

# Adaptive Coupling of Finite Volume and Boundary Element Methods: Non-symmetric and Three-field FVM-BEM

(Poster)

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We couple the prototype for flow and transport in porous media in an interior domain to the Laplace equation on the complement, an unbounded domain. This is a classical interface problem. An other interpretation of this model is that the (unbounded) exterior problem “replaces” the (unknown) boundary conditions of the interior problem. We approximate the solution of this interface problem either by the *non-symmetric* or the *three-field* coupling of the Finite Volume Method (FVM) and the Boundary Element Method (BEM). For these two coupling methods, we introduce (semi-)robust a posteriori error estimators and use them in an adaptive algorithm to improve the convergence behavior. Numerical experiments compare these two adaptive methods in terms of effectivity indexes, errors and mesh refinements. Both strategies turn out to be very suitable for the numerical treatment of interface problems, which have singularities or boundary/internal layers.

References:

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