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**Nanometer-scale scanning magnetometry of spin structures and excitations using Nitrogen-vacancy centers**  
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The development of increasingly sensitive scanning techniques has led to new insights into the physics of interacting condensed matter systems. Recently, Nitrogen-Vacancy (NV) centers in diamond emerged as a promising scanning magnetic imaging platform capable of operating in a broad range of temperatures and magnetic fields, with sensitivity and resolution capable of imaging a single electron spin with sub-nanometer resolution under ambient conditions [1,2]. In this talk we will review some of the recent developments in this new scanning platform. We will describe our recent progress in using a single NV center in a scanning diamond nano-pillar to study condensed matter magnetism at both room and low temperatures. In particular, we demonstrate the use of scanning NV magnetometry to image stray fields originating from static chiral spin structures, as well as to detect resonant and off-resonant low-energy spin excitations [3]. [1] Grinolds et al., Nature Phys 9, 215 (2013) [2] Grinolds et al., Nature Nanotech. 9, 279 (2014) [3] Van der Sar et al., Nature Comm. 6, 7886 (2015)