

curriculum vitae

KIM SPLITTORFF

Date of birth: September 11th 1973

Marital status: Married to Synne Høyer Svendsen
(Permanent staff of the Danish Climate Centre
at the Danish Meteorological Institute)

Children: Ask Høyer Splittorff (Oct 2004)
Ea Høyer Splittorff (April 2007)
Rune Høyer Splittorff (April 2010)

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EMPLOYMENT RECORD

DDF research leader (Associate prof.) **March 2011 -**

PI of Sapere Aude project

Theoretical Particle Physics Group, NBI, Copenhagen, Denmark.

Steno Fellow (Associate prof.) **May 2008-March 2011**

Theoretical Particle Physics Group, NBI, Copenhagen, Denmark.

Carlsberg Fellow (Assistant prof.) **Sep 2005-April 2008**

Theoretical Particle Physics Group, NBI, Copenhagen, Denmark.

Nordic Fellow (Post Doctoral Associate) **Sep 2003-Sep 2005**

Subatomic Group, NORDITA, Copenhagen, Denmark.

Post Doctoral Associate **Sep 2002-Sep 2003**

The Nuclear Theory Group, Department of Physics and Astronomy, State University of New York at Stony Brook.

Leon Rosenfeld Scholar **Summer 2002**

Fully supported by the Leon Rosenfeld foundation.

Parental leave a total of 7 month during 2004-2011

EDUCATION

Ph.D. degree in Physics **June 2002**

Faculty stipend, awarded upon faculty committee review.

The Niels Bohr Institute, University of Copenhagen, Copenhagen, Denmark.

Masters degree in Physics **1998**

University of Copenhagen, Copenhagen, Denmark.

B.Sc. in Physics **1996**

University of Copenhagen, Copenhagen, Denmark.

LONG TERM VISITS AT OTHER UNIVERSITIES

3 months at Stony Brook

Fall 2000

Nuclear Theory Group, SUNY SB, USA. Visiting Prof. J.J.M. Verbaarschot.

3 months in Graz

Winter 1998-1999

Karl-Franzens-Universität Graz, Graz, Austria. Visiting Prof. C. B. Lang

SUMMER AND WINTER SCHOOLS

Cargese 2 weeks

2001

NATO Advanced Study Institute, "QCD Perspectives on Hot and Dense Matter".

Schladming 1 week

2001

40th Schladming Winter School "Dense Matter".

Schladming 1 week

1999

38. Universitätswochen in Schladming. On "Geometry and Quantum Physics".

Les Houches 6 weeks

1997

Session LXVIII "Probing the standard model of particle interactions".

CERN 11 weeks

1996

Working within RD42 on development of a particle track detector using diamond instead of silicon.

TEACHING

Teacher of the year at the Faculty of Natural Sciences 2010
Award (25.000 Dkr) presented at NBI Kick-Off 2011

Awarded the Niels Bohr Institute Prize for Teaching 2009
Award (10.000 Dkr) presented at NBI Kick-Off 2010

Nomination for Teacher of the year at the Faculty of Natural Sciences 2008
Nominated by the teaching committee of the Niels Bohr Institute

Supervisor

Supervisor of B.Sc. student J. Lass 2015
Supervisor of B.Sc. student T.L. Koch 2015
Supervisor of B.Sc. student H. Gormsen 2015
Supervisor of B.Sc. student T. Nilsen 2015
Supervisor of B.Sc. student L.L. Hauge 2014
Supervisor of master student A.S. Christensen 2014
Supervisor of master student P.D. Pedersen 2014
Supervisor of master student E.B. Hansen 2014
Supervisor of B.Sc. student N.C.R. Momsen 2013
Supervisor of B.Sc. student A. Borger 2013
Supervisor of master student A. Møllgaard 2012
Supervisor of master student C. Marboe 2012
Supervisor of master student T.A. Zøllner Olesen 2012
Supervisor of B.Sc. student A.S. Christensen 2012
Supervisor of B.Sc. student P.D. Pedersen 2012
Supervisor of master student J.R. Ipsen 2011
Supervisor of B.Sc. student E.B. Hansen 2011
Supervisor of master student C. Christensen 2010
Supervisor of master student R.N. Larsen 2010
Supervisor of B.Sc. student J.R. Ipsen 2010
Supervisor of B.Sc. student J. Tarp 2010
Supervisor of master student J.M. Møller 2009
Supervisor of master student T. Andersson 2004

Pedagogy: presentations

“Realizing the reform” invited lecture at the SCIENCE Direction and VILU meeting Gentofte, Denmark. 2015
“Mass university teaching” invited lecture at the ‘Teaching and Learning in Higher Education Programme’, department of Science Education, Copenhagen, Denmark. 2015
“Better experimental labs in University education” invited IMFUFA 2015

lecture at, RUC, Roskilde, Denmark.	
“Teaching the methods” invited lecture at the ‘Teaching and Learning in Higher Education Programme’, department of Science Education, Copenhagen, Denmark.	2014
“Progression of experimental competences” invited lecture at FARMA.	2014
“Experimental competences” presentation at NBI, Copenhagen, Denmark.	2013
“Symmetries and Simplifications” invited lecture, NBI, Copenhagen, Denmark.	2012
“How to be a good mentor” invited lecture at NBI, Copenhagen, Denmark.	2012
“Better Bachelor Projects” invited lecture at NBI, Copenhagen, Denmark.	2012
“Preparation centered teaching” invited talk at IND, Copenhagen, Denmark.	2010
“Nano-Science and research based teaching of quantum mechanics” invited talk at the 10. may-conference on Science Education, Copenhagen, Denmark.	2010
“Preparation centered teaching” invited talk at Institute for Geography and Geology, University of Copenhagen, Denmark.	2009
“Learn From Hand to Brain” talk at <i>Network for university teachers</i>	2009
“Design of lab exercises at NBI” invited talk at VIP-session on the future structure of teaching at FARMA (Faculty of Pharmaceutical Sciences), Copenhagen, Denmark.	2009
“The role of experiments in university education” presentation at <i>Network for university teachers</i> , department of Science Education, Copenhagen, Denmark.	2008
Contribution to EU-project on teaching physics in Egypt.	2008

