

# Unsteady Numerical Investigation of An Axial Compressor Stage Embedding Tandem Blades

The aim of this work is to numerically investigate the unsteady aerodynamic behavior of low-speed axial compressor stage embedding tandem blades. Starting from the steady-state results of the stage already acquired, the student shall investigate how an unsteady analysis (URANS) affects the results by means of time consumption, accuracy, and more in general reliability of the model against the correspondent steady-state results (RANS). All the results shall be obtained by the CFD solver TRACE, developed at the Institute of Software Technology at DLR.

**Thesis type:** Master Thesis (Masterarbeit)

**Requirements:**

- Studying in mechanical engineering or a comparable course of study
- Basic knowledge of Turbomachinery and CFD
- Basic experience in Python or Matlab
- Autonomous and precise style of work
- Fluent English language knowledge

**Tasks:**

- Basic literature research
- Getting to know the process chain
  - o Geometry generator
  - o Mesher
  - o CFD solver
- Fixing the current convergence issues of the unsteady solver
- Developing a post-processing routine of unsteady data

**Start:**

- Flexible

**Duration:**

- 6-7 months

