

Professor Paul Newman BA (Oxon), PhD, MInstP

Professor of Particle Physics

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About

Professor Paul Newman is the leader of the Birmingham Particle Physics Group. His main areas of expertise are the strong nuclear force, the quark and gluon sub-structure of protons and nuclei and the behaviour of gluons at very high densities. He is currently working on collisions between ultra-high energy protons detected by the ATLAS experiment at CERN's Large Hadron Collider and is also an advocate of the 'LHeC' project to collide electrons with the LHC proton beams in the 2020s.

Paul teaches a variety of subjects at all undergraduate levels in physics and gives frequent talks to school students and the general public.

For more detailed information, please see Paul's personal web-page at <http://epweb2.ph.bham.ac.uk/user/newman/> (<http://epweb2.ph.bham.ac.uk/user/newman/>)

Qualifications

- Winner of the 2008 Institute of Physics High Energy Physics Group prize, "for leading contributions to the measurement of proton structure at HERA"
- PhD in Particle Physics, University of Birmingham, 1996
- BA (Hons) in Physics, University College, Oxford, 1992

Biography

Paul Newman came to Birmingham as a PhD student in 1992. His PhD work was on the H1 experiment, studying electron-proton collisions produced by the HERA collider at the DESY laboratory in Hamburg. He has continued to work in the H1 collaboration ever since, including five years spent in residence in Hamburg and a spell as the experiment's physics coordinator.

Paul has a long history of involvement in proposals to build the next generation electron-proton collider. He was a founding member of the 'LHeC' project, which is investigating the possibility of colliding electrons with the CERN Large Hadron Collider proton beams.

His most recent work is concentrated on the ATLAS experiment at the Large Hadron Collider, where he is involved with the First Level Calorimeter Trigger and various issues in strong interaction physics analysis, especially the identification and study of 'diffractive' processes in which one of the beam protons remains intact.

Paul is the principle investigator on the Birmingham Particle Physics grant from the Science and Technology Facilities Council (STFC). In recent years has also received funding in support of his work from the Royal Society and the Durham Institute of Particle Physics Phenomenology.

Teaching

- Y1 Lecture Course on Temperature and Matter
- Y2,3 tutorials to Physics and BNatSci Students
- Y3 General Physics module
- Y3,4 Physics Critique assessments
- Y4 Particle Physics Project team leader and supervisor

Postgraduate supervision

Currently supervising PhD students working on the ATLAS experiment.

Research

RESEARCH THEMES

- Diffractive Processes
- Deep Inelastic Scattering
- Proton Structure
- Low x Physics
- Strong Interactions and QCD

RESEARCH ACTIVITY

- The ATLAS experiment at the Large Hadron Collider
- The LHeC Project
- The H1 experiment at the HERA Collider

Other activities

- Member of the CERN LHC Committee (2014-)
- Member of the STFC Particle Physics Advisory Panel (2010-, chair from 2013)
- Member of the STFC Fellowships Selection Panel (2009-11)
- Steering Committee, LHeC project (2007-)
- Executive Committee, H1 Collaboration (2004-6 and 2009-)
- Member of the CERN SPS and PS Experiments Committee (2006-10)
- Physics Coordinator, H1 Collaboration (2001-4)

Publications

All ATLAS published papers can be found at: twiki.cern.ch/twiki/bin/view/AtlasPublic (<https://twiki.cern.ch/twiki/bin/view/AtlasPublic>)

All H1 published papers can be found at: www-h1.desy.de/publications/H1publication.fast_list.html (http://www-h1.desy.de/publications/H1publication.fast_list.html)

All LHeC public material can be found at: www.ep.ph.bham.ac.uk/exp/LHeC/ (<http://www.ep.ph.bham.ac.uk/exp/LHeC/>)

Conference proceedings, electronic copies of talks and other written documents can be found at www.desy.de/~newmanpr/diffraction/confs.html (<http://www.desy.de/~newmanpr/diffraction/confs.html>)

Some recent publication highlights:

ATLAS Collaboration, Rapidity Gap Cross Sections measured with the ATLAS Detector in pp Collisions at $\sqrt{s} = 7$ TeV, **Eur. Phys. J. C72 (2012) 1926** (<http://www.springerlink.com/content/fn552340w360518l/>)

ATLAS Collaboration, Measurement of the Inelastic Proton-Proton Cross-Section at $\sqrt{s} = 7$ TeV with the ATLAS Detector, **Nature Commun. 2 (2011) 463** (<http://www.nature.com/ncomms/journal/v2/n9/full/ncomms1472.html>)

H1 Collaboration, Measurement of the Diffractive Longitudinal Structure Function FLD at HERA, Eur. Phys. J. C72 (2012) 1836

H1 Collaboration (2010), Diffractive Dijet Photoproduction in ep Collisions at HERA, Eur. Phys. J. C70: 15.

H1 & ZEUS Collaborations (2010), Combined Measurement and QCD Analysis of the Inclusive ep Scattering Cross Section at HERA, JHEP 01: 109.

Dainton, J., Klein, M., Newman, P., Perez, E., and Wileke, F. (2006), Deep Inelastic Electron-Nucleon Scattering at the LHC, JINST 1: P10001.

H1 Collaboration (2006), Measurement and QCD Analysis of the Diffractive Deep Inelastic Scattering Cross Section at HERA, Eur. Phys. J. C48: 715.

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