

# Cole Citrenbaum

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## Research interests

Probabilistic machine learning, state-space models, Gaussian processes, and representation learning. Interested in applications to neuroscience, biology, and medicine.

## Education

- 2024- **Stanford University** – Stanford, CA  
PhD Student in Statistics, *GPA: 4.03/4.0*.  
Coursework includes first-year PhD sequence of Applied Statistics, Theoretical Statistics, and Probability.
- 2013 - **Yale University** – New Haven, CT  
2017 BS in Physics, *GPA: 3.91/4.0*.  
*magna cum laude*, with distinction in the major  
Senior thesis on monsoon depression genesis with Professor William Boos

## Publications

- 2024 Aaron R Slan, **Cole Citrenbaum**, Juliana Corlier, Doan Ngo, Nikita Vince-Cruz, Nicholas J Jackson, Thomas E Valles, Scott A Wilke, Gil D Hoftman, Ralph J Koek, Michael K Leuchter, David E Krantz, Thomas B Strouse, Reza Tadayonnejad, Nathaniel D Ginder, Margaret G Distler, John H Lee, Adesewa E Adelekun, Evan H Einstein, Hanadi A Oughli, Andrew F Leuchter. [The role of sex and age in the differential efficacy of 10 Hz and intermittent Theta-burst \(iTBS\) repetitive transcranial magnetic stimulation \(rTMS\) treatment of major depressive disorder.](#) *Journal of Affective Disorders*.
- 2024 Michael K Leuchter, **Cole Citrenbaum**, Andrew C Wilson, Tristan D Tibbe, Nicholas J Jackson, David E Krantz, Scott A Wilke, Juliana Corlier, Thomas B Strouse, Gil D Hoftman, Reza Tadayonnejad, Ralph J Koek, Aaron R Slan, Nathaniel D Ginder, Margaret G Distler, Hewa Artin, John H Lee, Adesewa E Adelekun, Evan H Einstein, Hanadi A Oughli, Andrew F Leuchter. [The effect of older age on outcomes of rTMS treatment for treatment-resistant depression.](#) *International Psychogeriatrics*.
- 2024 Zoe R Berman, **Cole Citrenbaum**, Juliana Corlier, Andrew F Leuchter, Robert L Folmer, Michael K Leuchter. [Sequential Multilocus Repetitive Transcranial Magnetic Stimulation for Treatment of Tinnitus With and Without Comorbid Major Depressive Disorder.](#) *Neuromodulation*.
- 2024 Evan Einstein, Juliana Corlier, Cole Matthews, Doan Ngo, Michael K Leuchter, **Cole Citrenbaum**, Nikita Vince-Cruz, Bhavna Ramesh, Aaron Slan, Scott A Wilke, Nathaniel Ginder, Thomas Strouse, Andrew F Leuchter. [Bilateral Cerebellar Repetitive Transcranial Magnetic Stimulation for Chronic Ataxia After Hemorrhagic Stroke: a Case Report.](#) *The Cerebellum*.

- 2023 **Cole Citrenbaum**, Juliana Corlier, Doan Ngo, Nikita Vince-Cruz, Andrew Wilson, Scott Wilke, David Krantz, Reza Tadayonnejad, Nathaniel Ginder, Jennifer Levitt, John H Lee, Michael K Leuchter, Thomas Strouse, Andrew Corse, Pooja Vyas, Andrew Leuchter. [Pretreatment pupillary reactivity is associated with differential early response to 10 Hz and intermittent theta-burst Repetitive Transcranial Magnetic Stimulation \(rTMS\) treatment of Major Depressive Disorder \(MDD\)](#). *Brain Stimulation*.
- 2023 **Cole Citrenbaum**, Juliana Corlier, Doan Ngo, Nikita Vince-Cruz, Andrew Wilson, Scott Wilke, David Krantz, Reza Tadayonnejad, Nathaniel Ginder, Jennifer Levitt, John H Lee, Thomas Strouse, Andrew Corse, Pooja Vyas, Andrew Leuchter. [Pretreatment pupillary reactivity is associated with outcome of Repetitive Transcranial Magnetic Stimulation \(rTMS\) treatment of Major Depressive Disorder \(MDD\)](#). *Journal of Affective Disorders*.
- 2023 Michael Leuchter, **Cole Citrenbaum**, Andrew Wilson, Tristan Tibbe, Nicholas Jackson, David Krantz, Juliana Corlier, Andrew Leuchter. [A comparison of self-and observer-rated scales for detecting clinical improvement during repetitive transcranial stimulation \(rTMS\) treatment of depression](#) *Psychiatry Research*.
- 2023 Stephanie A Chu, Reza Tadayonnejad, Juliana Corlier, Andrew C Wilson, **Cole Citrenbaum**, Andrew F Leuchter. [Rumination symptoms in treatment-resistant major depressive disorder, and outcomes of repetitive Transcranial Magnetic Stimulation \(rTMS\) treatment](#). *Translational Psychiatry*.
- 2023 Reza Tadayonnejad, **Cole Citrenbaum**, Thuc Doan P. Ngo, Juliana Corlier, Scott A. Wilke, Aaron Slan, Margaret G. Distler, Gil Hoftman, Adesewa E. Adekun, Michael K. Leuchter, Ralph J. Koek, Nathaniel D. Ginder, David Krantz, Hewa Artin, Thomas Strouse, Ausaf A. Bari, Andrew F. Leuchter. [Right lateral orbitofrontal cortex inhibitory transcranial magnetic stimulation for treatment of refractory mood and depression](#). *Brain Stimulation*.
- 2022 Reza Tadayonnejad, Andrew C Wilson, Stephanie Anne Chu, Juliana Corlier, **Cole Citrenbaum**, Thuc Doan P Ngo, Emmily Hovhannisyan, Nathaniel D Ginder, Jennifer G Levitt, Scott A Wilke, David Krantz, Ausaf A Bari, Andrew F Leuchter. [Use of right orbitofrontal repetitive transcranial magnetic stimulation \(rTMS\) augmentation for treatment-refractory obsessive-compulsive disorder with comorbid major depressive disorder](#). *Psychiatry Research*.
- 2022 Mike Conway, **Cole Citrenbaum**, Annie T Chen. [Substance use-related stigma: an exploratory study of search behavior using Google trends \(2004-2021\)](#). *The American Journal of Drug and Alcohol Abuse*.
- 2015 ES Walker, C Baltay, A Campillay, **C Citrenbaum**, Carlos Contreras, Nancy Ellman, U Feindt, C González, Melissa L Graham, E Hadjiyska, EY Hsiao, Kevin Krisciunas, R McKinnon, K Ment, N Morrell, Peter Nugent, Mark M Phillips, David Rabinowitz, S Rostami, J Serón, M Stritzinger, Mark Sullivan, BE Tucker. [First Results from the La Silla-QUEST Supernova Survey and the Carnegie Supernova Project](#). *The Astrophysical Journal Supplement Series*.

