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Robust Absolute Magnetometry with Organic Thin-Film Devices
DAVID P. WATERS, WILLIAM J. BAKER, KAPIL AMBAL, RACHEL BAARDA, HIROKI MORISHITA, KIPP VAN SCHOOTEN, University of Utah, DANE R. MCCAMEY, University of Sydney, JOHN M. LUPTON, Universität Regensburg, CHRISTOPH BOEHME, University of Utah — Magnetometers based on organic thin film materials have attracted considerable interest in recent years as they can be manufactured at very low cost and on flexible substrates. In spite of these advantages, the technological relevance of such magnetoresistive sensors is limited due to their narrow magnetic field ranges (∼30mT) and the continuous calibration required to compensate temperature fluctuations and materials degradation. Conversely, magnetic resonance based sensors, which utilize fundamental physical relationships for extremely precise measurements of fields, are usually large and expensive. This presentation will discuss an organic magnetic resonance based magnetometer [1], employing spin-dependent electronic transitions in an organic diode, which combines the low-cost thin-film fabrication and integration properties of organic electronics with the precision of a magnetic resonance based sensor.

[1] Baker et al., Nature Commun. 3, 898 (2012).

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