

# A Partition-of-unity based Variational Localization of the DWR estimator with Application to Nonlinear Fluids and Solids

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**Abstract:** In this talk, we introduce a novel localization technique based on the introduction of a partition of unity. This new technique is very easy to apply, as neither strong residuals nor jumps over element edges are required. In the mathematical analysis, we show for different localization techniques (established methods and the new one), that the local error indicators used for mesh adaptivity converge with the proper order in the error functional. As key application, we have in mind to treat nonlinear solid mechanics and multiphysics problems such as fluid-structure interaction. Here, derivation and evaluation of classical strong adjoint residual formulations are challenging when not even impossible to get. Numerical examples are consulted to illustrate our findings.

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