

PERSONALIA:

- Nationality: Dutch
- Gender: female
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- Languages: Dutch (native), English (near native), German (conversational), French (conversational)
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EMPLOYMENT:

- 2021-present: Lead Scientist at DESY and professor at the University of Hamburg, CMS experiment at the CERN LHC. Primary focus: Searches for physics beyond the standard model in the top quark sector with the CMS experiment. Also spending a fraction of research time on future colliders.
- 2019-2021: Professor at Vrije Universiteit Brussel.
- 2020-present: Visiting Professor (since 2017 Visiting Researcher) at University of Oxford.
- 2014-2018: Associate Professor at Vrije Universiteit Brussel.
- 2010-2014: Assistant Professor at Vrije Universiteit Brussel.
- 2007-2010: Research Associate at Cornell University, CMS experiment. Primary focus: CMS Pixel detector commissioning and measurement of the top quark pair production cross section in first LHC data.
- 2005-2007: Research Associate at Imperial College London, CMS experiment and the Dzero experiment at Fermilab. Primary focus: CMS software, CMS trigger, particle flow, tau identification.

CAREER BREAKS:

- 1995-1997 break in university studies due to the death of parents in 1994 and 1996.

EDUCATION:

- 2005: Ph.D. University of Amsterdam (Nikhef), Thesis: *Measurement of the top quark pair production cross section in the all-hadronic channel with the Dzero experiment*. Supervisors: Prof. Frank Linde and Prof. Marcel Demarteau.
- 2000: M.Sc. University of Amsterdam (Nikhef), Thesis: R&D for LHCb outer tracker.
- CERN Summer Student 1999 in group of Gigi Rolandi (Scuola Normale Superiore)

FELLOWSHIPS AND AWARDS:

- 2019-21: USA Department of Energy LHC Physics Center Senior Distinguished Researcher
- 2016: "Jaarprijs Science Communication" of the Royal Flemish Academy of Belgium for the Arts and Sciences (KVAB) for Promotion of particle physics on social media, particularly twitter and youtube.
- 2013: USA Department of Energy LHC Physics Center Fellow
- 2011: Odysseus II Grant awarded by the Flemish funding agency FWO.
- 2004: Awarded funding for extra year PhD from Dutch National Science Foundation due to accelerator delays (NWO)

SELECTED COLLECTIVE AWARDS:

- 2019: European Physics Society HEPP prize for physics of Top quark (D0 Collaboration)
- 2013: European Physics Society HEPP prize for discovery Higgs boson (CMS Collaboration)
- 2012: Science "Breakthrough of the Year 2012" for the discovery of the Higgs boson.

MENTORSHIP:

- Promotor 11 PhD students (5 ongoing at VUB or DESY, 6 graduated), of which 7 under shared PhD contracts.
- Supervisor of 8 postdoctoral researchers. Postdoctoral alumni from my group have successfully gained tenure track positions; Dr. R. Gonzalez Suarez (now faculty at Uppsala U) and Dr. J. Keaveney (now faculty at U of Cape Town). Informal mentorship of multiple postdocs not associated with my institute incl. Prof. Dr. R. Bartek (faculty at The Catholic University of America) and Dr. T. Du Pree (faculty at Nikhef).
- Of the MSc students who did a Master thesis in my group, ~50% pursued further research in a PhD programme, either in Belgium or the United Kingdom.

