

ALLEGATO B

UNIVERSITÀ DEGLI STUDI DI MILANO

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Giorgio Gubbiotti **CURRICULUM VITAE**

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	GUBBIOTTI
NOME	GIORGIO
DATA DI NASCITA	08/12/1988

1. SUMMARY OF RESEARCH OUTPUT

Peer-reviewed papers:	25
Book chapters:	1
Citations:	172 (Google Scholar) 85 (Web Of Science)
H-index	9 (Google Scholar) 6 (Web Of Science)
Talks in conferences:	More than 15
Conference organisation:	4
Seminars:	More than 10

2. RESEARCH INTERESTS

- Mathematical Physics.
- Continuous and discrete integrable systems.
- Lie and Generalised Symmetries.
- Lagrangian formulation for continuous and discrete equations.

3. WORK EXPERIENCE

03/2021–03/2023: Japan Society for the Promotion of Science Post-doctoral fellow at Graduate Mathematical School, The University of Tōkyō.

Postdoctoral position supported by the Japan Society for the Promotion of Science fiscal year 2020/2021.

09/2017–12/2020: Postdoctoral Research Associate at School of Mathematics and Statistics, The University of Sydney.

Member of the Integrable Systems group.

Postdoctoral position supported by the Australian Research Council through Nalini Joshi's Australian Laureate Fellowship grant FL120100094.

06/2014–06/2017: INFN Research Associate at Roma Tre Unit of INFN (National Institute for Nuclear Physics).

Member of National Scientific Committee 4 Mathematical Methods.

Supported by the project Mathematical Methods of Nonlinear Physics (MMNLP).

4. EDUCATION

01/2014–05/2017: Ph.D. in Mathematics *cum laude* at Università degli Studi Roma Tre, Roma. *Italian:* Dottorato di Ricerca in Matematica XXIX Ciclo.

Thesis: *Integrability properties of quad equations consistent on the cube*, supervised by Prof. D. Levi.

10/2010–10/2012: Master's degree in Mathematics *110/110 cum laude* (joint training program) at Università degli Studi di Trieste and SISSA, Trieste. *Italian:* Laurea Magistrale in Matematica (L.M. 40).

Thesis: *Nonlinear Gibbs phenomena*, supervised by Prof. T. Grava.

10/2007–09/2010: Bachelor's degree in Physics *110/110 cum laude* at Università degli Studi di Perugia, Perugia. *Italian:* Laurea Triennale in Fisica (ex D.M. 509/99).

Thesis: *The Schrödinger-Newton equations*, supervised by M. C. Nucci.

5. GRANTS

03/2021–03/2023: Japan Society for the Promotion of Science Standard Fellowship: ¥1,200,000/year research allowance, ¥362,000/month maintenance allowance.

11/2018: Early Career Researchers local allowance to attend the conference Symmetry and Integrability of Difference Equations 13 (SIDE13): ¥100,000.

09/2017–12/2020: School of Mathematics and Statistics of the University of Sydney Strategic funding: AU\$5,000 travel allowance.

6. TEACHING EXPERIENCE

6.1. Lectures.

2019: Advanced Methods of Mathematical Physics (Guest lecturer on weeks 11–12), ~ 20 students

School of Mathematics and Statistics, The University of Sydney, Sydney.

2016: Integrability of difference equations through Algebraic Entropy and Generalized Symmetries (4 hours), ~ 50 students

Lectures given at *ASIDE16 (Abecedarian of SIDE)*, June 27th – July 1st, 2016, at Centre de Recherche Mathématiques, Université de Montréal, Montréal.

2014–15: Introduction to \mathbb{R}^n , ~ 30 students

Dipartimento di Matematica e Fisica, Università degli Studi Roma Tre, Roma.

6.2. Tutorials.

2018–20: Undergraduate board tutorials (Calculus of one variable and Vector Calculus and differential equations, PDE and Waves), ~ 30 students. School of Mathematics and Statistics, The University of Sydney, Sydney.

