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Resonance profile of Moire-pattern Raman peaks in twisted graphene layers MARCOS PIMENTA, ARIETE RIGHI, SARA COSTA, CRISTIANO FANTINI, HELIO CHACHAM, Departamento de Fisica, UFMG, CARL MAGNUSON, ROD RUOFF, Department of Mechanical Engineering and the Texas Materials Institute, The University of Texas at Austin, 1 University Station C2200, Austin, Texas, WOLFGANG BACSA, CEMES/CNRS, University of Toulouse, 29 rue Jeanne Marvig, 31055 Toulouse, France, LUIGI COLOMBO, Texas Instruments Incorporated 13121 TI Blvd, MS-365 Dallas, TX 75243., PEDRO VENEZUELA, Instituto to de F?sica, Universidade Federal Fluminense, Niteroi, Brazil — In this work, we study the Raman spectra of graphene samples grown by CVD on a Cu foil, with different laser excitation lines. The spectra exhibit a number of extra sharp Raman peaks, classified in different families, each one associated with Moire patterns of graphene layers twisted with different angles. The presence of these extra peaks is theoretically analyzed considering the interlayer potential perturbation, that gives rise to a set of wavevectors within the interior of the Brillouin zone of graphene, activating special selective double-resonance (DR) Raman modes, in a so-called umklapp DR (u-DR) process. The resonance Raman profile of the Moire peaks obtained experimentally by changing the laser energy is compared with the calculations of the u-DR process, showing that Raman spectroscopy is useful to characterize Moire patterns in graphene systems.

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