Archiving and Community Use of Microlensing Data

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Outline

- Current microlensing content in NASA Exoplanet Archive
  - Goals
  - Planets
  - UKIRT Survey data
  - ExoFOP
- Tips for archiving data
  - Papers
  - Large data sets

NASA Exoplanet Archive

- The NASA Exoplanet Archive is an online astronomical exoplanet and stellar catalog and data service that collates and cross-correlates astronomical data and information on exoplanets and their host stars, and provides tools to work with these data.
  - Includes data from published literature, selected NASA mission (e.g. Kepler) and high-level data sets from community

https://exoplanetarchive.ipac.caltech.edu

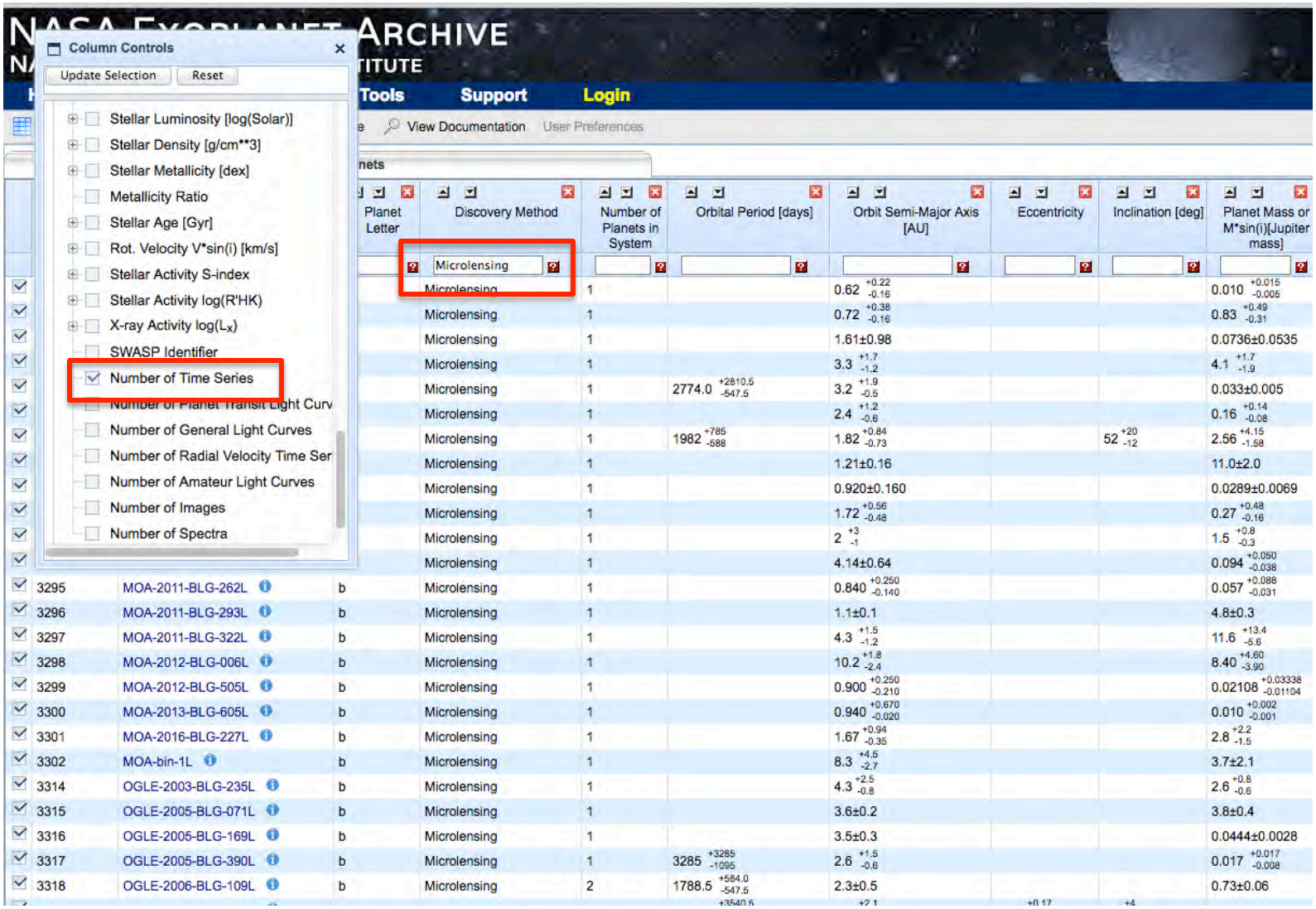
Archive goals

- Confirmed planet table
  - Allow comparisons across discovery types
- Microlensing table
  - Focus on observation and modeling parameters
  - Multiple papers and/or solutions per object
- Data sets and light curves
  - Allow multiple groups to fit the same event
  - Searches for additional events
  - Additional science: variable stars, etc.
- Tools to work tables and data
  - Ongoing discussions on tools for microlensing, including pyLIMA

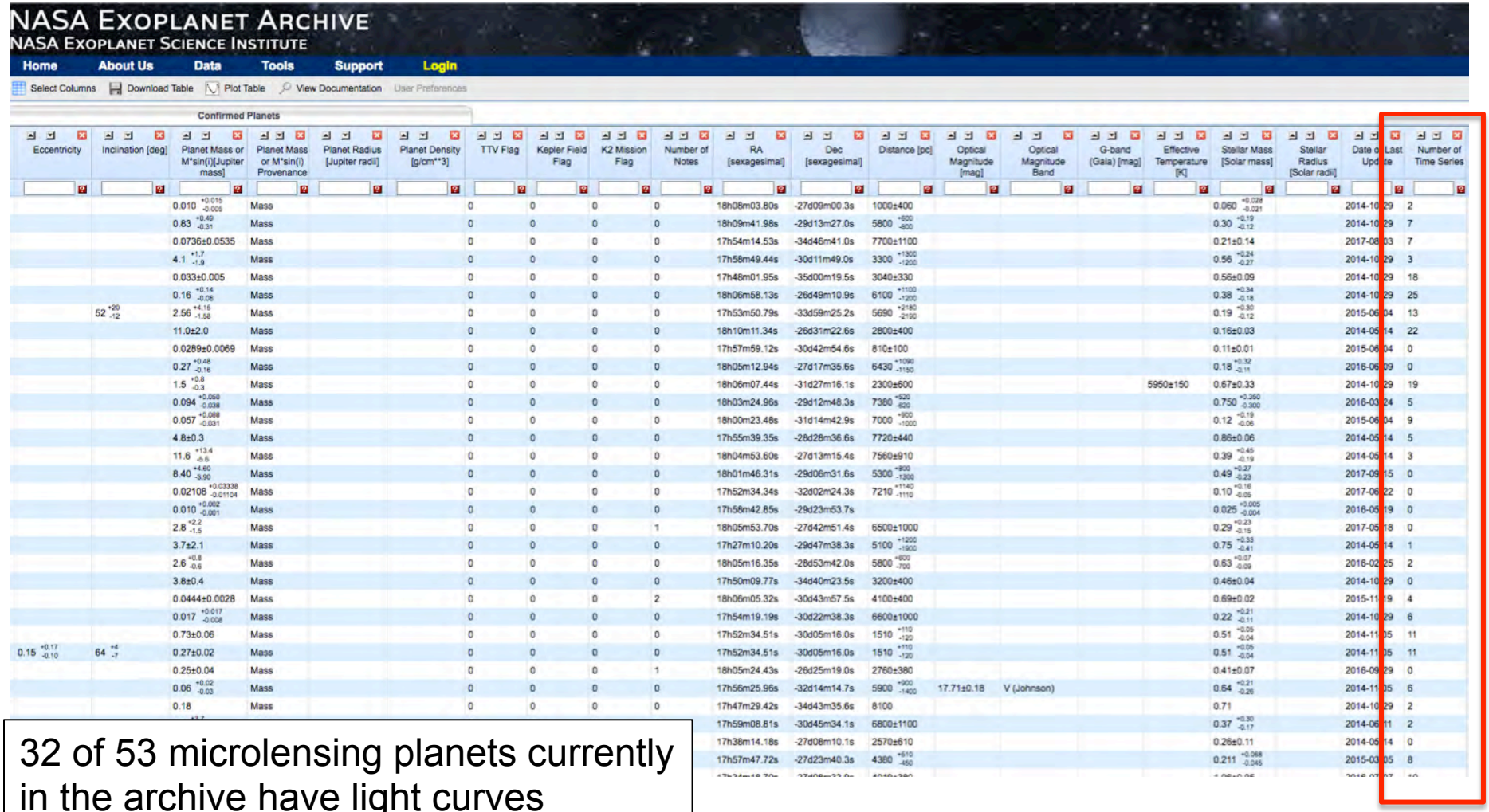
Confirmed planet table

- Contains basic parameters for planets discovered by any method
- Parameters gathered from peer-reviewed literature
- Only one reference listed for each planet
  - Either the discovery reference or a later publication with more complete or precise parameters
- Overview page for each object
  - Includes parameters from all papers in archive
  - Links to associated data files, including light curves, images, spectra

Confirmed planets (1)



Confirmed planets (2)



NASA EXOPLANET ARCHIVE
NASA EXOPLANET SCIENCE INSTITUTE

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Select Columns | Download Table | Plot Table | View Documentation | User Preferences

