EINSTEIN TELESCOPE

4th Einstein Telescope Annual Meeting

11-14 November 2025
Opatija, Croatia

Poster Sparkler Session

Please vote in the Poster Prize!

You can vote for as many posters as you like rating posters out of 5 stars.
Public vote is combined with jury vote and four winners chosen.

Poster Session is Wednesday 16.00-18.00.
Posters are on display throughout the conference.

<u>Voting will close end of the day Wednesday.</u>

EINSTEIN TELESCOPE

4th Einstein Telescope Annual Meeting

11-14 November 2025
Opatija, Croatia

Poster Sparkler Session

Tuesday 11th Nov

12.00

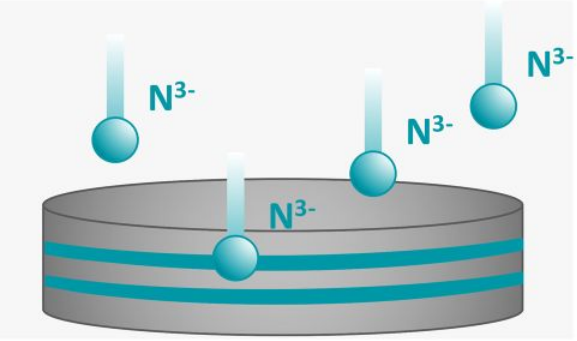
ET-0500A-25

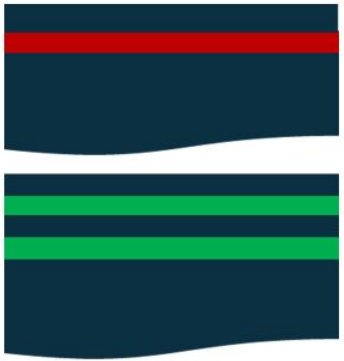
POSTER #8

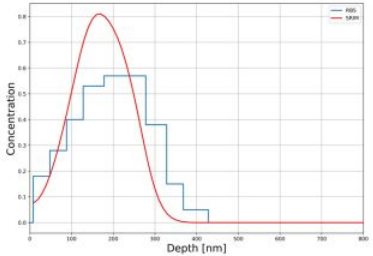
Optical Characterisation of Ion Implanted Layers for Advanced Gravitational-Wave Detection

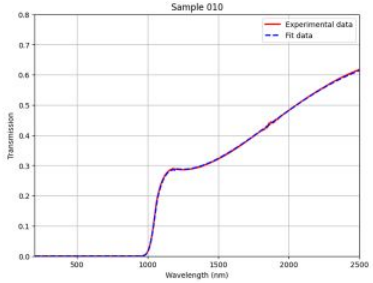
I. El Ouedghiri-Idrissi[1,2], L. Massaro[1,2], J. Wöhler[1,2], D. Diksha[1,2], J. Steinlechner[1,2], M. Chicoine[3], I. W. Martin[3], F. Schiettekatte[4], A. Amato[1,2]

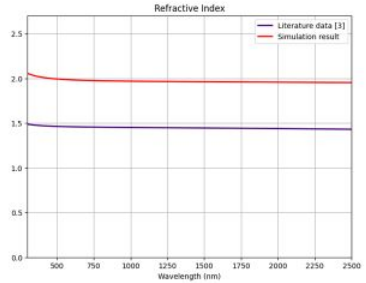
Ion implantation, next generation coatings, for next generation gravitational detectors!











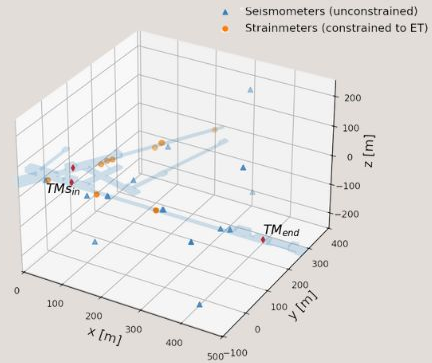
Come check it out for more details and let's shape the future together!

ET-TDS: ET-0488A-25

Silence of the Amps

POSTER #15

Mitigating Newtonian noise using fusion sensor arrays



HOW CAN FUSION SENSOR ARRAYS HELP TO MITIGATE NEWTONIAN NOISE IN THE ET?

STRAINMETER

What are they and what are the differences to seismometer?

OPTIMIZATION

How can we find the optimal positions for fusion sensor arrays?

