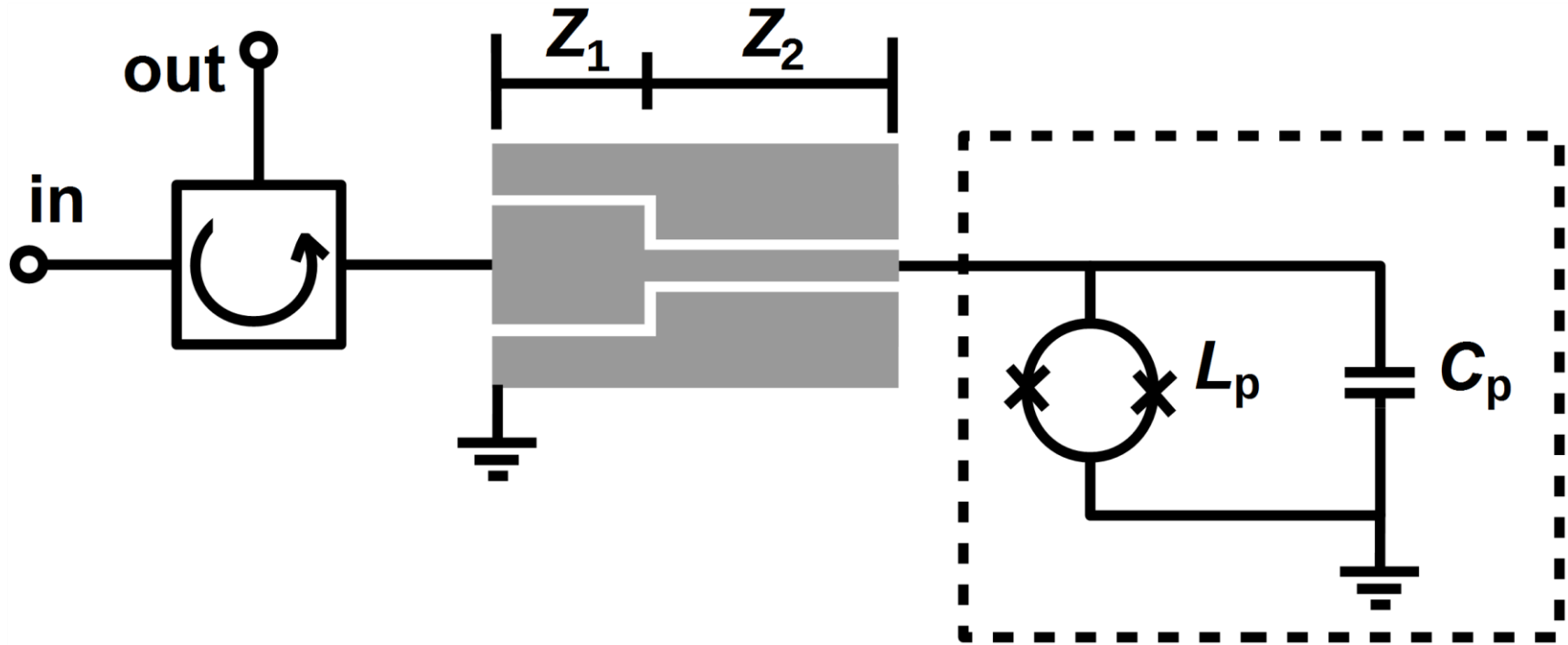


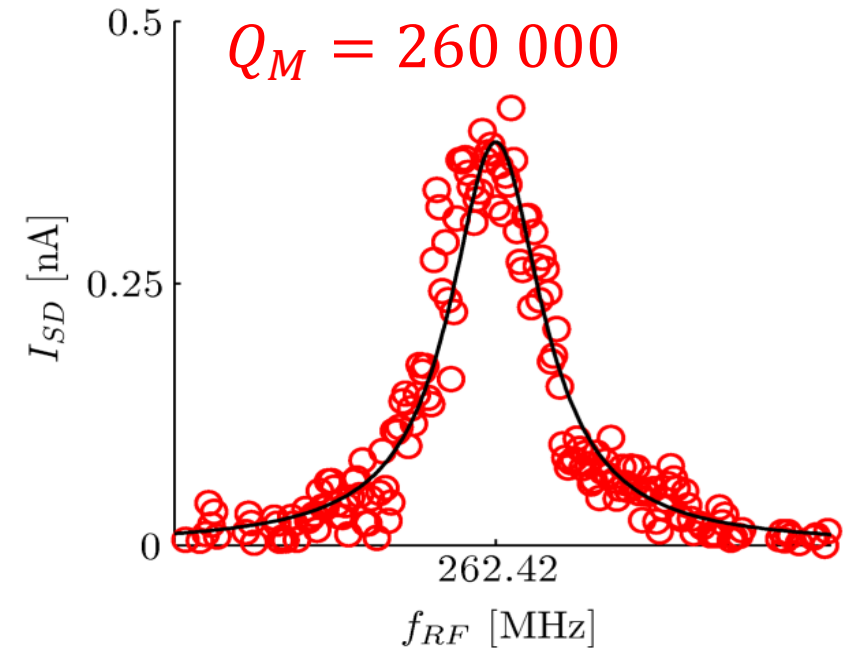
