

# Stanford

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## Lambertus Hesselink

Professor of Electrical Engineering and, by courtesy, of Applied Physics

### CONTACT INFORMATION

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### Bio

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#### BIO

Hesselink's research encompasses nano-photonics, ultra high density optical data storage, nonlinear optics, optical super-resolution, materials science, three-dimensional image processing and graphics, and Internet technologies.

#### ACADEMIC APPOINTMENTS

- Professor, Electrical Engineering
- Professor (By courtesy), Applied Physics
- Member, Bio-X
- Member, Wu Tsai Neurosciences Institute

#### ADMINISTRATIVE APPOINTMENTS

- Member of the Board, Co-founder, MultiDigit Corp., (2002-2003)
- Co-founder, Chairman, Senvid, Inc, (1999-2007)
- Chairman, Siros Technologies, Inc., (1997-2001)
- Founder, Chairman, CEO, CTO, Siros Technologies, (1995-1997)
- Principal Investigator for the development of Digital Holographic Data Storage, DARPA, (1994-2000)
- Legal technology expert consultant, Israeli Supreme Court, (1983- present)
- Professor of EE, by courtesy, in AP and Aeronautics & Astronautics Depts, Stanford University, (1980- present)
- Member of the technical staff, Space and Communications Group, Hughes Aircraft Company, (1978-1979)
- Instructor in Applied Physics, Senior Research fellow, Caltech, (1977-1980)

#### HONORS AND AWARDS

- NSF selection as being in top 1% of all US inventors, with over 100 patents in US and worldwide, . (2013)
- Who is Who in America, Who is Who in the world, Who is Who business leaders, and related., . (2013)
- NSF selection as being in top 1% of all US inventors, with over 100 patents in US and worldwide, . (2012)

- Top 1% of US inventors, with over 100 patents worldwide, many licensed, . (2011)
- Best Award, for pioneering contributions to holographic data storage, . (2007)
- Who'sWho in the West, in Finance and Business, in American Education, in Executives & Professionals, . (2005)
- Who'sWho in America, Who'sWho in Science and Engineering, . (2004-2005)
- Fellow of SPIE, . (2003-2005)
- America's Registry of Outstanding Professionals, . (2003-2004)
- Who's Who in Executive and Professionals, . (2000-2002)
- National Instruments Prize for Innovations in Education - the first Internet controlled lab, . (1999)
- National Storage Industry Leadership Award, . (1999)
- Royal Dutch Academy of Arts and Sciences, . (1996)
- Elected Member of the Scientific Advisory Board of the US Air Force, . (1995-1998)
- Who's Who Registry of Business Leaders, . (1994-1995)
- Best Paper Award from the IEEE Computer Graphics and Applications Society, . (1994)
- Best conference paper for Visualization, . (1994)
- Director's Award for Significant Technical Achievement (First Fully Automated HDSS), . (1994)
- Selected by the Secretary of the Airforce to be a member of the Air War College, . (1994)
- Best Paper for the IEEE Visualization '91 Conference Award, . (1992)
- Outstanding Paper for 1991 Award" for the Computer Society of the IEEE, . (1992)
- Who's Who in Science and Engineering, . (1991)
- Best Paper for the IEEE Visualization '90 Conference, . (1990)
- Fellow, Optical Society of America, . (1990)
- Ivised Member of Image Processing Ad Hoc Committee to solve the Hubble Space Telescope problem, . (1990)
- American Men and Women of Science, . (1989)
- International Directory of Distinguished Leadership, . (1989)
- Progressive Architecture Award for the Astronaut Memorial, . (1989)
- Who's Who in the West, . (1989)
- Five Thousand Personalities of the World, . (1988)
- International Leaders of Achievement award, . (1988)
- Member of the design team for the Astronaut Memorial in Orlando, Florida, . (1988)
- Men of Achievement, . (1988)
- Who's Who of Emerging Leaders in America, . (1988)
- Personalities of the Americas, . (1987)
- Who's Who in the West, . (1987)
- Who's Who in California, . (1986)
- Co-recipient of the Itek award for the paper Holographic Reciprocity Law Failure, . (1985)
- Who's Who in Optical Science and Engineering, . (1985)
- Engineer of the Year 1982, AIAA Northern California chapter, . (1983)
- Triple star, \*\*\* Highest Teaching Rating at Caltech, . (1979,1980)
- Josephine de Karman Fellowship, . (1974-1975)

