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🐙 [temuller](#)

🌐 <https://temuller.github.io>

Research Experience

- 📖 Optical and near-infrared cosmology with type Ia supernovae
- 📖 Physical properties and cosmology with type II supernovae
- 📖 Photometric and spectroscopic observations, including data reduction
- 📖 Machine learning techniques for classification, features analysis, regression, outliers detection, etc.
- 📖 Collaborations: ePESSTO+, ZTF, POISE, FLOWS

Career

- 2021 – Present 📖 **Postdoc** - Institute of Space Sciences (ICE-CSIC), Spain
- 2017 – 2021 📖 **Ph.D. in Astronomy** - University of Southampton, UK
- 2015 – 2017 📖 **M.Sc. in Astrophysics** - Pontificia Universidad Católica de Chile, Chile
- 2011 – 2014 📖 **B.Sc. in Astronomy** - Universidad de Chile, Chile

Grants, Awards and Fellowships

- 2023 – Present 📖 **Juan de la Cierva-Formación:** postdoctoral fellowship (Spain)
- 2023 📖 **ICE Best Paper:** best paper as postdoctoral researcher (ICE-CSIC)
- 2017 – 2021 📖 **Becas Chile:** PhD scholarship for studies abroad (Chile)
- 2019 📖 **RAS Grant:** Royal Astronomical Society grant for conferences and meetings (UK)
- 2016 – 2018 📖 **LSSTC Data Science Fellow:** LSST Corporation Data-Science Fellowship Program

Invited Talks

- 1 “Alternative standardisation of Type Ia supernovae for precise distance estimations,” Colloquium at National Central University, Taoyuan, Taiwan, May 2023. 🌐 URL: <https://www.astro.ncu.edu.tw/activity/abstract.php?id=678>.
- 2 “A Comprehensive Analysis of Type Ia Supernovae in the Near-Infrared,” Max Planck Institute for Astrophysics, online, Jul. 2022.
- 3 “An Overview of Supernova Cosmology,” VIII Meeting on Fundamental Cosmology, Granada, Spain, Sep. 2022. 🌐 URL: <https://home.iaa.csic.es/fundcosmo22/index.html>.
- 4 “Building a Type Ia Supernova Hubble Diagram with PISCoLA,” Imperial College London, London, UK (blackboard talk), Feb. 2020.
- 5 “Cosmology with VEILS: Building an Infrared SN Ia Hubble Diagram,” AURA, La Serena, Chile, Jan. 2019. 🌐 URL: <https://noirlab.edu/public/events/719/?audience=S>.
- 6 “Cosmology with VEILS: Building an Infrared SN Ia Hubble Diagram,” ESO, Santiago, Chile, Dec. 2018.
- 7 “Type Ia Supernova Cosmology: infrared light as a new window,” Charles University, Prague, Czech Republic, Jul. 2018. 🌐 URL: <http://utf.mff.cuni.cz/~pejcha/index.php/2018/07/17/talk-on-supernova-cosmology>.

Observations

Observing Proposals (as PI)

Isaac Newton Telescope	130-INT10/22B, 054-INT5/23A
Gran Telescopio Canarias	GTC05-22B-DDT
Liverpool Telescope	XCL23Bo1

Observational Experience

OSIRIS+EMIR	Gran Telescopio Canarias, Roque de los Muchachos Observatory
IDS	Isaac Newton Telescope, Roque de los Muchachos Observatory
EFOSC2+SOFI	New Technology Telescope, La Silla Observatory
DOLORES	Telescopio Nazionale Galileo, Roque de los Muchachos Observatory
IO:O+SPRATS	Liverpool Telescope, Roque de los Muchachos Observatory
IMACS	Baade Magellan Telescope, Las Campanas Observatory

Organised Conferences

July 2023	In the new era of cosmological surveys: from precision and accuracy to tensions and anomalies, symposium at EAS annual meeting (Krakow, Poland)
July 2021	Exploring the Exploding Transients Diversity with Next-Generation Facilities, on-line session in the National Astronomy Meeting (UK)
March 2021	A (Hubble) Tension Headache, online workshop (UK)
2019 – 2021	PyData Southampton organiser (UK)
2018 – 2021	Southampton+Portsmouth weekly supernova-group meetings
September 2020	The Big Data Era in Astronomy, online conference (UK)
April 2018	Software Carpentry Workshop at Max Planck Institute for Plasma Physics (Greifswald, Germany)
	Software Carpentry Workshop at University of Southampton (Southampton, UK)

