

44th IOP Plasma Physics Conference

3–6 April 2017

University of Oxford, Oxford, UK

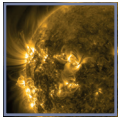
Organised by the IOP Plasma Physics Group

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 Cu₂O 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'



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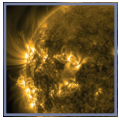
Wednesday 5 April

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

Thursday 6 April

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

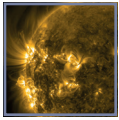
MAST-U Research Forum (The MAST-U research forum runs from Thursday afternoon and all day Friday)



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 Ceurvorst, 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 Hodge, 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



44th IOP Plasma Physics Conference

- 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**
Siobhan 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**
Anatolij 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

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