

AEROSPACE ENGINEERING

MUR DM 118 - Aerospace-Engineering Systems and Methods for Climate Mitigation Actions

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] Politecnico di TORINO [P.iva/CF:00518460019]
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Context of the research activity	System engineering, mission analysis and astrodynamics of space-based global geo-engineering climate mitigation systems. Progetto finanziato nell'ambito del PNRR – DM 118/2023 - CUP E14D23001650006
Objectives	The doctorate will investigate from the engineering stand-point, a planetary sunshade system (and alternative similar systems) aiming at mitigate the global climate crisis, by reducing of a small percentage the amount of Sun light that reaches the Earth. Such a system, previously proposed, appears to be promising and has strong advantages with respect to in-atmosphere geo-engineering approaches. The doctorate aims at obtaining a system-engineering preliminary design of a modular spacecraft for Planetary Sunshade, performing mission analysis and astrodynamics investigations for both the single module and the entire systems. Specific sub-system investigation, in particular regarding the 'sunshade'/'solar sail' device, will be also conducted.
Skills and competencies for the development of the activity	Requirements: a master degree in Aerospace Engineering, Physics, Mathematics, or related subjects, and a striving passion for research in the area mentioned above. Fluency in English, written and spoken; experience with Matlab, Python or other coding language. An experience outside of Italy will be greatly appreciated. Previous excellent knowledge is requested in one or both of the following two subject matters, together with a commitment to study the other one in great depth (in case only one is present): 1) engineering mechanics, celestial mechanics, astrodynamics ; 2) orbital space systems engineering.