

# Dr Inna Lukyanenko

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<http://innalukyanenko.org>

## Professional experience

### Postdoctoral research fellow

*School of Mathematics and Statistics, The University of Melbourne*

Melbourne, Australia

April 2016 - April 2017

## Academic education

### The University of Melbourne

*Graduate Diploma in Psychology (Advanced)*

– Supervisor: Brock Bastian

Melbourne, Australia

February 2019 - present

### The University of Melbourne

*Graduate Diploma in Psychology*

– Weighted average mark: 92

Melbourne, Australia

January 2018 - November 2018

### The University of Queensland

*PhD in Mathematics*

– Supervisors: Jon Links and Phillip Isaac

– Thesis: *Richardson–Gaudin models from the boundary quantum inverse scattering method*,  
available at <http://innalukyanenko.org>

Brisbane, Australia

October 2012 - August 2016

### Berlin Technical University

*PhD in Mathematics (withdrawn)*

– Supervisor: Alexander Bobenko

– Area: Discrete differential geometry

Berlin, Germany

October 2007 - October 2011

### St. Petersburg State University

*Diploma in Mathematics (4 years coursework + 1 year research project)*

– Supervisor: Andrei Bytsko

– Thesis: *Fundamental R-matrix for the quantum integrable model with the symmetry algebra  $GL_q(2)$* ,  
available at <http://innalukyanenko.org>

St. Petersburg, Russia

September 2003 - June 2008

## Awards

- The University of Melbourne Dean's Award for outstanding performance in the Graduate Diploma in Psychology, 2018
- The Social and Personality Prize for outstanding result in 2nd and 3rd year social psychology subjects, 2018
- The University of Melbourne Advanced Capstone Oral Presentation Award, 2018
- Honourable mention from the B. H. Neumann Student Prize Committee for the talk at the 8th Australia and New Zealand Mathematics Convention, 2014
- A. J. Guttmann Prize for the best student talk at the 2nd Annual Meeting of the Australian and New Zealand Association of Mathematical Physics, 2013
- The University of Queensland International Scholarship, 2012 - 2016
- Scholarship from the Graduate School "Berlin Mathematical School", 2007 - 2011

## Publications

- *An integrable case of the  $p + ip$  pairing Hamiltonian interacting with its environment*, Inna Lukyanenko, Phillip S. Isaac, Jon Links, J. Phys. A: Math. Theor. **49**, 084001, 2016
- *Discrete constant mean curvature nets in space forms: Steiner's formula and Christoffel duality*, Alexander I. Bobenko, Udo Hertrich-Jeromin, Inna Lukyanenko, Discrete Comput. Geom. **52**, 612 - 629, 2014
- *On the boundaries of quantum integrability for the spin-1/2 Richardson–Gaudin system*, Inna Lukyanenko, Phillip S. Isaac, Jon Links, Nucl. Phys. B **886**, 364 - 398, 2014
- *Path integral representation of the evolution operator for the Dirac equation*, Alexander Lukyanenko, Inna Lukyanenko, arXiv:gr-qc/0605129, Proceedings of SPIE **6597**, 59703 - 59703, 2007

## Side projects

- *On a Probabilistic Interpretation of Relativistic Quantum Mechanics*, Natalia Gorobey, Alexander Lukyanenko, Inna Lukyanenko, arXiv:1012.1719, 2010
- *Quantum Action Principle in Relativistic Mechanics*, Natalia Gorobey, Alexander Lukyanenko, Inna Lukyanenko, arXiv:1010.3824, 2010
- *Two-Time Quantum Mechanics*, Natalia Gorobey, Alexander Lukyanenko, Inna Lukyanenko, arXiv:1003.2830, 2010
- *On a New Form of Quantum Mechanics*, Natalia Gorobey, Alexander Lukyanenko, Inna Lukyanenko, arXiv:0912.3095, 2009
- *Generalized Canonical Form of a Multi-Time Dynamical Theory and Quantization*, Natalia Gorobey, Alexander Lukyanenko, Inna Lukyanenko, arXiv:0910.2157, 2009
- *Quantum Geometry of a Configuration Space in a Covariant Dynamical Theory*, Natalia Gorobey, Alexander Lukyanenko, Inna Lukyanenko, arXiv:0908.4543, 2009

