

GUY D. MOORE

Institut für Kernphysik
Technische Universität Darm-
stadt
Schlossgartenstraße 2 (S02/11)
D-64289 Darmstadt, Germany
guy.moore@physik.tu-darmstadt.de

PERSONAL

US and German citizen, Born 20 December, 1969 in Loveland, Colorado, USA

PROFESSIONAL EXPERIENCE

Professor (W3), Technische Universität Darmstadt, June 2015 – present

Professor, McGill University, Mar. 2013 – May 2015

Associate Professor, McGill University, May 2008 – Feb. 2013

Assistant Professor, McGill University, Sept. 2002 – May 2008

Postdoctoral Fellow, University of Washington, Sept. 1999 – Aug. 2002

Postdoctoral Fellow, McGill University, Sept. 1997 – Aug. 1999

EDUCATION

PhD in Physics June 1997

Princeton University, Princeton, NJ, USA

Thesis title: “Chern-Simons Number Diffusion in the Symmetric Electroweak Phase”

Advisor: Neil Turok

Bachelor of Science in Physics and Mathematics May 1992

Harvey Mudd College, Claremont, CA, USA

AWARDS AND DISTINCTIONS

Rutherford Medal in Physics, Royal Society of Canada, 2012.

Stacie Memorial Fellowship, National Science and Engineering Research Council, 2010.

Outstanding Referee, American Physical Society, 2010.

CAP Herzberg Medal, Canadian Association of Physicists, 2009.

Department of Physics teaching prize, McGill University, 2008.

Friedrich Wilhelm Bessel prize, Alexander von Humboldt foundation, 2007.

Richard P. Feynman fellowship, Los Alamos National Labs, 2001 (declined).

NSF Fellow, 1992-1995.

GRADUATE AND POSTDOCTORAL TRAINING

Students for which I had full responsibility:

Name	Dates	Current Status
Manuel Simon	4/2021 – present (MSc)	MSc student
David de la Cruz	3/2021 – present (PhD)	PhD student
Bruno Högl	11/2020 – present (PhD)	PhD student
Aidan Chaumet	11/2020 – present (MSc)	MSc student
Simon Stendebach	10/2020 – present (MSc)	MSc student
Marc Barroso Mancha	10/2019 – present (PhD)	PhD student
Marwin Acker	5/2019 – 8/2020 (MSc)	Agile Software
Jillur Rahman	10/2018 – present (PhD)	PhD student
Niels Schlusser	10/2017 – 7/2020 (PhD)	Postdoc, Helsinki
Maxamillian Eller	9/2016 – 2/2021 (MSc,PhD)	Postdoc, TUDa
Thomas Jahn	9/2016 – 11/2019	Analyst, D-Fine
Vincent Klaer	9/2015 – 11/2019	Data Scientist, Commerzbank
Peter Tsimiklis	9/2014 – 2/2017(MSc)	computer vision
Leesa Fleury	7/2014 – 8/2015(MSc)	PhD Student, UBC
Kiyoumars Sohrabi	9/2009 – 8/2013(PhD)	RBC Capital Markets
Egang Lu	9/2009 – 12/2014(MSc,PhD)	Senior Manager, RBC
Mark Abraao York	9/2008 – 6/2014(MSc,PhD)	Finance, Toronto
Vincent Dorais	9/2006 – 8/2008(left)	Medical Doctor
Simon Caron-Huot	9/2005 – 9/2009(MSc,PhD)	Asst. Professor of Physics, McGill
Joshua Elliott	9/2004 – 9/2008(MSc,PhD)	DARPA program manager
Jean-Marie Robert	9/2004 – 8/2006(MSc)	Physics Instructor, NAIT (Edmonton)
Olivier Gagnon	9/2002 – 6/2005(MSc)	Senior Programs Officer, CFI
Alex Johnstone	9/2002 – 8/2004(MSc)	Senior Rulings Officer, CRA

Postdoctoral fellows for which I had full or principal responsibility:

Name	Dates	Current Status
Parikshit Junnarkar	10/2019 – present	Postdoc, TU Darmstadt
Daniel Robaina	10/2016 – 12/2018	Software, Cyfex AG
Thomas Epelbaum	10/2014 – 3/2016	Data Scientist, MediaMobile
Jacopo Ghiglieri	10/2011 – 9/2014	Associate Scientist, CNRS Nantes
Aleksi Kurkela	10/2010 – 8/2013	Asst. Professor, Stavanger
Marcus Tassler	9/2009 – 8/2011	Finance: Nord/LB

Postdoctoral fellows for which I had secondary responsibility:

Name	Dates	Current Status
Richard Eager	9/2014 – 6/2015	Postdoc, Heidelberg
Gim-Seng Ng	7/2014 – 6/2015	Postdoc, Trinity Dublin
Ian Morrison	9/2013 – 6/2015	Asst. Professor, West Chester U
Beethoven Dos Santos	9/2013 – 8/2014	Brazil
Yifu Cai	10/2012 – 6/2015	Asst. Prof, Hefei
Zuowei Liu	10/2011 – 8/2014	Asst. Prof., Tsinghua Beijing
Shunji Matsuura	10/2011 – 8/2014	1QBit Information Technologies
Joshua Lapan	9/2011 – 8/2014	Finance (Renaissance Tech.)
Pat Scott	10/2010 – 12/2013	Lecturer, Imperial London
Jihye Seo	7/2010 – 9/2012	Data scientist, Adspert
Yi Wang	9/2009 – 8/2012	Asst. Professor, Hong Kong
Alejandra Castro	7/2009 – 8/2012	Assoc. Professor, Amsterdam
Bret Underwood	9/2008 – 7/2011	Assoc. Professor, PLU Tacoma
Andrew Frey	9/2006 – 6/2011	Assoc. Professor, Winnipeg U.
Omid Saremi	9/2006 – 8/2010	Apple (machine learning)
Anke Knauf	7/2006 – 8/2009	Project Manager, Charité (Berlin)
Hassan Firouzjahi	9/2006 – 5/2008	Professor, IPM Tehran
Sugumi Kanno	4/2006 – 3/2008	Asst. Prof, Osaka
Seoktae Koh	9/2006 – 9/2007	Prof, Jeju National (Korea)
Claudia De Rham	9/2005 – 8/2006	Professor, Imperial College London
Alessio Notari	9/2004 – 8/2007	Research Fellow, U. Barcelona
Horace Stoica	9/2003 – 8/2006	Finance, UK
Tirthabir Biswas	8/2003 – 7/2006	Assoc. Prof., Loyola New Orleans
Katlai Balaji	7/2003 – 5/2006	Tax consultant
Anupam Mazumdar	9/2002 – 8/2004	Assoc. Professor, Groningen
Damien Easson	9/2002 – 8/2003	Assoc. Prof., Arizona State

