

Curriculum vitæ

Tuomas Lappi

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Born Oct 25th 1978 in Suonenjoki, Finland. Finnish citizen. Married, two children (b. 2007 & 2011).

Positions, education

Positions held

- University of Jyväskylä, Finland, Sep 2009 – present. *Details of position: Academy of Finland Postdoctoral researcher (project no. 126604) Sep 2009 – Dec 2011, Research scientist (different Academy of Finland research grants) Jan 2012 – Aug 2013. Academy of Finland Research Fellow Sep 2013 – Aug 2018, Senior Lecturer Sep 2018 – .*
- Institut de Physique Théorique (IPhT, formerly SPhT), CEA/Saclay, France, Oct 2007 – Aug 2009. Postdoctoral researcher (*Partially funded by Academy of Finland, project 126604, Jan 2009 – Aug 2009.*)
- Brookhaven National Laboratory, Upton, NY, USA, Oct 2005 – Sep 2007. Postdoctoral Research Associate in Nuclear Theory Group.
- University of Helsinki, Finland, autumn 2001–summer 2005, Graduate student. *Details of position: employed as research assistant at the Division of Theoretical Physics, 2001, and at the Helsinki Institute of Physics, spring 2002. Funded by personal scholarships from the Finnish Cultural Foundation and the Magnus Ehrnrooth foundation, July 2002 – September 2005.*
- Research Assistant (computational condensed matter physics), Physics laboratory, Helsinki University of Technology, summer 1999.

Degrees

- *Docent* (Adjunct professor) at University of Jyväskylä, August 25th 2010.
- *PhD* in theoretical physics at the University of Helsinki, **January 28th 2005**. Thesis “Classical chromodynamics and heavy ion collisions,” hep-ph/0505095, opponent Dr. J.-P. Blaizot, supervisor prof. K. Kajantie.
- *MSc* at the University of Helsinki, **September 14th 2001**. Master’s thesis on “Classical fields in relativistic heavy ion collisions”, advisor prof. K. Kajantie. Major subject: theoretical physics. Minor subjects: mathematics, computer science and physics. Degree includes studies of theoretical physics (DEA de physique théorique) at Ecole Normale Supérieure, Paris, France, 1999 – 2000.
- Graduated from Suonenjoki high school in May 1997.

Other qualifications

- Basics of University Pedagogy, 10 ECTS credits, spring 2012. Basic course satisfying the formal requirements for University teaching positions, organized by the Faculty of Education, University of Jyväskylä.
- Teaching demonstration for adjunct professor (docent) position, University of Jyväskylä June 18th, 2010, evaluated as 4/5 (very good).

Awards

- “Zimanyi Nuclear Theory Award” recognizing an “exceptionally accomplished early career theorist whose work has had major and broad impact in the field of high energy nuclear physics,” awarded at the Quark Matter conference, Darmstadt, May 2014.

Publications

Overview

- 1 invited review article
- 35 published regular articles in Phys. Rev. Lett., Phys. Rev. C & D, Phys. Lett. B, Nucl. Phys. A, JHEP and EPJ C.
- 32 Conference proceedings
- Contributions to 7 scientific reports and white papers
- Total 2807 citations for 75 papers between 2003 and 2015 (INSPIRE database, August 2015).
- h-index 27 (INSPIRE database, August 2015)

Most cited regular articles (*citations: INSPIRE, August 2015*)

