

PERSONAL INFORMATION

Nicola Sansonetto

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Gender Male | Date of birth 16 February 1976 | Nationality Italian

PRESENT JOB

Associate Professor, Settore Concorsuale 01/A4 Fisica Matematica, Settore Scientifico Disciplinare Mat/07, Department of Computer Science, Università degli Studi di Verona, since November 2022.

ABILITAZIONE SCIENTIFICA NAZIONALE

February 2023 Abilitazione Scientifica Nazionale di I Fascia, Settore Concorsuale 01/A4 Fisica Matematica.

EDUCATION

- 1995-2001 Bachelor and Master in Physics, Università degli Studi di Padova, Italy. Graduated on December 18, 2001. Title of the thesis *Metodi geometrici in meccanica quantistica*. Advisor prof. P. Marchetti, co-advisor prof. M. Spera.
- 2002-2006 Ph.D. in Mathematics, Università degli Studi di Padova, Italy. Graduated on October 16, 2006. Title of the thesis, *First Integrals in Nonholonomic Systems*. Advisor: prof. F. Fassò.
- 2006-2008 Master and abilitation in teaching methodology of Mathematics and Physics at High School, SISS Veneto, May 28, 2008.

PROFESSIONAL EXPERIENCE / EMPLOYMENT HISTORY

- Ricercatore a Tempo Determinato di tipo b, Settore Concorsuale 01/A4 Fisica Matematica, Settore Scientifico Disciplinare Mat/07, Department of Computer Science, Università degli Studi di Verona, Novembre 2018 - Ottobre 2022.
- Ricercatore a Tempo Determinato di tipo a, Settore Concorsuale 01/A4 Fisica Matematica, Settore Scientifico Disciplinare Mat/07, April 2018 - Ottobre 2019. Department of Computer Science, Università degli Studi di Verona.
- Research Associate in Mathematical-Physics and Geometric Control Theory, September 2016 - March 2018, Department of Computer Science, Università degli Studi di Verona.
- Research Associate, October 2013 - September 2015, Department of Mathematics, Università degli Studi di Padova, Italy.
- Research Associate, September 2009 - August 2010, Department of Computer Science, Università degli Studi di Verona, Italy.
- Research Associate, May 2007 - April 2008, Department of Computer Science, Università degli Studi di Verona, Italy.
- Adjunct Professors at the Università degli Studi di Verona, since the academic year 2008/2009.

SCIENTIFIC INTERESTS

Finite Dimensional Hamiltonian and non-Hamiltonian Integrable Systems, Nonholonomic systems, Geometric Mechanics, Symplectic and Differential Geometric Methods in Physics, Geometric Control of Mechanical Systems, Geometric Quantization, Topological Fluid Mechanics.

SCIENTIFIC COLLABORATORS

F. Fassò (Università degli Studi di Padova - Italy); A. Giacobbe (University of Catania - Italy); M. Spera (Università Cattolica Sacro Cuore, Brescia - Italy); P. Fiorini, M. Ginesi, A. Marigonda, R. Muradore, D. Rigo, and A. Calanca (Università degli Studi di Verona - Italy); L. Garcia-Naranjo (UNAM - Mexico); J.C. Marrero and E. Padrón (University of La Laguna - Spain); R. Ricca (University of Milano-Bicocca - Italy); P. Balseiro and D. Sepe (Universidade Federal Fluminense, Rio de Janeiro - Brasil); C. Tronci (University of Surrey); M. Zoppello (Politecnico di Torino - Italy).

