

## PUBLICATIONS

[More than 120 publications including referred articles in *Science*,  
*Physical Review Letters*, and *the Proceedings of National Academy of Sciences*.]

### Publications in Refereed Scholarly Journals (Asterisk indicates SFSU student co-authors)

1. E.J. D'Angelo, C. Green, J.R. Tredicce, N.B. Abraham, S. Balle, Z. Chen and G.L. Oppo, "Symmetry breaking, dynamical pulsations, and turbulence in the transverse intensity patterns of a laser: the role played by defects", *Physica D*, **61**, 6-24, 1992.
2. Z. Chen, N.B. Abraham, S. Balle, E.J. D'Angelo and J.R. Tredicce, "Space-time dynamics in the transverse patterns of a laser from a model not restricted *a priori* to a few modes", in a special issue on Transverse Nonlinear Optics, *Chaos, Solitons & Fractals*, **4**, 1489-1517, 1994. (invited by feature editor L. Lugiato)
3. Z. Chen and N.B. Abraham, "Pattern dynamics in a bidirectional photorefractive ring resonator", in a special issue on Fundamental Systems in Quantum Optics, *Applied Physisc B*, **60**, S183-S194, 1995. (invited by feature editor W. Schleich).
4. Z. Chen, M. Mitchell, M. Shih, M. Segev, M. Garrett and G. Valley, "Steady-state dark photorefractive screening-solitons", *Optics Letters*, **21**, 629-631, 1996.
5. Z. Chen, M. Mitchell, M. Segev, "Steady-state photorefractive soliton-induced Y-junction waveguides and high-order dark spatial solitons", *Opt. Lett.*, **21**, 716-718, 1996.
6. Z. Chen, D. McGee and N.B. Abraham, "Pattern dynamics in photorefractive bi-directional ring resonator experiments", *Journal of Optical Society of America B*, **13**, 1482-1490, 1996.
7. M. Mitchell, Z. Chen, M. Shih and M. Segev, "Self-trapping of spatially incoherent light", *Physical Review Letters*, **77**, 490-493, 1996.
8. Z. Chen, M. Segev, T.H. Coskun and D.N. Christodoulides, "Observation of incoherently coupled photorefractive spatial soliton pair", *Opt. Lett.*, **21**, 1436-1438, 1996.
9. Z. Chen, M. Segev, T.H. Coskun, D.N. Christodoulides, Yu. S. Kivshar and V. Afasajev, "Coupled dark-bright photorefractive screening-solitons", *Opt. Lett.*, **21**, 1821-1823, 1996.
10. M. Mitchell, Z. Chen, M. Shih and M. Segev, "Self-trapping of partially spatially incoherent light beams", *Optics & Photonic News*, **7**, 17-18, 1996. (December special issue, *Optics in 1996*)
11. M. Shih, Z. Chen, M. Segev, T.H. Coskun and D.N. Christodoulides, "Incoherent collision of one-dimensional photorefractive screening solitons", *Applied Physics Letters*, **69**, 4151-4153, 1996.
12. Z. Chen, M. Segev, S.R. Singh, T.H. Coskun and D.N. Christodoulides, "Sequential formation of high-order dark photorefractive screening solitons: experiments and theory", *Journal of Optical Society of America B*, **14**, 1407-1417, 1997.
13. Z. Chen, M. Segev, D.W. Wilson, R.E. Muller and P.D. Maker "Self-trapping of an optical vortex by use of bulk photovoltaic effect", *Physical Review Letters*, **78**, 2948-2950, 1997.
14. Z. Chen, M. Segev, T.H. Coskun, D.N. Christodoulides, and Y.S. Kivshar, "Coupled photorefractive spatial soliton pairs", in a special issue on Nonlinear Guided Waves and Their Applications (feature editor: G. Stegeman), *J. Opt. Soc. Am. B*, **14**, 3066-3077, 1997.

