CURRICULUM VITÆ

(updated on July 5, 2010)

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Nationality:	Israeli

Positions:

2007-2010	Research Associate Particle theory group Department of Physics University of Washington Seattle, WA
2004-2007	Postdoctoral fellow Rudolf Peierls Centre for Theoretical Physics University of Oxford, UK

University Education:

Ph.D., 2004 *(Direct program)*	Physics Tel Aviv University (1998-2004) *(Advisor: Professor B. Svetitsky)* Thesis title: *'Dense baryonic matter in strong coupling lattice gauge theory'* `hep-lat/0407018`.
B.Sc., 1997	Physics Tel Aviv University (1994-1997) *Magna Cum Laude*

Visiting positions

18th Oct. - 18th Nov. 2009 21st - 25th December 2008	Department of Physics Weizmann Institute of Science Rehovot, Israel
19th - 25th July 2009	Kavli Institute for Theoretical Physics China at the Chinese Academy of Sciences Beijing, China
28th June - 7th July 2009 15th - 22nd March 2009	Rudolf Peierls Centre for Theoretical Physics Oxford, UK
10th - 16th March 2009	CERN theory department Geneva, Switzerland
7th - 27th August 2007	Isaac Newton Institute for Mathematical Sciences "Strong Fields, Integrability and Strings" programme Cambridge, UK

Organization of conferences

February 2009	"New Frontiers in Large N Gauge Theories" Organized together with Prof. Shifman, Dr. Ünsal, and Prof. Yaffe Institute for Nuclear Theory (INT) University of Washington Seattle, USA See details at `http://www.int.washington.edu/PROGRAMS/09-41w.html`. Funding awarded from the INT: 17,000$.
July 2010	"Confining flux tubes and strings" Currently organized together with Prof. Aharony and Dr. Teper The European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT*) Trento, Italy Funding awarded from the ECT*: about 14,000$ (estimated).

Awards

2004	The Judah Eisenberg award for academic achievements
2002	The Applied Materials Award for excellence in research
1997	The School of Physics and Astronomy award for excellence in studies

Teaching

University of Washington

Winter 2007 - Spring 2008	Teaching a reading class in Lattice Field Theory

University of Oxford

Michaelmas term 2005	Tutoring Introduction to Quantum Field Theory
Hilary term 2005	Tutoring Non-Abelian Quantum Field Theory

Tel Aviv University

Fall 2003	Tutoring Quantum Mechanics II
Spring 2002	Tutoring Introduction to Nuclear Physics
2001/2002	Head instructor in physics laboratory for first year undergraduates
2000/2001	Instructor in physics laboratory for first year undergraduates

Military service

Israel Defense Force	1997-2000

Preprints and articles published in primary peer-reviewed journals

1. B. Bringoltz,
   Large-N spacetime reduction and the sign and silver-blaze problems of dense QCD .
   JHEP06:076, (2010).
   arXiv:1004.0030.

2. B. Bringoltz,
   Partial breakdown of center symmetry in large-N QCD with adjoint Wilson fermions.
   JHEP 1003:069, (2010).
   arxiv:0911.0352.

3. B. Bringoltz and S. R. Sharpe,
   Non-perturbative volume-reduction of large-N QCD with adjoint fermions.
   Phys. Rev. D **80**, 065031 (2009).
   arxiv:0906.3538.

4. B. Bringoltz,
   Large-N volume reduction of lattice QCD with adjoint Wilson fermions at weak-coupling.
   JHEP 0906:091, (2009).
   arXiv:0905.2406.

5. B. Bringoltz,
Solving two-dimensional large-N QCD with a nonzero density of baryons and arbitrary quark mass.
Phys. Rev. D **79**, 125006 (2009).
arxiv:0901.4035.

6. A. Athenodorou, B. Bringoltz and M. Teper,
On the spectrum of closed $k = 2$ flux tubes in $D = 2 + 1$ $SU(N)$ gauge theories.
JHEP 0905:019, (2009).
arXiv:0812.0334.

7. B. Bringoltz,
Volume dependence of two-dimensional large-N QCD with a nonzero density of baryons.
Phys. Rev. D **79**, 105021 (2009).
arxiv:0811.4141.

8. B. Bringoltz and S. R. Sharpe,
Applying the Wang-Landau Algorithm to Lattice Gauge Theory.
Phys. Rev. D **78**, 074503 (2008).
arxiv:0807.1275.

9. B. Bringoltz and S. R. Sharpe,
Breakdown of large-N quenched reduction in SU(N) lattice gauge theories.
Phys. Rev. D **78**, 034507 (2008).
arxiv:0805.2146.