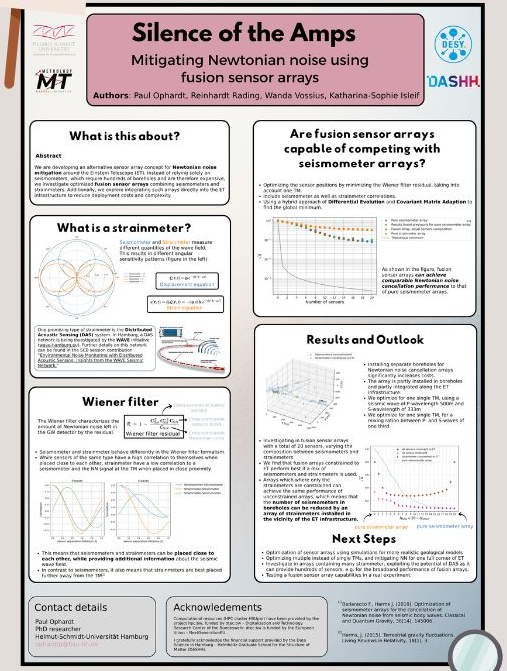
CONSTRAINED ARRAYS

Are sensor arrays constrained to the ET infrastructure able to cancel Newtonian noise effectively?

SEISMOMETER

STRAINMETER (E.G. DAS)

#15



Paul Ophardt, Helmut-Schmidt-Universität Hamburg

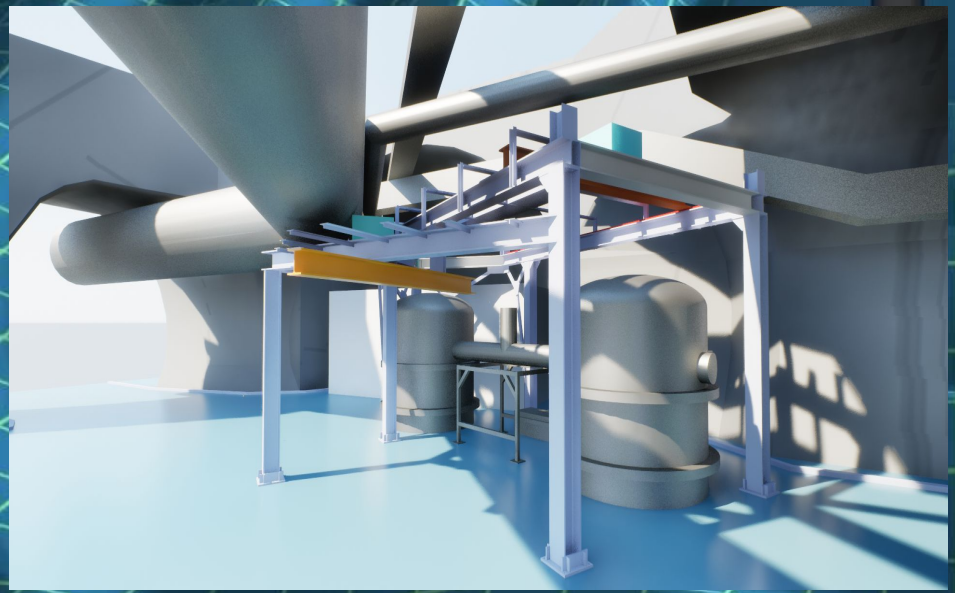
HELMUT SCHMIDT UNIVERSITÄT
Universität der Bundeswehr Hamburg

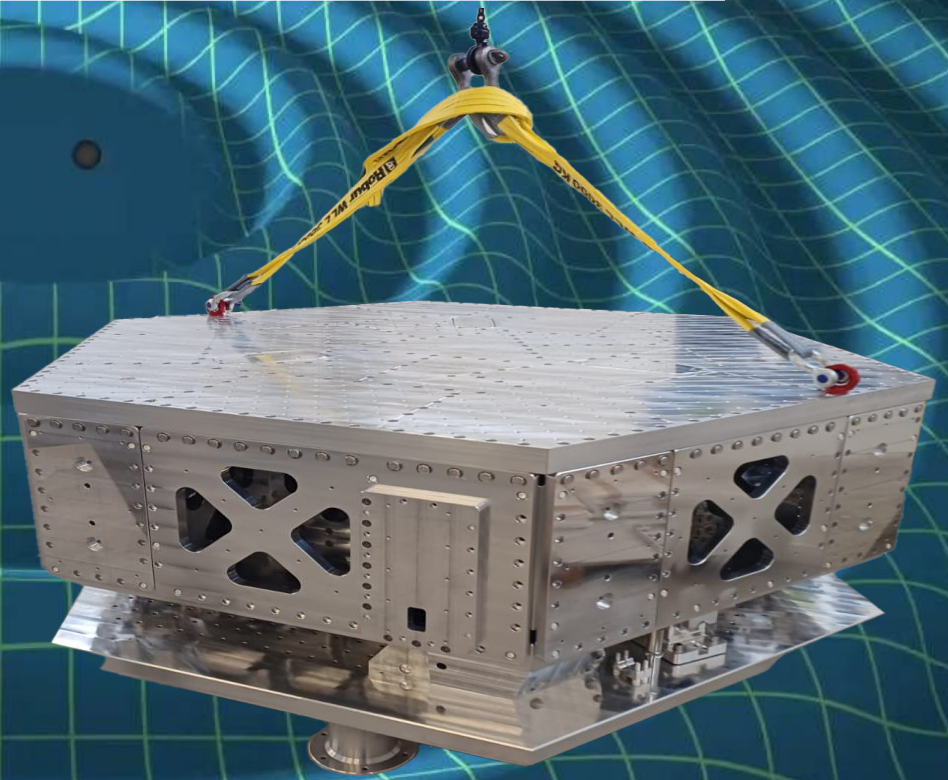
Building the Quietest Underground Platforms: GEMINI for the Einstein Telescope and Beyond

