

Curriculum Vitæ — Jock McOrist

Address: School of Science and Technology
University of New England

Email: jmcorist@une.edu.au

Phone: +61 2 6773 3142

Education and Positions

2020 - current	Lecturer	School of Science & Technology, University of New England, Australia
2012 - 2019	Senior Lecturer	Department of Mathematics, University of Surrey, UK
2009 - 2012	EPSRC* Postdoctoral Fellow	Department of Applied Mathematics and Theoretical Physics University of Cambridge, UK
2004 - 2009	Ph.D.	University of Chicago, USA
2004 - 2006	M.S.	University of Chicago, USA by coursework
2004 - 2006	M.Sc.	University of Sydney, Australia by research, relativistic astrophysics
2000 - 2003	B.Sc. (Hons)	University of Sydney, Australia First class honours and University Medal Majors in mathematics and physics

* Engineering and Physical Sciences Research Council

Selected Awards and Research Fellowships

2014 - 18	PI STFC** Consolidated Grant	Univ. of Surrey	Grant (£271,118)
2014	Clay Mathematics Institute	Univ. of Oxford	Workshop grant (£30,000)
2009 - 12	EPSRC Postdoctoral Fellowship	Univ. of Cambridge	Fellowship (£193,526)
2005 - 09	Ledley Fellow	Univ. of Chicago	Fellowship (\simeq \$180,000)
2004 - 09	Australian Fulbright Fellow	Univ. of Chicago	Fellowship (\$45,000) Ranked first in NSW, Australia
2005 - 08	J.B. Watt Travelling Scholarship	Univ. of Sydney	Fellowship (\$46,500) Funding for study outside Australia
2009	Sugarman Research Award	Univ. of Chicago	Prize. Excellence in research (\$2000)
2004	1st class honours and University medal	Univ. of Sydney	2nd in Faculty of Science. Overall mark of 99/100
2004	A.E. and F.A.Q. Stephens Fellowship	Univ. of Sydney	Fellowship (\$25,000). Highest ranked applicant for postgraduate study
2003	Deas-Thompson Scholarship	Univ. of Sydney	Top ranked honours physics student
2000 - 03	Vacation Scholarship	Univ. of Sydney	Awarded each year to undertake research in physics and mathematics
2001 - 03	Cadbury-Julius Sumner Miller	Univ. of Sydney	Highest ranked physics student each year 2001,2002,2003
2000	Nobert Quirk Prize	Univ. of Sydney	Best mathematics essay by 1st year undergraduate

** Science and Technology Funding Council

Teaching Experience

2020 - present	PMTH333/433, <i>Complex Analysis</i> University of New England
2015 - 2019	MATM035*, <i>Representation Theory</i> University of Surrey
2012 - 2018	MAT1036*, <i>Classical Dynamics</i> , University of Surrey
2014 - 2015	MAT3017, <i>Mathematics Education</i> , University of Surrey
2012	Senior Examiner, Natural Science Tripos IA, Cambridge
2011 - 2012	Undergraduate supervisor, DAMTP, Cambridge
2010	<i>Sigma Models and Mirror Symmetry*</i> , Cambridge
2010	Undergraduate supervisor, Trinity Hall, Cambridge
2004 - 2009	Teaching and Course Assistant. Supervised graduate and undergraduate courses Department of Physics, University of Chicago.
2003 - 2004	Undergraduate tutor in mathematics and physics, Wesley College, University of Sydney.
2002 & 2004	Undergraduate tutor in physics, School of Physics, University of Sydney.
2003	Tutor at National Mathematics Summer School, Australian National University, a mathematics summer school for elite high school students.

* indicates developed and designed course including lecture notes, seminar problem sheets, assignments and examinable material.

