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Dependence of the demagnetization time on the exchange interaction and spin moment[1] GUOPING ZHANG, Indiana State University, THOMAS F. GEORGE, University of Missouri - St. Louis, MINGSU SI, Lanzhou University, China — In femtomagnetism, the demagnetization time is at the center of laser-induced ultrafast demagnetization. It depends on various intrinsic and extrinsic parameters, but the experimental results are controversial, and in some cases the opposite effects are reported. In this presentation, we directly address how the exchange interaction and magnetic spin moment affect the demagnetization time. We employ a simple model that includes the exchange interaction and spin-orbit coupling. Then we derive an equation of motion for the spin moment change, from which a master equation is found. This equation explicitly shows how the demagnetization time is related to the exchange interaction and spin moment. This result can be directly compared with the latest experimental results.

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