

Sergey A. Ponomarenko

Education

- Ph. D in Physics, University of Rochester, USA, April 2002
Thesis: “Spatial Coherence of Optical Wavefields and Solitons.”
Advisor: Late Professor Emil Wolf.
- Five-year diploma in physics, Novosibirsk State University, Russia, May 1994
Thesis: “Weak turbulence in systems with coupled wave modes”
Advisor: Professor Sergei K. Nemirovskii.

Professional Experience

- Professor, September 2018–Date
- Associate Professor, Dalhousie University, September 2010–September 2018
- Canada Research Chair Renewal, Dalhousie Univ., September 2011-September 2016
- Canada Research Chair, Dalhousie University, September 2006–September 2011
- Assistant Professor, Dalhousie Univ., July 2006-July 2010
- Director’s Postdoctoral Fellow, Los Alamos National Laboratory Jan. 2004-July 2006
- Postdoc. Associate, Dept. of Physics and Astronomy, U of Rochester, Jan. 2002-Dec. 2003
- Research Assistant, Dept. of Physics and Astronomy, U of Rochester, Sep. 1998-Dec. 2001
- Teaching Assistant, Dept. of Physics and Astronomy, U of Rochester, Sep. 1997-Sep. 1998

Awards and Honors

- Outstanding Reviewer Recognition, Optical Society of America (OSA) 2016.
- Canada Research Chair Renewal, NSERC, Canada, September 2011.
- Canada Research Chair Award, NSERC, Canada, February 2006.
- Director’s Postdoctoral Fellowship Award, Los Alamos National Lab., January 2004
- Susumu Okubo Award for academic excellence, U of Rochester, May 1998
- GAANN (Dept. of Education) Graduate Fellowship, U of Rochester, (1997-1999)

Recent Funding Highlights

- Major Grants Held: Canada Research Chair (CRC) Award/Renewal, Canada Foundation for Innovation (CFI), Discovery (throughout career), CREATE, Engage
- Principal applicant of CRC award & renewal and CFI worth over \$1,000,000
- Co-applicant of CREATE iMERIT worth \$1,650,000

Highly Qualified Personnel (HQP) Training

Postdoctoral Fellows:

- Dr. Weihong Huang (female, 2006-2008)
- Dr. Andreas Norrman, (Photonics Lab, ETH, Zurich, Switzerland, co-advised, 2018-2020)
- Dr. Davud Hebri (Killam Postdoc, 2023-2025)
- Dr. Xiaofei Li (female, 2024-2026)

Doctoral students:

- Montasir Qasymeh (co-advised) (2010)
- Soodeh Haghgoo (female, 2012)
- Shunchuan Yang (co-advised) (2015)
- Laleh Mokhtarpour (female, 2016)
- Franklin Che (visible minority, African, 2017)
- Andreas Norrman (University of Eastern Finland, co-advised) (2017)
- Xianlong Liu (Soochow University, China, co-advised) (2017)
- Yashar Monfared (2018)
- Yahong Chen (University of Eastern Finland, co-advised) (2019)
- Chunhao Liang (Shandong Normal University, co-advised) (2019)
- Xiaofei Li (female, JPD between Dal and Shandong Normal University graduate, 2024)

Master's students:

- Mengdi Li (female, 2009);
- Gazi Habiba Akter (female, 2011)
- Luyu Wang (2013)
- Hao Cheng (2015)
- Liyuan Ma (female, 2015)
- Nimisha Subash (female, co-advised) (2016)
- Hitesh Yadav (2017)

Visiting postdocs & faculty:

- Prof. Haidan Mao, Hangzhou Dianzi University, China (female, 2017-2018)
- Prof. Feng Li, Jiangsu U. of Science & Technology, China (November 2009–May 2010)
- Dr. Elena Kazantzeva, Moscow Engineering Physics Institute, Russia (female, May 2010–September 2010)
- Dr. Xu Zhiheng, Shandong Normal University, China (April 2022-April 2024).

Research Interests

- Structured light; orbital angular momentum, optical vortices, topological states of light
- Structured random light; wave packet revivals and wave correlation revivals
- Connections between optical physics and number theory, number factorization, machine learning in photonics
- Classical entanglement and quantum-like communications; free-space and multi-mode fiber optical communications
- Self-similarity and multifractality in nonlinear optical physics
- Extreme events, rogue waves, wave turbulence
- Random lasers, random walks & particle trapping with structured light
- Electromagnetic surface waves

Research, HQP Training & EDI Highlights

- **Current H-index =37**
- Two invited papers, three Editor's Picks, and one invited review
- **EDI record:** around **44% women and visible minorities** among trained HQP
- Established a Joint Ph.D. (JPD) program in *Photonics & Optical Physics* between Dalhousie and Shandong Normal University, China.

