Joint APP and HEPP Annual Conference

26–28 March 2018, University of Bristol, Bristol, UK

Organised by the IOP Astroparticle Physics and High Energy Particle Physics Groups

Programme

Monday, 26 March 2018

	Tyndall Lecture Theatre			
09:00–09:15	Welcome			
09:15–09:55	**Gravity & Light: Binary Neutron Star Mergers** Patrick Sutton, Cardiff University, UK			
09:55–10:25	**Gamma-ray astronomy: current status and future plans** Anthony Brown, University of Durham, UK			
10:25–10:55	**The status of dark matter searches** Chamkaur Ghag, University College London, UK			
11:00–11:30	Coffee Break (Enderby Room)			
	S1. Mott Theatre	**S2. Frank Theatre**	**S3. Room 3.34**	**S4. Berry Theatre (3.21)**
11:30–11:45	**Search for additional heavy neutral Higgs and gauge bosons decaying to di-tau in the ATLAS detector produced with 13 TeV proton-proton collisions at the LHC** Theodore Zorbas, University of Sheffield, UK	**Measurement of the CP violating phase, ϕs, in Run 2 using $B^0_s \to J/\psi K^+K^-$** Konstantin Gizdov, University of Edinburgh, UK	**Vertex finding for pile-up mitigation in the Phase-2 upgrade of the Level-1 Trigger of CMS** Antoni Shtipliyski, Imperial College London, UK	**Measuring the Effective Longitudinal Electron Diffusion Coefficient at MicroBooNE** Adam Lister, Lancaster University, UK
11:45–12:00	**Search for exclusive Higgs and Z boson decays to $\phi\gamma$ and $\rho\gamma$ with the ATLAS detector** Rhys Edward Owen, University of Birmingham, UK	**Prospects for $K^\pm\pi\pi^+\mu^+\mu^-$ at the LHCb Experiment** Kristian Alexander Zarebski, University of Birmingham, UK	**Gaussian Processes for High Energy Physics** Adam Bozson, Royal Holloway, University of London, UK	**Calorimetric Energy Scale in the NOvA Detectors** Tyler Alion, University of Sussex, UK
12:00–12:15	**Search for boosted *ttH(H→bb)* with the ATLAS detector** Emma Winkels, University of Sussex, UK	**Status and prospects of the measurement of the pi+mu+mu- form factor with the NA62 experiment at CERN** Christopher John Parkinson, University of Birmingham, UK	**Perspectives for SUSY in light of current LHC constraints** Jonathan Costa, Imperial College London, UK	**MicroBooNE NC Delta Radiative Single-Photon Search** Robert Murrells, University of Manchester, UK
12:15–12:30	**Searching for decays of the Higgs boson to charm quarks at ATLAS** Elliot Reynolds, University of Birmingham, UK	**Measurement of the branching fractions and form factors of $K^+ \to \pi^0 l+\nu$ decays** Stoyan Trilov, University of Bristol, UK	**QED Parton Distribution Functions** Ricky Nathvani, University College London, UK	**Latest muon neutrino disappearance results from the NOvA experiment** Diana Patricia Méndez, University of Sussex, UK
12:30–12:45	**Searches for additional neutral Higgs bosons in the di-tau final state with the CMS experiment** Daniel Winterbottom, Imperial College London, UK	**Measurement of the K+ -> pi+ gamma gamma decay at NA62** Maria Brigida Brunetti, University of Birmingham, UK	**Positivity Constraints on Self-Interacting Dark Matter** Scott Melville, Imperial College London, UK	**Comparison of Binned vs. Unbinned Likelihood Analyses for Neutrino Oscillation Measurements in NOvA** Sebastian Bending, University College London, UK
13:00–14:00	Lunch (Enderby Room)		**APP AGM** (Frank Theatre)	

http://appandhepp2018.iopconfs.org

Joint APP and HEPP Annual Conference

26–28 March 2018, University of Bristol, Bristol, UK

Organised by the IOP Astroparticle Physics and High Energy Particle Physics Groups

