

Abstract Submitted  
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**A Wide-Field NV Diamond Magnetic Imager for Highly Parallel Detection of Rare Biological Targets** DAVID GLENN, Harvard-Smithsonian Center for Astrophysics, KYUNGHEON LEE, HAKHO LEE, Massachusetts General Hospital, Center for Systems Biology, RONALD WALSWORTH, Harvard-Smithsonian Center for Astrophysics — We have developed a wide-field magnetic imaging device based on Nitrogen Vacancy centers in diamond, optimized for the detection of rare, immunomagnetically labeled biological targets such as circulating tumor cells. The new imager allows simultaneous magnetic imaging over a  $\sim 1 \text{ mm}^2$  field of view, approximately two orders of magnitude larger than previous implementations. We describe experiments to detect cancer cells tagged with superparamagnetic nanoparticles, including validation studies for a cell detection assay and technical considerations associated magnetic imaging over very wide fields of view.

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