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The echo method for axion dark matter detection

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In this talk I will present a new idea to search for axion dark matter. It is based on the backscattering of a powerful electromagnetic wave that is produced due to the stimulated decay of ambient axions. This backscattering, the echo, is a negligible (but detectable) signal with frequency spectrum centered at one half the axion mass. In the mass range where the axion is motivated to be the dark matter, one would expect the echo signal in the microwave, radio, or even infrared ranges of the electromagnetic spectrum. I will show the main properties of the echo signal, possible detection schemes and future prospects.

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