

JUNE 28, 2018

# REFLECTIONS

Stan Bentvelsen

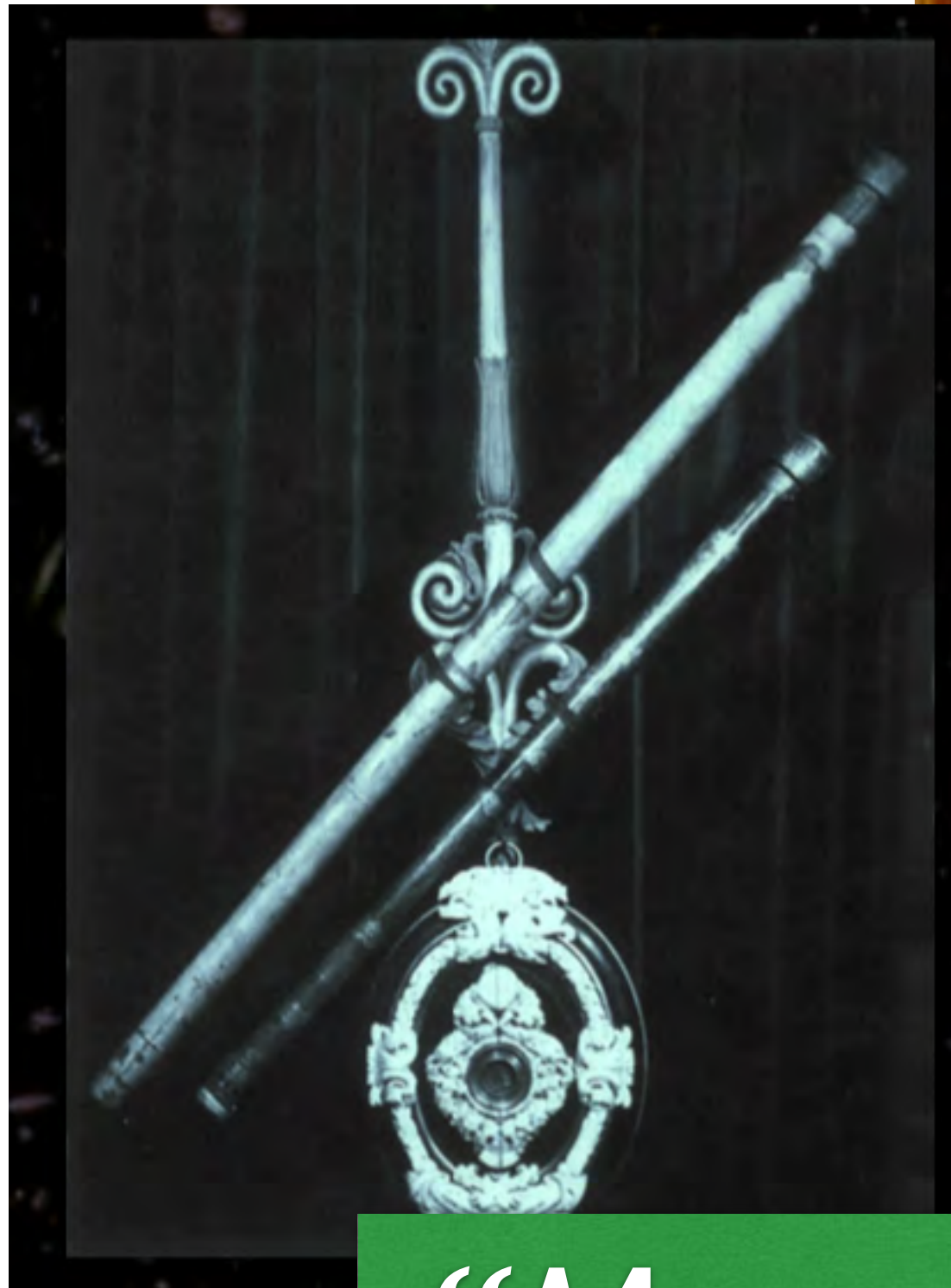




SCIENCE



# THE ERA OF COLLECTING DATA



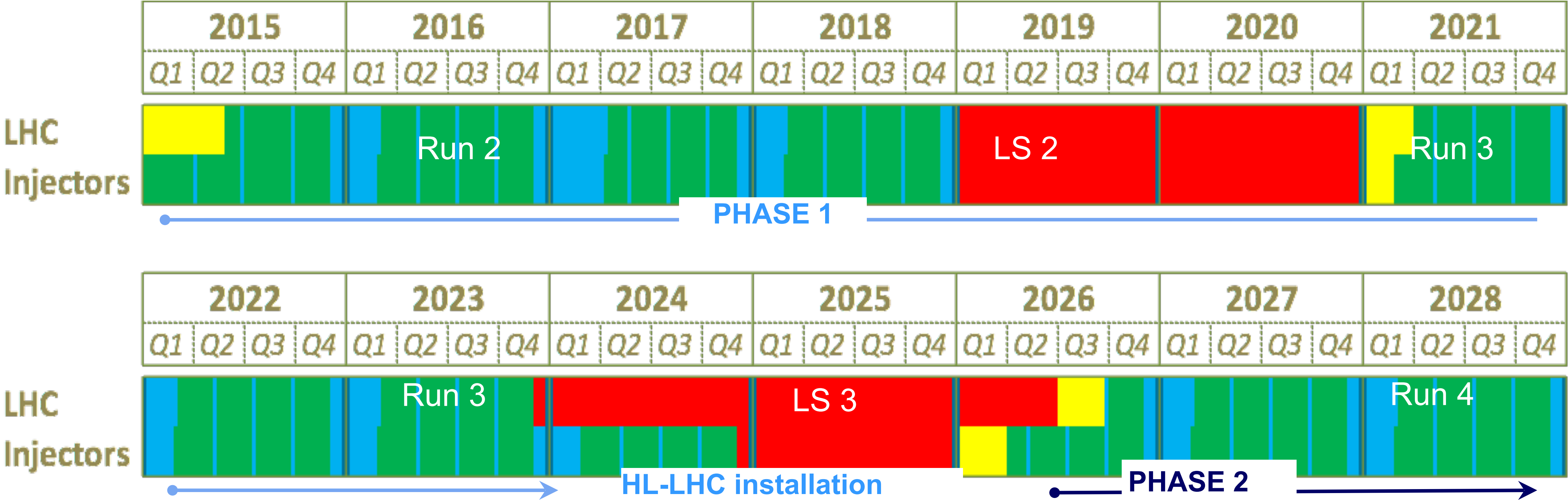
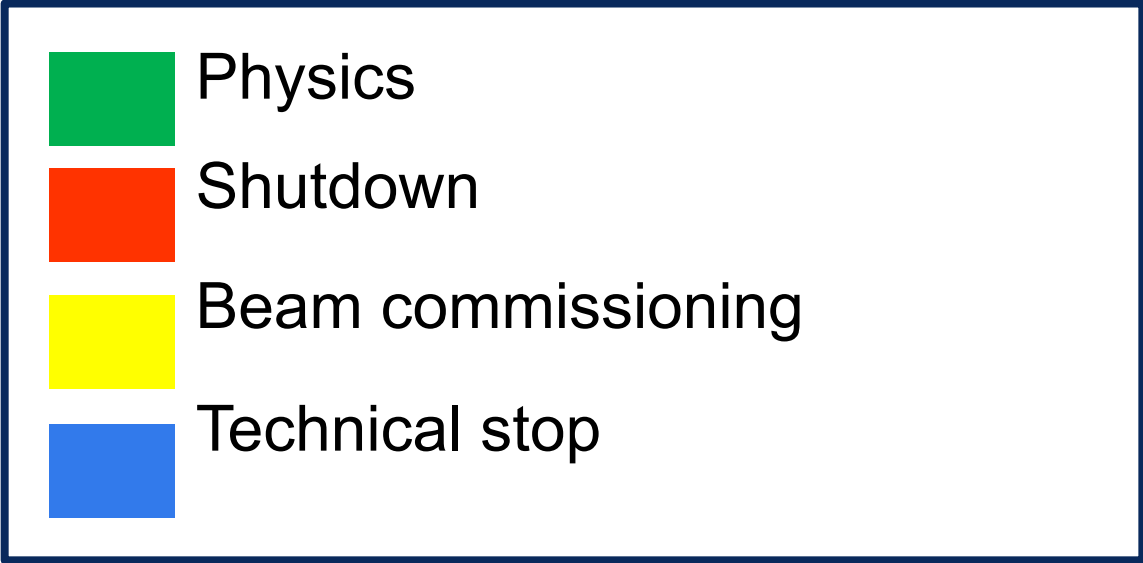
*“Measure what is measurable and make  
measurable what is not so.”*



# LHC ROADMAP UNTIL ~>2030

‘Harvest time’ - high quality data

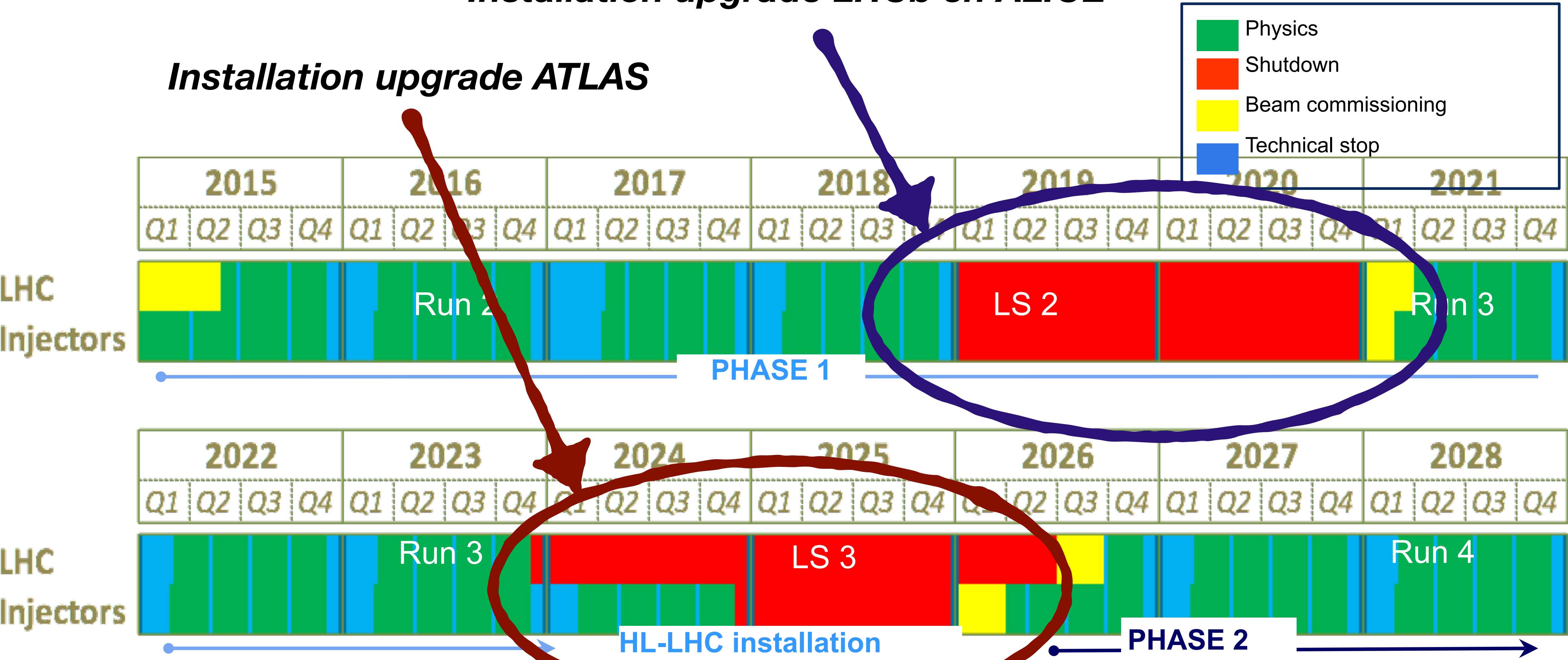
- precision measurements to find deviations
- brute force method to find new phenomena



