

# Thomas WEBER

## PERSONAL DATA

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PLACE AND DATE OF BIRTH: Würzburg, Germany | 05/10/1990  
PHONE: +49 1797296168  
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## MAIN RESEARCH TOPICS

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- Noncommutative differential geometry
- Hopf algebras and their representation theories
- Deformation quantization and Poisson geometry
- Supergeometry and field theory

## WORK EXPERIENCE

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Jul 2022 - Current	Postdoctoral researcher Department of Mathematics "Giuseppe Peano", <b>University of Turin.</b>
Jul 2021 - Jun 2022	Postdoctoral researcher Dipartimento di Scienze e Innovazione Tecnologica (DiSIT), <b>University of Eastern Piedmont.</b>
Mar 2021 - Jun 2021	Postdoctoral researcher Department of Mathematics, <b>University of Bologna.</b>
Oct 2020 - Jan 2021	Postdoctoral researcher Dipartimento di Scienze e Innovazione Tecnologica (DiSIT), <b>University of Eastern Piedmont.</b>
Nov 2019 - Apr 2020	Visiting Researcher Dipartimento di Scienze e Innovazione Tecnologica (DiSIT), <b>University of Eastern Piedmont.</b>

## EDUCATION

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Nov 2016 - Oct 2019	PhD in MATHEMATICS, <b>University of Naples "Federico II"</b> . <i>Thesis:</i> Braided Commutative Geometry and Drinfel'd Twist Deformations <i>Supervisors:</i> Prof. Gaetano Fiore and Prof. Francesco D'Andrea <i>Thesis Defense:</i> 12/02/2020
Apr 2014 - Jul 2016	Master of Science in MATHEMATICAL PHYSICS, <b>Julius Maximilian University of Würzburg.</b> <i>Thesis:</i> Star Products that can not be induced by Drinfel'd Twists <i>Supervisors:</i> Prof. Stefan Waldmann and Dr. Chiara Esposito

## PUBLICATIONS AND PREPRINTS

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1. ASCHIERI, P., WEBER, T.: *Metric compatibility and Levi-Civita Connections on Quantum Groups*. Preprint [arXiv:2209.05453](https://arxiv.org/abs/2209.05453).
2. ASCHIERI, P., FIORESI, R., LATINI, E., WEBER, T.: *Quantum principal bundles and noncommutative differential calculus*. *PoS Proc. Sci.* 406, (CORFU 2021) 280.  
[doi.org/10.22323/1.406.0280](https://doi.org/10.22323/1.406.0280)

3. FIORE, G., WEBER, T.: *Twisted geometry for submanifolds of  $\mathbb{R}^n$* . **PoS Proc. Sci.** 406, (CORFU 2021) 305.  
[doi.org/10.22323/1.406.0305](https://doi.org/10.22323/1.406.0305)
4. ASCHIERI, P., FIORESI, R., LATINI, E., WEBER, T.: *Differential Calculi on Quantum Principal Bundles over Projective Bases*. Preprint [arXiv:2110.03481](https://arxiv.org/abs/2110.03481).
5. FIORE, G., WEBER, T.: *Twisted submanifolds of  $\mathbb{R}^n$* . **Lett. Math. Phys.** 111, 76 (2021).  
[doi.org/10.1007/s11005-021-01418-w](https://doi.org/10.1007/s11005-021-01418-w)
6. FIORE, G., FRANCO, D., WEBER, T.: *Twisted Quadrics and Algebraic Submanifolds in  $\mathbb{R}^n$* . **Math. Phys. Anal. Geom.** 23, 38 (2020).  
[doi.org/10.1007/s11040-020-09361-3](https://doi.org/10.1007/s11040-020-09361-3)
7. WEBER, T.: *Braided Cartan calculi and submanifold algebras*. **J. Geom. Phys.** 150, 103612 (2020).  
[doi.org/10.1016/j.geomphys.2020.103612](https://doi.org/10.1016/j.geomphys.2020.103612)
8. WEBER, T.: *Braided Commutative Geometry and Drinfel'd Twist Deformations*. PhD Thesis [arXiv:2002.11478](https://arxiv.org/abs/2002.11478).
9. D'ANDREA, F., WEBER, T.: *Twist star products and Morita equivalence*. **C. R. Acad. Sci. Paris** 355, 11 (2017) 1178-1184.  
[doi.org/10.1016/j.crma.2017.10.012](https://doi.org/10.1016/j.crma.2017.10.012)
10. BIELIAVSKY, P., ESPOSITO, C., WALDMANN, S., WEBER, T.: *Obstructions for Twist Star Products*. **Lett. Math. Phys.**, 108(5):1341-1350, November 2017.  
[doi.org/10.1007/s11005-017-1034-z](https://doi.org/10.1007/s11005-017-1034-z)
11. WEBER, T.: *Star Products that can not be induced by Drinfel'd Twists*. Master Thesis [arXiv:1608.02504](https://arxiv.org/abs/1608.02504).

