Contribution ID: **170**   Type: **Talk**

Non-perturbative effects in the Fermi velocity renormalization in graphene

Tuesday, 31 August 2021 09:00 (30 minutes)

Application of Hybrid Monte Carlo (HMC) technique allowed us to perform the simulations of electronic properties of suspended graphene at as large as 102×102 lattices to directly observe the infrared renormalization of the Fermi Velocity for the first time in non-perturbative Quantum Monte Carlo calculations. We compared the results with experiment, and demonstrated the agreement in the specific case, when short-range electron-electron interactions are taken from cRPA approximation. Comparison of HMC data with perturbative calculations made within the Lattice Perturbation Theory (LPT) and in continuum QED demonstrates the importance of lattice-scale physics for the quantitative description of the Fermi Velocity renormalization. Higher-order corrections beyond RPA level are also important, especially in comparison with one-loop and RPA level LPT results, both at zero and finite temperature.

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

Yes

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