



Visit Dr. Jongyeob Park and Dr. Yunjong Kim (KASI)
2025 Oct 20 - Visit Dr. Jongyeob Park and Dr. Yunjong Kim (KASI)

Solar Influences Data analysis Center
<http://sidc.be>

Solar EUV image Instrumentation at ROB / SIDC

David Berghmans



Activities

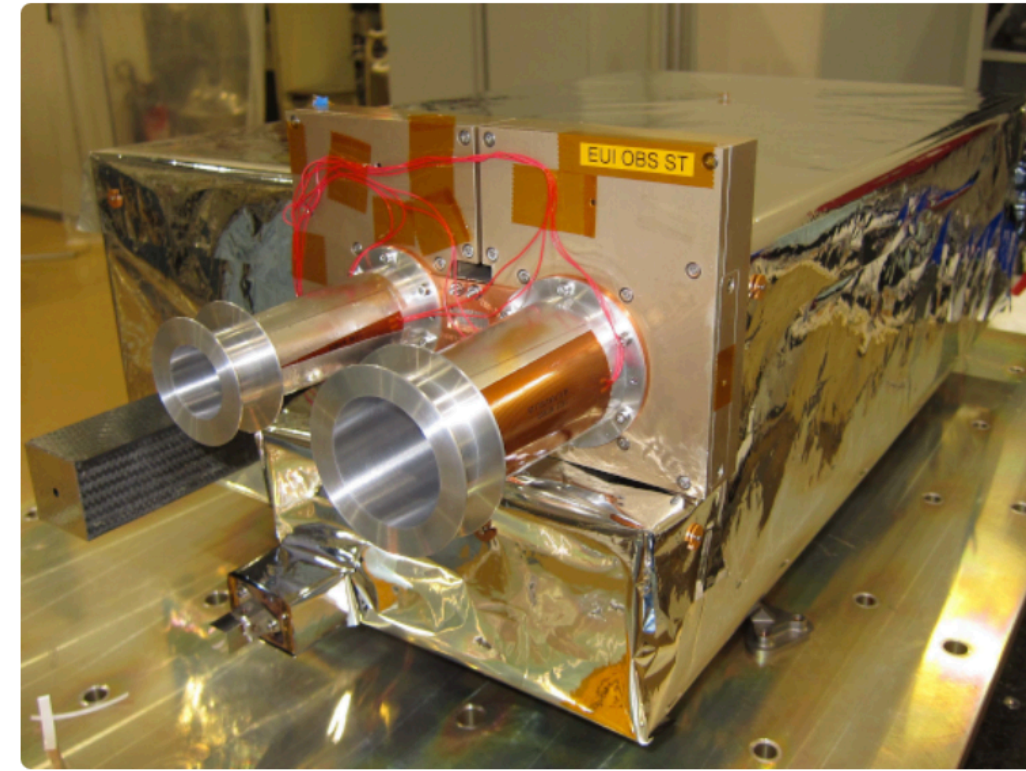
Ground Observations



The SIDC monitors the level of solar activity from the photosphere to the corona with ground based instruments located in Uccle and Humain.

[Read more](#)

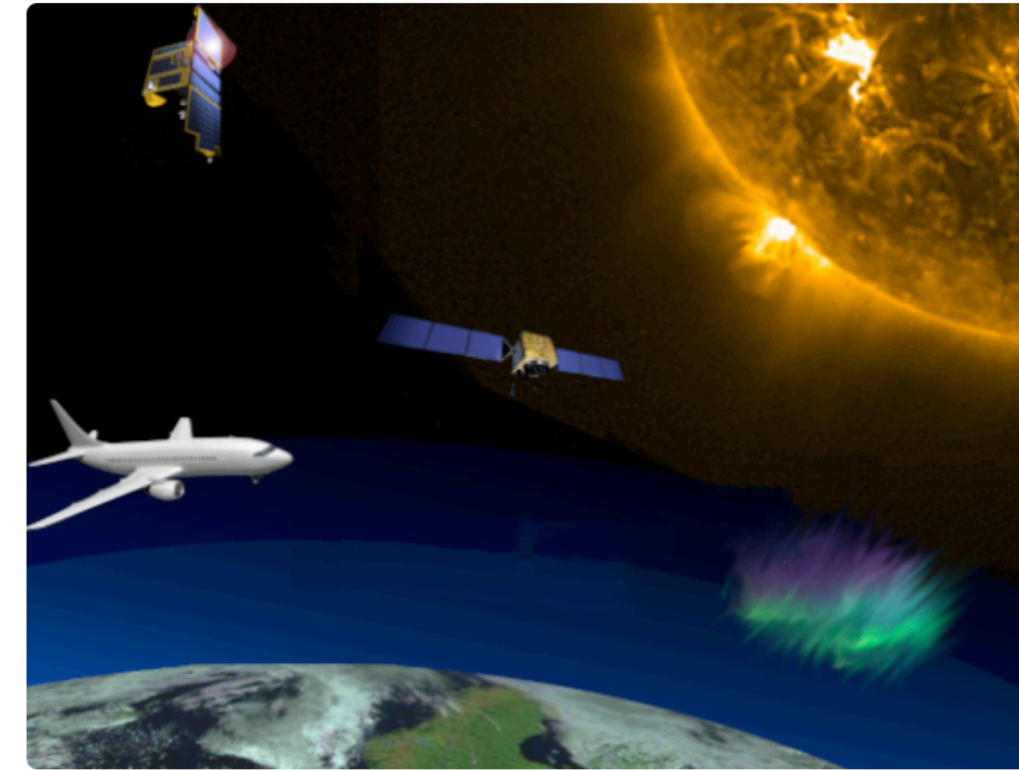
Space Instruments



To avoid the disturbing or blocking effect of the Earth atmosphere, EUV observations of the solar corona need to be made from space...

[Read more](#)

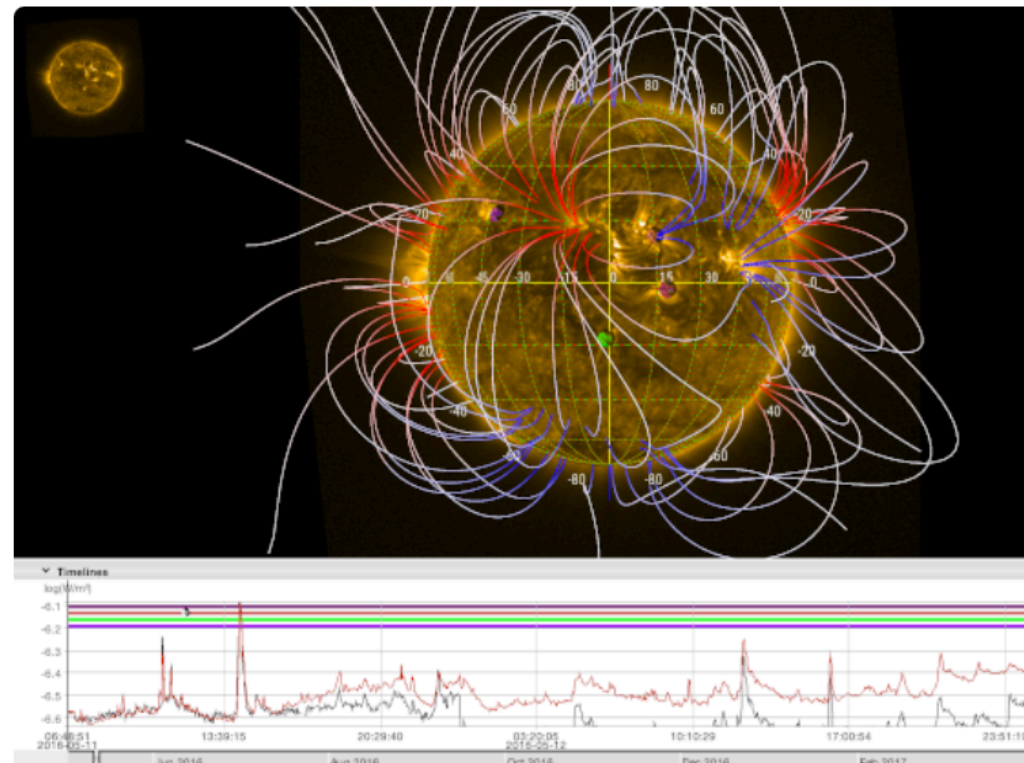
Space Weather & Climate



We monitor and forecast solar variability to provide information services to society and industry about the influence of space weather and climate.

[Read more](#)

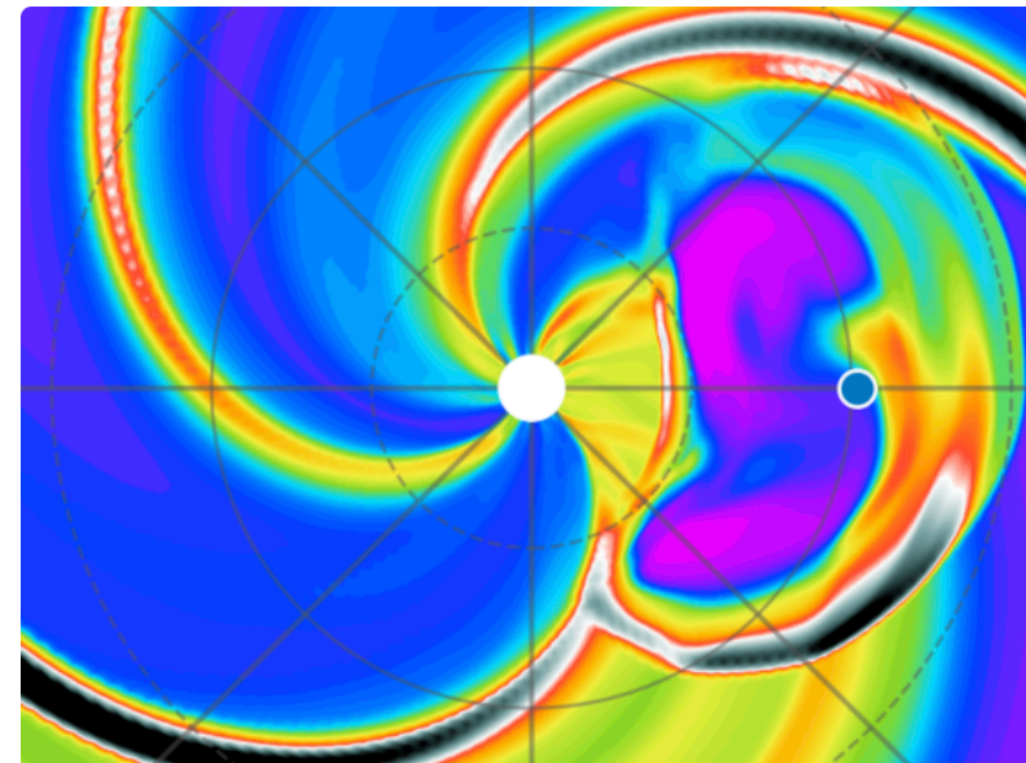
Data Processing & Distribution



Data processing is necessary to extract relevant information for research studies, whereas data distribution and visualization are part of ROB open data policy.

[Read more](#)

Modeling



Modelling of Solar phenomena allows scientists to test theories and to predict Space Weather phenomena and their impact on Earth.

[Read more](#)

Supporting Research



The SIDC shares and expands its expertise through interaction with both upcoming and experienced researchers.

