

University Academic Curriculum Vitae

Personal Information Paolo Maraner
E-Mail: paolo.maraner@unibz.it
ORCID: [0000-0003-0048-3770](https://orcid.org/0000-0003-0048-3770)

Education since leaving school 1990 – Laurea in Fisica (First Degree in Physics, 110/110 cum laude), Università degli Studi di Trento, Trento, Italy
1994 – PhD in Physics (Dottorato di Ricerca in Fisica), Università degli Studi di Parma, Parma, Italy
1999 – National Certification as Teacher of Mathematics and Physics
Habilitation: not applicable (Italian system)

Present appointment Teacher of Mathematics and Physics (since 09/2000) and Contract Professor / Lecturing Assistant (since 10/2006)
Start: September 2000 (Liceo Carducci, Bolzano); October 2006 (Free University of Bozen-Bolzano)
Secondary school teacher (national) / Contract Professor and Lecturing Assistant (international university)
(1) Liceo G. Carducci, via Mancini 8, Bolzano, Italy (state secondary school); (2) Free University of Bozen-Bolzano, Bolzano, Italy (trilingual international university, public)
Teaching Mathematics and Physics at secondary school level (Italian); teaching Mathematics for Economists and related courses at university undergraduate level (English)

Professional experience Chronological list of previous positions:

From / to	Job title	Name of academic Institution	Academic level	Responsibilities
10/1999–03/2000	Contract Researcher (Physics)	Università degli Studi di Parma, Parma, Italy	Recognized Researcher	Research in theoretical physics
10/1998–07/1999	Researcher (Physics)	Wigner Research Centre for Physics (MTA KFKI), Budapest, Hungary	Recognized Researcher	Research in theoretical physics
09/1996–09/1998	Post-Doctoral Fellow "Bruno Rossi" MIT-INFN	Center for Theoretical Physics, Massachusetts Institute of Technology, Cambridge, MA, USA	Postdoctoral Researcher	Research in theoretical physics
10/1994–08/1996	Post-Doctoral Fellow (Physics)	Università degli Studi di Parma, Parma, Italy	Postdoctoral Researcher	Research in theoretical physics

Experience in academic teaching

- Courses taught at the Free University of Bozen-Bolzano (undergraduate level, SECS-S/06, in English):

AY	Role	Course	Hours
2025/26	Lecturing Assistant	Mathematics for Economists M1+M2	120
2025/26	Lecturing Assistant	Mathematics for EPE B	30
2024/25	Contract Professor	Mathematics for Economists M1	36
2024/25	Lecturing Assistant	Mathematics for Economists M2	48
2024/25	Lecturing Assistant	Mathematics for EPE M2	36
2023/24	Contract Professor	Preparatory Course in Mathematics	40
2023/24	Lecturing Assistant	Mathematics for Economists M1+M2	132
2023/24	Lecturing Assistant	Mathematics for EPE M1+M2	72
2022/23	Contract Professor	Preparatory Course in Mathematics	60
2022/23	Lecturing Assistant	Mathematics for Economists M1+M2	132
2022/23	Lecturing Assistant	Mathematics for EPE M1+M2	72
2021/22	Lecturing Assistant	Mathematics for Economists M1+M2	132
2021/22	Lecturing Assistant	Mathematics for EPE M1+M2	72

- Over 20 years of experience teaching Mathematics at university level (undergraduate) and Mathematics and Physics at secondary school level. Consistent multi-year engagement as Lecturing Assistant and Contract Professor at the Free University of Bozen-Bolzano. Teaching entirely in English in a trilingual, international academic environment.
- No PhD supervision.

Other academic responsibilities

- Internal appointments: none.
- External appointments: none.
- Conference/seminar organisation: none.

Memberships

Membership of academic or professional bodies: none.

