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【615】 Integration of a near-field coupling device with scanning probes for Nitrogen-Vacancy magnetic imaging

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We present the design and implementation of a new type of scanning Nitrogen-Vacancy magnetic imaging probe with an integrated microwave near-field coupling device for optimized spin manipulation. The microwave coupling loop is directly integrated onto the attachment structure of the scanning probe eliminating the need for external MW delivery solutions. The characterization and the proof-of-principle scanning NV magnetometry experiment demonstrate that this new devices match the performance of state-of-the-art MW delivery solutions, making it a compelling alternative. This holds particularly true for low-temperature experiments but is also anticipated to reduce the technical barriers for the broader adoption of NV magnetometry across a larger research community.

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