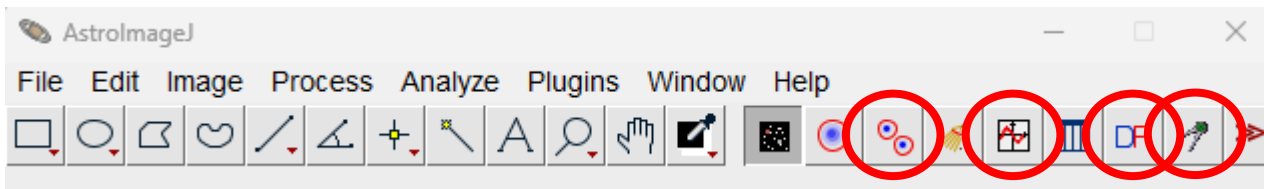


AstroImageJ Toolbar

- Provides access to Astronomy Tools (and underlying ImageJ tools)
- Data Processor (DP; data calibration)
- Multi-Aperture (MA; differential photometry)
- Multi-Plot and lightcurve fitting (MP; plotting facility)
- Coordinate Converter (CC; time format and coordinate conversion)



Data Processor (Image Calibration)

- Create master calibration files
- Bias subtract
- Dark Subtract
- Flat field
- Update FITS headers
- Plate Solve
- Save calibrated files
- Optional run photometry and plotting
- Run in realtime mode while observing to monitor live lightcurve

