

LIST OF PUBLICATIONS

Publications in international peer-reviewed journals (82)

1. “Deep learning denoising diffusion probabilistic model applied to holographic data synthesis”, A. Velez-Zea, C. Gutierrez, J.F. Barrera-Ramírez, *Opt. Lett.* **49**, 514-517 (2024).
2. “Color multilayer holographic near-eye augmented reality display”, A. Velez-Zea, **J.F. Barrera-Ramírez**, *Sci Rep* **13**, 10651 (2023).
3. “Double phase computer generated on-axis multiplane holograms”, A. Velez-Zea, **J.F. Barrera-Ramírez**, *J. Opt. Laser Eng.* **169**, 07681 (2023).
4. “Objective method for visual performance prediction”, W. Torres-Sepúlveda, A. Mira-Agudelo, **J.F. Barrera-Ramírez**, A. Kolodziejczyk, *J. Opt. Soc. Am. A* **40**, C138 (2023).
5. “Non-interferometric key recording applied to a joint transform cryptosystem”, C.Vargas Castrillón, A. Velez-Zea, J.F. Barrera-Ramírez, *Opt. Lett.* **48**, 672-675 (2023).
6. “Optical and digital methods for holographic data compression”, A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *Ópt. Pura Apl.* **55**, 51075 (2022).
7. “Improved phase hologram generation of multiple 3D objects”, A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *Appl. Opt.* **61**, 3230-3239 (2022).
8. “Improved phase multiplexing using iterative and non-iterative hologram generation”, A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *J. Opt. Laser Eng.* **151**, 106921 (2022).
9. “Optical encryption using phase modulation generated by thermal lens effect”, A. Jaramillo-Osorio, A. Velez-Zea, H. Cabrera, J. Niemela, **J.F. Barrera-Ramírez**, R. Torroba, *J. Opt.* **24**, 025702 (2022).
10. “Focus-tunable experimental optical cryptosystem”, A. Jaramillo-Osorio, W. Torres-Sepúlveda, A. Velez-Zea, A. Mira-Agudelo, **J.F. Barrera-Ramírez**, R. Torroba, *Opt. & Laser Technol.* **148**, 107689 (2022).
11. “Alternative constraints for improved multiplane hologram generation”, A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *Appl. Opt.* **61** B8-B16 (2022).
12. “Quality guided alternative holographic data representation for high performance lossy compression”, M. Gomez, S. Trejos, A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *J. Opt.* **23**, 075702 (2021).
13. “Generation and experimental reconstruction of optimized Fresnel random phase only holograms”, A. Velez-Zea, S. Bustamante, **J.F. Barrera-Ramírez**, R. Torroba, *J. Opt.* **23**, 055602 (2021).
14. “Secure selective recovery protocol for multiple optically encrypted data”, A. Jaramillo, A. Velez-Zea, A. Mira-Agudelo, **J.F. Barrera-Ramírez**, R. Torroba, *J. Opt. Laser Eng.* **137**, 106383 (2020).
15. “Experimental Fresnel and Fourier digital holography using a digital micro-mirror device”, A. Jaramillo, S. Bustamante, B. Muñoz, A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *J. Opt.* **23**, 035701 (2021).