TEACHING

Term	Course	Ratings (1-5) Instructor; Course	Dept. avg ratings
Winter 03	Phys. 673: Theoretical High Energy Physics	4.33; 4.33	3.80;3.45
Fall 03	Phys. 224: Physics and Psychophysics of Music	4.72; 4.44	3.88;3.61
Winter 04	Phys. 673	4.71; 4.67	3.60;3.26
Fall 04	Phys. 224	4.60; 4.23	3.67;3.36
Fall 04	Phys. 610: Quantum Field Theory I	4.14; 4.00	3.67;3.36
Fall 05	Phys. 224	4.70; 4.31	3.79;3.47
Fall 05	Phys. 610	4.20; 4.10	3.79;3.47
Winter 06	Phys. 730: Standard Model of Part. Physics	5.00; 4.50	3.74;3.33
Fall 06	Phys. 224	4.5; 3.9	3.8;3.5
Fall 06	Phys. 610	4.1; 3.9	3.8;3.5
Winter 07	Phys. 673: Quantum Field Theory II	team	3.7;3.2
Winter 07	Phys. 731: Supersymmetry and Supergravity	team	3.7;3.2
Fall 07	Phys. 610	4.3; 4.0	3.9;3.5
Winter 08	Phys. 225: Musical Acoustics	4.7; 3.8	3.8;3.2
Winter 08	Phys. 673	team	3.8;3.2
Winter 08	Phys. 742: Standard Model of Part. Physics	not rated	3.8;3.2
2008-9	Sabbatical Year		
Fall 09	Phys. 180: Space Time and Matter	4.6; 4.3	4.2;4.1
Fall 09	Phys. 446: Majors Quantum Physics	4.2; 3.9	4.2;4.1
Winter 10	Phys. 742	4.8; 4.8	4.2;4.0
Winter 10	Phys. 673	team	4.2;4.0
2010-2012	Steacie Prize: Two-year buyout		
Winter 12	Phys. 742	4.7; 4.5	3.9; 3.8
Fall 12	Phys. 610	4.8; 4.5	4.2; 4.0
Winter 13	Phys. 142: Freshman E&M and Optics	4.0; 3.9	3.7; 3.5
Fall 13	Phys. 551: Quantum Theory (Grad. Quantum)	4.7; 4.4	4.3; 4.0
Winter 14	Phys. 142	3.4; 3.5	4.0; 3.8
Winter 14	Phys. 742	4.7; 4.4	4.3; 4.0
Fall 14	Phys. 551	4.8; 3.7	4.3; 4.1
Winter 15	Phys. 181: Everyday Physics	TBD	TBD
Winter 2015-2021	Schwerionenseminar		
Winter 2015/16	(TU Darmstadt) Standard Model		
Summer 2016	Quantum Field Theory I		
Winter 2016/17	Quantum Field Theory II		
Summer 2017	Theorie I (Mechanik)		
Winter 2017/18	Theorie II (Quantenmechanik)		
Summer 2018	Quantum Field Theory I		
Winter 2018/19	Theorie IV (Statistische Physik)		
Summer 2019	Rechenmethoden (Math Methods)		
Summer 2020	Theorie I (Mechanik)		
Winter 2020/21	Teilchenphysik		
Summer 2021	Quantum Field Theory I		

GRANTS RECIEVED

For German grants, the grant amount is the available funding after overheads have been taken into account, and there is no summer salary. McGill University does not charge overhead on government grants, faculty salaries are 12-month so grants do not pay summer salary, and there are no tuition or payroll expenses for students and postdocs. Therefore Canadian grant amounts appear small in comparison to US grants.

Spokesperson, CRC-TR 211, 2021-2025 (second funding period): \$2.2M/year research center grant, with 24 PIs at TU Darmstadt, GU Frankfurt, U Bielefeld, and JLU Gießen.

ELEMENTS, 2021-2025, \$4M/year Hessian Excellence Initiative center, with 22 PIs in Darmstadt, Frankfurt, GSI. Principal Investigator.

CRC-TR 211, 2017-2021, \$2M/year research center grant, with 23 PIs at TU Darmstadt, GU Frankfurt, U Bielefeld, and JLU Gießen. Principal Investigator and Member of the governing board.

NSERC discovery grant, 2011-2016, \$90K/year except year 1 which is \$40K (individual)

NSERC W.E.R. Steacie memorial fellowship, 2010-2012, \$125K/year over 2 years (individual)

NSERC discovery grant, 2006-2011, \$72K/year over 5 years (individual)

FQRNT team grant, 2005-2008, \$68K/year for 4 team members

FQRNT Nouveaux Chercheurs, 2003-2006, \$15K/year over 3 years (individual)

NSERC discovery grant, 2003-2006, \$50K/year over 3 years (individual)

McGill Research Development, 2002, \$20K (individual one-time)

McGill startup grant, 2002, \$50K (individual one-time)

EVENT ORGANIZATION

Workshop co-organizer,
Theoretical Foundations of Relativistic Hydrodynamics
BIRSS Banff, Alberta, 24-29 November 2019

Main conference organizer,
From QCD matter to Hadrons:
XLVII Hirscheegg conference on gross properties of nuclei
Hirscheegg, Austria, 13-19 January 2019

Conference co-organizer,
XQCD 2018 (about 100 participants)
Goethe University Frankfurt, 21-23 May 2018

Co-organizer,
Foundational Aspects of Relativistic Hydrodynamics
1-week workshop at the ECT* Trento
Trento Italy, 7-11 May 2018

Co-organizer,
Hard Probes 2015 (5 day conference in heavy ion physics)
McGill University, 29 June – 3 July, 2015

Co-organizer,
Jets, particle production and transport properties in collider and cosmological environments
(2-week program)
Mainz Institute for Theoretical Physics (Mainz Germany), 28 July – 8 August 2014.

Co-organizer,

Gauge Field Dynamics In and Out of Equilibrium (6-week program)
Institute for Nuclear Theory (Seattle), 5 March – 13 April 2012.

Main conference organizer,

Strong and Electroweak Matter 2010 (Conference, 120 participants)
McGill University, Montreal, 29 June – 2 July 2010.

Workshop co-organizer,

Workshop on embedded defects (about 30 participants)
McGill University, Montreal, 30 Sept – 2 Oct 2005.

Conference co-organizer and proceedings editor,

MRST (Montreal, Rochester, Syracuse, and Toronto) '98 conference in high energy physics,
“Towards the Theory of Everything,”
McGill University, Montreal, May 13-15, 1998

SERVICE

Divisional Associate Editor, *Physical Review Letters*, 1 Jan 2019 - 31 December 2021

Referee work: 267 papers as of 1 Jan 2020, for 26 journals: *Physical Review C, D, L, JHEP, JCAP, JSTAT, Adv. Theor. Math. Phys., Can. J. Phys., Class. Quant. Gravity, Euro. Phys. Journal A, Euro. Phys. Journal C, Int. J. Phys. A, Journal of Physics G, New Journal of Physics, J. Phys. Conference Series, Nuovo Cimento B, Phys. Lett. B, Nuclear Physics A, Nuclear Physics B, Pramana, Letters in Mathematical Physics, Rev. Mod. Phys., Physics Reports, Prog. Theo. Exper. Phys., Prog. Part. Nucl. Phys., Particles, Physica Scripta*

Grant application referee, to date, for 32 applications from 14 different agencies in 11 countries: NSERC (Canada), the NSF, DOE Young Investigators, the US Civilian Research and Development Foundation (CRDF), the Alexander von Humboldt Foundation, the Deutsche Forschungsgemeinschaft (DFG), the Swiss National Science Foundation (SNSF), the Science Foundation of Ireland, the Helsinki Institute for Physics, the Bergen Forsknings Stiftelse (Norway), the Austrian Science Fund (FWF), the Partnership for Advanced Computing in Europe (PRACE), the National Research Foundation of South Africa (NRF), and the Israel Science Foundation.

Member and *de facto* chair, Ad-hoc theory subcommittee for the *National Science and Engineering Research Council* subatomic physics long-range planning committee, Canada, 2005-6.

Committee work:

Undergraduate Curriculum Committee, 2002-5, 2006-8, 2009-10 [chair], 2012-13, 2013-15 [chair], Colloquium Committee, 2003-4, 2009-10, 2012-13, Chair, Scholarships Committee, 2004-8, Astrophysics Hiring Committee, 2003-4 [2 hires made], High Energy Theory Hiring Committee, 2003-4, 2004-5, 2005-6 [1 hire made each], Chair, UO Physics Program Review, 2006-7, Science Faculty Academic Committee, 2006-8, 2013-15, Science Faculty Teaching Prizes Committee, 2009-10, Mentoring and Equity Committee, 2012-13, 2013-14, 2014-15

Promotionsausschuss, 2015-present

RESEARCH INTERESTS

Most of my research focuses on questions of thermalization and dynamics of the Quark-Gluon Plasma, as well as other nonabelian plasmas. The Quark-Gluon Plasma is a state of matter which is achieved when nuclear matter is heated to temperatures above about 10^{12} Kelvin, as occurs in heavy ion collisions; it also occurred in the early Universe, before 10^{-6} seconds after the Big Bang. We know in principle we should be able to describe this state of matter using the theory of Quantum Chromodynamics, which describes the structure and evolution of the constituents of the atomic nucleus. But doing so in practice is proving an exceedingly interesting challenge.

