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Geometric Optimization of Spin Current JOSH MELANDER, Linfield College, SERGEI URAZHDIN, Emory University — Spintronics is the study of spin transport electronics. Already employed in data storage technologies, spintronics offers the opportunity to continue to shrink electronic devices past what traditional electronics are capable of. The application of spintronics requires highly optimized devices; more so than what is available currently. In this experiment we aim to optimize spin transport properties through the geometry of the device. More specifically, we investigate how the thickness of the sample affects the diffusion length of the spin current (SC). The sample device is a multilayer made up of FeMn(0.5)Pt(x)Py(5), where x is the thickness in nm, sputtered onto an oxidized silicon chip. SC is then induced by the Spin Hall Effect (SHE) which occurs when a current is passed through the Pt layer. The effect of SC on Py is measured by Brillouin light scattering (BLS) spectroscopy. Our data shows that spin diffusion length is dependent on the thickness of the sample and we are currently working to formulate a working model for it.

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