

Gravitational Wave Advanced Detector Workshop 2021

17-21 May 2021



Welcome

GWADW has a long tradition of rather informal gathering to discuss gravitational wave detectors

Started by Syd Meshkov in Aspen, who was strongly convinced that good ideas need a relaxed environment to flourish

GWADW started touring the world: Girdwood, Waikoloa, Kyoto, Takayama, Elba, Fort Lauderdale

We were stopped but we really hope to come back to real meetings



Structure of GWADW

Plenaries on Zoom, connection instructions on indico

- Recorded talks and Q&A sessions
 - Monday and Tuesday 2 pm UTC
 - Group screenshot Tuesday at 3 pm UTC
- Poster Sessions
 - Wednesday and Thursday 2 pm UTC
- Workshop conclusions
 - Friday 2 pm UTC

- Recorded talks are available to participants until June 5
- Then decide whether to make them public



GWADW2021 Gravitational Wave Advanced Detector Workshop

17-21 May 2021
remote

[Eventbrite page](#)

Overview

- International Advisory Committee
- Second Announcement
- Scientific Programme
- Preliminary Program
- Call for Abstracts
- Timetable
- Connection Instructions
- Contribution List
- Registration
- Participant List

After a one-year long observation run and with laboratory activities almost stopped last year, work toward the next observation run by LIGO, Virgo and KAGRA is resuming. At the same time third generation observatories are gaining momentum, with Cosmic Explorer and Einstein Telescope and LISA progressing in their design, and other solutions being considered. Designing these instruments is an immense activity that is attracting more and more experimental groups.

R&D for the advanced detectors is resuming, this workshop offers the opportunity to discuss new ideas, progress and results toward the ultimate sensitivity of the current interferometers and the successful design of the future ones.



