

Nathaniel P. Hermosa II

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Birthday: October 17, 1977

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Professional & Research Experience

2014-present: National Institute of Physics, University of the Philippines Diliman, The Philippines

- *Associate Professor* 1, National Institute of Physics, College of Science
- Program Coordinator, Photonics Research Laboratory (*since January 2015*)
- Group leader, Structured Light group at the Photonics Research Laboratory

January 2016 - present

- We have published 4 papers in ISI/SCI indexed journals. Two of these journal articles are in collaboration with researchers from the ICFO-The Photonics Science Center in Barcelona, and the Semiconductor group at the National Institute of Physics. One publication is a sole authorship while the fourth is with Mr. Nestor Bareza, my MS student.
- We have attended 4 international conferences (International Conference in Applied Optics and Photonics in Hanover, Germany, The OSA Frontiers in Optics in Rochester, New York, and the International Conference on Photonics and Applications in Vietnam). I gave an invited talk to the Global Nanophotonics conference in Osaka, Japan at end of November.
- We also presented 4 papers at the Samahang Pisika ng Pilipinas Physics Congress held at University of the Philippines Iloilo City.
- My MS student, Nestor Bareza Jr., was awarded the Most Outstanding MS graduate of the College of Science.
- Our research on the subluminal group velocity of Laguerre-Gauss beams has been featured in several in popular media - GMANewsonline, IFLScience, ScienceAlert, trendsderzukunft, El Ciudadana.

July 2015 - December 2015

- Coordinator, General Physics Committee
- I taught Physics 161 (Laser Electronics), Physics 10 (Physics and Astronomy for Pedestrian) and Physics 305 (Special topics in theoretical Physics, Introduction to Nonlinear Optics I) for the 1st semester 2015-2016.
- I obtained a Balik PhD Research Grant to establish a structured light beam laboratory within the Photonics Research Laboratory. The start up research grant is 2.5M pesos. The grant will be for 2 years starting July 2015.
- I was able to get an OVCRD Outright Research Grant for 300k pesos to develop a fast and inexpensive phase front sensor. The grant is for 1 year starting July 2015.

- We have published a paper in Optics Communications titled, “Propagation dynamics of vortices in Helico-Conical optical beams.” It is the first ISI/SCI publication of Mr. Bareza.
- Mr. Bareza presented his research at the Conference of Laser and Electro-optics Pacific Rim (CLEO-PR) in Busan, Korea last August 2015. His paper is titled, “Spatial mode projection technique in extracting nanofeatures.”
- We have presented 6 papers in the Samahang Pisika ng Pilipinas Physics Congress held at the University of Northern Philippines in June 2015. I was a plenary speaker for the event as well. The complete list of papers are in the appendix under National Conferences.

June 2014 - June 2015

- Coordinator, General Physics Committee
- We have proposed and determined the feasibility of detecting rotational directions of transverse velocities of particles using time-varying transverse phase (*Optics Letters*). This is a continuation of the research I did at the Institut de Ciències Fotòniques with Prof. Juan P. Torres.
- I am advising Mr. Nestor Bareza, Jr, a MS Physics student on his thesis. Currently, we have checked the feasibility of using mode projection in detecting cylindrically symmetric nanoparticles. We are able to present this research at the Samahang Pisika ng Pilipinas Physics Congress held last October 2014 (*Proceedings of the Samahang Pisika ng Pilipinas*).
- I helped two undergraduate students from the Polytechnic University of the Philippines in their thesis work. We presented our research on Bessel-like beams with controllable beam path at two Samahang Pisika ng Pilipinas Physics Congress held at the National Institute of Physics in October 2014. (*Proceedings of the Samahang Pisika ng Pilipinas*)
- I taught Physics 161 (Laser Electronics), Applied Physics 187 (Photonics), Physics 102.1 (Fundamentals of Physics Laboratory) and Physics 10 (Physics and Astronomy for Pedestrian) for the 1st semester 2014-2015 and Physics 305 (Special topics in theoretical Physics), Physics 10 (Physics and Astronomy for Pedestrian) and Physics 192 (Experimental Physics 2) for the 2nd semester 2014-2015.
- I head the group tasked to develop and propose courses in optics at the National Institute of Physics.
- Head, Extenal Affairs Committee. I am tasked to make a prospectus. Recently, I have written a short writeup for the National Institute of Physics’ bid to be the NRCP Outstanding Insitution Award 2014 recipient. The NIP won the award.

