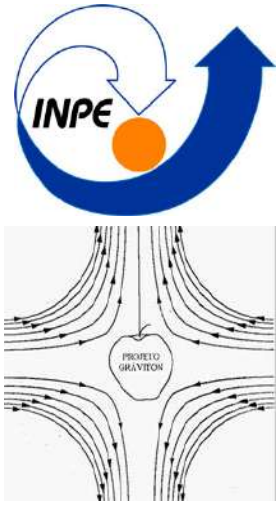
II Latin American Strategy Forum for Research Infrastructure:
an Open Symposium for HECAP

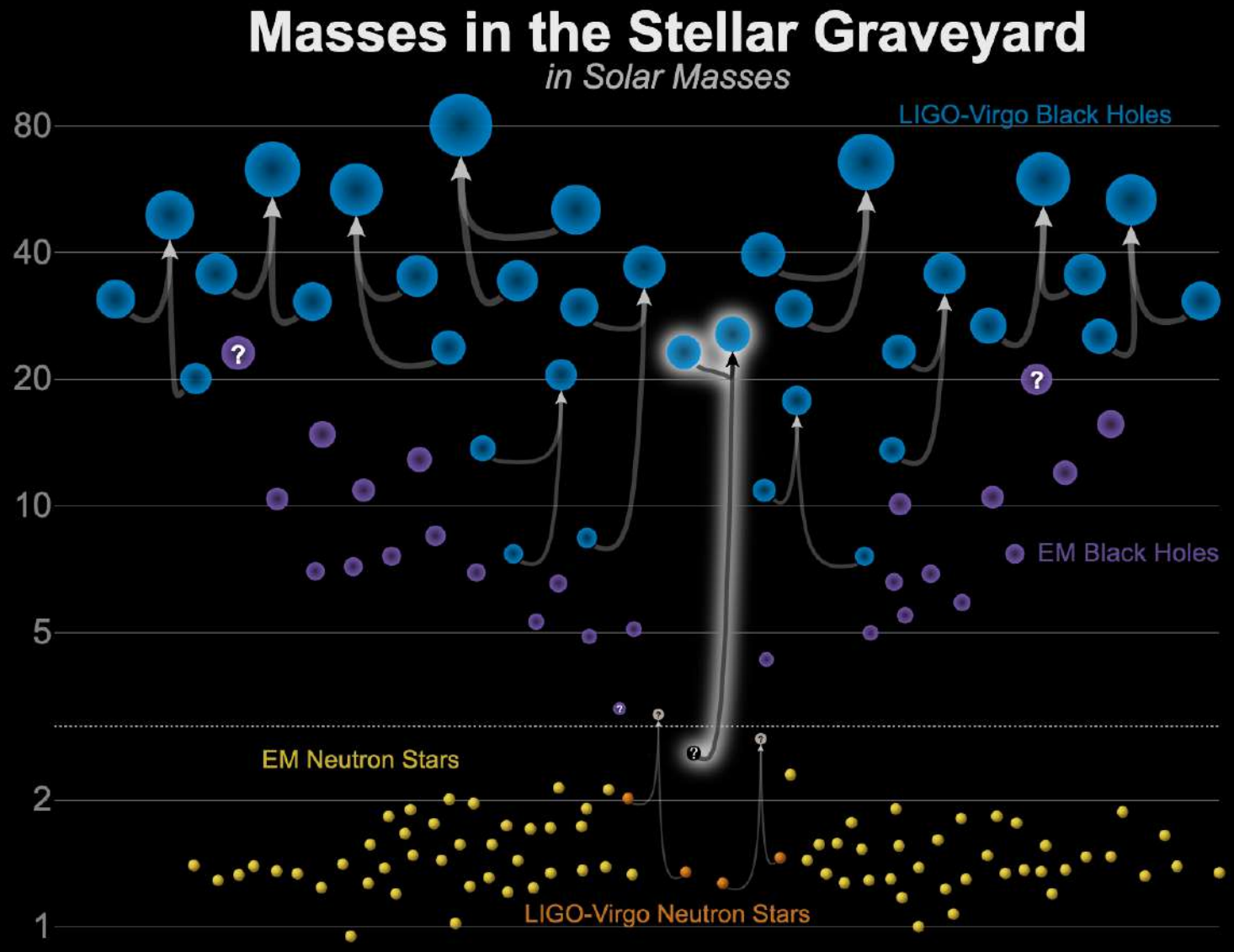
SAGO – South American Gravitational wave Observatory

Odylio D. Aguiar

July 8th, 2020



GRAVITON GROUP



https://www.ligo.org/detections/images/MassPlot_graveyard_190814.png

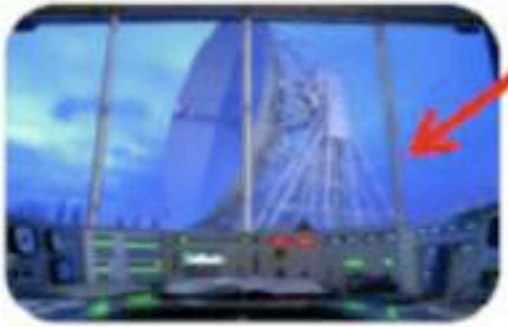
MULTIMESSENGER ASTROPHYSICS:
Simultaneous search with electromagnetic window instruments

Less than two years after the debut of gravitational wave astronomy, GW170817 marks the beginning of a new era of discovery.

