

**Richard T. Jones, PhD**  
**Associate Professor of Physics**  
**University of Connecticut**  
**Curriculum Vitæ**

Updated: July 7, 2016

**Birthdate:** Dec. 17, 1959

**Birthplace:** Sandy Point, Nova Scotia, Canada

**Citizenship:** Canadian, permanent U.S. resident

**Mailing address:**

Dept. of Physics, University of Connecticut unit 3046,  
2152 Hillside Rd., Storrs, CT, USA 06269-3046

**Email address:** richard.t.jones@uconn.edu

**Education:**

Bob Jones University, Greenville, S.C. Physics B. Sc. 1981  
Virginia Polytechnic Institute, Blacksburg VA Physics Ph. D. 1988  
University of Illinois, Urbana IL Nuclear Physics postdoc 1988-1990

**Appointments:**

Scientific Associate, CERN, Geneva, Switzerland 1990-1992  
Research Staff, CERN, Geneva, Switzerland 1992-1996  
Assistant Professor, Department of Physics, University of Connecticut 1996-2002  
Associate Professor, Department of Physics, University of Connecticut 2002-present

**Professional society memberships:**

American Physical Society, Division of Nuclear Physics

**Honours and Distinctions:**

graduated Summa Cum Laude with B.Sc. 1981  
received a NATO grant for collaboration with University of Geissen 1985  
received Cunningham dissertation fellowship 1986

**Visiting professorships:**

I.N.F.N. visiting professor, University of Genova, Italy 4/1996-7/1996

**Field of research specialization:**

Experimental Nuclear/Particle Physics

**Teaching experience:****Courses taught:**

Phys 1401/1402 Introductory Physics with Calculus for Scientists  
 Phys 1501 Introductory Physics with Calculus for Engineers  
 Phys 1600 Introduction to Modern Physics  
 Phys 2300 Development of Quantum Mechanics  
 Phys 2501/2502 Mechanics and Electromagnetics Laboratory I and II  
 Phys 3103/3104 Intermediate Physics I and II (modern physics)  
 Phys 3402 Quantum Mechanics II  
 Phys 3989 Undergraduate Research (independent study)  
 Phys 4350/6320 Particles and Nuclei (combined undergrad and grad)  
 Phys 4099 Experimental Monte Carlo Methods (independent study)  
 Phys 5600 Modern Physics (grad)  
 Phys 5401 Quantum Mechanics I (grad)

**Students mentored in research:**

UConn Mentor Connection mentoring (high school students): 25  
 Undergraduate honors students supervised: 8  
 Undergraduate independent study projects: 15  
 Undergraduate summer projects: 18  
 Summer interns supervised (students from other universities): 5  
 Undergraduate research study abroad supervised: 1  
 PhD students graduated: 4  
 PhD students at present: 4

**Research Experience:**

## Detector R&amp;D:

- |   |              |
|---|--------------|
| 1. RICH detector using a solid radiator and a pixel MWPC readout            | 1990-1993    |
| 2. Thin diamond monocrystals for use as coherent bremsstrahlung targets     | 1999-present |
| 3. High-resolution X-ray topography of diamond using synchrotron light      | 2002-present |
| 4. Active collimator for high-energy coherent bremsstrahlung source         | 2001-present |
| 5. Silicon photomultiplier devices for scintillating fiber detector readout | 2006-present |
| 6. Shaped diamond milling using UV laser ablation                           | 2009-present |
| 7. Open GEM detector for ambient radon decay rate measurement               | 2016-present |

## Detector systems integration:

- |  |           |
|--|-----------|
| 1. Upgrade of Jetset experiment to incorporate a forward RICH  | 1993-1994 |
| 2. Adaptation of Jetset barrel lead - scintillating fiber calorimeter for use in the Radphi experiment | 1998-1999 |

Monte Carlo detector simulation software written:

1. Physics simulation code for the Jetset experiment 1992-1996
2. Physics simulation of Radphi experiment  
1998-2005
3. Physics simulation of GlueX beamline and detector 2001-present
4. Simulation of Hall C Compton polarimeter for Qweak 2003-2006
5. Simulation of the Hall D tagging spectrometer and electron beamline 2006-present

Data analysis management:

1. Analysis coordinator for Jetset experiment 1994-1998
2. Analysis coordinator for Radphi experiment 2000-2005

Partial-wave analysis:

1. Author of PWA formalism and code for Jetset 1995-1996
2. Co-author of PWA results from Jetset experiment 1999-2000
3. PWA toolkit development for GlueX 2007-present

