

# Charlotte Elster

Professor of Physics, Ohio University

<http://www.phy.ohiou.edu/~elster>

## Professional Preparation:

<i>Institution</i>	<i>Major</i>	<i>Degree</i>	<i>Date</i>
University of Bonn	Physics	Diploma	1983
University of Bonn	Theoretical Physics	Ph.D.	1986

## Appointments:

Director, Institut of Nuclear and Particle Physics,	Ohio University	2003-
Professor of Physics	Ohio University	2002-
Senior Research Scientist	Forschungszentrum Jülich	1999-03
Associate Professor of Physics	Ohio University	1996-02
Assistant Professor of Physics	Ohio University	1991-96
Postdoctoral Research Fellow	The Ohio State University	1989-91
Battelle Fellow	The Ohio State University	1988-89
Postdoctoral Research Fellow	University of Maryland	1987-88
Postdoctoral Research Fellow	Kent State University	1986-87

## Honors and National Committees:

DOE/NSF Nuclear Science Advisory Committee	2007-09
Secretary Treasurer, Few-Body Topical Group, APS	2003-
INT National Advisory Committee	2006-08
NNPSS Steering Committee, DNP (Chair 2007-08)	2005-09
Fellow of the American Physical Society (APS)	2001
Member, Executive Committee, Division of Nuclear Physics, APS	2001-03
Member, Program Committee, Neumann Institute for Computing, FZJ	2001
Chair, Program Advisory Committee, IUCF	1998-99
Member, Program Advisory Committee, IUCF	1997-00
Member, Executive Committee, Few-Body Topical Group, APS	1996-99
Chair, Statewide Users Group at the Ohio Supercomputer Center	1996-98
Member, Committee on the Status of Women in Physics, APS	1992-95

## Publication Summary

Refereed Journals and book articles	: 67
Invited talks at professional meetings	: 34
Contributions to professional meetings	: 74

## Research Support

Federal/State career total: \$3,000,000+  
Computational Support: Ohio Supercomputer Center, National Energy Research Supercomputer Center, Pittsburgh Supercomputer Center, Neumann Institute for Computing

## Consultantships, Memberships

Consultantships: Los Alamos National Laboratory

1988-1994

Member: American Physical Society (APS); Division of Nuclear Physics, APS;  
Few-Body Topical Group, APS; Division of Computational Physics, APS;  
Deutsche Physikalische Gesellschaft (DPG); Sigma Xi

## Current Research Support

- ‘Nuclear Dynamics and Astrophysics in Few and Many-Body Systems’, U.S. Department of Energy, 11/09 - 10/10, \$371,000.
- Computational Support through the Ohio Supercomputer Center (OSC) and the National Energy Research Supercomputer Center (NERSC).

## Research Interests

Scattering of nucleons from very light nuclei in the intermediate energy range. Investigations of relativistic effects in few-body and many-body dynamics and the role of subnuclear degrees of freedom.

Multiple scattering theories with non-relativistic as well as relativistic dynamics. Application to nucleon-nucleus scattering and nuclear reactions at intermediate energies.

Effective field theories; especially models for the nucleon-nucleon, nucleon-nucleon-pion, and pion-nucleon system derived from hadronic field theories, pion production in nucleon-nucleon scattering.

Computational physics with emphasis on nuclear reactions and few-body systems. Development of computational tools to carry out 3N and 4N scattering without employing methods of angular momentum decomposition

## Teaching Experience

- **Graduate Courses:** Quantum Mechanics, Relativistic Quantum Mechanics, Nuclear Theory, Field Theory, Mathematical Methods in Physics, Scattering Theory, Computational Physics, Nuclear Physics.
- **Undergraduate Courses:** Introductory Physics for non-physics majors, Calculus based Introductory Physics, Modern Physics, Dynamic Meteorology.
- **Web-based Courses:** Interactive Physical Science Course for non-science majors using multimedia and java-based applications, course incorporated in LonCapa.

## Graduate and Undergraduate Research Participation

- T. Lin            Ph.D. Thesis, Ohio University, June 2008  
                  ‘Poincare Invariant Three-Body Scattering’
- H. Liu            Ph.D. Thesis, Ohio University, August 2005  
                  ‘Study of the Nuclear Three-Body System with  
                  Three-Dimensional Faddeev Calculations’
- A. Schwick        Diplom in Physics, University Bonn, November 2004  
                  ‘Analyse der pp-Streuung im GeV-Bereich  
                  anhand des Mesonaustauschmodells
- A. Motzke        Diplom in Physics, University Köln, March 2002  
                  ‘Der Einfluss von Dreiteilchenschnitten auf die  
                  Reaktion  $NN \rightarrow NN\pi$ .’
- G. Caia            Master Degree, Ohio University, November 2001.  
                  ‘ Study of Derivative Couplings in an OBE Model  
                  in Time Ordered Perturbation Theory.’
- S.P. Weppner     Ph.D. Thesis, Ohio University, August 1997.  
                  ‘Microscopic Calculations of First Order Optical Potentials for  
                  Nucleon-Nucleus Scattering.’
- E.E. Evans        Bachelors Degree, Ohio University, Spring 1995  
                  Undergraduate Thesis, Honors Tutorial College:  
                  ‘Effect of a nonlocal Yukawa interaction on the bound state properties.  
                  of a two and three fermion bound state.’
- L. Wang            Masters Degree, Ohio University, Fall 1994  
                  Research Project: ‘Low Energy Behavior of Energy Dependent  
                  One-Boson-Exchange Nucleon-Nucleon Interactions.’
- B.E. Barmore     Bachelors Degree, Ohio University, Spring 1993  
                  Undergraduate Thesis, Honors Tutorial College:  
                  ‘Sensitivity of Back Angle (n,p) Scattering to the Pion-Nucleon  
                  Coupling Constant.’
- Summer Students: J. Thomas, Summers 1996, 1995, Undergraduate Research Internship.  
                  E. Hutchinson, Summer 1994, Undergraduate Research Internship  
                  B.E. Barmore, Summer 1993, Undergraduate Research Internship