

## Curriculum vitae

### Johann Christoph Bernhard (Hannes) Jung

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### Education

2004 Docent in particle physics, University of Hamburg, Germany  
1999 Docent in particle physics, University of Lund, Sweden  
1989 PhD in particle physics, University of Hamburg, Germany  
1983 Diploma in physics, University of Freiburg, Germany

### Current position

since Oct 2021 Emeritus at DESY and II. Institut für Theoretische Physik, University of Hamburg  
2004 – 2021 Senior researcher at DESY, Hamburg, Germany  
since 2004 Docent in particle physics at University of Hamburg, Germany  
2014 – 2020 Leader/co-leader of the Standard Model Physics group at CMS-DESY  
(> 20 members: seniors, postdocs and PhD students)  
2009 – 2017 Guest Professor at University of Antwerp, Belgium

### Previous positions

1996 – 2004 Researcher, University of Lund, Sweden  
1995 – 1996 Visiting Scientist at CEA, DSM/DAPNIA, CE-Saclay, Gif-sur-Yvette, France  
1994 Visiting Scientist University Paris VI, France  
1994 Researcher, DESY, Hamburg, Germany  
1988 – 1993 Research Associate, University of Aachen, Germany  
1987 – 1988 Research Associate, DESY, Hamburg, Germany  
1984 – 1987 Research Associate, University of Karlsruhe, Germany

### Impact

more than 1200 citable papers in peer-reviewed high-impact journals.

The h-index is 155 (<http://inspirehep.net>).

High citation rate publication (in addition to publications from experimental collaborations):

#### **Renowned papers (with citations of 500+)**

*Hard diffractive scattering in high-energy ep collisions and the Monte Carlo generator RAPGAP.*

Comput. Phys. Commun. 86 (1995) 147. Cited by 568 records in INSPIRE on 22 Jan 2023

#### **Famous papers (with citations of 250-499)**

*Hadronic final state predictions from CCFM: The hadron level Monte Carlo generator CASCADE*

Eur. Phys. J. C19 (2001) 351. Cited by 284 records in INSPIRE on 22 Jan 2023

*The CCFM Monte Carlo generator CASCADE*

Comput. Phys. Commun. 143 (2002) 100. Cited by 255 records in INSPIRE on 22 Jan 2023

*The CCFM Monte Carlo generator CASCADE version 2.2.03*

Eur. Phys. J. C70 (2010) 1237. Cited by 231 records in INSPIRE on 22 Jan 2023

### ***Fellowships and Awards***

- 2016 – 2018 Alexander von Humboldt Polish Honorary Research Fellowship by the Foundation for Polish Science (FNP) (in collaboration with the German Humboldt Foundation)
- 2011 – 2012 Paid Associate, CERN, Geneva
- 2007 – 2009 DAAD-STINT grant (with University of Lund) on *Multi Parton Interactions and small x effects at HERA and the LHC*

### ***Supervision of graduate students and postdoctoral fellows***

- Since 1995 Supervisor of 28 PhD Theses and 15 diploma (master) theses, out of which are 20 PhD theses at University Hamburg, 5 PhD theses at Lund University and others at Aachen University, Freie Universität Berlin, CEA, DSM/DAPNIA, Saclay, Paris (France)
- until 2019 Leader of the QCD group at DESY with 4 PhD students, 3 postdocs and regular visiting scientists from Cracow (Poland), Havana (Cuba), Moscow (Russia) and Oxford (UK).

### ***Teaching experience***

- 2018 Exercise lectures at Monte Carlo school of the Terascale Alliance (DESY, Hamburg)
- 2015 Exercise lectures at Monte Carlo school of the Terascale Alliance (DESY, Hamburg)
- since 2008 Lecture Courses: QCD and Monte Carlos, Universities Antwerp, Hamburg and DESY
- 2005 – 2007 Lecture Courses: QCD and collider physics, University Hamburg
- since 2005 Summer-student lectures on Monte Carlo simulations, DESY Hamburg
- 1998 – 2001 Lecture Courses: Cosmology and particle physics, University Lund

### ***Reviewer Responsibilities***

- 2012 European Research Council (ERC) referee in peer review evaluations
- since 2000 Regular peer reviewer for European Journal of Physics C, Physics Letters B , JHEP

### ***Institutional Responsibilities***

- 2017 – Leader of the LHC wide working group on "Jets and electroweak bosons"
- 2016 – 2018 Leader of the Standard Model Physics-Jet group (SMP-J) in CMS (ca 30 members)
- 2013 – 2015 Leader of the Monte Carlo generator group "Physics Comparison and Generator Tunes" in CMS (ca 25 members)
- since 2013 Chair of the board "Theorists in CMS"
- 2013 – 2014 Chair of the CMS publication committee for forward physics and detector performance
- 2012 – 2014 Member of the CMS publication committee for Higgs and forward physics results
- 2010 – 2011 Leader of the "Forward Physics" analysis group in CMS
- 2007 – 2009 Leader of the Monte Carlo group at the Analysis Center of the Helmholtz Alliance "Physics at the Terascale" at DESY, Hamburg.

