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Magnetization pumping and dynamics in a uniform Dzyaloshinskii-Moriya magnet ALEXEY KOVALEV, UTKAN GÜNGÖRDÜ, University of Nebraska-Lincoln — We formulate a phenomenological description of thin ferromagnetic layers with inversion asymmetry where the long-wavelength magnetic dynamics experiences magnon current-induced torques and leads to magnon-motive forces. We first construct a phenomenological theory based on irreversible thermodynamics, taking into account the symmetries of the system. Furthermore, we confirm that these effects originate from Dzyaloshinskii-Moriya interactions from the analysis based on the stochastic Landau-Lifshitz-Gilbert equation. Our phenomenological results can be generalized to other systems such as pyrochlore crystals and chiral magnets. Possible applications include spin current generation, magnetization reversal and magnonic cooling.

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