

# *Curriculum Vitae*

## **Peng Zhang**

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### **Education**

9/2003-4/2009 Northwestern Polytechnical University, **Ph.D.** in *Precise Instrument and Mechanics*  
9/2001-3/2004 Northwestern Polytechnical University, **M.S.** in *Optical Engineering*  
9/1997-7/2001 Northwestern Polytechnical University, **B.S.** in *Applied Physics*

### **Employment History**

1/2011- present University of California, Berkeley, *Postdoctoral scholar*  
5/2009-12/2010 San Francisco State University, *Postdoctoral scholar*  
5/2006-4/2009 Northwestern Polytechnical University, *Lecturer*  
4/2004-4/2006 Northwestern Polytechnical University (NPU), *Teaching assistant*

### **Teaching Experience**

1. **Lecturer** for *Principles of Lasers* for undergraduate students (2005-2008)
2. **Lecturer** for *Modern Optical Measurement Technology* for undergraduate students (2005-2007)
3. **Lab Instructor** for *Modern Optics Laboratory* for undergraduate students (2006)

### **Research Experience**

#### **1. Self-accelerating beams**

- A. Theoretically and experimentally demonstrated both linear and nonlinear *nonparaaxial accelerating beams* as exact solutions of Helmholtz equation, including Mathieu and Weber accelerating beams.
- B. Experimentally demonstrated the generation and dynamic trajectory control of plasmonic Airy beams on a two-dimensional metal surface.
- C. Theoretically and experimentally demonstrated both linear and nonlinear control of Airy beams.
- D. Experimentally demonstrated abruptly focusing beams and optical bottles with circular Airy beams.

#### **2. Optical tweezers with novel light beams**

- A. Proposed and experimentally demonstrated the generation and nonlinear self-trapping of optical propellers with Moiré technique.
- B. Invented Moiré-based rotating optical tweezers for micro-particles and bacteria.
- C. Proposed and demonstrated manipulation of absorbing particles in air with single optical bottle beams generated by Moiré technique.
- D. Experimentally demonstrated micro-particle guiding with abruptly focusing Airy beams.

#### **3. Hybrid nonlinearity**

- A. Theoretically predict and experimentally demonstrated the concept of hybrid nonlinearity (coexistence of self-focusing and -defocusing).
- B. Proposed and demonstrated series of nonlinear light dynamics under hybrid nonlinearity in both continuum and discrete regimes, including spatial solitons, optical vortices, and lattice solitons.

#### **4. Ionic-type periodic photonic structure**

- A. Introduced the concept of “ionic-type periodic photonic structure” with both positive and negative potentials and established a *Geometrical Structure Factor* for such lattices.
- B. Proposed and demonstrated bandgap engineering with optically induced lattices.
- C. Proposed and demonstrated optical control over normal and anomalous diffraction, positive and negative refraction, and optical Bloch modes in reconfigurable photonic lattices.

### 5. Three-dimensional photonic lattice

- A. Experimentally demonstrated reconfigurable three-dimensional photonic lattices with optical induction method.
- B. Experimentally demonstrated enhanced discrete diffraction, coherent destructive tunneling, anomalous diffraction, negative refraction, as well as image transmission in such 3D lattices.

### 6. Refractive index engineering in nonlinear crystals

- A. Proposed and experimentally demonstrated visualizations of the light-induced refractive index changes in nonlinear crystals by using *digital holography*.
- B. Systemically studied the light-induced index changes in nonlinear crystals, including the relationship between the index change and time, intensity profile, as well as transverse beam shape.
- C. Proposed and demonstrated a method to obtain desired distribution of light-induced index changes by solving the reversed problem of nonlinear index changes.

### 7. Light-induced 3D light circuits

- A. Systematically studied laser micromachining, spatial optical solitons, and various structure-light illumination techniques for fabrication of variety of optical waveguides and waveguide arrays.
- B. Proposed a novel optical induction technique by combining laser micromachining, structure-light illumination, and soliton induction methods to build 3D optical circuits.

## Selected Publications

1. **Peng Zhang**, Daniel Hernandez, Drake Cannan, Yi Hu, Shima Fardad, Simon Huang, Joseph C. Chen, Demetrios N. Christodoulides, and Zhigang Chen. Rotating beads and bacteria with moiré-based optical tweezers. December special issue *Optics and Photonics News (Optics in 2012)* 2012, 23(12): 46.
2. **Peng Zhang**, Yi Hu, Tongcang Li, Drake Cannan, Xiaobo Yin, Roberto Morandotti, Zhigang Chen, Xiang Zhang. Nonparaxial Mathieu and Weber accelerating beams. *Physical Review Letters* 2012, 109(19): 193901. (Cover story, Editor’s suggestion, and featured by APS: **Physics**, OSA: **OPN**, IOP: **Physics World**, and **Laser Focus World**, etc.)
3. **Peng Zhang**, Daniel Hernandez, Drake Cannan, Yi Hu, Shima Fardad, Simon Huang, Joseph C. Chen, Demetrios N. Christodoulides, and Zhigang Chen. Trapping and rotating microparticles and bacteria with moiré-based optical propelling beams. *Biomedical Optics Express* 2012, 3(8): 1891-1897.
4. **Peng Zhang**, Yi Hu, Drake Cannan, Alessandro Salandrino, Tongcang Li, Roberto Morandotti, Xiang Zhang, and Zhigang Chen. Generation of linear and nonlinear nonparaxial accelerating beams. *Optics Letters* 2012, 37(14): 2820-2822.
5. **Peng Zhang**, Nikolaos K. Efremidis, Alexandra Miller, Peigen Ni, and Zhigang Chen. Reconfigurable 3D photonic lattices by optical induction for optical control of beam propagation. *Applied Physics B* 2011, 104(3): 553-560. (Invited paper)
6. **Peng Zhang**, Sheng Wang, Yongmin Liu, Xiaobo Yin, Changgui Lu, Zhigang Chen, and Xiang Zhang. Plasmonic Airy beams with dynamically controlled trajectories. *Optics Letters* 2011, 36(16): 3191-3193. (Featured by **OSA News**, **LBL News**, **OPN**, **Laser Focus World**, and **New Scientists**, etc.)