15. M. Shih, Z. Chen, M. Mitchell, M. Segev, "Waveguides induced by one-dimensional photorefractive screening solitons", *J. Opt. Soc. Am. B*, **14**, 3091-3101, 1997.
16. Z. Chen, M. Shih, M. Segev, D.W. Wilson, R.E. Muller and P.D. Maker, "Steady-state vortex screening-solitons formed in photorefractive media", *Opt. Lett.*, **22**, 1751-1753, 1997.
17. T.H. Coskun, D.N. Christodoulides, M. Mitchell, Z. Chen and M. Segev, "Dynamics of self trapped incoherent optical beams and their coherence properties", *Opt. Lett.* **23**, 418-420, 1998.
18. C. Anastassiou, M. Shih, M. Mitchell, Z. Chen and M. Segev, "Optically-induced photovoltaic self-focusing to -defocusing transition", *Optics Letters*, **23**, 924-926, 1998.
19. M. Matlin, D. McGee, Z. Chen and N.B. Abraham, "Pattern alternation and pattern erasure in a swept-cavity photorefractive oscillator", special issue of *Quantum and Semiclassical Optics*, **10**, 861-867, 1998.
20. Z. Chen, M. Mitchell, M. Segev, T.H. Coskun and D.N. Christodoulides, "Self-trapping of dark incoherent light beams", *Science*, **280**, 889, 1998.
21. Z. Chen, M. Mitchell, M. Segev, T.H. Coskun and D.N. Christodoulides, "Incoherent dark solitons", *Optics & Photonic News*, **9**, 48-49, 1998. (December special issue, Optics in 1998).
22. D.N. Christodoulides, T.H. Coskun, M. Mitchell, Z. Chen and M. Segev, "Theory of incoherent dark solitons", *Physical Review Letters*, **80**, 5113, 1998
23. E.A. Ostrovskaya, Yu.S. Kivshar, Z. Chen and M. Segev, "Interaction between vector solitons and solitonic gluons", *Optics Letters* **24**, 327 (1999).
24. M. Mitchell, Z. Chen, M. Segev, T.H. Coskun and D.N. Christodoulides, "Self-trapping of incoherent bright and dark light beams", in a special issue on Nonlinear Dynamics in Optics, *Asian Journal of Physics* **7**, 687 (1998). (invited paper)
25. T.H. Coskun, D.N. Christodoulides, Z. Chen and M. Segev, "Dark incoherent solitons and phase-memory effects", *Physical Review E, Rapid Commun.* **59**, R4777 (1999).
26. S. Lan, E. DelRe, Z. Chen, M. Shih and M. Segev, "Directional coupler using soliton-induced waveguides", *Opt. Lett.*, **24**, 475,(1999).
27. S. Lan, M. Shih, G. Mizell, J. Giordmaine, Z. Chen, C. Anastassiou, J. Martin, and M. Segev, "Second harmonic generation in waveguides induced by photorefractive spatial solitons", *Optics Letters*, **24**, 1145 (1999).
28. Z. Chen, M. Segev, D.N. Christodoulides and B. Feigelson, "Waveguides formed by dark incoherent solitons", *Opt. Lett.*, **24**, 1160 (1999).
29. S. Lan, M. Shih, G. Mizell, J. Giordmaine, Z. Chen, C. Anastassiou, J. Martin, and M. Segev, "Harmonic generation in soliton-induced waveguides", *Opt. & Photonic News*, (special issue, "Optics in 1999").
30. T.H. Coskun, D.N. Christodoulides, Y. Kim\*, Z. Chen and M. Segev, "Bright spatial solitons on an incoherent background beam", *Physical Review Letters* (**84**, 2374 (2000)).
31. Z. Chen, M. Acks\*, E.A. Ostrovskaya and Yu.S. Kivshar, "Observation of bound states of interacting vector solitons", *Optics Letters* **25**, 417 (2000).

