BENTLEY, Cleo L. Jr.
PRAIRIE VIEW A&M UNIVERSITY

EDUCATION

B.S., Howard University-Physics, 1968
M.S., Howard University-Physics, 1972
Ph.D., Howard University-Physics, 1974

PROFESSIONAL EXPERIENCE

Physics Professor, Department of Physics, Prairie View A&M University currently,
Professor & Head, Department of Physics, Prairie View A&M University, 1982-2001,
Visiting Professor, Texas A&M Univ., Bridge to Medicine Program, Summers 1986-1989.
Owner, Hiota Chemical Co., Houston, 1981-82
Assistant Professor of Physics, Texas Southern University, 1976-81
Member Technical Staff, Aerospace Corporation, Los Angeles, CA, 1977-80, (Summers and Holidays)
Assistant Prof. of Physics, Fed. City Col. (now U. D.C.) Washington, D.C., and Math Coordinator at NIH, 1974-76
Assistant Professor of Physics, Howard University, 1975-76 (Summers)
Math Coordinator - Federal City College (at National Institute of Health,) Bethesda,M.D., 1972-74.
Computer Programmer, IBM, Gaithersburg, M.D., 1972 (Summer)and E., former Engineer, East Fishkill, NY summer 1968.
Associate Engineer, Raytheon Missile Systems, Andover, Mass., 1969
Instructor of Physics, Michigan State University, 1968

PROFESSIONAL AFFILIATIONS

Sigma Pi Sigma; Pi Mu Epsilon; Phi Beta Kappa; Beta Kappa Chi; Outstanding Young Men of America (U.S. Joycees, 1981); One of three faculty to receive the Academic Excellence Award at the 110th Year Anniversary Celebration of Prairie View A&M U. on 10/10/88, former department head awards 2001 and 2006.

RECENT RESEARCH

-- Educational research on an "astronomical atom" model to visually convey electron configuration and behavior for SPDF sub shells other than by probability clouds.

Collaborating Principal Investigator - TARP - Lasing without Population Inversion (1993-1995),Short Wavelength Lasing via Lasing without Inversion (1996-1998), and recently Electromagnetically induced transparency and lasing without inversion in rare-earth ions (2000-2002). From two experiments at Houston Advanced Research Center using a ladder atom medium spontaneous emission modification by quantum interference was observed for the first time. A sodium beam was employed first with a coherent drive

and incoherent pump laser fields, then with two coherent drive fields to obtain a central dip in a usual central peak of a spontaneous emission spectrum in a weak field regime. Corresponding theoretical models have been developed analytically from fundamental concepts, with results in close agreement with the experimental results. Several papers have been published in refereed journals.

Other research is in optics on "Experimental Verification of Theoretical Optimizing Pupil Functions", as well as on refining for publication some theoretical work on finding an apodizing pupil function which gives the maximum central irradiance in the image plane for specified over-all transmittance and specified Sparrow limit of resolution for coherent illumination.

Principal Investigator - SERI (DOE) Solar Wind Energy Contract - 1983-1988 Software and Math Model development of tower modal frequencies (to include MICRORAY, MICROGUY, and MICRORITZ, software development) and tower wake studies (to include several TAMU Wind Tunnel tests).

Principal Investigator - Department of Education Grant-1983-1985-"Development of Microcomputer-Based Laboratory Studies in Physics and Chemistry". Study to compare and enhance students' experiences in physics and chemistry through a timely introduction of numerous microcomputers into laboratories and other settings including student, faculty, staff workshops.

Investigator - NASA Grant-1985-1989-To develop environment and study the effects of atomic oxygen on a variety of shuttle spacecraft materials. Grant with Dr. Wang (Physics) and Dr. Tang (TAMU). Investigator - NASA, DOE, NSF - 1995- present-Solar and Space physics grants with Dr. T.S. Huang.

Session Chair of the local field effects session in the Summer Conference on Quantum Optics, Jackson Hole, Wyoming, August 1998.

