
WELCOME

Korea–Italy Workshop on Multi-Messenger Astrophysics and Cosmology

25-28 October 2026

Hyung Mok Lee and Gor Oganesyan

KAST 한국과학기술한림원
The Korean Academy of Science and Technology

BASIC SCIENCE NETWORKING CENTER

GRAN SASSO SCIENCE INSTITUTE
SCHOOL OF ADVANCED STUDIES
Scuola Universitaria Superiore

Where are we?

2912 m






Long. Est 10 da Greenw.
MAR LIGURE
MAR TIRRENO
MAR ADRIATICO
MAR IONIO
SARDEGNA
SICILIA
Golfo di Venezia
Golfo di Genova
Golfo di Taranto
Golfo di Gaeta
Golfo di Salerno
Golfo di Catania
Golfo di Manfredonia
Golfo di Cagliari
Golfo di Orosei
Golfo di Palermo
Golfo di Trapani
Golfo di Castellammare
Golfo di Termini
Golfo di Gela
Golfo di Squillace
Golfo di Policastro
Golfo di Sant'Eufemia
Golfo di Patti
Golfo di Milazzo
Golfo di Noto
Golfo di Augusta
Golfo di Olbia
Golfo di Arbatax
Golfo di Asinara
Golfo di Porto Conte
Golfo di Oristano
Golfo di Terranova
Golfo di Castellammare
Golfo di Trieste
Golfo di Fiume
Golfo di Quarnaro
Golfo di Rimini
Golfo di Ancona
Golfo di Fano
Golfo di Pesaro
Golfo di Manfredonia
Golfo di Taranto
Golfo di Policastro
Golfo di Squillace
Golfo di Catania
Golfo di Noto
Golfo di Augusta
Golfo di Gela
Golfo di Trapani
Golfo di Palermo
Golfo di Castellammare
Golfo di Termini
Golfo di Patti
Golfo di Milazzo



https://laquila2026.it

GSSI History

An earthquake in 2009 devastated the city of L'Aquila….





Resilience..



..rebuilding the city through culture!

G S
S I

Four areas of high specialization with an international orientation:

- Astroparticle Physics
- Mathematics applied to natural, social and life sciences
- Computer Science
- Regional Science and Economic Geography

Three constitutional principles:

- Interdisciplinarity
- Innovative projects with the society
- Social engagement

G S
S I

Where are we located

POLARIS BUILDING
Rettorato (Regione)

AURORA BUILDING (Ex-ISEF)

ZENITH BUILDING (Ex-INPS)

HORIZON BUILDING
(Ex-Sanatrix)
under construction

SCIENCE CENTRE
(Ex Sanatrix)

NEXUS BUILDING
(Seic)
Almost ready

MARIANI

G S
S I

4

PhD courses
(4 years)

1

PhD course
(3 years)

220

PH.D. Students
(12 from the National PhDs)

89

Professors and
researchers

66

POST-DOC

43

Administrative
STAFF

49%

INTERNATIONAL
students

260

PhD awarded

Four areas of high specialization with an international orientation:

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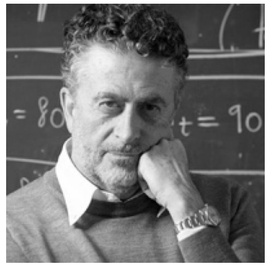
- Social engagement

