

UNIVERSITÀ DEGLI STUDI DI MILANO

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Gabriele TARTAGLINO MAZZUCHELLI

CURRICULUM VITAE

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	TARTAGLINO MAZZUCHELLI
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DATA DI NASCITA	6 SETTEMBRE 1978

Institution

School of Mathematics and Physics, University of Queensland, St Lucia, Brisbane, Queensland 4072, Australia

Academic Positions

Since October 2019	Senior Lecturer (Level C) and Australian Research Council (ARC) Future Fellow at the School of Mathematics and Physics, University of Queensland, St Lucia, Brisbane, Queensland 4072, Australia
Oct. 2018 – Sept. 2019	Senior Research Fellow at the Institute for Theoretical Physics, Albert Einstein Center for Fundamental Physics, University of Bern, Switzerland.
July 2015 – Sept. 2018	Senior Research Fellow at the Institute for Theoretical Physics (ITF), KU Leuven University, Leuven, Belgium.
Jan. 2015 – May 2015	Visiting Research Fellow at the Institute for Theoretical Physics (ITF), KU Leuven University, Leuven, Belgium.
June 2012 – June 2015	Research Assistant Professor (Lecturer, Level B), ARC DECRA fellow, at the School of Physics, The University of Western Australia, Australia.
May 2012	Visiting Research Fellow at the Theory Division, CERN, Geneva, Switzerland.
Apr. 2010 – Apr. 2012	Marie Curie Research Fellowship at the Department of Physics and Astronomy, Theoretical Physics, Uppsala University, Sweden.
Nov. 2008 – Mar. 2010	Postdoctoral Research Associate at the Center for String and Particle Theory, Department of Physics, University of Maryland, USA.
Nov. 2006 – Nov. 2008	Postdoctoral Research Associate at the School of Physics, The University of Western Australia, Australia.

Grants and Awards

So far in my career I have been successful in attracting competitive research grants and awards both as first Chief-Investigator (1,395k AU\$ + 167k€) and associated Chief-Investigator (346k AU\$) for a total of more than 1.2M€.

- 2020** Together with Jock McOrist (University of New England) and Johanna Knapp (University of Melbourne): 10kAU\$ from the Australian Mathematical Sciences Institute (AMSI) and Australian Mathematical Society (AustMS) to organise a satellite workshop of the AustMS annual meeting in December 2020 (postponed to 2021);
8kAU\$ + accommodation and living allowance for 20 participants for two weeks for a MATRIX institute program in Melbourne to be hold in January 2022.
- Dec. 2018** University of Queensland, Capacity Building Package for Future Fellowship, 295k AU\$ over four years.
- Aug. 2018** Australian Research Council (ARC) Future Fellowship (FT)
“Supersymmetry and Supergravity: New Approaches and Applications,”
703k AU\$ over four years, Award No. 2018 FT180100353.
- Jan. 2014** Italian “Abilitazione scientifica Nazionale” (National Scientific Professorship Qualification):
Associate Professor (Professore di seconda fascia),
Scientific Sector 02/A2 “Theoretical Physics of Fundamental Interactions,”
Validity period: 08/01/2014 – 08/01/2023.
- Nov. 2013** Third Chief–Investigator on the Australian Research Council (ARC) Discovery Project (DP)
“Novel Conformal Techniques in Quantum Field Theory Gravity & Supergravity,”
346k AU\$ over three years, Award No. 2014 DP140103925.
S. Kuzenko (CI1), E. Buchbinder (CI2), G. Tartaglino-Mazzucchelli (CI3);
S. Theisen (PI1), A. Tseytlin (PI2).
- Nov. 2011** Australian Research Council (ARC) Discovery Early Career Researcher Award (DECRA)
“Superspace and dualities in supersymmetric field theories, supergravity and string theory,”
375k AU\$ over three years, Award No. 2012 DE120101498.
- 2009** Awarded a Marie Curie Intra–European–Fellowship (FP7-PEOPLE-IEF-2008)
“Supersymmetry, supergravity and geometry in particle physics and string theory,”
167k€ over two years, contract No. PIEF-GA-2009-236454.
- Jan. 2007 – Mar. 2008** University of Western Australia Research Grant
“Supersymmetry, Supergravity and Extra Dimensions in Particle Physics and String Theories,”
21k AU\$ Grant No. 12104399.

University Education

- 30 Oct. 2006** PhD degree in Theoretical Physics at Milano-Bicocca University.
PhD Thesis title: *On Supersymmetry and Superspaces in 4 & 6 dimensions*
PhD Advisor: Prof. Silvia Penati.
- Aug. 2005** Visitor, invited by Prof. S. James Gates Jr., at the Center for String and Particle Theory, Department of Physics, University of Maryland.
- Nov. 2003 – Nov. 2006** PhD student at Milano-Bicocca University, Milan, Italy.
PhD supervisor: Prof. Silvia Penati.
- 29 Oct. 2003** Degree in Physics. Master Thesis title:

Complex Linear Superfield, Konishi anomaly and Matrix Models.

Supervisors: Prof. Silvia Penati and Prof. Luciano Girardello.

Final degree mark: 110/110 *cum laude*.

Nov. 1998 – Oct. 2003 Undergraduate studies in Physics, Milano-Bicocca University.
Specialization in Theoretical Physics.

University Teaching Experience

Academic yr 2020 Lecturer for the course “PHYS2100, Dynamics, Chaos & Special Relativity,” for the second year students at the School of Mathematics and Physics, University of Queensland, Brisbane, Australia.

Academic yr 2020 Organiser of the reading group on “Advanced Quantum Field Theory,” for the honours and PhD students at the School of Mathematics and Physics, University of Queensland, Brisbane, Australia.

May 2019 Lecturer for the course “Advanced group theory,” for the graduate course in theoretical physics at the Institute of Theoretical Physics, Bern University, Bern, Switzerland.

Academic yrs: 2015 – 2016, 2016 – 2017 & 2017 – 2018 Lecturer for the course “Groups and symmetries” for the master in Theoretical Physics at KU Leuven University, Leuven, Belgium.

Nov. 2011–Dec. 2011 Assistant of Prof. J. Minahan, for the undergraduate course “Kvantfysik (del 2)” on Quantum Mechanics at Uppsala University.

Nov. 2008–March. 2010 Assistant of Prof. S. James Gates Jr., for the undergraduate course on String Theory and the graduate course on Group Theory at the Department of Physics, University of Maryland.

Oct. 2005–Feb. 2006 & Oct. 2004–Feb. 2005 Assistant of Prof. Giancarlo Travaglini for the course “Institutions of Mathematics”, Milano-Bicocca University.

Supervision Experience

2020 – PhD supervision at the University of Queensland: Saurish Khandelwal; Gregory Gold.

2020 – PhD cosupervision at the University of Queensland: Ming Chen (main supervisor Pro. Yao-Zhong Zhang).

Sept. 2015 – Jul. 2016 Master Supervisor of Gerben Venken at KU Leuven University
Master Thesis: *A supersymmetric dS/CFT correspondence?*
G. Venken started a PhD at KU Leuven in the fall of 2016 and a postdoc in Heidelberg in 2020.

Jan. 2013 – June 2015 I supported the salary and cosupervised Dr J. Novak as a Research Associate at the University of Western Australia (then Humboldt Fellow at AEI, Max Plank Institute, Germany).

2014 – 2015 While at the University of Western Australia I was PhD cosupervisor of Daniel Ogburn,
Supervisor: Prof. S. Kuzenko

2008 – 2014 While at the University of Maryland and at Uppsala University I cosupervised and trained PhD students. In particular, I cosupervised Matias O. Leoni (now CONICET Assistant Professor in Argentina) during his PhD at Milano University. I was also largely interacting with Dr J. Novak, with K. Koutrolikos (now postdoc at Brown University, USA), with M. Göteman (now an Assistant Professor in Uppsala), and I. Ryb, in 2011 a visiting student from Stony Brook University in Uppsala.

2003 – 2005 During my PhD I cosupervised the Masters work of A. Mariotti (now Asst/Prof at VUB, Belgium).

Other Qualifications: Editorial activities, Conference and Seminars organization

- Invited Editor for the journal Symmetry (MDPI).
- Reviewer for the Journals: Phys. Lett. B., Class. Quantum Grav., JHEP, Journal of Modern Physics A, Symmetry (MDPI), Universe (MDPI), APS JOURNALS (Physical Review Letters, Physical Review D).
- Since 2012: “Detailed Assessor” (expert reviewer of grant proposals) for the Australian Research Council (ARC).
- Since 2020: I am Co-organiser of the “Australian String Theory” workgroup. This includes co-organisation of seminar series and conferences (two planned in 2021).

- Member of the Mathematical Physics section of the program committee for the 2020 annual meeting of the Australian Mathematical Society (AustMS)
- Member of the organising committee of the 2020 annual meeting of The Australian and New Zealand Association of Mathematical Physics (ANZAMP).
- During 2012 – 2016 and since 2020: I was a Member of the Australian Mathematical Society and of the Australian and New Zealand Association of Mathematical Physics (ANZAMP).
- July 2015 – June 2018: member of the organizing committee of the joint seminar program in theoretical physics of the KULeuven, ULB, UMons, VUB Universities in Belgium.
- Member of the program committee of the 2015 annual meeting of the The Australian and New Zealand Association of Mathematical Physics (ANZAMP).
- Member of the Guttmann prize committee at the 2014 annual meeting of the The Australian and New Zealand Association of Mathematical Physics (ANZAMP), 08 – 12 December 2014, Melbourne, Australia.
- During 2005 – 2006: organizer of the journal club sessions of the string theory group at Milano-Bicocca University.

