

Particle Physics Group Meeting: 8 Sept 2016

Introduction: PRN

- Staffing
- Some highlights
- Funding
- Group web pages
- Concerns and gripes



Staff Changes

Farewells ...

- **April 2016:** Andy Chisholm
- **Sept 2016:** Ludovica Aperio-Bella
- **Sept 2016:** Matthew Williams

Arrivals ...

- **Nov 2015:** Laura Gonella
- **April 2016:** Nancy Andari
- **April 2016:** Francesco Gonnella
- **June 2016:** Imran Iqbal
- **June 2016:** Tony Price
- **Sept 2016:** Steve Worm

Arriving soon ...

- **Oct 2016:** Nicolas Lurkin (NA62)
- NA62 Marie Curie, ATLAS analysis postdoc, AIDA post also expected in next 6-9 months



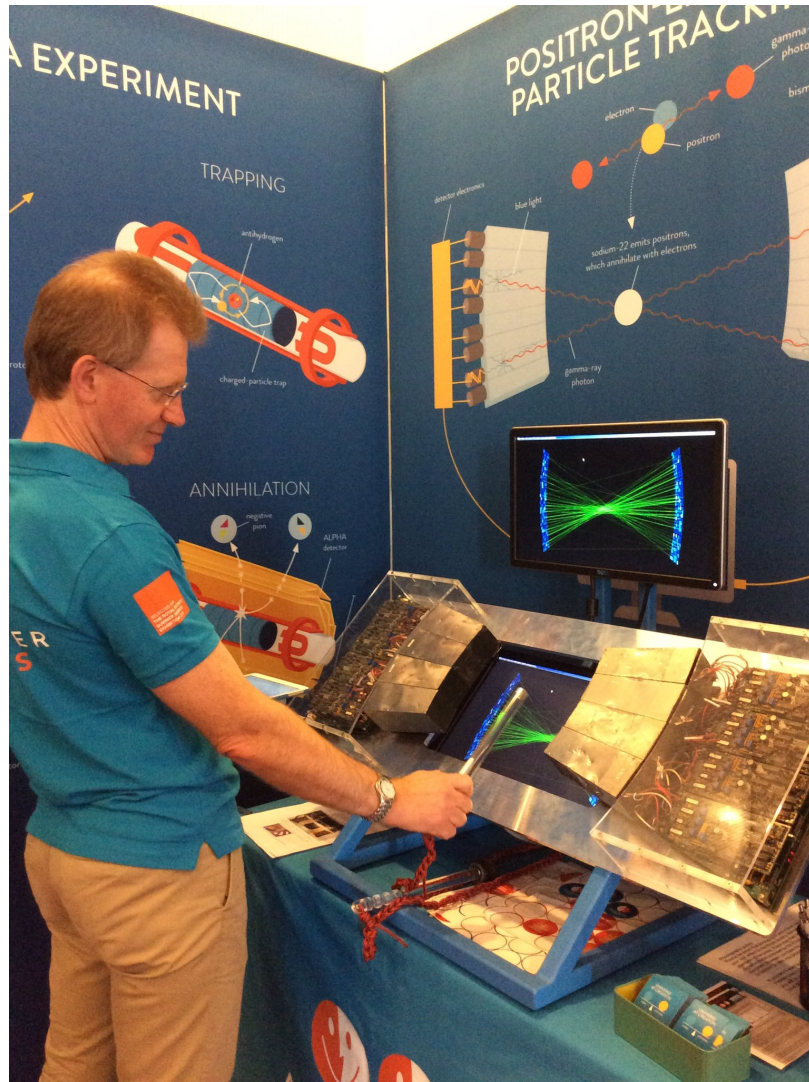
Opening of the Birmingham Instrumentation Laboratory for Particle Physics & Applications (BILPA)



BILPA



Another RS Summer Science Exhibition



... just one part of an outreach programme that continues to be truly outstanding