Research and scholarships

- Current research focuses on theoretical and mathematical physics, in particular: differential (Riemannian and Finsler) geometry and its application to physics; analytical mechanics; systems of differential equations as auto-parallel equations; Jacobi-Maupertuis metric for curved spaces; electromagnetic and gravitational interactions from Lagrangian mechanics.
- 2019–2023: Published three papers in refereed journals (Journal of Mathematical Physics, Annals of Physics, Scientific Reports) on topics including Jacobi-Finsler metrics, gravitational magnetoelectric effect, Majorana fermions from holography, and auto-parallel equations. Continued long-standing research programme in theoretical and mathematical physics.
- Author of over 25 refereed journal articles in leading international physics and mathematics journals (Annals of Physics, Physical Review Letters, Journal of Mathematical Physics, General Relativity and Gravitation, Mathematical Intelligencer, Journal of Physics A: Mathematical and General etc.) spanning topics from constrained quantum mechanics and gauge fields to Sagnac interferometry, dimensional reduction, and Finsler geometry. Co-authored with leading researchers including J.I. Cirac, J.R. Klauder and G.W. Gibbons. Invited to give research seminars at institutions including

MIT, ICTP, University of Oxford, Boston University and the University of Florida.

- Research grants and contracts: none.

Publications

- Chapters in books:
 - *Maraner P.* (1996). Teorie di gauge in meccanica quantistica [in Italian]. In: Onofri E., Destri C. (eds.), Istituzioni di Fisica Teorica. Carocci. ISBN: 9788843010615.
 - Di Benedetto F., Chierici E., Mora M., *Maraner P.* (2001). Le geometrie non euclidee [in Italian]. La città del sole. ISBN: 8882921182.
- Conference papers: none.
- Journal articles in refereed academic journals (last 15 years):
 - *Maraner P.* (2023). Systems of second order differential equations as auto-parallel equations. *Journal of Mathematical Physics*, 64, 122901.
[DOI: 10.1063/5.0167733](https://doi.org/10.1063/5.0167733)
 - *Maraner P.* (2021). Electromagnetic and gravitational interactions from Lagrangian mechanics. *Annals of Physics*, 431, 168548.
[DOI: 10.1016/j.aop.2021.168548](https://doi.org/10.1016/j.aop.2021.168548)
 - Chanda S., Gibbons G.W., Guha P., *Maraner P.*, Werner M.C. (2019). Jacobi-Maupertuis Randers-Finsler metric for curved spaces and the gravitational magnetoelectric effect. *Journal of Mathematical Physics*, 60, 122501.
[DOI: 10.1063/1.5098869](https://doi.org/10.1063/1.5098869)
 - *Maraner P.* (2019). On the Jacobi metric for a general Lagrangian system. *Journal of Mathematical Physics*, 60, 112901.
[DOI: 10.1063/1.5124142](https://doi.org/10.1063/1.5124142)
 - *Maraner P.*, Pachos J.K., Palumbo G. (2019). Specific heat of 2D interacting Majorana fermions from holography. *Scientific Reports*, 9, 17308.
[DOI: 10.1038/s41598-019-53771-5](https://doi.org/10.1038/s41598-019-53771-5)
 - *Maraner P.* (2016). A rotating Michelson interferometer from the co-rotating point of view. *General Relativity and Gravitation*, 48, 95–104.
[DOI: 10.1007/s10714-016-2078-6](https://doi.org/10.1007/s10714-016-2078-6)
 - *Maraner P.* (2016). On the phase shift in a uniformly rotating Michelson interferometer. *Physics-Uspekhi*, 59, 716–718.
[DOI: 10.3367/UFNe.2015.12.037675](https://doi.org/10.3367/UFNe.2015.12.037675)
 - *Maraner P.* (2014). The effect of rotations on Michelson interferometers. *Annals of Physics*, 350, 95–104.
[DOI: 10.1016/j.aop.2014.07.016](https://doi.org/10.1016/j.aop.2014.07.016)
 - *Maraner P.*, Zendri J.-P. (2012). General relativistic Sagnac formula revised. *General Relativity and Gravitation*, 44, 1713–1723.
[DOI: 10.1007/s10714-012-1361-4](https://doi.org/10.1007/s10714-012-1361-4)
 - *Maraner P.*, Pachos J.K. (2012). Conformal flatness, non-Abelian Kaluza-Klein reduction and quaternions. *Journal of Geometry and Physics*, 62, 344–351.
[DOI: 10.1016/j.geomphys.2011.10.019](https://doi.org/10.1016/j.geomphys.2011.10.019)
 - Cirac J.I., *Maraner P.*, Pachos J.K. (2010). Cold atom simulation of interacting relativistic quantum field theories. *Physical Review Letters*, 105, 190403.
[DOI: 10.1103/PhysRevLett.105.190403](https://doi.org/10.1103/PhysRevLett.105.190403)
 - *Maraner P.* (2010). A Spherical Pythagorean Theorem. *Mathematical Intelligencer*, 32, 46–50.
[DOI: 10.1007/s00283-010-9152-9](https://doi.org/10.1007/s00283-010-9152-9)
- Journal articles in professional journals: none
- Official reports (whole or part): none
- Journal articles in refereed academic journals older than 15 years:
 - *Maraner P.*, Pachos J.K. (2009). Yang Mills gauge theories from simple fermionic lattice models. *Physics Letters A*, 373, 2542–2545.
[DOI: 10.1016/j.physleta.2009.05.029](https://doi.org/10.1016/j.physleta.2009.05.029)

