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Dispersive chiral-spin modes in a 2D Fermi-Liquid with spin-orbit coupling. DMITRII MASLOV, University of Florida, SAURABH MAITI, Univeristy of Florida — Chiral-spin modes in a 2D Fermi liquid with spin-orbit coupling are oscillations of magnetization in zero magnetic field resulting from a many-body effect. We study the q-dispersion of these modes in the presence of both Rashba and Dresselahaus spin-orbit coupling and in-plane magnetic field. We show, both by symmetry arguments and explicit calculations, that the dispersion contains a leading linear in q term, which is a unique feature of spin-orbit coupling. The massive (q=0) part of the mode varies with direction of the in-plane magnetic field. These features have been observed in a series of Raman experiments in CdMnTe quantum well but were interpreted as an indication of a strong renormalization of spin-orbit coupling by electron-electron interaction. We show that the data can be explained without invoking strong renormalization effects. We also predict that these modes should be observed even in the absence of the magnetic field.

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