

Euclid: the dark universe detective

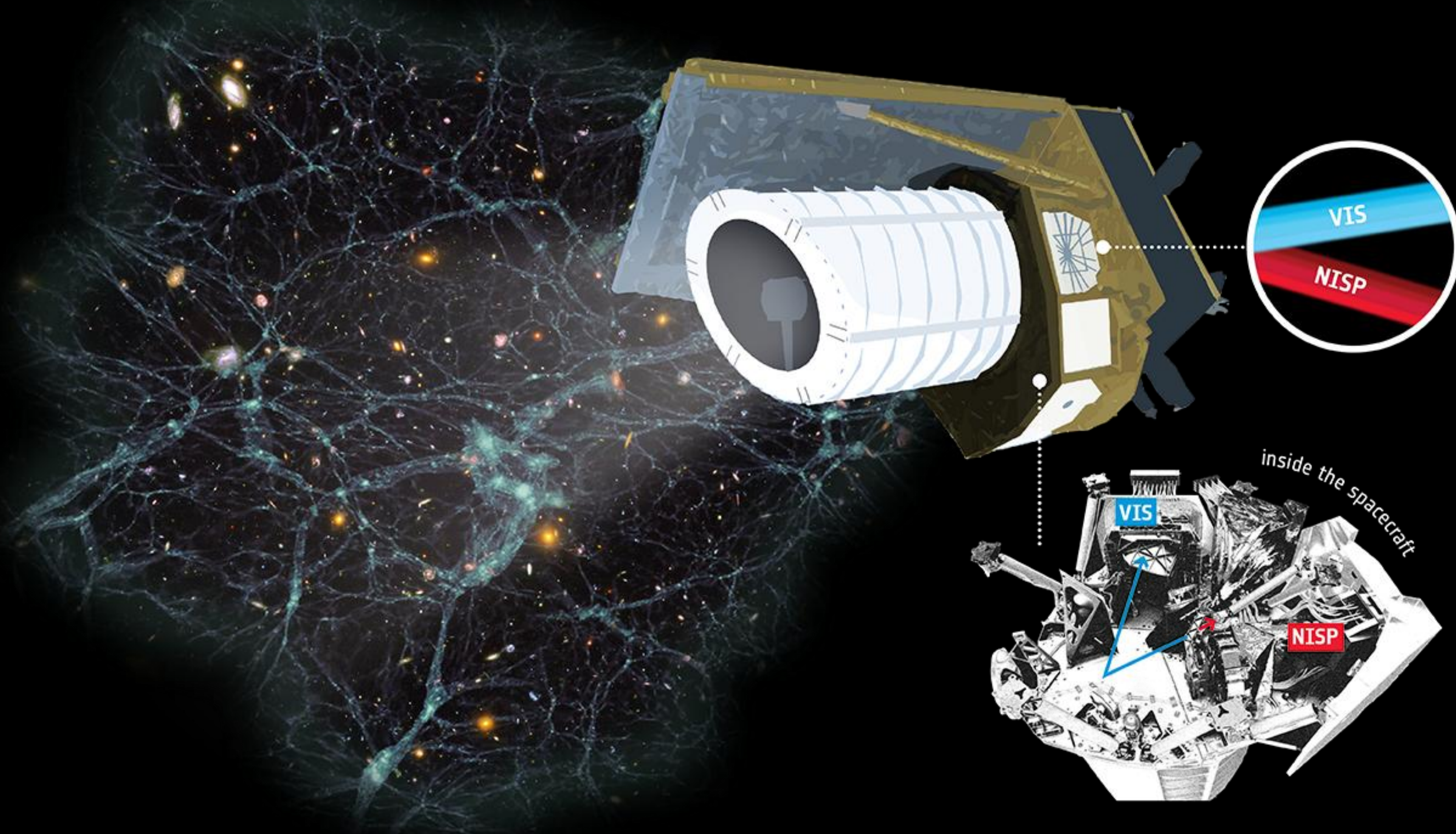
Guadalupe Cañas-Herrera
Leiden Observatory, Leiden University

Science Cafe, Nijmegen, May 21, 2026

Euclid Launch



Euclid instruments on board



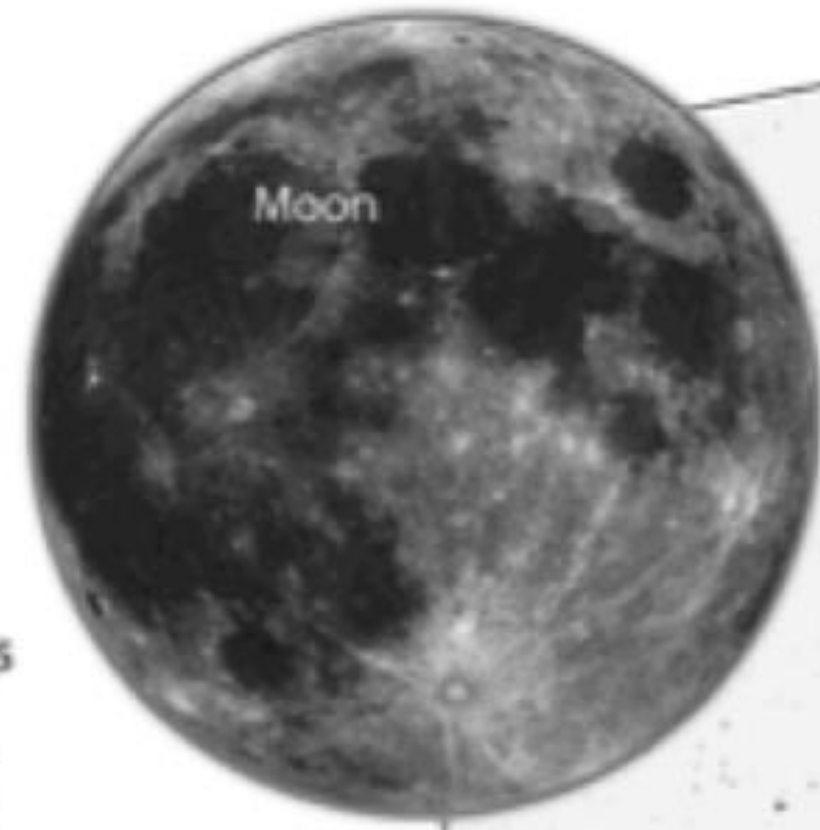
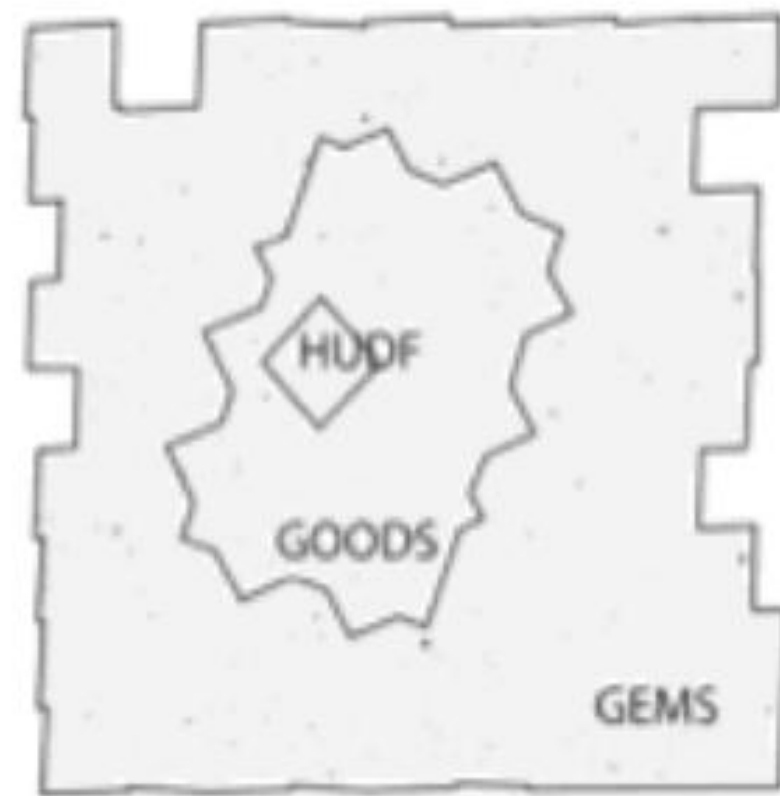
CAMERA TO MEASURE
SHAPES OF GALAXIES

