

Kevin Repasky

Electrical and Computer Engineering
Cobleigh Hall Room 610
Montana State University
Bozeman, MT 59717
Telephone: (406) 994-6082
E-mail: Repasky@ece.montana.edu

Education

Bachelor of Engineering in Mechanical Engineering, 1987
Youngstown State University

MS in Physics, 1992
Montana State University

Ph.D. Physics, 1996
Montana State University

Employment

Analytical Engineer, 1988-1989

Involved with the design development and testing of mechanical and electromechanical components for instrumentation

Graduate Teaching Assistant, 1989-1993

Outstanding Graduate Teaching Assistant award 1992-1993

Graduate Research Assistant, 1993-1996

Postdoctoral Researcher, 1996-1998

Research Scientist 1998-2002

Research Professor 2002-2004

Assistant Professor Electrical and Computer Engineering 2004-Present

Awards

Outstanding graduate teaching assistant awarded 1992

Outstanding Instructor in Electrical and Computer Engineering awarded 2003

Provost's Award for Undergraduate Research/Creativity Mentoring 2006

Publications

1. "Efficient seeding of a Raman amplifier with a visible laser diode", J.G. Wessel, K.S. Repasky, and J.L. Carlsten, Optics Letters 19, 1430 (1994).
2. "High finesse interferometers", K.S. Repasky, L.E. Watson, and J.L. Carlsten, Applied Optics 34, 2615 (1995).
3. "Frequency stability of high finesse interferometers", K.S. Repasky, J.G. Wessel, and J.L. Carlsten, Applied Optics 35, 609 (1996).

4. "Competition between spontaneous scattering and stimulated scattering in an injection seeded Raman amplifier", J.G. Wessel, K.S. Repasky, and J.L. Carlsten, Phys. Rev. A, 53, 1854 (1996).
5. "Enhanced input coupling into a gain guided amplifier", J.G. Wessel, K.S. Repasky, and J.L. Carlsten, Phys. Rev. A, 45, 2408 (1996).
6. "Intensity dependent index guiding in a seeded Raman amplifier", K.S. Repasky, J.G. Wessel, and J.L. Carlsten, Nonlinear Frequency Generation and Conversion, SPIE Proceedings Vol. 2700, 406 (1996).
7. "Competition between spontaneous scattering and stimulated scattering in an injection seeded Raman amplifier", J.G. Wessel, K.S. Repasky, and J.L. Carlsten, Nonlinear Frequency Generation and Conversion, SPIE Proceedings Vol. 2700, 406 (1996).
8. "Frequency asymmetric gain profile in a seeded Raman amplifier", K.S. Repasky and J.L. Carlsten, Phys. Rev. A, 54, 4524 (1996).
9. "Correcting an astigmatic, non-gaussian beam", K.S. Repasky, J.K. Brasseur, J.G. Wessel, and J.L. Carlsten, Applied Optics, 37, 1536 (1997).
10. "Influence of gain and index guiding on the mode structure and performance of a Raman amplifier", K.S. Repasky, J.G. Wessel, J.K. Brasseur, and J.L. Carlsten, Phys. Rev. A, 56, 859 (1996).
11. "Continuous Wave Raman Lasers In H₂", J.K. Brasseur, K.S. Repasky, and J.L. Carlsten, Opt. Lett. 23, 367 (1998).
12. "Performance and Design of an Off Resonant Continuous Wave Raman Laser", K.S. Repasky, J.K. Brasseur, and K.S. Repasky, JOSA B, 15, 1667 (1998).
13. "High efficiency, continuous wave Raman lasers", K.S. Repasky, L. Meng, J.K. Brasseur, J.L. Carlsten, and R.C. Swanson, JOSA B, 16, (1999).
14. "Characterization of a continuous wave Raman laser in H₂", J.K. Brasseur, P.A. Roos, K.S. Repasky, and J.L. Carlsten, JOSA B, 16, 1305 (1999).
15. "Coherent anti-Stokes emission in a continuous wave Raman laser in H₂", J.K. Brasseur, P.A. Roos, K.S. Repasky, and J.L. Carlsten, JOSA B, 17, 1223, (2000).
16. "Design Issues in continuously programmed optical coherent transient processors", K.D. Merkel, J. Zhai, K.S. Repasky, and W.R. Babbitt, SPIE vol 3802, 246, (1999).