[Read more](#)

>50 people

- > 60% from abroad
- > 40% female
- Most on soft money

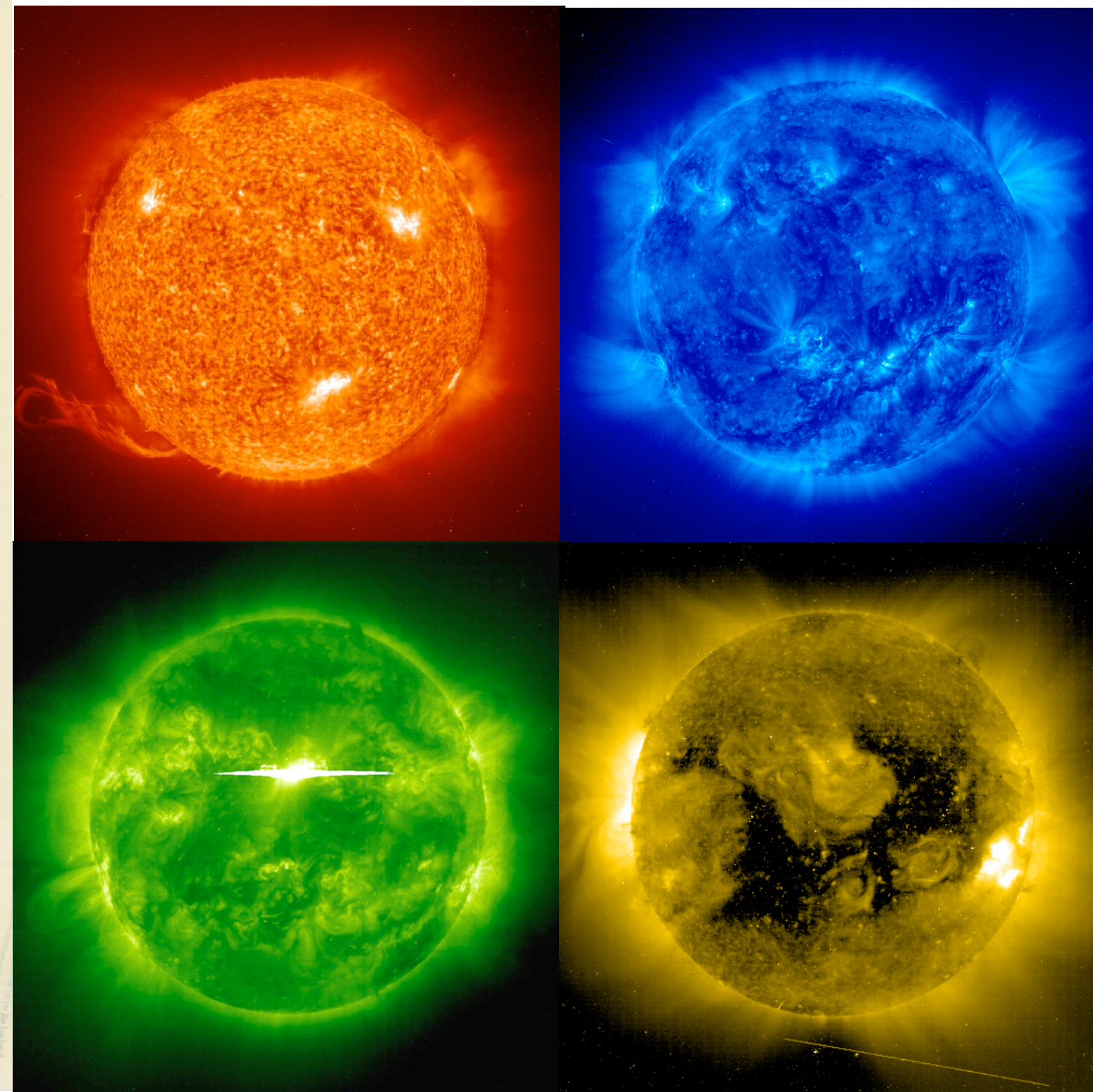


EIT

Extreme Ultraviolet Imaging Telescope

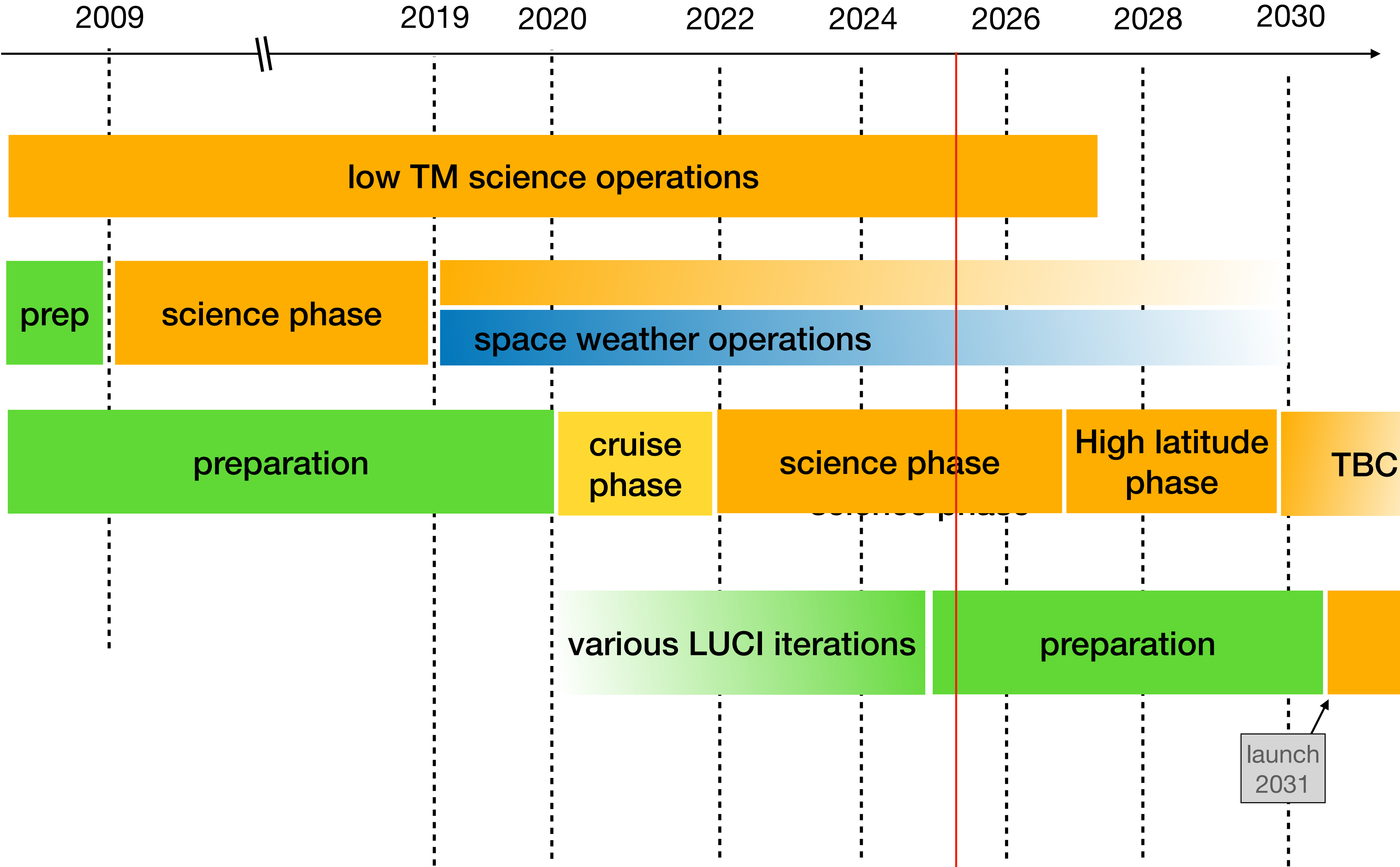
"SOHO's finderscope"

- First space instrument at ROB
- First space instrument funded by PRODEX Belgium
- Built by CSL with French partners as PI
- ROB participated in its operations and calibration
- EIT data analysis started space weather knowhow at ROB



Imaging telescopes

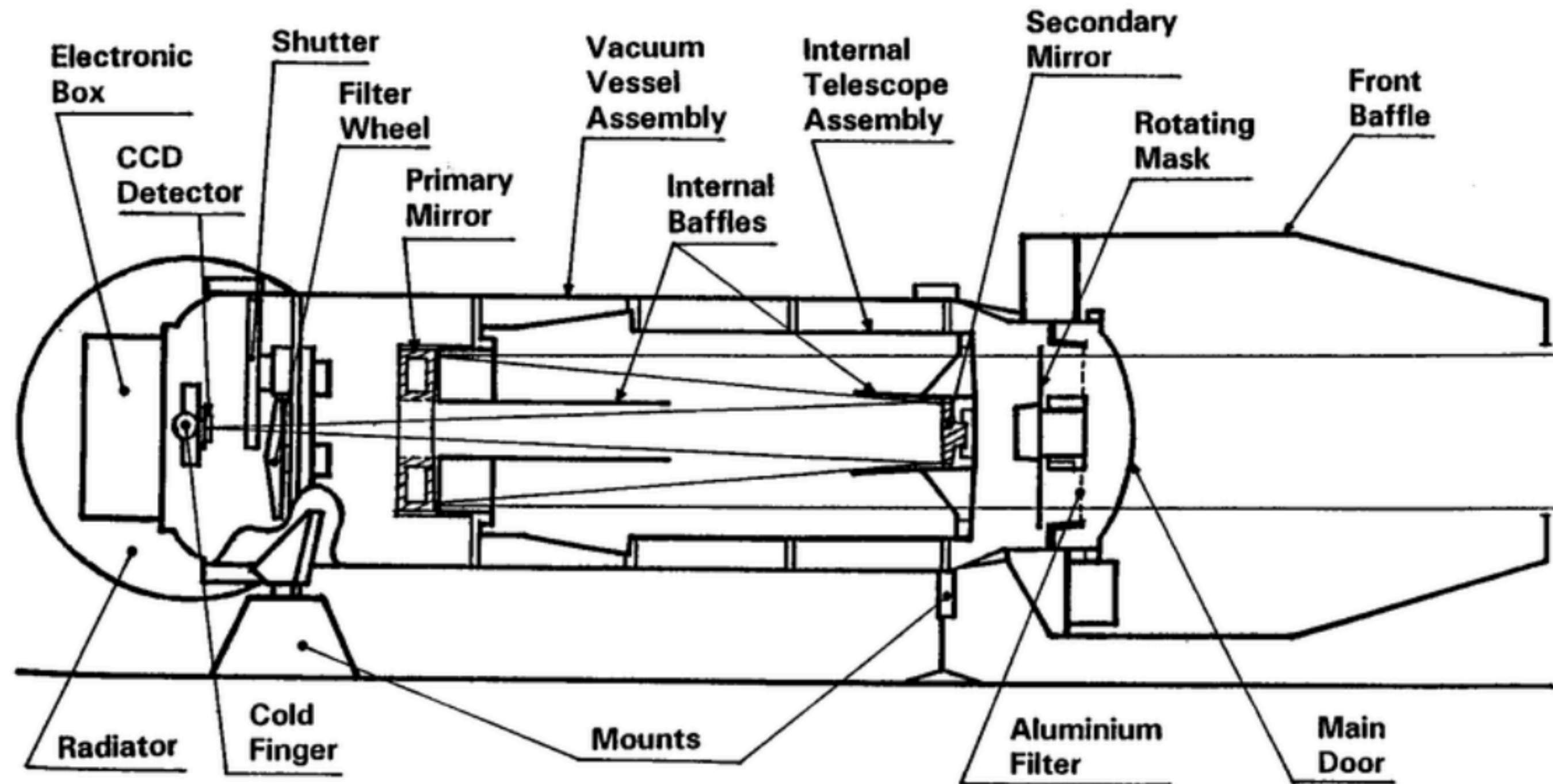
EIT	PI: F. Auchère (IAS, Fr)
SWAP	PI: Elke D’Huys
EUI	PI: David Berghmans PM: Cis Verbeeck
JEDI	PI: D. Hassler (SWRI, US)



