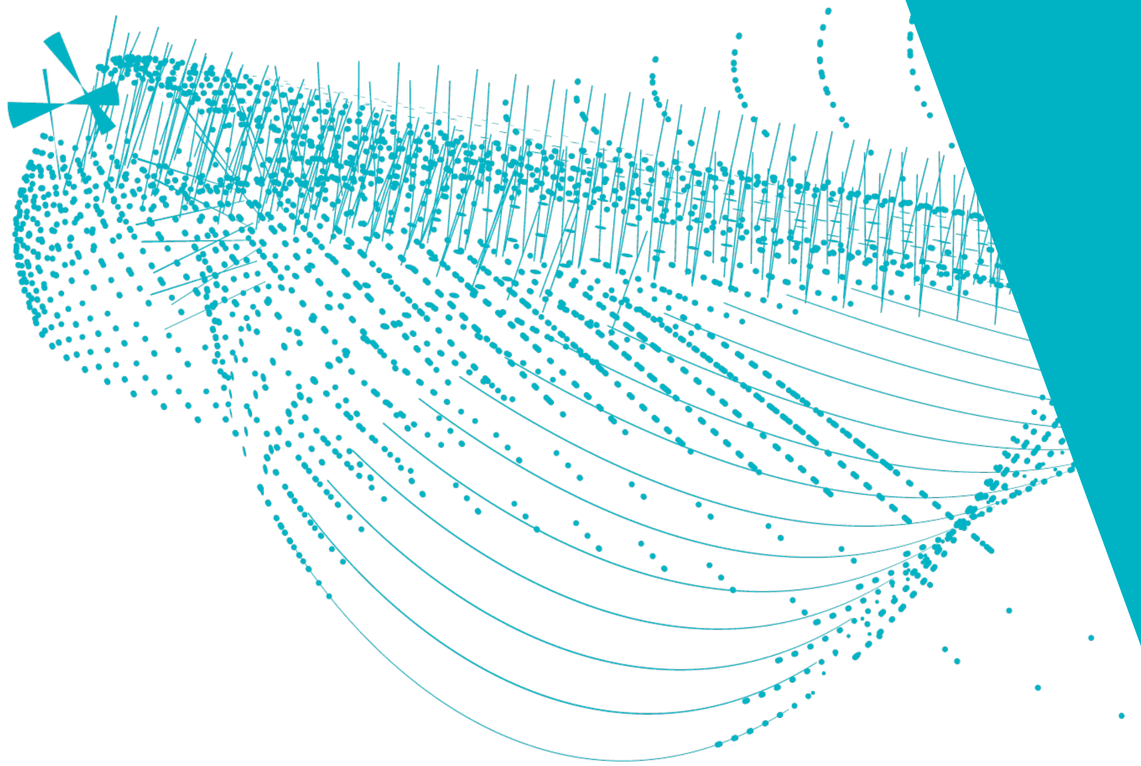
Nikhef



STAFF MEETING 9 MARCH 2020

THEORY NEWS MARCH 2020

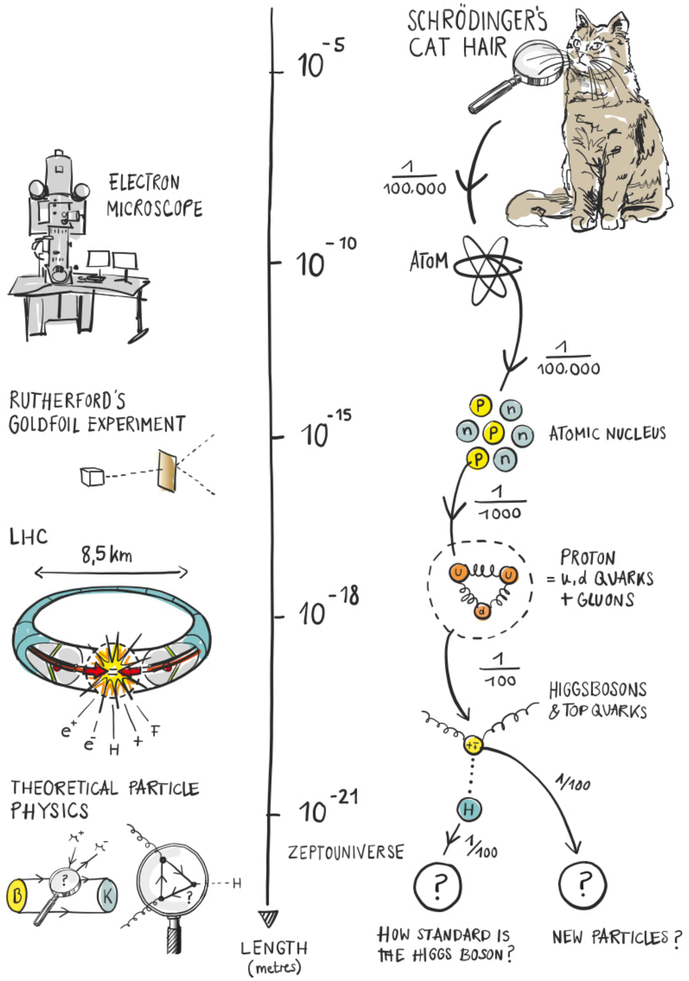
Robert Fleischer

ENW GROOT PROPOSAL