DEVICE TO MEASURE
DISTANCE TO GALAXIES

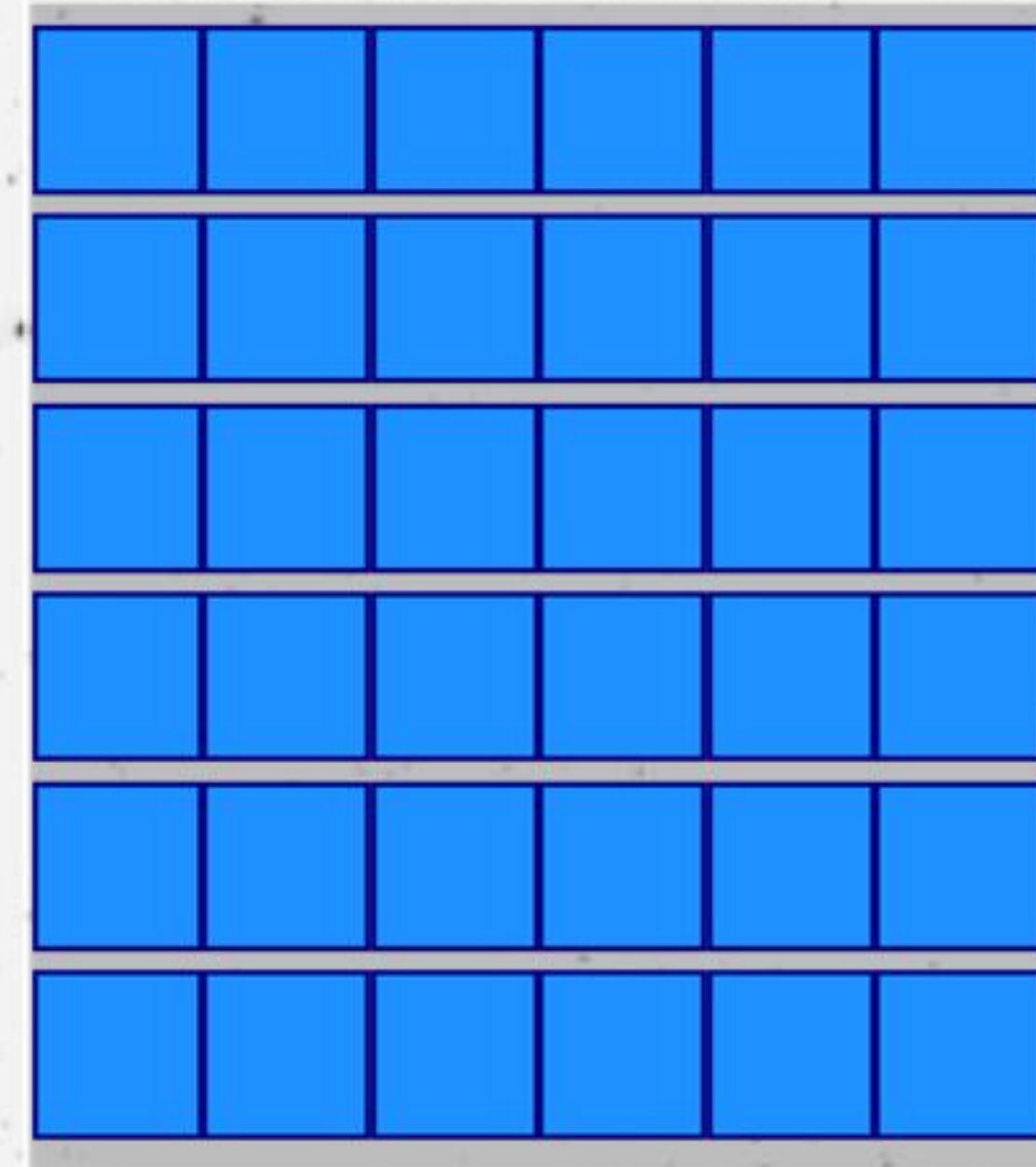
Alternatives

FoV: $\sim 0.5 \text{ deg}^2$

Relative Sizes of HST ACS Surveys



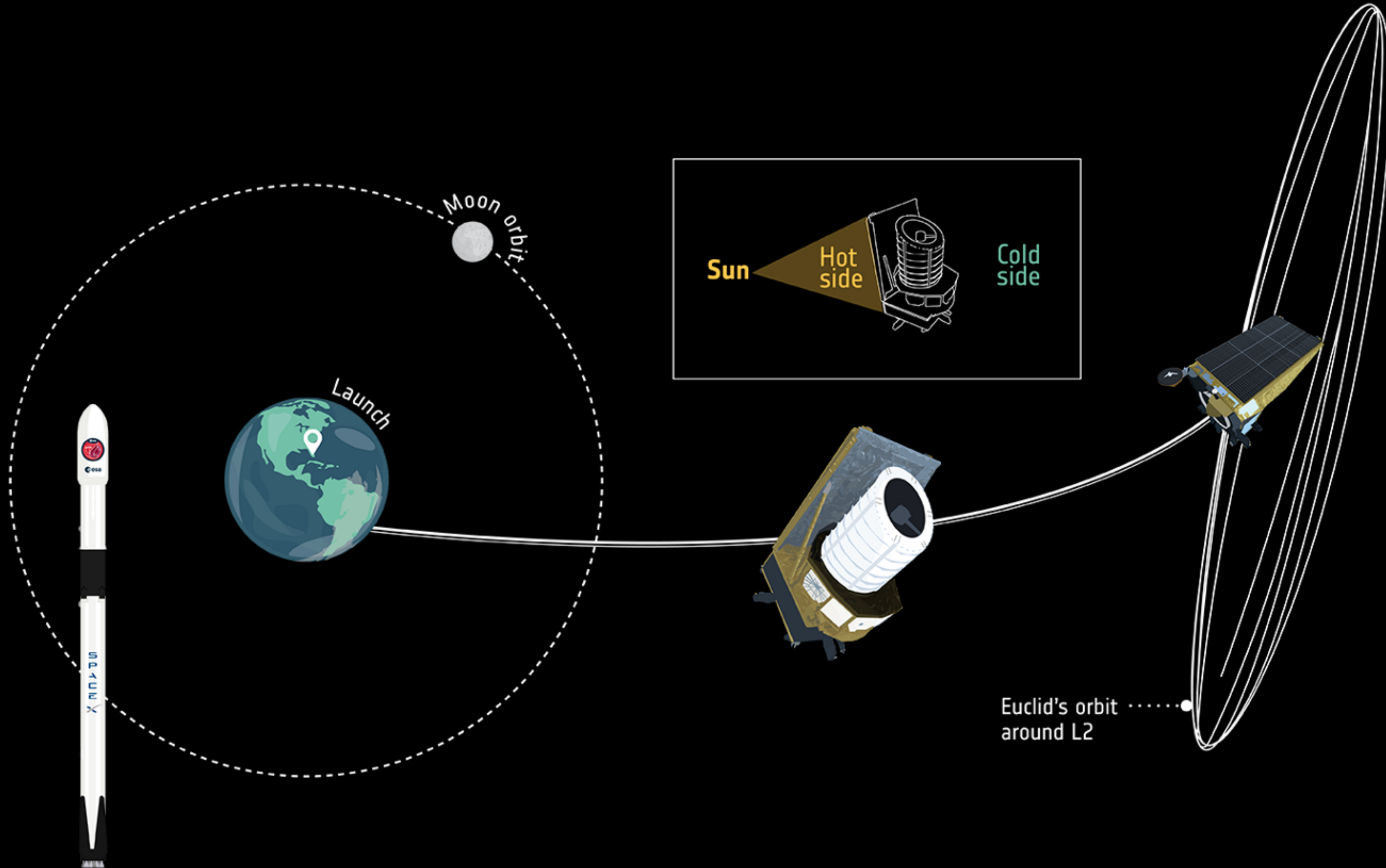
Visible Camera



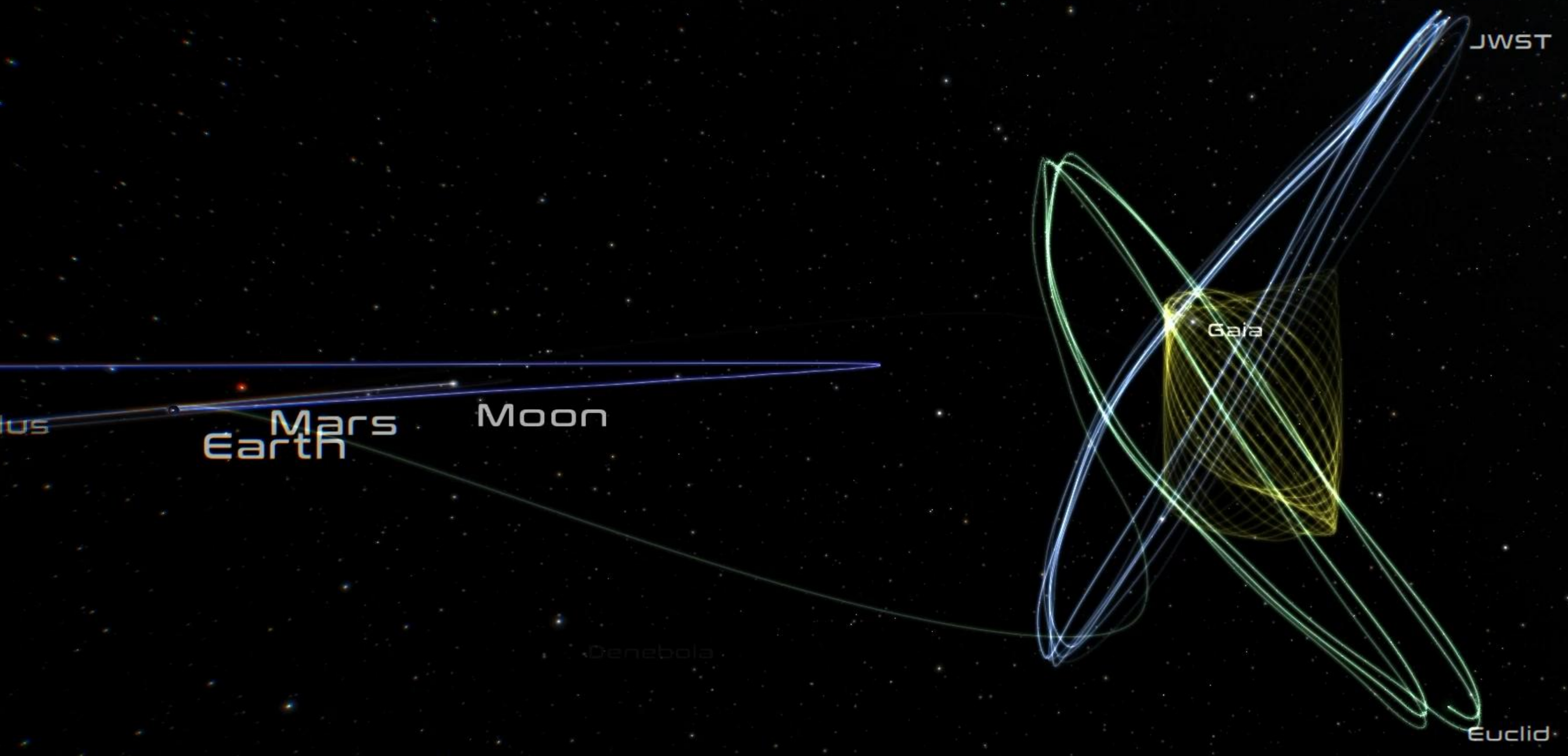
COSMOS



Euclid operates from L2



- **Launch (L)**
- **L+2 days:**
Euclid is on its way to L2
- **L+2 weeks:**
Euclid cool-down is complete
- **L+4 weeks:**
Euclid in orbit around L2
- **L+4 weeks:**
Telescope aligned and all instruments turned on
- **L+1–3 months:**
Testing of scientific performance and readiness for science
- **L+3 months:**
Euclid begins its survey



