

# 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

**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.*

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

	2024-2025
<b>KITP Graduate Fellowship</b>	
An opportunity for advanced physics doctoral students to spend a minimum period of 5 months at the Kavli Institute for Theoretical Physics.	2024
<b>Peter Kahn Prize</b>	
An award for “outstanding research”.	2023
<b>The Other Worlds Laboratory Exoplanet Summer Program</b>	
The program that allows to visit UC Santa Cruz for three weeks to work on a project with an UCSC faculty.	2023 – 2024
<b>Frontera Computational Science Fellowship</b>	
1-year fellowship for graduate students with an opportunity to compute on Frontera.	2022 – 2024
<b>LSSTC Data Science Fellowship Program</b>	
The program that consists of six week-long sessions on data science.	2020
<b>Young Researchers Alliance FRIP program</b>	
The stipend awarded to students for research projects. Stipend: \$1,000	2019
<b>Yessenov Foundation Scholarship</b>	
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

<b>The formation of gas giants</b> 	MAR 2023
iTelescope Webinar Series	AUG 2022
<b>Oceans in the Solar System</b>	
Astronomy on Tap, New York City	APR 2021
<b>How do planets form?</b> 	
Astronomy on Tap, Baton Rouge	

## TEACHING APPOINTMENTS

<b>Teaching Assistant</b> <b>Course:</b> Classical Physics Lab Department of Physics & Astronomy, Stony Brook University	MAY 2023 – JUL 2023
<b>Group Project Leader</b> Women in Science and Engineering program Stony Brook University	MAR 2022 – APR 2022
<b>Teaching Assistant</b> <b>Course:</b> Introduction to Planetary Sciences Department of Physics & Astronomy, Stony Brook University	AUG 2021 – DEC 2021
<b>Tutor of Mathematics</b> <b>Courses:</b> 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

<b>Steering Committee Member</b> NASA HWO Demographics and Architectures Sub-WG	MAY 2024 –
<b>Executive Secretary</b> NASA Astrophysics Theory Program (ATP)	OCT 2023
<b>Senator for the Department of Physics &amp; Astronomy, Member of the Graduate DEI Committee</b> Graduate Student Organization, Stony Brook University	SEP 2021 – MAY 2023
<b>Underclass person-at-large &amp; Director of External Affairs</b> Physics Graduate Student Association, Department of Physics & Astronomy, Stony Brook University	JUN 2021 – JUN 2022
<b>Member of the Diversity Committee</b> Department of Physics & Astronomy, Stony Brook University	MAR 2021 – SEP 2021
<b>Physics Department Representative</b> Student Council of Nazarbayev University	SEP 2017 – MAY 2020

## SELECTED OUTREACH

<b>Writer for <a href="https://astro.bites.org/">Astrobites.org</a></b> 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
<b>President of the Women in Physics Club</b> Nazarbayev University	APR 2018 – MAY 2020
<b>Volunteer at the “Education for all” center</b> 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

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