

ROBERT ROSATI

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EMPLOYMENT

University of Alabama in Huntsville / NASA - MSFC *02/2025 - present*

Research Scientist, LISA and Stochastic Gravitational Wave Backgrounds

NASA – Marshall Space Flight Center *01/2022 - 01/2025*

NASA Postdoctoral Program Fellow, LISA and Stochastic Gravitational Wave Backgrounds

Supervisor: Tyson Littenberg

EDUCATION

The University of Texas at Austin *2014 - 2021*

PhD in Physics, Advisor: Sonia Paban (GPA 3.87)

The University of Alabama *2010 - 2014*

BEng in Electrical Engineering, double major in Physics (Summa Cum Laude)

TEACHING EXPERIENCE

UT-Austin *2014-2021*

- TA for Graduate Quantum II - 1 sem. (Weinberg)
- AI for Physical Science 303 - 3 years (Instructor of record for the class)
- TA for Astrophysics - 1 year (Weinberg)
- TA for Junior-level Physics major lab - 1 sem. (Sitz)
- TA for Electronics Techniques, upper level electronics lab - 2 years (Erskine)

SELECTED TALKS

Astrophysics Seminar (invited talk), *University of Milano-Bicocca* *December 2024*

Prototype Stochastic Gravitational Wave Background Recovery in the LISA Global Fit Residual

LISA Cosmology Working Group Meeting (invited talk), *Porto, Portugal* *June 2024*

Reconstruction of Scalar-Induced Gravitational Waves

Amaldi 15, *Online* *July 2023*

Recovering Primordial Stochastic Gravitational Wave Backgrounds in the LISA Global Fit

LISA Cosmology Working Group Meeting, *Stavanger, Norway* *June 2023*

Recovering Primordial Stochastic Gravitational Wave Backgrounds in the LISA Global Fit

Nordic HET Seminar (invited talk), *Online* *December 2022*

Rapid-turn inflation in supergravity is rare and tachyonic

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Simulating the Early Universe with `Inflation.jl`

`SymbolicTensors.jl` – high-level tensor manipulation in Julia

Multi-field Inflation in High-Slope Potentials

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Inflation in Modified Dyson Brownian Motion Potentials

SELECTED SOFTWARE

`Inflation.jl` – a Julia package for many-field inflationary simulations using the transport method.
<https://github.com/rjrosati/Inflation.jl>

`SymbolicTensors.jl` – a Julia package for computer algebra of Einstein-notation tensor expressions.
<https://github.com/rjrosati/SymbolicTensors.jl>

Other expertise in: data analysis in Python (`numpy`, `scipy`, `astropy`, `jax`, `CuPy`, `PyTorch`, `emcee`, `Eryn`, etc), high-performance and parallel computing in C/C++ and Julia, Linux system administration

OUTREACH

LISA Data Analysis Summer Workshop – 2023. Traveled to Vanderbilt to help organize a summer school for disadvantaged students from Fisk University

Astronomy on Tap talk – 2017. Public lecture about cosmic inflation.

Girl Day – 2017-2019. Volunteer for a yearly UT event focused on exposing girls to STEM.

PUBLICATIONS

- [1] R. Rosati and T. B. Littenberg, *Prototype Stochastic Gravitational Wave Background Recovery in the LISA Global Fit Residual*, **2410.17180**.
- [2] P. Christodoulidis, E. Sfakianakis and R. Rosati, *Predictivity in multi-field models with non-minimal couplings, in prep* (2024) .
- [3] LISA COSMOLOGY WORKING GROUP collaboration, *Reconstruction of the Primordial Powerspectrum from Scalar-induced Gravitational Waves, in prep* (2024) .
- [4] V. Aragam, S. Paban and R. Rosati, *Primordial Stochastic Gravitational Wave Backgrounds from a Sharp Feature in Three-field Inflation II: The Inflationary Era*, **2409.09023**.
- [5] V. Aragam, S. Paban and R. Rosati, *Primordial stochastic gravitational wave backgrounds from a sharp feature in three-field inflation. Part I. The radiation era*, *JCAP* **11** (2023) 014 [2304.00065].
- [6] P. Christodoulidis and R. Rosati, *(Slow-)twisting inflationary attractors*, *JCAP* **09** (2023) 034 [2210.14900].

- [7] V. Aragam, R. Chiovoloni, S. Paban, R. Rosati and I. Zavala, *Rapid-turn inflation in supergravity is rare and tachyonic*, *JCAP* **03** (2022) 002 [2110.05516].
- [8] V. Aragam, S. Paban and R. Rosati, *The Multi-Field, Rapid-Turn Inflationary Solution*, *JHEP* **03** (2021) 009 [2010.15933].
- [9] R. Rosati, *Inflation.jl – A Julia package for numerical evaluation of cosmic inflation models using the transport method*, July, 2020. 10.5281/zenodo.4708348.
- [10] P. Christodoulidis, D. Roest and R. Rosati, *Many-field Inflation: Universality or Prior Dependence?*, *JCAP* **04** (2020) 021 [1907.08095].
- [11] V. Aragam, S. Paban and R. Rosati, *Multi-field Inflation in High-Slope Potentials*, *JCAP* **04** (2020) 022 [1905.07495].
- [12] S. Paban and R. Rosati, *Inflation in Multi-field Modified DBM Potentials*, *JCAP* **1809** (2018) 042 [1807.07654].
- [13] P. B. Visscher, K. Munira and R. J. Rosati, *Instability Mechanism for STT-MRAM switching*, 1604.03992.

HONORS AND AWARDS

CNS Ongoing Graduate Student Summer Fellowship	2019,2020
Randall Undergraduate Research Award	2014
UA Electrical Engineering Distinguished Senior	2014
National Merit Scholarship	2010

ACTIVITIES

Research Assistant for UT Theory Group	2016-2021
Software Consultant for ProView Optics, LLC	June 2015
Research Assistant, Center for Materials for Information Technology at UA	2012-2014
Reservoir Management Intern at US Army Corps of Engineers	Summers 2010-2012
Eagle Scout	2009