



# EINLADUNG zum IFP-SEMINAR

## Photonic kinetics in Josephson junction chains

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Host: Silke Bühler-Paschen

Termin: Mittwoch, 9. Oktober 2024, 16:00 Uhr

Ort: TU Wien, Freihausgebäude

Wiedner Hauptstraße 8-10, 1040 Wien

Seminarraum DC rot 07 (roter Bereich, 7. OG)

Oder via ZOOM

<https://tuwien.zoom.us/j/63020566887?pwd=RmYvRmVwOGU5YVBrOHpodWRKaHFWQT09>

*Vor dem Vortrag gibt es ab 15:30 Kaffee und Kekse*

### Abstract:

We present a study of a 5 mm-long chain consisting of 13,159 Josephson junctions (JJs) using microwave spectroscopy. The sample was fabricated using standard electron-beam lithography and double-angle shadow evaporation of Al/AlO<sub>x</sub>/Al junctions. Our investigation is focused on photon scattering processes arising from the non-linear terms in the system's Hamiltonian. We employed two coherent pump tones to control the scattering matrix element, and the resulting experimental data aligns closely with the susceptibility calculated via a standard quantum optics approach. As the matrix element increased, we observed cascaded decay and excitation processes. Additionally when an incoherent broadband drive was applied, we explored the kinetics of weakly populated modes.

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