

Title: A posteriori error estimates of the discontinuous Galerkin method for convection-diffusion equations

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Abstract: The thesis deals with a posteriori error estimates of the discontinuous Galerkin approximations of diffusion problems. It has two main parts. In the first one we describe different approaches leading to a posteriori error estimate for the Poisson equation with mixed boundary conditions. The second one is concerned with a heat equation discretized by the backward Euler scheme in time. We derive a posteriori error estimator which provides the error upper bound.

Keywords: Discontinuous Galerkin method, a posteriori error estimates, Helmholtz decomposition, Galerkin orthogonality principle, duality principle