# A posteriori estimates for Discontinuous Galerkin methods for second order elliptic problems

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We analyze Discontinuous Galerkin formulations for second order elliptic problems in mixed form. Using the "weighted residual" approach of [1] we carry out the a posteriori analysis in an abstract framework, without specifying the choice of the weighting operators. In such a way we identify the minimal approximation properties required on the operators to guarantee lower and upper bounds for the energy norm of the error. We then show that this unified approach applies to all the Discontinuous Galerkin schemes presented so far in the literature.

References:

[1] F. Brezzi, B. Cockburn, L.D. Marini, and E. Süli: *Stabilization mechanisms in discontinuous Galerkin finite element methods*, Comput. Methods Appl. Mech. Engrg. 195(25-28), (2006), 3293-3310.

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