Data Validation (DV) Report
for TESS ID 307210830
Sectors 2 - 9

This Data Validation Report was produced in the
TESS Science Processing Operations Center (SPOC) Pipeline
at NASA Ames Research Center

04-May-2019 23:24:24 Z

Contents

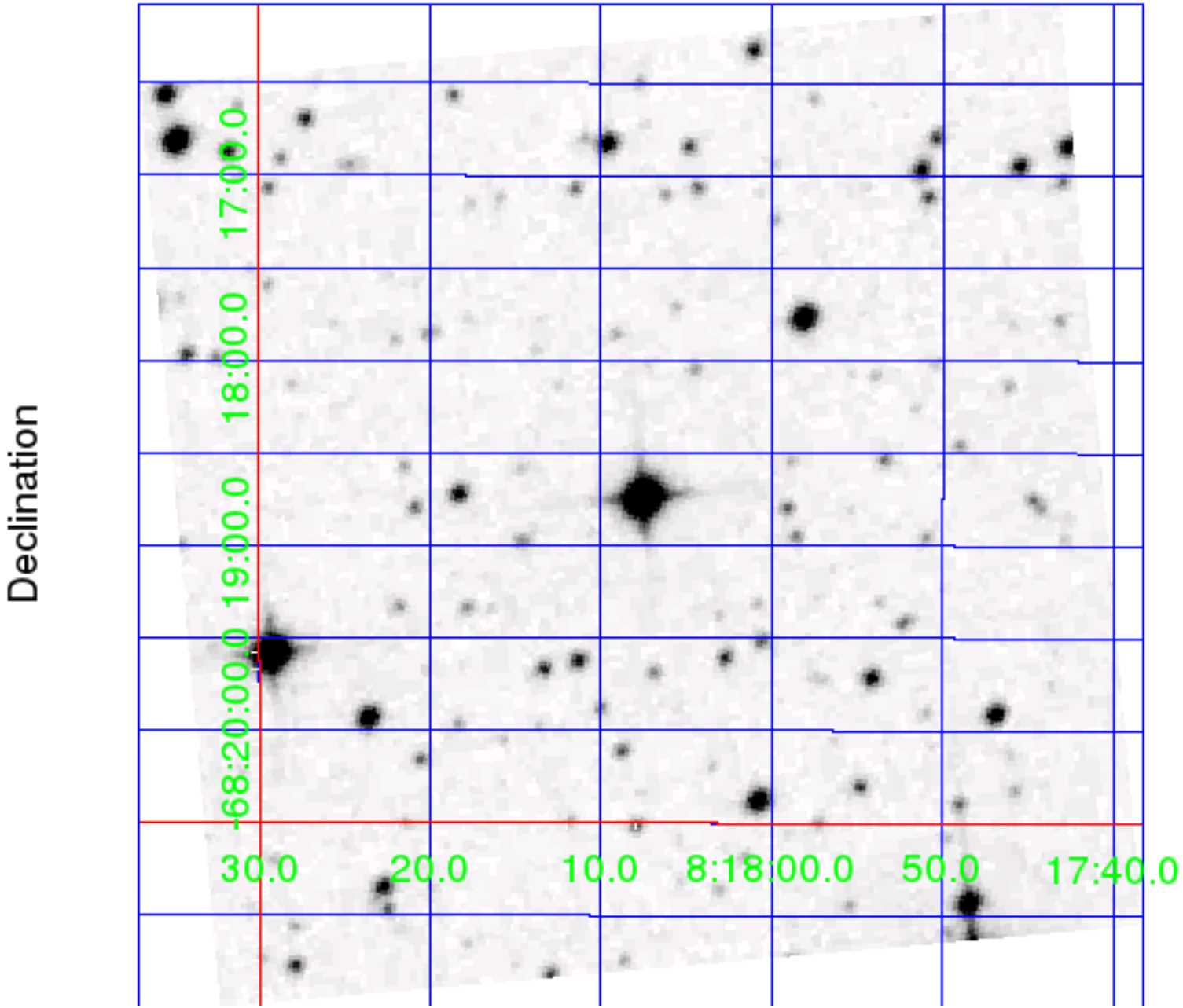
1 Summary

Target Properties	Value	Uncertainty	Units	Provenance
Catalog ID	307210830			
TOI ID	175			
TESS Name	-			
RA	124.53190000	0	degrees	TIC7
Dec	-68.31300000	0	degrees	TIC7
Magnitude	9.393	0.009		TIC7
Radius	0.313	0.009	Solar radii	TIC7
Effective Temperature	3469	68	Kelvin	TIC7
log(g)	4.940	0.058929	cm/sec^2	TIC7
[M/H]	0.000	0	Solar metallicity	Solar
Stellar Density	10.152	1.408	Solar density	TIC7-Derived
Limb Darkening Coefficient 1	0.66078			
Limb Darkening Coefficient 2	0.30626			
Limb Darkening Coefficient 3	-0.26499			
Limb Darkening Coefficient 4	0.061182			
Number of Planet Candidates	3			
TOI Model	toi-plus-2019-05-01.csv			
TESS Names Model	-			
External TCE Model	-			
Software Revision	spoc-3.3.65-20190425			
Date Report Generated	04-May-2019 23:24:24 Z			

Sector	Target Table	Camera/ CCD	Crowding Metric	Flux Fraction
2	129	4:3	0.9981	0.8776
5	136	4:4	0.9981	0.8918
8	148	4:1	0.9986	0.8926
9	152	4:1	0.9983	0.8727

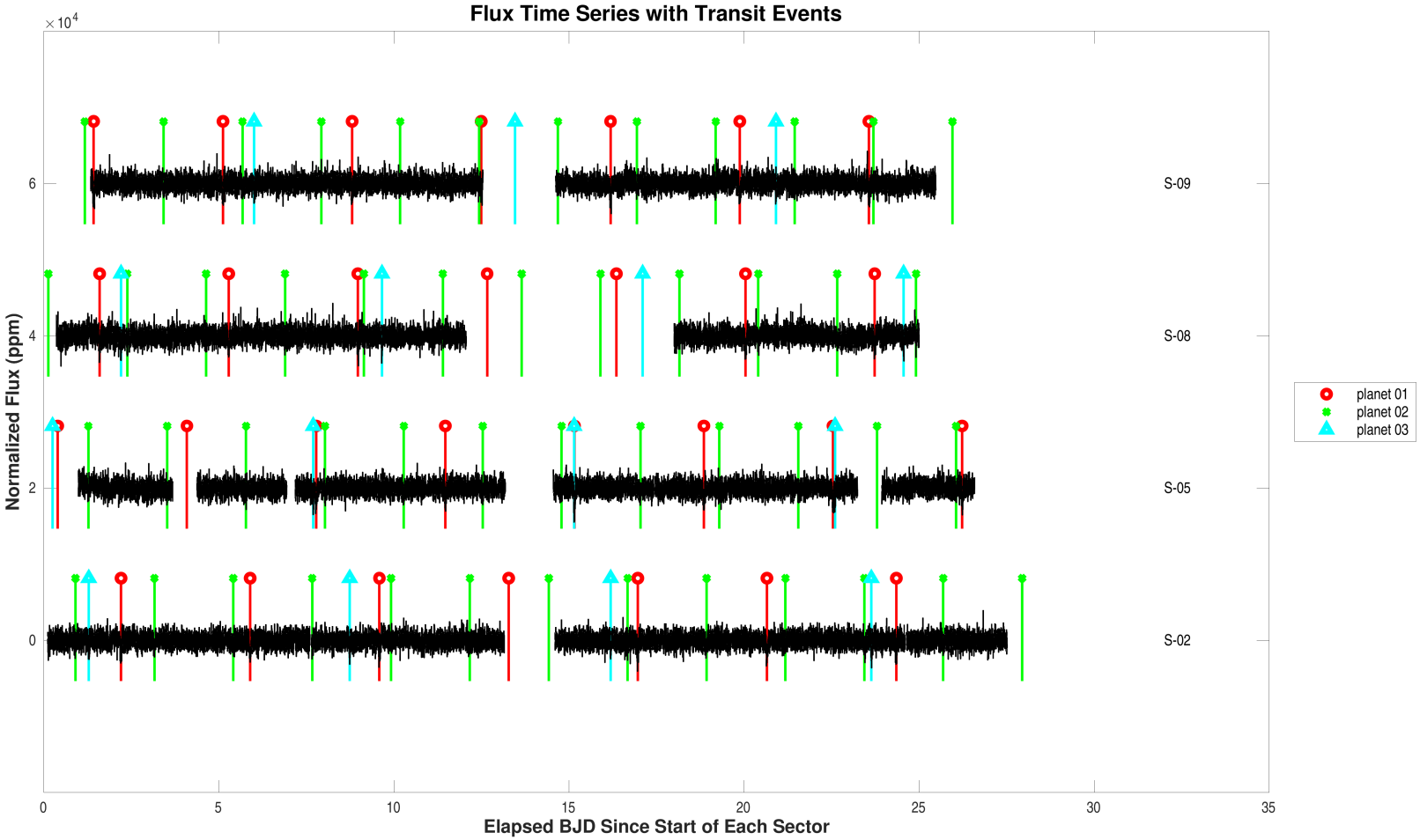
Planet Candidate	TOI ID	TESS Name	TOI Correlation	Period (days)	Period Ratio	Epoch (BTJD)	Semi-major Axis (AU)	Radius (Re)	Seff	Teq (K)	False Alarm	Suspected EB
1	175.01	-	0.99	3.691	1.64	1356.204	0.03	1.3	12.7	481	0.00e+00	false
2	175.03	-	0.90	2.253	1.00	1354.905	0.02	0.9	24.4	567	2.31e-77	false
3	175.02	-	0.90	7.451	3.31	1355.287	0.05	1.4	5.0	381	5.97e-91	false

2 Survey Image

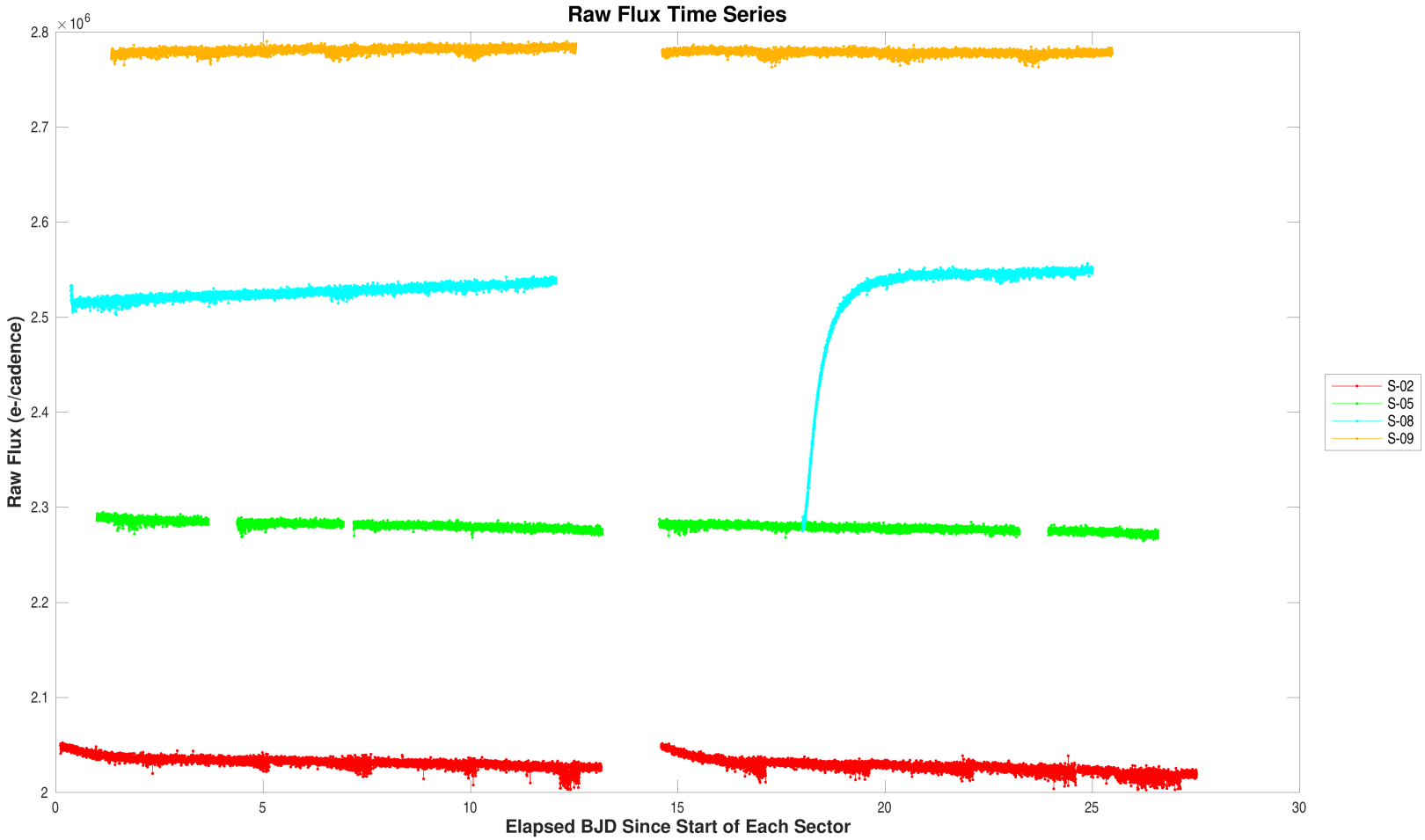


Digitized Sky Survey (DSS) red image. The 5' x 5' image is centered on the J2000 coordinates of target (307210830).

3 Flux Time Series



Summary plot of sector-stitched flux time series and transits for target 307210830, marked with DV fitted epoch/period (or TPS epoch/period if fit was not successful). Transits of identified planets are labeled with epoch BTJD and orbital period. For the data of sector 2, target table 129, start BJD is 2458354 and the vertical offset is 0 ppm. For the data of sector 5, target table 136, start BJD is 2458437 and the vertical offset is 20000 ppm. For the data of sector 8, target table 148, start BJD is 2458517 and the vertical offset is 40000 ppm. For the data of sector 9, target table 152, start BJD is 2458543 and the vertical offset is 60000 ppm.
Open `./summary-plots/0000000307210830-00-flux-dv-fit-02-129.fig`



Summary plot of raw flux time series. For the data of sector 2, target table 129, start BJD is 2458354 and the vertical offset is 0 electrons/cadence. For the data of sector 5, target table 136, start BJD is 2458437 and the vertical offset is 250000 electrons/cadence. For the data of sector 8, target table 148, start BJD is 2458517 and the vertical offset is 500000 electrons/cadence. For the data of sector 9, target table 152, start BJD is 2458543 and the vertical offset is 750000 electrons/cadence.
Open `./summary-plots/0000000307210830-00-raw-flux-02-129.fig`

4 Dashboards

Planet Candidate 1

<table>
<tr>
<td rowspan="2">Model Fitter</td>
<td colspan="2">Stellar Radius
0.3 ± 0.0 Solar units</td>
<td rowspan="2">Core Aperture Correlation Statistic
Value = 31.39
Significance = 100.00%
Halo Aperture Correlation Statistic
Value = 5.37
Significance = 100.00%
Core/Halo Ratio
Ratio = 5.85</td>
<td rowspan="2">Ghost Diagnostic Test</td>
</tr>
<tr>
<td colspan="2">Period = 3.7 ± 0.0 days
Depth = 1790 ± 45 ppm
Planet Radius = 1.3 ± 0.3 Earth radii
Semi-major Axis = 0.0 ± 0.0 AU
Effective Stellar Flux = 12.7 ± 1.5
Equilibrium Temperature = 481 ± 15 Kelvin
Chi-squared/DoF = 0.9
SNR = 46.2</td>
</tr>
<tr>
<td rowspan="2">Eclipsing Binary Discrimination Test</td>
<td colspan="2">Odd-Even Depth Comparison Statistic
Value = 1.03e-01
Significance = 74.79%</td>
<td>Offsets Relative to Out of Transit Centroid
Source RA Offset = 5.33e-01 ± 2.77e+00 arcsec (0.19 σ)
Source Dec Offset = 3.06e-02 ± 2.61e+00 arcsec (0.01 σ)
Source Offset Distance = 5.34e-01 ± 2.76e+00 arcsec (0.19 σ)
Offsets Relative to TIC Position
Source RA Offset = 2.60e+00 ± 2.79e+00 arcsec (0.93 σ)
Source Dec Offset = 4.11e-02 ± 2.57e+00 arcsec (0.02 σ)
Source Offset Distance = 2.60e+00 ± 2.79e+00 arcsec (0.93 σ)</td>
<td>Difference Image Centroid Offsets</td>
</tr>
<tr>
<td>Shorter Period Comparison Statistic
Value = 4.47e+02
Significance = 100.00%</td>
<td>Longer Period Comparison Statistic
Value = 3.84e+03
Significance = 100.00%</td>
<td>False Alarm = 0.00e+00
Transit Count = 58
Max Multiple Event Statistic = 38.1</td>
<td>Bootstrap Test</td>
</tr>
</table>

Summary of model fitter results and validation test results for target 307210830, planet candidate 1. In general, green denotes that the candidate is likely a planet, while red denotes that the candidate is unlikely to be a planet. Cyan denotes that no data is available. The color of the Model Fitter block is: green, when the SNR of the fit is greater than or equal to 10; yellow, if the SNR is greater than or equal to 7.1 but less than 10; red, if the SNR is less than 7.1 or if the fitter failed. The color of the Ghost Diagnostic Test and Eclipsing Binary Discrimination Test blocks are: green, when the significance is within 2-sigma; yellow, when the significance is between 2- and 3-sigma; red when the significance is greater than 3-sigma. The color of the Difference Image Centroid Offsets block is: green, when the max offset distance sigma is less than or equal to 2; yellow, when the max sigma is between 2 and 3; red when the max sigma is greater than 3. The color of the Bootstrap Test block is green whenever the false alarm probability is less than 10^{-12}, low enough to limit the total number of false alarms from a four year mission to less than one. If the false alarm probability is greater than 10^{-12}, the color of the Bootstrap Test block is: green, when the false alarm probability is less than or equal to the CCDF of a Gaussian distribution at the observed maximum multiple event statistic; yellow when the false alarm probability is between 1 and 2 times that of a Gaussian distribution at the max multiple event statistic; and red when the false alarm probability is more than 2 times that of a Gaussian distribution at the max multiple event statistic.

Planet Candidate 2

<table>
<tr>
<td rowspan="2">Model Fitter</td>
<td colspan="2">Stellar Radius
0.3 ± 0.0 Solar units</td>
<td rowspan="2">Core Aperture Correlation Statistic
Value = 15.67
Significance = 100.00%
Halo Aperture Correlation Statistic
Value = 0.95
Significance = 82.93%
Core/Halo Ratio
Ratio = 16.47</td>
<td rowspan="2">Ghost Diagnostic Test</td>
</tr>
<tr>
<td colspan="2">Period = 2.3 ± 0.0 days
Depth = 662 ± 34 ppm
Planet Radius = 0.9 ± 0.1 Earth radii
Semi-major Axis = 0.0 ± 0.0 AU
Effective Stellar Flux = 24.4 ± 3.0
Equilibrium Temperature = 567 ± 17 Kelvin
Chi-squared/DoF = 0.8
SNR = 21.5</td>
</tr>
<tr>
<td rowspan="2">Eclipsing Binary Discrimination Test</td>
<td colspan="2">Odd-Even Depth Comparison Statistic
Value = 2.59e+00
Significance = 10.75%</td>
<td>Offsets Relative to Out of Transit Centroid
Source RA Offset = -1.33e-01 ± 2.82e+00 arcsec (-0.05 σ)
Source Dec Offset = -3.55e-01 ± 2.79e+00 arcsec (-0.13 σ)
Source Offset Distance = 3.79e-01 ± 2.80e+00 arcsec (0.14 σ)
Offsets Relative to TIC Position
Source RA Offset = 1.89e+00 ± 2.81e+00 arcsec (0.67 σ)
Source Dec Offset = -2.36e-01 ± 2.74e+00 arcsec (-0.09 σ)
Source Offset Distance = 1.91e+00 ± 2.80e+00 arcsec (0.68 σ)</td>
<td>Difference Image Centroid Offsets</td>
</tr>
<tr>
<td>Shorter Period Comparison Statistic
Value = N/A
Significance = N/A</td>
<td>Longer Period Comparison Statistic
Value = 4.47e+02
Significance = 100.00%</td>
<td>False Alarm = 2.31e-77
Transit Count = 95
Max Multiple Event Statistic = 18.1</td>
<td>Bootstrap Test</td>
</tr>
</table>

Summary of model fitter results and validation test results for target 307210830, planet candidate 2. In general, green denotes that the candidate is likely a planet, while red denotes that the candidate is unlikely to be a planet. Cyan denotes that no data is available. The color of the Model Fitter block is: green, when the SNR of the fit is greater than or equal to 10; yellow, if the SNR is greater than or equal to 7.1 but less than 10; red, if the SNR is less than 7.1 or if the fitter failed. The color of the Ghost Diagnostic Test and Eclipsing Binary Discrimination Test blocks are: green, when the significance is within 2-sigma; yellow, when the significance is between 2- and 3-sigma; red when the significance is greater than 3-sigma. The color of the Difference Image Centroid Offsets block is: green, when the max offset distance sigma is less than or equal to 2; yellow, when the max sigma is between 2 and 3; red when the max sigma is greater than 3. The color of the Bootstrap Test block is green whenever the false alarm probability is less than 10^{-12}, low enough to limit the total number of false alarms from a four year mission to less than one. If the false alarm probability is greater than 10^{-12}, the color of the Bootstrap Test block is: green, when the false alarm probability is less than or equal to the CCDF of a Gaussian distribution at the observed maximum multiple event statistic; yellow when the false alarm probability is between 1 and 2 times that of a Gaussian distribution at the max multiple event statistic; and red when the false alarm probability is more than 2 times that of a Gaussian distribution at the max multiple event statistic.

Planet Candidate 3

<table>
<tr><td rowspan="2">Model Fitter</td><td colspan="2">Stellar Radius
0.3 ± 0.0 Solar units</td><td rowspan="2">Core Aperture Correlation Statistic
Value = 17.08
Significance = 100.00%
Halo Aperture Correlation Statistic
Value = 4.24
Significance = 100.00%
Core/Halo Ratio
Ratio = 4.03</td><td rowspan="2">Ghost Diagnostic Test</td></tr>
<tr><td colspan="2">Period = 7.5 ± 0.0 days
Depth = 1659 ± 81 ppm
Planet Radius = 1.4 ± 0.3 Earth radii
Semi-major Axis = 0.1 ± 0.0 AU
Effective Stellar Flux = 5.0 ± 0.6
Equilibrium Temperature = 381 ± 12 Kelvin
Chi-squared/DoF = 0.8
SNR = 23.5</td></tr>
<tr><td rowspan="2">Eclipsing Binary Discrimination Test</td><td colspan="2">Odd-Even Depth Comparison Statistic
Value = 3.53e-01
Significance = 55.23%</td><td>Offsets Relative to Out of Transit Centroid
Source RA Offset = 1.37e+00 ± 3.09e+00 arcsec (0.44 σ)
Source Dec Offset = -2.47e+00 ± 3.61e+00 arcsec (-0.69 σ)
Source Offset Distance = 2.83e+00 ± 3.50e+00 arcsec (0.81 σ)
Offsets Relative to TIC Position
Source RA Offset = 3.51e+00 ± 3.05e+00 arcsec (1.15 σ)
Source Dec Offset = -2.48e+00 ± 3.56e+00 arcsec (-0.70 σ)
Source Offset Distance = 4.30e+00 ± 3.23e+00 arcsec (1.33 σ)</td><td>Difference Image Centroid Offsets</td></tr>
<tr><td>Shorter Period Comparison Statistic
Value = 3.84e+03
Significance = 100.00%</td><td>Longer Period Comparison Statistic
Value = N/A
Significance = N/A</td><td>False Alarm = 5.97e-91
Transit Count = 29
Max Multiple Event Statistic = 20.0</td><td>Bootstrap Test</td></tr>
</table>

Summary of model fitter results and validation test results for target 307210830, planet candidate 3. In general, green denotes that the candidate is likely a planet, while red denotes that the candidate is unlikely to be a planet. Cyan denotes that no data is available. The color of the Model Fitter block is: green, when the SNR of the fit is greater than or equal to 10; yellow, if the SNR is greater than or equal to 7.1 but less than 10; red, if the SNR is less than 7.1 or if the fitter failed. The color of the Ghost Diagnostic Test and Eclipsing Binary Discrimination Test blocks are: green, when the significance is within 2-sigma; yellow, when the significance is between 2- and 3-sigma; red when the significance is greater than 3-sigma. The color of the Difference Image Centroid Offsets block is: green, when the max offset distance sigma is less than or equal to 2; yellow, when the max sigma is between 2 and 3; red when the max sigma is greater than 3. The color of the Bootstrap Test block is green whenever the false alarm probability is less than 10^{-12}, low enough to limit the total number of false alarms from a four year mission to less than one. If the false alarm probability is greater than 10^{-12}, the color of the Bootstrap Test block is: green, when the false alarm probability is less than or equal to the CCDF of a Gaussian distribution at the observed maximum multiple event statistic; yellow when the false alarm probability is between 1 and 2 times that of a Gaussian distribution at the max multiple event statistic; and red when the false alarm probability is more than 2 times that of a Gaussian distribution at the max multiple event statistic.

5 Pixel Level Diagnostics

To reduce clutter, the catalog IDs in the difference images have been replaced by indices representing distance from the target star. The mapping between the indices and the catalog IDs is found in a table at the end of this section.

5.1 Planet Candidate 1

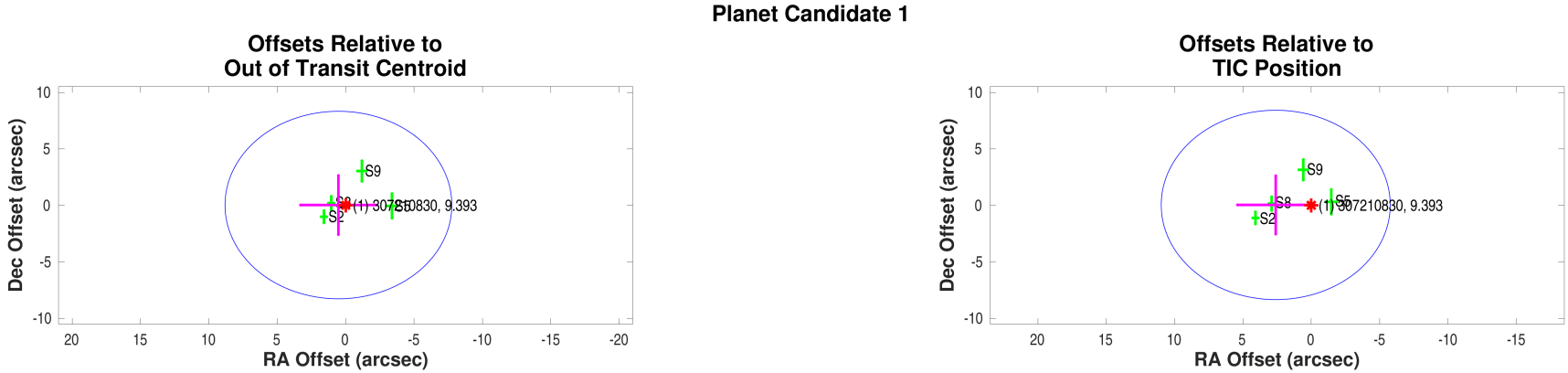
Multi-Sector Average PRF Fit of the Difference Images

Mean offset from the PRF fit to the out of transit image

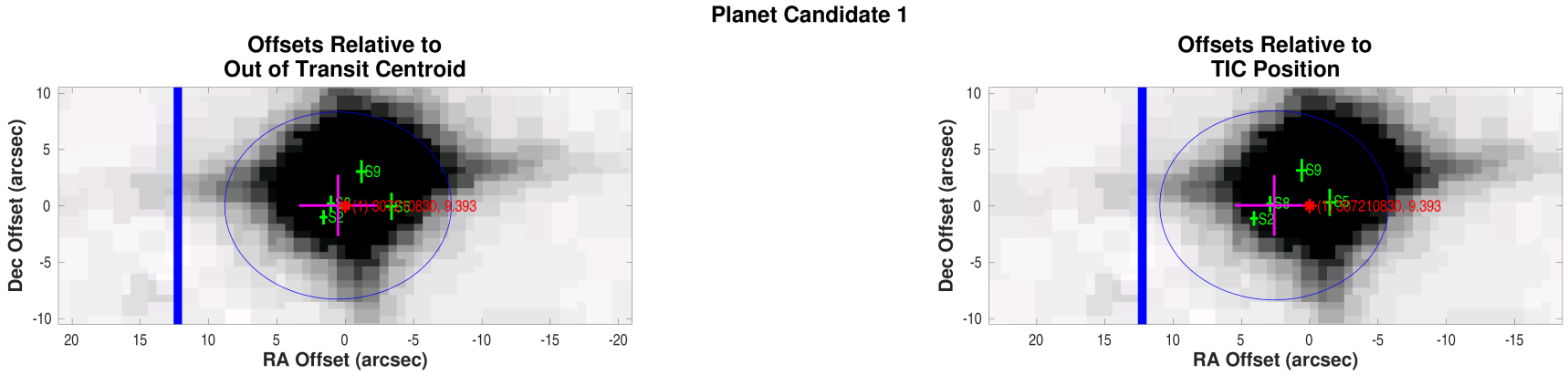
	RA	Dec	Units
Offset	$0.5332 \pm 2.77e+00$	$0.0306 \pm 2.61e+00$	arcseconds
Offset/σ	0.19	0.01	
Offset Distance	$0.5340 \pm 2.76e+00$		arcseconds
Offset Distance/σ	0.19		
3σ Radius	8.2947		arcseconds

Mean offset from the TIC RA and Dec

	RA	Dec	Units
Offset	$2.6021 \pm 2.79e+00$	$0.0411 \pm 2.57e+00$	arcseconds
Offset/σ	0.93	0.02	
Offset Distance	$2.6024 \pm 2.79e+00$		arcseconds
Offset Distance/σ	0.93		
3σ Radius	8.3763		arcseconds



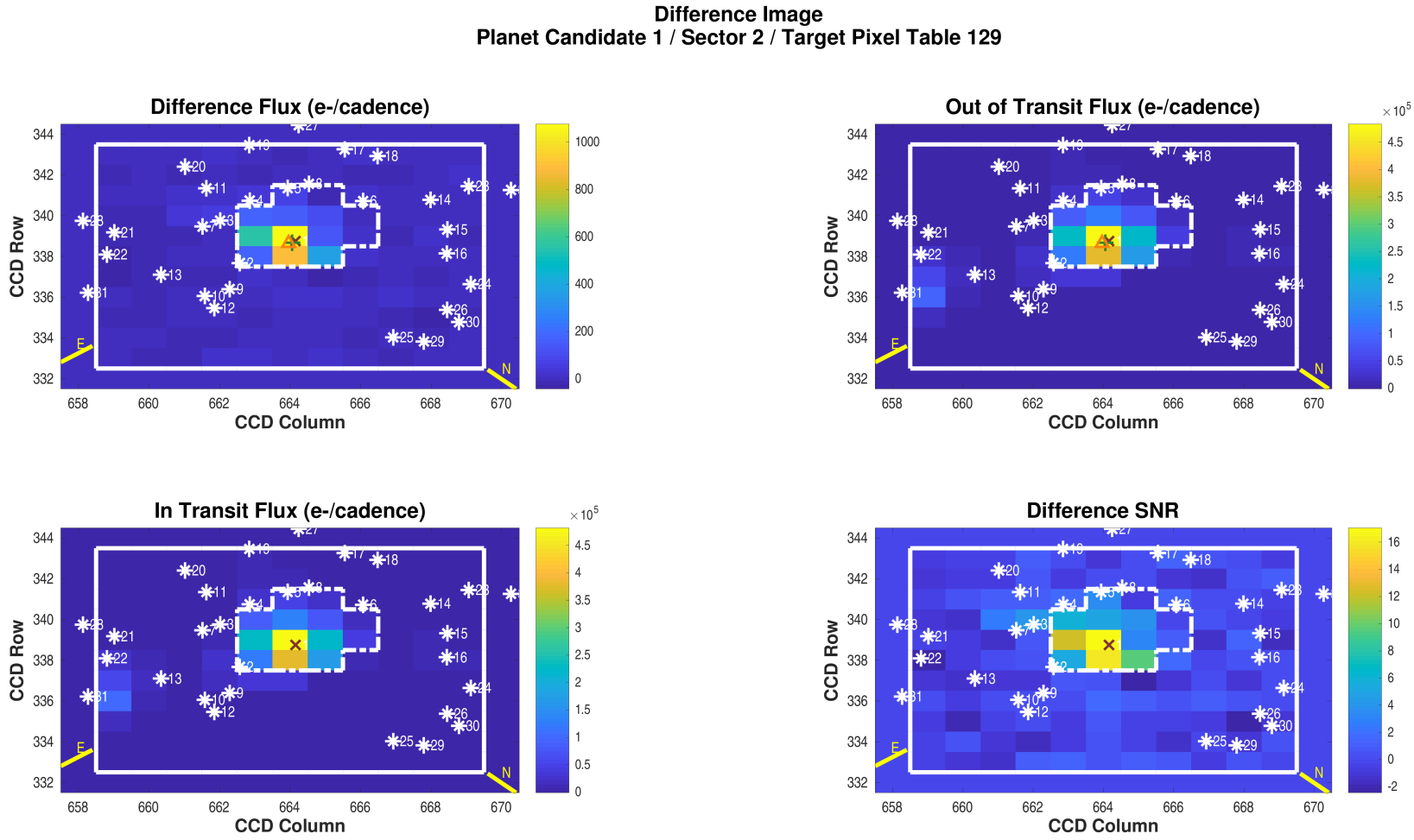
Difference image centroid offsets for target 307210830, planet candidate 1. Left: difference image PRF centroid offsets in RA and Dec with respect to the per sector out-of-transit centroids for the given target. Right: difference image PRF centroid offsets in RA and Dec with respect to the TC coordinates of the given target. Symbol key: green cross: per sector centroid offsets with 1-sigma error bars in RA and Dec; magenta cross: robust weighted mean offset over all sectors with 1-sigma error bars in RA and Dec; blue circle: 3-sigma radius of confusion for weighted mean offset; red asterisk: location of target star; blue asterisk: location of other TIC objects in the neighborhood. TIC ID and magnitude are noted in the text associated with each marked object. A constant error term of 2.5000 arcseconds has been added in quadrature to the computed uncertainty in the RA and Dec components of the robust mean offset.
Open `./planet-01/difference-image/0000000307210830-01-difference-image-centroid-offsets.fig`



Difference image centroid offsets for target 307210830, planet candidate 1, diplayed on survey image for given target. Left: difference image PRF centroid offsets in RA and Dec with respect to the per sector out-of-transit centroids for the given target. Right: difference image PRF centroid offsets in RA and Dec with respect to the TIC coordinates of the given target. Symbol key: green cross: per sector centroid offsets with 1-sigma error bars in RA and Dec; magenta cross: robust weighted mean offset over all sectors with 1-sigma error bars in RA and Dec; blue circle: 3-sigma radius of confusion for weighted mean offset; red asterisk: location of target star; blue asterisk: location of other TIC objects in the neighborhood. TIC ID and magnitude are noted in the text associated with each marked object. A constant error term of 2.5000 arcseconds has been added in quadrature to the computed uncertainty in the RA and Dec components of the robust mean offset.
Open `./planet-01/difference-image/0000000307210830-01-difference-image-centroid-offsets-survey.fig`

Difference Image Summary Metrics

Number of Difference Images	Number of Metrics	Number of Good Metrics	Fraction of Good Metrics	Quality Threshold
4	4	4	1.0000	0.70



Difference image for target 307210830, planet candidate 1, sector 2, target pixel table 129. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 6; number of valid in-transit cadences = 183; number of in-transit cadence gaps = 4; number of valid out-of-transit cadences = 475; number of out-of-transit cadence gaps = 17. Difference image quality metric = 0.97 (good).
Open `./planet-01/difference-image/0000000307210830-01-difference-image-02-129.fig`

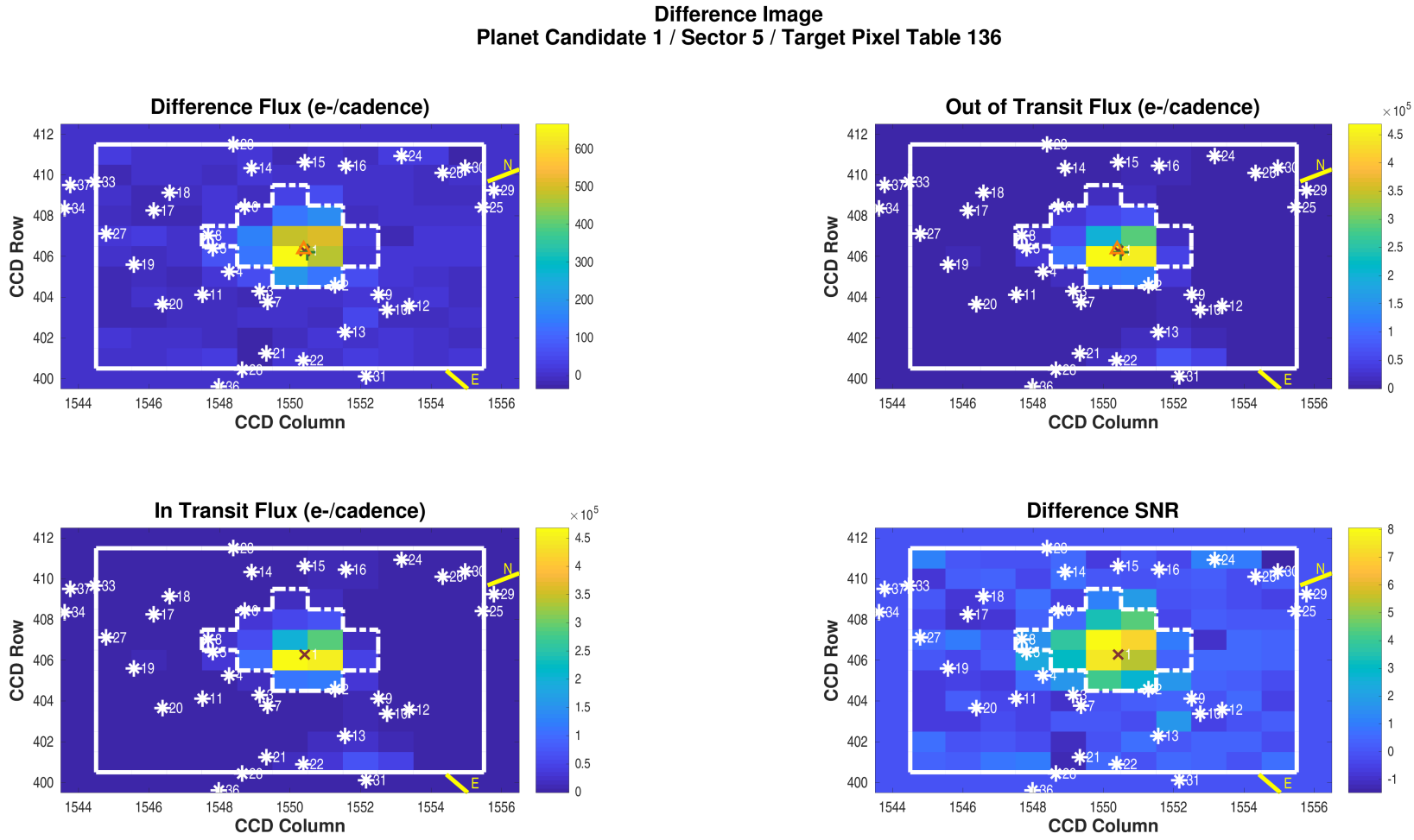
PRF Fit of the Difference Image

Offset from the PRF fit to the out of transit image

	Row	Column	Units	RA	Dec	Units
Out of Transit Image Centroid	$338.67 \pm 2.96e-05$	$664.06 \pm 2.81e-05$	pixels	$124.53512813 \pm 8.13e-07$	$-68.31479428 \pm 8.75e-07$	degrees
Difference Image Centroid	$338.65 \pm 2.68e-02$	$663.96 \pm 2.58e-02$	pixels	$124.53632629 \pm 1.52e-04$	$-68.31507371 \pm 1.49e-04$	degrees
Offset	$-0.0178 \pm 2.68e-02$	$-0.0942 \pm 2.58e-02$	pixels	$1.5938 \pm 2.02e-01$	$-1.0059 \pm 5.36e-01$	arcseconds
Offset/σ	-0.66	-3.65		7.88	-1.88	
Offset Distance	$0.0959 \pm 2.60e-02$		pixels	$1.8847 \pm 3.28e-01$		arcseconds
Offset Distance/σ	3.69			5.75		

Offset from the TIC RA and Dec converted to pixels via motion polynomials

	Row	Column	Units	RA	Dec	Units
TIC Reference Centroid	$338.75 \pm 1.29e-04$	$664.16 \pm 1.59e-04$	pixels	$124.53325461 \pm 0.00e+00$	$-68.31476464 \pm 0.00e+00$	degrees
Difference Image Centroid	$338.65 \pm 2.68e-02$	$663.96 \pm 2.58e-02$	pixels	$124.53632629 \pm 1.52e-04$	$-68.31507371 \pm 1.49e-04$	degrees
Offset	$-0.1003 \pm 2.68e-02$	$-0.1944 \pm 2.58e-02$	pixels	$4.0860 \pm 2.02e-01$	$-1.1127 \pm 5.36e-01$	arcseconds
Offset/σ	-3.74	-7.54		20.24	-2.08	
Offset Distance	$0.2188 \pm 2.64e-02$		pixels	$4.2348 \pm 2.36e-01$		arcseconds
Offset Distance/σ	8.30			17.93		



Difference image for target 307210830, planet candidate 1, sector 5, target pixel table 136. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 3; number of valid in-transit cadences = 94; number of in-transit cadence gaps = 0; number of valid out-of-transit cadences = 246; number of out-of-transit cadence gaps = 0. Difference image quality metric = 0.98 (good).
Open `./planet-01/difference-image/0000000307210830-01-difference-image-05-136.fig`

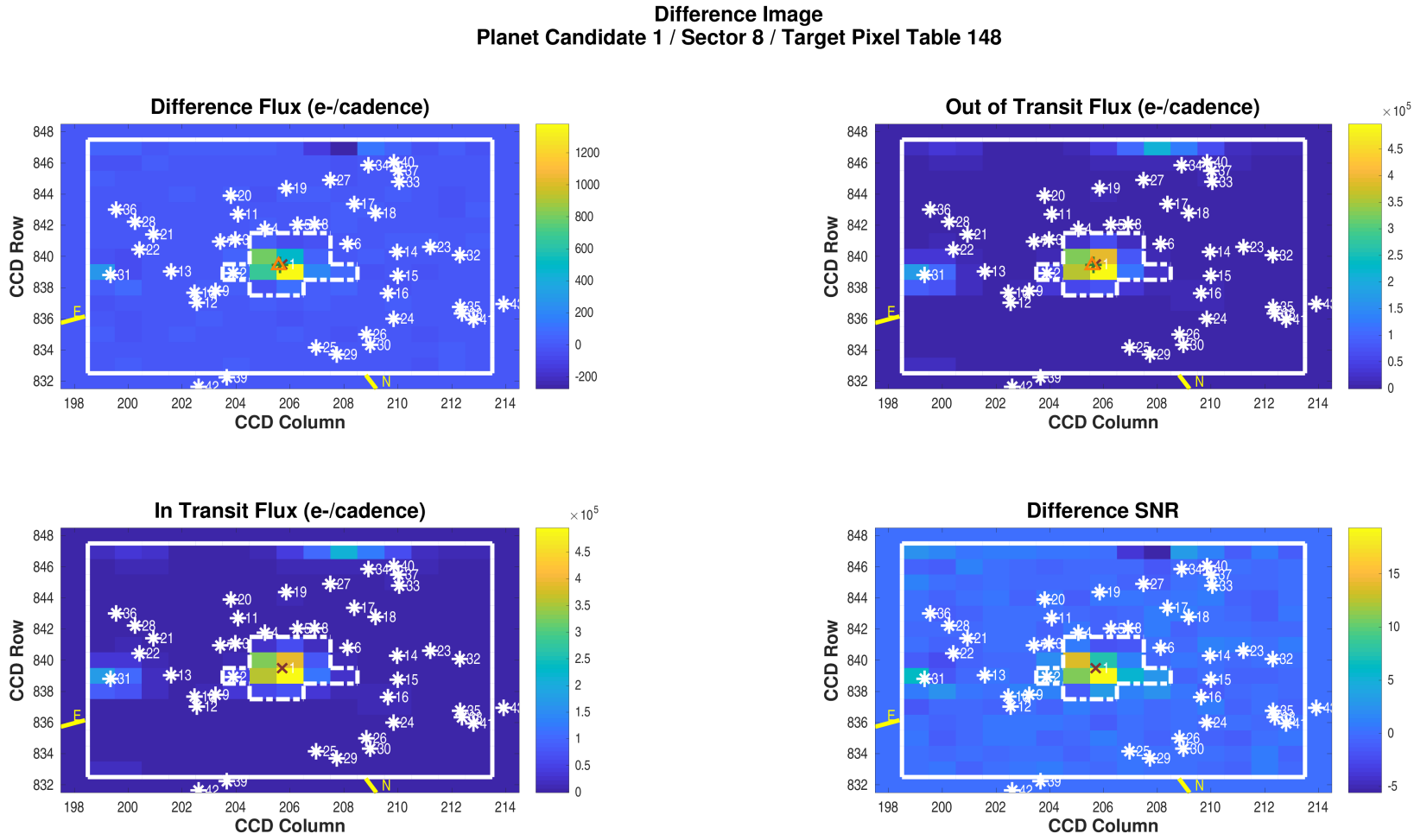
PRF Fit of the Difference Image

Offset from the PRF fit to the out of transit image

	Row	Column	Units	RA	Dec	Units
Out of Transit Image Centroid	$406.21 \pm 3.90e-05$	$1550.49 \pm 4.10e-05$	pixels	$124.53471574 \pm 8.98e-07$	$-68.31468607 \pm 9.12e-07$	degrees
Difference Image Centroid	$406.35 \pm 5.26e-02$	$1550.39 \pm 5.39e-02$	pixels	$124.53217187 \pm 3.06e-04$	$-68.31469885 \pm 3.03e-04$	degrees
Offset	$0.1443 \pm 5.26e-02$	$-0.1011 \pm 5.39e-02$	pixels	$-3.3839 \pm 4.07e-01$	$-0.0460 \pm 1.09e+00$	arcseconds
Offset/σ	2.74	−1.88		−8.31	−0.04	
Offset Distance	$0.1762 \pm 5.39e-02$		pixels	$3.3842 \pm 4.08e-01$		arcseconds
Offset Distance/σ	3.27			8.30		