Research collaborations:

1. Jetset Experiment at CERN/LEAR 1990-1998
2. Radphi Experiment at Jefferson Lab 1997-2005
3. GlueX Experiment at Jefferson Lab 1999-present
4. Qweak Experiment at Jefferson Lab 2000-present

**Research grants received (reverse order):**

1. "Research and Education with GlueX", R.T. Jones PI, National Science Foundation, \$405,000. 2015-2018
2. "Diamond Radiator Fabrication and Assembly", target construction contract with Jefferson Science Associates, \$75,000. 2013-2015
3. "Science DMZ to Enhance Data-Intensive Research at UConn", Wang PI, R.T. Jones co-PIs, NSF CC-NIE Network Infrastructure grant to build 10GB research network at UConn, \$500,000. 2013-2015 B.
4. "Research and Education with GlueX", R.T. Jones PI, National Science Foundation, \$375,000. 2012-2015
5. "Fabrication of the Hall D Microscope and Active Collimator", detector construction contract with Jefferson Science Associates, \$110,432. 2012-2014
6. "Defect Free, Ultra-Rapid Thinning/Polishing of Diamond Crystal Radiator Targets (20 $\mu$ m) for Highly Linearly Polarized Photon Beams", A. Arjunan (Sinmat Inc.) PI and R.T. Jones co-PI, Department of Energy Phase II Grant, \$225,000. 2011-2013 STTR
7. "Defect Free, Ultra-Rapid Thinning/Polishing of Diamond Crystal Radiator Targets (20 $\mu$ m) for Highly Linearly Polarized Photon Beams", 2010-2011

- A. Arjunan (Sinmat Inc.) PI and R.T. Jones co-PI, Department of Energy Phase I Grant, \$30,000. STTR
8. “UV Laser Refurbishment for Milling Research-Grade Diamonds”, 2010  
R.T. Jones PI, UConn Research Foundation Large Faculty Grant Competition, \$13,500.
  9. “Nuclear Physics Research and Education with GlueX”, 2009-2012  
R.T. Jones PI, National Science Foundation, \$225,000.
  10. “Development of a Prototype Tagger Microscope for Hall D” 2007-2008  
R.T. Jones PI, TJNAF contract for detector prototyping, \$91,390.
  11. “Collaborative Analysis Toolkit for Large Datasets on a Grid”, 2007-2010  
Curtis Meyer (CMU), Alex Dzierba (IU), and R.T. Jones co-PIs, National Science Foundation Physics at the Information Frontier multi-university grant, UConn portion \$325,000.
  12. “Development of Hall D Tagger and Beam Line Instrumentation”, 2006  
R.T. Jones PI, TJNAF contract for R&D, \$25,000.
  13. 1-year sabbatical at Jefferson Lab, R.T. Jones, \$59,000. 2005-2006
  14. “Research Program in Experimental Intermediate Energy Physics”, 2004-2006  
R.T. Jones PI, U.S. National Science Foundation \$85,000.
  15. “Research Program in Experimental Intermediate Energy Physics”, 2003-2004  
R.T. Jones PI, U.S. National Science Foundation \$75,000.
  16. “Development of Precise Polarimetry of Coherent Bremsstrahlung Radiation 2002-2004  
in the Energy Range 0.3-2GeV using Pair Production Processes on Nuclei and Atomic Electrons”, A. Sirunian (YerPhi) and R.T. Jones co-PIs, U.S. Civilian Research and Development Foundation, \$64,000.
  17. “Research Program in Experimental Intermediate Energy Physics”, 2000-2003  
R.T. Jones PI, National Science Foundation \$252,186.
  18. “A Seed for a Physics Simulation Farm using Commodity Processors 2000  
and Internet 2 Connectivity”, R.T. Jones PI, R. Côté, J. Javanainen co-PIs, UConn Research Foundation Large Equipment Competition, \$16,100.
  19. “A forward RICH for kaon identification in the Jetset experiment”, 1991-1994  
R.T. Jones PI, M. Renevey and M. Price co-PI’s, CHF 450,000.

**Colloquia, seminars, unpublished presentations:**

1. R.T. Jones, “The Search for Exotic Mesons with GlueX”, graduate student research seminar series, University of Connecticut, Storrs, CT, Nov. 20, 2015.
2. R.T. Jones, “The Higgs Boson and the Origin of Mass”, invited CLIR public lecture, Storrs, CT, Mar. 28, 2014, updated and presented twice again at other venues in 2015.
3. R.T. Jones, “High Throughput Computing on the Open Science Grid”, invited talk at BECAT Workshop on High Performance Computing, Storrs, May 16, 2013.
4. S. Engel, “GlueX Team Nears Needed Throughput on OSG”, interview with R.T. Jones, Open Science Grid Newsletter, March issue, 2013.
5. R.T. Jones, “Collimation and Tagging Instrumentation for the GlueX Photon Beamline”, contributed talk at DNP-2012, Newport Beach, Oct. 24-26, 2012.

