ON THE DPG METHOD FOR SHALLOW SHELLS

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ABSTRACT

We discuss advantages and challenges of the discontinuous Petrov–Galerkin method with optimal test functions (DPG method) with emphasis on a shallow shell model of Koiter type. The DPG method belongs to the class of minimum residual methods and, thus, is automatically stable, cf. [1]. Underlying assumption is the well-posedness of the model problem. This becomes a challenging requirement when considering singularly perturbed problems combined with locking phenomena of discretizations. In such cases, the design of proper weak formulations is not straightforward. For shallow shells of Koiter type we propose a DPG scheme that has all the typical advantages. Futhermore, numerical experiments illustrate that the built-in error estimator gives rise to adaptive mesh refinements that are capable to resolve boundary and interior layers. For a detailed report, see [2]

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References

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