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Critical coupling constants and eigenvalue asymptotics of perturbed periodic Sturm-Liouville operators. (English) [Zbl 0953.34069](#)

Commun. Math. Phys. 211, No. 2, 465-485 (2000).

Summary: Perturbations of asymptotic decay c/r^2 arise in the partial-wave analysis of rotationally symmetric partial differential operators. The author shows that for each end-point λ_0 of the spectral bands of a perturbed periodic Sturm-Liouville operator, there is a critical coupling constant c_{crit} such that eigenvalues in the spectral gap accumulate at λ_0 if and only if $c/c_{\text{crit}} > 1$. The oscillation theoretic method used in the proof also yields the asymptotic distribution of the eigenvalues near λ_0 .

MSC:

[34L20](#) Asymptotic distribution of eigenvalues, asymptotic theory of eigenfunctions for ordinary differential operators

[34B24](#) Sturm-Liouville theory

[34L40](#) Particular ordinary differential operators (Dirac, one-dimensional Schrödinger, etc.)

Cited in **2** Reviews
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Keywords:

perturbed periodic Sturm-Liouville operators; rotationally symmetric partial differential operators; critical coupling constant; eigenvalues

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