

Prof. Dr. Kerstin Borras

- Deputy Spokesperson -



Affiliation

DESY / RWTH Aachen University in a joined professorship

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http://www.desy.de/about_desy/leading_scientists/kerstin_borras/index_eng.html

Professional Experience

- 1988-1992 PhD / University of Dortmund (H1 Experiment)
- 1992-1996 Scientific Assistant, University of Dortmund (H1 Experiment)
- 1997-1998 Fellow of the Max Kade Foundation, Rockefeller University New York (CDF Experiment)
- 1999 Fellow of the Lise-Meitner-Habilitation Program, University of Dortmund (H1 Experiment)
- Since 1999 Senior Scientist at DESY (ZEUS Experiment, CMS Experiment)
- 2014-2015 CERN Scientific Associate (CMS Experiment)
- Since 2015 Joint Professorship at DESY / RWTH Aachen University (CMS Experiment)

Selected Committees and Reviews

- 2002-2005 LHC Committee at CERN (chief referee for LHCb and TOTEM)
- Since 2011 Advisory Committee on TRIUMF (ACOT) (National Lab in Canada)
- Since 2012 Plenary European Committee for Future Accelerators (P-ECFA)
- Since 2012 German committee for elementary particle physics (KET)
- Since 2013 Think Tank of the Helmholtz Association (German Funding Agency)

Research activities / Convenerships

- Detectors: Design, construction, operation, upgrades, specific physics data analyses
- Physics: Searches for Dark Matter, Forward Physics, Calorimetry
- 1994-2012 Coordinator for Calorimeter-Systems in H1 and ZEUS, and for CASTOR in CMS
- 2002-2005 Convener of ZEUS Working Group on Diffraction, Vector Boson and small-x Physics

Selected Contributions to CMS:

- 2008-2013 Head of the DESY CMS Group
 - Growing and guiding all activities of the DESY group to assume leading roles in CMS (starting with 38 members and growing to more than 100 members)
 - Physics: SUSY, Higgs, Top, Forward Physics
 - Operation: DQM, Alignment, Computing, BCM, CASTOR
 - Upgrade: Pixel Phase I, Tracker Phase II, HCAL
- 2007-2011 Co-Project Leader for the CASTOR Calorimeter
- 2012-2013 Conference Committee Chair (Deputy Chair 2010-2011) → knowledge of and known by CMS
- Since 2013 Management Board of the LPC at Fermilab
- 2014-2016 Deputy Spokesperson
- Since 2008 Collaboration and Finance Boards (CBI for DESY, ex-officio)
- Chair and Member of several ARCs for Forward Physics publications
- Contributing to the upgrade of HCAL with SiPMs and μ -TCA
- Synergy with Muon & HCAL: initiating HCAL Outer YB0 SiPM upgrade → common trigger & studies for MTT

Honors / Awards / Third Party Funds

- 1985-1987 Fellow of the Foundation of the German Nation
- 1997 Fellow of the Max Kade Foundation, New York
- 1999 Fellow of the Lise-Meitner-Habilitation Program
- 2007-2010 Helmholtz-Russia-Joint-Research Group: 500k €, PI (DESY), MSU, MEPHI, ITEP, LHC, ILC
- 2008-2013 Initiating and leading three Young Investigator Groups to approval: SUSY, Higgs, Forward Physics
- 2009-2012 "Landesexcellenzcluster" University of Hamburg, 100k €, PI, SiPMs for HO, link to Muons
- 2015-2020 Helmholtz Professorship: 750k €, Dark Matter Searches, studies: HO-MTT and HGC-MEO

Nominations

- 2006 ZEUS Deputy Spokesperson (declined for start in CMS)
- 2008 Nomination for Convener for FSQ PAG (declined for Head of DESY Group)
- 2011 Nomination for CMS Deputy Spokesperson

Lectures

- Since 2007 Lectures in Detectors for particle Physics, Diffraction, Time- and Self-Management

PhD (1988 – 1992)

It was very fortunate that my PhD thesis fell into the exciting time of designing, constructing, installing and commissioning the brand-new detectors for the HERA collider. My home institute produced one electromagnetic ring in the forward barrel region (FB2E) and the last ring in the backward barrel region (BBE). Having worked in my Diploma thesis on the layout of the FB2E, the optimization of the pad sizes and the construction of an intrinsic pre-sampler to compensate for inactive material in front of the calorimeter, I quickly met responsibilities for the production, quality assurance, test beam campaigns at CERN, the installation and commissioning of the two rings, especially for the BBE, which was soon called the “Borras Baby”. The calibration of BBE on the basis of general studies for electromagnetic and hadronic showers was the main ingredients of my written thesis: “Construction and calibration of an electromagnetic Liquid Argon calorimeter in H1”. With the collected experience, I acted as the main author for the publication on the calibration of the H1 LAr Calorimeter.

