

Christopher J. Plumberg

CONTACT INFORMATION	Department of Astronomy and Theoretical Physics Lund University - Lund, SE Sölvegatan 14A, SE-223 62 Lund, SE	<i>Cell:</i> by request <i>E-mail:</i> christopher.plumberg@thep.lu.se
RESEARCH INTERESTS	Heavy-ion physics, event generators, QCD at finite temperature and density, Hanbury Brown-Twiss interferometry, relativistic hydrodynamics, fluctuating hydrodynamics and thermal noise, gauge/gravity duality	
ACADEMIC APPOINTMENTS	Postdoctoral Researcher – Lund University - Lund, SE – Department of Astronomy and Theoretical Physics - Theoretical Particle Physics – Activities: <ul style="list-style-type: none">• Conduct and publish both independent and collaborative research Postdoctoral Researcher – University of Minnesota - Twin Cities – School of Physics and Astronomy - Nuclear theory group – Activities: <ul style="list-style-type: none">• Conduct and publish both independent and collaborative research• Supervise and collaborate with graduate students studying nuclear physics• Organize weekly nuclear seminar	September 2018 - present August 2016 - August 2018
EDUCATION	The Ohio State University , Columbus, Ohio USA Ph.D., Physics, July 2016 <ul style="list-style-type: none">• Thesis Topic: <i>Azimuthally sensitive and event-by-event Hanbury Brown-Twiss analyses</i>• Adviser: Professor Ulrich W. Heinz• Area of Study: Relativistic heavy-ion collisions M.S., Physics, August 2012 <ul style="list-style-type: none">• Candidacy Topic: <i>Constraints on Supersymmetry from $B_s \rightarrow \mu^+ \mu^-$</i>• Adviser: Professor Stuart A. Raby• Area of Study: Model building and collider phenomenology Eastern University , St. Davids, Pennsylvania USA B.A., Astronomy and Astrophysics, June 2009 <ul style="list-style-type: none">• <i>Magna cum Laude</i>• In conjunction with Villanova University, B.S. program• Templeton Honors College graduate• Thesis topic: <i>Light Curves and Analyses of the Eclipsing Overcontact Binaries V1033 Her and V1044 Her</i>• Adviser: Prof. David H. Bradstreet	
PUBLICATIONS	B. Tomášik, J. Cimerman and C. Plumberg, <i>Averaging and the Shape of the Correlation Function</i> , Universe 2019, 5(6), 148 [doi:10.3390/universe5060148]. S. Pratt and C. Plumberg, <i>Determining the Diffusivity for Light Quarks from Experiment</i> , arXiv:1904.11459 [nucl-th].	

- S. Pratt and C. Plumberg, *Evolving Charge Correlations in a Hybrid Model with both Hydrodynamics and Hadronic Boltzmann Descriptions*, Phys. Rev. C **99**, 044916 (2019) [Editor's Suggestion].
- C. Plumberg and U. Heinz, *Hanbury-Brown–Twiss correlation functions and radii from event-by-event hydrodynamics*, Phys. Rev. C **98**, 034910 (2018).
- S. Pratt, J. Kim and C. Plumberg, *Evolution of Charge Fluctuations and Correlations in the Hydrodynamic Stage of Heavy Ion Collisions*, Phys. Rev. C **98**, 014904 (2018).
- J. I. Kapusta and C. Plumberg, *Causal Electric Charge Diffusion and Balance Functions in Relativistic Heavy Ion Collisions*, Phys. Rev. C **97**, 014906 (2018).
- C. Plumberg and J. I. Kapusta, *Hydrodynamic fluctuations near a critical endpoint and Hanbury-Brown–Twiss interferometry*, Phys. Rev. C **95**, 044910 (2017).
- C. Plumberg and U. Heinz, *Probing the properties of event-by-event distributions in Hanbury-Brown–Twiss radii*, Phys. Rev. C **92**, 044906 (2015).
- C. Plumberg and U. Heinz, *Interferometric signatures of the temperature dependence of the specific shear viscosity in heavy-ion collisions*, Phys. Rev. C **91**, 054905 (2015) [Editor's Suggestion].
- C. J. Plumberg, C. Shen and U. W. Heinz, *Hanbury-Brown–Twiss interferometry relative to the triangular flow plane in heavy-ion collisions*, Phys. Rev. C **88**, 044914 (2013) [Erratum-ibid. C **88**, 069901 (2013)].
- S. D. Mathur and C. J. Plumberg, *Correlations in Hawking radiation and the infall problem*, JHEP **1109**, 093 (2011).
- T. Mizusawa, J. Merritt, R. L. Ballouz, M. Bonaro, S. Foran, C. Plumberg, H. Stewart and T. Wiley *et al.*, *Far Ultraviolet Spectroscopy of Seven Nova-Like Variables*, Publ. Astron. Soc. Pac. **122**, 299 (2010).
- CONFERENCE PUBLICATIONS C. J. Plumberg, T. Welle and J. I. Kapusta, *QCD matter with a crossover and a first-order phase transition*, arXiv:1812.01684 [nucl-th].
- C. Plumberg and U. Heinz, *Observable consequences of event-by-event fluctuations of HBT radii*, Nucl. Phys. A 956 (2016) 381-384.
- INVITED LECTURES *From Micro to Macro QCD Phenomena: Origins of Collectivity in Nuclear Collisions* (COST Workshop Mini-school), February 2019, Lund University, (Lund, Sweden)
- INVITED TALKS *Event-By-Event Particle Interferometry: Developments and Applications* (Subatech), April 17, 2019 (Nantes, France)
- Effects of Time Correlations on Net-Baryon Number Fluctuations* (GSI EMMI RRTF; “Dynamics of critical fluctuations: theory - phenomenology - HIC”), April 12, 2019 (Darmstadt, Germany)
- Switching It Up: Parametrizing the QCD Equation of State, Critical Point and Onset of Deconfinement* (CPOD) 2018, September 2018 (Corfu, Greece)
- Evolution of Charge Fluctuations and Correlations in Hydrodynamics*, RHIC/AGS Users' Meeting 2018 (Brookhaven National Lab), June 2018 (Upton, NY)
- Hanbury-Brown Twiss interferometry with respect to the triangular flow plane*, WPCF2013, November 2013 (Catania, Italy)

