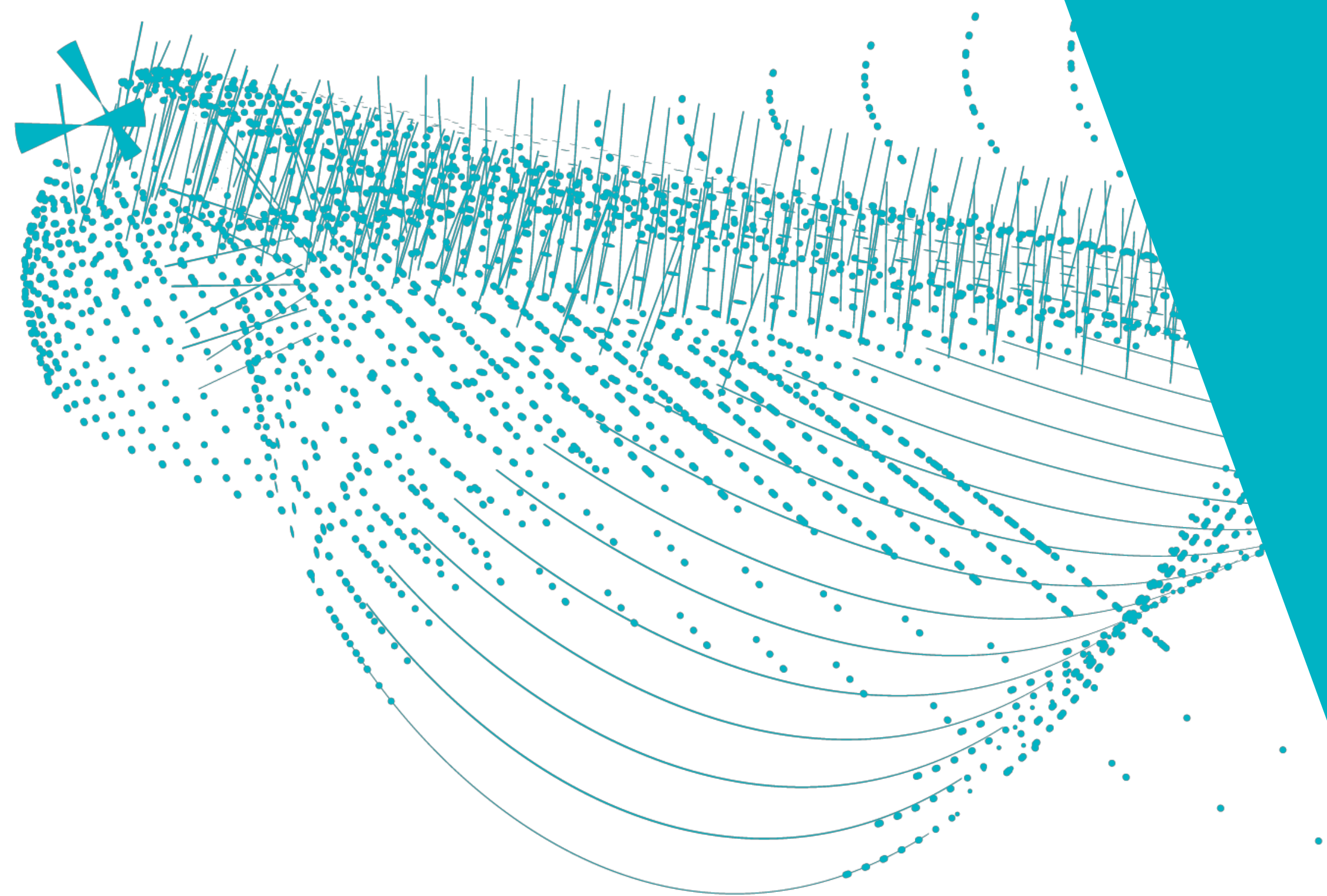




NIKHEF JAMBOREE  
UTRECHT, 18 DECEMBER 2018

# NIKHEF THEORY IN 2018

Robert Fleischer



# HOW DO THEORISTS WORK?

- We have typically collaborations of about 1-10 people.
- Involvement of students, postdocs and staff: *exchange of knowledge!*
- Theory “hardware”:

- Paper and pens
- Computers
- Coffee (!)
- Blackboards

+ *Personpower*



# THEORY IN THE NIKHEF CONSORTIUM

- *Nikhef Theory Groups:*
    - Nijmegen: Radboud Universiteit (RU)
    - Groningen: Rijksuniversiteit (RUG)
    - Amsterdam: Vrije Universiteit (VU)
- Nikhef

*Close interactions...*





## *Phenomenology:*

- Ronald Kleiss:

- Collider Physics
- Renormalization
- Monte Carlo



- Wim Beenakker:

- Resummation
- Supersymmetry
- Dark Matter



## *“Theory”:*

- Renate Loll:

- Constructing space time
- Constituents of space time
- Numerical simulations



- Frank Saueressig:

- Quantum theory of gravity
- Renormalisation group analyses



- Timothy Budd [+2018]:

- Mathematical tools & numerics
- Spacetime at smallest scales



## *Phenomenology:*

- Daniel Boer:
  - QCD, collider physics, BSM
- Elisabetta Pallante:
  - SM and beyond, flavour physics, lattice QCD, conformal field theory
- Rob Timmermans:
  - EDMs, Lorentz violation
- Anupam Mazumdar
  - Cosmology, BSM, quantum gravity



## *“Theory”:*

- Eric Bergshoeff:
  - String theory
  - Quantum gravity
- Kyriakos Papadodimas [-2018]:
  - Black holes, quantum mechanics
- Diederik Roest:
  - String cosmology
  - Inflation
  - Supersymmetry



# NIKHEF THEORY GROUP AMSTERDAM

- Broad spectrum of research topics:
  - Strong interactions
  - Collider physics
  - Flavour physics
  - Dark matter
  - Cosmology
- *Serves as a national centre for particle physics phenomenology.*
- Exploit environment at Nikhef through close interactions with the experimental groups.



# NIKHEF THEORY AMSTERDAM: STAFF

- Senior staff members:

- Robert Fleischer (+VU): flavour physics
- Eric Laenen (+UvA+UU): QCD, collider
- Piet Mulders (VU): QCD
- Marieke Postma: cosmology
- Juan Rojo (VU): QCD, LHC pheno
- Bert Schellekens: string theory
- Wouter Waalewijn (UvA): QCD, collider



- Junior staff members:

- Franz Herzog (Vidi): higher orders, Higgs
- Kalliopi Petraki (Vidi+Paris): dark matter

- (Formally) retired staff members:

- Jos Vermaseren: FORM
- Jan-Willem van Holten: BSM, gravitational waves
- Bernard de Wit (+UU): string theory, black holes

# NIKHEF THEORY GROUP AMSTERDAM: LEADERSHIP

- Head of the group from 2005-2018:

*Eric Laenen*

- Largely shaped the current Nikhef theory group
- Initiated collaborations within our community
- Conducted two FOM programmes
- Stimulated also a lot of further success in acquiring external funding (FOM, NWO, ERC grants, ...)

➔ *Many thanks to Eric!*

- Since September 2018: R.F.