32. J. Klinger\*, H. Martin\* and Z. Chen, "Experiments on induced modulation instability of an incoherent optical beam", *Optics Letters*, **26**, 271 (2001).
33. Z. Chen, "Fascinating behavior of optical spatial solitons", *Physics (Wuli)*, **30**, 752 (2001). (invited review article, in Chinese).
34. Z. Chen, S. Sears, H. Martin\*, M. Segev and D. N. Christodoulides, "Clustering in weakly-correlated wavefronts", the *Proceedings of the National Academy of Sciences, USA*, (PNAS), **99**, 5223 (2002)
35. Z. Chen, J. Klinger\* and D. N. Christodoulides, "Induced modulation instability of incoherent light with varying perturbation periods", *Physical Review E*, **66**, 066601 (2002).
36. Z. Chen and K. MaCarthy\*, "Spatial soliton pixels from partially coherent light", *Optical Letters*, **27**, 2019 (2002).
37. Z. Chen, K. MaCarthy\* and H. Martin\*, "Photonic Lattices induced by partially coherent light", *Opt. & Photonic News*, **13**, 35 (2002) (December special issue, "Optics in 2002").
38. Z. Chen and H. Martin\*, "Waveguides and waveguide arrays of incoherent light in photorefractive materials", *Journal of Optical Materials*, **23**, 235-241 (2003).
39. Z. Chen, M. Segev, and D.N. Christodoulides, "Experiments on partially coherent photorefractive solitons", special issue of *Journal of Optics A: Pure and Applied Optics*, **5**, S389, 2003 (invited review article).
40. H. Martin\* and Z. Chen, "Controlling the breakup of high-order optical vortices", *Optics Communications*, to appear.
41. Z. Chen, M. Asaro\*, O. Ostroverkhova, W. E. Moerner, M. He and R. J. Twieg, "Self-trapping of light in a photorefractive organic glass", *Opt. Lett.* **28**, 2509, (2003)
42. H. Martin\*, E. D. Eugenieva, Z. Chen, and D. N. Christodoulides, "Discrete solitons and soliton-induced dislocations in partially coherent photonic lattices", *Phys. Rev. Lett.*, **92**, 123902 (2004).
43. D. Neshev, Y. S. Kivshar, H. Martin\*, and Z. Chen "Stripe solitons in two-dimensional nonlinear photonic lattices", *Opt. Lett.* **29**, 486, (2004).
44. Z. Chen, H. Martin\*, E. D. Eugenieva, J. Xu and A. Bezryadina\*, "Anisotropic enhancement of discrete diffraction and discrete soliton trains in partially coherent photonic lattices", *Phys. Rev. Lett.*, **92**, 143902 (2004).
45. D.N. Neshev, T.J. Alexander, E.A. Ostrovskaya, and Y.S. Kivshar, H. Martin\*, I. Makasyuk and Z. Chen, "Observation of discrete vortex solitons in optically-induced photonic lattices", *Phys. Rev. Lett.*, **92**, 123903 (2004).
46. C. Lou, J. Xu, H. Qiao, X. Zhang, Y. Chen and Z. Chen, "Enhanced second-harmonic generation due to a femto-second laser signal in a photovoltaic soliton-induced waveguide", *Opt. Lett.*, **29**, 593, (2004).
47. P.G. Kevrekidis, B. A. Malomed, Z. Chen, and D.J. Frantzeskakis, "Stable higher charge vortices in the discrete nonlinear Schrodinger equation", submitted to *Phys. Rev. E* **70**, 056612 (2004)
48. Z. Chen, J. Yang, A. Bezryadina\*, and I. Makasyuk, "Observation of two-dimensional lattice vector solitons", *Opt. Lett.* **29**, 1656 (2004).

49. J. Yang, A. Bezryadina\*, I. Makasyuk, and Z. Chen, "Dipole solitons in two-dimensional optically-induced photonic lattices", *Opt. Lett.* **29**, 1662 (2004).
50. J. Yang, A. Bezryadina\*, I. Makasyuk, and Z. Chen, "Dipole and quadrupole solitons in optically-induced two-dimensional photonic lattices: theory and experiment", *Stud. Appl. Math.* **113**, 389 (2004).
51. J. W. Fleischer, D.N. Neshev, G. Bartal, Tristram J. Alexander, Oren Cohen, E. A. Ostrovskaya, Ofer Manela, H. Martin\*, Jared Hudock, Igor Makasyuk, Zhigang Chen, D. N. Christodoulides, Yuri S. Kivshar, and M. Segev, "Observation of discrete vortex solitons in 2D photonic lattices", *Opt. & Photonic News*, **15**, 30 (2004) (December special issue, "Optics in 2004").
52. M. Asaro\*, M. Sheldon\*, Z. Chen, O. Ostroverkhova and W. E. Moerner, "Soliton-induced waveguides in a photorefractive organic glass", *Opt. Lett.* **30**, 519 (2005).
53. Z. Chen, H. Martin\*, E. D. Eugeniya, J. Xu, J. Yang, and D. N. Christodoulides, "Formation of discrete solitons in light-induced photonic lattices", focus issue in *Opt. Express*. (invited by feature editor), **13**, 1816 (2005).
54. Z. Chen, H. Martin\*, A. Bezryadina\*, D.N. Neshev, Y.S. Kivshar, D. N. Christodoulides, "Experiments on Gaussian beams and vortices in optically-induced photonic lattices", special issue in *J. Opt. Soc. Am. B*, (invited by feature editor) accepted (2005).
55. J. Yang, I. Makasyuk, H. Martin\*, P.G. Kevrekidis, B.A. Malomed, D.J. Frantzeskakis, and Z. Chen, "Necklace-like solitons in optically induced photonic lattices", *Phys. Rev. Lett.* **94**, 113902 (2005).
56. Z. Chen, J. Xu, C. Lou, "Novel Discrete Solitons in Light-induced Photonic Lattices", *Physics (Wuli)*, **34**, 12 (2005). (invited review article, in Chinese).
57. P.G. Kevrekidis, Z. Chen, B.A. Malomed, D.J. Frantzeskakis, and M.I. Weinstein. "Spontaneous Symmetry Breaking in Photonic Lattices as a Bifurcation Problem: Theory, Numerics and Experiment". *Phys. Lett. A*, **340**, 275 (2005).
58. Francesco Fedele, Jianke Yang, Z. Chen, "Defect Modes in One-dimensional Photonic Lattices", *Opt. Lett.*, **30**, 1506 (2005).
59. Francesco Fedele, Jianke Yang, Z. Chen, "Properties of Defect Modes in One-dimensional Optically-induced Photonic Lattices", focus issue in *Stud. Appl. Math.* **115**, 277 (2005).
60. C. Lou, J. Xu, Z. Chen, P.G. Kevrekidis, "Demonstration of nonlinearity-induced symmetry breaking in waveguide lattices", to appear.
61. I. Makasyuk, Z. Chen, and J. Yang, "Observation of defect modes in light-induced photonic lattices", to appear.

