LGWA
LUNAR GRAVITATIONAL
WAVE ANTENNA

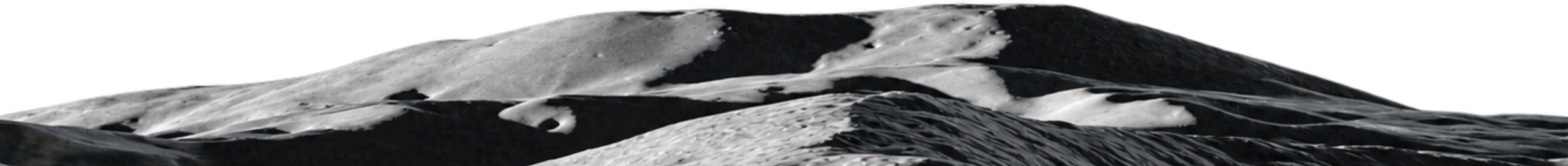
The LGWA



Outreach and Communications

Working Group

Nando Patat — N&O P@@
European Southern Observatory - Germany



The working group

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Lina Tomasella
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Silvia Piranomonte
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Francesca Badaracco
Ilaria Arosio
Gaia Lops

Masroor Pookkillath
Suresh Doravari
Jacopo Tissino
Chandrachur Chakraborty
Kenath Arun
Gill Kiranjyot
N&O P@@



Objectives

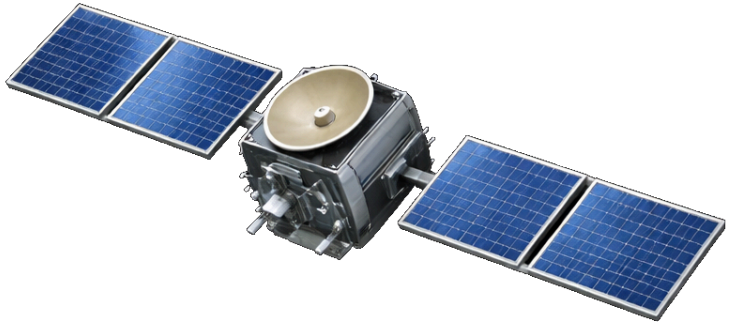
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Raise awareness and understanding of LGWA

Build public excitement

Foster stakeholder trust

Promote scientific collaboration



Target Audiences

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General Public

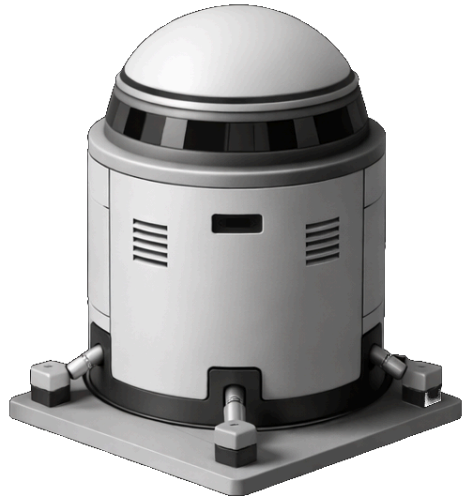
Scientific Community

Space Agencies

Policy makers/Funders

Media & Influencers

Educators & Students



Key Messages

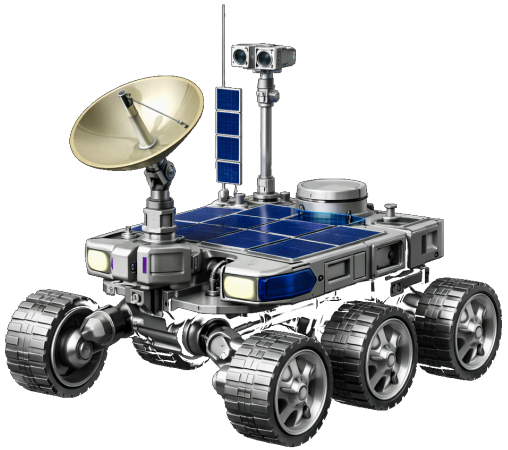
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The LGWA will be the first gravitational wave observatory on the Moon

