

Michael Tucker

Curriculum Vitae

✉ tucker.957@osu.edu

Research Interests: I am an observational astronomer focused on the time domain – supernovae, tidal disruption events, active galactic nuclei, and variable stars.

Positions Held

2022– **CCAPP Postdoctoral Fellow**, *Center for Cosmology and Astroparticle Physics*, The Ohio State University, Columbus, OH.

Education

2019–2022 **Doctorate of Philosophy: Astronomy**, *U.S. Dept. of Energy Computational Science Graduate Fellow*, Institute for Astronomy, University of Hawaii at Manoa, Advisor: B. J. Shappee.

2017–2019 **Master of Science: Astronomy**, *University of Hawai'i at Manoa*.

2013–2017 **Bachelor of Science: Physics (Cum Laude, University and Departmental Honors)**, *Appalachian State University*.

Projects

2018– **The Spectroscopic Classification of Astronomical Transients (SCAT) survey**, co-PI and founder. *Science Objectives:* Search for and characterize the exotic and unusual events in the time-variable sky including peculiar supernovae, tidal disruption events, interstellar objects, and more.

2023– **The ASAS-SN Low Surface Brightness Project**, co-PI. *Science Objectives:* Create the first all-sky image atlas using modern CCDs by stacking more than a decade of imaging from the All-Sky Automated Survey for SuperNovae (ASAS-SN).

Advising

2025– J. Ghammashi, Undergraduate, OSU. Topic: Late-time *HST* Imaging of the Type Ia supernova 2021aefx.

2023– E. Jennerjahn, Graduate, OSU. Topic: The Most Metal-poor Supernovae.

2023–2025 N. Flinner, Undergraduate, OSU. Topic: Core-collapse Supernovae in GALEX. Current PNC Bank employee.

2022–2024 V. Berger, Undergraduate, Pomona (co-advised). Topic: M-dwarf Flares in GALEX. Current MIT graduate student.

2022–2024 K. Neumann, Post-bac, OSU. Topic: Light Echoes of Tycho's SN and Cas A in ASAS-SN. Current Penn State graduate student.

2021–2022 A. Gardner, Undergraduate, UH Manoa. 2021 IfA Summer REU Program. Topic: Evolved planetary systems. Current State of Hawai'i employee.

2020–2021 L. Dubay, Undergraduate, Whitman. 2020 IfA Summer REU Program. Topic: Progenitors of Type Ia supernovae. Current OSU graduate student.

2019–2020 D. Rowan, Undergraduate, Haverford. 2019 IfA Summer REU Program. Topic: Variable white dwarfs. Former OSU graduate student, current NASA Hubble fellow.

Grants and Awards

2025 David J. Will Prize in Computational and Survey Science (OSU)

- 2024 *Hubble Space Telescope* Program GO 17837, PI: Tucker. 8 orbits in Cycle 32.
- 2023 *Hubble Space Telescope* Program GO 17429, PI: Tucker. 10 orbits in Cycle 31.
- 2018- *Ground-based observing*: 16 successful observing proposals as P.I. including 28 nights on 8 – 10 m telescopes (LBT, Keck, Gemini) and ~ 250 nights on 2 – 5 m telescopes. ≈ 300 total nights of observing experience on optical and near-IR instrumentation.
- 2018 U.S. Department of Energy Computational Science Graduate Fellowship

Seminars and Talks

Invited/Colloquia

- Sept. 2026 The Ohio State University, Columbus, OH
- Mar. 2025 University of Hawai'i, Hilo, HI
- Feb. 2025 Massachusetts Institute of Technology, Cambridge, MA.
- Jan. 2024 University of Melbourne, Melbourne, Australia.
- Jan. 2024 University of Sydney, Sydney, Australia.
- Sept. 2023 *The Golden Age of CVs and Related Objects - VI*, Palermo, Italy.
- June 2023 AAS workshop: *Small Telescopes in the Era of Large Surveys*, Albuquerque, NM.

Contributed

- Aug. 2025 "The Most Metal-poor Supernova." *Rise Time*, Purdue University, West Lafayette, IN.
- Feb. 2024 "SCAT Data Release 1: Spectra of 1000 Supernovae." *Transients Down Under*, Swinburne Institute of Technology, Melbourne, Australia.
- Nov. 2022 "SN2011fe: A Decade of Questions, Answers, and New Questions." *SuperVirtual 2022*.

