

# Ana Doblas

## Contact Information

### Office

Department of Electrical & Computer Engineering  
Science & Engineering 221B  
UMass Dartmouth  
Dartmouth, MA

Email: [adoblas@umassd.edu](mailto:adoblas@umassd.edu) or [adoblasexposito@gmail.com](mailto:adoblasexposito@gmail.com)

Phone: 508-999-8471

Fax: 508-999-8489

Research website: <https://sites.google.com/view/oirl/home>

## Education

### *University of Valencia, VLC, Spain*

- Doctor in Physics with Honors, September 2015. Dissertation title: “New advances in high-resolution optical microscopy.” Advisor: Manuel Martinez-Corral, Genaro Saavedra and Jorge Garcia-Sucerquia.
- Master in Advanced Physics, September 2011. Focus on diffraction and 3D imaging, nonlinear and quantum optics, optical fibers, and formal concepts in crystal growth, nanostructures and semiconductor materials.  
Master dissertation title: “Axial modulation of periodic illumination patterns in microscopy”
- Bachelor of Physics, June 2010. Focus on Optics and Applied Physics.

## Professional Experience

Conducting research in imaging formation theory and 3D optical microscopy. Extensive experience in building imaging systems and developing methods for overcoming the drawbacks of current systems. Projects include: a) fast axial-scanning of 3D specimens in real time and without any mechanical movement; b) design of phase mask suitable for reducing the spherical aberration of microscopy; (c) development of 3D structured illumination patterns for increasing lateral resolution and optical sectioning capability in microscopy, (d) development of a digital holographic microscope suitable for accurate quantitative phase imaging with high-resolution, (e) implementation of a parallel light-sheet optical coherence tomographic system for high sensitivity, kilohertz frame rate imaging using a supercontinuum source, (f) evaluation of the proper design of a spectrometer for reducing roll-off effects, (g) development of polarization-sensitive imaging systems, (h) development of compact and robust quantitative phase imaging systems, (i) development of automatic reconstruction algorithms based minimization of cost functions and neural networks, and (j) development of non-invasive devices to track and monitor biometrics.

### ***Participation in Funded Research Projects***

#### *University of Memphis, TN, US*

1. Improving 3D resolution and reducing sensitivity to spherical aberration in live, thick sample cellular imaging using novel methods in optical sectioning microscopy.

#### *University of North Carolina at Chapel-Hill, NC, US*

1. Long-range geomagnetic navigation in sea turtles: and interdisciplinary approach to localizing magnetite-based biological magnetoreceptors.

#### *University of Valencia, VLC, Spain*

1. Integral microscopy: recording, processing and display of 3D images in real time.
2. Development of new instruments of recording and display of 3D samples with sub-nanometer resolution.

3. Optical microscopic systems. Design of new experiments.
4. Interference with polarized light. Design of new experiments.
5. Visualization of transparent objects.

### **Summary of Appointments**

2023-present	<b>Assistant Professor (tenure-track)</b> , UMass Dartmouth, Department Electrical and Computer Engineering.
2019-2023	<b>Assistant Professor (tenure-track)</b> , The University of Memphis, Department Electrical and Computer Engineering.
2016-2018	<b>Research Assistant Professor</b> , The University of Memphis, Department Electrical and Computer Engineering.
2015-2016	<b>Postdoctoral Research Associate</b> , University of North Carolina, Department of Physics and Astronomy.
2013-2015	<b>Instructor</b> , University of Valencia (Spain), Department of Optics.

### **Academic Honors/Awards**

- R. Eugene Smith Professorship for outstanding research accomplishments, 2021-22 and 2022-23.
- The manuscript entitled “Two-Way Pepper Ghost Tunnel: Theory, Design and Analysis,” published in the QuaesitUM Undergraduate Research Journal has been awarded by Quaesitum Outstanding Paper Award. *This award serves to highlight papers that are very well written and highlights an interesting and important topic.*
- *This award grants you a check for a \$350 reward from the Helen Hardin Honors College*
- Endorsement UMRV Ventures Professor, 2021-2022.
- National Science Foundation (NSF) Faculty Early Career Development (CAREER) award for her project titled “Three-dimensional super-resolution light microscopy of thick, unprocessed biological samples,” in 2021.
- The manuscript entitled “Fast-iterative automatic reconstruction method for quantitative phase image with reduced phase perturbations in off-axis digital holographic microscopy,” published in Applied Optics in 2021 has been highlighted as an Editor’s Pick (*Editor’s Picks serve to highlight articles with excellent scientific quality and are representative of the work taking place in a specific field*).
- The manuscript entitled “Structured illumination in compact and field-portable 3D-printed shearing digital holographic microscopy for resolution enhancement” published in Optics Letters was one of the most downloaded articles in April 2019 and May 2019.
- Laureate of the Fumio Okano Best 3D paper for “Digital holographic microscopy as a screening technology for diabetes” in 2020.
- The manuscript entitled “Improvement of two-dimensional structured illumination microscopy with an incoherent illumination pattern of tunable frequency” published in Applied Optics in 2018 has been highlighted as an Editor’s Pick (*Editor’s Picks serve to highlight articles with excellent scientific quality and are representative of the work taking place in a specific field*).
- The manuscript entitled “High-speed and high-sensitivity parallel spectral-domain optical coherence tomography using a supercontinuum light source” published in Optics Letters was one of the most downloaded articles in December 2016 and January 2017.
- Laureate of the Fumio Okano Best 3D paper for “Three-dimensional microscopy through liquid-lens axial scanning” in 2016.
- The manuscript entitled “Off-axis Digital Holographic Microscopy: practical design parameters for operating at diffraction limit” published in Applied Optics in 2014 was selected and published in the OSA Virtual Journal for Biomedical Optics.

- The manuscript entitled “Shift-variant digital holographic microscopy: Inaccuracies in quantitative phase imaging” published in Optics Letters in 2014 was selected and published in the OSA Virtual Journal for Biomedical Optics.
- The manuscript entitled “Subtractive imaging in confocal scanning microscope using a CCD camera as a detector” published in Optics Letters in 2012 was selected and published in the OSA Virtual Journal for Biomedical Optics.
- Doctor by the University of Valencia with an excellent grade and with the cum laude and International Doctor mentions, 2015.
- Since 2012, my research articles have been cited in 395 works.
- 3-month Awarded Scholarship funded by the University of Valencia to visit and participate in research with Dr. Chrysanthe Preza (University of Memphis, summer of 2013) and Dr. Jorge Garcia-Sucerquia (Universidad Nacional de Colombia Sede Medellín, summer of 2014).
- Predoctoral research scholarship funded by the program “Atracció de Talent” of VLC-CAMPUS at the University of Valencia, January 2012 - September 2015.
- Graduate Scholarship, funded by the 3D Imaging and Display Laboratory at the University of Valencia, September 2010-December 2011.
- Undergraduate Scholarship funded by the Spanish Ministry of Education and Science, 2009/2010 academic year.

### **Additional Professional Activities**

- Topical Editor of Optics Letters journal from the Optica Publishing Group, 2021 – 2024.
- Program Chair, *3D Image Acquisition and Display: Technology, Perception and Applications conference*, OSA Imaging Congress, 2022 -
- Program Committee Member, *3D Image Acquisition and Display: Technology, Perception and Applications conference*, OSA Imaging Congress, 2021 – present
- Program Committee Member, *Three-Dimensional Imaging, Visualization, and Display*, SPIE Defense and Commercial Sensing (DCS), Commercial and Scientific Sensing and Imaging, 2020 – present
- Committee Chair of Master Dissertation of B. Feng presented at the Department of Electrical and Computer Engineering at the University of Memphis, Memphis, TN, October 28, 2021.
- Committee Chair of Master Dissertation of B. Bogue Jimenez presented at the Department of Electrical and Computer Engineering at the University of Memphis, Memphis, TN, October 27, 2021.
- Committee Member of Master Dissertation of T. Watson presented at the Department of Electrical and Computer Engineering at the University of Memphis, Memphis, TN, October 26, 2021.
- Committee Member of Master Project of R. Brown presented at the Department of Electrical and Computer Engineering at the University of Memphis, Memphis, TN, December 5, 2019.
- Committee Member of Master Project of S. Bedoya presented at the Department of Electrical and Computer Engineering at the University of Memphis, Memphis, TN, April 15, 2019.
- Committee Member of PhD Defense of H. Shabani presented at the Department of Electrical and Computer Engineering at the University of Memphis, Memphis, TN, February 12, 2019.
- Committee Member of Master Project of A. Dutta presented at the Department of Electrical and Computer Engineering at the University of Memphis, Memphis, TN, November 22, 2017.
- Committee Member of PhD Defense of N. Patwary presented at the Department of Electrical and Computer Engineering at the University of Memphis, Memphis, TN, November 23, 2017.