7. **Peng Zhang**, Jai Prakash, Ze Zhang, Matthew S. Mills, Nikolaos K. Efremidis, Demetrios N. Christodoulides and Zhigang Chen. Trapping and guiding micro-particles with morphing auto-focusing Airy beams. *Optics Letters* 2011, 36(15): 2883-2885.
8. **Peng Zhang**, Ze Zhang, Jai Prakash, Simon Huang, Daniel Hernandez, Matthew Salazar, Demetrios N. Christodoulides and Zhigang Chen. Trapping and transporting aerosols with a single optical bottle beam generated by Moiré techniques. *Optics Letters* 2011, 36(8): 1491-1493.
9. **Peng Zhang**, Nikolaos K. Efremidis, Alexandra Miller, Yi Hu, and Zhigang Chen. Observation of coherent destruction of tunneling and unusual beam dynamics due to negative coupling in three-dimensional photonic lattices. *Optics Letters* 2010, 35(19): 3252-3254.
10. **Peng Zhang**, Simon Huang, Yi Hu, Daniel Hernandez, and Zhigang Chen. Generation and nonlinear self-trapping of optical propelling beams. *Optics Letters* 2010, 35(18): 3129-3131. (**Cover story**)
11. **Peng Zhang**, Cibo Lou, Sheng Liu, Fajun Xiao, Xiaosheng Wang, Jianlin Zhao, Jingjun Xu, and Zhigang Chen. Incomplete Brillouin zone spectra and controlled Bragg reflection with ionic-type photonic lattices. *Phys. Rev. A Rapid Communication* 2010, 81(4): 041801(R).
12. **Peng Zhang**, Cibo Lou, Sheng Liu, Jianlin Zhao, Jingjun Xu, and Zhigang Chen. Tuning of Bloch modes, diffraction and refraction by two-dimensional lattice reconfiguration. *Optics Letters* 2010, 35(6): 892-894.
13. **Peng Zhang**, Robert Egger, and Zhigang Chen. Optical induction of three-dimensional photonic lattices and enhancement of discrete diffraction. *Optics Express* 2009, 17(15): 13151-13156.
14. **Peng Zhang**, Sheng Liu, Cibo Lou, Yuhan Gao, Jianlin Zhao, Jingjun Xu, and Zhigang Chen. Hybrid nonlinearity supported by nonconventionally biased photorefractive crystal. *Applied Physics B* 2009, 95(3): 559-563.
15. **Peng Zhang**, Cibo Lou, Sheng Liu, Fajun Xiao, Jianlin Zhao, Jingjun Xu, and Zhigang Chen. Band-gap engineering and light manipulation with reconfigurable egg-crate photonic lattices. December special issue *Optics and Photonics News: Optics in 2008* 2008, 19(12): 25.
16. **Peng Zhang**, Sheng Liu, Jianlin Zhao, Cibo Lou, Jingjun Xu, and Zhigang Chen. Optically induced transition between discrete and gap solitons in a nonconventionally biased photorefractive crystal. *Optics Letters* 2008, 33(8): 878-880.
17. **Peng Zhang**, Jianlin Zhao, Fajun Xiao, Cibo Lou, Jingjun Xu, and Zhigang Chen. Elliptical discrete solitons supported by enhanced photorefractive anisotropy. *Optics Express* 2008, 16(6): 3865-3870.
18. **Peng Zhang**, Jianlin Zhao, Cibo Lou, Xiaoyu Tan, Yuhan Gao, Qian Liu, Dexing Yang, Jingjun Xu, and Zhigang Chen, Elliptical solitons in nonconventionally biased photorefractive crystals, *Optics Express* 2007, 15(2): 536-544.
19. **Peng Zhang**, Yanghua Ma, Jianlin Zhao, Dexing Yang, and Honglai Xu. One-dimensional spatial dark soliton-induced channel waveguides in lithium niobate crystal. *Applied Optics*. 2006, 45(10): 2273-2278.
20. **Peng Zhang**, Dexing Yang, Jianlin Zhao, and Meirong Wang. Photo-written waveguides in iron-doped lithium niobate crystal employing binary optical masks. *Optical Engineering*. 2006, 45(7): 074603.
21. **Peng Zhang**, Jianlin Zhao, Honglai Xu, Yidong Sun, Dexing Yang, and Meirong Wang. Refractive index changes induced by sheet beams with various intensity distributions in LiNbO<sub>3</sub>:Fe crystal, *Science in China G*, 2005, 48(4): 399-412.
22. **Peng Zhang**, Dexing Yang, Jianlin Zhao, Kun Su, Jianbo Zhou, Bili Li, and Dongsheng Yang. Light-induced array of three-dimensional waveguides in lithium niobate employing two-beam interference field. *Chinese Physics Letters*. 2004, 21(8): 1558-1561.
23. **Peng Zhang**, Jianlin Zhao, Dexing Yang, Bili Li, and Dongsheng Yang. Optical masks prepared by using liquid crystal light valve for light-induced photorefractive waveguides. *Applied Optics*. 2003,

42(20): 4208-4211.

24. **Peng Zhang**, Jianlin Zhao, Dexing Yang, Bili Li, and Chen Xu. Optically induced photorefractive waveguides in KNSBN:Ce crystal. *Optical Materials*. 2003, 23(1-2):299-303.

## **Patents**

1. A test instrument for holographic combiner. **Chinese practical new patent**. Patent No.: ZL200720126109.5
2. Graded-index bulk glass optical current transducer. **Chinese national invention patent**. Patent No.: ZL200810017457.8
3. A new type of graded-index bulk glass optical current transducer. **Chinese national invention patent**. Patent No.: ZL200810017458.2
4. Graded-index bulk glass optical current transducer. **Chinese practical new patent**. Patent No.: ZL200820028254.5
5. A new type of graded-index bulk glass optical current transducer. **Chinese practical new patent**. Patent No.: ZL200820028255.9
6. High resolution image recording system for digital holography. **Chinese national invention patent**. Patent No.: ZL200710018669.3

## **Grants**

1. The NPU Foundation for Fundamental Research, **200,000RMB** (2007-2009)
2. The Open Foundation of Key Laboratory of Weak-Light Nonlinear Photonics, Ministry of Education, Nankai University, **20,000RMB** (2007-2009)
3. The Doctorate Foundation of NPU, **80,000RMB** (2005-2008)
4. The Youth for NPU Teachers Scientific and Technological Innovation Foundation **20,000RMB** (2004-2006)
5. The Postgraduate Seeds Foundation of NPU, **10,000RMB** (2003-2004)

## **Awards**

1. Nomination award of national excellent doctorate dissertation of China (2011)
2. Second Class Award for Science and Technology of Shaanxi Province (2008)
3. First Class Award for Science and Technology of Colleges and University of Shaanxi Province (2007)
4. The prize for the best poster of the Sino-German DAAD Summer School "Frontiers in Optics: from Nonlinear to Extreme Optics" (2007)
5. Advisor of excellent Bachelor's thesis of NPU (2007)
6. First class Master's thesis award of NPU (2004)
7. First class Bachelor's thesis award of NPU (2001)

## **Selected Other Honors**

1. Pacemaker to Outstanding Graduate Students in NPU (2005)
2. Excellent Graduate Student for Scientific and Technological Research of School of Science in NPU, 2005
3. Excellent Student Leader of NPU (1999) and All-Round Excellent Student of NPU (2000)
4. Man's Team Champion in Shaanxi Provincial Young College Teacher Championship (2004)
5. Man's Team Third Place Holder in Shaanxi Provincial Table Tennis College Student Championship (2003)
6. Man's Singles Champion in Graduate Student Table Tennis Championship of NPU (2002)
7. Man's Singles Champion in "Sanhang Cup" Table Tennis Championship of NPU (2000, 2001)

## **Other Activities**

1. Session presider of Optical Society of America (OSA) 93<sup>rd</sup> and 95<sup>th</sup> Annual meeting (Frontiers in Optics).

