

Welcome to



Nikhaf

Andreas Freise, 05.06.2023



The mission of Nikhef

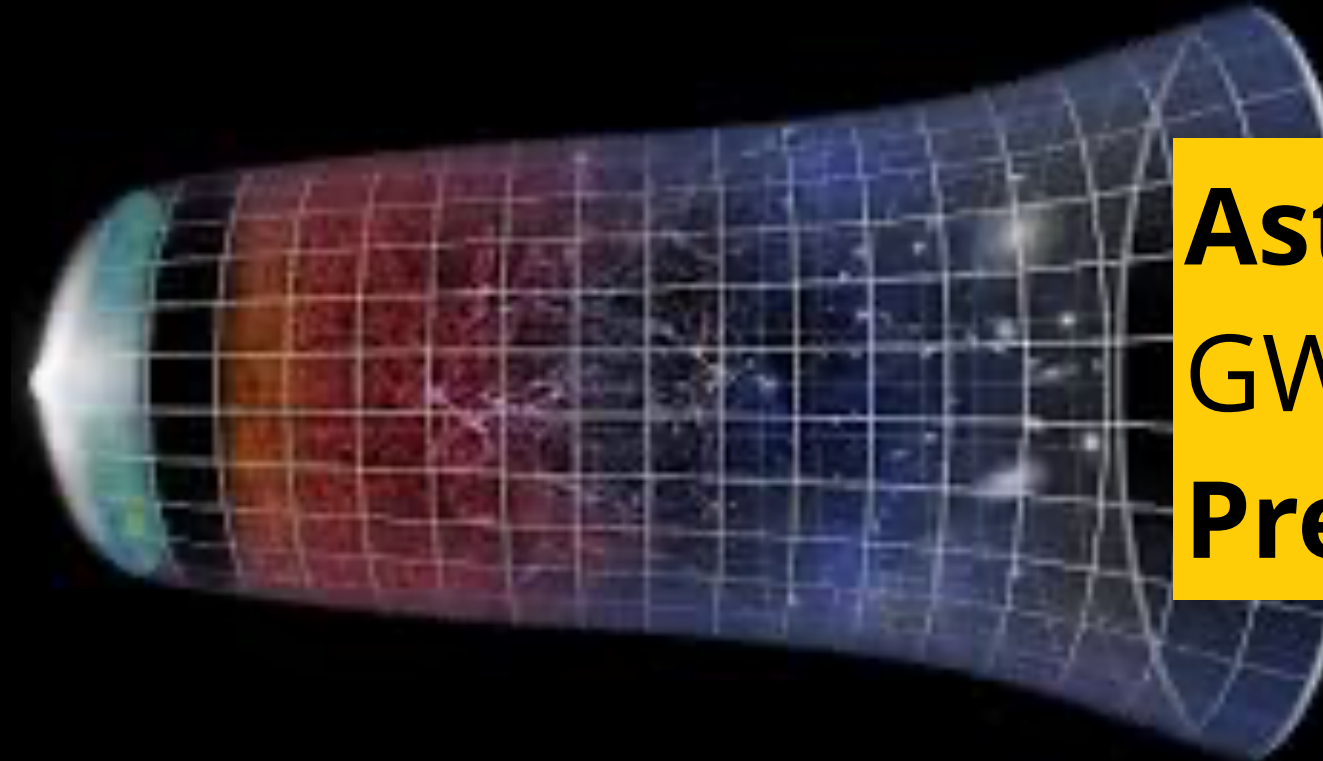
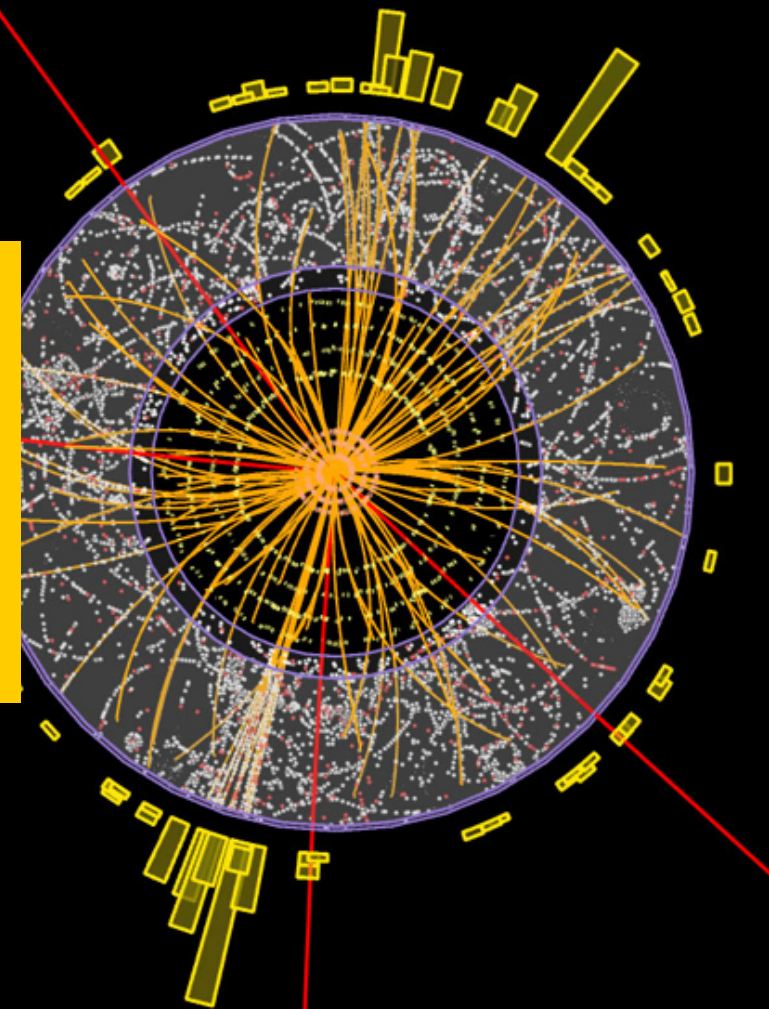
- Elementary constituents and forces of our Universe
 - Accelerator based Particle Physics - at CERN
 - Astroparticle physics - particles and radiation from the cosmos

