

Bibliography

1. Acevedo, C., H., Sepulveda, J., R., G., and Dogariu, A., First-order statistics of the phase in optical vortex speckles. *J. Opt. Soc. Am.* **37**, 584-590 (2020).
2. Allen, L., Padgett, M. J., & Babiker, M., IV The orbital angular momentum of light. In *Progress in optics* (Vol. 39, pp. 291-372). *Elsevier* (1999).
3. Allen, L., Barnett, S., and Padgett, M., J., *Orbital angular momentum* (*CRC Press*, 2016).
4. Alonso, M. A., Korotkova, O., & Wolf, E., Propagation of the electric correlation matrix and the van Cittert–Zernike theorem for random electromagnetic fields. *J. Mod. Opt.* **53**, 969-978 (2006).
5. Alperin, S., N., Niederriter, R., D., Gopinath, J., T., and Siemens, M., E., Quantitative measurement of the orbital angular momentum of light with a single, stationary lens. *Opt. Lett.* **41**, 5019-5022 (2016).
6. Al-Qasimi, A., Lahiri, M., Kuebel, D., James, D. F., & Wolf, E., The influence of the degree of cross-polarization on the Hanbury Brown-Twiss effect. *Opt. Express* **18**, 17124-17129 (2010).
7. Ambuj, A., Vyas, R., & Singh, S., Diffraction of Laguerre-Gauss vortex beams by regular polygons, In *Frontiers in Optics* (pp. JTU3A-10). *Optica Publishing Group* (2014).
8. Araujo, L., and Anderson, M., E., Measuring Vortex Charge With a Triangular Aperture. *Opt. Lett.* **36**, 787-789 (2011).
9. Awatsuji, Y., Fujii, A., Kubota, T., & Matoba, O., Parallel three-step phase-shifting digital holography. *Appl. Opt.*, **45**, 2995-3002 (2006).
10. Bai, Y., Lv, H., Fu, X., & Yang, Y., Vortex beam: generation and detection of orbital angular momentum, *Chin. Opt. Lett.* **20**, 012601 (2022).
11. Berger, B., Kahlert, M., Schmidt, D., and Assmann, M., Spectroscopy of fractional orbital angular momentum states. *Opt. Express* **26**, 32248-32258 (2018).
12. Baker, K. L., Stappaerts, E. A., Gavel, D., Wilks, S. C., Tucker, J., Silva, D. A., ... & Azucena, O., High-speed horizontal-path atmospheric turbulence correction with a large-actuator-number microelectromechanical system spatial light modulator in an interferometric phase-conjugation engine. *Opt. Lett.* **29**, 1781-1783 (2004).
13. Balasubramani, V., et al., Holographic tomography: techniques and biomedical applications. *Appl. Opt.* **60**, B65-B80 (2021).
14. Berkhout, G., C., G., and Beijersbergen, M., W., Method for probing the orbital angular momentum of optical vortices in electromagnetic waves from astronomical objects. *Phys. Rev. Lett.* **101**, 100801 (2008).

15. Bertolotti, J., Van Putten, E. G., Blum, C., Lagendijk, A., Vos, W. L., & Mosk, A. P., Non-invasive imaging through opaque scattering layers. *Nature*. **491**, 232-234 (2012).
16. Bertolotti, J., Peeking through the curtain. *Nat. Photon.* **8**, 751-752 (2014).
17. Berry, M. V., & Dennis, M. R., Phase singularities in isotropic random waves. Proceedings of the Royal Society of London. Series A: *Mathematical, Physical and Engineering Sciences*. **456**, 2059-2079 (2000).
18. Bezerra, D., O., Amaral, J., P., Fonseca, E., J., S., Alves, C., R., Jesus-Silva, A., J., Sorting of spatially incoherent optical vortex modes. *Sci. Rep.* **10**, 1-7 (2020).
19. Borghi, R., Gori, F., & Santarsiero, M., Phase and amplitude retrieval in ghost diffraction from field-correlation measurements. *Phys Rev. Lett.* **96**, 183901 (2006).
20. Bromberg, Y., Lahini, Y., Small, E., & Silberberg, Y., Hanbury Brown and Twiss interferometry with interacting photons. *Nat. Photon.* **4**, 721-726 (2010).
21. Briers, D., Duncan, D. D., Hirst, E. R., Kirkpatrick, S. J., Larsson, M., Steenbergen, W., ...& Thompson, O. B. Laser speckle contrast imaging: theoretical and practical limitations. *Journal of Biomedical Optics*. **18**, 066018 (2013).
22. Broky, J., & Dogariu, A., Complex degree of mutual polarization in randomly scattered fields. *Opt. Express*. **18**, 20105-20113 (2010).
23. Brown, R. H., & Twiss, R. Q., A Test of a New Type of Stellar Interferometer on Sirius, In *A Source Book in Astronomy and Astrophysics, 1900–1975* (pp. 8-12). *Harvard University Press* (2013).
24. Brundavanam, M., M., Miyamoto, Y., Singh, R., K., Naik, D., N., Takeda, M., and Nakagawa, K., Interferometer setup for the observation of polarization structure near the unfolding point of an optical vortex beam in birefringent crystal. *Opt. Express*. **20**, 13573-13581 (2012).
25. Cai, Y., and Wang, F., Lensless imaging with partially coherent light. *Opt. Lett.* **32**, 205-207 (2007).
26. Chen, M., Roux, F. S., & Olivier, J. C., Detection of phase singularities with a Shack-Hartmann wavefront sensor. *J. Opt. Soc. Am. A*. **24**, 1994-2002 (2007).
27. Chen, L., Lei, J., and Romero, J., Quantum digital spiral imaging. *Light: Sci. Appl.* **3**, e153-e153 (2014).
28. Chen, Y., Wang, F., Liu, L., Zhao, C., Cai, Y., & Korotkova, O., Generation and propagation of a partially coherent vector beam with special correlation functions. *Phys. Rev. A*. **89**, 013801 (2014).
29. Chen, L., Singh, R. K., Chen, Z., & Pu, J., Phase shifting digital holography with the Hanbury Brown–Twiss Approach. *Opt. Lett.* **45**, 212-215 (2020).

