# Nikhef staff meeting



Nikhef

If you have a question or remark - plse contact me!


- Monday February 16th 2015
- 13:30 hrs in H331

Stan Bentvelsen - Nikhef

# Scientific programme - small & large

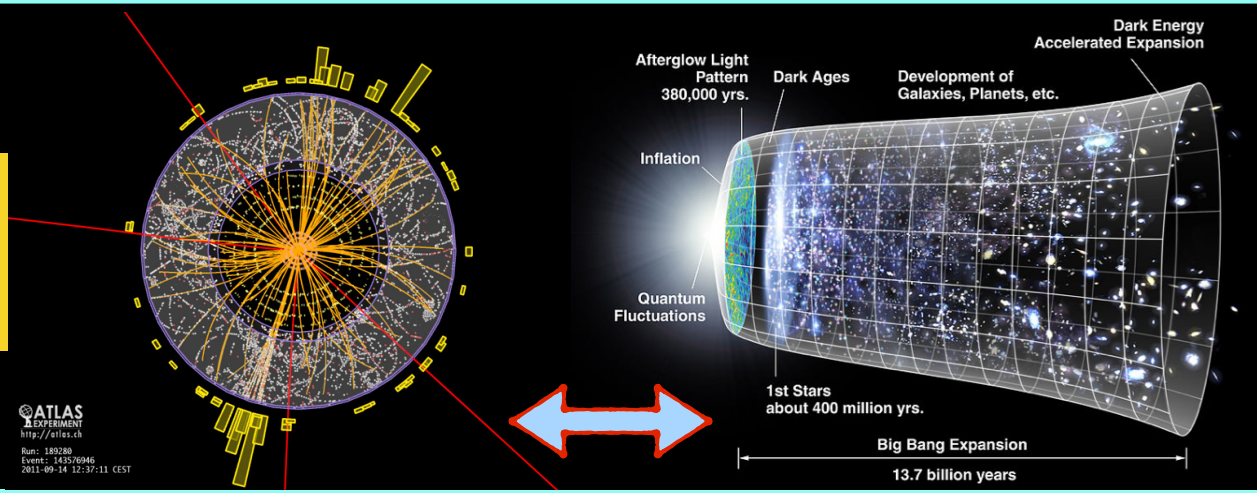


Nikhef

***Game change:***

What is beyond the Standard Model
and how can we observe it?

**LHC run-2 (2015+)**
Double energy
Improved luminosity




**Observations in APP(2016+)**
Gravitational Waves,
Dark Matter,
Neutrino telescope,
Cosmic Rays

LHC experiments as ‘backbone’ of Nikhef
Astroparticle physics experiment central activity

# Going beyond the Standard Model



Nikhef

- E.g.: discovery of Higgs particle opens new challenges

  - *Implication Higgs field -*
  - *Balance matter - anti-matter*
  - *Particle explanation Dark Matter*
  - *Direct observation gravitational waves*
  - *(Majorana) properties neutrino's*
  - *Particle point sources in the sky*
  - *…*

Particle physics enters a new phase after LHC run-1, and is probably linked with cosmology

