Peer-reviewed Articles

[1] Peter K. Blanchard, V. Ashley Villar, Ryan Chornock, et al. "**JWST detection of a supernova associated with GRB 221009A without an r-process signature**". In: *Nature Astronomy* (Apr. 2024).

[2] Joshua Fagin, Ji Won Park, Henry Best, et al. "Latent stochastic differential equations for modeling quasar variability and inferring black hole properties". In: *The Astrophysical Journal* 965.2 (2024), p. 104.

[3] Daichi Hiramatsu, Tatsuya Matsumoto, Edo Berger, et al. "Multiple Peaks and a Long Precursor in the Type IIn Supernova 2021qqp: An Energetic Explosion in a Complex Circumstellar Environment". In: *The Astrophysical Journal* 964.2 (2024), p. 181.

[4] Conor L Ransome, V. Ashley Villar, Anna Tartaglia, et al. "SN 2023ixf in Messier 101: The Twilight Years of the Progenitor as Seen by Pan-STARRS". In: *The Astrophysical Journal* 965.1 (2024), p. 93.

[5] Qinan Wang, Armin Rest, Georgios Dimitriadis, et al. "Flight of the Bumblebee: the Early Excess Flux of Type Ia Supernova 2023bee Revealed by TESS, Swift, and Young Supernova Experiment Observations". In: *The Astrophysical Journal* 962.1 (2024), p. 17.

[6] S Karthik Yadavalli, V. Ashley Villar, Luca Izzo, et al. "SN 2022oqm: A Multi-peaked Calcium-rich Transient from a White Dwarf Binary Progenitor System". In: *The Astrophysical Journal, in press.* (2024).

[7] PD Aleo, K Malanchev, S Sharief, et al. "The Young Supernova Experiment Data Release 1 (YSE DR1): Light Curves and Photometric Classification of 1975 Supernovae". In: *The Astrophysical Journal Supplement Series* 266.1 (2023), p. 9.

[8] KW Davis, K Taggart, S Tinyanont, et al. "SN 2022ann: a Type Icn supernova from a dwarf galaxy that reveals helium in its circumstellar environment". In: *Monthly Notices of the Royal Astronomical Society* 523.2 (2023), pp. 2530–2550.

[9] MD Fulton, SJ Smartt, L Rhodes, et al. "The optical light curve of GRB 221009A: the afterglow and the emerging supernova". In: *The Astrophysical Journal Letters* 946.1 (2023), p. L22.

[10] Alex Gagliano and V. Ashley Villar. "A Physics-Informed Variational Autoencoder for Rapid Galaxy Inference and Anomaly Detection". In: *Machine Learning and the Physical Sciences Workshop at NeurIPs* (2023).

[11] Sebastian Gomez, Edo Berger, Peter K Blanchard, et al. "The First Two Years of FLEET: An Active Search for Superluminous Supernovae". In: *The Astrophysical Journal* 949.2 (2023), p. 114.

[12] Sebastian Gomez, V. Ashley Villar, Edo Berger, et al. "Identifying Tidal Disruption Events with an Expansion of the FLEET Machine-learning Algorithm". In: *The Astrophysical Journal* 949.2 (2023), p. 113.

[13] Ish Gupta, Ssohrab Borhanian, Arnab Dhani, et al. "Neutron star-black hole mergers in next generation gravitational-wave observatories". In: *Physical Review D* 107.12 (2023), p. 124007.

[14] WV Jacobson-Galan, Luc Dessart, R Margutti, et al. "SN 2023ixf in Messier 101: photo-ionization of dense, close-in circumstellar material in a nearby type II supernova". In: *The Astrophysical journal letters* 954.2 (2023), p. L42.

[15] Charles D Kilpatrick, Ryan J Foley, Wynn V Jacobson-Galán, et al. "SN 2023ixf in Messier 101: a variable red supergiant as the progenitor candidate to a type II supernova". In: *The Astrophysical Journal Letters* 952.1 (2023), p. L23.