- Fulbright Scholar, recipient of IIE award and Dutch Government Fellowship award for studies abroad, . (1971-1974)
- The Steeman Prize for best academic performance, Twente Institute of Technology, . (1970)

## **BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS**

- Fellow, SPIE
- Fellow, Optical Society of America
- Member, Royal Dutch Academy of Arts and Sciences
- Member, American Institute for Aeronautics and Astronautics
- Member, American Physical Society
- Member, Sigma Xi
- Ambassador, University of Twente (2013)
- Board member, Yonsei University Advisory Board, Korea (2013)
- Editor, Journal of 3-D Imaging (2013)
- Expert witness, Major cases involving optical data storage and asbestos litigation (2013)
- Founding Chairman, Secure Content Storage Association (SCSA) consisting of Warner Bros, Fox, WDC, Sandisk, Samsung, LG, Seagate (2013)
- Member, OSA Leith Awards committee (2013)
- Member, Editorial Advisory Board of Optical Data Storage and Processing (2013)
- Ambassador, Twente University (2012)
- Chairman, ODS 2012 meeting in Tucson Arizona (2012)
- Co-Founder and Founding Chairman, the "Secure Content Storage Association", a LLC formed between Warner Bros, Fox, Western Digital and Sandisk to develop the next generation of content storage platform for Premium Content (Follower to BluRay technology) (2012)
- Editor, Journal of 3-D imaging (2012 - present)
- Member, OSA Awards Committee (2012 - present)
- NSF Proposal Review committee member, Expert witness in data storage and asbestos litigation (2012 - present)
- 3D Editorial Board Member, 3DMR, Korea (2011 - present)
- Advisor, Dutch Government on energy issues (2011 - present)
- Ambassador, Twente University, 2011 (2011 - present)
- Chairman, International ISOM/ODS 2011 OSA meeting, Hawaii (2011)
- Co-Founder, Secure Content Storage Association (2011)
- Distinguished member of International Advisory Board, Yonsei University, Korea (2011 - present)
- Founder and Sponsor, Leen van Wijngaarden Prize Foundation (2011 - present)
- Member, International Advisory Board, CC3DMR Korea (2011 - present)
- Chair, OSA bi-annual meeting on photorefractives, PR'07 (2007)
- Moderator and Panel Organizer, Stanford Nanophotonics Workshop (2004)
- Program Committee Member, IASTED International Conference on Communications, Internet and Information Technology (CIIT2004), St. Thomas, Virgin Islands (2004)
- Program Committee Member, 2nd IASTED International Conference on Communication and Computer Networks (CCN 2004), Cambridge, MA (2004)
- Co-organizer, OSA Topical Meeting, Optical Data Storage Conference, Vancouver, Canada. (2003)
- Conference Chair, IASTED WOC 2003, Wireless and Optical Communications Conference, July 2003, Banff, Alberta, Canada (2003)
- Meeting Organizer, CLEO Europe EQEC 2003, Symposium on Optical Storage, Munich, Germany (2003)
- Conference Chair, IASTED '00-'03 Technical Committee on Telecommunications, Banff, Canada (2002)