- *Maraner P.*, Pachos J.K. (2009). Conformally flat Kaluza-Klein spaces, pseudo-/para-complex space forms and generalized gravitational kinks. *Journal of Geometry and Physics*, 59, 1314-1325.
[DOI: 10.1016/j.geomphys.2009.06.013](https://doi.org/10.1016/j.geomphys.2009.06.013)
- *Maraner P.*, Pachos J.K. (2009) Centrifugal deformations of the gravitational kink. *Physics Letters A*, 373, 2616-2619.
[DOI: 10.1016/j.physleta.2009.05.051](https://doi.org/10.1016/j.physleta.2009.05.051)
- *Maraner P.*, Pachos J.K. (2008). Universal features of dimensional reduction schemes from general covariance breaking. *Annals of Physics*, 323, 2044-2072.
[DOI: 10.1016/j.aop.2007.11.004](https://doi.org/10.1016/j.aop.2007.11.004)
- *Maraner P.* (2004). Elementary particles and spin representations. *Modern Physics Letters A*, 19, 357-362.
[DOI: 10.1142/s0217732304013258](https://doi.org/10.1142/s0217732304013258)
- *Maraner P.* (1998). Charged particles in a (2+1)-curved background, *Journal of Physics A: Mathematical and General*, 31, 9309-9319.
[DOI: 10.1088/0305-4470/31/46/020](https://doi.org/10.1088/0305-4470/31/46/020)
- *Maraner P.* (1997) Quantum charged spinning particles in a strong magnetic field (a quantal guiding centre theory). *Journal of Physics A: Mathematical and General*, 30, 2163-2179.
[DOI: 10.1088/0305-4470/30/6/036](https://doi.org/10.1088/0305-4470/30/6/036)
- Klauder J.K., *Maraner P.* (1997). Dynamics as shadow of phase space geometry. *Annals of Physics*, 253, 356-375.
[DOI: 10.1006/aphy.1996.5631](https://doi.org/10.1006/aphy.1996.5631)
- *Maraner P.* (1997). A dynamical mechanism for the selection of physical states in 'geometric quantization schemes'. *Reports on Mathematical Physics*, 40, 265-271.
[DOI: 10.1016/S0034-4877\(97\)85923-X](https://doi.org/10.1016/S0034-4877(97)85923-X)
- *Maraner P.* (1996), Adiabatic motion of a quantum particle in a two-dimensional magnetic field. *Journal of Physics A: Mathematical and General*, 29, 2199-2210.
[DOI: 10.1088/0305-4470/29/9/030](https://doi.org/10.1088/0305-4470/29/9/030)
- *Maraner P.* (1996) Monopole gauge fields and quantum potentials induced by the geometry in simple dynamical systems. *Annals of Physics*, 246, 325-346.
[DOI: 10.1006/aphy.1996.0029](https://doi.org/10.1006/aphy.1996.0029)
- *Maraner P.* (1995). A complete perturbative expansion for quantum mechanics with constraints. *Journal of Physics A: Mathematical and General*, 28, 2939-2951.
[DOI: 10.1088/0305-4470/28/10/021](https://doi.org/10.1088/0305-4470/28/10/021)
- Destri C., *Maraner P.*, Onofri E. (1994). On the definition of quantum free particle on curved manifolds. *Il Nuovo Cimento A*, 107, 237-241.
[DOI: 10.1007/BF02781555](https://doi.org/10.1007/BF02781555)
- *Maraner P.*, Destri C. (1993). Geometry-induced Yang-mills fields in constrained quantum mechanics. *Modern Physics Letters A*, 08, 861-868.
[DOI: 10.1142/s0217732393000891](https://doi.org/10.1142/s0217732393000891)
- *Maraner P.* (1992). Landau ground state on Riemannian surfaces. *Modern Physics Letters A*, 07, 2555-2558.
[DOI: 10.1142/s0217732392004018](https://doi.org/10.1142/s0217732392004018)
- *Maraner P.*, Onofri E., Tecchiolli G.P. (1992). Klauder's quantization in the almost-Kaehler case. *Modern Physics Letters A*, 07, 1377-1380.
[DOI: 10.1142/s021773239200104x](https://doi.org/10.1142/s021773239200104x)
- *Maraner P.*, Onofri E., Tecchiolli G.P. (1991). Spectral methods in computational quantum mechanics. *Journal of Computational and Applied Mathematics*, 37, 209-219.
[DOI: 10.1016/0377-0427\(91\)90119-5](https://doi.org/10.1016/0377-0427(91)90119-5)
- Non-refereed / preprints:
 - *Maraner P.* (2018). Riemannian geometry without the hypotheses of homogeneity and symmetry.
[arXiv:1804.00488](https://arxiv.org/abs/1804.00488)

