

MC 0572

[IUPAP, IFCA, 1978-1979]

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BOX 609 FOLDER 9



International Committee for Future Accelerators  
Sponsored by the Particles and Fields Commission of IUPAP

L. M. LEDERMAN  
**RECEIVED**  
APR 25 1979  
DIRECTORS OFFICE  
**FERMILAB**

To Members of ICFA

Dear Leon,

Geneva, 20 April 1979

INTERREGIONAL COLLABORATION IN THE LATE 1980'S AND 1990'S

INTRODUCTION

At the last meeting of ICFA at Fermilab in October of last year, we touched on a matter which I believe is one of the most important topics for ICFA, namely, the trends in interregional collaboration in the second half of the 1980's and onwards when it seems from the planning currently discussed in the different regions of the world of high-energy physics that there will be fewer front-line machines than nowadays, possibly only one of each type, and that these machines will be located in different regions of the world. (By front-line machines, I mean the highest energy machines of a particular type). In these circumstances, experimenters will no longer find in their own region of the world all or most of the front-line machines they require for their research and more and more they will seek to carry out experiments using machines in other regions.

This will not be an entirely new situation since for many years now experimenters have carried out experiments using machines in other regions than their own. What may be different in future is that with fewer front-line machines, the numbers of experimenters seeking access to machines in other regions may grow considerably, and this may present new problems.

I feel that this matter is important for ICFA because in the second half of the 1980's we seem to be entering a pre-world machine phase when what might be regarded as components of a world machine are distributed in a few regions. Ultimately, it may be that all components will be built on one site and form a single world machine complex of even higher energies but this seems unlikely to happen before the mid 1990's. In the meantime, many of the problems of using a single world machine complex will arise in the interregional use of the new regional front-line machines now being launched and hence they could be tackled long before a single world machine complex is ever started. This presents a major challenge to ICFA the outcome of which may determine the confidence people place in any future world machine complex on a single site.

The purpose of this note is to put forward some personal views on this matter for your consideration in preparation for a thorough discussion at the next meeting of ICFA in October this year.

CURRENTS TRENDS IN REGIONAL PLANNING OF FRONT-LINE MACHINES

To the best of my knowledge the regional planning of front-line machines, classified under the main types, is as follows:

Fixed-target proton machines

At the present time, there are two front-line machines of this type operating - the 400 GeV Fermilab machine and the CERN 400 GeV machine. The highest energy machines of this type operating in other regions are the 76 GeV Serpukhov machine and the KEK 12 GeV machine. The next front-line machine of this type according to recent planning will be the 1 TeV Fermilab TEVATRON followed later on by the 3 TeV UNK machine at Serpukhov. Also, a 50 GeV machine is under construction near Peking and there are plans to add a 400 GeV ring later on. In the late 1980's and 1990's, there will therefore be only one front-line machine of this type, located in the USSR, compared with the two now operating, one in the USA and the other in Western Europe. It should be noted that fixed-target proton machines can be adapted to operate as proton-antiproton colliders as is now being done with the CERN SPS machine and by adding extra magnet rings they can be utilized as pp and ep colliders. Since the UNK machine consists of two magnet rings in one tunnel it could be operated as a 400 + 3000 GeV pp collider.

Proton-proton colliding beam machines

These are two ring machines expressly built with many intersection regions to obtain high luminosities for pp collisions. Only one exists in the world today, the 30 + 30 GeV ISR machine at CERN, but a larger one is under construction, the 400 + 400 GeV ISABELLE machine at Brookhaven National Laboratory in the USA which will in future be the front-line machine of this type. The TRISTAN project in Japan contains the possibility of colliding pp at 50 + 200 GeV energies, and the TEVATRON at Fermilab, since it is being built in the same tunnel as the 400 GeV fixed-target machine, could give 250 + 1000 GeV pp collisions. For the same reason, the UNK machine could be operated as a 400 + 3000 GeV pp collider. Clearly, pp colliders can be used as  $p\bar{p}$  colliders, and by adding an electron ring can be used as ep colliders.

Electron-positron colliding beam machines

The 19 + 19 GeV PETRA machine at DESY is the current front-line machine of this type in operation and it will be joined by the 18 + 18 GeV PEP machine at SLAC towards the end of this year. In addition there are the VEPP machines at Novosibirsk and an 8 + 8 GeV machine is nearing completion at Cornell. CERN has a project, not yet approved, to build a machine called LEP which when completed could reach 85 + 85 GeV energy using copper RF cavities and 130 + 130 GeV energy using superconducting RF cavities and hence would be the front-line machine of this type in the future. Electron-positron machines can be used as ep colliders by adding a proton ring or using one which already exists.

Towards the end of the 1980's, if the present planning is carried out, the regional distribution of front-line machines will be:

3 TeV, fixed-target proton - Serpukhov, USSR  
400 + 400 GeV, pp - BNL, USA  
about 100 + 100 GeV,  $e^+e^-$  - CERN, Western Europe,

and in addition there will probably be one or more ep colliders which would complete the list of front-line machines (the possibilities are TRISTAN and additional rings for PETRA, PEP, TEVATRON, ISABELLE, LEP and UNK).

#### MAIN FEATURES OF THE PRESENT ARRANGEMENTS FOR INTERREGIONAL USE OF FRONT-LINE MACHINES

Before considering what arrangements may be required to enable experimenters to use the front-line machines of the future, it is useful to note briefly what happens now. The present arrangements have evolved over many years and the new situation does not, I believe, present fundamentally new problems. I list below what I think are the common features of the present arrangements.

##### The experimental group

It seems a common feature that experimenters from another region usually join with local regional experimenters in carrying out experiments. Sometimes this is a requirement of the laboratory operating the front-line machine, sometimes it is just due to the size of the group required to do the experiment and the need to have local experimenters in the group who know the machine and laboratory. One also finds groups consisting only of experimenters from another region, but not so often as mixed groups.

##### Procedure for selecting experiments

Each laboratory operating a front-line machine has its own procedure for selecting the experiments to be carried out using the machine. As far I know, these procedures are applied uniformly by the laboratories to all experimental proposals irrespective of the origin of the teams in the group. The selection criteria are principally based on scientific merit and technical feasibility but sometimes local balances are taken into account.

##### The capital cost of the experiment

All the teams in an experimental group are expected to contribute in some way to the capital cost of the experiment either by cash contributions or by building hardware or software for the experiment. The operating laboratory also often contributes cash or hardware to the experiment and usually provides the technical infrastructures for the experiment to enable it to be carried out with the machine. The distribution of contributions is worked out by the group in collaboration with the operating laboratory. If the group contains teams from another region these teams are also expected to contribute in a similar way as local regional teams.

### Operating costs of an experiment

Experiments are carried out by the group, the members of which are paid by their universities or laboratories. The operating laboratories also provide to a varying extent technical help and consumable materials for experiments at their own cost and some stores, etc. The arrangements adopted vary with the operating laboratory and even within an operating laboratory from one experiment to another. However, I do not know of any case of an operating laboratory charging an experimental group for the use of a front-line machine. Within a region it would be inappropriate to do so since the operating laboratory is funded by the regional government(s) to construct and operate the machine and the laboratory, and to make them available to the experimental teams in the region. By applying this same concept to teams from other regions, it seems to be accepted that over a long enough period of time each region benefits equally from the arrangement. The use of the front-line machines by experimenters of another region has so far been relatively modest compared with their use by local regional experimenters.

### Formal arrangements for interregional use of front-line machines

Whereas the features of the arrangements described above are common to most laboratories operating front-line machines the formal arrangements which allow the interregional use of these machines differ widely. For example, the American and Western European experimenters have used each other's machines for many years now and it has never been found necessary to cover this use by any formal arrangement either at Government or Agency level. On the other hand, the shared use of front-line machines between the Soviet Union and Western Europe needed a formal agreement at Agency level (e.g. the CERN-USSR State Committee for the Utilization of Atomic Energy agreement). I read the other day that the future shared use of Japanese and American machines is covered by an agreement at the level of Heads of State and in the past there was the Nixon-Brezhnev agreement covering USA and USSR collaboration in high-energy physics. There seems, therefore, a great diversity in the formal arrangements for interregional use of front-line machines ranging all the way from no agreement at all to Heads-of-State declarations.

### WHAT CHANGES IN THE PRESENT ARRANGEMENTS MIGHT BE NECESSARY IN THE FUTURE?

Whatever changes may be necessary in the future to the present rather flexible arrangements for the interregional use of front-line machines will, I assume, be caused by the probability that there will be less of these machines in the future than there are now, and hence the competition to use them will be greater. Furthermore, this competition will come not only from experimenters in the region in which the machine is built but also from experimenters in other regions, and the present arrangements used by the operating laboratories may then be unable to cope, and the funding

Agencies of these laboratories may question the financial aspects of the arrangements. Clearly, we need some measure of the forthcoming competition in order to see how important a driving force for change it may be. One way of approaching this problem is to estimate how many experimenters can be accommodated on the new front-line machines. Judging from the experience at CERN, a large fixed-target proton machine can accommodate about 1000 experimenters and a colliding beam machine about 400. The three front-line machines of the future, ISABELLE, UNK and LEP, according to this could accommodate up to 2000 experimenters but many more than this use the present front-line machines. On the other hand, one can point to the experience at CERN with the ISR machine which is the only one of its type in the world. CERN has not been overwhelmed by requests from American experimenters to use this machine, although many of them do use it. Similarly, although the CERN SPS machine is the nearest front-line fixed-target proton machine to the Soviet Union and Eastern Europe, and there are quite a number of experimenters from these regions of the world using the SPS, the numbers are still small compared with the number of Western European experimenters using this machine, and the present arrangements are still working satisfactorily. It may be that the distance from the home laboratories, or financial limitation in the other regions or perhaps the present arrangements themselves limit the use of machines in other regions. In addition, it may be that there are still enough front-line machines in the different regions for the local experimenters to use that the need to launch an experiment so far from home only arises occasionally.

Towards the end of the 1980's, and during the 1990's, there will probably be fewer front-line machines and supposing the competition does build up, the operating laboratories and/or their funding Agencies may want to modify the present arrangements. The question then arises in what way could they be modified to take into account this new situation. On this question, I can offer the following comments:

#### Experimental groups

It seems to me that any change in the direction of allowing an experimental group to consist only of teams from a region other than that of the operating laboratory will make it more difficult for the laboratory to justify to its funding Agency the use of its machine by experimenters from another region. On the other hand, the pressure for wholly regional experiments will probably increase. If some way of equalising the use of the regional machines could be established the Agencies might tolerate wholly regional experiments.

#### Procedure for selecting experiments

It seems unlikely to me that the operating laboratories will want to introduce other criteria into their selection procedures than scientific merit and technical feasibility. To introduce, for example, regional considerations into the selection of an experiment would complicate considerably what is already a very difficult business and the research might suffer as a result. One could imagine widening the membership of the experiments selection committees of the regional laboratories to include scientists from other regions but to select experiments on an interregional basis seems to me too complicated.

The capital cost of the experiment

The present arrangements regarding the contributions of the teams in a group to the experiment seem equally applicable in the future. However, if the number of experimenters from other regions becomes an appreciable fraction of the local regional experimenters, or if wholly regional experiments are accepted, the contribution of the operating laboratory to the capital cost of the experiments may be brought into question.

Operating costs of the equipment

The present arrangements regarding the contributions of the group to running its experiment seem to me so dependent on the teams involved that the present variety of arrangements is likely to continue. I can see, however, that the contribution of the operating laboratory to running the experiment, which is often considerable, might be brought into question if, in the future, the groups have a large fraction in them of experimenters from other regions, or if wholly regional experiments are accepted. Also the old question of charging for the use of the machine might be raised in these circumstances. Incidentally, if charging experimental groups ever got adopted, it will present some difficult financial problems. It is by no means certain that the income a laboratory operating a front-line machine would earn in this way, could be used to finance groups in its region to use front-line machines in other regions. At least, in Western Europe, there is a clear distinction between the money made available to CERN and that made available to the experimental groups using CERN and transfers between them are by no means automatic.