RESEARCH PROJECTS AND GRANTS

- Member of the project *AI guidance for robot-assisted eye surgery* - GEYEDANCE HORIZON-CL4-2021-DIGITAL-EMERGING-01-10. Action: HORIZON Innovation Actions – 1 September 2022.
- Member of PRIN 2022 *Stability in Hamiltonian Dynamics and Beyond*, local unit of Padova, P.I. A. Sorrentino, Università di Roma Tor Vergata.
- Gennaio 2021, membro del Progetto Giovani Ricercatori 2021-2022 *Control of tumour growth: mathematical models and geometrical aspects*, P.I. dott.ssa Marta Zoppello - Polito.
- Principal investigator of the Progetto Giovani Ricercatori 2019, *Controllability and trajectory generation and nonholonomic mechanics*, budget 3500€.
- April 2019 - March 2020, Supervisor of the AdR3222-19, *Geometric control and reconstruction theory on principal bundles for mechanical control systems*, Department of Computer Science, Università degli Studi di Verona.
- Grant from the GNFM-INDAM of 1000€ to attend the XII AIMS Dynamical Systems and Applications, July 4-9, 2018, Taiwan.
- Member of the European Project ERC ARS, Principal Investigator Prof. P. Fiorini, Department of Computer Science, Università degli Studi di Verona.
- Progetto Giovani Ricercatori 2017, *Controllo geometrico e pianificazione di traiettorie di sistemi dinamici con simmetria su fibrati principali*. Principal investigator dott. M. Zoppello. Role in the project: member of the local unit of Università degli Studi di Verona, Italy.
- Progetto Giovani Ricercatori 2015, *Sistemi dinamici finito ed infinito dimensionali*. Principal investigator dott. A. Giacobbe. Role in the project: member of the local unit of Università degli Studi di Padova, Italy.
- Funds by the GNFM to attend the conference *Integrability in Mechanics and Geometry: Theory and Computations*, ICERM, Brown University, June 1–5, 2015.
- PRIN 2007B3RBEY_004 2008–2009, Area 01, *Sistemi dinamici Hamiltoniani e loro estensioni: metodi perturbativi, applicazioni alla meccanica celeste e alla meccanica statistica, aspetti geometrici della dinamica*. Principal Investigator: prof. C. Liverani. Role in the project: member of the local unit of Università degli Studi di Padova, Italy. Local Coordinator: prof. G. Benettin.
- European network MASIE *Mechanics and Symmetry in Europe* 2003–2005, HPRN-CT-2000-00113. Project Manager: prof. M. Roberts. Role in the project: member of the local unit of Università degli Studi di Padova, Italy. Local coordinator: prof. F. Fassò.

SCIENTIFIC VISITINGS

- Visiting the Department of Mathematics of the University of Surrey, UK, September 24–29, 2023 - fellowship of the LMS.
- Visiting IMPA - Rio de Janeiro, Brazil, December 2019.
- Visiting , Brazil, August 2019.
- Visiting the Department of Mathematics of PUC Rio de Janeiro, Brazil, June 2018.
- Visiting the Department of Mathematics of the University of La Laguna, Canarias Islands, Spain, May 8–13, 2017.
- Visiting IMPA - Rio de Janeiro, Brazil, July–August, 2015.
- Visiting the Department of Mathematics of the University of Utrecht, The Netherlands, October–November 2003.

FELLOWSHIPS

- Since September 2016, research fellowship AdR 2646/16, “*Analytical, geometrical and numerical methods for optimal control problems and applications to unmanned vehicles*”, Department of Computer Science, Università degli Studi di Verona, supervisors prof. G. Zampieri and P. Fiorini.
- October 2013 - September 2015, research fellowship for the research project “*Symmetries and integrability of nonholonomic mechanical systems*”, Department of Mathematics, Università degli Studi di Padova, supervisor prof. F. Fassò.
- September 2009 - August 2010, research fellowship AdR 1249/09, “*Nonholonomic dynamics*”, Department of Computer Science, Università degli Studi di Verona, supervisor prof. G. Zampieri.
- Research fellowship “Juan de la Cierva” at IMAFF Madrid, supervisor prof. M. de Leon. (Do not used).
- May 2007 - April 2008, research fellowship “*Global geometry of completely integrable systems*”, Department of Computer Science, Università degli Studi di Verona, supervisor prof. M. Spera.