- Program Organizer, SPRC Annual Meeting, "Nanophotonics," Stanford Campus (2002 - 2003)
- Member of the Organizing Committee, IEEE '01, Symposium on Parallel and Large Data Visualization & Graphics, San Diego, CA (2001)
- Program Committee Chair, Photonics West '00, San Jose, CA (2000)
- Program Committee Chair, Photonics West '99, San Jose, CA (1999)
- Stanford Organizer, International Workshop on Holographic Data Storage, Nice, France (1999)
- Program Committee Chair, Photonics West '98, San Jose, CA (1998)
- Program Committee Chair, Photonics West '97, San Jose, CA (1997)
- Member of Organizing Committee, Symposium on Data Storage: 1996 Annual Meeting of the Optical Society of America, Rochester, New York (1996)
- Member of Program Committee, International Symposium on Holographic Memories (1996)
- Member of Program Committee, IEEE Visualization '96, San Francisco, CA (1996)
- Member of organizing committee, ICO XVII '96 Optics for Science and New Technology, Taejon, Korea (1996)
- Member of organizing program committee, IS&T SPIE, Symposium on Electronic Imaging and Technology-Photonics West '96, San Jose, CA (1996)
- Presiding Chair, OSA Annual Meeting, ILS, XCII Optics & Imaging Center, Rochester, NY (1996)
- Program Committee Chair, OSA Topical Meet, "Holography," Boston, MA (1996)
- Chairperson, IEEE/LEOS, Lasers and Electro-Optics Society (1995)
- Chairperson (Tutorial), CLEO/QELS '95, Baltimore, MD (1995)
- Co-Chairperson, Photonics West '95, Practical Holography IX, San Jose, CA (1995)
- Member of the Program Committee, Sixth Eurographics Workshop on Visualization in Scientific Computing, Porto Conte, Italy (1995)
- Principal Investigator, \$53M DARPA program on Holographic optical data storage, involving four Universities and five major industrial partners, including IBM, Kodak, GTE, Rockwell International and Texas Instruments. Directed a group of 136 scientists and engineers which resulted in a demonstration platform that still has the best performance of any data storage system today. (1995 - 2000)
- Member of the Scientific Advisory Board, United States Air Force reporting to the Secretary of the Airforce (1995 - 1998)
- Member of Editorial Board, IEEE Transactions on Visualization and Computer Graphics (TVCG) (1994)
- Member, Committee on Engineering in Biology and Medicine (1993)
- Member of organizing committee, "Optical Computing" in Salt Lake City, Utah (1991)
- Chairperson, Imaging, SPIE Conference, Los Angeles, CA (1990)
- Chairperson, "3-D Visualization of Scientific Data", SPIE Conference, San Diego, CA (1990)
- Member, Symposium on Electronic Imaging, Santa Clara, CA (1990)
- Member, "Visualization" Panel, "Extracting Meaning from Complex Data" Conference, SPIE/SPSE (1990)
- Organizer, NASA Scientific Visualization Workshop, Stanford University, Stanford, CA (1990)
- Organizer, NASA Scientific Visualization Workshop, Stanford University, Stanford, CA (1990)
- Member, Technical Committee of the IEEE Visualization '90, '91, '92 Annual Meetings (1990 - 1992)
- Organizer, Visualization of Scientific Data, SPIE (1989)
- Organizer, Optical Interconnections for Computers, OSA Annual Meeting, Orlando, FL (1989)
- Organizer, Experimental Techniques, APS 42nd Annual Meeting, Palo Alto, CA (1989)
- Organizer, Practical Holography, SPIE (1989 - 1992)
- Invited lecturer, Dynamic Optical Interconnects at the International School of Quantum Electronics, Erice, Italy (1988)
- Member of the local organizing committee, Annual Meeting of the Optical Society of America, Santa Clara (1988)
- Member of the design team, Astronaut Memorial in Orlando, Florida (1988 - 1990)
- Invited Visiting Professor, Tsinghua University in Beijing, China (1987)

- Member of advisory panel, National Science Foundation (1987 - 1990)
- Invited lecturer, lecture series on Digital and Optical Image Processing at the Von Karman Institute, Brussels, Belgium (1986)
- Organizer, Topical meeting on "Holography", OSA, Honolulu, HI (1986)
- Invited lecturer, Lecture series on Digital and Optical Image Processing at the Von Karman Institute, Brussels, Belgium (1984)
- Meeting organizer and co-chairman, Twenty-Sixth International SPIE Meeting in San Diego (1982)
- Presentation of short courses, Holography and digital image processing in the Netherlands, Germany, China, Israel, England, Italy (1981 - 1988)
- Consultant, Hughes Aircraft Corporation, Microelectronics Corporation, Visulux Corporation, National Science Foundation, VSL Corporation, Physical Optics Corporation, Northrup and the Air Force (1980 - 1998)

## PROFESSIONAL EDUCATION

- Ph.D., Caltech , Applied Mechanics and Physics/Applied Physics (1977)
- ENG, Twente University , Applied Mechanics and Physics (1974)
- MS, Caltech , Applied Mechanics and Physics (1972)
- BS, Twente Univeristy , Applied Mechanics and Physics (1970)
- BS, Twente Univeristy , Applied Physics (1971)