G S
S I

The GravGroup

Faculty










Temporary Researchers





Post-docs








≥4th year PhD

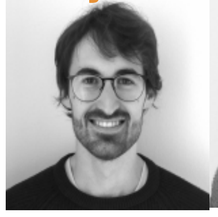








3rd year PhD







2nd year PhD




1st year PhD








Tech PhD





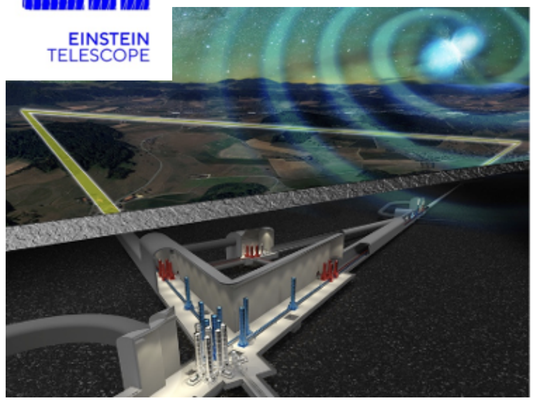
Our research focuses on **gravitational-wave and multi-messenger observations and modelling** to investigate: 1) fundamental interactions in relativistic regimes, 2) properties and evolution of compact objects, and 3) extreme electromagnetic transients such as gamma-ray bursts, kilonovae, supernovae, and tidal-disruption events.

Major Experiments

VIRGO



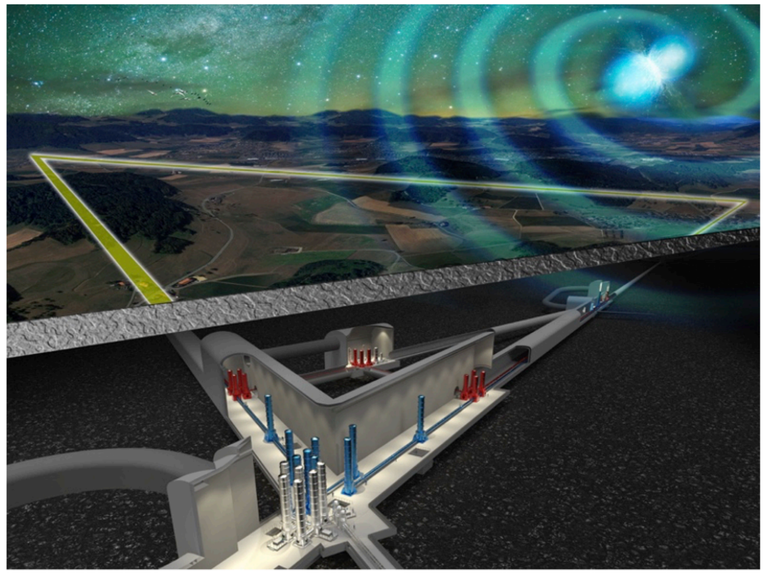
EINSTEIN TELESCOPE



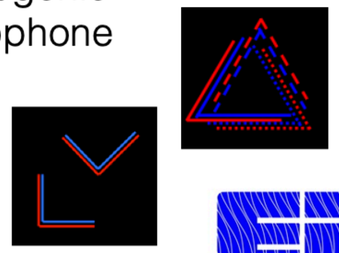


ESA | NASA
lisa

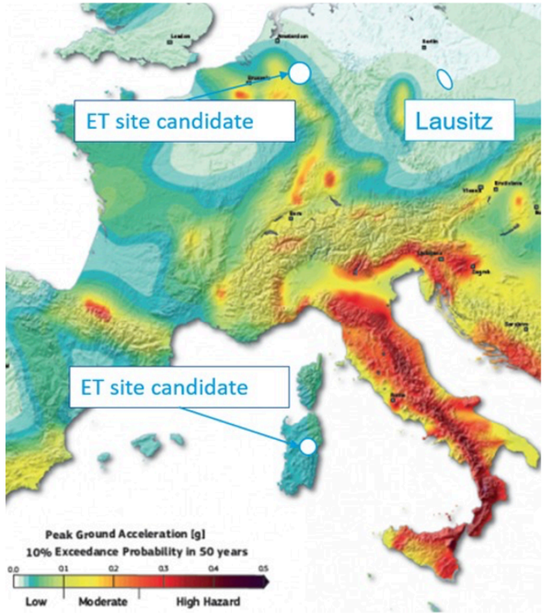
Einstein Telescope: the European next generation GW observatory



Triangular (10 km arms)
or 2L shape (15 km arms)
Underground
Cryogenic
Xylophone
…



