Simulation of the Evolution of Chaff in Helicopter Environments

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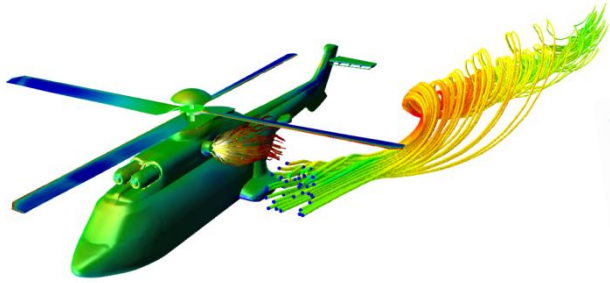
Chaff Effectivity Simulation

Motivation

The idea to use vortices in the helicopter flow-field to increase chaff blooming rates and Doppler-returns is not new. However, optimisation using flight tests is difficult and expensive.

Numerical simulation creates a controlled environment by getting rid of uncertainties like changing wind and flight trajectories, variations in pyrotechnical charges and so on. It also provides additional insight compared to real world tests. Altogether, simulation combined with real world tests allow for a more cost effective and scientific optimization of the evolution of chaff clouds.
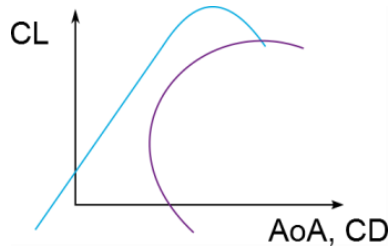
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Chaff Effectivity

Simulation Process

Helicopter Flowfield

Chaff Distribution

Particle Tracking
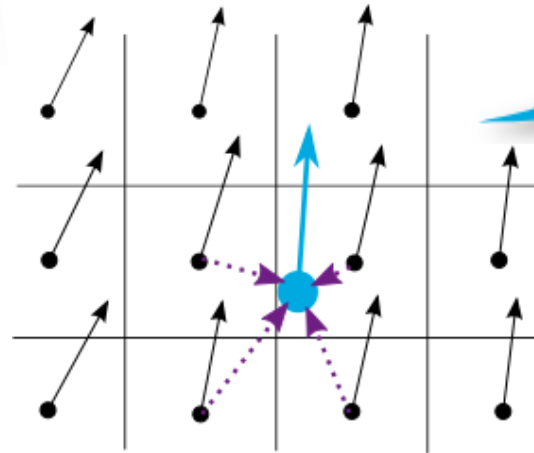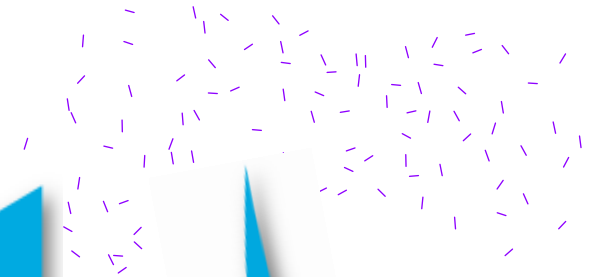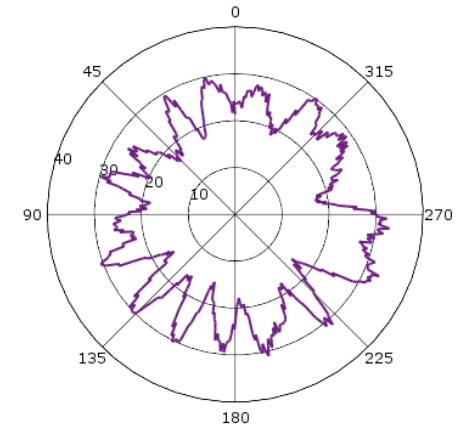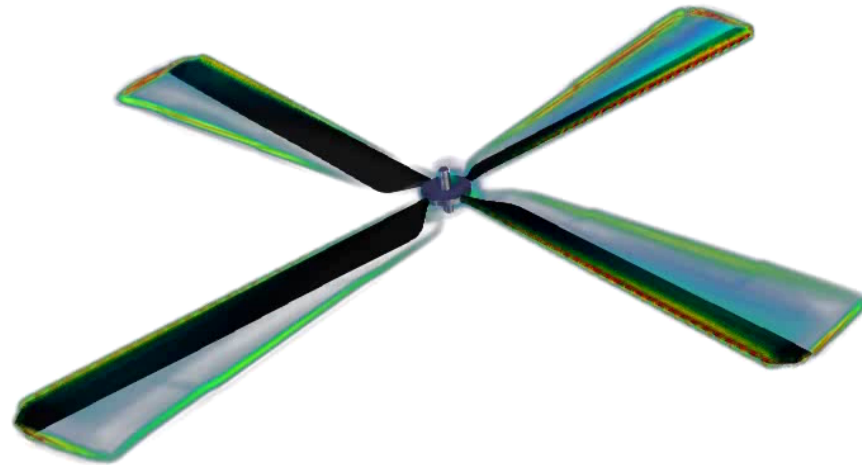
Physical properties of Chaff