EIT

versus

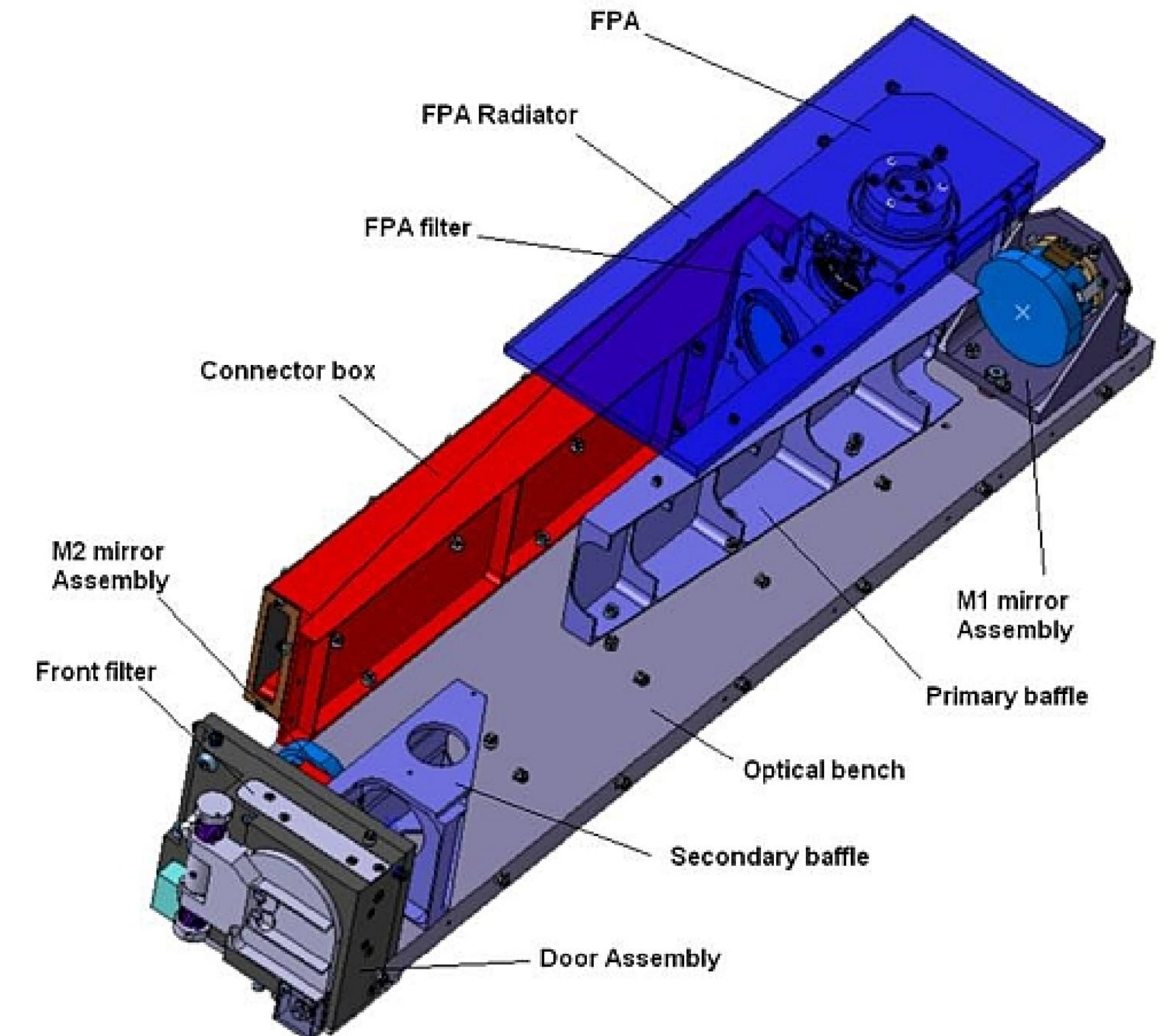
SWAP



Mirrors in 4 quadrants with different multilayers, illuminated one at the time

Mechanisms: door, rotating mask, filter wheel, shutter

CCD camera

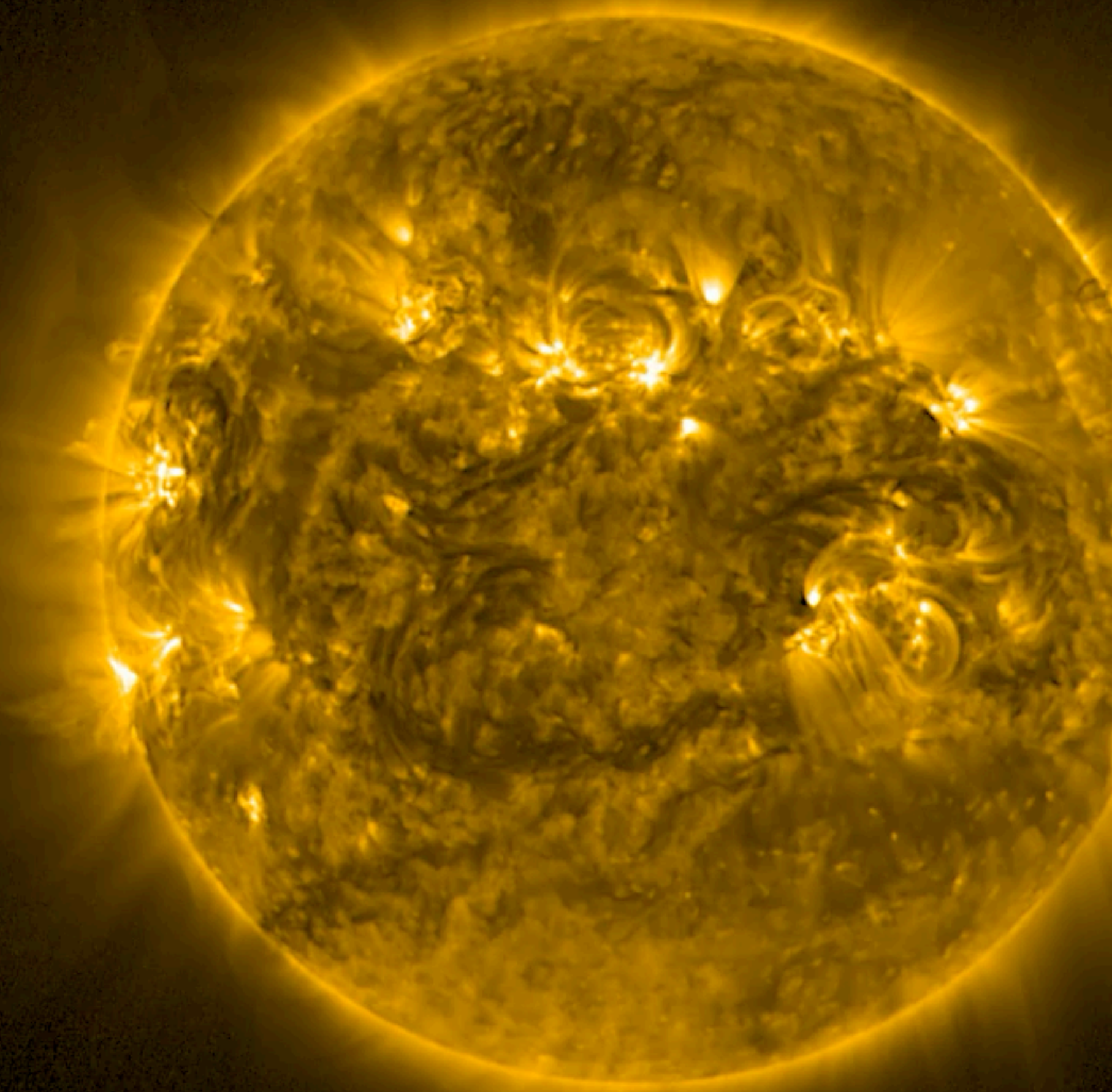


Single mirror coating

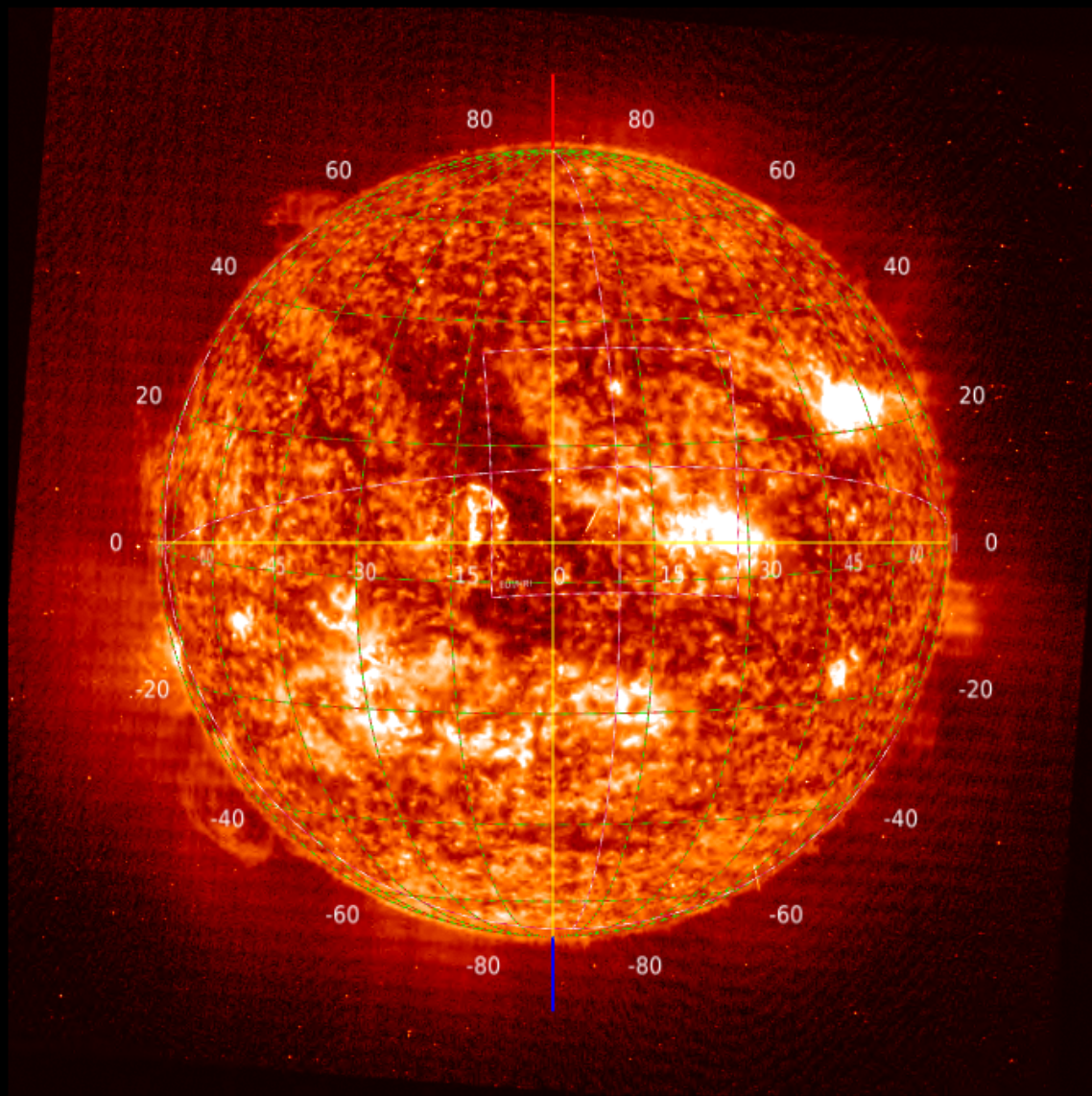
Mechanisms: single use door

CMOS camera