Offset from the TIC RA and Dec converted to pixels via motion polynomials

	Row	Column	Units	RA	Dec	Units
TIC Reference Centroid	$406.28 \pm 1.59e-04$	$1550.42 \pm 1.47e-04$	pixels	$124.53327115 \pm 0.00e+00$	$-68.31478619 \pm 0.00e+00$	degrees
Difference Image Centroid	$406.35 \pm 5.26e-02$	$1550.39 \pm 5.39e-02$	pixels	$124.53217187 \pm 3.06e-04$	$-68.31469885 \pm 3.03e-04$	degrees
Offset	$0.0714 \pm 5.26e-02$	$-0.0299 \pm 5.39e-02$	pixels	$-1.4623 \pm 4.06e-01$	$0.3144 \pm 1.09e+00$	arcseconds
Offset/σ	1.36	−0.56		−3.60	0.29	
Offset Distance	$0.0774 \pm 5.35e-02$		pixels	$1.4957 \pm 4.54e-01$		arcseconds
Offset Distance/σ	1.45			3.30		



Difference image for target 307210830, planet candidate 1, sector 8, target pixel table 148. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 5; number of valid in-transit cadences = 155; number of in-transit cadence gaps = 0; number of valid out-of-transit cadences = 411; number of out-of-transit cadence gaps = 0. Difference image quality metric = 0.91 (good).
Open `./planet-01/difference-image/0000000307210830-01-difference-image-08-148.fig`

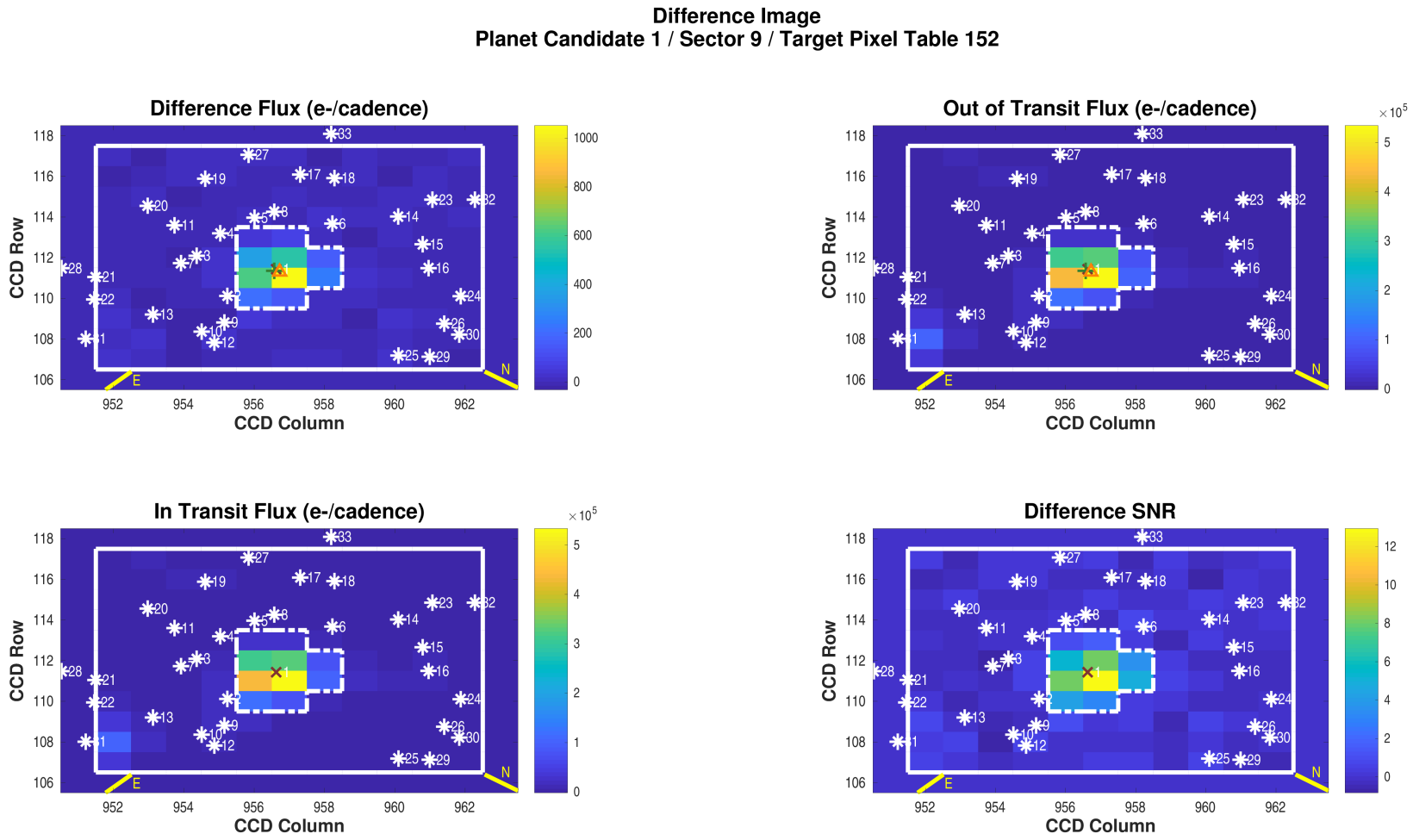
PRF Fit of the Difference Image

Offset from the PRF fit to the out of transit image

	Row	Column	Units	RA	Dec	Units
Out of Transit Image Centroid	$839.45 \pm 3.29e-05$	$205.62 \pm 2.91e-05$	pixels	$124.53467450 \pm 9.43e-07$	$-68.31481673 \pm 9.52e-07$	degrees
Difference Image Centroid	$839.42 \pm 2.93e-02$	$205.58 \pm 2.74e-02$	pixels	$124.53546728 \pm 1.56e-04$	$-68.31476212 \pm 1.68e-04$	degrees
Offset	$-0.0317 \pm 2.93e-02$	$-0.0460 \pm 2.74e-02$	pixels	$1.0546 \pm 2.08e-01$	$0.1966 \pm 6.06e-01$	arcseconds
Offset/σ	-1.08	-1.68		5.08	0.32	
Offset Distance	$0.0559 \pm 2.75e-02$		pixels	$1.0727 \pm 2.37e-01$		arcseconds
Offset Distance/σ	2.03			4.54		

Offset from the TIC RA and Dec converted to pixels via motion polynomials

	Row	Column	Units	RA	Dec	Units
TIC Reference Centroid	$839.49 \pm 1.59e-04$	$205.71 \pm 1.67e-04$	pixels	$124.53328674 \pm 0.00e+00$	$-68.31480650 \pm 0.00e+00$	degrees
Difference Image Centroid	$839.42 \pm 2.93e-02$	$205.58 \pm 2.74e-02$	pixels	$124.53546728 \pm 1.56e-04$	$-68.31476212 \pm 1.68e-04$	degrees
Offset	$-0.0700 \pm 2.93e-02$	$-0.1342 \pm 2.74e-02$	pixels	$2.9006 \pm 2.07e-01$	$0.1598 \pm 6.06e-01$	arcseconds
Offset/σ	-2.39	-4.89		13.98	0.26	
Offset Distance	$0.1513 \pm 2.74e-02$		pixels	$2.9050 \pm 2.11e-01$		arcseconds
Offset Distance/σ	5.52			13.75		



Difference image for target 307210830, planet candidate 1, sector 9, target pixel table 152. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 5; number of valid in-transit cadences = 156; number of in-transit cadence gaps = 0; number of valid out-of-transit cadences = 392; number of out-of-transit cadence gaps = 18. Difference image quality metric = 0.99 (good).
Open `./planet-01/difference-image/0000000307210830-01-difference-image-09-152.fig`

PRF Fit of the Difference Image

Offset from the PRF fit to the out of transit image

	Row	Column	Units	RA	Dec	Units
Out of Transit Image Centroid	$111.35 \pm 3.84e-05$	$956.57 \pm 3.91e-05$	pixels	$124.53462341 \pm 1.03e-06$	$-68.31478354 \pm 1.04e-06$	degrees
Difference Image Centroid	$111.30 \pm 4.43e-02$	$956.72 \pm 4.28e-02$	pixels	$124.53373313 \pm 2.45e-04$	$-68.31393917 \pm 2.52e-04$	degrees
Offset	$-0.0491 \pm 4.43e-02$	$0.1532 \pm 4.28e-02$	pixels	$-1.1843 \pm 3.26e-01$	$3.0397 \pm 9.07e-01$	arcseconds
Offset/σ	-1.11	3.58		-3.63	3.35	
Offset Distance	$0.1609 \pm 4.34e-02$		pixels	$3.2623 \pm 8.47e-01$		arcseconds
Offset Distance/σ	3.71			3.85		

Offset from the TIC RA and Dec converted to pixels via motion polynomials

	Row	Column	Units	RA	Dec	Units
TIC Reference Centroid	$111.43 \pm 1.79e-04$	$956.63 \pm 1.74e-04$	pixels	$124.53329194 \pm 0.00e+00$	$-68.31481327 \pm 0.00e+00$	degrees
Difference Image Centroid	$111.30 \pm 4.43e-02$	$956.72 \pm 4.28e-02$	pixels	$124.53373313 \pm 2.45e-04$	$-68.31393917 \pm 2.52e-04$	degrees
Offset	$-0.1239 \pm 4.43e-02$	$0.0988 \pm 4.28e-02$	pixels	$0.5869 \pm 3.26e-01$	$3.1467 \pm 9.07e-01$	arcseconds
Offset/σ	-2.80	2.31		1.80	3.47	
Offset Distance	$0.1585 \pm 4.44e-02$		pixels	$3.2010 \pm 8.97e-01$		arcseconds
Offset Distance/σ	3.57			3.57		

5.2 Planet Candidate 2

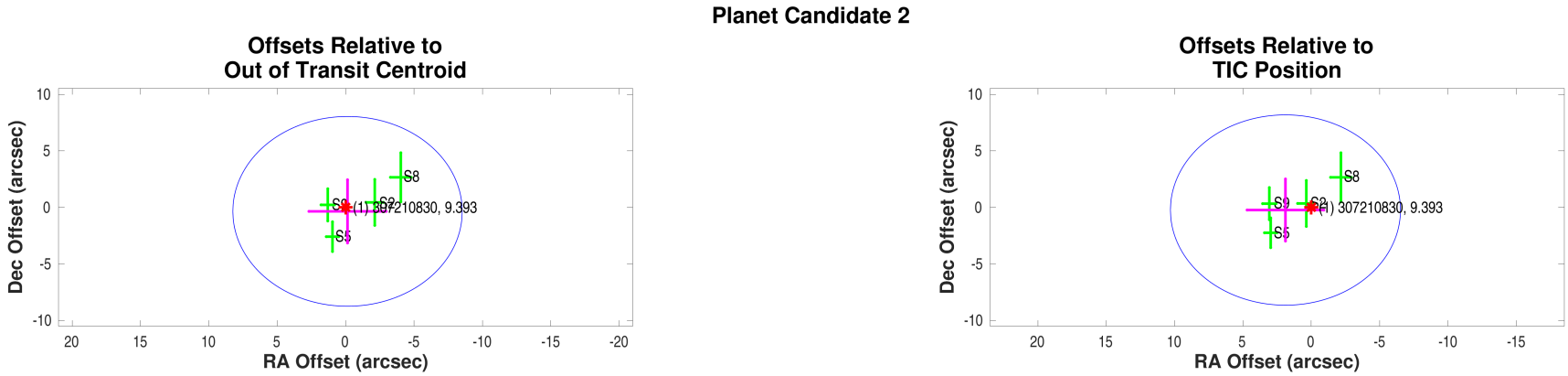
Multi-Sector Average PRF Fit of the Difference Images

Mean offset from the PRF fit to the out of transit image

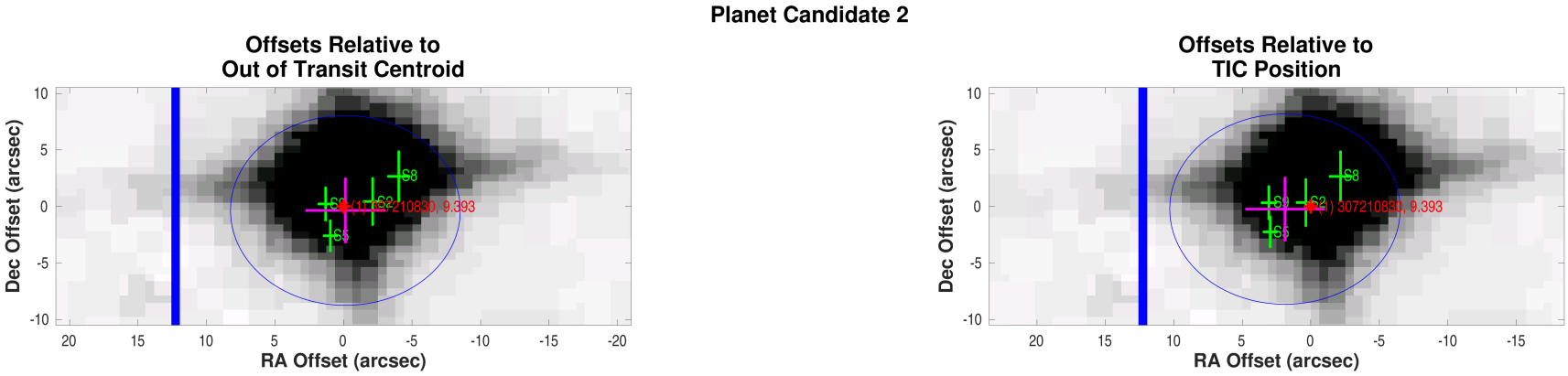
	RA	Dec	Units
Offset	$-0.1327 \pm 2.82e+00$	$-0.3545 \pm 2.79e+00$	arcseconds
Offset/σ	-0.05	-0.13	
Offset Distance	$0.3785 \pm 2.80e+00$		arcseconds
Offset Distance/σ	0.14		
3σ Radius	8.3885		arcseconds

Mean offset from the TIC RA and Dec

	RA	Dec	Units
Offset	$1.8905 \pm 2.81e+00$	$-0.2364 \pm 2.74e+00$	arcseconds
Offset/σ	0.67	-0.09	
Offset Distance	$1.9052 \pm 2.80e+00$		arcseconds
Offset Distance/σ	0.68		
3σ Radius	8.4127		arcseconds



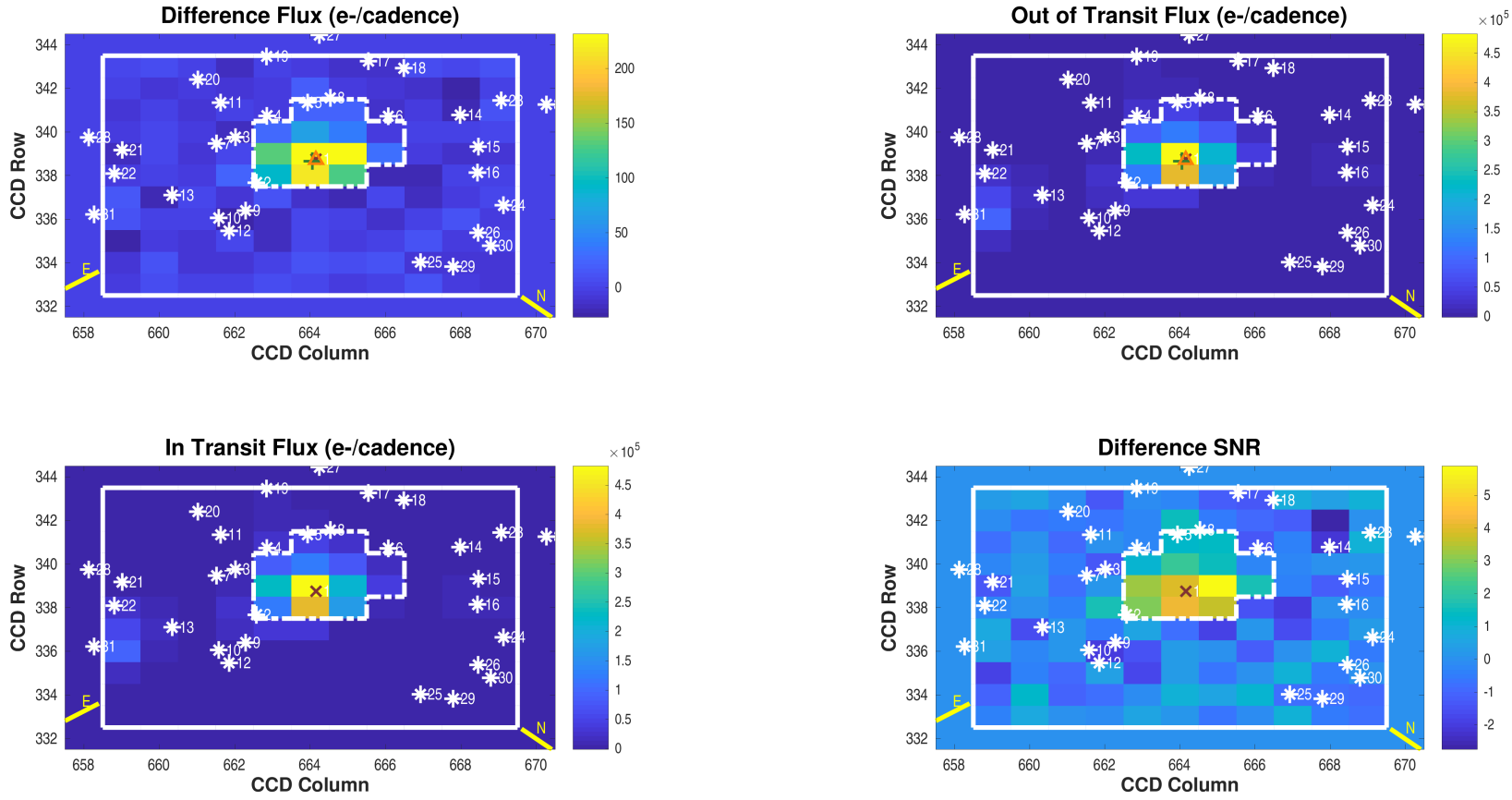
Difference image centroid offsets for target 307210830, planet candidate 2. Left: difference image PRF centroid offsets in RA and Dec with respect to the per sector out-of-transit centroids for the given target. Right: difference image PRF centroid offsets in RA and Dec with respect to the TC coordinates of the given target. Symbol key: green cross: per sector centroid offsets with 1-sigma error bars in RA and Dec; magenta cross: robust weighted mean offset over all sectors with 1-sigma error bars in RA and Dec; blue circle: 3-sigma radius of confusion for weighted mean offset; red asterisk: location of target star; blue asterisk: location of other TIC objects in the neighborhood. TIC ID and magnitude are noted in the text associated with each marked object. A constant error term of 2.5000 arcseconds has been added in quadrature to the computed uncertainty in the RA and Dec components of the robust mean offset.
Open `./planet-02/difference-image/0000000307210830-02-difference-image-centroid-offsets.fig`



Difference image centroid offsets for target 307210830, planet candidate 2, diplayed on survey image for given target. Left: difference image PRF centroid offsets in RA and Dec with respect to the per sector out-of-transit centroids for the given target. Right: difference image PRF centroid offsets in RA and Dec with respect to the TIC coordinates of the given target. Symbol key: green cross: per sector centroid offsets with 1-sigma error bars in RA and Dec; magenta cross: robust weighted mean offset over all sectors with 1-sigma error bars in RA and Dec; blue circle: 3-sigma radius of confusion for weighted mean offset; red asterisk: location of target star; blue asterisk: location of other TIC objects in the neighborhood. TIC ID and magnitude are noted in the text associated with each marked object. A constant error term of 2.5000 arcseconds has been added in quadrature to the computed uncertainty in the RA and Dec components of the robust mean offset.
Open `./planet-02/difference-image/0000000307210830-02-difference-image-centroid-offsets-survey.fig`

Difference Image Summary Metrics

Number of Difference Images	Number of Metrics	Number of Good Metrics	Fraction of Good Metrics	Quality Threshold
4	4	4	1.0000	0.70



Difference image for target 307210830, planet candidate 2, sector 2, target pixel table 129. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 9; number of valid in-transit cadences = 213; number of in-transit cadence gaps = 0; number of valid out-of-transit cadences = 643; number of out-of-transit cadence gaps = 5. Difference image quality metric = 0.94 (good).
Open `./planet-02/difference-image/0000000307210830-02-difference-image-02-129.fig`

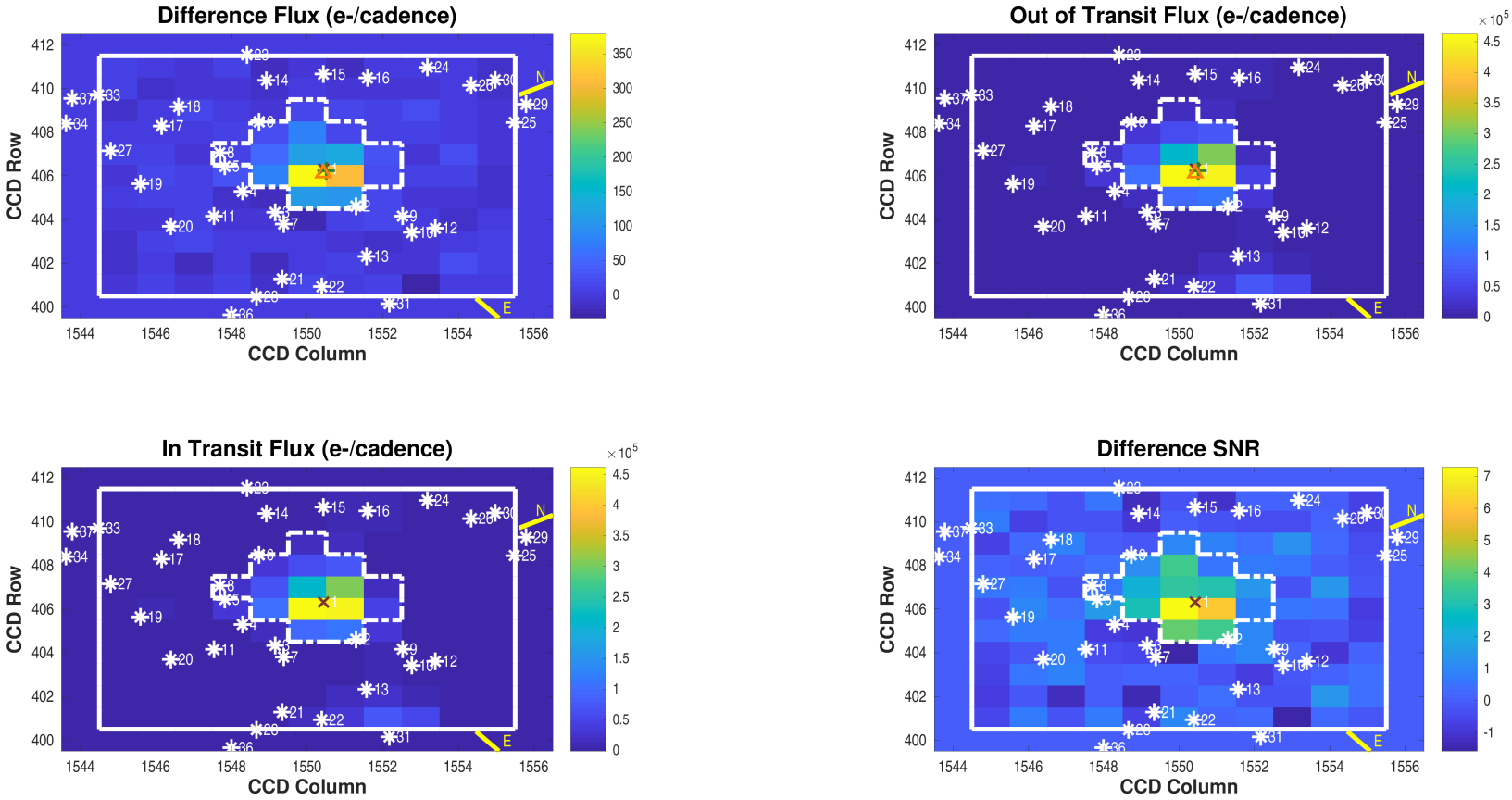
PRF Fit of the Difference Image

Offset from the PRF fit to the out of transit image

	Row	Column	Units	RA	Dec	Units
Out of Transit Image Centroid	$338.67 \pm 2.56e-05$	$664.06 \pm 2.43e-05$	pixels	$124.53512523 \pm 8.13e-07$	$-68.31479068 \pm 8.74e-07$	degrees
Difference Image Centroid	$338.72 \pm 9.36e-02$	$664.15 \pm 8.90e-02$	pixels	$124.53352842 \pm 4.79e-04$	$-68.31466881 \pm 5.64e-04$	degrees
Offset	$0.0574 \pm 9.36e-02$	$0.0966 \pm 8.90e-02$	pixels	$-2.1241 \pm 6.37e-01$	$0.4387 \pm 2.03e+00$	arcseconds
Offset/σ	0.61	1.08		-3.33	0.22	
Offset Distance	$0.1123 \pm 8.36e-02$		pixels	$2.1689 \pm 7.14e-01$		arcseconds
Offset Distance/σ	1.34			3.04		

Offset from the TIC RA and Dec converted to pixels via motion polynomials

	Row	Column	Units	RA	Dec	Units
TIC Reference Centroid	$338.75 \pm 1.30e-04$	$664.16 \pm 1.60e-04$	pixels	$124.53325461 \pm 0.00e+00$	$-68.31476464 \pm 0.00e+00$	degrees
Difference Image Centroid	$338.72 \pm 9.36e-02$	$664.15 \pm 8.90e-02$	pixels	$124.53352842 \pm 4.79e-04$	$-68.31466881 \pm 5.64e-04$	degrees
Offset	$-0.0255 \pm 9.36e-02$	$-0.0030 \pm 8.90e-02$	pixels	$0.3642 \pm 6.37e-01$	$0.3450 \pm 2.03e+00$	arcseconds
Offset/σ	-0.27	-0.03		0.57	0.17	
Offset Distance	$0.0257 \pm 9.19e-02$		pixels	$0.5017 \pm 1.51e+00$		arcseconds
Offset Distance/σ	0.28			0.33		



Difference image for target 307210830, planet candidate 2, sector 5, target pixel table 136. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 11; number of valid in-transit cadences = 260; number of in-transit cadence gaps = 0; number of valid out-of-transit cadences = 792; number of out-of-transit cadence gaps = 0. Difference image quality metric = 0.97 (good).
Open `./planet-02/difference-image/0000000307210830-02-difference-image-05-136.fig`

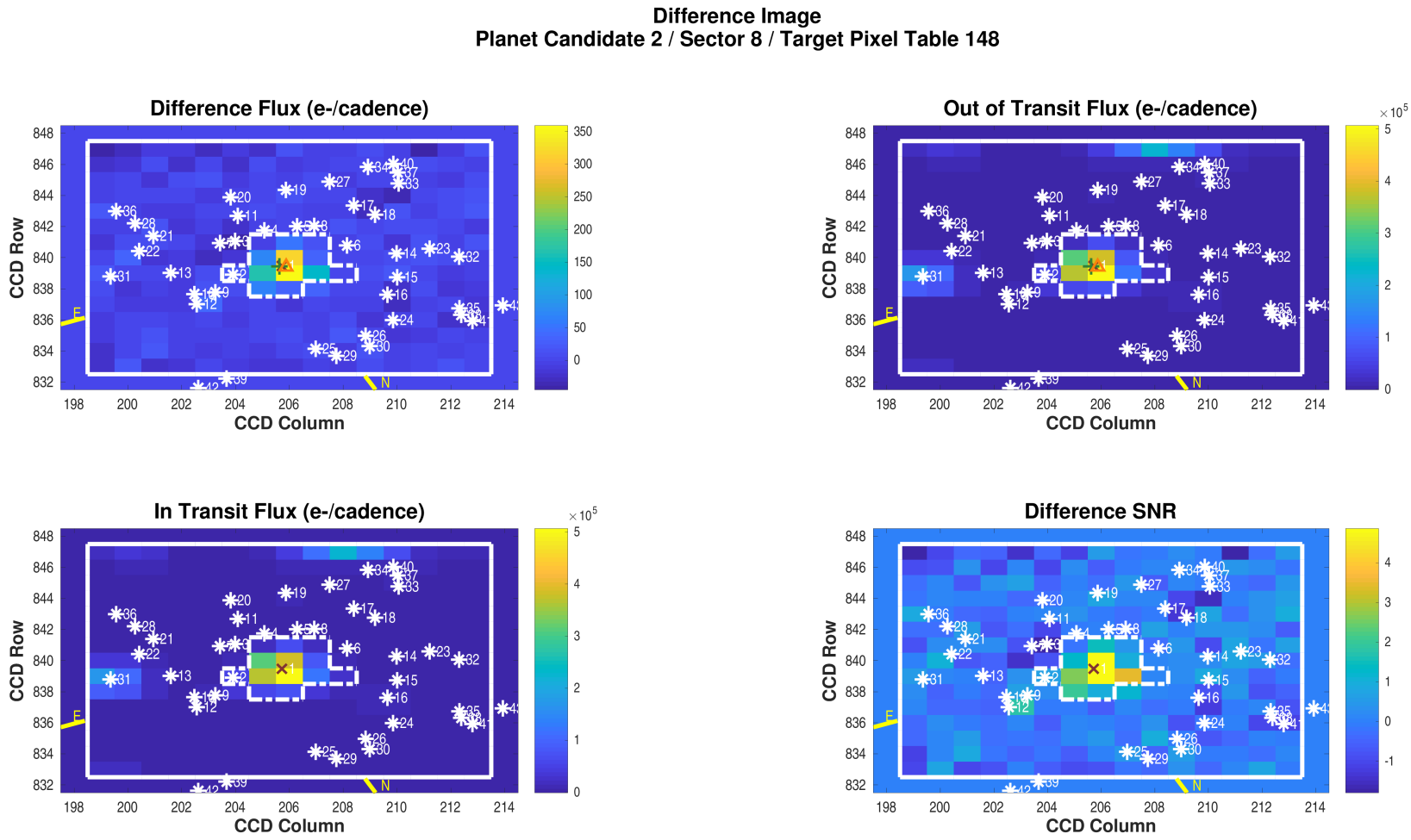
PRF Fit of the Difference Image

Offset from the PRF fit to the out of transit image

	Row	Column	Units	RA	Dec	Units
Out of Transit Image Centroid	$406.24 \pm 2.13e-05$	$1550.50 \pm 2.39e-05$	pixels	$124.53477661 \pm 8.75e-07$	$-68.31469086 \pm 8.92e-07$	degrees
Difference Image Centroid	$406.13 \pm 5.66e-02$	$1550.42 \pm 6.68e-02$	pixels	$124.53550394 \pm 3.42e-04$	$-68.31541087 \pm 3.65e-04$	degrees
Offset	$-0.1117 \pm 5.66e-02$	$-0.0783 \pm 6.68e-02$	pixels	$0.9675 \pm 4.55e-01$	$-2.5920 \pm 1.31e+00$	arcseconds
Offset/σ	-1.97	-1.17		2.13	-1.97	
Offset Distance	$0.1364 \pm 6.13e-02$		pixels	$2.7667 \pm 1.22e+00$		arcseconds
Offset Distance/σ	2.22			2.27		

Offset from the TIC RA and Dec converted to pixels via motion polynomials

	Row	Column	Units	RA	Dec	Units
TIC Reference Centroid	$406.32 \pm 1.58e-04$	$1550.43 \pm 1.48e-04$	pixels	$124.53327115 \pm 0.00e+00$	$-68.31478619 \pm 0.00e+00$	degrees
Difference Image Centroid	$406.13 \pm 5.66e-02$	$1550.42 \pm 6.68e-02$	pixels	$124.53550394 \pm 3.42e-04$	$-68.31541087 \pm 3.65e-04$	degrees
Offset	$-0.1886 \pm 5.66e-02$	$-0.0055 \pm 6.68e-02$	pixels	$2.9701 \pm 4.55e-01$	$-2.2489 \pm 1.31e+00$	arcseconds
Offset/σ	-3.33	-0.08		6.53	-1.71	
Offset Distance	$0.1886 \pm 5.67e-02$		pixels	$3.7254 \pm 8.17e-01$		arcseconds
Offset Distance/σ	3.33			4.56		



Difference image for target 307210830, planet candidate 2, sector 8, target pixel table 148. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 6; number of valid in-transit cadences = 142; number of in-transit cadence gaps = 0; number of valid out-of-transit cadences = 432; number of out-of-transit cadence gaps = 0. Difference image quality metric = 0.93 (good).
Open `./planet-02/difference-image/0000000307210830-02-difference-image-08-148.fig`

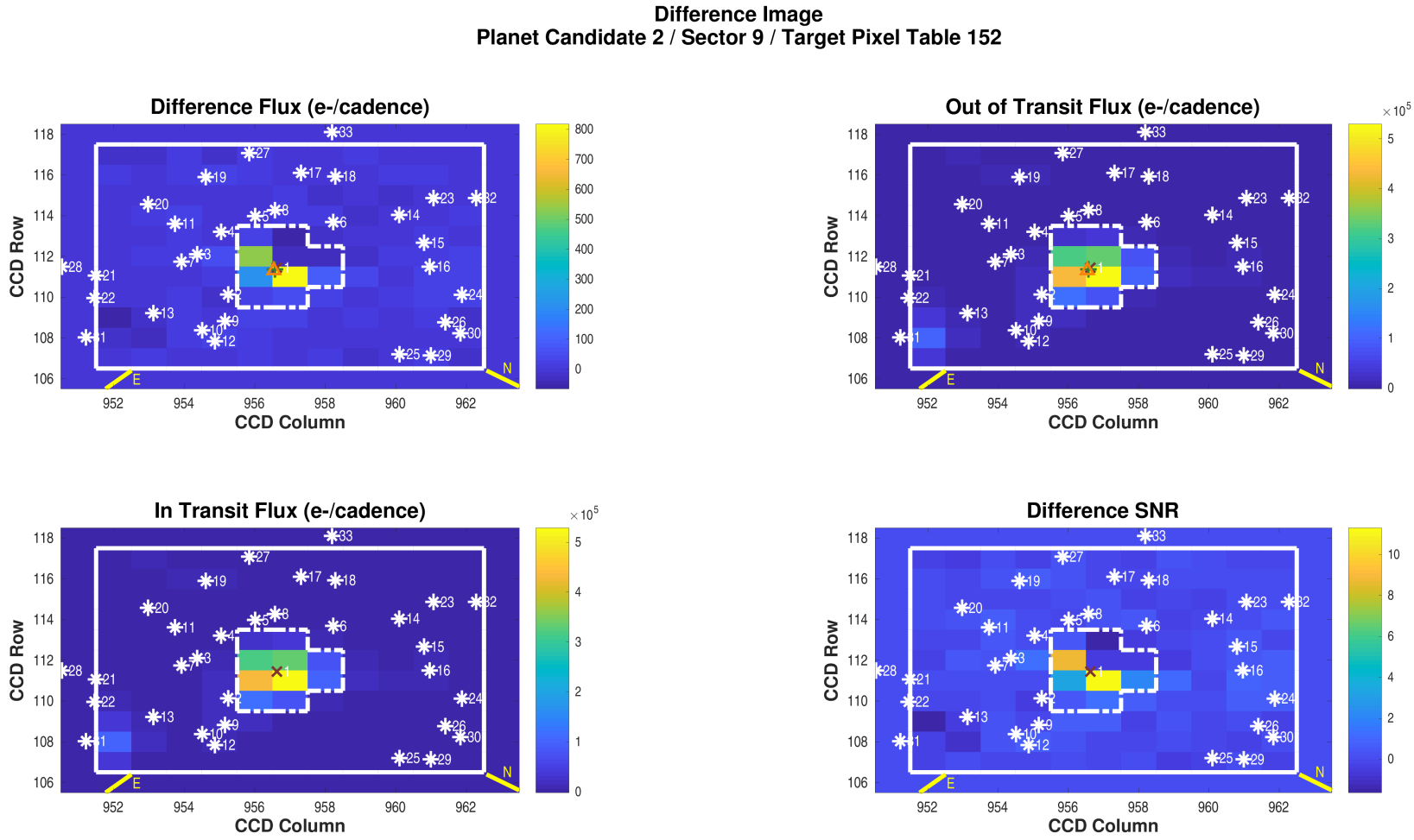
PRF Fit of the Difference Image

Offset from the PRF fit to the out of transit image

	Row	Column	Units	RA	Dec	Units
Out of Transit Image Centroid	$839.43 \pm 3.13e-05$	$205.63 \pm 2.83e-05$	pixels	$124.53468843 \pm 9.40e-07$	$-68.31480727 \pm 9.50e-07$	degrees
Difference Image Centroid	$839.40 \pm 9.62e-02$	$205.87 \pm 1.08e-01$	pixels	$124.53165877 \pm 5.69e-04$	$-68.31406940 \pm 6.02e-04$	degrees
Offset	$-0.0326 \pm 9.62e-02$	$0.2431 \pm 1.08e-01$	pixels	$-4.0301 \pm 7.57e-01$	$2.6563 \pm 2.17e+00$	arcseconds
Offset/σ	-0.34	2.25		-5.32	1.22	
Offset Distance	$0.2453 \pm 1.09e-01$		pixels	$4.8268 \pm 1.43e+00$		arcseconds
Offset Distance/σ	2.25			3.38		

Offset from the TIC RA and Dec converted to pixels via motion polynomials

	Row	Column	Units	RA	Dec	Units
TIC Reference Centroid	$839.47 \pm 1.59e-04$	$205.72 \pm 1.66e-04$	pixels	$124.53328674 \pm 0.00e+00$	$-68.31480650 \pm 0.00e+00$	degrees
Difference Image Centroid	$839.40 \pm 9.62e-02$	$205.87 \pm 1.08e-01$	pixels	$124.53165877 \pm 5.69e-04$	$-68.31406940 \pm 6.02e-04$	degrees
Offset	$-0.0728 \pm 9.62e-02$	$0.1548 \pm 1.08e-01$	pixels	$-2.1656 \pm 7.56e-01$	$2.6536 \pm 2.17e+00$	arcseconds
Offset/σ	-0.76	1.43		-2.86	1.22	
Offset Distance	$0.1711 \pm 1.09e-01$		pixels	$3.4251 \pm 1.81e+00$		arcseconds
Offset Distance/σ	1.57			1.89		



Difference image for target 307210830, planet candidate 2, sector 9, target pixel table 152. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 8; number of valid in-transit cadences = 188; number of in-transit cadence gaps = 1; number of valid out-of-transit cadences = 550; number of out-of-transit cadence gaps = 26. Difference image quality metric = 0.79 (good).
Open `./planet-02/difference-image/0000000307210830-02-difference-image-09-152.fig`

PRF Fit of the Difference Image

Offset from the PRF fit to the out of transit image

	Row	Column	Units	RA	Dec	Units
Out of Transit Image Centroid	$111.37 \pm 3.29e-05$	$956.57 \pm 3.34e-05$	pixels	$124.53461314 \pm 1.02e-06$	$-68.31478350 \pm 1.03e-06$	degrees
Difference Image Centroid	$111.31 \pm 6.78e-02$	$956.54 \pm 6.65e-02$	pixels	$124.53559922 \pm 3.71e-04$	$-68.31472246 \pm 3.95e-04$	degrees
Offset	$-0.0598 \pm 6.78e-02$	$-0.0350 \pm 6.65e-02$	pixels	$1.3117 \pm 4.94e-01$	$0.2197 \pm 1.42e+00$	arcseconds
Offset/σ	-0.88	-0.53		2.65	0.15	
Offset Distance	$0.0693 \pm 6.56e-02$		pixels	$1.3300 \pm 5.55e-01$		arcseconds
Offset Distance/σ	1.06			2.40		

Offset from the TIC RA and Dec converted to pixels via motion polynomials

	Row	Column	Units	RA	Dec	Units
TIC Reference Centroid	$111.44 \pm 1.79e-04$	$956.63 \pm 1.74e-04$	pixels	$124.53329194 \pm 0.00e+00$	$-68.31481327 \pm 0.00e+00$	degrees
Difference Image Centroid	$111.31 \pm 6.78e-02$	$956.54 \pm 6.65e-02$	pixels	$124.53559922 \pm 3.71e-04$	$-68.31472246 \pm 3.95e-04$	degrees
Offset	$-0.1341 \pm 6.78e-02$	$-0.0889 \pm 6.65e-02$	pixels	$3.0692 \pm 4.94e-01$	$0.3269 \pm 1.42e+00$	arcseconds
Offset/σ	-1.98	-1.34		6.21	0.23	
Offset Distance	$0.1608 \pm 6.54e-02$		pixels	$3.0866 \pm 5.23e-01$		arcseconds
Offset Distance/σ	2.46			5.90		

5.3 Planet Candidate 3

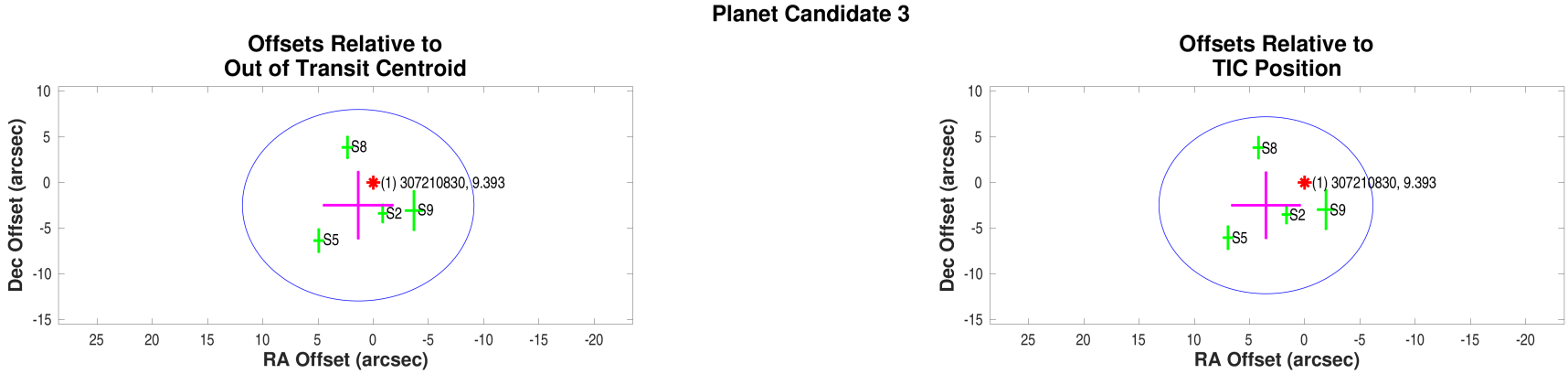
Multi-Sector Average PRF Fit of the Difference Images

Mean offset from the PRF fit to the out of transit image

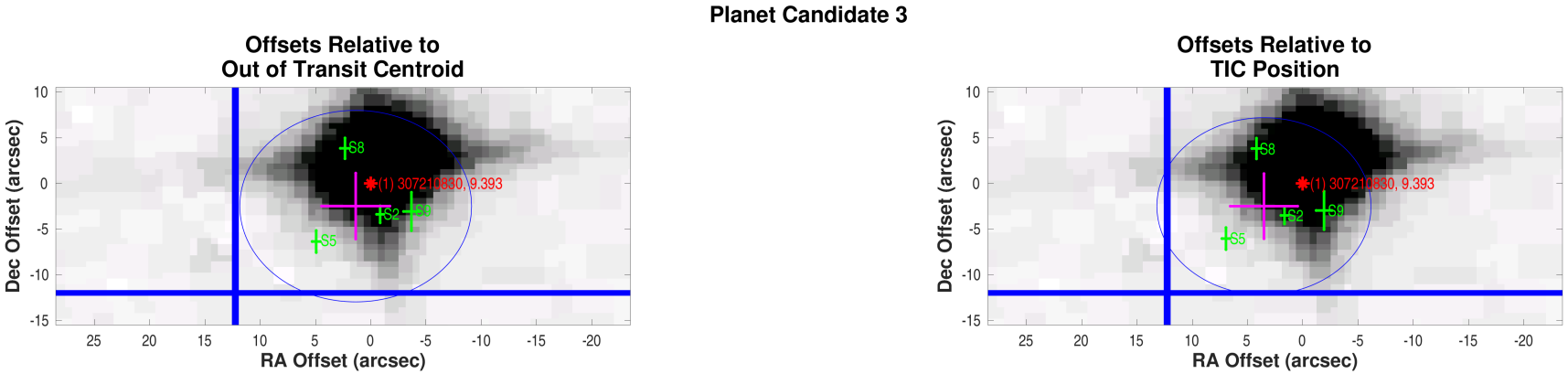
	RA	Dec	Units
Offset	$1.3659 \pm 3.09e+00$	$-2.4745 \pm 3.61e+00$	arcseconds
Offset/σ	0.44	-0.69	
Offset Distance	$2.8265 \pm 3.50e+00$		arcseconds
Offset Distance/σ	0.81		
3σ Radius	10.4871		arcseconds

Mean offset from the TIC RA and Dec

	RA	Dec	Units
Offset	$3.5095 \pm 3.05e+00$	$-2.4808 \pm 3.56e+00$	arcseconds
Offset/σ	1.15	-0.70	
Offset Distance	$4.2978 \pm 3.23e+00$		arcseconds
Offset Distance/σ	1.33		
3σ Radius	9.6894		arcseconds



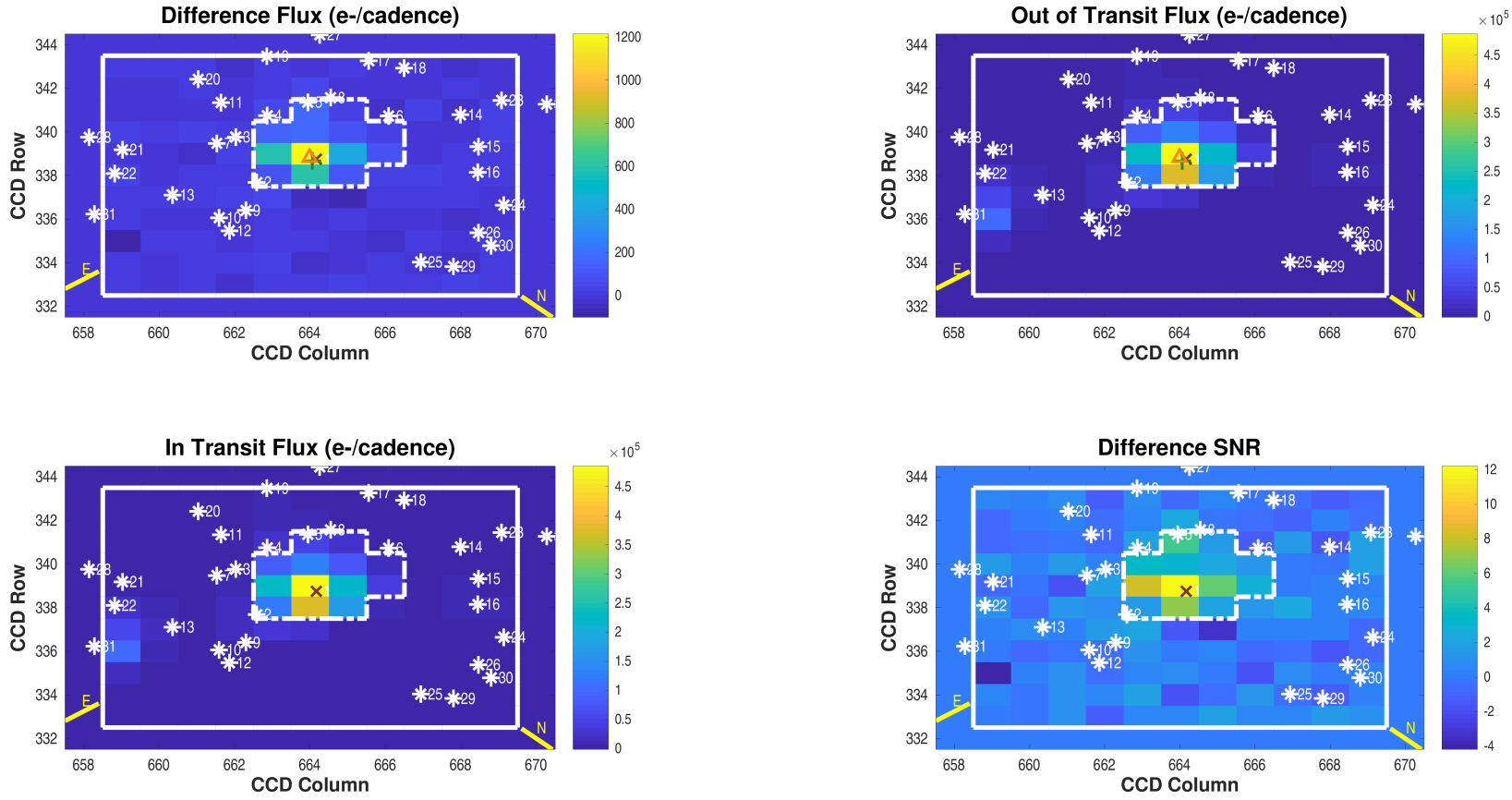
Difference image centroid offsets for target 307210830, planet candidate 3. Left: difference image PRF centroid offsets in RA and Dec with respect to the per sector out-of-transit centroids for the given target. Right: difference image PRF centroid offsets in RA and Dec with respect to the TC coordinates of the given target. Symbol key: green cross: per sector centroid offsets with 1-sigma error bars in RA and Dec; magenta cross: robust weighted mean offset over all sectors with 1-sigma error bars in RA and Dec; blue circle: 3-sigma radius of confusion for weighted mean offset; red asterisk: location of target star; blue asterisk: location of other TIC objects in the neighborhood. TIC ID and magnitude are noted in the text associated with each marked object. A constant error term of 2.5000 arcseconds has been added in quadrature to the computed uncertainty in the RA and Dec components of the robust mean offset.
Open `./planet-03/difference-image/0000000307210830-03-difference-image-centroid-offsets.fig`



