MQ Photonics Research Centre Seminar

When: Wednesday 17 March 2021 at 2PM (Australia Sydney local time)
Location: MPR and via Zoom: Join from a PC, Mac, iPad, iPhone or Android device: click this URL to join: https://macquarie.zoom.us/j/85829287435 Dial-in phone line: Dial: +61 2 8015 2088, Meeting ID: 858 2928 7435

Dr Doug Little
MQ Photonics

Speaker: Dr Doug Little

A quantum-random polarised diamond laser.

Abstract: Normally, random polarisations are associated with uncorrelated/incoherent states, so the transmission through a polariser is always 50%. Here I will report on what we believe is the first generation of correlated/coherent random polarisation states, where the transmission through a polariser can be anything from 0-100%. As part of this presentation, I will take a deep-dive into the physics of stimulated Raman scattering, look at how quantum-randomness is an intrinsic feature of Raman lasers even at macroscopic/classical scales, show how diamond is a critical ingredient for achieving quantum-random polarisation states, and how this could be leveraged in future quantum technologies

I completed my PhD in 2010 studying the physics of light-matter interactions in ultrafast direct-write laser applications. Since then I have enjoyed a multidisciplinary postdoctoral research career studying the optics of spider silks, interferometric imaging, nanometrology and developing statistical measures for analysing chaotic systems. Currently, I am working in the diamond photonics group creating novel diamond-based light sources.