

KIC 010657406

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
010657406-01	OBS	1837.01	34.173175	137.790056	628.9	4.791	39.4	40.8	0.83	5201	2.41	11.11
010657406-02	OBS	1837.02	1.682947	131.965032	137.1	1.958	28.9	32.8	0.83	5201	1.19	615.54

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010657406-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010657406-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

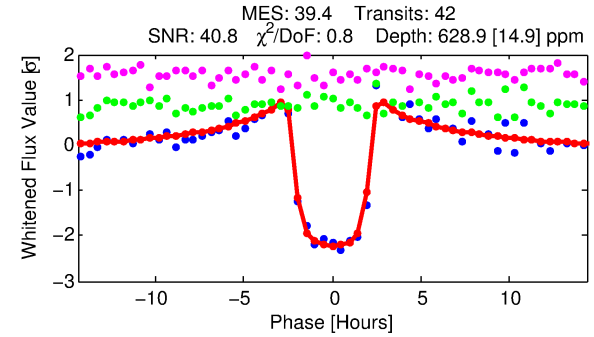
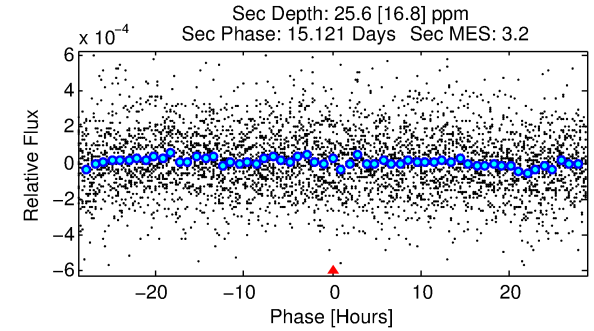
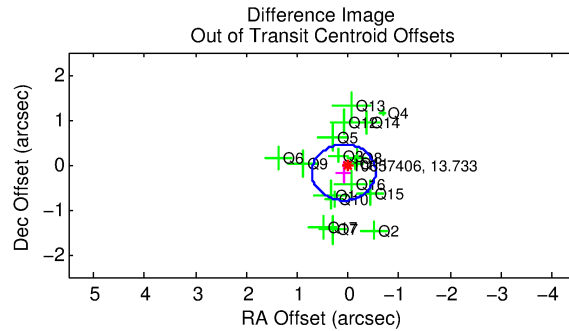
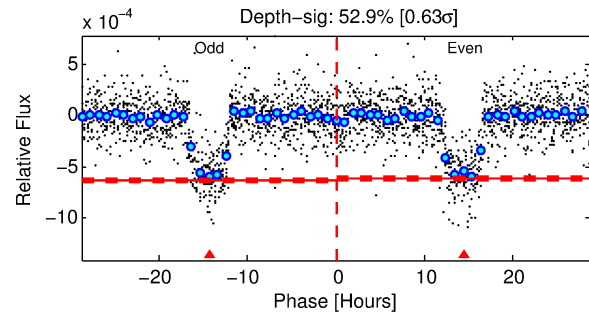
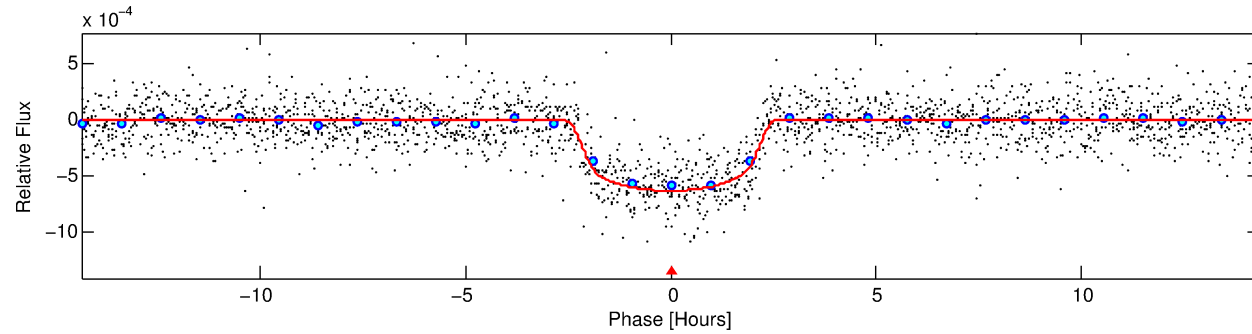
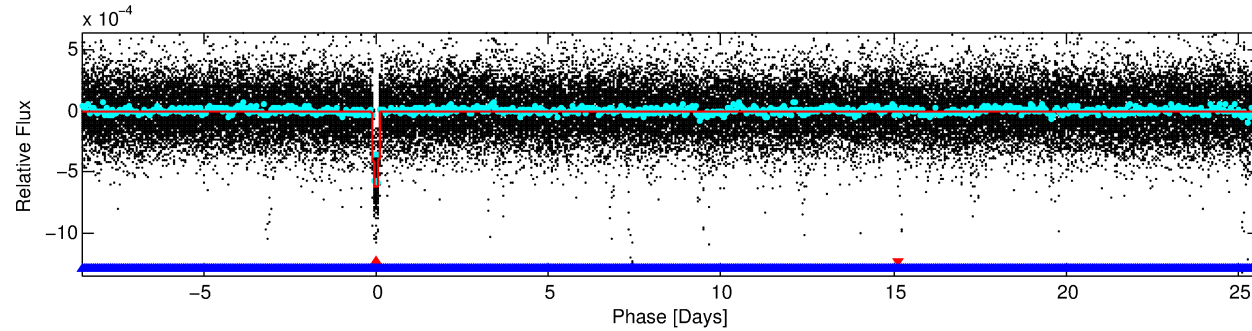
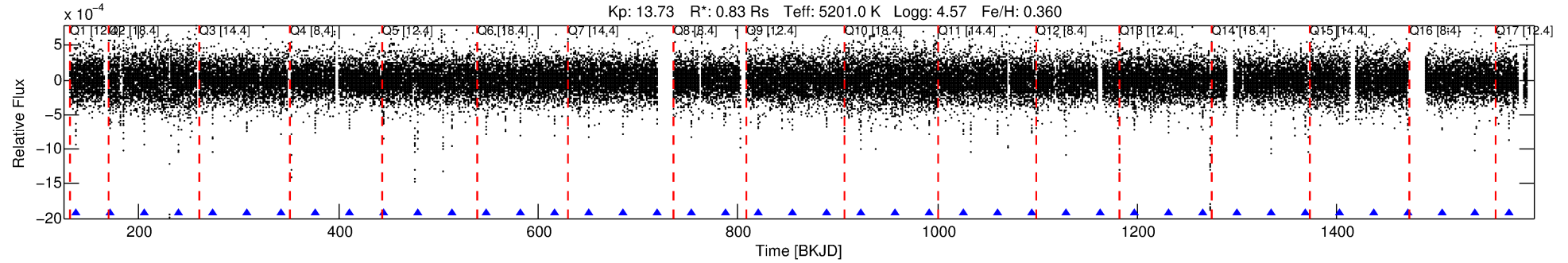
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010657406-01

No Significant Match Found

DV One-Page Summary

KIC: 10657406 Candidate: 1 of 2 Period: 34.173 d
KOI: K01837.01 Corr: 0.967



DV Fit Results:

Period = 34.17317 [0.00007] d
Epoch = 137.7901 [0.0018] BKJD
Rp/R* = 0.0265 [0.0021]
a/R* = 31.93 [9.22]
b = 0.84 [0.10]
Seff = 11.11 [1.94]
Teq = 466 [20] K
Rp = 2.41 [0.29] Re
a = 0.2026 [0.0187] AU
Ag = 99.53 [68.69] [1.43 σ]
Teffp = 2274 [386] K [4.68 σ]

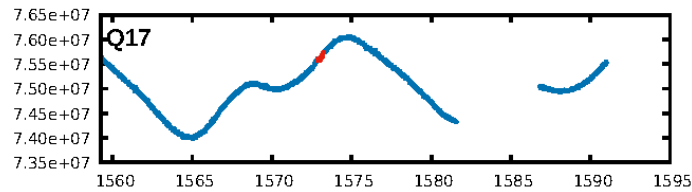
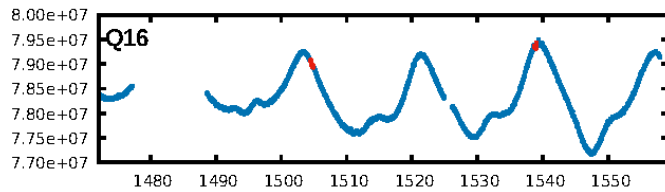
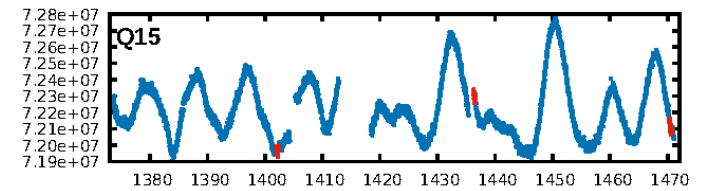
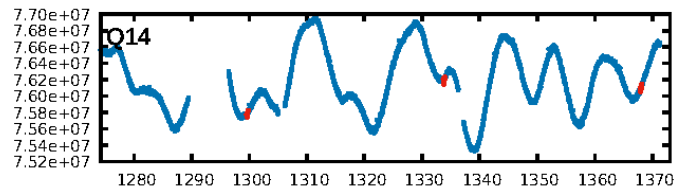
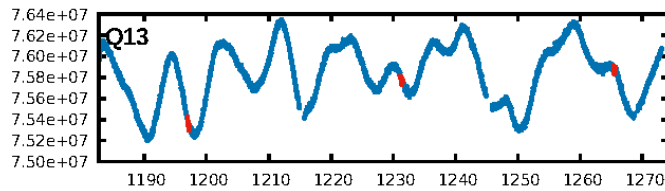
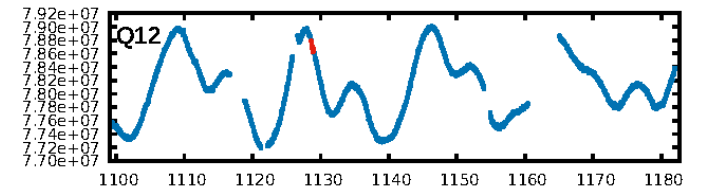
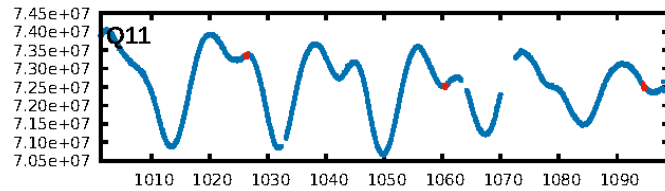
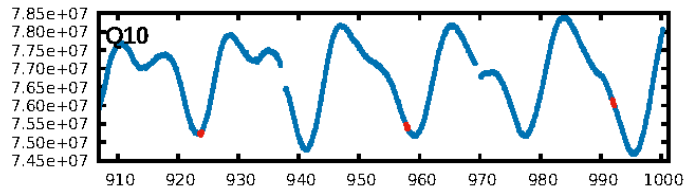
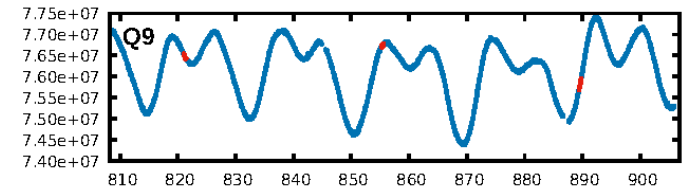
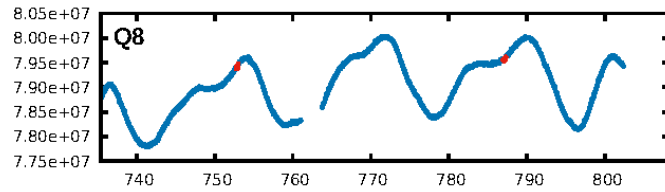
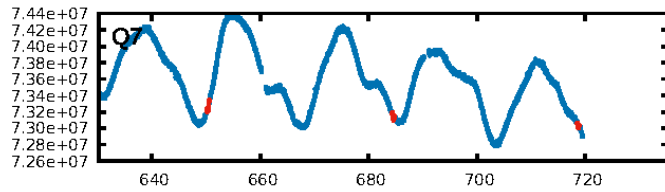
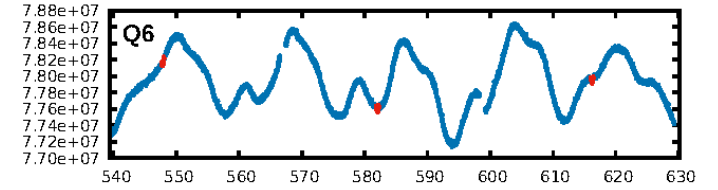
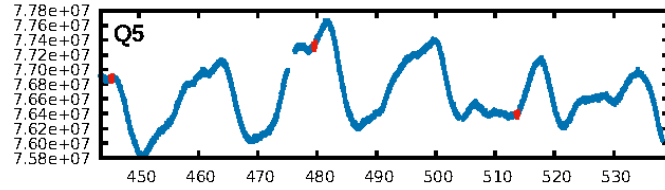
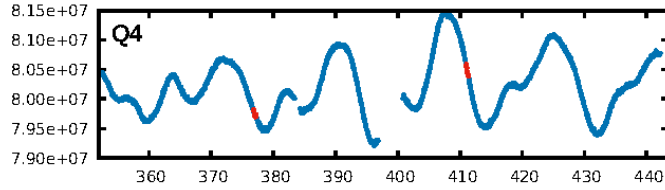
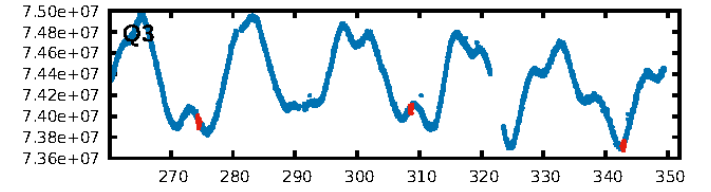
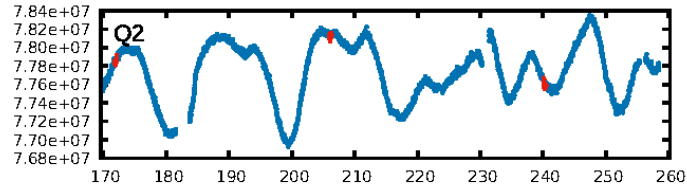
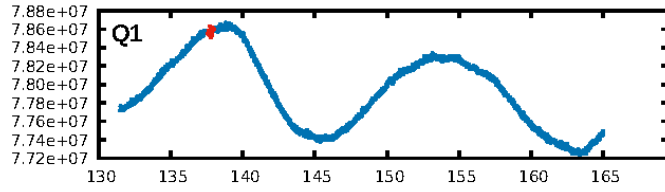
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [150.66 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 92.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.10e-203
RollingBand-fgt: 1.00 [40/40]
GhostDiagnostic-chr: 2.082
Centroid-sig: 4.2%
Centroid-so: 0.425 arcsec [2.03 σ]
OotOffset-rm: 0.194 arcsec [0.93 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.138 arcsec [0.61 σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
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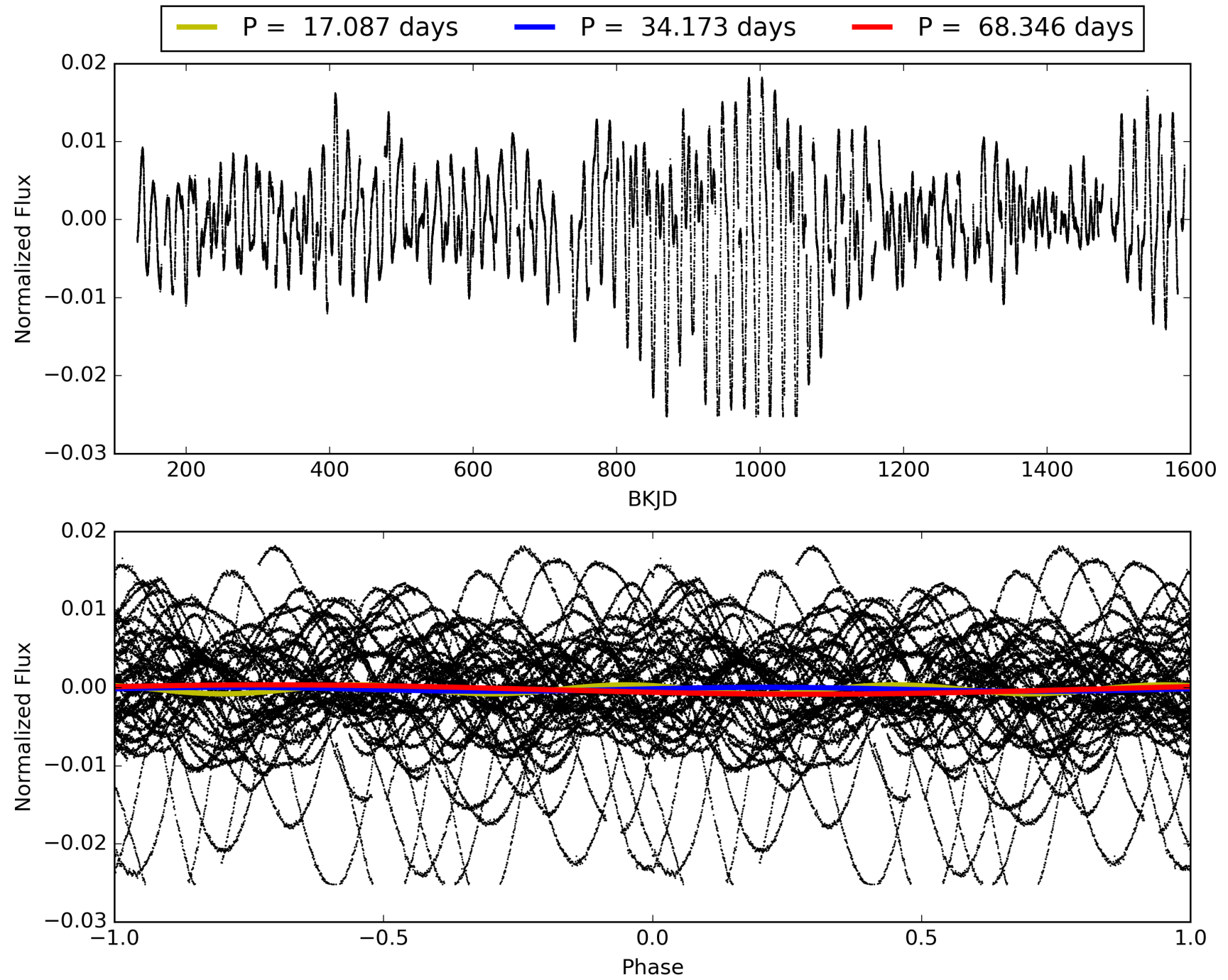
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010657406-01, PDC Light Curves