Formal arrangements for the interregional use of front-line machines

As I have described above, the present arrangements for the interregional use of front-line machines range all the way from no formal arrangement at all to agreements between Heads of State. If the interregional use of the front-line machines does increase considerably in the future, no doubt the question of some more uniformity in the formalities will be raised.

A SUGGESTION:

It is not my intention in this note to put forward a solution to all these problems. This is something which I am sure will only emerge after several discussions in ICFA and in the regions. I would, however, like to suggest that the solution might be approached along the following lines.

The key bodies involved in whatever interregional collaboration emerges are the operating laboratories of the future front-line machines. If these laboratories could work out a uniform way of dealing with the use of their machines by experimental teams from other regions a common basis for interregional collaboration could be established. This would involve reaching agreement on the main features of the interregional use of the front-line machines which I have mentioned above, namely:

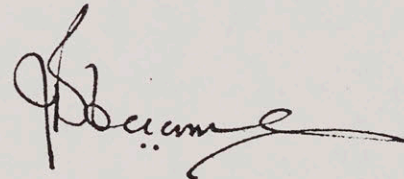
- composition of experimental groups
- selection of experiments
- sharing the capital costs of experiments
- sharing the operating costs of experiments.

Once an agreement is reached between the laboratories, each laboratory could then propose the agreement to its governing Authorities and seek approval. If the governing Authorities agree, each laboratory would then be empowered to operate the collaboration along the lines agreed. In order to make sure that the collaboration works well the front-line laboratories could meet together on a regular basis to review progress and propose modifications. Perhaps these laboratories could form themselves into an Association for this purpose without losing their identity or autonomy. In this way, it may be possible to avoid intergovernmental agreements which usually are very complicated and time consuming, and introduce many other factors apart from research.

The most difficult problem to my mind is how to establish an equitable use of the front-line machines and what unit to use to measure this use. I fear that money is not a good unit, especially if money has to be transferred from one region to another or between experimental groups and operating laboratories. Perhaps machines hours or numbers of experimenters would be better.

Needless to say, I look forward to an interesting discussion on this important topic at the next meeting of ICFA and I hope my remarks, which, I repeat, are purely personal ones, will stimulate this discussion.

Yours sincerely,



J.B. Adams  
Chairman of ICFA





Fermilab

Fermi National Accelerator Laboratory  
P.O. Box 500 • Batavia, Illinois • 60510

Directors Office

April 17, 1979

Dr. Marcel Vivargent  
CERN  
1211 Geneva 23  
Switzerland

Dear Marcel:

I would like to raise a matter with you as chairman of ECFA. As you know, Fermilab is in the midst of a construction project aimed at raising the energy of the Fermilab accelerator to 1000 GeV (Tevatron). This fact has elicited several informal proposals from European groups to bring large detectors to Fermilab. In addition, a recent survey notes that there are at present 26 Western European groups involved in active proposals at Fermilab. See list enclosed. This is in addition to visiting individuals. Clearly there is a strong asymmetry in the joint use of facilities and we at Fermilab are delighted at the role we are playing as a de facto world laboratory.

The matter I would like to raise has to do with the marginal nature of the TEVATRON funding. With such a large on-going and projected European utilization, is there the possibility of a European contribution to Fermilab - this would serve to guarantee a well-developed TEVATRON facility. The sum that would make a definite impact would be something like ~ 10-12 million Swiss Francs per year over the next three to four years. This would be a decisive contribution.

My question is whether there is enough scientific will and political wisdom to achieve such a contribution in our lifetime? Anyway, I would be interested in your reaction to this bizarre and somewhat desperate suggestion.

Sincerely yours,

Leon M. Lederman

Enclosure

cc: J. Adams, CERN  
W. Wallenmeyer, DOE  
S. Drell (HEPAP)

Ms. Mary Ann Hubar  
CERN  
1211 Geneva 23  
Switzerland

Following is the information Dr. Lederman asked that I transmit to you for Leslie on European collaborations currently participating in the Fermilab research program. Twenty-six institutions are represented in eleven Western European countries.

Belgium	University de l'Etat	E-565, E-570
France	Orsay	E-81
	Saclay	E-302, E-567
	Strasbourg	E-576
	University of Lyon	E-576
	University of Nancy	E-576
	University of Paris IV	E-576
Greece	University of Athens	E-537
Italy	University of Bari	E-451, E-469
	University of Padova	E-565, E-570
	University of Pavia	E-565, E-570
	University of Rome	E-565, E-570
	University of Torino	E-302, E-567
	University of Trieste	E-565, E-570
Netherlands	Nijmegen University	E-565, E-570
Spain	University of Santander	E-576
	University of Valencia	E-576
Sweden	University of Lund	E-553, E-576
	University of Stockholm	E-597
Switzerland	CERN	E-605
	University of Bern	E-606
United Kingdom	Cavendish Laboratory	E-597
	Imperial College, London	E-552
	Oxford University	E-253
West Germany	Max Planck Institute	E-110
Yugoslavia	University of Belgrade	E-576

Sincerely,

Thomas H. Groves

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

DEPARTMENT OF PHYSICS

CAMBRIDGE, MASSACHUSETTS 02139

March 27, 1979

Prof. Godfrey H. Stafford, OBE  
Director, Science Research Council  
Rutherford Laboratory  
Chilton, Didcot  
Oxfordshire OX11 0QX  
England

Dear Godfrey,

My previous communications to you and to the SPC were not too well formulated and I fear that they have been misinterpreted by some people. Let me, therefore, reformulate my points again.

My first point dealt with the selection of experiments at CERN. I had the impression that the decision making process was considered by a number of people as cumbersome, slow, and perhaps not always so that the best experiments get the highest priorities. Of course, I am not able to know by direct experience whether such criticisms are justified or not.

I was very pleased by the recent decision of the SPC to appoint a working group in order to review the process of selection of experiments at CERN. I have full confidence that this group will give an objective evaluation and will come up with the best possible recommendations if such are necessary.

My second point had to do with the character of experimental high energy physics in the future. A few years from now, it will no longer be so that each of the three "continents" will possess within their confines essentially all types of instruments necessary for research. Already today, proton storage rings are available only in Europe, there are no high-energy electron facilities in the U.S.S.R.; within the next decade it is expected that Isabelle and the Tevatron (1000 GeV fixed target) will be available only in U.S.A.; a strong  $p\bar{p}$  colliding system and LEP (hopefully) will be available only in Europe. Probably the U.S.S.R. may provide also unique facilities in the several TeV region. This development is by no means deplorable; on the contrary it is very desirable from the point of view of saving efforts and money, and also from the point of view of furthering international collaboration.

I am now raising the question as to whether our present system of planning for experiments at the different facilities needs some adjustments or changes in order to cope with the new situation when it arises. It necessarily will lead to a much larger participation of extra-continental groups in the exploitation of the new facilities. Today, the situation is still quite different. An American group at a European facility still is the exception to the rule, and a European one at a U.S. facility even more. This cannot and should not remain so in the future. It would be deplorable if European physicists would be interested mostly in electron phenomena because LEP happens to be in Europe; the same holds for U.S. physicists in regard to Isabelle and the Tevatron. We will have to move towards an inter-continental exploitation of continental facilities.

One may argue that this problem should be taken up and discussed by ICFA. It certainly is a suitable topic for that organization, but I would suggest that the problem first be discussed very informally by a group of Western Europeans and Americans.

After all, there already exists a great deal of reasonably satisfactory and informal collaboration between these two groups and, in view of this experience, it may be easier for them to focus upon the question of what kind of measures and changes, if any, may have to be introduced in order to exploit most fruitfully the new facilities to come. Moreover, it is most probable that the necessity of intercontinental exploitation will first arise between Europe and U.S.A.

In my opinion, discussions at ICFA would be more useful if they follow informal U.S.-Europe discussions, since it is in the nature of ICFA that such problems would be treated in more formal terms. Furthermore, the common exploitation of facilities with the Soviet Union probably will bring up problems that may not occur in a European-American exploitation.

I am glad to see that the first point that I have raised is already taken care of in a most satisfactory way. The second point, of course, touches problems of longer range. I would be interested in the views of the SPC regarding this point. I am also bringing up this question before the American community and I am curious as to their reaction.

Sincerely yours,

Victor F. Weisskopf

VFW/mbr

January 19, 1978

All Members International  
Committee On Future Accelerators

Gentlemen:

There is one piece of business in which I was involved with Bernard Gregory which now falls to me to complete.

Until last summer, and through the time of the provisional ICFA meeting which most of you attended, the establishment of ICFA had not been formalized. During the previous year there had been continuing discussions about an appropriate regional representation on ICFA. Although that representation had been established at the Tbilisi meeting of the IUPAP Commission, it was subsequently indicated that a change in the agreed-upon representation would be desirable. Such a change required the action of the IUPAP Commission, and that matter could not be considered until the time of its meeting on the day following the one set for the provisional ICFA meeting. At the August, 1977 meeting of the IUPAP Commission it was voted that ICFA should be established with a membership as follows:

- 3 representatives from CERN member countries
- 3 representatives from the USA
- 3 representatives from the USSR
- 1 representative from JINR member countries other than the USSR
- 1 representative from the "Other Countries" IUPAP category  
Chairman of the IUPAP Commission on Particles and Fields,  
ex-officio

At the same meeting the Commission on Particles and Fields defined the responsibilities of ICFA as follows:

"To organize workshops for the study of problems related to an international super high energy accelerator complex (VBA) and to elaborate the framework of its construction and its use.

"To organize meetings for the exchange of information on future plans of regional facilities and for the formulation of advice on joint studies and uses."

The IUPAP Commission was presented with a slate of nominees for initial membership on ICFA. The Commission voted on the initial appointments for membership and has made provision for a rotation of terms on a three-year cycle. Terms will start on January 1 of any given year and will end on December 31. Individual members will be eligible for reappointment for a second term, but normally will not be eligible for appointment for a third term.

Three of the initial members of ICFA were G. VonDardel, W. Paul and V. Weisskopf. All three of those members have subsequently submitted their resignations. Two replacements, G. Stafford and M. Vivargent have been nominated to complete the representation of the Western European region, and their appointments have been made by action of the IUPAP Commission. A replacement for Weisskopf will be deferred until the IUPAP Commission meeting next summer.

The present members of ICFA are listed below, together with the year at the end of which their present terms will end. (The cycles of rotation have been chosen alphabetically within regions.)

Adams (1979)	Dzhelepov (1979)
Stafford (1981)	Myznikov (1980)
Vivargent (1980)	Yarba (1981)
Lederman (1979)	Lanius (1980)
(to be nominated by USA) (1980)	Yamaguchi (1979)
Wilson (1981)	Goldwasser (1978)

I am currently serving, ex-officio, on ICFA. My term on the IUPAP Commission will expire in the fall of 1978. I shall be replaced on ICFA by the next IUPAP Chairman. He will be starting a three year term.

The Chairman of the ICFA Committee will be elected by the members of ICFA at their first meeting in each calendar year. At the August meeting of the above group Gregory was designated to serve as Chairman. I am temporarily taking it upon myself to serve in that capacity since I am acting for him. However, as I have indicated in my January 4 letter to you, a new chairman will be elected at the coming meeting of the Committee.

Sincerely,

*Edwin L. Goldwasser*

Edwin L. Goldwasser  
Acting Chairman  
IUPAP Commission on Particles and Fields

MINUTES OF THE SECOND ICFA MEETING  
HELD AT CERN, GENEVA, ON 27 FEBRUARY 1978

Participants : J.B. Adams, E.L. Goldwasser, K. Lanius,  
L.M. Lederman, M. Vivargent, R. Wilson,  
Y. Yamaguchi, V.A. Yarba,  
(+ W.O. Lock, A. Rousset, N. Tyurin).

