

Abbreviated Curriculum Vitae

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February 20, 2012

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BIRTHDATE:

October 14, 1950

PRESENT POSITION:

- Nov. 1994 - Present Professor
Department of Physics
University of Notre Dame
and
- Sept. 2000 - Present Director,
Center for Astrophysics at Notre Dame University (CANDU)
University of Notre Dame

PREVIOUS POSITIONS:

- Apr. 1993-Nov. 1994 Senior Scientist Physical Sciences & Space Technologies Directorate Physics Research Program/P-Division University of California, Lawrence Livermore National Laboratory

and

- Sept. 1992-Nov. 1994 Adjunct Professor of Physics and Astronomy University of California, Davis
- Oct. 1986-Apr. 1993 Group Leader for Astrophysics Physics Department/E-Division University of California, Lawrence Livermore National Laboratory
- Apr. 1981-Oct. 19886 Physicist Physics Department/E-Division University of California, Lawrence Livermore National Laboratory
- Nov. 1979-Apr. 1981 Senior Research Fellow California Institute of Technology, W. K. Kellogg Radiation Laboratory
- Sept. 1977- Nov. 1979 Research Associate University of California, Lawrence Berkeley Laboratory
- May-Sept. 1977 Post-Doctoral Research Associate, University of Maryland

EDUCATION:

- B.S., June 1972, Michigan State University
- Ph.D., May 1977, University of Maryland, College Park, MD Dissertation: *Reflections and Research on: I) The Nucleosynthesis of Light and Heavy Nuclei; II) A Generalized Theory of Odd-A Nuclei; III) A Study of Three Heavy-Ion Systems*

HONORS:

- Research Excellence Award of the Society of the Sigma Xi (1976)
- Assoc. Western Univ.-ERDA-Fellowship to Lawrence Berkeley Laboratory (1976)
- Visiting Scientist: California Institute of Technology (1981)
- Guest Scientist: Max Planck Institute for Astrophysics (1984)
- Distinguished Visiting Professor: Univ. of Chicago (1990)
- Outstanding Scientific Publication Award: Phys. Res. Prog., LLNL (1993)
- Fellow: American Physical Society (1994)
- Visiting Professor: National Astronomical Observatory of Japan (1994, 2000, 2001, 2005, 2007-2012)
- Center of Excellence Distinguished Lecturer, Tokyo University (2005)

CURRENT RESEARCH INTERESTS:

- **Cosmology:** Brane-world cosmology, inflation, big-bang nucleosynthesis, cosmic microwave background, primordial power spectrum, time-varying constants, dark matter and dark energy theories.
- **Theoretical Astrophysics:** Nuclear astrophysics, supernova models, thermonuclear burning and nucleosyntheses, the r-process, the s-process, galaxy formation and galactic chemical evolution
- **Astroparticle Physics:** Neutrinos in supernovae and the big bang, the QCD phase transition in the big bang and neutron stars, strange-matter stars, gamma-ray bursts, high-energy cosmic-ray production
- **General Relativity and Relativistic Hydrodynamics:** Neutron stars, neutron-star binaries, accreting neutron stars, accreting black holes, stars near black holes.

Recent Courses Taught

1. Descriptive Astronomy 10140: Fall 2009, Fall 2005
2. Cosmological Physics: 80204: Spring 2007, 2009
3. Mathematical Methods of Physics 70002: Fall 2006, 2007, 2008
4. Nuclear Warfare 20061: Spring 2008
5. Elementary Cosmology 171: Fall 2003, 2004, 2005
6. General Relativity 70050/50204: Spring 2004, 2005, 2006, Spring 2010
7. Physics General Lab 32220: Spring 2007
8. Introductory Physics for Students in Health Science 221: Fall 2002, Spring 2003

Refereed Journal Publications *over 3800 Citations*

1. $\alpha + \alpha$ Reaction and the Origin of ${}^7\text{Li}$, C.H. King, H.H. Rossner, S.M. Austin, W.S. Chien, **G. J. Mathews**, V.E. Viola, Jr., and R.G. Clark, Phys. Rev. Lett. 35, 988 (1975).
2. Population of Levels in ${}^{199}\text{Hg}$ following ${}^{199}\text{Tl}$ Decay and Intermediate Coupling Calculations for ${}^{199}\text{Hg}$, **G. J. Mathews**, F.M. Bernthal, and J.D. Immele, Phys. Rev. C11, 387 (1975).

3. Gamma-Gamma Angular Correlations in Rh following the Decay of 4.4-h ^{105}Ru , E.W. Schneider, **G. J. Mathews**, S.V. Jackson, P.W. Gallagher, and W.B. Walters, Phys. Rev. C13, 1624 (1976).
4. r-Process Nucleosynthesis of Superheavy Nuclei and Nuclear Mass Tables, **G. J. Mathews** and V.E. Viola, Jr., Nature 261, 382 (1976).
5. Li, Be, and Production in Reactions of 45100 MeV Protons with ^{12}C : Astrophysical Implications, C.T. Roche, R.G. Clark, **G. J. Mathews**, and V.E. Viola, Jr., Phys. Rev. C14, 410 (1976).
6. Evidence for the Characterization of Heavy-Ion Reactions by the Ratio E/B , **G. J. Mathews**, G.J. Wozniak, R.P. Schmitt, and L.G. Moretto, Z. Physik A 283, 247 (1977).
7. Production of $A = 6$ and $A = 7$ Isotopes in the $\alpha + \alpha$ Reaction, B.G. Glacola, **G. J. Mathews**, H.F. Breuer, V.E. Viola, Jr., P.G. Roos, A. Nadasen, and S.M. Austin, Phys. Rev. Lett. 41, 1698 (1978).
8. Measurement of $^4\text{He} + ^4\text{He}$ Elastic Scattering at 158.2 MeV, A. Nadasen, P.G. Roos, B.G. Glacola, **G. J. Mathews**, and V.E. Viola, Phys. Rev. C18, 2792 (1978).
9. Nucleosynthesis of Li, Be and B: Contributions from the $p+^{16}\text{O}$ Reaction at 5090 MeV, R.A. Moyle, B.G. Glacola, **G. J. Mathews**, and V.E. Viola, Jr., Phys. Rev. C19, 631 (1979).
10. On the Light Element Abundances, Galactic Evolution, and the Universal Baryon Density, **G. J. Mathews** and V.E. Viola, Jr., Ap. J. 228, 375 (1979).
11. A Scenario for the 220MeV $^{40}\text{Ar} + ^{238}\text{U}$ Reaction, **G. J. Mathews**, L.G. Sobotka, G.J. Wozniak, R. Regimbart, R.P. Schmitt, G.U. Rattazzi, and L.G. Moretto, Z. Physik A 290, 407 (1979).
12. A Theoretical Investigation of Shell Effects in Deep Inelastic Collisions, L.G. Sobotka, **G. J. Mathews**, and L.G. Moretto, Z. Physik A 292, 191 (1979).
13. On the Decay Width of the Complete-Fusion System, **G. J. Mathews** and L.G. Moretto, Phys. Lett. 87B, 331 (1979). 10/13/06
14. Fragment Spin Orientation in Deep-Inelastic Reactions from Anisotropy Measurements of Continuum Gamma Rays, P. Auger, R.P. Schmitt, G.J. Wozniak, D. Habs, R.M. Diamond, C. Ellegaard, D.L. Hillis, C.C. Hsu, **G. J. Mathews**, L.G. Moretto, G.U. Rattazzi, C.P. Roulet, and F.S. Stephens, Phys. Rev. Lett. 43, 1778 (1979).
15. Distortions in the Cosmic Background Radiation and Big Bang ^4He Nucleosynthesis, **G. J. Mathews**, Y. Alhassid, and G. Fuller, Ap. J. 246, 361 (1981).

16. Systematics of r-Process Enrichment Factors for Barium, Neodymium, and Samarium Isotopic Anomalies in the Allende Meteorite, **G. J. Mathews** and W.A. Fowler, *Ap. J.* 251, L45 (1981).
17. Fast Particle Emission in the Deep Inelastic Reaction $^{107,109}\text{Cu}+^{20}\text{Ne}$ at 12.1 MeV/Nucleon, R.P. Schmitt, G.J. Wozniak, G.U. Rattazzi, **G. J. Mathews**, R. Regimbart, and L.G. Moretto, *Phys. Rev. Lett.* 46, 522 (1981).
18. ^{20}Ne -Induced Reactions with Cu and ^{197}Au at 8.6 and 12.6 MeV/Nucleon, **G. J. Mathews**, J.B. Moulton, G.J. Wozniak, B. Cauvin, R.P. Schmitt, J.S. Sventek, and L.G. Moretto, *Phys. Rev. C* 25, 300 (1982).
19. Production of ^6He , ^6Li , ^7Li , and ^7Be in the $\alpha + \alpha$ Reaction Between 60160 MeV, B.G. Glagola, V.E. Viola, Jr., H. Breuer, N.S. Chant, A. Nadasen, P.G. Roos, S.M. Austin, and **G. J. Mathews**, *Phys. Rev. C* 25, 34 (1982).
20. Low Energy $^3\text{He}(\alpha, \gamma)^7\text{Be}$ Cross Section Measurements, J.L. Osborne, C.A. Barnes, R.W. Kavanagh, R.M. Kremer, **G. J. Mathews**, J.L. Zyskind, P.D. Parker, and A.J. Howard, *Phys. Rev. Lett.* 48, 1664 (1982).
21. Inclusion of Deuteron and Alpha-Particle Collisions in Intranuclear Cascade Calculations, **G. J. Mathews**, R. Moyle, B. Glagola, and V.E. Viola, *Phys. Rev. C* 25, 2181 (1982).
22. Energy Deposition in Intermediate Energy Nucleon-Nucleus Collisions, K. Kwaitkowski, S.H. Zhou, T.E. Ward, V.E. Viola, H. Breuer, **G. J. Mathews**, A. Gokmen, and A. Mignerey, *Phys. Rev. Lett.* 50, 1648 (1983).
23. Neutron Capture Rates in the r-Process: The Role of Direct Radiative Capture, **G. J. Mathews**, A. Mengoni, F.K. Thielemann, and W.A. Fowler, *Ap. J.* 270, 740 (1983).
24. A Comparison Between Observed and Theoretical H-R Diagrams for the Young LMC Star Cluster NGC1866, S.A. Becker and **G. J. Mathews**, *Ap. J.* 270, 155 (1983).
25. A New System for Astrophysical Nuclear Reaction Studies with Radioactive Ion Beams, R.C. Haight, **G. J. Mathews**, R.M. White, L.A. Aviles, and S.E. Woodard, *Nucl. Instrum. Methods* 206, 245 (1983).
26. On the Branching Ratio in the Decay of ^7Be , **G. J. Mathews**, R.C. Haight, R.G. Lanier and R.M. White, *Phys. Rev. C* 28, 879 (1983). 10/13/06
27. The Gamow-Teller Strength Function for ^{90}Zr : The Effects of Spin and Isospin Exchange Forces, and Ground-State Correlations, **G. J. Mathews**, S.D. Bloom and R.F. Hausman, Jr., *Phys. Rev. C* 28, 1367 (1983).

