Andrew J. Drake

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Education

1993 BSc, Physics, Auckland University, New Zealand.
1995 MSc, Nuclear Physics, Auckland University, New Zealand.
2000 PhD, Astronomy and Astrophysics, Mount Stromlo Observatory, ANU, Australia.

Professional Experience

2024-present, Member of Professional Staff, Caltech, USA.
2015-present, Staff Scientist, Department of Astronomy, Caltech, USA.
2005-2015, Staff Scientist, Center for Advanced Computing Research, Caltech, USA.
2002-2005, Princeton-Catolica Postdoctoral Prize Fellow, Dept. Astrophysical Sciences Princeton University, USA.
2000-2002, Postdoctoral Staff Scientist, Institute of Geophysics and Planetary Physics, Lawrence Livermore National Laboratory, USA.

Projects and Leadership

- Co-PI and project manager of the Catalina Real-time Transient Survey (CRTS).
- Calibration and Data Quality lead for the Zwicky Transient Facility (ZTF).
- PI and project manager of the Supernova Hunt project.
- Lead software developer for CRTS and Palomar-Quest transient surveys.

Awards and Funding

2002-2005, Princeton University Prize Fellowship.
2003-2005, PI, $40K FONDECYT grant, "Discovery of Halo White Dwarfs."
2009-2013, co-I, $480K grant, NSF OCI grant, "High Throughput Real-Time Astronomy: Discrimination, Dissemination and Decision."
2009-2013, co-PI, $900K, NSF AST grant (0909182), "The Catalina Real-time Transient Survey."
2010-2012, PI, $11K HST grant, "Determining the Nature of an Extraordinary Optical Transient."
2013-2014, co-PI, $230K, NSF AST grant (1313422), "Open Exploration of the time domain with the Catalina Real-time Transient Survey."
2014-2016, co-PI, $200K, NSF AST continuing grant (1413600), CRTS-II.
2015-2017, co-I, $300K, NSF AST (1518308), "A Systematic Approach to QSO Variability."
2017-2018, co-PI, $100K, NSF AST continuing grant, CRTS-II.
2024-2027, co-PI, $600K pending, NASA ADAP, "The Historic Sky Project."

Invited Talks

2010 AAS AGM, invited press release on CRTS supernovae discoveries.
2010 Invited speaker on CRTS, Astronomy Colloquium, Caltech.
2011 Plenary speaker on CRTS, IAU conference, MEARIM-II, Cape Town, South Africa.
2011 Invited speaker on VOEvent, ThunderKat workshop, Arneston, South Africa.
2011 Invited talk on CRTS, IAUS 285: New Horizons in Time Domain Astronomy, Oxford, UK.
2012 Invited speaker on CRTS, Gaia transients workshop, Bologna, Italy.
2013 Invited speaker on CRTS, Hotwiring the Transient Universe 3, Santa Fe, USA.
2014 Invited speaker on Catalina Binaries, Stellar Tango at the Rockies '14, Alberta, Candada.
2016 Plenary speaker on CRTS, Wide-field Variability Surveys: a 21st-century perspec., Chile.

Observating Time Allocations

Hubble Space Telescope + WFC3, Swift telescope + UVOT and XRT, Keck + LRIS and NIRSPEC, Gemini North and South + GMOS, Palomar 5m + DBSP and WFC, CTIO-4m, SMARTS.

Programming Experience and Languages

Transient Survey Pipelines:	CRTS, Palomar-Quest, Macho project.
Data Quality and Calibration:	CRTS spectroscopy and photometry, ZTF photometry.
Image Subtraction:	Macho Project (PhD), SNHunt.
Databases and Web Services:	CRTS, mysql, 500 million light curves, 9.2 million queries, 13 yrs.
	ZTF Zubercal, parquet-based.
	Historic Sky Project, parquet-based, in progress.
Forced Photometry:	ZTF Zubercal-II, CRTS, LONEOS, NEAT, Spacewatch, LINEAR.
Transient Alerts:	Palomar-Quest + CRTS (VOEvent XML via Jabber+VTCP).

C, C++, Python, Perl, SQL, Lua, IRAF, XML, Javascript, HTML

Research Interests

Variable Stars (deep full-sky catalogs, RR Lyrae & Cepheids, eclipsing binaries, CVs)
Supernovae (4000+ SN discoveries in CRTS)
Microlensing (first lens measurements, optical depth, exoplanets, Macho project)
Historic Data Preservation and Federation (CRTS, ZTF, LONEOS, LINEAR, NEAT, Spacewatch)
Open Research (first fully open large transient survey, CRTS)
Citizen Science (amateur astronomer based SN discovery, SNHunt)
Exoplanets (first WD exoplanet transit search, exoplanet transit searches)
HPM stars (first HPM stars towards Galactic center)

Bibliography (chronological)

ADS citation statistics: ref. papers=191, most cited=1162, h-index=63, tot. citations=14000+

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Das, K.K., ... **Drake, A.J.** et al., *Probing the Low-mass End of Core-collapse Supernovae Using a Sample of Strongly-stripped Calcium-rich Type IIb Supernovae from the Zwicky Transient Facility*, 2023, ApJ, 959, 12

Yao, Yuan, ... **Drake, A.J.** et al., *Tidal Disruption Event Demographics with the Zwicky Transient Facility: Volumetric Rates, Luminosity Function, and Implications for the Local Black Hole Mass Function*, 2023, ApJ, 955, 6

Rodriguez, A.C., ... **Drake, A.J.** et al., *SRGeJ045359.9+622444: A 55 Minute Period Eclipsing AM Canum Venaticorum Star Discovered from a Joint SRG/eROSITA + ZTF Search*, 2023, ApJ, 954, 63

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