



<https://transientsdownunder.github.io/>

TRANSIENTS DOWN UNDER

January 29 – February 2, 2024
Swinburne University of Technology
Melbourne, Australia

Transients Down Under brings together researchers from around the world working in transient astronomy to share ideas and recent progress in theoretical research and data collection, processing and analysis strategies, tools, and techniques. Conference topics include cataclysmic events at all wavelengths, messengers, and durations spanning observation, theory, data science, instrumentation, and cultural astronomy.

SOC: Ashley Ruiter (UNSW Canberra, co-chair), Jeff Cooke (Swinburne, co-chair), Lilia Ferrarjo (ANU), Evgeni Grishin (Monash), Duane Hamacher (Melbourne), Alex Heger (Monash), Ryosuke Hirai (Monash), Chris Lidman (ANU), Nicolas Rodríguez-Segovia (UNSW Canberra), Stuart Ryder (Macquarie), Karelle Steliez (UTas), Ivo Spitensahl (UNSW Canberra), Tony Travouillon (ANU), Brad Tucker (ANU), Linqing Wen (UWA)

LOC: Katie Auchettl (Melbourne), Jeff Cooke (Swinburne), Evgeni Grishin (Monash), Duane Hamacher (Melbourne), Alex Heger (Monash), Ryosuke Hirai (Monash), Jade Powell (Swinburne), Karelle Steliez (UTas), Simon Stevenson (Swinburne)



TRANSIENTS DOWN UNDER 2024

Swinburne University, Melbourne, Australia

Sunday, January 28, 2024

18:00 – 20:00

Reception

AMDC level 3

Welcome Reception – Registration

SkyLounge
and Terrace

Important notes:

The conference venue is on the Swinburne University campus in the AMDC and ATC buildings (see map at the end of this program). The Melbourne public trains, trams, and buses provide convenient access to/from the Swinburne campus. The Glenferrie station is the train stop located on campus.

The conference will have two parallel sessions.

- **Parallel session 1 is held in the AMDC 301 lecture hall**
- **Parallel session 2 is held in the ATC 101 lecture hall**

(see campus map at the end of this program)

The parallel sessions will run both morning and afternoon everyday. The two exceptions are the morning session on Monday and the closing session on Friday where the talks will only be held in AMDC 301.

The session times are indicated on the program. **Invited talks are 25+5 minutes** and **contributed talks are 12+3 minutes** within the sessions.

A few rooms on campus of varying size have been reserved for breakout meetings and to encourage collaborative discussions, etc. Please contact Jeff Cooke to book a room (jcooke@astro.swin.edu.au).

Conference daily info:

Coffee breaks (30 minute duration) are held everyday at 10:15 and 15:15 (+/- session end times) and located on level 3 of the AMDC building SkyLounge and Terrace.

A lunch is provided at 12:15 (+/- session end times) on conference full days (Monday, Tuesday and Thursday) on level 3 of the AMDC building SkyLounge and Terrace.

Optional excursions: Participant bus pick up will occur **promptly at 12:15 on Wednesday** for the wildlife and winery optional excursions. The talk sessions are planned to end at 11:45 that day to help provide time to make your way to the pick up location(s).

Conference dinner: The dinner will be Tuesday 18:30 – 21:30 in the Melbourne Aquarium Coral Atoll room. One option for transportation is to take the train from the Glenferrie station on campus to either the Flinders street or Southern Cross station. The Melbourne Aquarium is ~6–7 minute walk from the Southern Cross station and ~10 minutes from Flinders station.

