

Personal data

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Education

Beijing Institute of Mathematical Sciences
and Applications (Postdoctoral, from 09/2024)
Steklov International Mathematics Centre (Visiting Researcher, from 01/2022)
Humboldt University/INFN, 2022-2024 (Postdoctoral)
Hamilton Mathematics Institute, Trinity College (PhD 08/2022)
Oxford/Southampton University 12/2017-06/2018 (Research exchange)
University of Latvia, BSc 07/2016, MSc 06/2018

Research

[Inspire HEP](#)

Postdoctoral Fields

From 01/09/2022 to 01/09/2024, *Humboldt University/INFN/University of Padua*
AdS₃/CFT₂ lightcone superstring, Thermodynamic Bethe Ansatz, Finite-size effects, Harmonic space, Quantum Spectral Curve in *AdS₃* space, Supergroups/algebras (representation theory), Quantum algebras, Non-commutative field theories (Ward conjecture), Supersymmetric (deformed) sigma models, Superspace and Superembeddings, Quantum anomalies, β -function exactness, RG flows, Vertex operators and n -point correlators (worldsheet), Defect CFTs (D-brane intersections)

Doctoral Fields

From 01/09/2018 to 01/09/2022, *Royal Society PhD position at Hamilton Mathematics Institute, Trinity College* (under S. Shatashvili and M. de Leeuw)
Integrable lattice models and QFT, Integrable Sigma and Supercoset models, Automorphic Symmetries, Quantum groups, Yangian symmetries, *AdS* integrable backgrounds, Integrable deformations, Conformal theories with defects, Spin chain Bootstrap, Supersymmetric QFTs, Gauge/Gravity duality (both integrability and observable computations), Group theoretic methods

Past experience

Dates

01/09/2016 → 01/08/2018 (**during MSc**)

Researching student at STAG Research Centre/Dept. of Theoretical Physics UL

Fields

Project with prof. A. O'Bannon: D3-branes and associated systems, Probe brane limits, Dyonie Supergravity solutions, *AdS₅* solitonic solutions, Black p-branes, (Non-)Extremal Black Holes, BPS correlator and D3-spike entanglement entropy

Project with Dr. Habil. Phys., prof. I. Bersons: Quantum Inverse Scattering Method, Bethe Ansätze, Topological solitons, q-Toda, Hirota systems, Breather-Solitonic stable/decaying systems, general Painlevé analysis in NL PDE, Akhmediev approach

Dates	01/09/2014 → 01/09/2016 (during BSc)
Fields	Researcher Assistant, Theory Division (with prof. M. Auzinsh) (Relativistic) QED, Generalised Bloch formalism, Zeeman rate systems, WKB, Dirac-Hartree-Fock approximation, Racah formalism), Kramers-Henneberger approximation analysis, <i>Mathematica/C++</i> coding UL LC/UL IAS (Theoretical Division) Zella st. 8 (r. 50, 51)/Skunu st. 4, Riga
Additional interests	Sigma models, TQFTs with defects, Mirror symmetry in Supersymmetric Field Theories, Novel A-/B-brane systems (SSM), Poisson and Symplectic Geometry methods, Knot invariants and homologies in classical and quantum integrable systems, Quiver varieties (worldsheet models), Conformal bootstrap Deformed integrable backgrounds (η -/ λ -deformation and correspondence), ODE/IQFT correspondence (proof), Spin model Quantisation (spin RS, CM), Deformation Quantisation, Quantum Algebras (Belavin-Drinfeld classification, Elliptic algebras, DAHA), Topological Recursion/Quantum Spectral Curve, Resurgence and non-perturbative methods (Path integrals on Lefschetz thimbles), Superlocalisation in systems with defects, Ambitwistor approach in integrable systems, Higher Spin Gauge Field Theories (HS ₃ /CFT ₂ , Lifshitz asymptotic spacetimes, mKdV/KP hierarchies)