Keynote and Plenary Talks

1. *String theory, Geometry and String Model Building*, Mainz Institute for Theoretical Physics, 2018
2. *String theory and Geometry*, Indian Institute for Science, Bangalore 2017
3. *Fluids and Geometry*, Clay Mathematics Institute, Oxford, 2014.
4. *String–Math*, University of Bonn, 2012
5. *Mathematics and Applications of Branes in String theory*, Isaac Newton Institute, Cambridge, 2012,
6. *Generalised Geometries and String Theory*, Banff International Research Stations, 2012
7. *Topological Heterotic Strings and (0,2) Mirror Symmetry'*, Erwin Shrodinger Institute, Vienna, 2011;
8. *(0,2) Mirror Symmetry and Heterotic Gromov-Witten Invariants*, Banff International Research Station, 2010;
9. *(0,2) Mirror Symmetry and Quantum Sheaf Cohomology*, AEI, Potsdam, 2009
10. *String Phenomenology*, University of Pennsylvania, 2008

Research seminars at the institutions including:

University of Oxford; University of Cambridge; University of Liverpool; VUB, Leuven; University of Rome; Kings College London; Durham University; University of Edinburgh; C.E.A. Saclay, Paris; U.V. Amsterdam; Galileo Galilee Institute, Florence; Scuola Normale Superiore, Pisa; Max Planck Institutes in Potsdam and Munich; Stony Brook University; University of Chicago; University of California, Santa Barbara; Rutgers University; University of Pennsylvania; University of Wisconsin.

Administrative and Outreach Activities

2020 - present	Academic board member, Teaching & Learning Committee, UNE
2020 - present	Co-founder and organiser of the Australian & NZ Geometry, Strings and Fields Monthly Seminar series. http://turing.une.edu.au/~jmcorist/anzgsf.html
2020 - present	Deputy HDR Coordinator, School of Science & Technology, UNE
2020 - present	Mathematics Seminar Organiser, School of Science & Technology, UNE
2020	Organising committee, Australian Mathematical Society Annual conference 2020
2017 - 2019	Admissions co-tutor, University of Surrey
2012 - 2017	Schools Liaison Officer and Outreach Officer Department of Mathematics, University of Surrey
2014 - present	Pint of Science, outreach activity held annually

2016	Appearance in Left foot first science comedy podcast
2013 - 2015	Bright Club, science stand-up comedy in Edinburgh Fringe Festival and Guildford, UK
2014	Organising committee Clay Mathematics Institute conference 'Fluids and Geometry'
2013	Organising committee String-Math UK
2010 - 2011	Organiser HEP-GR DAMTP Colloquia
2007 - 2009	Secretary for Australian Fulbright Alumni Association US Midwest Chapter

List of Papers

Articles 1-19 are in the field of mathematical physics with authors listed alphabetically.

