	INTERNSHIP 6 MONTHS **YEAR 2020**
Internship tutors: Juan RUSCIO - Joel JEZEGOU Juan.ruscio@isae-supaero.fr joel.jezegou@isae.fr	Internship with ISAE SUPAERO - Toulouse Location: **ISAE SUPAERO - Toulouse** Starting Date: between 01/03/2020 to 30/06/2020 Duration : 6 months

Title : HYBRID DISTRIBUTED PROPULSION AIRCRAFT(DEP) STABILITY AND CONTROL MODELIZATION FOR PRELIMINARY AIRCRAFT DESIGN LEVEL.

ISAE-SUPAERO is an institute dedicated to aerospace engineering higher education and research. ISAE-SUPAERO develops a research focused on the future needs of aerospace or high-tech industries.

The ISAE-SUPAERO Department of Aerospace vehicles design and control (DCAS) supports activities related to the design and development of aerospace systems. The DCAS researchers belong to three research groups:

- Aerospace vehicle design
- Decision and Control
- Neuro-ergonomics and human factors

The research groups collaborate on the following topics:

- Design and operation of safer aircraft
- Integrated multidisciplinary design of aircraft
- Advanced space concept.

The internship is related to the multidisciplinary design of aircraft and more specifically to the stability and control of an advanced aircraft concept, the distributed-propulsion aircraft.

The objectives of the internship are :

- Define the stability and control constraints for high-level general aviation aircraft design process, including engine failure cases in DEP.
- Stablish the state-of-the-art of the existing conventional and distributed-propulsion aircraft (electric span-wise and wingtip propellers) high level stability and control models in the normal and light aircraft category (CS23 regulation);
- Develop missing models for DEP configuration.
- Implement the defined constraints and models into the FAST software (Overall aircraft design software developed by ISAE/ONERA in Python).
- Test the gathered conventional model with ©DAHER TBM configuration and apply the DEP model to the Ecopulse/X-57 configurations.
- A comparison of the model developed with flight test data from a DEP model aircraft may be possible depending on the availability of the data and time.

NASA X-57 Maxwell © NASA

Ecopulse project © DAHER / AIRBUS / SAFRAN

REQUIRED SKILLS

Skills: Aerodynamics, stability and control, overall aircraft design process, Python.
Soft skills: autonomy, curiosity, innovation

APPLICATION FOR INTERNSHIP

To apply : CV and motivation letter to be sent by email to Juan RUSCIO @ Juan.ruscio@isae-supaero.fr

For further information: please contact Juan RUSCIO @ Juan.ruscio@isae-supaero.fr