Pedagogy: Formal education

Scientific University Pedagogy (120 hours course + project)	2005-2006
Introduction to University Pedagogy (1 week course)	2005
Member of the network for university teachers (monthly meetings)	2007-
Colleague tutoring (group-based development of teaching skills)	2005-2011

Pedagogy: Projects

Working group on experimental curriculum and implementation	2013-2015
Project for better course accreditation at NBI	2011-2012
Head of project for better classroom teaching at NBI	2009-2010
Initiator and developer of project for closer coordination of experimental and theoretical parts of physics courses.	2008-2009

Pedagogy: Organizer

“Quality in teaching” workshop at NBI (co-organized with P. Ditlevsen)	2015
Instructor workshop (co-organized with A.W. Hansen and S. West)	2015

Lectures

Second year advanced Quantum Mechanics (course responsible lecturer)	2015
First year special relativity (3h)	2014
Second year advanced Quantum Mechanics (course responsible lecturer)	2014
Second year advanced Quantum Mechanics (course responsible lecturer)	2013
Second year advanced Quantum Mechanics (course responsible lecturer)	2012

Lectures at the International Graduate School Bielefeld-Paris-Helsinki (3 h)	2011
Second year advanced Quantum Mechanics (course responsible lecturer)	2011
Second year advanced Quantum Mechanics (course responsible lecturer)	2010
First year electromagnetism (2 h)	2009
First year Thermal Physics (5 h)	2008
Lecture series (15 h) at XX Heidelberg Physics Graduate Days on QCD at finite temperature and density.	2008

Classroom Teaching

Responsible for recitations and problem-solving sessions:

First year Newtonian mechanics and special relativity	2014
Second year Quantum Mechanics	2009
First year Thermal Physics	2009
First year Thermal Physics	2008
First year Newtonian mechanics and Special Relativity	2007
Second year Introductory Quantum Mechanics	2007
First year Newtonian mechanics	2006
Second year Introductory Quantum Mechanics	2006
Third year Applied Quantum Mechanics	2005
Third year Advanced Quantum Mechanics	2001-2002
First year Newtonian mechanics	1999
First year Newtonian mechanics	1999

Experimental Lab

Quantum Mechanics (lab responsible)	2015
Coordinator of compulsory lab courses	2014-
Quantum Mechanics (lab responsible)	2014
Quantum Mechanics (lab responsible)	2013
Quantum Mechanics (designer and lab responsible)	2012
Thermal physics	2009
Thermal physics	2008
First year mechanics	2008

Tutor

Tutor for student with special needs	2007-2008
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Continuing education

Master class for Gymnasium teachers on the Higgs mechanism	2013
Lecture at NBI Inspiration day for Gymnasium teachers	2011
Lecture at Viborg Gymnasium on particle physics	2007
One day course for Gymnasium teachers at NBI	2007

ADDITIONAL PHYSICS ACTIVITIES

Referee for **2000-present**
Physical Review Letters, Physical Review D, Physical Review E, Physical Review A, Nuclear Physics B, JHEP, Annals of Physics, Physics Letters A, JSTAT, European Physical Journal A and Acta Applicanda Mathematicae.

Organizer

Co-organizer Nordic Winter School on Cosmology and Particle Physics 2015 **2015**
Skeikampen, Norway, Jan 2-7. 2015.

Main organizer the Sapere Aude/NBIA Workshop **2014**
Facing Strong Dynamics

Main organizer the ECT* Workshop **2011**
Chiral dynamics with Wilson fermions

Co-organized the Discovery Center Workshop **2011**
Heavy Ions: Experiments confront theory

Co-organized the NBI Academy Workshop **2010**
Physics and Mathematics of Random Matrix Theory

Co-organizing the Niels Bohr Summer Institute **2008**
Ultracold Atoms and Quark-Gluon Plasmas

Co-organized the NBI Academy Workshop **2007**
Random Matrix Theory: recent Applications

NBIA Colloquia **2012-2013**

Part of the organizing committee for the NBIA Colloquia.

NORDITA Seminars **2003-2005**

Part of the organizing committee of the cross-disciplinary NORDITA seminars.

Outreach

- *Nothing!* **2015**

Interview with Danish National Radio, DR1 The World of Science.

- *The toughest calculations - how hard can it be?* **2014**

public lecture at NBI.

- *What happens if we split this into two?* **2014**

lecture for 3 classes at the Free Gymnasium, Copenhagen, Denmark.

- *Quantum mechanics, how hard can it be?* **2013**

lecture for the Youth Science Union (UNF), NBI, Copenhagen, Denmark.

- *What's up with this Higgs?* **2013**

lecture at the Students Union, Carlsberg Mansion, Copenhagen.

