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AN INTRODUCTION TO MINIMAL SPECTRAL PARTITIONS

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Abstract

Given a bounded open set Ω in \mathbb{R}^n and a partition of Ω by k open sets ω_j , we can consider the quantity $\max_j \lambda(\omega_j)$ where $\lambda(\omega_j)$ is the ground state energy of the Dirichlet realization of the Laplacian in ω_j . If we denote by $\mathfrak{L}_k(\Omega)$ the infimum over all the k -partitions of $\max_j \lambda(\omega_j)$, a minimal k -partition is then a partition which realizes the infimum. Although the analysis is rather standard when $k = 2$ (we find the nodal domains of a second eigenfunction), the analysis of higher k 's becomes non trivial and quite interesting.

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