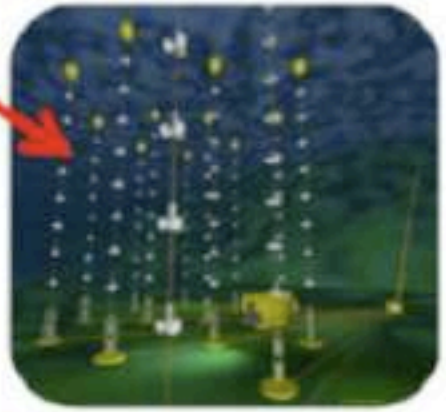
optical

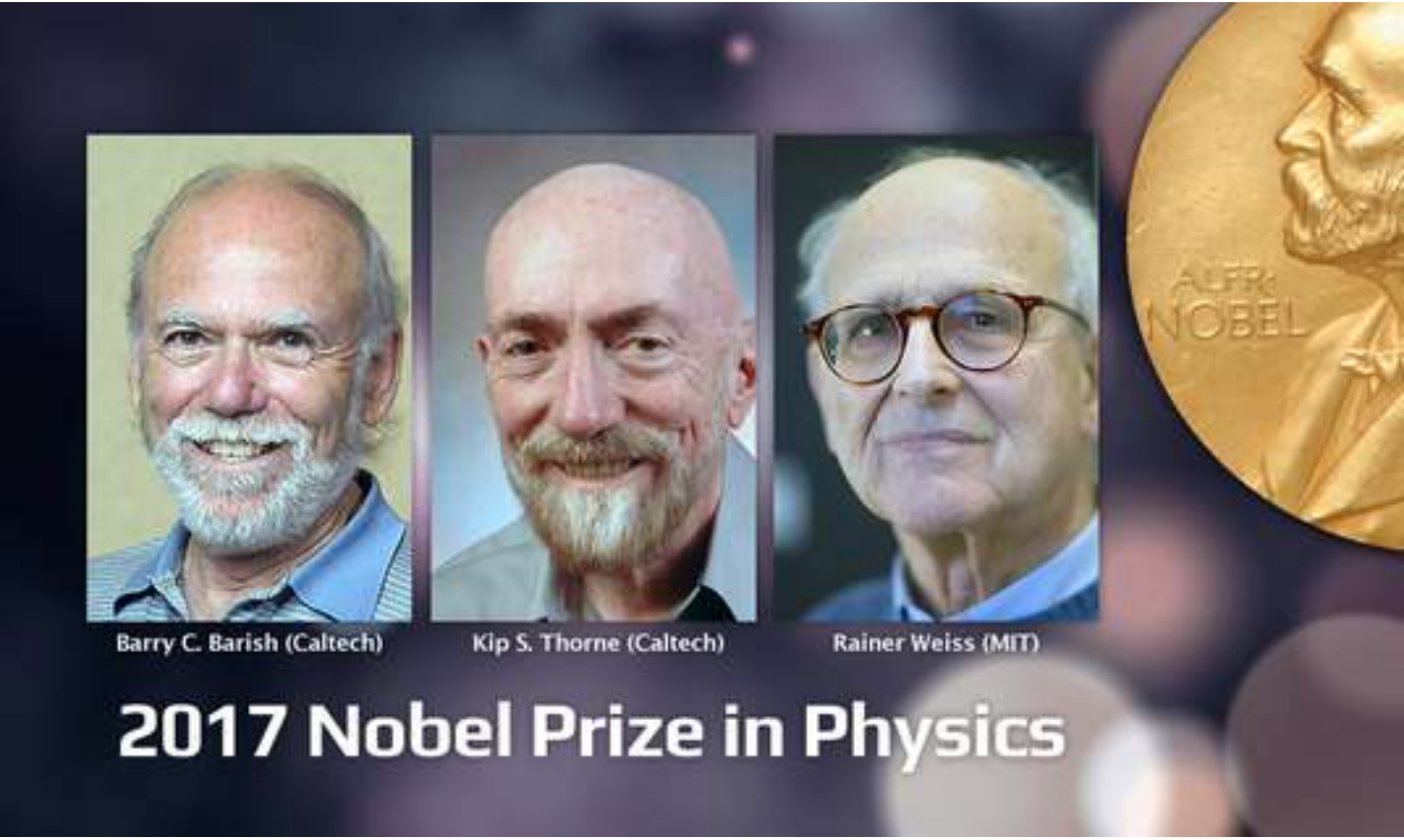
gamma rays,
x-rays

radio

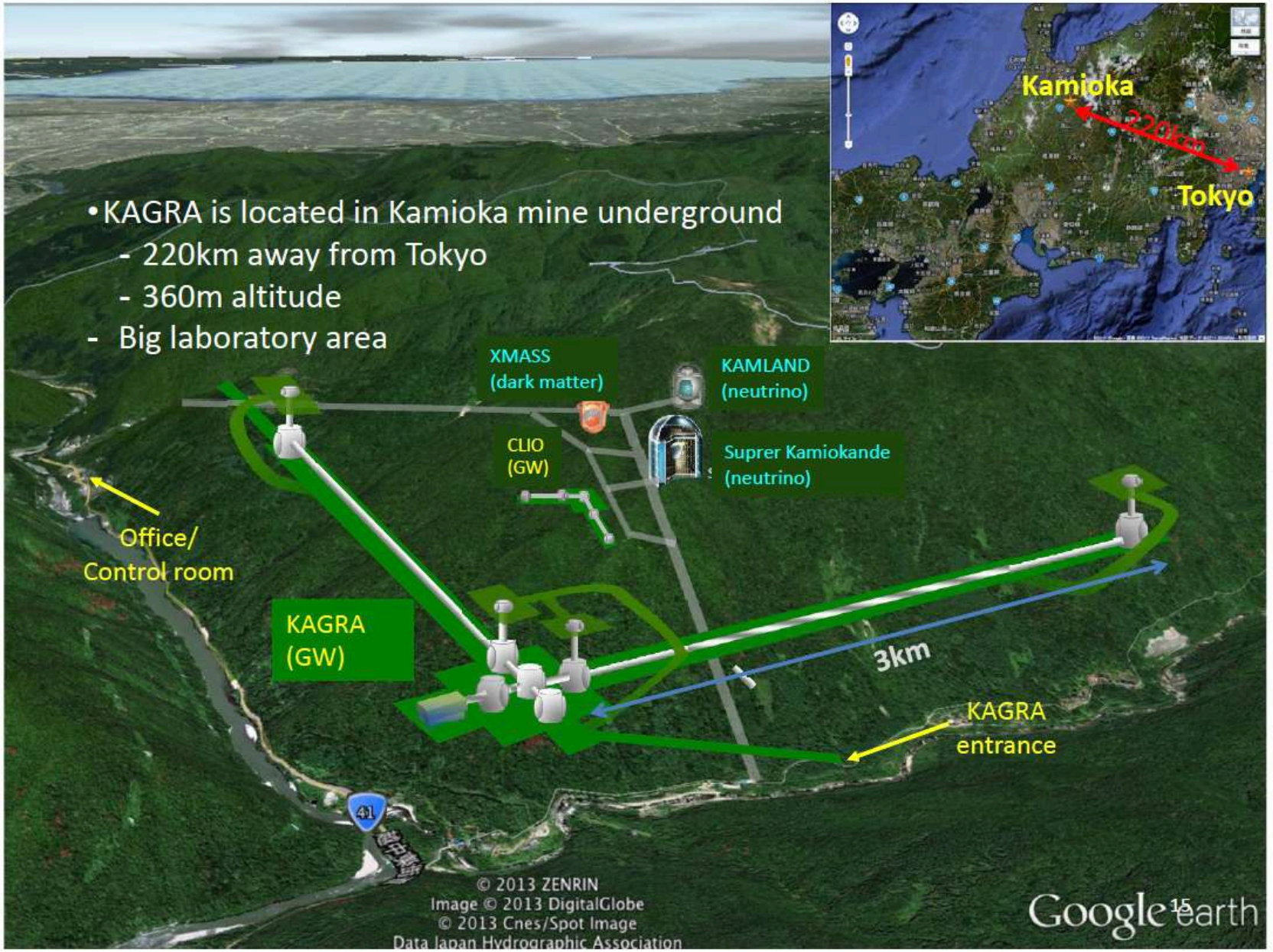


neutrinos




Barry C. Barish (Caltech)
Kip S. Thorne (Caltech)