Research interests and expertise

Theoretical and mathematical physics of fundamental interactions. Specifically: quantum field theory, general relativity, conformal field theories, supersymmetry, supergravity, string theory, superspaces in various dimensions, extended supersymmetry, geometric engineering of gauge theories, higher-spin theories, complex geometry, (A)dS/CFT and integrability.

Referees

Prof. Ignatios Antoniadis

Laboratoire de Physique Theorique et Hautes Energies (LPTHE), UMR 7589; Sorbonne Universite et CNRS, 4 place Jussieu, 75252 Paris Cedex 05, France; Albert Einstein Center, Institute for Theoretical Physics, University of Bern, Sidlerstrasse 5, 3012 Bern, Switzerland.
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Prof. Jean-Pierre Derendinger

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Prof. S. James Gates Jr.

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Prof. Thomas Hertog

Department of Physics, Institute for Theoretical Physics, KULeuven University, Celestijnenlaan 200D, B-3001 Leuven, Belgium.
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Prof. Sergei M. Kuzenko

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Prof. Ulf Lindström

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Prof. Antoine Van Proeyen

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KULeuven University, Celestijnenlaan 200D, B-3001 Leuven, Belgium.
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Asst. Prof. Thomas Van Riet

Department of Physics, Institute for Theoretical Physics,
KULeuven University, Celestijnenlaan 200D, B-3001 Leuven, Belgium.
email: thomas.vanriet@kuleuven.be

Scientific Publications

53 articles (52 published, 1 to appear) 10 conference proceedings; 1410 citations and a h -index of 25 on INSPIRE; 1566 citations (1004 since 2015) and a h -index of 25 on Google Scholar; citations data taken on September 14, 2020;

The list of papers by G. Tartaglino-Mazzucchelli can be obtained from the literature database INSPIRE or Google Scholar:

<http://inspirehep.net/author/profile/G.Tartaglino.Mazzucchelli.1>

<https://scholar.google.be/citations?user=bXoAK1kAAAAJ&hl=en&oi=ao>

All research papers of G. Tartaglino-Mazzucchelli were published in highest impact factor (IF) journals of high-energy theoretical and mathematical physics including (2019 Journal Impact Factors):

1 paper in	<i>Physical Review Letters</i> (Phys. Rev. Lett.)	IF 8.385;
41 papers in	<i>Journal of High Energy Physics</i> (JHEP)	IF 5.875;
6 papers in	<i>Physical Review D</i> (Phys. Rev. D)	IF 4.833;
2 papers in	<i>Physics Letters B</i> (Phys. Lett. B)	IF 4.384;
1 paper in	<i>Nuclear Physics B</i> (Nucl. Phys. B)	IF 2.817;
2 papers in	<i>Fortschritte der Physik Journal</i> (Fortschr. Phys.)	IF 3.921;
1 paper in	<i>Journal of Physics A: Mathematical and Theoretical</i> (J. Phys. A)	IF 1.996;

Please note that the convention in theoretical high-energy physics is that the list of authors on papers is strictly alphabetical.

Papers to appear:

- J53.** S. M. Kuzenko, U. Lindstrom, E S. N. Raptakis and Gabriele Tartaglino-Mazzucchelli, “Higher symmetries of 6D $\mathcal{N} = (1, 0)$ supermultiplets,” *to appear*.

Refereed journal articles:

- J52.** I. Antoniadis, J. P. Derendinger, H. Jiang and G. Tartaglino-Mazzucchelli, “Magnetic deformation of super-Maxwell theory in supergravity,” *JHEP* **08** (2020) no.08, 079 [arXiv:2005.11374 [hep-th]]. <https://arxiv.org/abs/2005.11374>
- J51.** H. Jiang and G. Tartaglino-Mazzucchelli, “Supersymmetric $J\bar{T}$ and $T\bar{J}$ deformations,” *JHEP* **05** (2020), 140 [arXiv:1911.05631 [hep-th]]. <https://arxiv.org/abs/1911.05631>
- J50.** C. Ferko, H. Jiang, S. Sethi and G. Tartaglino-Mazzucchelli, “Non-linear supersymmetry and $T\bar{T}$ -like flows,” *JHEP* **02** (2020), 016; [arXiv:1910.01599 [hep-th]]. <https://arxiv.org/abs/1910.01599>
- J49.** C. K. Chang, C. Ferko, S. Sethi, A. Sfondrini and G. Tartaglino-Mazzucchelli, “ $T\bar{T}$ flows and (2,2) supersymmetry,” *Phys. Rev. D* **101** (2020) no.2, 026008; [arXiv:1906.00467 [hep-th]]. <https://arxiv.org/abs/1906.00467>
- J48.** I. Antoniadis, J. P. Derendinger, F. Farakos and G. Tartaglino-Mazzucchelli, “New Fayet-Iliopoulos terms in $\mathcal{N} = 2$ supergravity,” *JHEP* **1907**, 061 (2019); [arXiv:1905.09125 [hep-th]]. <https://arxiv.org/abs/1905.09125>
- J47.** T. Hertog, G. Tartaglino-Mazzucchelli and G. Venken, “Spinors in Supersymmetric dS/CFT,” *JHEP* **1910**, 117 (2019); [arXiv:1905.01322 [hep-th]]. <https://arxiv.org/abs/1905.01322>

- J46.** H. Jiang, A. Sfondrini and G. Tartaglino-Mazzucchelli, “ $T\bar{T}$ deformations with $\mathcal{N} = (0, 2)$ supersymmetry,” *Phys. Rev. D* **100**, no. 4, 046017 (2019); [arXiv:1904.04760 [hep-th]]. <https://arxiv.org/abs/1904.04760>
- J45.** M. Baggio, A. Sfondrini, G. Tartaglino-Mazzucchelli and H. Walsh, “On $T\bar{T}$ deformations and supersymmetry,” *JHEP* **1906** (2019) 063; [arXiv:1811.00533 [hep-th]]. <https://arxiv.org/abs/1811.00533>
- J44.** D. Butter, J. Novak, M. Ozkan, Y. Pang and G. Tartaglino-Mazzucchelli, “Curvature squared invariants in six-dimensional $\mathcal{N} = (1, 0)$ supergravity,” *JHEP* **1904** (2019) 013; [arXiv:1808.00459 [hep-th]]. <https://arxiv.org/abs/1808.00459>
- J43.** F. Farakos, P. Kočí, G. Tartaglino-Mazzucchelli and R. von Unge, “Partial $\mathcal{N} = 2$ Supersymmetry Breaking and Deformed Hypermultiplets,” *JHEP* **1903** (2019) 037; [arXiv:1807.03715 [hep-th]]. <https://arxiv.org/abs/1807.03715>
- J42.** E. I. Buchbinder, J. Hutomo, S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Two-form supergravity, superstring couplings, and Goldstino superfields in three dimensions,” *Phys. Rev. D* **96**, no. 12, 126015 (2017); [arXiv:1710.00554 [hep-th]]. <https://arxiv.org/abs/1710.00554>
- J41.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Complex three-form supergravity and membranes,” *JHEP* **1712** (2017) 005; [arXiv:1710.00535 [hep-th]]. <https://arxiv.org/abs/1710.00535>
- J40.** T. Hertog, G. Tartaglino-Mazzucchelli, T. Van Riet and G. Venken, “Supersymmetric dS/CFT,” *JHEP* **1802** (2018) 024; [arXiv:1709.06024 [hep-th]]. <https://arxiv.org/abs/1709.06024>
- J39.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “New nilpotent $\mathcal{N} = 2$ superfields,” *Phys. Rev. D* **97** (2018) no.2, 026003; [arXiv:1707.07390 [hep-th]]. <https://arxiv.org/abs/1707.07390>
- J38.** J. Novak, M. Ozkan, Y. Pang and G. Tartaglino-Mazzucchelli, “Gauss-Bonnet supergravity in six dimensions,” *Phys. Rev. Lett.* **119**, no. 11, 111602 (2017); [arXiv:1706.09330 [hep-th]]. <https://arxiv.org/abs/1706.09330>
- J37.** S. M. Kuzenko, I. N. McArthur and G. Tartaglino-Mazzucchelli, “Goldstino superfields in $\mathcal{N} = 2$ supergravity,” *JHEP* **1705** (2017) 061; [arXiv:1702.02423 [hep-th]]. <https://arxiv.org/abs/1702.02423>
- J36.** D. Butter, J. Novak and G. Tartaglino-Mazzucchelli, “The component structure of conformal supergravity invariants in six dimensions,” *JHEP* **1705**, 133 (2017); [arXiv:1701.08163 [hep-th]]. <https://arxiv.org/abs/1701.08163>
- J35.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Nilpotent chiral superfield in $\mathcal{N}=2$ supergravity and partial rigid supersymmetry breaking,” *JHEP* **1603**, 092 (2016); [arXiv:1512.01964 [hep-th]]. <http://arxiv.org/abs/1512.01964>
- J34.** S. M. Kuzenko, J. Novak and G. Tartaglino-Mazzucchelli, “Higher derivative couplings and massive supergravity in three dimensions,” *JHEP* **1509**, 081 (2015); [arXiv:1506.09063 [hep-th]]. <http://arxiv.org/abs/1506.09063>
- J33.** D. Butter, S. M. Kuzenko, J. Novak and G. Tartaglino-Mazzucchelli, “Conformal supergravity in five dimensions: New approach and applications,” *JHEP* **1502**, 111 (2015); [arXiv:1410.8682 [hep-th]]. <http://arxiv.org/abs/1410.8682>
- J32.** S. M. Kuzenko, J. Novak and G. Tartaglino-Mazzucchelli, “Symmetries of curved superspace in five dimensions,” *JHEP* **1410**, 175 (2014); [arXiv:1406.0727 [hep-th]]. <http://arxiv.org/abs/1406.0727>
- J31.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “ $\mathcal{N}=4$ supersymmetric Yang-Mills theories in AdS_3 ,” *JHEP* **1405**, 018 (2014); [arXiv:1402.3961 [hep-th]]. <http://arxiv.org/abs/1402.3961>
- J30.** S. M. Kuzenko, U. Lindstrom, M. Rocek, I. Sachs and G. Tartaglino-Mazzucchelli, “Three-dimensional $\mathcal{N}=2$ supergravity theories: From superspace to components,” *Phys. Rev. D* **89**, 085028 (2014); [arXiv:1312.4267 [hep-th]]. <http://arxiv.org/abs/1312.4267>
- J29.** S. M. Kuzenko, J. Novak and G. Tartaglino-Mazzucchelli, “ $\mathcal{N}=6$ superconformal gravity in three dimensions from superspace,” *JHEP* **1401**, 121 (2014); [arXiv:1308.5552 [hep-th]]. <http://arxiv.org/abs/1308.5552>
- J28.** D. Butter, S. M. Kuzenko, J. Novak and G. Tartaglino-Mazzucchelli, “Conformal supergravity in three dimensions: Off-shell actions,” *JHEP* **1310**, 073 (2013); [arXiv:1306.1205 [hep-th]]. <http://arxiv.org/abs/1306.1205>

