

*Welcome to our institute*



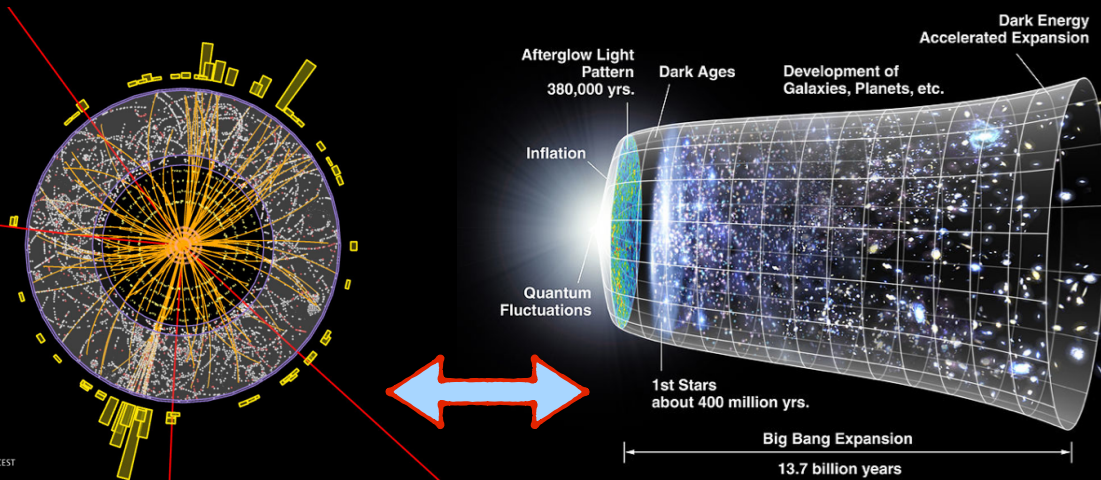
**Stan Bentvelsen**

## ***Game change:***

After the Higgs particle: What is beyond the Standard Model and how can we observe this?

**LHC run-2 (2015+)**  
Full collision energy  
Much larger beam intensities

ATLAS  
EXPERIMENT  
<http://atlas.ch>  
Run: 149280  
Event: 143576046  
2011-09-14 12:37:11 CEST



