



October 5, 2006

## 07pims007: Summer School on Strings, Gravity and Cosmology

### Organizers:

Semenoff, Gordon, University of British Columbia, [gordonws@physics.ubc.ca](mailto:gordonws@physics.ubc.ca)  
Cachazo, Freddy, Perimeter Institute, [fcachazo@perimeterinstitute.ca](mailto:fcachazo@perimeterinstitute.ca)  
Lee, Taejin, Kangwon University, Korea, [taejin@cc.kangwon.ac.kr](mailto:taejin@cc.kangwon.ac.kr)  
Karch, Andreas, University of Washington, [karch@feynman.phys.washington.edu](mailto:karch@feynman.phys.washington.edu)

### Location:

Perimeter Institute, Waterloo, Ontario

### PIMS Sites:

University of British Columbia  
University of Washington

### Objectives:

One of the most important problems of current fundamental physics are the search for a unified description of the most elementary constituents of nature and their interactions. Another is the quest for a reconciliation of the currently accepted theory of gravity, Einstein's general theory of relativity, and the quantum theory. String theory is dynamical framework which could simultaneously address both of these problems. It is apparently a consistent theory of quantum gravity. It also has solutions with structures tantalizingly close to the standard model of elementary particle physics and whose structure poses the ultimate unification of elementary particles and forces. Its promise and excitement have captured the attention of a large fraction of the world's community of theoretical particle physicists for the past twenty years.

We propose to hold a Summer School on recent developments in string theory and

its applications, particular to the problem of quantizing gravity and to its role in cosmology. The school is intended for early career scientists who are actively pursuing research on string theory. The target audience is graduate students and postdoctoral fellows, though more established scientists might also benefit from it. The location of the school will be at the Perimeter Institute in Waterloo, Ontario. That Institute has excellent facilities for lectures and discussions and there is also reasonable and inexpensive accomodation for students available nearby.

This is part of a series of school which in recent years has been alternating in location between Vancouver and Waterloo. It was very successful when it was located at Waterloo in the Summer of 2005 and we look forward to holding in that venue again in 2007.

## Comments:

During the past ten years, the Pacific Institute for Mathematical Sciences (PIMS), the Asia Pacific Center for Theoretical Physics (APCTP) and the Perimeter Institute have cooperated in creating a yearly Workshop, and more recently Summer School, entitled ``Frontiers of Mathematical Physics". Recently, it has also involved the Pacific Institute for Theoretical Physics (PITP). Between 1994 and 2004, these events were located in the Vancouver area. In 2005, for the first time, the Summer School was sited in Waterloo, Ontario and benefitted from using the facilities of the Perimeter Institute. In 2006 it came back to the UBC campus. The scientific focus of these events has been the most recent developments in string theory and related subjects.

Since their inception, these events have grown steadily in international reputation, regularly attracting participants from both inside and outside of Canada and Korea ranging from graduate students in theoretical physics to renowned established scientists. The conversion to a Summer School format has been particularly successful. The schools have become known as an outstanding pedagogical venue for early career researchers which teaches the most current techniques and latest research results of string theory, quantum field theory, elementary particle physics, gravitation and cosmology.

The present proposal is to continue this tradition in the year 2007. The 2007 version will be the eleventh in this highly successful series of events.

## Audience:

This will be a Summer School which teaches the most recent developments in string theory. It is aimed at early career researcher: graduate students and postdoctoral fellows who study string theory and its applications and interrelations with other subjects in theoretical and

mathematical physics, from early universe cosmology to algebraic geometry.

This school will be a unique resource for the North American scientific community. In the Summer of 2007, as far as we know right now, we have no competitors on the North American continent. This, together with the fine reputation that we have built in previous schools practically guarantees participation of the very best students in the summer school market this year. Financial support in the way of modest, but full local expenses will be offered to students of the school whom we expect are for the most part graduate students and postdoctoral fellows. Students will be selected on a competitive basis, with the usual attention to some demographic issues.

## Participants:

Invited speakers:

the first round of invitations for speakers will go to:

Nathan Seiberg, Institute for Advanced Study

Hiroshi Ooguri, Caltech

Robbert Dijkgraaf, University of Amsterdam

Cumrun Vafa, Harvard University

Emil Martinec, University of Chicago

Matt Strassler, University of Washington

Joe Polchinski, University of California at Santa Barbara

Micheal Green, Cambridge University

Burt Ovrut, University of Pennsylvania

Finn Larsen, University of Michigan

## Amount Requested:

10000.00

## Expenditures:

Local support for accomodation of students  $40 \times 60/\text{day} \times 14\text{da} = 33,600$

Support for travel and staying expenses of speakers  $10 \times 2000 = 20,000$

Banquet, coffee breaks, printing, copying etc. = 7,000

Total 60,600

## Income:

PIMS 10,000

Pacific Institute for Theoretical Physics 10,000

Asia Pacific Center for Theoretical Physics 15,000

Pacific Institute for the Mathematical Sciences

Central Office and UBC Site Office

1933 West Mall • University of British Columbia • Vancouver • B.C. • V6T 1Z2 • Canada

e/ [pims@pims.math.ca](mailto:pims@pims.math.ca) • w/ [www.pims.math.ca](http://www.pims.math.ca)

t/ 604.822.3922 • f/ 604.822.0883

Institute for Particle Physics	2,500
Perimeter Institute	20,000
Other (CIAR, etc)	2,500
Total	60,000

**Selected Dates:**

Mon, July 16, 2007

Sat, July 28, 2007