

## ALESSANDRO TORRIELLI

### Personal data

Dr Alessandro Torrielli, Italian

Born March 30, 1975

*Address:* Mathematics Department, University of Surrey, Guildford, GU2 7XH, UK

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### Education and career

As of 01/08/2018

Reader in Mathematics, Surrey

- |           |   |
|-----------|---|
| 2017      | Abilitation to Full Professor ( <i>Professore di Prima Fascia</i> ) according to Italian <i>Abilitazione Scientifica Nazionale</i> - Scientific Area FIS-02 |
| 2016-2018 | Senior Lecturer in Mathematics, Surrey  |
| 2011-2016 | Lecturer in Mathematics, University of Surrey, UK   |
| 2010-2011 | Post-doc at the Maths Dept of the University of York, UK (EPSRC grant of Dr N. MacKay and Prof E. Sklyanin)   |
| 2008-2010 | Post-doc at the Institute for Theoretical Physics and Spinoza Institute Utrecht University, The Netherlands   |
| 2006-2008 | <i>Bruno Rossi</i> INFN-MIT post-doctoral fellow at the Massachusetts Institute of Technology, USA  |
| 2004-2006 | Post-doc at the Humboldt University (HU Berlin)   |
| 2003-2004 | Post-doc at the University of Padua and fellow of the Italian Institute for Nuclear Physics (INFN)  |
| 2002-2003 | Four months of scientific collaboration with Padua  |
| 2003      | PhD dissertation (Physics), Padua, Italy [17 Feb]   |
| 1999      | <i>Laurea 110/110 cum laude</i> (Physics), Univ. of Genoa, Italy [13 Oct]   |
| 1994      | <i>Maturità 60/60, Liceo Classico "Parodi"</i> , Acqui Terme, Italy   |

### Teaching Experience

- Designed and taught a fourth-year **Quantum Field Theory** course: **5/5 student feedback** (maximum in every single entry) in its first year (of 2) of running
- Designed and taught for 7 years a third-year **Quantum Mechanics** course: **single highest student rating for semester 1 2012 Surrey-Maths modules** and **4.9/5 student feedback** (lecturer's section) in 2015/16

[students' feedback at the end →]

- Teaching assistant, **Differential Equations** for Mathematicians, York, 2011
- Teaching assistant, **Vector Calculus II**, York, 2011  
[students' feedback at the end →]
- Teaching assistant, **Vector Calculus I**, York, 2010  
[students' feedback at the end →]
- Teaching assistant, **Physics** for 1st year Molecular Biologists, Padua, 2003

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- External Examiner of PhD *viva* (Mr J. Felix, King's Coll. - superv. Dr N. Drukker)
  - Supervised 2 Masters projects and co-supervised 1; supervised 2 BSc projects
  - Supervised 1 and co-supervised 1 *Nuffield Research Placement* projects
  - Two 1-hour *Amazing Maths* seminars for first- & second-year students, Surrey, 2014 and 2017
  - Obtained Surrey *Graduate Certificate in Learning and Teaching* (GCLT)
  - Co-supervisor (with Dr M. Wolf) of Antonio Pittelli and Joakim Strömwall, PhD students, Surrey
  - I closely followed the preparation of the following theses:
    - *Marius de Leeuw*  
(PhD, Utrecht, 2010, advisor Prof Dr B. de Wit, co-advisor Prof Dr G. Arutyunov).  
*Cum laude* honors (awarded only to outstanding work). First post-doc at AEI, Golm
    - *Fabian Spill*  
(Master, HU Berlin, 2007, advisor Prof Dr J. Plefka).  
Thesis awarded with the *Humboldt price*, HU Berlin, 2007. PhD at Imperial College.
    - *Roberto Valandro*  
(Master, Padua, 2003, advisor Prof A. Bassetto). PhD at SISSA, Trieste.

## Reference Letters

I write reference letters for:

*Mr Manpreet Heer* [Surrey] → Cambridge Part III  
*Mr Ben Jones* [Surrey] → Cambridge Part III  
*Mr Tom Adams* [Surrey] → Master at Columbia  
*Miss Joanna Zanker* [Surrey] → Master at Manchester  
*Mr Andrew Rolph* [Cambridge graduate - collaborator] → PhD at Brandeis

*Mr Michael Foskett* [Surrey] → PhD at Surrey  
*Mr Chris Pattison* [Surrey] → PhD at Portsmouth  
*Mr Wookyung Kim* [Surrey]