Ongoing International Research Collaborations

- Prof. Govind P. Agrawal, Institute of Optics, University of Rochester, USA
- Prof. Ayman Abouraddy, University of Central Florida, USA
- Profs. Ari T. Friberg, Andreas Norman (former postdoc), Matias Koivurova, Center for Photonics Sciences, University of Eastern Finland, Finland
- Prof. Sergei Popov, Royal Institute of Technology, Sweden
- Prof.. Qiwen Zhan, University of Shanghai for Science & Technology, China
- Profs. Yangjian Cai, and Chunhao Liang (former Ph.D. student), Shandong Normal University, China
- Prof. Yahong Chen (former Ph.D student), Soochow University, China

Recent Popular Press Coverage & Editor's Selections

- Our recent work in collaboration with Prof. Ayman Abouraddy's group from University of Central Florida, USA on the **discovery of the space-time Talbot effect**, *APL Photonics* **6**, 056105 (2021), is featured in May 2021 issue of *Scilight*: Y. Yiu, "Talbot effect observed over space-time for the first time," <https://doi.org/10.1063/10.0005054>; **8,052 views to date**.

- Our recent work in collaboration with the group of Prof. Yangjian Cai from Shandong Normal University, China on the **discovery of temporal boundary solitons causing giant superthermal light statistics**, *Phys. Rev. Lett.*, **127**, 053901 (2021), is featured in a Shandong Normal University's College News issue for 2021,
- My 2021 single-author publication on the **discovery of a link between a twist phase and classical entanglement of random light**, *Opt. Lett.*, **46**, 5958 (2021), is selected as an Editor's Pick as an "article of excellent scientific quality and representative of the work taking place in fundamental optics".
- Our recent work in collaboration with Prof. Cai's group from Shandong Normal University on the **nearly distortionless propagation of a class of structured random light beams through atmospheric turbulence**, *JOSA A* **39**, C51, (2022), which was invited to be published in a special issue of JOSA A devoted to Emil Wolf, was selected as an Editor's pick.
- Our recent work on the **discovery of perfect correlation vortices** *Opt. Lett.*, **49**, 4717 (2024) was selected as an Editor's Pick as an "article of excellent scientific quality and representative of the work taking place in physical optics."

Editorship

- "Recent Advances in Statistical Optics and Plasmonics," Special Issue of *Applies Sciences* (ISSN 2076-3417), July 2019; co-edited by S.A. Ponomarenko and S. Popov.
- Associate Editor:
 1. *Journal of the European Optical Society: Rapid Publications*, May 2020—Date.
 2. *Frontiers in Physics (Optics & Photonics Section)*, June 2022—Date.

Invited Reviews (HQP underlined)

- **Y. Chen, A. Norrman**, S. A. Ponomarenko, and A. T. Friberg, "Optical coherence and electromagnetic surface waves," *Progress in Optics*, **65**, 105-166 (2020).

Journal Publications; HQP underlined, High Impact Factor (IF) in bold

1. **X. Li, S. Bashiri**, V. Ponomarenko, Y. Wang, Y. Cai, and S. A. Ponomarenko, "Multi-function vortex array radar," *Appl. Phys. Lett.* **125**, 174103 (2024).
2. **S. Alhadlaq** and S. A. Ponomarenko, "Emergence of extreme events from randomly chirped condensate," *Phys. Lett. A*, **526**, 129958 (2024).
3. T. Cao, X. Liu, Q. Chen, S. A. Ponomarenko, Y. Cai, and **C. Liang**, "Prime number factorization and degree of coherence of speckled light beams," *Opt. Lett.*, **49**, 5232 (2024).
4. **X. Li, S. Bashiri**, Y. Ma, **C. Liang**, Y. Cai, S. A. Ponomarenko, and **Z. Xu**, "Perfect correlation vortices [**Editor's Pick**]," *Opt. Lett.* **49**, 4717 (2024);
5. S. A. Ponomarenko, and **D. Hebri**, "Perfect space-time vortices" , *Opt. Lett.* **49**, 4322 (2024).
6. **X. Li**, Y. Wang, X. Liu, Y. Ma, Y. Cai, S. A. Ponomarenko, and X. Liu, "Deep learning and random light structuring ensure robust free-space communications," *Appl. Phys. Lett.* **124**, 214103 (2024).
7. M. Samadzadeh, S. Rasouli, **D. Hebri**, and S. A. Ponomarenko, "Multiplying vortex beams by diffraction from almost periodic structures: Theory and experiment" , *Appl. Phys. Lett.* **124**, 201107 (2024).

