

SIMONE NOJA

PERSONAL DATA

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EMPLOYMENT

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| OCT 2020 - | Heidelberg University <i>Postdoctoral Research Fellow</i> |
| MAY 2020 - OCT 2020 | Università del Piemonte Orientale <i>Postdoctoral Research Fellow</i> |
| SEP 2018 - SEP 2019 | Università degli Studi dell'Insubria <i>Postdoctoral Research Fellow</i> |
| MAR 2018 - SEP 2018 | Università del Piemonte Orientale <i>Research Fellow</i> |

HABILITATION

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| JAN 2023 | Italian National Scientific Habilitation <i>Associate Professor level - Algebra and Geometry (mat02/03)</i> |
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EDUCATION

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| MAR 2018 | Università degli Studi di Milano <i>PhD in Mathematics</i> Supervisor: Prof. Lambertus van Geemen Co-Supervisor: Prof. Sergio Luigi Cacciatori |
| APR 2014 | Università degli Studi di Milano <i>Laura Magistrale / Master in Theoretical Physics</i> Final grade: 110/110 cum laude Supervisor: Prof. Lambertus van Geemen Co-Supervisors: Prof. Sergio Cacciatori, Prof. Dietmar Klemm |
| JUL 2011 | Università degli Studi di Milano <i>Laurea Triennale / Bachelor in Physics</i> Final grade: 110/110 cum laude Supervisor: Prof. Bassano Vacchini Co-Supervisor: Ludovico Lanz |

GRANTS: PRINCIPAL INVESTIGATOR

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| JAN 2023 | Deutsche Forschungsgemeinschaft (DFG) – ~218.400 € Project title: <i>Homological Algebra of Supersymmetry: Locality, Unitarity, Duality</i> PIs: S. Noja, I. Saberi & J. Walcher – 3 years |
| JAN 2022 | STRUCTURES - Cluster of Excellence – ~108.000 € Project title: <i>Homological Algebra of Supersymmetry: Locality, Unitarity, Duality</i> PIs: S. Noja & J. Walcher – 1 year |

OTHER GRANTS AND FUNDINGS

- DEC 2022 | **Pacific Institute for Mathematical Sciences (PIMS) – 20.000 \$**
Grant for Workshop Organization in the year 2023
Proposers: *C. Doran, S. Noja & J. Walcher*
- DEC 2022 | **Istituto Nazionale di Alta Matematica (INdAM) – 2.500 €**
Grant for Conferences, Schools and Workshop Organization in the year 2023
Proposer: *S. Noja*
- JUL 2022 | **COST Action CA211009 – 1 million €**
Project title: *“CaLISTA” Cartan Geometry, Lie, Integrable System, Quantum Groups Theories for Application* – Main proposer: *R. Fiorese*
<https://www.cost.eu/actions/CA21109/>
Role: *Participant and member of the managing committee*
- JAN 2015 | **Fondazione Angelo Della Riccia – 3000 €**
Fondazione Angelo Della Riccia – grant for research abroad
Assigned for the year 2015

HONORS

- OCT 2014 | **Rank 1st at PhD Entrance Examination in Mathematics**
Università degli Studi di Milano
Academic Year 2014/2015
- JUL 2014 | **Best Recent Graduate INFN Scholarship – 4800 €**
INFN Public Competition 16506/2014
Awarded in the research topic class *“Quantum Field Theory and String Theory”*

ACADEMIC COMPETITIONS

- APR 2024 | **Shortlisted – Università Politecnica delle Marche**
Tenure track researcher (RTD-b) - Mat/03 - Interview: 29/4/2024
- FEB 2024 | **Shortlisted – Università degli Studi di Napoli Federico II**
Tenure track researcher (RTD-b) - Mat/03 - Interview: 22/2/2024 – *Ranked 2nd*
- FEB 2024 | **Shortlisted – Università di Modena e Reggio Emilia**
Tenure track researcher (RTD-b) - Mat/07 - Interview: 20/2/2024
- JAN 2024 | **Shortlisted – Università di Pisa**
Tenure track researcher (RTD-b) - Mat/07 - Interview: 24/1/2024
- DEC 2023 | **Shortlisted – Università degli Studi di Napoli Federico II**
Tenure track researcher (RTD-b) - Mat/07 - Interview: 14/12/2023
- NOV 2023 | **Shortlisted – Politecnico di Milano**
Tenure track researcher (RTD-b) - Mat/03 - Interview: 9/11/2023 – *Ranked 3rd*
- SEP 2023 | **Shortlisted – Università di Trento**
Tenure track researcher (RTD-b) - Mat/07 - Interview: 27/9/2023 & Invited talk: 26/9/2023 – *Declared eligible ex-aequo by the hiring committee*
- APR 2023 | **Shortlisted – Politecnico di Torino**
Tenure track researcher (RTD-b) - Mat/07 - Interview: 18/4/2023