[16] Charles D Kilpatrick, Luca Izzo, Rory O Bentley, et al. "Type II-P supernova progenitor star initial masses and SN 2020jfo: direct detection, light-curve properties, nebular spectroscopy, and local environment". In: *Monthly Notices of the Royal Astronomical Society* 524.2 (2023), pp. 2161–2185.

[17] Marko Ristic, Richard O'Shaughnessy, V. Ashley Villar, et al. "Interpolated kilonova spectra models: Examining the effects of a phenomenological, blue component in the fitting of AT2017gfo spectra". In: *Phys. Rev. Res.* 5 (4 Nov. 2023), p. 043106.

[18] Kaylee de Soto and V. Ashley Villar. "Deriving an Analytical Expression for Core-collapse Supernovae Using Symbolic Regression". In: *AI for Science Workshop at NeurIPS* (2023).

[19] V. Ashley Villar, Kaylee de Soto, and Alex Gagliano. "Hierarchical Cross-entropy Loss for Classification of Astrophysical Transients". In: *Machine Learning and the Physical Sciences Workshop at NeurIPS* (2023).

[20] Bingjie Wang, Joel Leja, V. Ashley Villar, et al. "SBI++: Flexible, Ultra-fast Likelihood-free Inference Customized for Astronomical Applications". In: *The Astrophysical Journal Letters* 952.1 (2023). Additionally appeared in Machine Learning for the Physical Sciences Workshop at NeurIPS, p. L10.

[21] Philippe Z Yao, Amy Secunda, Yan-Fei Jiang, et al. "A Negative Long Lag from the Optical to the UV Continuum in Fairall 9". In: *The Astrophysical Journal* 953.1 (2023), p. 43.

[22] Igor Andreoni, Raffaella Margutti, Om Sharan Salafia, et al. "Target-of-opportunity Observations of Gravitational-wave Events with Vera C. Rubin Observatory". In: *The Astrophysical Journal Supplement Series* 260.1 (2022), p. 18.

[23] Ho-Sang Chan, V. Ashley Villar, Siu-Hei Cheung, et al. "Searching for Anomalies in the ZTF Catalog of Periodic Variable Stars". In: *The Astrophysical Journal* 932.2 (2022). Additionally appeared in Machine Learning for the Physical Sciences Workshop at NeurIPS, p. 118.

[24] T Eftekhari, E Berger, BD Metzger, et al. "Extragalactic millimeter transients in the era of next-generation CMB surveys". In: *The Astrophysical Journal* 935.1 (2022), p. 16.

[25] A Hajela, Raffaella Margutti, JS Bright, et al. "Evidence for X-Ray Emission in Excess to the Jet-afterglow Decay 3.5 yr after the Binary Neutron Star Merger GW 170817: A New Emission Component". In: *The Astrophysical Journal Letters* 927.1 (2022), p. L17.

[26] Brian Hsu, Griffin Hosseinzadeh, V Ashley Villar, et al. "Photometrically Classified Superluminous Supernovae from the Pan-STARRS1 Medium Deep Survey: A Case Study for Science with Machine-learning-based Classification". In: *The Astrophysical Journal* 937.1 (2022), p. 13.

[27] WV Jacobson-Galán, Padma Venkatraman, Raffaella Margutti, et al. "The Circumstellar Environments of Double-peaked, Calcium-strong Transients 2021gno and 2021inl". In: *The Astrophysical Journal* 932.1 (2022), p. 58.

[28] Daniel M Siegel, Aman Agarwal, Jennifer Barnes, et al. ""Super-kilonovae" from Massive Collapsars as Signatures of Black Hole Birth in the Pair-instability Mass Gap". In: *The Astrophysical Journal* 941.1 (2022), p. 100.

[29] V. Ashley Villar. "Amortized Bayesian Inference for Supernovae in the Era of the Vera Rubin Observatory Using Normalizing Flows". In: *Machine Learning in the Physical Sciences Workshop at NeurIPS* (Oct. 2022).

[30] KD Alexander, G Schroeder, K Paterson, et al. "A Late-time Galaxy-targeted Search for the Radio Counterpart of GW190814". In: *The Astrophysical Journal* 923.1 (2021), p. 66.

