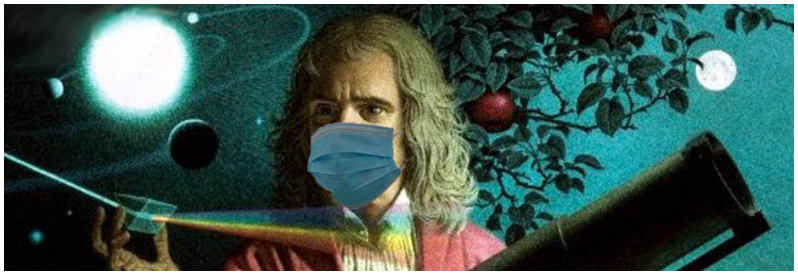

Contribution ID: **129** Type: **not specified**

Shocking Signals from CHAMP Cosmic Rays

Monday, March 1, 2021 5:30 PM (30 minutes)

https://inspirehep.net/literature/1711648
Cosmological relics with miniscule electric charges are well motivated in particle physics through kinetic mixing between our photon and a dark photon, and from cosmology as a way to thermally produce dark matter in the early universe. Despite their small electric charge, such thermal relics can interact with the Milky Way environment in surprising ways. I will discuss the thermalization of CHarged Massive Particles (CHAMPs) with the interstellar medium, their diffusion through inhomogeneous magnetic fields in the Milky Way, and Fermi acceleration by supernova shock waves. The Fermi accelerated CHAMPs form a component of cosmic rays that are able to reach underground detectors and produce unique experimental signatures typically absent from dark matter moving at virial speeds. I will discuss stringent bounds on the fraction of dark matter that can be CHAMPs from signals in nuclear/electron recoil experiments, ionization detectors, and Cherenkov light experiments.

Presenter: DUNSKY, David