On Carrier Diffusion in Nanostructures for Nanomedicine

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Abstract: Nanometer-sized particles have optical, magnetic, chemical and structural properties setting them apart from bulk solids, with fruitful potential applications in nanomedicine. Carrier diffusion at the nanoscale plays a very important role in the dynamics of the processes taking place at this scale. Advances in analytical modelling allow a detailed study of carrier diffusion in the classical, quantum and relativistic case. Important results and previsions come by a promising analytical “time-domain” model for classical and quantum-relativistic transport in nano-systems, called DS model; it is demonstrating high generality and very good fitting with available experimental data of literature.

Keywords: Nanomedicine; Nanostructures; Nanophysics; Diffusion; Analytical Modelling; Quantum-Relativistic Effects; DS Model.

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