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Eigenvalue approximation from below by Wilson's element. (Chinese. English summary)

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Summary: The authors consider the finite element approximation for the eigenvalue problem of the Laplace operator on a rectangular domain. The authors prove that the nonconforming Wilson element approximates eigenvalues from below, and thereby settle a long standing conjecture in the finite element method.

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
65N50 Mesh generation, refinement, and adaptive methods for boundary value problems involving PDEs
35P15 Estimates of eigenvalues in context of PDEs

Keywords:

eigenvalue; Wilson element