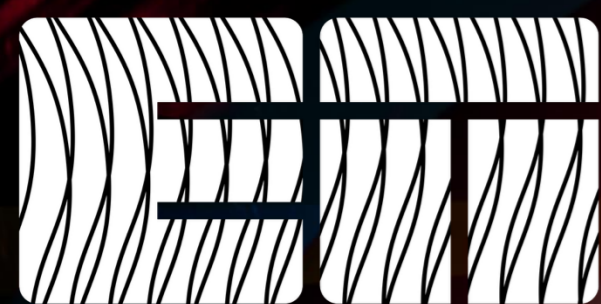


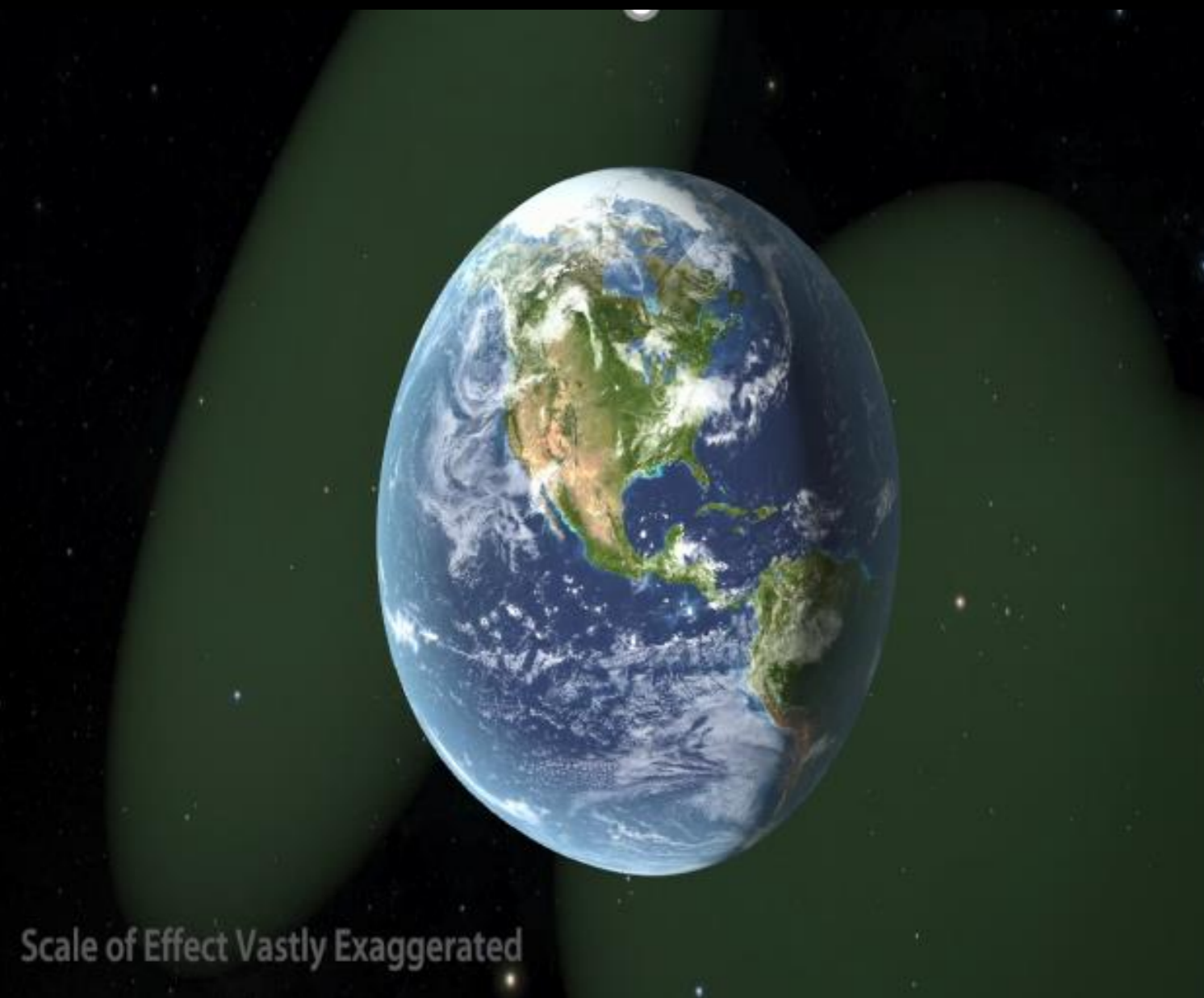
Swedish Big Science Forum 2026, Lund - dr. Rob van der Meer, Nikhef, NL



EINSTEIN  
TELESCOPE

Engage. Innovate. Explore.

