



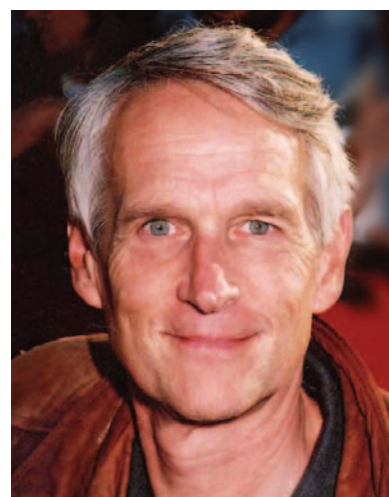
# PHYSICS and ASTRONOMY

presents

## the 27<sup>th</sup> Primakoff Lecture

### H. H. (Brig) Williams

Mary Amanda Wood Professor of Physics  
University of Pennsylvania



**B**rig Williams' primary interest is the study of elementary particle interactions, with particular emphasis on tests of the standard model and searches for new particles and new interactions. After working for numerous years on neutrino interactions and on precision tests of weak neutral current interactions, his interests shifted to the study of high-energy proton-antiproton interactions. He is currently participating, along with a number of other faculty in the department, in a large, sophisticated experiment at Fermilab (CDF) studying proton-antiproton interactions. His recent interests have focused especially on the discovery and study of the top quark. In the next few years, he expects to focus more strongly on searches for supersymmetric particles and for other indications of physics beyond that contained in the Standard Model.

One of the most outstanding questions which is not satisfactorily answered by the present "standard model" is the origin of mass, or as one might phrase within the theory, the nature of the "Higgs sector." Questions concerning the existence and nature of Higgs bosons are likely to be adequately addressed at the Large Hadron Collider (LHC) operating in Geneva, Switzerland at the energy frontier. Brig was a leader in the design and construction of the ATLAS detector which is currently running at LHC. He has concentrated especially on the development of fast, low-power, radiation hard electronics which are required to obtain information from the challenging environment of particle collisions at the highest energies ever attained in the laboratory. LHC experiments will of course probe many new questions other than the search for the Higgs; two of the most obvious are whether quarks themselves may have substructure and whether there are new force carriers in nature. The latter has been the focus of an intensive search by Brig in the first data set being amassed from the ATLAS detector.

### Search for a New World ... at the LHC

Wednesday, April 13<sup>th</sup>, 2011

4:00 PM

The David Rittenhouse Laboratory, A1

An impressive series of theoretical and experimental developments over the last four decades has led to our "rather complete," and very successful, Standard Model of particle physics. A number of unresolved problems, however, hint that there is much still to be discovered. The Large Hadron Collider, which is operating extremely well and rapidly increasing in intensity, represents the biggest advance in particle accelerators in nearly three decades. Recent results from the ATLAS experiment will be presented, as well as near-term prospects for beginning to uncover the "New World" of particle physics that may exist. The next decade may well be the most exciting one in a long time.

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Lecture