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**Semiclassical Theory of Coherent Phonon Generation Accompanying Transient Fano Resonance in Semiconductors** YOHEI WATANABE, YUYA NEMOTO, Graduate School of Pure and Applied Sciences, University of Tsukuba, KEN-ICHI HINO, NOBUYA MAESHIMA, Division of Materials Science, Faculty of Pure and Applied Sciences, University of Tsukuba — The recent advancement of ultra-short-pulse laser technology and time-resolved spectroscopy techniques have made it possible to observe coherent phonon generation. In particular, in *n*-type Si, transient Fano resonance was observed experimentally in the initial stage of coherent phonon generation, and it was speculated that this phenomenon results from the manifestation of polaronic quasiparticles composed of electrons and phonons which interact strongly each other [1]. In this study, we are aimed at constructing a semiclassical picture of the coherent phonon generation by virtue of Dyson's bosonization method which makes it possible to give form to the above-mentioned speculation. In the present picture, we can incorporate a variety of quantum effects on an equal footing, where the effects are such as the transient Fano resonance and further the effects of both intraband and interband transitions relevant to pair excitation of electrons, plasmon, exciton, bandgap renormalization, and so on. In addition, we make a comparison of the present model with the classical model recently reported [2]. [1] M. Hase, et al., Nature 426, 51 (2003) [2] D. M. Riffe, Phys. Rev. B 84, 064308 (2011).

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