6. R.T. Jones, "GlueX VO Status Report", invited presentation at annual meeting of the Open Science Grid Council, Chicago, Sept. 11, 2012.
7. R.T. Jones, "Probing the Force Between Quarks with Photons", invited presentation to the UConn Graduate Student Research Seminar series, Nov. 18, 2011.
8. "Probing Meson Structure with Polarized Photons", invited presentation at the Nuclear Physics Symposium on "Nucleon Structure and Electroweak Precision Tests: Past and Future", University of Illinois, Urbana, May 20, 2010.
9. "Lighting Up the Glue in the Proton", invited Robert Vojtek Physics Seminar, Central Connecticut College, New Britain, April 5, 2010.
10. R.T. Jones, "GlueX Experience with the Open Science Grid", invited presentation at the All-Hands Meeting of the Open Science Grid community, Chicago, Mar. 8, 2010.
11. "Hadron Physics with Polarized Photons at 9 GeV with Gluex", invited UMass Nuclear/High Energy Seminar, Amherst, Nov. 20, 2009.
12. "Diamond Radiator Assessment using Rocking Curve Topography at CHESS" invited presentation to NSLS weekly user's meeting, Upton, July 7, 2009.
13. "Diagnostics for Deformation in Thin Diamonds for Coherent Bremsstrahlung Radiators", contributed presentation at DNP-2008, Oakland, Oct. 23, 2008.
14. "Morphology of Diamonds from Analysis of X-ray Rocking Curves", invited presentation to the CHESS annual User's Meeting, Ithaca, June 10, 2008.
15. "Experimenting with Quarks", invited presentation to the Darien High School Science Symposium, Darien, Connecticut, May 28, 2008
16. "A Coherent Gamma Source", invited presentation to the CHESS weekly seminar series, Cornell University, Ithaca, Aug. 15, 2006.
17. "The GlueX Experiment", invited presentation at the Cascades Workshop, Jefferson Lab, Newport News, Dec. 1, 2005.
18. "Searching for Phi Radiative Decays with the Radphi experiment", Nuclear Physics Seminar series, Florida State University, Tallahassee, Nov. 19, 2004.
19. "Hunt for the Hybrid Meson", Physics and Astronomy Colloquium, Dartmouth College, Hanover, Feb. 7, 2004.
20. "Hunt for the Hybrid Meson", Frontiers in Physics Colloquium, University of Connecticut, Storrs, June 26, 2003.
21. R.T. Jones, "Preliminary design of a Compton Polarimeter for Hall C", Electron Beam Polarimetry Workshop, Newport News, June 9-10, 2003.
22. R.T. Jones, "PWA results from the Jetset experiment", Gluonic Excitations Workshop, Newport News, May 14-16, 2003.
23. "Is there a Quark Model within the Standard Model", Physics Department colloquium series, University of Iowa, Iowa City, Feb. 11, 2002.
24. "Is there a Quark Model within the Standard Model?" Nuclear Physics seminar series, University of Glasgow, Glasgow, U.K., Jan. 17, 2002.
25. "The Quark Model and the Standard Model: are they consistent?", Physics Department colloquium series, Wayne State University, Detroit, Feb. 22, 2001.
26. "Bridging the Gap between the Quark Model and the Standard Model", Physics Department colloquium series, University of Connecticut, Storrs, Sept. 10, 1999.

27. “An Experimental Test of Bell’s Inequalities”, Physics Department colloquium series, Indiana University, Bloomington, Sept. 22, 1995.