*Dr Spill* [see above]  
*Dr Vidas Regelskis* [Surrey] 2011 K. M. Stott Memorial Prize for PhD at York  
*Dr Alessio Camobreco* [Parma and Surrey]  
*Dr de Leeuw* [see above]  
*Dr Fabrizio Nieri* [Surrey] → post-doc at Uppsala  
*Dr Andrea Prinsloo* [Surrey] → Surrey Teaching Fellow  
*Dr Georgios Itsios* [Santiago] → post-doc at Oviedo  
*Dr Konstantinos Siampos* [Bern] → fellow at CERN  
*Dr Paul Skerritt* [Surrey] → Surrey Teaching Fellow  
*Dr Michael Abbott* [Cape Town] → Wigner Fellow in Budapest  
*Dr Antonio Pittelli* [Surrey] → post-doc at Uppsala  
*Mr Sylvain Lacroix* [ENS-Lyon and Hertfordshire]  
*Mr Reimar Hecht* [ETH Zürich]  
*Mr Andrea Fontanella* [Surrey]

*Prof Sanefumi Moriyama* [Nagoya] → professor at Osaka  
*Prof George Jorjadze* [Tbilisi State University] → Fulbright Scholarship]

## List of Publications

## Regular Articles

1. A. Bassetto, G. Nardelli and A. Torrielli, “*Perturbative Wilson loop in two-dimensional non-commutative Yang-Mills theory*” Nucl. Phys. B 617 (2001) 308
2. A. Bassetto, G. Nardelli and A. Torrielli, “*Scaling properties of the perturbative Wilson loop in two-dimensional non-commutative Yang-Mills theory*” Phys. Rev. D 66 (2002) 085012
3. A. Torrielli, “*Cutting rules and perturbative unitarity of noncommutative electric-type field theories from string theory*” Phys. Rev. D 67 (2003) 086010
4. H. Dorn and A. Torrielli, “*Loop equation in two-dimensional noncommutative Yang-Mills theory*” JHEP 0401 (2004) 026
5. A. Bassetto, A. Torrielli and R. Valandro, “*One-loop unitarity of string theories in a constant external background and their Seiberg-Witten limit*” JHEP 0401 (2004) 040
6. L. Fortunato and A. Torrielli, “*Theory of light emission in sonoluminescence based upon transitions in confined atoms*” Eur. Phys. J. D 33, 315-322 (2005).  
[Featured in the Italian Wikipedia: <http://it.wikipedia.org/wiki/Sonoluminescenza>]
7. A. Bassetto, G. De Pol, A. Torrielli and F. Vian, “*On the invariance under area preserving diffeomorphisms of noncommutative Yang-Mills theory in two dimensions*” JHEP 0505 (2005) 061
8. C. Sieg and A. Torrielli, “*Wrapping interactions and the genus expansion of the 2-point function of composite operators*” Nucl. Phys. B 723 (2005) 3

9. H. Dorn, M. Salizzoni and A. Torrielli, “*D-branes in overcritical electric fields*” Phys. Rev. D 73 (2006) 026006
10. M. Salizzoni, A. Torrielli and H. S. Yang, “*ALE spaces from noncommutative  $U(1)$  instantons via exact Seiberg-Witten map*” Phys. Lett. B 634 (2006) 427-433
11. J. Plefka, F. Spill and A. Torrielli, “*On the Hopf algebra structure of the AdS/CFT S-matrix*” Phys. Rev. D 74 (2006) 066008
12. A. Torrielli, “*Classical  $r$ -matrix of the  $su(2|2)$  SYM spin-chain*” Phys. Rev. D 75 (2007) 105020
13. S. de Haro, S. Ramgoolam and A. Torrielli, “*Large  $N$  expansion of  $q$ -deformed two-dimensional Yang-Mills theory and Hecke algebras*” Commun. Math. Phys. 273 (2007) 317
14. S. Moriyama and A. Torrielli, “*A Yangian double for the AdS/CFT classical  $r$ -matrix*” JHEP 0706 (2007) 083
15. W. Bietenholz, A. Bigarini and A. Torrielli, “*Area-preserving diffeomorphisms in gauge theory on a non-commutative plane: a lattice study*” JHEP 08 (2007) 041
16. T. Matsumoto, S. Moriyama and A. Torrielli, “*A Secret Symmetry of the AdS/CFT S-matrix*” JHEP 0709 (2007) 099
17. I. Heckenberger, F. Spill, A. Torrielli and H. Yamane, “*Drinfeld second realization of the quantum affine superalgebras of  $D^{(1)}(2, 1; x)$  via the Weyl groupoid*” RIMS Kokyuroku Bessatsu B8 (2008) 171
18. A. Torrielli, “*Structure of the string  $R$ -matrix*” J. Phys. A 42 (2009) 055204
19. F. Spill and A. Torrielli, “*On Drinfeld’s second realization of the AdS/CFT  $su(2|2)$  Yangian*” J. Geom. Phys. 59 (2009) 489
20. G. Arutyunov, M. de Leeuw and A. Torrielli, “*The Bound State S-Matrix for AdS5 x S5 Superstring*” Nucl. Phys. B 819 (2009) 319
21. G. Arutyunov, M. de Leeuw and A. Torrielli, “*Universal blocks of the AdS/CFT Scattering Matrix*” JHEP 0905 (2009) 086
22. G. Arutyunov, M. de Leeuw, R. Suzuki and A. Torrielli, “*Bound State Transfer Matrix for AdS5 x S5 Superstring*” JHEP 0910 (2009) 025
23. G. Arutyunov, M. de Leeuw and A. Torrielli, “*On Yangian and Long Representations of the Centrally Extended  $su(2|2)$  Superalgebra*” JHEP 1006 (2010) 033
24. C. Schubert and A. Torrielli, “*Open string pair creation from worldsheet instantons*” J. Phys. A 43 (2010) 402003 (Fast Track Communication)  
[In J. Phys. A “Highlights of 2010” collection]
25. M. de Leeuw, V. Regelskis and A. Torrielli, “*The Quantum Affine Origin of the AdS/CFT Secret Symmetry*” J. Phys. A 45 (2012) 175202

