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Polariton spectrum dependence on concentration of admixture layers in imperfect Si-superlattice. VLADIMIR RUMYANTSEV, STANISLAV FEDOROV, ESFIR SHTAERMAN, A.A.Galkin Physics Technical Institute of NASU — Advances in technology allowing growth of ultrathin crystalline films and periodic structures with controlled characteristics by molecular beam epitaxy has led to an increasing interest for study of excitations in perfect crystalline lattice. Investigation of disorder effects in imperfect superlattice allowing modeling the crystal properties is still of a great interest. We consider a model of superlattice as a macroscopically homogeneous system with randomly included admixture layers. The virtual crystal approach which is the method to describe quasi-particle excitations in disorder media is used. Polariton spectrum of imperfect superlattice (which is one-dimensional Si-crystal with two elements-layers in the cell) is obtained. Peculiarities of the dependence of band gap width on admixture layers concentration have been studied for different polariton branch. The results are the evidence of substantial polariton spectrum reconstruction caused by presence of defect layers.

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