

# A Posteriori Modelling Error Estimates for the Stationary Diffusion Equation with Complicated Diffusion Matrix

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## 1 Introduction

In this talk a new computable a posteriori error majorant for hierarchically simplified models of the stationary diffusion equation with a complicated diffusion coefficient is presented. The original problem is considered with homogeneous Dirichlet boundary conditions and without any specific assumptions on the domain geometry and the right-hand sides.

## 2 Results

Functional a posteriori estimates focused on numerical approximation errors were extended to estimate the modelling errors in a reliably way. Based on the local behavior of the error majorant an adaptive strategy was developed, which includes the local enrichment of the finite element space and the hierarchically adapted “models”. The numerical tests indicate the efficiency of the estimator and its ability to represent the error distribution needed for an adaptive improvement of the simplified models.

Joint work with S. Sauter (Universität Zürich) and S. I. Repin (PDMI St.-Petersburg)

## References

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