

Stabilization and fine-tuning of projection-based reduced order models (ROMs) for incompressible and compressible flow via minimal subspace rotation on the Stiefel manifold

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For a ROM to be stable and accurate, the dynamics of the truncated subspace must be accounted for. This talk proposes an approach for stabilizing and fine-tuning projection-based fluid ROMs in which truncated modes are accounted for *a priori* via minimal rotation of the projection subspace. No empirical turbulence modeling terms are required. Mathematically, the approach formulates a quadratic matrix program on the Stiefel manifold. The method is evaluated on incompressible and compressible flow problems.

This talk presents an approach for stabilizing and fine-tuning projection-based ROMs for incompressible and compressible flow.