

# **CURRICULUM VITAE**

## **OLGA KOCHAROVSKAYA**

### **EDUCATION**

Dr. Habilitation awarded by the Highest Attestation, 1996  
Commission of the Russian Federation

Ph.D. received from the N. N. Lobachevsky State University, 1986  
Nizhny Novgorod, Russia

### **ACADEMIC EXPERIENCE**

Texas A&M University, Department of Physics and Astronomy  
Distinguished Professor Sept. 2007 – Present  
Professor Sept. 2001 – 2007  
Associate Professor Jan. 1998 – Sept. 2001

Institute of Applied Physics of the Russian Academy of Sciences  
Leading Scientist 1996 – 1998  
Senior Scientist 1992 – 1996  
Research Scientist 1986 – 1991

Universite Libre de Bruxelles  
Visiting Research Scientist 1990 – 1996

N. N. Lobachevsky State University, Nizhny Novgorod, Russia  
Ph.D. Student 1984 – 1986

### **HONORS**

Distinguished Scientist Award, the Texas A&M University Chapter of Sigma Xi, 2012

University Distinguished Professor Award, Texas A&M University, 2011

Fellow of the American Physical Society, 2005

Citation: “For the pioneering works on lasing without inversion,  
electromagnetically induced transparency and laser control of gamma-ray nuclear transitions.”

The Association of Former Students and Texas A&M University,  
Distinguished Achievement Award in Research, 2005

“Distinguished Women Physicists” lecture series,  
Department of Physics, the University of Texas at Austin, 2005

Willis Lamb Medal for Laser Physics and Quantum Electronics,  
Physics of Quantum Electronics Winter Symposium, 1998

Fellow of the Optical Society of America (OSA), 1997

Citation: “For the seminal works on lasing without inversion.”

Outstanding Young Doctor of Sciences Award of the President of the Russian Federation, 1996

### **SYNERGISTIC ACTIVITIES**

Member of the Editorial Board of the International Journal “Laser Physics Letters”, 2013 -present

Member of the Editorial Board of the International Journal “Laser Physics”, 2013-present

Member of the International Advisory Board of the Journal “USPEHI”, 2015-present

Member of the Scientific Advisory Board, Max Planck Institute of Nuclear Physics, Heidelberg, Germany, 2013-present

Co-Chair of the Seminar 1 “Modern Problems of Laser Physics” in the frame of the Annual International Workshop “Laser Physics”, 2008-present.

Member of the Panel “Fundamental constituents of the matter”, Advanced Grants of the European Research Council, Brussels, 2008-2013.

Member of the APS Fellows Committee, 2007-2009.

Deputy Editor in Chief of the Journal of the European Optical Society, Journal of Optics, part B: Quantum and Semiclassical Optics, 1993-1998.

Editorial Board Member of the Journal of Optics, part B, 1993-1999.

Guest Co-Editor of the special issue of the International Journal "Laser Physics" on Lasing Without Inversion, 1999.

Co-Editor of the SPIE Proceedings of the Symposium on "Atomic Coherence and Lasing Without Inversion", 1995.

Co-Chair of the International Conference “Coherent Control of the fundamental processes in optics and x-ray optics”, Nizhny Novgorod-Kazan-Nizhny Novgorod, 2006.

Co-Chair of the 32nd Winter Colloquium on the Physics of Quantum Electronics, Utah, 2002, 2016.

Co-Chair of the 5th and 7th AFOSR Workshop "Gamma-Ray Optics and Quantum Nucleonics"-2006, 2004.

Organizer of various sessions and member of the Program Committee of the International Conferences, including IQEC/LAT; EQEC, ICONO, International Workshop on Laser Physics; International Conference “Frontiers of Nonlinear Physics”, Physics of Quantum Electronics, International Conference on Laser Physics and Quantum Optics; International Conference on Nonlinear Dynamics in Optical Systems, etc..