Chaff Aero

CL

AoA, CD

RCS

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Forward Flight

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Chaff Effectivity Project

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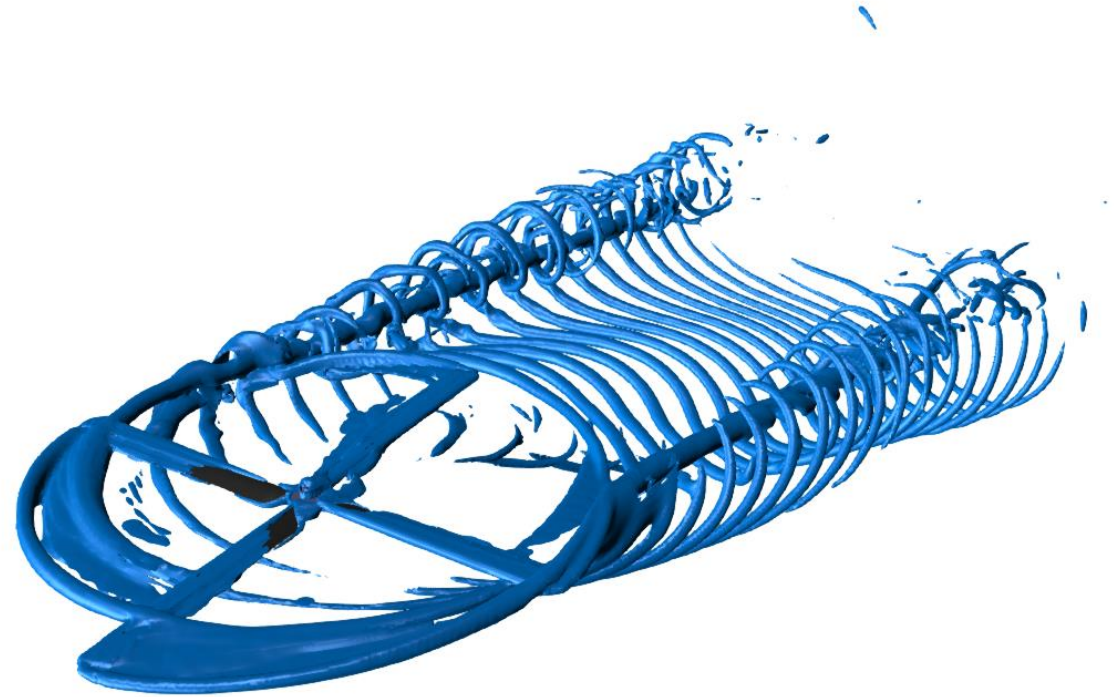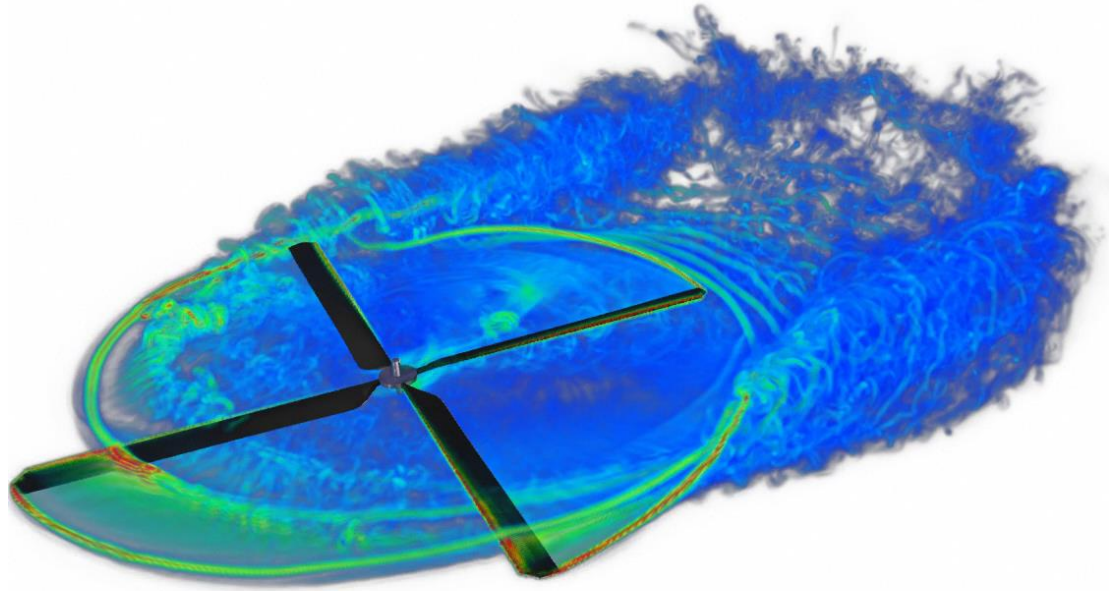
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Forward Flight