Confirmed Planets

Eccentricity	Inclination [deg]	Planet Mass or M*sin(i)[Jupiter mass]	Planet Mass or M*sin(i) Provenance	Planet Radius [Jupiter radii]	Planet Density [g/cm**3]	TTV Flag	Kepler Field Flag	K2 Mission Flag	Number of Notes	RA [sexagesimal]	Dec [sexagesimal]	Distance [pc]	Optical Magnitude [mag]	Optical Magnitude Band	G-band (Gaia) [mag]	Effective Temperature [K]	Stellar Mass [Solar mass]	Stellar Radius [Solar radii]	Date of Last Update	Number of Time Series
		0.010 $^{+0.015}_{-0.005}$	Mass			0	0	0	0	18h08m03.80s	-27d09m00.3s	1000±400					0.060 $^{+0.028}_{-0.021}$		2014-10-29	2
		0.83 $^{+0.49}_{-0.31}$	Mass			0	0	0	0	18h09m41.98s	-29d13m27.0s	5800 $^{+800}_{-800}$					0.30 $^{+0.19}_{-0.12}$		2014-10-29	7
		0.0736±0.0535	Mass			0	0	0	0	17h54m14.53s	-34d46m41.0s	7700±1100					0.21±0.14		2017-08-03	7
		4.1 $^{+1.7}_{-1.9}$	Mass			0	0	0	0	17h58m49.44s	-30d11m49.0s	3300 $^{+1300}_{-1200}$					0.56 $^{+0.24}_{-0.27}$		2014-10-29	3
		0.033±0.005	Mass			0	0	0	0	17h48m01.95s	-35d00m19.5s	3040±330					0.56±0.09		2014-10-29	18
		0.16 $^{+0.14}_{-0.06}$	Mass			0	0	0	0	18h06m58.13s	-26d49m10.9s	6100 $^{+1100}_{-1200}$					0.38 $^{+0.34}_{-0.18}$		2014-10-29	25
	52 $^{+20}_{-12}$	2.56 $^{+4.15}_{-1.58}$	Mass			0	0	0	0	17h53m50.79s	-33d59m25.2s	5690 $^{+2180}_{-2190}$					0.19 $^{+0.30}_{-0.12}$		2015-06-04	13
		11.0±2.0	Mass			0	0	0	0	18h10m11.34s	-26d31m22.6s	2800±400					0.16±0.03		2014-05-14	22
		0.0289±0.0069	Mass			0	0	0	0	17h57m59.12s	-30d42m54.6s	810±100					0.11±0.01		2015-06-04	0
		0.27 $^{+0.48}_{-0.16}$	Mass			0	0	0	0	18h05m12.94s	-27d17m35.6s	6430 $^{+1090}_{-1150}$					0.18 $^{+0.32}_{-0.11}$		2016-06-09	0
		1.5 $^{+0.8}_{-0.3}$	Mass			0	0	0	0	18h06m07.44s	-31d27m16.1s	2300±600				5950±150	0.67±0.33		2014-10-29	19
		0.094 $^{+0.050}_{-0.036}$	Mass			0	0	0	0	18h03m24.96s	-29d12m48.3s	7380 $^{+520}_{-620}$					0.750 $^{+0.350}_{-0.300}$		2016-03-24	5
		0.057 $^{+0.089}_{-0.031}$	Mass			0	0	0	0	18h00m23.48s	-31d14m42.9s	7000 $^{+900}_{-1000}$					0.12 $^{+0.19}_{-0.06}$		2015-06-04	9
		4.8±0.3	Mass			0	0	0	0	17h55m39.35s	-28d28m36.6s	7720±440					0.86±0.06		2014-05-14	5
		11.6 $^{+13.4}_{-5.5}$	Mass			0	0	0	0	18h04m53.60s	-27d13m15.4s	7560±910					0.39 $^{+0.45}_{-0.19}$		2014-05-14	3
		8.40 $^{+4.60}_{-3.90}$	Mass			0	0	0	0	18h01m46.31s	-29d06m31.6s	5300 $^{+800}_{-1300}$					0.49 $^{+0.27}_{-0.23}$		2017-09-15	0
		0.02108 $^{+0.03338}_{-0.01104}$	Mass			0	0	0	0	17h52m34.34s	-32d02m24.3s	7210 $^{+1140}_{-1110}$					0.10 $^{+0.16}_{-0.05}$		2017-06-22	0
		0.010 $^{+0.002}_{-0.001}$	Mass			0	0	0	0	17h58m42.85s	-29d23m53.7s						0.025 $^{+0.005}_{-0.004}$		2016-05-19	0
		2.8 $^{+2.2}_{-1.5}$	Mass			0	0	0	1	18h05m53.70s	-27d42m51.4s	6500±1000					0.29 $^{+0.23}_{-0.15}$		2017-05-18	0
		3.7±2.1	Mass			0	0	0	0	17h27m10.20s	-29d47m38.3s	5100 $^{+1200}_{-1900}$					0.75 $^{+0.33}_{-0.41}$		2014-05-14	1
		2.6 $^{+0.8}_{-0.6}$	Mass			0	0	0	0	18h05m16.35s	-28d53m42.0s	5800 $^{+800}_{-700}$					0.63 $^{+0.07}_{-0.09}$		2016-02-25	2
		3.8±0.4	Mass			0	0	0	0	17h50m09.77s	-34d40m23.5s	3200±400					0.46±0.04		2014-10-29	0
		0.0444±0.0028	Mass			0	0	0	2	18h06m05.32s	-30d43m57.5s	4100±400					0.69±0.02		2015-11-19	4
		0.017 $^{+0.017}_{-0.008}$	Mass			0	0	0	0	17h54m19.19s	-30d22m38.3s	6600±1000					0.22 $^{+0.21}_{-0.11}$		2014-10-29	6
		0.73±0.06	Mass			0	0	0	0	17h52m34.51s	-30d05m16.0s	1510 $^{+110}_{-120}$					0.51 $^{+0.05}_{-0.04}$		2014-11-05	11
0.15 $^{+0.17}_{-0.10}$	64 $^{+6}_{-7}$	0.27±0.02	Mass			0	0	0	0	17h52m34.51s	-30d05m16.0s	1510 $^{+110}_{-120}$					0.51 $^{+0.05}_{-0.04}$		2014-11-05	11
		0.25±0.04	Mass			0	0	0	1	18h05m24.43s	-26d25m19.0s	2760±380					0.41±0.07		2016-09-29	0
		0.06 $^{+0.02}_{-0.03}$	Mass			0	0	0	0	17h56m25.96s	-32d14m14.7s	5900 $^{+900}_{-1400}$	17.71±0.18	V (Johnson)			0.64 $^{+0.21}_{-0.26}$		2014-11-05	6
		0.18	Mass			0	0	0	0	17h47m29.42s	-34d43m35.6s	8100					0.71		2014-10-29	2
										17h59m08.81s	-30d45m34.1s	6800±1100					0.37 $^{+0.30}_{-0.17}$		2014-06-11	2
										17h38m14.18s	-27d08m10.1s	2570±610					0.26±0.11		2014-05-14	0
										17h57m47.72s	-27d23m40.3s	4380 $^{+510}_{-450}$					0.211 $^{+0.068}_{-0.045}$		2015-03-05	8

32 of 53 microlensing planets currently in the archive have light curves

Confirmed planet (3)

CONFIRMED PLANET OVERVIEW PAGE

FinderChart | 2MASS

Object and Aliases

Default Alias
MOA-2007-BLG-400L b

NASA Exoplanet Archive Links

Planet	Related Overviews			Transit Service
	Confirmed		Kepler Pipeline	
MOA-2007-BLG-400L b	Planet	Host		MOA-2007-BLG-400L b Transits

Planet Orbital Properties

Planet	Period (days)	Semi-Major Axis (AU)	Inclination (deg)	Eccentricity	Time of Periastron Passage (days)	Longitude of Periastron (deg)	Date of Orbital Solution	Reference
b	null	6.5^{+12}_{-12}	null	null	null	null	null	Dong et al. 2009
b	null	$0.72^{+0.36}_{-0.16}$	null	null	null	null	null	Dong et al. 2009

Planet Parameters

Planet	M sin(i)		Mass		Radius			Density	Equilibrium Temperature	Reference
	(Jupiter Mass)	(Earth Mass)	(Jupiter Mass)	(Earth Mass)	(Solar Radii)	(Jupiter Radii)	(Earth Radii)	(g/cm^3)	(K)	
b	null	null	$0.83^{+0.40}_{-0.31}$	$263.79^{+135.74}_{-99.52}$	null	null	null	null	34±9	Dong et al. 2009
b	null	null	$0.63^{+0.09}_{-0.31}$	$263.79^{+135.73}_{-99.52}$	null	null	null	null	103^{+29}_{-29}	Dong et al. 2009

Planet Transit Properties

Planet	Depth (perc)	Duration (days)	Duration (hours)	Mid-Point (days)	Impact Parameter	Occultation Depth (perc)	Ratio of Distance to Stellar Radius	Ratio of Planet to Stellar Radius	Reference
b	null	null	null	null	null	null	null	null	Dong et al. 2009
b	null	null	null	null	null	null	null	null	Dong et al. 2009

General Information

Planet	Discovery			System Information			Kepler Flag	TTV Flag	Exoplanet Encyclopedia Link	Exoplanets Data Explorer Link
	Method	Year	Reference	Number of Stars	Number of Planets	Circumbinary Flag				
b	Microlensing	2008	Dong et al. 2009	1	1	0	0	0	http://exoplanet.eu/catalog/moa-2007-blg-400l_b/	http://exoplanets.org/detail/MOA-2007-BLG-400L_b

