Texas Tech University. Applied Mathematics Seminar.

Green's function asymptotics of periodic elliptic operators on Abelian coverings of compact manifolds

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ABSTRACT. Green's function behavior near and at a spectral edge of a periodic operator is one of what was called by M. Birman and T. Suslina threshold properties. i.e., it depends upon the infinitesimal structure of the dispersion relation at the spectral edge. For a "generic" periodic second-order elliptic operators on a co-compact abelian cover, we will discuss the asymptotics at infinity of the Green's functions near and at the spectral gap edge as long as the dispersion relation of the operator has a non-degenerate extremum there. Previously, analogous results have been known for the Euclidean case only. One of the interesting features discovered is that the rank of the deck group plays more important role than the dimension of the manifold.