

The Nitrogen Vacancy (NV^-) electron spin has the remarkable property of being both polarizable and readable optically at room temperature. This property makes it a strong candidate to probe tiny magnetic field at the atomic level. Here we present our results where we managed to detect other spin impurities in the diamond at the ppb range with thanks to resonant coupling with NV centers. We also present observations on the NV-NV dipolar interaction and its potential use in magnetometry.