1. *Small gauge transformations and universal geometry in heterotic theories*
J. McOrist and R. Sisca, accepted and in press SIGMA , [arXiv:1904.07578](#)
2. *Universal Geometry of Heterotic Moduli*
P. Candelas, X de la Ossa, J. McOrist, R. Sisca, JHEP **1902** (2019) 038 [arXiv:1810.00879](#)
3. *On the Effective Field Theory of Heterotic Vacua,*
J. McOrist, Lett. Math. Phys. **108** (2018) no.4, 1031-1081, [arXiv:1606.05221](#)
4. *A Metric for Heterotic Moduli,*
P. Candelas, X de la Ossa, J. McOrist, Commun. Math. Phys. **356** (2017) no.2, 567-612, [arXiv:1605.05256](#)
5. *Global symmetries and $\mathcal{N} = 2$ SUSY*
Lett. Math. Phys. **107** (2017) no.8, 1545-1556, DOI 10.1007/s11005-017-0952-0, [arXiv:1312.3506](#)
6. *New Examples of Flux Vacua,*
T. Maxfield, J. McOrist, D. Robbins and S. Sethi, JHEP **1312** (2013) 032, [arXiv:1309.2577](#)
7. *M-theory and type IIA Flux Compactifications,*
J. McOrist and S. Sethi, JHEP **1212** (2012) 122, [arXiv:1208.0261](#)
8. *Monopole-Instantons in M2-brane Theories,*
J. McOrist and E. Martinec, JHEP **1306** (2013) 082, [arXiv:1112.4073](#)
9. *T-dualising the Deformed and Resolved Conifold,*
J. McOrist and A. B. Royston, Class. and Quant.Grav. **29** (2012) 055014. [arXiv:1107.5895](#)
10. *Old Issues and Linear Sigma Models,*
J. McOrist and I. Melnikov, Adv. Theor. Math. Phys. **16** (2012) 251-288, [arXiv:1103.1322](#)
11. *Relating Conifold Geometries to NS5-branes,*
J. McOrist and A. B. Royston, Nucl. Phys. **B849** (2011) 573-609 [arXiv:1101.3552](#)
12. *The Revival of (0,2) Linear Sigma Models,*
J. McOrist, Int. J. Mod. Phys. **A26** (2011), 1-41 [arXiv:1010.4667](#)
13. *Geometries, Non-Geometries and Fluxes,*
J. McOrist, D. R. Morrison and S. Sethi, Adv. Theor. Math. Phys., **14**, (2010), 1515. [arXiv:1004.5447](#)
14. *(0,2) Deformations of Linear Sigma Models,*
M. Kreuzer, J. McOrist, I. Melnikov, R. Plesser, JHEP **1107** (2011) 044, [arXiv:1001.2104](#)
15. *Dynamical Vacuum Selection in String Theory,*
D. Kutasov, O. Lunin, J. McOrist, A. B. Royston, Nucl. Phys. **B833**:64-95 (2010) [arXiv:0909.3319](#)
16. *D-term Supersymmetry Breaking,*
D. Kutasov, A. Giveon, J. McOrist, A. B. Royston, Nucl. Phys. **B822**:106-126 (2009) [arXiv:0904.0459](#)
17. *Summing the Instantons in Half-Twisted Linear Sigma Models,*
J. McOrist and I. Melnikov, JHEP **0902**:026 (2009) [arXiv:0810.0012](#)
18. *Type IIB Flux Compactifications via the String Worldsheet,*
W. D. Linch III, J. McOrist and B. C. Vallilo, JHEP **0809**:042 (2008) [arXiv:0804.0613](#)
19. *Half-Twisted Correlators from the Coulomb Branch,*
J. McOrist and I. V. Melnikov, JHEP **0804**:071 (2008) [arXiv:0712.3272](#)
20. *Dispersion in a relativistic degenerate electron gas,*

- J. McOrist, D. B. Melrose, and J. I. Weise, *Journal of Plasma Physics* **73**:04 495-513 (2007).
[arXiv:physics/0603227](https://arxiv.org/abs/physics/0603227)
21. *Relativistic quantum plasma dispersion functions*,
D. B. Melrose, J. I. Weise, and J. McOrist, *Journal of Phys. A: Mathematical and General*, **39**:27,
8727-8740 (2006). [arXiv:physics/0603223](https://arxiv.org/abs/physics/0603223)
22. *Density of states functions for photonic crystals*,
R.C. McPhedran, L.C. Botten, J. McOrist, A.A. Asatryan, C.M. de Sterke, and N.A. Nicorovici, *Phys. Rev. E*, **69**, 016609
23. *Hyperresolving phase-only filters with an optically-addressable liquid crystal spatial light modulator*,
J. McOrist, M.D. Sharma, CJR Sheppard and K. Matsuda, *Micron* **34**, 327-334 (2003)

References

1. Professor Philip Candelas FRS
Rouse Ball Professor of Mathematics
Mathematical Institute
University of Oxford
candelas@maths.ox.ac.uk
2. Professor Savdeep Sethi
Enrico Fermi Institute
University of Chicago
sethi@uchicago.edu
3. Professor Xenia de la Ossa
Mathematical Institute
University of Oxford
delaossa@maths.ox.ac.uk