

## **For Boundary Conditions for Schrödinger Equation on Hetero-Boundary**

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Standard conditions applied to wave function on boundary of two areas reduced to equality of wave functions itself and their derivatives on this boundary [1]. In case of hetero-boundary with different effective masses it goes to complications caused by the fact that if continuity wave function condition is required, than it leads to divergence density of stream, and non-equality of wave functions on hetero-boundary will give kinetic energy variance. Long time as the solution for this problem it was using the method of multiplying wave functions itself or their derivatives on correspondent effective masses. However, this approach often leads to complications.

There is another approach to obtain proper behavior of wave functions and their derivatives on hetero-boundary [2]. It lies in considering of strong-tied model that gives energy zones, which described by effective mass approximation and building strong-relation for merging of two areas with different effective masses for low energy irritations. As an example, we consider the simplest model of linear atomic chain using the method of strong-relation with parameters of effective mass on left and right of boundary are different. We obtained expression for boundary transition coefficient in this model and analyzed it. We came to conclusion that correct boundary conditions obtained by ingesting them on hetero boundary of wave functions divided on root square of correspondent effective masses and their derivatives divided on root square of correspondent effective masses.

1. Vakarchuk I.O. Quantum Mechanics (Ivan Franko LNU, Lviv, 2012).
2. Harrison W. A. Matching Conditions in Effective-Mass Theory. Web: [arXiv.org:cond-mat.mtrl.sci/1108.1224/04](http://arXiv.org:cond-mat.mtrl.sci/1108.1224/04). August 2011.