

# Seth Koren, PhD

Michelson Center for Physics  
sethk@uchicago.edu

933 East 56th Street  
Chicago IL 60637

## EDUCATION AND ACADEMIC APPOINTMENTS

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<b>University of Chicago</b>	Oehme Postdoctoral Fellow	2020-Present
<b>UC Santa Barbara</b>	MA, PhD in Physics	Aug 2020
Dissertation: NEW APPROACHES TO THE HIERARCHY PROBLEM AND THEIR SIGNATURES FROM MICROSCOPIC TO COSMIC SCALES advised by Prof. Nathaniel Craig		
<b>UPenn</b>	BA in Physics (w/ honors, astro concentration) and Math, MS in Physics	May 2015
<b>Montgomery County Community College</b>	gap year after high school due to illness	2010-2011

## HONORS AND AWARDS

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American Physical Society's 2022 Sakurai Dissertation Award

UCSB Graduate Student Association's 2019 Excellence in Teaching Award

Roy and Diana Vagelos Science Challenge Award, full tuition scholarship

William E. Stephens Memorial Prize for a graduating physics major

## TEACHING AND MENTORSHIP

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The Hierarchy Problem: From the Fundamentals to the Frontiers is a pedagogical guide to renormalization and the hierarchy problem I wrote as an introduction to my dissertation

UChicago Introduction to Particle Physics Seminar – Spring 2021

I volunteered to lead an undergraduate reading seminar on introductory particle physics as I was concerned students weren't getting time with professors during the pandemic. I lectured on important concepts, emphasized the role of quantum mechanics, and wrote mastery questions for students to work on to firm their understanding. I also introduced particle simulation software and wrote a final project to reinterpret an ATLAS search and 'discover' the Higgs.

At UCSB, research mentor to undergraduates Aidan Herderschee (→ UMichigan grad), Samuel Alipourfard (→ MIT grad), and Umut Can Öktem (→ UC Davis grad)

Worster Fellowship for summer mentorship (awarded 2017 and 2019)

Introduction to Quantum Mechanics 1 – Fall 2016, Fall 2017, Fall 2018

Complex Variables – Winter 2020

With Nathaniel Craig in Fall 2017, I worked to overhaul the Introductory Quantum Mechanics course using active learning methods and placing increased effort on pedagogy and on instructor accessibility. This worked marvelously and students both had better learning outcomes and reported feeling more comfortable in the classroom and with the material. Since then, our model has been implemented throughout the physics classes at UCSB.

## LEADERSHIP EXPERIENCE

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**UCSB High Energy Grad Group**

Organizer

Sept 2017 – Sept 2019

In addition to organizing our seminar series, this position rendered me the spiritual leader of the high energy theory grads. In that role I worked hard to create a welcoming and supportive environment, to foster a collaborative community, and to advocate for a more equitably focused theory group.

## **Penn Secular Society, *Founder***

President

Jan 2012 – May 2014

I created PSS to fill a void in the dialogue on campus surrounding philosophy, science and theology, and to provide community for a then-unrepresented population of students. The group became well-known at Penn for its efforts to encourage people to think critically about their beliefs, and fully succeeded in influencing and improving campus dialogue.

## **Penn For Liberty, *Co-founder***

Vice-, then Co-President

Jan 2012 – Jan 2014

PFL focused its activism on protecting free speech and civil liberties, opposing police overreach and our military interventions abroad, keeping the government out of people's bedrooms and their bodies, and advocating for drug policy reform, all of which I remain proud of. I write at some length on my website why I have amended my views on classical liberalism as concerns economic policy.

## **TALKS AND SEMINARS**

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### **Invited Talks**

*UV/IR Mixing and the Hierarchy Problem*

**Yale** Mossman Seminar, November 2019

**SoCal Grads Fields and Strings** at UC Los Angeles, February 2020

**Cornell/University of Maryland** Particle Phenomenology Seminar, October 2020

**LBNL/UC Berkeley** Particle Seminar, October 2020

**Caltech** High Energy Physics Seminar, October 2020

**University of Michigan** Particle Theory Seminar, November 2020

*The Hydrogen Mixing Portal, Its Origins, and Its Cosmological Effects*

**University of Toronto** Theoretical High Energy Physics Seminar, November 2020

**Fermilab** Theoretical Physics Seminar, November 2020

*A Cosmological Lithium Solution from Discrete Gauged Baryon Minus Lepton Number*

**Stony Brook University** Theoretical Physics Seminar, December 2021

**UW Madison** High Energy/Cosmology Theory Seminar, April 2022

**American Physical Society** Sakurai Dissertation Award Talk, New York, April 2022

**Harvard CMSA** Quantum Matter Seminar, May 2022

**UC Irvine** Particle Physics Seminar, June 2022

**UNAM Instituto de Fisica** Seminario Sandoval Vallarta, June 2022

**Brookhaven National Lab** High Energy Theory Seminar, August 2022

**UI Urbana-Champaign** High Energy Phenomenology Seminar, September 2022

**Notre Dame** Particle Physics Seminar, October 2022

**MIT** Nuclear and Particle Theory Seminar, October 2022

**UMaryland** Particle Theory Seminar, December 2022

### **Contributed Talks**

**IHEP** Workshop on the High Energy Circular Electron-Positron Collider, Beijing, November 2018

**CERN** Fifth Workshop of the LHC Long-Lived Particle Community, Geneva, May 2019

**Galileo Galilei Institute** New Physics From The Sky Workshop, October 2021

**Aspen Center for Physics** Frontiers of Particle Physics Workshop, March 2022

**Pheno** at University of Pittsburgh, May 2022

**Cambridge High Energy Workshop** at Harvard CMSA, August 2022

**ICTP-SAIFR** New Directions in Particle Physics, São Paulo, Brazil, September 2022

### **Publications**

See at [Inspire HEP](#) or [NASA ADS](#) or [Google Scholar](#).