30. Chen, L., Chen, Z., Singh, R. K., & Pu, J., Imaging of polarimetric-phase object through scattering medium by phase shifting. *Opt. Express*. **28**, 8145-8155 (2020).
31. Chen, Z., Singh, D., Singh, R. K., & Pu, J., Complex field measurement in a single pixel hybrid correlation holography. *Journal of Phys. Commun.* **4**, 045009 (2020).
32. Chen, Li, Singh, R., K., Dogariu, A., Chen, Z., and Pu, J., Estimation topological charge of propagating vortex from single-shot non-imaged speckle. *Chin. Opt. Lett.* **19**, 022603 (2021).
33. Chen, L., Singh, R. K., Vinu, R. V., Chen, Z., & Pu, J., A wavefront division multiplexing holographic scheme and its application in looking through diffuser. *New J. Phys.* **23**, 113034 (2021).
34. Chen, L., Chen, Z., Singh, R. K., Vinu, R. V., & Pu, J., Increasing field of view and signal to noise ratio in the quantitative phase imaging with phase shifting holography based on the Hanbury Brown-Twiss approach. *Opt. Lasers Eng.* **148**, 106771 (2022).
35. Chirkin, A. S., Gostev, P. P., Agapov, D. P., & Magnitskiy, S. A., Ghost polarimetry: ghost imaging of polarization-sensitive objects. *Laser Phys. Lett.* **15**, 115404 (2018).
36. Chung, C. Y., Cho, K. C., Chang, C. C., Lin, C. H., Yen, W. C., & Chen, S. J., Adaptive-optics system with liquid-crystal phase-shift interferometer. *Appl. Opt.* **45**, 3409-3414 (2006).
37. Colomb, T., Dahlgren, P., Beghuin, D., Cuche, E., Marquet, P., & Depeursinge, C., Polarization imaging by use of digital holography. *Appl. Opt.* **41**, 27-37 (2002).
38. Courtial, J., & Padgett, M. J., Performance of a cylindrical lens mode converter for producing Laguerre–Gaussian laser modes. *Opt. Commun.* **159**, 13-18 (1999).
39. Dainty, J. C. (Ed.), Laser speckle and related phenomena (Vol. 9). *Springer science & business Media* (2013).
40. Deng, D., Lin, M., Li, Y., and Zhao, H., Precision Measurement of Fractional Orbital Angular Momentum. *Phys. Rev. Appl.* **12**, 014048 (2019).
41. Ding, P., F., and Pu, J., The cross correlation function of partially coherent vortex beam. *Opt. Express*. **22**, 1350-1358 (2014).
42. D’Errico, A., D’Amelio, R., Piccirillo, B., Cardano, F., and Marrucci, L., Measuring the complex orbital angular momentum spectrum and spatial mode decomposition of the structured light beam. *Optica* **4**, 1350-1357 (2017).
43. Dogariu, A., and Carminati, R., Electromagnetic field correlations in three dimensional speckles. *Physics Reports* **559**, 1 (2015).
44. Duan, Z., Miyamoto, Y. and Takeda, M. Dispersion-free optical coherence depth sensing with a spatial frequency comb generated by an angular spectrum modulator. *Opt. Express* **14**, 12109–12121 (2006).

45. Efron, U. (Ed.), Spatial light modulator technology: materials, devices, and applications (Vol. 47). *CRC Press* (1994).
46. Erkmen, B. I., & Shapiro, J. H., Ghost imaging: from quantum to classical to computational. *Adv. Opt. Photonics*. **2**, 405-450 (2010).
47. Ferreira, Q., S., Jesus-Silva, A., J., Fonseca, E., J., and Hickmann, J., M., Fraunhofer diffraction of light with orbital angular momentum by a slit. *Opt. Lett.* **36**, 3106-3108 (2011).
48. Fang, X., Ren, H., & Gu, M., Orbital angular momentum holography for high-security encryption. *Nat. Photon.* **14**, 102-108 (2020).
49. Freund I. and Berkovits R., Surface reflections and optical transport through random media: coherent backscattering, optical memory effect, frequency, and dynamical correlations. *Phys. Rev. B*. **41**, 496–503 (1990).
50. Gabor, D., A new microscopic principle. *Nature*. **161**, 777-778 (1998).
51. Gao, X., Song, X., Zheng, Z., Xie, M., & Huang, S., Misalignment measurement of orbital angular momentum signal based on spectrum analysis and image processing. *IEEE Transactions on Antennas and Propagation*, **68**, 521-526 (2019).
52. Gbur, G., and Tyson, R., K., Vortex beam propagation through atmospheric turbulence and topological charge conservation. *J. Opt. Soc. Am.* **25**, 225-230 (2008).
53. Ghai, D., P., Vyas, S., Senthilkumaran, P., and Sirohi, R., S., Detection of phase singularity using a lateral shear interferometer. *Opt. Laser Eng.* **46**, 419-423 (2008).
54. Goodman, J. W., Introduction to Fourier Optics. Goodman. *McGraw-Hill* (1968).
55. Goodman, J. W., Speckle phenomena in optics: theory and applications. *Roberts and Company Publishers* (2007).
56. Goodman, J. W., Statistical optics. *John Wiley & Sons* (2005).
57. Goldstein, D. H., Polarized light. *CRC Press* (2017).
58. Gong, L., Zhao, Q., Zhang, H., Hu, X-Y, Huang, K., Yang, J-M, and Li, Y-M., Optical orbital angular momentum-multiplexed data transmission under high scattering. *Light Sci. Appl.* **8**, 1-11 (2019).
59. Gori, F., Santarsiero, M., Vicalvi, S., Borghi, R., & Guattari, G., Beam coherence-polarization matrix, Pure and Applied Optics: *Journal of the European Optical Society Part A*. **7**, 941 (1998).
60. Gross, M., Atlan, M., and Absil, E., Noise and aliases in off-axis and phase-shifting holography. *Appl. Opt.* **47**, 1757-1766 (2008).
61. Groot, P. D., Phase shifting interferometry, In Optical measurement of surface topography (pp. 167-186). *Springer, Berlin, Heidelberg* (2011).