1. T. Lappi and L. McLerran, Nucl. Phys. A **832** (2010) 330, *304 cit.*
2. T. Lappi, Phys. Rev. C **67** (2003) 054903, *216 cit.*
3. A. Dumitru *et al* Phys. Lett. B **697** (2011) 21, *131 cit.*
4. K. Dusling, F. Gelis, T. Lappi and R. Venugopalan Nucl. Phys. A **836** (2010) 159-182, *105 cit.*
5. F. Gelis, T. Lappi and R. Venugopalan, Phys. Rev. D **78** (2008) 054019, *102 cit.*
6. H. Kowalski, T. Lappi and R. Venugopalan, Phys. Rev. Lett. **100**, (2008) 022303, *90 cit.*
7. T. Lappi and R. Venugopalan, Phys. Rev. C **74** (2006) 054905, *89 cit.*
8. F. Gelis, T. Lappi and R. Venugopalan, Phys. Rev. D **78** (2008) 054020, *78 cit.*
9. F. Gelis, T. Lappi and R. Venugopalan, Phys. Rev. D **79** (2009) 094017, *71 cit.*
10. T. Lappi, Phys. Lett. B **643** (2006) 11, *69 cit.*

Teaching, supervision

Teaching

Lectures (*Jyväskylä*)

- Spring 2014: "QCD" (special graduate course, FYSH555), lectures 20h (1/3 of course).
- Spring 2012 & 2013 (*Jyväskylä*): Statistical Physics Ia (FYSA241), lectures 20h.
- Autumn 2011 & 2013 (*Jyväskylä*): Particle Physics (FYSH300), lectures 24h (1/2 of course).
- Spring 2011 (*Jyväskylä*): High energy scattering in QCD (special graduate course, FYSH560), lectures 28h and exercises 14h.
- Spring 2010 (*Jyväskylä*): Mathematical methods of physics II (FYSA200), lectures, 28 (1/2 of course).

Exercises (*Helsinki*)

- Spring 2005: Hydrodynamics, exercises, 22h.
- Autumn 2002: Many body physics, exercises, 24h.
- Spring 2001: Statistical physics I, exercises, 48h.
- Autumn 2000: Quantum Mechanics I, exercises, 52h.

Invited lectures

- November 2013, lectures on "CGC and small x ," Hard Probes 2013 pre-conference summer school, University of Cape Town, South Africa.
- January 2012, lectures on "High energy scattering in QCD," Stellenbosch Institute of Advanced Studies, South Africa.
- September 2008, lectures at school on "Initial Conditions in Heavy-Ion Collisions," Goa, India.

Other

- Science lectures and presentations of particle physics research to high school students, 9 lectures, autumn 2010 — present.
- FysikerFest (AGM of Finnish physics students), lecture on "Color dynamics under extreme conditions", November 2012, *Jyväskylä*, Finland.

Supervision

Postdocs supervised (*University of Jyväskylä*)

- B. Ducloué, Sep 2014 –

Students supervised (University of Jyväskylä)

- A. Ramnath: PhD ongoing
- T. Stylman: Research training assignment 2014, MSc ongoing.
- A. Asikainen: Research training assignment 2014.
- L. Laulumaa: BSc 2013, Research training assignment 2014.
- J. Peuron: BSc 2012, Research training assignment 2013, MSc 2014, PhD ongoing.
- P. Pöyhönen: MSc 2013
- H. Mäntysaari: BSc 2010, Research training assignment 2011, MSc 2011, PhD 2015.

PhD theses reviewed

- L. Franti, University of Helsinki 2015; external referee.
- T. Epelbaum, Université Paris VI, 2014; member of jury (“examinateur”).
- A. Mykkänen, University of Helsinki 2012; external referee.
- J. Alanen, University of Helsinki 2012; external referee.
- J. Kuokkanen, University of Oulu 2011; opponent in dissertation.
- S. Kurki, University of Helsinki 2011; external referee.
- V. Muhonen, University of Helsinki 2008; external referee.

MSc theses reviewed

- A. Ramnath, University of Cape Town, 2014; external examiner.
- E. Pohjoisaho, University of Jyväskylä 2013; evaluator.
- R. Paatelainen, University of Jyväskylä 2010; evaluator.

