Curriculum Vitae

Andrea Helen Prinsloo

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Academic Career

Oct 2015 – present: Teaching Fellow A in Mathematics at the University of Surrey.

Oct 2015 – present: Associate Lecturer at the Open University of the UK.

Oct 2012 – Sep 2015: Research Fellow in String Theory at the University of Surrey.

Jul 2010 – Jun 2012: NRF Innovation Postdoctoral Fellow at the National Institute for Theoretical Physics (NITheP) of South Africa and the University of Cape Town.

Jan 2010 – Jun 2012: Temporary Assistant Lecturer in Mathematics and Applied Mathematics at the University of Cape Town.

Jan 2007 – Dec 2009: Tutor in Mathematics and Applied Mathematics at the University of Cape Town

Memberships

Fellow of the UK Higher Education Academy (HEA) since Sep 2016.

Member of the London Mathematical Society (LMS) since Feb 2015.

Member of the Board of Examiners and the Board of Studies in the Department of Mathematics at the University of Surrey since 2014.

Education

Ph.D. in Applied Mathematics, University of Cape Town. Supervisor: Prof Jeff Murugan. Thesis entitled *Applications of the gauge theory/gravity correspondence* (4 Jun 2010).

M.Sc. with distinction in Physics, University of the Witwatersrand. Supervisor: Prof Robert de Mello Koch. Dissertation entitled *AdS/CFT correspondence in a non-supersymmetric γ_i-deformed background* (27 Jun 2007).

B.Sc.(Hons) with distinction in Theoretical Physics, University of Cape Town (7 Dec 2004). `Final result: 96%.`

B.Sc. with three majors in Applied Mathematics, Mathematics and Physics, all with distinction. University of Cape Town (10 Dec 2003). `Final year results: Applied Mathematics III: 96%; Mathematics III: 87%; Advanced Physics I and II: 86% and 95%.`

Fellowships and Awards

NRF Innovation Postdoctoral Fellowship (Jul 2010 – Jun 2012).

NRF Doctoral Scarce Skills Scholarship (Jan 2007 – Dec 2009).

KW Johnstone Scholarship (2007 and 2008).

Class Medal: Theoretical Physics (2004).

NRF Free-standing Scholarship (2004).

Hyman Lieberman Scholarship for the highest overall B.Sc. results (2003).

Class Medals: Advanced Physics I and II; Applied Mathematics III (2003).

Ivor Lewin Scholarship for outstanding undergraduate Physics results (2002 and 2003).

Class Medals: Electromagnetism; Classical and Quantum Mechanics; Applied Mathematics II (2002).

Dean's Merit List (2001, 2002 and 2003).

Class Medal: Dynamics (2001).

Entrance Scholarship to the University of Cape Town (2001 – 2003).

Teaching Experience

In the Department of Mathematics at the University of Surrey

Module coordinator of the following modules:

- *Advanced Techniques in Mathematics* (level 7) in semester 1 of 2017/18 and 2016/17.
- *Functions of a Complex Variable* (level 6) in semester 1 of 2017/18, and semester 2 of 2016/17, 2015/16 and 2014/15.
- *Groups and Rings* (level 5) in semester 1 of 2017/18 and 2016/17.
- *Mathematical Statistics* (level 5) in semester 2 of 2016/17.

Joint module coordinator of the module:

- *Mathematics Education* (level 6) in semester 2 of 2015/16.

Ran year 1 seminars for the following modules:

- *Probability and Statistics* (level 4) in semester 2 of 2016/17.
- *Classical Dynamics* (level 4) in semester 2 of 2015/16 and 2014/15.
- *Calculus* (level 4) in semester 1 of 2015/16.
- *Algebra* (level 4) in semester 1 of 2014/15.

Ran year 1 MATLAB laboratory sessions for the module:

- *Transferable Skills* (level 4) in semester 2 of 2015/16.

At the Open University of the UK

Tutor (primarily by correspondence) the following full-year module:

- *Mathematical Methods and Fluid Mechanics* (level 6) in 2015/16, 2016/17 and 2017/18.

