Abstract:

Acoustic noise is an aggressor causing discomfort. Especially regions in the proximity of airports represent a harsh and loud environment. The reduction of noise pollution is most effective at its origin, e.g. the turbine exhaust of the aircraft. Systematic optimisation of the turbomachinery flow demands the development and application of novel numerical methods.

Numerical simulation methods will be used to quantify the exhaust flow of an aircraft turbine. The combination with acoustic analogies allows the estimation of the acoustic noise generation and the localisation of the sources. Innovative strategies shall be employed to guide the optimal design of active noise reduction methods, such as fluidic injection. Thereby, the approach shall replace the blind trial of selective scenarios with a systematic strategy.

Key aspects:

- Novel numerical optimisation
- The perfect introduction to fluid dynamic simulations

Requirements:

- Motivation
- Basic knowledge of fluid dynamics and CFD

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