EINSTEIN
TELESCOPE



ESFRI ROADMAP 2021
ET collaboration more than 2000 members

Geometry and site selection expcted by 2027

Operations around 2040

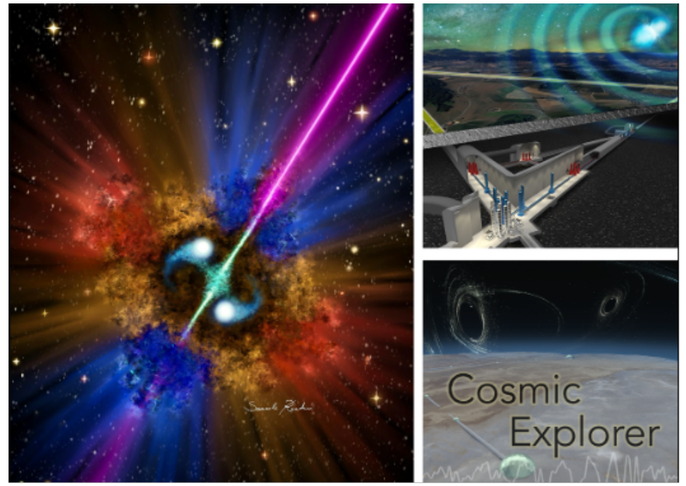
- GSSI professors hold strategic leadership roles within the governance, instrumentation, science;
- GSSI is a key node of the ET collaboration, largely contributing to the development of the hardware, science case and data-analysis.

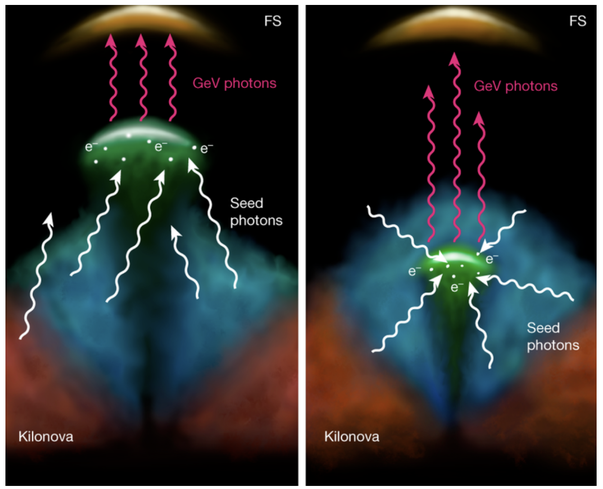
Electromagnetic Counterparts and Multi-Messenger Synergies

Highly active program of observations and modeling of electromagnetic counterparts to GW sources, spaning optical, X-ray, gamma-ray, and very-high-energy (VHE) bands.

Competitive observing time at ESO facilities (VLT, MUSE) and NASA and ESA satellites (HST, JWST, XMM-Newton), as well as access to public data from Fermi, Swift, Einstein Probe

Leading the development of scientific cases and synergies for ET and LGWA with future multi-messenger facilities, such as Crystal Eye, GRINTA, THESEUS, Vera Rubin Observatory, WST, CTAO