## PATENTS

- Hesselink, L. "United States Patent 4,171,915 Laser Interferometer Probe"
- Goodman, J. W. , Hesselink, L.. " Patent 4,674,824 System for enhancement of optical features"
- Hesselink, L., Redfield, S. R.. "United States Patent 4,927,220 System and method for photorefractive holographic recording and signal processing"
- Redfield, S. R., Hesselink, L.. "United States Patent 4,953,924 Enhanced nondestructive holographic reconstruction"
- Heanue, J. F., Bashaw, M. C., Hesselink, L.. "United States Patent 5,450,218 Method for encoding and decoding digital data in holographic storage media"
- DeVre, R., Hesselink, L.. "United States Patent 5,640,256 Dynamic multiple wavelength filter using a stratified volume holographic optical element"
- Bai, Y.S., Kachru, R., Hesselink, L., Macfarlane, R.. "United States Patent 5,665,493 Gated recording of holograms using rare-earth doped ferroelectric materials"
- Wilde, J.P., Hesselink, L.. "United States Patent 5,684,612 Method and system for maintaining and controlling the signal-to-noise ratio of holograms recorded in ferroelectric photorefractive materials"
- Bashaw, M.C., Heanue, J., Hesselink, L.. "United States Patent 5,729,364 Ion and impurity concentration optimization in photorefractive media for dynamic and fixed holography"
- Heanue, J.F., Gurkan, K., Hesselink, L.. "United States Patent 5,740,184 Decision feedback viterbi detector for page-access optical memories"
- Muthuveerappan, J., Bashaw, M., Hesselink, L.. "United States Patent 5,844,700 Spatio-angular multiplexing geometry for volume holographic storage"
- Lande, D., Heanue, J.F., Bashaw, M.C., Hesselink, L.. "United States Patent 5,850,299 Method of choosing an optimum angle between a reference beam and an object beam to record a hologram"
- Bashaw, M.C., Heanue, J. F., Hesselink, L.. "United States Patent 5,877,873 Differential video image compression in holographic media"
- Heanue, J.F. , Bashaw, M.C., Hesselink, L.. "United States Patent 5,940,514 Encrypted holographic data storage based on orthogonal phase code multiplexing"
- Hesselink, L., Heanue, J. F., Daiber, A. J.. "United States Patent 5,995,251 Apparatus for holographic data storage"
- McLeod, R.R., Sochava; S. L., Daiber, A. J., McDonald, M. E., Hesselink, L., Sander, I., Slagle, T.M.. "United States Patent 6,020,985 Multilayer reflection microhologram storage in tape media"
- Bashaw, M., Heanue, J.F., Hesselink, L.. "United States Patent 6,023,355 Coded-wavelength multiplex volume holography"
- Hesselink, L., McDonald; M. E., Heanue, J. F., Daiber, A. J.. "United States Patent 6,104,511 Reflector-based off-axis optical system for holographic storage"
- Hesselink, L., McLeod, R. R., Sochava, S. L., Phillips, W.. "United States Patent 6,212,148 Optical data storage by selective localized alteration of a format hologra"
- Sochava, S., Orlov; S., Honda, T., Cumpston, B. H., Hesselink, L.. "United States Patent 6,310,850 Method and apparatus for optical data storage and/or retrieval by selective alteration of a holographic storage medium"
- Hesselink, L., Bashaw, M. C.. "United States Patent 6,414,763 Digital holographic camera system and method having removable media"