Service & Outreach

- Oct. 2026 **Lead organizer:** *Type-Ia Progenitors and Cosmology in Light of DESI*, *Conceived a workshop at OSU's CCAPP to bring together experts on Type Ia supernova explosions with those using supernovae for cosmology, with a focus on DESI, Roman, and Rubin*, Oct. 14-16, 2026, Columbus, OH.
- 2023- **Review Panelist**, NASA's *Swift* Observatory, NSF's Astronomy and Astrophysics Grants.
- 2023, 2024 **Organizer:** **CCAPP Fellow Symposium**, *Center for Cosmology and AstroParticle Physics*, Columbus, OH.
- 2019- **Referee**, *ApJ*, *ApJL*, *AJ*, *MNRAS*, *OJAp*, *PASP*.
- 2017- **Public Lectures**, *Honolulu, HI, and Columbus, OH.*, I regularly give talks to local organizations, schools, and libraries about the scientific method, how astronomers conduct research in the modern era, and various research-related topics suitable for the public.

Teaching

- 2022- **Instruction**, *Columbus, OH*, ≈ 30 hours of substitute teaching across undergraduate and graduate courses in astronomy and physics.

Press Releases and Articles

- 2024 [OSU News](#): Novel supernova observations grant astronomers a peek into the cosmic past
- 2023 [OSU News](#): Galactic explosion offers astrophysicists new insight into the cosmos
- 2018 [AAS Nova](#): *A Black Hole X-Ray Binary Rises*.

Publications

14 first author, 14 with major contribution, and 58 additional papers. ≈ 2800 citations, $h \simeq 32$ as of 2026-06-01.

Submitted/Published

First author

I have published a total of 14 first-author papers, including 7 on the progenitors and explosions physics of Type Ia supernovae, 4 papers on the data, methods, and discoveries of the SCAT survey, and 3 additional papers on other interesting time-domain phenomena.

- 2026 *SCAT Data Release 1: 1810 optical spectra of 1330 transients.* **Tucker**, Huber, Shappee, et al., submitted to OJAp ([arXiv:2604.23794](#)).
- 2025 *Merging white dwarf binaries produce Type Ia supernovae in elliptical galaxies.* **Tucker**, [2025MNRAS.538L...1T](#).
- 2025 *Weighing The Options: The Unseen Companion in LAMOST J2354 is Likely a Massive White Dwarf.* **Tucker**, Wheeler, Rowan, et al., [2025OJAp....8E..61T](#).
- 2024 *The Extremely Metal-Poor SN 2023ufx: A Local Analog to High-Redshift Type II Supernovae.* **Tucker**, Hinkle, Angus, et al., [2024ApJ...976..178T](#).
- 2024 *The HST Non-Detection of SN Ia 2011fe 11.5yr After Explosion Further Restricts Single-Degenerate Progenitor Systems.* **Tucker** & Shappee, [2024ApJ...962...74T](#).
- 2022 *The Spectroscopic Classification of Astronomical Transients (SCAT) Survey: Overview, Pipeline Description, Initial Results, and Future Plans.* **Tucker**, Shappee, Huber, et al., [2022PASP..134I4502T](#).
- 2022 *The Whisper of a Whimper of a Bang: 2400 Days of the Type Ia SN 2011fe Reveals the Decay of ^{55}Fe .* **Tucker**, Shappee, Stanek, et al., [2022MNRAS.517.4119T](#).
- 2022 *A Rapid Ionization Change in the Nebular-Phase Spectra of the Type Ia SN 2011fe.* **Tucker**, Ashall, Shappee, et al., [2022ApJ...926L..25T](#).
- 2021 *An AMUSING Look at the Host-Galaxy of ASASSN-14ko Reveals a Second AGN.* **Tucker**, Shappee, Hinkle, et al., [2021MNRAS.506.6014T](#).
- 2021 *SN 2019yvq Does Not Conform to SN Ia Explosion Models.* **Tucker**, Ashall, Shappee, et al., [2021ApJ...914...50T](#).
- 2020 *Nebular spectra of 111 Type Ia supernovae disfavour single-degenerate progenitors.* **Tucker**, Shappee, Vallely, et al., [2020MNRAS.493.1044T](#).
- 2019 *No Stripped Companion Material in the Nebular Spectrum of the “Two-Component” Type Ia Supernova ASASSN-18bt.* **Tucker**, Shappee, & Wisniewski, [2019ApJ...872L..22T](#).
- 2018 *ASASSN-18ey: The Rise of a New Black Hole X-Ray Binary.* **Tucker**, Shappee, Holoien, et al., [2018ApJ...867L...9T](#).
- 2018 *White dwarf variability with gPhoton: pulsators.* **Tucker**, Fleming, Pelisoli, et al., [2018MNRAS.475.4768T](#).

