

# BAR ALLUF

2525 Amsterdam Avenue ◊ New York, NY 10033

(646) · 923 · 4664 ◊ baralluf@gmail.com

## EDUCATION

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**Yeshiva University, New York, NY**

**Yeshiva College**

**Bachelor of Art, Double Major: Mathematics & Physics**

Expected Date of Graduation: May 2020

Overall GPA: 3.75/4.00

## HONORS AND AWARDS

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Kressel Research Scholarship

September 2019

Dean's List

September 2016 - September 2019

Dean's Scholars

September 2016 - September 2019

## RESEARCH EXPERIENCE

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**Yeshiva University, Yeshiva College, New York, NY**

September 2019 - September 2020

**Student Research Assistant; Advisor: Dr. Gabriel Cwilich, PhD**

**Project:** Investigate the resilient in power law networks and electric grids and the problem of the disintegration of a network when following the removal of an initial fraction of its nodes

- Develop the mathematics of the problem
- Take part in coding and graphing the different cases of cascades
- Analyze and explain the relationship between the numerical results and real-life systems

**Yeshiva University, Stern College, New York, NY**

May 2019 - September 2019

**Summer Research Assistant; Advisor: Dr. Emil Prodam, PhD**

**Project:** Investigated the topological Valley-Chern Effect in a 3-dimensional mechanical crystal and showed the existence of bulk gap in body centered cubic lattice

- Actively helped with the development of the mathematics
- Wrote a code to numerically solve the problem
- Used plotting software to present different situations of the bulk gap and berry curvature of the system

## RELEVANT COURSE PROJECTS

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**Modern Physics, Quantum Physics in Astrophysics and Cosmology**

May 2019

Presented the life cycle of a star, why pulsar and supernovae are useful for measuring galactic distances; explained what Hubble's law is and how it is related to red shift and the expansion of the universe

**Computational Methods Physics, Self-Avoiding Random Walk**

May 2018

Presented computer code and critical exponents calculations in a 45-minute in-class presentation on two-and-three-dimension self-avoiding random walk, analyzing and graphing numerical results

## TEACHING RELATED EXPERIENCE

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**Yeshiva University, Yeshiva College, New York, NY**

September 2017 - September 2019

**Peer Tutoring**

- Selected by physics and mathematics faculty to work individually with students in both math and physics courses, providing them with academic support
- Developed individualized learning programs tailored to each student's needs, allowing them to better understand material

## EXTRACURRICULAR & LEADERSHIP

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*President, Physics Club*, Yeshiva University September 2018 - May 2020

- Work to create and organize club schedule including meetings, activities and events
- Plan and run physics colloquium on various topics
- Contact physics alumni to come and speak about their work experience

*Captain, Men's Basketball Team*, Yeshiva University September 2017 - May 2018

- Led the team to the first Skyline Conference championship in school history
- Responsible for school's first appearance in the NCAA National Championship
- Recognized as 1st-Team and 2nd-Leading Scorer, Skyline All-Conference

## SKILLS & INTERESTS

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<b>Computers</b>	Basic Fortran, Gnuplot, C++, and Python
<b>Microsoft Office</b>	Advanced Word, PowerPoint, Access, and Excel (VBA)
<b>Languages</b>	Hebrew (fluent), Spanish (conversational)
<b>Interest</b>	Basketball, Golf, Cycling, Art, and Classical Music