HHO Method for Semilinear Sobolev Equation

Ram Jiwari (Indian Institute of Technology Roorkee), Ajeet Singh, N. Kumar

This article presents the development and examination of a hybrid high-order (HHO) approach tailored for solving a semilinear Sobolev equation on polygonal meshes. The HHO method offers distinct advantages over traditional approaches, demonstrating its capability to achieve higher-order accuracy while reducing the number of unknown coefficients. We establish error approximations for the semi-discrete formulation employing HHO discretization. Using this method we find optimally convergence of orders $\mathcal{O}\left(\tau^2 + h^{k+1}\right)$ in the energy-type norm and $\mathcal{O}\left(\tau^2 + h^{k+2}\right)$ in the L^2 norm.

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