Major contribution

These papers are published by my students and/or use proprietary data from projects I lead.

- 2025 *The ASAS-SN Low Surface Brightness Survey I: Proof-of-Concept and Potential Applications*. Jennerjahn, **Tucker**, Shappee, et al., submitted to OJAp ([arXiv:2506.14873](#)).
- 2024 *Echo Location: Distances to Galactic Supernovae From ASAS-SN Light Echoes and 3D Dust Maps*. Neumann, **Tucker**, Kochanek, et al., [2024OJAp....7E..98N](#).
- 2024 *A hidden population of massive white dwarfs: two spotted K + WD binaries*. Rowan, Jayasinghe, **Tucker**, et al., [2024MNRAS.529..587R](#).
- 2024 *Stellar Flares Are Far-Ultraviolet Luminous*. Berger, Hinkle, **Tucker**, et al., [2024MNRAS.532.4436B](#).
- 2023 *SCAT Uncovers ATLAS's First Tidal Disruption Event ATLAS18mlw: A Faint and Fast TDE in a Quiescent Balmer Strong Galaxy*. Hinkle, **Tucker**, Shappee, et al., [2023MNRAS.519.2035H](#).
- 2023 *Serendipitous Nebular-phase JWST Imaging of SN Ia SN 2021aefx: Testing the Confinement of ^{56}Co Decay Energy*. Mayker Chen, **Tucker**, Hoyer, et al., [2023ApJ...944L..28C](#).
- 2023 *A Swift Fix II: Physical Parameters of Type I Superluminous Supernovae*. Hinkle, Shappee, and **Tucker**, submitted to OJAp ([arXiv:2309.03270](#)).
- 2023 *Four years of Type Ia Supernovae Observed by TESS: Early Time Light Curve Shapes and Constraints on Companion Interaction Models*. Fausnaugh, Vallely, **Tucker**, et al., [2023ApJ...956..108F](#).
- 2022 *Late-Onset Circumstellar Medium Interactions are Rare: An Unbiased GALEX View of Type Ia Supernovae*. Dubay, **Tucker**, Do, et al., [2022ApJ...926...98D](#).
- 2020 *Signatures of bimodality in nebular phase Type Ia supernova spectra*. Vallely, **Tucker**, Shappee, et al., [2020MNRAS.492.3553V](#).
- 2020 *The Outburst of the Young Star Gaia19bey*. Hodapp, Denneau, **Tucker**, et al., [2020AJ....160..164H](#).
- 2020 *The Rise and Fall of ASASSN-18pg: Following a TDE from Early to Late Times*. Holoien, Auchettl, **Tucker**, et al., [2020ApJ...898..161H](#).
- 2019 *Detections and constraints on white dwarf variability from time-series GALEX observations*. Rowan, **Tucker**, Shappee, et al., [2019MNRAS.486.4574R](#).
- 2018 *Interstellar Interlopers: Number Density and Origin of 'Oumuamua-like Objects*. Do, **Tucker**, & Tonry, [2018ApJ...855L..10D](#).

Additional papers

- 2026 *A Natural $\gtrsim 100\times$ Telescope: Discovery of the Strongly Lensed Type II SN 2025mkn at $z = 1.37$* . Aydi, Monnier, Merand, et al., [2026NatAs..10..271A](#).

