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Ferromagnetism in hydrogenated epitaxial graphene on 6H-SiC
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Graphene remains a material of interest in both fundamental and applied physics due to its unique combination of properties [1] such as its mechanical strength, surface sensitivity, relativistic bandstructure and large spin relaxation length. Functionalizing graphene leads to a whole new range of properties [2] varying from photoluminescence in graphene oxide [3] to ferromagnetism in hydrogenated graphene [4]. Here we will show a detailed investigation of the (ferro-)magnetic properties of hydrogenated epitaxial graphene on SiC (HeG). The magnetization of the of the HeG shows a clear hysteresis loop, which remains visible up to room temperature with a saturation magnetization of 0.5 μ_B/hexagon. The saturation magnetization depends on the hydrogen coverage and shows a strong anisotropy to the sample orientation with respect to the magnetic field. [1] N. M. R. Peres, Rev. Mod. Phys. 82, 2673 (2010) [2] W. Wei and X. Qu, Small 8, 2138 (2012). [3] Z. Luo et al., Appl. Phys. Lett. 94, 111909 (2009). [4] L. Xie et al., Appl. Phys. Lett. 98, 193113 (2011).

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