The Impact of Grid Geometry on the Accuracy of Higher Order Finite-Volume and Finite Element Schemes

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Abstract

We discuss the issues of a higher-order finite-volume and finite-element discretization on anisotropic grids. It will be shown that high order finite-volume schemes are inferior to finite-element schemes in terms of accuracy when stretched meshes are considered. The poor accuracy of finite-volume schemes is discussed based on the idea of numerically distant points that are present in a reconstruction stencil on stretched meshes.

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