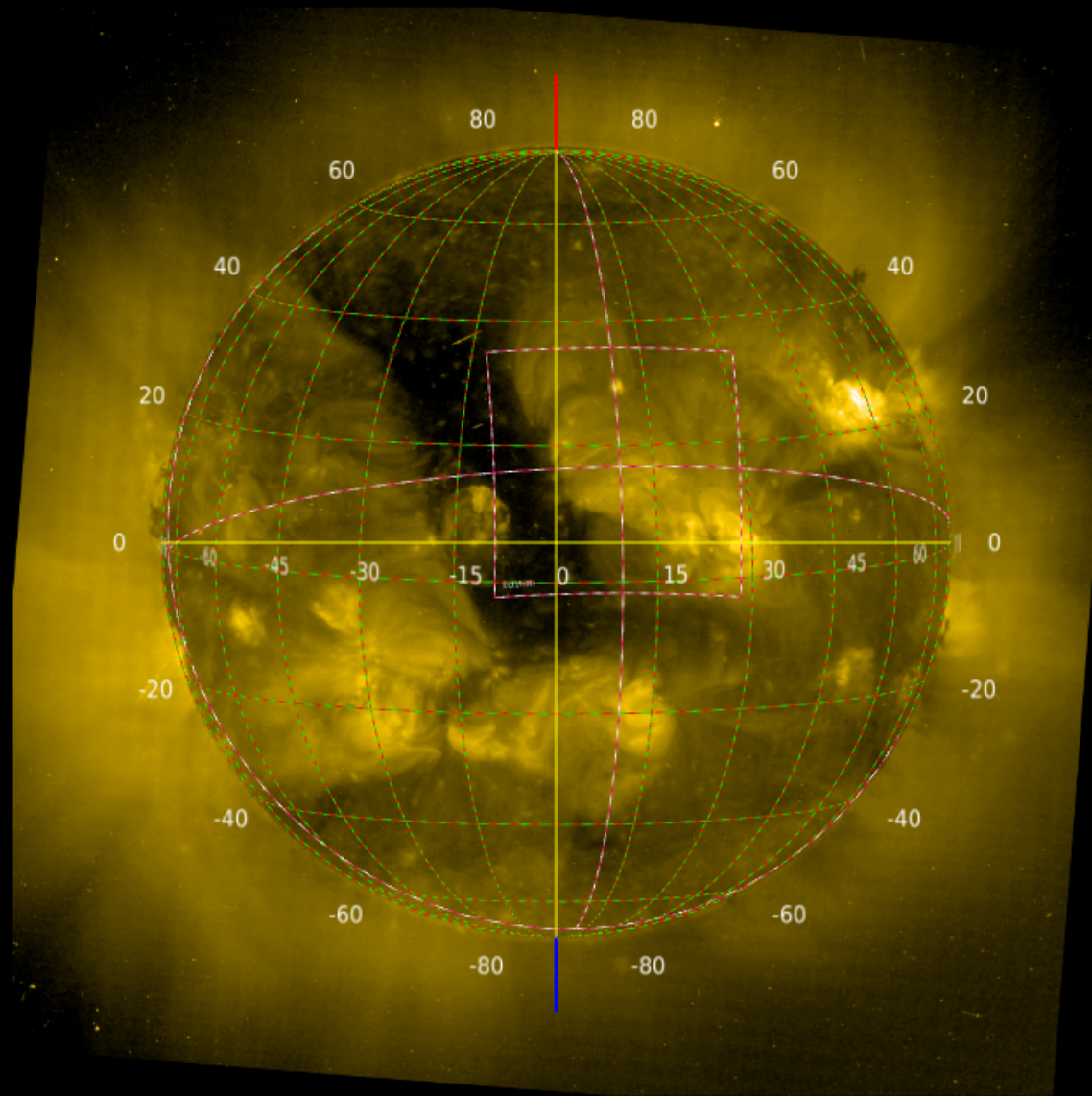
SWAP @ PROBA2



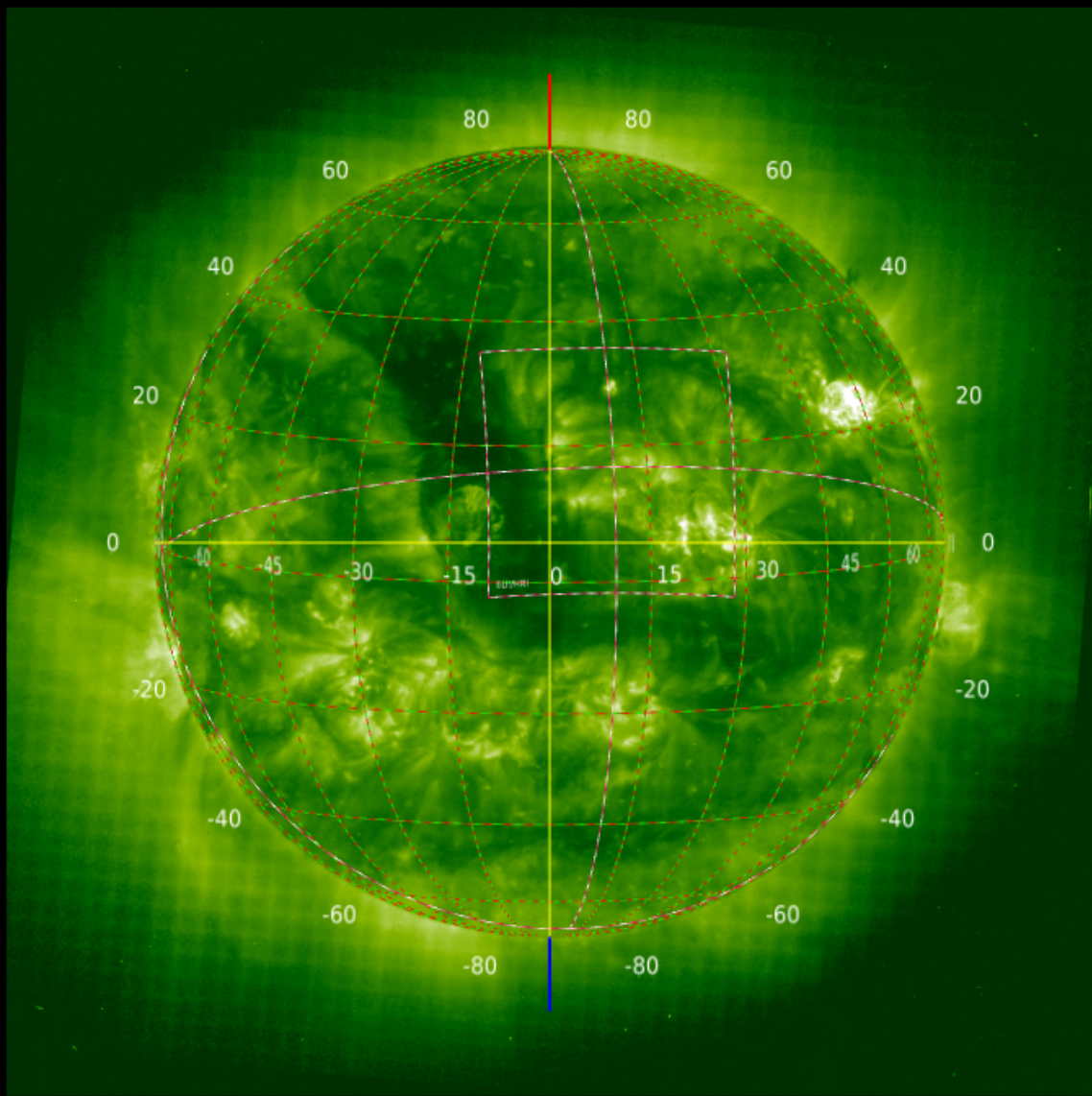
PROBA2/SWAP 174 2025-03-29T19:50:20



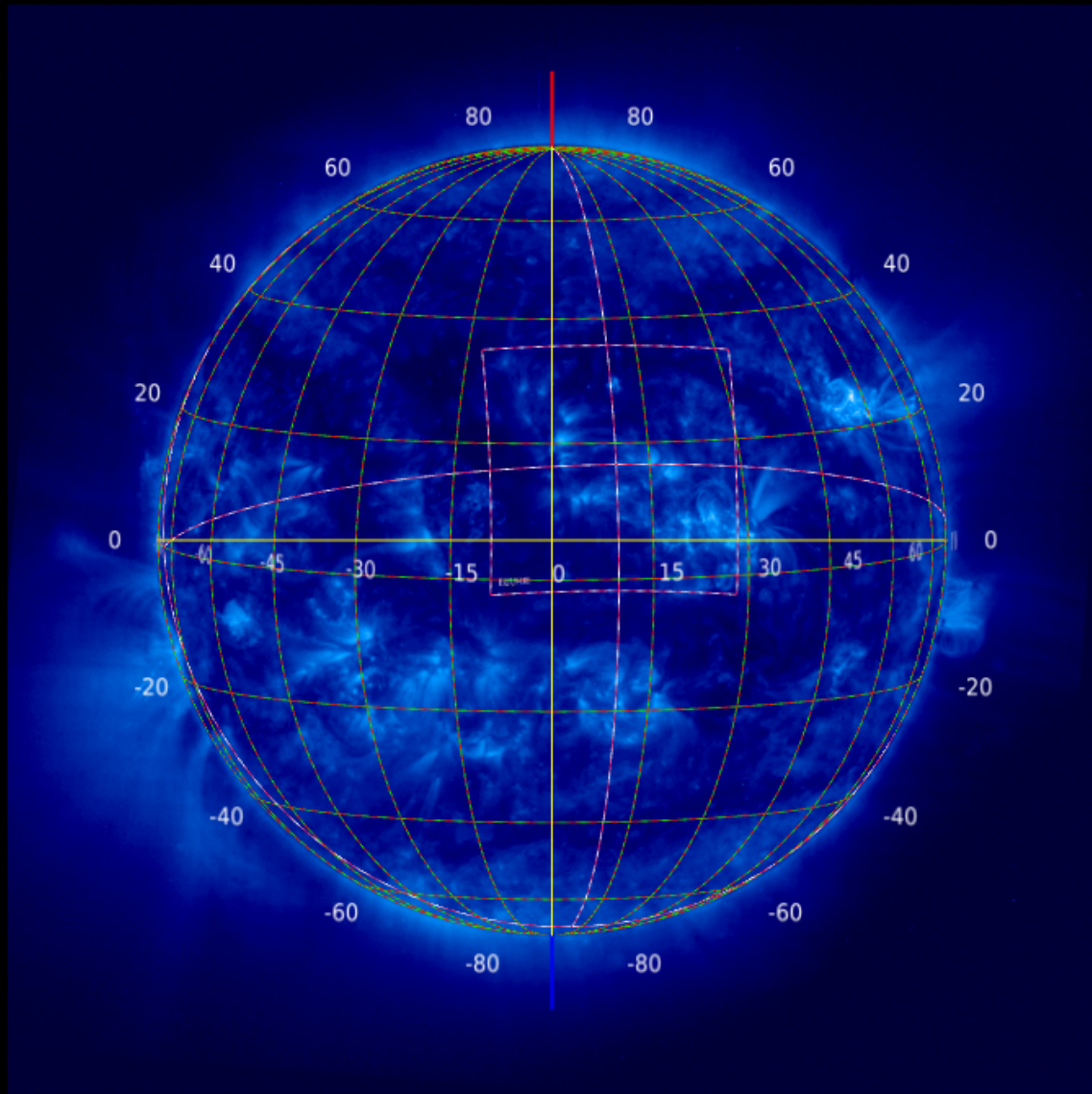
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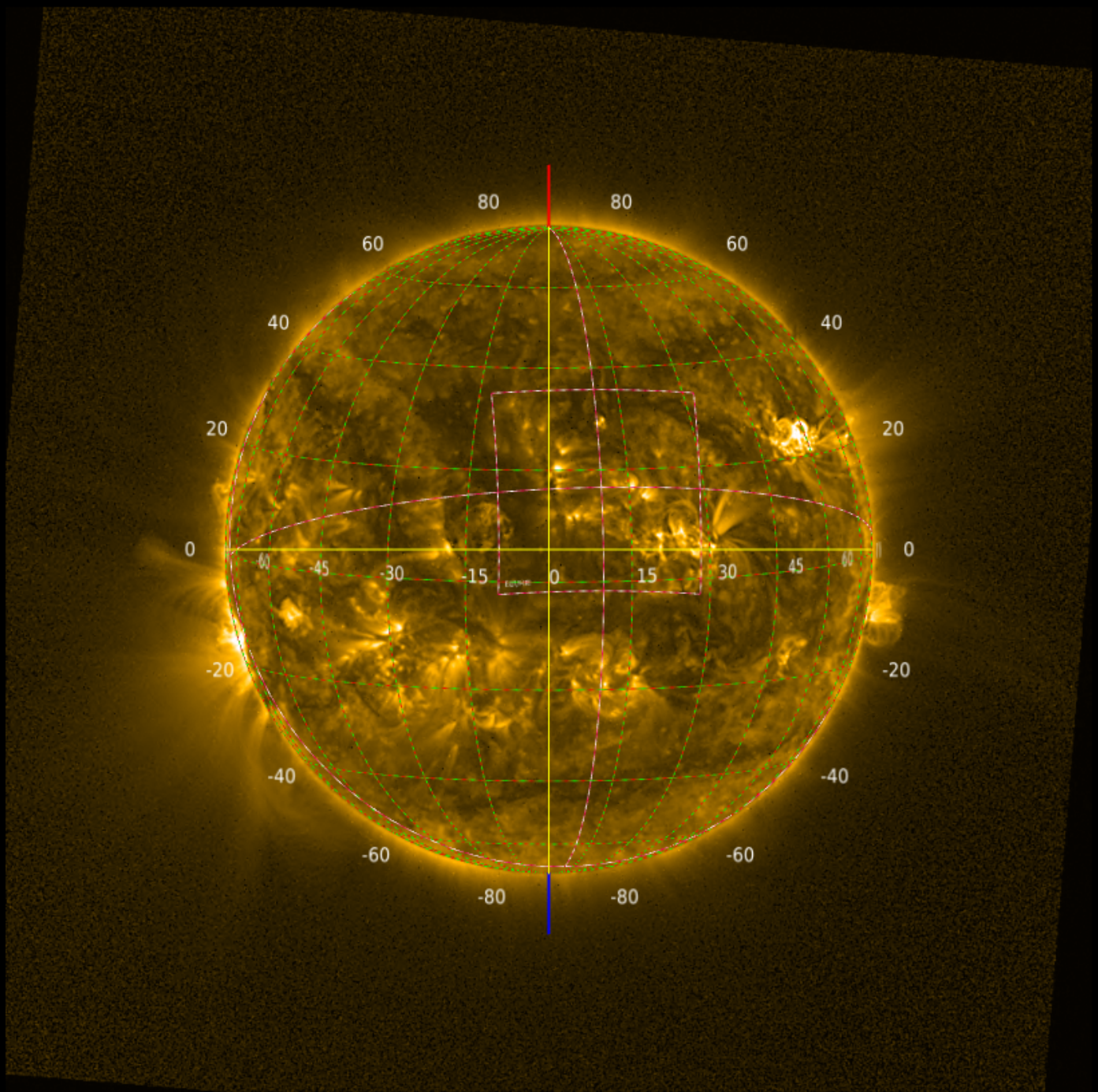
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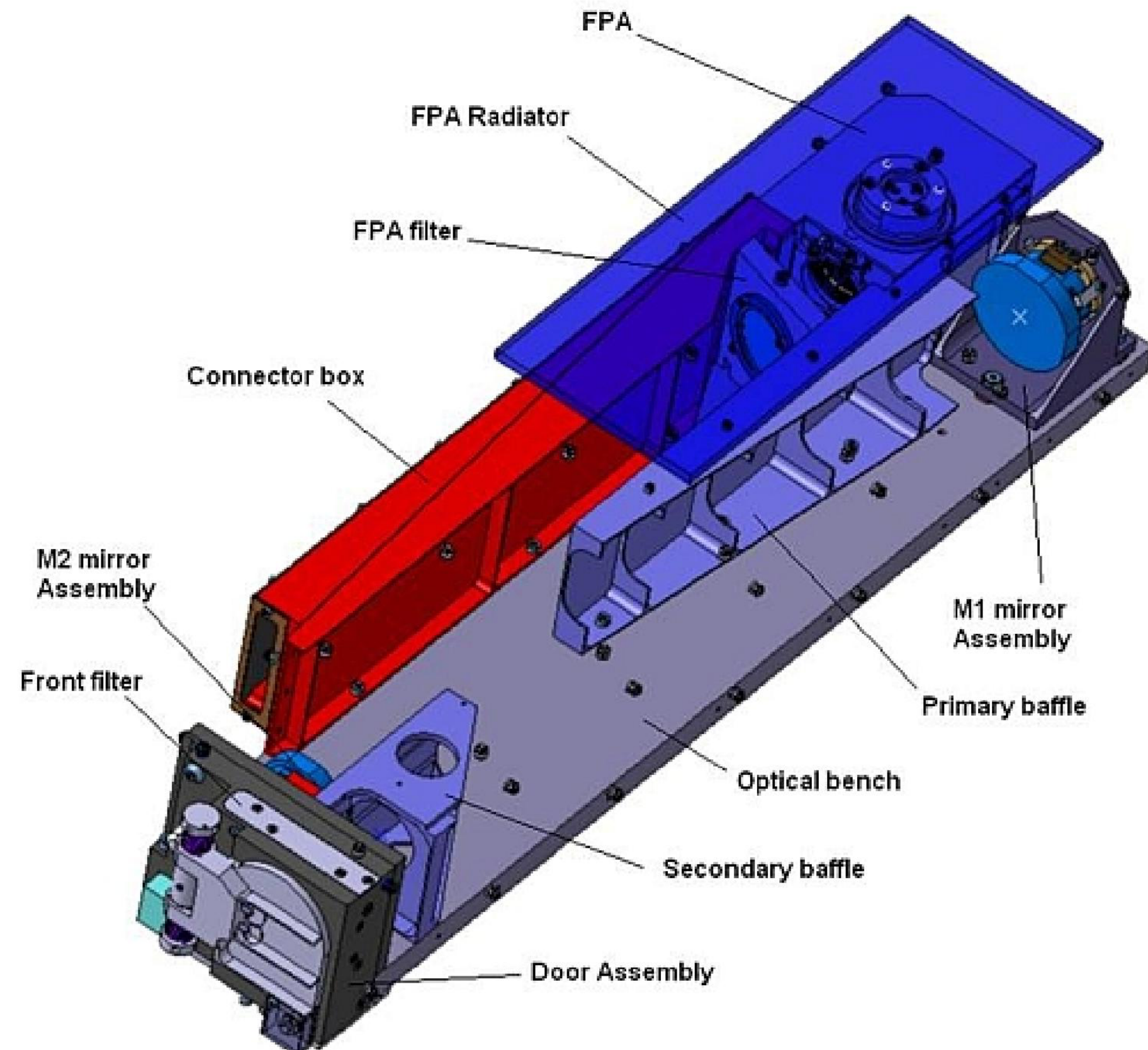