- *Physics** **2013**
lecture to freshmen and visiting Gymnasie students, NBI, Copenhagen.
- *A little simpler and far lighter* **2013**
lecture at Culture Night, NBI, Copenhagen.
- *The strange reality of quantum mechanics* **2013**
double lecture at peoples-univerity, Helsingør, Denmark.
- *Quarks and Charges,* **2013**
Lecture to 9th grade pupils at NBI, University of Copenhagen, Denmark.
- *Quantum mechanics, Symmetries and CERN* **2013**
double lecture at peoples-univerity, Alsion, Sønderborg, Denmark.
- *The wonders of quantum mechanics* **2013**
lecture at 'Bohr-days', NBI, University of Copenhagen for youth-school pupils.
- *Our Asymmetric Universe* **2012**
Lecture at Kulturnatten (Culture night) in Copenhagen.
- Online lecture on *Quarks in the early Universe* (in Danish) **2011**
<http://www.nbi.ku.dk/scienceexplorer/foredrag/kimSplittorff/video/>
- Interview in Danish Public Radio (P1): Videnskaben kort **2011**
- *Kopernikursus* **2006 & 2007**
Organizing and teaching at a physics summer school for Gymnasium students.
- *Termodynamik for Chiral Symmetri*, Gamma 128, Dec 2002 **2002**
see <http://www.gamma.nbi.dk/>
- *The strong interaction* **2011**
Lecture at NOVA - astronomers.
- *The early moments of our Universe* **2011**
Lecture with Anders Tranberg at Kulturnatten (Culture night) in Copenhagen.
- *Quantum chromodynamics* **2011**
Physics* lecture to the freshmen at NBI, Copenhagen.
- *Why do we need string theory ?* **2010**
Lecture with Konstantinos Zoubos at Kulturnatten (Culture night) in Copenhagen.
- *Technicolor* **2009**
With Mads Toudal Frandsen at Kulturnatten (Culture night) in Copenhagen.
- *The wild west of the quarks* **2007**
Lecture at Kulturnatten (Culture night) in Copenhagen.

- *Quarks and other small things* **2006**
Lecture at Kulturnatten (Culture night) in Copenhagen.
- *Do you believe in quarks?* **2005**
Lecture at Kulturnatten (Culture night) in Copenhagen.
- *Spontaneously broken symmetries* **2004**
Lecture at Kulturnatten (Culture night) in Copenhagen.

Scholarships

- SNF (the danish research council) travel support while in Stony Brook **2003**
- Leon Rosenfeld Scholarship **2002**
- The Lørup Scholar Stipend from The Frederikke Lørup, født Helms' Memorial Fond **1998**
- The Nykat Scholarship, from Nykøbing Katedralskole **1998**

PUBLICATIONS - PEER REVIEW

1. *Full simulation of chiral Random Matrix Theory at non-zero chemical potential by Complex Langevin*, A. Mollgaard, K. Splittorff, Phys.Rev. D91 (2015) 3, 036007.
2. *The Dirac spectrum in Complex Langevin Simulations of QCD*, K. Splittorff, Phys.Rev. D91 (2015) 3, 034507.
3. *Distribution of Canonical Determinants in QCD*, Andrei Alexandru, C. Gattringer, H. -P. Schadler, K. Splittorff, J.J.M. Verbaarschot, Phys.Rev. D91 (2015) 7, 074501.
4. *The gradient flow of the Dirac spectrum*, Alexander S. Christensen, K. Splittorff, J.J.M. Verbaarschot, JHEP 1411 (2014) 113.
5. *The van der Waals interaction in one, two and three dimensions*, A.C. Ipsen, K. Splittorff, Am. J. Phys. 83, 150 (2015).
6. *Complex Langevin Dynamics for chiral Random Matrix Theory*, A. Mollgaard and K. Splittorff, Phys.Rev. D88 (2013) 116007.
7. *The density in the density of states method*, Jeff Greensite, Joyce C. Myers and K. Splittorff, JHEP 1310 (2013) 192.
8. *The QCD sign problem as a total derivative*, Jeff Greensite, Joyce C. Myers and K. Splittorff, Phys.Rev. D (RC) 88 (2013) 031502.
9. *Subsets and the canonical partition functions*, J. Bloch, F. Bruckmann, M. Kieburg, K. Splittorff, J.J.M. Verbaarschot, Phys. Rev. D87 (2013) 034510.
10. *New Ways to Determine Low-Energy Constants with Wilson Fermions*, P.H. Damgaard, U.M. Heller, K. Splittorff, Phys.Rev. D86 (2012) 094502.
11. *Mean field theory of effective spin models as a baryon fugacity expansion*, J. Greensite, K. Splittorff, Phys.Rev. D86 (2012) 074501.
12. *Baryon Number Dirac Spectrum in QCD*, J.R. Ipsen, K. Splittorff, Phys.Rev. D86 (2012) 014508.
13. *The Realization of the Sharpe-Singleton Scenario*, M. Kieburg, K. Splittorff, J.J.M. Verbaarschot, Phys.Rev. D85 (2012) 094011.
14. *The Microscopic Twisted Mass Dirac Spectrum*, K. Splittorff, J.J.M. Verbaarschot, Phys.Rev. D85 (2012) 105008.
15. *Finite-Volume Scaling of the Wilson-Dirac Operator Spectrum*, P.H. Damgaard, U.M. Heller, K. Splittorff, Phys.Rev. D85 (2012) 014505.
16. *The Wilson Dirac Spectrum for QCD with Dynamical Quarks*, K. Splittorff, J.J.M. Verbaarschot, Phys.Rev. D84 (2011) 065031.