[31] P Armstrong, BE Tucker, A Rest, et al. "SN2017jgh-A high-cadence complete shock cooling lightcurve of a SN IIb with the Kepler telescope". In: *Monthly Notices of the Royal Astronomical Society* (2021).

[32] T. Eftekhari, B. Margalit, C. M. B. Omand, et al. "Late-time Radio and Millimeter Observations of Superluminous Supernovae and Long Gamma-Ray Bursts: Implications for Central Engines, Fast Radio Bursts, and Obscured Star Formation". In: 912.1, 21 (May 2021), p. 21. arXiv: `2010.06612 [astro-ph.HE]`.

[33] Sebastian Gomez, Edo Berger, Griffin Hosseinzadeh, et al. "The Luminous and Double-peaked Type Ic Supernova 2019stc: Evidence for Multiple Energy Sources". In: *The Astrophysical Journal* 913.2 (2021), p. 143.

[34] Plamen G. Krastev, Kiranjyot Gill, V. Ashley Villar, et al. "Detection and parameter estimation of gravitational waves from binary neutron-star mergers in real LIGO data using deep learning". In: *Physics Letters B* 815, 136161 (Apr. 2021), p. 136161. arXiv: `2012.13101 [astro-ph.IM]`.

[35] Ji Won Park, V. Ashley Villar, Yin Li, et al. "Inferring Black Hole Properties from Astronomical Multivariate Time Series with Bayesian Attentive Neural Processes". In: *Physical Sciences Workshop at NeurIPs* (June 2021).

[36] V. Ashley Villar, Miles Cranmer, Edo Berger, et al. "**A Deep-learning Approach for Live Anomaly Detection of Extragalactic Transients**". In: *The Astrophysical Journal Supplement Series* 255.2 (2021). Additionally appeared in the NeurIPS workshop Machine Learning and the Physical Sciences, p. 24.

[37] Qinan Wang, Armin Rest, Yossef Zenati, et al. "SN 2018agk: A prototypical Type Ia Supernova with a smooth power-law rise in Kepler (K2)". In: *The Astrophysical Journal* 923.2 (2021), p. 167.

[38] Peter K. Blanchard, Edo Berger, Matt Nicholl, et al. "The Pre-explosion Mass Distribution of Hydrogen-poor Superluminous Supernova Progenitors and New Evidence for a Mass-Spin Correlation". In: 897.2, 114 (July 2020), p. 114. arXiv: 2002.09508 [astro-ph.HE].

[39] Sebastian Gomez, Edo Berger, Peter K. Blanchard, et al. "FLEET: A Redshift-agnostic Machine Learning Pipeline to Rapidly Identify Hydrogen-poor Superluminous Supernovae". In: 904.1, 74 (Nov. 2020), p. 74. eprint: 2009.01853 (astro-ph.HE).

[40] Griffin Hosseinzadeh, Frederick Dauphin, V. Ashley Villar, et al. "Photometric Classification of 2315 Pan-STARRS1 Supernovae with Superphot". In: 905.2, 93 (Dec. 2020), p. 93.

[41] V. Ashley Villar, Griffin Hosseinzadeh, Edo Berger, et al. "**SuperRAENN: A Semisupervised Supernova Photometric Classification Pipeline Trained on Pan-STARRS1 Medium-Deep Survey Supernovae**". In: 905.2, 94 (Dec. 2020), p. 94. arXiv: 2008.04921 [astro-ph.HE].

[42] P. S. Cowperthwaite, V. A. Villar, D. M. Scolnic, et al. "LSST Target-of-opportunity Observations of Gravitational-wave Events: Essential and Efficient". In: 874.1, 88 (Mar. 2019), p. 88. eprint: 1811.03098 (astro-ph.HE).

[43] W. Fong, P. K. Blanchard, K. D. Alexander, et al. "The Optical Afterglow of GW170817: An Off-axis Structured Jet and Deep Constraints on a Globular Cluster Origin". In: 883.1, L1 (Sept. 2019), p. L1. eprint: 1908.08046 (astro-ph.HE).

