

Richard Ward



Personal:	Birth	December 4, 1949 Dallas, TX	
Education:	Ph.D. in Space Physics and Astronomy Rice University, Houston, TX		May 1976
	M.S. in Space Physics and Astronomy Rice University, Houston, TX		May 1974
	B.A. in Physics and Mathematics Rice University, Houston, TX Graduated Summa Cum Laude		May 1971

Professional Experience:

Deputy AX-Division Leader
Technical Advisor for Science, Secondary Nuclear Design
Lawrence Livermore National Laboratory, Livermore, CA – 2008 to present

Interim Leader, Office of Classification and Export Control
Lawrence Livermore National Laboratory, Livermore, CA – 2008

DNT/WCI Deputy Principal Associate Director
Lawrence Livermore National Laboratory, Livermore, CA – 2003 to 2008

AX-Division/A-Program Leader
Lawrence Livermore National Laboratory, Livermore, CA – 1996 to 2003

Group Leader, A Division
Lawrence Livermore National Laboratory, Livermore, CA – 1995 to 1996

Staff Physicist, A Division
Lawrence Livermore National Laboratory, Livermore, CA – 1982 to 1995

Chairman, Laboratory-Wide I. R. D. Committee – 1988 to 1989

Instructor in Physics and Astronomy
Las Positas College, Livermore, CA – 1986 to present

Research Associate
Max-Planck-Institut für Astrophysik, Munich, Germany – 1979 to 1982

Instructor in Physics and Astronomy
University of Maryland, Munich Campus, Munich, Germany – 1980 to 1982

Research Fellow in Physics
California Institute of Technology, Pasadena, CA – 1976 to 1979

Research Associate
Dept. of Space Physics and Astronomy, Rice University, Houston TX – 1976

Research Assistant
Dept. of Space Physics and Astronomy, Rice University, Houston TX – 1974 to 1976

Graduate Fellow
Dept. of Space Physics and Astronomy, Rice University, Houston TX – 1971 to 1974

Research

Interests: Physics of high-energy-density plasmas
Opacity
Radiation flow
Nucleosynthesis
Theoretical nuclear astrophysics

Major Nuclear-Design

Projects: A-Division point-of-contact for the W84
Add-on design for the RANDSBURG event
Add-on design for the SCHELLBOURNE event
Add-on design for the GOLDSTONE event
Secondary design for the CORNUCOPIA event
Add-on design for the ORKNEY event

Professional Memberships:

American Physical Society
International Astronomical Union

Honors and Awards:

Hertz Foundation Fellow (June 1973 - May 1976)
Rice University Fellow (September 1971 - May 1973)
Woodrow Wilson Fellow
Phi Beta Kappa
Sigma Pi Sigma (National Physics Honor Society)
Rice University Tuition Grant (1970 - 1971)
Hanszen College Fellow
James and Alice Graham Baker Distinguished Scholar (1968 - 1969)
President's Honor Roll (1967 - 1971)

Publications:

"Absorption experiments on x-ray-heated mid-Z constrained samples"
T. S. Perry, et al.
Physical Review E **54**, 5617 (1996).

"Quantitative Measurement of Mid-Z Opacities"
T. S. Perry, et al.
Journal of Quantitative Spectroscopy and Radiation Transfer **54**, No. 1/2, p. 317 (1995).

"Summary of June 1995 Nova Gap-Closure Experiments"
J. M. Foster, et al.
ACO-UK-9895 (1995).

"Radiation-Driven Gap Closure Experiments and Simulations",
P. A. Rosen, et al.
ACO-UK-9975 (1995).

"Experiments on the National Ignition Facility Involving Radiation Flow"
R. A. Ward
NIF and Non-proliferation Committee in Support of KD-1 Prime (1995).

"Radiation Flow and Foil Burnthrough Experiments on Nova"
J. M. Foster, et al.
RCO-UK-9712, Proceedings of JOWOG37 Meeting (1994).

"A Benchmark LTE Opacity Experiment"
P. A. Rosen, et al.
RCO-UK-9711, Proceedings of JOWOG37 Meeting (1994).

"Experimental Techniques to Measure Thermal Radiation Heat Transfer"

T. S. Perry, et al.
Journal of Quantitative Spectroscopy and Radiation Transfer **51**, p. 273 (1994)

"Possible Radiation-Flow Experiments on the National Ignition Facility"
R. A. Ward
contribution to the NIF Mission statement in Support of KD1 (1994)

"Radiation Flow Experiments on Nova"
R. A. Ward, et al.
Proceedings of the 9th Biennial Nuclear Explosives Design Physics Conference
UCRL-MI-113974, **1**, p. 323 (1993)

"Weapon Physics Experiments on Nova and the NIF"
T. S. Perry, et al.
Proceedings of the 9th Biennial Nuclear Explosives Design Physics Conference
UCRL-MI-113974, **1**, p. 495 (1993)

"Proposals and Plans for Radiation Flow Experiments on Nova"
R. A. Ward and T. S. Perry
COPD 91-727 (1991)

"Radiation Flow Experiments on Nova"
R. A. Ward et al.
Proceedings of the 1991 Nuclear Explosives Design Physics Conference
COPD 91-736 (1991)

T. S. Perry, et al.
"Opacity Measurements in a Hot Dense Medium"
Physical Review Letters **67**, No. 27, p. 3784 (1991).

"Opacity Experiments"
T. S. Perry and R. A. Ward
A0272SR (1988)

"Geometrical Constraints on ... Hohlräume and Backlights"
R. A. Ward
COPD-87-92 (1987)

"Premortem ... DELAMAR ..."
R. A. Ward
COPD-87-93 (1987)

