

Production and detection of an axion dark matter echo

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Electromagnetic radiation with angular frequency equal to half the axion mass stimulates the decay of cold dark matter axions and produces an echo, i.e. faint electromagnetic radiation traveling in the opposite direction. We propose to search for axion dark matter by sending out to space a powerful beam of microwave radiation and listening for its echo. We estimate the sensitivity of this technique in the isothermal and caustic ring models of the Milky Way halo, and find it to be a promising approach to axion, or axion-like, dark matter detection.

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