



## Current trends in atomic physics

July 4 - 29, 2016

### Scientific Direction

**Antoine Browaeys** (IOGS, CNRS, Palaiseau, France)  
**Thierry Lahaye** (IOGS, CNRS, Palaiseau, France)  
**Trey Porto** (JQI, University of Maryland, NIST, USA)  
**Charles S. Adams** (JQC, Durham University, UK)  
**Matthias Weidemüller** (Universität Heidelberg, Germany)

### International Advisory Committee:

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<b>David Wineland</b> (NIST, USA)	<b>Peter Zoller</b> (Innsbruck, Austria)

### Tutorials:

<b>Thierry Giamarchi</b> (Geneva, Switzerland)	Quantum simulation from a condensed-matter point of view
<b>Christopher Monroe</b> (JQI & U. Maryland, USA)	Quantum simulation with trapped ions
<b>Immanuel Bloch</b> (MPQ & LMU, Munich, Germany)	Quantum simulation with cold atoms
<b>Frédéric Merkt</b> (ETH Zurich, Switzerland)	Cold chemistry and manipulation of cold molecules
<b>Matthias Weidemüller</b> (U. Heidelberg, Germany)	Ultra-cold chemistry
<b>Anne Lhuillier</b> (U. Lund, Sweden)	Introduction to ultra-fast processes
<b>David DeMille</b> (Yale, USA)	AMO tests of fundamental symmetries and high-energy physics
<b>Thomas Udem</b> (MPQ, Garching, Germany)	High-precision measurements
<b>Mark Kasevich</b> (Stanford, USA)	Atom interferometry
<b>Mikhail Lukin</b> (Harvard, USA)	Artificial atoms: NV centers and quantum dots
<b>Jacqueline Bloch</b> (LPN, Marcoussis, France)	Artificial atoms: excitons and their condensation
<b>Steven Girvin</b> (Yale University, USA)	Artificial atoms: circuit QED
<b>Alain Aspect</b> (IOGS, Palaiseau, France)	Tests of the foundations of quantum mechanics
<b>Wojciech Zurek*</b> (Los Alamos, USA)	Quantum Theory of the Classical: Decoherence and Beyond
<b>Ivan Deutsch</b> (UNM, USA)	Quantum control, Measurement and Tomography

\*To be confirmed

### Short Courses:

Each tutorial will be illustrated by one or two short courses or seminars on more specific topics.

### Scientific Program:

Atomic physics provides a paradigm for exploring few-body quantum systems with unparalleled control. In recent years, this ability has been applied to shed light on open questions in diverse areas, including condensed matter physics, high energy physics, chemistry and ultra-fast phenomena as well as foundational aspects of quantum physics. This school will address these topics by presenting developments and current trends via a series of tutorials and lectures presented by international leading investigators.

More details on the website of this session: <http://jqj.umd.edu/Les-Houches-Summer-School-2016>

### Registration:

Applications must reach the School **before March 15, 2016** in order to be considered by the selection committee. The full cost per participant, including housing, meals and the book of lecture notes, is 1500 euros. A few grants may be available to support some students. All practical information and the application form (to apply online) can be found on the Les Houches website: <http://houches.ujf-grenoble.fr/>.

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### Location:

Les Houches is a village located in Chamonix valley, in the French Alps. Established in 1951, the Physics School is situated at 1150 m above sea level in natural surroundings, with breathtaking view on the Mont-Blanc range. A quiet place, ideal for intellectual activity.

Les Houches Physics School is affiliated with Université Grenoble Alpes and Institut National Polytechnique de Grenoble, and is funded by the Ministère de l'Éducation Nationale et de la Recherche, the Centre National de la Recherche Scientifique (CNRS), the Direction des Sciences de la Matière du Commissariat à l'Énergie Atomique (CEA/DSM). This session is also supported by the JQI Physics Frontier Center, the AFOSR, INTERCAN, the Université Franco-allemande / Deutsche-Französische Hochschule, and the iXCORE Fondation pour la Recherche.