Rainer Weiss (MIT)
NOBEL
2017 Nobel Prize in Physics

crédito: LIGO lab



Presented at Amaldi12 by Sheila Rowan
http://www.amaldi12.org/talks

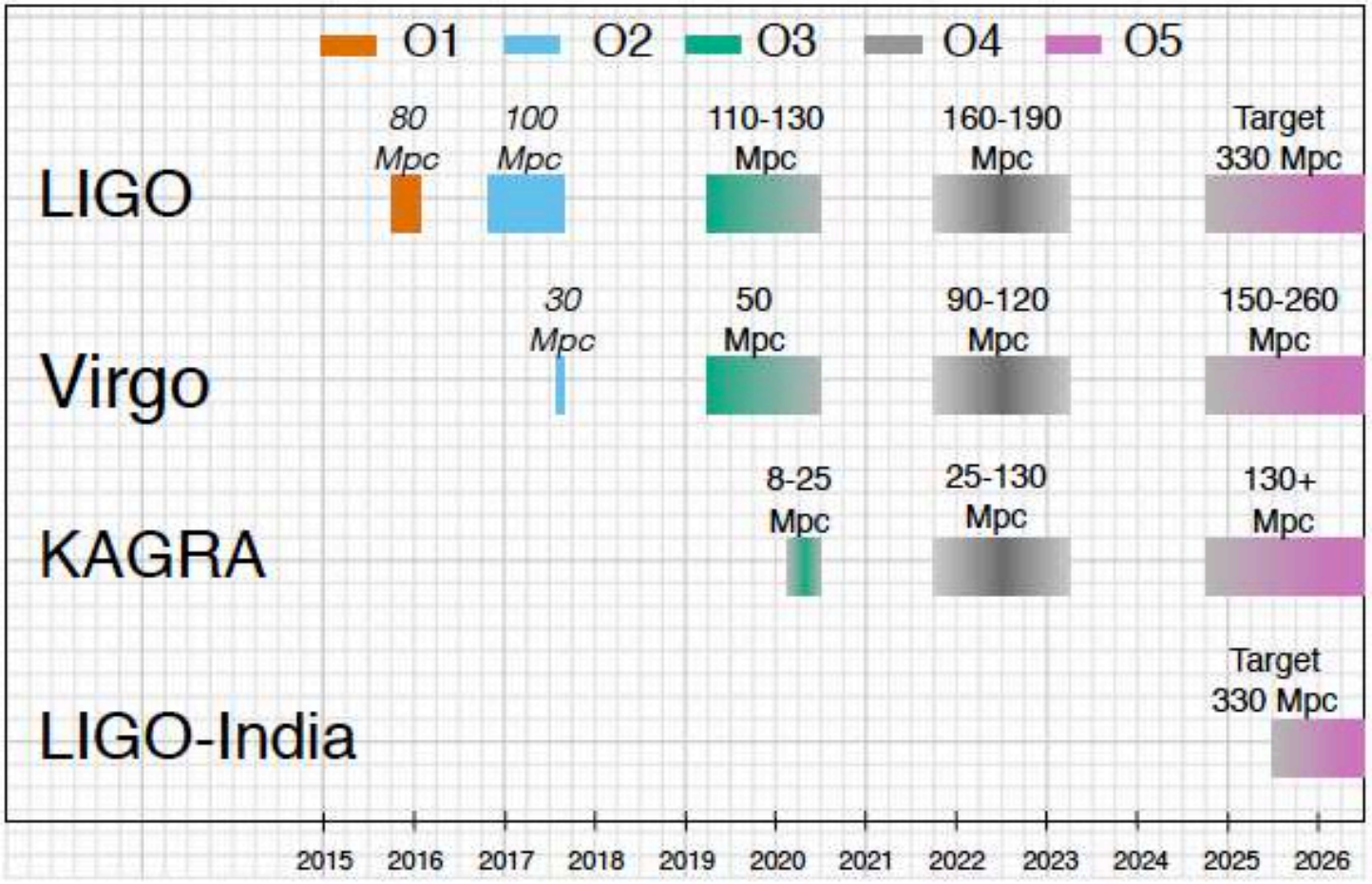
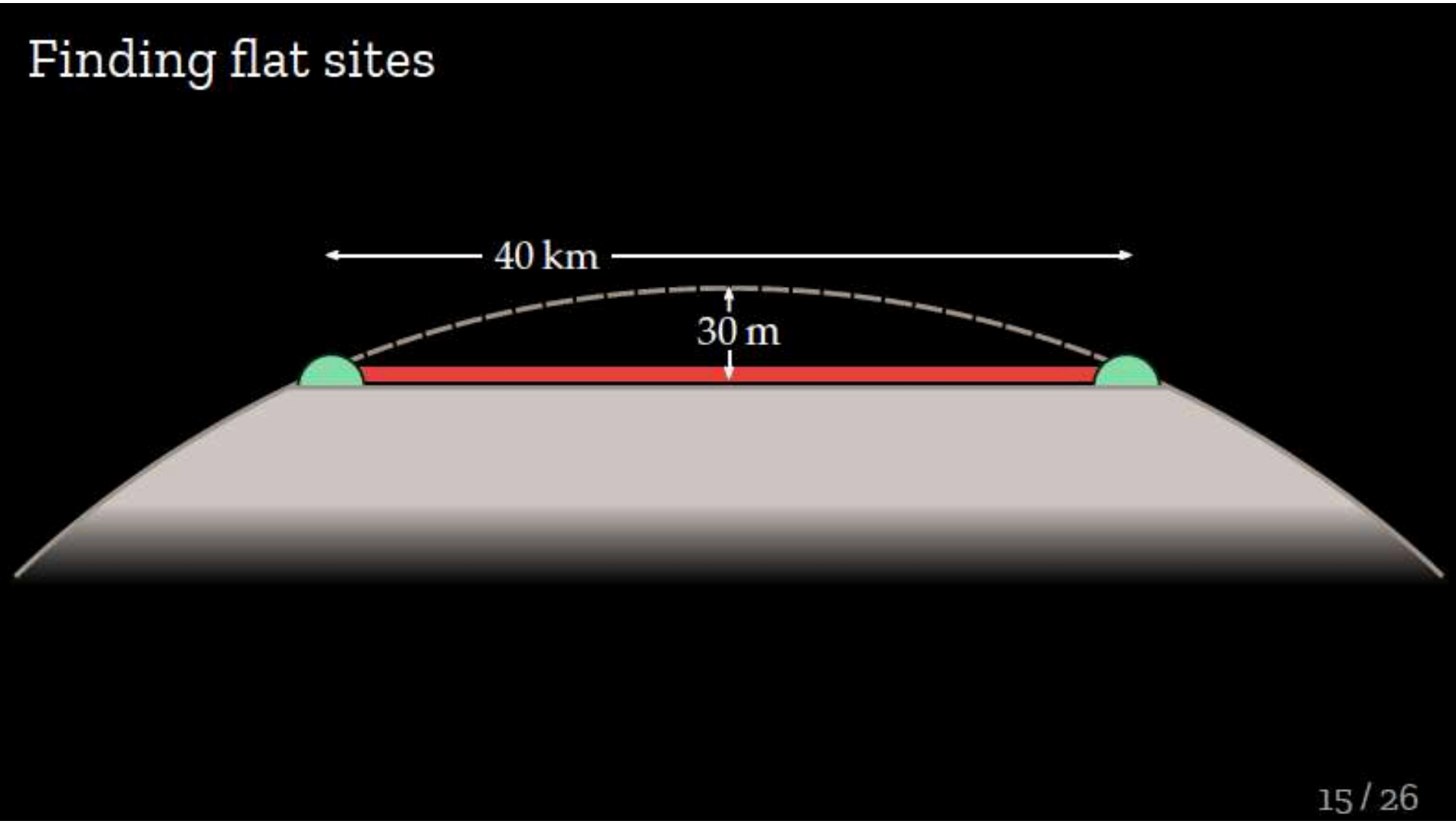


