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Block Structured Mesh

BlockMesh.cs

Two 2nd rank tensors serve as storage for node variable values (node vars):

$$\begin{aligned} \mathbf{u}_{\triangleright} \text{ with components } u^{\delta l}_{\triangleright} \qquad & \texttt{free node vars} \,, \\ \mathbf{u}_{\triangleleft} \text{ with components } u^{\delta l}_{\triangleleft} \qquad & \texttt{constrained node vars} \,. \end{aligned}$$

For both tensors the first slot is of dimension N while the second slot is of dimension m. Components $u^{\delta l}$ are mutually exclusive across the two tensors - if the component $u^{5,4}$ appears in $\mathbf{u}_{\triangleright}$, it cannot appear in $\mathbf{u}_{\triangleleft}$ because a variable is either constrained or it isn't. The sum of the two tensors thus produces a tensor which holds all node vars:

$$\mathbf{u}_{\bowtie} = \mathbf{u}_{\triangleright} + \mathbf{u}_{\triangleleft} \qquad \texttt{node vars} \,.$$

A third 2nd rank tensor stores all forcing vector values:

$$\mathbf{f}_{\bowtie} \qquad \texttt{forcing vars} \,.$$

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