- 2026 *ASAS-SN Rates IV: Constraints on the Kilonova Rate*. Desai, Shappee, Kochanek, et al., submitted to OJAp ([arXiv:2603.26871](#)).
- 2026 *The Enigmatic Type Icn Supernova 2024abvb Located ~ 22 kpc from Its Host Galaxy*. Shi, Auchettl, Hoogendam, et al., submitted to PASA ([arXiv:2602.16227](#)).
- 2026 *Contemporaneous Optical and Near-Infrared Observations of the Interstellar Comet 3I/ATLAS Pre- and Post-Perihelion*. Medler, Hoogendam, Ashall, et al., submitted to OJAp ([arXiv:2602.23586](#)).
- 2026 *Multiple outflows and delayed ejections revealed by early imaging of novae*. Aydi, Monnier, Merand, et al., [2026NatAs..10..271A](#).
- 2026 *JWST Observations of SN 2024ggi II: NIRSpec Spectroscopy and CO Modeling at 285 and 385 Days Past the Explosion*. Mera, Ashall, Hoefflich, et al., [2026ApJ...997..330M](#).
- 2026 *JWST Observations of SN 2023ixf I: Completing the Early Multi-Wavelength Picture with Plateau-phase Spectroscopy*. DerKacy, Ashall, Baron, et al., [2026ApJ...997..179D](#).
- 2025 *University of Hawaii 88-inch Telescope Observations of the Interstellar Comet 3I/ATLAS: Spectrophotometric Blue-Sensitive Spectral Time Series Spanning Two Months from Discovery*. Hoogendam, Kuesters, Shappee, et al., submitted to OJAp ([arXiv:2512.09020](#)).
- 2025 *Pan-STARRS follow-up of the gravitational-wave event S250818k and the lightcurve of SN 2025ulz*. Gillanders, Huber, Nicholl, et al., [2025ApJ...995L..27G](#).
- 2025 *Unraveling the Nature of the Nuclear Transient AT2020adpi*. Pandey, Hinkle, Kochanek, et al., [2025OJAp...851453P](#).
- 2025 *Discovery and Preliminary Characterization of a Third Interstellar Object: 3I/ATLAS*. Seligman, Marco, Farnocchia, et al., [2025ApJ...989L..36S](#).
- 2025 *Plasma instabilities dominate radioactive transients magnetic fields: the self-confinement of leptons in Type Ia and core-collapse supernovae, and kilonovae*. Desai, Hagerty, Shappee, et al., [2025MNRAS.541.2197D](#).
- 2025 *Early and Extensive Ultraviolet through Near Infrared Observations of the Intermediate-luminosity Type Iax Supernovae 2024pxl*. Hoogendam, Ashall, Jones, et al., [2025ApJ...988..209H](#).
- 2025 *JWST Observations of SN 2023ixf II: The Panchromatic Evolution Between 250 and 720 Days After the Explosion*. Medler, Ashall, Hoefflich, et al., [2025ApJ...993..191M](#).
- 2025 *JWST Observations of SN 2024ggi I: Interpretation and Model Comparison of the Type II Supernova 2024ggi at 55 days Past Explosion*. Baron, Ashall, DerKacy, et al., [2025ApJ...994..249B](#).
- 2025 *ASASSN-24fw: An 8-month long, 4.1 mag, optically achromatic and polarized dimming event*. Fores-Toribio, JoHantgen, Kochanek, et al., [2025OJAp...8E.114F](#).
- 2025 *Expanding the parameter space of 2002es-like type Ia supernovae: On the underluminous ASASSN-20jq/SN 2020qxp*. Bose, Stritzinger, Ashall, et al., [2025A&A...699A.169B](#).