- Hesselink, L., Rizal, D., Bjornson, E.S.. "United States Patent 6,499,054 Control and Observation of physical devices, equipment and processes by multiple users over computer networks"
- Lipson, M., Sochava, S., Hesselink, L., Cumpston, B. H., McLeod, R.R., Claude, C.D.. "United States Patent 6,512,606 Optical storage media and method for optical data storage via local changes in reflectivity of a format grating"
- Yoshinari, J., Tsukagoshi, T., Hirata, H., Hayashida, N., Honda, T., McDonald, M.E., Morelli, M.V., Daiber, A.J., Ghose, S., Hesselink, L., Nishimura, S., Sochava, S.. "United States Patent 6,540,397 Optical information storage medium"
- Amble, J. R., Hesselink, L., Honda, T., McDonald, M.E., Morelli, M.V., Daiber, A. J., Ferrier, H. A., Ghose, S., Kridl, T. A., Lipson, M., Nishimura, S., Sochava, S., Volz, L. A.. "United States Patent 6,574,174 Optical data storage system with multiple layer media"
- Thronton; R.L., Hesselink, L.. "United States Patent 6,574,257 Near-field laser and detector apparatus and method"
- Hesselink, L., McLeod, R. R., Sochava, S. L.. "United States Patent 6,614,741 Optical data storage by selective localized alteration of a format hologram in a holographic storage disk"
- Hesselink, L., Rizal, D., Beurden, J.. "United States Patent 6,732,158 VCR webification"
- Hesselink, L., Stinson, D.G., Thornton, R.L., Malmhall, R.F.. "United States Patent 6,807,131 Near field hybrid magnetic optical head system"
- Hesselink, L., Rizal, D., Bjornson, E.S.. "United States Patent 7,120,692 Access and control system for network-enabled devices"
- Hesselink, L., Cumpston, B. H., Lipson, M.. "United States Patent 7,129,006 Optical data storage system and method"
- Yin, X., Hesselink, L.. "United States Patent 7,327,445 Enhanced surface plasmon resonance sensor using Goos-Hanchen effect"
- Matteo, J.A., Hesselink, L., Yuen, Y.. "United States Patent 7,423,265 Near-field aperture having a fractal iterate shape"
- Hesselink, L., Rizal, D., Bjornson, E.S.. "United States Patent 7,467,187 Control and observation of physical devices, equipment and processes by multiple users over computer networks"
- Hesselink, L., Rizal, D., Bjornson, E.S.. "United States Patent 7,546,353 Managed peer-to-peer applications, systems and methods for distributed data access and storage"
- Hesselink, L., Rizal, D., Bjornson, E.S.. "United States Patent 7,587,467 Managed peer-to-peer applications, systems and methods for distributed data access and storage"
- Hesselink, L., Rizal, D., Bjornson, E.S.. "United States Patent 7,600,036 Access and control system for network-enabled devices"
- Hesselink, L., Rizal, D., Bjornson, E.S.. "United States Patent 7,788,404 Access and control system for network-enabled devices"
- Hesselink, L., Rizal, D., Bjornson, E.S.. "United States Patent 7,917,628 Managed peer-to-peer applications, systems and methods for distributed data access and storage"
- Hesselink, L., Rizal, D., Bjornson, E.S.. "United States Patent 7,934,251 Managed peer-to-peer applications, systems and methods for distributed data access and storage"
- Cheng Y-T, Yuen, Y., Hansen, P.C., Takashima, Y., Hesselink, L.. "United States Patent 8,196,217 Tip-enhanced resonant apertures"
- Hesselink, L., Rizal, D., Bjornson; E. S.. "United States Patent 8,341,275 Access and Control System for network-enabled devices"
- Hesselink, L., Rizal, D., van Beurden, J., Bjornson; E.S.. "United States Patent 8,352,567 VCR webification"
- Takashima, Y., Hesselink, L.. "United States Patent 8,374,068 Focusing and imaging compatible objective lenses for pixel-based and/or bit-based optical data recording and retrieval"
- Hesselink, L.. "United States Patent 8,526,798 Portable content container displaying A/V files in response to a command received from a consumer device"
- Hesselink, L., Rizal, D., Bjornson, E. S.. "United States Patent 8,661,507 Managed peer-to-peer applications, systems and methods for distributed data access and storage"
- Hesselink, L., Rizal, D., Bjornson, E. S.. "United States Patent 8,688,797 Managed peer-to-peer applications, systems and methods for distributed data access and storage"
- Hesselink, L., Rizal, D., Bjornson, E. S.. "United States Patent 8,793,374 Managed peer-to-peer applications, systems and methods for distributed data access and storage"
- Blankenbeckler, D. L. Ybarra, D., Hesselink, L.. "United States Patent 8,831,217 Digital rights management system and methods for accessing content from an intelligent storage"
- Blankenbeckler, D. L. Ybarra, D., Hesselink, L.. "United States Patent 8,831,218 Digital rights management system and methods for provisioning content to an intelligent storage"
- Hesselink, L.. "United States Patent 8,861,941 Portable content container displaying A/V files in response to a command received from a consumer device"
- Blankenbeckler, D. L. Ybarra, D., Hesselink, L.. "United States Patent 8,914,634 Digital rights management system transfer of content and distribution"
- Hesselink, L., Rizal, D., Bjornson, E. S.. "United States Patent 9,071,574 Access and control system for network-enabled devices"