09:00 – 09:30		Welcome	AMDC 301
Vice Chancellor Opening / Introduction			
09:30 – 12:00		Cultural Astronomy – Chair Duane Hamacher	AMDC 301
Contributed	Duane Hamacher – Seeking innovation at the crossroads of Indigenous astronomy and observational astrophysics		
Invited	Marcia Langton – The importance of Indigenous Knowledge in science and astronomy		
10:15 – 10:45		Coffee break	SkyLounge
Invited	Jarita Holbrook – The ASTROMOVES Study of Astrophysicists		
Contributed	Peter Swanton – Transients in Indigenous Astronomy		
Invited	Matthew Bailes – A historical perspective on transients		
12:00 – 12:15		Poster sparkler talks	AMDC 301
12:15 – 13:30		Lunch	SkyLounge
13:30 – 17:00		Supernova Theory – Chair Lilia Ferrario	AMDC 301
Invited	Hans–Thomas Janka – Core–collapse Supernova Theory: Recent Progress and New Questions		
Contributed	Vishnu Varma – The impact of magnetic fields in non–rotating core–collapse supernova		
Contributed	Ryo Sawada – '56Ni problem' in Canonical Supernova Explosion		
Contributed	Ko Nakamura – Systematic 3D MHD simulations of core–collapse supernova and multi–messenger signal		
Contributed	Kiril Maltsev – Convective core overshoot effects on Type IIP SN explosion energy and compact remnant mass landscape		
Contributed	Bart van Baal – Modelling supernova nebular lines in 3D		
15:15 – 15:45		Coffee break	SkyLounge
Contributed	Wolfgang Kerzendorf – Reconstructing the physics of transients using machine learning		
Contributed	Dhvanil Desai – Plasma Instabilities Matter: How late–time light curves of supernovae and kilonovae are impacted by plasma streaming instabilities		
Contributed	Seong Hyun Park – On the early–time optical light curves of double peaked SNe IIb: the effects of Thomson scattering and chemical mixing		
Contributed	Jared Goldberg – Type IIb Supernovae and the 3D structure of their progenitor envelope		
Contributed	Masato Sato – Light curves of electron–capture and Fe core–collapse supernovae: A new diagnostic of electron–capture supernovae		

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12:00 – 12:15		Poster sparkler talks	AMDC 301
12:15 – 13:30		Lunch	SkyLounge
13:30 – 15:15		Fast Radio Bursts – Chair Katie Auchettl	ATC 101
Invited	Manisha Caleb – From Puzzles to Revelations: The Fast Radio Burst Journey		
Contributed	Stuart Ryder – The first Fast Radio Burst at a redshift of 1		
Contributed	Chin-Ping Hu – Rapid spin changes around the 2022 fast radio burst from SGR 1935+2154		
Contributed	Alexa Gordon – Constraining the Progenitors of Fast Radio Bursts with Host Galaxies		
Contributed	Lachlan Marnoch – The Curious Case of the Missing Fast Radio Burst Host Galaxy		
Contributed	Jielai Zhang – Coordinated Simultaneous Multi-Wavelength Observations (X-ray, UV, Optical, and Radio) of Two FRBs		
15:15 – 15:45		Coffee break	SkyLounge
15:45 – 17:00		Radio transients – Chair Katie Auchettl	ATC 101
Invited	Laura Driessen – Unlocking the Radio Sky: Recent Advances in Image-Plane Radio Transient Searches		
Contributed	Dougal Dobie – Discovery of a highly polarised, short-lived radio transient with ASKAP		
Contributed	Joshua Pritchard – Identification of stellar radio transients with the Australian SKA Pathfinder		
Contributed	Kovi Rose – The identification of radio variables via circular polarisation searches		