8. **X. Li**, X. Liu, Q. Wu, Y. Cai, S. A. Ponomarenko, and **C. Liang**, “Prime Number Factorization with Light Beams Carrying Orbital Angular Momentum,” *APL Photonics*, **9**, 046107 (2024).
9. **D. Hebri**, S. Rasouli, and S. Ponomarenko, “Fourier reciprocity between generalized elliptical Gaussian and elegant elliptical Hermite-Gaussian beams carrying orbital angular momenta,” *J. Opt. Soc. Am. A*, **41**, 338–348 (2024).
10. Q. Chen, **M. Hajati**, X. Liu, Y. Cai, S.A. Ponomarenko, and **C. Liang**, “Experimental realization of Airy beams on incoherent background,” *Opt. Laser. Technol.*, **169**, 110020 (2024).
11. X. Liu, **C. Liang**, Y. Cai, and S. A. Ponomarenko, “Axial Correlation Revivals and Number Factorization with Structured Random Waves,” *Phys. Rev. Applied*, **20**, L021004 (2023).
12. S. A. Ponomarenko, J. Zhang, and G. P. Agrawal, “Goos-Hänchen shift at a temporal boundary,” *Phys. Rev. A*, **106**, L061501 (2022).
13. **Z. Xu**, , X. Liu, Y. Cai, S. A. Ponomarenko, and **C. Liang** “Structurally stable beams in the turbulent atmosphere: dark and antidark beams on incoherent background [**Invited, Editor’s Pick**],” *J. Opt. Soc. Am. A*, **39**, C51-C57 (2022).
14. S. A. Ponomarenko, “Classical entanglement of twisted random light propagating through atmospheric turbulence [**Invited**],” *J. Opt. Soc. Am. A*, **39**, C1-C5 (2022).
15. S. A. Ponomarenko, “Twist phase and classical entanglement of partially coherent light [**Editor’s Pick**],” *Opt. Lett.*, **46**, 5958-5961 (2021);
16. **C. Liang**, **X. Liu**, **Z. Xu**, F. Wang, W. Wen, S. A. Ponomarenko, Y. Cai, and P. Ma, “Perfect optical coherence lattices,” *Appl. Phys. Lett.* **119**, 131109 (2021).
17. **M. Hajati**, V. Sieben, and S. A. Ponomarenko, “Airy beams on incoherent background,” *Opt. Lett.*, **46**, 3961-3964 (2021).
18. **C. Liang**, **S. A. Ponomarenko**, **F. Wang**, and **Y. Cai**, “Temporal Boundary Solitons and Extreme Superthermal Light Statistics,” *Phys. Rev. Lett.*, **127**, 053901 (2021); **IF=9.2**.
19. L. Hall, S. A. Ponomarenko, and A. Abouraddy, ”Temporal Talbot effect in free space” , *Opt. Lett.*, **46**, 13, 3107-3110 (2021).
20. **Y. Chen**, **A. Norrman**, S. A. Ponomarenko, and A. T. Friberg, “Spin density in partially coherent surface-plasmon-polariton vortex fields,” *Phys. Rev. A*, **103**, 063511 (2021).
21. J. -F. Wang, Z. D. Chen, C. Peng, J. Li, and S. A. Ponomarenko, “Development of the Recursive Convolutional CFS-PML for the Wave-Equation-Based Meshless Method,” *IEEE Trans. Antenna Propag.*, **69**, 3599-3604 (2021).
22. L. A. Hall, M. Yessenov, S. A. Ponomarenko, and A. F. Abouraddy, “The space-time Talbot effect,” *APL Photonics* **6**, 056105 (2021); **Featured on cover & in popular press**.
23. **D. Peng**, **Z. Huang**, **Y. Liu**, **Y. Chen**, **F. Wang**, **S. A. Ponomarenko**, and **Y. Cai**, “Optical coherence encryption with structured random light,” *Photonix* **2**, 6 (2021); **2-year IF=19.8**.
24. Y. Shen, H. Sun, D. Peng, **Y. Chen**, Q. Cai, D. Wu, F. Wang, Y. Cai, and S. A. Ponomarenko, “Optical image reconstruction in 4f imaging system: Role of spatial coherence structure engineering,” *Appl. Phys. Lett.* **118**, 181102 (2021).
25. **M. Yessenov**, **L. A. Hall**, **S. A. Ponomarenko**, and **A. F. Abouraddy**, “Veiled Talbot Effect,” *Phys. Rev. Lett.*, **125**, 243901 (2020); **IF=9.2** .