- Committee Member of Master Defense of C. Taylor presented at the Department of Electrical and Computer Engineering at the University of Memphis, Memphis, TN, March 30, 2016.
- Substitute secretary of the committee of PhD Defense of A. Llavador presented at the Faculty of Physics at the University of Valencia, Burjassot (Spain), July 27, 2017.
- Scientific Reviewer for the following journals: *Optic Letters*, *Optics and Lasers in Engineering*, *Applied Optics*, *Optics Express*, *Biomedical Optics Express*, *Frontiers*, *Sensors*, *Journal of Optics & Laser Technology*, *Optica Applicata*, *Optik-International Journal for Light and Electron Optics*, *Journal of Biomedical Optics*, and *Optical Engineering*.
- Professional Affiliations:
  - Member, Optica Publishing Group (former, OSA).
  - Member, International Society for Optical Engineering (SPIE).
  - Member, IEE Photonics and Signal Processing Society

## Patents

1. E. Sánchez-Ortiga, **A. Doblas**, G. Saavedra, M. Martínez-Corral, and J. Garcia-Sucerquia, "Microscope, method and computer program for obtaining quantitative study of transparent samples by digital holographic microscopy," Spanish patent ES 2 534 960 A1, and US patent US 21060252880 A1.
2. C. Preza, **A. Doblas**, M. Martínez-Corral, G. Saavedra and J. C. Barreiro, "Multi-focal light-sheet structured illumination fluorescence microscopy system," US 62/527.232. Filing date 07/16/2018.
3. A. Doblas, and J. Garcia-Sucerquia, "Apparatus and method to convert a regular bright-field microscope into a PS-QPI System," US 17/382,164. Filing date: 07/21/2021.

## Journal Publications

1. B. Bogue-Jimenez, C. Trujillo, and **A. Doblas**, "Comprehensive Tool for a Phase Compensation Reconstruction Method in Digital Holographic Microscopy Operating in Non-Telecentric Regime," *Plos ONE* 18(9), e0291103 (2023).
2. K. Dahal, B. Bogue-Jimenez, and **A. Doblas**, "Global Stress Detection Framework Combining a Reduced Set of HRV Features and Random Forest Model," *Sensors* 23(11), 5220 (2023). doi:10.3390/s23115220
3. B. Javidi, H. Hua, A. Stern, M. Martinez-Corral, O. Matoba, **A. Doblas**, and S. Thibault, "Focus Issue Introduction: 3D Image Acquisition and Display: Technology, Perception, and Applications," *Opt. Express* 31(7), 11557-11560 (2023). doi: 10.1364/OE.487783.
4. R. Castaneda, C. Trujillo, and **A. Doblas**, "pyDHM: A Python library for applications in Digital Holographic Microscopy," *Plos ONE* 17(10), e0275818 (2022).
5. S. Obando-Vasquez, **A. Doblas**, and C. Trujillo, "Apparatus and method to recover the Mueller matrix in bright-field microscopy," *American Journal of Physics* 90, 702 (2022). doi: 10.1119/5.0081673.
6. A. Doblas, C. Hayes-Rounds, R. Isaac, and F. Perez, "Single-shot 3D topography of transmissive and reflective samples with a dual-mode telecentric-based digital holographic microscope," *Sensors* 22, 3793 (2022).
7. B. Bogue-Jimenez, X. Huang, D. Powell, and **A. Doblas**, "Selection of noninvasive features in wrist-based wearable sensors to predict blood glucose concentrations using machine learning algorithms," *Sensors* 22(9), 3534 (2022).
8. E. Costello, and **A. Doblas**, "Two-Way Pepper Ghost Tunnel: Theory, Design and Analysis," *QuaesitUM Undergraduate Research Journal*, *accepted* (2022).
9. R. Castaneda, J. Garcia-Sucerquia, and **A. Doblas**, "Speckle noise reduction in coherent imaging systems via Hybrid Median-Mean Filter," *Opt. Engineering* 60(12), 123107 (2021).

10. R. Castaneda, C. Trujillo, and **A. Doblas**, "Video-Rate Quantitative Phase Imaging Using a Digital Holographic Microscope and a Generative Adversarial Network," *Sensors* 21(23), 8021 (2021).
11. R. Castaneda, and **A. Doblas**, "Fast and automatic algorithm to universal recovery of the quantitative phase distribution in digital holographic microscopy," *Appl. Opt.* 60(32), 10214-10220 (2021).
12. R. Castaneda, C. Buitrago-Duque, J. Garcia-Sucerquia, and **A. Doblas**, "Fast-iterative blind phase-shifting digital holographic microscopy using two images," *Appl. Opt.* 59(24) 7469-7476 (2020).
13. C. Hayes-Round, B. Bogue-Jimenez, J. Garcia-Sucerquia, O. Skalli, and **A. Doblas**, "Advantages of Fresnel biprism-based Digital Holographic Microscopy in Quantitative Phase Imaging," *J. Biomed. Opt.* 25(8), 086501 (2020), doi: 10.1117/1.JBO.25.8.086501.
14. A. Doblas, C. Buitrago-Duque, A. Robinson, J. Garcia-Sucerquia, and, "Phase-Shifting Digital Holographic Microscopy with iterative blind reconstruction algorithm," *Appl. Opt.*, 58(34), G311-G317 (2019).
15. T. O'Connor, **A. Doblas**, and B. Javidi, "Structured illumination in compact and field-portable 3D-printed shearing digital holographic microscopy for resolution enhancement," *Opt. Letters* 44(9), 2326-2329 (2019).
16. S. Hossein, S. Yaghoubi, S. Ebrahimi, M. Dashtdar, **A. Doblas**, and B. Javidi, "Common-path, single-shot phase-shifting digital holographic microscopy using a Ronchi ruling," *Appl. Phys. Letter* 114, 183701 (2019).
17. H. Shabani, **A. Doblas**, G. Saavedra, and C. Preza, "Optical transfer function engineering using a tunable 3D structured illumination microscope," *Opt. Letters* 44(7), 1560-1563 (2019).
18. A. Doblas, S. Bedoya, and C. Preza, "Wollaston prism-based structured illumination microscope with tunable-frequency," *Appl. Opt.* 58(7), B1-B8(2019).
19. A. Doblas, H. Shabani, G. Saavedra, and C. Preza, "Tunable-frequency three-dimensional structured illumination microscopy with reduced data-acquisition," *Opt. Express* 26(23), 30492-30505 (2018).
20. N. Patwary, **A. Doblas** and C. Preza, "Image restoration approach to address reduced modulation contrast in structured illumination microscopy," *Biomed. Opt. Express* 9(4), 1630-1647 (2018).
21. H. Shabani, **A. Doblas**, G. Saavedra, E. Sanchez-Ortiga and C. Preza, "Improvement of two-dimensional structured illumination microscopy with an incoherent illumination pattern" *Appl. Optics* 57(7), B92-B101 (2018).
22. N. Patwary, H. Shabani, **A. Doblas**, G. Saavedra, and C. Preza, "Experimental validation of a customized phase mask designed to enable efficient computational optical sectioning microscopy through wavefront encoding" *Appl. Optics* 56(9), D14-D23 (2017).
23. J. Barrick, **A. Doblas**, M. R. Gardner, P. R. Sears, L. E. Ostrowski, and A. L. Oldenburg, "High-speed and high-sensitivity parallel spectral-domain optical coherence tomography using a supercontinuum light source," *Opt. Lett.*, 41(24), 5620-5623 (2016).
24. C. Trujillo, **A. Doblas**, G. Saavedra, M. Martínez-Corral and J. Garcia-Sucerquia, "Phase-shifting by means of an electronically tunable lens: quantitative phase imaging of biological specimens with digital holographic microscopy," *Opt. Lett.*, 41(7), 1416-1419 (2016).
25. A. Doblas, E. Roche, F. J. Ampudia-Blasco, M. Martínez-Corral, G. Saavedra and J. Garcia-Sucerquia, "Diabetes screening by telecentric digital holographic microscopy," *J. Microsc.*, 261(3), 285-290 (2016). doi: 10.1111/jmi.12331.
26. A. Doblas, M. Martínez-Corral, G. Saavedra, and J. Garcia-Sucerquia "Digital holographic microscopy for diabetes screening," *SPIE Newsroom* (2016). doi: 10.1117/2.1201604.006435
27. S. V. King, **A. Doblas**, N. Patwary, G. Saavedra, M. Martínez-Corral, and C. Preza, "Spatial light modulator phase mask implementation of wavefront encoded 3D computational-optical microscopy," *Appl. Optics* 54, 8587-8595 (2015).

