

David A. Coulter

CONTACT INFORMATION	UC Santa Cruz Dept. of Astronomy & Astrophysics 1156 High Street Santa Cruz, CA 95064-1077, USA	(503) 821-9298 dcoulter@ucsc.edu https://github.com/davecoulter
PH.D. INFORMATION	Ph.D. Candidate, Astronomy & Astrophysics , UC Santa Cruz, CA Advisor: Ryan J. Foley Thesis: <i>Understanding r-Process Enrichment Using Electromagnetic Follow-up of Gravitational Wave Sources</i>	Expected June 2023
EDUCATION	M.S., Astronomy & Astrophysics , UC Santa Cruz, CA B.Sc., Physics, Portland State University , OR Degree conferred <i>summa cum laude</i> B.A., History, Lewis & Clark College , OR	June 2019 December 2015 May 2003
HONORS, AWARDS, & GRANTS	ARCS Foundation Fellow , UC Santa Cruz, CA Physical and Biological Sciences Dean's Award , UC Santa Cruz, CA National Science Foundation GRFP Fellow , UC Santa Cruz, CA Regents Fellowship , UC Santa Cruz, CA USRA Summer Research Grant , NASA GSFC, MD OR Space Grant Consortium (OSGC) Summer Research Grant , NASA JPL, CA Post-Baccalaureate of the Year , Portland State University, OR OSCG 4-Year Institution Scholarship , Portland State University, OR OSGC Summer Research Grant , NASA Wallops, VA	2020 2018 2016 2016 2015 2014 2014 2014 2013
TECHNICAL LEADERSHIP	Software Engineering Training Provided Dr. David Jones, UC Santa Cruz Full-stack web application development Dr. Peter McGill, UC Santa Cruz Docker virtualization, relational database programming, and full-stack web application development on Blast (https://github.com/astrophpeter/blast) System Administration: UCSC Transients Research Server Built, maintain, and administer server with 50 user accounts. Responsible for maintaining high-availability of ~60 TB of research data. Technical Project Management: YSE-PZ Maintain, extend, and manage the software development life-cycle of YSE-PZ. Manage a team of 11 developers. Responsible for deployments, back-ups, and restores of mission critical data and infrastructure for multiple time-domain surveys.	Fall 2017 to Present Fall 2021 to Present

SOFTWARE

Teglon, Pixel-level gravitational wave search optimization and analysis code.

User-base: 1-Meter, 2-Hemisphere Collaboration / Gravity Collective (GW follow-up and analysis), and Las Cumbres Observatory (2023).

<https://github.com/davecoulter/teglon>

YSE-PZ, General Target and Observation Management platform.

User-base: 194 active users; Young Supernova Experiment (YSE), Keck Infrared Transient Survey (KITS), UCSC K2 Campaign 16 & 17 Supernova Experiment. System of record for: >100,000 transients, ~3.4 million photometric data points, and ~13k spectra.

<https://github.com/davecoulter/YSE.PZ>

UCSC Observation Scheduler, Photometric observation scheduler.

User-base: 15 active users; Swope Supernova Survey, 1-Meter, 2-Hemisphere Collaboration / Gravity Collective (GW follow-up). ~10,000 observations scheduled to date.

<https://github.com/davecoulter/Scheduler>

RELEVANT
INDUSTRY
EXPERIENCE

Nike, Inc., Beaverton, OR

2/2016–8/2016

Built a scalable and performant synthetic data pipeline for Nike’s internal testing purposes. Focused on dev ops, managed source code in an enterprise environment, built, tested, deployed, scaled, and versioned our proprietary tool across multiple Linux-based virtual machines in the AWS cloud.

Pollinate Media Group, Portland, OR

7/2010–2/2016

Built dozens of applications ranging from content management systems and complex workflows to data services and mobile websites. Specialized in full-stack web application development, enterprise database programming and management, microservices and RESTful APIs. Instrumental in securing over \$2 million in renewed contracts over 6 years.

Viewpoint Construction Software, Portland, OR

10/2008–7/2010

Published Viewpoint’s internal core API, co-led a new feature team, and helped to implement a company-wide adoption of Agile development methodologies.

ACCEPTED
PROPOSALS

ANDICAM, Gravitational Wave Follow-up with ANDICAM (PI), 74 hours, 2018–2019.

JWST, Nucleosynthesis, Astrophysics, and Cosmology with IR Observations of a Gravitational Wave Counterpart (Co-I), 17.2 hours, 2021.

