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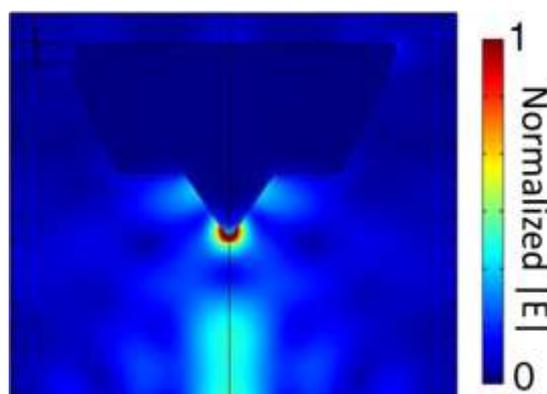
## Phonon localization in low-angle twisted bilayer graphene

Superconductivity has been found in bilayer graphene at the magic angle [1]. Below the magic angle, the bilayer graphene exhibits reconstruction, entering the strain soliton regime [2]. Direct optical images of the crystal superlattice in reconstructed twisted bilayer graphene are reported here [3], generated by nano-Raman spectroscopy (see figure) [4-9]. The observation of the crystallographic structure with visible light is made possible due to lattice dynamics localization, the images resembling spectral variations caused by the presence of strain solitons and topological points. The results are rationalized by a nearly-free-phonon model and electronic calculations that highlight the relevance of solitons and topological points, particularly pronounced for structures with small twist angles.

### References

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### Figures



**Figure 1:** Nano-Raman field distribution generated in the tip-enhanced Raman spectroscopy (TERS) configuration [8].