- Maraner P. (2001). Dimensional Reduction by a Two-Form.
[arXiv:hep-th/0102034](https://arxiv.org/abs/hep-th/0102034)
- Maraner P. (2000). Fermion Quantum Numbers and Families
Replication from an Extension of Space-Time Relativity.
[arXiv:hep-th/0006109](https://arxiv.org/abs/hep-th/0006109)
- Maraner P. (1998). Effective Dynamics on a Line.
[arXiv:hep-th/9809189](https://arxiv.org/abs/hep-th/9809189)

**Publications about
the applicant**

Articles published by others in magazines, etc. about the applicant or his/her projects: none

Further data

- Idoneità ed entries in public competitions for Assistant Professor (Ricercatore Universitario): Achieved a score of 78.5/100 in Sector B02A (Theoretical Physics) and 66/100 in Sector B02 (Theoretical Physics and Mathematical Methods).
- Research software skills: Wolfram Mathematica (advanced). Author of 16 interactive Demonstrations published on the Wolfram Demonstrations Project, an open peer-reviewed platform curated by Wolfram Research. Topics include geometry, physics, astronomy and mathematics education.
<https://demonstrations.wolfram.com/authors/paolo-maraner>
- Selected earlier seminars and invited presentations (see also full CV):
* A Local Self-Reducing Space-Time – Swansea, Oxford, Southampton, 2001 * Elementary Particles from an Extension of Space-Time Relativity – Florence, Parma, Trento, Padova, 2000 * Dimensional Reduction without Compactification – MIT Center for Theoretical Physics, 1998 * Effective Motion on a Line – ICTP, 1999

Entrepreneurship

No patents or spin-offs

**Language
competence**

Italian: native language (C2). English: advanced professional proficiency – Cambridge First Certificate (FCE); two years of residence in Boston, USA (1996–1998); over 20 years of university teaching entirely in English at the Free University of Bozen-Bolzano. Estimated level: C1/C2. German: C1 – official bilingualism certificate (Patentino di bilinguismo/Zweisprachigkeitsnachweis C1) issued by the Autonomous Province of Bolzano-South Tyrol.

Date

July 28, 2026

Signature

