Tomás Enrique Müller Bravo, Ph.D.

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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, CSP/POISE, FLOWS, SAINTS

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	XCL23B01

Observational Experience

IDS	Isaac Newton Telescope, Roque de los Muchachos Obserbatory
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, online 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 EFOSC2+SOFI at NTT
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 WISeREP data
TNS API	API to access Transient Name Server (TNS) data
SVO API	API to download Spanish Virtual Observatory (SVO) filters
SNII Fitting Code	code for fitting type II supernovae light curves and expansion velocities
ATLAS Object	cleaning of ATLAS light curves

Supervision

2024	**Joan (High School - summer student):** Type Ia supernova cosmology in the near-infrared (co-supervised with L. Galbany and C. Gutiérrez)
2023 – present	**Shiljo John Sebastian (Master - ICE):** Environment effects on type II supernovae for cosmology

Supervision (continued)

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 with ZTF data release 2 (co-supervised with L. Galbany)
- **Goio García (Undergraduate - ICE):** The effect of host-galaxy properties on the Colour Law of Type Ia supernovae

2022 – 2023
- **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 class)

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 and NeurIPS 2023 workshop on Machine Learning and the Physical Sciences
- Liverpool Telescope

Miscellaneous

Languages
- English (fluent), Spanish (fluent), French (basic)

Coding
- Python (advanced), C++ (basic)

Press Releases
- SN2018evt, AT2022tsd, AT2022aedm, AT2021lwx, The Birth of a Relativistic Jet, AT2019qiz

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

- "Mesurant distàncies en l'Univers amb explosions còsmiques" talk at Vil·la Urània, Barcelona, Spain (April 2024)
- "Galaxies" talk for teachers at Escola Gabriel Castellà i Raich, Igualada, Spain (Nov. 2023)
- "Sun Spots" talk for teachers at Escola Gabriel Castellà i Raich, Igualada, Spain (Apr. 2023)

Miscellaneous (continued)

- "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)
- Guest post in Astrobites (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. *"Characterisation of Type Ia Supernova Near-Infrared Light Curves"*, SEA meeting, Granada, Spain, Jul. 2024. URL: https://www.granadacongresos.com/sea2024.
2. *"Looking for environment effects on Type II Supernovae for cosmology" (short talk)*, EAS meeting, Padova, Italy, Jul. 2024. URL: https://eas.unige.ch/EAS2024/session.jsp?id=SS34.
3. *"Standardising Type Ia Supernovae in the near-infrared?"* EAS meeting, Padova, Italy, Jul. 2024. URL: https://eas.unige.ch/EAS2024/session.jsp?id=SS32.
4. *"Type Ia Supernovae in the Near-Infrared: characterisation and cosmology"*, Supernovae and Extragalactic Transients meeting, Oxford, UK, Jul. 2024.
5. *"Type Ia Supernovae in the Near-Infrared: characterisation and cosmology" (short talk)*, IEEC Fòrum, Castelldefels, Spain, Jun. 2024. URL: https://www.ieec.cat/en/6th-ieec-forum-gathers-more-than-160-attendees-during-first-edition-held-at-the-new-headquarters-of-the-institute-in-castelldefels/.
6. *"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.
7. *"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.
8. *"Testing the Homogeneity of Type Ia Supernovae in the Near-Infrared for Accurate Distance Estimations"*, XV Reunión Científica de la SEA, Tenerife, Sep. 2022. URL: https://research.iac.es/congreso/SEA2022/pages/en/presentation.php.
9. *"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/.
10. *"Gaussian Process Fitting: let the data guide you!"* PyData Global, online, Nov. 2020. URL: https://global.pydata.org/pages/program.
11. *"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.
12. *"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.
13. *"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://cosimoinserra.wixsite.com/lsstuk-tvs-ras.
14. *"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/.
15. *"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/.
16. *"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/.
17. *"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.

18 *"The Nickel Mass Distribution of Normal Type II Supernovae"*, III Millennium Institute of Astrophysics Workshop, Viña del Mar, Dec. 2016. URL: https://www.astrofisicamas.cl/en/mas-se-reune-por-tercera-vez-en-su-workshop-anual/.

19 *"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.

