

Two Types of Solution Overshoots in Discontinuous Galerkin Discretization Schemes

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Abstract. We address a high order Discontinuous Galerkin scheme coupled with Newton's method to solve a steady state problem. It will be demonstrated that using a high order DG scheme may result in two types of solution overshoots. The oscillations of the first type are associated with smooth approximation of solution discontinuities. In addition, the oscillations may appear in steady state problems as a result of inconsistent flux approximation near extrema.

Key words. discontinuous Galerkin, numerical flux, spurious oscillations

AMS subject classifications. 49M15, 65L20, 65L60

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