Srimoyee Sen

Assistant Professor,
Department of Physics and Astronomy,
Iowa State University,
Ames, Iowa, USA

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I am interested in the physics of strong interactions and its interplay with quantum phase transitions. I use effective field theory to answer related questions of principle and their phenomenological consequences.

EMPLOYMENT

September 2019 – present

Assistant Professor

Department of Physics and Astronomy,
Iowa State University,
Ames, Iowa, USA

September 2017 – September 2019

Postdoctoral Research Associate

Institute for Nuclear Theory
University of Washington
Seattle, USA

September 2015 – September 2017

Postdoctoral Research Associate

University of Arizona
Tucson, USA

EDUCATION

2010 – 2015

University of Maryland, College Park

College Park, USA.
PhD in Physics
Advisor: Paulo Bedaque

2007 – 2009

Indian Institute of Technology Madras

Chennai, India.
Master of Technology in Electrical Engineering

2003 – 2007

Jadavpur University

Kolkata, India.
Bachelor of Electronics Engineering

CONFERENCE AND SEMINAR ORGANIZATION

Open Problems and Opportunities in Chiral Fluids, Santa Fe, July 2018

Workshop co-organizer.

S@INT seminar, Institute for Nuclear Theory, University of Washington

Seminar series co-organizer.

REFEREEING

Referee for Physical Review Letters, Physical Review C, Physical Review D, Journal of High Energy Physics.

PUBLICATIONS

Fractional quantum Hall effect in a relativistic quantum field theory

David B Kaplan, Srimoyee Sen
e-Print: arXiv:1911.11292

Higgs-confinement phase transition in 2+1 D superfluids

Aleksey Cherman, Theodore Jacobson, Srimoyee Sen and Laurence G Yaffe
In preparation

Dynamical Derivation of the Momentum Space Shell Structure for Quarkyonic Matter.

Kie Sang Jeong, Larry McLerran, Srimoyee Sen
e-Print: arXiv:1908.04799

Anyonic particle-vortex statistics and the nature of dense quark matter.

Aleksey Cherman, Srimoyee Sen, Laurence Yaffe
e-Print: arXiv:1808.04827

Space-Time Picture of Baryon Stopping in the Color-Glass Condensate.

Larry D. McLerran, Sören Schlichting, Srimoyee Sen
e-Print: arXiv:1811.04089

A Deeply Bound Dibaryon is Incompatible with Neutron Stars and Supernovae.

Samuel D. McDermott, Sanjay Reddy, Srimoyee Sen.
e-Print: arXiv:1809.06765

Plasma Effects on Lasing of Uniform Ultralight Axion Condensate.

Srimoyee Sen
Published in Phys.Rev. D98 (2018) no.10, 103012

Neutrino-nucleon scattering in the neutrino-sphere.

Paulo Bedaque, Srimoyee Sen, Sanjay Reddy, Neill Warrington
Published in Phys.Rev. C98 (2018) no.1, 015802

Chiral Anomalous Dispersion.

Andrey Sadofyev, Srimoyee Sen
Published in JHEP02(2018)099

Order parameters and color-flavor center symmetry in QCD.

Aleksey Cherman, Srimoyee Sen, Mithat Unsal, Michael L. Wagman, Laurence G. Yaffe
Published in Phys. Rev. Lett.119.222001

Exponential reduction of finite volume effects with twisted boundary conditions.

Aleksey Cherman, Srimoyee Sen, Michael Wagman, Laurence G. Yaffe.
Published in Phys.Rev. D95 (2017) no.7, 074512

Energy Conservation and the Chiral Magnetic Effect.

David B. Kaplan, Sanjay Reddy, Srimoyee Sen
Published in Phys.Rev. D96 (2017) no.1, 016008

Chiral Shock Waves.

Srimoyee Sen, Naoki Yamamoto
Published in Phys.Rev.Lett. 118 (2017) no.18, 181601

Anisotropic Propagator for the Goldstone Modes in Color-flavor Locked Phase in the Presence of a Magnetic Field.

Srimoyee Sen.
Published in Phys.Rev. D92 (2015) 025004

Deconfinement transition at asymptotically high isospin density.

Thomas D. Cohen, Srimoyee Sen.
Published in Nucl.Phys. A942 (2015) 39-53

Center symmetry and the Hagedorn spectrum.

Adi Armoni, Thomas D. Cohen, Srimoyee Sen.
Published in Phys.Rev. D91 (2015) no.8, 085007

Massive and massless modes of the triplet phase of neutron matter.

Paulo Bedaque, Amy Nicholson, Srimoyee Sen.
Published in Phys.Rev. C92 (2015) no.3, 035809

Large Nc gauge theory with quarks in high representations.

Thomas D. Cohen, Srimoyee Sen.
Published in Phys.Rev. D90 (2014) no.8, 085008

Neutrino emissivity from Goldstone boson decay in magnetized neutron matter.

Paulo F. Bedaque, Srimoyee Sen.
Published in Phys.Rev. C89 (2014) no.3, 035808

A new crystalline phase in magnetar crusts.

Paulo F. Bedaque, Simin Mahmoodifar, Nathan Ng, Srimoyee Sen.
Available on arXiv, arXiv:1312.0591

Friedel crystals and the outer crust of magnetars.

Paulo F. Bedaque, Simin Mahmoodifar, Srimoyee Sen.
Published in Phys.Rev. C88 (2013) 055801

Thermodynamics of nuclear condensates and phase transitions in white dwarfs.

Paulo F. Bedaque, Evan Berkowitz, Srimoyee Sen.
Published in Phys.Rev. D89 (2014) no.4, 045010

Stable vortex loops in two-species BECs.