Scientific activities

Organization

Conferences, workshops

- Member of organizing committee, “Spaatind 2016 - Nordic Conference on Particle Physics,” January 2016
- Co-organizer of “Particle Physics Day” (annual meeting of the Particle Physics Division of the Finnish Physical Society), October 2014
- Co-convenor of Heavy-Ion session for “Elastic and Diffractive scattering, (EDS Blois 2013)” , Saariselkä, Finland, September 2013
- Chair of organizing committee for POETIC (Physics Opportunities at an ElecTron-Ion Collider) workshop, Jyväskylä, Finland, September 2013.
- Co-convenor of the “Heavy Ions”-session at the European Physical Society High Energy Physics conference (EPS-HEP 2013), Stockholm, Sweden, July 2013.

Schools

- Coordinator for 3 courses in the Jyväskylä international summer school, 2012. *F. Gelis: “High Energy Scattering in QCD”, W. Horowitz: “pQCD Calculations of Parton Energy Loss in a Quark-Gluon Plasma” and B. Schenke: “Relativistic Hydrodynamics in Heavy Ion Collisions”.*

Research funding

- Leader of “QCD theory” project at Helsinki Institute of Physics 2014–2016/2019 (ca €110 000/year)
- Academy of Finland Research Fellow grant 2013–2018: €425 005 (project 267321) + €210 000 (project 273464)
- Grants for organizing workshop in 2013: Väisälä foundation €5000, Federation of Finnish Learned Societies €3000 and Jefferson Lab \$2000.
- “Strengthening the competitiveness of ERC applicants” grant, Academy of Finland, 12 mo 2011–2012, €119 400 (project 141555).
- European Research Council Starting Grants 2010 and 2012; advanced to second evaluation round and passed quality threshold (but not funded). In 2012 evaluated in ranking range 54%-56% in panel PE2 (particle and nuclear physics); applications ranked 1%-48% on the second round were funded.
- Postdoctoral researcher–project, Academy of Finland, 2009–2011, €195 450.

- Travel grants from Magnus Ehrnrooth foundation (2003: €1800; 2005: €2100 and €1200; 2006: €2000; 2007: €2200; 2008: €1200)
- Graduate student scholarships from Finnish Cultural Foundation (2002: €13 500; 2003: €14 000 and 2004: €14 000) and Magnus Ehrnrooth foundation (2003: €14 400).

Scientific expert and administrative positions

- Reviewer for grant applications (NRF, South Africa; CONICYT, Chile; FWF, Austria) 2014
- Referee for Phys. Rev. Lett., Phys. Rev. C&D, Nucl. Phys. A, Phys. Lett. B, EPJ A and EPL.
- Finnish Physical Society, Division of Particle Physics, board member 2014 —
- Member of writing committee for the “Hot QCD” whitepaper for the US DOE/NSAC Nuclear Physics Long Range Plan, responsible for “Saturation” section (2014-2015).
- Center for Scientific Computing, Espoo, Finland, manager for project “JYY2580, High energy QCD in relativistic heavy ion collisions”, November 2009 –
- Chair of the nuclear physics seminar committee 2007, BNL physics department.
- Student vice-representative in the Board of the Department of Physical Sciences, University of Helsinki, 2001–2003.

Misc.

- Various activities at the Nation of Savo (organisation of students from the province of Savo) of the University of Helsinki, including Treasurer 2001–2002.
- Student Union of the University of Helsinki (HYY): Member of the Representative Council: 2002–2003, member of the board of Oy Vanha Ylioppilastalo Ab: 2002, member of the financial committee: 2003.
- Representative for Finland in the International Physics Olympiad, Sudbury, Canada, 1997, bronze medal.