"The Opacity Measurement Program at LLNL"
R. A. Ward
Proceedings of the Sixth Biennial Nuclear Explosives Design Physics Conference, LA-1185-C, **1**, 92-102 (1987)

"CORNUCOPIA Preshot Report"

R. A. Ward
COPD 86-87 (1987)

"Proposals for NTS Opacity Experiments"

R. A. Ward
COPD 87-56 (1987)

"A Parametric Study of Pulsed-Neutron-Source Models of the s-Process"

W. M. Howard, G. J. Mathews, K. Takahashi, and R. A. Ward
Astrophysical Journal **309**, 633-652 (1986).

"Neutron Capture Cross Sections for ^{86}Sr and ^{87}Sr at Stellar Temperatures"

R. W. Bauer, G. J. Mathews, J. A. Becker, R. E. Howe, and R. A. Ward
UCRL-94158 Rev. 1 (1986).

"Nuclear Information Needs for the Astrophysical s-Process"

G. J. Mathews, W. M. Howard, K. Takahashi, and R. A. Ward
UCRL-91705 (1985).

"Nuclear Astrophysics Away from Stability"

G. J. Mathews, W. M. Howard, K. Takahashi, and R. A. Ward
UCRL-92470 (1985).

"Production and Survival of ^{99}Tc in He-Shell Recurrent Thermal Pulses"

K. Takahashi, G. J. Mathews, R. A. Ward, and S. A. Becker
UCRL-92789 (1985).

"Stellar Technetium and Niobium Abundances as a Measure of the Lifetime of AGB Stars in the Third Dredge-Up Phase"

G. J. Mathews, K. Takahashi, R. A. Ward, and W. M. Howard
UCRL-92671 (1985), Astrophysical Journal **302**, 410-414 (1986).

"Some Nuclear Data Needs in Astrophysics"

G. J. Mathews, R. W. Bauer, S. D. Bloom, R. C. Haight, W. M. Howard, K. Takahashi, and R. A. Ward
UCRL-92672 (1985).

"Stellar s-Process Diagnostics"

G. J. Mathews, R. A. Ward, K. Takahashi, and W. M. Howard
UCRL-92724 (1985).

"Dynamic Stellar Neutron-Capture Nucleosynthesis: The Need for More Nuclear Data for the s-Process"

G. J. Mathews, W. M. Howard, K. Takahashi, and R. A. Ward

UCRL-91443 (1984).

"A Parametric Study of Dynamic s-Process Neutron-Capture Nucleosynthesis: Nuclear Data Needs"

G. J. Mathews, W. M. Howard, K. Takahashi, and R. A. Ward
UCRL-91444 (1984).

"Radioactive Ion Beam Research at Livermore"

R. C. Haight, G. J. Mathews, R. A. Ward, and S. E. Woosley
UCRL-89382 (1983).

"Neutron Capture Processes in Astrophysics"

G. J. Mathews and R. A. Ward
Reports on Progress in Physics **48**, 1371-1418 (1985).

"s-Process Studies in the Light of New Experimental Cross Sections: Distribution of Neutron Fluences and r-Process Residuals"

F. Käppeler, H. Beer, K. Wisshak, D. D. Clayton, R. L. Macklin, and R. A. Ward
Astrophysical Journal **257**, 821-846 (1982).

"On the Origin of the Solar-System Abundances of ^{113}In , ^{114}Sn and ^{115}Sn "

R. A. Ward and H. Beer
Astronomy and Astrophysics **103**, 189-196 (1981).

"Neutron-Capture Nucleosynthesis of Nature's Rarest Stable Isotope"

H. Beer and R. A. Ward
Nature **291**, 308-310 (1981).

" ^{176}Lu : Cosmic Clock or Stellar Thermometer?"

H. Beer, F. Käppeler, K. Wisshak, and R. A. Ward
Astrophysical Journal Supplement **46**, 295-317 (1981).

"Stellar Ion-Induced Coulomb Enhancements of Nuclear Radiative Decay Rates"

R. A. Ward
Astronomy and Astrophysics **97**, 157-168 (1981).

"Thermalization of Long-Lived Nuclear Isomeric States Under Stellar Conditions"

R. A. Ward and W. A. Fowler
Astrophysical Journal **238**, 266-286 (1980).

"s-Process Studies: Xenon and Krypton Isotopic Abundances"

D. D. Clayton and R. A. Ward
Astrophysical Journal **224**, 1000-1006 (1978).

"Numerical Calculation of the Limiting Properties of Coulomb Excitation Functions"

R. A. Ward

Journal of Computational Physics **29**, 49-66 (1978).

"s-Process Studies: The Effects of a Pulsed Neutron Flux"

R. A. Ward and M. J. Newman

Astrophysical Journal **219**, 195-212 (1978).

"The Importance of Long-Lived Isomeric States in s-Process Branching"

R. A. Ward

Astrophysical Journal **216**, 540-547 (1977).

"Resolution of s- and r-Process Solar-System Abundances of $A > 200$ with an Exponential Exposure Distribution"

R. A. Ward

Proceedings of the Southwest Regional Conference for Astronomy and Astrophysics II, 17-23 (1976).

"s-Process Studies: Branching and the Time Scale"

R. A. Ward, M. J. Newman, and D. D. Clayton

Astrophysical Journal Supplement **31**, 33-59 (1976).

"On Emission Lines in the Cosmic Gamma-Ray Background"

D. D. Clayton and R. A. Ward

Astrophysical Journal **198**, 241-244 (1975).

"s-Process Studies: Exact Evaluation of an Exponential Distribution of Exposures"

D. D. Clayton and R. A. Ward

Astrophysical Journal **193**, 397-399 (1974).