# NIKHEF THEORY AMSTERDAM: POSTDOCS

- Present:

Elena Petreska

Andreas Papaefstathiou

Darren Scott

Leonardo Vernazza

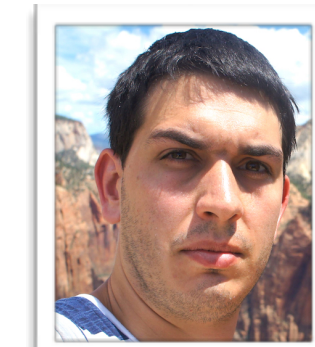
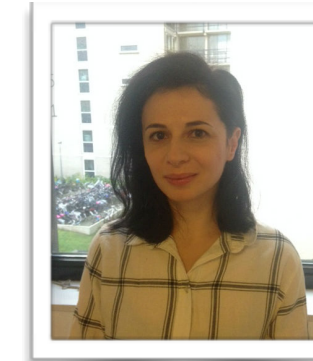
Marco Zaro

Gilberto Tetlalmatzi-Xolocotzi

Evangelos Sfakianakis (Leiden)

Bogumila Swiezewska (Utrecht)

Karl Nordström (Paris)



- Departures:

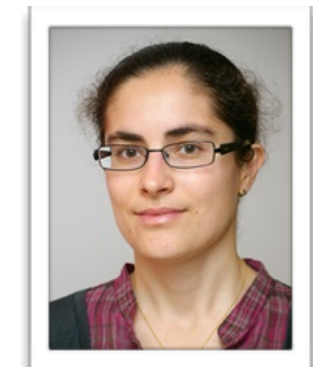
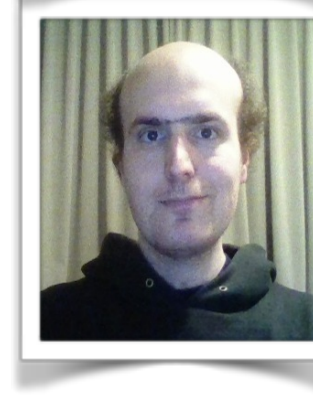
Jordy de Vries: tenure track Amherst

Valerio Bertone: postdoc Pavia

Giulio Falcioni: postdoc Edinburgh

Sonia El Hedri: postdoc Paris

Nathan Hartland: industry



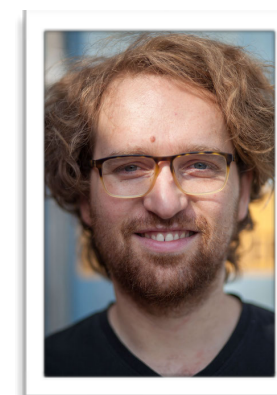
- Arrivals:

Michael Borinsky (Berlin)

Jake Ethier (JLab)

Rhorry Gauld (ETH): Veni

Emanuele Nocera (Oxford): Marie Curie

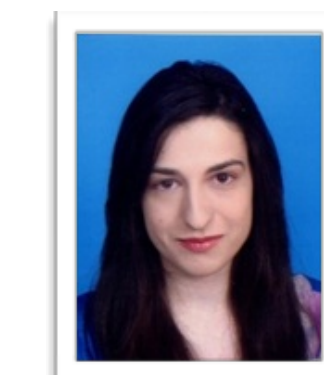
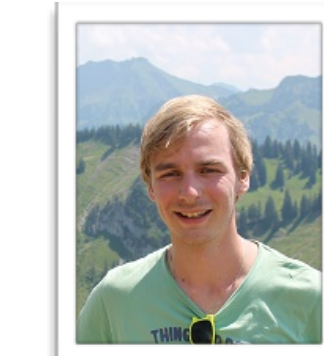
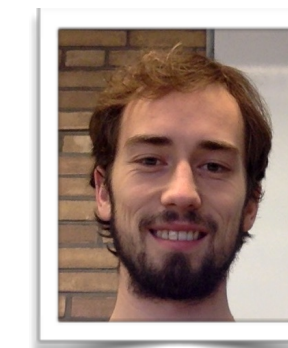
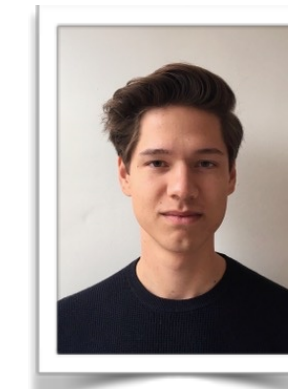


# NIKHEF THEORY AMSTERDAM: PHD STUDENTS

- **Present:**

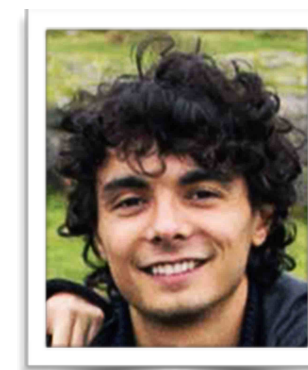
Jort Sinninghe Damste  
Gillian Lustermans  
Rabah Abdul Khalek  
Lorenzo Zoppi  
Jorinde van de Vis

Ruben Jaarsma  
Eleftheria Malami  
Pedro Cal  
Melissa van Beekveld (RU)  
Marrit Schutten (RUG/RU)  
Rubén Oncala Mesa (Paris)



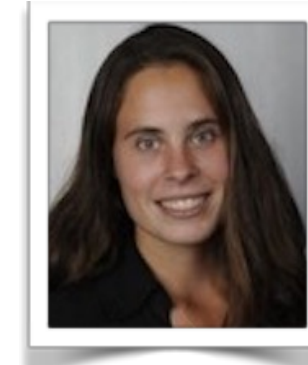
- **Departures:** [see also next slide]

Sabrina Cotogno: postdoc Paris  
Jacopo Fumagalli: postdoc Paris  
Tom van Daal: industry



- **Arrivals:**

Solange Schrijnder van Velzen  
Avanish Basdew-Sharma



# PHD DEFENSES

- **Sabrina Cotogno:** [Mulders (VU)]  
Polarized partons in hadrons at high energy
- **Jacopo Fumagalli:** [Postma/Laenen (UvA)]  
Running in the early Universe
- **Tom van Daal:** [Mulders/Boer (RUG)]  
Mapping the internal structure of hadrons through colour and spin effects

*Many Congratulations!*



# NIKHEF THEORY AMSTERDAM: MASTER STUDENTS

- Departures:

Giovanni Banelli (Volkert van der Willigen Grant UvA 2017-18):

PhD student @ TU Munich

Solange Schrijnder van Velzen: PhD student @ UvA - Nikhef

Andries Salm (UU): PhD student @ University of Edinburgh



- Arrivals... *large number* (!):

Philine van Vliet, Kars Huisman, Dion Noordhuis, Robert Beekveldt, Samuel van Beek, Alex Salas Bernardez, Mussa Rajamov, Gabriel Koole; Lieke van Dijk (RU), Jeremy de Wit (RU)



+ ...

*Access to MSc students in particular through teaching at Universities: (Special) Professorships!*

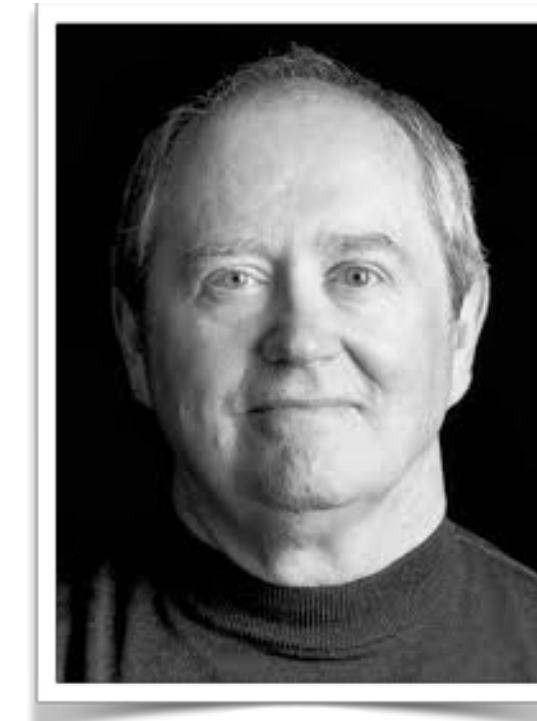
# NIKHEF THEORY AMSTERDAM: VISITORS

*Important element of our scientific live:*

- Various guests: Asmita Mukherjee (Mumbai), Carlos Salgado (Santiago) +...