26. **X. Li**, S. A. Ponomarenko, **Z. Xu**, F. Wang, Y. Cai, and **C. Liang**, “Universal self-similar asymptotic behavior of optical bump spreading in random medium atop incoherent background: reply”, *Opt. Lett.*, **45**, 3511 (2020).
27. Z. Huang, **Y. Chen**, F. Wang, S. A. Ponomarenko, and Y. Cai, “Measuring Complex Degree of Coherence of Random Light Fields with Generalized Hanbury Brown–Twiss Experiment”, *Phys. Rev. Applied*, **13**, 044042 (2020).
28. H. Ni, **C. Liang**, F. Wang, Y. Chen, S. A. Ponomarenko, and Y. Cai, “Non-Gaussian statistics of partially coherent light in atmospheric turbulence”, *Chinese Phys. B*, **29** 064203 (2020).
29. **Z. Xu**, **X. Li**, **X. Liu**, S. A. Ponomarenko, Y. Cai, and **C. Liang**, “Vortex preserving statistical optical beams”, *Opt. Express*, **28**, 8475 (2020).
30. **X. Li**, S. A. Ponomarenko, **Z. Xu**, F. Wang, Y. Cai, and **C. Liang**, “Universal self-similar asymptotic behavior of optical bump spreading in random medium atop incoherent background”, *Opt. Lett.*, **45** 698 (2020).
31. **Z. Xu**, X. Liu, **Y. Chen**, F. Wang, L. Liu, **Y. E. Monfared**, S. A. Ponomarenko, Y. Cai, and **C. Liang**, “Self-healing properties of Hermite-Gaussian correlated Schell-model beams”, *Opt. Express*, **28**, 2828 (2020).
32. **C. Liang**, S. A. Ponomarenko, F. Wang, and Y. Cai, “Rogue waves, self-similar statistics, and self-similar intermediate asymptotics”, *Phys. Rev. A*, **100**, 063804 (2019).
33. **Y. Chen**, **A. Norrman**, S. A. Ponomarenko, and A. T. Friberg, “Partially coherent surface plasmon polariton vortex fields”, *Phys. Rev. A*, **100** 053833 (2019).
34. H. Wang, X. Peng, L. Liu, F. Wang, Y. Cai, and S. A. Ponomarenko, “Generating bona fide twisted Gaussian Schell-model beams”, *Opt. Lett.*, **44**, 3709 (2019).
35. **H. Mao**, **Y. Chen**, **C. Liang**, L. Chen, Y. Cai and S. A. Ponomarenko, “Self-steering partially coherent vector beams”, *Opt. Express*, **27**, 14353 (2019).
36. S. Daniel, K. Saastamoinen, S. A. Ponomarenko, and A. T. Friberg, “Scattering of partially coherent surface plasmon polariton fields by metallic nanostripe”, *JEOS-RP*, **15**, 4 (2019).
37. X. Zhu, F. Wang, C. Zhao, Y. Cai, and S. A. Ponomarenko, “Experimental realization of dark and antidark diffraction-free beams”, *Opt. Lett.*, **44**, 2260 (2019).
38. **Y. E. Monfared** and S. A. Ponomarenko, “Extremely nonlinear carbon-disulfide-filled photonic crystal fiber with controllable dispersion”, *Opt. Mat.*, **88** 406 (2019).
39. **C. Liang**, X. Zhu, C. Mi, X. Peng, F. Wang, Y. Cai, and S. A. Ponomarenko, “High-quality partially coherent Bessel beam array generation: erratum” *Opt. Lett.*, **43**, 4939 (2018).
40. **Y. Chen**, **A. Norrman**, S. A. Ponomarenko, and A. T. Friberg, “Coherence lattices in surface plasmon polariton fields,” *Opt. Lett.*, **43**, 3429 (2018).
41. **C. Liang**, X. Zhu, C. Mi, X. Peng, F. Wang, Y. Cai, and S. A. Ponomarenko, “High-quality partially coherent Bessel beam array generation,” *Opt. Lett.*, **43**, 3188 (2018).
42. **Y. Chen**, **A. Norrman**, S. A. Ponomarenko, and A. T. Friberg, “Partially coherent axiconic surface plasmon polariton fields,” *Phys. Rev. A (Rapids)*, **97** 041801(R) (2018); **Featured in Kaleidoscope of PRA.**

