

Alex Dara Infanger

email: alexinf[at]stanford[dot]edu, website: <https://stanford.edu/~alexinf/>

- Education**
- Stanford University.** (09/2016-present)
PhD candidate in Computational and Mathematical Engineering.
(Entered Fall 2016).
- Current Research:** Simulation & Analysis of Non-Stationary Markov Chains.
Coursework: Stochastic Modeling, Numerical Linear Algebra,
Operations Research, Monte Carlo, Deep Learning,
Discrete Math & Algorithms, Optimization, Reinforcement Learning.
- University of California, Santa Cruz.** (08/2012-09/2016)
Summa cum laude, Phi Beta Kappa.
BS in Physics, highest honors.
Senior Thesis, *The Existence of Terrestrial Gamma-Ray Flashes
that Paralyze RHESSI*, awarded the Dean's and Chancellor's Awards.
Minor in Mathematics.
- Research & Work**
- Adobe Systems Incorporated** (07/2018-09/2018)
Data Science Intern
- Estimated Markov model for Creative Cloud customers in PySpark and Pandas.
- Infanger Investment Technology** (06/2017-09/2017)
Quantitative Analyst Intern
- Optimized sparse regression code for an ML based portfolio.
 - Automatized fund analyses using the Bloomberg API and VBA.
- Santa Cruz Institute for Particle Physics** (06/2013-09/2016)
Research Assistant
- Discovered a new class of Terrestrial Gamma-ray Flashes (TGFs) in the Reuven Ramaty High Energy Solar Spectroscopic Imager (RHESSI) data set.
 - Performed Monte Carlo analyses with lightning location data in order to estimate the probability of a TGF candidate coming from background processes.
- Lawrence Livermore National Laboratory** (06/2014-08/2014)
Research Assistant
- Modeled response of Radiation Portal Monitors and other instruments to TGFs.
 - Determined that TGF attenuation due to Compton scattering in the atmosphere makes it unlikely for ground-based nuclear safety detectors to trigger on TGFs.
- Scientific Slug Magazine** (08/2014-01/2016)
Managing Editor & Contributor
- Managed and contributed to *Scientific Slug*, a science and art magazine that publishes
 - survey articles on current research in science and maths, research papers,
 - speculative essays on the intersection of science with literature, art and philosophy,
 - poetry, fiction.

Honors Ranked 1/127 in data structures course (C and Java).
 Selected to attend IPAM Mean Field Games Summer School, June 2018.
 Session Chair: Instrumentation and Data Analysis, TEPA¹ 2014
 Ron Ruby Award: \$2540.00 award to attend TEPA 2014 Conference
 UCSC Representative for Ina Coolbrith Poetry Prize

Programming Python, Tensorflow, Keras, Julia, PySpark, Pandas, SQL, Matlab.

Languages Fluent: English, German.
 Conversational: French, Farsi.

Publications “The rarity of terrestrial gamma-ray flashes II: *RHESSI* stacking analysis”
 D. M. Smith, P. Buzbee, N. A. Kelley, A. Infanger, R. H. Holzworth, J.R. Dwyer.
 Journal of Geophysical Research: Atmospheres (2016).

“Quantifying the brightness of terrestrial gamma-ray flashes using delayed, Compton-scattered photons”
 N. A. Kelley, D. M. Smith, P. Buzbee, A. Infanger, M. Splitt, R. H. Holzworth, and J. R. Dwyer. (*In preparation for the Journal of Geophysical Research (Atmospheres)*).

Presentations Characteristics of extremely bright TGFs and short TGFs from RHESSI, and stacked search for subluminoous TGFs
 Alex Infanger, David M. Smith, Nicole Kelley (UCSC); Paul Buzbee (UCSC,Google); Joseph Dwyer, Michael Splitt, Steven Lazarus (FIT); Robert Holzworth, Michael Hutchins (UW); Steven Cummer (Duke). Thunderstorm and Elementary Particle Acceleration Conference 2014 – Yerevan, Armenia. (*Presenting Author*).

Ground based observations of Terrestrial Gamma-ray Flashes
 Alex Infanger, Simon Labov, Brandon Seilhan, Alan Kaplan, Karl Nelson. Lawrence Livermore National Laboratory, Summer 2014. (*Poster Presentation*).

The brightest TGF ever observed? - New results from the RHESSI satellite
 Nicole Kelley (SSL, Berkeley); David Smith (UCSC); Joseph Dwyer, Michael Splitt (FIT), Robert Holzworth (UAW), Paul Buzbee (Google), Alex Infanger (UCSC), and Steve Lazarus (FIT). EGU Spring 2015 Meeting – Vienna, Austria. (*Joint work presented by Nicole Kelley*).

Recent results from ADELE and RHESSI
 Nicole Kelley, D.M. Smith, G.S. Bowers, P. Buzbee, F. Martinez-Mckinney, J.R. Dwyer, E.S. Cramer, H. Rassoul, S.A. Cummer, G. Lu, A. Infanger, R.H. Holzworth, M.L. Hutchings, M.E. Splitt, S.M. Lazarus, T. Gjesteland, N. Ostgaard. AGU 2013 Fall Meeting – San Francisco, CA. (*Joint work presented by Nicole Kelley*).

Results from the third RHESSI catalog of Terrestrial Gamma-ray Flashes
 David M. Smith, Paul Buzbee, Alexander Infanger, Joseph R. Dwyer, Steven A. Cummer, Gaopeng Lu, Robert H. Holzworth, Michael L. Hutchins, Michael E. Splitt, Steven M. Lazarus, Thomas Gjesteland, Nikolai Ostgaard. AGU 2013 Fall Meeting, San Francisco. (*Conference presentation by Professor David Smith*).

Essays “Solid State Dream: *Fermi-LAT*”
 Alexander Infanger, *Scientific Slug*, Spring 2015.

“The Scientific Joy”
 Alexander Infanger, art by Marie Calapa, *Scientific Slug*, Winter 2014.

¹ Conference for Thunderstorms and Energetic Particle Acceleration

“Revenge of the WIMPs: A History of Dark Matter and the Research Happening at UCSC to Capture It”
Alexander Infanger, art by Kira Moser, *Scientific Slug*, Fall 2013.