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**Interplay between spin-orbit coupling and many body effects in spin-flip waves in CdMnTe quantum wells**<sup>1</sup> MEHUL DIXIT, CARSTEN A. ULLRICH, University of Missouri Columbia — We present a numerical study of spin-flip wave dispersions in a spin-polarized electron gas in an n-type dilute magnetic semiconductor heterostructure, using time-dependent density-functional response theory. The system under study is an asymmetrically modulation-doped CdMnTe quantum well with an in-plane magnetic field. Rashba and Dresselhaus spin-orbit coupling induces a wavevector-dependent spin splitting in the conduction bands. We demonstrate a striking organization and enhancement of the spin-orbit fields acting on the collective spin-flip wave due to an interplay with electronic many-body effects. Our results agree with recent inelastic light scattering experiments.

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