

Giovanni Gentili

Curriculum Vitae et studiorum

Personal information

Birth: 1995.

Nationality: Italian.

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Current position

01/02/2024–31/01/2026 **Post-doc (Assegnista di ricerca)**, *Università degli Studi di Torino*, Torino.

Past position

01/02/2023–31/01/2024 **Post-doc (Assegnista di ricerca)**, *Università degli Studi di Firenze*, Florence.
Position in complex and symplectic geometry dedicated to the memory of Professor Paolo de Bartolomeis.

Education

- 05/04/2023 **Ph.D. in Pure and Applied Mathematics**, with honors, *Università degli Studi di Torino and Politecnico di Torino*, Turin.
Thesis: New advances in HKT geometry. Supervisor: Professor Luigi Vezzoni.
- 2017–2019 **M.Sc. in Mathematics**, 110/110 cum laude, *Università degli Studi di Torino*, Turin.
- 2014–2017 **B.Sc. in Mathematics**, 110/110 cum laude, *Università degli Studi di Torino*, Turin.
- 2009–2014 **Scientific high school diploma**, 100/100 cum laude, *Liceo scientifico S. Giuseppe Calasanzio*, Carcare.

Teaching experience

- 2024 **Lecturer** for the Ph. D. course “Topics on Lie groups, nilmanifolds and solvmanifolds” at *Università degli studi di Torino*.
May–June (25 hours).
- 2021–2022 **Teaching assistant** for the course “Geometria UNO” of the *department of Mathematics “Giuseppe Peano”, Università degli studi di Torino* pursuant to Art. 76 of the statute of *Università degli studi di Torino*.
 - Oct 2021–Mar 2022 (40 hours of classwork activity).
 - Feb 2021–July 2021 (25 hours of teaching activity, exams supervision and quiz production).
- 2020–2022 **Tutor and exercise lecturer** for camplus college.
 - *Collegio di merito Camplus College Catania* of Catania (Nov 2020–July 2021, Nov 2021–July 2022).
 - *Collegio di merito Camplus College Bernini* of Torino (Nov 2020–July 2021).
 - *Collegio di merito Camplus College Lingotto* of Torino (Mar 2020–July 2020).
- 2018–2019 **Collaborator** for the course “Geometria UNO” of the *department of Mathematics “Giuseppe Peano”, Università degli studi di Torino* pursuant to Art. 13 L. 390/91.
100 hours of tutoring activity and home assignments correction.

Preprints

- 2024 E. FUSI, G. GENTILI. Special metrics in hypercomplex geometry, arXiv:2401.13056, submitted.

Publications

- L. BEDULLI, G. GENTILI, L. VEZZONI. The parabolic quaternionic Calabi-Yau equation on hyperkähler manifolds. To appear in *Rev. Mat. Iberoam.*, arXiv:2303.02689.
- G. GENTILI, N. TARDINI. HKT manifolds: Hodge theory, formality and balanced metrics. *Q. J. Math.* **75** (2024), no. 2, 413–435.
- G. GENTILI, J. ZHANG. Fully non-linear parabolic equations on compact manifolds with a flat hyperkähler metric. To appear in *Israel J. Math.*, arXiv:2204.12232.
- G. GENTILI, L. VEZZONI. A remark on the quaternionic Monge-Ampère equation on foliated manifolds. *Proc. Amer. Math. Soc.*, **151** (2023), 1263–1275.
- G. GENTILI, J. ZHANG. Fully non-linear elliptic equations on compact manifolds with a flat hyperkähler metric. *J. Geom. Anal.* **32** (2022), no. 9, Paper No. 229, 38 pp..
- L. BEDULLI, G. GENTILI, L. VEZZONI. A parabolic approach to the Calabi-Yau problem in HKT geometry. *Math. Z.* **302** (2022), 917–933.
- G. GENTILI, L. VEZZONI. The Quaternionic Calabi conjecture on abelian hypercomplex nilmanifolds viewed as tori fibrations. *Int. Math. Res. Not. IMRN* **2022**, no. 12, 9499–9528.

Conference and Seminar talks

Invited talks

- 29/11/2023 *Special metrics on hypercomplex manifolds*, “In ricordo del Professor Paolo de Bartolomeis”, Università degli Studi di Firenze, Italy.
- 11/09/2023 *Hypercomplex geometric flows*, Workshop “Geometric flows on complex manifolds”, Cortona, Italy.
- 21/06/2023 *The Monge-Ampère equation in hypercomplex geometry*, Workshop PRIN “Real and Complex Manifolds: Topology, Geometry and Holomorphic Dynamics”, Università degli studi di Roma “Tor Vergata”, Roma, Italy.
- 22/12/2022 *An introduction to HKT geometry*, XMaths Workshop 2022, Università degli Studi di Bari “Aldo Moro”, Bari, Italy.

