

GEORGE ROBERT WELCH

Professor

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PROFESSIONAL PREPARATION

Texas A&M University, Bachelor of Science, *summa cum laude*, in physics, 1979.

Massachusetts Institute of Technology, Doctor of Philosophy in physics, 1989.

APPOINTMENTS

2004-present: Professor of Physics. Texas A&M University, College Station, Texas.

1998-2004: Associate Professor of Physics. Texas A&M University.

1992-1998: Assistant Professor of Physics. Texas A&M University.

1989-1992: Research Associate, Duke University, Durham, North Carolina.

1979-1989: Research Assistant, Massachusetts Institute of Technology, Cambridge, Massachusetts.

SELECTED PUBLICATIONS:

“Heterodyne coherent anti-Stokes Raman scattering for spectral phase retrieval and signal amplification,” Xi Wang, Aihua Zhang, Miaochan Zhi, Alexei V. Sokolov, George R. Welch, and Marlan O. Scully, *Opt. Lett.* **35** 721-723, 2010.

“Glucose concentration measured by the hybrid coherent anti-Stokes Raman-scattering technique” Xi Wang, Aihua Zhang, Miaochan Zhi, Alexei V. Sokolov, and George R. Welch, *Phys. Rev. A* **81** 013813, 2010.

“Gain-swept superradiance applied to the stand-off detection of trace impurities in the atmosphere,” V. Kocharovskiy, S. Cameron, K. Lehmann, R. Lucht, R. Miles, Y. Rostovtsev, W. Warren, G. R. Welch, and M. O. Scully, *Proceedings of the National Academy of Science*, **102**, 7806-7811, 2005.

“Visible and UV coherent Raman spectroscopy of dipicolinic acid” Dmitry Pestov, Miaochan Zhi, Zoe-Elizabeth Sariyanni, Nikolai G. Kalugin, Alexandre A. Kolomenskii, Robert Murauski, Gerhard G. Paulus, Vladimir A. Sautenkov, Hans Schuessler, Alexei V. Sokolov, George R. Welch, Yuri V. Rostovtsev, Torsten Siebert, Denis A. Akimov, Stefanie Graefe, Wolfgang Kiefer, and Marlan O. Scully, *Proceedings of the National Academy of Science*, **102**, 14976-14981, 2005.

“Large negative and positive delay of optical pulses in coherently prepared dense Rb vapor with buffer gas” Eugeny E. Mikhailov, Vladimir A. Sautenkov, Irina Novikova, and George R. Welch, *Phys. Rev. A* **69**, 063808, 2004.

OTHER PUBLICATIONS:

“Controlled parametric generation in a double-ladder system via all-resonant four-wave mixing,” Paul S. Hsu, Anil K. Patnaik, and George R. Welch, *Opt. Lett.* **33**, 381 (2008).

“Ultra-Slow Light and Enhanced Nonlinear Optical Effects in a Coherently Driven Hot Atomic Gas,” M. M. Kash, V. A. Sautenkov, A. S. Zibrov, L. Hollberg, G. R. Welch, M. D. Lukin, Y. Rostovtsev, E. S. Fry, M. O. Scully, *Phys. Rev. Lett.* **82**, 5229 (1999).

“Magnetometry in dense coherent media,” I. Novikova and G. R. Welch, *Journal of Modern Optics* **49** 349–358 (2002).

“Nonlinear magneto-optical rotation of elliptically polarized light,” A. B. Matsko, I. Novikova, M. S. Zubairy, and G. R. Welch, *Phys. Rev. A* **67**, 043805 (2003).

“Large polarization rotation via atomic coherence,” I. Novikova, A. B. Matsko, and G. R. Welch, *Opt. Lett.* **26** 1016 (2001).

SYNERGISTIC ACTIVITY

2003: Fellow, Optical Society of America

1999: Member of team demonstrating ultra-slow light in warm atomic gases. 1995: Member of team demonstrating lasing without inversion in atomic sodium vapor.

COLLABORATIONS AND OTHER AFFILIATIONS

1994–1997 Associate, Texas Laser Lab, Houston Advanced Research Center, The Woodlands, Texas.

Frank A. Narducci, Naval Air Systems Command, Patuxent River, Maryland

Vladimir A. Sautenkov, Texas A&M University, College Station, Texas

Yuri V. Rostovtsev, Texas A&M University, College Station, Texas

Olga Kocharovskaya, Texas A&M University, College Station, Texas

Marlan O. Scully, Texas A&M University, College Station, Texas

M. Suhail Zubairy, Texas A&M University, College Station, Texas

Vladimir L. Velichansky, Lebedev Physics Institute, Moscow, Russia

Edward S. Fry, Texas A&M University, College Station, Texas

G. G. Padmabandu, Cymer Laser, San Diego, California

Mikhail D. Lukin, Harvard University, Cambridge, Massachusetts

Michael M. Kash, Lake Forest College, Lake Forest, Illinois

Irina Novikova, ITAMP, Harvard University, Cambridge, Massachusetts

Eugeny E. Mikhailov, LKIGO, MIT, Cambridge, Massachusetts

Aihua Zhang, Texas A&M University, College Station, Texas

GRADUATE AND POSTDOCTORAL ADVISORS

Daniel Kleppner, Massachusetts Institute of Technology, Cambridge, Massachusetts

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