The Moon's silence offers unique detection capabilities

Builds on ground-based success

Demonstrates global scientific leadership



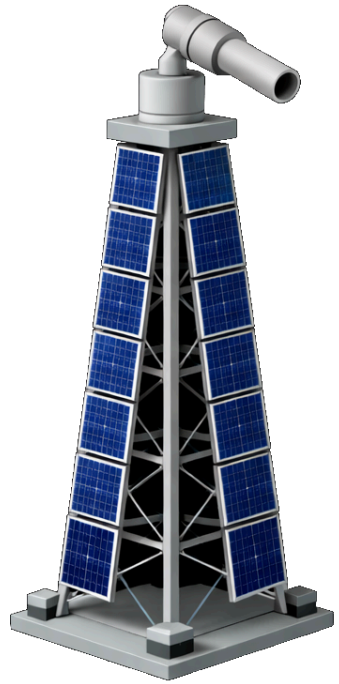
Communication Channels

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Digital: Website, Social Media, Newsletter

Media: Press releases, Expert interviews

Events: Conferences, Webinars, Exhibitions

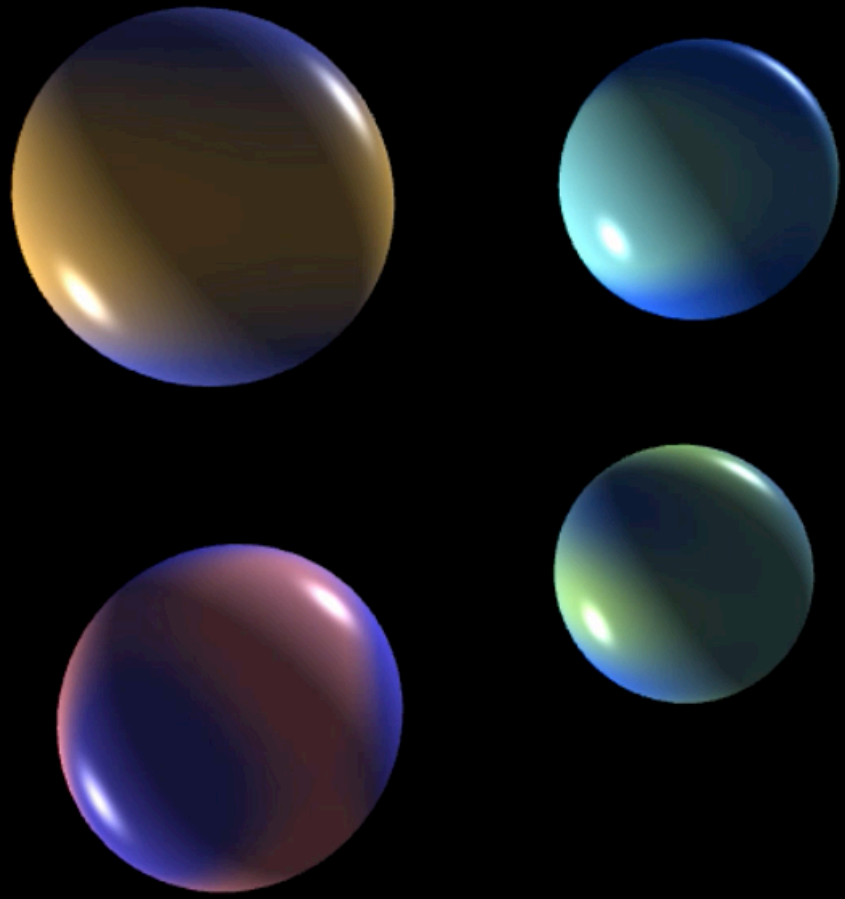


COELUM ASTRONOMIA