28. A Study of Charge, Energy, and Angular Momentum Transfer in the $^{56}\text{Fe}+^{197}\text{Au}$ and $^{56}\text{Fe} + ^{107,109}\text{Ag}$ Reactions at 7.2 and 8.3 MeV/Nucleon, G.J. Wozniak, **G. J. Mathews**, R.P. Schmitt, R. Regimbart, H. Hubel, R.M. Diamond, and L.G. Moretto, Nucl. Phys. A402, 322 (1983).
29. Low Energy Behavior of the $^3\text{He}(\alpha, \gamma)^7\text{Be}$ Cross Section, J.L. Osborne, C.A. Barnes, R.W. Kavanagh, R.M. Kremer, **G. J. Mathews**, J.L. Zyskind, P.D. Parker, and A.J. Howard, Nucl. Phys. A419, 115 (1984).
30. The $^{13}\text{N}(p, \gamma)^{14}\text{O}$ Thermonuclear Reaction Rate and the Hot CNO Cycle, **G. J. Mathews**, and F.S. Dietrich, Ap. J. 287, 969 (1984). (UCRL-90349)
31. Neutron Capture Nucleosynthesis of Neodymium Isotopes and the s-Process from A = 130 to 150, **G. J. Mathews** and F. Kappeler, Ap. J. 286, 810 (1984). (UCRL-90525)
32. Intranuclear Cascade and Fermi-Breakup Calculations of ^1H and ^4He - Induced Reactions on Light Target Nuclei, A. Gokmen, **G. J. Mathews**, and V.E. Viola, Jr., Phys. Rev. C29, 1606 (1984).
33. **G. J. Mathews** and R. A. Ward, "Neutron Capture Processes in Astrophysics," Rep. Prog. in Phys. **48**, 1371 (1985) UCRL-91445.
34. **G. J. Mathews**, S. D. Bloom, G. M. Fuller, and J. N. Bahcall, "A Shell Model Study of the $^{71}\text{Ga}(n, e^-)^{71}\text{Ga}$ Solar Neutrino Detector", Phys. Rev. **C32**, 796 (1985) UCRL-90317 REV. 1.
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36. T. P. Walker, V. E. Viola, and **G. J. Mathews**, "Astrophysical Production Rates for Li, Be, and B nuclei from Energetic Reactions of He, C, N, and O Nuclei with H and He", Astrophys. J. **299**, 745 (1985).
37. **G. J. Mathews**, K. Takahashi, R. A. Ward, and W. M. Howard, "Stellar Technetium and Niobium Abundances as a Measure of the Lifetime of AGB Stars in the Third Dredge-up Phase", Astrophys. J. **302**, 410 (1986) UCRL-92671.
38. R. C. Haight, **G. J. Mathews**, and R. W. Bauer, "Radioactive Ion Beams—Hot Stellar Reactions in the Laboratory", Nucl. Inst. Meth. **B10/11**, 361 (1985) UCRL-91600.
39. K. E. Sale, R. W. Bauer, R. N. Boyd, **G. J. Mathews**, R. C. Haight, and P. B. Corn, "Radioactive Ion Beam Research at Lawrence Livermore National Laboratory," Nucl. Instr. Meth. **B24/25**, 490 (1987). UCRL-95451.

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41. W. M. Howard, **G. J. Mathews**, K. Takahashi, and R. A. Ward, "A Parametric Study of Pulsed Neutron-Source Models for the s -Process," *Astrophys. J.* **309**, 633 (1986). UCRL-94131.
42. K. E. Sale and **G. J. Mathews**, "Primordial Nucleosynthesis in Inhomogeneous Cosmologies: $\Omega = 1$ with Baryons," *Astrophys. J.* **309**, L1 (1986). UCRL-94679.
43. C. A. Hughes, S.D. Bloom, and **G. J. Mathews**, "Binding Energies of Q-Nuclei and Stellar Hydrogen Burning," *Astrophys. J.*, **311**, 485 (1986). UCRL-93791.
44. V. E. Viola and **G. J. Mathews**, "The Cosmic Synthesis of Lithium, Beryllium and Boron," *Scientific American* **255**, 39 (1987).
45. C. R. Alcock, G. M. Fuller and **G. J. Mathews**, "The Quark-Hadron Phase Transition and Primordial Nucleosynthesis," *Astrophys. J.* **320**, 439 (1987). UCRL-95896.
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47. S. D. Bloom, **G. J. Mathews**, and J. A. Becker, "Gamow-Teller Strength Function for $^{90}\text{Zr}(n,p)^{90}\text{Y}$," *Can. J. Phys.* **65**, 684 (1987) UCRL-95857.
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49. B. S. Meyer, W. M. Howard, **G. J. Mathews**, K. Takahashi, P. Moller and G. A. Leander, "Beta-Delayed Fission and Neutron Emission Calculations for the Actinide Cosmochronometers," *Phys. Rev.* **C39**, 1876 (1989) UCRL-96754.
50. **G. J. Mathews** and D. N. Schramm, "Thorium/Neodymium Cosmochronology and Galactic Chemical Evolution," *Astrophys. J. Lett.* **324**, L67 (1987). UCRL-97178.
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53. R. A. Malaney, **G. J. Mathews**, and D. S. P. Dearborn, "Stellar Photonuclear Reactions and the Actinide Cosmochronometers", *Astrophys. J.*, **345**, 169 (1989) UCRL-100440.
54. T. Kajino, **G. J. Mathews** and K. Ikeda, "Branching Ratios for ${}^3\text{He}(\alpha, \gamma){}^7\text{Be}$ and ${}^3\text{H}(\alpha, \gamma){}^7\text{Li}$," *Phys. Rev.* **C40**, 525 (1989) UCRL-98534.
55. K. E. Sale, R. N. Boyd, **G. J. Mathews**, P. B. Corn, and M. S. Islam, "Radioactive Ion Beams of Cosmological Interest," *Nucl. Inst. & Meth.*, **B40**, 501 (1989) UCRL-98965.
56. M. S. Islam, P. B. Corn, R. N. Boyd, K. E. Sale, and **G. J. Mathews**, "A Convenient Technique to Make Uniform Polyethylene Foils," *Nucl. Inst. & Meth.*, **A276**, 647 (1989).
57. **G. J. Mathews**, C. R. Alcock, and G. M. Fuller, "Galactic Chemical Evolution with Low and High Primordial Lithium," *Astrophys. J.* **349**, 449 (1990) UCRL-100444.
58. **G. J. Mathews** and J. J. Cowan, "New Insights into the Astrophysical r-Process", *Nature*, **345** 491 (1990) UCRL-101746.
59. G. Bazan and **G. J. Mathews**, "Metallicity Dependent Stellar Ages and the G-Dwarf Problem," *Astrophys. J.*, **354**, 644 (1990) UCRL-101970.
60. C. R. Alcock, D. S. Dearborn, G. M. Fuller, **G. J. Mathews**, and B. S. Meyer, "Late Time Dissipation of Primordial Baryon Number Fluctuations and Nucleosynthesis," *Phys. Rev. Lett.*, **64**, 2607 (1990) UCRL-102191.
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65. **G. J. Mathews**, "Finding the Proton Drip Line," *Nature*, **351**, 348 (1991) UCRL-JC-107330.

66. G. Malinie, D. H. Hartmann, and **G. J. Mathews**, "Inhomogeneous Halo Collapse and Early Galactic Chemical Evolution: Globular Cluster Metallicities," *Astrophys. J.*, **376**, 520 (1991). UCRL-JC-106175
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77. **G. J. Mathews**, T. Ashenfelter, P. M. Garnavich, D. Menzies, T. Kajino, M. Yahiro, "Origin and Evolution of Matter in Brane World Cosmology," in Origin and Evolution of Galaxies 2003, M. Terasawa, et al., eds. (World Scientific: Singapore) pp. 3-17 (2004).
78. **G. J. Mathews**, "Origin and Evolution of Matter in Brane-World Cosmology," in *Origin of Matter and Evolution of Galaxies*; edited by M. Terasawa, S. Kubano, T. Kishida, T. Kajino, T. Motobayashi and K. Nomato. ISBN 981-238-824-9. Published by World Scientific Publishing Co. Pte. Ltd., Singapore, 2005, pp. 3-13
79. **G. J. Mathews** and X. Zhao, "Primordial Nucleosynthesis in the New Cosmology," in "Proc. 5th Recontres du Vietnam on Particle Physics and Astrophysics: New Views on the Universe, Hanoi, Vietnam, (World Scientific: Singapore) (2005), pp. 99-106.
80. **G. J. Mathews**, "Cosmological Search for Extra Dimensions and Parallel Universes," in *Inflating Horizon of Particle Astrophysics and Cosmology*, H. Suzuki, J. Yokoyama, Y. Suto, and K. Sato, eds., (Universal Academy Press, Inc.: Tokyo) Frontiers in Science Ser. 46, (2006) pp. 207-208.
81. D. G. Yamazaki, K. Ichiki, T. Kajino, and **G. J. Mathews**, "Constraints of Cosmological Magnetic field from Likelihood Analysis," in *Inflating Horizon of Particle Astrophysics and Cosmology*, H. Suzuki, J. Yokoyama, Y. Suto, and K. Sato, eds., (Universal Academy Press, Inc.: Tokyo) Frontiers in Science Ser. 46, (2006) pp. 215-216.
82. K. Otsuki, J. Truran, M. Wiescher, J. Gorres, **G. J. Mathews**, D. Frekers, A. Mengoni, A. Bartlett and J. Tostevin, "Origin of main r-process elements," OMEG06

- Workshop on the Origin of Matter and the Evolution of Galaxies” Tokyo University, (AIP Conf. Ser. in press 2006).
83. **G. J. Mathews**, L. Saleh, T. C. Beers, ”Early stochastic star formation, nucleosynthesis, and chemical evolution in proto-galactic clouds,” in Proceedings of the International Symposium on Nuclear Astrophysics ”Nuclei in the Cosmos - IX”, CERN, Geneva, June 25-30, 2006; Proceedings of Science, PoS(NIC-IX)194, (2006) in press.
 84. Yamazaki, Dai G.; Ichiki, Kiyotomo; Kajino, Toshitaka; **G. J. Mathews**, ”Primordial magnetic field constrained from CMB anisotropies, and its generation and evolution before, during and after the BBN,” in Proceedings of the International Symposium on Nuclear Astrophysics ”Nuclei in the Cosmos - IX”, CERN, Geneva, June 25-30, 2006; Proceedings of Science, PoS(NIC-IX)194, (2006) in press. astro-ph/0610234
 85. K. Ichiki, Kiyotomo, K. Umezu, T. Kajino, **G. J. Mathews**, R. Nakamura, M. Yahiro, ”On the Origin of Dark Energy in Brane World Cosmology,” in *Origin of Matter and Evolution of Galaxies: International Symposium on Origin of Matter and Evolution of Galaxies 2005: New Horizon of Nuclear Astrophysics and Cosmology*. AIP Conf. Proc., 847, pp. 15-20 (2006).
 86. K. Otsuki, J. Truran, M. Wiescher, J. Gorres, **G. J. Mathews**, D. Frekers, A. Mengoni, A. Bartlett, J. Tostevin, ”Origin of the main r-process elements,” in *Origin of Matter and Evolution of Galaxies: International Symposium on Origin of Matter and Evolution of Galaxies 2005: New Horizon of Nuclear Astrophysics and Cosmology*. AIP Conf. Proc., 847, pp. 227-232 (2006).
 87. G. J. Mathews, G. J., N. Q., I.-S. Suh, W. Zech, W.; K. Otsuki, K.; Weber, F. ”White Dwarfs with Strange Matter Cores: An Analysis of Candidates,” in *The Ultraviolet Universe: Stars from Birth to Death*, 26th meeting of the IAU, Joint Discussion 4, 16-17 August 2006, Prague, Czech Republic, JD04, #31 (2007).
 88. D. G. Yamazaki, K. Ichiki, T. Kajino, G. J. Mathews, ”Effects of The Primordial Magnetic Field on The CMB,” in PARTICLES, STRINGS, AND COSMOLOGY: 13th International Symposium on Particles, Strings, and Cosmology-PASCOS 2007. AIP Conference Proceedings, Volume 957, pp. 449-452 (2007).
 89. **G. J. Mathews** , ”Big Bang Cosmology,” in ORIGIN OF MATTER AND EVOLUTION OF GALAXIES: The 10th International Symposium on Origin of Matter and Evolution of Galaxies: From the Dawn of Universe to the Formation of Solar System. AIP Conference Proceedings, Volume 1016, pp. 7-14 (2008).
 90. M. Kusakabe, T. Kajino, R. N. Boyd, T. Yoshida, **G. J. Mathews**, ”Big-Bang Nucleosynthesis with Negatively-Charged Massive Particles as a Cosmological Solution

