Kenneth M. Nollett
Curriculum Vitae

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Personal

Birthdate/place: September 6, 1972, Valentine, Nebraska, USA
Citizenship: US

Current Position

2003 – present
Assistant Physicist
Physics Division
Argonne National Laboratory

Education

THE UNIVERSITY OF CHICAGO
Ph.D., Department of Physics, 2000

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
S.B. in Physics, Concentration in German Language, 1995

Research Interests

Nuclear astrophysics, nucleosynthesis, nuclear reactions, few-body nuclear physics, cosmic rays, cosmology.

Past Positions

2002–2003 Postdoctoral Research Associate, Institute for Nuclear Theory, University of Washington.
Research in ultra-high-energy cosmic rays, computational methods, nuclear scattering in the variational Monte Carlo technique.

2000–2002 Postdoctoral Scholar in Physics, California Institute of Technology.
Supervised by G. J. Wasserburg, Marc Kamionkowski.
Research in AGB star nucleosynthesis, presolar grains, ultra-high-energy cosmic rays.

1996–2000 Research Assistant, The University of Chicago.
Supervised by David Schramm, Michael Turner.
Nuclear data evaluation and uncertainty estimation for big-bang nucleosynthesis.

1997–2000 Guest/Lab Graduate Student, Argonne National Laboratory, Physics Division. Supervised by R. B. Wiringa.
Calculation of $^2\mathrm{H}(\alpha,\gamma)^6\mathrm{Li}$, $^3\mathrm{H}(\alpha,\gamma)^7\mathrm{Li}$, and $^3\mathrm{He}(\alpha,\gamma)^7\mathrm{Be}$ cross sections from realistic nucleon-nucleon interactions, via quantum Monte Carlo methods (Ph.D. thesis).

1994–1995 Undergraduate Thesis, M.I.T. Supervised by Alan Guth.
Thesis title: "Closed Timelike Curves Around Moving Cosmic Strings"

1992–1993 M.I.T. Undergraduate Research Opportunities Program.
Supervised by Simon Mochrie.
Design and assembly of apparatus to study x-ray scattering from ordered colloids.
Computer simulation of order/disorder transitions on silicon surfaces.

Publications

Kenneth M. Nollett, Martin Lemoine, and David N. Schramm, "Nuclear Reaction Rates and Primordial ^{6}Li," *Phys. Rev. C* **56**, 1144 (1997).

Scott Burles, Kenneth M. Nollett, James W. Truran, and Michael S. Turner, "Sharpening the predictions of big-bang nucleosynthesis", *Phys. Rev. Lett.*, **82**, 4176 (1999).

Kenneth M. Nollett and Scott Burles, "Estimating reaction rates and uncertainties for primordial nucleosynthesis", *Phys. Rev. D* **61**, 123505 (2000).

Kenneth M. Nollett, R. B. Wiringa, and R. Schiavilla, "Six-body calculation of the alpha-deuteron radiative capture cross section", *Phys. Rev. C* **63**, 024003 (2001).

Scott Burles, Kenneth M. Nollett, and Michael S. Turner, "What is the BBN prediction for the baryon density and how reliable is it?", *Phys. Rev. D* **63**, 063512 (2001).

Kenneth M. Nollett, "Radiative alpha-capture cross sections from realistic nucleon-nucleon interactions and variational Monte Carlo wave functions", *Phys. Rev. C* **63**, 054002 (2001). Based on thesis work.

Scott Burles, Kenneth M. Nollett, and Michael S. Turner, "Big-bang nucleosynthesis predictions for precision cosmology", *Astrophys. J. Lett.* **552**, L1 (2001).

S. Peng Oh, Kenneth M. Nollett, Piero Madau, and G. J. Wasserburg, "Did massive stars pre-enrich and reionize the universe?" *Astrophys. J. Lett.* **562**, L1 (2001).

Kenneth M. Nollett and Robert E. Lopez, "Primordial nucleosynthesis with a varying fine structure constant: An improved estimate," *Phys. Rev. D.* **66**, 063507 (2002).

Kenneth M. Nollett, M. Busso, and G. J. Wasserburg, "Cool bottom Processes on the Thermally-pulsing AGB and the Isotopic Composition of Circumstellar Dust Grains," *Astrophys. J.* **582**, 1036 (2003).

L. E. Marcucci, Kenneth M. Nollett, R. B. Wiringa, and R. Schiavilla, "Modern theories of low-energy nuclear reactions," *Nuclear Physics A* in press

G. J. Wasserburg, M. Busso, R. Gallino, and K. M. Nollett, "Short-lived radioactivities in the early solar system: possible AGB sources," *Nuclear Physics A* in press

Wick C. Haxton, Kenneth M. Nollett, and Kathryn M. Zurek, "The Piecewise Moments Method: A Generalized Lanczos Technique for Nuclear Response Surfaces," *Phys. Rev. C* **72**, 065501 (2005)

Invited Talks

Workshop on Realistic Interactions in Nuclei, Los Alamos National Laboratory
November 1998

Frontiers in Nuclear Astrophysics Workshop, Argonne National Laboratory
November 1998

T-5 (Medium-Energy Theory) Group Seminar, Los Alamos National Laboratory
December 1999 and January 2002

TRIUMF Seminar, TRIUMF Laboratory (Vancouver, BC, Canada)
January 2000

Kellogg (nuclear physics) Seminar, Kellogg Radiation Laboratory, California Institute of Technology
April 2001

LOWq workshop on electromagnetic nuclear reactions at low momentum transfer,
Halifax, NS, Canada
August 2001

Nuclear Theory Seminar, Argonne National Laboratory
September 2001

Physics Division Seminar, Argonne National Laboratory
February 2002

Nuclear Physics Seminar, Ohio University
March 2002

Nuclear Science Seminar, Michigan State University
September 2002 and February 2005

Invited session on charge symmetry breaking
American Physical Society April meeting
Philadelphia, PA
April 2003

TRIUMF Theory Seminar, TRIUMF Laboratory (Vancouver, BC, Canada)
May 2003

Invited session on recent developments in computational nuclear physics
American Physical Society April meeting
Denver, CO
May 2004

Astrophysics Seminar, University of Notre Dame
February 2005

2005 Gordon Research Conference on Nuclear Chemistry
New London, NH
July 2005

Third Argonne/MSU/INT/JINA RIA Theory Workshop
Argonne National Laboratory
April 2006

Physics Division colloquium, Argonne National Laboratory
May 2006

7th International Conference on Radioactive Nuclear Beams
Cortina d'Ampezzo, Italy
July 2006

Nuclear Structure '06: Conference on Nuclei at the Limits
Oak Ridge, TN
July 2006

Service

Referee for:
Journal of High Energy Physics, Atomic Data and Nuclear Data Tables, Nuclear Physics A, Physical Review Letters, Physics Letters B, Journal of Physics G

Co-organizer, Second Argonne/MSU/JINA/INT RIA Workshop: "Reaction Mechanisms for Rare Isotope Beams," East Lansing, Michigan, March 9–12, 2005

Co-organizer, Third Argonne/MSU/JINA/INT RIA Workshop, Argonne National Laboratory, April 4–7, 2006

Teaching Experience

The University of Chicago, Department of Physics, Teaching Assistant
Physics 131–133, Introductory physics sequence, 1995–96 academic year
Physics 141–143, Honors introductory physics sequence, 1996–97 academic year

Student Supervision

California Institute of Technology
Summer Undergraduate Research Fellowship Program
Mentor, Summer 2002

Argonne National Laboratory
Summer Research Aide supervisor, Summer 2006