Hosting Upcoming Conferences

TENTH INTERNATIONAL CONFERENCE ON
K A O N P H Y S I C S

**KAON
2016**

14-17 SEPTEMBER
UNIVERSITY OF BIRMINGHAM, UK

TOPICS
CP AND T VIOLATION
CKM MATRIX AND FLAVOUR MIXING
RARE DECAYS
PRECISION TESTS OF THE STANDARD MODEL
CPT AND QUANTUM MECHANICS
LEPTON UNIVERSALITY AND FLAVOUR VIOLATION
LATTICE GAUGE THEORY
CHIRAL PERTURBATION THEORY
PHYSICS BEYOND THE STANDARD MODEL
FUTURE OPPORTUNITIES IN KAON PHYSICS

INTERNATIONAL ADVISORY COMMITTEE
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ANDREZZA BUSSI (Technische Universität München)
AUGUSTO CECCOCCI (CEIS)
GIUSEPPE COLANGELO (Università di Bari)
PETER COOPER (FZJ)
GIANCARLO D'AMBROSIO (INFN Napoli)
PAOLO FANTONI (Università di Roma "La Sapienza")
BOB HEUNG (National Taiwan University)
ENRICO LEONORI (Università di Firenze)

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MASTRO GIORGIO (University of Liverpool)
EVGENII GOUDZOVSKIY (University of Birmingham)
GIUSTINA LAZZERONI (Oxford University of Birmingham)
ALEXANDER LENZ (Durham University)

LOCAL ASSISTANCE
MARIA NOBES
ANGELA WINDHAM
ANTONIO SERGI
MARK BLATER
MATTHEW WILLIAMS

www.ep.ph.bham.ac.uk/KAON2016

25TH INTERNATIONAL WORKSHOP ON
DEEP-INELASTIC SCATTERING
AND RELATED TOPICS

DIS 17

3 – 7 APRIL 2017
UNIVERSITY OF BIRMINGHAM, UK

WG1 Structure Functions and Parton Densities
WG2 Small x, Diffraction & Vector Mesons
WG3 Electroweak Physics & Beyond the Standard Model
WG4 QCD & Hadronic Final States
WG5 Heavy Flavours
WG6 Spin and 3D Structure
WG7 Future of DIS

International Advisory Committee

Katsumi Akamatsu (DESY)	Robert Kaiser (Hamburg)
Barbara Barish (Fermilab)	Alan Kotliar (Liverpool)
Dirk Behre (DESY)	Maxim Levy (DE Aachen, Chair)
Sergio Bertolucci (CEIS) / INFN	Les Lambourne (IP, Philadelphia)
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Alma Caldeira (DESY Hamburg)	Renald Ruyter (DESY)
Amanda Cooper-Saikat (DESY)	Hugh Montgomery (A.A.R)
John Collins (Liverpool)	Reza Rahn (Birmingham)
Cristi Dumescu (Marseille)	Fred Ooms (INFN Padova)
Schmid Erwin (DESY / DESY)	Alan Saxon (Birmingham)
Ralf Eick (LLNL)	Robert Thomas (JGU, Leoben)
Joel Ferrnandez (CERN)	Karel Todorovski (DESY)
Stefano Forte (Milano)	Matthew Wing (DESY / JGU, Leoben)
Elo Hatanpää (JYFL)	

Local Organisation and Programme Committee

Simon Blazey (Birmingham)
Jari Brannäs (Birmingham)
Claire Gonsky (DESY)
Mark Hadfield (Birmingham)
secretary:
Paul Jones (Birmingham)
Sha Maly (Liverpool)
Gina Miller (Birmingham)
Daniela Wladislaw-Bartik (Birmingham)

Paul Newman (Birmingham, Chair)
Nancy Minkowski (Birmingham)
Micaela J Gonzalez (Liverpool)
Mark Hadfield (Birmingham)
Alan Saxon (Birmingham)
John Hinchey (Birmingham)
Daniela Wladislaw-Bartik (Birmingham)
Frank Kriess (IPF, Durham)

UNIVERSITY OF BIRMINGHAM
DSFV
Science & Technology Facilities Council

www.dis17.org

KAON'16 - Next week!

DIS'17 - Easter 2017

... help put Birmingham PP on the map ... please support them ...

Bubble Chamber (IOP-HEPP) Tournament



Bubble Chamber (IOP-HEPP) Tournament



... but most importantly ...

