



Institut für
Angewandte Physik



Physikalisches
Institut



RHEINISCHE
FRIEDRICH-WILHELMS-UNI-
VERSITÄT BONN

COLLOQUIUM „OPTICS AND CONDENSED MATTER“

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Magnetic resonance imaging on the nanoscale – detecting coherent and incoherent sources

Our group uses single-photon emitters in the form of nitrogen-vacancy centers in diamond as quantum sensors by optically detecting the spin state of the defects. This allows for various measurement modalities, across many decades of frequencies. Using such sensors, I will present our effort towards nanoscale magnetic resonance imaging (nanoMRI) using a scanning probe approach pioneered in our group and explain how this technique can differentiate between two electron spins separated a few nm from each other in the same molecule. In addition, I will also introduce a noise spectroscopy method which allows us to differentiate, between different spin bath environments based on the memory (Markovianity) and dynamics (stationarity) of the noise spectrum. Together, the two examples, along with other methodologies developed by our group and by others, move us closer towards the goal of measuring the magnetic spectrum of a single molecule.

November 17th, starting with discussion at 17:00 h, talk at 17:15 h, live IAP lecture hall or via Zoom

<https://uni-bonn.zoom.us/j/98441612025?pwd=a01SSjlkY1Q3SDFhL09JQk1qc1V6dz09>

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