- Research topic:

A journey into the zeptouniverse:

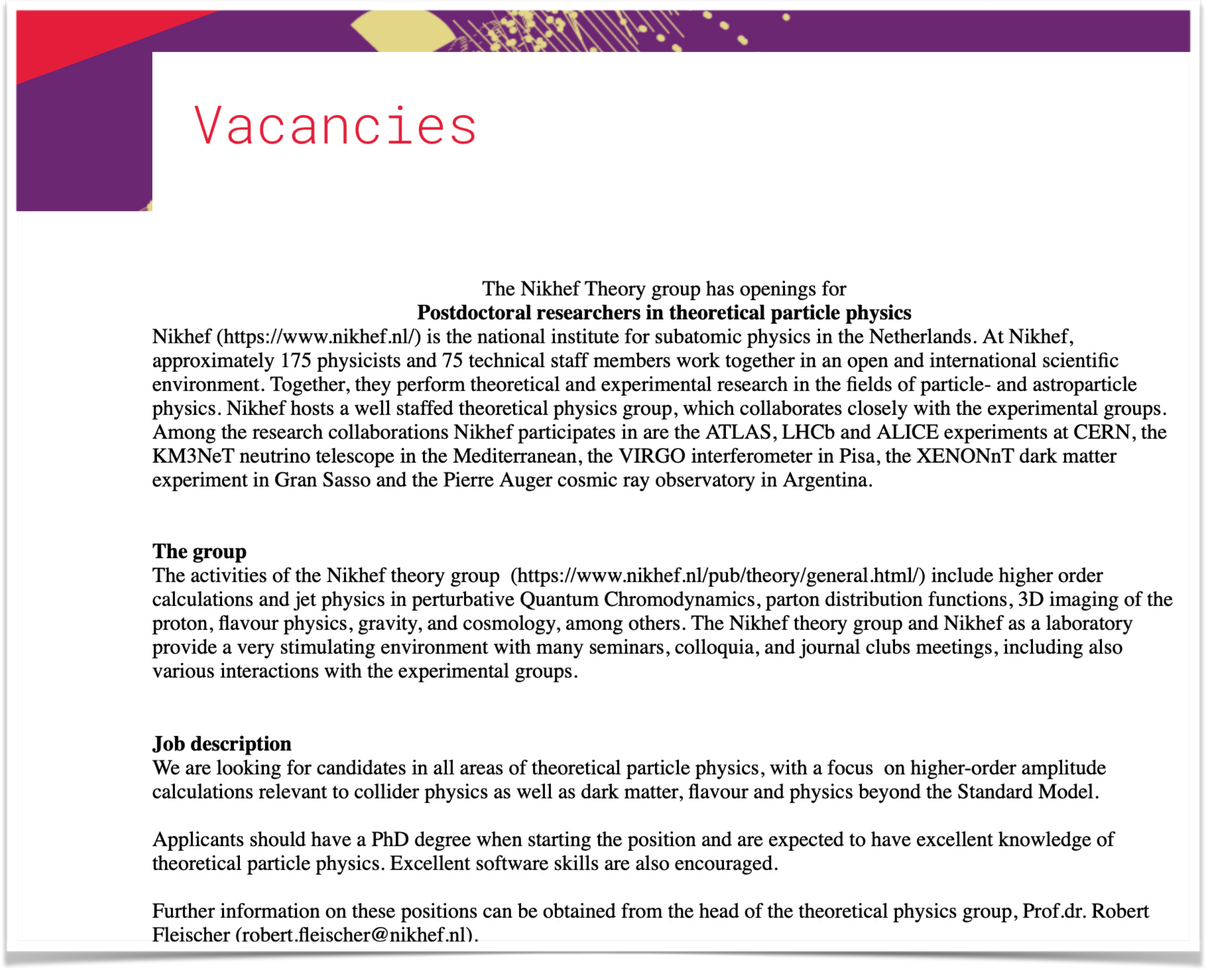
- After a very promising start finally not granted by NWO.
- Will submit again in the next round…



