

# NABEEL REHEMTULLA

## CURRICULUM VITAE

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1225 S. University Ave  
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Ann Arbor, MI 48109

### EDUCATION

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<b>BS</b>	University of Michigan - Ann Arbor Major Astronomy & Astrophysics Honors Major Interdisciplinary Physics Minor Computer Science	Expected April 2021
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### AWARDS

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<b>Outstanding Undergraduate Poster</b> Michigan Institute for Data Science Poster Symposium 2020 <i>Non-Parametric Spherical Jeans Mass Estimation with B-Splines</i>	November 2020
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### RESEARCH EXPERIENCE

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**Non-Parametric Spherical Jeans Mass Estimation with B-Splines** Fall 2017 – Present  
University of Michigan, Ann Arbor  
Advisor: Dr. Monica Valluri; Collaborator/Co-author: Eugene Vasiliev

- Developed a novel implementation of Spherical Jeans Modeling to estimate the mass profile of halos and map the system's dark matter
- Thoroughly tested the routine with self-made simulated halos and halos from the Auriga and Latte cosmological simulations
- Preparing for application to the Milky Way using DESI and Gaia data
- Journal paper intended for MNRAS and GitHub repository in prep.

**Star Formation Rate in Merger Galaxies** Summer 2019  
Kitt Peak National Observatory, ASTRO 461 Ground Based Observatories  
Advisor: Dr. Sally Oey

- Proposed and designed an original observing project to be executed at Kitt Peak National Observatory and reviewed by a simulated TAC
- Observed at MDM's 1.3-m McGraw Hill telescope; reduced and analyzed data and presented findings orally and in writing

### STEM TEACHING EXPERIENCE

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**Astronomy Structured Study Group Co-Facilitator** January 2019 – April 2019  
University of Michigan, Department of Astronomy

- Taught astronomy basics to non-STEM majors enrolled in 100-level ASTRO courses
- Reconstructed the entire curriculum to better engage and retain students, yielded threefold increase in sustained attendance from previous semesters

## Academic Success Program Tutor

Fall 2019

University of Michigan, Athletic Department

- Tutored university athletes in coursework they struggled with
- Organized progress reports of students for program staff to enable athletes to succeed in their education

## PRESENTATIONS

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### Non-Parametric Spherical Jeans Mass Estimation with B-Splines

Hybrid Poster / Presentation, Michigan Institute of Data Science Poster Symposium 2020, November 2020.

Future Hybrid Poster / Presentation, 237<sup>th</sup> American Astronomical Society Meeting *DESI Special Session*, January 2021.

### Star Formation Rate in Merger Galaxies

Presentation, ASTRO 461 – Ground Based Observatories, May 2019.

### Ironing out Jeans: Developing a robust implementation of the spherical Jeans equation

Poster, Astronomy Undergraduate Poster Session, April 2019.

## OTHER PROJECTS

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### Website Architect for GHOSTS HST Survey

Summer 2020 – Present

University of Michigan, Department of Astronomy & Leibniz Institute for Astrophysics

- Proposed and designed a ground-up rebuild of the GHOSTS survey website to GHOSTS P.I. Roelof de Jong and team member Dr. Eric Bell
- Improving maintainability and expandability of the website by leveraging my expertise in computer science

## PROFESSIONAL AFFILIATIONS

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American Astronomical Society, Undergraduate Member

Fall 2020 – Present

Dark Energy Spectroscopic Instrument, Undergraduate Member

Fall 2020 – Present

## OUTREACH

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### Student Astronomical Society, University of Michigan, Ann Arbor

Executive Board, Treasurer

April 2020 – Present

### Ismaili Center of Detroit (Local Mosque), Southfield, MI

Regional Youth Volunteer Co-Facilitator

July 2018 – Present

Youth & Sports Board Regional Representative

July 2020 – Present

Religious Education Center Teacher (partially virtual)

Sept. 2019 - May 2020

English as a Second Language Classes Teacher

Summer 2018

## LANGUAGES

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**English:** Native Language

**Spanish:** Intermediate Listening, Speaking, Reading and Writing

**Programming Languages:** Expert in Python; Proficient in C++, HTML; Familiar with Java, Swift, JavaScript