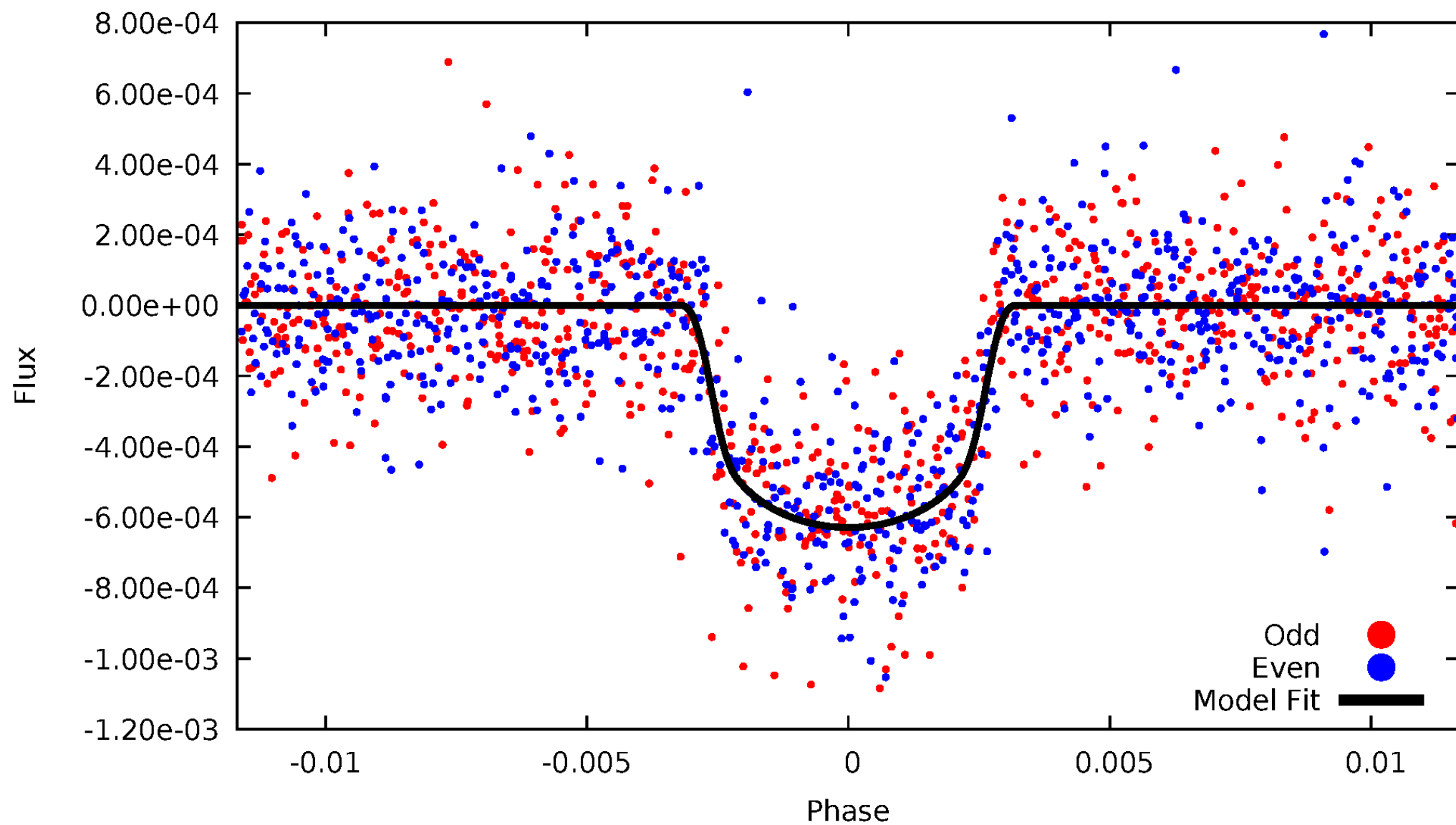


TCE 010657406-01



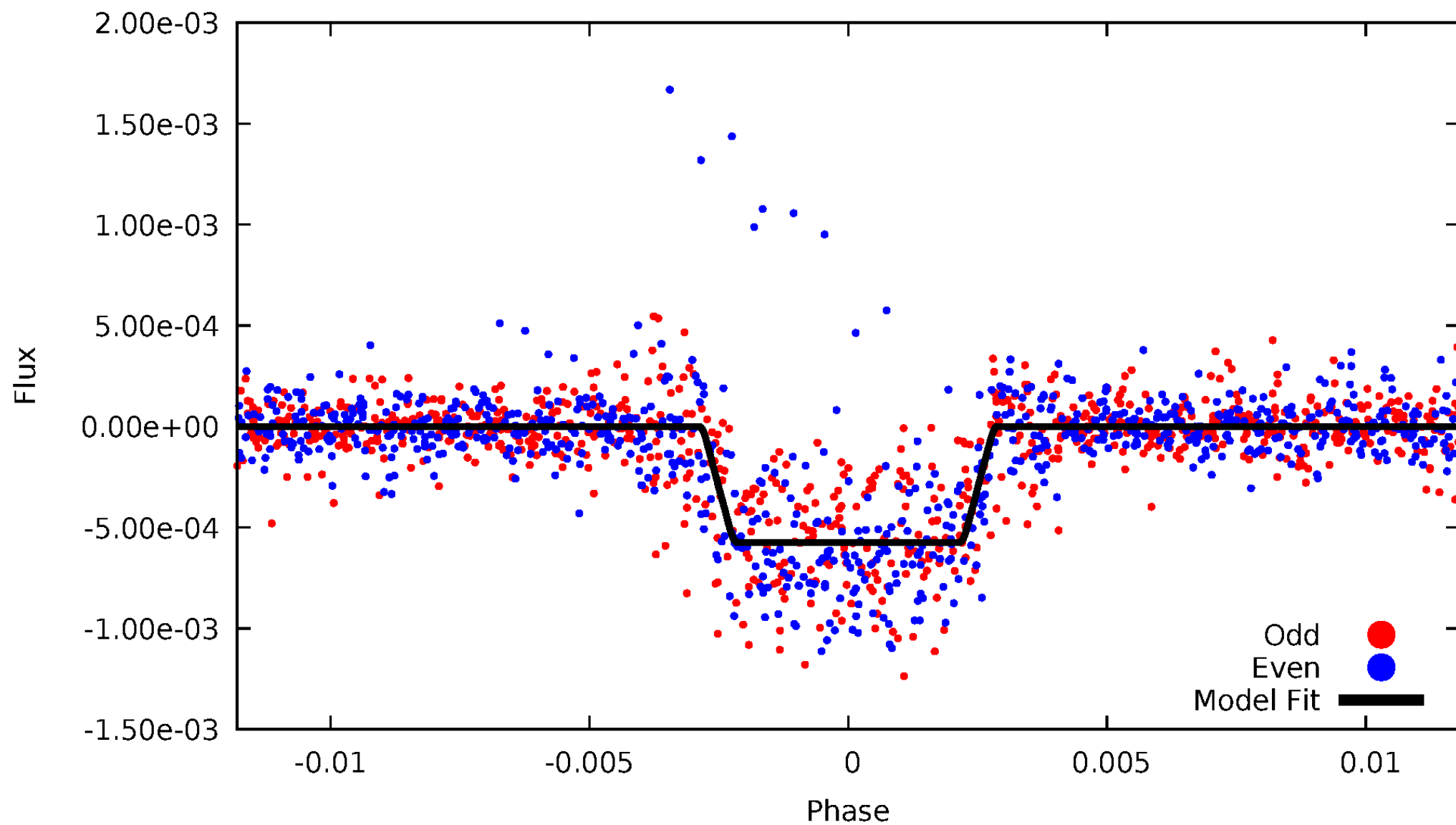
DV Odd/Even

TCE 010657406-01



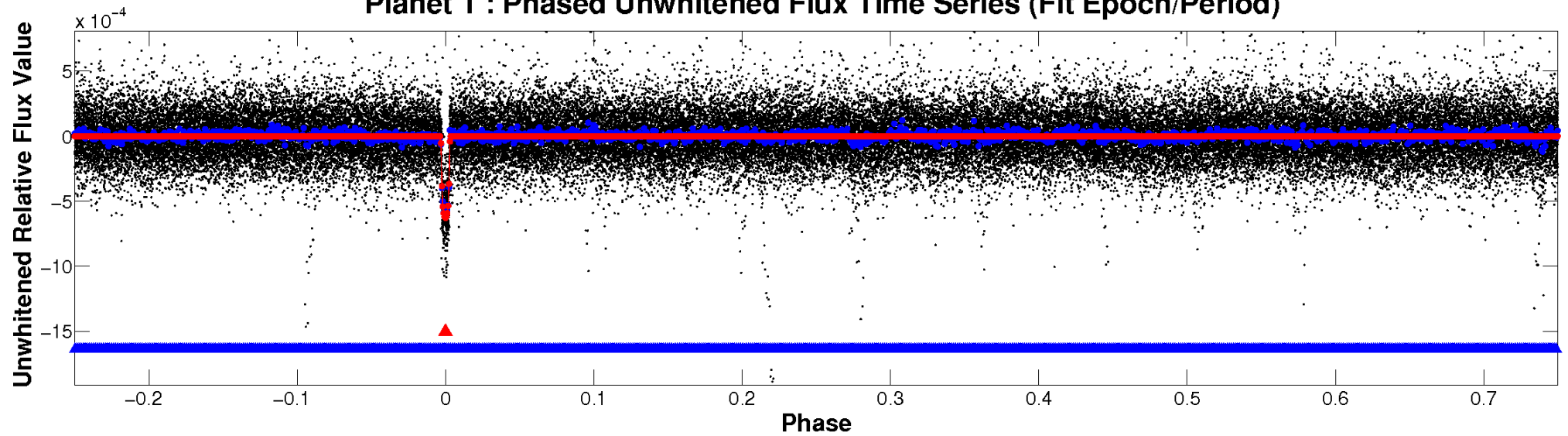
ALT Odd/Even

TCE 010657406-01

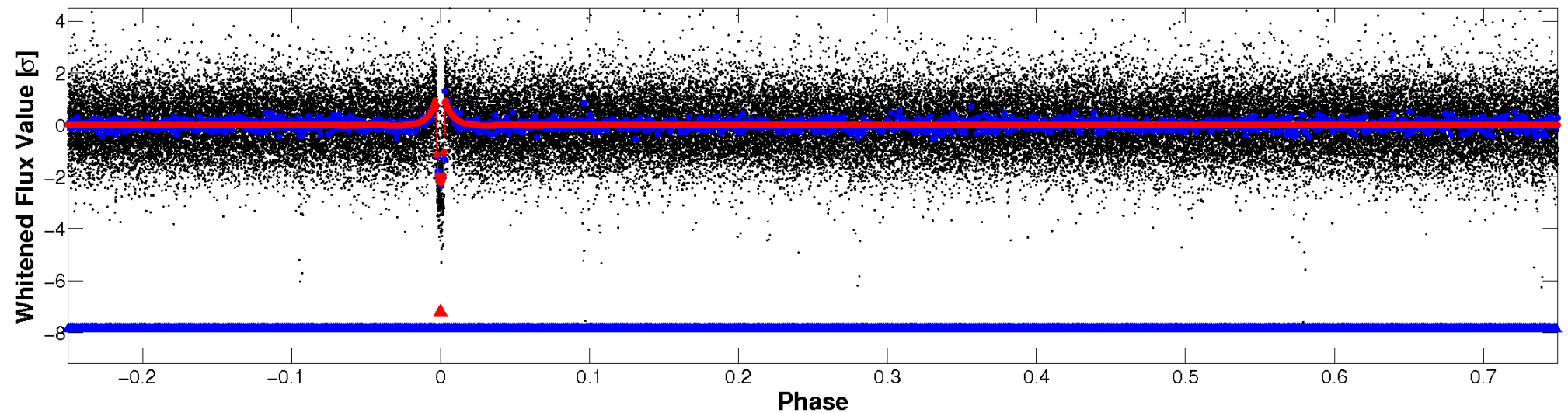


Non-Whitened Vs. Whitened Light Curve

Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

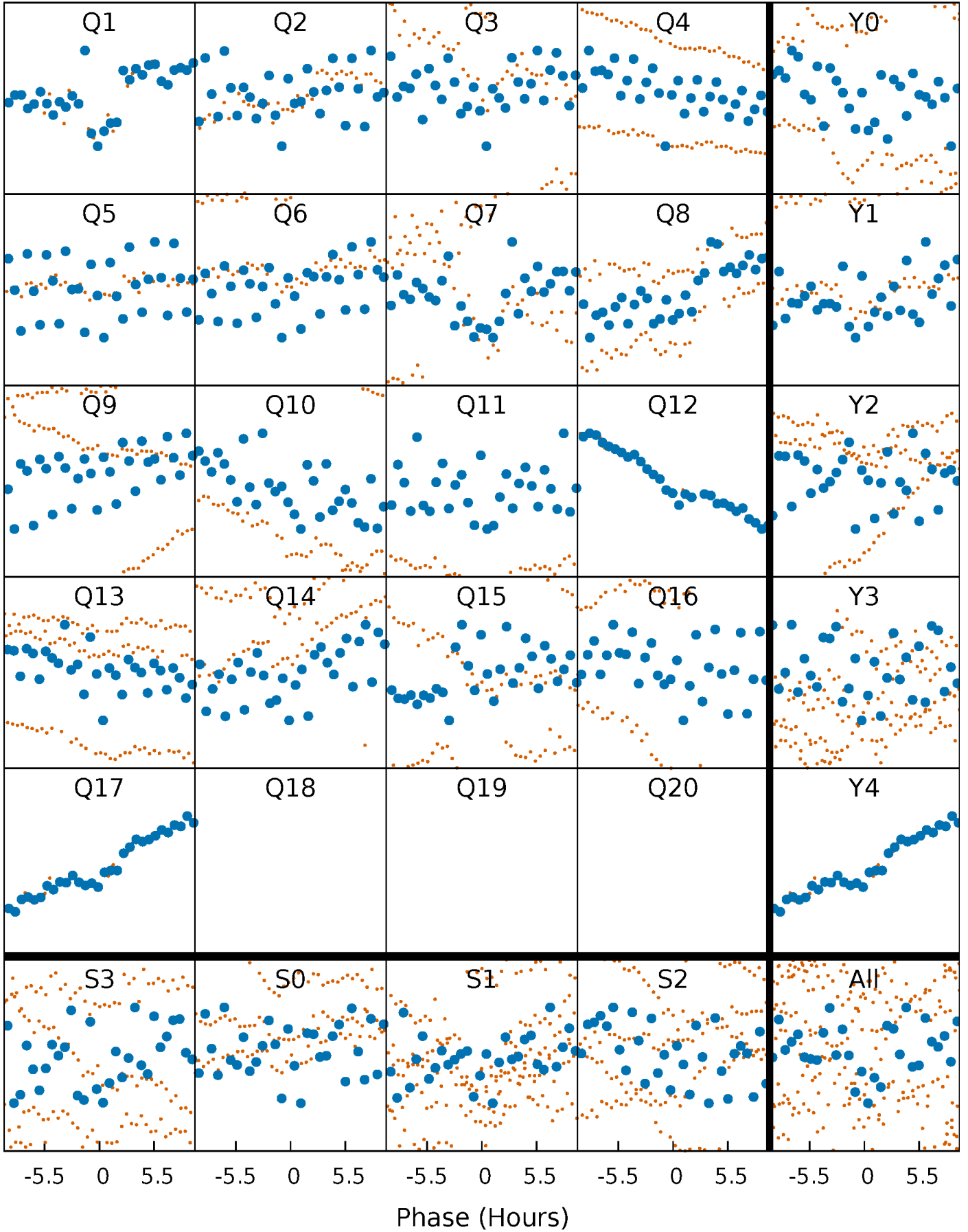


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



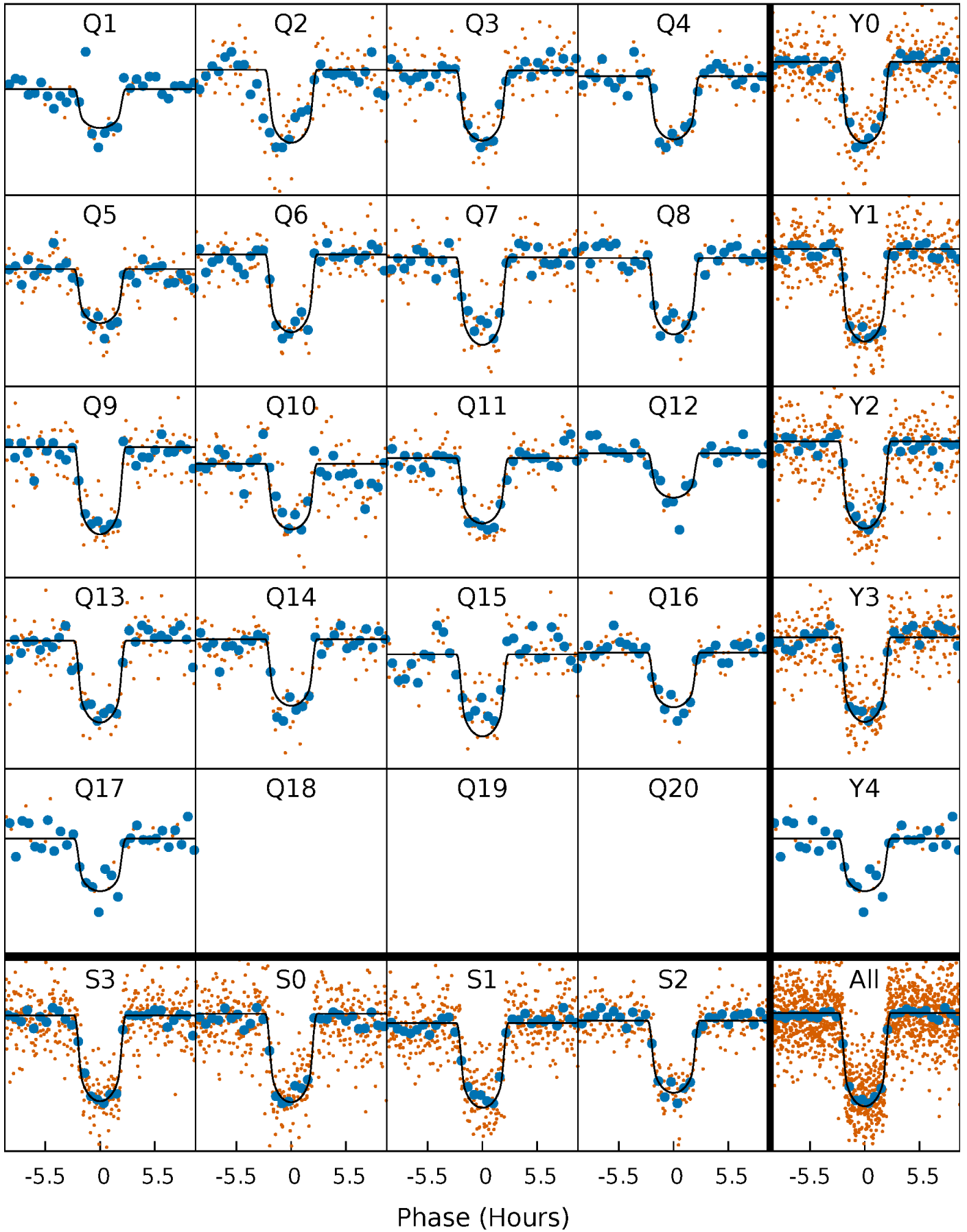
PDC Quarter-Phased Transit Curves

TCE 010657406-01 P= 34.173175 Days $T_0=137.790056$ (BKJD)



