

Exploiting spatial correlations between photons is a fundamental in quantum imaging. Correlation-based imaging, a scheme whereby one photon from a pair interacts with an object before reaching the detection system. The joint measurement of the two photons then reveals the image of the object. Though the image reconstruction was initially implemented using computational techniques that employ a single pixel with no spatial resolution on its own, modern implementations can make use of arrays of single-photon sensitive detectors. Novel imaging sensors such as arrays of single photon avalanche diodes (SPADs) have enabled two- and three-dimensional imaging, the latter being enabled by the high temporal resolution. Furthermore, their high-frame rate, compared to rival technology, dramatically reduces the acquisition time required to spatially characterise quantum states and form a correlation image. In this talk, we will provide an overview of the recent developments in 2D, and 3D correlation-based imaging using photon pairs and enabled by SPAD cameras. Particularly, we will focus on optical designs geared towards applications in microscopy.