Sabina Sagynbayeva

Curriculum Vitae

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https://github.com/ssagynbayeva

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

JAN 2025 – JUN 2025 (FT)

Kavli Institute for Theoretical Physics

Advisors: Dr. Lars Bildsten, Dr. Omer Blaes
Guest Researcher and KITP Grad Fellow

CURRENT, FROM FEB 2021 (FT)

Stony Brook University and Flatiron Institute

Advisors: Dr. Phil Armitage, Dr. Will Farr
Research Project Assistant and Guest Researcher at CCA

JUN 2020 – AUG 2020 (FT)

Nazarbayev University

Advisor: Dr. Daniele Malafarina
Research Assistant

MAY 2019 – AUG 2019 (FT)

University of Cambridge

Advisors: Dr. Roman Rafikov, Dr. William Béthune
Research Intern

AUG 2018 – DEC 2019 (PT)

Nazarbayev University

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. "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

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

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

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

MAR 2023

The formation of gas giants

iTelescope Webinar Series

AUG 2022

Oceans in the Solar System

Astronomy on Tap, New York City

APR 2021

How do planets form?

Astronomy on Tap, Baton Rouge

TEACHING APPOINTMENTS

MAY 2023 – JUL 2023

Teaching Assistant
Course: Classical Physics Lab
Department of Physics & Astronomy, Stony Brook University

MAR 2022 – APR 2022

Group Project Leader
Women in Science and Engineering program
Stony Brook University

AUG 2021 – DEC 2021

Teaching Assistant
Course: Introduction to Planetary Sciences
Department of Physics & Astronomy, Stony Brook University

JAN 2017 – JAN 2019

Tutor of Mathematics
Courses: Calculus I,II,III, Linear Algebra, Ordinary Differential Equations, Real Analysis
Department of Mathematics, Nazarbayev University

ACADEMIC AND DEPARTMENTAL LEADERSHIP

MAY 2024 –

Steering Committee Member
NASA HWO Demographics and Architectures Sub-WG

SEP 2021 – MAY 2023

Senator for the Department of Physics & Astronomy, Member of the Graduate DEI Committee
Graduate Student Organization, Stony Brook University

JUN 2021 – JUN 2022

Underclass person-at-large & Director of External Affairs
Physics Graduate Student Association, Department of Physics & Astronomy, Stony Brook University

MAR 2021 – SEP 2021

Member of the Diversity Committee
Department of Physics & Astronomy, Stony Brook University

SEP 2017 – MAY 2020

Physics Department Representative
Student Council of Nazarbayev University

SELECTED OUTREACH

JAN 2021 – PRESENT

Writer for Astrobites.org
A website where graduate students publish daily summaries of recent papers on astro-ph.
I also chaired the Advertising and Undergraduate Committees.

APR 2018 – MAY 2020

President of the Women in Physics Club
Nazarbayev University

OCT 2017 – SEP 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

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	*seawulf* at SBU, *Frontera* at the Texas Advanced Computing Center