[Congratulations to ATLAS to their ENW Groot!]

POSTDOC POSITIONS

- We have filled two postdoc positions for this autumn:
  - Higher-order amplitude calculations (Vidi grant Franz Herzog):
    Andrea Pelloni (PhD @ ETHZ)
  - Dark matter (Vidi Kallia Petraki):
    Anastasiia Filimonova
    (PhD @ Univ. Heidelberg)



Vacancies

The Nikhef Theory group has openings for
Postdoctoral researchers in theoretical particle physics

Nikhef (https://www.nikhef.nl/) is the national institute for subatomic physics in the Netherlands. At Nikhef, approximately 175 physicists and 75 technical staff members work together in an open and international scientific environment. Together, they perform theoretical and experimental research in the fields of particle- and astroparticle physics. Nikhef hosts a well staffed theoretical physics group, which collaborates closely with the experimental groups. Among the research collaborations Nikhef participates in are the ATLAS, LHCb and ALICE experiments at CERN, the KM3NeT neutrino telescope in the Mediterranean, the VIRGO interferometer in Pisa, the XENONnT dark matter experiment in Gran Sasso and the Pierre Auger cosmic ray observatory in Argentina.

The group
The activities of the Nikhef theory group (https://www.nikhef.nl/pub/theory/general.html/) include higher order calculations and jet physics in perturbative Quantum Chromodynamics, parton distribution functions, 3D imaging of the proton, flavour physics, gravity, and cosmology, among others. The Nikhef theory group and Nikhef as a laboratory provide a very stimulating environment with many seminars, colloquia, and journal clubs meetings, including also various interactions with the experimental groups.

Job description
We are looking for candidates in all areas of theoretical particle physics, with a focus on higher-order amplitude calculations relevant to collider physics as well as dark matter, flavour and physics beyond the Standard Model.