ius

Mars
Earth

Moon

Denebola

Gaia

JWST

Euclid

Arcturus

the Per

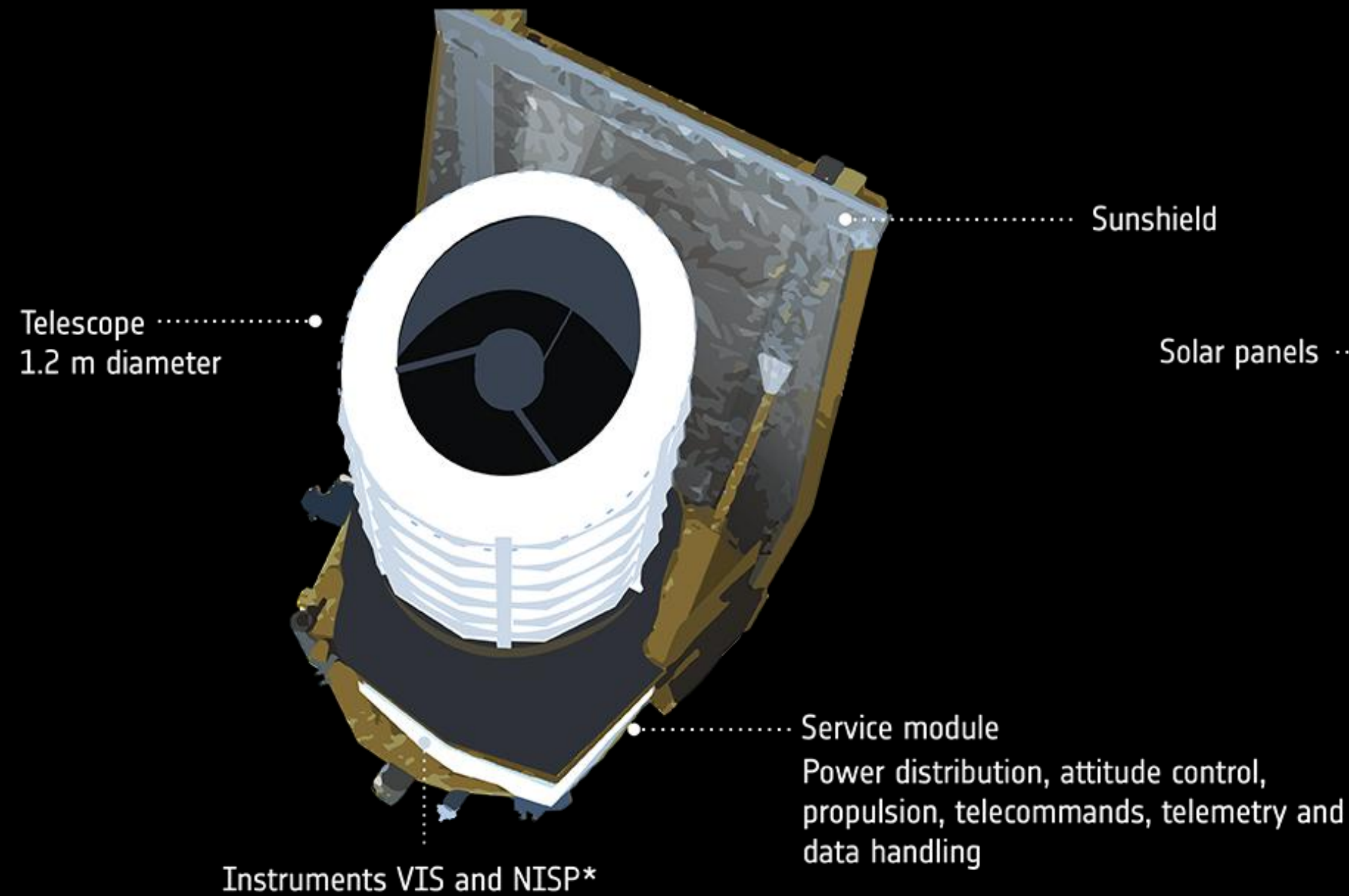
Euclid specifications



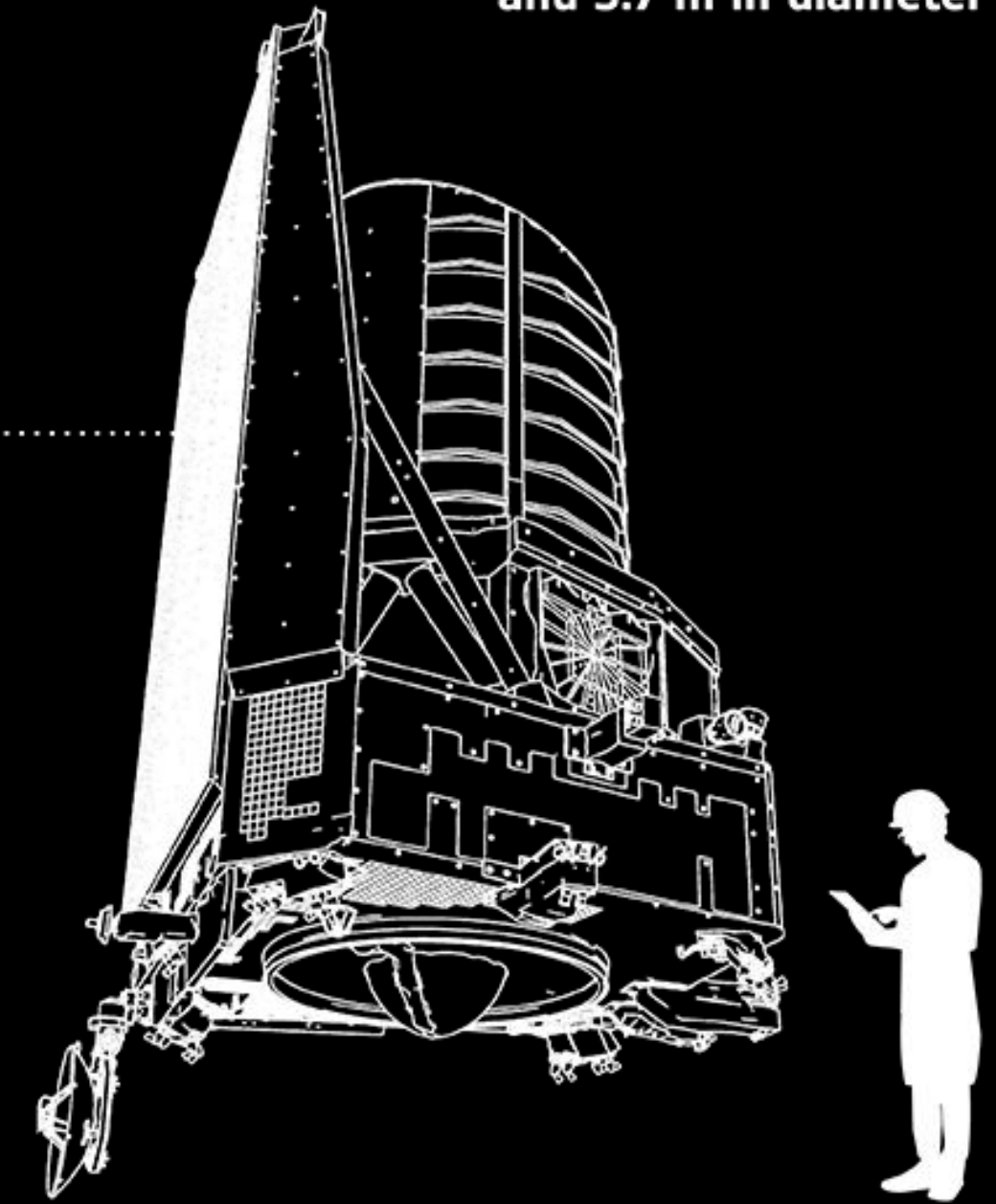
Euclid's mass in orbit will be
2 tonnes

- 800 kg payload module
- 850 kg service module
- 40 kg balancing mass
- 210 kg propellant

* VIS: VISible instrument
NISP: Near-Infrared Spectrometer and Photometer



The Euclid spacecraft is 4.7 m tall
and 3.7 m in diameter





Euclid's mass in orbit will be **2 tonnes**

- 800 kg payload module
- 850 kg service module
- 40 kg balancing mass
- 210 kg propellant