28. A. Doblas, D. Hincapie-Zuluaga, G. Saavedra, M. Martínez-Corral and J. Garcia-Sucerquia, "Physical compensation of phase curvature in digital holographic microscopy by use of programmable liquid lens," *Appl. Opt.*, 54, 5229-5233 (2015).
29. A. Doblas, E. Sánchez-Ortiga, M. Martínez-Corral and J. Garcia-Surcerquia, "Study of spatial lateral resolution in off-axis digital holographic microscopy," *Opt. Commun.* 352, 63-69 (2015).
30. M. Martínez-Corral, **A. Doblas**, E. Sánchez-Ortiga, J. Sola-Pikabea and G. Saavedra, "Static axial scanning in 3D microscopy through electrically controlled liquid lens," *SPIE Newsroom* (2015). doi: 10.1117/2.1201503.005832.
31. M. Martínez-Corral, P.-Y. Hsieh, **A. Doblas**, E. Sánchez-Ortiga, G. Saavedra and Y.-P. Huang, "Fast axial-scanning widefield microscopy with constant magnification and resolution," *J. Display Technol* 11, 913-920 (2015). doi: 10.1109/JDT.2015.2404347.
32. A. Doblas, E. Sánchez-Ortiga, M. Martínez-Corral, G. Saavedra and J. Garcia-Surcerquia, "Accurate single-shot quantitative phase imaging of biological specimens with telecentric digital holographic microscopy," *J. Biomed. Opt.* 19(4), 046022- (2014).
33. E. Sánchez-Ortiga, **A. Doblas**, G. Saavedra, M. Martínez-Corral and J. Garcia-Sucerquia, "Off-axis Digital Holographic Microscopy: practical design parameters for operating at diffraction limit," *Appl. Opt.* 53(10), 2058-2066 (2014).
34. A. Doblas, G. Saavedra, M. Martínez-Corral, J. C. Barreiro, E. Sánchez-Ortiga and A. Llavador, "Axial resonance of periodic patterns by using a Fresnel biprism," *J. Opt. Soc. Am. A* 30(1), 140-148 (2013).
35. A. Doblas, E. Sánchez-Ortiga, M. Martínez-Corral, G. Saavedra, P. Andres, and J. Garcia-Sucerquia, "Shift-variant digital holographic microscopy: inaccuracies in quantitative phase imaging," *Opt. Lett.* 38(8), 1352-1354 (2013).
36. E. Sánchez-Ortiga, G. Saavedra, C. J. R. Sheppard, **A. Doblas** and M. Martínez-Corral, "Scanning microscopy with spatial sampling of the detector plane," *Opt. Pur. Apl.* 46(2), 137-146 (2013).
37. I. Escobar, G. Saavedra, M. Martínez-Corral, A. Calatayud and **A. Doblas**, "Shaded-Mask Filtering for Extended Depth-of-Field Microscopy," *J. Inf. Commun. Converg. Eng* 11(2), 139-146, (2013).
38. E. Sánchez-Ortiga, **A. Doblas**, M. Martínez-Corral, G. Saavedra and J. Garcia-Surcerquia, "Aberration compensation for objective phase curvature in phase holographic microscopy: comment," *Opt. Lett.* 39(3), 417-417 (2013)
39. E. Sánchez-Ortiga, C.J.R. Sheppard, G. Saavedra, M. Martínez-Corral, **A. Doblas** and A. Calatayud, "Subtractive imaging in confocal scanning microscope using a CCD camera as a detector", *Optics Letters*, 37(7), 1280-1282(2012).
40. E. Sánchez-Ortiga, Pietro Ferraro, M. Martínez-Corral, G. Saavedra and **A. Doblas**, "Digital holographic microscopy with pure-optical spherical phase compensation", *J. Opt. Soc. Am. A* 28(7), 1410-1417(2011).

#### Journal Publications under Review/Revision

1. S. Obando-Vasquez, **A. Doblas**, and C. Trujillo, "Semi-heuristic phase compensation in digital holographic microscopy for stable and accurate quantitative phase imaging of moving objects," *Optics and Lasers in Engineering*, *under review* (2023).

#### Journal Publications under Preparation

1. R. Castaneda, C. Trujillo, and **A. Doblas**, "3D Quantitative Phase Imaging in Off-axis Digital Holographic Microscopy: Synergetic Reconstruction Framework," *Optics Letters*, *to be submitted (October 2023)*.

#### Peer-Reviewed Conference Publications

1. R. Castaneda, C. Trujillo, and **A. Doblas**, Computational algorithm that enables synergetic phase compensation and automatic focusing for off-axis Digital Holographic Microscopy

