Vsevolod Nedora, Ph.D

Researcher, Data Scientist

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Experience

MAX-PLANCK-INSTITUT FÜR GRAVITATIONSPHYSIK | Postdoctoral Researcher

November 2021 – Current | Potsdam, Germany

- I developed and maintained multiple Python and C++ modelling tools, including the `PyBlastAfterglow` code that has been used for multiple peer-reviewed publications.
- Working with large collaboration, including GRANDMA collaboration, analyzing observational data and performing model predition.

FRIEDRICH-SCHILLER-UNIVERSITÄT | Researcher

October 2018 – November 2021 | Jena, Germany

- I post processed and analyzed Big Data outputs of large hydrodynamic simulations, extracting and statistically analyzing physical quantities.
- I taught multiple classes on a graduate and undergraduate level, and worked with individual students on their graduate projects.
- I performed end-to-end statistical analysis of properties of matter ejected at neutron star mergers, performing data collection, cleaning, analysis and modeling using regression models, and publishing results in a peer-review journal.

Projects

BIG DATA PROCESSING PIPELINE | Python

2021

- I designed a pipeline to post process an output from large numerical hydrodynamic simulations of colliding neutron stars. The pipeline collates various output files, extracts phsyical information and creates descriptive figures
- The pipeline was used by my team for several peer-reviewed scientific publications

STATISTICS MODEL FOR EJECTED MATTER | Python

2022

- I designed a set of tools to statistically study the properties of matter ejected in colliding neutron stars, and created a model that performs better than others, using reduced χ^2 statistics and residuals analysis.
- The model has been used by multiple groups for Bayesian and ML analysis.

Education

FRIEDRICH-SCHILLER-UNIVERSITÄT JENA

Ph.D. in Theoretical Physics

October 2018 – November 2022 | Theoretisch-Physikalisches Institute, Jena, Germany

Grade: Magna cum laude

RHEINISCHE FRIEDRICH-WILHELMS-UNIVERSITÄT BONN

Master's degree in Astrophysics

September 2016 – October 2018 | Argerlander Institute for Astronomy, Bonn, Germany

Cum. GPA: 2.0 / 1.0

FAR-EASTERN FEDERAL UNIVERSITY

Bachelor's degree in Physics

September 2013 – October 2018 | Far-Eastern Federal University, Vladivostok, Russia

Cum. GPA: 5.0 / 5.0

Skills

Numerical modeling & Simulations
Statistical Modeling
Data Visualization
ML Algorithms
Clustering & Classification
High-performance computing

Analytical thinking
Problem solving
Project management
Public speaking
Technical writing
Teaching
Collaboration
Communication

Technical expertise

Languages

• Python • C++ • LaTeX • SQL

Packages and services:

ScikitLearn • Tensorflow • PyTorch • Numpy • scipy • Pandas • Plotly/Dash • HDF5 • Git • Docker

Mathematical methods:

Neural networks • Bayesians statistics • Gaussian processes • ODEs • Monte-Carlo

References

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