- to the 6Li and 7Li Problems,” in ORIGIN OF MATTER AND EVOLUTION OF GALAXIES: The 10th International Symposium on Origin of Matter and Evolution of Galaxies: From the Dawn of Universe to the Formation of Solar System. AIP Conference Proceedings, Volume 1016, pp. 15-20 (2008).
91. **G. J. Mathews**, I Suh, N. Q. Lan, and K. Otsuki, ”Evidence for White Dwarfs with Strange Matter Cores,” in Proc. Eleventh Marcel Grossmann Meeting on General Relativity, H. Kleinert, R. T. Jantzen and R. Ruffini, eds., (World Scientific press: 2008) pp. 1183-1185.
 92. **G. J. Mathews**, J. R. Haywood, and J. R. Wilson, ”Relativistic Hydrodynamic Simulations of Multiple Orbits for Close Neutron Star Binaries,” in Proc. Eleventh Marcel Grossmann Meeting on General Relativity, H. Kleinert, R. T. Jantzen and R. Ruffini, eds., (World Scientific press: 2008) pp. 1606-1608.
 93. **G. J. Mathews**, N. Q. Lan and J. R. Wilson, ”Dark Energy and Decaying Dark Matter,” in Proc. Eleventh Marcel Grossmann Meeting on General Relativity, H. Kleinert, R. T. Jantzen and R. Ruffini, eds., (World Scientific press: 2008) pp. 1776-1778.
 94. **G. J. Mathews** and D. Menzies, ”An Axisymmetric Object-Based Search for a Flat Compact Dimension,” in Proc. Eleventh Marcel Grossmann Meeting on General Relativity, H. Kleinert, R. T. Jantzen and R. Ruffini, eds., (World Scientific press: 2008) pp. 1813-1815.
 95. **G. J. Mathews**, K. Umezu, T. Kajino, K. Ichiki, R. Nakamura, and M. Yahiro, ”Constraints on Accelerating Brane Cosmology with Exchange between the Bulk and Brane,” in Proc. Eleventh Marcel Grossmann Meeting on General Relativity, H. Kleinert, R. T. Jantzen and R. Ruffini, eds., (World Scientific press: 2008) pp. 2836-2838.
 96. D. Hartmann, G. Mathews, et al., ”Reading the Metal Diaries of the Universe: Tracing Cosmic Chemical Evolution,” Astro2010: The Astronomy and Astrophysics Decadal Survey, Science White Papers, no. 114 (2009).
 97. K. Kojima, T. Kajino, G. J. Mathews, ”Neutrino mass effects on the CMB polarization with PMF,” in PERSPECTIVE IN NUCLEAR PHYSICS: Proceedings of the 6th Japan-Italy Symposium on Heavy-Ion Physics. AIP Conference Proceedings, Volume 1120, pp. 303-307 (2009).
 98. M. Kusakabe, T. Kajino, T. Yoshida, and G. J. Mathews, in ”Light Elements in the Universe,” Proceedings of the International Astronomical Union, IAU Symposium, Volume 268, p. 33-38 (2010), arXiv:1001.1413.

99. G. J. Mathews, X. Zhao, K. Ichiki, T. Kajino, and N. Q. Lan, "Some Alternative Unified Views for Dark Energy and Dark Matter," in Proc. 12th Marcel Grossman meeting on General Relativity, Paris, France, World Scientific, Singapore 2010 in press.
100. G. J. Mathews and X. Zhao, "Effects of Structure Formation on the Apparent Expansion Rate of the Universe: A Preliminary Estimate Based upon N-Body Simulations," in Proc. 12th Marcel Grossman meeting on General Relativity, Paris, France, World Scientific, Singapore 2010 in press.
101. G. J. Mathews, D. G. Yamazaki, K. Ichiki, and T. Kajino, "Evidence for a Primordial Magnetic Field from the CMB Polarization and Power Spectra," 12th Marcel Grossman meeting on General Relativity, Paris, France, World Scientific, Singapore 2010 in press.
102. T. Hayakawa, T. Kajino, S. Chiba, & G. J. Mathews, "Isomer residual ratio of odd-odd isotope ^{180}Ta in supernova nucleosynthesis," TOURS SYMPOSIUM ON NUCLEAR PHYSICS AND ASTROPHYSICS-VII. AIP Conference Proceedings, Volume 1238, pp. 222-224 (2010).
103. T. Hayakawa, T. Kajino, S. Chiba, & G. J. Mathews, "Production ratio of meta-stable isomer in ^{180}Ta by neutrino-induced reactions," NUCLEAR PHYSICS TRENDS: 7th Japan-China Joint Nuclear Physics Symposium. AIP Conference Proceedings, Volume 1235, pp. 242-246 (2010).
104. Pehlivan, Y.; Kajino, Toshitaka; Balantekin, A. B.; Mathews, G. J.; Kusakabe, Motohiko, "Photodisintegration at High Temperature," 10th International Symposium on Origin of Matter and Evolution of Galaxies: OMEG-2010. AIP Conference Proceedings, Volume 1269, pp. 397-399 (2010).
105. G. J. Mathews, and I.-S. Suh, "Magnetic Domain Instability and the Equation of State for Magnetars: A new mechanism for SGRs," 10th International Symposium on Origin of Matter and Evolution of Galaxies: OMEG-2010. AIP Conference Proceedings, Volume 1269, pp. 174-180 (2010).
106. M. Kusakabe, T. Kajino, T. Yoshida, and G. J. Mathews, "Signature of Long-lived Relic Particles on Primordial Light Element Abundances in Big Bang Nucleosynthesis," 10th International Symposium on Origin of Matter and Evolution of Galaxies: OMEG-2010. AIP Conference Proceedings, Volume 1269, pp. 63-68 (2010).
107. D. G. Yamazaki, K. Ichiki, and T. Kajino and G. J. Mathews, "Magnetic Field Effects on the CMB and Large-Scale Structure," 10th International Symposium on Origin

of Matter and Evolution of Galaxies: OMEG-2010. AIP Conference Proceedings, Volume 1269, pp. 57-62 (2010).

108. G. J. Mathews, X. Zhao, and N. Q. Lan, "Origin and Evolution of Structure and Nucleosynthesis for Galaxies in the Local Group," in Proc. 3rd Subaru International Conference "GALACTIC ARCHAEOLOGY" Nov. 1-4, Shuzenji, Japan, Astronomical Society of the Pacific, ASP Conference Series, (2012 in press).
109. G. J. Mathews and N. Q. Lan, "Space-time, Cosmology, and the Evolution of the Universe," Proceedings of the IAU-Vietnam Workshop on Astronomy and Astrophysics, Ho Chi Minh City, November 21-25, 2011, Saigon University Press, in press (2012).
110. G. J. Mathews, M.-K. Cheoun, T. Kajino, M. Kusakabe and D. G. Yamazaki, "Frontiers of Big Bang Cosmology and Primordial Nucleosynthesis," in 11th International Symposium on Origin of Matter and Evolution of Galaxies, Nov. 14-17, 2011, RIKEN, Wako, Saitama, Japan, AIP conference Ser. (2012 in press).

Invited talks and Colloquia

1. Oct. 1975 University of Maryland, Nuclear Chemistry Seminar. ***r*-Process Nucleosynthesis, Superheavy Elements, and Recent Atomic Mass Tables**
2. June 1977 California Institute of Technology, Kellogg Seminar. **Cosmic-Ray Nucleosynthesis and Galactic Chemical Evolution.**
3. Sept. 1977 University of Maryland, Nuclear Chemistry Seminar. **On the nucleosynthesis of ${}^{7,6}\text{Li}$ and the Question of a Bound or Unbound Universe.**
4. April. 1978 Granlibaken Workshop on Heavy Ion Collisions, invited talk. **A Dynamical Simulation of Heavy-Ion Collisions.**
5. June. 1978 California Institute of Technology. **A Dynamical Simulation of Heavy-Ion Collisions.**
6. March 1979 University of Virginia, Physics Department Colloquium. **Nucleon Transport During Heavy-Ion Collisions.**
7. April 1979 University of Maryland, Nuclear Chemistry Colloquium. **Nucleon Transport During Heavy-Ion Collisions.**

8. Feb. 1980 Lawrence Berkeley Laboratory, Nuclear Science Division Seminar. **Missing Matter.**
9. April 1980 Ohio State University, Physics Department Colloquium. **Angular Momentum in the Cosmic Background Radiation and the Thermodynamic History of the Early Universe.**
10. Apr. 1980 California Institute of Technology, Kellogg Seminar. **Angular Momentum in the Cosmic Background Radiation and the Thermodynamic History of the Early Universe.**
11. Dec. 1980 Oregon State University, Chemistry Department Colloquium. **Some Current Aspects on the Origin and History of the Elements.**
12. Jan. 1981 Lawrence Livermore National Laboratory, A-Division Seminar. **Origin and Evolution of the Elements.**
13. March 1981 University of Minnesota, Physics Department Colloquium. **Origin and Evolution of the Elements.**
14. May 1981 Workshop on Nuclear Astrophysics, Tegernsee, Germany. **Synthetic H-R Diagram for NGC1866.**
15. May 1981 Workshop on Nuclear Astrophysics, Tegernsee, Germany. **Systematics of r -Process Abundances in Meteoritic Isotopic Anomalies.**
16. June 1981 Lawrence Livermore National Laboratory, E-Division Seminar. **Highlights of Nuclear Astrophysics.**
17. June 1982 Lawrence Livermore National Laboratory, E-Division Seminar. **Nuclear Spallation and the Origin of Cosmic Rays.**
18. June 1982 NATO Workshop on Composition and Origin of Cosmic Rays, Erice Italy. **Complete Fragment Yields from Spallation Reactions via the Combined Time-of Flight and $\Delta - E$ Technique.**
19. June 1982 NATO Workshop on Composition and Origin of Cosmic Rays, Erice Italy. **Synthetic H-R Diagrams and Stellar Evolution.**
20. July 1982 Max Planck Institute for Physics and Astrophysics, Garching, Germany. Institute for Astrophysics Seminar, **Synthetic H-R Diagrams as a Constraint on Stellar Evolution.**

21. May 1983 Lawrence Livermore National Laboratory, Astrophysics Seminar. **Synthetic H-R Diagrams.**
22. May 1983 Workshop on Nuclear Astrophysics, Tegernsee, Germany. **Comparison between Observed and Theoretical H-R Diagrams as a Constraint on Stellar Evolution Theory.**
23. May 1983 Workshop on Nuclear Astrophysics, Tegernsee, Germany. **Large-Basis Shell Model Calculations of β -Decay Strength Functions for Applications in Nuclear Astrophysics.**
24. May 1983 Workshop on Nuclear Astrophysics, Tegernsee, Germany. **The Role of Direct Radiative Neutron Capture in the r -Process.**
25. Oct. 1983 OECD/NEA Nuclear Data Committee Specialists Meeting on Yields and Decay Data of Fission Product Nuclides, Brookhaven National Laboratory. **Applications of Fission Product Data to Problems in Stellar Nucleosynthesis.**
26. Oct. 1983 Lawrence Livermore National Laboratory, E-Division Seminar. **Some Problems in Stellar Evolution and Neutron Capture Nucleosynthesis.**
27. Nov. 1983 University of Washington, Nuclear Physics Seminar. **Some Problems in Stellar Evolution and Neutron Capture Nucleosynthesis.**
28. Jan. 1984 Lawrence Livermore National Laboratory, E-Division Seminar. **Synthetic H-R Diagrams for Young Star Clusters in the Magellanic Clouds.**
29. Apr. 1984 Lawrence Livermore National Laboratory, E-Division Seminar. **What in the World is Going on with the Sr-Rb Cosmic Clock.**
30. May 1984 University of California, Davis, Department of Applied Science Colloquium. **Nuclear Astrophysics – A New Look at the Ancient Skies.**
31. June 1984 NATO Workshop on Stellar Nucleosynthesis, Erice Italy. **Synthetic H-R Diagrams as a Constraint of Stellar Ages and Evolution.**
32. Nov. 1984 Workshop on Nuclear Shell Models, Drexel University. **Shell-Model Lanczos-Method Studies of the Gamow-Teller Strength Function in Astrophysics.**
33. Mar. 1985 Workshop on Nucleosynthesis and Its Implications on Nuclear and Particle Physics, Les Arcs, France. **Stellar Diagnostics of the s-Process.**

