

Jack Davies Hare

Employment

- 2019– **Post-doctoral Research Associate**, *Max-Planck Institute for Plasma Physics*.
Design, simulation, prototyping and testing of bolometers and manometers for the ITER project.
- 2017–2019 **Post-doctoral Research Associate**, *Imperial College London*.
Experiments on the MAGPIE pulsed power generator, studying magnetised turbulence and magnetic reconnection. Associate Supervisor of PhD Students. Significant lab management role.

Education

- 2013–2017 **PhD**, *Magnetic Reconnection in Pulsed-Power Driven Carbon Plasmas*.
Prof. Sergey Lebedev, Department of Physics, Imperial College London
- Developed a new pulsed-power driven platform to study magnetic reconnection in the lab.
 - Fielded diagnostics including imaging laser interferometry, Thomson scattering, Faraday rotation imaging, optical fast-framing and in-situ magnetic probes.
 - Key results include evidence for anomalous heating of the ions and electrons, and the formation of plasmoids inside the reconnection layer.
 - This work resulted in collaborations with researchers at MIT, UPMC (Paris) and U. Mich.
- 2011–2013 **MA**, *Effects of Lithium PFCs on Impurity Ion Content in LTX*.
Dr. Robert Kaita, Princeton Plasma Physics Laboratory, Princeton University
- Commissioned an XUV spectrometer to study impurity ions in a novel, lithium walled tokamak.
- 2010–2011 **MSci**, *Nanoscale Diamond-based Magnetometry*, Dr. Mete Atatüre, University of Cambridge.
- 2007–2010 **BA (hons)**, *1st Class*, Natural Sciences Tripos, University of Cambridge.

Invited Talks

- May 2018 High Energy Density Laboratory Astrophysics, Kurashiki, Japan. *Given by L. Suttle*
- Oct. 2017 APS Division of Plasma Physics Annual Meeting, Milwaukee, USA
- Jun. 2017 Plasmas à Paris Workshop on Magnetic Reconnection in Laboratory and Space Plasmas
- Mar. 2017 Magnetic Reconnection US-Japan Workshop 2017, Matsuyama, Japan

Awards

- 2018 European Physical Society Plasma Physics Division PhD Research Award.
- 2018 Imperial College Prize for Excellence in the Support of Teaching and Learning.
- 2016 Malcolm G. Haines award for Outstanding Young Plasma Physicists.
- 2016 Voted best demonstrator in 2nd year undergraduate teaching labs by students.
- 2015 EPSRC Science Photo Competition, 2nd place in Innovation category.

Scholarships

- 2013-2017 President's PhD Scholarship at Imperial College London.
- 2011-2013 Charles Ames Brooks Class of 1905 Scholarship at Princeton University.
- 2009-2011 Senior Scholar at Gonville and Caius College, University of Cambridge.

Grants

- 2017 MECMATPLA Winter School travel grant, Montgenèvre, France.
- 2015 HEDSA Summer School travel grant, San Diego, USA.

Academic Service

- From 2018 Organiser for Plasma Physics Group Postgraduate Lectures.
- From 2017 Referee for *Physical Review Letters*, *Physics of Plasmas* and *Nature Physics Communications*.
- From 2017 Chair and organiser for Plasma Physics Group Seminars.
- 2017 Student representative to the Postgraduate Research review panel at Imperial College.

Computer Skills

Python: Proficient (7+ years). C++: Significant experience (2+ years). Solidworks: Proficient (6+years).

Languages

Mother tongue: English. Common European Framework of Reference for Languages A2: French, German.

Contributed Talks and Posters

- 2018 EPS Plasma Physics Division Annual Meeting, Prague, Czechia
- 2016 APS Division of Plasma Physics Annual Meeting, San Jose, USA
- 2016 High Energy Density Laboratory Astrophysics, Palo Alto, USA
- 2015 APS Division of Plasma Physics Annual Meeting, Savannah, USA
- 2014 APS Division of Plasma Physics Annual Meeting, New Orleans, USA
- 2014 International Conference on Plasma Science, Washington D.C., USA
- 2014 High Energy Density Laboratory Astrophysics, Bordeaux, France
- 2012 APS Division of Plasma Physics Annual Meeting, Providence, USA

Teaching Experience

- 2018-2019 MSci project co-supervisor for two students, diagnosing electrically driven wire explosions.
- 2018 UROP supervisor for three students working on computational and experimental projects.
- 2017-2018 Head of experiment (Interferometry), first year undergraduate labs.
- 2017-2018 BSc Project supervisor, continuous wave triature interferometer for HED plasmas.
- 2017-2018 Lead Demonstrator for first year undergraduate computing with Python.
- 2017 UROP project supervisor, developing a continuous wave Faraday polarimeter.
- 2014-2016 Demonstrator for 2nd year physics undergraduate labs at Imperial College.
- 2014-2016 Supervisor for first year projects for physics undergraduates at Imperial College.
- 2013-2014 Teaching Assistant for first year physics undergraduates at Imperial College.
- 2012 Problem session on plasma physics for NUF and SULI summer students at PPPL.

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Outreach and Engagement

- 2017 Demonstrator, 'Making a Supernova' at the Science Museum Lates, August.
- 2017 Demonstrator, 'Making a Supernova' at the Royal Society Summer Science Exhibition.
- 2017 Demonstrator, 'Popomatic' laser-balloon interaction experiment at the Imperial Festival.
- 2015 Member, Imperial College delegation for the state visit of Chinese President Xi Jinping.
- 2014 Demonstrator, 'Set the Controls for the Heart of the Sun' at the Royal Society Summer Science Exhibition.

From 2013 Tours of the MAGPIE facility at Imperial College London.

Committee Positions

2018-	Physics Department LGBT+ Allies Network	<i>Chair</i>
2017-	Physics Research Associates Committee	<i>General Member: Teaching</i>
2014-2017	Imperial College Caving Club	<i>Equipment Officer, President, Expedition Leader</i>
2011-2013	Princeton University Mountaineering Club	<i>Treasurer, Trip Leader</i>
2010-2011	Cambridge University LGBT Campaign	<i>President, Communications Officer</i>
2009-2011	Cambridge University Physics Society	<i>Publicity Officer, Speaker Liaison</i>

Publications

Sixteen publications, of which three are first author.

16. 2018 J. D. Hare, L. G. Suttle, S. V. Lebedev, N. F. Loureiro, A. Ciardi, J. Chittenden, T. Clayson, S. J. Eardley, C. Garcia, J. W. D. Halliday, T. Robinson, R. A. Smith, N. Stuart, F. Suzuki-Vidal, and E. R. Tubman. "An Experimental Platform for Pulsed-Power Driven Magnetic Reconnection". *Physics of Plasmas* 25, p. 055703. DOI: 10.1063/1.5016280.
15. 2018 L. G. Suttle, J. D. Hare, S. V. Lebedev, A. Ciardi, N. F. Loureiro, G. C. Burdiak, J. P. Chittenden, T. Clayson, J. W. D. Halliday, N. Niasse, D. Russell, F. Suzuki-Vidal, E. Tubman, T. Lane, J. Ma, T. Robinson, R. A. Smith, and N. Stuart. "Ion heating and magnetic flux pile-up in a magnetic reconnection experiment with super-Alfvénic plasma inflows". *Physics of Plasmas* 25, p. 042108. DOI: 10.1063/1.5023664.
14. 2017 J. D. Hare, S. V. Lebedev, L. G. Suttle, N. F. Loureiro, A. Ciardi, G. C. Burdiak, J. P. Chittenden, T. Clayson, S. J. Eardley, C. Garcia, J. W. D. Halliday, N. Niasse, T. Robinson, R. A. Smith, N. Stuart, F. Suzuki-Vidal, G. F. Swadling, J. Ma, and J. Wu. "Formation and Structure of a Current Sheet in Pulsed-Power Driven Magnetic Reconnection Experiments". *Physics of Plasmas* 24, p. 102703. DOI: 10.1063/1.4986012.
13. 2017 J. D. Hare, L. Suttle, S. V. Lebedev, N. F. Loureiro, A. Ciardi, G. C. Burdiak, J. P. Chittenden, T. Clayson, C. Garcia, N. Niasse, T. Robinson, R. A. Smith, N. Stuart, G. F. Swadling, J. Ma, J. Wu, and Q. Yang. "Anomalous Heating and Plasmoid Formation in a Driven Magnetic Reconnection Experiment". *Physical Review Letters* 118, p. 085001. DOI: 10.1103/PhysRevLett.118.085001.
12. 2017 G. C. Burdiak, S. V. Lebedev, S. N. Bland, T. Clayson, **J. Hare**, L. Suttle, D. C. Garcia, J. P. Chittenden, A. Frank, and T. S. Lane. "The structure of bow shocks formed by the interaction of pulsed-power driven magnetised plasma flows with conducting obstacles". *Physics of Plasmas* 24, p. 072713. DOI: 10.1063/1.4993187.
11. 2016 L. G. Suttle, J. D. Hare, S. V. Lebedev, G. F. Swadling, G. C. Burdiak, A. Ciardi, J. P. Chittenden, N. F. Loureiro, N. Niasse, F. Suzuki-Vidal, J. Wu, Q. Yang, T. Clayson, A. Frank, T. S. Robinson, R. A. Smith, and N. Stuart. "Structure of a Magnetic Flux Annihilation Layer Formed by the Collision of Supersonic, Magnetized Plasma Flows". *Physical Review Letters* 116, p. 225001. DOI: 10.1103/PhysRevLett.116.225001.
10. 2016 G. F. Swadling, S. V. Lebedev, G. N. Hall, F. Suzuki-Vidal, G. C. Burdiak, L. Pickworth, P. De Grouchy, J. Skidmore, E. Khoory, L. Suttle, M. Bennett, J. D. Hare, T. Clayson, S. N. Bland, R. A. Smith, N. H. Stuart, S. Patankar, T. S. Robinson, A. J. Harvey-Thompson, W. Rozmus, et al. "Experimental investigations of ablation stream interaction dynamics in tungsten wire arrays: Interpenetration, magnetic field advection, and ion deflection". *Physics of Plasmas* 23, p. 056309. DOI: 10.1063/1.4948279.
9. 2016 G. Haerendel, L. Suttle, S. V. Lebedev, G. F. Swadling, J. D. Hare, G. C. Burdiak, S. N. Bland, J. P. Chittenden, N. Kalmoni, A. Frank, R. A. Smith, and F. Suzuki-Vidal. "Stop layer: a flow braking mechanism in space and support from a lab experiment". *Plasma Physics and Controlled Fusion* 58, p. 064001. DOI: 10.1088/0741-3335/58/6/064001.
8. 2015 G. C. Burdiak, S. V. Lebedev, F. Suzuki-Vidal, G. F. Swadling, S. N. Bland, N. Niasse, L. Suttle, M. Bennet, **J. Hare**, M. Weinwurm, R. Rodriguez, J. Gil, and G. Espinosa. "Cylindrical liner Z-pinch experiments for fusion research and high-energy-density physics". *Journal of Plasma Physics* 81, pp. 1–20. DOI: 10.1017/S0022377815000318.

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7. 2015 M. Bennett, S. Lebedev, G. Hall, L. Suttle, G. Burdiak, F. Suzuki-Vidal, **J. Hare**, G. Swadling, S. Patankar, M. Bocchi, J. Chittenden, R. Smith, A. Frank, E. Blackman, R. Drake, and A. Ciardi. "Formation of radiatively cooled, supersonically rotating, plasma flows in Z-pinch experiments: Towards the development of an experimental platform to study accretion disk physics in the laboratory". *High Energy Density Physics* 17, pp. 63–67. DOI: 10.1016/j.hedp.2015.02.001.
6. 2014 G. F. Swadling, S. V. Lebedev, G. N. Hall, S. Patankar, N. H. Stewart, R. A. Smith, A. J. Harvey-Thompson, G. C. Burdiak, P. de Grouchy, J. Skidmore, L. Suttle, F. Suzuki-Vidal, S. N. Bland, K. H. Kwek, L. Pickworth, M. Bennett, J. D. Hare, W. Rozmus, J. Yuan, C. Burdiak, et al. "Diagnosing collisions of magnetized, high energy density plasma flows using a combination of collective Thomson scattering, Faraday rotation, and interferometry". *Review of Scientific Instruments* 85, 11E502. DOI: 10.1063/1.4890564.
5. 2014 S. V. Lebedev, L. Suttle, G. F. Swadling, M. Bennett, S. N. Bland, G. C. Burdiak, A. Ciardi, A. Clemens, P. D. Grouchy, G. N. Hall, J. D. Hare, N. Kalmoni, N. Niasse, S. Patankar, L. Sheng, A. Smith, J. Yuan, A. Frank, E. G. Blackman, and R. P. Drake. "The formation of reverse shocks in magnetized high energy density supersonic plasma flows". *Physics of Plasmas* 21, p. 056305. DOI: 10.1063/1.4874334.
4. 2014 M. J. Bennett, S. V. Lebedev, G. N. Hall, L. Suttle, G. Burdiak, F. Suzuki-Vidal, **J. Hare**, G. Swadling, S. Patankar, M. Bocchi, J. P. Chittenden, R. Smith, A. Frank, E. Blackman, R. P. Drake, and A. Ciardi. "Rotating plasma disks in dense Z-pinch experiments". *AIP Conference Proceedings* 1639, pp. 71–75. DOI: 10.1063/1.4904780.
3. 2013 J. C. Schmitt, T. Abrams, L. R. Baylor, L. Berzak Hopkins, T. Biewer, D. Bohler, D. Boyle, E. Granstedt, T. Gray, **J. Hare**, C. M. Jacobson, M. Jaworski, R. Kaita, T. Kozub, B. LeBlanc, D. P. Lundberg, M. Lucia, R. Maingi, R. Majeski, E. Merino, et al. "Results and future plans of the Lithium Tokamak eXperiment (LTX)". *Journal of Nuclear Materials* 438, S1096–S1099. DOI: 10.1016/j.jnucmat.2013.01.241.
2. 2013 R. Majeski, T. Abrams, D. Boyle, E. Granstedt, **J. Hare**, C. M. Jacobson, R. Kaita, T. Kozub, B. LeBlanc, D. P. Lundberg, M. Lucia, E. Merino, J. Schmitt, D. Stotler, T. M. Biewer, J. M. Canik, T. K. Gray, R. Maingi, A. G. McLean, S. Kubota, et al. "Particle control and plasma performance in the Lithium Tokamak eXperiment". *Physics of Plasmas* 20, p. 056103. DOI: 10.1063/1.4802195.
1. 2011 Y. Alaverdyan, N. Vamivakas, J. Barnes, C. Leboutellier, **J. Hare**, and M. Atatüre. "Spectral tunability of a plasmonic antenna with a dielectric nanocrystal". *Optics Express* 19.19, pp. 18175–18181.