Contribution ID: **90** Type: **Oral presentation (plenary)**

An axion dark matter-induced echo of supernova remnants

Wednesday 20 July 2022 12:30 (30 minutes)

In the presence of radiation from bright astrophysical sources at radio frequencies, axion dark matter can undergo stimulated decay to two nearly back-to-back photons, meaning that bright sources could have a counterimage ("gegenschein") in nearly the exact opposite spatial direction if axions comprise the dark matter. The counterimage will be spectrally distinct from backgrounds, taking the form of a narrow radio line centered at half the axion mass with a width determined by Doppler broadening in the halo. I will discuss how the axion decay-induced echoes of supernova remnants may be bright enough to be detectable with ongoing observations from the FAST radio telescope.

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Session Classification: Plenary 3