- *High-profile* visitors:

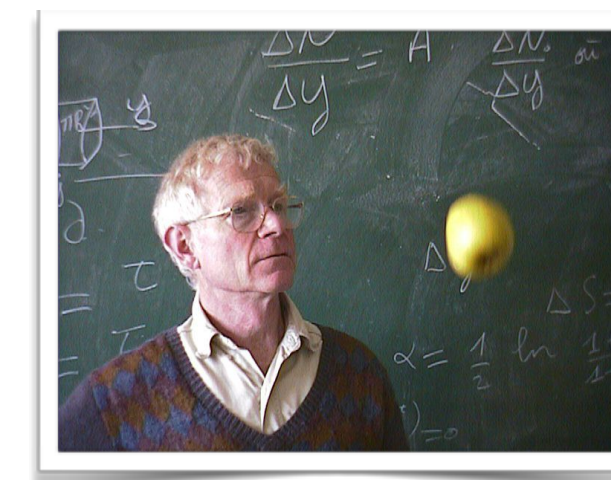
- Rohini Godbole (Bangalore) [UvA funds]
- Chris Quigg (FNAL) [D-ITP+Nikhef funds]



*Lots of interaction!*

- Regular visitors:

- Beatriz Gato Rivera (Madrid)
- Chris Korthals-Altes (Marseille)
- Andreas Vogt (Liverpool)

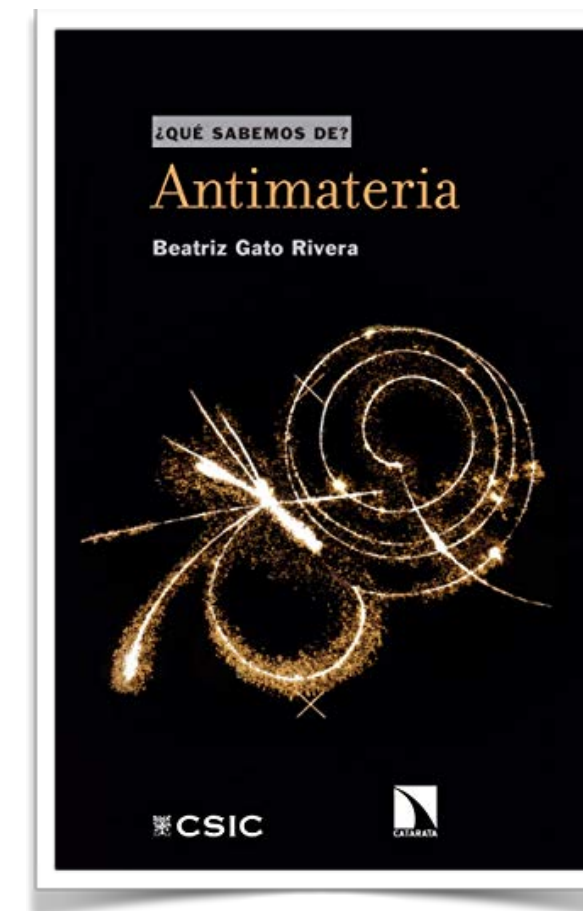


# NEWS ABOUT PEOPLE

- **Wouter Waalwijn:** *tenure at UvA*
- **Jan-Willem van Holten:** *now (formally) retired, but still very visible and active at Nikhef and the University of Leiden.*
- **Wim Beenakker:** *Educations Director at Radboud University*
- **Beatriz Gato Rivera:** *outreach book (Spanish)*



*Many Congratulations!*



# AWARDS 2018

- Philine van Vliet (MSc):

*Sander Bais Prize @ UvA*



- Melissa van Beekveld (PhD):

*Christine Mohrmann Stipendium @ RU:*

Research visit of two months @ IPPP

Durham, Universities of London & Torino



- Dr. Jacopo Fumagalli:

*Jan Kluyver Prize @ Nikhef*



*Many Congratulations!*

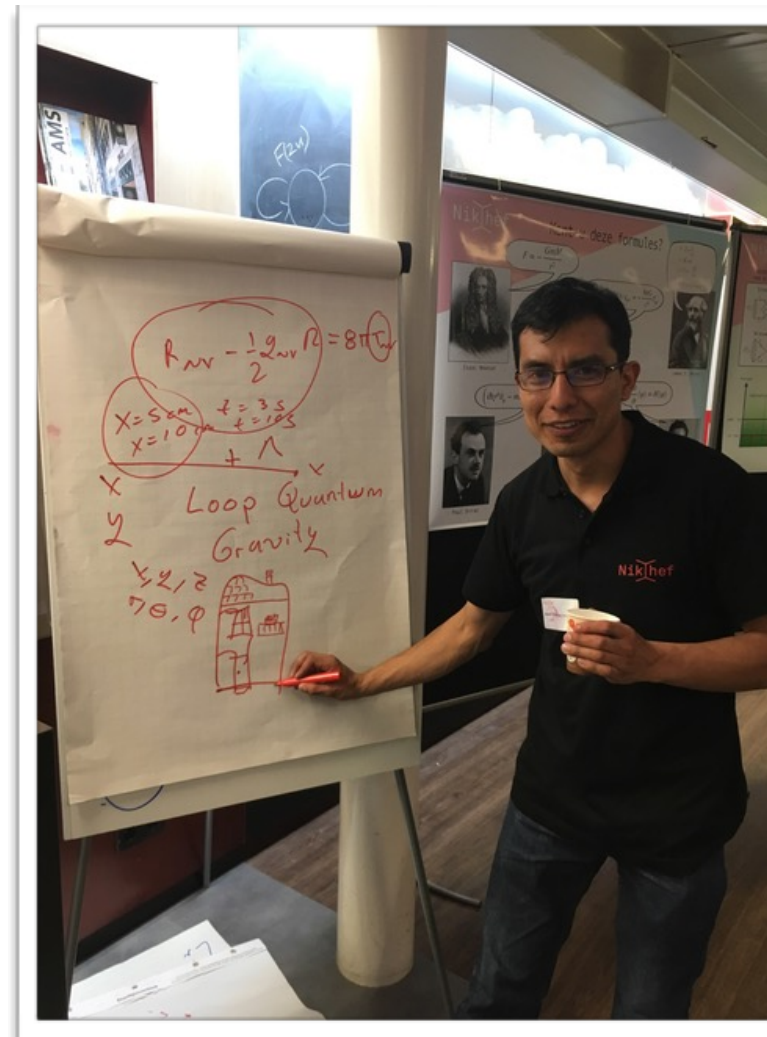
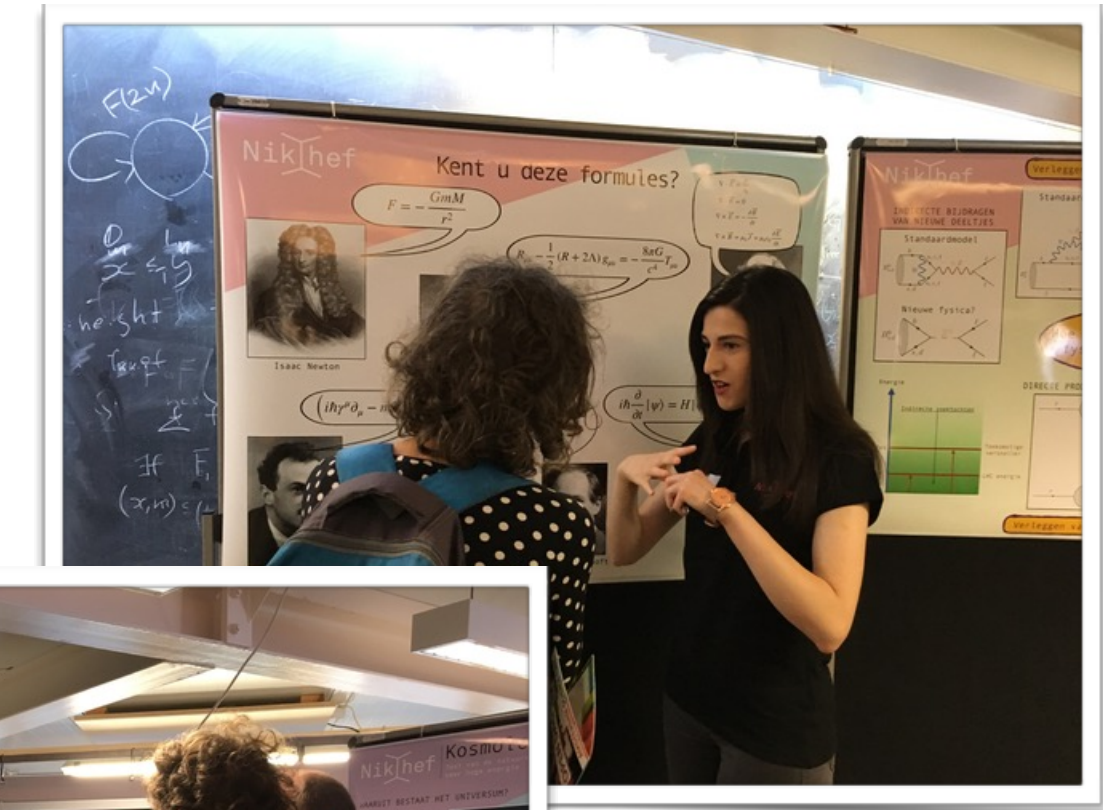
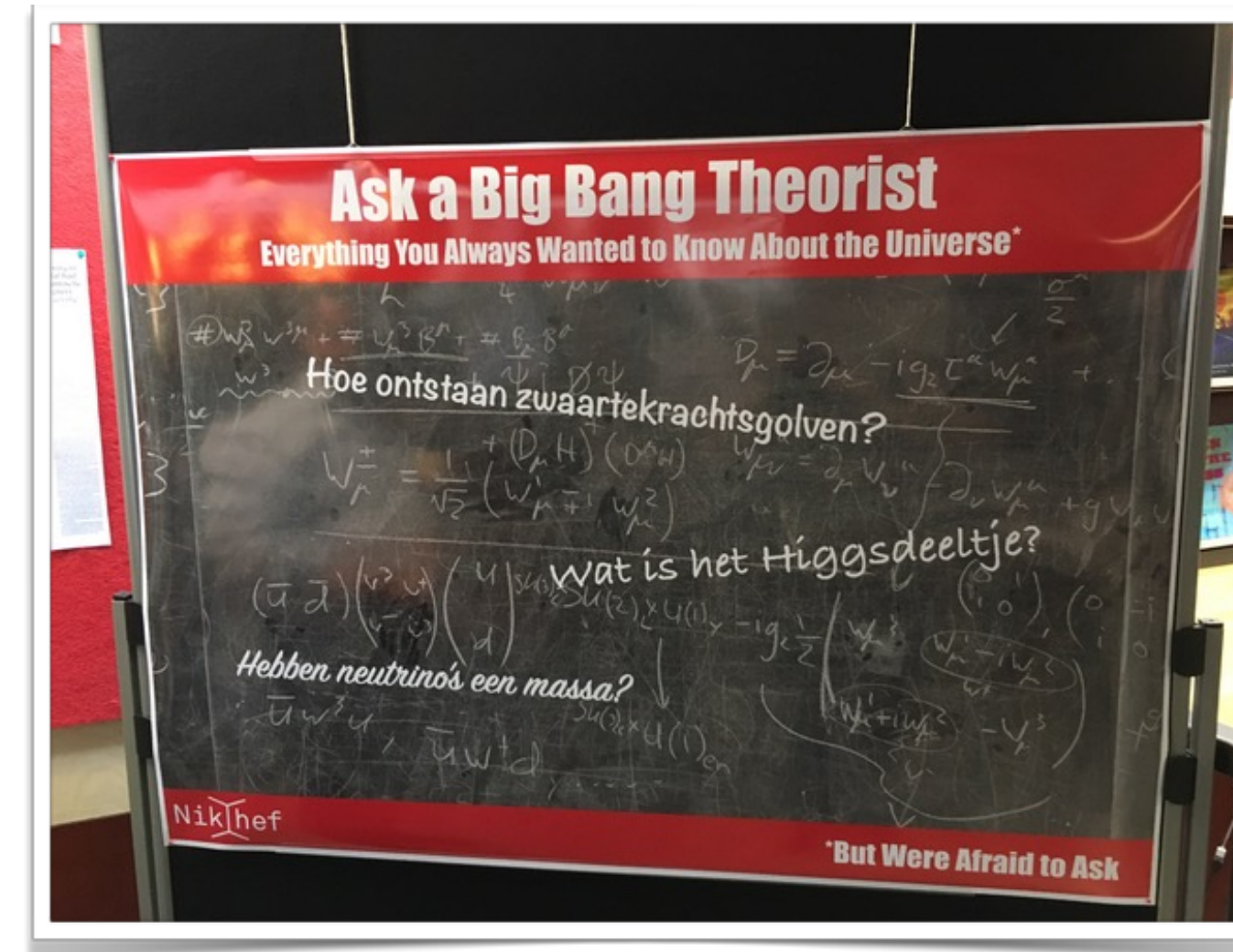
# THEORY @ NIKHEF OPEN DAY

- Redesigned theory group booth:

## *Ask a Big Bang Theorist*

- Task force of MSc/PhD students to make new posters and info material.

A big “*Thank You*” to everyone involved!