# LHC ROADMAP

*Installation upgrade LHCb en ALICE*

*Installation upgrade ATLAS*





# START OF CIVIL ENGINEERING HL-LHC

## ATLAS and CMS sites

- A shaft around 80 metres deep
- An underground service hall for cryogenics equipment
- A 300-metre-long tunnel for electrical equipment (power converters)
- Four tunnels 50 metres in length, connecting to the LHC tunnel.
- On each site, the surface work consists of constructing five new buildings, representing a total surface area of 2800 m<sup>2</sup>





# START OF HL-LHC

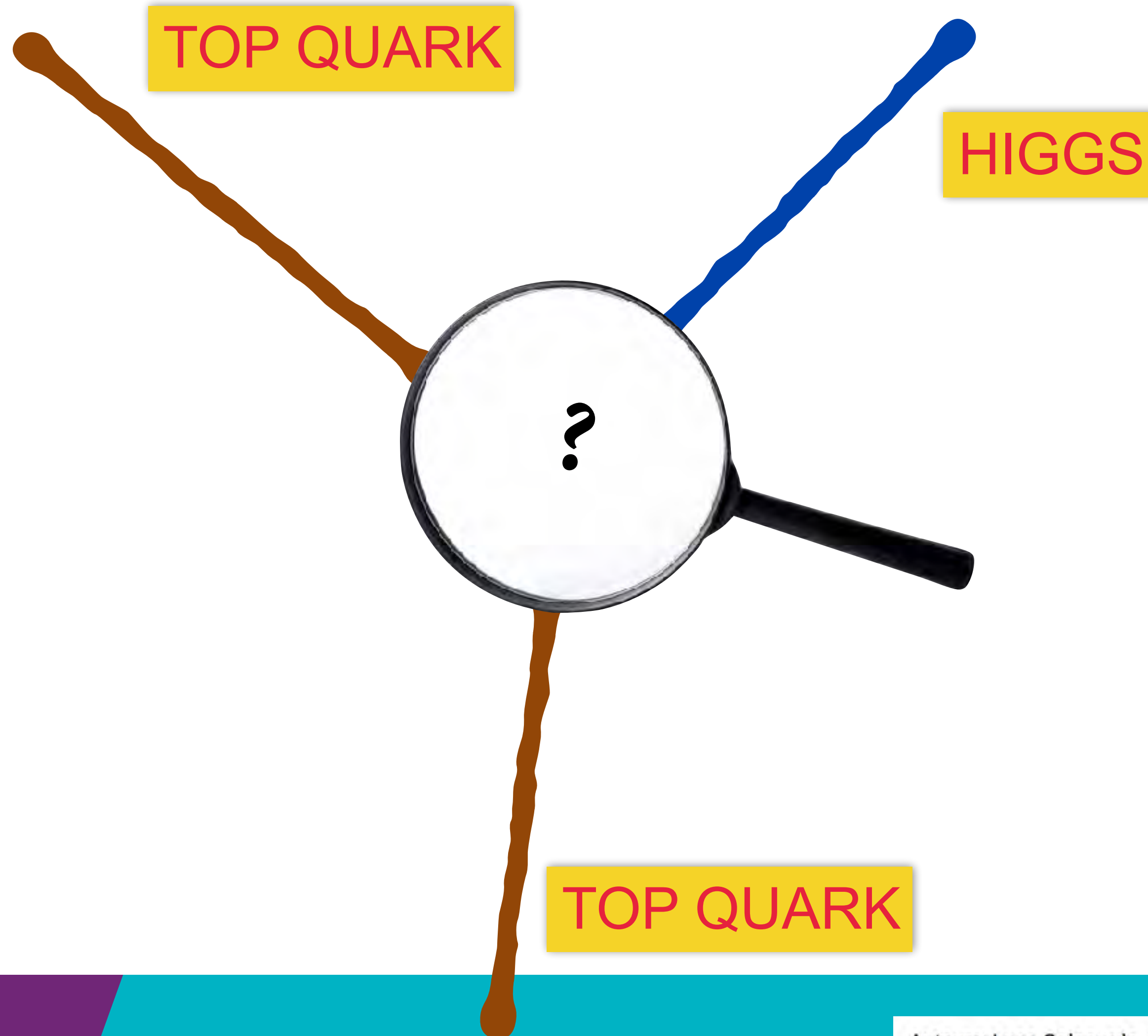
Ground-breaking ceremony for the High-Luminosity LHC

- Sijbrand de Jong president of CERN Council
- June 15, 2018





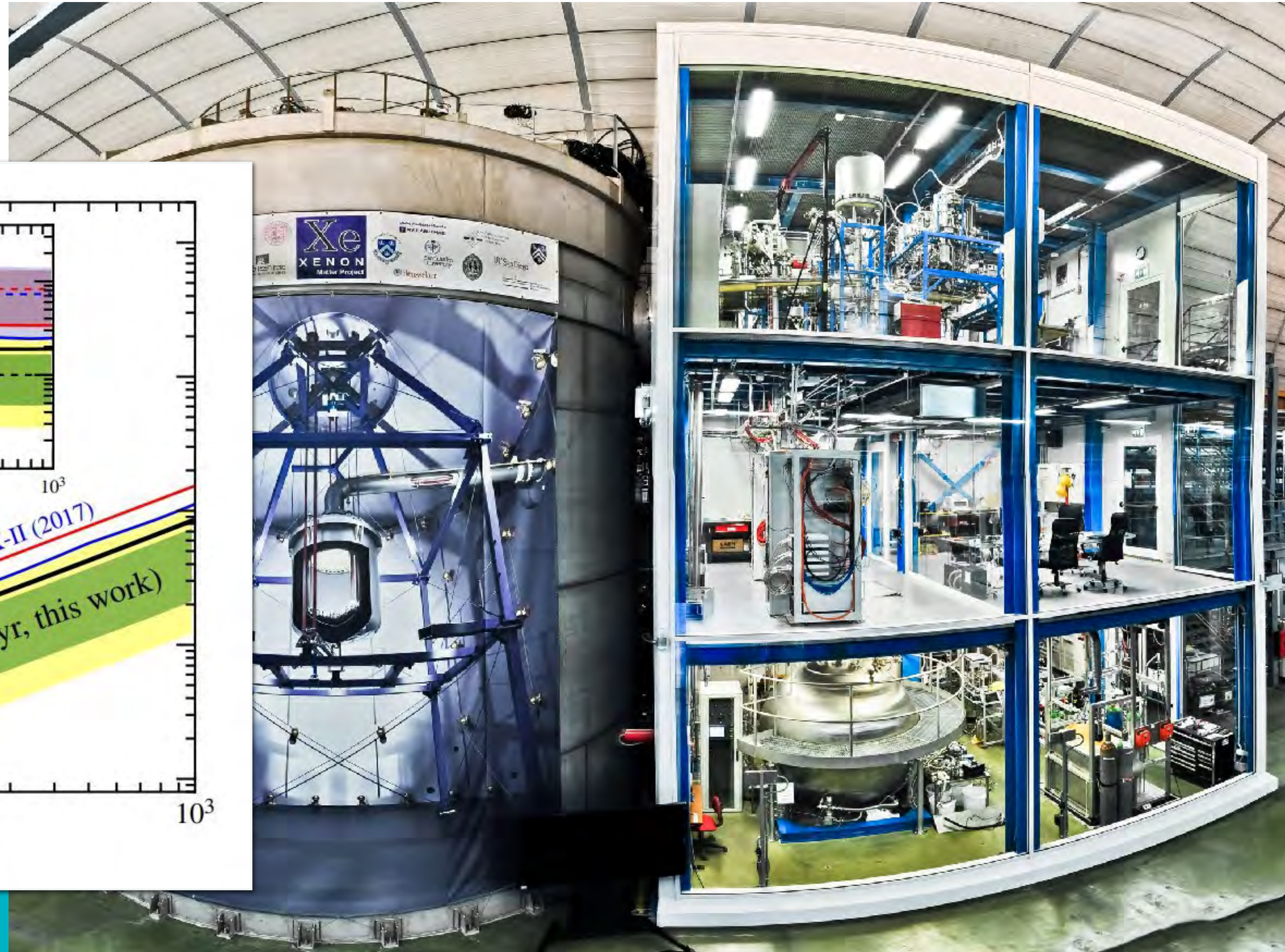
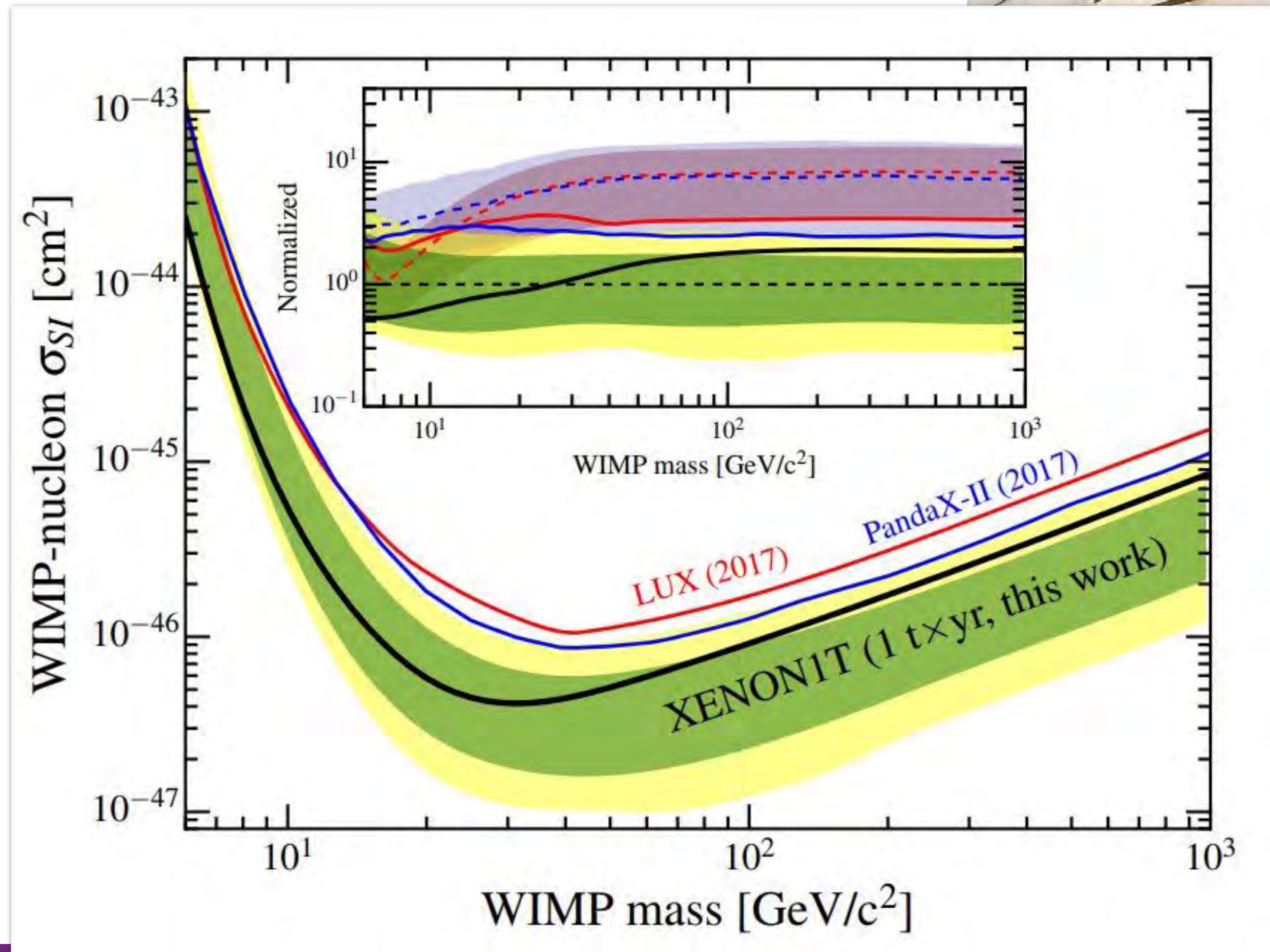
# PRIME MOTIVATION FOR HL-LHC