09:00 – 12:00 Compact objects and GWs – Chair Linqing Wen AMDC 301		
Invited	Lilli Sun – Gravitational-wave astronomy with next-generation observatories	
Contributed	Smaranika Banerjee – Modelling kilonova from photospheric to nebular phase	
Contributed	Teagan Clarke – Exploring the implications of fast radio bursts from neutron star–black hole mergers	
Contributed	Paul Lasky – Multimessenger observations of binary neutron star mergers — now and into the future	
10:15 – 10:45 Coffee break SkyLounge		
Invited	Manoj Kovalam – Low Latency Detection of Gravitational Waves from Compact Binaries	
Contributed	Dheeraj Pasham – Repeating X-ray Transients from Nuclei of External Galaxies as Extreme Mass Ratio Inspirals	
Contributed	Kelly Gourdji – Probing gravitational wave radio counterparts on all scales: from tens of square degrees to sub-milliarcsecond resolution	
Contributed	Justin Clancy – Exploring Millimetre Transients: Opportunities and Insights from Modern CMB Surveys and the Simons Observatory	
12:00 – 12:15 Poster sparkler talks AMDC 301		
12:15 – 13:30 Lunch SkyLounge		
13:30 – 17:00 Nuclear transients – Chair Bernhard Mueller AMDC 301		
Invited	Iair Arcavi – Tidal Disruption Events and Other Transients in Galaxy Centers	
Contributed	Charlotte Angus – A fast-rising tidal disruption event from an intermediate mass black hole	
Contributed	Taj Jankovič – Spin-induced offset stream self-crossing shocks in tidal disruption event	
Contributed	Paige Ramsden – Star Formation Histories and Bulge Masses of TDE Host Galaxies	
Contributed	Megha Sharma – Partial Tidal Disruption Events: Elixir of long life	
Contributed	Kohki Uno – Faked Disruption AT2023clx – A New-class AGN Activity Mimicking TDEs?	
15:15 – 15:45 Coffee break SkyLounge		
Contributed	Jason Hinkle – Building an ANT-hill: The Growing Class of Ambiguous Nuclear Transients	
Contributed	Adelle Goodwin – Radio emission from tidal disruption events: unveiling a population of prompt outflows launched during the stellar disruption	
Contributed	Fangyi (Fitz) Hu – Why do tidal disruption events shine in optical & radio more than X-rays?	
Contributed	Roberto Soria – Intermediate mass black holes in the halo of nearby galaxies	

Conference Dinner 18:30 – 21:30 at the Melbourne Aquarium Coral Atoll room

09:00 – 12:00		Thermonuclear – Chair Stuart Ryder	ATC 101
Invited	Friedrich Roepke – Simulating thermonuclear astrophysical transients		
Contributed	Masaki Tsurumi – Double Detonation Model of Type Ia Supernovae: The Effects of The Mass of The He Envelope on Carbon Detonation Ignition		
Contributed	Matthew Grayling – Hierarchical dust analysis of SNe Ia hosts in Foundation, DES3YR and PS1MD		
Contributed	Willem Hoogendam – From Out of the Blue: Swift Reveals a Link Between 2002es-like and 2003fg-like and Early-Time Bump Type Ia Supernovae		
10:15 – 10:45		Coffee break	SkyLounge
Contributed	Bailey Martin – Understanding the Physical Origin of the SN Ia Host Galaxy Mass Step		
Contributed	Qinan Wang – Searching for early excess of SNe Ia from Kepler and TESS		
Contributed	Gu Lim – Constraining the Progenitor System of SN 2021hpr via Early Flux Excess		
Contributed	Sahana Kumar – Investigating the Origins of SNe Ia using Late Time NIR spectroscopy		
Contributed	Luke Harvey – Chasing High-Velocity Silicon Features in the ZTF Cosmology DR2		
12:00 – 12:15		Poster sparkler talks	ATC 101
12:15 – 13:30		Lunch	SkyLounge
13:30 – 17:00		Massive stars and CSM – Chair Duane Hamacher	ATC 101
Invited	Keiichi Maeda – Interacting Supernovae with Different Flavors		
Contributed	Azalee Boestrom – Understanding CSM Interaction in Hydrogen-rich Supernovae using UV and Optical Spectroscopy		
Contributed	David Aguado – SN2023ixf: the most detailed flash spectroscopy event observed to date		
Contributed	Tatsuya Matsumoto – Constraining ejecta and CSM properties of multi-peak SNe		
Contributed	Erez Zimmerman – Ultraviolet observations resolve the explosion of supernova 2023ixf in Messier 101 within its complex circumstellar environment		
15:15 – 15:45		Coffee break	SkyLounge
Contributed	Sean Brennan – Early Warning Signs: Precursor Eruptions Preceding Supernova		
Contributed	Yashvi Sharma – Coronal lines in late-time spectra of interacting supernovae		
Contributed	Wynn Jacobson-Galan – Final Moments: Pre-Supernova Emission and Flash Spectroscopy as Novel Probes of Late-Stage Red Supergiant Evolution		
Contributed	Avinash Singh – Multi-wavelength analysis of SN 2023ixf: Type II SN with a multi-faceted CSM geometry		

