UDC 517.984

MATEMATICHESKIE TRUDY
2014, V. 17, N 2, 3–22

ON THE SPECTRUM OF THE THREE-PARTICLE HAMILTONIAN ON A UNIDIMENSIONAL LATTICE

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On a unidimensional lattice, the Hamiltonian of a system of three arbitrary particles is considered (with dispersion relations), where the particles interact pairwise via zero-range (contact) attractive potentials. We prove that the discrete spectrum of the corresponding Schrödinger operator is finite for all values of the total quasimomentum if the masses of two particles are finite. We also prove that the discrete spectrum of the Schrödinger operator is infinite if the masses of two particles in a three-particle system are infinite.

Key words and phrases: three-particle system on a lattice, Schrödinger operator, essential spectrum, discrete spectrum, compact operator.

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Received
February 8, 2013

Translated into English:
Siberian Advances in Mathematics, V. 25, N 3, 155–168 (2015).
DOI: 10.3103/S1055134415030013