



PHYSICS AND ASTRONOMY SEMINAR

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“Search for Dark Matter Produced in Proton-Proton Collisions with the ATLAS Detector”

“Longstanding evidence from observational astronomy indicates that non-luminous “dark matter” constitutes the majority of all matter in the universe, yet this mysterious form of matter continues to elude experimental detection. The study presented in this talk is part of an ongoing programme to search for dark matter production in high-energy proton-proton collisions at the Large Hadron Collider at CERN. This search targets a model referred to as the “Dark Higgs model”, in which dark matter is produced in association with the emission of a hypothesized Higgs boson in the dark sector (referred to as the “Dark Higgs”), which then decays to a pair of W bosons. The final-state signature of this model would be an excess of missing transverse energy in the detector due to undetected dark matter production, along with two reconstructed W bosons. In particular, the presented search considers a “semileptonic” final state in which one of the W bosons produced from the Dark Higgs decays to a pair of quarks, and the other to a charged lepton and a neutrino. The search probes new phase space for the Dark Higgs model, and complements existing searches which target the model in other final states.”

Tuesday, February 15, 2022
1:00 p.m. PST
Elliott Building, Room 061