17. "Widely tunable continuous wave Raman laser in diatomic hydrogen pumped by an external cavity diode laser", L. S. Meng, K.S. Repasky, P.A. Roos, and J.L. Carlsten, *Optics Letts.*, 25, 472, (2000).
18. "Laser diode facet modal reflectivity measurements", K.S. Repasky, G.W. Switzer, C.W. Smith, and J.L. Carlsten, *Appl. Optics*, 39, 4338, (2000).
19. "Simple method for measuring frequency chirps with a Fabry-Perot interferometer", K.S. Repasky and J.L. Carlsten, *Appl. Optics*, 39, (2000).
20. "Accumulated Programming of a complex spectral grating", K.D. Merkel, R.D. Peters, P.B. Sellin, K.S. Repasky, and W.R. Babbitt, *Optics Letts.*, 25, (2000).
21. "Amplified Output of a frequency chirped source via injection locking", K.S. Repasky, P.A. Roos, L.S. Meng, and J.L. Carlsten, *Optical Engineering*, 40, 2505-2509, (2001).
22. "Design and performance of a frequency chirped external cavity diode laser", Kevin S. Repasky, Gregg W. Switzer, and John L. Carlsten, *Review of Scientific Instruments*, 73, 3154-3159, (2002).
23. "Tunable external cavity diode laser based on integrated waveguide structures", Kevin S. Repasky, Jennifer Williams, John L. Carlsten, Elizabeth J. Noonan, and Gregg W. Switzer, *Opt. Eng.*, 42, 2229-2234 (2003).
24. "Diode laser transmitter for water vapor dial measurements", Kevin S. Repasky, Joseph A. Shaw, John L. Carlsten, Michael D. Obland, Lei S. Meng, and David S. Hoffman, *IGARSS Proceedings*, (2004).
25. "Normalized differential detection by use of smart pixels with smart illumination", Daryn E. Benson, Jim M. Murry, Robert D. Regester, Kevin S. Repasky, and W. Randall Babbitt, *Appl. Opt.*, 44, 2607-2612, (2005).
26. "Two micron continuous wave laser for optical detection of carbon dioxide", Kevin S. Repasky, Christopher Melton, John L. Carlsten, Joseph A. Shaw, and Lee H. Spangler, *Proceedings of the Carbon Sequestration Conference*, (2005).
27. "Widely Tunable amplified external cavity diode laser transmitter for differential absorption lidar", Michael D. Obland, Lei S. Meng, Kevin S. Repasky, Joseph A. Shaw, and John L. Carlsten, *SPIE Proceedings* (2005).
28. "Performance Optimization of Dynamic All-Optical Networks", Richard S. Wolff, Kevin S. Repasky, Brendan Mumey, Adam Green, and Wenhao Lin, *NFOEC Conference Proceedings* (2006).
29. "Optical Detection of honeybees by use of wing-beat modulation of scattered laser light for locating explosives and land mines", Kevin S. Repasky, Joseph A. Shaw, Ryan

Scheppele, Christopher Melton, John L. Carlsten, and Lee H. Spangler, *Appl. Opt.* V45, 1839-1843, (2006).

30. "Dual Polarization lidar using a liquid crystal retarder", Nathan L. Seldomridge, Joseph A. Shaw, and Kevin S. Repasky, *Optical Engineering*, 45, 106202, 2006.
31. "Preliminary testing of a water-vapor differential absorption lidar (DAIL) using a widely tunable amplified diode laser source", Michael D. Obland, Kevin S. Repasky, Joseph A. Shaw, and John L. Carlsten, *IGARSS Proceedings* (2006).
32. "Differential absorption measurements of carbon dioxide and diatomic oxygen", Seth Humphries, Amin Nehrir, Kevin S. Repasky, John L. Carlsten, Joseph A. Shaw, and Lee H. Spangler, *Proceedings of the Carbon Sequestration Conference* (2006).
33. "Design and Characterization of a tapered amplifier diode system by seeding with continuous-wave and mode locked external cavity diode lasers", Yihan Xiong, Sytil Murphy, Kevin S. Repasky, and John L. Carlsten, *Optical Engineering*, 45, 124205, 2006.
34. "Extending the Continuous Tuning Range of an External Cavity Diode Laser", Kevin S. Repasky, Amin R. Nehrir, Justin T. Hawthorne, Gregg W. Switzer, and John L. Carlsten, *Applied Optics*, 45, 9013-9020 (2006).
35. "Differential Absorption Measurements of Carbon Dioxide Using a Temperature Tunable Distributed Feedback Diode Laser", Kevin S. Repasky, Seth Humphries, and John L. Carlsten, *Review of Scientific Instruments*, 77, 113107, (2006).
36. "Application of extended tuning range for external cavity diode lasers to water vapor differential absorption measurements", Michael D. Obland, Amin R. Nehrir, Kevin S. Repasky, John L. Carlsten. And Joseph A. Shaw, *Optical Engineering*, 46, 084301, 2007.
37. "Frequency stabilization of a mode locked external cavity diode laser to a high finesse cavity", Yihan Xiong, Sytil Murphy, John L. Carlsten, and Kevin Repasky, *Optical Engineering*, 46, 054203, 2007.
38. "Range resolved optical detection of honeybees by use of wing-beat modulation of scattered light for locating land mines", David S. Hoffman, Amin R. Nehrir, Kevin S. Repasky, Joseph A. Shaw, and John L. Carlsten, *Applied Optics*, 46, 3007, 2007.
39. "Theory of a Far-Off Resonance Mode-Locked Raman Laser in H₂ with High Finesse Cavity Enhancement", Yihan Xiong, Sytil Murphy, John L. Carlsten, and Kevin S. Repasky, *JOSA B*, 24, 2055, 2007.
40. "Atmospheric carbon dioxide measurements using a tunable laser based system", Set D. Humphries, Amin R. Nehrir, Kevin S. Repasky, John L. Carlsten, Joseph A. Shaw, and Lee H. Spangler, *Proceedings of the Carbon Sequestration Conference*, (2007).