Code Development

HostPhot	global and local photometry of galaxies hosting supernovae or other transients
PISCOLA	transients light-curve fitter
ePESSTO+ pipeline	ePESSTO+ data-reduction pipeline for the New Technology Telescope
IDSRed	spectroscopy reduction pipeline for the IDS instrument at INT
TESSreduce	pipeline for extracting transients light curves with TESS data
WiseRep API	API to access WiserRep data
TNS API	API to access TNS data
SNII Fitting Code	code for fitting type II supernovae light curves and expansion velocities
ATLAS Object	cleaning of ATLAS light curves

Supervising

2023	John Kyriakopoulos (Erasmus - ICE): Type Ia supernovae cosmology with ZTF data release 2 (co-supervised with L. Galbany)
	Christos Thomopoulos (Erasmus - ICE): Type Ia supernovae cosmology in the NIR (co-supervised with L. Galbany)

Supervising (continued)

- 2022 – 2023
 - **Goio García (Undergraduate - ICE):** The effect of host-galaxy properties on the Colour Law of Type Ia supernovae
 - **Carlos Valero (Master - ICE):** Studying the host galaxies of the SHoES supernova sample (co-supervised with L. Galbany)
 - **Bernat Tobella (Master - ICE):** Cosmology with type II supernovae
 - **Ramón Sanfeliu (Undergraduate/Master - ICE):** Building a Hubble Diagram in the NIR with type Ia supernovae (co-supervised with L. Galbany)

Teaching

- 2023
 - **Universitat Autònoma de Barcelona:** Cosmology (Master course)
- 2017 – 2021
 - **University of Southampton:** Programming and Data Analysis, Electromagnetism, Introduction to Astronomy and Space Science, Quantum Physics of Matter, Wave Physics, Physics Skills 2, Physics from Evidence I
- 2016 – 2017
 - **Pontificia Universidad Católica de Chile:** Astronomy, Thermodynamics, Electricity & Magnetism, Physics II, Physics
- 2014
 - **Universidad de Chile:** Electromagnetism, Mechanics

Referee in journals, conferences and telescope proposals

- Monthly Notices of the Royal Astronomical Society ([MNRAS](#))
- The Journal of Open Source Software ([JOSS](#))
- [NeurIPS 2021](#) workshop on Machine Learning and the Physical Sciences
- Liverpool Telescope

Miscellaneous

- Languages
 - English (fluent), Spanish (fluent), French (basic), Catalan (basic)
- Coding
 - Python (advanced), C++ (basic)
- Outreach
 - Talks and activities in public schools and public events, member of outreach and mentoring organisations (e.g. [Magnet](#), [Humble Data](#), [Pint of Science](#), [Física Itinerante](#)), among other things.


Outreach

- "Sun Spots" talk for teachers at [Escola Gabriel Castellà i Raich](#), Igualada, Spain (Apr. 2023)
- "Stellar Evolution" class for students at [Colegio Concepción de Chillán](#), Chile (Apr. 2023)
- Public talk at the [ASTER](#) headquarters for amateur astronomers, Barcelona (Nov. 2022)
- Member of [Magnet](#) program that aims at relieving scholar segregation, Barcelona (2022 - present)
- Online astronomy talks at San Benito school, Santiago, Chile (Nov. 2020) - [link](#)
- Mentor in [Humble Data](#) Workshop as part of [PyData Global](#) for people outside of the mainstream in the data science/tech industry in Africa, Online (Nov. 2020) - [link](#)
- RAS Early Career Poster Exhibition (2020) - [link](#)
- Demonstration at Light Up Poole, Poole, UK (2020) - [link](#)
- Pint of Science [organiser](#), Southampton, UK (2019)

Miscellaneous (continued)

















- Guest post in *Astrobit*es (Jan. 2019)
- *Astrodome* and *Planeterrella* demonstrator for local schools in Southampton, UK (2018 - 2021)
- Astronomy talk for children at *Centro de Internación Provisoria* (CIP; temporary detention centre for minors) de San Joaquín, Santiago, Chile (2017) - [Link](#)
- Representing the *Millennium Institute of Astrophysics* at the *Jovenes Consciencia* annual meeting of *Iniciativa Milenio*, to discuss about the importance of public policies in science, and at the *Science Week*, event organised by the *Explora Program* of *CONICYT* in the *Museo Interactivo Mirador* (2016)
- Astronomy related talks and activities at the *Hermano Eugenio Eyraud* public school and *Museo Antropológico Padre Sebastián Englert* during the *Supernova Through the Ages* Conference, Easter Island, Chile (Aug. 2016)
- Astronomy workshop at the *San José de Peñalolen* public school as part of the *Bling Bling Universe* project from *Física Itinerante*, a student initiative from *Pontificia Universidad Católica de Chile* (2016)
