SPEAKER AT CONFERENCES, SCHOOLS AND MEETINGS

Invited Speaker at International Conferences/Worshops

- International Workshop on Geometric Control and Mechanics, 5-6 July 2024, Thessaloniki, Greece. Title of the talk: *Path planning via a Dynamic Moving Primitive approach to the obstacle avoidance problem.*
- IX International Conference GDIS-2024, 2-8 June 2024, Zlatibor - Serbia. Title of the talk: *Integrability and Hamiltonisation in nonholonomic mechanical systems with symmetry.*
- Kick-off workshop del PRIN *Stability in Hamiltonian Dynamics and Beyond*. Rome 2-3 February 2024. Title of the talk: *On integrable Hamiltonian systems on almost symplectic manifolds.*
- Geotop-A, International conference 0 Applications of Geometry and Topology, 8-13 January 2024, Mérida - Yucatán, México. Titolo dell'intervento: *Dynamics of a large number of charged vortices in the plane.*
- Congresso nazionale UMI, Pisa 4-9 Settembre 2023, Title of the talk: *Nonholonomic systems with symmetry: integrability and Hamiltonization.*
- Assemblea Scientifica Nazionale - GNFM - Montecatini, May 05-07, 2022. Title of the talk: *Hamiltonisation and integrability in nonholonomic systems with symmetry.*
- International Conference on Poisson Geometry, IMPA Rio de Janeiro, December 09 -13, 2019. Title of the talk: *Hamiltonisation and integrability in nonholonomic mechanical systems with symmetry.*
- XII AIMS Dynamical Systems and Applications, July 4-9, 2018, Taiwan. Title of the talk: *Nonholonomic systems with affine constraints and moving energies.*
- III Mini-Workshop em Geometria Simplética, June 20-21, 2018, Rio de Janeiro, Brazil. Title of the talk: *On integrable Hamiltonian systems on almost-symplectic manifolds.*
- V Iberoamerican Meeting on Geometry, Mechanics and Control, January 16–20, 2017, University of La Laguna, Canarias Islands - Spain. Title of the talk: *Nonholonomic Systems with Affine Constraints, (Moving) Energies and Integrability.*
- XI Young Researchers Workshop on Geometry, Mechanics and Control, January 12–14, 2017 University of La Laguna, Canarias Islands - Spain. Lecturer of the mini-course in mechanics, title of the mini-course: *Integrability and Nonholonomic Systems with Symmetry.*
- Nonholonomic and robotics day, July 7 2016, Department of Mathematics, Università degli Studi di Padova; Title of the talk: *Some aspects on the integrability of nonholonomic systems with symmetry.*
- XXX Coloquio Brasileiro de Matematica, IMPA, Rio de Janeiro - Brazil, 27–31 July 2015. Title of the talk: *'Moving' energy and integrability of a ball on a turning cup.*
- Conference on *Beyond Toric Integrability*, EPFL Lausanne December 9–13, 2013. Title of the talk: *Quantum Hamiltonian Monodromy and Geometric Quantisation Techniques.*
- *Giornata di Dinamica*, Department of Computer Science, Università degli Studi di Verona, 22 June 2007. Title of the talk: *Relationship between symmetries and first integrals in nonholonomic systems.*

Speaker at International Conferences/Workshops

- BlochFest, Miraflores de la Cristalera - Madrid, 11-14 July 2023. Title of the talk: *Ball on a rotating 'cup'*.
- Topological Methods in Mathematical Physics, ERICE 02-06 September 2022. Title of the talk: *Integrability and Hamiltonisation of Nonholonomic Systems with Symmetry*.
- XXX International Fall Workshop on Geometry and Physics, ICMAT Madrid, 29 August - 2 September 2022. Title of the talk *Hamiltonisation of Nonholonomic Systems with Symmetry*.
- 59th Conference on Decision and Control, December 14-18 2020, online Conference. Title of the Talk: *On the trajectory generation of the hydrodynamic Chaplygin sleigh*.
- 19th International Conference in Advanced Robotics, Belo Horizonte 2-6 December, 2019. Title of the talk: *Dynamic Movement Primitives: Volumetric Obstacle Avoidance*.
- Assemblée Scientifica Nazionale del GNFM, October 04-06, 2018, Montecatini, Italy. Title of the talk: *Moving energies e dinamica di una palla che rotola in una tazza rotante*.
- 11th International Summer School on Geometry, Mechanics and Control (ICMAT school), June 26-30, 2017, ICMAT, Madrid, Spain. Title of the talk: *An integrability result for certain nonholonomic systems with symmetry*.
- Fifth International Conference and School in Geometry, Dynamics, Integrable Systems GDIS 2014: Bicentennial of The Great Poncelet Theorem and Billiards Dynamics, June 13–27, 2015, ICTP, Trieste, Italy. Short communication: *Symmetries and first integrals in nonholonomic mechanics*.
- 9th International Young Researcher Workshop on *Geometry, Mechanics and Control*, January 19–21, 2015, University of Zaragoza Zaragoza, Spain. Title of the talk: *Complete Integrability, the Hamilton–Jacobi Equation and Nonholonomic Systems*.
- Workshop in Nonlinear dynamical systems and applications, Centro de Giorgi, February 18–19, 2011 Pisa, Italy. Title of the talk: *The problem of the Noetherianity of constants of motion in nonholonomic mechanics*.
- XII International Conference on Geometry, Integrability and Quantisation, June 4–9, 2010, Varna, Bulgaria, Title of the talk: *Hamiltonian Monodromy via Geometric Quantisation and theta functions*.
- XVII Congresso UMI, September 12, 2003, University of Milano-Bicocca, Italy. Title of the talk: *Integrability and Geometric Quantum Mechanics*.

