The

# Senior Conference Presentation Q&A Sessions

for

# The Class of 2021

## Part I: Tuesday, November 17, 2020

3:45 p.m. – 4:45 p.m.

And

## Part II: Friday, November 20, 2020

9:00 a.m. – 10:00 a.m.

The Department of Mathematics & Statistics
Swarthmore College

## Instructions:

1. Join the Math 97 Presentations Slack Channel:

https://bit.ly/2UgEAkK

Slides and video presentations will be available by Mon, Nov 16, Noon EST.

Each student will have a channel:

#TuesOrFri-LastName-Firstname

(An up-to-date copy of this program will be available in the #program channel.)

2. Join the Zoom meeting to hear from and/or ask questions of the presenters:

https://swarthmore.zoom.us/j/82462250490

Attendees will be given co-host privileges to move between breakout rooms.

3. You are encouraged to leave comments and questions in the individual presenters' slack channels (before, during, and after the Q&A sessions).

4. Thank you for supporting the Class of 2021!

## Part IA:
## Tues Nov 17, 3:45 p.m. – 4:15 P.M.

**Talbot Child (Room 1):**
Any Way You Want It: Various Approaches to Understanding and Proving the Fundamental Theorem of Algebra

**Lucy Decker (Room 1):**
Crystallographic Group Theory

**Kevin Choi (room 2):**
Arrow Impossibility Theorem

**Luke Wang (Room 2):**
Mathematical Underpinnings of Musical Ratios

**Arjun Madan (room 3):**
Betting Strategy in Two-Person, Unif(0,1) Poker Models

**Eddie Wu (room 3):**
Nash equilibrium existence theorem

**Juliette Narame (room 4):**
Dempster-Shaffer theory

**Danielle Rossetti Dos Santos (room 4):**
VNM utility theorem and expected utility theory

## Part IB:
## Tues Nov 17, 4:15 p.m. – 4:45 p.m.

**Dominic Woodward (room 1):**
Modeling Tumor Growth

**Keegan McKenna (room 1):**
Agent-Based Model of Disease Spread

**JJ Balisanyuka-Smith (room 2):**
Stochastic and Deterministic neuronal models

**Jung Jiung (room 2):**
Brownian Motion and its Applications in Finance

**Thomas Blakelock (room 3):**
Long Year, Short Season: Modeling MLB Divisional Standings

**Josh Geselowitz (room 3):**
Mathematics of Cities

**William Han (room 4):**
The Naive Bayes Classifier, and applications to NBA predictive modeling

**Austin Kim (room 4):**
Ridge Regression in NBA Advanced Statistics

## Part IIA:
## Fri Nov 20, 9:00 a.m. – 9:30 a.m.

**Francesco Massari (room 1):**
Optimality of Huffman Coding

**Maria Fernanda Sampaio Ferreira (room 1):**
Elliptic Curve Cryptography

**Sam Rothstein (room 2):**
Compressive sensing Theory and Applications

**Claudia Xu (room 2):**
Metropolis-Hastings algorithm: An Implementation of MCMC

**Sumi Onoe (room 3):**
Greibach Normal Form

**Genji Kawakita (room 3):**
Contrastive Divergence for Restricted Boltzmann Machine

## Part IIB:
## Fri Nov 20, 9:30 a.m. – 10:00 a.m.

**Alexander Flowers (room 1):**
Measuring Spatial Autocorrelation: Moran's I and friends

**Madeleine Ward (room 1):**
Spatial Disaggregation

**Jihye Yoon (room 2):**
Gompertz-Makeham Law of Mortality in Survival Analysis

**Julia Dalrymple (room 2):**
Where There's Smoke: Logit Models for Wildfire Occurrence

**Jessica Yang (room 2):**
Optimal Stopping of a Markov Chain

**Keonwoo Oh (room 3):**
Relational Completeness

**Lizhi Guo (room 3):**
No Regret Dynamics