Contributed Talks

- 1 "The effect of host-galaxy environment on type Ia supernova standardisation", Seminar, ICE-CSIC, Barcelona, Mar. 2023.  URL: <https://www.ice.csic.es/2-uncategorised/203-pizzaseminars-2022-2023>.
- 2 "Extending the utility of Type Ia Supernovae as Cosmological Probes", Seminar, ICE-CSIC, Barcelona, Feb. 2022.  URL: <https://www.ice.csic.es/news/events/2-uncategorised/29-pizzaseminars>.
- 3 "Testing the Homogeneity of Type Ia Supernovae in the Near-Infrared for Accurate Distance Estimations", IberiCOS, ICE-CSIC, Barcelona, May 2022.  URL: <https://indico.ice.csic.es/event/27/>.
- 4 "Gaussian Process Fitting: let the data guide you!" PyData Global, online, Nov. 2020.  URL: <https://global.pydata.org/pages/program>.
- 5 "Type Ia Supernova Cosmology with PISCOLA", RAS Specialist Meeting: Progress in Astrophysics with Type-Ia Supernovae, online, Nov. 2020.  URL: <https://www.ph.ed.ac.uk/events/2020/RASmeeting>.
- 6 "Type Ia Supernova Cosmology with PISCOLA", South-Coast Cosmology Meeting, online, Oct. 2020.  URL: <https://sites.google.com/port.ac.uk/south-coast-cosmology/home?authuser=0>.
- 7 "Type Ia Supernova Cosmology with PISCOLA", RAS Specialist Meeting: The new window on Transients and Variable Star astronomy with the Rubin Observatory, Oct. 2020.  URL: <https://cosimoinsera.wixsite.com/lsstuk-tvs-ras>.
- 8 "Cosmology with VEILS: Building an Infrared SN Ia Hubble Diagra", South Coast Cosmology meeting, Institute of Cosmology and Gravitation, Portsmouth, Jan. 2019.  URL: <https://www.icg.port.ac.uk/2018/11/south-coast-cosmology-icg/>.
- 9 "PISCoLA: Python for Interactive Supernova Cosmology Light-curve Analysis", Cosmic Explosions School, Institut d'Etudes Scientifiques de Cargèse, Corsica, May 2019.  URL: <https://indico.in2p3.fr/event/17572/>.
- 10 "The Nickel Mass distribution of Type II Supernova and the case of SN 2016aqf", European Week of Astronomy and Space Science, Lyon, Jun. 2019.  URL: <https://eas.unige.ch/EWASS2019/>.
- 11 "The Nickel Mass Distribution of Normal Type II Supernovae", II Workshop de Estudiantes de Astronomía, Universidad de Chile, Santiago, Mar. 2017.  URL: http://www.das.uchile.cl/noticias/noticias_2016/das_workshop_estudiantes_2016.pdf.
- 12 "The Nickel Mass Distribution of Normal Type II Supernovae", III Millennium Institute of Astrophysics Workshop, Viña del Mar, Dec. 2016.  URL: <https://www.astrofiscamas.cl/en/mas-se-reune-por-tercera-vez-en-su-workshop-anual/>.
- 13 "The Nickel Mass Distribution of Normal Type II Supernovae", Preparing for SN science in the LSST era: a kick-off workshop, Pittsburgh, Nov. 2016.  URL: <https://www.lsstcorporation.org/node/104>.
- 14 "The Nickel Mass Distribution of Normal Type II Supernovae", II Católica-Ohio State Workshop, Santiago, May 2016.  URL: <https://ccapp.osu.edu/workshops/2nd-catolica-osu-astrophysics-workshop>.

Research Publications (h-index 15 - ADS library)


