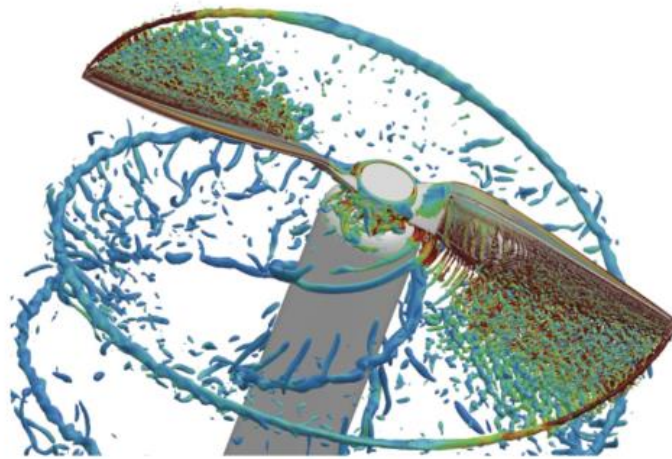




# Aerodynamic and Aeroacoustic Optimization of Propeller Blade Tip

Propellers are a popular means of propulsion in the world of aviation. Their use has recently landed in the world of small aircraft such as drones, and will probably also be used as thrusters on modern UAM aircrafts. Given the proximity these aircraft may have to populated areas, it is essential that the propellers provide the necessary force to fly, but at the same time generate as little noise as possible. In addition, making propulsion more efficient is also important to reduce energy consumption.



*Figure 1* Visualization of lambda 2 iso-surfaces around a 2 bladed propeller

The main goal of this thesis is to investigate different blade tip geometries, with the aim of reducing the noise produced and improving the overall aerodynamic performance. In fact, the tip vortex is a source of broadband noise and its perturbation in the surrounding flow can negatively affect the performance of the whole propeller. The development will be performed through a CFD solver based on LBM/VLES technology.

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