Multi-wavelength observations and modelling of GRBs, SNe and TDEs

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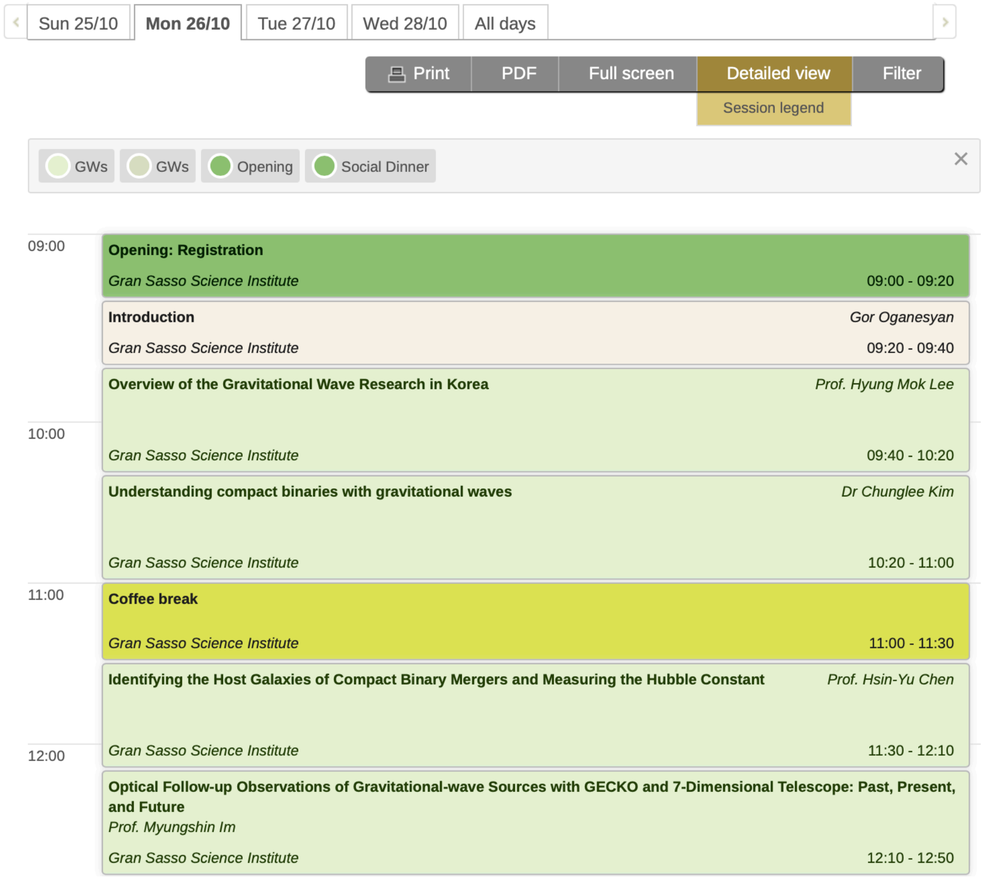
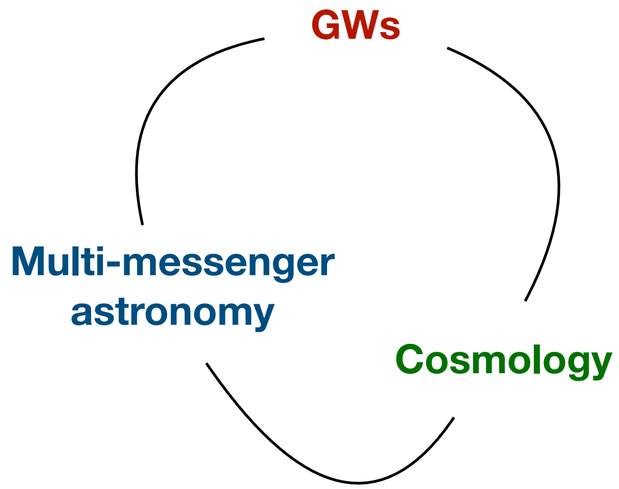
Programme