SCIENTIFIC LEADERSHIP IN LARGE COLLABORATIONS (highlights):

- *2018-present*: First ever CMS Physics Communication Officer, responsible for the communication and outreach of 130+ scientific papers per year by 4000+ international scientists at CERN.
- *2017-2019*: (co)chairperson of the CMS Supersymmetry Publication Committee Board, responsible for the editing, publishing of CMS papers on Supersymmetry and coordination with journals (member of same committee 2016-2017).
- *2016-2018*: Co-convener of the Top physics group for the future electron-positron collider FCC-ee study, aiming to assess feasibility of the machine and resulting in a conceptual design report.
- *2012-2014*: As the founder of the Beyond-Two-Generations physics group in the CMS experiment at CERN with 250 members world-wide, I have enabled the rapidly growing new research area of the CMS experiment with output (as of 2019) 60+ journal publications (12 produced during my tenure as convener) on the topic of searches for new physics using top quarks in the exotica sector.
- *2008-2009*: Convener CMS pixel offline software group, leading an international team of 50 people working on silicon pixel reconstruction software, i.e. simulation, digitization and reconstruction of pixel detector data, data quality monitoring, databases and calibration, including cosmic ray studies.

More details on INSTRUMENTATION/DETECTOR EXPERIENCE:

- Commissioning and online calibration of the CMS pixel detector, including automatization of charge insertion tests and resulting in leadership of CMS software calibration group for the pixel detector during the first LHC data taking /muon calibration runs in 2007-2009, including first journal papers of CMS detector.
- ATLAS SCT endcap module testing in 2005 as an intermediate postdoc before starting at Imperial College. Responsibilities included electronics/data acquisition testing and module visual inspections.
- Dzero 10% test, cosmic ray data taking and commissioning of 10% of the Dzero silicon strip detector in 2000, including full commissioning of the data acquisition chain.
- LHCb detector performance studies 1999-2000, on ageing of drift tube gas/chamber design combinations including radiation tests and test beams.
- CERN Summer Student Topic: development of gantry robots in for use of silicon detector assembly, gluing, and bonding, for the CMS experiment, in group of G. Rolandi (Scuola Normale Superiore & CERN).

INSTITUTIONAL RESPONSIBILITIES (selection):

- *2018-2021*: Director of undergraduate studies for the VUB BSc & MSc Physics and Astronomy.
- *2015-2018*: Member of executive committee VUB faculty of Science and Bioengineering.
- *2015-2018*: Coordinator of the VUB Faculty of Science and Bioengineering VUB fellows programme, providing fellowships for prominent members of the public to strengthen the bond between the VUB and society/industry.
- *2014-2018*: President of the PR and Outreach Council, VUB Faculty of Science
- *2014-2018*: Secretary of Examination/Admissions Council, VUB Master of Physics and Astrophysics.
- *2014-2018*: Secretary of Examination Council, VUB Bachelor of Physics and Astrophysics

COMMISSIONS OF TRUST (selection):

- Chairperson of *ATLAS-Canada* Standing Review Committee, Natural Sciences and Engineering Research Council of Canada (NSERC), Canada.
- Member of scientific steering committee of Institute for Particle Physics Phenomenology (IPPP) Durham, a leading international centre for research in particle physics phenomenology.
- Member CLIC detector&physics Advisory Board, CERN.
- *2017-19*: Vice-Chairperson of WT2 (fundamental physics) funding review panel of FWO, the national science funding council, Flanders, Belgium.
- Member/chairperson of physics or all-sciences interdisciplinary peer review panels in last 5 years, in Belgium, the Netherlands, Sweden and Norway.

ORGANISATION OF SCIENTIFIC EVENTS (selection):

- 2020-present: Member of Scientific Advisory Committee for the Fermilab LPC “topic of the week” seminars.
- Member local organizing committee EPS-HEP 2019 in Belgium (Gent), 800+ participants.
- Member local organising committee International CMS Collaboration Week in Brussels (Belgium, 2011, 350 participants).
- Established contributions to the CMS data analysis school (introduction school for new CMS members) including co-designer of the original top physics exercise.
- Member of Scientific Advisory Committee for ALPS (Austria) and Rencontres de Vietnam.
- Member of the scientific organizing committees of leading conferences in the field of experimental particle physics such as ICHEP2018 (the main High Energy Physics) and ALPS (Austria).
- Organiser of over 15 scientific workshops at CERN, Fermilab, etc.
- Organiser of the invited seminars of the Inter-university Institute for High Energies (2012-2017, VUB+ULB).
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SELECTED RESEARCH FUNDING AND MANAGEMENT (highlights, total funding acquired over 4M€, some via shared grants):

