

Diamond Quantum Devices: From Quantum Simulation to Medical Imaging

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Perfect diamond is transparent for visible light but there are famous diamonds, such as the famous Oppenheim Blue or the Pink Panther worth tens of millions of dollar, which have intense colour. An important source of colour in diamond are lattice defects which emit and absorb light at optical frequencies and may indeed possess a non-vanishing ground state electronic spin. I will explore the physics of one of these defects, the nitrogen vacancy center, and show how we can manipulate its electronic spin and make use of this capability to create quantum simulators, quantum sensors and perhaps surprisingly applications in medical imaging that may, we hope, find applications for example in cancer research and treatment.