2025-10-16T01:00:18.763 EIT 171 | D☉: 0.9870au



2025-10-16T01:15:29.814 SWAP 174 | D☉: 0.9970au

SWAP



Low resolution full disc imaging

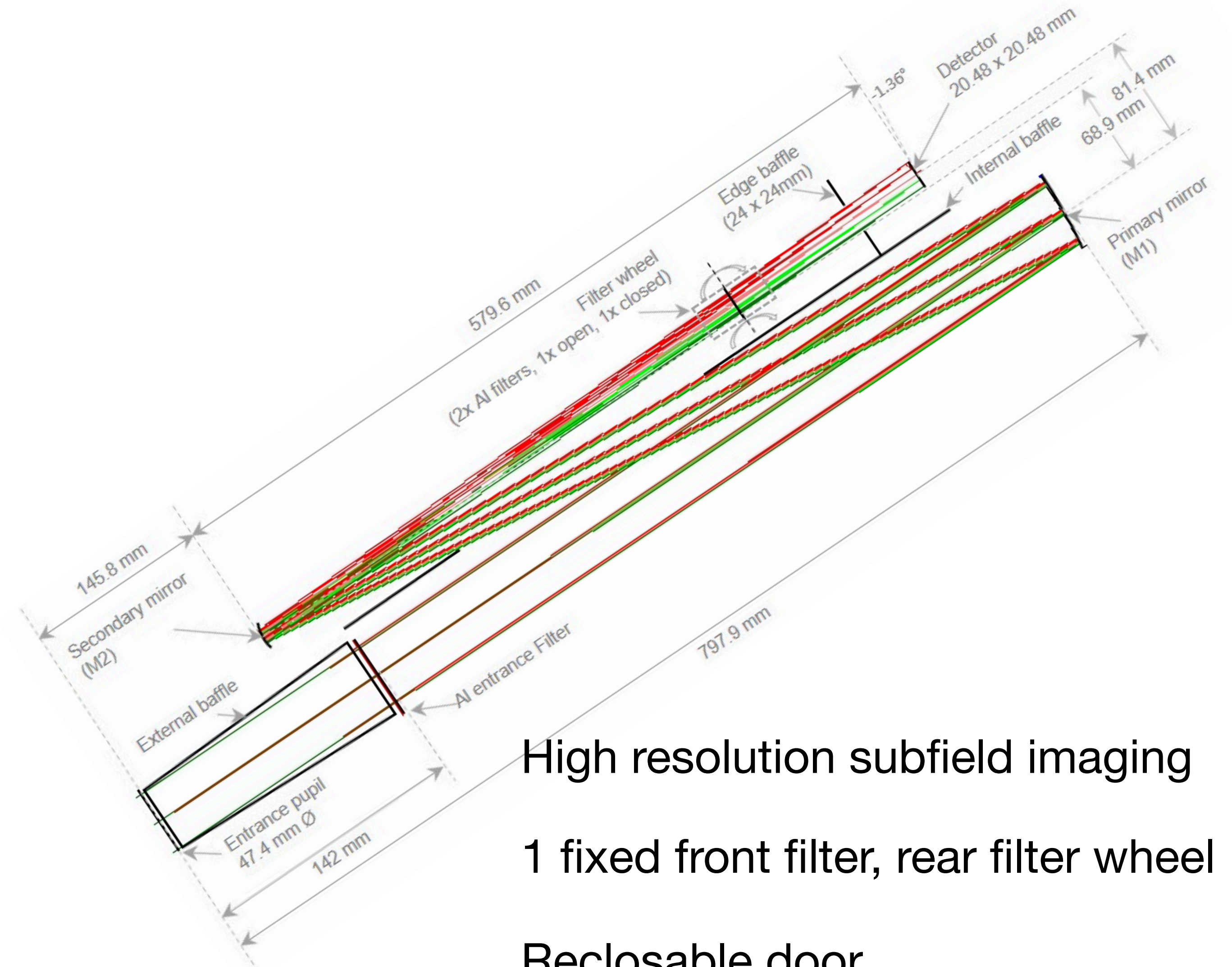
2 fixed filters

Mechanism: single use door

CMOS camera

versus

EUI/HRIEUV



High resolution subfield imaging

1 fixed front filter, rear filter wheel

Reclosable door

CMOS camera

FSI occulter

