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Electron Spin Resonance in a 2D Fermi Liquid with Spin-Orbit Coupling SAURABH MAITI, MUHAMMAD IMRAN, DMITRII MASLOV, University of Florida — Electron spin resonance (ESR) is usually interpreted as a single-particle phenomenon protected from the effect of many-body correlations. We show that this is not the case in a two-dimensional Fermi liquid (FL) with spin-orbit coupling (SOC). Depending on whether the magnetic field is below or above some critical value, ESR in such a system probes up to threecollective chiral-spin modes, augmented by the presence of the field, or the Larmor mode, augmented both by SOC and FL renormalizations. We argue that ESR can be used as a probe not only for SOC but also for many-body physics.

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