34. Mar. 1985 Workshop on Nucleosynthesis and Its Implications on Nuclear and Particle Physics, Les Arcs, France. **Large-Basis Shell-Model Technology in Nucleosynthesis and Cosmology.**
35. Apr. 1985 Indiana University, Joint Nuclear Physics/Astronomy Seminar. **Ages of Stars and Galaxies from Stellar Evolution and Nucleosynthesis.**
36. Apr. 1985 University of Michigan, Joint Nuclear Physics/Astronomy Seminar. **Ages of Stars and Galaxies from Stellar Evolution and Nucleosynthesis.**
37. May 1985 Conference on Nuclear Data for Basic and Applied Science, Santa Fe. **Some Nuclear Data Needs in Astrophysics.**
38. July 1985 Lawrence Livermore National Laboratory, E-Division Seminar. **A Microscopic Approach to Nuclear Strength Functions.**
39. Sept. 1985 Accelerated Radioactive Beams Workshop, Parksville, Canada. **Radioactive Ion Beam Research at LLNL.**
40. Sept. 1985 American Chemical Society Symposium on Nuclei off the Line of Stability, Chicago. **Nuclear Astrophysics Away from Stability.**
41. Feb. 1986 Washington University, St. Louis, Chemistry Department Colloquium. **In search of the Astrophysical Sites for Neutron-Capture Nucleosynthesis.**
42. July 1986 Workshop on Advances in Nuclear Astrophysics, Institut de Astrophysique, Paris. **Relativistic (3+1) Dimensional Hydrodynamic Simulations of Compact Interacting Binary Systems.**
43. July 1986 Workshop on Advances in Nuclear Astrophysics, Institut de Astrophysique, Paris. **Primordial Nucleosynthesis in Inhomogeneous Cosmologies: $\Omega = 1$ with Baryonic Dark Matter.**
44. Sept. 1987 Canadian Physical Society Invited Talk, Calgary, Canada. **Lattice Gauge Theory as a Nuclear Many-Body Problem.**
45. Dec. 1987 Symposium on Hot Nuclei, Texas A&M University. **Heavy-Ion Collisions with $A = 10^{57}$: Aspects of Nuclear Stability and the Nuclear Equation of State in Coalescing Neutron-Star Binary Systems.**
46. Mar. 1988 Institut de Astrophysique, Paris, Astrophysics Colloquium. **The Quark-Hadron Phase Transition, Baryon Diffusion, and Primordial Nucleosynthesis.**

47. Mar. 1988 Workshop on Dark Matter, Les Arcs, France. **Evolution of Heavy-Element Abundances in the Galactic Halo and Disk.**
48. Mar. 1988 Les Arcs Workshop on Dark Matter. **Evolution of Baryon Number Density Fluctuations Before, During, and After Primordial Nucleosynthesis.**
49. April 1988 Fermilab Workshop on QCD in Astrophysics. **The Quark-Hadron Phase Transition and Primordial Nucleosynthesis.**
50. Apr. 1988 Harvard-Smithsonian Center for Astrophysics, Theoretical Astrophysics Division Seminar. **The Evolution of Baryon Number Density Fluctuations from the QCD Phase Transition.**
51. Apr. 1988 Yale University, Joint Nuclear Physics/Astronomy Seminar **Hadronization of the Quark-Gluon Plasma, Primordial Nucleosynthesis of Heavy Elements and Cosmological QCD.**
52. May 1988 University of Illinois, Astrophysics Colloquium. **The Quark Hadron Phase Transition and Primordial Nucleosynthesis.**
53. June 1988 Workshop on the Primordial Lithium Abundance, Livermore, CA. **Galactic Chemical Evolution with Low and High Primordial Lithium.**
54. June 1988 Gordon Research Conference on Nuclear Physics, Tilton, NH **The Quark-Hadron Phase Transition in the Early Universe and Primordial Nucleosynthesis.**
55. June 1988 Lawrence Livermore National Laboratory, Nuclear Chemistry Division Colloquium. **Physical Chemistry for the Early Universe: from Quarks to Uranium.**
56. July 1988 Workshop on Heavy Ion Physics and Nuclear Astrophysical Problems, University of Tokyo. **Prospects for Understanding the Astrophysical r -Process.**
57. Sept. 1988 Lawrence Livermore National Laboratory, Physics Department Technical Briefing. **The Well Tempered Radioactive Ion Beam.**
58. Oct. 1988 Institute of Geophysics and Planetary Physics, Astrophysics Seminar, Lawrence Livermore National Laboratory. **Heavy Element Galactic Chemical Evolution.**

59. Nov. 1988 University of California, Davis, Department of Applied Science Colloquium. **In Search of the Astrophysical Site for the Origin of Heavy Elements.**
60. Mar. 1989 Workshop on Atomic Processes in Nuclear Explosives, Lawrence Livermore National Laboratory, Invited Talk. **Supercomputers in Quantum Chromodynamics.**
61. May 1989 Ohio State University, Nuclear Physics/Nuclear Astrophysics Seminar. **Tests of Theories of r-Process Nucleosynthesis.**
62. June 1989 University of California, San Diego, Center for Astrophysics and Space Science Seminar. **In Search of the Astrophysical Site for r-Process Nucleosynthesis.**
63. Aug. 1989 University of Notre Dame, Nuclear Seminar. **In Search of the Astrophysical Site for r-Process Nucleosynthesis.**
64. Sept. 1989 Lawrence Livermore National Laboratory, E-Division Seminar. **The Paradox of the Closure Parameter for the Universe.**
65. Oct. 1989 University of Chicago, Enrico Fermi Institute Astrophysics Seminar. **Heavy Element Nucleosynthesis and Galactic Chemical Evolution.**
66. Dec. 1989 Clemson University, Physics Department Colloquium. **Heavy Element Nucleosynthesis and Galactic Chemical Evolution.**
67. Feb. 1990 University of California, Davis, Department of Applied Science Colloquium. **The Missing Matter Problem of the Universe.**
68. Feb. 1990 University of Arizona, Theoretical Astrophysics Colloquium. **In Search of the Astrophysical Site for r-Process Nucleosynthesis.**
69. Mar. 1990 Symposium on Cosmology and Nuclear Astrophysics, Physical Society of Japan, Osaka. **Heavy-Element Nucleosynthesis.**
70. April 1990 Tokyo Metropolitan University, Cosmology and Astrophysics Colloquium. **Deviation from Periodicity in the Large Scale Distribution of Galaxies.**
71. April 1990 Tokyo Metropolitan University, Cosmology and Astrophysics Colloquium. **A Paradigm of the Dark Matter Problem and the Omega Problem.**

72. April 1990 Tokyo Metropolitan University, Cosmology and Astrophysics Colloquium. **Search for the Astrophysical Sites for Heavy Element Nucleosynthesis.**
73. April 1990 University of Tokyo, Physics Department Colloquium. **Heavy-Element Nucleosynthesis and Galactic Chemical Evolution.**
74. April 1990 Tokyo Institute of Technology, Physics Department Colloquium. **In Search of the Astrophysical Sites for Heavy Element Nucleosynthesis.**
75. April, 1990 Princeton University, Astrophysics Seminar. **Heavy Element Nucleosynthesis and the Dynamice of Galaxy Formation and Evolution**
76. April 1990 Symposium on Nuclear Astrophysics, Americal Chemical Society, Boston. **Heavy Element Galactic Chemical Evolution.**
77. April 1990 Workshop on the Science of Intense Radioactive Ion Beams, Los Alamos National Laboratory. **Prospects for Nuclear Astrophysics with Intense Radioactive Ion Beams.**
78. May 1990 University of California, San Diego, Physics Department Colloquium. **An Overview of the Dark Matter Problem and the Omega Problem.**
79. Sept. 1990 Lawrence Livermore National Laboratory, Physics Department Technical Briefing. **Elemental Nucleosynthesis and the Dynamics of Galaxy Formation and Evolution.**
80. Sept. 1990 Symposium on Primordial Nucleosynthesis and Evolution of Early Universe, University of Tokyo, Japan. **Chaotic Inflation and the Omega Problem.**
81. Oct. 1990 University of Chicago, Astrophysics Seminar. **Dynamics of Galaxy Formation and Galactic Chemical Evolution.**
82. Oct. 1990 University of Chicago, Guest Lecture Series. **Standard Big Bang Nucleosynthesis.**
83. Oct. 1990 International Symposium on Capture Gamma-Ray Spectroscopy and Related Topics, Invited Talk. **Nuclear and Astronomical Constraints on the Site for r-Process Nucleosynthesis.**
84. Oct. 1990 University of Chicago, Guest Lecture Series. **Nonstandard Big Bang Nucleosynthesis.**

85. Nov. 1990 Washington University, St. Louis, Physics Department Colloquium. **In Search of the Site for r-Process Nucleosynthesis.**
86. Nov. 1990 University of Chicago, Guest Lecture Series. **Nucleocosmochronology and Galactic Chemical Evolution.**
87. Nov. 1990 University of Illinois at Urbana, Astronomy Colloquium. **Dynamics of Galaxy Formation and Galactic Chemical Evolution.**
88. Nov. 1990 University of Chicago, Guest Lecture Series. **Thermonuclear Reaction Rates and the Phases of Stellar Evolution.**
89. Nov. 1990 University of Notre Dame, Physics Department Colloquium. **An Overview of the Inhomogeneous Big Bang: If You Don't Like the Standard Homogeneous Big Bang, You Can Lump It.**
90. Nov. 1990 Ohio State University, Physics Department Colloquium. **Chaotic Inflation and the Omega Problem.**
91. Dec. 1990 University of Chicago, Guest Lecture Series. **Neutron Capture Nucleosynthesis.**
92. Dec. 1990 Michigan State University, Joint Astronomy/Nuclear Physics Seminar. **An Overview of the Inhomogeneous Big Bang: If You Don't Like the Standard Homogeneous Big Bang, You Can Lump It.**
93. Dec. 1990 Fermilab National Accelerator Laboratory, Astrophysics Colloquium. **Chaotic Inflation and the Omega Problem.**
94. Jan. 1991 Workshop on Strong, Weak, and Electromagnetic Interactions in Nuclei, Atoms, and Astrophysics, Lawrence Livermore National Laboratory. **Exploring the Universe with the Shell Model.**
95. Jan. 1991 Institute of Geophysics and Planetary Physics Seminar, Astrophysics Seminar, Lawrence Livermore National Laboratory. **Stochastic Inflation and the Omega Problem.**
96. Apr. 1991 American Physical Society Invited Talk, Washington, D.C. **Nuclear Astrophysics Away from Stability: The Need for Radioactive Ion Beams.**

