

ELIZABETH H. SIMMONS

Associate Provost for Faculty and Academic Staff Development
Dean of Lyman Briggs College and University Distinguished Professor of Physics
Michigan State University

Address: 919 E. Shaw Lane, Room E28
Michigan State University
East Lansing, MI 48825-1107
Website: www.pa.msu.edu/~esimmons/
Full C.V.: www.pa.msu.edu/~esimmons/_documents/EHSimmons_cv.pdf

Voice: (517) 353-6486
Fax: (517) 432-2758
Cell: (517) 614-0970
e-mail: esimmons@msu.edu

Education

Ph.D., Physics (Theoretical Particle Physics), Harvard University (1990).
A.M., Physics, Harvard University (1987).
M.Phil., Physics (Theory of Condensed Matter), University of Cambridge (1986).
A.B., Physics, *magna cum laude*, Harvard University (1985).

Employment

Michigan State University

Associate Provost for Faculty and Academic Staff Development (since 2016).

Dean, Lyman Briggs College (since 2007). Director, Lyman Briggs School of Science (2003-07).

Acting Dean, College of Arts & Letters (2014-15)

University Distinguished Professor (since 2013).

Professor of Physics, Dept. of Physics and Astronomy, College of Natural Science (since 2003).

Boston University Department of Physics: Associate Professor (1998-2003); Assistant Professor (1993-98)

Harvard University Department of Physics: Postdoctoral Fellow in Theoretical Particle Physics (1990-93).

Sabbatical and Visiting Positions

American Council on Education Fellow, Office of the Provost, Yale University (2013-14).

Member, Institute for Advanced Study, Princeton, NJ (2009).

Bunting Fellow, Radcliffe Institute for Advanced Study, Harvard University (2000-01).

Public Writing

Quora Top Writer 2017, 2016. <https://www.quora.com/profile/Elizabeth-H-Simmons>

Columnist for *Inside Higher Ed*. Career Advice: Mend the Gap. (since 2011).

Selected Honors

Fellow, American Association for the Advancement of Science (elected 2011).

Robert F. Banks Award for Institutional Leadership, Michigan State University (2013).

ACE Michigan Distinguished Women in Higher Education Leadership Award (2005).

Committee on Institutional Cooperation Academic Leadership Program Fellow (2004-05).

Fellow, American Physical Society (elected 2002).

Winston Churchill Foundation Scholar, University of Cambridge (1985-86).

Phi Beta Kappa (elected 1983) and Phi Kappa Phi (elected 2011).

MAJOR ADMINISTRATIVE ROLES AT MICHIGAN STATE UNIVERSITY

Associate Provost for Faculty and Academic Staff Development (since 2016).

The Associate Provost leads the new Academic Advancement Network (AAN; <http://aan.msu.edu>), which supports individuals in building productive careers and promotes an inclusive, proactive culture of professional development throughout campus. The AAN works with all MSU faculty, academic staff, and academic leaders as they join the university, establish professional trajectories, and advance through stages of review, promotion, and growth. Its efforts are grounded in research and privilege innovation as a way to promote growth and development.

The Associate Provost's primary responsibilities, thus far, have included:

- Designing the structure, philosophy, and operations of the new Academic Advancement Network, building on the foundations from its predecessor, the Office for Faculty & Organizational Development.
- Establishing the leadership team. Undertaking financial and personnel planning, and resource acquisition, allocation, and tracking.
- Sustaining signature programs while conducting needs assessments, and designing revised or new resources and event series aligned with the Network's mission.
- Meeting with the leadership teams of all major academic units, interdisciplinary centers, and governance bodies to identify existing needs and initiate collaborations.

Dean, Lyman Briggs College (since 2007). Reports to the Provost. Member of Council of Deans.

