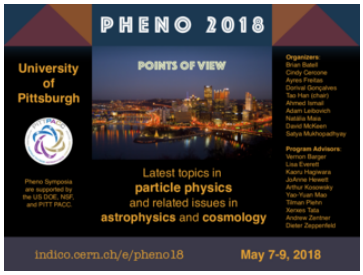

Contribution ID: **478** Type: **parallel talk**

Multiscatter Frontier of Dark Matter Direct Detection: To the Planck Mass and Beyond

Tuesday 8 May 2018 14:30 (15 minutes)

I will show that meter-scale underground experiments such as LUX, PandaX-II, XENON, and PICO could discover dark matter up to the Planck mass and beyond, via new dedicated searches for dark matter scattering multiple times as it transits these detectors. These searches would effectively double the reach of current experiments, and open up significant discovery potential through re-analysis of existing and future data. Amusingly, the mass, cross-section and local density of such dark matter may be pinpointed with a single experiment, using the angle of entry into the detector. I will also identify a hitherto-neglected effect in studies of strongly interacting dark matter, "saturated overburden scattering", which extends the reach of published limits and future analyses by many orders of magnitude.

Summary

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