## Conference Abstracts and Posters

- 2023 Andrew Leuchter, Juliana Corlier, **Cole Citrenbaum**, Andrew Wilson, Nikita Vince-Cruz, Doan Ngo. [Use of Resonant Frequency TMS \(RF-TMS\) to enhance treatment outcomes in MDD](#). *Brain Stimulation*.
- 2023 Michael Leuchter, **Cole Citrenbaum**, Andrew Wilson, Tristan Tibbe, Nicholas Jackson, David Krantz, Juliana Corlier, Andrew Leuchter. [Holding Steady: Age-Related Effects on Treatment Response During rTMS Treatment of Depression](#). *The American Journal of Geriatric Psychiatry*.

- 2023 Michael Leuchter, **Cole Citrenbaum**, Andrew Wilson, Tristan Tibbe, Nicholas Jackson, David Krantz, Juliana Corlier, Andrew Leuchter. [Agreeing to disagree: inter-subject variability of mood rating scales during rTMS treatment of depression.](#) *Brain Stimulation*.

## Research experience

- 2021 – **UCLA Neuromodulation Division**  
Present Data Science and Statistics in Psychiatry and Neuroscience Lab  
Principal Investigator: Dr. Andrew Leuchter
- Led statistical analysis and programming on projects involving depression treatment efficacy and biomarker data
  - Developed methods and implementation to individualize transcranial magnetic stimulation (TMS) treatment of depression with resonant frequencies based on EEG connectivity
  - Contributed to research stages from study design to statistical analysis to publication
  - Statistical techniques including hypothesis testing, propensity score weighting, dimensionality reduction, machine learning
  - Regularly presented statistical analyses to physicians to refine measurement-based care in the TMS clinic
  - Developed and automated pipeline to preprocess and analyze > 10 years of clinical symptom and brain imaging data
  - Programmed features for internal web application (PHP) for tracking symptoms, treatment parameters in TMS clinic (>9,000 treatments per year).
- 2020 **Substance Use Disorder-Related Stigma**  
Principal Investigator: Professor Mike Conway (now University of Melbourne).
- Drafted manuscript analyzing use of stigmatizing language over time with Google Trends, leading to publication
  - Wrote code to retrieve Google Trends data, run statistical analysis, and generate figures
- 2015 **UCLA Pure and Applied Math and Aerospace Corporation**  
**Research in Industrial Projects for Students**
- Selected as 1 of 36 students out of 600 applicants to study problems in applied mathematics
  - Worked for Aerospace Corporation with a small team, simulated cluster formation-keeping, calculated minimum fuel expenditures to maintain Cube Satellites in orbit
  - Presented findings at UCLA's Institute of Pure and Applied Mathematics and Aerospace Corporation headquarters
- 2014 – **La Silla QUEST Supernova Project**  
2015 Principal Investigator: Professor Charles Baltay (Yale Physics).
- Working towards gaining insight into Dark Energy and the expansion-rate of the universe by studying 1A Supernovae
  - Reworked the telescope-lab pipeline for a new CCD array camera, automated daily analysis of data, contributing to publication
- 2014 **The Strategic Logic of Nuclear Proliferation**  
Principal Investigator: Professor Alexandre Debs (Yale Political Science).
- Assisted with 2016 book on nuclear proliferation by performing literature review

## Teaching

2024-

### **Stanford**

- Stats 310/Math 230a. Theory of Probability (For PhD students). (Fall 2025)
- Stats 60. Introductory Statistics. (Summer 2025)
- Stats 141. Statistics for Life Sciences (Winter 2024)
- Stats 32. Introduction to R (Fall 2024)

## Other work

2016 –  
2021

### **Signed Songwriter and Producer (Pulse Recording) – Los Angeles, CA**

- Worked with major artists across genres, >500 million streams across platforms
- Co-writer on the Backstreet Boys' #1 album 'DNA' (2019), Louis Tomlinson's top 5 album 'Walls' (2020), Zayn's 2020 single "Better"
- Recorded and toured internationally under band-name Opia– over 100 million Spotify streams
- Songs in a variety of TV shows and ad campaigns, including Hulu and Target holiday ads, TV shows including Grey's Anatomy, Empire

## Skills

### **Programming languages**

Python, Matlab, R, SQL, Bash

### **Software and libraries**

PyTorch, Numpy, Pandas, etc.

### **Languages**

English (native), Spanish (fluent), Portuguese (conversational)