62. Guan, Y., Katz, O., Small, E., Zhou, J., & Silberberg, Y., Polarization control of multiply scattered light through random media by wavefront shaping. *Opt. Lett.* **37**, 4663-4665 (2012).
63. Han, Y., & Zhao, G., Measuring the topological charge of optical vortices with an axicon. *Opt. Lett.* **36**, 2017-2019 (2011).
64. Hannonen, A., Hoenders, B. J., Elsässer, W., Friberg, A. T., & Setälä, T. (2020). Ghost polarimetry using Stokes correlations. *J. Opt. Soc. Am. A.* **37**, 714-719.
65. Hassinen, T., Tervo, J., Setälä, T., & Friberg, A. T., Hanbury Brown–Twiss effect with electromagnetic Waves. *Opt. Express.* **19**, 15188-15195 (2011).
66. Hariharan, P., Basics of holography, *Cambridge university press* (2002).
67. He, H., Guan, Y., & Zhou, J., Image restoration through thin turbid layers by correlation with a known object. *Opt. Express.* **21**, 12539-12545 (2013).
68. Hecht, E., Optics, *Pearson Education India* (2012).
69. Hendry, D., Digital Holography: Digital Hologram Recording, Numerical Reconstruction and Related Techniques, U. Schnars, W. Jueptner (Eds.), *Springer, Berlin* (2006).
70. Hickmann, J. M., Fonseca, E. J. S., Soares, W. C., & Chávez-Cerda, S., Unveiling a truncated optical lattice associated with a triangular aperture using light's orbital angular momentum. *Phys. Rev. Lett.* **105**, 053904 (2010).
71. Hiersemenzel, K., Brown, E. R., & Duncan, R. R., Imaging large cohorts of single ion channels and their activity. *Front. Endocrinol.* **4**, 114 (2013).
72. Hillman, T. R., Yamauchi, T., Choi, W., Dasari, R. R., Feld, M. S., Park, Y., & Yaqoob, Z., Digital optical phase conjugation for delivering two-dimensional images through turbid media. *Sci. Rep.* **3**, 1-5 (2013).
73. Horstmeyer, R., Ruan, H., & Yang, C. (2015). Guidestar-assisted wavefront-shaping methods for focusing light into biological tissue. *Nat. photon.* **9**, 563-571.
74. Hossack, W., J., Darling, A., M., and Dahdouh, A., Coordinate transformations with multiple computer-generated optical elements. *J. Mod. Opt.* **34**, 1235-1250 (1987).
75. Huang, K., Zeng, J., Gan, J., Hao, Q., & Zeng, H., Controlled generation of ultrafast vector vortex beams from a mode-locked fiber laser. *Opt. Lett.* **43**, 3933-3936 (2018).
76. Huang, Y., RV, V., Chen, Z., Sarkar, T., Singh, R. K., & Pu, J., Recovery and Characterization of Orbital Angular Momentum Modes with Ghost Diffraction Holography. *Appl. Sci.* **11**, 12167 (2011).
77. Janassek, P., Blumenstein, S., & Elsässer, W., Recovering a hidden polarization by ghost polarimetry. *Opt. Lett.* **43**, 883-886 (2018).

78. Kadono, H., Ogusu, M., & Toyooka, S., Phase shifting common path interferometer using a liquid-crystal phase modulator. *Opt. Commun.* **110**, 391-400 (1994).
79. Katz, O., Small, E., & Silberberg, Y., Looking around corners and through thin turbid layers in real time with scattered incoherent light. *Nat. Photon.* **6**, 549-553 (2012).
80. Katz, O., Heidmann, P., Fink, M., & Gigan, S., Non-invasive single-shot imaging through scattering layers and around corners via speckle correlations. *Nat. Photon.* **8**, 784-790 (2014).
81. Kellock, H., Setälä, T., Shirai, T., and Friberg, A., T., Image quality in double- and triple-intensity ghost imaging with classical partial polarized light. *J. Opt. Soc. Am. A.* **29**, 2459-2468 (2012).
82. Khajavi, B., Ureta, Junior R. G. and Galvez, E., J., Determining Vortex-Beam Superposition by Shear Interferometry. *Photonics.* **5**, 16 (2018).
83. Knutson, E., M., Lohani, S., Danaci, O., Huver, S., D., and Glasser, R., T., Deep learning as a tool to distinguish between high orbital angular momentum optical modes, in *Optics and Photonics for Information Processing*, 9970, (2016).
84. Kolman, P., and Chmelik, R., Coherence-controlled holographic microscope. *Opt. Express.* **18**, 21990-22004 (2010).
85. Kotlyar, V. V., Almazov, A. A., Khonina, S. N., Soifer, V. A., Elfstrom, H., & Turunen, J., Generation of phase singularity through diffracting a plane or Gaussian beam by a spiral phase plate. *J. Opt. Soc. Am. A.* **22**, 849-861 (2005).
86. Kuebel, D., and Visser, T., D., Generalized Hanbury Brown-Twiss effect for Stokes parameters. *J. Opt. Soc. Am. A.* **36**, 362-367 (2019).
87. Kumar, A., Banerji, J., & Singh, R. P., Hanbury Brown–Twiss-type experiments with optical vortices and observation of modulated intensity correlation on scattering from rotating ground glass. *Phys. Rev. A.* **86**, 013825 (2012).
88. Kumar, B., Lochab, P., Baidya Kayal, E., Ghai, D. P., Senthilkumaran, P., & Khare, K., Speckle in polarization structured light. *Journal of Modern Optics.* **69**, 47-54 (2022).
89. Lathika, S., J., Anand, V., and Bhattacharya, S., A compact single channel interferometer to study vortex beam propagation through scattering layers. *Sci. Rep.* **10**, 1-8 (2020).
90. Leach, J., Courtial, J. Skeldon, K., Barnett, S., M., Frank-Arnold, S., and Padgett, M., J., interferometric method to measure orbital and spin, or the total orbital angular momentum of a single photon. *Phys. Rev. Lett.* **92**, 013601 (2004).
91. Lee, W., H., Sampled Fourier transform hologram generated by computer. *App. Opt.* **9**, 639-643 (1970).