Referee for National Science Foundation and other founding agencies in USA (DOE, AFOSR, Research Corporation, etc.) and in Europe (ERC, France, Belgium, Great Britain, Austria, Israel, Spain, etc.).

Referee for Nature, Phys. Rev. Lett., Phys. Rev. A, Phys. Rev. B, Phys. Rev. C, Phys. Lett., Opt. Lett., Optics Express, New J. of Phys., J. of Phys., A, Opt. Commun., J. Mod. Optics, JOSAs, Journal of Optics, part B, Laser Physics Letters, Laser Physics.

### **GRANTS IN SUPPORT OF RESEARCH (LAST 15 YEARS)**

2015-2018 Principal Investigator of the NSF Grant:

Quantum Interface between Gamma-Photons - Nuclear Ensembles, \$266,150.

2013-2016 –Principal Investigator of the NSF Grant:

“Dynamical Control of Light-Matter Interactions”, \$225, 000.

2009 – 2013 – Principal Investigator of the NSF Grant

“Control of atoms-light and nuclei-X-ray photons interactions in solids via quantum interference”

NSF, Total Funding: \$380,000.

2006 – 2009 – Principal Investigator of the NSF Grant  
“Atomic and Nuclear Interference in Solids”

NSF, Total Funding: \$300,000.

2005 – 2008 – Principal Investigator of the AFOSR Grant  
“Laser Manipulation of Nuclear Transitions”

Total Funding: \$526,946.

2007 – 2009 – Principal Investigator of the U.S. Civilian Research and Development Foundation (CRDF) Cooperative Grants Program

“Coherent Control of the Fundamental Optical Processes in Solids via Atomic Interference”

Total Funding: \$63,100 (U.S. Team: \$12,620; Russian Team: \$50,480).

2005 – 2006 – Principal Investigator of the DURIP AFSOR Grant

“Instrumentation for Laser Manipulation of Nuclear Transitions”

Total Funding: \$215,587.

2003 – 2006 – Principal Investigator of the NSF Grant

“Coherent Control of Nuclear Transitions”

NSF, Total Funding: \$335,000.

2004 – 2006 – Principal Investigator of the U.S. Civilian Research and Development Foundation (CRDF) Cooperative Grants Program

“Quantum Interference Phenomena with Gamma-Photons in Solids Doped by Mossbauer Nuclei”

Total Funding: \$88,382 (U.S. Team \$15,000; Russian Team: \$73,382).

2001 – 2005 – Co-Principal Investigator of the AFOSR Grant

“Spin-based Lattice-Gas Quantum optics in Solids Using Optical Addressing”

P.I. – Marlan Scully, Total Funding: \$1,028,767.

2002 – 2004 – Principal Investigator of the ONR Grant

“Interference Phenomena at Gamma-Ray Nuclear Transitions”

Total Funding: \$150,000.

2002 – 2004 – Principal Investigator of the Texas Advanced Research Program Grant

“Multiple Raman Scattering in solids for the new sources of ultra-short pulses”

Total Funding: \$150,000.

2001 – 2003 – Principal Investigator of the DARPA Grant

“Mossbauer Gamma-Ray Laser with an Optical Driving”

Total Funding: \$283,000.

### **INVITED TALKS AT SCIENTIFIC CONFERENCES**

1. International Conference “Laser Optics,” St. Petersburg, June 1998.
2. 16<sup>th</sup> International Conference on Coherent and Nonlinear Optics (ICONO), Moscow, July 1998.
3. 29<sup>th</sup> Winter Colloquium on Physics of Quantum Electronics, Snowbird, Utah, January 1999.
4. International Workshop on Novel Optical Materials, TAMU, College Station, Texas,

