



eyesat

Interplanetary dust and galaxy

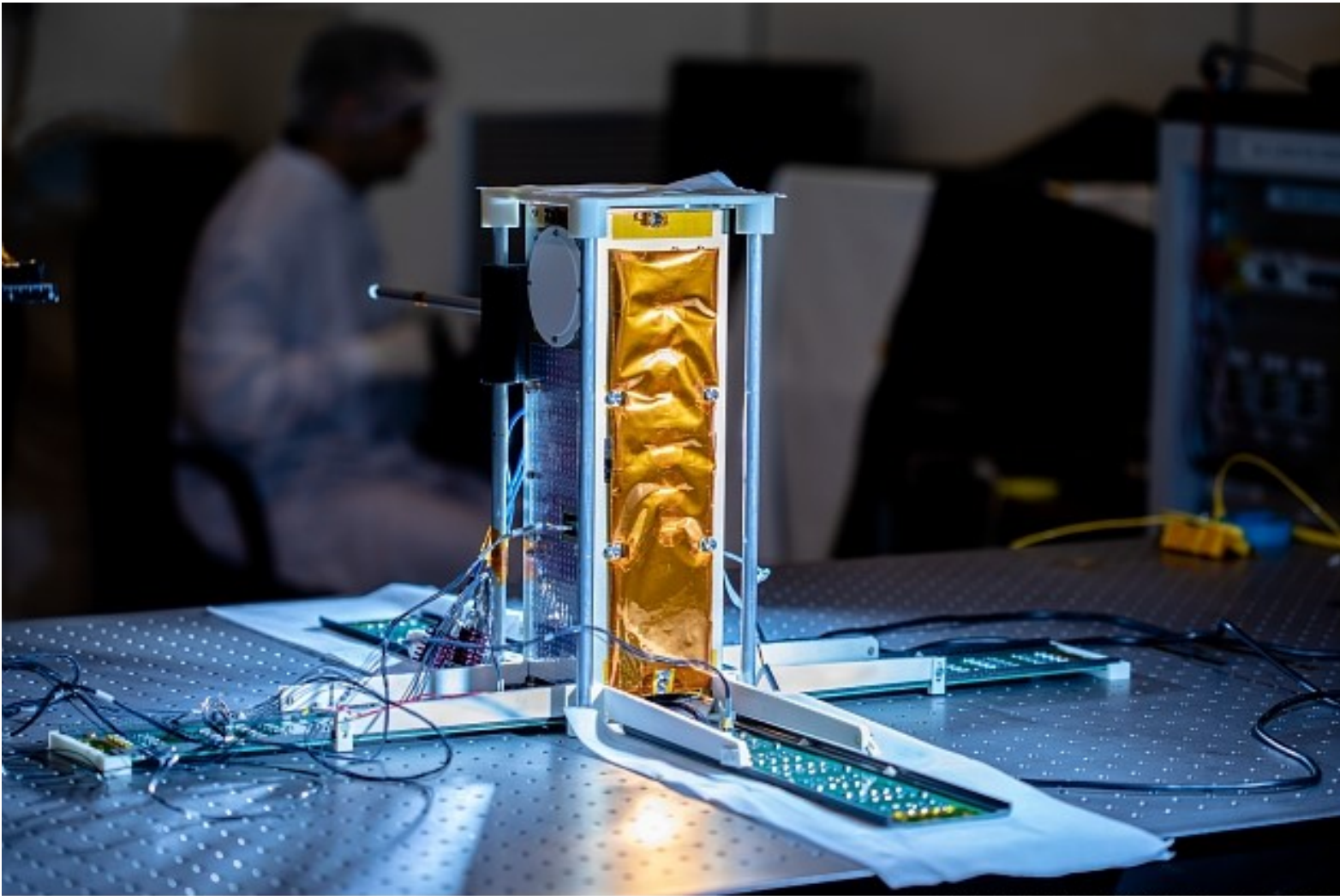


EyeSat

A great student adventure within the French space agency leading up to lessons learned from orbit