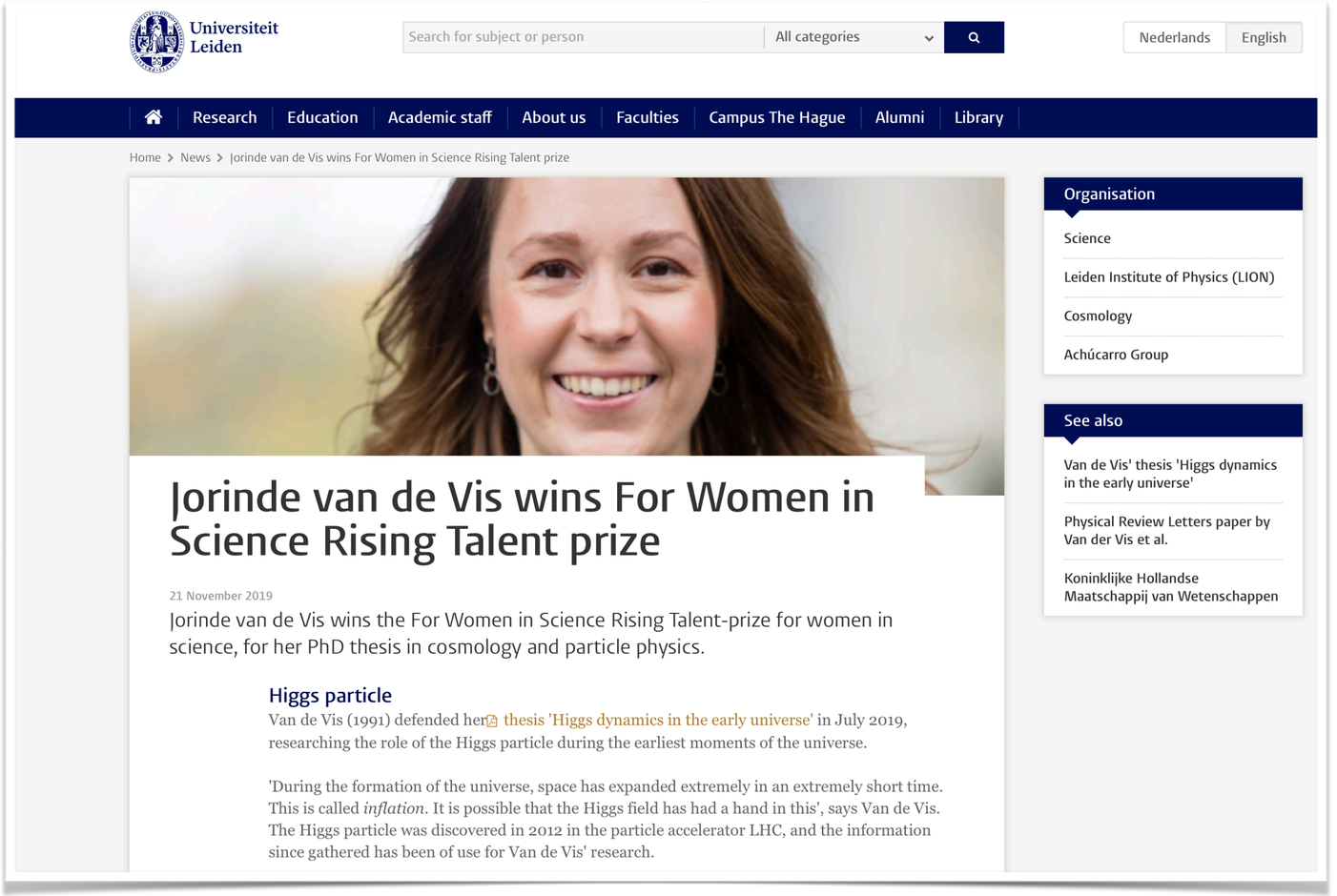
Applicants should have a PhD degree when starting the position and are expected to have excellent knowledge of theoretical particle physics. Excellent software skills are also encouraged.

Further information on these positions can be obtained from the head of the theoretical physics group, Prof.dr. Robert Fleischer (robert.fleischer@nikhef.nl).

FOR WOMEN IN SCIENCE RISING TALENT PRIZE

Jorinde van de Vis [now DESY] received the “For Women in Science Rising Talent Prize” for her PhD thesis [Van Holten/Postma]:

Many congratulations!