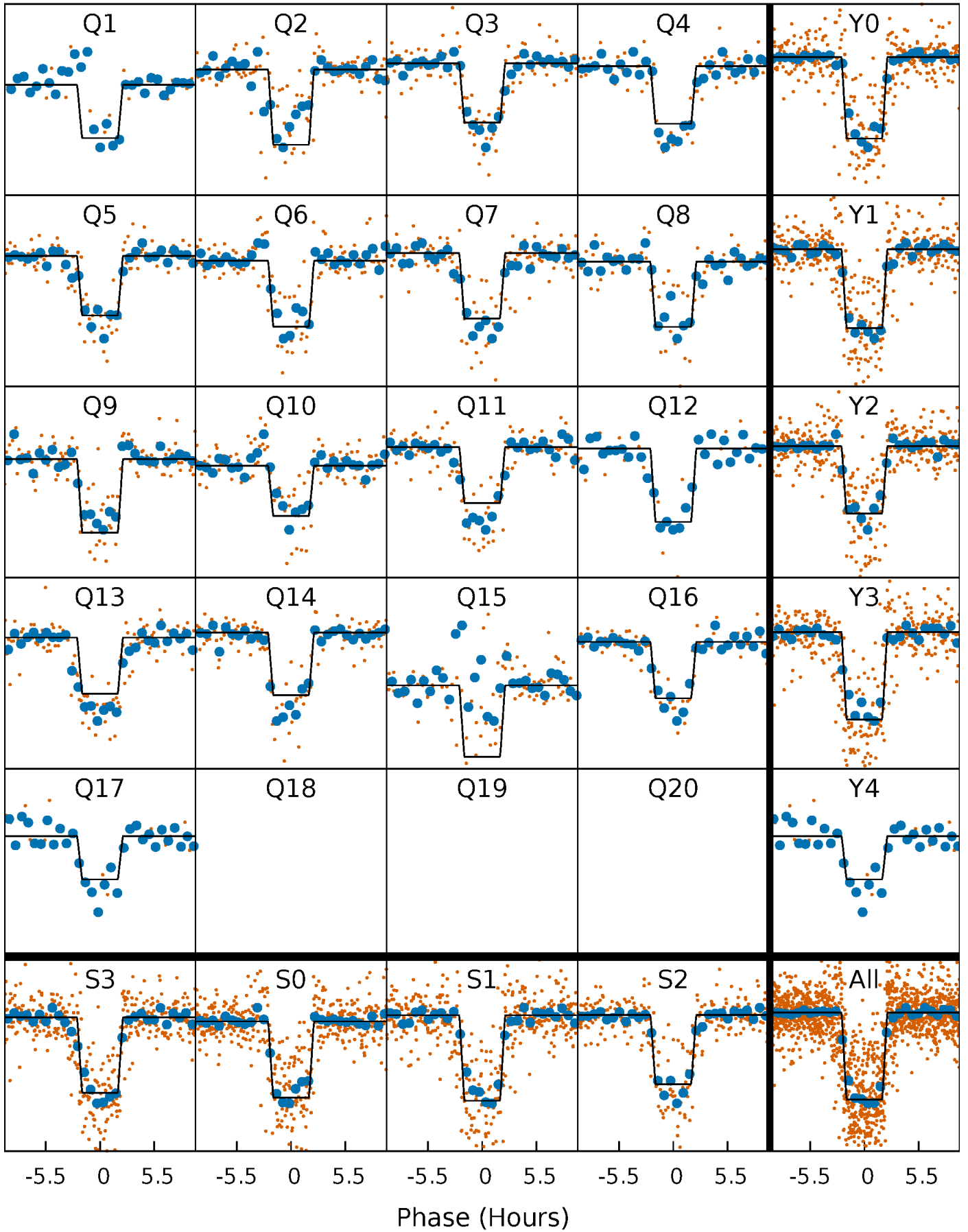
DV Quarter-Phased Transit Curves

TCE 010657406-01 P= 34.173175 Days $T_0=137.790056$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

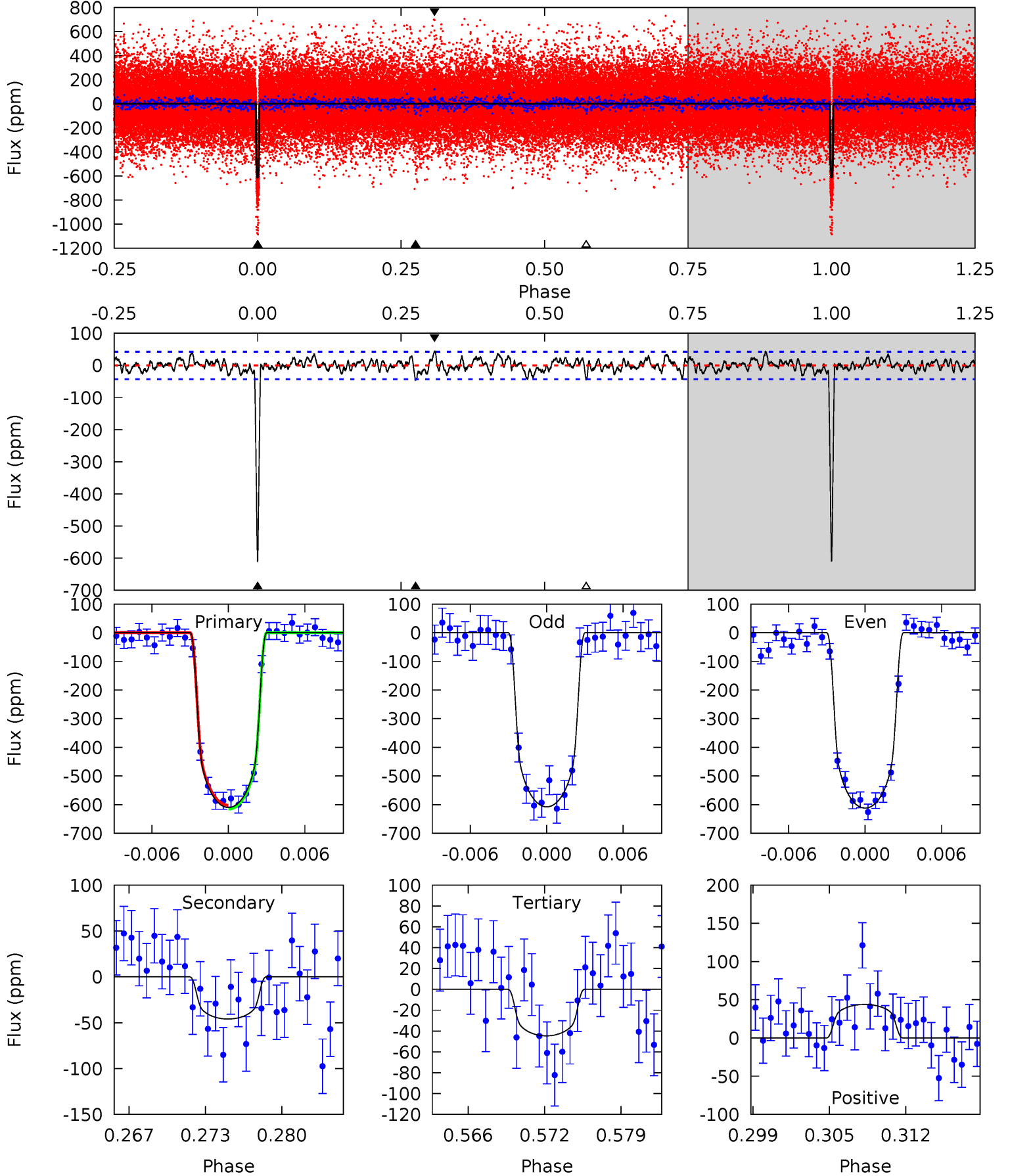
TCE 010657406-01 P= 34.173401 Days $T_0=137.786339$ (BKJD)



DV Model-Shift Uniqueness Test

010657406-01, P = 34.173175 Days, E = 103.616881 Days

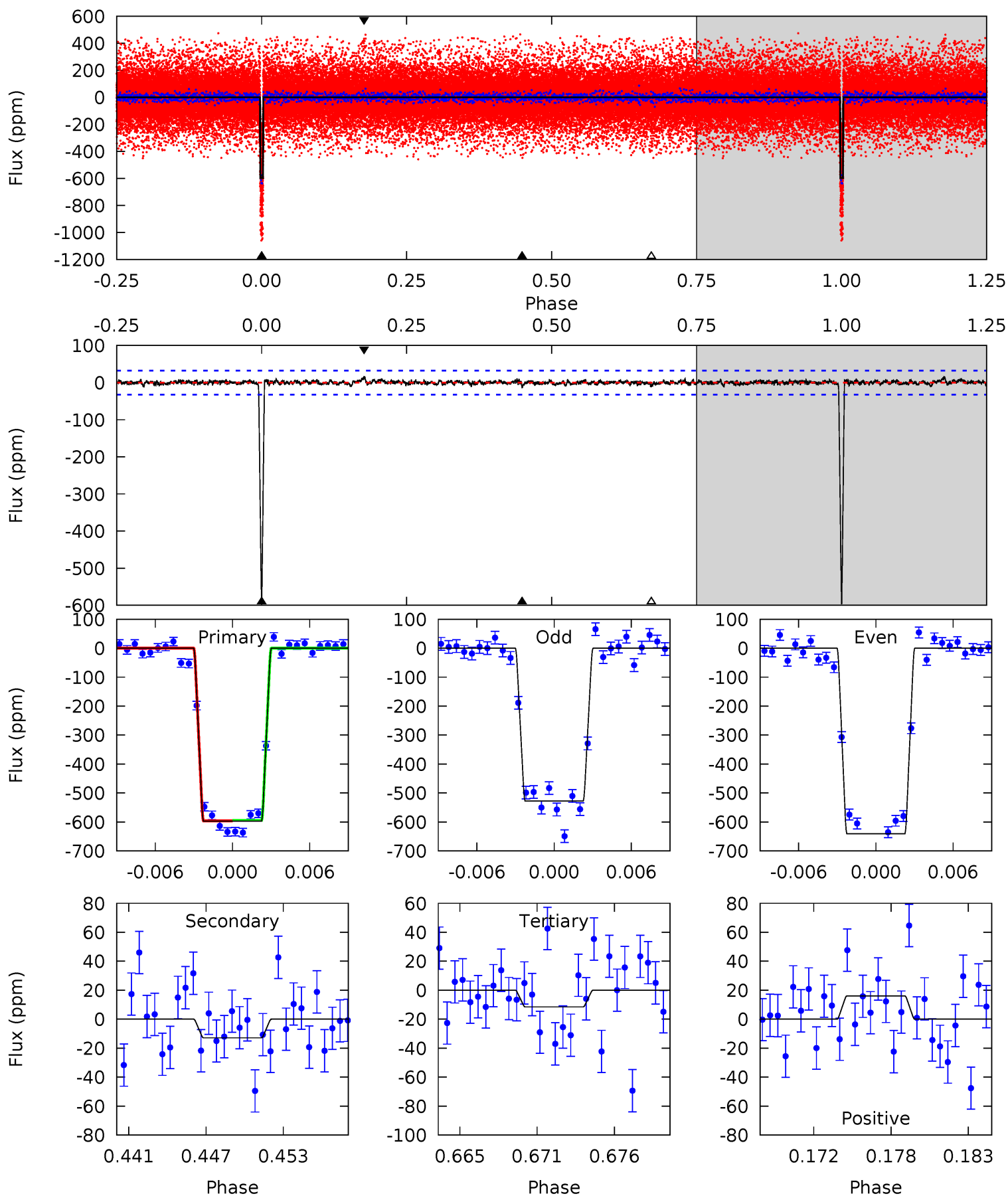
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
73.0	5.51	5.34	5.25	5.11	2.73	1.76	67.7	67.8	0.17	0.26	0.27	0.99	0.07	0.81



Alt Model-Shift Uniqueness Test

010657406-01, P = 34.173401 Days, E = 103.612938 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
94.4	2.04	1.83	2.54	5.13	2.76	0.53	92.6	91.9	0.22	-0.50	8.93	0.92	0.03	0.10



Stellar Parameters For KIC 010657406

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5201^{+93}_{-114}	$4.573^{+0.010}_{-0.090}$	$0.360^{+0.100}_{-0.150}$	$0.834^{+0.077}_{-0.026}$	$0.948^{+0.019}_{-0.071}$	$2.304^{+0.131}_{-0.590}$
	+2%/-2%	+0%/-2%	+28%/-42%	+9%/-3%	+2%/-7%	+6%/-26%
Source	SPE59	SPE59	SPE59	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010657406-01 / KOI 1837.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-46 ± 8	$2.46^{+0.23}_{-0.20}$	659^{+18}_{-16}	3188^{+113}_{-125}	164^{+47}_{-37}
Alt.	-13 ± 6	$2.22^{+0.24}_{-0.21}$	659^{+19}_{-16}	2754^{+166}_{-241}	57^{+32}_{-27}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

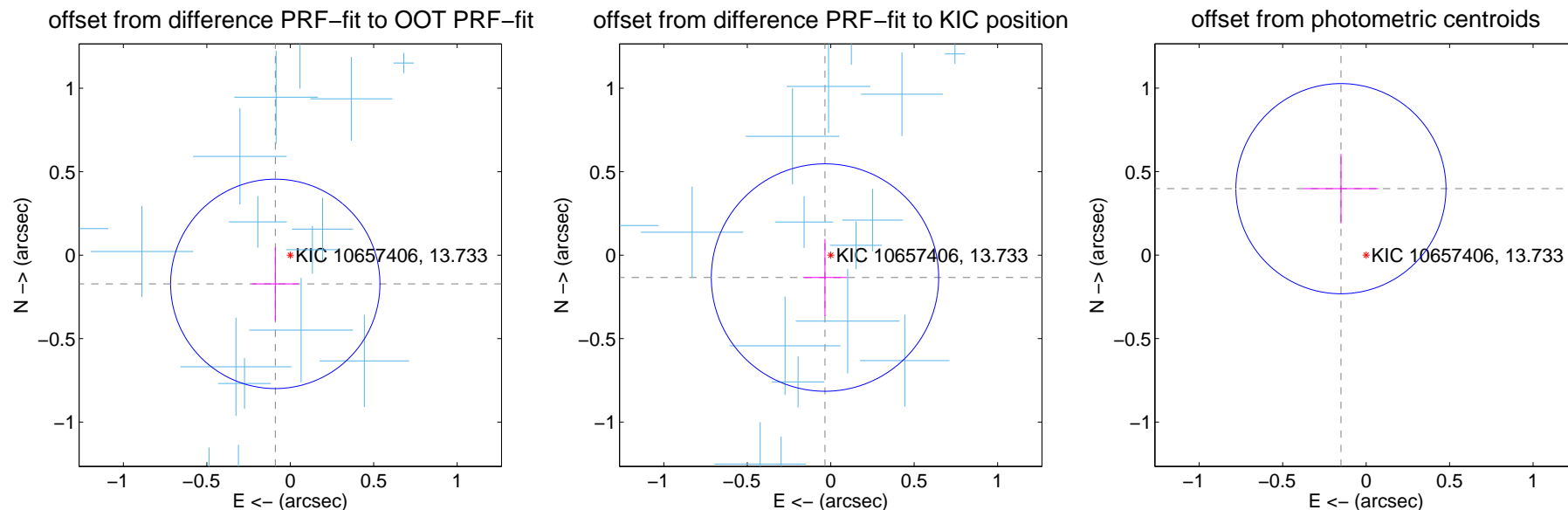
DV Centroid Data

Supplemental centroid analysis for 010657406-01. Kepler magnitude: 13.73. Transit SNR 40.78

