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***p*-multigrid method for Fekete-Gauss spectral element approximations of elliptic problems.**

(English) [Zbl 1364.65264](#)

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Summary: An efficient *p*-multigrid method is developed to solve the algebraic systems which result from the approximation of elliptic problems with the so-called Fekete-Gauss Spectral Element Method, which makes use of the Fekete points of the triangle as interpolation points and of the Gauss points as quadrature points. A multigrid strategy is defined by comparison of different prolongation/restriction operators and coarse grid algebraic systems. The efficiency and robustness of the approach, with respect to the type of boundary condition and to the structured/unstructured nature of the mesh, are highlighted through numerical examples.

MSC:

[65N35](#) Spectral, collocation and related methods for boundary value problems involving PDEs

Cited in **3** Documents

[65N55](#) Multigrid methods; domain decomposition for boundary value problems involving PDEs

Keywords:

spectral elements; Fekete points; multigrid methods

Software:

Wesseling; 2Dhp90

Full Text: [Link](#)