2. Member of APS, OSA, SPIE, and Chinese Optical Society (COS).
3. Referee for international journals, books and awards, including *Phys. Rev. Lett.*, *Phys. Rev. A*, *Phys. Rev. B*, *Opt. Lett.*, *Opt. Express*, *JOSA B*, *Electron. Lett.*, *J. Lightwave Technol.*, *Appl. Opt.*, *Opt. Eng.*, *J. Opt.*, *Opt. Commun.*, *Appl. Phys. B*, *New J. Phys.*, *J. Phys. B*, *J. Phys. D*, and *Chin. Opt. Lett.*
4. President of Table Tennis Student Association of NPU (1999-2000).
5. Participated National Table Tennis College Student Championship in China (1999, 2000).

## Full Publication List

### Invited Book Chapters

1. **Peng Zhang**, Cibo Lou, Yi Hu, Sheng Liu, Jianlin Zhao, Jingjun Xu, and Zhigang Chen, "Spatial beam dynamics mediated by hybrid nonlinearity," **Invited Book Chapter**, in "Nonlinear photonics and novel optical phenomena," Z. Chen and R. Morandotti ed. (Springer, 2012).
2. Yi Hu, G. A. Siviloglou, **Peng Zhang**, D. N. Christodoulides, and Zhigang Chen, "Self-accelerating Airy beams: generation, control, and applications," **Invited Book Chapter**, in "Nonlinear photonics and novel optical phenomena," Z. Chen and R. Morandotti ed. (Springer, 2012).

### Peer Reviewed Journals

1. **Peng Zhang**, Daniel Hernandez, Drake Cannan, Yi Hu, Shima Fardad, Simon Huang, Joseph C. Chen, Demetrios N. Christodoulides, and Zhigang Chen. Rotating beads and bacteria with moiré-based optical tweezers. December special issue *Optics and Photonics News (Optics in 2012)* 2012, 23(12): 46.
2. **Peng Zhang**, Yi Hu, Tongcang Li, Drake Cannan, Xiaobo Yin, Roberto Morandotti, Zhigang Chen, Xiang Zhang. Nonparaxial Mathieu and Weber accelerating beams. *Physical Review Letters* 2012, 109(19): 193901. (**Cover story, Editor's suggestion**, and featured by APS: **Physics**, OSA: **OPN**, and IOP: **Physics World**, etc.)
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6. **Peng Zhang**, Sheng Wang, Yongmin Liu, Xiaobo Yin, Changgui Lu, Zhigang Chen, and Xiang Zhang. Plasmonic Airy beams with dynamically controlled trajectories. *Optics Letters* 2011, 36(16): 3191-3193. (Featured by **OSA Release**, **LBL News**, **OPN**, **Laser Focus World**, and **New Scientists**)
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- three-dimensional photonic lattices. *Optics Letters* 2010, 3535(19): 3252-3254.
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  13. **Peng Zhang**, Robert Egger, and Zhigang Chen. Optical induction of three-dimensional photonic lattices and enhancement of discrete diffraction. *Optics Express* 2009, 17(15): 13151-13156.
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  15. **Peng Zhang**, Cibo Lou, Sheng Liu, Fajun Xiao, Jianlin Zhao, Jingjun Xu, and Zhigang Chen. Band-gap engineering and light manipulation with reconfigurable egg-crate photonic lattices. December special issue *Optics and Photonics News (Optics in 2008)* 19(12): 25 (2008).
  16. **Peng Zhang**, Sheng Liu, Jianlin Zhao, Cibo Lou, Jingjun Xu, and Zhigang Chen. Optically induced transition between discrete and gap solitons in a nonconventionally biased photorefractive crystal. *Optics Letters* 2008, 33(8): 878-880.
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  18. **Peng Zhang**, Qian Liu, Yuxuan Ren, Xiaoyu Tan, Hongying Yang, and Jianlin Zhao. Soliton-induced real-time planar waveguide and its guiding property in SBN:Cr crystal. *Acta Photonica Sinica* 2008, 37(5): 935-939.
  19. **Peng Zhang**, Jianlin Zhao, Cibo Lou, Xiaoyu Tan, Yuhan Gao, Qian Liu, Dexing Yang, Jingjun Xu, and Zhigang Chen, Elliptical solitons in nonconventionally biased photorefractive crystals, *Optics Express* 2007, 15(2): 536-544.
  20. **Peng Zhang**, Yanghua Ma, Jianlin Zhao, Dexing Yang, and Honglai Xu. One-dimensional spatial dark soliton-induced channel waveguides in lithium niobate crystal. *Applied Optics*. 2006, 45(10): 2273-2278.
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  22. **Peng Zhang**, Jianlin Zhao, Honglai Xu, Yidong Sun, Dexing Yang, and Meirong Wang. Refractive index changes induced by sheet beams with various intensity distributions in LiNbO<sub>3</sub>:Fe crystal, *Science in China G*, 2005, 48(4): 399-412.
  23. **Peng Zhang**, Dexing Yang, Jianlin Zhao, Honglai Xu, and Kun Su. Fabrication of waveguides with arbitrary index profiles in LiNbO<sub>3</sub>:Fe crystal by white light irradiation. *Acta Photonica Sinica*. 2005, 34(10): 1456-1460.
  24. **Peng Zhang**, Dexing Yang, Jianlin Zhao, Kun Su, Jianbo Zhou, Bili Li, and Dongsheng Yang. Light-induced array of three-dimensional waveguides in lithium niobate employing two-beam interference field. *Chinese Physics Letters*. 2004, 21(8): 1558-1561.
  25. **Peng Zhang**, Jianlin Zhao, Dexing Yang, Bili Li, and Dongsheng Yang. Optical masks prepared by using liquid crystal light valve for light-induced photorefractive waveguides. *Applied Optics*. 2003, 42(20): 4208-4211.
  26. **Peng Zhang**, Jianlin Zhao, Dexing Yang, Bili Li, and Chen Xu. Optically induced photorefractive