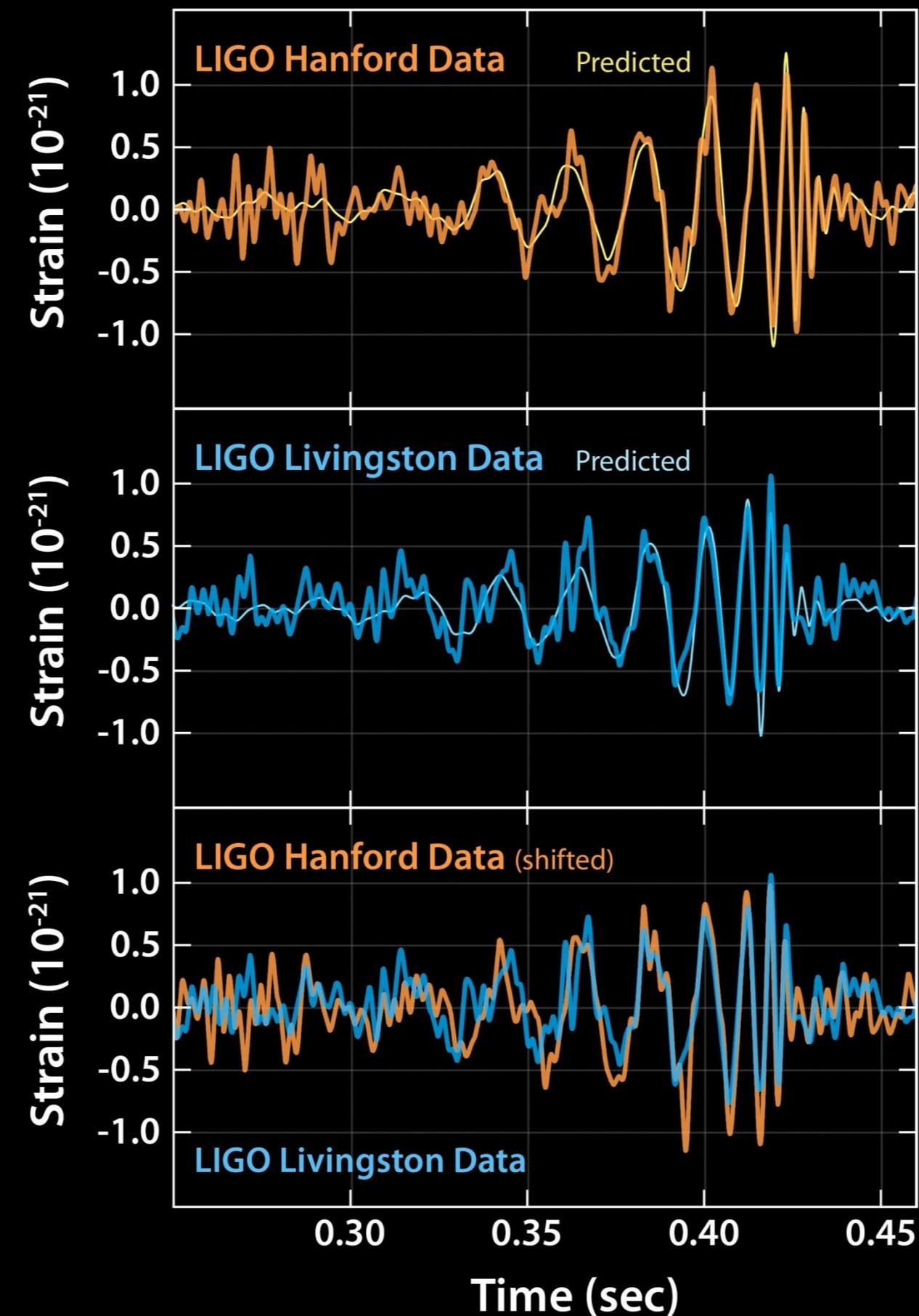
## 2015 Sept 14th, On Earth



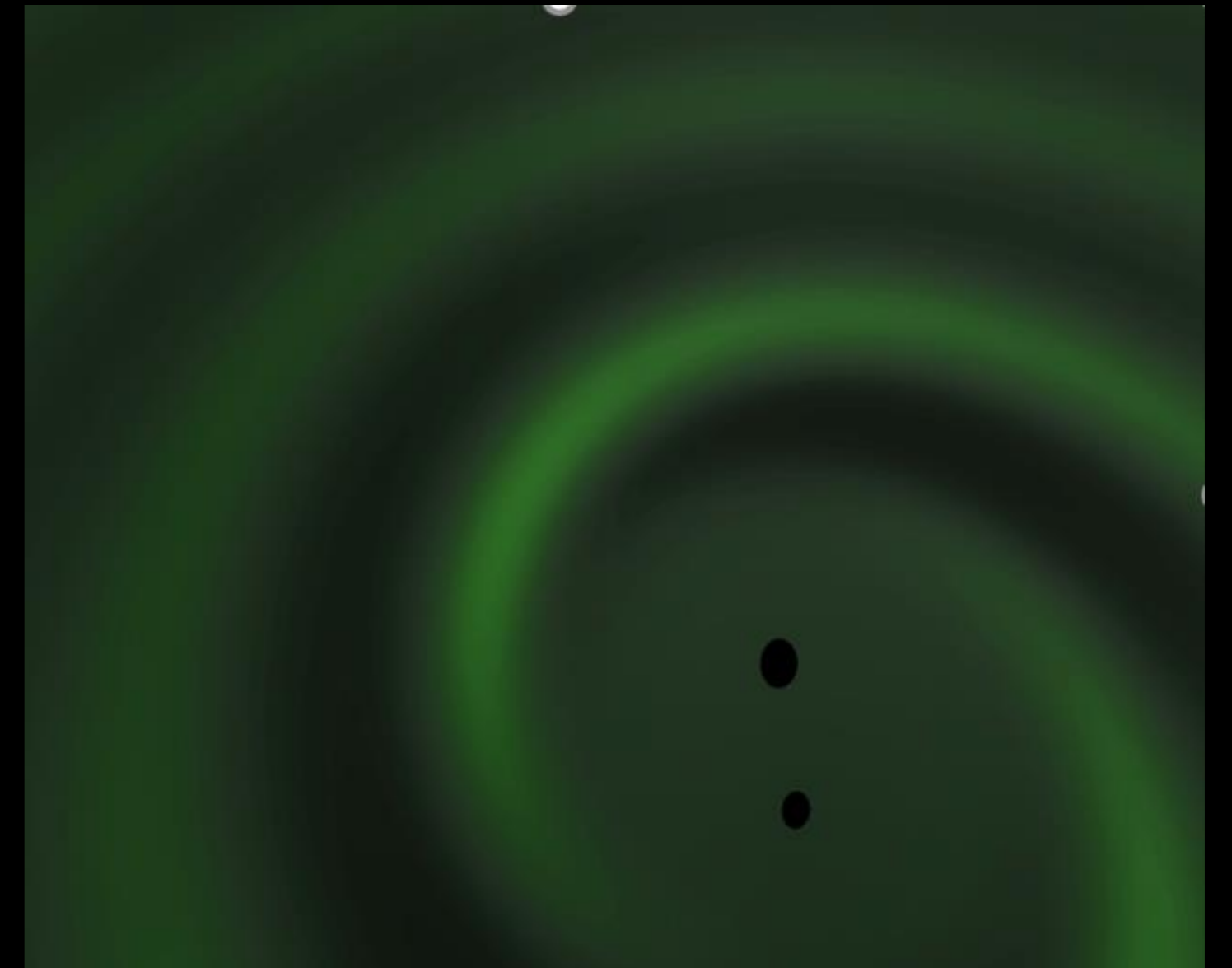
Gravitational waves at Earth animation:

<https://www.ligo.caltech.edu/video/ligo20160211v5>

[https://www.youtube.com/watch?v=WgE6lb\\_i78A](https://www.youtube.com/watch?v=WgE6lb_i78A)



## A long time ago, in a galaxy far, far away



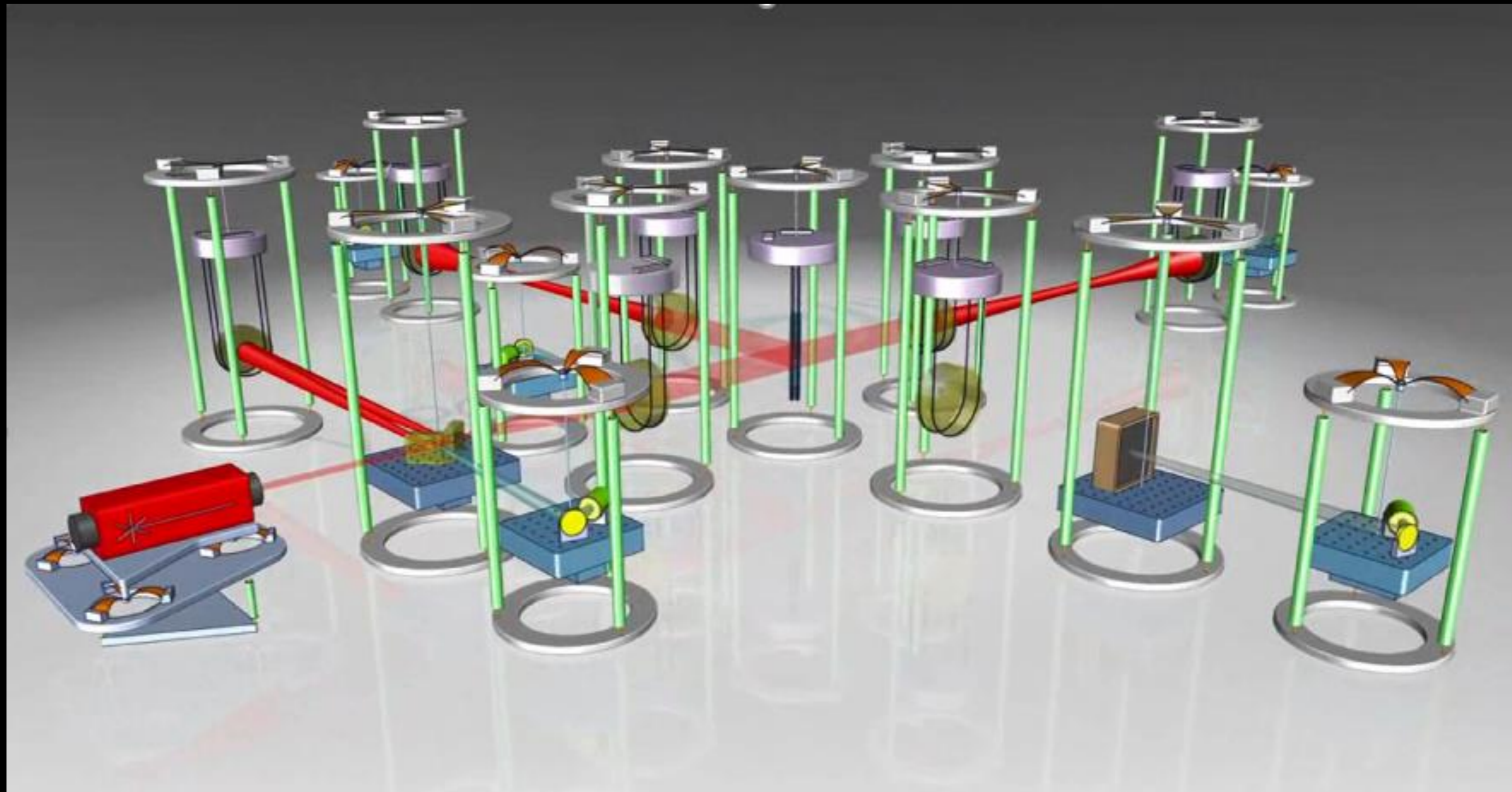
Gravitational waves from merger animation:

<https://www.ligo.caltech.edu/video/ligo20160211v4>

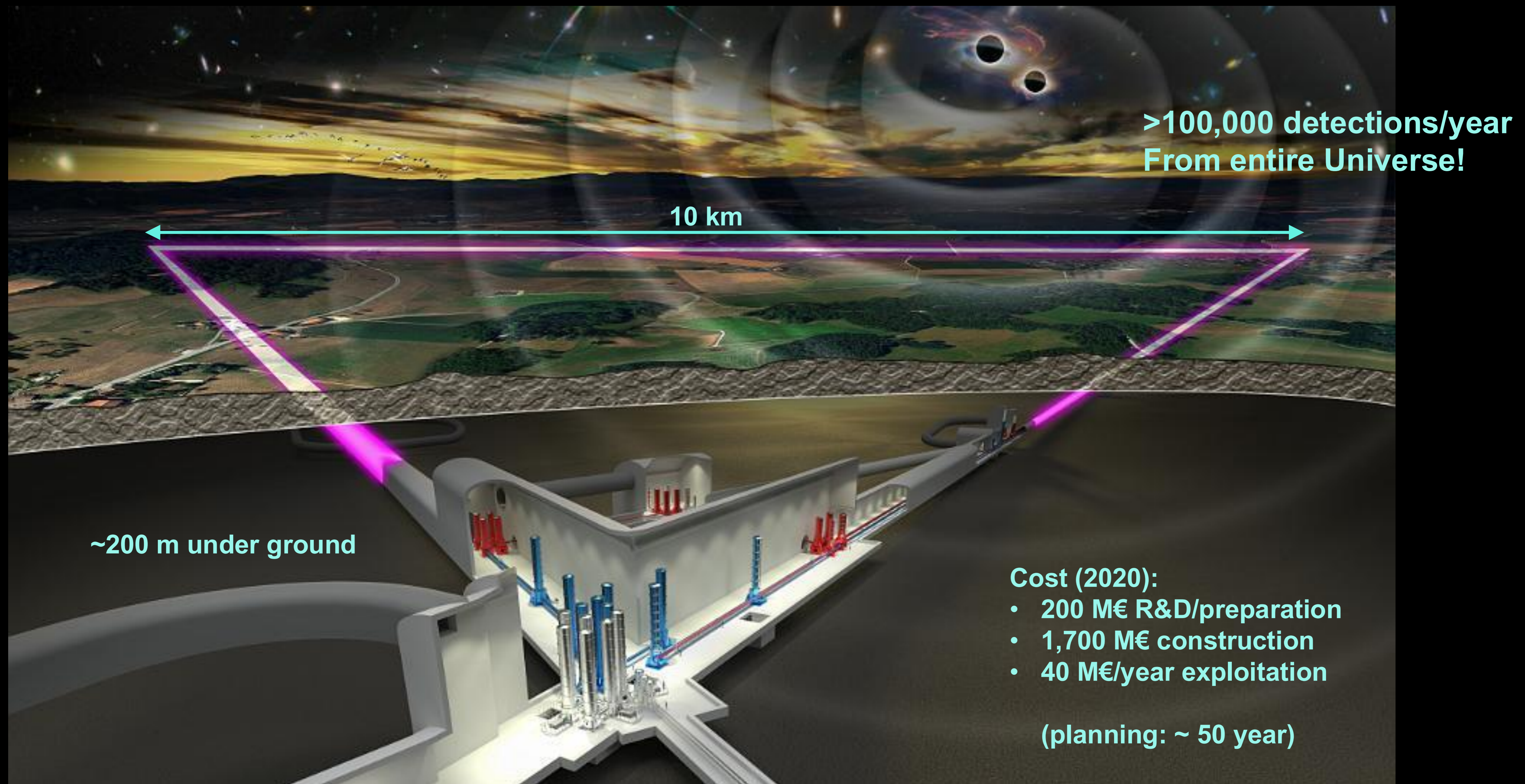
<https://www.youtube.com/watch?v=y0orOwQgcCM>



# Fighting the noise in VIRGO



Virgo operation principle and vibration reduction animation:  
<https://www.youtube.com/watch?v=6raomYII9P4>

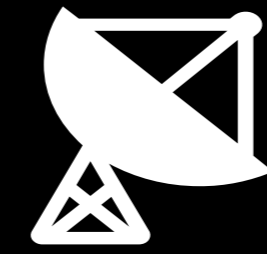


# Einstein Telescope timeline

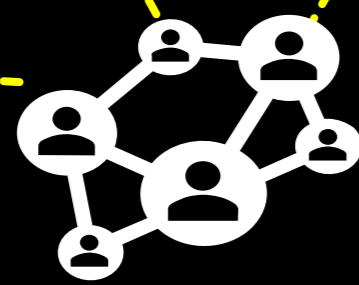
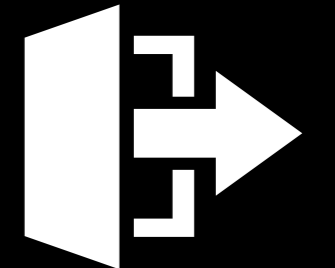
network of companies and researchers

Initial research

Creation of a bidbook



50 years



site selection:

Build phase

2021

2021-2026

2027

2028-~2040

2040-2090 (?)

Einstein Telescope on 'ESFRI roadmap'

