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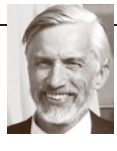

Chapters 1, B.12

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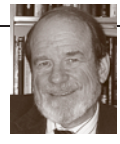

Chapters 1, B.11

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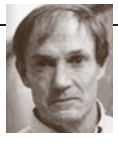

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Chapter D.53

Professor Manson is on the faculty at Georgia State University. He received the Ph.D. from Columbia University in 1966, and did a two-year post-doc at the NBS (now NIST) working with Ugo Fano and John Cooper. He started as a faculty member at Georgia State University in 1968 and has been Regents Professor since 1984. His research has been primarily in the area of theoretical studies of ionization of atoms and ions by charged particles and photons. He is a Fellow of the American Physical Society.

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Chapter B.10

Dr. Martin's research has included the measurement and energy-level analysis of atomic spectra. He has also published a number of critical compilations of atomic spectroscopic data, including a large volume for the rare-earth elements. In his current position as Scientist Emeritus at NIST, Dr. Martin is continuing work on internet-accessible atomic spectra databases.

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Chapter D.52

Jim McCann was a Ph.D. student of Prof. Derrick Crothers at Queen's University, Belfast. He is currently a Reader in Theoretical Physics at Queen's and works in the field of Quantum Optics and Quantum Information Processing.

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Chapter D.51

Ronald McCarroll is a Professor of Physics at the Université Pierre et Marie Curie in Paris. He obtained his Ph.D. degree in Theoretical Physics at Queen's University, Belfast. After a post-doctoral fellowship at the National Physics Laboratory, Teddington and a Lectureship at Queen's University, Belfast he was appointed as a Directeur de Recherche au CNRS at the Observatoire de Pari, Meudon. Later, he moved to the Université de Bordeaux I as Professor in Astrophysics and finally to Paris as Professor in Physics at the Univerité Pierre et Marie Curie. He has worked in the field atomic and molecular photodynamics, particularly in view of their application to astrophysics and the physics of fusion plasmas. He is the author of more then 130 papers in refereed journals and contributed more than 20 specialised reviews to books and other specialised publications.

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Chapter D.52

Dr. Fiona McCausland gained her Ph.D. in Theoretical Physics in 1995 from the Queen's University of Belfast. Following a year spent as a Post Doctoral Research Assistant at the University, she joined the Northern Ireland Civil Service in September 1996. She currently holds the position of Project Manager in the Department of Enterprise, Trade and Investment.

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Chapter E.63

Dr. Bill McConkey is a physicist with an extensive background in the measurement of absolute cross section data for the atomic, molecular, and optical physics community. His laboratory is recognised as a world leader in electron collisions research. He has been awarded the Gold Medal of the Canadian Association of Physicists (1999) and the Allis Prize of the American Physical Society (2004) for his work.

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Chapter D.48

Professor McEachran received his Ph.D. from the University of Western Ontario, Canada and then spent two years at the University College London (England) before joining York University in Toronto in 1964. In 1997 he accepted an Adjunct Professorship at the Australian National University. His current research interests are the theoretical treatment of electron/positron scattering from heavy atoms within a relativistic framework.

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Chapter D.57

Dr. McGuire is Murchison Mallory Chair and department chair at Tulane University. He is a past Chair of the Division of Atomic, Molecular and Optical Physics (DAMOP) of the American Physical Society. His research interests are in electron correlation dynamics. entanglement, complexity and correlation, and quantum time.

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Chapter F.79

Professor Dieter Meschede teaches at the Institute for Applied Physics in Bonn. After his studies in Hanover and Cologne and having been awarded his Dr. rer. nat in Munich in 1984, he first worked at Yale University. Then he became senior scientist at the MPI for Quantum Optics, Garching. He has been Professor of Physics since 1990, first in Hanover, since 1994 in Bonn. Professor Meschede is author of "Optics, Light, and Laser", some 90 refereed articles, and, since 2001, editor of the "Gerthsen"textbook.

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Chapter F.68

Pierre Meystre's research ranges from laser theory to cavity QED and to the physics of quantum-degenerate atomic and molecular systems. With Murray Sargent, he coauthored the textbook "Elements of Quantum Optics,"and he recently published the monograph "Atom Optics", both with Springer-erlag. He has been awarded the Senior Scientist Research Prize of the Humboldt Foundation and the R.W. Wood Prize of the Optical Society of America. He is currently a Regents Professor and the Head of the Physics Department at The University of Arizona.