Advanced Quantum Field Theory II, (2022) [with F. Nieri] : Supersymmetry, Superspace formalism, Lie Superalgebras, 4-dim $N = 1/N = 2^*$, Seiberg-Witten Theory, Supersymmetric localisation, Integrable structure in super-QFT, Elements of Index theory, Quiver varieties, Interacting Gauge Sector

Advanced Quantum Field Theory I, (MAP50004-2021) [with R. Britto]: Path Integral theory, Kernels, Generalised Regularisation schemes and (Non-)Renormalisable sectors, Nonabelian theories, Grassmann algebra and generalised spaces, Gauging formalism, Quantum Cohomologies, BRST, BV, Supersymmetric theories, Monopoles and Instantons, Mellin space, $\mathcal{CP}^n$ and Twistor formalism applications, Scattering Amplitudes and Unitarity

Differential Geometry, (MAU34301-A-SEM101-2020) [with S. Frolov]

Differential Geometry, (MAU34301-A-SEM101-2021) [with S. Frolov]: Theory of Manifolds, Elements of Differential Topology, Mappings, Manifold tensorial algebra, (l, k) -formalism, Embeddings/Immersion constructions, Manifolds in Euclidean space, $\mathcal{P}^n$ - and $\mathcal{CP}^n$ -spaces, Elements of Lie group theoretic methods, Homogeneous manifolds, Vector bundles on manifolds, Vector fields and operators, Covariant formalism, Lie calculus, Tensor fields, Transport, Geodesic and connections, General Tensor fields, General Curvature and Symmetries, Curved background spaces

Advanced Classical Mechanics II, (MAU23402-A-SEM202) [with S. Frolov]: Special Theory of Relativity, Canonical formalism, Poisson algebra, Phase space and transforms, Differential forms, Symplectic manifolds, Liouville formulation, Hamilton-Jacobi system and structure implications, Separation of Variables, Adiabatic Invariants, Conditionally periodic dynamics, Liouville-Arnold theorem, Continuous Systems and Fields, Nonlinear systems and Integrability

TA during Exchange and MSc program:

QFT I [Canonical Quantisation, S-expansion and Dyson formalism, Feynman formalism, Perturbation Theory, Scattering matrix geometric interpretation]

QFT II [Path integral formalism, Berezin integrals, Faddeev-Popov-de Witt method and renormalisation. Generalised Gauging, BRST quantisation, QCD introduction (flavour symmetries, Lagrangian formalism, problems)]

Nonlinear Dynamics (Korteweg-de Vries solutions, generalised NLS, Inverse scattering method, Lax consistency conditions, Light Bullet formation and nonlinear QED, profile nonlinear parametrisation, Backlund transform and generalization)

