

Curriculum Vitae

Peter Mati

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Born: 23.09.1985, Budapest

Studies

- 2011 MSc Diploma in Engineering Physics, Budapest University of Technology and Economics (BME)
- 2011– PhD student at BME, Department of Theoretical Physics

Short-term visits

- November 26, 2012 – December 5, 2012 - Research collaboration, Ecole Polytechnique (Paris), Collaborator: Urko Reinosa (Topic: *Resummation Schemes*)
- April 28, 2013 – May 4, 2013 - Research collaboration, Ecole Polytechnique (Paris), Collaborator: Urko Reinosa (Topic: *Investigation of critical exponents in the $O(N)$ model using $1/N$ expansion*)

Long-term visits

- February, 2013 – July, 2013 – Research and study at University of Sussex (Brighton, UK), Supervisor: Daniel Litim (Topic: *The Functional Renormalization Group*)
- December 2013 – Visitor Researcher (National Program of Excellence) Debreceni Tudományegyetem Természettudományi Kar/ATOMKI

Research interests

- Theoretical Particle Physics (Thesis: *Self-consistent Resummation in Scalar Field Theories*, Supervisor: Dr. Antal Jakovac)

- Finite Temperature Quantum Field Theories,
- Non-Perturbative Aspects of QFTs (Resummations, Functional Renormalization Group)
- Chiral Perturbation Theory
- Mathematical Physics, Applied Mathematics

Teaching

- 2009–2012-Teaching Assistant at the Institute of Physics, BME
 - General Physics for Engineers 1 (Classical Mechanics, Thermodynamics - 5 courses)
 - General Physics for Engineers 2 (Electromagnetism - 2 courses)
 - Introduction to Physics for Engineers (2 courses)
 - Electrodynamics for Engineers (1 course)
 - Practical Course in Physics 1 (for Physicist – 1 course)

Skills and qualifications

- Operating systems: Microsoft Windows, Ubuntu Linux
- Programming languages: C++, Mathematica, Matlab
- Document preparation: LaTeX
- English language: fluent (certificate in 2002, BME)
- TOEFL-ITP (CEU-organised, 2013) 603 points (90.4%)
- German language: more or less fluent (certificate in 2004, Österreich Institut Budapest)

Awards, scholarships

- 2010: 2nd prize at the Students Scientific Conference of the Faculty in the Section of Theoretical Physics, BME (Supervisor: Antal Jakovac)
Title of the work: The investigation of the Bloch-Nordsieck Model
- 2011: 5th prize at the National Students Scientific Conference in the Section of Particle Physics (Supervisor: Antal Jakovac)
Title of the work: The investigation of the Bloch-Nordsieck Model
- 2011: Prize of the Faculty of Natural Sciences, BME

- 2013: Campus Hungary Scholarship (Balassi Institute)
- 2013: Poster competition at University of Sussex, 1st prize
- Prize of the National Program of Excellence

Conferences, workshops, seminars

- *Strong Interactions in Quantum Field Theory* (5/4/2011-5/6/2011, Fürstenfeld, Ausztria)
Presentation: Investigation of the Bloch-Nordsieck Model
- *Zimanyi Winter School on Heavy Ion Physics* (11/28/2011-12/2/201., Budapest, KFKI)
Presentation: Resummations in the Bloch-Nordsieck Model
- *Workshop on Activating Learning* (1/25/2012, Budapest, BME), Lecturer: Prof .Michael Christie
- *MAFIHE Winter School on ELI* (Extreme Light Infrastructure) (2/2/2012-2/4/2012, Szeged)
- *Schladming Winter School 2012: Prospects of Particle Physics* (2/25/2012-3/3/2012, Schladming, Ausztria)
- *Non-Perturbative Methods in Quantum Field Theory* (4/11/2012-4/13/2012, Szombathely)
Presentation: Nonperturbative treatments of the Bloch-Nordsieck model
- *Conference of Hungarian Physics PhD students* (6/15/2012-6/17/2012, Balatonfenyves)
Presentation: The Bloch-Nordsieck Model at finite temperature
- *Strong and Electroweak Matter 2012*, (7/10/2012-7/13/2012, Swansea, United Kingdom)
Poster: The Bloch-Nordsieck Model at finite temperature
- *Zimanyi School'12* (Budapest, 12/3/2012-12/07/2012)
Presentation: A solvable toy model for QED at finite temperature
- Seminar talks: Solving the Bloch-Nordsieck Model
 - *University of Sussex* (Brighton, UK, 11/16/2012)
 - *ELTE* (Budapest, 11/21/12)
 - *Ecole Polytechnique* (Paris, 12/3/2012)
 - *ATOMKI* (Debrecen, 12/18/2012)
- *New connections between Experiment and Theory (NExT) Meeting* (Rutherford-Appleton Laboratory, Harwell Oxford, 03/20/2013)
- *Third NeXT PhD Workshop* (2013.június 17-19. *Queen Mary, University of London* (London))

Poster presentation: The Functional Renormalization Group and The BMB Phenomenon

- *Strong Interactions in Quantum Field Theory* (06.27.2013., Leitring Austria)
Presentation: The functional renormalization group and the BMB phenomenon.
- *National Nuclear Physics Summer School* (Jul.15-26. 2013.) Stony Brook University, New York
- *Wigner III*, (Nov 11-13. 2013.) MTA, Budapest
- *Zimányi School '13*, (12.2-6. 2013.) MTA Csillebérc/ELTE, Budapest
Presentation: The fixed point structure of the 3d O(N) model in the large N limit

Positions, Memberships

- *Member of Roland Eötvös Physical Society* (Budapest, Hungary, 2013 -)
- *PhD Student at BME* (2011-)
- *Visiting Researcher at ELTE* (2012-)
- *Visiting Researcher at University of Sussex* (Feb-July.2013.)
- *Visiting Researcher at Debrecen/Atomki* (2013.Dec.-)

Publications

- *Resummations in the Bloch-Nordsieck model*,
Antal Jakovac, Peter Mati,
Phys.Rev. D85 (2012) 085006, DOI: 10.1103/PhysRevD.85.085006
- *Spectral function of the Bloch-Nordsieck model at finite temperature*,
Antal Jakovac, Peter Mati,
arXiv:1301.1803 [hep-th], sent to Phys.Rev. D

Papers under review