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Composite Dark Matter and Neutrino Masses from a Light Hidden Sector

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We present a class of models in which dark matter is composed of the composite states of a strongly coupled hidden sector. The hidden sector interacts with the standard model through the neutrino portal, allowing the relic abundance of dark matter to be set by annihilation into final states containing neutrinos. The coupling to the hidden sector also leads to the generation of neutrino masses through the inverse seesaw mechanism, with composite hidden sector states playing the role of the singlet neutrinos. We focus on the scenario in which the hidden sector is conformal in the ultraviolet, and the compositeness scale lies at or below the weak scale. We construct a holographic realization of this framework based on a five-dimensional warped geometry and study its phenomenology.

Authors: NAJJARI, Saereh; AHMED, Aqeel (Max-Planck-Institut für Kernphysik, Heidelberg); CHACKO, Zackaria (University of Maryland); DESAI, Niral (University of Texas); DOSHI, Sanket (University of Maryland); KILIC, Can (University of Texas)

Presenter: NAJJARI, Saereh

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