

Fundamental physics with ensembles of spins

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Sensitive magnetometry is the key technology that enables a broad range of technologies and discovery-oriented experiments. This talk focuses on magnetic resonance with spin ensembles. Macroscopic spin ensembles are used to search for axion dark matter - I will focus on the Cosmic Axion Spin Precession Experiment (CASPEr). On the nanometer scale, I will describe how spin ensembles in diamond are used to explore the dynamics of many-body quantum systems with long-range interactions.