

# 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 1 November 2018 at 13:00**

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

**Seminar room F052**



**Mgr. Peter Zalom, Ph.D.**

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## Charge transport in normal and superconducting nanoscopic junctions

working version

Combining numerical renormalization group (NRG) studies and analytical methods (unitary transformations), we investigate transport in junctions manifesting Kondo effect accompanied by other competing processes like magnetism or superconductivity. The system of magnetically tunable Kondo effect is realized in a junction comprised of a diradical molecule attached to normal leads. The corresponding double dot model is solved using NRG Ljubljana. The obtained results are compared to the experiments. Analytical studies via Schrieffer-Wolff transformation are discussed. Using Majorana transformation we obtain analytic solutions on the behavior of a quantum dot in a three-terminal set-up that includes one normal and two superconducting leads. A non-trivial relationship to asymmetric single impurity Anderson model is presented.

