

# Patrick V. O'Melveny

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## Education

### San Francisco State University

CANDIDATE FOR MASTER OF ARTS IN MATHEMATICS

San Francisco, CA

Expected 2022

### Sonoma State University

BACHELOR OF ARTS IN MUSIC

Rohnert Park, CA

2014

## Research

### Mixed Volumes of Normal Complexes

ADVISOR: DUSTIN ROSS

San Francisco State University

July 2021 - Current Work

- Developing the concept of mixed volumes of normal complexes of tropical fans
- Working towards geometric proofs of the log-concavity of mixed degrees of divisors in Chow rings of tropical fans

## Teaching

### MATH 198: Prelude to Calculus II

SAN FRANCISCO STATE UNIVERSITY

San Francisco, CA

Planned Spring 2022

### MATH 197: Prelude to Calculus I

SAN FRANCISCO STATE UNIVERSITY

San Francisco, CA

Fall 2021

### MATH 228 Supplemental: Calculus I, 4th Hour

SAN FRANCISCO STATE UNIVERSITY

San Francisco, CA

Fall 2021

## Work Experience

### San Francisco State University

RESEARCH ASSISTANT

San Francisco, California

Aug 2021 - Current

- Perform research under the guidance Dustin Ross in combinatorial algebraic geometry
- Supported by NSF RUI: Compacifying moduli spaces of orbits, covers, and curves

### San Francisco State University

GRADUATE TEACHING ASSOCIATE

San Francisco, California

Aug. 2021 - Current

- Instructor of Record for undergraduate precalculus classes

### Posit Science Corporation

SOFTWARE ENGINEER

San Francisco, California

Jan. 2017 - June 2021

- Developed software for the needs of multiple research studies on neuroplasticity
- Maintained and extended data pipelines, allowing for efficient and secure access to clinical data
- Developed back-end event scheduling systems and data models for efficient distributed computing

### Posit Science Corporation

RESEARCH ASSOCIATE & DATA ANALYST

San Francisco, California

Jul. 2015 - Jan. 2017

- Created in-house tools for automation of R&D tasks; including study measure analytics, reporting dashboards, graphing tools and study-flow monitoring
- Performed exploratory data analysis for research studies and produced graphs and figures for publications
- Coordinated multi-site research trial, maintaining compliance with FDA regulations for Phase II clinical research

### Northern California Institute for Research and Education

RESEARCH ASSOCIATE II

San Francisco, California

Mar. 2014 - Jul. 2015

- Worked on a novel fMRI experiment on neurotransmitters and social cognition in Schizophrenia
- Created an analysis pipeline for the results of fMRI and MEG experiments

- Tutored students in Music Theory I-IV, Music History, and Ear Training

## Outreach

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### Mathematistas

MEMBER, FACILITATION TEAM

Mathematistas is a student community that supports and builds towards gender equity in pursuit of higher mathematics.

*San Francisco, CA*

*August 2020 - Current*

### Learning Home Volunteers

VOLUNTEER

Learning Home Volunteers is a non-profit organization working to address the kindergarten-readiness gap by empowering and equipping parents to engage their young children in joyful learning through play.

*Redwood City, CA*

*February 2019 - Current*

## Technical Skills

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### Programming Languages

TeX, Python, C++, R, Haskell, Julia

### Software

Linux, Git, Mathematica, Amazon Web Services, Jupyter Notebook

### Statistical

Hypothesis testing, Principal component analysis and dimensionality reduction, Regression models

### Languages

English (native), French (intermediate)