- operating in telecentric regime,” Optica Imaging and Applied Optics Congress, paper DTu3A.5 (2023).
2. K. Balachandran, R. Castaneda, **A. Doblas**, “Evaluation of the robustness and accuracy of PCA-based algorithms for in-line Digital Holographic Microscopy,” Optica Imaging and Applied Optics Congress, paper JTU4A.35 (2023).
  3. B. Bogue-Jimenez, C. Trujillo, and **A. Doblas**, “An Open-Source Tool for Non-Telecentric Digital Holographic Microscopy Reconstruction,” Optica Imaging and Applied Optics Congress, paper IM3E.1 (2023).
  4. S. Obando-Vasquez, **A. Doblas**, and C. Trujillo, “Accurate and fast phase compensation of dynamic samples in Digital Holographic Microscopy,” Optica Imaging and Applied Optics Congress, paper HW3C.3 (2023).
  5. S. Patra, C. Trujillo, and **A. Doblas**, “Super-resolution in confocal microscopy using generative adversarial networks with paired and unpaired data,” Proc. SPIE 12385, 123850S (2023). doi.:10.1117/12.2652629.
  6. B. Bogue-Jimenez, C. Trujillo, and **A. Doblas**, “Overview of the automatic reconstruction method for quantitative phase imaging using a digital holographic microscope operating in non-telecentric regime,” Proc. SPIE 12389, 123890B (2023). doi.: 10.1117/12.2651944.
  7. R. Castaneda, C. Trujillo, and **A. Doblas**, “Concurrent execution of phase compensation and automatic focusing procedures for telecentric off-axis Digital Holographic Microscopy,” Proc. SPIE 12389, 123890A (2023). Doi.: 10.1117/12.2652631.
  8. C. Hayes-Rounds, R. Isaac, and **A. Doblas**, “Common-path digital holographic microscope using a Fresnel biprism for imaging spatially dense samples,” Optica Imaging and Applied Optics Congress, paper 3F3A.3 (2022).
  9. R. Castaneda, C. Trujillo, and **A. Doblas**, “An Open-Source Python library for Digital Holographic Microscopy Imaging,” Optica Imaging and Applied Optics Congress, paper JTh2A.1 (2022).
  10. R. Castaneda, **A. Doblas**, and C. Trujillo “Learning-based Quantitative Phase Imaging in Digital Holographic Microscopy: a comparison study between different models,” Optica Imaging and Applied Optics Congress, paper 3F3A.4 (2022).
  11. E. Costello, R. E. Williamson, R. Isaac, and **A. Doblas**, “Upgrading the conventional Pepper Ghost holographic device to a full-parallax three-dimensional tunnel display,” Optica Imaging and Applied Optics Congress, paper 3F3A.1 (2022).
  12. S. Obando-Vasquez, C. Trujillo, and **A. Doblas**, “Turning a commercial bright-field microscope into a precise polarization-sensitive imaging device,” Proc. SPIE 12112, 121120E (2022). <https://doi.org/10.1117/12.2619052>.
  13. B. Feng, D. W. Powell, and **A. Doblas**, “Marker-less motion capture system using OpenPose,” Proc. SPIE 12101, 121010B (2022). <https://doi.org/10.1117/12.2619059>.
  14. R. Castaneda, C. Trujillo, and **A. Doblas**, “Learning-based method for full phase reconstruction of biological samples in digital holographic microscopy,” 2021 IEEE Photonics Conference (IPC) (2021).
  15. C. Hayes-Rounds, B. Bogue-Jimenez, J. Garcia-Sucerquia, O. Skalli, and **A. Doblas**, “Assessment of a Fresnel biprism-based digital holographic microscope for fast, high-sensitivity, high-resolution and polarization-sensitive phase imaging,” OSA Imaging and Applied Optics Congress, paper 3W5A.2 (2021).
  16. R. Castaneda, and **A. Doblas**, “Joint Reconstruction Strategy for Telecentric-based Digital Holographic Microscopes,” OSA Imaging and Applied Optics Congress, paper 3W5A.4 (2021).
  17. R. Castaneda, J. Garcia-Sucerquia, and **A. Doblas**, “Synergetic combination of median filtered images to reduce speckle noise in digital holography (DH) and digital holographic microscopy (DHM),” OSA Imaging and Applied Optics Congress, paper DF4C.7 (2021).
  18. T. O’Connor, **A. Doblas**, and B. Javidi, “Overview of compact and field-portable system for resolution enhanced digital holographic microscopy by structured illumination,” OSA Imaging and Applied Optics Congress, paper JTh2A.17, <https://doi.org/10.1364/3D.2020.JTh2A.17> (2020).
  19. R. Castaneda, C. Buitrago-Duque, J. Garcia-Sucerquia, A. Robinson, and **A. Doblas**, “Fast-iterative blind reconstruction algorithms for accurate quantitative phase images in

- phase-shifting digital holographic microscopy,” OSA Imaging and Applied Optics Congress, paper HTh5D.3, <https://doi.org/10.1364/DH.2020.HTh5D.3> (2020).
20. R. Castaneda, T. O’Connor, **A. Doblas**, and B. Javidi, “Reduction in data acquisition for resolution improvement in Structured Illumination Digital Holographic Microscopy,” Proc. SPIE 11402, 114020R-8 (2020).
  21. A. Doblas, J. Garcia-Sucerquia, Genaro Saavedra, and Manuel Martinez-Corral, “Digital holographic microscopy as a screening technology for diabetes,” Proc. SPIE 10997, 10997K-7 (2019).
  22. S. Bedoya, **A. Doblas**, G. Saavedra and C. Preza, “Wollaston-based tunable frequency structured illumination microscopy,” OSA Imaging and Applied Optics congress, paper ITu2B.3, <https://doi.org/10.1364/ISA.2018.ITu2B.3> (2018).
  23. J. Sola-Pikabea, **A. Doblas**, G. Saavedra, M. Martinez-Corral and C. Preza, “Optimal design of incoherent tunable-frequency structured illumination microscope scheme,” *IEEE 15<sup>th</sup> International Symposium on Biomedical Imaging*, Washington, DC, USA, pp. 449-452(2018).
  24. A. Dutta, **A. Doblas**, G. Saavedra, and C. Preza, “Tradeoff between insensitivity to depth-induced spherical aberration and resolution of 3D fluorescence imaging due to the use of wavefront encoding with a radially symmetric phase mask,” Proc. SPIE 10499, 1049913- (2018).
  25. H. Shabani, **A. Doblas**, G. Saavedra and C. Preza, “Preprocessing method to correct illumination pattern in sinusoidal-based structured illumination microscopy,” Proc. SPIE 10499, 1049960- (2018).
  26. H. Shabani, **A. Doblas**, G. Saavedra and C. Preza, “3D structured illumination microscopy using an incoherent illumination system based on a Fresnel biprism,” Proc. SPIE 10499, 1049902- (2018).
  27. N. Patwary, **A. Doblas**, G. Saavedra, and C. Preza, “Evaluation of the use of wavefront encoding to reduce depth-induced aberration in structured illumination microscopy” Proc. SPIE 10499, 1049936- (2018).
  28. N. Patwary, C. Preza and **A. Doblas**, “Computational approach to address reduced modulation contrast in structured-illumination microscopy,” OSA Imaging and Applied Optics congress, paper JTU5A.9 (2017), <https://doi.org/10.1364/3D.2017.JTu5A.9>.
  29. A. Doblas and C. Preza, “Incoherent-based tunable frequency structured illumination microscopy,” OSA Imaging and Applied Optics congress, paper ITh4E.4 (2017), <https://doi.org/10.1364/ISA.2017.ITh4E.4>.
  30. H. Shabani, **A. Doblas** and C. Preza, “Simultaneous optical sectioning and super resolution in 2D-SIM using tunable structured illumination,” OSA Imaging and Applied Optics congress, paper CW4B.4 (2017), <https://doi.org/10.1364/COSI.2017.CW4B.4>.
  31. A. Doblas, H. Shabani, G. Saavedra and C. Preza, “Comparison of 3D structured patterns with tunable frequency for use in structured illumination microscopy,” Proc. SPIE 10070, 100700H-8 (2017).
  32. H. Shabani, N. Patwary, **A. Doblas**, G. Saavedra and C. Preza, “Comparison of two structured illumination techniques based on different 3D illumination pattern,” Proc. SPIE 10070, 1007013-8 (2017).
  33. S. V. King, C. Taylor, **A. Doblas**, H. Shabani, N. Patwary, G. Saavedra and C. Preza, “Implementation of an incoherent 3-D patterned illumination design in a Structured Illumination Microscopy,” Proc. SPIE 1007013, 1007004-7 (2017).
  34. A. Doblas, E. Sánchez-Ortiga, G. Saavedra, M. Martínez-Corral, P.-Y. Hsieh and Y.-P. Huang, “Three-dimensional microscopy through liquid-lens axial scanning,” Proc. SPIE 9495, 1-6 (2015).
  35. A. Doblas, E. Sánchez-Ortiga, M. Martínez-Corral, G. Saavedra and J. Garcia-Surcerquia, “Accurate quantitative image through telecentric digital holographic microscopy,” Proc. SPIE 9117, 911705-8 (2014).
  36. A. Doblas, S. V. King, N. Patwary, G. Saavedra, M. Martinez-Corral and C. Preza, “Investigation of the SQUBIC phase mask design for depth-invariant widefield microscopy point-spread function engineering,” Proc. SPIE 8949-40 (2014).



37. N. Patwary, **A. Doblás**, S. V. King and C. Preza, "Reducing depth induced spherical aberration by wavefront coding in 3D widefield fluorescence microscopy," *Proc. SPIE* 8949-37 (2014).
38. S. V. King, **A. Doblás**, N. Patwary, G. Saavedra, M. Martínez-Corral and C. Preza, "Implementation of PSF engineering in high-resolution 3D microscopy imaging with a LCOS (reflective) SLM," *Proc. SPIE* 8949-39 (2014).
39. E. Sánchez-Ortiga, **A. Doblás**, G. Saavedra and M. Martínez-Corral, "Novel proposal in widefield 3D microscopy", *Proc. SPIE* 7690, 7690.05 (2010).

