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# Influence of the trailing edge shape on the aerodynamic characteristics of an airfoil at low Re number using RANS.

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**Abstract**. Recent studies have demonstrated that periodic spanwise modifications of the trailing edge (TE) of an airfoil can significantly reduce the noise produced, and also can increase its aerodynamic performances. This study aims to analyse the effects of such modifications on the aerodynamic performances of a profile by numerical simulation, with a particular emphasis on low Re numbers typical of Unmanned Aerial Vehicles (UAV), Micro Aerial Vehicle (MAV), and/or small wind turbines. In the range of Re numbers considered here, the flow presents laminar separation eventually followed by transition and reattachment (depending on Re, Angle of Attack and Free Stream Turbulence).
As the standard for industrial applications is still the RANS approach, thanks to its moderate computational cost, this approach is considered here and a first step consists in evaluating the ability of recently proposed transition models (Menter, 2015; Ge, 2014; and Kubacki, 2016) to predict the characteristics of the flow for such geometries with modified TE. A baseline NACA0012 profile is considered, together with modified TE (blunt TE, and serrated TE). Simulations are performed using Code_Saturne (open source 2nd order finite volume), and the influence of the FST, AoA, and Re on the aerodynamics performances is examined. Results are compared with reference results from the literature.

**Keywords:** Airfoil, Trailing Edge, RANS transition models.