

# ANALYSIS OF LINEARIZATION ERROR FOR GOAL-ORIENTED ADAPTIVITY OF NONLINEAR PROBLEMS

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**Abstract.** We propose in this talk to address the issue and effect of linearization in the quality of the error estimates in quantities of interest for strongly nonlinear problems (see e.g. [1, 2]). It is well known that the error representation in this case can be decomposed into two contributions: 1) one contribution in the form of the product of the residual by the solution of a linearized adjoint problem that describes the discretization error and 2) the other contribution that combines all higher-order terms with respect to the error in the primal solution that describes the linearization error. In most works on goal-oriented error estimation, the linearization error contribution is usually neglected with respect to the discretization error. However, when the nonlinear effects are significant, one cannot assume any longer that the latter is dominant over the former. In fact, it becomes obvious in those cases that linearization errors should be also controlled. We will present here the construction of refinement indicators that combine both sources of errors in order to simultaneously control those in a balanced manner.

## REFERENCES

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