97. Sept. 1991 Clemson University, Physics Department Colloquium. **An Overview of the Inhomogeneous Big Bang: If You Don't Like the Standard Homogeneous Big Bang, You Can Lump It.**
98. Nov. 1991 Golden Gate Chemical Society, Invited Lecture, Hayward, CA. **How Did the Universe Begin and Why is it so Empty?**
99. Jan. 1992 Workshop on the Primordial Helium Abundance, Clemson University. Invited Talk, **Irregular Galaxy Evolution and the Primordial Helium Abundance.**
100. Jan. 1992 Workshop on the Primordial Helium Abundance, Clemson University. Invited Talk, **Limits to the Primordial Helium Abundance in Inhomogeneous Big Bang Models.**
101. May 1992 Workshop on the Galactic Chemical Dynamics, Clemson University. **Protogalactic Mergers and CCosmochronology.**
102. May 1992 Workshop on the Galactic Chemical Dynamics, Clemson University, Invited Talk, **Irregular Galaxy Evolution and the Primordial Helium Abundance.**
103. Jan. 1992 Workshop on the Primordial Helium Abundance, Clemson University Invited Talk, **Limits to the Primordial Helium Abundance in Inhomogeneous Big Bang Models.**
104. June 1992 Americal Astronomical Society, Ohio State University, Invited Talk, **Formation of the Galaxy and Cosmochronology**
105. Sept. 1992 Symposium on Nuclear Physics in the Universe, Oak Ridge, Invited Talk **Origin and Evolution of r-Process Elements in the Galaxy**
106. Oct. 1992 University of Oklahoma, Physics Department Colloquium, **Galaxy Formation and Cosmochronology**
107. Oct. 1992 University of Oklahoma, Astronomy Department Seminar, **Heavy Element Synthesis in the Hot Supernova Bubble**
108. Oct. 1992 University of Chicago, Astrophysics Seminar, **Heavy Element Synthesis in the Hot Supernova Bubble**
109. Oct. 1992 California State University, Hayward, Physics Department Colloquium, **Galaxy Formation and Cosmochronology**

110. Nov. 1992 Canadian Institute for Theoretical Astrophysics, Astrophysics Colloquium, **Galaxy Formation and Cosmochronology**
111. Feb. 1993 University of Texas, McDonald Observatory, Astronomy Colloquium, **Galaxy Formation and Cosmochronology**
112. Feb. 1993 Rice University, Physics Department Colloquium, **Galaxy Formation and Cosmochronology**
113. Feb. 1993 Rice University, Astrophysics Seminar, **Heavy Element Nucleosynthesis in the Hot Supernova Bubble**
114. Feb. 1993 Rice University, Gamma-Ray Astronomy Seminar, **A Coalescing Neutron Star Model for Cosmological Gamma-Ray Bursts**
115. Mar. 1993 U. C. Berkeley, Cosmology Seminar, **Protogalactic Mergers and Cosmochronology**
116. June 1993 Third International Conference on Radioactive Nuclear Beams, Michigan State University, **New Production Mechanisms for Unstable Nuclei in Stars, Supernovae, and the Big Bang**
117. June 1993 Symposium on Weak Interactions, Nuclear Astrophysics, and Cosmology in Honor of Sam M. Austin's 60-th Birthday, Michigan State University, **Weak Interactions and Supernovae**
118. Sept. 1993 Lawrence Livermore National Laboratory, Astrophysics Seminar, **Constraining Inflation with the Cosmic Microwave Background**
119. Oct. 1993 Notre Dame University, Physics Department Colloquium, **Constraining Inflation with the Cosmic Microwave Background**
120. Oct. 1993 Notre Dame University, Nuclear Physics Seminar, **Nuclear Weak Interaction Rates in Supernovae**
121. Jan. 1994 Steward Observatory, Univ. of Arizona, Theoretical Astrophysics Seminar, **Nucleosynthesis in the Neutrino Energized Wind from Supernovae**
122. Jan. 1994 Steward Observatory, Univ. of Arizona, Departmental Colloquium, **Galaxy Formation and Cosmochronology**

123. Feb. 1994 University of California at Davis, Physics Department Colloquium **Constraining Inflation with the Cosmic Microwave Background**
124. Feb. 1994 Lake Louise Winter Institute on Particle Astrophysics and Cosmology/Joint ISAC Workshop **Weak Interactions and Heavy Element Nucleosynthesis in the Hot Supernova Bubble**
125. Feb. 1994 Rice University, Physics Department Colloquium, **Constraining Ripples in the Big Bang**
126. Feb. 1994 Rice University, Astrophysics Seminar, **Heavy Element Nucleosynthesis in the Hot Supernova Bubble**
127. Mar. 1994 Workshop on Applications of the National Ignition Facility, Lawrence Livermore National Laboratory, **Astrophysics Applications of the National Ignition Facility**
128. Mar. 1994 ACS Symposium on Novel Approaches to Nuclear Astrophysics, San Diego, CA **Creating Stars, Supernovae, and the Big Bang in the Laboratory: Nuclear Astrophysics with the Proposed National Ignition Facility**
129. Apr. 1994 Third International Workshop on Galactic Chemical Dynamics, Lawrence Livermore National Laboratory, Institute of Geophysics and Planetary Physics, **Galaxy Formation, MACHOS, and Cosmochronology**
130. Apr. 1994 Notre Dame University Physics Department Colloquium **Weak Interactions and Supernova Dynamics**
131. Apr. 1994 Michigan State University Department of Physics and Astronomy Colloquium **Weak Interactions and Supernova Dynamics**
132. Apr. 1994 Michigan State University, Astronomy Seminar **Constraining Inflation with the Cosmic Microwave Background**
133. April 1994 National Astronomical Observatory, Japan, Theoretical Astrophysics Seminar **Weak Interactions and Supernova Dynamics**
134. May 1994 National Astronomical Observatory, Japan, Astronomy Colloquium **Galaxy Formation and Cosmochronology**
135. May 1994 University of Tokyo, Astronomy Colloquium, **Weak Interactions and Supernova Dynamics**

136. May 1994 Osaka University, Laser Physics Colloquium, **reating Stars, Supernovae, and the Big Bang in the Laboratory: Nuclear Astrophysics with the Proposed National Ignition Facility**
137. June 1994 Institute of Nuclear Science, Tokyo, Colloquium, **Weak Interactions and Supernova Dynamics**
138. June 1994 RIKEN National Laboratory, Tokyo, Nuclear Colloquium, **Inhomogeneous Primordial Nucleosynthesis**
139. July 1994 Workshop on Nuclear and Particle Astrophysics and Cosmology for the Next Millennium, Snowmass, Co, Invited Talk, **Nonstandard Primordial Nucleosynthesis**
140. July 1994 Workshop on Nuclear and Particle Astrophysics and Cosmology for the Next Millennium, Snowmass, CO, Summary Talk, **Summary of the Future for Primordial and Stellar Nucleosynthesis**
141. Sept. 1994 Lawrence Livermore National Laboratory, Institute for Geophysics and Planetary Physics, Astrophysics Seminar, **Relativistic Binary Neutron Star Coalescence**
142. Sept. 1994 University of Oklahoma, Physics Department, Colloquium, **General Relativistic Neutron Star Coalescence**
143. Dec. 1994 Wayne State University, Physics Department, Colloquium, **Relativistic Binary Neutron Star Coalescence**
144. Jan. 1995 Ohio State University, Nuclear Physics Seminar, **Relativistic Binary Neutron Star Coalescence**
145. Apr. 1995 Workshop on Isotopic Anomalies, Clemson University, Invited Talk, **Galactic Chemical Dynamics and Cosmochronology**
146. Apr. 1995 Workshop on Isotopic Anomalies, Clemson University, Invited Talk, **Relativistic Binary Neutron Star Coalescence and Decompressing Neutron Star Matter**
147. July 1995 Workshop on Galactic Chemodynamics 4: The History of the Milky Way and it's Satellite System, Tegernsee, Invited Talk, **Galactic Chemical Dynamics and Cosmochronology**

148. Oct. 1995 Third Huntsville Workshop on Gamma Ray Bursts, Huntsville, Ala., Contributed Talk, **General Relativistic Simulation of Close Neutron Star Binaries: Implications for Cosmological Gamma-Ray Bursts**
149. Jan. 1996 Second International Workshop on Gravitational Microlensing, Orsay, France, Invited Talk, **Hot X-ray Gas and the Formation of Remnants in the Galactic Halo**
150. Apr. 1996 Univ. Illinois, Astronomy Department Colloquium, **Relativistic Binary Neutron Star Coalescence**
151. Jun. 1996 Univ. Notre Dame, Notre Dame, IN International Workshop on Nuclei in the Cosmos - IV, invited talk **Primordial Nucleosynthesis in the Next Millennium**
152. Aug. 1996 Gull Lake Conference on Nuclear Physics Near the Drip Lines, Gull Lake, MI, invited talk **The Decompression of Neutron-Star Matter**
153. Sep. 1996 International Workshop on the Identification of Dark Matter, University of Sheffield, UK **Hot Intercluster Medium and Halo Microlensing Events**
154. Sept. 1996 Oakland Univ., Rochester, MI - Physics Department Colloquium, **Hot Stars and Cold Gas: Clues to the Origin of Galaxies**
155. Oct. 1996 Indiana University, Purdue Univ., Indianapolis, Physics Department Colloquium **Instabilities in Close Neutron Star Binaries**
156. Nov. 1996 Bowling Green Univ., Ohio - Sixth Midwest Relativity Meeting Invited Talk - **Instabilities in Close Neutron Star Binaries**
157. Jan. 1997 Fermilab Theoretical Astrophysics Seminar: **Instabilities in Close Neutron Star Binaries**
158. Jan. 1997 Aspen Center for Physics, LIGO Workshop on Detection of Gravitational Radiation, invited talk, **Relativistic Hydrodynamic Results Relevant to the LIGO Detector.**
159. Feb. 1997 Univ. Arizona, Tucson, AZ, Astronomy Department Colloquium, **White Dwarfs in Galactic Halos and the Hot Intergalactic Medium**
160. Feb. 1997 Univ. Arizona, Tucson, AZ, Theoretical Astrophysics Seminar, **Instabilities in Close Neutron Star Binaries**

161. Feb. 1997 Hope College, Holland, MI, Physics Department Colloquium, **Instabilities in Close Neutron Star Binaries**
162. Mar. 1997 Third International Workshop on Gravitational Microlensing Surveys, Univ. of Notre Dame, Notre Dame, IN, Invited Talk **Halo Remnants and Galactic Chemical Dynamics**
163. May 1997 Spacetime '97, Michigan State University, E. Lansing, MI, Invited talk, **Heavy Ion Collisions with $A=10^{58}$: Methods of General Relativistic Hydrodynamics**
164. June 1997 University of North Carolina, Chapel Hill, NC, Astrophysics Colloquium, **General Relativistic Numerical Hydrodynamics For Close Neutron Star Binaries**
165. June 1997 The Eighth Marcel Grossmann Meeting on General Relativity, Givat Ram Campus, The Hebrew University, Jerusalem, Invited talk, **Relativistic Studies of Close Neutron Star Binaries**
166. June 1997 The Eighth Marcel Grossmann Meeting on General Relativity, Givat Ram Campus, The Hebrew University, Jerusalem, Invited talk, **Gamma-Ray Bursts from Neutron Star Binaries**
167. July 1997 International Workshop on the Synthesis of Light Nuclei in the Early Universe, European Centre for Theoretical Studies in Nuclear Physics and Related Areas, Trento Italy, Invited talk, **Galaxy Formation and Light Element Abundances**
168. July 1997 International Workshop on the Synthesis of Light Nuclei in the Early Universe, European Centre for Theoretical Studies in Nuclear Physics and Related Areas, Trento Italy, Invited talk, **Comments on Standard, Nonstandard and Inhomogeneous Primordial Nucleosynthesis**
169. Nov. 1997 - Workshop on the Origin of Matter and Evolution of Galaxies - Atami, Japan - Invited Talk **Development and Problems in the r-Process Scenario**
170. Nov. 1997 - Yukawa Institute of Theoretical Physics, Kyoto University, Japan - Astrophysics Colloquium, **Relativistic Hydrodynamics in Close Neutron Star Binaries**
171. Nov. 1997 - 3rd RESCUE International Symposium on Particle Cosmology, University of Tokyo, Japan, **Comments on Nonstandard Primordial Nucleosynthesis**

