



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

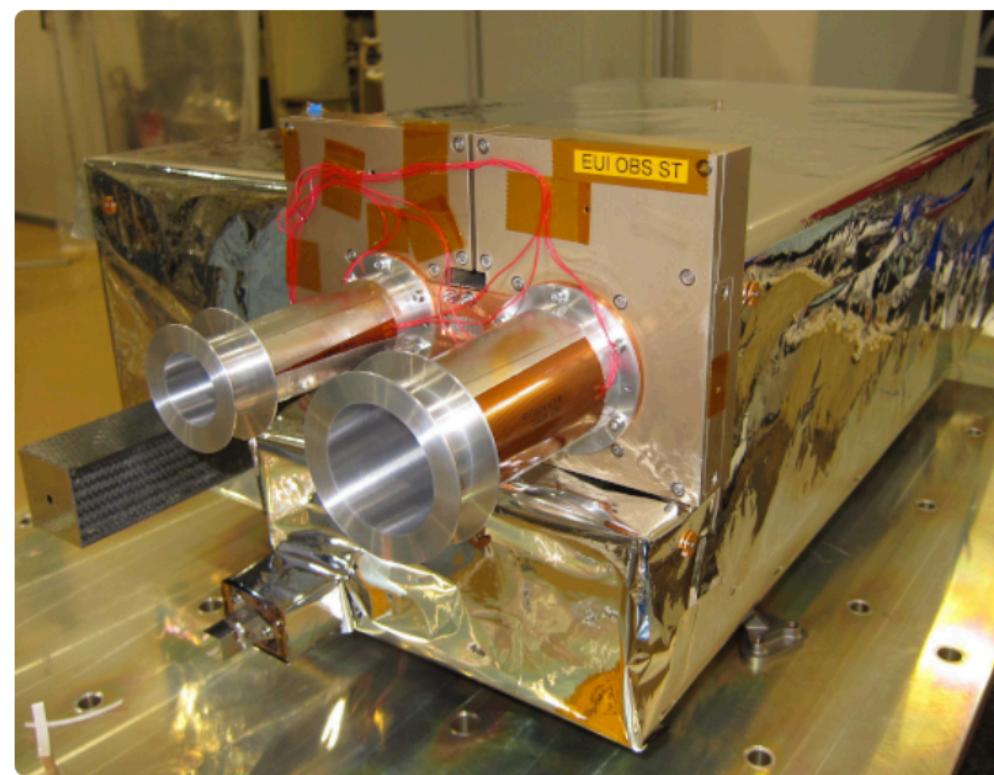
Ground Observations



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](#)

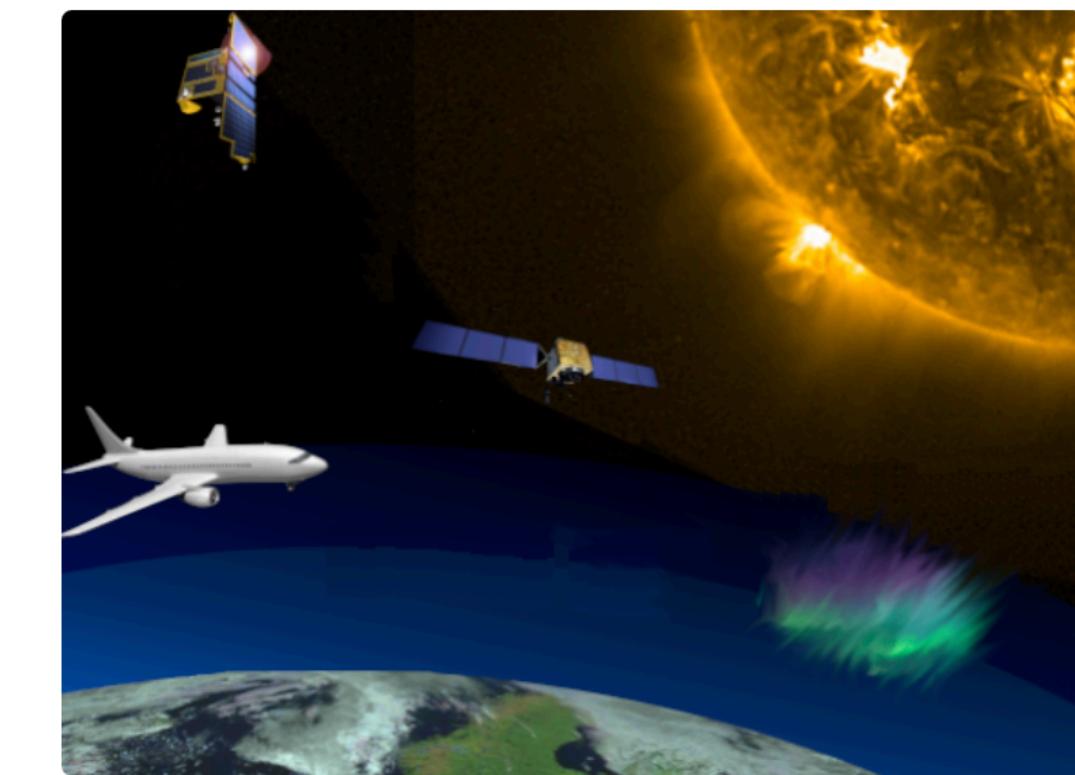
Space Instruments



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](#)

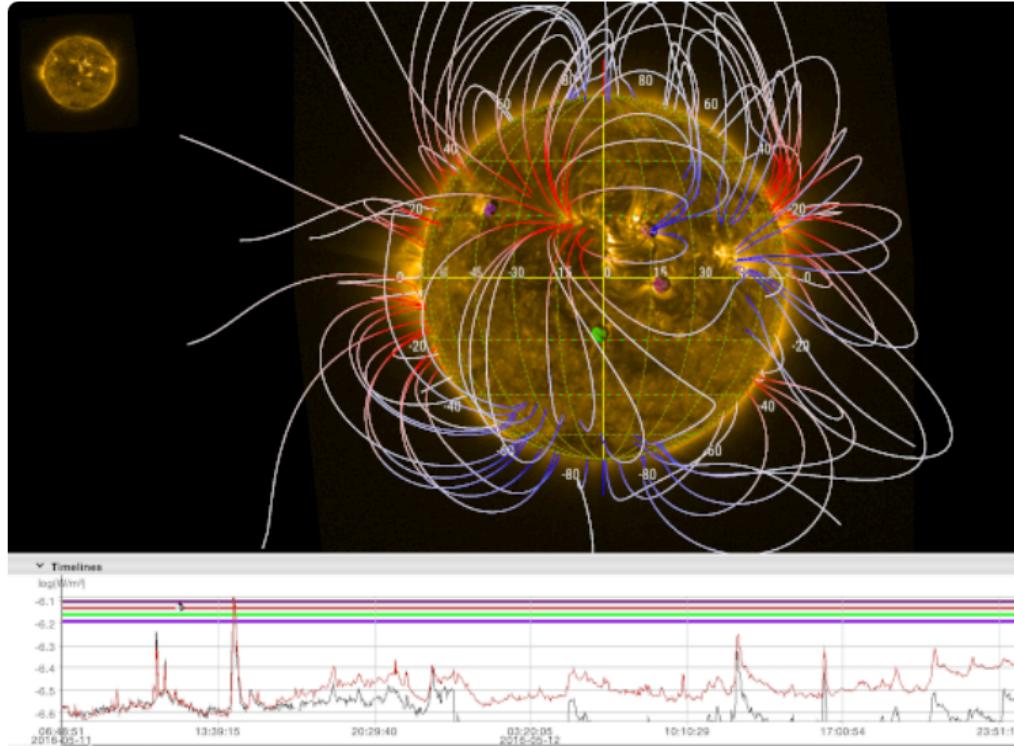
Space Weather & Climate



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

[Read more](#)

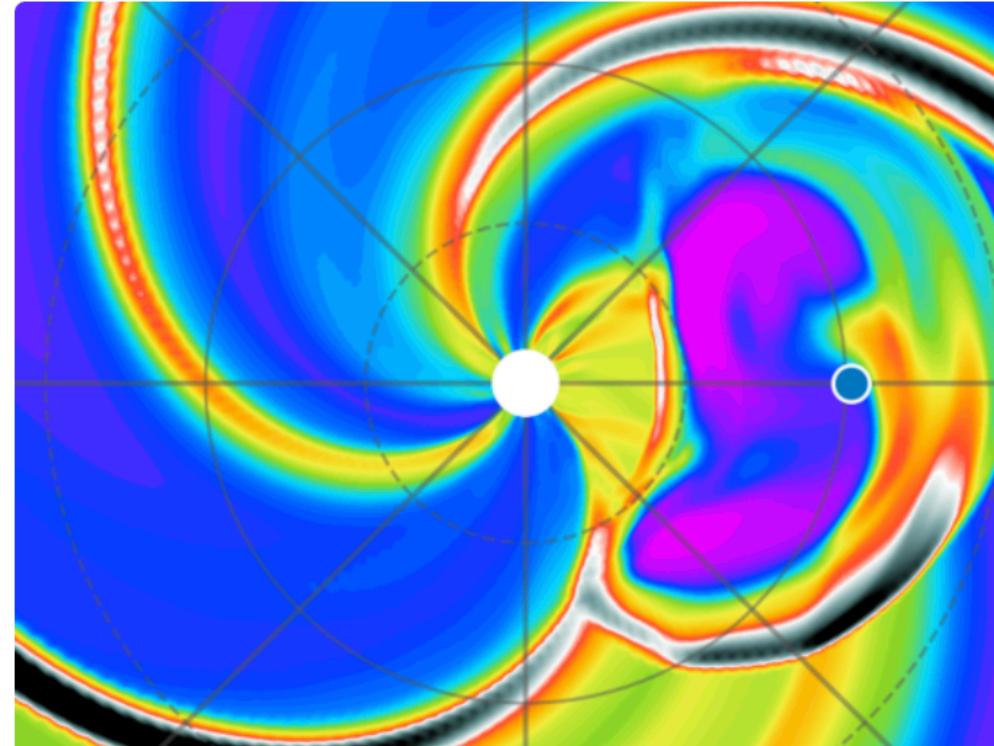
Data Processing & Distribution



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

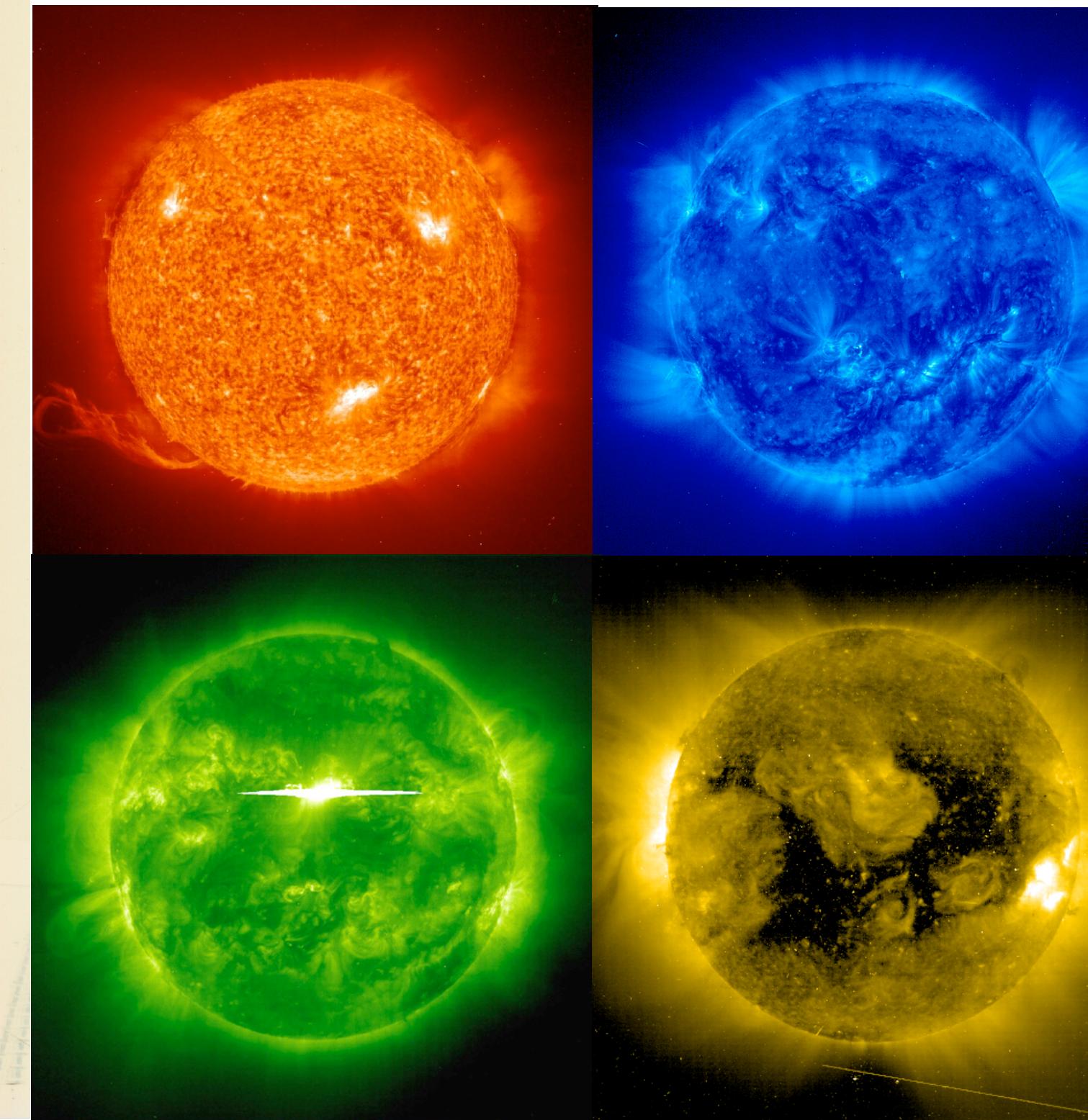
- > 60% from abroad
- > 40% female
- Most on soft money