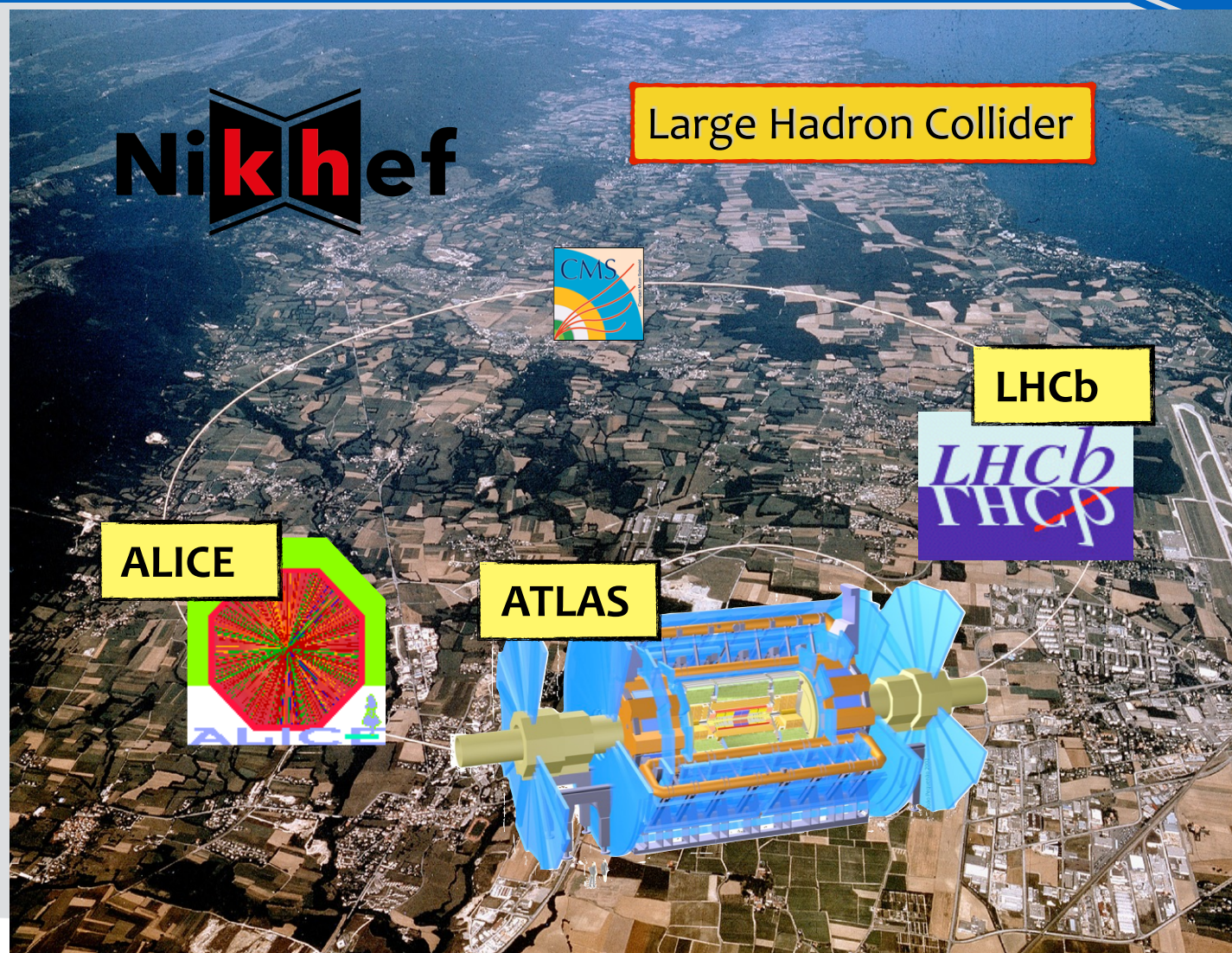
## **Observations in APP(2016+)**

Gravitational Waves,  
Dark Matter,  
Neutrino telescope,  
Cosmic Rays

LHC experiments form 'backbone' of Nikhef  
Astroparticle physics experiment is a central activity

