TYLER W. HUGHES

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789 Carolina St. #3
San Francisco, CA 94107

OBJECTIVE

Researcher with computational expertise, looking for interesting and challenging problems to solve. Currently a 4th year PhD candidate in Stanford applied physics department, developing algorithmic design strategies for novel photonic devices.

EDUCATION

PhD, Applied Physics (in progress) Sept 2014 - present
Stanford University, Stanford, CA
Research advisor: Prof. Shanhui Fan

Master of Science, Applied Physics Sept 2014 - June 2016
Stanford University, Stanford, CA

Bachelor of Science, Physics Sept 2009 - May 2013
University of Michigan, Ann Arbor, MI
With Distinction and Highest Honors
GPA: 3.82/4.0

SKILLS AND INTERESTS

Skills	mathematics, scientific programming, HPC, machine learning, photonics
Interests	algorithms, artificial intelligence, VR, LIDAR
Platforms	C, C++, python, matlab, mathematica, julia, javascript/CSS/HTML, LaTeX, autocad

EXPERIENCE

Graduate Research Assistant Sept 2014 - present
Fan Group, Stanford University *https://web.stanford.edu/group/fan/*

- Currently creating a laser power delivery system for accelerators on a chip (https://achip.stanford.edu)
- Invented algorithm for generating dielectric structures for high gradient acceleration of electrons.
- Designed gold microstructures for light trapping and concentration.

Rotation Student March 2014 - May 2014
Materials Computation and Theory Group, Stanford University *https://web.stanford.edu/group/evanreed/*

- Used density functional theory to model electron flow between 1D materials
- Estimated contact resistance between graphene sheets with first principles.

Junior Software Engineer Jan 2014 - Aug 2014
GudTech Inc. *www.gudtech.com/*

- Full-stack development of web application software for commercial inventory management
- Designed a business intelligence tool based on multidimensional databases.

Research Assistant July 2013 - Jan 2014
Centre for Quantum Technologies, National University of Singapore *https://sites.google.com/site/coldiongroup*

- Designed and simulated surface electrode ion traps for scalable quantum computation.
- Worked on vacuum chamber assembly, electrical component design and construction, & laser operation

Research Assistant Sept 2011 - May 2013

Optoelectronic Components and Materials, University of Michigan *umich.edu/~ocm/*

- Helped develop a process to greatly reduce GaAs thin film, flexible solar cell cost through substrate reuse.
- Led computational optimization study for device ARC thickness, contact grid design, and concentrator shape.

SELECTED PUBLICATIONS

Hughes, T.W. et al. **On-Chip Laser Power Delivery System for Dielectric Laser Accelerators**. (in preparation)

Tyler Hughes, Georgios Veronis, Kent P. Wootton, R. Joel England, and Shanhui Fan, **Method for Computationally Efficient Design of Dielectric Laser Accelerator Structures,** Opt. Express 25, 15414-15427 (2017)

Wang, J., Shi, Y., Hughes, T.W., et al. **Adjoint-Based Optimization of Active Nanophotonic Devices** (submitted)

Hughes, Tyler W., and Shanhui Fan. **Plasmonic Circuit Theory for Multiresonant Light Funneling to a Single Spatial Hot Spot.** Nano letters 16.9 (2016): 5764-5769.

Lee, K., Zimmerman, J. D., Hughes, T. W., Forrest, S. R.. **NonDestructive Wafer Recycling for LowCost ThinFilm Flexible Optoelectronics**. Advanced Functional Materials, 24(27), (2014) 4284-4291.

Oh, J., Lee, K., Hughes, T., Forrest, S., Sarabandi, K. **Flexible antenna integrated with an epitaxial lift-off solar cell array for flapping-wing robots**. IEEE Transactions on Antennas and Propagation, 62(8), (2014) 4356-4361.

LINKS

Personal Website	https://twhughes.github.io
Google Scholar	https://scholar.google.com/citations?user=-AHhToYAAAAJ&hl=en
Github	https://github.com/twhughes
LinkedIn	https://www.linkedin.com/in/tylerwhughes/