2020: Undergraduate online tutorials (Vector Calculus and differential equations, PDE and Waves), ~ 20 students. Software used: Ed and Zoom.

School of Mathematics and Statistics, The University of Sydney, Sydney.

7. EDITORIAL DUTIES

7.1. Editor.

2018: Symmetry, Co-Guest Editors of the Special Issue *Symmetries and Integrability of Difference Equations*.

7.2. Peer Reviewer.

- The European Physics Journal Plus,
- Mathematics,
- Journal of Mathematical Physics,
- Journal of Nonlinear Mathematical Physics,
- Journal of Physics A: Mathematical and Theoretical,
- Physica Scripta,
- Physics Letters A,
- Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences.

7.3. Reviewing Services.

- Mathematical Reviews,
- Zentral Blatt.

8. LANGUAGES

Language	Level	Notes
Italian:	Mother tongue	
English:	Fluent (7.0 IELTS Level)	<i>Vast knowledge of mathematical and physical specialistic terminology.</i>
French:	Intermediate	
Japanese:	Beginner	

9. COMPUTER SKILLS

Basic: C, C++, Go.

Intermediate: python, sh, Mathematica, Linux, julia.

Advanced: Maple, reduce.

10. CONFERENCES, SEMINARS AND SCHOOLS

10.1. Invited talks in conferences.

- Quantum Theory and Symmetries, July 1–5, 2019 Centre de Recherche Mathématiques, Montréal (QUE), Canada: *Five-point differential-difference equations: their growth properties and stationary reductions.*
- Day of Dynamics, School of Mathematics and Statistics, University of Sydney, Sydney (New South Wales), Australia, February 18th 2019: *Integrable discrete autonomous quad-equations admitting, as generalized symmetries, known five-point differential-difference equations.*
- Asymptotic, Algebraic and Geometric Aspects of Integrable Systems Workshop, Tsinghua Sanya International Mathematics Forum, Sanya, Hainan (China) April 9–13, 2018: *Four dimensional rational maps from their first integrals.*
- The Tenth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens (GA), USA, March 29 – April 01: *Darboux integrability for the trapezoidal H^4 and the H^6 equations.*

10.2. Invited seminars.

- *Recent developments on variational difference equations and their classification*, given on November 18th 2020 at Tōkyō University, Graduate School of Mathematical Sciences, Tōkyō (Tōkyō Prefecture), Japan (held online).
- *Lagrangians and integrability of difference equations*, given in January 13th 2020 at Università degli Studi di Milano, Dipartimento di Matematica “Federigo Enriques”, Milano (MI), Italy.

- *Integrable discrete autonomous quad-equations admitting, as generalized symmetries, known five-point differential-difference equations*, given in April 12nd 2019 at The University of Texas at Dallas, Department of Mathematical Sciences, Richardson, TX, USA.
- *On the inverse problem of the discrete calculus of variations*, given on November 8th 2018 at K  be University, Department of Mathematics, K  be (Hy  go Prefecture), Japan.
- *On the inverse problem of the discrete calculus of variations*, given on November 2nd 2018 at T  ky   University, Graduate School of Mathematical Sciences, T  ky   (T  ky   Prefecture), Japan.
- *Four dimensional rational maps from their first integrals*, given on May 29th 2018 at The University of Melbourne, School of Mathematics and Statistics, Melbourne (Victoria), Australia.
- *Integrability detectors for discrete and semi-discrete equations – The Algebraic Entropy method*, given on November 7th 2016 at Universit   del Salento, Dipartimento di Matematica e Fisica E. De Giorgi, Lecce (LE), Italy.
- *Quad equations consistent on the cube and linearization*, given on November 25th 2015, La Trobe University – Department of Mathematics and Statistics, Melbourne (Victoria), Australia.

