

# Symposium Advances in Ab-Initio Electronic Structure Theory of Time-Dependent and Non-Equilibrium Phenomena (SYES)

jointly organized by  
 the Surface Science Division (O),  
 the Semiconductor Physics Division (HL),  
 the Crystalline Solids and their Microstructure Division (KFM), and  
 the Dynamics and Statistical Physics Division (DY)

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Time-dependent and non-equilibrium phenomena in condensed matter involve a wide and diverse landscape of excitations (excitons, polarons, magnons, polaritons, etc.) and fundamental interaction mechanisms spanning different time and length scales as well as different levels of complexity. There has been enormous progress in the experimental probes of a variety of time-resolved phenomena with high precision, motivating further advancements in the ab initio description of ultrafast phenomena with electronic-structure calculations, explicit quantum dynamics, mixed quantum-classical dynamics methods, and many-body theories. This interdisciplinary symposium will cover recent progress in this area, with a primary focus on novel theoretical and computational paradigms for the description of time-dependent and nonequilibrium phenomena in quantum materials.

## Overview of Invited Talks and Sessions

(Lecture hall H 0105)

### Invited Talks

SYES 1.1	Tue	9:30–10:00	H 0105	<b>Light control of charge transport and phase transitions</b> — ●SHENG MENG
SYES 1.2	Tue	10:00–10:30	H 0105	<b>Probing the transport of the interacting electron-phonon system self-consistently and <i>ab initio</i></b> — ●NAKIB PROTIK
SYES 1.3	Tue	10:30–11:00	H 0105	<b>In- and out-of-equilibrium ab initio theory of electrons and phonons</b> — ●GIANLUCA STEFANUCCI
SYES 1.4	Tue	11:15–11:45	H 0105	<b>Phonon screening of excitons in semiconductors and insulators from first principles</b> — ●MARINA RUCSANDRA FILIP
SYES 1.5	Tue	11:45–12:15	H 0105	<b>Light-matter control of quantum materials: from Floquet to cavity engineering</b> — ●MICHAEL SENTEF

### Sessions

SYES 1.1–1.5	Tue	9:30–12:15	H 0105	<b>Advances in Ab-Initio Electronic Structure Theory of Time-Dependent and Non-Equilibrium Phenomena</b>
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