- January 1999.
5. International Conference "Laser Physics," Budapest, July 1999.
  6. Conference on Coherent Optics, Jackson Hole, July 1999.
  7. International Workshop "Modern Trends in Quantum Optics," Munich, Max-Planck Institute for Quantum Optic, June 1999.
  8. 30<sup>th</sup> Winter Colloquium on Physics of Quantum Electronics, Snowbird, Utah January 2000.
  9. International Workshop on Quantum Control in Atoms, Molecules, Solids and Nuclei, TAMU, College Station, Texas, January 2000.
  10. International Workshop on Slow Light, Harvard University, April 2000.
  11. International Workshop on Quantum Nucleonics, Leuven University, Belgium, May 2000.
  12. EOARD Workshop on Directional Gamma-Ray Induced Emission, London, May 2000.
  13. International Mossbauer Conference "Mossbauer Effect: Magnetism, Modern Materials, Gamma Optics," Kazan, July 2000.
  14. 31<sup>st</sup> Winter Colloquium on Physics of Quantum Electronics, Snowbird, Utah, January 2001.
  15. International Workshop "From Gamma-Ray Optics to Semiconductor Laser Dynamics," Brussels, Belgium, April 2001.
  16. 17<sup>th</sup> International Conference on Coherent and Nonlinear Optics (ICONO), Minsk, Belarus, June 2001.
  17. International Conference "Progress in Nonlinear Science," Nizhny Novgorod, July 2001.
  18. 22<sup>nd</sup> Solvay Conference on Physics: The Physics of Communication, Delphi, Greece, November 2001.
  19. 32<sup>nd</sup> Winter Colloquium on Physics of Quantum Electronics, Snowbird, Utah, January 2002.
  20. International Quantum Electronics Conference (UQEC), Moscow, June 2002.
  21. 33<sup>rd</sup> Winter Colloquium on Physics of Quantum Electronics, Snowbird, Utah, January 2003.
  22. 34<sup>th</sup> Winter Colloquium on Physics of Quantum Electronics, Snowbird, Utah, January 2004.
  23. International Conference "Frontiers of Nonlinear Physics," Nizhny Novgorod, St. Petersburg, July 2004.
  24. 35<sup>th</sup> Winter Colloquium on Physics of Quantum Electronics, Snowbird, Utah, January 2005.
  25. Quantum Optics Symposium, TAMU, College Station, Texas, January 2005.
  26. AFOSR Workshop on Isomers and Quantum Nucleonics, Dubna, Russia, June 2005.
  27. 36<sup>th</sup> Winter Colloquium Physics of Quantum Electronics, Snowbird, Utah, January 2006.
  28. International Conference "Coherent Control of the Fundamental Processes in Optics and X-ray Optics," Nizhny, Kazan, July 2006.
  29. 11<sup>th</sup> International Conference on Quantum Optics, Minsk, Belarus, June 2006.
  30. TAMU Molecular Physics and Quantum Optics Symposium, 2007.
  31. International Conference "Frontiers of Nonlinear Physics," Nizhny Novgorod, Saratov, July 2007.
  32. 16<sup>th</sup> International Laser Physics Workshop, Leon, Mexico, August 2007.
  33. 18<sup>th</sup> International Conference on Coherent and Nonlinear Optics (ICONO), Minsk, May 2007.
  34. 37<sup>th</sup> Winter Colloquium Physics of Quantum Electronics, Snowbird, Utah, January 2007.
  35. TAMU Workshop on Quantum Coherence, Jan, 2007.
  36. Princeton-TAMU Symposium on Quantum Mechanics, Informatics and Control, Princeton, March 2007.
  37. 38<sup>th</sup> Winter Colloquium Physics of Quantum Electronics, Snowbird, Utah, January 2008.
  38. TAMU Physics of Quantum Electronics Symposium, January 2008.
  39. Workshop on the storage and manipulation of quantum information in optically-addressed solids, Bozeman, Montana, January 2008.
  40. 17<sup>th</sup> International Laser Physics Workshop, Trondheim, Norway, July 2008.
  41. 39<sup>th</sup> Winter Colloquium Physics of Quantum Electronics, Snowbird, Utah, January 2009.
  42. TAMU Physics of Quantum Electronics Workshop, January 2009.
  43. 18<sup>th</sup> International Laser Physics Workshop, Barcelona, July 2009.