- Progress in commissioning, operations, analysis, publications, upgrade, distributed computing for all of our experiments

Newly Awarded Grants

- Consolidated Grant 2015-19 (£4.2M)
- Consolidated Grant Capital (£70k)
- GridPP5 (£246k)
- PRD for R&D into MAPS (£181k)
- ATLAS ITk Tracker Upgrade Bridging (£185k)
- Kostas Nikolopoulos ERC Starting Grant
“Exclusive Higgs” (€1.5M)
- Silicon Development for EIC (\$75k)



... apologies for any I forgot (please let me know)

Notes on Grants

- 2016 capital call currently pending ...
- Uncertainty in UK post-Nurse and post-Brexit ☹️ ... new govt, new dep't, new RC Structure, new STFC CEO. As it stands ...
- STFC / Consolidated Grant remains on “flat cash” → real terms reductions ... 2019 round will not be easier than 2015: expect ~10% cuts, submission expected early 2018.
[Col's discussion later today on strategy]
- STFC currently in ‘balance of programme’ exercise. Will hopefully bring clarity on e.g. ATLAS phase 2 upgrade funding
- Diversification is essential!
 - ERC, Marie-Curie and other EU sources still open
 - Other personal awards, Royal Soc, Leverhume ...
 - UK Global Challenges Research Fund is huge

Web Pages

- Thanks to many people who contribute, coordinated by Matt
- Please do try to keep your bits up to date.
- Further overall development of the site planned for the next year (ideas and volunteers welcome!)

PARTICLE PHYSICS UNIVERSITY OF BIRMINGHAM

Home

PhD Research

Experiments

- ATLAS
- LHCb
- LHeC
- Linear Collider
- NA62
- ALICE
- Past experiments

Publications

TWiki

- View (read-only)
- Login

Courses

Seminars

Outreach

Vacancies

Facilities

- Silicon Laboratory
- Internal group page
- Local systems guide
- e-Science certificates

Who we are

Contact us

Getting here


We are a [large research group](#) within the [School of Physics and Astronomy](#) at the [University of Birmingham](#) in the UK, studying collisions produced by particle accelerators to determine the ultimate structure of matter and the forces of nature.

Our main current activities are all based at the [CERN](#) laboratory in Geneva. We have a central involvement in the [ATLAS](#) experiment at the Large Hadron Collider, where we are studying the Higgs boson and searching for other signs of new physics at the energy frontier. We are investigating the matter-antimatter asymmetry in the Universe using beauty quarks at the [LHCb](#) experiment. Our [NA62](#) group is studying ultra-rare decays of strange particles to search for new physics such as lepton flavour violation. Our colleagues from the nuclear physics group are involved in related research with the [ALICE](#) experiment at the Large Hadron Collider.

Our facilities include a large [silicon laboratory](#), extensive capabilities for constructing trigger and data acquisition systems and a substantial GridPP site as part of the world-wide LHC distributed computing network.

Our research is supported primarily by the [Science and Technology Facilities Council](#) with additional current grants from the [Royal Society](#) and the [European Research Council](#).

News



14 July 2016
[New BILPA silicon lab opened](#)


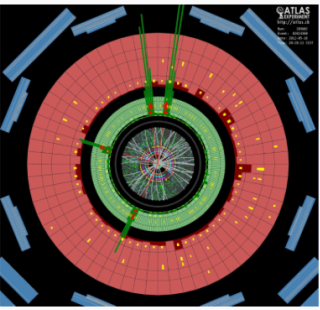
4 July 2016
LHCb colleagues showing [antimatter matters](#) at Royal Society Summer Science exhibition

20 April 2016
[PRaVDA proton therapy detectors](#) being tested on Bham cyclotron

20 March 2016
Birmingham [team](#) win 42nd Bubble Chamber tournament

3 March 2016
New NA62 postoc position [advertised](#)

27 January 2016
New technician post [advertised](#)





Birmingham PP on the Web

Please let me know when you have any interesting news (outreach events, meetings being held, big papers led by Birmingham ...)