- J27.** D. Butter, S. M. Kuzenko, J. Novak and G. Tartaglino-Mazzucchelli, “Conformal supergravity in three dimensions: New off-shell formulation,” JHEP **1309**, 072 (2013); [arXiv:1305.3132 [hep-th]]. <http://arxiv.org/abs/arXiv:1305.3132>
- J26.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Conformal supergravities as Chern-Simons theories revisited,” JHEP **1303**, 113 (2013); [arXiv:1212.6852 [hep-th]]. <http://arxiv.org/abs/arXiv:1212.6852>
- J25.** D. Butter, S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Nonlinear sigma models with AdS supersymmetry in three dimensions,” JHEP **1302**, 121 (2013); [arXiv:1210.5906 [hep-th]]. <http://arxiv.org/abs/arXiv:1210.5906>
- J24.** S. M. Kuzenko, U. Lindstrom and G. Tartaglino-Mazzucchelli, “Three-dimensional (p,q) AdS superspaces and matter couplings,” JHEP **1208**: 024 (2012); [arXiv:1205.4622 [hep-th]]. <http://arxiv.org/abs/arXiv:1205.4622>
- J23.** W. D. Linch, III and G. Tartaglino-Mazzucchelli, “Six-dimensional Supergravity and Projective Superfields,” JHEP **1208**: 024 (2012); [arXiv:1204.4195 [hep-th]]. <http://arxiv.org/abs/1204.4195>
- J22.** D. Butter, S. M. Kuzenko, U. Lindstrom and G. Tartaglino-Mazzucchelli, “Extended supersymmetric sigma models in AdS₄ from projective superspace,” JHEP **1205**: 138 (2012); [arXiv:1203.5001 [hep-th]]. <http://arxiv.org/abs/1203.5001>
- J21.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Three-dimensional N=2 (AdS) supergravity and associated supercurrents,” JHEP **1112**: 052 (2011); [arXiv:1109.0496 [hep-th]]. <http://arxiv.org/abs/1109.0496>
- J20.** S. M. Kuzenko, U. Lindstrom and G. Tartaglino-Mazzucchelli, “Off-shell supergravity-matter couplings in three dimensions,” JHEP **1103**, 120 (2011); [arXiv:1101.4013 [hep-th]]. <http://arxiv.org/abs/1101.4013>
- J19.** S. M. Kuzenko, J. H. Park, G. Tartaglino-Mazzucchelli and R. von Unge, “Off-shell superconformal nonlinear sigma-models in three dimensions,” JHEP **1101**, 146 (2011); [arXiv:1011.5727 [hep-th]]. <http://arxiv.org/abs/1011.5727>
- J18.** M. Leoni, A. Mauri, J. A. Minahan, O. O. Sax, A. Santambrogio, C. Sieg and G. Tartaglino-Mazzucchelli, “Superspace calculation of the four-loop spectrum in N=6 supersymmetric Chern-Simons theories,” JHEP **1012**, 074 (2010); [arXiv:1010.1756 [hep-th]]. <http://arxiv.org/abs/1010.1756>
- J17.** G. Tartaglino-Mazzucchelli, “2D N=(4,4) superspace supergravity and bi-projective superfields,” JHEP **1004**, 034 (2010); [arXiv:0911.2546 [hep-th]]. <http://arxiv.org/abs/0911.2546>
- J16.** S. J. Gates Jr., S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Chiral supergravity actions and superforms,” Phys. Rev. D **80**, 125015 (2009); [arXiv:0909.3918 [hep-th]]. <http://arxiv.org/abs/0909.3918>
- J15.** S. J. Gates Jr. and G. Tartaglino-Mazzucchelli, “Ectoplasm & Superspace Integration Measure for 2D Supergravity with Four Spinorial Supercurrents,” J. Phys. A **43**, 095401 (2010); [arXiv:0907.5264 [hep-th]]. <http://arxiv.org/abs/0907.5264>
- J14.** S. M. Kuzenko, U. Lindstrom, M. Rocek and G. Tartaglino-Mazzucchelli, “On conformal supergravity and projective superspace,” JHEP **0908**, 023 (2009); [arXiv:0905.0063 [hep-th]]. <http://arxiv.org/abs/0905.0063>
- J13.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Different representations for the action principle in 4D N = 2 supergravity,” JHEP **0904**, 007 (2009); [arXiv:0812.3464 [hep-th]]. <http://arxiv.org/abs/0812.3464>
- J12.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Field theory in 4D N=2 conformally flat superspace,” JHEP **0810**, 001 (2008); [arXiv:0807.3368 [hep-th]]. <http://arxiv.org/abs/0807.3368>
- J11.** S. M. Kuzenko, U. Lindstrom, M. Rocek and G. Tartaglino-Mazzucchelli, “4D N = 2 Supergravity and Projective Superspace,” JHEP **0809**, 051 (2008); [arXiv:0805.4683 [hep-th]]. <http://arxiv.org/abs/0805.4683>
- J10.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Conformally flat supergeometry in five dimensions,” JHEP **0806**, 097 (2008); [arXiv:0804.1219 [hep-th]]. <http://arxiv.org/abs/0804.1219>
- J9.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Super-Weyl invariance in 5D supergravity,” JHEP **0804**, 032 (2008); [arXiv:0802.3953 [hep-th]]. <http://arxiv.org/abs/0802.3953>

- J8.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “5D Supergravity and Projective Superspace,” JHEP **0802**, 004 (2008); [arXiv:0712.3102 [hep-th]]. <http://arxiv.org/abs/0712.3102>
- J7.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Five-dimensional Superfield Supergravity,” Phys. Lett. B **661**, 42 (2008); [arXiv:0710.3440 [hep-th]]. <http://arxiv.org/abs/0710.3440>
- J6.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Five-dimensional $N = 1$ AdS superspace: Geometry, off-shell multiplets and dynamics,” Nucl. Phys. B **785**, 34 (2007); [arXiv:0704.1185 [hep-th]]. <http://arxiv.org/abs/0704.1185>
- J5.** S. J. Gates Jr., S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “New massive supergravity multiplets,” JHEP **0702**, 052 (2007); [arXiv:hep-th/0610333]. <http://arxiv.org/abs/hep-th/0610333>
- J4.** S. J. Gates Jr., S. Penati and G. Tartaglino-Mazzucchelli, “6D Supersymmetric Nonlinear Sigma-Models in 4D, $N=1$ Superspace,” JHEP **0609**, 006 (2006); [arXiv:hep-th/0604042]. <http://arxiv.org/abs/hep-th/0604042>
- J3.** L. Girardello, A. Mariotti and G. Tartaglino-Mazzucchelli, “On supersymmetry breaking and the Dijkgraaf–Vafa conjecture,” JHEP **0603**, 104 (2006); [arXiv:hep-th/0601078]. <http://arxiv.org/abs/hep-th/0601078>
- J2.** S. J. Gates Jr., S. Penati and G. Tartaglino-Mazzucchelli, “6D supersymmetry, projective superspace and 4D, $N = 1$ superfields,” JHEP **0605**, 051 (2006); [arXiv:hep-th/0508187]. <http://arxiv.org/abs/hep-th/0508187>
- J1.** G. Tartaglino-Mazzucchelli, “Quantization of $N = 1$ chiral/nonminimal (CNM) scalar multiplets and supersymmetric Yang–Mills theories,” Phys. Lett. B **599**, 326 (2004); [arXiv:hep-th/0404222]. <http://arxiv.org/abs/hep-th/0404222>