EIT

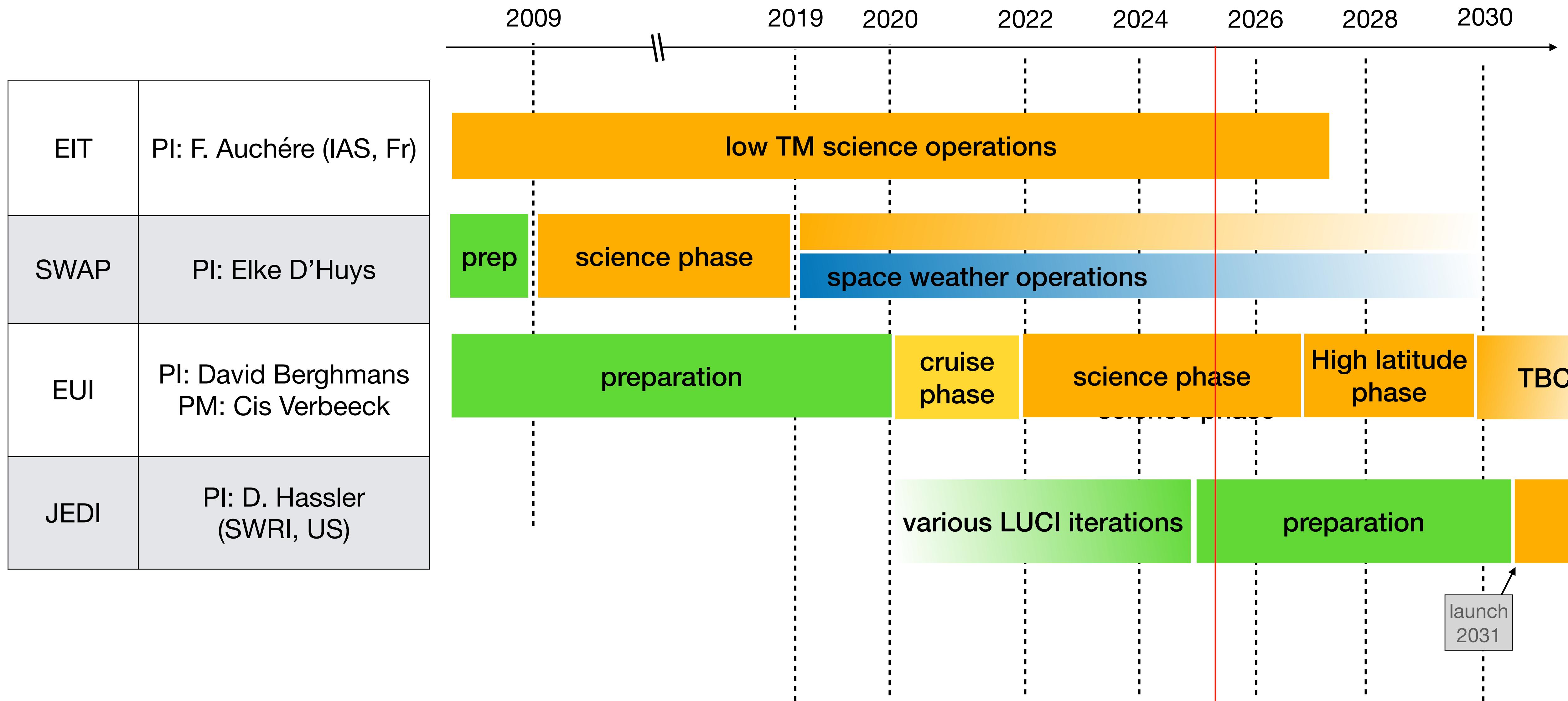
Extreme Ultraviolet Imaging Telescope

“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

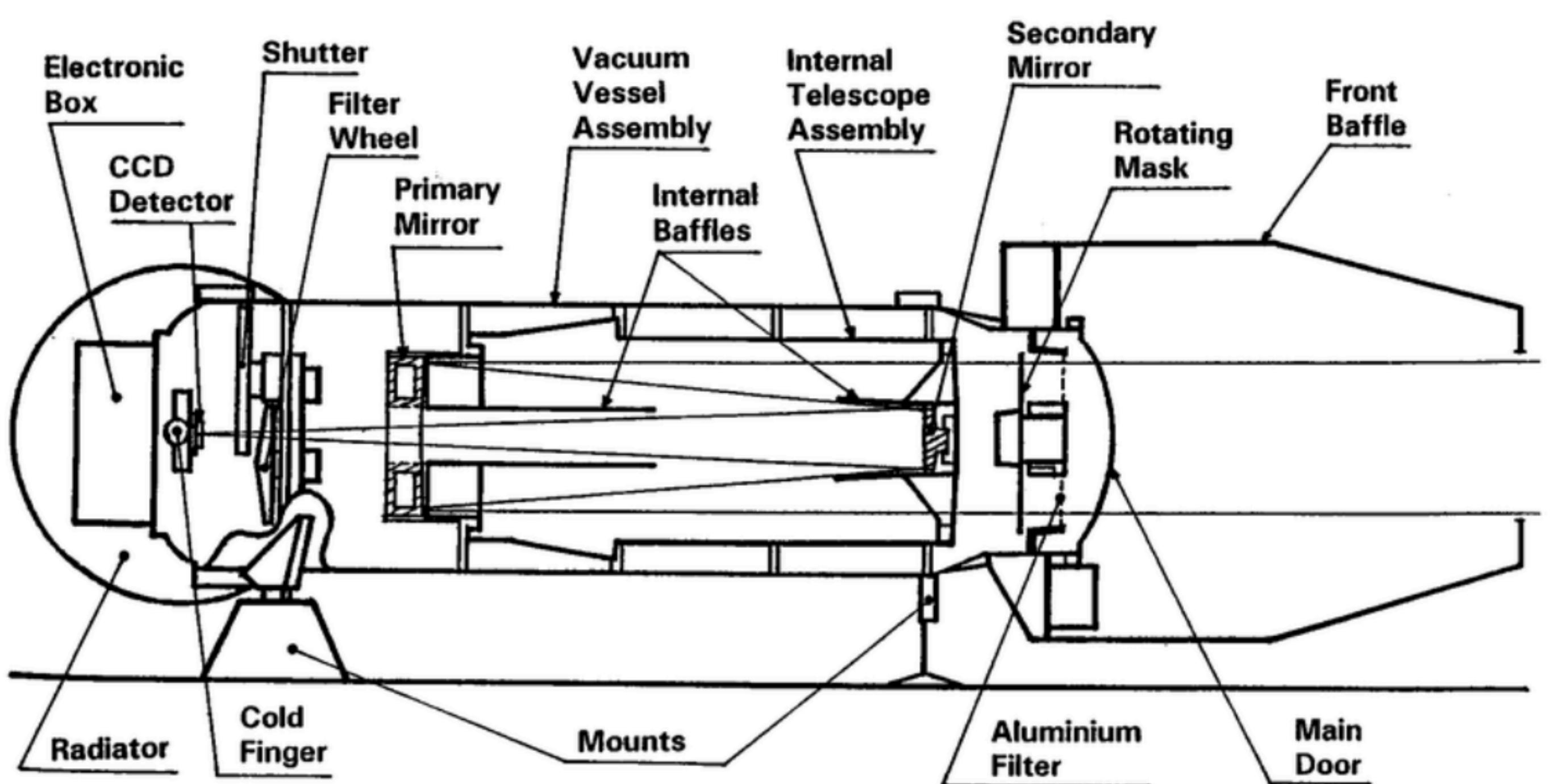
Imaging telescopes



EIT

versus

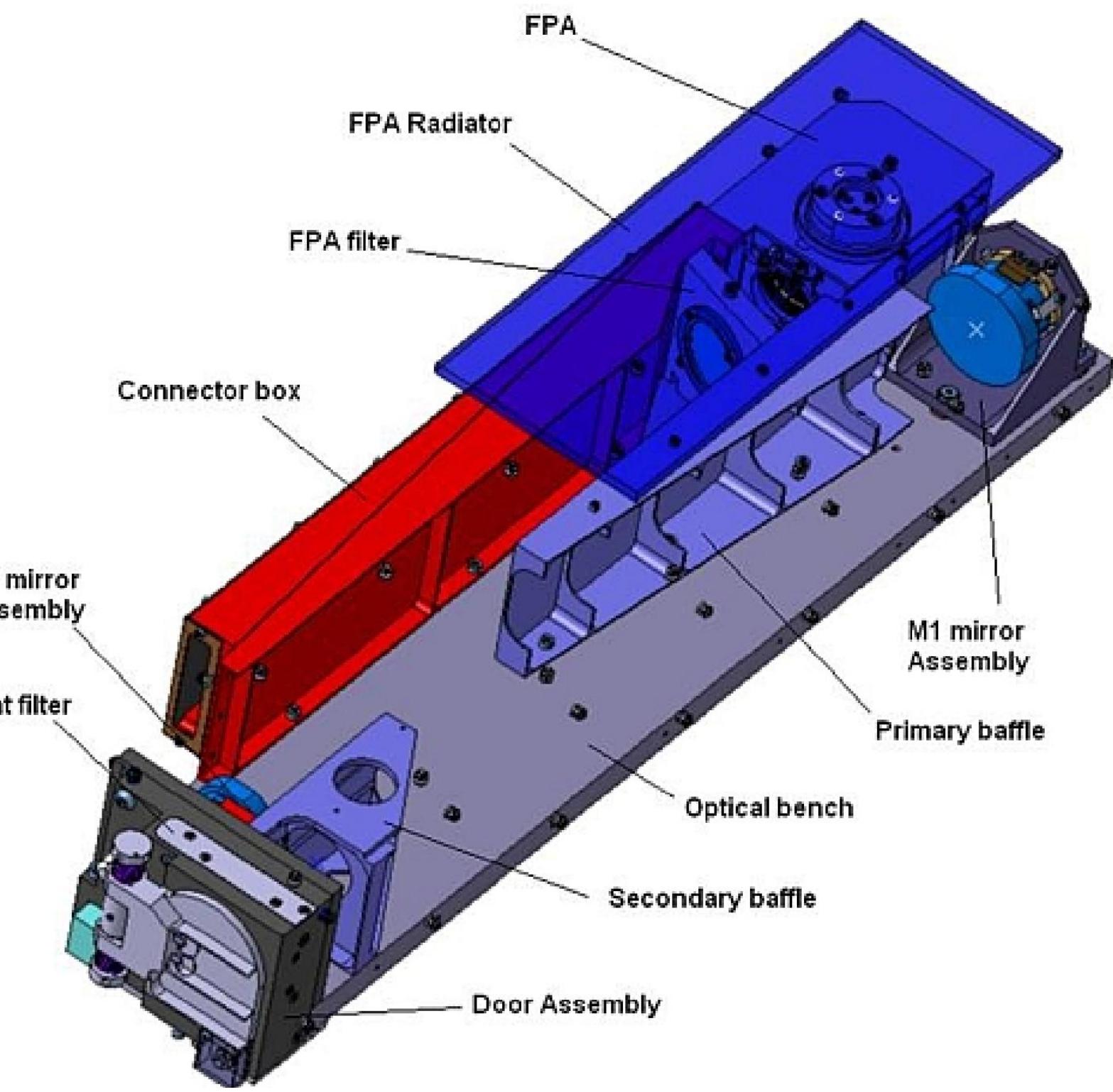
SWAP



