

# THOMAS C. BLUM

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UConn, Department of Physics, 196 Auditorium Road, U-3046, Storrs, CT 06269-3046 (work)

## Curriculum Vitae

March 2021

### EDUCATION:

- B.S., Aeronautical and Astronautical Engineering, University of Washington, Seattle, Washington, August 1985
- M.S., Aeronautical and Astronautical Engineering, University of Washington, Seattle, Washington, August 1986
- Ph.D., Physics, University of Arizona, Tucson, Arizona, May 1995  
Thesis Advisor: Doug Toussaint  
Thesis: “Nonperturbative quark mass and coupling renormalization in two flavor QCD”

### EMPLOYMENT HISTORY:

- Nov. 1986 - Jul. 1990  
Senior Engineer, Boeing Company  
Seattle, Washington  
(performed computational fluid dynamics research)
- Aug. 1990 - May 1991  
Teaching Assistant, Department of Physics  
University of Arizona, Tucson, Arizona 85721
- Jun. 1993 - Sept. 1995  
Research Assistant, Department of Physics  
University of Arizona, Tucson, Arizona 85721
- Oct. 1995 - Sept. 1998  
Postdoctoral Associate, High Energy Theory Group,  
Brookhaven National Laboratory, Upton, NY 11973
- Oct. 1998 - Sept. 2003  
RIKEN Fellow, RIKEN BNL Research Center,  
Brookhaven National Laboratory, Upton, NY 11973
- Oct. 2003 - Dec. 2003  
Associate Physicist,  
Brookhaven National Laboratory, Upton, NY 11973
- Jan. 2004 – Aug. 2008  
Assistant Professor and RHIC Fellow  
Physics Department, University of Connecticut, Storrs, CT 06269-3406  
RIKEN BNL Research Center, Brookhaven National Laboratory, Upton, NY 11973
- Aug. 2008 – Dec. 2008  
Associate Professor and RHIC Fellow  
Physics Department, University of Connecticut, Storrs, CT 06269-3406  
RIKEN BNL Research Center, Brookhaven National Laboratory, Upton, NY 11973
- Jan. 2009 – Jul. 2014  
Associate Professor  
Physics Department, University of Connecticut, Storrs, CT 06269-3406
- Aug. 2014 –  
Professor

Physics Department, University of Connecticut, Storrs, CT 06269-3406

Aug. 2015 –

Associate Department Head for Undergraduate Education  
Physics Department, University of Connecticut, Storrs, CT 06269-3406

### **VISITING PROFESSORSHIPS**

April 2006 – June 2006

KEK Visiting Professor, Institute for Particle and Nuclear Studies, KEK Particle  
Accelerator Laboratory, Tsukuba, Japan

April 26, 2007 — May 26, 2007

Visitor, CERN Theory Group, CERN, Geneve

Mar 2010 -

Visiting Scientist, RIKEN BNL Research Center, Brookhaven National Lab

September 2018 -

Fermilab Distinguished Scholar

January — March 2020

Visiting Scholar, Helmholtz Institute Mainz

### **ACADEMIC HONORS and AWARDS:**

GANN Fellowship, Department of Education (August 1990 – May 1993)

Outstanding Junior Investigator, Department of Energy, Office of High Energy  
Physics (2005- 2008)

Phi Kappa Phi National Honor Society (2012)

Ken Wilson Lattice Award (2012)

American Physical Society Fellow, Division of Particles and Fields (2015)

Fermilab Distinguished Scholar (2018-)

### **GRANTS:**

Department of Energy, Office of High Energy Physics, OJI (2005-2008)

Department of Energy, Office of High Energy Physics (2009-)

### **PROFESSIONAL SERVICES:**

Journal referee: Physical Review, Nuclear Physics, Journal of High Energy  
Physics, European Physical Journal C, IBM Research Journal

Grant proposal referee, DOE Divisions of High Energy and Nuclear Physics

Convener for RHIC Summer Study '97 (Brookhaven National Lab) July 1997

Weekly RIKEN Seminar organizer, Fall 1998-Fall 2000

High Energy Theory/RIKEN Seminar committee chairperson, Fall 1999-Fall 2000

Parallel session chairperson, XIXth International Symposium on Lattice Field Theory, Berlin (2001)

Grant proposal referee for NSF High Energy Physics Program

International Advisory Committee member, XXIst International Symposium on Lattice Field Theory, Tsukuba (2003)

Elementary Particle Theory panelist (grant review), National Science Foundation (2005 and 2013)

