Contribution ID: **166** Type: **Talk**

【103】Phonon-Polariton Nonlinearities in Ferroelectric LiNbO3

Tuesday 10 September 2024 14:30 (15 minutes)

In ferroelectric LiNbO3, THz light couples with low-frequency optical phonons and form phonon polaritons. Recent studies have shown that is possible to probe nonlinearities at specific points along the phonon-polariton dispersion curve with different probe wavelengths after broadband excitation with strong THz transients. However, extensive measurements of lattice anharmonicities in LiNbO3 are still lacking. To bridge this gap, we characterised the nonlinear behaviour of phonon-polaritons in LiNbO3 using nonlinear THz spectroscopy. We mapped the LiNbO3 phonon polariton E branch by varying the probe wavelength and observed a strong dependence of the nonlinear response on the wavelength of the near-optical pulse, which arises from the momentum selection of the detection process.

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Session Classification: Condensed Matter Physics (KOND)

Track Classification: Condensed Matter Physics (KOND)