Difference image centroid offsets for target 307210830, planet candidate 3, diplayed on survey image for given target. Left: difference image PRF centroid offsets in RA and Dec with respect to the per sector out-of-transit centroids for the given target. Right: difference image PRF centroid offsets in RA and Dec with respect to the TIC coordinates of the given target. Symbol key: green cross: per sector centroid offsets with 1-sigma error bars in RA and Dec; magenta cross: robust weighted mean offset over all sectors with 1-sigma error bars in RA and Dec; blue circle: 3-sigma radius of confusion for weighted mean offset; red asterisk: location of target star; blue asterisk: location of other TIC objects in the neighborhood. TIC ID and magnitude are noted in the text associated with each marked object. A constant error term of 2.5000 arcseconds has been added in quadrature to the computed uncertainty in the RA and Dec components of the robust mean offset.
Open `./planet-03/difference-image/0000000307210830-03-difference-image-centroid-offsets-survey.fig`

Difference Image Summary Metrics

Number of Difference Images	Number of Metrics	Number of Good Metrics	Fraction of Good Metrics	Quality Threshold
4	4	4	1.0000	0.70



Difference image for target 307210830, planet candidate 3, sector 2, target pixel table 129. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 4; number of valid in-transit cadences = 71; number of in-transit cadence gaps = 0; number of valid out-of-transit cadences = 216; number of out-of-transit cadence gaps = 1. Difference image quality metric = 0.97 (good).
Open `./planet-03/difference-image/0000000307210830-03-difference-image-02-129.fig`

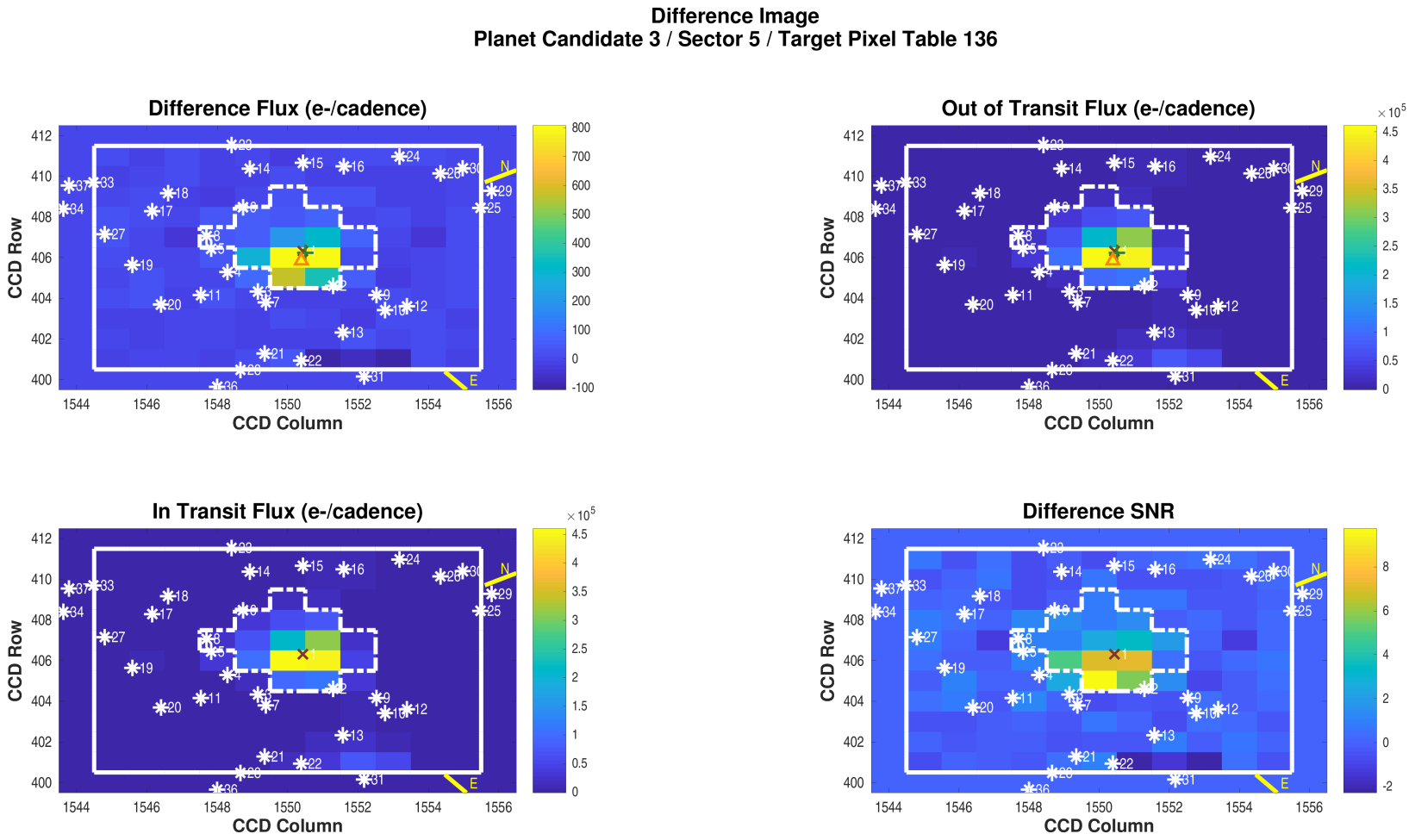
PRF Fit of the Difference Image

Offset from the PRF fit to the out of transit image

	Row	Column	Units	RA	Dec	Units
Out of Transit Image Centroid	$338.68 \pm 4.41e-05$	$664.06 \pm 4.18e-05$	pixels	$124.53513322 \pm 8.30e-07$	$-68.31479909 \pm 8.94e-07$	degrees
Difference Image Centroid	$338.83 \pm 4.58e-02$	$663.99 \pm 4.22e-02$	pixels	$124.53449560 \pm 2.45e-04$	$-68.31573573 \pm 2.59e-04$	degrees
Offset	$0.1552 \pm 4.58e-02$	$-0.0756 \pm 4.22e-02$	pixels	$-0.8482 \pm 3.26e-01$	$-3.3719 \pm 9.32e-01$	arcseconds
Offset/σ	3.39	−1.79		−2.60	−3.62	
Offset Distance	$0.1726 \pm 4.61e-02$		pixels	$3.4769 \pm 9.15e-01$		arcseconds
Offset Distance/σ	3.75			3.80		

Offset from the TIC RA and Dec converted to pixels via motion polynomials

	Row	Column	Units	RA	Dec	Units
TIC Reference Centroid	$338.76 \pm 1.29e-04$	$664.16 \pm 1.59e-04$	pixels	$124.53325461 \pm 0.00e+00$	$-68.31476464 \pm 0.00e+00$	degrees
Difference Image Centroid	$338.83 \pm 4.58e-02$	$663.99 \pm 4.22e-02$	pixels	$124.53449560 \pm 2.45e-04$	$-68.31573573 \pm 2.59e-04$	degrees
Offset	$0.0731 \pm 4.58e-02$	$-0.1766 \pm 4.22e-02$	pixels	$1.6508 \pm 3.26e-01$	$-3.4959 \pm 9.32e-01$	arcseconds
Offset/σ	1.59	−4.18		5.07	−3.75	
Offset Distance	$0.1911 \pm 4.36e-02$		pixels	$3.8661 \pm 8.40e-01$		arcseconds
Offset Distance/σ	4.38			4.60		



Difference image for target 307210830, planet candidate 3, sector 5, target pixel table 136. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 3; number of valid in-transit cadences = 54; number of in-transit cadence gaps = 0; number of valid out-of-transit cadences = 162; number of out-of-transit cadence gaps = 0. Difference image quality metric = 0.98 (good). Transits used to compute this difference image are overlapped by those of other candidates on this target.
Open `./planet-03/difference-image/0000000307210830-03-difference-image-05-136.fig`

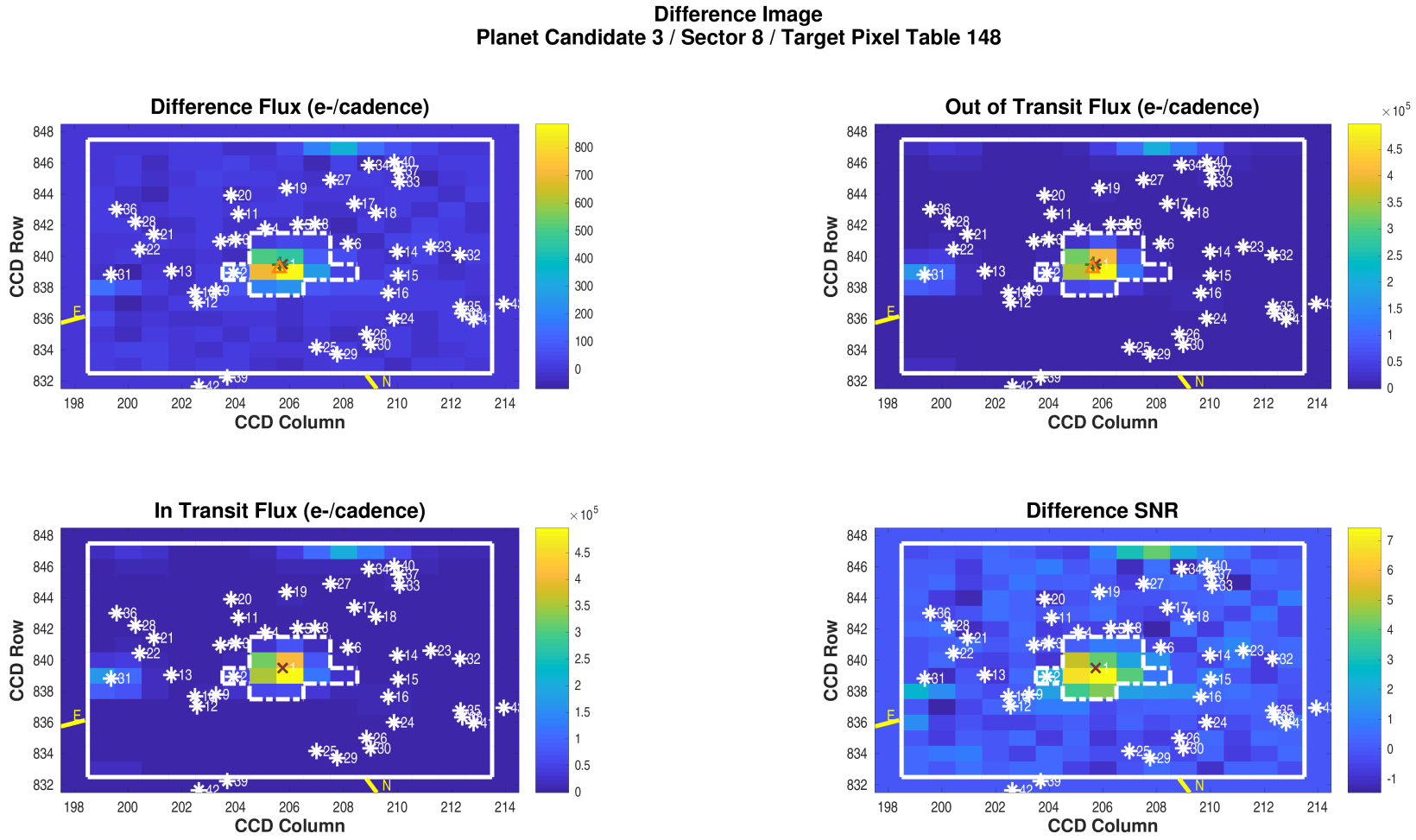
PRF Fit of the Difference Image

Offset from the PRF fit to the out of transit image

	Row	Column	Units	RA	Dec	Units
Out of Transit Image Centroid	$406.24 \pm 4.70e-05$	$1550.51 \pm 5.31e-05$	pixels	$124.53478076 \pm 9.18e-07$	$-68.31469652 \pm 9.26e-07$	degrees
Difference Image Centroid	$405.86 \pm 4.62e-02$	$1550.39 \pm 6.01e-02$	pixels	$124.53849420 \pm 2.77e-04$	$-68.31646086 \pm 3.34e-04$	degrees
Offset	$-0.3842 \pm 4.62e-02$	$-0.1167 \pm 6.01e-02$	pixels	$4.9397 \pm 3.70e-01$	$-6.3516 \pm 1.20e+00$	arcseconds
Offset/σ	-8.32	-1.94		13.34	-5.28	
Offset Distance	$0.4015 \pm 5.01e-02$		pixels	$8.0464 \pm 9.17e-01$		arcseconds
Offset Distance/σ	8.01			8.77		

Offset from the TIC RA and Dec converted to pixels via motion polynomials

	Row	Column	Units	RA	Dec	Units
TIC Reference Centroid	$406.32 \pm 1.59e-04$	$1550.43 \pm 1.48e-04$	pixels	$124.53327115 \pm 0.00e+00$	$-68.31478619 \pm 0.00e+00$	degrees
Difference Image Centroid	$405.86 \pm 4.62e-02$	$1550.39 \pm 6.01e-02$	pixels	$124.53849420 \pm 2.77e-04$	$-68.31646086 \pm 3.34e-04$	degrees
Offset	$-0.4618 \pm 4.62e-02$	$-0.0445 \pm 6.01e-02$	pixels	$6.9478 \pm 3.68e-01$	$-6.0288 \pm 1.20e+00$	arcseconds
Offset/σ	-10.00	-0.74		18.88	-5.01	
Offset Distance	$0.4640 \pm 4.73e-02$		pixels	$9.1989 \pm 7.65e-01$		arcseconds
Offset Distance/σ	9.82			12.03		



Difference image for target 307210830, planet candidate 3, sector 8, target pixel table 148. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 3; number of valid in-transit cadences = 54; number of in-transit cadence gaps = 0; number of valid out-of-transit cadences = 162; number of out-of-transit cadence gaps = 0. Difference image quality metric = 0.93 (good).
Open `./planet-03/difference-image/0000000307210830-03-difference-image-08-148.fig`

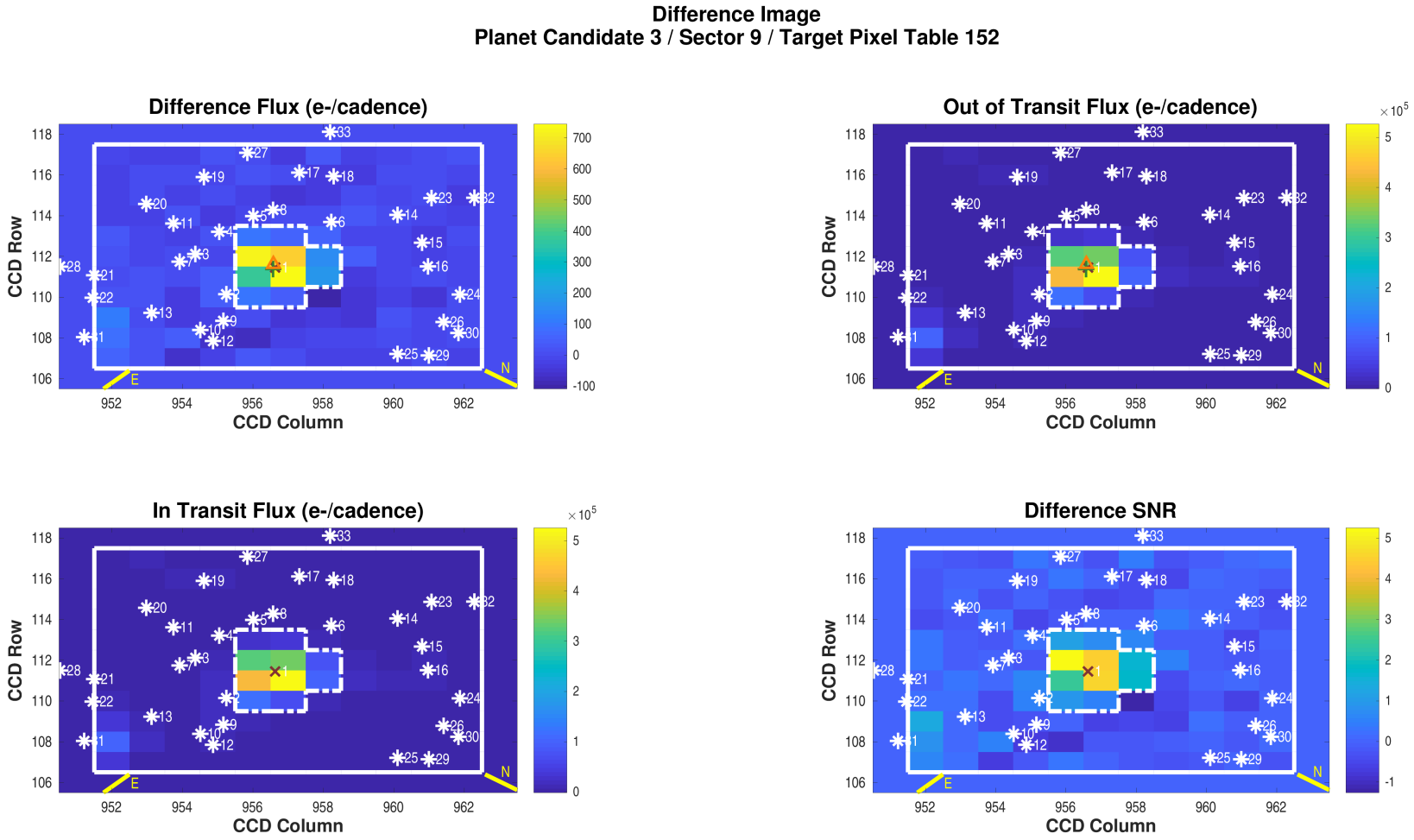
PRF Fit of the Difference Image

Offset from the PRF fit to the out of transit image

	Row	Column	Units	RA	Dec	Units
Out of Transit Image Centroid	$839.47 \pm 5.29e-05$	$205.64 \pm 4.71e-05$	pixels	$124.53467735 \pm 9.67e-07$	$-68.31481269 \pm 9.82e-07$	degrees
Difference Image Centroid	$839.24 \pm 5.30e-02$	$205.61 \pm 5.74e-02$	pixels	$124.53643403 \pm 3.17e-04$	$-68.31374162 \pm 3.15e-04$	degrees
Offset	$-0.2246 \pm 5.30e-02$	$-0.0346 \pm 5.74e-02$	pixels	$2.3368 \pm 4.22e-01$	$3.8559 \pm 1.14e+00$	arcseconds
Offset/σ	-4.24	-0.60		5.54	3.40	
Offset Distance	$0.2272 \pm 5.31e-02$		pixels	$4.5087 \pm 9.78e-01$		arcseconds
Offset Distance/σ	4.28			4.61		

Offset from the TIC RA and Dec converted to pixels via motion polynomials

	Row	Column	Units	RA	Dec	Units
TIC Reference Centroid	$839.51 \pm 1.59e-04$	$205.73 \pm 1.67e-04$	pixels	$124.53328674 \pm 0.00e+00$	$-68.31480650 \pm 0.00e+00$	degrees
Difference Image Centroid	$839.24 \pm 5.30e-02$	$205.61 \pm 5.74e-02$	pixels	$124.53643403 \pm 3.17e-04$	$-68.31374162 \pm 3.15e-04$	degrees
Offset	$-0.2636 \pm 5.30e-02$	$-0.1226 \pm 5.74e-02$	pixels	$4.1866 \pm 4.21e-01$	$3.8336 \pm 1.14e+00$	arcseconds
Offset/σ	-4.98	-2.13		9.94	3.38	
Offset Distance	$0.2907 \pm 5.38e-02$		pixels	$5.6766 \pm 8.03e-01$		arcseconds
Offset Distance/σ	5.40			7.07		



Difference image for target 307210830, planet candidate 3, sector 9, target pixel table 152. Upper left: difference between mean flux out-of-transit and in-transit; upper right: mean out-of-transit flux; lower left: mean in-transit flux; lower right: difference between mean flux out-of-transit and in-transit after normalizing by the uncertainty in the difference for each pixel. The optimal aperture is outlined with a white dash-dotted line in each panel and the target mask is outlined with a solid white line. Symbol key: x: target position from TIC RA and Dec converted to CCD coordinates via motion polynomials; *: position of nearby TIC objects converted to CCD coordinates via motion polynomials; +: PRF-fit location of target from out-of-transit image; triangle: PRF-fit location of transit source from the difference image. Number of transits = 2; number of valid in-transit cadences = 36; number of in-transit cadence gaps = 0; number of valid out-of-transit cadences = 108; number of out-of-transit cadence gaps = 0. Difference image quality metric = 0.95 (good).
Open `./planet-03/difference-image/0000000307210830-03-difference-image-09-152.fig`

PRF Fit of the Difference Image

Offset from the PRF fit to the out of transit image

	Row	Column	Units	RA	Dec	Units
Out of Transit Image Centroid	$111.38 \pm 7.39e-05$	$956.58 \pm 7.49e-05$	pixels	$124.53460831 \pm 1.07e-06$	$-68.31478325 \pm 1.10e-06$	degrees
Difference Image Centroid	$111.62 \pm 1.02e-01$	$956.58 \pm 9.43e-02$	pixels	$124.53184328 \pm 5.38e-04$	$-68.31563380 \pm 5.83e-04$	degrees
Offset	$0.2457 \pm 1.02e-01$	$0.0062 \pm 9.43e-02$	pixels	$-3.6781 \pm 7.17e-01$	$-3.0620 \pm 2.10e+00$	arcseconds
Offset/σ	2.41	0.07		-5.13	-1.46	
Offset Distance	$0.2458 \pm 1.02e-01$		pixels	$4.7858 \pm 1.53e+00$		arcseconds
Offset Distance/σ	2.42			3.14		

Offset from the TIC RA and Dec converted to pixels via motion polynomials

	Row	Column	Units	RA	Dec	Units
TIC Reference Centroid	$111.45 \pm 1.78e-04$	$956.63 \pm 1.73e-04$	pixels	$124.53329194 \pm 0.00e+00$	$-68.31481327 \pm 0.00e+00$	degrees
Difference Image Centroid	$111.62 \pm 1.02e-01$	$956.58 \pm 9.43e-02$	pixels	$124.53184328 \pm 5.38e-04$	$-68.31563380 \pm 5.83e-04$	degrees
Offset	$0.1717 \pm 1.02e-01$	$-0.0474 \pm 9.43e-02$	pixels	$-1.9270 \pm 7.16e-01$	$-2.9539 \pm 2.10e+00$	arcseconds
Offset/σ	1.69	-0.50		-2.69	-1.41	
Offset Distance	$0.1781 \pm 1.04e-01$		pixels	$3.5269 \pm 1.86e+00$		arcseconds
Offset Distance/σ	1.71			1.90		

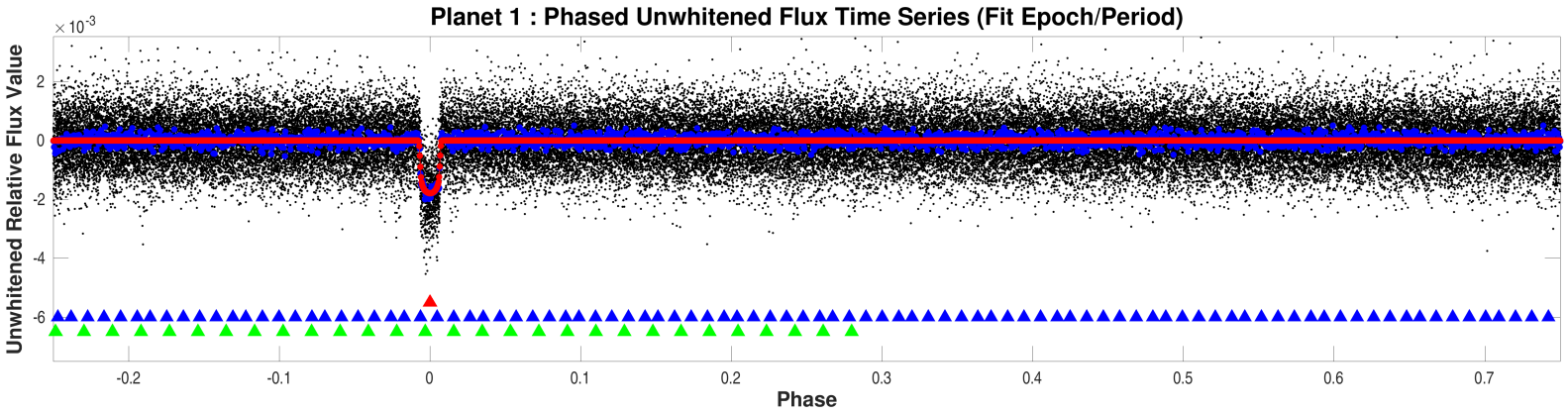
5.4 Difference Image TIC Key

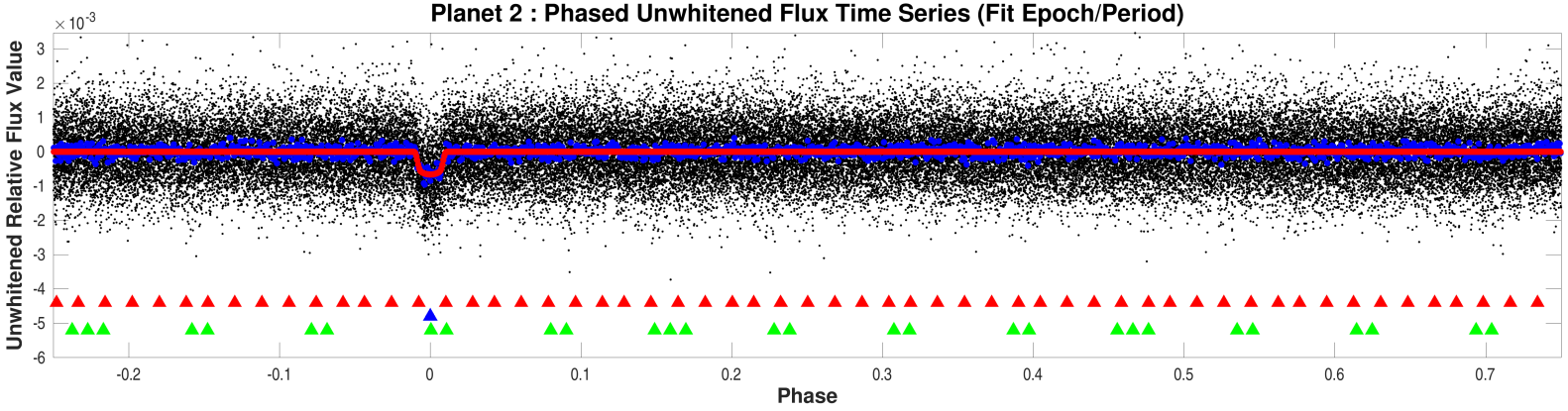
Index	Catalog ID	Mag	RA (degrees)	Dec (degrees)	Distance (arcsec)
1	307210830	9.393	124.53327317	-68.31478881	0.00
2	307210836	17.610	124.56063600	-68.31618500	36.74
3	307210845	16.042	124.54709249	-68.32705626	47.84
4	307210847	17.373	124.52866861	-68.32803243	48.07
5	307210844	16.928	124.51111507	-68.32655796	51.61
6	307210835	17.595	124.49367478	-68.31585101	52.81
7	307210846	16.651	124.55531500	-68.32769800	54.95
8	307210842	16.733	124.50253603	-68.32517659	55.41
9	307210828	15.093	124.57585765	-68.31188153	57.61
10	307210831	17.406	124.58681901	-68.31311088	71.48
11	307210850	16.876	124.53639125	-68.33517469	73.51
12	307210827	17.523	124.58942588	-68.30960052	77.00
13	307210839	17.447	124.59052538	-68.32215785	80.65
14	307210826	17.461	124.47229602	-68.30890967	83.83
15	307210821	18.662	124.48083900	-68.30098000	85.65
16	307210817	13.448	124.49214409	-68.29609636	86.73
17	307210848	15.908	124.47547124	-68.32847132	91.31
18	307210841	17.366	124.46836471	-68.32357188	91.95
19	307210858	14.124	124.50304777	-68.33952653	97.71
20	307210862	17.295	124.53296870	-68.34194211	97.75
21	307210852	17.431	124.58547198	-68.33587025	102.86
22	307217499	14.418	124.59797786	-68.33209496	106.25
23	307210825	17.850	124.45414071	-68.30761338	108.39
24	307210810	17.722	124.49885823	-68.28718465	109.41
25	307210806	16.783	124.54752841	-68.28448694	110.72
26	307210805	17.415	124.51809346	-68.28440319	111.24
27	307210855	16.995	124.47842014	-68.33838313	111.98
28	307210861	18.143	124.58977007	-68.34161293	122.37
29	307210796	14.832	124.53995104	-68.28036979	124.23
30	307210798	16.902	124.52002954	-68.28063011	124.23
31	307217504	10.727	124.62149878	-68.32624315	124.39
32	307210823	17.490	124.44276676	-68.30234137	128.46
33	307210849	14.943	124.44517972	-68.33177367	132.18
34	307210859	17.074	124.45409584	-68.33991681	138.84
35	307210807	16.885	124.46181032	-68.28529113	142.53
36	307217485	15.615	124.59452477	-68.34731667	142.66
37	307210851	16.556	124.44152300	-68.33550300	143.03
38	307210803	15.746	124.46343495	-68.28294844	147.54

Index	Catalog ID	Mag	RA (degrees)	Dec (degrees)	Distance (arcsec)
39	307210802	17.813	124.60234013	-68.28237840	148.51
40	307210856	17.813	124.44037548	-68.33872197	150.65
41	307210793	16.826	124.46011281	-68.27996236	158.71
42	307217543	17.655	124.61965793	-68.28180089	165.25
43	307210801	15.657	124.43951621	-68.28242981	170.66

RA, Dec and Distances are corrected for proper motion. This table may not contain all of the objects shown.

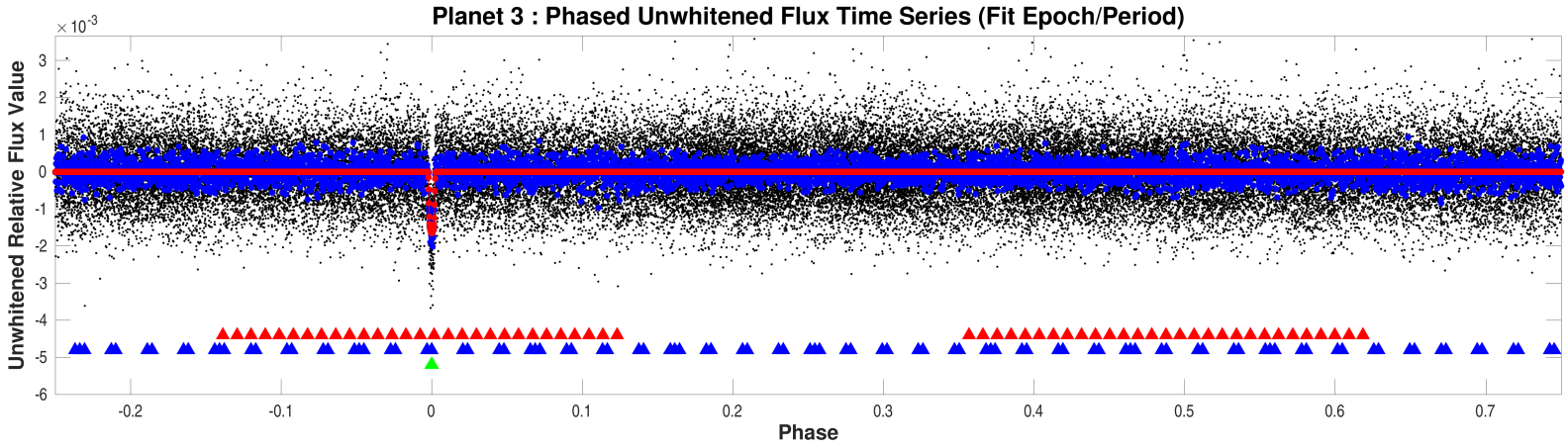
6 Phased Light Curves





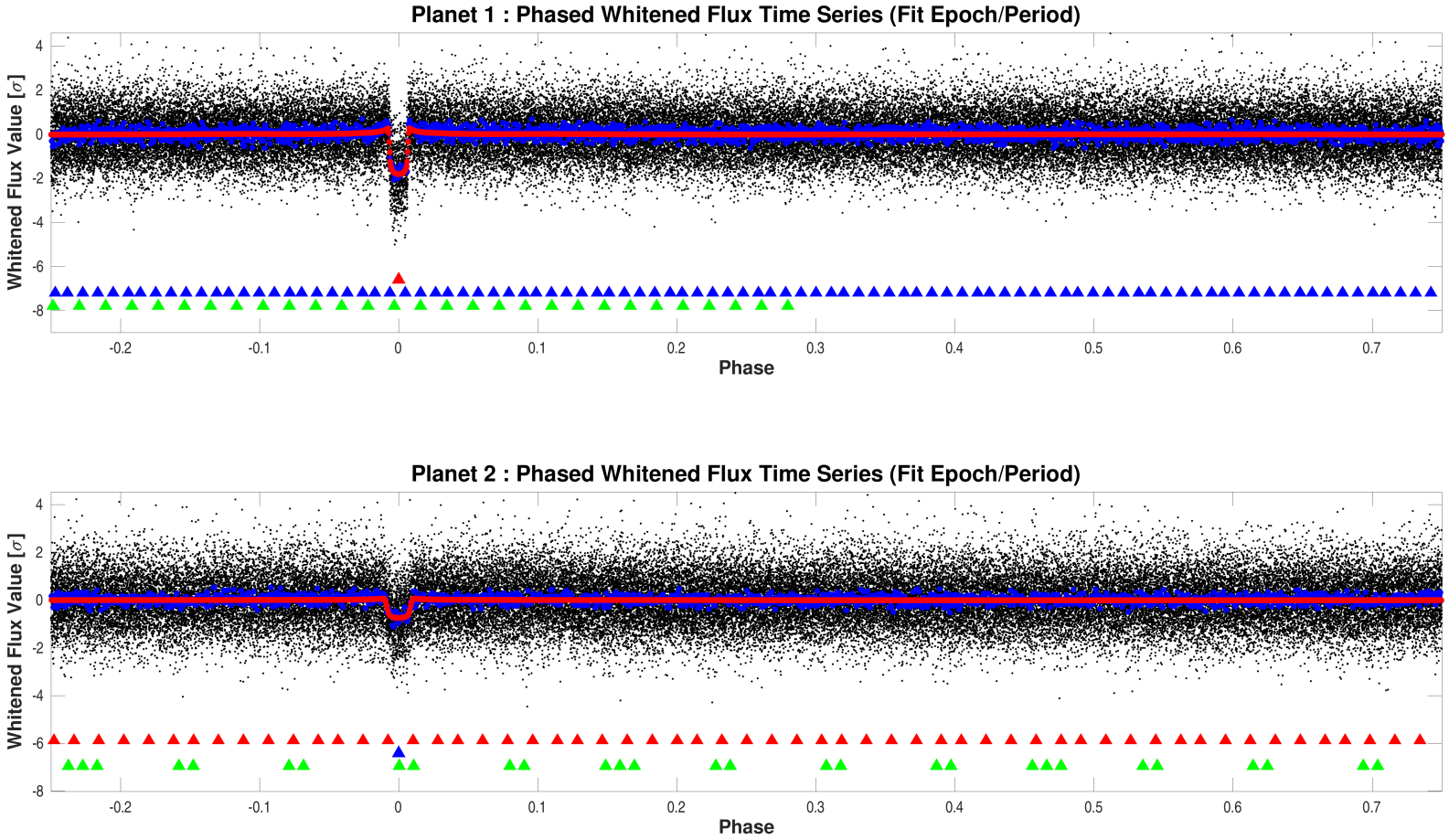
Phased unwhitened flux time series is plotted in black dots. When all transits fit completed with full or secondary convergence, the phase is determined with the fitted epoch and period; otherwise, the phase is determined with the TPS epoch and period. The values of the phased unwhitened flux time series averaged in one cadence wide bins are plotted in bigger blue dots. When all transits fit completes with full or secondary convergence, the averaged values of the phased unwhitened fitted model light curve are plotted in red dots. Transit event markers in different colors indicate the locations of the transits of all planet candidates. The transits of the same planet candidate are labeled with the markers of the same color, for example, blue markers for transits of plane candidate #1, red markers for transits of planet candidate #2, etc.

Open `./summary-plots/0000000307210830-01-phased-unwhitened-flux-time-series.fig`

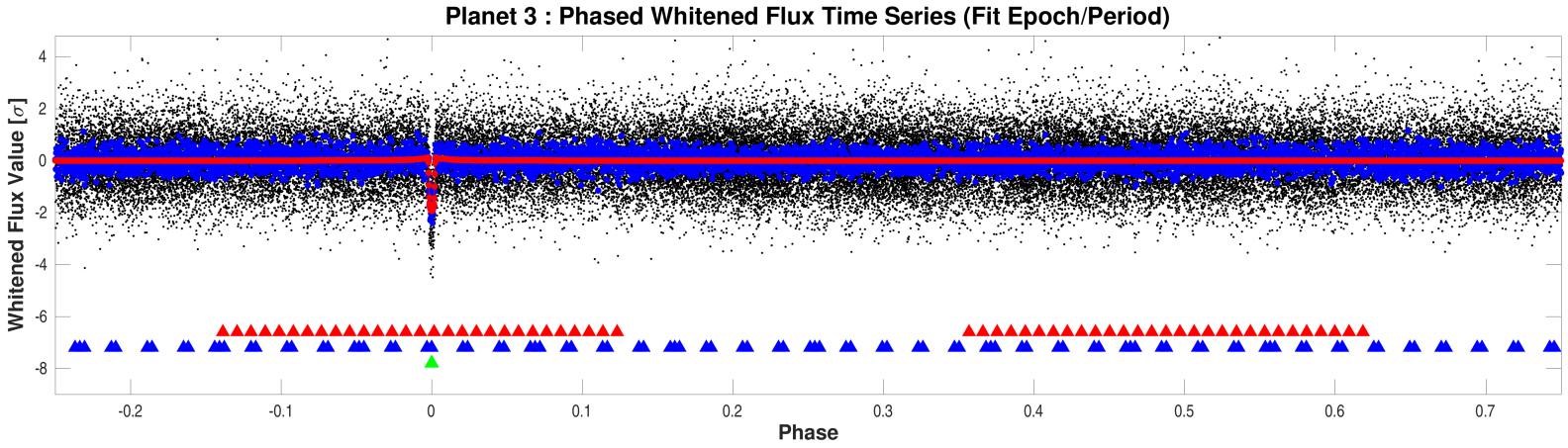


Phased unwhitened flux time series is plotted in black dots. When all transits fit completed with full or secondary convergence, the phase is determined with the fitted epoch and period; otherwise, the phase is determined with the TPS epoch and period. The values of the phased unwhitened flux time series averaged in one cadence wide bins are plotted in bigger blue dots. When all transits fit completes with full or secondary convergence, the averaged values of the phased unwhitened fitted model light curve are plotted in red dots. Transit event markers in different colors indicate the locations of the transits of all planet candidates. The transits of the same planet candidate are labeled with the markers of the same color, for example, blue markers for transits of plane candidate #1, red markers for transits of planet candidate #2, etc.