*0 Minutes corrected + agree*

1. E.L. Goldwasser, as acting Chairman (see § 2 below) and on behalf of the Committee, expressed his sympathy to the family of B.P. Gregory on his sudden and tragic death.
2. E.L. Goldwasser explained that he had been asked by the Secretary-General of IUPAP to act as interim Chairman of the IUPAP Commission on Particles and Fields. In this capacity therefore he had acted as Chairman of ICFA, pending the election of a new Chairman. In addition he would continue to be an "ex-officio" member of ICFA, representing IUPAP.
3. E.L. Goldwasser reported that W. Paul and G. von Dardel had resigned from ICFA and that IUPAP had agreed to the nomination of G.H. Stafford and M. Vivargent to replace them. In addition, V.F. Weisskopf had resigned as one of the representatives from the USA and no-one had yet been appointed to replace him.
4. J.B. Adams was then unanimously elected Chairman of ICFA for a period of one year and W.O. Lock as Secretary in replacement of A. Rousset, who had resigned.
5. Reports from the three regions on their views on the main aims of the ICFA, and on the suggestions which were made at the first ICFA meeting, were presented by J.B. Adams, R. Wilson and V.A. Yarba and also by K. Lanius and Y. Yamaguchi. In particular

there was an exchange of views on the necessity or otherwise of setting up two study groups as had been proposed at the first ICFA meeting.

6. It was then decided that
  - (a) there was no need at the present time to set up Working Groups;
  - (b) however, there was a clear need to organize a number of workshops ~~firstly~~ on topics related to an eventual VBA project and ~~secondly~~ on topics related to regional facilities which will assist in the realisation of a VBA project.
  
7. For topics related to the VBA, it was agreed that there were four main areas of interest, viz.
  - (i) the physics needs;
  - (ii) accelerator possibilities and limitations;
  - (iii) detector possibilities and limitations and
  - (iv) how to build and use a VBA.
  
8. It was agreed to organize a first Workshop on "accelerator and detector possibilities and limitations" at NAL from October <sup>9-19</sup> ~~16-26~~ 1978. Attendance would be limited to  $\sim 10$  from each region plus  $\sim 10$  others, i.e.  $\sim 40$  in total. ~~NAL~~ would be responsible for the organization of the Workshop. Formal announcements and invitations would be sent out to ICFA members as soon as possible. A draft programme would be sent from the ~~NAL~~ Organizing Group to the Chairman of ICFA who would distribute it to all members for their comments and suggestions.



9. For topics related to regional facilities, it was agreed that there were three, viz.
- (i) the physics reasons for building the new regional facilities such as LEP, UNK, Isabelle;
  - (ii) the technology required for building these regional facilities and
  - (iii) the experience gained in the present joint utilization of regional facilities.
10. It was tentatively agreed to hold a second workshop on "superconducting magnets and cavities" at IHEP, Serpukhov, in the spring of 1979. A final decision whether or not to hold this workshop would be made after the first workshop at ~~NAL~~.
11. The question of whether or not to hold a workshop on the physics needs for a VBA, perhaps also in 1979, would be discussed at the next ICFA meeting.
12. It was agreed that E.L. Goldwasser should report briefly on ICFA activities at the Tokyo High Energy Physics Conference. He would circulate a summary of what he intended to say to all ICFA members, for their comments, a month before the Conference.
13. It was provisionally agreed to hold the next meeting of ICFA at NAL on 27 October 1978.

W.O. Lock

\* \* \*



Fermilab

February 1, 1978

Dear Colleague:

This is a brief report of the ICFA meeting held at CERN on January 27, 1978 at which the proposal to set up two study groups was considered. You remember we had discussed this proposal at the meeting last October at Fermilab and the matter was further discussed at the HEPAP meeting in December. In both meetings, considerable caution was expressed, especially as concerned the group having to do with collaboration on the use and planning of region facilities.

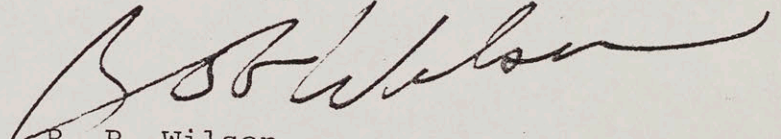
Well, the meeting went very smoothly, the spirit of Bernard Gregory infused and informed our deliberations, all the participants showing an eagerness to find agreement - John Adams, the chairman. I think most of you will be pleased that:

- "6. It was then decided that
- (a) there was no need at the present time to set up Working Groups;
  - (b) however, there was a clear need to organize a number of workshops on topics related to an eventual VBA project and on topics related to regional facilities which will assist in the realization of a VBA project."

to quote from the minutes.

It was also agreed to organize a first Workshop on "Accelerator and Detector Possibilities and Limitations" at Fermilab October 9-15, 1978. We at Fermilab will start at once to organize that Workshop which is supposed to be limited to about forty working physicists.

With best regards,



R. R. Wilson

DISTRIBUTION:

A. Abashian	L. Lederman	J. Ross
J. Ballam	T. D. Lee	N. Samios
C. Baltay	L. Leipuner	F. Sciulli
M. Bardon	J. Leiss	K. Strauch
C.-Y. Chien	D. Leith	J. Sullivan
M. Derrick	B. McDaniel	G. Trilling
R. Diebold	H. Neal	G. Vineyard
S. Drell	W. Panofsky	W. Wallenmeyer
E. Goldwasser	J. Peoples	V. Weisskopf ✓



Fermilab

January 31, 1978

Dear Viki:

Just to bring you up-to-date and for your information enclosed is recent ICFA correspondence and the minutes of the January 27 meeting.

Warm regards,

Ned

Enclosures



EXTRA

January 4, 1978

ALL MEMBERS INTERNATIONAL COMMITTEE  
ON FUTURE ACCELERATORS

Gentlemen:

By now most of you must have heard that Bernard Gregory died, suddenly and unexpectedly, at Christmastime. He had been vigorous and in apparent good health until the time of his untimely and tragic death. His loss will be felt in many different ways. Those of us who have served with him on IUPAP and ICFA know of his deep commitment to high energy physics and to the establishment of better international relations and cooperation. He will be sorely missed, but the best tribute we can pay to him is to continue the work in which he had been involved.

I have been asked by Larkin Kerwin, Secretary-General of IUPAP, to act in Gregory's place for the remainder of his term as Chairman of the IUPAP Commission on Particles and Fields. That I have agreed to do.

Professor Gregory served on ICFA, ex officio, as Chairman of the IUPAP Commission. I shall therefore be assuming that responsibility of his. As you are aware, you also elected him to serve as Chairman of ICFA at the time of your August meeting. However, his service in that capacity was not ex officio. As Gregory's replacement on ICFA I shall therefore serve in his stead as Chairman of ICFA only until the time of the next ICFA meeting.

Gregory, together with Andre Rousset, who has been serving as ICFA secretary, had been planning a meeting of ICFA at CERN on January 27-28. I am now assuming the responsibility of convening that meeting. At my request, Dr. Rousset has agreed to continue to serve as secretary, at least until the time of the next meeting. I am depending heavily upon him for the development of plans and arrangements. He will be contacting you about the dates that have tentatively been chosen.

I have asked Rousset to place on the agenda for the coming meeting the election of a new ICFA Chairman. It is my decision to refuse to be a candidate, since I believe that within the ground rules set down by our Commission, ICFA should not have its administration tied to the appointment of IUPAP Commission officers. Those appointments are made on the basis of criteria which may be quite independent from

bcc: S. Drell  
F. Low

those which are important for ICFA. The best way to remove the confusion that previously existed on that point, by reason of Gregory's election to the Chairmanship of ICFA, is to withdraw my own name, thus establishing a precedent for the separation of the two offices.

As a result of your actions last summer, Professor Gregory had been engaged in correspondence with regional representatives regarding the establishment of "Group 1" and "Group 2", and his correspondence had recently arrived at the stage when it was appropriate to have the meeting that was planned last summer. Rousset is circulating copies of that correspondence. It will be a principal subject of discussion at the coming meeting. Rousset will be sending out a tentative agenda within the next days.

Sincerely,

*Med Goldwasser*

Edwin L. Goldwasser



Fermilab

Fermi National Accelerator Laboratory  
P.O. Box 500 • Batavia, Illinois • 60510

EXTRA

Directors Office

January 10, 1978

Dr. John Adams  
Dr. Leon VanHove  
CERN  
1211 Geneva 23  
Switzerland

Dear John and Leon:

I am writing to summarize my understanding of the telephone conversation I recently had with John in an effort to clarify the status of ICFA in connection with its coming meeting at CERN.

First, as far as the chairmanship of ICFA is concerned, I think I have made this clear in a letter I have written to all ICFA members. With Gregory's death and with my filling out his term as Chairman of IUPAP, I become, ex officio, a replacement for him on ICFA. Furthermore, either as his ICFA substitute or as IUPAP Chairman or as both, I am assuming the responsibility of convening the coming meeting of ICFA. For that purpose I have asked, and I am receiving all the help that Rousset can give me.

For the future, I have indicated that one of the items on the agenda for the coming meeting would be the election of a new ICFA Chairman, and I have further indicated that I would not be a candidate for that chairmanship. For the reasons that I gave in my ICFA letter, I believe that the two chairmanships should clearly be established to be independent.

Since the original initiative which has led to the establishment of ICFA came largely from Bob Wilson at the time of the New Orleans meeting, it is my opinion that he would be a strong and a natural chairman to succeed Gregory. I would hope that this suggestion would be generally acceptable, but we shall only find that out at the time of the ICFA meeting.

John pointed out that there are also some questions regarding the Western European representatives previously nominated for membership on ICFA and appointed to membership by the IUPAP Commission at its meeting last summer. Those people are Adams, von Dardel and Paul. As I understand it,

bcc: J. Low  
A. Rousset

John is still an appropriate member, from any point of view, and will certainly continue to serve. However, I also understand that von Dardel and Paul were originally nominated by reason of their holding other positions which they have subsequently relinquished. As I understand it, Stafford now holds the position through which Paul was originally nominated, and Vivargent now holds the position through which von Dardel was originally nominated.

The general question of ex-officio membership versus individual membership was discussed at the IUPAP Commission meeting, and the Commission decided that they were not concerned with the method used, in any region, for the selection of nominees for ICFA membership. That was a matter for each region to decide, internally.

However, the Commission members were equally clear that appointments to ICFA membership and the terms of those appointments must be matters of IUPAP concern and responsibility. In fact, the Commission has explicitly reserved unto itself the authority to appoint members to ICFA. Accordingly, at the IUPAP meeting I was explicitly asked to arrange a system of rotation of ICFA membership and to make assignments for the assignment of terms to the original appointed members. This I did, directly following the IUPAP meeting, but I chose to send my proposed solution to all Commission members for comment before circulating it to members of ICFA. That I did, and it has received their tacit approval. I passed that along to Gregory in December, but he had not yet circulated a letter to ICFA members at the time of his death. His delay may have been due, in part, to the "European problem". Whether or not that is the case, it now falls to me to put ICFA on a more formal footing, and I intend to do so in the immediate future.

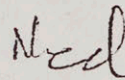
In the meantime, it turns out that we have a U.S. problem which is not entirely different from the European problem. Viki Weisskopf has indicated it to be his immutable decision to resign his membership on ICFA and has indicated it to be his intention not to attend the meeting at CERN. Resignation is an option which we cannot deny to any ICFA member and it is now up to the U.S. to nominate a replacement for Viki. It will then be up to IUPAP to consider that nomination and to make an appointment. Normally that action would await the summer meeting of the IUPAP Commission, but it could be taken by mail or by telex if there were any reason to do so on a faster time schedule.

