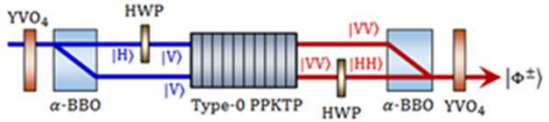
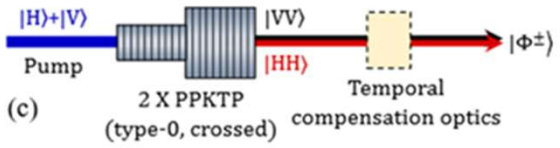
Fraunhofer IOF - Expertise

Parallel MZI Configuration



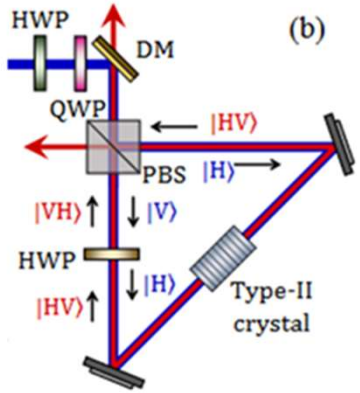
(a)

Crossed-Crystal Configuration



(c)

Sagnac-Cavity Configuration

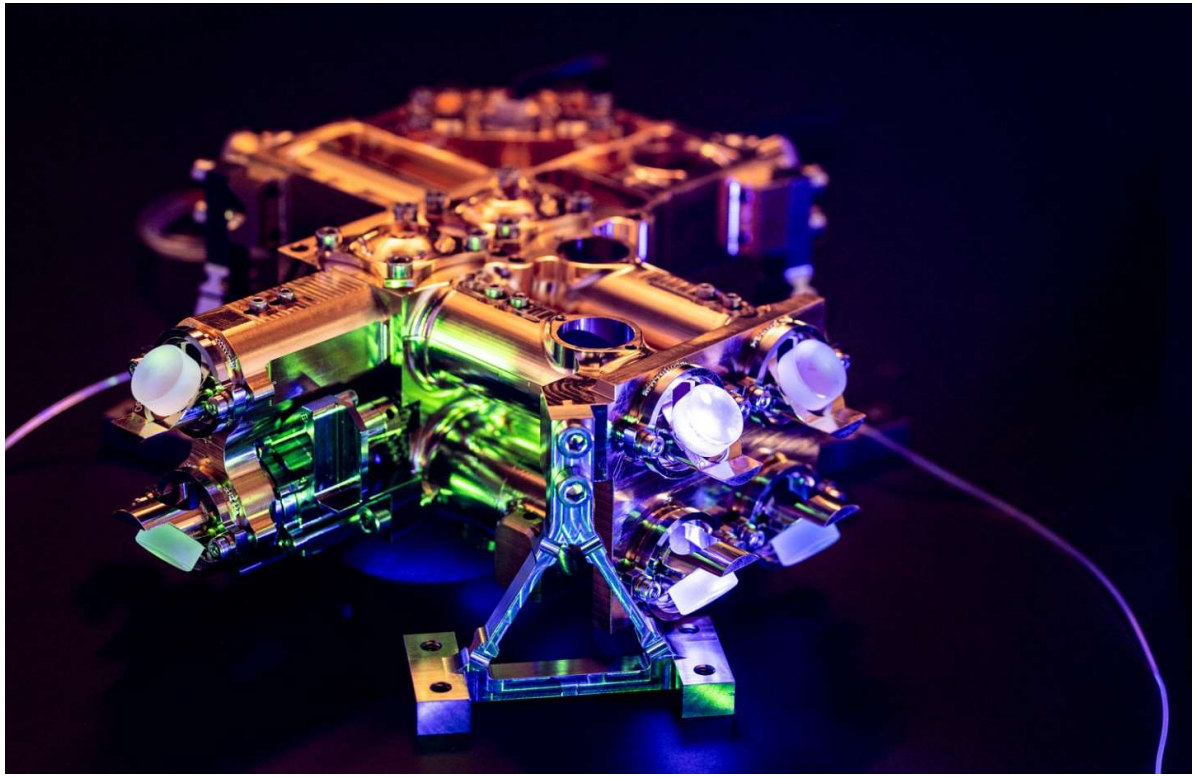


Different Entangled Photon Source Configuration

i) photon pair rate comparable to classical telecommunications standards
ii) spectral bandwidth suitable for wavelength-multiplexing
iii) high quality spatial correlations for spatial-multiplexing low losses and high entanglement fidelity
iv) Trade-off pair generation bulk, waveguide pooled fiber
v) Entangled version of Fiber-based Sagnac
vi) Integrated system made of space-qualified components and tested for pressure, vibrations and thermal noise.