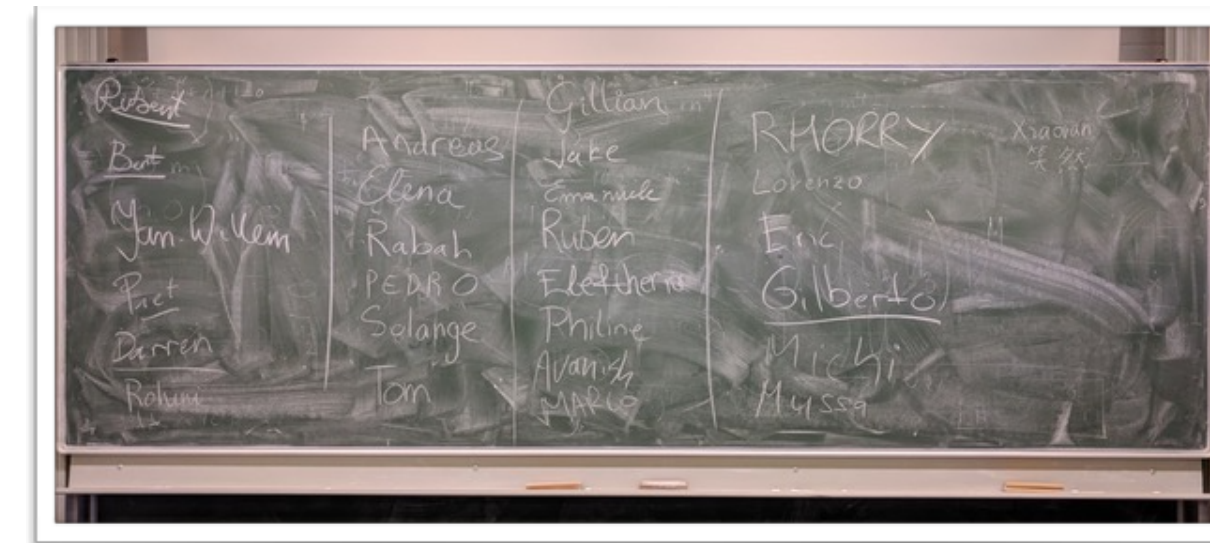




# (SOCIAL) EVENTS @ THEORY

*Spectrum of various activities:*

- Theory Day Out: “Prison & Park”  
Informal setting to get to know each other
- Theory Welcome Meeting: [October]  
Info + “two-minutes meeting” + photo
- Sinterklaas event:  
Food, drinks, poems and presents!

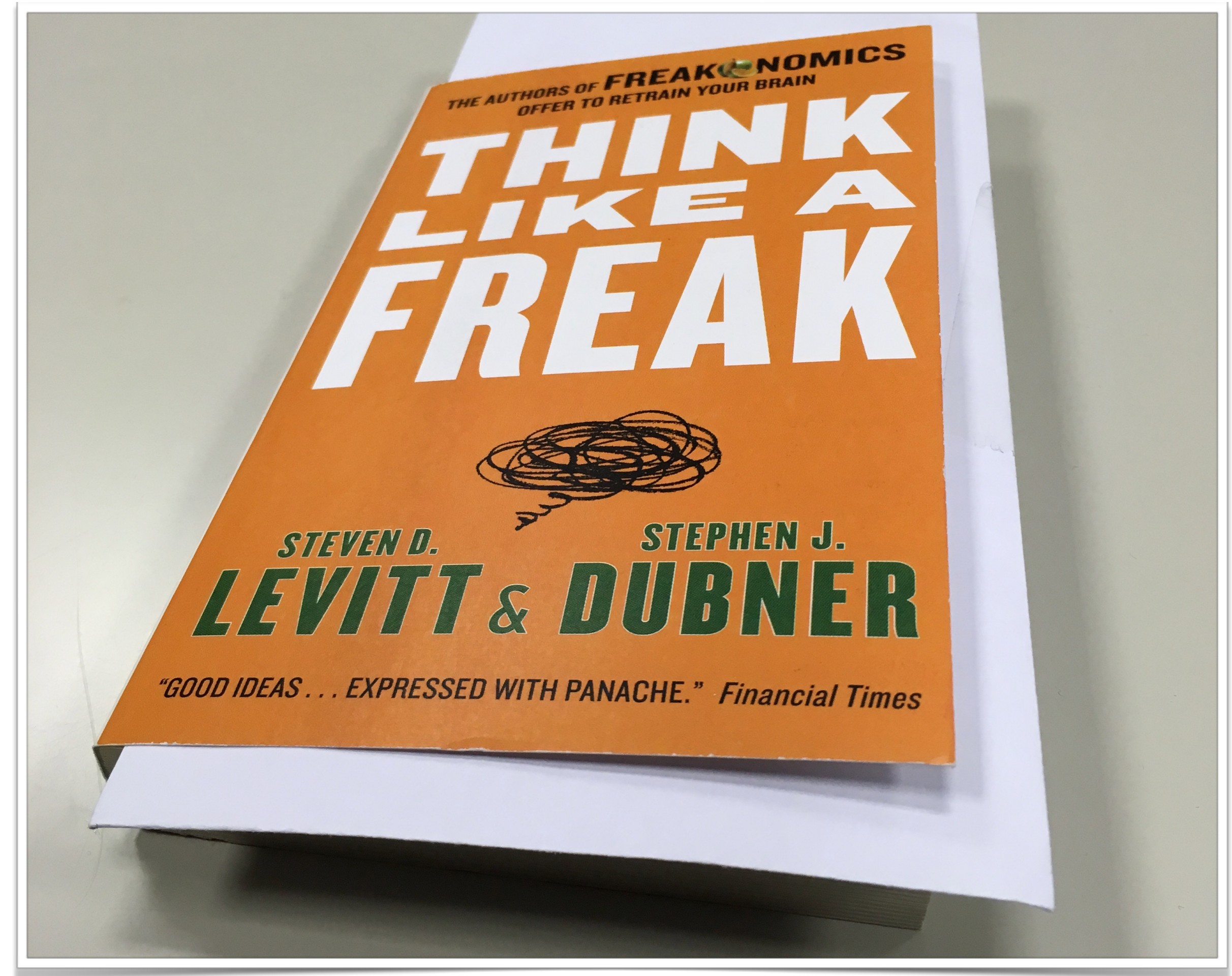


# SINTERKLAAS @ THEORY 2018

Present for R.F.:

*Inspiration for being head  
of the theory group ...*

*Thank you!*



# INTERACTION THEORY-EXPERIMENT @ NIKHEF

→ *Utilise the Structure of Nikhef:*

- Theorists learn about experimental challenges, point out new observables, raise questions...
- Joint papers Theory-Experiment
- Series “Theory meets Experiment”:
  - Theory colloquium with informal mini-workshop
  - Broad spectrum of topics
  - Proposals are very welcome!

[R.F. + Olya Igonkina (ATLAS) + Marcel Merk (LHCb)]



**Mini Nikhef Workshop: Theory meets Experiment - Long Lived Particles**  
chaired by Robert Fleischer, Olga Igonkina, Marcel Merk

Friday, 26 October 2018 from **14:00** to **16:30** (Europe/Amsterdam)  
at **Nikhef**

