

SIMONE NOJA

PERSONAL DATA

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EMPLOYMENT

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

JAN 2023	Italian National Scientific Habilitation <i>Associate Professor - Algebra and Geometry (01/MATH-02)</i>
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EDUCATION

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

JAN 2023	Deutsche Forschungsgemeinschaft (DFG) – ~218.400 € Project title: <i>Homological Algebra of Supersymmetry: Locality, Unitarity, Duality</i> PIs: <i>S. Noja, I. Saberi & J. Walcher</i> – 3 years https://gepris-extern.dfg.de/gepris/projekt/517493862?language=en
JAN 2022	STRUCTURES - Cluster of Excellence – ~108.000 € Project title: <i>Homological Algebra of Supersymmetry: Locality, Unitarity, Duality</i> PIs: <i>S. Noja & J. Walcher</i> – 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

- GEOMETRY AND ALGEBRA | **Università degli Studi di Padova**
Junior researcher (RTd-a) – interview: 14/10/2024
Università di Pavia
Tenure track researcher (RTT) – interview: 29/8/2024
Università di Perugia
Tenure track researcher (RTD-b) – interview: 30/7/2024
Università Politecnica delle Marche
Tenure track reseacher (RTD-b) – interview: 29/4/2024
Università degli Studi di Napoli
Tenure track researcher (RTD-b) – interview: 22/2/2024
Politecnico di Milano
Tenure track researcher (RTD-b) – interview: 9/11/2023
- MATHEMATICAL PHYSICS | **Università di Modena e Reggio Emilia**
Tenure track researcher (RTD-b) – interview: 20/2/2024
Università di Pisa
Tenure track researcher (RTD-b) – interview: 24/1/2024
Università degli Studi di Napoli
Tenure track researcher (RTD-b) – interview: 14/12/2023
Università di Trento
Tenure track researcher (RTD-b) – interview: 27/9/2023 – invited talk: 26/9/2023
Declared eligible *ex-aequo* by the selection committee
Politecnico di Torino
Tenure track researcher (RTD-b) – interview: 18/4/2023

PUBLICATIONS AND PREPRINTS

I work at the interface between geometry and 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: waiting for final decision)
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

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|---------------|--|
| 17 SEP 2024 | Non Commutative Geometry & Higher Structures
Aristotle University of Thessaloniki |
| 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 |

SEMINARS AND COLLOQUIA

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| YEAR 2024 | NYU - New York University at Abu Dhabi
Abu Dhabi (UAE) – 27/11/2024 (<i>on line</i>)
MPIM – Max Plank Institute für Mathematik
Bonn (Germany) – 31/5/2024
Ludwig Maximilian Universität – Munich
Munich (Germany) – 12/4/2024
University of Alberta
Edmonton (Canada) – 11/3/2024
University of Maryland
College Park (USA) – 4/3/2024 |
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YEAR 2023	KIT – Karlsruhe Institute of Technology Karlsruhe (Germany) – 20/10/2023 Charles University – Prague Prague (Czech Republic) – 12/10/2023 Hamburg Universität Hamburg (Germany) – 9/3/2023 Università degli Studi dell’Insubria Como (Italy) – 23/2/2023
YEAR 2022	Università di Pavia Pavia (Italy) – 19/12/2022 Center for Quantum Mathematics – University of Southern Denmark Odense (Denmark) – 13/6/2022 University of Lisbon (TQFT Club seminar series) Lisbon (Portugal)– 25/5/2022 ETH – Eidgenössische Technische Hochschule Zürich (Swiss) – 19/5/2022 Università del Piemonte Orientale Alessandria (Italy) – 1/3/2022 (<i>on line</i>)
YEAR 2021	Johannes Gutenberg Universität – Mainz Mainz (Germany) – 9/11/2021 (<i>on line</i>) Ruprecht Karl Universität – Heidelberg Heidelberg (Germany) – 2/6/2021 Università degli Studi di Bologna Bologna (Italy) – 23/4/2021 (<i>on line</i>) Università degli Studi di Bologna Bologna (Italy) – 16/4/2021 (<i>on line</i>)
YEAR 2020	Heidelberg-Munich-Wien Joint Seminar Wien (Austria) – 22/6/2020 (<i>on line</i>) Universität Mannheim Mannheim (Germany) – 10/10/2020 (<i>on line</i>)
YEAR 2019	University of Pennsylvania Philadelphia (USA) – 23/5/2019 University of Pennsylvania Philadelphia (USA) – 22/5/2019
YEAR 2019	Universitat de Valencia Valencia (Spain) – 18/11/2018 Università di Torino Torino 15/5/2018
YEAR 2017	Università del Piemonte Orientale Alessandria (Italy) – 1/3/2022

CONFERENCES AND SCHOOLS ORGANIZATION

JUL 15 - 19, 2024	Domoschool: International School of Mathematics and Physics “Intersecting Feynman Integrals” Domodossola (Italy) — Organizers: S. Cacciatori, S. Noja, P. Mastrolia https://www.arsunivco.eu/lecturers-domoschool-2024-edition/
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- 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)

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

TEACHING

PH.D. COURSE

- SPRING 2019 | **Algebraic and Geometric Structures and Some of Their Use in Contemporary Physics**
Università degli Studi dell'Insubria – *teacher in charge*
Front Lectures (16 hours)

GRADUATE LEVEL COURSES

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

UNDERGRADUATE COURSES

- SPRING 2024 | **Representations of Classical Groups**
Universität Heidelberg – *teacher in charge*
Front lectures (56 hours) – 6 / 8 ECTS
- FALL 2022 | **Symmetric Functions Pro-Seminar**
Universität Heidelberg – *teacher in charge (w/ J. Walcher)*
Front lectures (20 hours) and tutoring (40 hours) – 5 ECTS
- SPRING 2022 | **Mathematical Quantum Mechanics Pro-Seminar**
Heidelberg Universität – *teacher in charge (w/ J. Walcher)*
Front lectures (20 hours) and tutoring (40 hours) – 5 ECTS
- FALL 2019 | **Laboratorio di Matematica di Base**
Università degli Studi di Milano – *teacher in charge for Earth Science*
Front lectures (20 hours) and tutoring (30 hours) – coordinator: N. Bressan
- SPRING 2019 | **Metodi Matematici per la Fisica**
Università degli Studi dell'Insubria – *teaching assistant*
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

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
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): “ <i>Super Particles on a Simple Superspace</i> ” - 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., J. Math. Phys., Adv. Theor. Math. Phys., Int. J. Geom. Methods Mod. Phys., 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

REFERENCES

UGO BRUZZO - SISSA

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SERGIO CACCIATORI - Università degli Studi dell'Insubria

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RON DONAGI - University of Pennsylvania

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LAMBERTUS VAN GEEMEN - Università degli Studi di Milano

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JOHANNES WALCHER - Universität Heidelberg

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