Department talks

- Department of Mathematics of University of Surrey, UK, September 27th 2023. Title of the talk: *Integrable Hamiltonian systems on almost-symplectic manifolds*.
- Department of Mathematics, PUC Rio de Janeiro, Brasile, June 8th 2018. Title of the talk: *Hamiltonian Monodromy via Geometric Quantisation*.
- Department of Mathematics, University of La Laguna, Canaria Islands, Spain, May 12th, 2017. Title of the talk: *Geometric and dynamical structures of the phase space of a heavy ball that rolls without slipping on a convex surface of revolution*.
- Dipartimento di Matematica e Fisica dell'Università Cattolica del Sacro Cuore di Brescia, November 20th, 2015. Title of the talk: *Some Geometric Aspects of Nonholonomic Systems with Symmetry*.
- Department of Matematica Pura e Applicata, Università degli Studi di Padova, Spring 2005. Lectures on *Dirac Manifolds and Their Applications to Mechanics*.

Online Seminars

- Online Seminar at the NTNU - DNA Seminar, October 5th, 2022. Title of the talk: *Ball on a rotating 'cup'*.
- Online Seminar of the Geometry, Mechanics and Control Thematic Network at ICMAT, October 1st, 2021. Title of the talk: *Ball on a rotating 'cup'*.

- Posters**
- Poster on ‘Moving’ energy and integrability of a ball in a turning cup. Joint STAMP conference and 9th ICMAT International GMC Summer School on Symplectic Geometry, Classical Mechanics and Interactions with Spectral Theory, La Cristalera, Miraflores de la Sierra, Madrid - Spain - 29 June – 3 July, 2015.
 - Poster on *Linear First Integrals in Nonholonomic Systems with Symmetry*. GDIS ICTP, Trieste June 16–27, 2014.
 - Poster on *Symmetries and first integrals in nonholonomic mechanics*. 4th Summer School on Geometry, Mechanics and Control Santiago de Compostela (Spain) July 5–9, 2010.

ORGANIZATION OF EVENTS

- 2022**
 - Member of the organising committee of the ECMI Modelling Week, Verona July 4-8, 2022.
 - Member of the organising and scientific committee and Zoom master of the series of online seminars GDMSeminar <https://events.math.unipd.it/GDMSeminar>
 - Member of the organising and scientific committee and Zoom master of the series of seminars *Young Researcher Seminars, Maths Applications and Models* at the Department of Computer Science of the University of Verona <https://mathseminarsverona.wordpress.com>
- 2021**
 - Member of the organising and scientific committee and Zoom master of the series of online seminars GDMSeminar <https://events.math.unipd.it/GDMSeminar>
 - Member of the organising and scientific committee of the series of seminars *Young Researcher Seminars, Maths Applications and Models* at the Department of Computer Science of the University of Verona <https://mathseminarsverona.wordpress.com>
- 2020**
 - Member of the organising and scientific committee and Zoom master of the series of online seminars GDMSeminar <https://events.math.unipd.it/GDMSeminar>
- 2018**
 - Member of the organising committee of the 12th *Young Researchers Workshop on Geometry, Mechanics and Control* of the Network GMC, January 22–24, 2018, Dipartimento di Matematica Tullio Levi-Civita, Università degli Studi di Padova.
 - Member of the organising and scientific committee of the workshop *Dynamics and integrability of nonholonomic and other non-Hamiltonian systems*, January 24–27, 2018, Dipartimento di Matematica Tullio Levi-Civita, Università degli Studi di Padova.
- 2016**
 - *Nonholonomic and robotics day*, Dipartimento di Matematica, Università degli Studi di Padova, July 4, 2016.
- 2014**
 - Workshop *Problemi attuali in teoria dei sistemi dinamici*, Università Milano Bicocca, May 22–23, 2014.