44. 40<sup>th</sup> Winter Colloquium Physics of Quantum Electronics, Snowbird, Utah, January 2010.
45. TAMU Physics of Quantum Electronics Workshop, January 2010.
46. International Symposium on Optical Manipulation of Quantum Information in Solids, Institute Henri Poincare, May 2010.
47. 19<sup>th</sup> International Laser Physics Workshop, Iguazu Falls, Brazil, July 2010.
48. 4<sup>th</sup> International Conference “Frontiers of Nonlinear Physics,” Nizhny Novgorod, St. Petersburg, Russia, July 2010.
49. 41<sup>st</sup> Winter Colloquium Physics of Quantum Electronics, Snowbird, Utah, January 2011
50. TAMU Physics of Quantum Electronics Workshop, January, 2011
51. 20<sup>th</sup> International Laser Physics Workshop, Sarajevo, Bosnia, Herzegovina, July 2011.
52. 1<sup>st</sup> International Conference on Quantum Technologies, Moscow, July 2011.
53. 42<sup>nd</sup> Winter Colloquium Physics of Quantum Electronics, Snowbird, Utah, January 2012.
54. TAMU Physics of Quantum Electronics Workshop, January 2012.
55. 21<sup>st</sup> International Laser Physics Workshop, Calgary, Canada, July 2012.
56. 43<sup>d</sup> Winter Colloquium Physics of Quantum Electronics, Snowbird, Utah, January 2013.
57. TAMU Physics of Quantum Electronics Workshop, January, 2013.
58. 21<sup>st</sup> International Laser Physics Workshop, Prague, Czech. Republic, July,2013
59. 5<sup>th</sup> International Conference, Frontiers of Nonlinear Physics, Nizhny Novgorod-Kazan-Nizhny Novgorod, Russia, July,2013
60. FiO/LS, Orlando, Florida, October,2013
61. 4<sup>th</sup> International Workshop “Quantum Optics”, Jeju, S. Korea, Nov., 2013.
62. Physics Colloquium, University of Louisiana at Lafayette, Nov. 2013
63. 44<sup>th</sup> Winter Colloquium Physics of Quantum Electronics, Snowbird, Utah, Jan. 5-9, 2014.
64. TAMU Physics of Quantum Electronics Workshop, January, 2014.
65. International Conference on X-ray Lasers (ICXRL), Fort Collins, CO, May 26-30,2014
66. The 17<sup>th</sup> Gordon Research Conference on Multiphoton Processes, Bentley University, Waltham, MA, June 15-20, 2014
67. 23<sup>d</sup> International Laser Physics Workshop, Sophia, Bulgaria, July 14-18, 2014
68. SPIE Photonics Asia, Beijing, China, Oct. 9-11, 2014.
69. 45<sup>th</sup> Winter Colloquium5-11,2015m Physics of Quantum Electronics, Snowbird, Utah, January 4-8, 2015.
70. Princeton Workshop “Classical-Quantum Interface”, Princeton University, May 27-29, 2015.
71. Summer School on Quantum Optics, Casper, Wyoming, July 5-11,2015
72. The 3<sup>rd</sup> International Conference on Quantum Technologies (ICQT-2015), Moscow, July 13-17, 2015.
73. 24<sup>th</sup> International Laser Physics Workshop, Shanghai, China, Aug.21-25, 2015.
74. The 33<sup>rd</sup> International Conference on the Applications of the Mössbauer Effect (ICAME2015) Hamburg, Germany, Sept. 13-18, 2015.
75. 46<sup>th</sup> Winter Colloquium, Physics of Quantum Electronics, Snowbird, Utah, January 4-8, 2016.
76. TAMU PQE Follow-up Workshop, Jan.12,13, 2016.
77. Princeton-TAMU Symposium on Quantum Noise Effects in Thermodynamics, Biology and Information, Princeton University, April 14-16, 2016.
78. 25<sup>th</sup> International Laser Physics Workshop, Yerevan, Armenia, July 11-15, 2016. ”Towards attosecond X-ray plasma lasers in a “water window”.
79. 6<sup>th</sup> International Conference, Frontiers of Nonlinear Physics, Nizhny Novgorod-St. Petersburg, Russia, July 17-23, 2016.

