Reactive control of airfoil turbulence and sound

Motivated by the environmental problem posed by the sound generated by wind-turbines, which limits their implantation both on land and at sea, the PhD projet will address the problem of reactive control of the flow around an airfoil with the objective of manipulating both the turbulence developing in the airfoil boundary layer and the scattering properties of the trailing edge. The control approach will involve both linear and non-linear optimisation procedures to establish control laws that drive an active trailing edge based on sensor readings taken on the airfoil surface. Control approaches will be based both on adjoint-based optimal-control tools developed in [1, 2], and on gradient-free methods [3, 4]. The control laws will first be elaborated and validated using numerical simulation. Experiments will then be performed to test the approach in wind-tunnel conditions.

Motivated candidates with a solid grounding in fluid mechanics, aeroacoustics and computational methods are invited to send a CV and motivation statement to: **peter.jordan@univ-poitiers.fr** and **eduardo.martini@ensma.fr.**

References

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