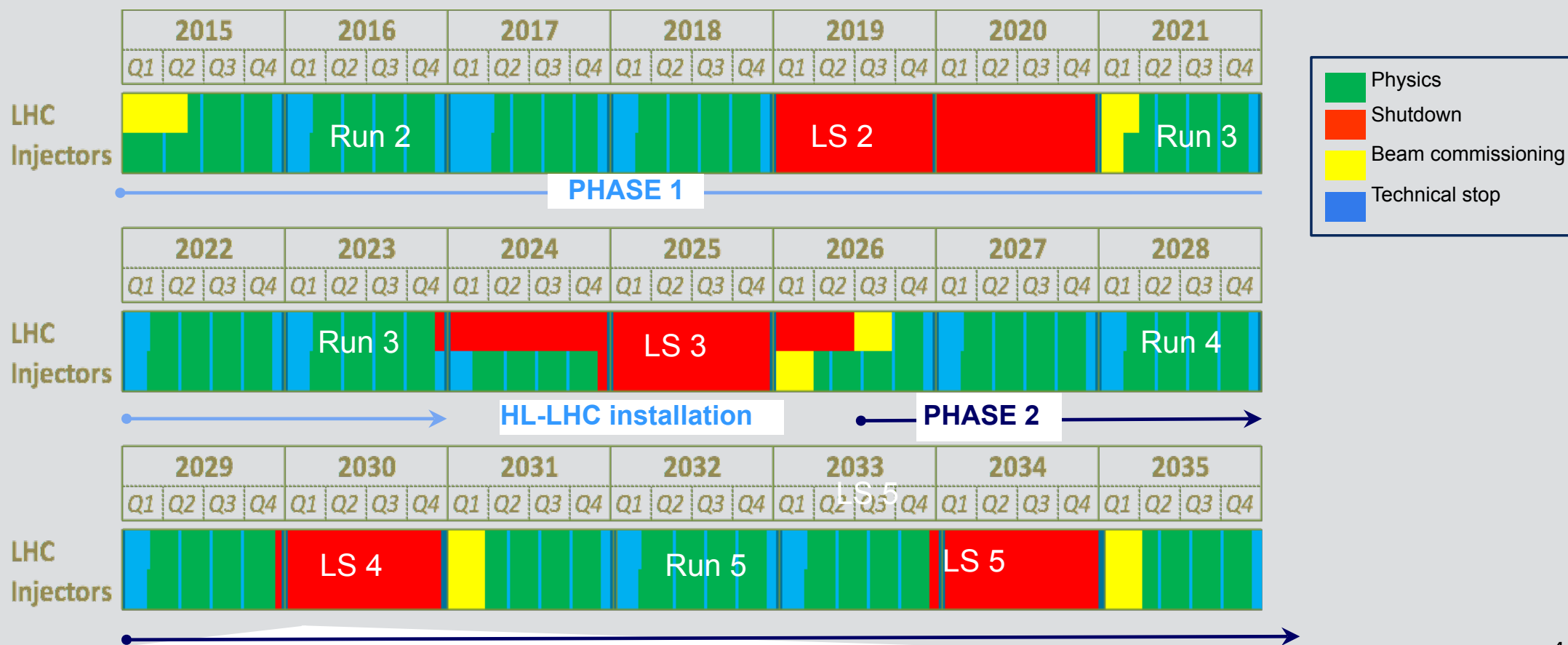


- **ATLAS**
  - Higgs physics
  - New particles beyond the Standard Model
- **LHCb**
  - Rare decays
  - Matter-anti-matter differences
- **ALICE**
  - Plasm of quarks and gluons
  - Phase transitions



# LHC roadmap to 2035

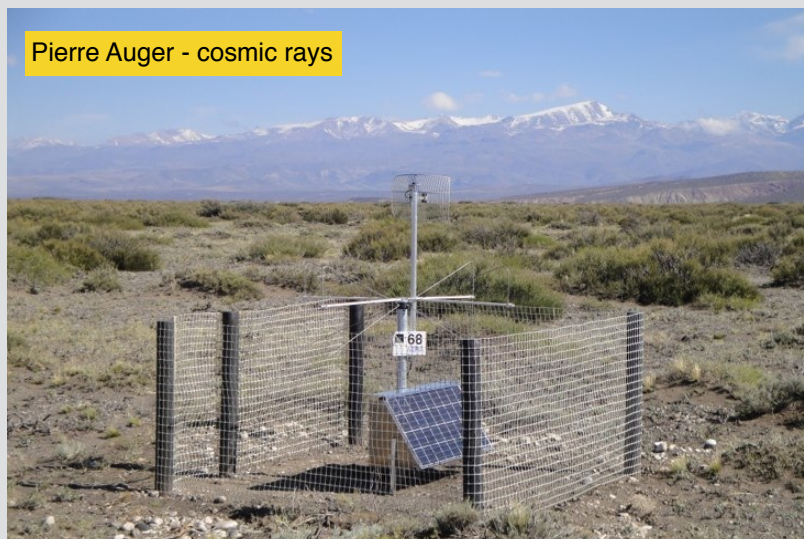
- Potential for LHC is huge. Program is long.





- **Xenon**
  - Direct search for Dark Matter
- **Virgo**
  - Observation gravitational waves
- **KM3NeT**
  - Neutrino telescope
  - White Rabbit!
- **Auger**
  - Ultra high energetic cosmic radiation

