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Vladimir Prochazka

Research Interests

RG flows and anomalies

QFT in curved space

Local RG and composite operator correlators

Background field calculations

Supersymmetric field theories

Boundary RG flows

Education

Fall 2016 **Visiting student**,
Weizmann Institute of Science, Rehovot, Israel,
Working on a project related to boundary RG flows with Zohar Komargodski .

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

Thesis Topic: *Aspects of Trace Anomalies in Perturbation Theory and Beyond*

Using local RG to study composite operator correlators and the associated contact terms. 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. 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, *On Finiteness of 2- and 3-point Functions and the Renormalisation Group*,arXiv:1611.01367 [hep-th], submitted

V. Prochazka and R. Zwicky , $\mathcal{N} = 1$ *Euler Anomaly Flow from Dilaton Effective Action*, JHEP 1601 (2016) 041

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

June 2016 *Blackboard talk on a-theorem and dilaton effective action*, Flavour and Electroweak Symmetry Breaking, International Center for the Scientific Culture, Anacapri (Island of Capri), Italy

January 2016 *Flow of central charge from the dilaton effective action*, Internal group seminar, The Higgs Centre, Edinburgh, UK

January 2016 *Flow of central charge from the dilaton effective action*, UK QFT Meeting 2016, The University of Nottingham, Nottingham, UK

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 Jun - 18 Jun *Flavour and Electroweak Symmetry Breaking*,International Center for the Scientific Culture, Anacapri (Island of Capri), Italy

30 May - 6 Jun *Conformal Field Theories and Renormalization Group Flows in Dimensions d>2*, GGI Institute, Florence, Italy

15 Jan 2016 *UK QFT V - Progress in Quantum Field Theory and Gravity: from Colliders to Cosmology* , The University of Nottingham, Nottingham, UK

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:

- 2016: *Quantum Chromodynamics*
- 2014 - 2015: *Principles of Quantum Mechanics*
- 2013 - 2016: *Classical Electrodynamics*
- 2012 - 2013: *Quantum Mechanics*
- 2013: *Statistical Mechanics*

Computing Skills

Languages	Java, C
Software	Mathematica, Maple, Latex

Languages

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