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Landau level spectroscopy of Dirac fermions in multilayer epitaxial graphene and graphite

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The results of magneto-absorption studies of epitaxial multilayer graphene on SiC and of graphite will be presented. The talk will be focused on inter Landau level transitions characteristic of electronic states with Dirac-like dispersion relations which are distinctive of graphene but persist in multilayer epitaxial graphene and are also present at the H-point of bulk graphite. The high energy limits of the Dirac-cone in epitaxial graphene will be discussed from experiments carried out in the near-infrared spectral range. Probing the nearest vicinity of the Dirac point with far-infrared light will be testified. An exceptional quality of essentially neutral multilayers of graphene on SiC (low temperature carrier mobilities ∼250 000cmˆ2/Vs) will be discussed from cyclotron resonance absorption resonance. This resonance will be shown to persist up to room temperature with negligible changes of the width what indicates no relevant thermally activated scattering process in this material. M.L. Sadowski, et al, Phys. Rev. Lett. 97, 266405 (2006), P. Plochocka et al., ibid., 100, 087401 (2008), M. Orlita et al., ibid., 100, 136403 (2008), M. Orlita et al., ibid, accepted, (arXiv:0808.3662).