Personal website:
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Billy Lam

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Education:

University of Rochester, Rochester, New York   (2015 - 2021 (Expected))
PhD in Optics

- Advisor: Dr. Chunlei Guo
- Current research: Ultrafast laser and matter interaction; single optical element shearing interferometer suitable for coherent light including ultrashort pulses and single photons; Single-shot direct measurement of the complex amplitude of ultrashort pulses
- Graduate Assistance in Areas of National Need (GAANN) Fellowship
- Teaching assistant for Sources and Detectors, Quantum Mechanics - Optics, and Detection of Optical Radiation
- Coursework: Quantum Optics, Nonlinear Optics, Polarization, Geometrical Optics, Fourier Optics, Instrumental Optics, Opto-Mechanics, etc.

Stony Brook University, Stony Brook, New York   (2012 - 2015)
B.S. in Physics, and Applied Mathematics and Statistics; Minor in Mathematics

- 3.74 GPA, Magna cum Laude, Dean's List, Presidential Scholarship, Sigma Pi Sigma.

Experience:

Optics/Metrology Intern at ASML, San Diego, New York   (Summer 2019)

- Design and add diagnostic to laser modules and optical modules to reduce the repair time of these modules and improve the availability of complex EUV lithography machines.
- Investigate and bring into reality the improvement path of these modules using bench test, on-system test, as well as modeling.

Skills:

- Computer skills: Matlab and LaTeX.
- Worked with common optical laboratory equipment, ultrafast laser systems, interferometers, spatial light modulators, locked-in amplifiers, spectrometers, ICCD cameras, and other equipment, including computer control via GPIB, RS-232, and USB for automation procedures for laser processing.
- Fluent in Cantonese, Mandarin and English. Able to read, write and type in both traditional and simplified Chinese.

Publications:

Spatial Wavefunction Characterization of Femtosecond Pulses at Single-Photon Level. Billy Lam, Mohamed ElKabbash, Jihua Zhang, and Chunlei Guo (2020). *Research* 2020.

High-efficiency non-diffractive generator of arbitrary vectorial optical fields with minimal optical elements. Billy Lam, and Chunlei Guo (2020). *Optics Communications*, 125443.

Plasmonic metasurfaces with 42.3% transmission efficiency in the visible. Jihua Zhang, Mohamed ElKabbash, Ran Wei, Subhash C Singh, Billy Lam, and Chunlei Guo (2019). *Light: Science & Applications* 8(1), 53.

Maskless laser nano-lithography of glass through sequential activation of multi-threshold ablation. Yizhuo He, Jihua Zhang, Subhash Singh, Erik Garcell, Anatoliy Y Vorobyev, Billy Lam, Zhibing Zhan, Jianjun Yang, and Chunlei Guo (2019) *Applied Physics Letters* 114(13), 133107.

Complete characterization of ultrafast light beam with phase-shifting wedged reversal shearing interferometer. Billy Lam, and Chunlei Guo (2018). *Light: Science & Applications* 7(1), 30.

Femtosecond laser-induced herringbone patterns. Erik Garcell, Billy Lam, and Chunlei Guo (2018). *Applied Physics A*, 124(6), 405.

Generation of continuously rotating polarization by combining cross-polarizations and its application in surface structuring. Billy Lam, Jihua Zhang, and Chunlei Guo (2017). *Optics letters*, 42(15), 2870-2873.

Real-time in situ study of femtosecond-laser-induced periodic structures on metals by linear and nonlinear optics. Jihua Zhang, Yizhuo He, Billy Lam, and Chunlei Guo (2017). *Optics express*, 25(17), 20323-20331.

Patents and Inventions:

一种激光光束准直的判断方法及采用该方法的剪切干涉仪 (A collimation testing method and the wedged reversal shearing interferometer that implements this method) 2018, first inventor, patent number: 201810502091.7

一种波前提取算法及采用该算法的剪切干涉仪 (A wavefront extraction method and the wedged reversal shearing interferometer that implements this method) 2018, first inventor, patent number: 201810502372.2

Conference:

Received best poster award

The poster was presented at the light conference in Changchun, China 2018, about the work on the **Complete characterization of ultrafast light beam with phase-shifting wedged reversal shearing interferometer**