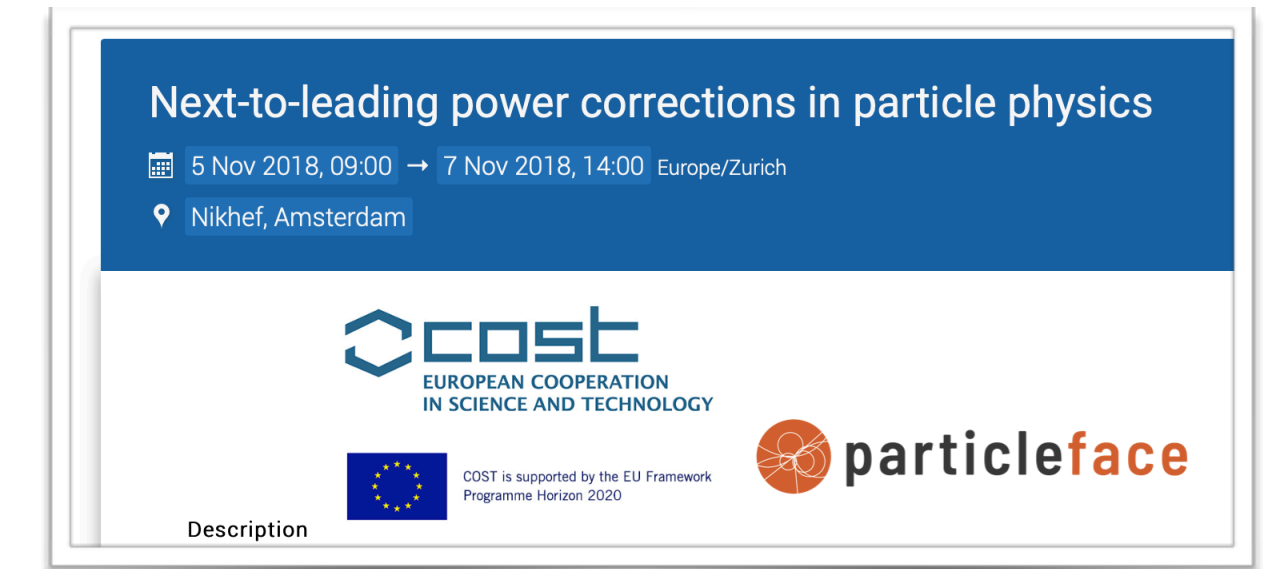
**Material:** AtlasAug2018Paper, EmergingJetsPaper, HiddenValleyParticlesLHCPaper, LHCbPaper, NovelSignaturesLHCpaper

**Friday, 26 October 2018**

14:00 - 14:45	Confining Hidden Valley Models at the LHC 45' Speaker: Yuhsin Tsai (University of Maryland)
14:45 - 15:30	Experimental Overview from LHCb 45' Speaker: Carlos Vazquez Sierra
15:30 - 16:00	Novel Signatures at the LHC 30' Speaker: Prof. Rohini Godbole
16:00 - 16:30	Discussion 30'

# WORKSHOPS AND CONFERENCES

- Nikhef theory group is actively involved in the (co)-organisation of workshops in Amsterdam.
- Meetings in 2018:
  - **SCET 2018 + COST Workshop pQCD** [W. Waalewijn, E. Laenen, L. Vernazza]
  - **Tau 2018** [O. Igonkina (Chair) + R.F.]
  - **NNPDF Collaboration Meeting** [J. Rojo]



# FUNDING @ NIKHEF THEORY AMSTERDAM

- Continuous funding efforts:



- O(125) grant applications since 2007 with remarkable success:

- 3 ERC advanced grants
- 2 ERC starting grants
- 3 Vidi grants
- 7 Veni and Marie Curie grants
- + ... [Since 2011]

Vidi	Fall 2014
Veni	Januari 2015
Veni	Januari 2015
Veni	Januari 2015
H2020 ITN #PRECISION	Januari 2015
ERC junior	Januari 2015
E-Cost network	Spring 2015
E-Cost network	Fall 2015
RISE	Spring 2015
Niels Stensen Fellowship	Fall 2015
Vici	Spring 2015
Projectruimte	Voorjaar 2015
MC IF Re-integration	Sept. 2015
MC IF	Sept. 2015
D-ITP PhD grant	10/1/2015
Vici	Spring 2016
H2020 ETN #PRECISION	Januari 2016
RISE	Spring 2016
Projectruimte	Winter 2015-2016
Projectruimte	Winter 2015-2016
Marie Curie	Sept. 2016
Marie Curie (Global F)	Sept. 2016
Marie Curie	Sept. 2016
Marie Curie	Sept. 2016
Marie Curie	Sept. 2016
ERC starting grant	Sept. 2016
Vidi	Oct. 6
D-ITP PhD grant	Oct. 6
Projectruimte	Oct. 1
ITN HiggsTrain	Jan. 10
ITN Precision	Jan. 10
IoP special PhD position	Jan. 9
IoP special PhD position	Jan. 9

Vidi	Fall 2017
Vidi	Fall 2017
Vidi	Fall 2017
Vidi	Fall 2017
ERC starting grant	Fall 2017
MC-IF	Fall 2017
MC-IF	Fall 2017
MC-IF	Fall 2017
ERC Advanced Grant	Fall 2017
ITN "Collisions"	Jan 2018
Veni	Jan 2018
ERC Consolidator	2018
Projectruimte	Spring 2018
Projectruimte	Spring 2018
Projectruimte	Spring 2018
ERC Advanced Grant	August 2018
Vidi	Fall 2018
Zwaartekracht (RU & UvA)	Fall 2018
Simons Foundation	Fall 2018
ERC Starting grant	Fall 2019
ERC Starting grant	Fall 2019
NWO ENW Groot grant	Spring 2019

# NIKHEF THEORY GROUP AMSTERDAM

- Key funding Instrument (+personal grants): *PhD students + Postdocs*

NWO (FOM) Programme [2014-2019]:

*Higgs as a Probe and Portal*

- Consortium:

Laenen, Vermaseren, R.F. (Nikhef); Mulders (VU); Beenakker, Kleiss (RU);  
Boer, Timmermans, Pallante (RUG) + Prokopec (UU)+ Boyarsky (Leiden)

- Research + Networking: *joint projects, monthly meetings, etc.*

*2019: NWO-ENW-GROOT Theory Programme...*

# SNAPSHOTS OF RESEARCH ...

## Strong Interactions, PDFs, QCD



PUBLISHED FOR SISSA BY SPRINGER

RECEIVED: May 27, 2018

REVISED: June 29, 2018

ACCEPTED: July 13, 2018

PUBLISHED: July 23, 2018

### Directed flow from C-odd gluon correlations at small $x$

Daniël Boer,<sup>a</sup> Tom van Daal,<sup>b,c</sup> Piet J. Mulders<sup>b,c</sup> and Elena Petreska<sup>b,c</sup>

<sup>a</sup> Van Swinderen Institute for Particle Physics and Gravity, University of Groningen, Nijenborgh 4, NL-9747 AG Groningen, The Netherlands

<sup>b</sup> Department of Physics and Astronomy, VU University Amsterdam, De Boelelaan 1081, NL-1081 HE Amsterdam, The Netherlands

<sup>c</sup> Nikhef, Science Park 105, 1098 XG Amsterdam, The Netherlands  
E-mail: d.Boer@uu.nl, t.van.Daal@uu.nl, p.j.mulders@uu.nl, e.petreska@uu.nl

Eur. Phys. J. C (2018) 78:651  
<https://doi.org/10.1140/epjc/s10052-018-6130-4>

THE EUROPEAN  
PHYSICAL JOURNAL C

Regular Article - Theoretical Physics

### Charged hadron fragmentation functions from collider data

NNPDF Collaboration

V. Bertone<sup>1,2</sup>, N. P. Hartland<sup>1,2</sup>, E. R. Nocera<sup>3,a</sup>, J. Rojo<sup>1,2</sup>, L. Rottoli<sup>4</sup>

<sup>1</sup> Department of Physics and Astronomy, Vrije Universiteit Amsterdam, 1081 HV Amsterdam, The Netherlands

<sup>2</sup> Nikhef Theory Group, Science Park 105, 1098 XG Amsterdam, The Netherlands

<sup>3</sup> Higgs Centre for Theoretical Physics, School of Physics and Astronomy, University of Edinburgh, Edinburgh EH9 3FD, UK