Pierre Auger - cosmic rays



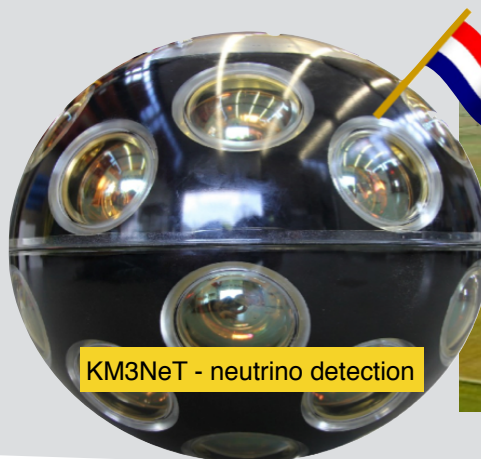
Xenon1T - Dark Matter



Adv VIRGO - Gravitational Waves

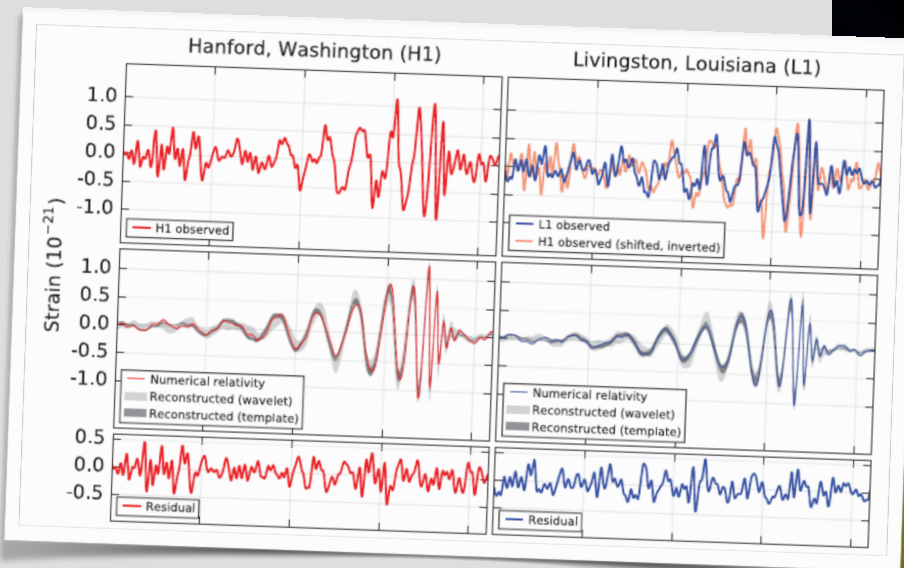


KM3NeT - neutrino detection





- Observation GW
  - Whole new era in astroparticle physics

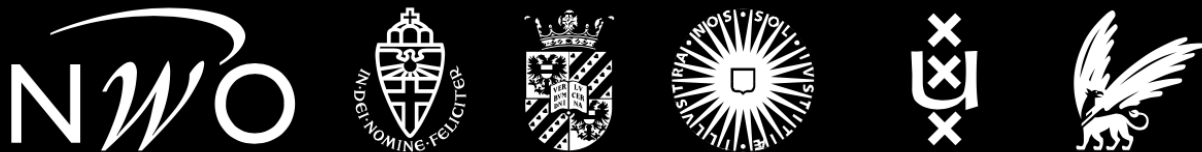


aVIRGO/LIGO  
Cascina - PISA  