# XENON1T PROBES DEEPER INTO DARK MATTER WIMPS

Most sensitive results



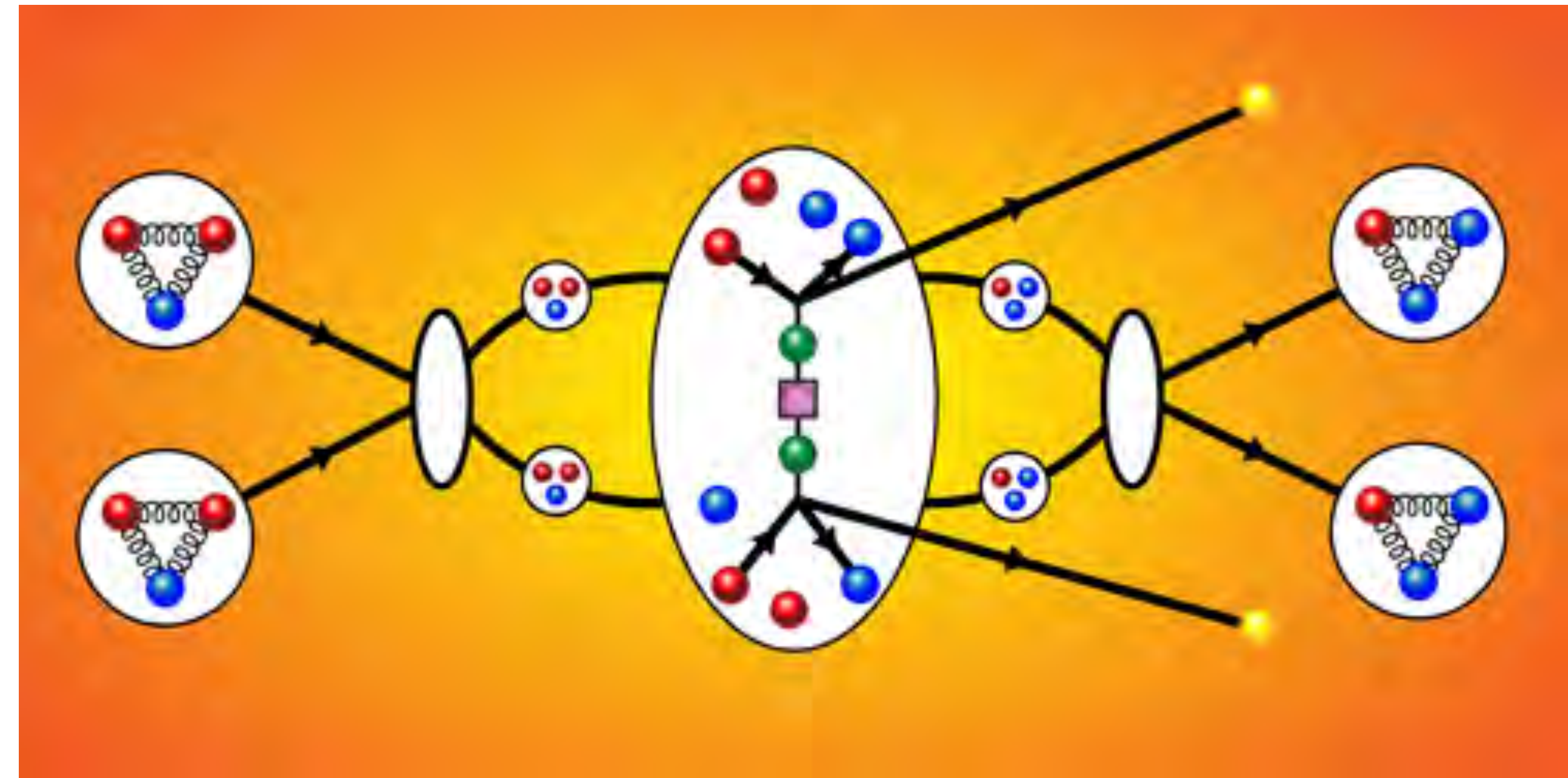


# HIGHLIGHTED - JORDY DE VRIES



## Missing Piece in the Neutrinoless Beta-Decay Puzzle

- The observation neutrinoless double-beta decay helps to figure out what gives neutrinos their mass and why there's far more matter than antimatter in the Universe.
- Missing contributions added that change the view

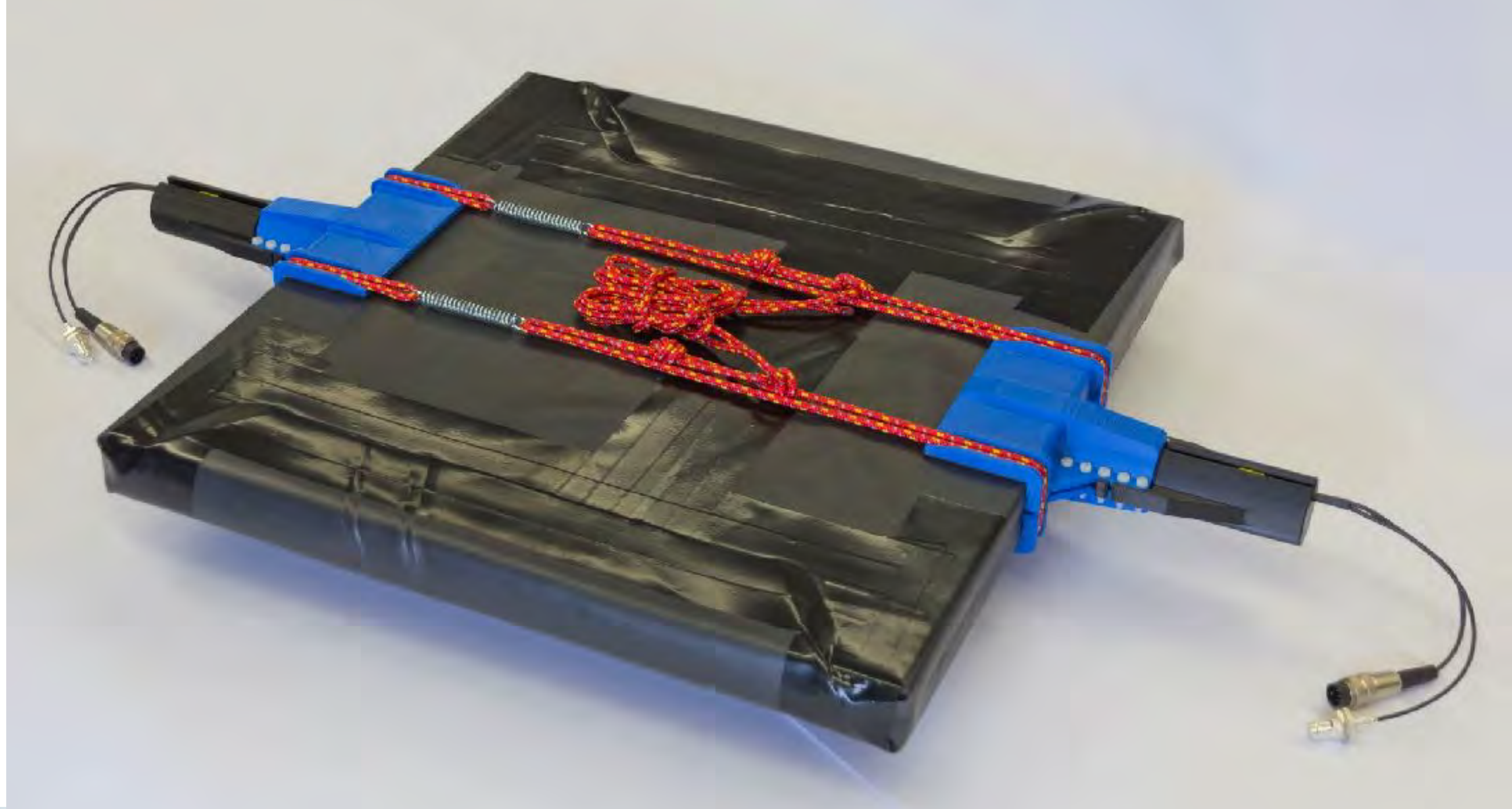




# CLEAN 2 ANTARTICA

## Treaty for Antarctic environment

- Expedition to South Pole by re-used materials
- Plastic pollution 'in the picture'
- HiSPARC detector on board





# CLEAN 2 ANTARTICA

Detector mechanics almost finished

- End of August the Solar Voyager will be transported to the Antarctic!
- In November to South Pole
- Documentary by SBS









# NATIONAL SCIENCE AGENDA

## Minister van Engelshoven (8 mei 2018)

- 'Kennis om de kennis' of mogen zoeken om het zoeken is van grote waarde. Daarom trekt dit kabinet hier veel geld voor uit. Het is een investering in de wetenschappelijke vrijheid.
- NWA: €70 miljoen dit jaar, €108 miljoen volgend jaar en €130 miljoen vanaf 2020.





Nr.nieuw	Titel nieuw
R01	Blauwe Route: water als weg naar innovatieve en duurzame groei
R02	Bouwstenen van materie en fundamenteën van ruimte en tijd
R03	Circulaire economie en grondstoffenefficiëntie: Duurzame circulaire impact
R04	Duurzame productie van gezond en veilig voedsel
R05	Energietransitie
R06	Het individu, zijn omgeving, gezondheid en ziekte: aandacht voor variatie
R07	Jeugd in ontwikkeling, opvoeding en onderwijs
R08	Kunst: onderzoek en innovatie in de 21ste eeuw
R09	Kwaliteit van de omgeving
R10	Levend verleden
R11	Logistiek en transport
R12	Materialen - Made in Holland
R13	Metten en detecteren: alles, altijd en overal
R14	NeuroLabNL: dé werkplaats voor hersen-, cognitie- en gedragsonderzoek
R15	De oorsprong van het leven – op aarde en in het heelal
R16	Op weg naar veerkrachtige samenlevingen
R17	Personalised medicine: uitgaan van het individu
R18	De quantum/nanorevolutie
R19	Regeneratieve Geneeskunde: op weg naar brede toepassing
R20	Smart industry
R21	Smart, liveable cities
R22	Sport en Bewegen
R23	Sustainable Development Goals voor inclusieve mondiale ontwikkeling
R24	Tussen conflict en coöperatie
R25	Waardecreatie door verantwoorde toegang tot en gebruik van big data