Notes

Planet	Note	Reference
No Data Available		

Summary of Stellar Information

Right Ascension	18h09m41.98s	Declination	-29d13m27.0s
Galactic Longitude (deg)	2.38127	Galactic Latitude (deg)	-4.70074
Parallax (mas)	null	Distance (pc)	5800^{+800}_{-800}
RA Proper Motion (mas/yr)	null	Dec Proper Motion (mas/yr)	null
Total Proper Motion (mas/yr)	null	Radial Velocity (km/s)	null
B-band (mag)	null	K-band (mag)	null
Spectral Type	null	Effective Temperature (K)	null
Surface Gravity ($\log_{10}$(cm/s^2))	null	Luminosity ($\log_{10}(L_{sun})$)	null
Radius (R_{sun})	null	Mass (M_{sun})	$0.30^{+0.19}_{-0.12}$
Density (g/cm^3)	null	Age (Gyr)	null
Metallicity (dex)	null	Metallicity Ratio	null
V sin(i) (km/s)	null	S-index	null
log R'HK	null	X-ray activity, log(L_x)	null
Number of Hipparcos Light Curves	0	Number of Photometric non-Hipparcos Light Curves	7
Number of Radial Velocity Time Series	0	Number of Amateur Light Curves	0
Number of Spectra	0	Number of Images	3

Literature Time Series

Type	Start Time	End Time	Number of Data Points	Wavelength	Method	Instrument/Telescope	Link	File	Reference
PLC	2454351.535970	2454362.521940	94	H (Generic)	Microlensing	ANDICAM - 1.3m SMARTS/CTIO	Time Series Viewer	Download	Dong et al. 2009
PLC	2454351.536740	2454362.522700	97	H (Generic)	Microlensing	ANDICAM - 1.3m SMARTS/CTIO	Time Series Viewer	Download	Dong et al. 2009
PLC	2454351.537500	2454362.523470	93	H (Generic)	Microlensing	ANDICAM - 1.3m SMARTS/CTIO	Time Series Viewer	Download	Dong et al. 2009
PLC	2453659.868400	2454413.896900	235	I (Generic)	Microlensing	Unknown - Unknown	Time Series Viewer	Download	Dong et al. 2009
PLC	2454351.539030	2454362.525000	94	H (Generic)	Microlensing	ANDICAM - 1.3m SMARTS/CTIO	Time Series Viewer	Download	Dong et al. 2009
PLC	2454351.537450	2454524.865920	74	I (Generic)	Microlensing	ANDICAM - 1.3m SMARTS/CTIO	Time Series Viewer	Download	Dong et al. 2009
PLC	2454351.538270	2454362.524230	96	H (Generic)	Microlensing	ANDICAM - 1.3m SMARTS/CTIO	Time Series Viewer	Download	Dong et al. 2009

Confirmed planet (3)

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Planet	Period (days)	Semi-Major Axis (AU)	Inclination (deg)	Eccentricity	Time of Periastron Passage (days)	Longitude of Periastron (deg)	Date of Orbital Solution	Reference
b	null	6.6 $^{+12}_{-2.2}$	null	null	null	null	null	Dong et al. 2009
b	null	0.72 $^{+0.36}_{-0.16}$	null	null	null	null	null	Dong et al. 2009

Planet Parameters

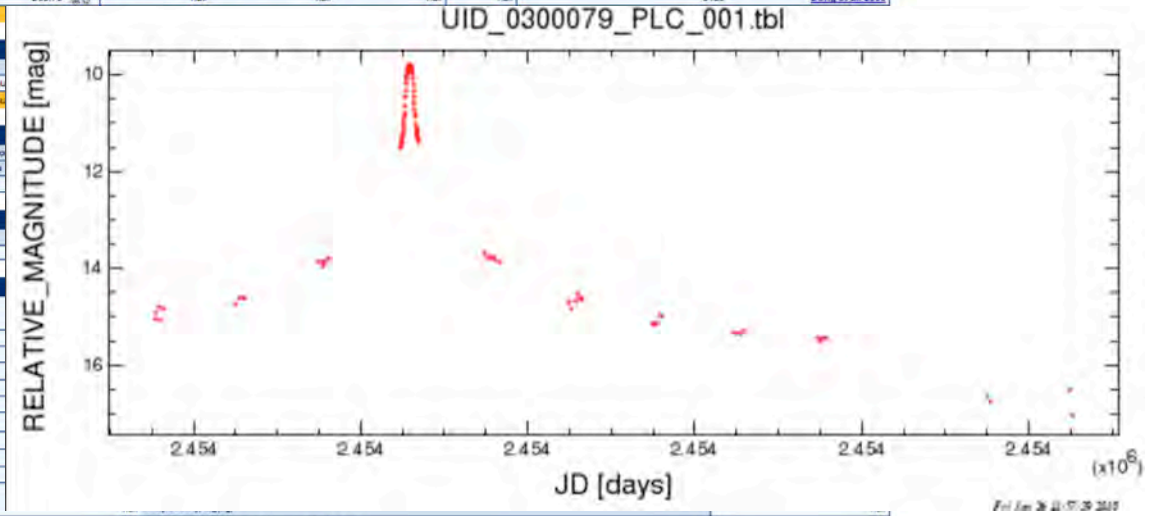
Planet	M sin(i)		Mass		Radius			Density	Equilibrium Temperature	Reference
	(Jupiter Mass)	(Earth Mass)	(Jupiter Mass)	(Earth Mass)	(Solar Radii)	(Jupiter Radii)	(Earth Radii)	(g/cm^3)	(K)	
b	null	null	0.83 $^{+0.40}_{-0.31}$	263.79 $^{+133.74}_{-99.52}$	null	null	null	null	34±9	Dong et al. 2009
b	null	null	0.63 $^{+0.30}_{-0.23}$							

Planet	Depth (perc)	Duration (days)	Duration (hours)	Mid-Point (days)
b	null	null	null	nu
b	null	null	null	nu

Planet	Discovery			System Information	
	Method	Year	Reference	Number of Stars	Number of Planets
b	Microlensing	2008	Dong et al. 2009	1	

Planet

Right Ascension			
Galactic Longitude (deg)			
Parallax (mas)			
RA Proper Motion (mas/yr)			
Total Proper Motion (mas/yr)			
B-band (mag)			
Spectral Type			
Surface Gravity (log$_{10}$(cm/s^2))			
Radius (R$_{Jupiter}$)			
Density (g/cm^3)			
Metallicity (dex)			
V sin(i) (km/s)			
log R'HK			
Number of Hipparcos Light Curves	0	Number of Photometric non-Hipparcos Light Curves	7
Number of Radial Velocity Time Series	0	Number of Amateur Light Curves	0
Number of Spectra	0	Number of Images	3



Literature Time Series

Type	Start Time	End Time	Number of Data Points	Wavelength	Method	Instrument/Telescope	Link	File	Reference
PLC	2454351.535970	2454362.521940	94	H (Generic)	Microlensing	ANDICAM - 1.3m SMARTS/CTIO	Time Series Viewer	Download	Dong et al. 2009
PLC	2454351.536740	2454362.522700	97	H (Generic)	Microlensing	ANDICAM - 1.3m SMARTS/CTIO	Time Series Viewer	Download	Dong et al. 2009
PLC	2454351.537500	2454362.523470	93	H (Generic)	Microlensing	ANDICAM - 1.3m SMARTS/CTIO	Time Series Viewer	Download	Dong et al. 2009
PLC	2453659.868400	2454413.896900	235	I (Generic)	Microlensing	Unknown - Unknown	Time Series Viewer	Download	Dong et al. 2009
PLC	2454351.539030	2454362.525000	94	H (Generic)	Microlensing	ANDICAM - 1.3m SMARTS/CTIO	Time Series Viewer	Download	Dong et al. 2009
PLC	2454351.537450	2454524.865920	74	I (Generic)	Microlensing	ANDICAM - 1.3m SMARTS/CTIO	Time Series Viewer	Download	Dong et al. 2009
PLC	2454351.538270	2454362.524230	96	H (Generic)	Microlensing	ANDICAM - 1.3m SMARTS/CTIO	Time Series Viewer	Download	Dong et al. 2009

Microlensing table

- Contains all solutions from a reference (confirmed planet table has only 1)
- Includes microlensing specific parameters
- Currently undergoing an update for additional parameters and papers

Microlensing table

- Contains all solutions
  (confirmed planet tal
- Includes microlensing
- Currently undergoing
  parameters and pape

Table Label	Description
Planet Name	Planet name
Reference	ADS reference link
RA [decimal]	Right ascension (decimal)
RA [sexagesimal]	Right ascension sexagesimal)
Dec [decimal]	Declination (decimal)
Dec [sexagesimal]	Declination (sexagesimal)
Galactic Longitude	Galactic longitude
Galactic Latitude	Galactic latitude
Source Crossing Time [day]	Source angular radius crossing time
Einstein Crossing Time [day]	Einstein radius crossing time
Time of Closest Projected Separation [days]	Time of closest projected separation between lens and source
Angular Einstein Radius [mas]	Angular Einstein radius
Angular Projected Separation	Angular projected separation between lens and source
Source-Lens Relative Proper Motion [mas/year]	Source-lens relative proper motion
Source Angular Radius [microas]	Source angular radius
Source Physical Radius [Solar radii]	Source physical radius
Source/Einstein Angular Radius Ratio (10**-3)	Ratio of source angular radius and the Einstein angular radius (x 10^{-3})
Source-Lens Relative Angle [radians]	Angle of source relative to lens
Binary Lens Mass Ratio (10**-4)	Ratio of binary lens mass, M_2/M_1 (x 10^{-4})
Binary Lens Separation Ratio	Ratio of binary lens separation
Lens Separation Ratio Rate of Change [1/year]	Rate of change of the binary lens separation ratio due to binary orbital motion
Relative angle rate of change [deg/year]	Rate of change of the source-lens relative angle due to binary orbital motion
Lens Mass [Solar mas]	Host mass
Planet Mass [Earth mass]	Planet mass