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

Mechanisms: door, rotating mask, filter wheel, shutter

CCD camera

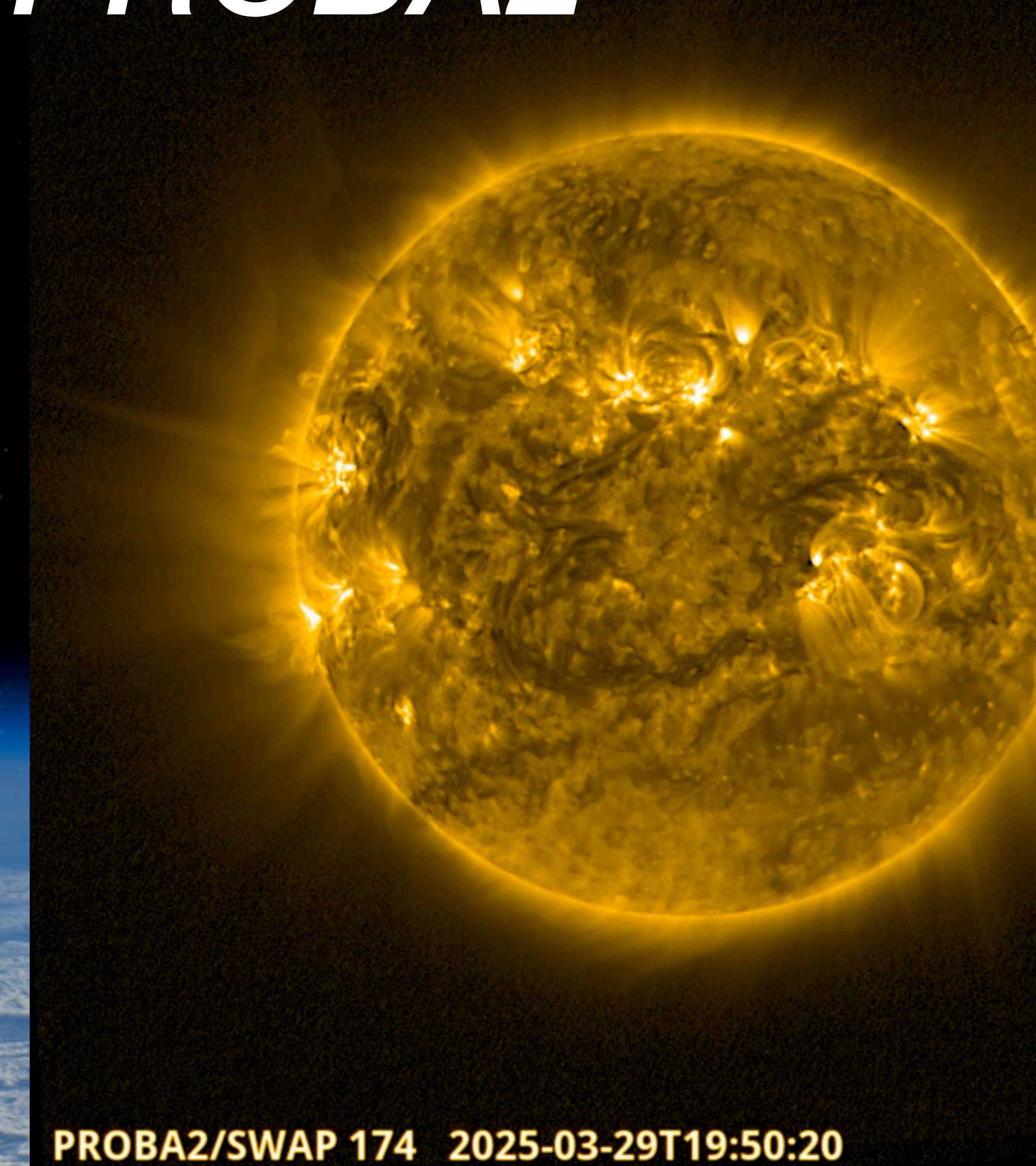


Single mirror coating

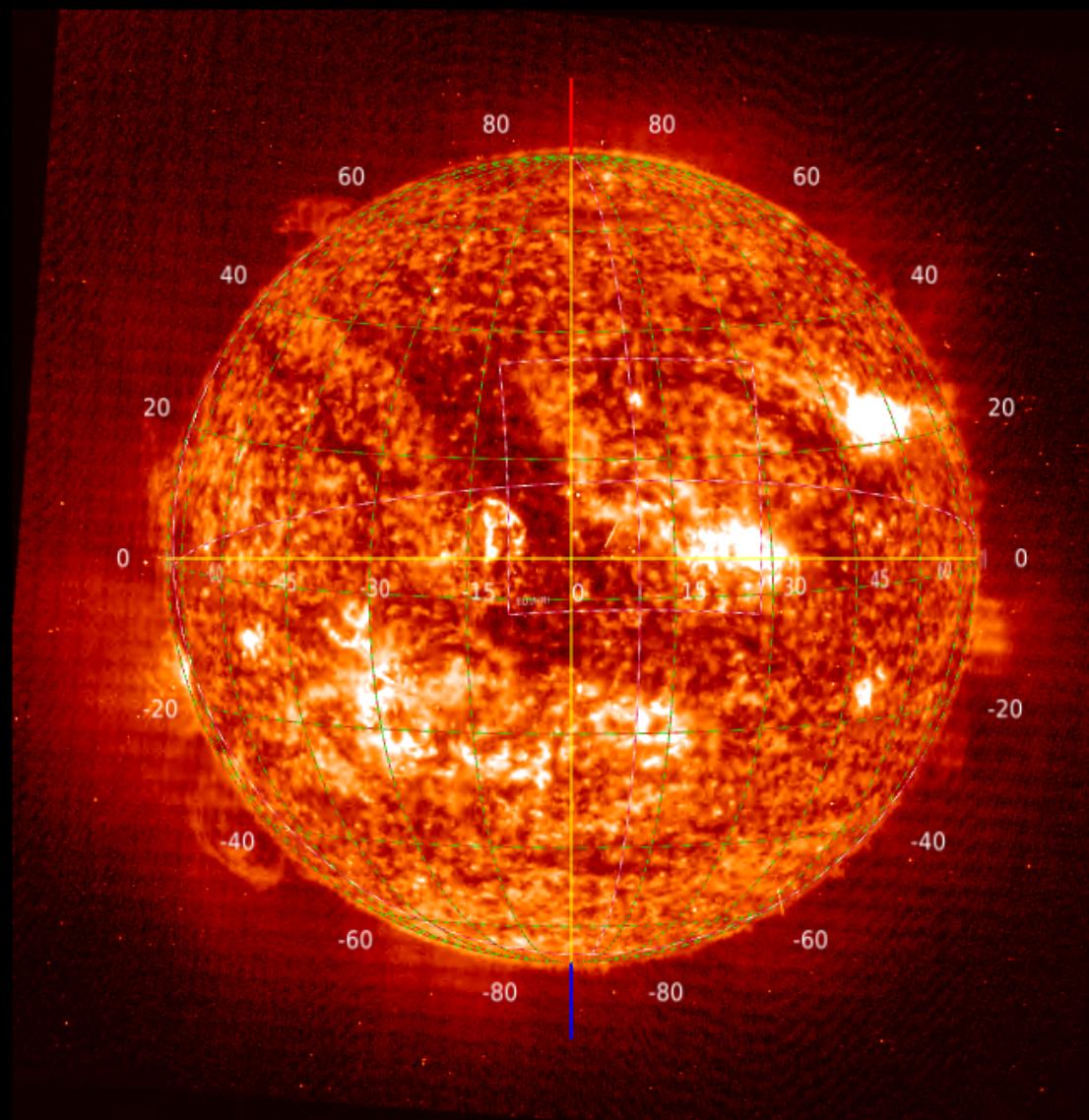
Mechanisms: single use door

CMOS camera

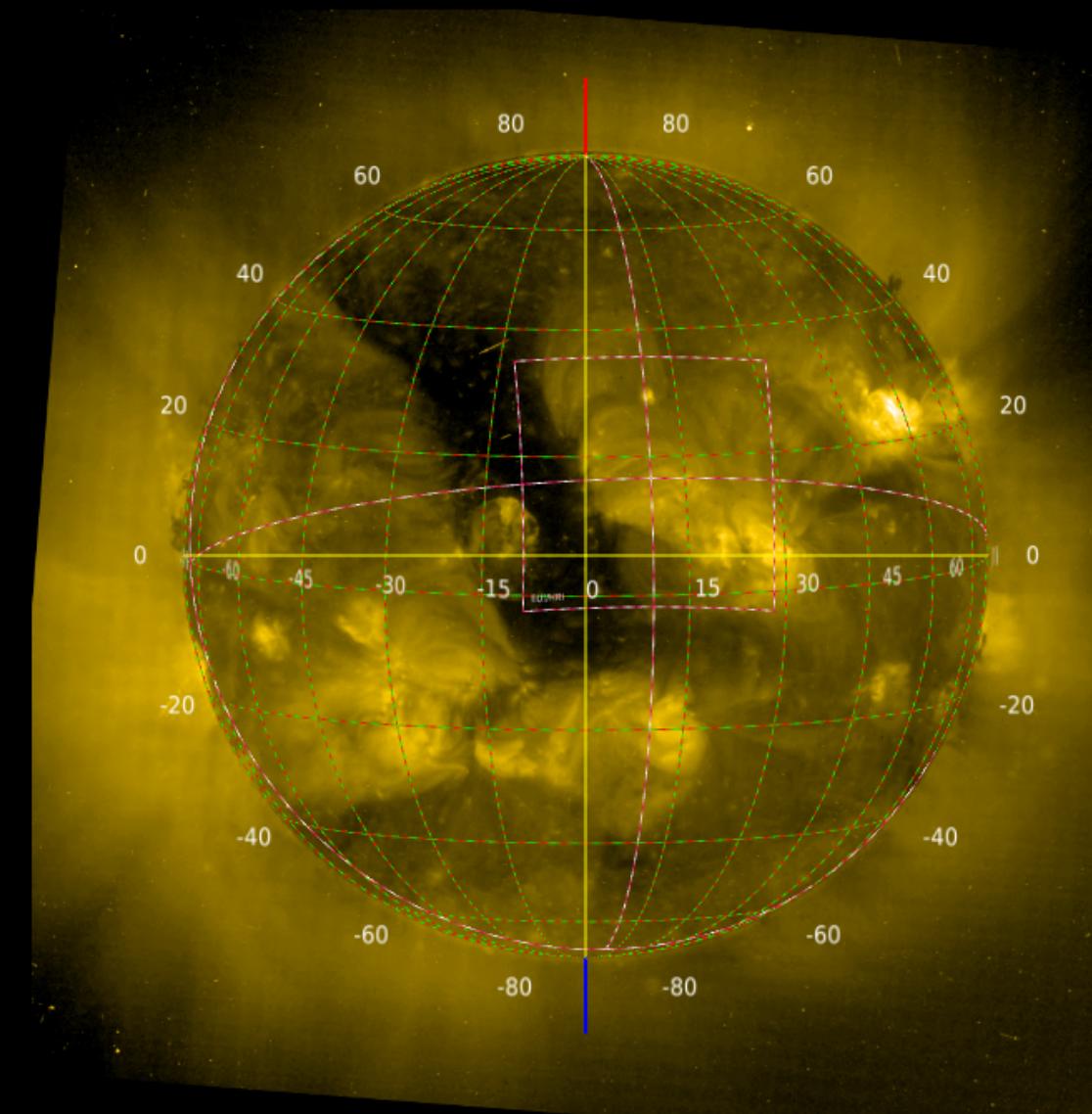