Industrial Return

Industrial Return

Scientific Return

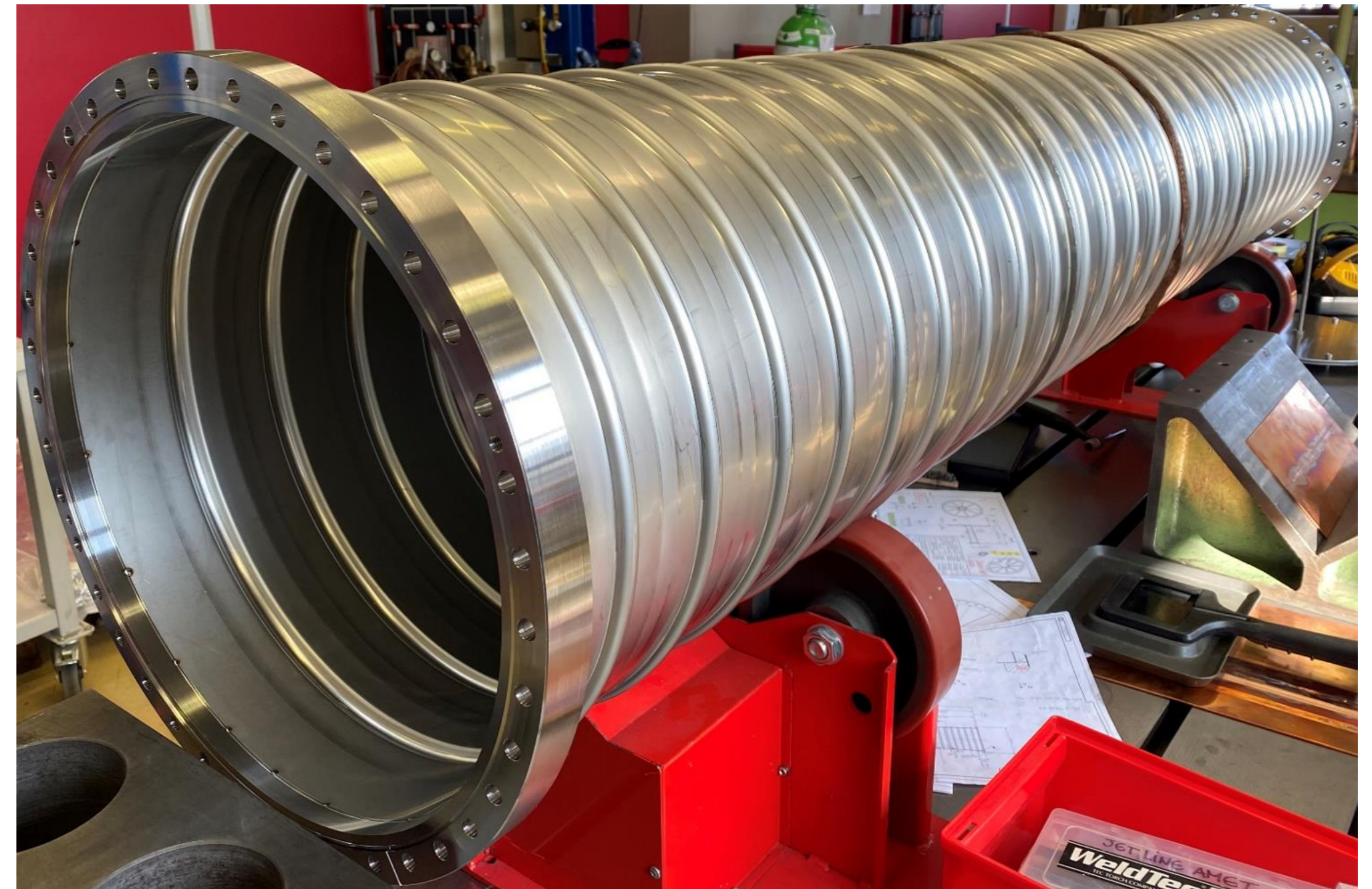
Ecological Research

Sustainability

Recycling

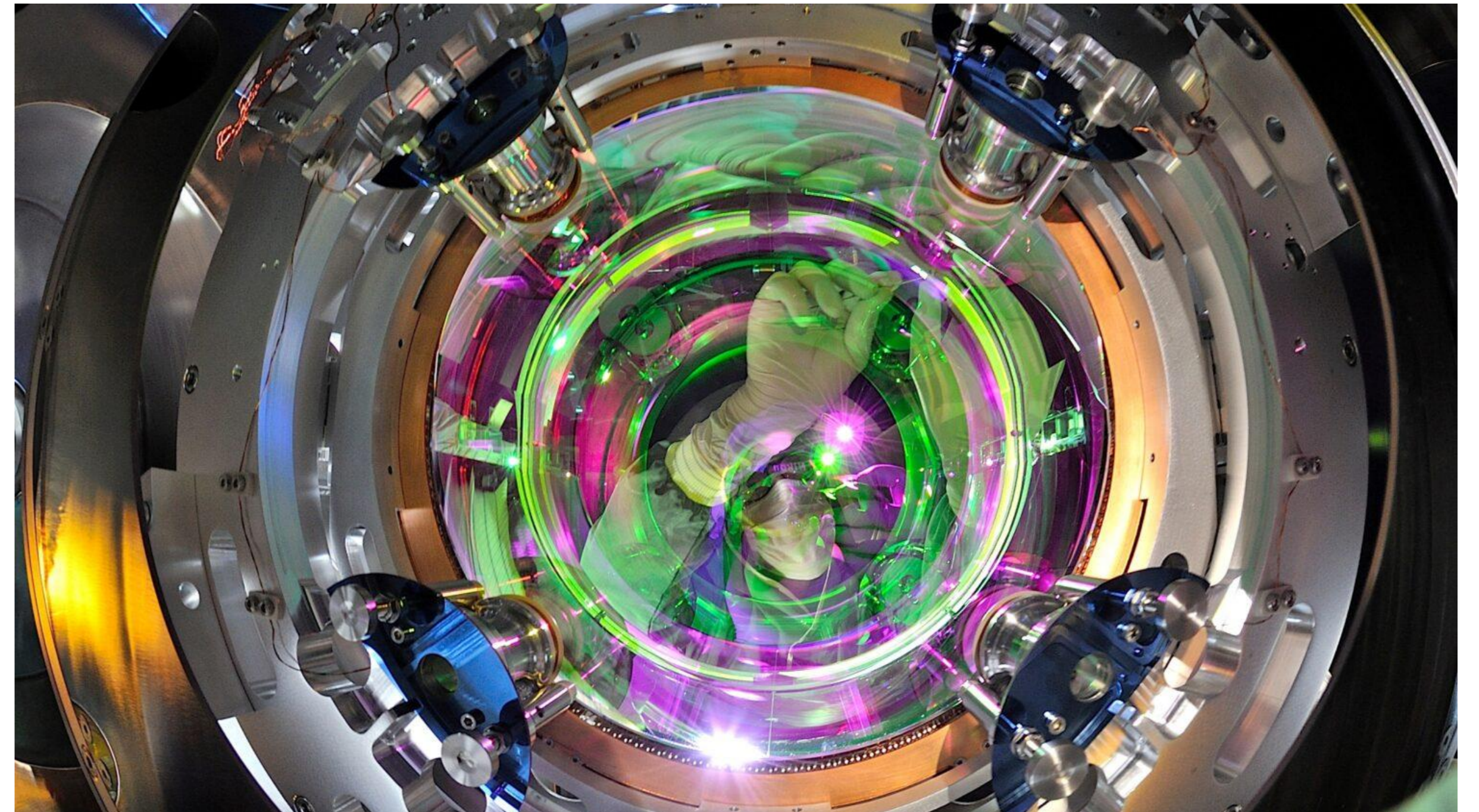
# Business involvement in ET

- Research & Development
- Engineering
- Construction
- Manufacturing & Installation
- Maintenance & Services

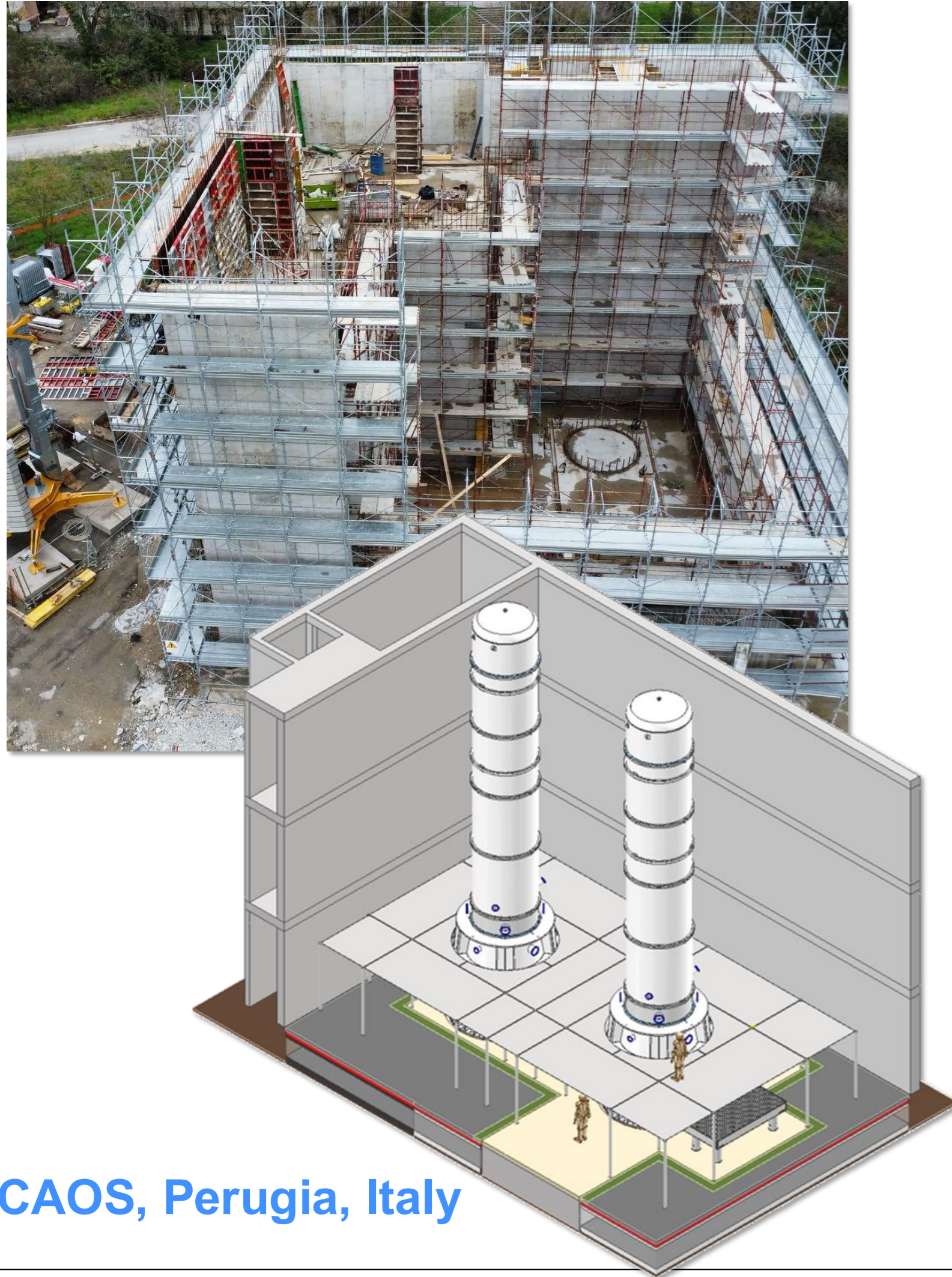


# Research & Development

- Sensors and precision mechanics
- Optics & optical metrology
- Lasers
- Vibration-free cryogenics cooling
- Vacuum system