41. "Initial results from a water vapor differential absorption lidar (DIAL) using a widely tunable amplified diode laser source", Michael D. Obland, Amin R. Nehrir, Kevin S. Repasky, Joseph A. Shaw, and John L. Carlsten, SPIE Proceedings, 2007
42. "Mode-locked Raman laser in H₂ pumped by a mode-locked external-cavity diode laser", Yihan Xiong, Sytil Murphy, Paul Nachman, Kevin S. Repasky, and John L. Carlsten, JOSA B, 24, 2893, 2007..
43. "Differential Absorption Instrument for Monitoring Sub-Surface Carbon Dioxide Concentrations", Amin R. Nehrir, Seth D. Humphries, Kevin S. Repasky, and John L. Carlsten, Submitted to Review of Scientific Instruments.
44. "Testing Carbon Sequestration Site Monitoring Instruments Using a Controlled Carbon Dioxide Release Facility", Seth D. Humphries, Amin R. Nehrir, Charlie J. Keith, Kevin S. Repasky, Laura M. Dobeck, John L. Carlsten, and Lee H. Spangler, Submitted to Applied Optics, 2007.

Contributed Talks

1. "Injection seeding of a Raman amplifier with a visible diode laser" at the Optical Science and Technology Conference, Bozeman, MT, August 1994.
2. "Soliton decay in stimulated raman scattering" at the annual meeting of the Optical Society of America, Dallas, TX, October 1994 (with J.G. Wessel and J.L. Carlsten).
3. "Raman soliton studies using a tunable laser diode" at the annual meeting of the Optical Society of America, Dallas, TX, October 1994 (with J.G. Wessel and J.L. Carlsten).
4. "Frequency Stability of high finesse interferometers" at the annual meeting of the Optical Society of America, Portland, OR, September 1995 (with J.G. Wessel, L.E. Watson and J.L. Carlsten).
5. "The possibility of spatial solitons in Raman media" at the Optical Science and Technology Conference, Bozeman, MT, September 1995.
6. "Intensity dependent index guiding in a seeded Raman amplifier" at the SPIE Photonics West Conference, San Jose, CA, January 1996 (with J.G. Wessel and J.L. Carlsten).
7. "Index guiding effects in a gain guided amplifier" at the annual meeting of the Optical Society of America, Rochester, NY, October 1996 (with J.G. Wessel and J.L. Carlsten).
8. "Enhanced input coupling into a gain guided Raman amplifier" at the annual meeting of the Optical Society of America, Rochester, NY 1996 (with J.G. Wessel and J.L. Carlsten).
9. "CW Raman Laser" to be presented at CLEO/QELS, Baltimore, MD, May 1997 (with J.K. Brasseur and J.L. Carlsten).