At the moment I study several aspects of this problem. I am trying to understand how the Quark-Gluon Plasma behaves once it has been produced – features such as viscosity, electrical conductivity, and other transport properties. Historically this has mostly been attempted within a computational approach called “perturbation theory.” We are trying to understand how to carry out such calculations to higher precision than has previously been possible, and to understand better the limitations of this theory. I am

also trying more generally to understand structural aspects of the theory of hydrodynamics, independent of perturbation theory. I am also trying to understand how the plasma is formed during the collision of heavy ions, particularly how the very far-from-equilibrium conditions right after the collision could turn into the apparently near-equilibrium conditions which experimental data seem to imply. I am also studying an ambitious proposal to capture fully nonperturbatively the strongly-coupled physics of the Quark-Gluon Plasma, called N -particle irreducible resummation techniques.

A am also active in trying to understand the dynamics in the early Universe of the axion field, trying to determine how efficiently axions are produced in order to relate the axion's mass and dark matter abundance. The main complication is that the axionic field generically starts with a network of cosmic (axionic) strings, which can play an important role in particle production. The network dynamics is a two-scale problem and I am working on effective methods to eliminate the UV scale in a tractable numerical implementation. I also want to study the topological susceptibility of QCD as a function of temperature, which also plays a central role in axion dynamics.

Guy D. Moore, Publications and Presentations

BOOKS

Cliff P. Burgess and Guy D. Moore, *The Standard Model: a Primer*, Cambridge University Press, 542 pages, © 2007 (revised first edition © 2013)

RESEARCH PUBLICATIONS

Students and postdocs under my supervision are underlined

1. Guy D. Moore, Sören Schlichting, Niels Schlusser, and Ismail Soudi, “Non-perturbative determination of collisional broadening and medium induced radiation in QCD plasmas,” arXiv:2105.01679.
2. P. Thomas Jahn, Parikshit Junnarkar, Guy D. Moore, and Daniel Robaina, “Multicanonical reweighting for the QCD topological susceptibility,” *Physical Review D* 104 (2021) 014502, arXiv:2103.01069.
3. Kim V. Berghaus, Peter W. Graham, David E. Kaplan, Guy D. Moore, and Surjeet Rajendran, “Dark energy radiation,” arXiv:2012.10549.
4. Luis Altenkort, Alexander M. Eller, Olaf Kaczmarek, Lukas Mazur, and Guy D. Moore, “The sphaleron rate from Euclidean lattice correlators: an exploration,” *Physical Review D* 103 (2021), 114513, arXiv:2012.08279.
5. Guy D. Moore, “Shear viscosity in QCD and why it’s hard to calculate,” contribution to *Criticality in QCD and the Hadron Resonance Gas* (2020), arXiv:2010.15704.
6. Luis Altenkort, Alexander M. Eller, Olaf Kaczmarek, Lukas Mazur, and Guy D. Moore, “Heavy quark momentum diffusion from the lattice using gradient flow,” *Physical Review D* 103 (2021) 014511, arXiv:2009.13553.
7. Guy D. Moore and Niels Schlusser, “The nonperturbative contribution to asymptotic masses,” *Physical Review D* 102 (2020) 9, 094512, arXiv:2009.06614.
8. P. Thomas Jahn, Guy D. Moore, and Daniel Robaina, “Improved reweighting for QCD topology at high temperature,” arXiv:2002.01153.
9. Vincent B. Klaer and Guy D. Moore, “Global cosmic string networks as a function of tension,” *Journal of Cosmology and Astroparticle Physics* 06 (2020) 021 [arXiv:1912.08058]
10. Guy D. Moore and Niels Schlusser, “Transverse momentum broadening from the lattice,” *Physical Review D* 101 (2020) 014505 [arXiv:1911.13127]
11. Guy D. Moore and Niels Schlusser, “Full $O(a)$ improvement in EQCD,” *Physical Review D* 100 (2019) 034510 [arXiv:1905.09708]
12. A. Maximilian Eller, Jacopo Ghiglieri, and Guy D. Moore, “Thermal quarkonium mass shift from Euclidean correlators,” *Physical Review D* 99 (2019) 094042 [arXiv:1903.09064]
13. P. Thomas Jahn, Guy D. Moore, and Daniel Robaina, “Topological susceptibility well above T_c in pure-gluon QCD through reweighting,” *Physical Review D* 98 (2018) 054512 [arXiv:1806.01162]
14. P. Thomas Jahn, Guy D. Moore, and Daniel Robaina, “Estimating topological susceptibility lattice artifacts from flowed SU(2) calorons,” *European Physical Journal C* (2019) 6, 510 [arXiv:1805.11511]
15. Jacopo Ghiglieri, Guy D. Moore, and Derek Teaney, “Second-order hydrodynamics in QCD at NLO,” *Physical Review Letters* 121 (2018) 052302 [arXiv:1805.02663]
16. Ralf Rapp *et al* (31 authors including Guy Moore), “Extraction of heavy-flavor transport coefficients in QCD matter,” *Nuclear Physics A* 979 (2018) 21-86 [arXiv:1803.03824]
17. Guy D. Moore, “Stress-stress correlator in $\lambda\phi^4$ theory: Poles or a Cut?” *Journal of High Energy Physics* 1805 (2018) 084, arXiv:1803.00736.
18. Jacopo Ghiglieri, Guy D. Moore, and Derek Teaney, “QCD Shear Viscosity at (almost) Next-to-Leading Order,” *Journal of High Energy Physics* 1803 (2018) 179, arXiv:1802.09535
19. Alexander M. Eller and Guy D. Moore, “Gradient-flowed thermal correlators: how much flow is too much?” *Physical Review D* 97 (2018) 114507 [arXiv:1802.04562]