PUBLICATIONS AND PREPRINTS

I am a geometer working at the interface with mathematical physics. My research focuses on algebraic-geometric and higher structures arising in modern quantum physics.

1. R. Eager, S. Noja, R. Senghaas, J. Walcher, *Adinkras and Pure Spinors*, [ArXiv:2404.07167](#)
2. K. Eder, J. Huerta, S. Noja, *Poincaré Duality on Supermanifolds, Higher Cartan Geometry and Geometric Supergravity*, [ArXiv:2312.05224](#)
3. F. Hahner, S. Noja, I. Saberi, J. Walcher, *Six-Dimensional Supermultiplets from Bundles on Projective Spaces*, [ArXiv:2206.08388](#) (Commun. Math. Phys. — positive referee reports: first round of revisions)
4. C.A. Cremonini, P.A. Grassi, S. Noja, *Cohomology of Lie Superalgebras: Forms, Integral Forms and Coset Superspaces*, J. Lie Theory, **33**, 2 (2023) 567–608 [JLT332/jlt33024](#)
5. S. Noja, *On the Geometry of Forms on Supermanifolds*, Diff. Geom. Appl., **88** 101999 (2023) [10.1016/j.difgeo.2023.101999](#)
6. S. Noja, *On BV Supermanifolds and the Super Atiyah Class*, Eur. J. Math., **9** (1), 19 (2023) [10.1007/s40879-023-00603-6](#)
7. S.L. Cacciatori, S. Noja, R. Re, *The Universal de Rham / Spencer Double Complex on a Supermanifold*, Doc. Math. **27**, 489-518 (2022) [10.25537/dm.2022v27.489-518](#)
8. S. Noja, R. Re, *A Note on Super Koszul Complex and the Berezinian*, Ann. Mat. Pura Appl. (1923 -) **201** (1), 403-421 (2022) [10.1007/s10231-021-01121-6](#)
9. R. Catenacci, C.A. Cremonini, P.A. Grassi, S. Noja, *On Forms, Cohomology, and BV Laplacians in Odd Symplectic Geometry*, Lett. Math. Phys., **111**, 44 (2021) [10.1007/s11005-021-01384-3](#)
10. R. Catenacci, P.A. Grassi, S. Noja, *Superstring Field Theory, Superforms and Supergeometry*, J. Geom. Phys., **148**, 103559 (2020) [10.1016/j.geomphys.2019.103559](#)
11. R. Catenacci, P.A. Grassi, S. Noja, *A_∞ -Algebra from Supermanifolds*, Ann. Henri Poincaré **20** (12) 4163–4195 (2019) [10.1007/s00023-019-00854-8](#)
12. S.L. Cacciatori, S. Noja, R. Re, *Non Projected Calabi-Yau Supermanifolds over \mathbb{P}^2* , Math. Res. Lett., **26** (4) (2019) 1027–1058 [10.4310/MRL.2019.v26.n4.a4](#)
13. S. Noja, *Non-Projected Supermanifolds and Embeddings in Super Grassmannians*, Universe **4** (11), 114, (2018) - Special Issue “*Super Geometry for Super Strings*” [10.3390/universe4110114](#)
14. S. Noja, *Topics in Algebraic Supergeometry over Projective Spaces*, Ph.D. Thesis, Università degli Studi di Milano, (2018) [phd-unimi-R11006](#)
15. S.L. Cacciatori, S. Noja, *Projective Superspaces in Practice*, J. Geom. Phys., **130** (2018) 40–62 [10.1016/j.geomphys.2018.03.021](#)

