

# On the Spectral Theory of Multidimensional Schrödinger Operator

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## Abstract

The main object of my talk is the Schrödinger operator  $L(V)$  with a matrix potential on a  $d$ -dimensional rectangle with Neumann boundary conditions. The operator  $L(V)$  is considered as a perturbation of the free Hamiltonian  $L(0)$ , when  $V = 0$ . Perturbative analysis of eigenvalues and eigenfunctions of  $L(V)$  meets a serious difficulty due to presence of the very close eigenvalues of unperturbed operator. In general, this leads to the so-called ‘small denominators’ problem. However, the set of unperturbed eigenvalues can be splitted into two parts called resonance and non-resonance domains, respectively. This opens a door to study the perturbations of each group for obtaining various asymptotic formulas for the eigenvalues and eigenfunctions of  $L(V)$ . I will talk about this problem which is a part of my PhD dissertation.

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