17. *Spectrum of the Wilson Dirac Operator at Finite Lattice Spacings*, G. Akemann, P.H. Damgaard, K. Splittorff, J.J.M. Verbaarschot, Phys.Rev. D83 (2011) 085014.
18. *Degenerate distributions in complex Langevin dynamics: one-dimensional QCD at finite chemical potential*, Gert Aarts, K. Splittorff, JHEP 08 (2010) 017.
19. *Microscopic Spectrum of the Wilson Dirac Operator*, P.H. Damgaard, K. Splittorff, J.J.M. Verbaarschot, Phys.Rev.Lett. 105 (2010) 162002.
20. *The Fluctuations of the Quark Number and of the Chiral Condensate*, M.P. Lombardo, K. Splittorff, J.J.M. Verbaarschot, Phys.Rev.D81:045012,2010.
21. *The sign problem across the QCD phase transition*, Jens O. Andersen, Lars T. Kyllingstad, Kim Splittorff, JHEP 1001:055,2010.
22. *Distributions of the Phase Angle of the Fermion Determinant in QCD*, M.P. Lombardo, K. Splittorff, J.J.M. Verbaarschot, Phys.Rev. D80 (2009) 054509.
23. *Phase Diagram of the Dirac Spectrum at Nonzero Chemical Potential*, J.C. Osborn, K. Splittorff, J.J.M. Verbaarschot, Phys.Rev.D78 (2008) 105006.
24. *Chiral Condensate at Nonzero Chemical Potential in the Microscopic Limit of QCD*, J.C. Osborn, K. Splittorff, J.J.M. Verbaarschot, Phys.Rev. D78 (2008) 065029.
25. *Nonhermitian Supersymmetric Partition Functions: The Case of one bosonic flavor*. K. Splittorff, J.J.M. Verbaarschot, M.R. Zirnbauer, Nucl. Phys. B803 (2008) 381.
26. *The Approach to the thermodynamic limit in lattice QCD at $\mu \neq 0$* , K. Splittorff, J.J.M. Verbaarschot, Phys.Rev. D77 (2008) 014514.
27. *The Sign problem via imaginary chemical potential*, K. Splittorff, B. Svetitsky, Phys.Rev. D75 (2007) 114504.
28. *The QCD Sign Problem for Small Chemical Potential*, K. Splittorff, J.J.M. Verbaarschot, Phys.Rev. D75 (2007) 116003.
29. *Phase of the Fermion Determinant at Nonzero Chemical Potential*, K. Splittorff, J.J.M. Verbaarschot, Phys.Rev.Lett. 98 (2007) 031601.
30. *A new Chiral Two-Matrix Theory for Dirac Spectra with Imaginary Chemical Potential*, G. Akemann, P.H. Damgaard, J.C. Osborn, K. Splittorff, Nucl.Phys. B766 (2007) 34.
31. *QCD with Bosonic Quarks at Nonzero Chemical Potential*, K. Splittorff, J.J.M. Verbaarschot, Nucl.Phys. B757 (2006) 259.
32. *Microscopic eigenvalue correlations in QCD with imaginary isospin chemical potential*, P. H. Damgaard, U. M. Heller, K. Splittorff, B. Svetitsky, D. Toublan, Phys.Rev. D73 (2006) 105016.

33. *Extracting F_π from small lattices: unquenched results*, P. H. Damgaard, U. M. Heller, K. Splittorff, B. Svetitsky, D. Toublan, Phys.Rev. D73 (2006) 074023.
34. *Chiral Symmetry Breaking at Nonzero Chemical Potential*, J.C. Osborn, K. Splittorff, J.J.M. Verbaarschot, Int.J.Mod.Phys. A21 (2006) 859.
35. *A New Method for Determining F_π on the Lattice*, P.H. Damgaard, Urs M. Heller, K. Splittorff, B. Svetitsky, Phys.Rev. D72 (2005) 091501.
36. *Chiral Symmetry Breaking and the Dirac Spectrum at Nonzero Chemical Potential*, J.C. Osborn, K. Splittorff, and J.J.M. Verbaarschot, Phys. Rev. Lett. 94, (2005) 202001.
37. *Unquenched QCD Dirac Operator Spectra at Nonzero Baryon Chemical Potential*, G. Akemann, J.C. Osborn, K. Splittorff, and J.J.M. Verbaarschot, Nucl.Phys. B712 (2005) 287.
38. *The Replica Method and Toda Lattice Equations for QCD₃*, T. Andersson, P.H. Damgaard, and K. Splittorff, Nucl.Phys. B707 (2005) 509.
39. *Supersymmetric Quenching of the Toda Lattice Equation*, K. Splittorff and J.J.M. Verbaarschot, Nucl.Phys. B695 (2004) 84.
40. *Factorization of Correlation Functions and the Replica Limit of the Toda Lattice Equation*, K. Splittorff and J.J.M. Verbaarschot, Nucl.Phys. B683 (2004) 467.
41. *Impossibility of spontaneously breaking local symmetries and the sign problem*, K. Splittorff, Phys.Rev. D68 (2003) 054504.
42. *Fluctuation Induced Critical Behavior at Non-Zero Temperature and Chemical Potential*, K. Splittorff, J.T. Lenaghan, and J. Wirstam, Phys.Rev. D67 (2003) 105011.
43. *Melting the Diquark Condensate in Two-Color QCD: A Renormalization Group Analysis*, J. Wirstam, J. T. Lenaghan, and K. Splittorff, Phys.Rev. D67 (2003) 034021.
44. *Replica Limit of the Toda Lattice Equation*, K. Splittorff and J.J.M. Verbaarschot, Phys.Rev. Lett. 90 (2003) 041601.
45. *Thermodynamics of chiral symmetry at low densities*, K. Splittorff, D. Toublan, and J.J.M. Verbaarschot, Nucl.Phys. B639 (2002) 524.
46. *Dashen's Phenomenon in Gauge Theories with Spontaneously Broken Chiral Symmetries*, G. Akemann, J. T. Lenaghan, and K. Splittorff, Phys.Rev. D65 (2002) 085015.
47. *The zeros of the QCD partition function*, A.D. Jackson, C.B. Lang, M. Oswald, and K. Splittorff, Nucl.Phys. B616 (2001) 233.