172. Nov. 1997 - International Symposium on Neutron Stars and Pulsars: Thirty Years after the Discovery, Rikkyo University, Tokyo, Japan - Invited Talk, **General Relativistic Hydrodynamics of Close Neutron Star Binaries**
173. Jan. 1998 - Winter Workshop on Universal Star Formation, Aspen Center for Physics, Aspen, CO, - Overview Talk - **Importance of Star Formation in Cosmology**
174. Mar. 1998 - International Workshop on Japan Hadron Facility Science, High Energy Accelerator Research Organization (KEK), Tsukuba, Japan, - Key-Note Address - **Nuclear Astrophysics with Radioactive Ion Beams**
175. Mar. 1998 - East Coast Nickle and Dime Gravity Meeting, Syracuse University, Syracuse NY - Invited Talk - **Relativistic Hydrodynamics in Close Binary Systems: Analysis of Neutron Star Collapse**
176. July 1998 - Workshop on Applications of High Precision Gamma-Ray Spectroscopy, Univ. of Notre Dame, July 1-3, 1998, **Current Topics in Gamma-Ray Astrophysics.**
177. July 1998 - 5th International Workshop on Nuclei in the Cosmos, Volos, Greece, July 6-12, 1998, **Models for Gamma-Ray Bursts from Binary Neutron Stars**
178. Sept. 1998 - University of Michigan, Astrophysics Seminar, **Relativistic Hydrodynamics for Neutron Star Binaries**
179. Oct. 5, 1998 - Astronomy Dept. Colloquium, Indiana University, **Where have all the Baryons Gone? An analysis of white dwarfs in the galactic halo and the hot intergalactic medium**
180. Oct. 6, 1998 - Astronomy Seminar, Indiana University, **General Relativistic Hydrodynamics for Binary Neutron Stars**
181. Nov. 20, 1998 - Invited Talk, "Frontiers in Nuclear Astrophysics" workshop, Argonne National Laboratory, **Towards Understanding the r-Process: A Summary of recent progress in supernova r-process models and computations of nuclear properties far from stability**
182. Nov. 8, 1998 - Invited Talk, Area Meeting on Variable Stars, Astronomy Department, Michigan State University, **Stellar Evolution and Variability of Betelgeuse**
183. Dec. 11, 1998 - Invited Talk, Workshop on LiBeB, Cosmic Rays and Gamma-Ray Line Astronomy, Institut d'Astrophysique de Paris, CNRS, Paris, France, **Formation and Evolution of the Halo : Implications for Light Elements**

184. June 28, 1999 - Invited Lecture, 11th Summer School in Nuclear Physics in Celebration of Maria Mayer and the 50th Anniversary of the Shell Model, University of California, San Diego - **Unsolved Mysteries in Post Main-Sequence Stellar Evolution**
185. June 30, 1999 - Invited Lecture, 11th Summer School in Nuclear Physics in Celebration of Maria Mayer and the 50th Anniversary of the Shell Model, University of California, San Diego - **Neutron Star Hydrodynamics**
186. July 1, 1999 - Invited Lecture, 11th Summer School in Nuclear Physics in Celebration of Maria Mayer and the 50th Anniversary of the Shell Model, University of California, San Diego - **Supernovae and Gamma-Ray Bursts**
187. Nov. 12, 1999 - Invited Talk, The 9th Midwest Relativity Meeting, Univ. Illinois at Urbana-Champaign - **Revised Relativistic Hydrodynamical Model for Neutron-Star Binaries**
188. Jan. 21, 2000 Invited Talk, OMEG 2000 Conference on the Origin of Matter and the Evolution of Galaxies, Tokyo University, Center for Nuclear Science - **Neutron Star Mysteries**
189. Mar. 6 2000 Invited Talk, Shell Model 2000 International Symposium, **Shell Model Studies near the A=130 r-Process Waiting Point**, RIKEN (Institute of Physical and Chemical Research), Tokyo
190. Mar. 10 2000 Astronomy Colloquium, National Astronomical Observatory, Tokyo, Japan, **Studies of Compact Objects: White Dwarfs, Neutron Stars and Black Holes**
191. Mar. 28 2000 Astrophysics Seminar, Yukawa Institute for Theoretical Physics, Kyoto University, Kyoto Japan **Reconstruction of Stellar Orbits around SgrA*: Possibilities for Testing General Relativity**
192. Mar. 30 2000 Invited Talk, Japanese Physical Society Meeting, Kinki University, Osaka Japan, **Unsolved Mysteries of Post-Main Sequence Evolution**
193. Apr. 25 2000 Astrophysics Seminar, Hanyang University, Seoul Korea, **Some Mysteries of Compact Objects: White Dwarfs, Neutron Stars and Black Holes**
194. Apr. 27, 2000 Joint Seminar, Asia-Pacific Center for Theoretical Astrophysics & Korean Institute for Advances Study, Seoul Korea, **Energetic Gamma Rays from Gamma-Ray Bursts.**

195. Apr. 28, 2000 Invited Talk, Korean Physical Society Meeting, Seoul, Korea, **Exploring the Black Hole in the Galactic Center.**
196. May 18, 2000 Astronomy Department Seminar, Tokyo University, Tokyo, Japan, **Sub-TeV Gamma Rays from Gamma-Ray Bursts: An Interpretation**
197. June 7, 2000 Theoretical Astrophysics Seminar, National Astronomical Observatory, Tokyo Japan, **New Evidence for Neutrino Degeneracy in the Early Universe.**
198. Sept. 5 2000 Overview Talk, TOURS 2000, Symposium on Nuclear Physics IV, Tours France, **Cosmology, Cosmic Chemical Evolution and the Age Problem.**
199. Sept. 5 2000 Invited Talk, International Conference on Cosmic Evolution, Institut d'Astrophysique, Paris France, **Cosmology, Cosmic Chemical Evolution and the Age Problem.**
200. Nov. 16 2000 Invited Talk, International Conference on Cosmic Evolution, Institut d'Astrophysique, Paris France, **New Insights into Neutron-Capture Nucleosynthesis.**
201. Jan. 30 2001 Invited Talk, Workshop on Nuclear Incompressibility, University of Notre Dame, **Nuclear Incompressibility, Supernovae and the r-Process.**
202. Feb. 1 2001 Colloquium, Department of Physics and Astronomy, University of Oklahoma, **New evidence for Neutrino Degeneracy in the Early Universe.**
203. Feb. 17 2001 Invited Talk, Workshop on Frontiers in Nuclear Astrophysics February 16-17, 2001 Argonne National Laboratory **New Paradigms for Neutron-Capture Nucleosynthesis.**
204. Apr. 29 2001 Invited Talk, American Physical Society Meeting, Washington, DC, **New Paradigms for Nucleosynthesis in the Early Universe and First Generation of Stars.**
205. Jun. 27 2001 Invited Talk, Korean Workshop on Numerical Methods for Astrophysical Flows, Pusan University, Korea **Relativistic Hydrodynamic Simulations of Quasiperiodic Oscillations.**
206. July 2, 2001 Astronomy Seminar, Tokyo University, Japan, **Relativistic Hydrodynamic Simulations of Quasiperiodic Oscillations.**
207. July 4, 2001 Theoretical Astrophysics Seminar, National Astronomical Observatory,

- Japan, **Relativistic Hydrodynamic Simulations of Quasiperiodic Oscillations.**
208. Oct. 10, 2001 Theoretical Astrophysics Seminar, University of Illinois, **Cosmic Quintessence, k-Essence and Primordial Nucleosynthesis.**
 209. Oct. 15, 2001 Theoretical Astrophysics Seminar, Fermilab, Illinois, **New Paradigms for Nucleosynthesis in the Early Universe and First Generation of Stars.**
 210. Oct. 15, 2001 Astrophysics Seminar, Fermilab, Illinois, **The Case for Neutrino Degeneracy.**
 211. Oct. 19 2001 Invited Talk, First Joint Meeting of the Nuclear Physicists of the American and Japanese Physical Societies, Maui, HI **New into Neutron-Capture Nucleosynthesis.**
 212. Oct. 20 2001 Invited Talk, Mini-symposium on High Temperature Nucleosynthesis, First Joint Meeting of the Nuclear Physicists of the American and Japanese Physical Societies, Maui, HI **High-Temperature Nucleosynthesis on the Neutron-Rich Side of Stability.**
 213. Nov. 18 2001 Astronomy Colloquium, State Univ. of New York, Stonybrook, NY **New Paradigms for Nucleosynthesis in the Early Universe and First Generation of Stars.**
 214. July 8, 2002 Invited Overview Talk, The 7th International Symposium on Nuclei in the Cosmos, Fuji-Yoshida, Japan, **New Paradigms in Primordial Nucleosynthesis.**
 215. July 16, 2002 Invited Overview Talk, Workshop on Light-to-Heavy Elements in Cosmology and Galactic Evolution, National Astronomical Observatory, Tokyo Japan, **Cosmology and Nuclear Astrophysics.**
 216. Sep. 4, 2002 Physics Department Colloquium, University of Notre Dame, **New Paradigms for the Big Bang: Dark Energy and the Fifth Dimension.**
 217. Oct. 7, 2002 Invited Talk, Workshop of the Joint Institute of Nuclear Astrophysics, Gull Lake, MI, **New Instghts into the Nature and Origin of the r-Process.**
 218. Jan. 10, 2003 Astrophysics Seminar, Institute of Geophysics and Planetary Physics, Lawrence Livermore National Laboratory, Livermore, CA **Cosmological Confronts the Fifth Dimension: Constraints on Dark Energy and Dark Radiation.**

- 219. Jan. 21, 2003 Astrophysics Seminar, Univ. of Notre Dame, **Cosmology Confronts the fifth dimension: A deeper look at dark radiation, dark energy and dark matter.**
- 220. Feb. 8, 2003 Invited Talk, Carnegie Observatories Centennial Symposium IV, Origin and Evolution of the Elements, Pasadena, CA, **An Update on the Hot Supernova Bubble r-Process: Roles of MHD and Neutrino Oscillation.**
- 221. Mar. 14, 2003 Cosmology Forum, Dept. of Physics, Univ. Illinois, **Cosmology Confronts the fifth dimension: A deeper look at dark radiation, dark energy and dark matter.**
- 222. Mar. 20, 2003 SUGRA 20, International Workshop, **Cosmological Evidence for Decaying Dark Matter in Brane-World Cosmology.**
- 223. May 8, 2003 KIAS-KAIST Joint Workshop on Physics Beyond the Standard Model, Korean Institute for Advancement of Science, Seoul, Korea, **Observational Constraints on Brane-World Cosmology: Evidence for the 5th Dimensions.**
- 224. May 18, 2003 Invited Talk: Great Lakes Cosmology Workshop, Univ. of Michigan, Center for Theoretical Physics, **Dark Energy, Dark Radiation, and Disappearing Dark Matter in Randall-Sundrum Cosmology.**
- 225. July 22, 2003 Invited Talk: Tenth Marcell Grossmann Meeting on General Relativity, CBPF-IRCA, Rio de Janeiro, Brazil, **Relativistic Compression of Neutron Stars and White Dwarfs.**
- 226. July 23, 2003 Invited Talk: Tenth Marcell Grossmann Meeting on General Relativity, CBPF-IRCA, Rio de Janeiro, Brazil, **Disappearing Dark Matter in brane-world cosmology: New Limits on noncompact extra dimensions.**
- 227. Nov. 17, 2003 Invited Overview Talk: Workshop on Origin of Matter and Evolution of Galaxies (OMEG03); RIKEN, Saitama Japan, **Origin and Evolution of Galaxies in Brane-World Cosmology: The Quest for the Fifth Dimension.**
- 228. Jan. 8, 2004 Invited Talk: First Argonne/MSU/INT RIA Workshop: The r-process: the astrophysical origin of the heavy elements and related Rare Isotope Accelerator Physics, Institute of Nuclear Theory, Univ. Wash., Seattle, WA, **An update on the Hot Bubble r-Process.**
- 229. Jan. 16, 2004 Invited Talk: Workshop on Studies of Dark Energy and Cosmology with X-Ray Surveys, Greenbelt, MD, **X-ray Probes of the Fifth Dimension: Disappearing Dark Matter and Brane-World Cosmology.**