# BOUWSTENEN VAN MATERIE EN FUNDAMENTEN VAN RUIMTE EN TIJD

Zwaartekracht – een nieuwe ontdekkingsreis

PROGRAMMABESCHRIJVING

**NWA route 'Building blocks'**  
**The current NWA call**  
**Building consortia & community day**



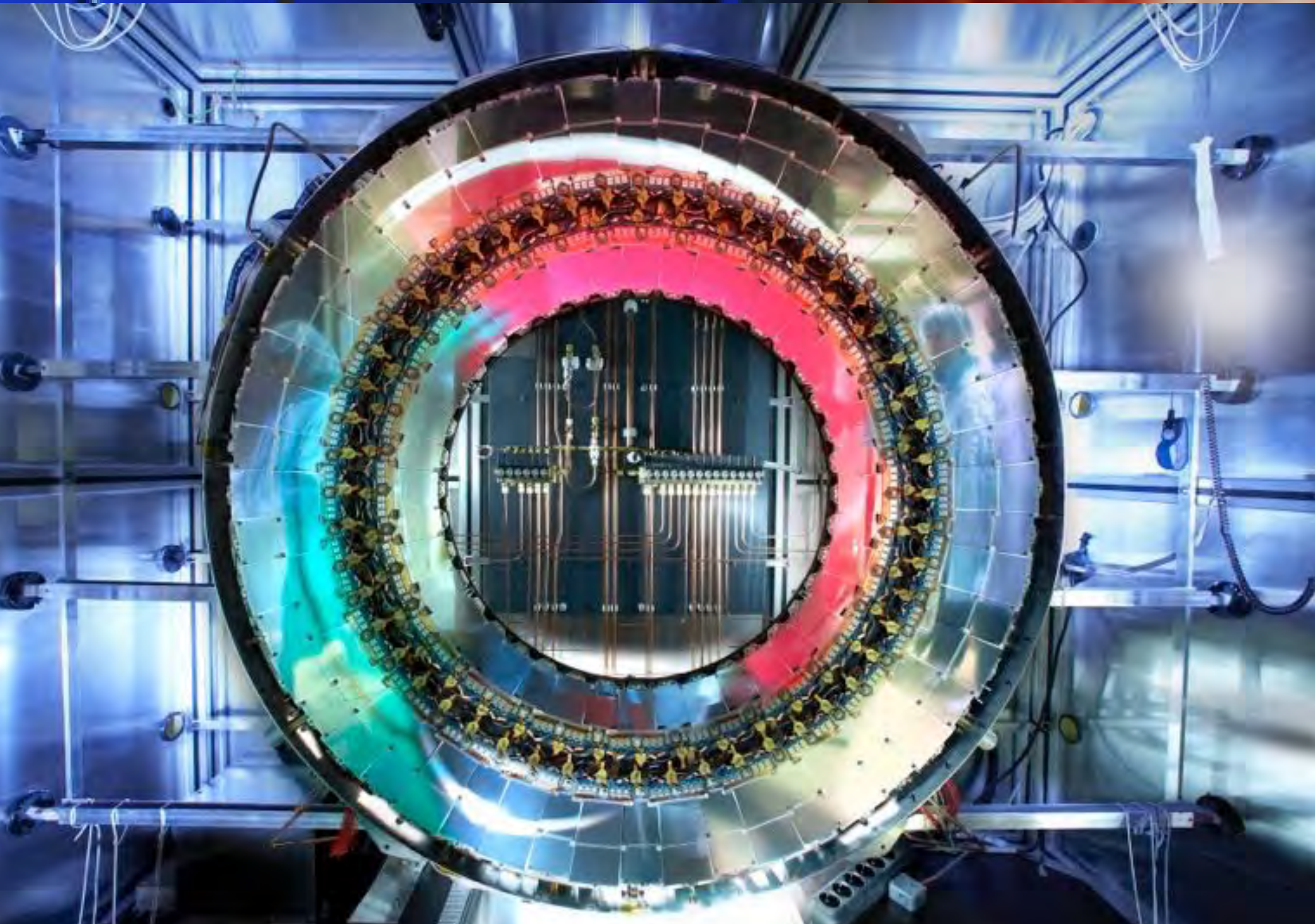
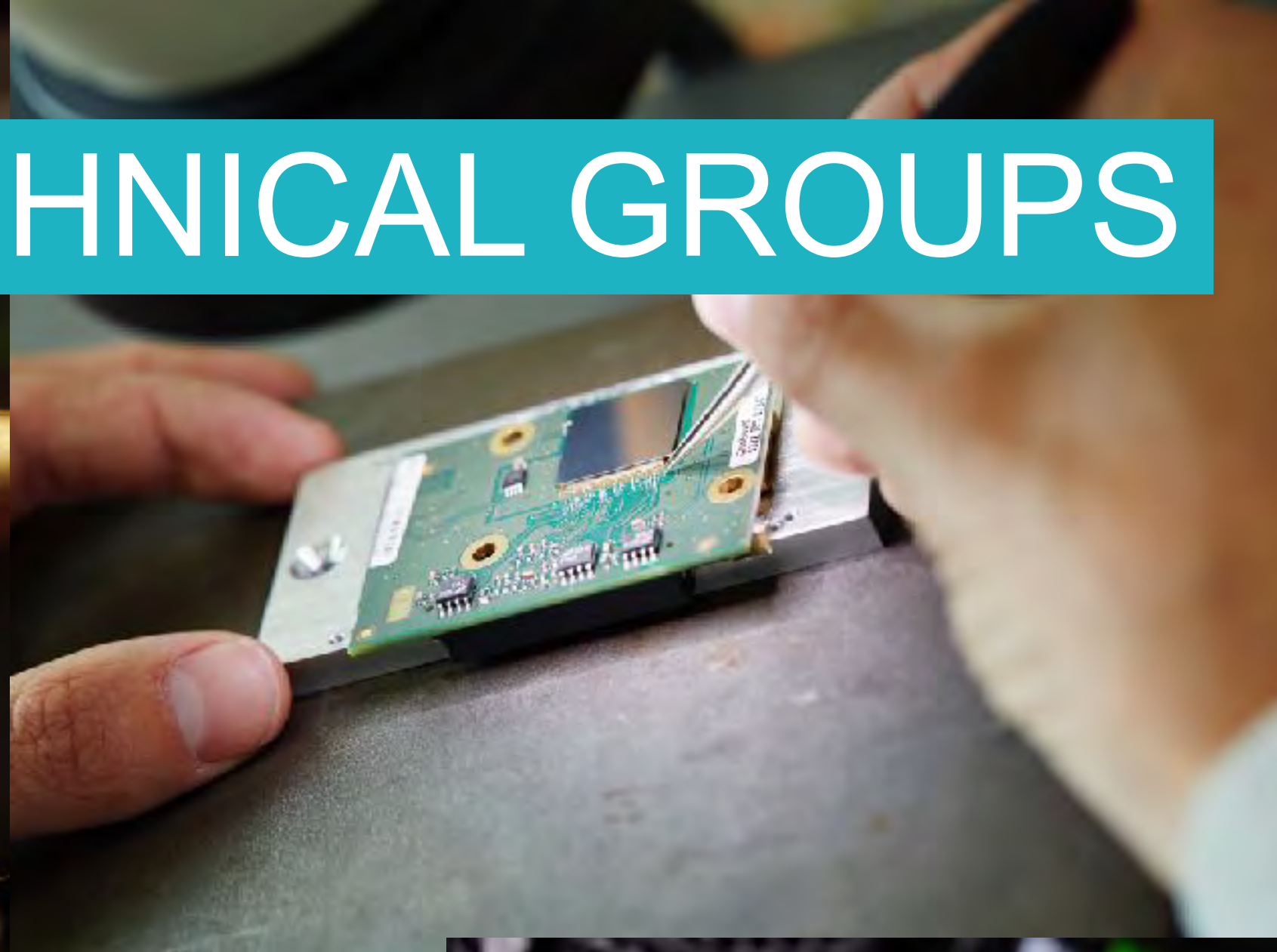
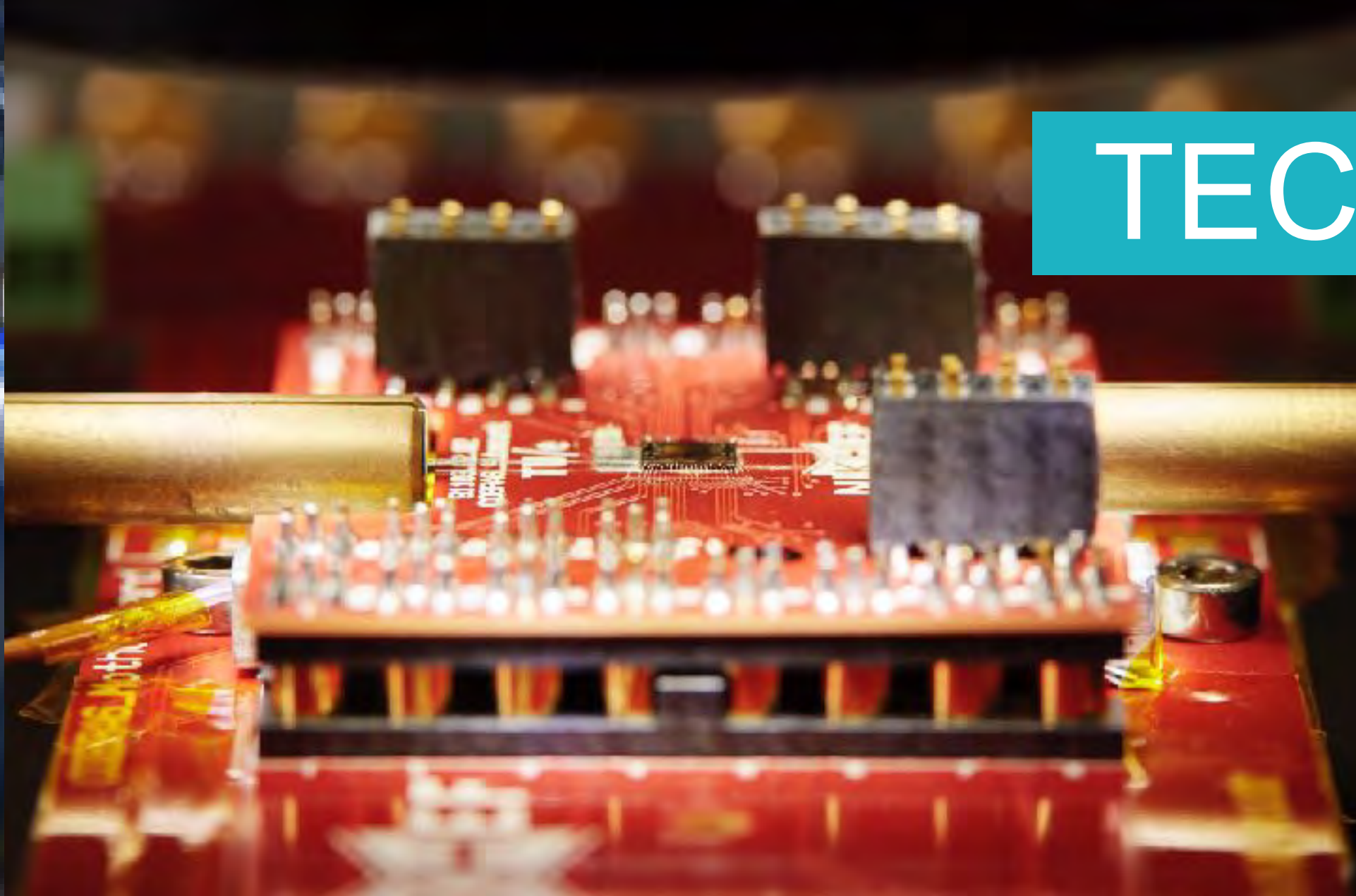