If it were your wish that Stafford and Vivargent should serve as members of ICFA, starting now, and replacing Paul and von Dardel, that could be accomplished in a straightforward way through the resignations of von Dardel and Paul. With

those resignations in hand, I would approach you, <sup>Leon,</sup> as the previously designated European authority, for nominations to fill those vacancies on ICFA. If it were your wish that this be accomplished prior to the coming meeting of ICFA, you could inform me of your nominees by telex and I could poll IUPAP Commission members for their approval of the appointments prior to the end of this month. If that were the course you chose to take, I would probably also make an effort to get a nomination for a replacement for Weisskopf and circulate it together with your two nominations to Commission members.

Lacking any such action, the ICFA membership will remain as acted upon by IUPAP last summer. The Commission has already made the decision that appointments to ICFA are made by the IUPAP Commission and that only appointed members (not offhand selected substitutes) may act or serve.

Sincerely,



Edwin L. Goldwasser





**International Committee for Future Accelerators**  
Sponsored by the Particles and Fields Commission of IUPAP

ANNEX

Members of ICFA

The years given below are those in which the term of office of the persons listed terminate on 31 December.

1979

Adams  
Dzhelepov  
Lederman  
Yamaguchi

1980

Lanius  
Myznikov  
Richter  
Vivargent

1981

Stafford  
Wilson  
Yarba

Ex officio: Goldwasser



(Dr. Adams)  
Prof. Weiskopf

**International Committee for Future Accelerators**  
Sponsored by the Particles and Fields Commission of IUPAP

To Members of ICFA

Geneva, 20 April 1979

INTERREGIONAL COLLABORATION IN THE LATE 1980'S AND 1990'S

INTRODUCTION

At the last meeting of ICFA at Fermilab in October of last year, we touched on a matter which I believe is one of the most important topics for ICFA, namely, the trends in interregional collaboration in the second half of the 1980's and onwards when it seems from the planning currently discussed in the different regions of the world of high-energy physics that there will be fewer front-line machines than nowadays, possibly only one of each type, and that these machines will be located in different regions of the world. (By front-line machines, I mean the highest energy machines of a particular type). In these circumstances, experimenters will no longer find in their own region of the world all or most of the front-line machines they require for their research and more and more they will seek to carry out experiments using machines in other regions.

This will not be an entirely new situation since for many years now experimenters have carried out experiments using machines in other regions than their own. What may be different in future is that with fewer front-line machines, the numbers of experimenters seeking access to machines in other regions may grow considerably, and this may present new problems.

I feel that this matter is important for ICFA because in the second half of the 1980's we seem to be entering a pre-world machine phase when what might be regarded as components of a world machine are distributed in a few regions. Ultimately, it may be that all components will be built on one site and form a single world machine complex of even higher energies but this seems unlikely to happen before the mid 1990's. In the meantime, many of the problems of using a single world machine complex will arise in the interregional use of the new regional front-line machines now being launched and hence they could be tackled long before a single world machine complex is ever started. This presents a major challenge to ICFA the outcome of which may determine the confidence people place in any future world machine complex on a single site.

The purpose of this note is to put forward some personal views on this matter for your consideration in preparation for a thorough discussion at the next meeting of ICFA in October this year.

CURRENTS TRENDS IN REGIONAL PLANNING OF FRONT-LINE MACHINES

To the best of my knowledge the regional planning of front-line machines, classified under the main types, is as follows:

Fixed-target proton machines

At the present time, there are two front-line machines of this type operating - the 400 GeV Fermilab machine and the CERN 400 GeV machine. The highest energy machines of this type operating in other regions are the 76 GeV Serpukhov machine and the KEK 12 GeV machine. The next front-line machine of this type according to recent planning will be the 1 TeV Fermilab TEVATRON followed later on by the 3 TeV UNK machine at Serpukhov. Also, a 50 GeV machine is under construction near Peking and there are plans to add a 400 GeV ring later on. In the late 1980's and 1990's, there will therefore be only one front-line machine of this type, located in the USSR, compared with the two now operating, one in the USA and the other in Western Europe. It should be noted that fixed-target proton machines can be adapted to operate as proton-antiproton colliders as is now being done with the CERN SPS machine and by adding extra magnet rings they can be utilized as pp and ep colliders. Since the UNK machine consists of two magnet rings in one tunnel it could be operated as a 400 + 3000 GeV pp collider.

Proton-proton colliding beam machines

These are two ring machines expressly built with many intersection regions to obtain high luminosities for pp collisions. Only one exists in the world today, the 30 + 30 GeV ISR machine at CERN, but a larger one is under construction, the 400 + 400 GeV ISABELLE machine at Brookhaven National Laboratory in the USA which will in future be the front-line machine of this type. The TRISTAN project in Japan contains the possibility of colliding pp at 50 + 200 GeV energies, and the TEVATRON at Fermilab, since it is being built in the same tunnel as the 400 GeV fixed-target machine, could give 250 + 1000 GeV pp collisions. For the same reason, the UNK machine could be operated as a 400 + 3000 GeV pp collider. Clearly, pp colliders can be used as  $p\bar{p}$  colliders, and by adding an electron ring can be used as ep colliders.

Electron-positron colliding beam machines

The 19 + 19 GeV PETRA machine at DESY is the current front-line machine of this type in operation and it will be joined by the 18 + 18 GeV PEP machine at SLAC towards the end of this year. In addition there are the VEPP machines at Novosibirsk and an 8 + 8 GeV machine is nearing completion at Cornell. CERN has a project, not yet approved, to build a machine called LEP which when completed could reach 85 + 85 GeV energy using copper RF cavities and 130 + 130 GeV energy using superconducting RF cavities and hence would be the front-line machine of this type in the future. Electron-positron machines can be used as ep colliders by adding a proton ring or using one which already exists.

Towards the end of the 1980's, if the present planning is carried out, the regional distribution of front-line machines will be:

3 TeV, fixed-target proton - Serpukhov, USSR  
400 + 400 GeV, pp - BNL, USA  
about 100 + 100 GeV,  $e^+e^-$  - CERN, Western Europe,

and in addition there will probably be one or more ep colliders which would complete the list of front-line machines (the possibilities are TRISTAN and additional rings for PETRA, PEP, TEVATRON, ISABELLE, LEP and UNK).

#### MAIN FEATURES OF THE PRESENT ARRANGEMENTS FOR INTERREGIONAL USE OF FRONT-LINE MACHINES

Before considering what arrangements may be required to enable experimenters to use the front-line machines of the future, it is useful to note briefly what happens now. The present arrangements have evolved over many years and the new situation does not, I believe, present fundamentally new problems. I list below what I think are the common features of the present arrangements.

##### The experimental group

It seems a common feature that experimenters from another region usually join with local regional experimenters in carrying out experiments. Sometimes this is a requirement of the laboratory operating the front-line machine, sometimes it is just due to the size of the group required to do the experiment and the need to have local experimenters in the group who know the machine and laboratory. One also finds groups consisting only of experimenters from another region, but not so often as mixed groups.

##### Procedure for selecting experiments

Each laboratory operating a front-line machine has its own procedure for selecting the experiments to be carried out using the machine. As far I know, these procedures are applied uniformly by the laboratories to all experimental proposals irrespective of the origin of the teams in the group. The selection criteria are principally based on scientific merit and technical feasibility but sometimes local balances are taken into account.

##### The capital cost of the experiment

All the teams in an experimental group are expected to contribute in some way to the capital cost of the experiment either by cash contributions or by building hardware or software for the experiment. The operating laboratory also often contributes cash or hardware to the experiment and usually provides the technical infrastructures for the experiment to enable it to be carried out with the machine. The distribution of contributions is worked out by the group in collaboration with the operating laboratory. If the group contains teams from another region these teams are also expected to contribute in a similar way as local regional teams.

### Operating costs of an experiment

Experiments are carried out by the group, the members of which are paid by their universities or laboratories. The operating laboratories also provide to a varying extent technical help and consumable materials for experiments at their own cost and some stores, etc. The arrangements adopted vary with the operating laboratory and even within an operating laboratory from one experiment to another. However, I do not know of any case of an operating laboratory charging an experimental group for the use of a front-line machine. Within a region it would be inappropriate to do so since the operating laboratory is funded by the regional government(s) to construct and operate the machine and the laboratory, and to make them available to the experimental teams in the region. By applying this same concept to teams from other regions, it seems to be accepted that over a long enough period of time each region benefits equally from the arrangement. The use of the front-line machines by experimenters of another region has so far been relatively modest compared with their use by local regional experimenters.

### Formal arrangements for interregional use of front-line machines

Whereas the features of the arrangements described above are common to most laboratories operating front-line machines the formal arrangements which allow the interregional use of these machines differ widely. For example, the American and Western European experimenters have used each other's machines for many years now and it has never been found necessary to cover this use by any formal arrangement either at Government or Agency level. On the other hand, the shared use of front-line machines between the Soviet Union and Western Europe needed a formal agreement at Agency level (e.g. the CERN-USSR State Committee for the Utilization of Atomic Energy agreement). I read the other day that the future shared use of Japanese and American machines is covered by an agreement at the level of Heads of State and in the past there was the Nixon-Brezhnev agreement covering USA and USSR collaboration in high-energy physics. There seems, therefore, a great diversity in the formal arrangements for interregional use of front-line machines ranging all the way from no agreement at all to Heads-of-State declarations.

### WHAT CHANGES IN THE PRESENT ARRANGEMENTS MIGHT BE NECESSARY IN THE FUTURE?

Whatever changes may be necessary in the future to the present rather flexible arrangements for the interregional use of front-line machines will, I assume, be caused by the probability that there will be less of these machines in the future than there are now, and hence the competition to use them will be greater. Furthermore, this competition will come not only from experimenters in the region in which the machine is built but also from experimenters in other regions, and the present arrangements used by the operating laboratories may then be unable to cope, and the funding

Agencies of these laboratories may question the financial aspects of the arrangements. Clearly, we need some measure of the forthcoming competition in order to see how important a driving force for change it may be. One way of approaching this problem is to estimate how many experimenters can be accommodated on the new front-line machines. Judging from the experience at CERN, a large fixed-target proton machine can accommodate about 1000 experimenters and a colliding beam machine about 400. The three front-line machines of the future, ISABELLE, UNK and LEP, according to this could accommodate up to 2000 experimenters but many more than this use the present front-line machines. On the other hand, one can point to the experience at CERN with the ISR machine which is the only one of its type in the world. CERN has not been overwhelmed by requests from American experimenters to use this machine, although many of them do use it. Similarly, although the CERN SPS machine is the nearest front-line fixed-target proton machine to the Soviet Union and Eastern Europe, and there are quite a number of experimenters from these regions of the world using the SPS, the numbers are still small compared with the number of Western European experimenters using this machine, and the present arrangements are still working satisfactorily. It may be that the distance from the home laboratories, or financial limitation in the other regions or perhaps the present arrangements themselves limit the use of machines in other regions. In addition, it may be that there are still enough front-line machines in the different regions for the local experimenters to use that the need to launch an experiment so far from home only arises occasionally.

Towards the end of the 1980's, and during the 1990's, there will probably be fewer front-line machines and supposing the competition does build up, the operating laboratories and/or their funding Agencies may want to modify the present arrangements. The question then arises in what way could they be modified to take into account this new situation. On this question, I can offer the following comments:

#### Experimental groups

It seems to me that any change in the direction of allowing an experimental group to consist only of teams from a region other than that of the operating laboratory will make it more difficult for the laboratory to justify to its funding Agency the use of its machine by experimenters from another region. On the other hand, the pressure for wholly regional experiments will probably increase. If some way of equalising the use of the regional machines could be established the Agencies might tolerate wholly regional experiments.

#### Procedure for selecting experiments

It seems unlikely to me that the operating laboratories will want to introduce other criteria into their selection procedures than scientific merit and technical feasibility. To introduce, for example, regional considerations into the selection of an experiment would complicate considerably what is already a very difficult business and the research might suffer as a result. One could imagine widening the membership of the experiments selection committees of the regional laboratories to include scientists from other regions but to select experiments on an interregional basis seems to me too complicated.