PUBLICATIONS, THESES,
PRE-PRINTS AND DRAFTS

Publications in Journals

- P28 F. Vesentini, D. Rigo, N. Sansonetto, L. Di Persio, and R. Muradore, *Minimum-energy switching geometric filter on lie groups for differential-drive wheeled mobile robots*. *European Journal of Control* **80** (2024) 101101.
- P27 D. Rigo, N. Sansonetto, and R. Muradore, *Geometric optimal filtering for an articulated n-trailer vehicle with unknown parameters*. *Int. J. Robust Nonlinear Control*. (2024), 1–19.
- P26 M.C. Nucci and N. Sansonetto, *Moving energies hide within Noether's first theorem*. *J. Phys. A* **56** (2023), Paper No. 165202, 9 pp.
- P25 D. Rigo, N. Sansonetto, and R. Muradore, *Second-order-optimal filtering on $SE(2) \times R^2$ for the Chaplygin sleigh*. *Systems Control Lett.* **178** (2023), Paper No. 105568, 10 pp.
- P24 M. Dalla Via, F. Fassò and N. Sansonetto, *On the dynamics of a heavy symmetric ball that rolls without sliding on a uniformly rotating surface of revolution*. *J. Nonlinear Sci.* **32** (2022), Paper No. 84, 45 pp.
- P23 D. Rigo, C. Segala, N. Sansonetto and R. Muradore, *Second-order-optimal filter on Lie groups for planar rigid bodies*. *IEEE Trans. Automat. Control* **67** (2022), 4971–4977.
- P22 F. Fassò and N. Sansonetto, *On some aspects of the dynamics of a ball in a rotating surface of revolution and of the kasamawashi art*. *Regul. Chaotic Dyn.* **27** (2022), 409–423.
- P21 P. Balseiro and N. Sansonetto, *First Integrals and Symmetries of Nonholonomic Systems*. *Archive for Rational Mechanics and Analysis*, **244**, 343–389, (2022).
- P20 M. Ginesi, N. Sansonetto and P. Fiorini, *Overcoming some drawbacks of Dynamic Movement Primitives*. *Robotics and Autonomous Systems*, **144**, 103844, (2021).
- P19 M. Ginesi, D. Meli, A. Roberti, N. Sansonetto and P. Fiorini, *Dynamic Movement Primitives: Volumetric Obstacle Avoidance Using Dynamic Potential Functions*. *Journal of Intelligent and Robotic Systems: Theory and Applications*, **101** (4), 79, (2021).
- P18 Sansonetto, N., Zoppello, M. *On the Trajectory Generation of the Hydrodynamic Chaplygin Sleigh*. *IEEE Control Systems Letters* **4**, 9098917, pp. 922-927, (2020).
- P17 F. Fassò, L. García Naranjo and N. Sansonetto, *Moving energies as first integrals of non-holonomic systems with affine constraints*. *Nonlinearity*, **18** 755 (2018).
- P16 P. Balseiro and N. Sansonetto, *A Geometric Characterization of Certain First Integrals for Nonholonomic Systems with Symmetries*. *SIGMA*, **12**, 14 pages (2016).
- P15 F. Fassò and N. Sansonetto, *Conservation of 'Moving Energy' in Nonholonomic Systems with Affine Constraints and Integrability of Spheres on Rotating Surfaces*. *J. Non. Sci.*, **26**, 519–544 (2016).
- P14 F. Fassò and N. Sansonetto, *Conservation of Energy and Momenta in Nonholonomic Systems with Affine Constraints*. *Regul. Chaotic Dyn.*, **2**, 449–462 (2015).
- P13 L. Bates, F. Fassò and N. Sansonetto, *The Hamilton–Jacobi equation, integrability and nonholonomic systems*. *J. Geom. Mech.* **6**, 441–449 (2014).
- P12 N. Sansonetto and D. Sepe, *Twisted Isotropic Realizations of Twisted Poisson Structures*. *J. Geom. Mech.* **2**, 233–256 (2013).
- P11 N. Sansonetto, *Esame di Stato 2011, seconda prova scritta per il liceo scientifico di Ordinamento*. *Archimede*, **4** 2011. (In italian).
- P10 F. Fassò, A. Giacobbe and N. Sansonetto, *Linear weakly Noetherian first integrals and gauge momenta*. *J. Geom. Mech.* **4** 129–136 (2012).
- P9 N. Sansonetto, *Monodromy and Bohr–Sommerfeld Geometric Quantisation*. *JGSP* **20**, 97–106 (2010).
- P8 N. Sansonetto, M. Spera, *Hamiltonian Monodromy via geometric quantisation and theta functions*. *J. Geom. Phys.* **60**, 501–512 (2010).
- P7 F. Fassò, A. Giacobbe, N. Sansonetto, *On the number of weakly Noetherian constants of motion of nonholonomic systems*. *J. Geom. Mech.*, **1** 389–416 (2009).
- P6 F. Fassò, N. Sansonetto, *An elemental overview of the nonholonomic Noether theorem*. *IJMMP*, special issue “Geometry of integrable systems”, **6**, 1343–1355 (2009).