Outreach essential to communicate this message

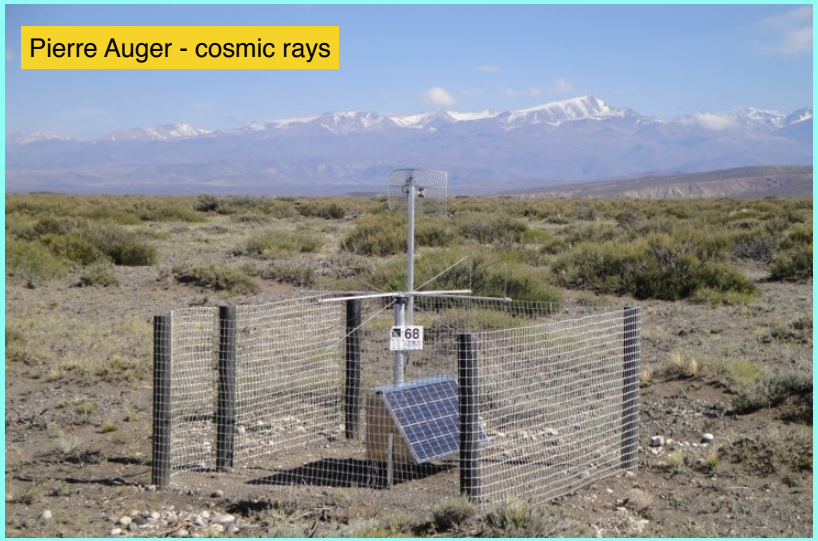
Nikhef well positioned to play key role in these endeavors

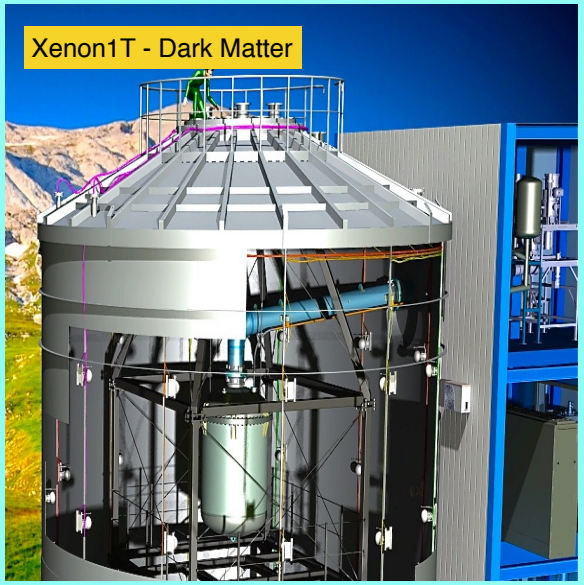
# APP programma

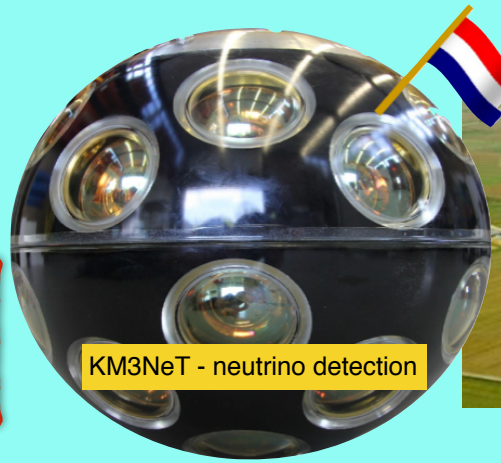


- **Xenon**
  - zoeken naar Donkere Materie
- **Virgo**
  - Observatie zwaartekrachtgolven
- **KM3NeT**
  - Neutrino telescoop
- **Auger**
  - Ultra hoge energie kosmische straling

Alleen XENON ondersteund met FOM programma >2015


Pierre Auger - cosmic rays


Xenon1T - Dark Matter


KM3NeT - neutrino detection


Adv VIRGO - Gravitational Waves

# Status Nikhef 2017 - 2018



Nikhef

- Organisation Nikhef / FOM / NWO
  - Discussion on the position of Nikhef finished
  - Financial conditions for the future clear
- Results of LHC run-2
  - New particles? new results Higgs? New insight QGP? New phenomena CP?
- Results APP
  - XENON Dark Matter?
  - VIRGO gravitational waves?
  - Future KM3NeT and AUGER
- International developments for Nikhef?
  - Lineair accelerator Japan
  - Long Base Neutrino facility
- FOM & NWO evaluation(s) 2017-2018
  - Essential for further future -