### The capital cost of the experiment

The present arrangements regarding the contributions of the teams in a group to the experiment seem equally applicable in the future. However, if the number of experimenters from other regions becomes an appreciable fraction of the local regional experimenters, or if wholly regional experiments are accepted, the contribution of the operating laboratory to the capital cost of the experiments may be brought into question.

### Operating costs of the equipment

The present arrangements regarding the contributions of the group to running its experiment seem to me so dependent on the teams involved that the present variety of arrangements is likely to continue. I can see, however, that the contribution of the operating laboratory to running the experiment, which is often considerable, might be brought into question if, in the future, the groups have a large fraction in them of experimenters from other regions, or if wholly regional experiments are accepted. Also the old question of charging for the use of the machine might be raised in these circumstances. Incidentally, if charging experimental groups ever got adopted, it will present some difficult financial problems. It is by no means certain that the income a laboratory operating a front-line machine would earn in this way, could be used to finance groups in its region to use front-line machines in other regions. At least, in Western Europe, there is a clear distinction between the money made available to CERN and that made available to the experimental groups using CERN and transfers between them are by no means automatic.

### Formal arrangements for the interregional use of front-line machines

As I have described above, the present arrangements for the interregional use of front-line machines range all the way from no formal arrangement at all to agreements between Heads of State. If the interregional use of the front-line machines does increase considerably in the future, no doubt the question of some more uniformity in the formalities will be raised.

### A SUGGESTION:

It is not my intention in this note to put forward a solution to all these problems. This is something which I am sure will only emerge after several discussions in ICFA and in the regions. I would, however, like to suggest that the solution might be approached along the following lines.

The key bodies involved in whatever interregional collaboration emerges are the operating laboratories of the future front-line machines. If these laboratories could work out a uniform way of dealing with the use of their machines by experimental teams from other regions a common basis for interregional collaboration could be established. This would involve reaching agreement on the main features of the interregional use of the front-line machines which I have mentioned above, namely:

- composition of experimental groups
- selection of experiments
- sharing the capital costs of experiments
- sharing the operating costs of experiments.

Once an agreement is reached between the laboratories, each laboratory could then propose the agreement to its governing Authorities and seek approval. If the governing Authorities agree, each laboratory would then be empowered to operate the collaboration along the lines agreed. In order to make sure that the collaboration works well the front-line laboratories could meet together on a regular basis to review progress and propose modifications. Perhaps these laboratories could form themselves into an Association for this purpose without losing their identity or autonomy. In this way, it may be possible to avoid intergovernmental agreements which usually are very complicated and time consuming, and introduce many other factors apart from research.

The most difficult problem to my mind is how to establish an equitable use of the front-line machines and what unit to use to measure this use. I fear that money is not a good unit, especially if money has to be transferred from one region to another or between experimental groups and operating laboratories. Perhaps machines hours or numbers of experimenters would be better.

Needless to say, I look forward to an interesting discussion on this important topic at the next meeting of ICFA and I hope my remarks, which, I repeat, are purely personal ones, will stimulate this discussion.

Yours sincerely,

J.B. Adams  
Chairman of ICFA



PAC - Fermi Lab  
Spring 1979

4. Policy Toward Non-U.S. Groups

The Laboratory has asked this Committee to give advice on the handling of proposals from non-U.S. groups. The issue goes beyond the purview of this Committee and even of Fermilab. We hope that negotiations with the major overseas laboratories will result in a fair and uniform policy. Meanwhile, our recommendations on the proposals we receive will be guided by the following.

- A. The predominant considerations in accepting or rejecting an experimental proposal should continue to be:
  - 1. The physics merit,
  - 2. The technical feasibility,
  - 3. The capability of the group,
  - 4. The resources required.
- B. The Laboratory should welcome outside money or equipment, but such opportunities should not have excessive weight in determining the choice among proposals.
- C. The national<sup>or</sup> institutional affiliations of proponents should not per se influence the acceptance or rejection of proposals. We expect that foreign groups would naturally want to team up with local experimenters, and the Laboratory should encourage this. However, we do not feel that it is in the interests of the

Laboratory or of the field of particle physics to establish quotas or restrict the international character of the field. We hope that other major laboratories around the world would have similar policies.

- D. If some time in the future the Laboratory program ~~were~~ <sup>were</sup> threatened ~~to become~~ <sup>ed</sup> ~~dominated~~ <sup>with</sup> ~~by~~ <sup>104</sup> foreign groups because they ~~can~~ <sup>could</sup> afford apparatus beyond the means of American groups, we should first try to correct the American funding situation, or failing that, perhaps modify the policy stated above. However, we do not expect such a situation to occur.

# STANFORD UNIVERSITY

STANFORD LINEAR ACCELERATOR CENTER

*Mail Address*  
SLAC, P. O. Box 4349  
Stanford, California 94305  
May 29, 1979

Professor V. F. Weisskopf  
Department of Physics  
Massachusetts Institute of Technology  
Cambridge, Mass. 02139

Dear Viki:

Thanks for your letter of May 4 about the nagging problem of international utilization of accelerators. I also have a copy of Ned Goldwasser's reply of May 18 on the subject. I did not have a chance to answer until now, since I was a visiting lecturer at the University of Washington during the last two weeks.

In general I agree with Ned's negative reaction to the proposal of international scheduling committees, even ignoring the problems (which would be formidable under present circumstances) of including the Russians in any kind of international selection mechanism. However, I am not sure that that is really what you are advocating; in your letter you just say that the present system of national selection committees is not the right way of doing things.

I believe we must recognize that currently the program committees are advisory to the respective laboratory directors and are therefore tools of managing the diverse laboratories. As soon as you internationalize these committees they have to advise somebody, since I believe everyone would agree that decisions by committees on laboratory programs cannot be final, considering the finiteness of available resources. Therefore, any program committee operating nationally or internationally would have to advise a national or international final authority, and this would imply that we would be moving to a Czar of High Energy Physics. This, I think, would surely be bad; one of the attractive features of the present way of life, its formal inefficiency notwithstanding, is that the different laboratories are managed in diverse styles and therefore a physicist has a choice as to how and where to work.

In general the advisory committees do a good job, although I agree that the CERN structure is a bit cumbersome because it is so multi-layered, and we have had some similar complexities in the PEP/SLAC interaction. However, the committees do keep in mind that the objective is to do the best physics, and they tend not to be overly influenced by national or global politics. In addition, the committees tend to be knowledgeable as to what is happening internationally. At SLAC we deliberately have a European member

May 29, 1979

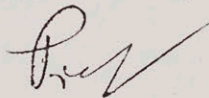
on both our Experimental Program Advisory Committee (EPAC) and our Scientific Policy Committee. My net conclusion is that internationalization of program committees would have costs which outweigh the benefits.

The above conclusion notwithstanding, I feel that there should be more international participation in national facilities, in particular those which are unique. You identify this problem for future facilities, but it has been true in the past that national facilities have been unique (e.g. the ISR and the SLAC Linac). Nevertheless, international participation has been minimal. Ned, in his letter, identifies that the international access to Fermilab during the time it was unique was soft-pedaled in order not to discourage the construction of the SPS, and CERN by policy requires European participation. Be this as it may, I am not aware of any current policy which prohibits or discourages international proposals to construct apparatus and carry out experiments at U.S. accelerators, for instance at SLAC. Nevertheless, as a practical matter this simply has not happened extensively beyond international participation by individuals in national experimental groups.

The best way to correct this situation may be through ICFA, possibly preceded by a discussion involving Western representatives only. Since the next generation of machines will most likely be largely unique, and since there will be a tendency to have insufficient instrumentation generated, it would be useful to plan from the very beginning to receive proposals for major apparatus from different continents for utilization of new machines. This would be a change in policy for CERN; although it would not be a policy change for U.S. laboratories, it would take active encouragement to actually occur.

To summarize, I believe strongly that internationalization of the program committees to the laboratories is a poor move. On the other hand, I believe that international access, in particular in respect to construction of large apparatus, should be fostered in the future and be incorporated in the planning stage of new facilities. Anyhow, I would very much like to talk to you about this - I don't know when this can be since I have no European trips planned in the immediate future. However, I will keep you informed as to my schedule; it seems that I am getting more involved in Chinese, Japanese and Russian collaboration discussions than European, not to mention SALT!

With best regards,



W. K. H. Panofsky  
Director

cc: Prof. E. L. Goldwasser, Prof. L. Lederman, Dr. B. Richter, Dr. J. Sanford,  
Dr. R. R. Wilson

STANFORD UNIVERSITY

STANFORD LINEAR ACCELERATOR CENTER

*Mail Address*

SLAC, P. O. Box 4349  
Stanford, California 94305

May 22, 1979

TO: HIGH ENERGY PHYSICS ADVISORY PANEL

P. A. Carruthers	J. Ross
M. Derrick	N. P. Samios
T. D. Lee	F. J. Sciulli
D. W. Leith	K. Strauch
W. Metz	R. P. Thun
H. A. Neal	M. Tigner
J. H. Peoples	V. F. Weisskopf

FROM: Sidney Drell, Chairman

Please respond to me at Oxford with your thoughts on this letter and on the following subject: I received a letter from Viki Weisskopf and talked with Leon Van Hove at the PETRA dedication about the question of mechanisms and needs for planning experiments at different facilities. Do we need adjustments in the way we do business in view of the uniqueness of new facilities? Any thoughts of yours on the further evolution or desirable/undesirable structures in intercontinental planning would be very helpful to me since I will be discussing such questions (with no official HEPAP connection or commitment) while I am at CERN in July. I have been asked to participate in such informal discussions both by ECFA and by other CERN policy types.

My address until June 28 is Department of Theoretical Physics, University of Oxford, 1 Keble Road, Oxford OX1 3NP, England - thereafter at CERN. Your comments should reach me before the 9th of July, if possible.

SDD:br

cc W. A. Wallenmeyer  
M. Bardon

*Sid Drell  
by BER*

Attachment



Fermilab

Fermi National Accelerator Laboratory  
P.O. Box 500 • Batavia, Illinois • 60510

Directors Office

April 17, 1979

Dr. Marcel Vivargent  
CERN  
1211 Geneva 23  
Switzerland

Dear Marcel:

I would like to raise a matter with you as chairman of ECFA. As you know, Fermilab is in the midst of a construction project aimed at raising the energy of the Fermilab accelerator to 1000 GeV (Tevatron). This fact has elicited several informal proposals from European groups to bring large detectors to Fermilab. In addition, a recent survey notes that there are at present 26 Western European groups involved in active proposals at Fermilab. See list enclosed. This is in addition to visiting individuals. Clearly there is a strong asymmetry in the joint use of facilities and we at Fermilab are delighted at the role we are playing as a de facto world laboratory.

The matter I would like to raise has to do with the marginal nature of the TEVATRON funding. With such a large on-going and projected European utilization, is there the possibility of a European contribution to Fermilab - this would serve to guarantee a well-developed TEVATRON facility. The sum that would make a definite impact would be something like ~ 10-12 million Swiss Francs per year over the next three to four years. This would be a decisive contribution.

My question is whether there is enough scientific will and political wisdom to achieve such a contribution in our lifetime? Anyway, I would be interested in your reaction to this bizarre and somewhat desperate suggestion.

Sincerely yours,

Leon M. Lederman

Enclosure

cc: J. Adams, CERN  
W. Wallenmeyer, DOE  
S. Drell (HEPAP) ✓

SDD 4/20/79

TWX - Charge XXC  
March 28, 1979

Ms. Mary Ann Hubar  
CERN  
1211 Geneva 23  
Switzerland

Following is the information Dr. Lederman asked that I transmit to you for Leslie on European collaborations currently participating in the Fermilab research program. Twenty-six institutions are represented in eleven Western European countries.

