The thesis discusses description of associative detachment of electron in the iont interaction with neutral atoms in optical lattice. This is given by combination of the model for interaction of particles in optical lattice, given by periodic potential, and of the model for associative detachment of electron, describe by imaginary component of the potential. In thesis is stated form of Schrödinger's equation for periodic potential, and subsequent solution of such equation in case of general complex and non hermitian Hamiltonian (because of imaginary component of potential). I specifically compute complex energetic levels one-dimensional model with numeric method from software package EISPACK for non hermitian Hamiltonian decomposed into finite base.