2012-2014: Institut de Ciències Fotòniques (ICFO), Castelldefels (Barcelona), Spain

- *Research Fellow*, Quantum Engineering of Light group of Prof. Juan Perez-Torres.
- I supervised a PhD student’s dissertation research. His topic is on the measurement of transverse velocities with structured beam of light. We already published a proof-of-concept paper in *Nature’s Scientific Reports*. This research was featured in *Physics Today*’s February 2014 issue. An extension of the method used to determine helical velocity components was just recently published in *Optics Express*.
- Also, I have done experiments on Quantum Optics with a PhD student. We are trying to demonstrate teleporting an optical state without a classical channel with our setup.
- I worked on a nanolayer thickness measurement technique using different spatial modes of light. So far, we were able to measure as low as 1/80 of a wavelength thickness with a standard error in the scale of a few hundred picometers. It is published in *Optics Letters*.

- I was able to work on the topic of weak measurement. In our *Physical Review Letters* publication, we show that by using a pointer state with an orbital angular momentum, higher order weak values can be accessed without the need to change the interaction Hamiltonian. In an *Optics Express* publication, we show that weak measurement is an interference effect.
- We also verified experimentally that Helico-conical beams are self-healing beams. This work is published in *Optics Letters*.

2009-2011: Huygens Laboratory, Leiden University, The Netherlands

- *Postdoc*, Quantum Optics and Quantum Information group of Prof. Dr. J.P. Woerdman.
- My area of investigation is the measurement of minute correction to the law of reflection when a beam of light reflects on a surface. These phenomena are collectively called beam shifts (more commonly as Imbert-Fedorov shift (Spin Hall effect of light) and Goos-Hänchen shift). We are the *first to fully measure all beam shifts happening when a beam is endowed with orbital angular momentum (Phys. Rev. A. and subsequent papers in Proceedings of SPIE and J. Opt.); the first to measure these beam shifts with beams which form a complete basis set for paraxial light beams (Opt. Lett.)* and; *the first to measure the Spin Hall effect of light (Imbert-Fedorov shifts) with a metallic surface* . We also show through experiments that angular beam shifts happen for scalar waves (*Opt. Lett.*).
- We also investigated the response of a quadrant detector when a beam with orbital angular momentum is used instead of a gaussian beam (*Optics Letters*).

2006-2009: Ateneo de Manila University, Quezon City, Philippines

- *Assistant Professor*, Department of Physics, School of Science and Engineering
- We proposed and created optical beams with bored helical phases. These beams have different intensity profiles and different rotation rates upon propagation which make them ideal for a bigger range of applications. Our work were published in *Applied Optics and Optics Express*.
- I advised undergraduate physics majors on thesis and research projects. I was the research adviser of Stein Alec C. Baluyot, a Bank of the Philippine Islands' Science Awardee and finalist to the Department of Science and Technology-Bank of the Philippine Islands' Best Project of the Year.
- I taught introductory physics courses and laboratory courses for physics majors as well as for engineering and science majors. These courses include Introduction to Modern Physics, Electromagnetics theory, Mathematical methods for Physicists, and Statistical Mechanics. I also taught general education Physics courses to non-science majors.

2005-2006: University of the Philippines Manila, Philippines

- *Assistant Professor*, Department of Physical Sciences and Mathematics, College of Arts and Sciences
- I taught introductory physics courses and laboratory courses and developed course syllabus for students of health professions.

1999-2005: University of the Philippines Diliman, Philippines

- *Instructor 7*, National Institute of Physics, College of Science
- I advised undergraduate physics majors on thesis and research projects. I was the research adviser of Christine O. Manaois, the Leticia Ramos-Shahani Award for Best Undergraduate Thesis in Applied Physics of the College of Science in 2005. I also counseled undergraduate physics majors on academic loading and plans.