There are 17 quarters with good PRF difference image offsets

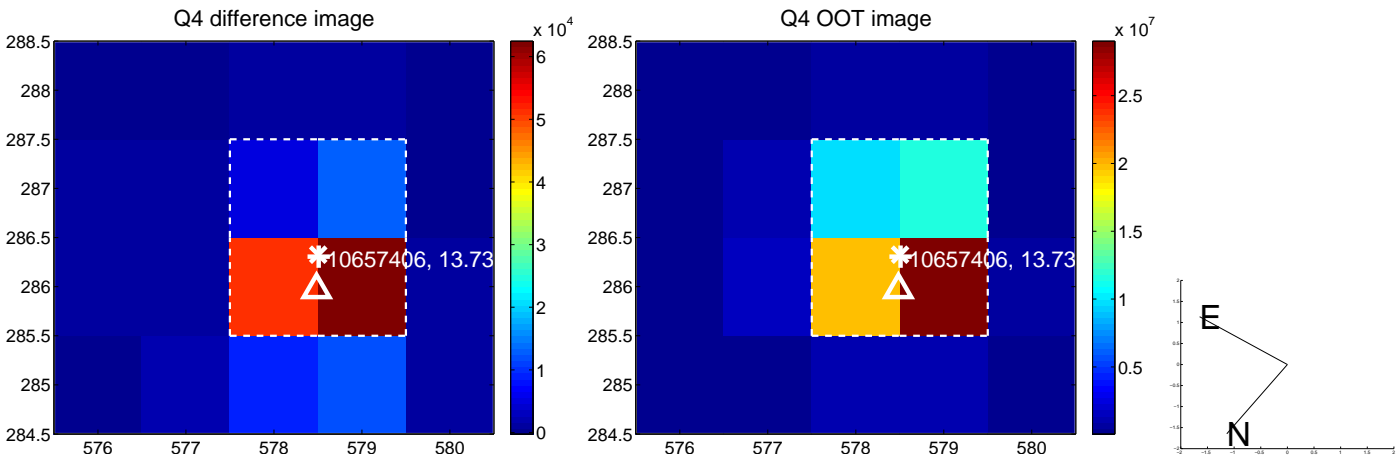
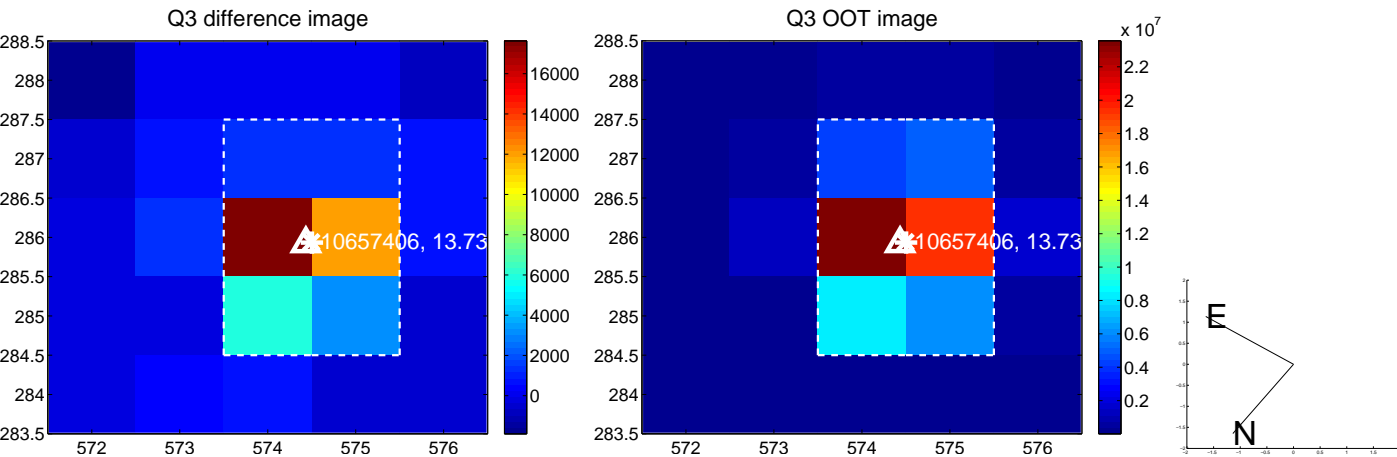
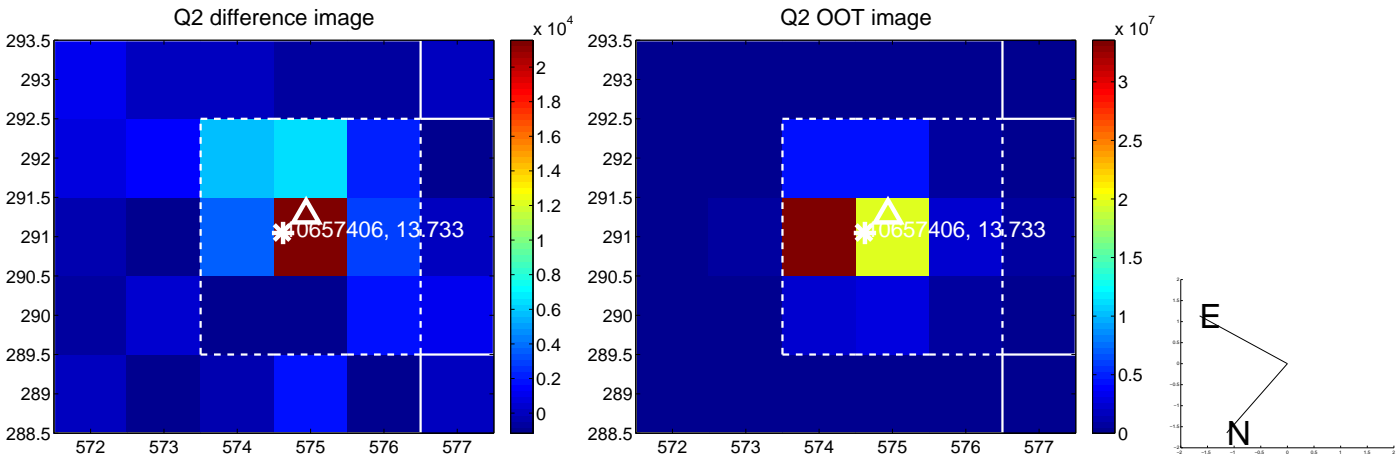
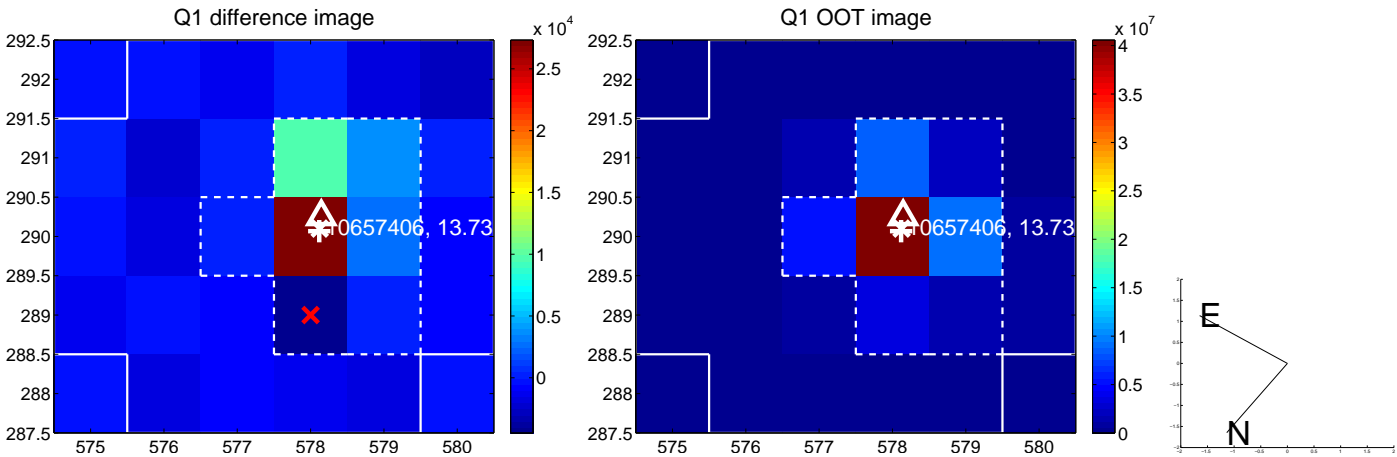
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.194 ± 0.209	0.93	0.090 ± 0.140	-0.172 ± 0.220
PRF-fit source offset from KIC position	0.138 ± 0.227	0.61	0.034 ± 0.131	-0.134 ± 0.231
photometric centroid source offset	0.43 ± 0.21	2.03	0.15 ± 0.22	0.40 ± 0.21

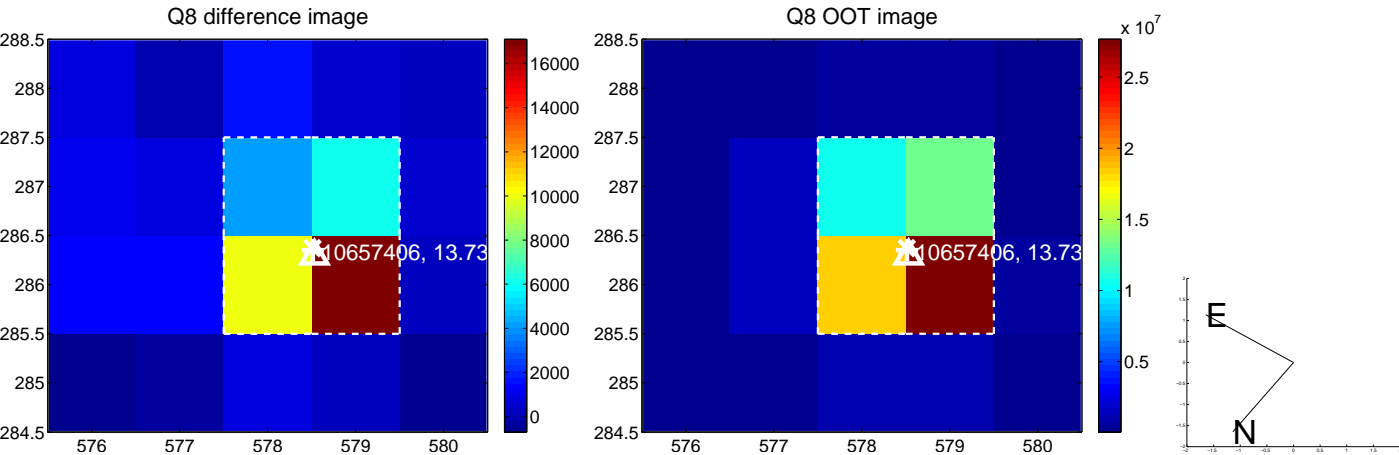
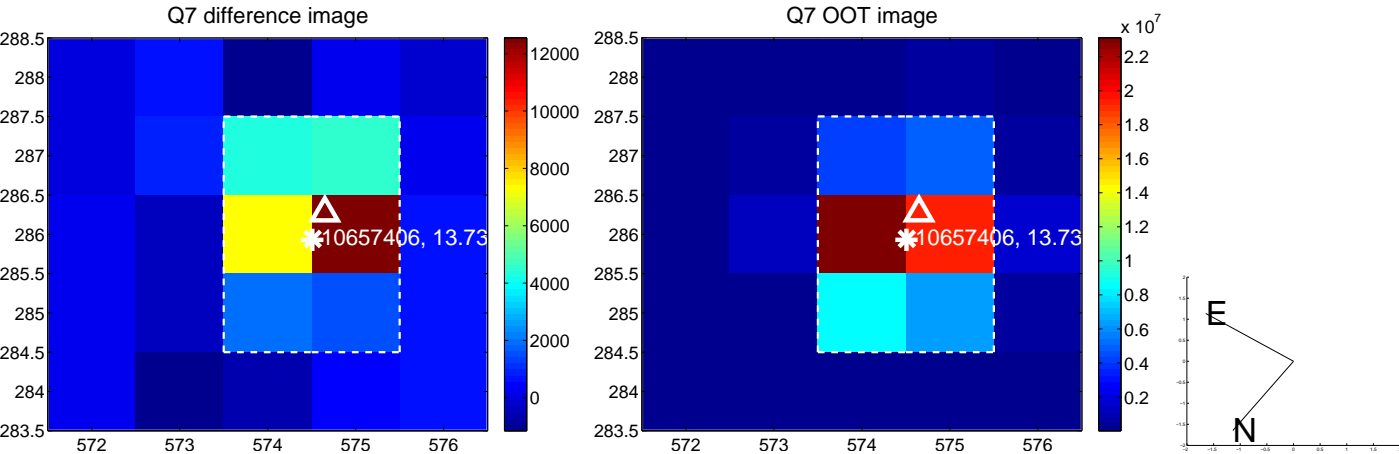
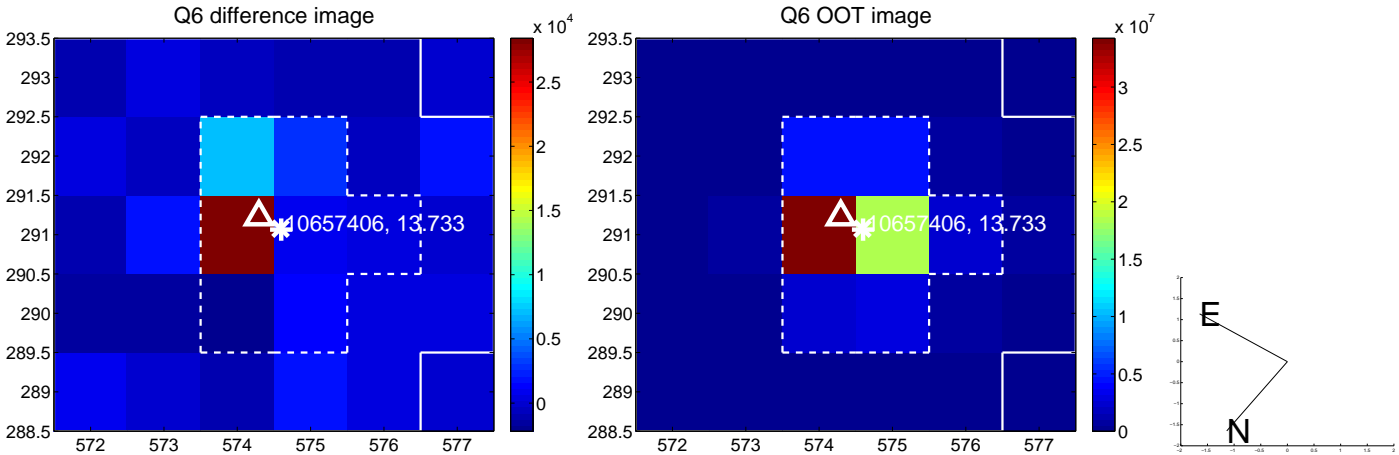
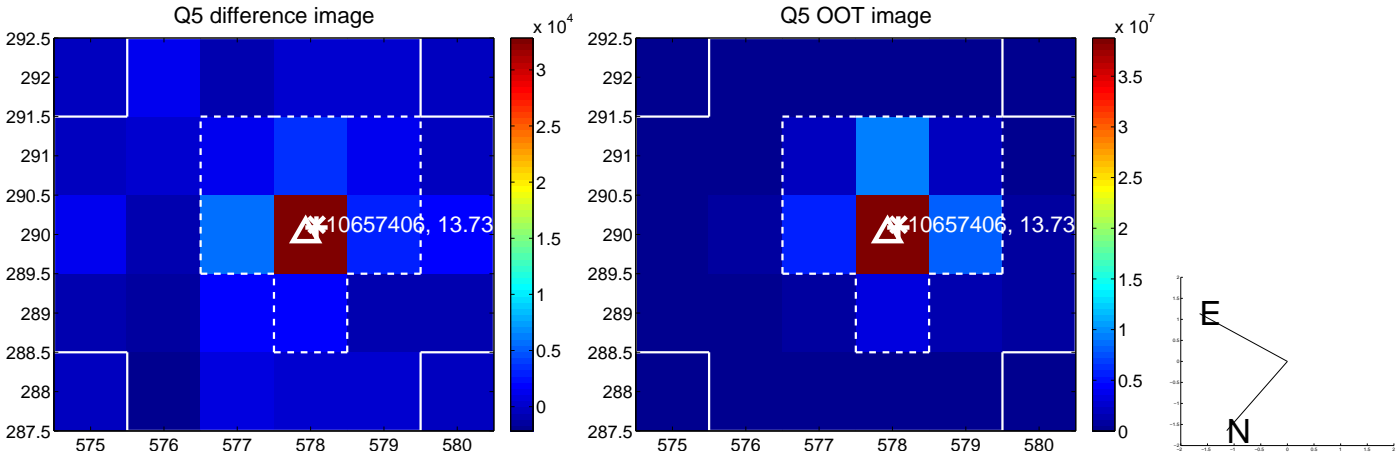


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

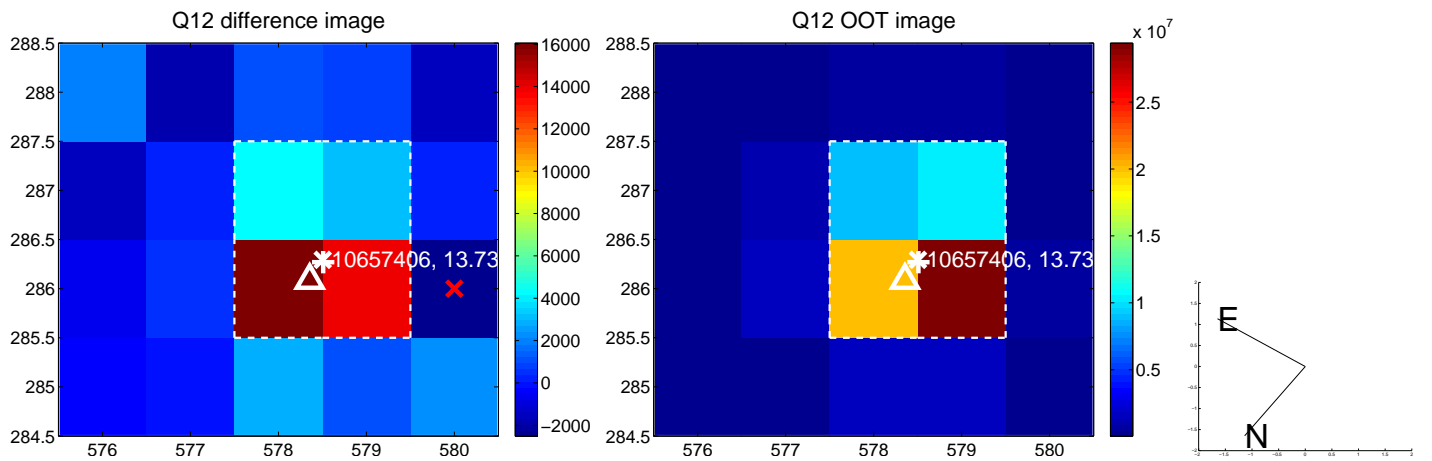
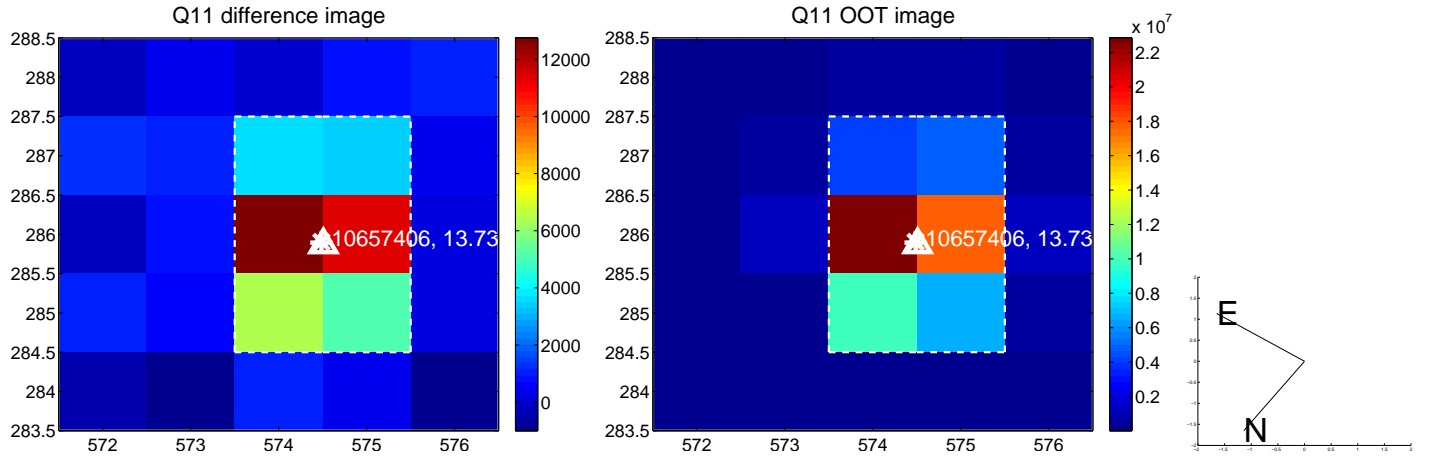
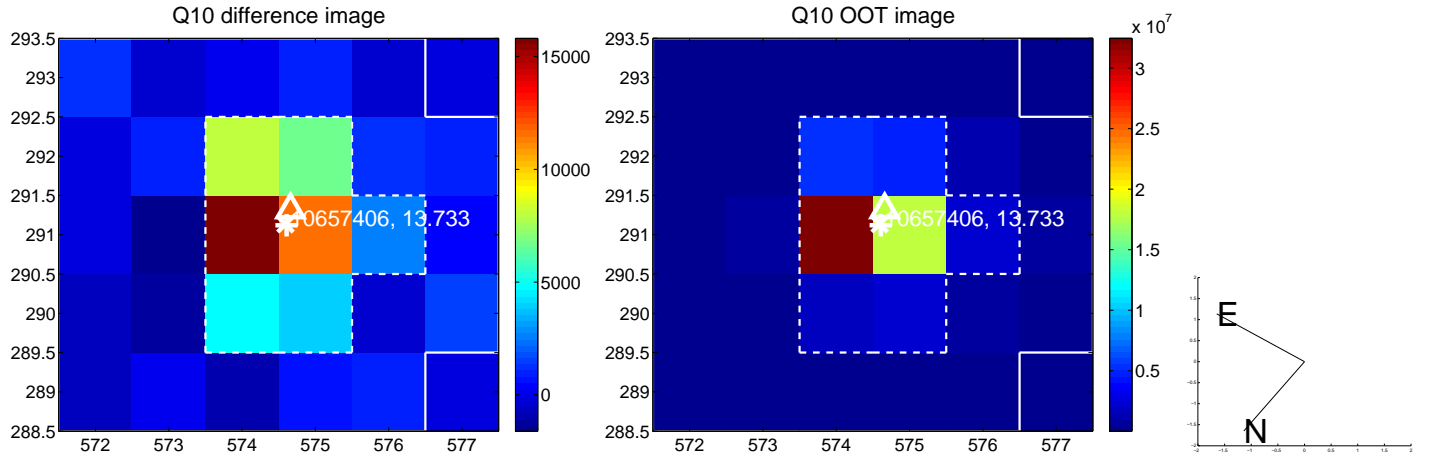
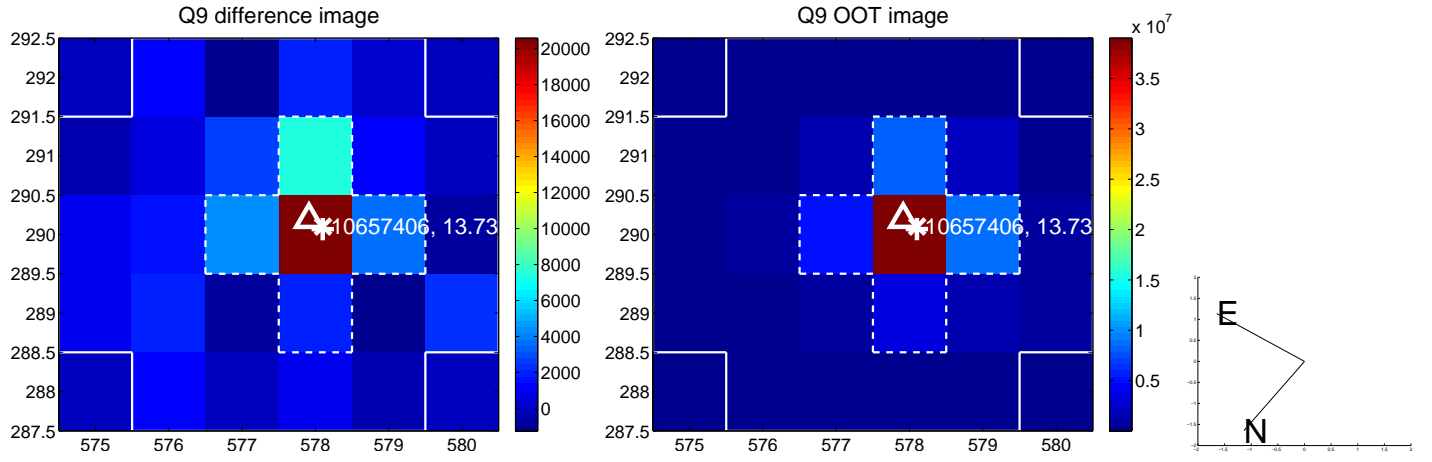
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



