

Kickoff Meeting



Kick-Off Meeting Thursday 14th April 2022



Sandra Bour-Schaeffer, Head of Airbus Demonstrators, CEO of Airbus UpNext
« Today's challenges in Aerospace »



Christophe Laux, ERC 2020, Laboratoire EM2C, CNRS & CS
« Reduction of greenhouse gas and air pollutant emissions through plasma-assisted hydrogen combustion, for the energy transition »



Internship Fundings 2022

- 1. Amalio CORON** Master2 Modélisation et Simulations en Mécanique des Structures et Systèmes Couplées, CentraleSupélec. « **Integrated Health Monitoring of Aeronautical Structures** ». ENS Paris-Saclay, laboratoire LMPS & SafranTech (Magny-les-Hameaux), dpt Sciences et Techniques du Numérique.
Supervisors : L. Chamoin (prof. ENS Paris-Saclay), ainsi que N. Hakkari & R. Hadjria (SafranTech).
- 2. François DOTTORI** Master 1 Mécanique des Matériaux et des Structures, ENS Paris-Saclay. « Evaluation de modèles numériques avancés multi-paramétrés pour la prévision en temps réel de limites de stabilités aéroélastiques pour des profils portants de formes auto-adaptatives / **Evaluation of advanced multi-parameter numerical models for real-time prediction of aeroelastic stability limits for support profiles of self-adaptive shapes** » Supervisor : Elizabeth Lacazedieu, LMPS ENS Paris-Saclay.
- 3. Gabriel MERLIN.** Master 2 en Modélisation et Simulation en Mécanique des Structures et des Systèmes mécaniques Complexes, CentraleSupélec. « **Homogeneization of Composite Materials with Defects** » Laboratoire de Mécanique Paris-Saclay, Supervisor : Hachmi Ben Dhia
- Supervisors: **Dimitri Bettebghor (DMAS, ONERA) et Myriam Tami (MICS, CentraleSupélec).** Title : « **Contribution of Machine Learning approaches for the prediction of fatigue life** »
- Supervisors; **Amir Ali Feiz (LMEE, univ. Evry).** Title : « **Prediction of Atmospheric Pollutant Concentrations in Airport Areas by Machine Learning** »
- Supervisors: **Olivier Marquet (DAAA, ONERA).** Title : « **Delaying laminar-turbulent transition with compliant walls** »

Internships 2023



Internships Fundings 2023

13 fundings for 19 applications :

3 applications from EM2C (2 financements) 66%

3 applications from LMPS (2 financements) 66%

8 applications from ONERA (1 financement over 2 for each 4 different laboratories: DAAA, DMAS, DMPE, DPHY) 50%

1 application from LGI (1 financement) 100%

1 application from CEA (1 financement) 100%

1 application from GeePS (1 financement) 100%

1 application from LISV (1 financement) 100%

1 application from IBISC (1 financement) 100%

Titles : Simulations numériques de chambres de combustion expérimentales à détonation rotative / Understanding and Modeling NOx formation in Turbulent HYdrogen flames / Diffusing Wave Spectroscopy for Wall-Bounded Turbulence (DWS2WBT) / Machine Learning for Optimal trajectory generation and observers design for uncertain or unknown dynamical systems: Application to UAVs / X-ray phase contrast imaging of aeronautical structures for lightning damage analysis / Effet de l'écroûissage sur la diffusion et le piégeage de l'hydrogène dans les alliages de nickel (EDPHAN) / Etude expérimentale de la recombinaison d'un plasma de méthane / Reinforcement Learning for spacecraft autonomous decision-planning for collision avoidance (ReLSpace)...

PhDs 2022

Remark **2021:** 25 cofunds ONERA + 5 funds 100% ONERA managed by Doctoral Schools from PSIA2

2022: 10 new ONERA PhDs managed by Doctoral Schools from PSIA2

2023: co-funds ONERA / GS SIS (opening soon)

External Workshops and Events



Financial Support for External Workshops 2022

International workshop on Plasma-Assisted Combustion, CentraleSupélec UPSaclay

From 9th to 10th June 2022

www.em2c.centralesupelec.fr/workshop-pastec

3rd edition Workshop MDO for Applications in Aeronautics – Towards a Greener Aviation

(ONERA, DLR, IRT St Exupéry) from 19th to 21th September 2022

<https://mdoworkshop2022.onera.fr/content/topics>

Financial Support for External Workshops and Events 2023

Ecole d'été MEALOR II – Mécanique de l'Endommagement et Approche Locale de la Rupture

From 21st August to 1st September 2023

<https://mealor2.sciencesconf.org/>

Summer school on aeronautic and aerospace systems: modeling, design and control

(université d'Evry, l'Université Northeastern-USA)

5 to 10 days in June-July 2023

C'Space event: launchers

Club étudiant de Polytech'Paris-Saclay Aerotech-BPCE

Camp militaire de Ger 15-22 July 2023

<https://sites.google.com/view/aerotech-bcpe>

Other Supports and Projects



Internal Workshops and Partnerships

- ✓ Participating at the **IFAR-X Challenge 2023**
- ✓ Interdisciplinary workshops to be organized in 2023 with **IDEST**. Possible topics:
 - New Aircrafts production: technical challenges, industrial and innovation policy.
 - Uses of Aircrafts: airport logistics and management, and Environmental policy
- ✓ Collaboration with **MIAE (Institut d'Ingénierie Aérospatiale, McGill university Canada)**
<https://www.mcgill.ca/miae/fr>

Internships Forums and Summer Schools for Students / Fundings for International Mobility

Supports for registration fees for the participation of 5 Masters students to
73rd **International Astronautical Congress Paris** 18th to 22nd septembre 2022 <https://iac2022.org/>

Large-scale Projects:

- ✓ Demande de PEPR Nouvelles Orientations pour les Mobilités Aériennes de Demain -> non financé
- ✓ Demande de DRIM Impacts Environnementaux et Acoustiques des Mobilités Aériennes -> non financé
- ✓ Participation à l'AMI-CMA Académie Spatiale d'Ile de France Jacques Blamont -> Auditionné
- ✓ Chaire de Professeur Junior au CNRS (LPP, EM2C, LMPS) Aéronautique et Astronautique -> 2023