- P5 F. Fassò, A. Giacobbe, N. Sansonetto, *Gauge Integrals, the Nonholonomic Momentum Equations and the Reaction–Annihilator distribution*. Rep. Math. Phys. **62**, 345–367 (2008).
- P4 F. Fassò, A. Ramos, N. Sansonetto, *The reaction-annihilator distribution and the nonholonomic Noether theorem for lifted actions*. Regul. Chaotic Dyn. **12**, 579–588 (2007).
- P3 F. Fassò, N. Sansonetto, *Integrable Almost-symplectic Hamiltonian Systems*. J. Math. Phys. **48**, (2007).
- P2 F. Fassò, A. Giacobbe, N. Sansonetto, *Periodic flows, Poisson structures and nonholonomic mechanics*. Regul. Chaotic Dyn. **10**, 267–284 (2005).
- P1 A. Benvegnù, N. Sansonetto, M. Spera, *Remarks on Geometric Quantum Mechanics*. J. Geom. Phys. **51**, 229–243 (2004).

Conference Proceedings

- CP5 D. Rigo, N. Sansonetto, and R. Muradore, *A comparison between the Extended Kalman Filter and a Minimum-Energy Filter in the TSE(2) case*. Proceedings of the IEEE Conference on Decision and Control, **2021**, 6175–6180 (2021).
- CP4 M. Ginesi, D. Meli, A. Roberti, N. Sansonetto and P. Fiorini, *Autonomous task planning and situation awareness in robotic surgery*. IEEE International Conference on Intelligent Robots and Systems, pp. 3144–3150, (2020).
- CP3 M. Ginesi, D. Meli, A. Calanca, D. Dall’Alba, N. Sansonetto, and P. Fiorini, *Dynamic movement primitives: Volumetric obstacle avoidance*. 2019 19th International Conference on Advanced Robotics, ICAR 2019, 8981552, pp. 234–239, (2019).
- CP2 F. Boriero, N. Sansonetto, A. Marigonda, R. Muradore and P. Fiorini, *Optimal Solution of Kinodynamic Motion Planning for the Cart-Pole System*. IFAC PapersOnLine 50-1 (2017) 6308–6313. DOI: 10.1016/j.ifacol.2017.08.895
- CP1 N. Sansonetto, *Monodromy and Bohr–Sommerfeld Geometric Quantisation*. Proceedings of the Tenth International Conference on Geometry, Integrability and Quantisation, June 4–09, 2010, Varna, Bulgaria. I.M. Mladenov, A. Ludu and A. Yoshioka, Editors; Sofia, 320–238 (2012). DOI: 10.7546/giq-12-2011-320-328

ADMINISTRATIVE AND TEACHING ACTIVITIES

- Administrative duties**
- February 2024-present day, **Coordinator of the “Percorso abilitante 30/60cfu classi A027 e A047”**.
 - April 2024-present day, **Coordinator of the Paritetic Committee** of the Department of Computer Science of the University of Verona.
 - December 2023-May 2024, **Member of Evaluating Committee for an academic position rtd-b in mathematical physics**, Università degli Studi di Padova, Italy.
 - June 22, 2022, **Member of Ph.D. Evaluating Committee**, Università degli Studi di Padova, Italy. Member of the commission for the evaluation of Ph.D. Thesis of Dr. Galasso Sara, supervisor prof. Francesco Fassò.
 - November 2021-present day, **person in charge** of the Double Degree Program in Mathematics between the University of Verona and the University Franche Comté in Dijon.
 - June 2020-March 2024, **Member of the Paritetic Committee** of the Department of Computer Science of the University of Verona.
 - Autumn 2021, **Coordinator of the Tutor Committee** for the Bachelor in Applied Mathematics and the Master in Mathematics of the University of Verona.
 - December 2017, **Member of Ph.D. Evaluating Committee**, Universidade Federal Fluminense, Brazil. Member of the commission for the evaluation of Ph.D. Thesis of Dr. Luis P. Yapu Quispe, supervisor prof. Paula Balseiro.

