



## Eileen Otte

Postdoctoral Scholar, Materials Science and Engineering

### Bio

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#### BIO

Eileen Otte is a postdoctoral researcher in Prof. Mark L. Brongersma's group at the Geballe Laboratory for Advanced Materials (GLAM), Stanford University, supported by the GLAM fellowship as well as DAAD PRIME program (Germany). Her research expertise spans various areas of optics & photonics and related fields including structured light; topological, singular, and quantum optics; light-matter interactions and optical trapping; nanophotonics and metamaterials; and advanced imaging with diverse applications. After completing her Master degree with distinction, she specialized on structured singular light in her PhD studies. She performed her research at the University of Muenster (WWU), Germany, as well as the University of Witwatersrand, South Africa, under supervision of Prof. Dr. Cornelia Denz and Prof. Dr. Andrew Forbes. In 2019 she finished her PhD, honored with "summa cum laude" and the WWU Dissertation Award in Physics, and recognized internationally as part of the Springer Theses series. Further, she received the Research Award 2020 of the Industrial Club Duesseldorf and is a junior class member of the NRW Academy of Sciences, Humanities, and the Arts. In 2021, Eileen moved to Stanford, focusing on nanoscale light-matter interactions in collaboration with the Center for Soft Nanoscience, WWU, Germany. Eileen has published 24 peer-reviewed articles as well as a book and was invited for 18 talks including one keynote talk at international conferences, seminars, and colloquia.

#### HONORS AND AWARDS

- Emerging Leaders 2021, Journal of Optics (IOP) (Nov. 2021)
- GLAM fellowship, Geballe Laboratory for Advanced Materials, Stanford University (Sept. 2021)
- PRIME fellowship, German Academic Exchange Service, DAAD (Sept. 2021)
- Emerging Talents 2021, Journal of Optics (IOP) (May 2021)
- PhD thesis publication in the "Springer Theses" series, Springer Nature (Jan. 2021)
- Appointment to the "Junges Kolleg", NRW Academy of Sciences, Humanities, and the Arts (Jan. 2021)
- Finalist "SAMOP Dissertation Prize 2020", German Physical Society (DPG) (Nov. 2020)
- Research Award 2020 (Wissenschaftspreis 2020), Industrie-Club e.V. Duesseldorf & NRW Academy of Sciences, Humanities, and the Arts (Oct. 2020)
- WWU Dissertation Award, University of Muenster, Germany (Dec. 2019)
- IP@WWU, International PhD Study at WWU, University of Muenster, Germany (Oct. 2016)
- Participant of the 66th Lindau Nobel Laureate Meeting, Lindau Nobel Laureate Meetings; Else & Wilhelm Heraeus Foundation (June 2016)

#### PROFESSIONAL EDUCATION

- Doctor of Science, Westfälische Wilhelms Universität (2019)
- Master of Science, Westfälische Wilhelms Universität (2015)
- Bachelor of Science, Westfälische Wilhelms Universität (2012)

- Dr. rer. nat., University of Muenster, Germany , Physics (2019)
- M.Sc., University of Muenster, Germany , Physics with specialization on Photonics, Material Physics, and Molecular Biophysics (2015)
- B.Sc., University of Muenster, Germany , Physics (2012)

## STANFORD ADVISORS

- Mark Brongersma, Postdoctoral Faculty Sponsor

## LINKS

- Google Scholar: <https://scholar.google.com/citations?user=Gcx155MAAAAJ&hl=de&oi=ao>
- LinkedIn: [www.linkedin.com/in/eileen-otte-277b2b177](http://www.linkedin.com/in/eileen-otte-277b2b177)

## Research & Scholarship

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### LAB AFFILIATIONS

- Mark Brongersma, Brongersma Group (9/1/2021)

## Publications

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### PUBLICATIONS

- **Optical second-order skyrmionic hopfion** *OPTICA*  
Ehrmanntraut, D., Droop, R., Sugic, D., Otte, E., Dennis, M. R., Denz, C.  
2023; 10 (6): 725-731
- **Counter-propagating scalar and vector beams for subwavelength shaping and particle manipulation**  
Asche, E., Otte, E., Denz, C., Imbrock, J., IEEE  
IEEE.2023
- **Advancing 3D shaping of vectorial light by counter-propagation of self-healing scalar and vector Bessel-Gaussian beams** *JOURNAL OF OPTICS*  
Asche, E., Otte, E., Denz, C.  
2022; 24 (10)
- **Shaping the skeleton of structured light in 3D space: From self-imaging singularity networks to optical skyrmionic Hopfions**  
Otte, E., Droop, R., Ehrmanntraut, D., Sugic, D., Dennis, M. R., Denz, C., Omatsu, T.  
SPIE-INT SOC OPTICAL ENGINEERING.2022
- **Particle-like topologies in light** *NATURE COMMUNICATIONS*  
Sugic, D., Droop, R., Otte, E., Ehrmanntraut, D., Nori, F., Ruostekoski, J., Denz, C., Dennis, M. R.  
2021; 12 (1): 6785
- **Shaping light in 3d space by counter-propagation** *SCIENTIFIC REPORTS*  
Droop, R., Asche, E., Otte, E., Denz, C.  
2021; 11 (1): 18019
- **Self-imaging vectorial singularity networks in 3d structured light fields** *JOURNAL OF OPTICS*  
Droop, R., Otte, E., Denz, C.  
2021; 23 (7)
- **Customization and analysis of structured singular light fields** *JOURNAL OF OPTICS*  
Otte, E., Denz, C.  
2021; 23 (7)
- **Fully-structured counter-propagating optical trap sculpted by spherical aberration** *JOURNAL OF OPTICS*  
Otte, E., Denz, C.  
2021; 23 (6)

- **Polarization nano-tomography of tightly focused light landscapes by self-assembled monolayers** *NATURE COMMUNICATIONS*

Otte, E., Tekce, K., Lamping, S., Ravoo, B., Denz, C.

2019; 10: 4308

- **Recovery of nonseparability in self-healing vector Bessel beams** *PHYSICAL REVIEW A*

Otte, E., Nape, I., Rosales-Guzman, C., Valles, A., Denz, C., Forbes, A.

2018; 98 (5)

- **Polarization Singularity Explosions in Tailored Light Fields** *LASER & PHOTONICS REVIEWS*

Otte, E., Alpmann, C., Denz, C.

2018; 12 (6)

- **Entanglement beating in free space through spin-orbit coupling** *LIGHT-SCIENCE & APPLICATIONS*

Otte, E., Rosales-Guzman, C., Ndagano, B., Denz, C., Forbes, A.

2018; 7: 18009

- **Customized focal light landscapes by complex vectorial fields for advanced optical trapping**

Otte, E., Tekce, K., Denz, C., Galvez, E. J., Andrews, D. L., Gluckstad, J.

SPIE-INT SOC OPTICAL ENGINEERING.2018

- **Tailored vectorial light fields: flower, spider web and hybrid structures**

Otte, E., Alpmann, C., Denz, C., Omatsu, T., Morita, R.

SPIE-INT SOC OPTICAL ENGINEERING.2017