A novel POD-DEIM-like model reduction method for the compressible Euler and Navier-Stokes equations

Zoltán Horváth @ (Széchenyi István University), Mátyás Constans
R 1.23 Tue Z3 11:30-11:40

We realized permanent failures of our computer code of the classical POD-DEIM by Chaturan- tabut-Sorensen and its QDEIM variant by Drmac-Gugercin when applied to 1st and 2nd order finite volume semi-discretizations of the 3D compressible Euler and Navier-Stokes equations with the ideal equation of states. Then we have introduced and applied a regression method instead of the interpolation step in DEIM, which resulted in a stable code.

In this talk, we present the new POD-DEIM-like reduced order method, overview its implementation, examine its accuracy, and provide results of some applications for external flow computations in complex domains in 3D.