# NWA COMMUNITY DAY 'BOUWSTENEN'





# TECHNICAL GROUPS





# SENSEIS: NIKHEF ASIC WORKS WITH MEMS SENSOR

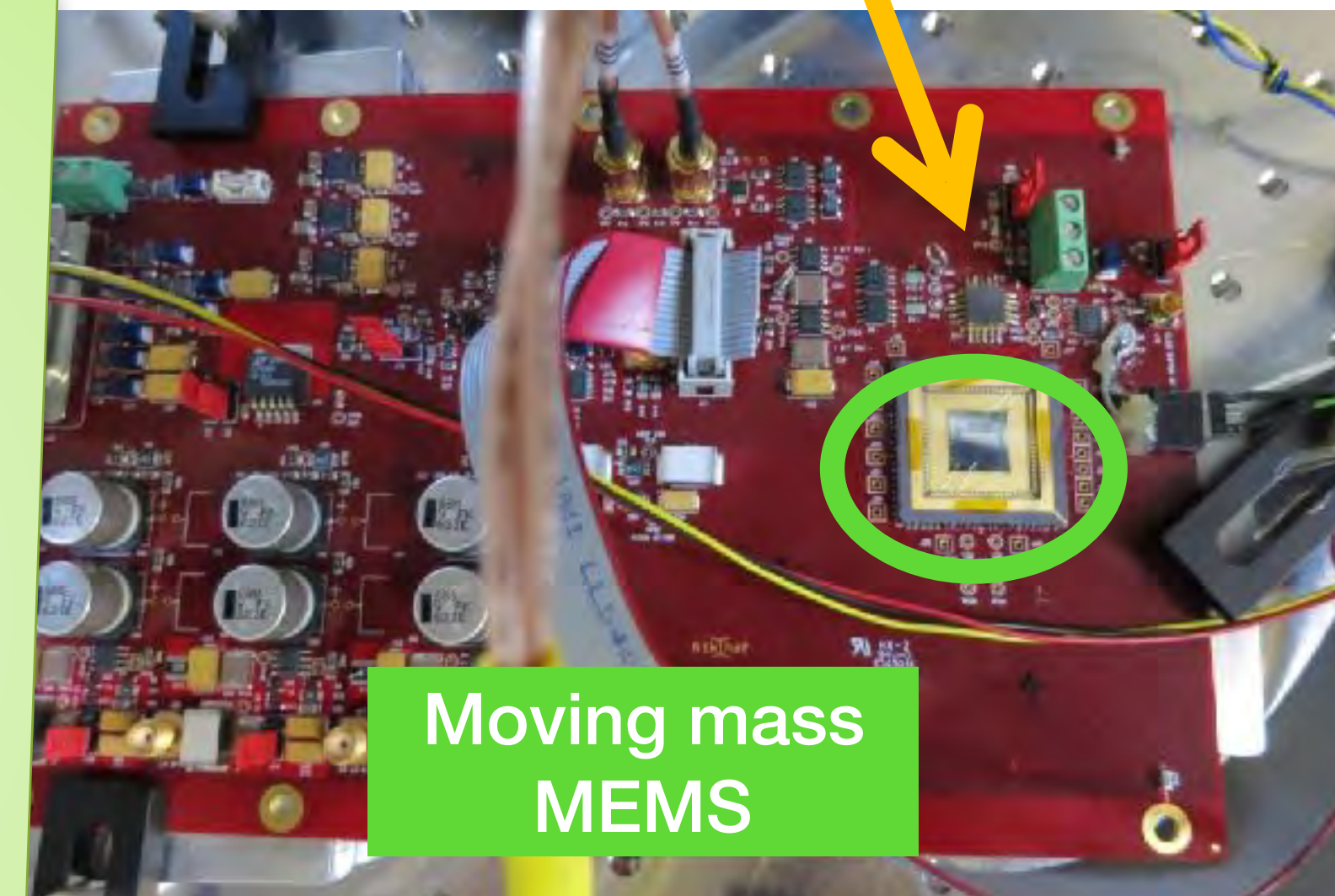
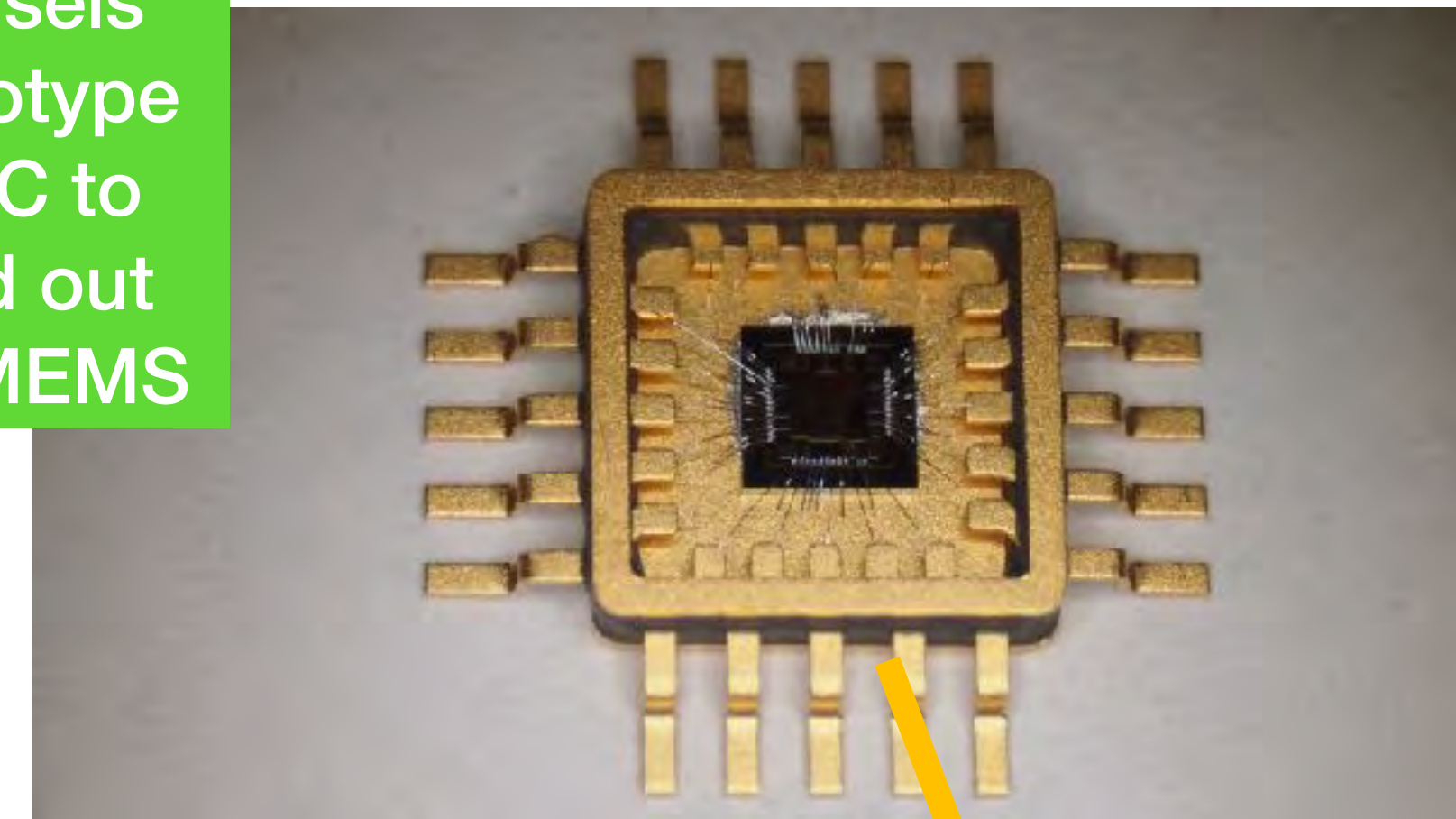
## Measurement of (seismic) vibrations

- Reference (e.g. Innoseis): Geophones
- New (Senseis):
  - MA: Microelectromechanical systems (MEMS) sensor to determine vibrations.
  - ET: MEMS information readout by ASIC (Application-Specific Integrated Circuit)

Sander van Doesburg  
Deepak Gajanana  
Mangleshwar  
Srivastava  
Arseniy Vitkovskiy  
Guido Visser

Boris Boom  
Alessandro Bertolini  
Eric Hennes  
Niels van Bakel  
+....

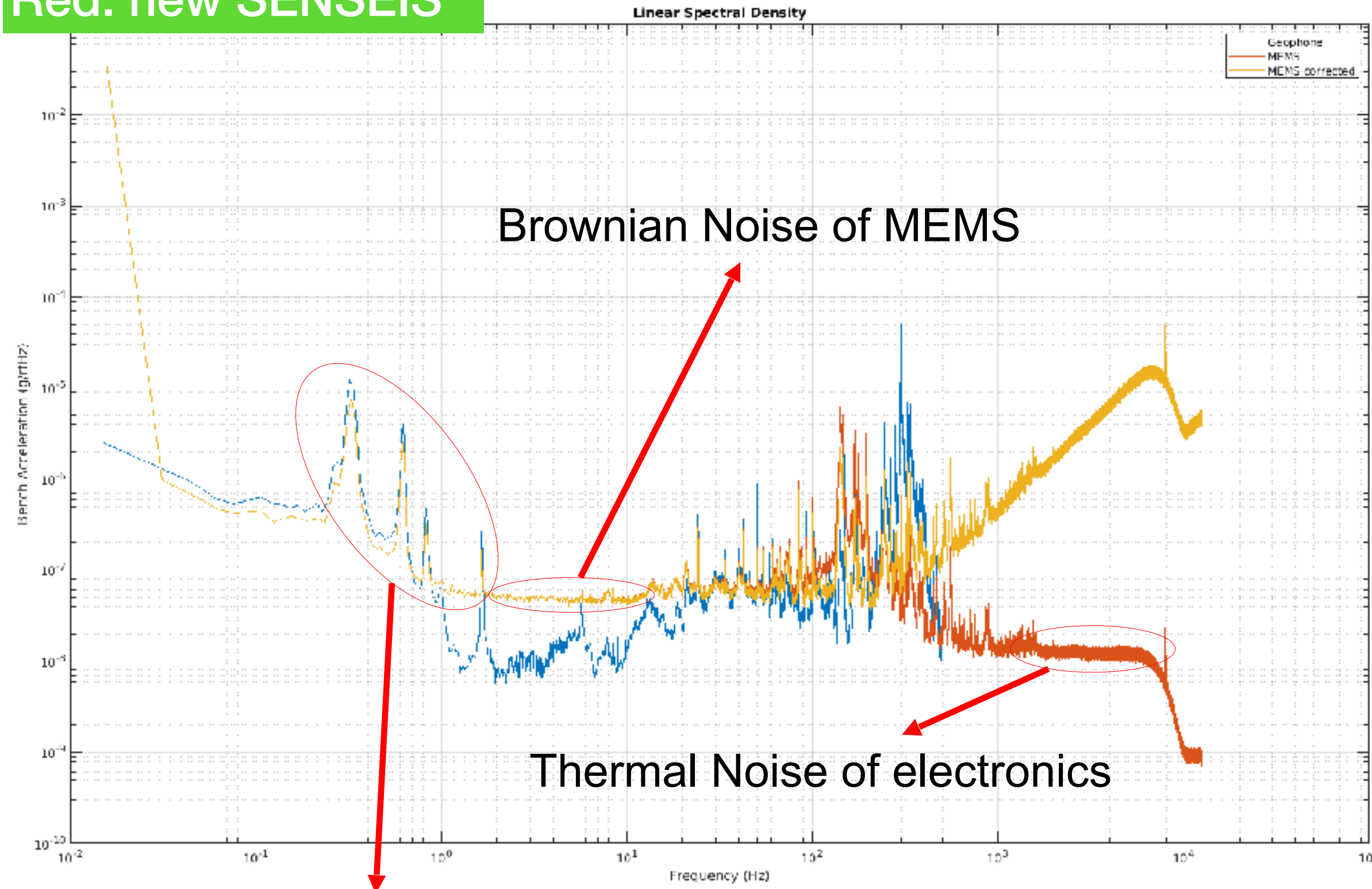
Senseis  
Prototype  
ASIC to  
read out  
the MEMS





# MEASUREMENTS MEMS AND GEOPHONE

Blue: old gyophone  
Red: new SENSEIS



Resonance frequencies of the  
*multiSAS* bench

## Measurement on multiSAS table

- MEMS (MT) and the readout ASIC (ET) are both designed at Nikhef
- New system works!
- Room for improvement

Work in progress, learning and improving as we move forward.



# COLLABORATION NIKHEF AND ASTRON

## Improve FPGA engineering design practices

- Field Programmable Gate Arrays in all data acquisition systems.
- Platform [OpenCores.org](https://opencores.org) to collaborate.
  - **ASTRON** as partner
- Developed by Oliscience - entrepreneur Andrea Borga





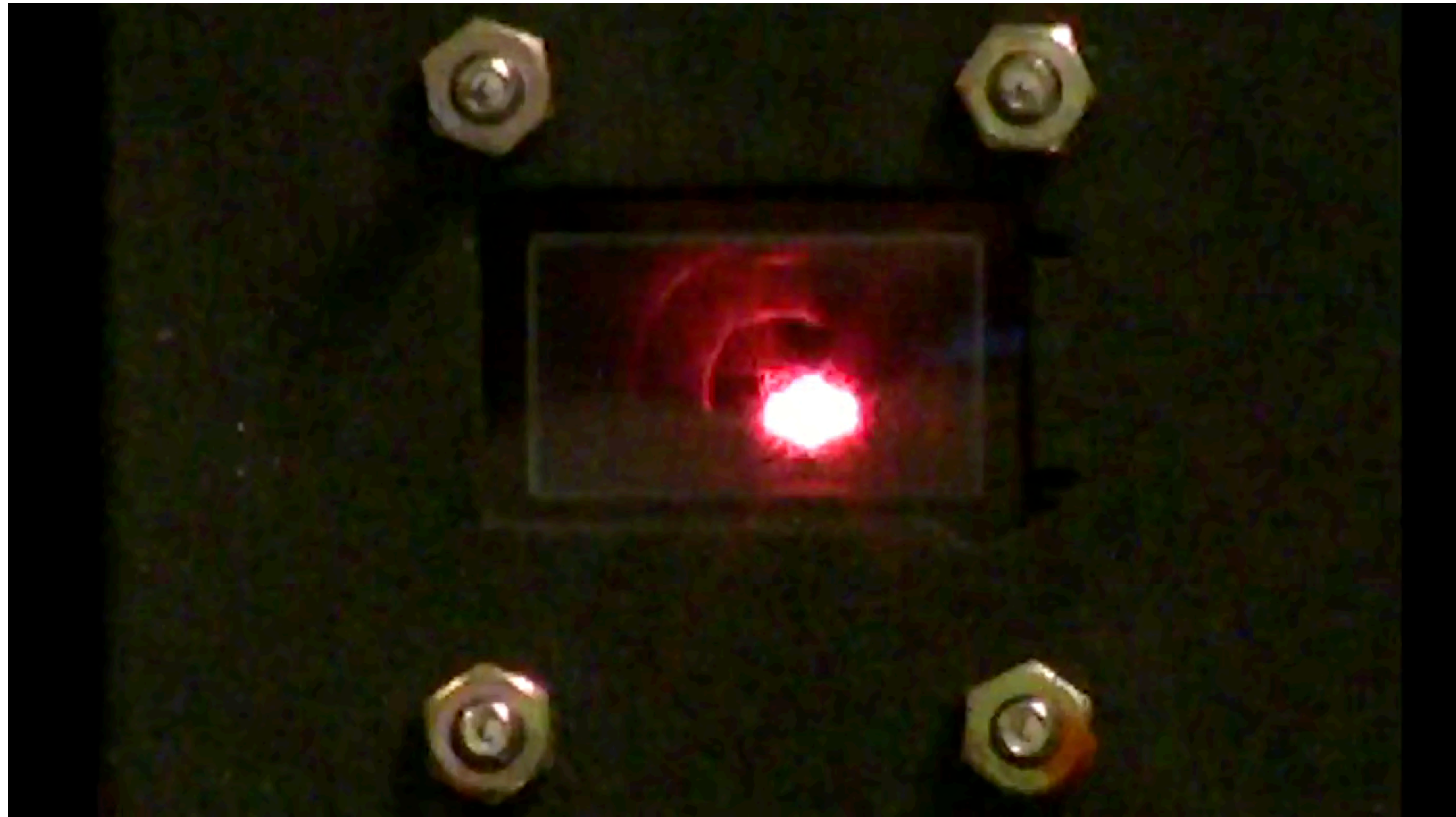
# HOLOGRAPHIC EMITTER

Martin Fransen

- *Take-off funding* for using new technique in commercial applications

Future:

- Holographic display in your mobile etc...