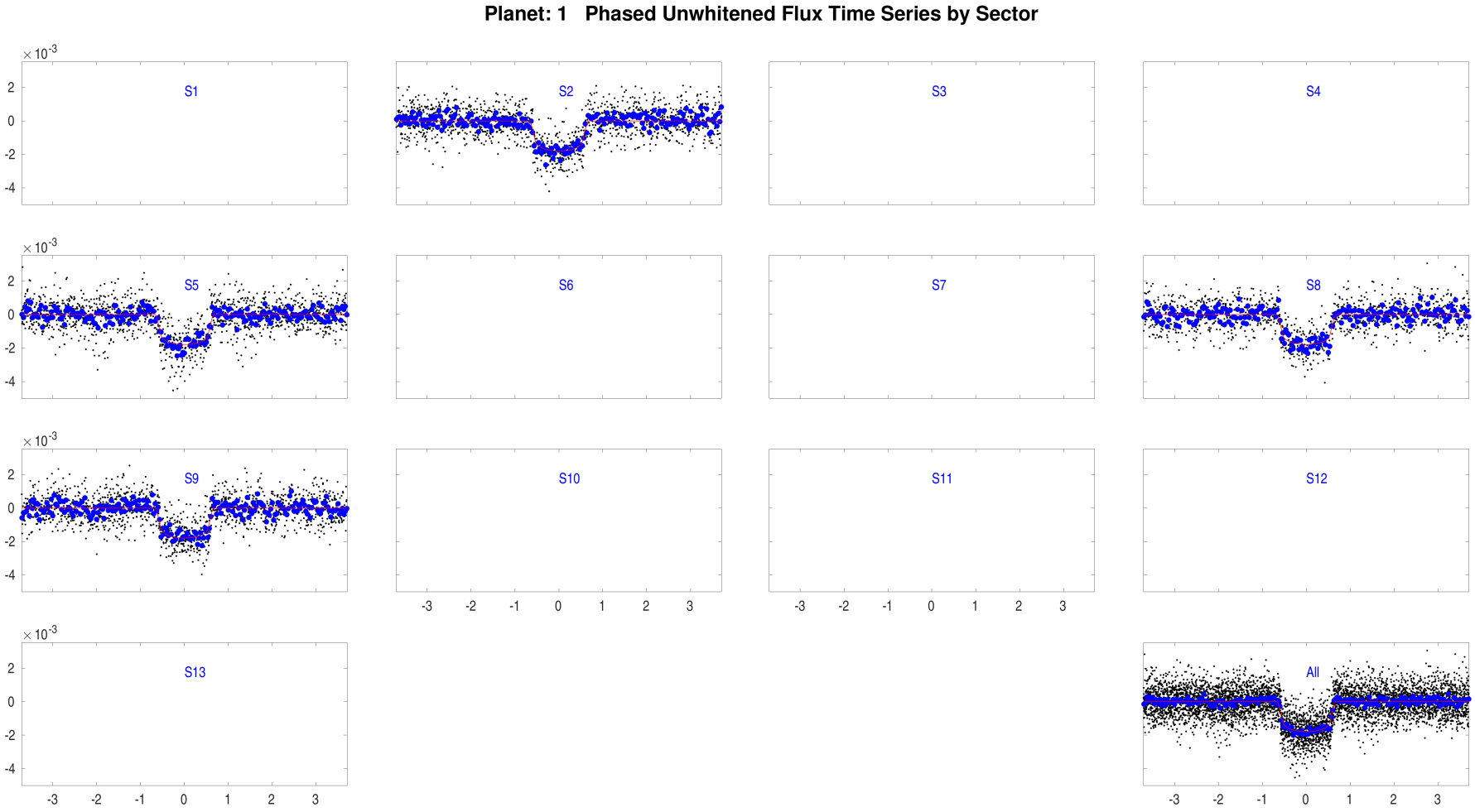
Open `./summary-plots/0000000307210830-03-phased-unwhitened-flux-time-series.fig`



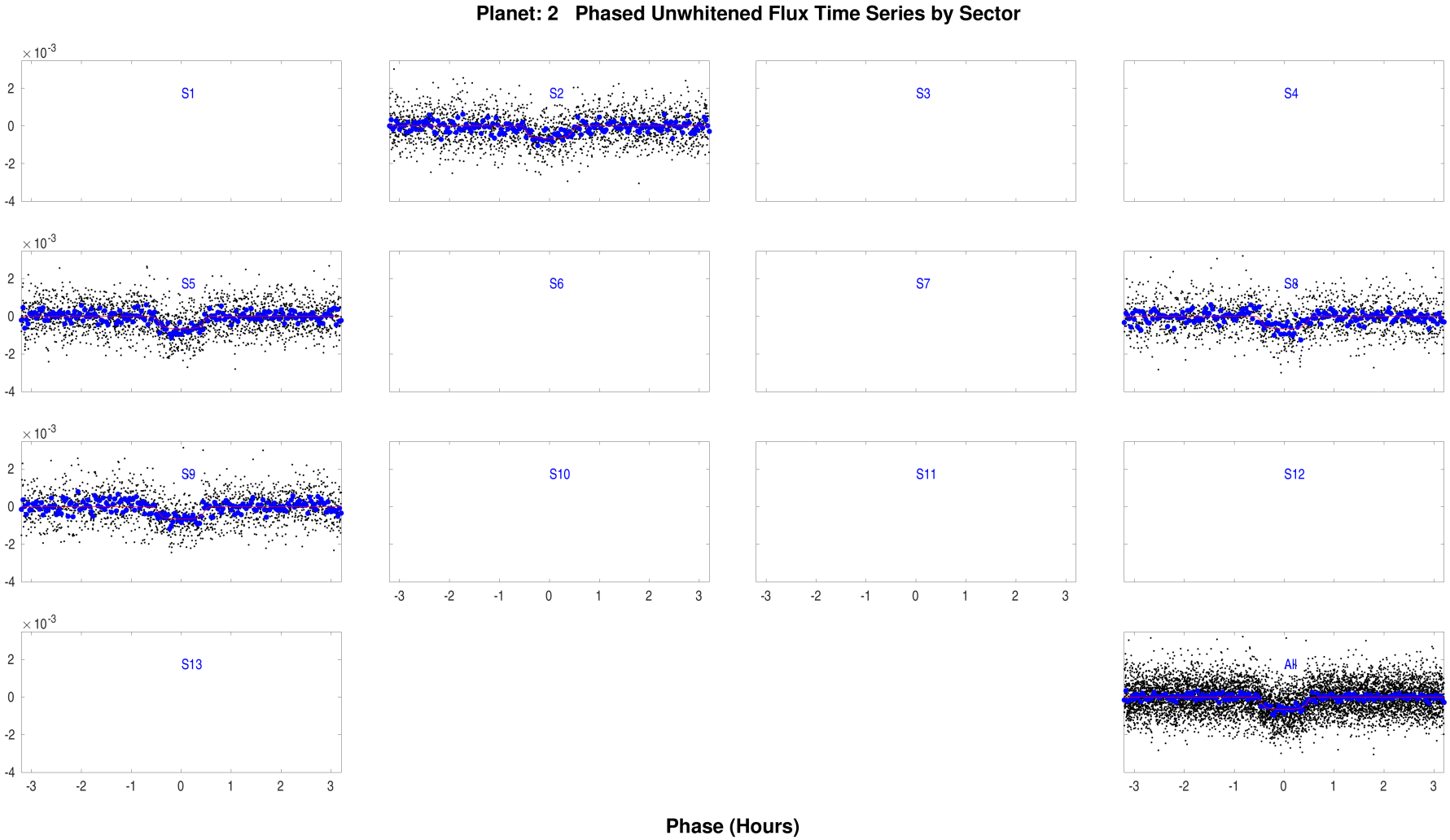
Phased whitened flux time series is plotted in black dots. When all transits fit completed with full or secondary convergence, the phase is determined with the fitted epoch and period; otherwise, the phase is determined with the TPS epoch and period. The values of the phased whitened flux time series averaged in one cadence wide bins are plotted in bigger blue dots. When all transits fit completes with full or secondary convergence, the averaged values of the phased whitened fitted model light curve are plotted in red dots. Transit event markers in different colors indicate the locations of the transits of all planet candidates. The transits of the same planet candidate are labeled with the markers of the same color, for example, blue markers for transits of plane candidate #1, red markers for transits of planet candidate #2, etc.
Open `./summary-plots/0000000307210830-01-phased-whitened-flux-time-series.fig`



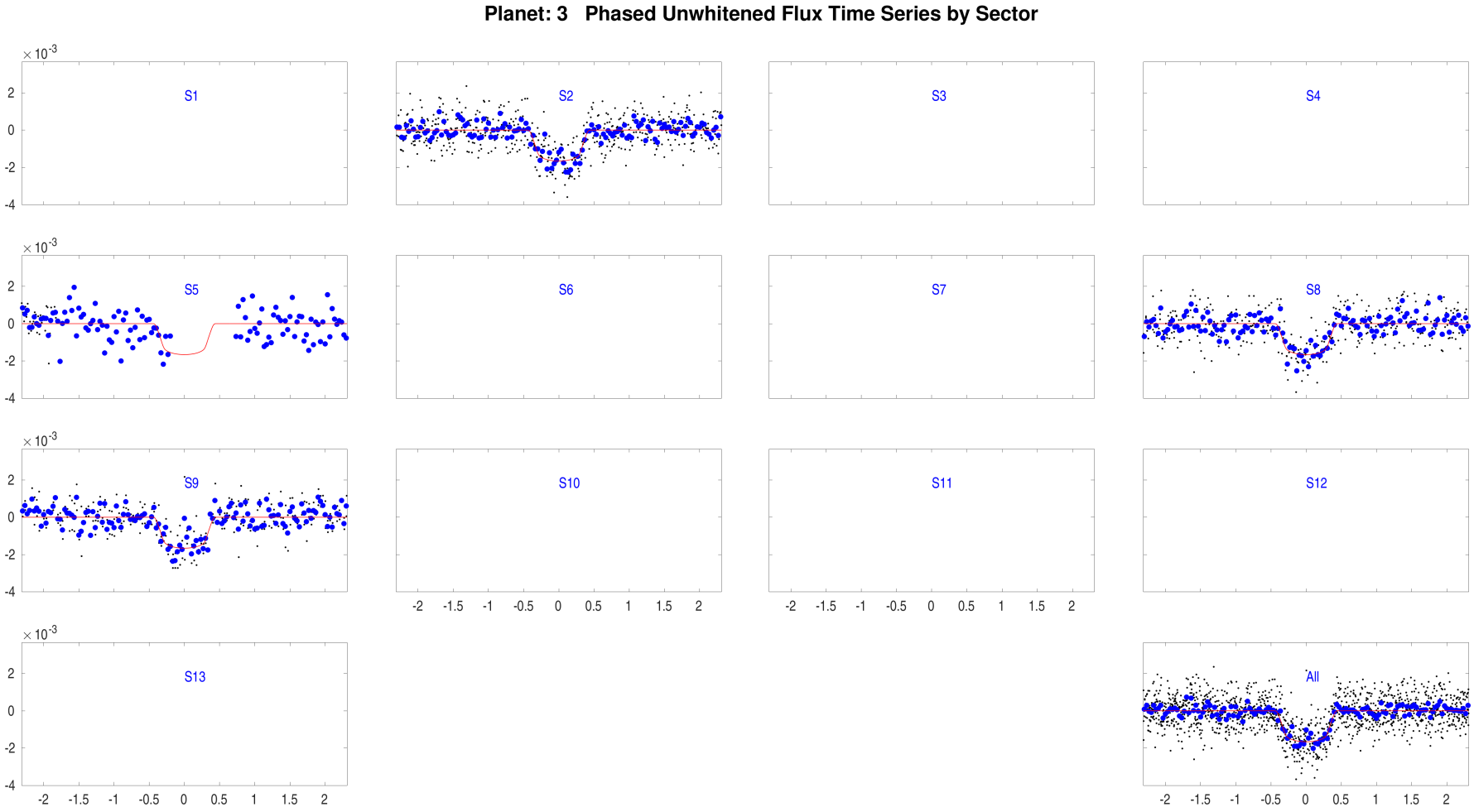
Phased whitened flux time series is plotted in black dots. When all transits fit completed with full or secondary convergence, the phase is determined with the fitted epoch and period; otherwise, the phase is determined with the TPS epoch and period. The values of the phased whitened flux time series averaged in one cadence wide bins are plotted in bigger blue dots. When all transits fit completes with full or secondary convergence, the averaged values of the phased whitened fitted model light curve are plotted in red dots. Transit event markers in different colors indicate the locations of the transits of all planet candidates. The transits of the same planet candidate are labeled with the markers of the same color, for example, blue markers for transits of plane candidate #1, red markers for transits of planet candidate #2, etc.
Open `./summary-plots/0000000307210830-03-phased-whitened-flux-time-series.fig`



Phased unwhitened flux time series by sector for target 307210830, planet candidate 1. Period = 3.6906 days; transit epoch = 1356.204 BTJD.
Open `./summary-plots/0000000307210830-01-phased-unwhitened-flux-time-series-by-sector.fig`



Phased unwhitened flux time series by sector for target 307210830, planet candidate 2. Period = 2.2531 days; transit epoch = 1354.9052 BTJD.
Open `./summary-plots/0000000307210830-02-phased-unwhitened-flux-time-series-by-sector.fig`



Phased unwhitened flux time series by sector for target 307210830, planet candidate 3. Period = 7.4508 days; transit epoch = 1355.2871 BTJD.
Open `./summary-plots/0000000307210830-03-phased-unwhitened-flux-time-series-by-sector.fig`

7 Planet Candidate 1

7.1 Model Fitter: All Transits

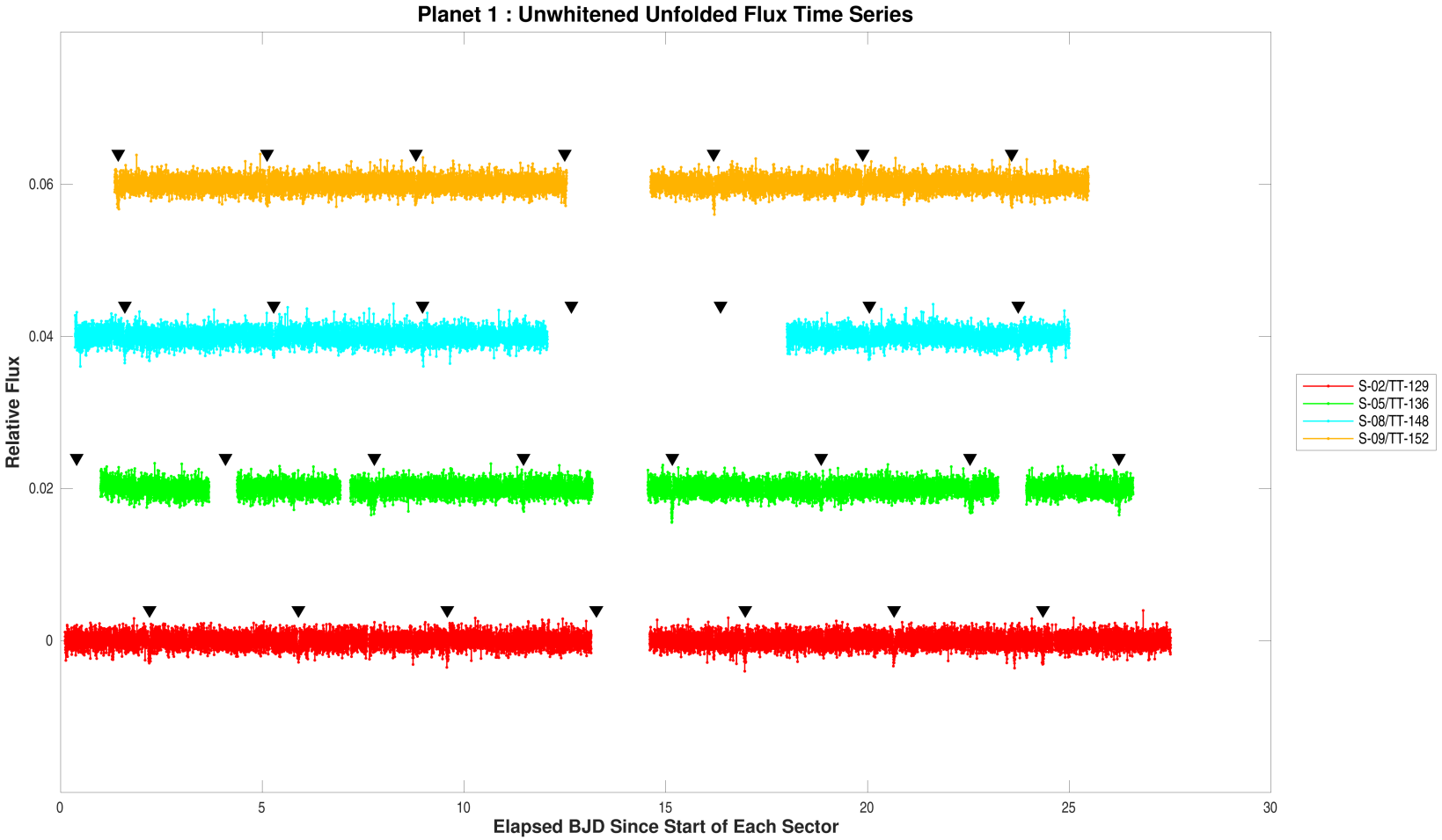
Model Characteristic	Name
Transit Model	mandel-agol_geometric_transit_model
Limb Darkening Model	claret_tess_nonlinear_limb_darkening_model

TCE Parameter	Value	Units
Trial Transit Pulse Duration	1.5	hours
Transit Epoch	1356.2068387	TJD
Orbital Period	3.6905041	days
Maximum SES	13.2	
Maximum MES	38.1	
Robust Statistic	40.7	
Chi Square Goodness of Fit Statistic (DoF)	1501.9 (1072)	
Chi Square2 Statistic (DoF)	145.2 (162.5)	
Threshold for Desired PFA		

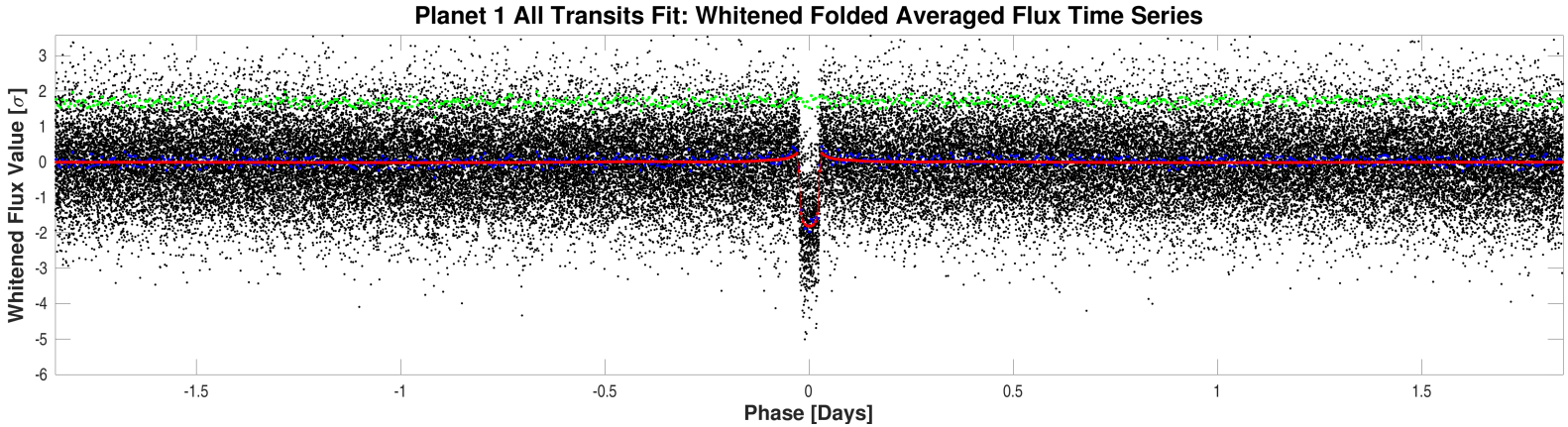
DoF: Degrees of Freedom

Parameter	Value	Uncertainty	Units
SNR	46.2		
Orbital Period	3.6906051	1.0552e-05	days
Transit Epoch	1356.2039994	3.4444e-04	BTJD
Impact Parameter	0.0906	1.2946e+01	
Planet Radius to Star Radius Ratio	0.0390232	8.4360e-03	
Semi-major Axis to Star Radius Ratio	23.6337	2.7853e+01	
Planet Radius	1.3334	2.9080e-01	Earth radii
Semi-major Axis	0.0317	1.5568e-03	AU
Effective Stellar Flux	12.6559	1.5344e+00	Goldilocks
Equilibrium Temperature	481	1.4580e+01	Kelvin
Stellar Density	13.0208	4.6035e+01	Solar density
Transit Depth	1790	4.4939e+01	ppm
Transit Duration	1.2352	1.1657e-01	hours
Transit Ingress Duration	0.0468	1.2077e-01	hours
Eccentricity	0.0000	0.0000e+00	
Peri Longitude	0.0000	0.0000e+00	degrees
Model Chi Square Statistic (DoF)	3788.8 (4448.3)		
Model Chi Square Goodness of Fit Statistic (DoF)	620.2 (970)		
Model Chi Square2 Statistic (DoF)	35.2 (23)		

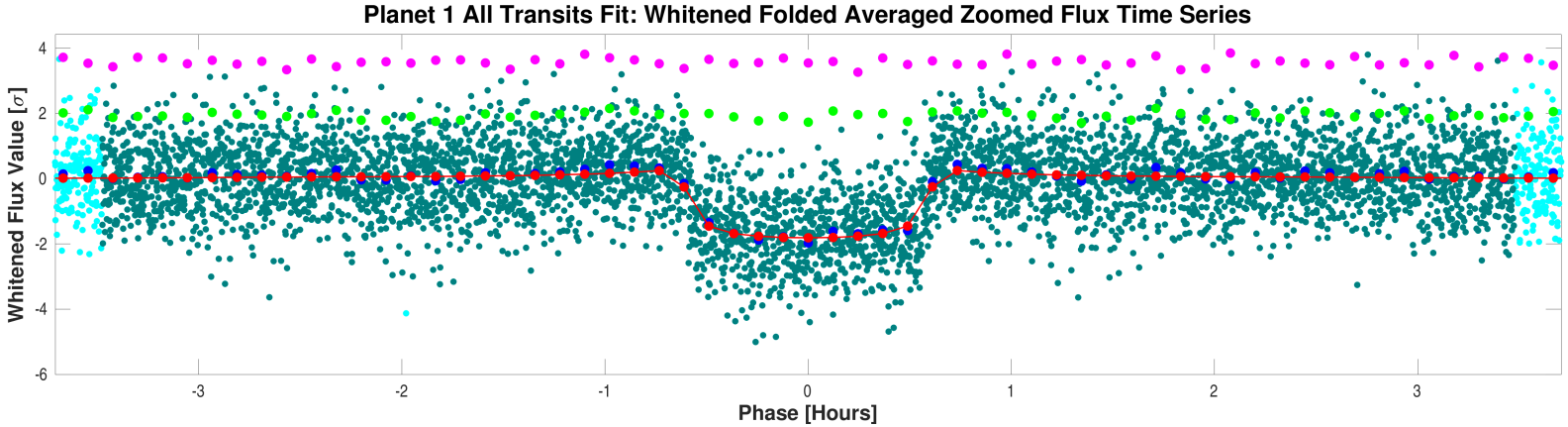
DoF: Degrees of Freedom



Flux time series for CatId 307210830, Planet candidate 1 in the unwhitened domain. For the data of Sector-02/TargetTableId-129, start BJD is 2458354 and the vertical offset is 0. For the data of Sector-05/TargetTableId-136, start BJD is 2458437 and the vertical offset is 0.02. For the data of Sector-08/TargetTableId-148, start BJD is 2458517 and the vertical offset is 0.04. For the data of Sector-09/TargetTableId-152, start BJD is 2458543 and the vertical offset is 0.06. Transit event markers indicate the location of transits of the given planet candidate. All transits fit completed with full convergence.
Open `./planet-01/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-01-all-unwhitened-02-129.fig`



Folded flux time series for CatId 307210830, Planet candidate 1 in the whitened domain is plotted in black dots. Values are averaged into 1 cadence wide bins. The blue dots represent the averaged values of the folded flux time series; the red dots represent the averaged values of the folded model light curve of the all transits fit; the green dots are the averaged folded fit residuals, vertically offset for clarity. All transits fit completed with full convergence.
Open `./planet-01/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-01-all-whitened.fig`

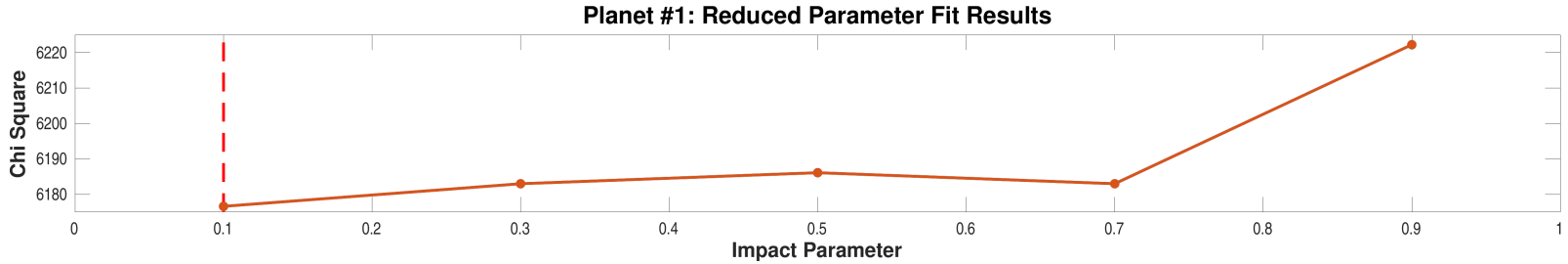


Folded flux time series for CatId 307210830, Planet candidate 1 in the whitened domain, zoomed on the transit. The flux data whose robust weights are larger/smaller than 0.1 are plotted in dark green/cyan dots, respectively. Values are averaged into 1 cadence wide bins. The blue dots represent the averaged values of the folded flux time series; the red dots represent the averaged values of the fitted model light curve of the all transits fit; the green dots are the averaged folded fit residuals, vertically offset for clarity. Magenta dots are the averaged values of the folded flux time series, with a phase shift of 0.5 relative to the blue dots, vertically offset for clarity. All transits fit completed with full convergence.
Open `./planet-01/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-01-all-whitened-zoomed.fig`

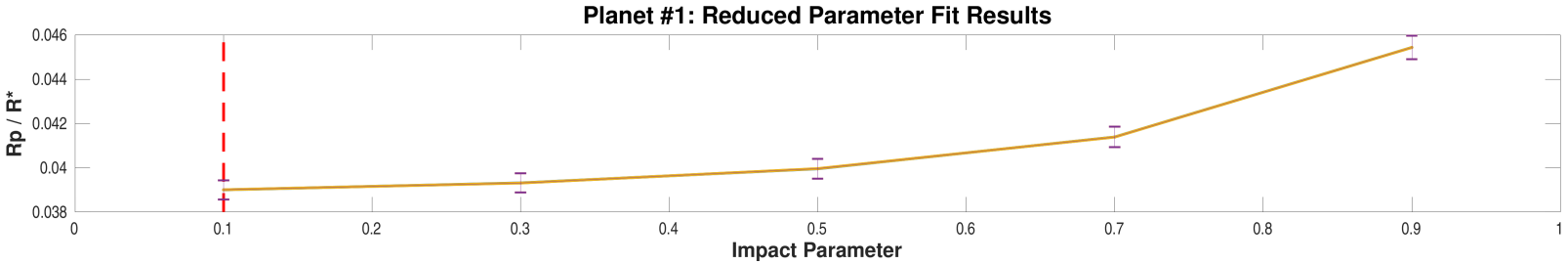
7.2 Model Fitter: Reduced Parameter Fit Results

Impact Parameter	SNR	Model Chi Square	Planet Radius to Star Radius	Uncert	Semi-major Axis to Star Radius	Uncert	Transit Depth (ppm)	Uncert	Transit Duration (hours)	Uncert
0.10	48.5	6176.6	0.0390041	4.3149e-04	23.6546	2.4970e-01	1788	3.9348e+01	1.2331	1.2934e-02
0.30	48.5	6183.0	0.0393162	4.3552e-04	22.7015	2.4127e-01	1789	3.9425e+01	1.2363	1.3052e-02
0.50	48.4	6186.1	0.0399549	4.4307e-04	20.4756	2.1898e-01	1784	3.9351e+01	1.2564	1.3335e-02
0.70	48.4	6183.0	0.0413906	4.6110e-04	16.9098	1.8807e-01	1785	3.9535e+01	1.2871	1.4175e-02
0.90	47.6	6222.2	0.0454335	5.3320e-04	10.4969	1.5483e-01	1795	4.1728e+01	1.4346	2.0755e-02

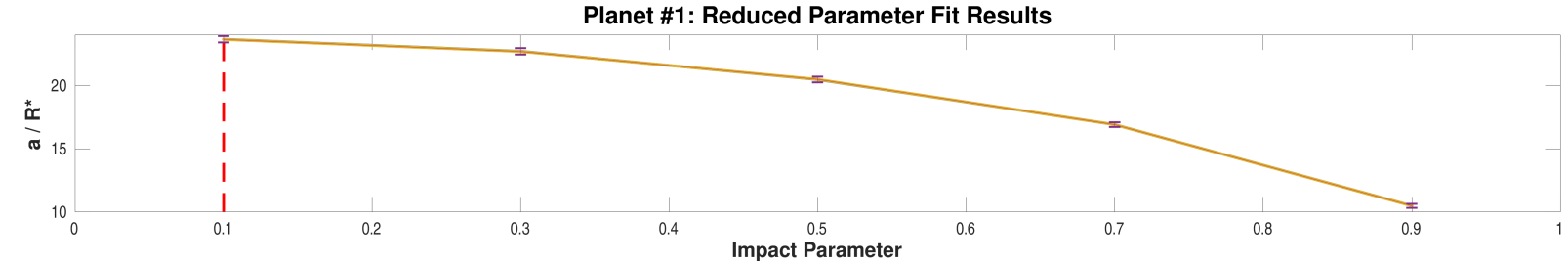
Highlighted row is the best reduced-parameter model fit.



Model chi squares of reduced parameter fits vs. impact parameter for CatId 307210830, Planet candidate 1. The fit result with the minimum chi square is marked with a dashed line in the plot.
Open `./planet-01/planet-search-and-model-fitting-results/reduced-parameter-fits/0000000307210830-01-reduced-fits-chi-square.fig`



Ratios of planet radius to star radius of reduced parameter fits vs. impact parameter for CatId 307210830, Planet candidate 1. The fit result with the minimum chi square is marked with a dashed line in the plot.
Open `./planet-01/planet-search-and-model-fitting-results/reduced-parameter-fits/0000000307210830-01-reduced-fits-rp-over-rstar.fig`



Ratios of semimajor axis to star radius of reduced parameter fits vs. impact parameter for CatId 307210830, Planet candidate 1. The fit result with the minimum chi square is marked with a dashed line in the plot.
Open `./planet-01/planet-search-and-model-fitting-results/reduced-parameter-fits/0000000307210830-01-reduced-fits-a-over-rstar.fig`

7.3 Model Fitter: Trapezoidal Fit Results

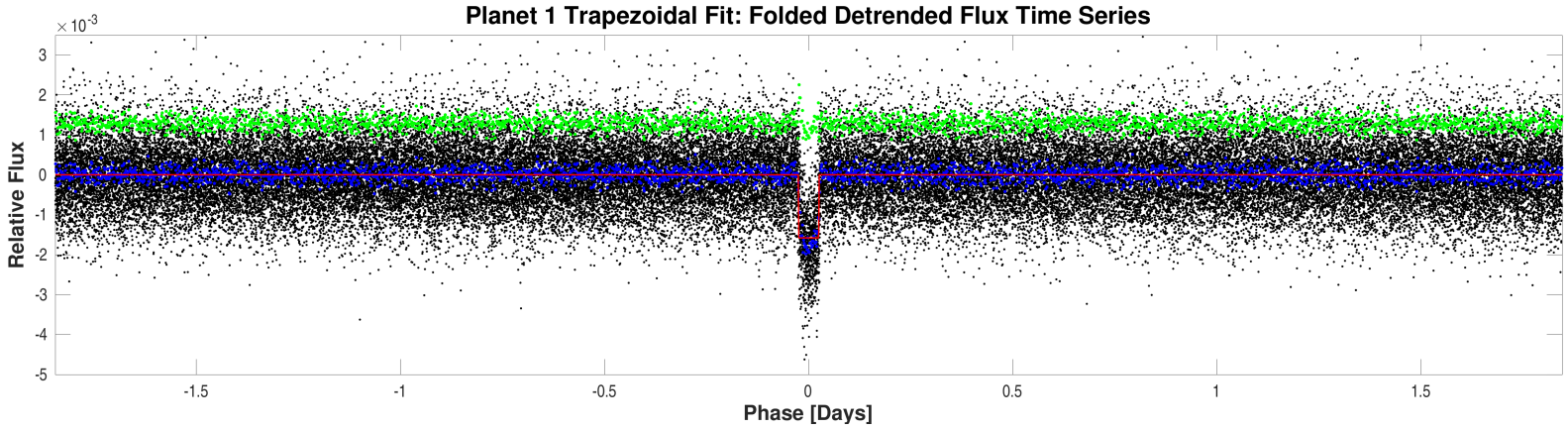
Model Characteristic	Name
Transit Model	trapezoidal_model
Limb Darkening Model	

TCE Parameter	Value	Units
Trial Transit Pulse Duration	1.5	hours
Transit Epoch	1356.2068387	TJD
Orbital Period	3.6905041	days
Maximum SES	13.2	
Maximum MES	38.1	
Robust Statistic	40.7	
Chi Square Goodness of Fit Statistic (DoF)	1501.9 (1072)	
Chi Square2 Statistic (DoF)	145.2 (162.5)	
Threshold for Desired PFA		

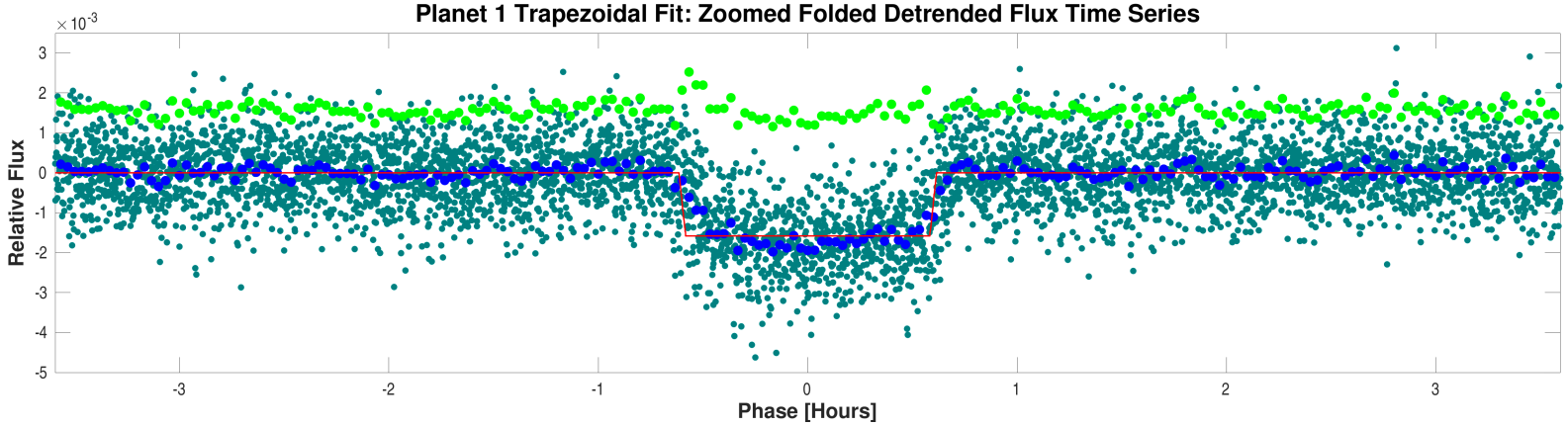
DoF: Degrees of Freedom

Parameter	Value	Uncertainty	Units
SNR	60.1		
Orbital Period	3.6905041		days
Transit Epoch	1356.2062607		BTJD
Transit Depth	1581		ppm
Transit Duration	1.1977		hours
Transit Ingress Duration	0.0000		hours
Model Chi Square Statistic (DoF)	66479.9 (8381)		

DoF: Degrees of Freedom



Folded detrended flux time series for CatId 307210830, Planet candidate 1 and folded trapezoidal model light curve.
Open `./planet-01/planet-search-and-model-fitting-results/trapezoidal-model-fit/0000000307210830-01-all-trapezoidal.fig`



Zoomed folded detrended flux time series for CatId 307210830, Planet candidate 1 and folded trapezoidal model light curve.
Open `./planet-01/planet-search-and-model-fitting-results/trapezoidal-model-fit/0000000307210830-01-all-trapezoidal-zoomed.fig`

7.4 Validation Tests

The Centroid Test and Eclipsing Binary Discrimination Test are chi-squared hypothesis tests. For these tests, a significance of 100% favors a planet, while 0% indicates an unlikely planet.

7.4.1 Weak Secondary Test

Result	Value	Uncertainty	Units	Statistic in Sigmas	Significance (%)
Orbital Period	3.6905		days		
Transit Duration	1.5		hours		
Maximum MES	38.1				
Secondary Phase	-0.90833		days		
Secondary MES	2.9				
Minimum Phase	-0.44861		days		
Minimum MES	-2.4				
Median MES	-0.1				
MAD MES	0.59408				
Robust Statistic	2.7				
Secondary Depth	97.1	3.5948e+01	ppm		
Geometric Albedo	30.2	1.7404e+01		1.6768	4.68
Planet Effective Temperature	1743	2.5039e+02	Kelvin	5.0326	0.00

7.4.2 Eclipsing Binary Discrimination Test

Result	Value	Value in Sigmas	Significance (%)
Odd Even Transit Depth Comparison Statistic	1.0331e-01	0.3214	74.79
Shorter Period Comparison Statistic	4.4687e+02	21.1393	100.00
Longer Period Comparison Statistic	3.8434e+03	61.9953	100.00

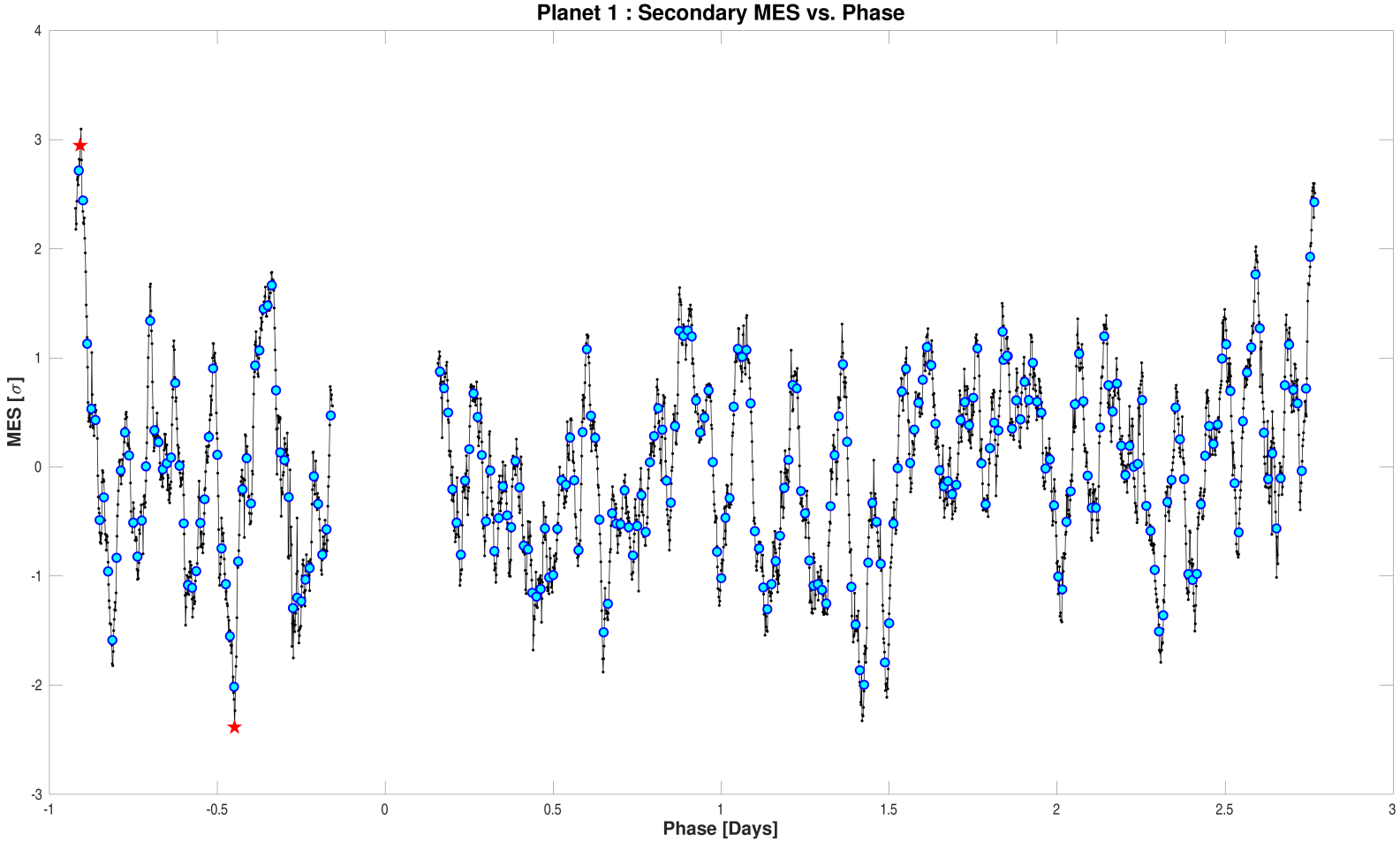
7.4.3 Bootstrap Test

Result	Value
False Alarm Probability	0.0000e+00
Bootstrap Threshold for Desired PFA	6.8
MES Mean	-0.20
MES Standard Deviation	0.99
Transit Count	58

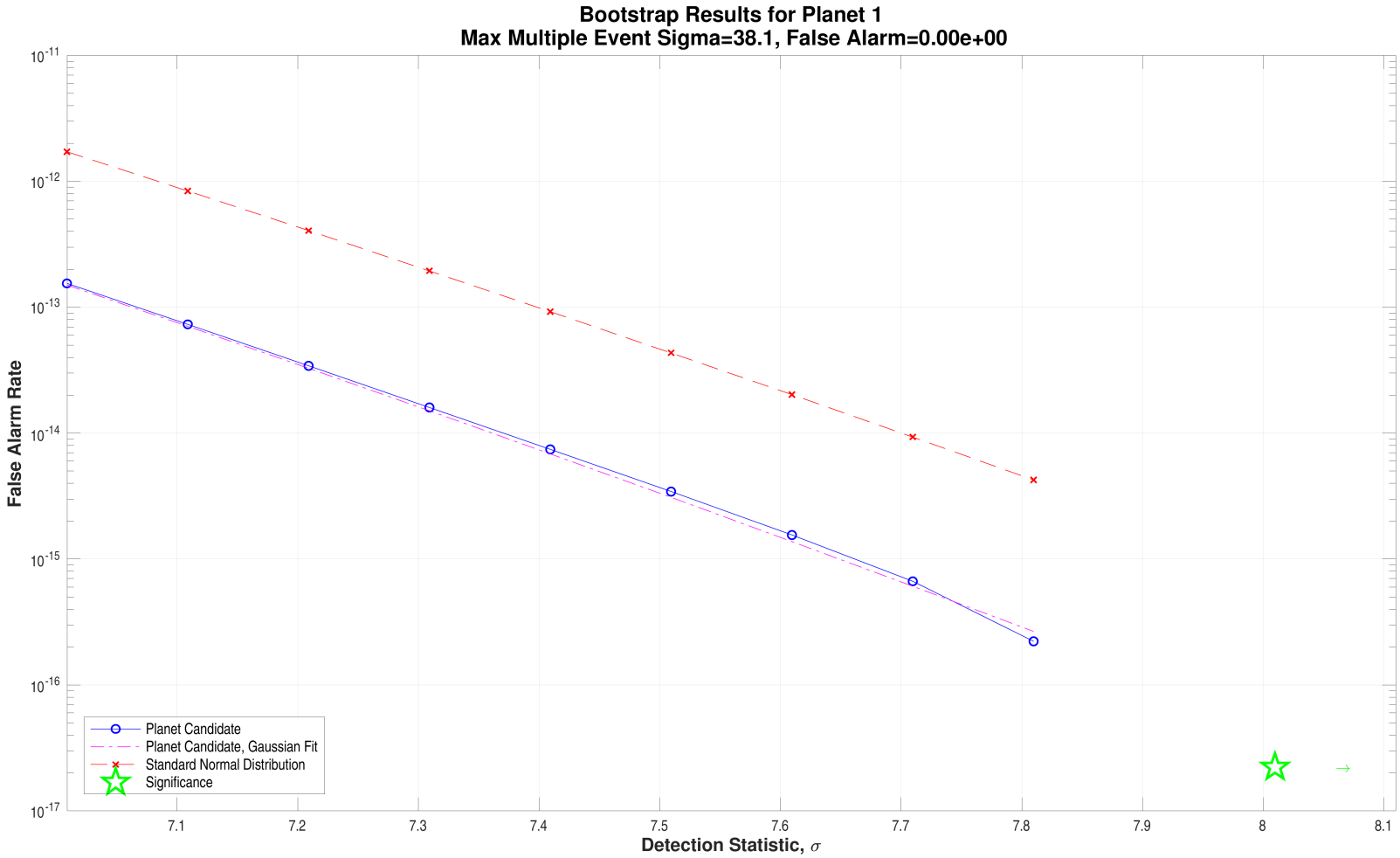
7.4.4 Ghost Diagnostic Test

Result	Value	Significance (%)
Maximum MES	38.1	
SNR	46.2	
Core Aperture Statistic	3.1386e+01	100.00
Halo Aperture Statistic	5.3692e+00	100.00
Ratio of Core/Halo Aperture Statistics	5.8456e+00	

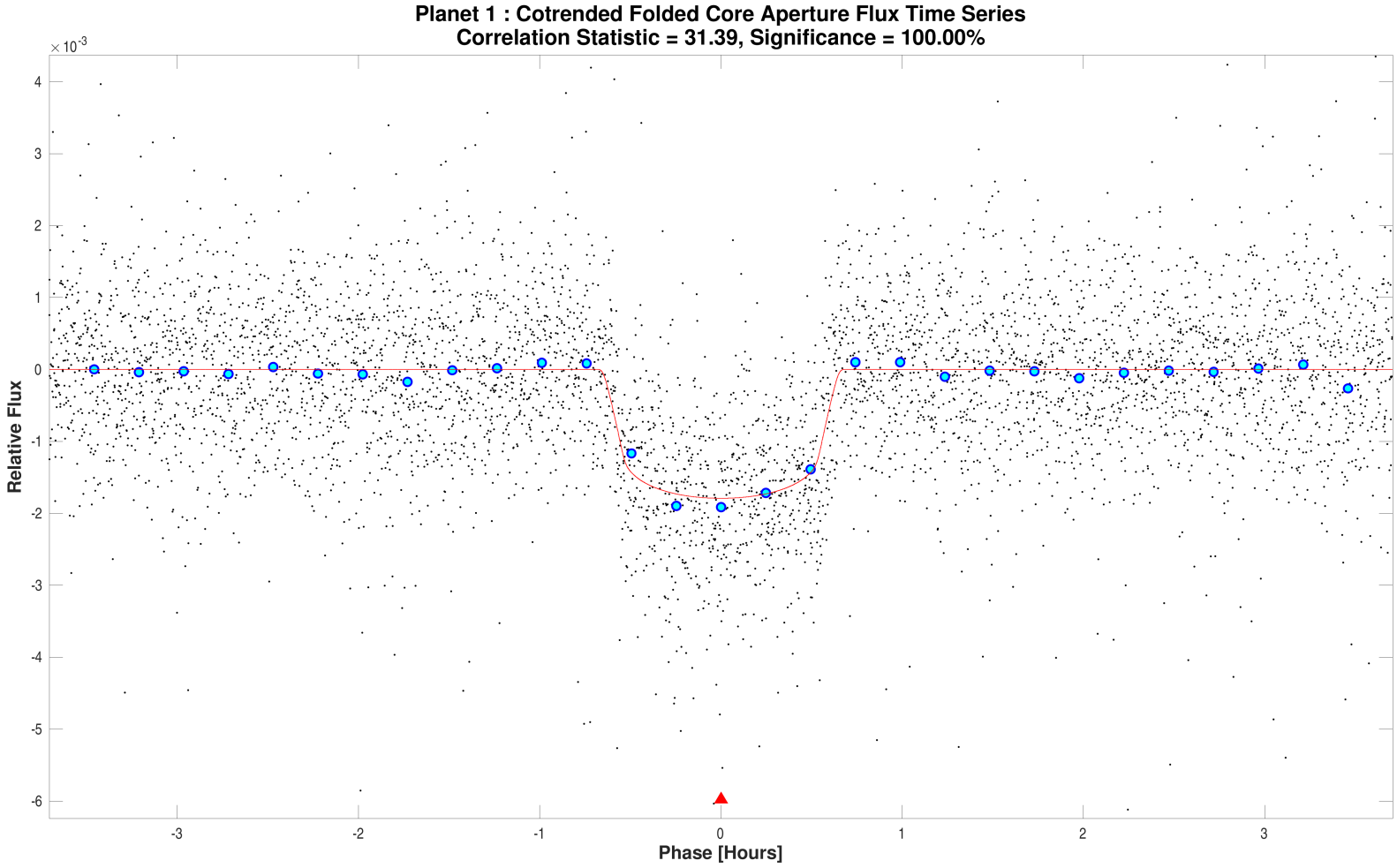
7.4.5 Validation Test Figures



The primary event has been set to zero and both the max and min of the resulting MES vs. Phase are marked with a red star. The best matched pulse duration in hours is 1.5. The maximum secondary MES and corresponding phase are 2.9462 and -0.90833 days respectively. The minimum secondary MES and corresponding phase are -2.3846 and -0.44861 days respectively.
Open `./planet-01/report-summary/0000000307210830-01-weak-secondary-diagnostic.fig`

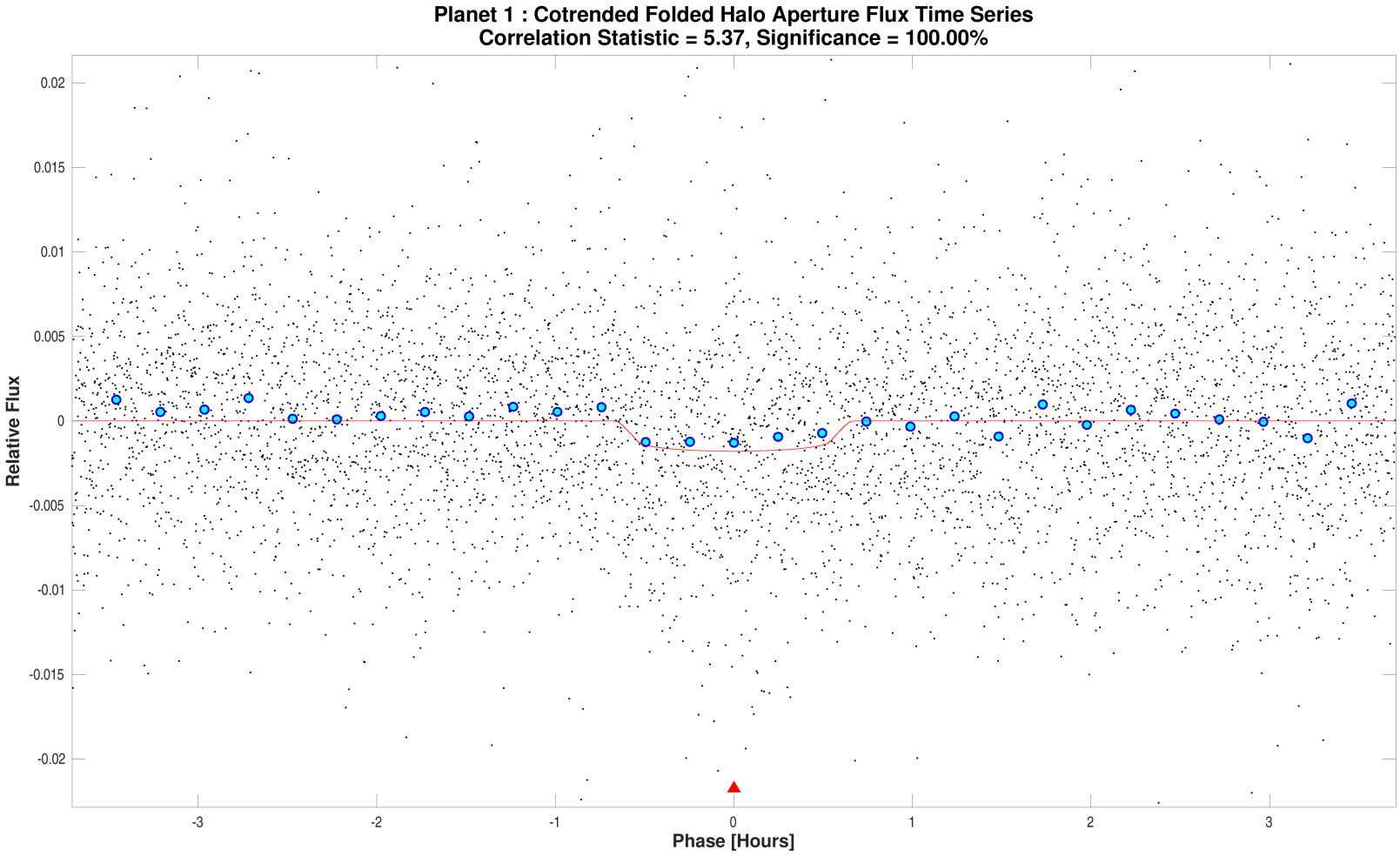


Bootstrap results for target 307210830, planet 1. Cumulative sum of the probabilities (derived from the histogram of counts) from upper tail to the search transit threshold; false alarm probability is indicated by the star. The Gaussian equivalent threshold for this false alarm probability is Inf. The threshold on this distribution that achieves the same false alarm rate as a 7.1 sigma threshold on a Gaussian distribution is 6.823.
Open `./planet-01/bootstrap-results/0000000307210830-01-bootstrap-false-alarm.fig`



Optical ghost diagnostic core aperture flux time series for target 307210830, planet candidate 1. The unwhitened time series is phase folded at the orbital period associated with the planet candidate and centered on the epoch of the first transit. The time series was first cotrended against spacecraft engineering data, motion proxies, and/or cotrending basis vectors (CBVs) to remove systematic effects. Flux time series data represent the mean per pixel flux in the core or haloaperture; phase folded data points are shown in the figure with black dots. Binned and averaged phase folded flux values are marked with filled blue circles. The unwhitened transit model light curve is displayed in the figure with a red line. The value and significance of the core aperture correlation statistic are displayed in the figure title if the statistic was successfully computed.