Talks	" <i>New B-brane SCFTs from genus 2 DAHA</i> ", Integrable systems and quantum theory 2025, SPSU, October 5 - October 11, 2025
	" <i>Chiral/Sigma Duality and TQFT with order defects</i> ", Gravity, Geometry, and Operator Algebras, SIMIS, September 1 - September 5, 2025
	" <i>Superdeformed $\mathbb{CP}^n$ models and Chiral/Sigma Duality</i> ", SEU, January 6 - January 11, 2025
	" <i>Supersymmetric deformation of $\mathbb{CP}^1$, Mirror Duals and β-exactness</i> ", Fradkin Centennial Conference, LPI RAS, September 2 - September 6, 2024
	" <i>Supersymmetric deformation of $\mathbb{CP}^1$, Mirror Duals and β-exactness</i> ", Supersymmetries and Quantum Symmetries, BLTP, July 29 - August 3, 2024
	" <i>Supersymmetric sausage model and Mirror duals</i> ", IDD 2024, Swansea University, July 2024
	" <i>Superdeformed $\mathbb{CP}^n$ model and Conformal Limits</i> ", Fields and Strings 2024, SIMC, February 2024
	" <i>AdS₃ background, Quantum Spectral Curve and tensionless limit</i> ", INFN, January 2024
	" <i>Exact β-function and RG-flow of the superdeformed Gross-Neveu model</i> ", MSU, December 2023
	" <i>Mirror TBA and twisted AdS₃ $\times$ S³ $\times$ T⁴ superstring</i> ", DESY Theory Workshop, October 2023
	" <i>Massless modes of the twisted AdS₃ superstring</i> ", Wigner Institute, August 2023
	" <i>Supersymmetric r-deformed $\mathbb{CP}^{n-1}$ model and chiral duals</i> ", IDD2023, Durham University, July 2023
	" <i>Twisted AdS₃ $\times$ S³ $\times$ T⁴ superstring and Mixed flux Thermodynamic Bethe Ansatz</i> ", QFTG2023, MSU/CTP, June 2023
	" <i>TBA and GSE of the twisted AdS₃ $\times$ S³ $\times$ T⁴ superstring</i> ", ETH, June 2023
	" <i>AdS₃ $\times$ S³ $\times$ T⁴ wrapping corrections and Mirror TBA</i> ", Humboldt University, June 2023
	" <i>Wrapping interactions of the AdS₃ $\times$ S³ $\times$ T⁴ superstring</i> ", Steklov International Mathematics Centre, April 2023
	" <i>AdS₃ Y-system and finite-size effects</i> ", Advanced Studies Center, Skoltech, January 2023
	" <i>Automorphic symmetry and New AdS String Integrability</i> ", ITMP, November 2022
	" <i>Novel AdS_{2,3} integrable models and deformations</i> ", BLTP, JINR, July 2022
	" <i>AdS solitons and extremal quasi-normal description</i> ", ITP UL, January 2021
	" <i>String background deformed integrable models and algebra</i> ", STAG Research Centre, Southampton, December 2021
	" <i>Quasi-normal modes and Entanglement entropy of D-brane solitons</i> ", Steklov Institute of Mathematics RAS, December 2021
	" <i>AdS₂ and AdS₃ deformed R-matrix, sigma models and duals?</i> " MSU and HSE, November 2021
	" <i>AdS_n deformed symmetry algebra and Free Fermions</i> ", XIV. International Conference in Lie Theory, Sofia, June 2021
	" <i>AdS_n deformations and Free Fermion condition</i> " London Integrability Journal Club, December 2020

	<i>"Boost operator generated integrable hierarchy and new models"</i>, <i>"Thermodynamic Bethe Ansatz and QQ-system for $\mathfrak{d}(2, 1; \alpha) \times \mathfrak{d}(2, 1; \alpha)$ model"</i>, "Correlation Functions in Low-Dimensional AdS/CFT" workshop, September 2020 <i>"Discrete integrability in two dimensions and Boost automorphism"</i>, Integrability in Gauge and String Theory, July 2019, Stockholm <i>"Quantum integrable hierarchies and novel $\mathfrak{sl}_2$ sector"</i>, UL CTP, June 2019 <i>"D-brane defects in AdS_5 and QNM spectra"</i>, Rudolf Peierls Centre for Theoretical Physics, May 2018 <i>"Defects and HS/CFT duality"</i>, STAG Research Centre, February 2018 <i>"D3-brane solitons and black factor problem"</i>, UL, June 2017 <i>"Thermal D3-spike dyons"</i>, Mandelstam Institute, January 2017 <i>"Wilson Loops and domain wall defects"</i>, Univ. of Latvia SSI HEP-TH workshop, December 2016
Awards/ Scholarships	President RSF Grant and Fellowship (2025-2030) Russian Science Foundation Grant and Fellowship (2021-2025) Royal Society Fellowship (2018-2022) Ryster Excellence Foundation Award (US/Europe Maecenas), 2018 UL and E+ Research Fellowship, 2016-2018 Mandelstam/NITheP Scholarship, 2017 Ryster Excellence Foundation Award and Scholarship, 2017 UL Excellence Scholarship, 2016 Weizmann/Technion Scholarship, 2016 European Science Fund Grant, 2016 Lebedev Institute and "Dynasty" Scholarship, 2015 Young Researcher Scholarship (2014→2018) Helmholtz International Scholarship, 2014 ITF and Spinoza Institute Scholarship (A-Certificate), 2014
Other data and skills	BSc/MSc GPA $\approx 9.93/10.00$ (for some A/B courses the highest possible grade was 9) Conducting conferences/seminars, teaching, student Physics/Mathematics Olympiads/IPhO training. Software: <i>Mathematica/MatLab/Maple/WX-Maxima/QtiPlot/Origin</i>; Programming languages: C/C++/Delphi/Python/L^AT_EX 2_ε, Web Dev.: HTML/JavaScript; OS: <i>Unix-Linux/Free BSD/MS Windows/MacOS/Linspire</i> During High School: 1st results in Mathematics, Physics and Chemistry olympiads; High School diploma with distinction; Awarded Soros Foundation Scholarship for High School students and olympiad winners.

