



**18 November 2021, 10:00–11:00h**

Zoom virtual meeting <https://desy.zoom.us/j/83631120632>

(Meeting ID: 836 3112 0632 Password: 235618)

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## **Effects of time-energy correlation strength in molecular entangled photon spectroscopy**

We explore the time-energy domain quantum-classical transition comparing a classical pump-probe experiment on a diatomic molecule to its quantum enhanced counterpart. The pump and probe pulses are substituted by the signal and idler beams of a spontaneous parametric down conversion (SPDC) source. Absorption of biphotons generated with SPDC exploits quantum time-energy entanglement to enhance the overall yield and selectivity of the process, when compared with a classical pump-probe setup, while maintaining femtosecond time resolution. The results indicate that the quantum improvements in yield are caused by a more efficient use of the total power available for the process.