- 2025 *The most energetic transients: Tidal disruptions of high-mass stars.* Hinkle, Shappee, Auchettl, et al., [2025SciA...11...74H](#).
- 2025 *Hawai'i Supernova Flows: a peculiar velocity survey using over a Thousand Supernovae in the near-infrared.* Do, Shappee, Tonry, et al., [2025MNRAS.536..624D](#).
- 2025 *The Anomalous Acceleration of PSR J2043+1711: Long-Period Orbital Companion or Stellar Flyby?.* Donlon, Chakrabartia, Lam, et al., [2025ApJ...983...62D](#).
- 2024 *JWST NIRSpec+MIRI Observations of the nearby Type IIP supernova 2022acko.* Shahbandeh, Ashall, Hoefflich, et al., submitted to MNRAS ([arXiv:2401.14474](#)).
- 2024 *1991T-like Supernovae.* Phillips, Ashall, Brown, et al., [2024ApJS..273...16P](#).
- 2024 *Discovery and follow-up of ASASSN-23bd (AT 2023clx): the lowest redshift and luminosity optically selected tidal disruption event.* Hoogendam, Hinkle, Shappee, et al., [2024MNRAS.530.4501H](#).
- 2024 *Ground-based and JWST Observations of SN 2022pul: I. Unusual Signatures of Carbon, Oxygen, and Circumstellar Interaction in a Peculiar Type Ia Supernova.* Siebert, Kwok, Johnansson, et al., [2024ApJ...960...88S](#).
- 2024 *Ground-based and JWST Observations of SN 2022pul: II. Evidence from Nebular Spectroscopy for a Violent Merger in a Peculiar Type-Ia Supernova.* Kwok, Siebert, Johansson, et al., [2024ApJ...966..135K](#).
- 2024 *An Episode of Occultation Events in Gaia21bcv.* Hodapp, Gaidos, Kenworthy, et al., [2024AJ....167...85H](#).
- 2024 *From Out of the Blue: Swift Links 2002es-like, 2003fg-like, and Early-Time Bump Type Ia Supernovae.* Hoogendam, Shappee, Brown, et al., [2024ApJ...966..139H](#).
- 2024 *A JWST Medium Resolution MIRI Spectrum and Models of the Type Ia supernova 2021aefx at +415 d.* Ashall, Hoefflich, Baron, et al., [2024ApJ...975..203A](#).
- 2024 *JWST MIRI/Medium Resolution Spectrograph (MRS) Observations and Spectral Models of the Underluminous Type Ia Supernova 2022xkq.* DerKacy, Ashall, Hoefflich, et al., [2024ApJ...961..187D](#).
- 2024 *Strong Carbon Features and a Red Early Color in the Underluminous Type Ia SN 2022xkq.* Pearson, Sand, Lundqvist, et al., [2024ApJ...960...29P](#).
- 2024 *Characterizing the Rapid Hydrogen Disappearance in SN 2022crv: Evidence of a Continuum between Type Ib and IIb Supernova Properties.* Dong, Valenti, Ashall, et al., [2024ApJ...974..316D](#).
- 2023 *SN 2022jli: A Type Ic Supernova with Periodic Modulation of Its Light Curve and an Unusually Long Rise.* Moore, Smartt, Nicholl, et al., [2023ApJ...956L..31M](#).
- 2023 *SN 2021gno: a calcium-rich transient with double-peaked light curves.* Ertini, Folatelli, Martinez, et al., [2023MNRAS.526..279E](#).
- 2023 *AT2022aedm and a new class of luminous, fast-cooling transients in elliptical galaxies.* Nicholl, Srivastav, Fulton, et al., [2023ApJ...954L..28N](#).
- 2023 *SN2021fxy: mid-ultraviolet flux suppression is a common feature of Type Ia supernovae.* DerKacy, Paugh, Baron, et al., [2023MNRAS.522.3481D](#).

