LENS-QSTAR Seminar
May 26, 2014 at 10:30, at Lens – Aula Querzoli

Tomasz Wasak
University of Warsaw

What can we learn from G(2) about the entanglement?

The creation of the ensembles of entangled particles triggered the studies of the fundamental aspects of quantum mechanics. The existence of non-classical correlations between atoms opened the possibility for the practital applications in non-trivial ways, for example in quantum computation or ultra-precise metrology. However, before the implementation stage, we must first make sure that entanglement is present in the system, which is a difficult task.
In this seminar I will present the experiments that were conducted to verify existence of nonclassical correlations in ultracold atomic systems. Then I give a simple and experimentally accessible criterion for particle entanglement in many-body systems. This is based on a violation of the Cauchy-Schwarz inequality for the second order correlation function. It applies to any system of identical bosons with either fixed or a fluctuating number of particles, provided that there is no coherence between different number states.

Contact: Tomasz.Wasak@fuw.edu.pl

Reference person : Augusto Smerzi