LHC operation >2030

ATLAS, LHCb, ALICE

Preparations beyond LHC


Run: 189280
Event: 143576946
2011-09-14 12:37:11 CEST



Astroparticle physics

GW, DM, Neutrino, UHECR, *eEDM*

Preparations next generations

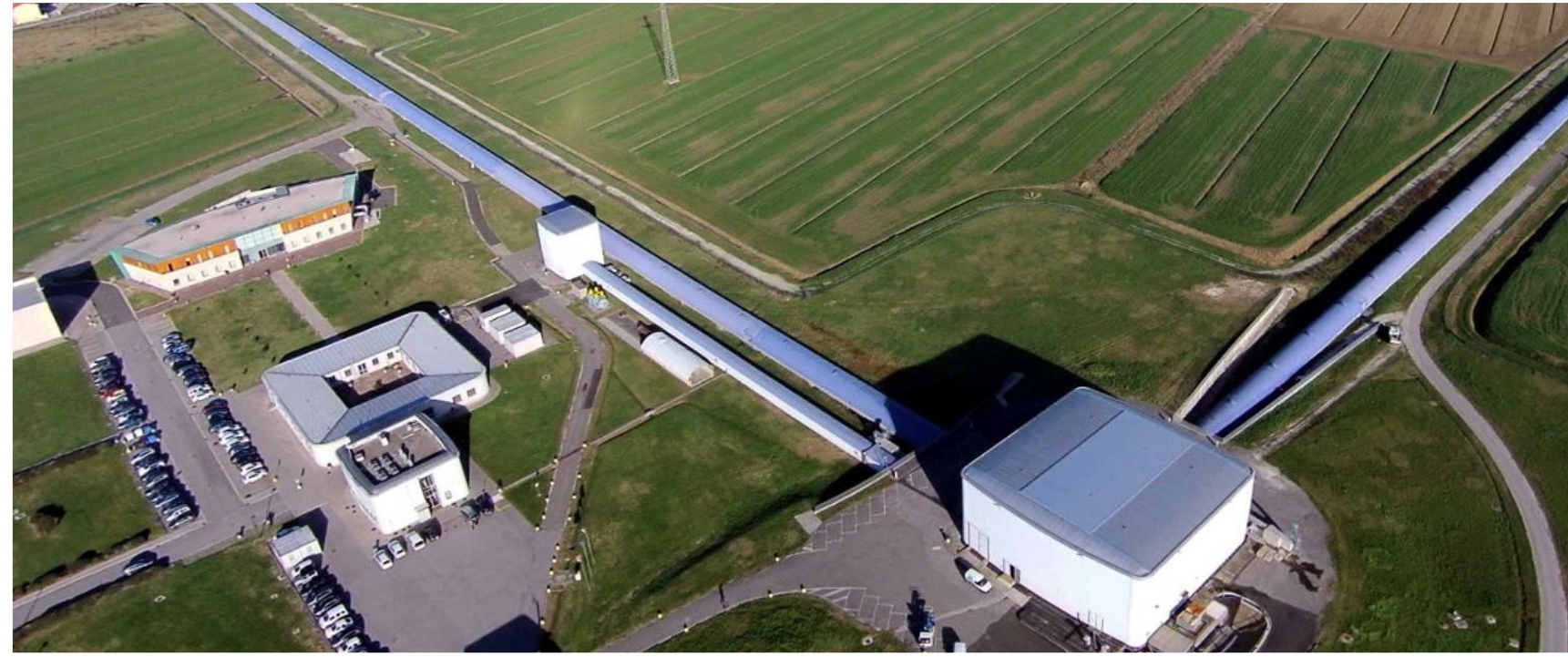
- Enabling programs
 - Detector R&D
 - Theory - phenomenology
 - Data Processing
- Technical teams/workshops
 - Mechanical
 - Electronics
 - Computing