### ***Membership of scientific societies***

- 2014 – 2021 Chair of the International Advisory Board of the REF workshops
- 2010 – 2021 Member of the International Advisory Board for the LISHEP (Brazil) workshops
- 2009 – 2014 Chair of the International Advisory Board for the [MPI@LHC](#) workshops
- 2008 – 2018 Member of the International Advisory Board for the [MPI@LHC](#) workshops
- 2008 – 2012 Member for the Scientific Committee at DESY
- 2007 – 2018 Member of International Advisory Committee for International Symposium on Multi-particle Dynamics (ISMD)
- 2007 – 2018 Member of International Advisory Committee for International Conference on Elastic and Diffractive Scattering (Blois Workshop)

### ***Organization of international conferences***

- 2021 Chair of Monte Carlo school of the Terascale Alliance (DESY, Hamburg)
- 2018 Chair of Monte Carlo school of the Terascale Alliance (DESY, Hamburg)
- 2015 Chair of Monte Carlo school of the Terascale Alliance (DESY, Hamburg)
- since 2013 Co-chair of the annual TMD-workshops (Antwerp, Amsterdam, Hamburg, Madrid, Cracow)
- 2012 Chair of the workshop "[MPI@LHC](#)" (CERN, Geneva)
- 2011 Chair of the workshop "[MPI@LHC](#)" (DESY, Hamburg)
- 2008 – 2009 Chair of Monte Carlo school of the Terascale Alliance (DESY, Hamburg)
- 2008 Chair of "International Symposium on multiparton dynamics " ISMD08 (DESY, Hamburg)
- 2007 Chair of "Elastic and diffractive scattering - forward physics and QCD (DESY, Hamburg)
- 2003 – 2008 Chair and initiator of the workshop "HERA and the LHC " (CERN, Geneva and DESY, Hamburg) (with more than 150 regular participants)

### ***Major Collaborations***

2008 – 2018 MCnet network (<http://www.montecarlonet.org>) (via the node in Lund, Sweden)  
since 2007 CMS collaboration (experiment at the LHC, CERN, Geneva)  
since 1987 H1 Collaboration (experiment at HERA, DESY, Hamburg)  
since 1984 CELLO Collaboration (experiment at PETRA, DESY, Hamburg)  
1982 – 1984 EMC/NMC Collaboration (experiment at SPS, CERN, Geneva)

### ***Summary of my achievements***

I am an expert in Monte Carlo techniques. Since 2005 I am giving lectures on Monte Carlo techniques and QCD at the Universities of Antwerp and Hamburg. I have developed and maintained Monte Carlo event generators which are used in large particle physics collaborations. I wrote the first Monte Carlo event generator (RAPGAP) to simulate hard diffractive events, which were observed at HERA (DESY). This event generator was further developed to become the main MC generator for deep-inelastic scattering at HERA, including all standard (non-diffractive) processes. The citation index of 524 citations of the manual is a clear indication of this. In 2001 I published the first Monte Carlo event generator (CASCADE) based on TMDs (in the high-energy limit un-integrated gluon distributions), which was then applied to HERA as well as Tevatron and later LHC measurements. The CASCADE manuals have in total 392 citations. CASCADE is part of the standard CMS and ATLAS software packages, and comparison with predictions are included in collaboration publications.

I have supervised 30 PhD thesis, one was dedicated to TMD evolution, 3 were in the field of Monte Carlo generators. In 2015 two of my PhD students graded with the highest distinction (summa-cum-laude) at Hamburg University. One of my PhD students published his thesis in the Springer Theses Series. I have been very successful to promote the postdocs of my group, some of them holding leading positions in science and education and others in start-up enterprises, finance sector and industry. At present I am supervising 2 PhD students.

From 2015 - 2017 I led the CMS Standard Model Physics-Jet group, where many very relevant publications were released, and now I am leading the LHC wide working group on Jets and electroweak bosons. In 2013 I created (and led for 2 years) the CMS Monte Carlo group “Physics Comparison and Generator Tunes”, which is concerned about the global description of measurements at the LHC as well as providing new parameter sets (tunes) for the standard Monte Carlo event generators for the best description of LHC data. The results are now the basis for the whole CMS Monte Carlo simulation, which is used in cross section measurements but is also important for all searches. Under my guidance we published a paper on tunes within the CMS collaboration (Eur. Phys. J. C 76 (2016) 155), which is the first CMS paper on generator tunes and serves as a benchmark and legacy reference for results from LHC run1.

I was leading the DESY QCD group with more than 20 scientists. This group is well embedded in the general CMS physics program; alone from the PhD students and postdocs I was supervising, more than 10 CMS publications were released since 2011.

I have excellent collaborations with theorists: I was initiator of the Lund Small x workshop series (with more than 350 citations for the proceedings). The HERA-LHC workshops which I initiated and led over 5 years (with more than 370 citations for the proceedings) had more than 150 participants. The HERA-LHC workshops were also a basis for the participation of DESY in LHC experiments. More than 50 publications in phenomenology (both on HERA and LHC physics) I have written together with theorists. Due to my experience in both phenomenology and experiment, I became a respected expert and translator between experimentalists and theorists, and therefore was chosen by the CMS collaboration board as the chair of the committee “Theorists in CMS” to motivate theorists to join CMS.

In 2016 I won the award of a “Humboldt research scholarship” from the Foundation of Polish Science (FNP) in collaboration with the German Humboldt society. The peer-reviewed award was given on the topic of TMD evolution and Monte Carlo generators.