26. A. Babichenko and A. Torrielli, “Multi-parametric R-matrix for the  $sl(2|1)$  Yangian” J. Math. Phys. 53 (2012) 082302
27. O. Ohlsson-Sax, B. Stefański and A. Torrielli, “On the massless modes of the  $AdS_3/CFT_2$  integrable systems,” JHEP 1303 (2013) 109
28. R. Borsato, O. Ohlsson-Sax, A. Sfondrini, B. Stefański, jr. and A. Torrielli, “The all-loop integrable spin-chain for strings on  $AdS_3 \times S^3 \times T^4$ : the massive sector,” JHEP 1308 (2013) 043
29. R. Borsato, O. O. Sax, A. Sfondrini, B. Stefański, jr. and A. Torrielli, “Dressing phases of  $AdS_3/CFT_2$ ,” Phys. Rev. D 88 (2013) 066004
30. G. Itsios, K. Sfetsos, K. Siampos and A. Torrielli, “The classical Yang-Baxter equation and the associated Yangian symmetry of gauged WZW-type theories,” Nucl. Phys. B 889 (2014) 64
31. A. Pittelli, A. Torrielli and M. Wolf, “Secret Symmetries of Type IIB Superstring Theory on  $AdS_3 \times S_3 \times M^4$ ,” J. Phys. A 47 (2014) 455402  
[In J. Phys. A “Highlights of 2014” collection]
32. B. Hoare, A. Pittelli and A. Torrielli, “S-matrix for the massive and massless modes of the  $AdS_2 \times S^2$  superstring,” JHEP 1411 (2014) 051
33. F. Nieri, S. Pasquetti, F. Passerini and A. Torrielli, “5D partition functions, q-Virasoro systems and integrable spin-chains,” JHEP 1412 (2014) 040
34. A. Rolph and A. Torrielli, “Drinfeld basis for string-inspired Baxter operators,” Phys. Rev. D 91 (2015) 066004
35. A. Prinsloo, V. Regelskis and A. Torrielli, “Integrable open spin-chains in  $AdS_3/CFT_2$ ,” Phys. Rev. D 92 (2015) 106006
36. B. Hoare, A. Pittelli and A. Torrielli, “S-matrix algebra of the  $AdS_2 \times S^2$  superstring,” Phys. Rev. D 93 (2016) 066006
37. A. Fontanella and A. Torrielli, “Massless sector of  $AdS_3$  superstrings: a geometric interpretation,” Phys. Rev. D 94 (2016) 066008
38. J. Strömwall and A. Torrielli, “ $AdS_3/CFT_2$  and q-Poincaré superalgebras,” J. Phys. A 49 (2016) 435402
39. R. Borsato, O. Ohlsson Sax, A. Sfondrini, B. Stefański, jr. and A. Torrielli, “On the Dressing Factors, Bethe Equations and Yangian Symmetry of Strings on  $AdS_3 \times S^3 \times T^4$ ,” J. Phys. A 50 (2017) 024004  
[In J. Phys. A “Highlights of 2017” collection]
40. M. Baggio, O. Ohlsson Sax, A. Sfondrini, B. Stefanski and A. Torrielli, “Protected string spectrum in  $AdS_3/CFT_2$  from worldsheet integrability,” JHEP 1704 (2017) 091