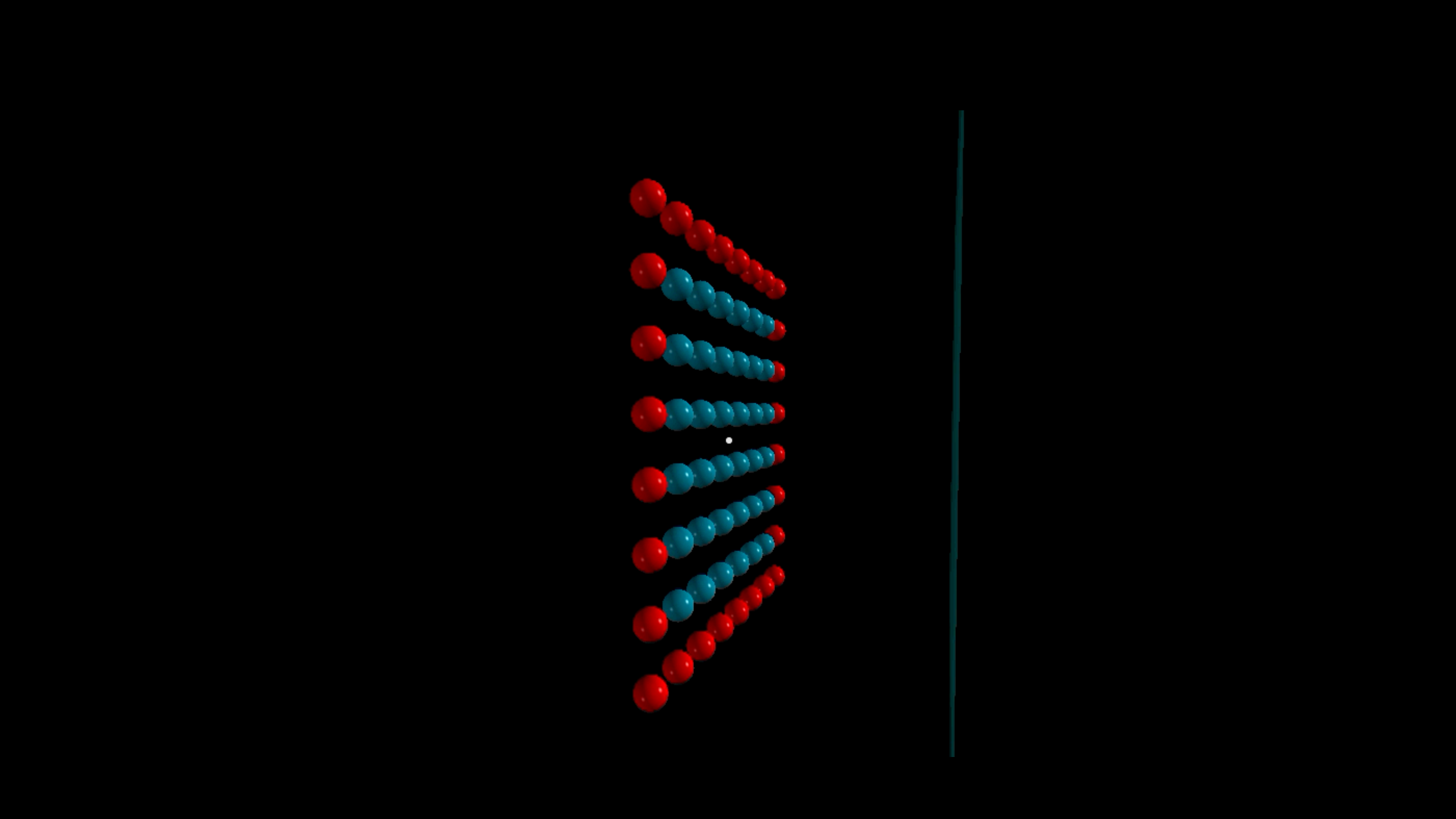
LUNAR GRAVITATIONAL WAVE ANTENNA

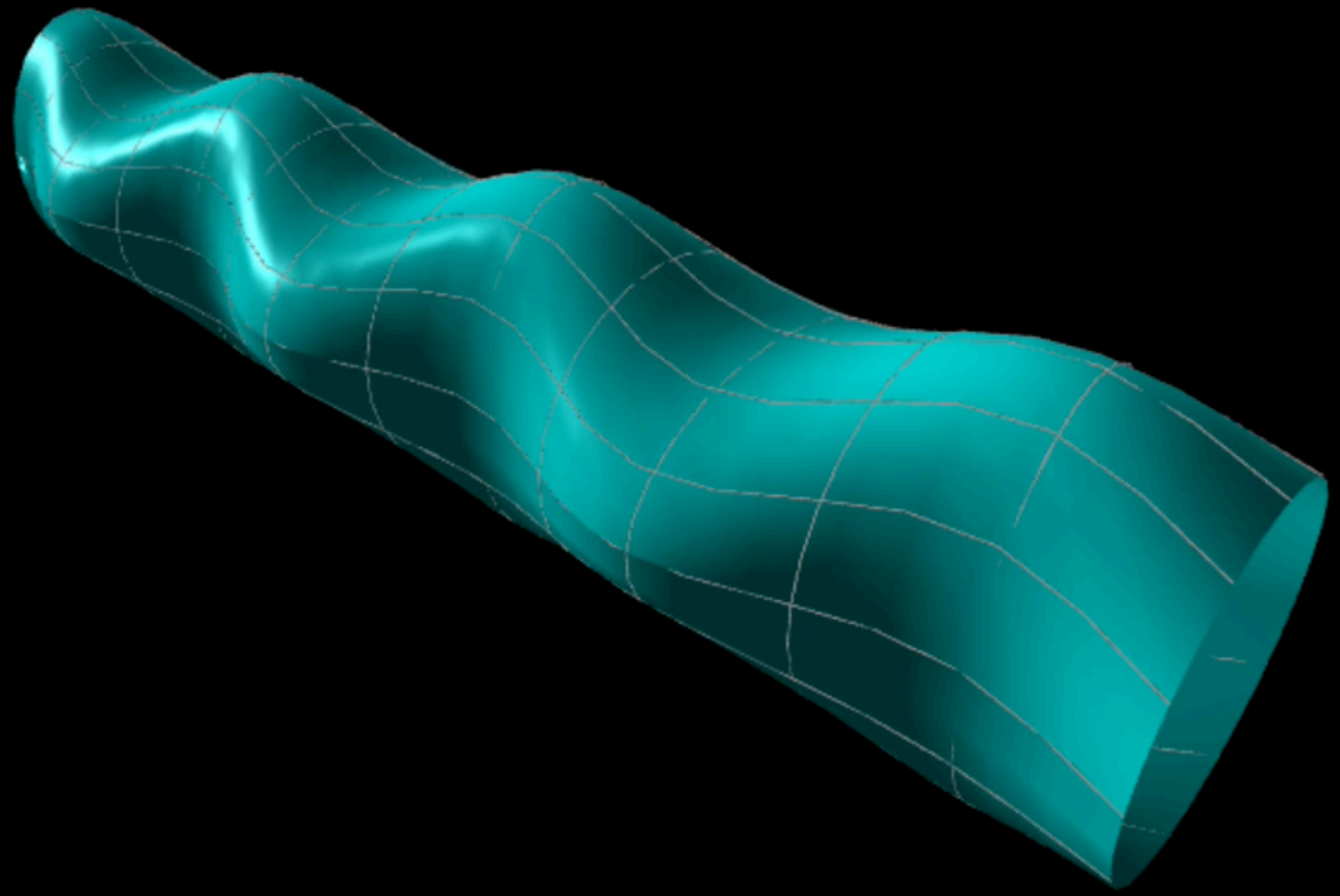
Osservatorio per le Onde Gravitazionali sulla Luna

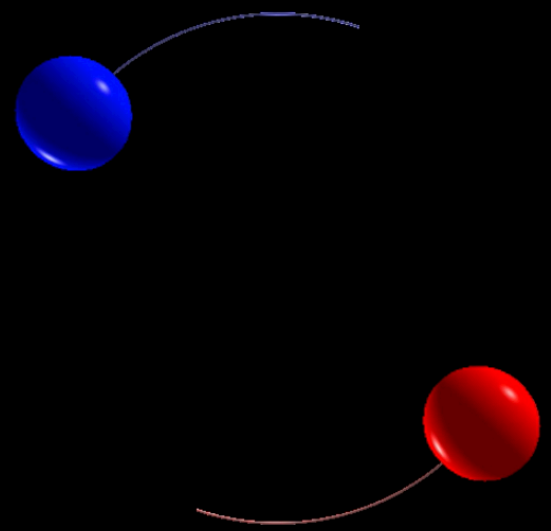
di Ferdinando Patat e Silvia Piranomonte