- Hesselink, L. and Batra, R.. "United States Patent 9,129,138 Methods and systems for a portable data locker"
- Hesselink, L., Rizal, D., Bjornson, E. S.. "United States Patent 9,191,443 Managed peer-to-peer applications, systems and methods for distributed data access and storage"
- Blankenbeckler, D. L., Ybarra, D., Hesselink, L.. "United States Patent 9,214,184 Digital rights management system, devices, and methods for binding content to an intelligent storage device"
- Hesselink, L.. "United States Patent 9,247,284 Portable content container displaying A/V files in response to a command received from a consumer device"
- Blankenbeckler, D. L., Ybarra, D. O., Hesselink, L.. "United States Patent 9,342,701 Digital rights management system and methods for provisioning content to an intelligent storage"
- Hesselink, L., Rizal, D., Bjornson, E. S.. "United States Patent 9,348,864 Managed peer-to-peer applications, systems and methods for distributed data access and storage"
- Maldonado, J. R., Cheng, Y-T, Pianetta, P., Pease, R. F. W., Hesselink, L.. "United States Patent 9,406,488 Enhanced photoelectron sources using electron bombardment"
- Blankenbeckler, D. L., Ybarra, D. O., Hesselink, L.. "United States Patent 9,424,400 Digital rights management system transfer of content and distribution"
- Hesselink, L., Fabian R., Pease W., Pianetta P., Maldonado J. R., Cheng Y-T, and Ryan J.. "United States Patent 9,520,260 Photo emitter x-ray source array (PeXSA)"
- Cheng, Y-T., Hesselink, L., Kim, Y-S., Takashima, Y., Yuen, M.. "United States Patent 9,772,407 Photonic-channeled X-ray detector array"

## LINKS

- <https://hesselink-lab.stanford.edu/>: <https://hesselink-lab.stanford.edu/>

## Teaching

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### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Hrishikesh Srinivas

#### Doctoral Dissertation Advisor (AC)

George Herring, Lars Neustock, Punnag Padhy, Maha Yusuf, Mohammad Zaman

#### Master's Program Advisor

Bradley Barnhart, Joshua Bosworth, Xiaole Wang

#### Doctoral (Program)

Lucas Fuentes Valenzuela, George Herring, Anqi Ji, Yi Liu, Lars Neustock, Chance Ornelas-Skarin, Punnag Padhy, Skyler Selvin, Praful Vasireddy, Alex White, Mohammad Zaman

## Publications

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### PUBLICATIONS

- **Solenoidal optical forces from a plasmonic Archimedean spiral** *PHYSICAL REVIEW A*  
Zaman, M., Padhy, P., Hesselink, L.  
2019; 100 (1)
- **Fokker-Planck analysis of optical near-field traps.** *Scientific reports*  
Zaman, M. A., Padhy, P., Hesselink, L.  
2019; 9 (1): 9557
- **In-plane near-field optical barrier on a chip** *OPTICS LETTERS*  
Padhy, P., Zaman, M., Hesselink, L.  
2019; 44 (8): 2061–64
- **Near-field optical trapping in a non-conservative force field.** *Scientific reports*