PostDoc (1992 – 1996, University of Dortmund, delegated to DESY)

After obtaining my PhD degree I became the leader of the Dortmund University group at DESY in the H1 Experiment. Having acted extensively on the commissioning of the detector and served many shifts in the control room as well as on-call expert for the LAr Calorimeter, I became one of the first Run Coordinators, and in 1994 I took over the responsibility as Coordinator for all Calorimeters in the H1 Experiment. The data taking of that year was most important for H1. With the accomplished excellent data quality innumerable measurements could be published. In Spring 1995 I laid down my hardware responsibilities in order to care for my newborn son Hendrik and turned to physics data analysis. I got fascinated by the just recently discovered “rapidity gap events” at HERA and the most fashionable physics topic at that time, diffraction, and finally published my studies of hadron production in diffractive electron-proton collisions. During these thrilling times many models to explain diffraction at HERA were on the market. A major break-through was the definition and measurement of a diffractive structure function.

PostDoc (1997 – 1998, Rockefeller University, New York)

My proposal to study diffraction in hadron interactions at the Tevatron and to combine it with measurements in diffraction at HERA was enthusiastically welcomed by the referees of the German Research Society and my application for a fellowship was approved by the Max Kade Foundation. In joint forces with the group at The Rockefeller University we studied especially the data of Run C recorded by the CDF Experiment. The Monte Carlo developed by me especially to simulate Double Pomeron Exchange laid the basis for its first unambiguous observation with the CDF data. Employing my experience from HERA and my familiarity with the HERA data and the diffractive structure function, we accomplished the establishment of factorization breaking in diffraction at the Tevatron and at HERA, a topic which kept the theorists and experimentalists busy for decades.

Scientist at DESY (ZEUS, since 1999)

Coming back from the U.S. I joined the DESY ZEUS group as permanent scientific staff. This position was created to ensure the operation and maintenance of the Hadron Electron Separator, a shower-max detector with two planes of in total 20m² of 20,000 Si pads, which was successively installed as an upgrade project. When I joined, the first mild indications of a problem appeared and developed to a major challenge: Due to intrinsic water leaks in the cooling, the complete detector needed to be removed, repaired, re-installed and re-commissioned. Performing all of this was a major logistic and motivation challenge for the small team, which worked endlessly during any short breaks and planned shut-down phases. In parallel to this responsibility, I coordinated as a co-convenor for four years all activities in forward physics in the ZEUS-wide working group, initiated many analyses and guided them to publication.

Scientist at DESY (CMS, since 2005)

With the end of HERA data taking in sight, I was asked as a former member of the LHCC to join the committee to evaluate potential contributions of DESY to LHC experiments and soon after joined my favorite experiment, which I knew already well from LHCC: CMS. In a small working group with members from DESY, Russia and Belgium, we pursued the installation of a calorimeter in the forward region. It was a major success when we obtained novel funding in a Helmholtz-Russia-Joint Research group. This paved the way to crucial contributions to the CASTOR calorimeter, R&D work for SiPMs within CALICE and novel calculations in phenomenology. As co-project leader I pursued in the four years all aspects from the initial approval up to the first physics publication.

In parallel, I took over the responsibility as head of the CMS group at DESY and grew and guided it to take up a leading role within CMS. Beside all this, I acted first as deputy and then finally as chair of the conference committee for a fair and transparent speaker selection. Since 2014 I have been fulfilling the exciting task of Deputy Spokesperson.

Excellent Soft Skills

Personal style: very diplomatic, searching win-win conditions in conflict situations, efficient, democratic management style, belief in delegation, very supportive of young people.

Master of identifying and employing synergy effects.

Excellent team player, especially with other institutions.

Maintaining good relations to all management levels in CMS, CERN, DESY, Helmholtz and other countries.

Representing CMS, CERN, DESY and particle physics in meetings with funding agencies, VIP visits and public media.