JWST, Nebular Spectroscopy of a Kilonova with JWST (Co-I), 14.9 hours, 2021.

JWST, Detecting the Synthesis of the Heaviest Elements with Photometry of a Kilonova in the Optically Thin Phase (Co-I), 9.3 hours, 2021.

HST, Snapshot Observations of Nearby, Recent Transients and Their Environments (Co-I), 75 orbits, 2021.

HST, Snapshot Observations of Nearby, Recent Supernovae and Their Environments (Co-I), 97 orbits, 2020.

Gemini North, Ultra-Rapid UV Spectroscopy of an Interacting Supernova Discovered by TESS (Co-I), 18 hours, 2020.

Gemini South, Optical to IR Observations of the Next Kilonovae (Co-I), 97.7 hours, 2019–2020.

HST, Ultra-Rapid UV Spectroscopy of an Interacting Supernova Discovered by TESS (Co-I), 19 orbits, 2019.

SOAR, SOAR spectroscopy for a sample of YSE-discovered SNe (Co-I), 8 nights, 2018–2019.

Gemini South, Identifying the Progenitors of Astrophysical Transients (Co-I), 5.7 hours, 2018/2021.

Gemini North, Ultra-Rapid UV Spectroscopy of an Interacting Supernova Discovered by K2 (Co-I), 9 hours, 2018.

KP-4m, SOAR, LCO, The Next Generation Low-z Type Ia Supernova Sample for Cosmology (Co-I), 31.4 nights, 2017–2018.

OBSERVING EXPERIENCE	Keck - Optical Spectroscopy (ESI, 1 night; LRIS, 1 night) Lick Shane - Optical Spectroscopy (Kast, 9 nights) SOAR - Optical Spectroscopy (Goodman, 4 nights) KPNO Mayall - Optical Spectroscopy (KOSMOS, 4 nights) LCO Swope - Direct Imaging (13 nights) Lick Nickel - Direct Imaging (2 nights)	
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MENTORSHIP	Undergraduate students Pedro Jesus Quiñonez, Lamat Scholar, UC Santa Cruz “A Statistical Dark Siren Measurement of the Hubble Constant” Summer 2021 “Candidate Analysis Pipeline for GW190425” Summer 2022 Dragon Reed, UC Santa Cruz (now graduate student at University of Minnesota) Galaxy-targeted gravitational wave follow-up algorithms Winter 2016 - Winter 2018 Taught elementary Python programming Mileena Garcia, Koret Scholar, UC Santa Cruz EM follow-up observation scheduling algorithms Winter 2016 - Winter 2018 Taught elementary Python programming	
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TALKS (invited [†])	NASA TDAMM O4 Hackathon August 2022 NOIRLab FLASH[†] May 2022 Rose City Astronomers June 2021 ARCS Forward[†] May 2021 ARCS 50th Anniversary Celebration April 2021 ARCS Scholar Symposium April 2021 STScI MMA Workshop April 2019 UC Santa Cruz FLASH[†] June 2018 Astronomy On Tap October 2018 Graduate Student Research Symposium, UC Santa Cruz April 2018 APS April 2018 Original Thinkers, LA Central Library[†] April 2018 Santa Cruz Cruzio November[†] November 2017 227th AAS December 2016	
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OUTREACH	Astronomy On Tap, Santa Cruz 2017–2020 Original co-founder. Produced over 25 public shows reaching > 2000 people PI of Osterbrock Mini-grant (2020) to grow AoT’s reach. Over the course of the grant period we nearly doubled the number of younger attendees, persons of color, and women attending the event for the first time. Lick Observatory Summer Series 2017–2022 Guest lecturer for the Nickel 40” Reflector Telescope Control Room Engaged with > 500 diverse members of the public	
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PRESS	<i>The Slack Chat That Changed Astronomy</i> , The Atlantic October 2017 <i>In a First, Gravitational Waves Linked to Neutron Star Crash</i> , Nat Geo December 2017 <i>Neutron Star Collision AMA</i> , Carnegie Observatories Reddit “Ask Me Anything” October 2017	
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REFERENCES	Ryan Foley: foley@ucsc.edu , UC Santa Cruz (510) 388-3364 Enrico Ramirez-Ruiz: enrico@ucolick.org , UC Santa Cruz (831) 345-4117 Armin Rest: arest@stsci.edu , Space Telescope Science Institute (443) 794-4838 Michael Coughlin: cough052@umn.edu , University of Minnesota (952) 836-7113	