

CURRICULUM VITAE

RAFAŁ ROMAN SUSZEK

PERSONAL DATA

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Katedra Metod Matematycznych Fizyki	E-mail: suszek@fuw.edu.pl
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PL-00-682 Warszawa, Poland	

Gender: Male

Date of birth: October 21th, 1977

Birthplace: Puławy, woj. lubelskie

Citizenship: Polish

Marital status: Married

Languages: Polish, English (fluent);
French, German (good);
Russian (passive);
Hindi (rudimentary)

RESEARCH INTERESTS

differential-cohomological structures on manifolds and loop spaces (fibre bundles, bundle gerbes, n -gerbes etc.); non-commutative geometry and the associated gauge field theory; Lie-, loop-, Poisson–Lie- and quantum-group theory, generalised (complex) geometry; category theory; quantum topological field theory; geometric and deformation quantisation; (generalised) Ricci flow; conformal field theory; geometry of non-linear sigma models; mathematical aspects of string theory; matrix models; models of gravity with torsion; integrable systems

EDUCATION**Post-graduate**

6/10/2005 **Ph.D. in theoretical physics** at the Physics Faculty of the University of Warsaw

Thesis: *Quantum Wess–Zumino–Novikov–Witten Branes*

Scientific advisor: Dr. Hab. Jacek Pawełczyk, Prof. UW

Referees: Prof. Dr. hab. Jerzy Lukierski (University of Wrocław)

Prof. Dr. hab. Krzysztof Meissner (University of Warsaw)

7/2004–8/2005 **Marie-Curie Fellowship** at the Department of Mathematics, King’s College London, UK

Project: *Spectral Non-commutative Geometry of the Boundary CFT*
Scientific advisor: Dr. Andreas Recknagel

10/2001–10/2005 **Ph.D. studies** at the Institute of Theoretical Physics at the Physics Faculty of the University of Warsaw

Project: *Quantum Wess–Zumino–Novikov–Witten Branes*
Scientific advisor: Dr. Hab. Jacek Pawełczyk, Prof. UW

Undergraduate

5/7/2001 **M.Sci. in theoretical physics** at the Physics Faculty of the University of Warsaw (*summa cum laude*)

Thesis: *The structures of non-commutative geometry in string theory*
Scientific advisor: Dr. Hab. Jacek Pawełczyk, Prof. UW
Referee: Prof. Dr. Hab. Krzysztof Meissner (University of Warsaw)

6/2001 graduation at the Physics Faculty of the University of Warsaw

1999–2001 M.Sci. studies at the Physics Faculty of the University of Warsaw

Project: *The structures of non-commutative geometry in string theory*
Scientific advisor: Dr. Hab. Jacek Pawełczyk, Prof. UW

1999–2001 Interdisciplinary Individual Studies in Mathematical and Natural Sciences, University of Warsaw

Scientific advisor: Dr. Hab. Jacek Pawełczyk, Prof. UW

Pre-university

5/1996 **baccalaureate**, II Liceum in Puławy, woj. lubelskie

1992–1996 II Liceum in Puławy, woj. lubelskie; mathematic-physical profile (12/1994 Cambridge Certificate of Proficiency in English)

1984–1992 Primary School No. 9 in Puławy, woj. lubelskie

FELLOWSHIPS AND GRANTS

10/2009–9/2010 Post-doctoral fellow in Sonderforschungsbereich “Teilchen, Strings und frühes Universum: Struktur von Materie und Raum-Zeit”, Section A4 “Mathematical Foundations of String Theory”, Bereich Algebra und Zahlentheorie, Department Mathematik, Universität Hamburg, Germany (project coordinator: Prof. Dr. Hab. Christoph Schweigert)

- 9/2008–11/2008 Junior Research Fellow at The Erwin Schrödinger International Institute for Mathematical Physics, Wien, Austria
- 11/2007–11/2009 EPSRC First Grant EP/E005047/1, Department of Mathematics, King's College London, UK (grant coordinator: Prof. Dr. Hab. Ingo Runkel)
- 10/2006–9/2007 ANR Post-doctoral Fellow at Laboratoire de Physique, École Normale Supérieure de Lyon, France (scientific advisor: Prof. Dr. Hab. Krzysztof Gawędzki)
- 11/2005–9/2006 EUCLID Post-Doctoral Fellow at Laboratoire de Physique, École Normale Supérieure de Lyon, France (scientific advisor: Prof. Dr. Hab. Krzysztof Gawędzki)
- 7/2004–8/2005 Marie Curie Fellow at the Department of Mathematics, King's College London, UK (scientific advisor: Dr. Andreas Recknagel)
- 2003–2005 Research grant of the Committee of Scientific Research No. 2 P03B 001 25 (grant coordinator: Dr. Hab. Jacek Pawełczyk, Prof. UW)
- 2001–2005 Doctoral fellow at the Physics Faculty of the University of Warsaw