Tomislav Andric
GSSI / INFN-LNGS

POSTER #28

- **TDS link:** https://apps.et-gw.eu/tds/?r=19913
- Seismic isolation & control R&D for ET and LGWA
- 10 mHz–10 Hz active platform stabilization





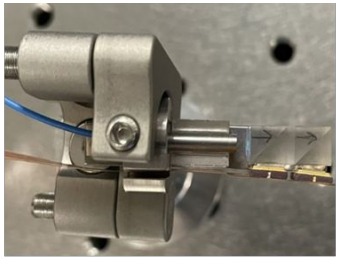
Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

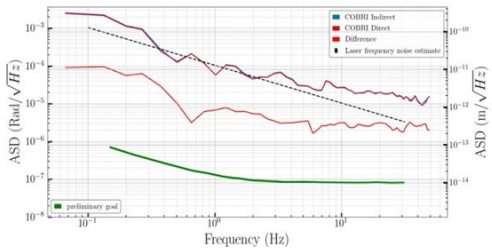
EINSTEIN TELESCOPE

Compact sensors for test mass readout using deep frequency modulation interferometry

POSTER #32

Jan-Niklas Feldhusen, Meenakshi Mahesh, Nils Leander Weickhardt, Tobias Eckhardt, Christian Darsow-Fromm, Hitesh Abichandani, Lea Carlotta Hügel, Katharina-Sophie Isleif, Oliver Gerberding





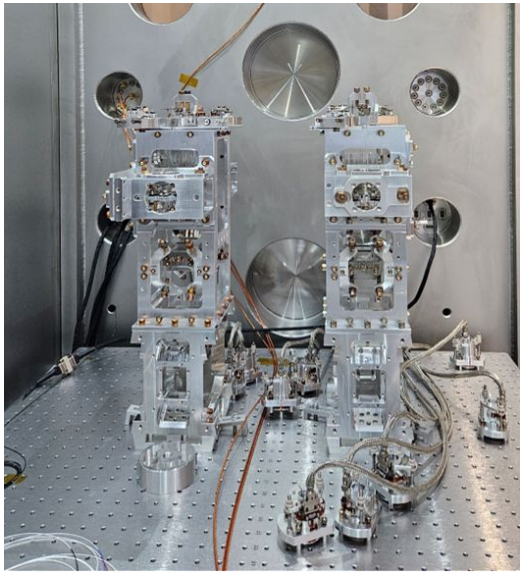
How do you build a compact sensor?

How do you prove the sensors sensitivity?

How small is a compact interferometric displacement sensor?

How can you do an absolute distance measurement with an *interferometric* sensor?

You already know about the COBRI and want to know the current status?



POSTER #50

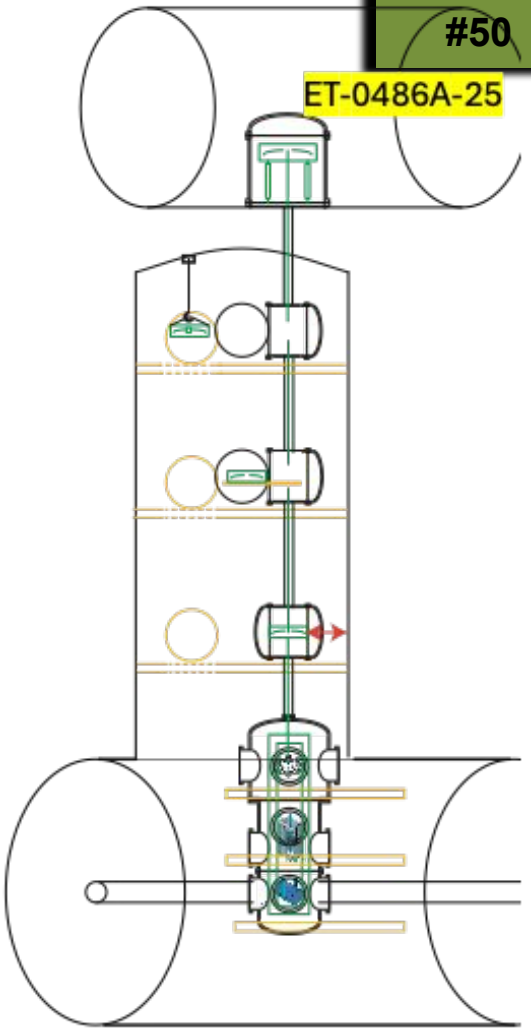
A DUAL TUNNEL STRUCTURE FOR THE EINSTEIN TELESCOPE

Riccardo DeSalvo & al.