41. K. K. Kozłowski, E. Sklyanin and A. Torrielli, “*Quantisation of Kadomtsev-Petviashvili equation*,” Theoretical and Mathematical Physics, 192 (2017) 1162 - Russian version: Teoreticheskaya i Matematicheskaya Fizika, 192 (2017) 259
42. A. Fontanella and A. Torrielli, “*Massless  $AdS_2$  scattering and Bethe ansatz*,” JHEP **1709** (2017) 075
43. A. Torrielli, “*On  $AdS_2/CFT_1$  transfer matrices, Bethe ansatz and scale invariance*,” J. Phys. A **51** (2017) 015402
44. R. Borsato and A. Torrielli, “ *$q$ -Poincaré supersymmetry in  $AdS_5/CFT_4$* ,” Nucl. Phys. B **928** (2018) 321
45. R. Borsato, J. Strömwall and A. Torrielli, “ *$q$ -Poincaré invariance of the  $AdS_3/CFT_2$   $R$ -matrix*,” Phys. Rev. D **97** (2018) 066001
46. D. Bombardelli, B. Stefański and A. Torrielli, “*The low-energy limit of  $AdS_3/CFT_2$  and its TBA*,” JHEP **10** (2018) 177

## Proceedings

1. A. Torrielli, “*Unitarity of noncommutative field theories from string theory*”, proceedings of the “Conference on Spacetime and Fundamental Interactions: Quantum Aspects (In honor of A.P. Balachandran’s 65th Birthday)”, Vietri, Italy, 2003. Mod. Phys. Lett. A **18** (2003) 2525
2. A. Torrielli, “*D-branes and Unitarity of Noncommutative Field Theories*”, in “Proceedings to the Euroconference on Symmetries Beyond the Standard Model”, Portoroz, Slovenia, July 12-17, 2003 Bled Workshops in Physics Vol. 4, No. 2-3, DMFA Ljubljana, December 2003
3. A. Bassetto, G. De Pol, A. Torrielli and F. Vian, “*Area preserving diffeomorphisms and Yang-Mills theory in two noncommutative dimensions*” Nucl. Phys. Proc. Suppl. **161** (2006) 21. Also in \*Cairns 2005, Light-cone QCD and nonperturbative hadron physics\* 21-26
4. W. Bietenholz, A. Bigarini, J. Nishimura, Y. Susaki, A. Torrielli and J. Volkholz, “*Simulation Results for  $U(1)$  Gauge Theory on Non-Commutative Spaces*” PoS LAT-TICE2007 049 (2007)
5. T. Matsumoto, S. Moriyama and A. Torrielli, “*A Secret Symmetry of the  $AdS/CFT$   $S$ -matrix*” Int. J. Mod. Phys. A **23** (2008) 2262. Proceedings of the “Workshop On Progress Of String Theory And Quantum Field Theory”, 2007, Osaka, Japan
6. A. Torrielli, “*The Hopf superalgebra of  $AdS/CFT$* ” J. Geom. Phys. **61** (2011) 230. Proceedings to the workshop “The Interface of Integrability and Quantization” (Leiden, The Netherlands, April 2010)
7. M. de Leeuw, T. Matsumoto, S. Moriyama, V. Regelskis and A. Torrielli, “*Secret Symmetries in  $AdS/CFT$* ” Physica Scripta **86** (2012) 028502. Proceedings to the Nordita program ‘Exact Results in Gauge-String Dualities’, Stockholm, Jan-Feb 2012

[In *Physica Scripta* “Highlights of 2012” collection]

8. A. Torrielli, “*Secret Symmetries of AdS/CFT*” Proceedings of Symposia in Pure Mathematics 90 (2015). Proceedings to “String-Math” 2012, Eds Donagi, Katz, Klemm and Morrison

### Invited Reviews

1. A. Torrielli, “*Yangians, S-matrices and AdS/CFT* ” J. Phys. A: Math. Theor. 44 (2011) 263001 (Invited topical review)

[Within top 3 % of most downloaded articles across all IOP journals in 2011]

2.a N. Beisert *et al.*, “*Review of AdS/CFT Integrability: An Overview*” Lett. Math. Phys. 99 (2012) 3

2.b A. Torrielli, “*Review of AdS/CFT Integrability, Chapter VI.2: Yangian Algebra*” Lett. Math. Phys. 99 (2012) 547

3.a D. Bombardelli, A. Torrielli *et al.*, “*An Integrability Primer for the Gauge-Gravity Correspondence: an Introduction*,” J. Phys. A 49 (2016) 320301

[In J. Phys. A “Highlights of 2016” collection]

3.b A. Torrielli, “*Lectures on Classical Integrability*,” J. Phys. A 49 (2016) 323001 (Prepared for the “Durham Young Researchers Integrability School, Special Issue”.)