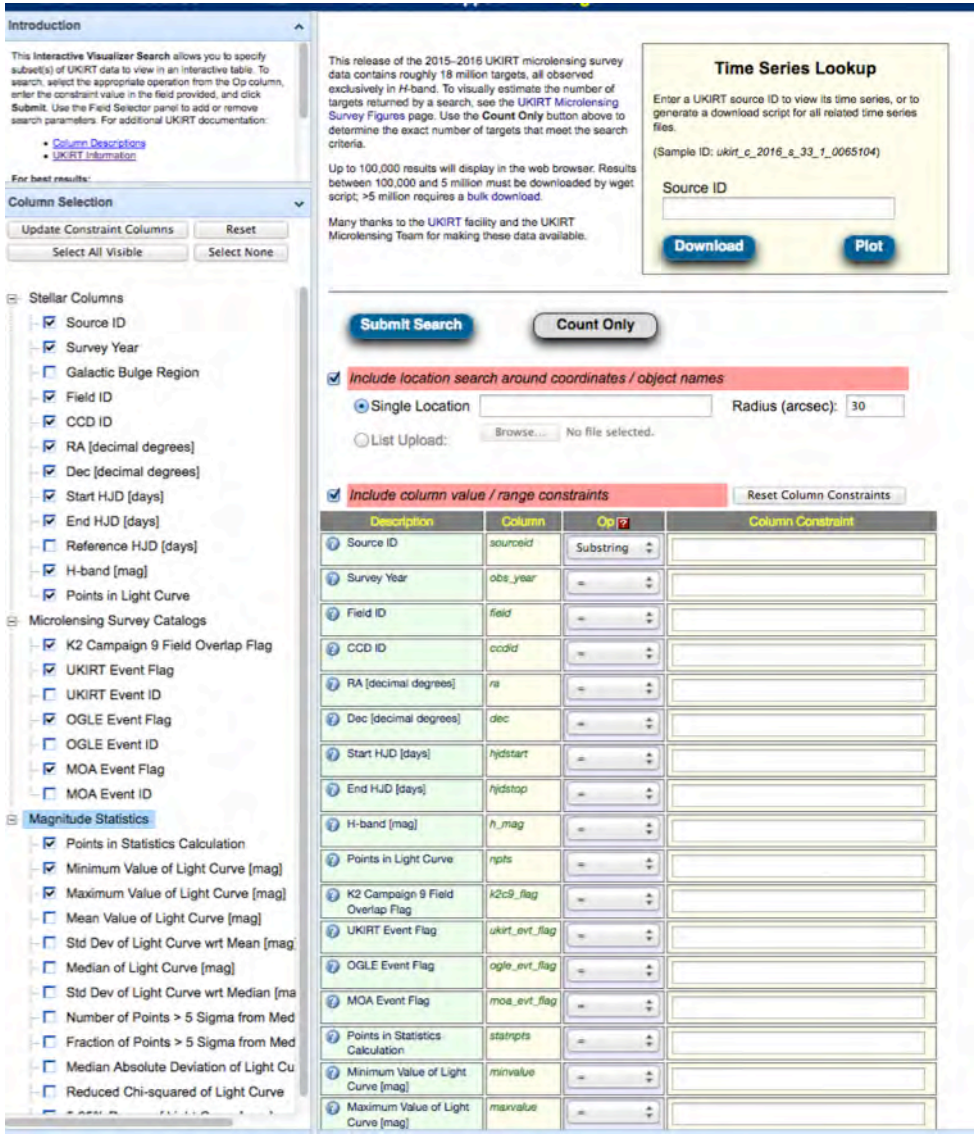
Microlensing Table (2)

Row ID	Planet Name	ADS Reference link	RA [decimal]	RA [sexagesimal]	Dec [decimal]	Dec [sexagesimal]	Galactic longitude	Galactic latitude	Source crossing time [day]	Einstein crossing time [day]	Time of closest projected separation [day]	Angular Einstein radi [mas]
1	MOA 2011-BLG-028L b	Skowron et al. 2016	270.854000	18h03m24.96s	-29.213417	-29d12m48.3s	1.725752	-3.495602		34.20±0.74	2455673.81±0.18	0.337±0.053
2	MOA 2011-BLG-028L b	Skowron et al. 2016	270.854000	18h03m24.96s	-29.213417	-29d12m48.3s	1.725752	-3.495602		34.26±0.67	2455673.788±0.0	0.337±0.053
3	MOA 2011-BLG-028L b	Skowron et al. 2016	270.854000	18h03m24.96s	-29.213417	-29d12m48.3s	1.725752	-3.495602		34.2±1.3	2455673.74±0.33	0.337±0.053
4	MOA 2011-BLG-028L b	Skowron et al. 2016	270.854000	18h03m24.96s	-29.213417	-29d12m48.3s	1.725752	-3.495602		34.45±0.55	2455673.687±0.0	0.337±0.053
5	MOA 2011-BLG-028L b	Skowron et al. 2016	270.854000	18h03m24.96s	-29.213417	-29d12m48.3s	1.725752	-3.495602		33.91±0.26	2455673.707±0.0	0.337±0.053
6	MOA 2011-BLG-028L b	Skowron et al. 2016	270.854000	18h03m24.96s	-29.213417	-29d12m48.3s	1.725752	-3.495602		34.19±0.45	2455673.694±0.0	0.337±0.053
7	MOA 2011-BLG-028L b	Skowron et al. 2016	270.854000	18h03m24.96s	-29.213417	-29d12m48.3s	1.725752	-3.495602		34.07±0.68	2455673.82±0.17	0.337±0.053
8	MOA 2011-BLG-028L b	Skowron et al. 2016	270.854000	18h03m24.96s	-29.213417	-29d12m48.3s	1.725752	-3.495602		34.20±0.74	2455673.81±0.18	0.337±0.053
9	MOA 2010-BLG-353L b	Rattenbury et al. 201	271.303917	18h05m12.94s	-27.293233	-27d17m35.6s	3.597801	-2.903537			2455381.24±0.06	0.187±0.089
10	MOA 2010-BLG-353L b	Rattenbury et al. 201	271.303917	18h05m12.94s	-27.293233	-27d17m35.6s	3.597801	-2.903537			2455381.24±0.06	0.187±0.089
11	OGLE 2005-BLG-169L b	Gould et al. 2006	271.522167	18h06m05.32s	-30.732639	-30d43m57.5s	0.676832	-4.739985		43±4		1.00±0.22
12	OGLE 2003-BLG-235L b	Bennett et al. 2006	271.318125	18h05m16.35s	-28.895000	-28d53m42.0s	2.202553	-3.694478	0.059±0.007			0.55±0.07
13	OGLE 2012-BLG-0724L b	Hirao et al. 2016	268.968292	17h55m52.39s	-29.818528	-29d49m06.7s	0.385001	-2.370432		13.3556±0.8479	2456071.0381±0.(	0.239±0.028
14	OGLE 2012-BLG-0724L b	Hirao et al. 2016	268.968292	17h55m52.39s	-29.818528	-29d49m06.7s	0.385001	-2.370432		13.3556±0.8479	2456071.0381±0.(	0.239±0.028
15	OGLE 2015-BLG-0954L b	Shin et al. 2016	270.184333	18h00m44.24s	-28.660889	-28d39m39.2s	1.918903	-2.713585	0.0111±0.0003	37.53±0.87	2457165.220±0.0(	1.89
16	OGLE 2015-BLG-0954L b	Shin et al. 2016	270.184333	18h00m44.24s	-28.660889	-28d39m39.2s	1.918903	-2.713585	0.0111±0.0003	36.96±1.10	2457165.223±0.0(	1.89
17	OGLE 2012-BLG-0563L b	Fukui et al. 2015	271.490500	18h05m57.72s	-27.712000	-27d42m43.2s	3.312164	-3.251965		77.5±2.2	2456069.02790±0(	$1.36^{+0.14}_{-0.12}$
18	OGLE 2012-BLG-0563L b	Fukui et al. 2015	271.490500	18h05m57.72s	-27.712000	-27d42m43.2s	3.312164	-3.251965		77.7±2.1	2456069.02811±0	$1.36^{+0.14}_{-0.12}$
19	MOA 2010-BLG-328L b	Furusawa et al. 2013	269.496333	17h57m59.12s	-30.715175	-30d42m54.6s	359.835949	-3.213775		62.9±0.3	2455378.723±0.0	
20	MOA 2010-BLG-328L b	Furusawa et al. 2013	269.496333	17h57m59.12s	-30.715175	-30d42m54.6s	359.835949	-3.213775		57.2±0.3	2455378.641±0.0	
21	MOA 2010-BLG-328L b	Furusawa et al. 2013	269.496333	17h57m59.12s	-30.715175	-30d42m54.6s	359.835949	-3.213775		70.3±0.7	2455378.717±0.0	
22	MOA 2010-BLG-328L b	Furusawa et al. 2013	269.496333	17h57m59.12s	-30.715175	-30d42m54.6s	359.835949	-3.213775		62.6±0.6	2455378.683±0.0	0.98±0.12
23	MOA 2010-BLG-328L b	Furusawa et al. 2013	269.496333	17h57m59.12s	-30.715175	-30d42m54.6s	359.835949	-3.213775		64.2±0.6	2455378.694±0.0	0.83±0.14
24	MOA 2010-BLG-328L b	Furusawa et al. 2013	269.496333	17h57m59.12s	-30.715175	-30d42m54.6s	359.835949	-3.213775		75.1±0.9	2455378.776±0.0	
25	MOA 2010-BLG-328L b	Furusawa et al. 2013	269.496333	17h57m59.12s	-30.715175	-30d42m54.6s	359.835949	-3.213775		61.8±0.3	2455378.706±0.0	0.68±0.04
26	OGLE 2012-BLG-26L b	Beaulieu et al. 2016	263.577917	17h34m18.70s	-27.142750	-27d08m33.9s	0.194880	3.066576		94.12±0.92		0.98±0.04
27	OGLE 2012-BLG-26L b	Beaulieu et al. 2016	263.577917	17h34m18.70s	-27.142750	-27d08m33.9s	0.194880	3.066576		94.12±0.92		0.98±0.04
28	OGLE 2015-BLG-0051L b	Han et al. 2016	269.662537	17h58m39.01s	-28.031694	-28d01m54.1s	2.237480	-2.002630		10.81±0.07	2457083.081±0.0(	0.093±0.006
29	MOA 2011-BLG-262L b	Bennett et al. 2014	270.097833	18h00m23.48s	-31.245258	-31d14m42.9s	359.630583	-3.924346		3.846±0.013	2455739.1311±0.(	0.205±0.015
30	MOA 2011-BLG-262L b	Bennett et al. 2014	270.097833	18h00m23.48s	-31.245258	-31d14m42.9s	359.630583	-3.924346		3.827±0.013	2455739.1312±0.(	0.205±0.015
31	MOA 2011-BLG-262L b	Bennett et al. 2014	270.097833	18h00m23.48s	-31.245258	-31d14m42.9s	359.630583	-3.924346		3.855±0.013	2455739.1310±0.(	0.122±0.009
32	MOA 2011-BLG-262L b	Bennett et al. 2014	270.097833	18h00m23.48s	-31.245258	-31d14m42.9s	359.630583	-3.924346		3.858±0.013	2455739.1309±0.(	0.122±0.009