Shaping our Nikhef future will culminate around 2018

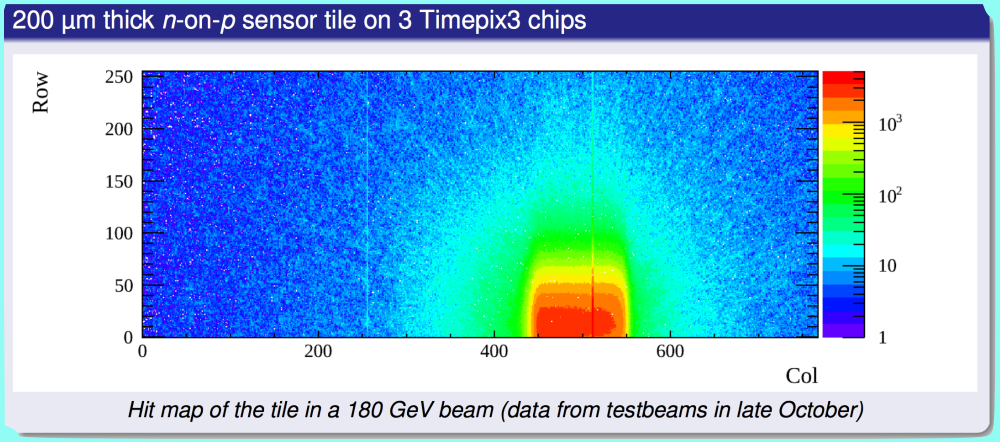
# Advanced instrumentation initiatieves



Nikhef

- Connecting to instrumentation SPA
  - Collaboration with SRON, HighTIF
- New contacts SIA
  - "Nat Regieorgaan praktijkgericht onderwijs"
  - Collaboration with engineering education
  - Trip to CERN with HBO lectoren March 2015

Advanced instrumentation with HBO on agenda




***Timepix3 under stress test in beam.***

- Valorization
  - Spin-off via e.g. Particle Inside Products (P2IP)
    - ASI, Sensiflex, Omics2Image
  - Innoseis collaboratie met Shell
    - (2014) Proof of Concept low power seismic sensor nodes: 783 k; afgerond begin 2014;
    - (2015) Field studies: 182k TKI-toeslag, 150k bijdrage Shell, 108k in-kind (Shell + Innoseis);

Industry day second half 2015 at Nikhef

# Meetings at Nikhef



Nikhef

- Direction Team (DT)
  - A van Rijn, P van Braam van Vloten, SB
- Overleg Programmaleiders (OP)
  - 7 experimental programs + Theory + R&D + PDP
  - New consultation - 6 or more x per year
  - Coherence and prioritization science program
- Wetenschappelijke Advies Raad (WAR)
  - 2-3x per year
  - Completely reshuffled membership

Spiegel Moment

- Nikhef communication
  - Communication presentation Nikhef
  - 4x per jaar

- Strong role & responsibility program leaders
- WAR: creative Think-Tank:
- Staff meeting organized by you

# Funding opportunities



Nikhef

- Bessensap 2015
  - deadline February 24, 2015
  - "young scientists" presentation in front of journalists
- ERC consolidator grant
  - deadline March 12, 2015

- NWO investment
  - deadline May 14, 2015
  - proposal Decowski on "XENONnT: A Facility for Rare Event Searches"
    - first proposal has been sent to FOM - grill session
  - proposal David Berge on CTA (outside Nikhef)

- NWO VICI pre-proposal
  - expected deadline end of March
  - make sure you send in!

# New initiatives - ESFRI



Nikhef

- “Van welke onderzoeksfaciliteiten droomt u als wetenschapper?”
  - KNAW call for dream facility in 2025
  - Einstein Telescope proposal?
  - Let me know your dream facility!

