O.A.VELIEV

ON THE POLYHARMONIC OPERATOR WITH A PERIODIC POTENTIAL

Abstract

In this paper we obtain the asymptotic formulas of arbitrary order for the Bloch eigenvalues and Bloch functions of the d-dimensional polyharmonic operator $L(l,q(x)) = (-\Delta)^l + q(x)$ with periodic, with respect to arbitrary lattice, potential $q(x)$, where $l \geq 1$ and $d \geq 2$. Then we prove that the number of gaps in the spectrum of the operator $L(l,q(x))$ is finite. In particular, taking $l = 1$, we get the proof of the Bethe -Sommerfeld conjecture for arbitrary dimension and arbitrary lattice.