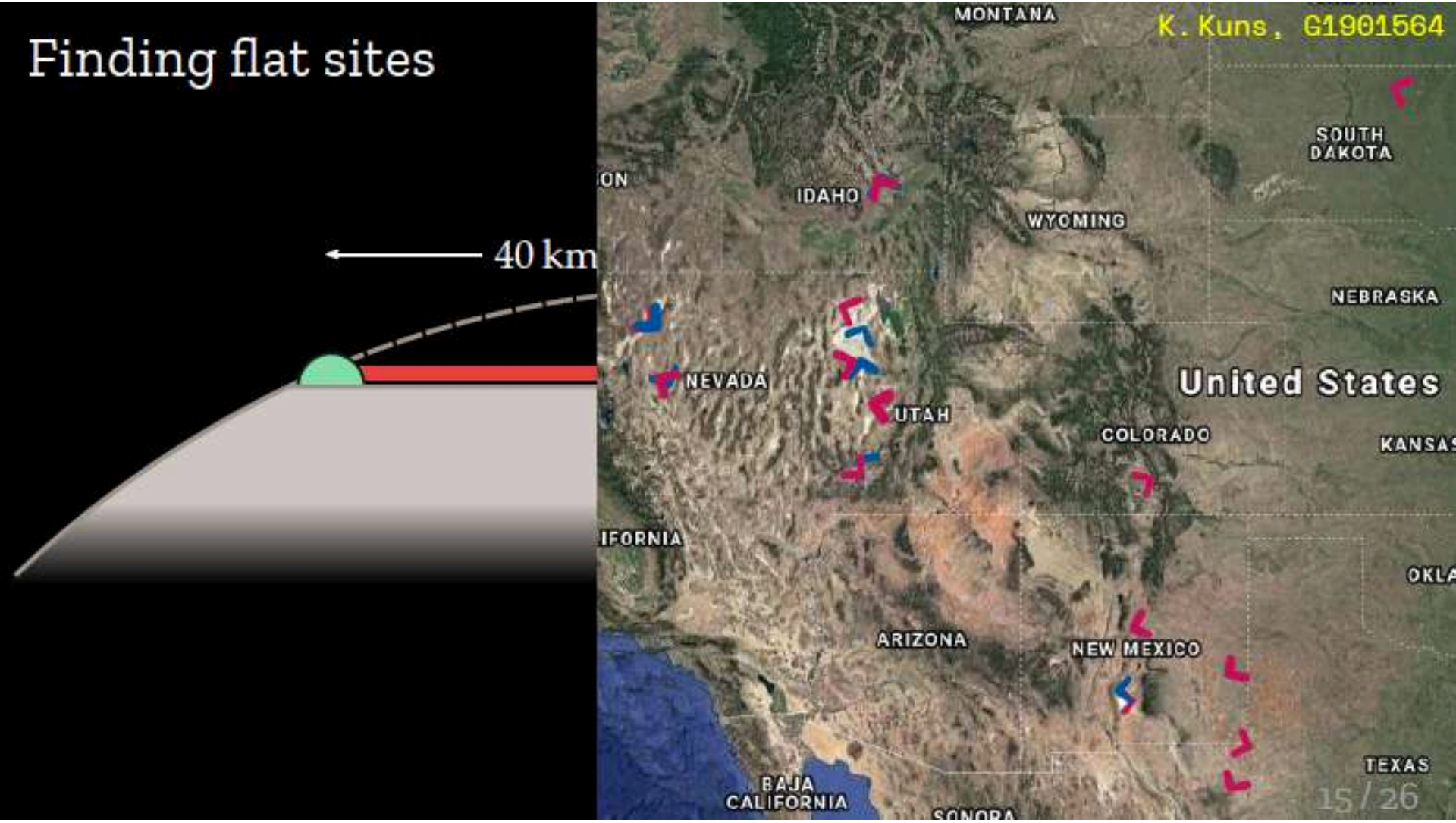
Fig. 2 The planned sensitivity evolution and observing runs of the aLIGO, AdV and KAGRA detectors over the coming years. The colored bars show the observing runs, with achieved sensitivities in O1, O2 and O3, and the expected sensitivities given by the data in Fig. 1 for future runs. There is significant uncertainty in the start and end times of the planned observing runs, especially for those further in the future, and these could move forward or backwards relative to what is shown above. Uncertainty in start or finish dates is represented by shading. The break between O3 and O4 will last at least 18 months. O3 is expected to finish by June 30, 2020 at the latest. The O4 run is planned to last for one calendar year. We indicate a range of potential sensitivities for aLIGO during O4 depending on which upgrades and improvements are made after O3. The most significant driver of the aLIGO range in O4 is from the implementation of frequency-dependent squeezing. The observing plan is summarised in Sect. 2.5