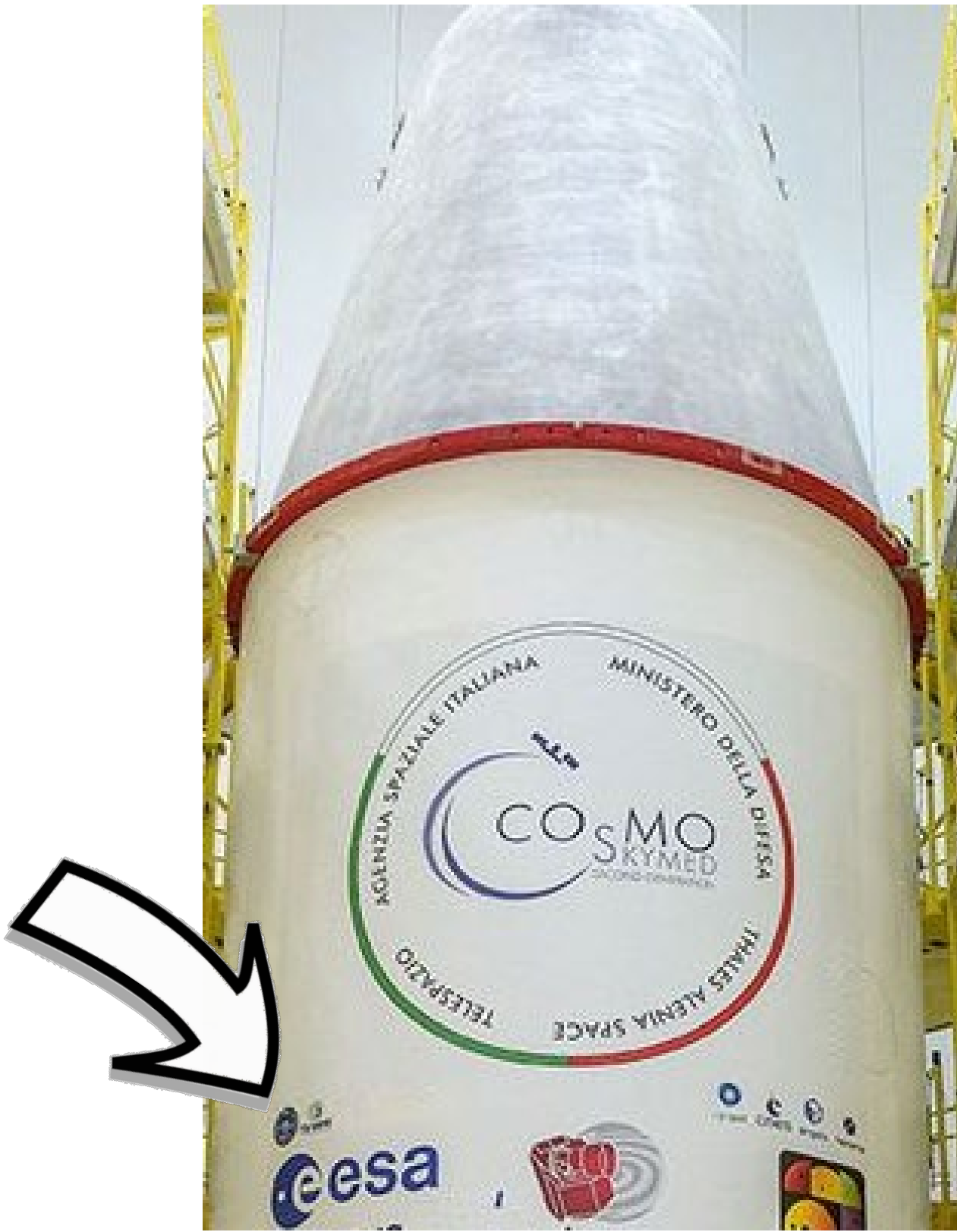
July 2, 2020 – Fabien APPER

Introduction



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Student 3U CubeSat developed at
CNES



