Adith Ramamurti

Ph.D. Candidate, Nuclear Theory Group

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Education

Stony Brook University — *Stony Brook, NY*

Ph.D. Candidate in Theoretical Nuclear Physics (GPA: 3.9/4) — *Aug. 2013 - PRESENT*

Brown University — *Providence, RI*

A.B. in Mathematical Physics and Music (History/Theory), *magna cum laude* (GPA: 3.82/4) — *Sep. 2009 - May 2013*

Skills

Programming Languages

- Expert: C++, Python, Unix shell (bash, tcsh), Mathematica, Parallelization (MPI, openMP)
- Intermediate: Fortran, Java, MATLAB

Research Experience

Graduate Researcher — *Stony Brook, NY*

Stony Brook University — *Mar. 2014 - PRESENT*

- Dissertation research under the supervision of Edward Shuryak, focusing on non-perturbative aspects of quantum chromodynamics
- Developed an effective quantum model for the magnetic component of quark-gluon plasma using path-integral Monte Carlo (PIMC) method; studied the thermodynamics, permutation cycles, and spatial distributions of large systems of Coulomb-interacting bosons (Published: PRD95 076019, NPA967 868)
  - Developed a fully-parallelized C++ PIMC code based on the Markov Chain/Metropolis Monte Carlo algorithm, run on the clusters at the National Energy Research Science Computing Center (NERSC) and at the Institute for Advanced Computational Science (IACS) at Stony Brook University
- Studied the influence of color-magnetic monopoles on the phenomenon of jet quenching in heavy-ion collisions (Submitted to PRD)
- Used the Improved Holographic QCD model to study - analytically and numerically - hadron spectroscopy; the fields and dynamics of QCD strings; and derive an effective theory for the Pomeron (Published: PRD92 014011, PRD94 045005)

References:

Edward Shuryak, Distinguished Professor, Dept. of Physics and Astronomy, Stony Brook University, Stony Brook, NY 11794-3800
(631) 632-8127, edward.shuryak@stonybrook.edu
Derek Teaney, Associate Professor, Dept. of Physics and Astronomy, Stony Brook University, Stony Brook, NY 11794-3800
(631) 632-4489, derek.teaney@stonybrook.edu

Undergraduate Researcher — *Providence RI*

Brown University — *Jan. 2012 - May 2013*

- Senior thesis research under the supervision of Antal Jevicki
- Studied the process for quantizing symmetric spaces based on the theory of coherent states; applied this algorithm to symplectic spaces and studied both the coherent state construction and the properties of the consequent pseudoclassical algebras

Reference:

Antal Jevicki, Professor, Department of Physics, Brown University, 182 Hope Street, Providence, RI 02912
(401) 863-2624, antal_jevicki@brown.edu

Undergraduate Researcher — *Providence RI*

Brown University — *Mar. 2010 - Dec. 2010*

- Analyzed large data sets from the DZero (Fermilab) and CMS (CERN) detectors, looking for lepton jets; learned and used the CERN ROOT software package to carry out these analyses

Physical Science Aid — *Washington, DC*

U.S. Naval Research Laboratory — *Jun. 2007 - Dec. 2009*

- Supervised by Dr. David Calvo (2008-2009); 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

Reference:
David C. Calvo, Research Scientist, Acoustics Division, Code 7165, Naval Research Laboratory, Washington, DC 20375
(202) 404-4800, david.calvo@nrl.navy.mil

Publications

The Role of QCD Monopoles in Jet Quenching — *Physical Review D, under peer review*

Adith Ramamurti, Edward Shuryak — *arXiv:1708.04254 [hep-ph]*

2017

An Effective Model of QCD Monopoles — *Nuclear Physics A* **967**, *868-871*

Adith Ramamurti, Edward Shuryak — *arXiv:1704.04467 [hep-ph]*

25 Sep. 2017

Effective Model of QCD Magnetic Monopoles From Numerical Study of One- and Two-Component Coulomb Quantum Bose Gases — *Physical Review D* **95**, *076019*

Adith Ramamurti, Edward Shuryak — *arXiv:1702.07723 [hep-ph]*

24 Apr. 2017

Pomeron Interactions from the Einstein-Hilbert Action — *Physical Review D* **94**, *045005*

Ioannis Iatrakis, **Adith Ramamurti**, Edward Shuryak — *arXiv:1602.05014 [hep-ph]*

5 Aug. 2016

Collective String Interactions in AdS/QCD and High-Multiplicity pA Collisions — *Physical Review D* **92**, *014011*

Ioannis Iatrakis, **Adith Ramamurti**, Edward Shuryak — *arXiv:1503.04759 [hep-ph]*

8 Jul. 2015

Conferences and Workshops

Feb. 2017 — XXVIth International Conference on Ultrarelativistic Nucleus-Nucleus Collisions (Quark Matter 2017), Attendee & Presenter — *Chicago, IL*

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

Other Work Experience

Teaching Assistant — *Stony Brook, NY*

Stony Brook University — *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)

Reference:
Chang Kee Jung, Distinguished Professor, Dept. of Physics and Astronomy, Stony Brook University, Stony Brook, NY 11794-3800
631-632-8108, chang.jung@stonybrook.edu

Physics in Perspective — *Stony Brook, NY*

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

- Helped Dr. Robert Crease check and edit physics content in submitted articles

Honors & Awards

May 2013 — Mildred G. Widgoff Prize for Excellence in Thesis Preparation, Brown University Physics Dept.

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