

Dr. Casey J. Law

CONTACT INFORMATION	Assistant Project Astronomer Dept of Astronomy and Radio Astronomy Lab Campbell Hall University of California, Berkeley Berkeley, CA 94720	+1-510-859-3636 claw@astro.berkeley.edu
RESEARCH INTERESTS	<i>Radio interferometry</i> , fast transients, multiwavelength astronomy, surveys, neutron stars, intergalactic and interstellar media, big data, data science, Python, polarimetry, X-ray astronomy, star clusters	
EDUCATION	Northwestern University , Evanston, IL Ph.D., Astrophysics, 2007 <ul style="list-style-type: none">• Thesis Title: <i>Surveys of the Galactic Center and the Nature of the Galactic Center Lobe</i>• Research Topics: Galactic outflows, radio, X-ray, and infrared observations of the Galactic center• Adviser: Farhad Yusef-Zadeh Boston University , Boston, MA M.A., Astronomy, 2000 <ul style="list-style-type: none">• Research Topics: Galactic molecular gas survey, optical photometry of stellar clusters, gravitational lensing• Advisers: James Jackson, Ken Janes, Tereasa Brainerd University of Hawai‘i, Manoa , Honolulu, HI B.S. with distinction, Physics, 1998 <ul style="list-style-type: none">• Hawai‘i Space Grant Fellowship with James Heasley of the Institute for Astronomy• Research Topic: Optical photometry of globular clusters with the UH 2.2m and CFHT	
EMPLOYMENT	Assistant Project Astronomer Postdoctoral Fellow Radio Astronomy Lab, UC Berkeley <ul style="list-style-type: none">• Supervisor: Geoff Bower and Carl Heiles• Leader of VLA fast radio burst project and real-time VLA transients project• Radio transients and polarimetry• Commissioning of the Allen Telescope Array, Karoo Array Telescope, Jansky Very Large Array	December 2011 to present January 2009 to November 2011

Postdoctoral Fellow July 2006 to December 2008

Department of Astronomy, University of Amsterdam

- Supervisor: Ralph Wijers
- Low frequency radio transients
- Commissioning of the Low Frequency Array (LOFAR)

Astrophysicist September 2000 to June 2002

Harvard-Smithsonian Center for Astrophysics

- Data analyst and support astronomer for the *Chandra* X-ray Observatory
- Tested, documented, and developed code for the CIAO software package

TEACHING AND OUTREACH **UC Berkeley**, Berkeley, CA

Tutor and Coordinator, Prison University Project **2010 – 2014**

- Led tutoring of introductory math for college-level curriculum in San Quentin State Prison.

Co-organizer, Science@Cal **2009 – 2014**

- Helped organize and advertise monthly lecture series.
- Demonstrated principles of radio astronomy at annual “Cal Day” event.

Student Advising **2009 – present**

- Doctoral students **Peter Williams**, **Chat Hull**, and **James McBride**
Mr. Williams, Mr. Hull, and Mr. McBride used data from the Allen Telescope Array to study radio transients and the polarimetric properties of galaxies. Primary adviser: Carl Heiles and Geoff Bower, 2008 – 2012.
- Undergraduates **Jun Tan**, **Yawen Sun**, **Kyle Blanchard**, and **Phillip Sells**

Students have worked with the NERSC supercomputer, AWS cloud computing, and radio interferometric search software and data analysis. Primary adviser: Geoff Bower and Carl Heiles, 2012 – present.

University of Amsterdam, Amsterdam, The Netherlands

Student Advising **2006 – 2007**

- **Thijs Coenen**

Master’s student at the University of Amsterdam building a machine learning algorithm for the automatic classification of radio transients detected by LOFAR. Primary adviser: Ralph Wijers. 2005.

Northwestern University, Evanston, IL

Teaching Assistant **2004**

- Taught weekly physics discussion session with roughly 100 students.

Observatory Host **2003 – 2006**

- Led open night tours of the historic Dearborn Observatory once per month.

Boston University, Boston, MA

Teaching Assistant

1999 – 2000

- Taught four astronomy lab sections per semester (including night labs).

University of Hawaii at Manoa, Honolulu, HI

Co-organizer, Hawai'i Physics Olympics

1996 – 1998

- Helped organize annual, state-wide event for high school students.
- Designed events to test understanding of physical concepts.

Co-organizer, Physics Tutoring

1996 – 1998

- Created and participated in volunteer physics tutoring service for undergraduates.

GRANTS

PI: Real-time, commensal transient detection at the VLA (“realfast” project), NSF, Advanced Technology and Instrumentation grant, awarded 2016.

Senior staff: Anomaly detection with fast imaging radio interferometers. University of California Office of the President grant, awarded 2012.

Co-I: A Coherent Transient Detection System for SKA Pathfinders. University of Western Australia Collaboration grant, awarded 2012.

PI: Meeting of LOFAR and the Transient Radio Sky. NWO and NOVA (NL) collaboration support grants, awarded 2008.