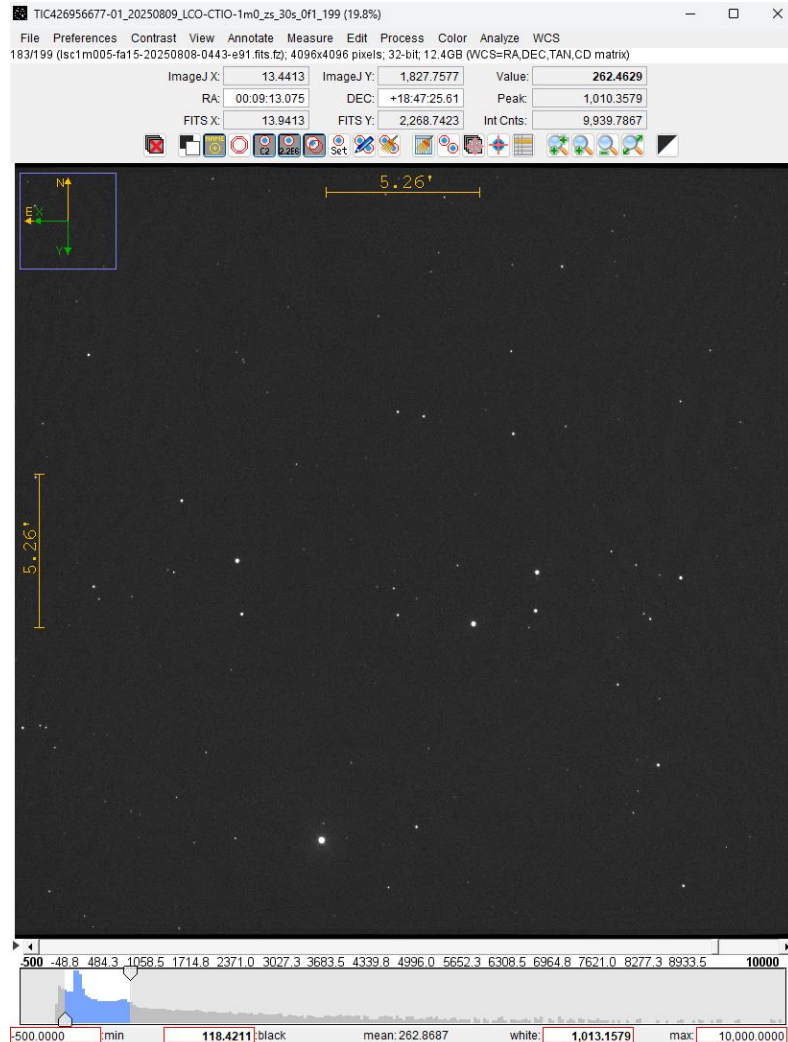
DP CCD Data Processor

File Preferences View

Control	Options	Directory	Filename/Pattern	Totals
Science Image Processing				
Filename Matching				
<input checked="" type="checkbox"/> Enable	<input checked="" type="checkbox"/> Sort Num	C:\Users\karen\Documents\Observations\WASP-12b_qty-19\20091127_WASP-12b_r-filter	WASP-12b_*.fits	134
Filename Number Filtering				
<input type="checkbox"/> Enable	Min: 0	Max: 1000000000	WASP-12b_*.fits	134
Bias Subtraction				
<input checked="" type="checkbox"/> Build	<input type="radio"/> ave <input checked="" type="radio"/> med	:\Users\karen\Documents\Observations\WASP-12b_qty-19\20091127_WASP-12b_r-filter\Bias	BIAS_*.fits	6
<input checked="" type="checkbox"/> Enable		:\Users\karen\Documents\Observations\WASP-12b_qty-19\20091127_WASP-12b_r-filter\Bias	mbias.fits	1
Dark Subtraction				
<input checked="" type="checkbox"/> Build	<input type="radio"/> ave <input checked="" type="radio"/> med	:\Users\karen\Documents\Observations\WASP-12b_qty-19\20091127_WASP-12b_r-filter\Dark	Dark_100s_*.fits	10
<input checked="" type="checkbox"/> Enable	<input checked="" type="checkbox"/> scale <input checked="" type="checkbox"/> deBias	:\Users\karen\Documents\Observations\WASP-12b_qty-19\20091127_WASP-12b_r-filter\Dark	mdark.fits	1
Flat Division				
<input type="checkbox"/> Build	<input type="radio"/> ave <input checked="" type="radio"/> med	C:\Users\Karen\Documents_Awaiting Reduction - TESS\Wingham\Calibration_Images\Flats 1x	*FLAT.FIT	0
<input checked="" type="checkbox"/> Enable	<input type="checkbox"/> Remove Gradient	C:\Users\karen\Documents\Observations\WASP-12b_qty-19\20091127_WASP-12b_r-filter	mflat.fits	1
Image Correction				
<input type="checkbox"/> Enable Linearity Correction	New pixel value = 0.0E0 + 1.0E0 * (PixVal) + 0.0E0 * (PixVal) ² + 0.0E0 * (PixVal) ³			
<input type="checkbox"/> Remove Outliers	<input checked="" type="checkbox"/> Bright <input checked="" type="checkbox"/> Dark	Radius: 2	Threshold: 50	
FITS Header Updates				
<input checked="" type="checkbox"/> General	<input type="checkbox"/> Plate Solve	Target Coordinate Source FITS header target RA/DEC (J2000)		Observatory Location Source FITS header latitude and longitude
Save Calibrated Images				
<input checked="" type="checkbox"/> Enable	<input type="radio"/> 16 <input checked="" type="radio"/> 32	Sub-dir: .\pipelineout	Suffix: _out	Format: <input type="checkbox"/> FPACK <input type="checkbox"/> GZIP
Post Processing				
<input checked="" type="checkbox"/> M-Ap	<input type="checkbox"/> Save Image		<input type="checkbox"/> Macro 1 C:\Users\Karen\	0
<input checked="" type="checkbox"/> M-Plot	<input type="checkbox"/> Save Plot		<input type="checkbox"/> Macro 2 C:\Users\Karen\	0
Control Panel				
Polling Interval 3		START PAUSE RESET		
Processed: 0				Remaining: 134

Image Stack Display

- Zoom and pan image with mouse
- Adjust contrast
- Scroll through stack
- Photometer at mouse pointer
- X, Y, East, North, indicators
- Access to all AIJ settings and tools
 - Icons for common settings and tools
 - Menus for all others



Multi-Aperture

- Select aperture shape
- Select aperture size and size mode
- Select new or saved aperture mode
- Select aperture tracking modes
- Set up auto comp star mode
- Select runtime display options
- Select “Place Apertures” to interactively add, remove, or move apertures in image stack

Multi-Aperture Measurements

Aperture Shape: Circular

First slice: 1

Last slice: 199

Fixed/Base radius of photometric aperture: 15

Fixed/Base radius of inner background annulus: 30

Fixed/Base radius of outer background annulus: 45

☐ Fixed Apertures as selected above

☐ Auto Fixed Apertures from first image T1 radial profile

☒ Auto Fixed Apertures from multi-image T1 radial profiles

☐ Auto Variable Apertures from each image T1 radial profile

☐ Auto Variable Apertures from each image T1 FWHM

Normalized flux cutoff threshold: 0.005 (0 < cutoff < 1; default = 0.010)

Normalized flux cutoff threshold: 0.005 (0 < cutoff < 1; default = 0.010)

Normalized flux cutoff threshold: 0.005 (0 < cutoff < 1; default = 0.010)

FWHM factor: 1.4

☐ Place all new apertures

☐ Place first previously used aperture

☐ Place 31 previously used apertures

☒ Place 1 imported apertures

☐ Use RA/Dec to locate aperture positions

☐ T1 is moving object

☐ Use single step mode (1-click to set first aperture location in each image)

☐ Allow aperture changes between slices in single step mode (right click to advance image)

