

Jorgen D'Hondt – Vrije Universiteit Brussel, VUB (May 2021)

Born in Belgium

PhD in 2003 at the VUB (DELPHI experiment)

Professor since 2006 at the VUB (now Full Professor)

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I am a professor at the VUB and full professor since 2014. As part of my university, I am the VUB-director of the Interuniversity Institute for High Energies (IIHE) with about 100 members, I was the president of the physics department and I am coordinator of a center of excellence for high-energy physics, including ~20 professors. In the Belgian context, since 2013 I am the Spokesperson for the Flemish participation in the CMS experiment at CERN, i.e. the largest Big Science project in Flanders, and administrative Spokesperson for the Belgian CMS Tracker Upgrade project, i.e. the largest experimental project ever for fundamental physics in Belgium.

Initially, I researched the W boson with the LEP collider at CERN with membership in the LEP Electroweak Working Group. Since then, 21 PhD students have graduated with me as a supervisor with research at the LHC. In the CMS experiment I initiated research on the top quark, the heaviest elementary particle known today. Shortly after our discovery of the Higgs boson, I was elected chair of the CMS Collaboration Board where all major decisions of this 4000-person collaboration are made. Meanwhile, I was invited for keynote talks at the most prominent conferences worldwide.

At LEP I was a pioneer in the integrated measurement method of a physics parameter (e.g. W boson mass) and the main phenomena that induce systematic uncertainties on it (e.g. colour reconnection). At the LHC, since 2003, I continued the novel development of in-situ calibrations in the physics analysis chain (e.g. jets and b-tagging) and coherently integrated background estimates into physics analyses and integrate several channels into one analysis in the search for new physics. With my team we have worldwide a leading role in developing charm- and b-taggers, and their use in physics analyses. Recently, we innovated the use of Machine Learning to optimise an integrated analysis aimed at measurements of new-physics coefficients in Effective Field Theory models.

For the period 2018-2020 I was elected chair of the European Committee for Future Accelerators (ECFA). In this role I represented the European community of particle physicists and played an instrumental role in updating the European Strategy for Particle Physics. I initiated and participated in amongst others the international study group to compare Higgs physics at future colliders, the development of a European Detector R&D Roadmap and international working groups to enhance synergies of physics and detector studies across future Higgs factories.

SELECTED INTERNATIONAL AND NATIONAL LEADERSHIP ROLES

- **Chairperson of the European Committee for Future Accelerators, ECFA** (elected, 2018-2020)
- **Strategy Secretariat to update the European Strategy for Particle Physics** (2018-2020)
- **Director of the Inter-university Institute for High Energies** (2011-now, VUB part) *~100 members*
- **Coordinator VUB Strategic Research Programme High-Energy Physics** (2013-now) *~20 professors*
- **President of the Young Academy of Belgium** (Flanders) (elected, 2013-2015) *founding president*
- **President of the Department of Physics** (elected, 2012-2014 and 2016-2018, VUB)
- **President of the Education Council** (2013-2015, Faculty of Science and Bio-engineering, VUB)

SELECTED (AND RECENT) LEADERSHIP ROLES IN THE CMS COLLABORATION

- **PI of the CMS Phase-2 Tracker project in Belgium** (2017-2023) *~10M EUR*
- **PI Flemish contribution to CMS** (2013-now, largest Big Science project Flanders) *~1.2M EUR per year*
- **Deputy Spokesperson of an Excellence of Science (EoS) project "be.h"** (2018-2021) *~4M EUR*
- **PI of several other research projects** *~40M EUR (incl. the above) obtained in open competition*
- **Chairperson of the CMS Collaboration Board** (elected, 2014-2017) & **Secretary** (2013-2014)
- **Member CMS Executive Board, Management Board and Finance Board** (2013-2017)
- **Chairperson CMS International Committee** (2013-2019) & **CMS Search Committee** (2014-2017)
- **Chairperson CMS Career Committee** (2012-2014) *founding chairperson*
- **First convener of the CMS top quark group & Member of Physics Coordination** (2007-2008)

SELECTED PUBLICATIONS (information from InspireHEP, 16 Febr 2021)

