



# WINTER SCHOOL

## Quantum resources & molecule-machines

*January 27th – February 1<sup>st</sup>, 2013*

### Organizers

*Christian Joachim (CEMES-CNRS, France)*

*Saw Wai Hla (Ohio University, Argonne National Laboratory, USA)*

This is a winter school on surface atom and single molecule machines. We start from the basis of quantum control towards quantum and classical designs of atomic scale machineries. The courses are set up for PhD students, Post-Doctoral fellows and researchers interested to enter this new field of research. New atomic scale multiple access experimental tools to/from an atomic scale machinery (nano-communications) will be detailed. The physics of the first surface atom circuits, molecule Boolean logic gates, molecule gears (trains of gears) together with the operation of a single molecule motor will be described from theoretical and experimental viewpoints.

### Professors:

*N. Renaud (Northwestern University, USA); N. Lorente (CSIC, Spain); S. Hla (Ohio University, Argonne National Laboratory, USA); P. Moriarty (Nottingham University, UK); M. Maier (Omicron, Wiesbaden, Germany); D. Martrou (CNRS-CEMES, France); F. Remacle (Université de Liège, Belgium); W.H. Soe (IMRE, A\*STAR, Singapore); D. Astumian (University of Maine, USA); C. Joachim (CNRS-CEMES, France).*

**Registration and full board: 365 euros**

**Registration before January 10, 2013  
& information at [www.atmol.eu](http://www.atmol.eu)**

*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 mountain range.*

*Les Houches Physics School is affiliated with Université Joseph Fourier Grenoble I (UJF). The school is a joint interuniversity facility of UJF and Grenoble-INP, and is supported by the UJF, the Centre National de la Recherche Scientifique (CNRS) and the Direction des Sciences de la Matière du Commissariat à l'Énergie Atomique (CEA/DSM).  
Ecole de Physique des Houches, Côtes des Chavants, F-74310 Les Houches, France.*

<http://houches.ujf-grenoble.fr>