Belgium	University de l'Etat	E-565, E-570
France	Orsay	E-81
	Saclay	E-302, E-567
	Strasbourg	E-576
	University of Lyon	E-576
	University of Nancy	E-576
	University of Paris IV	E-576
Greece	University of Athens	E-537
Italy	University of Bari	E-451, E-469
	University of Padova	E-565, E-570
	University of Pavia	E-565, E-570
	University of Rome	E-565, E-570
	University of Torino	E-302, E-567
	University of Trieste	E-565, E-570
Netherlands	Nijmegen University	E-565, E-570
Spain	University of Santander	E-576
	University of Valencia	E-576
Sweden	University of Lund	E-553, E-576
	University of Stockholm	E-597
Switzerland	CERN	E-605
	University of Bern	E-606
United Kingdom	Cavendish Laboratory	E-597
	Imperial College, London	E-552
	Oxford University	E-253
West Germany	Max Planck Institute	E-110
Yugoslavia	University of Belgrade	E-576

Sincerely,

Thomas H. Groves

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

DEPARTMENT OF PHYSICS

CAMBRIDGE, MASSACHUSETTS 02139

May 24, 1979

Dr. Leon M. Lederman  
Fermi National Accelerator Laboratory  
P.O. Box 500  
Batavia, Illinois 60510

Dear Leon,

Thanks for your letter of May 16 regarding the international exploitation of unique facilities. I am sorry about two mistakes that I made in my letter to Stafford. One is that the p-p collision bar facility will be only at CERN. My deepest apology to the Director of Fermilab. I am also glad that you have corrected me in my belief that there are more American groups in Europe than European groups in America.

I am glad that you agree to a pre-ICFA discussion between the United States and Europe. I believe that this would be important in particular because I feel and so do feel other Americans that the European selection committees consider political and sociological reasons to a much greater extent in their selection of experiments than we do. This must change when we have unique facilities. Since it is a very delicate point, it would be certainly more difficult to discuss it in the presence of the Russians and Japanese.

I am very doubtful that such conversations will produce a cash flow to the United States, but nothing is impossible.

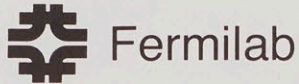
I will spend all summer at CERN and maybe I see you over there. With best regards,

Sincerely yours,

Victor F. Weisskopf

VFW/mbr





Fermi National Accelerator Laboratory  
P.O. Box 500 • Batavia, Illinois • 60510

Directors Office

May 16, 1979

Professor Victor F. Weisskopf  
Department of Physics  
Massachusetts Institute of Technology  
Cambridge, Massachusetts 02139

Dear Viki:

Now I'll answer your letter to Stafford. You may be aware that John Adams was thinking along very similar lines in his call for the ICFA agenda. In case you haven't seen this I enclose a copy. It may be incipient megalomania brought about by my new job but I suspect much of the CERN interest stems from the fact that from 1982/3 → 1986/7 we will have uniquely unique facilities e.g. 1000 GeV protons on fixed target and 2 TeV in the CM.

In your letter you seem to have overlooked the fact that by 1982 Fermilab will also have  $\bar{p}$ 's in collision. Another significant error is in your statement that European Groups at U.S. facilities are "even more (rare)". The contrary is true. I enclose a list of 26 European groups on active Fermilab proposals. This is important because we are in fact already deep into interregional collaboration. So far, in fact, the Europeans have benefited asymmetrically and this will continue for many, many years. Therefore I heartily agree to a pre-ICFA discussion between U.S. and Europe. I even have some ambition (far out as it may seem) of getting some cash to flow to the U.S. (see my enclosed letter to ECFA). This is desperation but its absurd that this one potentially unique facility is so underfunded.

Ask a lab director a foolish question and you get .....

Best wishes,

A handwritten signature in cursive script, appearing to read "Lem", written in dark ink.

Leon M. Lederman

Enclosures

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

DEPARTMENT OF PHYSICS

CAMBRIDGE, MASSACHUSETTS 02139

May 24, 1979

Dr. James R. Sanford  
Brookhaven National Laboratory  
Associated Universities, Inc.  
Upton, New York 11973

Dear Jim,

Thanks for your letter of May 17 in regard to future international exploitation of unique facilities. I agree with everything you say, and I am also extremely skeptical myself about having international program committees. The adding of a few members of other regions would probably be a reasonable measure. I definitely agree that we should wait with adding Russians or Japanese (not to speak of Chinese) to the program committees because of the obvious political difficulties with the Russians. The question of the Japanese might not be so crucial. Indeed that difficulty was one of the reasons that I proposed in my letter that we have first an American-European discussion before the thing will be brought to ICFA. I am afraid, however, that Adams is very eager to bring it before ICFA, and that might create some problems.

Unfortunately, your statement that the Europeans mix too much politics and sociology into their selection process is true and that is another reason why frank discussion between Europe and America might be useful.

I am very unhappy that I will miss you at CERN if you stay only a week. I arrive in Geneva only about June 16 since I have to visit Hamburg, Vienna and Poland before. With best regards,

Sincerely yours,

Victor F. Weisskopf

VFW/mbr



BROOKHAVEN NATIONAL LABORATORY  
ASSOCIATED UNIVERSITIES, INC.

Upton, New York 11973

ISABELLE Project

(516) 345- 3321

May 17, 1979

Professor Victor F. Weisskopf  
Massachusetts Institute of Technology  
Department of Physics  
Cambridge, Massachusetts 02139

Dear Viki,

Ronnie Rau and I have discussed your letter concerning the future organization of high energy physics. You're quite right, there will be only limited high energy facilities in the future, and they must be available for use by talented high energy physicists from throughout the world. That is the policy of BNL and our advisory committee, the HEAC.

Because the HEAC met at BNL last week, Ronnie raised the points that you made in your letter to G. Stafford. Since you urged that informal discussions be held on these points, we seized this opportunity to solicit the members views.

There was unanimous agreement that there should not be a single international committee. On the other hand, no one saw any great difficulty in adding to existing program committees in the US one or two Europeans. When it was suggested that should we add Europeans we would have to add Russians, Chinese and Japanese, there was a large groan. It was clear that the committee is not up to accepting that much internationalization.

Along a slightly different tack the committee believes that in the US it is primarily physics that comes first and politics and sociology come second, while they believe the reverse is true in Europe. Thus, in many ways, it would be difficult to try to form an international committee. Their perception is that, for example, the CERN committees really function more as political bodies than as physics bodies.

They also pointed out that generally speaking US committees have considered and would consider again European proposals at American accelerators with the same attitude as they would American proposals. They did indicate however that the climate is so different in the US and in Europe that it is not at all clear that the same kinds of committees or committee actions could or should be imposed in the two areas.

→ We hope that these thoughts will be useful to you. I will be at CERN during the week of June 4 and would be happy to discuss these topics with you further.

Yours truly,

  
James R. Sanford

JRS:ph  
cc: R.R. Rau

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

DEPARTMENT OF PHYSICS

CAMBRIDGE, MASSACHUSETTS 02139

December 31, 1975

Institute for High Energy Physics  
P. O. Box 918  
Peking, People's Republic of China

Dear Friends at the Institute for High Energy Physics:

After our return from China we discussed together at length what we saw and what we learned during our visits in China and during the numerous discussions with our Chinese colleagues. We are deeply impressed by your great efforts to establish active high energy physics in China and we were also impressed by the knowledge and ability of all the physicists and engineers we have met and talked to. We are convinced that your Institute will contribute much to our science and will enlarge our knowledge of the basic structure of matter.

Perhaps it may be useful to summarize in this letter our own ideas of a possible way of building up an important research facility of high energy physics in China. We know only very little about China's industrial capacities and the rate of increase in the future, nor do we know much about the amount of effort which you plan to devote to high energy physics. Hence our suggestions can only be very tentative. Much of what is in this letter is a repetition of what we expressed during our visit.

We believe that it is not worthwhile to plan a level of activity which is much inferior in scientific significance and importance compared to what is done elsewhere. In the field of high energy physics one must be near the frontline of research. To be much behind is a waste of effort. The Russian experience has clearly shown this fact.

In the next decades frontline research will be made with accelerators with proton energies higher than 1000 GeV (=1 TeV), or at colliding beam devices with several hundred GeV proton beams or 50 to 100 GeV electron beams. The present proton accelerators reach an energy of 500 GeV and the Fermilab will get up to 1000 GeV in a few years. The present colliding beam devices reach 30 GeV per beam for protons and the newly planned electron-colliding beams at DESY and SLAC are planned for 15 GeV per beam but may reach as much as 20-30 GeV. It is true that one can also perform important experiments at lower energies. It is also true that in the next two decades much important research will be done at the presently available energies. But one must keep in mind that experimentation at lower energies is much more difficult because the simpler experiments are already done or

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December 31, 1975

will be done soon. It requires much more experience and a very high level of development in instrumentation. This is why we believe that you should plan for energies which are higher than the ones that are available or will soon be available.

The colliding beam devices require a much more sophisticated technology and instrumentation than the proton accelerators in respect to vacuum, beam transport, magnet design and computer control. The construction of an accelerator of several TeV is technically much simpler, but, no doubt, it is a very large enterprise. It requires much more effort than the above mentioned colliding beam devices in respect to manpower, buildings, construction, land, and the production of a large number of magnets. However, much depends on the "style" of construction. For example the "style" of Wilson in which the accelerator at the Fermilab was built, is much simpler and easier to realize than the style of the CERN accelerator where much effort is put into better quality buildings, better experimental areas and higher quality magnets and other items of this kind.

One must also consider that there is reasonable expectation that colliding beam devices in the 200 GeV region for protons, and in the 50-100 GeV region for electrons will be constructed elsewhere within the next 10 or 15 years. It is not very probable that a proton accelerator of several TeV will be built in that period. There are some plans in that direction in Serpukhov, but their realization is not probable.

A very important condition for the success of the construction of a facility and of the physics program afterwards is a thorough training of physicists and engineers. Here you face special problems in respect to the training and experience of your young scientists before the accelerator is finished. We therefore recommend frequent visits of engineers, experimenters, and theorists to places like CERN and DESY. Personal contact and participation in the work that goes on at these places will make it possible to learn about the problems and difficulties, about the "tricks of the trade" which are not written in the publications; they can see the working papers which were exchanged during the construction of apparatus and they can watch the actual construction of accelerators in the beginning stage at DESY and in the final stages at CERN.

If you feel that an exchange of view with some more Western scientists may be of use to you, we would recommend that you should ask them to spend at least two weeks in Peking for discussions and talks.

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December 31, 1975

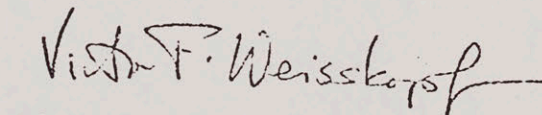
At the end of this letter we would like to inform you of a series of meetings that are planned by the high energy physicists of the United States, of Western Europe, of the Soviet Union, and Japan, discussing the possibility of constructing together facilities which are beyond the financial means of any of these partners. The facilities under discussion are: a proton accelerator of an energy larger than 10 TeV or an electron colliding beam setup with more than 100 GeV per beam. The first of these meetings is scheduled in May, 1976 at Serpukhov. We thought that you should be informed of these meetings although the realization of such plans lies very far in the future and it is rather questionable whether such an international collaboration is at all possible.

We would like to emphasize again that the remarks in this letter are meant as tentative suggestions only since we know so little about your situation. It may very well be that our reasoning does not apply to the circumstances. In any case we are most interested in your planning and in your progress and we are ready whenever you feel that we can be of help to you.

