Motivation
Implement Grid Adaptivity for 2D Staggered Grids in DuMuX

Refined Grid in the Regions of Interest => Significant Increase in Accuracy
With Moderate Increase in Computational Cost

Plans and Ideas for the Realization

- Hanging Nodes Occur

Staggered Grid (in Free Flow)

- Full Stencils
- Etc.

- Interpolated Stencils
- Clearly Part of the Stencil
- Part of the Stencil for the Interpolation to the Left

Stencils with Adaptivity (Geometry-Dependent)

Equations

\[ \rho + \nabla \cdot (\rho \mathbf{v}) = 0 \]
\[ \frac{3}{2} \rho \mathbf{v} \cdot \nabla \mathbf{v} + \mathbf{f} - \rho \mathbf{g} = 0 \]

\[ \rho = \text{Density} \]
\[ q_{\text{inlet}} \]
\[ t \]
\[ \mathbf{v} \]
\[ \mu \]
\[ p \]
\[ \mathbf{g} \]

Open Question: What Is A Mass Conservative Interpolation?

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