### **Bibliography:**

1. C. Meyer et al. (GlueX Collaboration), “First Results from the GlueX Experiment”, AIP Conf. Proc. 1735 (2016) 020001.
2. A. Narayan et al., “Precision Electron-Beam Polarimetry at 1 GeV Using Diamond Microstrip Detectors”, Phys. Rev. X **6**, (2016) 011013.
3. T. Allison et al. (Qweak Collaboration), “The Qweak Experimental Apparatus”, Nucl. Instr. Meth. **A781** (2015) 105–133.
4. D. Androic et al. (Qweak Collaboration), “First Determination of the Weak Charge of the Proton”, Phys. Rev. Lett. **111** (2013) 141803.
5. G. Yang, R.T. Jones, F. Klein, K. Finkelstein, K. Livingston, “Rocking Curve Imaging for Diamond Radiator Crystal Selection”, Journal of Diamond & Related Materials **19** (2010) 719.
6. F. Adamyan, A. Aganyants, H. Hakobyan, J. Manukyan, R. Oganezov, L. Sargsyan, A. Sirunyan, H. Vartapetian, and R.T. Jones, “Experimental study of photon beam polarimetry based on nuclear  $e^+e^-$  pair production on an amorphous target”, Nucl. Instr. Meth. **A579**, (2007) 973.
7. R.T. Jones, T. Bogue, B.E. Evans, M. Kornicer, A.R. Dzierba, R. Gardner, J.L. Gunter, D. Krop, R. Lindenbusch, D. Rust, E. Scott, P. Smith, C. Steffen, S. Teige, D.S. Armstrong, D.H.E. Clark, L.J. Kaufman, D.J. Steiner, E. Frlez, D. Pocanic, J.J. Kolata, L.O. Lamm, G. Rogachev, C. Campbell, E. Collins, L. McGlinchey, P. Rubin, E. Walker, D.S. Adams, J. Napolitano, D.I. Sober, H. Crannell, R.R. Mammei, E.S. Smith, “Performance of the Radphi detector and trigger in a high rate tagged photon beam”, Nucl. Instr. Meth. **A570**, (2007) 384.
8. R.T. Jones, M. Kornicer, A.R. Dzierba, J.L. Gunter, R. Lindenbusch, E. Scott, P. Smith, C. Steffen, S. Teige, P. Rubin and E.S. Smith, “A Bootstrap Method for Gain Calibration and Resolution Determination of a Lead-Glass Calorimeter”, Nucl. Instr. Meth. **A566** (2006) 366.
9. S. Darbinyan, H. Hakobyan, R.T. Jones A. Sirunian, and H. Vartapetian, “Polarimetry of coherent bremsstrahlung by analysis of the photon energy spectrum”, Nucl. Instr. Meth. **A554** (2005) 75.
10. F. Adamyan, H. Hakobyan, R.T. Jones, Zu Manukyan, A. Sirunian, H. Vartapetian, “A Photon Beam Polarimeter based on Nuclear  $e^+e^-$  Pair Production in an Amorphous Target”, Nucl. Instr. Meth. **A546** (2005) 376.
11. J.D. Kellie, P.J.M. Clive, G.L. Yang, R. Beck, C. Gordon, C. Hall, J.W. Harris, R.T. Jones, D. Laundy, K. Livingston, I.J.D. MacGregor, J.C McGeorge, J. Malone, A. Schmidt, P.A. Slaven, R.M. Vrcelj, and D. Watts, “The Selection and Performance of Diamond Radiators used in Coherent Bremsstrahlung Experiments”, Nucl. Instr. Meth. **A545** (2005) 164.
12. F. Adamyan, K. Dallankyan, H. Hakobyan, Zh. Manukyan, A. Sirunian, H. Vartapetian and R.T. Jones, “Calculations of a CB polarimeter based on  $e^+e^-$  pairs photoproduction on nuclei in an amorphous target”, YerPhi preprint 1590, December 2003.
13. GlueX collaboration, A. Dzierba spokesman, “Photoproduction of Gluonic Excitations and Unusual Mesons: The Hall D Project at Jefferson Lab”, Hall D Design Report v4, Jefferson Lab Reports (Nov. 11, 2002) R.T. Jones editor and primary author of chap. 4 “Photon Beam and Tagger” pp. 49-104, and chap. 10, “Monte Carlo Simulations” pp. 237-262.