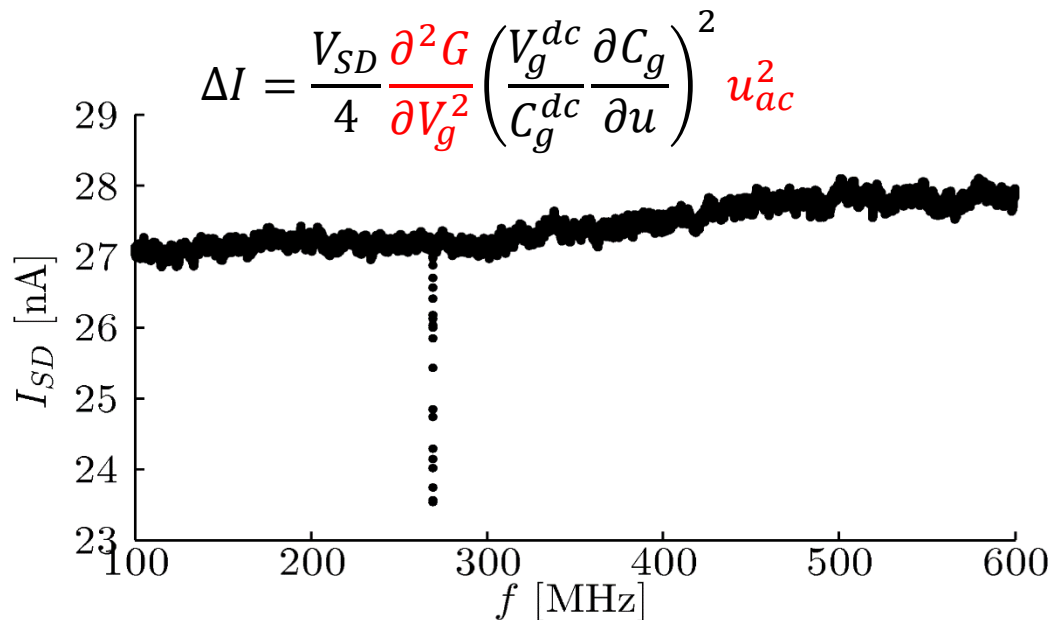
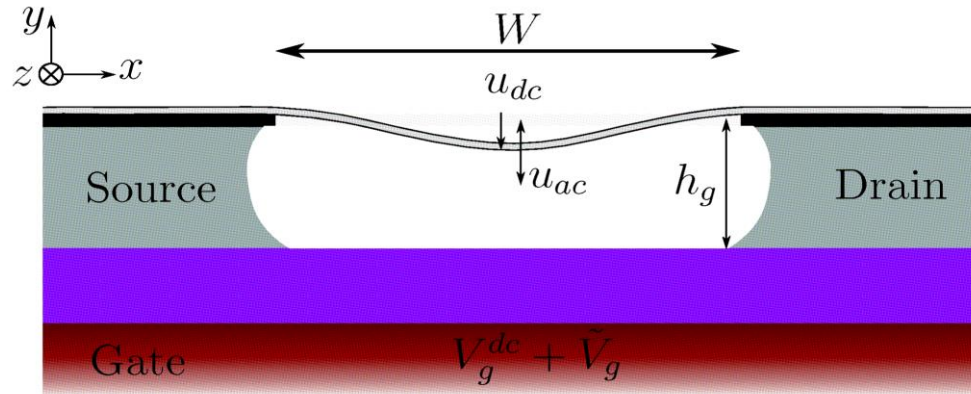
Wide-band parametric amplifier