With best wishes to the New Year, we remain,

Sincerely yours,

  
Samuel C. C. Ting

  
Victor F. Weisskopf

/dle



ORGANISATION EUROPÉENNE POUR LA RECHERCHE NUCLÉAIRE

EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

SIÈGE: GENÈVE, SUISSE

*EUROPE*

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CERN  
CH 1211 GENÈVE 23  
SUISSE/SWITZERLAND

TÉLEX: 23698 CH  
TÉLÉGRAMMES: CERNLAB-GENÈVE

TÉLÉPHONE: GENÈVE (022)  
Direct: 83 /83 /83  
Central/Exchange: 83 61 11

Professor Godfrey H. Stafford, OBE  
Director, Science Research Council  
Rutherford Laboratory  
Chilton  
Didcot  
Oxfordshire O X 1 1 O Q X  
United Kingdom

Votre/Your ref. Notre/Our ref.

Dear Godfrey:

I am directing this letter to you in your capacity of Chairman  
of the CERN Scientific Policy Committee.

Sincerely,

Samuel C.C. Ting

2 February 1979



ORGANISATION EUROPÉENNE POUR LA RECHERCHE NUCLÉAIRE  
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

SIÈGE: GENÈVE, SUISSE

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TÉLÉPHONE: GENÈVE (022)  
Direct: 83 /83 /83  
Central/Exchange: 83 61 11

Scientific Policy Committee

C.E.R.N.

Votre/Your ref. Notre/Our ref.

2 February 1979

Gentlemen:

This letter is to present to the Scientific Policy Committee my concern about the future of the CERN laboratory. I have discussed my opinions with a number of people at CERN during the past two years, hence, my attitude is familiar to many in the CERN community. I have great professional respect for the two Director Generals and many of the physicists and engineers at CERN and share their sincere interest in the future of the laboratory. I feel a responsibility to bring to your attention certain experiences and observations which to me are indicative of an impediment in CERN's pursuit of its high standards of quality and relevance as an international laboratory. I sense that political expediency flourishes at the expense of objective scientific excellence, that this discourages such effort and produces mediocrity and wasted human and technical potential. I regard the predominant atmosphere at CERN and the absence of critical and unbiased views to be of the most profound concern.

As you may know, I began my career at CERN and learned a great deal of physics here. For more than fifteen years I have worked in Europe at either CERN or DESY so I am familiar with both laboratories. Based on the experiences and achievements of my group and my personal perspective during the past years, I make the following statements.

Some of our best work was accomplished at DESY and we consider it one of the most efficient laboratories in the world. Decisions at DESY are based on physics alone and the atmosphere and organization are conducive to productive work. The following three incidents will illustrate why our experiences at CERN have created a somewhat different impression.

1. A few years ago we wanted to apply the experience gained at DESY on electron pair physics to search for new particles at the CERN Proton Synchrotron. We intended to submit a proposal but were told not to go to the effort as there was already a European group proposing the same physics. I was rather surprised, but assumed that the reasons behind this were other than physics considerations.



Consequently, we made the major effort of moving our group from DESY to the AGS at Brookhaven and the J particle was promptly discovered. It is well-known that we managed to perform the whole experiment at BNL, from the time of writing the proposal to publication of results, in less than two years - a credit not only to the systematic and accurate procedures of my group but also the cooperation and efficiency of the laboratory.

2. At a later date we proposed an experiment to search for new particles at the Intersecting Storage Ring by means of detecting muon pair decays. Although there was no competition from European proposals, the required political considerations before final approval was granted and installation could begin were involved and time consuming. The proposal was submitted in July of 1973 known as ISR 414. It was approved as ISR 804 and installed almost three years later as ISR 209. As a result of this delay years were wasted, therefore, even with the superb support of the ISR group we were unable to discover the next family of particles (the  $\epsilon$ ) in time. The results of our ISR experiment will yield some new information, but regrettably, in my opinion, the experiment is not a successful one because it is too late. (See note 1 on results of our data).

3. A year ago, we began an intensive study concerning the possibilities for performing an  $e^+e^-$  or  $\mu^+\mu^-$  pair experiment at the  $\bar{p}p$  machine. We delayed submission of our proposal until the deadline for two reasons: (1) my two unfortunate experiences described above; and (2) our feeling that the  $\bar{p}p$  machine was essentially the realm of Professor Rubbia. If we proposed anything we wanted it to be complementary to his experiment. After we had assured ourselves of the value and viability of the proposal through extensive discussions and study, it was submitted at the end of October 1978. A month later a public presentation was made at which time no significant questions were asked of us. On December 13, 1978 the Research Committee met for the final consideration of this proposal. A short time after this deliberation had begun I received a phone call from the Chairman of the Committee who informed me that the proposal had not been approved. The reasons given were that some on the Committee felt that we should have designed the detector differently to acquire more physics information and others felt that the detector was too complicated. Thus, the proposal was rejected expeditiously and unanimously without giving us objective physics arguments.

Since in most laboratories program decisions are made on the basis of both the content of the proposal and the reputation of the proponents, we have the following remarks about CERN's precipitant action:

In hadron hadron interaction the  $e^+e^-$  and the  $\mu^+\mu^-$  pairs are produced rarely (typically  $1/10^6$  or less from strong interaction backgrounds). Because of this background there have been many attempts all over the world (the original  $e^+e^-$  experiment was done by Zichichi at CERN) to study  $L^+L^-$  yet very rarely has success occurred. There has never been a successful  $e^+e^-$  experiment at either the CERN Proton Synchrotron or the ISR. None of the members of the Research Committee, including the two referees of our proposal, has ever done a successful  $L^+L^-$  experiment. Therefore, none of them could possibly have a realistic feeling for the problems involved. I was somewhat perplexed by the level of experience of the two referees. In particular, one of them seemed to vacillate from one opinion to another on simple technical matters depending on what was said to him.

Scientific Policy Committee  
page 3

We are concerned about the wisdom of approving a proposal from a group some of whose major proponents are known for their less than successful record at CERN and refusing a proposal from a group who has accumulated a large amount of experience and success in that field of experimentation. The work of our group over many years has earned a certain amount of distinction and recognition that is well-known to the scientific community.

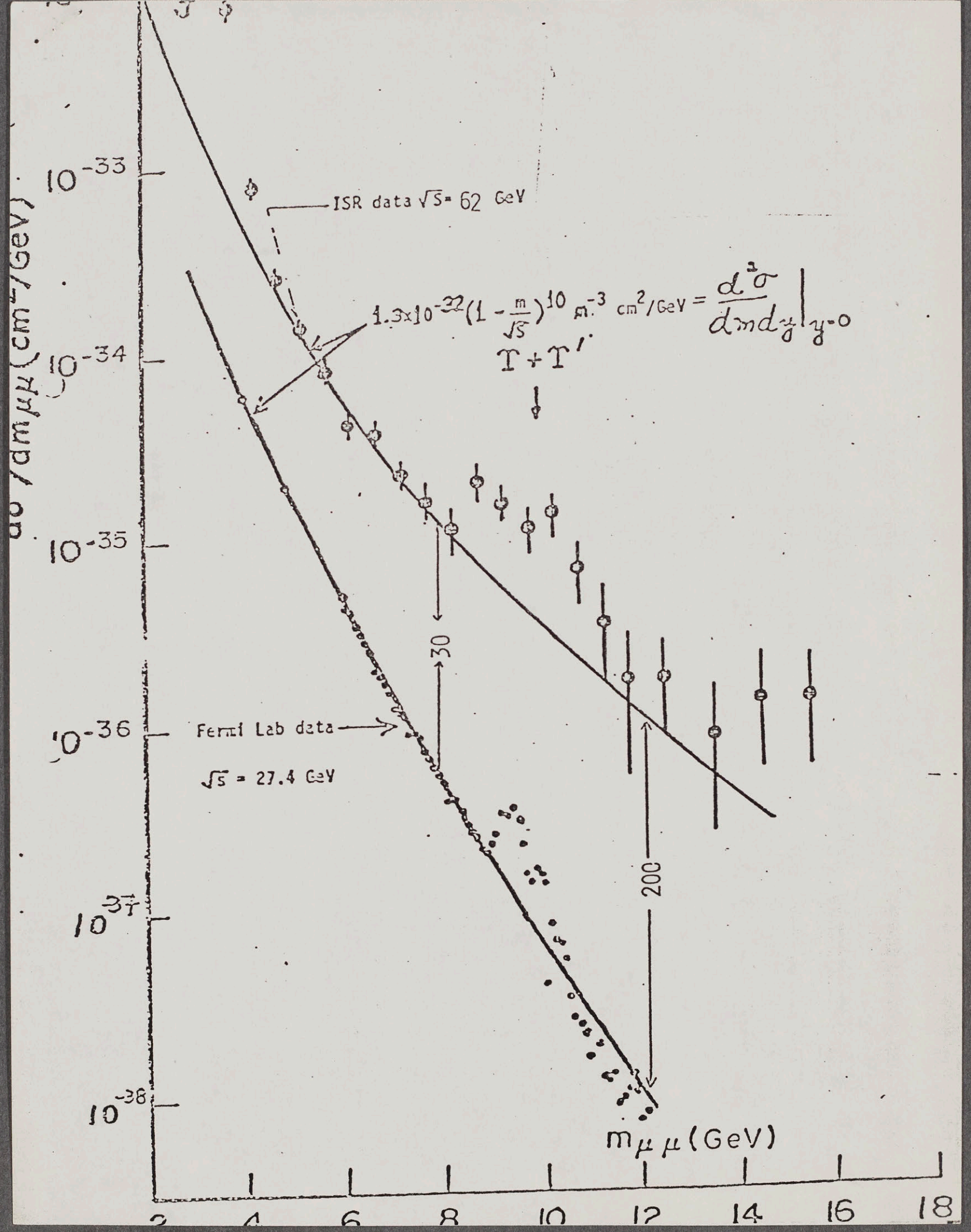
I deeply regret that, because of the circumstances mentioned in this letter, my group never had a good opportunity to accomplish anything truly significant at the right time at CERN. We would have been eager to contribute to the prestige and purpose of your great institution.

I am writing this to you in the hope that you will understand why compared to SLAC, DESY and BNL, so many at CERN have spent so much and achieved so little for so long a period.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Sam', with a long horizontal flourish extending to the right.

Samuel C.C. Ting



MASSACHUSETTS INSTITUTE OF TECHNOLOGY

DEPARTMENT OF PHYSICS

CAMBRIDGE, MASSACHUSETTS 02139

May 24, 1979

Prof. Edwin L. Goldwasser  
Univ. of Illinois at Urbana-Champaign  
Graduate College  
330 Administration Building  
Urbana, Illinois 61801

Dear Ned,

Thanks very much for your answer to my inquiry regarding the international exploitation of unique facilities in high energy physics. I agree with much of what you say, and I certainly would give the Wilson-Goldwasser administration an A+ for their treatment of foreign physicists.

I also fully agree with you that nationalization of program selection committees would be a great mistake. I have never proposed this. I have not proposed it in my letter to Stafford nor in any other discussion. I still am very much in favor of informal discussions by Europe and America because I think that there are problems that could not very well be discussed in a more formal international framework where Russians and Japanese are present. One of the problems is the undeniable fact that European selection committees use much more political and sociological arguments in their selection than American committees. That must stop when we have unique experimental facilities. Indeed, it should have stopped with the ISR, but I am afraid it didn't.

I will be at CERN for the whole summer and please address any correspondence to me to c/o CERN, Theoretical Division, 1211 Geneva 23, Switzerland. Have a very good summer, and I remain,

Sincerely yours,

Victor F. Weisskopf

VFW/mbr

# University of Illinois at Urbana-Champaign

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GRADUATE COLLEGE · 330 ADMINISTRATION BUILDING · URBANA, ILLINOIS 61801 · (217) 333-0035

May 18, 1979

Professor Victor F. Weisskopf  
Department of Physics  
Massachusetts Institute of Technology  
Cambridge, Massachusetts 02139

Dear Viki:

Thanks very much for sending me your letter in which you described some of your concerns about future international collaborations. I share your concerns, but I am not yet ready to agree that the best solution, or even a practical solution to the problem lies in the establishment of internationally representative program advisory committees for each of the unique facilities.

