



UNIVERSITÀ
DI TRENTO

Dipartimento di
Fisica

PHD PROGRAM IN SPACE SCIENCE AND TECHNOLOGY - SST

Design of a Payload for a Scientific Space Mission: The Technological Point of View

Monday, April 23, 2025, 3:00 p.m.

Speaker:

Dr. **Christian De Santis**, INFN - Istituto Nazionale di Fisica Nucleare | Rome II

Abstract:

Designing a payload for a scientific space mission involves translating scientific objectives into precise technological solutions. This presentation explores the engineering challenges and innovations required to develop spaceborne instruments capable of thriving in harsh space environments. Key topics include sensor design, material and component selection processes, and the integration of electronics for high sensitivity and accuracy. The discussion emphasizes mechanical design, thermal management, radiation shielding, and power optimization to ensure long-term payload functionality. Case studies illustrate trade-offs between performance, mass, and cost in payload development. Emerging technologies, such as miniaturization, additive manufacturing, flexible architectures, and AI-enhanced data processing, are highlighted for their transformative impact on payload capabilities.

Online Attendance

<https://unitn.zoom.us/j/82542051167?pwd=vDcpGXAzig4dPfXnzHi9njI2XYao5b.1>

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