### Chapters in Collective Volumes

1. A. Torrielli, “*On the mathematical problem of the relation between string and field theory unitarity singularities through the example of noncommutative field theories*” In Kovras, O. (ed.): Focus on quantum field theory\* 83, Nova Science Publ. 2005

### Preprints

#### Theses

1. *Laurea* thesis: “*Riduzione Abeliiana e Orizzonti di Gribov in una teoria di Yang e Mills*” (in Italian). Supervisor Prof C. Becchi, co-supervisor Dr N. Maggiore.

2. PhD thesis: “*Noncommutative perturbative quantum field theory: Wilson loop in two-dimensional Yang-Mills, and unitarity from string theory*”, [arXiv:hep-th/0301091]. Supervisor Prof Bassetto, collaborator Dr G. Nardelli.

[Listed as review at <http://www.stringwiki.org/wiki/Noncommutativity>]

## Refereeing Work

- → for **Journals, Editors**

*Mathematical Reviews* (AMS) (2002-2004), *Communications in Mathematical Physics* (since 2007), *Letters in Mathematical Physics* (since 2010), *Journal of High Energy Physics* (since 2005), *Nuclear Physics B* (since 2011), *Annals of Physics* (since 2012), *Journal of Physics A* (since 2013), *Physics Letters B* (since 2014), Elsevier book publisher (since 2015), *Journal of Mathematical Physics* (since 2015), *Institute of Physics* book publisher (since 2018)

- → for **Research Councils**

*EPSRC, UK* (2 fellowship proposals)  
*Shota Rustaveli National Science Foundation, Georgia* (1 proposal)  
*Czech Science Foundation* (1 proposal)  
*National Research Foundation (NRF), South Africa* (2 proposals)

- → for **Other**

*London Mathematical Society* (2 summer bursary proposals)

## Organisational experience

On the advisory committee for the *Bicocca-Surrey School on Prospects in Strings, Fields and Related Topics*, Milano, September 2018

Scientific advisor (with Dr J. Gutowski) for the *String Geometry, Supersymmetric Theories and Dualities* conference → Summer 2017, Surrey

Co-organiser (with *Dr Prinsloo*) of “*SEMPS*” at Surrey, 2015 and 2018 edition

Co-organiser (with *Dr Regelskis* and *Dr Pasquetti*) of the international conference “*New Trends in Quantum Integrability*”, 18-22 August 2014

Co-organiser of the “*Tomorrow’s Mathematicians Today*” (TMT 2014) UK national undergraduate conference. Fundraised £1,500 from private companies to support it

Surrey Maths Summer-project coordinator 2012-14 and 2017 - present

Co-organiser of the Mathematical Physics group seminar, Surrey, 2011-12

Co-organiser of the String Seminar - Institute for Theoretical Physics, Utrecht, 2009

## Grants



- 2018 EPSRC-SFI grant “*Solving spins and strings*” jointly with Dr Marius de Leeuw (Trinity College Dublin). The total value to Surrey is £487,604 (with a commensurate amount from SFI to Trinity College). It includes money for a postdoc, travel, and 20% time for the PI. The project starts in September 2019 and runs for 3 years.
- 2017 £2,500 EPSRC Vacation Bursary (decl.) and £1,440 LMS Summer Scholarship (accept.) to fund student co-applicant *Mr. Wookyung Kim*
- 2016 €64,000 (Assoc. di Fondaz. e di Casse di Risp. *via* INFN) with *Prof de Boer* [UvA], *Dr Borsato* [Imperial], *Prof Gaberdiel* [ETH], *Dr Ohlsson Sax* [Nordita], *Dr Sfondrini* [ETH], *Dr Stefanski* [City], *Prof Tong* [DAMTP]: *Giovani ricercatori in Fisica Teorica: AdS<sub>3</sub>/CFT<sub>2</sub>* - young researcher participation to GGI workshop (see below)
- 2015 Approx. €100,000 (Galileo Galilei Institute - GGI workshop) with *Prof de Boer* [UvA], *Dr Borsato* [Imperial], *Prof Gaberdiel* [ETH], *Dr Ohlsson Sax* [Nordita], *Dr Sfondrini* [ETH], *Dr Stefanski* [City], *Prof Tong* [DAMTP]: *New Developments in AdS<sub>3</sub>/CFT<sub>2</sub> Holography*
- 2013 £271,118.37 (STFC *Consolidated Grant*) jointly with the Surrey *Fields, Strings and Geometry* group (PI Prof. Sfetsos; deputy A.T.)
- £1,500×*n* (London Mathematical Society - LMS) as Surrey node-leader to hold the “*South East Mathematical Physics Seminars*” (SEMPs) (initial, renewed periodically)
- £800 (LMS *Small Education Grant*) to sponsor TMT 2014
- £2,500 EPSRC Vacation Bursary to fund student co-applicant *Mr. James Goodwin* on a 10-week Summer project
- Sponsored *Dr. Regelskis’* £271,911 EPSRC fellowship to join Surrey
- 2012 £2,880 in LMS-Nuffield Undergraduate Research Bursaries. One project presented at TMT ’13, Greenwich, UK
- €13,500 *Dr Camobreco’s Della Riccia* Fellowship to join Surrey
- £97,336 Individual EPSRC *First grant* (2 years):  
“*Exotic quantum groups, Lie superalgebras and integrable systems*”
- 2003 Two-month DAAD (German Academic Exchange) grant at HU Berlin

