Electric-dipole spin resonance in antiferromagnetic conductors

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The electron spectra of antiferromagnetic conductors in an external magnetic field exhibit striking symmetry-protected degeneracies. These degeneracies render the Zeeman splitting strongly momentum-dependent, thus inducing an unusual spin-orbit coupling. In this talk, I will present a recent experimental evidence for this phenomenon [1] and elucidate its symmetry origins [2]. I will also show how these effects lead to an anomalously strong electric-dipole spin resonance (EDSR) [3], a striking effect still awaiting experimental confirmation.

[1] R. Ramazashvili, P. Grigoriev, T. Helm *et al.*, NPJ Quantum Mater. **6**, 11 (2021).

[2] R. Ramazashvili, Phys. Rev. Lett. **101**, 137202 (2008), Phys. Rev. B **79**, 184432 (2009).

[3] R. Ramazashvili, Phys. Rev. B **80**, 054405 (2009).