Adith Ramamurti

Ph.D. Candidate
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Education

Stony Brook University — *Stony Brook, NY*

Ph.D. Candidate in Theoretical Nuclear Physics — *Aug. 2013 - PRESENT*

- Ph.D. Advisor: Prof. Edward Shuryak

Brown University — *Providence, RI*

Sc.B. with Honors in Mathematical Physics, *magna cum laude* — *Sep. 2009 - May 2013*

- Senior Thesis Advisor: Prof. Antal Jevicki

Brown University — *Providence, RI*

A.B. in Music (History/Theory), *magna cum laude* — *Sep. 2009 - May 2013*

- Studied classical piano performance with Arlene Cole
- Studied jazz guitar performance with Francisco Pais

Research Experience

Stony Brook University — *Stony Brook, NY*

Graduate Researcher — *Mar. 2014 - PRESENT*

- Ph.D. dissertation research under the supervision of Prof. Edward Shuryak
- Studying the magnetic component of quark-gluon plasma at and above the confinement temperature using path-integral Monte Carlo (PIMC) to collect data on the thermodynamics, permutation cycles, and spatial distributions of large systems of bosons in a periodic box
- Developed a fully parallelized C++ PIMC code based on the papers of D.M. Ceperley (1995) and Boninsegni, et al. (2006), run on the clusters at the Institute for Advanced Computational Study (IACS) at Stony Brook
- Used the Improved Holographic QCD (IHQCD) model (by Kiritsis, et al.) to study hadron spectroscopy, particularly focusing on the mixing of the first scalar meson and glueball states; the fields and dynamics of QCD strings; and derive an effective theory for the Pomeron, and use this structure to compute cross sections and angular distributions to compare to collider data

Brown University — *Providence RI*

Undergraduate Researcher — *Jan 2012 - May 2013*

- Senior thesis research under the supervision of Prof. Antal Jevicki
- Studied the process for quantizing symmetric spaces based on an algorithm by F. A. Berezin, developed from the theory of coherent states; studied examples of both the coherent state construction and the properties of the consequent pseudoclassical algebras
- Specifically focused on the algebra of Sp(2N), applying this quantization procedure to obtain a finite-dimensional Hilbert space and found that, comparing the algebraic invariants of the algebra to that of O(N), Sp(2N) has a possible correspondence to de Sitter space

Brown University — *Providence RI*

Undergraduate Researcher — *Mar. 2010 - Dec. 2010*

- Supervised by Prof. David Cutts
- Analyzed data from the DZero (Fermilab) and CMS (CERN) detectors, specifically looking for lepton jets. Learned and used the CERN ROOT software to carry out these analyses

U.S. Naval Research Laboratory — *Washington, DC*

Physical Science Aid — *Jun. 2007 - Dec. 2009*

- Supervised by Dr. Dave Calvo (2008-2010); Dr. Jason Summers and Dr. Raymond J. Soukup (2007-2008)
- Created and compared various computational algorithms for predicting the near- and far-field scattering off of smooth objects, focusing on the study of the on-surface-radiation-condition
- Created a small-small scale rough surface modeled on the ocean floor using stochastic fractals, and performed various underwater back-scattering experiments to verify theoretical predictions

Teaching Experience

Stony Brook University — *Stony Brook, NY*

Teaching Assistant — *Aug. 2014 - Dec. 2015*

- Taught the laboratory portion and gave recitation/review lectures for the Physics of Sports (Fall 2014, 2015) and Physics of Light, Color, and Vision (Spr. 2015) classes given by Prof. Chang Kee Jung

Stony Brook, NY; Providence, RI

Private Tutor — *Oct. 2011 - PRESENT*

- Tutored undergraduate and high school students in physics and mathematics

Providence, RI; Silver Spring, MD

Music Teacher — *Oct. 2007 - May 2013*

- Gave lessons in classical piano and classical guitar to students of various ages

Other Work Experience

Physics in Perspective — *Stony Brook, NY*

Assistant to the Editor — *Sep. 2013 - May 2014*

- Helped Prof. Robert Crease edit and polish articles submitted to Physics in Perspective

Publications

Path-Integral Monte Carlo Study of the Magnetic Component of Quark Gluon Plasma at and above T_c — *In Progress*

Adith Ramamurti, Edward Shuryak — *2016*

Pomeron Interactions from the Einstein-Hilbert Action — *Phys. Rev. D94, 045005*

Ioannis Iatrakis, **Adith Ramamurti**, Edward Shuryak — *5 Aug. 2016*

Collective String Interactions in AdS/QCD and High-Multiplicity pA Collisions — *Phys. Rev. D92, 014011*

Ioannis Iatrakis, **Adith Ramamurti**, Edward Shuryak — *8 Jul. 2015*

Computational Study of Scattering and the On-Surface-Radiation-Condition (OSRC) from Smooth Objects — *NRL Internal Memo.*

David C. Calvo, **Adith Ramamurti** — *Jan. 2011*

Conferences and Workshops

Aug. 2015 **Gauge Field Topology Workshop**, Simons Center for Geometry and Physics, Attendee — *Stony Brook, NY*

Jul. 2015 **XXVII National Nuclear Physics Summer School**, Attendee — *Tahoe, CA*

Honors & Awards

May 2013 **Mildred G. Widgoff Prize for Excellence in Thesis Preparation**, Brown University Phys. Dept. — *Providence, RI*

Mar. 2013 **Phi Beta Kappa Honor Society**, Brown University — *Providence, RI*

Skills

Software

Proficient: C, C++, Fortran, Unix shells, Parallelization (MPI, openMP), Mathematica, MatLab, Java, MSOffice

Extracurriculars

Brown University Club Hockey Team

Providence, RI

Alternate Captain/Member

Oct. 2009 - Mar. 2013

- Helped organize team events, schedule games, and put together logistics for team travels, etc.
- Performed duties of alternate captain on the ice for the 2012-2013 season (liaison between players and referees when captain isn't available)

Stancill Guitar Studio Quartet

Kensington, MD

Member

Sep. 2007 - Dec. 2010

- Played various shows with the Scott Stancill's guitar quartet around the Kensington area

References

Edward Shuryak

Distinguished Professor, Stony Brook University

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David C. Calvo

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