Launched on december 18, 2019
Soyouz VS23



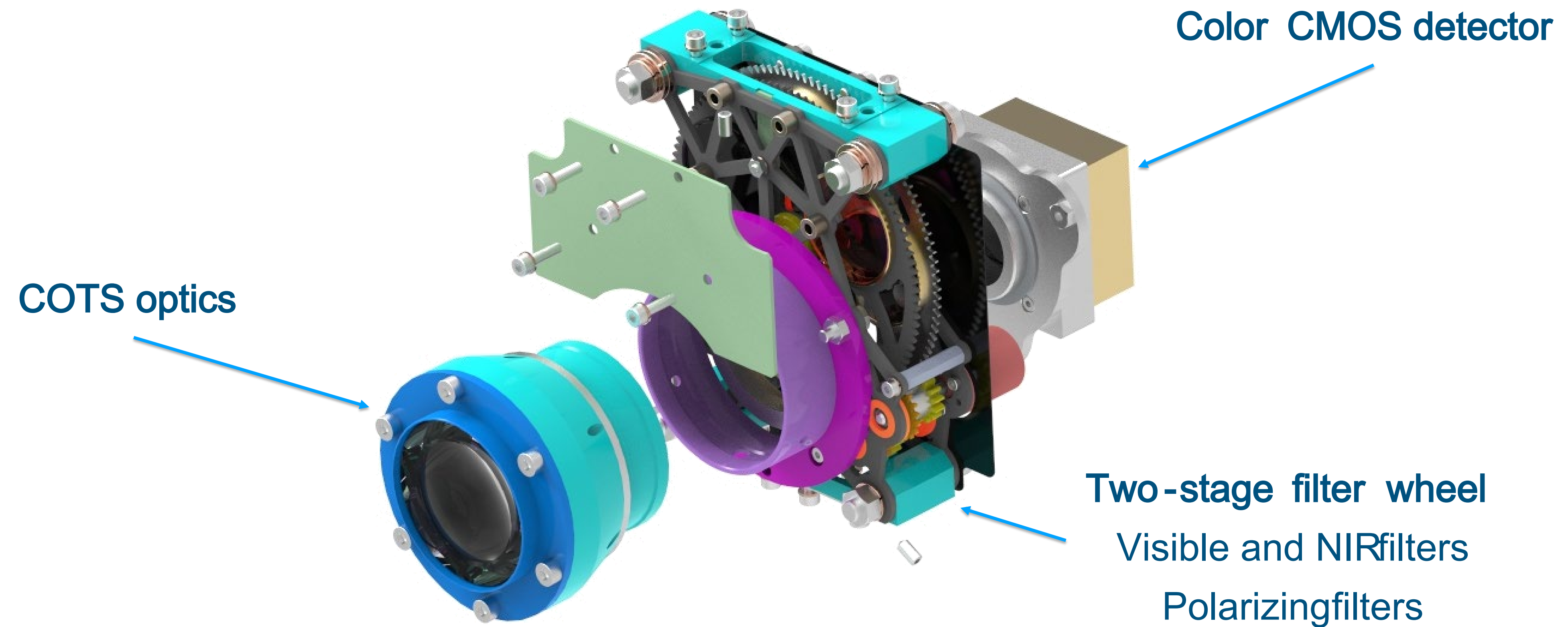
Operational since then

EyeSat's Mission

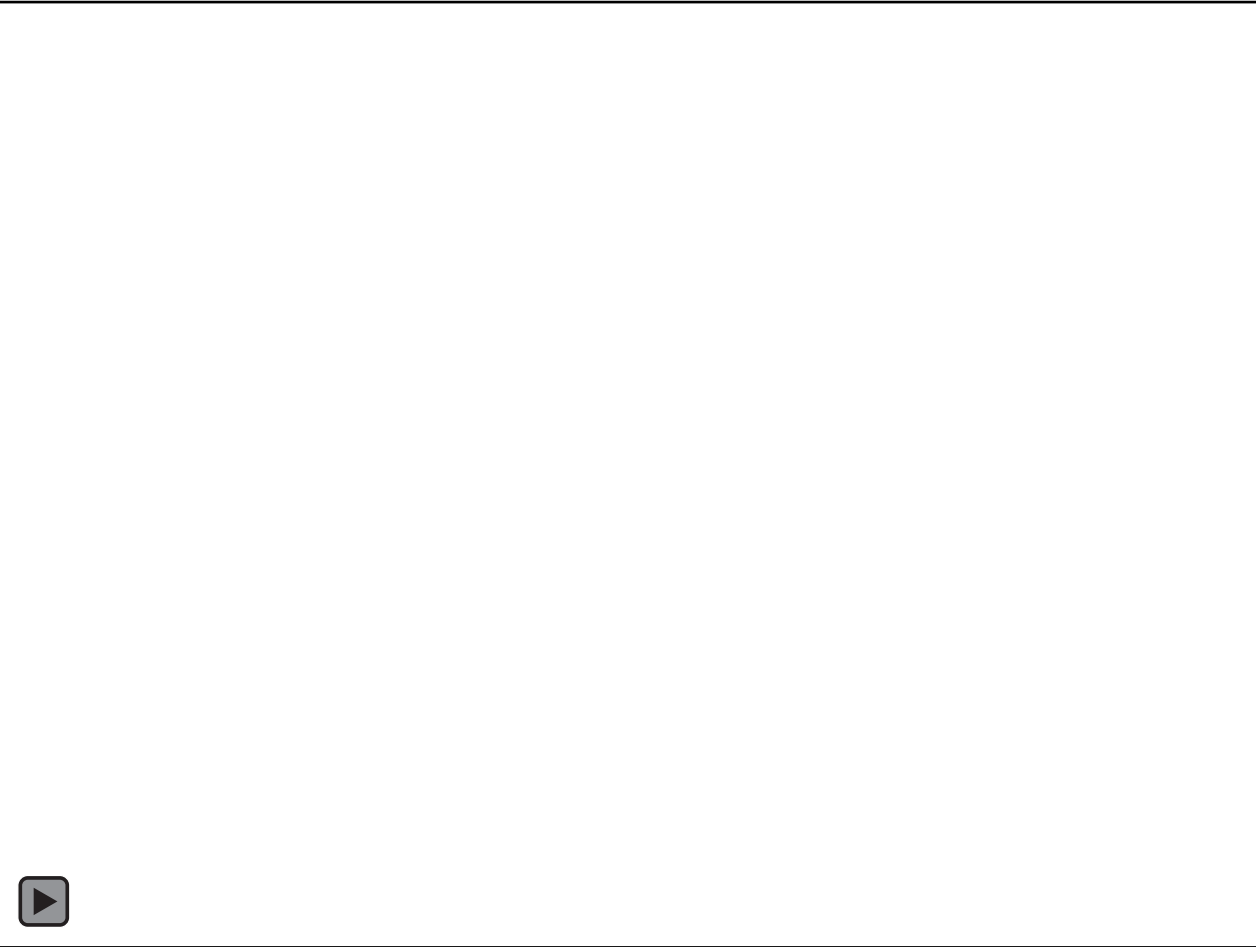
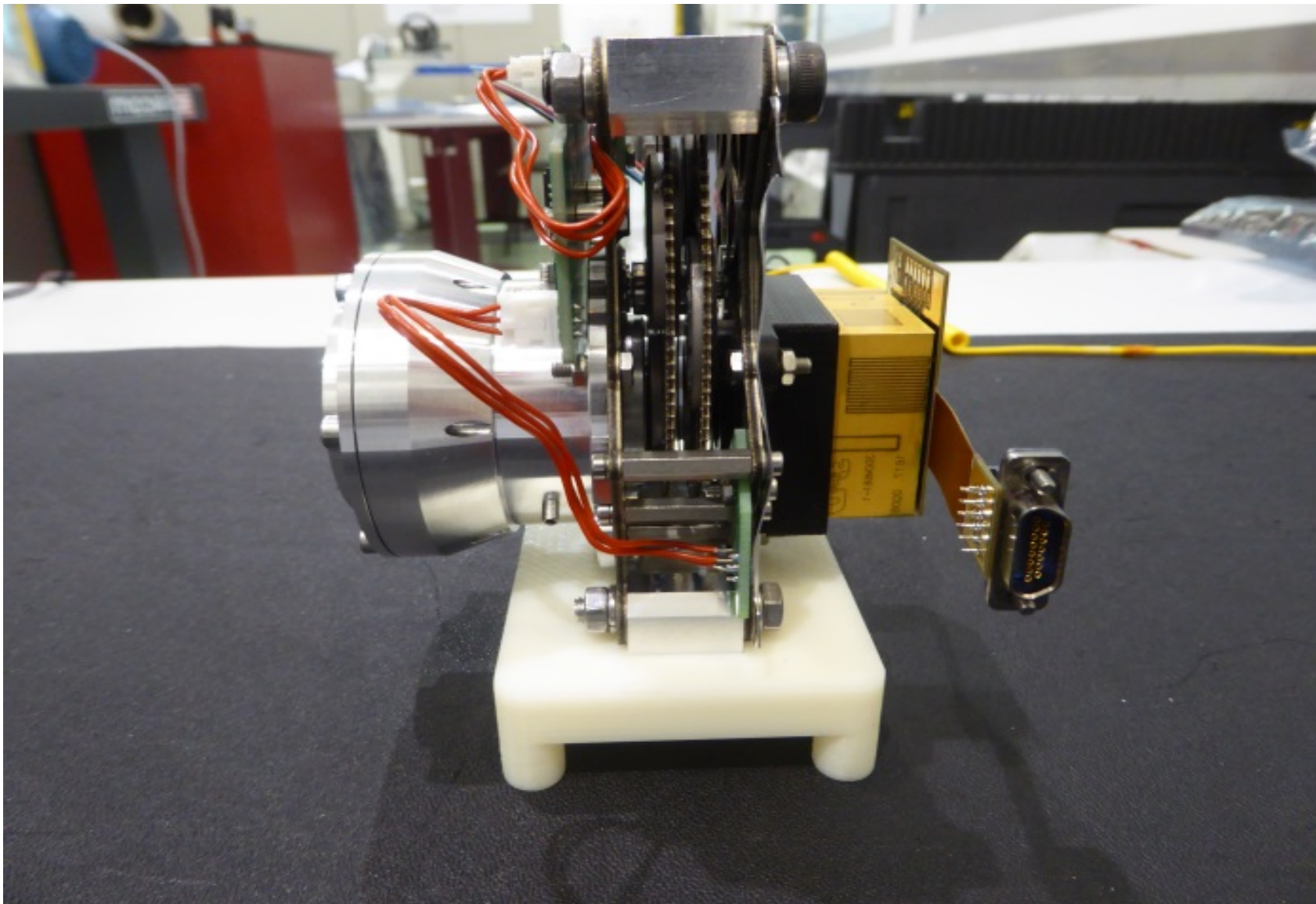
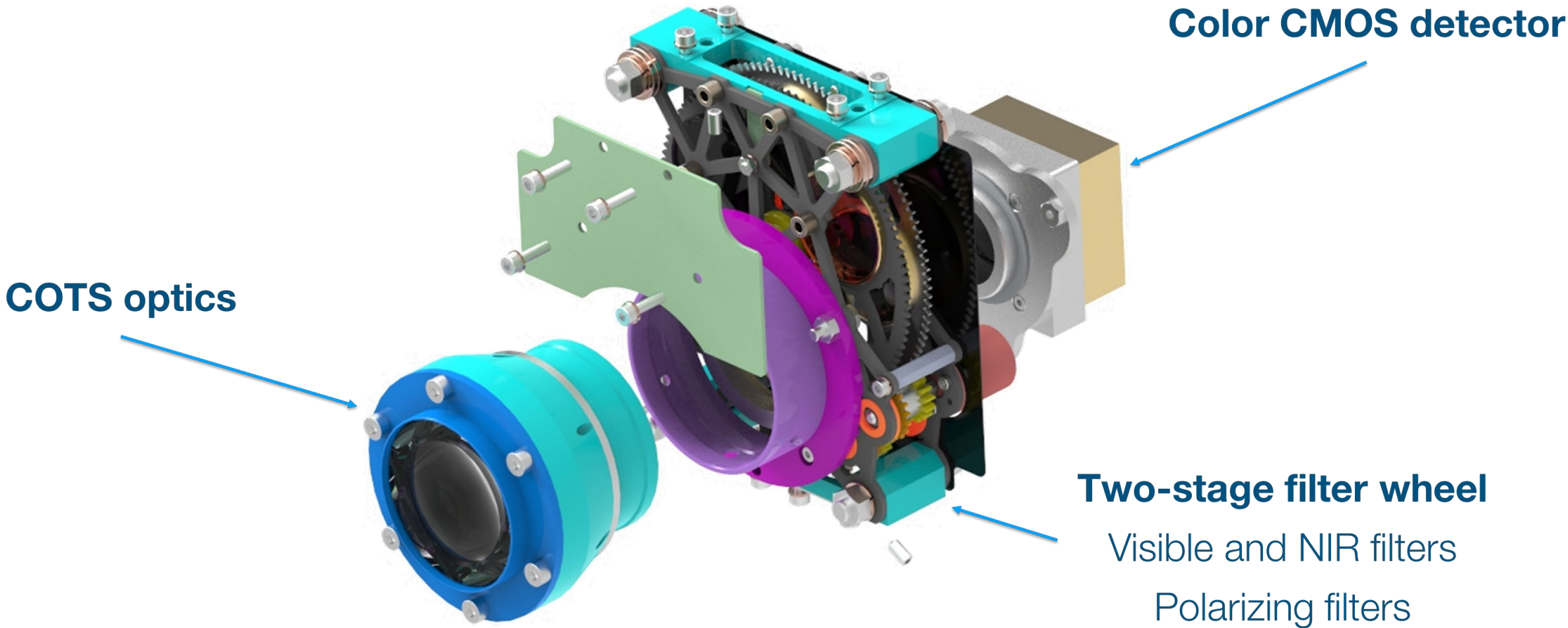
- Education: to produce a triple CubeSat with students to promote space engineering
- Science: observation of the zodiacal light
 - Solar light scattered by interplanetary dust particles
 - Measurements of the intensity and the polarization direction within 4 spectral bands (blue, green, red and near infrared)
- Outreach: a 360° image of the milky way