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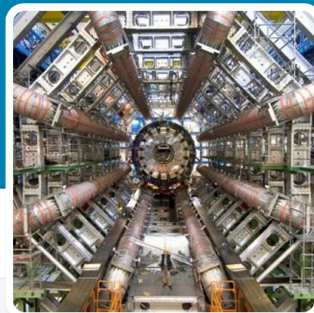
New technician post [advertised](#)

26 November 2015

New firmware engineer post [advertised](#)

26 November 2015

[Forward W and Z production at LHCb](#) with strong Birmingham involvement



TWEETS 192 FOLLOWING 67 FOLLOWERS 326

ParticlePhysics-Bham

@PP_UniBham

Particle Physics Group at the University of Birmingham, collaborating in the ATLAS, LHCb, NA62 and ALICE experiments at CERN

Physics West Building / CERN

ep.ph.bham.ac.uk

Joined September 2012

26 Photos and videos



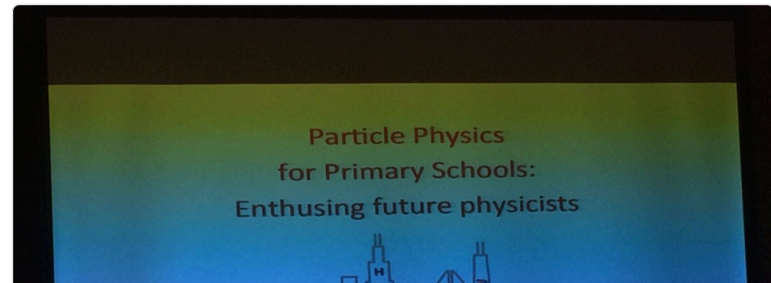
Tweets Tweets & replies Media

You Retweeted



Dr Adrian Buzatu @DrAdrianBuzatu · Aug 6

Can we teach particle physics already at primary school? Yes, says Prof Cristina Lazzeroni. #outreach #ICHEP2016



Coffee lounge screen also shows rotating web pages of interest → suggestions welcome

Some Sundried Concerns and Suggestions

- **Seminars ...** thanks to Ian and Chris and now Tonino... (ideas?)
 - Please (pretty please!) attend
- **Open Days ...** thanks to those who help.
 - Please (pretty pretty please!) volunteer
 - Can we get a more systematic set-up procedure?
- **Offices ...** - Becoming very tight (apologies) → Expansion?
- **College Paper of the Month ...**
 - Let me know when you have something suitable
- **Group Poster ...**
 - Ancient! Chris Parkinson tries(d) to make a new one.

TOP PHYSICS
The top quark is by far the heaviest quark; it is nearly as heavy as a gold atom! Due to its high mass, it was discovered only in 1995. The generation of enormous numbers of Top quarks at the LHC, together with their unique coupling behaviour, will enable the ATLAS experiment to conduct detailed studies of their properties. The Atlantis event display image shows a top-antitop pair decaying into a cascade of particles including an electron and numerous jets.

DEEP IN THE PROTON
It is well known that the proton is built from 2 up quarks and 1 down quark. Lesser known is the fact that due to the strong nuclear force, these valence quarks can radiate gluons, which in turn can split into sea quark-antiquark pairs, ultimately resulting in a very complex structure.

CP VIOLATION
The BaBar experiment is investigating a subtle, but fundamental difference between the properties of matter and antimatter, known as CP violation. It has measured a significant difference between the decays of B⁰ and anti-B⁰ particles.




GRID COMPUTING
The LHC experiments have built truly massive detectors that will create about 15 PB (petabytes) of data annually. That's enough to fill more than 500000 30GB iPods with 3 billion songs, 4 billion photos or more than 2000 years of video! No single institute is capable of providing the required computing and storage capacities. Birmingham, through its involvement in the GridPP collaboration, is contributing to the development of the world-wide grid which will pool together resources of participating institutes worldwide and give scientists access to resources levels never before available.



QUARK-GLUON PLASMA
The ALICE experiment will probe the mysteries surrounding the structure of matter and the nature of the strong force. In particular, we will create and explore the first instants of the Universe, a few microseconds after the Big Bang when a primordial state of matter, the Quark-Gluon Plasma, is thought to have existed.

LOOKING AHEAD
The International Linear Collider is the next generation, high energy e⁺e⁻ accelerator. We are studying both the novel use of CMOS MAPS sensors and more established technologies to measure electromagnetic energy with unprecedented precision. We are also leading global design efforts for collimation in the beam delivery system. Extensive test beam experiments world wide are essential to all of these activities.

