

## Ugo Bruzzo

### CURRICULUM VITAE

#### Personal data

Born in Campomorone (Genova province, Italy), 30 September 1955. Two children, Cristiano born 1983, and Valentina born 1985.

#### Addresses:

- SISSA, Via Bonomea 265, 34136 Trieste, Italy (office)
- Via dello Sterpeto 5, 34141 Trieste, Italy (personal)

**Telephone:**<sup>1</sup> 040 3787 408 (office); 040 0643210 (home); 349 1605989 (mobile); 040 3787 528 (fax)

**Email** [bruzzo@sisssa.it](mailto:bruzzo@sisssa.it)

**Present position:** Professor of Geometry, International School for Advanced Studies, Trieste. Head of the Area of Mathematics of SISSA since April 2012 (equivalent to Head of Department).

**Languages:** Italian (native), English and Spanish (fluent), French (fair).

#### Bibliometrics (as of 11 October 2014)

Total citations (from Google Scholar): 1327, since 2009: 519

Total citations (from MathSciNet): 225

h Index (Google Scholar): 19, since 2009: 10

i10 Index (Google Scholar): 33, since 2009: 10

#### Job history

- Nov 1979 to Sept 1982: Fellow of the Italian National Research Council (CNR)
- Oct 1982 to Aug 1983: High school teacher (electronics)
- Sept 1983 to Sept 1987: Assistant Professor, University of Genova
- Oct 1987 to Oct 1994: Associate Professor, University of Genova
- Nov 1994 to June 2002: Associate Professor at SISSA
- July 2002 to present: Full Professor at SISSA

#### Education

Degree in Physics, 28 March 1979, University of Genova. Thesis work on canonical formalisms in general relativity. Advisor: Prof. E. Massa.

---

<sup>1</sup>All to be prefixed by +39 if calling from out of Italy. Leading "0" always to be dialled.

## Publications

I have authored 2 monographs (in collaboration), 85 research papers and 25 proceeding papers, mostly in collaboration (I have about 40 coauthors). I have co-edited 3 conference proceedings, and written a number of lecture notes and exercise books, made translations from/to English, etc.

## Past administrative work

- Head of the SISSA Mathematical Physics Sector (May 24, 2011 - April 11, 2012).
- Member of the Executive Committee of the Department of Mathematics of the University of Genova (1985-87 and 1989-91).
- Coordinator of several research projects, funded by the Italian Ministry for University or the Trieste regional administration (see “Grant history” below).
- Coordinator of joint Italian-Spanish research projects (“Azioni Integrate” — 1993-1994, 1999-2000, 2001-2003, 2007-2009).
- Deputy head of the Mathematical Physics Sector, SISSA (1998–2001).
- SISSA Director’s delegate for international relations (Oct. 2002 – Dic. 2007).
- Coordinator of the SISSA-University of Trieste Mathematics M.Sc. course (2005–2007).
- Coordinator of the Trieste unit of the research project “Nonperturbative gauge dynamics” of the Italian Institute for Nuclear Physics (2005–2011).

## Journal activity

- Editor in Chief of the Journal of Geometry and Physics, Elsevier (since Nov. 2003).
- Editorial Board of “Analysis, Geometry and Number Theory”.
- Editorial Board of “Rendiconti dell’Istituto Matematico dell’Università di Trieste” (since 2008).
- Reviewer/referee for Mathematical Reviews, Zentralblatt für Mathematik, Classical and Quantum Gravity, Journal of Physics A: Mathematical and General, Journal of High Energy Physics, Journal of Geometry and Physics, Nuovo Cimento, Journal of Mathematical Physics, International Journal of Mathematics and Mathematical Sciences, Journal of Differential Equations, Journal of Algebra, Rivista Matematica dell’Università di Parma, Rendiconti dell’Istituto Matematico dell’Università di Trieste, Pacific Journal of Mathematics, Annals of Global Analysis and Geometry, International Mathematical Research Notices, Calculus of Variations.