Open `./planet-01/ghost-diagnostic-results/0000000307210830-01-core-unwhitened-cotrended-zoomed-model.fig`



Optical ghost diagnostic halo aperture flux time series for target 307210830, planet candidate 1. The unwhitened time series is phase folded at the orbital period associated with the planet candidate and centered on the epoch of the first transit. The time series was first cotrended against spacecraft engineering data, motion proxies, and/or cotrending basis vectors (CBVs) to remove systematic effects. Flux time series data represent the mean per pixel flux in the core or haloaperture; phase folded data points are shown in the figure with black dots. Binned and averaged phase folded flux values are marked with filled blue circles. The unwhitened transit model light curve is displayed in the figure with a red line. The value and significance of the halo aperture correlation statistic are displayed in the figure title if the statistic was successfully computed.

Open `./planet-01/ghost-diagnostic-results/0000000307210830-01-halo-unwhitened-cotrended-zoomed-model.fig`

8 Planet Candidate 2

8.1 Model Fitter: All Transits

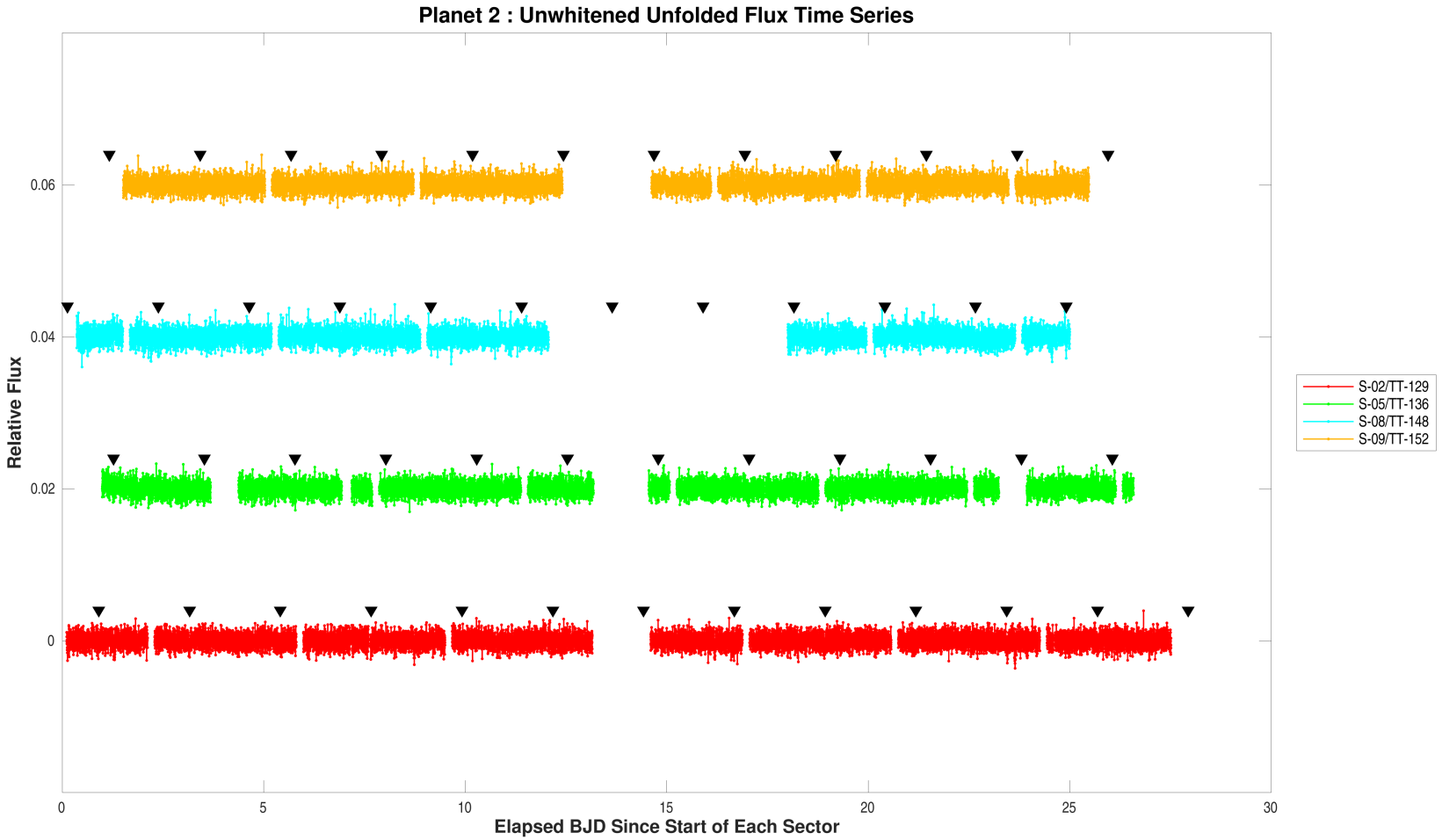
Model Characteristic	Name
Transit Model	mandel-agol_geometric_transit_model
Limb Darkening Model	claret_tess_nonlinear_limb_darkening_model

TCE Parameter	Value	Units
Trial Transit Pulse Duration	1.0	hours
Transit Epoch	1354.9075335	TJD
Orbital Period	2.2530803	days
Maximum SES	10.6	
Maximum MES	18.1	
Robust Statistic	18.8	
Chi Square Goodness of Fit Statistic (DoF)	1083.3 (1130)	
Chi Square2 Statistic (DoF)	47.1 (66.8)	
Threshold for Desired PFA		

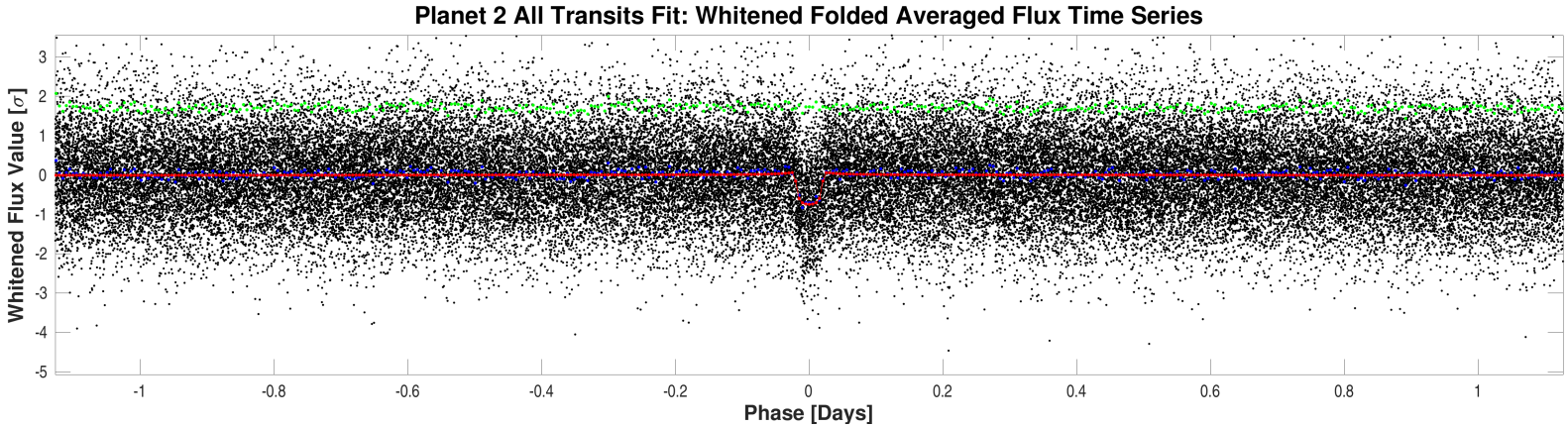
DoF: Degrees of Freedom

Parameter	Value	Uncertainty	Units
SNR	21.5		
Orbital Period	2.2531237	1.4321e-05	days
Transit Epoch	1354.9051736	6.8754e-04	BTJD
Impact Parameter	0.8985	8.6628e-02	
Planet Radius to Star Radius Ratio	0.0275095	2.1901e-03	
Semi-major Axis to Star Radius Ratio	8.0993	3.1941e+00	
Planet Radius	0.9400	7.9568e-02	Earth radii
Semi-major Axis	0.0228	1.1204e-03	AU
Effective Stellar Flux	24.4368	2.9626e+00	Goldilocks
Equilibrium Temperature	567	1.7187e+01	Kelvin
Stellar Density	1.4061	1.6635e+00	Solar density
Transit Depth	662	3.3892e+01	ppm
Transit Duration	1.0666	1.0584e-01	hours
Transit Ingress Duration	0.1353	1.2134e-01	hours
Eccentricity	0.0000	0.0000e+00	
Peri Longitude	0.0000	0.0000e+00	degrees
Model Chi Square Statistic (DoF)	5297.0 (6445.7)		
Model Chi Square Goodness of Fit Statistic (DoF)	830.8 (1413)		
Model Chi Square2 Statistic (DoF)	24.6 (39)		

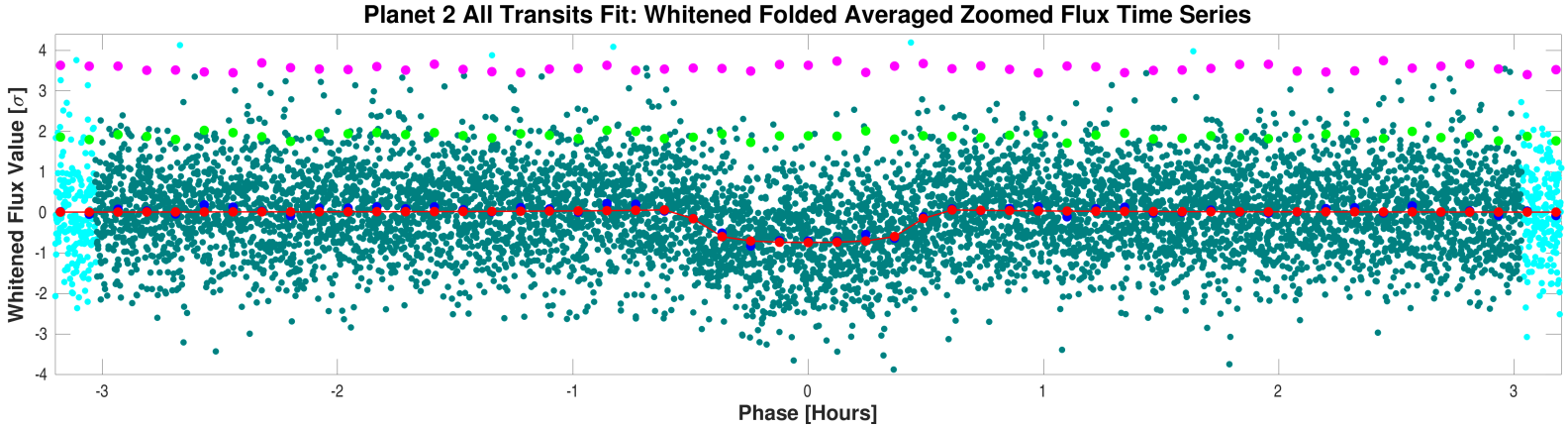
DoF: Degrees of Freedom



Flux time series for CatId 307210830, Planet candidate 2 in the unwhitened domain. For the data of Sector-02/TargetTableId-129, start BJD is 2458354 and the vertical offset is 0. For the data of Sector-05/TargetTableId-136, start BJD is 2458437 and the vertical offset is 0.02. For the data of Sector-08/TargetTableId-148, start BJD is 2458517 and the vertical offset is 0.04. For the data of Sector-09/TargetTableId-152, start BJD is 2458543 and the vertical offset is 0.06. Transit event markers indicate the location of transits of the given planet candidate. All transits fit completed with full convergence.
Open `./planet-02/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-02-all-unwhitened-02-129.fig`



Folded flux time series for CatId 307210830, Planet candidate 2 in the whitened domain is plotted in black dots. Values are averaged into 1 cadence wide bins. The blue dots represent the averaged values of the folded flux time series; the red dots represent the averaged values of the folded model light curve of the all transits fit; the green dots are the averaged folded fit residuals, vertically offset for clarity. All transits fit completed with full convergence.
Open `./planet-02/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-02-all-whitened.fig`

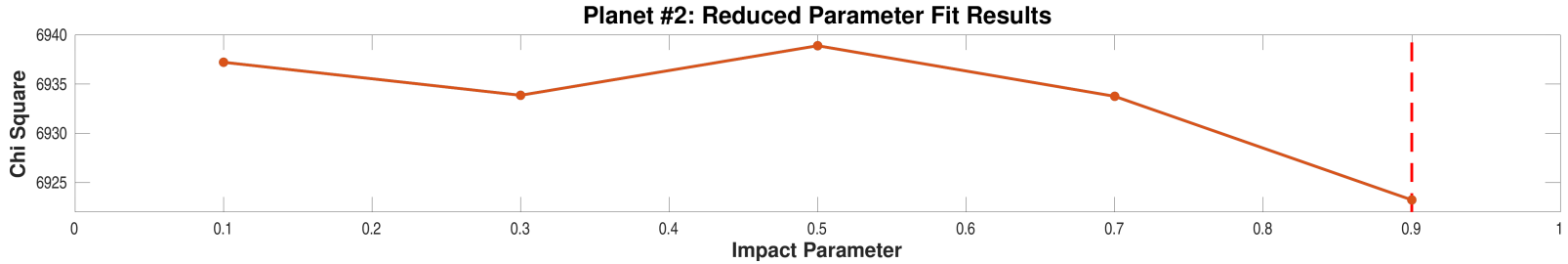


Folded flux time series for CatId 307210830, Planet candidate 2 in the whitened domain, zoomed on the transit. The flux data whose robust weights are larger/smaller than 0.1 are plotted in dark green/cyan dots, respectively. Values are averaged into 1 cadence wide bins. The blue dots represent the averaged values of the folded flux time series; the red dots represent the averaged values of the fitted model light curve of the all transits fit; the green dots are the averaged folded fit residuals, vertically offset for clarity. Magenta dots are the averaged values of the folded flux time series, with a phase shift of 0.5 relative to the blue dots, vertically offset for clarity. All transits fit completed with full convergence.
Open `./planet-02/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-02-all-whitened-zoomed.fig`

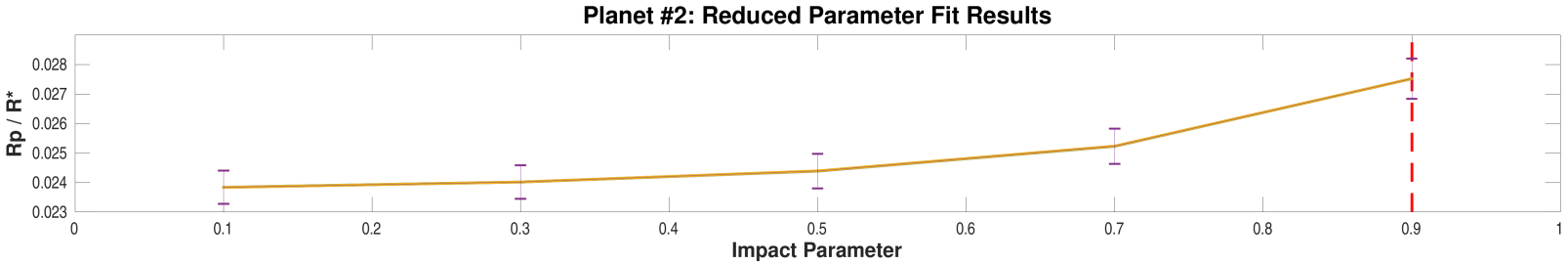
8.2 Model Fitter: Reduced Parameter Fit Results

Impact Parameter	SNR	Model Chi Square	Planet Radius to Star Radius	Uncert	Semi-major Axis to Star Radius	Uncert	Transit Depth (ppm)	Uncert	Transit Duration (hours)	Uncert
0.10	22.9	6937.2	0.0238384	5.6456e-04	18.0830	4.5744e-01	668	3.1455e+01	0.9704	2.4445e-02
0.30	22.9	6933.9	0.0240167	5.6938e-04	17.3354	4.3930e-01	667	3.1476e+01	0.9728	2.4543e-02
0.50	22.7	6938.9	0.0243865	5.8243e-04	15.7935	4.0725e-01	664	3.1565e+01	0.9754	2.5031e-02
0.70	22.6	6933.8	0.0252282	6.0037e-04	13.1142	3.3984e-01	663	3.1381e+01	0.9851	2.5370e-02
0.90	22.3	6923.2	0.0275164	6.7881e-04	8.1510	2.3809e-01	660	3.2343e+01	1.0540	3.0485e-02

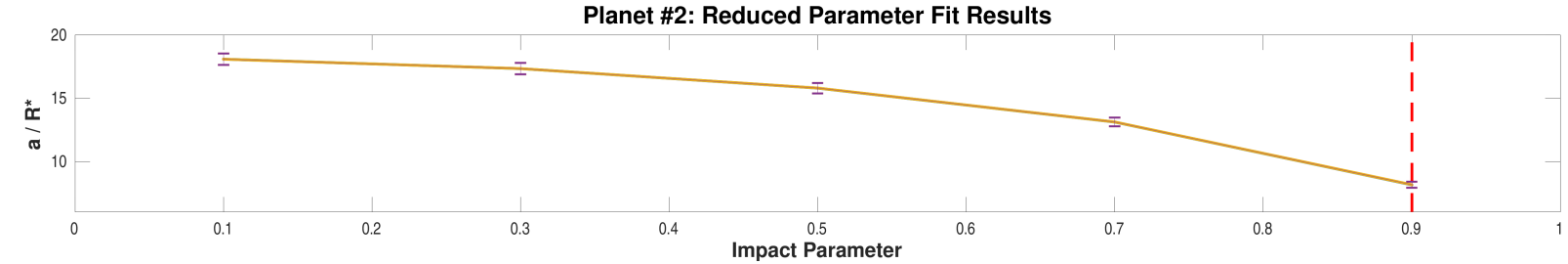
Highlighted row is the best reduced-parameter model fit.



Model chi squares of reduced parameter fits vs. impact parameter for CatId 307210830, Planet candidate 2. The fit result with the minimum chi square is marked with a dashed line in the plot.
Open `./planet-02/planet-search-and-model-fitting-results/reduced-parameter-fits/0000000307210830-02-reduced-fits-chi-square.fig`



Ratios of planet radius to star radius of reduced parameter fits vs. impact parameter for CatId 307210830, Planet candidate 2. The fit result with the minimum chi square is marked with a dashed line in the plot.
Open `./planet-02/planet-search-and-model-fitting-results/reduced-parameter-fits/0000000307210830-02-reduced-fits-rp-over-rstar.fig`



Ratios of semimajor axis to star radius of reduced parameter fits vs. impact parameter for CatId 307210830, Planet candidate 2. The fit result with the minimum chi square is marked with a dashed line in the plot.
Open `./planet-02/planet-search-and-model-fitting-results/reduced-parameter-fits/0000000307210830-02-reduced-fits-a-over-rstar.fig`

8.3 Model Fitter: Trapezoidal Fit Results

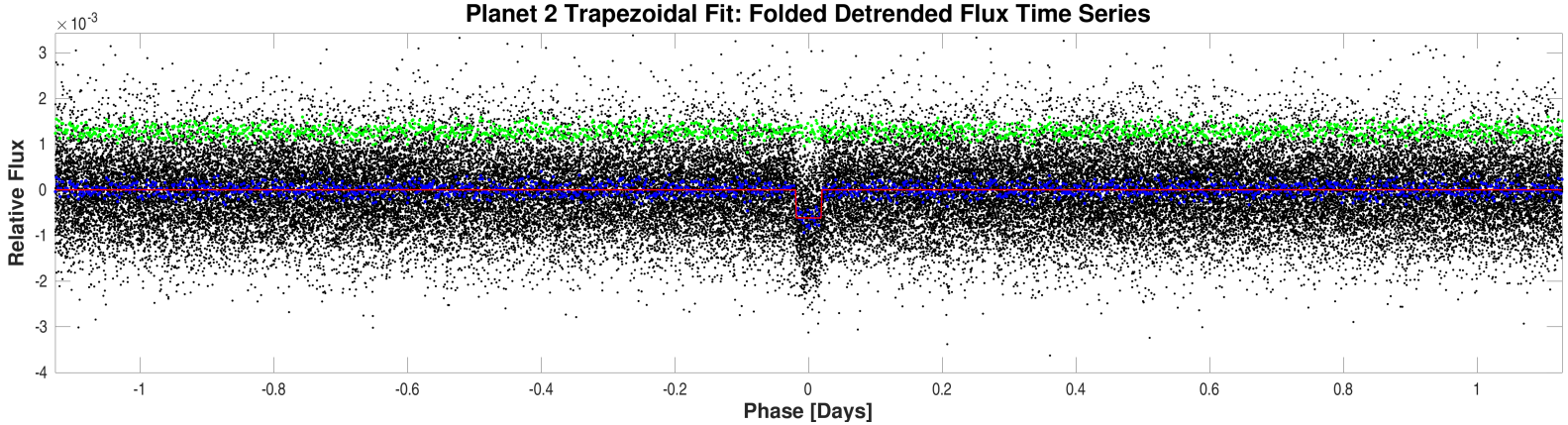
Model Characteristic	Name
Transit Model	trapezoidal_model
Limb Darkening Model	

TCE Parameter	Value	Units
Trial Transit Pulse Duration	1.0	hours
Transit Epoch	1354.9075335	TJD
Orbital Period	2.2530803	days
Maximum SES	10.6	
Maximum MES	18.1	
Robust Statistic	18.8	
Chi Square Goodness of Fit Statistic (DoF)	1083.3 (1130)	
Chi Square2 Statistic (DoF)	47.1 (66.8)	
Threshold for Desired PFA		

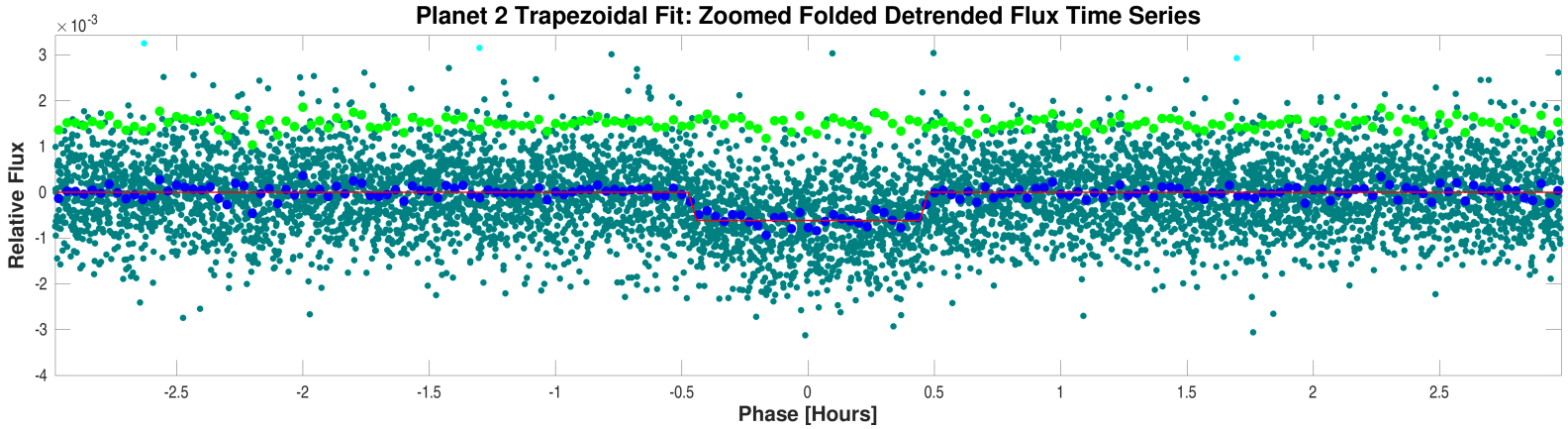
DoF: Degrees of Freedom

Parameter	Value	Uncertainty	Units
SNR	25.6		
Orbital Period	2.2530803		days
Transit Epoch	1354.9066924		BTJD
Transit Depth	616		ppm
Transit Duration	0.9933		hours
Transit Ingress Duration	0.0766		hours
Model Chi Square Statistic (DoF)	62866.2 (9264)		

DoF: Degrees of Freedom



Folded detrended flux time series for CatId 307210830, Planet candidate 2 and folded trapezoidal model light curve.
Open `./planet-02/planet-search-and-model-fitting-results/trapezoidal-model-fit/0000000307210830-02-all-trapezoidal.fig`



Zoomed folded detrended flux time series for CatId 307210830, Planet candidate 2 and folded trapezoidal model light curve.
Open `./planet-02/planet-search-and-model-fitting-results/trapezoidal-model-fit/0000000307210830-02-all-trapezoidal-zoomed.fig`

8.4 Validation Tests

The Centroid Test and Eclipsing Binary Discrimination Test are chi-squared hypothesis tests. For these tests, a significance of 100% favors a planet, while 0% indicates an unlikely planet.

8.4.1 Weak Secondary Test

Result	Value	Uncertainty	Units	Statistic in Sigmas	Significance (%)
Orbital Period	2.2531		days		
Transit Duration	1		hours		
Maximum MES	18.1				
Secondary Phase	-0.3625		days		
Secondary MES	2.5				
Minimum Phase	1.6725		days		
Minimum MES	-3.5				
Median MES	-0.1				
MAD MES	0.66703				
Robust Statistic	2.0				
Secondary Depth	67.7	3.2356e+01	ppm		
Geometric Albedo	21.9	1.1230e+01		1.8634	3.12
Planet Effective Temperature	1897	2.4181e+02	Kelvin	5.4868	0.00

8.4.2 Eclipsing Binary Discrimination Test

Result	Value	Value in Sigmas	Significance (%)
Odd Even Transit Depth Comparison Statistic	2.5904e+00	1.6095	10.75
Longer Period Comparison Statistic	4.4687e+02	21.1393	100.00

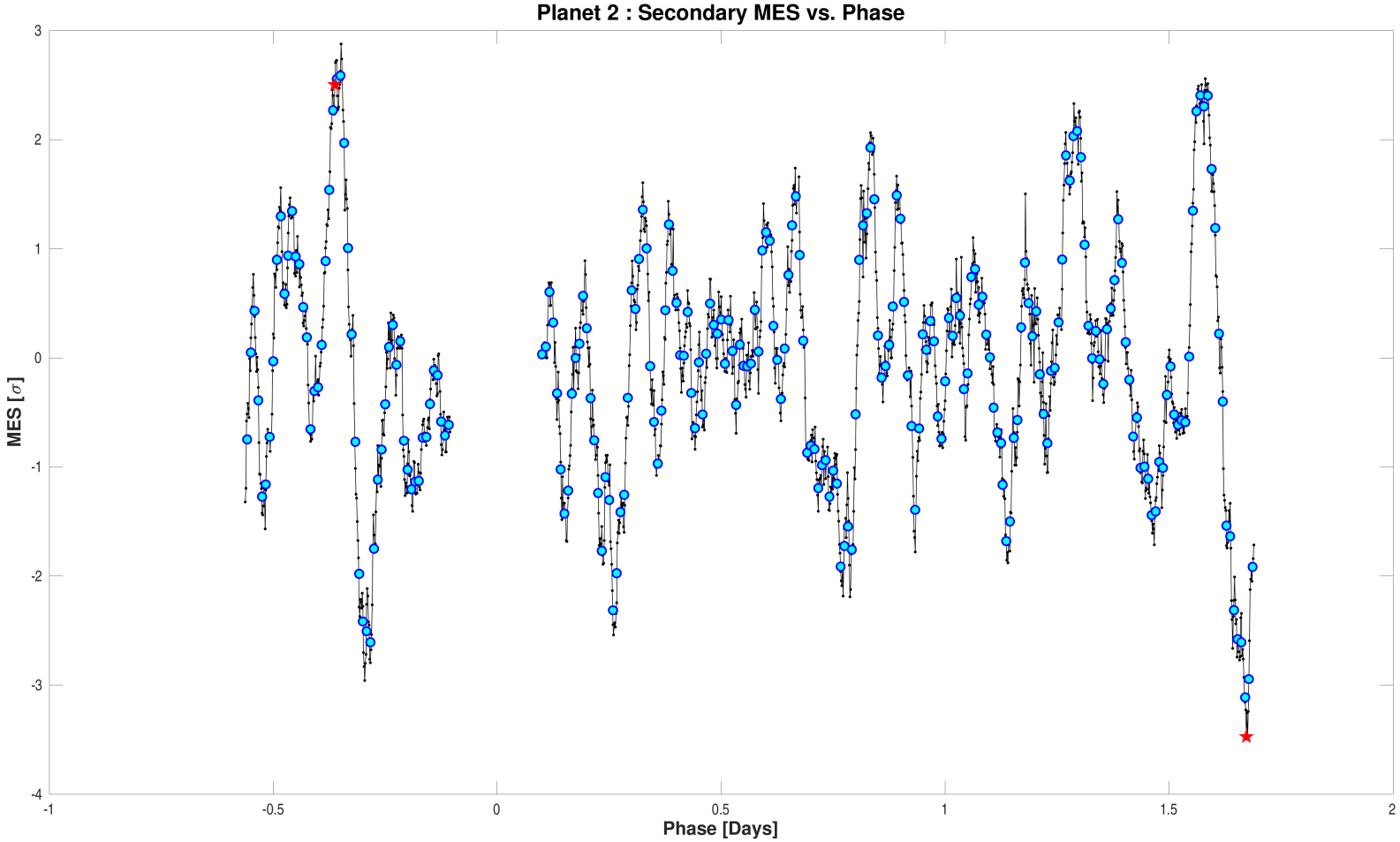
8.4.3 Bootstrap Test

Result	Value
False Alarm Probability	2.3130e-77
Bootstrap Threshold for Desired PFA	6.8
MES Mean	-0.24
MES Standard Deviation	0.99
Transit Count	95

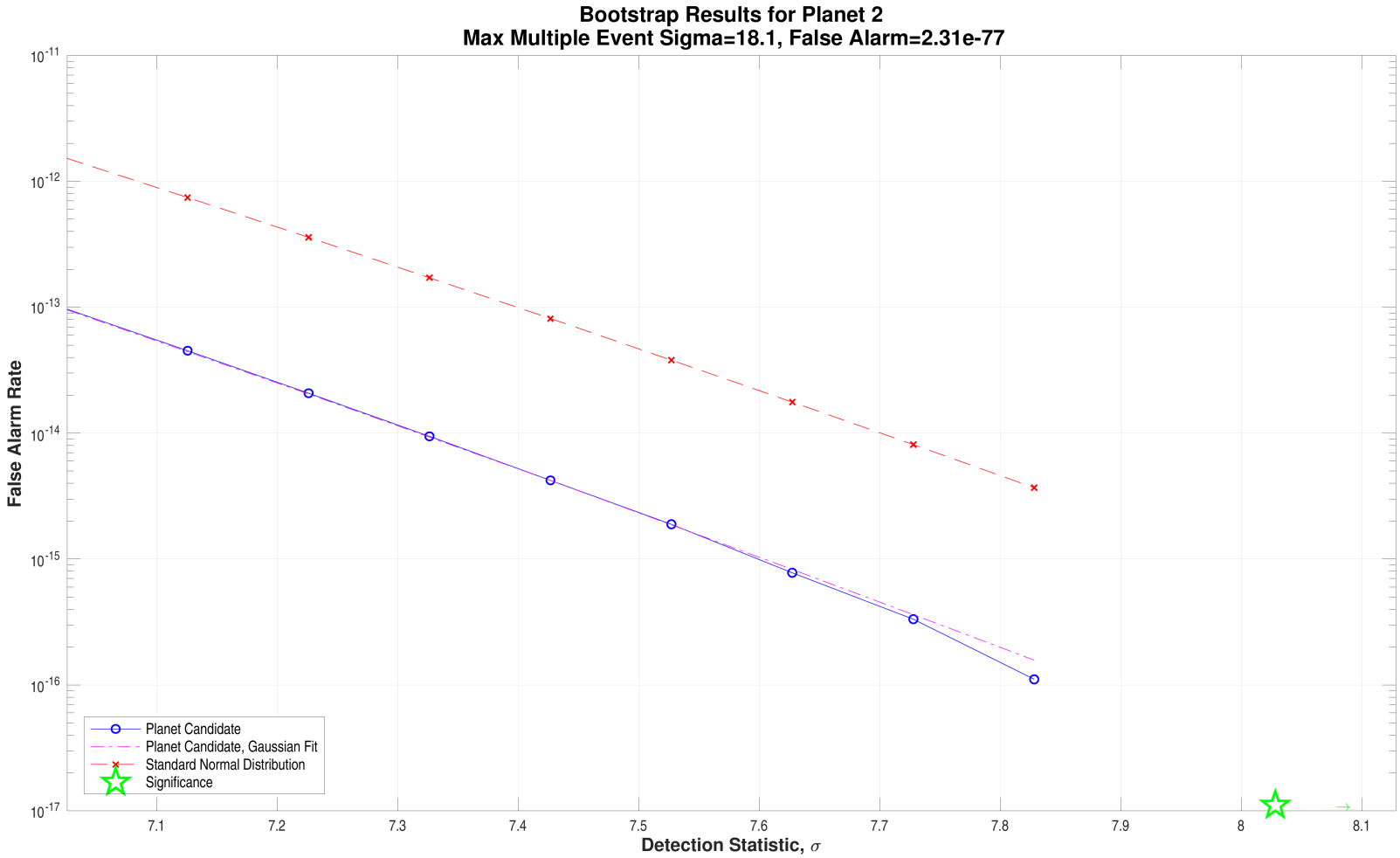
8.4.4 Ghost Diagnostic Test

Result	Value	Significance (%)
Maximum MES	18.1	
SNR	21.5	
Core Aperture Statistic	1.5669e+01	100.00
Halo Aperture Statistic	9.5151e-01	82.93
Ratio of Core/Halo Aperture Statistics	1.6467e+01	

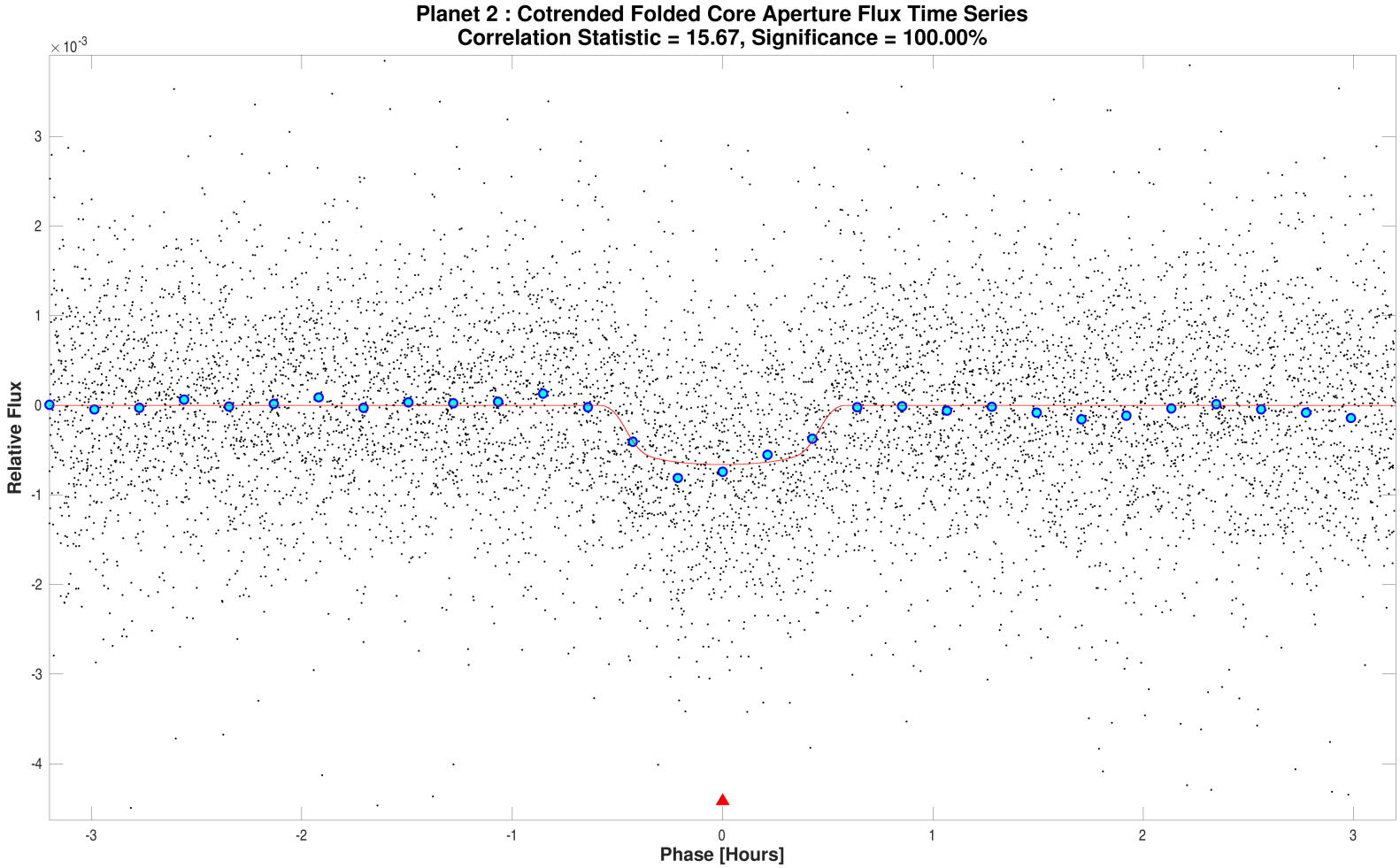
8.4.5 Validation Test Figures



The primary event has been set to zero and both the max and min of the resulting MES vs. Phase are marked with a red star. The best matched pulse duration in hours is 1. The maximum secondary MES and corresponding phase are 2.5027 and -0.3625 days respectively. The minimum secondary MES and corresponding phase are -3.4727 and 1.6725 days respectively.
Open `./planet-02/report-summary/0000000307210830-02-weak-secondary-diagnostic.fig`

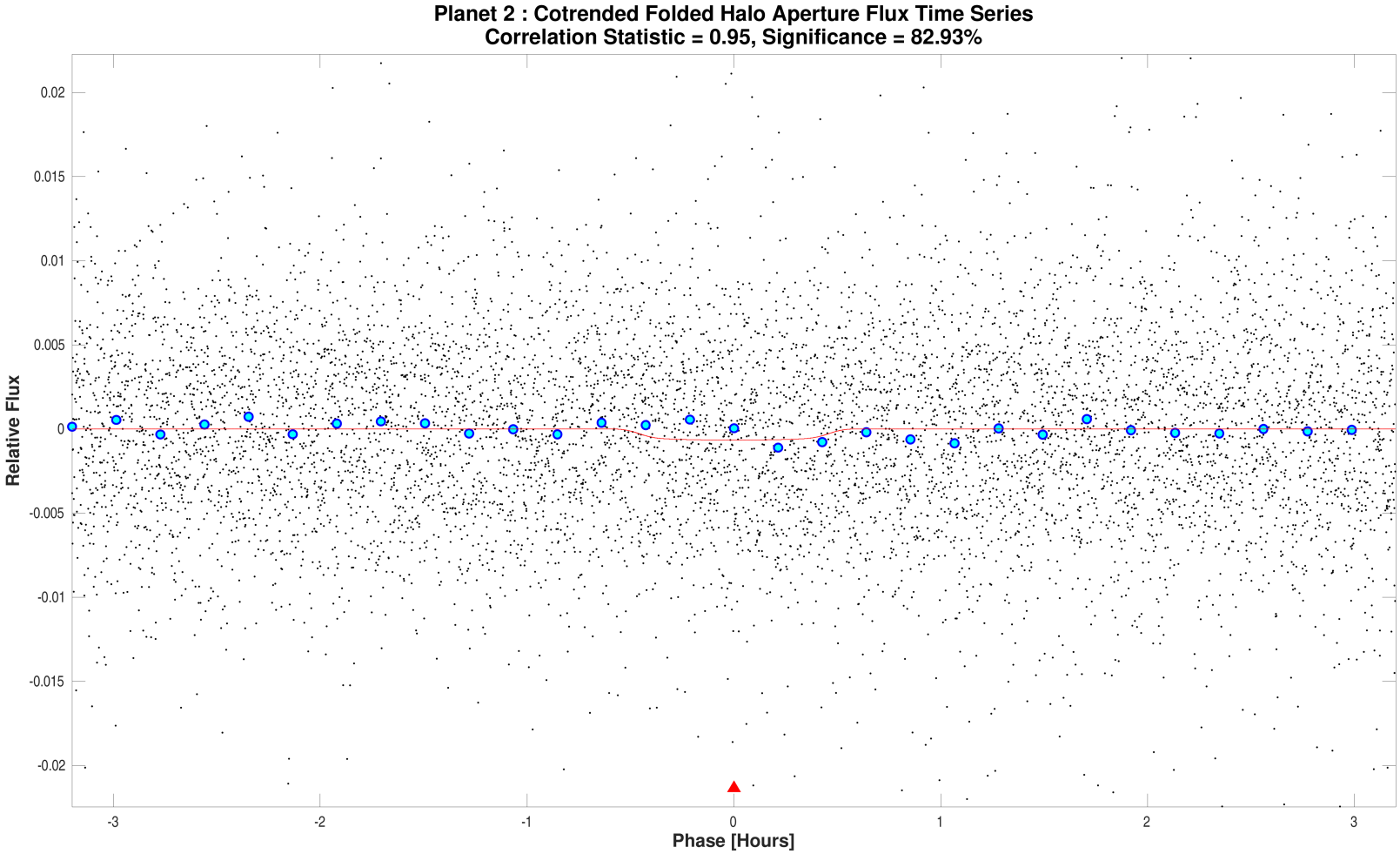


Bootstrap results for target 307210830, planet 2. Cumulative sum of the probabilities (derived from the histogram of counts) from upper tail to the search transit threshold; false alarm probability is indicated by the star. The Gaussian equivalent threshold for this false alarm probability is 18.5805. The threshold on this distribution that achieves the same false alarm rate as a 7.1 sigma threshold on a Gaussian distribution is 6.7834.
Open `./planet-02/bootstrap-results/0000000307210830-02-bootstrap-false-alarm.fig`



Optical ghost diagnostic core aperture flux time series for target 307210830, planet candidate 2. The unwhitened time series is phase folded at the orbital period associated with the planet candidate and centered on the epoch of the first transit. The time series was first cotrended against spacecraft engineering data, motion proxies, and/or cotrending basis vectors (CBVs) to remove systematic effects. Flux time series data represent the mean per pixel flux in the core or haloaperture; phase folded data points are shown in the figure with black dots. Binned and averaged phase folded flux values are marked with filled blue circles. The unwhitened transit model light curve is displayed in the figure with a red line. The value and significance of the core aperture correlation statistic are displayed in the figure title if the statistic was successfully computed.

Open `./planet-02/ghost-diagnostic-results/0000000307210830-02-core-unwhitened-cotrended-zoomed-model.fig`



Optical ghost diagnostic halo aperture flux time series for target 307210830, planet candidate 2. The unwhitened time series is phase folded at the orbital period associated with the planet candidate and centered on the epoch of the first transit. The time series was first cotrended against spacecraft engineering data, motion proxies, and/or cotrending basis vectors (CBVs) to remove systematic effects. Flux time series data represent the mean per pixel flux in the core or haloaperture; phase folded data points are shown in the figure with black dots. Binned and averaged phase folded flux values are marked with filled blue circles. The unwhitened transit model light curve is displayed in the figure with a red line. The value and significance of the halo aperture correlation statistic are displayed in the figure title if the statistic was successfully computed.