AFFILIATIONS AND HITHERTO EMPLOYMENT

- 9/2010– Katedra Metod Matematycznych Fizyki, Wydział Fizyki, Uniwersytet Warszawski, Poland (Assistant Professor)
- 10/2009–9/2010 Bereich Algebra und Zahlentheorie, Department Mathematik, Universität Hamburg, Germany (wissenschaftlicher Mitarbeiter)
- 9/2008–11/2008 The Erwin Schrödinger International Institute for Mathematical Physics, Wien, Austria (Junior Research Fellow)
- 11/2007–10/2009 Department of Mathematics, King's College London, UK (Research Associate)
- 10/2006–9/2007 Laboratoire de Physique, École Normale Supérieure de Lyon, France (Post-doc ANR)
- 11/2005–9/2006 Laboratoire de Physique, École Normale Supérieure de Lyon, France (EUCLID Post-doctoral Fellow)
- 8/2005 Department of Mathematics, King's College London, UK (Marie Curie Fellow)
- 7/2004–1/2005 Department of Mathematics, King's College London, UK (Marie Curie Fellow)
- 10/2001–9/2005 Katedra Teorii Cząstek i Oddziaływań Elementarnych, Instytut Fizyki Teoretycznej, Wydział Fizyki, Uniwersytet Warszawski (Ph.D. fellow)

SHORT SCIENTIFIC VISITS

- 25/10-2/11/2009 Laboratoire de Physique, École Normale Supérieure de Lyon, France (scientific collaboration with Prof. Dr. Hab. Krzysztof Gawędzki i Dr. Konrad Waldorf)
- 23-30/4/2009 Albert-Einstein-Institut, Golm, Germany (invitation from Dr. Stefan Fredenhagen)
- 23-25/3/2009 Laboratoire de Physique, École Normale Supérieure de Lyon, France (scientific collaboration with Prof. Dr. Hab. Krzysztof Gawędzki)

- 27/11-4/12/2008 Laboratoire de Physique, École Normale Supérieure de Lyon, France (scientific collaboration with Prof. Dr. Hab. Krzysztof Gawędzki)
- 10-22/3/2008 Laboratoire de Physique, École Normale Supérieure de Lyon, France (scientific collaboration with Prof. Dr. Hab. Krzysztof Gawędzki i Dr. Konrad Waldorf)

LECTURES AND SEMINARS

- 31/10/2011 *Bi-brane Fusion*, Workshop on Representation Theoretical and Categorical Structures in Quantum Geometry and Conformal Field Theory, Department Mathematik, Friedrich-Alexander-Universität Erlangen–Nürnberg, Erlangen, Germany
- 15/4/2011 *Spin Chains from the Frog’s Perspective*, Conference “stringtheory.pl/2011”, Instytut Fizyki Teoretycznej, Wydział Fizyki, Uniwersytet Warszawski, Poland
- 24/11/2010 *Strings, Gerbes, and All That. 2. Symmetries and Generalised Geometry*, Seminar “Methods of Geometry in Physics”, Instytut Matematyki PAN, Warszawa, Poland
- 18,25/11/2010 *Strings, Gerbes, and All That. 1. Generalities*, Seminar “Theory of Duality”, Katedra Metod Matematycznych Fizyki, Wydział Fizyki, Uniwersytet Warszawski, Poland
- 24/9/2010 *A new air on the old \mathcal{G} -string*, International Conference “Geometry and Physics”, Instytut Matematyki, Uniwersytet Jagielloński, Kraków, Poland
- 29/3/2010 *On Gerbes, Generalised Geometry and σ -Models*, Mathematical Physics Seminar, Instytut Matematyki, Uniwersytet Jagielloński, Kraków, Poland
- 24/3/2010 *Gauging Sigma Models in the Presence of Conformal Defects*, SFB Meeting, Hamburg, Germany
- 23/2/2010 *Defects, Dualities and Gauging in String Theory via Gerbes*, Nordic String Theory Meeting 2010, Hannover, Germany
- 6/12/2009 *Gerbes, Symmetries and Generalised Geometry*, The 5th Meeting of the Seminar “Transformation Groups and Mathematical Physics”, Hamburg, Germany
- 14/10/2009 *Gerbes, Defects and Fusion Rules*, The 5th Baltic–Nordic Workshop “Algebra, Geometry, and Mathematical Physics”, Będlewo, Poland
- 27/4/2009 *Gerbes, World-Sheet Defects and σ -Model Symmetries*, Albert-Einstein-Institut, Golm, Germany
- 24/4/2009 *Why Gerbes Matter?*, introductory lectures on bundle gerbes at the Albert-Einstein-Institut, Golm, Germany
- 8/1/2009 *On Bundle Gerbes and Non-linear Sigma Models*, Seminar “Theory of Duality”, Katedra Metod Matematycznych Fizyki, Wydział Fizyki, Uniwersytet Warszawski, Poland
- 21/12/2008 *Gerbes Matter*, Conference “Quantum Gravity in Cracow²”, Instytut Fizyki Teoretycznej, Uniwersytet Jagielloński, Kraków, Poland
- 28/11/2008 *Gerbes for World-Sheets Quiver*, Séminaire “Géométrie et Physique mathématique” de l’Équipe Algèbre, Géométrie, Logique, Institut Camille Jordan, Université Claude Bernard Lyon 1, France