Cosmic Explorer
https://www.cosmicexplorer.org/

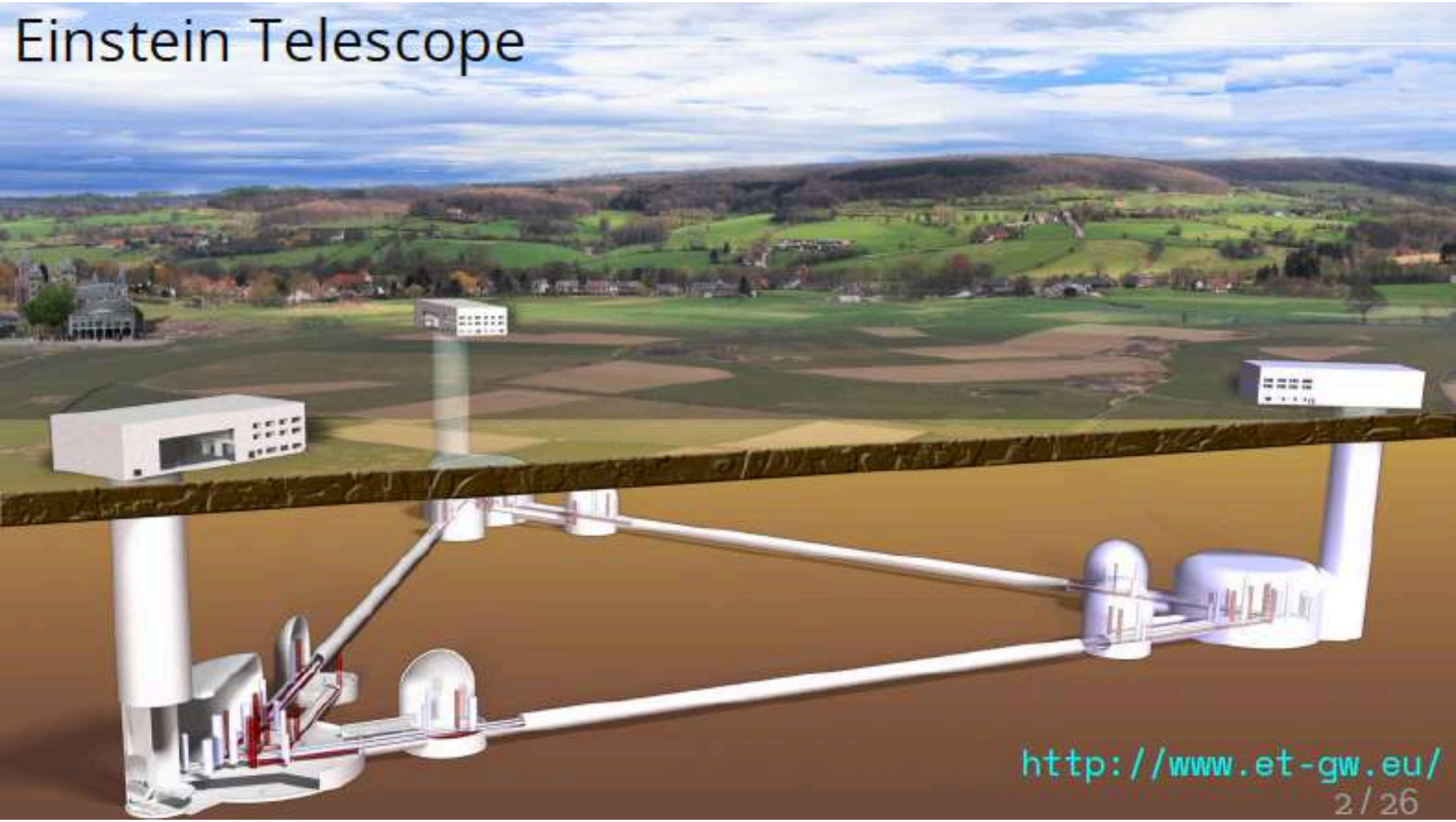
Credit: Evan Hall (LIGO, MIT)



Credit: Evan Hall (LIGO, MIT)

