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TRISEP

Introduction to the 2014 TRISEP Summer School

The TRI-institute School on Elementary Particles (TRISEP-2014) will be an exciting opportunity for graduate students or junior postdoctoral fellows to learn from world experts in particle physics, astrophysics, neutrino physics and particle-astrophysics. TRISEP-2014 builds upon the successful launch of the school last year. The school is annual event hosted in turn by TRIUMF (2013), SNOLAB (2014) and the Perimeter Institute.

This year's school will be hosted by SNOLAB and Laurentian University between June 2 and 13. These dates were chosen to allow students to attend the CAP Congress held this year at Laurentian University from June 16 to 20 as well.

Topics for lectures include electroweak theory, Higgs measurement (including statistical analysis), inferences of beyond-standard-model physics, Monte-Carlo methods, cosmology (including theory and measurement of fluctuations), evidence for dark matter, direct detection of dark matter, neutrino physics and searches for neutrinoless double beta decay.

The school will include four class hours per day for 9 days, discussion sessions, homework for those taking the course for credit, and hands-on practical sessions for the Monte Carlo sessions. One day will comprise a tour of SNOLAB and a special talk.

We hope many departments will allow students to take this course for formal credit in their graduate programs. This is of course, not mandatory for students, but we hope and expect this to be an option many students find useful. The 2013 school, hosted by TRIUMF, was acceptable for graduate credit by the University of Victoria, Simon Fraser University, the University of British Columbia and York University.

The details below are to serve as a guide for students, lecturers and departments to ensure a common understanding of what work is expected from the school and what prerequisites the students should have. Of course, university departments are free to choose how to evaluate their students' performance at the school as they see fit, but the following is set up to be as helpful as possible.

Instructors will assign homework that the local organizing committee or its designates will grade. The grading will be complete six weeks after the school ends. Results will be communicated the graduate co-coordinators at the students' home institution as well as the students.

Most of the homework will be accomplished the weeks of the course and will comprise several hours per day. It must be formally submitted no later than one week after the end of the school.

Students should have taken an advanced quantum mechanics class and an introductory particle physics class. In particular they should be able to calculate electromagnetic Feynman diagrams at tree level; they should understand ladder operators; they should understand the difference between a quantum field and a particle. *A quantum field theory course is not a prerequisite.*

Students should have a basic knowledge of C++. There will be a considerable component of the course dealing with Monte-Carlo methods and geant4. Students who have knowledge of another object-oriented language should review the basics of C++ before the course starts.

If you have any questions, please feel free to contact me or any member of the local organizing committee. Thank you.

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