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Chapter F.70

Peter Milonni is a Laboratory Fellow (retired) at Los Alamos National Laboratory. His main interests are in theoretical physics, especially quantum optics and electrodynamics. He is an author of several books including Lasers (with J. H. Eberly), The Quantum Vacuum, and Fast Light, Slow Light, and Left-Handed Light. Previously he held positions with the U. S. Air Force, the Perkin-Elmer Corporation, and the University of Arkansas.

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Dr. Peter Mohr received his Ph.D. from the University of California at Berkeley in 1973 and spent some years at the Lawrence Berkeley Laboratory (1973–1978), at Yale University (1978–1985), at the National Science Foundation (1985–1987), and at the National Bureau of Standards/ National Institute of Standards and Technology from 1987 until now. He is a Fellow of the American Physical Society, and received the Alexander von Humboldt Senior Research Award in 1995. He held the Chair of the CODATA Task Group on Fundamental Constants from 1999 to 2006 and was Chair of the Precision Measurement and Fundamental Constants Topical Group of the American Physical Society from 2000–2001.

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Chapters B.20, G.90

Dr. Morgan is Associate Professor and obtained his B.S. from The George Washington University, his M.Sc. in Theoretical Chemistry from Oxford University, and his Ph.D. in Chemistry from Berkeley. He has served on the editorial boards of the Journal of Mathematical Physics and the International Journal of Quantum Chemistry. His wide-ranging interests include the application of sophisticated mathematical techniques to assist the accurate calculation of properties of atoms and molecules.

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Chapter G.86

Dr. Murillo received his Ph.D. in theoretical atomic and plasma physics from Rice University. He then received a Director's Postdoctoral Felloship at Los Alamos, where he has remained since. His current research interests lie in the areas of dense and strongly coupled plasmas, including laser-produced plasmas, dusty plasmas, astrophysical plasmas, and ultracold plasmas. He applies both analytical and molecular dynamics methods to these systems.

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Chapter D.49

Professor, Nikitin Evgueni is a researcher, head of the research group, and Professor of Chemical Physics at the Institute of Chemical Physics, Moscow, since 1958. He is also Professor of Physical Chemistry, Technion, Haifa, since 1991. He is a member of the Deutsche Akademie der Naturforscher Leopoldina, the European Academy of Arts, Sciences and Humanities, and the International Academy of Quantum Molecular Sciences. His research concentrates on the theory of inelastic and reactive scattering, theory of nonadiabatic processes, statistical theory of chemical reactions, and atom-molecule processes at low energies. He authored 15 books and about 300 papers. Research awards: Alexander von Humboldt Award, Gauss Professorship, and Barecha Fellowship

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Chapter F.78

Professor O'Connell earned his Ph.D. in 1962 from the University of Notre Dame, Indiana. For many years , in collaboration with G. W. Ford , he has been studying dissipative and fluctuation phenomena in quantum mechanics and related applications. In addition, he is using the generalized quantum Langevin equation to explore recent topical questions in non-equilibrium statistical mechanics (particularly claims that the fundamental laws of thermodynamics may be violated in the quantum regime).

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Chapter D.52

Dr. O'Rourke obtained her Ph.D. in Ion-Atom Collisions from Queens University, Belfast, in 1991. She now lectures in Applied Mathematics and Theoretical Physics at Queens University, Belfast. Her current research interests include heavy particle collisions in atomic and molecular physics and more recently mathematical modelling in Biomedicine.

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Chapter D.58

Ronald E. Olson, Curators' Professor of Physics earned his Ph.D. from Purdue University in 1967. He is a Fellow of the American Physics Society and a Fulbright Fellow to France. He was received the Humboldt Senior Prize Award, the University of Missouri system-wide Presidential Award for Research and Creativity. His research interests concentrate on theory of elastic and inelastic total and differential scattering cross sections: atom–atom, ion–atom, and ion–ion. Studies of multiply charged ion–atom collisions, Rydberg atom collisions, negative ion detachment mechanisms, and Penning and associative ionization.

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Chapter C.43

Dr. Barbara Paldus received her Ph.D. in electrical engineering from Stanford University. She is a partner at Skymoon Ventures, where she works with early stage photonics companies. Previously, she was CTO at Picarro, which she founded in 1998. She has received numerous research awards, most recently the Adolph Lomb Prize (2001) by the OSA for her work in cavity ring-down spectroscopy.