Payload



Payload in motion



Payload's images

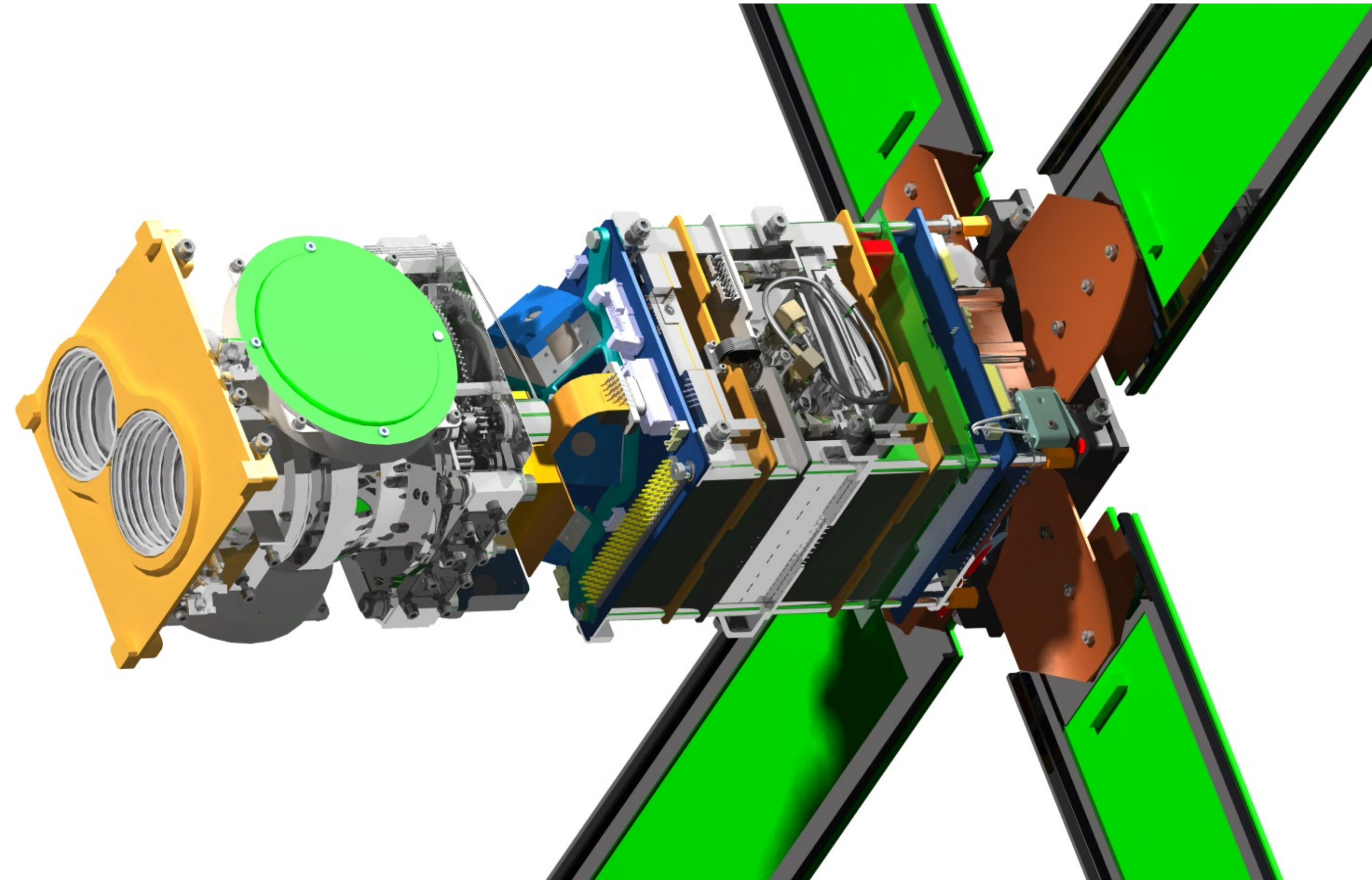


Andromeda galaxy

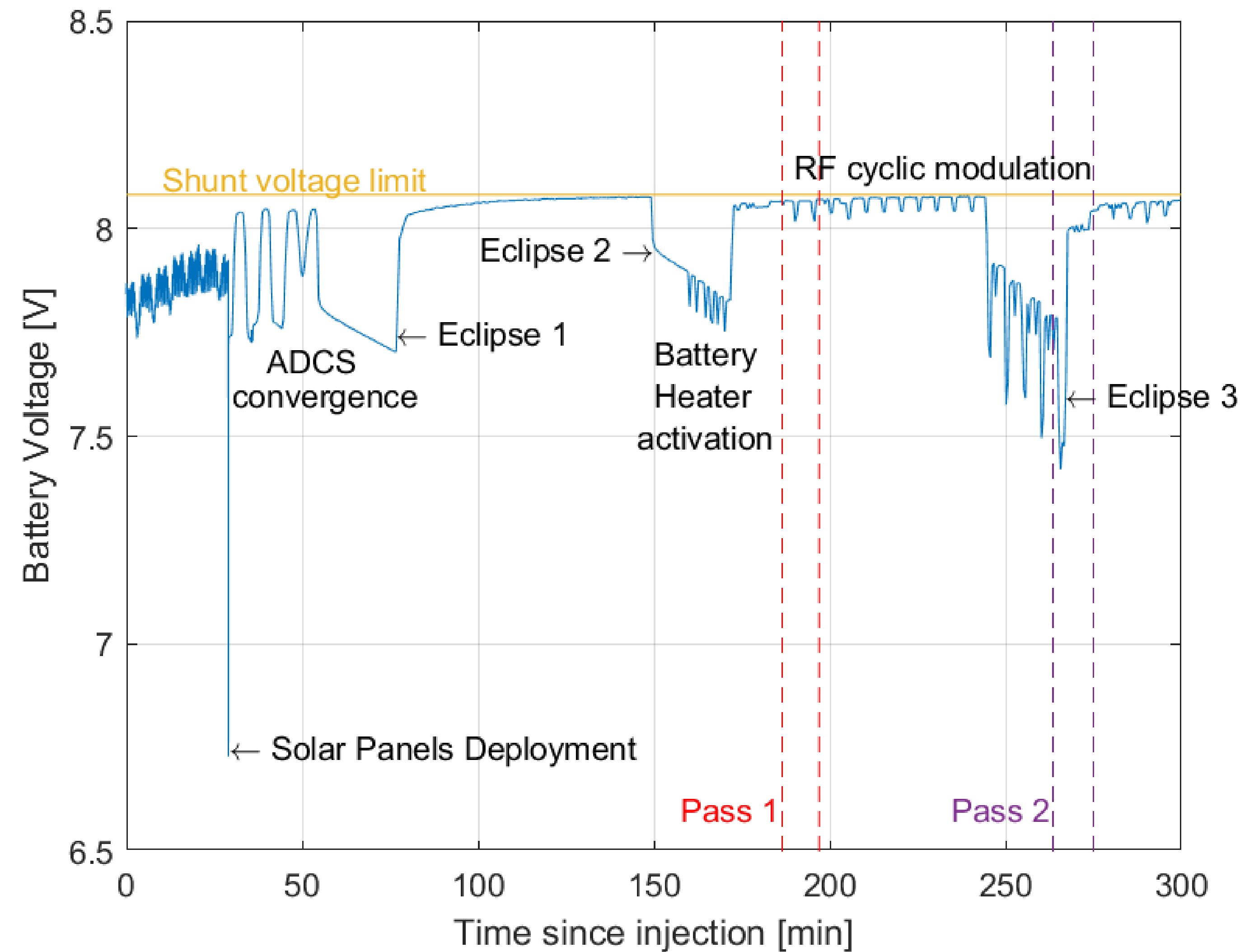


Lake Maurice, Australia

- 3-axis pointing
- X-band telemetry
- S-band telecommand and telemetry
- 4 deployable solar panels
- On-board computer based on a Zynq SoC
- Flight software with Time and Space partitioning technology