Lyman Briggs College (LBC) is a 4-year degree-granting residential undergraduate college devoted to studying the natural sciences in their historical, philosophical, literary and social context. Each tenure-system LBC faculty member has a 75% appointment and tenure home in LBC; to facilitate scholarship, each has a 25% joint appointment in the corresponding disciplinary department of another MSU college. Half the faculty are in STEM fields and half are in the history, philosophy, and sociology of science. Current student enrollment is 1900. The college has 55 faculty and staff, over 90 student employees, and an operating budget of \$4.4M. For details see www.lymanbriggs.msu.edu .

The Dean is the Chief Academic, Financial, and Advancement Officer of the College.

- Leads financial and personnel planning, and resource acquisition, allocation, and tracking.
- Responsible for all faculty hiring, retention, annual evaluations and promotion/tenure reviews.
- Promotes development of a strong college research portfolio, including special focal areas.
- Facilitates academic governance within the College and participation in University governance.
- Oversees the development and assessment of courses, curricula, and teaching facilities.
- Plans College-wide space utilization, acquisition, and renovations.
- Builds collaborations with other units on hiring, curriculum, governance, and scholarship.
- Leads development, communications, and alumni relations.

Major accomplishments as leader of Lyman Briggs include

- New cross-campus collaborations on undergraduate education reform and interdisciplinary research.
- Creation of several programs supporting at-risk freshmen in STEM.
- Establishment of a planned gift that will fund the college's first endowed chair
- Transition of Lyman Briggs to college status.
- 25% Expansion of student enrollment, with corresponding growth in faculty lines.

Acting Dean, College of Arts & Letters (2014-15).

Served as Acting Dean during a transitional year with an external search for a new Dean. Held this position concurrently with my ongoing role as Dean of Lyman Briggs College.

The College of Arts & Letters includes 8 departments and 12 academic centers, with 52 graduate and undergraduate majors and programs and a \$40M general funds budget. College employees include 185 tenure-system faculty, 190 other faculty and academic staff, and 60 administrative and support staff. The college has 2000 primary undergraduate majors and a similar number undertaking secondary majors or minors. The graduate programs enroll 160 fully-funded Ph.D. and MFA candidates. The College contains the 1st Year Writing Program and the general education program “Integrative Studies in Arts and Humanities” taken by all MSU undergraduates, and also stewards the campus Writing Center.

Highlights included establishing a College Inclusive Practices Committee; establishing two endowed chairs; recruiting an external department chair and several academic leaders from within MSU; overseeing more than twenty reappointment, promotion, and tenure cases; and revising the graduate funding model to provide stability, incentivize best practices, and improve time to degree.

GRANTS

Major Physics Research Funding

National Science Foundation Research Grant. 5/1/15 - 4/30/18. \$510,000.

R.S. Chivukula (co-PI) and E.H. Simmons (co-PI).

National Science Foundation Research Grant. 5/15/10 - 4/30/15. \$1,000,000.

R.S. Chivukula (co-PI) and E.H. Simmons (co-PI).

National Science Foundation Research Grant. 11/15/04 - 10/31/10. \$720,000.

R.S. Chivukula (co-PI) and E.H. Simmons (co-PI).

Department of Energy Research Grant, Task E: *Theoretical Particle Physics*. \$6,030,000.

Simmons was one of 7 Boston University Co-PIs on this grant from 2/1/95 - 1/31/04.

Additional Physics Research Funding (1990 - present)

I have also received grants totaling \$420,000 from the NSF CAREER and POWRE programs, the US Dept. of Energy OJI program, the Radcliffe Institute for Advanced Study, the Japan Society for the Promotion of Science, the Institute for Advanced Study (Princeton), the AAAS and the AAUW.

Educational Research Funding

Herbert H. and Grace C. Dow Foundation Award. 10/30/2014 – 10/31/2017. \$5,000,000.

R.S. Chivukula (co-PI), K. Renn (co-PI), E.H. Simmons (co-PI) and M. Urban-Lurain (co-PI)

National Science Foundation CCLI -Type 2 Grant. 6/1/2010 - 5/31/2013. \$250,000.

BRAID: Bringing Relationships Alive through Interdisciplinary Discourse.