Refereed conference papers:

- C10.** G. Tartaglino-Mazzucchelli, “The 6D Gauss-Bonnet Supergravity Invariant,” Contribution to the proceedings of the International Workshop “Supersymmetries and Quantum Symmetries” (SQS’17), Bogoliubov Laboratory of Theoretical Physics, JINR, Dubna, 31 July - 5 August, 2017, Phys. Part. Nucl. Lett. **49** (2018) no.5, 884-889, based on the invited plenary talk given by Dr. G. Tartaglino-Mazzucchelli. <https://link.springer.com/article/10.1134/S1063779618050386>
- C9.** J. Novak and G. Tartaglino-Mazzucchelli, “On curvature squared invariants in 6D supergravity,” J. Phys. Conf. Ser. **965**, no. 1, 012029 (2018), Contribution to the proceedings of the “International Conference on Integrable Systems and Quantum symmetries” (ISQS-25), Prague, Czech Republic, 6 – 10 June, 2017, based on the talk given by Dr. G. Tartaglino-Mazzucchelli. <http://iopscience.iop.org/article/10.1088/1742-6596/965/1/012029/meta>
- C8.** J. Novak and G. Tartaglino-Mazzucchelli, “Component reduction and the superconformal gravity invariants,” J. Phys. Conf. Ser. **965**, no. 1, 012045 (2018), Contribution to the proceedings of the “International Conference on Integrable Systems and Quantum symmetries” (ISQS-25), Prague, Czech Republic, 6 – 10 June, 2017, based on the talk given by Dr. J. Novak. <http://iopscience.iop.org/article/10.1088/1742-6596/965/1/012045/meta>
- C7.** D. Butter, S. M. Kuzenko, J. Novak and G. Tartaglino-Mazzucchelli, “Off-shell actions for conformal supergravity in three dimensions,” Contribution to the proceedings of the Workshop “Supersymmetry and Quantum Symmetries,” (SQS’13), Bogoliubov Laboratory of Theoretical Physics, JINR, Dubna, July 29-August 3 2013, Phys. Part. Nucl. Lett. **11** (2014) no.7, 927-932, based on the invited plenary talk given by Dr G. Tartaglino-Mazzucchelli. <https://link.springer.com/article/10.1134%2FS1547477114070085>
- C6.** D. Butter, S. M. Kuzenko, J. Novak and G. Tartaglino-Mazzucchelli, “New approach to N -extended conformal supergravity in three dimensions,” Contribution to the proceedings of the Workshop “Supersymmetry and Quantum Symmetries,” (SQS’13), Bogoliubov Laboratory of Theoretical Physics, JINR, Dubna, July 29-August 3 2013, Phys. Part. Nucl. Lett. **11** (2014) no.7, 880-885, based on the invited plenary talk given by Prof S. M. Kuzenko. <https://link.springer.com/article/10.1134%2FS1547477114070097>
- C5.** G. Tartaglino-Mazzucchelli, “Extended supersymmetric sigma-models in 3D AdS,” Contribution to the proceedings of the XVIII European Workshop on String Theory: 12th Hellenic School and Workshops on Elementary Particle Physics and Gravity. (CORFU2012-ST), Corfu, 19-27 September, 2012, PoS Corfu **2012**, 090 (2013), based on the talk given by Dr G. Tartaglino-Mazzucchelli. <http://inspirehep.net/record/1249424>

- C4.** G. Tartaglino-Mazzucchelli, “Topics in 3D $\mathcal{N} = 2$ AdS supergravity in superspace,” Contribution to the proceedings of the XVII European Workshop on String Theory 2011, Padua, 5-9 September, 2011, Fortsch. Phys. **60**, 1105 (2012), DOI 10.1002/prop.201200027, based on the talk given by Dr G. Tartaglino-Mazzucchelli. <http://arxiv.org/abs/1202.0109>
- C3.** G. Tartaglino-Mazzucchelli, “On 2D $\mathcal{N}=(4,4)$ superspace supergravity,” Contribution to the proceedings of the Workshop “Supersymmetry and Quantum Symmetries,” (SQS’09), Bogoliubov Laboratory of Theoretical Physics, JINR, Dubna, July 29–August 3 2009, Phys. Part. Nucl. Lett. **8**, 251 (2011), [arxiv:0912.5300 [hep-th]], based on the invited talk given by Dr G. Tartaglino-Mazzucchelli. <http://arxiv.org/abs/0912.5300>
- C2.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “Wandering in five-dimensional curved superspace,” Contribution to the proceedings of the 3rd RTN Workshop “Constituents, fundamental forces and symmetries of the universe,” Valencia, October 1-5 2007, Fortsch. Phys. **56**, 929 (2008), [arxiv:0804.3246 [hep-th]], based on the talk given by Dr G. Tartaglino-Mazzucchelli. <http://arxiv.org/abs/0804.3246>
- C1.** S. M. Kuzenko and G. Tartaglino-Mazzucchelli, “On 5D AdS SUSY and Harmonic Superspace,” Contribution to the proceedings of the Workshop “Supersymmetry and Quantum Symmetries,” (SQS’07), Bogoliubov Laboratory of Theoretical Physics, JINR, Dubna, July 30-August 4 2007, [arxiv:0711.0063 [hep-th]], published in the proceedings of the conference SQS’07, and based on the invited talk given by Dr G. Tartaglino-Mazzucchelli. <http://arxiv.org/abs/0711.0063>

Selected Talks

- | | |
|--------------------------|--|
| March 3, 2020 | <i>On supersymmetry, its breaking, supergravity, and the cosmological constant</i>
talk at the Physics seminars series at the University of Queensland. |
| February 6, 2020 | <i>$T\bar{T}$ deformations and supersymmetry</i>
talk at the 2020 annual meeting of the The Australian and New Zealand Association of Mathematical Physics (ANZAMP), Coolangatta, Australia, February 5-7, 2020. |
| November 28, 2019 | <i>$T\bar{T}$ deformations and supersymmetry</i>
talk at the Mathematical Physics Research Group at the University of Queensland. |
| November 30, 2018 | <i>On $T\bar{T}$ Deformations and Supersymmetry</i>
invited talk at the Geneva - Neuchâtel - Zürich informal String Seminars (GeNeZiSS XXIV). |
| October 25, 2018 | <i>Higher-derivative invariants in SUSY and SUGRA: two recent new examples</i>
invited talk at the Mathematical Physics group at the University of Melbourne. |
| October 22, 2018 | <i>Supersymmetry and supergravity: a personal perspective</i>
invited Colloquium at the School of Mathematics and Physics – University of Queensland. |
| October 4, 2018 | <i>Higher-derivative invariants in 6D supergravity</i>
invited talk for the “Fields & Strings” group, Institute for Theoretical Physics, University of Bern. |
| August 30, 2018 | <i>Supersymmetric $T\bar{T}$ deformations?</i>
invited talk at the Workshop “A Fresh Look at AdS3/CFT2,”
Villa Garbald, Castasegna, Switzerland, August 29 – September 4, 2018. |
| May 23, 2018 | <i>Curvature squared invariants in 6D $\mathcal{N} = (1,0)$ supergravity</i>
talk at the conference “New Frontiers in Theoretical Physics, XXXVI Convegno di Fisica Teorica”
Cortona, Italy, May 23-26. |
| May 21, 2018 | <i>Higher-derivative invariants in 6D supergravity</i>
invited talk at Milano University, Milan, Italy. |
| May 8, 2018 | <i>Curvature squared invariants in 6D $\mathcal{N} = (1,0)$ supergravity</i>
invited talk at the joint seminar program in theoretical physics in Vienna, Austria. |
| March 19, 2018 | <i>Higher-derivative invariants in 6D supergravity</i> |

- invited talk at Brown University, Providence, Rhode Island USA.
- March 19, 2018** *Curvature squared invariants in 6D $\mathcal{N} = (1,0)$ supergravity*
invited talk at Texas A& M University, College Station, Texas USA.
- November 28, 2017** *Higher-derivatives invariants in 6D $\mathcal{N} = (1,0)$ supergravity*
invited talk at Torino University, Turin, Italy.
- August 2, 2017** *Higher-derivatives invariants in 6D $\mathcal{N} = (1,0)$ supergravity*
invited plenary talk at the Workshop “Supersymmetries and Quantum Symmetries” (SQS’17), Bogoliubov Laboratory of Theoretical Physics, JINR, Dubna, 31 July - 5 August, 2017.
- June 8, 2017** *On curvature squared invariants in 6D $\mathcal{N} = (1,0)$ supergravity*
talk at the International Conference on Integrable Systems and Quantum symmetries (ISQS-25), Prague June 6–10, 2017.
- March 1, 2017** *On conformal supergravity and higher derivative invariants*
invited talk for the hep-th Belgium joint seminars of Brussels-Leuven-Mons.
- September 19, 2016** *On conformal supergravity and higher derivative invariants*
invited talk at the workshop “Supergravity: What Next?” GGI, Florence, 7 September – 28 October, 2016.
- December 18, 2015** *Higher derivative couplings in supergravity*
at the meeting of the Belgian Inter-University Attraction Pole network on fundamental interactions, 2015, Antwerp, December 18, 2015.
- December 11, 2014** *Conformal supergravity in five dimensions: New approach and applications*
at the annual meeting of the The Australian and New Zealand Association of Mathematical Physics, Melbourne, December 8–12, 2014.
- November 28, 2013** *Off-shell conformal supergravity in 3D*
at the annual meeting of the The Australian and New Zealand Association of Mathematical Physics, Mooloolaba, November 27–29, 2013.
- September 2, 2013** *New superspace techniques for conformal supergravity in three dimensions*
at the XIX European Workshop on String Theory 2013 and 1st COST MP1210 Meeting, Bern, September 2–6, 2013.
- August 30, 2013** *New superspace techniques for conformal supergravity in three dimensions*
at SUSY 2013, Trieste, 26–31 August, 2013.
- August 3, 2013** *New off-shell actions for conformal supergravity in three dimensions*
invited plenary talk at the Workshop “Supersymmetry and Quantum Symmetries,” (SQS’13), Dubna, July 29-August 3 2013.
- September 20, 2012** *Extended supersymmetric sigma-models in 3D AdS*
at the XVIII European Workshop on String Theory 2012, Corfu, 19–27 September, 2012.
- September 9, 2011** *Topics in 3D $\mathcal{N} = 2$ AdS supergravity in superspace*
at the XVII European Workshop on String Theory 2011, Padua, 5-9 September, 2011.
- March 26, 2011** *Off-shell supergravity-matter couplings in three dimensions*
at the 27th Nordic Meeting on Strings, Fields and Branes, NBI Copenhagen.
- August 27, 2009** *Susy invariants and superforms*
invited talk at the School of Physics, University of Western Australia, Crawley, Australia.
- August 1, 2009** *4D $\mathcal{N} = 2$ supergravity and projective superspace*
invited talk at the Workshop “Supersymmetry and Quantum Symmetries,” (SQS’09), Dubna, July 29-August 3 2009.

