

Curriculum Vitae

Siddharth Mahesh

Ph.D. Candidate

Department of Physics and Astronomy , West Virginia University

E-mail: maheshsiddharth94@gmail.com

ORCID: 0000-0002-8340-614X

Education

Ph.D. Physics & Astronomy

West Virginia University(2018-2026)

Expected: Summer 2026

Advisors: Sean McWilliams, Zach Etienne

Thesis topic: First-principles approach to the evolution of binary black holes and their environments. Documentation and optimization of highly accurate inspiral-merger-ringdown waveform models. First-principles approaches to results from circumbinary disk simulations.

MSci.(Hons) Mathematics & Physics

King's College London(2012-2017)

Graduated: 27 July 2017

Degree Classification: First Class Honors

Publications

Submitted / In Preparation

Accepted in Journals

1. Michal Pirog, **Siddharth Mahesh**, and Sean T. McWilliams, “Analytical and Numerical Methods for Circumbinary Disk Dynamics. II. Inclined Disks”. *ApJ* 980.1 (Feb. 2025) p. 130, doi: 10.3847/1538-4357/ada55e.
 2. **Siddharth Mahesh**, Sean T. McWilliams, and Michal Pirog. “Analytical and Numerical Analysis of Circumbinary Disk Dynamics. I. Coplanar Systems”. In: *ApJ* 973.1, 18 (Sept. 2024), p. 18. doi: 10.3847/1538-4357/ad6149.
 3. **Siddharth Mahesh**, Sean T. McWilliams, and Zachariah Etienne (2025). Spinning Effective-to-Backwards One Body (SE-BOB): combining Effective One-Body inspirals and Backwards One-Body merger-ringdowns for aligned spin black hole binaries. (<https://arxiv.org/abs/2508.20418>, Accepted in PRD)
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Collaborations

1. Collaborator on NRPy.
Incorporated the SEOBNRv5 aligned spin model into the BlackHoles@Home infrastructure, enhancing computational efficiency for large-scale simulations.
 2. Core Member: LISA Waveform WG
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Teaching & Outreach

1. Invited Speaker, Lunch Talk, Green Bank Observatory, June 2024
Talk Title: Analytical and Numerical Analysis of Circumbinary Disk Dynamics – I: Coplanar Systems
2. Faculty Interview Panel, Graduate Member, Department of Physics and Astronomy, West Virginia University, Academic Year 2018-2019
Interviewed candidates for a tenure-track faculty position as part of a graduate student panel.
3. WVU Representative, West Virginia Press Association Dinner 2019
Presented on the physics of ground-based gravitational wave interferometers with a miniature LIGO model.
4. Instructor: Written Qualifier Review, West Virginia University, Fall 2019
Taught classical mechanics topics at the advanced undergraduate level for incoming graduate students.