Structure of workshops

ALL TIMES UTC nominal duration 2 hours

Monday 9 pm

Coating Thermal Noise Room Capraia

Scattered Light Room Gorgona

Tuesday 4 am

Cryogenics Room Capraia

Low Frequency Room Gorgona

Tuesday 9 pm

Controls and Machine Learning Room Capraia

Quantum noise and Optical configurations Room Gorgona

Structure of workshops

ALL TIMES UTC nominal duration 2 hours

Wednesday 4 am

Coating Thermal Noise Room Capraia

Scattered Light Room Gorgona

Wednesday 9 pm

Cryogenics Room Capraia

Low Frequency Room Gorgona

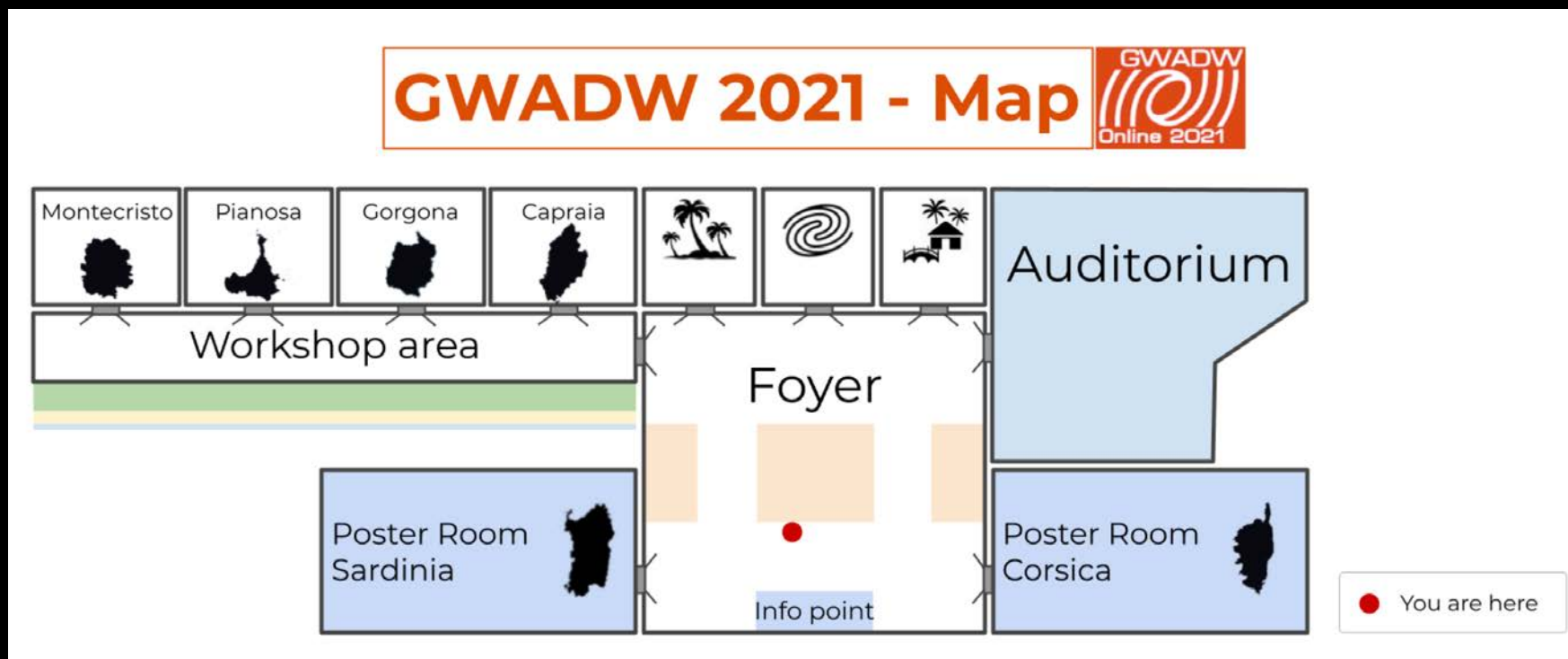
Thursday 4 am

Controls and Machine Learning Room Capraia

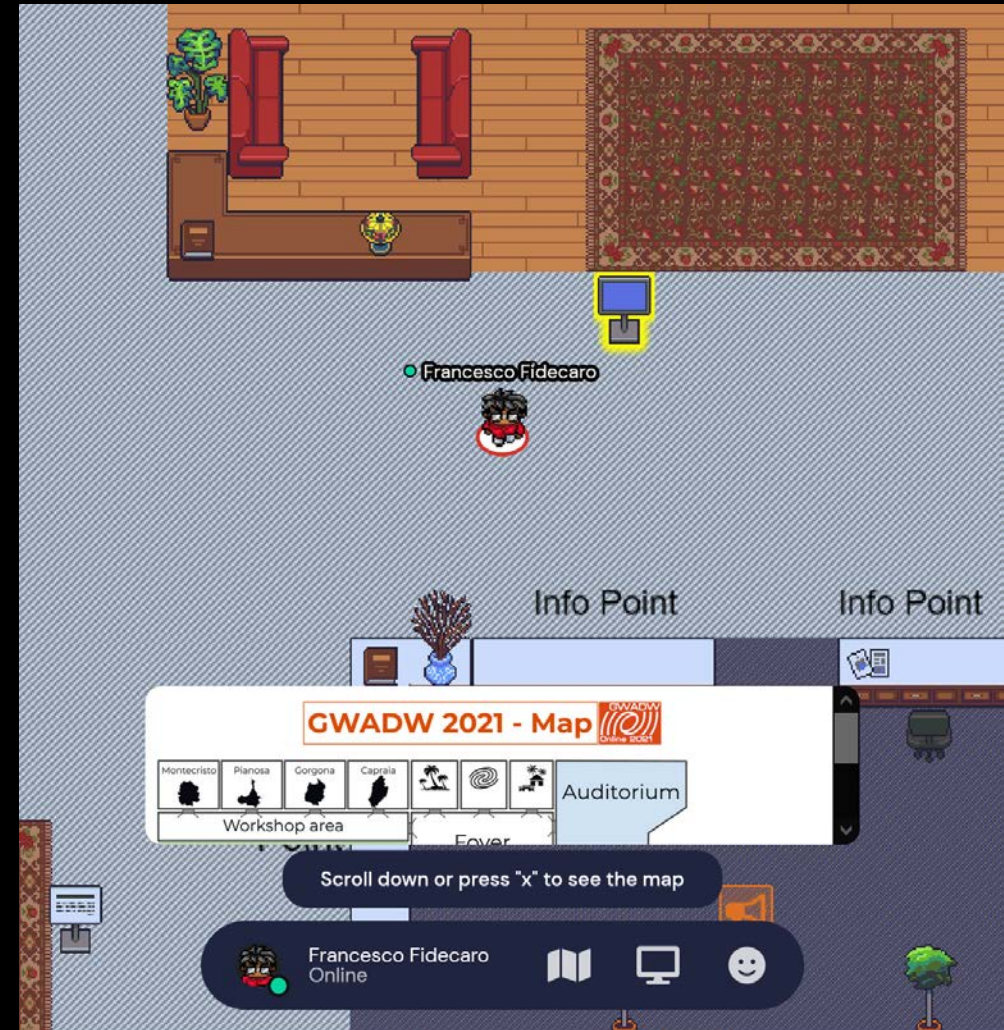
Quantum noise and Optical configurations Room Gorgona

