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Error-measure for anisotropic grid-adaptation in turbulence-resolving simulations SIAVASH TOOSI, JOHAN LARSSON, University of Maryland — Grid-adaptation requires an error-measure that identifies where the grid should be refined. In the case of turbulence-resolving simulations (DES, LES, DNS), a simple error-measure is the small-scale resolved energy, which scales with both the modeled subgrid-stresses and the numerical truncation errors in many situations. Since this is a scalar measure, it does not carry any information on the anisotropy of the optimal grid-refinement. The purpose of this work is to introduce a new error-measure for turbulence-resolving simulations that is capable of predicting nearly-optimal anisotropic grids. Turbulent channel flow at $Re_\tau \approx 300$ is used to assess the performance of the proposed error-measure. The formulation is geometrically general, applicable to any type of unstructured grid.

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