

Clare Singer
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(301) 922-4578

December 2018
1200 E. California Blvd., MC 131-24
Pasadena, CA 91125

Education

- **California Institute of Technology** Pasadena, CA
PhD candidate, Department of Environmental Science and Engineering October 2018 - present
- **University of Chicago** Chicago, IL
BA Physics, BS Mathematics (GPA 3.957/4.0) September 2014 - June 2018
- **Montgomery Blair High School** Silver Spring, MD
Science, Math, and Computer Science Magnet Program (GPA 4.77/5.0) September 2010 - June 2014

Awards and Fellowships

NSF Graduate Research Fellowship	2018-2021
John Haeseler Lewis Prize (top graduating physics major)	2018
Barry M. Goldwater Scholarship (\$7,500 towards tuition)	2017
David W. Grainger Fellowship (top rising senior in physics, full tuition)	2017
Astronaut Scholarship (\$10,000 towards tuition)	2017
College Summer Research Fellowship	2017
Jeff Metcalf Fellowship, UChicago Institute for Molecular Engineering	2016
University Scholar Award, UChicago	2014
Dr. Vaccaro Scholarship for outstanding research project	2014

Research Experience

- **University of Chicago, Department of the Geophysical Sciences** Chicago, IL
Dr. Liz Moyer's Lab January 2017 - September 2018
 - Helped test, calibrate, and operate the Chicago Water Isotope Spectrometer (Chi-WIS) that flew in the StratoClim campaign in July/August 2017 over the Asian monsoon. Currently analyzing data from the StratoClim campaign and conducting comparisons between water measurements made in-situ and remote-sensing satellite measurements.
- **Ben-Gurion University, Zuckerberg Institute for Water Research** Sde Boker, Israel
Dr. Chris Arnusch's and Dr. Roy Bernstein's Labs Summer 2016
 - Created modified membranes for wastewater treatment using a novel ink-jet printing approach. Used ATR-FTIR, Contact Angle, XPS, AFM, SEM, and Zeta Potential measurements for characterization.
- **University of Chicago, Department of Physics** Chicago, IL
Dr. Heinrich Jaeger's Lab - James Franck Institute January 2015 - June 2016
 - Explored the effect of microscopic shape of granules on the macroscopic properties of dry granular structures. Studied jamming in dry granular packings under impact. Collaborated with architects to create large-scale granular structures that were displayed in the 2015 Chicago Architecture Biennial.
- **Georgetown University, Department of Physics** Washington, D.C.
Dr. Daniel Blair's Lab - Institute for Soft Matter Summer 2013, Summer 2015
 - Studied colloidal rods at the oil-water interface with confocal microscopy and pendant-drop tensiometry.
 - Researched pH dependence of the viscosity of silk protein solutions for use in biomedical applications. Used viscometry and dynamic light scattering techniques to determine the effect of pH on the proteins.

Publications and Presentations

1. **Singer, C.E.**, Clouser, B., Sarkozy, L., Gaeta, D.C., Moyer, E.J. (2018), *ChiWIS: The Chicago Water Isotope Spectrometer*, presented at Goldschmidt 2018; Boston, MA; 13-17 Aug 2018.
2. **Singer, C.E.**, Clouser, B., Gaeta, D.C., Moyer, E.J., *Comparison of water vapor from observations and models in the Asian Monsoon UTLS region*, Abstract A21I-2258, presented at 2017 AGU Fall Meeting; New Orleans, LA; 11-15 Dec 2017.
3. Bernstein, R., **Singer, C.E.**, Singh, S.P., Mao, C., Arnusch, C.J., *UV initiated surface grafting on polyethersulfone ultrafiltration membranes via ink-jet printing assisted modification*. J. Memb. Sci. **548** (2018).
4. **Singer, C.E.**, Bernstein R., Arnusch, C.J., *Ink-jet printing assisted modification of ultra-filtration membranes for wastewater treatment*, presented at the Naval Academy Science and Engineering Conference (NASEC) on environmental sustainability; Annapolis, MD; 13-15 Nov 2016.
5. Murphy, K.A., Reiser, N., Chosky, D., **Singer, C.E.**, Jaeger, H.M., *Freestanding loadbearing structures with Z-shaped particles*. Granular Matter 18, 26 (2016).
6. **Singer, C.E.**, Blair, D.L., *Colloidal rods at the oil-water interface*, presented at 11th Mid-Atlantic Soft Matter Conference; University of Delaware; 11 Jul 2013.

Honors

Chair's Award for Distinguished Service in Physics	2018
Phi Beta Kappa (top 2% by GPA)	2017
Udall Scholarship Nominee, UChicago	2016
Dean's List, UChicago	2015-2018
3rd place physics, Montgomery Area Science Fair	2014
Intel Science Talent Search Research Report Badge	2014
1st place physics, Washington Academy of Sciences	2014
National Merit Finalist	2013
National AP Scholar	2013
ExploraVision Competition Honorable Mention	2013

Work Experience

- **Senior Interviewer** Chicago, IL
University of Chicago, Office of College Admissions June 2017 - May 2018
 - Interviewed applicants for undergraduate admissions to the college. Occasionally lead campus tours, answered office phone calls, and worked other student jobs in the office.
- **Summer Head Counselor and Fall Outdoor Education Facilitator** Poolesville, MD
Calleva Outdoor Adventures Summer 2014
 - Facilitated multi-day outdoor education trips for schools that promoted engagement with the outdoors and built self-confidence. Led rock climbing and white water rafting trips.
- **Tutor** Chicago, IL
Math, Physics, and Computer Science 2013 - 2015
 - Tutored 7th-12th grade students in Algebra, Trigonometry, AP Physics C, and JAVA programming

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Leadership Activities

- **University of Chicago Society of Women in Physics (SWiP)** Chicago, IL
President (2017-2018), Vice President (2016-2017), Board Member (2016) 2014 - 2018
 - Organized and coordinated logistics for events to foster a strong community among students in the physics department. Coordinated SWiP's mentorship program for first year students. Worked with professors and administrative staff to improve communication between undergraduates and faculty. Attended the Conference of Undergraduate Women in Physics (CUWiP) in January 2015 at the University of Michigan and January 2018 at the University of Iowa.
- **University of Chicago Taekwondo Club** Chicago, IL
Vice President (2016 - 2018), President (2015 - 2016), Instructor 2014 - 2018
 - Coordinated practice schedules and logistics with the Athletics Department. Oversaw club finances. Advertised around campus to recruit new members and managed social media and club communication
- **University of Chicago Hillel** Chicago, IL
Board Member At-Large 2014 - 2018
 - Planned and organized events for the Jewish community on campus. Created a "Black-Tie Shabbat" event and organized it for all four years.
- **University of Chicago FEMMES: Curriculum developer** Chicago, IL
Females Excelling More in Math Engineering and the Sciences 2016
 - Wrote computer science curriculum for code camp and weekly workshops for local middle school girls.

Technical Skills

- **Foreign Languages:** French (beginner), Japanese (beginner).
- **Programming Languages:** Python, IDL, MatLab, C++, Java, \LaTeX , Mathematica.
- **Software Knowledge:** Microsoft Office, Autodesk Inventor, ImageJ, Adobe Illustrator and Photoshop.