*Gravitational waves*



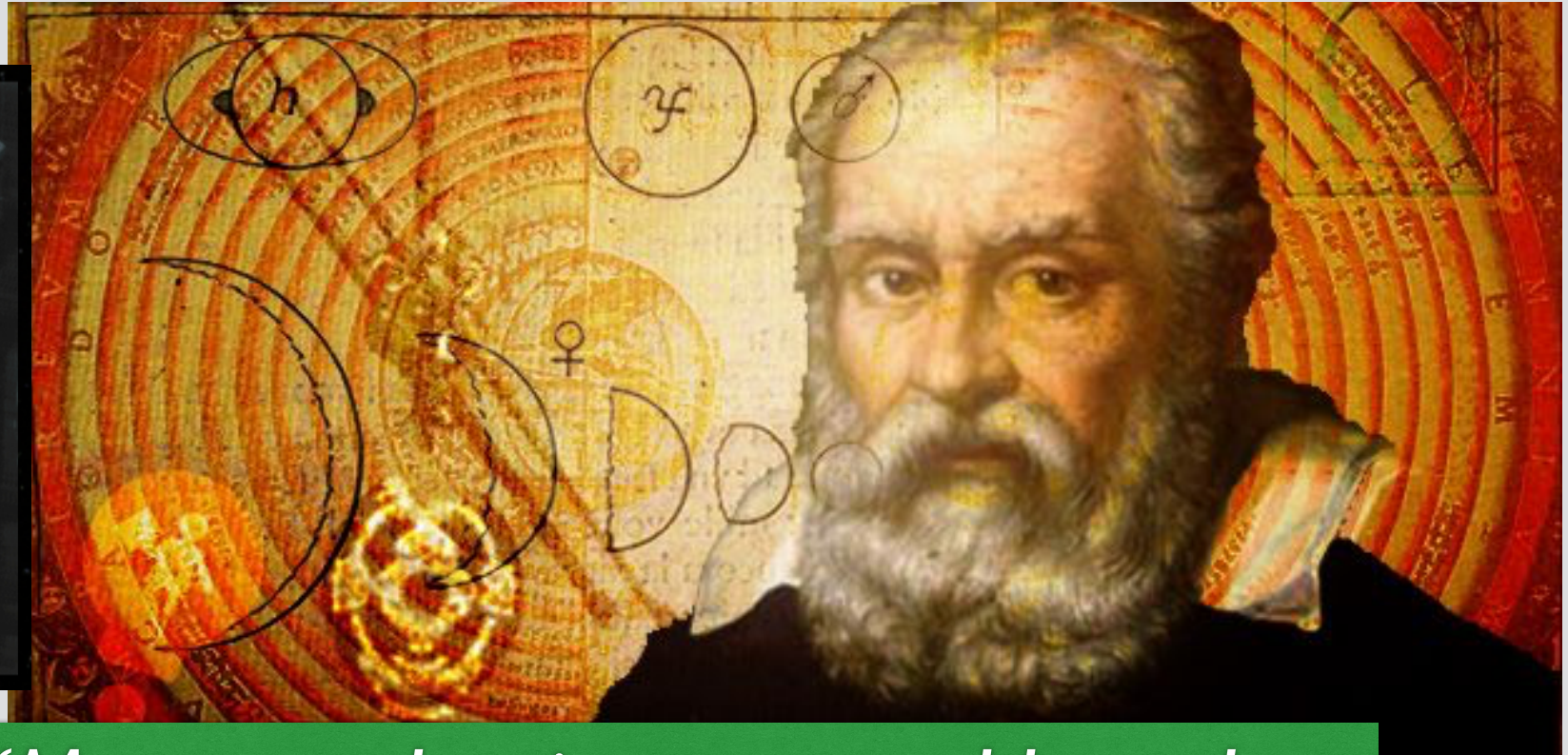
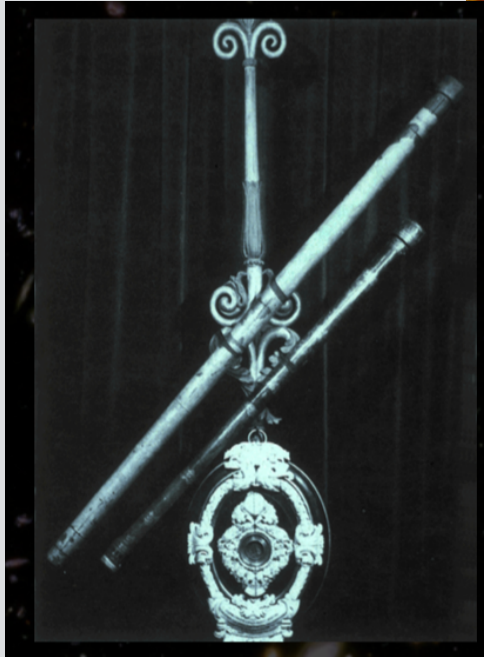


- Particle physics in the Netherlands coordinated by Nikhef:
  - partnership NWO/FOM and 5 Universities
  - close collaboration Leiden, Delft, Twente
- GRID computing
  - Nikhef/SARA as centre-of-excellence
- Dutch industry plays important role