- waveguides in KNSBN:Ce crystal. *Optical Materials*. 2003, 23(1-2):299-303.
27. **Peng Zhang**, Jianlin Zhao, Dexing Yang, Meirong Wang, and Yidong Sun. Analyses of guiding properties of light-induced planar waveguides in LiNbO<sub>3</sub>:Fe crystals. *Acta Physica Sinica* 2004, 53(10): 3369-3374.
  28. Ze Zhang, **Peng Zhang**, Matthew S. Mills, Zhigang Chen, Demetrios N. Christodoulides, and Jingjiao Liu. Trapping aerosols with optical bottle arrays generated through a superposition of multiple Airy beams. *Chinese Optics Letters* 2012 (in press).
  29. Fajun Xiao, **Peng Zhang**, Sheng Liu, and Jianlin Zhao. Discrete soliton interaction in quasi one-dimensional optically induced photonic lattice. *Acta Physica Sinica* 2012, 61(13): 134207.
  30. Ioannis Chremmos, **Peng Zhang**, Jai Prakash, Nikolaos K. Efremidis, Demetrios N. Christodoulides, and Zhigang Chen. Fourier-space generation of abruptly autofocusing beams and optical bottle beams. *Optics Letters* 2011, 36(18): 3675-3677.
  31. Fajun Xiao, **Peng Zhang**, Sheng Liu, and Jianlin Zhao, Tunable oscillation of discrete solitons triggered by coherent interactions. *Journal of Optics A* 2011, 13(10): 105101. (Cover story)
  32. Jianke Yang, **Peng Zhang**, Masami Yoshihara, Yi Hu, and Zhigang Chen, Image transmission using stable solitons of arbitrary shapes in photonic lattices. *Optics Letters* 2011, 36(5): 772-774.
  33. Simon Huang, **Peng Zhang**, Xiaosheng Wang, and Zhigang Chen. Observation of soliton interaction and planet-like orbiting in Bessel-like photonic lattices. *Optics Letters* 2010, 35(13): 2284-2286.
  34. Yi Hu, **Peng Zhang**, Cibo Lou, Simon Huang, Jingjun Xu, and Zhigang Chen. Optimal control of the ballistic motion of Airy beams. *Optics Letters* 2010, 35(13): 2260-2262.
  35. Nikolaos K. Efremidis, **Peng Zhang**, Zhigang Chen, Demetrios N. Christodoulides, Christian E. Rüter, and Detlef Kip. Wave propagation in waveguide arrays with alternating positive and negative couplings. *Physical Review A* 2010, 81(5): 053817.
  36. Xuetao Gan, **Peng Zhang**, Sheng Liu, Youming Zheng, Jianlin Zhao, and Zhigang Chen. Stabilization and breakup of optical vortices in presence of hybrid nonlinearity. *Optics Express* 2009, 17(25): 23130-23136.
  37. Sheng Liu, **Peng Zhang**, Xuetao Gan, Fajun Xiao, and Jianlin Zhao. Visualization of Bragg reflection of complex photonic lattices by employing Brillouin zone spectroscopy. *Applied Physics B* 2010, 99(4): 727-731.
  38. Sheng Liu, **Peng Zhang**, Xuetao Gan, Fajun Xiao, and Jianlin Zhao. Interaction of in-band and in-gap lattice soliton trains in optically induced two-dimensional photonic lattices. *Chinese Physics B* 2010, 19(6): 065203.
  39. Fajun Xiao, **Peng Zhang**, Sheng Liu, Xuetao Gan, and Jianlin Zhao. Incoherent interaction between one- and two-dimensional solitons in noncentrosymmetric photorefractive media. *Chinese Physics B* 2010, 19(4): 044208.
  40. Sheng Liu, **Peng Zhang**, Cibo Lou, Fajun Xiao, and Jianlin Zhao. Numerical simulations of discrete propagations of light waves in optically induced planar waveguide arrays. *Journal of Modern Optics*. 2009, 56(5): 677-684.
  41. Sheng Liu, **Peng Zhang**, Fajun Xiao, Dexing Yang, and Jianlin Zhao. Influence of parameters on light propagation dynamics in optically induced planar waveguide arrays, *Science in China G*, 2009, 52(5): 747-754.
  42. Sheng Liu, **Peng Zhang**, Fajun Xiao, Xuetao Gan, and Jianlin Zhao. Analysis of linear defect modes in two-dimensional photonic lattices by employing Brillouin zone spectroscopy. *Acta Physica Sinica* 2009, 58(8): 5467-5472.
  43. Xuetao Gan, **Peng Zhang**, Sheng Liu, Fajun Xiao, and Jianlin Zhao. Solitary wave evolution of optical

- planar vortices in self-defocusing photorefractive media. *Chinese Physics Letters*. 2008, 25(9), 3280-3283.
44. Yuhan Gao, **Peng Zhang**, Sheng Liu, Taian Huang, Dexing Yang, and Jianlin Zhao. Visualizations of dynamics of light-induced index changes during thermal fixing by employing the digital holography. *Acta Photonica Sinica*, 2008, 37(5): 964-968.
  45. Fajun Xiao, **Peng Zhang**, Sheng Liu, and Jianlin Zhao. Coherent interactions between discrete spatial solitons in light-induced planar waveguide arrays. *Acta Physica Sinica* 2008, 57(4): 2529-2536.
  46. Fajun xiao, **Peng Zhang**, Sheng Liu, and Jianlin Zhao, Coherent and incoherent interactions between discrete-soliton trains in two-dimensional light-induced photonic lattices, *Chinese Physics Letters*. 2007, 24(12): 3435-3438.
  47. Yanghua Ma, **Peng Zhang**, Jianlin Zhao, and Tao Peng. Numerical investigations of interactions among planar bright photorefractive screening solitons. *Acta Photonica Sinica*. 2006, 35(2): 252-256.
  48. Honglai Xu, **Peng Zhang**, Jianlin Zhao, Yuhan Gao, Zhijun Ye, and Dexing Yang. Optimum exposure intervals for light-induced optical waveguides in lithium niobate crystals by laser micromachining. *Acta Physica Sinica*. 2006, 55(6):3100-3105.
  49. Dexing Yang, **Peng Zhang**, Jianlin Zhao, and Kun Su. Planar waveguide array with Bragg grating and its fabrication method by laser irradiation. *Acta Photonica Sinica* 2004, 33(12): 1432-1435.
  50. Jianlin Zhao, **Peng Zhang**, Jianbo Zhou, Dexing Yang, Dongsheng Yang, and Enpu Li. Visualizations of light-induced refractive index changes in photorefractive crystals employing digital holography. *Chinese Physics Letters*. 2003, 20(10): 1748-1751.
  51. Ze Zhang, Jingjiao Liu, **Peng Zhang**, Peigen Ni, Jai Prakash, Yang Hu, Dongsheng Jiang, Demetrios N. Christodoulides, and Zhigang Chen. Generation of autofocusing beams with Multi-Airy beams. *Acta Physica Sinica* 2012 (in press).
  52. Sheng Liu, Yi Hu, **Peng Zhang**, Xuetao Gan, Cibo Lou, Daohong Song, Jianlin Zhao, Jingjun Xu, and Zhigang Chen, Tunable self-shifting Bloch modes in anisotropic hexagonal photonic lattices. *Optics Letters* 2012, 37(12): 2184-2186.
  53. Sheng Liu, Yi Hu, **Peng Zhang**, Xuetao Gan, Cibo Lou, Daohong Song, Jianlin Zhao, Jingjun Xu, and Zhigang Chen, Symmetry-breaking diffraction and dynamic self-trapping in optically induced hexagonal photonic lattices. *Applied Physics Letters* 2012, 100(6): 061907.
  54. Sheng Liu, Yi Hu, **Peng Zhang**, Xuetao Gan, Fajun Xiao, Cibo Lou, Daohong Song, Jianlin Zhao, Jingjun Xu, and Zhigang Chen, Anomalous interactions of spatial gap solitons in optically induced photonic lattices. *Optics Letters* 2011, 36(7): 1167-1169.
  55. Yi Hu, Simon Huang, **Peng Zhang**, Cibo Lou, Jingjun Xu, and Zhigang Chen. Persistence and break-down of Airy beams driven by an initial nonlinearity. *Optics Letters*. 2010, 35(23): 3952-3954.
  56. Yi Hu, Robert Egger, **Peng Zhang**, xiaosheng Wang, and Zhigang Chen. Interface solitons excited between a simple lattice and a superlattice. *Optics Express*. 2010, 18(14): 14679-14684.
  57. Yi Hu, Cibo Lou, **Peng Zhang**, Jingjun Xu, and Zhigang Chen. Saddle lattice solitons: a perfect balance between hybrid nonlinearity and anisotropic diffraction. *Laser & Optoelectronics Progress (Chinese Optics 2009)* 2010, 47(3): 03SC06.
  58. Yi Hu, Cibo Lou, **Peng Zhang**, Jingjun Xu, Jianke Yang, and Zhigang Chen. Saddle solitons: A balance between bi-diffraction and hybrid nonlinearity. *Optics Letters*. 2009, 34(21): 3259-3261.
  59. Meirong Wang, Wangmin Zhou, **Peng Zhang**, Hao Zhang, and Jianlin Zhao. Investigations of magneto-optical properties of BGO crystal utilized for optical fiber current sensor. *Acta Photonica Sinica* 2006, 35(1): 100-104.
  60. Jianlin Zhao, Bili Li, **Peng Zhang**, Dexing Yang, and Zhenwei Li. Experimental investigation of the phase conjugation by photorefractive four-wave mixing in SBN:Cr crystals. *Acta Physica Sinica* 2004,



