ID de Contribution: **279** Type: **Poster**

Non destructive imaging of a fast rotating quantum gas on the surface of a bubble-shaped trap.

The aim of the work that I will present in the poster is to study the superfluid dynamics of a quantum gas trapped on the curved surface of a bubble-shaped trap. First I will present a new trapping configuration and loading procedure for the realization of the bubble trap, based on an hybrid quadrupole-dimple trap. This helps reducing the superfluid excitations during the loading of the bubble trap.

Our starting point is a magnetic quadrupole trap, modified by a red detuned laser beam. After producing a quantum gas, we switch on a radiofrequency (rf) field to dress the atoms. We then slowly ramp up the rf frequency, thus inflating the resonant rf surface - a bubble - up to the point where it catches the atoms. This resonant surface is our final bubble trap. To study the superfluid dynamics on the surface of the bubble trap we put our quantum gas in rapid rotation by rotating a trap anisotropy. Then, I will present the non-destructive imaging method that we are currently implementing. The motivation behind this is to take multiple images, in a single experimental sequence, of the rotating gas. We expect to record a movie of almost 100 pictures of the rotating gas.

Affiliation de l'auteur principal

Laboratoire de physique des lasers, Université Sorbonne Paris Nord, 99 avenue J.-B. Clément, F-93430 Villetaneuse, France

Auteur principal: SHARMA, Rishabh

Co-auteurs: REY, David (Laboratoire de physique des lasers UMR7538 CNRS - Université Sorbonne Paris Nord); PERRIN, Hélène (LPL/CNRS/USPN); LONGCHAMBON, Laurent (Laboratoire de Physique des Lasers); DUBESSY, Romain (Laboratoire de physique des lasers UMR7538 CNRS - Université Sorbonne Paris Nord); M. THOMAS, Simon; Dr BADR, Thomas (Laboratoire de Physique des Lasers - UMR7538 CNRS USPN)

Orateur: SHARMA, Rishabh

Classification de Session: Session Poster 1: MC3, MC5, MC6, MC11, MC13, MC15, MC16, MC18, MC19, MC25, REDP, posters hors MC

Classification de thématique: MC16 Fluides classiques et quantiques hors équilibre