Venue

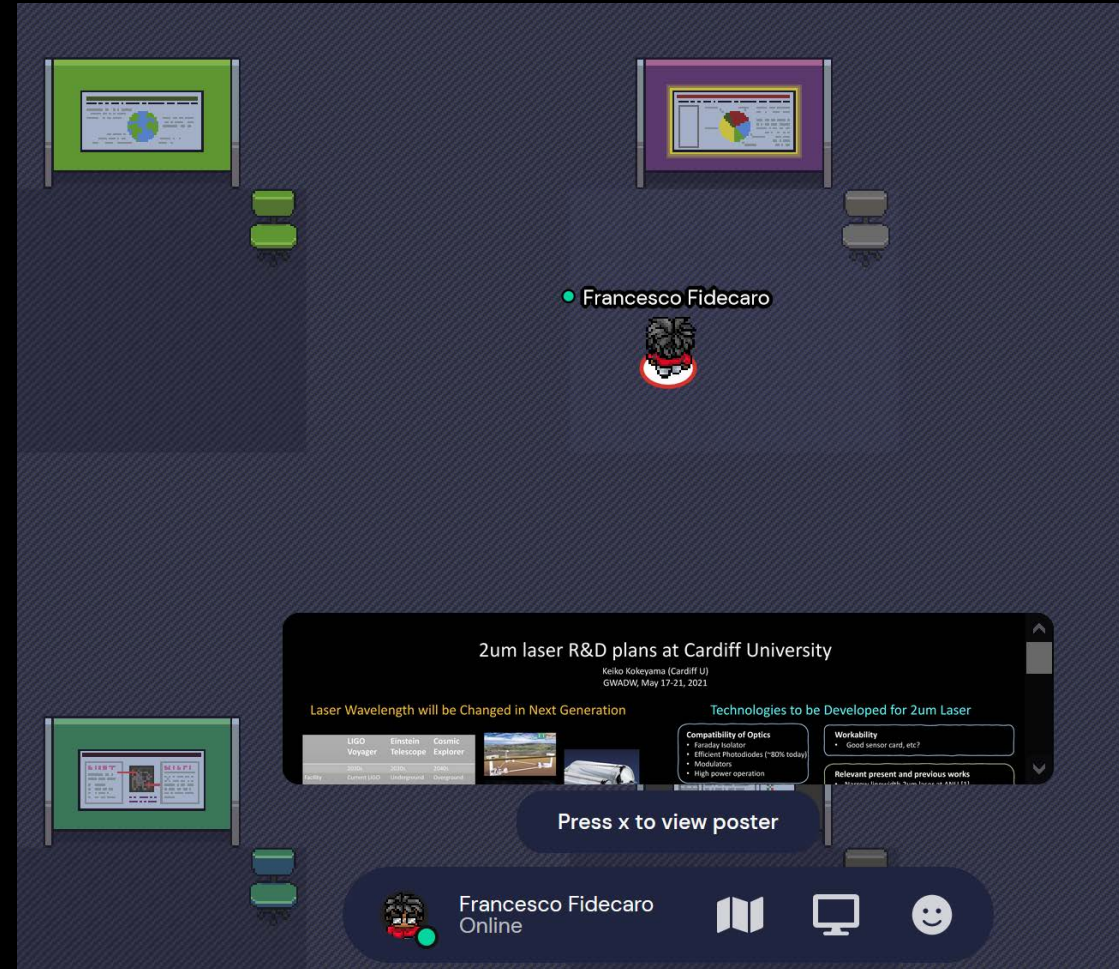
Based on gather.town™



- Move around using arrows on the keyboard
- Proposed contents glow yellow on the map and show up at the bottom part of the screen, type x to show them, close them top right
- Coming near someone else turns direct mike and camera connection on if enabled
