

Symposium Ultrafast Excitation Pathways of Quantum Materials (SYUE)

jointly organised by
the Surface Science Division (O),
the Low Temperature Physics Division (TT), and
the Thin Films Division (DS)

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Ultrafast laser experiments provide avenues to utilizing ultrafast light-matter interaction to control macroscopic properties of quantum materials. While conventional photo-induced processes in condensed matter often rely on ultrafast laser heating, there are intriguing pathways towards emergent macroscopic properties in quantum materials that are inherently non-thermal in nature. The mechanisms behind such pathways include transient modifications of the free-energy landscape by population redistributions, the dynamical modification of coupling strengths, and coherent light-matter dressing via Floquet engineering. This symposium brings together leading researchers in the field to showcase experimental and theoretical progress and discuss new avenues.

Overview of Invited Talks and Sessions

(Lecture hall HSZ 01)

Invited Talks

SYUE 1.1	Wed	9:30–10:00	HSZ 01	Dynamics and control in quantum materials using multi-terahertz spectroscopy — ●RICHARD AVERITT
SYUE 1.2	Wed	10:00–10:30	HSZ 01	Accessing the nonthermal phonon populations in 2D materials with femtosecond electron diffuse scattering — ●HÉLÈNE SEILER, MARIOS ZACHARIAS, DANIELA ZAHN, PATRICK-NIGEL HILDEBRANDT, THOMAS VASILEIADIS, YOAV WILLIAM WINDSOR, YINGPENG QI, CHRISTIAN CARBOGNO, CLAUDIA DRAXL, RALPH ERNSTORFER, FABIO CARUSO
SYUE 1.3	Wed	10:30–11:00	HSZ 01	Exciting potentials – Exploring the realms of ultrafast phase transitions — ●LAURENZ RETTIG
SYUE 1.4	Wed	11:15–11:45	HSZ 01	Sub-cycle multidimensional spectroscopy of strongly correlated materials — VIKTOR VALMISPILD, EVGENY GORELOV, MARTIN ECKSTEIN, ALEXANDER LICHTENSTEIN, HIDEO AOKI, MIKHAIL KATSNELSON, MISHA IVANOV, ●OLGA SMIRNOVA
SYUE 1.5	Wed	11:45–12:15	HSZ 01	Witnessing many-body entanglement in light-driven quantum materials — ●MATTEO MITRANO, DENITSA BAYKUSHEVA, MONA KALTHOFF, DAMIAN HOFMANN, MARTIN CLAASSEN, DANTE KENNES, MICHAEL SENTEF
SYUE 1.6	Wed	12:15–12:45	HSZ 01	Optical responses of photoexcited materials: from parametric amplification to photoinduced superconductivity — ●EUGENE DEMLER

Sessions

SYUE 1.1–1.6	Wed	9:30–12:45	HSZ 01	Ultrafast Excitation Pathways of Quantum Materials
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