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Chapters A.4, A.5

Josef Paldus, FRSC, is a Distinguished Professor Emeritus in the Department of Applied Mathematics, Department of Chemistry, and Guelph-Waterloo Center for Graduate Work in Chemistry – Waterloo Campus, at the University of Waterloo, Waterloo, ON Canada. He is also an Adjunct Professor in the Department of Chemistry of the University of Florida in Gainesville, FL, USA. He received his Ph.D. degree from the Czechoslovak Academy of Sciences and his RNDr. and Dr.Sc. degrees from the Faculty of Mathematics and Physics of the Charles University in Prague, Czech Republic. His research interests are in the methodology of quantum chemistry, the many-electron correlation problem, and the electronic structure of molecular systems in general. On these topics he published about 300 papers, reviews, and monograph chapters. He is a member of several professional societies and editorial boards, and received various awards and international fellowships, notably a Killam Fellowship, Institute for Advanced Study in Berlin Fellowship, Alexander von Humboldt Senior Scientist Award, and most recently a Gold Medal of the Charles University. He is also a Fellow of the Royal Society of Canada and of the Fields Institute for Research in Mathematical Sciences.

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Chapter D.52

Ruth Pedlow is working towards completion of her Ph.D. in heavy particle collisions in atomic and molecular physics at Queens University of Belfast.

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Chapter E.60

Currently I am investigating the structure and dynamics of atomic and molecular negative ions by studying how they interact with photons and electrons. The threshold behaviour and resonance structure in detachment cross sections are used to measure correlation-sensitive parameters. Experiments on photo detachment involve the use of lasers or synchrotron radiation. Such measurements, for example, lead to information on the process of multiple electron detachment induced by the absorption of a single photon. Electron-impact detachment and dissociation processes are studied using a magnetic storage ring. These studies, for example, yield information on the production and decay of doubly negative charged molecular and cluster negative ions.

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Chapter B.30

Dr. Ekkehard Peik received his doctorate and the habilitation in physics at the University of Munich. His research interests are in the fields of laser-cooling and trapping of atoms and ions, precision laser spectroscopy and the application to optical time and frequency metrology and tests of fundamental physics. He is now head of the group 'Optical Clocks' at PTB and also a lecturer at the University of Hannover.

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Chapter E.64

Professor Phaneuf received a Ph.D. in atomic physics from the University of Windsor in 1973 and has since been engaged in experimental research on interactions of ions with electrons, atoms, molecules and photons using merged-beams and crossed-beams techniques. He was formerly at JILA and Oak Ridge National Laboratory. His current research emphasis is photon–ion interactions using synchrotron radiation.

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Chapter B.18

Eric Pinnington obtained his Ph.D. in Physics at Imperial College in 1962. Prior to joining the University of Alberta in 1965, he held an NRC postdoctoral fellowship at McMaster University in Hamilton, Ontario, and an Alexander von Humboldt Fellowship at the Max Planck Institute for Astrophysics in Munich. He was elected Fellow of the American Physical Society in 1995. He became Professor Emeritus of Physics in 1997.

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Chapter F.71

Powell was educated in physics at the United States Naval Academy and Arizona State University. He has been a research scientist and professor at Air Force Cambridge Research Laboratories, Sandia National Laboratory, and Lawrence Livermore National Laboratory, Oklahoma State University and the University of Arizona. He has authored two textbooks and over 260 scientific papers in laser spectroscopy and solid-state laser development. Powell is an elected Fellow of both the American Physical Society and the Optical Society of America and has served a President of OSA. He has been elected to the Russian Academy of Engineering Science.

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Chapter D.50

Professor Reading earned his Ph.D. from the University of Birmingham, UK, in 1964. His current research interests are in theoretical calculations of cross sections for excitation and ionization following fast ion–atom collisions, the role of Pauli correlation in inner-shell vacancy production, and the role of dynamic electronic correlation. The latter especially in comparision of proton and anti-proton-induced single and double ionization of helium. He was named The Distinguished Texas Scientist of 1995 by the Texas Academy of Sciences and is Editor of the proceedings of several conferences on ion–atom collisions.

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Chapters B.27, B.29

Dr. Sapirstein earned his Ph.D. from Stanford University in 1979. He did postdoctoral work at UCLA and Cornell, and is at the University of Notre Dame, Indiana, since 1984. Current research interest in parity non-conservation in atoms, QED effects in highly charged many-electron ions, QED calculations in hydrogen, positronium, muonium, and helium. Dr. Sapirstein is a Fellow of the American Physical Society.