# CLOUD CHAMBER

We have a new cloud chamber!







PEOPLE





# BUSY PERIOD: HEI-SESSIES OF GROUPS

KM3NeT

LHCb

GW

R&D

ATLAS

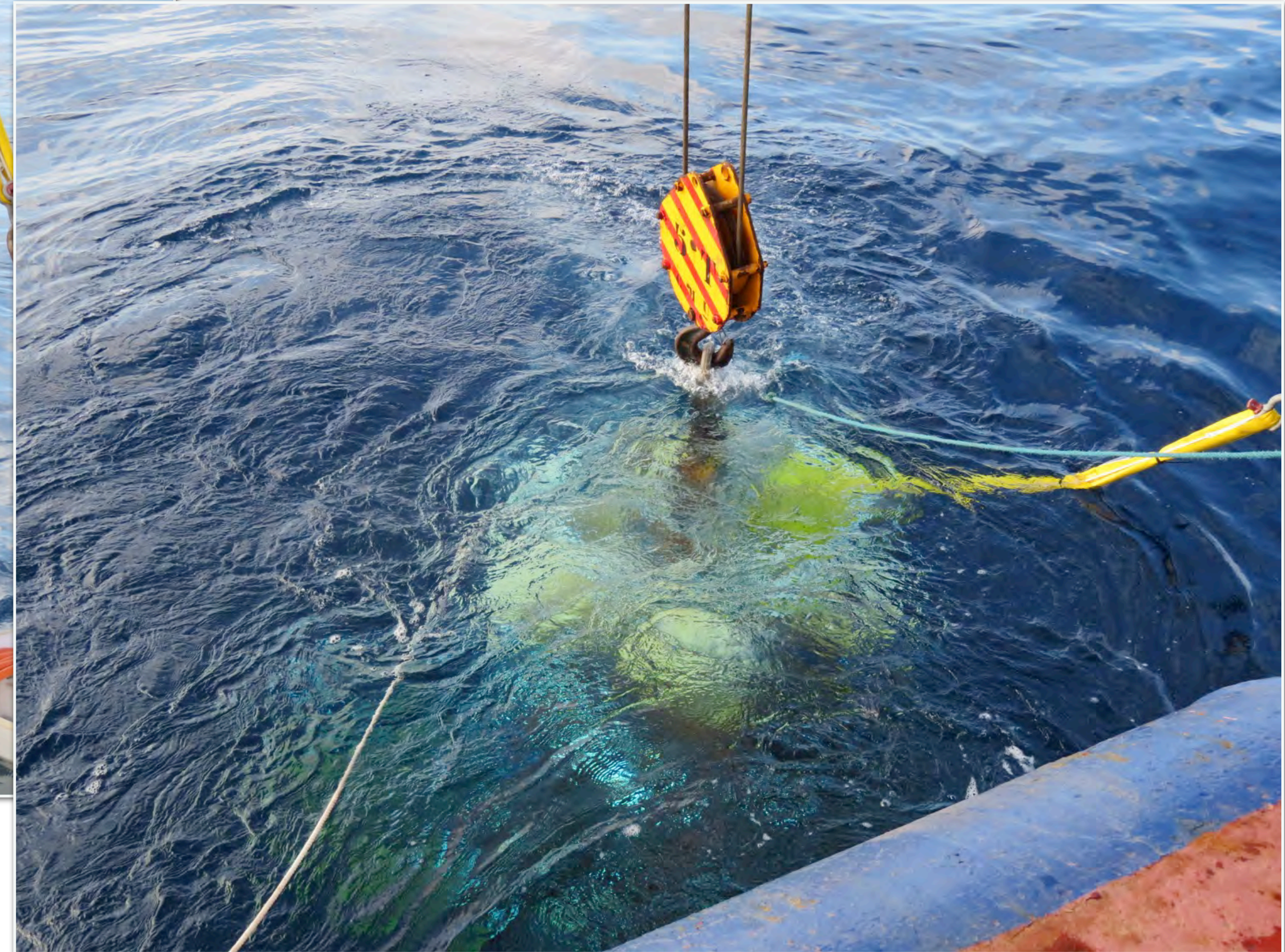
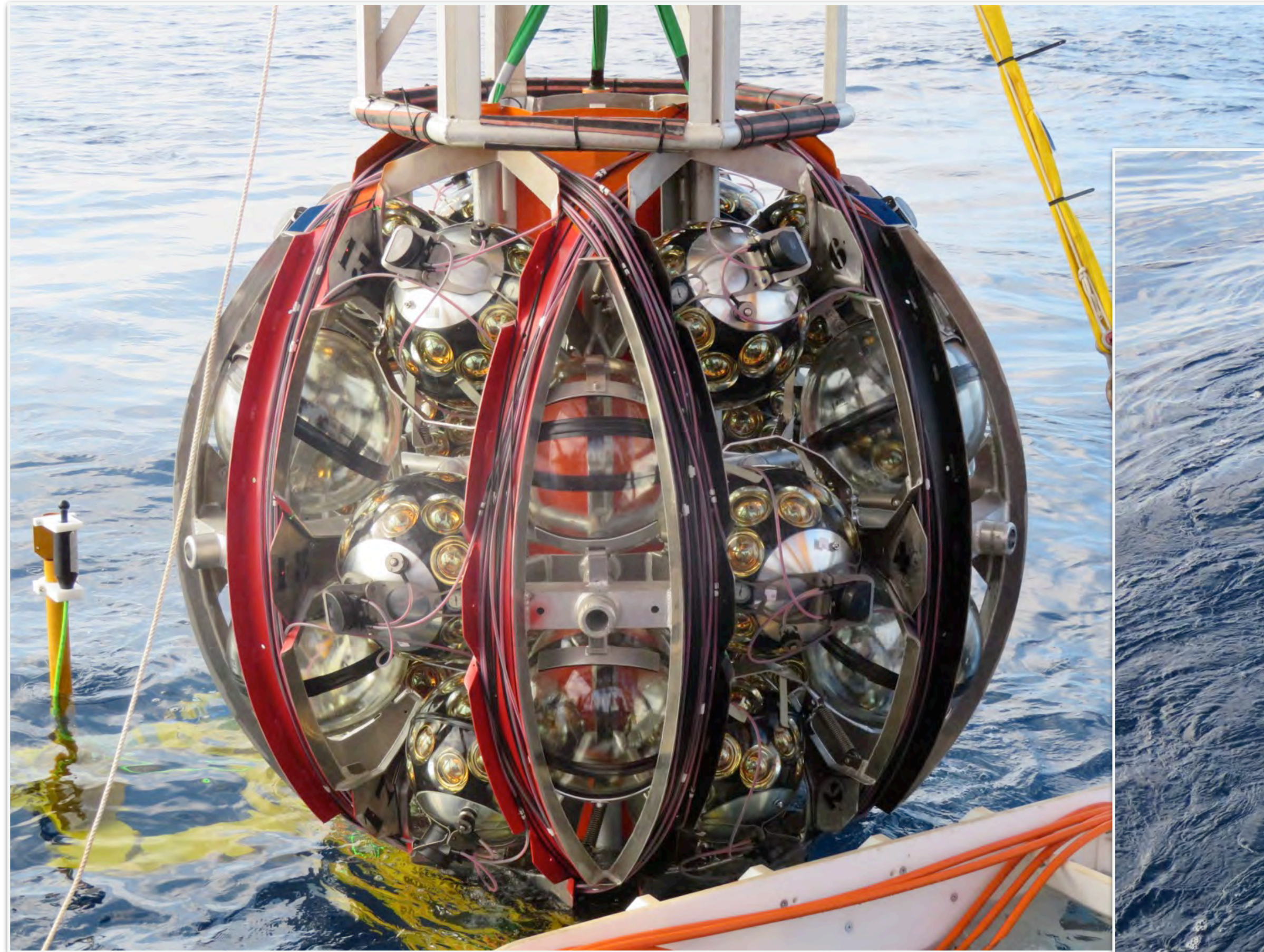
...

- Urge all groups to do this!





# DEPLOYMENT OF KM3NET IN 2017





# DEPLOYMENT OF KM3NET IN 2018





# AWARDS

## Barbara Trzeciak

- Young Scientist Award at Quark Matter 2018
- Talk on ALICE
  - Measurements of heavy-flavour correlations and jets with ALICE at the LHC

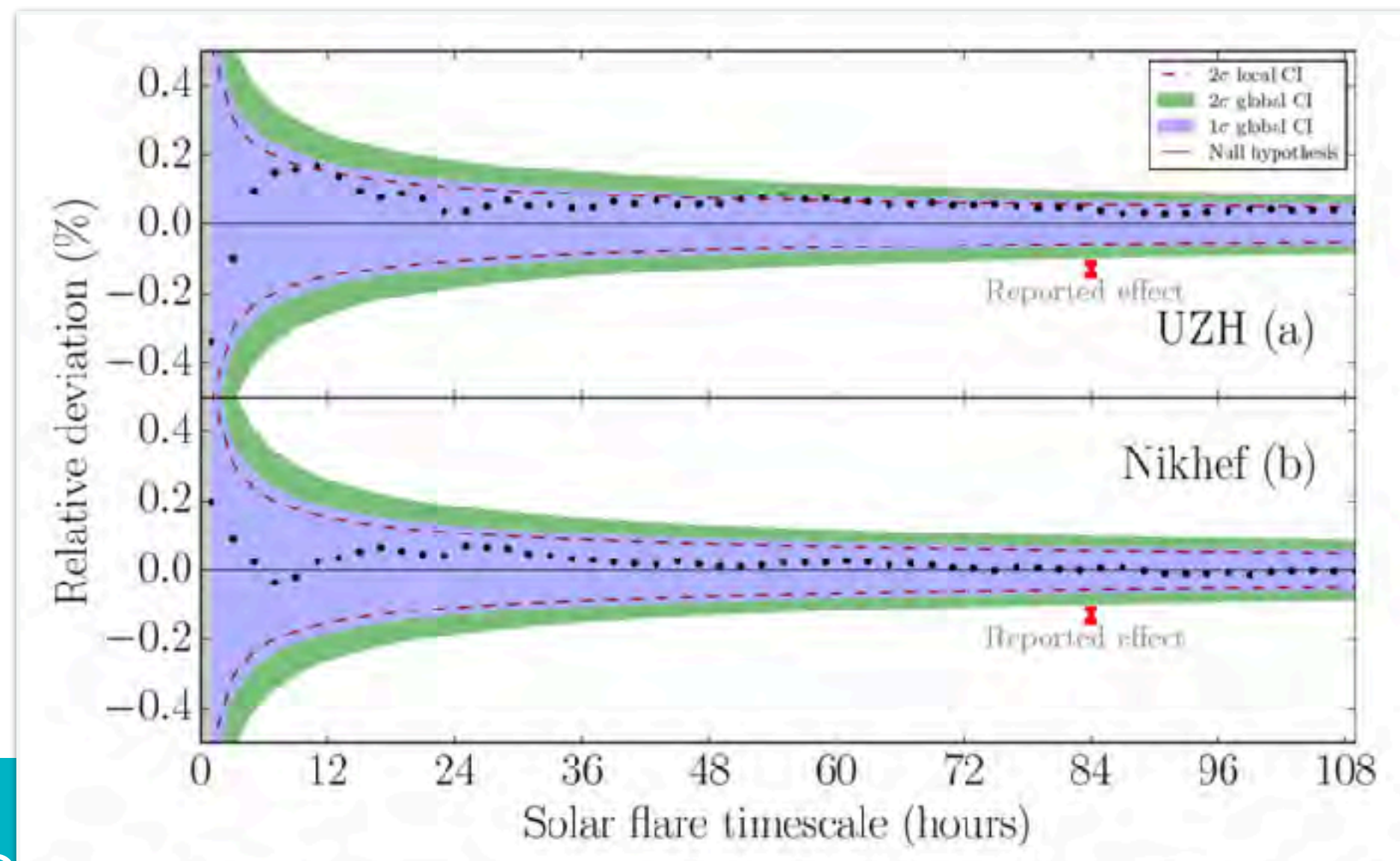




# PUBLICATION BY MSC STUDENT

## Jasper Nobelen (UvA)

- First analysis of in-house modulation experiment
- No correlation between Solar flares and the decay rate of several  $\beta$ -decaying isotopes





