

Einladung

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Seminartag



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**"Towards quantum transport in graphene multilayers"**

Novel nanoscopic materials such as organic small molecules or graphene are of high interest for potential application in novel electronic devices (e.g. flexible displays or quantum computation) and also offer a wealth of fascinating new properties explored in the fundamental science community. For example, it was shown that in ultraclean samples of graphene bilayers [1] and recently also multilayers [2], the exchange interaction leads to a novel phase, whose exact nature is currently still under debate since there are varying experimental observations. At the heart of identifying the detailed order parameter of this phase is knowledge of the local stacking order during a charge transport experiment. It turns out, that the stacking order of multilayer graphene flakes is however not stable in conventional experiments: More specifically, we have identified that the structuring of metal contacts can induce a non-local transition from ABC to ABA stacking. This stacking has been identified by spatially resolved Raman and scattering SNOM measurements. We discuss possible reasons for this transformation.

[1] R.T. Weitz, M.T. Allen, B.E. Feldman, J. Martin, and A. Yacoby, "Broken-symmetry states in doubly gated suspended bilayer graphene", *Science* 330, 812 (2010)

[2] Y. Nam, D.-K. Ki, M. Koshino, E. McCann and A.F Morpurgo, "Interaction-induced insulating state in thick multilayer graphene", *2D Mater.* 3 045014 (2016)