DETECTOR AND TRIGGER DEVELOPMENT
We have excellent facilities and highly skilled staff working locally on the design, construction and testing of key components (e.g. readout hybrids) and software for the ALICE and ATLAS experiments at the Large Hadron Collider (LHC) at CERN. We are specialists in the design and production of electronic trigger systems used to select the collisions to be recorded. At the LHC, proton bunches are expected to collide at a rate of a thousand million every second. As we can only record and study a few hundred collisions every second, the trigger plays a critical role by only selecting the most interesting ones.

PARTICLE PHYSICS GROUP
AS ONE OF THE LARGEST RESEARCH GROUPS IN THE SCHOOL OF PHYSICS AND ASTRONOMY, WE INVESTIGATE AND SEARCH FOR THE SMALLEST CONSTITUENTS OF THE ATOM AND MAKE PRECISE MEASUREMENTS OF QUARKS AND LEPTONS. MOST OF OUR EXPERIMENTS ARE CARRIED OUT AT PARTICLE ACCELERATORS IN LABORATORIES AROUND THE WORLD (INCLUDING CERN) WHERE PARTICLES ARE ACCELERATED TOWARDS ONE ANOTHER AT NEAR LIGHT SPEED. THE HIGH ENERGY COLLISIONS PRODUCE MASSIVE PARTICLES INCLUDING THE Z BOSON AND THE TOP QUARK. THESE EXPERIMENTS WILL ALLOW US TO FIND OUT WHETHER SUPERSYMMETRY, TECHNICOLOR OR DARK MATTER ARE INVOLVED WHEN THE SYMMETRY OF THE STANDARD MODEL IS BROKEN.

- 13:30** **ATLAS Data Analysis (12+3)**
Speakers: Konstantinos Nikolopoulos (University of Birmingham (GB))
 Thompson (University of Birmingham (GB))
- 13:45** **ATLAS L1Calo (8+2)**
Speakers: Alan Watson (University of Birmingham (GB)) , Juraj Bracinik
 of Birmingham (GB))
- 13:55** **ATLAS Silicon Tracker / BILPA lab (8+2)**
Speakers: Juergen Thomas (University of Birmingham (GB)) , Laura Go
 (University of Birmingham (UK))
- 14:05** **Other BILPA Activities (8+2)**
Speakers: Laura Gonella (University of Birmingham (UK)) , Philip Patric
 (University of Birmingham (GB))
-  201606-PP-BHA...
- 14:15** **LHCb (12+3)**
Speakers: Nigel Watson (University of Birmingham (GB)) , Simone Bifai
-  bham_2016_09_0...
- 14:30** **NA62 (12+3)**
Speakers: Angela Romano (University of Birmingham (GB)) , Antonino
 (University of Birmingham (GB)) , Evgueni Goudzovski (University of Bir
-  CL-NA62.pdf
- 14:45** **Computing and GridPP (8+2)**
Speakers: Chris Hawkes (University of Birmingham (GB)) , Mark Slater
- 14:55** **DUNE (10+5)**
Speaker: Alan Watson (University of Birmingham (GB))
- 15:10** **New Lepton Colliders (6+2)**
Speaker: Nigel Watson (University of Birmingham (GB))
- 15:18** **New Lepton Hadron Colliders (6+2)**
Speaker: Paul Newman (University of Birmingham (GB))

- 15:26** → 15:38 **Outreach Matters (10+2)**
Speaker: Cristina Lazzeroni (University of Birmingham (GB))
-  CL-outreach.pdf
- 15:38** → 15:50 **Undergraduate Teaching, PwPPC, C4 Projects ... (10+2)**
Speakers: Chris Hawkes (University of Birmingham (GB)) , Nigel Watson (University of Birmingham (GB))
- 15:50** → 16:02 **PhD Student Matters (10+2)**
Speaker: Cristina Lazzeroni (University of Birmingham (GB))
-  CL-PhD.pdf
- 16:02** → 16:10 **A.O.B.**
- 16:15** → 16:30 **Group Photo**
- 16:30** → 17:00 **Strategy Discussion for Next Consolidated Grant (Academic Staff & Other Col's)**
Speaker: Paul Newman (University of Birmingham (GB))
- 17:00** → 18:00 **Informal Debrief in Bratby Bar**

Please note last 3 items 😊