May 27, 2009	<i>4D $\mathcal{N} = 2$ supergravity and projective superspace</i> invited talk at the Physics department of Milano University, Milan, Italy.
October 9, 2007	<i>Towards 5D curved projective superspace</i> invited talk at the Physics department of Milano-Bicocca University, Milan, Italy.
October 5, 2007	<i>Towards 5D curved projective superspace</i> at the 3rd RTN Workshop “Constituents, fundamental forces and symmetries of the universe,” Valencia, October 1-5 2007.
September 27, 2007	<i>Five-dimensional $\mathcal{N} = 1$ Anti-de Sitter superspace</i> at the “The 51st Annual Meeting of the Australian Mathematical Society,” La Trobe University, Melbourne, September 25-28 2007.
July 31, 2007	<i>On five-dimensional $\mathcal{N} = 1$ AdS superspace</i> at the Workshop “Supersymmetry and Quantum Symmetries,” (SQS’07), Dubna, July 30-August 4 2007.
May 2, 2007	<i>Five-dimensional $\mathcal{N} = 1$ Anti-de Sitter superspace</i> invited talk at the LPTENS, Ecole Normale Supérieure, Paris.
June 1, 2006	<i>6D $\mathcal{N} = 1$ Supersymmetry and 4D $\mathcal{N} = 1$ Superfields</i> at the conference “Cortona 2006”, Cortona, Italy, May 29 - June 1 2006.

Conferences and Schools in Theoretical Physics

September 19 – 24, 2019	Workshop “New frontiers of integrable deformations,” Villa Garbald, Castasegna, Switzerland.
April 8 – 12, 2019	Workshop “TTbar and Other Solvable Deformations of Quantum Field Theories” Simons Center for Geometry and Physics, Stony Brook, USA.
February 4 – 8, 2019	Conference “CERN Winter School on Supergravity, Strings and Gauge Theory” CERN, Geneva, Switzerland.
December 19 – 21, 2018	Conference “XIV AVOGADRO MEETING on Strings, Supergravity and Gauge Theories” University of Rome - Tor Vergata, Rome, Italy.
November 30, 2018	“GeNeZiSS XXIV: Mini-Conference Series of the Swiss String Theory Community” University of Bern, Bern, Switzerland.
August 29 – September 4, 2018	Workshop “A Fresh Look at AdS3/CFT2,” Villa Garbald, Castasegna, Switzerland.
July 16 – 18, 2018	Conference “Supersymmetric theories, dualities and deformations,” Bern, Switzerland.
May 23 – 26, 2018	Conference “New Frontiers in Theoretical Physics, XXXVI Convegno di Fisica Teorica,” Cortona, Italy.
April 9 – 13, 2018	23rd European String Workshop “Strings, Geometry and Black Holes,” Kings College, London, UK.
July 31 – August 5, 2017	International Workshop “Supersymmetries and Quantum Symmetries” (SQS’17), Dubna, Russia.
June 6 – 10, 2017	International Conference on Integrable Systems and Quantum symmetries (ISQS-25) Prague, Czech Republic.
May 18 – 19, 2017	Workshop “Supergravity 2017” Padua, Italy.
September 12 – 30, 2016	Workshop “Supergravity: what next?” GGI Institute for Theoretical Physics, Florence.
June 17, 2016	“Meeting of the Belgian IUAP network on fundamental interactions, 2016,” Universite catholique de Louvain, Louvain-la-Neuve, Belgium.
May 22 – 26, 2016	“Theory at Sea 2016,” Annual meeting of the theoretical and mathematical physicists

	working in Flanders. Ostend, Belgium.
December 18, 2015	“Meeting of the Belgian IUAP network on fundamental interactions, 2015,” Antwerp University, Antwerp, Belgium.
February 2 – 6, 2015	“CERN Winter School on Supergravity, Strings, and Gauge Theory 2015,” CERN, Geneva, Switzerland.
December 8 – 12, 2014	2014 annual meeting of the The Australian and New Zealand Association of Mathematical Physics (ANZAMP), Melbourne, Australia.
June 23 – 27, 2014	Strings 2014, Princeton University, Princeton, USA.
November 27 – 29, 2013	2013 annual meeting of the The Australian and New Zealand Association of Mathematical Physics (ANZAMP), Mooloolaba, QNL Australia.
September 2 – 6, 2013	XIX European Workshop on String Theory 2013 and 1st COST MP1210 Meeting, Bern, Switzerland.
August 26 – 31, 2013	SUSY 2013, ICTP, Trieste, Italy.
July 29-August 3, 2013	International Workshop “Supersymmetry and Quantum Symmetries,” (SQS’13), Bogoliubov Laboratory of Theoretical Physics, JINR, Dubna.
September 19-27, 2012	XVIII European Workshop on String Theory 2012, Corfu, Greece.
Nov. 1 - Dec. 3, 2011	“Geometry of Strings and Fields,” NORDITA workshop, Stockholm.
September 5-9, 2011	XVII European Workshop on String Theory 2011, Padua, Italy.
June 27 - 02 July, 2011	Strings 2011, Uppsala University, Uppsala, Sweden.
March 24-26, 2011	The 27th Nordic Meeting on “Strings, Fields and Branes,” NBI, Copenhagen,
October 21-23, 2010	The 26th Nordic Network Meeting on “Strings, Fields and Branes,” Chalmers U., Goteborg.
July 26 - August 20, 2010	Simons Workshop in Mathematics and Physics 2010, YITP Stony Brook.
July 30 - August 3, 2009	International Workshop “Supersymmetry and Quantum Symmetries,” (SQS’09), Bogoliubov Laboratory of Theoretical Physics, JINR, Dubna, Russia.
June 16 - July 12, 2008	Simons Workshop in Mathematics and Physics 2008, YITP Stony Brook.
October 1-5 2007	3st RTN Workshop “Constituents, fundamental forces and symmetries of the universe,” Valencia, Spain.
September 25-28, 2007	“The 51st Annual Meeting of the Australian Mathematical Society,” La Trobe University, Melbourne.
July 30 - August 4, 2007	International Workshop “Supersymmetry and Quantum Symmetries,” (SQS’07), Bogoliubov Laboratory of Theoretical Physics, JINR, Dubna.
May 29 - June 1, 2006	“Cortona 2006”, Cortona, Italy.
September 20-26, 2005	1st RTN Workshop “Constituents, fundamental forces and symmetries of the universe,” Corfu’ summer institute on elementary particle physics, Corfu’.
January 31 - February 4, 2005	“RTN Winter School on Strings, Supergravity and Gauge Theories”, SISSA, Trieste.
July 5-7, 2004	“Strings at CERN”(workshop post strings 2004), CERN, Geneva.
March 15-23, 2004	“Spring school on superstring theory and related topics,” Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste.

STATEMENT ON ACADEMIC OPPORTUNITIES AND PERFORMANCE

Academic positions, opportunities, & academic research outputs

2003-2006, PhD Milano-Bicocca University: During my PhD in Theoretical Physics, between November 2003 and October 2006, I had a continuous full time research activity which, in 2005 and 2006, included organisation of journal club and seminars. In 2005, I was invited by Prof S. J. Gates Jr. as a visiting researcher at Maryland U. for one month. In 2005 and 2006 I had teaching responsibilities, approx. 10% of time. In the three years of my PhD studies I published five research papers.

2006-2008, Postdoctoral Research Associate at The University of Western Australia (UWA): In the period November 2006 – November 2008, I was a full time postdoctoral Research Associate at the School of Physics of the University of Western Australia. In this period I undertook 100% research. At the end of 2006 I was also awarded a 21k AU\$ University of Western Australia Research Grant. During the two years of my first postdoc I published seven research papers and two conference proceedings.