43. **H. Mao, Y. Chen**, S. A. Ponomarenko, and A. T. Friberg, “Coherent pseudo-mode representation of partially coherent surface plasmon polaritons,” *Opt. Lett.*, **43**, 1395 (2018).
44. **C. Liang**, G. Wu, F. Wang, W. Li, Y. Cai, and S. A. Ponomarenko, “Overcoming the classical Rayleigh diffraction limit by controlling two-point correlations of partially coherent light sources,” *Opt. Express*, **25**, 28352 (2017)
45. **Y. E. Monfared** and S. A. Ponomarenko, “Non-Gaussian statistics of extreme events in stimulated Raman scattering: The role of coherent memory and source noise,” *Phys. Rev. A*, **96**, 043817 (2017)
46. **Y. Chen, A. Norrman**, S. A. Ponomarenko, and A. T. Friberg, “Plasmon coherence determination by nanoscattering,” *Opt. Lett.*, **42**, 3279 (2017).
47. **F. Che**, S. A. Ponomarenko, M. Cada, and N. Nguyen-Huu, “High Sensitivity Integrated Visible to Mid-Infrared Nonlinear Plasmonic Sensor”, *IEEE Photonics Journal*, **9**, 1 (2017).
48. **C. Liang**, C. Mi, F. Wang, C. Zhao, Y. Cai, and Sergey A. Ponomarenko, “Vector optical coherence lattices generating controllable far-field beam profiles”, *Opt. Express* **25**, 9872 (2017).
49. **F. Che**, S. Grabtchak, W. M. Whelan, S. A. Ponomarenko, and M. Cada, “Relative SHG measurements of metal thin films: Gold, silver, aluminum, cobalt, chromium, germanium, nickel, antimony, titanium, titanium nitride, tungsten, zinc, silicon and indium tin oxide,” *Results in Physics*, **7**, 593 (2017)
50. **Y. E. Monfared** and S. A. Ponomarenko, “Non-Gaussian statistics and optical rogue waves in stimulated Raman scattering,” *Opt. Express*, **25**, 5941 (2017).
51. **Y. Chen**, S. A. Ponomarenko, and Y. Cai, “Self-steering partially coherent beams,” *Sci. Rep.*, **7**, 39957 (2017).
52. **X. Liu**, F. Wang, L. Liu, **Y. Chen**, Y. Cai, and S. A. Ponomarenko, “Complex degree of coherence measurement for classical statistical fields,” *Opt. Lett.*, **42**, 77 (2017).
53. **A. Norrman**, S. A. Ponomarenko, and A. T. Friberg, “Partially coherent surface plasmon polaritons,” *Europhys. Lett.*, **116** 64001 (2016).
54. **F. Che**, S. A. Ponomarenko, and M. Cada, “Giant spectral transformations in plasmon-enhanced difference-frequency generation with polychromatic light,” *J. Opt.*, **18**, 125503 (2016); **Featured on cover**.
55. F. Wang, **Y. Chen**, **X. Liu**, Y. Cai, and S. A. Ponomarenko, “Self-reconstruction of partially coherent beams scattered by opaque obstacles,” *Opt. Express*, **24**, 23735 (2016).
56. **X. Liu**, J. Yu, **Y. Chen**, Y. Cai, and S. A. Ponomarenko, “Propagation of optical coherence lattices in the turbulent atmosphere,” *Opt. Lett.*, **41**, 4182 (2016).
57. **Y. Chen**, S. A. Ponomarenko, and Y. Cai, “Experimental generation of optical coherence lattices,” *Appl. Phys. Lett.*, **109**, 061107 (2016).
58. **Y. E. Monfared** and S. A. Ponomarenko, “Slow light generation via stimulated Brillouin scattering in liquid-filled photonic crystal fibers,” *Optik*, **127**, 5800 (2016).
59. **L. Mokhtarpour** and S. A. Ponomarenko, “Fluctuating pulse propagation in resonant nonlinear media: self-induced transparency random phase soliton formation,” *Opt. Express*, **23**, 30270 (2015).

