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Effect of Electric Field on Phonoritons in Semiconductors¹ MICHAEL JAYSON PRICE, QUE HUONG NGUYEN, Marshall University — Under illumination of high-intensity electro-magnetic radiation near the resonance, the occupation number of polaritons of the same mode in a semiconductor sample is large, leading to significant interaction between polaritons and phonons. This interaction leads to the formation of a new kind of elementary excitation called phonoriton, a coherent superposition of excitons, photons, and longitudinal acoustic phonons under Brillouin scattering of intense polaritons. The phonoritons have been studied theoretically and experimentally and have been found in Cu2O. In this work we study the effect of an electric field on phonoritons inside semiconductors. The shift of photoritons as the result of applying electric field and the quadratic Stark effect is found. The effect suggests an experiment to observe the phonoritons.

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