

A primal hybrid polyhedral method for the Hodge Laplacian on arbitrary topologies

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In this work, we propose and analyze a primal hybrid method of arbitrary order for the Hodge-Laplace problem on three-dimensional domains with non-trivial topology. The method is designed for general polyhedral meshes and relies on recent advances in the hybrid discretization of div-curl systems. We establish the well-posedness of the discrete formulation through hybrid Weber inequalities adapted to general topologies, and derive error estimates in the case of sufficiently regular solutions.