#### Other Conference Publications

1. G. Saavedra, M. Martínez-Corral, J. I. García-Sucerquia, E. Sánchez-Ortiga, and A. Doblás, "Recent advances in Digital Holographic Microscopy," *IEEE Proceeding, 20<sup>th</sup> International Conference on Transparent Optical Network ICTON (2018)*, doi: 10.1109/ICTON.2018.8473628.
2. A. Doblás, H. Shabani, G. Saavedra and C. Preza, "Recent advances in 3D structured illumination microscopy," *IEEE Proceeding, 20<sup>th</sup> International Conference on Transparent Optical Network ICTON (2018)*, doi: 10.1109/ICTON.2018.8473675.
3. G. Saavedra, E. Sánchez-Ortiga, M. Martínez-Corral, A. Doblás and P. Ferraro, "Optically-undistorted digital holographic microscopy for quantitative phase-contrast imaging", *IEEE Workshop on Information Optics (WIO), 10th Euro-American Workshop (2010)*. doi 10.1109/WIO.2011.5981444.
4. E. Sánchez-Ortiga, G. Saavedra, M. Martínez-Corral, A. Doblás and A. Calatayud, "Confocal scanning microscope using CCD camera as a pinhole-detector system", *IEEE Workshop on Information Optics (WIO), 10th Euro-American Workshop (2010)*. doi 10.1109/WIO.2011.5981473.
5. G. Saavedra, M. Martínez-Corral, E. Sánchez-Ortiga and A. Doblás, "Optical-sectioning microscopy by patterned illumination," *J. Phys.: Conf. Series* 206 (2010) 012011.

#### Conference Presentations/Posters

1. A. Doblás, B. Bogue-Jimenez, R. Castaneda, and C. Trujillo, "Applications of deep learning in microscopic imaging," Invited Talk in the European Summit on Laser Optics & Photonics Technology' 23, September 23.
2. R. Castaneda, C. Trujillo, and **A. Doblás**, Computational algorithm that enables synergetic phase compensation and automatic focusing for off-axis Digital Holographic Microscopy operating in telecentric regime," Oral Talk in Optica Imaging and Applied Optics Congress '23, August 2023.
3. R. Castaneda, C. Trujillo, and **A. Doblás**, Computational algorithm that enables synergetic phase compensation and automatic focusing for off-axis Digital Holographic Microscopy operating in telecentric regime," Oral Talk in Optica Imaging and Applied Optics Congress '23, August 2023.
4. K. Balachandran, R. Castaneda, **A. Doblás**, "Evaluation of the robustness and accuracy of PCA-based algorithms for in-line Digital Holographic Microscopy," Poster in Optica Imaging and Applied Optics Congress '23, August 2023.
5. B. Bogue-Jimenez, C. Trujillo, and **A. Doblás**, "An Open-Source Tool for Non-Telecentric Digital Holographic Microscopy Reconstruction," Oral Talk in Optica Imaging and Applied Optics Congress' 23, August 2023.
6. S. Obando-Vasquez, **A. Doblás**, and C. Trujillo, "Accurate and fast phase compensation of dynamic samples in Digital Holographic Microscopy," Oral Talk in Optica Imaging and Applied Optics Congress' 23, August (2023).
7. S. Patra, C. Trujillo, and **A. Doblás**, "Super-resolution in confocal microscopy using generative adversarial networks with paired and unpaired data," Oral Talk in SPIE Photonics West '23, February 2023.

8. B. Bogue-Jimenez, C. Trujillo, and **A. Doblas**, "Overview of the automatic reconstruction method for quantitative phase imaging using a digital holographic microscope operating in non-telecentric regime," Oral Talk in SPIE Photonics West '23, February 2023.
9. R. Castaneda, C. Trujillo, and **A. Doblas**, "Concurrent execution of phase compensation and automatic focusing procedures for telecentric off-axis Digital Holographic Microscopy," Oral Talk in SPIE Photonics West '23, February 2023.
10. C. Hayes-Rounds, R. Isaac, and **A. Doblas**, "Common-path digital holographic microscope using a Fresnel biprism for imaging spatially dense samples," Oral Talk in *Optica Imaging and Applied Optics Congress*, July 2022.
11. R. Castaneda, C. Trujillo, and **A. Doblas**, "An Open-Source Python library for Digital Holographic Microscopy Imaging," Poster in *Optica Imaging and Applied Optics Congress*, July 2022.
12. R. Castaneda, **A. Doblas**, and C. Trujillo "Learning-based Quantitative Phase Imaging in Digital Holographic Microscopy: a comparison study between different models," Oral Talk in *Optica Imaging and Applied Optics Congress*, July 2022.
13. E. Costello, R. E. Williamson, R. Isaac, and **A. Doblas**, "Upgrading the conventional Pepper Ghost holographic device to a full-parallax three-dimensional tunnel display," Oral Talk in *Optica Imaging and Applied Optics Congress*, July 2022.
14. B. Bogue-Jimenez, D. Powell, X. Huang, and **A. Doblas**, "Exploring Non-invasive solutions for continuous glucose monitoring," Oral Talk in SPIE Meeting on Defense, Security & Sensing '22, April 2022.
15. R. Castaneda, C. Trujillo, and **A. Doblas**, "Learning-based free-of-distortion phase imaging," Oral Talk in SPIE Meeting on Defense, Security & Sensing '22, April 2022.
16. B. Feng, and **A. Doblas**, "Marker-less Motion Capture System using OpenPose," Oral Talk in SPIE Meeting on Defense, Security & Sensing '22, April 2022.
17. S. Obando-Vasquez, C. Trujillo, and **A. Doblas**, "Turning a commercial bright-field microscope into a precise polarization-sensitive imaging device," Oral Talk in SPIE Meeting on Defense, Security & Sensing '22, April 2022.
18. B. Feng, and **A. Doblas**, "Marker-less Motion Capture System using OpenPose," Oral Talk in 2022 Mid-South Biomechanics Conference, February 2022.
19. B. Bogue-Jimenez, X. Huang, D. Powell, and **A. Doblas**, "Multisensory Non-invasive approach for Continuous Glucose Monitoring," Oral Talk in 2022 Mid-South Biomechanics Conference, February 2022.
20. R. Castaneda, C. Trujillo, and **A. Doblas**, "Learning-based method for full phase reconstruction of biological samples in digital holographic microscopy," 2021 IEEE Photonics Conference, October 2021.
21. C. Hayes-Rounds, B. Bogue-Jimenez, J. Garcia-Sucerquia, O. Skalli, and **A. Doblas**, "Assessment of a Fresnel biprism-based digital holographic microscope for fast, high-sensitivity, high-resolution and polarization-sensitive phase imaging," OSA Imaging and Applied Optics Congress, July 2021
22. R. Castaneda, and **A. Doblas**, "Joint Reconstruction Strategy for Telecentric-based Digital Holographic Microscopes," OSA Imaging and Applied Optics Congress, July 2021.
23. R. Castaneda, J. Garcia-Sucerquia, and **A. Doblas**, "Synergetic combination of median filtered images to reduce speckle noise in digital holography (DH) and digital holographic microscopy (DHM)," OSA Imaging and Applied Optics Congress, July 2021.
24. T. O'Connor, **A. Doblas**, and B. Javidi, "Overview of structured illumination for resolution enhancement in compact and field-portable 3D-printed shearing digital holographic microscopy," *OSA Imaging and Applied Optics Conference '20*, June 2020.
25. R. Castaneda, C. Buitrago, J. Garcia-Sucerquia, A. Robinson, and **A. Doblas**, "Fast-iterative blind reconstruction algorithms for accurate quantitative phase images in phase-shifting digital holographic microscopy," *OSA Imaging and Applied Optics Conference '20*, June 2020.
26. A. Doblas, "Quantitative Phase Imaging as an alternative screening and monitoring method for diabetes," *Invited* in *Frontiers in Lasers, Optics and Photonics '20*, March 2020.

