

Challenges in the Prediction of Separated Flow in an Exhaust Diffuser

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Summary:

Flow in a diffuser can comprise complex phenomena such as separation, reattachment, recirculation and shear layer mixing.

Prediction of the flow by means of CFD (Computational Fluid Dynamics) is therefore challenging and strongly dependent on the underlying modeling. In particular the turbulence modeling for such adverse pressure gradient flows is a major field of research and ongoing development.

The presentation aims to give insight into state of the art diffuser CFD, its capabilities and drawbacks.

For this purpose, computational results for a model exhaust diffuser are presented, compared and validated with measurements from an in-house test rig.