- KM3NeT 2.0 – Astroparticle & Oscillations Research with Cosmics in the Abyss
  - deadline this Friday February 20th
  - Phase-1 fully funded (31 strings)
  - Phase-2 in the proposal to free resources in France and Italy
    - ARCA: 2 blocks of 115 strings each - in Italy
    - ORCA: 1 block of 115 strings - in France
    - Each string contains 18 DOMs

# Plea VIRGO funding



Nikhef

- VIRGO is going to take data later in 2015
  - Excellent position in the collaboration
  - Opportunity for significant Dutch involvement in discovery of gravitational waves

- Plea from Nikhef consortium
  - funding available from RU and VU
  - proposal discussed tomorrow at FOM-UB

***Kosten VIRGO programma voor 5 jaar***

| | Totaal | Amsterdam | Nijmegen |
|---|---|---|---|
| 3 promovendi | 600 k€ | 400 k€ | 200 k€ |
| 3 postdocs | 600 k€ | 600 k€ | |
| lidmaatschap EGO | 500 k€ | 400 k€ | 100 k€ |
| running kosten en coördinatie | 400 k€ | 300 k€ | 100 k€ |

***Voorstel financiering***

| | | |
|---|---|---|
| Nikhef LHC programma | 250 k€ | |
| Nikhef missiebudget | 250 k€ | |
| RU garantstelling | 150 k€ | (projectruimte Nelemans) |
| VU bijdrage | 200 k€ | |
| FOM garantstelling tav RU | 100 k€ | (projectruimte Nelemans) |
| FOM garantstelling tav VU/Nikhef | 400 k€ | (projectruimte van den Broeck) |
| FOM bijdrage | 750 k€ | |

# Nikhef funding ceiling



Nikhef

- Nikhef financial ceiling
  - Long term funding for LHC
  - Dark Matter XENON programma finishes in 2018
  - VIRGO programme stops in 2015
  - KM3NeT en AUGER do not have FOM programs

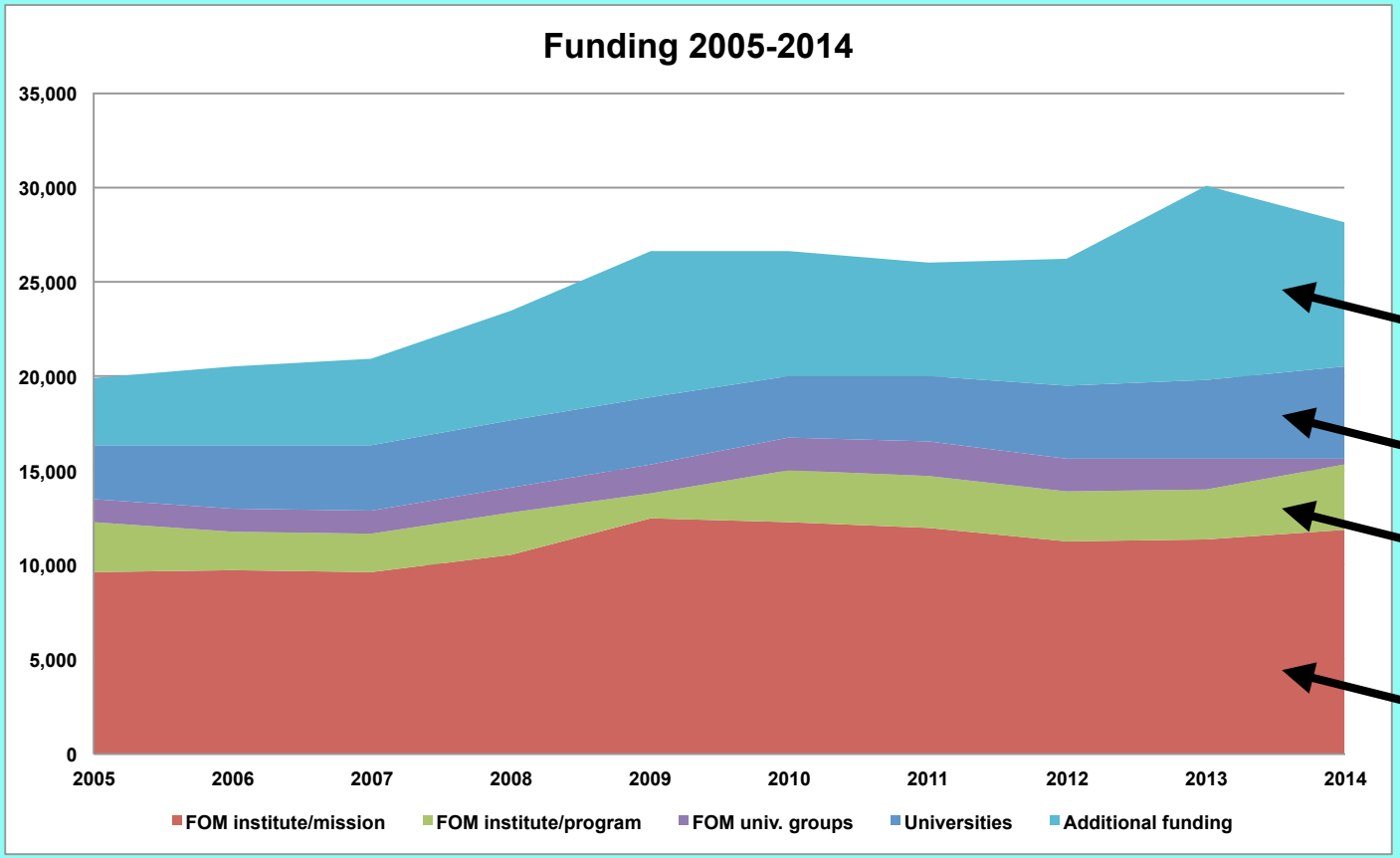
Make sure that APP postdocs and PhD students are funded
- personal funding
- colloboration astronomy
- re-schedule Nikhef mission