https://indico.kgwg.org/event/158/

Timetable —> Detailed view





upload the presentations in advance

Monday 26th October

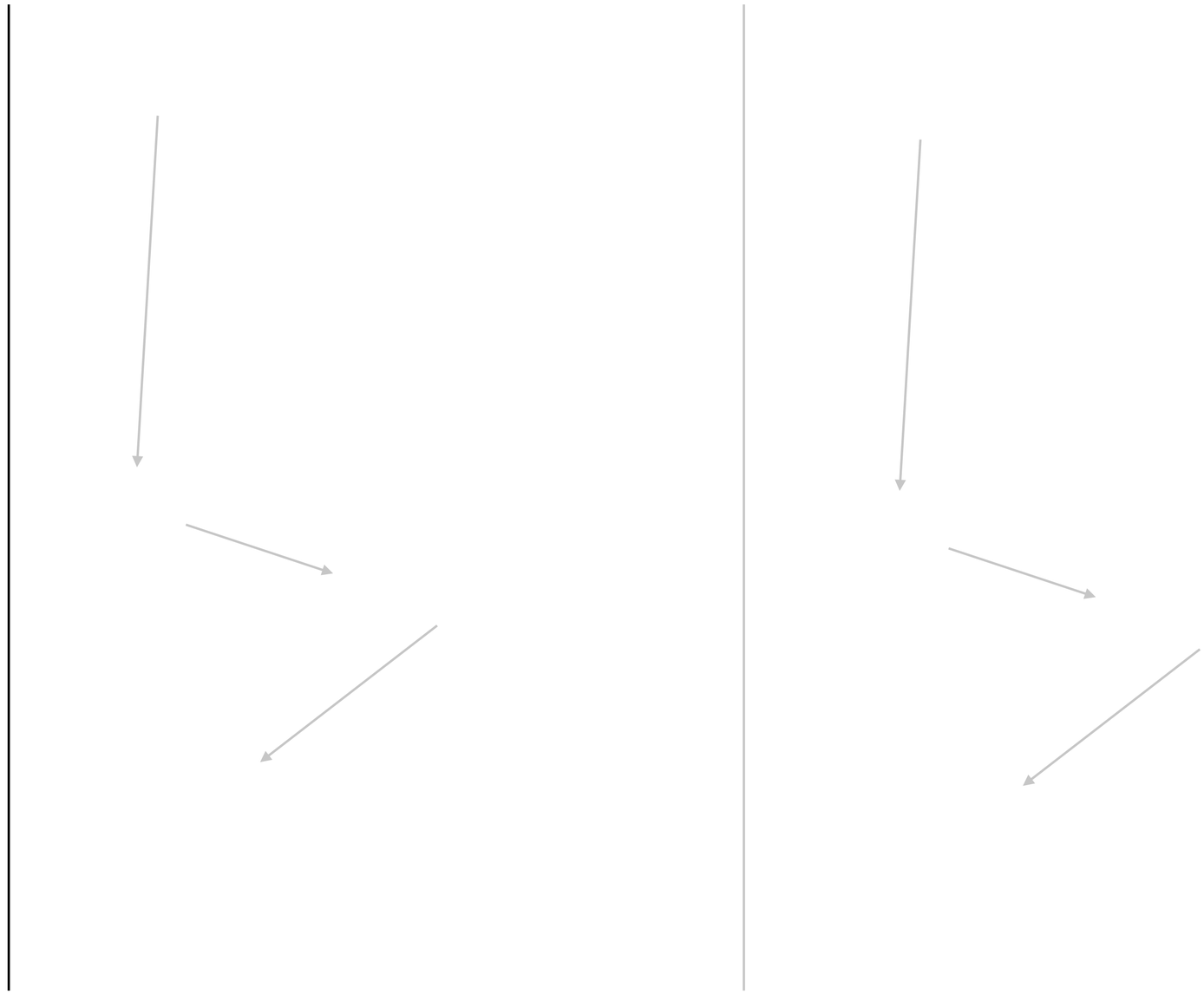
9:40

GW
science

Multi-messenger
astronomy & multi-probe
cosmology

GW instrumentation

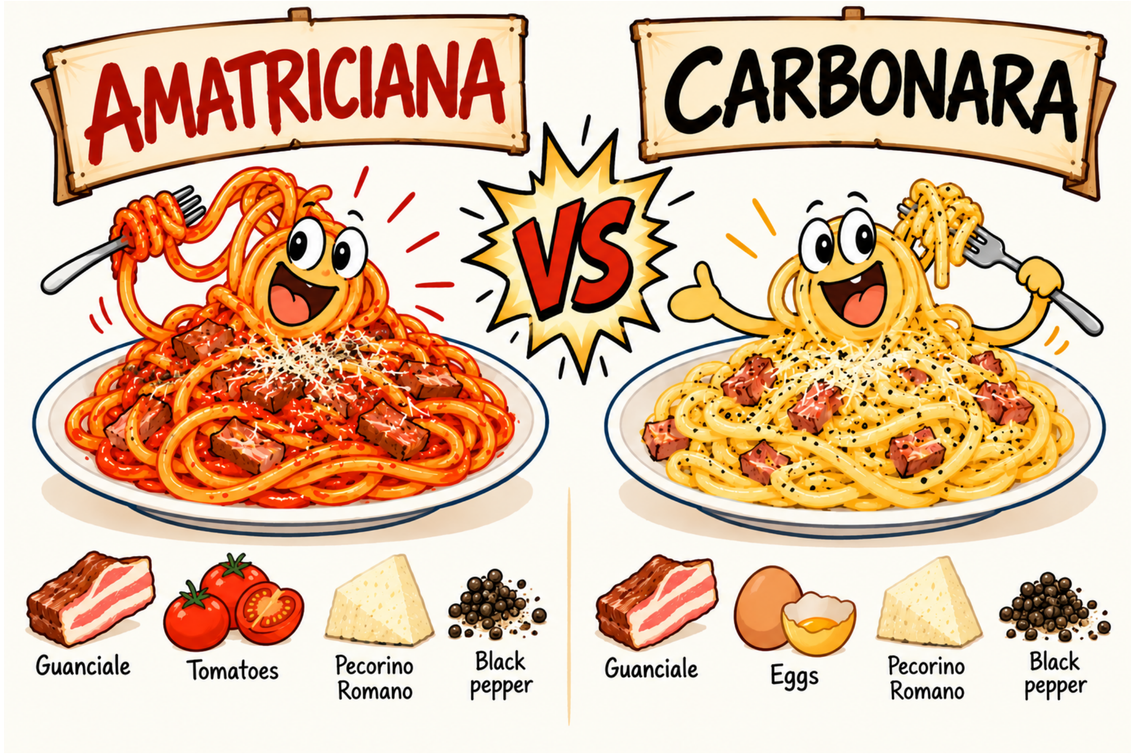
