Electroconductivity and Thermopower of Quantum Semiconductor Wire by Thickness Fluctuations

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The aim of this work is the theoretical determination of the electroconductivity and thermopower in the model [1] of quantum semiconductor wire by a random field of Gaussian fluctuations of wire thickness.

We present the results for cases degenerate and nondegenerate statistics of carriers. The considered mechanism of relaxation of the charge carriers is essential for sufficiently thin and clean GaAs wire at low temperatures and allows in principle the possibility of increasing the value of thermopower compared to the case of three-dimensional solid model.

1. M.A.Ruvinskii, B.M.Ruvinskii // *FTP* – 2005 – **V39** (2) – P.247-250.