16. "Compression of 3D dynamic holographic scenes in the Fresnel domain", S. Trejos, M. Gomez, A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *Appl. Opt.* 59 D230-D238 (2020).
17. "High performance compact optical cryptosystem without reference arm", A. Jaramillo, **J.F. Barrera-Ramírez**, S. Montoya, A. Mira-Agudelo, A. Velez-Zea, R. Torroba, *J. Opt.* **22**, 035702 (2020).
18. "Experimental holographic movie compression using optical scaling and sampling", M. Gomez, S. Trejos, A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *J. Opt.* **22**, 035703 (2020).
19. "Optimization of the light sword lens for presbyopia correction", W. Torres-Sepúlveda, A. Mira-Agudelo, **J.F. Barrera-Ramírez**, K. Petelczyc, A. Kolodziejczyk, *Transl. Vis. Sci. Technol.* Article 6 (1-16) (2020).
20. "Latin America: Reduced S&T Investment Puts Sustainable Development at Risk", P. Bolaños-Villegas, F.M. Cabrerizo, F. D. Brown, P. Zancan, **J.F. Barrera-Ramírez**, P.A. González-Muñoz, H.E. Grecco, A.M. Kalergis, A.C. Paula-Lima, R.E. Vargas-Balda, R.A. Gittens, S. López-Vergès, C.A.M. Wilson. *OpenScience*, Doi:10.14293/S2199-1006.1.SOR-.PPBPKUJ.v2 (2020).
21. "Secure real-time generation and display of color holographic movies", A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *Opt. Laser Eng.* **122**, 239-244 (2019).
22. "Photothermal lens technique: a comparison between conventional and self-mixing schemes", H. Cabrera, I. Ashraf, F. Matroodi, E.E. Ramírez-Miquet, J. Akbar, J.J. Suárez-Vargas, **J.F. Barrera-Ramírez**, D. Korte, H. Budasheva, J. Niemela, *Laser Physics* **29**, 055703 (2019).
23. "Pump-Probe Photothermal Self-Mixing System for Highly Sensitive Trace Detection", H. Cabrera, E. E. Ramírez-Miquet, J. J. Suarez-Vargas, **J.F. Barrera-Ramírez**, D. Korte, J. J. Niemela, *IEEE Sensors Journal* **19**, 2547-2552 (2019).
24. "Tear film stability assessment by corneal reflex image degradation", M. Aldaba, A. Mira-Agudelo, **J.F. Barrera-Ramírez**, C. E. García-Guerra, J. Pujol Ramo, *J. Opt. Soc. Am. A* **36**, B110-B115 (2019).
25. "Improved decryption quality with a random reference beam cryptosystem", A. Jaramillo, **J.F. Barrera-Ramírez**, S. Montoya, A. Mira-Agudelo, A. Velez-Zea, R. Torroba, *Opt. Laser Eng.* **112**, 119-127 (2019).
26. "Optimized random phase encryption", A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *Opt. Lett.* **43**, 3558-3561 (2018).
27. "Compression of multiple 3D color scenes with experimental recording and reconstruction", S. Trejos, **J.F. Barrera-Ramírez**, A. Velez-Zea, M. Tebaldi, R. Torroba, *Opt. Laser Eng.* **110**, 18-23 (2018).
28. "Optimized random phase only holograms", A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *Opt. Lett.* **43**, 731-734 (2018).
29. "Fractional optical cryptographic protocol for data containers in a noise-free multiuser environment", A. Jaramillo, **J.F. Barrera-Ramírez**, A. Velez-Zea, R. Torroba, *Opt. Laser Eng.* **102**, 119-125 (2018).
30. "Cross-talk free selective reconstruction of individual objects from multiplexed optical field data", A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *Opt. Laser Eng.* **100**, 90-97 (2018).