10.3. Talks in conferences.

- Integrable Systems 2019, School of Mathematics and Statistics, University of Sydney, Sydney (New South Wales), Australia, November 28–29 2018: *Space of initial values of maps with higher degree invariants*.
- Ninth International Congress on Industrial and Applied Mathematics (ICIAM), July 15–19, 2019 Valencia, Spain: *On the inverse problem of the discrete calculus of variations*.
- The Eleventh IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory Georgia Center for Continuing Education University of Georgia, Athens, GA, USA, April 17–19, 2019: *On the inverse problem of the discrete calculus of variations*.
- Integrable Systems 2018, School of Mathematics and Statistics, University of Sydney, Sydney (New South Wales), Australia, November 29–30 2018: *Integrable discrete autonomous quad-equations admitting, as generalized symmetries, known five-point differential-difference equations*.
- SIDE13, Fukuoka, Ky  sh   (Japan) November 11–17, 2018: *Growth, invariants, Lagrangians and integrability for four-dimensional recurrence relations*.
- Nonlinear Integrable Systems, Universidad de Burgos (Castilla y Le  n), Spain, October 20–22, 2016: *Are all classical superintegrable systems in two-dimensional space linearizable?*
- SIDE12, Sainte-Ad  le (Qu  bec), Canada, July 3–9, 2016: *Quad equations consistent on the cube II: Darboux integrability for the ιH^4 and the H^6 equations*.

- Progress On Difference Equations 2016, University of Latvia, Riga, Latvia, May 16–20, 2016: *Partial difference equations on the square: a non-autonomous generalisation of the Q_V equation.*
- Geometric and Analytic theory of Hamiltonian systems in finite and infinite dimensions, SISSA, Trieste, Italy, January 18–21, 2016: *Nonlinear lattice equations: a non-autonomous generalisation of the Q_V equation.*
- Integrable Systems 2015, School of Mathematics and Statistics, University of Sydney, Sydney (New South Wales), Australia, December 3–4 2015: *The Generalized Symmetries of Boll's equations.*
- Physics and Mathematics of Nonlinear Phenomena 2015, Gallipoli (Lecce), Italy, June 20–27, 2015: *On quad equations consistent on the cube.*
- Conference on Nonlinear Mathematical Physics: Twenty Years of JNMP Nordfjordeid, Norway June 4–14, 2013: *Noether symmetries and the quantization of a Liénard-type nonlinear oscillator.*

10.4. Conference and workshop organisation.

- Managing organiser of the Asia-Pacific Integrable Online seminar, 2020–now, (with N. Joshi).
- Integrable systems 2019, School of Mathematics and Statistics, University of Sydney, Sydney (New South Wales), Australia, November 28–29 2019 (with N. Joshi, M. Radnovic, and D.T. Tran).
- Minisymposium “Integrable systems and discrete dynamics Part 1–2” within the Ninth International Congress on Industrial and Applied Mathematics (ICIAM), (with D. Gomez-Ullate Oteiza, N. Joshi and N. Nakazono).
- Special session “Dynamical systems and integrability” within The Eleventh IMACS international conference on Nonlinear evolution equations and wave phenomena: Computation and Theory, University of Georgia, Athens (GA), USA, March 17–19, 2019, (with N. Joshi, N. Nakazono, M. Radnovic, Y. Shi, D.T. Tran).
- Integrable systems 2018, School of Mathematics and Statistics, University of Sydney, Sydney (New South Wales), Australia, November 29–30 2018 (with N. Joshi, M. Radnovic, Y. Shi, and D.T. Tran).