- I taught introductory physics courses which include large lecture classes of up to 110 students and laboratory classes for physics and other science and engineering majors.
- I managed and supervised all aspects of Elementary Physics Laboratories of the National Institute of Physics for efficient and smooth operation for a year. These include meeting with the staff to accommodate concerns of teachers and students weekly and developing original laboratory experiments and exercises.
- I was a Teaching Associate and then a Teaching Fellow before I became an Instructor.

Education

2001-2007: *Doctor of Philosophy*, University of the Philippines Diliman, Philippines

- *Physics with Optics as specialization* I have studied the evolution of optical beams with non-integer topological charge upon propagation in my PhD dissertation. Specifically, I looked at the birth and interaction of optical vortices which came from a beam with an initial non-integer topological charge (Title: Birth and Propagation of Optical Vortices in Helico-Conical Optical Beams). I also have done quite a lot of spatial beam shaping using holographic techniques. I have used these techniques in some of my publications after my PhD. I was initiated as a member of Phi Kappa Phi Honor Society of the University of the Philippines at this time.

1999-2001: *Master of Science*, University of the Philippines Diliman, Philippines

- *Physics with Photonics as specialization* I have done a lot of work in liquid crystals especially as a medium for dynamic holography during my Masters. In my Master's thesis, I have written microholograms in a type of liquid crystal that is embedded on a polymer matrix (Title: Optical Storage on a Methyl Red Doped Polymer Dispersed Liquid Crystal (E48:PVP)). These holograms are semi-permanent but can be erased with heating. I have won third prize in the 2001 Outstanding Thesis and Dissertation Awards in Advanced Science and Technology by the Philippine Council on Advanced Science and Technology Research and Development with this thesis. Part of my dissertation was published in *Optics Communications*.

1994-1999: *Bachelor of Science*, University of the Philippines Diliman, Philippines

- *Applied Physics with Material Science as concentration* My bachelor's thesis is about storing information using holography in a photorefractive crystal (Title: Optical Storage of Two-Dimensional Data in BSO Crystal). This is the first dynamic holography setup in the Philippines that uses a nonlinear crystal.

1990-1994: *Diploma*, Muntinlupa National High School- Special Science Class, Muntinlupa City, Philippines

- Class Valedictorian, Philippine Senate awardee for Academic Excellence, Excellence in Math and Science awardee. As a student of a Special Science class, we have more intensive courses in Mathematics and the Sciences.

1990-1994: *Diploma*, Itaas Elementary School, Muntinlupa City, Philippines

- Class Valedictorian

Professional Service & Extension

2016, Technical Editor for Physical Sciences, CHED K-12 program. Group leader, *Light on Love* project

in the celebration of the 2015 International Year of Light. This project has been featured in GMAnews online, a new website.

2014, Test Developer, Department of Science and Technology.

Various years: *Editorial Board Member and Reviewer*, Proceedings of the Samahang Pisika ng Pilipinas.

2010-present, *Reviewer*

- Optics Letters, Optics Express, Journal of the Optical Society of America A, JETP, and Chinese Optics Letters.

2010-2014, *Science Blogger and Contributor*

- I blog about science news and happenings in the Philippines for general audiences (imphscience.wordpress.com).
- I also contribute articles in a Philippine online news network, the Rappler (www.rappler.com).

2010 *Participant*

- Physics with Industry, Lorentz Center, Leiden University, The Netherlands, October 11 – 15, 2010.
- The team was tasked to find creative solutions to the problem of Electrostatic Discharge (ESD) proposed by NXP.

2007- 2008: *Secretary-General*, Samahang Pisika ng Pilipinas (Physics Society of the Philippines).

- I am the head organizer of the annual Physics conference of the Physics Society of the Philippines. For two years, I make sure that the daily operations of the society runs smoothly. During my time as Secretary-General, the physics society was inducted as an associate member of the International Union of Pure and Applied Physics. I was also able to ask for grant for the publication of two issues of PISIKA, the Journal of the Samahang Pisika ng Pilipinas (Journal of the Physics Society of the Philippines).