10. B. Bringoltz and M. Teper,
Closed k-strings in $SU(N)$ gauge theories : $2 + 1$ dimensions.
Phys. Lett. B. **663** (2008).
arxiv:0802.1490.

11. A. Athenodorou, B. Bringoltz and M. Teper,
The closed string spectrum of $SU(N)$ gauge theories in $2 + 1$ dimensions.
Phys. Lett. B. **656** (2007).
arxiv:0709.0693.

12. B. Bringoltz,
Chiral crystals in strong-coupling lattice QCD at nonzero chemical potential.
JHEP 0703:016, (2007).
JHEP03(2007)016 hep-lat/0612010.

13. B. Bringoltz and M. Teper,
A precise calculation of the fundamental string tension in $SU(N)$ gauge theories in $2 + 1$ dimensions.
Phys. Lett. B. **645** (2007).
hep-lat/0611286.

14. B. Bringoltz,
The critical region of strong-coupling lattice QCD in different large-N limits
Phys. Rev. D. **73**, 076002 (2006).
hep-lat/0511058.

15. B. Bringoltz and M. Teper,
In search of a Hagedorn transition in $SU(N)$ lattice gauge theories at large-N
Phys. Rev. D. **73**, 014517 (2006).
hep-lat/0508021.

16. B. Bringoltz and M. Teper,
The pressure of the $SU(N)$ lattice gauge theory at large-N
Phys. Lett. B. **628**, 113 (2005).
hep-lat/0506034.

17. B. Bringoltz and B. Svetitsky,
Anisotropic Goldstone bosons of strong-coupling lattice QCD at high density
Phys. Rev. D. **70**, 074512 (2004).
hep-lat/0405013.

18. B. Bringoltz and B. Svetitsky,
Spontaneous symmetry breaking in strong-coupling lattice QCD at high density
Phys. Rev. D. **69**, 014502 (2004).
hep-lat/0310032.

19. B. Bringoltz,
Order from disorder in lattice QCD at high density
Phys. Rev. D. **69**, 014508 (2004).
hep-lat/0308018.

20. B. Bringoltz and B. Svetitsky,
Lattice gauge theory with baryons at strong coupling
Phys. Rev. D. **68**, 034501 (2003).
hep-lat/0211018.

Articles published in non peer-reviewed conference proceedings

(1) A. Athenodorou, B. Bringoltz and M. Teper,
The spectrum of closed loops of fundamental flux in D = 3+1 SU(N) gauge theories.
The Proceeding of Science (2009).
arxiv:0912.3238.

(2) B. Bringoltz and S. R. Sharpe,
Volume independence of large-N QCD with adjoint fermions.
The Proceeding of Science (2009).
arxiv:0909.1843.

(3) B. Bringoltz and S. R. Sharpe,
Breakdown of large-N reduction in the quenched Eguchi-Kawai model.
Proceedings of Science. PoS(LAT2008)055, (2008).
arxiv:0810.1239.

(4) A. Athenodorou, B. Bringoltz and M. Teper,
Spectrum of closed k-strings in $D = 2 + 1$.
Proceedings of Science. PoS(LAT2008)263, (2008).
arxiv:0809.4431.

(5) A. Athenodorou, B. Bringoltz and M. Teper,
The Spectrum of closed loops of fundamental flux in $D = 2 + 1$ $SU(N)$ gauge theories.
Proceedings of Science. PoS(LAT2007)288, (2007)
arxiv:0709.2981.

(6) B. Bringoltz and M. Teper,
Strings in $SU(N)$ gauge theories in $2 + 1$ dimensions: Beyond the fundamental representation.
Proceedings of Science. PoS(LAT2007)291, (2007)
Talk given by BB at the 23rd International Symposium on Lattice Field Field: Lattice 2007, Regensburg, Germany, (30 Jul - August 4, 2007).
arxiv:0708.3447.

(7) B. Bringoltz and M. Teper,
String tensions of $SU(N)$ gauge theories in $2 + 1$ dimensions.
Proceedings of Science. PoS(LAT2006)041, (2006)
Talk presented by BB at the 24th International Symposium on Lattice Field Field: Lattice 2006, Tucson, Arizona
hep-lat/0610035.

(8) B. Bringoltz,
Bulk thermodynamics of $SU(N)$ lattice gauge theories at large-N
Talk given at the workshop on Extreme QCD, Swansea, Wales, (2-5 Aug 2005)
hep-lat/0511012.

