

Armentano, María G.; Durán, Ricardo G.

Asymptotic lower bounds for eigenvalues by nonconforming finite element methods. (English) [Zbl 1065.65127](#)

ETNA, *Electron. Trans. Numer. Anal.* 17, 93-101 (2004).

Summary: We analyze the approximation obtained for the eigenvalues of the Laplace operator by the nonconforming piecewise linear finite element of Crouzeix-Raviart. For singular eigenfunctions, as those arising in nonconvex polygons, we prove that the eigenvalues obtained with this method give lower bounds of the exact eigenvalues when the mesh size is small enough.

MSC:

- [65N25](#) Numerical methods for eigenvalue problems for boundary value problems involving PDEs
- [65N30](#) Finite element, Rayleigh-Ritz and Galerkin methods for boundary value problems involving PDEs
- [65N15](#) Error bounds for boundary value problems involving PDEs
- [35P15](#) Estimates of eigenvalues in context of PDEs

Cited in **55** Documents

Keywords:

Laplace operator; singular eigenfunctions; eigenvalue problem

Full Text: [EuDML](#) [EMIS](#)