

# Carlos D. Alas

Los Angeles, California

📞 661-247-5340 ✉️ [calas@usc.edu](mailto:calas@usc.edu) 🌐 [cdalas.com](http://cdalas.com) 🌐 LI 🌐 GH 🌐 RG

## SKILLS

---

**Programming:** MATLAB, Python, C/C++, Git, LaTeX, Mathematica, Julia, HTML

**Data Science:** Pyspark, SQL, AWS, Databricks, Machine Learning, Cassandra, Airflow

## PROFESSIONAL EXPERIENCE

---

### The Travelers Indemnity Company

Jun 2022 – Aug 2022

*Data Science Leadership Development Program Intern*

- Designed, validated, and benchmarked a metric for measuring trip regularity on 50+ billion IntelliDrive data points.
- Doubled our market share and earnings on auto policies to earn 1st place in Intern Team Case Competition
- Earned an 'Extraordinary' performance evaluation (awarded to < 1% of DSLDP interns).

### Tutoring

Jul 2014 – Dec 2018

*1-1 and group tutoring at college & university levels*

- Strengthened physics, math, and chemistry skills of students as California Polytechnic State University, San Luis Obispo Physics Department Learning Center & Educational Opportunities Program tutor
- Honed math & science skills of students as Antelope Valley College Learning Center tutor & suppl. instruction leader

## RECENT PROJECTS

---

Measured trip regularity of drivers and assessed risk (Travelers Internship project, **Summer 2022**)

Predicted customer churn on transaction data (Stripe's toy data set, **Spring 2022**)

Classified cat/dog pictures (CSCI 585 course project, **Fall 2021**)

Investigated diffusion in inhomogeneous media using KMC methods (PHYS 516 course projects, **Spring 2021**)

## EDUCATION

---

### University of Southern California

Aug 2018 – Jul 2023

*Ph.D. in Physics & M.S. in Computer Science | GPA: 3.5*

- Relevant Courses Passed: Database Systems, Methods of Computational Physics, Thermodynamics & Statistical Physics
- Relevant Courses Planned: Machine Learning, Deep Learning and Its Applications
- Research and Teaching Assistant in Theoretical & Computational Biophysics, Advisor: Dr. Christoph A. Haselwandter

### California Polytechnic State University, San Luis Obispo

Sep 2015 – Dec 2017

*B.S. in Physics w/ minor in Mathematics*

- UC, Boulder SMRC Summer Research Assistant in Experimental Fluid Dynamics on Liquid Crystal Films
- Thesis: Swimming of microorganisms in quasi-2D membranes (Published in JFM), Advisor: Dr. Tatiana Kuriabova

## PUBLICATIONS

---

K.R. Ferguson, Z. Qi, A. Green, **C. Alas**, C. Briggs, C. S. Park, M. A. Glaser, J. E. MacLennan, and N. A. Clark, *Experimental studies of two-dimensional laminar jet flows in freely suspended liquid crystal films*, arXiv:1808.01747 [cond-mat.soft] (preprint, 2018).

**C. Alas**, T. R. Powers, and T. Kuriabova, *Swimming of microorganisms in quasi-two-dimensional membranes*, J. Fluid Mech. 911, A35 (2021).

**C. D. Alas** and C. A. Haselwandter, *Dependence of protein-induced lipid bilayer deformations on protein shape*, arXiv:2208.05011 [physics.bio-ph] (Accepted by PRE, 2023).

**C. D. Alas**, O. Kahraman, and C. A. Haselwandter, *Thermosensing through membrane mechanics*, (in preparation, 2023).

**C. D. Alas**, Y. Li, O. Kahraman, and C. A. Haselwandter, *Stochastic lattice model for emerlin nanodomains*, (in prep., 2023).

## TALKS

---

**C. Alas** and T. Kuriabova, *Swimming of filamentous biological microorganisms in quasi-2D membranes*, CSM Student Research Conference, California Polytechnics State University, San Luis Obispo, CA, USA (2018).

**C. D. Alas** and C. A. Haselwandter, *Dependence of protein-induced lipid bilayer thickness deformations on protein shape*, APS March Meeting, McCormick Place, Chicago, IL, USA (2022).

**C. D. Alas** and C. A. Haselwandter, *Thermosensing through membrane mechanics*, APS March Meeting, Caesar's Forum Convention Center, Las Vegas, NV, USA (Upcoming, 2023).

## POSTERS

---

**C. Alas** and T. Kuriabova, *Swimming of filamentous biological microorganisms in quasi-2D membranes*, CSM Student Research Conference, California Polytechnics State University, San Luis Obispo, CA, USA (2018).

**C. D. Alas** and C. A. Haselwandter, *Dependence of protein-induced lipid bilayer thickness deformations on protein shape*, USC Computational Biology Symposium, University of Southern California, Los Angeles, CA, USA (2022).

## FELLOWSHIPS, SCHOLARSHIPS, AND AWARDS

---

**Diversity, Inclusion, and Access Initiative Fellowship** **Aug 2018**

**Frost Summer Research Scholarship** **Jun 2017**

**UC Boulder SMRC REU Scholarship** **Jun 2016**

**Helen SanderCock Foundation Scholarship** **May 2016**

**Flight Test Historical Foundation Scholarship** **May 2015**

**Antelope Valley College's Honors Convocation Subject Area Award in Physics** **May 2015**

*Nominating Instructors: Dr. Jason Bowen and Dr. Alexandra Schroer*

## VOLUNTEER EXPERIENCES

---

### **Antelope Valley College**

- Cal Tech Science Olympiad Competition Event Designer &/or Supervisor (STEM Program Director: Christos Valiotis)  
**Every Feb 2015–2019**
- Barnes and Noble Physics Experiments Demonstration, Palmdale, CA (STEM Outreach Coordinator: Jamie Jones)  
**Jun 14, 2018**

**California Polytechnic State University, San Luis Obispo** **Jan 27, 2018**

Baywood Elementary School Physics Experiments Demonstrations, Los Osos, CA (Event Director: Dr. Karl Saunders)