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Towards an optically pumped spin-precession, magnetometric camera

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We have developed a magnetic field camera for detecting defects in metal components and battery imaging.

Our approach leverages the high sensitivity and robustness of free-spin-precession (FSP) and Mz magnetometry, combined with a fast, commercial camera operating at up to 90kHz.

Unlike current state-of-the-art optically pumped magnetometers (OPM), which record single or few data points using custom-made diode arrays, we image the entire volume of the rubidium cell directly onto the camera.

This method allows us to read out spatially resolved magnetic field strengths with $200\mu m$ resolution in parallel, enabling time-efficient data acquisition at an experimental validated sensitivity of $100pT$.

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