Replaces the large caverns:

- Maintains flexibility & improve the science case
- Declutters the space around the cryostat
- Allows easier interferometer lock acquisition
- Push seismic attenuation out of the picture
- Safer and easier side-access installation or maintenance from intermediate floors
- **Less than ½ as expensive as the large caverns,** and safer!

How? **Come!** **Seeing is believing!**



E-TEST Seismic Isolation Update

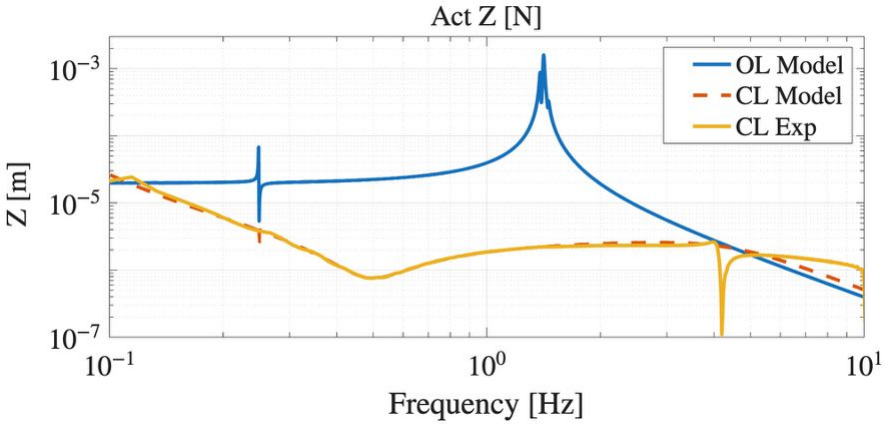
Precision Mechatronics Laboratory

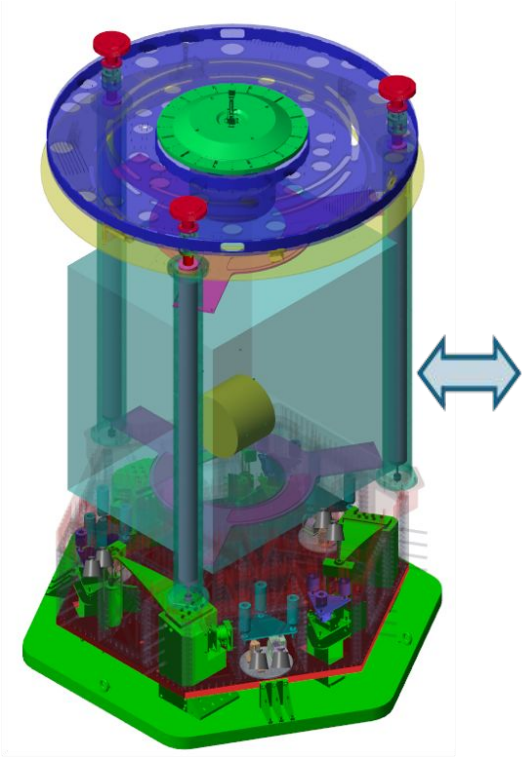
POSTER #60

Christophe Collette, T. Giordano, M. H. Lakkis, B. Thibaut, M. Zeoli, A. Amorosi, M. Teloi, H. Singh
ULiege, ULB, UCLouvain

The low-frequency isolation recipe:
Active Platform + Inverted pendulum

!! First experimental validations at full-scale on the poster !!





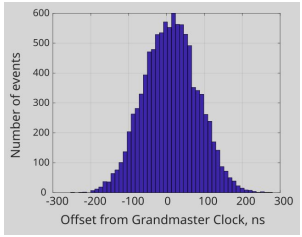
christophe.collette@uliege.be

Time Synchronization for Environmental Sensor Networks in the Einstein Telescope Using PTP

POSTER #61

M. Suchenek msuchenek@astrouw.edu.pl

Astronomical Observatory of the University of Warsaw
Nicolaus Copernicus Astronomical Center of the Polish Academy of Sciences

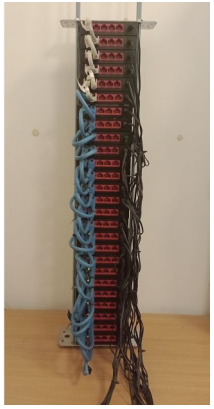


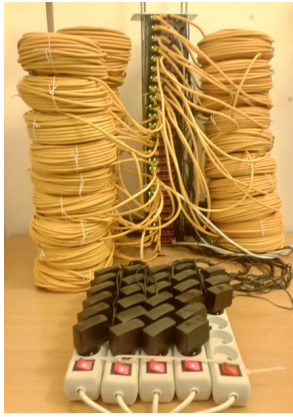
The Problem:
Environmental noise (seismic, infrasound, acoustic) can mask the faintest signals unless it's precisely measured and subtracted