## Grant history

- Italian-Spanish research projects “Azione integrata” (Years 1993-1994, 1999-2000, 2001-2003, 2006-2009).
- National research project “Geometry of differentiable manifolds” (1993-1996).

- National research project “Classification and properties of real and complex manifolds” (1997-1998).
- “Noncommutative geometry: algebraic, analytic and probabilistic aspects and applications in mathematical physics”, funded by the Friuli-Venezia Giulia region (1999-2001).
- National research project “Singularities, Integrability, Symmetries” (2000-2002).
- “Geometry of moduli spaces and applications in mathematical physics”, funded by the Friuli-Venezia Giulia region (2002-2004).
- National research project “Geometry of algebraic varieties” (2002-2004, 2010-2012, 2013-2016).
- EINSTEIN Consortium project “Duality in integrable systems” (2008-2009).
- MATPYL (Mathématiques en Pays de Loire) project “Lie algebroids, equivariant cohomology, and topological quantum field and string theories” (2008-2009).
- “Nuevas tendencias en Geometría Algebraica Derivada y Espacios de Móduli con una mirada a la Teoría de Cuerdas”, Junta de Castilla y León, Spain (2008-2011).
- INFN Research Project “Nonperturbative dynamics of gauge theories” (2005–; coordinator of the Trieste Unit, 2005-2011).
- EINSTEIN Consortium project “Integrability in topological string and field theory” (2009-2010).
- GEANPYL-II Angers-SISSA project “Generalized Lie algebroid structures” (2010–).

## Memberships

- European Research Group “Vector Bundles on Algebraic Curves” (member of the scientific committee)
- “More Geometrico” project (member of the scientific committee)
- National Group for Geometry and Algebra, Istituto Nazionale di Alta Matematica
- Società Italiana di Relatività Generale e Gravitazione (SIGRAV) (life member, past member of the scientific committee)
- Unione Matematica Italiana
- INFN — Istituto Nazionale di Fisica Nucleare (INFN)

## Visits

- Sept – Oct 1977: “Student Fellowship”, Max-Planck-Institut für Strömungsforschung, Göttingen, Germany.
- May – Jun 1984: “Visiting Fellowship”, Physics Department, Princeton University.
- Apr 1986, May – Jun 1989, May 1990, Jun – Jul 1999: Visiting scientist, University of Salamanca, Spain
- Sep 1990: “Visiting Associate Professorship”, Department of Mathematics, Baruch College, City University of New York.
- Oct 1994, Aug – Oct 1998: “Visiting Associate Professorship”, Department of Mathematics, Victoria University of Wellington, New Zealand.

- Dec 2000: Visiting “Maître de conférences”, Laboratoire de Physique Théorique des Hautes Energies, Université Paris VII.
- Feb – Apr 2006: Visiting Professor, Tata Institute for Fundamental Research, Mumbai, India.
- Jan – May 2008: Senior Visiting Professor, Department of Mathematics, University of Pennsylvania, Philadelphia.
- June 2009: Visiting Professor, Department of Mathematics, Université des Sciences et Technologies de Lille.
- May – Aug 2010: Chercheur associé, CNRS, Université des Sciences et Technologies de Lille.
- Sep – Dec 2010: Distinguished Visiting Professor, Department of Mathematics, University of Pennsylvania, Philadelphia.
- Jan - Feb 2011: Institut des Hautes Études Scientifiques, Paris.
- March - April 2011, March 2012, Nov 2013: Max-Planck-Institut für Mathematik, Bonn.
- May - June 2011: Isaac Newton Institute, Cambridge, UK.
- Oct 2013: Visiting Professor, Department of Mathematics, Université des Sciences et Technologies de Lille.

