

Abstract Submitted  
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**Solid State Hanle Magnetometry** CHRISTOPHER WOLFE, VIDYA BHALLAMUDI, The Ohio State University, VIVEK AMIN, Texas A&M University, DOMINIC LABANOWSKI, ANDREW BERGER, HELENA REICHLOVA, DAVID STROUD, The Ohio State University, JAIRO SINOVA, Texas A&M University, CHRIS HAMMEL, The Ohio State University — The development of spatially resolved imaging of strongly varying vector magnetic fields is a fundamental challenge that would have scientific and technological implications in fields ranging from materials characterization to the study of magnetic particles in scanned probe techniques and tracking of biological tags. We have extended magnetometry based on the Hanle effect<sup>1</sup> to the characterization of vector fields in solid state systems. Local Hanle curves were measured in a GaAs membrane at various positions around a NdFeB micro-magnetic particle using spin-photoluminescence. The spatially varying vector magnetic fields from the micro-magnet cause calculable changes to the shape of the Hanle curve, and by fitting these curves we can extract information about all three components of the field of the micromagnet and infer its properties. I will also discuss the possibility of an all electrical device which could be more easily and broadly utilized.

<sup>1</sup>A. Kastler, Nucl. Instrum. Methods **110**, 259 (1973).

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