(9) B. Bringoltz and M. Teper,
The pressure and a possible hidden Hagedorn transition at large-N
Proceedings of Science. PoS(LAT2005)175, (2005).
Talk given by BB at the 23rd International Symposium on Lattice Field Field: Lattice 2005, Trinity College, Dublin, Ireland, 25-30 Jul 2005.
hep-lat/0509186.

(10) B. Bringoltz and B. Svetitsky,
Towards a strong-coupling theory of QCD at finite density
Nucl. Phys. Proc. Suppl. **119**, 565 (2003).
Presented at 20th International Lattice Symposium, Boston, Massachusetts, 24-29 Jun 2002.
hep-lat/0209005

Papers in preparation, and work in progress

a. B. Bringoltz and L. G. Yaffe
Chemical potentials in the large-N limit of QCD.
Work in progress.

b. A. Athenodorou, B. Bringoltz and M. Teper,
The spectrum of closed strings in D = 3+1 SU(N) gauge theories.
In preparation.

Talks at international meetings

The pdf copies of these talks are available online at `http://www.phys.washington.edu/users/barak/`

Invited talks at conferences, workshops, and meetings

"Space-time reduction of large-N gauge theories"

The "Numerical approaches to AdS/CFT, large N and gravity" workshop, Imperial College, London, UK (September 2009).

"Large-N volume reduction with adjoint fermions"

The "Large-N at Swansea" conference, University of Wales, Swansea, UK, (July 2009).

"Large-N QCD from the lattice"

Review talk, given at "New Frontiers in Large N Gauge Theories" workshop at the Institute for Nuclear Theory at the University of Washington, Seattle, USA (February 2009).

"QCD flux-tubes/strings"

The 54th meeting of the Israeli Physical Society, Ben-Gurion Univ., Be'er Sheva, Israel, (December 2008).

"Large-N volume quenched reduction of SU(N) lattice gauge theories"

The Lawrence Livermore National Laboratory, "Lattice for the Large Hadron Collider" workshop (May 2008)

"Strings in $SU(N)$ gauge theories: zero and nonzero temperature"

The "Exploring deconfinement" workshop at the Newton Institute for Mathematical Sciences (August '07). Available at - `www.newton.cam.ac.uk/webseminars/pr+ws/2007/sis/sisw01/0824/bringoltz/`

"QCD flux-tubes/strings in $2+1$ dimensions"

The joint Israeli High Energy Theory Seminar, Neve Shalom, Israel (April 2007).

"Strings in $2+1$ dimensions: a lattice perspective"

The workshop "Yang-Mills Theories: Nonperturbative aspects", City College of New York, USA (Jan 2007)

"The deconfinement transition for a large number of colors"

Keynote speaker at the "Extreme QCD" workshop, RIKEN/BNL, Long-Island, USA (August 2006).

"Strong-coupling lattice QCD at high density."

The workshop on QCD at finite temperature and density, RIKEN/BNL, Long-Island, USA, (February 2004).

Contributed presentations at workshops and conferences

"On dense QCD at large-N"

Talk at the "Extreme QCD" workshop, Seoul University, Seoul, Korea, (August 2009).

"Large-N volume reduction with Wilson adjoint fermions at weak-coupling"

Talk at the XXVII International Symposium on Lattice Field Theory, Peking University, Beijing, China, (July 2009).

"Large-N QCD flux-tubes as relativistic strings"

Talk at the "Lattice QCD" workshop at the Kavli Institute for Theoretical Physics China at the Chinese Academy of Sciences, Beijing, China, (July 2009).

"On the behavior of large-N QCD at zero temperature and nonzero chemical potential"

Talk at the "Sign Problems and Complex Actions" workshop at the ECT*, Trento, Italy, (March 2009).

"Large-N volume quenched reduction of SU(N) lattice gauge theories"

Talk given at the XXVI International Symposium on Lattice Field Theory, College of William and Mary, Williamsburg, Virginia, USA, (July 2008).

"k-strings in $SU(N)$ gauge theories in $2+1$ dimensions"

Talk at the XXV International Symposium on Lattice Field Theory, University of Regensburg, Germany, (July 2007).

"String tensions of $SU(N)$ lattice gauge theories in $2+1$ dimensions."

Talk at the XXIV International Symposium on Lattice Field Theory, Tucson, Arizona, USA, (July 2006).

"The critical region of strong-coupling lattice QCD in different large-N limits."
Talk at the "New Directions in Nonperturbative QCD" workshop, ECT*, Trento, Italy, (March, 2006).

"Bulk thermodynamics in $SU(N)$ lattice gauge theories at large-N."
Talk at the "Extreme QCD" workshop, University of Swansea, UK, (August 2005).

