

First Circular

Workshop on "Theoretical Problems in Fundamental Neutron Physics" Columbia, South Carolina, 14-15 October 2005

The purpose of the workshop is to identify and elucidate current theoretical issues associated with fundamental symmetry violation experiments involving low energy neutrons. The workshop will focus on theoretical issues related to neutron beta decay, hadronic parity violation, the neutron electric dipole moment, and neutron-antineutron oscillations. Some invited experimental talks will give overviews of the current status and the expected progress of future experiments. The workshop is organized by the University of South Carolina with support from Oak Ridge National Laboratory, Oak Ridge Associated Universities, Joint Institute for Neutron Science, University of South Carolina, and Sub-Z0 Working Group.

The description of the workshop:

Since the advent of intense cold neutron facilities nearly 30 years ago, a wide variety of fundamental neutron physics measurements have shed much light on important issues in nuclear physics, particle physics, astrophysics and cosmology. Currently a new generation of such experiments is being planned and new sources of cold neutrons, including the Spallation Neutron Source (SNS), are under construction. The extraction of fundamental information from these experiments requires careful and often delicate theoretical interpretations. With the prospect of new and more accurate measurements, it is appropriate to review the status of the theory associated with these experimental improvements with an eye towards the clarification of unresolved issues as well as the identification of the breadth of physics that can be addressed at SNS.

The workshop will focus on three major areas where new experimental results are anticipated: (1) The semi-leptonic weak interaction and neutron beta decay, (2) The Hadronic weak interactions and Nucleon-Nucleon interactions; (3) CP & T violation and the neutron electric dipole moment. While the focus of the workshop is directed towards theoretical issues, there will be a small number of invited experimental talks to guide our discussion on the extraction of physics in the next generation of experiments.

Topics for the workshop will include :

- Unitarity of the CKM matrix
- Scalar, tensor and other non-standard couplings
- Radiative effects in nuclear beta decay
- Exotic decay channels and neutron/antineutron oscillations
- Weak meson coupling constants
- Hadronic weak interactions
- CP and T violations
- Cosmic baryon asymmetry and electric dipole moment

Program committee:

D. J. Bowman, LANL
P. Herczeg, LANL
B. Holstein, University of Massachusetts Amherst
S. Gardner, University of Kentucky
C. R. Gould, North Carolina State University
G. Greene, University of Tennessee / ORNL
V. Gudkov, University of South Carolina
M. J. Ramsey-Musolf, CALTECH
M. Snow, Indiana University

Local organizing committee:

V. Gudkov, Chair
K. Kubodera
F. Myhrer

Registration:

The registration fee of \$100 will cover the reception, coffee breaks, lunch and the banquet. The fee will be waived for students attending the workshop.

Financial support for participants:

Financial support is available for a limited number of students. Interested students should contact the local organizing committee directly.

Workshop address is:

Department of Physics and Astronomy
University of South Carolina
Columbia SC, 29208
E-mail: papp@physics.sc.edu
<http://www.physics.sc.edu/TPFNP/>

Contact person:

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Next circular:

Only those who have returned the accompanying questionnaire will receive the second circular. It will contain more information on the scientific program, logistics, etc.

THOSE WISHING TO ATTEND ARE KINDLY REQUESTED TO COMPLETE THE ENCLOSED APPLICATION FORM AND RETURN IT BY FAX OR VIA E_MAIL TO THE ORGANIZERS AS SOON AS POSSIBLE.

APPLICATION FORM

Name: _____

Home Institute: _____

Address: _____

Telephone: _____

Fax: _____

E-mail: _____

Do you want to present a talk? (Yes/No)

The title of your talk (if any): _____