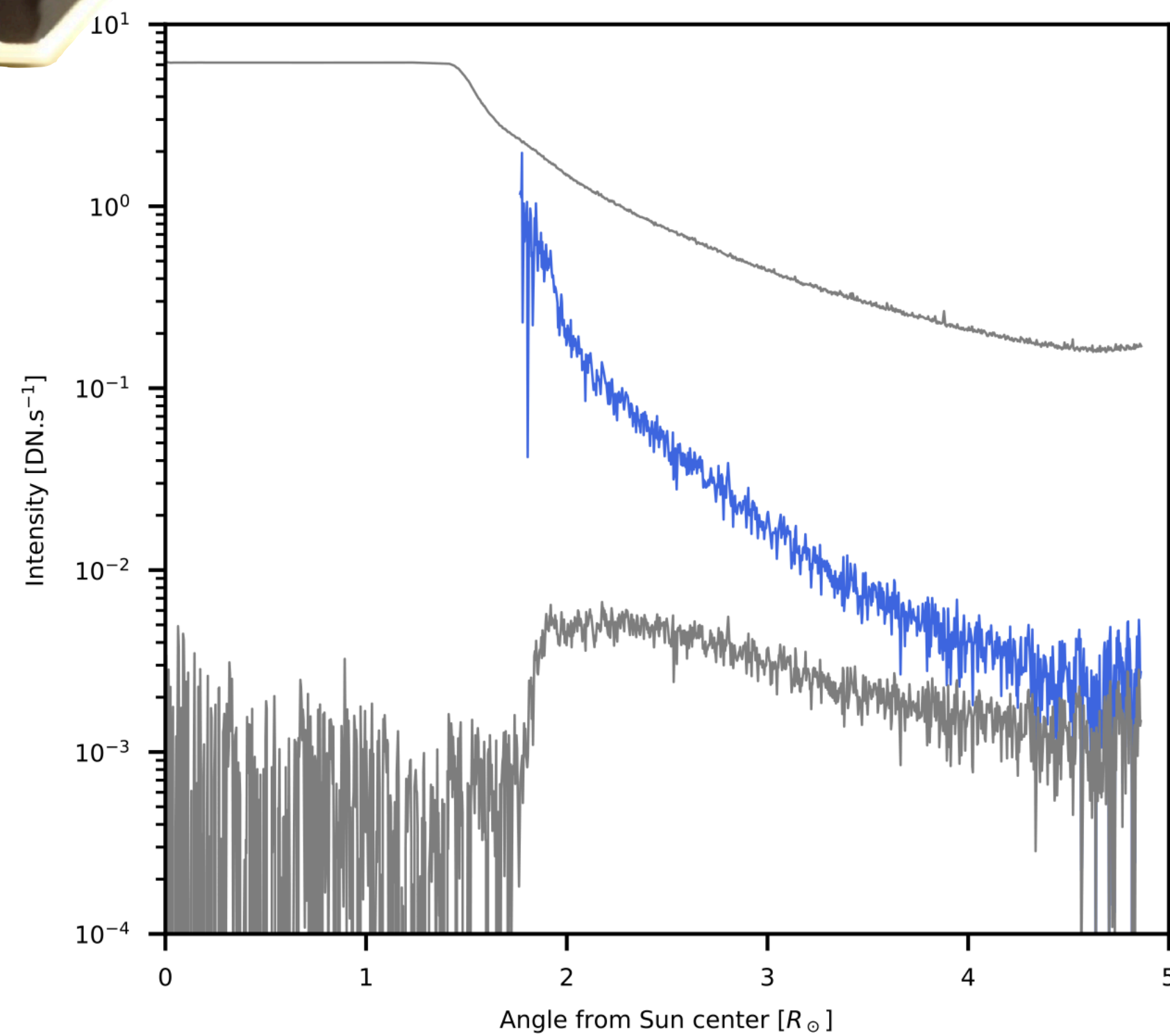
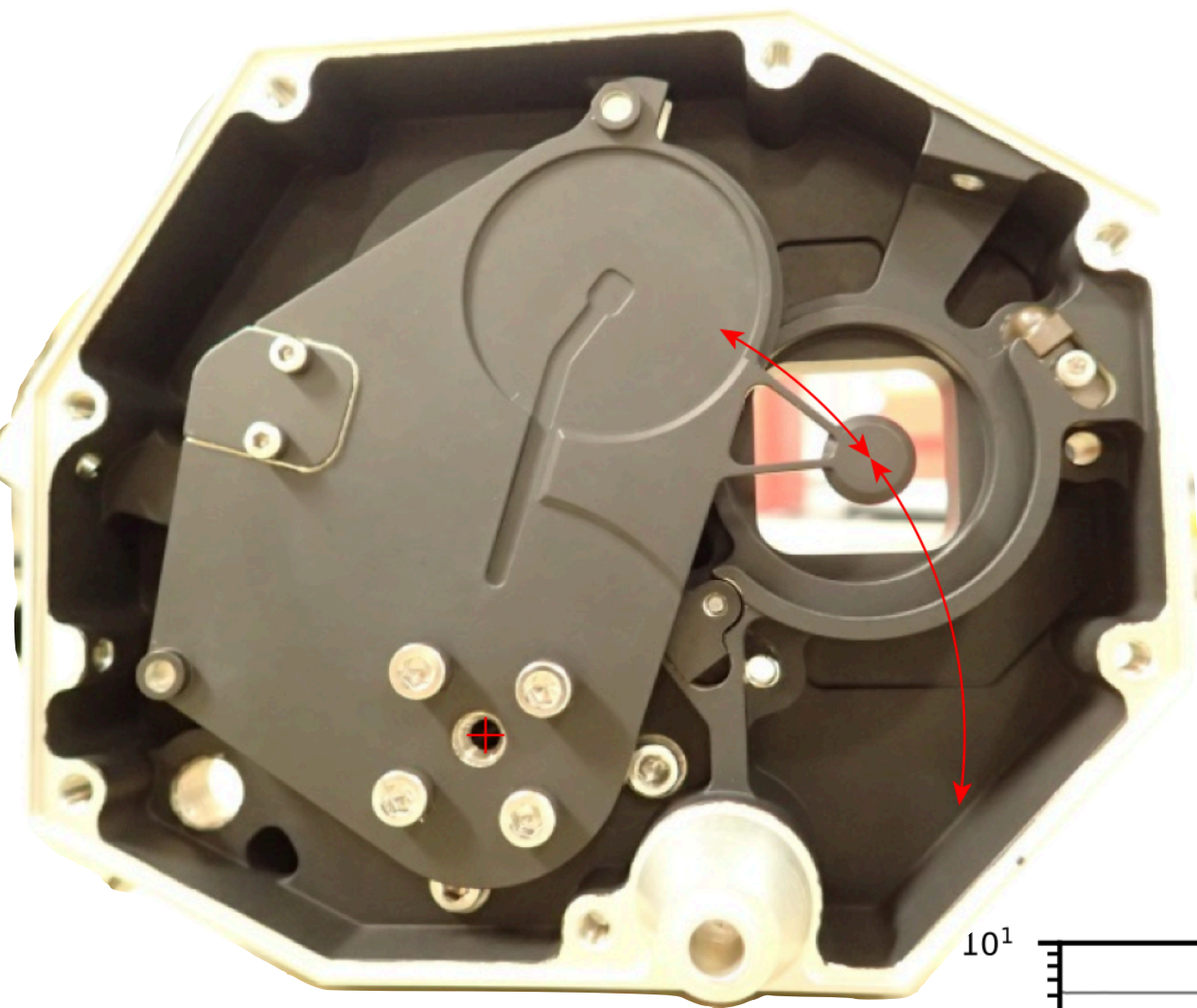
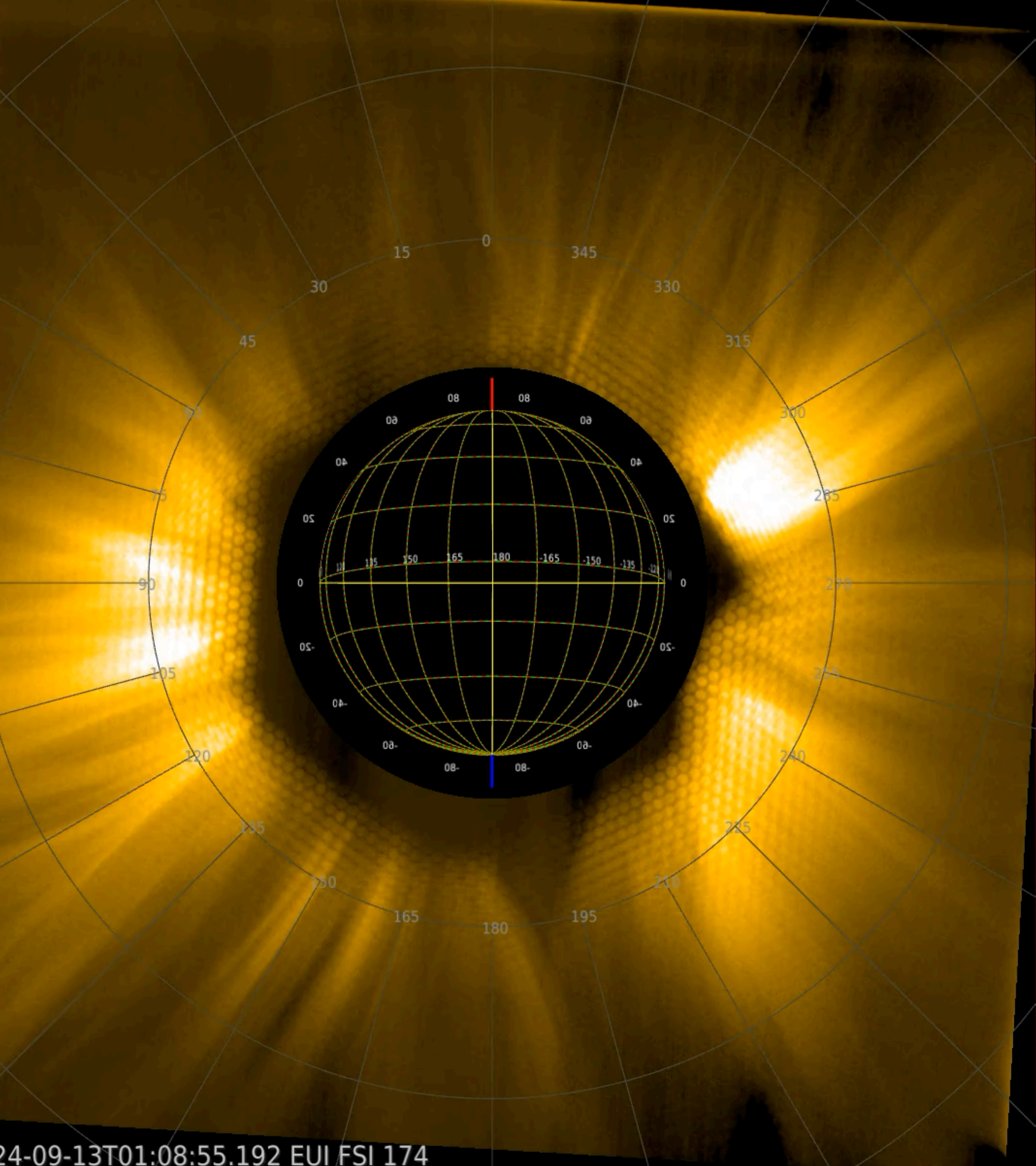
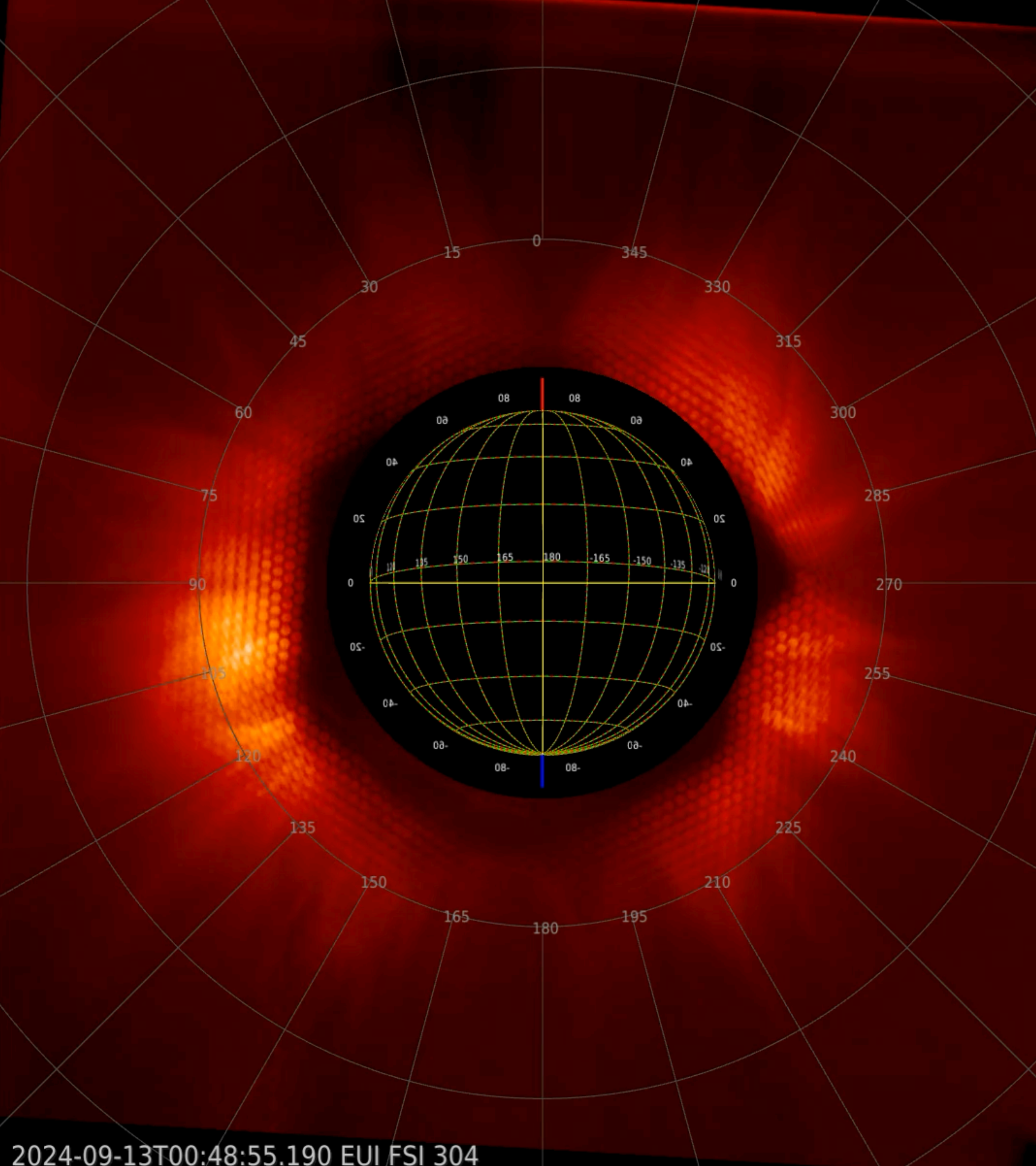


Fig. 5. Raw (lower gray) and vignetting-calibrated (blue) radial 17.4 nm intensity profiles, averaged over the sector shown in Fig. 3. The top curve corresponds to the data taken without the occulting disk.