SWAP @ PROBA2



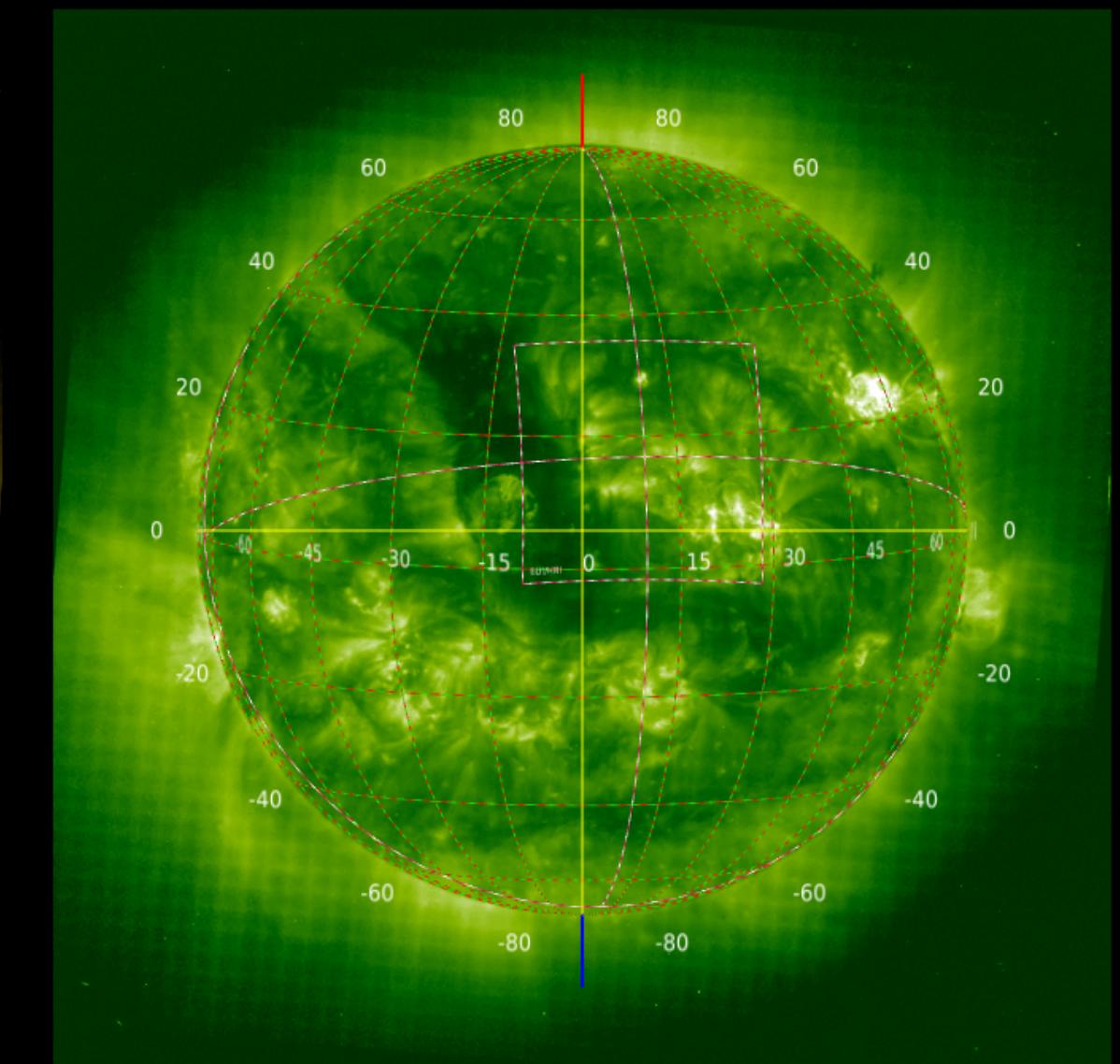
PROBA2/SWAP 174 2025-03-29T19:50:20



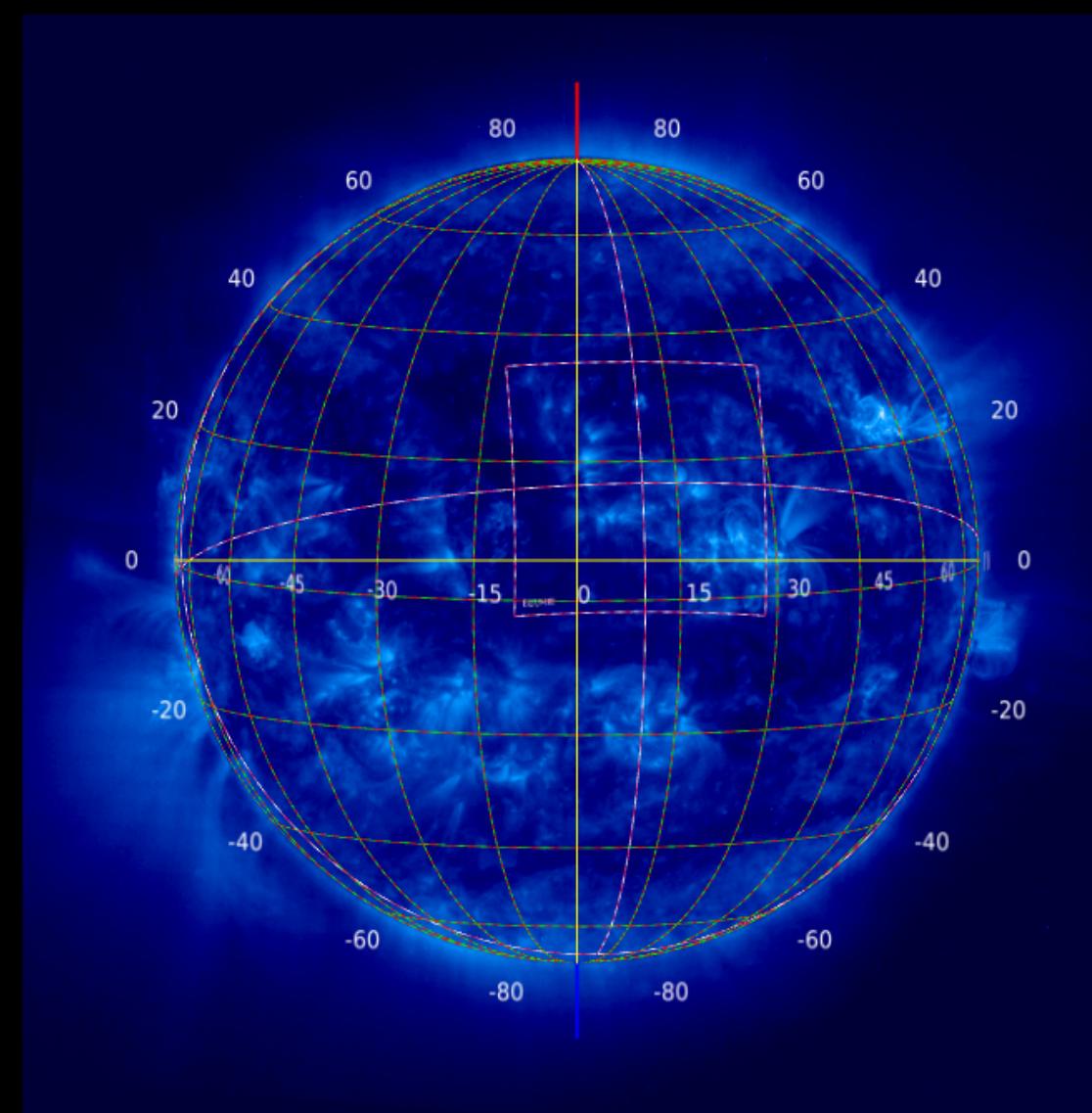
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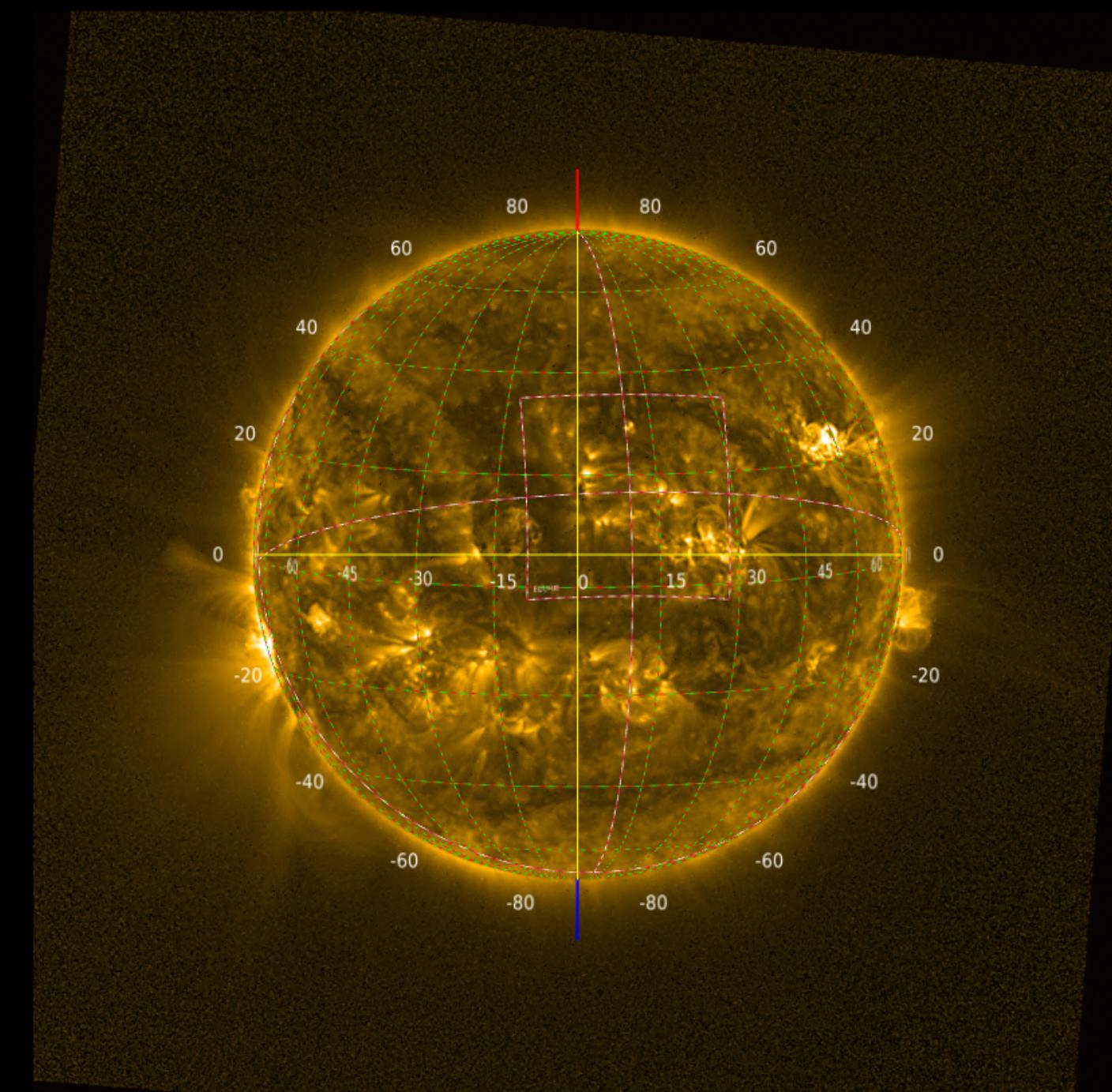
2025-10-16T01:06:14.359 EIT 284 | D \odot : 0.9870au



