Laboratoire Alexander Grothendieck
Équipe de Recherche Labellisée 9216 CNRS-IHÉS

NOKIA

Nokia-IHES Workshop

Centre de conférences Marilyn et James Simons

Mardi 2 octobre 2018

9h30-10h00 Café d'accueil

10h-10h30 Jean-Luc BEYLAT (Nokia – FR/Paris-Saclay), Emmanuel ULLMO (IHES)
Introduction

10h30-11h45 Alain ASPECT (Institut d'Optique Graduate School, Université Paris-Saclay)
Hanbury Brown-Twiss, Hong-Ou-Mandel, and other landmarks in quantum optics: from photons to atoms

Abstract: The second quantum revolution is based on entanglement, discovered by Einstein and Schrödinger in 1935. Its extraordinary character has been experimentally demonstrated by landmark experiments in quantum optics. At Institut d'Optique, we are currently revisiting these landmarks using atoms instead of photons, and after the observation of the atomic HBT1 and HOM effects2, we are progressing towards a test of Bell's inequalities with pairs of momentum entangled atoms3.

This talk will be an opportunity to know Everything you always wanted to know about HBT, HOM, etc… (but were afraid to ask).

References:
1. T. Jeltes, J. M. McNamara, W. Hogervorst, W. Vassen, V. Krachmalnicoff, M. Schellekens, A. Perrin, H. Chang, D. Boiron, A. Aspect, and C. I. Westbrook, "Comparison of the Hanbury Brown-Twiss effect for bosons and fermions," Nature 445 (7126), 402-405 (2007).
2. Lopes, R., Imanaliev, A., Aspect, A., Cheneau, M., Boiron, D., & Westbrook, C. I. (2015). Atomic Hong-Ou-Mandel experiment. Nature, 520(7545), 66-68.
3. P. Dussarrat, M. Perrier, A. Imanaliev, R. Lopes, A. Aspect, M. Cheneau, D. Boiron, and C. I. Westbrook, "Two-Particle Four-Mode Interferometer for Atoms," Physical Review Letters 119 (17) (2017).

11h45-13h30 Déjeuner-Buffet

13h30-14h45 Sergio VERDU (Princeton University)
Information Theory Today

Abstract: Founded by Claude Shannon in 1948, information theory has taken on renewed vibrancy with technological advances that pave the way for attaining the fundamental limits of communication channels and information sources. Increasingly playing a role as a design driver, information theory is becoming more closely integrated with associated fields such as coding, signal processing, machine learning and networks.

In this talk, I will review its history, current research trends in the field, as well as some of its longstanding open problems.

Information et inscription : www.ihes.fr

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