☒ Auto comparison stars ☐ Enable log ☐ Show peaks

Smoothing Filter Radius: 3.5 pixels

☒ Auto Thresholds

Max. Peak Value: 145,370.01

Min. Peak Value: 470.56

Base Aperture: 1

Max. Comp. Brightness %: 300.0

Min. Comp. Brightness %: 10.0

Weight of Distance: 50 vs Brightness

Max. Comp. Stars: 30

☒ Centroid apertures (initial setting)

☐ Halt processing on WCS or centroid error

☒ Remove stars from background

☐ Assume background is a plane

☐ Prompt to enter ref star apparent magnitude (required if target star apparent mag is desired)

☐ Update plot while running

☐ Show help panel during aperture selection

☐ Update image display while running

CLICK 'PLACE APERTURES' AND SELECT APERTURE LOCATIONS WITH LEFT CLICKS.
THEN RIGHT CLICK or <ENTER> TO BEGIN PROCESSING.
(to abort aperture selection or processing, press <ESC>)

Place Apertures Aperture Settings Cancel

Measurements Table Display

- Contains all data from multi-aperture run
- Interactive with plotted data
- Searchable
- Sortable
- Editable

Measurements in TIC393818343-01_20240702_LCO-CTIO-0m4p_5px_KC_measurements.tbl									
File Edit Font Results Filter									
	Label	slice	Saturated	J.D.-2400000	JD_UTC	BJD_TDB	ATDMACC	MMCHUMID	CCDATEMD
1	lsc0m476-sq34-20240701-0141-e91.fits.gz	1	0.0	60493.60185756395	2460493.601857564	2460493.601857564			
2	lsc0m476-sq34-20240701-0143-e91.fits.gz	2	0.0	60493.60233846679	2460493.602338467	2460493.602338467			
3	lsc0m476-sq34-20240701-0145-e91.fits.gz	3	0.0	60493.60281584505	2460493.602815845	2460493.602815845			
4	lsc0m476-sq34-20240701-0147-e91.fits.gz	4	0.0	60493.603305567056	2460493.603305567	2460493.603305567			
5	lsc0m476-sq34-20240701-0149-e91.fits.gz	5	0.0	60493.603779363446	2460493.603779363	2460493.603779363			
6	lsc0m476-sq34-20240701-0151-e91.fits.gz	6	0.0	60493.60424845526	2460493.604248455	2460493.604248455			
7	lsc0m476-sq34-20240701-0159-e91.fits.gz	10	0.0	60493.6061387267	2460493.606138726	2460493.606138726			
8	lsc0m476-sq34-20240701-0163-e91.fits.gz	12	0.0	60493.6070901854	2460493.607090185	2460493.607090185			
9	lsc0m476-sq34-20240701-0165-e91.fits.gz	13	0.0	60493.60756527772	2460493.607565277	2460493.607565277			
10	lsc0m476-sq34-20240701-0167-e91.fits.gz	14	0.0	60493.60803953698	2460493.608039537	2460493.608039537			
11	lsc0m476-sq34-20240701-0169-e91.fits.gz	15	0.0	60493.60851792246	2460493.608517922	2460493.608517922			
12	lsc0m476-sq34-20240701-0171-e91.fits.gz	16	0.0	60493.608991921414	2460493.608991921	2460493.608991921			
13	lsc0m476-sq34-20240701-0173-e91.fits.gz	17	0.0	60493.60946921911	2460493.609469219	2460493.609469219			
14	lsc0m476-sq34-20240701-0175-e91.fits.gz	18	0.0	60493.60994497128	2460493.609944971	2460493.609944971			
15	lsc0m476-sq34-20240701-0177-e91.fits.gz	19	0.0	60493.610423472244	2460493.610423472	2460493.610423472			
16	lsc0m476-sq34-20240701-0179-e91.fits.gz	20	0.0	60493.61090125609	2460493.610901256	2460493.610901256			
17	lsc0m476-sq34-20240701-0181-e91.fits.gz	21	0.0	60493.61137435166	2460493.611374351	2460493.611374351			
18	lsc0m476-sq34-20240701-0183-e91.fits.gz	22	0.0	60493.61184606468	2460493.611846064	2460493.611846064			
19	lsc0m476-sq34-20240701-0185-e91.fits.gz	23	0.0	60493.61237861728	2460493.612378617	2460493.612378617			
20	lsc0m476-sq34-20240701-0187-e91.fits.gz	24	0.0	60493.61285255244	2460493.612852552	2460493.612852552			
21	lsc0m476-sq34-20240701-0191-e91.fits.gz	26	0.0	60493.61385250604	2460493.613852506	2460493.613852506			
22	lsc0m476-sq34-20240701-0193-e91.fits.gz	27	0.0	60493.61432887195	2460493.614328872	2460493.614328872			
23	lsc0m476-sq34-20240701-0195-e91.fits.gz	28	0.0	60493.61480316566	2460493.614803165	2460493.614803165			
24	lsc0m476-sq34-20240701-0197-e91.fits.gz	29	0.0	60493.61527910316	2460493.615279103	2460493.615279103			
25	lsc0m476-sq34-20240701-0201-e91.fits.gz	31	0.0	60493.61622452555	2460493.616224525	2460493.616224525			
26	lsc0m476-sq34-20240701-0203-e91.fits.gz	32	0.0	60493.61669783015	2460493.616697830	2460493.616697830			
27	lsc0m476-sq34-20240701-0205-e91.fits.gz	33	0.0	60493.61716912035	2460493.617169120	2460493.617169120			
28	lsc0m476-sq34-20240701-0207-e91.fits.gz	34	0.0	60493.61764584482	2460493.617645844	2460493.617645844			
29	lsc0m476-sq34-20240701-0209-e91.fits.gz	35	0.0	60493.61812527198	2460493.618125272	2460493.618125272			
30	lsc0m476-sq34-20240701-0211-e91.fits.gz	36	0.0	60493.61860082764	2460493.618600827	2460493.618600827			
31	lsc0m476-sq34-20240701-0213-e91.fits.gz	37	0.0	60493.61907348968	2460493.619073489	2460493.619073489			
32	lsc0m476-sq34-20240701-0215-e91.fits.gz	38	0.0	60493.61954888329	2460493.619548883	2460493.619548883			
33	lsc0m476-sq34-20240701-0217-e91.fits.gz	39	0.0	60493.6200197977	2460493.620019797	2460493.620019797			
34	lsc0m476-sq34-20240701-0221-e91.fits.gz	41	0.0	60493.62096436927	2460493.620964369	2460493.620964369			
35	lsc0m476-sq34-20240701-0223-e91.fits.gz	42	0.0	60493.6214413424	2460493.621441342	2460493.621441342			
36	lsc0m476-sq34-20240701-0225-e91.fits.gz	43	0.0	60493.621919664554	2460493.621919664	2460493.621919664			
37	lsc0m476-sq34-20240701-0227-e91.fits.gz	44	0.0	60493.622391458135	2460493.622391458	2460493.622391458			
38	lsc0m476-sq34-20240701-0229-e91.fits.gz	45	0.0	60493.62286680564	2460493.622866805	2460493.622866805			
39	lsc0m476-sq34-20240701-0231-e91.fits.gz	46	0.0	60493.62334713573	2460493.623347135	2460493.623347135			
40	lsc0m476-sq34-20240701-0233-e91.fits.gz	47	0.0	60493.623822575435	2460493.623822574	2460493.623822574			
41	lsc0m476-sq34-20240701-0235-e91.fits.gz	48	0.0	60493.62430097815	2460493.624300978	2460493.624300978			
42	lsc0m476-sq34-20240701-0237-e91.fits.gz	49	0.0	60493.624772505835	2460493.624772506	2460493.624772506			

