

Vladimir Prochazka

Research Interests

RG flows and CFTs in 2D and 4D
QFT in curved spacetime
Trace anomaly and the dynamics of Gauge Theories
UV Completion of Supersymmetric Field Theories

Education

2012–present **PhD Candidate, Particle Physics Theory, (expected October 2016),**
University of Edinburgh, Edinburgh, UK.

Thesis Topic: *Conformal Anomalies in QFT*

Studied the connection between renormalisation of Gauge Theories and the Conformal Anomaly. Developing geometrical techniques to calculate the RG flow of central charges in theories with IR fixed points.

Supervisor: Dr. Roman Zwicky

2008–2012 **MPhys (Hons) Mathematical Physics,**
University of Edinburgh, Edinburgh, UK,
Degree classification: First Class.

Thesis Topic: *Aspects of ϕ^6 at $N = \infty$*

Studied renormalisation of exactly solvable model with non-trivial IR fixed points in 3D. Used Functional Renormalization Group methods to examine the scaling behaviour close to a Wilson-Fisher fixed point.

Supervisor: Prof. Luigi Del Debbio

Publications

V. Prochazka and R. Zwicky, $\mathcal{N} = 1$ Euler Anomaly Flow from Dilaton Effective Action, arXiv:1511.03868 [hep-th], Submitted

V. Prochazka and R. Zwicky, *Gluon Condensates from Hamiltonian Formalism*, J. Phys. A 47 (2014) 395402

Undergraduate Research

2011 **Summer Research Project:** *Coordinate Separation for the Helmholtz Equation on a Neutral Black Ring*

Supervisor: Prof José Miguel Figueroa-O'Farrill

2010 **Summer Research Project:** *Covariant Field Equations in Hyperbolic 3-Space*

Supervisor: Prof José Miguel Figueroa-O'Farrill

Awards and Scholarships

- 2012 - 2016 STFC Studentship, The University of Edinburgh, Particle Physics Theory
- 2014 P.A.M. Dirac Diploma, Ettore Majorana Foundation and Centre for Scientific Culture
- 2012 Tait Medal, The University of Edinburgh
- 2011 College Vacation Scholarship, The University of Edinburgh
- 2010 Nichol Foundation Scholarship, The University of Edinburgh
- 2010 Mathematical Physics Class Medal, The University of Edinburgh
- 2010 College Vacation Scholarship, The University of Edinburgh
- 2009 Certificate of Merit, The University of Edinburgh

Seminars and Talks

- November 2015 *RG flows and Geometry*, Team Theory Reading Group, Higgs Centre for Theoretical Physics, Edinburgh, UK
- May 2015 *Introduction to Supergravity*, Team Theory Reading Group, Higgs Centre for Theoretical Physics, Edinburgh, UK
- December 2014 *Gluon Condensates from Hamiltonian Formalism*, Young Theorist Forum, IPPP, Durham, UK
- September 2014 *BRST Quantization*, Team Theory Reading Group, Higgs Centre for Theoretical Physics, Edinburgh, UK
- July 2014 *Gluon Condensates from Hamiltonian Formalism*, ISSP, Ettore Majorana Foundation and Centre for Scientific Culture, Erice, Italy
- December 2013 *Solitons, Vortices and Magnetic Monopoles*, Team Theory Reading Group, Higgs Centre for Theoretical Physics, Edinburgh, UK

Schools, Conferences and Workshops

- 12 - 15 Jul 2015 *Shaping UV Physics Beyond the Standard Model*, IPPP, Durham, UK
- 24 Jun - 3 Jul 2015 *International School of Subnuclear Physics*, Erice, Italy
- 25 - 30 May 2015 *Higgs Centre School of Theoretical Physics*, Edinburgh, UK
- 17 - 18 Dec 2014 *Young Theorist Forum*, IPPP, Durham, UK
- 15 - 17 Dec 2014 *Annual Theory Meeting*, IPPP, Durham, UK
- 12 - 14 Nov 2014 *Strong Interactions in the LHC Era*, Physikzentrum Bad Honnef, Germany
- 24 Jun - 3 Jul 2014 *International School of Subnuclear Physics*, Erice, Italy
- 26 Feb 2014 *Higgs-Maxwell Particle Physics Workshop*, Royal Society of Edinburgh, UK
- 8 - 10 Jan 2014 *New Directions in Theoretical Physics*, Informatics Forum, Edinburgh, UK
- 16 - 18 Dec 2013 *Annual Theory Meeting*, IPPP, Durham, UK
- 30 Sep - 5 Oct 2013 *Theoretical Methods in Particle Physics*, Higgs Centre for Theoretical Physics, Edinburgh, UK
- 1 Sep - 13 Sep 2013 *British Universities Summer School in Theoretical Elementary Particle Physics*, The University of Sussex, Brighton, UK
- 5 - 12 Aug 2013 *Origin of Mass 2013*, CP3-Origins, Odense, Denmark

Teaching

2012 – present **Teaching Assistant** at *The University of Edinburgh*

Tutored following subjects:

- 2014 - 2015: *Principles of Quantum Mechanics*
- 2013 - 2015: *Classical Electrodynamics*

Computing Skills

Languages Java, C
Software Mathematica, Maple, Latex

Languages

native Slovak, Czech
fluent English, Polish, Spanish
intermediate German, Italian, Russian

References

- Referee 1 Dr. Roman Zwicky
Reader, Particle Physics Theory, The University of Edinburgh, UK
+44 (0)131 650 5243 , roman.zwicky@ed.ac.uk
- Referee 2 Prof. Graham Shore
Professor of Theoretical Physics, Department of Physics, Swansea University, UK
+44 1792 295737 , g.m.shore@swansea.ac.uk
- Referee 3 Prof. Luigi Del Debbio
Professor of Theoretical Physics, Particle Physics Theory, The University of Edinburgh, UK
+44 (0)131 650 5212 , luigi.del.debbio@ed.ac.uk