

K. GRACE JOHNSON

380 Roth Way, Stanford CA, 94305

✉ kgjohn@stanford.edu [in](https://www.linkedin.com/in/k-grace-johnson) [k-grace-johnson](https://www.linkedin.com/in/k-grace-johnson)

Education

- Stanford University** — Stanford, CA 2017 - 2022
◦ Ph.D in Theoretical Chemistry
- Loyola Marymount University** — Los Angeles, CA 2013 - 2017
◦ B.S. in Biochemistry, Summa Cum Laude
◦ Minor: Applied Mathematics
◦ University Honors Program
◦ Major/Minor GPU: 4.0 Overall GPA: 3.99

Research Experience

- Stanford University, Department of Chemistry** — Stanford, CA August 2017 - Present
Graduate Research Assistant (Scalable quantum chemistry, quantum simulation, models for biological light harvesting)
Advisor: Prof. Todd Martinez
- NVIDIA Research** — Santa Clara, CA January - March 2022
Research Intern (Quantum circuit simulations with MPS tensor networks)
Manager: Dr. Michael Garland
- National Renewable Energy Lab** — Golden, CO June - September 2019
DOE Research Fellow (Machine learning for materials properties)
Advisor: Dr. Ross Larsen
- Loyola Marymount University, Dpt of Chemistry and Biochemistry** — Los Angeles, CA Jan 2016 - May 2017
Undergraduate Research Assistant (Computational chemistry of photoelectrochemical surfaces)
Advisor: Prof. Emily Jarvis
- Loyola Marymount University, Dpts of Mathematics and Biology** — Los Angeles, CA Jan 2015 - May 2016
Undergraduate Research Assistant (Computational models of gene regulatory network dynamics)
Advisors: Prof. Kam Dahlquist and Prof. Ben Fitzpatrick

Fellowships & Scholarships

- Department of Energy Computational Science Graduate Fellowship** — USA 2018-2022
- Stanford Graduate Fellowship in Science and Engineering** — Stanford, CA 2017-2020
- Loyola Marymount University Trustee Scholar** — Los Angeles, CA 2013-2017
- Seaver College of Science and Engineering Summer Fellowship** — Los Angeles, CA 2016
- University Honors Program Summer Research Fellowship** — Los Angeles, CA 2015

Publications

- Johnson, K. G., Mirchandaney, S., Hoag, E., Heirich, A., Aiken, A., Martinez, T. J. Multi-node Multi-GPU Two-Electron Integrals: Code Generation Using the Regent Language. *Under review, Journal of Chemical Theory and Computation.*
- Fales, B. S., Curtis, E. R., Johnson, K. G., Lahana, D., Seritan, S., Wang, Y., Weir, H., Martinez, T. J., Hohenstein, E. G. Performance of Coupled-Cluster Singles and Doubles on Modern Stream Processing Architectures. *Journal of Chemical Theory and Computation* **2020**, 16, 4021-4028.
- Ellerbrock, R.*, Johnson, K. G.*, Seritan, S., Martinez, T. J. A Fidelity Analysis of Shor's Algorithm using Tree Tensor Network Simulations. *In preparation.* (*authors contributed equally)
- Ellerbrock, R., Johnson, K. G., Seritan, S., Lenzen, T., Weike, T., Manthe, U., Martinez, T. J. QuTree - A Tree Tensor Network Package. *To be submitted.*
- Vykhodets, V. B., Johnson, K. G., Kurennykh, T. E., Beketov, I. V., Samatov, O. M., Medvedev, A. I., Jarvis, E. A. Direct Observation of Tunable Surface Structure and Reactivity in TiO₂ Nanopowders. *Surface Science* **2017**, 665, 10-19.

Technical Skills

Programming Languages: C, C++, Python, Regent, CUDA

Computer Skills: bash, Linux

Selected Invited Talks & Presentations

- Seminar to the Mesoscience Lab at SMU** — Dallas, TX (virtual) March 2022
- Invited talk: *GPU Computing and Quantum Chemistry*
- SystemX Alliance Fall Conference** — Stanford, CA November 2021
- K. Grace Johnson, Roman Ellerbrock, and Todd J. Martinez, *Approximate simulations of Shor's algorithm with a tree tensor network*
- Bay Area Theoretical Chemistry Conference** — Stanford, CA July 2021
- K. Grace Johnson, Seema Mirchandaney, Alex Aiken, and Todd J. Martinez, *Multi-node multi-GPU two-electron integrals: code generation using the Regent language*
- Seminar Series on Innovations in Clean Technology** — Loyola Marymount University, CA October 2020
- Invited talk: *Chemistry, Computers, and Clean Tech*
- Northern California Theoretical Chemistry Meeting** — Berkeley, CA May 2019
- Stefan Seritan, K. Grace Johnson, Edward G. Hohenstein, Keiran Thompson, and Todd J. Martinez, *Frameworks for distributing a GPU-accelerated ab initio exciton model*

Selected Awards & Honors

- Peaker Award, Department of Chemistry** — Stanford University, CA 2020
for significant contributions to the department by organizing Graduate School Preview Day
- Program Scholar Award, Biochemistry** — Loyola Marymount University, CA 2017
- Presidential Citation** — Loyola Marymount University, CA 2017

Teaching Experience

- Summer School Lecturer, Programming in C and CUDA** — Martinez Group, Stanford University Summer 2021
- Teaching Assistant for Advanced Biochemistry** — Department of Chemistry, Stanford University Spring 2018
- General Chemistry Tutor** — Academic Resource Center, LMU 2014-2017
- Physical Chemistry Teaching Assistant** — Department of Chemistry and Biochemistry, LMU 2016-2017

Outreach

- WoSTEM** — Stanford, CA 2019-Present
- Editor and co-creator of a [platform](#) to share the stories and increase the visibility of women in STEM.
- Stanford Chemistry Preview Day** — Department of Chemistry, Stanford University Fall 2021
- Worked with a small team to extend the 2020 Theoretical Chemistry Preview Day (see below) to a department-wide event.
- Stanford Theoretical Chemistry Preview Day** — Department of Chemistry, Stanford University Fall 2020
- Worked with a small team to design and implement a virtual preview day to introduce students underrepresented in STEM to theoretical chemistry at Stanford.
- SAGE Camp** — SLAC National Accelerator Laboratory August 2020
- Served as a mentor for a small group of high-school girls during a week long camp for science and professional development.