You may remember that at the time Fermilab was under construction, the western Europeans were still in throes of establishing an approval for the construction of CERN. Bob Wilson and I both felt that western European scientists' interests and involvement in 200-500 GeV physics could probably be accommodated at Fermilab. Obviously the combination of western European scientists plus U.S. scientists with a little sprinkling of eastern European and other countries to boot, would make for a highly competitive situation.

On the other hand, had western Europe opted for some unique facility, rather than a copy of Fermilab, the gains that would have been realized through utilization of that unique facility (on an international basis) might have far outweighed the losses due to overcrowding of Fermilab plus the western European gains by having a machine similar to Fermilab's.

In any case, Bob and I were quite ready to do what we could to make the facilities available to the western Europeans, and nothing in our experience leads me to believe that it would not have been possible for us to do so. The factor which finally led to the down-playing of the opportunities which could be made available to western Europeans at Fermilab was the fear of the western Europeans that too much emphasis on open access would have resulted in a scuttling of the possibility of building the SPS. At their request, we suppressed our inclination to publicize more widely the open nature of our program.

I am making this point not to illustrate any particular generosity on our part. Rather I am making it to indicate that it would not have taken an internationally representative program advisory committee to bring about the end which we had in mind. It would only have taken a policy instituted by the laboratory administration. That policy could then, I believe, have been implemented quite effectively through the actions of our usual, national program advisory committee.

You may remember that in the initial discussions about ICFA, with physicists in the U.S., one of the fears that was explicitly expressed was that program committees would become instruments of international cooperation rather than of scientific selection. If my memory serves me well, there was a summary letter written by Bob Wilson, after we held a meeting, at Fermilab, of physicists representing all kinds of interests within the United States, and that summary reflects the kind of strong feeling that I have described above.

Personally, I believe that an internationalization of program advisory committees would be a mistake. It could focus the attention of just the wrong people on the international aspects of our program. Rather it has been the intent of IUPAP, from the start, that periodic meetings of the principal laboratory directors would be initiated and sponsored by ICFA with the purpose of establishing understandings and informal agreements which would accomplish exactly the goals which I believe you are seeking, but which would do so through the operation of no different mechanisms than those which we already have in place. I still believe that it would be worthwhile to try that approach before adopting anything more drastic. In fact, if my memory serves me correctly, any significant departure from the present system of program selection committees would be flying in the face of advice which has already been strongly expressed by many physicists in the U.S. It would also be contrary to the expressed wishes of the IUPAP Commission.

Sincerely,

*Med*

Edwin L. Goldwasser

cc: L. Lederman  
W.K.H. Panofsky  
B. Richter  
J. R. Sanford  
R. R. Wilson

P.S. I am enclosing a copy of a letter Bob Wilson wrote to Bernard Gregory following a meeting Bob held, at Fermilab, in response to a Gregory-ICFA request. It bears on the subject of your letter.

I also enclose the minutes of the IUPAP Commission meeting in Tbilisi at which ICFA was established under IUPAP sponsorship. I call your attention to the marked paragraph on page 3. That also bears on the subject of your letter.

It is my recollection that in all IUPAP discussions of ICFA activities as well as at Bob's special meeting and at a HEPAP meeting I attended on the same subject strong opposition was expressed to a possible conversion of "autonomous" laboratory program advisory committees (or the like) into international program committees.

E.L.G.

December 12, 1977

Professor B. P. Gregory  
Delegation Generale a la Recherche  
Scientifique et Technique  
DGRST  
35, Rue Saint Dominique  
75700 Paris, France

Dear Bernard:

You have asked me to send proposals on terms of reference, working methods, topics, agendas and memberships in respect to two bodies: 1) a study group on superhigh-energy facilities, and 2) a study group on regional facilities collaboration.

We have now had a number of discussions with representative groups of high-energy physicists. These discussions revealed a certain divergence of opinion, as might be expected, and this letter is written in a spirit of trying to reflect those concerns while at the same time expressing profound belief in and commitment to international collaboration on the part of my American colleagues.

Starting with the first item, essentially everyone was convinced of the importance of the VBA idea and the eventual necessity of a world collaboration for the future of high energy physics. My own commitment and that of many of my colleagues is primarily to this, largely because we see the necessity for sharing the cost that will make available the eventual instruments for our investigation of inner space, but also because we value the beneficent social consequences that world collaboration can bring, and because we have the hope and determination that it can and will contribute to peace.

Of great importance for the success of the endeavor is that the goals of the world collaboration be scientifically sound and lie well beyond the capability of any one nation, or even of a few. In view of the initiatives presently being pursued on a national basis, such as ISABELLE or the UNK project in the USSR, it would appear that the time scale for an international VBA is such that a specific working group for a particular VBA is not yet advisable. Instead we should be exploring physics requirements, accelerator alternatives and limitations, and politico-managerial questions.

bcc: A. Rousset



As a first VBA initiative under ICFA, I propose to organize the meeting at Fermilab during 1978 which we discussed at the ICFA meeting in Hamburg, namely a meeting to explore possibilities and limitations of particle accelerators and detectors. I would hope to appoint an international organizing committee for that meeting which might be approved rather soon by ICFA.

Another possible meeting, in which I know Leon Lederman has an interest, might probe economic, social, and political problems that must be solved in establishing a world laboratory. More important yet is the overriding question of scientific desirability and necessity. That is the business of the whole physics community, and that is what our international elementary particle conferences are partly about. Nevertheless, some specific meeting should be organized, I suggest at CERN, to consider long range scientific questions. It would be desirable if some of these meetings could be held in time for a public report to be made to the particle physics community and to IUPAP at one of their next international meetings, for example at the one to be held next year in Japan.

Let me emphasize that the responsibility for these ad hoc VBA meetings should be that of ICFA itself and not as yet of any particular sub-group of ICFA.

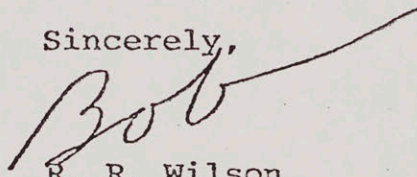
Turning to the second item which we found to be more controversial, I believe that if we are circumspect we can proceed cautiously to appoint a specific study group consistent with the IUPAP Commission's charge to "hold meetings for the exchange of information on future plans of regional facilities and for the formulation of advice on joint studies and uses." The study group of 20 to 30 people which might meet about once a year could consider such topics as: (A) Information about existing research facilities, their improvement programs, and additions of detection devices. (B) Information about planned new facilities; scope, schedules, equipment and availability for collaborations. (C) Information about expected technical difficulties, the types of necessary development to overcome them; possible manpower problems, and discussions of possible interregional collaboration to solve some of these difficulties. (D) Information about the degree of international exploitation of existing facilities, discussions of possible means of improving it. (E) Discussion of international exploitation of future regional facilities, in particular of the problems that may arise from the fact that some of those facilities will be available only in one region.

It is the general consensus within the U.S. community, that this study group and ICFA itself should only have advisory function in the sense of drawing attention to shortcomings and anticipating problems and difficulties

associated with specific proposals presented by combined experimental groups from different nations. ICFA should restrict itself to general aspects and should neither initiate particular research efforts, nor consider the details of research and planning. Decisions and their implementation should remain in the hands of regional authority and laboratory directorates; the flexibility of individual laboratories should be protected. The primary purpose of this study group should be to draw attention to the growing needs of the international community caused by the unavoidable trend towards the availability of important facilities in only one region of the world.

It would be quite possible to comply now with your request to provide a list of American candidates for the study group. It would consist of the three laboratory directors of Brookhaven, SLAC and Fermilab, plus the chairman of the Executive Committee of the Division of Particles and Fields of the APS, a representative of a user's group, and the chairman of HEPAP (or their designates where appropriate). However, I assume that there will be similar reservations about the function of the study group by the other members of ICFA, and that we will want to discuss this at the meeting in Geneva in January. A draft charge should be drawn up at that meeting so that further discussion could occur, looking toward a final charge and commissioning of the actual study group early in 1978.

Sincerely,

A handwritten signature in cursive script, appearing to read "Bob", with a long horizontal flourish extending to the right.

R. R. Wilson

IUPAP MEETING HELD IN TBILISI  
ON THE 20TH JULY 1976Background to the Tbilisi Discussion

At the "International Topical Seminar on Perspectives in High Energy Physics", held in New Orleans in March of 1975 there was unanimous agreement among the internationally representative participants that progress in high energy physics was likely to lead inexorably to a need for a facility substantially larger than could reasonably be supported by any single country or even by any single region of the world. That facility was given the name, "Very Big Accelerator" (VBA).

The participants in the New Orleans Seminar recognized that there were many difficult and complicated problems of science, technology, economics and politics which would have to be solved before a truly international laboratory could be organized for the construction of a VBA. As a first step toward the study of such problems, a preliminary meeting of the "International Study Group on Future Accelerators and High Energy Physics" was held at CERN in October of 1975. At that meeting, in accordance with plans, the organization of the first substantive meeting of the Study Group was arranged to take place in Serpukhov, and an agenda for that meeting was outlined.

One of the results of the Serpukhov meeting, was recommendation that the IUPAP Division of Particles and Fields undertake sponsorship of future activities directed toward the study and possible construction of a VBA, to be housed in an international laboratory.

Conclusions of Tbilisi Meeting

The IUPAP Commission on Particles and Fields discussed this recommendation at its meeting in Tbilisi in July, 1976. As a result of those discussions it was decided that the Commission should take initiative to consolidate the enthusiasm for a VBA that was expressed at the New Orleans meeting and to initiate and maintain a series of activities directed toward the possible implementation of an international laboratory. Toward that end, the Commission decided to appoint a subcommittee. Its title would be, "International Committee on Future Accelerators". Its primary purpose would be, under Commission sponsorship, to organize working groups and future meetings relating to the establishment of an international laboratory, to the design and construction of a VBA, and to the free exchange of information which is essential to establish the kind of coordination and cooperation which would eventually be necessary for the establishment of an international laboratory. Among the specific aims of this Committee should be the following:

- 1) To study the developing results, interests and needs of high energy physics with an eye toward an eventual identification of the principal characteristics of a VBA (particle to be accelerated, laboratory or center-of-mass energy, intensity, size, and cost).
- 2) To sponsor joint studies on new technologies which might become important considerations in the planning of a VBA.
- 3) To sponsor the development of a joint design for a VBA.

- 4) To encourage cooperation in the design, construction and use of regional facilities.

It was further agreed that for the purposes of exchanging information about current programs and of discussing possible plans for the future development of national and regional facilities, meetings of the type that have been held at Tbilisi, Morges and New Orleans are extremely useful. It was recognized that those meetings have been organized only sporadically and in an informal way. It was felt that there would be considerable advantage in regularizing such an activity. It was agreed that the IUPAP Commission should undertake responsibility to encourage the organization of such meetings in conjunction with the regular, biannual International Conferences of High Energy Physics. For the purposes of organizing such meetings, the services of the ICFA member(s) representing the region in which the biannual conference was to be held would be enlisted.

The ICFA (International Committee for Future Accelerators) will be created by the IUPAP Commission and will be composed of the following eight members:

- 2 members from the U.S.A.
- 2 members from CERN member States
- 2 members from U.S.S.R. and Dubna JINR member States
- 1 member from Japan
- the chairman of the IUPAP Commission on Particles and Fields, as the representative of all the other countries.

The members of this Committee shall be nominated by the relevant authorities from the States or the Regions, and appointed by the IUPAP Commission.

The Chairman of the IUPAP Commission will send a letter to Professors Drell, Logunov, Nishikawa and Van Hove to ask them to take the necessary steps with their relevant authorities in order to nominate the members of the ICFA Committee.

The ICFA Committee will choose its chairman from among its members. The ICFA Committee will report on its activities at the bi-annual International Conferences on High Energy Physics.