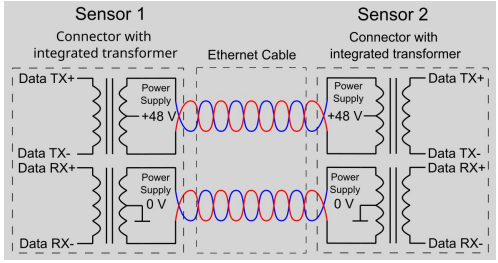
How to **connect sensors to form a network**? → Sensors interconnected via **ethernet switches**

How to **synchronise data from sensors**? → Each sensor includes an integrated switch, enabling **daisy-chain topology**

How to **power** them without additional connections? → **Power and data** delivered through **PoE++** (Power over Ethernet Plus Plus)







TDS link: 18226

4th Einstein Telescope Annual Meeting - Opatija, Croatia

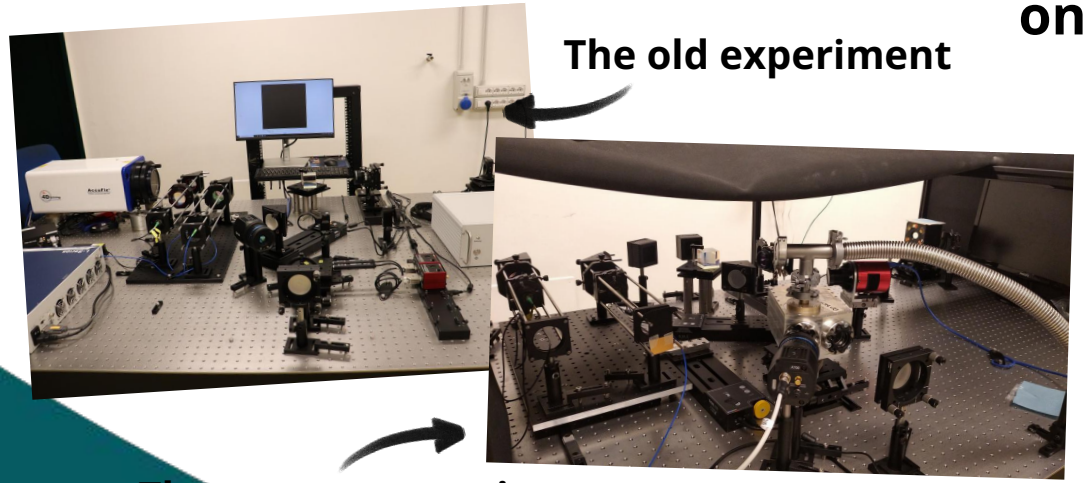
11-14 November 2025

Advancements in the ETIC-ADONI optical test bench.

S. Lombardi[1], T. Lapucci[2], A. Riccardi[2], C. Del Vecchio[2], L. Carbonaro[2], A. Puglisi[2], S. Esposito[2]
[1]University of Padova, INAF Padova, [2]INAF Firenze, Astrophysical observatory of Arcetri

POSTER #62

Ready to measure Non-Axial thermal actuation on a IR absorbing Glass Sample.



The old experiment

The current experiment

ET TDS: ET-0490A-25

PIANO NAZIONALE RIPRESA E RESILIENZA
MISSIONE 4 – COMPONENTE 2 – INVESTIMENTO 3.1
PROGETTO: ETIC CODICE PROGETTO: IR0000004

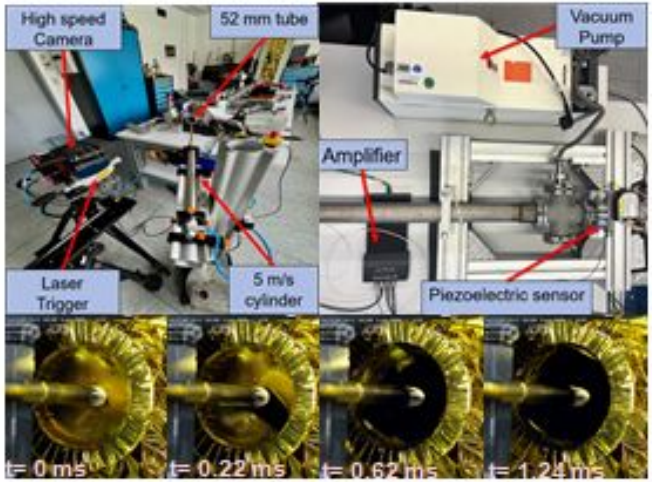
Finanziato dall'Unione europea
NextGenerationEU

Italiadomani
PIANO NAZIONALE DI RIPRESA E RESILIENZA

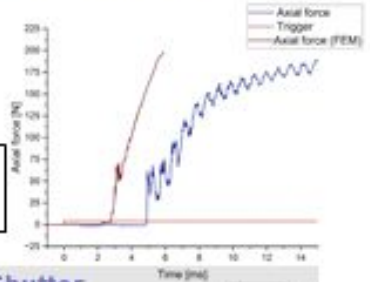
FROM VACUUM TO ATMOSPHERE: PRESSURE FRONT PROPAGATION IN VACUUM TUBES

POSTER #72

M. Elbashbishy, F.M. Esser, U. Giesen, H. Glückler, C. Hoven, G. Natour, E. Rosenthal, L. Semke



Owr goal is to design a fast shutter system for ET.