92. Lee, Y., L., Lin, Y., C., Tu, H., Y., and Cheng, C., J., Phase measurement accuracy in digital holographic microscopy using a wavelength-stabilized laser diode. *J. Opt.* **15**, 025403 (2013).
93. Leith, E., N., and Upatnieks, J., Reconstructed wavefronts and communication theory. *J. Opt. Soc. Am.* **52**, 1123-1130 (1962).
94. Li, J., Zhang, M., Wang, D., Wu, S., & Zhan, Y., Joint atmospheric turbulence detection and adaptive demodulation technique using the CNN for the OAM-FSO communication. *Opt. Express.* **26**, 10494-10508 (2008).
95. Li, J., Zhang, M., & Wang, D., Adaptive demodulator using machine learning for orbital angular momentum shift keying. *IEEE Photonics Technol. Lett.* **29**, 1455-1458 (2017).
96. Li, S., Zhao, P., Feng, X., Cui, K., Liu, F., Zhang, W., & Huang, Y., Measuring the orbital angular momentum spectrum with a single point detector. *Opt. Lett.* **43**, 4607-4610 (2018).
97. Li, S., & Wang, Z., Generation of optical vortex based on computer-generated holographic gratings by photolithography. *Appl. Phys. Lett.* **103**, 141110 (2013).
98. Li, Y., Han, Y., and Cui, Z., Measuring Topological Charge of Vortex Beam With Gradually Changing-Period Spiral Spoke Grating. *IEEE Photonics Technol. Lett.* **32**, 101-104 (2020).
99. Litvin, I., A., Dudley, A., Roux, F., S., and Forbes, A., Azimuthal decomposition with digital holograms. *Opt. Express.* **20**, 10996-11004 (2012).
100. Liu, Y., & Pu, J., Measuring the orbital angular momentum of elliptical vortex beams by using a slit hexagon aperture. *Opt. Commun.*, 284(10-11), 2424-2429 (2011).
101. Liu, Y., Sun, S., Pu, J., & Lü, B., Propagation of an optical vortex beam through a diamond-shaped aperture. *Opt. Laser Technol.* **45**, 473-479 (2013).
102. Liu, Z., Gao, S., Xiao, W., Yang, J., Huang, X., Feng, Y., ... & Li, Z., Measuring high-order optical orbital angular momentum with a hyperbolic gradually changing period pure-phase grating. *Opt. Lett.* **43**, 3076-3079 (2018).
103. Liu, X., Zeng, J., and Cai, Y., Review on vortex beams with low spatial coherence. *Advances in Physics: X* **4**, 507 (2019).
104. Lohmann, A. W., Reconstruction of vectorial wavefronts. *Appl. Opt.* **4**, 1667-1668 (1965).
105. Lu, X., Zhao, C., Shao, Y., Zeng, J., Konijnenberg, S., Zhu, X., Popov, S., Urbach, H., P., and Cai, Y., Phase detection of coherence singularities and determination of topological charge of a partially coherent vortex beam. *Appl. Phys. Lett.* **114**, 201106 (2019).
106. Magaña-Loaiza, O. S., Mirhosseini, M., Cross, R. M., Rafsanjani, S. M. H., & Boyd, R. W., Hanbury Brown and Twiss interferometry with twisted light. *Sci. Adv.* **2**, e1501143 (2016).

107. Mahajan, S., Trivedi, V., Vora, P., Chhaniwal, V., Javidi, B., & Anand, A., Highly stable digital holographic microscope using Sagnac interferometer. *Opt. Lett.* **40**, 3743-3746 (2015).
108. Mao, C. C., Johnson, K. M., & Modde, G., Optical phase conjugation using optically addressed chiral smectic liquid crystal spatial light modulators. *Ferroelectrics*. **114**, 45-53 (1991).
109. Mandel, L., & Wolf, E., Coherence properties of optical fields. *Rev. Mod. Phys.* **37**, 231 (1965).
110. Mandal, A. C., Sarkar, T., Zalevsky, Z., & Singh, R. K., Structured transmittance illumination coherence holography. *Sci. Rep.* **12**, 1-9 (2022).
111. Maurer, C., Jesacher, A., Bernet, S., & Ritsch-Marte, M., What spatial light modulators can do for optical microscopy. *Laser & Photonics Reviews*. **5**, 81-101 (2011).
112. Marco, D., López-Morales, G., Sánchez-López, M. D. M., Lizana, Á., Moreno, I., & Campos, J., Customized depolarization spatial patterns with dynamic retardance functions. *Sci. Rep.* **11**, 1-13 (2021).
113. Melo, L., A., Jesus-Silva, Alcenisio J., and Soares, W. C., Direct Measurement of the Topological Charge in Elliptical Beams Using Diffraction by a Triangular Aperture, *Sci. Rep.* **1**, 6370 (2018).
114. Micó, V., García, J., Zalevsky, Z., & Javidi, B., Phase-shifting Gabor holography. *Opt. Lett.* **34**, 1492-1494 (2009).
115. Milione, G., Wang, T., Han, J., & Bai, L., Remotely sensing an object's rotational orientation using the orbital angular momentum of light. *Chin. Opt. Lett.* **15**, 030012 (2017).
116. Miyamoto, Y., and Reddy, S., G., Probing the orbital angular momentum spectrum of complex incoherent mixtures. *Proc. SPIE* 11099 (2019).
117. Molina-Terriza, G., Torres, J., P., and Torner, L., Management of the angular momentum of light: Preparation of photons in multidimensional vector states of angular momentum. *Phys. Rev. Lett.* **88**, 013601 (2001).
118. Naik, D. N., Singh, R. K., Ezawa, T., Miyamoto, Y., & Takeda, M., Photon correlation holography. *Opt. Express*. **19**, 1408-1421 (2011).
119. Naik, D. N., Ezawa, T., Singh, R. K., Miyamoto, Y., & Takeda, M., Coherence holography by achromatic 3-D field correlation of generic thermal light with an imaging Sagnac shearing interferometer. *Opt. Express*. **20**, 19658-19669 (2012).
120. Naik, D. N., Pedrini, G., & Osten, W., Recording of incoherent-object hologram as complex spatial coherence function using Sagnac radial shearing interferometer and a Pockels cell. *Opt. Express*. **21**, 3990-3995 (2013).