NATIONAL SEMINAR THEOR. HIGH-ENERGY PHYSICS

Friday, 13 March (Z011)

Colloquium by Giulia Zanderighi (MPI Munich):

Precision Physics @ LHC

Dutch Research School of Theoretical Physics

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Conferences
Seminars
DRSTP Newsletter
Educational guide
Annual report
Vacancies
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NATIONAL SEMINAR THEORETICAL HIGH ENERGY PHYSICS (THEP)

Date: Friday, 13 March 2020

Speakers: Tanja Hinderer (UvA)
Giulia Zanderighi (Max Planck Intstitute, Munich)
Daan Meerburg (RUG)
Chris Couzens (UU)

Location: Nikhef-CWI, Room Z011, Science Park 105, 1098 XG Amsterdam
Information on how to reach Nikhef.
Note there is a train station: Amsterdam Science Park.

Schedule:
09:45 Coffee/tea
10.15 Tanja Hinderer (UvA): *Exploring frontiers in subatomic physics with gravitational waves*
11.15 Giulia Zanderighi (Max Planck Intstitute, Munich): *Precision at the LHC: why and how*
12:15 Lunch
14:00 Daan Meerburg (RUG): *A new decade in cosmology*
15:00 Coffee/tea
15:15 Chris Couzens (UU): *AdS/CFT, Black Holes and Extremization principles*
16:15 Borrel/drinks

Local organizers: For questions or suggestions, please contact one of the organizers:

Wouter Waalewijn (NIKHEF)
tel: +31 (0)20 5255773
e-mail: wouterw@nikhef.nl

Marieke Postma (Nikhef)
tel.: +31 (0)20 5925128
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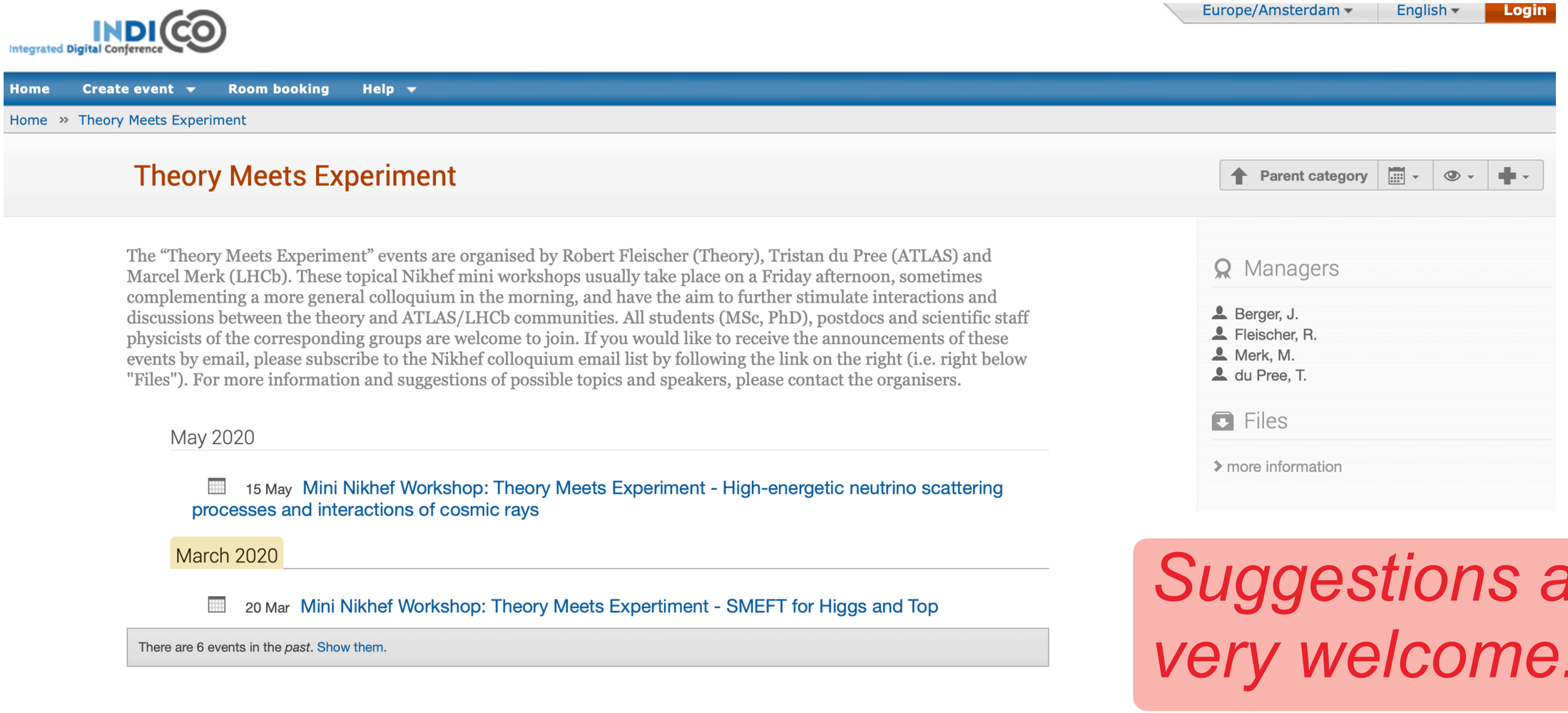
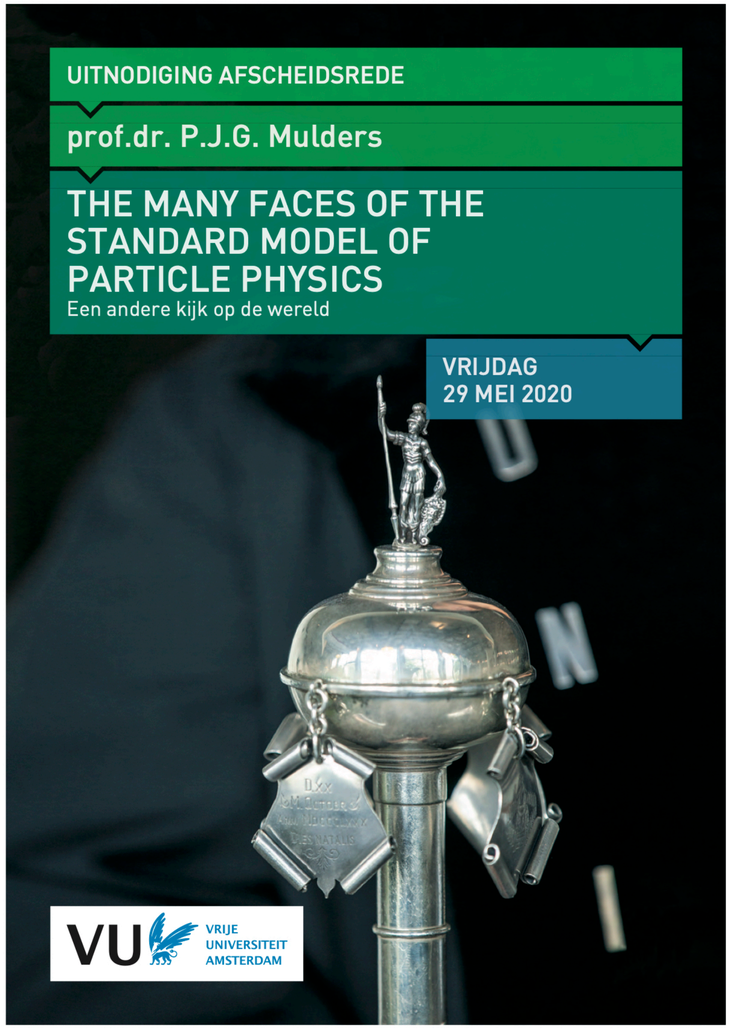
Thomas Grimm (UU)

THEORY MEETS EXPERIMENT



Suggestions are very welcome!