- Private spaces allow people inside to talk one with other
- Entering auditorium or workshop rooms allows to connect to the zoom session
- In case of trouble refresh the page



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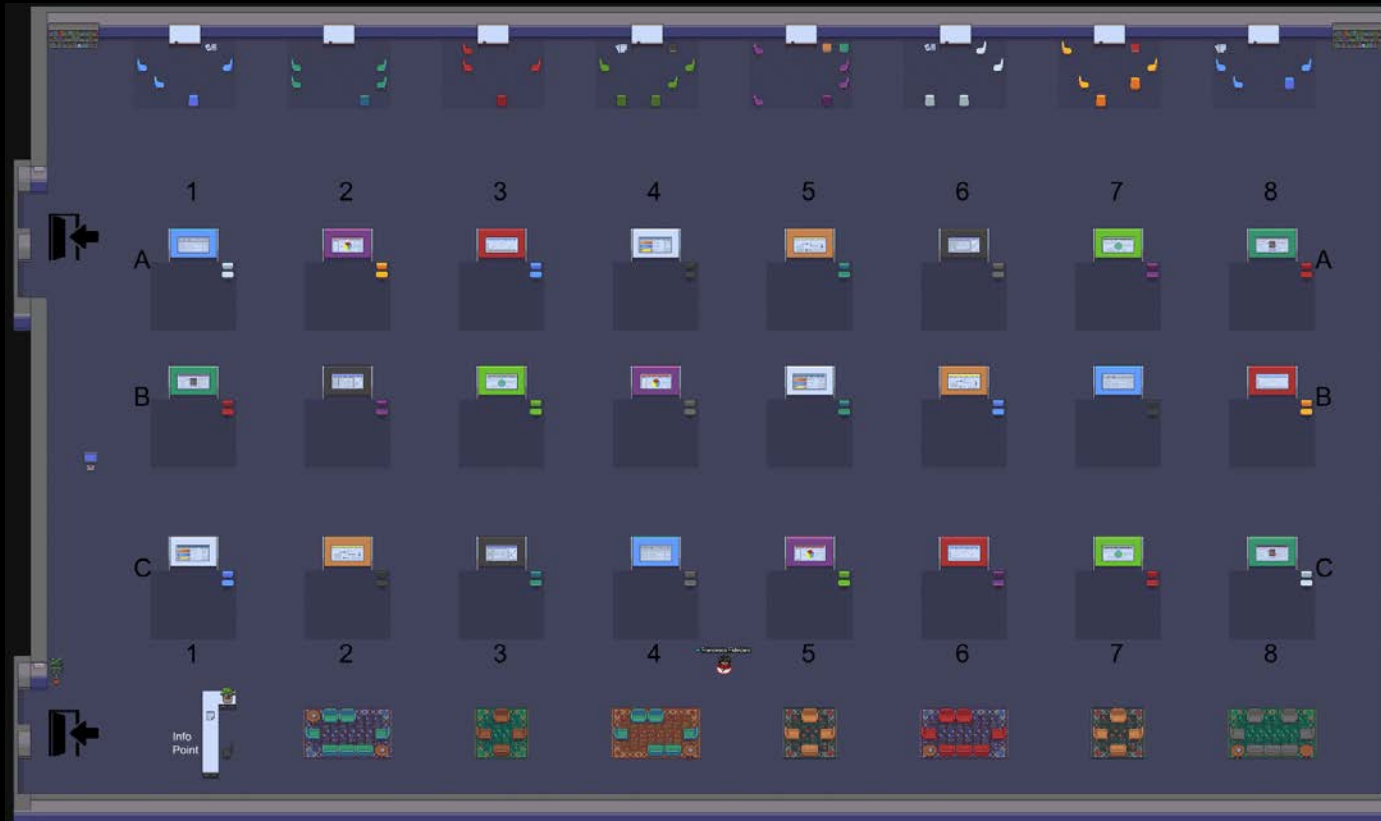


