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Detecting axions with chiral magnetic effects

Wednesday 22 February 2023 15:40 (40 minutes)

We show that dark matter axions or axion-like particles (ALP) induce spontaneously alternating electric currents in conductors along the external magnetic fields due to the (medium) axial anomaly, realizing the chiral magnetic effects. We propose a new experiment to measure this current to detect the dark matter axions or ALP. These induced currents are the electron medium effects, directly proportional to the axion or ALP coupling to electrons, which depends on their microscopic physics, and also suppressed by the Fermi velocity. My talk is based on my paper, arXiv: <https://arxiv.org/abs/2207.06884>

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Session Classification: Axion