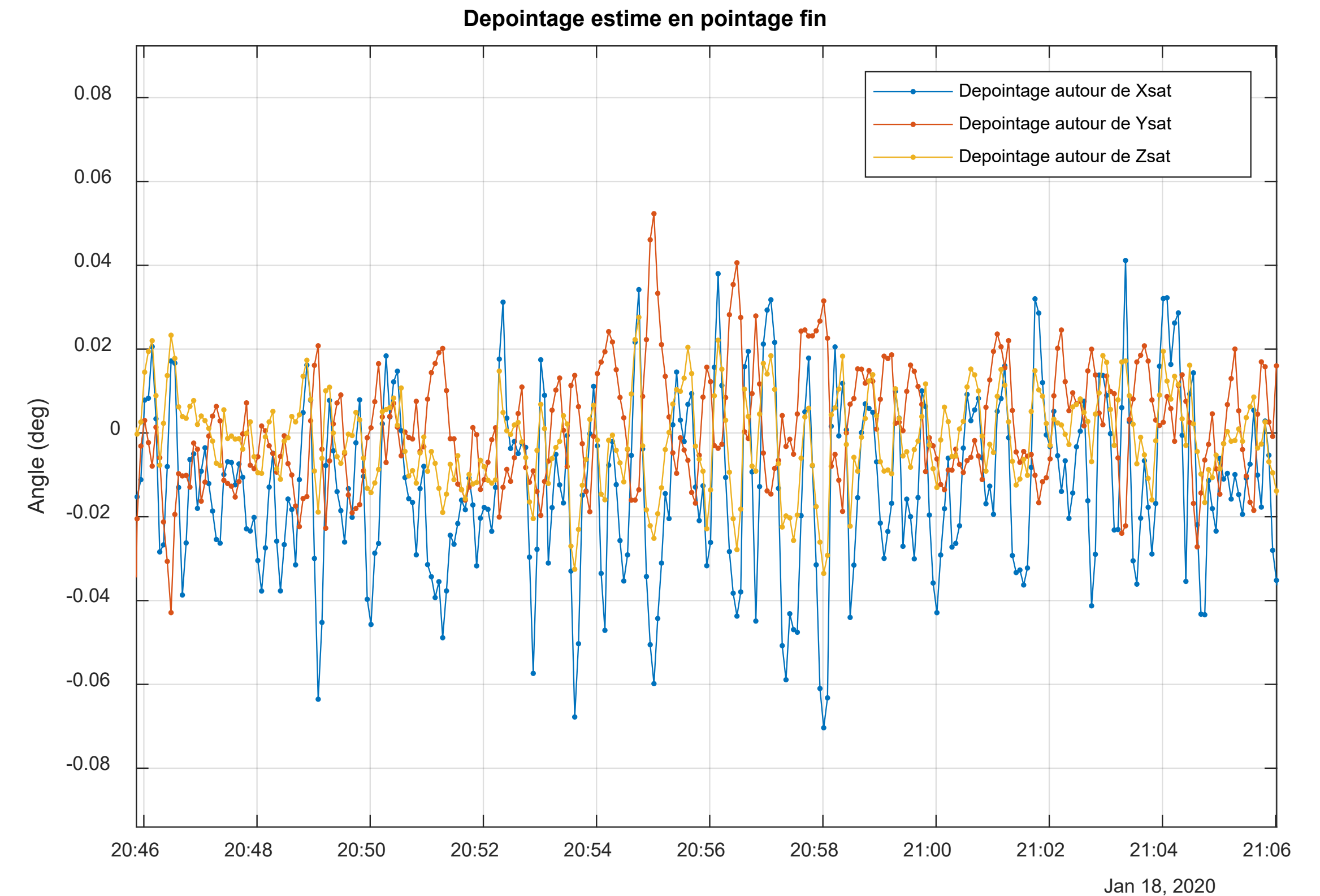


Knowledge is power...or the opposite ?



Pointing accuracy better than predicted

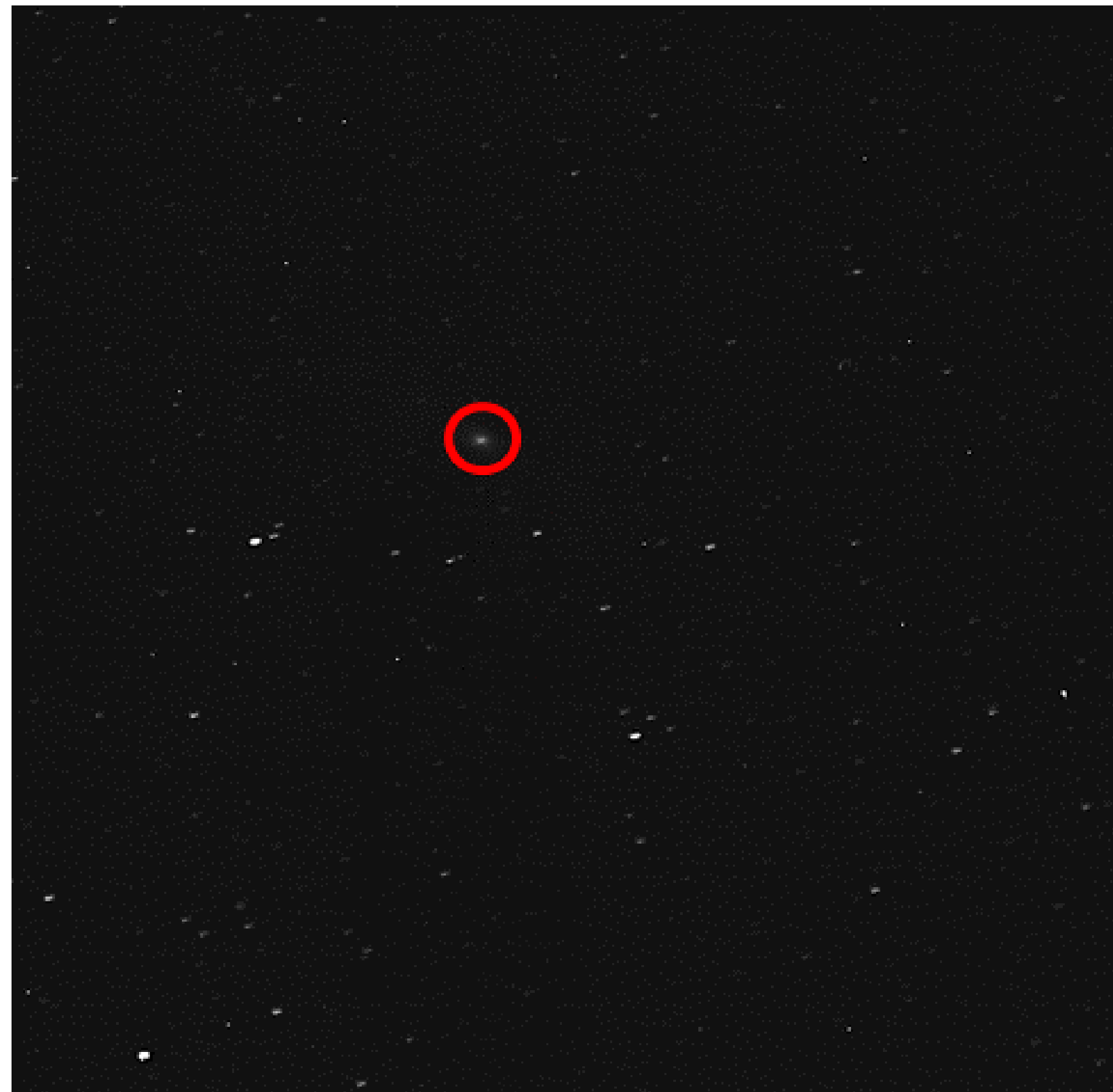
- Precise pointing: Star tracker + reaction wheels
- Requirement: $0,25^\circ$
- Achieved: $<0,1^\circ$



