

Abstract Submitted  
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**New techniques for NV-diamond ensemble magnetometry** KEIGO ARAI, MIT, DAVID LE SAGE, NIR BAR-GILL, CHINMAY BELTHANGADY, DAVID GLENN, Harvard-Smithsonian, ALEXEI TRIFONOV, Harvard, RONALD WALSWORTH, Harvard-Smithsonian — We describe new techniques for precision magnetometry using ensembles of NV centers in diamond. One technique uses the large refractive index of diamond as a light guide to achieve much higher fluorescence detection efficiency than provided by high NA microscope objectives. Another technique employs the  $m = +/-1$  basis states of the NV triplet ground state, which may give improved magnetometry for small static magnetic fields. Dynamic decoupling pulse sequences can also improve the effective spin coherence time for NV ensembles. An alternate approach measures the absorption of the NV excitation light by an optically thick diamond sample.

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