Open `./planet-02/ghost-diagnostic-results/0000000307210830-02-halo-unwhitened-cotrended-zoomed-model.fig`

9 Planet Candidate 3

9.1 Model Fitter: All Transits

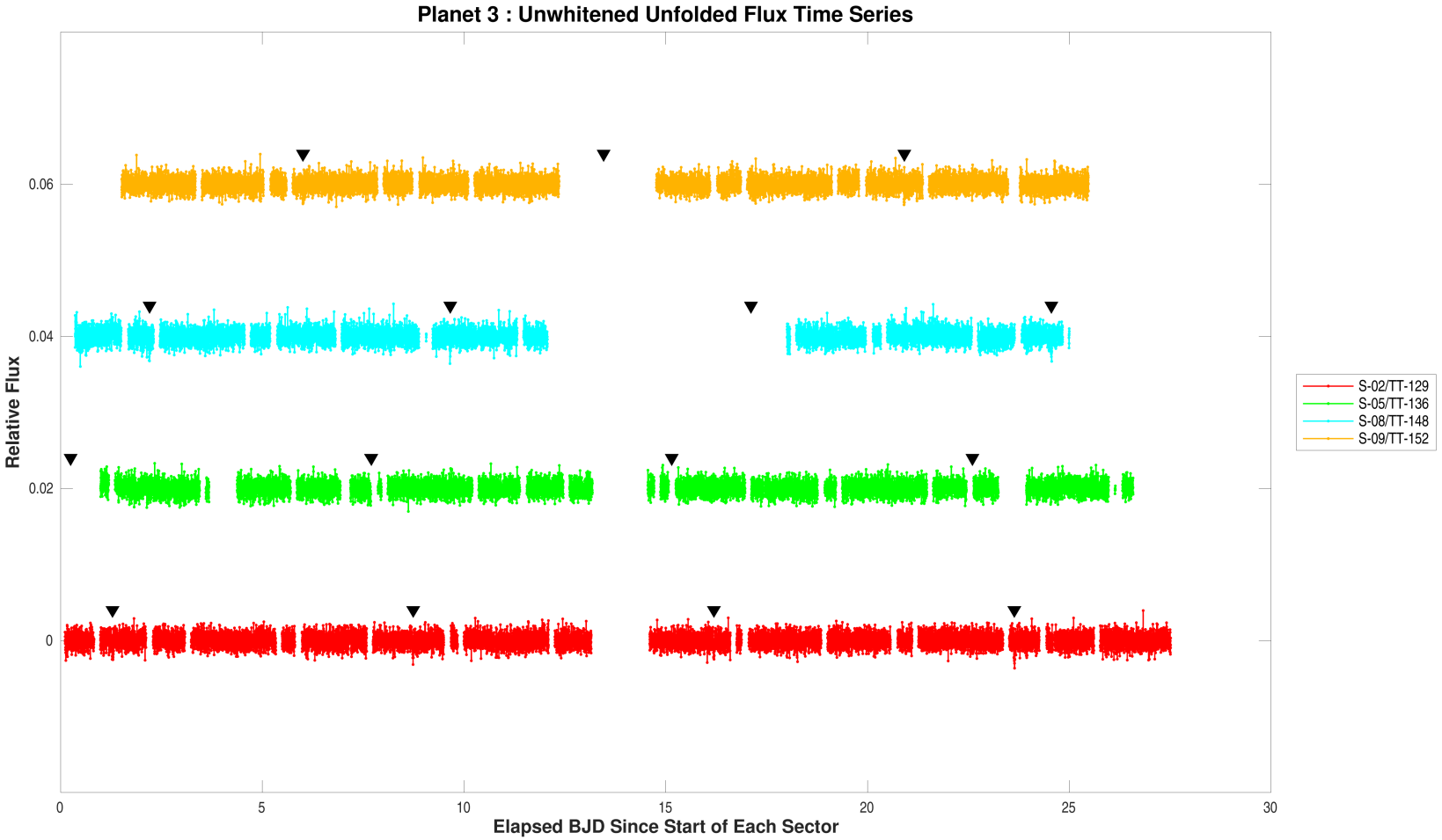
Model Characteristic	Name
Transit Model	mandel-agol_geometric_transit_model
Limb Darkening Model	claret_tess_nonlinear_limb_darkening_model

TCE Parameter	Value	Units
Trial Transit Pulse Duration	1.0	hours
Transit Epoch	1355.2908667	TJD
Orbital Period	7.4505942	days
Maximum SES	10.8	
Maximum MES	20.0	
Robust Statistic	20.2	
Chi Square Goodness of Fit Statistic (DoF)	405.1 (269)	
Chi Square2 Statistic (DoF)	8.2 (43.5)	
Threshold for Desired PFA		

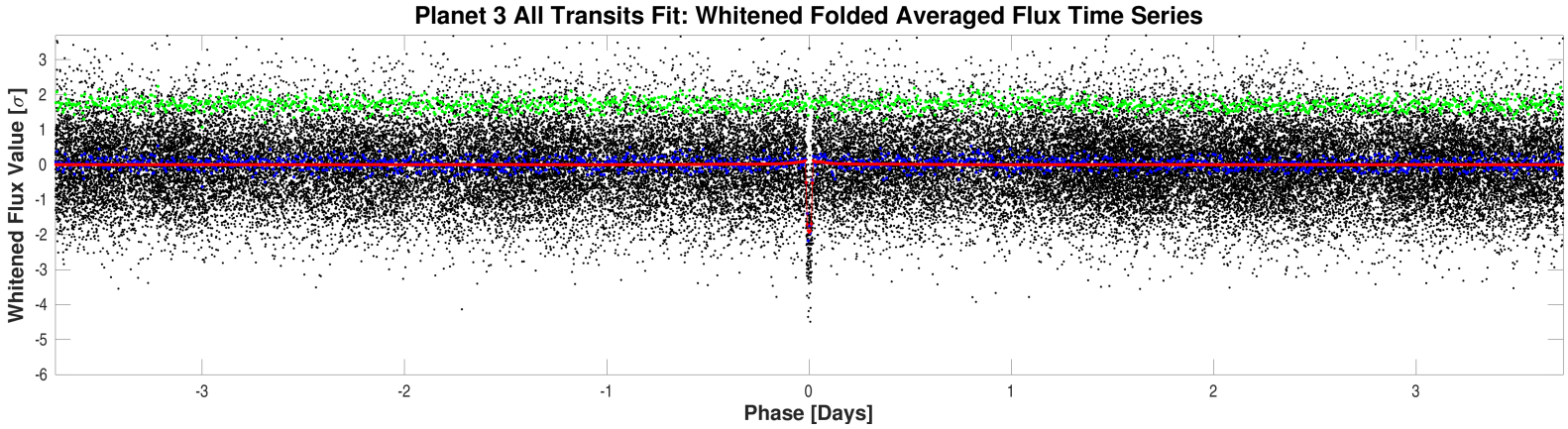
DoF: Degrees of Freedom

Parameter	Value	Uncertainty	Units
SNR	23.5		
Orbital Period	7.4508417	3.3749e-05	days
Transit Epoch	1355.2870639	5.6589e-04	BTJD
Impact Parameter	0.6998	9.1547e-01	
Planet Radius to Star Radius Ratio	0.0399230	9.3293e-03	
Semi-major Axis to Star Radius Ratio	56.8500	7.1014e+01	
Planet Radius	1.3642	3.2119e-01	Earth radii
Semi-major Axis	0.0506	2.4868e-03	AU
Effective Stellar Flux	4.9600	6.0134e-01	Goldilocks
Equilibrium Temperature	381	1.1536e+01	Kelvin
Stellar Density	44.4649	1.6663e+02	Solar density
Transit Depth	1659	8.1005e+01	ppm
Transit Duration	0.7703	1.4246e-01	hours
Transit Ingress Duration	0.0561	1.5413e-01	hours
Eccentricity	0.0000	0.0000e+00	
Peri Longitude	0.0000	0.0000e+00	degrees
Model Chi Square Statistic (DoF)	1071.4 (1261.7)		
Model Chi Square Goodness of Fit Statistic (DoF)	157.9 (264)		
Model Chi Square2 Statistic (DoF)	7.4 (9)		

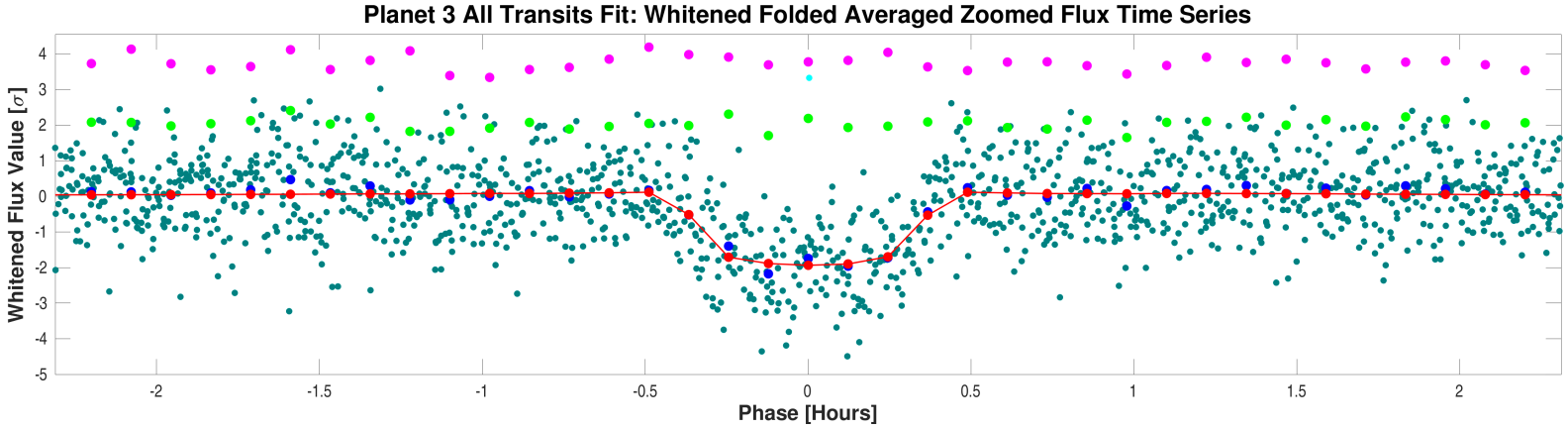
DoF: Degrees of Freedom



Flux time series for CatId 307210830, Planet candidate 3 in the unwhitened domain. For the data of Sector-02/TargetTableId-129, start BJD is 2458354 and the vertical offset is 0. For the data of Sector-05/TargetTableId-136, start BJD is 2458437 and the vertical offset is 0.02. For the data of Sector-08/TargetTableId-148, start BJD is 2458517 and the vertical offset is 0.04. For the data of Sector-09/TargetTableId-152, start BJD is 2458543 and the vertical offset is 0.06. Transit event markers indicate the location of transits of the given planet candidate. All transits fit completed with full convergence.
Open `./planet-03/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-03-all-unwhitened-02-129.fig`



Folded flux time series for CatId 307210830, Planet candidate 3 in the whitened domain is plotted in black dots. Values are averaged into 1 cadence wide bins. The blue dots represent the averaged values of the folded flux time series; the red dots represent the averaged values of the folded model light curve of the all transits fit; the green dots are the averaged folded fit residuals, vertically offset for clarity. All transits fit completed with full convergence.
Open `./planet-03/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-03-all-whitened.fig`

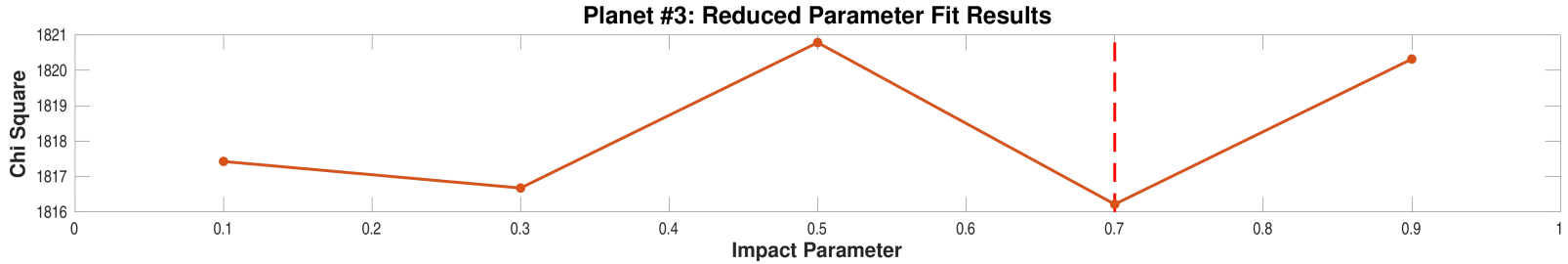


Folded flux time series for CatId 307210830, Planet candidate 3 in the whitened domain, zoomed on the transit. The flux data whose robust weights are larger/smaller than 0.1 are plotted in dark green/cyan dots, respectively. Values are averaged into 1 cadence wide bins. The blue dots represent the averaged values of the folded flux time series; the red dots represent the averaged values of the fitted model light curve of the all transits fit; the green dots are the averaged folded fit residuals, vertically offset for clarity. Magenta dots are the averaged values of the folded flux time series, with a phase shift of 0.5 relative to the blue dots, vertically offset for clarity. All transits fit completed with full convergence.
Open `./planet-03/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-03-all-whitened-zoomed.fig`

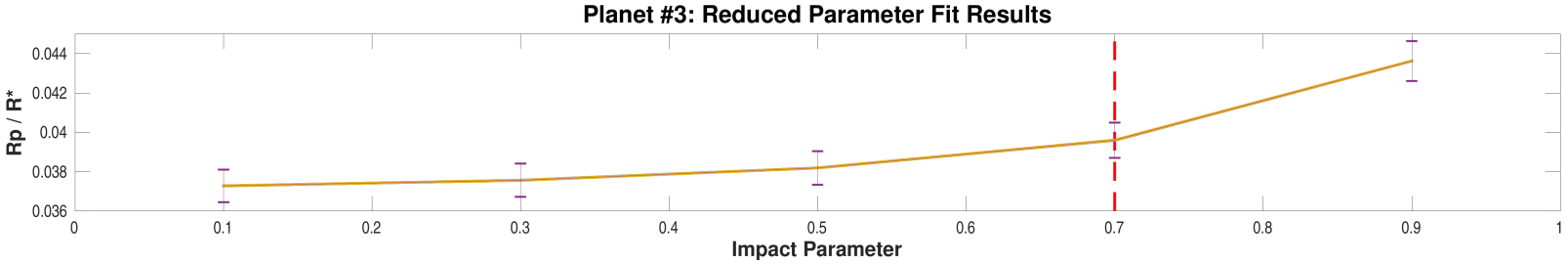
9.2 Model Fitter: Reduced Parameter Fit Results

Impact Parameter	SNR	Model Chi Square	Planet Radius to Star Radius	Uncert	Semi-major Axis to Star Radius	Uncert	Transit Depth (ppm)	Uncert	Transit Duration (hours)	Uncert
0.10	24.2	1817.4	0.0372804	8.3336e-04	79.0866	2.1917e+00	1631	7.2517e+01	0.7431	2.0418e-02
0.30	24.2	1816.7	0.0375656	8.3963e-04	75.8003	2.0848e+00	1631	7.2504e+01	0.7459	2.0325e-02
0.50	24.2	1820.8	0.0381930	8.5537e-04	68.6885	1.9123e+00	1628	7.2501e+01	0.7540	2.0764e-02
0.70	24.2	1816.2	0.0395975	8.8776e-04	56.7705	1.6054e+00	1632	7.2704e+01	0.7707	2.1459e-02
0.90	24.2	1820.3	0.0436256	1.0132e-03	35.0618	1.1628e+00	1654	7.6054e+01	0.8581	2.7500e-02

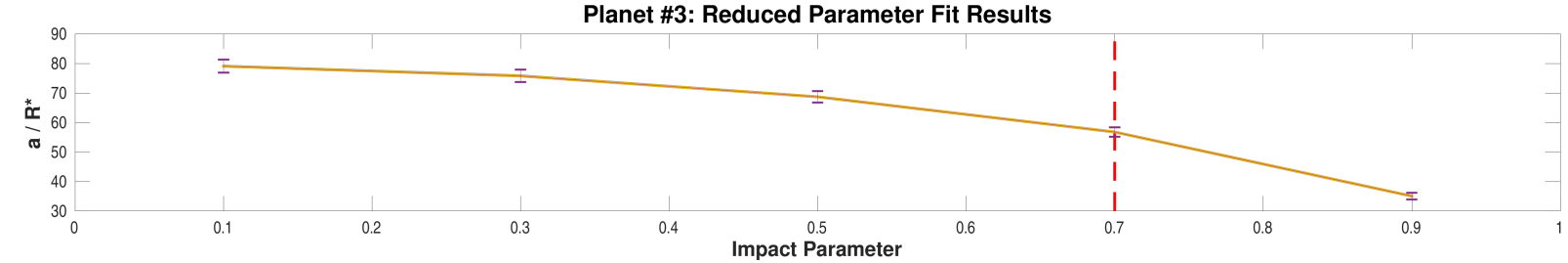
Highlighted row is the best reduced-parameter model fit.



Model chi squares of reduced parameter fits vs. impact parameter for CatId 307210830, Planet candidate 3. The fit result with the minimum chi square is marked with a dashed line in the plot.
Open `./planet-03/planet-search-and-model-fitting-results/reduced-parameter-fits/0000000307210830-03-reduced-fits-chi-square.fig`



Ratios of planet radius to star radius of reduced parameter fits vs. impact parameter for CatId 307210830, Planet candidate 3. The fit result with the minimum chi square is marked with a dashed line in the plot.
Open `./planet-03/planet-search-and-model-fitting-results/reduced-parameter-fits/0000000307210830-03-reduced-fits-rp-over-rstar.fig`



Ratios of semimajor axis to star radius of reduced parameter fits vs. impact parameter for CatId 307210830, Planet candidate 3. The fit result with the minimum chi square is marked with a dashed line in the plot.
Open `./planet-03/planet-search-and-model-fitting-results/reduced-parameter-fits/0000000307210830-03-reduced-fits-a-over-rstar.fig`

9.3 Model Fitter: Trapezoidal Fit Results

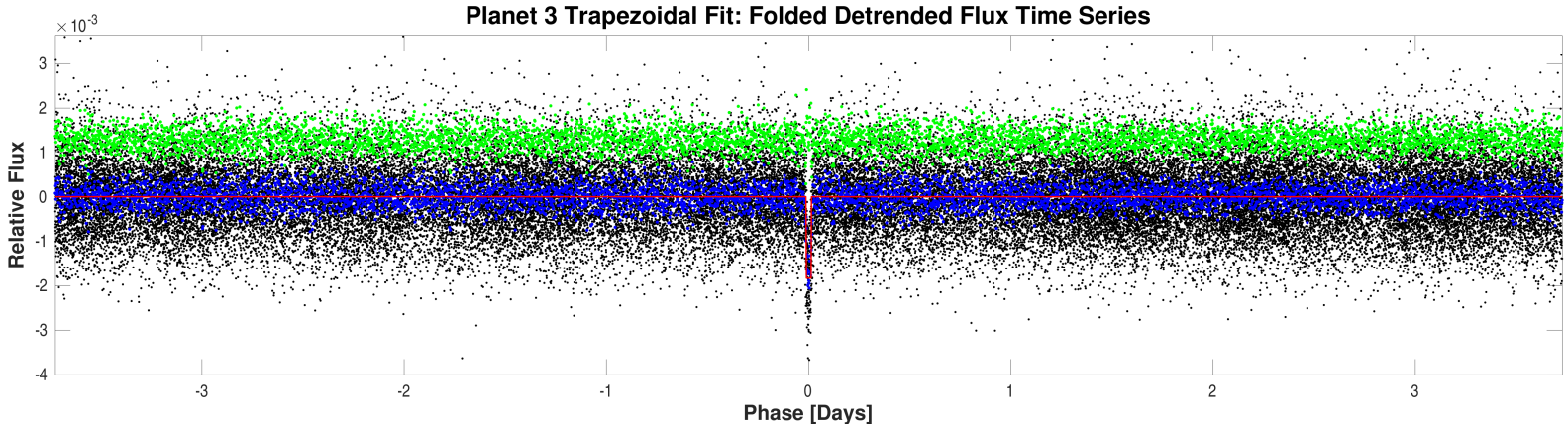
Model Characteristic	Name
Transit Model	trapezoidal_model
Limb Darkening Model	

TCE Parameter	Value	Units
Trial Transit Pulse Duration	1.0	hours
Transit Epoch	1355.2908667	TJD
Orbital Period	7.4505942	days
Maximum SES	10.8	
Maximum MES	20.0	
Robust Statistic	20.2	
Chi Square Goodness of Fit Statistic (DoF)	405.1 (269)	
Chi Square2 Statistic (DoF)	8.2 (43.5)	
Threshold for Desired PFA		

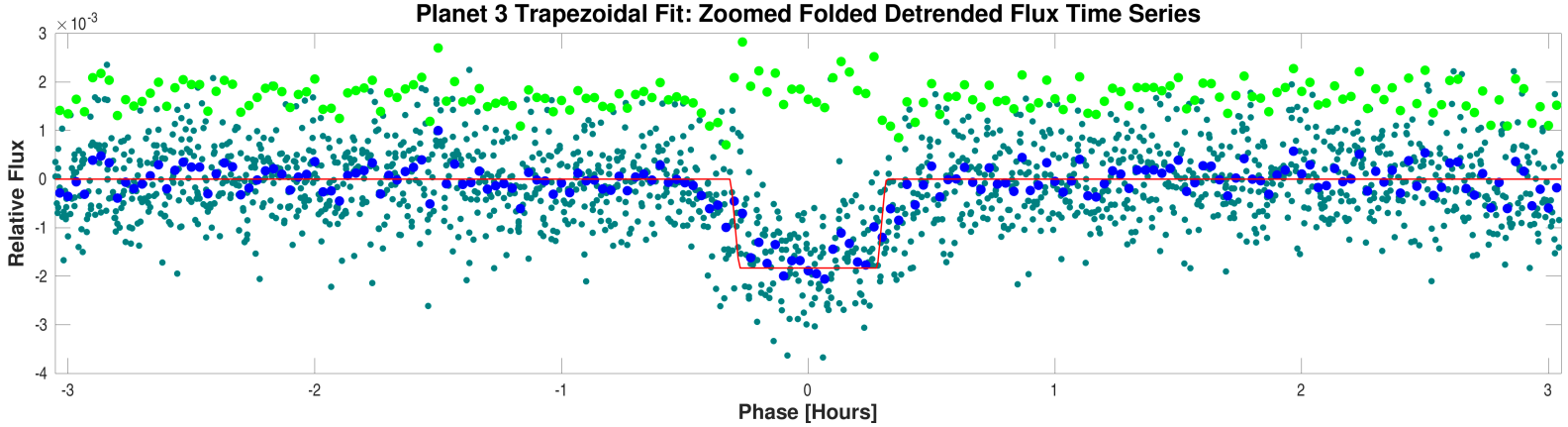
DoF: Degrees of Freedom

Parameter	Value	Uncertainty	Units
SNR	23.4		
Orbital Period	7.4505942		days
Transit Epoch	1355.2903259		BTJD
Transit Depth	1830		ppm
Transit Duration	1.0173		hours
Transit Ingress Duration	0.4226		hours
Model Chi Square Statistic (DoF)	58256.1 (2413)		

DoF: Degrees of Freedom



Folded detrended flux time series for CatId 307210830, Planet candidate 3 and folded trapezoidal model light curve.
Open `./planet-03/planet-search-and-model-fitting-results/trapezoidal-model-fit/0000000307210830-03-all-trapezoidal.fig`



Zoomed folded detrended flux time series for CatId 307210830, Planet candidate 3 and folded trapezoidal model light curve.
Open `./planet-03/planet-search-and-model-fitting-results/trapezoidal-model-fit/0000000307210830-03-all-trapezoidal-zoomed.fig`

9.4 Validation Tests

The Centroid Test and Eclipsing Binary Discrimination Test are chi-squared hypothesis tests. For these tests, a significance of 100% favors a planet, while 0% indicates an unlikely planet.

9.4.1 Weak Secondary Test

Result	Value	Uncertainty	Units	Statistic in Sigmas	Significance (%)
Orbital Period	7.4506		days		
Transit Duration	1		hours		
Maximum MES	20.0				
Secondary Phase	2.9389		days		
Secondary MES	2.8				
Minimum Phase	3.7181		days		
Minimum MES	-2.9				
Median MES	-0.1				
MAD MES	0.63663				
Robust Statistic	2.7				
Secondary Depth	147.5	5.3687e+01	ppm		
Geometric Albedo	111.8	6.7002e+01		1.6531	4.92
Planet Effective Temperature	1913	2.8582e+02	Kelvin	5.3583	0.00

9.4.2 Eclipsing Binary Discrimination Test

Result	Value	Value in Sigmas	Significance (%)
Odd Even Transit Depth Comparison Statistic	3.5326e-01	0.5944	55.23
Shorter Period Comparison Statistic	3.8434e+03	61.9953	100.00

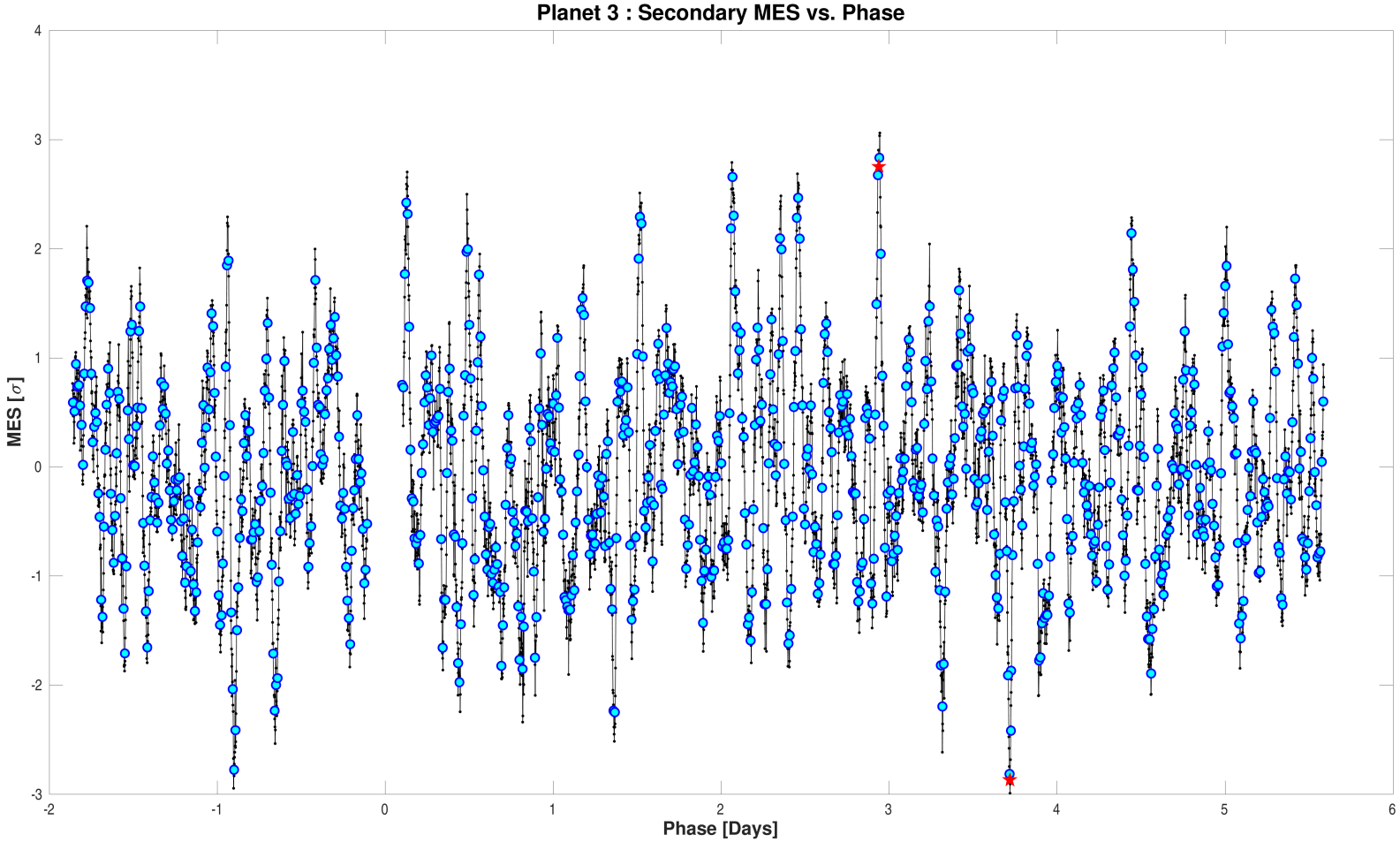
9.4.3 Bootstrap Test

Result	Value
False Alarm Probability	5.9740e-91
Bootstrap Threshold for Desired PFA	6.9
MES Mean	-0.21
MES Standard Deviation	1.00
Transit Count	29

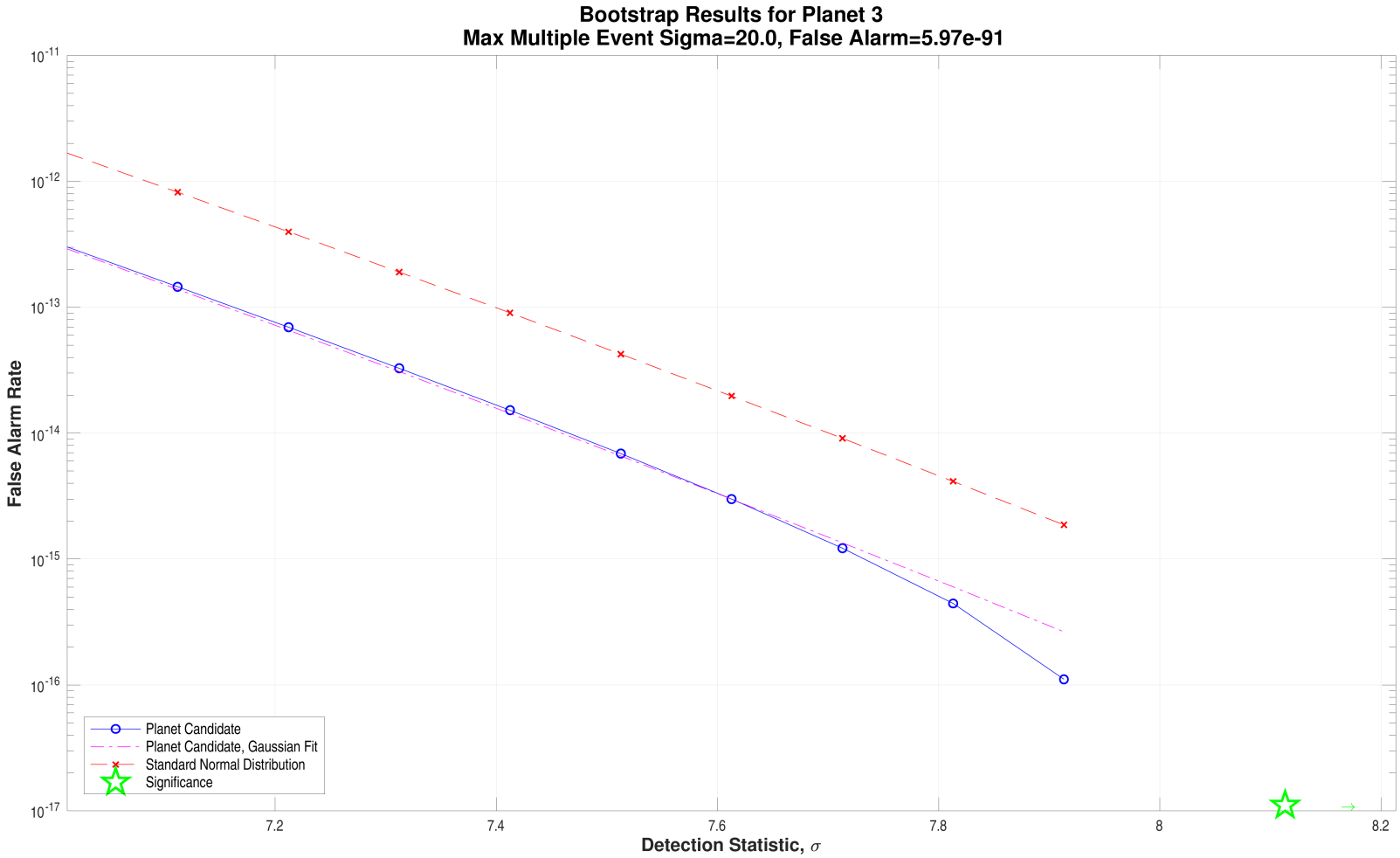
9.4.4 Ghost Diagnostic Test

Result	Value	Significance (%)
Maximum MES	20.0	
SNR	23.5	
Core Aperture Statistic	1.7084e+01	100.00
Halo Aperture Statistic	4.2421e+00	100.00
Ratio of Core/Halo Aperture Statistics	4.0273e+00	

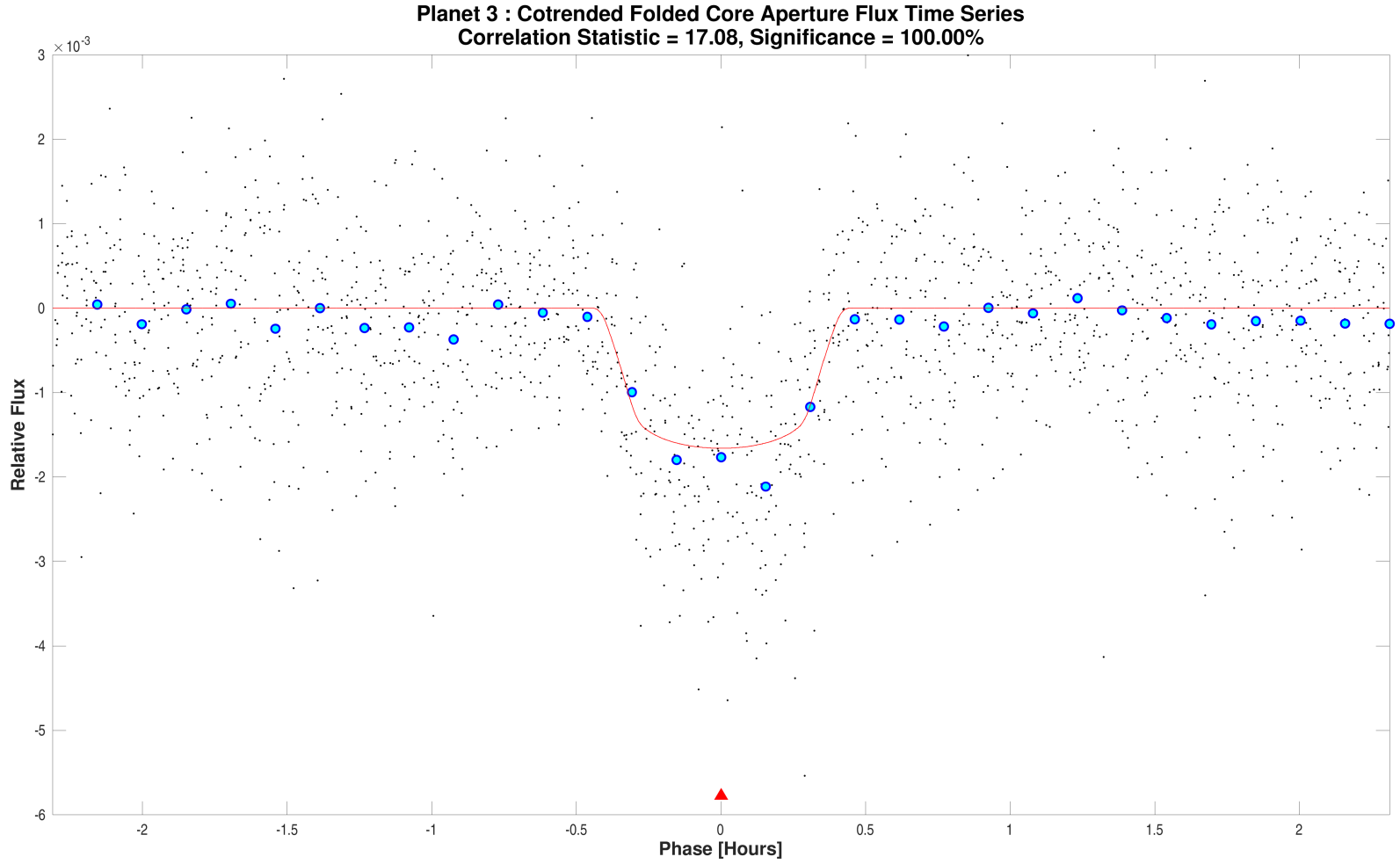
9.4.5 Validation Test Figures



The primary event has been set to zero and both the max and min of the resulting MES vs. Phase are marked with a red star. The best matched pulse duration in hours is 1. The maximum secondary MES and corresponding phase are 2.7526 and 2.9389 days respectively. The minimum secondary MES and corresponding phase are -2.8673 and 3.7181 days respectively.
Open `./planet-03/report-summary/0000000307210830-03-weak-secondary-diagnostic.fig`

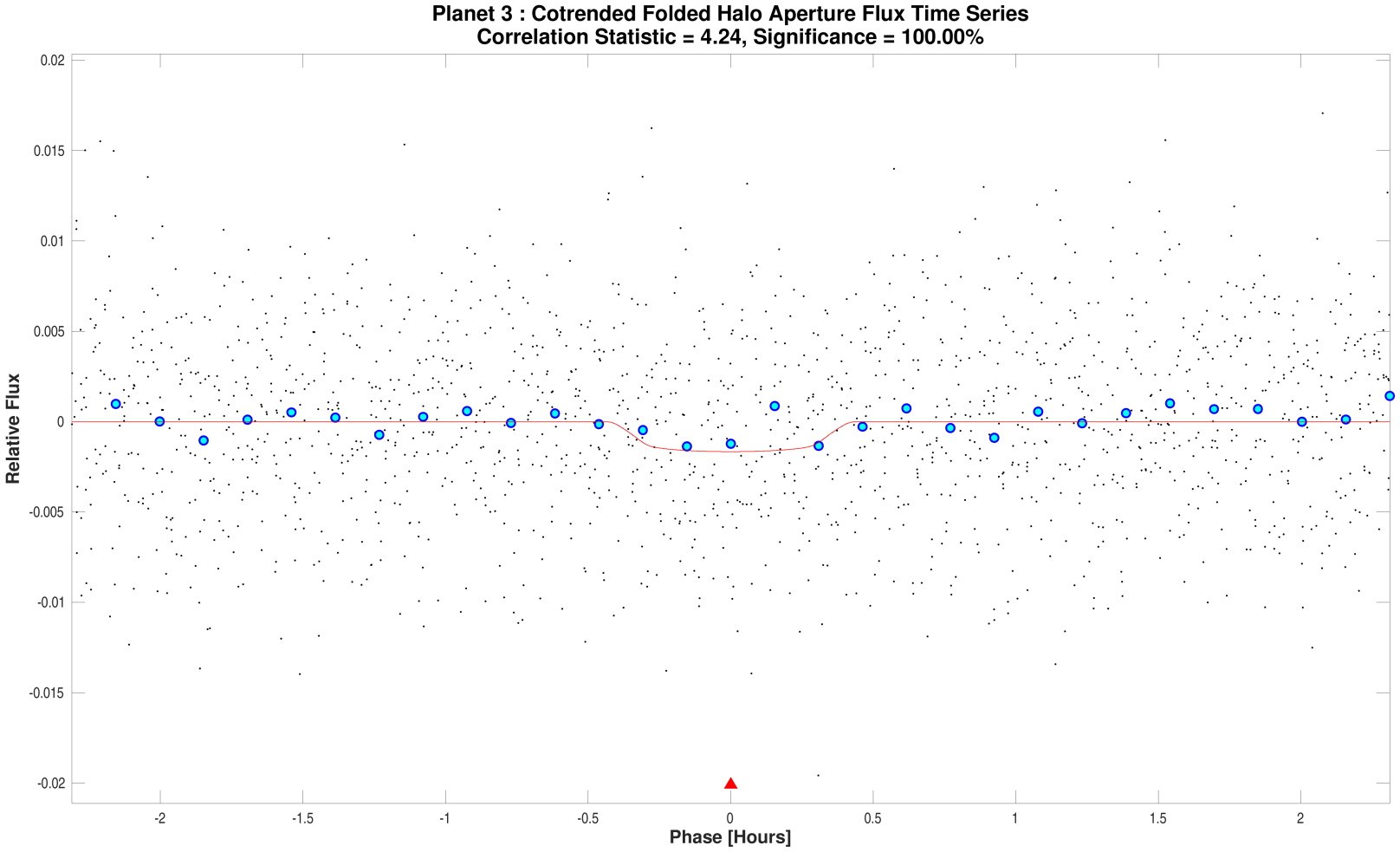


Bootstrap results for target 307210830, planet 3. Cumulative sum of the probabilities (derived from the histogram of counts) from upper tail to the search transit threshold; false alarm probability is indicated by the star. The Gaussian equivalent threshold for this false alarm probability is 20.1902. The threshold on this distribution that achieves the same false alarm rate as a 7.1 sigma threshold on a Gaussian distribution is 6.9111.
Open `./planet-03/bootstrap-results/0000000307210830-03-bootstrap-false-alarm.fig`



Optical ghost diagnostic core aperture flux time series for target 307210830, planet candidate 3. The unwhitened time series is phase folded at the orbital period associated with the planet candidate and centered on the epoch of the first transit. The time series was first cotrended against spacecraft engineering data, motion proxies, and/or cotrending basis vectors (CBVs) to remove systematic effects. Flux time series data represent the mean per pixel flux in the core or haloaperture; phase folded data points are shown in the figure with black dots. Binned and averaged phase folded flux values are marked with filled blue circles. The unwhitened transit model light curve is displayed in the figure with a red line. The value and significance of the core aperture correlation statistic are displayed in the figure title if the statistic was successfully computed.

Open `./planet-03/ghost-diagnostic-results/0000000307210830-03-core-unwhitened-cotrended-zoomed-model.fig`

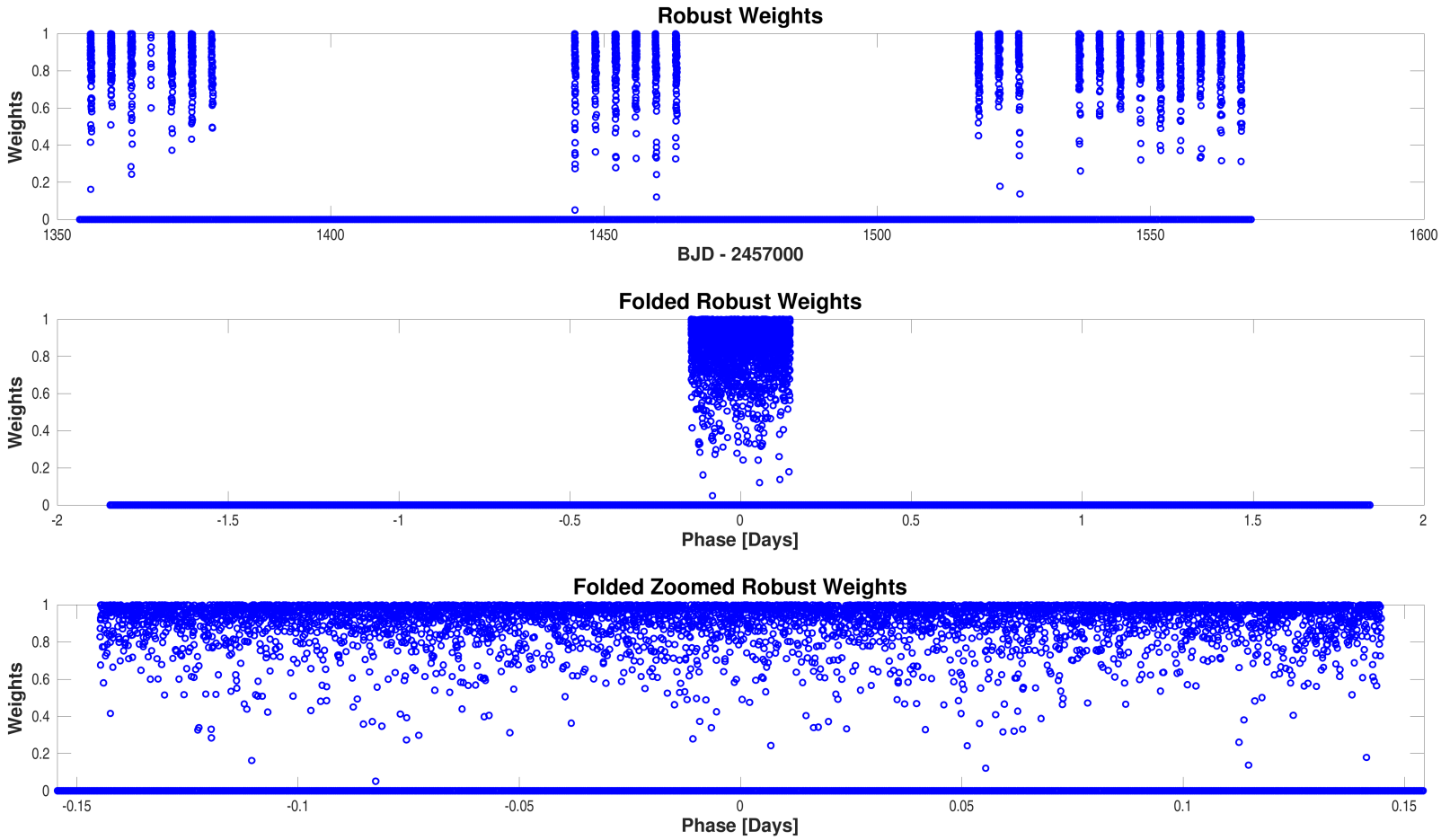


Optical ghost diagnostic halo aperture flux time series for target 307210830, planet candidate 3. The unwhitened time series is phase folded at the orbital period associated with the planet candidate and centered on the epoch of the first transit. The time series was first cotrended against spacecraft engineering data, motion proxies, and/or cotrending basis vectors (CBVs) to remove systematic effects. Flux time series data represent the mean per pixel flux in the core or haloaperture; phase folded data points are shown in the figure with black dots. Binned and averaged phase folded flux values are marked with filled blue circles. The unwhitened transit model light curve is displayed in the figure with a red line. The value and significance of the halo aperture correlation statistic are displayed in the figure title if the statistic was successfully computed.

