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## Implementation of an atomic free spin precession magnetometer targeted at medical diagnostics

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We report on the progress of implementing an atomic magnetometer based on free spin precession using our in-house manufactured rubidium-87 MEMS (micro-electromechanical systems) vapor cells. The magnetometer employs a pulsed pump and probe laser scheme, featuring a double pass through the vapor cell configuration for the probe laser beam. The magnetometer currently exhibits a sensitivity of  $300 \text{ fT/Hz}^{1/2}$  with a bandwidth of 500 Hz. The high dynamic range of the device, which ranges up to magnetic field strengths in the Earth's field regime, allows for a wide range of applications, e.g. the detection of biomagnetic signals from the human body, specifically signals stemming from cardiac activity. Finally, we will discuss the potential for a compact design in future iterations.

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