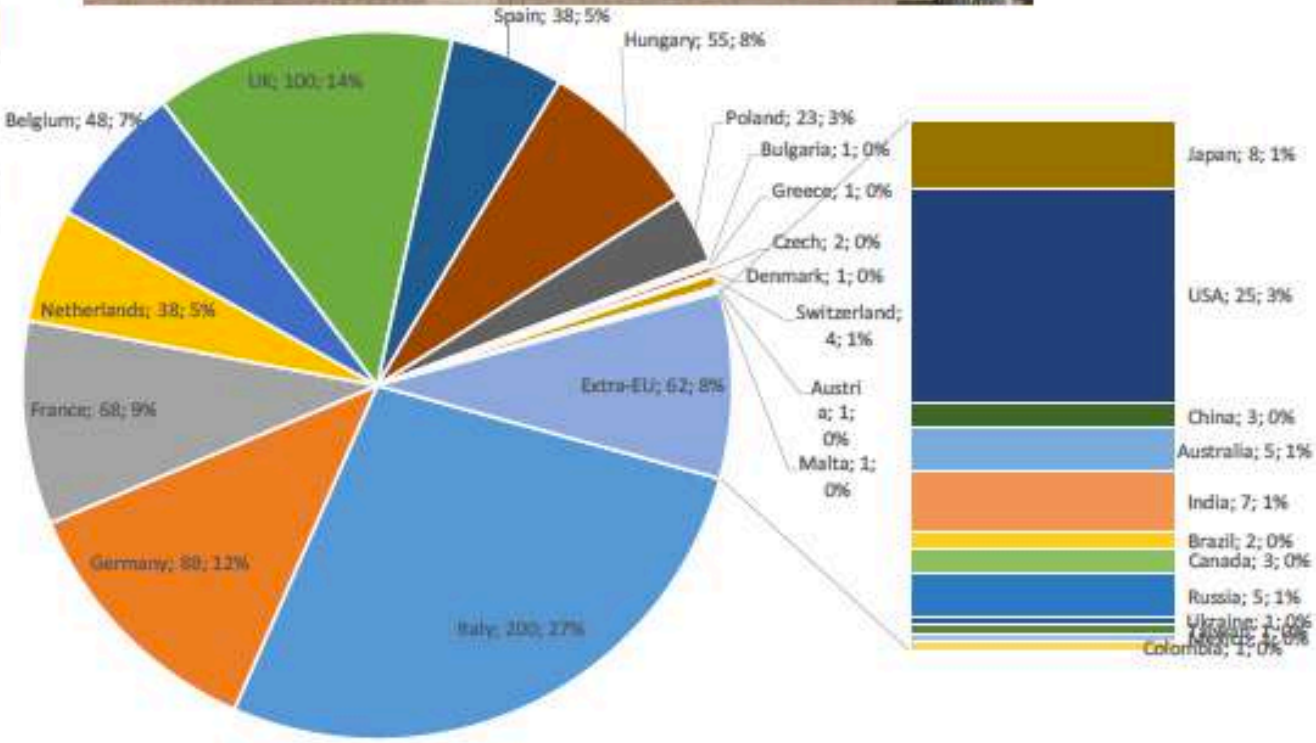


Einstein Telescope



ET collaboration

- Launched the ET letter of intent @ the 9th ET symposium (April 2018)
- At the 10th ET symposium, April 2019, we collected more than 730 signatories

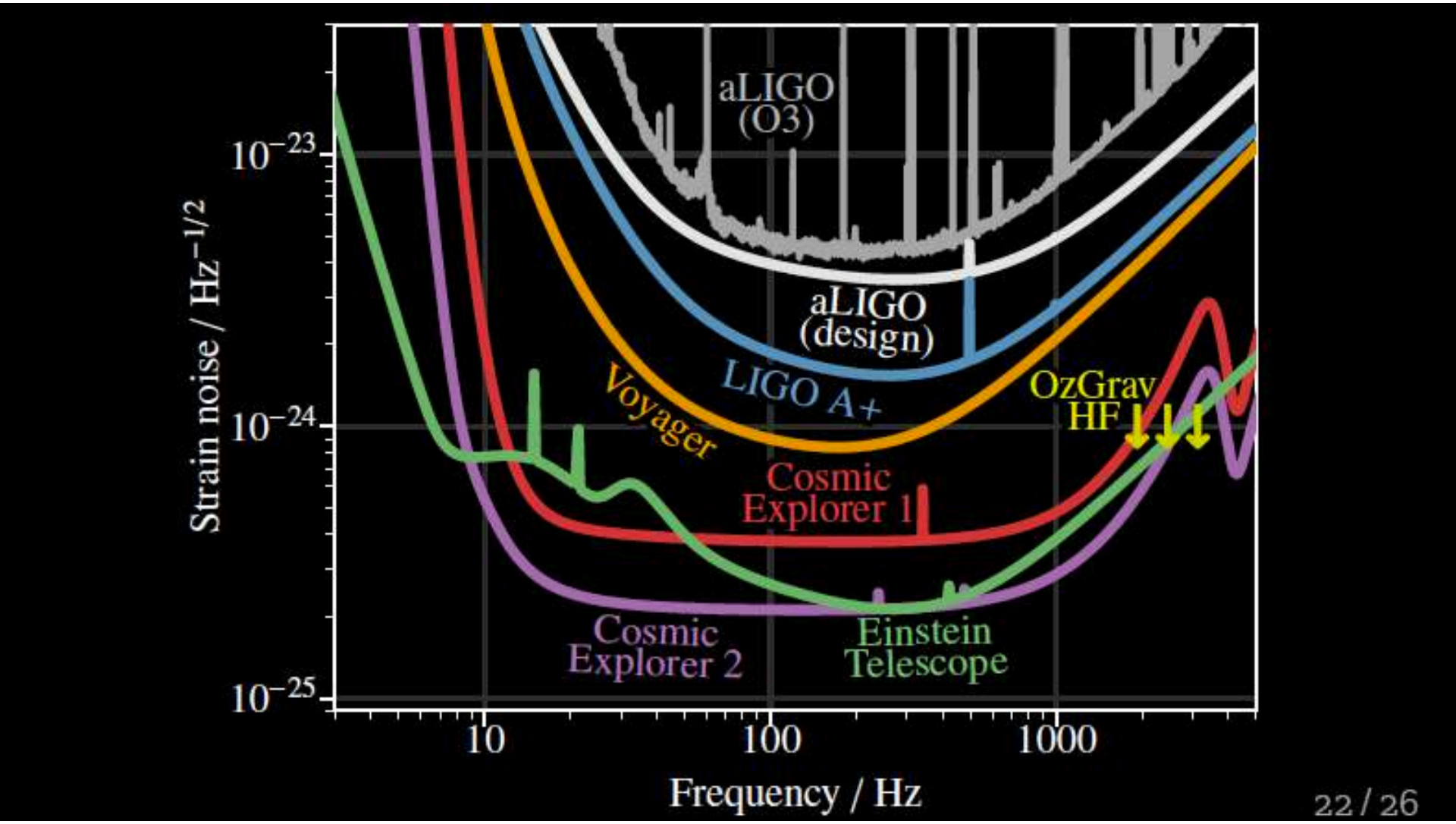


http://www.et-gw.eu/index.php/letter-of-intent

M. Punturo, G1901686

ET EINSTEIN TELESCOPE

Credit: Evan Hall (LIGO, MIT)