31. "Experimental evaluation of the light sword lens performance with a variable pupil size", W. Torres, A. Mira-Agudelo, **J.F. Barrera-Ramírez**, A. Kolodziejczyk, *Photon. Lett. Poland* **10**, 36-38 (2018).
32. "Cryptographic salting for security enhancement of double random phase encryption schemes", A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *J. Opt.* **19**, 105703 (2017).
33. "Experimental optical encryption of grayscale information", A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *Appl. Opt.* **56**, 5883-5889 (2017).
34. "Innovative speckle noise reduction procedure in optical encryption", A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *J. Opt.* **19**, 055704 (2017).
35. "Imaging with an extended depth of field by means of the peacock eye optical element", W. Torres, **J.F. Barrera-Ramírez**, R. Henao, Z. Jaroszewicz, K. Kakarenko, A. Mira-Agudelo, K. Petelczyc, M. Sypek, A. Kolodziejczyk, *Photon. Lett. Poland* **9**, 128-130 (2017).
36. "Compensation of Presbyopia with the Light Sword Lens", A. Mira-Agudelo, W. Torres-Sepúlveda, **J.F. Barrera-Ramírez**, R. Henao, N. Blocki, K. Petelczyc, A. Kolodziejczyk, *Invest Ophthalmol Vis Sci.* **57**, 6870-6877 (2016).
37. "Customized data container for improved performance in optical cryptosystems", A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *J. Opt.* **18**, 125702 (2016).
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39. "Roadmap in optical security", B. Javidi, A. Carnicier, W. Chen, X. Chen, E. Pérez-Cabré, M.S. Millán, M. Naruse, T. Matsumoto, C. Guo, J.T. Sheridan, A. Carnicer, I. Juvells, G. Situ, N.K. Nishchal, W. He, X. Peng, A. Stern, Y. Rivenson, P.W.H. Pinkse, A.P. Mosk, M. Yamaguchi, T. Nomura, R. Torroba, **J.F. Barrera-Ramírez**, A. Alfalou, C. Brosseau, A. Markman, E. Tajahuerce, J. Lancis, *J. Opt.* **18**, 083001 (2016).
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41. "Experimental analysis of a Joint Free Space Cryptosystem", **J.F. Barrera-Ramírez**, A. Jaramillo, A. Velez-Zea, R. Torroba, *Opt. Laser Eng.* **83**, 126-130 (2016).
42. "Three-dimensional joint transform correlator cryptosystem", A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *Opt. Lett.* **41**, 599-602 (2016).
43. "One-step reconstruction of digitally assembled 3D extended holographic scenes" A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *Opt. & Laser Technol.* **75**, 146-150 (2015).
44. "Optimized and secure technique for multiplexing QR code images of single characters: Application to noiseless messages retrieval", S. Trejos, **J.F. Barrera-Ramírez**, R. Torroba, *J. Opt.* **17**, 085702 (2015).
45. "Experimental scrambling and noise reduction applied to the optical encryption of QR codes", **J.F. Barrera-Ramírez**, A. Velez-Zea, R. Torroba, *Opt. Express.* **22**, 20268-20277 (2014).
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48. "Experimental double random phase encoding technique under a joint transforms correlator architecture", **J.F. Barrera-Ramírez**, M. Tebaldi, R. Torroba, *Asian Journal of Physics* **22**, 135-152 (2013).
49. "Optical encryption and QR codes: Secure and noise-free information retrieval", **J.F. Barrera-Ramírez**, A. Mira-Agudelo, R. Torroba, *Opt. Express* **21**, 5373-5378 (2013).
50. "Experimental protocol for packaging and encrypting multiple data", **J.F. Barrera-Ramírez**, S. Trejos, M. Tebaldi, R. Torroba, *Journal of Optics* **15**, 055406 (2013).
51. "Experimental multiplexing protocol to encrypt messages of any length", **J.F. Barrera-Ramírez**, A. Velez-Zea, R. Torroba, *Journal of Optics* **15**, 055404 (2013).
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53. "Master key generation to avoid the use of an external reference wave in an experimental JTC encrypting architecture", E. Rueda, C. Ríos, **J.F. Barrera-Ramírez**, R. Torroba, *Appl. Opt.* **51**, 1822-1827 (2012).
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58. "Experimental opto-digital synthesis of encrypted sub-samples of an image to improve its decoded quality", **J.F. Barrera-Ramírez**, E. Rueda, C. Ríos, M. Tebaldi, N. Bolognini, R. Torroba, *Opt. Commun.* **284**, 4350-4355 (2011).
59. "Experimental multiplexing approach via code key rotations under a joint transform correlator scheme", E. Rueda, C. Ríos, **J.F. Barrera-Ramírez**, R. Henao, R. Torroba, *Opt. Commun.* **284**, 2500-2504 (2011).
60. "Known-plaintext attack on a joint transform correlator encrypting system", **J.F. Barrera-Ramírez**, C. Vargas, M. Tebaldi, R. Torroba, N. Bolognini, *Opt. Lett.* **35**, 3553-3555 (2010).
61. "Simultaneous use of Amplitude and phase to improve the validation process in a Joint Transform Correlator", **J.F. Barrera-Ramírez**, J. Serna, R. Torroba, *Optik* **121**, 1885-1890 (2010).
62. "Chosen-plaintext attack on a joint transform correlator encrypting system", **J.F. Barrera-Ramírez**, C. Vargas, M. Tebaldi, R. Torroba, *Opt. Commun.* **283**, 3917-3921 (2010).
63. "One step multiplexing optical encryption", **J.F. Barrera-Ramírez**, R. Torroba, *Opt. Commun.* **283**, 1268-1272 (2010).

64. "Noise-free recovery of optodigital encrypted and multiplexed images", R. Henao, E. Rueda, **J.F. Barrera-Ramírez**, R. Torroba, *Opt. Lett.* **35**, 333-335 (2010).
65. "Optical encryption with a reference wave in a joint transform correlator architecture", E. Rueda, **J.F. Barrera-Ramírez**, R. Henao, R. Torroba, *Opt. Commun.* **282**, 3243-3249 (2009).
66. "Efficient encrypting procedure using amplitude and phase as independent channels to display decoy objects", **J.F. Barrera-Ramírez**, R. Torroba, *Appl. Opt.* **48**, 3121-3129 (2009).
67. "Multiplexing encryption technique by combining random amplitude and phase masks", **J.F. Barrera-Ramírez**, M. Tebaldi, R. Torroba, N. Bolognini, *Optik* **120**, 351-355 (2009).
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69. "Lateral shift multiplexing with a modified random mask in a JTC encrypting architecture", E. Rueda, **J.F. Barrera-Ramírez**, R. Henao, R. Torroba, *Opt. Eng.* **48**, 027006 (2009).
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75. "Multiple image encryption using an aperture-modulated optical system", **J.F. Barrera-Ramírez**, R. Henao, M. Tebaldi, R. Torroba, N. Bolognini, *Opt. Commun.* **261**, 29-33 (2006).
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79. "Optical encryption method using toroidal zone plates", **J.F. Barrera-Ramírez**, R. Henao, R. Torroba, *Opt. Commun.* **248**, 35-40 (2005).
80. "Talbot effect for periodical objects limited by finite apertures: a new interpretation", **J.F. Barrera-Ramírez**, R. Henao, Z. Jaroszewicz, A. Kolodziejczyk, *Optik* **116**, 144-148 (2005).
81. "Minute details detection through Fresnel diffraction domain", J. Garcia-Sucerquia, F.F. Medina, **J.F. Barrera-Ramírez**, *Opt. Commun.* **253**, 250-256 (2005).

