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Master thesis

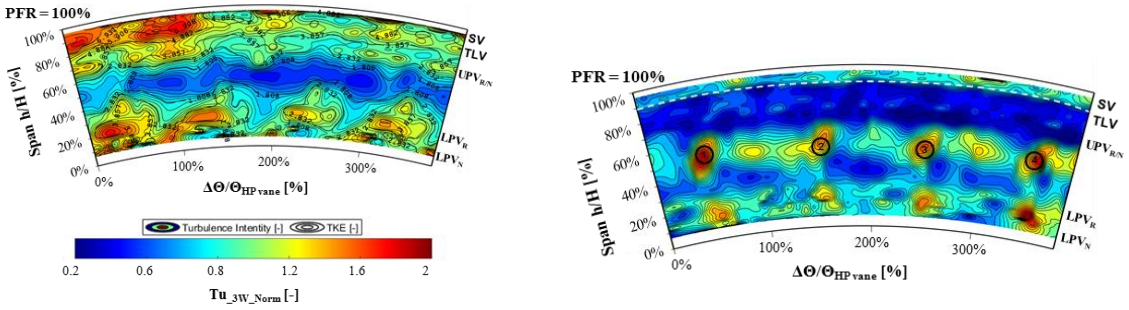
Application of AI to Predict a Flow Field based on Scarce Measurement Data

Because of a reduced access to the flow field in a turbine intermediate duct, measurements can only be performed in a few planes. In order to get the complete flow field, AI methods based on POD (Proper Orthogonal Decomposition) shall be developed.

These methods use a large number of CFD computations of the duct for different boundary conditions. The results are then decomposed in modes, which can be used to reconstruct the flow field for different boundary conditions.

The contribution of the modes shall be calculated based on an optimized agreement with the measurement data. In this way the flow field, which corresponds best to the measurement data can be found as well as the CFD boundary conditions of the test case.

Finally, the difference to the measured boundary conditions shall be evaluated and a CFD simulation shall be done to see if the experimental data can be captured.



Measured turbulence intensity and turbulent mixing length

Beginning: available now

Duration: 5-6 Months

Language: English/German

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