60. **S. Yang**, S. A. Ponomarenko, and Z. Chen, "Coherent pseudo-mode decomposition of a new partially coherent source class," *Opt. Lett.*, **40**, 3081 (2015).
61. S. A. Ponomarenko, "Self-imaging of partially coherent light in graded-index media," *Opt. Lett.*, **40**, 566 (2015).
62. **L. Ma** and S. A. Ponomarenko, "Free-space propagation of optical coherence lattices and periodicity reciprocity," *Opt. Express*, **23**, 1848 (2015).
63. **L. Ma** and S. A. Ponomarenko, "Optical coherence gratings and lattices," *Opt. Lett.*, **39**, 6656 (2014).
64. **S. Yang**, Z. Chen, Y. Yu, and S. Ponomarenko, "On Numerical Dispersion of the Radial Point Interpolation Meshless Method," *IEEE Microw. Wireless Comp. Lett.*, **24**, 653 (2014).
65. **S. Yang**, Y. Yu, Z. Chen, and S. Ponomarenko, "A Time Domain Collocation Meshless Method with Local Radial Basis Functions for Transient Electromagnetic Analysis," *IEEE Trans. Antennas Propag.*, **62**, 5334 (2014).
66. **S. Yang**, Z. Chen, Y. Yu, and S. Ponomarenko, "A Divergence-Free Meshless Method Based on the Vector Basis Functions for Transient Electromagnetic Analysis," *IEEE Trans. Microw. Theory Techn.*, **62**, 1409 (2014).
67. **L. Wang**, S. A. Ponomarenko, and Z. Z. Chen, "Spectral coherence anomalies," *Opt. Lett.*, **15**, 2557 (2013).
68. **L. Wang**, **F. Che**, S. A. Ponomarenko, and Z. Z. Chen, "Plasmon-enhanced spectral changes in sum-frequency generation with polychromatic light," *Opt. Express*, **21**, 14159 (2013).
69. **S. Yang**, Z. D. Chen, Y. J. Yu, and S. Ponomarenko, "Efficient Implementation of the Divergence-Preserved ADI-FDTD Method," *IEEE Antennas and Wireless Propag. Lett.*, **11**, 1560 (2013).
70. **L. Mokhtarpour** and S. A. Ponomarenko, "Ultrashort pulse coherence properties in coherent linear amplifiers," *J. Opt. Soc. Am. A* **30**, 627 (2013).
71. **S. Haghgoo** and S. A. Ponomarenko, "Optical shocks in resonant media: The role of inhomogeneous broadening," *Opt. Commun.*, **286**, 344 (2013).
72. **L. Mokhtarpour**, **G. H. Akter**, and S. A. Ponomarenko, "Partially coherent self-similar pulses in resonant linear absorbers," *Opt. Express*, **20**, 17816 (2012).
73. **L. Mokhtarpour** and S. A. Ponomarenko, "Complex Area-Correlation Theorem for Statistical Pulses in Coherent Linear Absorbers," *Opt. Lett.*, **37**, 3498 (2012).
74. **S. Haghgoo** and S. A. Ponomarenko, "Self-induced transparency quadratic solitons," *Opt. Express*, **20**, 13988 (2012).
75. **S. Haghgoo** and S. A. Ponomarenko, "Shape-invariant pulses in resonant linear absorbers," *Opt. Lett.*, **37**, 1328 (2012).
76. S. A. Ponomarenko, "Degree of phase-space separability of statistical pulses," *Opt. Express*, **20**, 2548 (2012).
77. S. A. Ponomarenko, "Complex Gaussian Representation of Statistical Pulses," *Opt. Express*, **19**, 17086 (2011).