Poster sessions








The poster rooms are Corsica and Sardinia

Posters have been grouped by track

The poster location is available at the entrance



Plenary Session Monday May 17 2 pm UTC

16:00	Plenary Day 1 (until 17:00) ()	
16:00	General Relativity - Edward Porter (APC-Paris) ()	
16:30	Multimessenger Astronomy - Hsin-Yu Chen ()	
17:00	Plenary Day 1 (until 18:00) ()	
17:00	Space missions - Kentaro Somiya (Tokyo Institute of Technology) ()	 Q&A_Space.pptx 
17:30	Third generation design - Stefan Ballmer (Syracuse University) ()	Minutes 

May 17 2 pm UTC

Recorded talks: GW Physics - Edward Porter (APC-Paris) (until 07:25) ()	Recorded talks: Multimessenger Astronomy - Hsin-Yu Chen (until 07:00) ()
<p>The Science Case for the Einstein Telescope - Michele Maggiore (Geneva University) ()</p> <p>Recorded talk</p>	<p>Binary neutron star mergers - David Radice (The Pennsylvania State University) ()</p> <p>Radice_GWADW2021.pdf Recorded talk</p>
<p>On the nature of the remnants in mergers of compact binaries - Walter Del Pozzo (P) ()</p> <p>GWADW_WDP.pdf</p>	<p>Localization and early warning for BNSs by third generation detector networks - Yufeng Li ()</p> <p>Recorded talk files</p>
<p>Searching for Primordial Black Holes: The Role of 3rd Generation Gravitational Wave Detectors - Gabriel Franciolini (University of Geneva) ()</p> <p>Franciolini_slides.pdf Franciolini_talk.mp4</p>	<p>Impact of calibration uncertainties on cosmological measurements from gravitational wave sources - Yiwei Huang (MIT) ()</p> <p>YHuang_slides.pdf</p>
<p>Ranking the Love for the neutron star equation of state with third-generation detectors - Andrea Maselli (Sapienza University of Rome) ()</p> <p>Maselli_GWADW_2021.pdf Recorded talk</p>	
<p>Challenges and Opportunities of Ultra-High-Frequency Gravitational Wave Detection - Francesco Muia (University of Cambridge) ()</p> <p>GWADW_Muia.pdf Recorded talk</p>	

May 17 3 pm UTC

Recorded talks: Space missions - Kentaro Somiya (Tokyo Institute of Technology) (until 09:40) ()	
Progress towards the LISA orbiting observatory for gravitational waves - William Weber (TIFP) ()	Recorded talk
Space GW Antennae: DECIGO/B-DECIGO - Masaki Ando (University of Tokyo) ()	
Current progress in developing key technologies for TianQin project - Hsien-Chi Yeh (Sun Yat-sen University) ()	Recorded talk
Lunar Gravitational-Wave Antenna - Jan Harms (GSGC) ()	Recorded talk
Time-delay interferometry for LISA - Olaf Hartwig ()	Recorded talk
Enhanced noise suppression for LISA by combining cavity and arm locking control systems - Jobin Valliyil (Australian National University) ()	
LISA_arm_locking_Jobin_GWADW_2021.pdf	Recorded talk

