CU Physics

High Energy Particle Seminar

Wednesday, December 4, 2019 / 705 Pupin Hall / 1:00 PM

Stefano Zambito - Harvard University

"Hunting for Supersymmetry at the LHC. A Dive into Naturalness... And Beyond"

After the discovery of the Higgs Boson, the predictions of the Standard Model of particle physics can be extrapolated without inconsistencies all the way up to the Planck mass. Despite this tremendous success, we still remain in the dark about many open puzzles. Why is the weak interaction much stronger than gravity? What is the nature of Dark Matter? Are the strong, weak and electromagnetic forces a lower-energy manifestation of one single fundamental interaction? A possible solution to these questions is provided by Supersymmetry. The key assumption behind many natural supersymmetric models is that the masses of the gluinos, the top squarks and the higgsinos are near the TeV scale, thus within the LHC reach. In this presentation, I will introduce some of the theoretical and phenomeno- logical arguments that motivate the quest for Supersymmetry. I will then outline how I searched for the above-mentioned particles using LHC Run-2 data collected by the ATLAS experiment. Finally, I will focus on my vision of the future and my research plans in high-energy experimental physics.

Lunch will be available for attendees