10. "Maximizing the finesse in a high finesse interferometer" CLEO/QELS, Baltimore, MD, May 1997 (with J.K. Brasseur and J.L. Carlsten).
11. "Continuous Wave Raman Lasers in H₂", CLEO/QELS, San Francisco, CA May 1998 (with J.K. Brasseur and J.L. Carlsten).
12. "Electrooptically tunable external cavity diode lasers", OpTeC Conference, Bozeman, MT, Aug. 1999 (with G.W. Switzer, B. Peters, W.R. Babbitt, and J.L. Carlsten).
13. "Threshold measurements of a non-resonant continuous wave Raman laser", CLEO/QELS Baltimore, MD, May 1999 (with P.A. Roos, J.K. Brasseur, and J.L. Carlsten).
14. "A widely tunable cw Raman laser in H₂ pumped by an external cavity diode laser", CLEO/QELS, San Francisco, CA, May 2000 (with L.S. Meng, P.A. Roos, and J.L. Carlsten).
15. "Frequency chirped external cavity diode lasers", Physics of Quantum Electronics Conference, Snowbird, Utah, Jan. 2001 (with J.L. Carlsten).
16. "Laser Source Development", OPTEC Conference, Bozeman, MT, Aug 2002.
17. "Tunable external cavity diode laser based on integrated waveguide structures", Accepted for CLEO/QELS, Baltimore, MD, June 2003, (with Jennifer Williams, John L. Carlsten, Elizabeth J. Noonan, and Gregg W. Switzer).
18. "Diode laser transmitter for water vapor dial measurements", IGARSS, Anchorage, AK, 2004 (with Joseph A. Shaw, John L. Carlsten, Michael D. Obland, Lei S. Meng, and David S. Hoffman).
19. "Two micron continuous wave laser for optical detection of carbon dioxide", Carbon Sequestration Conference, Alexandria, VA., 2005 (with Christopher Melton, John L. Carlsten, Joseph A. Shaw, and Lee H. Spangler).
20. "Widely Tunable amplified external cavity diode laser transmitter for differential absorption lidar", SPIE Meeting, San Jose, CA, 2005 (with Michael D. Obland, Lei S. Meng, Joseph A. Shaw, and John L. Carlsten).
21. "Dual Polarization lidar using a liquid crystal retarder" SPIE Meeting San Jose, CA, 2005 (with Nathan L. Seldomridge and Joseph A. Shaw).
22. "Performance Optimization of Dynamic All-Optical Networks", OFC/NFOEC, Anaheim, CA, 2006 (with Richard S. Wolff, Brendan Mumey, Adam Green, and Wenhao Lin).

23. "Differential absorption measurements of carbon dioxide and diatomic oxygen", Proceedings of the Carbon Sequestration Conference, Alexandria, VA., 2006 (with Seth Humphries, Amin Nehrir, John L. Carlsten, Joseph A. Shaw, and Lee H. Spangler).
24. "Preliminary testing of a water-vapor differential absorption lidar (DAIL) using a widely tunable amplified diode laser source", IGARSS Conference, Denver, CO., 2006, (with Michael D. Obland, Joseph A. Shaw, and John L. Carlsten).
25. "Atmospheric carbon dioxide measurements using a tunable laser based system", Set D. Humphries, Amin R. Nehrir, Kevin S. Repasky, John L. Carlsten, Joseph A. Shaw, and Lee H. Spangler, NETL Carbon Sequestration Conference, Pittsburg, PA. (2007).
26. "Initial results from a water vapor differential absorption lidar (DIAL) using a widely tunable amplified diode laser source", Michael D. Obland, Amin R. Nehrir, Kevin S. Repasky, Joseph A. Shaw, and John L. Carlsten, SPIE Conference, San Diego, CA, 2007.
27. "Underground Fiber-Optic Differential Absorption Instrument for Monitoring Carbon Dioxide Soil Gas Concentration for Carbon Sequestration Site Monitoring", Amin R. Nehrir, Seth D. Humphries, Kevin S. Repasky, John L. Carlsten, Lee H. Spangler, and Laura M. Dobeck, American Geophysical Union Annual Meeting, San Francisco, CA, 2007.
28. "Differential Absorption Measurements of Carbon Dioxide for Carbon Sequestration Site Monitoring Using a Temperature Tunable Diode Laser", Seth D. Humphries, Amin R. Nehrir, Kevin S. Repasky, John L. Carlsten, Lee H. Spangler, and Joseph A. Shaw, American Geophysical Union Annual Meeting, San Francisco, CA, 2007.
29. "EDFA Transient Reduction Using Power Shaping", Trent Jackson, Timothy Hahn, Wenhao Lin, Richard S. Wolff, Brendan Mumey, and Kevin S. Repasky, OFC/NFOEC, San Diego, CA, 2008.

Invited Talks

1. "Competition between spontaneous scattering and stimulated scattering in an injection seeded Raman amplifier" at the SPIE Photonics West Conference, San Jose, CA, January 1996 (with J.G. Wessel and J.L. Carlsten).
2. "Intensity dependent index guiding in a seeded Raman amplifier" at the SPIE Photonics West Conference, San Jose, CA, January 1996 (with J.G. Wessel and J.L. Carlsten).
3. "Laser Source Development At Montana State University", Los Alamos National Laboratory, April 2002.
4. "Novel Laser Sources: Theory and Application", Physics Colloquium at Montana State University, September, 2002.

5. "Laser Source Research and Development", Montana University System Open House, State Capitol, Helena, MT, Feb. 2003.

6. "Undergraduate Research in Applied Optics", Undergraduate Scholars Conference, Montana State University, Bozeman, MT, April, 2007.

Patents

1. "A Widely Tunable Continuous Wave Raman Laser", with John L. Carlsten and Jason K. Brasseur.

2. "Optical detection of oscillating targets using modulation of scattered light", with Joseph A. Shaw, John L. Carlsten, and Lee H. Spangler.