- Task: to test and characterize the amplifier
- The SQUID structure in the dashed box is provided by VTT

Suspended carbon nanotube as a detector

► Conductance depends on $Q(V_g, u)$



Goals:

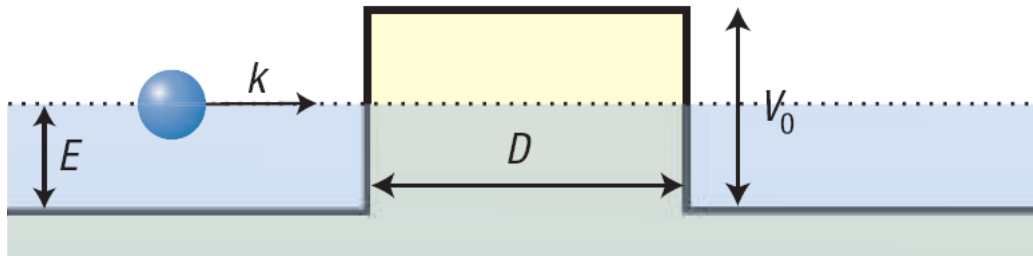
- 1) Test the influence of the environment on high quality nanotube resonator
- 2) Study superconducting properties of this device

Work done in collaboration with J.-P. Kaikkonen (instructor)

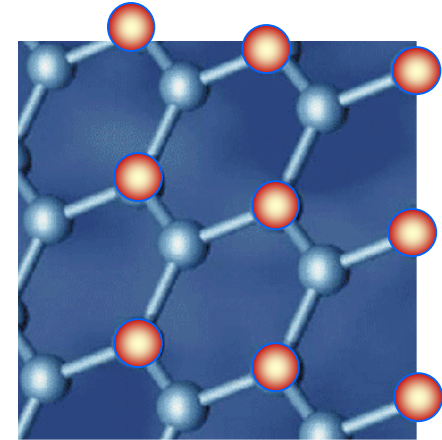
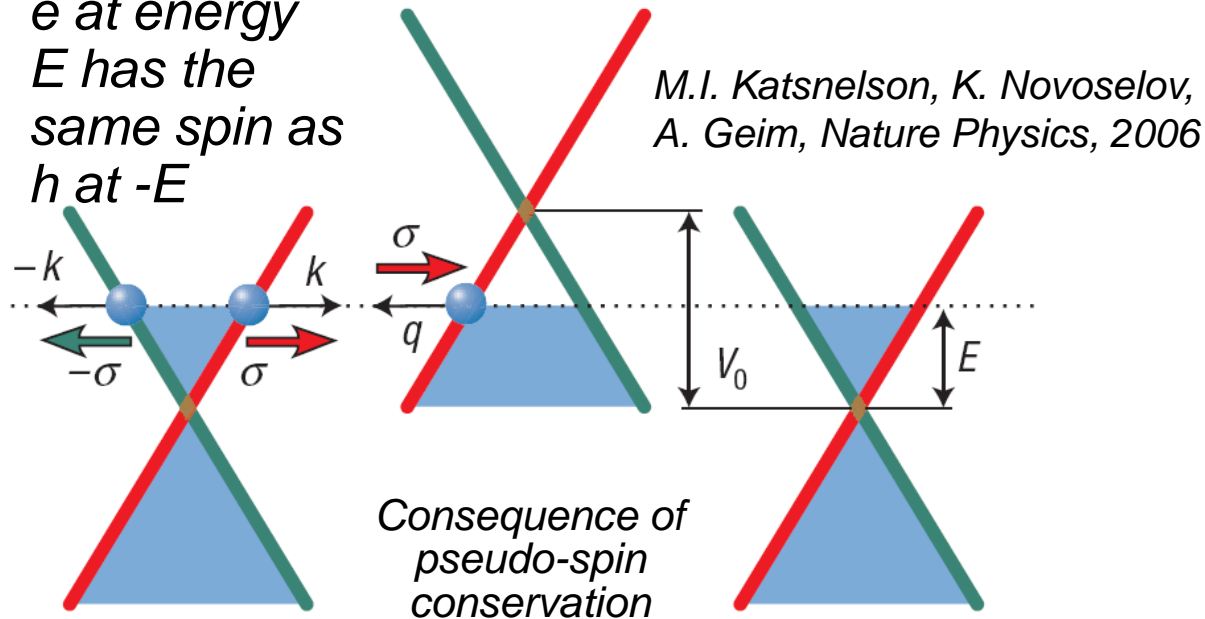
Klein tunneling and Quantum Hall effect (QHE)