[44] S. Gomez, G. Hosseinzadeh, P. S. Cowperthwaite, et al. "A Galaxy-targeted Search for the Optical Counterpart of the Candidate NS-BH Merger S190814bv with Magellan". In: 884.2, L55 (Oct. 2019), p. L55. arXiv: 1908.08913 [astro-ph.HE].

[45] Sebastian Gomez, Edo Berger, Matt Nicholl, et al. "SN 2016iet: The Pulsational or Pair Instability Explosion of a Low-metallicity Massive CO Core Embedded in a Dense Hydrogen-poor Circumstellar Medium". In: 881.2, 87 (Aug. 2019), p. 87. eprint: 1904.07259 (astro-ph.HE).

[46] A. Hajela, R. Margutti, K. D. Alexander, et al. "Two Years of Nonthermal Emission from the Binary Neutron Star Merger GW170817: Rapid Fading of the Jet Afterglow and First Constraints on the Kilonova Fastest Ejecta". In: 886.1, L17 (Nov. 2019), p. L17. arXiv: 1909.06393 [astro-ph.HE].

[47] G. Hosseinzadeh, P. S. Cowperthwaite, S. Gomez, et al. "Follow-up of the Neutron Star Bearing Gravitational-wave Candidate Events S190425z and S190426c with MMT and SOAR". In: 880.1, L4 (July 2019), p. L4. eprint: 1905.02186 (astro-ph.HE).

[48] R. Kessler, G. Narayan, A. Avelino, et al. "Models and Simulations for the Photometric LSST Astronomical Time Series Classification Challenge (PLAsTiCC)". In: 131.1003 (Sept. 2019), p. 094501. eprint: 1903.11756 (astro-ph.HE).

[49] V. Ashley Villar, E. Berger, G. Miller, et al. "Supernova Photometric Classification Pipelines Trained on Spectroscopically Classified Supernovae from the Pan-STARRS1 Medium-deep Survey". In: 884.1, 83 (Oct. 2019), p. 83. arXiv: 1905.07422 [astro-ph.HE].

[50] K. D. Alexander, R. Margutti, P. K. Blanchard, et al. "A Decline in the X-Ray through Radio Emission from GW170817 Continues to Support an Off-axis Structured Jet". In: 863.2, L18 (Aug. 2018), p. L18. eprint: 1805.02870 (astro-ph.HE).

[51] Michele Cantiello, J. B. Jensen, J. P. Blakeslee, et al. "A Precise Distance to the Host Galaxy of the Binary Neutron Star Merger GW170817 Using Surface Brightness Fluctuations". In: 854.2, L31 (Feb. 2018), p. L31. eprint: 1801.06080 (astro-ph.GA).

[52] James Guillochon, Matt Nicholl, V. Ashley Villar, et al. "**MOSFiT: Modular Open Source Fitter for Transients**". In: 236.1, 6 (May 2018), p. 6. eprint: 1710.02145 (astro-ph.IM).

[53] R. Margutti, K. D. Alexander, X. Xie, et al. "The Binary Neutron Star Event LIGO/Virgo GW170817 160 Days after Merger: Synchrotron Emission across the Electromagnetic Spectrum". In: 856.1, L18 (Mar. 2018), p. L18. eprint: 1801.03531 (astro-ph.HE).

[54] A. Rest, P. M. Garnavich, D. Khatami, et al. "A fast-evolving luminous transient discovered by K2/Kepler". In: *Nature Astronomy* 2 (Mar. 2018), pp. 307–311. eprint: 1804.04641 (astro-ph.HE).

[55] D. Scolnic, R. Kessler, D. Brout, et al. "How Many Kilonovae Can Be Found in Past, Present, and Future Survey Data Sets?" In: 852.1, L3 (Jan. 2018), p. L3. eprint: 1710.05845 (astro-ph.IM).

[56] V. Ashley Villar, P. S. Cowperthwaite, E. Berger, et al. "Spitzer Space Telescope Infrared Observations of the Binary Neutron Star Merger GW170817". In: 862.1, L11 (July 2018), p. L11. arXiv: 1805.08192 [astro-ph.HE].