- 14/11/2008 *World-Sheet Defects, Symmetries and Gerbes*, DESY Workshop on “Applied 2d Sigma Models”, Deutsches Elektron Synchrotron, Hamburg, Germany
- 22/9/2008 *World-Sheet Structures for Defect Junctions in 2d σ -Models*, ESI Workshop on “Operator Algebras and Conformal Field Theories”, The Erwin Schrödinger International Institute for Mathematical Physics, Wien, Austria
- 4/2008 *Per Gerba ad Astra – Gerbes Made Simple I,II,III*, introductory lectures on bundle gerbes at the Department of Mathematics, King’s College London, UK
- 27/8/2007 *From Higher to Twisted Gauge Fields via Deformed σ -Models*, ESI Workshop on “Poisson Sigma Models, Lie Algebroids, Deformations, and Higher Analogues”, The Erwin Schrödinger International Institute for Mathematical Physics, Wien, Austria
- 27/4/2007 *Landscape with a Background Gerbe*, Seminar “Exact Results in Quantum Theory and Relativity”, Katedra Metod Matematycznych Fizyki, Wydział Fizyki, Uniwersytet Warszawski, Poland
- 5/4/2007 *The Reshetikhin–Turaev Construction – an Example of TQFT*, Arbeitsgemeinschaft mit aktuellem Thema: “Algebraic Structures in Conformal Field Theories”, Mathematisches Forschungsinstitut Oberwolfach, Germany
- 22/11/2006 *Air on the \mathcal{G} -String*, Séminaire “Géométrie et Physique mathématique” de l’Équipe Algèbre, Géométrie, Logique, Institut Camille Jordan, Université Claude Bernard Lyon 1, France
- 13/9/2006 *The Geometry of WZW Branes – from gerbes to quantum groups and back*, International Workshop of the EUCLID Network “Integrable Models and Applications: from Strings to Condensed Matter”, Laboratoire de Physique, École Normale Supérieure de Lyon, France
- 6/4/2006 *Cold Fusion for WZW Branes*, the Gong Show at the Spring School of the EUCLID Network “Integrable Models and Applications: from Strings to Condensed Matter”, Institut für Theoretische Physik, Freie Universität Berlin, Germany
- 27/5/2005 *Quantum Wess–Zumino–Novikov–Witten Branes*, The Friday Seminar, Instytut Fizyki Teoretycznej, Uniwersytet Wrocławski, Poland
- 26/1/2005 *Twisted Reflections on Twisted $SU(2n+1)$ Branes*, Theoretical Physics Group Seminar, Department of Mathematics, King’s College London, UK
- 28/7/2004 *WZW Patterns in Reflection Algebras*, Theoretical Physics Group Seminar, Department of Mathematics, King’s College London, UK
- 7/11/2001 *Non-commutative Geometry Strikes Back*, Seminar on HEP and Cosmology, Instytut Fizyki Teoretycznej, Uniwersytet Warszawski, Poland
- 22/10/2001 *Non-commutative Geometries – a New Outlook on Gauge Theories*, Seminar of the Theory of Elementary Interactions, Instytut Fizyki Teoretycznej, Uniwersytet Warszawski, Poland
- 6/12/2000 *Target Space Non-commutativity in String Theory*, Seminar on HEP and Cosmology, Instytut Fizyki Teoretycznej, Uniwersytet Warszawski, Poland

