Joint Annual Meeting of the Swiss and Austrian Physical Society 2023



Contribution ID: 167

Type: Talk

[153] A Versatile Ultrasonic Setup for Quantum Matter Research

Thursday 7 September 2023 17:30 (15 minutes)

Ultrasound techniques offer a simple and efficient method for studying quantum matter as they are able to detect subtle changes to symmetry and are also sensitive to lattice-spin/charge coupling. There are two distinct measurement paradigms used for ultrasonic studies: Whereas RUS provides a comprehensive view of the elastic tensor of solids, PEUS measures changes in sound wave attenuation and velocity, revealing the coupling of the lattice to spin or charge degrees of freedom. Here we will present versatile ultrasonic setup, which is using the same electronic system and allowing for efficient switching between both methods. The setup is further optimized for studying quantum systems in low-temperature and magnetic field environments.

Theoretical Work

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Session Classification: Condensed Matter Physics (KOND)

Track Classification: Condensed Matter Physics (KOND)