Moreover I made short visits at University of Georgia (Athens, USA), Gannon University (Erie, USA), Université Paris VI, King’s College University of London, University of Edinburgh, Universidad Autonoma de Madrid, University of Queensland in Brisbane (Australia), Instituto Superior Técnico (Lisbon), Universität Kaiserslautern (Germany), Université d’Angers (France), Humboldt Universität Berlin, Tsinghua University (Beijing), Universidad de Barcelona, University of Ottawa (Canada), Penn State University (State College, PA), University of Wisconsin at Madison, Nankai University (Tianjin, China), Rutgers University (Piscataway, USA), Ukrainian Academy of Sciences (Kiev), IMPA (Rio de Janeiro), Universidade Estadual de Campinas (Brazil), Florida State University (Tallahassee), Centro de Recerca Matemàtica (Bellaterra, Spain), Universidade de São Paulo, São Carlos (Brazil), Universidade Federal de Santa Catarina (Florianópolis, Brazil), Hong Kong University of Science and Technology, University of Hong Kong, University of Adelaide (Australia), CIMAT (Guanajuato, Mexico), Heriot-Watt University (Edinburgh), University of Alberta (Edmonton, Canada), Institute for Mathematica Sciences (National University of Singapore).

In Italy I gave talks at the Universities of Pavia, Roma “La Sapienza”, Bologna, Roma “Tor Vergata”, Napoli, Milano Bicocca, Torino, Padova, Trieste, Firenze, Lecce, Scuola Normale Superiore (Pisa), Università del Piemonte Orientale (Alessandria), Udine, Roma 3.

During February 2004 I spent two weeks at “Mathematisches Forschungsinstitut Oberwolfach” (Germany) as a “Research in pairs” fellow.

## Teaching

- Problem solving classes in general physics, classical mechanics, partial differential equations (1979-1992).
- Undergraduate/master courses in calculus, PDEs, mathematical physics (analytical mechanics, continuum mechanics, electromagnetism, quantum mechanics, special and gen-

eral relativity), differential geometry (including Lie groups), symplectic geometry, algebraic topology, algebraic geometry.

- PhD courses in: sheaf theory, homological algebra, algebraic geometry, toric geometry, Hodge theory, Teichmüller theory, elliptic curves, fibre bundles, instantons.

**PhD theses in mathematics advised/current PhD students:**

1. C. Bartocci, Elementi di una teoria globale delle supervarietà (Università di Genova, 1990). Presently Associate Professor at the University of Genoa, Italy.
2. F. Thompson, New approaches to quaternionic algebra and geometry (SISSA, 1999). Presently CEO, Dragonfly Science, Wellington, New Zealand.
3. G. Marelli, A Fourier transform for sheaves on Lagrangian families of real tori (SISSA, 2001). Presently Associate Professor, Universidad de Antioquia, Medellín, Colombia.
4. A. Tacca, Heisenberg-Clifford super algebras and moduli spaces of instantons (University of Genova, 2005). Presently Head of Pricing and Financial Valuation, Banca Popolare di Milano.
5. E. Macrì, Stability conditions in derived categories (SISSA, 2006). Presently Associate Professor, Northeastern University, Boston.
6. A. Ricco, Some comments on the local curve (B-side) (SISSA, 2006, with L. Bonora). Presently Assistant Professor, Sungkyunkwan Univ., Korea
7. L. Cirio, Symmetries of noncommutative spaces and equivariant cohomology (with G. Landi, SISSA, 2008). Presently Researcher at Westfälische Wilhelms-Universität Münster, Germany.
8. F. Ferrari Ruffino, Topics on topology and D-branes (SISSA, with L. Bonora, 22 October 2009). Presently Assistant Professor, Universidade Federal de São Carlos, São Carlos, Brazil.
9. A. A. Henni, Monads and coherent sheaves on blowups of the projective plane (SISSA, 27 November 2009). Presently Assistant Professor at Universidade Federal de Santa Catarina, Florianópolis, Brazil.
10. F. Sala, Some topics in the geometry of framed sheaves and their moduli spaces (SISSA, with D. Markushevich, 6 October 2011). Presently Postdoc at the University of Western Ontario, London, Canada.
11. P. Tortella,  $\Lambda$ -modules and holomorphic Lie algebroids (SISSA, with D. Markushevich, 6 October 2011). Presently Postdoc at Universidade de São Paulo, São Carlos, Brazil.
12. C. Rava, ADHM data for framed sheaves on Hirzebruch surfaces (SISSA, 27 February 2012).
13. S. Holguín Cardona, Approximate Hermitian-Yang-Mills structures and semistability for Higgs bundles (SISSA, 3 May 2012). Presently Postdoc at CIMAT, Guanajuato, Mexico.
14. G. Abdellaoui, Topology of moduli spaces of framed sheaves (SISSA, 27 September 2013). Presently Postdoc at the University of Osnabrück, Germany.
15. A. Lo Giudice, Some topics on Higgs bundles over projective varieties and their moduli spaces (SISSA, 27 September 2013). Presently Postdoc at Universidade Estadual de Campinas, Brazil.

