



# SONDERKOLLOQUIUM

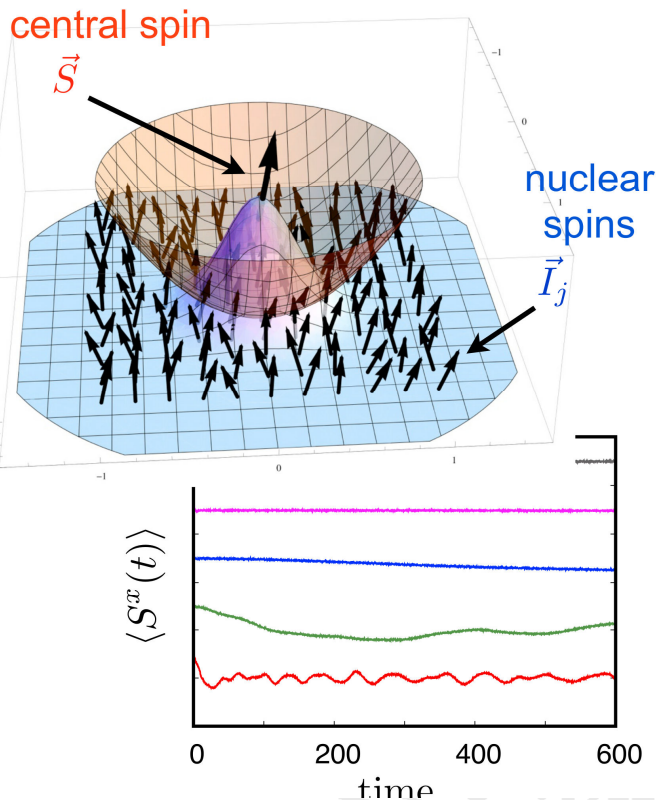
AM 19. NOVEMBER 2015 UM 13:00 UHR

IM HÖRSAAL II IM PHYSIKHOCHHAUS

## STRONGLY CORRELATED QUANTUM SYSTEMS IN REDUCED DIMENSIONS

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I will present an overview of my research activities which are centred on correlation effects in low-dimensional quantum systems. The unifying feature of these systems is the appearance of many-body phenomena like spin-charge separation or the Kondo effect, whose description required the development and application of non-perturbative theoretical methods.

Specifically I will discuss (i) the dynamics of one-dimensional systems after a so-called quantum quench, ie, the sudden change of some of the system parameters, (ii) the properties of strongly interacting wires hosting Majorana fermions, (iii) correlation effects in nanostructures and their consequences on the non-equilibrium transport, and (iv) the relaxation in quantum dots.

For all topics I will briefly discuss the motivation, main results and applied methodology. I conclude with an outlook for the near future.