- 53(8):2583-2588.
61. Dexing Yang, Jianlin Zhao, **Peng Zhang**, Bili Li, and Xiqi Feng. The index changes of waveguides fabricated by light irradiation in  $\text{LiNbO}_3\text{:Fe}$  crystals. *Acta Physica Sinica* 2003, 52(5):1179-1183.
  62. Ze Zhang, Drake Cannan, Jingjiao Liu, **Peng Zhang**, Demetrios N. Christodoulides and Zhigang Chen. Observation of trapping and transporting absorbing air-borne particles with a single optical beam. *Optics Express* 2012, 20(15): 16212-16217.
  63. Zhuoyi Ye, Sheng Liu, Cibo Lou, **Peng Zhang**, Yi Hu, Daohong Song, Jianlin Zhao, and Zhigang Chen. Acceleration control of Airy beams with optically-induced refractive-index gradient. *Optics Letters*. 2011, 36(16): 3230-3232.
  64. Eugenia Eugenieva, Daohong Song, Anna Bezryadina, **Peng Zhang**, Zhigang Chen, and Neal B. Abraham. Self-trapping and stabilization of double-charged optical vortices in optically-induced periodic structures. *Journal of Modern Optics* 2010, 57(14-15): 1377-1387.
  65. Yi Hu, Cibo Lou, Sheng Liu, **Peng Zhang**, Jianlin Zhao, Jingjun Xu, and Zhigang Chen. Orientation-dependent excitations of lattice soliton trains with hybrid nonlinearity. *Optics Letters*. 2009, 34(7): 1114-1116.
  66. Jianglei Di, Jianlin Zhao, Hongzhen Jiang, **Peng Zhang**, Qi Fan, Weiwei Sun. High resolution digital holography microscopy with wide view field based on synthetic aperture technique using linear CCD scanning. *Applied Optics*. 2008, 47(30): 5654-5659.
  67. Dexing Yang, Xiarui Guo, Haibin Wang, **Peng Zhang**, Hongli Xiang, and Jianlin Zhao. Recording method and fabrication of layered multiple volume holographic gratings for WDM. *Acta Photonica Sinica* 2007, 36(11): 1975-1978.
  68. Jun Wang, Jianlin Zhao, Qi Fan, and **Peng Zhang**. A novel synthetical method for phase unwrapping. *Chinese Journal of Lasers* 2006, 33(6):795-799.
  69. Jianlin Zhao, Bili Li, Dexing Yang, **Peng Zhang**, and Zhenwei Li. Light-induced refractive index changes in doped SBN crystals under external electric field. *Acta Photonica Sinica* 2003, 32(12):1487-1491.
  70. Jianlin Zhao, Bili Li, Dexing Yang, **Peng Zhang**, and Xiqi Feng. Experiment of light writing planar waveguides array in  $\text{LiNbO}_3\text{:Fe}$  crystal. *Acta Photonica Sinica* 2003, 32(4):421-424.
  71. Meirong Wang, Jianlin Zhao, Wangmin Zhou, Peifeng Wei, and **Peng Zhang**. Optical fiber current sensor based on BGO crystal with enhanced Faraday rotation by reflections. *Acta Photonica Sinica* 2008, 37(6): 1186-1190.
  72. Qi Fan, Jianlin Zhao, Jun Wang, Jianglei Di, and **Peng Zhang**. Analysis of numerical reconstruction of lensless Fourier transform holograms. *Acta Photonica Sinica* 2007, 36(10): 1824-1828.
  73. Dongsheng Yang, Jianlin Zhao, Zhenwei Li, Qitui Xu, and **Peng Zhang**. Experimental investigation of the phase conjugation by photorefractive four-wave mixing in SBN:Cr crystals. *Acta Photonica Sinica*. 2002, 31(9):1160-1163.
  74. Tongcang Li, Zhe-Xuan Gong, Zhang-Qi Yin, Haitao Quan, Xiaobo Yin, **Peng Zhang**, Luming Duan, and Xiang Zhang. Space-time crystals of trapped ions. *Physical Review Letters*. 2012 (in press); [arXiv:1206.4772](https://arxiv.org/abs/1206.4772), 2012.
  75. Jiandong Yang, Zhuoyi Ye, Alexandra Miller, Yi Hu, Cibo Lou, **Peng Zhang**, Zhigang Chen, and Jianke Yang. Nonlinear beam deflection in photonic lattices with negative defects. *Phys. Rev. A* 2011, 83(3): 033836.
  76. Meirong Wang, Jianlin Zhao, Sheng Liu, Fei Liu, Xun Wan, and **Peng Zhang**. Optical current sensor immune to reflection phase shift based on graded-index magneto-optical glass. *Applied Optics*. 2009, 48(32): 6264-6270.
  77. Meirong Wang, Jianlin Zhao, Sheng Liu, Xun Wan, Fei Liu, and **Peng Zhang**. An optical sensing

method of current based on annular graded-index magnetic-optic glass. *Chinese Journal of Lasers*. 2010, 37(4): 1058-1063.