Paulo F. Bedaque, Evan Berkowitz, Srimoyee Sen.
Published in J.Phys. B45 (2012) 225301

Effective Field Theory for Two-body Systems in Resonant States.

Jaber Balalhabashi, Sean Fleming, Srimoyee Sen, U. van Kolck.
In preparation,

Low Energy Effective Theory of QCD at High Isospin Chemical Potential.
Thomas D. Cohen, Srimoyee Sen.
Published in *CIPANP 2015* Conference: C15-05-19 Proceedings – Published July 1, 2015.

INVITED TALKS AND LECTURES

Higgs-Confinement phase transitions in 2+1 D superfluids
Tata Infosys Lecture Series, Tata Institute for Fundamental Research, December, 2019

Higgs-Confinement phase transitions in 2+1 D superfluids
University of Maryland, College Park, Maryland, November 2019.

Higgs-Confinement phase transitions in 2+1 D superfluids
University of Toronto, Toronto, November 2019.

Higgs-Confinement phase transitions in 2+1 D superfluids
MIT Center for Theoretical Physics, massachusetts institute of technology, October 2019.

Spontaneous magnetization in a superfluid vortex.
Internation Symposium on Multi-particle Dynamics, September 2019, Plenary talk.

Particle-vortex statistics and dense matter.
Iowa State University, April 2019.

Anyonic particle-vortex statistics and the nature of dense QCD.
Jefferson Laboratory, March 2019.

Vortices, a new diagnostic for phase transition in dense matter.
North Carolina State University, February 2019.

Anyonic particle-vortex statistics and the nature of dense QCD.
The Kadanoff Center for Theoretical Physics, University of Chicago, January 2018.

Particle-vortex statistics and the nature of dense QCD.
Los Alamos National Laboratory, November 2018.

Anyonic Particle-vortex statistics and the nature of dense QCD.
Brookhaven National Laboratory, October 2018.

Particle-vortex statistics and the nature of dense QCD.
University of Maryland College Park, October 2018.

Anyonic particle-vortex statistics and the nature of dense quark matter.
North Carolina State University, October 2018.

Plasma Effects on Lasing of Uniform Ultralight Axion Condensate.
Lawrence Berkeley National Laboratory, Particle Theory seminar, September 2018.

Medium Effects on Lasing of Superradiant Axions.
Los Alamos National Lab, July 2018.

Chiral Magnetic Effect and Magnetars.
Colloquium, Lewis and Clark College , January 2018.

Order parameters and color-flavor center symmetry in QCD.
University of Victoria, January 2018.

Neutrino-nucleon scattering in the neutrino-sphere.

Network for Neutrinos, Nuclear Astrophysics, and Symmetries Meeting, San Diego, January 2018.

Order parameters and color-flavor center symmetry in QCD.

Tata Institute for Fundamental Research, India, December 2017.

Exponential reduction of finite volume effects with twisted boundary conditions.

Lawrence Berkeley National Laboratory, Berkeley, November 2017.

Exponential reduction of finite volume effects with twisted boundary conditions.

Los Alamos National Laboratory, New Mexico, April 2017.

Chiral Shock Waves.

University of Illinois, Chicago, October 2016.

Neutral Goldstone Modes of Color-Flavor Locked Phase in a Magnetic Field.

University of Washington, Seattle, February 2016.

CONFERENCE AND WORKSHOP TALKS

Vortices as probes for phase transitions.

Quantum Turbulence: Cold Atoms, Heavy Ions, and Neutron Stars, Institute for Nuclear Theory, University of Washington, April 2019.

Particle-vortex Statistics and Dense QCD.

Higher Symmetries: Theory and Applications workshop, Aspen Center for Physics, CO, March 2019.

Energy Conservation and the Chiral Magnetic Effect.

Open Problems and Opportunities in Chiral Fluids workshop, July 2018.

Medium Effects on Lasing of Superradiant Axions.

Conference on Intersection of Particle and Nuclear Physics, June 2018.

Color-flavor center symmetry in QCD and its order parameter .

Conference: Critical Point and Onset of Deconfinement, August 2017.

Chiral Shockwaves.

Workshop: QCD and Chirality, University of California Los Angeles, March 2017.

Chiral Shockwaves.

Workshop: QCD in Finite Temperature and Heavy Ion Collisions, Brookhaven National Laboratory, February 2017.

Deconfinement Transition at High Isospin chemical Potential and Low Temperature.

University of Washington, Seattle, May 2016.

Neutral Goldstone Modes of Color-Flavor Locked Phase in a Magnetic Field.

University of Washington, Seattle, July 2016.

Deconfinement Transition at High Isospin chemical Potential and Low Tempera-ture.

CIPANP conference, Vail, Co, May 2015.

SKILLS

Languages C, VHDL

Tools Mathematica, MatLab, ISE-TCAD (A commercial device simulator), SPICE, MAGIC (A commercial layout tool), Mentor Graphics tools for Electronic Design.

AWARDS AND HONORS

The paper titled *Large Nc gauge theory with quarks in high representations* was selected to be a PRD Editors' Suggestion. The manuscript was featured on the Physical Review D homepage http://journals.aps.org/prd, alongside other highlighted articles.

Awarded *Kulkarni Graduate Student Summer Research Fellowship* 2013 for the successful completion of the project titled *Neutrino emissivity from Goldstone boson decay in magnetized neutron matter* by the *University of Maryland*, College Park, USA.

References

Dr. Paulo F. Bedaque
Professor
University of Maryland, College Park
College Park, USA
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Dr. David B. Kaplan
Professor
University of Washington,
Seattle, USA
dbkaplan@uw.edu