Recorded talks: Third Generation Design - Stefan Ballmer (Syracuse University) (until 09:40) ()	
Einstein Telescope - update - Harald Lueck (AEI Hannover (MPI f. gravitational Physics / Inst. f. Grav.physics Leibniz Uni Hannover)) ()	Recorded talk
Cosmic Explorer: Status and Plans - Joshua Smith (California State University Fullerton) ()	Recorded talk
NEMO, the concept of a high frequency gravitational wave detector - Vaishali Adya (Australian National University) ()	
NEMO_Ady.mp4 NEMO_GWADW.pdf NEMO_GWADW_summary.pdf	Recorded talk
Listening to the Universe with Next Generation Ground-Based Gravitational-Wave Detectors - Ssohrab Borhanian (Penn State) ()	Recorded talk

Plenary Session May 18 2 pm UTC

16:00	Plenary Day 2 (until 17:00) ()
16:00	Second generation experience - NICOLAS ARNAUD (LAL ORSAY CNRS-IN2P3) ()
16:30	Beyond second generation - Viviana Fafone (ROMA2) ()
17:00	Plenary Day 2 (until 18:00) ()
17:00	R&D facilities and plans - Stefan Hild (Maastricht University) ()
17:30	Third generation infrastructures - Enrico Calloni (NA) ()

Zoom Screen shot










Recorded talks: Experience From Current Detectors - NICOLAS ARNAUD (LAL ORSAY CNRS-IN2P3) (until 11:20) ()			
Scattering light modelling and subtraction - Michal Was (LAPP/CNRS) ()	GWADW2021_scatter.pdf	Recorded talk	
Status of KAGRA mirrors - Dr Matteo Leonardi (NAOJ) ()	20210517_GWADW2021_KAGRA-MIR.pdf	Recorded talk	
Suspension fibers for large masses of Advanced Virgo Plus and beyond - Matteo Montani (Istituto Nazionale di Fisica Nucleare) ()	GWADW2021_montani.pdf	Recorded talk	
Locking of Central Interferometer of Advanced Virgo+ - Priyanka Giri (Istituto Nazionale di Fisica Nucleare) ()	GWADW21_GIRI.pdf	Recorded talk	

Recorded talks: Beyond Current Detectors - Viviana Fafone (ROMA2) (until 11:00) ()			
Post-O5 planning for LIGO - Peter Fritschel (M.I.T.) ()		Recorded talk	
Virgo post-O5 plans - Matteo Barsuglia (APC-CNRS) ()		Recorded talk	
Room Temperature Post O5 Coating Design - Steven Penn (LSC - Hobart and William Smith Colleges) ()			
Virgo Coatings Development in the Post-O5 timeline - Gianpietro Cagnoli (ILM-UCBL) ()	PO5_Virgo _Coatings.pptx	Recorded talk	
A Post-O5 LIGO with Crystalline Coatings - Steven Penn (LSC - Hobart and William Smith Colleges) ()			
KAGRA+, next step for KAGRA - Kazuhiro Yamamoto (Faculty of Science, University of Toyama) ()	KAGRA+GWADW2021.ppt	Recorded talk	

