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**Measurement of wall pressure fluctuations for noise prediction in axial flow fans**

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The unsteady pressure field on fan blades is an important investigation topic. Both numerical simulation and experimental techniques are used in order to achieve this purpose. However neither has given yet entire satisfaction. The CFD tools using the resolution of the averaged Navier Stokes equations do not really give the unsteady aerodynamic characteristics of the flow needed for an accurate noise prediction. In addition, tools using large eddy simulation are still expensive for industrial users in the case of a complex geometry such as turbomachinery.

When a lifting surfaces goes through turbulence, pressure fluctuations occur on their surfaces that can radiate noise. To calculate these fluctuations and thus the noise requires a theoretical model of the unsteady aerodynamics. The validation and development of these models require data and understanding from experiments. Unsteady surface pressure measurements were carried out on one fan blade with an array of pressure transducers with high sensitivity. The fan studied is a low pressure and low Mach number axial flow fan. Investigations of unsteady surface pressure are carried out in different configuration, spanwise, chordwise, pressure side and suction side. Data are gathered through a slip ring by an analyser. The unsteady wall pressure spectra is used as an input for trailing edge noise analytical prediction model.