

KAVLI INSTITUTE FOR THEORETICAL PHYSICS

Presents

The Sixty-Fourth KITP Public Lecture

Sponsored by Friends of KITP

Immanuel Bloch

Realizing Feynman's Dream of a Quantum Simulator

More than 30 years ago, Richard Feynman outlined his vision of a quantum simulator for carrying out complex calculations on physical problems. Today, his dream is a reality in laboratories around the world. This has become possible by using complex experimental setups of thousands of optical elements which allow atoms to be cooled to nanokelvin temperatures, where they almost come to rest. The atoms can then be trapped and manipulated in arrays of millions of microscopic light traps. Such light crystals allow an unprecedented view into the microscopic world of quantum materials and enable the currently most precise atomic clocks, fundamental to next-generation timing and navigation. In this public lecture, Professor Bloch will explain how such quantum simulators are realized at the lowest temperatures known, and highlight their applications, which range from condensed-matter physics and statistical physics to 'table-top' high-energy physics.

About the Speaker

IMMANUEL BLOCH is scientific director at the Max Planck Institute of Quantum Optics in Garching and holds a chair for experimental physics at the Ludwig Maximilians University of Munich. His scientific work is among the most frequently cited in the field of quantum physics and has helped to open a new interdisciplinary research field at the interface of atomic physics, quantum optics, quantum information science and solid state physics. For his research, he has received numerous international awards, including the Körber European Science Prize and the Harvey Prize of the Technion in Israel.

Wednesday September 28, 2016
8:00 PM (reserved seats held until 7:50 PM)

Kavli Institute for Theoretical Physics, Main Seminar Room



Admission is Free
RSVP for Seating
by September 26

at:

<http://www.kitp.ucsb.edu/public-lecture-rsvp>

or call

(805) 893-6363

**There will be open seating
but a reservation is required**

*To make special arrangements to
accommodate a disability, call the
KITP at the number above.*

LOT 10 PARKING

From the roundabout at Hwy 217, turn right onto Mesa Rd, merge into the left lane, and turn left at the first light into Lot 10 parking structure. **PARK, BUY a \$4 permit** from the dispenser (near the elevator and stairs), and **DISPLAY PERMIT** on dashboard. The KITP is right next door in Kohn Hall.

*The KITP gratefully acknowledges its
many friends in the community.*

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