## Talks

- *Effect of processing disfluency on judgement of moral dilemmas*, Capstone Oral Presentation at the University of Melbourne, Australia, October 10, 2018
- *A geometric interpretation of finite  $W$ -algebras (Part II)*, Algebra Seminar at the University of Melbourne, Australia, July 27, 2016
- *Spin Bose gas*, Mathematical Physics Reading Group at the University of Melbourne, Australia, July 21, 2016
- *A geometric interpretation of finite  $W$ -algebras (Part I)*, Algebra Seminar at the University of Melbourne, Australia, July 13, 2016
- *Richardson–Gaudin models from the Boundary Quantum Inverse Scattering Method*, 4th Annual Meeting of the Australian and New Zealand Association of Mathematical Physics, Newcastle, December 9 - 11, 2015
- *An integrable case of the  $p+ip$  pairing Hamiltonian interacting with its environment*, 59th Annual Meeting of the Australian Mathematical Society, Flinders University, Adelaide, September 28 - October 1, 2015
- *Quantum affine algebras and their realisations*, QFT Seminar at the University of Queensland, Australia, September 3, 2015
- *An integrable case of the  $p+ip$  pairing Hamiltonian interacting with its environment*, Baxter 2015: Exactly Solved Models & Beyond, Palm Cove, Australia, July 19 - 25, 2015
- *Properties of the Bethe Ansatz equations for Richardson–Gaudin models*, Australian Mathematical Sciences Institute Winter School on Algebra, Geometry and Physics, Brisbane, Australia, June 29 - July 10, 2015

- *Integrability and the exact solution of the  $p+ip$  model coupled to the environment*, Mathematical Physics Seminar at the University of Queensland, Australia, May 8, 2015
- *Integrable highest weight representations of affine Lie algebras*, QFT Seminar at the University of Queensland, Australia, April 30, 2015
- *On the quasi-classical limit of the bosonic Lax operator*, 8th Australia and New Zealand Mathematics Convention (joint with 3rd Annual Meeting of the Australian and New Zealand Association of Mathematical Physics), Melbourne, Australia, December 8 - 12, 2014
- *On the boundaries of quantum integrability for the spin-1/2 Richardson–Gaudin system*, 30th International Colloquium on Group Theoretical Methods in Physics, Ghent, Belgium, July 14 - 18, 2014
- *Quantum Inverse Scattering Method and the Heisenberg XXX spin-1/2 model*, Chebyshev Laboratory at St. Petersburg State University, St. Petersburg, Russia, June 26, 2014
- *Integrability of the Russian Doll BCS model*, Ioffe Physical Technical Institute, St. Petersburg, Russia, June 19, 2014
- *On the boundaries of quantum integrability for the spin-1/2 Richardson–Gaudin system*, V. A. Steklov Institute of Mathematics, St. Petersburg, Russia, June 16, 2014
- *Affine Lie Algebras*, QFT Seminar at the University of Queensland, Australia, May 2014
- *Properties of the Bethe Ansatz equations for Richardson–Gaudin models*, Institute of Modern Physics, Northwest University, Xi'an, China, March 2014
- *Properties of the Bethe Ansatz equations for Richardson–Gaudin models*, 2nd Annual Meeting of the Australian and New Zealand Association of Mathematical Physics, Mooloolaba, Australia, November 27 - 29, 2013
- *Integrable models from the Boundary Quantum Inverse Scattering Method*, 57th Annual Meeting of the Australian Mathematical Society, Sydney, Australia, September 30 - October 3, 2013
- *Integrable models from the Boundary Quantum Inverse Scattering Method*, Confirmation seminar at the University of Queensland, Australia, September 27, 2013
- *Mathematics behind the phenomenon of spin*, QFT Seminar at the University of Queensland, Australia, September 19, 2013
- *Integrable models from the Boundary Quantum Inverse Scattering Method*, Exact and Numerical Models of Low-Dimensional Quantum Structures, Turunc, Turkey, August 4 - 12, 2013
- *Integrable models from the Boundary Quantum Inverse Scattering Method*, Australian Mathematical Sciences Student Conference, Canberra, Australia, July 15 - 17, 2013
- *Integrable models from the Boundary Quantum Inverse Scattering Method*, Quantum Groups and Quantum Integrable Systems, Kiev, Ukraine, June 18 - 21, 2013
- *Integrable models from the Boundary Quantum Inverse Scattering Method*, Mathematical Physics Seminar at the University of Queensland, Australia, June 7, 2013
- *Special Relativity*, QFT Seminar at the University of Queensland, Australia, April 18, 2013
- *Discrete Differential Geometry and Integrability*, Mathematical Physics Seminar at the University of Queensland, Australia, March 22, 2013
- *Internal Time and Quantum Action Principle in Relativistic Quantum Mechanics*, Inaugural Meeting of the Australian and New Zealand Association of Mathematical Physics, Lorne, Australia, December 3 - 5, 2012
- *On a New Form of Quantization for Covariant Theories*, 30th Winter School on Geometry and Physics, Srni, Czech Republic, January 16 - 23, 2010
- *What is ... a Quantum Group?*, Berlin Mathematical School Seminar, TU Berlin, Germany, November 27, 2009