14:00–14:15	**Measurement of Z+bb kinematic variables with ATLAS** Chloe Gray, University of Glasgow, UK	**Search for the decay B → $p^+p^-\mu\nu$** Matthew James Tilley, Imperial College London, UK	**Sensor Characterisation and Readout for the LHCb VELO Upgrade** Vinicius Franco Lima, University of Liverpool, UK	**Overview of the ANITA experiment** Linda Cremonesi, University College London, UK
14:15–14:30	**Searching for invisible phenomena through measurement of events with jets and large missing transverse momentum in pp collisions at ATLAS** Rebecca Hayley Pickles, The University of Manchester, UK	**Measuring the WW Production Cross-Section at LHCb** Heather Mckenzie Wark, University of Liverpool, UK	**3D Printing Gaseous Radiation Detectors** Samuel Fargher, University of Sheffield, UK	**Hunting Axionlike Dark Matter by Searching for an Oscillating Neutron Electric Dipole Moment** Nick Ayres, University of Sussex, UK
14:30–14:45	**Measurements of boosted top-quark differential cross-sections in the lepton+jets channel at s=√13 TeV using pp collision data recorded with the ATLAS detector** Michael James Fenton, University of Glasgow, UK	**Search for $B^c \to DD$ decays with the LHCb detector** Alison Maria Tully, University of Cambridge, UK	**ATLAS inner detector decommissioning: Tolerance study of robotic components for use in high radiation environment** Alice Cryer, University of Sheffield, UK	**Search for New Physics in Astrophysical Flavor at IceCube** Shivesh Mandalia, Queen Mary University of London, UK
14:45–15:00	**Higgsinos and compressed sleptons: opening the soft lepton frontier for new physics at the LHC** Jesse Liu, University of Oxford, UK	**Searching for lepton universality violation and New Physics in rare decays of Lambda baryons at the LHCb** Ross John Glew, University of Southampton, UK	**The LHCb VELO Upgrade** Dutta Deepanwita, University of Manchester, UK	**Neutrino Interferometry for High-Precision Tests of Lorentz Symmetry with IceCube** Teppei Katori, Queen Mary University of London, UK
15:00–15:15	**Dark Matter Searches at CMS** Shane Davy Breeze, Imperial College London, UK	**Search for K+ to pi+ nu nu at NA62** Angela Romano, University of Birmingham, UK	**Bayesian optimisation of the SHiP muon shield** Oliver Lantwin, Imperial College London, UK	**Searching for WIMP dark matter with the LZ experiment** Ibles Olcina, Imperial College London, UK
15:15–15:30	**Search for single top production in association with a Z boson for the dilepton final state in pp collisions at √s = 13 TeV in the CMS detector** Corin James Keir Hoad, Brunel University, UK	**Search For Heavy Neutral Lepton Decays at NA62 Experiment at CERN** Lorenza Iacobuzio, University of Birmingham, UK	**Towards the highest precision detector at the LHC – The LHCb Upgrade VELO and its Performance** Chris Burr, University of Manchester, UK	
15:45–16:15	Coffee (Enderby Room)			
	Tyndall Lecture Theatre			
16:15–16:40	**Particle Beam Therapy in the UK** Michael Taylor, University of Manchester, UK			
16:40–17:05	**Promoting Physics in Developing Countries** Kate Shaw, International Centre for Theoretical Physics, Italy			
17:05–17:35	**ECR prize talk: Gravitational-wave astronomy and black hole astrophysics** Christopher Berry, University of Birmingham, UK			
17:35–18:15	**Status of Neutrino Physics** Frank Deppisch, University College London, UK			
18:15–19:30	Exhibition and poster reception (Enderby Room)			

Joint APP and HEPP Annual Conference

26–28 March 2018, University of Bristol, Bristol, UK

Organised by the IOP Astroparticle Physics and High Energy Particle Physics Groups