High speed camera, laser trigger, and two hydrophones were used to measure the speed of shock waves due to a change in pressure of 1 bar.

leaks in vacuum tubes create fast pressure waves that can damage sensitive components, so mechanical shutters are used to protect them.

VAT Vakuumventile AG. VAT Vacuum Valves https://vatvalve.vatstatic. com/uploads/downloads/file/VAT_Catalog_2018-vat-catalog- 2018-e-web.pdf.

EINSTEIN TELESCOPE

RWTH AACHEN UNIVERSITY

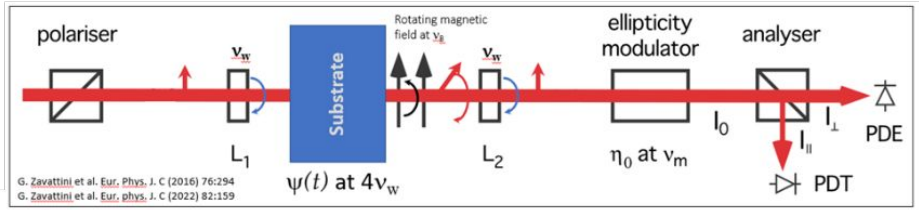
JÜLICH Forschungszentrum

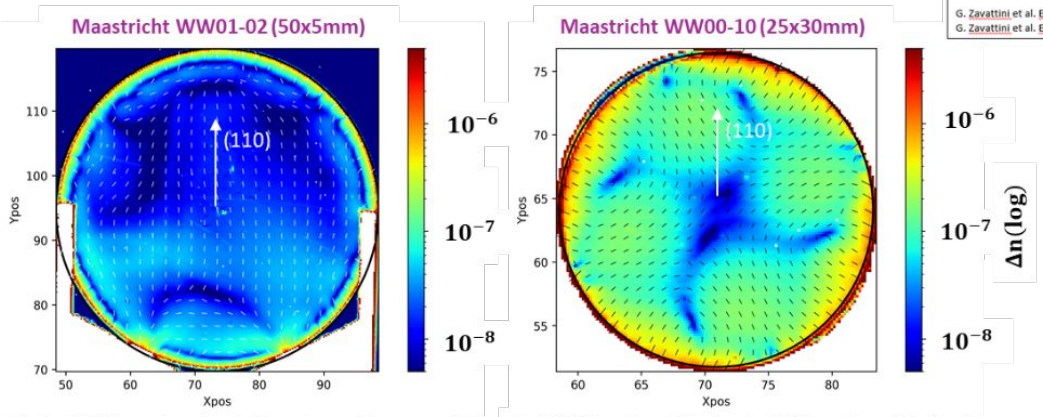
POSTER #74

Birefringence measurements of Silicon substrate for Einstein Telescope

N. Canale[1], F. Cescato[1], F. Della Valle[2], G. Di Domenico[1], **A. M. Mailliet[1]**, L. Malagutti[1], E. Mariotti[2], A. Mazzolari[1], M. Romagnoni[1], G. Zavattini[1]
[1]University of Ferrara and INFN – Ferrara, [2] University of Siena and INFN – Pisa,

Birefringence mapping of silicon substrates using a highly sensitive optical polarimeter





$\Delta n^{centre} \approx 2 \times 10^{-8}$ (dominated by gravity), lateral polishing

$\Delta n^{centre} \approx 2 \times 10^{-8}$; $\Delta n^{poles} \approx 3 \times 10^{-7}$
No lateral polishing

- 4 pole structures of higher birefringence with thickness > 5mm and no lateral polishing
- Possible influence of lateral polishing
- $\Delta n \sim 10^{-8}$ in the central region
  → ET sensitivity: $\Delta n \lesssim 10^{-8}$

ET-TDS: ET-0485A-25

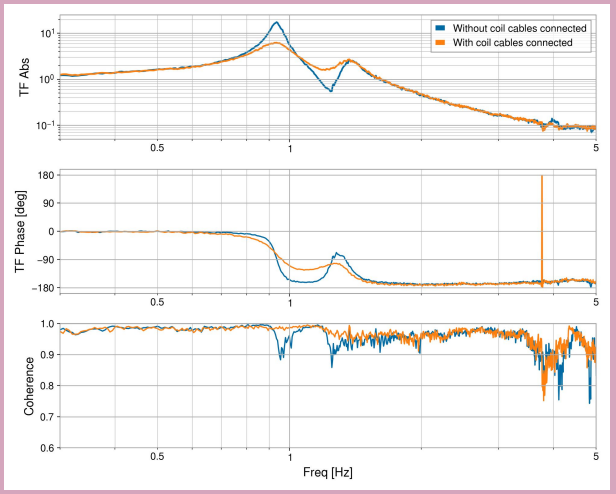
INFN Istituto Nazionale di Fisica Nucleare
ET ITALY
Finanziato dall'Unione europea NextGenerationEU
Ministero dell'Università e della Ricerca
Italiadomani
Università degli Studi di Ferrara

