

Curriculum vitae

Personal information

- Full name: Eero Aleksii Kurkela
- Date and place of birth: September 6th 1982, Hämeenlinna, Finland
- Nationality: Finnish
- Marital status: unmarried
- Language skills: Finnish (native), English (excellent), Swedish (satisfactory), German (satisfactory)
- Address: McGill University
Rutherford Physics Building
3600 rue University
Montreal QC H3A 2T8
Canada

Phone: +1 514 398 2156
e-mail: aleksi.kurkela@mcgill.ca

Education

- High School Diploma, December 2001, Sibelius-Lukio
- Master of Science, June 2006, University of Helsinki
 - Major in Theoretical Physics, minors in Physics and Astronomy
 - M.Sc. thesis: *Numerical study of the deconfinement transition in QCD*
- Doctor of Philosophy, May 2008, University of Helsinki
 - Ph.D. Thesis: *Dimensional Reduction Near the Deconfinement Transition*

Work history

- University of Helsinki, Department of Physical Sciences
 - Research Assistant, 5/2005 - 5/2006
 - Research Fellow, 5/2006 - 9/2008
- ETH Zurich, Department of Physics
 - Postdoctoral Research Fellow 10/2008 - 10/2010
- McGill University, Department of Physics
 - Postdoctoral Research fellow, 10/2010 - present

Teaching

- Lecturer in:
 - PHYS744 Thermal field theory, Winter semester 2011, McGill University
 - * 26×80min lectures, 3 credits
 - * 13 registered students, attendance \sim 20 graduate students
 - * Selected anonymous student evaluations:
 - ‘Very clear explanations, very good balance between developing the necessary mathematical techniques and still keeping track of the physics picture of what’s happening.’*
 - ‘Aleksi is knowledgeable, patient, and methodical. He takes his time delivering the material, making it a pleasure to follow along.’*
 - Thermal field theory at finite density, University of Bielefeld, September 2011.
 - * Part of a Block Course of the International Graduate School, GRK 881 Bielefeld - Paris - Helsinki ‘Quantum Fields and Strongly Interacting Matter’ on ‘Aspects of QCD at Finite Density’,
 - * 3×60min lectures
- Cosupervisor in ”Proseminar in Theoretical Physics - Perturbative and non-perturbative methods for strong interactions”, Autumn 2009 and in ”Symmetries in physics”, Autumn 2010, ETH Zürich.
- Teaching assistant in:
 - Mathematics for Physicists II, Spring 2006, University of Helsinki

- Many-Body Phenomena, Autumn 2006, University of Helsinki
- Many-Body Phenomena, Autumn 2007, University of Helsinki

List of publications

Ph.D. Thesis

1. A. Kurkela, *Dimensional Reduction Near the Deconfinement Transition*, Report series in physics HU-P-D152, ISBN 978-952-10-3933-1 (<http://urn.fi/URN:ISBN:978-952-10-3933-1>).

Refereed journals

2. A. Hietanen and A. Kurkela, *Plaquette expectation value and lattice free energy of three-dimensional $SU(N)$ gauge theory*, JHEP **0611** (2006) 060 [arXiv:hep-lat/0609015].
3. A. Kurkela, *Framework for non-perturbative analysis of a $Z(3)$ -symmetric effective theory of finite temperature QCD*, Phys. Rev. D **76** (2007) 0945071 [arXiv:0704.1416 [hep-lat]].
4. Ph. de Forcrand, A. Kurkela and A. Vuorinen, *Center-Symmetric Effective Theory for High-Temperature $SU(2)$ Yang-Mills Theory*, Phys. Rev. D **77** (2008) 125014 [arXiv: 0801.1566 [hep-ph]].
5. A. Gynther, A. Kurkela and A. Vuorinen, *The $N_f^3 g^6$ term in the pressure of hot QCD*, Phys. Rev. D **80** (2009) 096002 [arXiv:0909.3521 [hep-ph]].
6. A. Kurkela, P. Romatschke and A. Vuorinen, *Cold Quark Matter*, Phys. Rev. **D81** (2010) 105021. [arXiv:0912.1856 [hep-ph]].
7. P. de Forcrand, A. Kurkela and M. Panero, *The phase diagram of Yang-Mills theory with a compact extra dimension*, JHEP **1006** (2010) 050. [arXiv:1003.4643 [hep-lat]].
8. A. Kurkela and G. D. Moore, *Thermalization in Weakly Coupled Nonabelian Plasmas*, JHEP **1112**, 044 (2011) [arXiv:1107.5050 [hep-ph]].
9. A. Kurkela and G. D. Moore, *Bjorken Flow, Plasma Instabilities, and Thermalization*, JHEP **1111**, 120 (2011) [arXiv:1108.4684 [hep-ph]].
10. T. Zhang, T. Brauner, A. Kurkela and A. Vuorinen, *Two-color QCD via dimensional reduction*, arXiv:1112.2983 [hep-ph]. Accepted for publication in JHEP.

Preprints

11. A. Kurkela, P. Romatschke, A. Vuorinen and B. Wu, *Looking inside neutron stars: Microscopic calculations confront observations*, [arXiv:1006.4062 [astro-ph.HE]].
12. P. de Forcrand, A. Kurkela and M. Panero, *Numerical properties of staggered quarks with a taste-dependent mass term*, arXiv:1202.1867 [hep-lat].