### Other awards

- 2015 Best lecturer: Durham *YRIS school*. Award presented at IGST15.
- 2007 1-week visiting fellow at the Isaac Newton Institute, Cambridge, UK

- 2002 Robert Hofstadter Award at the “*40th International School of Subnuclear Physics*”, Erice, Italy (new-talents’ talk session)
- 1995-2000 Five times winner of scholarship for children of workers, Alessandria
- 1995-1996 Twice sole recipient of Genoa U. Physics-students’ scholarship
- 1993 Sole Acqui Terme student sent to summer-school at Scuola Normale

### Memberships

Member of LMS since June 2013

Fellow of Higher Education Academy since 2013

### Invited Speaker at Group Seminars

- 2002 Genoa
- 2004 Padua
- 2005 AEI Golm
- 2007 Brown University, Providence, RI, USA  
Padua  
Bologna University, Italy  
Universidad Michoacana, Morelia, Mexico
- 2008 Maths Dept of MIT, Cambridge, MA, USA  
HU Berlin
- 2009 NIKHEF Theory Group seminar, Amsterdam (Netherlands)  
Vienna University of Technology - ITP, Vienna, Austria  
University of Amsterdam, String Theory Group seminar  
CERN Theory Group (Geneva-Switzerland), String seminar
- 2010 LAPTH, Annecy-le-Vieux, France  
Imperial College (London), String Theory seminar  
Genoa  
Bologna
- 2011 University of Uppsala, Sweden  
University of Oxford, UK  
Padua  
Series of lectures at the University of Parma (5 hours).
- 2012 School of Maths, Trinity College Dublin, Ireland  
Queen Mary University of London, UK - String Theory seminar  
Utrecht - String Theory seminar  
HU Berlin
- 2013 York - Mathematical Physics seminar

Bologna  
 2014 Durham - HEP lunchtime seminar  
 Edinburgh Mathematical Physics Group (EMPG) seminar  
 Bologna  
 2015 Genoa  
 Turin  
 2016 Modena  
 City University, London  
*Polygon seminar*, Queen Mary University of London  
*Strings, CFT and Integrability seminar*, ETH, Zürich, Switzerland  
 University of Parma, Italy

*Internal/didactic seminars:*

- 3 Padua Journal Clubs
- 1 HU Berlin QFT Seminar
- 2 MIT Student Lunch Clubs
- 1 MIT String Seminar
- 2 at Utrecht (GraFiTi, String Seminar)
- Mini-series of 3 York Mathematical-Physics Seminars
- Mini-series of 10 lectures at Surrey Maths Dept, plus 1 seminar and 1 colloquium
- 4 Surrey Journal Clubs
- String Theory Journal Club at City University
- Journal Club, ETH - Zürich, Switzerland

### **Invited Speaker at Conferences**

2003 *Problemi attuali di Fisica Teorica*, Vietri, Italy  
 2006 *Problemi attuali di Fisica Teorica*, Vietri  
 2007 Isaac Newton Institute Programme *Strong Fields, Integrability and String*, Cambridge, UK  
 2009 *Integrability in Gauge and String Theory '09*, Max Planck Institut and Albert Einstein Institut, Golm, Germany (invited review talk)  
 2010 *North British Mathematical Physics Seminar* (opening talk)  
 Dept of Mathematical Sciences, Durham, UK

