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**Electronic excitation spectrum of ABC-stacked multilayer graphene** Y. HENNI, K. NOGAJEWSKI, Laboratoire National des Champs Magntiques Intenses, CNRS, H. P. OJEDA COLLADO, G. USAJ, C. A. BALSEIRO, Centro Atmico Bariloche and Instituto Balseiro, Comisn Nacional de Energa Atmica, M. POTEMSKI, C. FAUGERAS, Laboratoire National des Champs Magntiques Intenses, CNRS — The electronic properties of ABC graphene trilayers has attracted lot of attention recently due to their potential applications in engineering carbon-based devices with gate tunable electrical conductivity. Morever,ABC-stacked thin layers of graphite are predicted to host peculiar surface electronic states, with a flat dispersion over most of the Brillouin zone. The associated high density of states is likely to favour the emergence of exotic electronic phases, such as charge density waves or even superconductivity. We present a micro-magneto-Raman scattering study of a thin graphite flake produced by exfoliation of natural graphite, composed of ∼15graphene layers, and including a large ABC-stacked domain. Exploring the low temperature Raman scattering spectrum of this domain up to B=29T,we identify inter Landau level electronic excitations within the surface flat bands,together with electronic excitations involving the gapped states in the bulk. This interband electronic excitation at B=0T can be observed,up to room temperature, directly in the Raman scattering spectrum as a broad($\sim 180\text{cm}^{-1}$) feature. Because the energy gap strongly depends on the number of layers,this electronic excitation can be used to identify and characterize ABC-stacked graphite thin layers.

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