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | Totaal |
|---|---|---|---|---|---|---|---|
| Plafond | 14467 | 14152 | 14100 | 13994 | 13942 | 13942 | |
| Missie | 10819 | 10819 | 10819 | 10819 | 10819 | 10819 | |
| LHC | 2960 | 2562 | 2646 | 2646 | 2646 | 2490 | 15949 |
| APP: DM/Virgo | 495 | 565 | 282 | 283 | 283 | 0 | 1908 |
| Theory: Higgs/Cosmo | | 159 | 167 | 248 | 216 | 10 | 800 |
| Resterend | 193 | 47 | 186 | -2 | -22 | 623 | 1026 |

NB: ceiling changes when Groningen enters Nikhef

# Nikhef funding compleet






***EU, NWO, AMS-IX, Industrie, andere projecten***

***Universiteiten***

***FOM programma's***

***Missie budget***

# Congratulations André Mischke!



Nikhef

- VICI grant
  "Tomography of the Quark-Gluon Plasma - beauty quarks as a key probe"

  – Het jonge, evoluerende heelal bevond zich net na de oerknal in de quark-gluonplasmatoestand. Dit onderzoeksproject richt zich op het bestuderen van de dynamische eigenschappen van deze fundamentele materie, die ook voor een heel kort moment ontstaat wanneer in het laboratorium atoomkernen bij zeer hoge energie op elkaar botsen.

