Contribution ID: **14** Type: **not specified**

Axion gegenschein: dark countersources of bright radio objects

Thursday 20 August 2020 09:30 (25 minutes)

We propose a novel scenario for the detection of radio signals from the decay of axions and axion-like particles, termed *axion gegenschein*. Ambient radiation arriving from astrophysical radio-bright objects stimulate the decay of halo dark matter in Milky Way creating a *countersource* emitting photons at frequencies half the axion mass and exhibiting the spatial dimensions and features of each radio object in a direction precisely opposite to it. This technique for the indirect detection of axion dark matter is more powerful compared to radio observations of dwarf spheroidals, and can be advantageous in measuring dark matter overdensities, in the form of minihalos, clumps, and spikes, at large distances.

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Session Classification: Session 3.1