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# Experimental analysis of the wall aerodynamics and acoustic radiation of the trailing edge of an airfoil in subsonic flow

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This experimental study treats of the trailing edge noise mechanisms, especially broadband noise, resulting from the hydrodynamic wave diffraction on the sharp edge of a foil in flow, with the aim of improving its modelling. A detailed review of the dynamic behaviour of the phenomenon characteristic aerodynamic quantities (wall pressure and velocity fluctuations) has been made on a Naca 0012 airfoil and particular statistical data analysis have been performed (POD, temporal and spectral visualizations, spatial filtering by transducer array). Some models from the literature related to the wall pressure statistics (Corcos, Chase) have been adjusted and validated, and finally used for the modelling of the noise from the trailing edge of the airfoil. To conclude, measurements of the radiated acoustic pressure have been made in an anechoic wind tunnel, showing as a result the validity and limits of the implemented aeroacoustic model. The approach proposed by Chase in terms of wall pressure statistic modelling appears to be able to correctly represent the influence of the problem main parameters (Reynolds number, airfoil incidence).