# Research & Development



CAOS, Perugia, Italy

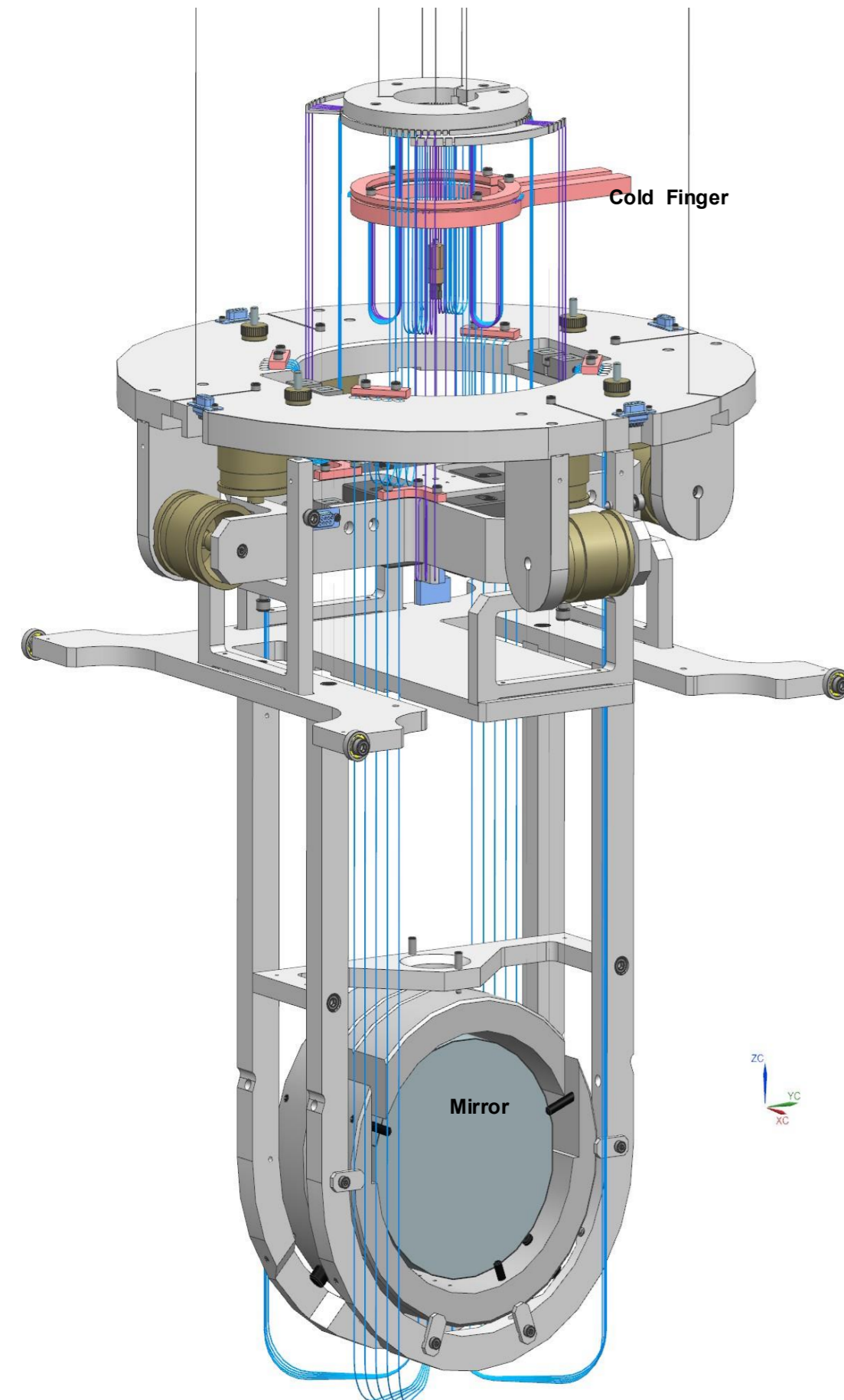
Test centers for prototypes, acceptance, integration

- Vibration reduction
- Mirror support, cooling
- Optical elements integration
- Vacuum system
- Cleanliness
- etc.



ETpathfinder, Maastricht, Netherlands

# Vibration free cooling of mirror



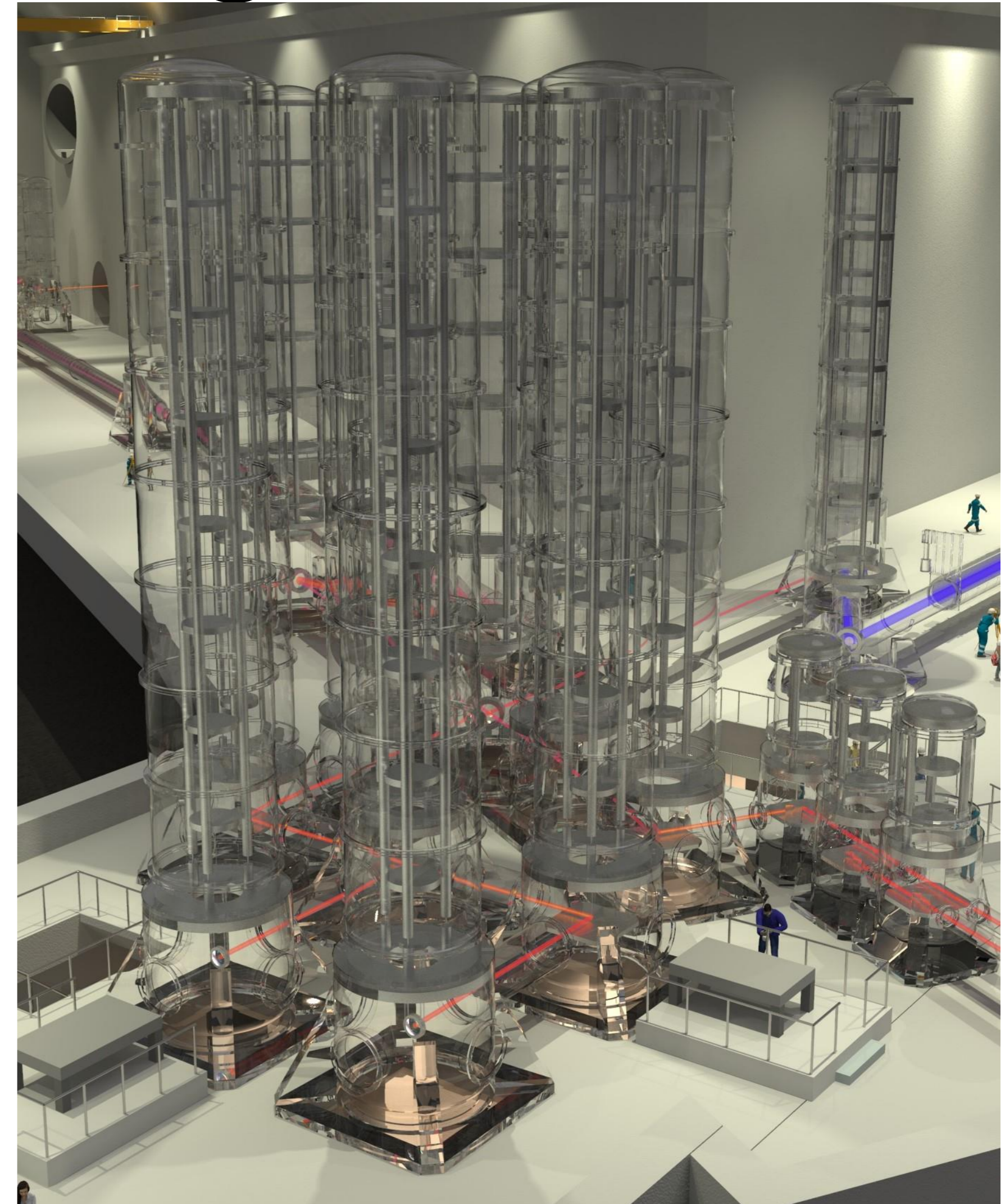
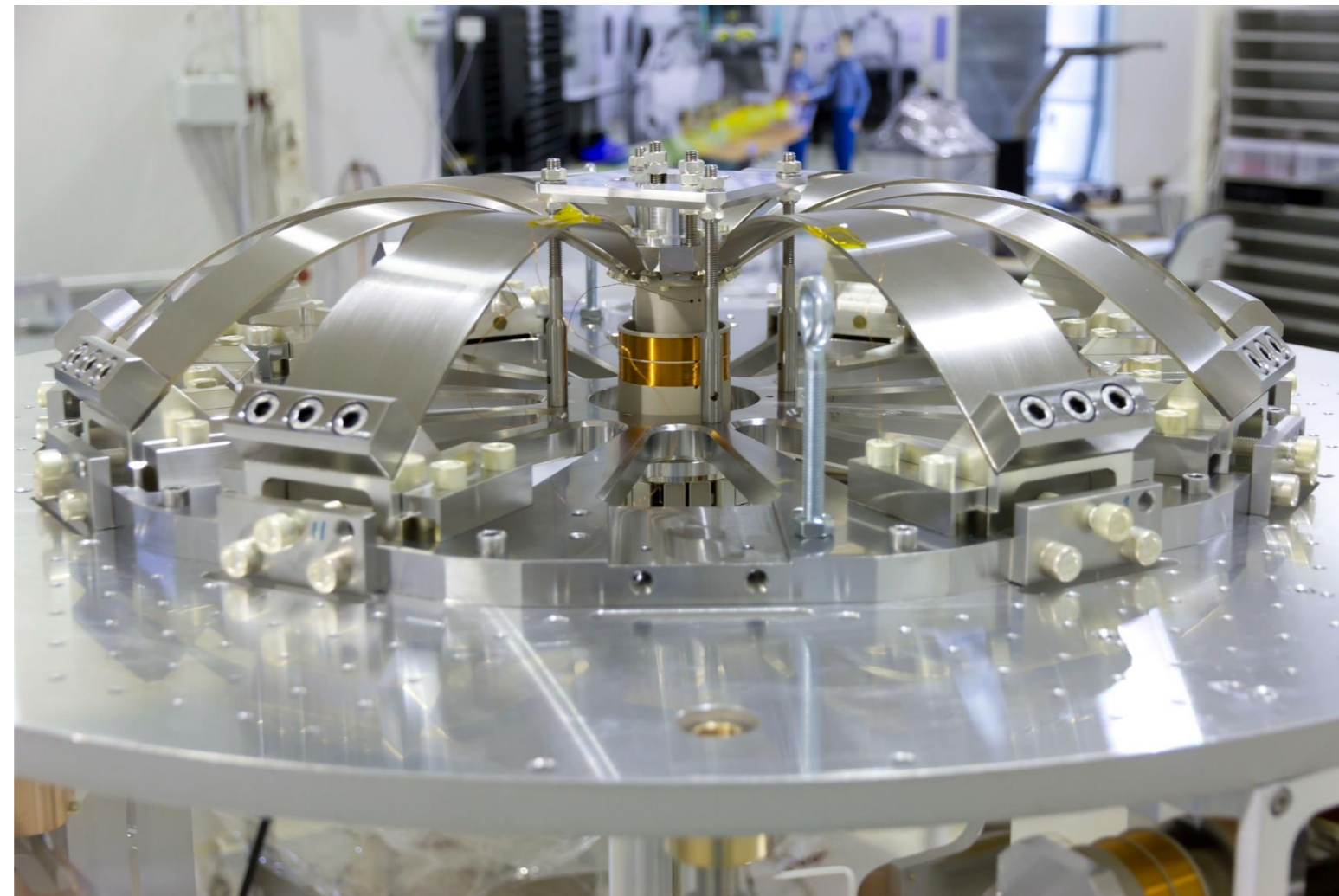
- Design and testing of mirror support and mirror cryogenic cooling
- Final mirror 50 x 50 cm
- Cooling to 10 K
- Si mirror