Conference Dinner 18:30 – 21:30 at the Melbourne Aquarium Coral Atoll room

09:00 – 10:15 **Type Ia and novae** – Chair Ashley Ruiters AMDC 301

Invited **Ken Shen** – New pictures of old transients: Recent advances in the fields of Type Ia supernovae and classical novae

Contributed **Alex Kemp** – Classical novae: rates, distributions, yields, and wider impact on galactic chemical evolution

Contributed **Kazuya Iwata** – Assessing the double-detonation model via detonation cellular physics: Terrestrial experiment meets astrophysics

10:15 – 10:45 Coffee break SkyLounge

10:45 – 11:45 **Remnants and dust** – Chair Ashley Ruiters AMDC 301

Contributed **Abigail Polin** – Decoding Supernova Remnants

Contributed **Timo Kravtsov** – Discovery of new oxygen-rich supernova remnants

Contributed **Jeonghee Rho** – Carbon Monoxide Detections and Dust Formation in Supernovae

Contributed **Melissa Shahbandeh** – Unraveling Cosmic Dust Origins: JWST Revelations from Supernovae

11:45 Lunch on your own – or –
12:15 Excursions (most include lunch)

09:00 – 12:00

Surveys – Chair Linqing Wen

ATC 101

- | | |
|-------------|--|
| Invited | Tamara Davis – The Dark Energy Survey, Final Supernova Cosmology Results |
| Contributed | Igor Andreoni – Discovering rare transients and multi-messenger counterparts with wide-field optical telescopes |
| Contributed | Rahul Jayaraman – Studying Gamma-Ray Bursts and Gravitational-Wave Events using the Transiting Exoplanet Survey Satellite |
| Contributed | Emily Biermann – Blind Transient Searches in CMB Survey Data |

10:15 – 10:45

Coffee break

SkyLounge

- | | |
|-------------|---|
| Contributed | Natasha Van Bemmell – Finding Kilonova with the KiloNova and Transients Program (KNTrAP) |
| Contributed | Michael Tucker – SCAT DR1: Spectra of 1000 Supernovae |
| Contributed | Sara Webb – Beyond the Stars: Astronomy's Contribution to Space Situational Awareness |
| Contributed | Hugo Walsh – The Future of Observational Astronomers |

11:45

Lunch on your own – or –

12:15

Excursions (most include lunch)

09:00 – 12:15 **Identification** – Chair Dougal Dobie AMDC 301

Invited	Anais Moller – Transients in the era of Rubin, a perspective from Fink broker
Contributed	Takashi Moriya – Synthetic light-curve model grid for systematic characterization of Type II supernovae in the era of Rubin/LSST
Contributed	Shreejit Jadhav – Status of machine learning in GW searches
Contributed	Manisha Shrestha – Rapid follow-up of type II SN2023axu show evidence of circumstellar material interaction

10:15 – 10:45 Coffee break SkyLounge

Invited	Francisco Forster – The ALeRCE astronomical alert broker
Contributed	Nikhil Sarin – From TDEs and GRBs to supernovae – Redback: A Bayesian inference software package for electromagnetic transients
Contributed	Makoto Uemura – Automated Decision Making in Rapid Follow-up Observations of Cataclysmic Variables
Contributed	Simon Goode – Sub-Minute Optical Transient candidates detected via an AI-driven search
Contributed	Yi Shuen Christine Lee – Impact of noise transients on gravitational-wave burst detection efficiency of the BayesWave pipeline with multidetector networks

