MR672543 (83m:35115) 35P15 (49G05)

Joó, I.; **Stachó, L. L.**

An upper estimation for the eigenfrequencies of vibrating Liapunoff bodies (first boundary value problem).

Publ. Inst. Math. (Beograd) (N.S.) **30(44)** (1981), 59–64.

G. Pólya [J. Indian Math. Soc. (N.S.) **24** (1960), 413–419; MR0133059 (24 #A2895)] established the upper bound $\Lambda_1 < \pi L/2A$ for the first eigenvalue Λ_1^2 of a simply or doubly connected plane membrane of area A, fixed along its boundary of length L. The present paper is devoted to its extension to "generalized Lyapunov bodies" in $\mathbf{R}^n$ (which include the convex domains), using geometric measure theory. As in Pólya's paper the proof depends on the "method of interior parallels" initiated by E. Makai [Czechoslovak J. Math. **9(84)** (1959), 66–70].

{Reviewer's remarks: The lower bound referred to in Section 1 is essentially the classical Rayleigh-Faber-Krahn theorem and is valid only for the first eigenvalue Λ_1^2. Furthermore, in Theorems 2 and 3, Λ_1 (instead of Λ_1^2), which has dimension cm^{-1}, should stay on the left side of the inequalities.}

Reviewed by *J. Hersch*