

SES05-2005-020026

Abstract for an Invited Paper  
for the SES05 Meeting of  
the American Physical Society

### **The Promise of the LHC**

DARIN ACOSTA, University of Florida

The Large Hadron Collider (LHC) will provide extraordinary opportunities in particle physics based on its unprecedented collision energy and luminosity when it begins operation in 2007. With its 14 TeV center-of-mass energy and its design luminosity of  $10^{34} \text{ cm}^{-2} \text{ s}^{-1}$  for proton collisions, far above current collider machines, it should provide a definitive window onto physics at the TeV energy scale, including the nature of electroweak symmetry breaking and possibly a glimpse onto physics beyond the Standard Model as well. To capitalize on the physics opportunities presented by the LHC, two large general-purpose experiments, ATLAS and CMS, are nearing completion. This talk will focus on the physics program of the LHC, from the search for new particles at the TeV energy scale to precision measurements of the Standard Model, and the capabilities and status of the experiments to explore such physics from the very onset of collisions.