[57] V. Ashley Villar, Matt Nicholl, and Edo Berger. "Superluminous Supernovae in LSST: Rates, Detection Metrics, and Light-curve Modeling". In: 869.2, 166 (Dec. 2018), p. 166. arXiv: 1809.07343 [astro-ph.HE].

[58] B. P. Abbott, R. Abbott, and etal Abbott. "A gravitational-wave standard siren measurement of the Hubble constant". In: 551.7678 (Nov. 2017), pp. 85–88. eprint: 1710.05835 (astro-ph.CO).

[59] B. P. Abbott, R. Abbott, and etal Abbott. "Multi-messenger Observations of a Binary Neutron Star Merger". In: 848.2, L12 (Oct. 2017), p. L12. eprint: 1710.05833 (astro-ph.HE).

[60] K. D. Alexander, E. Berger, W. Fong, et al. "The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/Virgo GW170817. VI. Radio Constraints on a Relativistic Jet and Predictions for Late-time Emission from the Kilonova Ejecta". In: 848.2, L21 (Oct. 2017), p. L21. eprint: 1710.05457 (astro-ph.HE).

[61] P. K. Blanchard, E. Berger, W. Fong, et al. "The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/Virgo GW170817. VII. Properties of the Host Galaxy and Constraints on the Merger Timescale". In: 848.2, L22 (Oct. 2017), p. L22. eprint: 1710.05458 (astro-ph.HE).

[62] R. Chornock, E. Berger, D. Kasen, et al. "The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/Virgo GW170817. IV. Detection of Near-infrared Signatures of r-process Nucleosynthesis with Gemini-South". In: 848.2, L19 (Oct. 2017), p. L19. eprint: 1710.05454 (astro-ph.HE).

[63] P. S. Cowperthwaite, E. Berger, V. A. Villar, et al. "The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/Virgo GW170817. II. UV, Optical, and Near-infrared Light Curves and Comparison to Kilonova Models". In: 848.2, L17 (Oct. 2017), p. L17. eprint: 1710.05840 (astro-ph.HE).

[64] W. Fong, E. Berger, P. K. Blanchard, et al. "The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/Virgo GW170817. VIII. A Comparison to Cosmological Short-duration Gamma-Ray Bursts". In: 848.2, L23 (Oct. 2017), p. L23. eprint: 1710.05438 (astro-ph.HE).

[65] C. Guidorzi, R. Margutti, D. Brout, et al. "Improved Constraints on H $_0$ from a Combined Analysis of Gravitational-wave and Electromagnetic Emission from GW170817". In: 851.2, L36 (Dec. 2017), p. L36. eprint: 1710.06426 (astro-ph.CO).

[66] R. Margutti, E. Berger, W. Fong, et al. "The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/Virgo GW170817. V. Rising X-Ray Emission from an Off-axis Jet". In: 848.2, L20 (Oct. 2017), p. L20. eprint: 1710.05431 (astro-ph.HE).

[67] M. Nicholl, E. Berger, D. Kasen, et al. "The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/Virgo GW170817. III. Optical and UV Spectra of a Blue Kilonova from Fast Polar Ejecta". In: 848.2, L18 (Oct. 2017), p. L18. eprint: 1710.05456 (astro-ph.HE).

[68] M. Nicholl, P. K. G. Williams, E. Berger, et al. "Empirical Constraints on the Origin of Fast Radio Bursts: Volumetric Rates and Host Galaxy Demographics as a Test of Millisecond Magnetar Connection". In: 843.2, 84 (July 2017), p. 84. eprint: 1704.00022 (astro-ph.HE).

[69] M. Soares-Santos, D. E. Holz, J. Annis, et al. "The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/Virgo GW170817. I. Discovery of the Optical Counterpart Using the Dark Energy Camera". In: 848.2, L16 (Oct. 2017), p. L16. eprint: 1710.05459 (astro-ph.HE).

[70] V. Ashley Villar, J. Guillochon, E. Berger, et al. "**The Combined Ultraviolet, Optical, and Near-infrared Light Curves of the Kilonova Associated with the Binary Neutron Star Merger GW170817: Unified Data Set, Analytic Models, and Physical Implications**". In: 851.1, L21 (Dec. 2017), p. L21. arXiv: 1710.11576 [astro-ph.HE].

