CURRICULUM VITAE

Paulo F. Bedaque

Notarization. I have read the following and certify that this curriculum vitae is a current and accurate statement of my professional record.

Signature Date June 18, 2007

1. Personal Information

Home address: 7225 Central Avenue, Takoma Park, MD 20912

Employment

Associate Professor, University of Maryland, 2008-present
Assistant Professor, University of Maryland, 2006-2008
Senior Scientist: Lawrence-Berkeley Laboratory, 2006
Divisional Fellow: Lawrence-Berkeley Laboratory, 2001-present
Research Assistant Professor: Institute for Nuclear Theory, University of Washington, 1999-2001
Research Associate: Institute for Nuclear Theory, University of Washington, 1996-1999
Post-Doctoral Associate: Massachusetts Institute of Technology, 1994-1996

Education

Ph.D.: University of Rochester, Rochester, 1994, Physics
M.S.: Universidade de Sao Paulo, Brazil, 1989, Physics
B.S.: Universidade de Sao Paulo, Brazil, 1985, Physics

2. Research, Scholarly, and Creative Activities

a. Books.

i. Books authored.
ii. Books edited.

"Nuclear Physics with Effective Theories", P. Bedaque, M. Savage, U. van Kolck and R. Seki (editors), World Scientific, 2000.

iii. Chapters in books.

From Hadrons To Nuclei: Crossing The Border, by Silas R. Beane, Paulo F. Bedaque, Wick C., Daniel R. Phillips and Martin J. Savage in the Boris Ioffe Festschrift, ed. by M. Shifman, World Scientific

b. Articles in Refereed Journals.

1) Search for Fermion Actions on Hyperdiamond Lattices, Paulo F. Bedaque, Michael I. Buchoff,, Brian C. Tiburzi, Andre Walker-Loud, *arXiv:0804.1145*.

2) Broken Symmetries from Minimally Doubled Fermions, Paulo F. Bedaque, Michael I. Buchoff, Brian C. Tiburzi, Andre Walker-Loud, *arXiv:0801.3361*.

3) Effective Field Theory for the Anisotropic Wilson Lattice Action, Paulo F. Bedaque, Michael I. Buchoff, Andre Walker-Loud, UMD-40762-393, *arXiv:0708.2254, submitted to Phys. Rev. D.*

4) Restless pions: orbifold boundary conditions and noise suppression in lattice QCD, Paulo F. Bedaque, Andre Walker-Loud, *UMD-40762-395, arXiv:0708.020, submitted to Phys. Lett. B.*

5) Fitting two nucleons inside a box: Exponentially suppressed corrections to the Luscher's form, I. Sato and Paulo F. Bedaque, *hep-lat/0702021, to appear on Phys. Rev. D.*

6) Hyperon-Nucleon Scattering from Fully-Dynamical Lattice QCD, by Silas R. Beane, Paulo F. Bedaque, Thomas C. Luu, Kostas Orginos, Elisabetta Pallante, Assumpta Parreno, Martin J. Savage, *hep-lat/0612026, submitted to Phys. Rev. C.*

7) A New class of quantum bound states: Diprotons in extreme magnetic fields, by Danielle Allor, Paulo Bedaque, Thomas D. Cohen, Charles T. Sebens, *Phys. Rev. C75:034001, 2007.*

8) π K scattering in full QCD with domain-wall valence quarks, by Silas R. Beane, Paulo F. Bedaque, Thomas C. Luu, Kostas Orginos, Elisabetta Pallante , Assumpta Parreno, Martin J. Savage, *Phys.Rev.D74:114503,2006.*

9) f(K)/f(π) in Full QCD with Domain Wall Valence Quarks., by S.R. Beane, P.F. Bedaque , K. Orginos , M.J. Savage, *hep-lat/0606023, Phys.Rev.D75:094501,2007.*

10) Superfluid phases of the three-species fermion gas, by Paulo F. Bedaque, Jose P. D'Incao, *cond-mat/060252, submitted to the Journal of Low Temperature Physics.*

11) Nucleon-nucleon scattering from fully-dynamical lattice QCD, by S.R. Beane, P.F. Bedaque, K. Orginos, M.J. Savage, *hep-lat/0602010, Phys.Rev.Lett.97:012001,2006.*

