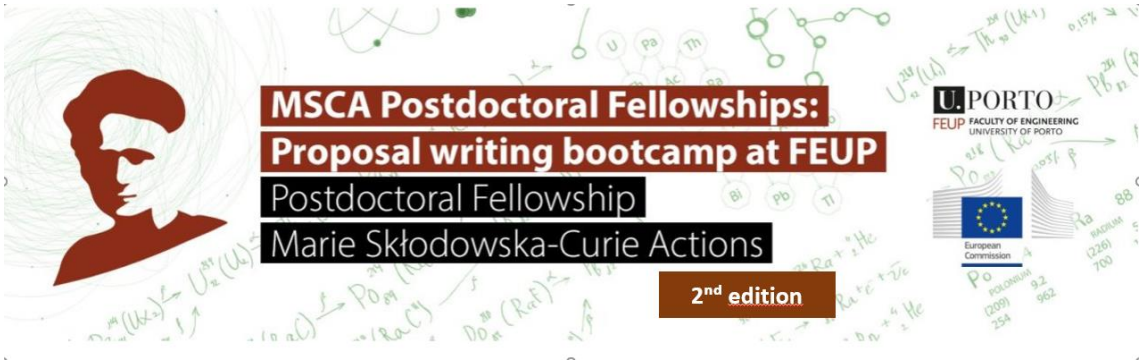

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Department	DEEC
Field(s) of research	Control and Optimization
PROJECT PROPOSAL	
Title (optional)	Autonomous Airborne Wind Energy Systems: Advanced Control and Optimization for Next-Generation Renewable Energy

Brief project description

This project focuses on the development of advanced control and optimization techniques for Airborne Wind Energy Systems (AWES). AWES offer a promising solution for harnessing high-altitude wind energy, a huge renewable resource not yet exploited, with the potential to play a significant role in the much-needed energy transition. However, the operation of these systems presents several control challenges to be able to maintain airborne a high-speed wing, safely and reliably, under a wide range of wind conditions. This project will investigate advanced control strategies for autonomous operation, including take-off, landing, and power generation phases, with a focus on maximizing energy capture while ensuring a safe and reliable operation. In addition, optimization algorithms will be developed to address key challenges in AWES, such as trajectory planning, wind farm layout design, and electrical grid integration. This research will contribute to advancing the state-of-the-art in AWES control and optimization, paving the way for the widespread adoption of this transformative renewable energy technology.