

Laplacians on non-Convex polygons, Quantum graphs and Dirichlet network squeezing

A. Posilicano

By Birman and Skvortsov it is known that the Laplace operator with domain $C_0^\infty(\Omega)$ is a symmetric operator with deficiency indices (n, n) , where n denotes the number of non-convex corners of the plane curvilinear polygon Ω . Here we provide, by Krein's resolvent formula, all the self-adjoint extensions of such a symmetric operator. Then, by a resolvent correspondence between self-adjoint Laplacians on a graph G and self-adjoint Dirichlet Laplacians on the non-convex curvilinear polygon G^ϵ given by a suitable fattening of G , we propose a recipe for approximating a quantum graph by squeezing a Dirichlet network.