Gravitational waves in the Netherlands

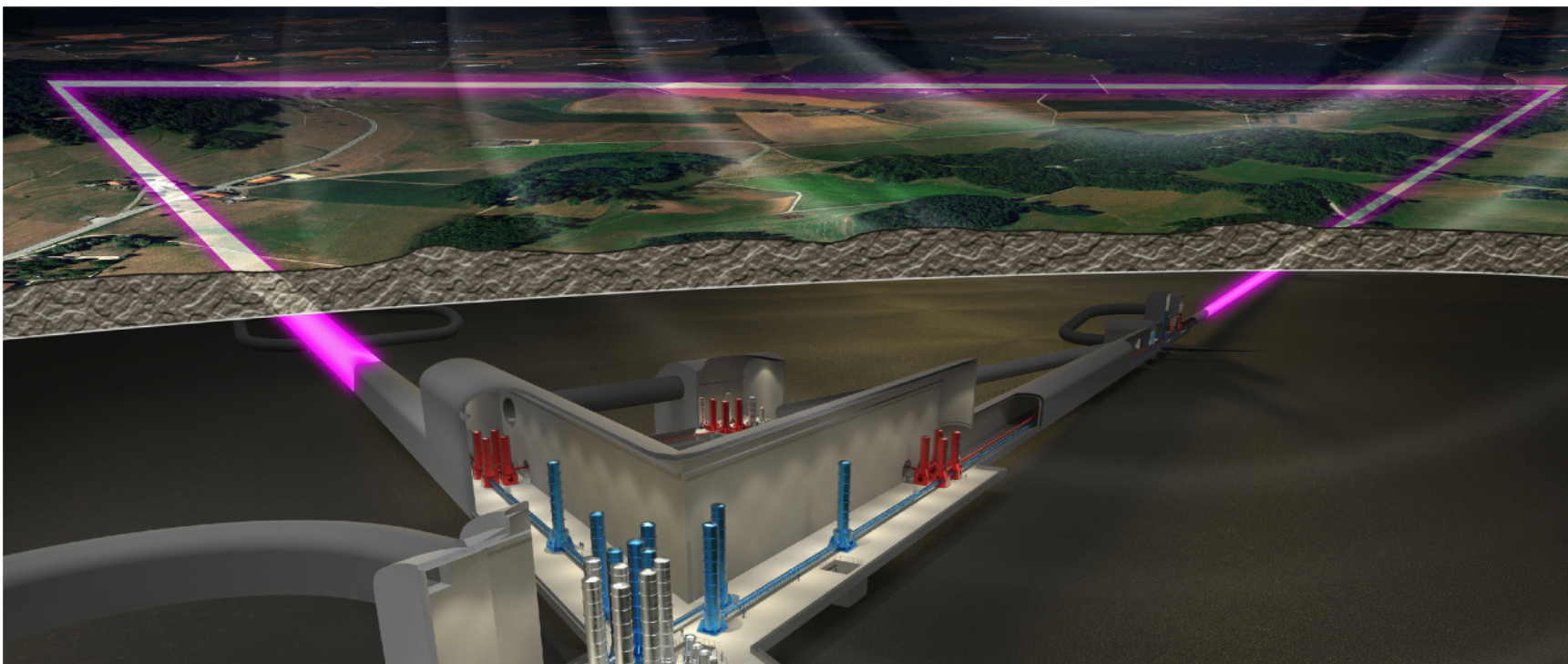
- **Nikhef**
- Maastricht University
- Radboud University Nijmegen
- University of Amsterdam
- Vrije Universiteit Amsterdam
- Utrecht University
- University of Groningen
- SRON
- Leiden University
- ASTRON
- TU Delft
- University of Twente
- KNMI
- TNO
- TU Eindhoven



