

DETERMINISTIC IMPLEMENTATION OF CUBIC QUANTUM NONLINEARITY

Marek P., Filip R., Furusawa A.

Palacky University, Olomouc, Czech Republic

High order quantum nonlinearity is essential for non-Gaussian quantum operations which in turn are required for the most intriguing quantum technologies, such as quantum computation. The full spectrum of quantum nonlinear operations is endless, but many of them can be constructed by repeated application of a third order nonlinearity – the cubic nonlinearity. In this talk we show both the theoretical proposal for implementation of such nonlinearity and the steps that have been taken towards its experimental realization.