20. Guy D. Moore, “Axion dark matter and the Lattice,” *EPJ Web Conference* **175** (2018 01009 (*Lattice 2017* (Granada))) [arXiv:1709.09466]
21. Vincent B. Klaer and Guy D. Moore, “The dark matter axion mass,” *Journal of Cosmology and Astroparticle Physics* **1711** (2017) 049 [arXiv:1709.09466]
22. Vincent B. Klaer and Guy D. Moore, “How to Simulate Global Cosmic Strings with Large String Tension,” *Journal of Cosmology and Astroparticle Physics* **1710** (2017) 043 [arXiv:1707.05566]
23. Dietrich Bödeker and Guy D. Moore, “Electroweak Bubble Wall Speed Limit,” *Journal of Cosmology and Astroparticle Physics* **1705** (2017) 025 [arXiv:1703.08215]
24. James M. Cline, Weicong Huang, and Guy D. Moore, “Challenges for Models with Composite States,” *Physical Review* **D94** (2016) 055029 [arXiv:1607.07865]
25. Guy D. Moore, “Intercommutation of U(1) Global Cosmic Strings,” arXiv:1604.02356
26. Leesa Fleury and Guy D. Moore, “Axion String Dynamics in 2+1 Dimensions,” *Journal of Cosmology and Astroparticle Physics* **1605** (2016) 005 [arXiv:1602.04818]
27. Guy D. Moore, “Condensates in Relativistic Scalar Theories,” *Physical Review* **D 93** (2016) 6, 065043 [arXiv:1511.00697]
28. Jacopo Ghiglieri, Guy D. Moore, and Derek Teaney, “Jet-Medium Interactions at NLO in a Weakly-Coupled Quark-Gluon Plasma,” *Journal of High Energy Physics* **1603** (2016) 095 [arXiv:1509.07773]
29. Leesa Fleury and Guy D. Moore, “Axion Dark Matter: Strings and their Cores,” *Journal of Cosmology and Astroparticle Physics* **1601** (2016) 004 [arXiv:1509.00026]
30. Thomas Epelbaum, Francois Gelis, Sangyong Jeon, and Guy D. Moore, “Kinetic Theory of a Longitudinally Expanding System of Scalar Particles,” *Journal of High Energy Physics* **1509** (2015) 117 [arXiv:1506.05580].
31. Jacopo Ghiglieri and Guy D. Moore, “Low Mass Thermal Dilepton Production at NLO in a Weakly Coupled Quark-Gluon Plasma,” *Journal of High Energy Physics* **1214**, 029 (2014) [arXiv:1410.4203]
32. Mark C. Abraao York and Guy D. Moore, “2PI Resummation in 3D SU(N) Higgs Theory,” *Journal of High Energy Physics* 1410 (2014) 105 [arXiv:1407.3816]
33. Pavel Kovtun, Guy D. Moore, and Paul Romatschke, “Towards an Effective Action for Relativistic Dissipative Hydrodynamics,” *Journal of High Energy Physics* 1407 (2014) 123 [arXiv:1405.3967]
34. James M. Cline, Yasaman Farzan, Zuowei Liu, Guy D. Moore, and Wei Xue, “3.5 KeV X-Rays as the ‘21 cm Line’ of Dark Atoms, and a Link to Light Sterile Neutrinos,” *Physical Review* **D 89** (2014) 12, 121302 [arXiv:1404.3729]
35. Michela D’Onofrio, Alekski Kurkela, Guy D. Moore, “Renormalization of Null Wilson Lines in EQCD,” *Journal of High Energy Physics* 1403 (2014) 125 [arXiv:1401.7951]
36. Mark C. Abraao York, Alekski Kurkela, Egang Lu, Guy D. Moore, “UV Cascade in Classical Yang-Mills via Kinetic Theory,” *Physical Review* **D 89** (2014) 074036 [arXiv:1401.3751]
37. James M. Cline, Zuowei Liu, Guy D. Moore, Wei Xue, “Composite strongly interacting dark matter,” *Physical Review* **D 90** (2014) 015023 [arXiv:1312.3325].
38. James M. Cline, Zuowei Liu, Guy D. Moore, Wei Xue, “Scattering properties of dark atoms and molecules,” *Physical Review* **D 89** (2014) 043514 [arXiv:1311.6468].
39. Jacopo Ghiglieri, Juhee Hong, Alekski Kurkela, Egang Lu, Guy D. Moore, and Derek Teaney, “Next-to-leading order thermal photon production in a weakly coupled quark-gluon plasma,” *Journal of High Energy Physics* 1305, 010 (2013). [arXiv:1302.5970]
40. Guy D. Moore and Kiyoumars A. Sohrabi, “Thermodynamical second-order hydrodynamic coefficients,” *Journal of High Energy Physics* **1211**, 148 (2012). [arXiv:1210.3340]
41. Alekski Kurkela and Guy D. Moore, “New algorithm for classical gauge theory simulations in an expanding box,” accepted in *Physical Review* **D**. [arXiv:1209.4091]

42. James M. Cline, Andrew R. Frey and Guy D. Moore, “Composite Magnetic Dark Matter and the 130 GeV Line,” *Physical Review* **D86** 115013. [arXiv:1208:2685[hep-ph]].
43. Aleksi Kurkela and Guy D. Moore, “UV Cascade in Classical Yang-Mills Theory,” *Physical Review* **D86** 056008 (2012) [arXiv:1207.1663[hep-ph]].
44. Mark C. Abraao York and Guy D. Moore, “3-loop 3PI Effective Action for 3D SU(3) QCD,” *Journal of High Energy Physics* **1206**, 077 (2012). [arXiv:1202.4756[hep-ph]].
45. Aleksi Kurkela and Guy D. Moore, “Bjorken Flow, Plasma Instabilities, and Thermalization,” *Journal of High Energy Physics* **1111**, 120 (2011). [arXiv:1108.4684 [hep-ph]].
46. Aleksi Kurkela and Guy D. Moore, “Thermalization in Weakly Coupled Nonabelian Plasmas,” *Journal of High Energy Physics* **1112**, 44 (2011). [arXiv:1107.5050 [hep-ph]].
47. Mark A. York, Guy D. Moore, “Exploring the Phase Diagram with Taylor Series: Epic Voyage or Just Another Bad Trip,” [arXiv:1106.2535 [hep-lat]].
48. J. M. Cline, Guy D. Moore, and Yi Wang, “Chain Inflation Reconsidered,” *Journal of High Energy Physics* **1108**, 032 (2011). [arXiv:1106.2188 [hep-th]].
49. P. Kovtun, Guy D. Moore, and P. Romatschke, “The stickiness of sound: An absolute lower limit on viscosity and the breakdown of second order relativistic hydrodynamics,” *Physical Review* **D84**, 025006 (2011). [arXiv:1104.1586 [hep-ph]].
50. Egang Lu and Guy D. Moore, “The Bulk Viscosity of a Pion Gas,” *Physical Review* **C83**, 044901 (2011). [arXiv:1102.0017 [hep-ph]].
51. Guy D. Moore and Marcus Tassler, “The Sphaleron Rate in SU(N) Gauge Theory,” *Journal of High Energy Physics* **1102**, 105 (2011). [arXiv:1011.1167 [hep-ph]].
52. Guy D. Moore and Kiyoumars Sohrabi, “Kubo Formulae for Second-Order Hydrodynamic Coefficients,” *Physical Review Letters* **106**, 122302 (2011). [arXiv:1007.5333 [hep-ph]].
53. Kevin Dusling, Guy D. Moore, and Derek Teaney, “Radiative energy loss and v_2 spectra for viscous hydrodynamics,” *Physical Review* **C 81**:034907 (2010); arXiv:0909.0754
54. Guang-You Qin, Jorg Ruppert, Charles Gale, Sangyong Jeon, and Guy D. Moore, “Jet energy loss, photon production, and photon-hadron correlations at RHIC,” *Physical Review* **C 80**:054909 (2009); arXiv:0906.3280 [hep-ph].
55. Dietrich Bodeker and Guy D. Moore, “Can electroweak bubble walls run away?,” *Journal of Cosmology and Astroparticle Physics* 0905:009 (2009), arXiv:0903.4099 [hep-ph].
56. Mikko Laine, Guy D. Moore, Owe Philipsen and Marcus Tassler, “Heavy Quark Thermalization in Classical Lattice Gauge Theory: Lessons for Strongly-Coupled QCD,” *Journal of High Energy Physics* 0905:014 (2009), arXiv:0902.2856 [hep-ph].
57. Simon Caron-Huot, Mikko Laine and Guy D. Moore, “A way to estimate the heavy quark thermalization rate from the lattice,” *Journal of High Energy Physics* **0904** (2009) 053; arXiv:0901.1195 [hep-lat].
58. Mark A. York and Guy D. Moore, “Second order hydrodynamic coefficients from kinetic theory,” *Physical Review* **D 79** (2009) 054011; arXiv:0811.0729 [hep-ph].
59. Joshua W. Elliott, Joel Giedt and Guy D. Moore, “Lattice four-dimensional N=4 SYM is practical,” *Physical Review* **D 78** (2008) 081701; arXiv:0806.0013 [hep-lat].
60. Guy D. Moore and Omid Saremi, “Bulk viscosity and spectral functions in QCD,” *Journal of High Energy Physics* **0809** (2008) 015; arXiv:0805.4201 [hep-ph].
61. Simon Caron-Huot and Guy D. Moore, “Heavy quark diffusion in QCD and $\mathcal{N}=4$ SYM at next-to-leading order,” *Journal of High Energy Physics* **0802** (2008) 081; arXiv:0801.2173 [hep-ph].
62. Guang-You Qin, Jorg Ruppert, Charles Gale, Sangyong Jeon, Guy D. Moore, and Munshi G. Mustafa, “Radiative and collisional jet energy loss in the quark-gluon plasma at RHIC,” *Physical Review Letters* **100** (2008) 072301; arXiv:0710.0605 [hep-ph].