* VIS: VISible instrument
 NISP: Near-Infrared Spectrometer and Photometer

Telescope
 1.2 m diameter

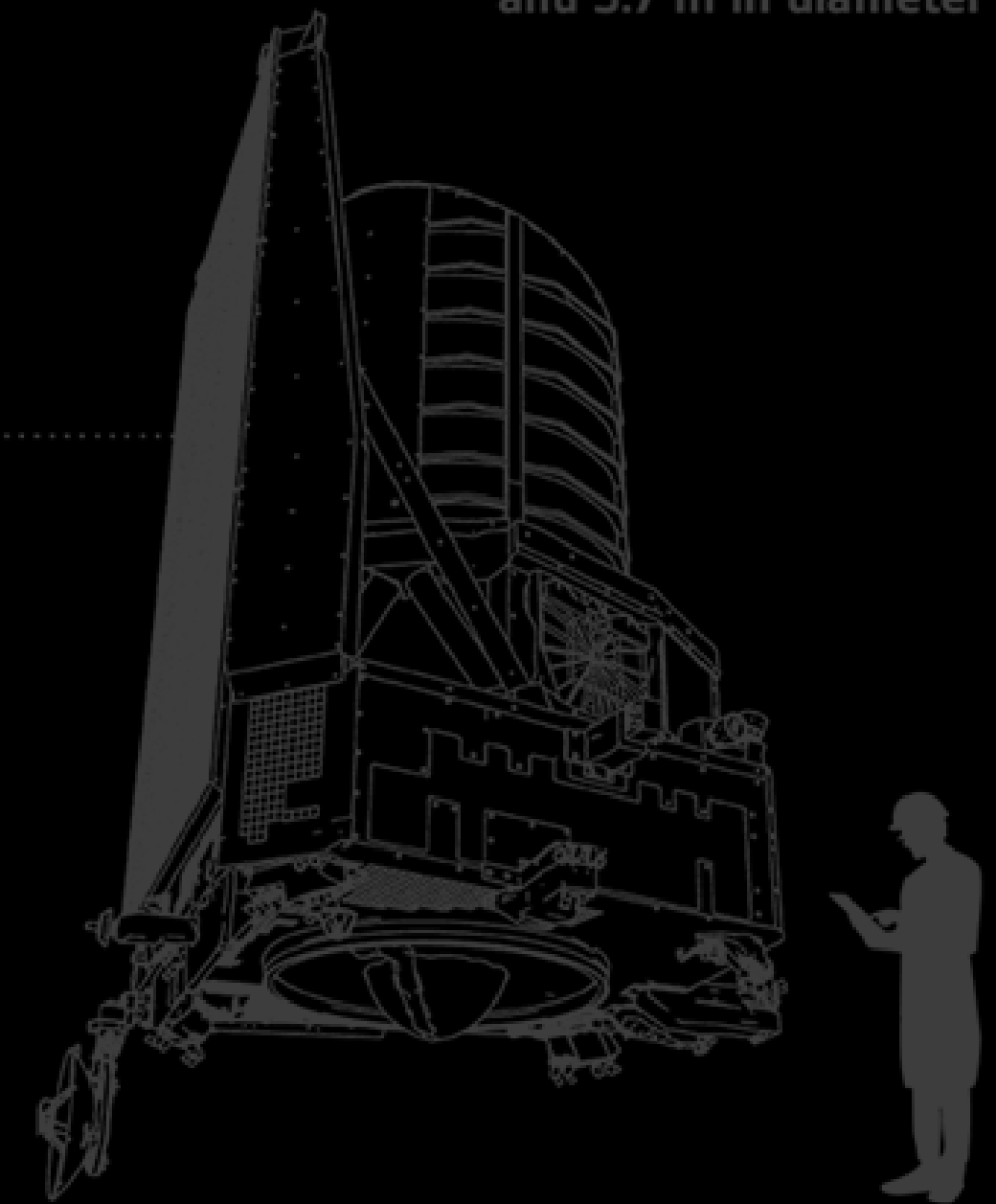


Instrume

panels

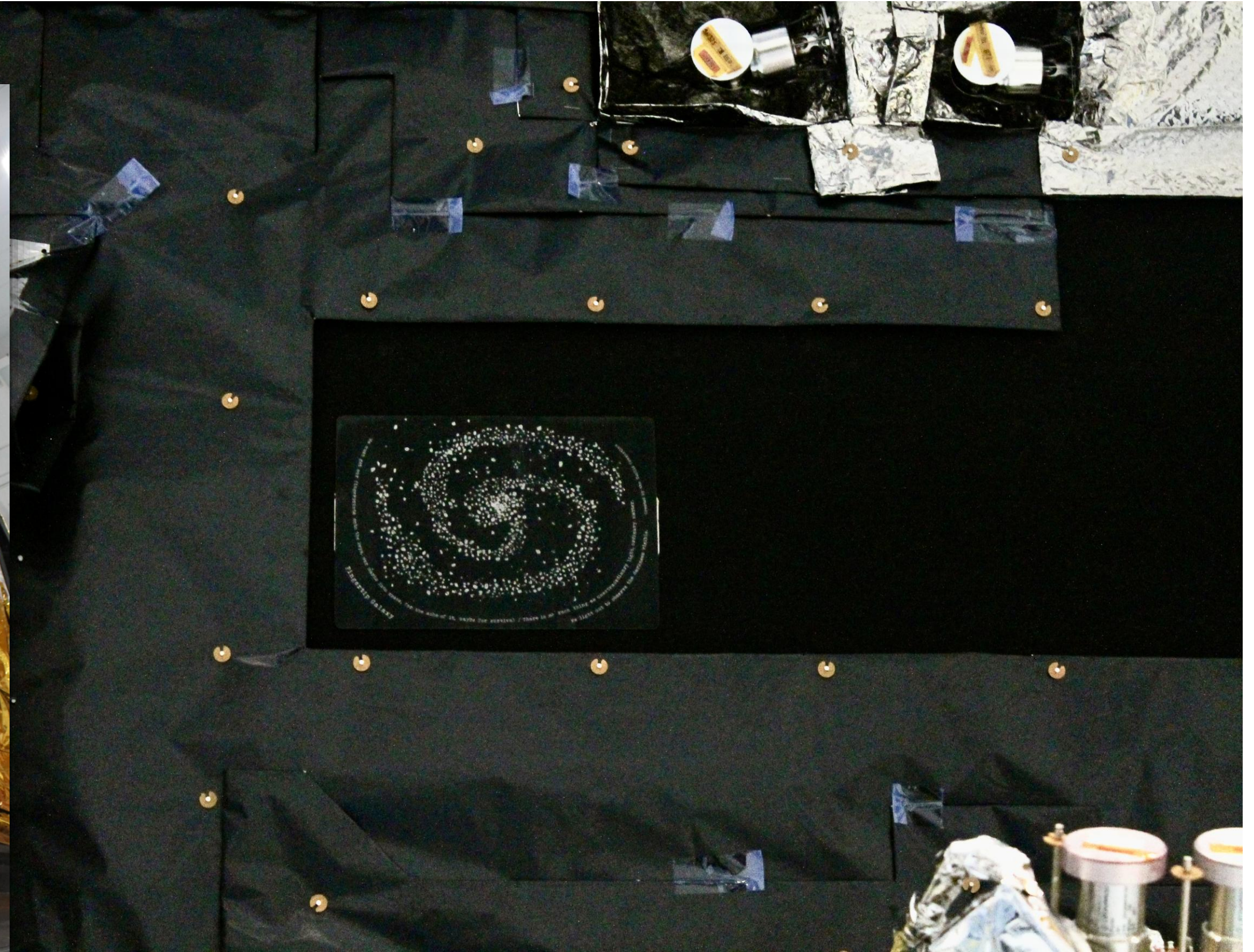
rol,
metry and

The Euclid spacecraft is 4.7 m tall and 3.7 m in diameter



Real size, real person

Euclid does exist!



But, should we trust the light?