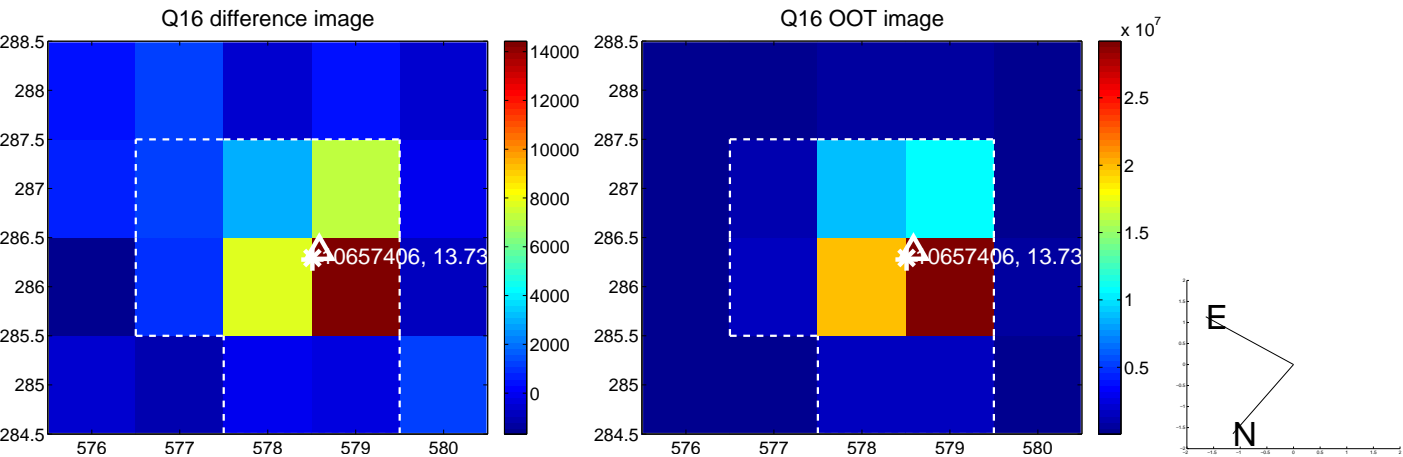
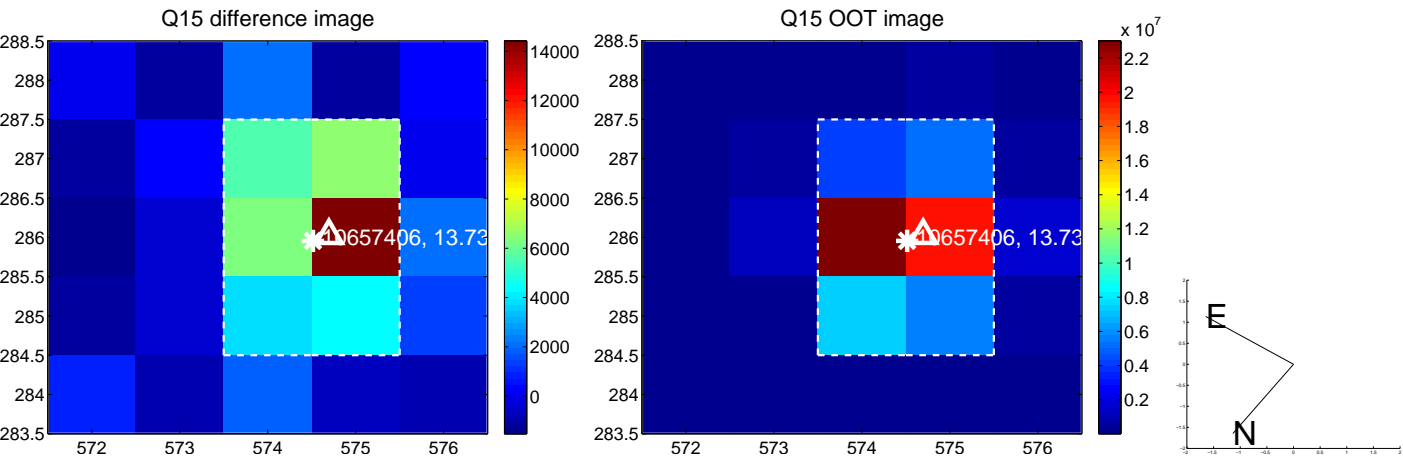
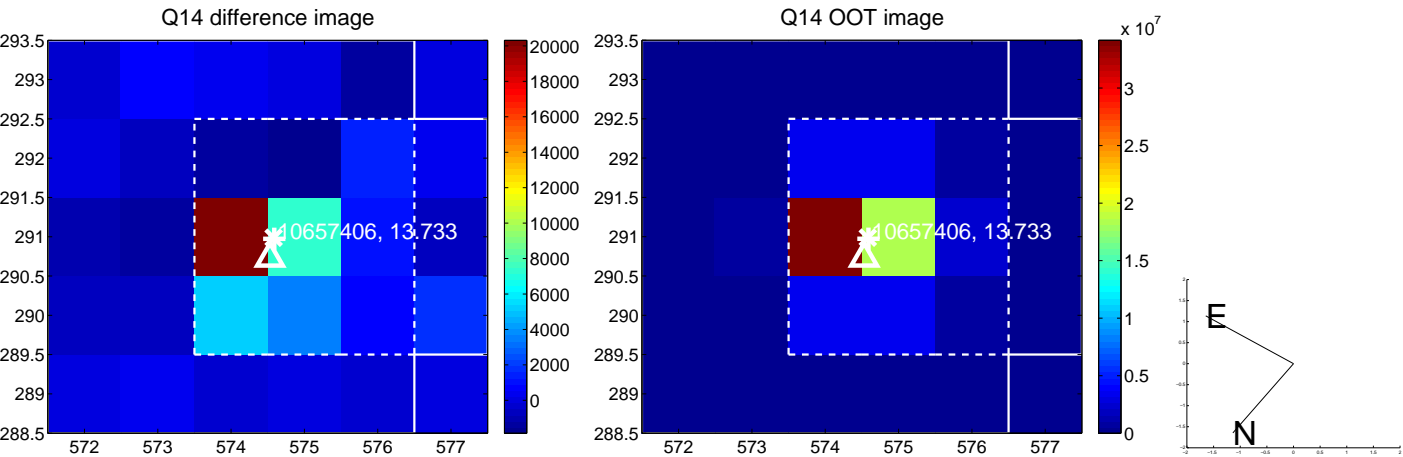
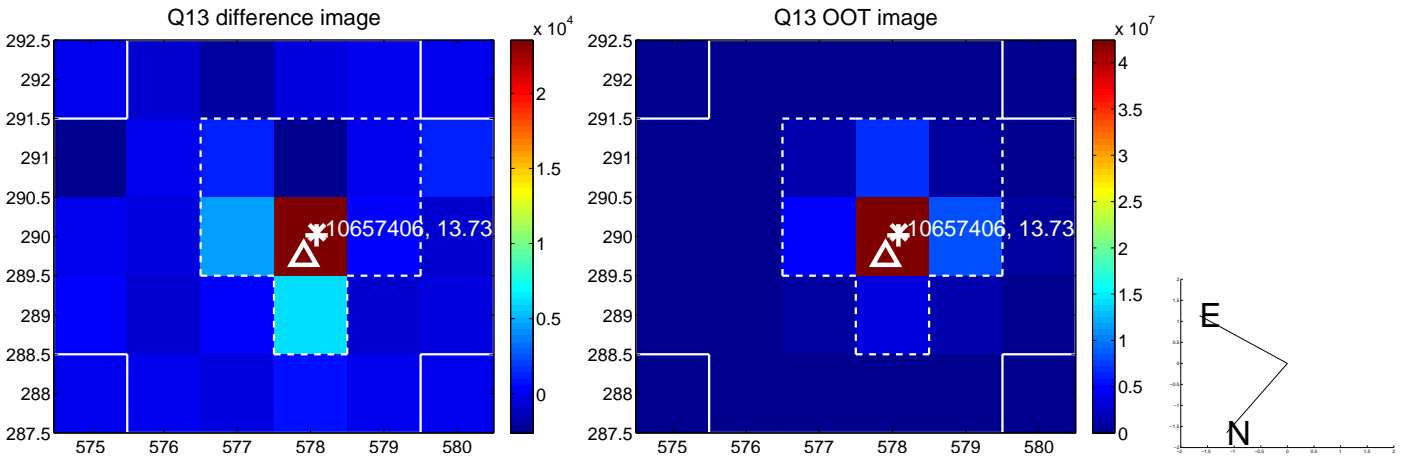
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



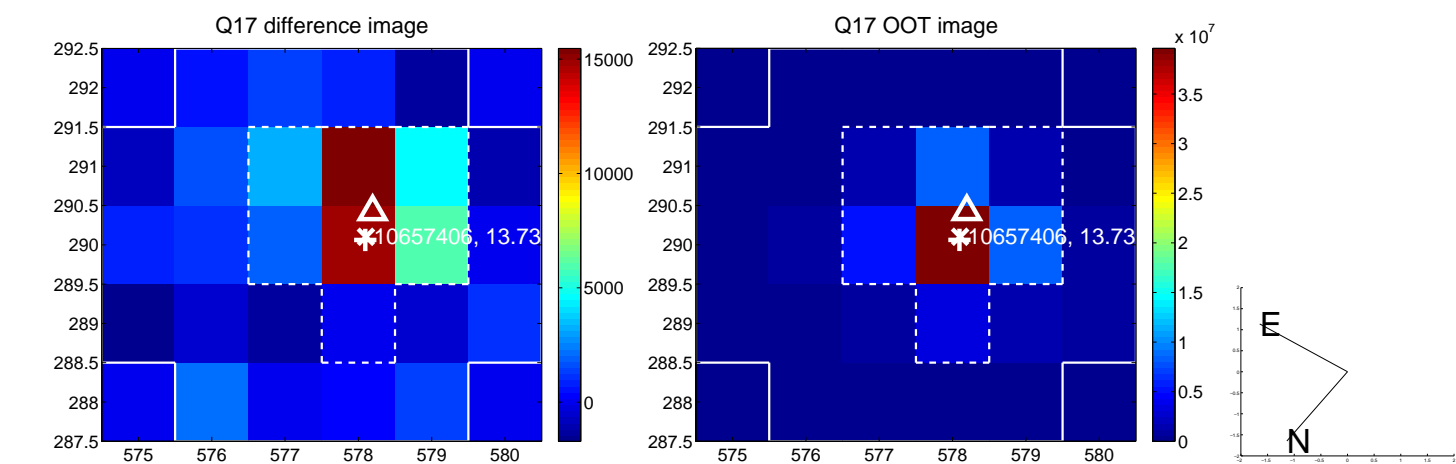
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



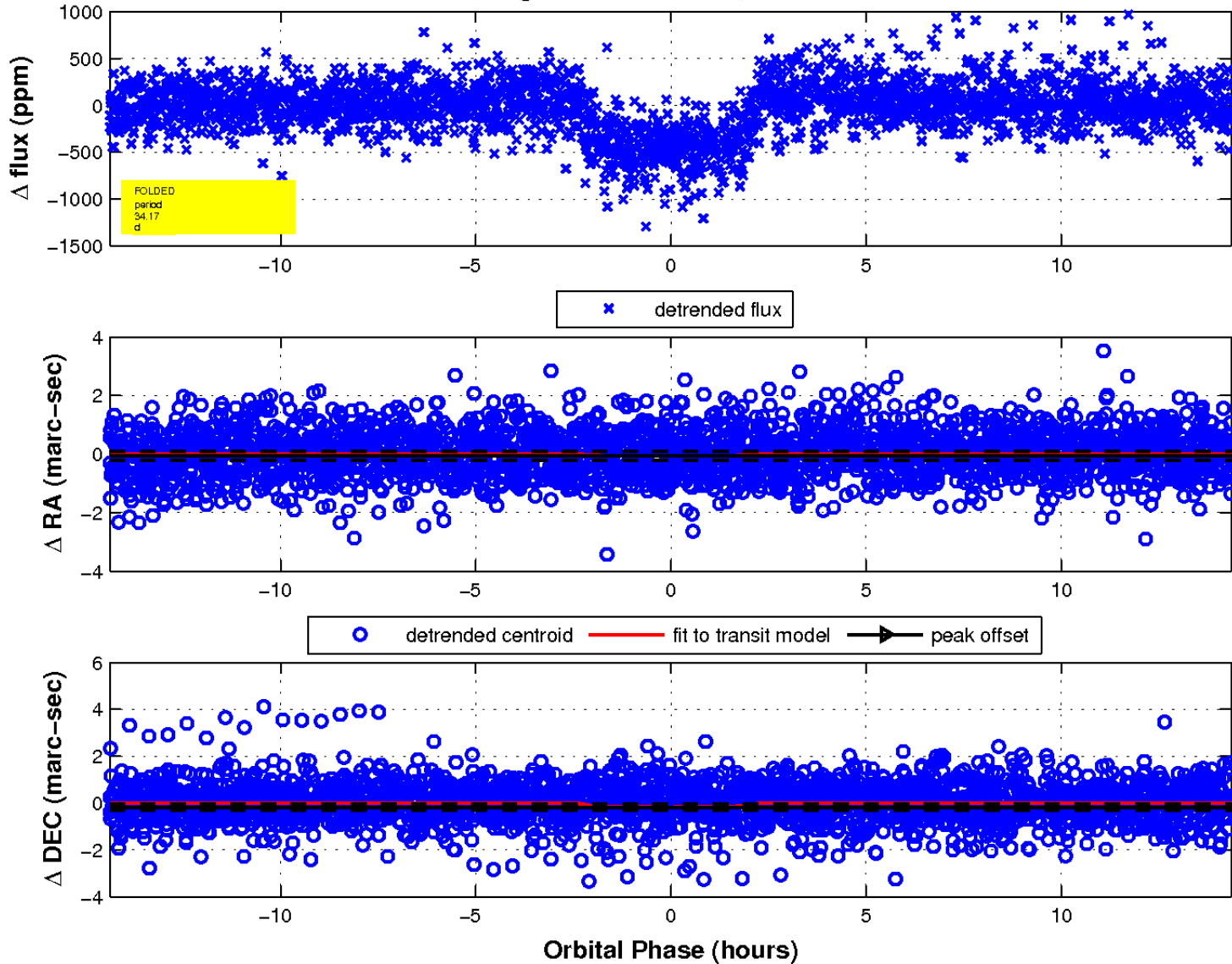
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

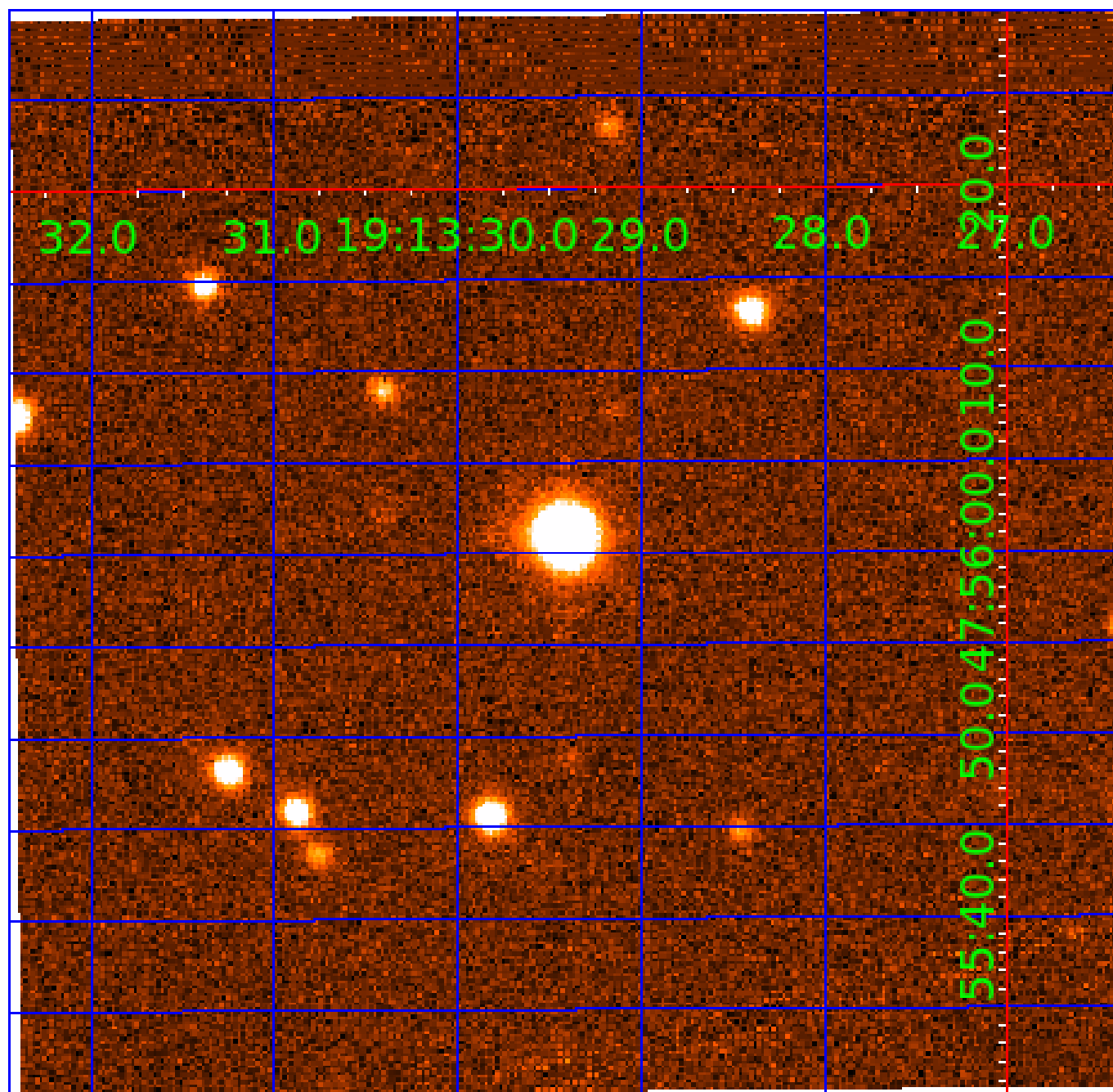


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 010657406

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010657406-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010657406-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