PUBLICATIONS, PREPRINTS I THESES

- XIII R.R.S., “*Defects, dualities and the geometry of strings via gerbes, II. Generalised geometries with a twist*”, arXiv preprint 11xx.xxxx [hep-th].
- XII R.R.S., “*The Gerbe Theory of the Bosonic Sigma-Model: The Multi-phase CFT, Dualities, and the Gauge Principle*”, Acta Phys. Pol. B Proc. Suppl. **4** (2011) 425–460.
- XI R.R.S., “*Defects, dualities and the geometry of strings via gerbes, I. Dualities and state fusion through defects*”, arXiv preprint 1101.1126 [hep-th].
- X K. GAWĘDZKI, R.R.S., AND K. WALDORF, “*Global gauge anomalies in the two-dimensional bosonic sigma model*”, Commun. Math. Phys. **302** (2011) 513–580.
- IX I. RUNKEL AND R.R.S., “*Affine $su(2)$ fusion rules from gerbe 2-isomorphisms*”, J. Diff. Geom. **61** (2011) 1527–1552.
- VIII I. RUNKEL AND R.R.S., “*Gerbe-holonomy for surfaces with defect networks*”, Adv. Theor. Math. Phys. **13.4** (2009) 1137–1219.
- VII K. GAWĘDZKI, R.R.S., AND K. WALDORF, “*Bundle gerbes for orientifold sigma models*”, arXiv preprint 0809.5125 [math-ph], submitted for publication to Adv. Theor. Math. Phys. (in 2008).
- VI R.R.S., “*The Reshetikhin–Turaev Construction – an Example of TQFT*”, in: Arbeitsgemeinschaft mit aktuellem Thema: “Algebraic Structures in Conformal Field Theories”, Oberwolfach Reports 4 (2007) 945–994 (971–975).
- V K. GAWĘDZKI, R.R.S., AND K. WALDORF, “*WZW orientifolds and finite group cohomology*”, Commun. Math. Phys. **284** (2008) 1–49.
- IV A. RECKNAGEL AND R.R.S., “*Non-commutative Weitzenböck geometry, gerbe modules, and WZW branes*”, JHEP **0802** (2008) 089.
- III J. PAWELCZYK AND R.R.S., “*Brane bulk couplings and condensation from REA fusion*”, JHEP **0604** (2006) 009.
- II J. PAWELCZYK, H. STEINACKER, AND R.R.S., “*Twisted WZW branes from twisted REA’s*”, Nucl. Phys. (PM) **B724** (2005) 487–502.
- I J. PAWELCZYK AND R.R.S., “*Quantum matrix models for simple current orbifolds*”, Nucl. Phys. (PM) **B710** (2005) 599–613.
- PhD R.R.S., “*Quantum Wess–Zumino–Novikov–Witten Branes*”, Ph.D. Thesis defended at the Faculty of Physics, University of Warsaw (October 6th, 2005; in English).
- MSc R.R.S., “*Struktury Geometrii Nieprzemiennej w Teorii Strun*”, M.Sci. Thesis defended at the Faculty of Physics, University of Warsaw (July 5th, 2001; in Polish).

Papers in writing and preparation

- XVII R.R.S., “*Quasi-Hamiltonian (bi-)G-spaces, loop-group actions, and bi-brane fusion*”, in preparation.
- XVI K. GAWĘDZKI, R.R.S., AND K. WALDORF, “*Unoriented WZW branes and gerbes*”, in preparation.
- XV K. GAWĘDZKI, R.R.S., AND K. WALDORF, “*Gauging symmetries of 2D sigma-models on world-sheets with defects*”, in writing.
- XIV I. RUNKEL AND R.R.S., “*Maximally symmetric defects with junctions in the classical WZW model*”, in writing.