UKIRT Survey Data

- See Shvartzvald et al 2017 and Geoff Bryden's talk for details of surveys and data reduction
- 18 million light curves from 2015 and 2016 UKIRT campaigns made available to the community via the Exoplanet Archive
- 2017 campaign data (*H*+*K*-band, CASU data products) will be released in spring 2018 (i.e., in time for the ROSES-18 ADAP proposal submission deadline).

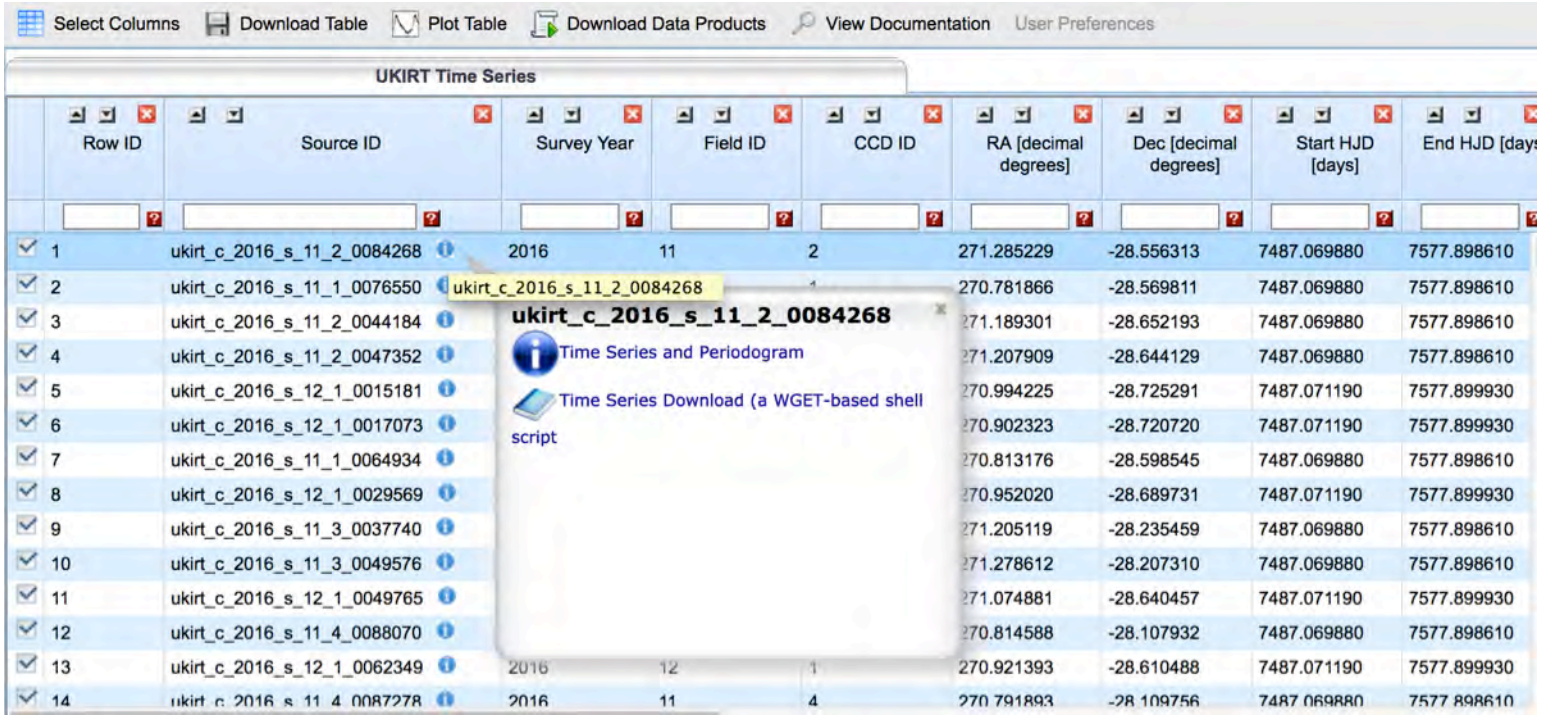
UKIRT Search Interface



Includes flags for K2C9 overlap, UKIRT, OGLE and MOA events

Example search

- Bright (<11.5 H mag) stars in K2C9 overlap
  - 34484 matches
- Small (<100,000) queries return in interactive table