27. T. O'Connor, **A. Doblás**, and B. Javidi, "Overview of structured illumination for resolution enhancement in compact and field-portable 3D-printed shearing digital holographic microscopy," *SPIE Meeting on Defense, Security & Sensing '20*, April 2020.
28. A. Doblás, A. Robinson, C. Buitrago-Duque, and J. Garcia-Sucerquia, "Blind Phase-Shifting Digital Holographic Microscopy using an iterative approach," *Invited Talk in SPIE Meeting on Defense, Security & Sensing '20*, April 2020.
29. C. Hayes-Round, B. Bogue-Jimenez, J. Garcia-Sucerquia, O. Skalli, and **A. Doblás**, "Polarization-sensitive digital holographic microscopy using a Fresnel biprism," *SPIE Meeting on Defense, Security & Sensing '20*, April 2020.
30. R. Castaneda, **A. Doblás**, T. O'Connor, and B. Javidi, "Reduction in data acquisition for resolution improvement in Structured Illumination Digital Holographic Microscopy," *SPIE Meeting on Defense, Security & Sensing '20*, Anaheim (USA), April 2020.
31. A. Doblás, S. Bedoya, and C. Preza, "Tunable-frequency two-dimensional Wollaston prism-based structured illumination microscope," *Invited Talk in Frontiers in Lasers, Optics and Photonics '19*, Tokyo (Japan), May 2019.
32. A. Doblás, J. Garcia-Sucerquia, G. Saavedra, and M. Martinez-Corral, "Digital holographic microscopy as a screening technology for diabetes," *Invited Talk in SPIE Meeting on Defense, Security & Sensing '19*, Baltimore (USA), April 2019.
33. H. Shabani, **A. Doblás**, G. Saavedra, and C. Preza, "Investigating the impact of structured illumination design on the synthetic optical transfer function," *BiOS 2019, part of Photonics West*, San Francisco (USA), February 2019.
34. J. Sola-Pikabea, **A. Doblás**, G. Saavedra, M. Martinez-Corral and C. Preza, "Optimal design of an incoherent structured illumination system with tunable frequency," *XII Spanish Optical Society Meeting*, Castellon (Spain), July 2018.
35. G. Saavedra, M. Martinez-Corral, J. I. Garcia-Sucerquia, E. Sanchez-Ortiga, and **A. Doblás**, "Recent advances in Digital Holographic Microscopy," *20<sup>th</sup> International Conference on Transparent Optical Networks*, Bucharest (Romania), July 2018.
36. A. Doblás, H. Shabani, G. Saavedra and C. Preza, "Recent advances in 3D structured illumination microscopy," *20<sup>th</sup> International Conference on Transparent Optical Networks*, Bucharest (Romania), July 2018.
37. S. Bedoya, **A. Doblás**, G. Saavedra and C. Preza, "Wollaston-based tunable frequency structured illumination microscopy," *Imaging systems and Applications*, part of *OSA Imaging and Applied Optics congress*, Orlando (USA), June 2018.
38. S. Bedoya, **A. Doblás**, G. Saavedra and C. Preza, "Tunable structured illumination system based on a Wollaston prism" *Image Science Gordon Research Conference*, Easton (USA), June 2018.
39. H. Shabani, **A. Doblás**, G. Saavedra and C. Preza, "Novel structured illumination improves 3-D resolution in fluorescence microscopy" *Image Science Gordon Research Conference*, Easton (USA), June 2018.
40. H. Shabani, **A. Doblás**, G. Saavedra and C. Preza, "3D Tunable Structured Illumination Microscope using a Fresnel biprism," *Focus on Microscopy 2018*, Singapur (Singapur), March 2018.
41. A. Doblás, J. Sola-Pikabea, H. Shabani, G. Saavedra, M. Martinez-Corral and C. Preza, "Incoherent structured illumination system with a tunable 3D pattern," *Computational Imaging III*, part of *SPIE DCS Commercial + Scientific Sensing and Imaging*, Orlando (USA), April 2018.
42. J. Sola-Pikabea, **A. Doblás**, G. Saavedra, M. Martinez-Corral and C. Preza, "Optimal design of incoherent tunable-frequency structured illumination microscope scheme," *IEE International Symposium on Biomedical Imaging*, Washington D. C. (USA), April 2018.
43. A. Dutta, **A. Doblás**, G. Saavedra, and C. Preza, "Tradeoff between insensitivity to depth-induced spherical aberration and resolution of 3D fluorescence imaging due to the use of wavefront encoding with a radially symmetric phase mask," *BiOS 2018, part of Photonics West*, San Francisco (USA), January-February 2018.
44. H. Shabani, **A. Doblás**, G. Saavedra and C. Preza, "Preprocessing method to correct illumination pattern in sinusoidal-based structured illumination microscopy," *BiOS 2018, part of Photonics West*, San Francisco (USA), January-February 2018.

45. H. Shabani, **A. Doblás**, G. Saavedra and C. Preza, "3D structured illumination microscopy using an incoherent illumination system based on a Fresnel biprism," *BiOS 2018, part of Photonics West*, San Francisco (USA), January-February 2018.
46. N. Patwary, **A. Doblás**, G. Saavedra, and C. Preza, "Evaluation of the use of wavefront encoding to reduce depth-induced aberration in structured illumination microscopy" *BiOS 2018, part of Photonics West*, San Francisco (USA), January-February 2018.
47. A. Doblás and C. Preza, "Incoherent-based tunable frequency structured illumination microscopy," *Imaging systems and Applications*, part of *OSA Imaging and Applied Optics congress*, San Francisco (USA), June 2017.
48. N. Patwary, C. Preza and **A. Doblás**, "Computational approach to address reduced modulation contrast in structured-illumination microscopy," *OSA Imaging and Applied Optics congress*, paper JTU5A.9 (2017), <https://doi.org/10.1364/3D.2017.JTu5A.9>.
49. H. Shabani, **A. Doblás** and C. Preza, "Simultaneous optical sectioning and super resolution in 2D-SIM using tunable structured illumination," *OSA Imaging and Applied Optics congress*, paper CW4B.4 (2017), <https://doi.org/10.1364/COSI.2017.CW4B.4>.
50. A. Doblás, J. Garcia-Sucerquia, C. Trujillo, G. Saavedra and M. Martinez-Corral, "Phase-shifting method applied to digital holographic microscopy using a programmable focusing lens," *Focus on Microscopy 2017*, Bordeaux (France), April 2017.
51. C. Preza, N. Patwary, H. Shabani, **A. Doblás** and G. Saavedra, "PSF Engineering using a fabricated Squbic phase mask to reduce the effect of spherical aberration in 3D widefield field fluorescence imaging," *Focus on Microscopy 2017*, Bourdeaux (France), April 2017.
52. A. Doblás, H. Shabani, G. Saavedra and C. Preza, "Improvement of 2D-SIM achieved based on tunable structured illumination," *Focus on Microscopy 2017*, Bordeaux (France), April 2017.
53. J. Barrick, **A. Doblás**, M. Gardner, P. R. Sears, L. E. Ostrowski and A. L. Oldenburg, "Supercontinuum parallel line-field optical coherence tomography for high sensitivity, kilohertz frame rate imaging," *Optics in Life Science 2017, part of Bio-Optics: Design and Application 2017*, San Diego (USA), April 2017. <https://doi.org/10.1364/BODA.2017.BoM4A.1>.
54. A. Doblás, G. Saavedra, and C. Preza, "Comparison of 3D structured patterns with tunable frequency for use in Structured Illumination Microscopy" *BiOS 2017, part of Photonics West*, San Francisco (USA), January-February 2017.
55. A. Doblás, E. Boyers, R. L. Blackmon, and A. L. Oldenburg, "Investigation of spectrometer design for reducing roll-off in spectral-domain optical coherence tomography," *BiOS 2017, part of Photonics West*, San Francisco (USA), January-February 2017.
56. J. Barrick, **A. Doblás**, P. R. Sears, L. E. Ostrowski, and A. L. Oldenburg, "High-sensitivity supercontinuum-based parallel line-field optical coherence tomography with 1 million A-lines/s," *BiOS 2017, part of Photonics West*, San Francisco (USA), January-February 2017.
57. S. V. King, C. Taylor, **A. Doblás**, H. Shabani, N. Patwary, G. Saavedra, and C. Preza, "Implementation of an incoherent 3-D patterned illumination design in Structured Illumination Microscope," *BiOS 2017, part of Photonics West*, San Francisco (USA), January-February 2017.
58. H. Shabani, N. Patwary, **A. Doblás**, G. Saavedra, and C. Preza, "Investigating the effect of different 3D illumination patterns on structured illumination microscopy performance," *Quantitative Biolmaging Conference '17*, College Station (Texas, US), January 2017.
59. N. Patwary, **A. Doblás**, G. Saavedra, and C. Preza, "Implementation of PSF engineering using a fabricated SQUBIC phase mask to reduce the effect of spherical aberration in 3D wide field fluorescence imaging," *Quantitative Biolmaging Conference '17*, College Station (Texas, US), January 2017.
60. M. Martinez-Corral, **A. Doblás**, E. Sanchez-Ortiga, G. Saavedra, and Y.P. Huang, "Fast axial scanning in 3D imaging," *Imaging and Applied Optics Congress '16*, Heidelberg, (Germany), July 2016.

