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【137】Strong coupling of antiferromagnetic resonance with subterahertz cavity fields

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We study coupling of electromagnetic waves to magnetization dynamics. Magnon-polaritons are intensively explored in ferromagnetic materials at gigahertz frequencies. Antiferromagnets have resonance frequencies at in the terahertz band, thus, there are only a few reports of light-matter coupling in that case. We report strong magnon-photon coupling in hematite alpha-Fe2O3. A cube of hematite was placed inside a cavity that has a resonance at 0.24 THz. Our transmission data as function of temperature show very clear avoided crossing of the first cavity mode and the antiferromagnetic resonance of a cooperativity factor of 40.

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Primary authors: BIALEK, Marcin (Ecole Polytechnique Fédérale de Lausanne); Mr ZHANG, Jianyu (Beihang University, Beijing); Prof. YU, Haiming (Beihang University, Beijing); Prof. ANSERMET, Jean-Philippe (EPFL)

Presenter: BIALEK, Marcin (Ecole Polytechnique Fédérale de Lausanne)

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