

# On the MHM method for Linear Elasticity

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In this talk, we extend the Multiscale Hybrid-Mixed (MHM) method proposed in [1] to handle polytopal meshes. As a result, we obtain new stable pairs of approximation spaces while keeping the overall properties of the original method. The numerical analysis highlights the dependence of the error in terms of the diameters of the coarse, the skeleton and the second-level meshes. Notably, we show that the method achieves superconvergence in the usual broken  $H^1$ - and  $L^2$ -norms. Numerical tests assess theoretical results and verify the robustness of the method on a two-dimensional elastic medium with high-contrast.

## References

- [1] C. Harder, A.L. Madureira, and F. Valentin. A hybrid-mixed method for elasticity. *ESAIM: Math. Model. Num. Anal.*, 50(2):311–336, 2016.