80. TAMU-Princeton-Baylor Summer Symposium “Quantum Biophotonics”, Casper College, Casper, Wyoming, July 25-29, 2016.

## **COLLOQUIA**

1. Drexel University, Philadelphia, USA, Department of Physics, 1990.
2. Vavilov Optical Institute, St. Petersburg, 1990. Moscow State University, 1990.
3. Università di Pisa, Italia, Istituto de Fisica, 1990.
4. Bryn Mawr College, USA, Department of Physics, 1991.
5. Université P. Et M. Curie, Paris, France, Laboratoire de Spectroscopie Hertzienne, 1991.
6. Università di Pisa, Italia, Istituto de Fisica, 1991.
7. Moscow Theoretical Physics Seminar of Prof. V. L. Ginzburg, Lebedev Institute, 1991.
8. University of New Mexico, Albuquerque, USA, Center for Advanced Studies, 1992.
9. University of Texas at Dallas, USA, Department of Physics, 1992.
10. Texas A&M University, College Station, USA, Department of Physics, 1992.
11. Kurchatov Institute Of Atomic Energy, Moscow, 1993.
12. North Western University, Evanston, USA, Department of Physics, 1993.
13. Alabama University, Huntsville, USA, Weapon Science Directorat and Physics Department, 1993.
14. University of Oregon, Eugene, USA, Physics Department, August 1993.
15. Imperial College of Science, Technology and Medicine, The Blackett Laboratory, London, UK, 1994.
16. Stanford University, Edward Ginzton Laboratory, 1995.
17. Texas A&M University, College Station, USA, 1995.
18. Prairie View University, Physics Department, 1995.
19. Jagelonsky University, Krakov, Poland, Institute of Physics, 1995.
20. Université Libre de Bruxelles, Belgium, 1995.
21. Fondation Louis de Broglie, Paris, France, January 1996.
22. Max Plank Institute for Quantum Optik, Garching, Germany, 1996.
23. Texas A&M University, College Station, 1997.
24. Institute of Applied Physics, Russian Academy of Science, 1998.
25. University of Texas at Austin, Department of Physics, 1998.
26. Old Dominion University, Norfolk, 1999.
27. City College, New York, 1999.
28. Temple University, Philadelphia, 1999.
29. Imperial College, The Blackett Laboratory, London, UK, 2000.
30. Texas A&M University, College Station, 2000.
31. Institute of Applied Physics, Russian Academy of Science, 2001.
32. University of California, Berkeley, AMO, 2002.
33. Niels Bohr Institute and Copenhagen University, Denmark, 2003.
34. University of Texas at Austin, Department of Physics, 2005.
35. University of Texas at Austin, AMO and Condensed Matter, 2005.
36. Oklahoma State University, Department of Physics, 2008.
37. Louisiana State University, Department of Physics, 2008.
38. Louisiana State University, AMO, 2008.
39. Harvard University, Department of Physics and ITAMP, 2008.
40. AMO/Quantum optics Seminar, Texas A&M University, 2010.
41. University of Berkeley, Department of Physics, 2011.
42. Invited speaker at South Central Conference for Undergraduate Women in Physics, Jan., 2012, TAMU.

