SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
"Hands-On" Space Education (1)

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"FLY YOUR THESIS! – AN ASTRONAUT EXPERIENCE" – ESA PARABOLIC FLIGHTS OPPORTUNITIES FOR UNIVERSITY STUDENTS

Abstract

"Fly Your Thesis! – An Astronaut Experience" is a new programme launched by ESA's Education Office which consists in offering a unique opportunity for European students to design, build, and eventually fly, a scientific experiment to be performed in microgravity, as part of their last year of University, Master or PhD thesis.

The students will participate in an ESA Microgravity Research Campaign and will work in close contact with renowned European Scientists carrying out their own research. The students will accompany their experiments onboard the Zero-G aircraft for three flights of 30 parabolas, of about 20s each. ESA will financially support the cost of the flights, part of the hardware, necessary travel and accommodation, and participation in a conference.

For the first version of this programme, a Review Board (composed of experts from the European Low Gravity Research Association ELGRA, the ESA Human Spaceflight, Microgravity and Exploration Directorate, and ESA Education Office) selected 16 teams and invited them to elaborate a detailed scientific proposal, with the support of an ELGRA scientific mentor. The teams presented their projects during a dedicated workshop at ESA's European Astronaut Centre in Germany. The Review Board then made the selection of the four teams to be offered flight opportunities:

• Complex, composed of four Norwegian students who will study the flow birefringence of a solution of clay particles in salty water, to shed light on the self-organisation of those small particles.

• The Dust Side of the Force, composed of four German students. The experiment regards the GT-effect which can lift particles off the ground in low gravity conditions, an important effect in planet formation and the formation of dust storms on Mars.

• AstEx, composed of two British students who will investigate the behaviour of granular material under shear stress, with the possibility of using their results in the design of future asteroid sample return missions.

• ABCtr MicroG, composed of three Spanish students who will investigate the behaviour of particular biological agents involved in the assimilation of drugs by the human body, which could help to improve treatments in space.

The use of other platforms (Drop Towers and the ESA-ESTEC Large Diameter Centrifuge (hypergravity of up to 20g) is under assessment.

This paper will introduce this new ESA Education programme and will explain in detail the selected experiments and their related scientific-value, as well as give information for students interested in the future editions.