2025-10-16T01:13:56.753 EIT 195 | D \odot : 0.9870au



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

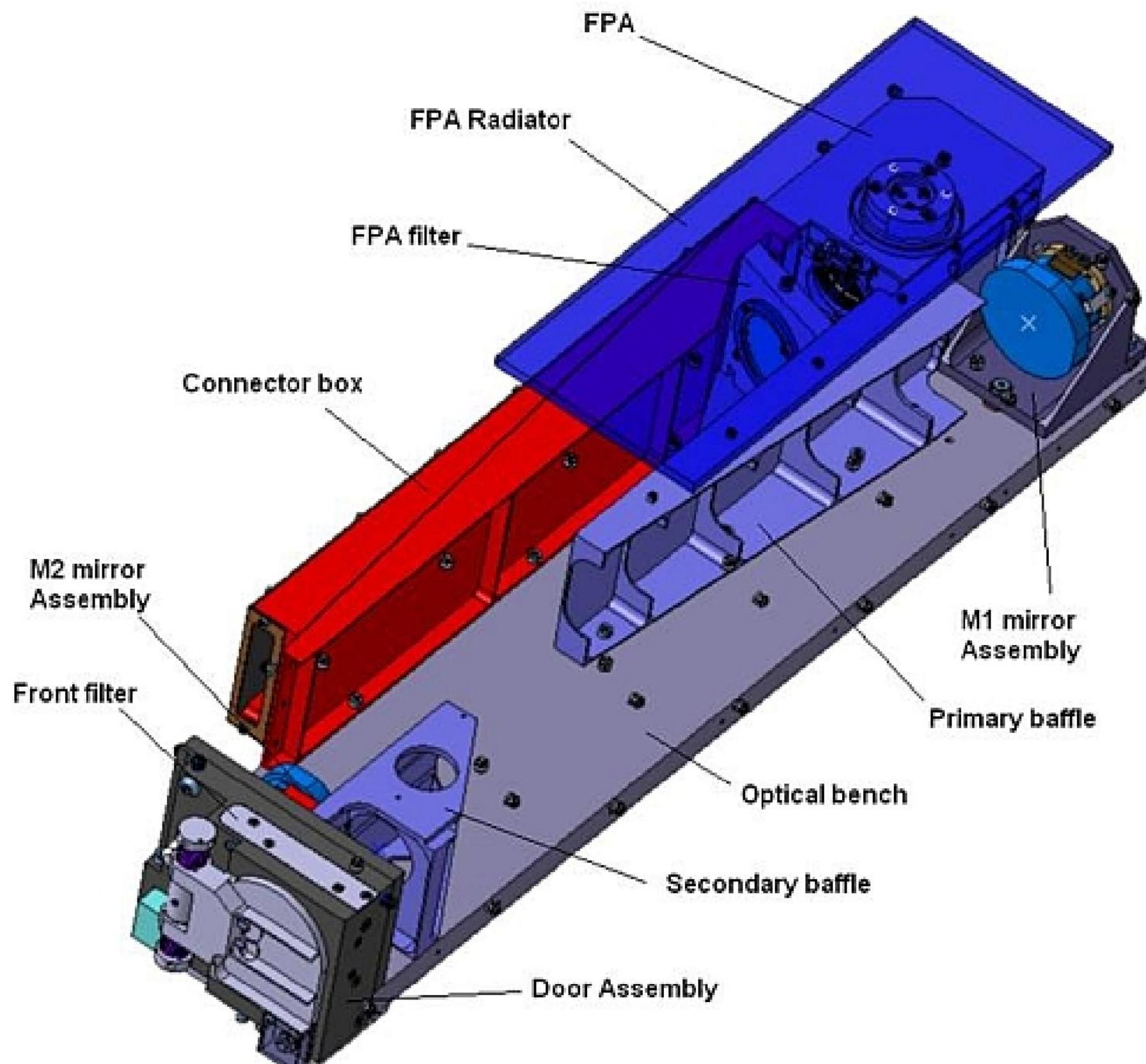


2025-10-16T01:15:29.814 SWAP 174 | D \odot : 0.9970au

SWAP

versus

EUI/HRIEUV

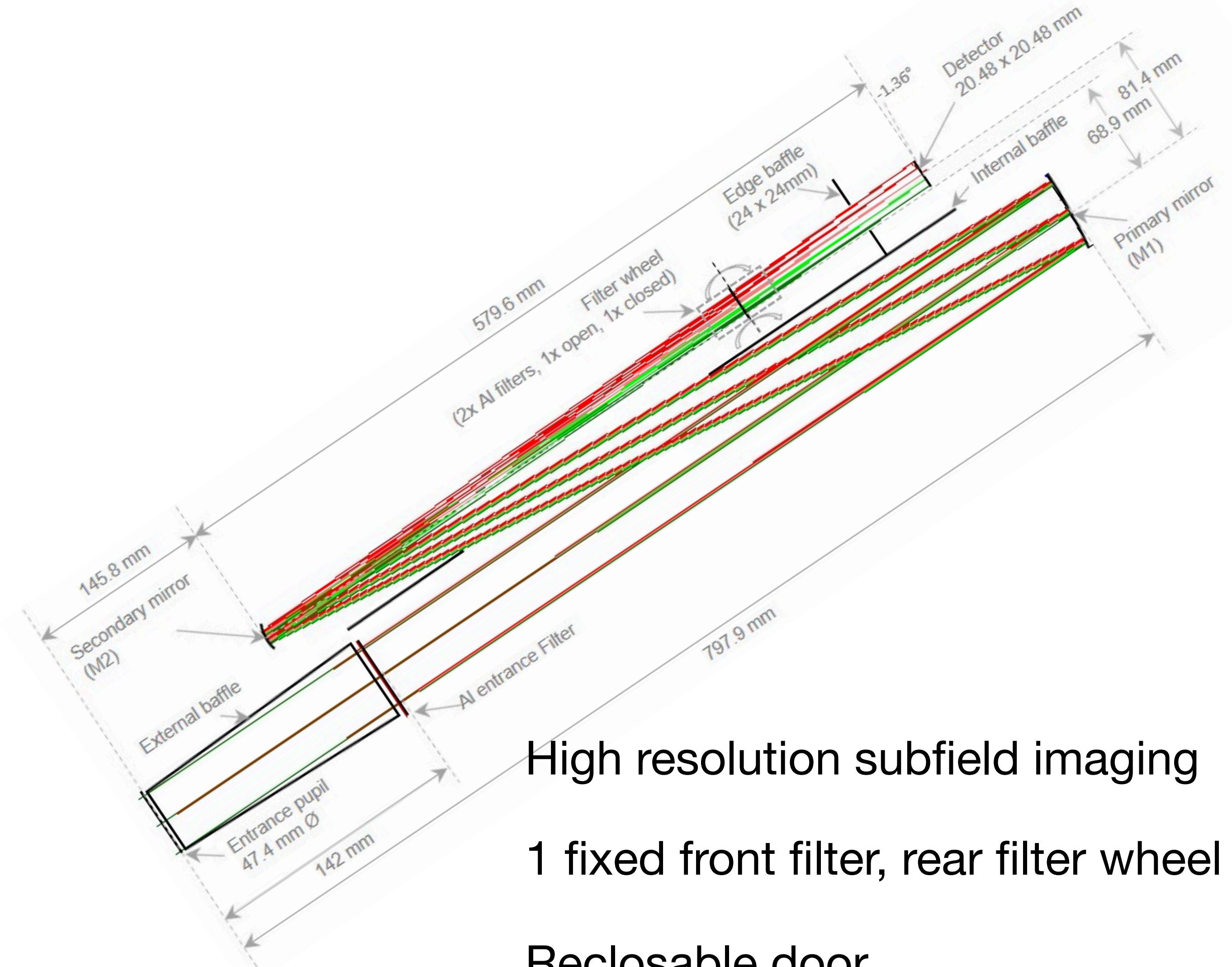


Low resolution full disc imaging

2 fixed filters

Mechanism: single use door

CMOS camera



High resolution subfield imaging

1 fixed front filter, rear filter wheel

