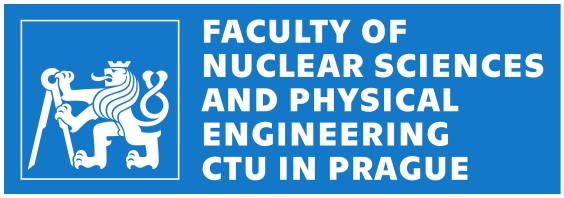

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Quantum optics and information science in multi-dimensional photonics networks

Friday, 27 May 2022 14:00 (1 hour)

Quantum technologies promise a change of paradigm for many fields of application, for example in communication systems, in high-performance computing and simulation of quantum systems, as well as in sensor technology. They can shift the boundaries of today's systems and devices beyond classical limits and seemingly fundamental limitations.

Photonic systems, which comprise multiple optical modes as well as many nonclassical light quantum states of light, have been investigated intensively in various theoretical proposals over the last decades. However, their implementation requires advanced setups of high complexity, which poses a considerable challenge on the experimental side, and stimulate the demand for novel theoretical approaches. The realization of controlled quantum network structures and demonstration of innovative concepts is key for many applications in quantum optics and quantum information science. Here we present different approaches to overcome current limitations for the implementation of multi-dimensional quantum networks.

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