

Abstract Submitted
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Micro-hysteresis in the Faraday Rotation of Bismuth Doped Iron Garnets¹ MANNIX SHINN, DONG HO WU, ANTHONY GARZARELLA, U. S. Naval Research Laboratory, RONGJIA TAO, Temple University — There is strong interest in using the Faraday effect (Magneto-Optic effect) for non-invasive detection of weak magnetic fields, since in principle one can construct an ultra-sensitive MO-sensor that could be comparable to a SQUID. Bismuth doped rare earth iron garnets (Bi-RIGs) are a candidate material, however their polarization rotation is often measured at saturating fields. We have found that in some Bi-RIGs there is a coercive field that is less than the noise level of our probe beam, which can lead to mischaracterization of sensitivity. This coercivity appears related to magnetic domain wall motion. In this talk I will discuss our experiments and how domain walls can affect the sensitivity of our MO-sensor.

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