Combined MQ Photonics Research Centre & Centre for Quantum Engineering Seminar

Time: Thursday 10 June at 1 PM Location: MPR & via ZOOM Zoom link (Sydney local time): https://macquarie.zoom.us/j/89140137524?pwd=M0JEV VYraUlaeDhpQ3JJcUFnbmp3dz09

Title: Quantum Acoustics: the what? The why? And the how?

Abstract: Quantum acoustics explores the non-classical dynamics of vibrating mechanical systems – pendulums oscillating at exceedingly high frequencies with vanishingly small amplitudes [1]. In this talk I will review the basics of quantum acoustics, and show early implementations of all-acoustics quantum systems [2]. I then show how to build efficient acoustic cavities [3,4], and hint at the ongoing work focused on interfacing such all-acoustic platforms with optical and electronic control systems.

[1] M. Aspelmeyer, et al., Rev. Mod. Phys. 86, 1391 (2014). [2] D. Lee, et al., J. Opt. 19, 033001 (2017). [3] M.K. Schmidt, et al., Phys. Rev. Lett. 121, 064301 (2018). [4] M.K. Schmidt, et al., Phys. Rev. Research 2, 033153 (2021).

Speaker: Dr Mikolaj Schmidt

Bio: Dr Schmidt received a doctoral degree from the University of Basque Country in Spain, conducting research on the theory of nanophotonics in a group headed by Prof. Javier Aizpurua. In early 2017, he joined the group of Prof. Michael J. Steel at Macquarie University as a Research Assistant, to work on novel optoacoustic waveguides for nonlinear integrated photonics. In 2019, he was awarded a Macquarie University Research Fellowship, to lead an independent research program into theoretical quantum nanoscale optics ap optoacoustics.