61. A. Doblás, E. Sánchez-Ortiga, G. Saavedra, J. Sola-Pikabea, M. Martínez-Corral, P. Y. Hsieh and Y. P. Huang, "Three-dimensional microscopy through liquid-lens axial scanning," *SPIE Meeting on Defense, Security & Sensing '15*, Baltimore (USA), May 2015.
62. A. Doblás, G. Saavedra, M. Martínez-Corral, J. Garcia-Sucerquia, E. Roche and F. J. Ampudia-Blasco "Evaluation of digital holographic microscope as an alternative method to the diagnosis and screening of HbA<sub>1c</sub> in diabetic patients," *XXVI National Meeting on Diabetes (SED)*, Valencia (Spain), April 2015.
63. A. Doblás, E. Roche, F. J. Ampudia-Blasco, G. Saavedra, M. Martínez-Corral and J. Garcia-Sucerquia, "Assessment of diabetes screening using quantitative phase imaging by digital holographic microscopy," *Focus on Microscopy 2015*, Göttingen (Germany), March 2015.
64. E. Sánchez-Ortiga, **A. Doblás**, J. Sola-Pikabea, G. Saavedra, P. Y. Hsieh, Y. P. Huang and M. Martínez-Corral, "Non-mechanical axial scanning in wide-field microscopy by means of a liquid lens," *Focus on Microscopy 2015*, Göttingen (Germany), March 2015.
65. A. Doblás, E. Sánchez-Ortiga, M. Martínez-Corral, G. Saavedra and J. Garcia-Sucerquia, "Drawbacks of using non-telecentric geometry in digital holographic microscopy", *Focus Latin America 2014*, Medellín (Colombia), November 2014.
66. A. Doblás, A. Pons, G. Saavedra and M. Martínez-Corral, "Ultra-fast axial-scanning microscopy by use of a liquid lens," *XXIII ICO '14*, Santiago de Compostela (Spain) August 2014.
67. M. Martínez-Corral, **A. Doblás**, E. Sánchez-Ortiga, G. Saavedra and J. Garcia-Sucerquia, "Accurate quantitative phase imaging through telecentric digital holographic microscopy," *SPIE Meeting on Defense, Security & Sensing '14*, Baltimore (USA), May 2014.
68. C. Preza, N. Patwary, **A. Doblás**, S. V. King, G. Saavedra and M. Martínez-Corral, "Addressing depth-induced spherical aberration in computational optical sectioning microscopy using wavefront coding", *Focus on Microscopy 2014*, Sidney (Australia), April 2014.
69. A. Doblás, S. V. King, N. Patwary, G. Saavedra, M. Martínez-Corral and C. Preza, "Investigation of the SQUBIC phase mask design for depth-invariant widefield microscopy point-spread function engineering," *BiOS 2014, part of Photonics West*, San Francisco (USA), February 2014.
70. N. Patwary, **A. Doblás**, S. V. King and C. Preza, "Reducing depth induced spherical aberration by wavefront coding in 3D widefield fluorescence microscopy," *BiOS 2014, part of Photonics West*, San Francisco (USA) February 2014.
71. S. V. King, **A. Doblás**, N. Patwary, G. Saavedra, M. Martínez-Corral and C. Preza, "Implementation of PSF engineering in high-resolution 3D microscopy imaging with a LCOS (reflective) SLM," *BiOS 2014, part of Photonics West*, San Francisco (USA), February 2014.
72. J. Garcia-Sucerquia, E. Sánchez-Ortiga, **A. Doblás**, M. Martínez-Corral, G. Saavedra and P. Andrés, "Curvature phase factor in digital holographic microscopy", *XI Latinoamerican Meeting on Optics, Lasers and Applications*, Porto (Portugal), July 2013.
73. A. Doblás, E. Sánchez-Ortiga, M. Martínez-Corral, G. Saavedra, P. Andrés and J. Garcia-Sucerquia, "Efecto del telecentrismo en microscopía holográfica digital", *XXXIV Reunión Bienal de la Real Sociedad Española de Física*, Valencia (Spain), July 2013.
74. E. Sánchez-Ortiga, **A. Doblás**, J. Garcia-Sucerquia, M. Martínez-Corral and G. Saavedra, "Microscopía holográfica digital: optimización de los parámetros de captura", *XXXIV Reunión Bienal de la Real Sociedad Española de Física*, Valencia (Spain), July 2013.
75. E. Sánchez-Ortiga, **A. Doblás**, M. Martínez-Corral, G. Saavedra and J. Garcia-Sucerquia, "DHM parameters for optimal hologram recording", *Focus on Microscopy 2013*, Maastricht (Netherlands), March 2013.
76. A. Doblás, E. Sánchez-Ortiga, M. Martínez-Corral, G. Saavedra and J. Garcia-Sucerquia, "Effect of non-telecentric geometry in quantitative phase imaging by digital holographic microscopy", *Focus on Microscopy 2013*, Maastricht (Netherlands), March 2013.
77. A. Doblás, G. Saavedra, J. Barreiro, M. Martínez-Corral, E. Sánchez-Ortiga, A. Pons and A. Llavador, "Lau effect with a Fresnel biprism", *X Spanish Optical Society Meeting*, Zaragoza (Spain), September 2012.

78. E. Sánchez-Ortiga, C. Sheppard, G. Saavedra, **A. Doblás**, G. Saavedra, M. Martínez-Corral and P. Andrés, “Confocal scanning microscopy with spatial sampling at the detector plane”, *X Spanish Optical Society Meeting*, Zaragoza (Spain), September 2012.
79. G. Saavedra, M. Martínez-Corral, **A. Doblás**, E. Sánchez-Ortiga, J.C. Barreiro and A. Llavador, “Tunable structured illumination microscopy with incoherent light”, *Focus on Microscopy 2012*, Singapur (Singapur) April 2012.
80. G. Saavedra, M. Martínez-Corral, **A. Doblás** and E. Sánchez-Ortiga, “Versatile fringe generation for 3D imaging in microscopy”, *5th International Universal Communication Symposium*, Gumi (South Korea), October 2011.
81. G. Saavedra, E. Sánchez-Ortiga, M. Martínez-Corral, A. Doblás and P. Ferraro, “Optically-undistorted digital holographic for quantitative phase-contrast imaging”, *10th Workshop on Information Optics*, Benicassim (Spain), June 2011.
82. E. Sánchez-Ortiga, G. Saavedra, M. Martínez-Corral, **A. Doblás** and A. Calatayud, “Confocal scanning microscope using CCD camera as a pinhole-detector system”, *10th Workshop on Information Optics*, Benicassim (Spain), June 2011.
83. E. Sánchez-Ortiga, P. Ferraro, M. Martínez-Corral, G. Saavedra and **A. Doblás**, “Telecentric DHM for quantitative phase-contrast imaging”, *Focus on Microscopy 2011*, Konstanz (Germany), April 2011.
84. H. Navarro, M. Martínez-Corral, B. Javidi, E. Sánchez-Ortiga, **A. Doblás** and G. Saavedra, “Axial Segmentation of 3D images through synthetic-apodization integral-imaging microscopy”, *Focus on Microscopy 2011*, Konstanz (Germany), April 2011.
85. E. Sánchez-Ortiga, **A. Doblás**, G. Saavedra and M. Martínez-Corral, “Novel proposals in widefield 3D microscopy”, *SPIE Meeting on Defense, Security & Sensing '10*, Orlando (EEUU), April 2010.
86. M. Martínez-Corral, G. Saavedra, A. Pons, R. Martínez Cuenca, I. Escobar, H. Navarro, A. Molina, A. Tolosa, E. Sánchez-Ortiga and **A. Doblás**, “Activities in 3D Imaging & Display Laboratory of University of Valencia”, *IX National Meeting on Optics*, Ourense (Spain), September 2009.
87. M. Martínez-Corral, G. Saavedra, E. Sánchez Ortiga and A. Doblás, “Optical-sectioning microscopy by patterned illumination”, *8th Workshop on Information Optics*, Paris (France), July 2009.

