



Contribution ID: 86

Type: **Talk**

# Nuclear decoupling techniques at the microscale

*Monday 29 May 2023 17:00 (20 minutes)*

We present a method to identify energy shifts which contain structural information in solid-state systems using Nitrogen-Vacancy (NV) centers combined with synchronization techniques. To achieve this, we have developed a theory for Lee-Goldburg based decoupling schemes in microscale-NMR scenarios with NV centers at large static magnetic fields. The introduced RF fields serve two purposes: (i) nuclear decoupling and (ii) bridging the interaction between NV sensors and fast-rotating spins. We have created a theory to track the thermal signal (i.e., the magnetization vector) when driven by decoupling fields. This allows us to obtain coherent signals even in highly protonated samples with strong internuclear couplings.

**Primary authors:** TOBALINA, Ander (ARQUIMEA Research Center); MUNUERA JAVALOY, Carlos (Universidad del País Vasco / EHU Quantum Center); PANADERO, Ivan (ARQUIMEA Research Center); CASANOVA, Jorge (Universidad del País Vasco / EHU Quantum Center)

**Presenter:** MUNUERA JAVALOY, Carlos (Universidad del País Vasco / EHU Quantum Center)

**Session Classification:** Session 3.4

**Track Classification:** quantum metrology and sensing