### Archived Conference Proceedings

1. **Peng Zhang**, Jianlin Zhao, Honglai Xu, Yanghua Ma and Dexing Yang, Photo-written three-dimensional optical circuits in iron doped lithium niobate crystals, *Proc. SPIE* 2006, 6149: 86-93. *The 2nd International Symposium on advanced optical manufacturing and testing technologies*, November, 2005, Xi'an, China. **(Oral)**
2. **Peng Zhang**, Jianlin Zhao, Dexing Yang, Yanghua Ma and Yidong Sun, Light-induced waveguide arrays in photorefractive crystals, *Proc. SPIE* 2006, 6032: 92-100. *20<sup>th</sup> Congress of the International Commission for Optics (ICO20)*, August, 2005, Changchun, China. **(Poster)**
3. **Peng Zhang**, Jianlin Zhao, Yidong Sun, Honglai Xu and Dexing Yang, Specific intensity profiles for light-induced arbitrary desirable index distributions in photorefractive crystal, *OSA TOPS* 2005, 99: 802-807. *Tenth International Conference on Photorefractive Effects, Materials, and Devices*. July, 2005, Sanya, China. **(Oral)**
4. Yi Hu, **Peng Zhang**, Simon Huang, Cibo Lou, Jingjun Xu, and Zhigang Chen, Linear and nonlinear control of ballistic trajectory of Airy beams, *Proc. SPIE* 2010, 7782: 778207. *SPIE Optics+Photonics*, August, 2010, San Diego, USA. **(Oral)**.
5. Honglai Xu, **Peng Zhang**, Jianlin Zhao, Yidong Sun, Dexing Yang, Zhijun Ye, and Yuhan Gao. Optimum exposure distances for 3-D optical circuits induced by laser micromachining in LiNbO<sub>3</sub> crystals, *Proc. SPIE* 2006, 6149: 173-179. *The 2nd International Symposium on advanced optical manufacturing and testing technologies*, November, 2005, Xi'an, China. **(Oral)**
6. Jianlin Zhao, **Peng Zhang**, Dexing Yang, Yanghua Ma, and Honglai Xu, Photo-written optical waveguides and waveguide arrays in photorefractive crystals, *OSA TOPS* 2005, 99: 529-534. *Tenth International Conference on Photorefractive Effects, Materials, and Devices*. July, 2005, Sanya, China. **(Oral)**
7. Jianlin Zhao, **Peng Zhang**, Dexing Yang and Bili Li. Light-induced photorefractive waveguides in iron-doped lithium niobate crystals, *Acta Optica Sinica* 2003, 23(supplement): 171-172. *The 8th OptoElectronics and communication International conference*. October, 2003, Shanghai, China. **(Oral)**
8. Meirong Wang, Wangmin Zhou, **Peng Zhang**, Jianlin Zhao, Hao Zhang, and Peifeng Wei, Optical fiber current sensor based on Bi<sub>4</sub>Ge<sub>3</sub>O<sub>12</sub> crystal with enhanced Faraday rotation by critical angle reflections, *Proc. of SPIE* 6279: 627911-1/9. *The 27th International Congress on High-Speed Photography and Photonics*, September, 2006, Xi'an, China. **(Oral)**
9. Dexing Yang, Hongli Xiang, Haibin Wang, **Peng Zhang**, and Jianlin Zhao, Multiple volume Bragg gratings with layered structure and their fabrication method, *OSA TOPS* 2005, 99: 767-771. *Tenth International Conference on Photorefractive Effects, Materials, and Devices*. July, 2005, Sanya, China. **(Poster)**

### Other International Conference Presentations

10. **Peng Zhang**, Yi Hu, Drake Cannan, Alessandro Salandrino, Tongcang Li, Roberto Morandotti, Xiang Zhang, and Zhigang Chen, Demonstration of nonparaxial beams self-bending along circular trajectories, *OSA's 96<sup>nd</sup> Annual Meeting: Frontiers in Optics 2012 and Laser Science XXVIII*, October, 2012, Rochester, USA. **(Oral)**
11. **Peng Zhang**, Sheng Wang, Yongmin Liu, Xiaobo Yin, Changgui Lu, Zhigang Chen, and Xiang Zhang, Dynamically routing surface plasmon polaritons along arbitrary trajectories, *CLEO/QELS*, May, 2012, San Jose, USA. **(Oral)**