- **CMS Collaboration** (3099 authors), *The CMS experiment at the CERN LHC*, Journal of Instrumentation 3 (2008) S08004, 361p, peer rev., 7524 citations
- **CMS Collaboration** (2900 authors), *Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC*, Physics Letters B 716 (2012) 30, 31p, peer rev., 11656 citations
- **CMS Collaboration** (2265 authors), *Identification of heavy-flavour jets with the CMS detector in pp collisions at 13 TeV*, Journal of Instrumentation 13 (2018) 05, P05011, 114p, peer rev., 548 citations
- **J. D'Hondt**, A. Mariotti, K. Mimasu, S. Moortgat, C. Zhang, *Learning to pinpoint effective operators at the LHC: a study of the $t\bar{t}b\bar{b}$ signature*, Journal of High Energy Physics 11 (2018) 131, 47p, peer rev., 14 citations
- J. de Blas, M. Cepeda, **J. D'Hondt**, R.K. Ellis, **C. Grojean**, B. Heinemann, **F. Maltoni**, A. Nisati, E. Petit, R. Rattazzi, W. Verkerke, *Higgs boson studies at future particle colliders*, Journal for High Energy Physics 01 (2020) 139, 75p, peer rev., 98 citations

SELECTED SCIENTIFIC IMPACT AND OTHER SCIENTIFIC OUTPUT

- **Publications:** 1136 with 128866 citations, h-index 159 (source INSPIRE <http://inspirehep.net/>)
- **Promoter of 21 PhD students and 14 master students**, several winning international awards
- **Above 250 presentations** at conferences, workshops, seminars, and international meetings
- **Co-author of more than 100 internal publications** in large international collaborations
- **Annual Prize for Science Valorisation** by the VUB (2014)
- **Awarded Young Scientist 2013** by the World Economic Forum (2013)
- **Prize for Science Communication** by the Royal Flemish Academy of Belgium (2013)
- **Discovery of the Higgs boson** as member of the CMS collaboration (2012)
- **Frequently invited for outreach talks**, 150+ presentations on science for the general public
- **Extensive experience with media**, 100+ appearances (television, radio, national newspapers)
- **Keynote talks at academic, career, outreach & political events, debates, academic openings, ...**
- **PI of three Innoviris projects**, in Belgium, incl. STEM education and the COVID pandemic
- **Organisation of conferences/workshops:** recent examples are: Joint APPEC-ECFA-NuPECC Seminar series (initiator, 2019), EPS-HEP conference (member local organising committee, 2019), Future Circular Collider week (main local organiser, 2019), CERN School of Computing (main local organiser, 2016), CMS Week in Brussels (main organiser, 2011), International Top Quark Conference (organiser, 2010), member of 20+ committees of prominent international conferences/workshops
- **European delegate in the International Committee for Future Accelerators**, ICFA (2018-2020)
- **Chairperson MYRRHA-MINERVA International Advisory Committee** (2020-now) ESFRI ~1.6B EUR project
- **Invited member to CERN Council and member of CERN's Scientific Policy Committee** (2018-2020)
- **Member of European APPEC (astroparticle) and NuPECC (nuclear phys) committees** (2018-2020)
- **Member of the European Physics Society HEPP board** (2018-2020)
- **Belgian delegate to the Restricted European Committee for Future Accelerators** (2012-2018)
- **Belgian delegate to the International Particle Physics Outreach Group** (2006-2014)
- **Member of advisory boards**, recent examples are: Scientific and Strategic Council of IJCLab (2020-now), International Advisory Committee for Physics and Detector studies for Higgs Factories (initiator, 2020-now), FCC Physics & Experiments workshops (2020-now), European H2020 ESCAPE external expert advisory board (2019-now, <https://projectescape.eu>), Scientific Advisory Panel of NIKHEF (2019-now), Scientific Adv. Comm. Institute of Physics at the Uni. of Amsterdam (chair, 2016-2017)
- **Member of international review panels**, recent examples are: ECFA Detector R&D Roadmap (initiator, 2020-now), high-level committee for the Dutch National Roadmap for Large Research Infrastructures (2019-2020), Spanish Research Agency panel for HEP (2019), HCERES review panel for IRFU (2018), MYRRHA international review panel of the Flemish Government (chair, 2017), NWO committee for VICI grants (2014-2018), Flemish delegate in the NSF International Oversight & Finance Group of IceCube (2014-now), FWO Committee for International Collaboration (2012-2017)