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Mining CHAMP relics from terrestrial matter

Wednesday, April 15, 2026 2:15 PM (30 minutes)

We propose a method for detecting an ambient density of heavy, electrically charged particles around the Earth. Such particles would impinge the Earth, lose energy in terrestrial matter, and become trapped. We examine the accumulation of these rare particles in multiple target materials that offer substantial exposure, such as large monitored water/ice volumes, geological rocks, and ancient ice cores. We also discuss strategies for enriching target samples to increase the concentration of captured heavy particles, along with precision techniques for their subsequent identification. This technique enables the discovery of charged relics with mass $1 - 10^{12}$ TeV constituting a tiny fraction of the local dark matter density, down to $f_X \sim 10^{-18}$ for the lowest masses.

Do you plan to give the talk in person?

Yes

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