Recorded talks: Third Generation R&D Facilities - Koji Arai (Caltech) Stefan Hild (Maastricht University) (until 13:00) ()			
The Amaldi Research Center ET Cryogenic Lab in Rome. - Piero Rapagnani (ROMA1) ()			
2021_05_17 GWADW2021 Amaldi Center Lab_a.pptx	Rapagnani ARC ET Lab - Recorded talk		
ET-Pathfinder - Jan-Simon Hennig ()			
20210517_ETPathFinder_Hennig.pdf	Recorded talk		
The Sar-Grav Laboratory - Dr Domenico D'Urso (University of Sassari and INFN-LNS) ()			
Recorded talk	The Sar-Grav Laboratory.pdf		
Mariner: LIGO Voyager Prototype at the Caltech 40 m Lab - Dr Christopher Wipf (Caltech LIGO) ()			
Next generation gravitational wave detector research at the ANU - Bram Slagmolen (The Australian National University) ()			
ANU-Facility-Slagmolen-v2.mp4	ANU-Facility-Slagmolen-v2.pdf		
Glasgow 10m facility - Giles Hammond (University of Glasgow) ()	Recorded talk	Slides	

Recorded talks: Third Generation Infrastructures - Enrico Calloni (NA) (until 13:40) ()				
Seismic studies at Sos Enattos, the Sardinian site for the Einstein Telescope - Dr Luca Naticchioni (INFN Roma) ()				
GWADW21 SosEnattos LNAT.pdf				
Seismic and Newtonian noise estimate at Terziet - the Euregio Meuse-Rhine candidate site for Einstein Telescope - Soumen Koley (GSSI) ()				
Recorded talk	SeismicNNET-v3.pdf	SeismicNNET-v3.pptx		
Site-selection for next generation surface detectors - Bram Slagmolen (The Australian National University) ()				
3G-Site-Slagmolen.mp4				
3G-Site-Slagmolen.pdf				
Feasibility Project On the construction of the underground infrastructure for the Einstein Telescope (ET) Project -Sardinia - Maria Marsella (Sapienza University, Rome) ()				
SAR-GRAV underground laboratory (Sardinia): engineering challenges and key solutions. - Claudio Rossini (Sapienza DICEZ) ()				

Plenary Session May 21 2 pmUTC

16:00 → 18:30	Workshop conclusions	
16:00	Summary of Coating thermal noise Workshop Speakers: Elisabetta Cesarini (ROMA2) , Gianpietro Cagnoli (ILM-UCBL) , Stuart Reid (SUPA, University of Strathclyde)	🕒 20m 
16:20	Summary of Scattered light workshop Speakers: Alena Ananyeva (Caltech) , Andreas Freise	🕒 20m 
16:40	Summary of Cryogenics workshop Speakers: Kazuhiro Yamamoto (Faculty of Science, University of Toyama) , Paola Puppo (ROMA1)	🕒 20m 
17:00	Summary of Low frequency workshop Speakers: Dr Conor Mow-Lowry (Vrije Universiteit Amsterdam and Nikhef) , Masaki Ando (Department of Physics, Univ. of Tokyo)	🕒 20m 
17:20	Summary of Quantum noise and optical configurations workshop Speakers: Martina De Laurentis (Istituto Nazionale di Fisica Nucleare) , Sebastian Steinlechner (Maastricht University & Nikhef)	🕒 20m 
17:40	Summary of Controls and machine learning workshop Speakers: Bas Swinkels (Nikhef) , Gabriele Vajente (Caltech)	🕒 20m 
18:00	GWADW 2022 Speakers: Kentaro Somiya (Tokyo Institute of Technology) , Shinji Miyoki (Institute for Cosmic Ray Research, The University of Tokyo)	🕒 15m 
18:15	GWADW 2021 Conclusions Speakers: Francesco Fidecaro (University of Pisa and INFN) , Gabriele Vajente (Caltech) , Kentaro Somiya (Tokyo Institute of Technology) , Marica Branchesi (GSGC) , Rana Adhikari (Caltech) , Shinji Miyoki (Institute for Cosmic Ray Research, The University of Tokyo)	🕒 15m 

Final note

- A lot of space and time have been reserved to posters, visit them!
- This space is available for participants 24/24
- The organizers invite to meet also outside session time
- The Pianosa room is specially dedicated to Early Career Researchers
- The Montecristo room is free to use for other self organized discussions, write the subject at the entrance
- Many areas are ready to host small group discussions