

# On the Fermi Surfaces of the Multidimensional Periodic Schrödinger Operator

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The multidimensional Schrödinger operator  $L(q)$  of arbitrary dimension with a periodic (relative to a lattice) potential  $q$  is considered. We construct a class  $S$  of the periodic potentials such that if  $q$  belong to  $S$  then the corresponding Bloch eigenvalues of  $L(q)$  coincides with the Bloch eigenvalues of the free operator  $L(0)$ . It implies that the Fermi surfaces of  $L(q)$  and  $L(0)$  are the same. Then we find explicit formulas for the Bloch functions. The considered set of operators includes a large class of  $PT$  symmetric operators used in the  $PT$  symmetric quantum theory.