



Nathaniel Starkman
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📄 Publications ✖ arXiv 📦 Zenodo 📞 0000-0003-3954-3291



🏛️ EDUCATION

2018 – 2024 **PhD in Astronomy & Astrophysics**, University of Toronto 🔗 Toronto, ON, Canada
2014 – 2018 **B.S. in Mathematical Physics and Astronomy**, Case Western Reserve University 🔗 Cleveland, OH, USA

🏢 PROFESSIONAL APPOINTMENTS

2024 – 2027 **Postdoctoral Associate**, MIT Kavli Institute for Astrophysics and Space Research 🔗 Cambridge, MA, USA
2021 – **Coordinator (2025 – 2028), Strategic Planner (2025 – 2026) & Core Developer**, Astropy 🔗 Remote

🏆 GRANTS & FELLOWSHIPS

Feb 2024 **Brinson Prize Fellowship**, Prize Fellow, Brinson Foundation 🔗 USD 360,000
2020 – 2023 **NSERC - CGS D** 🔗 CAD 105,000
2018 – 2024 **University of Toronto Graduate Fellowship**, University of Toronto CAD 23,000–32,000 p.a.

🏆 AWARDS

Jan 2025 **AAS Lancelot M. Berkeley–New York Community Trust Prize**, American Astronomical Society 🔗, to the Astropy Collaboration

📖 PUBLICATIONS

Students I supervised or advised: [undergraduate†](#), [graduate†](#).

- Euclid Collaboration, **N. Starkman**, J. Nibauer, S. Pearson, [S. Wu†](#), M. Walmsley, L. Necib, et al. *Euclid Quick Data Release (Q1): The geometry of dark matter halos from extragalactic streams*. Astronomy & Astrophysics [SUBMITTED](#) 🔗 ADS ✖ arXiv:2606.21774
- [C. Myers†](#), **N. Starkman**, L. Necib. *Reconstructing Galactic Gravitational Potentials from Stellar Kinematics with Physics-Informed Neural Networks*. Monthly Notices of the Royal Astronomical Society [SUBMITTED](#) 🔗 ADS ✖ arXiv:2606.18386 🔗
- [S. Wu†](#), **N. Starkman**, S. Pearson, J. Nibauer, J. Miro-Carretero, D. Martinez-Delgado. *Potamides: Mapping Dark Matter Halo Shapes from Stellar Stream Tracks in the Local Universe*. The Astrophysical Journal [ACCEPTED](#) 🔗 ADS ✖ arXiv:2605.07809
- N. Starkman**, J. Nibauer, J. Bovy, J. Webb, K. Tavangar, A. Price-Whelan, et al. *Stream Members Only: Data-Driven Characterization of Stellar Streams with Mixture Density Networks*. The Astrophysical Journal 980, 253 [10.3847/1538-4357/ad94f2](#) 🔗 ADS ✖ arXiv:2311.16960 🔗
- N. Starkman**, J. Bovy, J. Webb, D. Calvetti, E. Somersalo. *On the fast track: Rapid construction of stellar stream paths*. Monthly Notices of the Royal Astronomical Society 522, 5022 [10.1093/mnras/stad1166](#) ✖ arXiv:2212.00949 🔗 🔗 🔗 🔗

🔧 SOFTWARE DEVELOPMENT

phasecurvefit 📖2026
Paths through phase space

coordinax ⓘ
Coordinates in JAX

potamides 📖2026
Constrain gravitational potentials from stellar stream curvature

unxt 📖2025 ⓘ
Units in JAX

galax ⓘ📖
Galactic dynamics in JAX

Astropy 📖2022 ⓘ
Astronomy in Python