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A Full Single-Quantum Radiative Recombination of Biexcitons Due to Exciton—Biexciton Interaction

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Abstract

The single-quantum annihilation process of the biexciton as a whole at the inelastic collision of the biexciton with an exciton is studied. Analytic expressions for the spectral and temperature dependence of the transition probability are obtained for allowed interband optical transition for various temperatures of the exciton and biexciton subsystems. It is shown that the single-photon radiative recombination process of the biexciton as a whole in the presence of the exciton is characterized by a transition probability different from zero in the crystal with the symmetry centre in the dipole approximation, while the biexciton radiative recombination itself is impossible.