Title: **Discretisation of diffusive fluxes on hybrid grids**

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Due to the discrete nature of the the finite-difference or finite volume operators, all the numerical approaches to the calculation of fluxes on the cell boundaries are sensitive to the actual shape and aspect ratio of the of the cell. In dealing with complex geometries at least two approaches are possible, work on generating well shaped cells or, as the authors do in this paper, put the effort searching for a scheme that maintain the accuracy on irregular hybrid meshes.

After analyzing discretisations of the viscous terms on hybrid unstructured meshes based on: Edge-based methods; Cell-vertex methods; Tessellation-like methods and Discontinuous Galerkin methods for accuracy, consistence, monotonicity and sensitivity to mesh quality, the authors found that none of these approaches is fully satisfactory. They presented and analyzed a novel method using an approximated finite-element method based on nodal gradients. The methods were compared for the linear heat equation and the Reynolds Averaged NavierStokes.

Based on the analysis and the numerical test performed, the authors conclude that *while the novel approximated finite-element method performs significantly better for the linear heat equation, a stabilised edge-based method performs equally well for the considered test-cases for the NavierStokes equations."* and that the methods based on a finite-element-like gradient reconstruction exhibit the best properties, *vis-a-vis* the following necessary properties: consistency; conservation; monotonicity; second-order accuracy; insensitivity of precision and convergence to deterioration in mesh quality and compact support.

This is a very good paper, that will certainly become a well referenced source.