[71] P. S. Cowperthwaite, E. Berger, M. Soares-Santos, et al. "A DECam Search for an Optical Counterpart to the LIGO Gravitational-wave Event GW151226". In: 826.2, L29 (Aug. 2016), p. L29. eprint: 1606.04538 (astro-ph.HE).

[72] R. Lunnan, R. Chornock, E. Berger, et al. "PS1-14bj: A Hydrogen-poor Superluminous Supernova With a Long Rise and Slow Decay". In: 831.2, 144 (Nov. 2016), p. 144. eprint: 1605.05235 (astro-ph.HE).

[73] M. Nicholl, E. Berger, S. J. Smartt, et al. "SN 2015BN: A Detailed Multi-wavelength View of a Nearby Superluminous Supernova". In: 826.1, 39 (July 2016), p. 39. eprint: 1603.04748 (astro-ph.SR).

[74] V. Ashley Villar, E. Berger, R. Chornock, et al. "The Intermediate Luminosity Optical Transient SN 2010da: The Progenitor, Eruption, and Aftermath of a Peculiar Supergiant High-mass X-Ray Binary". In: 830.1, 11 (Oct. 2016), p. 11. arXiv: 1605.07245 [astro-ph.SR].

[75] E. M. Ratti, T. F. J. van Grunsven, P. G. Jonker, et al. "CXOGBS J174444.7-260330: a new long orbital period cataclysmic variable in a low state". In: 428.4 (Feb. 2013), pp. 3543–3550. eprint: 1211.1194 (astro-ph.HE).

Non-refereed Articles

[1] Ian Thornton, V Ashley Villar, Sebastian Gomez, et al. "extrabol: A Python Package for Estimating Bolometric Light Curves of Thermal Transients". In: *Research Notes of the American Astronomical Society* 8.2 (2024), p. 48.

[2] Sebastian Gomez, Kate Alexander, Edo Berger, et al. "Roman CCS White Paper: Characterizing Superluminous Supernovae with Roman". In: *arXiv preprint arXiv:2306.17233* (2023).

[3] Cora Dvorkin, Siddharth Mishra-Sharma, Brian Nord, et al. "Machine Learning and Cosmology". In: *arXiv e-prints*, arXiv:2203.08056 (Mar. 2022), arXiv:2203.08056. arXiv: 2203.08056 [hep-ph].

[4] Siu-Hei Cheung, V. Ashley Villar, Ho-Sang Chan, et al. "A New Classification Model for the ZTF Catalog of Periodic Variable Stars". In: *Research Notes of the American Astronomical Society*, arXiv:2112.04010 (Dec. 2021), arXiv:2112.04010. arXiv: 2112.04010 [astro-ph.IM].

[5] Brighten Jiang, Shuai Jiang, and V. Ashley Villar. "Extended Self-similar Solution for Circumstellar Material-supernova Ejecta Interaction". In: *Research Notes of the American Astronomical Society* 4.1, 16 (Jan. 2020), p. 16. DOI: 10.3847/2515-5172/ab7128. arXiv: 2008.10397 [astro-ph.HE].

[6] Leilani Baker, Sophia Green, and V. Ashley Villar. "SNIF: The SuperNova Interactive Fitter". In: *Research Notes of the American Astronomical Society* 3.9, 135 (Sept. 2019), p. 135. DOI: 10.3847/2515-5172/ab459
arXiv: 1909.09022 [astro-ph.HE].

[7] Gourav Khullar, Susanna Kohler, Tarini Konchady, et al. "Astrobites as a Community-led Model for Education, Science Communication, and Accessibility in Astrophysics". In: *Bulletin of the American Astronomical Society*. Vol. 51. Sept. 2019, 230, p. 230. arXiv: 1907.09496 [astro-ph.IM].

[8] R. Margutti, P. Cowperthwaite, Z. Doctor, et al. "Target of Opportunity Observations of Gravitational Wave Events with LSST". In: *arXiv e-prints*, arXiv:1812.04051 (Dec. 2018), arXiv:1812.04051. arXiv: 1812.04051 [astro-ph.HE].