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**HL 19: Invited Talk: Stephan Winnerl**

Time: Monday 15:00–15:30

Location: H17

**Invited Talk**

HL 19.1 Mon 15:00 H17

**Relaxation dynamics in graphene close to the Dirac point** —

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The carrier relaxation in graphene is of strong interest for understanding carrier-carrier and carrier-phonon interactions in this fascinating material as well as for optoelectronic applications such as detectors, and saturable absorbers. Here we give an overview on our investigations on the dynamics in the energetic vicinity of the Dirac point, which is explored by pump-probe experiments with mid-infrared and terahertz radiation [1]. We compare our experimental results with

microscopic theory and discuss the role of optical phonons, acoustic phonons and carrier-carrier scattering. For excitations slightly above and below the Fermi edge an interesting change in sign of the pump-probe signals is observed, which can be explained by an interplay of intraband and interband excitation. Furthermore we present recent results on the dynamics in Landau quantized graphene, where a strong dependence of the pump-probe signals on the state of circular polarization of both pump and probe radiation is found. The results indicate the importance of Auger-type processes in this regime.

S. Winnerl et al., Phys. Rev. Lett. 107, 237401 (2011).