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Chaff Distribution

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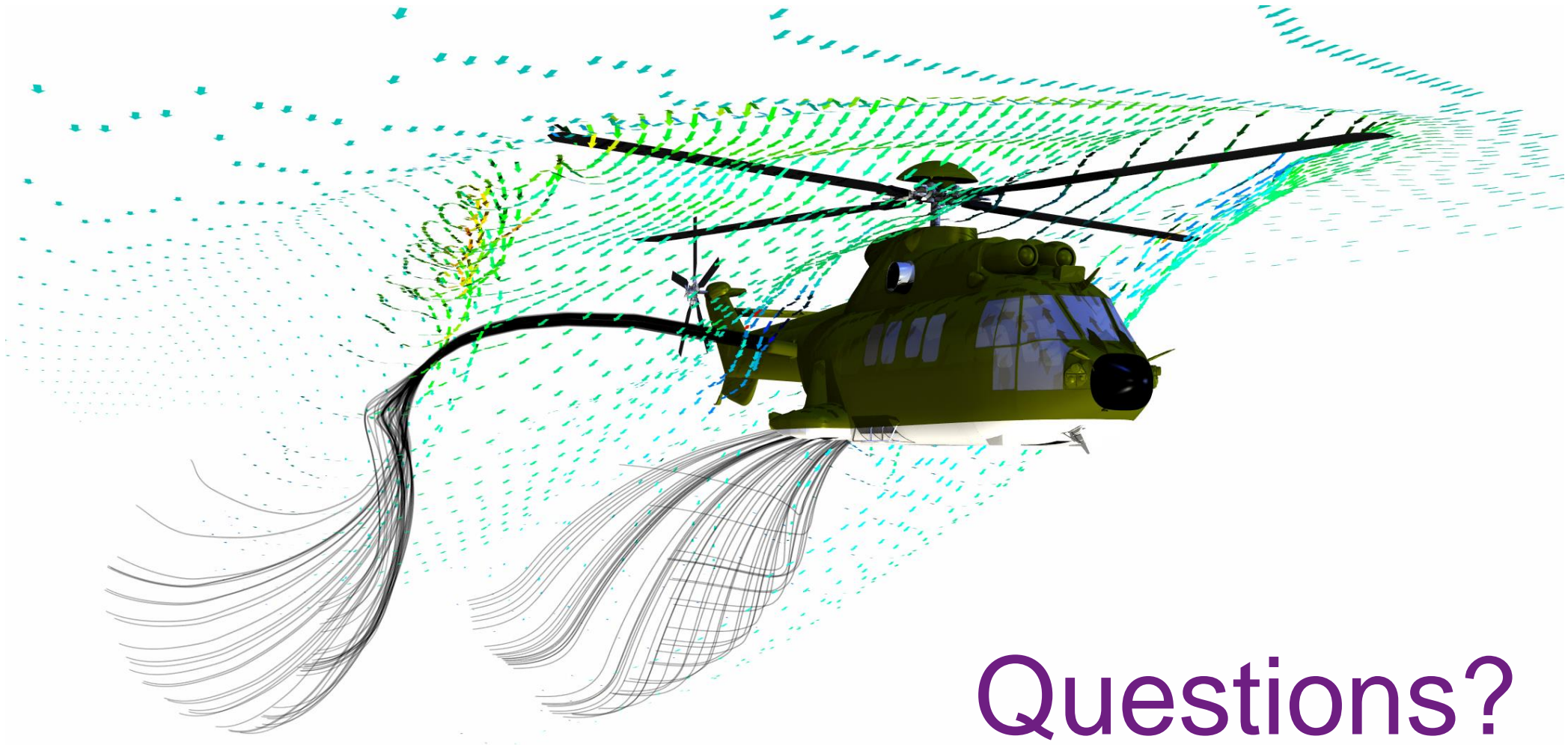
Chaff Distribution