48. *Diquark Condensate in QCD with Two Colors at Next-to-Leading Order*, K. Splittorff, D. Toublan, and J.J.M. Verbaarschot, Nucl.Phys. B620 (2002) 290.
49. *The Superfluid and Conformal Phase Transitions of Two-Color QCD*, J.T. Lenaghan, F. Sannino, and K. Splittorff, Phys.Rev. D65 (2002) 054002.
50. *QCD-like Theories at Finite Baryon and Isospin Density*, K. Splittorff, D.T. Son, and M.A. Stephanov, Phys.Rev. D64 (2001) 016003.
51. *Partially Quenched Chiral Perturbation Theory and the Replica Method*, P.H. Damgaard, and K. Splittorff, Phys.Rev. D62 (2000) 054509.
52. *Spectral Sum Rules of the Dirac operator and Partially Quenched Chiral Condensates*, P.H. Damgaard, and K. Splittorff, Nucl.Phys. B572 (2000) 478-498.
53. *Microscopic Universality and the Chiral Phase Transition in two Flavor QCD*, F. Farchioni, Ph. de Forcrand, I. Hip, C. B. Lang, and K. Splittorff, Phys.Rev. D62 (2000) 014503.
54. *Logarithmic Universality in Random Matrix Theory*, K. Splittorff, Nucl.Phys. B548 (1999) 613-625.

PUBLICATIONS - PROCEEDINGS AND THESIS

1. *Phase Diagram of Wilson and Twisted Mass Fermions at finite isospin chemical potential*, M. Kieburg, K. Splittorff, J.J.M. Verbaarschot, S. Zafeiropoulos, contribution to LATTICE 2014, arXiv:1411.2570.
2. *Investigating corrections to a Gaussian distribution of the complex phase*, Jeff Greensite, Joyce C. Myers, K. Splittorff, **Plenary review** at Lattice 2013, PoS(LATTICE 2013)023, arXiv:1311.4568.
3. *Discretization Effects in the ϵ -Domain of QCD*, Mario Kieburg, K. Splittorff, Jacobus J. M. Verbaarschot, Savvas Zafeiropoulos, PoS LATTICE2013 (2013) 120, arXiv:1311.3647.
4. *Investigating the Sharpe-Singleton scenario on the lattice by direct eigenvalue computation*, Joni M. Suorsa, T. Rantalaiho, K. Rummukainen, K. Splittorff, David J. Weir, PoS(LATTICE 2013)11, arXiv:1311.1680 [hep-lat].
5. *Wilson chiral perturbation theory, Wilson-Dirac operator eigenvalues and clover improvement*, Poul H. Damgaard, Urs M. Heller, K. Splittorff, arXiv:1301.3099 [hep-lat]. Contribution to "Xth Quark Confinement and the Hadron Spectrum," PoS (Confinement X) 077.
6. *Chiral Dynamics With Wilson Fermions*, K. Splittorff, **Plenary review**, lattice 2012, PoS(Lattice 2012)113, arXiv:1211.1803 [hep-lat].
7. *Progress on the Microscopic Spectrum of the Dirac Operator for QCD with Wilson Fermions*, K. Splittorff, J.J.M. Verbaarschot, contribution to Lattice 2011, PoS(Lattice 2011)113, arXiv:1112.0377 [hep-lat].
8. *A mesoscopic approach to the QCD phase diagram*, M.P. Lombardo, K. Splittorff, J.J.M. Verbaarschot, contribution to New Frontiers in QCD 2010: Exotic Hadron Systems and Dense Matter, Prog.Theor.Phys.Suppl. 186 (2010) 516-521.
9. *Wilson Fermions, Random Matrix Theory and the Aoki Phase*, G. Akemann, P.H. Damgaard, K. Splittorff, J.J.M. Verbaarschot, contribution to Lattice 2010, PoS LATTICE2010 (2010) 092, arXiv:1011.5118 [hep-lat].
10. *Effects of dynamical quarks on the spectrum of the Wilson Dirac operator*, G. Akemann, P.H. Damgaard, K. Splittorff, J.J.M. Verbaarschot, contribution to Lattice 2010, PoS LATTICE2010 (2010) 079, arXiv:1011.5121 [hep-lat].
11. *How the Quark Number fluctuates in QCD at small chemical potential*, M.P. Lombardo, K. Splittorff, J.J.M. Verbaarschot, contribution to Lattice 2010, PoS LATTICE2010 (2010) 216, arXiv:1011.5341 [hep-lat].
12. *Lattice QCD and dense quark matter*, M.P. Lombardo, K. Splittorff, J.J.M. Verbaarschot, Invited contribution to the proceedings for CSQCD II, May 2009, KIAA at Peking University, Beijing, China, arXiv:0912.4410.

13. *Fluctuations, correlations and the sign problem in QCD*, M. P. Lombardo, K. Splittorff, J.J.M. Verbaarschot, contribution to Lattice 2009, PoS(LAT2009)171, arXiv:0912.3109.
14. *Phase of the Fermion Determinant for QCD at Finite Chemical Potential*, K. Splittorff, J.J.M. Verbaarschot, PoS(LATTICE 2008)182, arXiv:0809.5259.
15. *Lessons from Random Matrix Theory for QCD at Finite Density*, K. Splittorff, J.J.M. Verbaarschot, proceedings from Continuous Advances in QCD 2008, Minneapolis, May 2008, arXiv:0809.4503.
16. *Statistical QCD with non-positive measure*, J.C. Osborn, K. Splittorff, J.J.M. Verbaarschot, proceedings from CAQCD 2008 in Minneapolis, arXiv:0808.1982.
17. *Triage of the sign problem*, K. Splittorff, J.J.M. Verbaarschot, Acta Phys.Polon.B38 (2007) 4123-4138; arXiv:0710.0704 [hep-th]
18. *Random Matrix Theory at Nonzero μ and T* , K. Splittorff, J.J.M. Verbaarschot, Invited talk at YKIS2006, Prog.Theor.Phys.Suppl.168 (2007) 265; arXiv:0704.0330 [hep-ph].
19. *The Sign problem in the epsilon-regime of QCD*, K. Splittorff, **Plenary review** at lattice 2006, PoS (LAT2006) 23, hep-lat/0610072.
20. *Surprises for QCD at Nonzero Chemical Potential*, K. Splittorff, J.J.M. Verbaarschot, proceedings from 7th Workshop on Continuous Advances in QCD, Minneapolis, Minnesota, 11-14 May 2006, hep-ph/0608206.
21. *The Sign Problem is the Solution*, J.C. Osborn, K. Splittorff, J.J.M. Verbaarschot, proceedings of XQCD in Swansea, hep-lat/0510118.
22. *Lattice simulations of QCD with $\mu_B \neq 0$ versus phase quenched QCD*, K. Splittorff, hep-lat/0505001.
23. *QCD Dirac Spectra and the Toda Lattice*, K. Splittorff and J.J.M. Verbaarschot, proceedings from "Continuous Advances in QCD 2004", Minneapolis, hep-th/0408107.
24. *Thermodynamics of Chiral Symmetry at Low Densities*, Ph.D. thesis, University of Copenhagen, The faculty of Science, <http://www.nbi.dk/~split/afhandling.ps.gz>.
25. *The Ginsparg-Wilson relation and local chiral random matrix theory*, K. Splittorff and A.D. Jackson, hep-lat/9805018.
26. *Vector Condensation in QCD*, K. Splittorff, proceedings from "International Conference on Statistical QCD" held in Bielefeld, hep-lat/0110226.
27. *Local Chiral Random Matrix Theory*, Master thesis, University of Copenhagen, The faculty of Science, <http://www.nbi.dk/~split/special.ps.gz>.

