

Sabina Sagynbayeva

Curriculum Vitae



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RESEARCH INTERESTS

I am an astrophysicist, who primarily works on the past, present, and future of exoplanets – I study planetary dynamics and planet formation to understand the architecture of exoplanets. In the meantime, I also work on stars that host those exoplanets and stellar characterization by studying their surface activity using the time-series data from *Kepler* and *TESS* telescopes. I am broadly interested in general analytical techniques, astro-statistics, and numerical simulations.

EDUCATION

- 2021 - PRESENT **PhD:** Physics (Astrophysics)
*Deferred my admission to Spring 2021 due to COVID-19
Stony Brook University, Stony Brook, NY
- 2021 - 2023 **MA:** Physics (Astrophysics)
Stony Brook University, Stony Brook, NY
- 2016 – 2020 **Bachelor of Science:** Physics
Minor: Mathematics, Literature
Nazarbayev University, Astana, Kazakhstan

RESEARCH POSITIONS

Kavli Institute for Theoretical Physics

JAN 2025 – JUN 2025 (FT)

Advisors: Dr. Lars Bildsten, Dr. Omer Blaes

Guest Researcher and KITP Grad Fellow

Stony Brook University and Flatiron Institute

CURRENT, FROM FEB 2021 (FT)

Advisors: Dr. Phil Armitage, Dr. Will Farr

Research Project Assistant and Guest Researcher at CCA

Nazarbayev University

JUN 2020 – AUG 2020 (FT)

Advisor: Dr. Daniele Malafarina

Research Assistant

University of Cambridge

MAY 2019 – AUG 2019 (FT)

Advisors: Dr. Roman Rafikov, Dr. William Béthune

Research Intern

Nazarbayev University

AUG 2018 – DEC 2019 (PT)

Advisors: Dr. Ernazar Abdikamalov, Dr. Dana Alina

Research Assistant

PUBLICATIONS: 1ST AUTHOR

Sabina Sagynbayeva et al. “Optimizing Habitable Worlds Observatory’s Orbital Characterization of Cold Giants and Habitable Worlds.” *In prep.*

Sabina Sagynbayeva et al. “Polka-dotted Stars: a Hierarchical Model for Mapping Stellar Surfaces Using Occultation Light Curves.” *In prep.*

Sabina Sagynbayeva et al. “Circumplanetary Disks are Rare around Planets at Large Orbital Radii: A Parameter Survey of Flow Morphology around Giant Planets.” *In review.*

PUBLICATIONS: NTH AUTHOR

Briley Lewis et al. [including **S. Sagynbayeva**]. “Exploring the Effects of Astrobites Lesson Plans on Undergraduate Astronomy Students.” *Submitted*.

Thayne Currie et al. [including **S. Sagynbayeva**]. “Direct Imaging and Astrometric Discovery of a Superjovian Planet Orbiting an Accelerating Star.” *Science* (2023).

Daniele Malafarina, **Sabina Sagynbayeva**. “What a difference a quadrupole makes?” *General Relativity and Gravitation* (2021).

D. Alina et al. [including **S. Sagynbayeva**]. “Large-scale magnetic field in the Monoceros OB-1 East molecular cloud.” *Astronomy & Astrophysics* (2020).

AWARDS & FELLOWSHIPS

KITP Graduate Fellowship

An opportunity for advanced physics doctoral students to spend a minimum period of 5 months at the Kavli Institute for Theoretical Physics.

2024-2025

2024

Peter Kahn Prize

An award for “outstanding research”.

2023

The Other Worlds Laboratory Exoplanet Summer Program

The program that allows to visit UC Santa Cruz for three weeks to work on a project with an UCSC faculty.

2023 – 2024

Frontera Computational Science Fellowship

1-year fellowship for graduate students with an opportunity to compute on Frontera.

2022 – 2024

LSSTC Data Science Fellowship Program

The program that consists of six week-long sessions on data science.