## RESEARCH STAYS AND LONG TERM VISITS

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Mai 29 - June 03, 2022:	Visiting Prof. Majid, Queen Mary University of London, ENG.
Mai 02 - 13, 2022:	Visiting Prof. Ó Buachalla & Prof. Jurco, Charles University of Prague, CZE.
Nov 2019 - Apr 2020:	Visiting Researcher, University of Eastern Piedmont, Alessandria, IT.
Oct - Nov 2017:	Visiting Prof. Ping Xu, Penn State University, Pennsylvania, USA.

## PRICES, FELLOWSHIPS AND AWARDS

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2017	Otto-Volk Medal, Julius Maximilian University of Würzburg.
2016	PhD fellowship, University of Naples "Federico II". PhD fellowship, Sapienza University of Rome (rejected by candidate).

## REFEREE FOR

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1. European Cooperation in Science and Technology (COST)
2. International Journal of Geometric Methods in Modern Physicse (IJGMMP)
3. Journal of Physics A - Mathematical and Theoretical (JPhysA)
4. Ricerche di Matematica (RIDM)
5. Symmetry, Integrability and Geometry: Methods and Applications (SIGMA)

Reviewer for zbMATH.

## ACTIVITIES

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### Speaker at Conferences and Workshops

Sep 18 - 25, 2022	<b>Workshop on Noncommutative and generalized geometry in string theory, gauge theory and related physical models</b> , Corfu (GR). Title: <i>Metric compatibility and Levi-Civita Connections on Quantum Groups</i>
May 13 - 16, 2022	<b>Higher Structures in Quantum Field and String Theory</b> , Bayrischzell (DE). Title: <i>Principal differential calculi over projective bases</i>
Jan 15 - 22, 2022	<b>Winter School Geometry and Physics</b> , Srni (CZ). Title: <i>Differential Calculi on Quantum Principal Bundles over Projective Bases</i>
Nov 29 - Dec 01, 2021	<b>Noncommutative Geometry and Physics. Quantum Spacetimes</b> , Krakow (PL). Title: <i>Levi-Civita connection in noncommutative Riemannian geometry</i>
Sep 20 - 27, 2021	<b>Workshop on Quantum Geometry, Field Theory and Gravity</b> , Corfu (GR). Title: <i>Noncommutative Levi-Civita connections on covariant spaces</i>
Nov 27 - 30, 2018	<b>International Conference on "Noncommutative Geometry: Physical and Mathematical Aspects Of Quantum Space-Time and Matter"</b> , Kolkata (IN). Title: <i>Deformation Quantization of Symplectic Manifolds via Symmetries</i>
Apr 20 - 23, 2018	<b>Workshop on Noncommutativity and Physics</b> , Bayrischzell (DE). Title: <i>Drinfel'd Twist Deformation Quantization on Symplectic Manifolds</i>
Feb 19 - 23, 2018	<b>Workshop in Deformation Theory III</b> , Bari (IT). Title: <i>Drinfel'd Twist Deformation Quantization on Symplectic Manifolds</i>
Sep 11 - 15, 2017	<b>Noncommutative Geometry &amp; Higher Structures</b> , Würzburg (DE). Title: <i>Equivariant Morita Equivalence and Twist Star Products</i>
Mar 13 - 17, 2017	<b>Topological &amp; geometric aspects of quantum spaces</b> , SISSA, Trieste (IT). Title: <i>Obstructions for Twist Star Products</i>
Feb 27 - Mar 03, 2017	<b>Noncommutative Geometry and Applications</b> , ICTP, Trieste (IT). Title: <i>Obstructions for Twist Star Products</i>