Some Teaching Experiences--C. Bentley has taught at six universities: Howard University (Wash., D.C.), Michigan State, Federal City College (now U.D.C. in Wash., D.C.), TSU (Houston), Texas A&M U. and Prairie View A&M U. Lectured at the Quantum Optics Summer schools at Casper College, Casper, Wyoming, in August 1995, 1996, and 1997. Physics Department Head at Prairie View from 1982 - 2001.

For years as the Physics Department Head,carried-out daily administrative, word processing, and typing chores, to include student registration (now from department computers) and advisement, faculty rank-promotion-tenure processing, semester book requests, curriculum planning, space allocations, recruitment activities, class scheduling, self-study report development, writing recommendations for numerous students, accreditation support for several colleges, coordinating board-level course inventory updating, purchasing and budgeting, raise recommendation cycling, faculty contracts, Form 500's, writing recommendation letters, counseling for student or faculty grievances,

repairing lab equipment and furnishings, inviting guest speakers, giving and hosting seminars, filling out scholarship forms and senior graduation forms, participating in numerous New Science Building meetings, answering surveys, proposal and paper writing and editing, reading and signing paper, teaching several physics classes a semester, and the like. Graduated 20 physics majors during the 1990's. Several papers by Physics faculty were published in referred journals. Physics undergraduate summer interns at Princeton, 3M, Fermilab, Stanford, and the like. Provided donuts, popcorn and apple juice for physics seminars. Torch Bearer PVAMU 1995.

SOME RECENT PUBLICATIONS

1. Alexey Belyanin, Cleo Bentley, Federico Capasso, Olga Kocharovskaya, and Marlan O. Scully, "Inversionless lasing with self-generated driving field," Physical Review A., Vol. 64, 013814, June 2001.

2. C.L. Bentley, Jr., Jiaren Liu, Yan Liao, "Cavity EIT of driven Lambda three-level atoms: A transparent window narrowing below a natural width," Physical Review A, Vol. 61, February 2000.

3. C.L. Bentley, Jr., Jiaren Liu, "LWI in a driven Lambda three-level atom and effects of the probe laser on EIT," October 1999, Vol. 169, Optics Communications, pp. 289-299.

4. S. Alam, and C. Bentley, "Equation for Nonlinear Optical Propagation Beyond the Paraxial Approximation," SPIE Proceedings 3418 (Optical Beam Characterization and Measurements), November 1998

5. S. Alam, and C. L. Bentley, Jr., "Model for Trapped Ion Interacting with Standing Wave via Gauge-Like Transformations," April 1998, Vol. 99 No. 4, J. Progress of Theoretical Physics of Japan, pp. 577-583.

6. S. Alam, and C. L. Bentley, Jr., "The Relevant Operators for the Generalized Time-Dependent m-Photon Jaynes-Cummings Hamiltonian," August 1997, Vol. 98 No. 2, J. Progress of Theoretical Physics of Japan.

7. Jiaren Liu, C. L. Bentley, Jr., George Welch, and Olga Kocharovskaya, "Time-Dependent Exact Solution of Resonance Fluorescence," in progress.

8. Jiaren Liu, C.L. Bentley, Jr., "Spontaneous emission modification via quantum interference," The 28th Winter Colloquium on the Physics of Quantum Electronics in Snowbird, Utah, Jan. 1988.

9. Jiaren Liu, C.L. Bentley, Jr., "Calculation of Instantaneous Mandel Q Factor of Fully Quantum-Mechanical Resonance Fluorescence," The Summer Conference on Quantum Optics in Jackson Hole, Wyoming, August 1998.

10. Hu Huang, C.L. Bentley, Jr., and M.O. Scully. "Atom-Atom Correlation and the Limit of Mean Field Theory of Near Dipole-Dipole Interaction in a Dense Medium," PVAMU E&A Symposium Proceedings, Vol II, 1995, pp. 405-409.