Meetings of the Belgian Quantum Physics Initiative

Colloquium

Thierry Giamarchi

Geneva University

The bizarre one-dimensional quantum world

The effect of interactions on quantum particles is a long-standing question, with important consequences for most realistic systems. In one dimension interactions lead to a radically new type of physics, very different from the one we know for higher dimensional systems. Once a pure theoretical game, such one-dimensional physics has forcefully entered reality with the progress in miniaturization of electronic devices, and the appearance of novel physical system such as cold atoms in optical lattices.
I will present the main concepts underlying this physics, known as Tomonaga-Luttinger liquid, and show the various realizations of such systems that recent progress in material science, nanotechnology and cold atomic physics have provided. I will discuss where the field is standing now, and what today's challenges are.

Thursday 1st MARCH 2018 AT 2.00 P.M.

COFFEE AND TEA WILL BE SERVED AT 3.00 P.M.

Two short talks will follow:

4pm: Luca Barbiero (ULB)

« Locality breaking and spin-charge separation in an interacting topological lattice »

4:30pm: Laurens Vanderstraeten (Ghent Univ.)

« Tensor Networks and Effective Particles in Quantum Spin Chains »

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