ET-CRISTAL, Liege, Belgium

# Vibration damping

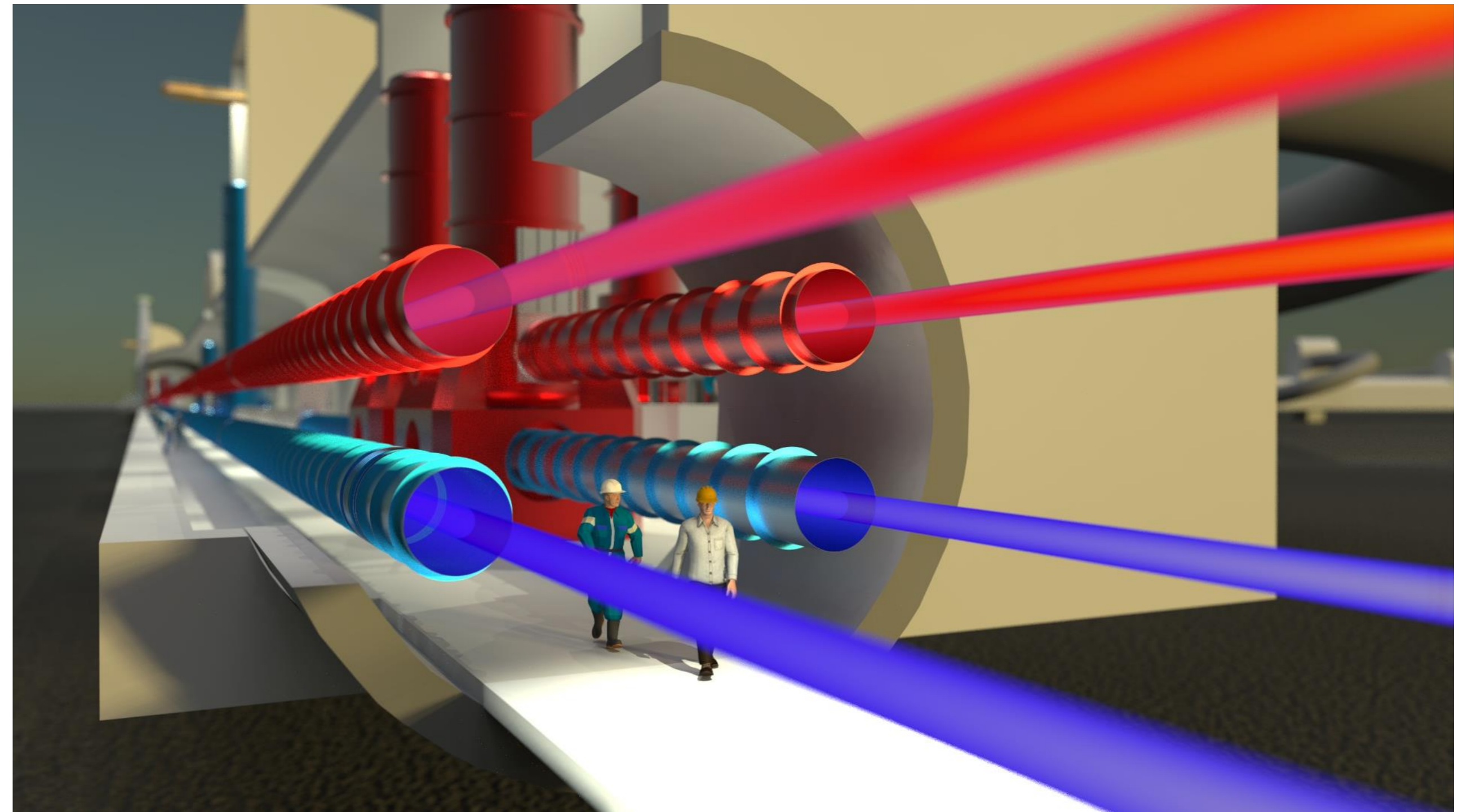
- Development of optimal combination of passive and active vibration damping;
- Can we increase the damping?
- Can we reduce the size of the (vacuum) towers?