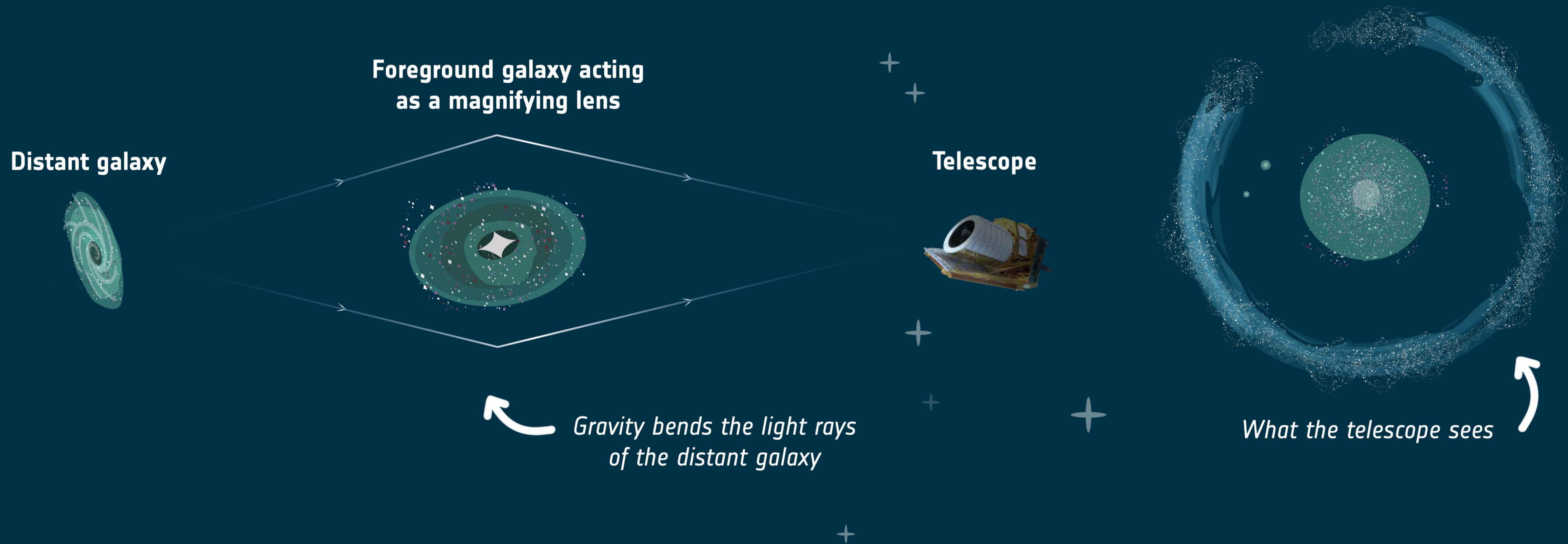


**Galaxies are biased
tracers of matter in
our universe**

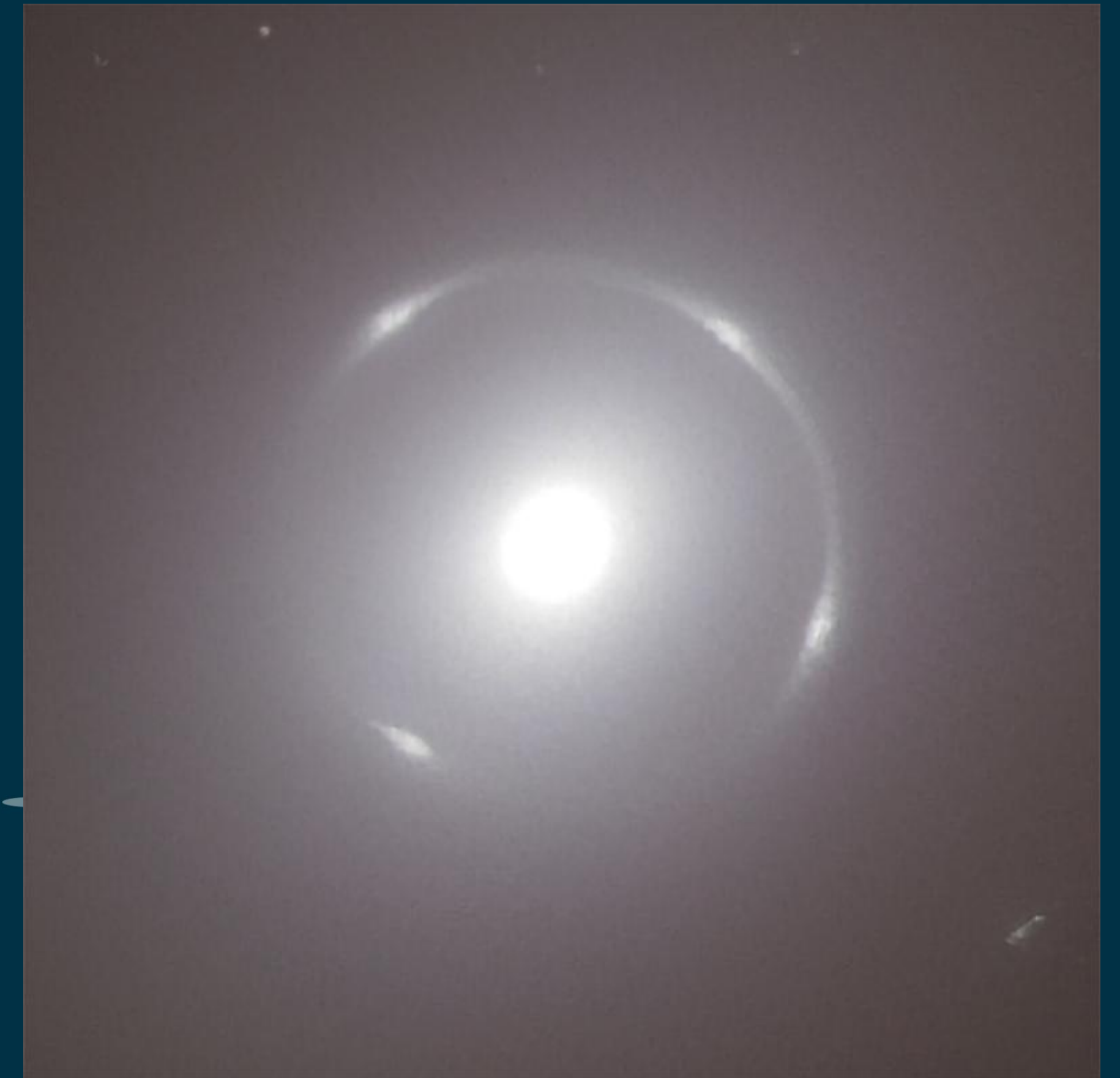
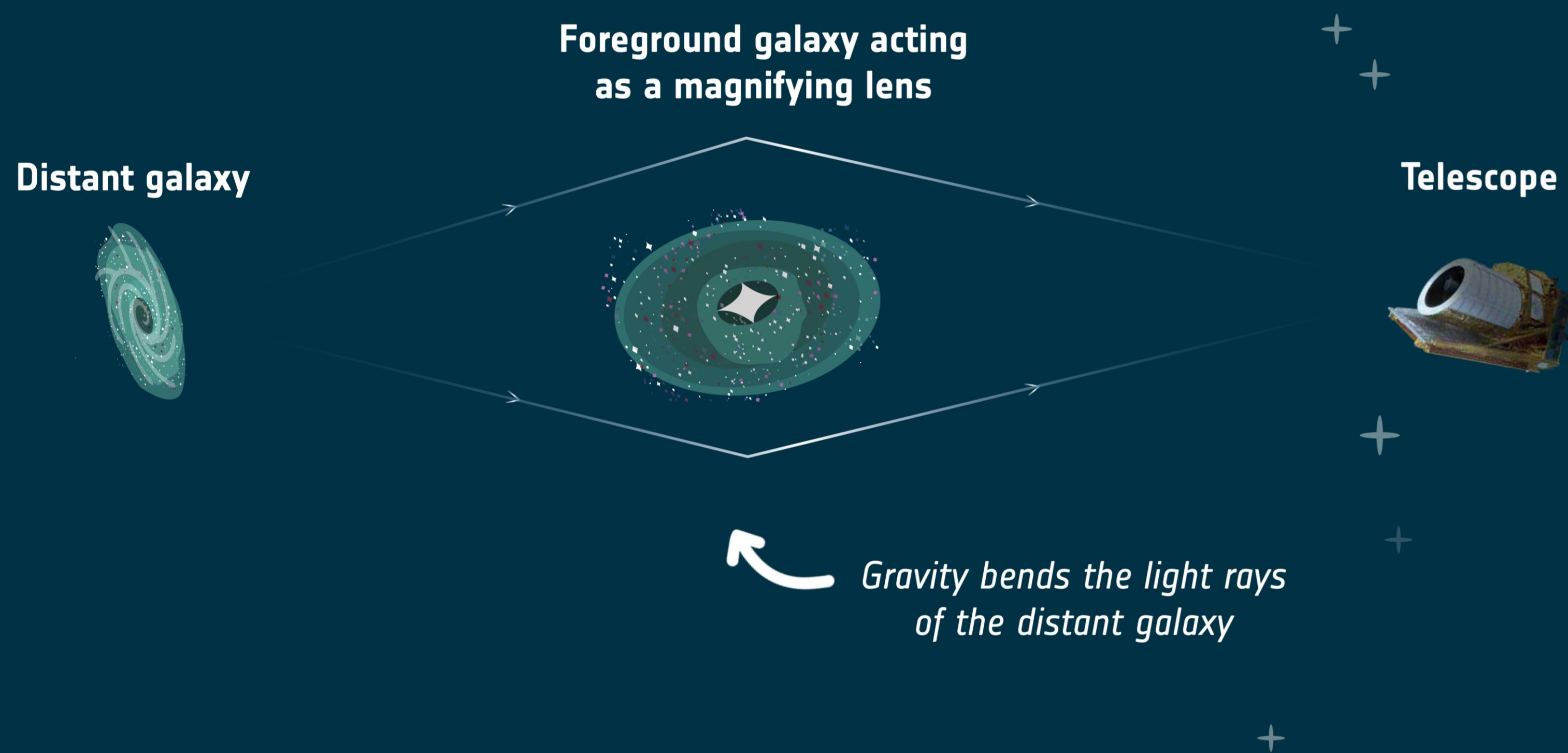
How do we know that light bends?

