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Searching for axion dark matter with magnons

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The axion provides a solution for the strong CP problem and is one of the leading candidates for dark matter. In this talk, we propose an axion detection scheme based on quantum nondemolition detection of magnons, i.e., quanta of collective spin excitations in a ferromagnetic crystal. Furthermore, we give an upper limit on the coupling constant between an axion and an electron for a certain mass of the axion dark matter.

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