<sup>4</sup> Clarendon Laboratory, Rudolf Peierls Centre for Theoretical Physics, University of Oxford, Parks Road, Oxford OX1 3PU, UK

### Neutrino Telescopes as QCD Microscopes

Valerio Bertone,<sup>a</sup> Rhorry Gauld,<sup>b</sup> and Juan Rojo<sup>a</sup>

Eur. Phys. J. C (2018) 78:962  
<https://doi.org/10.1140/epjc/s10052-018-6448-y>

THE EUROPEAN  
PHYSICAL JOURNAL C

Regular Article - Theoretical Physics

### Towards ultimate parton distributions at the high-luminosity LHC

Rabah Abdul Khalek<sup>1,4</sup>, Shaun Bailey<sup>2</sup>, Jun Gao<sup>3</sup>, Lucian Harland-Lang<sup>2</sup>, Juan Rojo<sup>1,4,a</sup>

<sup>1</sup> Department of Physics and Astronomy, Vrije Universiteit Amsterdam, 1081 HV Amsterdam, The Netherlands

<sup>2</sup> Rudolf Peierls Centre for Theoretical Physics, University of Oxford, Clarendon Laboratory, Parks Road, Oxford OX1 3PU, UK

<sup>3</sup> Institute of Nuclear and Particle Physics, Shanghai Key Laboratory for Particle Physics and Cosmology, School of Physics and Astronomy, Shanghai Jiao Tong University, Shanghai, China



PUBLISHED FOR SISSA BY SPRINGER

RECEIVED: July 4, 2018

REVISED: September 17, 2018

ACCEPTED: October 3, 2018

PUBLISHED: October 16, 2018

### Joint resummation of two angularities at next-to-next-to-leading logarithmic order

Massimiliano Procura,<sup>a,b</sup> Wouter J. Waalewijn<sup>c,d</sup> and Lisa Zeune<sup>d,e</sup>

# SNAPSHOTS OF RESEARCH ...

## Collider Physics



PUBLISHED FOR SISSA BY SPRINGER

RECEIVED: May 14, 2018  
REVISED: July 20, 2018  
ACCEPTED: July 23, 2018  
PUBLISHED: August 2, 2018

### Geometric IR subtraction for final state real radiation

Franz Herzog

PUBLISHED: July 31, 2018

### The automation of next-to-leading order electroweak calculations

R. Frederix,<sup>a</sup> S. Frixione,<sup>b</sup> V. Hirschi,<sup>c</sup> D. Pagani,<sup>a</sup> H.-S. Shao<sup>d</sup> and M. Zaro<sup>e</sup>

Eur. Phys. J. C (2018) 78:760  
<https://doi.org/10.1140/epjc/s10052-018-6234-x>

THE EUROPEAN  
PHYSICAL JOURNAL C



Regular Article - Theoretical Physics

### Exploiting the WH/ZH symmetry in the search for new physics

R. V. Harlander<sup>1,a</sup>, J. Klappert<sup>1</sup>, C. Pandini<sup>2</sup>, A. Papaefstathiou<sup>3,4</sup>

PUBLISHED: October 23, 2018



### On next-to-leading power threshold corrections in Drell-Yan production at N<sup>3</sup>LO

N. Bahjat-Abbas,<sup>a</sup> J. Sinninghe Damsté,<sup>b,c</sup> L. Vernazza<sup>c</sup> and C.D. White<sup>a</sup>

PUBLISHED FOR SISSA BY SPRINGER

RECEIVED: April 10, 2018  
REVISED: July 18, 2018  
ACCEPTED: July 30, 2018  
PUBLISHED: August 22, 2018

### Electroweak logarithms in inclusive cross sections

Aneesh V. Manohar<sup>a</sup> and Wouter J. Waalewijn<sup>b,c</sup>

Eur. Phys. J. C (2018) 78:214  
<https://doi.org/10.1140/epjc/s10052-018-5701-8>

THE EUROPEAN  
PHYSICAL JOURNAL C



Regular Article - Theoretical Physics

### Rare top quark decays at a 100 TeV proton-proton collider: $t \rightarrow bWZ$ and $t \rightarrow hc$

Andreas Papaefstathiou<sup>1,2,a</sup>, Gilberto Tetlalmatzi-Xolocotzi<sup>2,b</sup>

<sup>1</sup> Institute for Theoretical Physics Amsterdam and Delta Institute for Theoretical Physics, University of Amsterdam, Science Park 904, 1098 XH Amsterdam, The Netherlands


<sup>2</sup> Nikhef, Theory Group, Science Park 105, 1098 XG Amsterdam, The Netherlands



# SNAPSHOTS OF RESEARCH ...

## Flavour Physics and BSM

Eur. Phys. J. C (2018) 78:911  
<https://doi.org/10.1140/epjc/s10052-018-6393-9>

THE EUROPEAN  
PHYSICAL JOURNAL C 

Regular Article - Theoretical Physics

### Decoding (pseudo)-scalar operators in leptonic and semileptonic $B$ decays

Giovanni Banelli<sup>1</sup>, Robert Fleischer<sup>1,2</sup>, Ruben Jaarsma<sup>1,a</sup>, Gilberto Tetlalmatzi-Xolocotzi<sup>1</sup>

<sup>1</sup> Nikhef, Science Park 105, 1098 XG Amsterdam, The Netherlands  
<sup>2</sup> Faculty of Science, Vrije Universiteit Amsterdam, 1081 HV Amsterdam, The Netherlands


PHYSICAL REVIEW LETTERS 120, 202001 (2018)

Editors' Suggestion    Featured in Physics

### New Leading Contribution to Neutrinoless Double- $\beta$ Decay

Vincenzo Cirigliano,<sup>1</sup> Wouter Dekens,<sup>1</sup> Jordy de Vries,<sup>2</sup> Michael L. Graesser,<sup>1</sup>  
Emanuele Mereghetti,<sup>1</sup> Saori Pastore,<sup>1</sup> and Udirajara van Kolck<sup>3,4</sup>

<sup>1</sup>Theoretical Division, Los Alamos National Laboratory, Los Alamos, New Mexico 87545, USA  
<sup>2</sup>Nikhef, Theory Group, Science Park 105, 1098 XG Amsterdam, The Netherlands  
<sup>3</sup>Institut de Physique Nucléaire, CNRS/IN2P3, Université Paris-Sud, Université Paris-Saclay, 91406 Orsay, France  
<sup>4</sup>Department of Physics, University of Arizona, Tucson, Arizona 85721, USA

 (Received 1 March 2018; revised manuscript received 28 March 2018; published 16 May 2018)

Within the framework of chiral effective field theory, we discuss the leading contributions to the neutrinoless double-beta decay transition operator induced by light Majorana neutrinos. Based on renormalization arguments in both dimensional regularization with minimal subtraction and a coordinate-

Physics Letters B 787 (2018) 193–197

Eur. Phys. J. C (2018) 78:943  
<https://doi.org/10.1140/epjc/s10052-018-6397-5>

THE EUROPEAN  
PHYSICAL JOURNAL C

Regular Article - Theoretical Physics

### Exploring $B \rightarrow \pi\pi, \pi K$ decays at the high-precision frontier

Robert Fleischer<sup>1,2</sup>, Ruben Jaarsma<sup>1</sup>, Eleftheria Malami<sup>1</sup>, K. Keri Vos<sup>3,a</sup>

