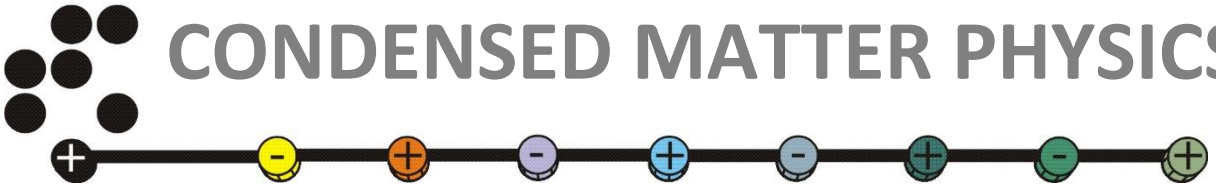
F-5 SEMINAR



Thursday, August 4, 2022
at 1 PM

in the seminar room of physics (room 106)
Condensed Matter Physics, Jožef Stefan Institute

Robin T. K. Schock, PhD student

Institute for Experimental and Applied Physics, University of Regensburg, Germany

Non-destructive low-temperature contacts to MoS2 nanoribbon and nanotube quantum dots

Molybdenum disulfide nanoribbons and nanotubes are near-one dimensional semiconductors with strong spin-orbit interaction. These nanomaterials are highly promising for quantum electronic applications. Here, we demonstrate that a bismuth semimetal layer between the contact metal and this nanomaterial strongly improves the properties of the contacts.

Two-point resistances on the order of 100 kΩ are observed at room temperature. At cryogenic temperature, Coulomb blockade is visible. The resulting stability diagrams indicate a marked absence of trap states at the contacts and the corresponding disorder, compared to previous devices using low-work function metals as contacts. Single level quantum transport is observed at temperatures below 100 mK.

You are cordially invited to attend.