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Effect of electron-phonon interaction on the finite frequency conductivity of 3D Dirac materials BORIS PAVLOVIC, ELISABETH J. NICOL, University of Guelph, Canada — Recently, interest has been directed toward identifying and characterizing materials with 3D Dirac energy dispersions. We present our theoretical results for the finite frequency optical conductivity of 3D Dirac materials with the inclusion of an electron-phonon (e-p) interaction. Using a Holstein e-p interaction and allowing for varying chemical potential, we show how the e-p self energy modifies the electronic density of states and the optical conductivity. The results for 3D are contrasted with their 2D analogs, as previously discussed for graphene.^[1] [1] J.P. Carbotte, E.J. Nicol and S.G. Sharapov, PRB 81, 045419 (2010).

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