CONTRIBUTED
TALKS

- Contributed talk (COST Workshop Mini-school), Lund University, *Particle Interferometry for Hydrodynamics and Event Generators* February 2019 (Lund, Sweden)
- Seminar talk, CERN, *Event-By-Event Particle Interferometry: Developments and Applications*, October 2018 (Geneva, Switzerland)
- Seminar talk, CLASH meeting, Lund University, *Fluctuations and Correlations in Heavy-Ion Collisions*, October 2018 (Lund, Sweden)
- Poster, Christopher Plumberg and Joseph I. Kapusta, *Causal Charge Diffusion and Fluctuations in Heavy-Ion Collisions*, Quark Matter 2018, May 2018 (Venice, Italy), ID#314.
- Colloquium, Minnesota State University - Mankato (Correlation and Fluctuations in Relativistic Heavy-Ion Collisions), February 2018 (Mankato, Minnesota)
- Nuclear Seminar, University of Minnesota (Causal Charge Diffusion in Relativistic Heavy-ion Collisions), October 2017 (Minneapolis, Minnesota)
- Contributed talk, Light, Color, and Dense Matter Symposium, *Event-by-event fluctuations of interferometric radii near the QCD critical point*, June 2017 (Minneapolis, Minnesota)
- Poster, Christopher Plumberg and Joseph I. Kapusta, *Hydrodynamic fluctuations and Hanbury Brown-Twiss Interferometry*, Quark Matter 2017, February 2017 (Chicago, Illinois), ID#175.
- Nuclear Seminar, University of Minnesota (Event-by-event fluctuations and their consequences for Hanbury Brown-Twiss interferometry), October 2016 (Minneapolis, Minnesota)
- Nuclear Seminar, University of Minnesota (Observable consequences of event-by-event fluctuations of HBT radii), April 2016 (Minneapolis, Minnesota)
- Nuclear Seminar, Brookhaven National Laboratory (Observable consequences of event-by-event fluctuations of HBT radii), October 2015 (Long Island, New York)
- Selected talk, *Observable consequences of event-by-event fluctuations of HBT radii*, Quark Matter 2015, September 2015 (Kobe, Japan)
- Contributed talk, CAM (Canadian-American-Mexican) Graduate student conference (Event-by-event fluctuations of HBT radii and the QGP shear viscosity), September 2015 (Oaxaca, Oaxaca, Mexico)
- Contributed talk, APS - Ohio Section (Event-by-event fluctuations of HBT radii and the QGP shear viscosity), March 2015, Kent State University (Kent, Ohio)
- Contributed talk, 2014 Midwestern Theory Get-together, Argonne National Laboratory (How to measure a distribution of HBT radii, and why you might want to), September 2014, Lemont, Illinois
- Student presentation, JET Summer School (Hanbury-Brown-Twiss interferometry with respect to the triangular flow plane), June 2014, Davis, California
- Contributed talk, MADAI 2014 (How to measure a distribution of HBT radii), July 2014, East Lansing, Michigan
- Contributed talk, Midwest Critical Mass 2014 (Hanbury-Brown-Twiss interferometry and event-by-event fluctuations), March 2014, Toledo, Ohio