121. Nape, I., Sephton, B., Huang, Y. W., Vallés, A., Qiu, C. W., Ambrosio, A., ... & Forbes, A., Enhancing the modal purity of orbital angular momentum photons. *Appl. Photonics*. **5**, 070802 (2020).
122. Neil, M. A., Juškaitis, R., & Wilson, T., Method of obtaining optical sectioning by using structured light in a conventional microscope. *Opt. Lett.* **22**, 1905-1907 (1997).
123. Ni, B., Guo, L., Yue, C., & Tang, Z., A novel measuring method for arbitrary optical vortex by three spiral spectra. *Phys. Lett. A*. **381**, 817-820 (2017).
124. Nixon, M., Katz, O., Small, E., Bromberg, Y., Friesem, A. A., Silberberg, Y., & Davidson, N., Real-time wavefront shaping through scattering media by all-optical feedback. *Nat. Photon.* **7**, 919-924 (2013).
125. Nomura, T., Javidi, B., Murata, S., Nitandai, E., & Numata, T., Polarization imaging of a 3D object by use of on-axis phase-shifting digital holography. *Opt. Lett.* **32**, 481-483 (2007).
126. Nye, J. F., & Berry, M. V., Dislocations in wave trains. In *A Half-Century of Physical Asymptotics and Other Diversions: Selected Works by Michael Berry* (6-31) (1974).
127. Ohta, N., Kodama, S., Miyamoto, Y., Osten, W., Takeda, M., and Watanabe, E., 3D imaging through a highly heterogenous double-composite random medium by common-path phase-shift digital holography. *Opt. Lett.* **47**, 1170-1173 (2022).
128. Osnabrugge, G., Horstmeyer, R., Papadopoulos, I. N., Judkewitz, B., & Vellekoop, I. M., Generalized optical memory effect. *Optica*. **4**, 886-892 (2017).
129. Ostrovsky, A. S., Martínez-Niconoff, G., Arrizón, V., Martínez-Vara, P., Olvera-Santamaría, M. A., & Rickenstorff-Parrao, C., Modulation of coherence and polarization using liquid crystal spatial light modulators. *Opt. Express*. **17**, 5257-5264 (2009).
130. Ozaktas, H. M., & Kutay, M. A., Optical information processing: A historical overview. *Digital Signal Processing*. **119**, 103248 (2021).
131. Padgett, M. J., & Boyd, R. W., An introduction to ghost imaging: quantum and classical. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*. **375**, 20160233 (2017).
132. Panthong, P., Srisuphaphon, S., Chiangga, S., & Deachapunya, S., High-contrast optical vortex detection using the Talbot effect. *Appl. Opt.* **57**, 1657-1661 (2018).
133. Park, J., Park, C., Lee, K., Cho, Y. H., & Park, Y., Time-reversing a monochromatic subwavelength optical focus by optical phase conjugation of multiply-scattered light. *Sci. Rep.* **7**, 1-6 (2017).
134. Park, Y., Depeursinge, C., and Popescu, G., Quantitative phase imaging in biomedicine. *Nat. Photon.* **12**, 578 (2018).
135. Park, S. R., Cattell, L., Nichols, J. M., Watnik, A., Doster, T., & Rohde, G. K., Demultiplexing vortex modes in optical communications using transport-based pattern recognition. *Opt. Express*. **26**, 4004-4022 (2018).

136. Park, K., Yang, T. D., Seo, D., Hyeon, M. G., Kong, T., Kim, B. M., ...& Choi, Y., Jones Matrix Microscopy for Living Eukaryotic Cells. *ACS Photonics*. **8**, 3042-3050 (2021).
137. Pedrini, G., Li, H., Faridian, A., & Osten, W., Digital holography of self-luminous objects by using a Mach–Zehnder setup. *Opt. Lett.* **37**, 713-715 (2012).
138. Peng, Y., Gan, X. T., Ju, P., Wang, Y. D., & Zhao, J. L., Measuring topological charges of optical vortices with multi-singularity using a cylindrical lens. *Chin. Phys. Lett.* **32**, 024201 (2015).
139. Perrin, A., Bücken, R., Manz, S., Betz, T., Koller, C., Plisson, T., ...& Schmiedmayer, J., Hanbury Brown and Twiss correlations across the Bose–Einstein condensation threshold. *Nat. Phys.* **8**, 195-198 (2012).
140. Pinnell, J., Nape, I., Sephton, B., Cox, M., A., Rodriguez-Fajardo, V., and Forbes, A., Modal analysis of structured light with spatial light modulators: a practical tutorial. *J. Opt. Soc. Am. A*. **37**, c146 (2020).
141. Popoff, S. M., Lerosey, G., Carminati, R., Fink, M., Boccaro, A. C., & Gigan, S., Measuring the transmission matrix in optics: an approach to the study and control of light propagation in disordered media. *Phys. Rev. Lett.* **104**, 100601 (2010).
142. Popescu, G., Ikeda, T., Dasari, R. R., & Feld, M. S., Diffraction phase microscopy for quantifying cell structure and dynamics. *Opt. Lett.* **31**, 775-777 (2006).
143. Poon, T. C., Wu, M. H., Shinoda, K., & Suzuki, Y., Optical scanning holography. *Proceedings of the IEEE*. **84**, 753-764 (1996).
144. Poon, T. C. (Ed.), Digital holography and three-dimensional display: Principles and Applications, *Springer Science & Business Media* (2006).
145. Poon, T. C., & Liu, J. P., Introduction to modern digital holography: with MATLAB, *Cambridge University Press* (2014).
146. Princeton, J., Narag, C., and Hermosa, N., Probing Higher Angular Momentum of Laguerre-Gaussian Beams Vis Translated Single Slit. *Phys. Rev. Appl.* **11**, 054025 (2019).
147. Reddy, S., G., Prabhakar, S., Kumar, A., Banerji, J., and Singh, R., P., Higher-order optical vortices and formation of speckles. *Opt. Lett.* **39**, 4364-4367 (2014).
148. Rittweger, E., Han, K. Y., Irvine, S. E., Eggeling, C., & Hell, S. W., STED microscopy reveals crystal colour centres with nanometric resolution. *Nat. Photon.* **3**, 144-147 (2009).
149. Rosen, J., & Brooker, G., Digital spatially incoherent Fresnel holography. *Opt. Lett.* **32**, 912-914 (2007).