2008-2010, postdoctoral Research Associate at the University of Maryland, USA: In November 2008, I moved to the USA where, until March 2010, I was a full time Research Associate at the Center for String and Particle Theory (CSPT), Maryland Center for Fundamental Physics (MCFP), Department of Physics, University of Maryland (UMD). During my second postdoc, I also had teaching responsibilities (about 15% of my time). In 18 months at UMD I published five research papers and one conference proceedings.

2010-2012, Marie Curie Research Fellowship, Uppsala University, Sweden: In 2009, I was awarded a prestigious 167k € two-year Marie Curie Intra-European-Fellowship (MC-IEF). During March 2010 – March 2012, I was a MC-IEF fellow at the Department of Theoretical Physics, Uppsala U., Sweden. During my MC-IEF fellowship I was engaged in approx. 90% research, 5% teaching, and 5% administration (related to my fellowship). During my MC Fellowship I published seven research papers and one conference proceedings.

May 2012, Visiting Fellowship, CERN: In May 2012, I was a visiting researcher at the Theoretical Physics division of CERN.

2012-2015, Research Assistant Professor (Lecturer, Level B), ARC DECRA Fellow at UWA: In November 2011, I was awarded a prestigious 375k AU\$, three-year, Australian Research Council (ARC) Discovery Early Career Research Award (DECRA). During June 2012 – June 2015, I was a Research Assistant Professor, Level B (equivalent of the Italian “ricercatore-B”), at the The University of Western Australia. In November 2013, as a third Chief-Investigator (CI3), I obtained an ARC Discovery Project (DP) worth 346k AU\$. The results of my DECRA attracted attention of research experts in Europe and between January – May 2015, I was invited by Prof A. Van Proeyen, a world expert in supergravity, as a Visiting Research Fellow at the Institute for Theoretical Physics (ITF), KU Leuven U., Leuven, Belgium. During my DECRA I undertook 95% research while 5% of my time was engaged in administrative duties for my grant. During these three years I published eight research papers and three conference proceedings.

2015-2018, Senior Research Fellow at KU Leuven University, Belgium: During July 2015 – September 2018 I was a full-time Senior Research Fellow at the Institute for Theoretical Physics (ITF), KU Leuven U., Belgium. The position was about 70% research with a reasonable teaching load of approx. 25% of my time. In Leuven I was teaching in the Masters program and supervised Master and PhD students. I also had administrative duties of approx. 5% for the organization of the Belgium hep-th seminars. These activities affected my production in 2015-2016. Successively, I started one of the most prolific research period of my career. I initiated new collaborations and research lines. In 39 months in Leuven, I wrote 13 research papers and 3 conference proceedings. In August 2018, I was also awarded a prestigious 703k AU\$, four-year, Australian Research Council (ARC) Future Fellowship (FT18). To support my Future Fellowship project, The University of Queensland also granted me a four-year, Capacity Building Package worth 295k AU\$. For work and family reasons I postponed the start of my FT18 to October 2019.

2018-2019, Senior Research Fellow at ITP Bern, Switzerland: During October 2018 – September 2019 I was a Senior Research Fellow at the Institute for Theoretical Physics (ITP), Albert Einstein Center for Fundamental Physics, Bern U., Switzerland. Despite family duties due to the birth of my first son in July 2019, and teaching duties for the graduate program (10% FTE), in Bern I had a very productive year of research. In one year I wrote five research papers and created new research collaborations.

Since October 2019, ARC Future Fellow and Senior Lecturer (Level C) at the University of Queensland (UQ): In October 2019 I started an ARC Future Fellowship (a prestigious Australian middle career research fellowship) and Senior Lecturer, Level C (equivalent of Italian Associate professor), position at the University of Queensland (UQ). With this appointment I re-established myself in Australia. At UQ I started to create new research lines oriented on high-energy theoretical and mathematical physics of fundamental interactions. I also created new national connections with the Australian string theory community. Together with

Johanna Knapp (University of Melbourne) and Jock McOrist (University of New England), we started to create a new network of string theorists in Australia and we have already secured funding for two conferences between 2021 and 2022. Currently, and till September 2023, I estimate my workload to be 95% research and 5% administration for my FT grant. During the first year at UQ I wrote four research papers.

Collaborations

During my research career I activity established international contacts and successfully collaborated with some of the world's leading experts in the research areas of supersymmetry, supergravity, string theory, AdS/CFT and integrability such as: I. Antoniadis, E. I. Buchbinder, D. Butter, J.-P. Derendinger, S. J. Gates Jr., L. Girardello, T. Hertog, S. M. Kuzenko, W. D. Linch III, U. Lindström, A. Mariotti, I. McArthur, J. A. Minahan, Y. Pang, J.-H. Park, S. Penati, M. Roček, I. Sachs, A. Santambrogio, S. Sethi, A. Sfondrini, A. Van Proeyen, T. Van Riet, and R. von Unge. I also successfully collaborated with young promising scientists such as: M. Baggio, C. H. Chang, F. Farakos, J. Hutomo, H. Jiang, P. Kočí, C. Ferko, M. Leoni, A. Mauri, J. Novak, O. Ohlsson-Sax, M. Ozkan, C. Sieg, G. Venken and H. Walsh. My network of collaboration include the following countries: Argentina, Australia, Belgium, Czech Republic, France, Germany, South Korea, Italy, Sweden, Switzerland, Turkey, UK, USA.

It is worth mentioning that Prof Gates, Prof Lindström, Prof Roček and Prof Kuzenko are among the founding fathers and world leading experts in the use of superspace in studying supersymmetry and supergravity. They wrote two of the current classic books on the subject: *S. J. Gates, M. T. Grisaru, M. Rocek and W. Siegel, "Superspace Or One Thousand and One Lessons in Supersymmetry," Front. Phys. 58, 1 (1983); I. L. Buchbinder and S. M. Kuzenko, "Ideas and methods of supersymmetry and supergravity: Or a walk through superspace," Bristol, UK: IOP (1998) 656 p.* Prof Gates, is also a well known science personality in the USA. In 2013 he was recipient of the National Medal of Science. He was a member of the Council of Advisors on Science and Technology during the eight years administration of President Barack Obama. In 2018, Gates was elected to the presidential line of the American Physical Society beginning as Vice President in 2019, and President from 2021.

Prof Lindström and Prof Roček are world leading experts on superspace techniques in the study of supersymmetric non-linear sigma-models and complex geometry. They were two of the scientists who developed these fields in the context of generalised complex geometry and its application to string theory compactification with fluxes.

From Milan, Prof Penati, who was my Masters and PhD supervisor, and A. Santambrogio are expert on supersymmetric quantum field theories well known for their contributions on studies of the AdS/CFT. Prof Girardello, who was co-supervisor of my Masters thesis and collaborator during my PhD, is one of the founding fathers of studies of supergravity in Italy and Europe and made many famous contributions in his career.

Prof Derendinger and Prof Van Proeyen, are among the founding fathers and leading experts on supergravity. Prof's Van Proeyen's book on supergravity is becoming one of the most used in the field: *D. Z. Freedman and A. Van Proeyen, "Supergravity," Cambridge, UK: Cambridge Univ. Pr. (2012) 607 p.*

Prof Antoniadis is a leading figure in research in supersymmetry, supergravity, string theory and physics beyond the standard model. He was one of the pioneers in understanding several aspects of supersymmetry breaking. He was also head of the theory division at CERN during 2010-2015.

Prof Minahan was one of the two researchers who first analysed the role of integrability, a main subject in statistical mechanics, in the context of the so called AdS/CFT conjecture. He became a leading figure in this subject which is now one of the most studied topics in the recent string theory literature. His seminal paper from 2002, *"The Bethe ansatz for $N=4$ superYang-Mills," JHEP 0303, 013 (2003)*, has obtained more than 1200 citations.

Recently I started various successful collaborations. One with T. Hertog and T. Van Riet on new developments of holographic techniques and the so-called dS/CFT and one on supersymmetric $T\bar{T}$ deformations with A. Sfondrini and S. Sethi. Prof Hertog (one of the few PhD students and collaborators of Stephen Hawking) and Prof Van Riet are emerging leading figures in Belgium and Europe. Prof Sethi is a well known American string theorist who made important contributions on the study of string compactifications and dynamics of branes. Sfondrini is a very young emerging leader in the European research in integrability in string theory.

Publication record

Up till September 14, 2020, in the period 2004-2020, I have published in total 52 research papers [J1-J52], I have one to appear [J53], and I have written 10 conference proceedings [C1-C10]. All papers are published in the main, highest impact factor journals in the field. They include Physical Review Letters, the Journal of High Energy Physics (JHEP), Nuclear Physics B, Physics Letters B, Physical Review D, J. Phys. A and Fortschr. Phys.

According to the High-Energy Physics Literature Database (<http://inspirehep.net>), at the time of preparation of this document (September 14, 2020), my papers have 1410 citations, my h -index is 25, and 7 papers are top-cite with more than 50 citations. According to Google Scholar my papers have 1566 citations (1004 of which from 2015), my h -index is 25, and 11 of my papers have more than 50 citations with 2 papers over 100 citations.

Grants, awards, and research support income

So far I successfully attracted competitive research grants and awards for approximately **1.2 million Euros** both in Fellowships (1,365k AU\$ + 167k€) and as Chief Investigator (346k AU\$). I was awarded some of the most prestigious positions and fellowships available to early and middle career researchers in Europe and Australia including a **Marie Curie fellowship**, an **ARC DECRA award**, and an **ARC Future Fellowship**.

