

Imperial College
London

IOP HEPP/APP 2019 at Imperial

Yoshi Uchida / Gavin Davies

IOP Institute of Physics

**Joint APP and HEPP
Annual Conference**

8–10 April 2019, Imperial College London, London, UK



Past IOP Conferences

Bristol (2018)

Sheffield

Sussex

Manchester

Royal Holloway

Liverpool

Queen Mary

Glasgow

UCL

Oxford

Lancaster

Surrey

Warwick

UC Dublin

Birmingham

Durham

Brighton

Southampton

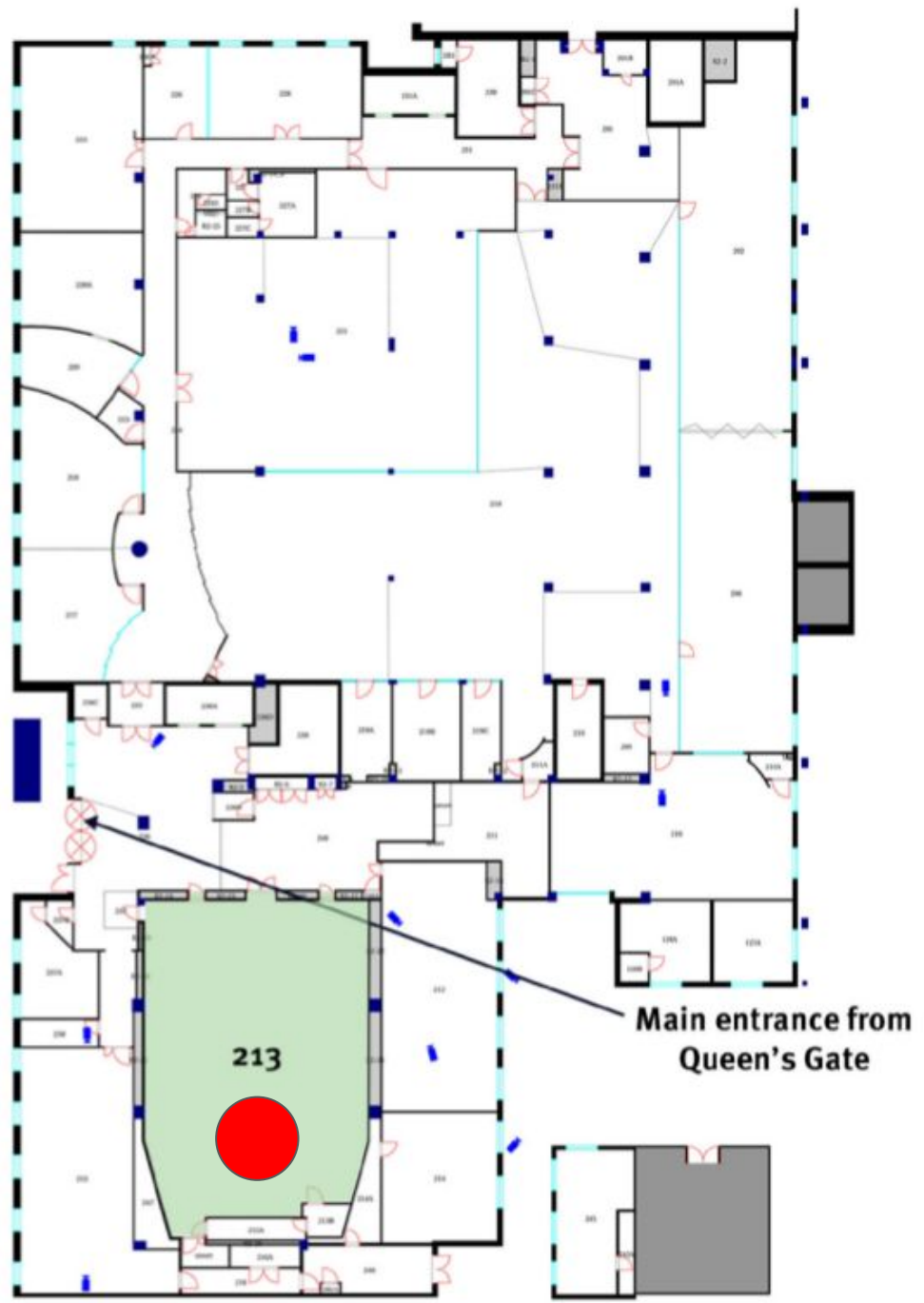
Edinburgh

Salford

Cambridge

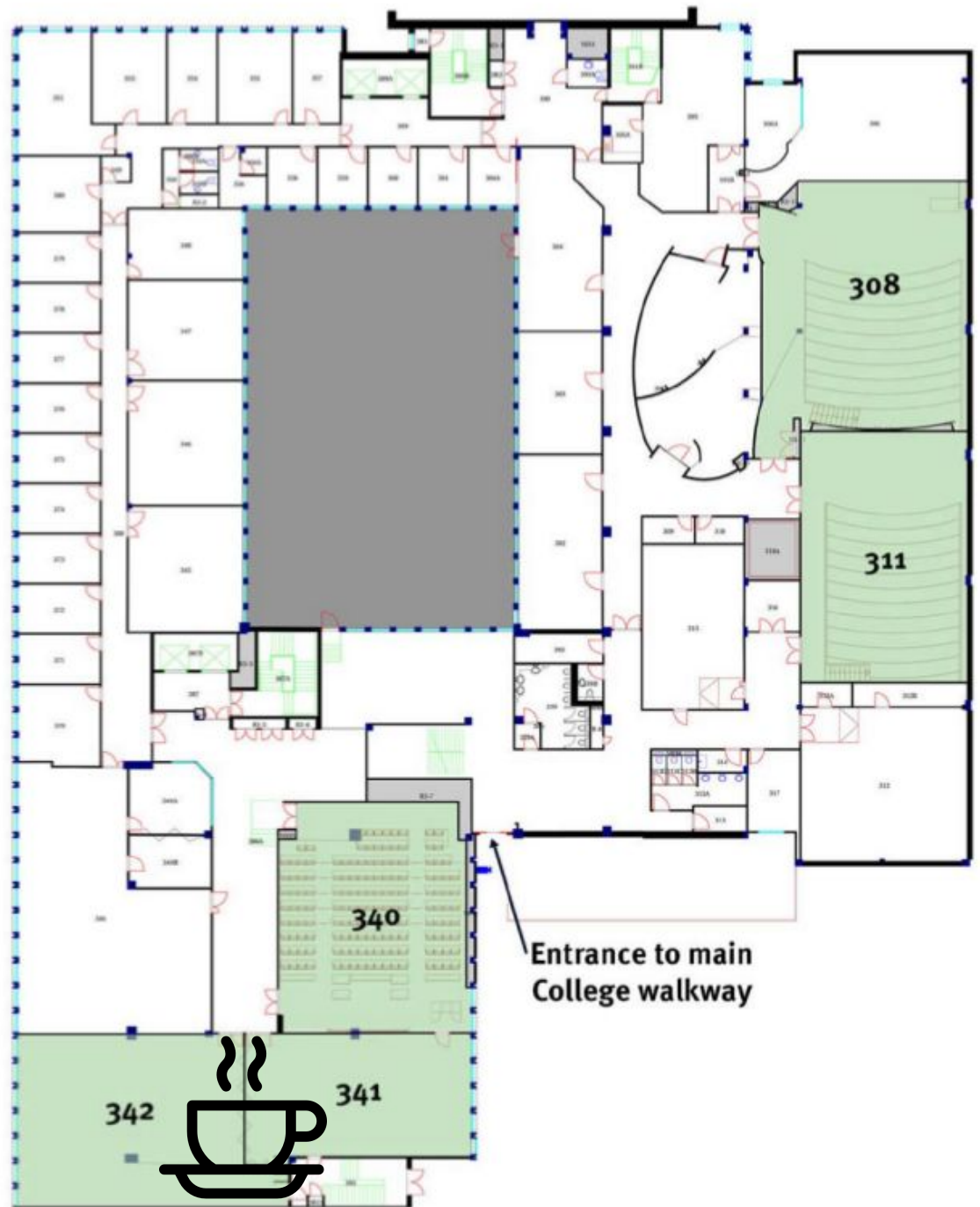
Imperial (1996)

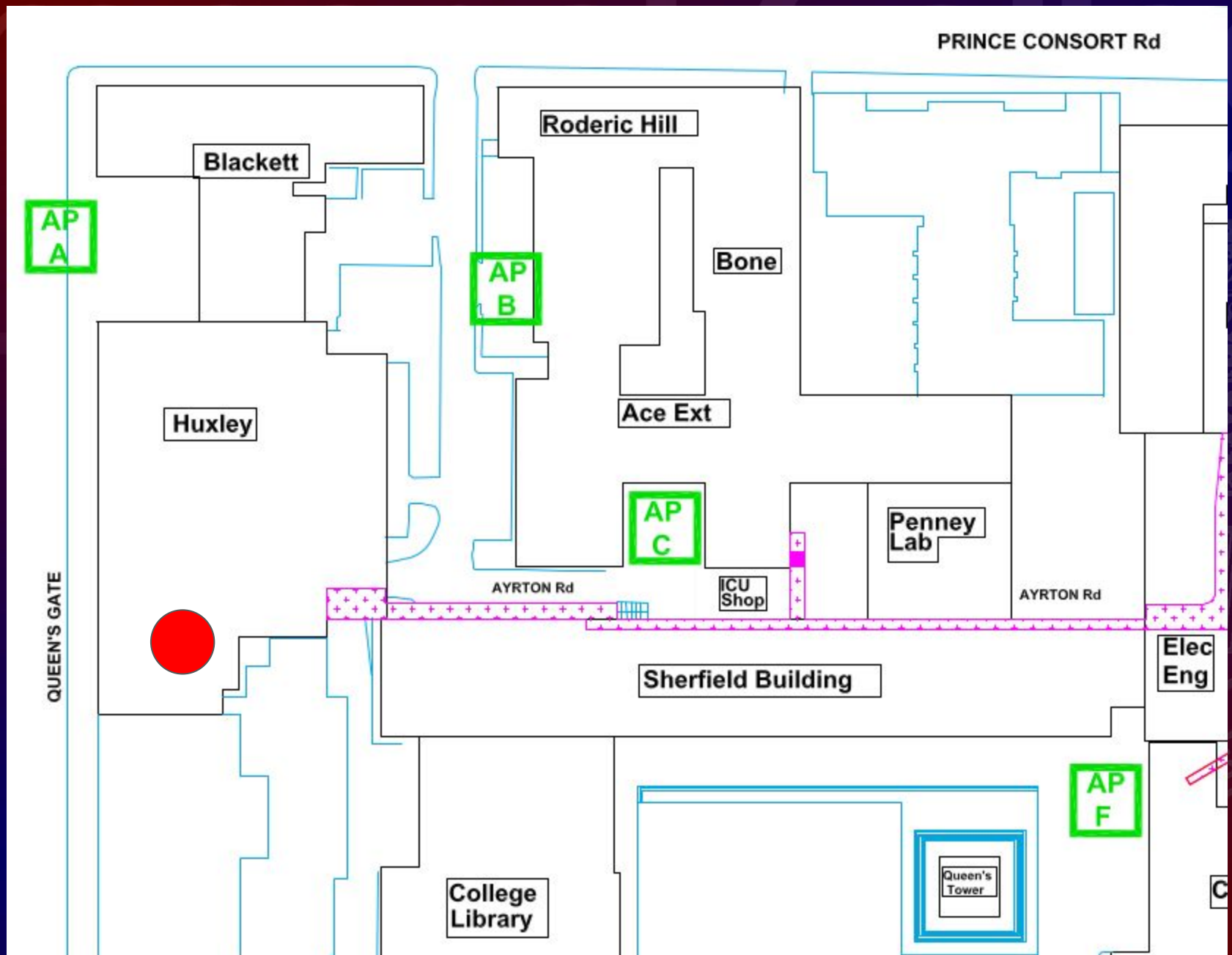
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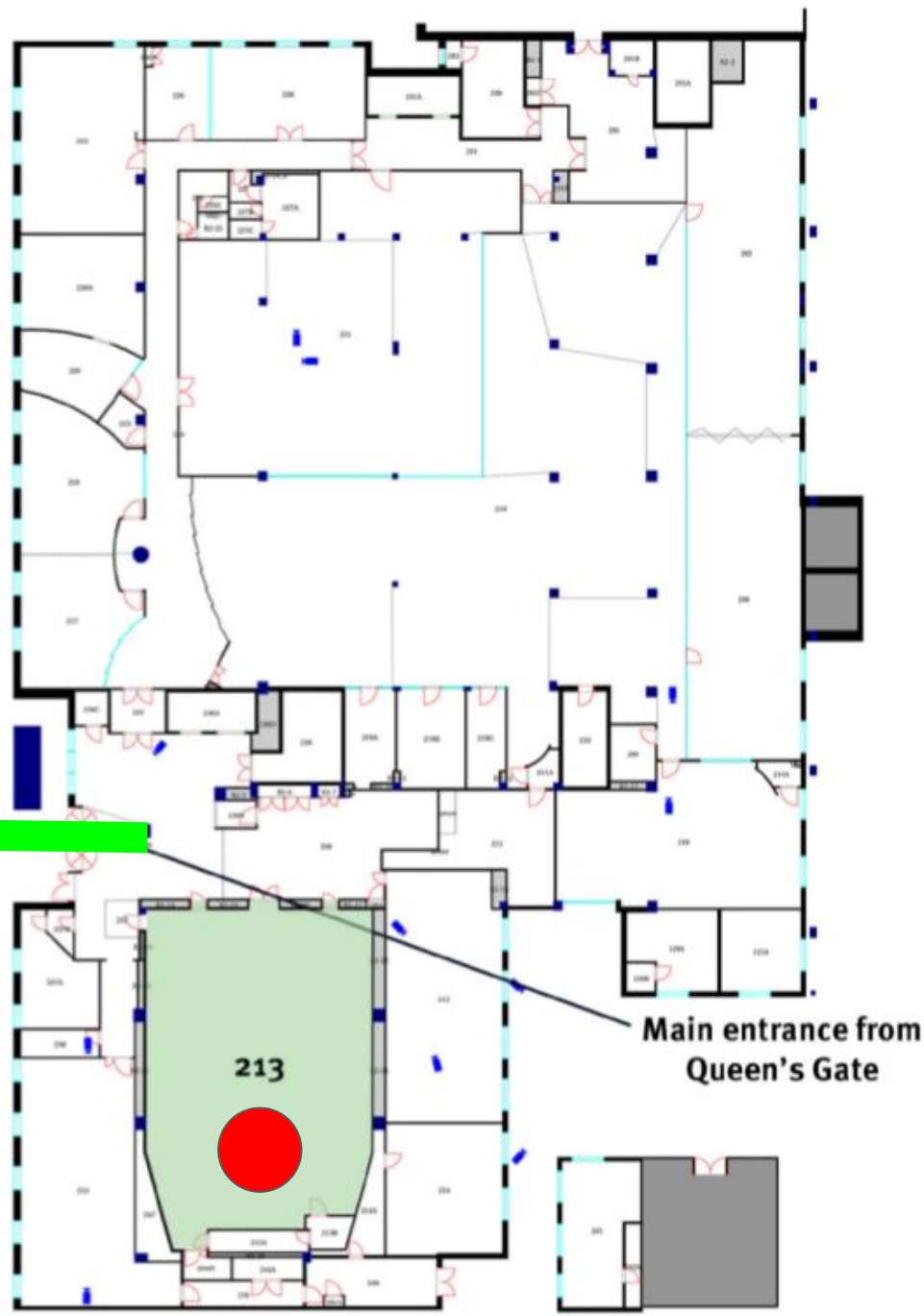
Main entrance from Queen's Gate

Imperial London

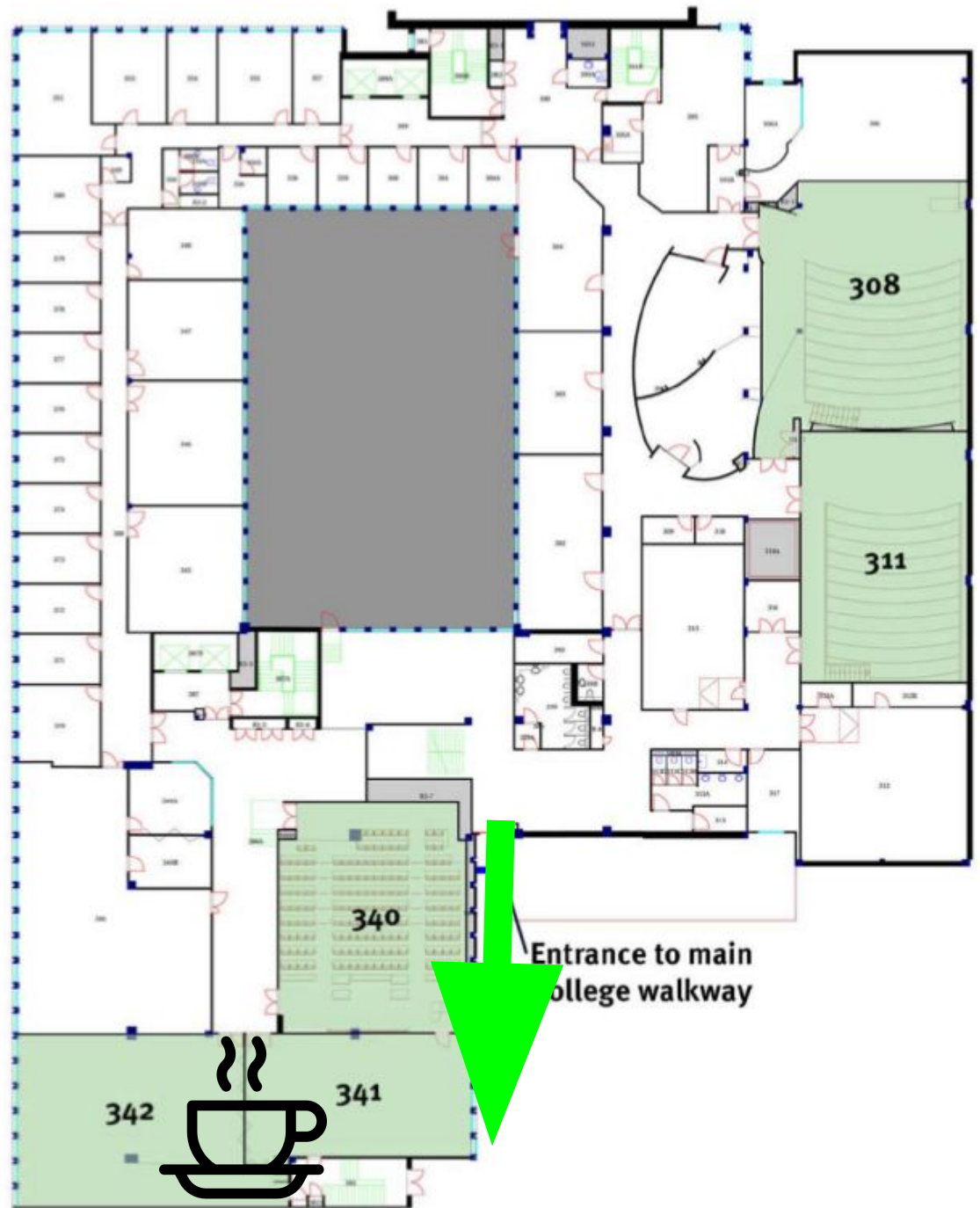


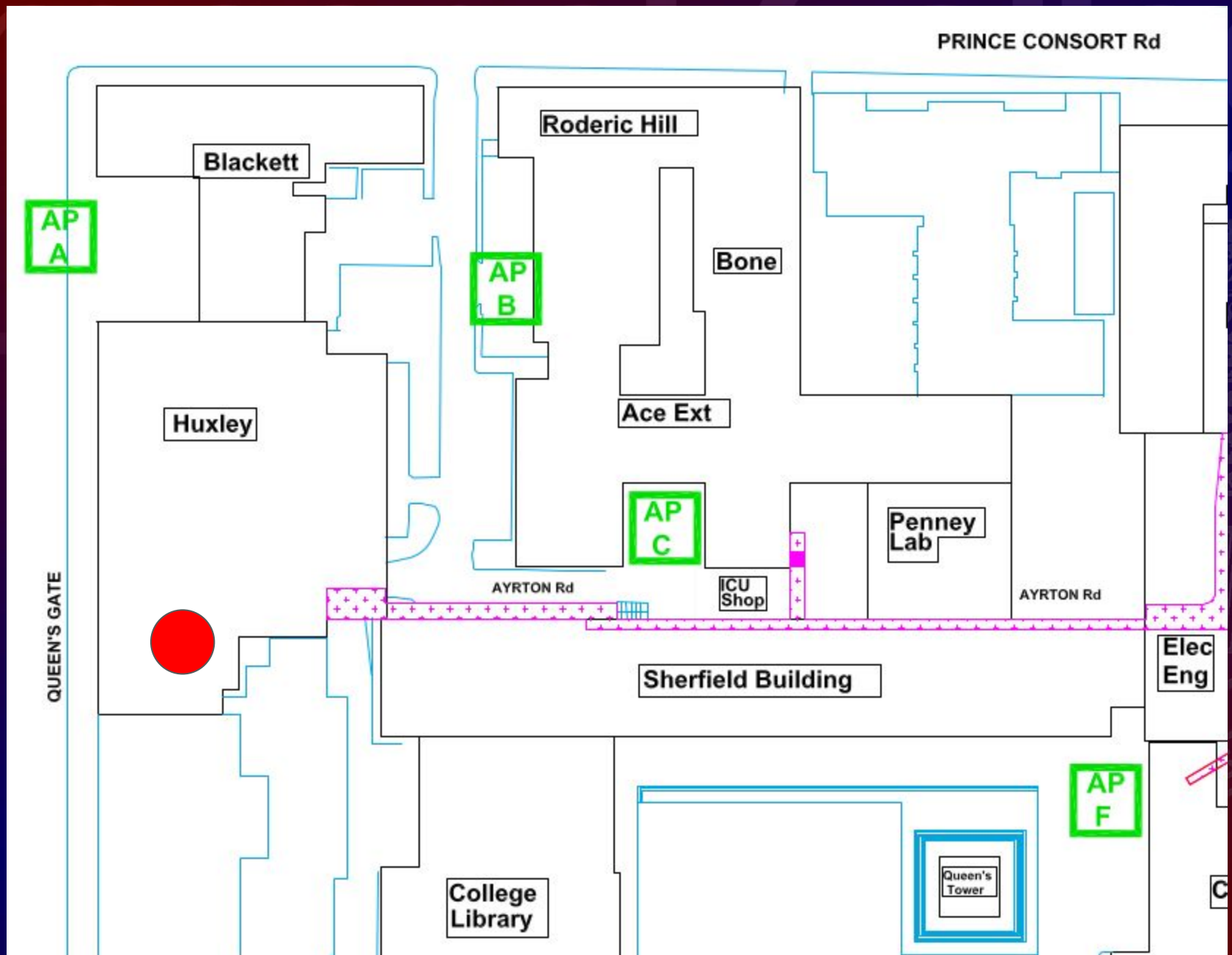


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Londo



Imperial London





Programme

Programme Overview

Monday 8 April									
10:00	Registration and Coffee (Reception Foyer and Huxley 341)								
11:00	Welcome								
Plenary Session 1 (Clare Lecture Theatre, Huxley 213)									
11:10–12:30	(Invited) Jim Yirdee (Invited) Dave Wark (Invited) Eleonora Di Valentino								
13:00	Lunch (Huxley 341)								
Parallel Session 1									
	Stream 1 (Clare Lecture Theatre, Huxley 213)			Stream 2 (Huxley 340)		Stream 3 (Huxley 308)		Stream 4 (Huxley 311)	
14:00–15:45	Albert Kenneth Dow Nicolas Schamberg Matthew Heath Yixuan Zhang	Tom Brooks Dominic Barker Tom Coates Hemchid Chawdhry	Alice Moris Miha Zgubic Russell Turner Teppei Katari	Elena Massera Brais Lopez Paredes Umit Utku	Robert Vallance James Kendrick James Mead Mikael Bjorn	Laurent Kelleter Tereza Kroupova Mariti Nikko	Joseph Taylor Baptiste Ravina Matthew Anthony William Parker Edward Millard	Toby Nonnenmacher Alexandra Rollings Samuel Maddrell-Mander	
16:30	Tea and coffee (Huxley 341)								
Plenary Session 2 (Clare Lecture Theatre, Huxley 213)									
17:00–18:00	(Invited) Martin Bauer (Invited) Gavin Heskeith (Invited) Steve Leach								
19:00	Poster Session with buffet (Queens Tower Rooms)								

Tuesday 9 April									
Plenary Session 3 (Clare Lecture Theatre, Huxley 213)									
09:00–10:00	(Invited) Yvonne Peters (Invited) Christos Leonidopoulos (Invited) Katherine Dooley								
10:30	Tea and coffee (Huxley 341)								
Parallel Session 2									
	Stream 1 (Clare Lecture Theatre, Huxley 213)			Stream 2 (Huxley 340)		Stream 3 (Huxley 308)		Stream 4 (Huxley 311)	
11:00–12:15	Nellie Marangou Peter Rossiter Fabio Tesoldi	Holly Pacey Mark Stinger Matthew Malek	Joseph Walding Giacomo Zecchinelli Edward Thorpe	Amy Tee Wai Yuen Chan Ashlea Kemp	Thomas Hancock Emmy Gabriel Fabrizio Trovato	Alexander Titterton Tommaso Boschi	Susana Molina Sedgwick Celeste Pidcott Felix Kress	Malte Hecker Beojan Stanislaus Santiago Paredes Saenz	
13:00	Lunch (Huxley 341)					HEPP AGM (Huxley 311)			
Plenary Session 4 (Clare Lecture Theatre, Huxley 213)									
14:00–15:00	(Invited) Andy Blake (Invited) Jon Coleman (Invited) Andrew Rose								
15:30	Tea and coffee (Huxley 341)								
16:00	STFC Town Meeting (Clare Lecture Theatre, Huxley 213)								

Wednesday 10 April									
Plenary Session 5 (Clare Lecture Theatre, Huxley 213)									
09:00–10:00	(Invited) Trevor Vickey (Invited) Asher Kaboth (Invited) Christopher McCabe								
10:30	Tea and coffee (Huxley 341)								
Parallel Session 3									
	Stream 1 (Clare Lecture Theatre, Huxley 213)			Stream 2 (Huxley 340)		Stream 3 (Huxley 308)		Stream 4 (Huxley 311)	
11:00–12:15	Hannah Pullen Jennifer Zinneveld Jared Vann	Ioannis Katsioulas Marco Montella Luca Ambroz	Matthew Sullivan Artur Stuz Wouter Van De Ponseele	Lewis Millward Lydia Beresford Deshan Athayasinghe	Lauren Douglas Gediminas Sapia Athy Niliama	Rob Taylor Thomas Powell Elliot Reynolds	Yasilia Konstantinides Paolo Agnes Daria Sartore	Scott Melville Eshwen Bhal Vukasin Milosevic	
13:00	Lunch (Huxley 341)					APP AGM (Huxley 311)			
Plenary Session 6 (Clare Lecture Theatre, Huxley 213)									
14:00–16:00	(Invited) Linda Cremonesi (Invited) Cheryl Patrick (Invited) Sridha Malde (Invited) Lars Eldund								

Programme

APP AGM
Monday lunchtime

HEPP AGM
Tuesday lunchtime

in Room 311

Yoshi.Uchida@imperial.ac.uk
Imperial

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11:00	Welcome							
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13:00	Lunch (Huxley 341)				HEPP AGM (Huxley 311)			
Plenary Session 4 (Clare Lecture Theatre, Huxley 213)								
14:00–15:00	(Invited) Andy Blake (Invited) Jon Coleman (Invited) Andrew Rose							
15:30	Tea and coffee (Huxley 341)							
16:00	STFC Town Meeting (Clare Lecture Theatre, Huxley 213)							

Wednesday 10 April								
Plenary Session 5 (Clare Lecture Theatre, Huxley 213)								
09:00–10:00	(Invited) Trevor Vickey (Invited) Asher Kaboth (Invited) Christopher McCabe							
10:30	Tea and coffee (Huxley 341)							
Parallel Session 3								
	Stream 1 (Clare Lecture Theatre, Huxley 213)		Stream 2 (Huxley 340)		Stream 3 (Huxley 308)		Stream 4 (Huxley 311)	
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Tuesday 9 April

Plenary Session 3 (Clare Lecture Theatre, Huxley 213)

09:00–10:00 (Invited) Yvonne Peters
(Invited) Christos Leonidopoulos
(Invited) Katherine Dooley

10:30 Tea and coffee (Huxley 341)

Parallel Session 2

Stream 1

(Clare Lecture Theatre, Huxley 213)

Stream 2

(Huxley 340)

Stream 3

(Huxley 308)

Stream 4

(Huxley 311)

11:00–12:15	Nellie Marangou Peter Rossiter Fabio Tresoldi	Holly Pacey Mark Stringer Matthew Malek	Joseph Walding Giacomo Zecchinelli Edward Thorpe	Amy Tee Wai Yuen Chan Ashlea Kemp	Thomas Hancock Emmy Gabriel Fabrizio Trovato	Alexander Titterton Tommaso Boschi	Susana Molina Sedgwick Celeste Pidcott Felix Kress	Malte Hecker Beojan Stanislaus Santiago Paredes Saenz
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13:00 Lunch (Huxley 341)

HEPP AGM (Huxley 311)

Plenary Session 4 (Clare Lecture Theatre, Huxley 213)

14:00–15:00 (Invited) Andy Blake
(Invited) Jon Coleman
(Invited) Andrew Rose

15:30 Tea and coffee (Huxley 341)

16:00 STFC Town Meeting (Clare Lecture Theatre, Huxley 213)

Poster Programme

Poster Programme

- P1. On the Use of Photomultiplier Waveform Information with Machine Learning Techniques for the Cherenkov Telescope Array**
S Spencer, University of Oxford, UK
- P2. Constraints on the Higgs boson self coupling from $t\bar{t} + tH, H \rightarrow \gamma\gamma$ measurements with CMS at the HL-LHC**
J Langford, Imperial College London, UK
- P3. Improving the performance of the CMS ECAL Level-1 trigger for LHC Run 3**
W Smith, University of Southampton, UK
- P4. 21cm Cosmology and radiative neutrino decays**
K Fanaig, Queen Mary University of London, UK
- P5. Quest for new physics using astrophysical neutrino flavour in IceCube**
K Fanaig, Queen Mary University of London, UK
- P6. A case for studying Flat Spectrum Radio Quasars (FSRQs) and prospects for gamma-ray observations with the CTA**
A Adharys, Durham University, UK
- P7. Sensitivity study for the $\mu^+ \rightarrow e^+ e^+ e^-$ search with the mu3e experiment and work to prepare for MuPIX pixel tracker module in Liverpool module**
A Wasili, University of Liverpool, UK
- P8. How to monitor your Gd-loaded water Cherenkov detector**
T Boschi, Queen Mary University of London, UK
- P9. Quality Control for ATLAS Inner Tracker Strip Sensor Production**
C Khan, University of Cambridge, UK
- P10. New L1 seeds for HLT jet trigger**
E Wilhauser, CERN, Switzerland
- P11. Measuring the space charge effect in the ProtoDUNE-SP detector**
J Thompson, University of Sheffield, UK
- P12. The role of photon isolation in the measurement of $Z\gamma$ production with the ATLAS detector**
D Lewis, University of Birmingham, UK
- P13. Imaging nuclear waste in a V/S2 CASTOR drum using muon scattering tomography**
A Akheil, University of Sheffield, UK
- P14. Quarkonia in jets at LHCb**
N Cooke, University of Birmingham, UK
- P15. Prospects for the observation of true muonium at LHCb**
J Piewe, University of Birmingham, UK
- P16. A Novel Light Source for Hyper-Kamiokande Calibration Tests**
K McDiwee, University of Sheffield, UK
- P17. Background rejection measurements for electron identification with the ATLAS detector**
K Saoucha, University of Sheffield, UK
- P18. Ultra-pure Copper Electroplating for Background Reduction in the NEWS-G Experiment**
P Knights, University of Birmingham, UK
- P19. Studying the Effect of Polarisation in Compton Scattering in the Undergraduate Laboratory**
P Knights, University of Birmingham, UK
- P20. ATLAS Upgrade: Production of the cooling circuit for the ITk Strip Slave and Forward Pixel End-Caps at The University of Sheffield**
W Yasdon, University of Sheffield, UK
- P21. Fast Simulation of Muon Backgrounds at a SHIP using Machine Learning**
A Marshall, University of Bristol, UK
- P22. Investigation of Gas Properties and the Effect of Electron Negative Contaminants in the NEWS-G Experiment**
R Ward, University of Birmingham, UK
- P23. Reducing top quark background in measurements of W^+W^- cross sections at $\sqrt{s} = 13\text{TeV}$ with the ATLAS detector**
J MacDonald, University of Sheffield, UK
- P24. Search for CP violation in $D^0 \rightarrow \pi^+ \pi^0$ at LHCb with the energy test method**
J Cobbleck, The University of Manchester, UK
- P25. Applications of muon scattering tomography to image and characterise materials in nuclear waste drums**
M Weekes, University of Sheffield, UK
- P26. Experimental Determination of Proton Hardness Factors at Various Irradiation Facilities**
C Simpson-Aliap, University of Birmingham, UK
- P27. Study of $t\bar{t}$ production with $H \rightarrow b\bar{b}$ at the HL-LHC**
A M Mendes Jacques da Costa, University of Birmingham, UK
- P28. Progress Towards a First Measurement of the π^0 -Argon Cross Section in ProtoDUNE-SINGLE PHASE**
S Vergani, University of Cambridge, UK
- P29. Track vs Shower Hit-Based Classification Using Deep Learning in LArTPC Experiments**
S Vergani, University of Cambridge, UK
- P30. B-Tagger Calibration using the Combinatorial Likelihood Method with Particle Flow Jets**
J Hall, University of Sheffield, UK
- P31. Construction of the ATLAS Phase-II upgrade Inner Tracker semiconductor barrel micro-strip detector**
T Zorbas, University of Sheffield
- P32. Towards a gas filtration setup for ultra-sensitive SF6 gas based rare-event physics experiments**
R R Marcelo Gregorio, University of Sheffield, UK
- P33. Searching for electroweak supersymmetry in events with two leptons and missing transverse momentum in the final state at 1.3TeV with the ATLAS detector**
H Pacey, University of Cambridge, UK
- P34. Advances and limitations of new machine learning for jet tagging**
H Day-Hall, University of Southampton, UK
- P35. SBND Recombination Study for Shower Calorimetry**
E Tyley, University of Sheffield, UK
- P36. ATLAS ITk Pixel Sensor Measurements**
M Mironova, University of Oxford, UK
- P37. Measurement of DD mixing parameters using $D^0 \rightarrow K_S^0 \pi^0$ Decay at LHCb**
M Hilton, The University of Manchester, UK
- P38. Data-driven corrections to ATLAS trigger simulation**
D Köck, University of Sussex, UK
- P39. A High Pressure gaseous Time Projection Chamber for future long-baseline neutrino experiments**
E Atkin, Imperial College London, UK
- P40. Integration of n-by-parts identities and multi-loop QCD amplitudes**
H Chawdhry, University of Cambridge, UK
- P41. Observation of $H \rightarrow b\bar{b}$ decays in the VH production mode and first differential measurement with the ATLAS detector**
L Ambroz, University of Oxford, UK
- P42. Measuring the mass of the Higgs Boson at the ATLAS detector in the $H \rightarrow Z\gamma^* D^0$ channel using an analytic model**
T Powell, University of Sheffield, UK
- P43. Beam test studies of a prototype TORCH detector**
T Hancock, University of Oxford, UK
- P44. Searches for electroweak supersymmetry in final states containing one lepton, two b-tagged jets and missing transverse energy at the ATLAS experiment**
M Sullivan, University of Liverpool, UK
- P45. Prospects for ttZ measurements at ATLAS with the full 140 fb⁻¹ Run 2 dataset**
B Ravina, University of Sheffield, UK
- P46. The search for invisibly decaying Higgs bosons at the LHC**
V Milošević, Imperial College London, UK, The CMS Collaboration, Switzerland
- P47. Top quark charge asymmetry at LHCb**
J Mead, University of Liverpool, UK
- P48. The High Pressure gas Time Projection Chamber: a Future Neutrino Detector**
T Nonnenmacher, Imperial College London, UK
- P49. Measurement of the CP nature of the Htt Yukawa coupling using gluon fusion production in association with two jets with a Higgs boson decay to a tau lepton pair**
A Dow, Imperial College London, UK
- P50. Background Modelling in the $t\bar{t}(H \rightarrow \gamma\gamma)$ Channel**
M Heath, University of Edinburgh, UK
- P51. Electron neutrino selection in the MicroBooNE LArTPC using the Pandora pattern recognition reconstruction**
W Van De Pontbeeck, University of Oxford, UK
- P52. Determination of hadronic resonance contributions to the $B^0 \rightarrow K^*0 \mu^+ \mu^-$ decay**
M Hedker, Imperial College London, UK
- P53. Non-parametric Bayesian event reconstruction in Super-Kamiokande detector**
A Stuz, Imperial College London, UK
- P54. Matter density profile effects on neutrino oscillations at T2HK and T2HKK**
S Molina Sedgwick, Queen Mary University of London, UK, University of Southampton, UK
- P55. Applications of Machine Learning to the Monopole and Exotics Detector At The Large Hadron Collider (MoEDAL)**
L Millward, Queen Mary, University of London, UK, The MoEDAL Collaboration, Switzerland

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11:00 Welcome

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11:10–12:30 (Invited) Jim Virdee
(Invited) Dave Wark
(Invited) Eleonora Di Valentino

13:00 Lunch (*Huxley 341*)

Parallel Session 1

Stream 1

(*Clare Lecture Theatre, Huxley 213*)

Stream 2

(*Huxley 340*)

Stream 3

(*Huxley 308*)

Stream 4

(*Huxley 311*)

14:00–15.45	Albert Kenneth Dow Nicolas Schamberg Matthew Heath Yixuan Zhang	Tom Brooks Dominic Barker Tom Coates Herschel Chawdhry	Alice Morris Miha Zgubic Russell Turner Teppe Katori	Elena Massera Brais Lopez Paredes Umit Utku	Robert Vallance James Kendrick James Mead Mikkel Bjom	Laurent Kelleter Tereza Kroupova Martti Nirikko	Joseph Taylor Baptiste Ravina Matthew Anthony William Parker Edward Millard	Toby Nonnenmacher Alexandra Rollings Samuel Maddrell- Mander
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16:30 Tea and coffee (*Huxley 341*)

Plenary Session 2 (*Clare Lecture Theatre, Huxley 213*)

17:00–18:00 (Invited) Martin Bauer
(Invited) Gavin Hesketh
(Invited) Steve Leach

19:00 Poster Session with buffet (*Queens Tower Rooms*)

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