

Abstract Submitted
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A calibration method based on atomic spin self-sustaining vector magnetometer QIN ZHAO, BOLING FAN, SHIGUANG WANG, LIJUN WANG, Tsinghua University — The self-sustaining atomic magnetometer has the advantage of high sensitivity and long spin coherence lifetime, based on which we demonstrate a novel method to calibrate the magnetic coil constants precisely. Via non-destructive phase measurement and coherent optical pumping, the spin polarization of rubidium atoms is regenerated coherently and the Larmor precession signal is oscillating continuously. In this stable state, the calibrating capability is achieved by applying current to coils and scan the magnetic components along x- and y-direction. The magnetic field magnitude is obtained from precession frequency and the coil constants can be derived from the fitting equation directly. The constants of coils in the experiment are 246.0100.034 nT/mA and 197.452 0.025 nT/mA in the x- and y-directions, respectively

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