Various years: *Associate Coach*

- I was tasked to train members of the Philippine Team to the 4th Asian Physics Olympiad and the 34th and 39th International Physics Olympiad on experimental techniques.

Various years: *Supervising Examiner*, University of the Philippines's College Admission Test.

Peer-reviewed journal papers

1. M.A.B. Faustino, L.P. Lopez, J.P. Afalla, J. Muldera, N. Hermosa, A. Salvador, A. Somintac, E.S. Estacio, “ Terahertz emission enhancement in semi-insulating gallium arsenide integrated with subwavelength one-dimensional metal line array,” *Opt. Lett.* 41, 4515-4517 (2016).
2. N. Bareza, Jr., N. Hermosa, “ Subluminal group velocity and dispersion of Laguerre Gauss beams in free space,” *Sci. Rep.* 6, 26842 (2016).
3. F. Steinlechner, N. Hermosa, V. Pruneri and J.P. Torres, “Frequency conversion of structured light,” *Sci. Rep.* 6, 21390 (2016).
4. N. Hermosa, “Reflection beamshifts of visible light due to graphene,” *J. Opt.* 18, 025612 (2016).
5. N. Bareza, Jr., N. Hermosa, “Propagation dynamics of vortices in helico-conical optical beams,” *Optics Communications*, 356, 236-242 (2015).
6. C. Rosales-Guzmán, N. Hermosa, A. Belmonte, J. P. Torres, “Direction-sensitive transverse velocity measurement by phase-modulated structured light beams,” *Opt. Lett.* 39, 5415-5418 (2014).
7. C. Rosales-Guzmán, N. Hermosa, A. Belmonte, J. P. Torres, “Measuring the translational and rotational velocity of particles in helical motion using structured light,” *Optics Express* 22,16504-15509 (2014).
8. N. Hermosa, C. Rosales-Guzmán, S.F. Pereira, and J. P. Torres, “Nanolayer thickness detection via spatial mode projection,” *Opt. Lett.* 39, 299-302 (2014).
9. C. Rosales-Guzmán, N. Hermosa, A. Belmonte, J. P. Torres, “Experimental detection of transverse particle movement with structured light,” *Sci. Rep.* 3, 2815 (2013).
10. G. Puentes, N. Hermosa, J. P. Torres, “Puentes, Hermosa, and Torres Reply,” *Phys. Rev. Lett.* 111, 028902 (2013).
11. N. Hermosa, C. Rosales-Guzmán, J. P. Torres, “Helico-conical optical beams self-heal,” *Opt. Lett.* 38, 383-385 (2013).
12. W. Löffler, N. Hermosa, Andrea Aiello, and J. P. Woerdman, “Total internal reflection of orbital angular momentum beams,” *J. Opt.* 15, 014012 (2013).
13. J. P. Torres, G. Puentes, N. Hermosa, L. J. Salazar-Serrano, “Weak interference in the high-signal regime,” *Opt. Express* 20, 18869-18875 (2012).
14. G. Puentes, N. Hermosa, J. P. Torres, “Weak measurements with orbital-angular-momentum pointer states,” *Phys. Rev. Lett.* 109, 040401 (2012).
15. N. Hermosa, A. Aiello and J.P. Woerdman, “Radial mode dependence of optical beam shifts,” *Optics Letters* 37, 1044-1046 (2012).
16. N. Hermosa, A.M. Nugrawati, A. Aiello and J.P. Woerdman, “Spin Hall effect of light in metallic reflection,” *Optics Letters* 36, 3200-3202 (2011).
17. N. Hermosa, A. Aiello and J.P. Woerdman, “Quadrant detector calibration for optical vortex,” *Optics Letters* 36 409 - 411 (2011).
18. N. Hermosa, M. Merano, A. Aiello and J.P. Woerdman, “Orbital Angular Momentum induced beam shifts,” *Proceedings of SPIE* 7950, 79500F (2011).
19. M. Merano, N. Hermosa, A. Aiello and J.P. Woerdman, “How orbital angular momentum affects beam shifts in optical reflections,” *Phys Rev A* 82 , 023817 (2010).