Grant reviewer, Fundamental Onderzoek der Materie (FOM), Netherlands (2005, 2007)

Scientific Program Committee, USQCD Collaboration, (2005-2010, 2015-2018)

Chair, Colloquium Committee, University of Connecticut Physics Department (2005-)

Preliminary Exam Committee, University of Connecticut Physics Department (2007-2008, 2012-2013)

PTR Committee, University of Connecticut Physics Department (2009-2011, 2017-)

Graduate Affairs Committee, University of Connecticut Physics Department (2009-2015)

Advisory Committee, University of Connecticut Physics Department (2010-2013, 2015-)

Advisor, Physics Club, University of Connecticut Physics Department (2009-2014)

CLAS Dean's Committee on Committees, University of Connecticut (2009-2012)

NSF TeraGrid Resource Allocations Committee (2010-2011)

NSF XSEDE Resource Allocations Committee (2012-2013)

Flavor Lattice Averaging Group (FLAG), quark mass working group (2012-)

NSF High Energy Theory Comparative Review Panel (2013)

DOE High Energy Theory Comparative Review Panel (2014, 2016)

Snowmass 2021 topical group convener, Rare processes and precision measurements frontier

USQCD Executive Committee (July 2020-)

**WORKSHOPS and MEETINGS ORGANIZED:**

Organizer, RIKEN BNL Workshop, Numerical Algorithms at Non-Zero Chemical Potential (Brookhaven National Lab) April 27-May 1, 1999

Session organizer, Fifth Workshop on Quantum Chromodynamics (QCD2000), session: Chiral Quarks on the Lattice, (Villefranche-sur-Mer) January 3-7, 2000

Organizer, RIKEN BNL Workshop, Hadron Structure From Lattice QCD (Brookhaven National Lab) March 18-22, 2002

Organizer, RIKEN BNL Workshop, Lattice QCD at Finite Temperature and Density (Brookhaven National Lab) February 8-12, 2004

Convener, Session on Lattice QCD, Meeting of the Division of Particles and Fields of the American Physical Society, (University of California, Riverside) August 28-31, 2004

Convener, Session on Lattice QCD, Meeting of the Division of Particles and Fields of the American Physical Society, (University of California, Riverside) August 28-31, 2004

Program Committee, XXIVth International Symposium on Lattice Field Theory (Lattice 2006), Tucson (July 2006)

Organizer, BaBar Physics and Lattice QCD Workshop, Stanford Linear Accelerator Center, September 16, 2006

Organizer, Domain Wall Fermions @ 10 Years, RIKEN BNL Workshop and Symposium, Brookhaven National Lab, March 12-15, 2007

Organizer, Graduate Fellowship Workshop, University of Connecticut, September 13, 2010

Organizer, INT Workshop on The Hadronic Light-by-Light Contribution to the Muon Anomaly, Institute of Nuclear Theory, University of Washington, February 28 - March 4, 2011

Organizer, RIKEN BNL Workshop, New Horizons for Lattice Gauge Theory Computations, RIKEN BNL Research Center, Brookhaven National Lab, May 14-18, 2012

Organizer, Galileo Galilei Institute Workshop, New Frontiers in Lattice Gauge Theory, Galileo Galilei Institute, Florence, Italy, August 27 - September 28, 2012

Convener, Project X Summer Study, Lattice QCD subgroup, Fermilab, Batavia, IL, June 14-23, 2012

Convener, Community Planning Meeting, Lattice QCD subgroup, Fermilab, Batavia, IL October 11-13

Convener, Community Summer Study, Lattice QCD subgroup, University of Minnesota, Minneapolis, July 29- August 6, 2013

Organizer, Hadronic contributions to the muon anomalous magnetic moment Workshop, MITP, Waldthausen Castle, Mainz Germany, April 1-5, 2014

Local Organizing Committee, XXXII International Symposium on Lattice Field Theory (Lattice 2014), New York, June 2014

Organizer, Muon  $g-2$  Theory Initiative Hadronic Light-by-Light Working Group Workshop,

UConn, March 12-14, 2018

Organizer, SchwingerFest 2018, Bhaumik Institute, UCLA, December 3-5, 2018

Organizer, Workshop on Dipole Moments (Snowmass 2021), virtual, September 15-17, 2020

### **SUMMER SCHOOLS ATTENDED:**

Uehling Summer School, University of Washington  
*Phenomenology and Lattice QCD*  
June 21 - July 2, 1993

NATO Advanced Study Institute  
*Masses of the Fundamental Particles*  
Institut D'Etudes Scientifiques De Cargese  
Aug. 4 - Aug. 17, 1996

### **INVITED TALKS, COLLOQUIA, and LECTURES:**

Invited Talk, Joint Meeting of the American Physical Society/American Association of Physics Teachers (Indianapolis) 1996.

