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David H. Lippman, Ph.D.

Professional Experience

2023-Present Senior Optical Design Engineer, Imaging Optics, Synopsys OSG
2018 Optical Engineering Intern, MIT Lincoln Laboratory
2017 Software Development Intern, CODE V, Synopsys OSG
2016 Optical R&D Intern, Arnold & Richter Cine Technik (ARRI)
2015 Intern, IMPERX

Education

2023 Ph.D. Degree in Optics, University of Rochester
2021 M.S. Degree in Technical Entrepreneurship & Management, Simon Business School, University of Rochester
2018 B.S. Degree in Optical Engineering, University of Rochester

Dr. David Lippman is an optical designer with experience ranging from zoom systems and cine lenses to riflescopes and gradient-index (GRIN) optics. He also has a background in freeform design including Alvarez lenses and freeform-GRIN optimization. David is well-versed in aberration theory and leverages this background in the design process.

Patents

US App 18/168,926 Artificially curved optical detector, and methods and systems of making and using
US 11,782,192 B2 Freeform gradient-index optics and methods of designing same

Publications

K. Kunala, D. H. Lippman, A. Desai, B. Kowalski, J. Bentley, and A. Dubra, "Refractive adaptive optics scanning ophthalmoscope for small animal imaging," *Investigative Ophthalmology & Visual Science* 65(7), 3399 (2024).

D. H. Lippman, "Design and Metrology of Freeform Gradient-Index Optics for Imaging and Illumination," Ph.D. Dissertation, University of Rochester, The Institute of Optics (2023).

D. H. Lippman and D. R. Shafer, "Unusual imaging between equi-curvature mirrors," *Proc. SPIE 12798, International Optical Design Conference, 127981G* (2023).

D. H. Lippman, G. R. Schmidt, J. L. Bentley, D. T. Moore, H. Akhavan, J. P. Harmon, "Compact zoom visual scope using gradient-index Alvarez lenses," Proc. SPIE 12798, International Optical Design Conference, 127981Z (2023).

J. A. Sacks, D. H. Lippman, J. L. Bentley, "Generating Zoom Lens Starting Designs With Particle Swarm Optimization and K-Means Clustering," Proc. SPIE 12798, International Optical Design Conference, 1279814 (2023).

D. H. Lippman, G. R. Schmidt, J. L. Bentley, D. T. Moore, H. Akhavan, J. P. Harmon, G. M. Williams, "Gradient-index Alvarez lenses," Appl. Opt. 62(13), 3485-3495 (2023).

J. L. Bentley and D. H. Lippman, "Freeform gradient-index materials: a new type of freeform optic," SPIE Optics + Photonics, Lens Design Technical Event Invited (2022).

D. H. Lippman, R. Xu, and G. R. Schmidt, "Freeform gradient-index optics for prescribed illumination," Proc. SPIE 12220, Nonimaging Optics: Efficient Design for Illumination and Solar Concentration XVIII, 1222005 (2022).

D. H. Lippman, R. Chou, A. X. Desai, N. S. Kochan, T. Yang, G. R. Schmidt, J. L. Bentley, D. T. Moore, "Polychromatic annular folded lenses using freeform gradient-index optics," Appl. Opt. 61(3), A1-A9 (2022).

D. H. Lippman, N. S. Kochan, T. Yang, G. R. Schmidt, J. L. Bentley, D. T. Moore, "Freeform gradient-index media: a new frontier in freeform optics," Opt. Express 29(22), 36997-37012 (2021).

D. H. Lippman, R. Chou, A. X. Desai, N. S. Kochan, T. Yang, G. R. Schmidt, J. L. Bentley, D. T. Moore, "Design of annular folded lenses using freeform gradient-index optics," Proc. SPIE 12078, International Optical Design Conference, 120781S (2021).

D. H. Lippman, J. L. Bentley, D. T. Moore, "Learning lens design from Rudolf Kingslake," Proc. SPIE 12078, International Optical Design Conference, 1207809 (2021).

T. Yang, D. H. Lippman, R. Y. Chou, N. S. Kochan, A. X. Desai, G. R. Schmidt, J. L. Bentley, D. T. Moore, "Material optimization in the design of broadband gradient-index optics," Proc. SPIE 12078, International Optical Design Conference, 120780Z (2021).

D. H. Lippman, D. S. Teverovsky, J. L. Bentley, "Monte Carlo First-order design method for anamorphic cinema zoom lenses," Opt. Eng. 60(5), 051203 (2021).

D. H. Lippman and G. R. Schmidt, "Prescribed irradiance distributions with freeform gradient-index optics," Opt. Express 28(20), 29132-29147 (2020).



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N. S. Kochan, D. Xu, S. Iqbal, B. Moon, J. Hrdina, D. Lippman, S. A. Choudhury, M. T. Banet, K. J. Dunn, A. A. G. Dewage, R. Draham, N. Takaki, J. D. T. Kruschwitz, "Light and lilacs: an interactive exploration of colorimetry," Proc. SPIE 11143, Fifteenth Conference on Education and Training in Optics and Photonics (2019).

K. Tinkham, X. Huang, W. Kim, D. H. Lippman, A. Morales, M. Tangari, T. Yang, J. L. Bentley, "Optical design of a compact high power riflescope with a large zoom ratio," SPIE European Optical Systems Design (2018).

Awards

Hilbert Memorial Student Travel Grant Recipient (2023)

Michael Kidger Memorial Scholarship (2022)

SPIE Optical Design and Engineering Scholarship (2020)

Robert S. Hilbert Memorial Optical Design Competition Winner (2018)

Professional Societies

Member SPIE

Member Optica