

THE NSF/APS GRANT FOR PHYSICS IN LATIN AMERICA

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Introduction

This article describes the history and administration of a grant to the American Physical Society to aid physics in Latin America. It is felt that the experience we have gained so far could be valuable to others who are contemplating similar activities, and so we discuss mainly the work entailed and problems that have arisen, as this is probably of most interest to those who would like to learn from our activities. However, we do not want the reader to be left with a negative impression. Helping physics in less industrialized nations really does work; a relatively small amount of money can have a big impact on physics in countries where foreign currency for this type of activity is severely limited. One broken small component of a large piece of equipment can often halt a whole research project if funds are not available for its replacement. Our experience has been very positive, and the feedback from the recipient countries convinces us that the effort has been extremely worthwhile.

History

The initial idea for this grant arose in discussions at the 2nd Symposium on Pan American Collaboration in Experimental Physics, held in Rio de Janeiro, Brazil in July/August 1983. A number of U.S. participants, including Leo Falicov (Professor of Physics, U. C. Berkeley) and Leon Lederman (Director, Fermilab), wrote a letter to the U.S. National Science Foundation (NSF) and the U.S. Department of Energy (DOE) expressing concern at the effects of the economic crisis on the growing scientific infrastructure of the most developed countries of Latin America. The writers suggested that a relatively small amount of money would be enormously helpful in tiding their Latin American physics colleagues over the difficulties caused by the hard-currency shortages in those countries.

The response to the letter, from E. Knapp (NSF) and A. Trivelpiece (DOE) was encouraging. In late 1983, at the urging of R. Marshak who was then President of the American Physical Society (APS), Falicov and Lederman as principal investigators submitted a grant proposal, through the APS, for \$375,000 to the NSF for assistance to physics in Argentina, Brazil, Chile, Mexico, and Venezuela. In July, 1984, the NSF approved a grant of \$300,000 for this purpose to the APS, with direction of the grant under Falicov and Lederman; about half of the money was from DOE. The grant was to be used in four areas: (i) library subscriptions to U.S. scientific journals, (ii) payment of page charges for articles by Latin American authors submitted to refereed U.S. journals, (iii) spare parts and maintenance items

for existing equipment in Latin American physics laboratories, and (iv) per diem support for Latin American physicists visiting the U.S. for short periods of time.

The APS set up an Oversight Committee for the grant, consisting of L. Lederman (Chair), L. Falicov, R. Park, D. Scott, and S. Sinha; because Falicov is also Chair of the Executive Committee of the APS International Physics Group (IPG), there is a close connection between the grant and IPG. Two representatives from each of the designated countries were selected to ascertain, in a fair manner, the most critical items needed in the above areas. A strong effort was made to select outstanding members of the physics community in each country and, where practical, to have one from the government science establishment and one from academia.

Processing of Requests

The representatives of the countries sent lists of their approved items to the U.S. (Falicov and Lederman); initially the U.S. Oversight Committee gave guidelines for the approval process to Falicov and the author, who oversee the day-to-day operation of the grant. Fermilab, which has had a history of interactions with Latin America over a number of years, was designated to administer the grant; this administration, which involved placing orders with manufacturers, paying for the orders, issuance of per diem checks, etc., was under the direction of the author. The services of Fermilab's Purchasing and Accounting Departments, administrative and secretarial assistance, computerized record keeping, telephones, etc. were provided at no cost to the grant.

Following some trial and error, procedures evolved for processing the requests, and after a somewhat slow start, the operation became reasonably smooth. It may be of some interest to give the fractions of expenditures in the different categories. Although these varied from country to country, a typical breakdown is: per diem 15%, journal subscriptions 25%, page charges 15%, and equipment 45%.

Experience So Far

1. Per Diem

Following the intent of the grant that only short visits (not long-term fellowships) should be covered, it was decided to put an upper limit of 30 days per diem to any visitor. Air fare to and from the U.S. were not paid. The NSF allowed the per diem details to be handled similarly to those of the receiving organization, in this case the APS. Consequently, the per diem amount was that of the APS, namely \$70 per day to cover all expenses in the U.S.; this simplified the reporting. In order to make payment, proof of the visit was necessary, usually by a copy of the

airline ticket to and from the U.S. Also, copies of either a conference registration receipt, or a letter from the visitor's university or laboratory host in the U.S., were required.

A few difficulties arose in the early days of the grant. One was that some physicists came to the U.S. expecting to receive per diem for vacation days before and after their working visit. The other was that some came to the U.S. with no funds, and were told that Falicov or Lederman or the author would instantly supply money. Both problems were soon corrected.

Generally, a check would be issued by Fermilab about a week after receipt of the required information described above. It was mailed to the visitor, either in the U.S. or to his home address. No funds were advanced prior to travel.