FUTURE FESTIVITIES: *RESERVE THE DATES*



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Bert Schellekens Fest

Friday, 10 July 2020 from **10:00** to **19:00** (Europe/Amsterdam)
at **Nikhef (H331)**

Description

Retirement Bert Schellekens

Organisers:
Robert Fleischer (Nikhef, Amsterdam)
Beatriz Gato Rivera (IFF-CSIC, Madrid)

Program for the scientific meeting of Bert's Fest on July 10th, 2020

Nikhef, Seminar Room: H331

NOTE: the two talks in the morning are intended for a general audience of particle physicists, theorists as well as experimentalists.

(*) To be confirmed

Friday, 10 July 2020

10:00 - 10:15	Welcome with coffee, tea, cookies,...
10:15 - 11:00	Dieter Lüst, LMU and MPI, München (Germany) *"New Cloths for the Landscape"*
11:00 - 12:00	Nikhef Colloquium - Elias Kiritsis, APC, Paris (France) and University of Crete (Greece) *"String Theory, Particle Physics and Emergent Gravity"*
12:00 - 13:30	Lunch

RESEARCH SNAPSHOTS

Eur. Phys. J. C (2020) 80:153
https://doi.org/10.1140/epjc/s10052-020-7702-7

THE EUROPEAN PHYSICAL JOURNAL C

Regular Article - Theoretical Physics

Testing lepton flavour universality with (semi)-leptonic $D_{(s)}$ decays

Robert Fleischer[1,2], **Ruben Jaarsma**[1], **Gabriël Koole**[1,3,a]

[1] Nikhef, Science Park 105, 1098 XG Amsterdam, The Netherlands
[2] Faculty of Science, Vrije Universiteit Amsterdam, 1081 HV Amsterdam, The Netherlands
[3] Max Planck Institute for Physics, Föhringer Ring 6, 80805 Munich, Germany

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JHEP

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Source terms for electroweak baryogenesis in the vev-insertion approximation beyond leading order

Marieke Postma[a] **and Jorinde van de Vis**[a,b]

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[b] *DESY, Notkestraße 85, D-22607, Hamburg, Germany*

E-mail: mpostma@nikhef.nl, jorinde.van.de.vis@desy.de

Nikhef/2020-003

Parton Distributions in Nucleons and Nuclei

Jacob J. Ethier,[1,2] **and Emanuele R. Nocera**[1,*]

[1] Nikhef Theory Group, Science Park 105, 1098 XG Amsterdam, The Netherlands
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JHEP

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PUBLISHED: *February 5, 2020*

Dark matter bound state formation via emission of a charged scalar

Ruben Oncala and Kalliopi Petraki

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PREPARED FOR SUBMISSION TO JHEP Nikhef 19-055

The leading jet transverse momentum in inclusive jet production and with a loose jet veto

Darren J. Scott[a,b] **Wouter J. Waalewijn**[a,b]

[a] *Institute for Theoretical Physics Amsterdam and Delta Institute for Theoretical Physics, University of Amsterdam, Science Park 904, 1098 XH Amsterdam, The Netherlands*
[b] *Nikhef, Theory Group, Science Park 105, 1098 XG, Amsterdam, The Netherlands*

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Annu.Rev.Nucl.Part.Sci. 2020. 70:1–35
https://doi.org/10.1146/annurev-nucl-011720-042725

Keywords

Quantum Chromodynamics, Parton Distribution Functions, Proton Spin, Nuclear Medium, Collider Physics, Future Experiments

Abstract

We review the current status of Parton Distribution Function (PDF) determinations for unpolarized and longitudinally polarized protons and for unpolarized nuclei, which are probed by high-energy hadronic scattering in perturbative Quantum Chromodynamics (QCD). We present the established theoretical framework, the experimental information, and the methodological aspects inherent to any modern PDF extraction. Furthermore, we summarize the present knowledge of PDFs and discuss their limitations in both accuracy and precision relevant to advance our understanding of QCD proton substructure and pursue our quest for precision in the Standard Model and beyond. In this respect, we highlight various achievements, discuss contemporary issues in PDF analyses, and outline future directions of progress.

Stay tuned …