20. M. Merano, N. Hermosa, A. Aiello and J.P. Woerdman, "Demonstration of a quasi-scalar angular Goos-Hänchen effect," *Optics Letters* 35, 3562-3564 (2010).
21. S. Baluyot and N. Hermosa, "Controllable rotation of optical beams with bored helical phases," *Applied Optics* 49, 673-677 (2010).
22. S. Baluyot and N. Hermosa, "Intensity profiles and propagation of optics beams with bored helical phase," *Optics Express* 17, 16244 – 16254 (2009).
23. N. Hermosa and C.O. Manaois, "Phase Structure of Helico-Conical Optical Beams," *Optics Communications*, 271, 178-183 (2007).

Philippine publications

1. S. Baluyot and N. Hermosa, "Bored Helical Phases: Intensity Profiles and Propagation," *PISIKA* 1, January 2008.
2. N. Hermosa and MR Daza, "Micro-Holograms in a Methyl Red Doped Polymer Dispersed Liquid Crystal (E48:PVP)," *Science Diliman* 15 (Jan-June 2003).

International conference papers with review committee

1. C. Olaya, and N. Hermosa, “Goos-Hanchen shifts on porous thin film,” 9th International Conference on Photonics and Applications, Ninh Binh City, Vietnam, Nov 6-10, 2016.
2. N. Bareza Jr., and N. Hermosa, “Subluminal speed of higher orders of physical light beams,” OSA Frontiers in Optics, Rochester, New York, Oct 17-21, 2016. *Recipient of UP OVPA RDG travel subsidy.*
3. G.J.H. Doblado and N. Hermosa, “Limits of Brewster Imaging,” International Conference on Applied Optics and Photonics, Hannover, Germany, May 17-21, 2016. *Recipient of ICO travel subsidy.*
4. J.P. Narag and N. Hermosa, “Beam deflection sensitivity of quadrant detector using a Bessel beam,” International Conference on Applied Optics and Photonics, Hannover, Germany, May 17-21, 2016. *Recipient of ICO travel subsidy.*
5. N. Bareza, N. Hermosa, “Spatial mode projection technique in extracting nanofeatures,” CLEO/Pacific Rim 2015, Busan, Korea August 24-28, 2015. (SCOPUS indexed)
6. N. Hermosa, C. Rosales-Guzmán, S.F. Pereira, and J. P. Torres, “Nanolayer thickness detection via spatial mode projection,” Nanolight 2014, Benasque, Spain 2-8 March 2014.
7. C. Rosales-Guzmán, N. Hermosa, A. Belmonte and J.P. Torres, “Transverse Doppler Effect using optical beams with a twist,” Second International Conference on Optical Angular Momentum, Glasgow, UK, 2-5 June 2013.
8. N. Hermosa, M. Merano, A. Aiello and J.P. Woerdman, “Orbital Angular Momentum induced beam shifts,” SPIE-Photonics West, San Francisco, USA, 22-27 January 2011.(SCOPUS indexed)
9. N. Hermosa and M.R. Daza, “Storage of micro-holograms in a methyl red doped polymer dispersed liquid crystal”, ISOM/ODS 2002: International Symposium on Optical Memory and Optical Data Storage Topical Meeting Technical Digest 180-182, (2002). (SCOPUS indexed)
10. N. Hermosa, A. Francia and M.R. Daza, “Polarization dependent optical grating in a methyl red doped polymer dispersed liquid crystal (E48 : PVP),” CLEO(R)/PACIFIC RIM 2001, VOL II, Technical Digest 674 -675 (2001). (SCOPUS indexed)
11. N. Hermosa, “Helico-Conical Optical Beams and their limits for nondiffraction and self-reconstruction,” ESF-FWF Conference in Partnership with LFUI Conference on Trends in Optical Micromanipulation in Obergurgl, near Innsbruck, Austria ESF-FWF Conference on Trends in Optical Micromanipulation, 4-9 February 2007. *Recipient of full conference fee grant and travel subsidy.*
12. M. Estonactoc, P. Rodrigo, N. Hermosa , R. Amor, “Twisted-Nematic Liquid Crystal (E7-Cance) Cells On Driving Voltage Amplitude and Frequency,” 9th International Liquid Crystal Conference, Edinburgh UK, 30 June - 5 July 2002.
13. A. Francia Jr., N. Hermosa, G. Naceno, Z. Domingo, “Holographic Gratings in Polymer-LC Composites,” 9th International Liquid Crystal Conference, Edinburgh UK, 30 June - 5 July 2002.
14. R. Amor, N. Hermosa, M. Daza, “Holographic Image Formation In Dye-Doped Nematic Liquid Crystals,” 9th International Liquid Crystal Conference, Edinburgh UK, 30 June - 5 July 2002.
15. J. Muldera, N. Hermosa and Z. Domingo, “Structural Behavior of Cholesteric Liquid Crystal TM74A:E48 Mixture (60:40 weight ratio) with Different Surface Alignments,” 9th International Liquid Crystal Conference, Edinburgh UK, 30 June - 5 July 2002.

