

## Reduced order modeling for CFD problems

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### ABSTRACT

Reduced order modelling techniques have been developed to reduce the computational cost and time of high-fidelity Computational Fluid Dynamics simulations. Typically, a reduced basis technique is applied to obtain the reduced order model. The governing equations are then projected onto a reduced basis space, generated by applying a Proper Orthogonal Decomposition (POD) approach onto the snapshots of the full order simulation. The obtained reduced order model can be used for controlling (time-dependent) non-homogeneous boundary conditions or parametric studies. Three types of solutions are considered: the full order solution, the projected fields which are obtained by the projection of the full order solutions onto the POD basis and the prediction fields obtained by solving the reduced order model for a new set of parameters. These results are then compared and the accuracy of the reduced order model is assessed.