



CEA - Saclay 91191 Gif-sur-yvette Cedex
Service de Physique de l'Etat Condensé - UMR 3680

SÉMINAIRE

Mercredi 19 avril 2017 à 11h15

Orme des Merisiers SPEC, Salle Itzykson, Bât.774

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Quantum fluids of light in semiconductor lattices

Semiconductor microcavities appear today as a new platform for the study of quantum fluids of light. They enable confining both light and electronic excitations (excitons) in very small volumes. The resulting strong light-matter coupling gives rise to hybrid light-matter quasi-particles named cavity polaritons. Polaritons propagate like photons but strongly interact with their environment via their matter part: they are fluids of light and show fascinating properties such as superfluidity or nucleation of quantized vortices. Sculpting microcavities at the micron scale, we fabricate at C2N lattices of various geometries and use this photonic platform for the emulation of different Hamiltonians.

After a general introduction, I will illustrate with several examples the diversity of physical problems we have implemented with polariton lattices: Dirac physics and edge states in honeycomb lattices, fractal spectrum in quasi-periodic 1D lattice, or flat bands in lattices with geometric frustrations.

I will conclude with the discussion of polariton-polariton interactions, which provide giant non-linearities to the system, thus opening the way to the exploration of complex non-linear dynamics and in a near future quantum many body physics with light.

A coffee break will be served at 11h00. The seminar will be given in English.
