Colloquium

The bizarre one-dimensional quantum world

Thierry Giamarchi
University of Geneva

Host: Maksym Serbyn

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, such as the Tomonaga-Luttinger liquid and the various consequences, such as topological excitations and topological phase transitions, that stems from it, or its variants and extensions such as the sine-Gordon or double sine-Gordon theory.I will show the various experimental realizations that recent progress in material science, nanotechnology and cold atomic physics have provided and will discuss where the field is standing now, and what today's challenges are.

Monday, November 30, 2020 04:00pm - 05:00pm
Online on Zoom

This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.
Please find a schedule of the ISTA Shuttle on our webpage:
https://ista.ac.at/en/campus/how-to-get-here/ The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.