Reclosable door

CMOS camera

FSI occulter

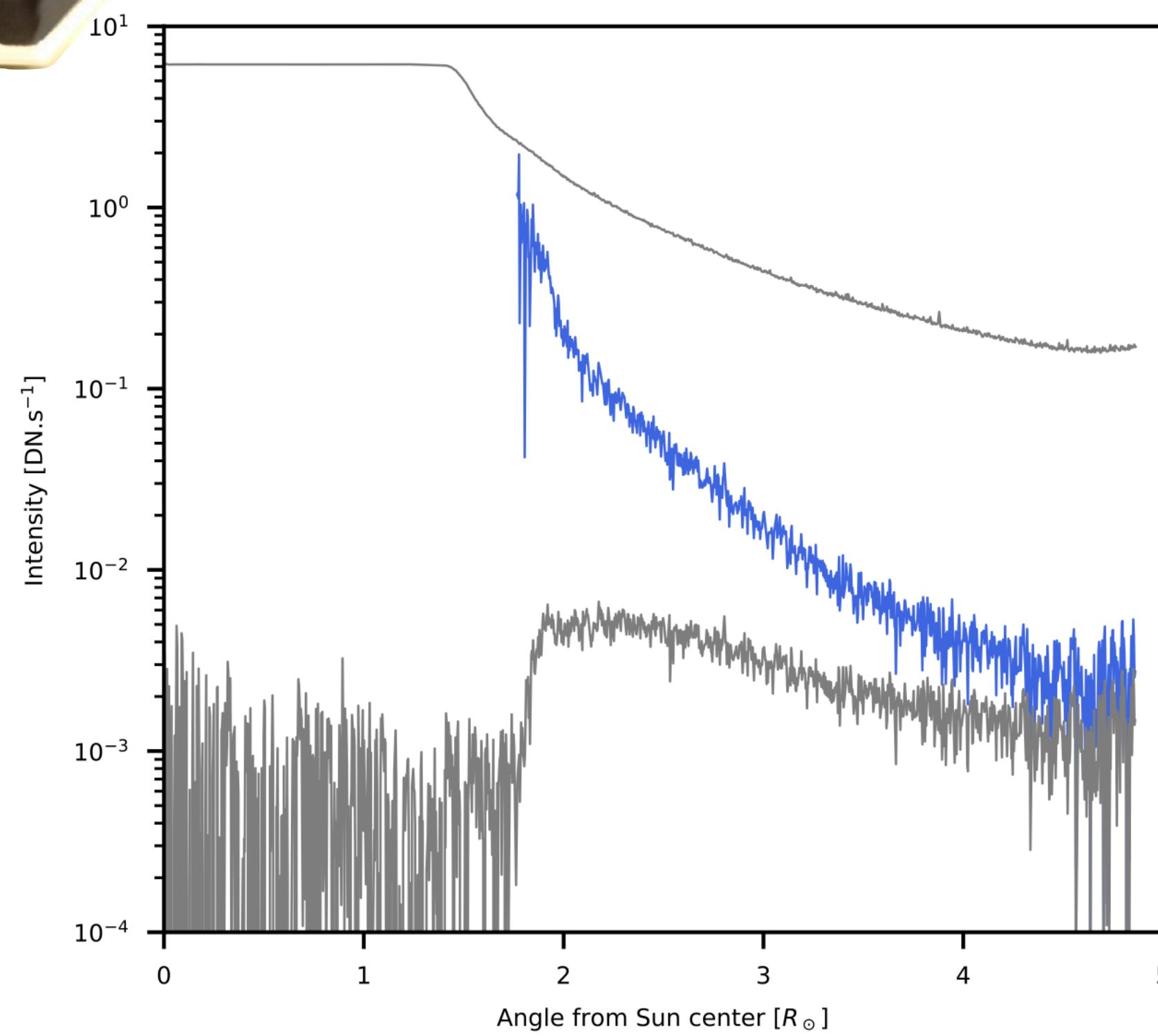
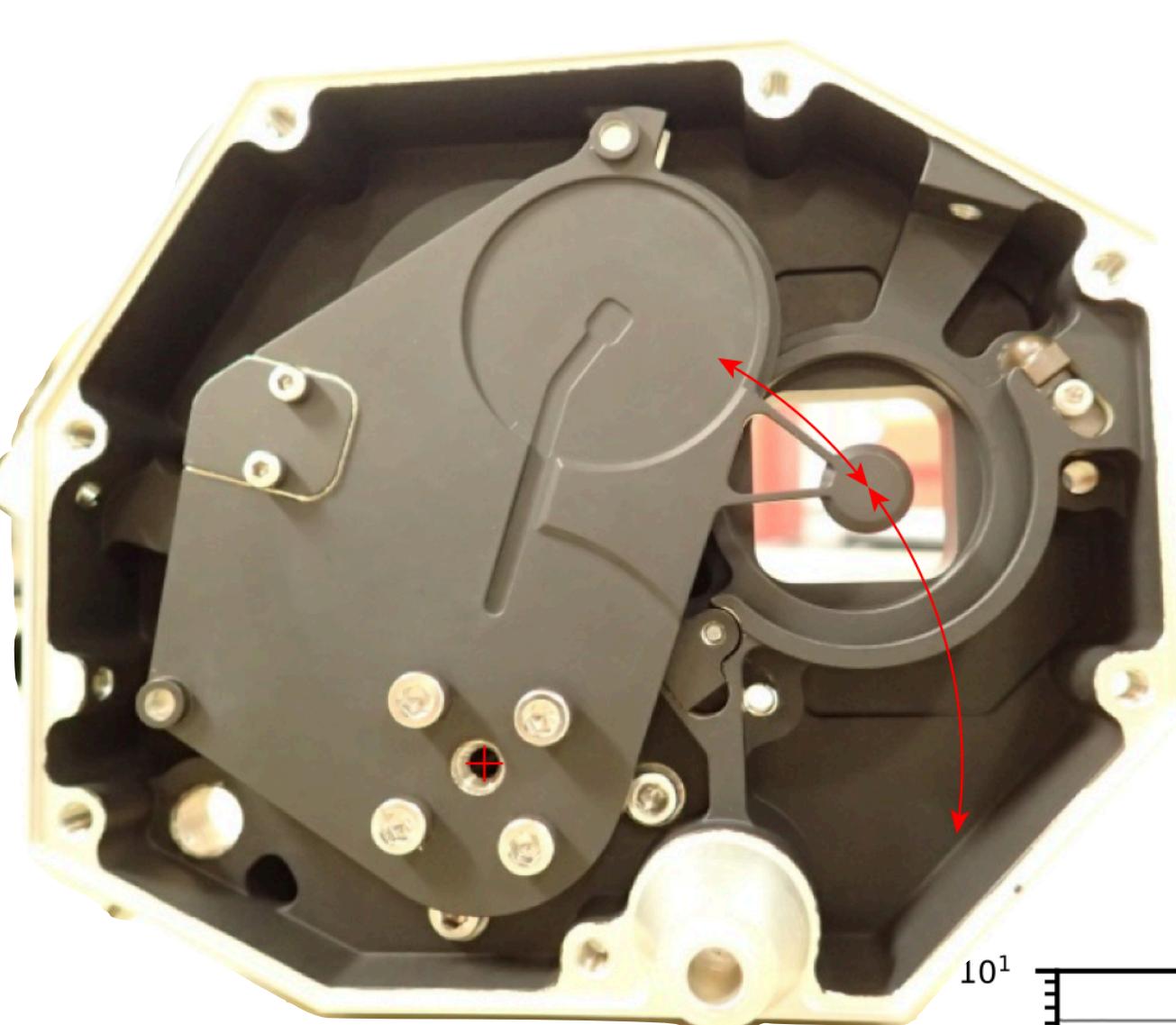
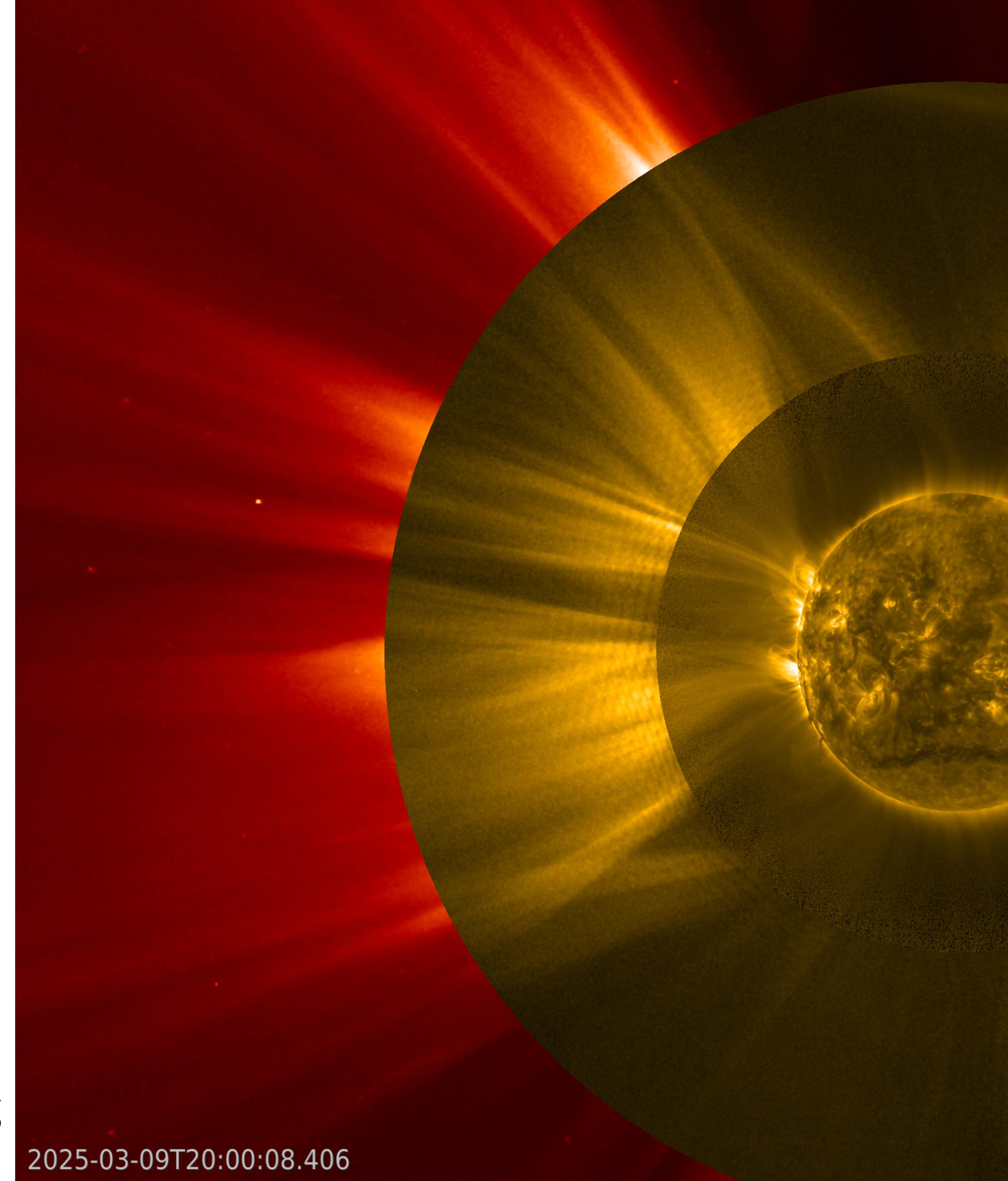
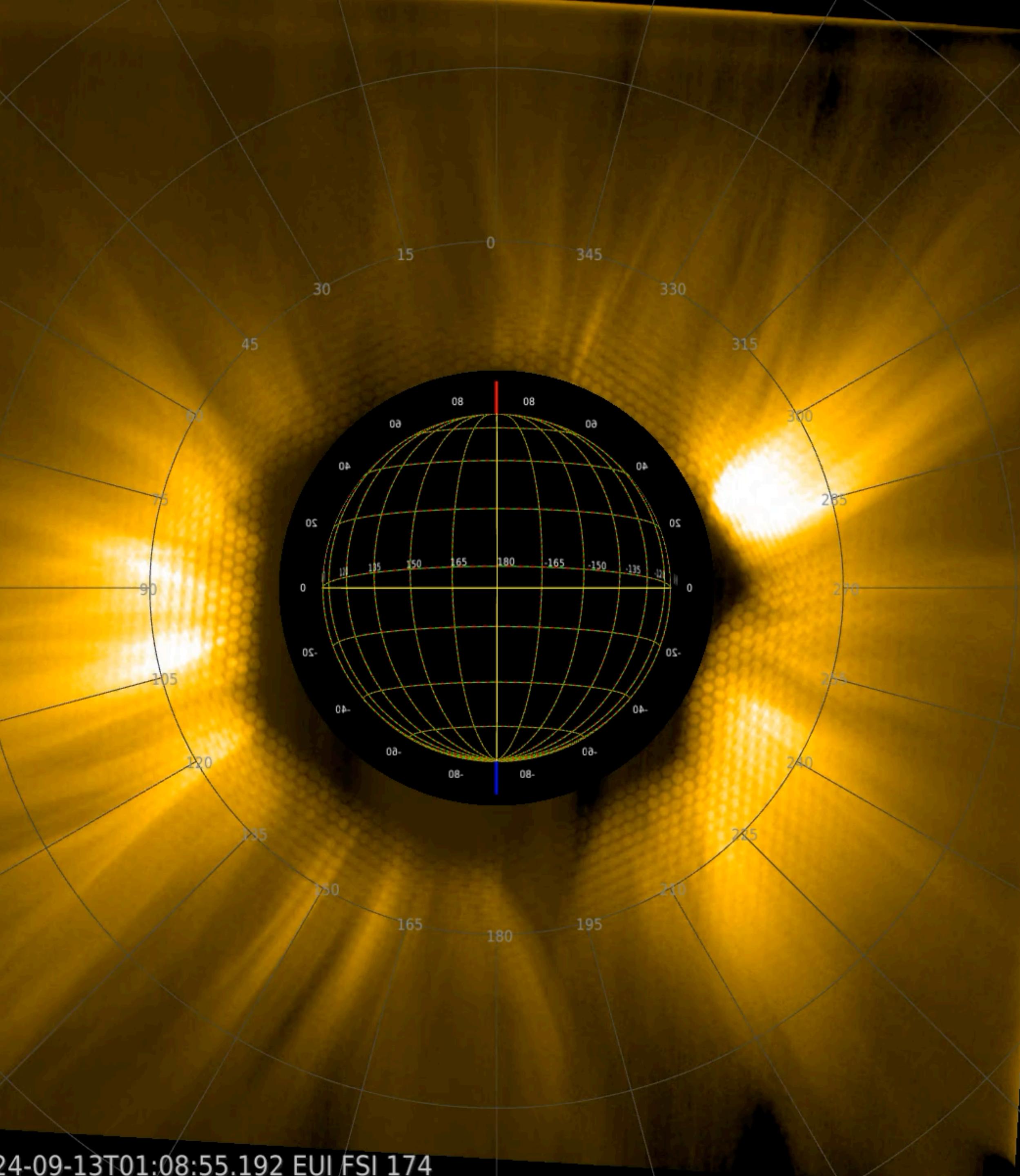
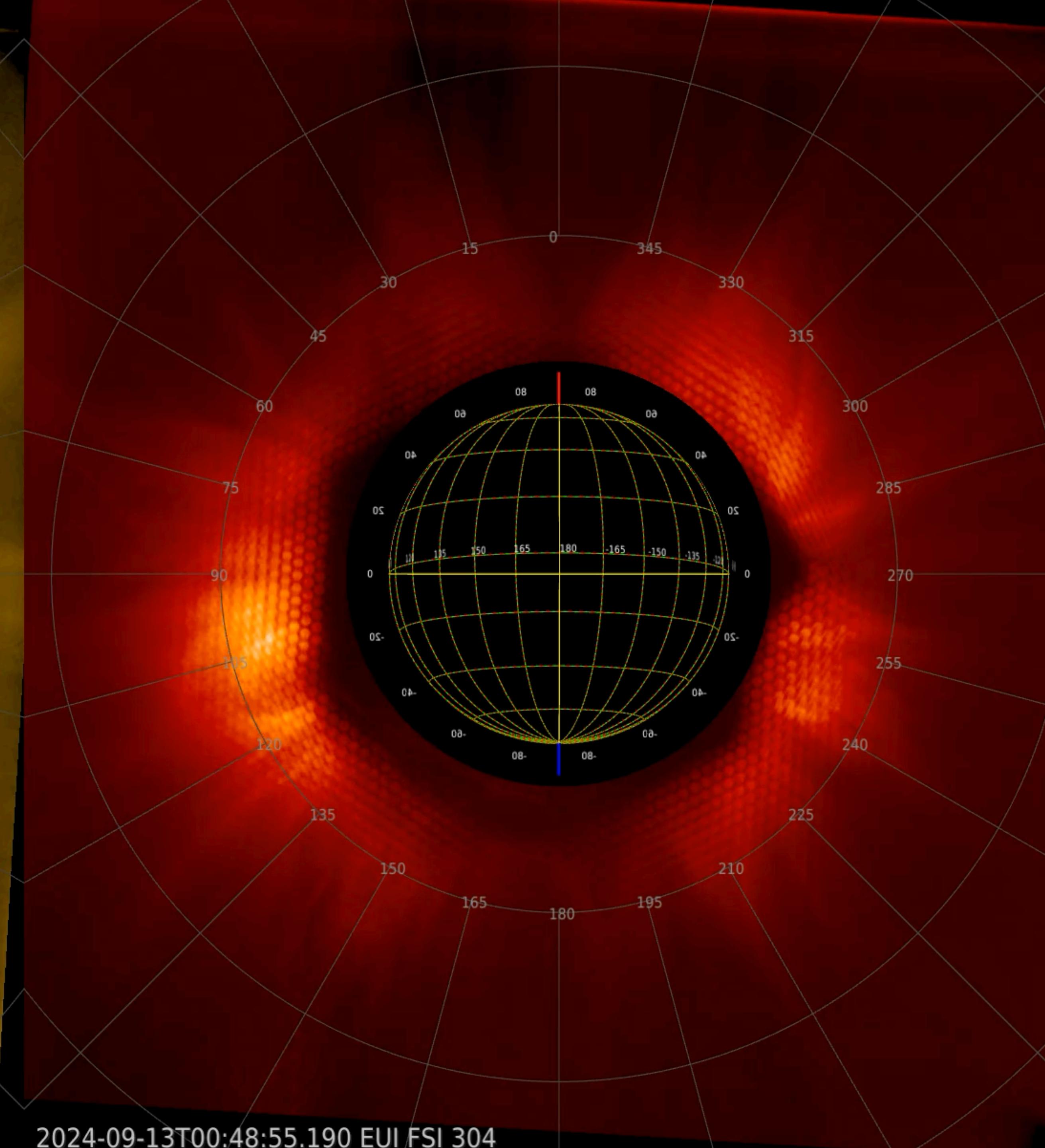


Fig. 5. Raw (lower gray) and vignetting-calibrated (blue) radial 17.4 nm intensity profiles, averaged over the sector shown in Fig. 3. The top curve corresponds to the data taken without the occulting disk.