- Zaman, M. A., Padhy, P., Hesselink, L.  
2019; 9 (1): 649
- **Inverse Design Tool for Ion Optical Devices using the Adjoint Variable Method.** *Scientific reports*  
Neustock, L. T., Hansen, P. C., Russell, Z. E., Hesselink, L.  
2019; 9 (1): 11031
  - **Display technology, 3-D.** *Encyclopedia of Physical Science and Technology*  
Hesselink, L.  
Academic Press.: 20
  - **Extracting the potential-well of a near-field optical trap using the Helmholtz-Hodge decomposition** *APPLIED PHYSICS LETTERS*  
Zaman, M., Padhy, P., Hansen, P. C., Hesselink, L.  
2018; 112 (9)
  - **Learning from the Unexpected: Statistics and Uncertainty in Massively Scalable Online Laboratories (MSOL)**  
Herring, G. K., Neustock, L., Hesselink, L., IEEE  
IEEE.2018: 815–24
  - **Remote Experimentation with Massively Scalable Online Laboratories** *Online Engineering & Internet of Things*  
Neustock, L. T., Herring, G. K., Hesselink, L.  
Springer.2018
  - **Immersive Peer Education: Virtual Interactive Scalable Online Notebooks for Science (VISIONS)**  
Neustock, L., Herring, G. K., Hesselink, L., IEEE  
IEEE.2018: 805–14
  - **A semi-analytical model of a near-field optical trapping potential well** *JOURNAL OF APPLIED PHYSICS*  
Zaman, M., Padhy, P., Hesselink, L.  
2017; 122 (16)
  - **On the substrate contribution to the back action trapping of plasmonic nanoparticles on resonant near-field traps in plasmonic films** *OPTICS EXPRESS*  
Padhy, P., Zaman, M., Hansen, P., Hesselink, L.  
2017; 25 (21): 26198–214
  - **Capturing range of a near-field optical trap** *PHYSICAL REVIEW A*  
Zaman, M., Padhy, P., Hesselink, L.  
2017; 96 (4)
  - **Dielectrophoresis-assisted plasmonic trapping of dielectric nanoparticles** *PHYSICAL REVIEW A*  
Zaman, M. A., Padhy, P., Hansen, P. C., Hesselink, L.  
2017; 95 (2)
  - **High-fidelity simulation of a standing-wave thermoacoustic-piezoelectric engine** *JOURNAL OF FLUID MECHANICS*  
Lin, J., Scalo, C., Hesselink, L.  
2016; 808: 19-60
  - **Adjoint method for estimating Jiles-Atherton hysteresis model parameters** *JOURNAL OF APPLIED PHYSICS*  
Zaman, M. A., Hansen, P. C., Neustock, L. T., Padhy, P., Hesselink, L.  
2016; 120 (9)
  - **Accurate adjoint design sensitivities for nano metal optics** *OPTICS EXPRESS*  
Hansen, P., Hesselink, L.  
2015; 23 (18): 23899-23923
  - **Fabrication and Operation of a Nano-Optical Conveyor Belt** *JOVE-JOURNAL OF VISUALIZED EXPERIMENTS*  
Ryan, J., Zheng, Y., Hansen, P., Hesselink, L.  
2015
  - **High gradient rf gun studies of CsBr photocathodes** *PHYSICAL REVIEW SPECIAL TOPICS-ACCELERATORS AND BEAMS*  
Vecchione, T., Maldonado, J. R., Gierman, S., Corbett, J., Hartmann, N., Pianetta, P. A., Hesselink, L., Schmerge, J. F.



2015; 18 (4)

- **Linear and nonlinear modelling of a theoretical travelling-wave thermoacoustic heat engine** *JOURNAL OF FLUID MECHANICS*  
Scalo, C., Lele, S. K., Hesselink, L.  
2015; 766
- **A cesium bromide photocathode excited by 405 nm radiation** *APPLIED PHYSICS LETTERS*  
Maldonado, J. R., Cheng, Y. T., Pianetta, P., Pease, F. W., Hesselink, L.  
2014; 105 (2)
- **Nano-optical conveyor belt, part I: theory.** *Nano letters*  
Hansen, P., Zheng, Y., Ryan, J., Hesselink, L.  
2014; 14 (6): 2965-2970
- **Nano-Optical Conveyor Belt, Part II: Demonstration of Handoff Between Near-Field Optical Traps.** *Nano letters*  
Zheng, Y., Ryan, J., Hansen, P., Cheng, Y., Lu, T., Hesselink, L.  
2014; 14 (6): 2971-2976
- **Differential Phase Contrast 3-D Imaging system and Applications** *DHS Symposium, Washington DC*  
Hesselink, L.  
2013
- **Full-scale simulation and reduced-order modeling of a thermoacoustic engine** *the bulletin of the 66th Annual Meeting of the APS Division of Fluid Dynamics, Pittsburgh, Pennsylvania*  
Scalo, C., Lin, J., Lele, S. L., Hesselink, L.  
2013
- **Differential Phase Contrast 3-D imaging** *ISPDI, Beijing*  
Hesselink, L.  
2013
- **Towards full-scale modeling of a traveling-wave thermoacoustic engine** *Proceedings of the AIAA Fluid Dynamics Conference and Exhibit, San Diego, California*  
Scalo, C., Lin, J., Lele, S. K., Hesselink, L.  
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