82. “Stokes Parameters Description for the Contrast Variations Observed in Fringes Generated by Digital Speckle Correlation”, R. Henao, **J.F. Barrera-Ramírez**, R. Torroba, *Journal of Holography and Speckle* **1**, No. 2, 85-89 (2004).

Publications in international conference proceedings (28)

1. “Single arm opto-digital JTC cryptosystem based on a phase retrieval algorithm”, C. Vargas-Castrillón, A. Velez-Zea, **J.F. Barrera-Ramírez**, *Optica Imaging Congress (3D, COSI, DH, FLatOptics, IS, pcAOP)*, Technical Digest Series (Optica Publishing Group, 2023), paper HTu3C.4.
2. “Digital holograms reconstruction with controllable magnification using a single lens processor”, C. Vargas-Castrillon, A. Velez-Zea, and J. F. Barrera-Ramirez, *Optica Imaging Congress (3D, COSI, DH, FLatOptics, IS, pcAOP)*, Technical Digest Series (Optica Publishing Group, 2023), paper HW3D.3.
3. “Generation of phase hologram from multiple 3D axially overlapping objects without crosstalk”, A. Velez-Zea, **J.F. Barrera-Ramírez**, in *Imaging and Applied Optics Congress 2022 (3D, AOA, COSI, ISA, pcAOP)*, Technical Digest Series (Optica Publishing Group, 2022), paper JW2A.2.
4. “A modified constraint for iterative phase-only multiplane hologram generation”, A. Velez-Zea, J. F. Barrera-Ramírez, R. Torroba, *OSA Imaging and Applied Optics Congress 2021 (3D, COSI, DH, ISA, pcAOP)*, OSA Technical Digest (Optical Society of America, 2021), paper DTh7C.4.
5. “Sistema de encriptación de un solo brazo de iluminación en el dominio de Fresnel”, A. Jaramillo Osorio, **J.F. Barrera-Ramírez**, A. Mira-Agudelo, A. Velez-Zea, R. Torroba, *Proceedings of RIAO-OPTILAS-MOPM*, 167-168 (Cancún, México) 2019.
6. “Compresión de escenas dinámicas holográficas en el dominio de Fresnel mediante técnicas óptico-virtuales”, S. Trejos, M. Gómez, A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *Proceedings of RIAO-OPTILAS-MOPM*, 169-171 (Cancún, México) 2019.
7. “Fast computation of binary amplitude holograms with optimized random phases”, A. Velez-Zea, S. Bustamante, **J.F. Barrera-Ramírez**, R. Torroba, *OSA Imaging and Applied Optics Congress 2021 (3D, COSI, DH, ISA, pcAOP)*, OSA Technical Digest (Optical Society of America, 2021), paper DTu7B.5.
8. “Experimental noise-free information recovery via reference beam encryption”, A. Jaramillo, **J.F. Barrera-Ramírez**, S. Montoya, A. Mira-Agudelo, A. Velez-Zea, R. Torroba, *Proc. SPIE 10721, SPIE Nanoscience + Engineering*, 107212E (2018).
9. “Optimized random phase only holograms in the Fresnel domain”, A. Velez-Zea, **J.F. Barrera-Ramírez**, R. Torroba, *Proc. SPIE 10751, SPIE Optical Engineering + Applications*, 1075105 (2018).
10. “Noise analysis and reduction applied to optically encrypted data codes”, R. Torroba, A. Velez-Zea, **J.F. Barrera-Ramírez**, *XXIV Congress of the International Commission for Optics (ICO 24): enlightening the future*, *Proceedings of ICO XXIII*, paper Opt_Imag_63_87 (2017).

11. "Light Sword Lens as Effective Method of Presbyopia Compensation", K. Petelczyc, K. Kakarenko, A. Kolodziejczyk, Z. Jaroszewicz, M. Rekas, A. Mira-Agudelo, **J.F. Barrera-Ramírez**, R. Henao, *Frontiers in Optics 2016, OSA Technical Digest (online) (Optical Society of America, 2016)*, paper FW2A.4.
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20. "Optical Image Multiplexing Encryption Using Digital Holography in a JTC Architecture", E. Rueda, **J.F. Barrera-Ramírez**, R. Henao, and R. Torroba, *Digital Holography and Three-Dimensional Imaging 2009, OSA Technical Digest (CD) (Optical Society of America, 2009)*, paper JTUB3.
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