

SIMONE NOJA

PERSONAL DATA

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EMPLOYMENT

OCT 2020 - NOW	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*”

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](#) (91 pages)
2. K. Eder, J. Huerta, S. Noja, *Poincaré Duality on Supermanifolds, Higher Cartan Geometry and Geometric Supergravity*, [ArXiv:2312.05224](#) (49 pages)
3. F. Hahner, S. Noja, I. Saberi, J. Walcher, *Six-Dimensional Supermultiplets from Bundles on Projective Spaces*, Commun. Math. Phys. (2024) [10.1007/s00220-024-05176-3](#) (to appear), preprint available at [ArXiv:2206.08388](#)
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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1007/978-3-319-91100-6)
15. S.L. Cacciatori, S. Noja, *Projective Superspaces in Practice*, J. Geom. Phys., **130** (2018) 40–62 [10.1016/j.geomphys.2018.03.021](https://doi.org/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

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

YEAR 2024	NYU - New York University at Abu Dhabi Abu Dhabi (UAE) – 11/12/2024 (<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
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 2018	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/
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 <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

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

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 (w/ L. Battistella)</i> Front lectures (56 hours) and exercise sessions (28 hours) – 9 ECTS
SPRING 2021	Supergeometry Pro-Seminar Universität Heidelberg – <i>teacher in charge (w/ J. Walcher)</i> Front lectures (20 hours) and tutoring (40 hours) – 5 ECTS

UNDERGRADUATE COURSES

SPRING 2024	Representations of Classical Groups Universität Heidelberg – <i>teacher in charge</i> Front lectures (56 hours) – 6 / 8 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

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., Ann. Henri Poincaré, J. Geom. Phys., J. Math. Phys., Adv.

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	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

Heidelberg, 18/12/2024