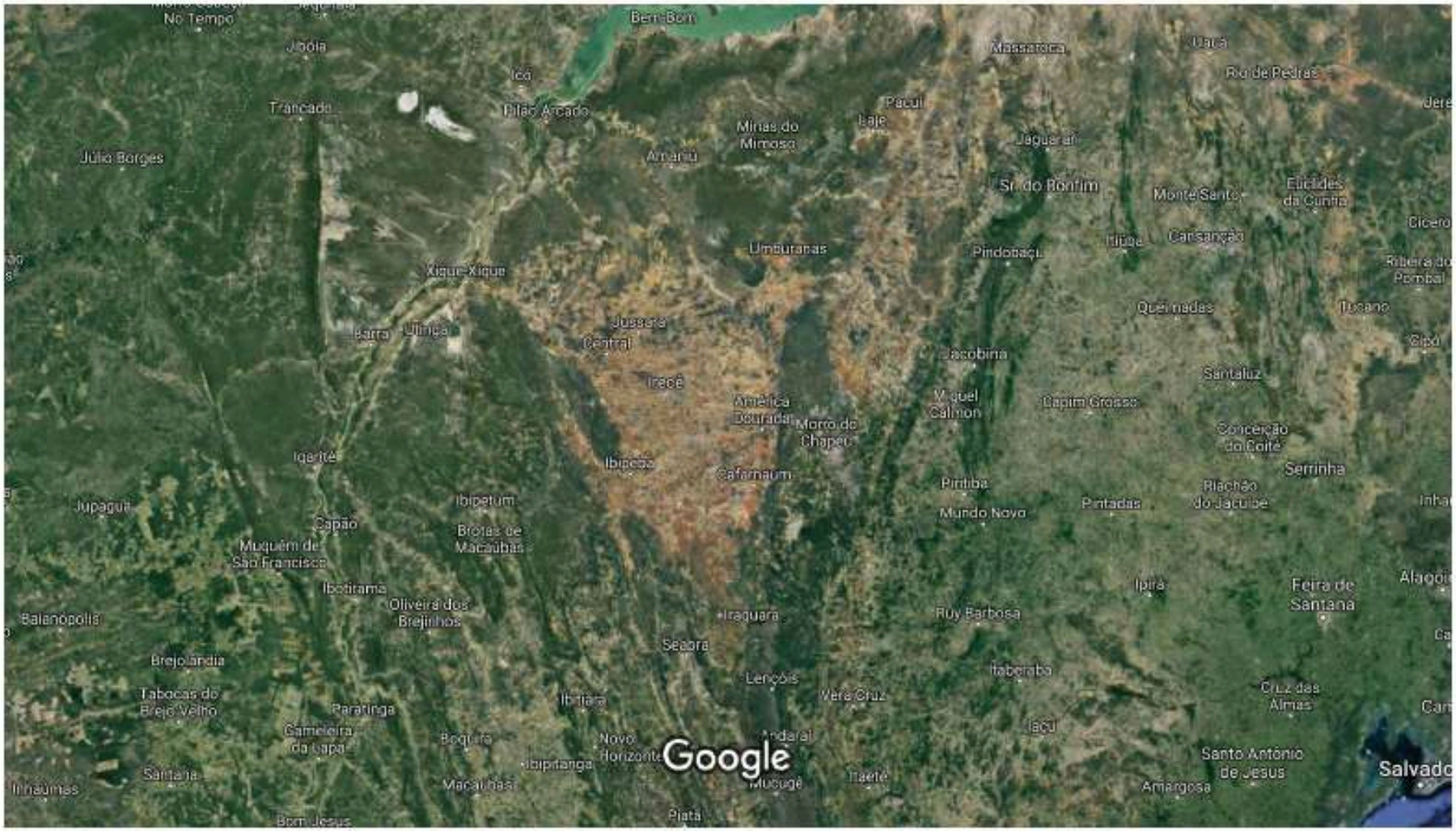
SAGO – South American Gravitational wave Observatory