Example search

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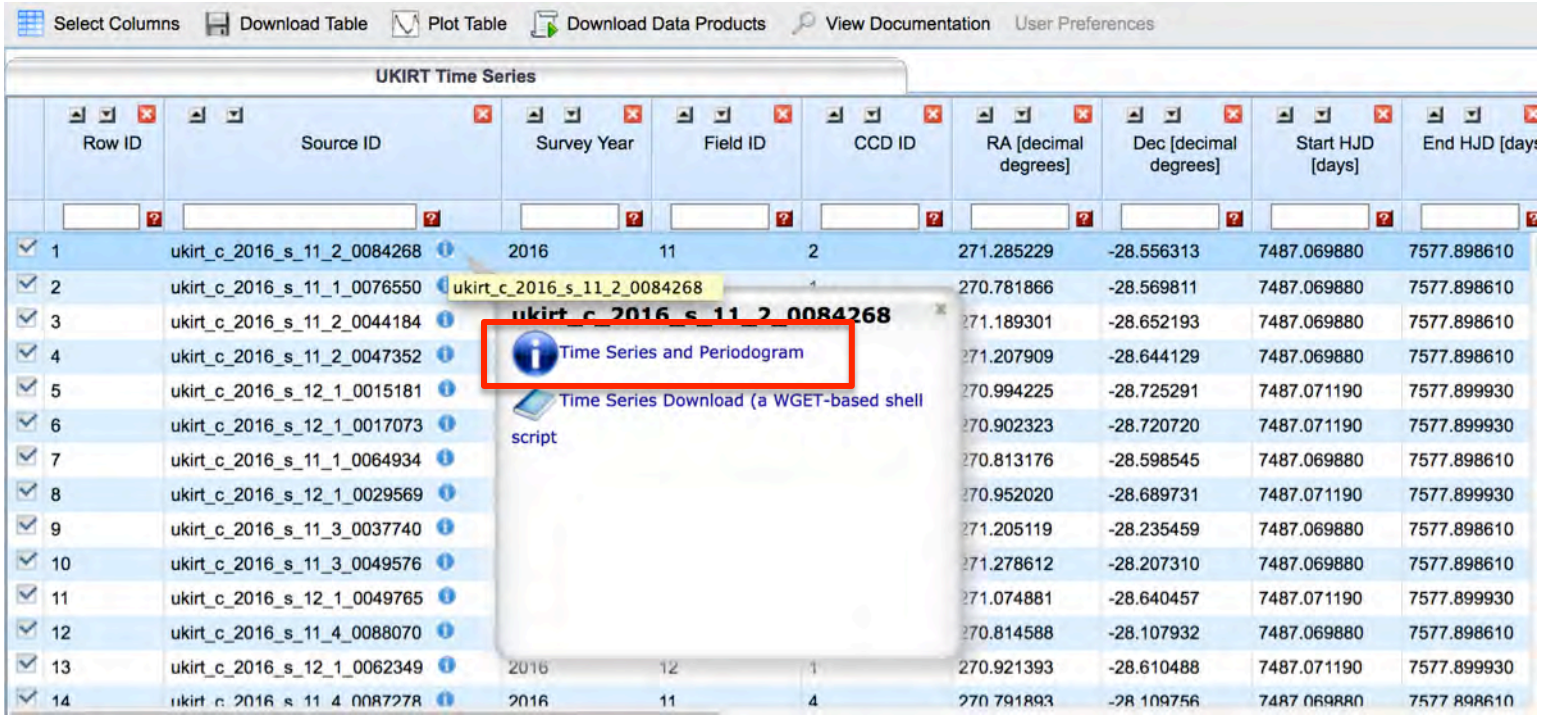
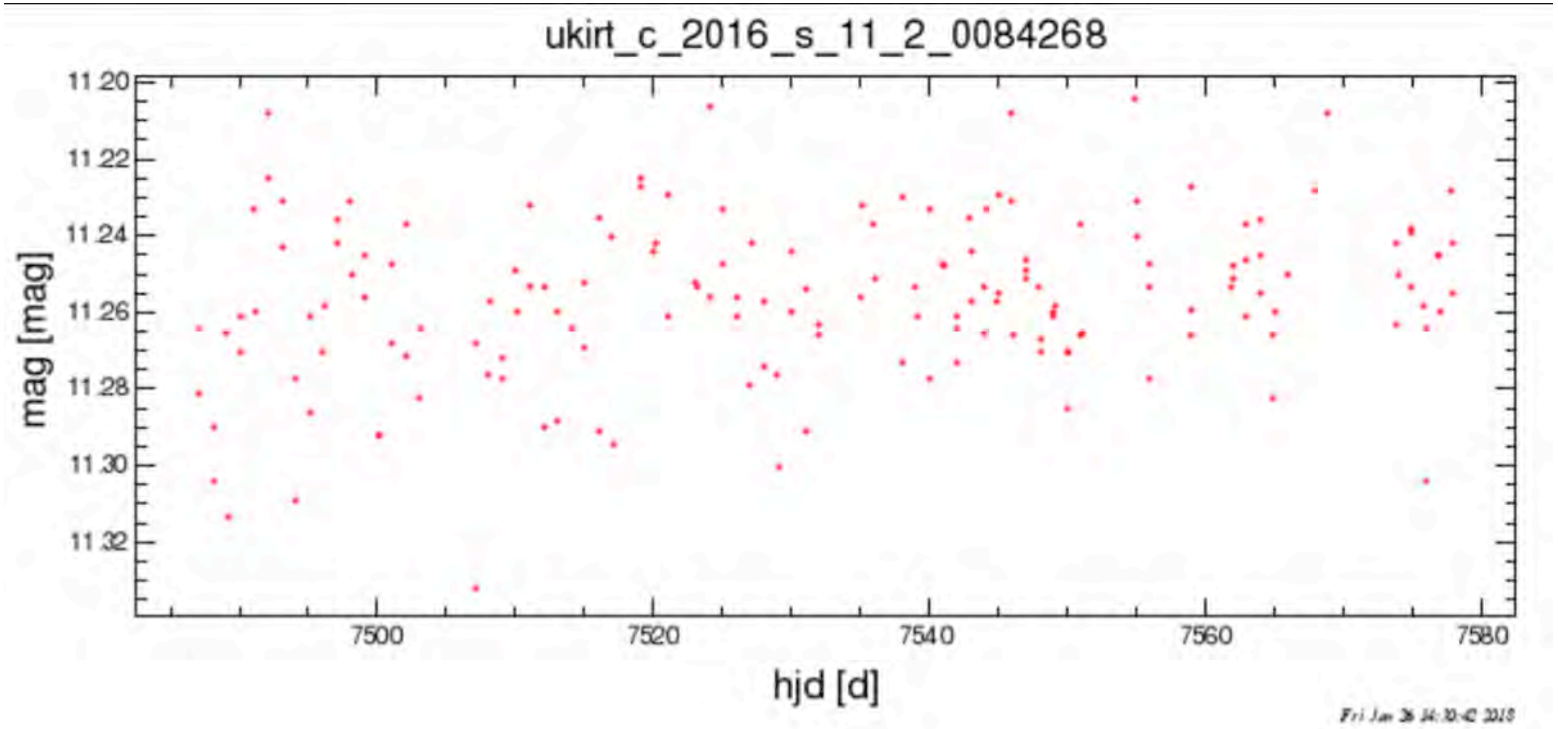
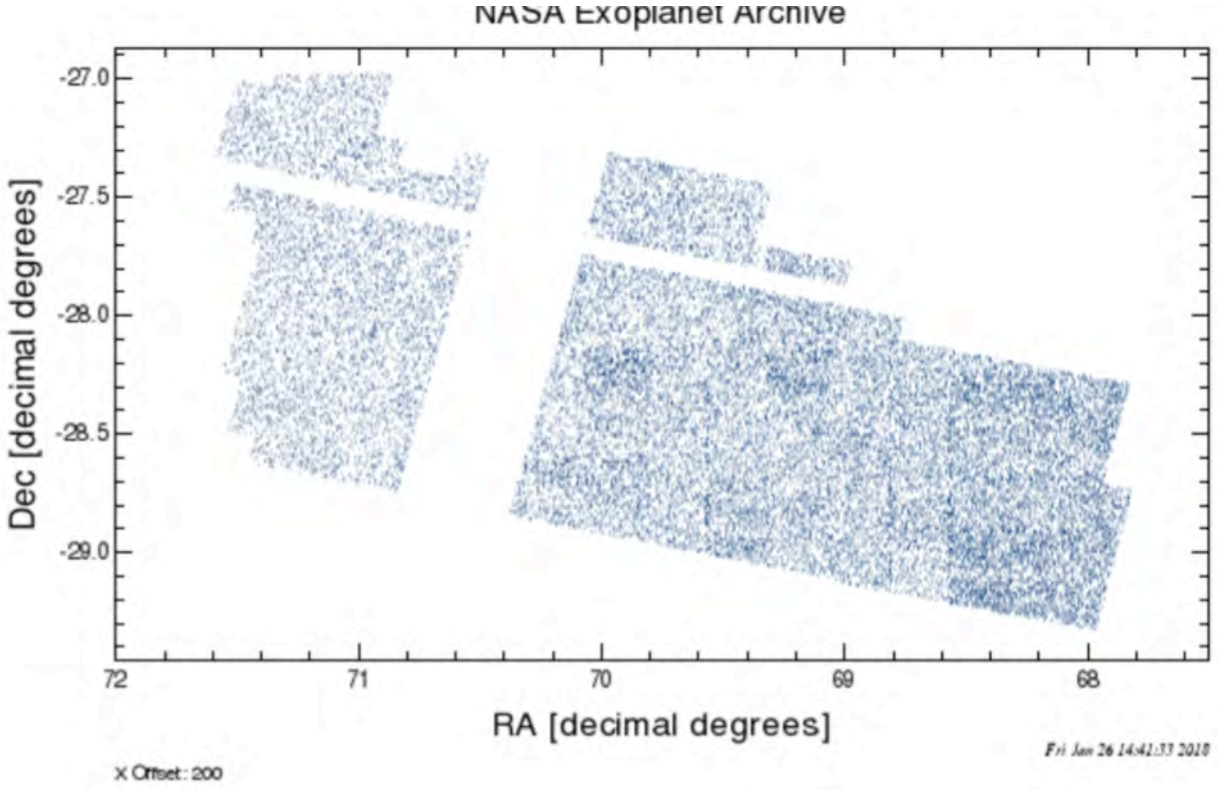


View light curves



Plotting metadata

- Can also make scatter plots or histograms from search results



UKIRT data download

- Scripts to download data
  - Light curves and metadata

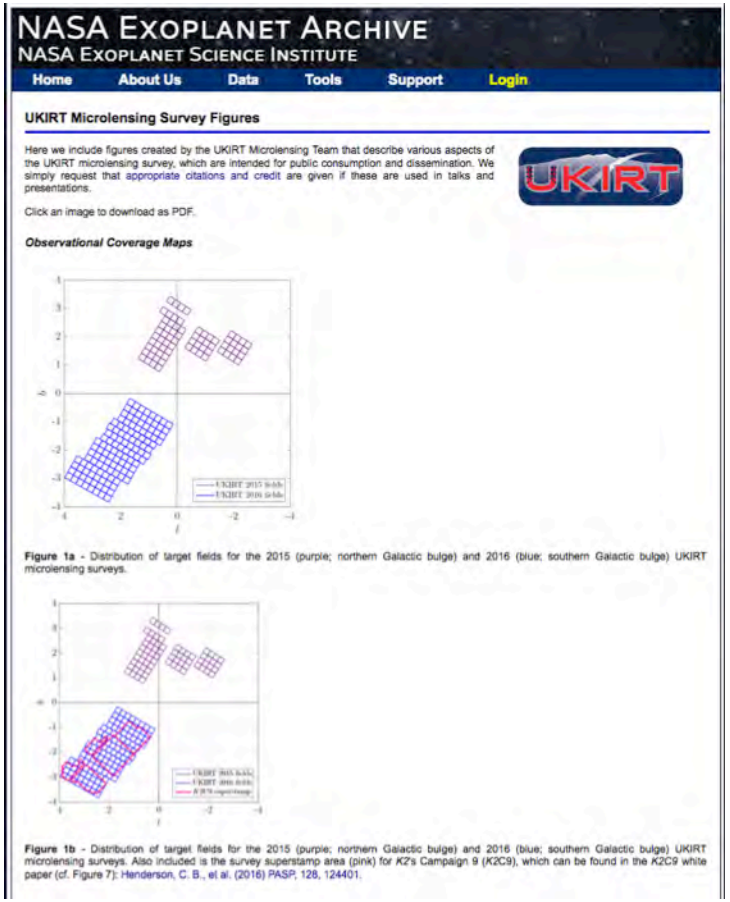
Download UKIRT Data

The time series are available via wget scripts, while the other products, such as the survey metadata, can be downloaded directly.