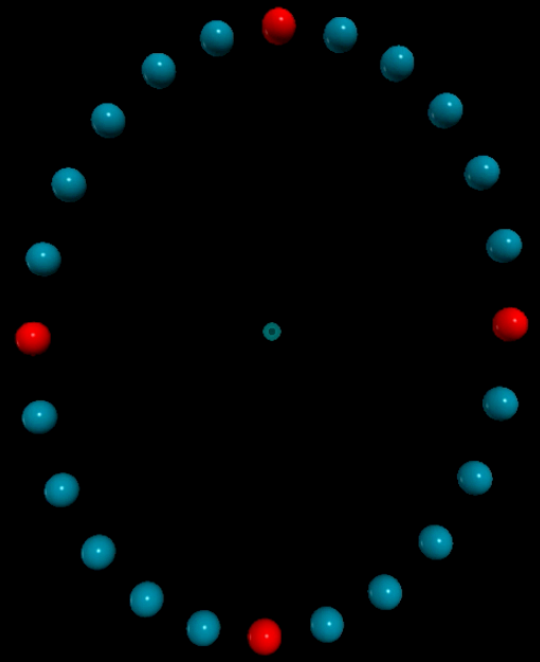


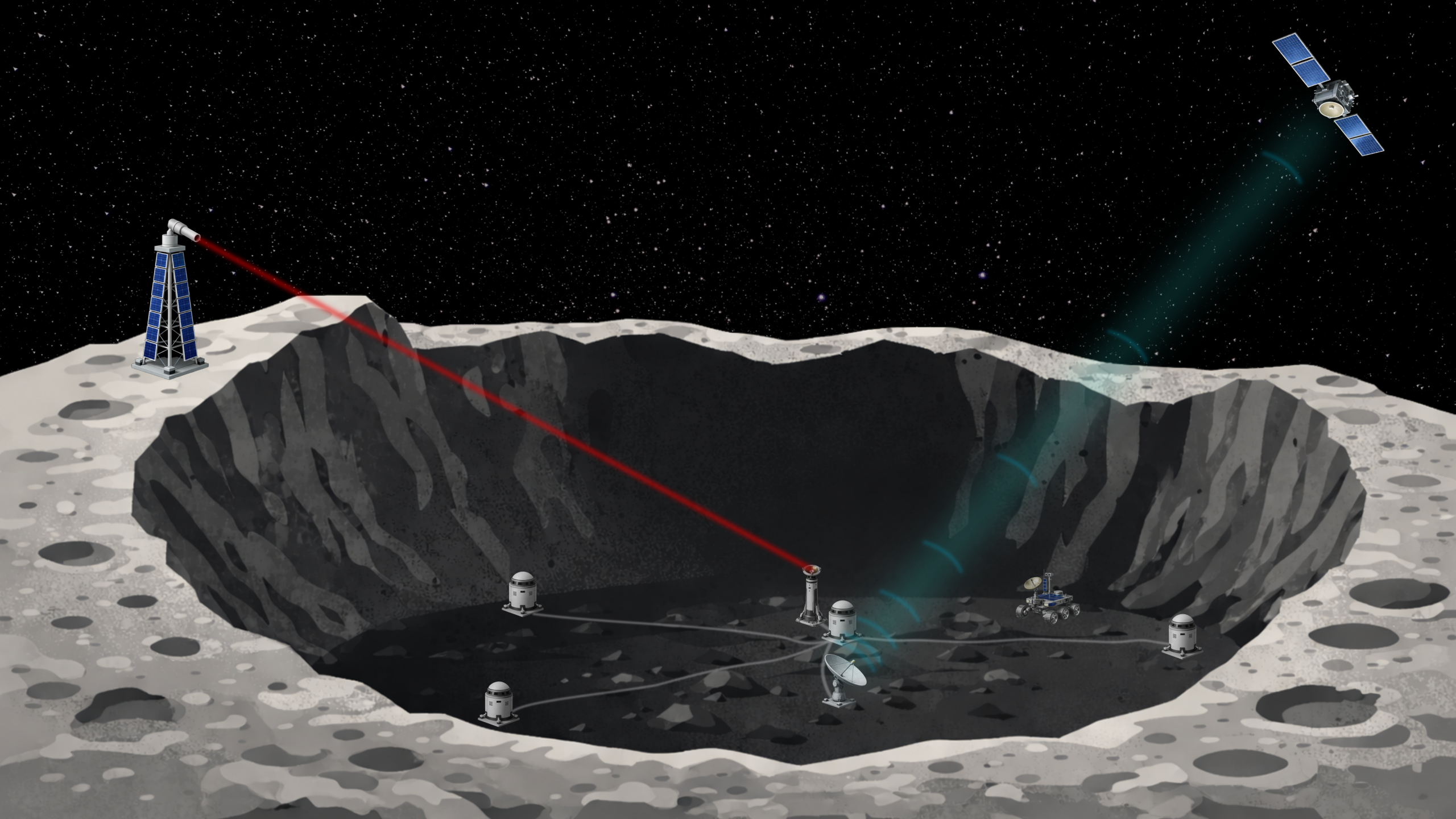












Music: Stay the Course – K. MacLeod

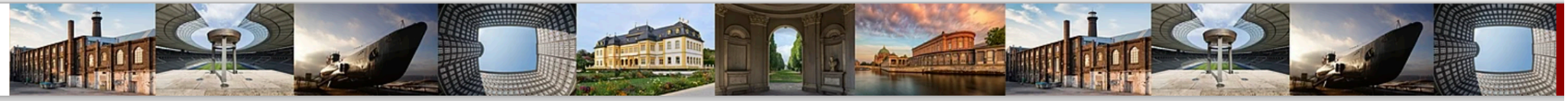
Credit: Lunar Reconnaissance Orbiter/NASA


Music: – Galactic Rap – K. MacLeod
Credit: Lunar Reconnaissance Orbiter/NASA

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Draft:Lunar Gravitational-Wave Antenna

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(Redirected from User:Nando Patat/LGWA draft)

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This may take 4 weeks or more, since drafts are reviewed in no specific order. There are 2,230 pending submissions waiting for review.