Invited presentation and talks

1. N.A.F. Zambale and N. Hermosa “How beamshifts can be used determine properties of graphene,” Global Nanophotonics 2016, Osaka, Japan, 30 November - 1 December 2016. *Invited talk*

2. N. Hermosa, “Optical beams endowed with orbital angular momentum: generation, some new application, and outlook,” *Plenary Speaker*, 33rd Samahang Pisika ng Pilipinas at Vigan, Philippines, June 2015.
3. N. Hermosa, “Revisiting Reflection: Orbital Angular Momentum induced beam shifts,” ICFO Seminars, Castelldefels (Barcelona), Spain, 8 September 2011. *Invited talk*.
4. N. Hermosa, M. Merano, A. Aiello and J.P. Woerdman, “Orbital Angular Momentum induced beam shifts,” International Lorentz Workshop “Beam shifts: Analogies between light and matter waves”, Leiden, The Netherlands, 28 March-1 April, 2011. *Invited talk*.
5. N. Hermosa, “Bored Helical Phase: Intensity Profiles and Propagation,” Quantum Optics and Quantum Information group, Huygens Laboratory, Leiden University, The Netherlands, March 2009. *Invited talk*.
6. N. Hermosa and S. Baluyot, “Bored Helical Phases: Dynamics of Intensity Profiles and Poynting Vector Calculation upon Propagation,” Invited presentation, Progress in Electromagnetics Research Symposium, Hangzhou, China, 24-28 March 2008.

Philippine conferences

1. G.H. Doblado, and N. Hermosa, “Limits of Brewster imaging applied on thin films,” Proceedings of the 34th Samahang Pisika ng Pilipinas, Iloilo City, Philippines, August 2016.
2. R.T.C. Mestre, A. Baclig, R.J. Fernandez and N. Hermosa, “Pearcey beam as diffraction from a parabolic slit,” Proceedings of the 34th Samahang Pisika ng Pilipinas, Iloilo City, Philippines, August 2016.
3. J.P.C. Narag, and N. Hermosa, “Sensitivity of quadrant detectors to Bessel beams,” Proceedings of the 34th Samahang Pisika ng Pilipinas, Iloilo City, Philippines, August 2016.
4. N.A.F. Zambale, and N. Hermosa, “Fermi energy and scattering time dependence of Goos-Hanchen shifts on monolayer graphene,” Proceedings of the 34th Samahang Pisika ng Pilipinas, Iloilo City, Philippines, August 2016.
5. N. Bareza, E. Escoto, N. Hermosa, “Measurement of orbital angular momentum of light by polygon apertures,” Proceedings of the 33rd Samahang Pisika ng Pilipinas, Vigan, Philippines, June 2015.
6. N.D. Bareza Jr, N. Hermosa, “Detecting multiple optical vortices numerically,” Proceedings of the 33rd Samahang Pisika ng Pilipinas, Vigan, Philippines, June 2015.
7. G.H. Doblado, N.D. Bareza Jr, N. Hermosa, “Goos-Hanchen and Imbert-Fedorov shifts induced by silver, gold and copper,” Proceedings of the 33rd Samahang Pisika ng Pilipinas, Vigan, Philippines, June 2015.
8. E. Engay, M. Jamerlan, R. Novesteras, N. Hermosa, “Wavefront engineering for advanced undergraduate optics class,” Proceedings of the 33rd Samahang Pisika ng Pilipinas, Vigan, Philippines, June 2015.
9. N. Hermosa, “Reflection beamshifts of visible light due to graphene,” Proceedings of the 33rd Samahang Pisika ng Pilipinas, Vigan, Philippines, June 2015.
10. S. Sabanal, M. Bondoc, N. Hermosa, “Controllable Bessel-like beams self-reconstruct,” Proceedings of the 33rd Samahang Pisika ng Pilipinas, Vigan, Philippines, June 2015.
11. N.A.F. Zambale, N.D. Bareza, N. Hermosa, “Optical beam generation via incoherent superposition of phases,” Proceedings of the 33rd Samahang Pisika ng Pilipinas, Vigan, Philippines, June 2015.
12. J. Sabanal, M. Bondoc, and N. Hermosa, “Bessel-like beams with controllable path,” Proceedings of the 32nd Samahang Pisika ng Pilipinas Physics Congress, Quezon City, Philippines, October 2014.