- 2012 Nordita Programme *Exact Results in Gauge-String Dualities*  
 Nordita, Stockholm, Sweden  
 Invited to moderate a discussion on *Current status of AdS/CFT integrability* (with O. Ohlsson-Sax and N. Gromov), *Maths of String and Gauge Theory workshop*, City U. and King's College, London, UK  
 Invited **plenary** speaker to *String-Math 2012*, Bonn, Germany  
*Integrability in Gauge and String Theory '12*, ETH-Zürich, Switzerland
- 2013 *4th Johannesburg Workshop on String Theory*, South Africa  
*IX Avogadro meeting*, review session (with A. Sfondrini), Trieste
- 2014 *Permutations and Gauge-String Duality 2014*, Queen Mary U., London  
*Third AGM Meeting on Geometric Quantum Dynamics*, Brunel University, London
- 2015  *$\eta$  and  $\lambda$  Deformations in Integrable Systems and Supergravity*, Albert Einstein Institute, Bern, Switzerland  
 Invited opening lecture series (5 hours), *YRIS school*, Durham  
**Plenary talk** at the conference *Selected topics in theoretical high energy physics*, Tbilisi, Georgia, September 21-27
- 2016 *Integrability in Gauge and String Theory 2016*, Humboldt University Berlin, Germany
- 2017 21st UK Meeting on *Integrable Models, Conformal Field Theory and Related Topics* (ICFT 2017), Leeds  
*South-East Mathematical Physics Seminar - SEMPS*  
 University of Kent - Canterbury, UK
- 2018 4 hours of lectures on integrability at the *Bicocca-Surrey School on Prospects in Strings, Fields and Related Topics*, Milano, September 2018

### Invited Colloquium

- 2013 ITF and Spinoza Institute Colloquium, Utrecht

### Other Conference Talks/Posters

- 2001 International Light-Cone Workshop *Light-cone Physics: Particles and Strings*, ECT\* Trento, Italy (poster)

- 2002 EURESCO Conf. *Particle Physics and Gravitation*, Bad Herrenalb (DE)
- 2003 *Convegno Informale di Fisica Teorica*, Cortona, Italy  
*What comes beyond the Standard Model?*, EURESCO conference,  
 Portoroz, Slovenia (poster)
- 2004 *Spacetime and Fundamental Interactions: Quantum Aspects - A  
 conference to honor A. P. Balachandran's 65th birthday*, Vietri, Italy  
*Convegno Informale di Fisica Teorica*, Cortona, Italy
- 2006 XVIII Workshop *Beyond the Standard Model*, Bad Honnef, Germany  
*Integrability in Supersymmetric Gauge- and String Theory*, Niels  
 Bohr Summer Institute "Frontiers in Theoretical Particle Physics",  
 NBI Copenhagen, Denmark
- 2010 *The Interface of Integrability and Quantization*, Lorentz Center,  
 Leiden, The Netherlands

### **Outreach**

- 2014 Presentation talk to the faculty, Surrey, 28 May  
 Talk on Maths Education at the Surrey *ExciTes* conference 2014  
 Public Lecture, Surrey *Science and Engineering Summer School* 2013

### **Languages (spoken and written)**

Italian (mother tongue), English (fluent), German (basic).

### **Computer skills**

Microsoft Windows (Office, Outlook, Word, etc.), Unix, LaTeX, Adobe,  
 Mathematica and Fortran (programming level). Basics of Maple and HTML.

### **Students' Feedback for the 2010 Autumn Term Seminar - Vector Calculus I, York (as received)**

*A very helpful seminar leader; he explained things well; he was very nice and went out of his way to be useful and supportive.*

*Very helpful seminars, methods often seemed different to notes but very well organised  
 Thoroughly enjoyed these seminars. Covered a lot of material and questions which was very helpful. Explains topics very clearly, and uses real/fun examples to help convey a new topic.*

**Students' Feedback for the 2011 Spring Term Seminar - Vector Calculus II, York (as received)**

*Very good. Enthusiastic and explained problems clearly.*

*Alessandro's seminars have been well worth attending as he manages to explain all of the lecture material in an incredibly easy way to understand. I hope that I have the opportunity to attend more of Alessandro's seminars in the future.*