# Other remarks



Nikhef

- We start a major renovation traject at Nikhef
  - Plans are being developed
  - First contacts with companies to assist us - in few weeks
  - Aim to get architect involvement around summer 2015
  - Renovation period in coming years

- New Nikhef website
  - Typo 3 CMT is obsolete - migration to typo 4 probably not best solution
  - Few web-site designers contacted to help (technical) migration - e.g. to wordpress
  - Plan to have most done around summer 2015

- Communication plan
  - New website as part of a larger ‘outreach plan’
  - Not made fully concrete yet - think of news items, brochures, annual report, …

# NWO issues



Nikhef

- Fast moving grounds - not very much to say now
  Apart that current structure with FOM will not survive

- Timeline:
  - situation will be much clearer in few weeks (months?)
  - new situation will be effective in 2-3 years

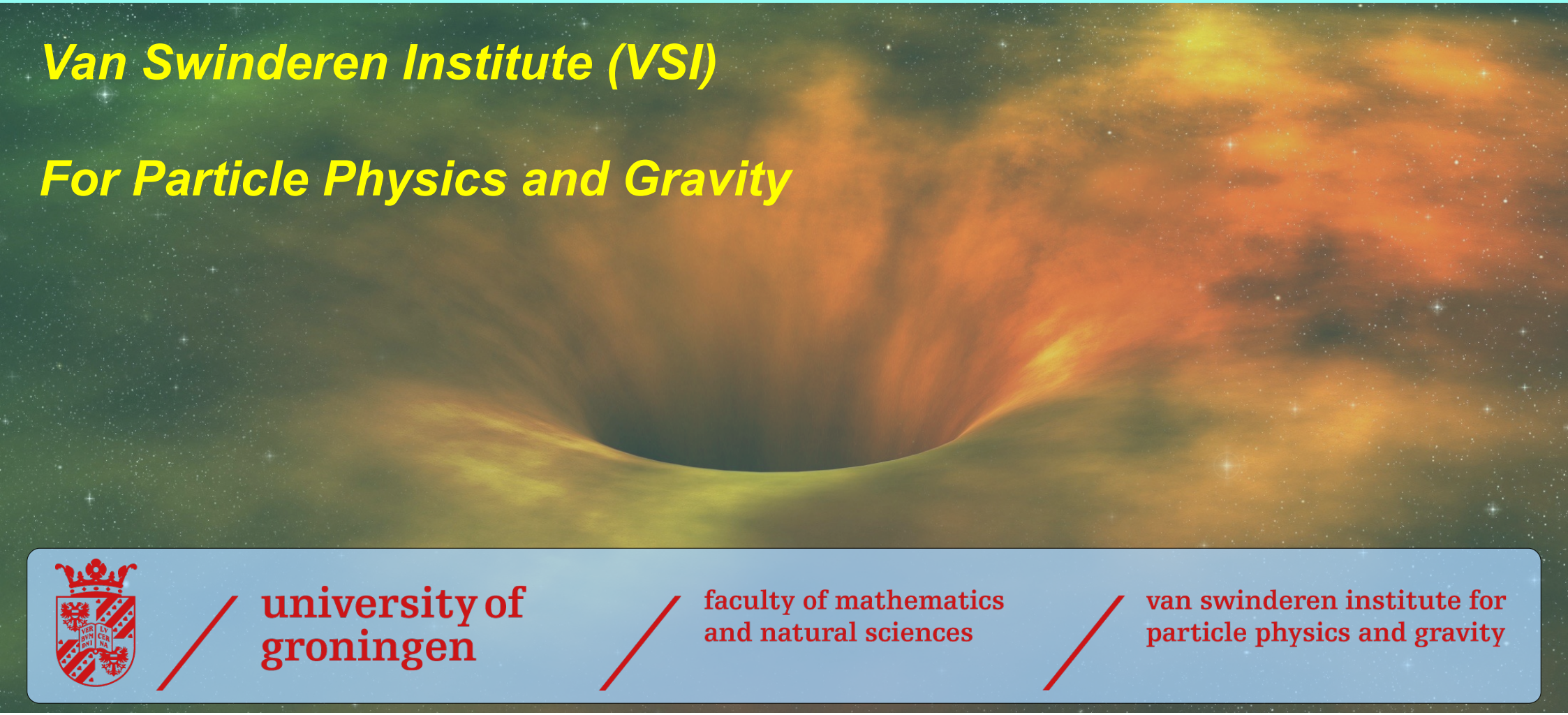
- Current activities
  - Be present at discussion table to shape future
  - Be part of “wetenschapsagenda” - i.e. formulate 3 challenges that define our field

- Keep you posted!