PRESENTATIONS

1. *Does the gradient flow quench the dynamics?* **2015**
talk at NBI, May 13, 2015.
2. *Complex Langevin in QCD with chemical potential larger than half the pion mass* **2014**
Invited talk LGT group CUDA, Eotvos University, Budapest, December 17th, 2014.
3. *The Dirac spectrum of complex Langevin simulations* **2014**
Invited talk at LGT14, CERN, July 29th, 2014.
4. *Complex Langevin for chiral RMT at nonzero chemical potential* **2014**
Opening talk at XQCD, Stony Brook, June 19th, 2014.
5. *Gradient flow in the ϵ -regime* **2014**
Talk at *Facing Strong dynamics*, Liselund, Denmark, June 4, 2014.
6. *Complex Langevin for chiral Random Matrix Theory at nonzero chemical potential* **2014**
Invited talk for the *Sign 2014* conference, GSI, Darmstadt, Germany, February 20, 2014.
7. *Complex Langevin for chiral Random Matrix Theory at nonzero chemical potential* **2013**
Invited talk at University of Bielefeld, Germany, December 17, 2013
8. *The density in the density of states* **2013**
Invited talk at I.N.F.N., Universita di Parma, Italy, November 28, 2013.
9. *The density of states approach to QCD at nonzero density* **2013**
Invited talk at STRONGnet 2013, University of Graz, Austria, September 16, 2013.
10. *The QCD sign problem as a total derivative* **2013**
Talk at XQCD, AEI in Bern, Switzerland, August 6, 2013.
11. *The QCD sign problem as a total derivative* **2013**
Invited talk at NTNU, University of Trondheim, Norway, June 9, 2013.
12. *The QCD sign problem as a total derivative* **2013**
Talk at program on “Quantum Noise”, INT, University of Washington, Seattle, USA, May 8, 2013.
13. *The QCD sign problem as a total derivative* **2013**
Invited talk at Swansea University, UK, April 19, 2013.
14. *Dense strongly Interacting Matter* **2013**
- *an unexpected lesson from chiral perturbation theory,*
Invited Science Coffee talk, University of Lund, Sweden January 24, 2013.

15. *Canonical determinants in QCD*, **2012**
Talk at 'QCD in Extreme Conditions', Trondheim, Norway, December 14, 2012.
16. *Strong Phases From First Principles*, **2012**
Invited talk at Discovery centre strategy meeting, NBI, Copenhagen, Denmark, November 13, 2012.
17. *The subset method and canonical determinants* **2012**
Talk at Sign 2012, Regensburg, Germany, September 20, 2012.
18. *Chiral Dynamics with Wilson Fermions* **2012**
Plenary talk at Lattice 2012, Cairns, Australia, June 29, 2012.
19. *Can we study dense matter on the lattice?* **2012**
Invited talk at NUPECC meeting, NBI, Copenhagen, June 14, 2012.
20. *The Realization of the Sharpe-Singleton Scenario* **2012**
Invited talk at CERN lattice theory group, June 8, 2012.
21. *The QCD sign problem from Chiral Perturbation Theory* **2012**
Invited talk at the Institute for Theoretical Physics, AEC, University of Bern, May 31, 2012.
22. *On the Realization of the Sharpe-Singleton Scenario* **2012**
Invited talk at the Institute for Theoretical Physics, AEC, University of Bern, May 30, 2012.
23. *The Aoki phase versus the Sharpe-Singleton scenario* **2012**
Talk at HIP, Dep of Physics, Uni of Helsinki, Finland, May 8, 2012.
24. *The Realization of the Sharpe-Singleton Scenario* **2012**
Invited talk at INT Seattle, Washington, USA, March 9, 2012.
25. *The spectrum of the Dirac operator in lattice QCD with Wilson Fermions* **2012**
Talk at the Niels Bohr Institute, Copenhagen, Denmark, Jan 25, 2012.
26. *RMT for QCD at non zero lattice spacing* **2011**
Invited talk at ZiF, Bielefeld, Germany, December 16, 2011.
27. *Finite Volume Scaling of the Wilson Dirac Spectrum* **2011**
Invited Joint Lattice Seminar of Humboldt University and DESY Zeuthen, Berlin, Germany, December 5, 2011.
28. *Lattice QCD at non zero chemical potential - status and challenges* **2011**
Talk at workshop on *Heavy ions: Experiments Confront Theory*, the Discovery Center, Copenhagen, Denmark, November 8, 2011.
29. *The Wilson Dirac Spectrum close to the Continuum* **2011**
Invited talk at University of Helsinki, Finland, September 20, 2011.