Multi-plot Main

- Controls related to overall plot
- Titling
- Axis labeling
- Axis Scaling
- Legend
- Plot size

Multi-plot Main

File Preferences Table X-axis Y-axis Style Help

Data (TIC393818343-01_20240702_LCO-CTIO-0m4p_ip_5px_KC_measurements.tbl)

Default X-data: BJD_TDB Y-datasets: 15 sets Detrend Vars: 10 Rel. Mag. Reference: 10 samples V. Marker 1: 0.6207 Copy V. Marker 2: 0.7936

Title
☐ None ☒ Text ☐ Programmable
 TIC 393818343.01 (TOI 6883.01) on UT 2024-07-02

Subtitle
☐ None ☒ Text ☐ Programmable
 LCO-CTIO-0m4p Telescope (ip-band, exp=14s, C-FA: 5-30--

Legend
 Align: ☐ Left ☒ Center ☐ Right
 Position: Top Middle Bottom

X-Axis Label
☐ None ☒ Column Label ☐ Custom Label
 X-axis custom label

Y-Axis Label
☐ None ☐ Column Label ☒ Custom Label
 Relative Flux

Trim Data Samples
 Head: 0 Tail: 0

X-Axis Scaling
☒ Auto X-range ☐ First X-value as min ☐ Custom X-range
 X-width: 0.251088 X-max: 2458823.803 X-min: 2458823.453912

Y-Axis Scaling
☐ Auto Y-range ☒ Custom Y-range
 Y-max: 1.016573 Y-min: 0.943377

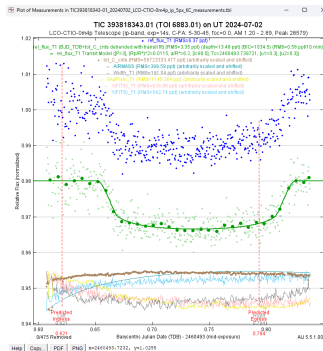
Plot Size
 Height: 800 Width: 800

Phase Folding
☒ Unphased ☐ Days Since Tc ☐ Hours Since Tc ☐ Phase
 T0 (Days): 2455873.679 Period (Days): 3.0196 Duration (Hours): 3 ☐ 2xP ☐ odd/even

