

PERSONAL INFORMATION

Family name, First name: MARZUOLI ANNALISA
24 March, 1955, Milano, Italy

EMPLOYMENT

May 2019: National Scientific Qualification (ASN 2018), Full Professorship in Mathematical Physics;
Dec. 2013: National Scientific Qualification (ASN 2012), Full Professorship in Mathematical Physics;
2000-present: Associate Professor of Mathematical Physics (Dept. of Nuclear and Theoretical Physics, since 2011 Dept. of Mathematics 'F Casorati'), University of Pavia;
1984-2000: Researcher of Theoretical Physics (Inst. of Theoretical Physics and then Dept. of Nuclear and Theoretical Physics), University of Pavia.

FELLOWSHIPS AND VISITING POSITIONS

1979-1982: Research Fellowship of the National Research Council in Mathematical Physics;
March-May 1993: Santa Barbara, CA: Semester *Small Scale Structure of Spacetime*;
July-August 1997: Santa Fe, New Mexico: *New Directions in Simplicial Quantum Gravity*;
May 2014: Visiting Professor, Charles University in Prague, Faculty of Mathematics and Physics (LLP Erasmus Mobility Programme).

MEMBERSHIPS & SCIENTIFIC COORDINATIONS

1980-present: research associate, National Group of Mathematical Physics (GNFM) of the National Institute of Advanced Mathematics (INdAM);
1987-present: research associate, National Institute of Nuclear Physics (INFN);
2000/01-2010/11: participant to several PRIN (National Research Projects) in Mathematics;
2004: Coordinator of the interdisciplinary Project *Geometric Partition Functions* (INdAM)
2006-2012: research associate, Institute for the Scientific Interchange, Torino, Italy;
2009-10: Scientific Coordinator of the Italian team of the bilateral Project (Consortium E.I.N. S.T.E.I.N-Russian Foundation for Basic Research) *Semiclassical Analysis of Quantum Integrable Systems modeled on Racah-Wigner algebra*;
2015: Scientific Coordinator of the INdAM Meeting *Chromatic and Colored Structures in Geometry and Statistical Physics*;
2015: co-organizer of the public lectures *Einstein 2015, 100 anni di Relatività Generale*, University of Pavia;
2016-present: elected member, Board of the Italian Society of General Relativity and Gravitational Physics; September 2022: elected Secretary of the Society

2014-2022: scientific coordinator of the Pavia Unit of the Project *Geometry and Symmetry in Quantum Field Theory* (INFN, National Commission IV);
2016-2022: member of the Board of the Doctorate Course in Mathematics Pavia-Milano Bicocca-INdAM;
2021-2022: national coordinator of the Project *Geometry and Symmetry in Quantum Field Theory* (INFN, National Commission IV).

INSTITUTIONAL SERVICES

1991-1996 and 1998-2000: elected member, Academic Committee (Senato Accademico) of Pavia University;

Nov 2009 - Jan 2013: elected member, Management Board (Consiglio di Amministrazione) of Pavia University.

Member of hiring and reviewing committees in Italian Universities and for INFN;

2019-23: member of the Equal Opportunities Committee of Pavia University

PUBLICATIONS

Coauthor of 80+ publications & four research monographs published by Springer.

<https://scholar.google.it/citations?user=DhCY9AUAAA&hl=it>

RESEARCH TOPICS AND SELECTED PUBLICATIONS

1. Quantum algorithms for topological invariants

1a. S Garnerone, A Marzuoli, M Rasetti, *Efficient quantum processing of 3-manifold topological invariants*, Adv. Theoretical and Mathematical Physics **13**, 1601-1652 (2009)

2. Topological quantum computation

2a. Z Kádár, A Marzuoli, M Rasetti, *Microscopic description of 2d topological phases, duality and 3d state sums*, Adv. Mathematical Physics **2010**, 671039 (18 pp) (2010)

2b. A Marzuoli, G Palumbo, *BF-Theory in graphene: a route toward topological quantum computing?*, Europhys. Lett. **99**, 10002 (5 pp) (2012)

2c. A Marzuoli, M Rasetti, *Spin network quantum circuits*, Int. J. Circuit Theory and Applications **45**, 951-969 (2017)

3. Spin networks and applications

3a. R W Anderson, V Aquilanti, A Marzuoli, *3nj morphogenesis and asymptotic disentangling*, J. Phys. Chem. A **113**, 15106-15117 (2009)

3b. V Aquilanti, D Marinelli, A Marzuoli, *Hamiltonian dynamics of a quantum of space: hidden symmetries and spectrum of the volume operator, and discrete orthogonal polynomials*, J. Phys. A: Mathematical and Theoretical **43**, 175303 (9 pp) (2013)

3c. V Aquilanti, D Marinelli, A Marzuoli, *Symmetric coupling of angular momenta, quadratic algebras and discrete polynomials*, J. Phys. Conference Series **482**, 012001 (13 pp) (2014)

3d. A Marzuoli, *The Ponzano-Regge model*, invited contribution to the volume

Tullio Regge, *An eclectic genius- From Quantum Gravity to Computer Play*, Edited by L. Castellani A. Ceresole R. D'Auria Pietro Fré. Regge. pp. 99-110, SINGAPORE: World Scientific, ISBN: 9789811213434, doi: 10.1142/11643 (2020)

4. Algebraic and geometric methods in classical and quantum Field Theory

4a. M Carfora, A Marzuoli, *Quantum Triangulations: Moduli spaces, Strings, and Quantum Computing*, Lecture Notes in Physics **845** (295 pp.), Springer--Verlag Berlin--Heidelberg (2012) ISBN 9783642244391

4b. A Marzuoli, F A Raffa, M Rasetti, *Where do bosons actually belong?*, J. Phys. A: Mathematical and Theoretical **47**, 275292 (9 pp) (2014)

4c. M Carfora, A Marzuoli: *Quantum Triangulations: Moduli Space, Non-linear Sigma Models, Ricci Flow and Quantum Computing*

Lecture Notes in Physics **942**, ISBN 978-3-319-67936-5; ISBN 978-3-319-67937-2 (ebook),

Springer International Publishing AG (2017)

4d. M. Carfora, A. Marzuoli, *Einstein Constraints and Ricci Flow – A Geometrical Averaging of Initial Data Sets*; pp. XII + 173, Monography in the Series *Mathematical Physics Studies* – Springer – ISBN 978-981-19-8539-3 (2023)