20 *"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 21 – ADS library)

1. A. Aamer, M. Nicholl, A. Jerkstrand, *et al.*, "A precursor plateau and pre-maximum [O II] emission in the superluminous SN2019szu: a pulsational pair-instability candidate," *MNRAS*, vol. 527, no. 4, pp. 11 970–11 995, Feb. 2024. DOI: 10.1093/mnras/stad3776. arXiv: 2307.02487 [astro-ph.HE].
2. M. Amenouche, M. Smith, P. Rosnet, *et al.*, "ZTF SN Ia DR2: Simulations and volume limited sample," *arXiv e-prints*, arXiv:2409.04650, arXiv:2409.04650, Sep. 2024. DOI: 10.48550/arXiv.2409.04650. arXiv: 2409.04650 [astro-ph.CO].
3. M. Aubert, P. Rosnet, B. Popovic, *et al.*, "ZTF SN Ia DR2: Exploring SN Ia properties in the vicinity of under-dense environments," *arXiv e-prints*, arXiv:2406.11680, arXiv:2406.11680, Jun. 2024. DOI: 10.48550/arXiv.2406.11680. arXiv: 2406.11680 [astro-ph.CO].
4. U. Burgaz, K. Maguire, G. Dimitriadis, *et al.*, "ZTF SN Ia DR2: The spectral diversity of Type Ia supernovae in a volume-limited sample," *arXiv e-prints*, arXiv:2407.06828, arXiv:2407.06828, Jul. 2024. DOI: 10.48550/arXiv.2407.06828. arXiv: 2407.06828 [astro-ph.HE].
5. B. Carreres, D. Rosselli, J. E. Bautista, *et al.*, "ZTF SN Ia DR2: Peculiar velocities impact on the Hubble diagram," *arXiv e-prints*, arXiv:2405.20409, arXiv:2405.20409, May 2024. DOI: 10.48550/arXiv.2405.20409. arXiv: 2405.20409 [astro-ph.CO].
6. P. Charalampopoulos, R. Kotak, T. Wevers, *et al.*, "The fast transient AT 2023clx in the nearby LINER galaxy NGC 3799, as a tidal disruption event of a very low-mass star," *arXiv e-prints*, arXiv:2401.11773, arXiv:2401.11773, Jan. 2024. DOI: 10.48550/arXiv.2401.11773. arXiv: 2401.11773 [astro-ph.HE].
7. P. Clark, O. Graur, J. Callow, *et al.*, "Long-term follow-up observations of extreme coronal line emitting galaxies," *MNRAS*, vol. 528, no. 4, pp. 7076–7102, Mar. 2024. DOI: 10.1093/mnras/stae460. arXiv: 2307.03182 [astro-ph.HE].
8. M. Deckers, K. Maguire, L. Shingles, *et al.*, "ZTF SN Ia DR2: The secondary maximum in Type Ia supernovae," *arXiv e-prints*, arXiv:2406.19460, arXiv:2406.19460, Jun. 2024. DOI: 10.48550/arXiv.2406.19460. arXiv: 2406.19460 [astro-ph.HE].
9. S. Dhawan, E. Mortsell, J. Johansson, *et al.*, "ZTF SNDR2: Cosmology-independent constraints on Type Ia supernova standardisation from supernova siblings," *arXiv e-prints*, arXiv:2406.01434, arXiv:2406.01434, Jun. 2024. DOI: 10.48550/arXiv.2406.01434. arXiv: 2406.01434 [astro-ph.CO].
10. G. Dimitriadis, U. Burgaz, M. Deckers, *et al.*, "ZTF SN Ia DR2: The diversity and relative rates of the thermonuclear SN population," *arXiv e-prints*, arXiv:2409.04200, arXiv:2409.04200, Sep. 2024. DOI: 10.48550/arXiv.2409.04200. arXiv: 2409.04200 [astro-ph.HE].
11. N. Elias-Rosa, S. J. Brennan, S. Benetti, *et al.*, "SN 2020pvb: a Type IIn-P supernova with a precursor outburst," *arXiv e-prints*, arXiv:2402.02924, arXiv:2402.02924, Feb. 2024. arXiv: 2402.02924 [astro-ph.SR].
12. L. Ferrari, G. Folatelli, H. Kuncarayakti, *et al.*, "The metamorphosis of the Type Ib SN 2019yvr: late-time interaction," *MNRAS*, vol. 529, no. 1, pp. L33–L40, Mar. 2024. DOI: 10.1093/mnrasl/slad195. arXiv: 2401.15052 [astro-ph.HE].
13. M. Ginolin, M. Rigault, Y. Copin, *et al.*, "ZTF SN Ia DR2: Colour standardisation of Type Ia Supernovae and its dependence on environment," *arXiv e-prints*, arXiv:2406.02072, arXiv:2406.02072, Jun. 2024. DOI: 10.48550/arXiv.2406.02072. arXiv: 2406.02072 [astro-ph.CO].
14. M. Ginolin, M. Rigault, M. Smith, *et al.*, "ZTF SN Ia DR2: Environmental dependencies of stretch and luminosity of a volume limited sample of 1,000 Type Ia Supernovae," *arXiv e-prints*, arXiv:2405.20965, arXiv:2405.20965, May 2024. DOI: 10.48550/arXiv.2405.20965. arXiv: 2405.20965 [astro-ph.CO].
15. A. Gkini, C. Fransson, R. Lunnan, *et al.*, "Eruptive mass-loss less than a year before the explosion of superluminous supernovae: I. The cases of SN 2020xga and SN 2022xgc," *arXiv e-prints*,

arXiv:2409.17296, arXiv:2409.17296, Sep. 2024. DOI: 10.48550/arXiv.2409.17296. arXiv: 2409.17296 [astro-ph.HE].