Commissioning of the OmniSens Isolation System

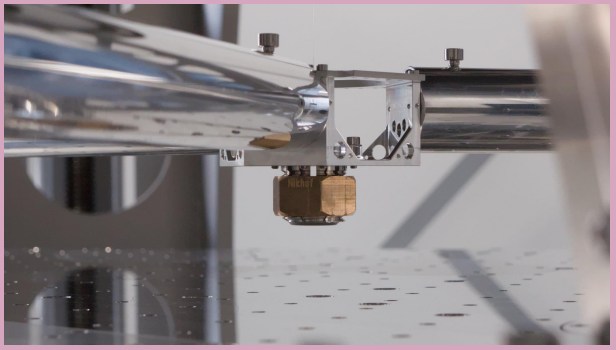
POSTER #78

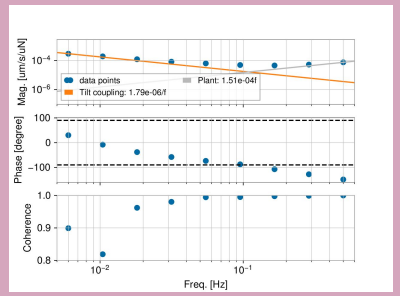
Active Isolation Platform for 6D Interferometric Inertial Sensing

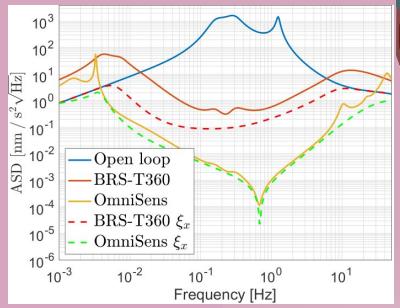
Pooya Saffarieh[1], **Abhay Karia (Presenter)[1],** Michele Valentini[1], Armin Numic[1], Nathan Holland[1], Jesse van Dongen[1], Alexandra Mitchell[1], Zhao-Qing Lin[1], Tim Kortekaas[1], Joe O'Dell[2], Barnaby Mathews[2], Conor Mow-Lowry[1]
VU Amsterdam and NIKHEF, Rutherford Appleton Labs UK

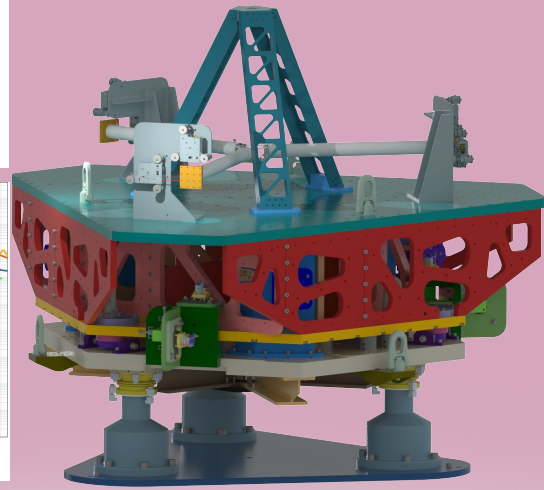


- OmniSens is an active isolation system based on six degrees of freedom interferometric sensing of a torsion pendulum like reference mass. The poster presentation here aims to communicate updates of the commissioning of the OmniSens ISI and installation of the reference mass as shown in the pictures. A detailed talk on optimal controls is to be presented by one of the authors Pooya Saffarieh.









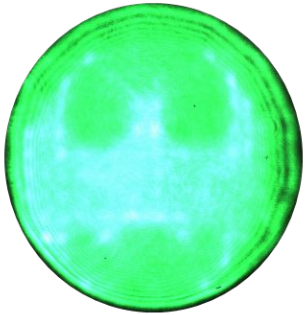
Adaptive aberration control for ET-HF using deformable mirrors

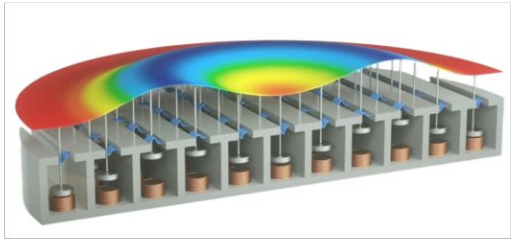
POSTER #124

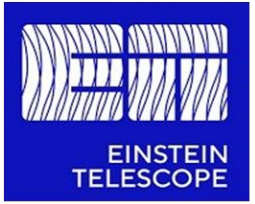
L. Aiello, E. Cesarini, M. Cifaldi, L. A. Corubolo, V. Fafone, M. Ianni, M. Lorenzini, D. Lumaca, Y. Minenkov, I. Nardecchia, A. Rocchi, C. Taranto

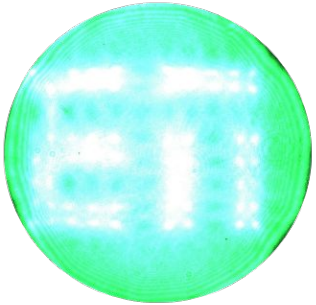
- ET-HF expected circulating power: up to 3 MW.
- High power reduces signal-to-shot noise ratio…
- …but increases optical aberrations.
- Adaptive optics has the potential to improve the aberrations control.
- How?

