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Continuum Model of the twisted graphene bilayer[1]

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The electronic structure of the twisted bilayer was first considered [1] in the context of a continuum description of the two layers, coupled by a spatially modulated hopping. The model's predictions were subsequently confirmed by experiments [2,3], including a scanning tunneling spectroscopy finding of two low energy Van-Hove peaks in the density of states [4], and by band structure calculations [5,6]. We discuss the extension of the model in several directions: the two families of commensurate structures discovered by Mele [7], will be characterized by elementary geometrical arguments; it will be shown that it is possible to calculate analytically *all* Fourier components of the hopping amplitudes for any kind of commensurate structure with large period; the calculations will be extended beyond the perturbative regime in the interlayer coupling to address the electronic structure and local density of states in the very small angle limit.

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