12:15 – 13:30 Lunch SkyLounge

13:30 – 17:00 **Binaries and mergers** – Chair Karelle Siellez AMDC 301

Invited	Orsola De Marco – Dusty common envelope interactions and the light they emit
Contributed	Jinping Zhu – Formation of Fast-spinning Neutron Stars in Close Binaries and Magnetar-driven Stripped-envelope Supernovae
Contributed	Ana Lourdes Juarez Garcia – Evolution of accretion disks in low-to-intermediate mass X-ray binary progenitors
Contributed	Chunliang Mu – Photospheric Evolution in Common Envelope Simulations
Contributed	Christian van der Merwe – Explosive Transients from Stellar Collisions
Contributed	Stan Owocki – Modeling signatures of massive-star mergers

15:15 – 15:45 Coffee break SkyLounge

Contributed	Ashley Ruitter – Mergers of double white dwarfs and non-explosive transients
Contributed	Jamie Soon – An outlook on utilising multiwavelength datasets with new infrared survey
Contributed	Lucy McNeill – Evolution of Hot Helium White Dwarf Binaries
Contributed	Tomer Shenar – Which transients accompany black-hole production? Clues from dormant black holes in the Galactic neighbourhood

09:00 – 12:15 **Instrumentation and facilities** – Chair Jeff Cooke ATC 101

- Invited **Tony Travouillon** – The present and future of IR transient facilities: toward an IR LSST survey
- Contributed **Masayuki Yamanaka** – Near-Infrared Followups of Nearby Supernovae and Transients with the Iriki 1m Telescope
- Contributed **Gavin Rowell** – Transients at TeV Gamma-Ray Energies
- Contributed **Nick Tothill** – CTA-Pol: Optical Blazar Polarimetry from Australia

10:15 – 10:45 Coffee break SkyLounge

- Invited **Duncan Galloway** – Searching for counterparts of explosive transients with the GOTO network
- Contributed **Felipe Jimenez-Ibarra** – Rapid identification and classification of GOTO Transients
- Contributed **Gregory Paek** – 7-Dimensional Telescope: Kilonova Identifier with a Single Epoch Photometric SED and LightGBM
- Contributed **Simon Lee** – Optimising an Array of IACTs in Australia for the Detection of Gamma-ray Transients
- Contributed **Wael Farah** – The Allen Telescope Array: an upgraded radio facility for slow and fast transients

12:15 – 13:30 Lunch SkyLounge

13:30 – 17:00 **Energetic SNe and hosts** – Chair Ryosuke Hirai ATC 101

- Invited **David Buckley** – Status and Future Plans of the SALT Transient Follow-up Programme
- Contributed **Giacomo Terreran** – Very late-time observations of stripped-envelope SNe
- Contributed **Conor Ormand** – Toward nebular spectral modeling of magnetar-powered supernovae
- Contributed **Aysha Amer** – A Precursor Plateau and Pre-Maximum [O II] Emission in the Superluminous SN2019szu: A Pulsational Pair-Instability Candidate
- Contributed **Steve Schulze** – 1100 days in the life of the (candidate) pair-instability supernova 2018ibb
- Contributed **Anjasha Gangopadhyay** – ASASSN-14il: A superluminous supernova with complex geometry?

15:15 – 15:45 Coffee break SkyLounge

- Contributed **Yun-Wei Yu** – The features, types, and possible origins of magnetar-driven optical transients
- Contributed **Anamaria Gkini** – SN2020zbf: A fast-evolving hydrogen-poor superluminous supernova with strong carbon features
- Contributed **Zhuoxi Liang** – Luminosity Functions of the Host Galaxies of Supernova
- Contributed **Thallis Pessi** – Observational evidence for a metallicity dependence on the occurrence of core-collapse supernovae