- 1 Aamer, Nicholl, and et al., “Pre-peak detection of [o ii] emission in the superluminous sn2019szu: A pulsational pair-instability candidate,”
- 2 Bostroem, Pearson, Shrestha, and et al., “Early spectroscopy and dense circumstellar medium interaction in sn 2023ixf,”
- 3 Clarck and et al., “Extreme coronal line emitter (ecle) follow-up,”
- 4 Ertini, Folatelli, and et al., “Sn 2021gno: A calcium-rich transient with double-peaked light curves,”
- 5 Ho, Perley, Chen, and et al., “Minute-timescale optical flares with supernova luminosities, months after an extragalactic transient,”
- 6 Moore and et al., “Sn 2022jli: Periodic modulation of a supernova light curve,”
- 7 Nancy, Brennan, and et al., “Sn 2020pvb: A type iin-p sn with a precursor outburst,”
- 8 Parrag, Inserra, and et al., “Investigating o ii lines in type i superluminous supernovae,”
- 9 Pearson, Sand, Lundsqvist, and et al., “Strong carbon features and a red early color in the underluminous type ia sn 2022xkq,”
- 10 Pursiainen, Leloudas, Schulze, and et al., “Sn 2023emq: A likely flash-ionised ibn supernova,”
- 11 Ridley, Nicholl, Ward, and et al., “At2017bcc: Time-varying double-peaked emission lines following the sudden ignition of a dormant galactic nucleus,”
- 12 Srivastav and et al., “Pronounced early flux excess in the extraordinary o2es-like ia supernova 2022ywc,”
- 13 Terwel and et al., “Late-time interaction signatures in type ia supernovae in the ztf dr2 sample,”
- 14 Valerin, Pastorello, Reguitti, and et al., “Intermediate luminosity red transients i - photometric properties,”
- 15 Wang, Hu, Wang, and et al., “The cosmic dust storms in snia-csm 2018evt,”
- 16 B. Ailawadhi, R. Dastidar, K. Misra, *et al.*, “Photometric and spectroscopic analysis of the Type II SN 2020jfo with a short plateau,” vol. 519, no. 1, pp. 248–270, Feb. 2023.  DOI: [10.1093/mnras/stac3234](https://doi.org/10.1093/mnras/stac3234). arXiv: [2211.02823](https://arxiv.org/abs/2211.02823) [astro-ph.HE].
- 17 K. A. Bostroem, L. Dessart, D. J. Hillier, *et al.*, “SN 2022acko: the First Early Far-Ultraviolet Spectra of a Type IIP Supernova,” *arXiv e-prints*, arXiv:2305.01654, arXiv:2305.01654, May 2023.  DOI: [10.48550/arXiv.2305.01654](https://doi.org/10.48550/arXiv.2305.01654). arXiv: [2305.01654](https://arxiv.org/abs/2305.01654) [astro-ph.HE].
- 18 M. Deckers, O. Graur, K. Maguire, *et al.*, “Photometric study of the late-time near-infrared plateau in Type Ia supernovae,” vol. 521, no. 3, pp. 4414–4430, May 2023.  DOI: [10.1093/mnras/stad841](https://doi.org/10.1093/mnras/stad841). arXiv: [2303.09548](https://arxiv.org/abs/2303.09548) [astro-ph.HE].
- 19 D. D. Desai, C. Ashall, B. J. Shappee, *et al.*, “Fast and not-so-furious: Case study of the fast and faint type IIb SN 2021bxu,” Jun. 2023.  DOI: [10.1093/mnras/stad1932](https://doi.org/10.1093/mnras/stad1932). arXiv: [2303.13581](https://arxiv.org/abs/2303.13581) [astro-ph.HE].
- 20 G. Dimitriadis, K. Maguire, V. R. Karambelkar, *et al.*, “SN 2021zny: an early flux excess combined with late-time oxygen emission suggests a double white dwarf merger event,” vol. 521, no. 1, pp. 1162–1183, May 2023.  DOI: [10.1093/mnras/stad536](https://doi.org/10.1093/mnras/stad536). arXiv: [2302.08228](https://arxiv.org/abs/2302.08228) [astro-ph.HE].
- 21 S. Holmbo, M. D. Stritzinger, E. Karamahmetoglu, *et al.*, “The Carnegie Supernova Project I. Spectroscopic analysis of stripped-envelope supernovae,” vol. 675, A83, A83, Jul. 2023.  DOI: [10.1051/0004-6361/202245334](https://doi.org/10.1051/0004-6361/202245334). arXiv: [2302.11304](https://arxiv.org/abs/2302.11304) [astro-ph.HE].