On-board estimated pointing accuracy

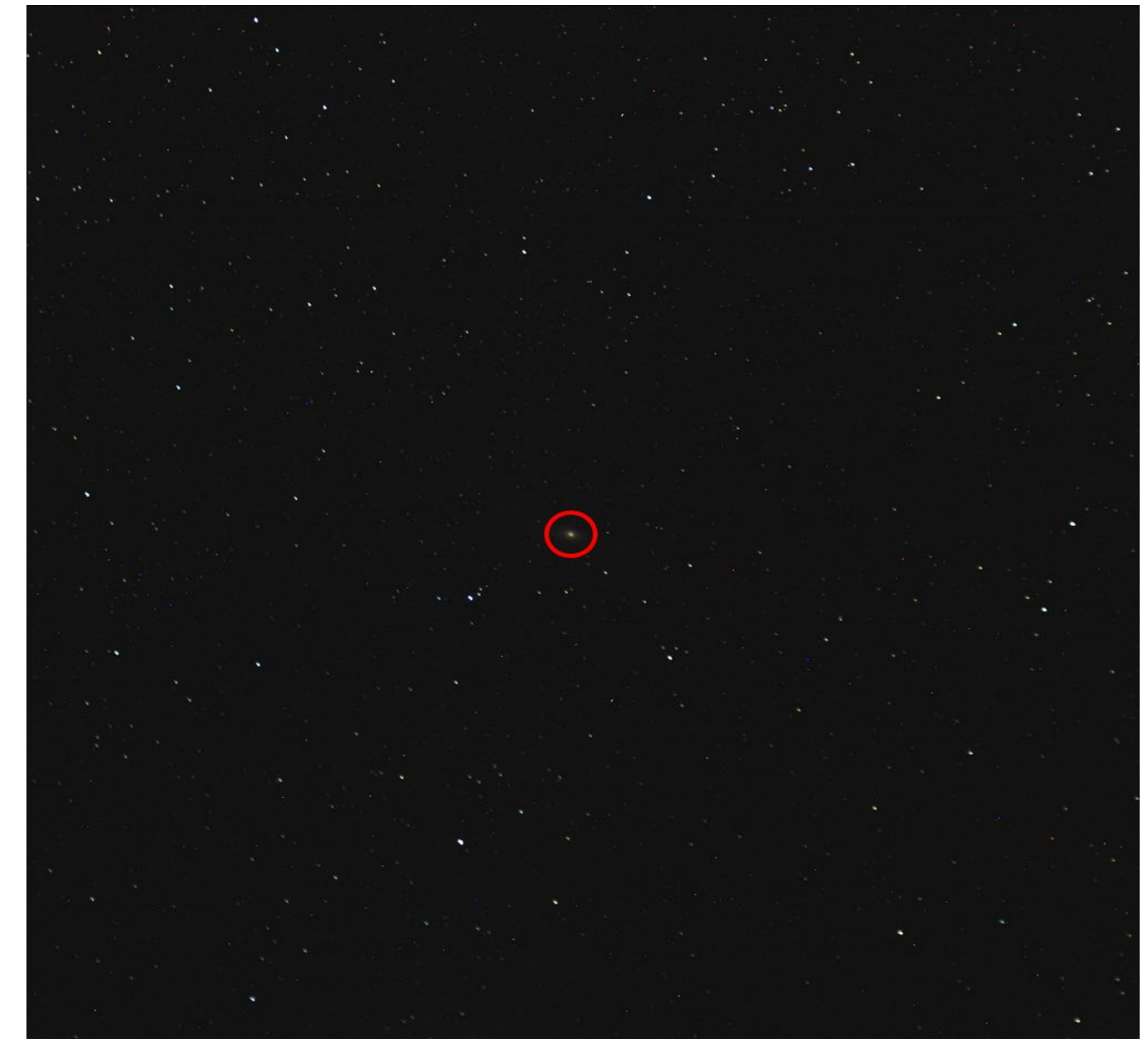
Good ABSOLUTE pointing

First picture of Andromeda



Misalignement correction

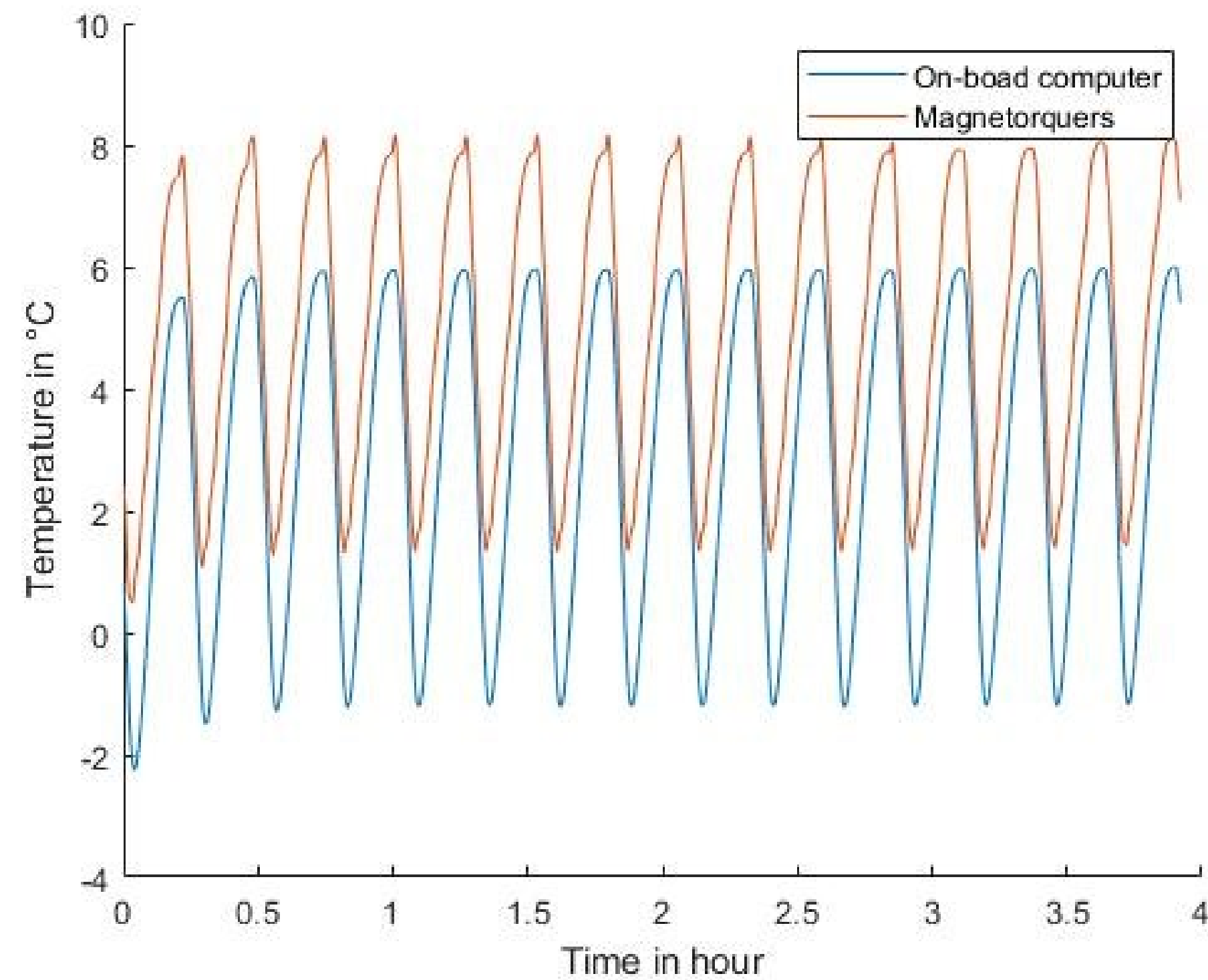
Second picture of Andromeda