Teaching experience

Alongside my research intensive career, I had the opportunity to teach both at the undergraduate and graduate levels. At the undergraduate level for two years during my PhD, during 2004-2006, I was assistant for a course of “Institutions of Mathematics” for the first year of the Biotechnology degree at the University of Milano-Bicocca. During my postdoc at the University of Maryland, during 2008-2010, I was assisting Prof S. James Gates Jr. for the undergraduate course on String Theory in the physics Major and at the graduate level for the course on Group Theory. At Uppsala University, during 2011-2012, I was assistant of Prof J. Minahan, for the undergraduate course on quantum mechanics, “Kvantfysik (del 2),” for the third year of the engineering major. At KULeuven, for three academic years during 2015–2018, I have been designing and Lecturing the course “Symmetries and Groups” for the master degree in Physics at KU Leuven University, Leuven, Belgium. At the Institute for Theoretical Physics in Bern, Switzerland, I lectured in May 2019 the course “Advanced group theory,” for the graduate course in theoretical physics. At the School of Mathematics and Physics of the University of Queensland, Brisbane, Australia, I will be lecturer in 2020 for the second year course “PHYS2100, Dynamics, Chaos & Special Relativity.” Here I have also been leading the organisation of a reading group on “Advanced Quantum Field Theory,” for the honours and PhD students.

Supervision experience

2003 – 2005: During my PhD, together with L. Girardello, I co-supervised the Masters thesis of A. Mariotti (now Asst/Prof at VUB, Belgium) which led to a paper.

2008 – 2012: While at Maryland U. and at Uppsala U. I co-supervised and trained various PhD students. I co-supervised Matias O. Leoni (now CONICET Assistant Professor in Argentina) during his PhD at Milano University. I was also largely interacting with K. Koutrolikos (now postdoc at Brown University), with M. Göteman (now Assistant Professor in Uppsala), and I. Ryb. It is worthwhile to highlighting that I have been the initiator of the research project that engaged M. Leoni in his PhD and led to one +50 citation paper.

Jan 2013 – Jun 2015: I supported the salary and co-supervised Dr J. Novak as a Research Associate at the University of Western Australia (then Humboldt Fellow at AEI, Max Plank Institute, Germany). Dr Novak became my past main junior collaborator with 13 joint papers.

2014 – 2015: While at the University of Western Australia I was PhD co-supervisor of Daniel Ogburn.

2015 – 2016: At KULeuven I supervised G. Venken for his Master Thesis. In the fall of 2016 he then started a PhD at KULeuven, and then obtained a postdoctoral position in Heidelberg in 2020. This research led to a new collaboration with T. Hertog and T. Van Riet which resulted in two papers.

Since Oct 2019: By using the funding of my ARC Future Fellowship, I have already recruited 2 PhD students and I am currently recruiting for 1-2 more students that are expected to start in 2020-2021.

Reviewer and editorial activities

I am a referee for the journals: Physical Review Letters, Physical Review D, Journal of High Energy Physics (JHEP), Physics Letters B, Classical Quantum Gravity, Journal of Modern Physics A, Symmetry (MDPI), Universe (MDPI). I am also reviewer (“Detailed Assessor”) for the Australian Research Council. Since 2020 I am an invited editor for the journal Symmetry (MDPI).

Conferences and talks

I presented my work in several international institutes and I participated in many international conferences and workshops on theoretical and mathematical physics of fundamental interactions. My main talks and conference participations during the last five years are:¹ *Feb 10–14, 2020*, ANZAMP meeting 2020, Coolangatta (AU), *talk* ; *Sep 19–24, 2019*, Workshop “New frontiers of

¹Note that in 2019 and 2020 I substantially reduced my travel activities due to the pregnancy of my wife, the birth of my first

integrable deformations,” Castasegna (CH), *invited participation*; Apr 8–12, 2019, Workshop “TTbar and Other Solvable Deformations of Quantum Field Theories” Simons Center for Geometry and Physics, Stony Brook (USA), *invited participation*; Nov 30, 2018, “GeNeZiSS XXIV: Mini-Conference Series of the Swiss String Theory Community” Bern U. (CH), *invited talk*; Oct 25, 2018, Mathematical Physics group, Melbourne U. (AU), *invited talk*; Oct 22, 2018, School of Mathematics and Physics, Queensland U. (AU), *invited Colloquium*; Oct 4, 2018, “Fields & Strings” group, Bern U. (CH), *invited talk*; Aug 29 – September 4, 2018, Workshop “A Fresh Look at AdS3/CFT2,” Castasegna (CH), *invited participation and talk*; May 23–26, 2018, Conference “New Frontiers in Theoretical Physics, XXXVI Convegno di Fisica Teorica,” Cortona (IT), *talk*; May 21, 2018, Milano U., Milan (IT), *invited talk*; May 8, 2018, joint seminar program in theoretical physics in Vienna (AT), *invited talk*; Mar 21, 2018, Brown U., Providence, Rhode Island (USA), *invited talk*; Mar 19, 2018, Texas A&M U., College Station, Texas (USA), *invited talk*; Nov 28, 2017, Torino U., Turin (IT), *invited talk*; 31 Jul – 5 August, 2017, International Workshop “Supersymmetries and Quantum Symmetries” (SQS’17), Dubna, (RU), *invited keynote speaker*; Jun 6–10, 2017, International Conference on Integrable Systems and Quantum symmetries (ISQS-25), Prague (CZ), *talk*; Mar 1, 2017, hep-th Belgium joint seminars of Brussels-Leuven-Mons, *invited talk*; Sep 12–30, 2016, Workshop “Supergravity: what next?” GGI Institute for Theoretical Physics, Florence (IT), *invited talk*; Dec 18, 2015, “Meeting of the Belgian IUAP network, 2015,” Antwerp U. (BE), *invited talk*.

Organisation of seminars and conferences

Since early in my career I have been involved in the organisation of seminar series and conferences. In 2005 – 2006 I was organizer of the journal club sessions of the string theory group at Milano-Bicocca University. In 2014 I was Member of the Guttmann prize committee at the 2014 annual meeting of The Australian and New Zealand Association of Mathematical Physics (ANZAMP), 08 – 12 December 2014 and I was a member of the program committee of the 2015 ANZAMP annual meeting. During 2015 – 2018 I was a member of the organising committee of the joint seminar program in theoretical physics of the KULeuven, ULB, UMons, VUB Universities in Belgium. In 2020 I was a member of the organising committee of the 2020 ANZAMP annual meeting of The Australian and New Zealand. Since 2020 I am co-organiser of the “Australian String Theory” workgroup which includes co-organisation of seminar series and conferences (two planned in 2021). In 2020 I have also been a member of the Mathematical Physics section of the program committee for the 2020 annual meeting of the Australian Mathematical Society (AustMS).

Research that has led to a significant change or advance of knowledge in my field or research

In the large context of research in string theory and related topics, my research interests and expertise revolve around topics in theoretical physics and mathematics: quantum field theory, supersymmetry, supergravity, superspaces, geometric engineering of gauge theories, higher-spin theories, covariant formulations of superstrings and branes, complex geometry, quantum gravity, holography, (A)dS/CFT and integrability. These are some of the most challenging topics in present day theoretical particle physics. During my career, I have become a leading expert on various mathematical aspects of the aforementioned topics. A major activity in my research has been the development of new techniques to study off-shell supergravity-matter systems and supersymmetric theories on curved manifolds. My research has helped developing a solid mathematical treatment of supersymmetric models analogously to how tensor calculus, and the field of differential geometry, have been at the basis of the formulation of General Relativity. There are very few scientists in the world with this expertise. I was a primary figure in developing some of the latest innovations in this field.

New covariant techniques for extended supersymmetry and supergravity

A main research theme in my career has been the development of covariant superspace techniques for supersymmetric field and supergravity theories. During my PhD I developed new techniques in the projective superspace formalism to study six-dimensional (6D) supersymmetry [J2, J4]. Projective superspace is a powerful formalism introduced by A. Karlhede, U. Lindström and M. Roček in 1984 to study extended supersymmetric field theories with eight real supercharges. The formalism has been used to study extended supersymmetric non-linear sigma-models and has found many applications in mathematics and physics such as: the twistor space description of hyper-Kähler or quaternion Kähler manifolds; the hyper-Kähler quotient construction; the physical explanation of the wall crossing phenomenon. Recently, I was one of the scientists who pushed the boundaries of this approach in supergravity.

After my PhD, in collaboration with, e.g., S. J. Gates Jr., S. Kuzenko, U. Lindström, M. Roček, I was a main figure to develop a research program on covariant superspace techniques for supergravity theories with eight supercharges aimed at studying general supergravity-matter systems in $D \leq 6$. My research solved problems that have been open for more than two decades

son in July 2019, and the travel restrictions introduced in Australia in March 2020 as a consequence of the covid-19 pandemic.

and made me renowned as a leading expert in the field. I provided for the first time the covariant formulation of supergravity with eight supercharges in projective superspace in $5D$ [J7, J8], $4D$ [J11], $2D$ [J17], $3D$ [J20] and $6D$ [J23]. In order to describe general supergravity-matter couplings as matter systems coupled to conformal supergravity, I also formulated novel covariant descriptions of conformal supergravity in the $5D$ $\mathcal{N} = 1$ [J9], $2D$ $\mathcal{N} = (4, 4)$ [J17], $3D$ \mathcal{N} -extended [J20] and $6D$ $\mathcal{N} = (1, 0)$ [J23, J36] cases. Recently, in [J27, J33, J36], I developed a new so-called “conformal superspace” formalism for $3D$ \mathcal{N} -extended, $5D$ $\mathcal{N} = 1$ and $6D$ $\mathcal{N} = (1, 0)$ off-shell conformal supergravity, respectively. In order to use these new formulations for a number of applications, in [J13, J15, J16, J26, J28–J30, J36] I developed general frameworks to reduce superfield actions to components and to derive various invariants in supergravity. Related to this line of research, I was one of the scientists who recently developed the idea of using superforms (the supersymmetric extension of differential forms) as building blocks of supersymmetric invariants [J15, J16, J26, J28–J30, J33, J36, J38, J41, J42, J44].