10.5. Seminars.

- *Algebraic geometry and discrete integrable systems*, given in January 21st 2020 at SISSA (International School for Advanced Studies), Trieste (TS), Italy.
- *Lagrangians and integrability of difference equations*, given in January 17th 2020 at Università degli Studi di Roma La Sapienza, Dipartimento di Fisica, Roma (RM), Italy.
- *Complexity and integrability in 4D bi-rational maps with two invariants*, given on October 31st 2018 at Tōkyō University of Marine Science and Technology, Faculty of Marine Technology, Tōkyō (Tōkyō Prefecture), Japan.
- *Multiple scale expansions and application to non-equilibrium thermodynamics*, given on June 24th 2016 at Università degli Studi di Perugia, Dipartimento di Fisica e Geologia, Perugia (PG), Italy.

- *Linearization of Superintegrable systems*, given on November 30th 2015 at University of Queensland – School of Mathematics and Physics Brisbane (Queensland), Australia.

10.6. Schools attended.

- *XLI Summer School on Mathematical Physics*, 5 – 17 September 2016, Ravello, organized by Gruppo Nazionale per la Fisica Matematica (GNFM).
- *ASIDE16 (Abecedarian of SIDE)*, June 27th – July 1st, 2016, at Centre de Recherche Mathématiques, Université de Montréal, Montréal.

11. PUBLICATION LIST

Published papers.

- P1. Gubbiotti G. Lax pairs for the discrete reduced Nahm systems. Accepted for publication on *Math. Phys. Anal. Geom.* 2021. arXiv: 2009 . 01463 [nlin.SI].
- P2. Gubbiotti G. A novel integrable fourth-order difference equation admitting three invariants. Accepted for publication in “Proceedings of the Quantum Theory and Symmetries 11” conference published in *CRM Series on Mathematical Physics*, by Springer. 2020.
- P3. Gubbiotti G. Lagrangians and integrability for additive fourth-order difference equations. *Eur. Phys. J. Plus* 2020;135:853 (30pp).
- P4. Gubbiotti G and Joshi N. Space of initial values of a map with a quartic invariant. *Bull. Aus. Mat. Soc.* 2020:1–12.
- P5. Gubbiotti G, Joshi N, Tran DT, and Viallet CM. Bi-rational maps in four dimensions with two invariants. *J. Phys. A: Math. Theor* 2020;53:115201 (24pp).
- P6. Gubbiotti G, Joshi N, Tran DT, and Viallet CM. Complexity and Integrability in 4D Bi-rational Maps with Two Invariants. In: *Asymptotic, Algebraic and Geometric Aspects of Integrable Systems*. Ed. by Nijhoff F, Shi Y, and Zhang D. Cham: Springer International Publishing, 2020:17–36.
- P7. Garifullin RN, Gubbiotti G, and Yamilov RI. Integrable discrete autonomous quad-equations admitting, as generalized symmetries, known five-point differential-difference equations. *J. Nonlinear Math. Phys.* 2019;26:333–57.
- P8. Gubbiotti G. Algebraic Entropy of a Class of Five-Point Differential-Difference Equations. *Symmetry* 2019;11:432 (24pp).
- P9. Gubbiotti G. On the inverse problem of the discrete calculus of variations. *J. Phys. A: Math. Theor.* 2019;52:305203 (29pp).
- P10. Gubbiotti G and Latini D. A multiple scale approach to maximal superintegrability. *J. Phys. A: Math. Theor.* 2018;51:285201 (36pp).
- P11. Gubbiotti G and Scimaterna C. Reconstructing a lattice equation: a non-autonomous approach to the Hietarinta equation. *SIGMA* 2018;14:004 (21pp).
- P12. Gubbiotti G, Scimaterna C, and Yamilov RI. Darboux integrability of trapezoidal H^4 and H^6 families of lattice equations II: General solutions. *SIGMA* 2018;14:008 (51pp).
- P13. Gubbiotti G and Nucci MC. Are all classical superintegrable systems in two-dimensional space linearizable? *J. Math. Phys.* 2017;58:012902 (14pp).