# Groningen at Nikhef



Nikhef



***Van Swinderen Institute (VSI)***

***For Particle Physics and Gravity***

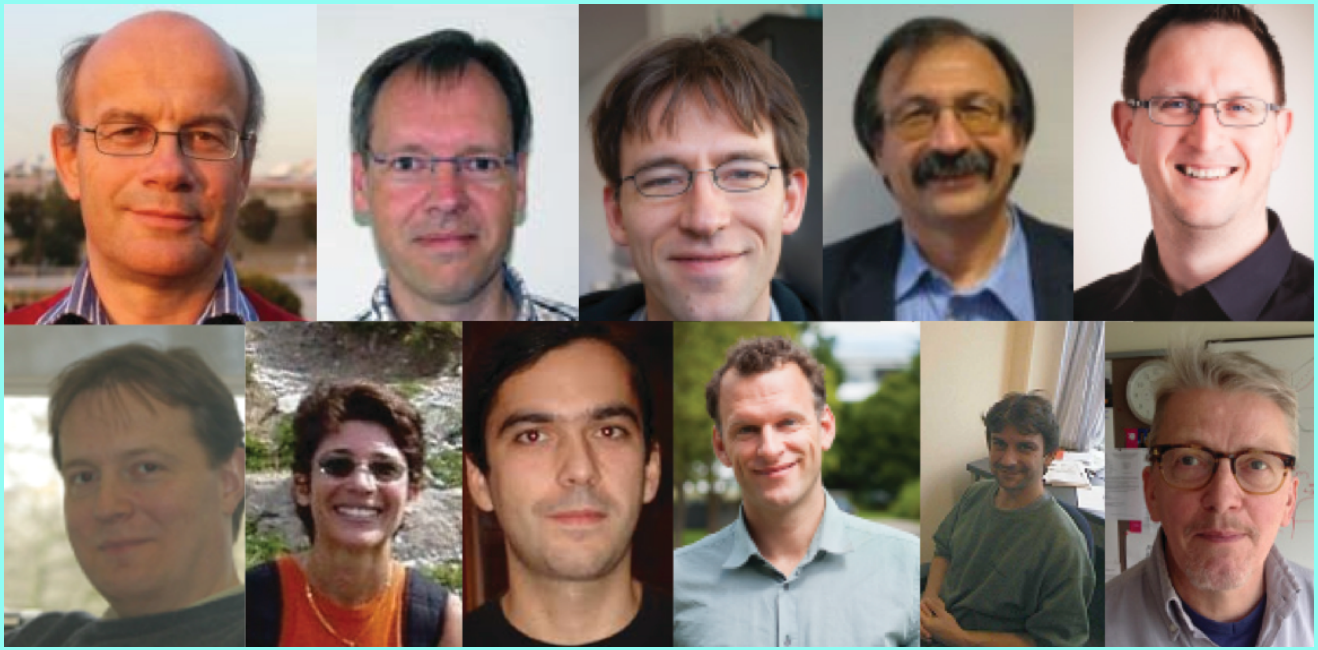
university of groningen / faculty of mathematics and natural sciences / van swinderen institute for particle physics and gravity

# VSI - team olv Eric Bergshoeff



Nikhef

- Het VSI consists of 2 parts:
  - Theoretical High Energy Physics
  - Experimental Particle Physics



