Summer research in Neutrino Physics and Astrophysics

at University of Minnesota Duluth

The neutrino physics group at UM-Duluth has summer undergraduate research positions available on the MINOS, MINERvA, and NOvA experiments. The group is led by Dr. Rik Gran and Dr. Alec Habig. Our research is focused on neutrino interactions, neutrino and cosmic ray astrophysics, and neutrino oscillation studies. We plan to support a group of five students active this summer, some from UMD and some from elsewhere. As a sample of potential projects, some recent student research topics have included:

- Neutrino Interactions on Nuclei in MINOS data
- Cosmic Ray Muon Telescope
- Search for electron neutrino appearance in MINOS data
- Study of the shadow of the moon in MINOS cosmic ray data
- Study of the rock overburden in MINOS as seen by cosmic ray muons
- Study of systematic effects in Neutrino-nucleus interactions

Candidates for this position should be a physics major and have completed at least the Atomic and Nuclear Physics course and have taken a computer programming course or have equivalent programming experience. You will have the opportunity to gain specific experience in scientific programming, data analysis, and topics in particle physics or particle astrophysics.

This position will be located in Duluth, and a competitive stipend is available. Depending on the schedule specifics, there is likely to be opportunities and support to attend a MINOS or MINERvA collaboration meeting, work at the Soudan Underground Laboratory, and/or take a trip to Fermilab during the course of the summer.

There is a separate opportunity that may especially interest someone whose career goals include science education. The Soudan Underground Laboratory has at least two positions for summer outreach leaders. These people will assist with public tours of the underground experimental areas and also improve and develop new materials related to MINOS, CDMS, and the NOvA experiments for public tours and K-12 programs. These positions are located in Soudan, MN, include competitive stipends, and housing arrangements are available. Candidates for this position need not specifically be a physics major, though completion of the Atomic and Nuclear Physics course would still be ideal.

For more information on these projects, you might find the following web resources useful, or you can inquire with Dr. Gran at rgran@d.umn.edu.

Two web pages with current project suggestions for interested students:
http://neutrino.d.umn.edu/~rgran/projects.html and
http://www.d.umn.edu/physics/research/urop.htm

web pages for these experiments and for the Soudan Underground Lab:
http://www-numi.fnal.gov/
http://minerva.fnal.gov/
http://www-nova.fnal.gov/
http://www.sudan.umn.edu/
http://www.dnr.state.mn.us/state_parks/soudan_underground_mine/index.html

If you are interested, send a short letter expressing your interests and goals and a brief description of your background. Please send it to the address below by 1 April 2007, and be sure to include contact information.

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