

KIDS TALK

“Fermionic systems in 1D: simple theories vs strong quantum fluctuations”

Speaker: Polina Matveeva, AG Eggert

Abstract: One dimensional fermionic systems (nanowires and spin chains in all their diversity) are topics of large experimental and theoretical interest today. Implementation of nanodevices has been changing the world continuously!

Quantum fluctuations in low dimensions play a crucial role: they cannot be neglected and affect all measured properties significantly. During my talk I will discuss the following intriguing questions:

Why 1D systems exist not only in theorist's minds?

Why 1D is so special?

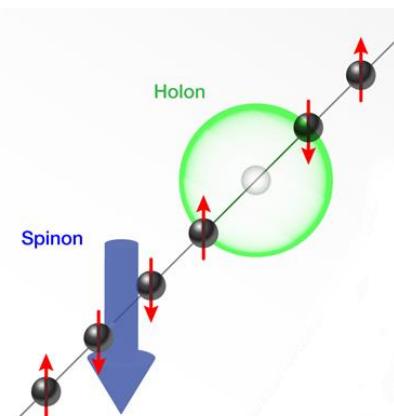
Why good old Fermi-liquid theory doesn't work any more at all?

Why fermions are bosons in 1D?

How 1D allows us to treat some interactions **non-perturbatively?**

How to use the powerful machinery coming from quantum field theory to calculate the variety of experimentally measured properties?

And finally, how to map spins 1/2 to fermions in 1D and how impurities can affect them?



In 1D an electron splits into two new collective excitations, carrying spin and charge separately.

T. Giamarchi, *APS Physics* 2, 78 (2009)

When: Friday, July 7th 2017, 10:00 am

Where: Room 46-387/388

All undergraduate and graduate students as well as postdocs are welcome and encouraged to join our discussion!

***** COFFEE, TEA AND COOKIES WILL BE SERVED *****

For questions, comments or suggestions: cjoerg@physik.uni-kl.de