43. Sigma Xi Distinguished Scientist Lecture, TAMU, Dec. 2012
44. Institute of Applied Physics, RAS, Nizhny Novgorod, Russia, Dec. 2012.
45. University of Louisiana at Lafayette, Nov.2013

### **Carrier of former students (10 total) and post-docs (9 total)**

#### **Academy:**

Alexey Belyanin (Professor, TAMU), former postdoc

Yury Rostovtsev (Associate Professor, UT Denton), former postdoc

Roman Kolesov (Lecturer, Univ. Stuttgart), former Ph. D student, former postdoc

Shaoyan Gao (Associate Professor, Xian Jiaotong Univ., Chiana), former postdoc

Yevgeny Radeonychev (Associate Professor, Lobachevsky State Univ., Nizhny Novgorod, Russia), former Ph. D student and former postdoc

Victor Kozlov (Professor, St. Peterersburg Univ., Russia, passed away in 2013), former postdoc

#### **National Labs, Research Institutes and corporations:**

Alexey Kalachev, Director of the Kazan Physical-Technical Institute, Russian Academy of Sciences, former postdoc

Petr Anisimov, scientist, LANL, former Ph. D. student

Elena Kuznetsova, senior research scientist, Institute of Applied Physics, RAS, Ph. D. former student, former postdoc

Maria Erukhimova, senior research scientist, Institute of Applied Physics, RAS, former master student

Vladimir Antonov, research scientist, Institute of Applied Physics, RAS, former Ph. D. student, former postdoc

Vasily Temonov, researcher, CNRS, France, former master student

Chris O'Brien, scientist, Lynntex, former Ph. D. student

### **Main Research Areas:**

Quantum, Coherent and Nonlinear Optics, Quantum Information Science, Attosecond Physics, X-ray Optics.

**Publications in the Referred Journals** (Google Scholar: 5025 citations, h-index: 33, i-10 index: 67)

1. O.Kocharovskaya, V.B.Tsaregradsky, Mechanisms of spectral line broadening of quantum oscillators with a beam of inflying atoms, *Izv.Vuz. Radiophys.*, v.22, n12, pp.1427-1436.
2. O.Kocharovskaya, Ya.I.Khanin, V.B. Tsaregradsky, Resonance effects under the interaction of two-level system with intensive polichromatic radiation, *Zh.Eksp.Theor.Fiz.*, v.86, n. 2, pp. 423-433; *Sov. Phys .JETP*, 1984.
3. O.Kocharovskaya, V.B.Tsaregradsky, Peculiarities of the stationary generation of maser in case of the polarizing pumping, *Izv. Vuz. Radiofiz.*, v.27, n. 4, pp.863-865, 1984.
4. O.Kocharovskaya, Ya.I.Khanin, V.B.Tsaregradsky, Laser mode-locking due to interaction in the resonant medium with the splitted level, *Kvant. Electron. (Sov. J. Quant. Electron.)*, v.12, n. 6, pp.1227-1234, 1985;
