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An NV-Diamond Magnetic Imager for Neuroscience MATTHEW TURNER, Harvard University, JENNIFER SCHLOSS, Massachusetts Institute of Technology, ERIK BAUCH, CONNOR HART, RONALD WALSWORTH, Harvard University — We present recent progress towards imaging time-varying magnetic fields from neurons using nitrogen-vacancy centers in diamond. The diamond neuron imager is noninvasive, label-free, and achieves single-cell resolution and state-of-the-art broadband sensitivity. By imaging magnetic fields from injected currents in mammalian neurons, we will map functional neuronal network connections and illuminate biophysical properties of neurons invisible to traditional electrophysiology. Furthermore, through enhancing magnetometer sensitivity, we aim to demonstrate real-time imaging of action potentials from networks of mammalian neurons.

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