

# Winnipeg Institute for Theoretical Physics

## Proposal for Formation

### CONTENTS:

1. Background
2. Objectives
3. Activities
4. Membership
5. Administrative Structure
6. Secretarial Services and Facilities
7. Funding

## 1. Background

The community of theoretical physicists in Manitoba has grown significantly in the past few years. The combined group of 13 theorists (1 at AECL, Pinawa, 1 at Brandon University, 8 at the University of Manitoba and 3 at the University of Winnipeg) comprises one of the largest active Theoretical Physics groups in the country. This strong research environment was enhanced in the spring of 1990 by the formation of the Winnipeg Institute for Theoretical Physics. Funding for this Institute has so far come in the form of seed money from both the University of Manitoba (\$40,000.) and the University of Winnipeg(\$25,000.). We have also received a grant of \$1,000. from Brandon University.

The purpose of the Institute is to increase the cooperation and collaboration between the Theoretical Physicists in Manitoba, thereby strengthening the community, and to initiate and sustain research collaborations between the members of the Institute and first class researchers from all over the world. The activities of the Institute will also help to expose the graduate students of its Members to different people and ideas, through seminars and lecture series, thereby increasing the quality of training provided. In the long term this will further attract high quality students in theoretical physics from Canada and abroad.

The academic year 1990-91 was the first year of operation of the Institute, and as seen in the first Annual Report, it was a very active and successful year. The 1991-92 academic year has proved to be equally productive and beneficial to the research and teaching environments at the major two Universities. Since we now have a "proven track record" illustrating what can be accomplished at the funding levels achieved to date, it seems that this is an appropriate time to ask the University of Manitoba and the University of Winnipeg to grant the WITP official Institute status.

Granting Institute status will bring several important benefits to the WITP. First, the official recognition by both the University of Manitoba and the University of Winnipeg will assist us in our fund raising efforts. Second, the WITP will be able to negotiate as an equal with other theory institutes, and this will allow us to build formal relationships with them. These institute-to-institute linkages would support joint ventures of mutual interest such as research projects, joint workshops, exchange of members, and joint sponsorship of international conventions. Already the WITP has been approached by Professor G. A. Vilkovisky of the Lebedev Physical Institute in Moscow with the aim of establishing such a linkage.

## 2. Objectives

The WITP has been created to have the following beneficial effects on the theoretical physics community in Manitoba:

- enhance research output
- increase visibility nationally and internationally
- increase cooperation and collaboration amongst researchers
- enhance facilities for the training of highly qualified research personnel, such as graduate students and postdoctoral fellows
- enhance the ability of Members to attract external research support

By achieving these objectives, the Institute will enhance the overall academic effectiveness of both the University of Manitoba and the University of Winnipeg, whose mandates include both fundamental research and the training of qualified personnel.

## 3. Activities

The specific activities and functions of the Institute designed to achieve the above objectives are the following:

### (a) Scientific Visitors

The Institute funds both long and short term visits to Winnipeg by recognized national and international experts in various areas of Theoretical Physics. The visitors are expected to interact and collaborate with Members of the Institute on research topics of mutual interest. They are also asked to give seminars and/or short lecture courses for the benefit of the graduate students and Institute Members, as well as Physics Colloquia appropriate for more general audiences. Visitors are encouraged to acknowledge financial support of the Institute in any publications that arise as a consequence of their visit. In addition to enhancing both the research and teaching environments, these visits have the added benefit of facilitating contacts with other similar Theoretical Physics Institutes, such as those at the University of Alberta and the University of Minnesota.

(b) Workshops and Institutes

The Institute helps to fund and coordinates the organization of National and International workshops and/or summer Institutes on topics of interest to the Members.

(c) Annual Report

The Institute puts together and distributes an annual report summarizing the activities and research interests of the Institute and its Members.

4. Membership

The members of the Institute would fall into these categories:

- Permanent Members (Referred to above and below as Members)

These include all theoretical physicists on the faculty of either the University of Manitoba or the University of Winnipeg, as well as any other researchers voted in by the Policy Committee (described below). If they desire, theoretical physicists on the faculty of either University can opt out of Membership by simply providing a written statement to the Director.

- Associate Members

These include all postdoctoral fellows, research associates and long term visitors(12 months or longer) to the Institute.

- Student Members

These include all graduate students supervised by Permanent Members.

- Visitors

These include all short term visitors (less than 12 months) for the duration of their stay.

## CURRENT LIST OF MEMBERS

### (a) Permanent Members

- B. Bhakar<sup>1</sup>, *Ph.D.(Delhi)*
- P.G. Blunden<sup>1</sup>, *Ph.D.(Queen's)*  
*Director-elect, 1993/94*
- R.L. Kobes<sup>2</sup>, *Ph.D.(Alberta)*
- G. Kunstatter<sup>2</sup>, *Ph.D.(Toronto)*  
*Director, 1991/92*
- P.D. Loly<sup>1</sup>, *Ph.D.(London)*
- T.A. Osborn<sup>1</sup>, *Ph.D.(Stanford)*  
*Director, 1992/93*
- B.W. Southern<sup>1</sup>, *Ph.D.(McMaster)*  
*Director, 1990/91*
- J.P. Svenne<sup>1</sup>, *Ph.D.(M.I.T.)*
- J.M. Vail<sup>1</sup>, *Ph.D.(Brandeis)*
- D.W. Vincent<sup>2</sup>, *Ph.D.(Toronto)*
- J.G. Williams<sup>3</sup>, *Ph.D.(Birmingham)*
- C.H. Woo<sup>4</sup>, *Ph.D.(Waterloo)*
- J.A. Zuk<sup>1</sup>, *D.Phil.(Oxford)*