# ET Vacuum system

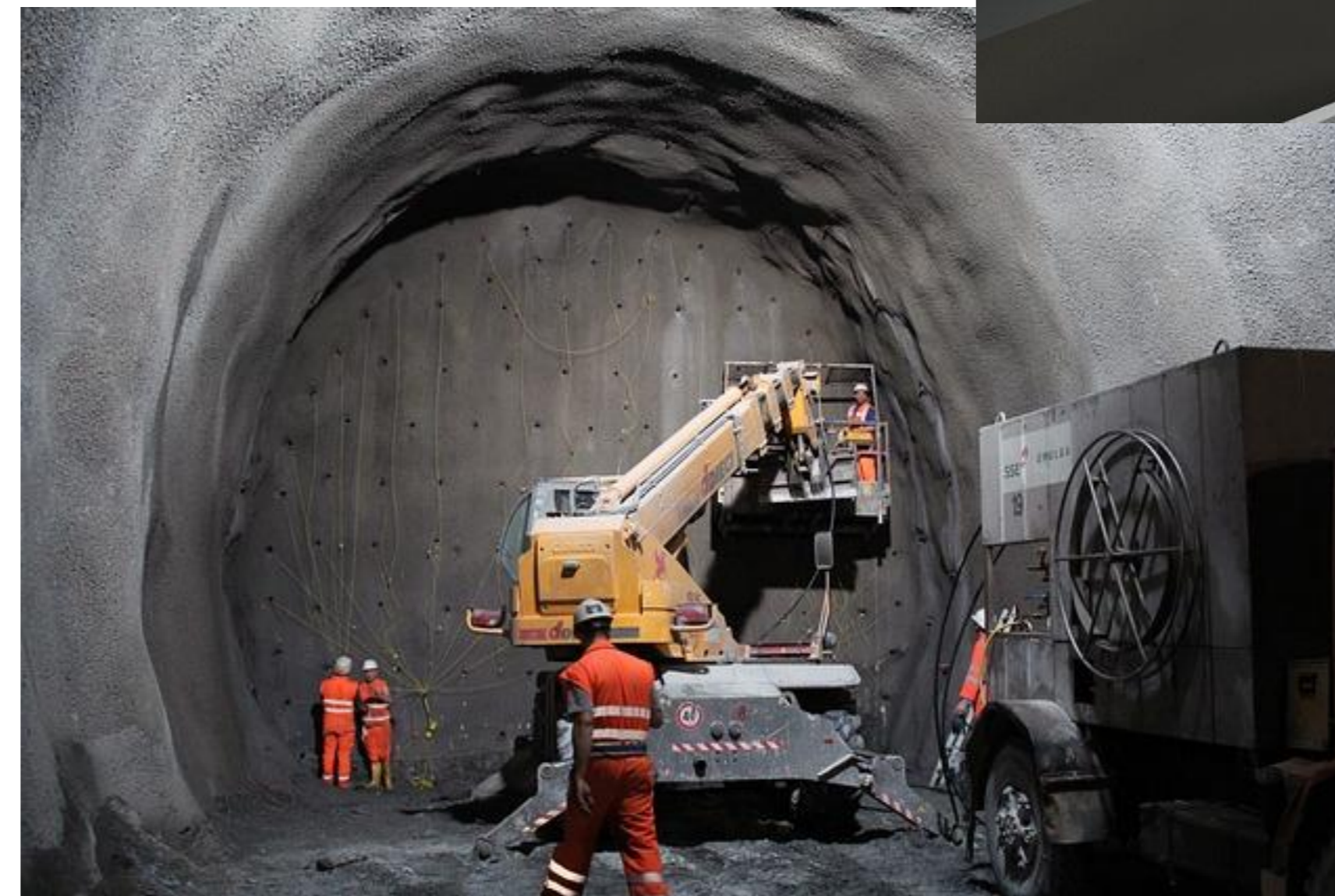
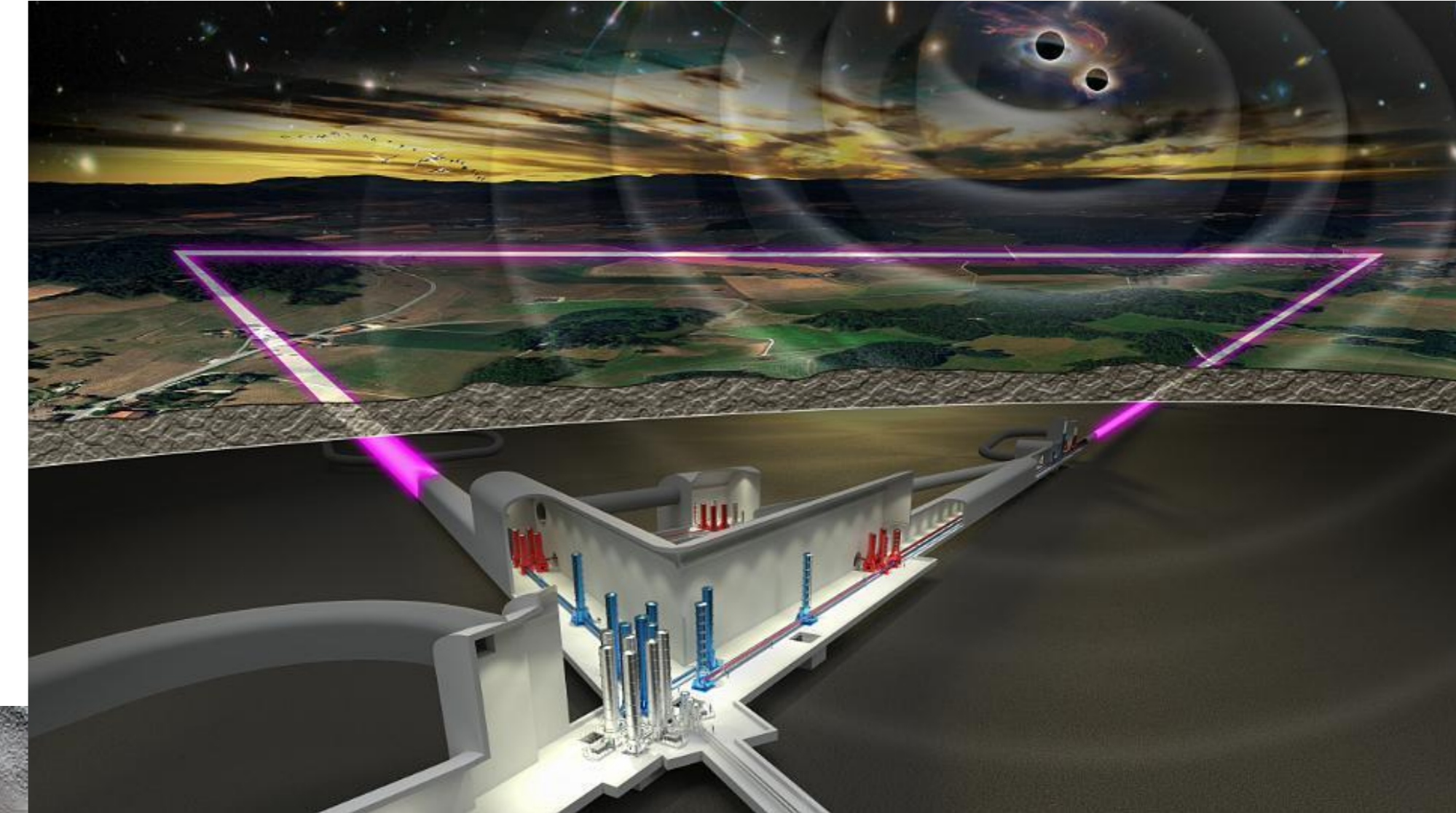
**120 km, 1m diameter,  $10^{-10}$  mbar**

- Engineering + Manufacturing
- Welding + Installation
- Support structure
- Cleanliness in all steps
- Logistics



# Civil engineering - Tunneling

- Design
  - Underground research
  - Safety
  - Time line, Budget
- Tunnel boring – 30 km
- Caverns - 20 x 100 x 20 m
- Permits
- Sustainability
  - Reuse of materials
  - Transport and logistics
  - Waste water management



- Drill & Blast  $\leftrightarrow$  TBM
- Shaft  $\leftrightarrow$  Ramp

# Contact ET for industry

<https://einsteintelelescope.eu/>

<https://einsteintelelescope.eu/get-involved/for-industry/>

or the ILO in your country

[r.van.der.meer@nikhef.nl](mailto:r.van.der.meer@nikhef.nl)

# Big Science Business Forum 2026

**27 - 30 October 2026**

MECC, Maastricht  
The Netherlands

[www.BSBF2026.org](http://www.BSBF2026.org)



# BSBF 2026



BSBF2026 trailer:  
[https://www.bsf2026.org/wp-content/uploads/2025/03/BSBF2026\\_trailer\\_V2.mp4?\\_=1](https://www.bsf2026.org/wp-content/uploads/2025/03/BSBF2026_trailer_V2.mp4?_=1)

- Interested?
- Sign up to the newsletter at [www.BSBF2026.org](http://www.BSBF2026.org) -- Follow us on LinkedIn – BSBF2026