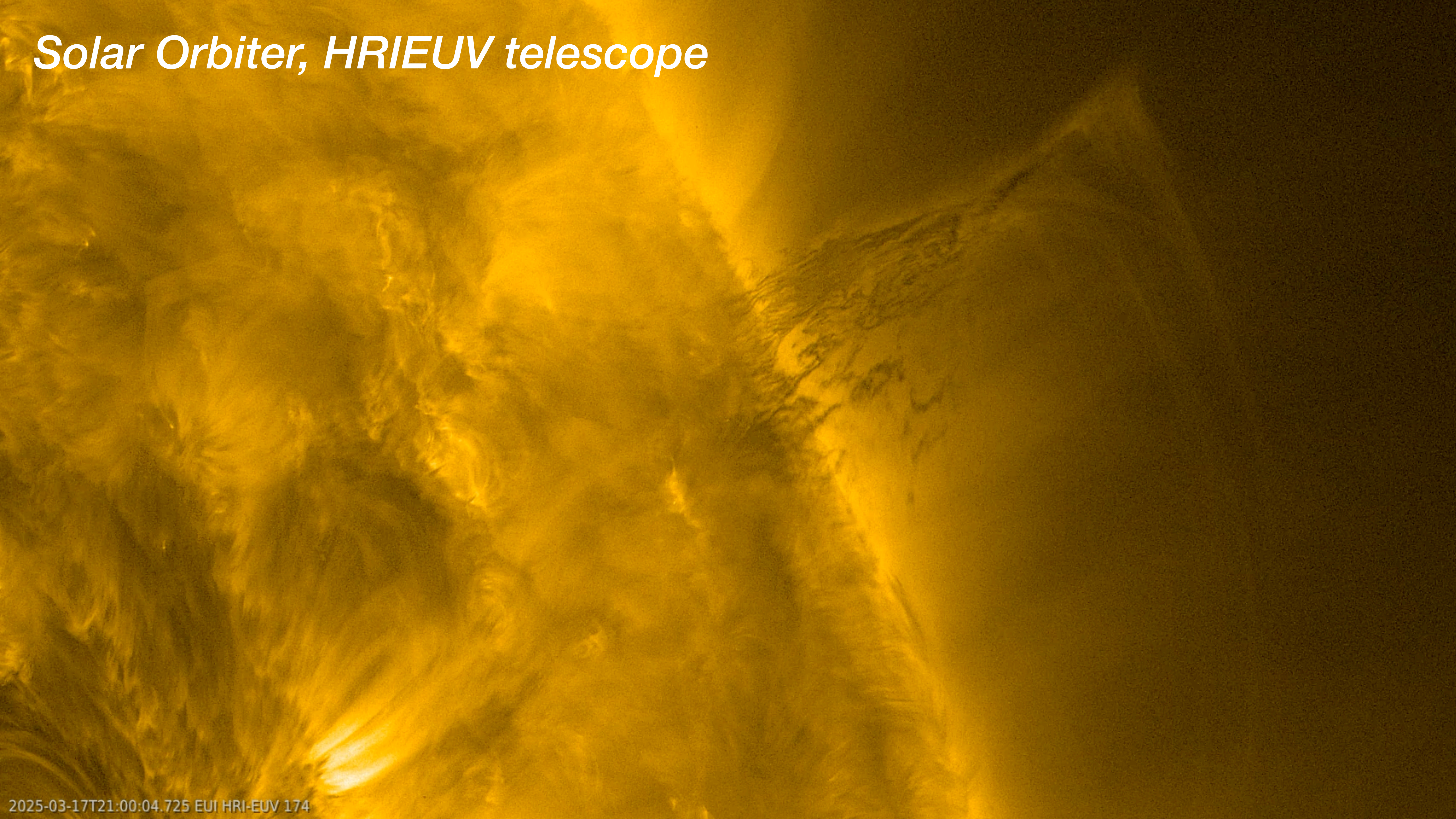


24-09-13T01:08:55.192 EUI FSI 174

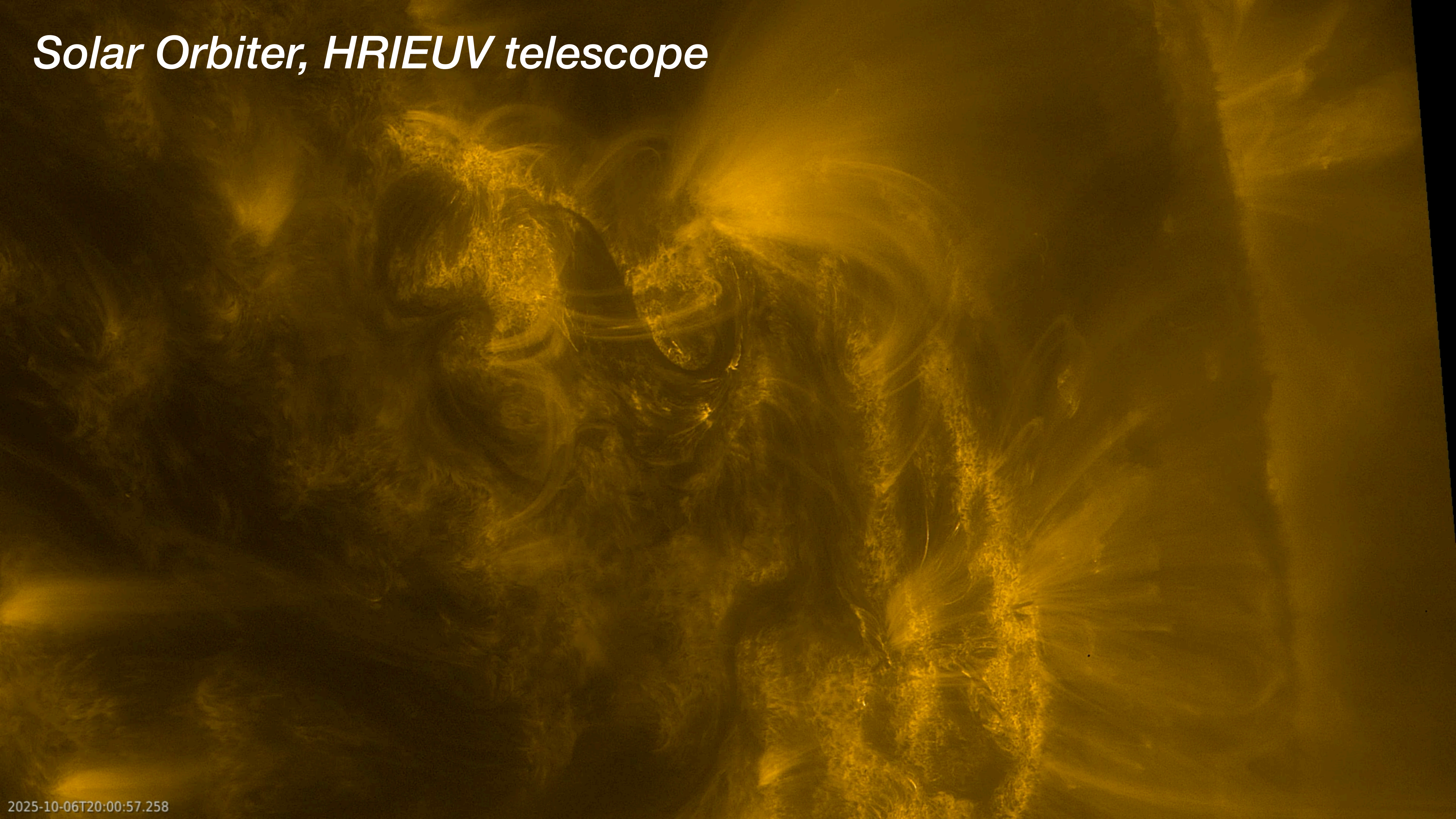


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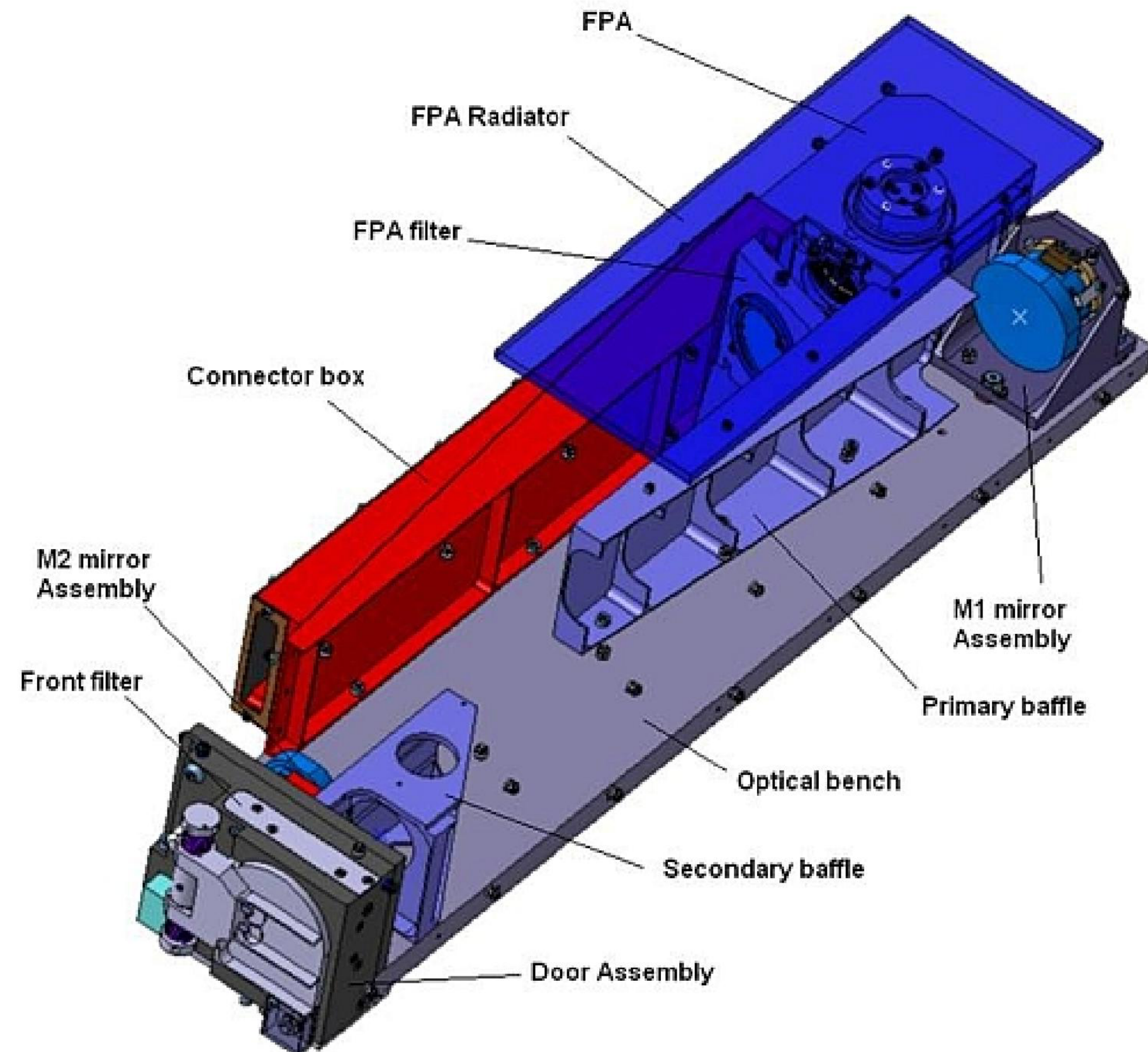
Solar Orbiter, HRIEUV telescope



Solar Orbiter, HRIEUV telescope



SWAP



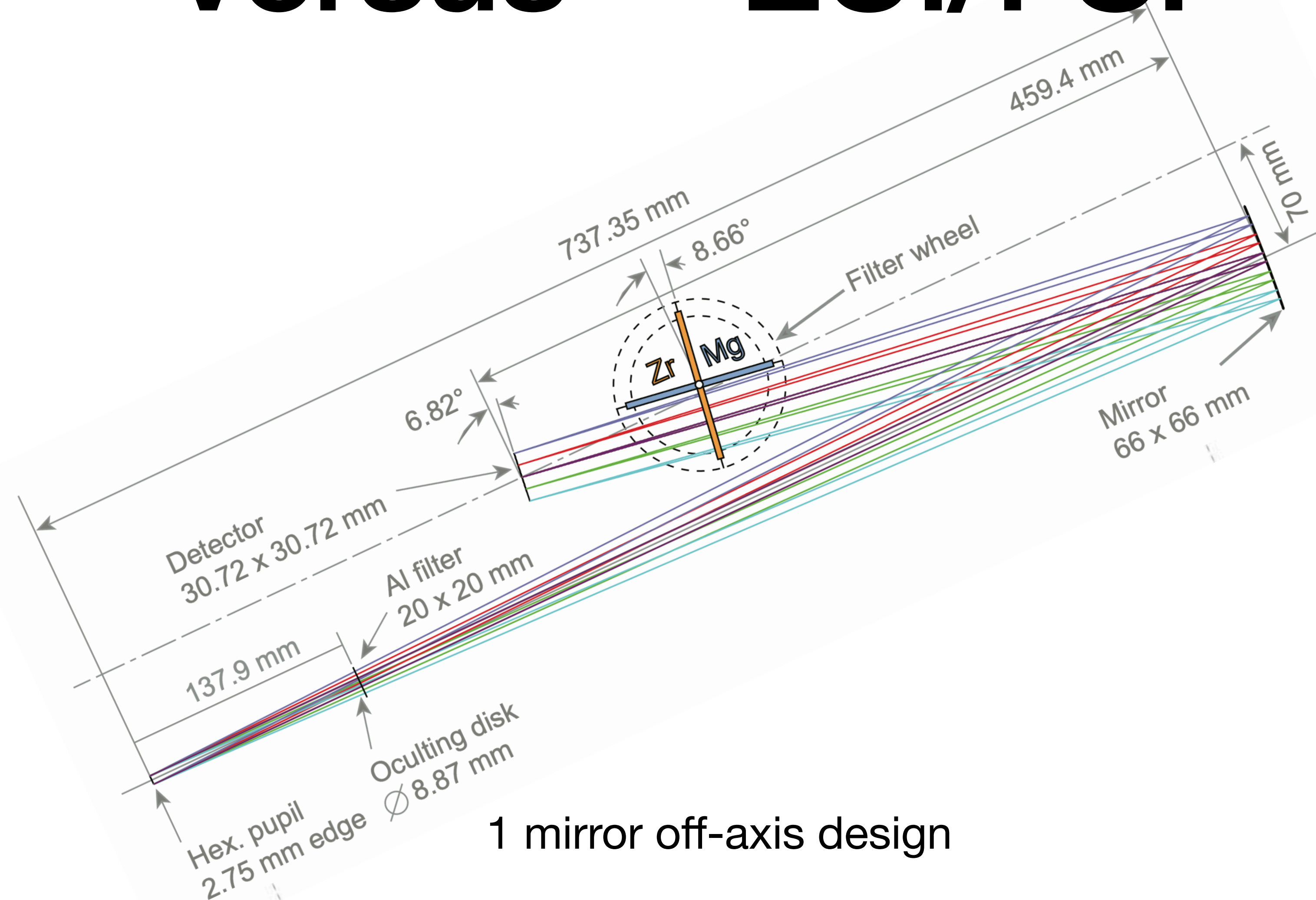
2 mirror off-axis design

1-bandpass multilayers (17.4nm)