Come by poster #124 for more details about it!









ET-TDS: ET-0484A-25

Finanziato dall'Unione europea NextGenerationEU · Ministero dell'Università e della Ricerca · Italiadomani · ET ITALY Einstein Telescope

STRAY LIGHT INDUCED NOISE STUDY IN ET-LF's CRYOAREA

POSTER #107

TDS link: ET-0493A-25

E. Vallejo-Pagès

Institut de Física d'Altes Energies (**IFAE**), Barcelona Institute of Science and Technology, F-08010 Barcelona, Spain

KIT's DISTRIBUTION OF THE CRYOAREA BAFFLES

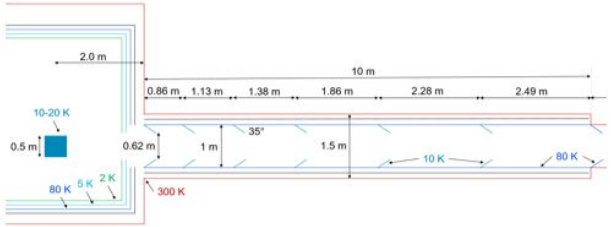
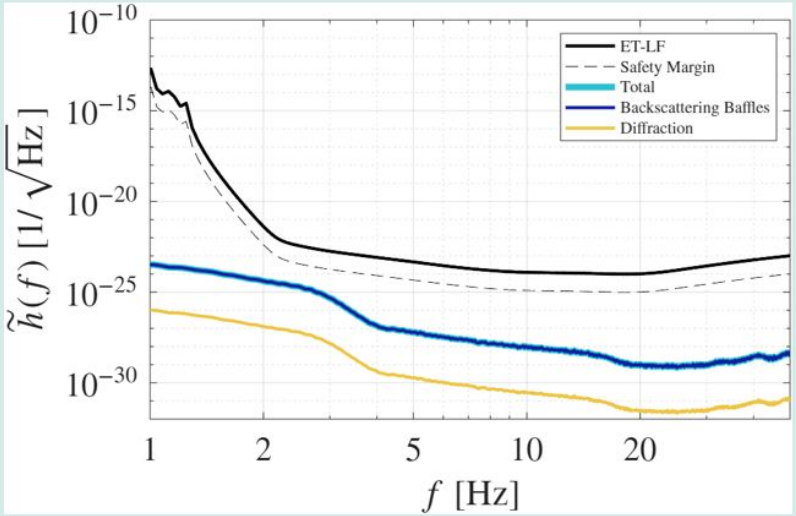


Image extracted from Ref. [1].

Could this baffle configuration in the cryoarea compromise ET-LF sensitivity?

Disclaimer: More work is needed to account for cryoarea vibrations and realistic transfer factors.

Noise spectral density from SIS simulations for the cryoarea, including **diffraction, backscattering, total noise** compared to the **safety margin** and ET-LF's **sensitivity** curve.



[1] S. Hanke, K. Battes, X. Luo and C. Day: Cryopumps at the extremities of the beampipes: design and performance. Beampipes for Gravitational Wave Telescopes 2023, CERN, March 2023, https://indico.cern.ch/event/1208957/

Early Career News

Things to look out for if you are, or work with, early career members of the ET community

Coming soon:

ET Science Workshop for Early Career Researchers, Sapienza

18th-20th February 2026

Organized by early career researchers in Sapienza, open to all (priority is given to ECRs - from any field - working on ET; limited places)

Visit their [website] to register before 6th January & add your ET Science questions [here]

Reminder:

***Survey:* Training Programmes**

What local training opportunities about ET are you aware of? What do you think an "ET Training Programme" should look like?

Complete the short (4-question) survey for ET-PP WP10 [here] before 24th November

Coming soon:

GWECS Annual Online Job Fair

before Christmas

Got a position to advertise? Register it [here] for promotion at the event.

Visit gwecs.org for more about the Gravitational-Wave Early Career Scientists and subscribe to their mailing list.

Got Ideas? **Contact** ET's Early Career Support Committee at et-ssb-ecss@et-gw.eu or visit our **wiki** to learn more about us: https://wiki.et-gw.eu/SSB/ECS

EINSTEIN TELESCOPE

Please vote for your favourite poster

Poster Sparkler Session

Thank-you, and enjoy the posters!

11-14 November 2025
Opatija, Croatia

POSTER
#XX