Friday, February 2, 2024

Parallel session 1

09:00 – 12:00 **High-energy** – Chair Alexander Heger AMDC 301

- Invited **Gemma Anderson** – Rapid radio follow-up of GRBs to probe the most violent relativistic outflows using Australian radio telescopes
- Contributed **Akihiro Suzuki** – Early electromagnetic signals from supernova associated with GRBs
- Contributed **Christopher Irwin** – Insights on the origin of low-luminosity GRBs from a revised shock breakout picture for GRB 060218
- Contributed **James Freeburn** – A Fast-cadenced Search for Gamma-Ray Burst Orphan Afterglows with the Deeper, Wider, Faster Programme

10:15 – 10:45 Coffee break SkyLounge

- Contributed **Ilya Mandel** – Short gamma ray bursts, the neutron star mass distribution, and the equation of state
- Contributed **Karelle Siellez** – Getting more Kilonovae using short AND long Gamma Ray Bursts
- Contributed **Sergey Belkin** – GRB 230911A: The First Discovery of a Fermi GRB Optical Counterpart with the Gravitational-wave Optical Transient Observer (GOTO)
- Contributed **Mankeun Jeong** – The Stellar Mass Distribution of Galaxies Hosting Short Gamma-ray Bursts and Kilonovae
- Contributed **Yuzhe Song** – Detecting Gamma-ray Emission from Nearby Flare Stars

12:10 – 12:40 **Closing address** AMDC 301

- Contributed **Ashley Ruiten, David Buckley, and Jeff Cooke**

End of meeting

Friday, February 2, 2024

Parallel session 2

09:00 – 12:00 **Binary interaction and CSM** – Chair Evgeni Grishin ATC 101

Invited **Jan Eldridge** – Refining binary mass–transfer physics through supernovae

Contributed **Tomoki Matsuoka** – Binary Interaction Can Yield a Diversity of Circumstellar Media around Type II Supernova Progenitors

Contributed **Hanindyo Kuncarayakti** – Stripped supernovae with strong CSM interaction

10:15 – 10:45 Coffee break SkyLounge

Invited **Thomas Moore** – SN 2022jli: a type Ic supernova with periodic modulation of its light curve and an unusually long rise

Contributed **Emma Beasor** – A JWST view of the failed supernova candidate N6946–BH1

Contributed **Ryosake Sasaki** – The growth of the disk structure of WZ Sge–type dwarf novae