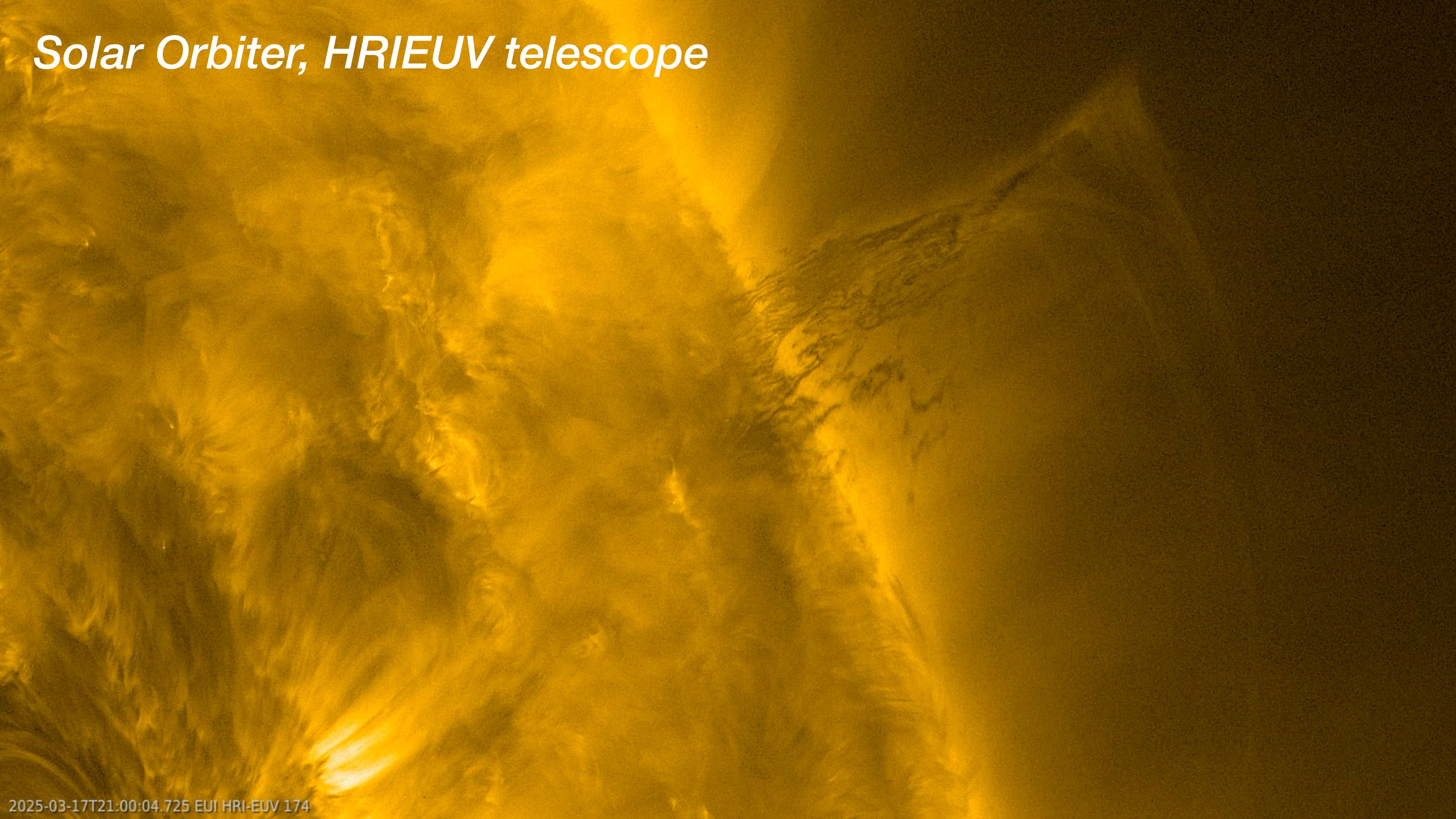


2024-09-13T01:08:55.192 EUI FSI 174

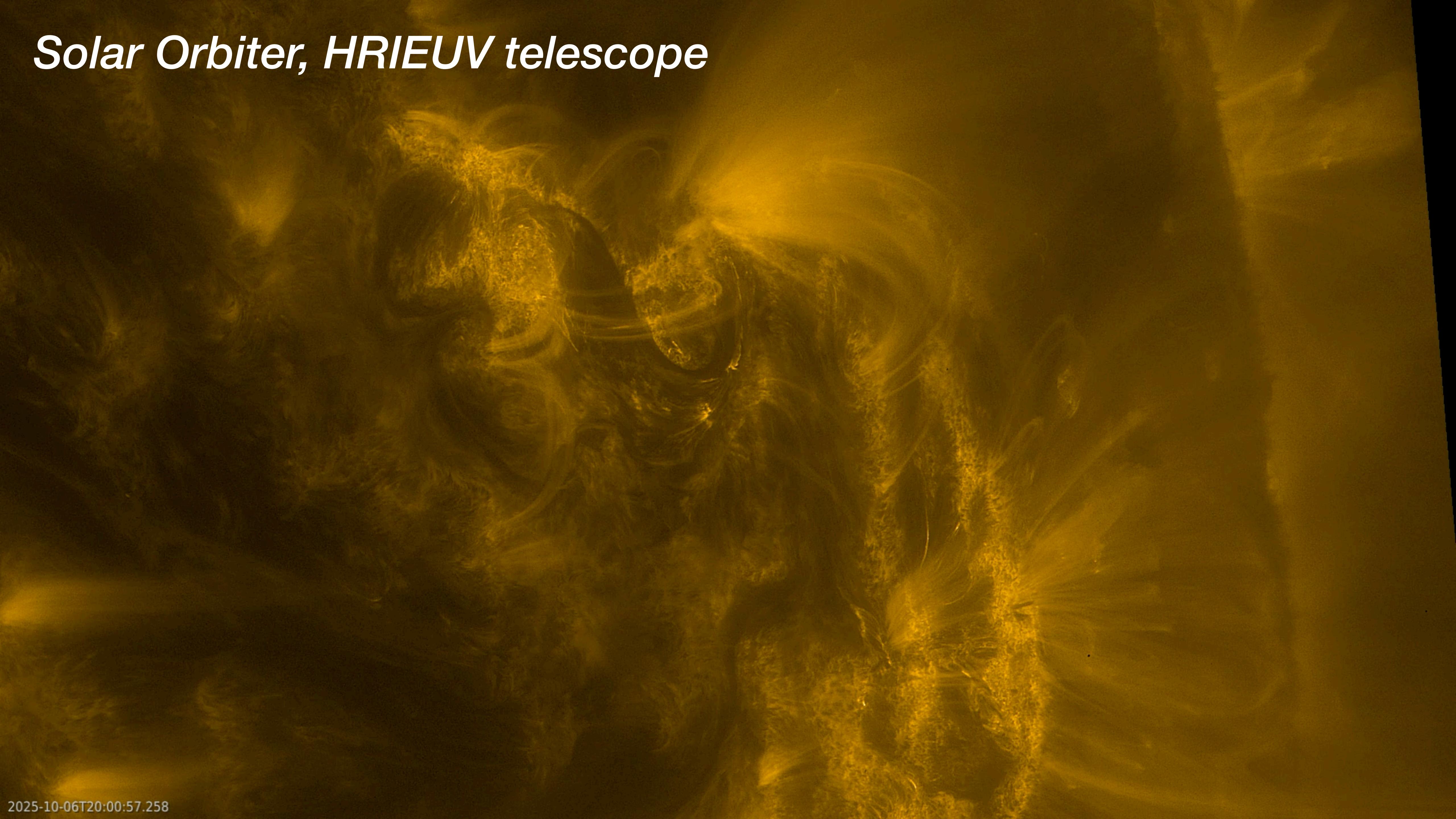


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Solar Orbiter, HRI-EUV telescope



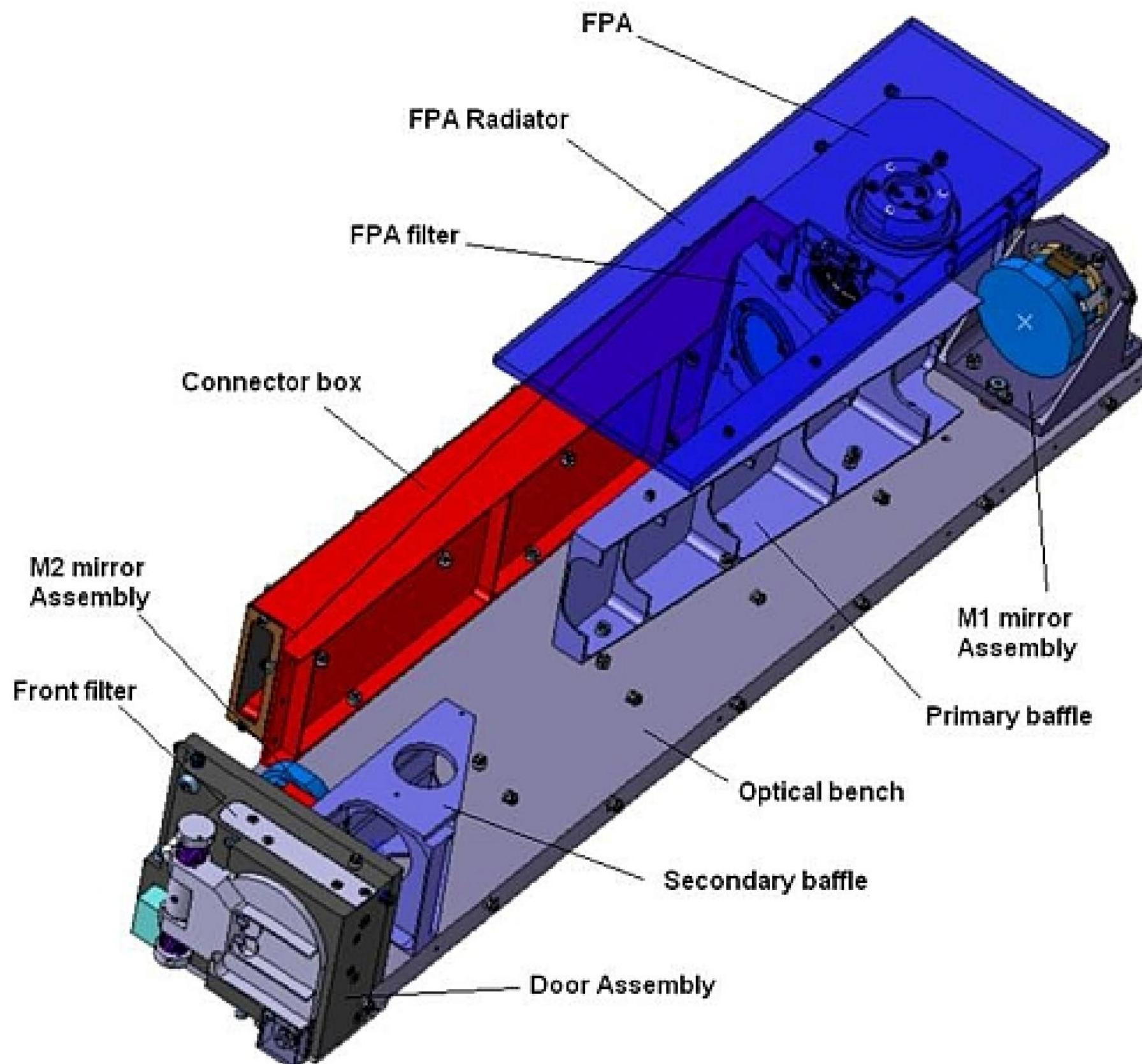
Solar Orbiter, HRIEUV telescope



SWAP

versus

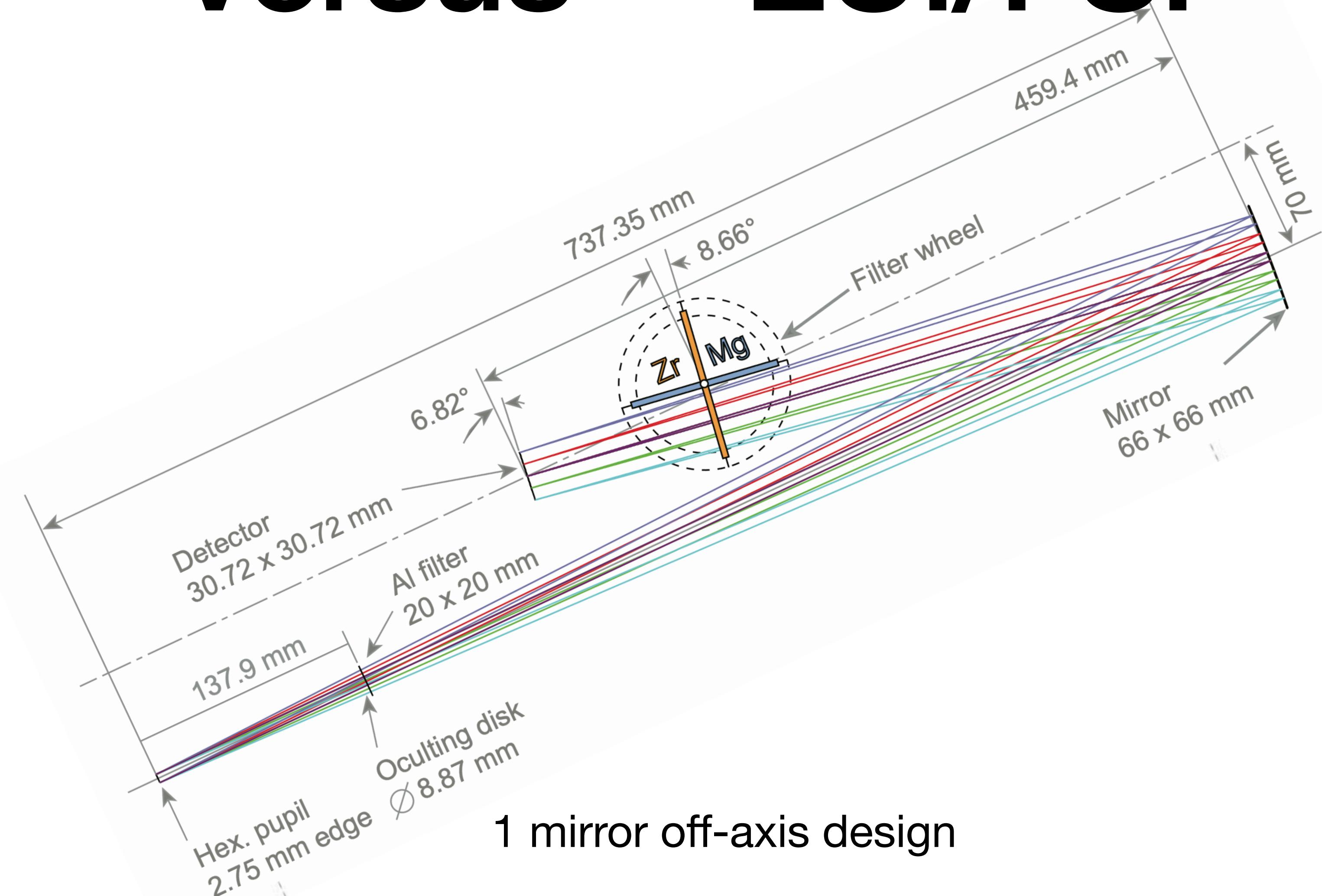
EUI/FSI



2 mirror off-axis design

1-bandpass multilayers (17.4nm)