63. Simon Caron-Huot and Guy D. Moore, “Heavy quark diffusion in perturbative QCD at next-to-leading order,” *Physical Review Letters* **100** (2008) 052301; arXiv:0708.4232 [hep-ph].
64. Jonathan W. Sharman and Guy D. Moore, “Decoherence due to the Horizon after Inflation,” *Journal of Cosmology and Astroparticle Physics* **020** (2007) 0711; arXiv:0708.3353 [gr-qc].
65. Joshua W. Elliott and Guy D. Moore, “3D $\mathcal{N}=1$ SYM Chern-Simons theory on the Lattice,” *Journal of High Energy Physics* **067** (2007) 0711; arXiv:0708.3214 [hep-lat].
66. Guy D. Moore, “Next-to-Leading Order Shear Viscosity in $\lambda\phi^4$ Theory,” *Physical Review* **D76** (2007) 107702; arXiv:0706.3692 [hep-ph].
67. P. Arnold and Guy D. Moore, “Non-Abelian Plasma Instabilities for Extreme Anisotropy,” *Physical Review* **D 76** (2007) 045009; arXiv:0706.0490 [hep-ph].
68. Simon Caron-Huot, S. Jeon and Guy D. Moore, “Shear viscosity in weakly coupled $N = 4$ super Yang-Mills theory compared to QCD,” *Physical Review Letters* **98** (2007) 172303; hep-ph/0608062.
69. P. Arnold, C. Dogan and Guy D. Moore, “The bulk viscosity of high-temperature QCD,” *Physical Review* **D 74** (2006) 085021; hep-ph/0608012.
70. Simon Caron-Huot, P. Kovtun, Guy D. Moore, A. Starinets and L. G. Yaffe, “Photon and dilepton production in supersymmetric Yang-Mills plasma,” *Journal of High Energy Physics* **0612** (2006) 015; hep-th/0607237.
71. Guy D. Moore and Jean-Marie Robert, “Dileptons, spectral weights, and conductivity in the quark-gluon plasma,” hep-ph/0607172.
72. Guy D. Moore and Horace Stoica, “Defect Formation with Bulk Fields,” *Physical Review* **D 74** (2006) 065003; hep-th/0605070.
73. Peter Arnold and Guy D. Moore, “The Turbulent Spectrum Created by Non-Abelian Plasma Instabilities,” *Physical Review* **D 73** (2006) 025013; hep-ph/0509226.
74. Peter Arnold and Guy D. Moore, “QCD Plasma Instabilities: The Nonabelian Cascade,” *Physical Review* **D 73** (2006) 025006; hep-ph/0509206.
75. Joshua W. Elliott and Guy D. Moore, “Three Dimensional $N = 2$ Supersymmetry on the Lattice,” *the Journal of High Energy Physics* **0511** (2005) 010; hep-lat/0509032.
76. Peter Arnold, Guy D. Moore, and Larry Yaffe, “The Fate of Non-Abelian Plasma Instabilities in 3+1 Dimensions,” *Physical Review* **D 72** (2005) 054003; hep-ph/0505212.
77. Joshua Elliott, Guy D. Moore, and Horace Stoica, “Constraining the New Aether: Gravitational Cherenkov Radiation,” *the Journal of High Energy Physics* **0508** (2005) 066; hep-ph/0505211.
78. Simon Turbide, Charles Gale, Sangyong Jeon, and Guy D. Moore, “Energy Loss of Leading Hadrons and Direct Photon Production in Evolving Quark-Gluon Plasma,” *Physical Review* **C 72** (2005) 014906; hep-ph/0502248.
79. Guy D. Moore and Derek Teaney, “How Much Do Heavy Quarks Thermalize in a Heavy Ion Collision?” *Physical Review* **C 71** (2005) 064904; hep-ph/0412346.
80. Peter Arnold, Guy D. Moore, and Larry Yaffe, “Apparent Thermalization due to Plasma Instabilities in Quark-Gluon Plasma,” *Physical Review Letters* **94** (2005) 072302; nucl-th/0409068.
81. Olivier Gagnon and Guy D. Moore, “Limits on Lorentz Violation from the Highest Energy Cosmic Rays,” *Physical Review* **D 70** (2004) 065002; hep-ph/0404196.
82. James Cline, Sangyong Jeon, and Guy D. Moore, “The Phantom Menaced: Constraints on Low-Energy Effective Ghosts,” *Physical Review* **D 70**, 043543; hep-ph/0311312.
83. F. Arleo *et. al.*, “Photon Physics in Heavy Ion Collisions at the LHC,” Writeup of the working group on Photon Physics for the CERN Yellow Report on Hard Probes in Heavy Ion Collisions at the LHC, hep-ph/0311131.
84. Sangyong Jeon and Guy D. Moore, “Energy Loss of Leading Partons in a Thermal QCD Medium,” *Physical Review* **C 71** (2005) 034901; hep-ph/0309332.

85. Peter Arnold, Jonathan Lenaghan, and Guy D. Moore, “QCD Plasma Instabilities and Bottom-Up Thermalization,” *the Journal of High Energy Physics* **0308** (2003) 002; hep-ph/0307325.
86. Peter Arnold, Guy D. Moore, and Larry Yaffe, “Transport Coefficients in High Temperature Gauge Theories II: Beyond Leading Log,” *the Journal of High Energy Physics* **0305** (2003) 051; hep-ph/0302165.
87. Andreas Ipp, Guy D. Moore, and Anton Rebhan, “Comment on and Erratum to ‘Pressure of Hot QCD at Large N_f ,’” *the Journal of High Energy Physics* **0301** (2003) 037; hep-ph/0301057.
88. Patrick Aurenche, Francois Gelis, Guy D. Moore, and Heitham Zaraket, “Landau-Pomeranchuk-Migdal Resummation for Dilepton Production,” *the Journal of High Energy Physics*, **0212** (2002) 006; hep-ph/0211036.
89. Peter Arnold, Guy D. Moore, and Larry Yaffe, “Effective Kinetic Theory for High Temperature Gauge Theories,” *the Journal of High Energy Physics*, **0301** (2003) 030; hep-ph/0209353.
90. Guy D. Moore, “Pressure of Hot QCD at Large N_f ,” *the Journal of High Energy Physics* **0210** (2002) 055; hep-ph/0209190.
91. Peter Arnold, Guy D. Moore, and Larry Yaffe, “Photon and Gluon Emission in Relativistic Plasmas,” *Journal of High Energy Physics* **0206** (2002) 030; hep-ph/0204343.
92. Cliff Burgess, James Cline, Elise Filotas, Joaquim Matias, and Guy D. Moore, “Loop-Generated Bounds on Changes to the Gravitation Dispersion Relation,” *Journal of High Energy Physics* **0203** (2002) 043; hep-ph/0201082.
93. Peter Arnold, Guy D. Moore, and Larry Yaffe, “Photon Emission from Quark-Gluon Plasma: Complete Leading Order Results,” *Journal of High Energy Physics* **0112** (2001) 009; hep-ph/0111107.
94. Guy D. Moore, “Problems with Lattice Methods for Electroweak Preheating,” *Journal of High Energy Physics* **0111** (2001) 021; hep-ph/0109206.
95. Peter Arnold, Guy D. Moore, and Larry Yaffe, “Photon Emission from Ultrarelativistic Plasmas,” *Journal of High Energy Physics* **0111** (2001) 057; hep-ph/0109064.
96. Peter Arnold, Guy D. Moore, and Boris Tomasik, “ T_C for Homogeneous Dilute Bose Gases: a Second Order Result,” *Physical Review* **A 65** (2002) 013606; cond-mat/0107124.
97. Guy D. Moore and Ann E. Nelson, “Lower Bound on the Propagation Speed of Gravity from Gravitational Cherenkov Radiation,” *Journal of High Energy Physics* **0109** (2001) 023; hep-ph/0106220.
98. Guy D. Moore, “Transport Coefficients in Large N_F Gauge Theory: Testing Hard Thermal Loops,” *Journal of High Energy Physics* **0105** (2001) 039; hep-ph/0104121.
99. Guy D. Moore, Kari Rummukainen, and Anders Tranberg, “Nonperturbative Computation of the Bubble Nucleation Rate in the Cubic Anisotropy Model,” *Journal of High Energy Physics* **0104** (2001) 017; hep-ph/0103036.
100. Peter Arnold and Guy D. Moore, “Transition Temperature of a Dilute Homogeneous Imperfect Bose Gas,” *Physical Review Letters* **87** (2001) 120401; cond-mat/0103228.
101. Peter Arnold and Guy D. Moore, “Monte-Carlo Simulation of $O(2)$ ϕ^4 Field Theory in Three Dimensions,” *Physical Review* **E 64** (2001) 066113; cond-mat/0103227.
102. Peter Arnold, Guy D. Moore, and Larry Yaffe, “Transport coefficients in High Temperature Gauge Theories I: Leading Log Results,” *Journal of High Energy Physics* **0011** (2000) 001; hep-ph/0010177.
103. Guy D. Moore and Kari Rummukainen, “Electroweak Bubble Nucleation, Nonperturbatively,” *Physical Review* **D 63** (2001) 045002; hep-ph/0009132.
104. Guy D. Moore, “Electroweak Bubble Wall Friction: Analytic Results,” *Journal of High Energy Physics* **0003** (2000) 006; hep-ph/0001274.
105. Guy D. Moore, “Sphaleron Rate in the Symmetric Electroweak Phase,” *Physical Review* **D 62** (2000) 085011; hep-ph/0001216.
106. Dietrich Bödeker, Guy D. Moore, and Kari Rummukainen, “Chern-Simons Number Diffusion and Hard Thermal Loops on the Lattice,” *Physical Review* **D 61** (2000) 056003; hep-ph/9907545.