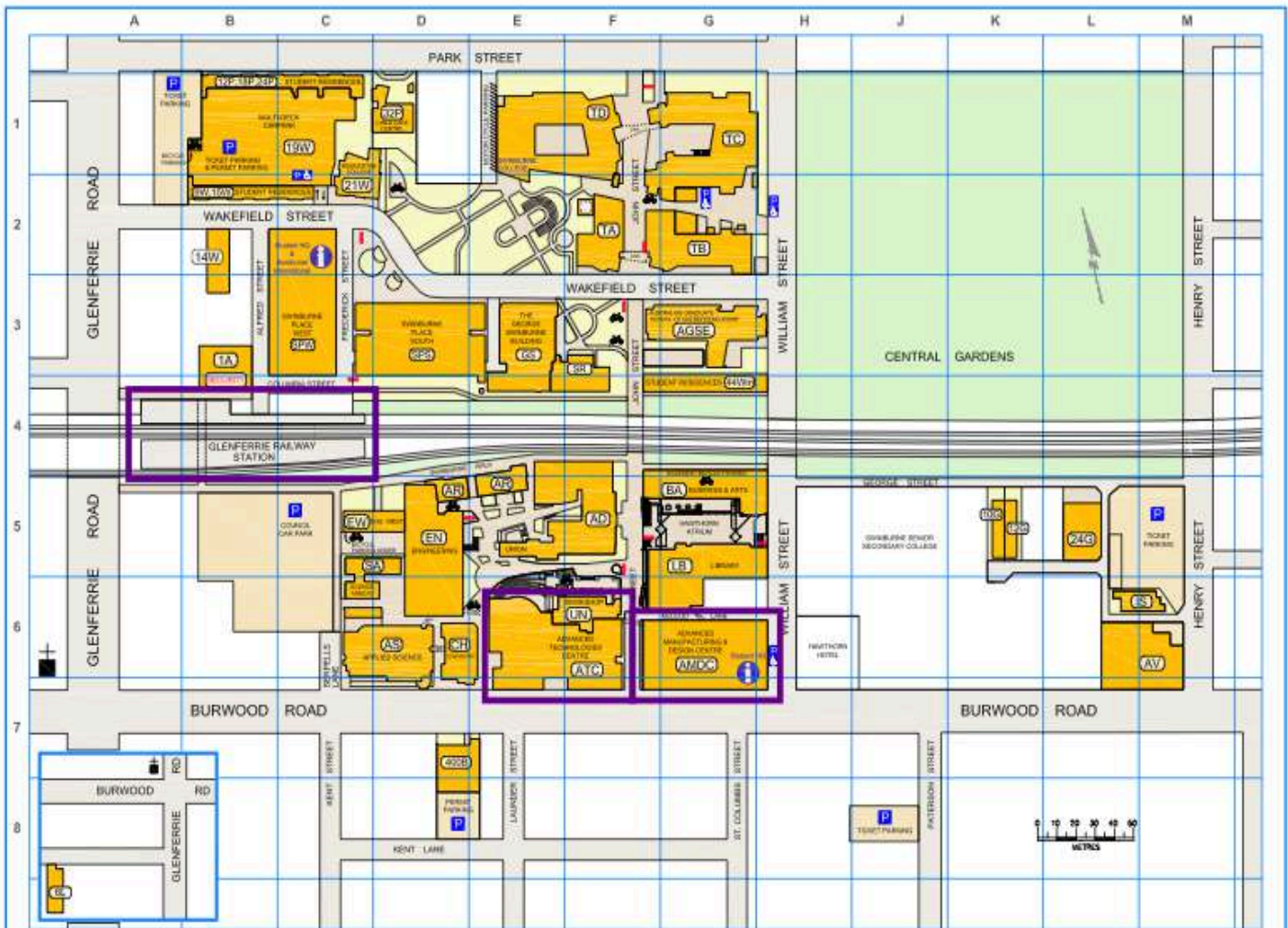
Contributed **Karthik Yadavalli** – SN 2022oqm: A Multi–peaked Calcium–rich Transient from a White Dwarf Binary Progenitor System

*** NOTE: Return to AMDC 301 lecture hall for the closing address

12:10 – 12:40 **Closing address** AMDC 301

Contributed **Ashley Rüter, David Buckley and Jeff Cooke**

End of meeting



BUILDING NAME

BLDG.

REF.

1 Alfred St	1A	B 3
6 Luton Lane	6L	A 8
10 George St	10G	K 5
21 Wakefield St	21W	C 2
24 George St	24G	L 5
32 Park St	32P	D 1
400 Burwood Rd	400B	D 7
60 William St	60Wm	G 5
Old Administration Building	AD	E 5
Advanced Manufacturing & Design Centre	AMDC	G 6
Advanced Technologies Centre	ATC	E 6
Applied Sciences Building	AS	D 6
Arts Building	AR	E 5
Australian Graduate School of Entrepreneurship	AGSE	G 3
Aviation Building	AV	M 6
Business & Arts Building	BA	G 5
Chemistry Building	CH	D 6
Engineering Building	EN	D 5
Engineering - West Building	EW	C 5
IS Building	IS	M 6
Library	LB	G 5
Multi-Deck Car Park	19W	C 1
Science Annexe	SA	C 5
SR Building	SR	F 3
Student Residences - Park St	12P, 18P, 24P	B 1
Student Residences - Wakefield St	9W, 15W	B 2
Student Residences - William St	44Wm	G 4
Swinburne Place - South Building	SPS	D 3
Swinburne Place - West Building	SPW	C 3
TA Building	TA	F 2
TB Building	TB	G 2
TC Building	TC	G 1
TD Building	TD	F 1
The George Swinburne Building	GS	E 3
UN Building	UN	F 6



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