- *Elliptic curve cryptography*, Joint Advanced Student School, St. Petersburg, Russia, March 25 - April 4, 2007
- *Path integral representation of the evolution operator for the Dirac equation*, 10th International Workshop on Nanodesign, Technology, and Computer Simulations, Olsztyn, Poland, July 5 - 8, 2006

### Schools and workshops attended

- Australasian Mathematical Psychology Conference, Melbourne, Australia, February 14 - 16, 2019
- AMSI (Australian Mathematical Sciences Institute) Winter School on Algebra, Geometry and Physics, Brisbane, Australia, June 29 - July 10, 2015
- 23rd Canberra International Physics Summer School: Frontiers in Physics, Canberra, Australia, December 1 - 5, 2014
- ITAP (Institute of Theoretical and Applied Physics) Summer School: Exact and Numerical Models of Low-Dimensional Quantum Structures, Turunc, Turkey, August 4 - 12, 2013
- BMS (Berlin Mathematical School) Summer School: Discretization in Geometry and Dynamics, TU Berlin, Germany, September 20 - October 1, 2010
- Barrett lectures: Discrete Differential Geometry and Applications, Townsend, Tennessee, USA, May 17 - 21, 2010
- 30th Winter School on Geometry and Physics, Srni, Czech Republic, January 16 - 23, 2010
- MSRI Workshop: Tropical Geometry in Combinatorics and Algebra, Berkeley, USA, October 12 - 16, 2009
- Workshop on Dirac Operators and Special Geometries, Marburg, Germany, September 24 - 27, 2009
- 32nd Autumn School in Algebraic Geometry: Algebraic Torus Actions, Lukecin, Poland, September 6 - 12, 2009
- BMS (Berlin Mathematical School) Summer School: Moduli, HU Berlin, Germany, August 21 - 23, 2009
- Geometry Summer School, Lisbon, Portugal, July 13 - 17, 2009
- Workshop on Surfaces, Meshes, Geometric Structures, Admont, Austria, July 6 - 9, 2009
- Oberwolfach Workshop on Discrete Differential Geometry, Oberwolfach, Germany, January 11 - 17, 2009
- Workshop on Geometry and Integrability, Obergurgl, Austria, December 13 - 20, 2008
- Joint Advanced Student School on Polynomials: Their Power and How to Use Them, St. Petersburg, Russia, March 25 - April 4, 2007

### Teaching experience

<b>Tutor</b> <i>Linear Algebra</i>	The University of Melbourne <i>February 2017 - May 2019</i>
<b>Guest Lecturer</b> <i>An Introduction to Quantum Integrable Models</i>	The University of Queensland <i>September 2014</i>
<b>Tutor</b> <i>Algebraic Methods of Mathematical Physics</i>	The University of Queensland <i>August 2014 - October 2014</i>
<b>Guest Lecturer</b> <i>Linear and Abstract Algebra</i>	The University of Queensland <i>May 2014</i>
<b>Tutor</b> <i>Multivariate Calculus and Ordinary Differential Equations</i>	The University of Queensland <i>December 2013 - January 2014</i>
<b>Tutor</b> <i>Topical Group on Mathematics for highly skilled high school students</i>	Berlin Technical University <i>October 2008 - December 2008</i>