### Seminar Talks

Nov 24, 2022	<b>Metric Compatibility and Levi-Civita Connections on Quantum Groups</b> , Indian Statistical Institute of Kolkata.
Jun 01, 2022	<b>Levi-Civita connections for non-central metrics on quantum groups</b> , Queen Mary University of London.
May 06, 2022	<b>Principal differential calculi over projective bases</b> , Charles University of Prague.
Apr 01, 2022	<b>Star products induced by Drinfel'd twists</b> , Davis University of California.
Feb 23, 2022	<b>F-Hopf algebras and quantum computing</b> , University of Bologna.
Dec 17, 2021	<b>The Hopf Algebra of Trees and Renormalization of Quantum Field Theory</b> , web-seminar, University of Würzburg.
May 27, 2021	<b>Noncommutative differential geometry on Hopf algebras</b> , web-seminar, Math in the Mill 2021.
May 21, 2021	<b>Braided commutative geometry and supergeometry</b> , web-seminar, University of Bologna.
May 11, 2021	<b>Noncommutative differential geometry and braided commutative Riemannian geometry</b> , University of Bologna.
Mar 31, 2021	<b>Cartan calculus and Riemannian geometry on braided commutative algebras</b> , web-seminar, Queen Mary University of London.
Jul 03, 2020	<b>The Braided Cartan Calculus and Braided Commutative Geometry</b> , web-seminar, University of Würzburg.
May 07, 2020	<b>Braided Commutative Geometry &amp; Drinfel'd Twist Deformations</b> , web-seminar, Charles University in Prague.

Dec 12, 2019	<b>Braided Geometry and Drinfel'd Twist Equivalences</b> , University of Naples "Federico II".
Nov 16, 2018	<b>Twisted Cartan Calculus on smooth Submanifolds</b> , University of Würzburg.
Oct 24, 2017	<b>Equivariant Morita Equivalence &amp; Twist Star Products</b> , Penn State University.
May 05, 2017	<b>Morita vs Drinfel'd - The Empire Twists Back</b> , University of Würzburg.
Nov 30, 2016	<b>Drinfel'd Twist Deformation Quantization</b> , University of Salerno.
Nov 24, 2016	<b>The Fedosov Construction</b> , University of Naples "Federico II".
Nov 10, 2016	<b>Obstructions for Twist Star Products</b> , University of Naples "Federico II".
Oct 23, 2015	<b>Obstructions of Drinfel'd Twist Deformation</b> , University of Würzburg.