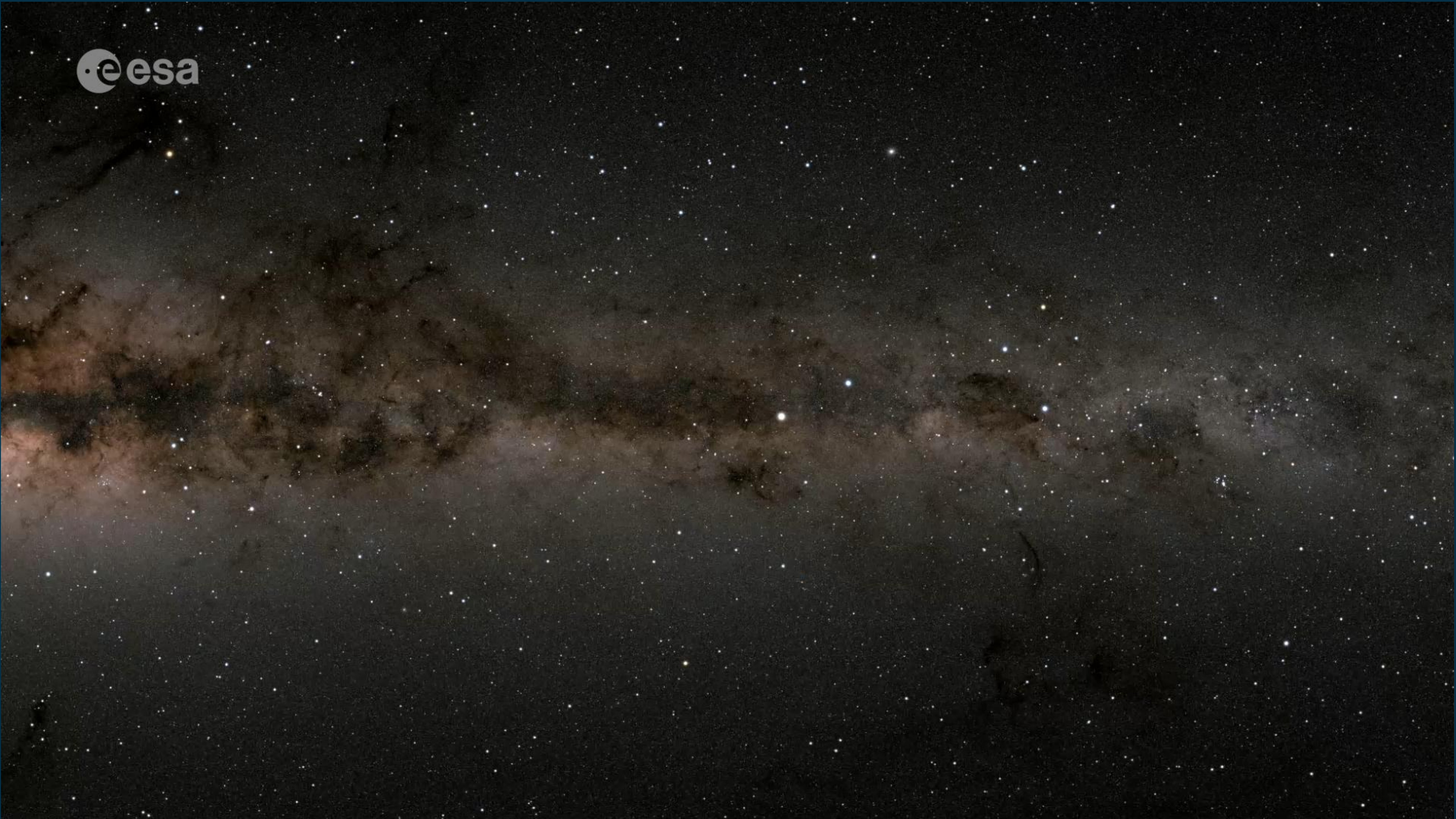


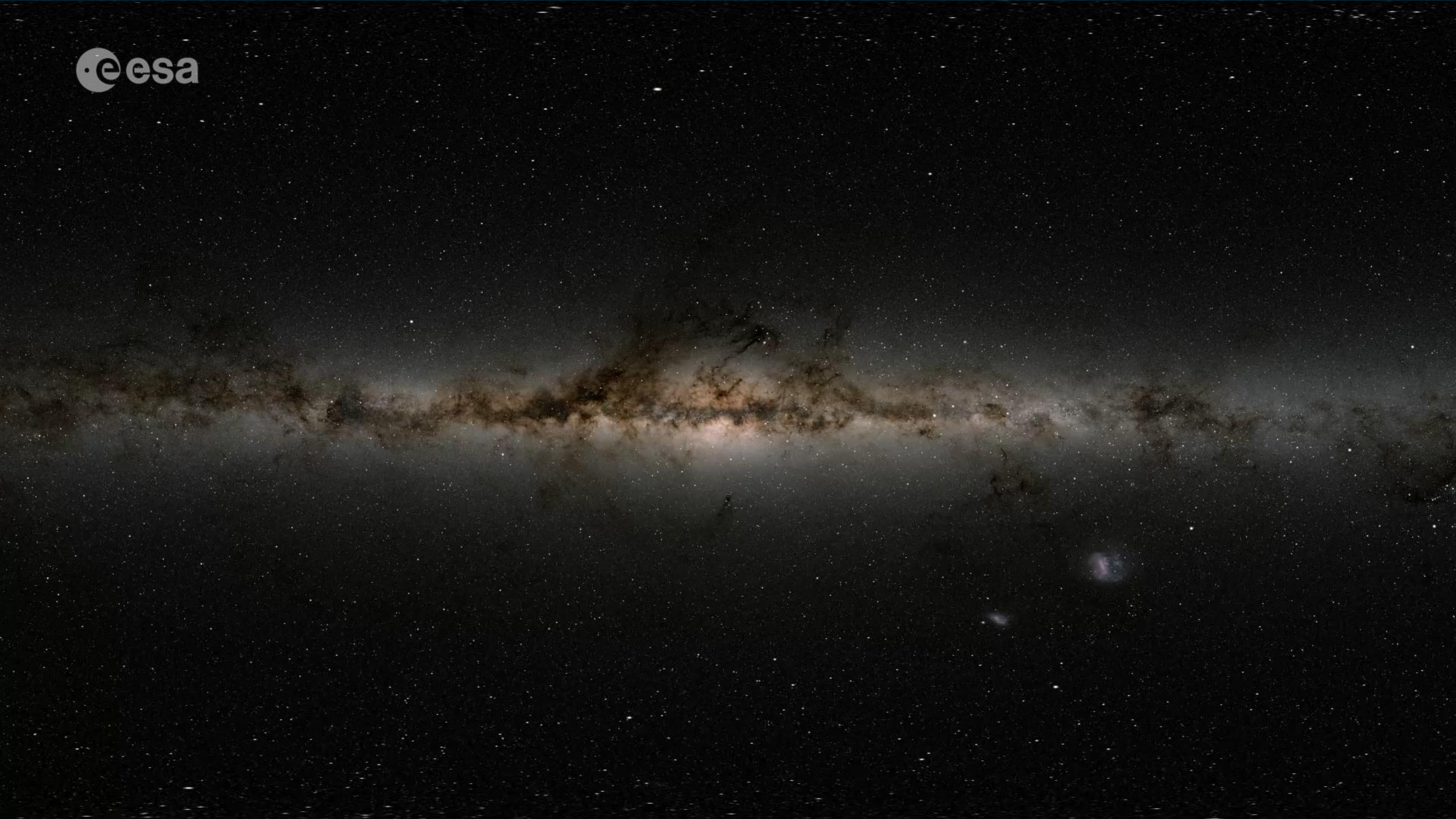
How do we know that light bends?