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Chapter F.81

Stefan Scheel received his Ph.D. (Dr. rer. nat.) from the Friedrich-Schiller-University Jena in 2001. He is an EPSRC Advanced Research Fellow in the Quantum Optics and Laser Science group in the Department of Physics at Imperial College London. His main research areas include QED in dielectric materials, quantum information processing using linear optics, and decoherence processes in atom chip experiments.

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Chapter F.79

Professor Schenzle has been working on various aspects of Theoretical Quantum Optics, the description of classical and quantummechanical noise in microscopic and mesoscopic systems, Bose–Einstein-Condensation, Quantum Information Theory, qunatum computing and decoherence. He has been Deputy Rector of the University of Munich and Dean for many years.

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Chapter C.34

Dr. Reinhard Schinke received his Ph.D. from the Physics department of the University of Kaiserslautern in 1976. His main area of research is molecular dynamics, in particular energy transfer in atomic collisions, chemical reactions, and photodissociation. He is author of the book Photodissociation Dynamics. In recent years his interest shifted to dynamical investigations of recombination processes with particular emphasis on the ozone isotope effect.

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Chapter F.78

Prof. Schleich studied physics and mathematics at the Ludwig-Maximilians-Universität München where he obtained his Diplom, Doktor, and Habilitation. He worked at the University of New Mexico (Albuquerque) and University of Texas (Austin) and the Max-Planck Institut für Quantenoptik in Garching. Since 1991 he has held a chair of theoretical physics at the Universität Ulm. He has more than 200 publications, is a Fellow of APS, IOP and OSA and an elected member of the Heidelberger Akademie der Wissenschaften and the Leopoldina, and has received numerous awards including the Leibniz Prize and the Max-Planck Prize.

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Chapter E.65

Professor Dr. Michael Schulz received his Ph.D. in Physics from the University of Heidelberg in 1987 to become a Teaching Assistant from 1981–1987. After positions at Oak Ridge National Laboratory and Kansas State University he joined the University of Missouri-Rolla as Assistant Professor in 1990. Since 2002 he is Professor of Physics and since 2003 Director of the Laboratory for Atomic, Molecular, and Optical Research. His scientific concentrate on experimental atomic physics, dynamics of many-body problem, correlation effects, and three-dimensional imaging of atomic break-up processes. He is a Fellow of the American Physical Society and was Mercator Scholar 2004–2005.

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Chapter C.44

Peter L. Smith received his Ph.D. degree in Physics from Caltech in 1972 and, after a year of teaching, came to and stayed at the Harvard-Smithsonian Center for Astrophysics. He is involved in measurements of fundamental atomic and molecular parameters at ultraviolet wavelengths for analysis of astronomical spectra, and design and calibration of instruments for ultraviolet spectroscopic and/or radiometric measurements, especially of the Sun, from earth-orbiting satellites.

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Chapter B.24

Dr. Starace earned his Ph.D. from the University of Chicago in 1971 and is George Holmes University Professor of Physics at the University of Nebraska since 2001. His primary research interests concern the interaction of intense laser light with atoms, especially single and multiphoton detachment and ionization processes. He is a Fellow of the American Physical Society and the American Association for the Advancement of Science, and is currently an Associate Editor of Reviews of Modern Physics.

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Chapter C.44

Professor Stark's research interest is in the field of experimental molecular spectroscopy. His laboratory programs emphasize molecular transitions of interest to the astrophysics and aeronomy communities, primarily involving the measurement and interpretation of high-resolution absorption spectra of vacuum ultraviolet and extreme ultraviolet transitions. Related activities include Fourier transform spectroscopy of diatomic molecules, and laser spectroscopies of diatomics.

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Chapter D.48

Allan Stauffer has published numerous papers in the field of electron and positron scattering from atoms and simple molecules. In collaboration with numerous colleagues, he has been involved with extensive scattering calculations and developed methods to carry out these investigations and has worked closely with groups involved in measuring these processes.

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Chapter F.80

Aephraim Steinberg works on experimental quantum optics and laser cooling, with specific emphasis on foundational questions in quantum mechanics (esp. quantum measurement) and on quantum information. His obssession is with tunneling times; in 1994, he demonstrated (with Kwiat and Chiao) the superluminal tunneling of photons, and in 2005, he is starting an experiment to probe tunneling times for Bose-condensed atoms through optical barriers.