16. S. Noja, *Supergeometry of Π -Projective Spaces*, J. Geom. Phys., **124** (2018) 286–299
[10.1016/j.geomphys.2017.11.010](https://doi.org/10.1016/j.geomphys.2017.11.010)
17. S. Noja, S. L. Cacciatori, F. Dalla Piazza, A. Marrani, R. Re, *One-Dimensional Super Calabi-Yau Manifolds and their Mirrors*, JHEP **1704** (2017) 094 [10.1007/JHEP04\(2017\)094](https://doi.org/10.1007/JHEP04(2017)094)

INVITED SPEAKER TO CONFERENCES

- 19 JUNE 2023 | **Emergent Geometries from Strings and Quantum Fields**
 Galileo Galilei Institute - Arcetri
- 6 JUNE 2023 | **CaLISTA Kick-off Meeting**
 Università degli Studi di Bologna
- 27 MARCH 2023 | **SuperGeometry and SuperModuli**
 Simons Center for Geometry and Physics - Stony Brook
- 27 JUNE 2022 | **Workshop on Supermoduli and Superstrings**
 SISSA - Trieste
- 22 OCT 2021 | **CP7 - “STRUCTURES Exzellenzcluster” Kick-Off Event**
 University of Heidelberg
- 9 JUL 2021 | **Workshop on Algebraic Geometry and Physics: Supermoduli & Superstrings**
 Institute for Geometry and Physics (ICTP / SISSA)
- 5 MAY 2020 | **Super Days in Alessandria - Virtual Edition**
 Università del Piemonte Orientale - Alessandria
- 23 SEP 2019 | **Workshop on Supermoduli**
 SISSA and ICTP - Trieste
- 29 MAY 2018 | **Giornate di Geometria Algebrica ed Argomenti Correlati XIV**
 Università degli Studi di Genova
- 6 JUL 2017 | **An Algebraic Geometry Day in Como**
 Università degli Studi dell'Insubria

SELECTED SEMINARS AND COLLOQUIA

- 20 OCT 2023 | **RTG Colloquium in Heidelberg**
 Karlsruhe Institute of Technology & Heidelberg University
- 12 OCT 2023 | **Local Research Seminar**
 Charles University - Prague
- 19 DEC 2022 | **Joint Seminar in Mathematical Physics**
 Università di Pavia
- 13 JUNE 2022 | **Center for Quantum Mathematics Research Seminar**
 University of South Denmark - Odense
- 25 MAY 2022 | **TQTF Club**
 Online - Hosted at University of Lisbon

- 19 MAY 2022 | **Joint ETH - UZH Seminar**
ETH & UZH Universität - Zürich
- 4 MAR 2022 | **Max Plank Institute für Mathematik**
MPI - Bonn
- 9 NOV 2021 | **Local Research Seminar**
Univesity of Mainz - on line
- 23 APR 2021 | **Supergeometry Meeting**
Università degli Studi di Bologna - on line
- 22 JUN 2020 | **Joint Heidelberg-Munich-Wien (HMW) Seminars**
University of Wien - on line
- 23 MAY 2019 | **Geometry and Mathematical Physics Seminar**
University of Pennsylvania
- 18 NOV 2018 | **Local Research Seminar**
Universitat de Valencia

