

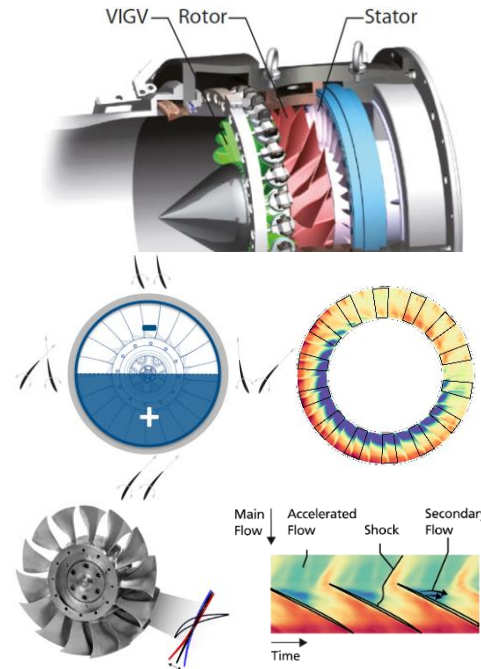
Aeroelastic Analysis of Mistuning Effects in a Transonic Compressor

Aeroelastische Analyse von Mistuning-Effekten in einem transsonischen Verdichter

Master Thesis

Background

Modern transonic compressors tend to suffer severe blade vibration such as flutter or non-synchronous vibration, thus comprehensive physical understanding of the aerodynamic and aeroelastic phenomena as well as distinct countermeasures are necessary. The current investigation applies aerodynamic mistuning using different pattern with circumferentially varying stagger angles of the inlet guide vanes. The experimental investigation was carried out at the Transonic Compressor test facility, using a 1.5-stage modern compressor with a BLISK rotor and variable inlet guide vanes. The rig is extensively equipped with instrumentation for aerodynamics and aeromechanics.



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Supervisor

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Focus

X	data analysis
	design
(X)	experiments
	simulations

Tasks

- Literature survey about aerodynamics, aeroelastics and mistuning in transonic compressors
- Development of analysis methods and implementation in MATLAB (based on existing tools)
- Determine and characterize mistuning effects
- Synthesis, documentation and presentation of the results