107. Guy D. Moore and Kari Rummukainen, “Classical Sphaleron Rate on Fine Lattices,” *Physical Review D* **61** (2000) 105008; hep-ph/9906259.
108. James Cline, Guy D. Moore, and Geraldine Servant, “Was the Electroweak Phase Transition Preceded by a Color Broken Phase?,” *Physical Review D* **60** (1999) 105035; hep-ph/9902220.
109. Guy D. Moore, “The Sphaleron Rate: Bödeker’s Leading Log,” *Nuclear Physics B* **568** (2000) 367-404; hep-ph/9810313.
110. James Cline, Jose Espinosa, Guy D. Moore, and Antonio Riotto, “String Mediated Electroweak Baryogenesis: A Critical Analysis,” *Physical Review D* **59** (1999) 065014; hep-ph/9810261.
111. James Cline and Guy D. Moore, “Supersymmetric Electroweak Phase Transition: Baryogenesis Versus Experimental Constraints,” *Physical Review Letters* **81** (1998) 3315-3318; hep-ph/9806354.
112. Guy D. Moore, “Measuring the Broken Phase Sphaleron Rate Nonperturbatively,” *Physical Review D* **59** (1999) 014503, hep-ph/9805264.
113. Guy D. Moore, “A Nonperturbative Measurement of the Broken Phase Sphaleron Rate,” *Physics Letters B* **439** (1998), 357-365; hep-ph/9801204.
114. Guy D. Moore, Chaoran Hu, and Berndt Müller, “Chern-Simons Number Diffusion with Hard Thermal Loops,” *Physical Review D* **58** (1998) 045001; hep-ph/9710436.
115. Guy D. Moore, “ $O(a)$ Errors in 3-D $SU(N)$ Higgs Theories,” *Nuclear Physics B* **523** (1998) 569-593; hep-lat/9709053.
116. Guy D. Moore, “Chern-Simons number diffusion in the symmetric electroweak phase,” PhD. thesis, Princeton University, unpublished.
117. Guy D. Moore, “Computing the Strong Sphaleron Rate,” *Physics Letters B* **412** (1997) 359-370; hep-ph/9705248.
118. Guy D. Moore and Neil Turok, “Lattice Chern-Simons number Without Ultraviolet Problems,” *Physical Review D* **56** (1997) 6533-6546; hep-ph/9703266.
119. Guy D. Moore, “Curing $O(a)$ Errors in 3-D Lattice $SU(2)\times U(1)$ Higgs Theory,” *Nuclear Physics B* **493** (1997) 439-474; hep-lat/9610013.
120. Guy D. Moore and Neil Turok, “Classical Field Dynamics of the Electroweak Phase Transition,” *Physical Review D* **55** (1997) 6538-6560; hep-ph/9608350.
121. Guy D. Moore, “Improved Hamiltonian for Minkowski Yang-Mills Theory,” *Nuclear Physics B* **480** (1996) 689-728; hep-lat/9605001.
122. Guy D. Moore, “Motion of Chern-Simons Number at High Temperatures under a Chemical Potential,” *Nuclear Physics B* **480** (1996) 657-688; hep-ph/9603384.
123. Guy D. Moore, “Fermion Fluctuation Determinant and the Sphaleron Bound,” *Physical Review D* **53** (1996) 5906-5917; hep-ph/9508405.
124. Guy D. Moore and Tomislav Prokopec, “How Fast can the Wall Move? A Study of the Electroweak Phase Transition Dynamics,” *Physical Review D* **52** (1995) 7182-7204; hep-ph/9506475.
125. Guy D. Moore and Tomislav Prokopec, “Bubble Wall Velocity in a First Order Electroweak Phase Transition,” *Physical Review Letters* **75** (1995) 777-780; hep-ph/9503296.
126. Robert Lewis and Guy D. Moore, “Computer Search for Nilpotent Complexes,” *Experimental Mathematics* **6** (1997) 239-246. (This was my undergraduate mathematics thesis.)

CONFERENCE PROCEEDINGS EDITED

James Cline, Marcia Knutt, Gregory Mahlon, and Guy D. Moore, eds., *Toward the Theory of Everything: Proceedings, 20th Annual Meeting on High Energy Physics, MRST’98*, Montreal, Canada, 13-15 May 1998, American Institute for Physics, publisher, copyright 1998.

PRESENTATIONS SINCE FALL 2002

1. 2 July 2021: Seminar, University of Florida, “QCD Axion Mass-Dark Matter Density Relation.”
2. 16 April 2021: Talk at Symposium in honor of Professor Jochen Wambach, ECT* Trento, “Photons and dileptons at high temperatures.”
3. 9 April 2021: Seminar, TNT (UNC/NC State/Duke, North Carolina), “Transport, the Lattice, and Noise Reduction.”
4. 26 February 2021: Seminar, Groningen (Netherlands), “QCD, the Axion, and Dark Matter.”
5. 20 January 2021: Seminar, University of Edinburgh, “Reweighting for Topology at High T .”
6. 29 July 2020: Invited talk at conference “Criticality in QCD and the Hadron Resonance Gas,” Wrocław and Bielefeld (held online due to Covid-19), “Shear viscosity in QCD, and Why it’s Hard to Calculate.”
7. 15 July 2020: Colloquium, Goethe University Frankfurt a.M.: “QCD, the Axion, and Dark Matter.”
8. 9 March 2020: Invited talk at workshop “Axion Cosmology,” Munich Institute for Astro- and Particle Physics: “Effective Actions for Cosmic String Simulation.”
9. 6 December 2019: Colloquium, Heidelberg University: “Could the Dark Matter be the QCD Axion?”
10. 17 August 2019: invited 30-minute talk at GNOME (Global Network of Optical Magnetometers for Exotic physics) collaboration meeting, Mainz: “Domain walls in axion and ALP models.”
11. 22 to 26 July 2019: 4 90-minute lectures at MITP summer school “Non-perturbative Phenomena and the Early Universe” (Mainz), on the topic of finite-temperature field theory.
12. 27 June 2019: Colloquium, Universität Münster (Westfalen): “Could the Dark Matter be the QCD Axion?”
13. 13 March 2019: Presentation at CRC-TR 211 meeting in Schleiden: “Transport and Hard Probes.”
14. 22, 25, 26 February 2019: Three 75-minute invited lectures at “Arbeitstreffen Kernphysik 2019,” Schleching (Bavaria) (invitation-only workshop on current topics in nuclear physics). The lectures covered dark matter: evidence, theoretical proposals and their motivations, and experimental searches.
15. 30 November 2018: Invited presentation at conference “Vienna Central European Seminar 2018,” Vienna Austria, “QCD topological susceptibility at high temperature via reweighting.”
16. 32 October 2018: Invited talk at conference “Cosmic topological defects: dynamics and multi-messenger signatures,” Leiden Netherlands, “High-tension global strings for axions.”
17. 13 June 2018: Seminar, Uni Karlsruhe, “Axion: mass dark matter abundance relation.”
18. 5 April 2018: Invited presentation at conference “Fire and Ice: hot QCD meets cold and dense matter,” Saariselkä Finland, “Axion: mass dark matter abundance relation.”
19. 14 March 2018: Presentations at CRC-TR 211 meeting at ZIF Bielefeld: “Topology and the Lattice,” and “Shear Viscosity at (almost) NLO.”
20. 9 March 2018: Invited contribution to the meeting Advances in Lattice Field Theory (Zurich), “Reweighting for Topology at High Temperature.”
21. 18 December 2017: Seminar, EPFL Lausanne, “Axion: Mass Dark Matter Abundance Relation.”
22. 17 November 2017: Colloquium, NIKHEF Amsterdam, “Axion: Mass Dark Matter Abundance Relation.”
23. 16 November 2017: Seminar, University of Leiden, “Analytic structure of stress-stress correlators at high temperature.”
24. 16 October 2017: Invited contribution at 4’th LISA working group workshop, Mainz MITP: “Bubble wall runaways?”
25. 6 September 2017: Seminar, McGill University, “Axion: Mass Dark Matter Abundance Relation.”
26. 22 June 2017: Invited plenary talk at Lattice 2017 conference (Granada), “Axions in Cosmology: Needs from Lattice.”

