INTERFACE EFFECTS IN THE MODEL OF δ-POTENTIAL FOR DILUTED MAGNETIC SEMICONDUCTOR QUANTUM STRUCTURES

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We further develop the recently proposed model of interface δ-potential in nonmagnetic/semimagnetic semiconductor heterostructures. We calculate the parameters of the δ-potential (applied to the description of the interface paramagnetic enhancement effect) using a smooth approximation of the interface potential. We propose useful analytic approximations of the magnetic field, temperature, and magnetic ion concentration dependences of the δ-potential intensity for the $CdTe/Cd_{1-x}Mn_xTe$-interface. Our calculations have proved the recent hypothesis about a Brillouin-like magnetic field dependence of the intensity of the δ-potential. It is shown that the approach allows one to satisfactorily describe the interface effects in diluted magnetic semiconductor quantum structures in terms of only one free parameter, the interface width ΔL_{if}. The obtained formulas are used to describe some experimental results from the present literature. It is shown that our theory provides good agreement with experimental data.