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Erratum

The energetic implications of the time discretization in implementations of the ALE equations, by S. J. Childs (*Int. J. Numer. Meth. Fluids* 2000; **32**: 979–1020)

On page 1016, line 3 onwards, the text:

In the terms arising from $(\tilde{F}^{-1}_{jk}\tilde{w}_k\tilde{J})_{,j}$

$$\tilde{F}^{-1}_{jk,j} = \frac{\partial}{\partial \tilde{x}_j}\frac{\partial \tilde{x}_j}{\partial x_k}$$

$$= \frac{\partial}{\partial x_k}\frac{\partial \tilde{x}_j}{\partial \tilde{x}_j} \quad \text{(order of differentiation interchangeable for } \tilde{\boldsymbol{x}}(\boldsymbol{x}, t) \text{ continuous)}$$

$$= 0$$

and

$$\tilde{J}_{,j}\tilde{F}^{-1}_{jk} = \frac{\partial}{\partial \tilde{x}_j}\det\left\{\frac{\partial \boldsymbol{x}}{\partial \tilde{\boldsymbol{x}}}\right\}\frac{\partial \tilde{x}_j}{\partial x_k}$$

$$= \frac{\partial}{\partial x_k}\det\left\{\frac{\partial \boldsymbol{x}}{\partial \tilde{\boldsymbol{x}}}\right\}$$

$$= 0$$

The latter result becomes apparent when considering that all terms which arise from the differentiation of the determinant contain factors of the form $\partial^2 x_i/\partial x_j\,\partial \tilde{x}_k$. These vanish as continuity once again affords the order of differentiation interchangeable.

should be replaced by:

In the terms arising from $(\tilde{F}^{-1}_{jk}\tilde{\omega}_k\tilde{J})_{,j}$, both $\tilde{F}^{-1}_{jk,j}$ and $\tilde{J}_{,j}\tilde{F}^{-1}_{jk}$ vanish under the conditions specified (in Section 2.4) for Equations (9) and (10) to be a completely general reference description.