<sup>1</sup> University of Manitoba

<sup>2</sup> University of Winnipeg

<sup>3</sup> Brandon University

<sup>4</sup> AECL, Pinawa

(b) Associate Members

- C. L. Canton (*Postdoctoral Fellow*)
- M. Carrington (*Postdoctoral Fellow*)
- V. Cherepanov (*NSERC International Fellow*)
- P. Kelly (*Postdoctoral Fellow*)
- V. I. Kukulin (*Visiting Scientist*)
- F. H. Molzahn (*Research Associate*)
- A. S. Raskin (*Research Associate*)

(c) Graduate Students (*Supervisor in Brackets*)

- J. Chen (M.Sc.), (*Kobes*)
- S. Cyr (Ph.D.), (*Southern*)
- R. Epp (Ph.D.), (*Bhakar & Kunstatter*)
- N. Li (M. Sc.), (*Vail & Woo*)
- R. J. Lee (M.Sc.), (*Southern*)
- G. Lan (M.Sc.), (*Southern*)
- K. Mak (Ph.D.), (*Kobes & Kunstatter*)
- D. L. Martinez (Ph.D.) (*Kunstatter*)
- J. Wang (M.Sc.), (*Kobes*)

## 5. Administrative Structure

The Institute would be a Type-III Institute involving an agreement between the University of Manitoba and University of Winnipeg. It would contain an Executive and a Policy Committee, whose composition and duties are described below:

### (a) Executive

The Executive will consist of a past-Director, Director and Director-elect. The Director-elect will be elected from the Permanent Members by the Policy Committee in April to serve a one-year term commencing on September 1 of the same calendar year. There will be at least one representative from each of the two Universities on the Executive at all times.

- Director (*one year term, non-renewable*)

Duties:

- Chair Policy committee meetings
- budget preparation and control
- report to and interact with Administrators at both Universities: the reporting line at the University of Manitoba would be to the Vice-President (Research and External Programs), whereas at the University of Winnipeg it would be to the Office of the Vice-President Academic. The Director would also report to the Chair of the URCS at the University of Manitoba, as required
- receive applications in writing for funding
- approve (in consultation with the Executive) applications of \$1,000. or less
- assist past-Director with preparation of Annual Report
- submit applications for funding on behalf of the Institute to the Universities and external funding agencies, as required
- assume office as past-Director in the following academic year

- Past-Director

Duties:

- prepare Annual Report
- advise Director
- assume responsibilities of Director if required

- Director-Elect

Duties:

- organize seminar series

- fill in as Director if Director and past-Director unavailable
- assume office as Director in the following academic year

(b) Policy Committee

This will consist of all Permanent Members. The duties of the Policy Committee include:

- election of Director-elect
- approve expenditures of \$1,000. or greater
- elect new Permanent Members as appropriate
- decide on direction and policy of Institute
- plan and approve future programs, workshops, long-term visitors

6. Secretarial Services and Facilities

Secretarial services, such as sending out notices of seminars, meetings, letters of invitation to visitors, applications for funding, and typing the Annual Report will be normally shared by the Secretaries of the Physics Departments at both Universities. No special library facilities or services are anticipated. However the Institute does require office space for visitors. The Physics Departments of the two Universities have agreed to provide this space.

7. Funding

The purpose and the activities of the Institute are designed to ensure that virtually all funds go directly towards research, in the form of visitors, seminars, workshops, etc. The structure of the Institute is such that it does not incur or depend on any fixed annual cost. Since the Institute is a collection of theorists, we have no expensive equipment to maintain or technicians to employ. There are virtually no direct infrastructure costs. This allows the Institute to tailor its operations to match the level of funding it receives. The Members have agreed to contribute 2 percent of their research grants to assist in the support of the Institute. Currently the total of the NSERC grants held by the Members exceeds \$200,000. annually.

The level of activity achieved in the past two years, as evidenced by the first two annual reports, required a total budget of \$20,000. per year. An approximate five year budget would therefore include the following, per academic year:



## Projected Annual Budget

Visitors:	\$9,000.
Workshops:	\$10,000.
Annual Report and Misc.:	\$1,000.

Clearly the existence of a stable (i.e. 5 years or longer) level of financial support is extremely desirable, since it would allow the Director and Members to concentrate more on their mission, instead of on fund raising. An minimum practical level of sustained funding would be in the range of \$10,000. per year. The recent and potential sources for funding of the Institute are as is indicated below:

### Potential Sources of Funding

- Visitors

Visitors could be funded by NSERC and NATO collaborative research grants, and to some extent by the NSERC operating grants of the members.

- Workshops

These would be funded by NSERC conference grants and NATO advanced study institute and advanced research workshop grants.

- Annual Report and Miscellaneous Expenditures.

All Members with NSERC operating have agreed to contribute up to 2 percent of their operating grants per year to cover these expenses.