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Chapter F.69

Stig Stenholm was Pprofessor of Laser Physics and Quantum Optics at the Royal Institute of Technology, Stockholm. He studied Technical Physics at the Helsinki Institute of Technology and Mathematics at the University of Helsinki. He worked at the Research Institute for Theoretical Physics in Helsinki until 1997, when moving to Stockholm. Theoretical research fields include spectroscopy, quantum optics, and informatics

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Chapter D.57

Jack Straton earned a doctorate in quantum theory from the University of Oregon and served as both a volunteer and professional diversity trainer over the past 18 years. He is an Assistant Professor in Portland State University's interdisciplinary University Studies program, where his teaching blends science, art, diversity, and social responsibility. His research ranges from Quantum Scattering Theory to Anti-racist Pedagogy.

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Chapter F.73

Professor Stroud is Professor of Optics, Professor of Physics and Director of the Center for Quantum Information at the University of Rochester where he works in a variety of areas of experimental and theoretical quantum optics and atomic physics. His group pioneered the area of Rydberg electron wave packet physics observing localization, decays, revivals and interferometry with a single electron.

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Chapter B.28

Barry N. Taylor received his Ph.D. in Physics from the University of Pennsylvania in 1963. He remained at Penn as a faculty member until he joined RCA Laboratories in Princeton, NJ in 1966. He joined the National Bureau of Standards (now NIST) in 1970 as a Section Chief in the Electricity Division, becoming its Chief in 1974. In 1988 he became manager of the NIST Fundamental Constants Data Center, retiring from NIST and that position in 2001. Since then he has been a NIST Scientist Emeritus in the Data Center. Dr. Taylor has authored or co-authored over 100 publications, is a fellow of the APS and IEEE, and has received a number of awards. His current research focuses on the evaluation of data related to the fundamental constants and improving the International System of Units (SI).

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Chapter B.25

Dr. Temkin is a research physicist (emeritus) at NASA/GSFC. He has specialized (primarily) in scattering problems of electrons from atoms and molecules, and associated processes (autoionization, in particular). He received his Ph.D. degree from the Massachusetts Institute of Technology in 1956, and has been at his present institution since 1960.

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Dr. Sandor Trajmar received his Ph.D. in physical chemistry from the University of California at Berkeley, California,. He was Head of the Electron collision Physics Group, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California. He retired in January 1997.

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Chapter B.18

Professor Elmar Träbert obtained his doctorate and professorial title at Ruhr-Universität Bochum. He has extensive experience in time-resolved spectroscopy and atomic lifetime measurements mainly from working with beam-foil spectroscopic techniques, a heavy-ion storage ring, as well as radio-frequency and electron beam ion traps in more than a dozen laboratories.

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Chapter B.15

Professor Turgay Uzer obtained his doctorate at Harvard and was a postdoctoral fellow at Caltech. Currently he is Regents' Professor in the School of Physics, Georgia Institute of Technology. His research interests include: Rydberg atoms and molecules, semiclassical theories, nonlinear dynamics/chaos, intramolecular energy transfer, and chemical reactivity.

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Chapter F.78

Dr. Vogel received his PhD from the Universität Ulm in 1989. His research area is theoretical quantum optics. In particular, he investigated how quantum states of the radiation field can be prepared and how they can be measured.

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Chapter G.86

Jon Weisheit recently joined Washington State Universtity's Intstitute for Shock Physics, where he holds appointments as Research Professor and Associate Director, and conducts research focused on understanding quantum phenomena in high energy density matter. He is a Fellow of the American Physical Society, and is a frequent advisor in government agencies on issues pertaining both to basic science and to national defense programs. Her received his graduate degrees in space science and in physics from Rice University.

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Chapter B.10

Dr. Wolfgang Wiese is a physicist with extensive research background in atomic spectroscopy and in the critical tabulation of atomic reference data. He has worked at the National Institute of Standards and Technology for more than 40 years and has led the Atomic Physics Division from 1978 to 2004. He has authored 6 data volumes on Atomic Transition Probabilities, 15 book chapters and about 225 shorter research papers.

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Chapter F.77

Dr. Martin Wilkens received a Ph.D. In Physics from Essen University. He spent his post-doctoral years in Warsaw, Tucson, and Konstanz and has been appointed Professor for Theoretical Physics / Quantum Optics at Potsdam University in 1997. His current research areas are Bose-Einstein condensation, degenerate quantum gases, and quantum information processing and communication.