## Conferences, Schools and Workshops attended

Sep 18- 25, 2022	<b>Workshop on Noncommutative and generalized geometry in string theory, gauge theory and related physical models</b> , Corfu (GR).
Jun 13 - 15, 2022	<b>Theories of the Fundamental Interactions</b> , Venice (IT).
May 13 - 16, 2022	<b>Higher Structures in Quantum Field and String Theory</b> , Bayrischzell (DE).
Jan 15 - 22, 2022	<b>Winter School Geometry and Physics</b> , Srni (CZ).
Nov 29 - Dec 01, 2021	<b>Noncommutative Geometry and Physics. Quantum Spacetimes</b> , Krakow (PL).
Nov 20 - 21, 2021	<b>INFN Theory Group Retreat</b> , Santo Stefano Belbo (IT).
Sep 20 - 27, 2021	<b>Workshop on Quantum Geometry, Field Theory and Gravity</b> , Corfu (GR).
Sep 17 - 21, 2021	<b>Humboldt Kolleg on Quantum Gravity and Fundamental Interactions</b> , Corfu (GR).
July 07, 2021	<b>Advances in Hopf Algebroids</b> , online conference, Madrid (ES).
May 27 - 28, 2021	<b>Math in the Mill 2021</b> , online conference, Würzburg (DE).
Oct 12 - 16, 2020	<b>An Introduction to Quantum Field Theory in Curved Spacetime</b> , online lecture series, London Mathematical Society.
Oct 7 - 11, 2019	<b>Deformations &amp; Rigidity in Algebra, Geometry &amp; Analysis</b> , Würzburg (DE).
Sep 16 - 20, 2019	<b>Noncommutative manifolds and their symmetries</b> , Scalea (IT).
May 20 - 23, 2019	<b>Some topic in Deformation Theory and DGLAs</b> , Salerno (IT).
Apr 26 - 28, 2019	<b>Math in the Mill 2019</b> , Sondheim (DE).
Apr 12 - 16, 2019	<b>Quantum structure of space-time: Generalized geometry and symmetries</b> , Bayrischzell (DE).
Nov 27 - 30, 2018	<b>International Conference on "Noncommutative Geometry: Physical &amp; Mathematical Aspects Of Quantum Space-Time and Matter"</b> , Kolkata (IN).
Apr 20 - 23, 2018	<b>Workshop on Noncommutativity and Physics</b> , Bayrischzell (DE).
Feb 19 - 23, 2018	<b>Workshop in Deformation Theory III</b> , Bari (IT).
Oct 28, 2017	<b>Joint Symplectic Seminar</b> , State College (USA).
Sep 11 - 15, 2017	<b>Noncommutative Geometry &amp; Higher Structures</b> , Würzburg (DE).
Jul 31 - Aug 11, 2017	<b>School and conference on geometry and quantization</b> , Aarhus (DK).
Jul 20 - 31, 2017	<b>XX Summer Diffiety School</b> , Lizzano in Belvedere (IT).
Apr 07 - 11, 2017	<b>Current Problems in Theoretical Physics</b> , Vietri sul Mare (IT).
Mar 13 - 17, 2017	<b>Topological &amp; geometric aspects of quantum spaces</b> , SISSA, Trieste (IT).
Feb 27 - Mar 03, 2017	<b>Noncommutative Geometry and Applications</b> , ICTP, Trieste (IT).
Jan 30 - Feb 03, 2017	<b>Quantum Spacetime 2017</b> , Porto (PT).
Oct 05 - 10, 2015	<b>From Poisson geometry to quantum fields on nc spaces</b> , Würzburg (DE).

## TEACHING EXPERIENCES

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### University of Turin

WT 2022 | PhD course (On Hopf-Galois extensions)

### University of Würzburg

WT 2015/16 - ST 2016	Linear algebra I & II (Problem Session)
WT 2014/15 - ST 2015	Calculus I & II (Problem Session & Tutorial)
WT 2013/14 - ST 2015	Mathematics I & II for Physics & Computer Sciences (Problem Session & Tutorial)
ST 2013	Differential Equations for Teachers (Problem Session & Tutorial)

- JIM Erklärhiwi (Tutor for Bachelor Students).

## LANGUAGES

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German (Mothertongue), English (Fluent), Italian (Basic Knowledge).

## COMPUTER SKILLS

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Windows and Linux,  $\text{\LaTeX}$ , C++, Matlab, Mathematica.