- P14. Gubbiotti G and Nucci MC. Quantization of the dynamics of a particle on a double cone by preserving Noether symmetries. *J. Nonlinear Math. Phys.* 2017;24:356–67.
- P15. Gubbiotti G, Scimiterna C, and Levi D. A two-periodic generalization of the Q_V equation. *J. Integrable Sys.* 2017;2:xyx004 (13pp).
- P16. Gubbiotti G, Scimiterna C, and Levi D. The non autonomous YdKN equation and generalized symmetries of Boll equations. *J. Math. Phys.* 2017;58:053507 (18pp).
- P17. Gubbiotti G and Yamilov RI. Darboux integrability of trapezoidal H^4 and H^6 families of lattice equations I: First integrals. *J. Phys. A: Math. Theor.* 2017;50:345205 (26pp).
- P18. Chiuchiù D and Gubbiotti G. Multiple scales approach to the gas-piston non-equilibrium thermodynamics. *J. Stat. Mech. Theor. Exp.* 2016;2016:053110 (21pp).
- P19. Gubbiotti G and Chiuchiù D. Thermodynamics of slow solutions to the gas-piston equations. *Phys. Rev. E* 2016;94:042106 (6pp).
- P20. Gubbiotti G, Scimiterna C, and Levi D. Algebraic entropy, symmetries and linearization of quad equations consistent on the cube. *J. Nonlinear Math. Phys.* 2016;23:507–43.
- P21. Gubbiotti G, Scimiterna C, and Levi D. Linearizability and fake Lax pair for a consistent around the cube nonlinear non-autonomous quad-graph equation. *Theor. Math. Phys.* 2016;189:1459–71.
- P22. Gubbiotti G, Scimiterna C, and Levi D. On Partial Differential and Difference Equations with Symmetries Depending on Arbitrary Functions. *Acta Polytechnica* 2016;56:193–201.
- P23. Gubbiotti G and Nucci MC. Quantization of quadratic Liénard-type equations by preserving Noether symmetries. *J. Math. Anal. Appl.* 2015;422:1235–46.
- P24. Gubbiotti G and Nucci MC. Noether symmetries and the quantization of a Liénard-type nonlinear oscillator. *J. Nonlinear Math. Phys.* 2014;21:248–64.
- P25. Gubbiotti G and Nucci MC. Conservation laws for the Schrödinger–Newton equations. *J. Nonlinear Math. Phys.* 2012;19:1220002 (8pp).

Submitted papers.

- S.1. Gubbiotti G and Nucci MC. Superintegrable systems in non-Euclidean plane: hidden symmetries leading to linearity. 2021. arXiv: 2101.05270 [nlin.SI].

Papers in preparation.

- W.1. Gubbiotti G. Algebraic entropy for cross equations. in preparation. 2021.
- W.2. Gubbiotti G. Lagrangians and integrability for multiplicative fourth-order difference equations. 2021.
- W.3. Gubbiotti G. Stationary reductions of five-point differential-difference equations and their integrability properties. In preparation. 2021.
- W.4. Gubbiotti G and Hay M. A SymPy module to calculate algebraic entropy for difference equations and quadrilateral partial difference equations. in preparation. 2021.

- W.5. Gubbiotti G and Kels AP. Algebraic entropy for face-centered quad equations. 2021.
- W.6. Gubbiotti G, McLaren D, and Quispel GRW. Kahan Discretization for Dummies. 2021.
- W.7. Gubbiotti G and Nucci MC. Symmetry approach to superintegrability of classical Mechanical Systems in the plane. In preparation. 2021.

Book chapters.

- B.1. Gubbiotti G. Integrability of difference equations through Algebraic Entropy and Generalized Symmetries. In: *Symmetries and Integrability of Difference Equations: Lecture Notes of the Abecedarian School of SIDE 12, Montreal 2016*. Ed. by Levi D, Verge-Rebello R, and Winternitz P. CRM Series in Mathematical Physics. Berlin: Springer International Publishing, 2017. Chap. 3:75–152.

11/03/2021

Data

Perugia

Luogo