

# Alberto Tacchella

*Curriculum vitæ* — November 30, 2017

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🏠 <https://atlog.it>

Age: 37 years old

Nationality: Italian

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## Academic positions

- Jan. 2016 – Dec. 2017 **Visiting Researcher**, DIMA, Università di Genova, Genoa, Italy.
- Sep. 2011 – Aug. 2014 **Postdoctoral Researcher**, ICMC, Universidade de São Paulo (USP), São Carlos (SP), Brazil.
- Oct. 2007 – Feb. 2008 **Early Stage Researcher**, Mathematics Department, Oxford University, Oxford, England.

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## Education and training

- 2006–2010 **PhD in Mathematics and Applications**, DIMA (Department of Mathematics), Università degli studi di Genova, Genoa, Italy.
- 1999–2005 **Laurea in Theoretical Physics**, DIFI (Department of Physics), Università degli studi di Genova, Genoa, Italy, final mark: 110/110 cum laude.
- 1994–1999 **Diploma di Maturità Scientifica**, Liceo Scientifico “G. Marconi”, Chiavari, Italy, final mark: 97/100.

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## PhD thesis

- title *A multicomponent generalization of the KP/CM correspondence*
- supervisor Claudio Bartocci
- date 15 April 2010

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## Master thesis

- title *Nuove simmetrie per campi di spin intero* (English title: *New symmetries for higher spin fields*)
- supervisor Giuseppe Bandelloni
- date 19 October 2005
- final mark 110/110 cum laude

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## Grants

- 2011 Postdoctoral Research Fellowship (3 years) granted by FAPESP (Fundação de amparo à pesquisa do estado de São Paulo), c/o the Mathematics Department (ICMC) of the University of São Paulo at São Carlos.

- 2007 Research Fellowship (4 months) granted by the Research Training Network “ENIGMA” (Marie Curie Actions) as Early Stage Researcher, c/o the Mathematical Institute at the University of Oxford.
- 2006 Fellowship (3 years) granted by the Mathematics Department of the University of Genoa to attend a PhD course in “Mathematics and Applications”.

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## Publications

- [1] Alberto Tacchella. “On rational solutions of multicomponent and matrix KP hierarchies”. In: *Journal of Geometry and Physics* 61.8 (2011), pp. 1319–1328. DOI: 10.1016/j.geomphys.2011.02.007. arXiv: 1011.1427 [nlin.SI].
- [2] Igor Mencattini and Alberto Tacchella. “A Note on the Automorphism Group of the Bielawski-Pidstrygach Quiver”. In: *SIGMA* 9.037 (2013). DOI: 10.3842/SIGMA.2013.037. arXiv: 1208.3613 [math-ph].
- [3] Alberto Tacchella. “On a family of quivers related to the Gibbons-Hernsen system”. In: *Journal of Geometry and Physics* 93 (2015), pp. 11–32. DOI: 10.1016/j.geomphys.2015.03.002. arXiv: 1311.4403 [math.SG].
- [4] Claudio Bartocci and Alberto Tacchella. “Poisson–Nijenhuis structures on quiver path algebras”. In: *Letters in Mathematical Physics* 107.7 (2017), pp. 1265–1291. DOI: 10.1007/s11005-017-0940-4. arXiv: 1604.02012 [math-ph].
- [5] Alberto Tacchella. “An introduction to associative geometry with applications to integrable systems”. In: *Journal of Geometry and Physics* 118 (2017), pp. 202–233. DOI: 10.1016/j.geomphys.2016.09.013. arXiv: 1611.00644 [math-ph].

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## Talks and posters

- March 22, 2017 “Bihamiltonian structures from non-commutative geometry”, invited talk at the University of Angers, France.
- December 21, 2016 “Integrable systems on quivers”, invited talk at the *2016 Christmas workshop on Quivers, Moduli Spaces and Integrable Systems* in Genoa, Italy.
- November 12, 2015 “Calogero-Moser systems from associative geometry”, invited talk at the University of Milano-Bicocca, Italy.
- August 21, 2015 “Calogero-Moser systems from associative geometry”, talk delivered at the conference *Interactions between Geometry and Physics* in Guarujá - SP, Brasil.
- April 7, 2014 “The non-commutative geometry of higher-rank Gibbons-Hernsen systems”, poster presented at the *IV Iberoamerican Meeting on Geometry, Mechanics and Control* at IMPA, Rio de Janeiro, Brazil.
- May 7, 2013 “Noncommutative symplectic and Poisson geometry”, talk delivered at the *Mini-Workshop on Poisson Geometry and Related Topics* at IMPA, Rio de Janeiro, Brazil.
- January 24, 2013 “Group actions on the moduli space of noncommutative instantons”, talk delivered at the *School and Workshop on Moduli Spaces and Mathematical Physics* in Guanajuato, Mexico.

December 19, 2012 “The (noncommutative) symplectic structure of the (noncommutative) instanton moduli space”, talk delivered at the *2012 Christmas Workshop on Moduli Spaces and Integrable Systems* in Genoa, Italy.

July 30, 2012 “Noncommutative symplectic geometry of Gibbons-Hermsen varieties”, talk delivered at the *Brazil-Italy Geometry Meeting 2012 (EGBI2012)* in Salvador - Bahia, Brazil.

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## Scientific interests

Research topics My research interests center on the application of geometric methods to physical theories, particularly in the field of integrable dynamical systems and exactly solvable models. In more detail, my research so far has been concerned with the following topics (listed in inverse chronological order):

- the application of associative geometry to the theory of completely integrable Hamiltonian systems ([3, 5, 4]);
- the geometric theory of integrable hierarchies of PDEs, notably the KP hierarchy and its relations with finite-dimensional integrable systems of Calogero-Moser type (PhD thesis, [1, 2]);
- the study of anomalies using the BRST formalism in quantum field theory (Master thesis).

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## Teaching experience

Oct.-Nov. 2017 “Homotopy type theory: an introduction”, seminar for PhD students held at the University of Genoa.

May 2013 “An introduction to the geometry of integrable Hamiltonian systems”, *mini-curso de extencao* (12 hours total) for advanced graduate and PhD students held at the University of São Paulo, São Carlos.

June 2007 “Introduction to category theory and sheaves”, short informal course (12 hours total) for PhD students held at the University of Genoa.

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## Other

Languages Italian (native), English (fluent), French (basic), Portuguese (basic).

Technical skills

- Very good knowledge of the GNU/Linux operating system (esp. Debian or Debian-based distributions), acquired through 18+ years of administration of my personal machines.
- Very good knowledge of the  $\text{\LaTeX}$  document preparation system and related common packages, including `xy` and `tikz`.
- In the past I have used (with various degrees of proficiency) the following programming languages: Basic, Pascal, Modula-2, C, C++ and Fortran. Currently I mostly code in Scheme, C++ and Javascript.
- Good knowledge of the computer algebra system Maxima.
- Basic knowledge of modern website design using HTML 5, CSS 3 and Javascript.