



Contribution ID: 24

Type: **not specified**

## Axion Quasiparticles for Axion Dark Matter Detection

*Friday, 18 June 2021 16:30 (25 minutes)*

It has been suggested that certain antiferromagnetic topological insulators contain axion quasiparticles (AQs), and that such materials could be used to detect axion dark matter (DM). I review recent progress in this direction. I begin by clarifying the effective theory, and introducing a model for material losses. Current progress on measurement of material candidates is discussed. The resonance mechanism is explained following the principle of the dielectric haloscope. AQ-photon mixing leads to an effective photon mass, changing the optical properties of the material, and allowing for resonant axion DM-photon conversion in samples large compared to the axion Compton wavelength. The proposal could allow for detection of axion DM in the mass range between 1 and 10 meV.

### Speaker

David Marsh

**Primary author:** MARSH, David (King's College London)

**Presenter:** MARSH, David (King's College London)

**Session Classification:** Session 19