# BSBF 2026

## Why participate in BSBF?

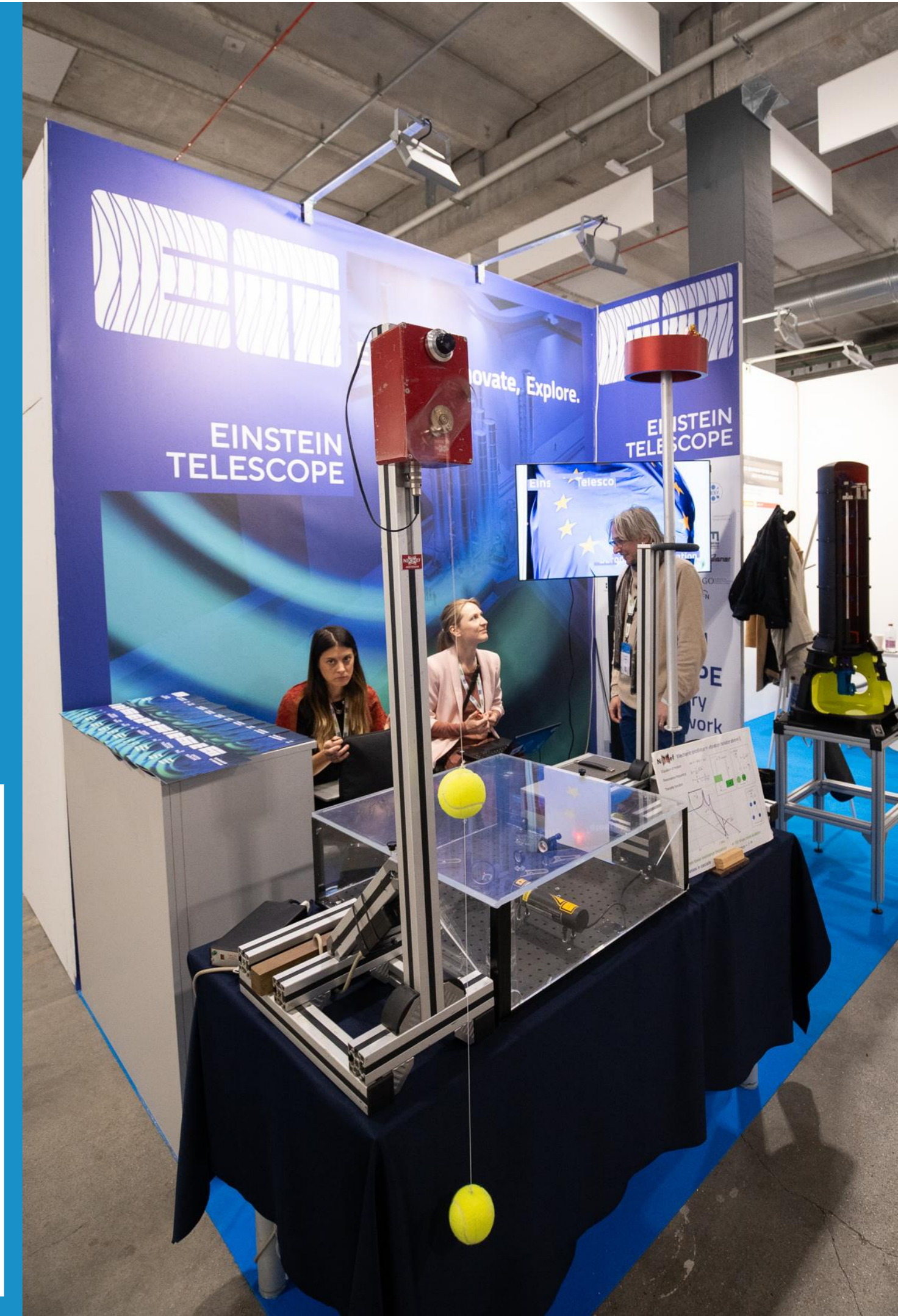
### In two days, one can

- Get informed about Big Science in general
- Learn about the BSO needs in your technology domain:
  - Build to print or co-development opportunities
- Meet representatives of 10 hosting and the associated BSOs
- Engage with both procurement officers and technical experts
  - In B2B meetings or at their or your stand
- Determine whether your competences match their needs
- Visits to laboratories to see set-ups first hand





- BSBF2024 was fully booked
- Contact [info@bsbf2026.org](mailto:info@bsbf2026.org) to register interest
- At [www.bsbf2026.org](http://www.bsbf2026.org) sign up for newsletter
- Follow BSBF2026 on LinkedIn
- Registration and booking of booths is open
- Sponsorship packages are available, but custom packages can be discussed
- Standard stand size 2x3 m2





Tuesday 27 October

- Satellite events & opening ceremony

Wednesday 28 October

- Plenary & parallel sessions and B2B meetings
- Conference dinner

Thursday 29 October

- Plenary & parallel sessions and B2B meetings
- Closing ceremony

Friday 30 October

- Visits to laboratories

# BSBF 2026

## EXPO-HALL MECC : + 5000 m<sup>2</sup>



# BSBF 2026



## Foyer MECC : working areas, press..



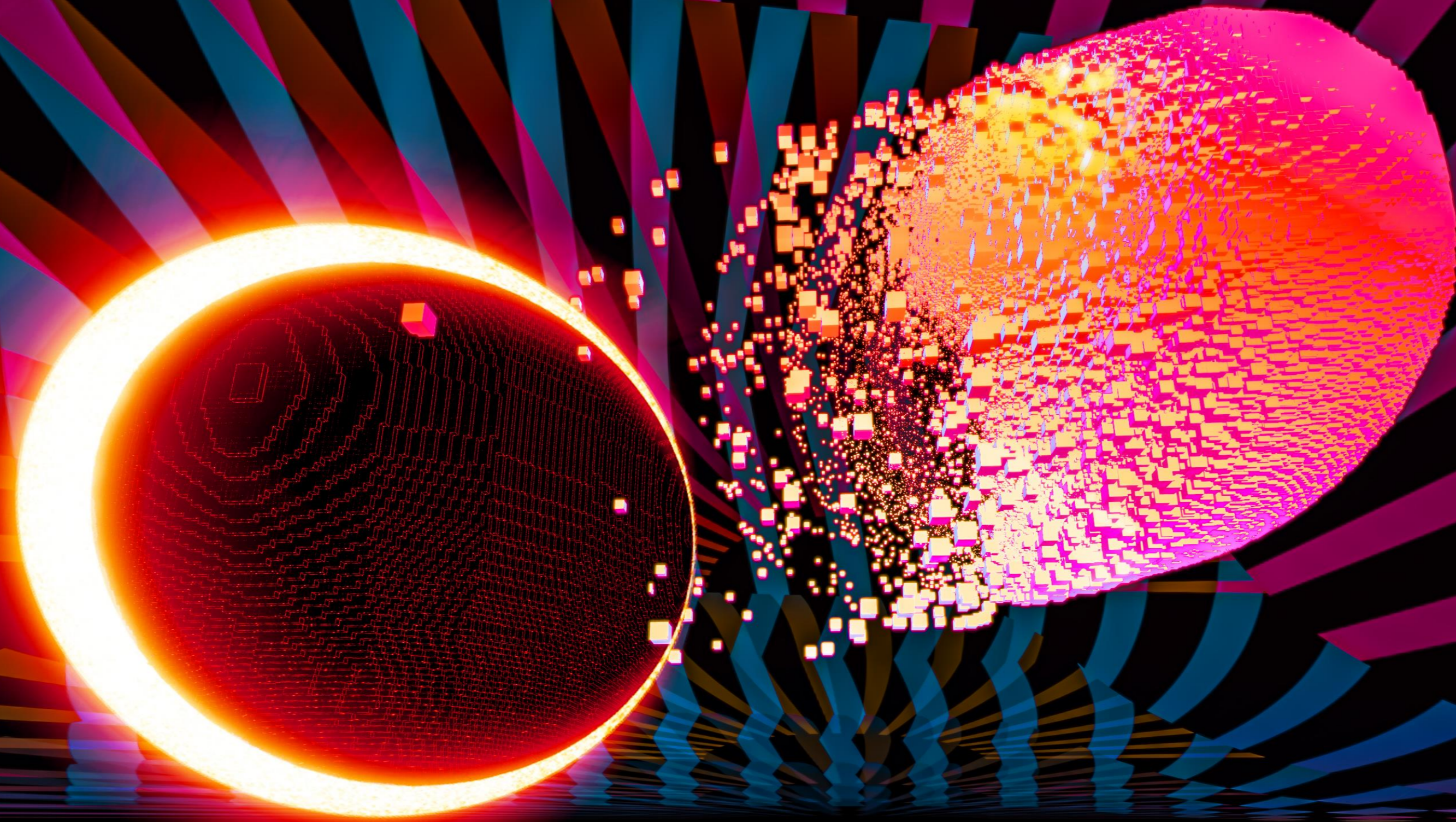


# Contact information

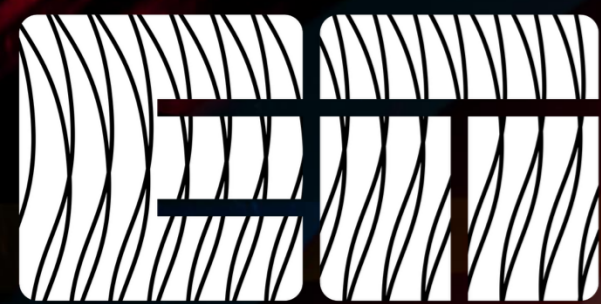


- Interested?
- Sign up to the newsletter at [www.BSBF2026.org](http://www.BSBF2026.org)
- Write to [info@bsbf2026.org](mailto:info@bsbf2026.org)
- Follow us on LinkedIn – BSBF2026





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Thank you!