“The Equation of State for Two Flavor QCD from the Lattice”

Invited Talk, RHIC Summer Study '96 (Brookhaven National Lab) 1996.

“The Equation of State for QCD from the Lattice”

Invited Talk, RIKEN BNL workshop on Frontiers in Vector Lattice Gauge Theories (Brookhaven National Lab) 1998.

“Domain Wall Fermions in Lattice QCD”

Plenary review talk, Lattice '98, The XVI International Symposium on Lattice Field Theory (Boulder) 1998.

“Domain Wall Fermions in Vector Gauge Theories”

Review talk, Santa Fe Workshop on perturbative and non-perturbative aspects of the Standard Model (Santa Fe) 1998.

“Domain Wall Fermions”

Lecture, APCTP-RCNP Joint International School on Physics of Hadrons and QCD (Osaka) 1998.

“Domain wall fermion formalism in lattice QCD”

Parallel session talk, American Physical Society, DPF99 (UCLA) 1999.

“QCD with domain wall quarks”

Physics Department Colloquium, University of Arizona (Tucson), Winter 1999.

“Progress in Lattice QCD”

Plenary talk, KAON'99 (Chicago) 1999.

“Calculation of  $\epsilon'/\epsilon$  with domain wall fermions”

Lectures(4), Program on Lattice Gauge Theory, National Center for Theoretical Sciences (Taiwan) Summer 1999

Nuclear and Particle Physics Colloquium, Massachusetts Institute of Technology (Boston) Fall 1999

“Lattice calculation of  $\varepsilon'/\varepsilon$ ”

Plenary talk, Circum-Pan-Pacific RIKEN Symposium on High Energy Spin Physics (Wako, Japan) November 3-7 1999

“Polarized structure functions from the lattice”

Invited talk, Workshop on Predictions and uncertainties for RHIC Spin Physics, (Brookhaven National Lab) March 2000.

“Spin on the Lattice”

Invited talk, Workshop on Future Transversity Measurements, (Brookhaven National Lab) September 2000.

“Tensor charge from the lattice”

Invited talk, European Committee on Future Accelerators (ECFA) Workshop on High Performance Computing in Lattice Field Theory, (DESY-Zeuthen) October 6-7 2000

“Lattice QCD using domain wall fermions”

Invited talk, Workshop on a New Computing Venue for Lattice Gauge Theory Calculations, (Brookhaven National Lab) October 12-14 2000

“The quenched chiral limit of QCD with domain wall fermions”

Special Seminar (Brookhaven National Lab), July 26, 2001

“CP violation in K decay from Lattice QCD”

Physics Department Colloquium (Washington University, St. Louis), January, 2002

“CP violation in Nature and the Standard Model”

Invited talk, April Meeting of the American Physical Society, (Albuquerque), 2002

“New results in lattice QCD (Lattice QCD in the chiral fermion era)”

Physics Department Colloquium (Brookhaven National Lab), October 1, 2002

“CP violation in Nature and the Standard Model”

Physics Department Colloquium, College of William and Mary (Williamsburg), Winter 2003.

“CP Violation in Nature”

Physics Department Colloquium, University of Arizona (Tucson), Winter 2003.

“CP Violation in Nature”

Plenary talk, International Symposium on Lepton Moments, (Cape Cod), June 2003

“Lattice Calculation of hadronic contributions to muon  $g-2$ ”

Plenary talk, Confinement 2003, (Wako, Japan), July 2003

“Lattice Calculation of hadronic contributions to muon  $g-2$ ”

Invited Lectures, 1st Summer School on QCD Spin Physics, (Brookhaven National

Lab), June 5-12, 2004

“Introduction to Lattice QCD and Spin on the Lattice”

Invited talk, ILFT Network Tsukuba Workshop on Lattice QCD and Particle Phenomenology, December 6-17, 2004

“Lattice calculation of nucleon moments ”

Invited plenary talk, Lattice 2005 (XXIII<sup>rd</sup> International Symposium on Lattice Field Theory), Dublin, July 23<sup>rd</sup>- 30<sup>th</sup> 2005

“Neutron Electric Dipole Moment with two flavors of domain wall fermions”.