5. O.Kocharovskaya, Ya.I.Khanin, Population trapping and coherent bleaching of three-level medium by the ultrashort pulse train, *Zh.Eksp.Theor.Fiz.*, v.90, pp.1610-1618, 1986; *Sov. Phys. JETP*, v.63, pp.945-952, 1986.
6. O.Kocharovskaya, Ya.I.Khanin, V.B.Tsaregradsky, About possibility of the ultrashort pulses generation and modelocking by the Raman-filter, *Kvant. Electron. (Sov. J. Quant. Electron.)*, v.13, n. 1, pp.193-195, 1986).
7. O.Kocharovskaya, Passive mode-locking by the Raman-filter, *Izv. Vuz. Radiofiz.*, v.29, n. 7, pp.863-865, 1986.
8. O.Kocharovskaya, Ya.I.Khanin, Coherent amplification of the ultrashort pulse in the three-level medium without population inversion, *Pisma JETP Zh.Eksp. Theor. Fiz.*, v.48, pp.581-584, 1988; *JETP Lett.*, v.48, p.630, 1988.
9. O.Kocharovskaya, Coherent low-frequency effects in a three- level medium with the asymmetric transitions,*Kvant. Elektron.*, v.17,n.1, pp.20-27, 1990; *Sov. J. Quant. Electron.*, v.20, n. 1, pp.14-20, 1990.
10. O.Kocharovskaya and P.Mandel, Amplification without inversion: the double lambda scheme, *Phys.Rev. A* 42, n.1, pp.523-535, 1990.
11. O.Kocharovskaya, P.Mandel and R.-D.Li, Lasing without inversion: the double lambda scheme, *Opt. Commun.*, v.77, n. 2,3, pp.215-220, 1990 .
12. Ya.I.Khanin and O.Kocharovskaya, Inversionless amplification of ultrashort pulses and coherent population trapping in athree-level medium , *J. Opt. Soc. Am.*, v.B-7, n.10, pp. 2016-2024, 1990.
13. O.Kocharovskaya, P.Mandel and Ya.I.Khanin, Lasers without population inversion, *Izv.Acad.Nauk SSSR, ser. fiz.*, v.54, n. 10, pp.1979-1987, 1990.
14. O.Kocharovskaya and P.Mandel, Frequency up-conversion in athree-level medium without inversion, *Opt. Commun.*, v.84, n. 3,4, pp.179-183, 1990 .
15. O.Kocharovskaya, F.Mauri and E.Arimondo, Laser without population inversion and coherent trapping, *Opt. Commun.*, v.84, n. 5,6, pp.393-400, 1991.
16. O. Kocharovskaya, F.Mauri, B.Zambon and E.Arimondo, Coherentpopulation trapping in lasers without inversion, in "Laser Spectroscopy", eds. M.Ducloy, E.Giacobino and G.Camu, World Scientific, p.307-309, 1991.
17. O.Kocharovskaya, P.Mandel and Y.Radeonychev, Inversionless amplification in a three-level medium, *Phys.Rev. A* 45, pp. 1997-2005, 1992.
18. O.Kocharovskaya, Amplification and lasing without inversion, *Phys.Rep.*, v.219, pp. 175-191, 1992.
19. P.Mandel and O.Kocharovskaya, Inversionless amplification of a monochromatic field by a three-level medium, *Phys. Rev. A* 46, pp.2700-2706, 1992.
20. Mandel and O.Kocharovskaya, Inversionless Amplification in a multilevel system, *Phys.Rev.A* 47, pp.5003-5008, 1993.

