

OPENING UP AND CONTROL OF SPECTRAL GAPS OF THE LAPLACIAN IN A PERIODIC DOMAIN

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We discuss the following result [1]: for arbitrary pairwise disjoint finite intervals $(\alpha_j, \beta_j) \subset [0, \infty)$, $j = 1, \dots, m$ and for arbitrary $n \geq 2$ we construct the family of periodic non-compact domains $\{\Omega^\varepsilon \subset \mathbb{R}^n\}_{\varepsilon > 0}$ such that the spectrum of the Neumann Laplacian in Ω^ε has at least m gaps when ε is small enough, moreover the first m gaps tend to the intervals (α_j, β_j) as $\varepsilon \rightarrow 0$. The constructed domain Ω^ε is obtained by removing from \mathbb{R}^n a system of periodically distributed "trap-like" surfaces.

REFERENCES

- [1] Andrii Khrabustovskiyi, Opening up and control of spectral gaps of the Laplacian in periodic domains, arXiv:1308.4091.