Meridian Flip
☐ Show Flip Time: 0.6

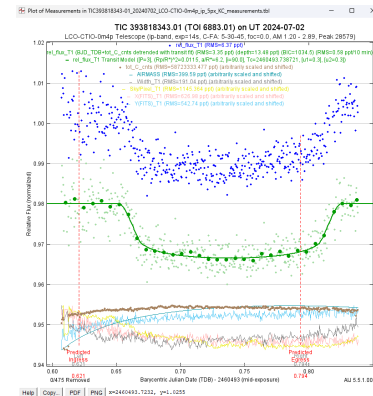
Fit and Normalize Region Selection
☒ Show Left Trim: -0.01 Left: 0.6207 Right: 0.7936 Right Trim: 6.649275

Other Panels



Multi-plot Y-data

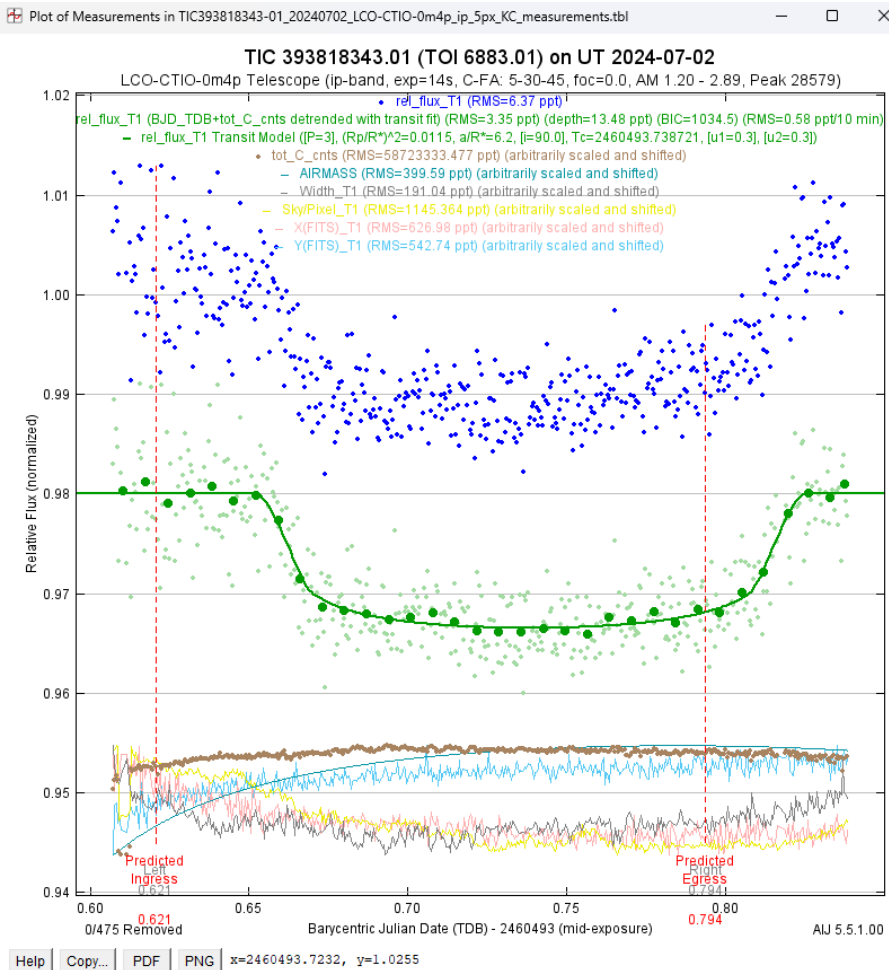
- Controls related to individual plotted datasets
- Color, symbol shape
- Fitting mode
- Data averaging and binning