21. C.H.Keitel, O.Kocharovskaya, L.M.Narducci, M.O.Scully , S.-Y.Zhu and H.M.Doss, Two Mechanisms of Inversionless amplification in four-level atoms with Raman pumping, *Phys.Rev.A* 48, pp.3196-3201, 1993.
22. Kocharovskaya, S.-Y.Zhu, M.O.Scully, P.Mandel and Y.V.Radeonychev, "Generalization of the Maxwell-Bloch equations to the case of strong atom-field coupling",*Phys. Rev. A*.49, 4928, 1994.
23. O.Kocharovskaya and P.Mandel, "Basic models of lasing without inversion:general form of amplification condition and problem of self-consistency", *Quantum Optics*, 6, 217, 1994.
24. O.Kocharovskaya, P.Mandel and Ya.I.Khanin, Problem of inversionless amplification, *BRAS, Phys./Suppl.:Phys.vib.*, v.58, n.1, p.10-15, 1994;
25. Y.V.Radeonychev and O.A.Kocharovskaya, Influence of a strong field on the relaxation of a three level atom. *BRAS, Phys./Suppl.: Phys. vib.*, v.58, n.1, p.16-20, 1994.
26. O.A.Kocharovskaya and Y.V.Radeonychev., Self-consistency of inversionless laser basis schemes.*BRAS, Phys./Suppl.: Phys.vib.*, v.58, n.2, p.79-85, 1994;
27. O.Kocharovskaya, P.Mandel, M.O.Scully, Atomic coherence via modified spontaneous relaxation, *Phys. Rev. Lett.*, 74, 2451, 1995.
28. O.Kocharovskaya, From lasers without inversion to gamma-ray lasers, *Laser Physics*, v.5, p.284, 1995.
29. O.Kocharovskaya and Y.V.Radeonychev, Symmetry breaking of the two-level atomic response due to field-dependent relaxation, *Quant.and Semiclas. Opt.*, 8, p.7-13, 1996;
30. O.Kocharovskaya and Ya.I.Khanin, Lasers without population inversion, in : *Russian Science: Withstand and Revive*, p.133-139. International Science Foundation.
31. Kocharovskaya O. *Lasers Without Inversion:Problems and Prospects*, *Hyperfine Interactions*, v.107,p.187-195, 1997.
32. O.Kocharovskaya, P.Mandel, Atomic coherence and field-dependent relaxation in strongly driven three-level atoms, *J.Tech.Phys.*, v.38, n. 2,pp.235-237, 1997.
33. M.Louffler, D.Nikonov, O.Kocharovskaya and M.O.Scully, High-field index enhancement via selective population of dressed states, *Phys. Rev A* 56, p.5014, 1997.
34. O.Kocharovskaya and Y.V.Radeonychev, Spontaneous emission from the ground atomic state due to its crossing with a dynamical Stark level, *Found. of Phys.*, v. 28, p.561, 1998.
35. O.Kocharovskaya, Yu.Rostovtsev, A.Imamoglu, Inversionless Amplification in the three-level atoms with and without "hidden" inversion in reservoir,*Phys.Rev. A*.58, p.649, 1998.
36. O.Kocharovskaya, R.Kolesov, Y.Rostovtsev, Coherent Optical Control of Mossbauer Spectra, *Phys.Rev.Lett.* 82 ,3593, 1999.
37. O.Kocharovskaya, Y.V.Radeonychev,P.Mandel,M.O.Scully, Field dependent relaxation effects in a three-level system driven by a strong coherent field, *Phys.Rev. A* 60, p.3091, 1999.
38. V.Kozlov, O.Kocharovskaya, M.O.Scully, Effective two-level Maxwell-Bloch formalism and coherent pulse propagation in a driven three-level medium, *Phys.Rev.A*.59, p. 3986, 1999.
39. V.Kozlov, O.Kocharovskaya, Y.Rostovtsev, M.O.Scully, Superfluorescence without inversion in coherently driven three-level systems, *Phys.Rev.A* 60, 1598, 1999.
40. O.Kocharovskaya, M.O.Scully, P.Mandel, Preface of the Guest Editors, *Laser Physics*, v.9, p.745, 1999.
41. O.Kocharovskaya, R.Kolesov, Y.Rostovtsev, Lasing without inversion: a new path to gamma-ray laser, *Laser Physics*, v.9, p.745, 1999.
42. Y.V.Radeonychev,, I.Koryukin, O.Kocharovskaya, R.Corbalan, R.Vilaseca, Dynamical manifestation of two mechanisms of lasing without inversion, *J.Opt.B: Quant. and Semiclass. Opt.*, 1, p.580-587, 1999.
43. R.Kolesov, Y.Rostovtsev, O.Kocharovskaya, Laser Control of Mossbauer Spectra as a way to gamma-ray lasing, *Opt. Commun.*, v.179, pp.537-547, 2000.
44. O.Kocharovskaya, Y.Rostovtsev, M.O.Scully, Freezing light via atomic coherence, *Phys.Rev.Lett* 86, 628, 2001.

45. M.O. Scully, G.S. Agarwal, O. Kocharovskaya, V.V. Kozlov, A.B. Matsko, "Mixed electromagnetically and self-induced transparency", *Opt. Express*, 8, 66, 2001.
46. A. Matsko, O. Kocharovskaya, Y. Rostovtsev, G.R. Welch, A.S. Zibrov, M.O. Scully, Slow, Ultra-slow, stored and frozen light, *The Advances in Atomic, Molecular, and Optical Physics* 46, 191, 2001, edited by B. Bederson and H. Walther.
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