CONFERENCES AND SCHOOLS ORGANIZATION

- JUL 17 - 21, 2023 | **Domoschool: International School of Mathematics and Physics**
“Einstein Equations in the Dark Side of the Universe”
Domodossola (Italy) — Organizers: S. Cacciatori, S. Noja, S. Pigola
<https://www.arsunivco.eu/einstein-equations-in-the-dark-side-of-the-universe-program-2023/>
- JUN 12 - 16, 2023 | **Workshop “Hodge Theory, Mirror Symmetry, and Physics of Calabi-Yau Moduli”**
Universität Heidelberg (Germany) — Organizers: C. Doran, S. Noja, J. Walcher
<https://web.mathi.uni-heidelberg.de/cymod23>
- JUL 18 - 22, 2022 | **Domoschool: International School of Mathematics and Physics**
“Gauge Theories and the Langlands Program”
Domodossola (Italy) — Organizers: S. Cacciatori, S. Noja, S. Pigola
<https://www.arsunivco.eu/gauge-theories-and-the-langlands-program-2022/>
- OCT 4 - 8, 2021 | **Workshop “Pure Spinors, Superalgebras and Holomorphic Twists”**
Universität Heidelberg (Germany) — Organizers: S. Noja, I. Saberi, J. Walcher
<https://www.mathi.uni-heidelberg.de/phymath/purespinors/>
- JUL 15 - 19, 2019 | **Domoschool: International School of Mathematics and Physics**
“Einstein Equations: Physical and Mathematical Aspects of General Relativity II”
Domodossola (Italy) — Organizers: S. Cacciatori, S. Noja, S. Pigola
<https://www.arsunivco.eu/edition-2019/>
- JUL 16 - 20, 2018 | **Domoschool: International School of Mathematics and Physics**
“Einstein Equations: Physical and Mathematical Aspects of General Relativity I”
Domodossola - Italy — Organizers: S. Cacciatori, S. Noja, S. Pigola
<https://www.arsunivco.eu/edition-2018-d58/>

VISITING (MORE THAN A WEEK)

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| JUNE 2023 | Galileo Galilei Institute <i>Invited by Prof.'s Ron Donagi and Antonio Grassi</i> |
| APRIL 2023 | Simons Center for Geometry and Physics <i>Invited by Prof.'s Alexander Polishchuk and Samuel Grushevsky</i> |
| SEP 2022 | University of Pennsylvania (UPenn) <i>Invited by Prof. Ron Donagi</i> |
| MAY 2022 | ETH - Zürich <i>Invited by Dr. Michele Schiavina - Prof. Giovanni Felder group</i> |
| MAY 2019 | University of Pennsylvania (UPenn) <i>Invited by Prof. Ron Donagi</i> |
| NOV 2018 | Universitat de Valencia (UV) <i>Invited by Prof. Marian Lledó</i> |
| JAN 2015 | University of Pennsylvania (UPenn) <i>Guest Graduate Student of Prof. Ron Donagi</i> |

TEACHING

PH.D. COURSE

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| SPRING 2019 | Algebraic and Geometric Structures and Some of Their Use in Contemporary Physics Università degli Studi dell'Insubria – <i>teacher in charge</i> Front Lectures (16 hours) |
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GRADUATE LEVEL COURSES

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| WINTER 2023 | Twists on Strings Pro-Seminar Heidelberg Universität – <i>teacher in charge</i> Front lectures (20 hours) and tutoring (40 hours) – 5 ECTS |
| SPRING 2023 | Mathematical Aspects of String Theory II Universität Heidelberg – <i>teacher in charge</i> Front lectures (56 hours) – 6 ECTS |
| FALL 2022 | Mathematical Aspects of String Theory I Universität Heidelberg – <i>teacher in charge</i> Front lectures (56 hours) – 6 ECTS |
| FALL 2021 | Complex Geometry Universität Heidelberg – <i>teacher in charge</i> Front lectures (56 hours) and exercise sessions (28 hours) – 9 ECTS |
| SPRING 2021 | Supergeometry Pro-Seminar Universität Heidelberg – <i>teacher in charge</i> Front lectures (20 hours) and tutoring (40 hours) – 5 ECTS |

UNDERGRADUATE COURSES

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| SPRING 2024 | Representations of Classical Groups Universität Heidelberg – <i>teacher in charge</i> Front lectures (56 hours) – 6 ECTS |
| FALL 2022 | Symmetric Functions Pro-Seminar Universität Heidelberg – <i>teacher in charge (w/ J. Walcher)</i> Front lectures (20 hours) and tutoring (40 hours) – 5 ECTS |
| SPRING 2022 | Mathematical Quantum Mechanics Pro-Seminar Heidelberg Universität – <i>teacher in charge (w/ J. Walcher)</i> Front lectures (20 hours) and tutoring (40 hours) – 5 ECTS |
| FALL 2019 | Laboratorio di Matematica di Base Università degli Studi di Milano – <i>teacher in charge for Earth Science</i> Front lectures (20 hours) and tutoring 30 (hours) – coordinator: N. Bressan |
| SPRING 2019 | Metodi Matematici per la Fisica Università degli Studi dell'Insubria – <i>teaching assistant</i> Exercise sessions (30 hours) |
| FALL 2018 | Istituzioni di Matematica Università degli Studi di Milano – <i>teaching assistant</i> Exercise sessions (40 hours) |
| SPRING 2018 | Calcolo – Progetto Lauree Scientifiche Università degli Studi di Milano – <i>teacher in charge for Chemistry</i> Exercise sessions & tutoring (41 hours) – coordinator G. Bini |
| FALL 2017 | Laboratorio di Matematica di Base Università degli Studi di Milano – <i>teacher in charge for Chemistry</i> Front lectures (20 hours) and tutoring (35 hours) – coordinator: G. Bini |
| FALL 2016 | Laboratorio di Matematica di Base Università degli Studi di Milano – <i>teacher in charge for Bioscience</i> Front lectures (20 hours) and tutoring (35 hours) – coordinator: G. Bini |

