

## Einladung zu einem Kolloquium

Datum/Zeit: **Dienstag, 10.12.2024, 16.45 Uhr**

Referent: **Prof. Denitsa Baykusheva**  
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Titel: *Quantum control of Hubbard excitons*

Ort: **HCI J3**

Over the last two decades, intense electromagnetic fields have been extensively used as a tool to realize and control nontrivial dynamical states of matter. Some of the most prominent light-induced phenomena in driven materials, such as transient superconductivity or excitonic condensation, rely on the presence of strong electronic interactions paired with a large susceptibility to external stimuli. In this context, one-dimensional Mott insulators hosting spin-charge separation and large optical nonlinearities emerge as an extremely promising platform for exploring photoinduced non-equilibrium phases.

Here, I will report on our recent studies of the light control of the prototypical quasi-1D quantum chain  $\text{Sr}_2\text{CuO}_3$ . I will first show how low-frequency mid-infrared fields reshape the third harmonic spectrum in this material by dressing the many-body states mediating the large optical nonlinearity and discuss the interpretation of these features within the Floquet paradigm. Second, I will demonstrate how near-resonant excitation paired with x-ray absorption spectroscopy can interrogate the local structure of these intermediate states. I will conclude by discussing the implications of these results for the realization of new non-equilibrium ordering phenomena in photoexcited Mott insulators, such as  $\eta$ -pairing superconductivity.

**Gäste sind willkommen**