Data Set	Size	Description
UKIRT Bulk Time Series wget scripts (by field and ccd id)	125 MB	All time series
UKIRT Time Series metadata (by field and ccd id)	1.1 GB	IPAC ASCII files in tar.gz format
UKIRT Field and CCD list	4 KB	IPAC ASCII format
UKIRT ID list	40 MB	IPAC ASCII files in tar.gz format
UKIRT Source ID/Tile-CCD cross-reference	40 MB	IPAC ASCII files in tar.gz format

Dedicated documention

- Brief description of survey
- Description of columns, including matching to other surveys
- Links to relevant papers and requested acknowledgments

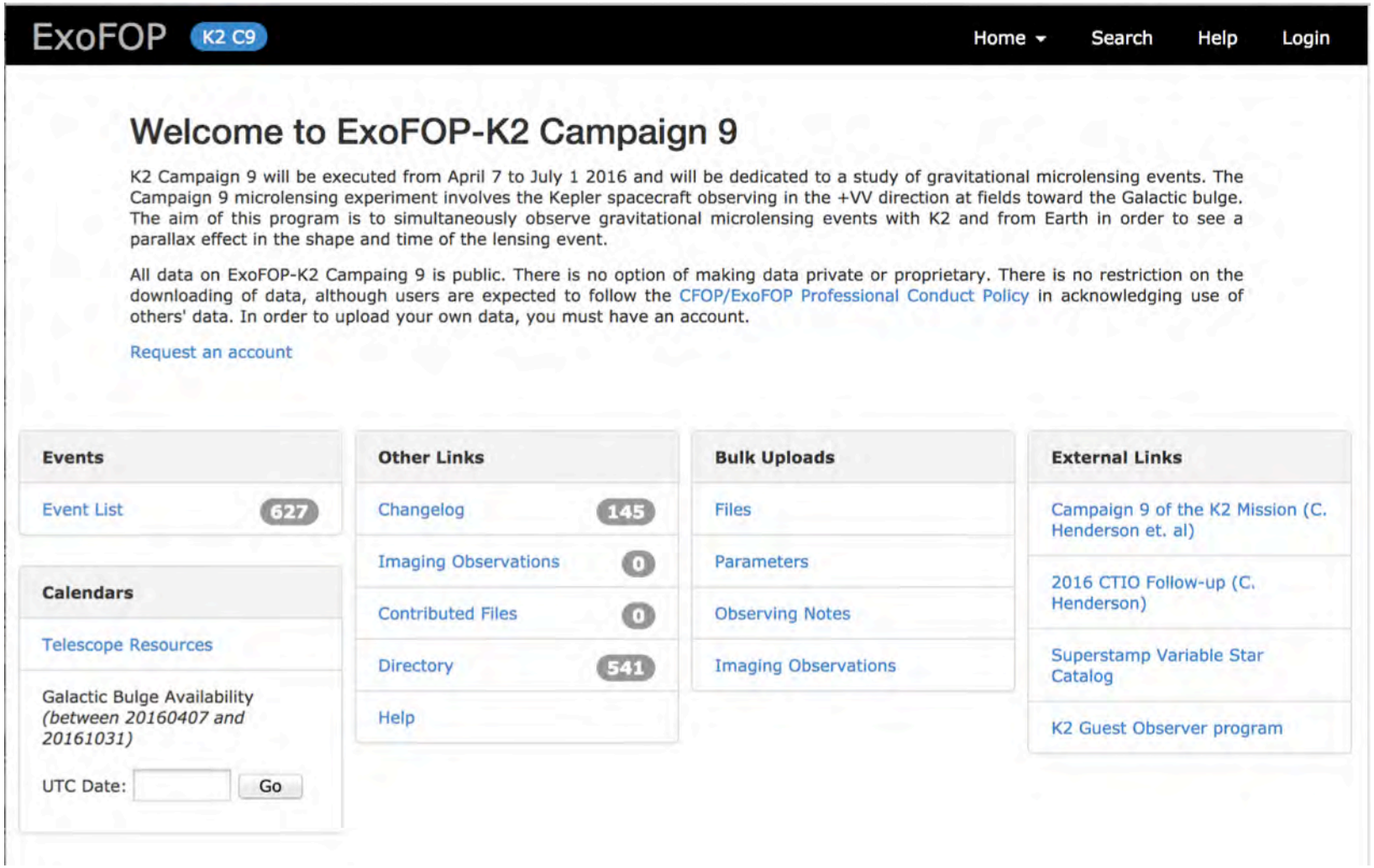


ExoFOP

- Website is designed to optimize resources and facilitate collaboration in follow-up studies of exoplanet candidates
  - Supported by Exoplanet Archive infrastructure
  - Most content upload by users, does not have to be published
  - Sand-box for early observations and exchange of information
- Currently supports Kepler, K2, K2C9 and TESS

https://exofop.ipac.caltech.edu

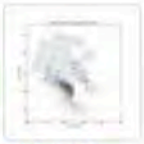
ExoFOP K2C9


ExoFOP
K2 C9
Home
Search
Help
Login
Welcome to ExoFOP-K2 Campaign 9
K2 Campaign 9 will be executed from April 7 to July 1 2016 and will be dedicated to a study of gravitational microlensing events. The Campaign 9 microlensing experiment involves the Kepler spacecraft observing in the +VV direction at fields toward the Galactic bulge. The aim of this program is to simultaneously observe gravitational microlensing events with K2 and from Earth in order to see a parallax effect in the shape and time of the lensing event.
All data on ExoFOP-K2 Campaing 9 is public. There is no option of making data private or proprietary. There is no restriction on the downloading of data, although users are expected to follow the CFOP/ExoFOP Professional Conduct Policy in acknowledging use of others' data. In order to upload your own data, you must have an account.
Request an account
Events
Event List
627
Calendars
Telescope Resources
Galactic Bulge Availability
(between 20160407 and 20161031)
UTC Date:
Go
Other Links
Changelog
145
Imaging Observations
0
Contributed Files
0
Directory
541
Help
Bulk Uploads
Files
Parameters
Observing Notes
Imaging Observations
External Links
Campaign 9 of the K2 Mission (C. Henderson et. al)
2016 CTIO Follow-up (C. Henderson)
Superstamp Variable Star Catalog
K2 Guest Observer program

Event List

ExoFOP K2 C9 Home Search Help Login

K2 Microlensing Events (627) Event Selection Criteria Download as: Text CSV *Current JD = 2458145.45* Events within last


All Events


Events outside superstamp

Ogle Name	MOA Name	RA	Dec	t_{alert} (HJD)	t_0 (HJD)	t_E (d)	u_0 (θ_E)
	MOA-2016-BLG-596	18:07:25.96	-26:38:27.37	2457662.592	2457956.008	3275.02	0
	MOA-2016-BLG-587	17:53:42.67	-29:00:14.67	2457655.435	2457641.633	42.99	32.07
	MOA-2016-BLG-582	17:55:51.69	-28:50:16.36	2457654.447	2457858.985	1350030.79	0
	MOA-2016-BLG-575	17:51:36.76	-28:26:10.57	2457654.413	2457654.332	52765.2	0
OGLE-2016-BLG-1849		18:19:14.52	-27:07:11.8	2457654.161	2457647.652	44.03	0.118
OGLE-2016-BLG-1829	MOA-2016-BLG-579	18:17:27.8	-23:54:09.9	2457653.234	2457668.603	128.2	0.161
	MOA-2016-BLG-562	18:13:15.35	-27:51:41.66	2457652.483	2457649.804	103904.53	0
OGLE-2016-BLG-1801		18:02:34.88	-27:51:04.8	2457651.4	2457653.266	52.76	0.292
OGLE-2016-BLG-1787		18:09:17.2	-25:05:59.4	2457650.026	2457635.501	50.85	0.503
OGLE-2016-BLG-1770		17:57:12.88	-28:04:15.4	2457646.047	2457649.923	38.4	0.208
OGLE-2016-BLG-1886	MOA-2016-BLG-550	17:54:18.73	-29:07:21	2457641.727	2457818.52	74	0
	MOA-2016-BLG-545	18:18:37.64	-21:43:42.48	2457641.724	2457645.494	56.98	0.024

Individual Object page

ExoFOP K2 C9 Home Search Help Login

OGLE-2016-BLG-1829/MOA-2016-BLG-579

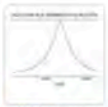
Current JD = 2458145.45

Open Observing Notes (0)

Last modified 2016-10-31 14:57:47 by swain

Download: Text file of this page All files (tar) All files (zip)
External Links: SIMBAD (if exists) IRSA Finder Chart