Data Set	New Col	Plot	Auto Scale	X-data	Input in Mag	Y-data	Function	Y-operand	Show Error	Color	Symbol	Lines	Input Average	Spline Smooth	Fit Mode	Trend Select	Trend Coefficient	Trend Dataset	Norm/ Mag Ref	Out Mag	Page Rel	Scale	then Shift	Out Bin	BinSize (min)
1			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	rel_flux_T1	<input type="checkbox"/>		<input type="checkbox"/>	blue	dot	<input type="checkbox"/>	1			<input type="checkbox"/>	0.0000023			<input type="checkbox"/>		1	0	<input type="checkbox"/>	5
2			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	rel_flux_T1	<input type="checkbox"/>		<input type="checkbox"/>	red	box	<input type="checkbox"/>	5			<input type="checkbox"/>	0			<input type="checkbox"/>		1	-0.008	<input type="checkbox"/>	5
3			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	rel_flux_T1	<input type="checkbox"/>		<input type="checkbox"/>	dark green	dot	<input type="checkbox"/>	1			<input type="checkbox"/>	-0.0000000	tot_C_ents		<input type="checkbox"/>		1	-0.02	<input checked="" type="checkbox"/>	10
4			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	rel_flux_C2	<input type="checkbox"/>		<input type="checkbox"/>	magenta	X	<input type="checkbox"/>	1		off	<input type="checkbox"/>	-0.0001225			<input type="checkbox"/>		1	-0.04	<input type="checkbox"/>	5
5			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	rel_flux_C3	<input type="checkbox"/>		<input type="checkbox"/>	black	X	<input type="checkbox"/>	1		off	<input type="checkbox"/>	0.0000094			<input type="checkbox"/>		1	-0.045	<input type="checkbox"/>	5
6			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	rel_flux_C4	<input type="checkbox"/>		<input type="checkbox"/>	red	X	<input type="checkbox"/>	1		off	<input type="checkbox"/>	-0.000051			<input type="checkbox"/>		1	-0.05	<input type="checkbox"/>	5
7			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	rel_flux_C5	<input type="checkbox"/>		<input type="checkbox"/>	purple	X	<input type="checkbox"/>	1		off	<input type="checkbox"/>	-0.001511			<input type="checkbox"/>		1	-0.055	<input type="checkbox"/>	5
8			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	rel_flux_C6	<input type="checkbox"/>		<input type="checkbox"/>	light blue	X	<input type="checkbox"/>	1		off	<input type="checkbox"/>	0.0000020			<input type="checkbox"/>		1	-0.06	<input type="checkbox"/>	5
9			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	rel_flux_C7	<input type="checkbox"/>		<input type="checkbox"/>	dark green	X	<input type="checkbox"/>	1		off	<input type="checkbox"/>	0.0000997			<input type="checkbox"/>		1	-0.065	<input type="checkbox"/>	5
10			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	tot_C_ents	<input type="checkbox"/>		<input type="checkbox"/>	brown	dot	<input type="checkbox"/>	1		off	<input type="checkbox"/>	0		off	<input type="checkbox"/>		15	-42	<input type="checkbox"/>	5
11			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	AIRMASS	<input type="checkbox"/>		<input type="checkbox"/>	teal	line	<input type="checkbox"/>	1		off	<input type="checkbox"/>	0		off	<input type="checkbox"/>		-15	-42	<input type="checkbox"/>	5
12			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	Width_T1	<input type="checkbox"/>		<input type="checkbox"/>	gray	line	<input type="checkbox"/>	1		off	<input type="checkbox"/>	0		off	<input type="checkbox"/>		15	-42	<input type="checkbox"/>	5
13			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	Sky/Pixel_T1	<input type="checkbox"/>		<input type="checkbox"/>	yellow	line	<input type="checkbox"/>	1		off	<input type="checkbox"/>	0		off	<input type="checkbox"/>		15	-42	<input type="checkbox"/>	5
14			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	X(FITS)_T1	<input type="checkbox"/>		<input type="checkbox"/>	pink	line	<input type="checkbox"/>	1		off	<input type="checkbox"/>	0		off	<input type="checkbox"/>		15	-42	<input type="checkbox"/>	5
15			<input checked="" type="checkbox"/>	default	<input type="checkbox"/>	Y(FITS)_T1	<input type="checkbox"/>		<input type="checkbox"/>	light blue	line	<input type="checkbox"/>	1		off	<input type="checkbox"/>	0		off	<input type="checkbox"/>		15	-42	<input type="checkbox"/>	5

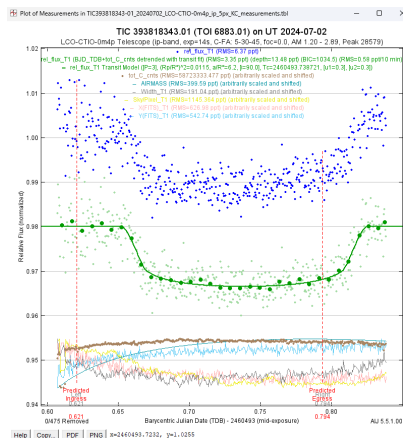
Plot Window

- Displays plotted dataset(s)
- Is interactive with mouse and data table
- Zoom and pan with mouse



Lightcurve Fitting Panel

- Set up initial fitting parameters
- View fitted values
- Manually select detrending
- Auto remove bad data points (“clean”)
- Auto optimize comparison stars
- Auto optimize detrending



File Auto Priors

rel_flux_T1

User Specified Parameters (not fitted)