R. Sweeder (PI), Richard Bellon (co-PI), D. Luckie (co-PI), and E.H. Simmons (co-PI)

National Science Foundation CCLI Grant. 6/1/2007 - 5/31/2010. \$149,904.

BRAID: Bridging the Disciplines with Authentic Inquiry and Discourse.

R. Sweeder (PI), D. Luckie (co-PI), and E.H. Simmons (co-PI)

Funding for Women-in-Science and Outreach Activities (1997 - present)

This work has been supported by grants, subcontracts and corporate donations totaling \$215,000.

TEACHING

Research Students

I have one current doctoral student. Seven doctoral and three masters students have completed physics theses under my supervision. I have also supervised 4 visiting graduate students and four undergraduate theses and worked with nine freshman “professorial assistants” on particle physics theory and outreach.

Course at Michigan State University (one semester each year, since 2005)

I teach a course “Methods of Theoretical Physics” that covers mathematical methods and their application to the physical sciences for undergraduates and entering graduate students in physics, astrophysics, or other physical sciences. With co-instructor R.S. Chivukula, I created this course and have imbued it with active and cooperative learning techniques.

Courses at Boston University (1993-2003)

I taught physics courses aimed at audiences from freshman not planning to major in science, through physics and engineering majors, to physics graduate students. The topics of these courses included mechanics, electricity & magnetism, modern physics, mathematical methods, and particle physics.

SELECTED PROFESSIONAL ACTIVITIES

Board of Directors, Association of American Colleges & Universities (since 2014).

External Advisory Board, NSF Physics Frontiers Center at the Kavli Institute for Cosmological Physics, University of Chicago, Chicago, IL. (2011-16).

Advisory Board, NSF Directorate of Mathematical and Physical Sciences (2004-2007).

American Physical Society Division of Particles & Fields: *Ad hoc* Committee on LGBT Issues (2014-16); Nominating Committee (2008); Executive Committee (2002-04); EPO Committee (2002-07); Chair 2002-04; Sakurai Prize Committee (2001-02).

Aspen Center for Physics: General Member (since 1994), Trustee (2000-06, 2013-2017); Nominations and Presidential Search Committees (2012-13); Corporate Secretary (2004-07); Asst. Corp. Secretary (2001-03; 2007-09), Scientific Secretary (2009-10), Committee for Participant Diversity (Member 1996-2008; Chair, 1996-2005).

Co-Organizer, ICTP Career Development Workshops for Women in Physics, Trieste, Italy. (2013, 2015)

Co-Organizer, *Rencontres de Blois*: Particle Physics and Cosmology, Blois, France. (2009-12).

Co-Organizer, Thinkshops on Top Quark Physics at Run II, Fermilab, Batavia, IL. (1998, 2000).

Co-Organizer, Workshops at the Aspen Center for Physics: Focus Week on Women in Physics (1994).

The Flavor and Gauge Hierarchy Problems (1996), Theoretical and Experimental Issues in Electroweak Dynamics (1998), Education and Outreach (2004), New Data from the Energy Frontier (2011).

Grant reviewer for the National Science Foundation; the US Department of Energy, the Chilean Research Council, the National Science Research Council of Canada, and Research Corporation.

Referee for European Physical Journal, Journal of High-Energy Physics, Modern Physics Letters A, Nuclear Physics B, Physical Review D, Physical Review Letters, and Physics Letters B.

lgbt+ physicists: Member, Organizers’ Board (since 2012).

Summer Science Program, Inc.: Board of Trustees (2006-13; Chair 2008-11, 12-13), Sr. V.P. 2011-12.

QuarkNet national outreach program in high-energy physics. Advisory Board (2005-13).

