

## **Thin-Film Diamond Nanophotonics for Spin-Photon Interfaces**

Ralf Riedinger (UHH)

### **Abstract**

Spin-photon interfaces allow for networking of quantum processors, direct quantum data analysis of optical telescopes, or long rang quantum teleportation. Here we introduce our work towards scalable solid-state network nodes based on diamond thin films. Diamond is a near-ideal host material for point-defects with atom-like optical transitions, combining a large optical bandgap, high purity crystals, and a spin-less background. The challenge arises from manufacturing nanophotonic structures in the bulk material. Here we describe how smart-cut thin film can improve optical properties, as well as scalability of the platform.

Keywords: