

Dr Joseph Paddison

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| Contact | <i>Office:</i> 2.106 Maxwell Centre, Cavendish Laboratory, Cambridge CB3 0HE, UK <i>Home:</i> Churchill College, Storey's Way, Cambridge CB3 0DS, UK <i>Email:</i> jamp3@cam.ac.uk or paddison@gatech.edu <i>Phone:</i> +44 (0)7756 904108 | |
| Personal | <i>Date of birth:</i> 20 February 1989 <i>Citizenship:</i> British citizen | |
| Employment | Churchill College, University of Cambridge, UK | October 2016 to present |
| | Junior Research Fellow in Physics <ul style="list-style-type: none">Independent fellowship to advance experimental and computational frontiers in the neutron-scattering study of quantum and frustrated materials and Affiliate, School of Physics, Georgia Institute of Technology, USA | |
| | School of Physics, Georgia Institute of Technology, USA | June 2015 to Sept 2016 |
| | Postdoctoral Fellow in Physics <ul style="list-style-type: none">Mentor: Prof Martin Mouri | |
| Education | Department of Chemistry, University of Oxford, UK and STFC-ISIS, Rutherford Appleton Laboratory, UK | October 2011 to June 2015 |
| | DPhil in Inorganic Chemistry <ul style="list-style-type: none">Title: <i>Neutron-Scattering Studies of Frustrated Magnetic Materials</i>Supervisors: Prof Andrew Goodwin and Dr Ross Stewart | |
| | Wadham College, University of Oxford, UK | September 2007 to July 2011 |
| | MChem in Chemistry <ul style="list-style-type: none">Classification: 1st | |
| | Barnard Castle School, UK | September 2001 to May 2007 |
| Publications | <ol style="list-style-type: none">Hierarchy of Exchange Interactions in the Triangular-Lattice Spin-Liquid YbMgGaO₄ X Zhang, F Mahmood, M Daum, Z L Dun, J A M Paddison, N J Laurita, T Hong, H D Zhou, N P Armitage, and M Mouri <i>Phys Rev X</i> 8, 031001 (2018)Magnetic Structure of Paramagnetic MnO J A M Paddison, M J Gutmann, J R Stewart, M G Tucker, M T Dove, D A Keen, and A L Goodwin <i>Phys Rev B</i> 97, 014429 (2018)Low-Dimensional Quantum Magnetism in Cu(NCS)₂: A Molecular Framework Material M J Cliffe, J Lee, J A M Paddison, S Schott, P Mukherjee, M W Gaultois, P Manuel, H Sirringhaus, S E Dutton, and C P Grey <i>Phys Rev B</i> 97 144421 (2018) | |

4. Continuous Excitations of the Triangular-Lattice Quantum Spin Liquid YbMgGaO_4
J A M Paddison, M Daum, Z L Dun, G Ehlers, Y Liu, M B Stone, H D Zhou, and M Mourigal
Nature Physics **13**, 117 (2017) [Web of Science Highly Cited Paper \(Top 1% in its academic field\)](#); [Phys.org](#); [Science Bulletin](#)
5. Orbital Dimer Model for the Spin-Glass State in $\text{Y}_2\text{Mo}_2\text{O}_7$
P M M Thygesen, **J A M Paddison**, R Zhang, K A Beyer, K W Chapman, H Y Playford, M G Tucker, D A Keen, M A Hayward, and A L Goodwin
Phys Rev Lett **118**, 067201 (2017)
6. Spin Order and Dynamics in the Diamond-Lattice Heisenberg Antiferromagnets CuRh_2O_4 and CoRh_2O_4
L Ge, J Flynn, **J A M Paddison**, M B Stone, S Calder, M A Subramanian, A P Ramirez, and M Mourigal
Phys Rev B **96**, 064413 (2017) [Editors' Suggestion](#)
7. Spin Correlations in the Dipolar Pyrochlore Antiferromagnet $\text{Gd}_2\text{Sn}_2\text{O}_7$
J A M Paddison, G Ehlers, O A Petrenko, A R Wildes, J S Gardner, and J R Stewart
J Phys: Condens Matter **29**, 144001 (2017) ["Emerging Leaders" Special Issue](#)
8. Emergent Order in the Kagome Ising Magnet $\text{Dy}_3\text{Mg}_2\text{Sb}_3\text{O}_{14}$
J A M Paddison, H S Ong, J O Hamp, P Mukherjee, X Bai, M G Tucker, N P Butch, C Castelnovo, M Mourigal, and S E Dutton
Nature Communications **7**, 13842 (2016)
9. Encoding Complexity Within Supramolecular Analogues of Frustrated Magnets
A B Cairns, M J Cliffe, **J A M Paddison**, D Daisenberger, M G Tucker, F-X Coudert, and A L Goodwin
Nature Chemistry **8**, 442 (2016) [Nature Chemistry News and Views](#)
10. Hidden Order in Spin-Liquid $\text{Gd}_3\text{Ga}_5\text{O}_{12}$
J A M Paddison, H Jacobsen, O A Petrenko, M T Fernández-Díaz, P P Deen, and A L Goodwin
Science **350**, 179 (2015) [Phys.org](#)
11. Searching Beyond Gd for Magnetocaloric Frameworks: Magnetic Properties and Interactions of the $\text{Ln}(\text{HCO}_2)_3$ Series
P J Saines, **J A M Paddison**, P M M Thygesen, and M G Tucker
Materials Horizons **2**, 528 (2015)
12. Spin Correlations in $\text{Ca}_3\text{Co}_2\text{O}_6$: Polarized-Neutron Diffraction and Monte Carlo Study
J A M Paddison, S Agrestini, M R Lees, C L Fleck, P P Deen, A L Goodwin, J R Stewart, and O A Petrenko
Phys Rev B **90**, 014411 (2014)
13. Liquidlike Correlations in Single-Crystalline $\text{Y}_2\text{Mo}_2\text{O}_7$: An Unconventional Spin Glass
H J Silverstein, K Fritsch, F Flicker, A M Hallas, J S Gardner, Y Qiu, G Ehlers, A T Savici, Z Yamani, K A Ross, B D Gaulin, M J P Gingras, **J A M Paddison**, K Foyevtsova, R Valenti, F Hawthorne, C R Wiebe, and H D Zhou
Phys Rev B **89**, 054433 (2014)
14. Spinvert: A Program for Refinement of Paramagnetic Diffuse Scattering Data
J A M Paddison, J R Stewart, and A L Goodwin
J Phys: Condens Matter **25**, 454220 (2013)
15. Emergent Frustration in Co-doped β -Mn
J A M Paddison, J R Stewart, P Manuel, P Courtois, G J McIntyre, B D Rainford, and A L Goodwin
Phys Rev Lett **110**, 267207 (2013) [STFC-ISIS Highlight](#)
16. Statics and Dynamics of the Highly Correlated Spin Ice $\text{Ho}_2\text{Ge}_2\text{O}_7$
A M Hallas, **J A M Paddison**, H J Silverstein, A L Goodwin, J R Stewart, A R

Wildes, J G Cheng, J S Zhou, J B Goodenough, E S Choi, G Ehlers, J S Gardner, C R Wiebe, and H D Zhou
Phys Rev B **86**, 134431 (2012)

17. Empirical Magnetic Structure Solution of Frustrated Spin Systems
J A M Paddison and A L Goodwin
Phys Rev Lett **108**, 017204 (2012) **Cover of Bluesci magazine**

Preprints

1. Ultrafast Calculation of Diffuse Scattering from Atomistic Models
J A M Paddison
arXiv:1809.07088 (2018)
2. Quantum Spin Fragmentation in Kagome Ice $\text{Ho}_3\text{Mg}_2\text{Sb}_3\text{O}_{14}$
Z L Dun, X Bai, **J A M Paddison**, N P Butch, C D Cruz, M B Stone, T Hong, M Mourigal, H D Zhou
arXiv:1806.04081 (2018)
3. Nature of Partial Magnetic Order in the Frustrated Antiferromagnet $\text{Gd}_2\text{Ti}_2\text{O}_7$
J A M Paddison, A B Cairns, D D Khalyavin, P Manuel, A Daoud-Aladine, G Ehlers, O A Petrenko, J S Gardner, H D Zhou, A L Goodwin, and J R Stewart
arxiv:1506.05045 (2015)

Software authored

- Spinvert: A Program for Refinement of Paramagnetic Diffuse Scattering Data
- Available at <http://spinvert.chem.ox.ac.uk>

Seminars given

- Institut Laue-Langevin and European Spallation Source User Meeting, Grenoble, France, 10 Oct 2018 **Invited speaker**
- IoP Magnetism–TCM Joint Symposium, Abingdon, UK, 25 July 2018 **Invited speaker**
- High Field Magnet Laboratory, University of Nijmegen, Netherlands, 12 April 2018 **Invited speaker**
- APS March Meeting, Los Angeles CA, USA, 5–9 March 2018 (also 2017 and 2016)
- Centre for Science at Extreme Conditions, University of Edinburgh, UK, 15 Feb 2018 **Invited speaker**
- Solid-State Seminar, Department of Chemistry, University of Oxford, UK, 12 Jan 2018 **Invited speaker**
- School of Physics and Astronomy, Queen Mary University of London, UK, 21 Nov 2017 **Invited speaker**
- ISIS/Diamond Seminar, Rutherford Appleton Laboratory, Didcot, UK, 25 Oct 2017 **Invited speaker**
- Triennial Congress of the International Union of Crystallography, Hyderabad, India, 21–28 Aug 2017 **Invited speaker**
- S N Bose National Centre for Basic Sciences, Kolkata, India, 18 Aug 2017 **Invited speaker**
- Theoretical and Experimental Magnetism Meeting, Abingdon, UK, 5–6 July 2017 (also 2013 and 2012) **Invited speaker**
- Highly Frustrated Magnetism 2016, Taipei, Taiwan, 7–11 Sept 2016
- Reverse Monte Carlo Workshop, Oak Ridge National Laboratory, USA, 10–12 Feb 2016 **Invited speaker**
- European Powder Diffraction Conference, Aarhus, Denmark, 15–18 June 2014
- European Crystallographic Meeting, Warwick, UK, 25–29 Aug 2013
- Flipper 2013: Single-Crystal Diffraction with Polarised Neutrons, Grenoble, France, 23–25 Jan 2013

Awards

- (2017) European Physical Society Early Career Prize
- (2016) Highly Frustrated Magnetism Conference poster prize
- (2014) STFC-ISIS (UK) student presentation prize
- (2012) Institute of Physics (UK) poster prize
- (2011) Inorganic Chemistry Part II thesis prize, University of Oxford, UK

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| Teaching | <ul style="list-style-type: none"> • (July 2018) Lectured at Summer School “Polarised Neutrons for Condensed-Matter Investigations”, Rutherford Appleton Laboratory, UK • (2017–2018) Small-group teaching of “Electrons in Solids” Chemistry course to 2nd-year undergraduates • (Sept 2016) Lectured at Summer School “Highly Frustrated Magnetism”, Taipei, Taiwan • (July 2015–Sept 2016) Involved in mentoring 3 graduate students as postdoc at Georgia Tech • (Oct 2016–present) Involved in mentoring 2 graduate students as JRF at Cambridge |
| Funding | <ul style="list-style-type: none"> • (Jan 2017–present) Awarded 61 days of experimental time at central facilities, including 11 days of beam-time in 2017 at the ISIS Neutron Source with a value of £209,880 • (Feb 2018) Funded as academic lead supervisor for student placement at Institut Laue-Langevin, Grenoble, France |
| Professional activities | <ul style="list-style-type: none"> • (2018–present) Member, MLZ Review Panel • (2017–present) Member, STFC-ISIS Facility Access Panel • (2017–present) Member, European Physical Society • (2017–present) Referee, <i>Physical Review Letters</i> • (2017–present) Referee, <i>Acta Crystallographica Section A</i> • (2016–present) Member, American Physical Society • (2016–present) Referee, US D.O.E. Office of Basic Energy Sciences • (2015–present) Referee, <i>Annalen der Physik</i> • (2014–present) Referee, <i>Physical Review B</i> |