- 22 H. Kuncarayakti, J. Sollerman, L. Izzo, *et al.*, “The Bactrian? Broad-lined Type-Ic supernova SN 2022xxf with extraordinary two-humped light curves,” *arXiv e-prints*, arXiv:2303.16925, arXiv:2303.16925, Mar. 2023.  DOI: [10.48550/arXiv.2303.16925](https://doi.org/10.48550/arXiv.2303.16925). arXiv: 2303.16925 [astro-ph.SR].
- 23 S. Moran, M. Fraser, R. Kotak, *et al.*, “A long life of excess: The interacting transient SN 2017hcc,” vol. 669, A51, A51, Jan. 2023.  DOI: [10.1051/0004-6361/202244565](https://doi.org/10.1051/0004-6361/202244565). arXiv: 2210.14076 [astro-ph.HE].
- 24 T. Nagao, H. Kuncarayakti, K. Maeda, *et al.*, “Photometry and spectroscopy of the Type Icn supernova 2021ckj. The diverse properties of the ejecta and circumstellar matter of Type Icn supernovae,” vol. 673, A27, A27, May 2023.  DOI: [10.1051/0004-6361/202346084](https://doi.org/10.1051/0004-6361/202346084). arXiv: 2303.07721 [astro-ph.HE].
- 25 D. R. Pasham, M. Lucchini, T. Laskar, *et al.*, “The Birth of a Relativistic Jet Following the Disruption of a Star by a Cosmological Black Hole,” *Nature Astronomy*, vol. 7, pp. 88–104, Jan. 2023.  DOI: [10.1038/s41550-022-01820-x](https://doi.org/10.1038/s41550-022-01820-x). arXiv: 2211.16537 [astro-ph.HE].
- 26 P. J. Pessi, J. P. Anderson, G. Folatelli, *et al.*, “Broad-emission-line dominated hydrogen-rich luminous supernovae,” vol. 523, no. 4, pp. 5315–5340, Aug. 2023.  DOI: [10.1093/mnras/stad1822](https://doi.org/10.1093/mnras/stad1822). arXiv: 2306.08880 [astro-ph.HE].
- 27 T. Petrushevska, G. Leloudas, D. Ilić, *et al.*, “The rise and fall of the iron-strong nuclear transient PS16dtm,” vol. 669, A140, A140, Jan. 2023.  DOI: [10.1051/0004-6361/202244623](https://doi.org/10.1051/0004-6361/202244623). arXiv: 2211.17097 [astro-ph.HE].
- 28 S. Schulze, C. Fransson, A. Kozyreva, *et al.*, “1100 Days in the Life of the Supernova 2018ibb – the Best Pair-Instability Supernova Candidate, to date,” *arXiv e-prints*, arXiv:2305.05796, arXiv:2305.05796, May 2023.  DOI: [10.48550/arXiv.2305.05796](https://doi.org/10.48550/arXiv.2305.05796). arXiv: 2305.05796 [astro-ph.HE].
- 29 Q. Wang, P. Armstrong, Y. Zenati, *et al.*, “Revealing the Progenitor of SN 2021zby through Analysis of the TESS Shock-cooling Light Curve,” vol. 943, no. 2, L15, p. L15, Feb. 2023.  DOI: [10.3847/2041-8213/acb0d0](https://doi.org/10.3847/2041-8213/acb0d0). arXiv: 2211.03811 [astro-ph.HE].
