

# Mason J. Stoecker

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*"There is nothing new to be discovered in physics now. All that remains is more and more precise measurement."- Lord Kelvin*

## Education

### V.T.(Virginia Polytechnic Institute and State University)

PURSUING B.S. IN PHYSICS AND MATHEMATICS

Blacksburg, VA

Graduating: Dec 2020

### Thomas Nelson Community College

ASSOCIATE IN SCIENCE

Hampton, VA

Graduated: May 2018

- Graduated Cum Laude and wrote capstone on recent searches for beyond standard model particles.

## Skills

### Coding Languages

#### 1. Python

- (a) Performed Monte Carlo Simulations
- (b) Web scraping applications w/ BeautifulSoup
- (c) Utilized for data acquisition of the muon detector

#### 2. C++

- (a) Worked Project Euler solutions
- (b) Utilized in research concerning Erdos' distance problem
- (c) Root used for SULI research

#### 3. Java

- (a) Utilized for major classes at Virginia Tech
- (b) learned the basics of data structures and algorithms using it.

## Experience

### Researcher

Blacksburg, Virginia

MONTE CARLO SIMULATIONS OF PREDATOR-PREY MODELING

Aug. 2019-

- Performed simulations on lattice structures to obtain information about the behavior of n-species systems.
- Simulations for on non-lattice structures specify modifying predator and prey dynamics in terms of optimization.
- Performed through a combination of matplotlib, bash script and C++.

### Jefferson Lab

Newport News, Virginia

SULI AT JEFFERSON LAB

May. 2019 - Aug 2019

- Created a paper and poster detailing findings that were on display
- Computed the Bremsstrahlung of the LINAC sections at CEBAF
- Determined the effect of ionization on the electrostatic of the beam

### Virginia Tech Math Department

Blacksburg, Virginia

UNDERGRADUATE MATHEMATICS RESEARCH

Jan. 2019 - May 2019

- Understanding the Erdős distinct distances problem through unperiodic point distributions
- Has applications in Quasicrystals and all unperiodic graphs.
- Seeking a nontrivial graph of distances greater than  $\ln(\sqrt{N})$

### Thomas Nelson Tutor Zone

Hampton, Virginia

TUTOR

Jan. 2018 - Exp. Aug. 2018

- Responsible for tutoring in introductory material in Physics, Math, Statistics, and Philosophy in 1-1 sessions.
- Welcomed people to the Zone and helped create appointments.

### V.I.M.S (Virginia Institute of Marine Science)

Gloucester, Virginia

SUMMER INTERN

May. 2016 - Nov. 2016

- Utilized G.I.S. data to assist with the Comprehensive Coastal Inventory Program

## Extracurricular Activity

## SOVT (Sub-Orbital Launch at Virginia Tech)

### MEMBER & AVIONICS SUBTEAM

- Gained expertise in software applications relating to rocket systems.
- Utilized different metrics to determine rocket location
- Responsible for the implantation of the IMU and Temperature systems

## Mars Madness Design Club

### WHEEL DESIGN SUBTEAM

- Insight into mechanics and non pneumatic tires
- Presented information about terrain difficulties and rough calculations
- Reviewed Final Design for Wheel

## SOVT (Sub-Orbital Launch at Virginia Tech)

### MEMBER & AVIONICS SUBTEAM & CODING SUBTEAM

- Gained expertise in software applications relating to rocket systems.
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- Responsible for the implantation of the IMU and Temperature systems

## Society for Physics Students

### MEMBER & TREASURER(2019-2020)

- Participated in Physics outreach at local high schools

## Transfer Experience LLC

### VICE PRESIDENT

- Organized activities and events for both the LLC Transfers and the larger class of incoming transfers
- Responsible for the agenda of a majority of the meets and the coordination for the events

## BSA (Boy Scouts of America)

### EAGLE SCOUT

- Completed all requirements to obtain the rank of Eagle Scout
- Final project was the construction of a mediation garden that is still maintained

Blacksburg, Virginia

Jan. 2019 - PRESENT

Blacksburg, Virginia

Aug. 2018 - May 2019

Blacksburg, Virginia

Jan. 2019 - PRESENT

Blacksburg, Virginia

Aug 2016 - PRESENT

Blacksburg, Virginia

Aug 2016 - PRESENT

Blacksburg, Virginia

Aug 2016 - PRESENT

## Personal Projects

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### 2020 Mathematical Contest in Modeling

Blacksburg, Virginia

#### MAJOR WRITING CONTRIBUTOR

Feb 2020

- Participated in a 96 hour event with 2 other people seeking to model climate change effects on the Scottish fishing industry
- Determined models for how the movement of fish populations would effect boat capacity
- Modeled the effect of unsustainable total allowable catch will have in the upcoming decades
- Wrote a majority of a 13 page document in the timespan

### Muon Detector

Blacksburg, Virginia

#### TEAM LEAD

Jan. 2019 - May. 2019

- Coordinated and organized a group of 4 people for the final project of Intermediate Lab
- Acquired parts and supplies of the implementation of the design of the detector
- Assisted with the soldering and coding of the Arduino