### Invited Presentations given by A. Doblás

1. “Overview of Digital Holographic Microscopy”, *Invited Lecture presented at Fall UofM Physics Seminar, University of Memphis, Department of Physics*, November 19, 2021.
2. “Advances in super-resolution fluorescence microscopy through a novel tunable 3D structured illumination design”, *Invited Lecture presented at University of Georgia*, online May 15, 2020.
3. “Advances in super-resolution fluorescence microscopy through a novel tunable 3D structured illumination design”, *Invited Lecture presented at Spring UofM Physics Seminar, University of Memphis, Department of Physics*, February 1, 2019.
4. “Structured Illumination Microscopy”, *Invited Lecture presented at the Department of Electrical and Computer Engineering at the University of Memphis*, Memphis, TN, March 31, 2016.
5. “Advances in high-resolution optical microscopy”, *Invited Lecture presented at the Department of Electrical and Computer Engineering at the University of Memphis*, Memphis, TN, August 8, 2016.

### Courses Taught

*University of Massachusetts Dartmouth, MA*

- **ECE 475/574 Digital-Time Signal Processing**, Fall semester 2023. This course is a 3-hour course that provides an in-depth exploration of discrete-time signal processing. The objective learning are: (1) analyze the performance of discrete-time signal processing (DSP) algorithms; (2) recognize appropriate approaches to analyze in the frequency and

time domains; (3) design new algorithms for given signal processing tasks, and discuss the performance of such algorithms; (4) evaluate the relative advantages and disadvantages of competing implementations to solve the same problems; and (5) implement common signal processing algorithms in MATLAB, and interpret the results of processing signals with these programs.

#### *The University of Memphis, TN*

- **EECE 2207 Engineering Math Applications**, Spring semester 2021 and Fall semester 2021. This course is a 3-hour course. Introduction to Matlab programming techniques through implementation of relevant engineering application.
- **EECE 3240 Electromagnetic Field Theory**, Spring semester 2020 and 2021. This course is a 3-hour course. Topics that are included: phasor review, transmission lines, vector analysis, electro-statics, magneto-statics, Maxwell's equations, plane wave propagation and wave reflection and transmission.
- **EECE 4243/6243 Linear Optical Systems**, Fall semester 2020. This course reviews Fourier techniques for analysis and design of linear systems, extension to 2-dimensional techniques, 2-dimensional transform applied to linear optical systems and optical data processing.
- **EECE 4242/6242 Electro-Optics**, Fall semester 2019 and 2021. This course provides an introduction to electro-optical (e.g. photonic) theory, devices and systems. Approximately, half of the course is devoted to optical theory and the remaining part is devoted to applications (e.g. devices and systems) commonly used in optical communications systems, scientific and medical sensor. Topics that are included: ray optics, diffraction, interferometry, polarization, crystal optics, luminescence, photoelectric effects, photon optics and an introduction to liquid crystal displays (LCDs), light sources (laser and LED diodes) and photodetectors.

#### *University of Valencia, VLC, Spain*

- **Clinical exploration methods**, first semester 2013/14. An introduction to advanced techniques for invasive clinical diagnosis based on knowledge introduced in the Optics and Visual Perception matters, emphasizing the principles of design of devices and the requirements for proper use.
- **Optical and optometric instruments**, second semester 2014/15. The contents of this course are essential for the development of the profession of optical optometrist, as it lays down the laws and mechanisms of formation of images in the instruments used in optometric practice. Its development is based on geometrical optics in establishing the laws of image formation in optical systems and the physiological optics are studied in the human visual system characteristics and the imaging system. The subject is related to physical optics, especially in regard to resolving power of the instruments and the use of polarizing elements.

#### **Workshops/Courses**

1. Coursera Online course in Machine Learning offered by Stanford University from September to November 2018.
2. Workshop, "Light Sources of Fibre Optic" held in Valencia (Spain) from 2 to 4 July 2012 and organized by University of Valencia (Group in Fibre Optic and Signal Processing - FOPS) and the Optoelectronics Committee of the Spanish Society of Optics.
3. Predoctoral Workshop "Image Recognition and Classification using Statistical Filters" given by Prof. Javidi at the Faculty of Physics of University of Valencia, 28 May 2012.
4. Workshop on basic optical microscopes organized by IZASA group (NIKON) and held in Murcia (Spain) from 20 to 21 October 2010.
5. Workshop "Introduction to numerical calculus with Matlab" organized by CADE (Center d'Assesorament i Dinamització dels Estudiants) of University of Valencia from 6 to 10 September 2010.

6. Workshop "Introduction to the generation of scientific writing in LaTeX" given by Prof. Xaro Benavent Garcia from 6 to 10 September 2010. This course was organized by the CADE (Center d' Assesorament i Dinamització dels Estudiants) of University of Valencia.
7. Predoctoral Workshop "Introduction to Optical Fiber Communications" given by Prof. Lawrence Chen from 12 to 17 July 2010 at the Faculty of Physics of University of Valencia.

### **Scientific Teaching Events**

1. Team member in the organization of the "XIV Experimenta Competition" organized by the Faculty of Physics of University of Valencia. Date: 30 March 2014 in the museum of the City of Arts and Sciences in Valencia.
2. Scientific team member in the organization of the workshop Aluzina held in the City of Arts and Sciences in during 2013-2014.
3. Attendance at the meeting "Meeting in Fiber Optics and Signal Processing" in ADEIT institute of Valencia. Date: 25 October 2013.
4. Attendance at the meeting "Meeting in Fiber Optics and Signal Processing" in ADEIT institute of Valencia. Date: 25 October 2013.
5. Team member in the organization of the "XIII Experimenta Competition" organized by the Faculty of Physics of University of Valencia. Date: 22 April 2013 in the Botanical Garden of Valencia.
6. I National Meeting on Young Optics held on 3 September 2012 in Zaragoza (Spain).
7. Attendance at the meeting "Meeting in Fiber Optics and Signal Processing" in ADEIT institute of Valencia. Date: 5 July 2012.
8. Team member in the organization of the "XII Experimenta Competition" organized by the Faculty of Physics of University of Valencia. Date: 22 April 2012 in the Botanical Garden of Valencia.
9. Attendance at the meeting "Meeting in Fiber Optics and Signal Processing" in ADEIT institute of Valencia. Date: 18 November 2011.
10. Team member in the organization of the "XI Experimental Competition" organized by the Faculty of Physics of University of Valencia. Date: 3 April 2011 in the Botanical Garden of Valencia.
11. Attendance at the meeting "Meeting in Fiber Optics and Signal Processing" in ADEIT institute of Valencia. Date: 5 November 2010.
12. Team member in the organization of the "X Experimenta Competition" organized by the Faculty of Physics of University of Valencia. Date: 25 April 2010 in the Botanical Garden of Valencia.
13. Attendance at the meeting "Meeting in Fiber Optics and Signal Processing" in ADEIT institute of Valencia. Date: 20 November 2009.