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Many-Body Theory for Point-Defect Effects on Electron-Energy-Loss and Optical Absorption Spectra in Layered Semiconductors DANHONG HUANG[1], Directorate of Space Vehicles, US Air Force Research Laboratory, ANDRII IUROV, Center for High Technology Materials, University of New Mexico, FEI GAO, Department of Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, GODFREY GUMBS, Department of Physics and Astronomy, Hunter College of the City University of New York, DAVID CARDIMONA, Directorate of Space Vehicles, US Air Force Research Laboratory — For a layered and doped semiconductor system, in the presence of point defects by proton radiation, the changes of both electron-energyloss and optical absorption spectra can theoretically be related to the Coulomb renormalized polarization and optical-response functions, respectively. The ladder approximation has been employed first for calculating the point-defect induced vertex correction to the Feynmans bubble diagram for the polarization function of non-interacting subband electrons in layered semiconductors. Based on the random-phase approximation, the intralayer screening from both intrasubband and intersubband electronic excitations in the system, as well as the interlayer Coulomb coupling of electrons, are also taken into account by computing the inverse dielectric-function matrix and solving the self-consistent Dyson equations at the same time.

[1]oral presentation, from Monday to Thursday

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