12. **Peng Zhang**, Peigen Ni, Xinyuan Qi, Weining Man, Zhigang Chen, Jianke Yang, Mikael C. Rechtstman, and Mordechai Segev, Specular amorphous photonic bandgap lattices, *CLEO/QELS*, May, 2012, San Jose, USA. **(Oral)**
13. **Peng Zhang**, Ze Zhang, Jai Prakash, Simon Huang, Demetrios N. Christodoulides, and Zhigang Chen, Trapping and manipulating aerosols with optical bottle beams generated by Moiré technique, *CLEO/QELS*, May, 2011, Baltimore, USA. **(Oral)**
14. **Peng Zhang**, Jai Prakash, Ze Zhang, Yi Hu, Nikolaos K. Efremidis, Demetrios N. Christodoulides, and Zhigang Chen, Observation of auto-focusing of radially symmetric Airy beams, *CLEO/QELS*, May, 2011, Baltimore, USA. **(Oral)**
15. **Peng Zhang** and Zhigang Chen, Spatial control of beam propagation with specially-engineered photonic lattices, *The seventh IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory*, April, 2011, Athens, USA. **(Invited)**
16. **Peng Zhang**, Simon Huang, Yi Hu, D. Hernandez, M. Yoshihara, and Zhigang Chen, Generation and self-trapping of optical propelling beams, *CLEO/QELS*, May, 2010, San Jose, USA. **(Oral)**
17. **Peng Zhang**, Nikolaos K. Efremidis, Alexandra Miller, Yi Hu, and Zhigang Chen, Demonstration of coherent destruction of tunneling in tunable three-dimensional photonic lattices. *OSA Topical Meeting: Nonlinear Photonics*, June, 2010, Karlsruhe, Germany. **(Poster)**
18. **Peng Zhang**, Robert Egger, and Zhigang Chen, Demonstration of optically-induced three-dimensional photonic lattices and enhanced discrete diffraction, *OSA's 93<sup>rd</sup> Annual Meeting: Frontiers in Optics 2009 and Laser Science XXV*, October, 2009, San Jose, USA. **(Oral)**
19. **Peng Zhang**, Sheng Liu, Xiaosheng Wang, Jianlin Zhao, and Zhigang Chen. Negative refraction in optical waveguide arrays with loss layers. *CLEO Europe-EQEC*, June, 2009, Munich, Germany. **(Poster)**
20. **Peng Zhang**, Sheng Liu, Cibo Lou, Yuhao Gao, Jianlin Zhao, Jingjun Xu, and Zhigang Chen. Hybrid nonlinearity supported by nonconventionally biased photorefractive crystal. *OSA Topical Meeting: Photorefractive Materials, Effects, and Devices*, June, 2009, Bad Honnef, Germany. **(Poster)**
21. **Peng Zhang**, Cibo Lou, Sheng Liu, Fajun Xiao, Jianlin Zhao, Jingjun Xu, and Zhigang Chen, Band-gap engineering and light manipulation with reconfigurable ionic-type photonic lattices, *OSA's 92<sup>nd</sup> Annual Meeting: Frontiers in Optics 2008 and Laser Science XXIV*, October, 2008, Rochester, USA. **(Postdeadline paper)**
22. **Peng Zhang**, Light manipulation in optically induced reconfigurable photonic lattices, *International conference: Nonlinear Waves-Theory and Applications*, June, 2008, Beijing, China. **(Invited)**
23. **Peng Zhang**, Sheng Liu, Cibo Lou, Jianlin Zhao, Jingjun Xu, and Zhigang Chen, Band-gap engineering of two-dimensional photonic lattices with reconfigurable refractive index potential, *International conference: Nonlinear Waves-Theory and Applications*, June, 2008, Beijing, China. **(Oral)**
24. **Peng Zhang**, Cibo Lou, Sheng Liu, Jianlin Zhao, Jingjun Xu, and Zhigang Chen, Manipulation of light in reconfigurable 2D photonic lattices with nonconventional bias conditions, *407.WE-Heraeus-Seminar: Discrete optics and beyond*, May, 2008, Bad Honnef, Germany. **(Poster)**
25. **Peng Zhang**, Jianlin Zhao, Sheng Liu, Yuhao Gao, Cibo Lou, Jingjun Xu, and Zhigang Chen, Transition from bright to dark and from discrete to gap spatial solitons by varying optical beam orientation, *CLEO/QELS*, May, 2008, San Jose, USA. **(Oral)**
26. **Peng Zhang**, Jianlin Zhao, Dexing Yang, Bili Li, and Chen Xu. Optically induced photorefractive waveguides in KNSBN:Ce crystal. *The 8th IUMRS International Conference on Electronics Materials*. June, 2002, Xi'an, China. **(Oral)**
27. Drake Cannan, **Peng Zhang**, and Zhigang Chen, Generation and potential applications of white-light

- propelling beams, *Asia Communications and Photonics Conference*, November, 2012, Guangzhou, China. **(Oral)**
28. Drake Cannan, **Peng Zhang**, and Zhigang Chen, Generation of white-light optical propelling beams, *OSA's 96<sup>nd</sup> Annul Meeting: Frontiers in Optics 2012 and Laser Science XXVIII*, October, 2012, Rochester, USA. **(Oral)**
  29. Drake Cannan, **Peng Zhang**, and Zhigang Chen, Generation and potential applications of white-light propelling beams, *IEEE Photonics Conference*, September, 2012, Burlingame, USA. **(Oral)**
  30. Drake Cannan, **Peng Zhang**, Shima Fardad, Daniel Hernandez, Joseph Chen, Demetrios N. Christodoulides, and Zhigang Chen, Rotating microparticles and bacteria with optical propelling beams, *CLEO/QELS*, May, 2012, San Jose, USA. **(Oral)**
  31. Peigen Ni, **Peng Zhang**, Weining Man, Jianke Yang, and Zhigang Chen, Observation of localized modes in optically induced disordered lattices, *OSA's 95<sup>th</sup> Annul Meeting: Frontiers in Optics 2011 and Laser Science XXV*, October, 2011, San Jose, USA. **(Oral)**
  32. Daniel Hernandez, **Peng Zhang**, Simon Huang, Yi Hu, and Zhigang Chen, Controlled rotation of micro-particles with multi-trap rotating tweezers generated by Moiré technique, *OSA's 94<sup>th</sup> Annul Meeting: Frontiers in Optics 2010 and Laser Science XXVI*, October, 2010, Rochester, USA. **(Oral)**
  33. Alexandra Miller, **Peng Zhang**, Yi Hu, Zhigang Chen, and Nikolaos K. Efremidis, Anomalous diffraction, negative refraction, and image transmission based on coherent destructive tunneling in 3D photonic lattices, *OSA's 94<sup>th</sup> Annul Meeting: Frontiers in Optics 2010 and Laser Science XXVI*, October, 2010, Rochester, USA. **(Oral)**
  34. Yi Hu, **Peng Zhang**, Masami Yoshihara, Jianke Yang, and Zhigang Chen, Observation of soliton-based image transmission through self-defocusing photonic lattices, *OSA's 94<sup>th</sup> Annul Meeting: Frontiers in Optics 2010 and Laser Science XXVI*, October, 2010, Rochester, USA. **(Poster)**
  35. Yi Hu, **Peng Zhang**, Simon Huang, Jingjun Xu, and Zhigang Chen, Wing flipping, restoration and degeneration of deformed Airy beams. *International conference: Nonlinear Waves-Theory and Applications*, June, 2010, Beijing, China. **(Oral)**
  36. Nikolaos K. Efremidis, **Peng Zhang**, Zhigang Chen, Demetrios N. Christodoulides, Christian E. Rüter, and Detlef Kip. Wave propagation in waveguide arrays with alternating positive and negative couplings. *OSA Topical Meeting: Nonlinear Photonics*, June, 2010, Karlsruhe, Germany. **(Oral)**
  37. Yi Hu, **Peng Zhang**, Cibo Lou, Weiyu Huang, Jingjun Xu, and Zhigang Chen, Optimal control of the ballistic trajectory of Airy beams. *OSA Topical Meeting: Nonlinear Photonics*, June, 2010, Karlsruhe, Germany. **(Poster)**
  38. Robert Egger, **Peng Zhang**, Fajun Xiao, Xiaosheng Wang, Jianlin Zhao, and Zhigang Chen, Nonlinear surface states at the interface between a simple lattice and a superlattice, *OSA's 93<sup>nd</sup> Annul Meeting: Frontiers in Optics 2009 and Laser Science XXV*, October, 2009, San Jose, USA. **(Oral)**
  39. Sheng Liu, **Peng Zhang**, Xuetao Gan, and Jianlin Zhao, Symmetry-broken diffraction and self-trapping of multi-vortex beams in triangle photonic lattices, *OSA's 93<sup>nd</sup> Annul Meeting: Frontiers in Optics 2009 and Laser Science XXV*, October, 2009, San Jose, USA. **(Poster)**
  40. Zhigang Chen and **Peng Zhang**, Manipulation of light waves with reconfigurable ionic-type photonic structures, *The Sixth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory*, March, 2009, Georgia, USA. **(Invited)**
  41. Sheng Liu, **Peng Zhang**, Fajun Xiao, Xuetao Gan, and Jianlin Zhao, Anomalous interaction of spatial gap solitons in optically induced photonic lattices, *International conference: Nonlinear Waves-Theory and Applications*, June, 2008, Beijing, China. **(Oral)**
  42. Fajun Xiao, **Peng Zhang**, Sheng Liu, Xuetao Gan, and Jianlin Zhao, Optical Bloch oscillation

