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## Variations on a theme by Cheeger

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### Abstract

We present some generalizations of the well-known Cheeger inequality  $4\lambda(\Omega) \geq h^2(\Omega)$ , where  $\lambda(\Omega)$  denotes the principal eigenvalue of the Dirichlet Laplacian and  $h(\Omega)$  is the Cheeger constant. The domain  $\Omega$  may vary either in the class of *all* open bounded subsets of  $\mathbb{R}^d$  or in the subclass of *convex* domains. In particular, the existence of optimal domains for the shape functional  $\lambda(\Omega)h^{-2}(\Omega)$  is deeply discussed.

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## References

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