

The Choice of Weight Coefficients for the Least-Squares Gradient Approximation.

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Abstract.

We consider the problem of the least-squares gradient approximation on two-dimensional unstructured grids with "bad" cells. We discuss how the accuracy of the least-squares approximation depends on the cell geometry. We analyze a simple geometry and demonstrate that introducing weight coefficients into the problem may help to essentially improve the accuracy of the least-squares approximation. Based on the results of our analysis, a heuristic choice of the weights in a general least-squares procedure is suggested. Our approach is illustrated by numerical tests.

Key words. least - squares method, gradient approximation, unstructured grid

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