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ASYMPTOTIC LOWER BOUNDS FOR EIGENVALUES BY NONCONFORMING FINITE ELEMENT METHODS*

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Abstract. 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.

Key words. finite elements, eigenvalue problems, nonconforming methods.

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