Centre de Nanosciences et de Nanotechnologies

Séminaire

Mardi 18 juillet 2017

11 h – C2N, Site Marcoussis, Salle D2-106 Mezzanine, site Marcoussis

Bernhard Rauer, Université Technique de Vienne

(groupe de Jörg Schmiedmayer)

"Recurrences in an one-dimensional Bose gas"

Résumé

Even though the evolution of an isolated quantum system is unitary and should therefore be intrinsically periodic, the complexity of interacting many-body systems prevents the observation of recurrences of quantum states for all but the smallest systems. For large systems the full quantum states are not accessible and the requirements to observe a recurrence in experiments reduces to being close to the initial state with respect to the employed observable. Selecting an observable connected to the collective excitations in a pair one-dimensional superfluids realized with ultracold rubidium atoms, we demonstrate recurrences of coherence and long range order in an interacting many-body system containing thousands of particles. This opens up a new window into the long time dynamics of large quantum systems even after they reached a transient thermal-like state.