CONFERENCES, WORKSHOPS AND SCHOOLS

- 31/10-2/11/2011 Workshop on Representation Theoretical and Categorical Structures in Quantum Geometry and Conformal Field Theory, Department Mathematik, Friedrich-Alexander-Universität Erlangen–Nürnberg, Erlangen, Germany
- 15-17/4/2011 Conference “stringtheory.pl/2011”, Instytut Fizyki Teoretycznej, Wydział Fizyki, Uniwersytet Warszawski, Poland
- 21-25/9/2010 International Conference “Geometry and Physics”, Instytut Matematyki, Uniwersytet Jagielloński, Kraków, Poland
- 24/3/2010 SFB Meeting, Universität Hamburg, Germany
- 22-23/2/2010 Nordic String Theory Meeting 2010, Leibniz Universität Hannover, Germany
- 5-6/12/2009 The 5th Meeting of the Seminar “Transformation Groups and Mathematical Physics”, Universität Hamburg, Germany
- 22-26/6/2009 “*Strings 2009*”, Università degli studi di Roma “Tor Vergata”, Italy
- 3-4/4/2008 *The 13th Annual UK meeting on Integrable Models, Conformal Field Theory and Related Topics*, Oxford University, UK
- 19-21/12/2008 “*Quantum Gravity in Cracow²*”, Instytut Fizyki Teoretycznej, Uniwersytet Jagielloński, Poland
- 10-14/11/2008 *DESY Workshop on “Applied 2d Sigma Models*”, Deutsches Elektron Synchrotron, Hamburg, Germany
- 25/8-14/12/2008 *ESI Workshop on “Operator Algebras and Conformal Field Theories*”, The Erwin Schrödinger International Institute for Mathematical Physics, Wien, Austria
- 11-15/8/2008 *Prestrings '08 in Zürich*, Eidgenössische Technische Hochschule, Zürich, Switzerland
- 11-12/4/2008 *The 13th Annual UK meeting on Integrable Models, Conformal Field Theory and Related Topics*, International Centre for Mathematical Sciences, Edinburgh, UK
- 14-15/12/2007 “*Fields, Lattices and Condensed Matter*”, A symposium in honour of John Cardy’s 60th birthday, Oxford University, UK

- 1/8-21/9/2007 *ESI Workshop on “Poisson Sigma Models, Lie Algebroids, Deformations, and Higher Analogues”*, The Erwin Schrödinger International Institute for Mathematical Physics, Wien, Austria
- 28-30/6/2007 *“Fields, Fluids and Branes”, Conference on Mathematical Physics on the Occasion of the 60th Birthday of Krzysztof Gawędzki*, Laboratoire de Physique, École Normale Supérieure de Lyon, France
- 1-7/4/2007 *Arbeitsgemeinschaft mit aktuellem Thema: “Algebraic Structures in Conformal Field Theories”*, Mathematisches Forschungsinstitut Oberwolfach, Germany
- 11-15/9/2006 *International Workshop of the EUCLID Network “Integrable Models and Applications: from Strings to Condensed Matter”*, Laboratoire de Physique, École Normale Supérieure de Lyon, France (coorganiser)
- 6-11/4/2006 *Spring School of the EUCLID Network “Integrable Models and Applications: from Strings to Condensed Matter”*, Institut für Theoretische Physik, Freie Universität Berlin, Germany (coorganiser)
- 7-18/6/2004 *ESI Workshop on “String theory on non-compact and time-dependent backgrounds”*, The Erwin Schrödinger International Institute for Mathematical Physics, Wien, Austria
- 15-23/3/2004 *Spring School on Superstrings and Related Matters*, The Abdus Salam International Centre of Theoretical Physics, Trieste, Italy
- 2-12/6/2003 *School on Mathematics in String and Field Theory*, The Abdus Salam International Centre of Theoretical Physics, Trieste, Italy
- 31/3-8/4/2003 *Spring School on Superstrings and Related Matters*, The Abdus Salam International Centre of Theoretical Physics, Trieste, Italy
- 25-29/5/2002 *V European Meeting “From the Planck Scale to the Electroweak Scale: SUPER-SYMMETRY AND BRANE WORLDS”*, Kazimierz Dolny nad Wisłą, Poland
- 18-26/3/2002 *Spring School on Superstrings and Related Matters*, The Abdus Salam International Centre of Theoretical Physics, Trieste, Italy
- 3-14/9/2001 *VII National Summer School for Graduate Students, WE-Heraeus-Doktorandenschule Saalburg “Grundlagen und neue Methoden der theoretischen Physik”*, Saalburg, Germany
- 5-16/2/2001 *XXXVII Winter School of Theoretical Physics*, Karpacz, Poland