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Spin-Dependent Phonon-Assisted Optical Transitions in Germanium DHARA TRIVEDI, Department of Physics, University Of Rochester, PENGKE LI, Department of Electrical and Computer Engineering, University of Rochester, HANAN DERY, Department of Physics & Department of Electrical and Computer Engineering, University Of Rochester — We study the circular polarization of the photoluminescence due to phonon-assisted indirect optical transitions in Germanium. The band structure is calculated by empirical pseudopotential method with the spin-orbit interaction. Phonon modes are obtained by the adiabatic bond charge model and the L - Γ electron-phonon matrix elements are calculated within the rigid-ion approximation. We have used group theory extensively to account for all possible transitions. We quantify the circular polarization of various phonon-assisted optical transitions.

Dhara Trivedi
Department of Physics, University Of Rochester

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