12) Finite volume corrections to pi-pi scattering, by Paulo F. Bedaque, Ikuro Sato, Andre Walker-Loud, *hep-lat/0601033, Phys.Rev.D73:074501, 2006.*

13) I = 2 pi-pi scattering from fully-dynamical mixed-action lattice QCD, by NPLQCD Collaboration (Silas R. Beane *et al.), hep-lat/0506013, Phys.Rev.D73:054503,2006.*

14) Twisted valence quarks and hadron interactions on the lattice, by Paulo F. Bedaque , Jiunn-Wei Chen**,** *hep-lat/0412023, Phys.Lett.B616:208-214,2005.*

15) A Nucleon in a tiny box, by Paulo F. Bedaque , Harald W. Griesshammer , Gautam Rupak, *hep-lat/0407009, Phys.Rev.D71:054015,2005.*

16) Aharonov-Bohm effect and nucleon nucleon phase shifts on the lattice, by Paulo F. Bedaque, *nucl-th/0402051, Phys.Lett.B593:82-88, 2004.*

17) Two Nucleons on a Lattice, by S. Beane, P. F. Bedaque, M. Savage and A. Parreno, *hep-lat/0312004, Phys.Lett.B585:106-114,2004.*

18) Exploring Hyperons and Hyper Nuclei with Lattice QCD, by S. Beane, P. F. Bedaque, M. Savage and A. Parreno, *nucl-th/0311027, Nucl.Phys.A747:55-74, 2005.*

19) Phase Separation In Asymmetrical Fermion Superfluids, by Paulo F. Bedaque, Heron Caldas and Gautam Rupak, *cond-mat/0306694, Phys.Rev.Lett.91:247002, 2003.*

20) Goldstone Bosons In The $^3P_2$ Superfluid Phase Of Neutron Matter And Neutrino Emission, by Paulo F. Bedaque, Gautam Rupak and Martin J. Savage, *nucl-th/0305032, Phys.Rev.C68:065802,2003.*

21) Narrow Resonances In Effective Field Theory, by P.F. Bedaque, H.W. Hammer and U. van Kolck, *nucl-th/0304007, Phys.Lett.B569:159-167,2003.*

22) Quantum Corrections To Dilute Bose Liquids, by Paulo F. Bedaque, Aurel Bulgac and Gautam Rupak, *Phys.Rev.A68:033606,2003.*

23) Low-Energy Expansion In The Three-Body System To All Orders And The Triton Channel, by Paulo F. Bedaque, Gautam Rupak, Harald W. Griesshammer and Hans-Werner Hammer, *nucl-th/0207034, Nucl.Phys.A714:589-610, 2003*.

24) Dilute Resonating Gases And The Third Virial Coefficient, by Paulo F. Bedaque and Gautam Rupak , ***cond-mat/0206527,*** *Phys.Rev.B67:174513,2003.*

25) Effective Field Theory for Few Nucleon Systems, by Paulo F. Bedaque and Ubirajara van Kolck, *nucl-th/0203055, Ann.Rev.Nucl.Part.Sci.52:339-396, 2002.*

26) Charged Kaon Condensation In High Density Quark Matter, by Paulo F. Bedaque, *Phys.Lett.B524:137-143, 2002.*

27) High Density Quark Matter under Stress, by Paulo F. Bedaque and Thomas Schafer, *Nucl.Phys.A697:802-822, 2002*.

28) Towards A Perturbative Theory Of Nuclear Forces, by S.R. Beane, Paulo F. Bedaque, M.J. Savage and U. van Kolck, *Nucl.Phys.A700:377-402, 2002.*

29) Singular Potentials And Limit Cycles, by S.R. Beane, Paulo F. Bedaque, L. Childress, A. Kryjevski, J. McGuire and U.van Kolck, *Phys.Rev.A64:042103, 2001.*

30) How to Renormalize The Gap Equation In High Density QCD, by Silas R. Beane and Paulo F. Bedaque, **Phys***.Rev.D62:117502, 2000* .

