

Publication

A Note on Multilevel Based Error Estimation

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By employing the infinite multilevel representation of the residual, we derive computable bounds to estimate the distance of finite element approximations to the solution of the Poisson equation. If the finite element approximation is a Galerkin solution, the derived error estimator coincides with the standard element and edge based estimator. If Galerkin orthogonality is not satisfied, then the discrete residual additionally appears in terms of the BPX preconditioner. As a by-product of the present analysis, conditions are derived such that the hierarchical error estimation is reliable and efficient.

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