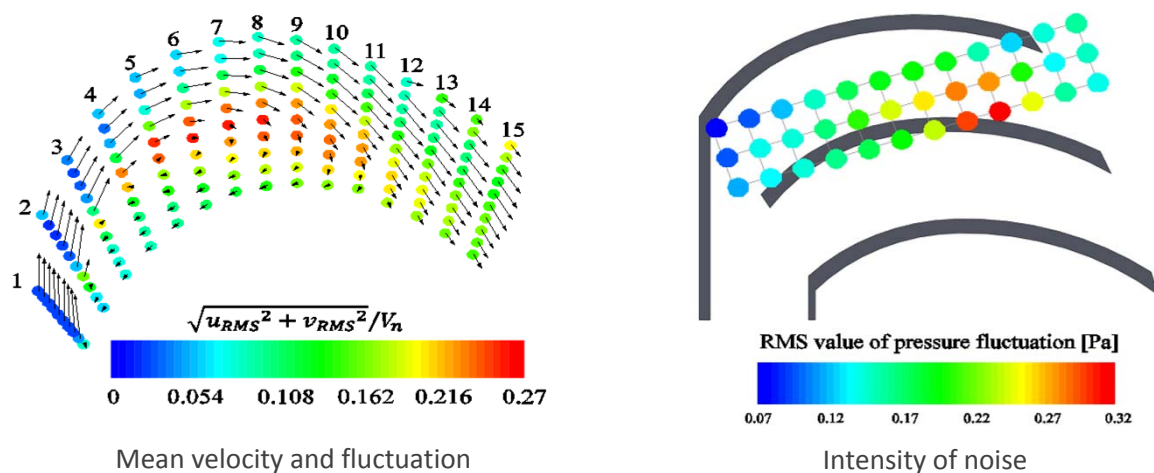


Noise reduction in a sirocco fan

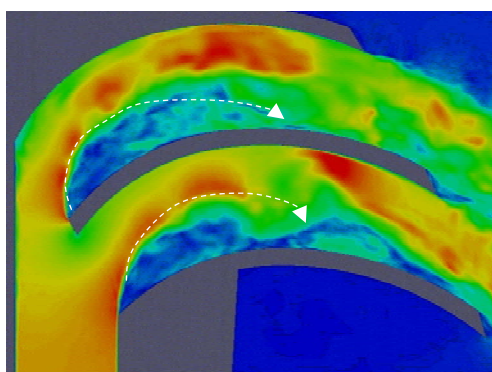
Abstract

These days, aeroacoustic noise from car air-conditioners attracts increasing attention with development of quiet hybrid engines. Aeroacoustic sound is generated from turbulence in separated/reattachment flow between blades. In this study, we clarify the mechanisms of sound generation from the flow by simultaneous measurement of sound pressure, air velocity, and wall pressure between an enlarged model blades. In addition, we use numerical simulation to get the visual information of flow field between blades.

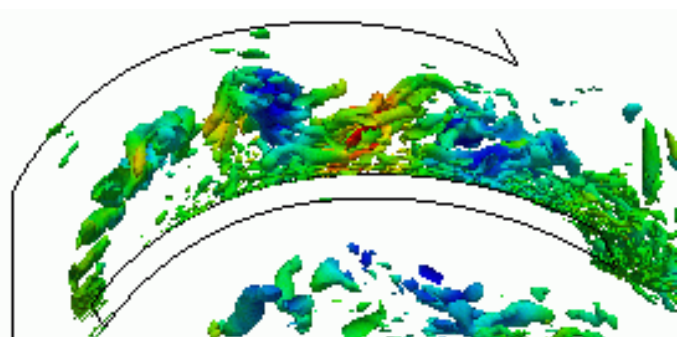
Measurement of velocity, pressure and noise in blade model



Numerical simulation of flow field between blades by OpenFOAM



Instantaneous flow field



Vortical structure

- 古田他, タンデム型熱線プローブによる二次元翼周りのはく離流計測, 日本実験力学会論文集 (2013) momentum and Mass Transfer in Developing Plane Mixing Layers, Exp. Therm. Fluid Sci. (2013)