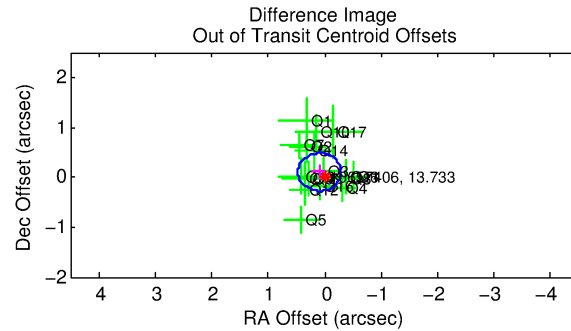
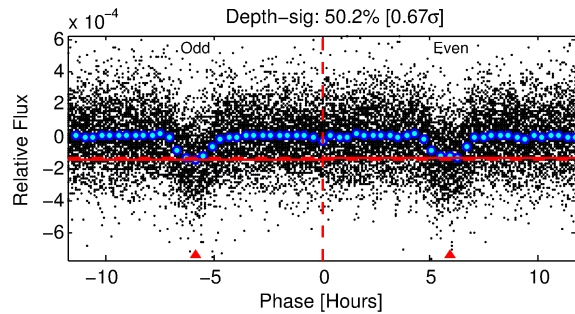
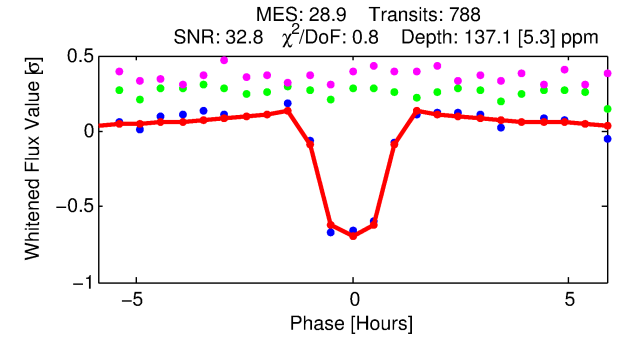
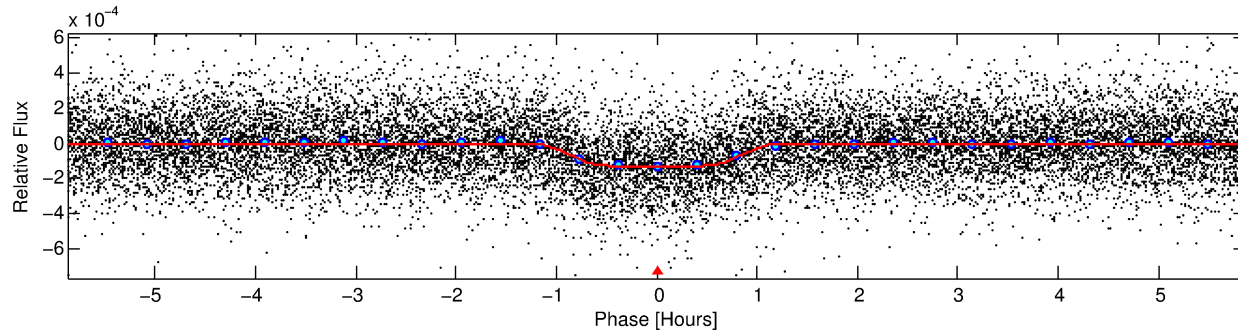
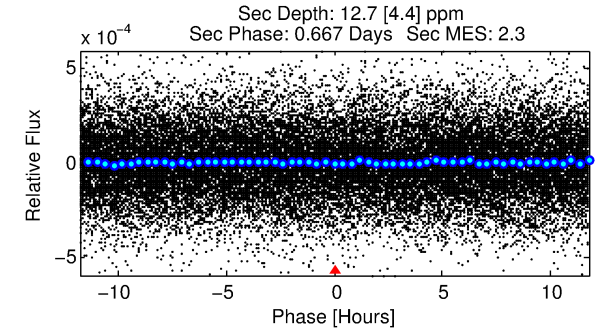
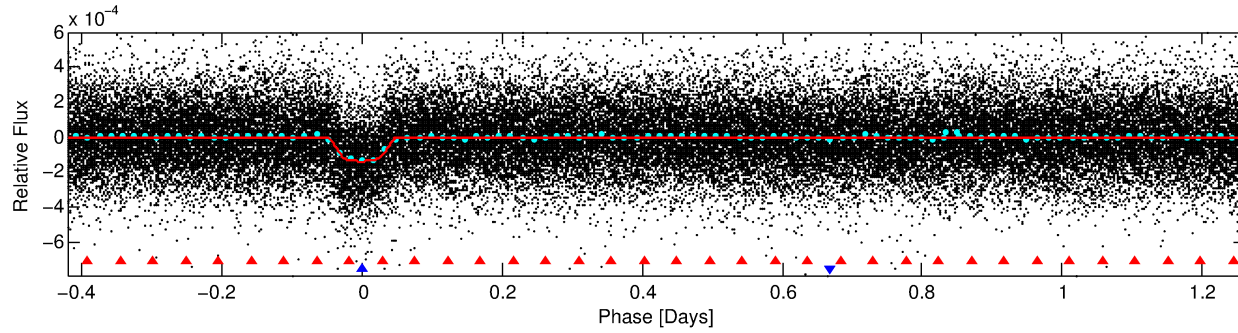
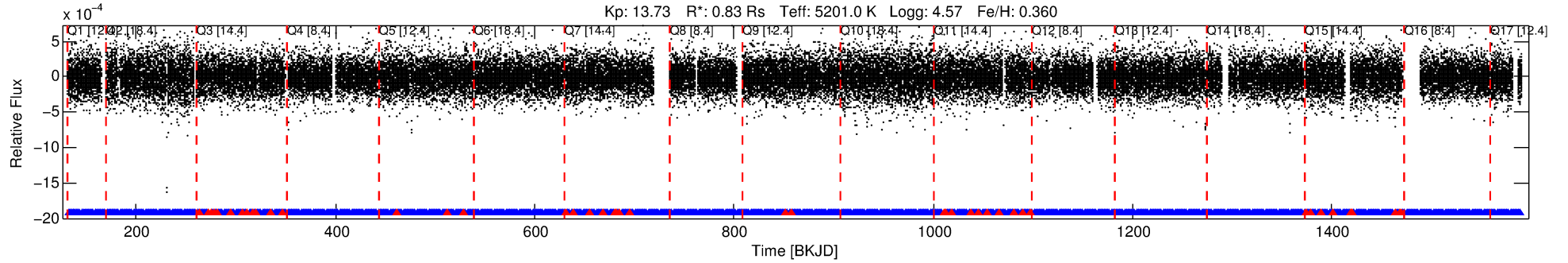
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010657406-02

No Significant Match Found

DV One-Page Summary

KIC: 10657406 Candidate: 2 of 2 Period: 1.683 d
KOI: K01837.02 Corr: 0.956



DV Fit Results:

Period = 1.68295 [0.00000] d
Epoch = 131.9650 [0.0008] BKJD
Rp/R* = 0.0130 [0.0032]
a/R* = 3.21 [2.87]
b = 0.90 [0.22]
Seff = 615.54 [107.61]
Teq = 1270 [56] K
Rp = 1.19 [0.31] Re
a = 0.0272 [0.0025] AU
Ag = 3.67 [2.27] [1.17σ]
Teffp = 2718 [413] K [3.48σ]

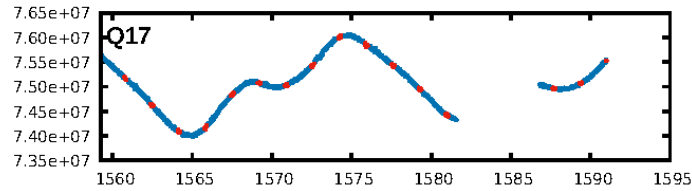
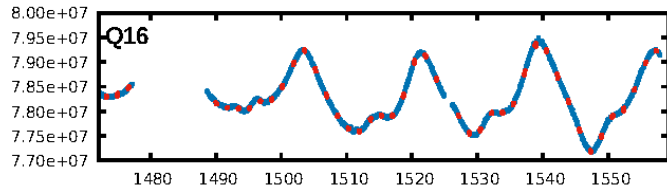
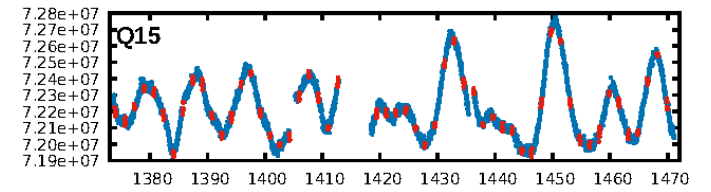
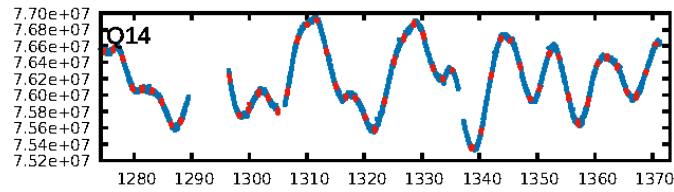
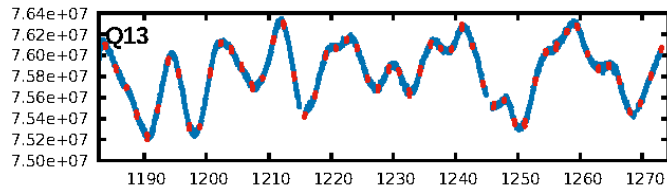
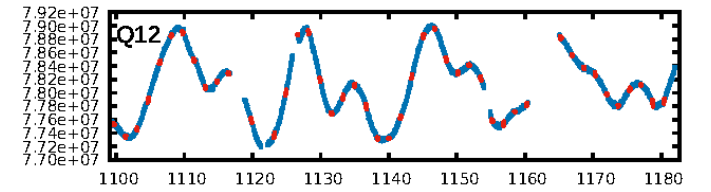
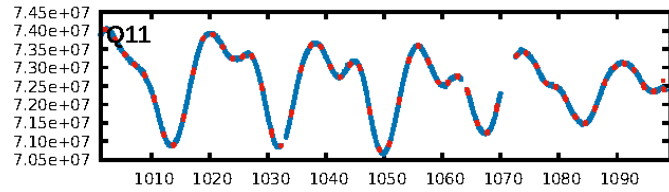
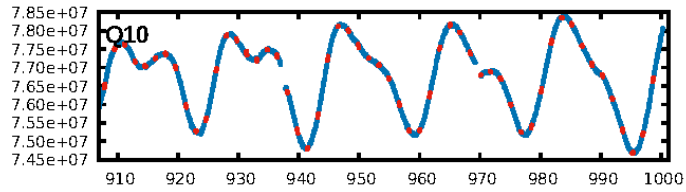
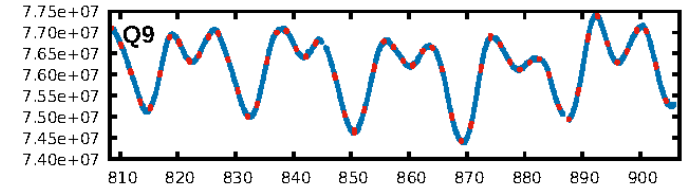
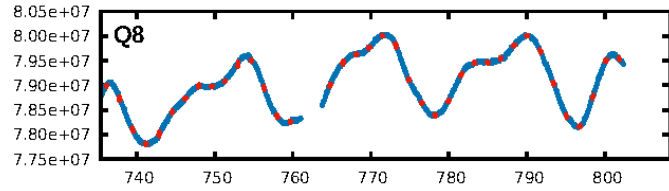
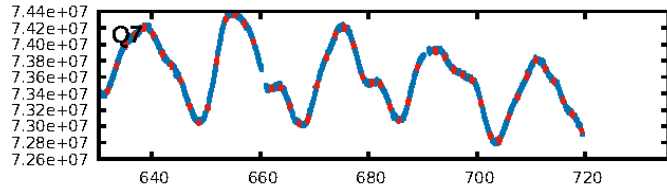
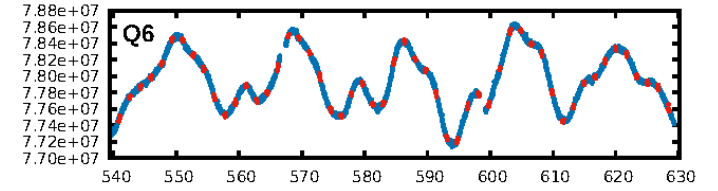
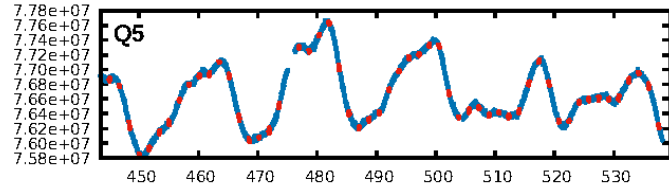
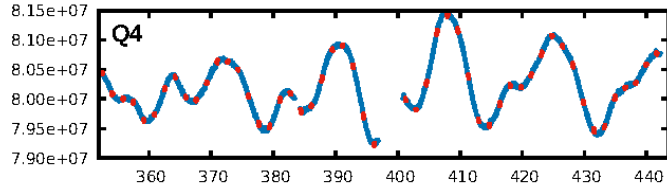
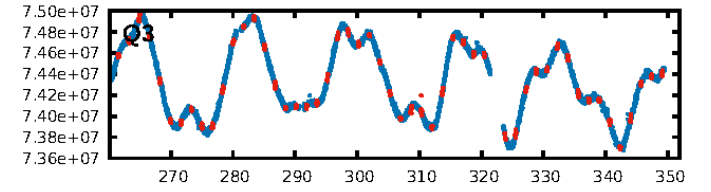
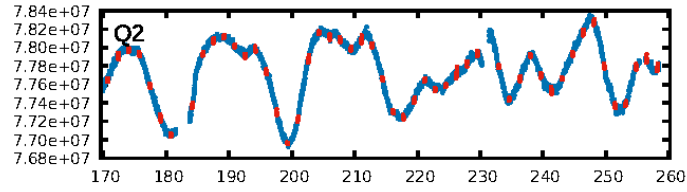
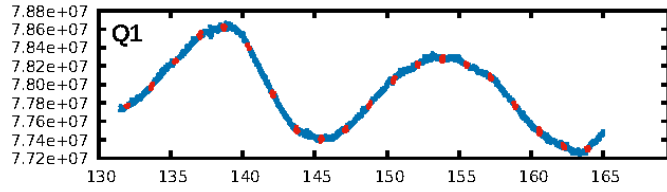
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [150.66σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.60e-175
RollingBand-fgt: 0.94 [709/753]
GhostDiagnostic-chr: 4.209
Centroid-sig: 11.6%
Centroid-so: 0.474 arcsec [1.49σ]
OotOffset-rm: 0.136 arcsec [1.07σ]
KicOffset-rm: 0.149 arcsec [1.08σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