150. Rosen, J., Vijayakumar, A., Kumar, M., Rai, M.R., Kelner, R., Kashter, Y., Bulbul, A. and Mukherjee, S., Recent advances in self-interference incoherent digital holography. *Adv. Opt. Photon.* **11**, 1-66 (2019).
151. Rosen, J., de Aguiar, H. B. Anand, V., et al., Roadmap on chaos-inspired imaging technologies (CI²-Tech). *Appl. Phys. B.* **128**, 49 (2022).
152. Sahin, S., Korotkova, O., Zhang, G., & Pu, J., Free-space propagation of the spectral degree of cross-polarization of stochastic electromagnetic beams. *Journal of Optics A: Pure and Appl. Opt.* **11**, 085703 (2009).
153. Salla, G., R., Perumangattu, C., Prabhakar, S., Anwar, A., and Singh, R., P., Recovering the vorticity of a light beam after scattering. *Appl. Phys. Lett.* **107**, 021104 (2015).
154. Schaefer, B., Collett, E., Smyth, R., Barrett, D., & Fraher, B., Measuring the Stokes polarization parameters. *Am. J. Phys.* **75**, 163-168 (2007).
155. Schulze, C., Dudley, A., Flamm, D., Duparré, M., and Forbes, A., Measurement of the orbital angular momentum density of light by modal decomposition. *New J. Phys.* **15**, 073025 (2013).
156. Schnars, U., and Jüptner, W., *Digital Holography: Digital Hologram Recording, Numerical Reconstruction and Related Techniques* (Springer, 2005).
157. Shaked, N., T., Quantitative phase microscopy of biological samples using a portable interferometer. *Opt. Lett.* **37**, 2016-2018 (2012).
158. Shen, Y., Wang, X., Xie, Z., Min, C., Fu, X., Liu, Q., ...& Yuan, X., Optical vortices 30 years on: OAM manipulation from topological charge to multiple singularities. *Light Sci. and Appl.* **8**, 1-29 (2019).
159. Senthilkumaran, P., Optical phase singularities in detection of laser beam collimation. *Appl. Opt.* **42**, 6314-6320 (2003).
160. Shi, D., Hu, S., & Wang, Y., Polarimetric ghost imaging. *Opt. Lett.* **39**, 1231-1234 (2014).
161. Shi, Y., & Zhang, Y., Generation of wideband tunable orbital angular momentum vortex waves using graphene metamaterial reflectarray. *IEEE Access.* **6**, 5341-5347 (2017).
162. Shirai, T., & Wolf, E., Coherence and polarization of electromagnetic beams modulated by random phase screens and their changes on propagation in free space. *J. Opt. Soc. Am. A.* **21**, 1907-1916 (2004).
163. Singh, D., & Singh, R. K., Lensless Stokes holography with the Hanbury Brown-Twiss approach. *Opt. Express.* **26**, 10801-10812 (2018).
164. Singh, R., K., Senthilkumaran, P., and Singh, K., Influence of astigmatism and defocusing on the focusing of a singular beam, *Opt. Commun.* **270** (2), 128-138 (2007).

165. Singh, R., K., Senthilkumaran, P., and Singh, K., Tight focusing of singular beams; A review part 1, *Inverts J. Sci. Techn.* **1**, 197 (2009).
166. Singh, R. K., Naik, D. N., Itou, H., Miyamoto, Y., & Takeda, M., Vectorial coherence holography. *Opt. Express.* **19**, 11558-11567 (2011).
167. Singh, R. K., Naik, D. N., Itou, H., Miyamoto, Y., & Takeda, M., Stokes holography. *Opt. Lett.* **37**, 966-968 (2012).
168. Singh, R. K., Naik, D. N., Itou, H., Brundabanam, M. M., Miyamoto, Y., & Takeda, M., Vectorial van Cittert–Zernike theorem based on spatial averaging: experimental demonstrations. *Opt. Lett.* **38**, 4809-4812 (2013).
169. Singh, R., K., & Sharma M, A., Recovery of complex valued objects from two-point intensity correlation measurement. *Appl. Phys. Lett.* **104**, 111108 (2014).
170. Singh, R. K., Naik, D. N., Itou, H., Miyamoto, Y., & Takeda, M., Characterization of spatial polarization fluctuations in scattered field. *J. Opt.* **16**, 105010 (2014).
171. Singh, R. K., Sharma, A. M., & Das, B., Quantitative phase-contrast imaging through a scattering media. *Opt. Lett.* **39**, 5054-5057 (2014).
172. Singh, R., K., Sharma, A., M., and Senthilkumaran, P., Vortex array embedded in a partially coherent beam. *Opt. Lett.* **40**, 2751-2754 (2015).
173. Singh, R. K., Vyas, S., & Miyamoto, Y., Lensless Fourier transforms holography for coherence waves. *J. Opt.* **19**, 115705 (2017).
174. Shapiro, J. H., & Boyd, R. W., The physics of ghost imaging. *Quantum Inf. Process.* **11**, 949- 993 (2012).
175. Shen, D., and Zhao, D., Measuring the topological charge of optical vortices with a twisting phase. *Opt. Lett.* **44**, 2334–2337, 2019.
176. Somkuwar, A. S., Das, B., Vinu, R. V., Park, Y., & Singh, R. K., Holographic imaging through a scattering layer using speckle interferometry. *J. Opt. Soc. Am. A.* **34**, 1392-1399 (2017).
177. Soni, N., K., Vinu, R., and Singh, R., K., Polarization modulation for imaging behind the scattering medium. *Opt. Lett.* **41**, 906-909 (2016).
178. Sreelal, M. M., Vinu, R. V., & Singh, R. K., Jones matrix microscopy from a single-shot intensity measurement. *Opt. Lett.* **42**, 5194-5197 (2017).
179. Sung, Y., Choi, W., Fang-Yen, C., Badizadegan, K., Dasari, R. R., & Feld, M. S., Optical diffraction tomography for high resolution live cell imaging. *Opt. Express.* **17**, 266-277 (2009).
180. Sztul, H., I., and Alfano, R., R., Double-slit interference with Laguerre-Gaussian beams. *Opt. Lett.* **31**, 999–1001 (2006).