16 A. Gkini, R. Lunnan, S. Schulze, *et al.*, "SN 2020zbf: A fast-rising hydrogen-poor superluminous supernova with strong carbon lines," *A&A*, vol. 685, A20, A20, May 2024. DOI: 10.1051/0004-6361/202348166. arXiv: 2310.06814 [astro-ph.HE].

17 T. Kangas, H. Kuncarayakti, T. Nagao, *et al.*, "The enigmatic double-peaked stripped-envelope SN 2023aew," *arXiv e-prints*, arXiv:2401.17423, arXiv:2401.17423, Jan. 2024. DOI: 10.48550/arXiv.2401.17423. arXiv: 2401.17423 [astro-ph.HE].

18 J. Pearson, D. J. Sand, P. Lundqvist, *et al.*, "Strong Carbon Features and a Red Early Color in the Underluminous Type Ia SN 2022xkq," *ApJ*, vol. 960, no. 1, 29, p. 29, Jan. 2024. DOI: 10.3847/1538-4357/ad0153. arXiv: 2309.10054 [astro-ph.HE].

19 B. Popovic, M. Rigault, M. Smith, *et al.*, "ZTF SN Ia DR2: Evidence of Changing Dust Distributions With Redshift Using Type Ia Supernovae," *arXiv e-prints*, arXiv:2406.06215, arXiv:2406.06215, Jun. 2024. DOI: 10.48550/arXiv.2406.06215. arXiv: 2406.06215 [astro-ph.CO].

20 E. J. Ridley, M. Nicholl, C. A. Ward, *et al.*, "Time-varying double-peaked emission lines following the sudden ignition of the dormant galactic nucleus AT2017bcc," *MNRAS*, Apr. 2024. DOI: 10.1093/mnras/stae1129. arXiv: 2310.20408 [astro-ph.HE].

21 M. Rigault, M. Smith, N. Regnault, *et al.*, "ZTF SN Ia DR2: Study of Type Ia Supernova lightcurve fits," *arXiv e-prints*, arXiv:2406.02073, arXiv:2406.02073, Jun. 2024. DOI: 10.48550/arXiv.2406.02073. arXiv: 2406.02073 [astro-ph.CO].

22 M. Rigault, M. Smith, A. Goobar, *et al.*, "ZTF SN Ia DR2: Overview," *arXiv e-prints*, arXiv:2409.04346, arXiv:2409.04346, Sep. 2024. DOI: 10.48550/arXiv.2409.04346. arXiv: 2409.04346 [astro-ph.CO].

23 F. Ruppin, M. Rigault, M. Ginolin, *et al.*, "ZTF SN Ia DR2: Impact of the galaxy cluster environment on the stretch distribution of Type Ia supernovae," *arXiv e-prints*, arXiv:2406.01108, arXiv:2406.01108, Jun. 2024. DOI: 10.48550/arXiv.2406.01108. arXiv: 2406.01108 [astro-ph.CO].

24 J. H. Terwel, K. Maguire, G. Dimitriadis, *et al.*, "Searching for late-time interaction signatures in Type Ia supernovae from the Zwicky Transient Facility," *arXiv e-prints*, arXiv:2402.16962, arXiv:2402.16962, Feb. 2024. arXiv: 2402.16962 [astro-ph.HE].

25 G. Valerin, A. Pastorello, E. Mason, *et al.*, "A study in scarlet – II. Spectroscopic properties of a sample of Intermediate Luminosity Red Transients," *arXiv e-prints*, arXiv:2407.21733, arXiv:2407.21733, Jul. 2024. DOI: 10.48550/arXiv.2407.21733. arXiv: 2407.21733 [astro-ph.SR].

26 G. Valerin, A. Pastorello, A. Reguitti, *et al.*, "A study in scarlet – I. Photometric properties of a sample of Intermediate Luminosity Red Transients," *arXiv e-prints*, arXiv:2407.21671, arXiv:2407.21671, Jul. 2024. DOI: 10.48550/arXiv.2407.21671. arXiv: 2407.21671 [astro-ph.SR].