Tunneling through a broad barrier:

O. Klein, Z. Phys **53**,157 (1929); **41**, 407 (1927)



e at energy E has the same spin as h at $-E$



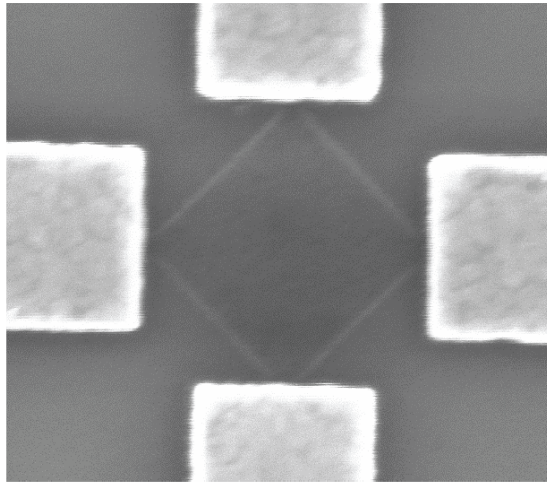
Goal:

To investigate QHE in suspended graphene in Corbino geometry, especially tunneling through the sample

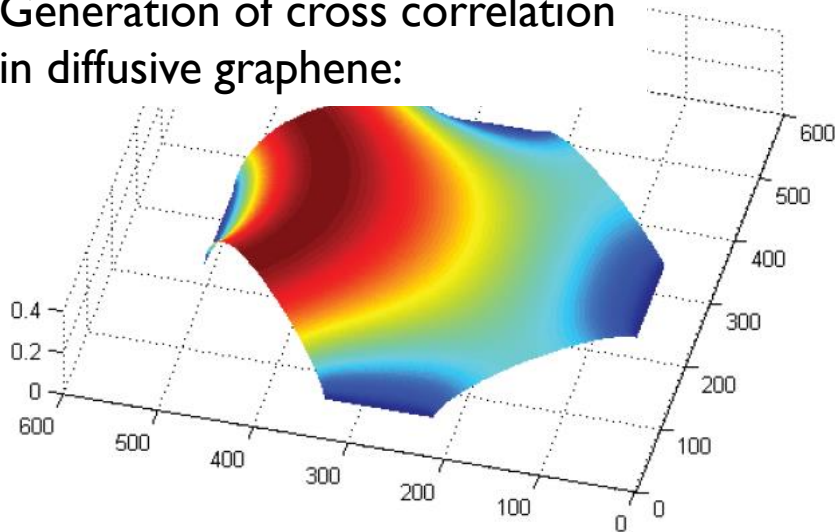
See: arXiv:1611.02742



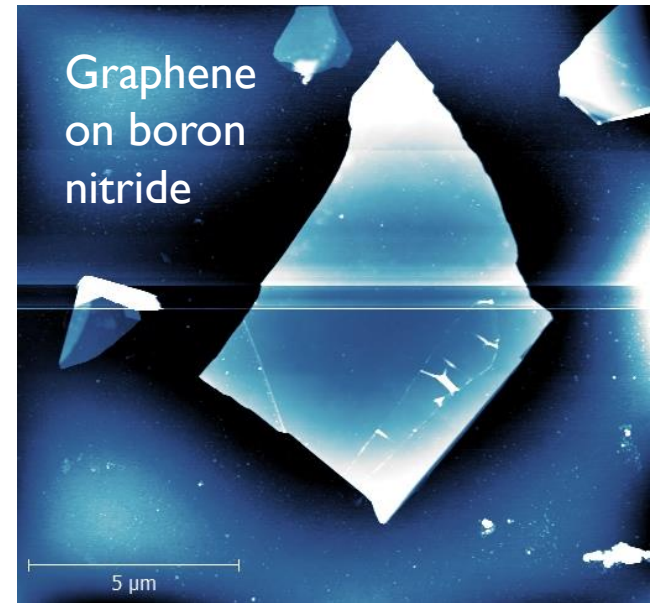
Quantum interference with relativistic electrons



Generation of cross correlation
in diffusive graphene:



Interference in the relativistic regime?
In general: UH quality graphene experiments



Goal:

To investigate a ballistic
graphene box on boron-nitride
and measure cross correlations
at a frequency of ~ 1 GHz

Work in collaboration with
Teemu Nieminen 040 7346496