OGLE finding chart


light curve

Event Summary		
t_{alert} (HJD)	2457653.234	
$I_{current}$ time (HJD), mag		
ARTEMiS Status	pspl	
User-supplied Event Status		View
# Observations	0	

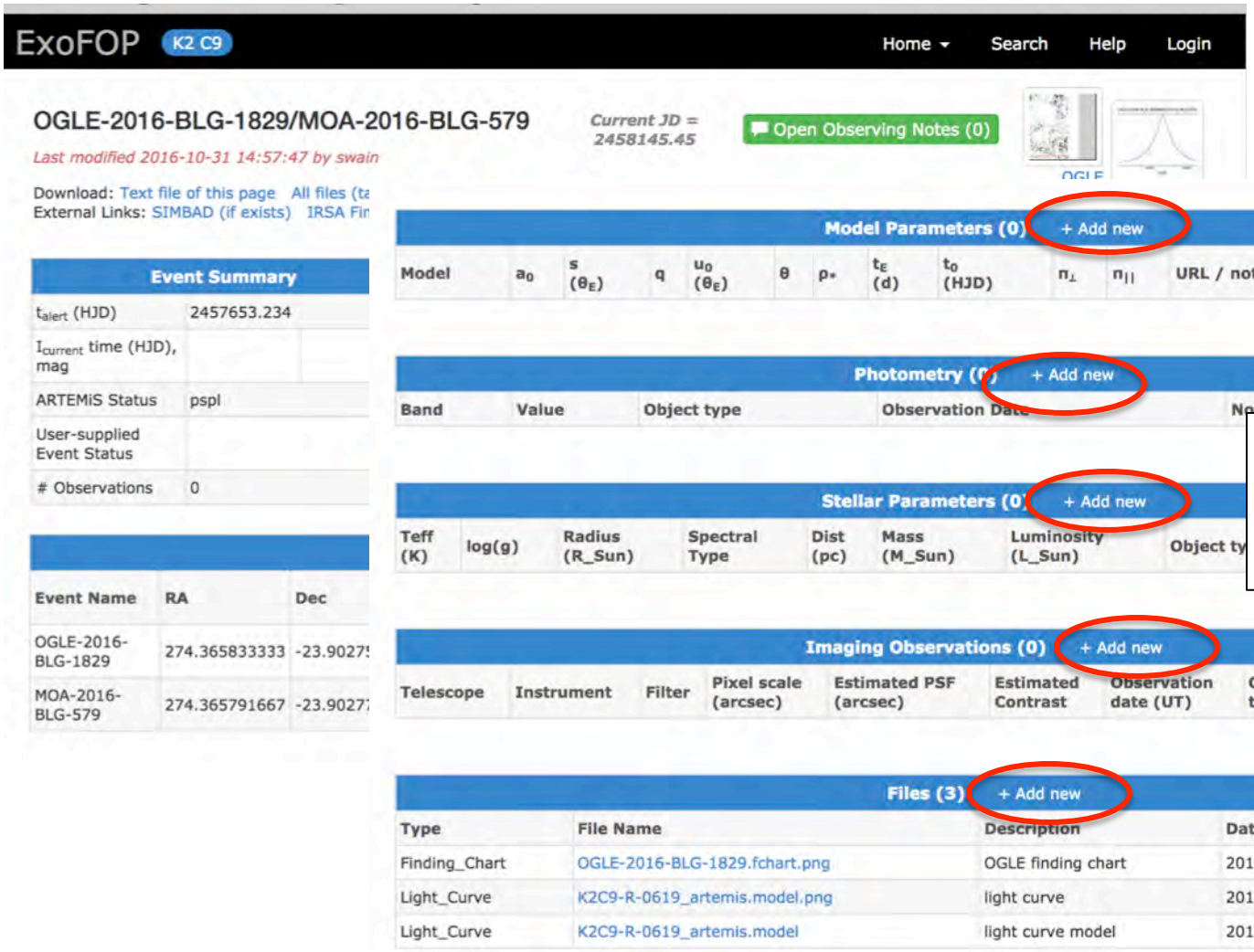
Event Location	
During campaign?	Y
In footprint?	Y
In superstamp?	

Coordinates (J2000)		
RA/Dec (hms)	18:17:27.8	-23:54:09.9
RA/Dec (deg)	274.365833333	-23.90275
Gal Lat/Long (deg)	-4.308613	8.252195

Survey Parameters

Event Name	RA	Dec	t_0 (HJD)	t_E (d)	u_0 (θ_E)	A_0	I_0 (mag)	Ndata	URL
OGLE-2016-BLG-1829	274.365833333	-23.90275	2457668.603	128.2	0.161	6.278	20.509		http://ogle.astrouw.edu.pl/ogle4/ews/2016/blg-1829.html
MOA-2016-BLG-579	274.365791667	-23.902775	2457670.10526	76.82	0.305		19.14		http://www.massey.ac.nk/~iabond/moa/alert2016/alert.php2016/display.php?id=gb20-R-3-2281

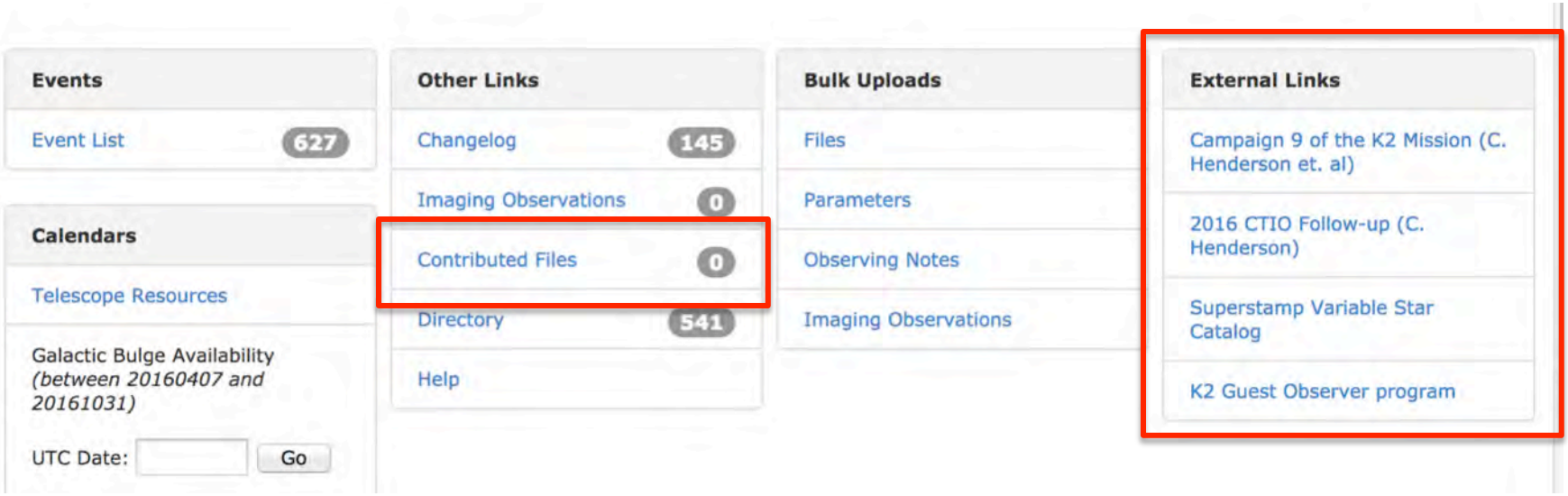
Individual Object page



Users can directly upload parameters, observations and files

ExoFOP: Contributed files

- Can also upload data files not directly tied to individual events or link to external files



Tips for presenting data in paper

Consistency will help both the archive and the rest of the exoplanet field

1. Present data in tables (including magnitudes and colors)
2. Include uncertainties for all measured or derived parameters
3. Specify the coordinate system/geometry of the angle of the source trajectory relative to the binary lens axis
   a. How is the zero point defined?!
   b. In what direction (e.g., clockwise) does the angle increase?
4. Explicitly specify reference frame --- geocentric or heliocentric --- for all proper motion values.

Tips for papers (2)

5. Explicitly indicate how the source and blend flux parameters are defined (e.g., does F_b = 1.0 mean 0% blend flux or 100%)
6. Consistent parameter notation
   a. Use mass ratio q, not mass fraction epsilon
   b. Denote the source trajectory-binary lens axis angle as alpha, not theta
   c. Potential guides
      - Gaudi 2012 ARAA
      - Appendix A of Skowron, Udlaski, Gould et al, 2011, ApJ
      - Glossary at http://microlensing-source.org/glossary/

Tips for data sets

- The Exoplanet Archive can host high level (not raw) data if there is some association with exoplanets
  - Microlensing surveys are a good example
- The Archive makes these data available to the community at no charge to the team
  - But this means we have to prioritize our limited resources

Tips for data sets (2)

- Preparation of the data set by the team is key
  - Consistent formats, units and labeling
    - Including handling of nulls
  - Consistent source naming and approach for dealing with overlaps (either across fields or across seasons)
  - Selection of metadata fields
    - Used for searching
  - Calculation or identification of appropriate statistics
    - Used for searching
  - See UKIRT survey data for example

Summary

Ask not what the archives can do for you but what you can do for the archives…

- If not published in the journal, send us the light curve data for published planets (the data file, NOT the plot)
  - Thanks to those who have done this already!
- Consider using standard parameter names/symbols and pay attention to uncertainties in papers
- If interested having the Exoplanet Archive host larger high-level data sets, talk to Rachel A or Calen
  - Can also cross-link to existing archives