

**ASYMPTOTIC BEHAVIOUR OF CUBOIDS OPTIMISING  
LAPLACIAN EIGENVALUES.**

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JOINT WORK WITH SIMON LARSON (KTH).

We consider the minimisation of the Dirichlet eigenvalues of the Laplacian  $\lambda_k$ ,  $k \in \mathbb{N}$ , among cuboids in  $\mathbb{R}^m$ ,  $m \geq 2$ , of unit measure (that is sets of the form  $\prod_{i=1}^m (0, a_i)$ ). We prove that any sequence of such minimising cuboids  $(R_k^*)_k$  for  $\lambda_k$  converges to the unit cube as  $k \rightarrow \infty$ . The result for  $m = 2$  was obtained by Antunes and Freitas, while van den Berg and Gittins addressed the case where  $m = 3$ . In addition we present a stability result for the optimal eigenvalues as  $k \rightarrow \infty$ , and we discuss some related results.