13. N. D. Bareza Jr. and N. Hermosa, "Detection of nanocylinder dimensions using sequential spatial mode projection," Proceedings of the 32nd Samahang Pisika ng Pilipinas Physics Congress, Quezon City, Philippines, October 2014.
14. S. Baluyot and N. Hermosa, "Selective phase shift induced bored helical beam rotation," Proceedings of the Samahang Pisika ng Pilipinas, Vol. 5, (ISSN 1656-2666), 26th SPP Physics Congress, University of the Philippines Baguio, Baguio City, 22-24 October 2008.
15. P. Co and N. Hermosa, "Light through a Novel Lens," Proceedings of the Samahang Pisika ng Pilipinas, Vol. 5, (ISSN 1656-2666), 26th SPP Physics Congress, University of the Philippines Baguio, Baguio City, 22-24 October 2008.
16. S. Baluyot and N. Hermosa, "Bored Helical Phases: Intensity Profiles and Propagation", Proceedings of the Samahang Pisika ng Pilipinas, Vol. 4 (ISSN 1656-2666), 25th SPP Physics Congress, University of the Philippines, Los Banos, Laguna, 24-26 October 2007.
17. N. Hermosa, "Self-Reconstruction and Psuedo-Nondiffraction Properties of Helico-Conical Optical Beams," Proceedings of the Samahang Pisika ng Pilipinas, Vol. 3, (ISSN 1656-2666), 24th SPP Physics Congress, Ateneo de Davao University, Davao City, 25-27 October 2006.
18. C. Manaois and N. Hermosa, "Optical Structures with Linearly Increasing Non-integer Topological Charge," Proceedings of the Samahang Pisika ng Pilipinas, Vol. 2, (ISSN 1656-2666), 23rd SPP Physics Congress, Central Philippine University, Jaro, Iloilo City, 26-28 October 2005.
19. N. Hermosa, "Mental Models of a Group of Public High School Physics Teachers," Proceedings of the Samahang Pisika ng Pilipinas, Vol. 2, (ISSN 1656-2666), 23rd SPP Physics Congress, Central Philippine University, Jaro, Iloilo City, 26-28 October 2005.
20. C. Manaois and N. Hermosa, "Optical Vortices from Laguerre-Gaussian Beam and Nematic Liquid Crystal Interaction," Proceedings of the Samahang Pisika ng Pilipinas, Vol.1, (ISSN 1656-2666), 22nd SPP Physics Congress, Bohol Tropics, Tagbilaran City, 25-27 October 2004.
21. K. Guto and N. Hermosa, "Degenerate Four-wave mixing in a Methyl Red doped Nematic Liquid Crystal," Proceedings of the 21th SPP Physics Congress, Talamban, Cebu, October 2003.
22. C. Manaois and N. Hermosa, "Generation of Higher-Order Laguerre Gaussian Modes via Computer Generated Hologram," Proceedings of the 21th SPP Physics Congress, Talamban, Cebu, October 2003.
23. M. Estonactoc, P. Rodrigo and N. Hermosa, "Electro-optic Characteristics of Millisecond Response CANCE-doped Twisted Nematic E7 LC Cell," Proceedings of the 20th SPP Physics Congress, Naga City, Camarines Sur, October 2002.
24. J. Muldera, N. Hermosa and Z. Domingo, "Surface Alignment Effects on the Structural Behavior of Cholesteric Liquid Crystal TM74A:E48 Mixture (60:40 weight ratio)", Proceedings of the 20th SPP Physics Congress, Naga City, Camarines Sur, October 2002.
25. J. Gabayno, N. Hermosa and M. Daza, "Optical Signal and Image Amplification Studies in Dye-Doped Nematic Liquid Crystal E7", Proceedings of the 20th SPP Physics Congress, Naga City, Camarines Sur, October 2002.
26. Baclig, A. Francia, C. Mahinay and N. Hermosa, "Conceptual Survey in Electricity and Magnetism (CSEM) at the National Institute of Physics," Proceedings of the 20th SPP Physics Congress, Naga City, Camarines Sur, October 2002
27. N. Hermosa and MR Daza, "Holographic Gratings in a Methyl-red Doped PDLC," Proceedings of the 19th SPP Physics Congress, Bayombong, Nueva Vizcaya, October 2001.