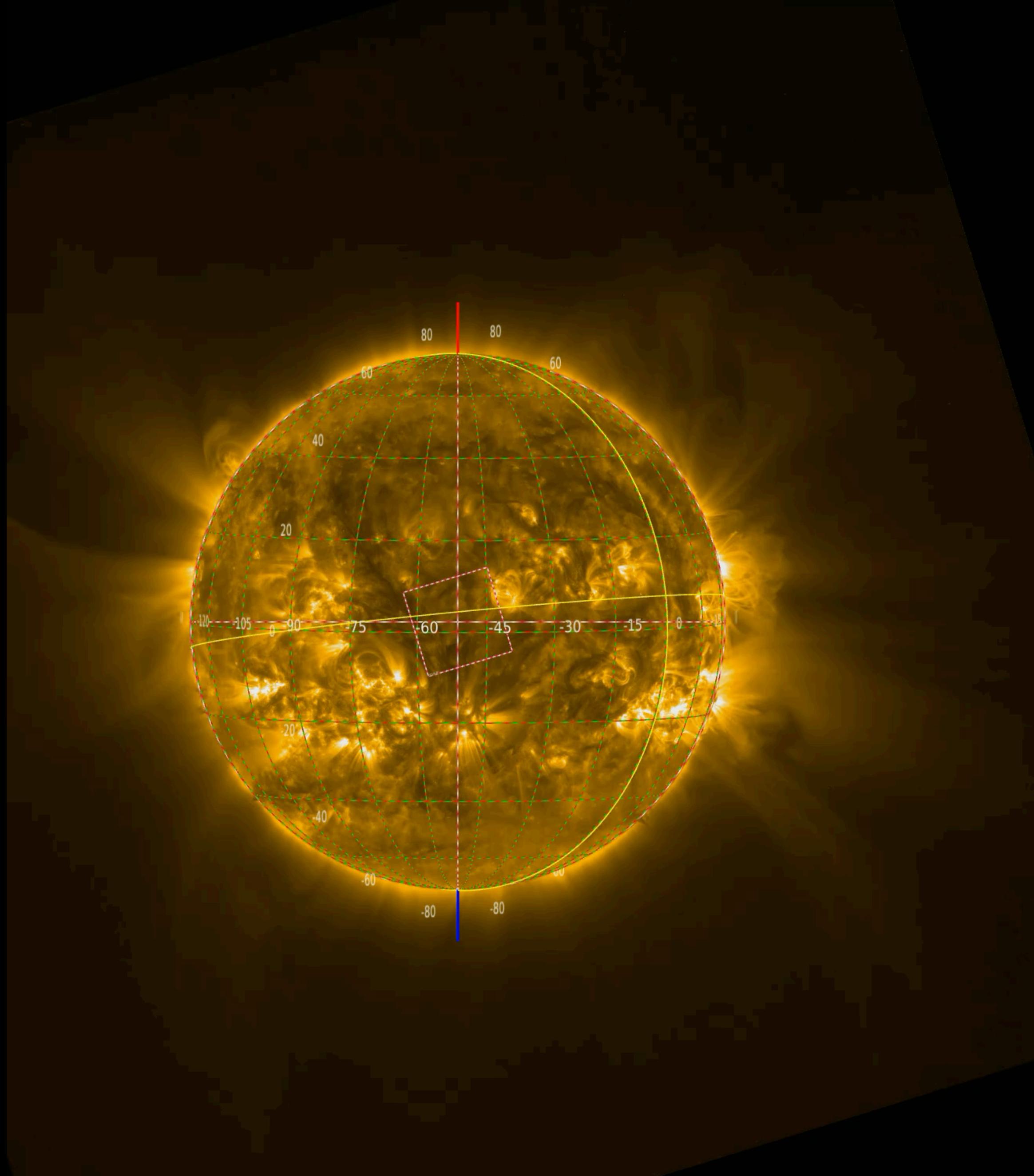
no filter wheel



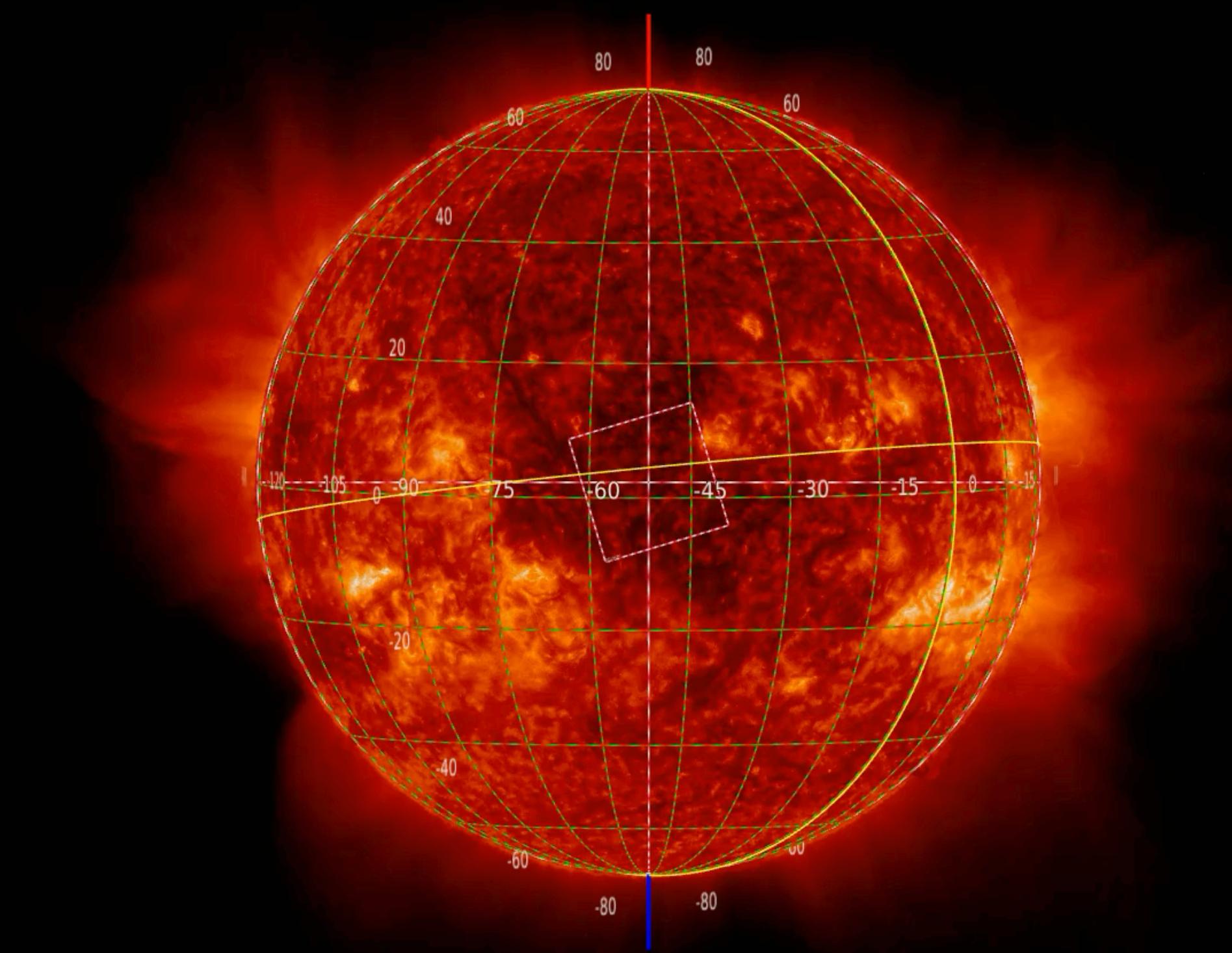
1 mirror off-axis design

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

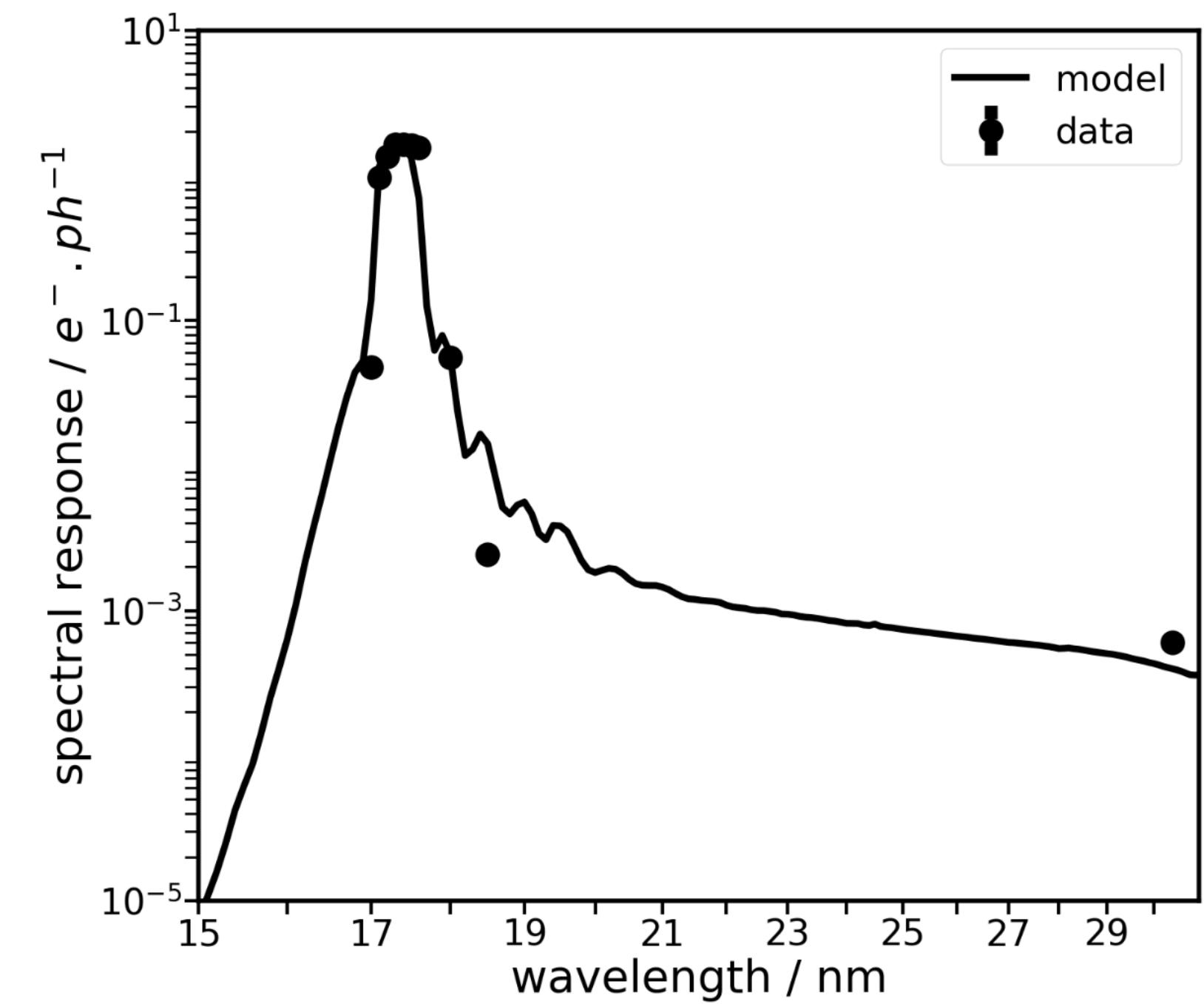


Fig. 22. Spectral response of the HRI_{EUV} instrument measured during ground calibration, including the 30.4 nm wavelength measurement, with the filter wheel in open position.