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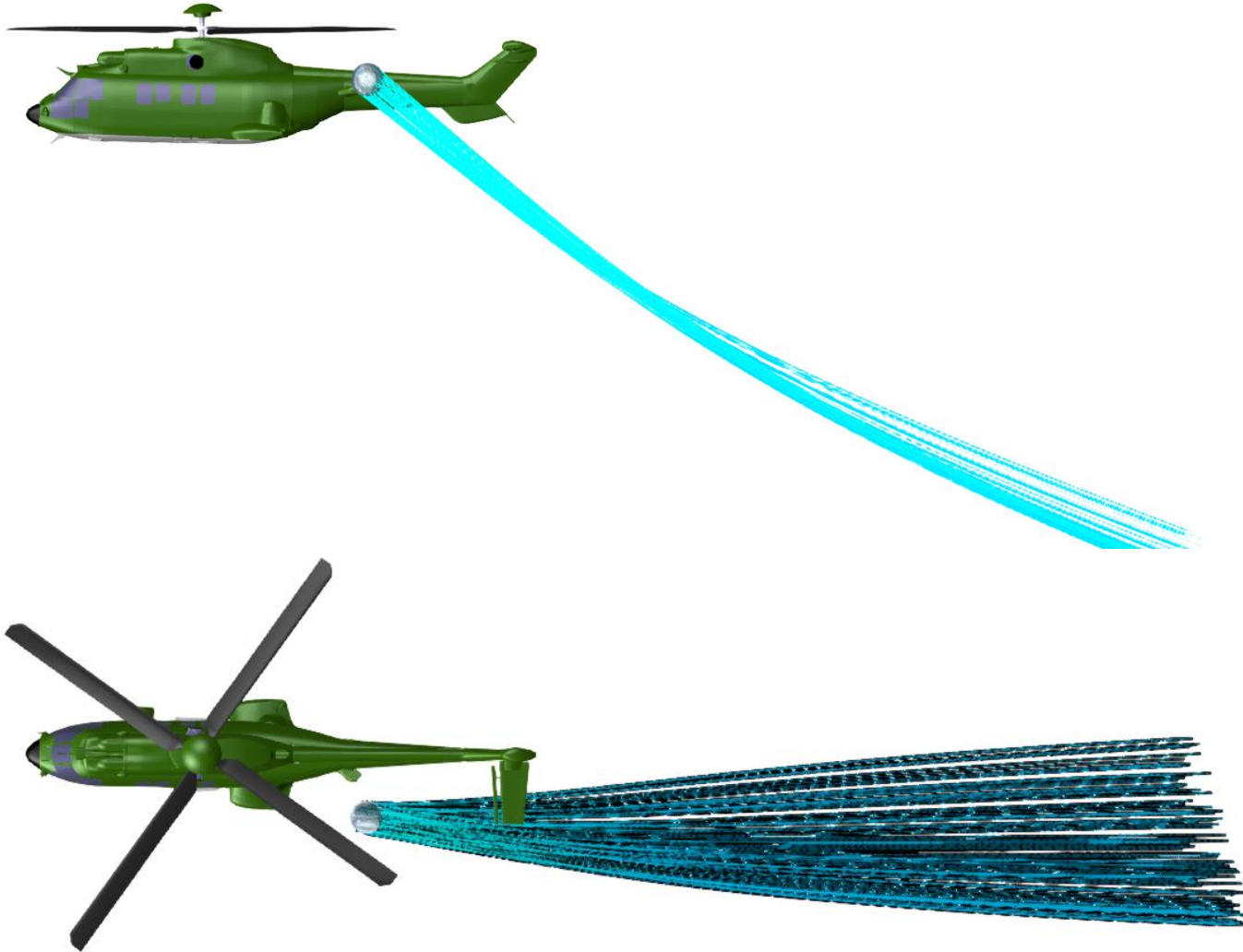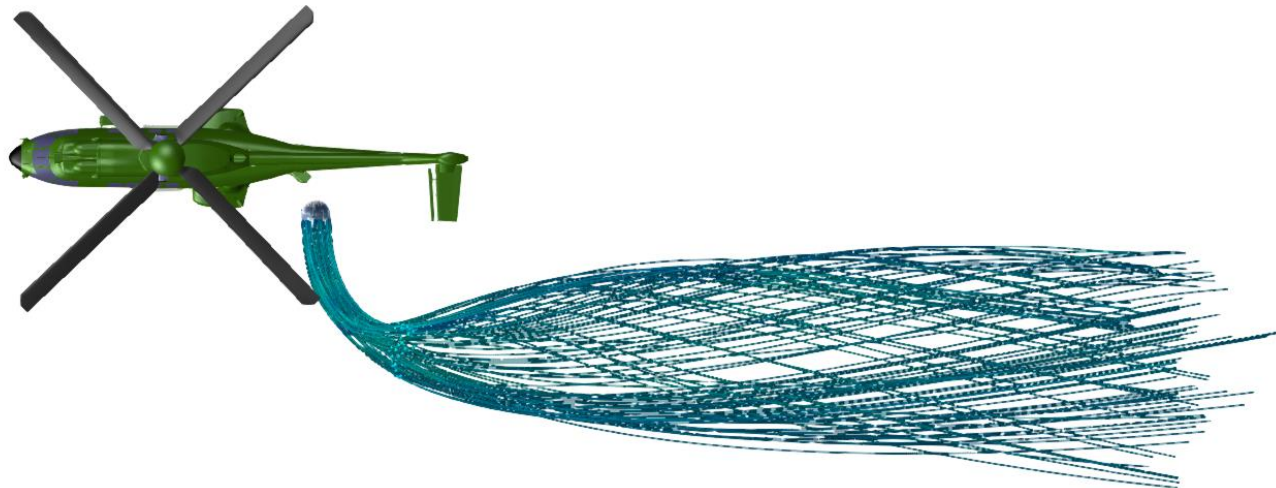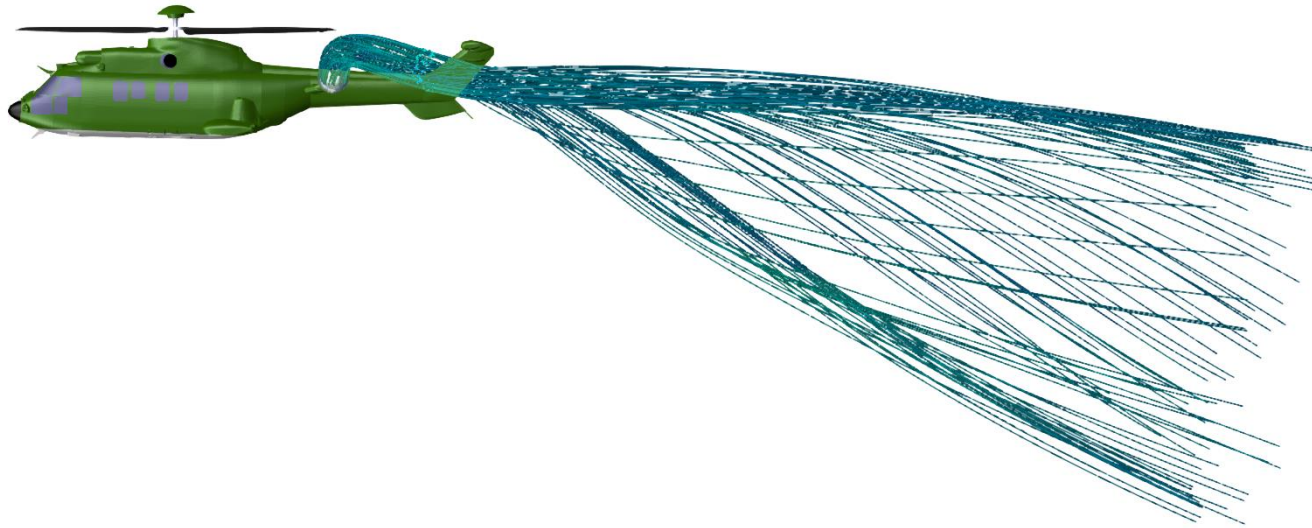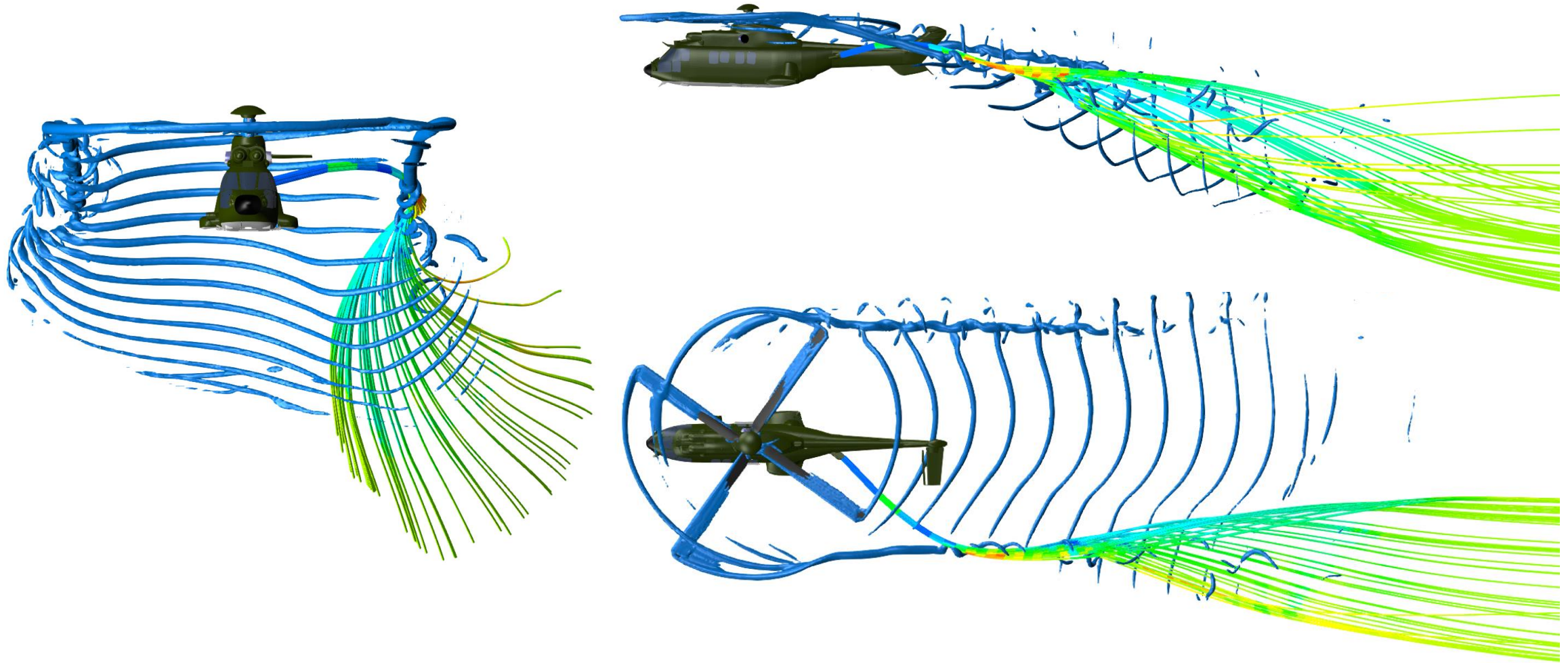
Chaff Effectivity Project

Summary

❑ The evolution of chaff clouds in helicopter flow environments were simulated

❑ The simulation provides additional insight compared to real world tests

❑ The simulation creates results under "laboratory conditions", thus, allows comparison of different configurations under the very same conditions

❑ Insight and "laboratory condition"-results allow for optimization

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Chaff Effectivity Project

Questions?

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