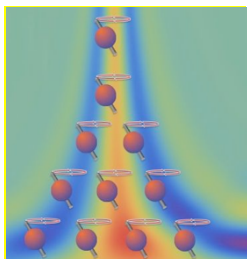


M2 – SMNO-nanomat – CMP2

Title:	Condensed Matter Physics – level 2 Magnetism and semi-conductors physics (CMP2)	
	Apogée code: MU5PYM02 Number of credits: 3 Teaching hours: 30h courses and tutorials	

Lecturers:	Franck VIDAL (coordinator) INSP – 22-32 – 4 th floor franck.vidal@insp.jussieu.fr	Marcel HENNES INSP - hennes@insp.jussieu.fr
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Objective	To address fundamentals of magnetism and semiconductor physics. To give a description of basic magnetic phenomena and of the electronic structure of bulk and nanostructured semiconductors near the band gap. To introduce notions required to follow the optional teaching unit “Nanostructures for optoelectronics and spintronics”.
Content	<p>A) Magnetism</p> <ol style="list-style-type: none"> 1- Magnetic moment in ions 2- Diamagnetism and paramagnetism in solids 3. Ferromagnetism: molecular field model and Heisenberg Hamiltonian 4. Itinerant and localized ferromagnetism. 5. Magnetic anisotropies and magnetic domains 6. Ferrimagnetism and antiferromagnetism <p>B) Semiconductor physics</p> <ol style="list-style-type: none"> 1- Introduction to semiconductors 2- Band structure close to an extremum, method k_p 3. Electron confinement and semiconductor nanostructures 4. Formation and energy levels of a 2D electron gas
Prerequisites	Basic concepts of Quantum Physics and Statistical Mechanics. Basic concepts of Solid-State Physics.
Examination	Study an analysis of an article and final written examination.