



PHYSICS COLLOQUIUM:

Searching for New Physics at the Large Hadron Collider

Dr. Indara Suarez

Assistant Professor, Department of Physics
Boston University



Date:

4/5/2024

Time:

10:30 AM – 11:50 AM

Location:

GRANITE PASS 135

About The Speaker:

Prof. Indara Suarez is an Assistant Professor at Boston University. Her research focuses on understanding the characteristics of the Higgs boson and the nature of dark matter using data collected by the Compact Muon Solenoid (CMS) Collaboration at the Large Hadron Collider (LHC). She is currently developing next-generation electronics and firmware for muon detectors and a new CMS precision timing detector capable of ultra-fast timing information to enhance the physics capabilities during the future high-luminosity era of the LHC. Her group has also developed novel computational tools using artificial intelligence for data analysis and detector monitoring. Prof. Suarez is a former UC President's Postdoctoral Fellow at UCSB and an NSF Graduate Research Fellow at Texas A&M. She was also awarded the DOE Early Career award in 2021. Prof. Suarez is a strong supporter of efforts to increase the participation of traditionally under-represented groups and women in science. Her group promotes "inclusion through research" by mentoring, teaching, and training students to create a pipeline for their success through their involvement in research.



Abstract:

Questions surrounding the properties of the Higgs Boson as well as astrophysical evidence for dark matter suggest that new fundamental particles and interactions are awaiting discovery. Over the projected lifetime of the Large Hadron Collider (LHC) experiments, my group is utilizing the wealth of data collected by the Compact Muon Solenoid (CMS) to search indicators of dark matter by using top quarks and Higgs bosons. Through detector developments and machine learning techniques, we have begun to severely constrain prevailing notions of how natural solutions to Higgs mass hierarchy and dark matter can manifest themselves experimentally. I will show the latest results from the LHC and discuss possible future directions in our search for new physics phenomena.

For more information, contact: David Strubbe
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