- Helmholtz Distinguished Professorship at DESY, 2021-until retirement, about 900 k€/year every year.
- Bilateral grant between FWO and Swiss National Science Foundation, establishing first Belgian contribution to future collider studies, 2021-2025, 350k€
- FWO Odysseus II (Belgian faculty starter grant in competition over all of academia), 2011-2018, 870k€ .
- Co-promotor and work node coordinator of the *Be.h Excellence of Science* network, funding for Belgian federal national collaboration between French- and Dutch-language universities, focusing on CMS and LHC phenomenology (2018-2022) with ULB, UA, UGent, UCLouvain (719k€ for VUB).
- Co-promotor of Hercules project for the *CMS Phase-2 upgrade*, total Flemish. contribution 5M€ to build CMS Detector upgrade in Flanders (detector due 2025).
- Co-promotor of FWO project ‘*Precise top quark physics at the LHC in the search for Dark Matter particles*’ at the VUB (2017-2020), 440k€.
- Co-promotor for HEP@VUB Strategic Research Program ‘*Zwaartepunt hoge-energiefysica*’ at the VUB (2018-2022 and 2012-2017), 260k€/year.
- Co-promotor of FWO Big Science grant “*Het CMS experiment te CERN*”, with UA and UGent, 2.4M€ for VUB (2012-2018, 2019-2024).
- Co-promotor of BELSPO Inter-University Attraction Poles grant ‘*Fundamental Interactions*,’ with ULB, UA, UGent, KUL, UCL, UMons and ULiege. Coordinator of WP3 Beyond the Standard Model, in program IAP V/27 and IAP VI/11 2012-2017.
- Promotor of four FWO postdoctoral fellowship grants, including one Marie-Curie grant and two candidates high on the reserve list who were awarded overflow grants by VUB.
- Secured additional funding by starting structural program of shared PhDs with University of Bristol, UK.

SCIENCE COMMUNICATION AND VALORISATION (selection)

- Over 70 presentations to the general public, and 10+ jury memberships in various science competitions.
- Over 40 contact moments in international media: newspapers, New Scientist (NL and UK versions), WIRED, and online magazines (such as Gizmodo, Nature News), radio, mostly in Belgium, USA, UK, and Netherlands.
- Strong focus on science communication using social media, for example currently 7800+ followers on twitter, reaching 150000s/month, and YouTube videos with over 100k views.
- 2010-present: yearly guest speaker at the London International Youth Science Forum, one of the oldest high school student science conferences in the world, hosting about 500 students from 65 countries worldwide.
- Coordinator and initiator of the Belgian contribution to the CERN Teacher Programme.
- Organiser of the IPPOG CMS masterclasses (2 per year, one in Dutch, one in English) in Belgium (Brussels).
- Organiser of regular IIHE career workshops for particle physics doctoral students and postdocs, highlighting opportunities in industry for particle physicists.

DIDACTIC ACTIVITIES:

- 2017-present: Yearly lectures on physics in the top quark sector for University of Oxford doctoral school.
- 2022-present: *Seminar particle physics* (University of Hamburg Bachelor Physics & Astronomy): Seminar course to familiarize second/third year bachelor students with particle physics
- Until 2021: *Simulation of modern physics and detectors* (VUB Master Physics&Astronomy, 10% of course load in final year): Designed new course at Vrije Universiteit Brussel, focusing besides practical computational physics on acquiring necessary analysis software skills (ROOT, pyROOT, matplotlib python) for (astro) particle physics students.
- Until 2021: *Experimental physics* (VUB Bachelor Physics&Astronomy 10% of course load in first year): First year physics laboratory at the Vrije Universiteit Brussel. This course is part of the core physics curriculum and intends to teach basic experimentation skills using modern active learning techniques, including peer evaluation, blended learning, including use of modern media (such as youtube) and inverted classrooms.
- Until 2021: *Detection techniques in nuclear physics for medical engineers* (Master Medical Engineering VUB, 5% of final year course): Advanced MSc electives course that augments the medical engineering curriculum with basic subatomic physics detection techniques in the context of the underlying principles of medical imaging.
- Until 2021: *External Mobility A* (Master Physics&Astronomy, VUB, 6 ETCS): In this mandatory advanced physics and astronomy course, students have high flexibility to take up a physics topic outside the Vrije Universiteit Brussel (typically an internship at a research lab or in industry). I am responsible for quality and content of the internship and for evaluation of the written and oral reporting.
- *Advanced physics lecturing*: Regular speaker at doctoral schools in Europe and beyond, highlights:
 - Nordic Particle Physics Meeting and Doctoral School
 - The CERN-Fermilab summer school (aimed at advanced doctoral students and early career postdocs)
 - The German-Dutch-Belgian doctoral school for Experimental Particle Physics
 - Particle physics schools in Egypt and Pakistan in the context of ITCP

ON MY PUBLICATIONS:

By convention, **articles published by particle physics experiments list all collaboration members in strict alphabetical order.** This policy reflects the substantial efforts in detector construction and maintenance, data acquisition, data reconstruction, and calibration that all collaborators contribute to, which is a prerequisite to any data analysis. This is particularly relevant for those who have committed a substantial fraction of their time to the construction, installation and commissioning of detectors.

As such, scientific leadership, awarded after selection on merits and excellence within the collaboration, as are conference presentations, and seminar invitations add a reliable measure of scientific productivity in the hep-ex field than merely citations alone. The journal publications in the bibliographies at the end of the CVs in this document are subsets of the full publication records in the case of members of experimental collaborations and consist of publications to which the authors have made a major contribution. Also note that the papers from large collaborations such as the CMS experiment are almost exclusively published in high impact factor journals (in the first quartile, Q1) with impact factors around 5, whereas Nature Physics (IF: 20) and Science (IF: 30) should be considered as rather unconventional publication channels in the hep-ex field, with more PR than scientific impact value. These lists can be compared with the total publication output of big experiments such as CMS, which publish about 100 papers per year on average. There are about 3000 physicists in CMS, and my personal output is significantly higher than normal in the collaboration.

A list I consider more relevant than my 1280+ citeable publications (with on average about 110 citations per paper), and also showing the very high impact in this field world- wide, follows below. As most of these papers have 2000+ authors, I focus in the list only on papers I have actually made a contribution to (and indicate the contribution in parentheses). Using **a list containing only articles to which I have made a substantial and provable contribution**, my Hirsh index would be around 45.

As the founding convener of the CMS Beyond-Two-Generations group I am also at the basis of an highly impactful program that has up to now produced 59 published or submitted papers in the context of searches for new physics theories using top quarks, I have listed these in a separate list, and in that same list include any journal papers where I was involved with coordination in an editorial role as the chair/ member of the CMS Supersymmetry group publication committee as these represent a substantial contribution and time commitment. Similar arguments should be made for the overview papers for the FCC-ee, as I was involved as author or editor of the top physics chapters. I also am one of the regular chairs of the efforts on the intensive internal peer review (6 to 12 months) inside the CMS collaboration.

Looking at my individual impact, I have provable contributions to in the order of 7% of all journal papers in the CMS collaboration. Due to this, I regularly get nominated for leading roles, including the internationally important role Physics Communication Officer for the CMS experiment. The selection procedure during and after nomination in the CMS collaboration is unfortunately not the most transparent, but already being nominated ranks me in the top of most visible physicists in the entire field (world-wide), which is also confirmed by my advisory roles in conference organizing committees, advisory and peer-review panels, etc.