- 2023 *Multiple flares in the changing-look AGN NGC 5273*. Neustadt, Hinkle, Kochanek, et al., [2023MNRAS.521.3810N](#).
- 2023 *JWST Low-resolution MIRI Spectral Observations of SN 2021aefx: High-density Burning in a Type Ia Supernova*. DerKacy, Ashall, Hoeflich, et al., [2023ApJ...945L...2D](#).
- 2023 *A JWST Near- and Mid-Infrared Nebular Spectrum of the Type Ia Supernova 2021aefx*. Kwok, Jha, Temim, et al., [2023ApJ...944L...3K](#).
- 2023 *ASAS-SN Sky Patrol V2.0*. Hart, Shappee, Hey, et al., submitted to PASP ([arXiv:2304.03791](#)).
- 2022 *COol Companions ON Ultrawide orbiTS (COCONUTS). III. A Very Red L6 Benchmark Brown Dwarf around a Young M5 Dwarf*. Zhang, Liu, Morley, et al., [2022ApJ...935...15Z](#).
- 2022 *Investigating the Nature of the Luminous Ambiguous Nuclear Transient ASASSN-17jz*. Holoien, Neustadt, Vallely, et al., [2022ApJ...933..196H](#).
- 2022 *The Curious Case of ASASSN-20hx: A Slowly-Evolving, UV and X-ray Luminous, Ambiguous Nuclear Transient*. Hinkle, Holoien, Shappee, et al., [2022ApJ...930...12H](#).
- 2022 *The Rapid X-ray and UV Evolution of ASASSN-14ko*. Payne, Shappee, Hinkle, et al., [2022ApJ...926..142P](#).
- 2021 *Measuring an off-Center Detonation through Infrared Line Profiles: The peculiar Type Ia Supernova SN 2020qxp/ASASSN-20jq*. Hoeflich, Ashall, Bose, et al., [2021ApJ...922..186H](#).
- 2021 *Simultaneous Multiwavelength Flare Observations of EV Lacertae*. Paudel, Barclay, Schlieder, et al., [2021ApJ...922...31P](#).
- 2021 *The Changing-look Blazar B2 1420+32*. Mishra, Dai, Chen, et al., [2021ApJ...913..146M](#).
- 2021 *ASASSN-14ko is a Periodic Nuclear Transient in ESO 253-G003*. Payne, Shappee, Hinkle, et al., [2021ApJ...910..125P](#).
- 2021 *Early-time Light Curves of Type Ia Supernovae Observed with TESS*. Fausnaugh, Vallely, Kochanek, et al., [2021ApJ...908...51F](#).
- 2021 *Discovery and follow-up of ASASSN-19dj: an X-ray and UV luminous TDE in an extreme post-starburst galaxy*. Hinkle, Holoien, Auchettl, et al., [2021MNRAS.500.1673H](#).
- 2021 *SN 2021csp – the explosion of a stripped envelope star within a H and He-poor circumstellar medium*. Fraser, Stritzinger, Brennan, et al., submitted to Nature Astronomy ([arXiv:2108.07278](#)).
- 2020 *To TDE or not to TDE: the luminous transient ASASSN-18jd with TDE-like and AGN-like qualities*. Neustadt, Holoien, Kochanek, et al., [2020MNRAS.494.2538N](#).
- 2020 *COol Companions ON Ultrawide orbiTS (COCONUTS). I. A High-gravity T4 Benchmark around an Old White Dwarf and a Re-examination of the Surface-gravity Dependence of the L/T Transition*. Zhang, Liu, Hermes, et al., [2020ApJ...891..171Z](#).

- 2019 *WISE J072003.20-084651.2B is a Massive T Dwarf*. Dubuy, Liu, Best, et al., [2019AJ...158..174D](#).
- 2019 *ASASSN-18tb: a most unusual Type Ia supernova observed by TESS and SALT*. Vallely, Fausnaugh, Jha, et al., [2019MNRAS.487.2372V](#).
- 2019 *PS18kh: A New Tidal Disruption Event with a Non-axisymmetric Accretion Disk*. Holloien, Huber, Shappee, et al., [2019ApJ...880..120H](#).
- 2019 *Discovery and progenitor constraints on the Type Ia supernova 2013gy*. Holmbo, Stritzinger, Shappee, et al., [2019A&A...627A.174H](#).
- 2018 *Red versus Blue: Early Observations of Thermonuclear Supernovae Reveal Two Distinct Populations?*. Stritzinger, Shappee, Piro, et al., [2018ApJ...864L..35S](#).
- 2016 *gPhoton: The GALEX Photon Data Archive*. Million, Fleming, Shaio, et al., [2016ApJ...833..292M](#).

Non-Refereed Articles

Conference proceeding, abstracts, white papers, and AAS Research Notes.

- 2023 *No UV-bright Eruptions from SN 2023ixf in GALEX Imaging 15-20 yr Before Explosion*. Flinner, **Tucker**, Beacom, et al., [2023RNAAS...7..174F](#).
- 2020 *The $H\alpha$ Luminosity of ATLAS18qtd Does Not Plateau in the Nebular Phase*. **Tucker** & Shappee, [2020RNAAS...4...80T](#).
- 2020 *A High-Cadence UV-Optical Telescope Suite On The Lunar South Pole*. Fleming, Barclay, Bell, et al., Artemis III Science Definition Team White paper ([arXiv:2010.00007](#)).
- 2018 *Carbon Reservoirs in Protoplanetary Systems Surveyed Across the Galaxy*. Smith, Blake, Boogert, et al., [2018LPICo2067.6362S](#).