Seminar talks

- 29/05/2024 *Elliptic and parabolic PDEs on hyperhermitian manifolds*, Informal Complex Geometry and PDE Seminar, Columbia University, New York City, USA.
- 23/04/2024 *Special metrics in hypercomplex geometry*, Online Differential Geometry Seminar, Yau Mathematical Sciences Center, Tsinghua University, Beijing, China.
- 22/03/2024 *Special metrics in hypercomplex geometry*, Università degli Studi di Torino, Torino, Italy.
- 08/03/2024 *Special metrics in hypercomplex geometry*, Università degli Studi di Parma, Parma, Italy.
- 22/01/2024 *Special metrics in hypercomplex geometry*, Jagiellonian University, Kraków, Poland.
- 15/06/2023 *Hyperkähler with torsion*, “Hyperkähler day”, Università degli Studi di Torino, Torino, Italy.
- 26/04/2023 *The Calabi problem on HKT manifolds*, Università degli Studi di Firenze, Firenze, Italy.
- 04/11/2022 *HKT geometry and the quaternionic Calabi conjecture*, FIU, Miami, USA.
- 14/06/2022 *Monge-Ampère type equations on HKT manifolds*, UFRJ, Rio de Janeiro, Brazil.
- 27/05/2022 *The quaternionic Calabi conjecture in HKT geometry*, Unicamp, Campinas, Brazil.
- 26/04/2022 *The quaternionic Calabi conjecture in HKT geometry*, IMPA, Rio de Janeiro, Brazil.

Contributed talks

- 03/02/2022 *The quaternionic Calabi conjecture in HKT geometry*, Informal Geometry workshop in Paradiso 2022, Cogne, Italy.

Attendance to schools, conferences and workshops

- 2024 – Differential Geometry Workshop in Lerici. Lerici (La Spezia), Italy, April 8–10.
 - Conference “Special Holonomy and Geometric Structures on Complex Manifolds”. IMPA, Rio de Janeiro, March 11–15.
- 2023 – Workshop “Geometric flows on complex manifolds”. Cortona, September 11–15.
 - Workshop PRIN “Real and Complex Manifolds: Topology, Geometry and Holomorphic Dynamics”. Università degli studi di Roma “Tor Vergata”, Roma, June 21–23.
 - 7th Workshop “Complex Geometry and Lie Groups”. Università del Salento, Lecce, May 22–26.
 - A Complex Differential Geometry Meeting at UniTo. Università degli Studi di Torino, May 17–19.
- 2022 – XMaths Workshop 2022. Università degli Studi di Bari “Aldo Moro”, December 21–22.
 - Incontro Nazionale di Analisi Ipercomplessa. Università degli Studi di Firenze, December 19.
 - Complex Analysis, Complex Geometry and Dynamics - in memory of Nessim Sibony. Institut de Mathématiques d'Orsay, Université Paris-Saclay, Orsay, France, December 5–9.
 - Informal Geometry workshop in Paradiso 2022. Cogne (Aosta), Italy, February 3–5.
- 2021 – Quaternioni sul Conero III. Ancona, Italy, September 9–10.
 - Math School SMI, Cortona, “Riemannian Foliations and Lie Group Actions”. Online, organized by the *Scuola Matematica Interuniversitaria (SMI)*, July 19–30.
- 2020 – 5th GTSS (Geometry-Topology Summer School). Online, organized by *IMBM, İstanbul Center for Mathematical Sciences, Boğaziçi University South Campus*, Bebek, Turkey, July 6–18.
- 2019 – Summer school “Special Holonomy - Geometry and Physics”. *Albert-Ludwigs-Universität Freiburg*, Freiburg, Germany, September 23–27.

Visits

- May–Jun 2024 CUNY, New York City, USA. Invitation of Mehdi Lejmi (31 days).
- Jan–Feb 2024 Jagiellonian University, Cracow, Poland. Visiting Marcin Sroka (31 days).
- Oct–Nov 2022 FIU, Miami, USA. Visiting Anna Fino (34 days).
- Apr–Jun 2022 IMPA, Rio de Janeiro, Brazil. Visiting Misha Verbitsky (81 days).
- May–Jun 2022 Unicamp, Campinas (São Paulo), Brazil. Invitation of Henrique Sá Earp (9 days).

Languages

Italian	Mother tongue	
English	Advanced	04/2013 First Certificate in English (FCE), Grade B, Council of Europe level B2.
Portuguese	Beginner	10-12/2021, 40 hours course (level A1) by QCER, CLA-UniTo, mark 28/30.

Other

Referee for: Analysis and Mathematical Physics, Annals of PDE, International Journal of Mathematics, Journal of Algebra.

- 17/03/2023–today Member of the research project GNSAGA 2023 “Geometric structures on real and complex manifolds” (code CUP_E55F22000270001).
- 01/02/2023–today Member of the research project PRIN2017 “Real and Complex Manifolds: Topology, Geometry and holomorphic dynamics” (code 2017JZ2SW).
- 2020–today Member of “Gruppo Nazionale per le Strutture Algebriche, Geometriche e le loro Applicazioni” (GNSAGA), of *Istituto Nazionale di Alta Matematica “Francesco Severi”* (INdAM).