

Symposium Quantum Simulators of Lattice Gauge Theories (SYLG)

jointly organized by
the Quantum Optics and Photonics Division (Q),
the Atomic Physics Division (A), and
the Particle Physics Division (T)

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Lattice gauge theories provide essentially the only theoretic way to access theories of fundamental constituents of matter (standard model, quantum chromodynamics, etc.) in a non-perturbative way. Still, many questions concerning these theories (in particular involving finite densities and temperatures) remain open. Recent developments in physics of ultracold atomic and molecular matter allow for the design and control of quantum many body systems that may serve as quantum simulators of various interesting theoretical models of condensed matter or high energy physics. In particular numerous proposals have been formulated and are being implemented in experiments, in which simple models of lattice gauge theories can be tested. The Symposium will confront quantum optics and high energy physics to discuss the further directions of this new rapidly developing area.

Overview of Invited Talks and Sessions

(Lecture room P 1)

Invited Talks

SYLG 1.1	Fri	11:00–11:30	P 1	Quantum Simulation of Lattice Gauge Theories with Cold Atoms and Ions — ●PETER ZOLLER
SYLG 1.2	Fri	11:30–12:00	P 1	Quantum Simulations with Cold Trapped Ions — ESTEBAN A. MARTINEZ, CHRISTINE A. MUSCHIK, PHILIPP SCHINDLER, DANIEL NIGG, ALEXANDER ERHARD, MARKUS HEYL, PHILIPP HAUKE, MARCELLO DALMONTE, THOMAS MONZ, PETER ZOLLER, ●RAINER BLATT
SYLG 1.3	Fri	12:00–12:30	P 1	Studies of hot and dense nuclear matter at the Large Hadron Collider — ●BOLESŁAW WYSŁOUCH
SYLG 1.4	Fri	12:30–13:00	P 1	Lattice gauge theory beyond QCD — ●CLAUDIO PICA

Sessions

SYLG 1.1–1.4	Fri	11:00–13:00	P 1	Symposium Quantum Simulators of Lattice Gauge Theories
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