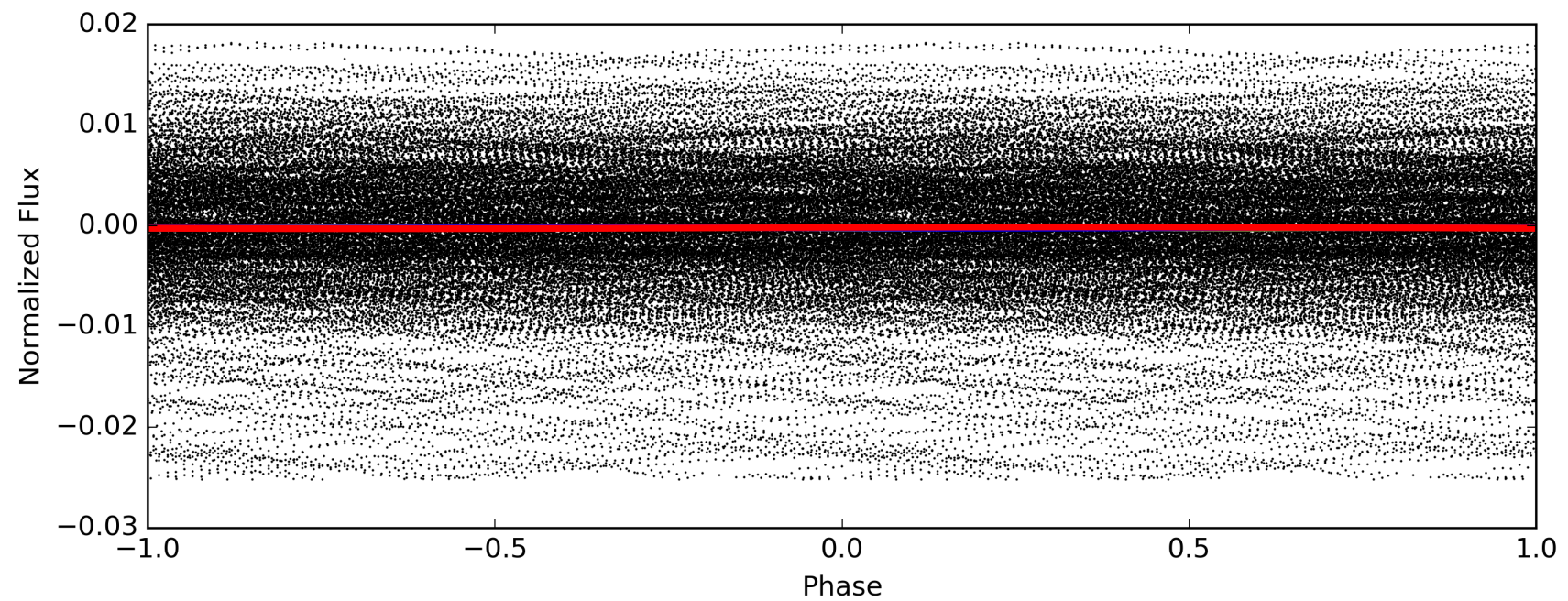
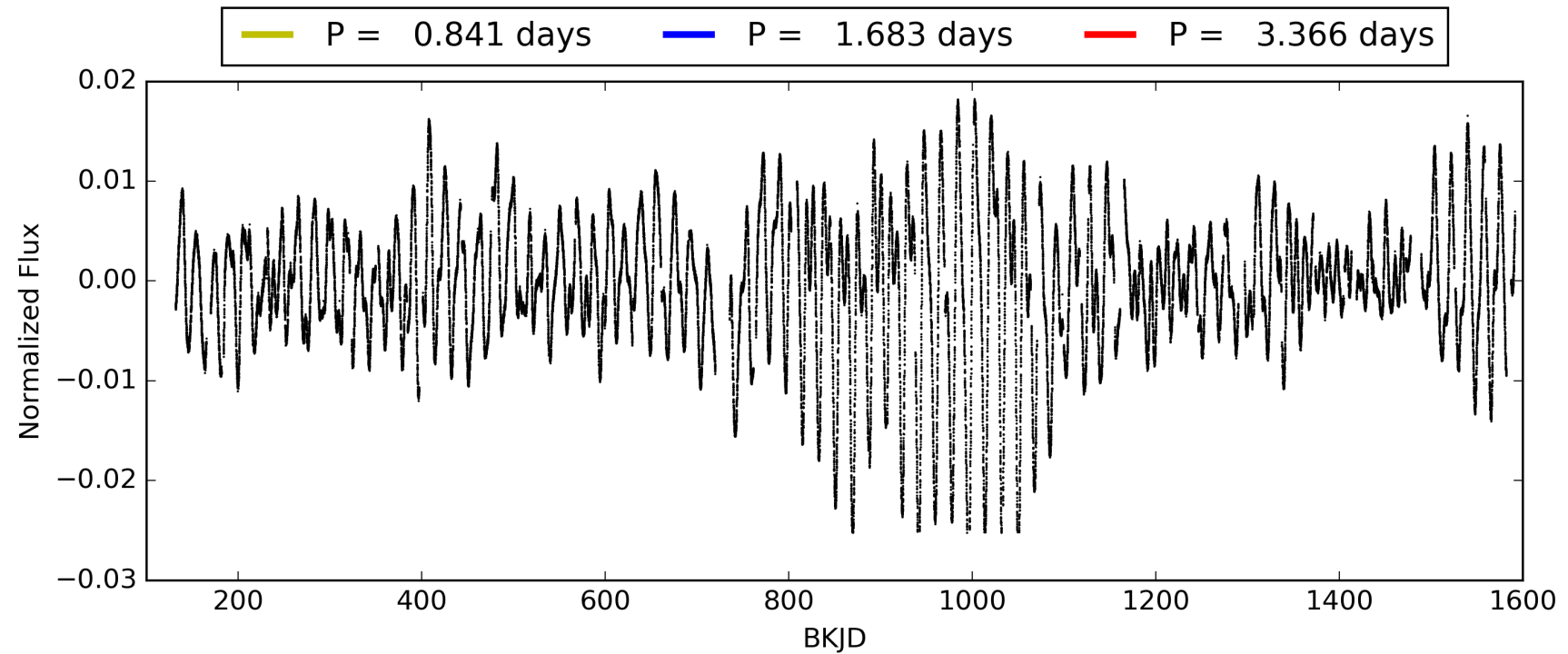
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 07:11:57 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010657406-02, PDC Light Curves

