Ken Ricci, Ph.D.

Education

- Stanford University: Ph.D. Physics, 2000; Master of Science, Physics, 1996
- Massachusetts Institute of Technology: Bachelor of Science, Physics, 1993; Bachelor of Science, Literature, 1993

Employment

2006 – Present: Senior Physicist: BOSSdev, Inc. / LaunchPoint Technologies, Inc., Goleta, CA

- Chief Detector Physicist for LaunchPoint's collaboration with BOSSgov Inc's Standoff Explosives Detection System
- Modeling and measurement of electromagnetic fields, heat transfer, and radiation
- Engineering and cost analysis for cryogenic, vacuum, and superconducting systems
- Mechanical, vibrational, and stability analysis for magnetically levitated structures

2005 – Present Consultant: DBI Operating Company, San Leandro, CA

- Mechanical, thermal, and radiation design and analysis of fuel loading, neutron transport, fission criticality, reactor control, gamma-ray shielding, and heat transfer from a proposed 100-Megawatt thorium-powered nuclear reactor for production of electricity, steam, and hydrogen fuel.

2003 – Present Senior Physicist: Los Gatos Research Inc., Mountain View, CA

- Developed and validated algorithms for ultra-sensitive CH_4, CO_2, CO, HF, and O_2 gas concentration and isotope ratio measurements using Integrated Cavity Output Spectrometer (ICOS) technique.

2003 – Senior Research Scientist: Bay Area Environmental Research Institute, NASA Ames Research Center, Moffet Field, CA

- Analysis of optical properties, and potential effects on global climate, of smoke, dust and clouds measured by airborne cavity ringdown spectrometer (CRDS) during the DOE Aerosol Intensive Operating Period field experiment.
- Software and electronics development, calibration and characterization for NASA Ames Earth Science Division's Cadenza II CRDS airborne spectrometer for aerosol science.

2000 – 2003 Research Scientist: Picarro Incorporated, Sunnyvale, CA

- Developed spectral methods to measure stable carbon isotope ratio in air; implemented algorithms in Matlab; wrote intellectual property documents on the patentable aspects of these algorithms.
- Designed and simulated the optical train and assembly protocol of a high-precision, 40mm footprint, telecom laser infrared wavemeter; led prototype team of

2 scientists and 2 engineers to build, test, and certify the first 12 prototypes; wrote intellectual property documents for this prototype.

1993 – 2000 Free Electron Laser/Superconducting Accelerator Center, Stanford University, Stanford, CA

- Developed new femtosecond electronic and optical diagnostics for relativistic electron beams in a linear accelerator and a far-infrared free electron laser (FEL). Made the first direct observations of FEL-induced microbunching in a relativistic electron beam. Designed, built, and characterized a Fourier-transform infrared (FTIR) spectrometer for the far-infrared and submillimeter wavelength ranges, including development of cryogenically cooled detectors, optical filters, attenuators, beamsplitters, electrical amplifiers, and high vacuum systems.

1990 – 1993 Defense Meteorological Satellite Program, The Aerospace Corporation, El Segundo, CA

- Wrote software based on boundary layer fluid dynamics theory to derive the marine surface wind velocity field from satellite microwave image data; evaluated this model by comparing it to field measurements.

1992 – 1993 MIT, Research Lab for Electronics, Cambridge, MA

- Developed a heterodyne technique to measure the power, phase, and frequency characteristics of a pulsed high-power free-electron laser microwave amplifier. Used scintillation detectors to measure X-ray flux from high-current MeV electron beam, and to optimize lead shielding geometry for instruments and personnel.

Selected Publications

E.R.Crosson, K.N. Ricci, B.A. Richman, A.A. Kachanov, F.C. Chilese, T.G. Owano, R.A. Provencal, M.W. Todd, J.M. Glasser, B.A. Paldus, T.G. Spence, and R.N. Zare, "*Stable isotope ratios using cavity ring-down spectroscopy: determination of 13C / 12C for carbon dioxide in human breath*," Analytical Chemistry, vol. 74, No. 9, 2002.

K.N. Ricci, T.I. Smith, "*Longitudinal electron beam and free electron laser microbunch measurements using off-phase RF acceleration*," Physical Review AB, vol. 3, p. 32801, (2000).

K.N. Ricci, E. R. Crosson, T. I. Smith, "*Direct measurement of electron bunch shapes and coherent undulator radiation produced by 100 femtosecond structure*," Nuclear Instruments and Methods, Section A, vol. 445, p. 333, 2000.

K.W. Berryman, E.R. Crosson, K.N. Ricci and T.I. Smith. "*Coherent spontaneous radiation from highly bunched electron beams*," Nuclear Instruments and Methods, Section A, vol. 375, p. 526, 1996.

G. Bekefi, K. Ricci, P. Volfbeyn, and B. Chen. "*Observations of frequency chirping and phase of a free electron laser amplifier*," Nuclear Instruments and Methods, Section A, vol. 341, p. 119, 1994.

Selected Conference Presentations

K.N. Ricci, T.I. Smith and E.R. Crosson. "*Electron bunch profile measurements with 300 femtosecond resolution*," Proceedings of the Twentieth International FEL Conference, 1998.

K.N. Ricci, T.I. Smith, and E.R. Crosson. "*Sub-picosecond electron bunch profile measurements using magnetic longitudinal dispersion and off-phase RF acceleration*," AIP Conference Proceedings: Advanced Accelerator Concepts Workshop, 1998.

K.N. Ricci, E.R. Crosson, and T.I. Smith, "*Longitudinal electron bunch measurements using transition radiation in vacuum*," Proceedings of the Eighteenth International FEL Conference, 1996.

D.J. Boucher, K.N. Ricci, A. Kishi. "*A simple model for deriving ocean surface wind direction from the DMSP Special Sensor Microwave Imager*," Proceedings of the International Geoscience and Remote Sensing Symposium, vol. 3, p. 1704, 1996.

P. Volfbeyn, G. Bekefi, K. Ricci. "*Measurement of the temporal and spatial phase variations of a pulsed free electron laser amplifier*," IEEE Transactions of Plasma Science, vol. 22 p. 659, 1994.

K. Ricci, P. Volfbeyn, and G. Bekefi. "*Observation of frequency, phase and saturation characteristics of a Raman free electron laser amplifier*," IEEE Abstracts: Conference on Plasma Science p. 174, 1993.