- University Teaching
- *Progettazione di esperienze didattiche laboratoriali in matematica A*, Università degli Studi di Verona: 2023/2024.
 - *Analisi 2: Applicazioni e Metodi Matematici*, Laurea in Ingegneria dei sistemi medicali per la persona, Università degli Studi di Verona: 2022/2023, 2023/2024.
 - *Differential Geometry*, Laurea Magistrale in Mathematics, Università degli Studi di Verona: 2021/2022, 2022/2023, 2023/2024, 2024/2025.
 - *Numerical modeling and optimization*, Laurea Magistrale in Mathematics, Università degli Studi di Verona: 2019/2020, 2020/2021, 2021/2022, 2023/2024.
 - *Sistemi Dinamici*, Laurea in Matematica Applicata, Università degli Studi di Verona: 2018/2019, 2019/2020, 2020/2021.
 - *Analytical Mechanics*, Laurea Magistrale in Mathematics, Università degli Studi di Verona: 2016/2017, 2017/2018, 2018/2019, 2019/2020, 2020/2021, 2021/2022, 2022/2023, 2023/2024.
 - *Elementi di Geometria*, Laurea in Matematica Applicata, Università degli Studi di Verona: 2012/2013, 2013/2014, 2014/2015, 2015/2016.
 - *Exercises of Meccanica razionale*, Laurea in Ingegneria Civile, Università degli Studi di Padova: 2013/2014.
 - *Geometria*, Laurea in Matematica Applicata, Università degli Studi di Verona: 2012/2013.
 - *Exercises for the class of Differential Geometry and Topology*, Laurea Magistrale in Mathematics, Università degli Studi di Verona: 2009/2010, 2010/2011, 2011/2012.
 - *Exercises for the class of Algebra Lineare ed Elementi di Geometria*, Laurea in Matematica Applicata, Università degli Studi di Verona: 2006/2007, 2007/2008, 2008/2009, 2009/2010, 2010/2011, 2011/2012.
 - *Matematica di Base*, Laurea in Matematica Applicata, Università degli Studi di Verona: 2008/2009.
 - *Exercises for the class of Analisi 2*, Laurea in Matematica Applicata, Università degli Studi di Verona: 2008/2009.

POSTDOC SUPERVISION

- Postdoc – Zoppello Marta, period from April 2019 to July 2019, funded by the University of Verona.

STUDENT SUPERVISION

- Ph.D. Students – Luise Martina, XXXVIII Cycle of Ph.D. School in Mathematics, University of Trento, Italy.
– Eugenio Paolo Petit, XXXV Cycle of Ph.D. School in Mathematics, University of Trento, Italy.
– Damiano Rigo, XXXV Cycle of Ph.D. School in Computer Science, University of Verona, Italy, (Co-advisor).

- M.Sc. Students – Luise Martina, *A geometric approach to quantum vortices on Riemann surfaces*. Laurea Magistrale in Mathematics, Università degli Studi di Verona, defended on March 2022.
– Murari Davide, *Integrable non-Hamiltonian systems: from B-integrability to Euler-Jacobi Theorem and back*. Laurea Magistrale in Mathematics, Università degli Studi di Verona, defended on July 2020.
– Vantini Elena, *Tides and tidal effects for Earth-Moon system via an Hamel's equations approach*. Laurea Magistrale in Mathematics, Università degli Studi di Verona, defended on March 2020.
– Vu Ho Thuan Thao, *Euler-Poincaré equations and applications to fluid dynamics*. Laurea Magistrale in Mathematics, Università degli Studi di Verona, defended on July 2019.
– Zerbinato Marco, *Analysis of the limbo problem for the cart-pole system*. Laurea Magistrale in Mathematics, Università degli Studi di Verona, defended on July 2019.
– Rigo Damiano, *Global aspects of completely integrable Hamiltonian systems in classical and quantum mechanics via geometric quantisation*. Laurea Magistrale in Mathematics, Università degli Studi di Verona, defended on March 2019.
– Meneguzzi Sara, *A geometric mechanical description of the twisting tennis racket*. Laurea Magistrale in Mathematics, Università degli Studi di Verona, defended on March 2019.
– Hristova Gergana, *Geometric control of the cart-pole system*. Laurea Magistrale in Mathematics, Università degli Studi di Verona, defended on March 2019.
– Stanzial Martina, *On the controlled dynamics of a 1-dimensional quadroto with a pendulum*. Laurea Magistrale in Mathematics, Università degli Studi di Verona, defended on March 2018.
– Dalla Via Marco, *Geometric and dynamic phase-space structure of a class of nonholonomic systems with symmetries*. Laurea Magistrale in Physics, Università degli Studi di Padova, defended on September 2017.