## Service

- Member of the Guttman Prize Committee for the best student talk at the 3rd, 4th and 5th Annual Meetings of the Australian and New Zealand Association of Mathematical Physics, December 2014 - February 2017
- Member of the Research Committee in the School of Mathematics and Physics, The University of Queensland, May 2014 - September 2015
- Member of the Selection Committee for the Senior Lecturer/Associate Professor position (level C/D) in Financial Mathematics, The University of Queensland, April - May 2014
- Member of the Local Organizing Committee for the 2nd Annual Meeting of the Australian and New Zealand Association of Mathematical Physics in Mooloolaba, 2013

## Volunteering experience

### **On My Feet** ([www.onmyfeet.org.au](http://www.onmyfeet.org.au))

*Run champion*

Melbourne, Australia

*July 2016 - May 2017*

“On My Feet uses running to help homeless and long-term unemployed create self worth, a sense of purpose and pathways to self sufficiency.”

### **St Vincent de Paul Society, VOICE program** ([www.vinnies.org.au](http://www.vinnies.org.au))

*Conducting social visits*

Brisbane, Australia

*September 2014 - November 2015*

“VOICE program (Volunteer Outreach Initiative and Community Engagement) is a companionship-based home visitation program that reaches out to the marginalised and socially isolated. The program aims to develop meaningful connections between volunteers and participants who may be experiencing social isolation at various locations across Brisbane.”

### **Iranian Film Festival** (<http://www.iffa.net.au>)

*Local volunteer*

Brisbane, Australia

*October 2014*

“Originating in Queensland, the Iranian Film Festival Australia (IFFA) is the only nation-wide Australian festival dedicated to Iranian cinema. Through the presentation of contemporary Iranian cinema, IFFA uses the film medium to entertain and educate audiences and introduces Iranian culture to other Australians, fostering greater cultural awareness.”

### **Ukrainian Gothic Portal** ([gothic.com.ua](http://gothic.com.ua))

*Music journalist*

Berlin, Germany

*2010 - 2011*

“Ukrainian Gothic Portal is a printed magazine, web-portal and promotion agency of gothic/dark/electro scene in Ukraine, Russia and Belarus. UGP was established in 1999 on basis of unofficial closed subculture formation Kiev Gothic Clan and was officially registered in 2000 on the domain [gothic.com.ua](http://gothic.com.ua).”

## Certificates

### **IELTS**

Overall score: 8.0

*June 2015*

### **Business management and project management**

TU Berlin

*August 2011*

### **Networking**

Berlin Mathematical School

*December 2011*

### **Time and workload management**

Berlin Mathematical School

*December 2010*

### **Zentrale Mittelstufenprüfung**

*(advanced German language exam - level C1)*

Overall score: sehr gut - very good

*December 2006*

## Languages

- Russian - native
- English, German, Spanish, French - fluent
- Mandarin, Farsi, Italian, Portuguese, Latin - basic

## IT knowledge

LaTEX, Mathematica, Maple, Matlab, C++, Pascal, HTML, SPSS

## Academic references

- Assoc. Prof. Brock Bastian, School of Psychological Sciences, The University of Melbourne  
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- Prof. Jan de Gier, School of Mathematics and Statistics, The University of Melbourne  
Phone: +61 3 8344 9709  
E-mail: jdgier@unimelb.edu.au
- Assoc. Prof. Jon Links, School of Mathematics and Physics, The University of Queensland  
Phone: +61 7 3365 2400  
E-mail: jrl@maths.uq.edu.au
- Dr. Phillip Isaac, School of Mathematics and Physics, The University of Queensland  
Phone: +61 7 3365 3267  
E-mail: psi@maths.uq.edu.au

## Volunteering references

Available upon request.