- Education
  - VSI is connected to the master phase ***Quantum Universe***

# SVI - Theory



Nikhef

- Theoretical Particle Physics



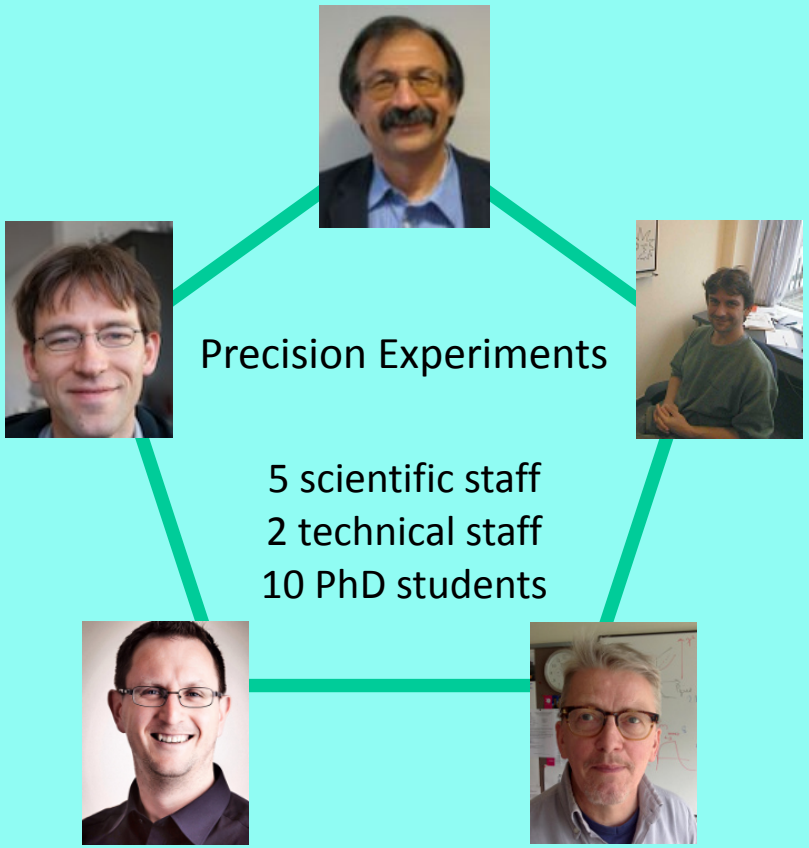
  - *E. Pallante, D. Boer, R. Timmermans*
  - FOM programma:
    ***Higgs as probe and portal***

6 scientific staff
4 postdocs
17 PhD students

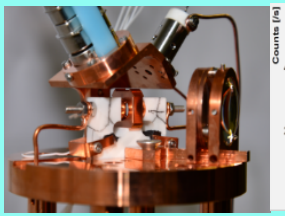
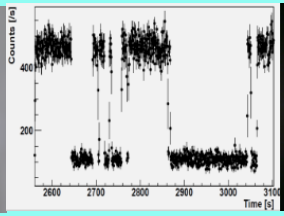
  - *D. Roest*
  - FOM programma:
    ***Observing the big bang:***
    ***the quantum universe and its imprint on the sky***

# SVI - Experiment






- Experience:
  - Muonium (μ+e-) Spectroscopy, Lepton Number Violation Searches (MMbar), Muon g-2, Bose Condensation in Hydrogen, Test Lorentz/CPT Violation, ….
- Present activities
  - Parity Violation in trapped ions and cold molecules
    - Electric Dipole Moments - sensitivity to New Physics
  - Lorentz Invariance
    - LHCb experiment - b-anti-b quark systeem


Funding through VIDI's, FOM programs, Projectruimte, EU projects

# VSI in Nikhef consortium



Nikhef

- **VSI wishes to connect in Nikhef consortium**
  - Save the Date
    - Friday March 6
    - Van Swinderen Institute Inaugural Symposium
    - Van Swinderenhuys Groningen
  - See website:
  - http://www.rug.nl/research/vsi/events/vsisymposium/vsi-inaugural-symposium

- **Request connection from CvB upcoming**
- **Wait for advice Nikhef SAC in April 2015**
- **Concretely: accept VSI after positive statements of SAC - per email**