In the Department of Mathematics and Applied Mathematics at the University of Cape Town

Lectured the following full-year course:

- *Mathematics I for Engineering students* (level 4), which covered Functions and Continuity, Differential and Integral Calculus, Ordinary Differential Equations, Complex Numbers, and Vectors and Matrices) in 2010, 2011 and semester 1 of 2012.

Ran tutorials, and assisted with marking and invigilation, for the following courses while a PhD student:

- *String Theory* (level 7) for Applied Mathematics honours students in semester 1 of 2009.
- *Mathematics II* (level 5) for Engineering students in 2007, 2008 and 2009.

Pastoral Care Experience

In the Department of Mathematics at the University of Surrey

Personal tutor of Mathematics undergraduate students
(7 students in 2014/15, 12 students in 2015/16 and 2016/17, and 10 students in 2017/18).

Professional training year (PTY) tutor of Mathematics (placement year) students
(3 students in 2016/17 and 2 students in 2017/18).

Supervision Experience

Co-supervisor of the MMath project of Mr S. Nash entitled *An Introduction to Classical Integrability* in the Department of Mathematics at the University of Surrey in 2016/17.

Examining Experience

Internal Examiner of the B.Sc. project of Ms R. Bensen entitled *General Relativity and Celestial Dynamics* in the Department of Mathematcs at the University of Surrey (Jun 2017).

Internal Examiner of the M.Sc. project of Mr B. Pooley entitled *Self-Dual Manifolds* in the Department of Mathematics at the University of Surrey (Sep 2016).

Internal Examiner of the M.Sc. dissertation of Mr A. Misra entitled *Towards a Holographic Description of Pulsar Glitch Mechanism* in the Department of Mathematics and Applied Mathematics at the University of Cape Town (Mar 2012, re-examined in Nov 2014).

External Examiner of the M.Sc. dissertation of Ms K. Jefferies entitled *The Dynamics of Two Interacting Giant Gravitons* in the Department of Physics at the University of the Witwatersrand (Jan 2011).

Organisational Experience

In the Department of Mathematics at the University of Surrey

Co-organiser of the 11^{th} meeting of the South East Mathematical Physics Seminars (SEMPS), funded by the London Mathematical Society, to be held at the University of Surrey on 28 Mar 2018.

Organiser of the Fields, Strings and Geometry Group Seminars since Oct 2012.

Organiser of the Amazing Maths Seminars for undergraduate students in 2015/16 and 2017/18.

Co-organiser of the 5th meeting of the South East Mathematical Physics Seminars (SEMPS), funded by the London Mathematical Society, at the University of Surrey on 6 Nov 2015.

Liaison from the Department of Mathematics on the Physics Researcher Forum Committee in 2014/15.

At the University of Cape Town

Organiser of the *Special Topics in Theoretical Physics Seminar Series* at the University of Cape Town from 2010 to 2012.

At the National Institute for Theoretical Physics in Stellenbosch

Co-organiser of the *Applications of the Gauge/Gravity Duality Workshop* at the Stellenbosch Institute for Advanced Study (STIAS) from 8-12 Dec 2008.

Research Interests

I have been a member of the Fields, Strings and Geometry Group in the Department of Mathematics at the University of Surrey since Oct 2012. My research is primarily in the area of mathematical physics. My current research interests include:

- dualities between superstring and gauge theories, such as AdS/CFT correspondences;
- integrable systems, and underlying quantum group symmetries and algebraic structures;
- supersymmetric D and M-brane giant gravitons in superstring theory and M-theory.

Publications

My publications, with the authors in alphabetical order (please see SPIRES for the preprints):

[1] A. Prinsloo, V. Regelskis, A. Torrielli, *Integrable open spin-chains in AdS_3/CFT_2 correspondences*, Phys. Rev. **D 92** (2015) 106006 [arXiv:1505.06767].

[2] A. Prinsloo, *D1 and D5-brane giant gravitons on $AdS_3 \times S^3 \times S^3 \times S^1$*, J. High Energy Phys. **12** (2014) 094 [arXiv:1406.6134].

[3] M. Abbott, J. Murugan, A. Prinsloo, N. Rughoonauth, *Meromorphic functions and the topology of giant gravitons*, Phys. Lett. **B 730** (2014) 215 [arXiv:1312.4900].

[4] Y. Lozano, J. Murugan, A. Prinsloo, *A giant graviton genealogy*, J. High Energy Phys. **08** (2013) 109 [arXiv:1305.6932].