16. A. Pustetto, Semistability and decorated bundles (SISSA, 27 September 2013).
17. M. Pedrini, Moduli spaces of framed sheaves on stacky ALE spaces, deformed partition functions and the AGT conjecture (SISSA, 11 October 2013). Presently Mathematical Consultant at ThinkTank, Edinburgh.
18. J. Scalise (SISSA, PhD expected September 2016). Topic: Resolution of singularities of Uhlenbeck compactifications of moduli spaces of framed principal bundles.
19. A. Celotto (SISSA, PhD expected September 2015). Topic: Morse theory on moduli spaces of framed sheaves.

Moreover, I have advised 30 students for their MSc theses (in mathematics or physics). My MSc student Guido Sanguinetti's thesis won the 1999 "Premio Franco Triccerri" of the Italian Mathematical Union.

## Organization of conferences

I have organized (or participated in the scientific committees of) 30 international conferences. In particular since 1996 I am the main organizer of the series "Schools and Workshops on Algebraic Geometry and Physics," that have taken place in Trieste (twice), Medina del Campo (Spain), Marseille, Genova, Como, Salamanca, Lisbon, Philadelphia, Vienna, Seoul (Korea), Hangzhou (China), Maresias (Brazil), Saint Jean de Monts (France), Leiden (The Netherlands), Guanajuato (Mexico).

I am member of the Scientific Committees of the interdisciplinary project "More Geometrico" and of the VBAC (Vector Bundles on Algebraic Curves) conference series.

## Talks and participation in conferences

I have given about 80 talks in different universities and research institutions. Moreover I have participated in about 170 conferences, giving about 100 talks (mostly invited) and lectures series. I have given 10 talks to high school students, high school teachers or general audiences.

## Other activities

- National committee for the hiring of Associate Professors in Mathematical Physics (1992).
- Several hiring committees at different levels (SISSA).
- PhD defence committees in Salamanca (three times), Rome (twice), Milano, Genova (twice), Instituto Superior Técnico (Lisbon) (and many times at SISSA).
- Advisory board of "SUPERSYMMETRY 2000 – Encyclopedic Dictionary" (Jim Gates chief editor).
- Chair of a committee for the awarding of high school degrees (twice).
- Referee for National Research Projects applications (PRIN).
- Evaluator for CIVR (Comitato di Indirizzo per la Valutazione della Ricerca), Ministero dell'Università e della Ricerca Scientifica.

- Committee for the conferment of an Habilitation degree at Humboldt Universität, Berlin.
- Referee for Volkswagen Stiftung grants (three times) and member of the midterm evaluation board for one of them (2011).
- Committees for the awarding of the “Agregação” degree, Instituto Superior Técnico, Lisbon (2009).
- Committee for the awarding of a full professorship at Instituto Superior Técnico, Lisbon (2011).
- Referee for the Portuguese Exact Sciences and Engineering Council (2012).
- Referee for the Romanian Agency for Higher Education, Research, Development and Innovation Funding (2012).
- Referee for FONDECYT (Chile, 2014).
- Referee for ANVUR (Agenzia nazionale di valutazione del sistema universitario e della ricerca, 2012-3).
- Member of the External Advisory Committee of the Lisbon Mathematics PhD programme (2013–).
- Evaluator for INdAM COFUND-2012.