Twist and Texture in Multilayer Graphene

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Multilayer graphenes feature special functionalities that microscopically arise from the atomic registry when graphene sheets are stacked. These depend on relative lateral translations, rotations and layer symmetry breaking that can occur spontaneously or be induced. This talk will focus on bilayer graphenes (BLG) in which the stacking arrangement varies in space. We examine domain walls where the local stacking order switches from local AB to BA registry, and study the electronic modes at the boundary by analyzing their valley-projected four band continuum models augmented by numerical calculations on a lattice. We then consider the more general family of two dimensional strain-minimizing BLG stacking textures, showing that they are twisted textures of the interlayer displacement field. We study the interactions and composition rules for these elementary textures which permit a unified treatment of stacking point defects, domain walls and twisted graphenes.