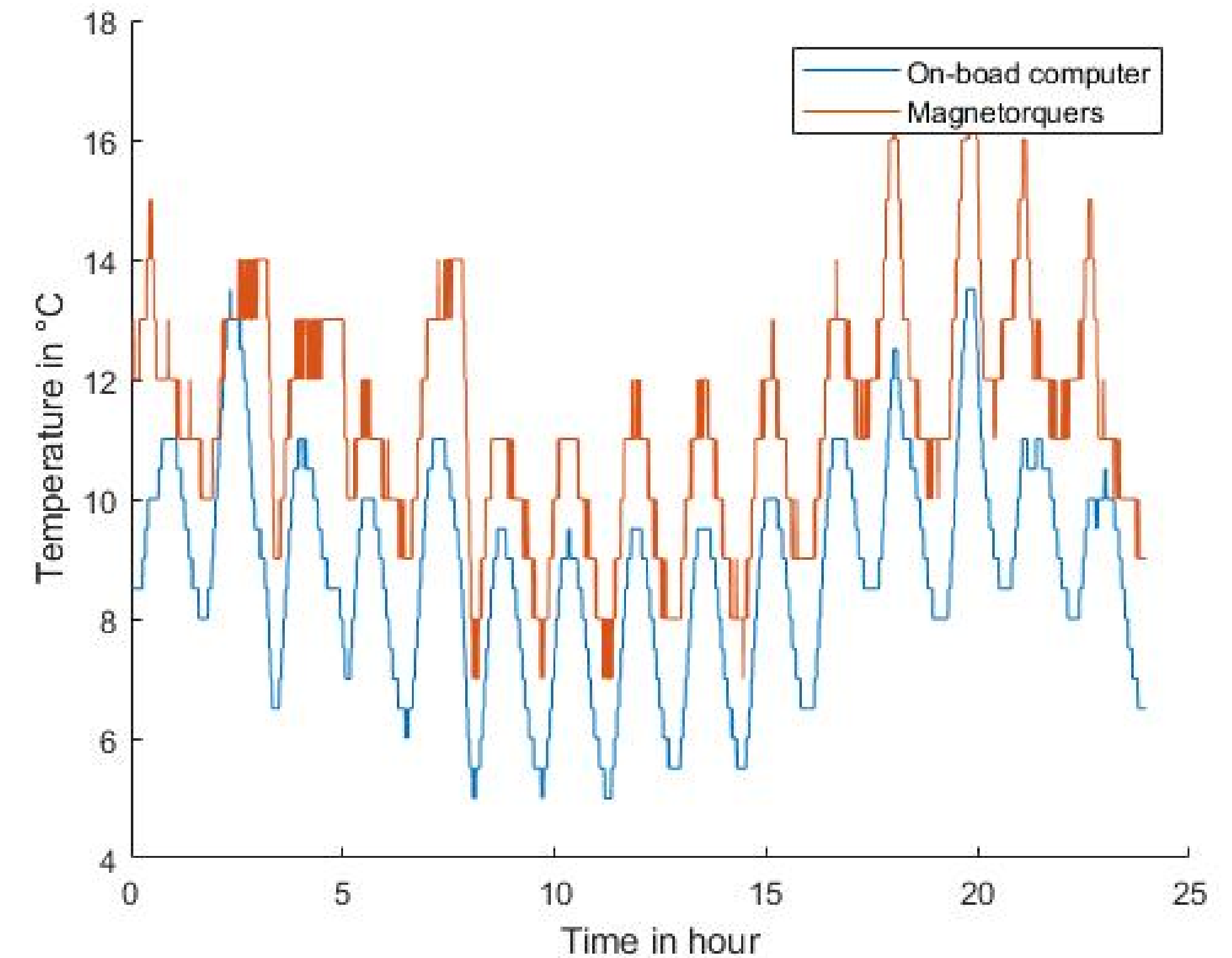
Absolute pointing accuracy: 0.1°

Is it hot or is it cold ?

Prediction



Reality



Mean difference: 6°C

The adventure continues



Designs, builds and operates nanosatellites