- 30 P. Wiseman, Y. Wang, S. Hönig, *et al.*, “Multiwavelength observations of the extraordinary accretion event AT2021lwx,” vol. 522, no. 3, pp. 3992–4002, Jul. 2023.  DOI: [10.1093/mnras/stad1000](https://doi.org/10.1093/mnras/stad1000). arXiv: 2303.04412 [astro-ph.HE].
- 31 S. J. Brennan, M. Fraser, J. Johansson, *et al.*, “Photometric and spectroscopic evolution of the interacting transient AT 2016jbu(Gaia16cfr),” vol. 513, no. 4, pp. 5642–5665, Jul. 2022.  DOI: [10.1093/mnras/stac1243](https://doi.org/10.1093/mnras/stac1243). arXiv: 2102.09572 [astro-ph.SR].
- 32 S. J. Brennan, M. Fraser, J. Johansson, *et al.*, “Progenitor, environment, and modelling of the interacting transient AT 2016jbu (Gaia16cfr),” vol. 513, no. 4, pp. 5666–5685, Jul. 2022.  DOI: [10.1093/mnras/stac1228](https://doi.org/10.1093/mnras/stac1228). arXiv: 2102.09576 [astro-ph.HE].
- 33 P. Charalampopoulos, G. Leloudas, D. B. Malesani, *et al.*, “A detailed spectroscopic study of tidal disruption events,” vol. 659, A34, A34, Mar. 2022.  DOI: [10.1051/0004-6361/202142122](https://doi.org/10.1051/0004-6361/202142122). arXiv: 2109.00016 [astro-ph.HE].
- 34 A. M. Deiana, N. Tran, J. Agar, *et al.*, “Applications and techniques for fast machine learning in science,” *Frontiers in Big Data*, vol. 5, 2022, ISSN: 2624-909X.  DOI: [10.3389/fdata.2022.787421](https://doi.org/10.3389/fdata.2022.787421).
- 35 A. Fiore, S. Benetti, M. Nicholl, *et al.*, “Close, bright, and boxy: the superluminous SN 2018hti,” vol. 512, no. 3, pp. 4484–4502, May 2022.  DOI: [10.1093/mnras/stac744](https://doi.org/10.1093/mnras/stac744). arXiv: 2111.07142 [astro-ph.HE].
- 36 L. Galbany, T. de Jaeger, A. Riess, *et al.*, “An updated measurement of the Hubble constant from near-infrared observations of Type Ia supernovae,” *arXiv e-prints*, arXiv:2209.02546, arXiv:2209.02546, Sep. 2022.  DOI: [10.48550/arXiv.2209.02546](https://doi.org/10.48550/arXiv.2209.02546). arXiv: 2209.02546 [astro-ph.CO].
- 37 G. Hosseinzadeh, C. D. Kilpatrick, Y. Dong, *et al.*, “Weak Mass Loss from the Red Supergiant Progenitor of the Type II SN 2021yja,” vol. 935, no. 1, 31, p. 31, Aug. 2022.  DOI: [10.3847/1538-4357/ac75f0](https://doi.org/10.3847/1538-4357/ac75f0). arXiv: 2203.08155 [astro-ph.HE].

