

Partition-of-unity localizations of dual-weighted residual estimators for single and multiple goal functionals

Thomas Wick¹ Thomas Richter² Bernhard Endtmayer³ Ulrich Langer⁴ Andreas Schafelner⁵
Julian Roth⁶ Jan Philipp Thiele⁷

In this talk, we present our efforts over the last years to apply partition-of-unity localizations in a posteriori goal-oriented error control and adaptivity for stationary and nonstationary problems. The partition-of-unity greatly facilitates error localization for nonlinear problems, coupled problems, multiphysics applications, up to space-time coupled variational inequality systems. We discuss the idea, concepts and show several applications in single and multigoal-oriented error estimation.

References:

- [1] <https://link.springer.com/article/10.1007/s10915-024-02485-6>
- [2] <https://www.degruyter.com/document/doi/10.1515/cmam-2022-0200/html>
- [3] <https://comptes-rendus.academie-sciences.fr/mecanique/articles/10.5802/crmeca.160/>
- [4] <https://www.degruyter.com/document/doi/10.1515/jnma-2018-0038/pdf>
- [5] <https://www.sciencedirect.com/science/article/pii/S0377042714004798>

¹Leibniz University Hannover, Institute of Applied Mathematics
thomas.wick@ifam.uni-hannover.de

²University of Magdeburg
thomas.richter@ovgu.de

³Leibniz University Hannover
endtmayer@ifam.uni-hannover.de

⁴Johannes Kepler University Linz
ulanger@numa.uni-linz.ac.at

⁵Johannes Kepler University Linz
andreas.schafelner@jku.at

⁶Leibniz University Hannover
roth@ifam.uni-hannover.de

⁷Weierstraß-Institut für Angewandte Analysis und Stochastik Berlin
thiele@wias-berlin.de