**Publications of Invited Book Chapters:**

62. M. Segev, B. Crosignani, P. Di Porto, M. Shih, Z. Chen, M. Mitchell and G. Salamo, "Photorefractive Spatial Solitons", in *Beam Shaping and Control with Nonlinear Optics*, R. Reinisch and F. Kajzar eds., Plenum Press, New York (1998).
63. M. Segev, M. Mitchell, Z. Chen, M. Shih and D.N. Christodoulides, "Self-Trapping of Incoherent Light Beams: Incoherent Solitons", in *Trends in Nonlinear Optics* (1999).

**Publications of Invited Lectures in Proceedings and Book Series:**

64. N.B. Abraham, S. Balle, Z. Chen, E.J. D'Angelo and J.R. Tredicce, "Defect Dynamics in the Evolution of the Transverse Pattern of a Laser", in *Transverse Effects in Nonlinear Optics*, N.N. Rosanov, ed., *Proc. SPIE* **1840**, 156-165, 1992.
65. Z. Chen, N.B. Abraham, S. Balle, E.J. D'Angelo and J.R. Tredicce, "Transverse Pattern Development and Space-Time Dynamics in a Laser Model Not Restricted *a priori* to a Few Modes", in *Nonlinear Dynamics in Lasers and Optical Systems*, L. Melnikov, ed., *Proc. SPIE* **2099**, 2, 1994.
66. Z. Chen, M. Segev, T.H. Coskun, D.N. Christodoulides and Yu. S. Kivshar, "Incoherently coupled photorefractive spatial soliton pairs", in *Quantum Electronics and Laser Science*, OSA Technical Digest Series **12**, 154, 1997.
67. Z. Chen, M. Mitchell, M. Segev, T. Coskun and D.N. Christodoulides, "Self-trapping of partially spatially incoherent dark beams", in *International Quantum Electronics Conference*, OSA Technical Digest Series **7**, 4, 1998.
68. M. Shih, M. Segev, Z. Chen, M. Mitchell and D.N. Christodoulides, "Photorefractive spatial solitons", in *Optical Pulse and Beam Propagation I*, Y. B. Band, ed. *Proc. SPIE* **3609**, 36, 1999.
69. M. Segev, Z. Chen, M. Mitchell, T. Coskun and D.N. Christodoulides. "Dark and bright incoherent solitons", in *Quantum Electronics and Laser Science*, OSA Technical Digest Series, pp. 84. (1999).
70. S. Lan, M. Shih, G. Mizell, J. Giordmaine, Z. Chen, C. Anastassiou, J. Martin, and M. Segev, "Second harmonic generation in waveguides induced by photorefractive spatial solitons", in *Nonlinear Guided Waves and Their Applications*, OSA Technical Digest Series, pp. 200-202 (1999).
71. Z. Chen and M. Segev, "Optical spatial solitons", in 1999 IEEE LEOS Annul Meeting Conference Proceedings, P. 315 (1999).
72. Z. Chen, J. Klinger\* and H. Martin\*, "Observation of induced modulation instability of an incoherent optical beam", in *Soliton-driven Photonics*, A. D. Boradman ed., p. 261, NATO book series (2001).
73. Z. Chen, J. Klinger\* and H. Martin\*, "Driven modulation instability and new class of solitons of incoherent light", in *Optical Pulse and Beam Propagation III.*, *Proc. SPIE* **4271** , 81 (2001).
74. M. Segev, D. N. Christodoulides, M. Soljacic, Z. Chen, D. Kip and S. Sears, "Pattern formation and clustering of solitons in weakly-correlated wavefronts", in *Conference on Lasers and Electro-Optics*, 2002 OSA Technical Digest Series (paper QThL3).
75. D. Neshev et al., "Photonics in optically-induced lattices", in TOPS Proceedings, *International Quantum Electronics Conference* (2004)
76. Z. Chen, "Discretizing light in light-induced photonic lattices", *International Conferences on Coherent and Nonlinear Optics* (ICONO-2005).
77. Z. Chen, J. Xu and J. Yang, "Controlling light in photorefractive lattices", TOPS Proceedings, *Photorefractive Effect, Phenomena, and Applications* (2005).

**Other Peer-reviewed Conference Publications (78 -126)**