Tuesday, 27 March 2018

	Tyndall Lecture Theatre			
09:00–09:40	**Overview of experimental heavy flavour physics** Greig Cowan, University of Edinburgh, UK			
09:40–10:20	**Review of lepton flavor experiments** Phillip Litchfield, Imperial College London, UK			
10:20–11:00	**Who ordered that? Interpreting LFUV and other new physics signals from flavour** Alexander Lenz, IPPP Durham, UK			
11:00–11:30	Coffee (Enderby Room)			
	S5. Mott Theatre	**S6. Frank Theatre**	**S7. Room 3.34**	**S8. Berry Theatre (3.21)**
11:30–11:45	**Tagging boosted jets from top quarks and heavy vector bosons using jet substructure and multivariate techniques** Amal Vaidya, University College London, UK	**Relative branching fraction measurements of B→3h decays** Cayo Costa Sobral, University of Warwick, UK	**Optical Calibration of the Hyper-Kamiokande Detector with Test Data in Super-Kamiokande** Lauren Anthony, University of Liverpool, UK	**Status of the SuperNEMO double-beta decay experiment** Cheryl Patrick, University College London, UK
11:45–12:00	**Searches for Resonant and Non-Resonant Higgs Pair Production in the bbtautau Decay Channel with the ATLAS Detector** Emily Charlotte Graham, University of Liverpool, UK	**A search for the decay $\Lambda b \rightarrow pK\eta'$ using the LHCb Run I dataset** Timothy Williams, University of Birmingham, UK	**Gadolinium radiopurity assay programme for Super-Kamiokande** Matthew Thiesse, University of Sheffield, UK	**Recent Developments in the Spherical Proportional Counter for NEWS-G** Patrick Knights, University of Birmingham, UK
12:00–12:15	**Searches for heavy ZZ and ZW resonances in the llqq and $\nu\nu$qq final states at 13 TeV in the ATLAS detector** David Philip John Lack, University of Manchester, UK	**Anti-deuteron measurements at LHCb** Sophie Katherine Baker, Imperial College London, UK	**The Hyper-Kamiokande Outer-Detector : design, performance estimation of background rejection and physics potential** Stephane Alexandre Zsoldos, Queen Mary University of London, UK	**Sensitivity Studies and Development of the Gas Supply System for the SuperNEMO Experiment** Lauren Dawson, University College London, UK
12:15–12:30	**Measurements of Higgs boson cross sections and couplings in the diphoton decay channel with the CMS experiment** Edward Scott, Imperial College London, UK	**Searches for doubly charmed baryons at LHCb** Murdo Thomas Traill, University of Glasgow, UK	**Supernova Neutrino Simulations in Hyper-Kamiokande** Jost Migenda, University of Sheffield, UK	**Radon Background Mitigation Strategy for the SuperNEMO Experiment** Fang Xie, University College London, UK
12:30–12:45	**Higgs-to-Invisible Searches for the CMS experiment at the LHC** Riccardo Di Maria, Imperial College London, UK	**Angular analysis of the decay $\Lambda_b^0 \rightarrow \Lambda\mu^+\mu^-$** Georgios Chatzikonstantinidis, University of Birmingham, UK	**Innovation and Non-Proliferation – Particle Physics for Nuclear Threat Reduction** Elisabeth Kneale, University of Sheffield, UK	**Search for light Dark Matter with NEWS-G** Konstantinos Nikolopoulos, University of Birmingham, UK
13:00–14:00	Lunch (Enderby Room)		**HEPP AGM** (Frank Theatre)	
	Tyndall Lecture Theatre			
14:00–14:30	**Standard Model Measurements at the LHC** Ulla Blumenschein, Queen Mary University of London, UK			
14:30–15:00	**Higgs Physics at the LHC** Nicholas Wardle, Imperial College London, UK			

Joint APP and HEPP Annual Conference

26–28 March 2018, University of Bristol, Bristol, UK

Organised by the IOP Astroparticle Physics and High Energy Particle Physics Groups

15:00–15:30	**New Physics Searches at the LHC** Jim Brooke, University of Bristol, UK
15:30–16:00	Coffee
16:00–18:00	**STFC Town Meeting**
19:00–23:00	Conference dinner (Bristol Museum and Art Gallery)

Wednesday, 28 March 2018

	Tyndall Lecture Theatre		
09:00–09:30	**Short-Baseline Neutrino Experiments** Andrzej Michal Szelc, The University of Manchester, UK		
09:30–10:00	**Long-Baseline Neutrino Experiments** Asher Kaboth, Royal Holloway, University of London, UK		
10:00–10:30	**Neutrinoless Double Beta Decay and Absolute Neutrino Mass** Elisabeth Falk, University of Sussex, UK		
10:35–11:00	Coffee (Enderby Room)		
	S9. Mott Theatre	**S10. Frank Theatre**	**S11. Berry Theatre (3.21)**
11:00–11:15	**Search for low mass dijet resonances in association with ISR in *pp* collisions at $\sqrt{s}$ = 13 TeV with the ATLAS detector** Andreas Sogaard, University of Edinburgh, UK	**Search for hidden sectors in kaon decays at the NA62 experiment at CERN** Viacheslav Duk, University of Birmingham, UK	**Commissioning of a Laser Calibration System for SNO+** Esther Turner, University of Oxford, UK
11:15–11:30	**ATLAS Measurement of the Dynamics of Single Proton Dissociation at the LHC** Andrew Geoffrey Foster, University of Birmingham, UK	**Charged Higgs Bosons in Naturally Aligned Two Higgs Doublet Models at the LHC** Emily Orgill, University of Manchester, UK	**The physics of SNO+** Edward Leming, University of Oxford, UK
11:30–11:45	**The Quest for New Physics, motivated with strong-supersymmetric models, in final states with many hadronic jets in 13 TeV *pp* collisions at the ATLAS detector** Michael Edward Nelson, University of Oxford, UK	**Constraining new physics with standard model measurements** David Yallup, University College London, UK	**Cosmic Muon Induced Neutrons in SNO+** Billy Liggins, Queen Mary University of London, UK
	Tyndall Lecture Theatre		
12:00–12:30	**IOP Prize Lecture: Charm Physics** Marco Gersabeck, The University of Manchester, UK		
12:30–13:00	**Collider Physics Beyond the LHC** Victoria Jane Martin, University of Edinburgh, UK		
13:00	Close of conference and depart		

Joint APP and HEPP Annual Conference

26–28 March 2018, University of Bristol, Bristol, UK

Organised by the IOP Astroparticle Physics and High Energy Particle Physics Groups

Poster programme

P1 **Search for heavy neutral lepton decays at NA62 experiment at CERN**
Lorenza Iacobuzio, University of Birmingham, UK

P2 **Probing the light quark Yukawa couplings through rare exclusive Higgs boson decays**
Govindraj Singh Virdee, University of Birmingham, UK

P3 **IceCube DOM beamtest at the Fermilab Test Beam Facility (FTBF)**
Shivesh Mandalia, Queen Mary University of London, UK

P4 **Supernova burst observations with DUNE**
Jost Migenda, University of Sheffield, UK

P5 **Commissioning of a Laser Calibration System for SNO+**
Esther Turner, University of Oxford, UK

P6 **Monte carlo modelling of an optical calibration system for the Hyper-Kamiokande experiment**
William Vinning, University of Warwick, UK

P7 **Monitoring long-term performance of the Hyper-Kamiokande optical calibration system**
Sam Jenkins, University of Sheffield, UK

P8 **Measurement of the K+ -> pi+ gamma gamma decay at NA62**
Maria Brigida Brunetti, University of Birmingham, UK

P9 **Diffuser Research and Development for Optical Calibration Systems in Hyper-K**
Sammy Valder, University of Warwick, UK

P10 **The reconstruction and identification of electrons**
Alix Fell, University of Sheffield, UK

P11 **Cosmic muon induced neutrons in SNO+**
Billy Liggins, Queen Mary University of London, UK

P12 **Development of SF6 for use in a low pressure time projection chamber for dark matter detection applications**
Callum Eldridge, University of Sheffield, UK

P13 **Analysis with the ProtoDUNE single phase detector**
Joshua Thompson, University of Sheffield, UK

P14 **Prospects for Higgs measurements in the diphoton channel with the CMS experiment at the HL-LHC**
Edward Scott, Imperial College London, UK

P15 **Mirror Dark Matter Searches with LUX Electron Recoil Data**
Elizabeth Leason, University of Edinburgh, UK

P16 **Studying the Effect of Polarisation in Compton Scattering in the Undergraduate Laboratory**
Patrick Knights, University of Birmingham, UK

P17 **Simulations of gamma-ray background from rock for dark matter experiments**
Andrew Naylor, University of Sheffield, UK

P18 **Innovation and non-proliferation - Particle physics for nuclear threat reduction**
Elisabeth Kneale, University of Sheffield, UK

P19 **Adversarially trained neural network jet classifiers with ATLAS**
Andreas Sogaard, University of Edinburgh, UK

P20 **Higgs-to-Invisible Searches for the CMS experiment at the LHC**
Riccardo Di Maria, Imperial College London, UK

P21 **Bayesian optimisation of the SHiP muon shield**
Oliver Lantwin, Imperial College London, UK

P22 **The upgraded silicon detector characterisation facility of the University of Sheffield**
Evangelos Kourlitis, University of Sheffield, UK

P23 **X-PIPELINE: Gravitational-Wave Burst search applied to LIGO data**
Elena Massera, University of Sheffield, UK

http://appandhepp2018.iopconfs.org

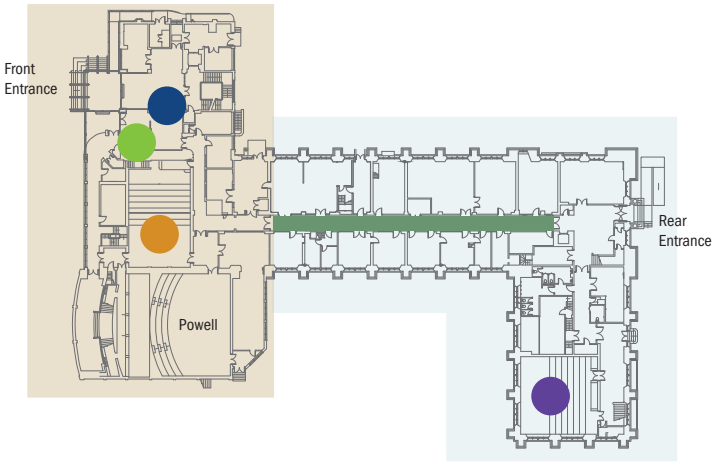
Floorplan – H H Wills Physics Laboratory

Ground Floor

- **Frank lecture theatre**
  This lecture theatre is accessed by the right-hand doors as you enter the building via the main entrance facing Tyndall Avenue. For level access please enquire at the Foyer lodge. The nearest toilets are downstairs near the Enderby room.

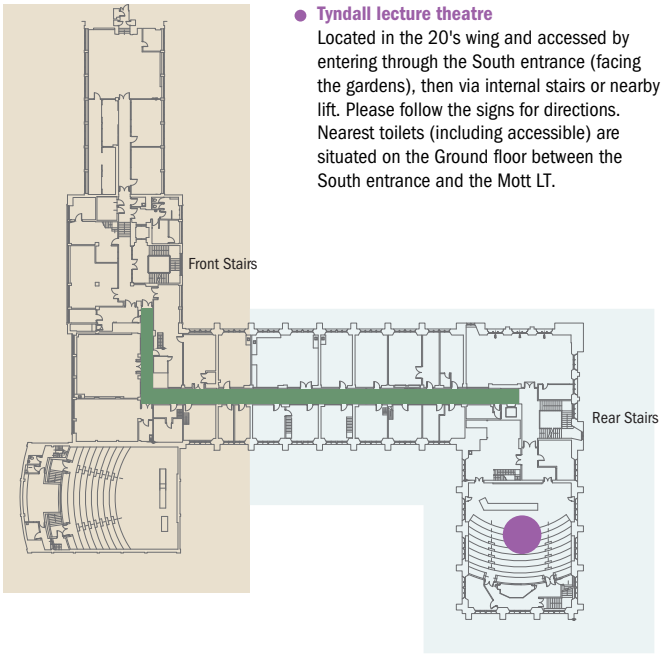
- **Mott lecture theatre**
  Accessed either inside the building (using the public area of the third floor to traverse the building), or by travelling around the outside of the building to enter via the South entrance (located in the 20's wing, facing the garden). Nearest toilets (including accessible) are situated between the South entrance and the Mott LT.

