

The effect of rogue waves on electron mobility in graphene

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The mobility of electrons in a crystal is influenced by how ordered and free of defects the structure is. Phonons are one mechanism that can cause distortions in a material compared to the ideal lattice and cause reductions in electron mobility. We extrapolate the effect of configurations unobtainable by a reasonable number of Monte Carlo simulations with a model for the probability for rare many-phonon constructive interference events to occur. This distribution is then used to extend a Monte Carlo based ensemble average electron mobility to include low probability—but high impact—events.

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