- stimulated by interaction between discrete solitons, *International conference: Nonlinear Waves-Theory and Applications*, June, 2008, Beijing, China. **(Poster)**
43. Xuetao Gan, **Peng Zhang**, Sheng Liu, Fajun Xiao, and Jianlin Zhao, Evolution of optical vortices in light-induced photonic lattices under nonconventional bias conditions, *International conference: Nonlinear Waves-Theory and Applications*, June, 2008, Beijing, China. **(Oral)**
  44. Jianlin Zhao, **Peng Zhang**, Sheng Liu, Fajun Xiao, Cibo Lou, Jingjun Xu, and Zhigang Chen, Lattice solitons in nonconventionally biased photorefractive crystals, *The OSA Topical Conference on Nanophotonics'08*, May, 2008, Nanjing, China. **(Oral)**
  45. Fajun Xiao, **Peng Zhang**, Sheng Liu, Jianlin Zhao, Cibo Lou, Jingjun Xu, and Zhigang Chen, Anisotropic discrete surface solitons in nonconventionally biased photorefractive crystals, *The OSA Topical Conference on Nanophotonics'08*, May, 2008, Nanjing, China. **(Poster)**
  46. Sheng Liu, **Peng Zhang**, Fajun Xiao, Xuetao Gan, and Jianlin Zhao, Interaction of lattice soliton trains in optically induced 2D photonic lattices with self-defocusing nonlinearity, *The OSA Topical Conference on Nanophotonics'08*, May, 2008, Nanjing, China. **(Oral)**
  47. Xuetao Gan, **Peng Zhang**, Sheng Liu, Fajun Xiao, and Jianlin Zhao, Interaction between discrete vortex soliton and fundamental discrete soliton in 2D optically induced photonic lattices, *The OSA Topical Conference on Nanophotonics'08*, May, 2008, Nanjing, China. **(Oral)**
  48. Ze Zhang, Drake Cannan, **Peng Zhang**, Jingjiao Liu, Demetrios N. Christodoulides, and Zhigang Chen, Trapping and transporting air-borne absorbing particles with a single optical beam, *OSA's 96<sup>nd</sup> Annual Meeting: Frontiers in Optics 2012 and Laser Science XXVIII*, October, 2012, Rochester, USA. **(Oral)**
  49. Xinyuan Qi, Ramy El-Ganainy, **Peng Zhang**, Demetrios N. Christodoulides, and Zhigang Chen, Observation of accelerating Wannier-Stark beams in optically induced photonic lattices, *CLEO/QELS*, May, 2012, San Jose, USA. **(Oral)**
  50. Sheng Liu, Yi Hu, **Peng Zhang**, Xuetao Gan, Jianlin Zhao, Cibo Lou, Daohong Song, and Zhigang Chen, Observation of symmetry-breaking beam dynamics in optically induced hexagonal photonic lattices, *CLEO/QELS*, May, 2011, Baltimore, USA. **(Poster)**
  51. Xuetao Gan, Sheng Liu, **Peng Zhang**, and Jianlin Zhao, Controllable band-gap structure and mini-gap solitons in two-dimensional photonic superlattices, *CLEO/QELS*, May, 2010, San Jose, USA. **(Poster)**
  52. Yi Hu, Simon Huang, **Peng Zhang**, Jingjun Xu, and Zhigang Chen, Nonlinearity-controlled reshaping and anomalous diffraction of Airy beams, *CLEO/QELS*, May, 2010, San Jose, USA. **(Oral)**
  53. Yi Hu, Cibo Lou, **Peng Zhang**, Jianlin Zhao, Jingjun Xu, Jianke Yang, and Zhigang Chen, Self-trapping of light due to balance between saddle-shaped diffraction and hybrid nonlinearity, *OSA's 93<sup>rd</sup> Annual Meeting: Frontiers in Optics 2009 and Laser Science XXV*, October, 2009, San Jose, USA. **(Oral)**
  54. Yi Hu, Cibo Lou, **Peng Zhang**, Sheng Liu, Jianlin Zhao, Jingjun Xu, and Zhigang Chen. Observation of two-dimensional quasi-localized solitons with saddle-shaped diffraction and hybrid nonlinearity. *CLEO/QELS*, May, 2009, Maryland, USA. **(Oral)**
  55. Dexing Yang, Chen Xu, **Peng Zhang**, Jianlin Zhao, and Xiqi Feng. Refractive index distributions in LiNbO<sub>3</sub>:Fe crystals illuminated by structure lights. *The 8th IUMRS International Conference on Electronics Materials*. 2002. 6, Xi'an. **(Poster)**
  56. Jai Prakash, Weining Man, Ze Zhang, **Peng Zhang**, D. N. Christodoulides, and Zhigang Chen, Observation of self-trapping of an optical beam in "air-bubble"-type nonlinear nano-suspensions, *OSA's 95<sup>th</sup> Annual Meeting: Frontiers in Optics 2011 and Laser Science XXV*, October, 2011, San Jose, USA. **(Oral)**
  57. Zhuoyi Ye, Sheng Liu, Cibo Lou, **Peng Zhang**, Yi Hu, Daohong Song, Jianlin Zhao, and Zhigang Chen, Control of self-accelerating Airy beams with optically-induced refractive-index gradient, *CLEO/QELS*,

May, 2011, Baltimore, USA. **(Poster)**

58. Yi Hu, Cibo Lou, Sheng Liu, **Peng Zhang**, Jianlin Zhao, Jingjun Xu, and Zhigang Chen. Observation of discrete and gap soliton trains in light-induced 2D photonic lattices under an identical bias condition. *The OSA Topical Conference on Nanophotonics'08*, May, 2008, Nanjing, China. **(Oral)**
59. Michael Lau, Ze Zhang, Weining Man, Jai Prakash, **Peng Zhang**, Demetrios N. Christodoulides, and Zhigang Chen, Observation of self-induced transparency in nano-suspensions with negative polarizability, *CLEO/QELS*, May, 2012, San Jose, USA. **(Oral)**
60. Jiandong Wang, Jianke Yang, Zhuoyi Ye, Alex Miller, Yi Hu, Cibo Lou, **Peng Zhang**, and Zhigang Chen, Nonlinear beam reflection by negative defects in photonic lattices. *CLEO/QELS*, May, 2010, San Jose, USA. **(Poster)**

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