[5] Y. Lozano, A. Prinsloo, *$S^2 \times S^3$ geometries in ABJM and giant gravitons*, J. High Energy Phys. **04** (2013) 148 [arXiv:1303.3748].

[6] R. de Mello Koch, B.A.E. Mohammed, J. Murugan, A. Prinsloo, *Beyond the Planar Limit in ABJM*, J. High Energy Phys. **05** (2012) 037 [arXiv:1202.4925].

[7] D. Giovannoni, J. Murugan, A. Prinsloo, *The giant graviton on $AdS_4 \times \mathbf{CP}^3$ - another step towards the emergence of geometry*, J. High Energy Phys. **12** (2011) 003 [arXiv:1108.3084].

[8] J. Murugan, A. Prinsloo, *ABJM dibaryon spectroscopy*, J. High Energy Phys. **05** (2011) 129 [arXiv:1103.1163].

[9] A. Hamilton, J. Murugan, A. Prinsloo, *Lessons from giant gravitons on $AdS_5 \times T^{1,1}$*, J. High Energy Phys. **06** (2010) 017 [arXiv:1001.2306].

[10] A. Hamilton, J. Murugan, A. Prinsloo, M. Strydom, *A note on dual giant gravitons on $AdS_4 \times \mathbf{CP}^3$*, J. High Energy Phys. **04** (2009) 132 [arXiv:0901.0009].

[11] A. Hamilton, J. Murugan, A. Prinsloo, *A note on the universality of the Hagedorn behavior of pp-wave strings*, J. High Energy Phys. **02** (2008) 108 [arXiv:0712.3059].

[12] A. Prinsloo, *γ_i-deformed Lax pair for rotating strings in the fast motion limit*, J. High Energy Phys. **01** (2006) 050 [arXiv:hep-th/0510095].

[13] C. Koen, L.A. Balona, K. Khadaroo, I. Lane, A.Prinsloo, B. Smith, C.D. Laney *Pulsations in β Pictoris*, Monthly Notices of the Royal Astronomical Society **344** (2003) 1250.

Talks

Recent Invited Group Research Seminars

Integrable Boundary Scattering in AdS_3/CFT_2, Mathematical Physics Seminar, Unversity of Cambridge (31 Jan 2017).

Integrable Boundary Scattering in AdS_3/CFT_2 Correspondences, Mathematical Physics Seminar, University of York (5 May 2016).

Giant Gravitons in an AdS_3/CFT_2 Correspondence, Maths HEP Lunchtime Seminar, Durham Unversity (17 Oct 2014).

The Topology of Giant Gravitons from Meromorphic Functions, City University London (28 Jan 2014) and Queen Mary College, University of London (3 Apr 2014).

Non-spherical Giant Gravitons and Schur Polynomial Operators, High Energy Physics Theory Group, Oviedo University (12 Dec 2012).

Membranes and the Emergence of Geometry in MSYM and ABJM, Fields, Strings and Geometry Group, Mathematics Department, University of Surrey (30 Oct 2012).

Recent Conference Talks

Giant Gravitons on $AdS_3 \times S^3 \times S^3 \times S^1$, Permutations and Gauge-String Duality 2014 Workshop, Queen Mary College, University of London (21-25 Jul 2014).

The Topology of Giant Gravitons, South East Mathematical Physics Seminar Series (SEMPS), University of Kent (2 Apr 2014).

M5-brane Giant Gravitons in $S^7/\mathbb{Z}_k$ from Holomorphic Surfaces, String-Math UK Conference, University of Surrey (11 May 2013).

Recent Poster Presentation

Integrable open spin-chains in AdS_3/CFT_2, Young Researchers Integrability School (YRIS), Durham University (6-10 Jul 2015); and Integrability in Gauge and String Theory (IGST) Conference, King's College, University of London (13-17 Jul 2015).

Outreach

STEM Ambassador with the Science, Technology, Engineering and Mathematics Network (STEMNET) in the UK since 8 Sep 2015.

Marked submissions to the Maths Challenge at the University of Surrey (6 Mar 2013).

Volunteer on the Free High School Science Texts (FHSST) Project in South Africa.

References

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