Monday 3 April

11:00  Registration
12:00  Lunch
13:00  Welcome
13:10  (Invited) Some remarks on collisionless current sheet equilibria
      Thomas Neukirch, University of St Andrews, UK
13:50  Temporally resolved optical probing of picosecond laser propagation in underdense and near-critical density plasmas
      Zoë Davidson, University of Strathclyde, UK
14:10  (Culham Thesis Prize) Diagnosis and applications of laser wakefield accelerators
      Jason Cole, Imperial College London, UK
14:50  Refreshment break
15:10  (Invited) The role of turbulence in tokamak edge transport
      Istvan Cziegler, University of York, UK
15:50  Vlasov simulations of fast stochastic electron heating near the upper hybrid layer
      David C. Speirs, University of Strathclyde, UK
16:10  Efficient solution to multi-temperature Riemann problem coupled with front-tracking for gas dynamics simulations
      Danail Vassilev, First Light Fusion Ltd., UK
16:30  Plasma enhanced Pulsed laser deposition of CuO and Cu$_2$O thin films
      Sudha Rajendiran, University of York, UK
16:50  Refreshment break
17:10  Poster introductions
17:30  Posters

Tuesday 4 April

09:00  (Invited) Inside an ion Larmor Orbit
      Ruth Bamford, STFC, UK
09:40  A new criterion to describe crossed-beam energy transfer in laser-plasma interactions
      Raoul Trines, STFC Rutherford Appleton Laboratory, UK
10:00  (Invited) The role of plasma-surface interactions in low-temperature plasmas
      Andrew Gibson, York Plasma Institute, UK
10:40  Refreshment break
11:00  (Invited) The UK’s central laser facility
      John Collier, STFC, UK
11:40  Influence of environmental parameters on the Kelvin-Helmholtz instability at the magnetopause
      Matthieu Leroy, KU Leuven, Belgium
12:00  Optimized up-down asymmetry to drive fast intrinsic rotation in tokamak reactors
      Justin Ball, École Polytechnique Fédérale de Lausanne, Switzerland
12:20  Particle acceleration by lower-hybrid turbulence in the laboratory
      Alexandra Rigby, University of Oxford, UK
12:40  Lunch
13:40  Excursions
18:30  Evening outreach: ‘Plasma Science takes 5’
### Wednesday 5 April

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker</th>
<th>Institution</th>
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<tbody>
<tr>
<td>09:00</td>
<td>(Invited) Laser-driven charged particle beam structures induced by diffraction</td>
<td>Martin King</td>
<td>University of Strathclyde, UK</td>
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<tr>
<td>09:40</td>
<td>Intermittent transport in the divertor of MAST and TCV</td>
<td>Nick Walkden</td>
<td>Culham Centre for Fusion Energy, UK</td>
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<tr>
<td>10:00</td>
<td>Mass transfer in surface dielectric barrier discharges</td>
<td>Alex Shaw</td>
<td>Loughborough University, UK</td>
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<td>10:20</td>
<td>Refreshment break</td>
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<tr>
<td>10:40</td>
<td>(Invited) Accessing high confinement conditions in hydrogen and mixed species plasmas in JET</td>
<td>Jon Hillesheim</td>
<td>CCFE, UK</td>
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<tr>
<td>11:20</td>
<td>High energy and efficiency proton acceleration from relativistically transparent laser-foil interactions</td>
<td>Adam Higginson</td>
<td>University of Strathclyde, UK</td>
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<tr>
<td>11:40</td>
<td>Modelling of plasma-liquid interactions</td>
<td>Joshua Holgate</td>
<td>Imperial College London, UK</td>
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<td>12:00</td>
<td>IOP Plasma Group AGM</td>
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<td>12:30</td>
<td>Lunch</td>
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<tr>
<td>13:30</td>
<td>(Invited) Analysis of low temperature atmospheric plasma polymerisation processes for innovative coating applications</td>
<td>Kirsty McKay</td>
<td>University of Liverpool, UK</td>
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<tr>
<td>14:10</td>
<td>Investigations on the role of inferior phase velocity laser plasma wakefield in proton acceleration</td>
<td>Supriya Rai</td>
<td>University College London, UK</td>
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<tr>
<td>14:30</td>
<td>Ion cyclotron emission as a diagnostic of the time evolution of edge density during ELMs in KSTAR plasmas</td>
<td>Benjamin Chapman</td>
<td>University of Warwick, UK</td>
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<tr>
<td>14:50</td>
<td>Proton imaging of stochastic magnetic fields</td>
<td>Archie Bott</td>
<td>University of Oxford, UK</td>
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<td>15:10</td>
<td>Refreshment break</td>
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<tr>
<td>15:30</td>
<td>Pulsed laser breakdown in water and its aftermath</td>
<td>Bill Graham</td>
<td>Queen’s University Belfast, UK</td>
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<tr>
<td>15:50</td>
<td>Some problems with the ponderomotive force</td>
<td>David Burton</td>
<td>Lancaster University, UK</td>
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<tr>
<td>16:10</td>
<td>Poster introductions</td>
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<td>16:30</td>
<td>Poster session</td>
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<tr>
<td>19:00</td>
<td>Conference dinner</td>
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### Thursday 6 April

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<td>09:00</td>
<td>(Invited) The physics currently limiting the thermonuclear fusion yield on the National Ignition Facility</td>
<td>Robbie Scott</td>
<td>RAL Central Laser Facility, UK</td>
</tr>
<tr>
<td>09:40</td>
<td>Particle acceleration during merging-compression plasma start-up in the MAST spherical tokamak</td>
<td>Ken McClements</td>
<td>Culham Centre for Fusion Energy, UK</td>
</tr>
<tr>
<td>10:00</td>
<td>The role of vibrational states of CO₂ in the conversion of CO₂ to CO using radio-frequency atmospheric pressure plasmas</td>
<td>Alexander Foote</td>
<td>University of York, UK</td>
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<tr>
<td>10:20</td>
<td>Theory of the sheath and maximum ion energies in target normal sheath acceleration</td>
<td>Holger Schmitz</td>
<td>STFC, Rutherford Appleton Laboratory, UK</td>
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<td>10:40</td>
<td>Refreshment break</td>
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<tr>
<td>11:00</td>
<td>(Invited) Physics and technology innovations for compact tokamak fusion pilot plants</td>
<td>Jonathan Menard</td>
<td>Princeton Plasma Physics Laboratory, USA</td>
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<td>11:40</td>
<td>MAST upgrade: A facility to advance understanding of power exhaust in tokamaks</td>
<td>James Harrison</td>
<td>Culham Centre for Fusion Energy, UK</td>
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<tr>
<td>12:00</td>
<td>(Invited) Solar flares and energetic particles</td>
<td>Eduard Kontar</td>
<td>University of Glasgow, UK</td>
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<tr>
<td>12:40</td>
<td>Lunch</td>
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**MAST-U Research Forum** (The MAST-U research forum runs from Thursday afternoon and all day Friday)
44th IOP Plasma Physics Conference

Poster programme

P1 The collisionless transient pinch
John Allen, University College, Oxford, UK

P2 The PLATINUM project: Pulsed laser accelerators for the inspection of nuclear materials
Ceri Brenner, STFC Central Laser Facility, UK

P3 Channeling optimization of high-intensity laser beams in millimeter-scale plasmas
Luke Ceuvorst, University of Oxford, UK

P4 Nonlinear self-consistent kinetic simulations of the anomalous Doppler instability of suprathermal electron populations in fusion plasmas
Samuel Irvine, University of Warwick, UK

P5 Extended interaction oscillator based on a pseudospark-sourced electron beam
Adrian Cross, University of Strathclyde, UK

P6 Fourier-Vlasov simulations of cyclotron instabilities in plasma
Bengt Eliasson, University of Strathclyde, UK

P7 An algorithm for analysis of filaments in fast camera data
Tom Farley, Culham Centre for Fusion Energy, UK

P8 Improving understanding of divertor detachment via atomic physics and spectroscopy
Daljeet Singh Gahle, Culham Centre for Fusion Energy, UK

P9 Experimental observation of beam intensity profile modification and transient phase during cross beam energy transfer
Kevin Glize, STFC, Rutherford Appleton Laboratory, UK

P10 Reduced kinetic simulations of particle acceleration during magnetic reconnection
Philippa Browning, University of Manchester, UK

P11 Ball-pen Probe in strongly magnetised low-temperature plasma
Brandon Harris, University of Liverpool, UK

P12 Combined effects of trapped energetic ions and resistive layer damping on the stability of the resistive wall mode
Yuling He, Dalian University of Technology, China

P13 Nonlinear waves in the terrestrial quasiparallel foreshock
Bogdan Hnat, University of Warwick, UK

P14 Time-resolved characterisation of the evolution of electrostatic collisionless shocks
Thomas Hodgè, Queens University Belfast, UK

P15 Plasma micro-reactors: potential and practical challenges for chemical engineering
Thomas Holmes, University of Sheffield, UK

P16 Argon photoionisation
Rachael Irwin, Queen’s University Belfast, UK

P17 Ion streaming instability of dust-acoustic surface waves in a Lorentzian complex plasma slab
Young-Dae Jung, Hanyang University, South Korea

P18 Quantitative shadowgraphy and proton radiography for large intensity modulations
Muhammad Kasim, University of Oxford, UK

P19 Intrinsic suppression of resistive drift-wave turbulence in linear device geometry
Jarrod Leddy, University of York, UK

P20 Photoabsorption of Ca, Pb and Bi in the vacuum ultraviolet region – towards controlled resonance-enhanced high harmonic generation
Hu Lu, Dublin City University, Ireland

P21 Spatial organisation of tokamak flow structures
Ben McMillan, University of Warwick, UK

P22 QDB: A new database of plasma chemistries and reactions – concept and exemplar verification
Anna Dzarasova, Quantemol Ltd., UK

P23 Understanding detachment onset in MAST-U using SOLPS
David Moulton, Culham Centre for Fusion Energy, UK

P24 Study of Mg He-like intercombination line in optically thin solid density plasmas
Gabriel Pérez Callejo, University of Oxford, UK

P25 Complex phase space representation of wave equations using the Wick symbol calculus
Naren Ratan, University of Oxford, UK
P26 Experimental paths to improve the physics basis for high $q_{||}$ exhaust strategies
Matthew Reinke, Oak Ridge National Laboratory, USA

P27 Modelling ion cyclotron emission from beam-injected ions in the large Helical Device
Bernard C G Reman, University of Warwick, UK

P28 Design, operation and measurement of a penning discharge
Kevin Ronald, University of Strathclyde, UK

P29 Adiabaticity breaking in direct laser acceleration of electrons
Alex Robinson, Central Laser Facility, UK

P30 Optimisation of plasma amplifiers
James Sadler, University of Oxford, UK

P31 Spatial distribution of plasma parameters in a dc-magnetron discharge and influence of the discharge power
Christian Saringer, Montanuniversität Leoben, Austria

P32 Attosecond absorption in two dimensions
Alex Savin, University of Oxford, UK

P33 Influence of plasma backgrounds including neutrals on SOL filaments using 3D simulations
David Schwörer, Dublin City University, Ireland

P34 Modelling heating and ablation of dust in a plasma
Luke Simons, Imperial College London, UK

P35 Production of low energy spread accelerated electrons at the AWAKE experiment: LWFA as a potential solution
Barney Williamson, University of Manchester, UK

P36 Resistive wall modes stabilization by feedback control in HL-2M tokamak
Guoliang Xia, Culham Centre for Fusion Energy, UK

P37 Simulations of edge localised modes
Siobhand Smith, University of York, UK

P38 Plasma application for bio-oils chemical detoxification: from harmful to useful
Thomas Holmes, University of Sheffield, UK

P39 Investigation of efficiency exciplex DBD lamp excited by electrical generators of various types
Dmitry Schitz, Immanuel Kant Baltic Federal University, Russia

P40 Hybrid kinetic-hydrodynamic model of high-pressure gas discharges under strong overvoltages
Natalia Semeniuk, Institute of High Current Electronics, Russia

P41 Observation of anomalous inward particle pinch in ADITYA tokamak
Harshita Raj, Institute for Plasma Research, India

P42 MHD modeling of the capillary discharge plasma and the future prospects
Anatoliy Shapolov, Institute of Physics University of Pecs, Hungary

P43 Exact Vlasov-Maxwell equilibria for asymmetric current sheets
Thomas Neukirch, University of St Andrews, UK

P44 X-ray emission from petawatt laser driven nanostructured Ni targets
Oliver Humphries, University of Oxford, UK

P45 Time integrated optical emission studies of laser produced lead plasma: measurements of transition probabilities of the 6p7s $\rightarrow$ 6p2 transition array
Javed Iqbal, Pakistan