181. Tahara, T., Kanno, T., Arai, Y., and Ozawa, T., Single-shot phase-shifting incoherent digital holography. *J. Opt.* **19**, 065705 (2017).
182. Taira, Y., & Zhang, S., Split in phase singularities of an optical vortex by off-axis diffraction through a simple circular aperture. *Opt. Lett.* **42**, 1373-1376 (2017).
183. Takeda, M., Wang, W., & Hanson, S. G. (2010, September). Polarization speckles and generalized Stokes vector wave: a review. In *Speckle 2010: Optical Metrology* (Vol. 7387, pp. 257-263). *SPIE*.
184. Takeda, M., Wang, W., Duan, Z., & Miyamoto, Y., Coherence holography. *Opt. Express.* **13**, 9629- 9635 (2005).
185. Takeda, M., Wang, W., Naik, D. N., & Singh, R. K., Spatial statistical optics and spatial correlation holography: a review. *Optical Review.* **21**, 849-861 (2014).
186. Takeda, M., Wang, W., Naik, D. N., & Singh, R. K., Coherence holography and synthetic statistical optics: A tutorial review, *Asian Journal of Physics.* **30**, 537-548 (2021).
187. Tervo, J., Setälä, T., & Friberg, A. T., Degree of coherence for electromagnetic fields. *Optics Express.* **11**, 1137-1143 (2003).
188. Thompson, O., Andrews, M., & Hirst, E., Correction for spatial averaging in laser speckle contrast analysis. *Bio. Opt. Express.* **2**, 1021-1029 (2011).
189. Torres, J. P., & Torner, L. (Eds.), Twisted photons: applications of light with orbital angular momentum. *John Wiley & Sons* (2011).
190. Troup, G. J., & Turner, R. G., Optical coherence theory. *Reports on Progress in Physics.* **37**, 771 (1974).
191. Varghese, A., Das, B., & Singh, R. K., Highly stable lens-less digital holography using cyclic lateral shearing interferometer and residual decollimated beam. *Opt. Commun.* **422**, 3-7 (2018).
192. Vinu, R. V., & Singh, R. K., Experimental determination of generalized Stokes parameters. *Opt. Lett.* **40**, 1227-1230 (2015).
193. Vinu, R. V., & Singh, R. K., Determining helicity and topological structure of coherent vortex beam from laser speckle. *Appl. Phys. Lett.* **109**, 111108 (2016).
194. Vinu, R., V., Kim, K., Somkuwar, A. S., Park, Y., & Singh, R. K., Imaging through scattering media using digital holography. *Opt. Commun.* **439**, 218-223 (2019).
195. Vinu, R. V., Chen, Z., Singh, R. K., & Pu, J., Ghost diffraction holographic microscopy. *Optica.* **7**, 1697-1704 (2020).

196. Volkov, S. N., James, D. F., Shirai, T., & Wolf, E., Intensity fluctuations and the degree of cross-polarization in stochastic electromagnetic beams. *Journal of Optics A: Pure and Appl. Opt.* **10**, 055001 (2008).
197. Wada, A., Ohtani, T., Miyamoto, Y., & Takeda, M., Propagation analysis of the Laguerre–Gaussian beam with astigmatism. *J. Opt. Soc. Am. A.* **22**, 2746-2755 (2005).
198. Wang, J., Liu, J., Zhu, L., Li, C., Luo, M., Yang, Q., and Yu, S., Experimental demonstration of free-space optical communications using OFDM-QPSK/16QAM-carrying fractional orbital angular momentum (OAM) multiplexing, 2015 *Optical Fiber Communications Conference and Exhibition (OFC)*, pp. 1-3, 2015.
199. Wang, L. G., Qamar, S., Zhu, S. Y., & Zubairy, M. S., Hanbury Brown–Twiss effect and thermal light ghost imaging: a unified approach. *Phys. Rev. A.* **79**, 033835 (2009).
200. Wang, W., and Takeda, M., Coherence current, coherence vortex, and the conservation law of coherence, *Phys. Rev. Lett.* **96**, 223904 (2006).
201. Wang, F., Zhang, X., Yuan, H., Xiong, R., & Jiang, X., Enhancing the information capacity with modulated orbital angular momentum holography. *IEEE Photonics Journal.* **14**, 1-5 (2022).
202. Wang, Y., Yan, S., Kuebel, D., & Visser, T. D., Generalized Hanbury Brown–Twiss effect and Stokes scintillations in the focal plane of a lens. *Phys. Rev. A.* **100**, 023821 (2019).
203. Webb, K., J., and Luo, Q., Theory of speckle intensity correlation over object position in a heavily scattering random medium. *Phys. Rev. A.* **101**, 063827 (2020).
204. Wen, Y., Chremmos, I., Chen, Y., Zhu, J., Zhang, Y., and Yu, S., Spiral transformation for high-resolution and efficient sorting of optical vortex modes. *Phys. Rev. Lett.* **120**, 193904 (2018).
205. Wiedemann, U. A., & Heinz, U., Resonance contributions to Hanbury-Brown–Twiss correlation radii. *Phys. Rev. C.* **56**, 3265 (1997).
206. Willner, A. E., Huang, H., Yan, Y., Ren, Y., Ahmed, N., Xie, G., ... & Ashrafi, S., Optical communications using orbital angular momentum beams. *Adv. Opt. Photon.* **7**, 66-106 (2015).
207. Willner, A. E., & Liu, C., Perspective on using multiple orbital-angular-momentum beams for enhanced capacity in free-space optical communication links. *Nanophoton.* **10**, 225-233 (2021).
208. Wolf, E., Introduction to the Theory of Coherence and Polarization of Light. *Cambridge university press* (2007).
209. Wu, G., & Visser, T. D., Hanbury Brown–Twiss effect with partially coherent electromagnetic beams. *Opt. Lett.* **39**, 2561-2564 (2014).