# NEW PEOPLE

## Peter Gaemers

- PhD student at XENON



## Ann-Katrin Perrevoort

- Postdoc in ATLAS  
on  
Lepton Flavor Violation





# MT: NEW STAGIAIR

Bas Steenbeek

- HvA - 3D printen





# COMMUNICATION

Martine Oudenhoven

- Started June 1st

Martijn van Calmthout

- Will start on September 1st





# SCIENCE WRITER VOLKSKRANT

As announced - George van Hal

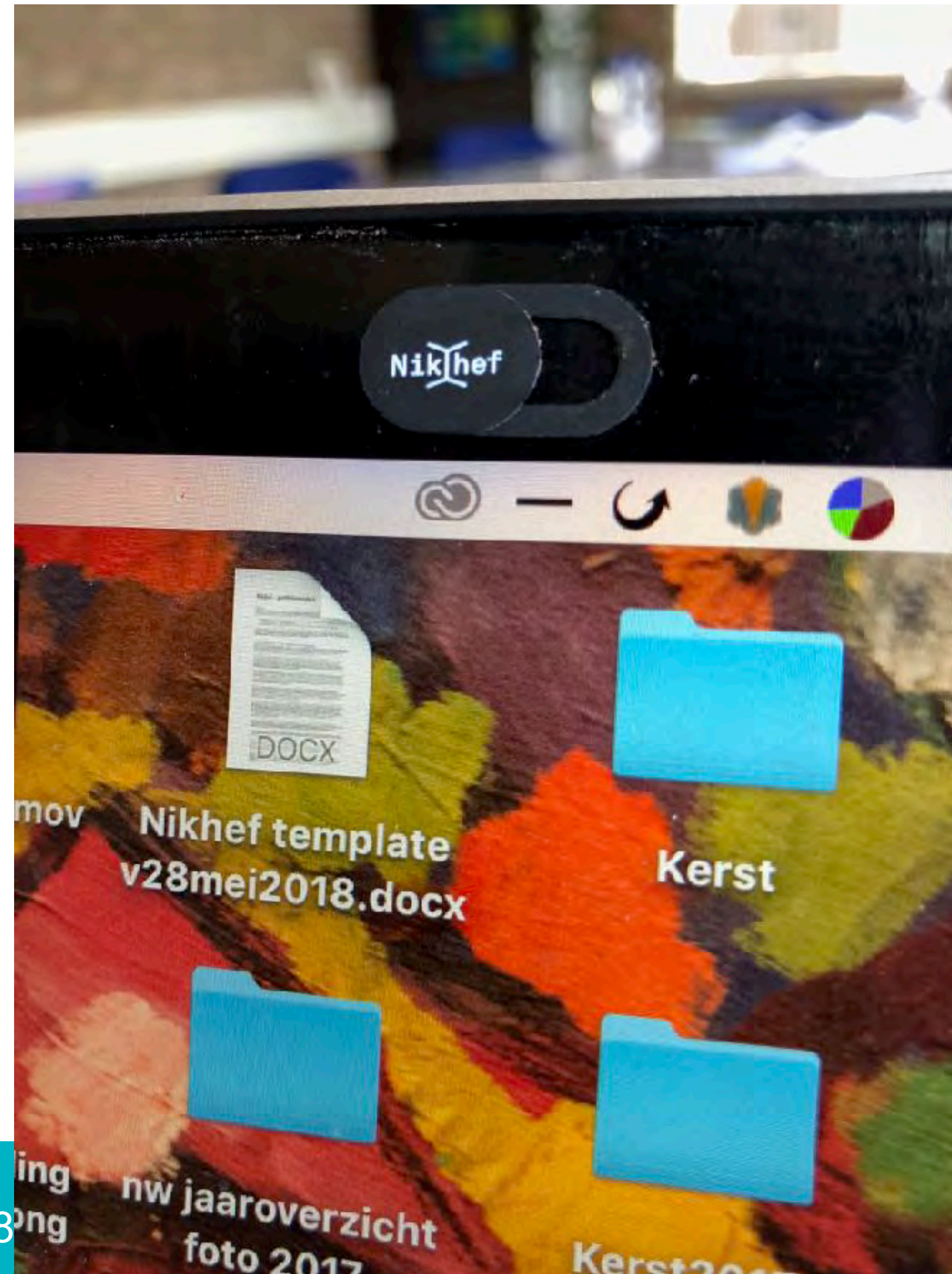
- Moving away from New Scientist
- Well known for his contributions to the Nikhef annual report etc.





# AVG - GENERAL REGULATION PERSONAL DATA

Laptop and  
mobile  
camera protection  
available -





BEYOND SCIENCE





# ARBO, MILIEU & STRALING

## Safety, Health and Environment

- New email address to communicate with department
- [safety@nikhef.nl](mailto:safety@nikhef.nl)
- TOPdesk ticket systeem
  - Same as GRID, Helpdesk, Facilities

## Bram en Nico op CERN voor ARBO onderzoek

- 18-20 Juli 2018: geef aan als je een issue hebt
- Werkplekken onderzoek
- Werkbelasting opbouw nieuwe LHCb detectoren





# NEW LASER SAFETY OFFICERS

Bas Swinkels  
Matteo Tacca

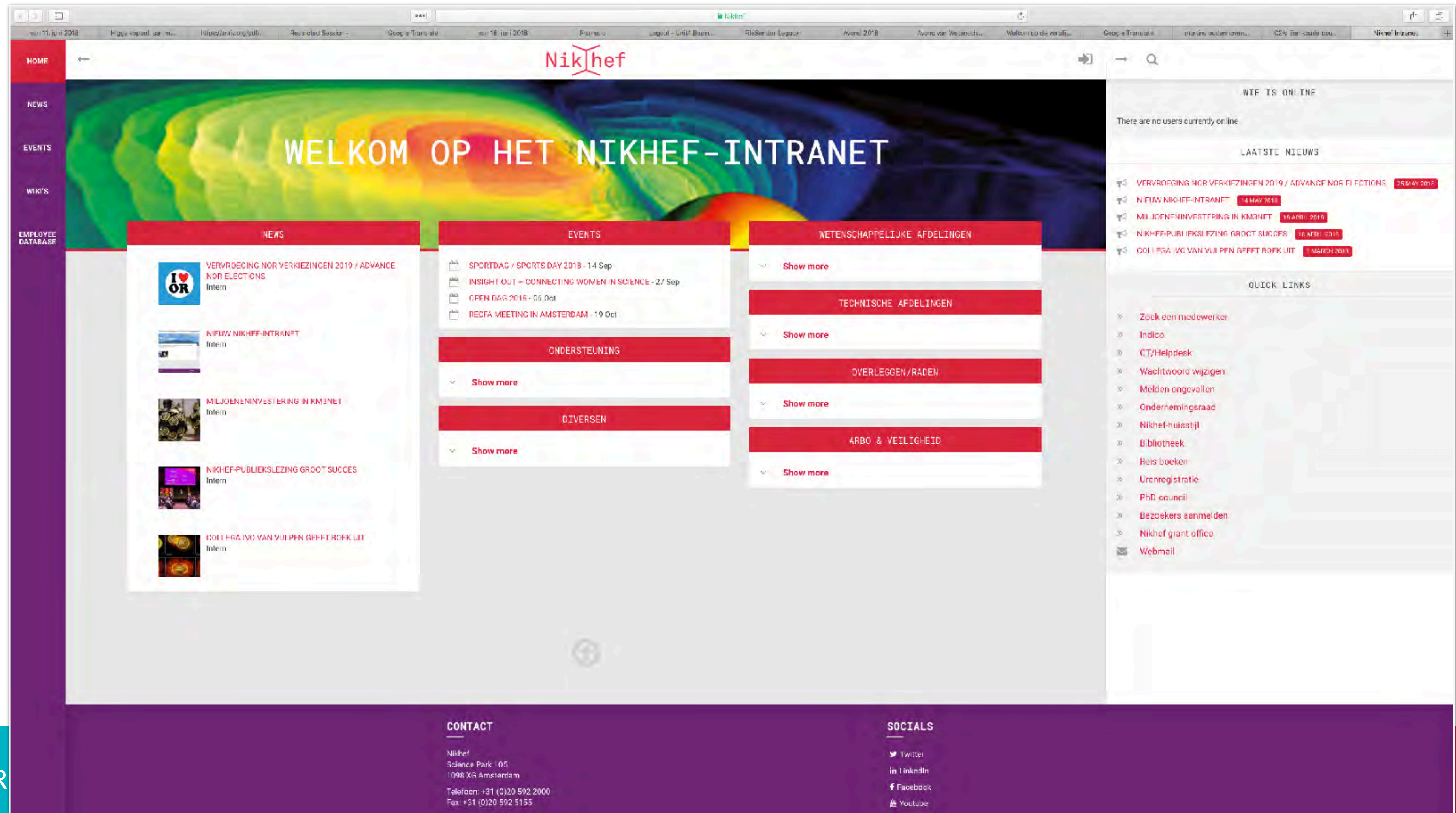


- Thanks to  
Jan-Willem Schmelling





# NIKHEF INTRANET AVAILABLE



The screenshot displays the Nikhef Intranet homepage. At the top, a navigation bar includes links for HOME, NEWS, EVENTS, WIKI'S, and EMPLOYEE DATABASE. The main header features the Nikhef logo and a large banner with the text 'WELKOM OP HET NIKHEF-INTRANET'. Below the banner, there are three main content columns: NEWS, EVENTS, and WETENSCHAPPELIJKE AFDELINGEN. The NEWS column lists recent articles with thumbnails and dates. The EVENTS column lists upcoming events with dates. The WETENSCHAPPELIJKE AFDELINGEN column lists various departments with 'Show more' links. On the right side, there are sections for 'WIE IS ONLINE' (showing no users online), 'LAATSTE NIEUWS' (latest news), and 'QUICK LINKS' (a list of useful links). The footer contains contact information and social media links.