Talks

Invited conference talks and colloquia

1. June 2015, “The 7th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions (Hard Probes 2015),” Montréal, QC. Invited plenary review talk on “Recent developments in the theory of initial states in heavy ion collisions”
2. April 2015, “XXIII International Workshop on Deep-Inelastic Scattering and Related Subjects (DIS2015),” Dallas, TX, US. Invited plenary review talk on “Small x , diffraction and vector mesons”.
3. December 2014, “2nd International Conference on the Initial Stages in High-Energy Nuclear Collisions” conference, Napa, CA, US. Invited talk on “Theoretical overview of ultraperipheral collisions”.
4. September 2014, “Physics Opportunities at an Electron-Ion Collider” workshop, Yale University, New Haven, CT, US. Talks on “Diffractive physics at an EIC” and “Nuclear Collisions at LHeC”
5. April 2014, “The Approach to Equilibrium in Strongly Interacting Matter” workshop, RIKEN-BNL research center, Brookhaven, NY, US, invited talk on “Spatial Wilson loops in the glasma.”
6. December 2013, “New Frontiers in QCD” workshop, Yukawa Institute, Kyoto, Japan, invited talk on: “Numerical studies of JIMWLK (and glasma) evolution.”
7. September 2013, EDS-Blois (Elastic and Diffractive Scattering) conference, Saariselkä, Finland, invited talk on “Models for exclusive vector meson production in heavy-ion collisions”.
8. March 2013, “Physics Opportunities at an Electron-Ion Collider” workshop, UTFSM, Valparaíso, Chile, invited talk on “Diffractive studies at EIC”.
9. November 2011, “Multiple parton interactions 2011” conference, DESY, Hamburg, Germany, invited talk on “Multi-gluon correlations in the Color Glass Condensate”.
10. November 2010, “Structure Functions, Geometric Scaling and Parton Saturation: Assessment and Perspectives for the LHC” workshop, GSI, Darmstadt, Germany, talk on “Multigluon correlations in the Glasma.”

11. August 2010, "High energy strong interactions 2010" symposium, Yukawa institute of theoretical physics, Kyoto University, Japan, talk on "Gluon correlations in the Glasma".
12. October 2009, MIT, Cambridge, MA, USA, Particle and Nuclear Physics colloquium on "Understanding saturation and AA collisions with an eA collider"
13. June 2009, "International Conference on Elastic and Diffractive Scattering (Blois Workshop)," CERN, Geneva, Switzerland, invited talk on "Saturation in Nuclei".
14. June 2009, "Workshop on Non-Perturbative Quantum Chromodynamics", Paris, France, invited talk on "Saturation at RHIC and LHC".
15. April 2009, "Deep Inelastic Scattering 2009" conference, Madrid, Spain; invited talk on "Nuclear enhancement and suppression of diffractive structure functions at high energies".
16. April 2009, Quark Matter 2009, Knoxville, TN, invited plenary talk on "Understanding saturation and AA collisions with an eA collider".
17. January 2009, XV Epiphany Conference on "Hadronic Interactions at the dawn of LHC" Cracow, Poland, invited talk on "Initial conditions of heavy ion collisions and high energy factorization."
18. November 2008, "Particles and Nuclei International Conference", Eilat, Israel, invited talk on "Initial conditions and small x ."
19. September 2008, "International Symposium on Very High Energy Cosmic Ray Interactions," Paris, France, invited talk on "RHIC data and small x physics."
20. July 2006, Classical field theory and solitons workshop, Cambridge, UK, invited talk on "Classical fields and heavy ion phenomenology."
21. March 2006, Strangeness in Quark Matter conference, Los Angeles, CA, invited talk on "Chemical composition of the decaying glasma."
22. June 2004, Helsinki, "Strong and Electroweak Matter 2004" conference, invited talk: "Classical fields and heavy ion collisions."