230. Feb. 2, 2004 Joint High Energy Physics/Astrophysics Seminar, University of Michigan Center for Theoretical Physics, Ann Arbor, MI, **White-Dwarf/Black-Hole Collisions: A New Mechanism for Type I Supernovae—**.
231. Feb. 3, 2004 Astrophysics Seminar, University of Notre Dame, "White-Dwarf/Black-Hole Collisions: A New Mechanism for Type I Supernovae"
232. April. 6, 2004 Astrophysics Seminar, University of Minnesota, School of Physics & Astronomy, **Black Holes and White Dwarfs: A New Paradigm for Type I Supernova.**
233. May 13, 2004 Invited Talk, The Dark Side of the Universe Workshop, Michigan Center for Theoretical Physics, University of Michigan, Ann Arbor, MI, **Dark Radiation and Dark Matter - A View into the Fifth Dimension.**
234. July 17, 2004 Invited Talk, Workshop on Supernova Theory and Nucleosynthesis, University of Washington, Seattle WA, **STAN and the Giant Supernova Bubble.**
235. July 21, 2004 Invited Talk, Nuclei in the Cosmos VIII Vancouver, BC Canada, **Galactic Chemical Evolution, AGB Stars, and the Apparent Variation of the Fine-Structure Constant.**
236. Aug. 9, 2004 Invited Talk, 5th Recontres du Vietnam on Particle Physics and Astrophysics: New Views on the Universe, Hanoi, Vietnam, **Primordial Nucleosynthesis in the New Cosmology.**
237. Aug. 31, 2004 Astrophysics Seminar, Center for Astrophysics, University of Notre Dame, **Resonant Particle Creation during Inflation, Hunting Plank-Mass Particles in the CMB and Lyman- α Forrest.**
238. Sept. 18, 2004 Invited talk, COSMO-04 International Workshop on Particle Physics and the Early Universe, Canadian Institute for Theoretical Physics, University of Toronto, Toronto Canada, **Resonant Particle Creation during Inflation, Hunting Plank-Mass Particles in the CMB and Lyman- α Forrest.**
239. Oct. 19, 2004 Cosmology Seminar, Institute for Theoretical Physics, Univ. Minnesota, **Resonant Particle Creation during Inflation, Hunting Plank-Mass Particles in the CMB and Lyman- α Forrest**
240. Nov. 15, 2004 Omnibus Lecture Series on Particle Astrophysics and Cosmology National Astronomical Observatory of Japan, Mitaka, Tokyo, Japan, **The Search for the Parallel Universes and Extra Dimensions.**

241. Nov. 16, 2004 Omnibus Lecture Series on Particle Astrophysics and Cosmology
National Astronomical Observatory of Japan, Mitaka, Tokyo, Japan, **Big Bang Nucleosynthesis in the New Cosmology.**
242. Nov. 17, 2004 Omnibus Lecture Series on Particle Astrophysics and Cosmology
National Astronomical Observatory of Japan, Mitaka, Tokyo, Japan, "An update on
core-collapse Supernovae and r-Process Nucleosynthesis."
243. Nov. 18, 2004 Omnibus Lecture Series on Particle Astrophysics and Cosmology
National Astronomical Observatory of Japan, Mitaka, Tokyo, Japan, "White Dwarfs
in Binaries and Type I Supernovae."
244. Nov. 19, 2004 Astronomy Colloquium, National Astronomical Observatory Mitaka,
Tokyo, Japan, "Resonant Particle Creation during Inflation - Hunting Plank-Mass
Particles in the CMB and Lyman- α Forrest."
245. Dec. 3, 2004 Colloquium, Physics Department, Florida Atlantic University, Boca
Raton, FL, "The Cosmological Search for Parallel Universes and Extra Dimensions."
246. Jan. 19, 2005 Astrophysics Seminar, Center for Astrophysics, University of Notre
Dame, "An update on Core Collapse Supernovae and r -Process Nucleosynthesis."
247. Jan. 28, 2005 Invited Overview Talk, Joint Institute on Nuclear Astrophysics Work-
shop, Univ. of Notre Dame, " r -Process Nucleosynthesis in the Hot Supernova Bubble:
Where Do We Stand and Where Do We Go from Here?"
248. Mar. 9, 2005 Invited Talk, Workshop on the Nuclear Shell Model, Astrophysics,
and Condensed-Matter Physics, RIKEN, Center for Nuclear Science, Wako, Japan,
"Recent Progress in Core-Collapse Supernova Explosion Models and r-Process Nu-
cleosynthesis"
249. June 16, 2005 Colloquium: Center for Theoretical Physics, Institute of Physics, Hanoi
University, Vietnam, The Cosmological Search for Parallel Universes and Extra Di-
mensions
250. June 17, 2005 Colloquium: Vietnamese Academy of Science and Technology, Institute
of Physics and Electronics, Hanoi, Vietnam, An Introduction to Cosmology, Dark
Matter and Dark Energy
251. June 29, 2005 Tokyo University Center of Excellence Distinguished Lecture Series on
Particle Cosmology, Supernova Explosions and Nucleosynthesis: Part I: Introduction
to Cosmology, Dark Matter and Dark Energy

- 252. June 29, 2005 Tokyo University Center of Excellence Distinguished Lecture Series on Particle Cosmology, Supernova Explosions and Nucleosynthesis: Part II: The Beginning: various views on inflation, the multiverse, and the pre-big bang
- 253. June 30, 2005 Tokyo University Center of Excellence Distinguished Lecture Series on Particle Cosmology, Supernova Explosions and Nucleosynthesis: Part III: The Cosmological Search for Extra Dimensions and Parallel Universes
- 254. June 30, 2005 Tokyo University Center of Excellence Distinguished Lecture Series on Particle Cosmology, Supernova Explosions and Nucleosynthesis: Part IV: The First Elements: Primordial nucleosynthesis and early galactic chemical evolutions
- 255. June 30, 2005 Tokyo University Center of Excellence Distinguished Lecture Series on Particle Cosmology, Supernova Explosions and Nucleosynthesis: Part V: An Introduction to Relativistic Hydrodynamics
- 256. July 1, 2005 Tokyo University Center of Excellence Distinguished Lecture Series on Particle Cosmology, Supernova Explosions and Nucleosynthesis: Part VI: An Update on Core-Collapse Supernovae and r-Process Nucleosynthesis
- 257. July 1, 2005 Tokyo University Center of Excellence Distinguished Lecture Series on Particle Cosmology, Supernova Explosions and Nucleosynthesis: **Part VII: White Dwarfs, Neutron Stars, and Type I Supernovae.**
- 258. July 7, 2005 Astronomy Department Colloquium, Tokyo University **An update on core-collapse Supernovae and r-Process Nucleosynthesis.**
- 259. Aug. 30, 2005 Astrophysics Seminar CANDU; Center for Astrophysics, University of Notre Dame **The Beginning: various views on inflation, the multiverse, and the pre-big bang.**
- 260. Oct. 29, 2005 Invited Talk: Indiana University Cyclotron Facility: Mini-symposium in honor of Vic Viola: Celebration of a Career, **Keeping up with V^2 : Exploding Stars, Melting cyclotrons, Phantom gamma rays, and the Search for more Lithium.**
- 261. Mar. 3, 2006 Physics Department Colloquium: Florida Atlantic University, **Alternative Views of Dark Energy and Dark Matter.**
- 262. Mar. 10, 2006 Invited talk: SENFU06 Shell Model Workshop, Tokyo University, **Nuclear Physics Needs in the Supernova Bubble r-process: Where do we stand and where do we go from here?.**

263. May 19, 2006 Invited talk: Workshop on Fundamental Astro-Particle Physics, Center for Cosmology and Astroparticle Physics, The Ohio State University, **Non-Standard Big Bang Nucleosynthesis.**
264. May 27, 2006 Invited Talk: Workshop on External Correlations of the CMB and Cosmology, Fermilab, Batavia, IL **Constraints on Resonant Particle Production and Primordial Magnetic Fields from the CMB and LSS on Small Angular Scales.**
265. June 29, 2006 Invited Talk: International Symposium on Nuclear Astrophysics - Nuclei in the Cosmos - IX, CERN, Geneva, Switzerland, **Early Star Formation, Nucleosynthesis, and Chemical Evolution in Proto-Galactic Clouds.**
266. July 24, 2006 Invited Talk: Eleventh Marcel Grossmann Meeting on General Relativity, Freie Universitt Berlin, **Evidence for White Dwarfs with Strange Matter Cores.**
267. July 25, 2006 Invited Talk: Eleventh Marcel Grossmann Meeting on General Relativity, Freie Universitt Berlin, **Relativistic Hydrodynamic Simulations of Multiple Orbits for Close Neutron Star Binaries.**
268. July 26, 2006 Invited Talk: Eleventh Marcel Grossmann Meeting on General Relativity, Freie Universitt Berlin, **Dark Energy and Decaying Dark Matter.**
269. July 27, 2006 Invited Talk: Eleventh Marcel Grossmann Meeting on General Relativity, Freie Universitt Berlin, **An Axisymmetric Object-Based Search for a Flat Compact Dimension.**
270. July 28, 2006 Invited Talk: Eleventh Marcel Grossmann Meeting on General Relativity, Freie Universitt Berlin, **Constraints on Accelerating Brane Cosmology with Exchange between the Bulk and Brane**
271. Aug. 3, 2006 Astrophysics Seminar: Mahidol University, Bangkok, Thailand, **The First Elements: Primordial Nucleosynthesis and Early Galactic Chemical Evolution.**
272. Aug. 4, 2006 Physics Department Colloquium: Mahidol University, Bangkok, Thailand, **A Journey to the Center of the Galaxy: A Giant Black Hole, Lost Matter, and Exploding Stars.**
273. Aug. 9, 2006 Invited Talk: Symposium on Challenges in Particle Astrophysics, 6th Rencontres du Vietnam, Hanoi, **Unified Approaches to Dark Matter and Dark Energy.**

- 274. Aug. 14, 2006 Invited Lecture: Summer School on Astrophysics, Hanoi University of Education, **Introduction to Cosmology, Dark Matter and Dark Energy.**
- 275. Aug. 15, 2006 Invited Lecture: Summer School on Astrophysics, Hanoi University of Education, **Evidence and Interpretation of Dark Matter and Dark Energy**
- 276. Aug. 16, 2006 Invited Lecture: Summer School on Astrophysics, Hanoi University of Education, **Birth of the Universe: Various Views on Inflation, the Multiverse, and the Pre-Big Bang**
- 277. Aug. 17, 2006 Invited Lecture: Summer School on Astrophysics, Hanoi University of Education, **The Cosmological Search for Extra Dimensions and Parallel Universes.**
- 278. Aug. 18, 2006 Invited Lecture: Summer School on Astrophysics, Hanoi University of Education, **The First Elements: Primordial nucleosynthesis and Early Galactic Chemical Evolution.**
- 279. Aug. 18, 2006 Invited Lecture: Summer School on Astrophysics, Hanoi University of Education, **An Introduction to Relativistic Hydrodynamics.**
- 280. Aug. 19, 2006 Invited Lecture: Summer School on Astrophysics, Hanoi University of Education, **An Update on Supernovae and Early Galactic Nucleosynthesis.**
- 281. Sept. 9, 2006 Astrophysics Seminar: University of Notre Dame **Alternative Approaches to Dark Matter and Dark Energy.**
- 282. Sept. 20, 2006 Seminar: National Superconducting Cyclotron Laboratory Seminar: Michigan State University, **The First Elements: Primordial Nucleosynthesis and Early Galactic Chemical Evolution.**
- 283. Nov. 18, 2006 Invited talk: MIDwest General Relativity Meeting MWRM16: Washington University, St. Louis, **General Relativistic Alternatives for Dark Matter and Dark Energy.**
- 284. Feb. 7, 2007 FAUST Seminar, Physics Department, Florida Atlantic University, **Update on Core-Collapse Supernovae and r-Process Nucleosynthesis in the Neutrino Energized Bubble.**
- 285. Feb. 9, 2007 Physics Department Colloquium, Florida Atlantic University, **A Journey to the Center of the Galaxy: A Giant Black Hole, Lost Matter, and Exploding Stars.**