- 38 I. Irani, S. J. Prentice, S. Schulze, *et al.*, “Less Than 1% of Core-collapse Supernovae in the Local Universe Occur in Elliptical Galaxies,” vol. 927, no. 1, 10, p. 10, Mar. 2022.  DOI: [10.3847/1538-4357/ac4709](https://doi.org/10.3847/1538-4357/ac4709). arXiv: 2110.02252 [astro-ph.HE].
- 39 K. Medler, P. A. Mazzali, J. Teffs, *et al.*, “SN 2020acat: an energetic fast rising Type IIb supernova,” vol. 513, no. 4, pp. 5540–5558, Jul. 2022.  DOI: [10.1093/mnras/stac1192](https://doi.org/10.1093/mnras/stac1192).
- 40 T. E. Müller-Bravo, L. Galbany, E. Karamahmetoglu, *et al.*, “Testing the homogeneity of type Ia Supernovae in near-infrared for accurate distance estimations,” vol. 665, A123, A123, Sep. 2022.  DOI: [10.1051/0004-6361/202243845](https://doi.org/10.1051/0004-6361/202243845). arXiv: 2207.04780 [astro-ph.CO].
- 41 T. Müller-Bravo and L. Galbany, “HostPhot: global and local photometry of galaxies hosting supernovae or other transients,” *The Journal of Open Source Software*, vol. 7, no. 76, 4508, p. 4508, Aug. 2022.  DOI: [10.21105/joss.04508](https://doi.org/10.21105/joss.04508). arXiv: 2208.08117 [astro-ph.CO].
- 42 T. E. Müller-Bravo, M. Sullivan, M. Smith, *et al.*, “PISCOLA: a data-driven transient light-curve fitter,” vol. 512, no. 3, pp. 3266–3283, May 2022.  DOI: [10.1093/mnras/stab3065](https://doi.org/10.1093/mnras/stab3065). arXiv: 2110.11340 [astro-ph.HE].
- 43 F. Onori, G. Cannizzaro, P. G. Jonker, *et al.*, “The nuclear transient AT 2017gge: a tidal disruption event in a dusty and gas-rich environment and the awakening of a dormant SMBH,” vol. 517, no. 1, pp. 76–98, Nov. 2022.  DOI: [10.1093/mnras/stac2673](https://doi.org/10.1093/mnras/stac2673). arXiv: 2206.00049 [astro-ph.HE].
- 44 M. Pursiainen, G. Leloudas, E. Paraskeva, *et al.*, “SN 2018bsz: A Type I superluminous supernova with aspherical circumstellar material,” vol. 666, A30, A30, Oct. 2022.  DOI: [10.1051/0004-6361/202243256](https://doi.org/10.1051/0004-6361/202243256). arXiv: 2202.01635 [astro-ph.HE].
- 45 G. Valerin, M. L. Pumo, A. Pastorello, *et al.*, “Low luminosity Type II supernovae - IV. SN 202ocxd and SN 2021aai, at the edges of the sub-luminous supernovae class,” vol. 513, no. 4, pp. 4983–4999, Jul. 2022.  DOI: [10.1093/mnras/stac1182](https://doi.org/10.1093/mnras/stac1182). arXiv: 2203.03988 [astro-ph.SR].
- 46 T. Wevers, M. Nicholl, M. Guolo, *et al.*, “An elliptical accretion disk following the tidal disruption event AT 2020zso,” vol. 666, A6, A6, Oct. 2022.  DOI: [10.1051/0004-6361/202142616](https://doi.org/10.1051/0004-6361/202142616). arXiv: 2202.08268 [astro-ph.HE].
- 47 B. Barna, T. Szalai, S. W. Jha, *et al.*, “SN 2019muj - a well-observed Type Iax supernova that bridges the luminosity gap of the class,” vol. 501, no. 1, pp. 1078–1099, Feb. 2021.  DOI: [10.1093/mnras/staa3543](https://doi.org/10.1093/mnras/staa3543). arXiv: 2011.03068 [astro-ph.HE].
- 48 G. Cannizzaro, T. Wevers, P. G. Jonker, *et al.*, “Accretion disc cooling and narrow absorption lines in the tidal disruption event AT 2019dsg,” vol. 504, no. 1, pp. 792–815, Jun. 2021.  DOI: [10.1093/mnras/stab851](https://doi.org/10.1093/mnras/stab851). arXiv: 2012.10195 [astro-ph.HE].
- 49 T. .-. Chen, S. J. Brennan, R. Wesson, *et al.*, “SN 2018bsz: significant dust formation in a nearby superluminous supernova,” *arXiv e-prints*, arXiv:2109.07942, arXiv:2109.07942, Sep. 2021.  DOI: [10.48550/arXiv.2109.07942](https://doi.org/10.48550/arXiv.2109.07942). arXiv: 2109.07942 [astro-ph.HE].
- 50 A. Fiore, T. .-. Chen, A. Jerkstrand, *et al.*, “SN 2017gci: a nearby Type I Superluminous Supernova with a bumpy tail,” vol. 502, no. 2, pp. 2120–2139, Apr. 2021.  DOI: [10.1093/mnras/staa4035](https://doi.org/10.1093/mnras/staa4035). arXiv: 2012.12755 [astro-ph.HE].
- 51 C. P. Gutiérrez, M. C. Bersten, M. Orellana, *et al.*, “The double-peaked Type Ic supernova 2019cad: another SN 2005bf-like object,” vol. 504, no. 4, pp. 4907–4922, Jul. 2021.  DOI: [10.1093/mnras/stab1009](https://doi.org/10.1093/mnras/stab1009). arXiv: 2104.03723 [astro-ph.HE].
- 52 D. Hiramatsu, D. A. Howell, T. J. Moriya, *et al.*, “Luminous Type II Short-Plateau Supernovae 2006Y, 2006ai, and 2016gz: A Transitional Class from Stripped Massive Red Supergiants,” vol. 913, no. 1, 55, p. 55, May 2021.  DOI: [10.3847/1538-4357/abf6d6](https://doi.org/10.3847/1538-4357/abf6d6). arXiv: 2010.15566 [astro-ph.HE].