2. Journal Subscriptions

This part of the grant gave rise to few problems. When funds became available in mid-1984, all requests for subscriptions were placed for one year starting January 1985. A small number of requests for non-U.S. journals were not placed, since this would violate the intent of the grant.

3. Page Charges

This also gave rise to few problems. Invoices for page charges for articles in U.S. journals were sent by the authors, via the country representatives, to Fermilab, and payment was then made to the journal. A problem occurred when, on occasion, incomplete information, rather than the invoice itself, was sent; several phone calls were sometimes necessary in order to obtain adequate information from which to make payment. Occasionally even this was not adequate and payment could not be made. In one instance, the authors' reprints were delivered to Fermilab rather than to the authors.

4. Equipment

The largest fraction of all requests was for equipment; in addition, the largest number of administrative problems per request occurred in this category.

Requests were received at Fermilab, in the form of item description, suggested vendor, and approximate cost, and fed to the Fermilab Purchasing Department in the form of purchase requisitions; orders were then placed, with instructions that the items were to be sent air-freight by the vendor to the requesting country. This circumvented the need at Fermilab for receiving, inventory, and trans-shipment activity.

Among the difficulties encountered were the following:

- a) Insufficient information was given by the requestor, so that the order could not be placed. Component part numbers

were sometimes incorrect or omitted; the number of items required was sometimes unclear; crucial descriptions, such as item sizes, were sometimes unavailable; vendor name and address were sometimes too unclear or incomplete. In all these cases, no action was taken until clarifying information could be obtained from the requisitioner.

b) Some vendors would not ship equipment to non-U.S. countries, possibly because of the additional paper-work effort this caused them. These orders thus could not be placed. Other vendors required information on the end-use of their product.

c) Customs regulations in the receiving countries differed from country to country. After many letters, telexes, and phone calls, procedures appropriate for each individual country were instituted. Generally the vendor was instructed to enclose a letter with each item stating that it was a gift for scientific purposes, so that local customs charges could be avoided. (Occasionally the vendor forgot to include the letter, so that additional effort on the administrator's part was needed.) One country initially wanted equipment shipped only on their national carriers, which was not allowable under the relevant U.S. regulations.

Some receiving countries wanted items shipped to the original physicist requester, while others, in order to circumvent their customs problems, wanted the items shipped only to a single agency in the country for subsequent distribution.

d) Fermilab's Purchasing Department has a standard procedure of not paying a vendor until proof of delivery is obtained. This caused some problems due to the time delays involved.

5. Comments

Many lessons have been learned during the past several months, during which almost two-thirds of the funds have already been disbursed; perhaps the most obvious one is that distributing \$300,000 in a fair (and auditable) way involves a very large amount of effort!

The representatives of the countries have to be chosen with care: they should be people who have the respect of the physicists in their country, and who also have the necessary administrative resources to carry out this work. The appearance of U.S. paternalism in the choice should be avoided if possible; it is probably a good idea to involve the country's Physical Society or equivalent in this selection.

Having two people, rather than one, in charge of the day-to-day operation was important. It meant that discussions of new problems with someone else was immediately possible, and ideas could be exchanged on possible solutions. The Oversight Committee gave general guidelines, but many small problems arose daily

and required decisions that would be difficult to obtain in a timely manner if many people had to be consulted. In our case, the good communication between Falicov and the author by mail, phone, and electronic mail has been crucial.

It was found valuable to have the detailed administration of the grant carried out at a large institution such as Fermilab, which has considerable facilities for this type of activity. The author has spent perhaps 15% of his time working on this grant. Part-time assistance available to him included an Administrative Assistant, a Secretary, and a Systems Analyst--the latter to create and keep updated a crucial computer record of all transactions. The Fermilab Purchasing and Accounting Departments were obviously essential to smoothly place all of the orders and make all payments. The frequent use of telephones, telexes, and sometimes electronic mail was necessary. By arrangement with DOE, which funds Fermilab, all of these activities were carried out at no cost to the grant. The smooth flow of the NSF funds from the APS to Fermilab was helpful in overcoming bookkeeping problems.

Lastly, it should be noted that there are still one-third of the funds to be disbursed. Based on experience so far, many other problems have yet to surface! However, as noted in the Introduction, the impression we want to emphasize is that in spite of the difficulties, the program really does work. It appears that the goal of significantly helping Latin American physics has been successful.

Acknowledgements

Many people made working on this project possible, and actually fun. It is a pleasure to thank Fermilab's Jackie Coleman, Doris Bart, Anne Burwell, and Don Beatty together with many others in our Purchasing and Accounting Departments. Leon Lederman's enthusiastic support of Latin American physics, and this program in particular, was essential. Joe Burton and Bill Havens of the APS were generous with their time and advice. Many people in the receiving countries were very gracious in the long telephone conversations necessary to solve detailed problems. My most sincere thanks are due to Leo Falicov, whose humor, advice, and encouragement helped to make all this possible.