

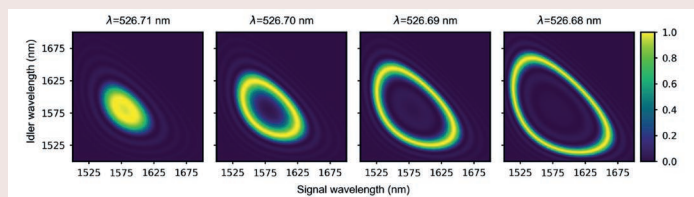
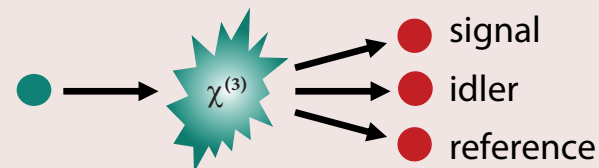
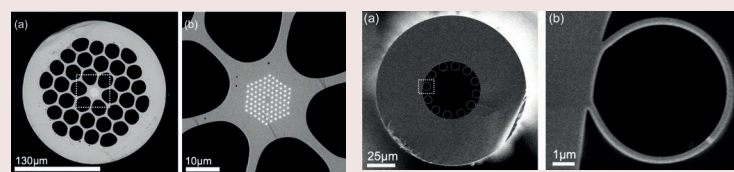
## Generation of photon triplets in optical fibres

### Spontaneous third-order down-conversion [1]

- Observation of spontaneously generated photon triplets is a major task in modern quantum optics
- Applications from fundamental science to new cryptographic schemes

[1] Braunstein and McLachlan, *PRA* 35, 1987

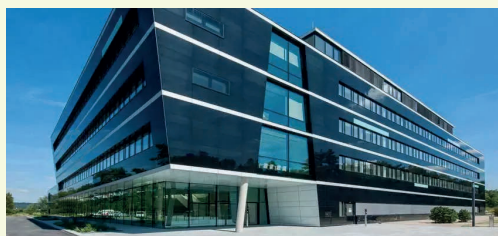
- Third-order nonlinear process: fibres are an ideal platform! [2]



[2] Cavanna et al., *PRA* 101, 2020

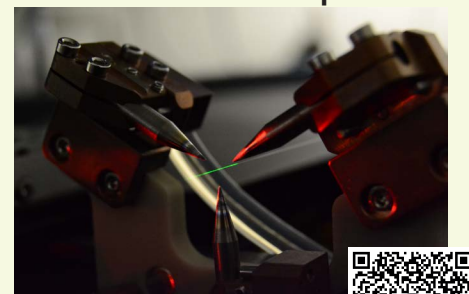
### Max Planck Institute for the Science of light

- Located in the bavarian city of Erlangen, MPL offers cutting edge research conditions and an international working environment.
- Graduate school with monthly seminars and funding for summer schools



### Microstructured optical fibre group (MPL)

- Expertise in modern optical fibres, fibre-fabrication, fibre-postprocessing, nonlinear/ultrafast and quantum optics
- State of the art laboratories:
  - plasma tapering machine
  - superconducting nanowire single photon detectors
  - state of the art laser equipment
- Close collaboration with Russell emeritus group, Chekhova research group and fibre fabrication unit.



### Your task & opportunities

- Develop and fabricate fibres (fibre-tapers, photonic crystal fibres) for third-order down-conversion
- Develop and built optical setups for detecting photon triplets
- Opportunity to develop and realise own research ideas
- Collaboration with the quantum radiation research group (Dr. Maria Chekhova) at the Max-Planck Institute for the Science of Light (MPL)

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Start date: ASAP