**Extract from students' Feedback for Quantum Mechanics MAT3039, Surrey 2012-13 (as received)**

- *This was my best lecture of the semester - Dr Torrielli is incredibly enthusiastic and knowledgeable on the course material. and gives engaging lectures. - Dr Torrielli was very responsive to student feedback over the duration of the course. producing very well-written. comprehensive lecture notes. a glossary and exercises. He clearly cares a lot that the students are enjoying the course and performing well (for example. by giving individual feedback to us after the class test). - Giving lectures on extra non-examinable material purely for background purposes was motivating and a welcome change (it is often easy to become completely exam-focused).*
- *The teaching was very good. Alessandro is an excellent lecturer. Class examples were all relevant and clear. The online notes Alessandro provided were very good. he kept adding to them every week with what we had learnt in the lectures. It was nice to have a lecturer that is passionate and enthusiastic about what he teaches. He would always ask to make sure we understood and was very approachable if we needed help with things. He goes the extra mile to make it a good learning experience. Alessandro Torrielli is the best lecturer I've had at Surrey. and because of this I really enjoyed Quantum Mechanics.*
- *This lecturer is one of the best I've had, not necessarily due to lecturing style, but the fact that I feel he genuinely cares about how well I do and whether I understand or not, and he is very passionate about the subject which makes lectures more enjoyable. Dr Torrielli is always available for questions, and has even answered my emails on a Sunday morning before now. His emails aren't just one line answers either, not only are the answer explained but it is expanded upon, and the "folklore" of the Maths is discussed. Dr Torrielli also took the time to email each and every one of us some feedback advice after our test, which I felt was a fair test and studying for it helped me to improve my understanding of the topic. Dr Torrielli has taken what is a very difficult topic and made it interesting and entertaining, whilst also caring about us succeeding in our degrees. The notes which go up on Surrey Learn are also incredibly helpful. They don't replace the lectures, but help to consolidate what we have learned. I also really appreciate the colour coding used before tests as it saves so much unnecessary confusion. I wish he had been a lecturer since I started at Surrey!*
- *Real subject knowledge. enthusiasm and always being available and approachable with problems.*

**Extract from students' Feedback for Quantum Mechanics MAT3039,  
Surrey 2013-14 (as received)**

- *The feedback given by the Dr Torrielli was phenomenal. He would have tests marked within 2 days and then he would email each student individually with personal feedback. Extremely enthusiastic about his subject and he found a way to make his classes quite interesting. His were the only lectures I genuinely looked forward to attending.*
- *This module was a pleasure from start to finish. Dr. Torrielli's communication style was clear and informative, and he spoke with a genuine passion for the subject and for our education. Additionally, he was very available to ask questions or go over things that we don't understand. Personalized replies containing out course-work/test marks only hours after completion show dedication to us as students and encouraged me to work even harder. Overall, this has been a fantastic module to take part in.*
- *Dr Torrielli's passion and enthusiasm was incredible - I got a clear sense of his love for the subject of Quantum Mechanics, and his desire for students to share his passion. He is also an incredibly friendly and engaging man on a personal level, more than happy to give up his personal time to help improve student's learning. This is probably the module I have enjoyed most at my time at Surrey*
- *I was very impressed with the amount of help and commitment the lecturer showed while giving the lectures and with extra materials and resources. I was also impressed with how much the lecturer understood the learning needs of myself, for example that difficulty of the abstract concepts involved and help I received in learning them.*
- *Dr Torrielli really loves this subject, his enthusiasm comes across strongly and he makes this module an interesting exploration into Physics. Thanks!*

**Extract from students' Feedback for Quantum Mechanics MAT3039,  
Surrey 2015-16 (as received)**

- *I really really enjoyed the module! The best aspect of it of course was an amazing lecturer Dr Torrielli! He loves his subject and was able to transfer this love to us - students. I really liked the fact that he didn't only talk about examinable stuff, but also he spoke about history of the subject and interesting facts. All the notes were clear. The feedback was amazing. Immediate response to students via emails. Dr Torrielli was always happy to see students and help us if we were struggling. He perfectly knows his subject! I am very very happy that I chose to do it this semester! I would give 10 out of 10 to the module.*
- *This module was fantastic. Dr Torrielli is clearly very passionate about his subject and his enthusiasm was passed on to us. I liked how some parts of the module were unassessed as this gave us the chance to learn something interesting without the pressure of having to understand it for an exam. Lecture notes were well organised*

*and examples and coursework sheets helped with exam questions. I loved the emails with individual feedback on coursework and tests and also Dr Torrielli's willingness to answer questions at any time of day. Dr Torrielli is a fabulous lecturer and I loved this module.*

- *Dr Torrielli is clearly passionate about the subject and this passion made the module so interesting. It has probably been the most difficult module to get my head around but Dr Torrielli has always made it clear that he is available to help. He has always answered my questions after class or in his own time later. He is wonderfully approachable and friendly. He also has amazing memory!*
- *AMAZING! Dr Torrielli is very passionate about Quantum Mechanics and other fields of study mentioned in the course. Alessandro's enthusiasm is infectious which is one of the main reasons people enjoy this module so much! It is refreshing to feel that you are supported so much and always welcomed to discuss topics out of office hours. Also, the feedback following class tests was really helpful and greatly appreciated!*
- *Alessandro's passion, it inspired me to also be passionate about the subject and to try my best perform well in it*

#### **Master student's thesis acknowledgments**

- *It is true that passion for a subject is born from a great teacher, and Dr. Torrielli's enthusiasm is infectious*