286. Apr. 16, 2007 Invited talk, American Physical Society Meeting, Jacksonville, FL, **Nuclear Astrophysics and Supernova Core Collapse**, on behalf of James R. Wilson, recipient of the 2005 Bethe Prize for nuclear Astrophysics.
287. Apr. 23, 2007 Physics Department Colloquium, Western Michigan University, **Alternative Approaches to Dark Matter and Dark Energy**.
288. May 21, 2007 Invited Talk: Workshop on experimental opportunities for nuclear astrophysics at the Frankfurt neutron source of the Stern-Gerlach-Zentrum - The FRANZ Neutron Source, **Some Perspectives on Neutron-Capture Nucleosynthesis in the s-Process**.
289. May 22, 2007 Invited Talk: 19th Recontres de Blois, Chateau Royal de Blois, Blois, France, **Stellar Evolution and Nucleosynthesis in 3D**.
290. June 8, 2007 Plenary Talk: 23rd International Conference on Nuclear Physics, Tokyo International Forum, Japan, **Recent Developments in Nuclear Astrophysics**.
291. June 11, 2007 Invited Talk, Workshop on Frontiers and Perspectives of Nuclear and Hadron Physics, Tokyo Institute of Technology, **Frontiers in Nuclear Astrophysics** .
292. Aug. 29, 2007 Invited Talk, Nuclear Astrophysics Workshop, National Ignition Facility, Lawrence Livermore National Laboratory, **Pair Annihilation in the Early Universe**.
293. Oct. 16, 2007 Seminar: Center for Astrophysics, University of Notre Dame, **New Frontiers in Nuclear Astrophysics**.
294. Nov. 13, 2007 Invited Talk: 2007 International Conference on Cosmology and Particle Physics, National Taiwan University, Taipei, Taiwan, **Alternative Views on Dark Matter and Dark Energy**
295. Dec. 4, 2007 Key Note Address: 10th International Symposium on the Origin of Matter and Evolution of Galaxies, OMEG07, **Big Bang Cosmology**.
296. Jan. 3, 2008 Astrophysics Seminar, Physics Department, Hanoi University of Education, Hanoi, Vietnam, **Frontiers in Stellar Astrophysics**
297. Jan. 7, 2008 Physics Department Colloquium, Hanoi University of Education, Hanoi, Vietnam, **Big Bang Cosmology**

298. Mar, 13, 2008 Invited Talk, , Workshop on r-Process nucleosynthesis and Quantum Beams, Tsukuba University, Tsukuba, JAPAN **Supernova Explosions and Nucleosynthesis**
299. Mar. 28, 2008 Plenary Talk, 12th Annual Symposium on Computational Science and Engineering (12th ANSCSE), Ubon Rajathanee University, Thailand, **3D simulations of stellar evolution and supernovae: Current challenges and progress.**
300. May 22, 2008 Chemistry/Physics Department Colloquium, Kasetsart University Bangkok, Thailand, **Big Bang Cosmology and the Birth of the Universe**
301. May 31,, 2008 Invited Talk, Workshop on Big Bang Nucleosynthesis and Particle Physics, Perimeter Institute for Theoretical Physics, University O Waterloo, Waterloo, Ontario, Canada, **Alternative Unifying Views on Dark Matter and Dark Energy.**
302. Sept. 2, 2008 Astrophysics Seminar, Dept. Physics, Univ. Notre Dame, **Key Questions in Big Bang Cosmology and Primordial Nucleosynthesis.**
303. Sept. 27, 2008 Colloquium, Chinese Institute for Atomic Energy, Beijing China, **Alternative Unifying Views on Dark Matter and Dark Energy.**
304. Sept. 26, 2008 Invited Talk, Workshop on Alternative Approaches to Gravity, Institute on High Energy Physics, Beijing, China, , **Some Alternative Unifying Views on Dark Matter and Dark Energy.**
305. Sept. 27, 2008 Nuclear Physics Seminar, Chinese Institute for Atomic Energy, Beijing China, **Key Questions in Big Bang Cosmology and Primordial Nucleosynthesis.**
306. Sept. 28, 2008 Invited Talk, TeV Particle Astrophysics Workshop, IHEP, Beijing, **High Energy Neutrinos via Heavy-Meson Synchrotron Emission in Strong Magnetic Fields**
307. Oct. 24, 2008, Invited Talk, 18th Midwest Meeting on Relativity, Jordan Hall, Univ. Notre Dame, **Some Alternative Unifying Approaches to Dark Matter and Dark Energy.**
308. Jan. 4, 2009 College of Science Special Colloquium, Hanoi University of Education, Hanoi, Vietnam, **What and When was the Christmas Star: An investigation of the astrophysics and history of the star of Bethlehem**

309. Feb. 13, 2009 Physics Department Colloquium, Florida Atlantic University, Boca Raton, FL, **Key Issues in Big Bang Cosmology.**
310. Mar. 9, 2009 Invited Talk, Workshop on the r-Process, Tsukuba University, Tsukuba, Japan **Nuclear Physics in Cosmology and Astrophysics.**
311. Mar. 26, 2009 Invited Talk, 13th Annual Symposium on Computational Science and Engineering (13th ANSCSE), Kasetsart University, Thailand, **Computational Challenges and Progress in Cosmology.**
312. June 1, 2009 Invited talk, International Conference on Cosmological Magnetic Fields MonteVerit, Ascona, Switzerland, **Constraints on the Primordial Magnetic Field and Neutrino Mass from the CMB Polarization and Power Spectra.**
313. July 13, 2009 Invited talk, 12th Marcel Grossman meeting on General Relativity, Paris, France, **High Energy Neutrinos via Heavy-Meson Synchrotron Emission in Strong Magnetic Fields.**
314. July 13, 2009 Invited talk, 12th Marcel Grossman meeting on General Relativity, Paris, France, **Some Alternative Unifying Models for Dark Energy and Dark Matter.**
315. July 15, 2009 Invited talk, 12th Marcel Grossman meeting on General Relativity, Paris, France, **Evidence for a Primordial Magnetic Field from the CMB Polarization and Power Spectra.**
316. July 16, 2009 Invited talk, 12th Marcel Grossman meeting on General Relativity, Paris, France, **Effects of Structure Formation on the Apparent Expansion Rate of the Universe: A Preliminary Estimate Based upon N-Body Simulations.**
317. Sept. 8, 2009 Astrophysics Seminar, Dept. Physics, Univ. Notre Dame, **Evidence for a Primordial Magnetic Field in the Cosmic Microwave Background and Large Scale Structure.**
318. Nov. 10, 2009 Invited talk, Dark Stars Workshop, Univ. Michigan, Ann Arbor **Current challenges and progress in 3D simulations of stellar evolution and supernovae.**
319. Jan. 26, 2010 Invited Talk, Workshop on New Frontiers in QCD 2010 - Exotic Hadron Systems and Dense Matter, Yukawa Institute for Theoretical Physics, Kyoto, Japan **Astrophysical Consequences of QCD Matter in White Dwarfs and Supernova Collapse.**

320. Jan. 28, 2010 Invited Overview Talk, Workshop on New Frontiers in QCD 2010 - Exotic Hadron Systems and Dense Matter, Yukawa Institute for Theoretical Physics, Kyoto, Japan **The Physics of Supernovae and Proto-Neutron Stars.**
321. March 9, 2010 Invited Talk, 10th International Symposium on Origin of Matter and Evolution of Galaxies, RCNP, Osaka University **Magnetic Domain Instability and the Equation of State for Magnetars: A new mechanism for SGRs.**
322. June 4, 2010 Invited Talk, Xenia Cosmic Chemical Evolution Workshop, St. Michaels, MD **Big Bang Nucleosynthesis and Early Star Formation.**
323. June 26, 2010 Invited Talk, Nuclear Astrophysics Workshop, Tokyo University, Kobayashi Hall, **Overview of Nuclear Physics in Explosive Nucleosynthesis.**
324. Sept. 7, 2010 Astrophysics Seminar, University of Notre Dame, Dept. of Physics **New Insight into Photonuclear Reactions and Explosive Nucleosynthesis.**
325. Jan. 6, 2011 Invited Talk, French Japanese Symposium on Nuclear Structure Problems, Nishina Hall, RIKEN, Wako, Japan **New Insight into Photonuclear Reactions and Explosive Nucleosynthesis.**
326. Jan. 12, 2011 Astrophysics Seminar, International Christian University, Tokyo, Japan **Origin and Evolution of Structure and Nucleosynthesis for Galaxies in the Local Group**
327. Mar. 8, 2011 Astrophysics Seminar, University of Notre Dame, Dept. of Physics, Origin and Evolution of Structure and Nucleosynthesis for Galaxies in the Local Group
328. Aug. 30, 2011 Astrophysics Seminar, University of Notre Dame, Dept. of Physics, "Evidence for an inverted neutrino hierarchy from neutrino nucleosynthesis in core collapse supernovae, meteorites and new measurements of the θ_{13} neutrino mixing angle"
329. June 17, 2011 Colloquium, National Astronomical Observatory of Japan, Mitaka, Tokyo, "Formation and Evolution of Galactic Streaming Flows in Local-Group Like Systems"
330. Sept. 9, 2011 Seminar, Kalamazoo Astronomical Society, Kalamazoo, MI, "The Birth of the Universe"
331. Oct. 19, 2011 Colloquium, Physics Department, Florida Atlantic University Boca Raton, FL, "Formation and Evolution of Galactic Streaming Flows in Local-Group

Like Systems”

- 332. Nov. 3, 2011 Invited Talk, 3rd Subaru International Conference ”GALACTIC ARCHAEOLOGY” Nov. 1-4, Shuzenji, Japan, ”Origin and Evolution of Structure and Nucleosynthesis for Galaxies in the Local Group”
- 333. Nov. 17, 2011 Invited Talk, 11th International Symposium on Origin of Matter and Evolution of Galaxies, Nov. 14-17, 2011, RIKEN, Wako, Saitama, Japan, ”Frontiers of Big Bang Cosmology and Primordial Nucleosynthesis,”
- 334. Nov. 18, 2011 Invited Talk, 5th meeting of OMEG Institute: OMEG5-I, Nov. 18, 2011, NAOJ, Mitaka, Tokyo, ”New Frontiers in Nuclear and Particle Astrophysics: Time varying quarks MHD Jets, and the Neutrino Mass Hierarchy”
- 335. Nov. 23, 2011 Invited Lecture I, IAU-Vietnam Workshop on Astronomy and Astrophysics, Ho Chi Minh City , November 21-25, 2011, ”Space-time, Cosmology, Dark Matter and Dark Energy”
- 336. Nov. 23, 2011 Invited Lecture II, IAU-Vietnam Workshop on Astronomy and Astrophysics, Ho Chi Minh City , November 21-25, 2011, ”The Beginning: various views on the pre-big bang, the multiverse, inflation, and the early universe”
- 337. Nov. 23, 2011 Invited Lecture III, IAU-Vietnam Workshop on Astronomy and Astrophysics, Ho Chi Minh City , November 21-25, 2011, ”Formation and Evolution of Large Scale Structure and Local-Group Like Systems”