Google Maps

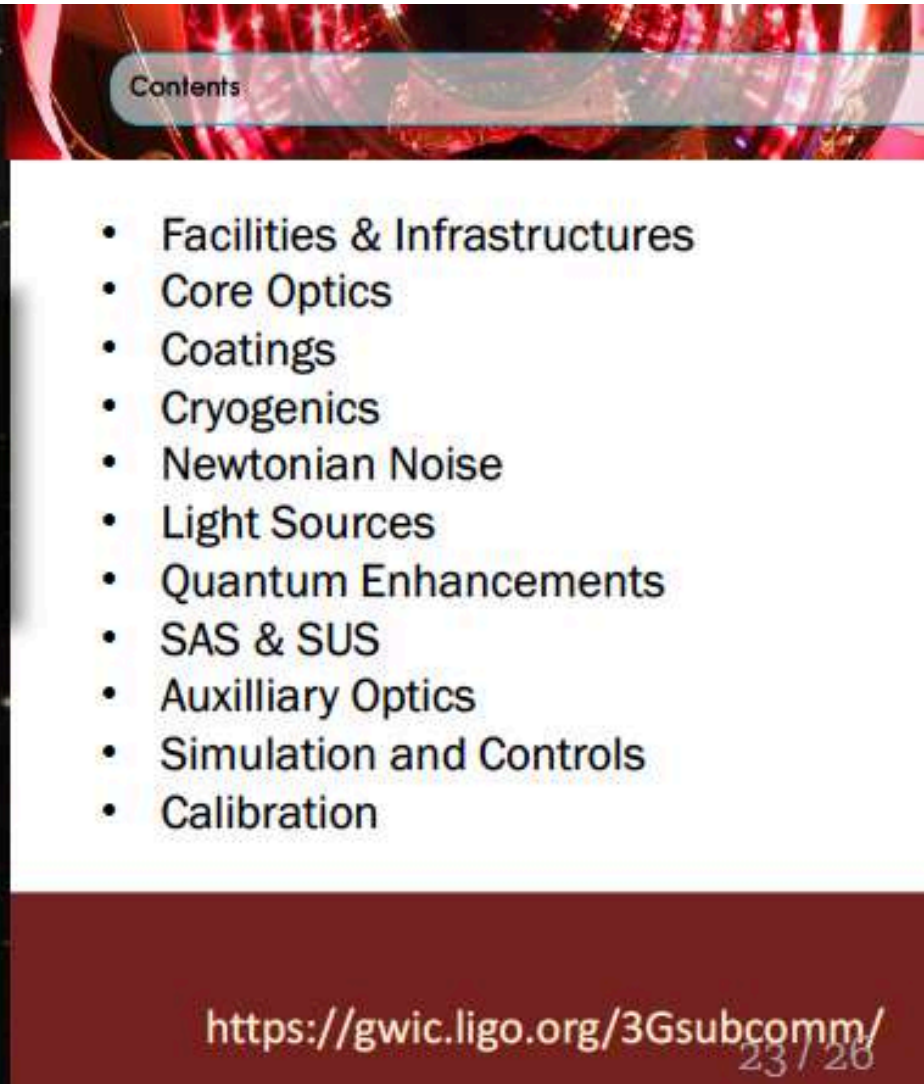
500 km

Google Maps

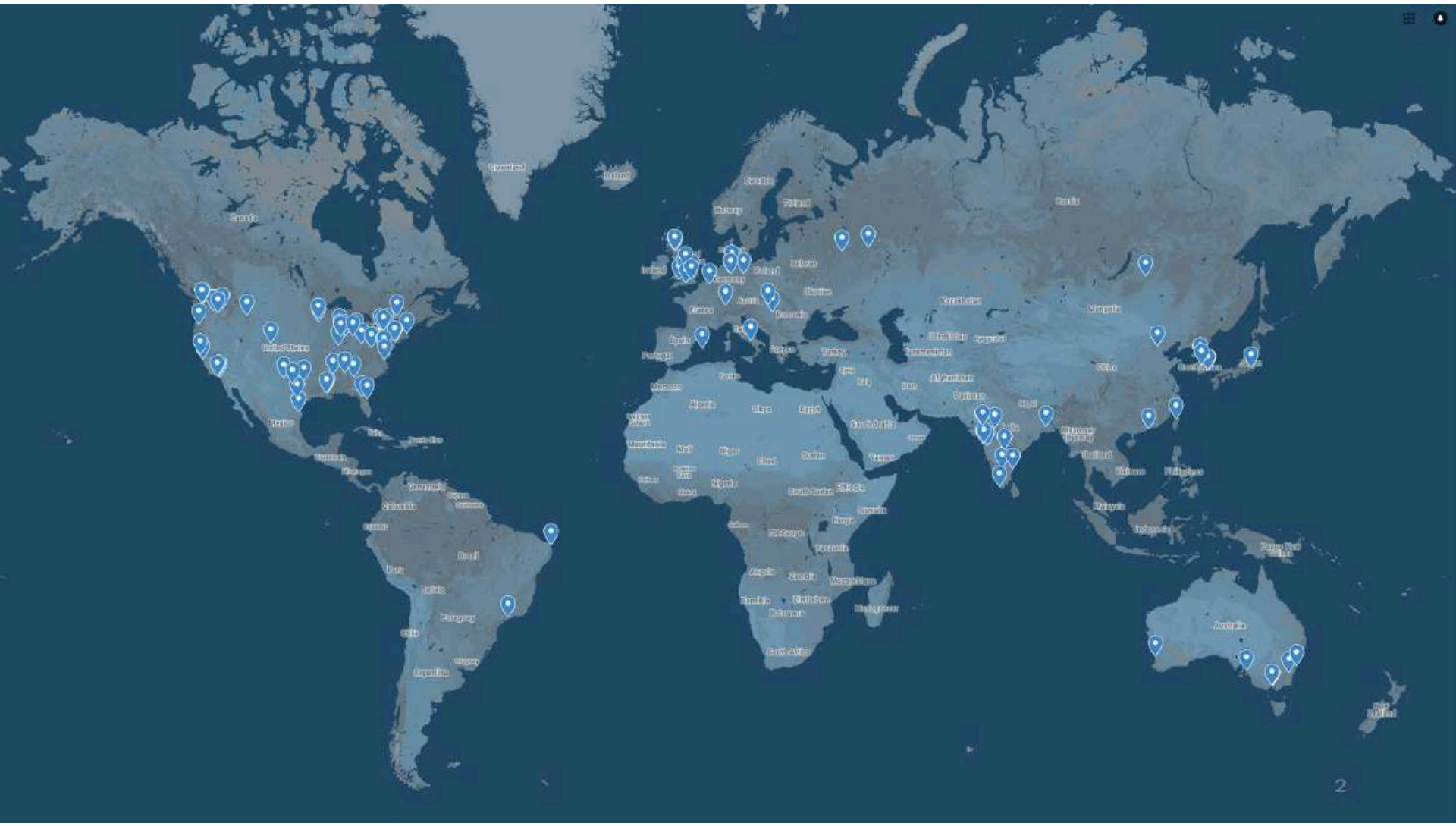
Google Maps



The technologies to be pursuit



Before asking money for a proposal, we need to ask fellowships and research money for creating a critical mass of researchers in Latin America with knowledge on the 3G technology. So, we need to involve Latin American students and post-docs in the present projects (LIGO, Virgo, KAGRA, LIGO India, ET, and Cosmic Explorer) and attract them and foreign post-docs with knowledge on 3G to form groups in Latin America.



LSC/GWINPE: 8 members; **LSC/IIP/UFRN:** 2 members; **LSC/AEI:** Marina Neri (Brazil);
LSC/USA: Claudia Moreno (Mexico); **Virgo/Italy**: Iara Tostae Melo (Brazil);
Virgo/Netherlands: Enzo Tapia (Chile), **Virgo/Brazil:** Edison Santos (Brazil);
KAGRA: Fabian Peña Arellano (Peru). **TOTAL :** 16+

Thanks
for your attention !