- 53 E. Kankare, A. Efstathiou, R. Kotak, *et al.*, “Core-collapse supernova subtypes in luminous infrared galaxies,” vol. 649, A134, A134, May 2021. [DOI: 10.1051/0004-6361/202039240](#). arXiv: 2102.13512 [astro-ph.SR].
- 54 O. R. McBrien, S. J. Smartt, M. E. Huber, *et al.*, “PS15cey and PS17cke: prospective candidates from the Pan-STARRS Search for kilonovae,” vol. 500, no. 3, pp. 4213–4228, Jan. 2021. [DOI: 10.1093/mnras/staa3361](#). arXiv: 2006.10442 [astro-ph.HE].
- 55 K. Medler, P. A. Mazzali, J. Teffs, *et al.*, “SN 2020cpg: an energetic link between Type IIb and Ib supernovae,” vol. 506, no. 2, pp. 1832–1849, Sep. 2021. [DOI: 10.1093/mnras/stab1761](#). arXiv: 2106.09505 [astro-ph.HE].
- 56 E. Parrag, C. Inserra, S. Schulze, *et al.*, “SN 2019hcc: a Type II supernova displaying early O II lines,” vol. 506, no. 4, pp. 4819–4840, Oct. 2021. [DOI: 10.1093/mnras/stab2074](#). arXiv: 2107.12017 [astro-ph.HE].
- 57 S. J. Prentice, C. Inserra, S. Schulze, *et al.*, “Transitional events in the spectrophotometric regime between stripped envelope and superluminous supernovae,” vol. 508, no. 3, pp. 4342–4358, Dec. 2021. [DOI: 10.1093/mnras/stab2864](#). arXiv: 2109.14572 [astro-ph.HE].
- 58 R. Ridden-Harper, A. Rest, R. Hounsell, T. E. Müller-Bravo, Q. Wang, and V. A. Villar, “TESSreduce: transient focused TESS data reduction pipeline,” *arXiv e-prints*, arXiv:2111.15006, arXiv:2111.15006, Nov. 2021. [DOI: 10.48550/arXiv.2111.15006](#). arXiv: 2111.15006 [astro-ph.IM].
- 59 S. Gomez, M. Nicholl, P. Short, *et al.*, “The Tidal Disruption Event AT 2018hyz II: Light-curve modelling of a partially disrupted star,” vol. 497, no. 2, pp. 1925–1934, Sep. 2020. [DOI: 10.1093/mnras/staa2099](#). arXiv: 2003.05469 [astro-ph.HE].
- 60 C. P. Gutiérrez, A. Pastorello, A. Jerkstrand, *et al.*, “SN 2017ivv: two years of evolution of a transitional Type II supernova,” vol. 499, no. 1, pp. 974–992, Nov. 2020. [DOI: 10.1093/mnras/staa2763](#). arXiv: 2008.09628 [astro-ph.HE].
- 61 W. V. Jacobson-Galán, R. Margutti, C. D. Kilpatrick, *et al.*, “SN 2019ehk: A Double-peaked Ca-rich Transient with Luminous X-Ray Emission and Shock-ionized Spectral Features,” vol. 898, no. 2, p. 166, Aug. 2020. [DOI: 10.3847/1538-4357/ab9e66](#). arXiv: 2005.01782 [astro-ph.HE].
- 62 T. E. Müller-Bravo, C. P. Gutiérrez, M. Sullivan, *et al.*, “The low-luminosity Type II SN 2016aqf: a well-monitored spectral evolution of the Ni/Fe abundance ratio,” vol. 497, no. 1, pp. 361–377, Sep. 2020. [DOI: 10.1093/mnras/staa1932](#). arXiv: 2006.15028 [astro-ph.HE].
- 63 M. Nicholl, T. Wevers, S. R. Oates, *et al.*, “An outflow powers the optical rise of the nearby, fast-evolving tidal disruption event AT2019qiz,” vol. 499, no. 1, pp. 482–504, Nov. 2020. [DOI: 10.1093/mnras/staa2824](#). arXiv: 2006.02454 [astro-ph.HE].
- 64 S. J. Prentice, K. Maguire, I. Boian, *et al.*, “SN 2018gix reveals that some SNe Ibn are SNe IIb exploding in dense circumstellar material,” vol. 499, no. 1, pp. 1450–1467, Nov. 2020. [DOI: 10.1093/mnras/staa2947](#). arXiv: 2009.10509 [astro-ph.HE].
- 65 M. Pursiainen, C. P. Gutiérrez, P. Wiseman, *et al.*, “The mystery of photometric twins DES17X1boj and DES16E2bjy,” vol. 494, no. 4, pp. 5576–5589, Jun. 2020. [DOI: 10.1093/mnras/staa995](#). arXiv: 1911.12083 [astro-ph.HE].
- 66 P. Short, M. Nicholl, A. Lawrence, *et al.*, “The tidal disruption event AT 2018hyz - I. Double-peaked emission lines and a flat Balmer decrement,” vol. 498, no. 3, pp. 4119–4133, Nov. 2020. [DOI: 10.1093/mnras/staa2065](#). arXiv: 2003.05470 [astro-ph.GA].
- 67 T. Szalai, S. Zsiros, O. D. Fox, O. Pejcha, and T. Müller, “A Comprehensive Analysis of Spitzer Supernovae,” vol. 241, no. 2, 38, p. 38, Apr. 2019. [DOI: 10.3847/1538-4365/ab10df](#). arXiv: 1803.02571 [astro-ph.HE].

- 68

C. S. Kochanek, M. Fraser, S. M. Adams, *et al.*, “Supernova progenitors, their variability and the Type IIP Supernova ASASSN-16fq in M66,” vol. 467, no. 3, pp. 3347–3360, May 2017.  DOI: [10.1093/mnras/stx291](https://doi.org/10.1093/mnras/stx291). arXiv: [1609.00022](https://arxiv.org/abs/1609.00022) [astro-ph.SR].
- 69

T. Müller, J. L. Prieto, O. Pejcha, and A. Clocchiatti, “The Nickel Mass Distribution of Normal Type II Supernovae,” vol. 841, no. 2, 127, p. 127, Jun. 2017.  DOI: [10.3847/1538-4357/aa72f1](https://doi.org/10.3847/1538-4357/aa72f1). arXiv: [1702.00416](https://arxiv.org/abs/1702.00416) [astro-ph.SR].