Other talks

1. September 2015, Quark Matter 2015 conference, Kobe, Japan. Talk on "Initial state azimuthal anisotropies in small collision systems".
2. May 2015, BNL Nuclear theory seminar on "Solving the NLO BK equation in coordinate space".
3. April 2015, "XXIII International Workshop on Deep-Inelastic Scattering and Related Subjects (DIS2015)," Dallas, TX, US. Parallel talk on "Solving the NLO BK equation in coordinate space".
4. December 2014, "Ab-initio approaches in many-body QCD confront heavy-ion experiments" workshop, Heidelberg, Germany, talk on "Classical gauge field picture of the initial stage in A+A collisions"
5. June 2014, IPhT, CEA/Saclay, France, seminar on "Spatial Wilson loops in the glasma".
6. May 2014, Quark Matter 2014 conference, Darmstadt, Germany. Talk on "Structure of chromomagnetic fields in the glasma".
7. November 2013, Hard Probes 2013 conference, Stellenbosch, South Africa. Talk on "Proposal for a running coupling JIMWLK equation".
8. July 2013, EPS-HEP 2013 conference, Stockholm, Sweden. Talk on "Hadron production in pA collisions" in the Heavy Ions-session.
9. June 2013, h3QCD (High energy, high density and hot QCD) workshop, ECT*, Trento, Italy, talk on "Numerical studies of JIMWLK evolution".
10. April 2013, Jyväskylä, Finland, URHIC seminar on "The running coupling in the JIMWLK equation"
11. March 2013, Physics Days (Finnish Physical Society general meeting), Espoo, Finland, talk on "Langevin formulation of renormalization group evolution in high energy QCD"
12. October 2012, Center for Scientific computing, Espoo, Finland, Workshop on "High performance computing in particle and nuclear physics", talk on "High performance computing in heavy ion collisions and high energy QCD"
13. August 2012, Quark Matter 2012, Washington DC, USA, talk on "Multigluon correlations in the color glass condensate"
14. June 2012, IPhT, CEA/Saclay, France, seminar on "Unequal rapidity correlations in JIMWLK"
15. May 2012, Hard Probes 2012 conference, Cagliari, Italy, talk on "Multigluon correlations in

JIMWLK"

16. March 2012, Santiago de Compostela, Spain, seminar on "Multigluon correlations in the color glass condensate"
17. February 2012, Stellenbosch, South Africa, "Exploring QCD frontiers from RHIC and LHC to EIC" workshop, "Multigluon correlations in the color Glass condensate"
18. December 2011, Oulu, Finland, seminar on "Classical color fields and heavy ion collisions".
19. October 2011, Particle Physics Day of the Finnish Physical Society, Helsinki. Talk on "Renormalization group evolution of multi-gluon correlators in high energy QCD"
20. March 2011, Physics Days (Finnish Physical Society general meeting), Helsinki. Talk on "The Glasma initial state of a heavy ion collision"
21. September 2010, "Gluons and the quark sea at high energies: distributions, polarization, tomography" program, INT, Seattle, WA. Two talks on "Diffraction in nuclei" and "Small x in ep and eA, theory overview."
22. June 2010, "Hot Quarks 2010" workshop, La Londe-les-Maures, France, talk on "Gluon correlations in the Glasma".
23. June 2010, "Quantifying the Properties of Hot QCD Matter" program, INT, Seattle, WA, USA, talk on "Rapidity correlations from the Glasma initial state".
24. May 2010, "Saturation, the Color Glass Condensate and Glasma" workshop, RIKEN BNL Research center, Brookhaven, NY, USA, talk on "Multiplicity distributions and long range rapidity correlations".
25. November 2009, University of Santiago de Compostela, Spain, seminar on "Gluon correlations in the Glasma".
26. October 2009, "Physics at a High Energy Electron Ion Collider" workshop, INT, Seattle, WA, USA. Talk on "Inclusive diffraction in nuclei".
27. February 2009, University of Jyväskylä, Department of Physics and University of Helsinki and Helsinki Institute of Physics, seminar on "Initial conditions of heavy ion collisions and high energy factorization".
28. September 2008, lectures on "Initial Conditions in Heavy-Ion Collisions," Goa, India.
29. August 2008, "Strong and Electroweak Matter 2008" conference, Amsterdam, the Netherlands, talk on "The glasma initial state and JIMWLK factorization".
30. August 2008, University of Jyväskylä, seminar on "Diffraction in Nuclei"
31. July 2008, ECT*, Trento, Italy, "Structure of hadrons and nuclei at an electron-ion collide"—workshop, talk on "Inclusive diffraction in Nuclei"
32. March 2008, IPN Orsay, France, seminar on "The glasma initial state of heavy ion collisions"
33. February 2008, Quark Matter 2008, Jaipur, India, contributed talk on "The glasma initial state at LHC"
34. December 2007, University of Jyväskylä, Particle Physics Day of the Finnish Physical Society, talk on "Color glass and glasma: the initial state of a relativistic heavy ion collision"
35. December 2007, University of Helsinki, seminar "The initial state of the little bang at RHIC and LHC"
36. October 2007, CEA/Saclay, Paris, France, seminar on "The glasma initial state at RHIC and LHC."
37. July 2007, Workshop on Early Time Dynamics of Heavy Ion Collisions, McGill University, Montreal, Canada, talk on "The glasma initial stage of heavy ion collisions"
38. June 2007, RHIC/AGS user's meeting, Brookhaven, talk on "Eccentricity and elliptic flow"
39. April 2007, Electron-Ion Collider collaboration meeting, MIT, Cambridge, MA, talk on "The Oomph factor in eA: the A-dependence of the saturation scale."
40. November 2006, Stony Brook University, seminar on "From color glass to glasma and plasma."
41. October 2006, McGill University, Montreal, Canada, seminar on "From color glass to glasma and plasma."
42. September 2006, Workshop on Non-Equilibrium Quark-Gluon Plasma, INT Seattle, WA, talk on "From color glass to glasma and plasma."
43. July 2006, CEA/Saclay, Paris, France, talk on "From color glass to glasma and plasma."