28. N. Hermosa and MR Daza, "Micro-Holograms in a Methyl-red Doped PDLC," Proceedings of the 19th SPP Physics Congress, Bayombong, Nueva Vizcaya, October 2001.
29. J. Gabayno, N. Hermosa and MR Daza, "Signal Amplification in a methyl red doped nematic liquid crystal," Proceedings of the 19th SPP Physics Congress, Bayombong, Nueva Vizcaya, October 2001.
30. D. Palima, R. Amor, N. Hermosa and MR Daza, "Laser induced nonlocal refractive index change in a methyl red doped nematic liquid crystal E7," Proceedings of the 19th SPP Physics Congress, Bayombong, Nueva Vizcaya, October 2001.
31. N. Hermosa and MR Daza, "All-Optical Dynamic Filtering using Nematic Liquid Crystals", Proceedings of the 18th SPP Physics Congress, Puerto Princesa, Palawan, October 2000.
32. A. Francia, N. Hermosa and MR Daza, "Holographic Gratings in a Methyl-red Doped PDLC," Proceedings of the 18th SPP Physics Congress, Puerto Princesa, Palawan, October 2000.
33. N. Hermosa, R. Guerrero and MR Daza, "Reconstruction Characteristics of Holographic Data Stored in a BSO Crystal," Proceedings of the 17th SPP Physics Congress, Tacloban City, Leyte, October 1999.
34. R. Guerrero, N. Hermosa and MR Daza, "Pump Beam Depletion via Inverse Ratio Two-Wave Mixing," Proceedings of the 16th SPP Physics Congress, Quezon City, October 1998.

Grants and Awards

1. *DOST - PCIEERD* Angular Goos-H[']anchen Shift: An optical phenomena for ultra thin film thickness measurement - January 2017 - December 2019 - PhP 13.4 m
2. UP Centennial Faculty Grant, July 2015 - June 2016.
3. *UP OVPAA-BPhD-2015-06* Establishment of a Structured Light Laboratory within the Photonics Research Laboratory of the National Institute of Physics - June 2015 -June 2017 - PhP 2,500,000.00
4. UPAAM/UPMASA Michigan UP Centennial Professorial Chair, July 2014 - June 2015.
5. *UP Diliman OVCRD 151507 PNSE* Development of a fast and inexpensive phase front sensor using a Digital micromirror device (DMD) to determine the phase front and the Poynting vector skew angle of optical fields with complex amplitudes - June 2015 -July 2016 - PhP 300,000.00