

# Master thesis



## “Design of an experimental set-up for the thermal analysis of water droplets impacting rotating surfaces”

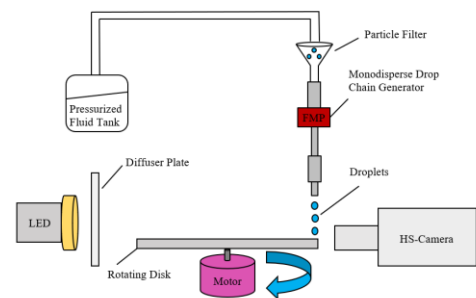


Due to the escalating extreme weather conditions, the aircraft icing events are increasingly growing. The analysis of this phenomenon has gained increased attention, particularly in the field of aviation safety. A significant contributor to icing is the occurrence of Supercooled Large Droplets (SLD), water droplets suspended in air at temperatures below freezing one. Previous experiments in the scientific community have predominantly focused on the standard (normal) impact of these droplets on solid surfaces with low velocities.

Our new research aims to expand this understanding by considering rotating surfaces and high relative impact velocities. This approach will closely simulate real-world conditions that an aircraft wing's experience.



*flightsafety.org*



*Current experimental set-up*

### Requirements:

- High motivation and interest in experimental work
- Teamwork-oriented with a strong sense of responsibility and consciousness
- Knowledge of LabView/CAD (Siemens NX, SolidWorks, ...)  
Hands-on experience with sensors, high speed/infrared camera, image-processing (Matlab) would be beneficial

### Tasks:

- Measure the residual water layer on the rotating disk
- Measure the temperature field in the impact position
- Conduct and evaluate the experimental results
- (Optional) Expand the drop-chain impact set-up to a single drop one

**Starting time:** as soon as possible

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