

LOWER BOUND STATES OF ONE-PARTICLE HAMILTONIANS ON AN INTEGER LATTICE

E. E. Muminov and U. N. Kulzhanov

Under consideration is a Hamiltonian H describing the motion of a quantum particle on a d -dimensional lattice in an exterior field. It is proven that if H has an eigenvalue at the lower bound of its spectrum then this eigenvalue is nondegenerate and the corresponding eigenfunction is strictly positive (thereby a lattice analog of the Perron-Frobenius theorem is proven).

Key words and phrases: spectral properties, one-particle Hamiltonian on a lattice, Birman–Schwinger principle, eigenvalue, strictly positive function.

Muminov Zakhriddin Ehshkobilovich

Samarkand State University,
Samarkand, 140100 Uzbekistan.
E-mail: zimuminov@mail.ru

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Kulzhanov Utkir Nematovich

Samarkand State University,
Samarkand, 140100 Uzbekistan.

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