Refereed conference proceedings

13. A. Kurkela, *Z(3)-symmetric effective theory of hot QCD*, PoS **LAT2007** (2007) 199 [arXiv:0711.1796 [hep-lat]].
14. A. Kurkela, *Center-symmetric dimensional reduction of hot Yang-Mills theory*, Nuclear Physics A, 820 (2009) 159, Proceedings of the 8th International Conference on Strong and Electroweak Matter 2008.
15. A. Kurkela, *Center-symmetric dimensional reduction of hot Yang-Mills theory*, PoS **LATTICE2008** (2008) 211 [arXiv:0810.5458 [hep-lat]].
16. A. Kurkela, Ph. de Forcrand and M. Panero, *Dimensional reduction and the phase diagram of 5d Yang-Mills theory*, to appear in Proceedings of Lattice 2009 [arXiv:0911.3609 [hep-lat]].
17. P. de Forcrand, A. Kurkela and M. Panero, *Numerical properties of staggered overlap fermions*, PoS **LATTICE 2010** (2010) 080 [arXiv:1102.1000 [hep-lat]].

Recent talks

Invited talks at major conferences

- *Large extra dimensions and lattices*, Invited plenary, Lattice 2011, The 29th International Symposium on Lattice Field Theory, Lake Tahoe, July 2011.
- *EoS of cold quark matter*, invited talk in International conference on Quark Confinement and Hadron Spectrum IX, Universidad Complutense de Madrid, August 2010.
- *Dimensional reduction near deconfinement transition*, Invited plenary, 6th Vienna Central European Seminar on Particle Physics and Quantum Field Theory, November 2009.

Other talks

- *Thermalization in collisions of extremely large nuclei at extremely large energies*, Brookhaven National Laboratory, December 2011.
- *Towards NLO computation of thermal photon production rate*, 2011 Workshop Thermal Photons and Dileptons, Brookhaven National Laboratory, December 2011.
- *Thermalization in collisions of extremely large nuclei at extremely large energies*, Washington university in St. Louis, November 2011.
- *Cold quark matter*, Washington university of St. Louis, November 2011.
- *Thermalisation in collisions of extremely large nuclei at extremely large energies*, University of Jyväskylä, October 2011.
- *Thermalisation in collisions of extremely large nuclei at extremely large energies*, Helsinki institute of Physics, October 2011.
- *Thermalisation in collisions of extremely large nuclei at extremely large energies*, University of Bielefeld, September 2011.
- *Neutron stars and strong interactions*, McGill, May 2011.
- *Strongly interacting astrophysics*, International conference on Strong and Electroweak Matter, McGill University, Montreal, June 2010.
- *Cold quark matter*, University of Bielefeld, May 2010.
- *Cold quark matter*, Δ -meeting, workshop in QCD, Nonequilibrium Dynamics, Complex Systems, and Simulational Methods, Heidelberg, May 2010.
- *Cold quark matter*, ETH Zürich, April 2010.
- *Cold quark matter*, University of Bern, March 2010.
- *Neutron stars to 3 loops*, Norwegian Winter Workshop on QCD in Extreme Conditions, Norwegian University of Science and Technology, Trondheim, February 2010.
- *Cold quark matter*, Helsinki Institute of Physics, December 2009.
- *Cold quark matter*, University of Torino, December 2009.
- *Cold quark matter*, University of Swansea, November 2009.
- *Understanding the quark-gluon plasma via dimensional reduction*, University of Frankfurt, September 2009.

- *Dimensional reduction and the phase diagram of 5d Yang-Mills theory*, Lattice 2009, The XXVII International Symposium on Lattice Field Theory, Beijing, July 2009.
- *Understanding the quark-gluon plasma via dimensional reduction*, Paul Scherrer Institute, Villigen, July 2009.
- *Dimensionally reduced effective theories of hot QCD*, 47th Winter School on Theoretical Physics in Schladming, March 2009.
- *Dimensional reduction in hot QCD*, ETH Zürich, February 2009.
- *Dimensional reduction near deconfinement transition*, New results in Lattice Gauge Theories, University of Torino, December 2008.
- *Center-symmetric dimensional reduction of hot Yang-Mills theory*, Strong and ElectroWeak Matter, University of Amsterdam, August 2008.
- *Center-symmetric dimensional reduction of hot Yang-Mills theory*, Lattice 2008, The XXVI International Symposium on Lattice Field Theory, College of William and Mary, Virginia, July 2008.
- *New results from center-symmetric dimensionally reduced Yang-Mills theory*, Workshop on hot and dense QCD, University of Oulu, June 2008.
- *Dimensional Reduction Near Deconfinement Transition*, University of Jyväskylä, February 2008.
- *Hot Yang-Mills Theory and The Center Symmetry*, Vienna University of Technology, November 2007.
- *Plaquette expectation value and hot QCD*, Winter School on Conceptual and Numerical Challenges in Femto- and Peta-Scale Physics, Schladming, February 2007.
- *Non-perturbative pressure of hot QCD*, Helsinki Institute of Physics, January 2007.
- *Plaquette expectation value and hot QCD*, University of Oulu, December, 2006.
- *Plaquette expectation value of three-dimensional $SU(N)$ gauge theory and hot QCD*, University of Southern Denmark, Odense, November 2006.
- *Free energy of 3D $SU(N)$ gauge theory*, Lecture Week on The Physics of Hadrons and Ultrarelativistic Heavy Ion Collisions, Hyytiälä, September, 2006.