NABEEL REHEMTULLA

CURRICULUM VITAE

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EDUCATION

PhD Northwestern University, CIERA September 2021 – *In Progress*
Astronomy

BS University of Michigan - Ann Arbor (GPA: 3.5) September 2017 – April 2021
Major Astronomy & Astrophysics with Highest Honors (Major GPA: 3.7)
Major Interdisciplinary Physics
Minor Computer Science

PUBLICATIONS

Rehemtulla, et al. 2022 "Non-Parametric Spherical Jeans Mass Estimation with B-Splines" *MNRAS*, 511, 5536.

RESEARCH EXPERIENCE

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

- Developed a novel implementation of spherical Jeans modeling to map the Milky Way's dark matter distribution
- Thoroughly tested the routine with self-simulated halos and halos from the Auriga and Latte cosmological hydrodynamic simulations
- Preparing for application to the Milky Way using observations from Gaia and DESI
- Meticulously documented code for release in a public GitHub repository: NIMBLE

ZTF Bright Transient Survey Neural Network Classifier January 2022 – Present
Northwestern University, Department of Physics and Astronomy; CIERA
Advisor: Adam Miller

- Building a neural network to identify transients that will become bright enough for inclusion in the ZTF Bright Transient Survey allowing for earlier spectra of transients

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

- Proposed an observing project to be executed at Kitt Peak National Observatory
- Observed at MDM Observatory's 1.3-m McGraw Hill telescope; reduced and analyzed data; formally presented findings

AWARDS

Chambliss Astronomy Achievement Award January 2021
American Astronomical Society – 237th Meeting
Non-Parametric Spherical Jeans Mass Estimation with B-Splines

Outstanding Undergraduate Poster November 2020
Michigan Institute for Data Science Poster Symposium 2020
Non-Parametric Spherical Jeans Mass Estimation with B-Splines

PRESENTATIONS

Non-Parametric Spherical Jeans Mass Estimation with B-Splines
Hybrid Poster / Presentation, Michigan Institute for Data Science Poster Symposium 2020, November 2020; Won Outstanding Undergraduate Poster award.

Hybrid Poster / Presentation, 237th American Astronomical Society Meeting *DESI Special Session*, January 2021; Won Chambliss Astronomy Achievement award.

Star Formation Rate in Merger Galaxies
Presentation, ASTRO 461: Ground Based Observatories, May 2019.

TEACHING EXPERIENCE

Religious Education Center Teacher Sept. 2019 – May 2020
Ismaili Center of Detroit (local mosque)

- Instructed a weekly class of 7th and 8th grade mosque members in the significance behind religious practices and Islamic history
- Adapted instruction to maintain student engagement in transition to remote classes

Academic Success Program Tutor Fall 2019
University of Michigan, Athletics Department

- Met with student athletes in 1-on-1 sessions to supplement their learning in the coursework they struggled with
- Documented student progress for program staff to monitor their academic success

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

- Instructed non-STEM majors in weekly meetings covering astronomy fundamentals
- Redesigned the entire curriculum to better engage and retain students, yielded threefold increase in sustained attendance from previous semesters

English as a Second Language (ESL) Teacher Summer 2018
Ismaili Center of Detroit (local mosque)

- Taught a group of young adult refugees intermediate level English, focusing on communication skills necessary in applying to jobs

OTHER PROJECTS

Website Architect for GHOSTS HST Survey Summer 2020 – Summer 2021
University of Michigan, Dept. of Astronomy & Leibniz Institute for Astrophysics Potsdam

- Proposed and designed a ground-up rebuild of the GHOSTS Hubble Space Telescope survey website to GHOSTS P.I. Roelof de Jong
- Improving maintainability and expandability of the survey website by leveraging my expertise in computer science

OUTREACH

Student Astronomical Society, University of Michigan, Ann Arbor
Executive Board, Treasurer April 2020 – April 2021

Ismaili Center of Detroit (Local Mosque), Southfield, MI
Regional Youth Volunteer Co-Facilitator July 2018 – June 2021
Youth & Sports Board Regional Representative July 2020 – June 2021

LANGUAGES

English: Native Language; **Spanish**: Intermediate Listening, Speaking, Reading and Writing
Programming Languages: Proficient in Python, C++, HTML; Familiar with Java, Swift