31) Renormalization Group Improved Gap Equation For Color Superconductors, by Silas R. Beane, Paulo F. Bedaque and Martin J. Savage, *Nucl.Phys.A688:931-938, 2001.*

32) Three Body Recombination In Bose Gases With Large Scattering Length, by Paulo F. Bedaque, E. Braaten and H.W. Hammer, *Phys.Rev.Lett.85:908-911, 2000.*

33) Meson Masses in High Density QCD, by Silas R. Beane, Paulo F. Bedaque and Martin J. Savage, *Phys.Lett.B483:131-138, 2000.*

34) Higher Partial Waves In An Effective Field Theory Approach To Nd Scattering, by Fabrizio Gabbiani, Paulo F. Bedaque and Harald W. Griesshammer, *Nucl.Phys.A675:601-620, 2000.*

35) Color Superconductivity In Asymmetric Matter, by Paulo F. Bedaque, *Nucl.Phys.A697:569-577, 2002.*

36) Parity Violation in Gamma Polarized Compton Scattering, by Paulo F. Bedaque and Martin J. Savage, **Phys***.Rev.C62:018501, 2000.*

37) Quartet S Wave Neutron Deuteron Scattering In Effective Field Theory, by Paulo F. Bedaque and Harald W. Griesshammer, *Nucl.Phys.A671:357-379, 2000.*

38) Effective Theory of the Triton, by Paulo F. Bedaque, H.W. Hammer and U. van Kolck, *Nucl.Phys.A676:357-370, 2000* .

39) The Three Boson System With Short Range Interactions, by Paulo F. Bedaque, H.W. Hammer and U. van Kolck, *Nucl.Phys.A646:444-466, 1999.*

40) Renormalization of The Three-Body System With Short Range Interactions, by Paulo F. Bedaque, H.W. Hammer and U. van Kolck, *Phys.Rev.Lett.82:463-467, 1999.*

41) Effective Theory for Neutron Deuteron Scattering: Energy Dependence, by Paulo F. Bedaque, H.W. Hammer and U. van Kolck, *Phys.Rev.C58:641-644, 1998*

42) Nucleon Deuteron Scattering From An Effective Field Theory, by Paulo F. Bedaque and U. van Kolck, *Phys.Lett.B428:221-226, 1998*

43) Cutting Rules At Finite Temperature, by Paulo F. Bedaque, Ashok K. Das and Satchidananda Naiak, *Mod.Phys.Lett.A12:2481-2496, 1997.*

44) Chiral Perturbation Theory Analysis of Baryon Temperature Mass Shifts, by Paulo F. Bedaque, *Phys.Lett.B387:1-8, 1996.*

45) Baryon Masses At Second Order in Large N Chiral Perturbation Theory, by Paulo F. Bedaque and Markus A. Luty, *Phys.Rev.D54:2317-2327, 1996.*

46) Thermalization and Pinch Singularities In Nonequilibrium Quantum Field Theory, by Paulo F. Bedaque, *Phys.Lett.B344:23-28, 1995*

47) Annihilation Diagrams in Two-Body Nonleptonic Decays Of Charmed Mesons, by Paulo F. Bedaque, A.K. Das and V.S. Mathur, *Phys.Rev.D49:1339-1341, 1994.*

48) Two-Body Nonleptonic Decays Of Charmed Mesons, by Paulo F. Bedaque, A.K. Das and V.S. Mathur, *Phys.Rev.D49:269-274, 1994.*

49) Out-Of-Equilibrium Phase Transitions and A Toy Model For Disoriented Chiral Condensates, by Paulo F. Bedaque and Ashok K. Das, *Mod.Phys.Lett.A8:3151-3164, 1993.*

50) On The Analytic Structure of the Self-energy For Massive Gauge Bosons At Finite Temperature, by Peter Arnold, Stamatis, Paulo F. Bedaque and Ashok K. Das, *Phys.Rev.D47:4698-4704, 1993.*

51) Two-Dimensional Baryons in the Large N Limit, by Paulo F. Bedaque, I. Horvath and S.G. Rajeev, *Mod.Phys.Lett.A7:3347-3356, 1992.*

52) Feynman Parameterization and the Degenerate Electron Gas, by Paulo F. Bedaque and Ashok K. Das, *Phys.Rev.D47:601-607, 1993.*

53) On The Zero Momentum Limit of Feynman Amplitudes at Finite Temperature, by Paulo F. Bedaque and Ashok K. Das, *Phys.Rev.D45:2906-2910, 1992.*

54) Generalized Schwinger Model and A Theory of Interacting Photons and Majorana Fermions, by Paulo F. Bedaque, Ashok K. Das and Wen-Jui Huang, *Phys.Rev.D44:1818-1824, 1991.*

c. Monographs, Reports, and Extension Publications.

d. Book Reviews, Other Articles, and Notes.

e. Talks, Abstracts, and Other Professional Papers Presented.

i. Invited talks, etc.