27. 14 June 2017: Talk at Mainz/Frankfurt/Darmstadt theorist meeting, “Axion Dark Matter and the Lattice.”
28. 11 May 2017: Seminar, Technische Universität München, “Axion: Mass Dark Matter Abundance Relation.”
29. 8 March 2017: Invited presentation at Oxford mini-workshop on analytic properties of thermal correlators, “Analytics of Txy Txy correlator in lambda phi4 theory.”
30. 18 January 2017: Seminar, DESY Hamburg, “Axion: Mass Dark Matter Abundance Relation.”
31. 2 December 2016: Invited presentation at Bad Honnef DFG Tagungsprogramm, “Shear Viscosity in QCD.”
32. 13 September 2016: Colloquium, Brookhaven National Laboratory theory group, “Transport in QCD: a Theorist’s Perspective.”
33. 18 July 2016: Presentation at EMMI Rapid Reaction Taskforce on Heavy Quarks (GSI), “pQCD Perspective on Heavy Quark Diffusion.”
34. 15 June 2016: Seminar, GSI (Darmstadt), “Jets and Medium Modification.”
35. 18 May 2016: PRISMA colloquium, University of Mainz, “Axion: Mass Dark Matter Abundance Relation.”
36. 10 May 2016: General-audience talk in “Was Steckt Dahinter” series, “Von was bekommen die Galaxien ihre Massen?” (in German)
37. 28 April 2016: Invited talk at conference “Kosmologietag,” Bielefeld, “Axion: Mass Dark Matter Abundance Relation.”
38. 14 April 2016: Seminar University of Helsinki, “Axion: Mass Dark Matter Abundance Relation.”
39. 24 March 2016: Seminar MPI Physics, Munich, “Axion: Mass Dark Matter Abundance Relation.”
40. 9 March 2016: Theory Colloquium, CERN, “Axion: Mass Dark Matter Abundance Relation.”
41. 22 January 2016: Invited presentation at conference “QCD Matter: Dense and Hot,” Hirschegg Austria, “Jet-Medium Interactions at NLO.”
42. 10 December 2015: Seminar, Heidelberg, “Axion: Mass–Dark Matter Abundance Relation.”
43. 27 October 2015: Colloquium, GSI, “Axion: Mass–Dark Matter Abundance Relation.”
44. 4 lectures at the DK Indian-Summer School 2015, 21-25 September 2015 in Traunkirchen, Austria: “Lectures on the Quark-Gluon Plasma.”
45. 3 July 2015: Colloquium, Technische Universität Darmstadt, “Symmetries, Dark Matter, and the Axion,”
46. 29 July 2014: Invited talk at workshop “Jets, Particle Production and Transport Properties in Collider and Cosmological Environments,” Mainz Institute for Theoretical Physics, “Equilibration at Weak Coupling.”
47. 20 May 2014: Colloquium, Technische Universität Darmstadt, “Transport and Hydrodynamics in Quantum Chromodynamics.” Second 20 minute presentation, “The Discovery of the Higgs.”
48. 15 May 2014: Invited talk at workshop “Hydrodynamics of Strongly Coupled Fluids,” Trento, Italy, “Fluctuations and Nonlinearity in Hydrodynamics.”
49. 27 February 2014: Invited talk at workshop “Strongly Coupled Systems Away from Equilibrium,” Simons Center, Stonybrook NY, “Second-Order Relativistic Hydrodynamics.”
50. 12 December 2013: Invited general interest lecture in “Cutting Edge Lectures” series, McGill University: “How well have we tested Einstein’s theory of Special Relativity?”
51. 14 November 2013: Seminar, McGill University, “Photons and Transport at NLO.”
52. 4 August 2013: Invited talk at conference “Extreme QCD 2013,” Bern, Switzerland, “Photons and Transport at NLO.”

53. 18 June 2013: Invited talk at conference “High energy, High density, and Hot QCD,” ECT* Center, Trento Italy, “Photons and Transport at NLO.”
54. December 2012: Colloquium, University of Washington, “Relativistic Hydrodynamics and Heavy Ion Collisions.”
55. December 2012: Seminar, University of Washington, “QGP Photon Production: Beyond Leading Order.”
56. July 2012: Talk at conference “Strong and Electroweak Matter 2012,” Swansea Wales UK, “Gauge field evolution at high occupancy.”
57. December 2011: Invited talk at workshop “EMMI Rapid Reaction Taskforce on Thermalization in the Quark-Gluon Plasma,” Heidelberg Germany, “Plasma Instabilities: Review.”
58. December 2011: Seminar, Université de Paris (Saclay), “Second-order Relativistic Hydrodynamics.”
59. December 2011: Invited talk at workshop “Workshop on Thermal Photons and Dileptons,” Brookhaven National Labs, Upton New York, “Medium and Medium-Jet Photons in Perturbation Theory.”
60. October 2011: Colloquium, Goethe University Frankfurt, “The Strange Physics of Nonabelian Plasmas.”
61. September 2011: Seminar at McGill University, “Equilibration in Weakly-Coupled Nonabelian Plasmas.”
62. April 2011: Invited talk at conference “Werner Israel Symposium,” University of Victoria (BC), “Nonlinearities in Hydrodynamics.”
63. April 2011: Seminar, University of Maryland, “Second-order Relativistic Hydrodynamics.”
64. April 2011: Seminar, University of Virginia, “Second-order Relativistic Hydrodynamics.”
65. February 2011: Seminar, Columbia University “Second-order Relativistic Hydrodynamics.”
66. November 2010: Seminar, University of Washington (Seattle), “Second-order Relativistic Hydrodynamics.”
67. October 2010: Seminar, Perimeter Institute, Waterloo ON, “Second-order Relativistic Hydrodynamics.”
68. August 2010: Invited talk at workshop “Hot Matter: Quasiparticles or Quasinormal Modes,” Erwin Schrödinger Institute, Vienna, “Second-Order Hydro from Kubo Relations.”
69. April 2010: Invited talk at workshop “P and CP Odd Effects in Hot and Dense Matter,” Brookhaven National Labs, Upton NY, “What We Know about the SU(3) Sphaleron Rate.”
70. April 2010: Invited talk at workshop “Critical Examination of RHIC Paradigms,” University of Austin (TX), “How Well can we Treat Energy Loss and Hydrodynamics?”
71. April 2010: Seminar, McGill University, “Preheating in Higgs Inflation.”
72. March 2010: Seminar, Concordia University, “Can Electroweak Bubble Walls Run Away?”
73. June 2009: Universidad Autonoma Madrid, “Bulk Viscosity in QCD.”
74. June 2009: Invited talk at conference “Canadian Association of Physicists 2009 annual conference,” as recipient of the CAP Herzberg award, “Is QCD Matter ‘Thin’ or ‘Thick’?”
75. May 2009: Talk at workshop “Strings and QCD,” Universitat de Barcelona, “Second Order Hydro in QCD and SYM theory.”
76. May-June 2009: Graduate lecture series (9 1-hour lectures) on “Finite Temperature and Nonequilibrium Field Theory,” for students at Universidad Autonoma Madrid.
77. January 2009: Seminar, Goethe University Frankfurt, “Second order Hydrodynamics in QCD.”
78. January 2009: Seminar, Universidad Autonoma Madrid, “Second order Hydrodynamics in QCD.”
79. January 2009: Seminar, University of Darmstadt, “Second order Hydrodynamics in QCD.”

