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**Micron-Resolution Magnetic Imaging Using Nitrogen-Vacancy Defect Centers in Diamond for Paleomagnetism** PAULI KEHAYIAS, DAVID GLENN, Harvard-Smithsonian Center for Astrophysics, ROGER FU, Lamont-Doherty Earth Observatory, Columbia University, EDUARDO LIMA, BENJAMIN WEISS, MIT Department of Earth, Atmospheric and Planetary Sciences, RONALD WALSWORTH, Harvard-Smithsonian Center for Astrophysics — We use nitrogen-vacancy (NV) defect centers in diamond to measure the magnetic field in microscopic rock samples. Our NV magnetic microscopy tools achieve spatial resolution that is otherwise inaccessible for rock paleomagnetism studies. This allows us to spatially distinguish between different ferromagnetic sources and isolate high-coercivity magnetic inclusions from possible contamination. We present our ongoing efforts to establish NV magnetic imaging as a standard instrument in paleomagnetism, including absolute calibration and comparison with a SQUID microscope, improvements in sensitivity and bias field range, and demonstrations with ancient terrestrial and extraterrestrial rock samples.

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