30. *The Physical Wilson Dirac Spectrum* **2011**
Invited talk at Department of Theoretical Physics at UAM, Madrid, Spain, May 25, 2011.
31. *The spectrum of the Wilson Dirac Operator at Finite Lattice Spacing* **2011**
Invited talk at Inst. f. Physik, FB Theoretische Physik, Uni-Graz, Austria, May 11, 2011.
32. *The Microscopic Eigenvalue Density of the Wilson Dirac Operator* **2010**
Invited talk at LNF, Frascati, Italy, November, 2010
33. *Random Matrix Theory for QCD* **2010**
3 invited lectures at the International Graduate School, Bielefeld-Paris-Helsinki, Helsinki, Finland, 25 October 2010.
34. *The second complex Langevin revolution* **2010**
Informal talk at LGT10, CERN, Geneva, Switzerland, August 5, 2010.
35. *Spectra of the Wilson Dirac operator at nonzero lattice spacing* **2010**
Invited talk at LGT10, CERN, Geneva, Switzerland, August 3, 2010.
36. *How the Quark Number fluctuates in QCD at small chemical potential* **2010**
Talk at Lattice2010, Sardinia, Italy, 17 June 2010.
37. *Microscopic spectra at finite lattice spacing* **2010**
Talk at CP³-Origins, SDU, Odense, Denmark, May 17, 2010.
38. *The fluctuations of the quark number* **2010**
Talk at EQCD, Trondheim, Norway, 25 Feb 2010.
39. *Partially quenched observables in dense QCD* **2010**
Invited lecture at YITP, Kyoto, Japan, 13 Jan 2010.
40. *The density of states method: fluctuations of the quark number* **2010**
Invited talk at YITP, Kyoto, Japan, 13 Jan 2010.
41. *Stochastic quantization, finite chemical potential and the sign problem* **2009**
Presentation at NBI, Copenhagen, Denmark, 17 June 2009.
42. *Lattice QCD and dense quark matter* **2009**
Invited talk at the workshop “Compact stars in the QCD phase diagram II” held at KIAA, Peking University, Beijing, China, 23 May 2009.
43. *QCD with fixed complex fermion determinant* **2009**
Invited talk at TAU, Tel Aviv, Israel, 26 March 2009.
44. *Replica Quarks* **2009**
Invited talk at the ISF Research Workshop “Random Matrices and Integrability”, Yad Hashmona, Israel, 26 March 2009.

45. *QCD with fixed complex fermion determinant* **2009**
Invited introductory talk at the workshop “Sign Problems and Complex Actions” held at ECT* in Trento, Italy for 2 March 2009
46. *The quest for the QCD phase diagram* **2008**
Invited talk at SDU, Odense, Denmark, 11 December 2008
47. *Fixing the complex fermion determinant* **2008**
Talk at the International Workshop “Tools for Finite Density QCD” held at University of Bielefeld, Germany, 21 November 2008.
48. *Non hermitian RMT applied to QCD* **2008**
Talk at the workshop on ‘Random matrices, Related topics, and Applications’, Centre de Recherches Mathematiques, Montreal, Canada, 30 August 2008.
49. *Bose-Einstein Condensation and the phase diagram of QCD* **2008**
Presentation at the Niels Bohr International Academy *Summer Institute* on “Ultra-cold Atoms and Quark-Gluon Plasmas”, 4 July 2008.
50. *Statistical QCD with non-positive measure* **2008**
Talk at the workshop on ‘Continuous Advances in QCD’, Minneapolis, Minnesota, USA 15 May 2008.
51. *QCD at finite temperature and density, a matrix model approach* **2008**
Lecture series (15 hours) at XX Heidelberg Physics Graduate Days, University of Heidelberg, Germany, 31 March - 4 April 2008.
52. *Microscopic integrability and strong dense fields* **2007**
Seminar at Isaac Newton Institute for Mathematical Sciences in Cambridge, UK, 17 August 2007.
53. *The average phase factor from chiral perturbation theory* **2007**
Seminar at XQCD in Frascati, Italy, 7 August 2007.
54. *Extracting the pion decay constant from the Dirac spectrum* **2006**
Seminar at DESY in Zeuthen, Germany, 28 November 2006.
55. *Complying with the sign problem* **2006**
Seminar at Swansea University, Wales, 5 September 2006.
56. *The sign problem in the ϵ -regime of QCD* **2006**
Seminar at Laboratori Nazionali, Frascati, Italy, 4 October 2006.
57. *The sign problem in the ϵ -regime of QCD* **2006**
Plenary talk at “The XXIV International Symposium on Lattice Field Theory”, Tucson, Arizona, USA, 24 July 2006.
58. *The ϵ -regime of QCD at $\mu \neq 0$* **2006**
Talk at the workshop “New Directions in Nonperturbative QCD” held at ECT*, Trento, Italy, 27 April 2006