**WIE IS ONLINE**  
There are no users currently online.

**LAATSTE NIEUWS**

- VERVROEGING NOR VERKIEZINGEN 2019 / ADVANCE NOR ELECTIONS 25 MAY 2018
- NIEUW NIKHEF-INTRANET 14 MAY 2018
- MILJOENENINVESTERING IN KMNIT 15 APRIL 2018
- NIKHEF-PUBLIEKSLEZING GROOT SUCCES 16 APRIL 2018
- COLLEGA VAN VULPEN GEEFT ROEK UIT 2 MARCH 2018

**QUICK LINKS**

- Zoek een medewerker
- Indico
- CT/Helpdesk
- Wachtwoord wijzigen
- Melden ongevallen
- Ondernemingsraad
- Nikhef-huisstijl
- Bibliotheek
- Reis boeken
- Urenregistratie
- PhD council
- Bezoekers aanmelden
- Nikhef grant office
- Webmail

**CONTACT**  
Nikhef  
Science Park 105  
1098 XG Amsterdam  
Telefoon: +31 (0)20 592 2000  
Fax: +31 (0)20 592 5135

**SOCIALS**

- Twitter
- LinkedIn
- Facebook
- Youtube



# HBO STUDENT TESTIMONIALS





# MATRIX-VII

## Moving fast

- People can move-in on October 1st





# DYNAMITE

## Deconstructing “building 140 MeV”

- Former Nikhef accelerator, used by Telecity
- Remove concrete floor of 2m thick

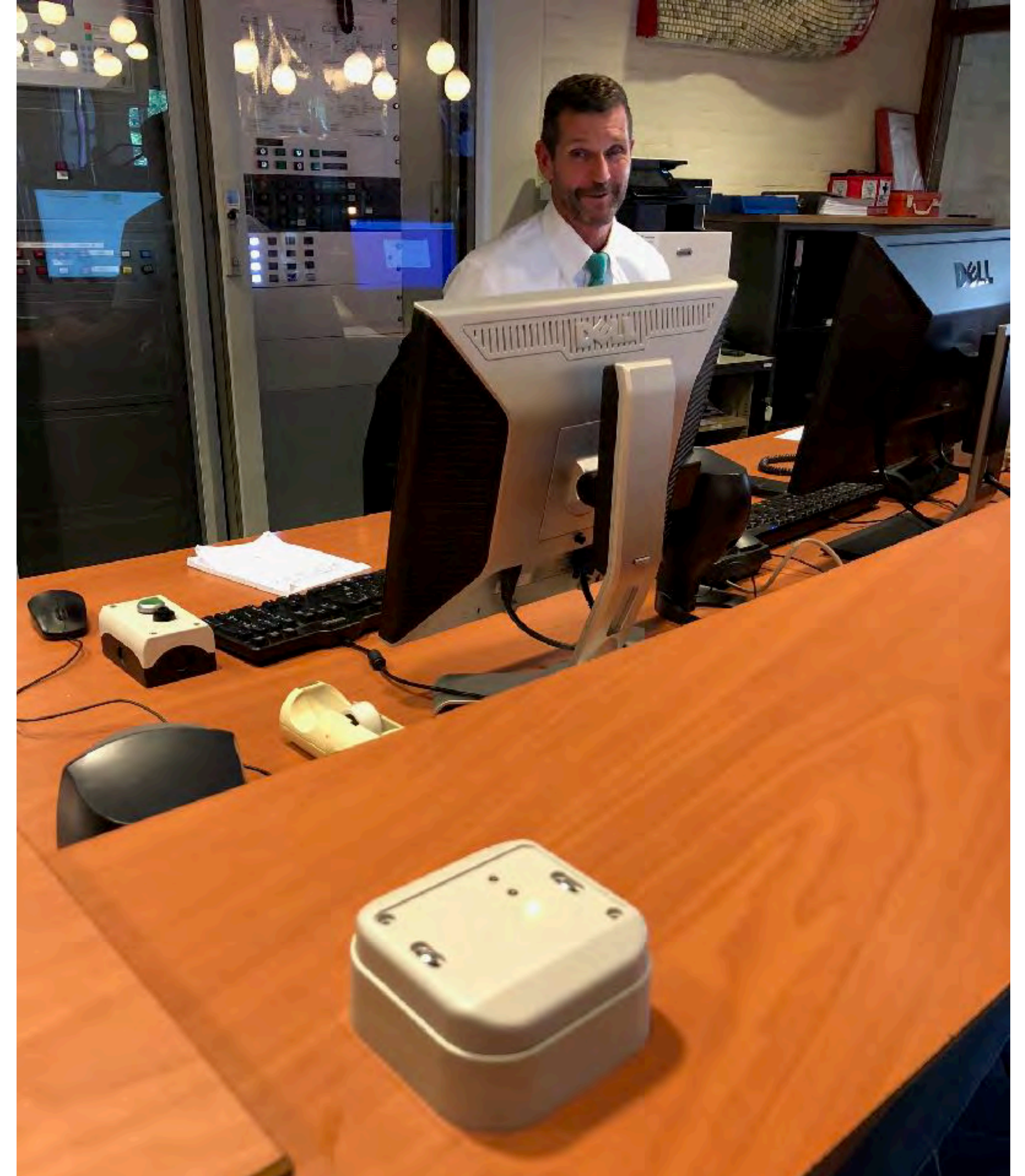




Small explosions to crack the concrete









# RENOVATION OF NIKHEF

Funding for the renovation definite:

- Advice from Work Council is positive
  - both NOR & COR
- NWO-RvB gave final approval

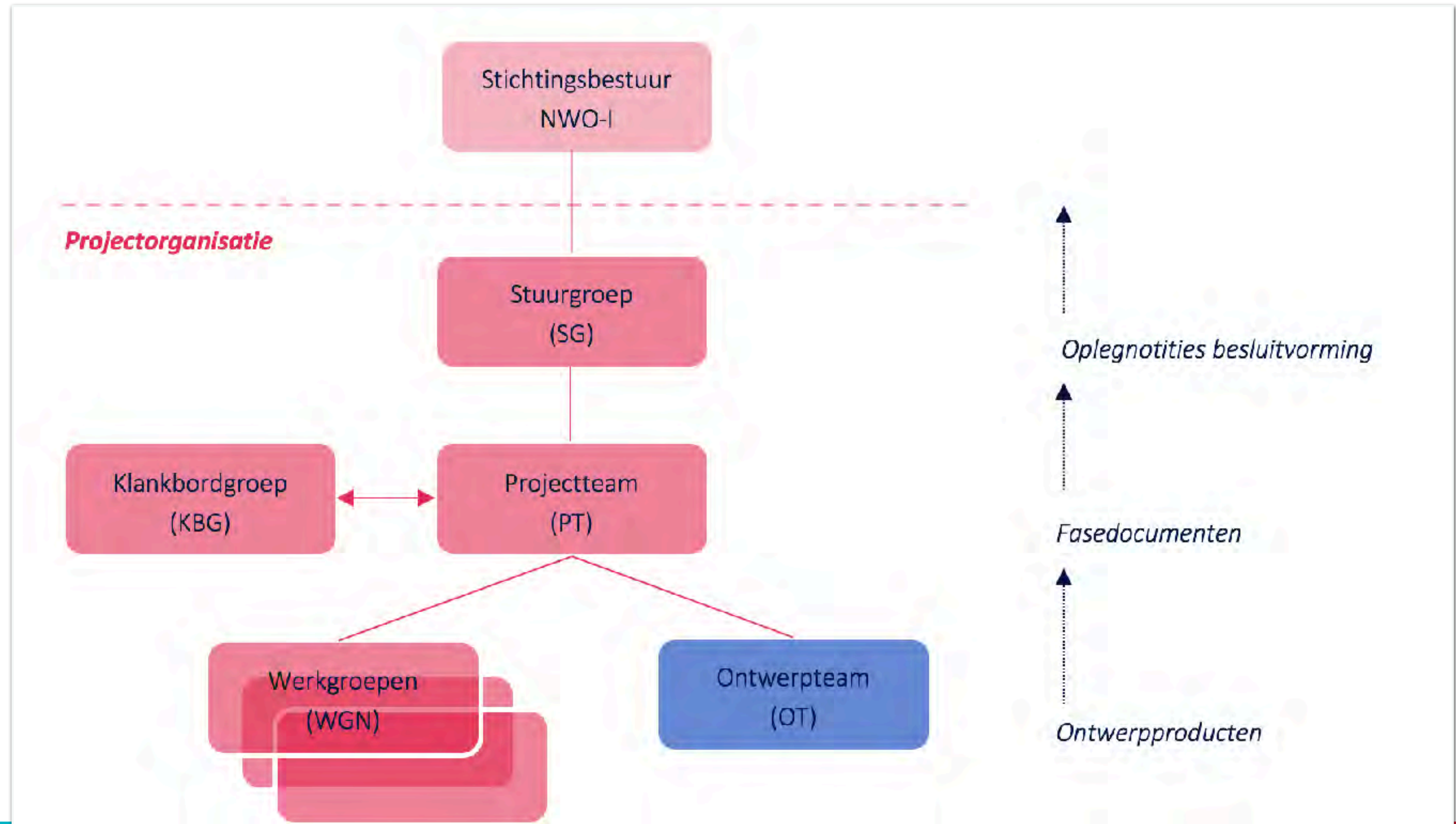




# ORGANISATION OF RENOVATION PROJECT

Organisation in place in coming period

- Role for groups, 'users' and Work Council



Figuur 9: Organogram projectorganisatie



# UPGRADE TRANSFORMER

Part of the renovation plans!

- Old trafo: 1000 kVA
- New trafo: 2500 kVA (7000kg)
  - Side A feed
  - Preparations new data-centre





# UPGRADE TRANSFORMER

At the same time

- Annual maintenance of the generators, UPS.
- Compulsory major maintenance diesel tank A feed.





# FACADE

One of the  
last  
'Pilot Projects'



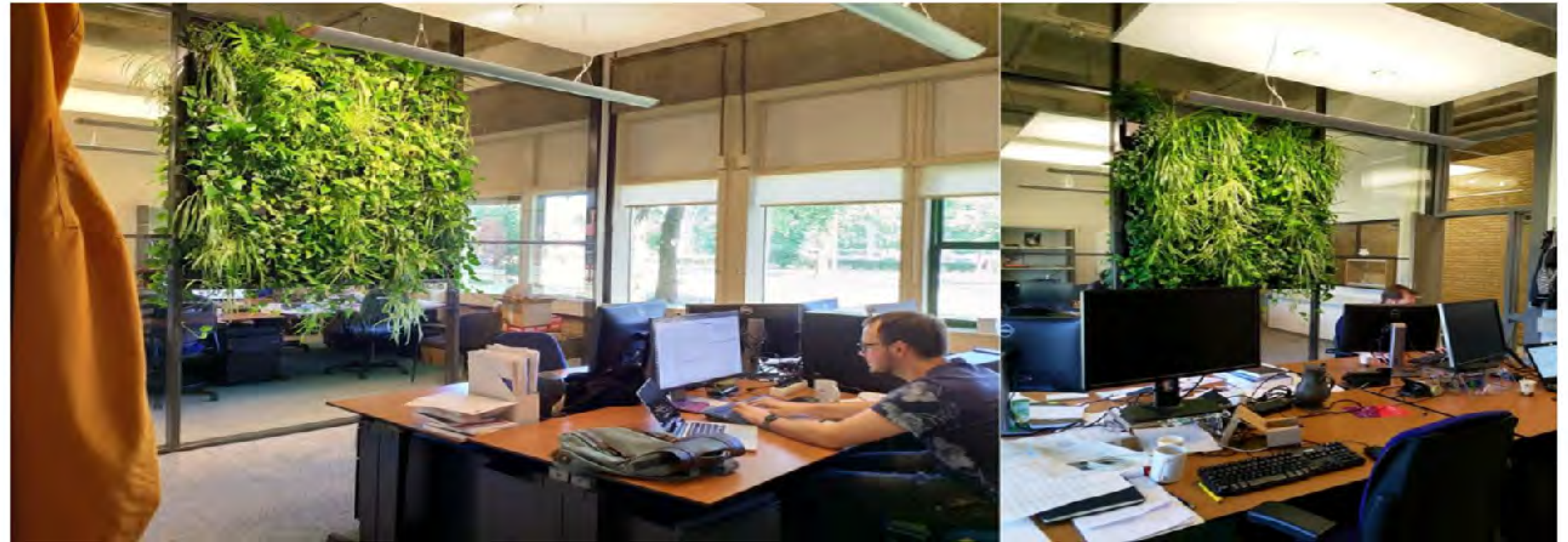


# ENQUETE PILOTS @ NIKHEF

We need your feedback!

- Enquete about all pilot projects
- Will be send to all of you in coming period

In de ruimtes H042 en H043 wilden we met eenvoudige middelen meer werkplekken en een prettige sfeer creëren. Zie de foto's:



In hoeverre ben je het eens met de volgende stellingen over H042 en H043

	Helemaal niet mee eens	Niet mee eens	Neutraal	Mee eens	Helemaal mee eens	Geen mening
De kantoorruimtes hebben een prettige sfeer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er is genoeg ruimte voor de 8 werkplekken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De hoeveelheid planten in de kantoren is goed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De hoeveelheid licht in de kantoren is goed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



# EINDE