78. **S. Haghgoo** and S. A. Ponomarenko, "Self-similar pulses in coherent linear amplifiers," *Opt. Express*, **19**, 9750 (2011).
79. S. A. Ponomarenko and **S. Haghgoo**, "Self-similarity and optical kinks in resonant nonlinear media," *Phys. Rev. A, (Rapids)*, **82**, 051801(R) (2010).
80. S. A. Ponomarenko and **S. Haghgoo**, "Spatial similaritons in conservative nonintegrable systems," *Phys. Rev. A, (Rapids)*, **81**, 051801(R), (2010).
81. R. Borghi, F. Gori, and S. A. Ponomarenko, "On a class of electromagnetic diffraction free beams" *J. Opt. Soc. Am. A*, **26**, 2275 (2009).
82. **M. Qasymeh**, S. A. Ponomarenko, and M. Cada, "Ultrashort pulse polarization control in silicon waveguides," *Opt. Express*, **17**, 1795 (2009).
83. **M. Li**, S. A. Ponomarenko, **M. Qasymeh**, and M. Cada, "Electronic control of soliton power transfer in silicon nanocrystal waveguides," *Opt. Express*, **16** 9587 (2008).
84. **M. Qasymeh**, M. Cada, and S. A. Ponomarenko, "Applications of electro-optical Kerr effect to photonics devices" *IEEE, J. Quant. Electron.*, **44**, 740 (2008).
85. S. A. Ponomarenko and G. P. Agrawal, "Phase space quality factor for ultrashort pulsed beams", *Opt. Lett.*, **33**, 767 (2008).
86. S. A. Ponomarenko and G. P. Agrawal, "Nonlinear interaction of two or more similaritons in loss- and dispersion-managed fibers," *J. Opt. Soc. Am. B*, **25**, 983 (2008).
87. S. A. Ponomarenko, **W. Huang**, and M. Cada, "Dark and antidark diffraction-free beams," *Opt. Lett.*, **32**, 2508 (2007).
88. **W. Huang**, S. A. Ponomarenko, and M. Cada, "Polarization changes of partially coherent pulses propagating in optical fibers", *J. Opt. Soc. Am. A*, **24**, 3063 (2007).
89. S. A. Ponomarenko and G. P. Agrawal, "Optical similaritons in nonlinear waveguide amplifiers", *Opt. Lett.*, **32**, 1659 (2007).
90. S. A. Ponomarenko and G. P. Agrawal, "Interactions of chirped and chirp-free similaritons in fiber amplifiers", *Opt. Express*, **15**, 2963 (2007).
91. S. A. Ponomarenko, M. E. Sherrill, D. P. Kilcrease, and G. Csanak, "Statistical mean-field theory of finite quantum systems: canonical ensemble formulation", *J. Phys. A*, **39**, L499, (2006).
92. **S. A. Ponomarenko and G. P. Agrawal**, "Do Solitonlike Self-Similar Waves Exist in Non-linear Optical Media?", *Phys. Rev. Lett.*, **97**, 013901 (2006); IF=9.2.
93. S. A. Ponomarenko and G. P. Agrawal, "Linear optical bullets," *Opt. Commun.*, **261**, 1 (2006).
94. S. A. Ponomarenko, H. Roychowdhury, and E. Wolf, "Physical Significance of Complete Spatial Coherence of Optical Fields," *Phys. Lett. A*, **345**, 10 (2005).
95. H. Roychowdhury, S. A. Ponomarenko, and E. Wolf, "Changes in polarization of partially coherent electromagnetic beams propagating through the turbulent atmosphere", *J. Mod. Opt.*, **52**, 1611 (2005).
96. S. K. Nemirovskii and S. A. Ponomarenko, "Multi-scale perturbation analysis in hydrodynamics of the superfluid turbulence: Derivation of the Dresner equation," *Cryogenics*, **45**, 408 (2005).

97. J. Ellis, A. Dogariu, S. Ponomarenko, and E. Wolf, "Degree of polarization of statistically stationary electromagnetic fields," *Opt. Commun.*, **248**, 333 (2005).
98. S. A. Ponomarenko, N. M. Litchinitser, and G. P. Agrawal, "Theory of incoherent solitons: Beyond the mean-field approximation," *Phys. Rev. E, Rapid Communication*, **70**, 015603(R) (2004).
99. J. Ellis, A. Dogariu, S. Ponomarenko, and E. Wolf, "Correlation matrix of a completely polarized, statistically stationary electromagnetic field," *Opt. Lett.*, **29**, 1536 (2004).
100. S. A. Ponomarenko and G. P. Agrawal, "Asymmetric incoherent vector solitons," *Phys. Rev. E*, **69**, 036604 (2004).
101. S. A. Ponomarenko, G. P. Agrawal, and E. Wolf, "The energy spectrum of nonstationary ensembles of pulses" *Opt. Lett.*, **29**, 394 (2004).
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