- If the submission is **accepted**, then this page will be moved into the article space.
- If the submission is **declined**, then the reason will be posted here.
- In the meantime, you can continue to improve this submission by editing normally.

Where to get help [show]

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History
Science objectives
Mission architecture
Comparison with Other Detectors
Development status
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See also
References
External links

The **Lunar Gravitational-Wave Antenna** (LGWA) is a proposed gravitational-wave observatory that would detect low-frequency gravitational waves by measuring vibrations of the Moon with an array of ultra-sensitive seismic sensors deployed on the lunar surface. It is intended to operate in the 1 mHz–1 Hz frequency band.[1]

The project was proposed in 2020 and is intended to bridge the frequency gap between space-based detectors such as LISA and terrestrial observatories such as LIGO, KAGRA, the Einstein Telescope and the Cosmic Explorer.[1][2]

History [edit source]

Early theoretical work [edit source]

The idea of using an entire celestial body for detecting gravitational waves was proposed by Joseph Weber.[3] Weber suggested that the Earth or the Moon could act as natural resonant antennas, with gravitational waves exciting their normal modes and the resulting motion being measured by sensitive gravimetric instruments.[4] Subsequent theoretical studies examined the response of planetary bodies to gravitational waves. Freeman Dyson derived the response of a free surface to an incident gravitational wave,[5] while Ari Ben-Menahem later developed a treatment for a spherically symmetric Earth and showed that gravitational waves could excite low-order spheroidal modes of the planet.[6]

Lunar seismology and experimental attempts [edit source]

The Apollo Lunar Surface Experiments Package deployed seismometers on the Moon between 1969 and 1977, providing the first long-term record of lunar seismic activity.[7][8] Among the instruments flown during the Apollo program was the Lunar Surface Gravimeter, which was partly conceived for gravitational-wave investigations.[9][8] The gravimeter suffered an engineering failure that prevented the experiment from operating as intended.[10][8] Later analyses concluded that its sensitivity would not have been sufficient

Public talks - done

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- *Cieli di Brera* (Milan, Italy)
- *Astronomiamo* (Rome, Italy)
- *Aeronautic Society* of Munich, LMU
- *Tap of Science* (Munich)
- *Astronomy for non astronomers* - ESO
- *Astrofisica del Futuro* (Artegna, Italy)

Public talks - planned

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- *Astrofisica del Futuro* (Asiago, Italy)
- *Festival della Scienza* (Genoa, Italy)
- Hamburg University (Germany)
- *Astrofisica del Futuro* (Tolmezzo, Italy)

Outlook/1

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- Presence at major astronomical venues
  - EAS 2027 (Vienna), SPIE 2028, COSPAR 2028
- Public web page & visual identity
- Media toolkit (flyer/slides/audio/video)
- Trailer/podcast
- Stickers, pin, T-shirt

Outlook/2

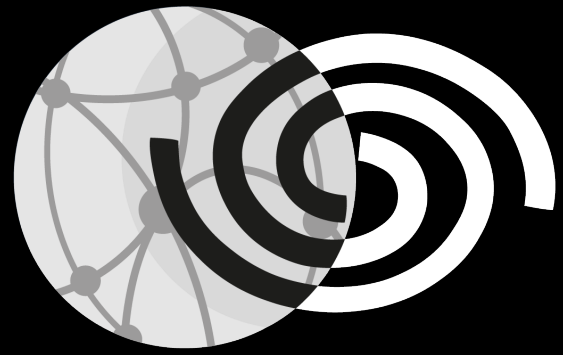
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- Futuro24 (Rainews 24)
- Le Science (Scientific American, Italian Edition)
- Universi (INAF)
- Other European journals
- Prepare for SoundCheck (if selected)

Fund rising

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- Apply for money to be used for outreach



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Music: Dark Times - K. McLeod

Credit: Lunar Reconnaissance Orbiter/NASA