- Minicourse organization at the Master in Mathematics, Università degli Studi di Verona – Minicorso: "Cosmology and Differential Geometry", Dicembre 2022. Relatore prof. Carlo Schimd - Università di Marsiglia - Francia.
– Minicourse: "Euler-Poincaré variational principles and applications to fluid dynamics", May/June 2022. Teacher: prof. Cesare Tronci - University of Surrey - UK.
– Minicourse: "Introduction to the geometry of integrable Hamiltonian systems", November 2020. Teacher: prof. Daniele Sepe - Universidade Federal Fluminense - Brazil.

- Teaching at High School – Teacher of Mathematics since 2012/2013.
– Teacher of Mathematics and Physics in many high schools of Verona since 2008/2009.

Other teaching and scientific activities

- March 2022, Progetto Nazionale Lauree Scientifiche - Verona - Educando agli Angeli, Coniche e Sistemi Dinamici.
- December 2018 - January 2019, STEM project “La bottega di Archimede” at the Istituto Lavinia Mondin - Verona.
- September 2018, STEM project “La bottega di Archimede” at the Istituto comprensivo M. Hack, San Giovanni Lupatoto.
- February 2018, conference on “*Le tassellazioni del piano e il gruppo dei mosaici*”, Mathesis di Mantova.
- PNLS - Verona - 2018, lecturer in the class for high-school teachers, lecture on *Isometrie e tassellazioni del piano*.
- PNLS - Verona - 2017, lecturer of the class for high-school teachers: *Modelli matematici via GeoGebra*.
- PNLS - Verona - 2016, lecturer of the class for high-school teachers: *Geometria dello spazio*.
- PNLS - Padova - 2016 lecturer of the class for high-school teachers: *Modelli differenziali: teoria, didattica e applicazioni*.
- 2013, lectures for high-school teachers on teaching methodology: “... oltre il compasso”, Verona.
- 2013, organiser of the lectures for high-school students on Cosmology: “... verso l’altre stelle”, Verona.
- 2012, organiser of the lectures for high-school teachers and students on modern physics: “*Standard non-Standard*”, Verona.
- Since 2006, trainer for the olympic games in Mathematics, for the Università degli Studi di Verona.
- PNLS (National Plane for Scientific Degrees), Liceo Scientifico Fracastoro, *Introduction to Cryptography and Python*.

Verona, February 24, 2025

Nicola Sansonetto

DICHIARAZIONE SOSTITUTIVA DI CERTIFICAZIONE (art 46 del D.P.R. n.445 del 28/12/2000)
DICHIARAZIONE SOSTITUTIVA DELL'ATTO DI NOTORIETA' (artt. 46 e 47 del D.P.R. n.445 del 28/12/2000)

Il sottoscritto Cognome: SANSONETTO Nome: NICOLA, Codice Fiscale: SNSNCL76B16C957U nato a CONEGLIANO - TREVISO il 16-02-1976 residente a SAN MARTINO BUON ALBERGO - VERONA, cap 37036, via Dolomiti 32, email nicola.sansonetto@gmail.com

consapevole delle sanzioni penali, nel caso di dichiarazioni non veritiere e falsità negli atti, richiamate dall'art. 76 del D.P.R. 445/2000 e dalle leggi speciali in materia

DICHIARA

- di possedere i titoli riportati nel curriculum;
- che quanto riportato nel curriculum risponde a verità.

Verona, February 24, 2025

Nicola Sansonetto