59. *Chiral Symmetry Breaking and the Dirac Spectrum at Nonzero Chemical Potential*,
Seminar at University of Graz, 10 May 2006. **2006**
60. *Random Matrix Theory for QCD* **2006**
Introductory talk at University of Graz, 10 May 2006.
61. *When the sign problem is the solution* **2005**
Seminar at Trinity Collage Dublin, 23 November 2005.
62. *The Statistical Physics of Complex Eigenvalues* **2005**
Seminar at Chalmers University, Göteborg, 29 April 2005.
63. *The Banks-Casher relation at Non-Zero Baryon Chemical Potential* **2005**
Seminar at NBI, 29 March 2005.
64. *Chiral symmetry breaking and the Dirac spectrum at non-zero μ_B* **2005**
Talk during the KITP program “Modern Challenges for Lattice Field Theory” in Santa Barbara, 28 February 2005.
65. *The spectrum of the unquenched QCD Dirac operator at non-zero μ_B* **2005**
Talk at the workshop “Probing QCD with High Energy Nuclear Collisions” in Hirschegg, 19 January 2005.
66. *Finite Volume Effects and the Sign Problem in QCD* **2004**
Seminar at Lund TH - Dpt. Mathematical Physics, December 2 2004.
67. *The unquenched QCD Dirac spectrum at non-zero μ_B* **2004**
Talk at ”Quantum Fields in the Era of Teraflop-Computing” ZiF Workshop in Bielefeld, 23 November 2004.
68. *The complex spectrum of the QCD Dirac operator* **2004**
Contribution to ”Perspectives in Random Matrix Theory” at CiC, Cuernavaca, Mexico, 10 August 2004.
69. *Finite Volume Effects in QCD at non-zero μ* **2004**
Talk at the Niels Bohr Institute, 10 May 2004.
70. *Finite Volume Effects in QCD at non-zero μ* **2004**
Contribution to “QCD and Dense Matter: From Lattices to Stars” at INT - Seattle, 26 May 2004.
71. *Random Matrix Theory* **2004**
NORDITA Seminars - 4 general lectures, 5-12 February 2004.
72. *The spectral density of the Dirac operator in QCD at non-zero chemical potential* **2003**
Nuclear theory seminar at the Niels Bohr Institute, 17 November 2003.

73. *Elitzur's theorem & the sign problem* **2003**
Seminar at Brookhaven National Lab, 13 August 2003.
74. *Elitzur's theorem & the sign problem* **2003**
Seminar at University of Virginia 16 August 2003.
75. *Elitzur's theorem & the sign problem* **2003**
Nuclear Theory Seminar at SUNY Stony Brook, 21 August 2003.
76. *Elitzur's theorem & the sign problem* **2003**
Seminar at the Rostock-Copenhagen meeting, 8 December 2003.
77. *The Thermodynamics of QCD at Small Chemical Potentials* **2003**
Presented at University of Colorado at Boulder, 11 November 2003.
78. *Fluctuation Induced Critical Behavior at Non-Zero T and μ* **2003**
Seminar at Center for Theoretical Physics at MIT, Boston, 18 February 2003.
79. *Bose Condensation in CPT* **2003**
Talk at "Applications of Effective Field Theory" in Milan, 5 February 2003.
80. *The Replica Limit of the Toda Lattice Equation* **2003**
Theoretical High Energy Physics Seminar at the Niels Bohr Institute, 13 February 2003.
81. *The Replica Limit of the Toda Lattice Equation* **2003**
Contribution to "Random Matrices in Subatomic Physics" at ECT* in Trento, 29 May 2003.
82. *Critical Phenomena and Explicit Breaking of Lorentz Invariance* **2002**
Nuclear Theory Seminar at SUNY Stony Brook, 10 October 2002.
83. *Critical Phenomena and Explicit Breaking of Lorentz Invariance* **2002**
Seminar at Brookhaven National Lab, 8 November 2002.
84. *The Thermodynamics of Chiral Symmetry at Low Densities* **2002**
PhD thesis defense the Niels Bohr Institute, 7 June 2002. Chairman: Prof. T. Døssing, NBI. Opponents: Prof. R.D. Pisarski, BNL and Prof. S. Hands, University of Wales, Swansea.
85. *Vector Condensation in QCD* **2001**
Talk at the Niels Bohr Institute, 8 October 2001.
86. *Vector Condensation in QCD* **2001**
Nuclear Physics Seminar at Brookhaven National Lab, 27 November 2001.
87. *Vector Condensation in QCD* **2001**
Nuclear Theory Seminar at SUNY Stony Brook, 4 December 2001.

88. *Vector Condensation in Two Colour QCD* **2001**
 Poster presented at the Center for Interdisciplinary Research (Bielefeld) at the “International Conference on Statistical QCD”, 27 August 2001.
89. *Thermodynamics of QCD* **2001**
 Talk presented at the Cargese summer school on “QCD Perspectives on Hot and Dense Matter”, 17 August 2001.
90. *QCD at finite Baryon and Isospin Density* **2001**
 Talk at The Niels Bohr Institute, 12 February 2001.
91. *QCD at finite Baryon and Isospin Density* **2001**
 Contribution to the 40th Schladming Winter School on “Dense Matter”, 4 March 2001.
92. *QCD at finite Baryon and Isospin Density* **2000**
 Nuclear Theory Seminar at SUNY-Stony Brook, 7 November 2000.
93. *QCD at finite Baryon and Isospin Density* **2000**
 Seminar at MIT, Boston, 6 December 2000.
94. *Partial Quenching, Replicas, and Non-Zero Chemical Potential* **2000**
 Talk at INT, Seattle during the program ”QCD at Finite Baryon Density”, 17 May 2000.
95. *Equivalence Between the Replica and the Supersymmetric Formulations of Partially Quenched Chiral Perturbation Theory* **2000**
 Talk at the Niels Bohr Institute, 17 April 2000.
96. *Virasoro constraints, the replica trick, and the infrared limit of the QCD Dirac spectrum* **1999**
 Talk at the Niels Bohr Institute, 13 December 1999.
97. *Microscopic Universality and the Chiral Phase Transition* **1999**
 Talk at the Workshop ”Hot non-perturbative particle physics” held at the Niels Bohr Institute, 15 October 1999.
98. *Chiral Random Matrix Theory - a case study of RMT* **1999**
 Talk at the Institute for theoretical physics Universität Graz, 19 January 1999.
99. *Local Chiral Random Matrix Theory* **1998**
 Talk at the ECT* workshop in Trieste on ”QCD and random matrix theory”, 6 May 1998.
100. *Local Chiral Random Matrix Theory* **1998**
 Nuclear Theory Seminar at the Niels Bohr Institute, 21 October 1998.