After 2000

Lecture at the "National Nuclear Physics Summer School", Washington DC, June 2008.

Five lectures on Lattice QCD, 19th Indian-Summer School, Rez/Prague, Czech Republic, September 3 - 7, 2007

Seminar at Jefferson National Laboratory, Newport news, VA, "Restless pions and noise suppression in lattice QCD", September 2007

Seminar at George Washington University, Washington D.C., "Hadron Interactions from Lattice QCD, February 2007

Invited talk at the "APS Topical Group on Hadronic Physics Meeting", Nashville, "Nuclear Physics with Lattice QCD", November 2006

Invited talk at "Chiral Dynamics: Theory and Experiment", "$\pi\pi$ Scattering from Mixed Action Lattice QCD", Durham, September 2006

Invited talk at the "Few-Body Conference", Brazil, "Nuclear Forces and Lattice QCD", July 2006
Invited talk at the "Workshop on New Developments in Quantum Gases", August 2005

Lecturer: RIA Summer School on Exotic Beam Physics (2005)

Invited talk at the APS Spring Meeting 2005, “Nuclear Lattice QCD”, Tampa April 2005

Seminar at the University of Maryland, “Nuclear Forces and QCD”, February 2005

Invited talk at the “Physics of Nuclei with the 12 GeV upgrade Worshop”, JLab, November 2004

Seminar at the MIT, “Nuclear Forces from Lattice QCD”, October 2004

Seminar at the University of Maryland, “Bohm-Aharonov Effect and Nuclear Forces on the Lattice”, October 2004

Invited talk at the Institute for Nuclear Theory, “Angulon Cooling of Neutron Stars”, Seattle, April 2004

Plenary talk at “Chiral Dynamics 2003”, Bonn, Germany, September 2003

Seminar at Caltech, “Effective Theory and Three-body Systems”, March 2003

Seminar at the Institute for Nuclear Theory, “Model Independency in Three-Nucleon Systems, December 2003

Invited talk at “The 17th International IUPAP Conference on Few-Body Problems in Physics”, “Three-Body Scattering”, Durham, June 2003

Seminar at Ohio State University, “What is the Ground State of Quark Matter ?”, December 2002

Seminar at Ohio State University, “Effective Field Theory and the Running of the Three Body Force”, November 2002

Seminar at the Los Alamos National Laboratory, “Color Superconductivity”, November 2002

Invited talk at the APS Spring Meeting 2003, Philadelphia, “Nuclear Effective Field Theory”,

Invited Talk at the ETSIM Workshop, “Kaon Condensation in Quark Matter”, Manchester, UK 2003

Invited talk at the Institute for Nuclear Theory, Seattle, “3-Body Physics in Effective Field Theory”, August 2000

Colloquium at McGill University, Montreal, Canada, “Effective Theories for Dense QCD”, June 2000

Invited talk at the APS Spring Meeting 2000, “Three-Body Physics and Effective Field Theory”, Long Beach, April 2000

Selected talks before 2000

Invited talk at “Nuclear Interactions: Modern Developments” workshop, ECT*, Trento, Italy, 1999

Invited talk at the “Caltech-INT Workshop on Nuclear Physics with Effective Theories”, Caltech, 1999

Invited talk at the “Worshop on Disoriented Chiral Condensates”, ECT*, Trento, Italy, 1996

Invited talk at the “Worshop on New Physics and New Facilities”, Case Western Reserve, University, 1994

Over 40 seminars on US and abroad

ii. Refereed conference proceedings.
iii. Unrefereed conference proceedings.

Nuclear Physics with Lattice QCD, in the proceedings of the “APS Topical Group on Hadronic Physics Meeting”, Nashville, 2006.
Three nucleons at very low-energies, Paulo F. Bedaque, Caltech / INT Mini Workshop on Nuclear Physics with Effective Field Theories, Pasadena, CA, 26-27 Feb 1998.

f. Films, CDs, Photographs, etc.

g. Exhibits, Performances, Demonstrations, and Other Creative Activities

h. Original Designs, Plans, Inventions, Software, and/or Patents.

i. Contracts and Grants.