27 J. N. D. van Dalen, A. J. Levan, P. G. Jonker, *et al.*, "The Einstein Probe transient EP240414a: Linking Fast X-ray Transients, Gamma-ray Bursts and Luminous Fast Blue Optical Transients," *arXiv e-prints*, arXiv:2409.19056, arXiv:2409.19056, Sep. 2024. DOI: 10.48550/arXiv.2409.19056. arXiv: 2409.19056 [astro-ph.HE].

28 L. Wang, M. Hu, L. Wang, *et al.*, "Newly formed dust within the circumstellar environment of SN Ia-CSM 2018evt," *Nature Astronomy*, vol. 8, pp. 504–519, Apr. 2024. DOI: 10.1038/s41550-024-02197-9. arXiv: 2310.14874 [astro-ph.HE].

29 B. Warwick, J. Lyman, M. Pursiainen, *et al.*, "SN 2023tsz: A helium-interaction driven supernova in a very low-mass galaxy," *arXiv e-prints*, arXiv:2409.14147, arXiv:2409.14147, Sep. 2024. DOI: 10.48550/arXiv.2409.14147. arXiv: 2409.14147 [astro-ph.HE].

30 B. Ailawadhi, R. Dastidar, K. Misra, *et al.*, "Photometric and spectroscopic analysis of the Type II SN 2020jfo with a short plateau," *MNRAS*, vol. 519, no. 1, pp. 248–270, Feb. 2023. DOI: 10.1093/mnras/stac3234. arXiv: 2211.02823 [astro-ph.HE].

31 K. A. Bostroem, J. Pearson, M. Shrestha, *et al.*, "Early Spectroscopy and Dense Circumstellar Medium Interaction in SN 2023ixf," *ApJL*, vol. 956, no. 1, L5, p. L5, Oct. 2023. DOI: 10.3847/2041-8213/acf9a4. arXiv: 2306.10119 [astro-ph.HE].

32 M. Deckers, O. Graur, K. Maguire, *et al.*, "Photometric study of the late-time near-infrared plateau in Type Ia supernovae," *MNRAS*, vol. 521, no. 3, pp. 4414–4430, May 2023. DOI: 10.1093/mnras/stad841. arXiv: 2303.09548 [astro-ph.HE].

33 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," *MNRAS*, vol. 524, no. 1, pp. 767–785, Sep. 2023. DOI: 10.1093/mnras/stad1932. arXiv: 2303.13581 [astro-ph.HE].

34 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," *MNRAS*, vol. 521, no. 1, pp. 1162–1183, May 2023. DOI: 10.1093/mnras/stad536. arXiv: 2302.08228 [astro-ph.HE].

35 K. Ertini, G. Folatelli, L. Martinez, *et al.*, "SN 2021gno: a calcium-rich transient with double-peaked light curves," *MNRAS*, vol. 526, no. 1, pp. 279–298, Nov. 2023. DOI: 10.1093/mnras/stad2705. arXiv: 2309.07800 [astro-ph.HE].

36 L. Galbany, T. de Jaeger, A. G. Riess, *et al.*, "An updated measurement of the Hubble constant from near-infrared observations of Type Ia supernovae," *A&A*, vol. 679, A95, A95, Nov. 2023. DOI: 10.1051/0004-6361/202244893. arXiv: 2209.02546 [astro-ph.CO].

37 A. Y. Q. Ho, D. A. Perley, P. Chen, *et al.*, "Minutes-duration optical flares with supernova luminosities,", vol. 623, no. 7989, pp. 927–931, Nov. 2023. DOI: 10.1038/s41586-023-06673-6. arXiv: 2311.10195 [astro-ph.HE].

38 S. Holmbo, M. D. Stritzinger, E. Karamehmetoglu, *et al.*, "The Carnegie Supernova Project I. Spectroscopic analysis of stripped-envelope supernovae," *A&A*, vol. 675, A83, A83, Jul. 2023. DOI: 10.1051/0004-6361/202245334. arXiv: 2302.11304 [astro-ph.HE].

39 H. Kuncarayakti, J. Sollerman, L. Izzo, *et al.*, "The broad-lined Type-Ic supernova SN 2022xxf and its extraordinary two-humped light curves. I. Signatures of H/He-free interaction in the first four months," *A&A*, vol. 678, A209, A209, Oct. 2023. DOI: 10.1051/0004-6361/202346526. arXiv: 2303.16925 [astro-ph.SR].

40 T. Moore, S. J. Smartt, M. Nicholl, *et al.*, "SN 2022jli: A Type Ic Supernova with Periodic Modulation of Its Light Curve and an Unusually Long Rise," *ApJL*, vol. 956, no. 1, L31, p. L31, Oct. 2023. DOI: 10.3847/2041-8213/acfc25. arXiv: 2309.12750 [astro-ph.HE].

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