PI: Development of a spatio-spectral analysis technique for X-ray data. *Chandra* archival research grant, awarded 2003.

PROFESSIONAL
HONORS AND
SERVICE

Co-Chair of Technical Working Group for VLA Sky Survey Project, 2014 – present

Reviewer for NRAO Science Review Panel and NASA Postdoctoral Program, 2013 – present

Member of the SKA Transients Science Working Group, 2013 – present

Developed and contributed to public astronomy software repositories:
<https://github.com/caseyjlaw>, 2012 – present

Referee for the Astrophysical Journal, Astronomical Journal, PASP, and New Astronomy, 2006 – present

Jansky Very Large Array Resident Observer, 2012

Chair of LOC and member of SOC for “LOFAR and the Transient Radio Sky”, 2008

Huang Fellowship at Northwestern University, 2002 – 2003

Two Presidential Fellowships (Research and Teaching) at Boston University, 1998 – 2000

Four merit-based tuition waivers from the Department of Physics at the University of Hawai‘i, 1995 – 1998

Hawai‘i Space Grant Fellowship, 1997

SELECT
PUBLICATIONS

“New methods to constrain the radio transient rate: results from a survey of four fields with LOFAR”, Carbone, D. et al, 2016, MNRAS, 459, 3161

“Low-radio-frequency eclipses of the redback pulsar J2215+5135 observed in the image plane with LOFAR”, Broderick, J. W. et al 2016, MNRAS, 459, 2681

“The LOFAR pilot surveys for pulsars and fast radio transients”, Coenen, T. et al, 2014, A&A, 570, 60

“LOFAR: The LOw-Frequency ARray”, van Haarlem, M. et al., 2013, A&A, 556, 2

“The RRAT Trap: Interferometric Localization of Radio Pulses from J0628+0909”, Law, C. J. et al., 2012, ApJ, 760, 124

“All Transients, All the Time: Real-time Radio Transient Detection with Interferometric Closure Quantities”, Law, C. J. et al., 2012, ApJ, 749, 143

“Millisecond Imaging of Radio Transients with the Pocket Correlator”, Law, C. J. et al., 2011, ApJ, 742, 12

“Spectropolarimetry with the Allen Telescope Array: Faraday Rotation toward Bright Polarized Radio Galaxies”, Law, C. J. et al., 2011, ApJ, 728, 57

“A Constraint on the Organization of the Galactic Center Magnetic Field Using Rotation Measures”, Law, C. J. et al., 2011, ApJ, 731, 36

“Observing pulsars and fast transients with LOFAR”, Stappers, B. W. 2011, A&A, 530, 80

“Wild at Heart: The Particle Astrophysics of the Galactic Centre”, Crocker, R. M. et al., 2011, MNRAS, 413, 763

“The Allen Telescope Array Pi GHz Sky Survey I. Survey Description and Static Catalog Results for the Bootes Field”, Bower, G. C. et al., 2010, ApJ, 725, 1792

“The Allen Telescope Array Twenty-centimeter Survey – A 690 sq-deg, 12 Epoch Radio Data Set. I. Catalog and Long-duration Transient Statistics”, Croft, S. et al. 2010, ApJ, 719, 45

“A Multiwavelength View of a Mass Outflow from the Galactic Center”, Law, C. J. 2010, ApJ, 708, 474

“Green Bank Telescope Multiwavelength Survey of the Galactic Center Region”,
Law, C. J., et al. 2008, ApJS, 177, 255

“X-Ray Observations of Stellar Clusters Near the Galactic Center”, Law, C. &
Yusef-Zadeh, F. 2004, ApJ, 611, 858

“Detection of X-Ray Emission from the Arches Cluster near the Galactic Center”,
Yusef-Zadeh, F., Law, C., et al. 2002, ApJ, 570, 665

SELECT INVITED TALKS “Searching for Fast Radio Transients at 1 Terabyte per hour”. Talk at “Conference
on Data Analysis (CODA 2014)” in Santa Fe, NM, March 2014.

“VLA Searches for Fast Radio Transients at 1 TB/hour”. Talk at “Hotwiring the
Transient Universe III” in Santa Fe, NM, November 2013.

“Real-Time Transient Detection with Interferometric Closure Quantities”. Talk
at “Interferometric Techniques for Impulsive Signals at Radio Frequencies” at
Ohio State University, April 2013.

“Real-Time Radio Transient Detection with the VLA”. Seminar for LANL Statis-
tics group, April 2012.

“The VLA as a Millisecond Transient Survey Machine ”. Colloquium at NRAO
Socorro, March 2012.

“Radio Interferometric Searches for Millisecond Transients”. Colloquium at Uni-
versity of Cape Town, October 2011.

“Breaking Through the Faraday Fog”. Colloquium at University of Sydney, April
2011.

“Probing the Transient Radio Sky”. Colloquium at Southampton University,
March 2010.