Conferences/Workshops

“Fields and Strings 2025”

SIMC/MITP, December 2025

“Integrable Systems and Quantum Theory”

SPSU, October 2025

” Gravity, Geometry, and Operator Algebras “

SIMIS, September 2025

” Fradkin Centennial Memorial Conference “

Lebedev Physics Institute of RAS, September 2024

” Supersymmetries and Quantum Symmetries “

BLTP, July 29 - August 3, 2024

” Integrability, Dualities and Deformations 2024 “

Swansea University, July 2024

“Fields and Strings 2024”

MIAN/MITP, February 2024

“New Perspectives in CFT and Gravity”

DESY, October 2023

“Great Lessons from Exact techniques and Beyond 2023”

INFN/UPPD, August 2023

“Integrability, Dualities and Deformations”

Durham University, July 2023

“Quantum Field Theory and Gravity 2023”

CTP/BLTP, June 2023

“Integrability in Gauge and String Theories 2023”

ETH Zurich, June 2023

“A. A. Slavnov memorial conference”

Steklov IMC, December 2022

“Integrability, Dualities and Deformations”

Humboldt University, August 2022

“International Conference on Quantum Field Theory, High-Energy Physics,
and Cosmology ”

BLTP, JINR, July 2022

“Integrability in Gauge and String Theories 2022”

Wigner Research Centre for Physics, July 2022

“Quantum Integrability and Geometry”

SIMC, June 2022

“Integrability, Dualities and Deformations 2021”

University of Santiago de Compostela, September 2021

“Classical and Quantum Integrable Systems 2021”

Steklov Mathematical Institute RAS and HSE, August 2021

“Hamilton Workshop”

Hamilton Mathematics Institute, Trinity College, August 2021

“IGST 2021”

University of Tourin, July 2021

“XIV. Lie Groups and its applications in Physics”

Institute for Nuclear Research and Nuclear Energy, June 2021

“Correlation Functions in Low-Dimensional AdS/CFT & Great Lessons from Exact techniques and Beyond”

ETH Zürich and University of Padua, September 2020

“IGST 2020”

ICTP/SAIFR, August 2020

“Integrability, Anomalies and Quantum Field Theory”

IHÉS, February 2020

“Integrable effective field theories and their holographic descriptions”

Galileo Galilei Institute, December 2019

“IGST 2019”

Nordita, July 2019

“Resurgence in Mathematics and Physics”

IHÉS, May 2019

“YRISW 2019: A modern primer for 2D CFT”

ESI, February 2019

“Gauge/Gravity Duality 2018”

Institute for Theoretical Physics, Würzburg Universität, July 2018

“Holography, Gauge Theories and Black Holes”

STAG Research Centre, April 2018

“3rd Karl Schwarzschild School/Conference”

Frankfurt Institute for Advanced Studies, July 2017

“Technion School Strings 2017”

Technion/Tel Aviv University, June 2017

“Mandelstam School and Workshop Recent Advances in AdS/CFT”

Mandelstam Institute for Theoretical Physics, NITheP, NRF, January 2017

“Resurgence in Gauge and String Theories”

Instituto Superior Técnico, CAMGSD, Departamento de Matemática, June 2016

“Theoretical Problems of Physics of Fundamental Interactions”

Dept. of Theoretical Physics of I. E. Tamm LPI PIAS, ICFP, Zelenogorsk-Moscow, July 2015