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Seminar über Ultrafast Science and Technology

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Titel: Characterization of a type-0 SPDC source with a time resolving SPAD array

Entanglement is the most distinct feature of quantum mechanics with no analogue in classical theories. This work aimed to characterize the photon pairs (biphotons) generated by type-0 spontaneous parametric down-conversion using a time-resolved single photon avalanche detector (SPAD) array with a temporal and spatial resolution of $\{205\}$ ps and 32×32 pixels, respectively. We verify the state of the biphotons to be space-momentum entangled and therefore of true quantum nature as the measured correlations violate the Heisenberg-inferred inequality. We observed the survival of this entanglement when the biphotons pass through nano structures, indicating that a photon-plasmon-photon conversion also preserves space-momentum entanglement.

Zeit: Donnerstag, 31.10.2019, 11.15h

Ort: **Hörsaal B116**, Gebäude Exakte Wissenschaften, Sidlerstrasse 5, Bern, Schweiz