

IAF MATERIALS AND STRUCTURES SYMPOSIUM (C2)  
Space Structures I - Development and Verification (Space Vehicles and Components) (1)

Author: Mr. Antonio Abruscato

Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, Italy,  
abruscatony15@gmail.com

Mr. Simone Ambrosino

Politecnico di Torino, Italy, simone.ambrosino@live.it

Mr. Alessandro Breda

Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, Italy,  
s319159@studenti.polito.it

Mr. Stefano Coco

Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, Italy,  
s319175@studenti.polito.it

Mr. Giovanni Antonio Cossu

Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, Italy,  
s319128@studenti.polito.it

Mr. Francesco Laudadio

Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, Italy, fralauda21@gmail.com

Ms. Ariane Mansard

Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, France, ariane.mansard@sfr.fr

Mr. Davide Marampon

Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, Italy,  
davide.marampon@gmail.com

Mr. Alberto Milan

Politecnico di Torino, Italy, albert.m965@gmail.com

Mr. Matteo Paschero

Politecnico di Torino, Italy, s319155@studenti.polito.it

Mr. Andrea Paternoster

Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, Italy,  
s319150@studenti.polito.it

Mr. Alessandro Peluso

Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, Italy,  
alessandropeluso16@yahoo.it

Ms. Serena Pipolo

Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, Italy,  
s319174@studenti.polito.it

## INNOVATIVE SOLUTIONS FOR SPACE HABITABLE STRUCTURES

**Abstract**

Inflatable modules have gained attention as a potential solution for commercial space stations due to their several advantages over traditional rigid structures, including increased transport efficiency, mass

reduction and improved flexibility for reconfiguration. These modules will play an increasing role in the development of commercial on-orbit stations, due to the growing commercial interest in space activities, combined with advances in inflatable technology. The unique features of inflatable modules offer new opportunities for cost-effective and flexible solutions in space operations. Project Work performed during the 2nd Level Specializing Master Programme SEEDS (Space Exploration and Development Systems), now in its fifteenth edition, focused on the design of packing methods, stiffening techniques and deployment mechanisms considering all possible solutions compatible with the potential concept of a future commercial space station.