<sup>1</sup> Nikhef, Science Park 105, 1098 XG Amsterdam, The Netherlands  
<sup>2</sup> Department of Physics and Astronomy, Vrije Universiteit Amsterdam, 1081 HV Amsterdam, The Netherlands  
<sup>3</sup> Theoretische Physik 1, Naturwissenschaftlich-Technische Fakultät, Universität Siegen, 57068 Siegen, Germany



Contents lists available at ScienceDirect

Physics Letters B

[www.elsevier.com/locate/physletb](http://www.elsevier.com/locate/physletb)

### Emergent symmetries of the Standard Model

P.J. Mulders

Nikhef Theory Group and Department of Physics and Astronomy, VU Amsterdam, De Boelelaan 1081, NL-1081 HV Amsterdam, the Netherlands

# SNAPSHOTS OF RESEARCH ...

## Cosmology and Dark Matter

Gravitational waves  
from generalized newtonian sources

J.W. van Holten

SciPost Physics

Submission

Preprint numbers: Nikhef 2018-045

**Whac-a-constraint with anomaly-free dark matter models**

Sonia El Hedri<sup>1,a</sup>, Karl Nordström<sup>1,2,b</sup>

<sup>1</sup> National Institute for Subatomic Physics (NIKHEF) Science Park 105, 1098 XG  
Amsterdam, Netherlands

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September 27, 2018

**Preheating after Higgs Inflation:  
Self-Resonance and Gauge boson production**

Evangelos I. Sfakianakis<sup>1,2</sup> and Jorinde van de Vis<sup>1\*</sup>

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Gravitational waves from conformal symmetry breaking

Tomislav Prokopec\*, Jonas Rezacek† and Bogumiła Świeżewska‡

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Princetonplein 5, 3584 CC Utrecht, The Netherlands*



**Electroweak baryogenesis and the standard model  
effective field theory**

Jordy de Vries,<sup>a</sup> Marieke Postma,<sup>a</sup> Jorinde van de Vis<sup>a</sup> and Graham White<sup>b,c</sup>



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**Radiative bound-state formation in unbroken  
perturbative non-Abelian theories and implications for  
dark matter**

Julia Harz<sup>a</sup> and Kalliopi Petraki<sup>a,b</sup>

# JAMBOREE 2018 THEME: *NEWCOMERS & EXPERTS*

- **Attracting talent:**

- MSc students: mainly locally (through teaching).
- PhD students: locally and internationally.
- Postdocs and staff: internationally.

- **Flat hierarchy with open, collegial atmosphere:**

- Informal exchange between staff and juniors.

- **Scientific meetings at various level:**

- Journal Clubs (informal discussions of papers).
- Monthly theory meetings (presentations, discussions, ...).
- Theory seminars (+brainstorming for topics/speakers).
- Interaction with visitors (discussions, seminars, lectures, ...).



# JAMBOREE 2018 THEME: NEWCOMERS & EXPERTS

Transfer of knowledge: *very informal...*

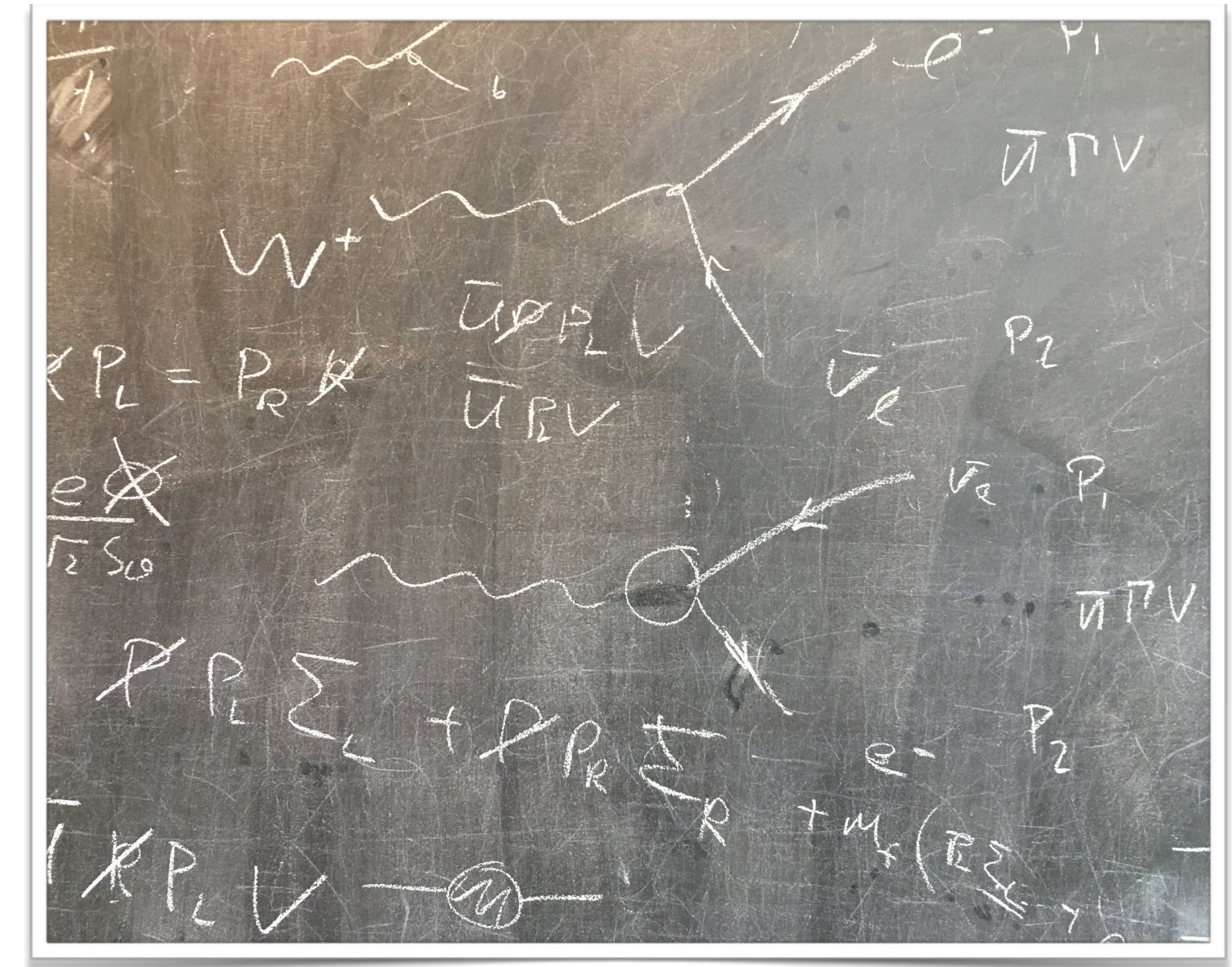
- Goal to bring juniors/newcomers quickly to the forefront of research:
  - Regularly papers with MSc students.
  - Close collaboration between staff and juniors.
  - Lots of excitement through new results, writing papers, sending them to journals, ...: juniors closely involved!
- Make sure that *juniors get visibility*:
  - Presentations @ international meetings!
  - Long-term research visits for PhD students.
- Support/help with job applications @ all levels!



# PROGRAMME OF THE REMAINING SESSION

## *Glimpse of Variety of Research in Nikhef Theory:*

- Neutrino telescopes as QCD microscopes [Rhorry Gauld]
- Observable gravitational waves from symmetry breaking [Bogumila Swiezewska]
- Reheating the Universe after inflation [Jorinde van de Vis]



*Enjoy!*