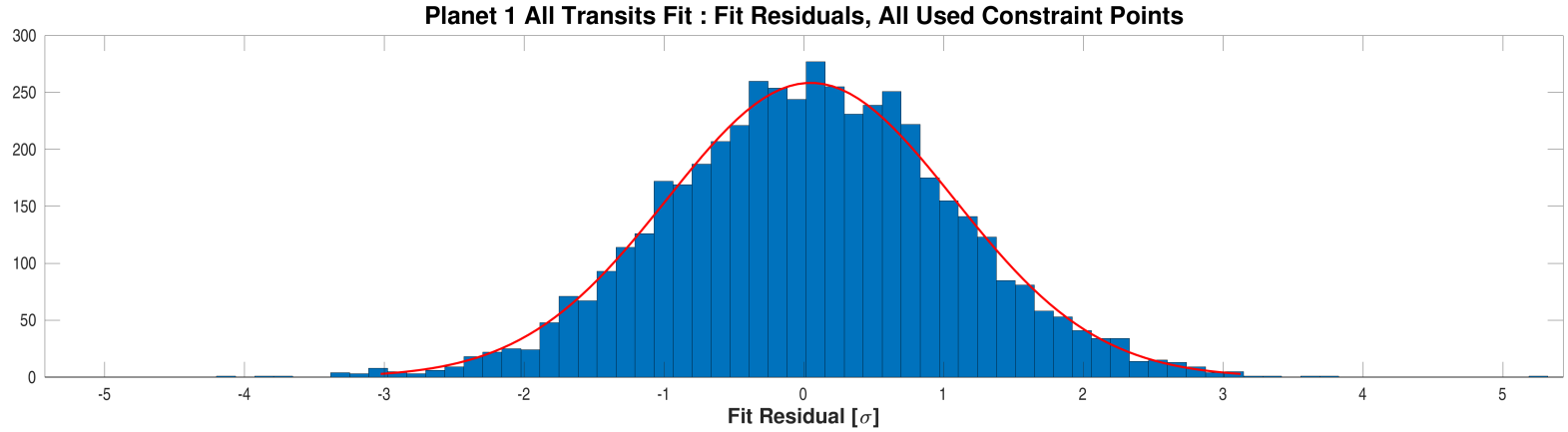
Open `./planet-03/ghost-diagnostic-results/0000000307210830-03-halo-unwhitened-cotrended-zoomed-model.fig`

Appendix A Planet Candidate 1

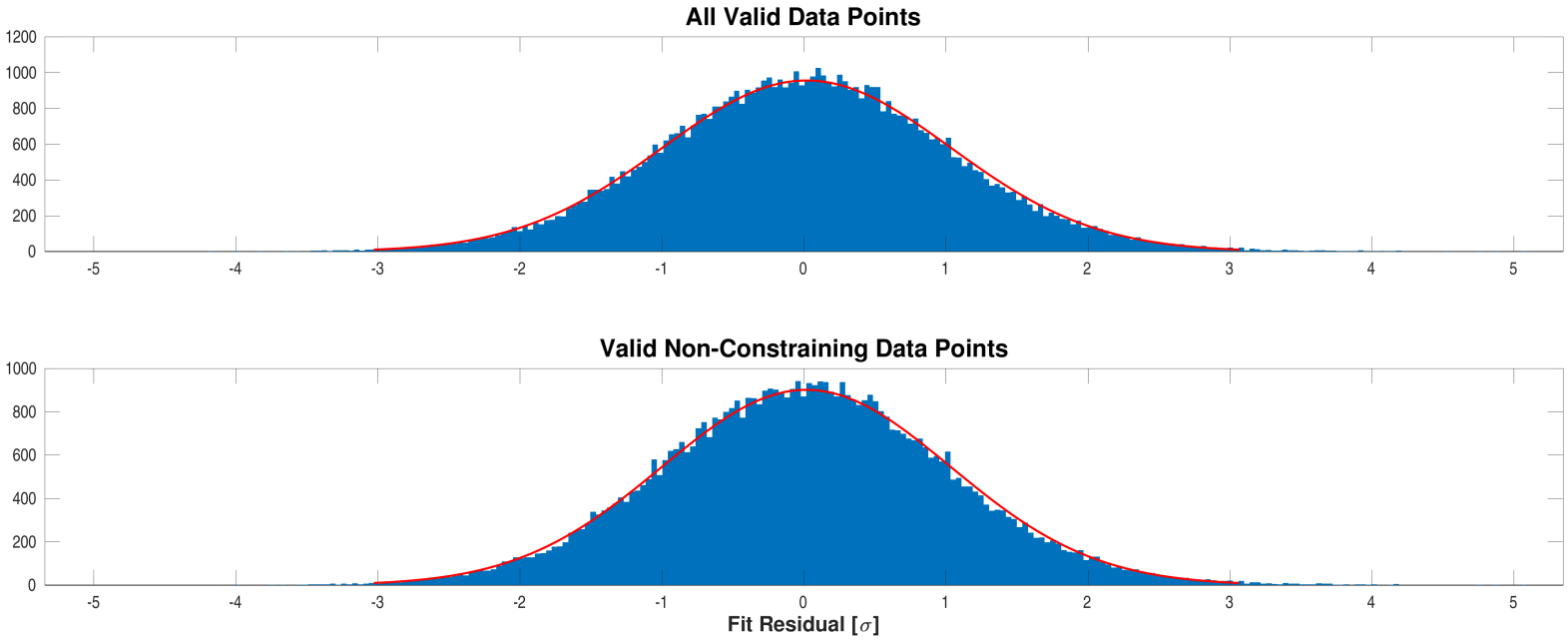
A.1 Model Fitter: All Transits



Robust weights distribution for CatId 307210830, Planet candidate 1. Top plot: all data points. Middle plot: all data points, folded per the fitted period and epoch. Bottom plot: all data points, folded and zoomed.
Open `./planet-01/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-01-all-robust-weights.fig`



Fit residuals distribution for CatId 307210830, Planet candidate 1. Only the valid data points used to constrain the fit are shown here. A Gaussian fit to the histogram is shown in red.
Open `./planet-01/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-01-all-histo-used.fig`

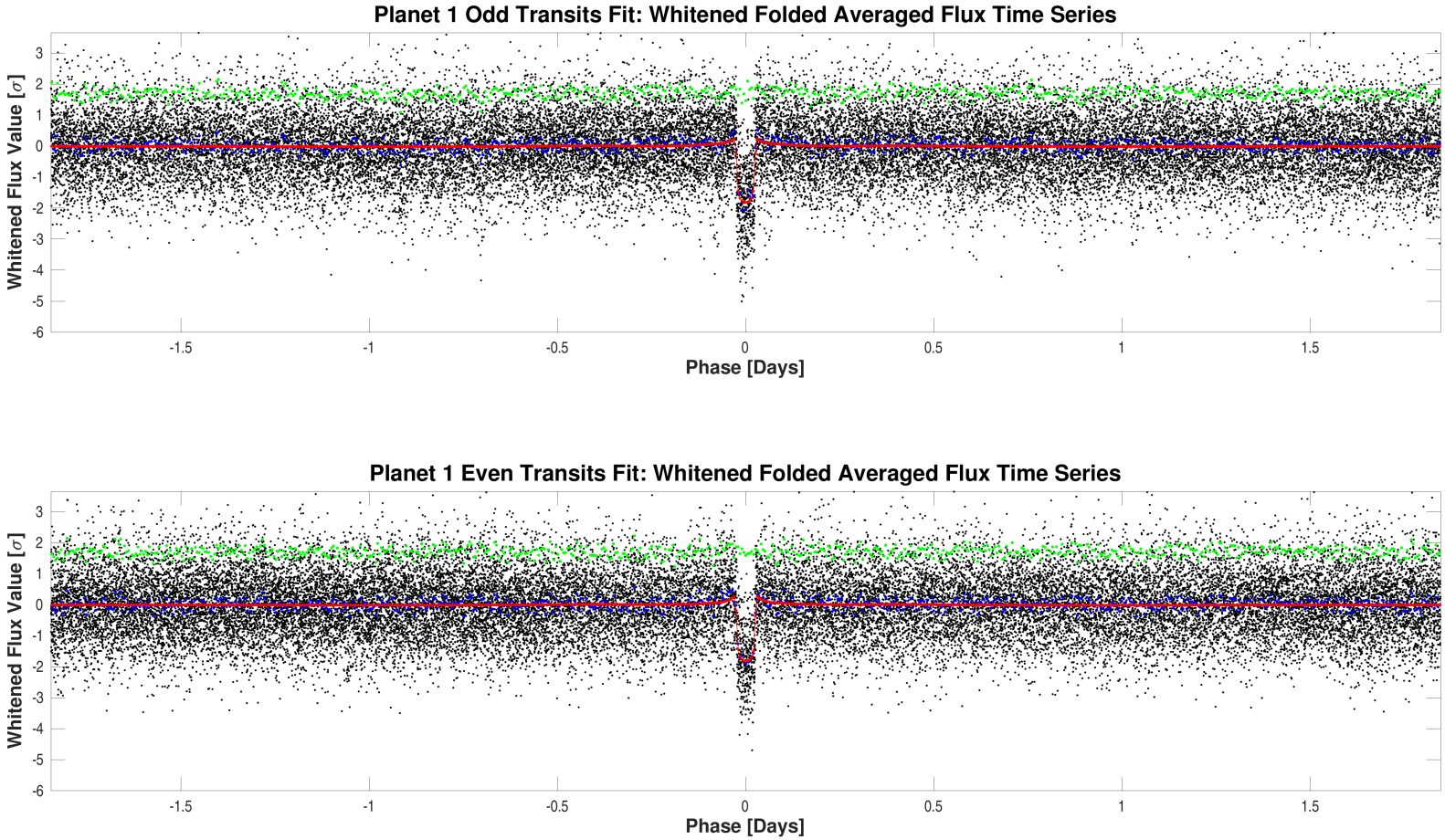


Fit residuals distribution for CatId 307210830, Planet candidate 1. Top plot: all valid data. Bottom plot: valid data not used to constrain fit (due to distance from a transit). Gaussian fits to the histograms are shown in red.
Open `./planet-01/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-01-all-histo-all-and-unused.fig`

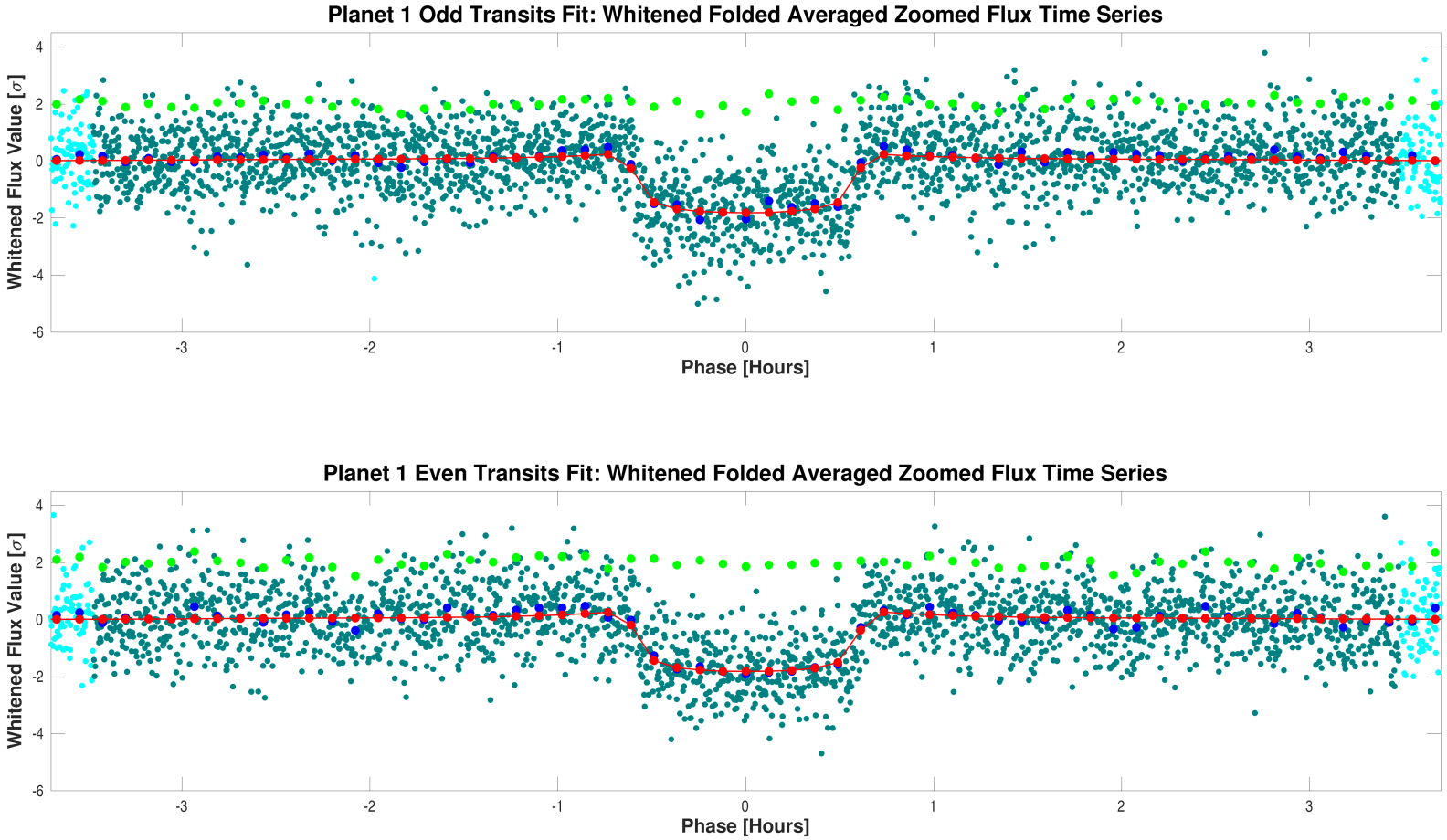
A.2 Model Fitter: Odd & Even Transits

Parameter	Odd Transits Value	Odd Transits Uncertainty	Even Transits Value	Even Transits Uncertainty	Units	Difference / Uncertainty
SNR	33.7		31.8			
Orbital Period	3.6905999	1.4836e-05	3.6906041	1.5181e-05	days	1.9684e-01
Transit Epoch	1356.2039962	4.6457e-04	1359.8947831	5.0925e-04	BTJD	2.6375e-01
Impact Parameter	0.1046	1.5459e+01	0.0529	3.2312e+01		1.4435e-03
Planet Radius to Star Radius Ratio	0.0388940	1.1621e-02	0.0391799	1.2252e-02		1.6932e-02
Semi-major Axis to Star Radius Ratio	23.6596	3.8521e+01	23.5655	4.0256e+01		1.6891e-03
Planet Radius	1.3290	3.9894e-01	1.3388	4.2041e-01	Earth radii	1.6858e-02
Semi-major Axis	0.0317	1.5568e-03	0.0317	1.5568e-03	AU	1.0865e-05
Effective Stellar Flux	12.6560	1.5344e+00	12.6560	1.5344e+00	Goldilocks	8.8045e-06
Equilibrium Temperature	481	1.4580e+01	481	1.4580e+01	Kelvin	8.8045e-06
Stellar Density	13.0637	6.3808e+01	12.9084	6.6153e+01	Solar density	1.6897e-03
Transit Depth	1777	6.1197e+01	1806	6.5974e+01	ppm	3.2142e-01
Transit Duration	1.2321	1.6021e-01	1.2421	1.7153e-01	hours	4.2460e-02
Transit Ingress Duration	0.0466	1.6636e-01	0.0470	1.7568e-01	hours	1.3958e-03
Eccentricity	0.0000	0.0000e+00	0.0000	0.0000e+00		
Peri Longitude	0.0000	0.0000e+00	0.0000	0.0000e+00	degrees	
Model Chi Square Statistic (DoF)	3788.0 (4442.5)		3788.0 (4442.5)			

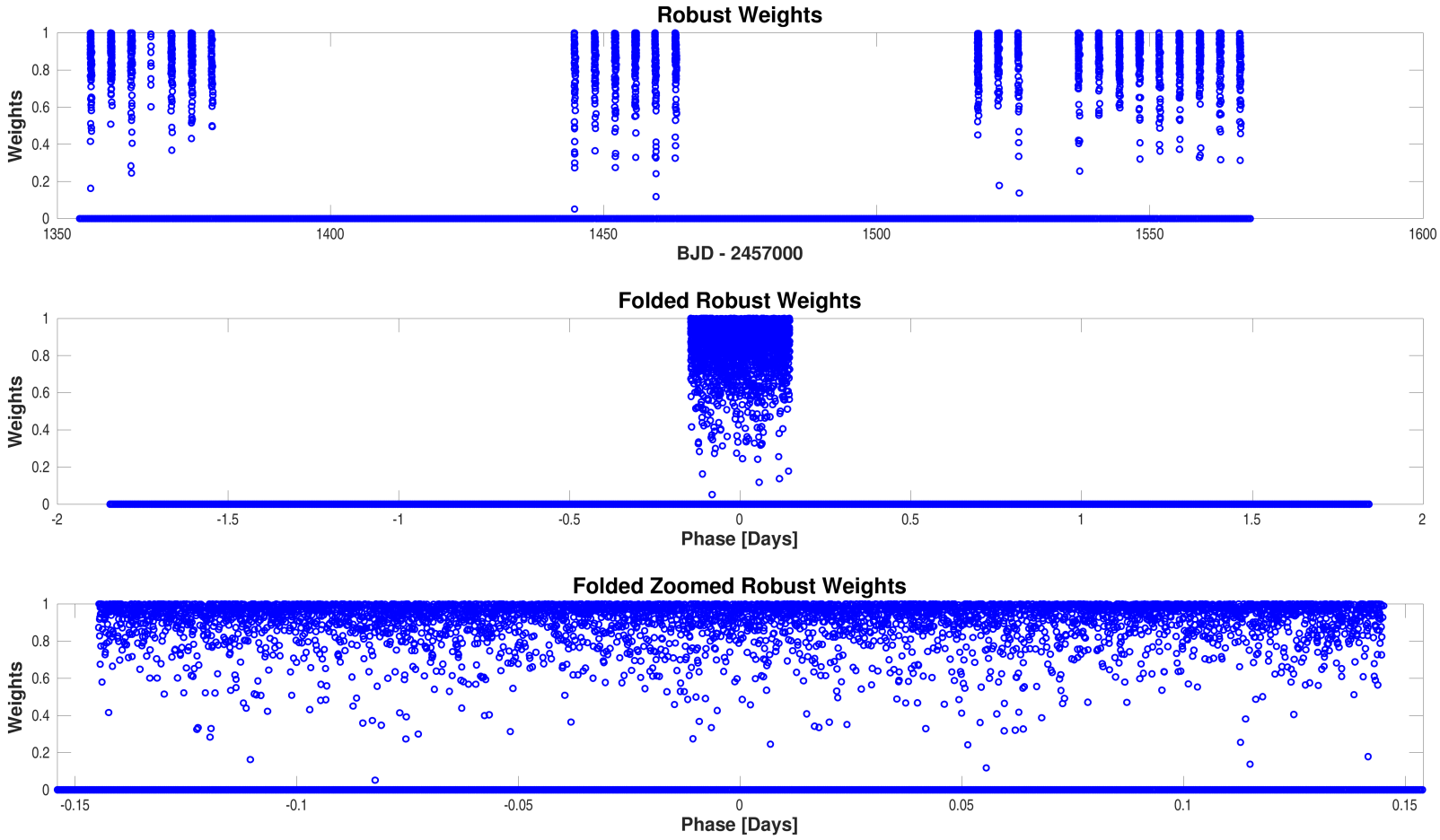
DoF: Degrees of Freedom



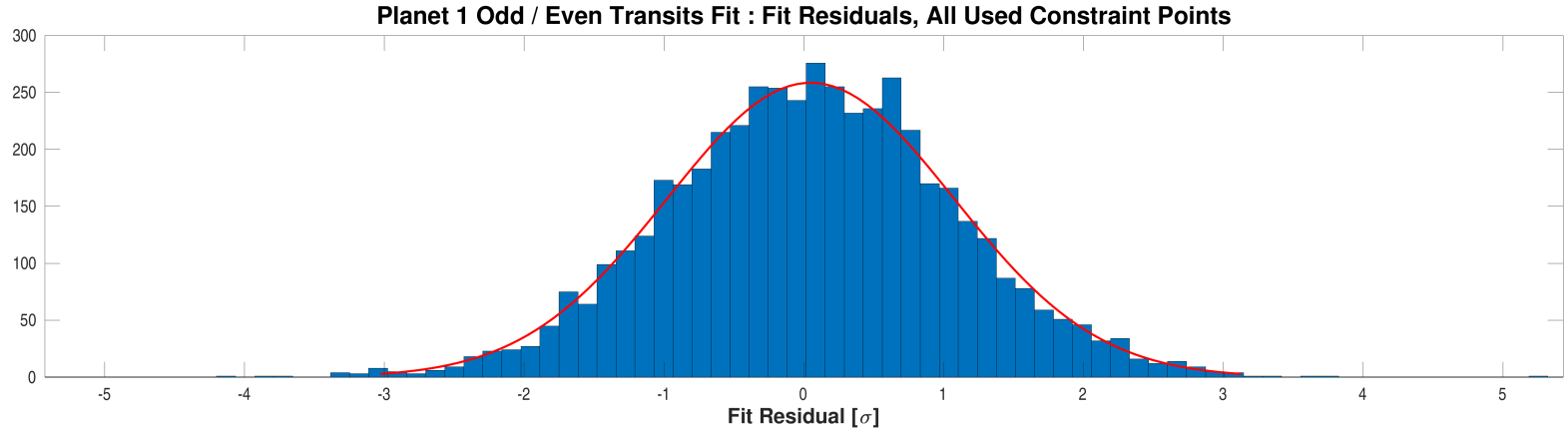
Folded flux time series for CatId 307210830, Planet candidate 1 in the whitened domain is plotted in black dots. Values are averaged into 1 cadence wide bins. The blue dots represent the averaged values of the folded flux time series; the red dots represent the averaged values of the folded model light curve of the odd/even transits fit; the green dots are the averaged folded fit residuals, vertically offset for clarity. Odd-even transits fit completed with full convergence.
Open `./planet-01/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-01-odd-even-whitened.fig`



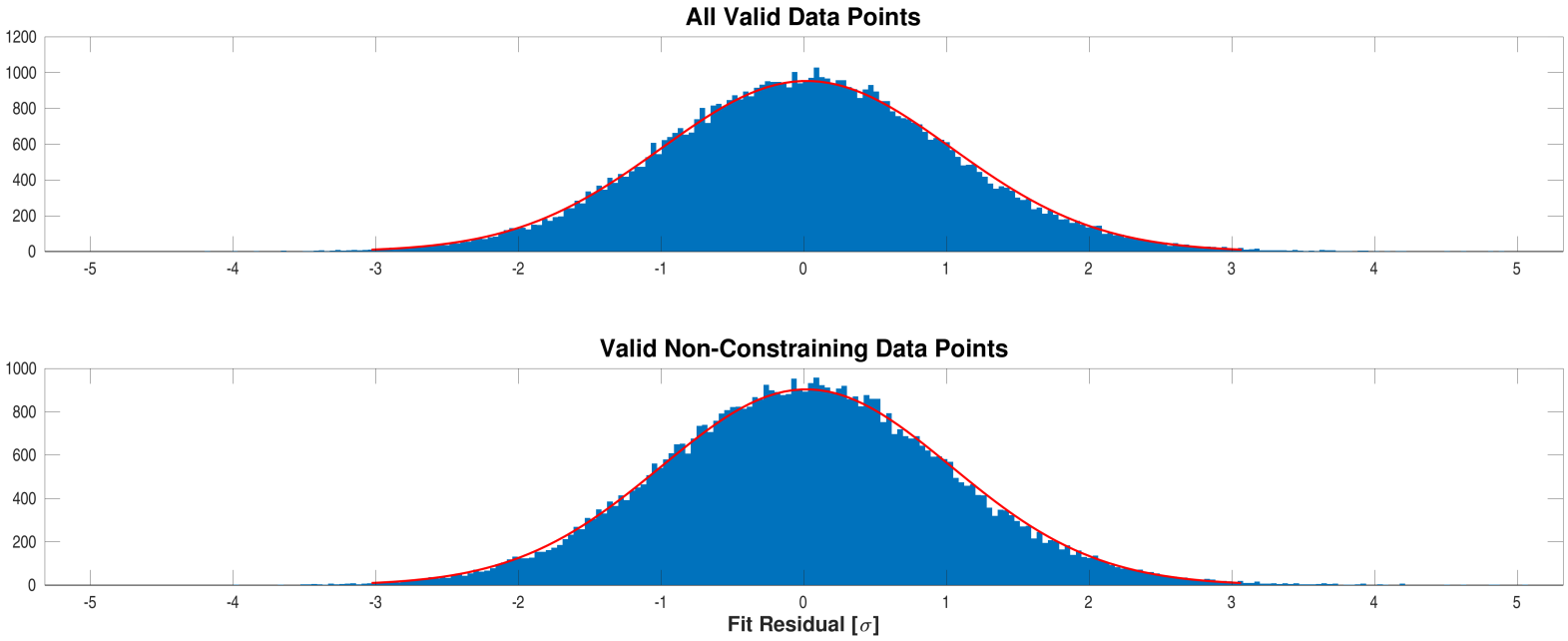
Folded flux time series for CatId 307210830, Planet candidate 1 in the whitened domain, zoomed on the transit. The flux data whose robust weights are larger/smaller than 0.1 are plotted in dark green/cyan dots, respectively. Values are averaged into 1 cadence wide bins. The blue dots represent the averaged values of the folded flux time series; the red dots represent the averaged values of the fitted model light curve of the odd/even transits fit; the green dots are the averaged folded fit residuals, vertically offset for clarity. Magenta dots are the averaged values of the folded flux time series, with a phase shift of 0.5 relative to the blue dots, vertically offset for clarity. Odd-even transits fit completed with full convergence.
Open `./planet-01/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-01-odd-even-whitened-zoomed.fig`



Robust weights distribution for CatId 307210830, Planet candidate 1. Top plot: all data points. Middle plot: all data points, folded per the fitted period and epoch. Bottom plot: all data points, folded and zoomed.
Open `./planet-01/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-01-odd-even-robust-weights.fig`

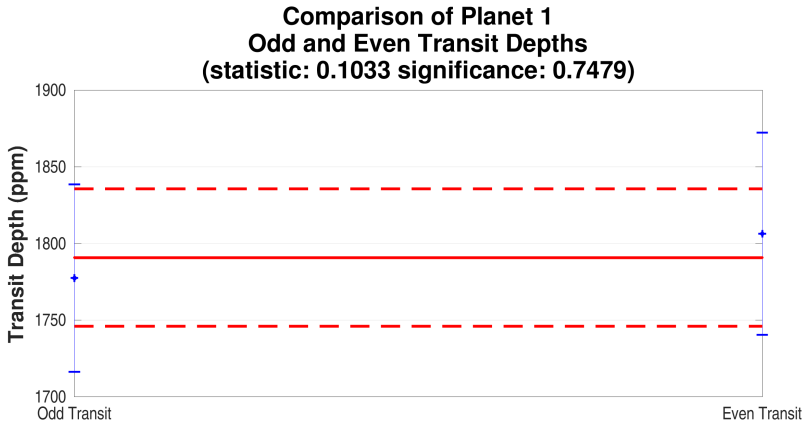


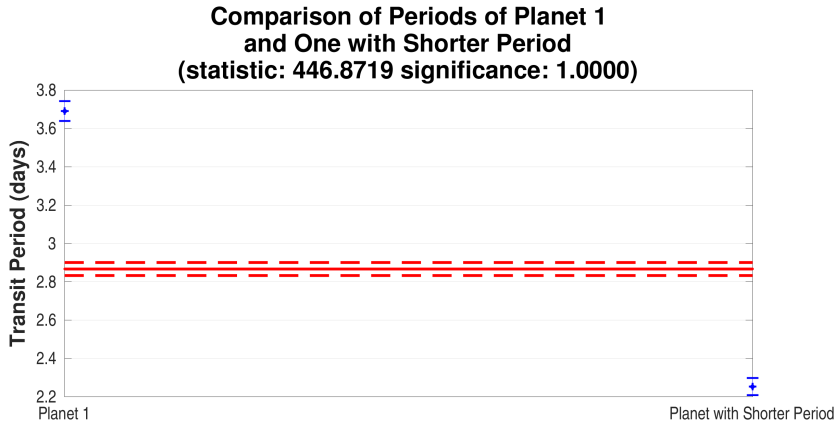
Fit residuals distribution for CatId 307210830, Planet candidate 1. Only the valid data points used to constrain the fit are shown here. A Gaussian fit to the histogram is shown in red.
Open `./planet-01/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-01-odd-even-histo-used.fig`

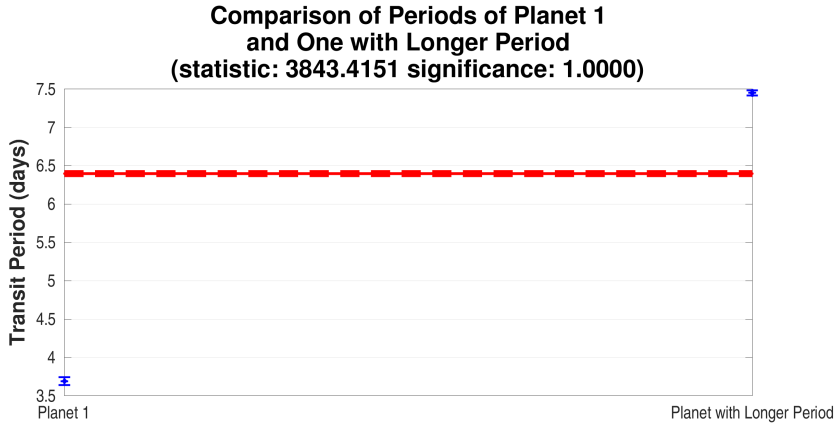


Fit residuals distribution for CatId 307210830, Planet candidate 1. Top plot: all valid data. Bottom plot: valid data not used to constrain fit (due to distance from a transit). Gaussian fits to the histograms are shown in red.
Open `./planet-01/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-01-odd-even-histo-all-and-unused.fig`

A.3 Eclipsing Binary Discrimination Test



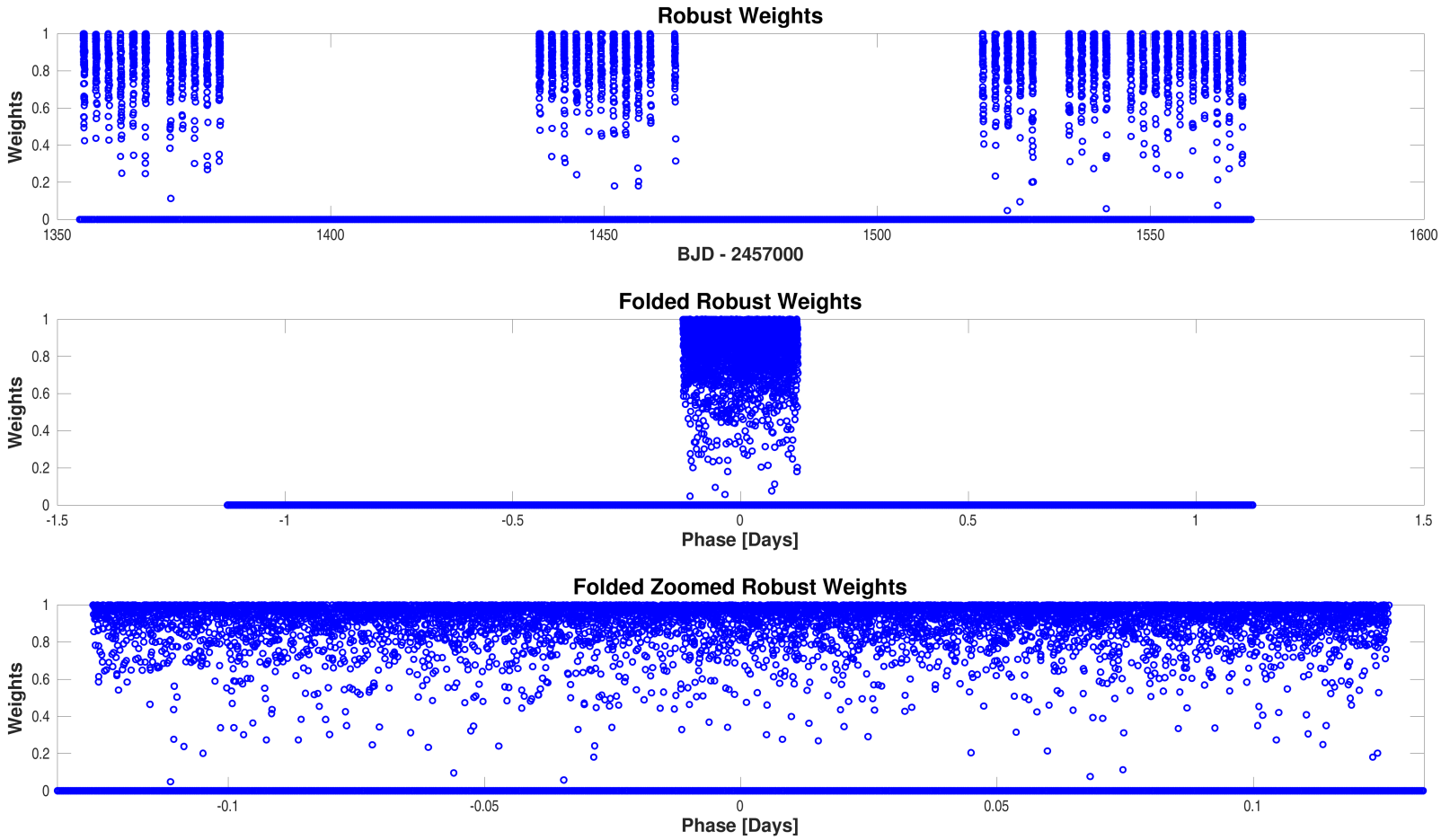




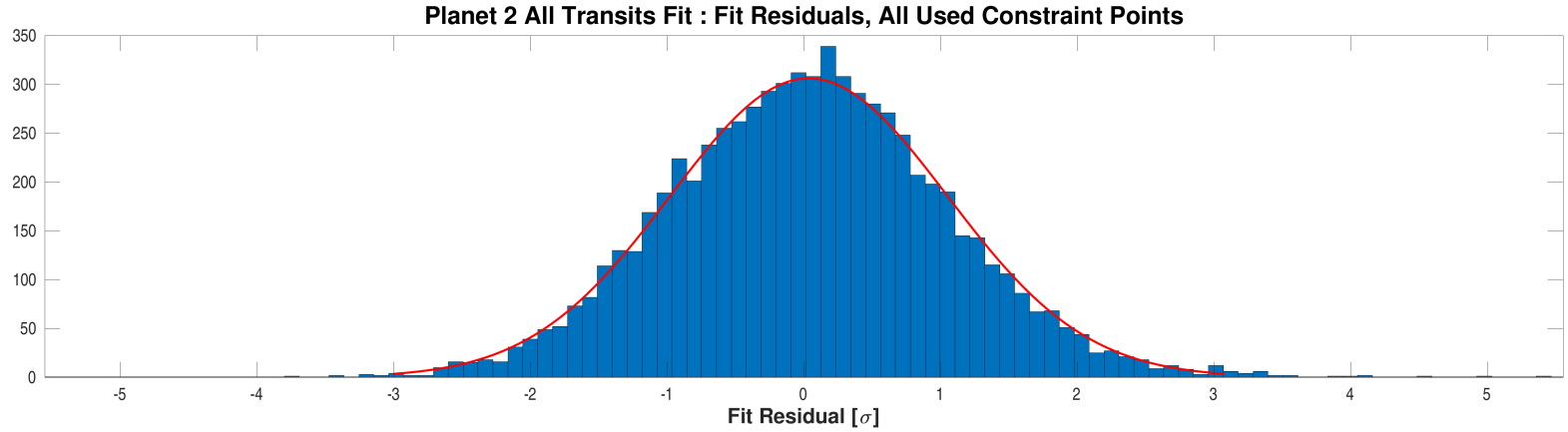
Top-left: Diagnostic plot of Odd/Even Transit Depth Test for catId 307210830, planet 1. A significance level close to 1/0 favors a transiting planet/an eclipsing binary. Top-right: Diagnostic plot of Orbital Period Test for catId 307210830. Orbital periods of planet 1 and the planet with shorter period are compared. A significance level close to 1/0 favors a transiting planet/an eclipsing binary. Bottom-left: Diagnostic plot of Orbital Period Test for catId 307210830. Orbital periods of planet 1 and the planet with longer period are compared. A significance level close to 1/0 favors a transiting planet/an eclipsing binary.
Open `./planet-01/binary-discrimination-test-results/0000000307210830-01-eclipsing-binary-discrimination-tests.fig`

Appendix B Planet Candidate 2

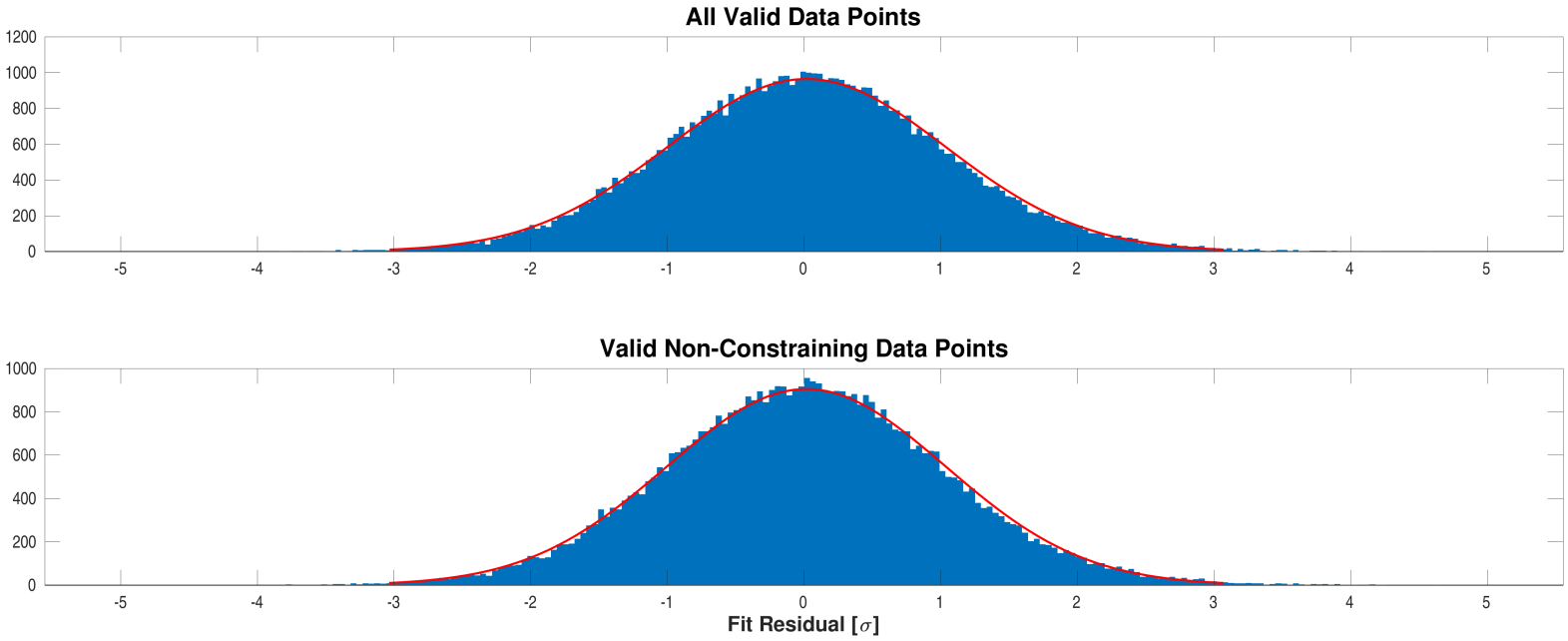
B.1 Model Fitter: All Transits



Robust weights distribution for CatId 307210830, Planet candidate 2. Top plot: all data points. Middle plot: all data points, folded per the fitted period and epoch. Bottom plot: all data points, folded and zoomed.
Open `./planet-02/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-02-all-robust-weights.fig`



Fit residuals distribution for CatId 307210830, Planet candidate 2. Only the valid data points used to constrain the fit are shown here. A Gaussian fit to the histogram is shown in red.
Open `./planet-02/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-02-all-histo-used.fig`

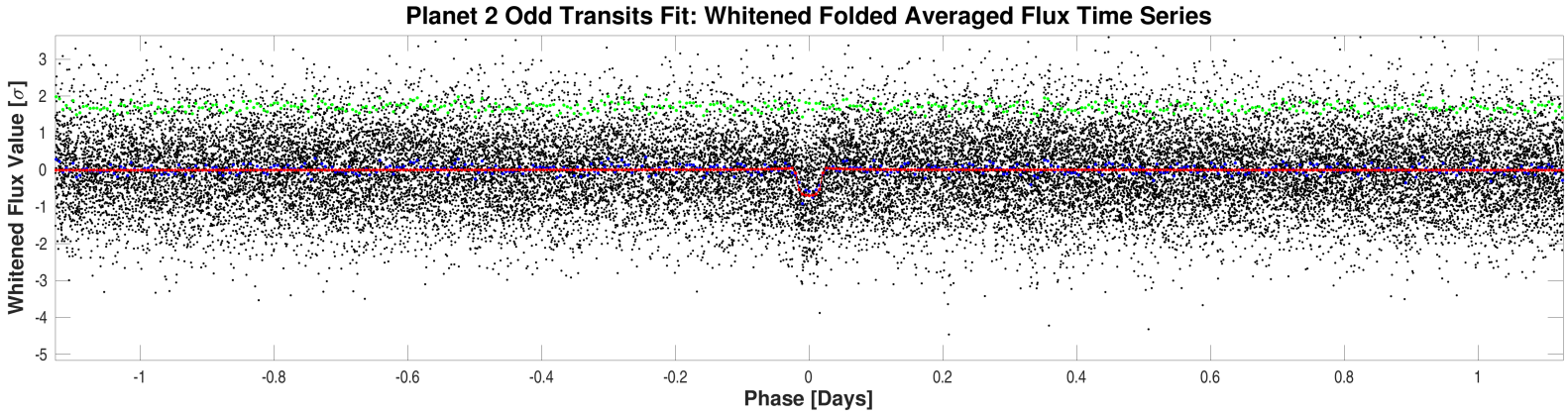


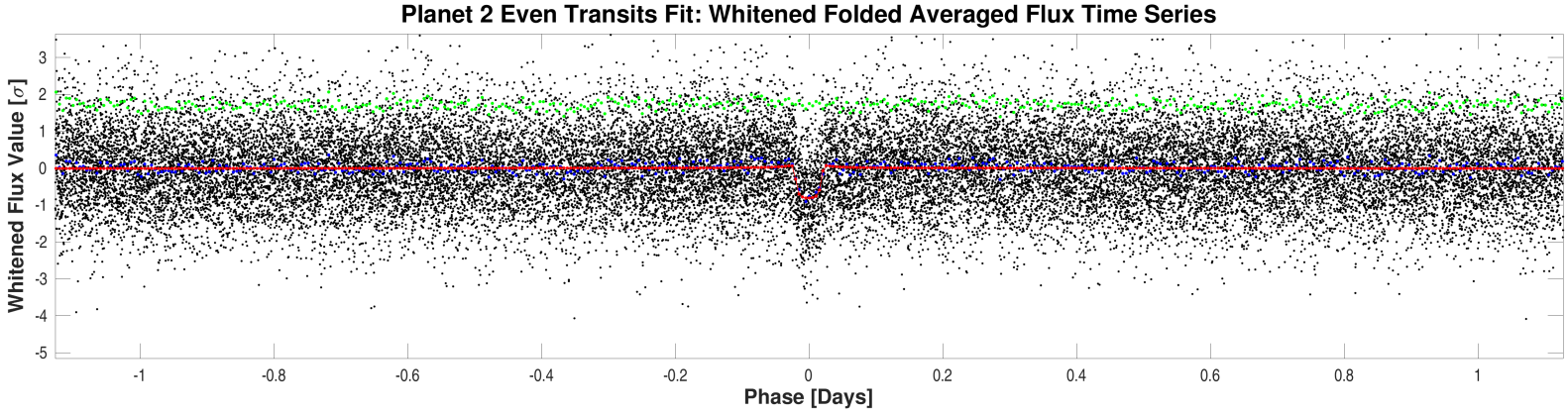
Fit residuals distribution for CatId 307210830, Planet candidate 2. Top plot: all valid data. Bottom plot: valid data not used to constrain fit (due to distance from a transit). Gaussian fits to the histograms are shown in red.
Open `./planet-02/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-02-all-histo-all-and-unused.fig`

B.2 Model Fitter: Odd & Even Transits

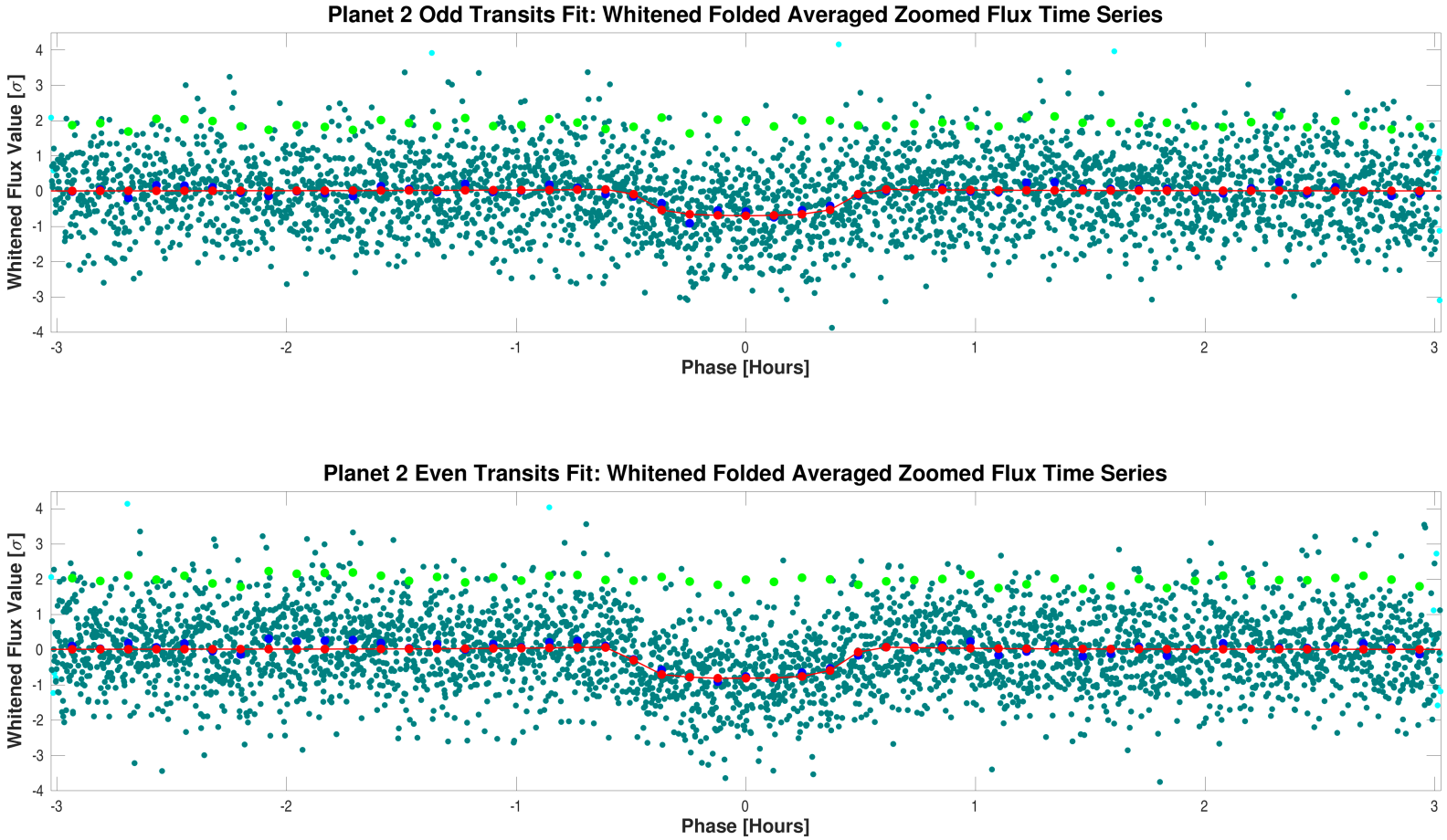
Parameter	Odd Transits Value	Odd Transits Uncertainty	Even Transits Value	Even Transits Uncertainty	Units	Difference / Uncertainty
SNR	13.9		16.6			
Orbital Period	2.2531459	2.0852e-05	2.2531402	1.8314e-05	days	2.0428e-01
Transit Epoch	1354.9044714	9.9067e-04	1357.1568000	8.5040e-04	BTJD	6.0895e-01
Impact Parameter	0.8849	2.0561e-01	0.8710	1.9496e-01		4.8849e-02
Planet Radius to Star Radius Ratio	0.0261682	4.1704e-03	0.0281513	3.7809e-03		3.5229e-01
Semi-major Axis to Star Radius Ratio	8.9174	7.3237e+00	8.9630	6.1856e+00		4.7608e-03
Planet Radius	0.8942	1.4481e-01	0.9619	1.3212e-01	Earth radii	3.4569e-01
Semi-major Axis	0.0228	1.1204e-03	0.0228	1.1204e-03	AU	2.4146e-05
Effective Stellar Flux	24.4365	2.9626e+00	24.4366	2.9626e+00	Goldilocks	1.9568e-05
Equilibrium Temperature	567	1.7187e+01	567	1.7187e+01	Kelvin	1.9568e-05
Stellar Density	1.8766	4.6236e+00	1.9056	3.9452e+00	Solar density	4.7663e-03
Transit Depth	611	4.8819e+01	721	4.7581e+01	ppm	1.6095e+00
Transit Duration	1.0085	1.7937e-01	1.0547	1.5420e-01	hours	1.9497e-01
Transit Ingress Duration	0.1098	2.0292e-01	0.1113	1.7274e-01	hours	5.9090e-03
Eccentricity	0.0000	0.0000e+00	0.0000	0.0000e+00		
Peri Longitude	0.0000	0.0000e+00	0.0000	0.0000e+00	degrees	
Model Chi Square Statistic (DoF)	5307.1 (6445.9)		5307.1 (6445.9)			