Orbital Parameters

Period (days) Cr ☒ Ecc ω (deg)

Host Star Parameters (enter one)

Sp.T. Teff (K) J-K R^* (R_{sun}) M^* (M_{sun}) ρ^* (cgs)

Transit Parameters

☒ Enable Transit Fit ☒ Auto Update Priors

Parameter	Best Fit	Lock	Prior Center	Use	Prior Width	Cust	StepSize	
Baseline Flux (Raw)	0.177981439	<input type="checkbox"/>	0.177516248	<input type="checkbox"/>	0.03550325	<input type="checkbox"/>	0.1	
$(R_p / R_*)^2$	0.011466227	<input type="checkbox"/>	0.010690118	<input type="checkbox"/>	0.005345059	<input type="checkbox"/>	0.010690118	
a / R_*	6.152852370	<input type="checkbox"/>	6.127483167	<input type="checkbox"/>	0.8	<input type="checkbox"/>	1.0	
T_c	2460493.738720952	<input type="checkbox"/>	2460493.70715	<input type="checkbox"/>	0.015	<input type="checkbox"/>	0.04	
Inclination (deg)	90.00000000	<input checked="" type="checkbox"/>	90.0	<input type="checkbox"/>	15.0	<input type="checkbox"/>	30.0	
Linear LD u1	0.300000000	<input checked="" type="checkbox"/>	0.3	<input type="checkbox"/>	1.0	<input type="checkbox"/>	0.1	
Quad LD u2	0.300000000	<input checked="" type="checkbox"/>	0.3	<input type="checkbox"/>	0.2	<input type="checkbox"/>	0.1	
Calculated from model	13.48	<input type="checkbox"/>	0.000	<input type="checkbox"/>	0.000	<input type="checkbox"/>	0.000	
Depth (ppt)	b	<input type="checkbox"/>	t14 (d)	t14 (hrs)	t23 (d)	tau (d)	ρ^* (cgs)	Rp (R _{Jup})
		<input type="checkbox"/>	0.172761	04:08:47	0.139073	0.016844	0.4892	1.05

Detrend Parameters

Use	Parameter	Best Fit	Lock	Prior Center	Use	Prior Width	Cust	StepSize
<input type="checkbox"/>	AIRMASS		<input type="checkbox"/>	0.0	<input type="checkbox"/>	1.0	<input type="checkbox"/>	0.1
<input checked="" type="checkbox"/>	BJD_TDB	0.003308716042	<input type="checkbox"/>	0.0	<input type="checkbox"/>	1.0	<input type="checkbox"/>	0.1
<input type="checkbox"/>	Width_T1		<input type="checkbox"/>	0.0	<input type="checkbox"/>	1.0	<input type="checkbox"/>	0.1
<input type="checkbox"/>	Sky/Pixel_T1		<input type="checkbox"/>	0.0	<input type="checkbox"/>	1.0	<input type="checkbox"/>	0.1
<input checked="" type="checkbox"/>	tot_cnts	-0.000000002762	<input type="checkbox"/>	0.0	<input type="checkbox"/>	1.0	<input type="checkbox"/>	0.1
<input type="checkbox"/>	Y(FITS)_T1		<input type="checkbox"/>	0.0	<input type="checkbox"/>	1.0	<input type="checkbox"/>	0.1
<input type="checkbox"/>	X(FITS)_T1		<input type="checkbox"/>	0.0	<input type="checkbox"/>	1.0	<input type="checkbox"/>	0.1
<input type="checkbox"/>			<input type="checkbox"/>	0.0	<input type="checkbox"/>	1.0	<input type="checkbox"/>	0.1
<input type="checkbox"/>			<input type="checkbox"/>	0.0	<input type="checkbox"/>	1.0	<input type="checkbox"/>	0.1
<input type="checkbox"/>			<input type="checkbox"/>	0.0	<input type="checkbox"/>	1.0	<input type="checkbox"/>	0.1
<input type="checkbox"/>			<input type="checkbox"/>	0.0	<input type="checkbox"/>	1.0	<input type="checkbox"/>	0.1

Fit Statistics

RMS (ppt) χ^2/dof BIC dof χ^2

Fit Optimization

Outlier Removal: N: 0 0

Comparison Star Selection: Quick Iter. Remaining: N/A

Detrend Parameter Selection: Max Pars: Exhaustive BIC Thres: Iter. Remaining: N/A

Plot Settings

☒ Show Model ☒ Show in legend ☐ Show Residuals ☐ Show Error

Line Color: Line Width: ☐ Log Optimization

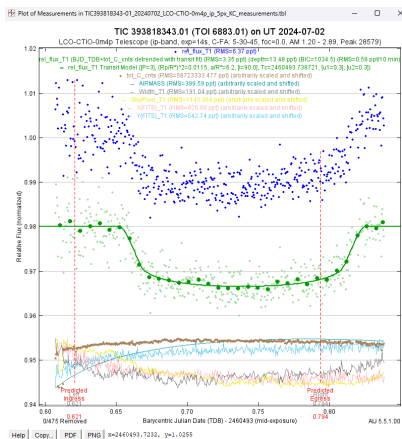
Line Color: Line Width: Symbol: Symbol Color: Shift:

Fit Control

Fit Update Options: ☒ Auto Update Fit Fit Tolerance: Max Allowed Steps: Steps Taken:

Reference Star Panel

- Interactively change comparison stars
- Add comp star magnitude data (optional)



Multi-plot Reference Star Settings

Select reference stars to include in tot_C_cnts and rel_flux calculations

Reference Star Selection

T1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Green checkbox border - aperture peak count under linearity limit
Yellow checkbox border - aperture peak count over linearity limit
Red checkbox border - aperture peak count over saturation limit

Save/Show Current Configuration

Add Astronomical Data Panel

- Add calculated data to measurements table
- Examples are BJD_TDB, airmass, etc.
- Optionally runs automatically at end of each Multi-Aperture run

The screenshot shows a software window titled "Add astronomical data to table". It contains several configuration options for adding astronomical data to a table.

Input Time Format: Three radio buttons are present: ☒ JD (UTC), ☐ HJD (UTC), and ☐ BJD (TDB).

RA/Dec Source (J2000): Two radio buttons: ☐ Manual and ☒ Table.

Date/Time Column From Active Table: A dropdown menu showing "JD.UTC".

RA Column (hrs): A dropdown menu showing "RA_T1".

DEC Column (deg): A dropdown menu showing "DEC_T1".

Select data to add: A list of checkboxes with the following items: ☒ Airmass, ☐ Altitude, ☐ Azimuth, ☐ Hour Angle, ☐ Zenith Distance, ☐ JD.UTC, ☐ HJD.UTC, ☐ HJD Correction, ☒ BJD.TDB, ☐ BJD Correction, ☐ RA Now, ☐ Declination Now, ☐ RA J2000, and ☐ Declination J2000.

Enter table column name to add: A list of text boxes containing the following column names: AIRMASS2, ALTITUDE, AZIMUTH, HOUR_ANGLE, ZENITH_DIST, JD.UTC_MOBS, HJD.UTC_MOBS, HJD_CORR, BJD.TDB, BJD_CORR, RA_EOD, DEC_EOD, RA_J2000, and DEC_J2000.

Setup target and/or observatory parameters in 'MP Coordinate Converter' window, then press the 'Update Table' button.

At the bottom right, there are three buttons: ☒ Auto, Update Table, and Close.

Coordinate Converter Panel

- Convert between time formats
- Convert between coordinate formats
- Calculates observability parameters
- Includes leap second calculations
- Manual control or automatic control from:
 - Data Processor
 - Add Data panel

Coordinate Converter

File Preferences Network Help

Current UTC-based Time

UTC: 2025-09-05 11:07:57 Local: 2025-09-05 07:07:57 JD: 2460923.963858 LST: 05:23:57

SIMBAD Object ID (or SS Object)

Time Zone: UTC offset: -4

Observatory ID

LCO CTIO (IsC)

Target Proper Motion (mas/yr)

pmRA: 0 pmDec: 0

Geographic Location of Observatory

Lon: -70.815000 Lat: -30.165000 Alt: 2215

Standard Coordinates

J2000 Equatorial

SIMBAD RA: 15.245316 Dec: -72.684825

J2000 Ecliptic

Lon: 251.426781 Lat: -51.905055

B1950 Equatorial

Sky-Map RA: 15.158580 Dec: -72.498568

Galactic

Lon: 313.219085 Lat: -12.740492

Epoch of Interest

UTC-based Time

Now UTC: 2020-01-10 08:21:24 UT 19:49 JD: 2458858.848194 LST: 10:55:28

Lock Local: 2020-01-10 03:21:24 03:52 HJD: 2458858.845428 dT: -00:03:59

Dynamical Time

Update Auto Leap-secs: 37.0 OSU/internal BJD: 2458858.846208 dT: -00:02:52

Equatorial

RA: 15.279270 Dec: -72.752073

Ecliptic

Lon: 251.694040 Lat: -51.904368

Horizontal

Alt: 35.961394 Az: 160.562732

Direction - Hour Angle - Zenith Distance - Airmass

Dir: S HA: -4.354841 ZD: 54.038606 AM: 1.6989

Phase - Altitude - Proximity

Moon 11.25 122.83

Mercury Down 59.05

Venus Down 78.94

Mars 19.53 52.50

Jupiter Down 56.77

Saturn Down 62.25

Uranus Down 118.28

Neptune Down 92.14

Pluto Down 61.50