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Ripples in epitaxial graphene FRANCOIS VARCHON, PIERRE MALLET, JEAN-YVES VEUILLEN, LAURENCE MAGAUD, Institut Neel CNRS/UJF — On the basis of extensive ab initio calculation supported by scanning tunneling experiments, we have elucidated the complex morphology of the graphene/SiC (0001) interface [1]. We demonstrate that a carbon buffer layer is always present at the interface. It is a key characteristic of the system because this buffer layer electronically decouples the graphene layer from the substrate [2]. It has a mosaic structure that is reminiscent of a graphene honeycomb lattice distorted by the formation of strong covalent bonds with the substrate. The substrate-induced nanostructuration extends up to the ontop graphene layer where it generates an incommensurate modulation of the honeycomb lattice. The possible opening of a gap induced by the substrate [3] in the epitaxial graphene electronic structure will also be discussed. [1] F.Varchon et al. cond-mat/0712.3394, (submitted to PRB) [2] F.Varchon et al. Phys. Rev. Lett. 99, 126805 (2007) [3] S.Y.Zhou et al. Nature Mat. 6, 771 (2007)

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