SELECTED PUBLICATIONS OF ELIZABETH H. SIMMONS (of 197 total)

Particle Physics Journal Articles from 2015-2016

1. 'Simplified Limits on Resonances at the LHC,' with R.S. Chivukula, P. Ittisamai, and K. Mohan. *Physical Review D* **D94** 094029, 2016 (15 pages).
2. Direct Search Implications for a Custodially-Embedded Composite Top,' with R.S. Chivukula, D. Foren, and R. Foadi. *Physical Review D* **D94**, 014002, 2016 (8 pages).
3. Diphoton Resonances in the Renormalizable Coloron Model,' with R.S. Chivukula, A. Farzinnia, and K. Mohan. *Physical Review D* **D94** 035018, 2016 (12 pages).
4. 'Color Discriminant Variable and Scalar Diquarks at the LHC,' with R.S. Chivukula, P. Ittisamai, and K. Mohan. *Physical Review D* **D92** 075020, 2016 (12 pages).
5. 'Color Discriminant Variable and Scalar Diquarks at the LHC,' with R.S. Chivukula, P. Ittisamai, and K. Mohan. *Physical Review D* **D92** 075020, 2015 (13 pages).
6. 'Vacuum Stability and Triviality Analyses of the Renormalizable Coloron Model,' with R.S. Chivukula and A. Farzinnia. *Physical Review D* **D92** 055002, 2015 (17 pages).
7. 'Distinguishing Di-jet Resonances at the LHC,' with R.S. Chivukula and Natascia Vignaroli, *Physical Review D* **D91** 055019, 2015 (11 pages).
8. 'Distinguishing Flavor Non-universal Colorons from Z' Bosons at the LHC,' with R.S. Chivukula and Pawin Ittisamai. *Physical Review D* **D91** 055021, 2015 (16 pages).

Selected High-Impact Particle Physics Journal Articles.

9. 'Axiguons cannot explain the observed top-quark forward-backward asymmetry,' with R.S. Chivukula and C.-P. Yuan. *Physical Review D* **D82**: 094009, 2010. (100 citations).
10. 'The Structure of Corrections to Electroweak Interactions in Higgsless Models,' with R.S. Chivukula, H.-J. He., M. Kurachi, and M. Tanabashi. *Physical Review D* **D70**: 075008, 2004. (109 citations).
11. 'Strong Dynamics and Electroweak Symmetry Breaking,' with C.T. Hill. *Physics Reports* 381, 235, 2003. (903 citations).
12. 'A Heavy Top Quark from Flavor Universal Colorons,' with M.B. Popovic. *Physical Review D* **D58**: 095007, 1998. (106 citations).
13. 'Coloron Phenomenology.' *Physical Review D* **D55**: 1678-1683, 1997. (109 citations).
14. 'New Strong Interactions at the Tevatron?' with R.S. Chivukula and A.G. Cohen. *Physics Letters B* **B380**: 92-98, 1996. (138 citations).
15. ' $D - \bar{D}$ Mixing in Heavy Quark Effective Field Theory: The Sequel,' with T. Ohl, and G. Ricciardi. *Nuclear Physics B* **B403**: 605-632, 1993. (180 citations).
16. 'Non-oblique Effects in the $Zb\bar{b}$ Vertex from ETC Dynamics,' with R.S. Chivukula, and S.B. Selipsky. *Phys. Rev. Letters* **69**: 575-577, 1992. (177 citations).
17. 'Phenomenology of a Technicolor Model with Heavy Scalar Doublet.' *Nuclear Physics B* **B312**: 253-268, 1989. (105 citations).

Selected Publications on Higher Education.

18. 'Improving the Experience of Women in the STEM Professoriate,' with P. Wise. In *Challenges in Higher Education Leadership*, J.S. Antony, A.M. Cauce, D.E. Shalala, eds. Routledge, 2017.
19. 'Updating the Two Cultures: How Structures Can Promote Interdisciplinary Cultures,' with S.A. Valles *et al.*, *Change: The Magazine of Higher Learning*, **48:6**, 28-35, 2016.
20. 'Promoting Gender Equity in STEM: Theory and Applications,' *AWIS*, **48**: 14-17, 2016.
21. 'Humanities Strengthen Science.' *Inside Higher Ed*, 8-14-2014. Reprinted by *Slate*, 8-22-2014.