

# Weakly symmetric stress equilibration and a posteriori error estimation for hyperelasticity

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By extending the techniques in [1] for the linear elastic case, an algorithm to reconstruct a  $H(\text{div})$ -conforming weakly symmetric stress tensor for the non-linear hyperelastic case is presented. This work builds upon [2] where a local weakly symmetric stress reconstruction is derived for arbitrary conforming finite elements in linear elasticity. The reconstructed stress tensor is used as an a posteriori error estimator. Numerical results for the incompressible hyperelastic case are presented.

## References:

- [1] F. Bertrand, M. Moldenhauer, G. Starke, A posteriori error estimation for planar linear elasticity by stress reconstruction, *Computational Methods in Applied Mathematics* (2018), <https://doi.org/10.1515/cmam-2018-0004>
- [2] F. Bertrand, B. Kober, M. Moldenhauer, G. Starke, Weakly symmetric stress equilibration and a posteriori error estimation for linear elasticity, *in review*, available at: <https://arxiv.org/abs/1808.02655>

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