Permanent Staff	68
OIO+PD	125
Technical/engineer	75
Support	26

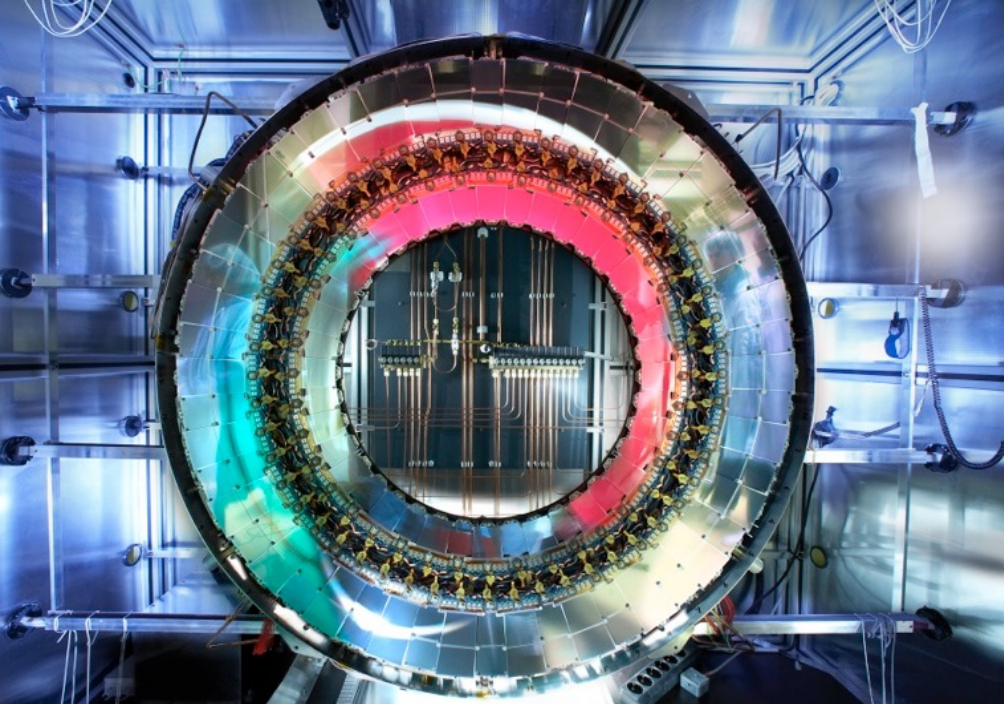
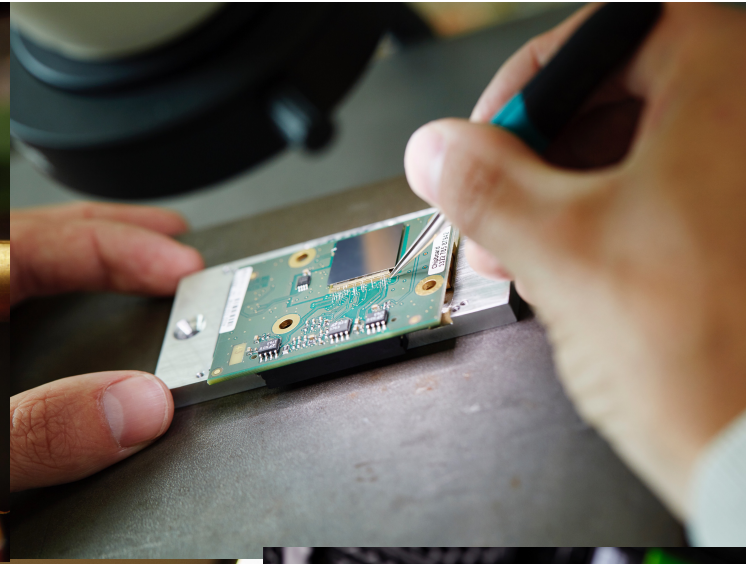
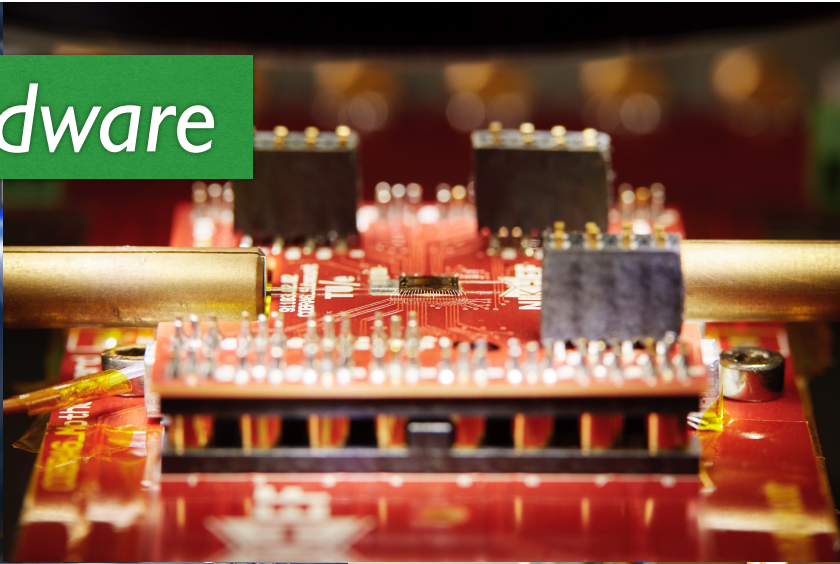
# Experimental HEF essentials!