Invitation only workshop on “Lattice QCD with Light Dynamical Fermions”, Ringberg Castle, Bavaria, Germany, April 23-28 2006.

“2+1 Flavor Domain Wall Fermion Simulations”

Colloquium, Institute for Particle and Nuclear Studies, KEK Particle Accelerator Laboratory, Tsukuba, Japan, “Hadronic corrections to the anomalous magnetic moment of the muon”, June 2006.

Physics Department Colloquium, University of Connecticut, “Current topics in Lattice Gauge Theory”, January 19, 2007

CERN Theory Seminar, “Electromagnetic Effects in Hadrons”, CERN (Geneve), May 9, 2007

Invited plenary talk, *High Energy Physics from High Performance Computing*, SciDAC 2009, San Diego, June 14-18, 2009

Medium energy seminar, University of Illinois, Physics Department, “Hadronic contributions to the muon  $g-2$ ”, April 7, 2010

Invited talk, Lattice Meets Experiment Workshop, Fermilab, “Hadronic contributions to the muon  $g-2$ ”, April 24, 2010

Invited talk, P- and CP-odd Effects in Hot and Dense Matter, Brookhaven National Lab, “Chiral magnetic effect on the lattice”, April 26-30, 2010

RHIC and AGS Users meeting workshop on the chiral magnetic effect, Brookhaven National Lab, “Chiral magnetic effect from the lattice”, June 6, 2010

Invited Key participant, Lattice Gauge Theory Institute, CERN (Geneve), July 16-August 16, 2010

Invited talk, USQCD All Hands Meeting, “Pion and Kaon Physics from 2+1 Flavor DWF Lattices with  $m\pi = 250$  and 180 MeV, III”, Jefferson Lab, May 6, 2011

Invited talk, American Physical Society, Division of Nuclear Physics Meeting, “Fundamental symmetries on the lattice”, Sante Fe, November 1, 2010

Colloquium, University of Arizona, “The muon anomalous magnetic moment”, September 16, 2011.

Invited talk, Fundamental Physics at the Intensity Frontier Workshop, Muon  $g-2$  parallel session, “Theory Overview”, Rockville, MD, November 30, 2011

Plenary Talk, Lattice 2012, Cairns, Australia, June 29, 2012, “The muon anomalous magnetic moment”

Plenary talk, “The muon anomalous magnetic moment from lattice QCD”, Tau 2012, Nagoya, Japan, September 19, 2012

Invited talk, “Lattice calculation of the hadronic light by light scattering contribution to the muon's magnetic moment”, New Frontiers in Lattice Gauge Theory, Florence, Italy, September 14, 2012

MIT Nuclear and Particle Theory Seminar, “Hadronic contributions to the muon anomalous magnetic moment from lattice QCD”, CTP, MIT, November 5, 2012

Invited talk, “Computing  $K$  to  $\pi\pi$  decays with lattice QCD”, APS April Meeting, Denver, April 13, 2013

Invited talk, “Lattice calculation of nucleon electric dipole moments”, Nucleon Matrix Elements for New-Physics Searches, ECT\* Workshop, Trento, Italy, July 24, 2013

Invited talk, “The muon anomalous magnetic moment”, Nucleon Matrix Elements for New-Physics Searches, ECT\* Workshop, Trento, Italy, July 26, 2013

High Energy Theory Seminar, University of Delaware Physics Department, February 20, 2014

Invited talk, “Lattice calculations of hadronic contributions to the muon  $g-2$ ”, Lattice Meets Experiment 2013: Beyond the Standard Model, December 6, 2013

Invited talk, “Light by light scattering for muon  $g-2$ ”, Lattice QCD Meets Experiment 2014, Fermilab, March 8, 2014

Invited talk, “Summary and Perspectives of Lattice QCD”, Hadronic contributions to the muon anomalous magnetic moment: strategies for improvements of the accuracy of the theoretical prediction, MITP Workshop, Waldthausen Castle, Mainz Germany, April 5, 2014

Invited seminar, “Fundamental Parameters I: Quark Masses”, FLAG-Mad, Instituto de Física Teórica UAM/CSIC, May 24, 2014

Plenary Talk, “Lattice calculation of hadronic light-by-light scattering contribution to the muon  $g-2$ ”, Lepton Moments 2014, Cape Cod, July 21, 2014.

Invited talk, “Lattice calculation of hadronic light-by-light scattering contribution to the muon  $g-2$ ”, Creutz Fest, BNL, September 5, 2014.