Fraunhofer IOF - Expertise

Entangled Photon Source Development

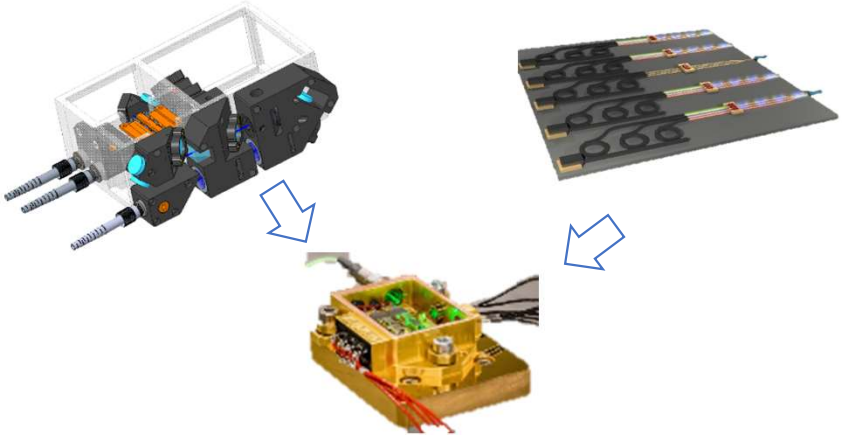


Performance <u>demonstrated</u>

- Wavelengths **800nm**, **1550 nm**
- State Fidelity > **99.95%**
- Pair Emission > **1Giga pair/s**
- Bandwidths from 50 pm to 100 nm

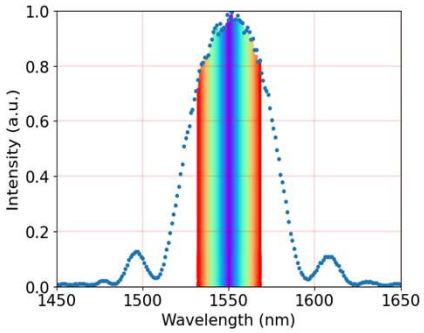
Bulk/Microoptics

Waveguides



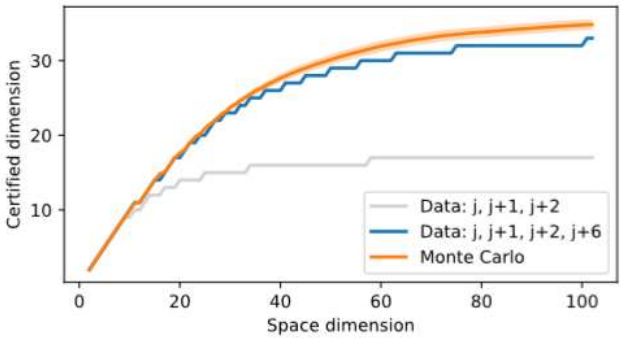
Fraunhofer IOF - Expertise

Operational Free-Space QKD System Deployment

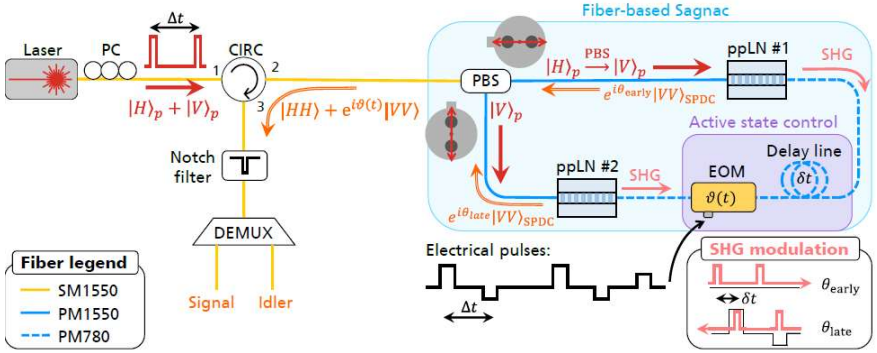


Multiplexed Polarization-Entanglement in 28 ITU Channels
S. Sharma et al., (in prep)

dimensionality of entanglement vs. space dimension



Certification of 34-dimensional Entanglement
M. Cabrejo Ponce, A.L. Marques Muniz, M. Huber, F. Steinlechner, arXiv: 2206.00969



Fiber-based Sagnac source
M. Cabrejo Ponce, C. Spiess, A.L. Marques Muniz, P. Ancsin, F. Steinlechner, arXiv: 2201.08799