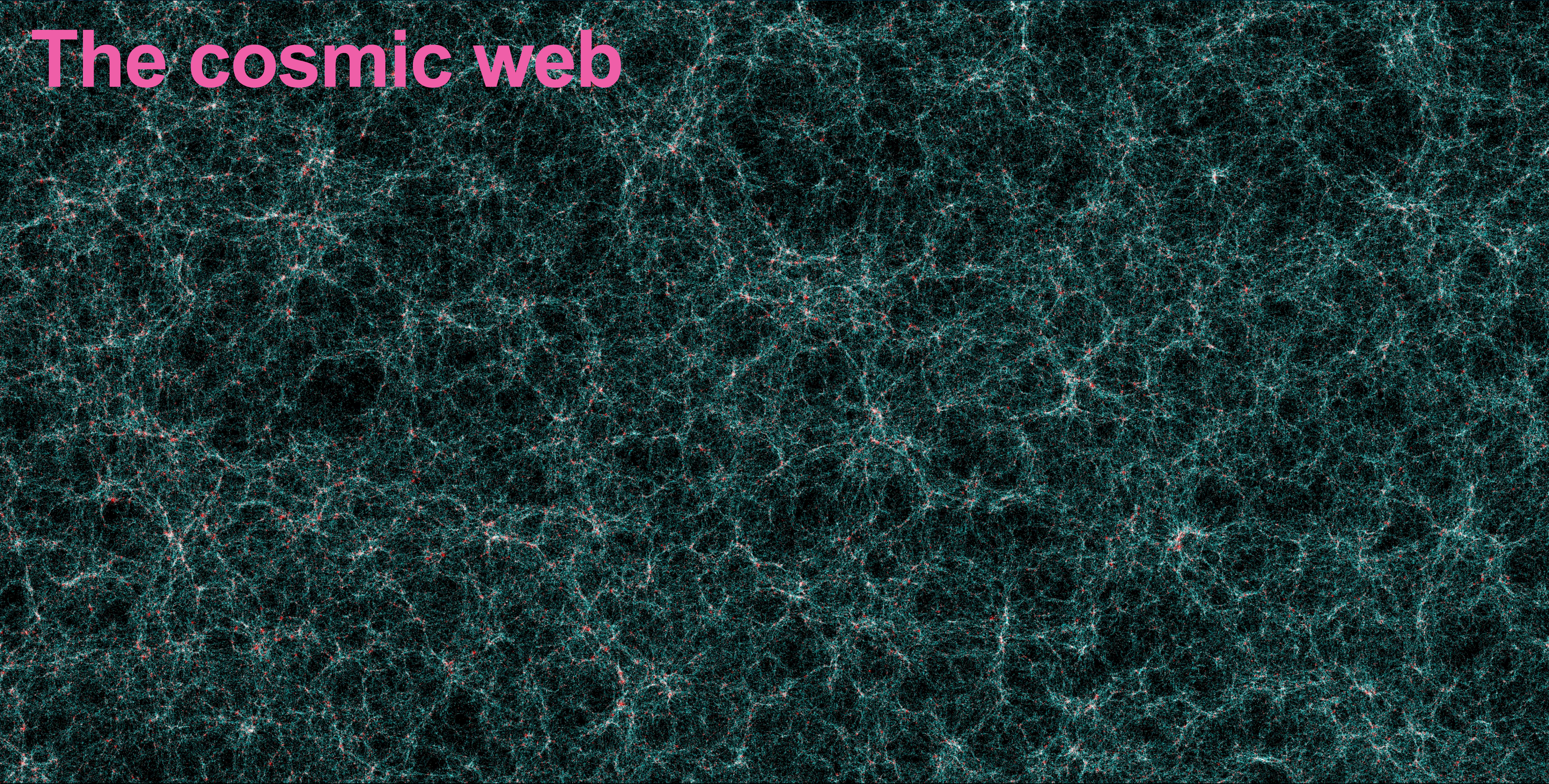
How do we know that light bends?







The cosmic web



Evolution of the cosmic web – 3 billion years after the Big Bang to the present day

Euclid Consortium Flagship Simulation

Desde la superficie terrestre





Desde el cielo



**EUCLID
EARLY
RELEASE
OBSERVATIONS**

Young star-forming region of Messier 78

Credit: ESA/Euclid/Euclid Consortium/NASA, image processing by J.-C. Cuillandre (CEA Paris-Saclay), G. Anselmi












Hubble



This is a single Hubble pointing at the same scale.



J2000 05 46 45.804 +00 00 04.46 FoV: 2.0° X 1.1° DSS2 color

Sci. Mode En Feedback     

ESA/Euclid Outreach Images Hide Footprints ✕ —

Object Name	Title
<input type="text" value="filter column..."/>	<input type="text" value="filter column..."/>
▼ Outside Field of View (13 images)	
Abell 2764 galaxy cluster	Abell 2764 galaxy cluster (enhanced view)
Perseus galaxy cluster	Perseus cluster of galaxies
NGC6744 spiral galaxy	NGC6744 spiral galaxy (enhanced view)
Horsehead Nebula	The Horsehead Nebula
NGC6397 globular cluster	The globular cluster NGC 6397
NGC6744 spiral galaxy	NGC6744 spiral galaxy (24x24k resolution)
El Dorado galaxy group	El Dorado galaxy group (24x24k resolution)

Rows: 15


Messier 78 nebula (24x24k resolution) ✕

This image is released as part of the Early Release Observations from ESA's Euclid space mission. All data from these initial observations are made public on 23 May 2024 – including a handful of unprecedented new views of the nearby Universe, this being one.

This breathtaking image features Messier 78 (the central and brightest region), a vibrant nursery of star formation enveloped in a shroud of interstellar dust. This image is unprecedented – it is the first shot of this young star-fo...

[Show More](#)

Image Opacity

esa ALADIN 

A GLOBAL COLLABORATION



>300
institutions



22.
countries



80
companies



140
industry
contracts



>3500
people

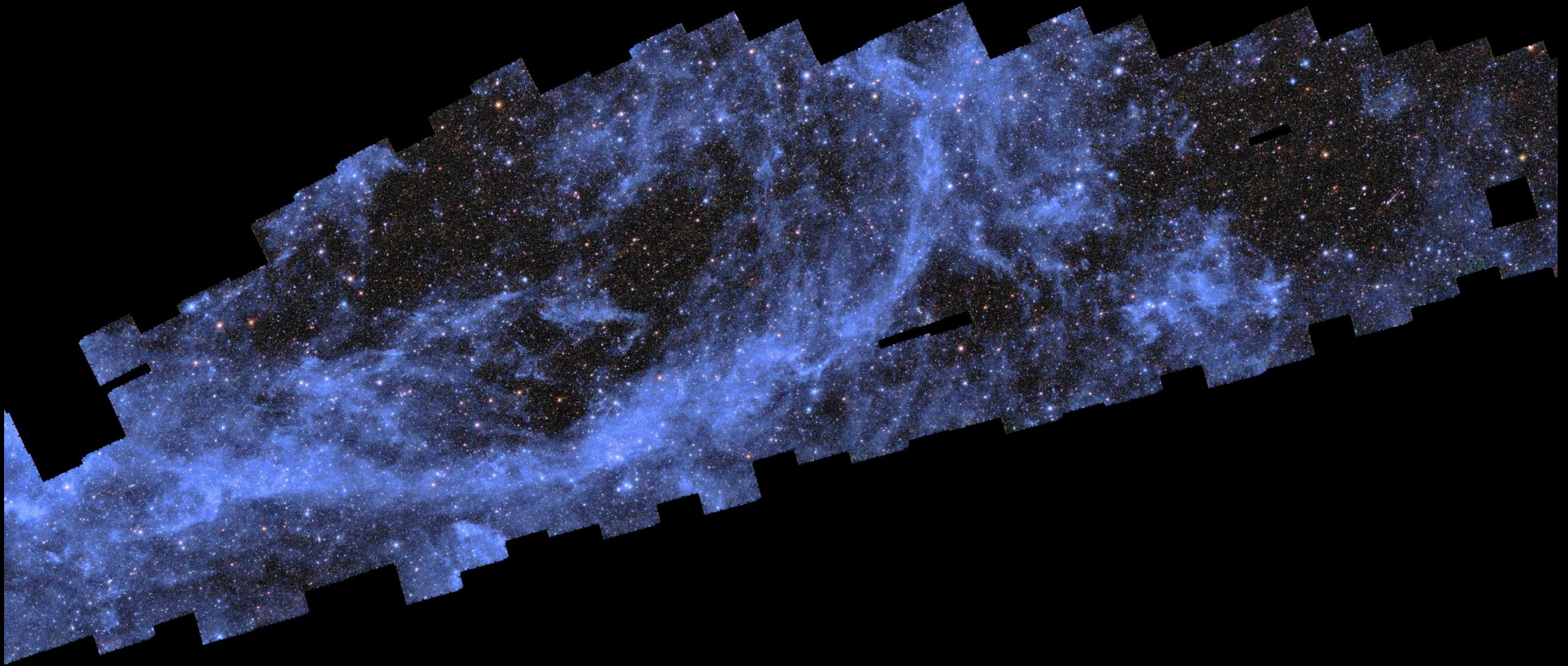
EUCLID
CONSORTIUM
MEETING 2025,
Leiden

56th ESLAB Symposium 24-26 March 2025
Euclid Consortium Meeting 25-27 March 2025
Leiden – The Netherlands

Universiteit Leiden | Leiden Kennisstad | SRON | NOVA | ThalesAlenia Space
TELESPAZIO | RAPID | ATG europe | esa academy



First atlas



APPENDIX