Contributed talk, 2013 Midwestern Theory Get-together, Argonne National Laboratory (Hanbury-Brown–Twiss interferometry with respect to the triangular flow plane), September 2013, Lemont, Illinois

Contributed talk, OSAPS (Hanbury-Brown–Twiss interferometry with respect to the triangular flow plane), March 2013, Athens, Ohio

Contributed talk, SPOCK (Correlations in Hawking Radiation and the Infall Problem), April 2011, Cincinnati, Ohio

Poster, Plumberg, C., & Kankelborg, C. C., *Coronal Tomography With STEREO and TRACE* (poster), American Astronomical Society Meeting Abstracts, #407.22. Presented at 216th Meeting of the AAS in Miami, Florida, May 2010.

Poster, Bradstreet, D. H., Sanders, S. J., Wiley, T. B., Plumberg, C. J., Grau, D. M., *Light Curves and Analyses of the Eclipsing Overcontact Binaries V1033 Her and V1044 Her*, Bulletin of the American Astronomical Society, 41, #410.12.

REFEREE FOR
JOURNALS

- *Physics Review C*
- *European Physical Journal A*

SCHOLARSHIPS,
HONORS, AND
AWARDS

The Ohio State University

- Three-Minute Thesis (3MT) competition (Ohio State) semi-finalist
- APS membership (2014 - present)
- OSU Physics department teaching award (2011)

Eastern University

- Society of Physics Students membership (2008-present)
- Sigma Pi Sigma membership (2008-2009)
- Templeton Honors College Student at Eastern University (2005-2009)
- Dean's List for 7 out of 8 semesters at Eastern University (GPA, 3.75 or higher; 2005-2009)
- Jerry Goff Scholarship Recipient (2006)

High School

- National Merits Scholar (2005)
- Valedictorian of 2005 High School Graduating Class, CHALC (Coalition of Home-schoolers Across Lancaster County)

TECHNICAL SKILLS *Experience*

- Extensive work with numerical methods and applications to computational physics
- Significant contributions to development of iEBE-VISHNU package

Programming: C, C++, Fortran, HDF5, Python, UNIX shell scripting, GNU make, Mathematica, Interactive Data Language (IDL), MPI, OpenMP, Perl Data Language (PDL)

Scientific Visualization: gnuplot, Matlab, Matplotlib, Mathematica

Other Computer Applications: L^AT_EX, Vim, Awk

Operating Systems: Microsoft Windows family, Linux, Solaris, and other UNIX variants

MATHEMATICAL
EXPERTISE

Real and Complex Analysis, Differential Equations, Probability and Statistics, Combi-

natorics, Random Variables, Stochastic Processes, Integral Transforms, Special Functions and Asymptotic Expansions

PROFESSIONAL
EXPERIENCE

Montana State University - Bozeman
Research Experience for Undergraduates (REU) in Solar Physics

REU/NSF Summer Program **June 2008 through August 2008**

- Fluxon modeling of magnetohydrodynamic phenomena on solar corona and photosphere
- Mentor: Prof. Charles Kankelborg

REU/NSF Summer Program **June 2009 through August 2009**

- Developed tomographic software for analyzing STEREO and TRACE data of solar corona
- Mentor: Prof. Charles Kankelborg

TEACHING
EXPERIENCE

University of Minnesota, Minneapolis, Minnesota USA

Guest Lecturer **October 2016**
Graduate Statistical Physics course (PHYS 5201)

The Ohio State University, Columbus, Ohio USA

Teaching Assistant **Autumn 2009 to Spring 2012**

- Supertutor for Physics majors, Physics 2300 and 2301
 - Autumn 2011 and Spring 2012
 - Sample student evaluations available upon request
 - Responsible for regularity availability to assist physics majors with challenging problems sets in Intermediate Mechanics
- Instructor for Freshman Engineering Honors, PHY 131
 - Autumn 2010 and Spring 2011
- Instructor for PHY 111: Forces and Kinematics
 - Autumn 2009, Winter 2010, and Spring 2010 (2 sections)
 - Responsible for two 1 hour sessions and supervision of 3 hour laboratory where undergraduate students design explore various elementary concepts in Newtonian kinematics and dynamics

SERVICE

Guest blogger

- "A day in the life..." (OSU Women In Physics)
- Title: *Atom-smashing and femtoscopy*

REFERENCES

Available upon request