Sasha (Alexander A.) Kaurov, Ph.D.

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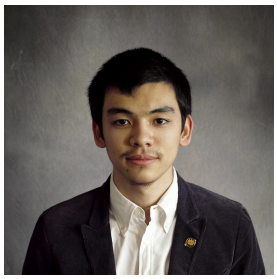

10+ years of experience in astronomy, astrophysics and cosmology utilizing , and 2+ years of data-driven sociological research. Interested in meaningful incorporation of novel technology into science outreach. Enthusiastic about improving the pathways in academia and founded a mentoring network.

WORK EXPERIENCE

Harvard University — *Visitor, History of Science*

Boston, MA, Starting 01/2022

- **Dean's Competitive Fund for Promising Scholarship, Co-PI Naomi Oreskes** 01 — 07/2022

Blue Marble Space Institute of Science — *Affiliate Research Scientist*

Seattle, WA, 11/2021 — PRESENT

The Institute for Advanced Study — *Visitor, Program in Interdisciplinary Studies*

Princeton, NJ, 08/2021 — PRESENT

The Institute for Advanced Study — *Postdoctoral researcher*

Princeton, NJ, 2016 — 07/2021

- **William D. Loughlin fellowship** 2020 — 2021
- **IBM Einstein fellowship** 2019 — 2020
- **William D. Loughlin fellowship** 2018 — 2019
- **Eric and Wendy Schmidt fellowship** 2017 — 2018
- *Paternity leave* 01 — 06/2017
- **AMIAS fellowship** 2016 — 2017

The University of Chicago — *Research Assistant*

Chicago IL, 2012 — 2016

Fermilab — *Research Assistant*

Batavia IL, 2012 — 2013

- **Fermilab Fellowship in Theoretical Physics** 2012 — 2013

The University of Chicago — *Teaching Assistant*

Chicago IL, 2011 — 2012

- PHSC 12000 **The Origin of Universe & How We Know**
- PHSC 11900 **Introductory astronomy course**
- PHSC 13500 **Chemistry — The Atmosphere**

EDUCATION

The University of Chicago — *Ph.D. in Astronomy & Astrophysics*

Chicago IL, 2011 — 2016

Thesis: "Analytical and numerical modeling of the epoch of cosmic reionization."

- **McCormick Fellowship** 2011 — 2012

St. Petersburg State Polytechnic University — *B.Sc. in Astrophysics*

St. Petersburg, Russia, 2007 — 2011

Thesis: "Multidimensional numerical simulations of heat transfer in the crusts of neutron stars."

- **Russian Academy of Science fellowship (Pulkovo, Russia)** 2009 — 2011
- **Ioffe Institute Fellowship** 2009 — 2010

PUBLIC SERVICE

- The National Aeronautics and Space Administration (NASA) grant review panelist.
- Referee for Monthly Notices of the Royal Astronomical Society.

REFERENCES

Academic:

Nickolay Gnedin, professor at the University of Chicago and senior scientist at Fermilab
gnedin@fnal.gov

Matias Zaldarriaga, professor at the Institute for Advanced Study
matiasz@ias.edu

Education and outreach:

Piet Hut, professor of Interdisciplinary Studies at the Institute for Advanced Study
piet@ias.edu

Mark Subbarao, president of the International Planetarium Society,
lead of NASA's Scientific Visualization Studio
mark.u.subbarao@nasa.gov

SELECTED ASTRONOMY PROJECTS

- **Cosmology and Astrophysics with 21 cm signal.** We leverage numerical cosmological simulations to forward model the observed optical and radio signals and then design machine learning techniques capable of meaningfully interpreting the mock data.

- **Time-domain Astronomy and Highly Magnified Stars in Lensing Clusters.** We mine the existing data and develop methods for the upcoming space telescopes to detect the brightness variability of lensed galaxies and then build theoretical models to constrain the physics of dark matter.

- **Geological Evidence of Near-Earth Supernova Explosion.** We adopt numerical models of the Inter-Stellar Medium to estimate the flux of the supernova ejecta that can reach the Solar system.

SELECTED DATA-DRIVEN SCIENCE COMMUNICATION PROJECTS

- **Leveraging Public and Marketing Data for Probing Public's Perception of Science.** Together with Prof. Naomi Oreskes (Harvard) we explore new methods of deducing public's trust in science by creating indicators from large datasets, potentially replacing traditional methods of field surveys.

- **AI for democratizing access to Higher Ed.** We adapt NLP and other ML techniques to analyze the freely available online learning resources and aggregate them in a way to make them accessible to students with any background or experience.

- **Quantitative Methods for Accessibility Estimations.** Together with Mark SubbaRao (President, International Planetarium Society) we studied the accessibility of the planetariums in the United States based on census data and Google Maps API.

SELECTED OUTREACH AND SCIENCE COMMUNICATION PROJECTS

- **STEM XR initiative** https://stemxr.org **.** I founded a network of 50+ science communicators, theater professionals and technologists from 18 countries who joined on the quest of combining novel immersive tech and theatrical storytelling techniques for creating science-focused shows and experiences.

- **Science communication in the shared virtual worlds.** I designed and supervised the development of virtual world experiences in collaboration with the Earth Life Science Institute (ELSI, Tokyo Institute of Technology) and the Japan Aerospace Exploration Agency (JAXA) about the Hayabusa2 mission and another one for the Nautilus science magazine.

MENTORING

- I co-founded a mentoring program that connects undergraduate and graduate students from post-Soviet countries (Russia, Belarus, Ukraine and Kazakhstan) with mid-career scientists from all over the world. We generate around 100 mentor-mentee pairs each quarter from ~20 countries. https://www.thesciencementors.com/en

- I supervised the B.Sc. thesis projects of several undergraduate students from St. Petersburg State Polytechnic University (my alma mater):
  - Evgenii Chaikin (B.Sc., 2017), M.Sc. fellowship at the University of Bonn (Germany), currently Ph.D. student at Leiden Observatory (Netherlands).
  - Nadezhda Tuberozova (B.Sc., 2018), a graduate student at the University of Bonn (Germany).
  - Ekaterina Leonova (B.Sc., 2019), M.Sc. fellow at the University of Geneva (Switzerland), Ph.D. student at the University of Amsterdam.