HL 59: Invited Talk: Jonathan Eroms

Time: Wednesday 15:00–15:30 Location: ER 164

Topical Talk HL 59.1 Wed 15:00 ER 164

Magnetotransport in Graphene Nanoribbons — •Jonathan Eroms — Institute of Experimental and Applied Physics, University of Regensburg, Germany

In this talk I will present our magnetotransport studies on graphene nanoribbons. To separate the different scattering mechanisms at work, we performed magnetotransport experiments in pulsed magnetic fields up to 60 Tesla. Close to the charge neutrality point, our samples show a high resistance which drops by about an order of magnitude at fields up to 20 Tesla, and then approaches a high field induced insulating state. At higher carrier densities we observe clear quantum Hall features. We can explain our data by assuming at least two different scattering mechanisms located at the sample edge and in the bulk. This is confirmed by corresponding transport simulations based on a tight binding model. Looking at phase-coherent effects in nanoribbons at millikelvin temperatures, in single nanoribbons we observe strong universal conductance fluctuations, while in arrays of nanoribbons, ensemble averaging suppresses the UCFs and allows us to study weak localization. Both effects show that at the lowest temperatures the phase coherence length approaches 1 micrometer, clearly exceeding the ribbon width.