

Adjoint-based optimization of a complete design chain in CFD

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An optimization in CFD that covers the complete design chain including a CAD tool to describe the object to be optimized is still a severe challenge. In this talk we present the algorithmic differentiation of the CAD kernel within OpenCASCADE Technology using the AD tool ADOL-C. This will be coupled with a correspondingly extended flow solver for optimization purposes in CFD. First numerical results for the optimization of a U-bend pipe and of the TU Berlin stator are shown including also a verification of the computed derivatives.