Co-PI, DoE Research Grant: “Theoretical Studies in Hadronic and Nuclear Physics”, $685k/year, 2006.

PI, NCSA Teragrid: 500.000 processor hours, 2006.

Co-PI, SciDAC (Scientific Discovery through Advanced Computing**,** DOE**)**: 1.500.000 processor hours at the Fermilab cluster, 2005.

Co-PI, LOFAR, University of Groningen: about 60 teraflop weeks of computer time, 2005.

Co-PI, SciDAC (Scientific Discovery through Advanced Computing**,** DOE**)**: 700.000 processor hours at the Jefferson Lab cluster, 2005.

PI, Laboratory Directed Research and Development program (LDRD): “Effective Field Theory for Few-Nucleon Systems”, 2003.

PI, Laboratory Directed Research and Development program (LDRD): “Effective Field Theory for Few-Nucleon Systems”, 2002.

j. Fellowships, Prizes, and Awards.

Scholarship for Studies Abroad
CAPES, Brazil, 1989-1993.
CNPq, Brazil, 1989.

k. Editorships, Editorial Boards, and Reviewing Activities for Journals and Other Learned Publications.

Member of the Editorial Board of PMC Physics A.

Frequent referee for Physical Review C and D, Physical Review Letters, Physics Letters B, Nuclear Physics A, etc.

l. Other.

3. Teaching, Mentoring, and Advising

a. Courses taught in the last five years.

Quantum Physics I - PHY401, Fall 2006.
Physics of Music – PHY102, Spring 2007.

b. Course or Curriculum Development.

c. Manuals, Notes, Software, Webpages, and Other Contributions to Teaching.

d. Teaching Awards and Other Special Recognition.

e. Advising: Other Than Research Direction.

i. Undergraduate.

Independent Studies:

"Path integrals in Quantum Mechanics", with Garret Goon, Leo Singer, Jonathan Hood and Mandana Ahmadi, Fall 2006.

"Web Application Finding the Ground State of One-Dimensional Models with Variational Methods", Biruh Tesfayeh, Summer 2007.

ii. Graduate.
iii. Other advising activities

f. Advising: Research Direction.

i. Undergraduate.

Summer Research: "Ground State of a Di-proton in a High Magnetic Field", Danielle Allor and Charles Stebbens, Summer 2006.

Research Experience for Undergraduates (REU), "Limit Cycles and Singular Potentials",
James McGuire, Summer 2000, University of Washington.
Michael Kesden, Summer 1999, University of Washington.

ii. Master's.
ii. Doctoral.

Advisor: “Topics in Effective Theories and Lattice Field Theory”, Michael Buchoff.

iii. PostDoctoral

Supervisor: Postdoctoral Fellow Andre Walker-Loud (2006)
Postdoctoral Fellow Gautam Rupak (2001-2003) , Lawrence-Berkeley Laboratory
Visiting Researcher Heron Caldas (2003), Lawrence-Berkeley Laboratory

g. Extension Activities.

4. Service

a. Professional.

i. Offices and committee memberships held in professional organizations.
ii. Reviewing activities for agencies.

Reviewer of Grant Proposals for the Dept. of Energy and National Science Foundation.

iii. Other unpaid services to local, state, and federal agencies.
iv. Other non-University committees, commissions, panels, etc.

Co-Organizer of the “National Nuclear Physics Summer School”, Berkeley, CA, Summer 2005.

Co-Organizer of the “Effective Theories in Nuclear Physics and Lattice QCD”, ECT*, Trento, Italy, July 2005.

Organizer of the “Berkeley Summer of Lattice” workshop, Berkeley, CA, Summer 2004.

Organizer of the “Effective Summer of Berkeley” workshop, Berkeley, CA, Summer 2003.

Co-Convenor of Few-Body Systems Workgroup of “Chiral Dynamics 2003”, Bonn, Germany, 2003.

Co-Organizer of INT Workshop on Effective Field Theory and Nuclear Physics, Seattle, 1999.

v. International activities not listed above.
vi. Paid consultancies.

b. Campus.

i. Departmental.

Salary Advisory Committee – 2007-2009

Physics Council – 2007-2009

Colloquium Organizer – Spring 2001 to Fall 2005 (Lawrence-Berkeley

Laboratory)

ii. College.
iii. University.
iv. Special administrative assignments.
v. Other.

c. Community, State, National.

d. Service Awards and Honors.