

Abstract Submitted
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Interfacial Control of Dzyaloshinskii–Moriya Interaction in Heavy Metal/Ferromagnetic Metal Thin Film Heterostructures¹ XIN MA, The University of Texas at Austin, GUOQIANG YU, XIANG LI, University of California, TAO WANG, University of Delaware, DI WU, University of California, KEVIN OLSSON, ZHAODONG CHU, KYONGMO AN, The University of Texas at Austin, JOHN XIAO, University of Delaware, KANG WANG, University of California, XIAOQIN LI, The University of Texas at Austin — The interfacial Dzyaloshinskii–Moriya Interaction (DMI) in ultrathin magnetic thin film heterostructures provides a new approach for controlling spin textures on mesoscopic length scales. Here we investigate the dependence of the interfacial DMI constant D on a Pt wedge insertion layer in Ta/CoFeB/Pt(wedge)/MgO thin films by observing the asymmetric spin wave dispersion using Brillouin light scattering. Continuous tuning of D by more than a factor of three is realized by inserting less than one monolayer of Pt. The observations provide new insights for designing magnetic thin film heterostructures with tailored D for controlling skyrmions and magnetic domain wall chirality and dynamics.

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