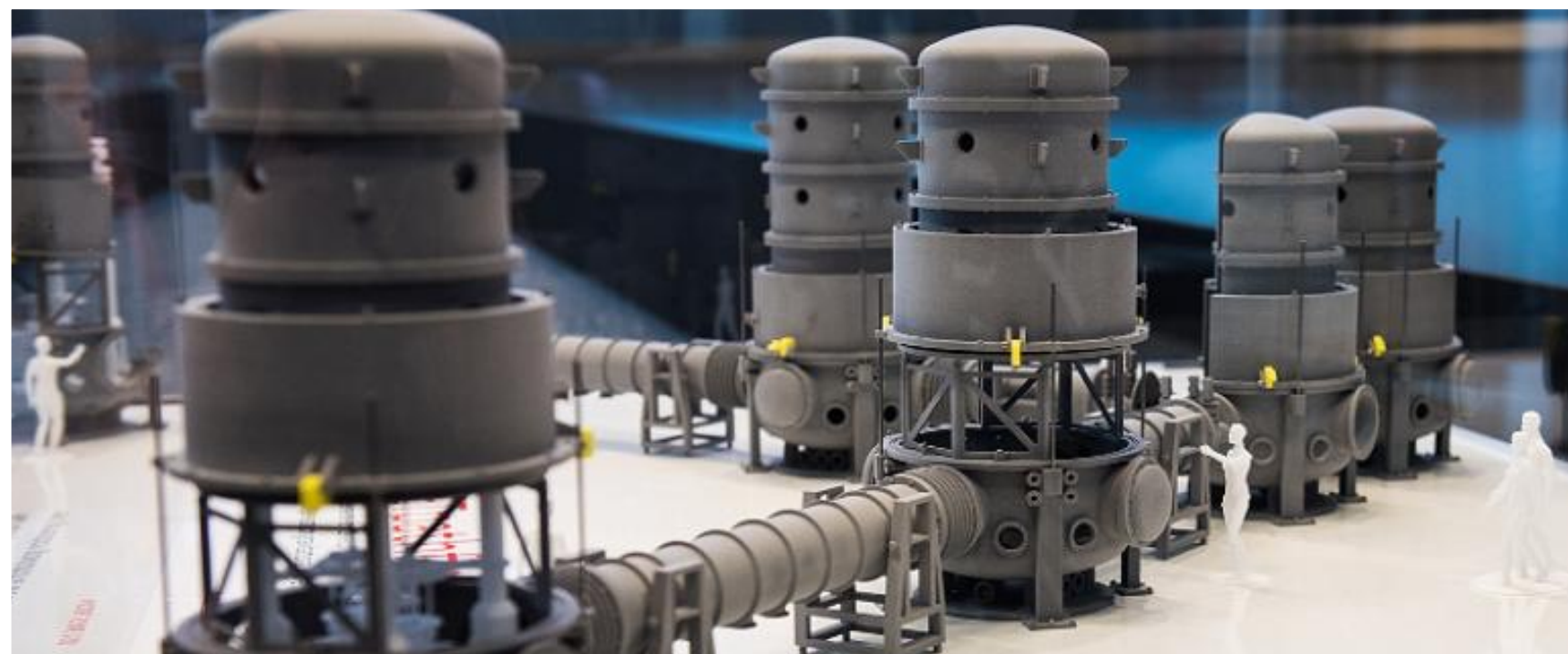
Some key points from ground-based detector projects



Virgo: Nikhef provides several hardware systems to Virgo (e.g. filter cavity) and became a full EGO council member in 2021. We recently received 2.7M€ for hardware for further upgrades.



Einstein Telescope: Nikhef co-leads the ET project, we received 42M€ for preparing a bid to host ET near Maastricht. Now building a large team of scientists but also engineers and managers.



ETpathfinder: 10m scale prototype interferometer, a testbed for future GW technologies, 15M€ capital investment, currently under construction in Maastricht.

Interferometer simulations at Nikhef

- Following my move from Birmingham to Nikhef we started to move the **support infrastructure** for Finesse to Nikhef (testing, integration, documentation).
- Nikhef committed to provide structural support for a ‘Finesse project’, as part of our deliverables for Virgo and ET. Currently we benefit from **two dedicated members of the Nikhef computing groups, two dedicated servers** and further support in personal or funding if needed.
- Our vision: in the future provide simulation tools and simulation results via a **professionally managed subsystem**, similar to hardware development (laser, vacuum, etc.).
- Finesse could become the core of a wider **simulation framework**. At least it should serve as an example for other tools, on **how to manage software development** for GW instrument simulations.

The ET team at Nikhef



Enjoy Amsterdam



for example, by boat ...



or...

more
traditionally