

Seminar on Condensed Matter Theory

Group of Theoretical Physics at the Department of Condensed Matter Physics
of Charles University has a pleasure to invite you to attend the seminar

on 11 April 2019 at 13:00

at Faculty of Mathematics and Physics of Charles University, Ke Karlovu 5, 121 16 Praha 2

Seminar room F052



Dr. Daniel Hernangómez-Pérez

Institute for theoretical physics, University of Regensburg, Germany

Topological Defects in Finite Polyacetylene Wires: Signatures on Geometrical and Quantum Transport Properties

We undertake a detailed study of structural and electronic properties of topological defects appearing in long (finite) conjugated one-dimensional wires. By using density-functional theory, we first discuss odd-even effects, the impact of charging and the elastic properties associated to those defects. We argue that, by applying an external electric field, additional defects can be generated in the finite wire manifesting as alterations of the bond-length alternation pattern. Next, we consider the transport properties of finite chains within simpler tight-binding schemes. We show that these wires manifest a strong mid-gap resonance in the transmission function. Based on the transmission characteristics, we propose a kink-based molecular memory.