2020

Young Researchers Alliance FRIP program

The stipend awarded to students for research projects. Stipend: \$1,000

2019

Yessenov Foundation Scholarship

Awarded to ten best students from Kazakhstan for a research internship in the US and European universities and laboratories. Funding: \$7,500

SCIENCE TALKS & POSTERS : POSTER

Know Thy Star 2, Caltech 

Feb 2025

MAPL Lab Group Meeting, University of California Santa Barbara


Feb 2025

Planet Formation group meeting, Flatiron Institute (CCA)

Oct 2024

High-Resolution Exoplanet and Stellar Characterization 

Jul 2024

Cool Stars 22, University of California San Diego 

Jun 2024

Frontera Talk, Texas Advanced Computing Center

May 2024

New York Area Exoplanets Meeting (NYAEM) 2024

May 2024

Lunch Talk, Columbia University

Feb 2024

Bay Area Exoplanet Meeting 44, University of California Santa Cruz

Jul 2023

University of California Santa Barbara

Jul 2023

OWL talk, University of California Santa Cruz

Jul 2023

StanCon 2023, Washington University in St. Louis

Jun 2023

Emerging Researchers in Exoplanet Science, Yale University 

Jun 2023

Origins of Solar Systems, Gordon Research Conference 

Jun 2023

Athena++ workshop, Flatiron Institute (CCA)

May 2023

Gravitational Waves group meeting, Flatiron Institute (CCA)

Oct 2022

Seminar, University of Kansas

May 2022

PUBLIC OUTREACH TALKS : WATCHABLE

The formation of gas giants

iTelescope Webinar Series

MAR 2023

Oceans in the Solar System

Astronomy on Tap, New York City

AUG 2022

How do planets form?

Astronomy on Tap, Baton Rouge

APR 2021

TEACHING APPOINTMENTS

Teaching Assistant

Course: Classical Physics Lab

Department of Physics & Astronomy, Stony Brook University

MAY 2023 – JUL 2023

Group Project Leader

Women in Science and Engineering program

Stony Brook University

MAR 2022 – APR 2022

Teaching Assistant

Course: Introduction to Planetary Sciences

Department of Physics & Astronomy, Stony Brook University

AUG 2021 – DEC 2021

Tutor of Mathematics

Courses: Calculus I,II,III, Linear Algebra, Ordinary Differential Equations, Real Analysis

Department of Mathematics, Nazarbayev University

JAN 2017 – JAN 2019

ACADEMIC AND DEPARTMENTAL LEADERSHIP AND SERVICE

Steering Committee Member

NASA HWO Demographics and Architectures Sub-WG

MAY 2024 –

Executive Secretary

NASA Astrophysics Theory Program (ATP)

OCT 2023

Senator for the Department of Physics & Astronomy, Member of the Graduate DEI Committee

Graduate Student Organization, Stony Brook University

SEP 2021 – MAY 2023

Underclass person-at-large & Director of External Affairs

Physics Graduate Student Association, Department of Physics & Astronomy, Stony Brook University

JUN 2021 – JUN 2022

Member of the Diversity Committee

Department of Physics & Astronomy, Stony Brook University

MAR 2021 – SEP 2021

Physics Department Representative

Student Council of Nazarbayev University

SEP 2017 – MAY 2020

SELECTED OUTREACH

Writer for [Astrobites.org](https://astrobites.org)

A website where graduate students publish daily summaries of recent papers on astro-ph.

I also chaired the Advertising and Undergraduate Committees.

JAN 2021 – JAN 2023

President of the Women in Physics Club

Nazarbayev University

APR 2018 – MAY 2020

Volunteer at the “Education for all” center

An organization that helps children with mental and physical disabilities.

I organized the first three inclusive musical theatre performances in Kazakhstan

OCT 2017 – SEP 2020

COMPUTATIONAL SKILLS

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|--------------------------------|---|
| PROGRAMMING / MARKUP LANGUAGES | Python, C/C++, IDL, SQL, HTML, JavaScript, Mathematica, \LaTeX |
| HYDRO CODES | Athena++, PLUTO |
| N-BODY CODES | REBOUND |
| FRAMEWORKS / TOOLS | git, GitHub, ds9, Slurm |
| SUPERCOMPUTING CLUSTERS | <i>seawulf</i> at SBU, <i>Frontera</i> at the Texas Advanced Computing Center, <i>rusty</i> at Flatiron Institute |