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In-Plane Magnetic Field Tolerance of a Nanobridge SQUID Magnetometer[1] NATANIA ANTLER, ELI M. LEVENSON-FALK, RAVI NAIK[2], SHAY HACOHEN-GOURGY, R. VIJAY, I. SIDDIQI, QNL, UC Berkeley — We describe the operation of a nanobridge SQUID magnetometer subject to an in-plane magnetic field of up to 60 mT. The magnetometer is comprised of a nanobridge SQUID with two aluminum weak links embedded in a 4-8 GHz microwave tank circuit for dispersive readout. We obtain a flux sensitivity of 17 $n\Phi_0/Hz^{1/2}$ with 50 MHz of instantaneous bandwidth in zero magnetic field. This effectively corresponds to single spin resolution, within a 1 Hz bandwidth, for nanomagnets placed within 100-200 nm from the nanobridge edge. We find that the effective flux sensitivity only degrades by a factor of $\sim$3 up to 60 mT of applied field. Finally, we describe progress towards magnetization dynamics measurements in different spin species such as Cobalt nanoclusters and Bismuth implanted in Silicon-28.

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