



# Sommerfeld Theory Colloquium

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The Role of Duality in Transport in Imperfect Luttinger Liquid

A single potential impurity can drastically change a low-temperature transport of strongly interacting particles in one dimension - a system which is known as the Luttinger liquid. An arbitrary weak backscattering of fermions from the impurity totally destroys their zero-temperature current while even a very strong backscattering of bosons makes no impact on their flow. On the other hand, a more complicated impurity (like a quantum dot or a double-barrier structure with a resonant level) can preserve an ideal resonant conductance of fermions, or conversely lead (in a different geometry) to an ideal (i.e. infinite) resonant resistance. I emphasize the role of a so-called duality in these transport effects. The duality was related to the integrability of the Luttinger liquid with an impurity. I will show that - surprisingly - duality survives the addition of a non-local and retarded interaction (like electron-phonon) which almost certainly destroys the integrability.

Wednesday, 5 June 2013, 16:15h, Room A348/349, Theresienstr. 37/III

Prof. J. von Delft, Dr. O. Yevtushenko