80. December 2008: Talk at workshop “Second Workshop of the Theory-Experiment Collaboration for Hot QCD Matter,” Berkeley (participated remotely), “Second Order Hydrodynamics in QCD.”
81. December 2008: Seminar, University of Heidelberg, “Second order Hydrodynamics in QCD.”
82. December 2008: Seminar, University of Münster (Germany), “Second order Hydrodynamics in QCD.”
83. November 2008: Seminar, Imperial College London (UK), “Second order Hydrodynamics in QCD.”
84. November 2008: Colloquium, Bielefeld University, “The 2008 Nobel Prize in Physics.”
85. September 2008: Invited talk at workshop “Initial Conditions in Heavy Ion Collisions,” International Center, Goa India, “Transport Coefficients in QCD.”
86. September 2008: Series of 3 lectures (90 min. each) at advanced graduate program, International Center, Goa India: “Real-time Dynamics on the Lattice.”
87. September 2008: Seminar, Tata Institute for Fundamental Research, Mumbai, “Bulk Viscosity and Spectral Functions in QCD.”
88. August 2008: Talk at Conference “Strong and Electroweak matter 2008,” Amsterdam, “Spectral Functions and Bulk Viscosity.”
89. June 2008: Invited talk at workshop “Effective Probes of QCD Matter,” Duke University, “Finite Temperature Effective Field Theory and Parton Energy Loss”
90. May 2008: Talk at workshop “Strings and Things,” University of Washington (Seattle), “How Similar are QCD and $\mathcal{N}=4$ Super-Yang-Mills?”
91. May 2008: Seminar, University of Bielefeld (Germany), “Transport Coefficients at Next-to-Leading Order.”
92. May 2008: Seminar, Goethe University Frankfurt, “Heavy Quark Diffusion at Next-to-Leading Order.”
93. April 2008: Invited speaker at conference “Understanding QCD through Spectral Functions and Euclidean Correlators,” Brookhaven National Lab, Upton NY, “Transport and the Coupling Expansion.”
94. February 2008: Invited speaker at conference “Nonequilibrium Phenomena in Cosmology and Particle Physics,” Kavli Institute, Santa Barbara, “Plasma Instabilities in QCD and SYM.”
95. September 2007: Seminar at University of British Columbia, “Plasma Instabilities in QCD.”
96. May 2007: Invited talk at conference “Exotic States of Hot Dense Matter and their Dual Description,” Perimeter Institute (Waterloo Ontario), “QCD versus $\mathcal{N}=4$ SYM: Shear viscosity.”
97. April 2007: Seminar, Universidad Autonoma Barcelona (Spain), “Plasma Instabilities in QCD?”
98. April 2007: Seminar, North Carolina State University/Duke University/UNC, Chapel Hill North Carolina (USA), “Viscosity, Quark-Gluon Plasma, and SYM.”
99. December 2006: Seminar, Université Laval, Quebec City, “Plasma Instabilities in QCD?”
100. October 2006: Seminar, Carleton University, Ottawa, “Plasma Instabilities in QCD?”
101. September 2006: Invited talk at workshop “Non-equilibrium Quark-Gluon Plasma,” University of Washington, Seattle WA (USA), “Plasma Instabilities at Large Anisotropy.”
102. September 2006: Seminar, McGill University, Montréal, “QCD versus $\mathcal{N}=4$ SYM: Shear viscosity.”
103. July 2006: Invited talk at workshop “Classical Field Theory and Solitons,” Cambridge University, Cambridge (UK), “Plasma Instabilities in the QGP.”
104. June 2006: Invited talk at conference “Theory Canada II,” Perimeter Institute (Waterloo Ontario), “Plasma Instabilities in the QGP.”
105. May 2006: Talk at conference “Strong and Electroweak Matter 2006,” Brookhaven National Labs, Upton NY (USA), “Plasma Instabilities in the QGP.”
106. March 2006: Seminar, Syracuse University, Syracuse NY (USA), “3-D Supersymmetry on the Lattice.”

107. January 2006: Colloquium, Columbia University, New York NY (USA), “Plasma Instabilities in QCD?”
108. August 2005: Invited talk at workshop “Quark-Gluon Plasma Thermalization,” Technische Universität Wien, Vienna (Austria), “Numerical Studies of QGP Instabilities and Implications.”
109. March 2005: Seminar, University of Washington, Seattle WA (USA), “Plasma Instabilities in Hot QCD.”
110. March 2005: Seminar, McGill University, Montréal, “Plasma Instabilities in Hot QCD.”
111. December 2004: Invited talk at workshop “Strongly Coupled Plasma,” Brookhaven National Labs, Upton NY (USA), “Plasma Instabilities in the Anisotropic Quark-Gluon Plasma.”
112. June 2004: Invited talk at conference “Strong and Electroweak Matter 2004,” University of Helsinki, Helsinki (Finland), “Transport Coefficients in Hot QCD.”
113. June 2004: Invited talk at conference “Canadian Association of Physicists meeting,” Winnipeg, “We Don’t Live On A Spacetime Lattice and You Should Believe in Lorentz Symmetry.”
114. May 2004: Talk at retirement symposium “Lamfest” (for retirement of Harry Lam), McGill University, Montréal, “How We Know Spacetime is Not a Lattice.”
115. January 2004: Invited plenary talk at conference “Quark Matter 2004,” Berkeley CA (USA), “Electromagnetic Emission (and energy loss) in the QGP.”
116. December 2003: Invited talk at workshop “High p_T Physics at RHIC,” Brookhaven National Labs, Upton NY (USA), “Energy Loss of High p_T Partons.”
117. November 2003: Seminar, McGill University, Montréal, “Why I don’t believe we live on a spacetime lattice.”
118. October 2003: Lectures at summer school “Quantum Fields In and Out of Equilibrium,” Universität Bielefeld, Bielefeld (Germany), “QCD Transport Theory.”
119. April 2003: Seminar, Lawrence Berkeley National Labs, Berkeley CA (USA), “Photon Production and Transport in the QGP.”
120. April 2003: Seminar, Brookhaven National Labs, Upton NY (USA), “Transport and Equilibration in Ultrarelativistic Plasmas.”
121. March 2003: Seminar, Boston University, Boston MA (USA), “Why I Don’t Believe We Live on a Spacetime Lattice.”
122. February 2003: Seminar, McGill University, Montréal, “Interaction Corrections to Atomic Bose-Einstein Condensation Temperature.”
123. December 2002: Seminar, University of Toronto, Toronto, “Transport and Equilibration in Hot QCD.”
124. November 2002: Seminar, University of Washington, Seattle WA (USA), “QCD Pressure at Large N_f .”
125. November 2002: Seminar, McGill University, Montréal, “QCD Pressure at Large N_f .”
126. November 2002: Colloquium, Université de Montréal, Montréal, “Why is the Universe Made of Matter?”
127. October 2002: Invited talk, conference “Strong and Electroweak Matter 2002,” Universität Heidelberg, Heidelberg (Germany), “Transport Coefficients at Leading Order: Kinetic Theory versus Diagrams.”