*“Measure what is measureable and  
make measureable what is not so.”*

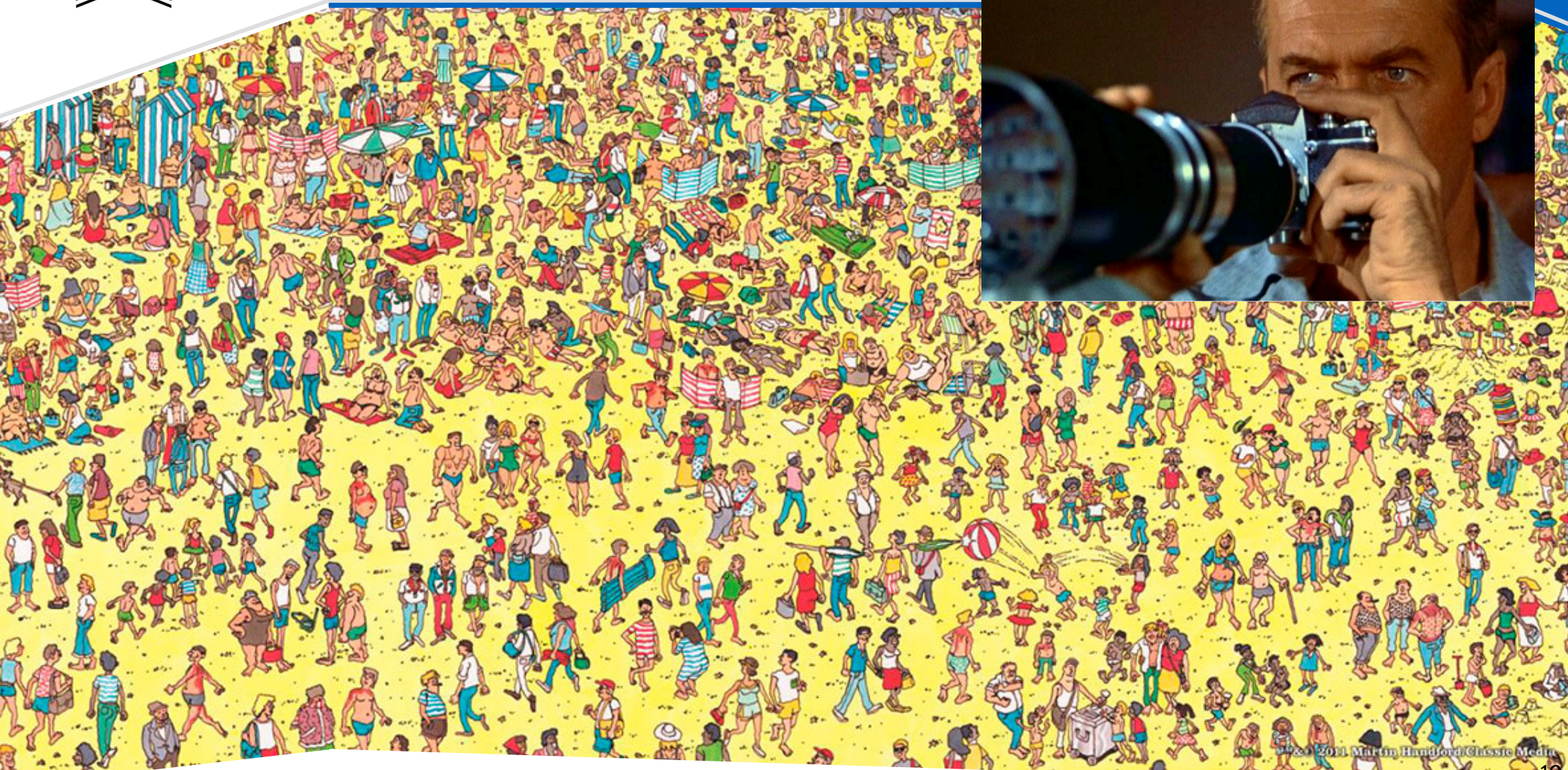


# *Building the hardware*





# Trigger and DAQ





# Trigger and DAQ



ISOTDAQ 2017 - International School of  
Trigger and Data AcQuisition

***Enjoy your stay!***