THESIS SUPERVISION AND MENTORING

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| RAPHAEL SENGHAAS | Heidelberg Universität Co-Supervisor of Ph.D. thesis - Expected ~2026 |
| ERIK FINK | Heidelberg Universität Co-Supervisor of M.Sc. thesis - Expected late 2024 |
| CHARLES PRAUM | Heidelberg Universität Co-Supervisor of B.Sc. thesis: “ <i>An Alternative Approach to the Covariant Quantisation of the Bosonic String</i> ” - 2023 |
| ERIK FINK | Heidelberg Universität Co-Supervisor of B.Sc. thesis: “ <i>Localization Theorems in Supergeometry</i> ” - 2023 Co-Supervisor of M.Sc. thesis - Expected late 2024 |
| ANDREA GROSSUTTI | Heidelberg Universität & Università di Padova Co-Supervisor of M.Sc. thesis (informal): “ <i>Formulation of Supersymmetry Theories Using Integral Forms</i> ” - 2021 |

ENEA RIVA | **Università degli Studi dell'Insubria**
Co-Supervisor of M.Sc. thesis (informal): "*Super Particles on a Simple Superspace*"
- 2019

SERVICE TO THE PROFESSION

- HIRING COMMITTEE FOR TWO FULL PROFESSORSHIP (W3) IN ALGEBRAIC & ARITHMETIC GEOMETRY - HEIDELBERG UNIVERSITY
- HIRING COMMITTEE FOR THE DOCTORAL SCHOOL - HEIDELBERG UNIVERSITY
- ORGANIZER OF JOINT SEMINAR "HEIDELBERG - MAINZ - MÜNCHEN - WIEN" - HEIDELBERG UNIVERSITY <https://web.mathi.uni-heidelberg.de/physmath/physmath>
- REFEREE - Adv. Math., J. Geom. Phys. (multiple times), J. Math. Phys., Adv. Theor. Math. Phys., Int. J. Geom. Methods Mod. Phys. (multiple times), J. Alg., J. Lie Theory

AFFILIATIONS

- ISTITUTO NAZIONALE DI ALTA MATEMATICA "FRANCESCO SEVERI" - INDAM
GNSAGA - Gruppo Nazionale per le Strutture Algebriche Geometrie e le loro Applicazioni
- "STRUCTURES" - CLUSTER OF EXCELLENCE (DFG)
YOUNG RESEARCHER CONVENT ([HTTPS://STRUCTURES.UNI-HEIDELBERG.DE/INDEX.PHP](https://structures.uni-heidelberg.de/index.php))

LANGUAGES

ENGLISH: Fluent (Level C2), TOEFL® *ibt* 110/120

ITALIAN: Native Speaker

GERMAN: Basic

REFERENCES

| | |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------|
| UGO BRUZZO - SISSA | bruzzo@sissa.it |
| SERGIO CACCIATORI - Università degli Studi dell'Insubria | sergio.cacciatori@uninsubria.it |
| RON DONAGI - University of Pennsylvania | donagi@math.upenn.edu |
| PIETRO ANTONIO GRASSI - Università del Piemonte Orientale | pietro.grassi@uniupo.it |
| LAMBERTUS VAN GEEMEN - Università degli Studi di Milano | lambertus.vangeemen@unimi.it |
| JOHANNES WALCHER - Universität Heidelberg | walcher@mathi.uni-heidelberg.de |