Higher-derivatives supergravity invariants

Recent important applications of the mathematical formalisms I developed in the study of supergravity in diverse dimensions include the construction of new higher-derivative supergravity invariants. This challenging field of research has very important connections with string theory, black holes physics, and cosmology. Its limited understanding is linked to many open questions in the low-energy description and physical application of string theory. Thanks to my expertise, I have been in the unique position of attacking and producing important contributions in this field.

In [J28, J29] I constructed for the first time the off-shell $3D$ conformal supergravity actions with $3 \leq \mathcal{N} \leq 6$, 25 years after the $\mathcal{N} = 1, 2$ cases were derived. These describe an important class of contact terms that arise in the study of supersymmetric field theories on $3D$ curved backgrounds. For the $5D$ $\mathcal{N} = 1$ [J33] and $3D$ $\mathcal{N} = 1, 2, 3$ cases [J34], I classified the off-shell supersymmetric extensions of curvature-squared terms. The results of [J34] were central ingredients in constructing models of massive supergravities in $3D$ which are interesting toy models for AdS_3/CFT_2 dualities. My paper [J36] studied the component structure of $\mathcal{N} = (1, 0)$ and $\mathcal{N} = (2, 0)$ conformal supergravity invariants in six dimensions. These describe the B -type conformal anomalies of $6D$ supersymmetric field theories. This paper represents a state of the art result in the construction of off-shell higher-derivatives supergravity invariants and an important result in the full understanding of the structure of supersymmetric anomalies in six-dimensions. Recently, I have been leading a collaboration focused on the construction of new curvature-squared $6D$ $\mathcal{N} = (1, 0)$ supergravity invariants, including the important Gauss-Bonnet supergravity in six dimensions which led to a PRL publication [J38]. The results in [J38] and [J44] filled a gap left in the literature for over three decades and opened the way for, e.g., next to leading order analysis of AdS/CFT dualities.

Supersymmetric theories on curved manifolds

Recently supersymmetric field theories on curved backgrounds have received a lot of attention. On one hand this is due to the mathematical interest raised in classifying manifolds possessing nontrivial rigid supersymmetry and, on the other hand, it is due to the powerful applications of techniques such as localisation in studying supersymmetric and superconformal field theories. The mathematical framework that I have been developing to construct supergravity-matter systems naturally applies to the study of general off-shell supersymmetric field theories on curved manifolds as proven by my publications [J6, J10, J12, J21, J22, J24, J25, J31, J32]. Of interest was the study of field theories in conformally-flat superspaces in $D = 3, 4, 5$. In particular, I focused on the maximally symmetric and constant curvature anti-de Sitter (AdS) spacetime. This is of great interest, for example, for model building (as for braneworld phenomenological scenarios) and for holographic dualities such as the AdS/CFT correspondence. I was the first to provide a superspace description of general field theories in $5D$ $\mathcal{N} = 1$ AdS superspace [J6, J10]. This was extended to $4D$ $\mathcal{N} = 2$ [J12, J22], and to $3D$ $\mathcal{N} = 2, 3, 4$ in [J21, J24, J25, J31]. The study of supersymmetric field theories on curved backgrounds was successively sparked by works on supersymmetric localisation. One of the major achievements of my research was the description of hyper-Kähler target-space geometries for $4D$ $\mathcal{N} = 2$ [J22] and $3D$ $\mathcal{N} = 3, 4$ [J24, J25] supersymmetric non-linear sigma-models in AdS (the latter also based on the $3D$ superconformal sigma-models of [J19]). The many papers I wrote on supersymmetric theories on curved superspaces represent the state of the art on this field.

In [J42, J41] novel $3D$ and $4D$ supergravities were shown to be consistent backgrounds for the Green-Schwarz superstring and the supermembrane, respectively. These were missing elements in the classification of all consistent κ -symmetric backgrounds and triggered my interest in the study of curved superspaces as consistent target spaces for p -branes, which is of importance in the understanding of non-perturbative string theory.

Goldstino multiplets, spontaneously broken local supersymmetry and de Sitter supergravity

Recently the study of spontaneously broken local supersymmetry and de Sitter supergravity have received much attention thanks to the various applications to cosmology. Most of the work on this topic concern the $4D$ $\mathcal{N} = 1$ unextended case. In the last couple

of years I was one of the few scientists able to push these analysis to the more technically challenging extended supersymmetric case which needs to be understood for embeddings in string theory and higher-dimensional phenomenological models. In [J35], in the framework of $\mathcal{N} = 2$ conformal supergravity in four dimensions, I introduced a nilpotent chiral superfield suitable for the description of partial supersymmetry breaking in maximally supersymmetric spacetimes and of $\mathcal{N} = 1$ supersymmetric Born-Infeld actions. In [J39], I then extended this analysis introducing new multiplets and models for partial global and local supersymmetry breaking. In [J37], I introduced variant Goldstino superfields in $\mathcal{N} = 2$ supergravity. This paper outlines for the first time ever the construction of the so-called $4D$ $\mathcal{N} = 2$ de Sitter supergravity. Moreover, in [J42] a general classification of Goldstino superfields and supersymmetry breaking in three dimensions was given. In [J43], I recently introduced a new streamlined setup to study $4D$ $\mathcal{N} = 2 \rightarrow \mathcal{N} = 1$ partial global supersymmetry breaking based on the classification of deformations of supermultiplets and broken (central charge) generators. In collaboration with I. Antoniadis, J.-P. Derendinger and F. Farakos I constructed a new type of Fayet-Iliopoulos term in $\mathcal{N} = 2$ supergravity that allows to overcome several old no-go theorems and construct ungauged models possessing de Sitter vacua [J48]. In [J52] I elaborated on off-shell magnetic gaugings/deformations of $\mathcal{N} = 1$ vector multiplets which in supergravity leads to de-Sitter vacua.

Holography, AdS/CFT and dS/CFT

In parallel to my intensive research on formal aspects of supersymmetry and supergravity, during my career I have also been interested in the holographic correspondences together with their role in the study of integrability in string theory. In these fields, I wrote few but important papers.

The AdS/CFT correspondence and integrability have been major areas of research in the last decade. In my paper [J18] I computed the four-loop spectrum of operators in the $SU(2) \times SU(2)$ sector of ABJM supersymmetric $\mathcal{N} = 6$ Chern-Simons theories. At four loops, I checked the integrability of the dilatation operator and computed the weak coupling expansion of the function $h^2(\lambda)$ that appears in the magnon dispersion relation. This represents a state of the art result which has important applications for the AdS_4/CFT_3 dualities.

The supersymmetric off-shell Gauss-Bonnet invariant in $6D$ of [J38, J44] encodes the α' -corrections of string theories compactified to six dimensions. By using this result it was possible to analyse the spectrum about the $AdS_3 \times S^3$ solution arising from the near horizon limit of the dyonic string. This can be used to extract the central charge of the dual $2D$ SCFT and it is expected to find AdS/CFT applications.

In [J40, J41], by studying the supersymmetric extension of the $Sp(N)$ models, which are expected to be dual to supersymmetric Vasiliev's higher-spin theories on a de Sitter background, I analysed the possibility for a "Supersymmetric dS/CFT" correspondence to exist. Our findings from a CFT point of view indicate this to be possible. The results of [J40, J47] are remarkable since they seem to overcome various old no-go theorems on the consistency of supersymmetric theories and quantum gravity on de Sitter space-time. As such, they might lead to new interesting developments in holography and quantum cosmology.

$T\bar{T}$ deformations and supersymmetry

Recently starting with [J45], I initiated and led the investigation of the role of supersymmetry in the context of $T\bar{T}$ deformations of two-dimensional quantum field theories. These deformations, that were first studied by Zamolodchikov in 2004, have recently attracted a lot of attention in the string community for their application to the AdS_3/CFT_2 correspondence and integrability. In [J45] we have been the first to show that, in the case of $\mathcal{N} = (1, 0)$ and $\mathcal{N} = (1, 1)$ supersymmetry, if a starting $2D$ QFT is supersymmetric then $T\bar{T}$ deformations preserve supersymmetry. Our results might open a new perspective in the study of the spectrum of string theory on AdS_3 backgrounds. The analysis of [J45] led to a series of papers [J46, J49–J51] where, in a joint collaboration with scientists in Bern, Zurich and Chicago, we have shown extensions to $2D$ $\mathcal{N} = (0, 2)$ theories, $J\bar{T}/T\bar{J}$ deformations and described the link between $T\bar{T}$ deformations and nonlinearly realised supersymmetry in $2D$ and even in $4D$ that arise in the Nambu-Goto and the Born-Infeld model which are of importance for string theory.