no filter wheel

versus

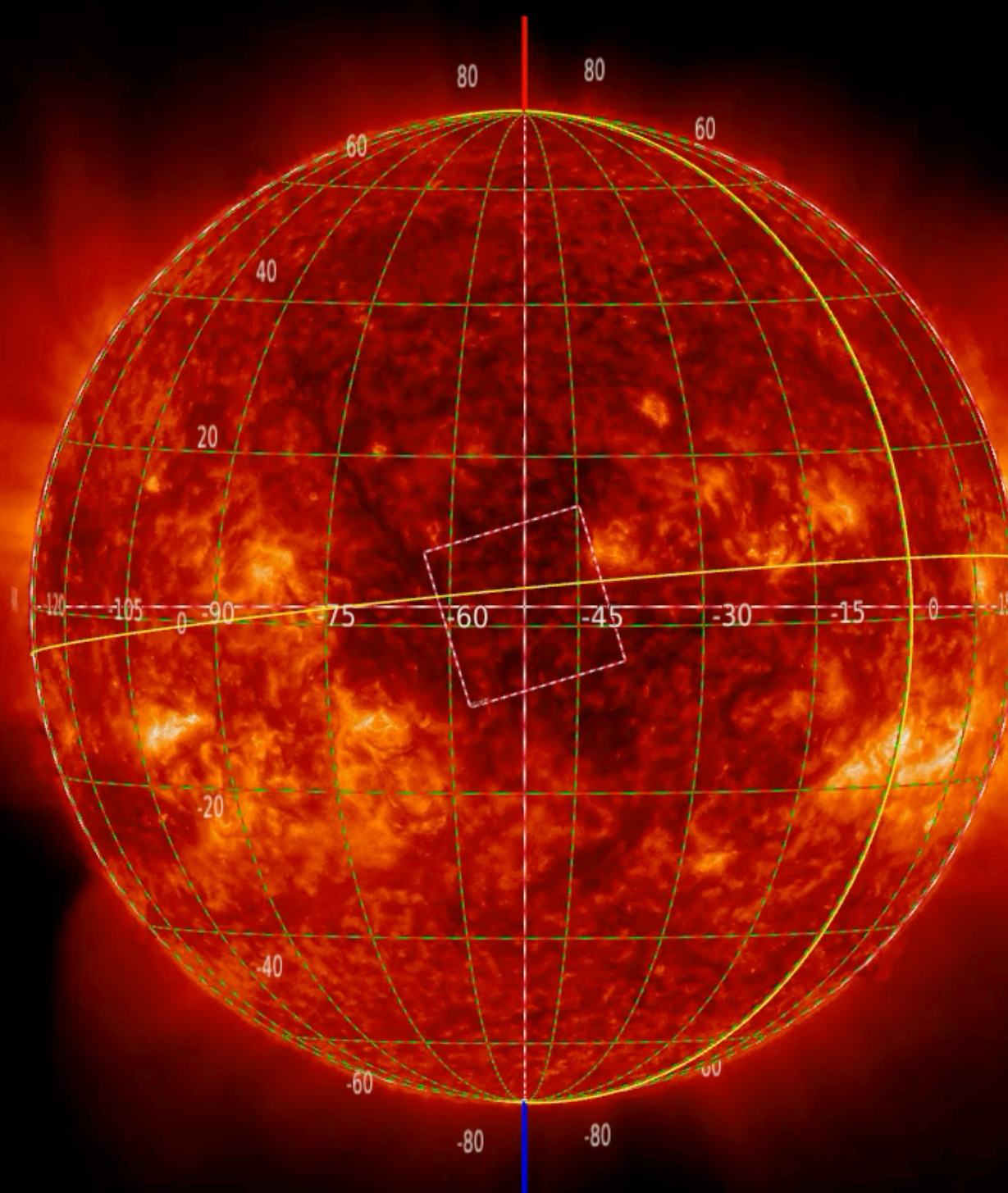
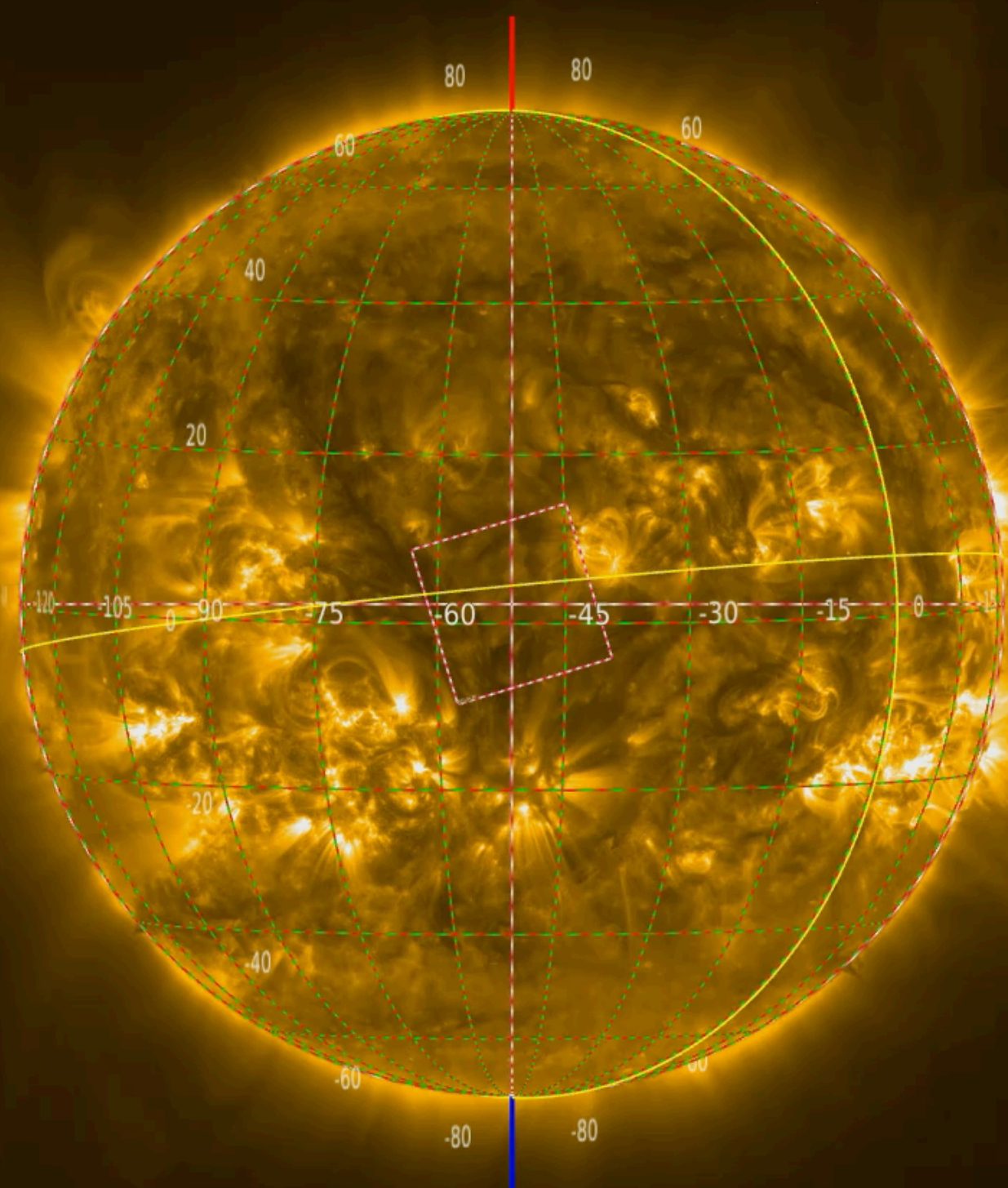
EUI/FSI



1 mirror off-axis design

2-bandpass multilayers (17.4nm/30.4 nm)

filter wheel



2025-09-21T09:36:43.252 EUI FSI 174 | D \odot : 0.3168au

2025-09-21T09:46:08.225 EUI FSI 304 | D \odot : 0.3169au

	EIT	SWAP	EUI	JEDI
PI PM	IAS CSL	ROB-> CSL -> ROB CSL	ROB -> CSL -> ROB CSL	SWRI SWRI
System Integration	CSL	CSL	CSL	SWRI
Optical alignment	IAS/CSL	CSL	IAS	SWRI
Calibration	IAS/ROB	CSL/ROB	ROB/IAS	IAS/ROB
Operations	NASA/IAS/ROB	ROB	ROB	SWRI
Data Management & Processing	NASA/IAS	ROB	ROB	SWRI/ROB

IAS: Institut d'Astrophysique Spatiale (France)
 CSL: Centre Spatial de Liège (Belgium)
 IO: Institut d'Optique (France)
 SWRI: South West Research Institute (US)

More institutes participated of course

Calibration

1. Characterization at component level (filters, mirrors, sensor)

- ROB contribution: sensor characterization: dark current, flat field, noise
- @ROB Demelab, @CSL clean-room @PTB Berlin EUV source

2. End-to-end calibration of full instrument on raw ground

- Whole instrument @PTB Berlin EUV source
- Integrated in spacecraft during TVAC testing

3. Commissioning in space

- Confirmation ground calibration
- Optical performance (resolution, stray-light, PSF)

4. In-flight Degradation monitoring

- Onboard LEDs, flatfield, flux

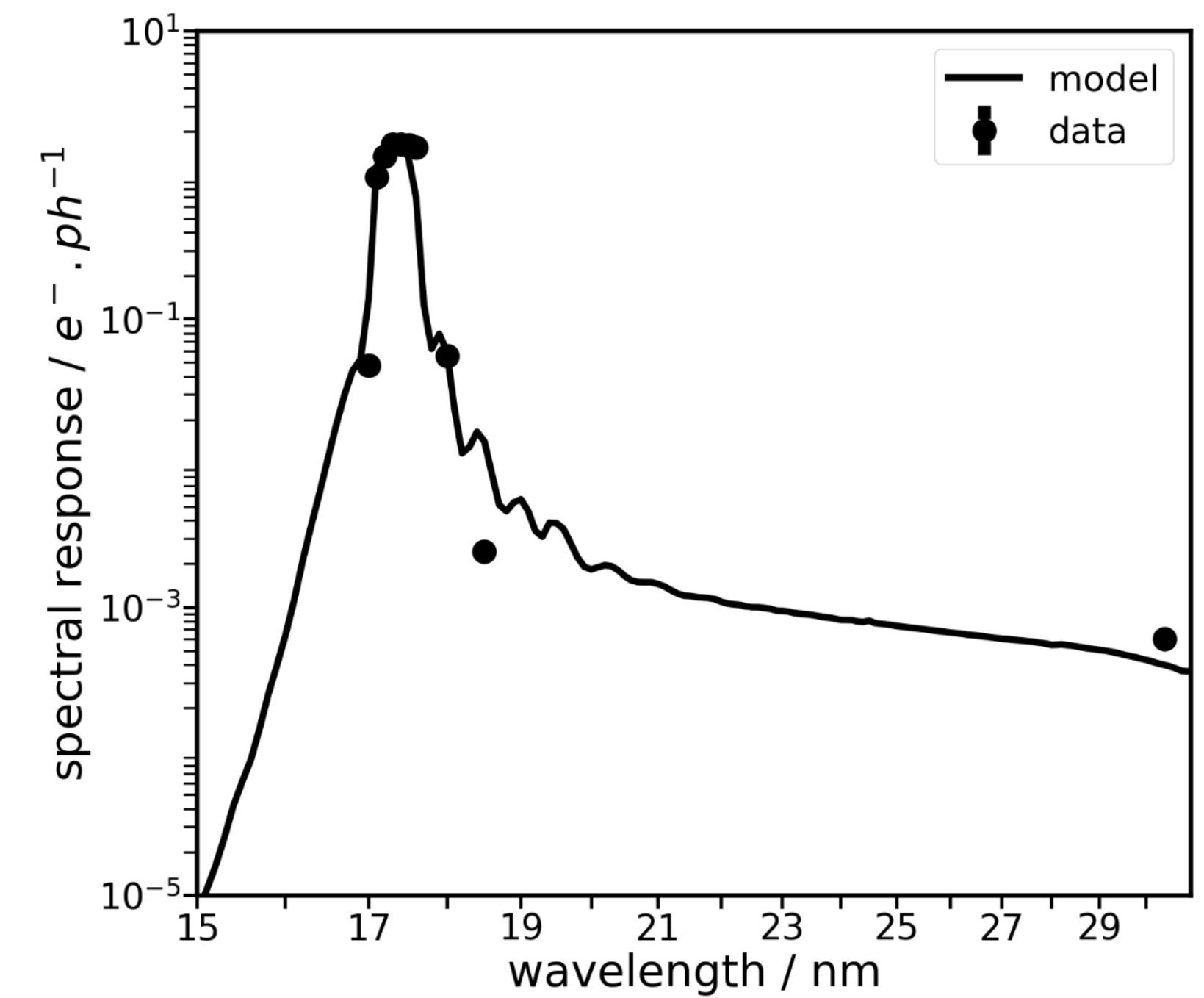


Fig. 22. Spectral response of the HRI_{EUV} instrument measured during ground calibration, including the 30.4 nm wavelength measurement, with the filter wheel in open position.