44. June 2006, RHIC/AGS user's meeting, Brookhaven, talk on "From Glasma to Hadrons."
45. April 2006, Jyväskylä, seminar on "From Glass to Glasma."
46. February 2006, RIKEN seminar, Brookhaven, talk on "Quark pairs from classical fields."
47. October 2005, "Particles and Nuclei International Conference", Santa Fe, NM, talk on "Quark pair production from classical fields in heavy ion collisions."
48. August 2005, Quark Gluon Plasma Thermalization workshop, Vienna, Austria, talk on "Production of quark pairs from classical gluon fields."
49. August 2005, Quark Matter 2005, Budapest, Hungary, contributed talk on "Quark-antiquark production from classical fields and chemical equilibration."
50. May 2005, University of Jyväskylä, talk on "Quark antiquark pair production in the classical field model."
51. January 2005, Duke University, Durham, NC; Ohio State University, Columbus, OH and BNL, Upton, NY: talk on "Particle production in the classical field model for heavy ion collisions."
52. October 2004, University of Helsinki, High energy physics phenomenology seminar: "Saturation in deep inelastic scattering."
53. February 2004, University of Helsinki, High energy physics phenomenology seminar: "News from Quark Matter 2004."
54. October 2003, CEA/Saclay, Paris, France: "Particle production in the classical field model for heavy ion collisions."
55. June 2003, ECT*, Trento, Italy: "Color Glass Condensate and Parton Percolation"—workshop: "Classical field simulations of heavy ion collisions."
56. April 2003, University of Jyväskylä, Department of Physics: "Classical fields in heavy ion collisions."
57. March 2003, University of Helsinki, High energy physics phenomenology seminar: "Classical fields in heavy ion collisions."
58. October 2002, ECT*, Trento, Italy: "Coherent Effects at RHIC and LHC: Initial Conditions and Hard Probes"—workshop: "Numerical Consequences of the McLerran-Venugopalan Model."
59. May 2002, University of Jyväskylä, Department of Physics: "Classical Chromodynamics Simulations of Relativistic Heavy-Ion Collisions."