210. Xie, G., Song, H., Zhao, Z., Milione, G., Ren, Y., Liu, C., ... & Willner, A. E., Using a complex optical orbital-angular-momentum spectrum to measure object parameters. *Opt. Lett.* **42**, 4482-4485 (2017).
211. Xin, Y., He, Y., Chen, Y., & Li, J., Correlation between intensity fluctuations of light scattered from a quasi-homogeneous random media. *Opt. Lett.* **35**, 4000-4002 (2010).
212. Yamaguchi, I., Phase-shifting digital holography. In *Digital Holography and Three-Dimensional Display Springer*, Boston, MA (pp. 145-171) (2006).
213. Yang, W., Li, G., & Situ, G., Imaging through scattering media with the auxiliary of a known reference object. *Sci. Rep.* **8**, 1-7 (2018).
214. Yang, W., and Situ, G., Recovery of the topological charge of a vortex beam propagated through a scattering layer. *Appl. Opt.* **60**, B95-B99 (2021).
215. Yao, A. M., & Padgett, M. J., Orbital angular momentum: origins, behavior and applications. *Adv. Opt. Photon.* **3**, 161-204 (2010).
216. Yao, E., Franke-Arnold, S., Courtial, J., Barnett, S., & Padgett, M., Fourier relationship between angular position and optical orbital angular momentum. *Opt. Express.* **14**, 9071-9076 (2006).
217. Zhan, Q., Cylindrical vector beams: from mathematical concepts to applications. *Adv. Opt. Photon.* **1**, 1-57 (2009).
218. Zhao, Qi, Dong, M., Bai, Y., and Yuanjie, Measuring high orbital angular momentum of vortex beams with an improved multipoint interferometer, *Photon. Res.* **8**, 745, (2020).
219. Zheng, S., and Wang, J., Measuring Orbital Angular Momentum (OAM) States of Vortex Beams with Annular Gratings. *Sci. Rep.* **7**, 1-9, (2017).

List of Publications

Included In Thesis

1. **Sarkar, T.**, Parvin, R., Brundavanam, M. M., & Singh, R. K., Higher-order Stokes-parameter correlation to restore the twisted wavefront propagating through a scattering medium. *Physical Review A*. **104**, 013525 (2021).
2. **Sarkar, T.**, Parvin, R., Brundavanam, M. M., & Singh, R. K., Unscrambling OAM mode using digital phase-shifting in the Stokes fluctuations correlation. *Opt. Lett.* **46**, 5546-5549 (2021).
3. **Sarkar, T.**, Parvin, R., Brundavanam, M. M., & Singh, R. K., Measuring obscured OAM spectrum using Stokes fluctuations in a non-interferometric approach. *Opt. Lasers Eng.* **155**, 107065 (2022).
4. **Sarkar, T.**, Tiwari, V., Chandra, S., Bisht, N. S., & Singh, R. K., Holography with higher-order Stokes correlation. *Physical Review A*. **106**, 013508 (2022).
5. **Sarkar, T.**, Chandra, S., Tiwari, V., Bisht, N. S., Das, B., & Singh, R. K., On-axis phase-shifting correlation holography with un-polarized light. *Opt. Lett.* **47**, 4953-4956 (2022).
6. **Sarkar, T.**, & Singh, R. K., Stokes correlation to estimate topological charge from the speckle pattern. *Appl. Phys. B*. **129**, 1-7 (2023).
7. **Sarkar, T.**, Yadav, A., Karmakar, T., & Singh, R. K., Measuring OAM modes by a three-step phase-shifting in the polarization correlation (To be submitted).

Not Included In Thesis

1. **Sarkar, T.**, Mandal, A. C., Ziyang, C., Jixiong, P., & Singh, R. K., Correlation Holography with A Single-Pixel Detector: A Review Invited. *激光与光电子学进展*, 58(10), 1011011 (2021).
2. **Sarkar, T.**, Chandra, S., & Singh, R. K. Phase recovery with intensity and polarization correlation: an invited book chapter, *Progress in Optics* (Submitted).
3. Huang, Y., RV, V., Chen, Z., **Sarkar, T.**, Singh, R. K., & Pu, J., Recovery and Characterization of Orbital Angular Momentum Modes with Ghost Diffraction Holography. *Appl. Sci.* **11**, 12167 (2021).
4. Mandal, A. C., **Sarkar, T.**, Zalevsky, Z., & Singh, R. K., Structured transmittance illumination coherence holography. *Sci. Rep.* **12**, 1-9 (2022).
5. Rosen, J., de Aguiar, H. B., Anand, V., Baek, Y., Gigan, S., Horisaki, R., Hugonnet, R., Juodkazis, S., Lee, K., Liang, H., Ludwig, S., Osten, w., Park, Y., K., Pedrini, G., **Sarkar, T.**,.....& Zhou, J., Roadmap on chaos-inspired imaging technologies (CI2-Tech). *Appl. Phys. B*. **128**, 1-26 (2022).
6. Parvin, R., **Sarkar, T.**, Singh, R. K., & Brundavanam, M. M., Aberration-insensitive twisted wavefront detection using polarization correlation. *J. Opt.* **24**, 125604 (2022).
7. Chandra, S., **Sarkar, T.**, et. al., Incoherent digital holography with Hanbury Brown Twiss approach (Under manuscript preparation).
8. Chandra, S., **Sarkar, T.**, et. al., Aberration cancelation in coherence holography (Under manuscript preparation).

Conferences/ Workshop/ Symposium

List of Publications

1. **Sarkar, T.**, Dixit, M., & Singh, R. K. (2021). Crafting Correlation Structure by Interference. In *ICOL-2019*, 101-103. Springer, Singapore.
2. **Sarkar, T.**, Parvin, R., Brundavanam, M. M., & Singh, R. K. (2021). Unscrambling OAM mode using Stokes fluctuations, *Frontiers in Optics & Photonics*, Indian Institute of Technology, Delhi.
3. Global Initiative of Academic Network (GIAN) workshop on digital and dynamic holography with applications, Indian Institute of Technology, Bihta, Patna.