"The pressure, and a possible hidden Hagedorn transition at large-N."
Talk at the XXIII International Symposium on Lattice Field Theory, Trinity College, Dublin (July 2005).

"Strong-coupling lattice QCD at high density."
Poster at the XX International Symposium on Lattice Field Theory, MIT, Boston, USA, (July 2002)

"The pressure, and a possible hidden Hagedorn transition at large-N."
Talk at the XXIII International Symposium on Lattice Field Theory, Trinity College, Dublin (July 2005).

Departmental seminar talks

"Large-N volume reduction with adjoint fermions"
Scheduled at the theory seminar at SLAC, Stanford University, USA,
(December 2009).

"On nonzero chemical potentials in large-N QCD"
Scheduled at the physics seminar of Duke University, USA, (December 2009).

"Large-N volume reduction with adjoint fermions"
Scheduled at the physics seminar of the University of Maryland, USA, (December 2009).

"Nonperturbative space-time reduction with large-N gauge theories"
Scheduled at the department of physics, the Hebrew University, Jerusalem, Israel, (October 2009).

"Space-time reduction with large-N gauge theories with adjoint fermions"
Scheduled at the department of physics of the Technion, Haifa, Israel,(October 2009)
Scheduled at the department of physics, Tel-Aviv University, Tel-Aviv, Israel, (October 2009).

"Space-time reduction of large-N gauge theories"

Department of Physics, Edinburgh University, Edinburgh, UK,(October 2009).

"QCD flux-tubes/strings"

Department of Physics, City College of New York, New-York, USA, (March 2009).

Theory department, CERN, Geneva, Switzerland, (March 2009).

"On the behavior of large-N QCD at zero temperature and nonzero chemical potential"

The Nuclear theory group at RIKEN/BNL, Long-Island, USA, (March 2009).

"QCD flux-tubes/strings"

The Nuclear group at the Hebrew University, Jerusalem, Israel, (January 2009).

"On the status of non-perturbative large-N equivalences"

Weizmann Institute, Rehovot, Israel (December 2008).
The Technion, Haifa, Israel (December 2008).
Tel-Aviv University, Tel-Aviv, Israel (January 2009).
Ben-Gurion University, Beer-Sheva, Israel (January 2009).
The Technion, Haifa, Israel (December 2008).
The University of Oxford, Oxford, UK (March 2009).

"Large-N volume quenched reduction of SU(N) lattice gauge theories"

University of California in San-Francisco (April 2008).
Department of Physics, UCLA (May 2008)
Theory seminar at the University of California in San-Diego (May 2008).

"Color flux-tubes/strings and the Hagedorn temperature : a lattice perspective"

Nuclear theory group, Stony Brook University, Stony Book, USA (December 2006).
Columbia University, New-York, USA (December 2006).
Theory department, TRIUMF, British Columbia, Canada (January 2007).
University of Washington, Seattle, USA (January 2007).

"Bulk thermodynamics in $SU(N)$ lattice gauge theories at large-N."

University of Liverpool, UK, (October 2005).

Trinity college, Dublin, Ireland, (December 2005).

"Strong-coupling lattice QCD at high density."

Center for Nuclear Theory, Stony Brook University, Stony Brook, USA, (January 2004).

Center for Theoretical Physics, MIT, Boston, USA, (February 2004).

Tel-Aviv University, Israel, (July 2004).

University of Oxford, UK, (October 2004).

University of Swansea, UK, (November 2004).

Service to the community

Working as referee for *Physical Review D, Physical Review Letters, Physics Letters, and Journal of High Energy Physics*

Computational experience

Fortran

Expert in Monte-Carlo simulations of $SU(N)$ lattice gauge theories, spin and sigma models, and bosonic and fermionic matrix models.

Experienced in the analysis of lattice QCD data that includes

- Calculations of string and glueball spectra from correlation functions.
- Investigations of phase transitions and thermodynamics of lattice QCD.
- Studies of Dirac overlap propagators from their low modes.
- Studies of the spectrum of Dirac operators (naive and overlap) at nonzero chemical potentials.

Performed re-weighting analysis of strongly-first order phase transitions

- Developed a Wang-Landau re-weighting algorithm for $SU(N)$ lattice gauge theories.
- Experienced with Ferrenberg-Swendsen Multi-histogram re-weighting.

Performed numerical work that includes integration and minimization of multi-dimensional functions.

Matlab

Twelve years experience with many aspects of Matlab that include solution of non-linear integral equations, data analysis, and data presentation.

C++

Basic programming skills: currently coding a Monte-Carlo simulation to describe large-N systems with dynamic fermions.