- **Enderby room**
  Located in the basement, this lecture room is accessed by entering the building through the right-hand doors of the main entrance (Ground floor, facing Tyndall Avenue) and then via the staircase found further along the corridor. If ramp access is required, please ask at the foyer lodge (located by the main entrance to the building) for assistance.



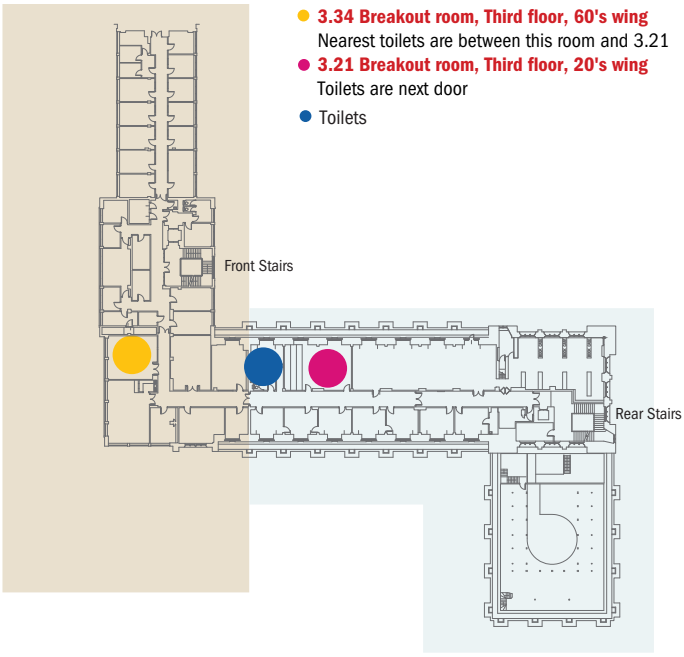
- Corridors where visitors will not be authorised to go (for safety reasons)
- 60's wing
- 20's wing
- Foyer Lodge (porters)
- Registration Area

First Floor



- **Tyndall lecture theatre**
  Located in the 20's wing and accessed by entering through the South entrance (facing the gardens), then via internal stairs or nearby lift. Please follow the signs for directions. Nearest toilets (including accessible) are situated on the Ground floor between the South entrance and the Mott LT.

Third Floor



- **3.34 Breakout room, Third floor, 60's wing**
  Nearest toilets are between this room and 3.21
- **3.21 Breakout room, Third floor, 20's wing**
  Toilets are next door
- Toilets

General directions/lifts/stairs/other toilets not listed above:

There are lifts (with stairwells nearby) at each end of the building near the entrances. It is worth noting that visitors will NOT be able to access the Basement via the lifts or internal stairs; an access ramp is outside the front entrance (as mentioned above). There will be plenty of signage around the building, inside the lifts and on the stairs to point visitors towards the toilets and lecture theatres/breakout rooms.

More toilets not shown on the map are located near the lift in the 60's wing and may be accessed by either stairs or the lift (this is the one nearest the main entrance) as follows:

- Lower First floor ('L1' lift button) male toilet
- Mezzanine ('M' lift button) women's toilet
- Third floor ('3R' lift button) women's toilet (further along the corridor are the womens + mens toilets as described above)
- Fourth floor ('4R' lift button) men's toilet