Invited talk, “Lattice calculation of hadronic light-by-light scattering contribution to the muon  $g-2$ ”, Confinement XI, St. Petersburg, Russia, September 9, 2014.

Invited talk, “Calculation of  $D=4$  Operators for  $n$ EDM (lattice QCD)”, Hadronic Matrix Elements for Probes of CP Violation, Amherst, January 21, 2015.

Invited talk, “Lattice calculation on the nucleon EDM”, CCS-BNL Workshop on Lattice Gauge Theories 2015 (University of Tsukuba), Tsukuba, March 13, 2015.



Plenary talk, “Progress on the muon anomalous magnetic moment from lattice QCD”, The 8th International Workshop on Chiral Dynamics 2015, Pisa, July 3, 2015.

Invited talk, “Progress on computing the muon anomalous magnetic moment from lattice QCD(+QED) (Lattice QCD: HLbL & HVP)”, Muon  $g-2$  Physics Workshop (muon  $g-2$  collaboration Physics Week), Seattle, July 12, 2015.

Invited talk, “Muon  $g-2$ : New Advances for Hadronic Vacuum Polarization and Light-by-Light”, KITP, Santa Barbara, August 14, 2015.

Invited talk, “Progress on computing the hadronic light-by-light scattering contribution to the muon anomalous magnetic moment from lattice QCD(+QED)”, Intersections of BSM Phenomenology and QCD for New Physics Searches, INT, Seattle, September 29, 2015.

Invited talk, “Precision EW calculations for future experiments”, Aspen Winter Conference on Particle Physics, January 14, 2016

Colloquium, “The muon magnetic moment”, Wayne State University, April 14, 2016

Invited talk, “The muon  $g-2$  from lattice QCD”, APS April Meeting (Salt Lake City), April 16, 2016

Invited talk, “The muon  $g-2$  from lattice QCD”, LoopFest XV (Buffalo), August 17, 2016

Plenary talk, “The muon  $g-2$  from lattice QCD”, Spin 16 (University of Illinois), The 22<sup>nd</sup> International Symposium on Spin, September 28, 2016

Invited talk, “Hadronic light-by-light and vacuum polarization contributions to the muon anomalous magnetic moment from lattice QCD”, Muon  $g-2$  Physics Week, Muon  $g-2$  collaboration, Boston University, July 2017

Invited talk, “Lattice:  $g-2$  for muons”, COFI Workshop on Searching for Physics Beyond the Standard Model Using Charged Leptons, Puerto Rico, May 2018

Invited talk, “HLbL lattice: RBC results”, Second Plenary Workshop of the Muon  $g-2$  Theory Initiative, Mainz Institute of Theoretical Physics, Mainz, June 2018

Invited plenary talk, “Muon  $g-2$  Theory Status”, Anomalies 2019, Hyderabad, India, July 16, 2019

Invited plenary talk, “ $g-2$  from the lattice”, Rencontres de Moriond, Electroweak session, La Thuile March 16, 2019

Invited plenary talk, “Status of Hadronic Light-by-Light contribution to the muon  $g-2$  from Lattice QCD+QED”, HP2NP 2019, Tenerife, September 26, 2019

Invited plenary talk, “Hadronic contributions to the muon anomalous magnetic moment from lattice QCD”, EINN 2019, Paphos, October 31, 2019

Invited seminar, “The hadronic light-by-light scattering contribution to the muon anomalous magnetic moment from lattice QCD”, Physics Department, Johannes Gutenberg University, Mainz, February 7<sup>th</sup>, 2020

Invited SLAC Elementary Particle Physics Theory Seminar, “The hadronic light-by-light scattering contribution to the muon anomalous magnetic moment from lattice QCD”, April 29<sup>th</sup>, 2020

Invited review talk, “Quark and lepton flavor physics”, USQCD Review, September 9, 2020

Invited colloquium, “The muon anomalous magnetic moment and the hunt for new physics”, San Francisco State University, November 2, 2020

Invited overview talk, “Overview talk: Systematic errors in the determination of the hadronic vacuum polarization contribution to the muon anomalous magnetic moment from lattice QCD”, The Hadronic Vacuum Polarization from Lattice QCD at high precision workshop, Muon g-2 Theory Initiative, November 16, 2020

## **PUBLICATIONS**

inSPIRE h<sub>HEP</sub> index: 58 (citeable papers), 54 (published only)

See [inSPIRE](#) for a full listing (find a t blum)