14. R.T. Jones, "Can the scalar mesons  $a_0/f_0(980)$  be described by a kaon-antikaon state?", Proceedings of EMI2001 International Symposium on Electromagnetic Interactions in Nuclei, Osaka, 4-7 December 2001, M. Fujiwara and T. Shima eds., published by World Scientific (2002).
15. C. Guo, R.T. Jones, G.N. Gibson, "Influence of spatial symmetry on the dynamics of strong-field ionization", Phys. Rev. **A62** Rapid Communications (2000) 15402.
16. "PWA results from the Jetset experiment", R.T. Jones, AIP Conference Proceedings vol.549, eds. Z. Parsa and W. Marciano (2000) 237.
17. R.T. Jones, "Optimal Photon Sources for CEBAF at Higher Energies," Physics and Instrumentation with 6-12 GeV Photons, eds. S. Dytman, H. Fenker, R. Roos, proceedings published by Jefferson Lab User's Group (1999) 189.
18. A. Buzzo et al (the JETSET collaboration), "Study of the reaction from  $p\bar{p} \rightarrow \Phi\Phi$  from 1.1 to 2.0 GeV/c," Phys. Rev. **D57** (1998) 5370.
19. R.T. Jones, "The Radphi experiment at Jefferson Lab", Hadron Spectroscopy Seventh International Conference, AIP Conference Proceedings 432, Eds. S.U. Chung and H.J. Willutzki (1997).
20. A. Buzzo et al (the Jetset collaboration), "Measurement of the Reaction from  $p\bar{p} \rightarrow \Phi\Phi$  from 0.6 to 1.9 GeV/c", Phys. Rev. **D56** (1997) 3803.
21. A. Buzzo et al (the Jetset collaboration), "Search for narrow resonances in the reaction ", Zeitschrift für Physik **C76** (1997) 475.
22. L. Bertolotto et al (the Jetset collaboration), "Observation of  $\phi\phi$  production in the reaction  $p\bar{p} \rightarrow 4K^\pm$  at 1.4 GeV/c incident  $\bar{p}$  momentum," Phys. Lett **B345**, (1995) 325.
23. R.T. Jones, "Exclusive  $\phi\phi$  production in  $p\bar{p}$  annihilations at PS202", Proceedings of Third Biennial Conference on Low Energy Antiproton Physics, published by World Scientific, eds. G. Kernel, P. Krizan and M. Mikuz (1995) p. 326.
24. R.T. Jones and E.G. Adelberger, "Quantum Mechanics and Bell's Inequalities," Phys. Rev. Lett. **72**, (1994) 2675.
25. N.H. Hamann, J. Dittmayer, A. Klett, E. Rössle, M. Tscheulin, H.-J. Urban, H. Wirth, H. Zipse, M.J. Price, E. David, R. Harfield, R.T. Jones, D. Lacroix and C. Rivoiron, "The JETSET barrel drift-tube (straw) chamber", Nucl. Instr. Meth. **A346** (1994) p. 57.
26. R.T. Jones, "First Results from the Jetset RICH detector", Proceedings of First Workshop on Ring Imaging Cerenkov Detectors, published by North Holland, eds. E. Nappi and T. Ypsilantis (1993) 208.
27. R.T. Jones, M. Price, M. Renevey and H. Wirth, "A fast RICH detector for JETSET", Nucl. Instr. Meth. **A323** (1992) p. 386.
28. B. Firth, T. Lafford, R.T. Jones, M. Price, M. Renevey, and G. Muratori, "A Simple Modular Wire Chamber for use as a RICH Photon Detector", Nucl. Instr. Meth. **A311** (1992) 484.
29. J.E. Knott, P.T. Debevec, P.D. Harty, D.A. Jenkins and R.T. Jones, "An Absolute Measurement of the Differential Cross Section for Deuteron Photodisintegration from 63 to 71 MeV", Phys. Rev. **C45** (1992) 904.
30. R.T. Jones, D.A. Jenkins, P.T. Debevec, P.D. Harty and J.E. Knott, "An Absolute Measurement of the Differential Cross Section for the Reaction  ${}^4\text{He}(\gamma, p){}^3\text{H}$  from 63 to 71 MeV", Phys. Rev. **C40** (1991) 2052.

31. P.D. Harty, R.T. Jones, J.E. Knott, P.T. Debevec and D.A. Jenkins, "Large Solid Angle Detector for Charged Particles from Photodisintegration of Light Nuclei", Nucl. Instr. Meth. **A297** (1990) 415.
32. R.T. Jones, "An Automated Method for Measuring Wire Tensions in Multiwire Chambers", Nucl. Instr. Meth. **A268** (1988) 550.
33. R.T. Jones and A.L. Ritter, "Analysis of Multiple Scattering for (e,2e) Experiments on Thin Films", Journal of Electron Spectroscopy and Related Phenomena 40 (1986) 285.
34. D.A. Jenkins and R.T. Jones, "Kinematics of Threshold ( $\gamma, \pi^0$ ) Reactions", Phys. Rev. **C31** (1985) 262.
35. A.L. Ritter, J.R. Dennison and R.T. Jones, "The Spectral Momentum Density of Amorphous Carbon from (e, 2e) Spectroscopy", Phys. Rev. Lett. **53** (1984) 2054.