18:10 → 20:00 Social dinner



Social dinner

today at 8 pm





Tuesday

9:00

multi-probe cosmology

transient astronomy

GW instrumentation

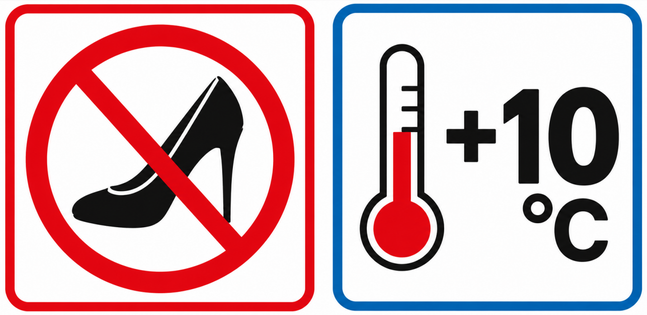
13:10

Lunch

Underground labs visit

Gran Sasso National Laboratories



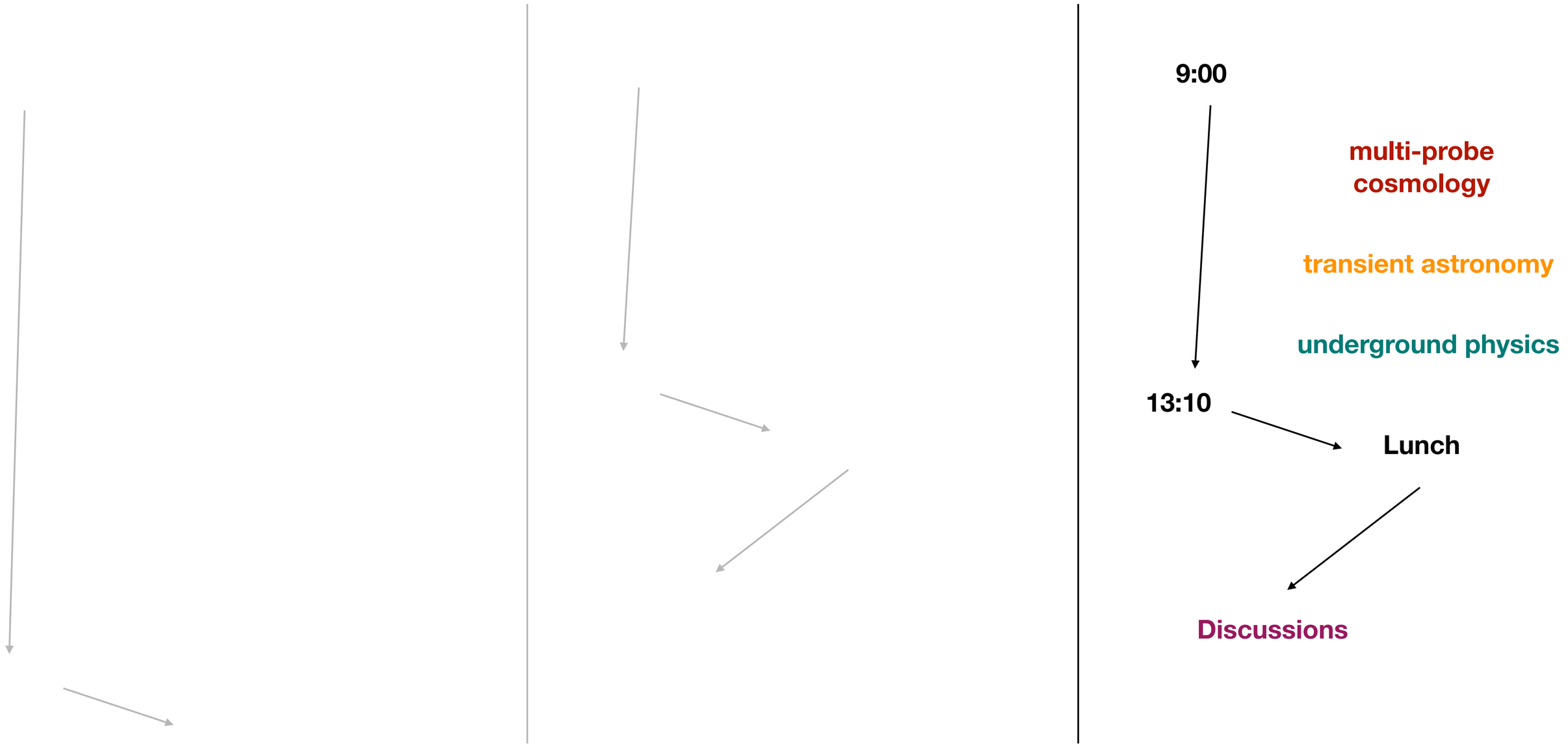




Your guide

