# Some new HDG Projections and their Use for Streamlined Analysis of HDG Methods

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The convergence analysis of the some of the Hybridizable Discontinuous Galerkin schemes was rendered "quite trivial" by the introduction of a tailored HDG projection. This made many of the arguments in the analysis to be easy to replicate and verify. This special projection was not available in some new classes of HDG schemes, which required a certain amount of bootstrapping for the convergence proofs. We show that a carefully crafted (while easy to analyze) HDG projection allows for a very simple analysis of new HDG methods applied to diffusive and evolutionary problems.

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