DoF: Degrees of Freedom

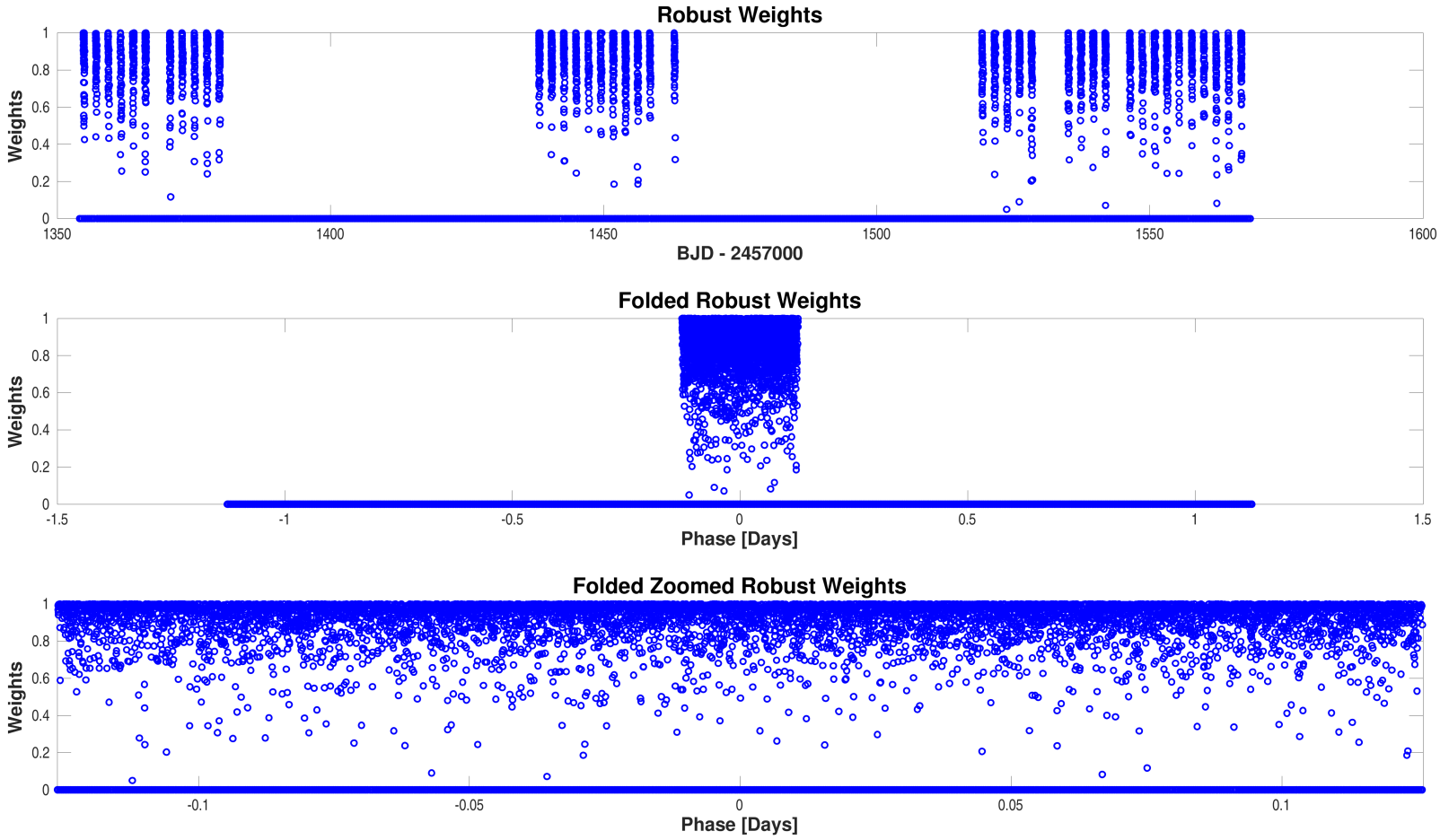




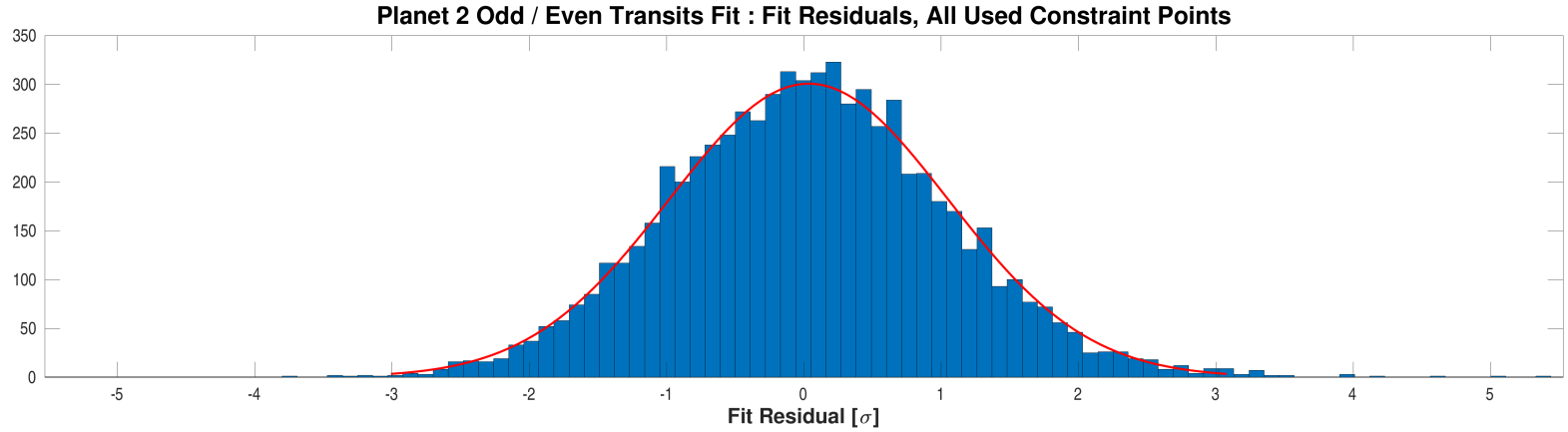
Folded flux time series for CatId 307210830, Planet candidate 2 in the whitened domain is plotted in black dots. Values are averaged into 1 cadence wide bins. The blue dots represent the averaged values of the folded flux time series; the red dots represent the averaged values of the folded model light curve of the odd/even transits fit; the green dots are the averaged folded fit residuals, vertically offset for clarity. Odd-even transits fit completed with full convergence.
Open `./planet-02/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-02-odd-even-whitened.fig`



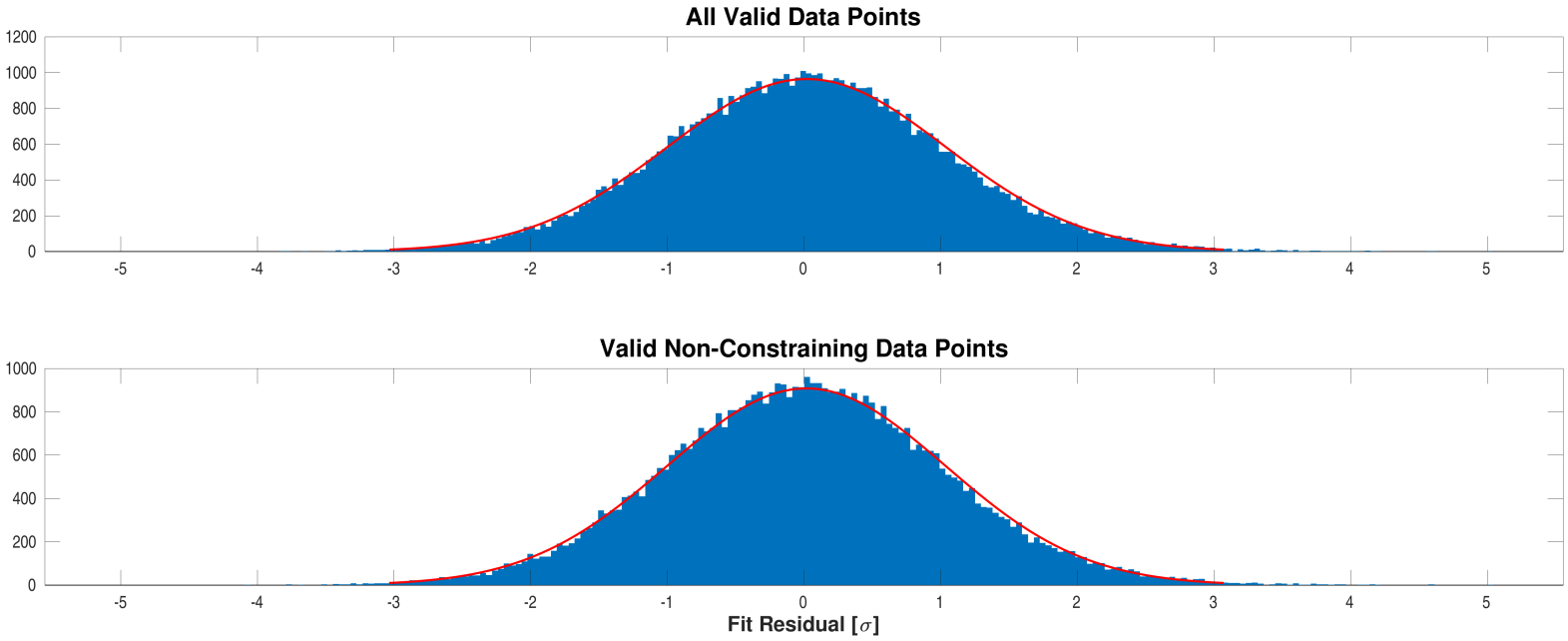
Folded flux time series for CatId 307210830, Planet candidate 2 in the whitened domain, zoomed on the transit. The flux data whose robust weights are larger/smaller than 0.1 are plotted in dark green/cyan dots, respectively. Values are averaged into 1 cadence wide bins. The blue dots represent the averaged values of the folded flux time series; the red dots represent the averaged values of the fitted model light curve of the odd/even transits fit; the green dots are the averaged folded fit residuals, vertically offset for clarity. Magenta dots are the averaged values of the folded flux time series, with a phase shift of 0.5 relative to the blue dots, vertically offset for clarity. Odd-even transits fit completed with full convergence.
Open `./planet-02/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-02-odd-even-whitened-zoomed.fig`



Robust weights distribution for CatId 307210830, Planet candidate 2. Top plot: all data points. Middle plot: all data points, folded per the fitted period and epoch. Bottom plot: all data points, folded and zoomed.
Open `./planet-02/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-02-odd-even-robust-weights.fig`

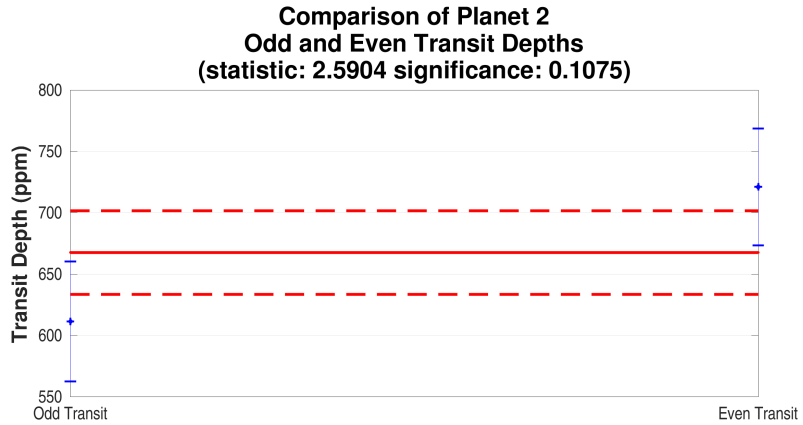


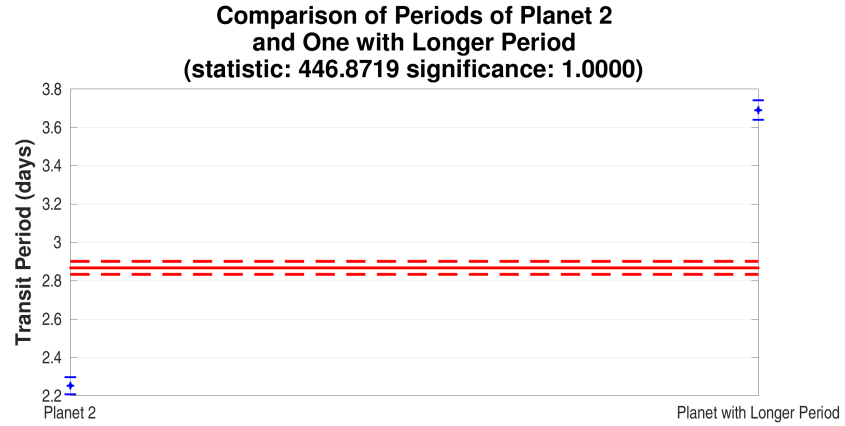
Fit residuals distribution for CatId 307210830, Planet candidate 2. Only the valid data points used to constrain the fit are shown here. A Gaussian fit to the histogram is shown in red.
Open `./planet-02/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-02-odd-even-histo-used.fig`



Fit residuals distribution for CatId 307210830, Planet candidate 2. Top plot: all valid data. Bottom plot: valid data not used to constrain fit (due to distance from a transit). Gaussian fits to the histograms are shown in red.
Open `./planet-02/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-02-odd-even-histo-all-and-unused.fig`

B.3 Eclipsing Binary Discrimination Test

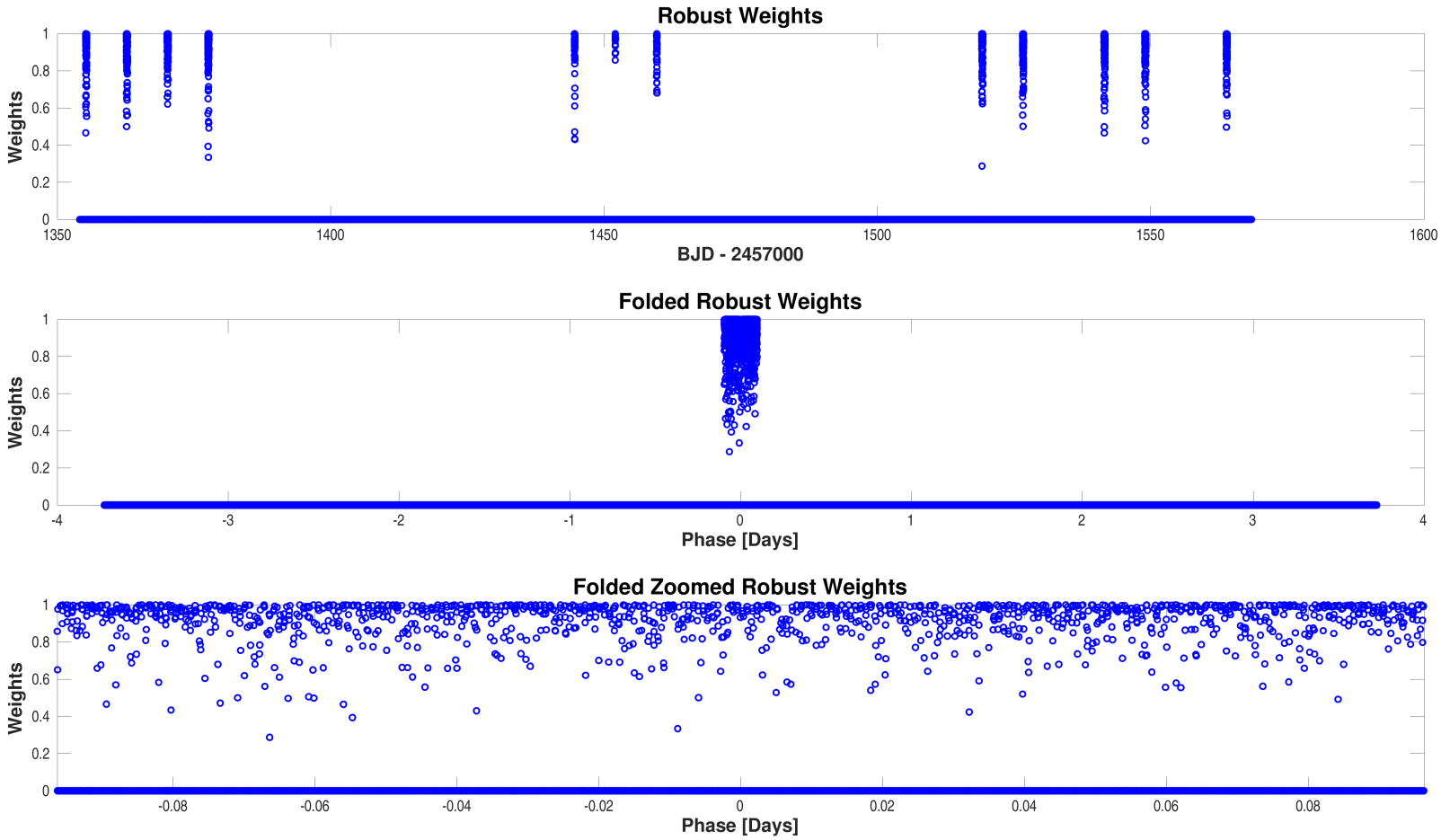




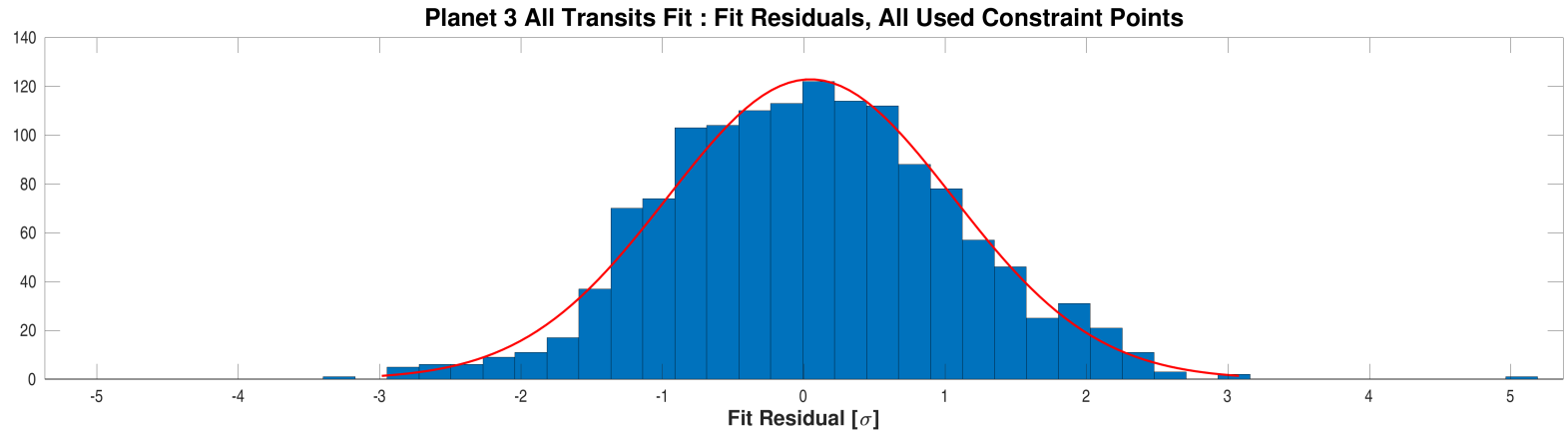
Top-left: Diagnostic plot of Odd/Even Transit Depth Test for catId 307210830, planet 2. A significance level close to 1/0 favors a transiting planet/an eclipsing binary. Bottom-left: Diagnostic plot of Orbital Period Test for catId 307210830. Orbital periods of planet 2 and the planet with longer period are compared. A significance level close to 1/0 favors a transiting planet/an eclipsing binary.
Open `./planet-02/binary-discrimination-test-results/0000000307210830-02-eclipsing-binary-discrimination-tests.fig`

Appendix C Planet Candidate 3

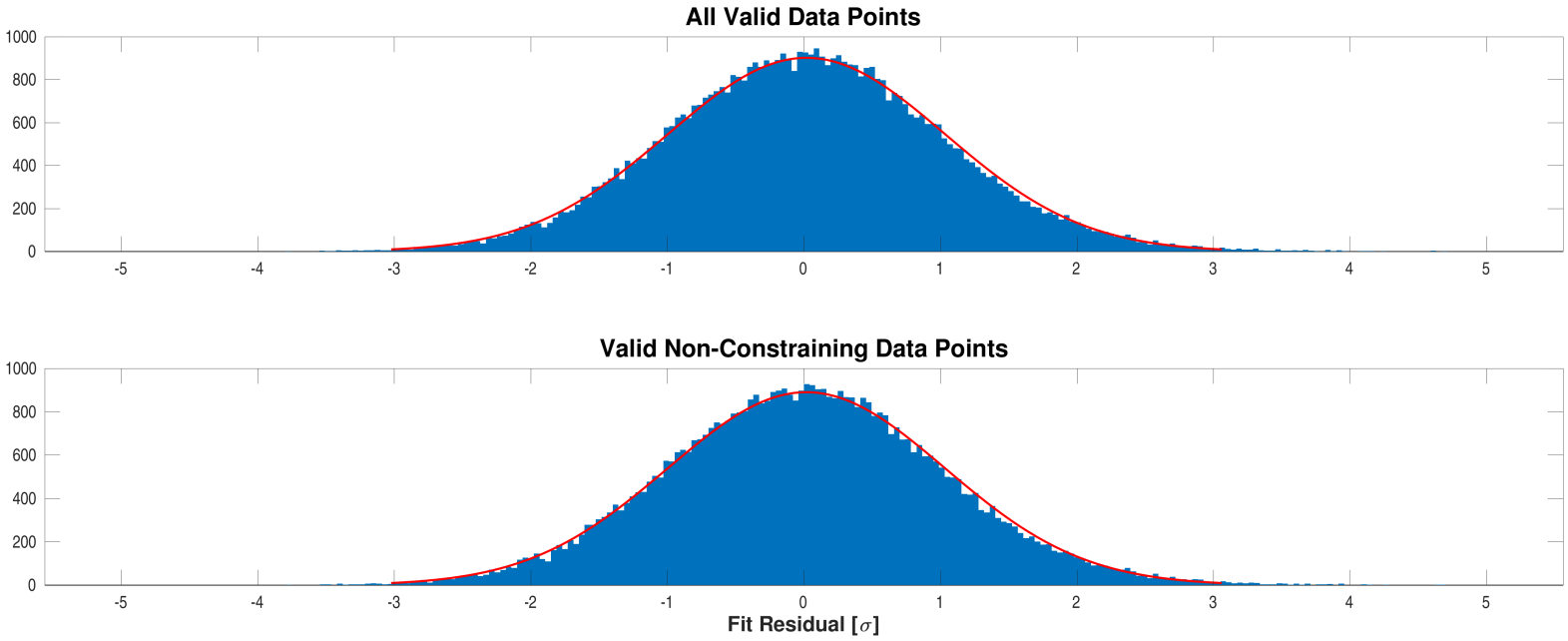
C.1 Model Fitter: All Transits



Robust weights distribution for CatId 307210830, Planet candidate 3. Top plot: all data points. Middle plot: all data points, folded per the fitted period and epoch. Bottom plot: all data points, folded and zoomed.
Open `./planet-03/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-03-all-robust-weights.fig`



Fit residuals distribution for CatId 307210830, Planet candidate 3. Only the valid data points used to constrain the fit are shown here. A Gaussian fit to the histogram is shown in red.
Open `./planet-03/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-03-all-histo-used.fig`

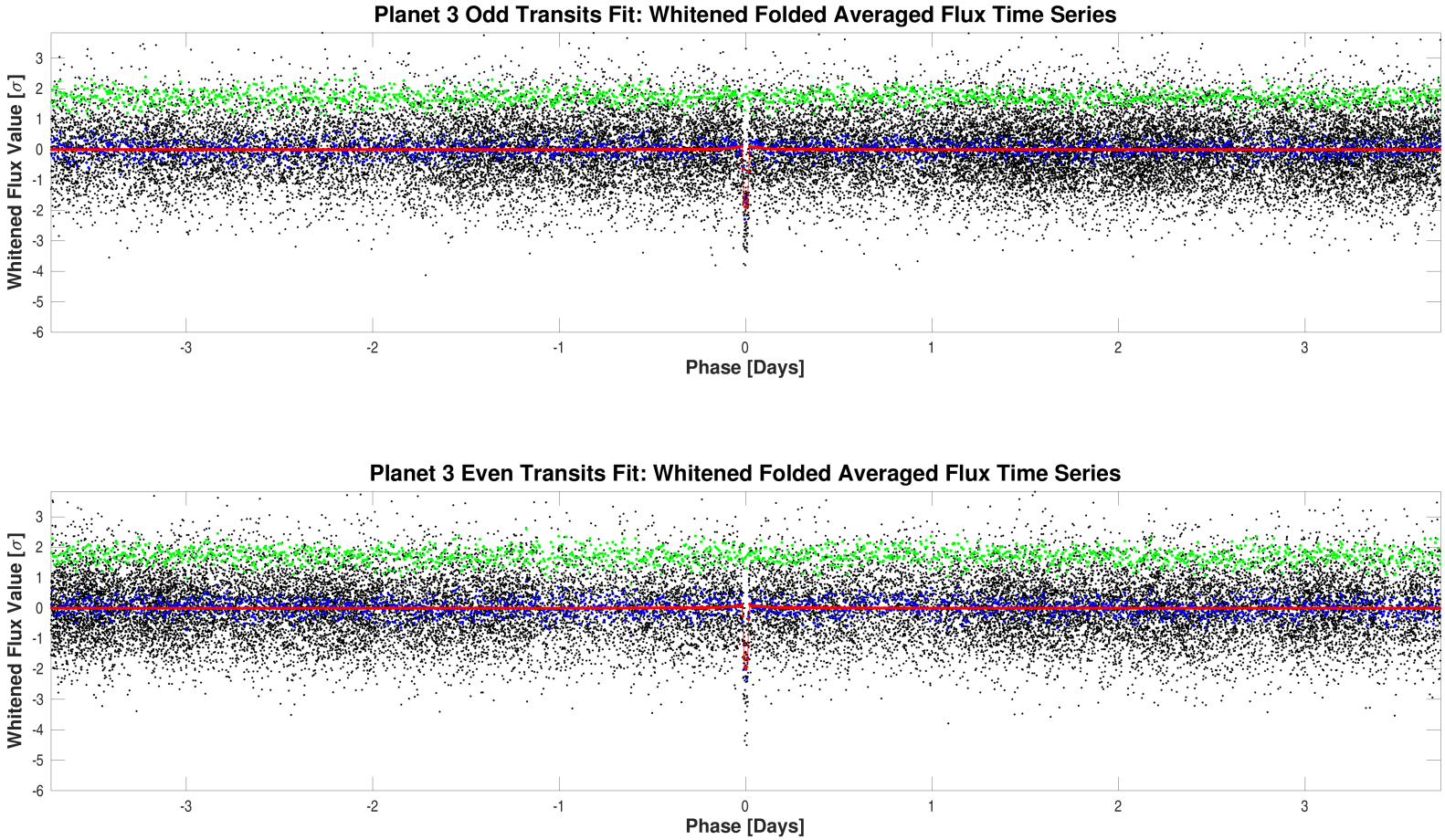


Fit residuals distribution for CatId 307210830, Planet candidate 3. Top plot: all valid data. Bottom plot: valid data not used to constrain fit (due to distance from a transit). Gaussian fits to the histograms are shown in red.
Open `./planet-03/planet-search-and-model-fitting-results/all-transits-fit/0000000307210830-03-all-histo-all-and-unused.fig`

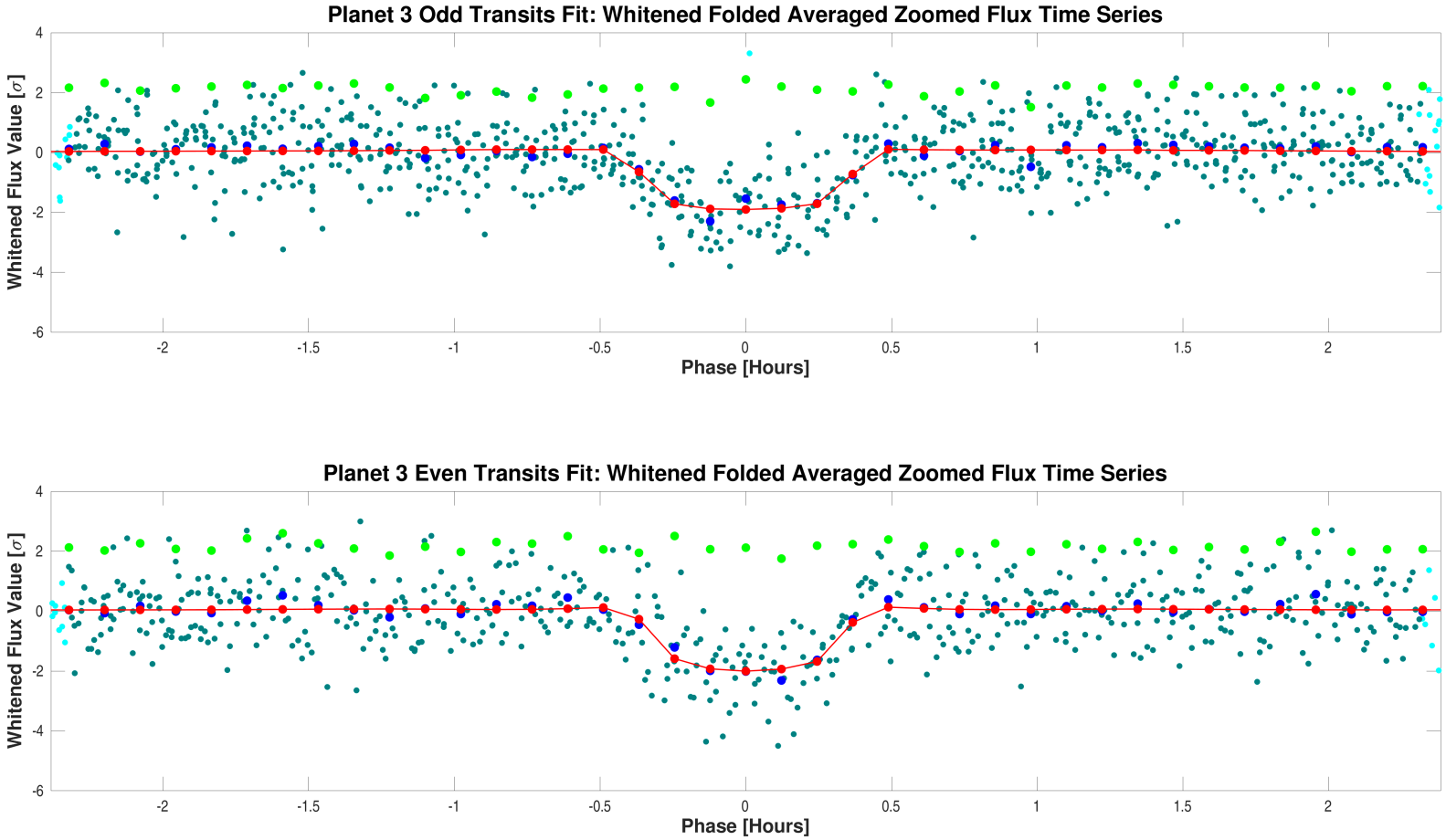
C.2 Model Fitter: Odd & Even Transits

Parameter	Odd Transits Value	Odd Transits Uncertainty	Even Transits Value	Even Transits Uncertainty	Units	Difference / Uncertainty
SNR	17.7		15.4			
Orbital Period	7.4508096	4.3983e-05	7.4508410	5.1137e-05	days	4.6574e-01
Transit Epoch	1355.2875521	7.7551e-04	1362.7381673	7.8440e-04	BTJD	2.0533e-01
Impact Parameter	0.6794	1.4352e+00	0.6853	1.6009e+00		2.7425e-03
Planet Radius to Star Radius Ratio	0.0392276	1.3181e-02	0.0404706	1.5564e-02		6.0946e-02
Semi-major Axis to Star Radius Ratio	56.3377	1.0172e+02	61.2169	1.2591e+02		3.0143e-02
Planet Radius	1.3404	4.5205e-01	1.3829	5.3330e-01	Earth radii	6.0754e-02
Semi-major Axis	0.0506	2.4868e-03	0.0506	2.4868e-03	AU	4.0460e-05
Effective Stellar Flux	4.9601	6.0134e-01	4.9600	6.0134e-01	Goldilocks	3.2788e-05
Equilibrium Temperature	381	1.1536e+01	381	1.1536e+01	Kelvin	3.2788e-05
Stellar Density	43.2741	2.3441e+02	55.5188	3.4256e+02	Solar density	2.9499e-02
Transit Depth	1617	1.0533e+02	1716	1.2859e+02	ppm	5.9435e-01
Transit Duration	0.7946	2.0181e-01	0.7280	2.1589e-01	hours	2.2528e-01
Transit Ingress Duration	0.0541	2.1454e-01	0.0517	2.3428e-01	hours	7.3634e-03
Eccentricity	0.0000	0.0000e+00	0.0000	0.0000e+00		
Peri Longitude	0.0000	0.0000e+00	0.0000	0.0000e+00	degrees	
Model Chi Square Statistic (DoF)	1066.4 (1256.0)		1066.4 (1256.0)			

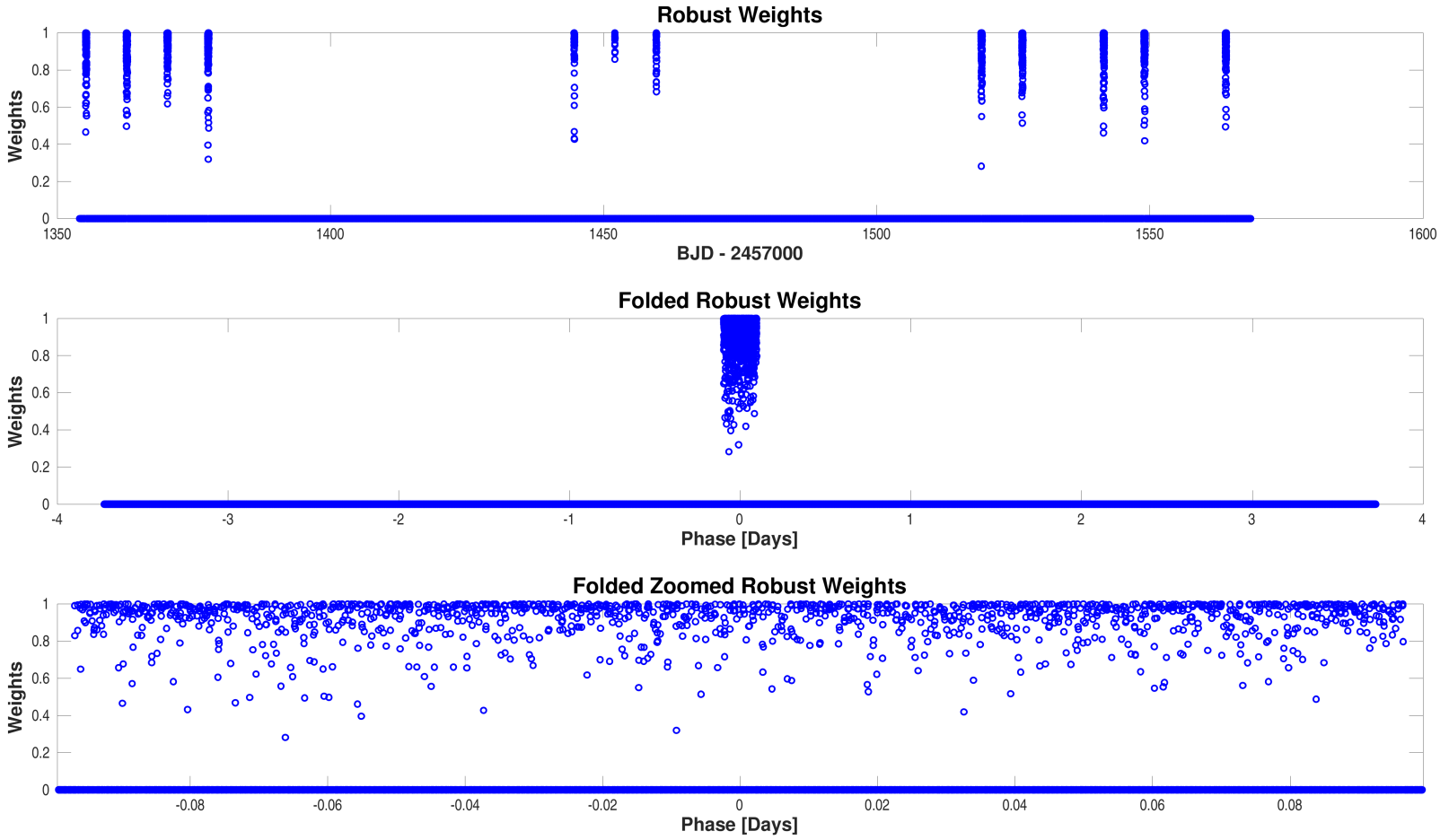
DoF: Degrees of Freedom



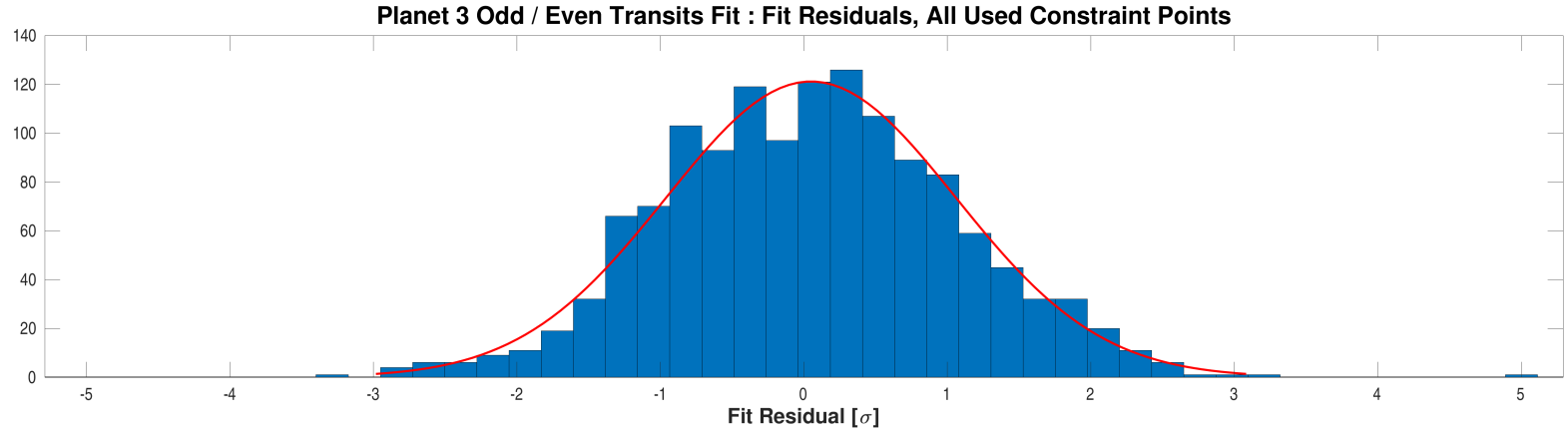
Folded flux time series for CatId 307210830, Planet candidate 3 in the whitened domain is plotted in black dots. Values are averaged into 1 cadence wide bins. The blue dots represent the averaged values of the folded flux time series; the red dots represent the averaged values of the folded model light curve of the odd/even transits fit; the green dots are the averaged folded fit residuals, vertically offset for clarity. Odd-even transits fit completed with full convergence.
Open `./planet-03/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-03-odd-even-whitened.fig`



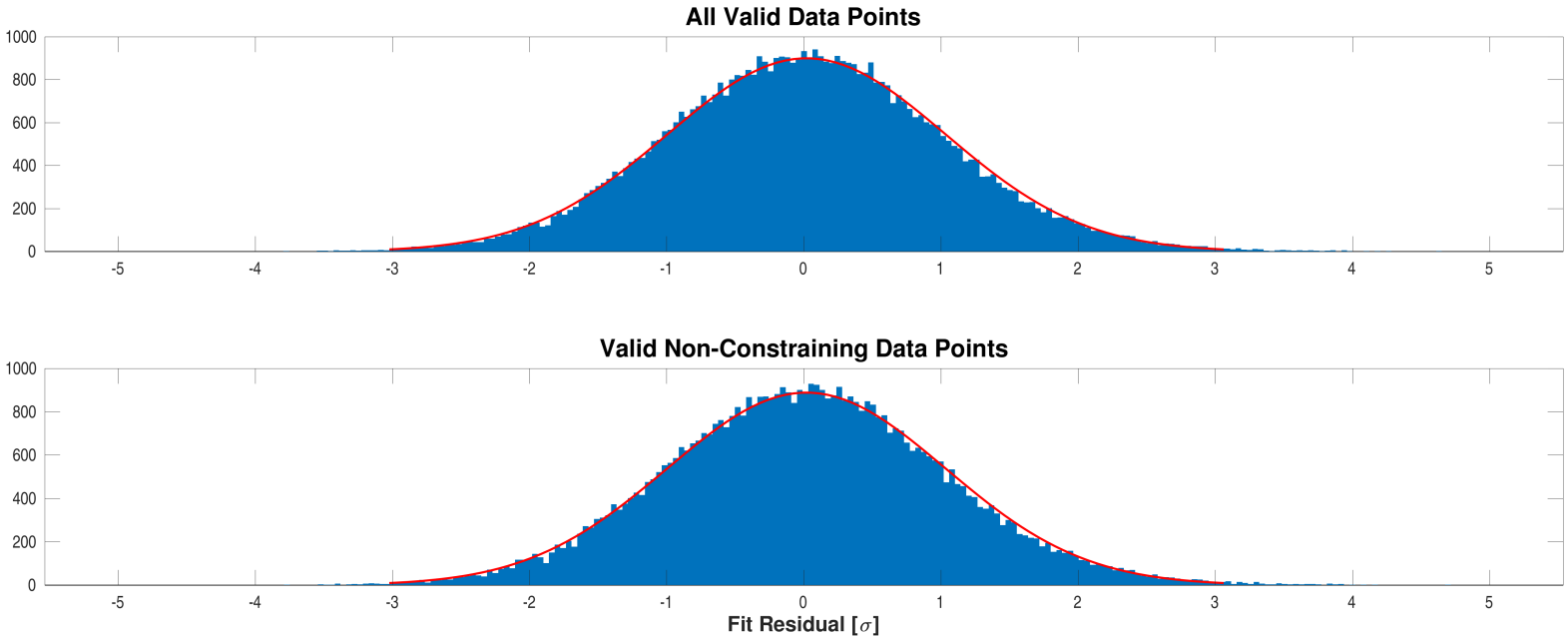
Folded flux time series for CatId 307210830, Planet candidate 3 in the whitened domain, zoomed on the transit. The flux data whose robust weights are larger/smaller than 0.1 are plotted in dark green/cyan dots, respectively. Values are averaged into 1 cadence wide bins. The blue dots represent the averaged values of the folded flux time series; the red dots represent the averaged values of the fitted model light curve of the odd/even transits fit; the green dots are the averaged folded fit residuals, vertically offset for clarity. Magenta dots are the averaged values of the folded flux time series, with a phase shift of 0.5 relative to the blue dots, vertically offset for clarity. Odd-even transits fit completed with full convergence.
Open `./planet-03/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-03-odd-even-whitened-zoomed.fig`



Robust weights distribution for CatId 307210830, Planet candidate 3. Top plot: all data points. Middle plot: all data points, folded per the fitted period and epoch. Bottom plot: all data points, folded and zoomed.
Open `./planet-03/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-03-odd-even-robust-weights.fig`

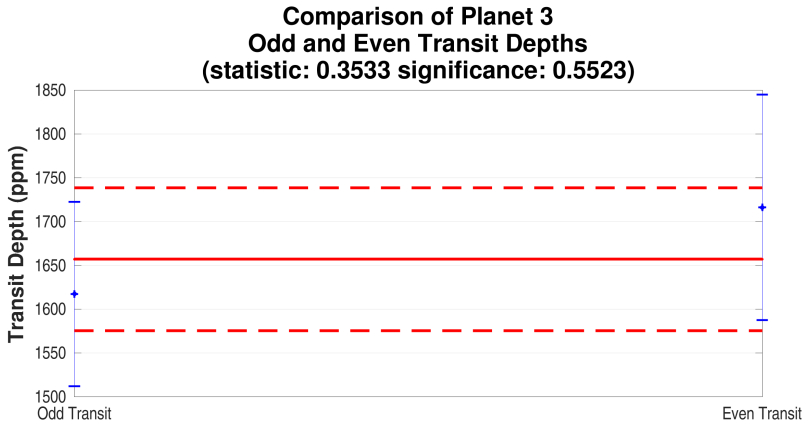


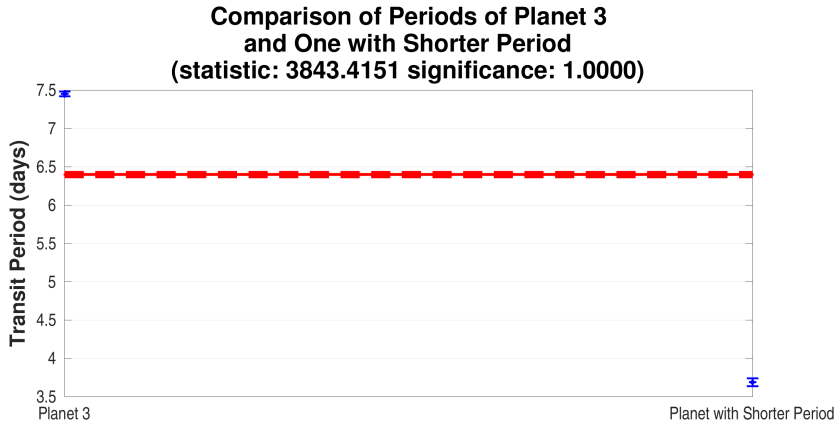
Fit residuals distribution for CatId 307210830, Planet candidate 3. Only the valid data points used to constrain the fit are shown here. A Gaussian fit to the histogram is shown in red.
Open `./planet-03/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-03-odd-even-histo-used.fig`



Fit residuals distribution for CatId 307210830, Planet candidate 3. Top plot: all valid data. Bottom plot: valid data not used to constrain fit (due to distance from a transit). Gaussian fits to the histograms are shown in red.
Open `./planet-03/planet-search-and-model-fitting-results/odd-even-transits-fit/0000000307210830-03-odd-even-histo-all-and-unused.fig`

C.3 Eclipsing Binary Discrimination Test





Top-left: Diagnostic plot of Odd/Even Transit Depth Test for catId 307210830, planet 3. A significance level close to 1/0 favors a transiting planet/an eclipsing binary.
Top-right: Diagnostic plot of Orbital Period Test for catId 307210830. Orbital periods of planet 3 and the planet with shorter period are compared. A significance level close to 1/0 favors a transiting planet/an eclipsing binary.
Open `./planet-03/binary-discrimination-test-results/0000000307210830-03-eclipsing-binary-discrimination-tests.fig`

Appendix D Alerts

Time	Severity	Message
1608.4520	warning	Not excluding transits that overlap those of another candidate in S5 (target=1, catId=307210830, planet=3, targetTable=136, component=generateDvDifferenceImages)