Raoul Cesarano

Wednesday


9:00
multi-probe cosmology
transient astronomy
underground physics
13:10
Lunch
Discussions

Emergencies



Gor

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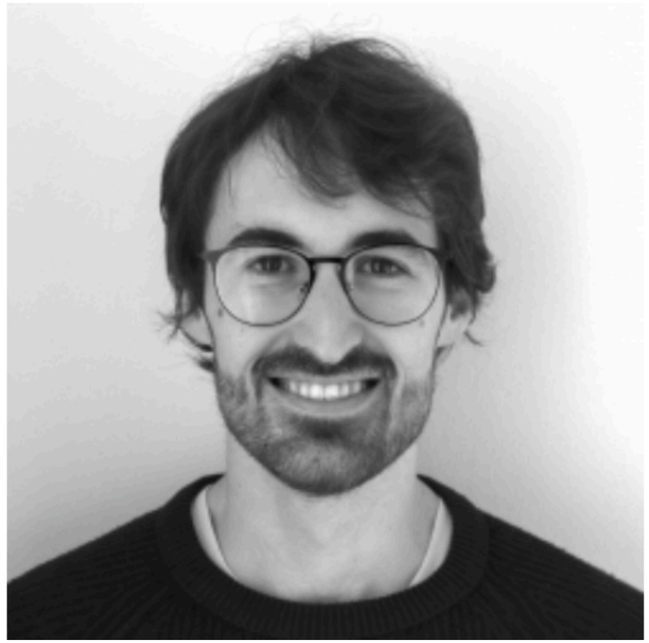

Matteo

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WhatsApp


WELCOME