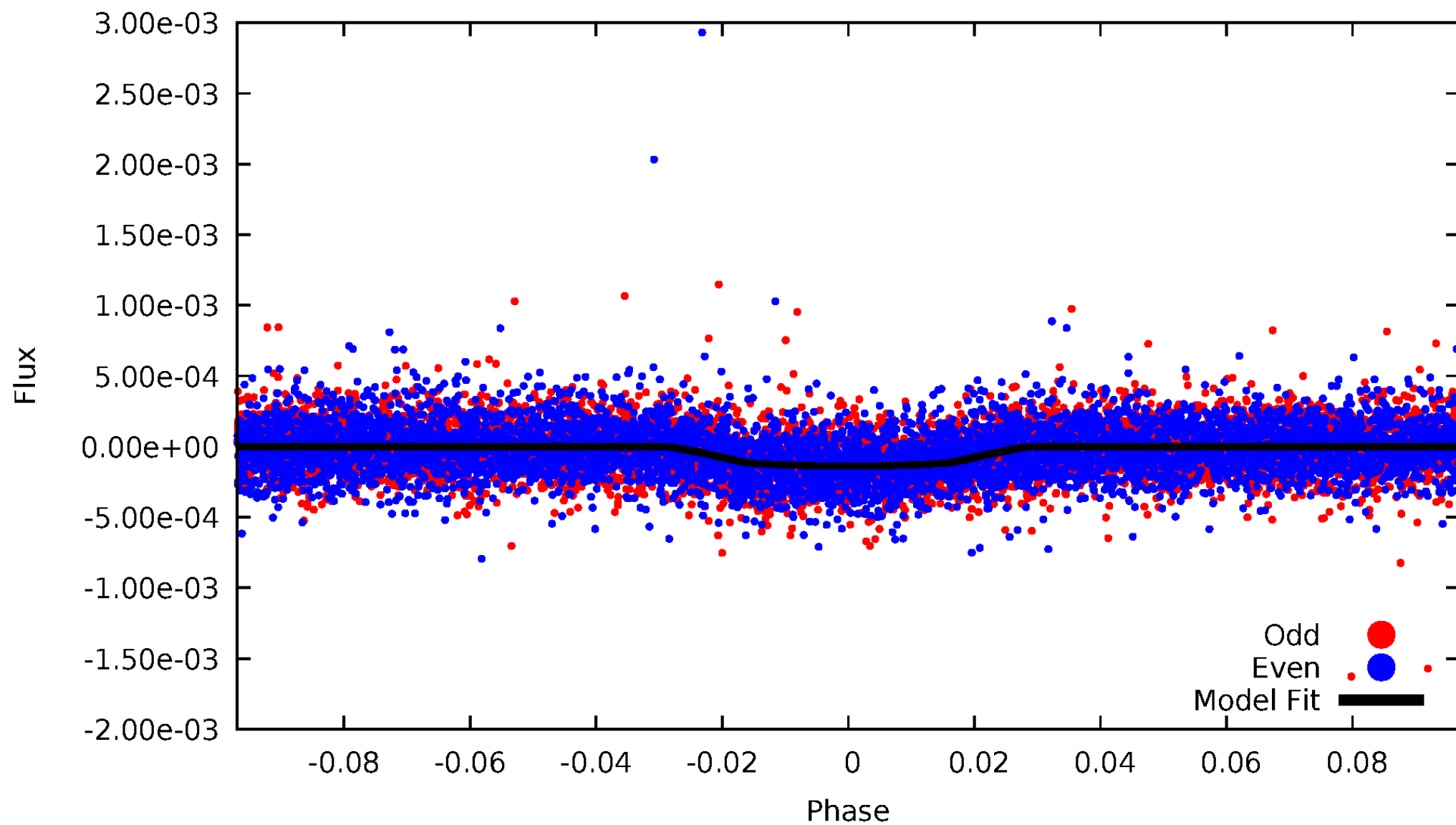


TCE 010657406-02



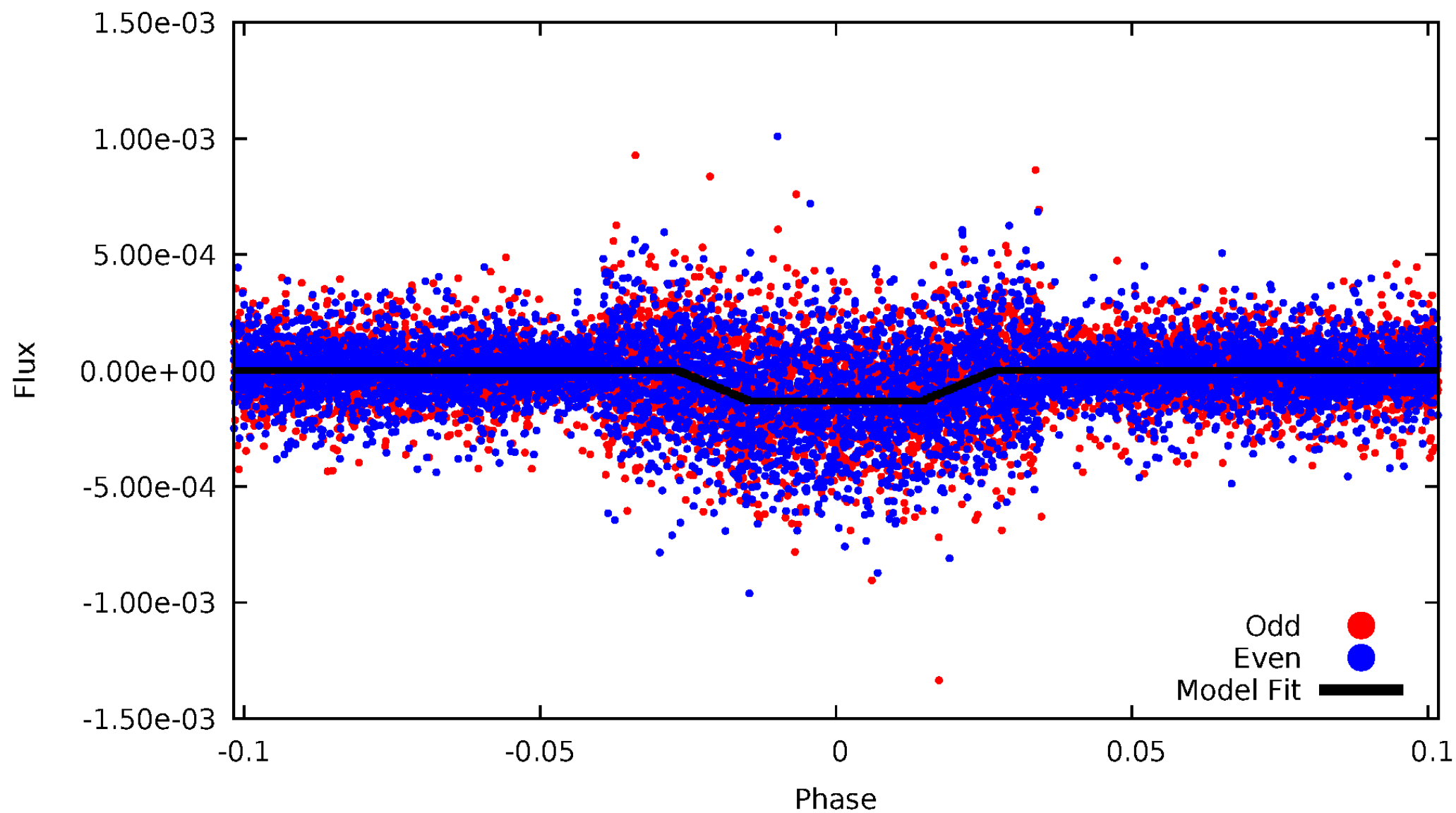
DV Odd/Even

TCE 010657406-02



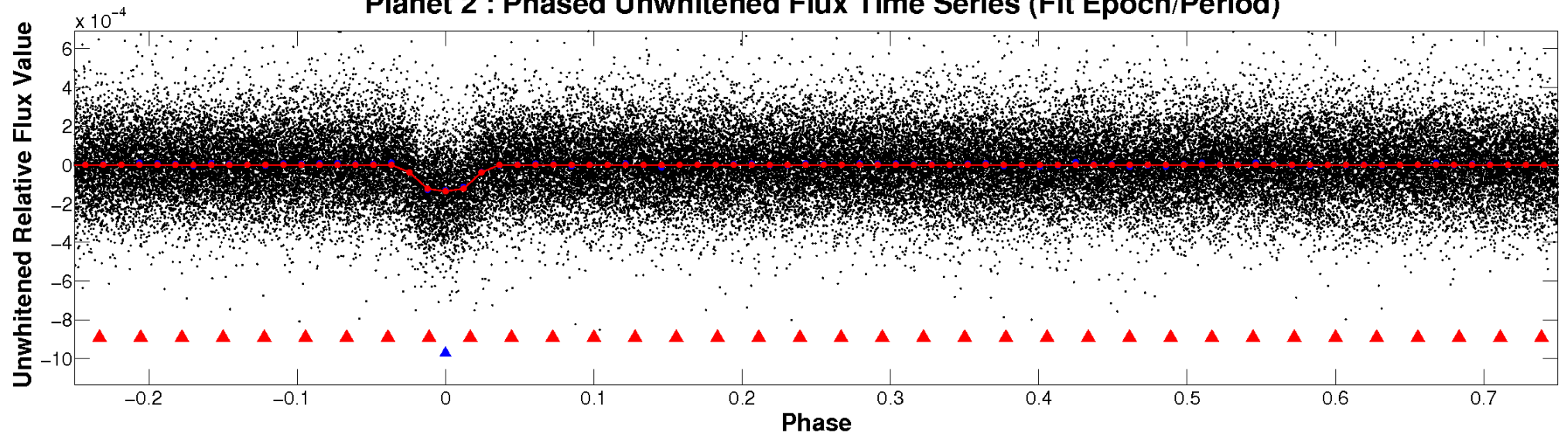
ALT Odd/Even

TCE 010657406-02

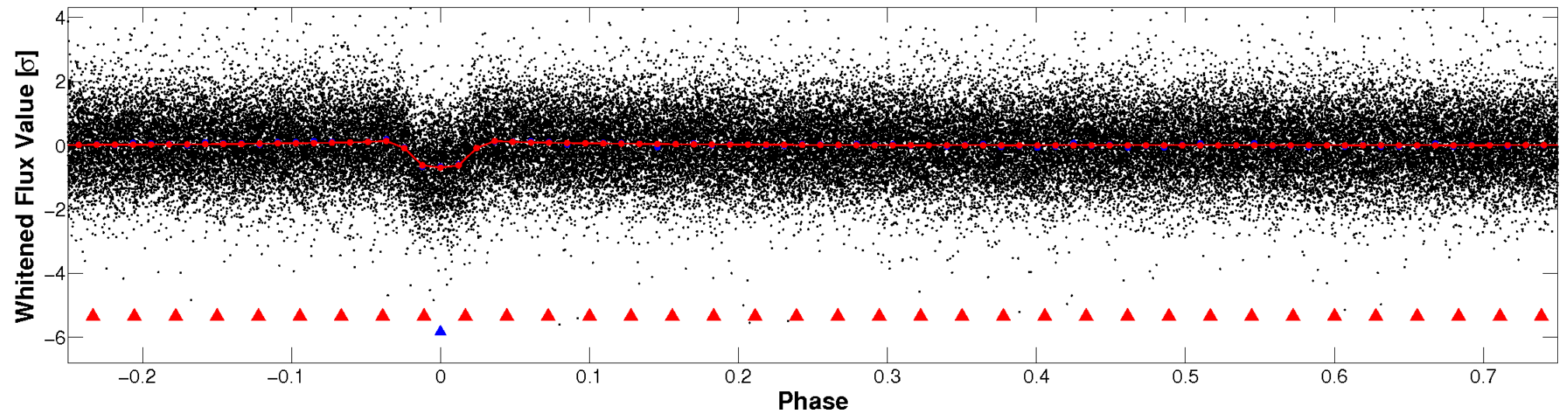


Non-Whitened Vs. Whitened Light Curve

Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

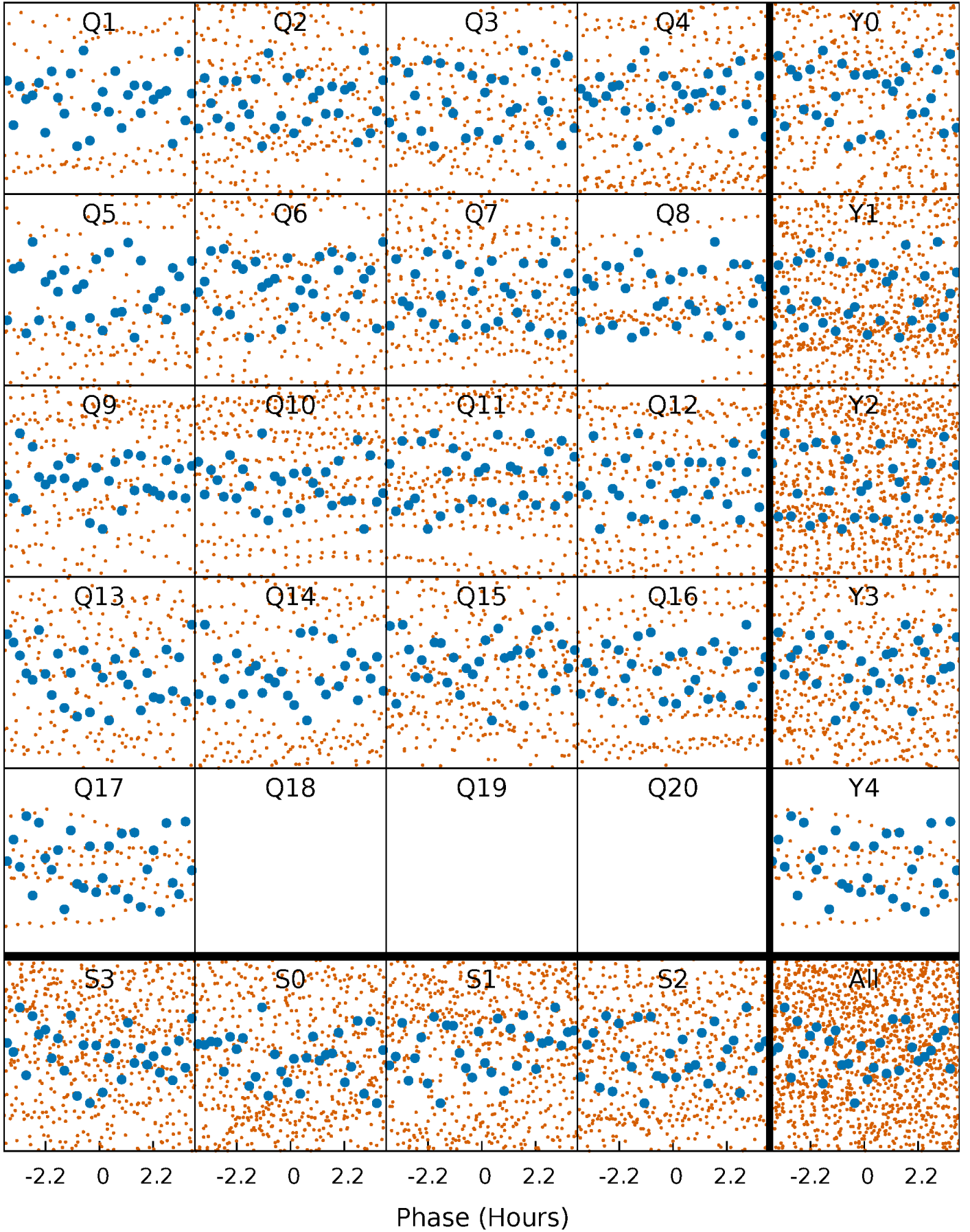


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



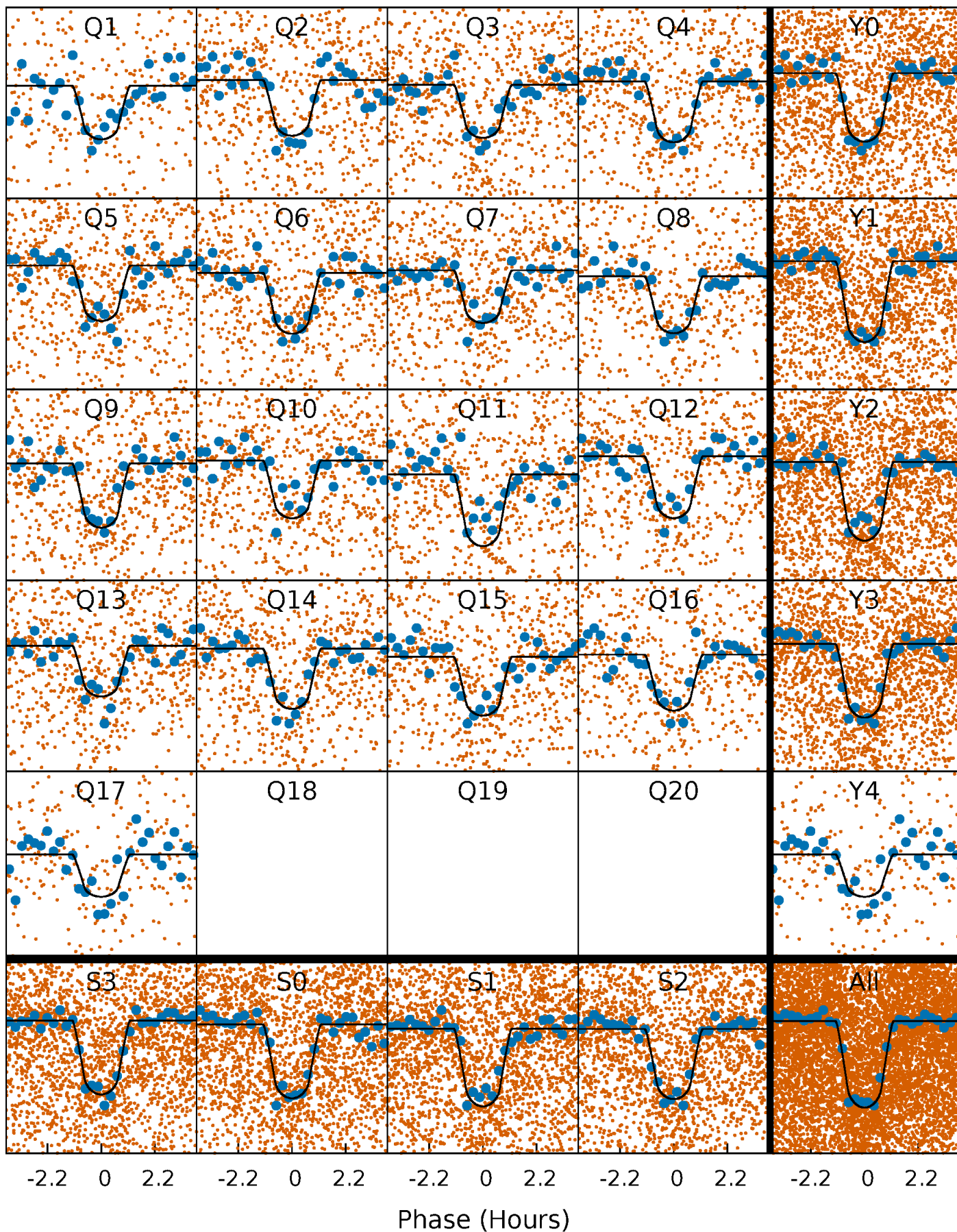
PDC Quarter-Phased Transit Curves

TCE 010657406-02 P= 1.682947 Days $T_0=131.965032$ (BKJD)



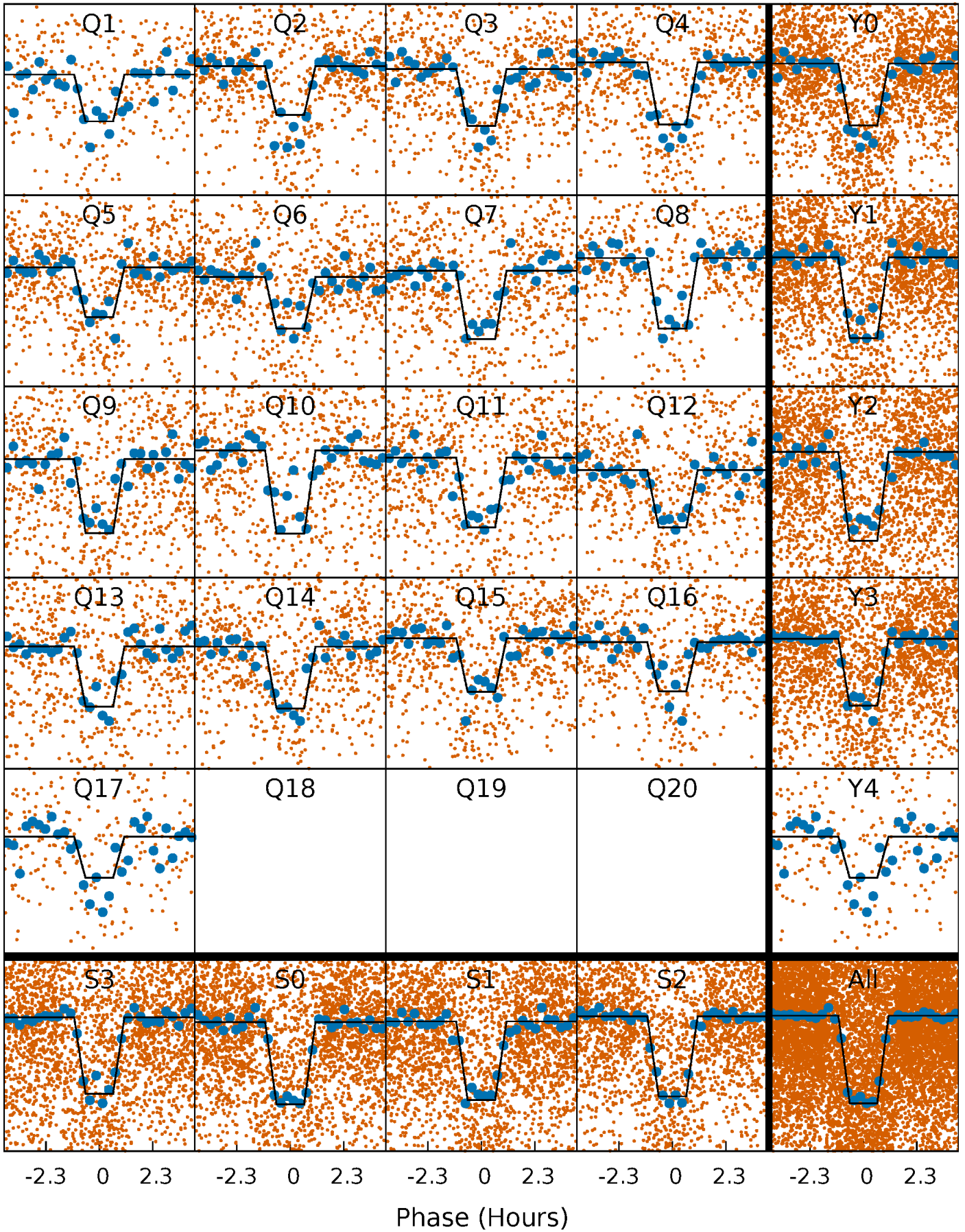
DV Quarter-Phased Transit Curves

TCE 010657406-02 P= 1.682947 Days $T_0=131.965032$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

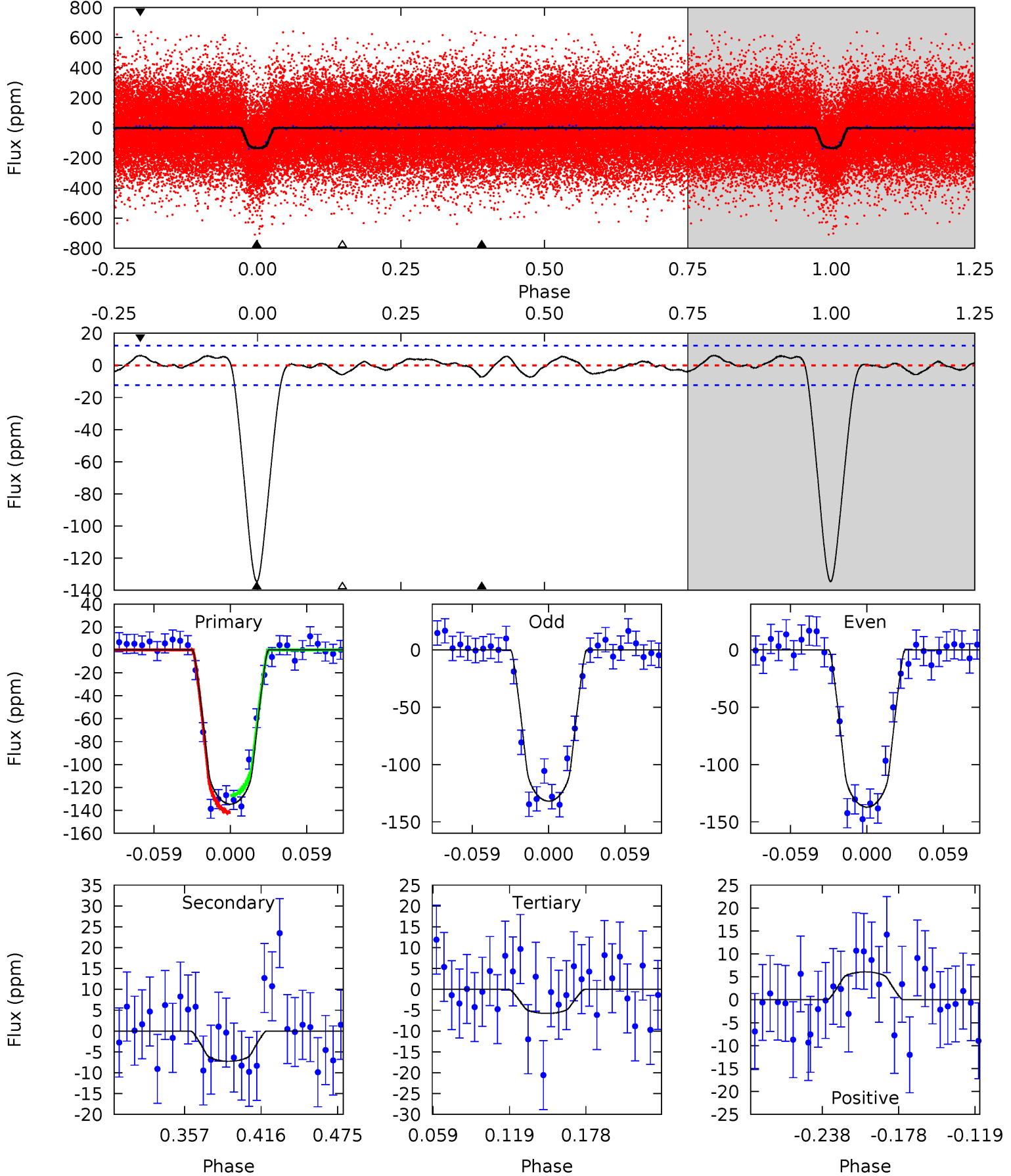
TCE 010657406-02 P= 1.682940 Days $T_0=131.965537$ (BKJD)



DV Model-Shift Uniqueness Test

010657406-02, P = 1.682947 Days, E = 130.282085 Days

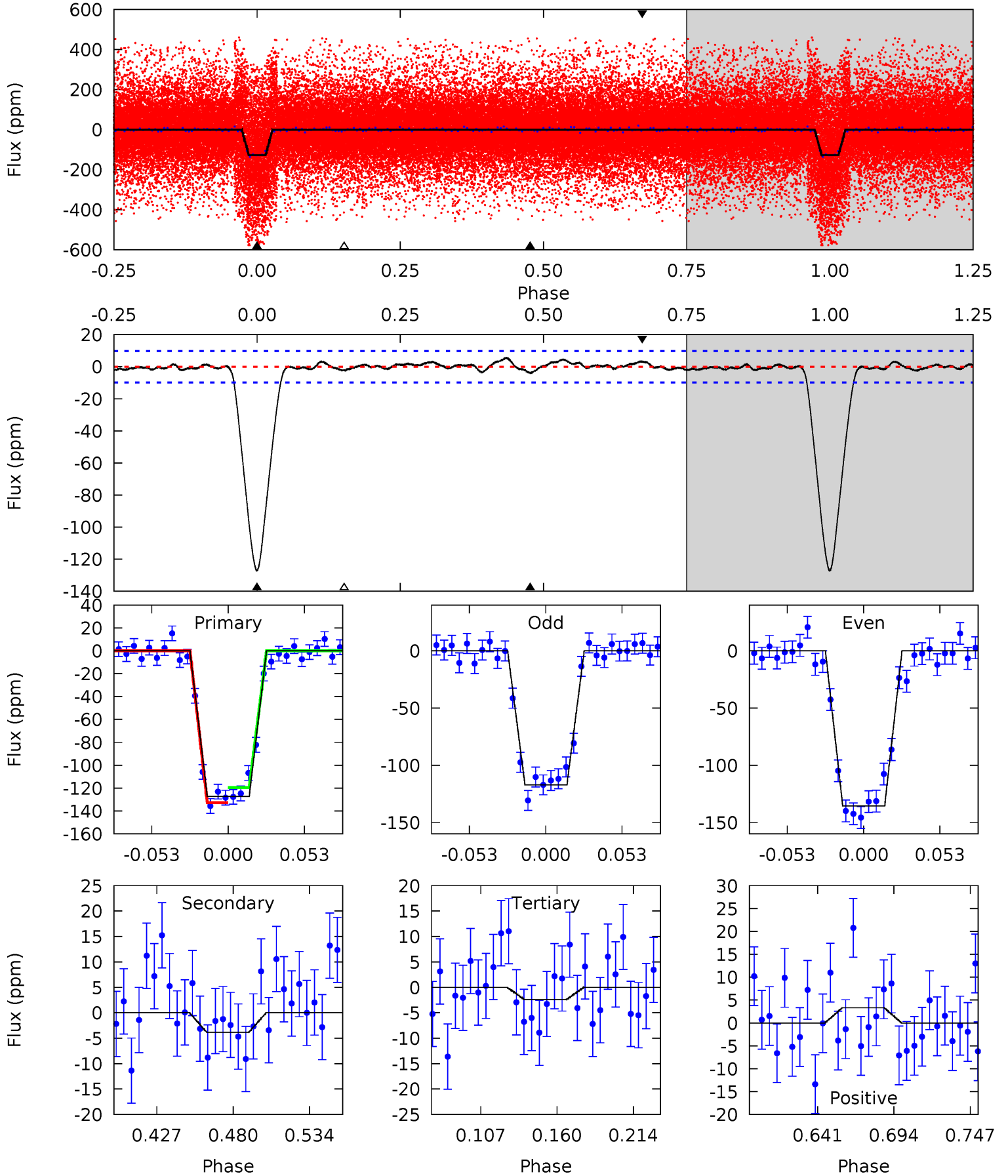
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
51.1	2.76	2.19	2.31	4.67	1.88	1.19	48.9	48.8	0.57	0.45	0.99	0.99	0.04	2.81



Alt Model-Shift Uniqueness Test

010657406-02, P = 1.682940 Days, E = 130.282597 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
60.7	1.84	1.15	1.58	4.69	1.93	0.70	59.6	59.2	0.69	0.26	4.42	1.05	0.04	3.17



Stellar Parameters For KIC 010657406

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5201^{+93}_{-114}	$4.573^{+0.010}_{-0.090}$	$0.360^{+0.100}_{-0.150}$	$0.834^{+0.077}_{-0.026}$	$0.948^{+0.019}_{-0.071}$	$2.304^{+0.131}_{-0.590}$
	+2%/-2%	+0%/-2%	+28%/-42%	+9%/-3%	+2%/-7%	+6%/-26%
Source	SPE59	SPE59	SPE59	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010657406-02 / KOI 1837.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-7 ± 3	$1.20^{+0.30}_{-0.29}$	1797^{+52}_{-46}	2906^{+330}_{-268}	$1.885^{+1.674}_{-0.824}$
Alt.	-4 ± 2	$1.05^{+0.30}_{-0.27}$	1795^{+49}_{-47}	2733^{+377}_{-437}	$1.304^{+1.571}_{-0.761}$

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

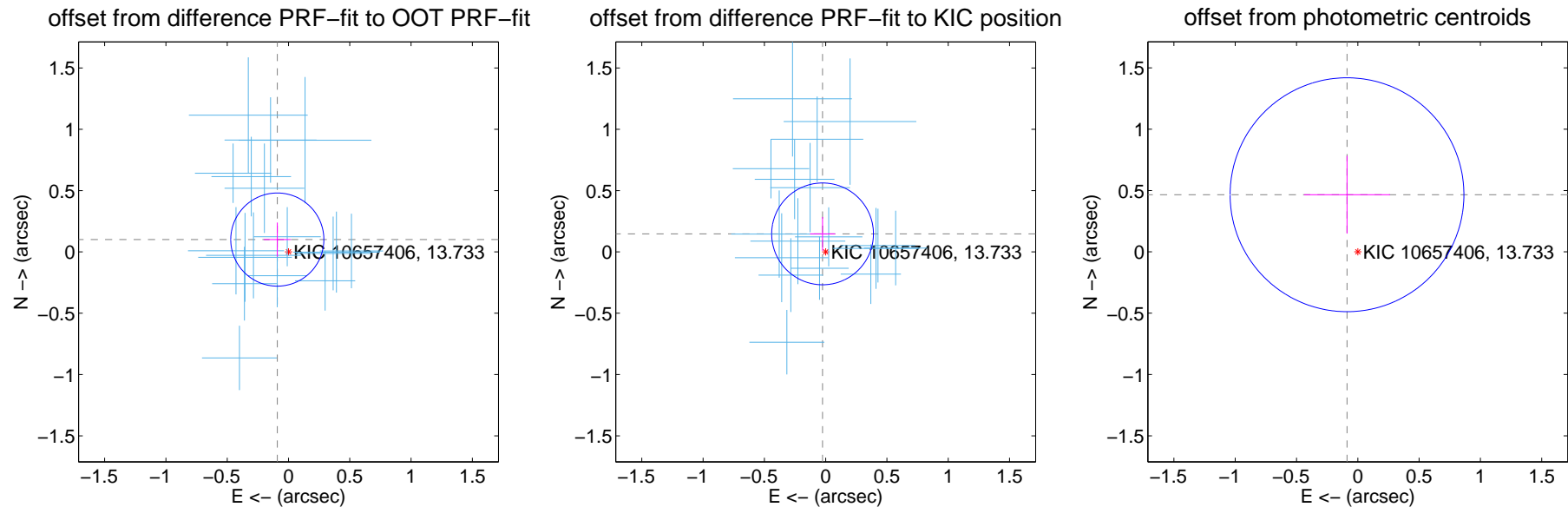
DV Centroid Data

Supplemental centroid analysis for 010657406-02. Kepler magnitude: 13.73. Transit SNR 32.76

There are 17 quarters with good PRF difference image offsets

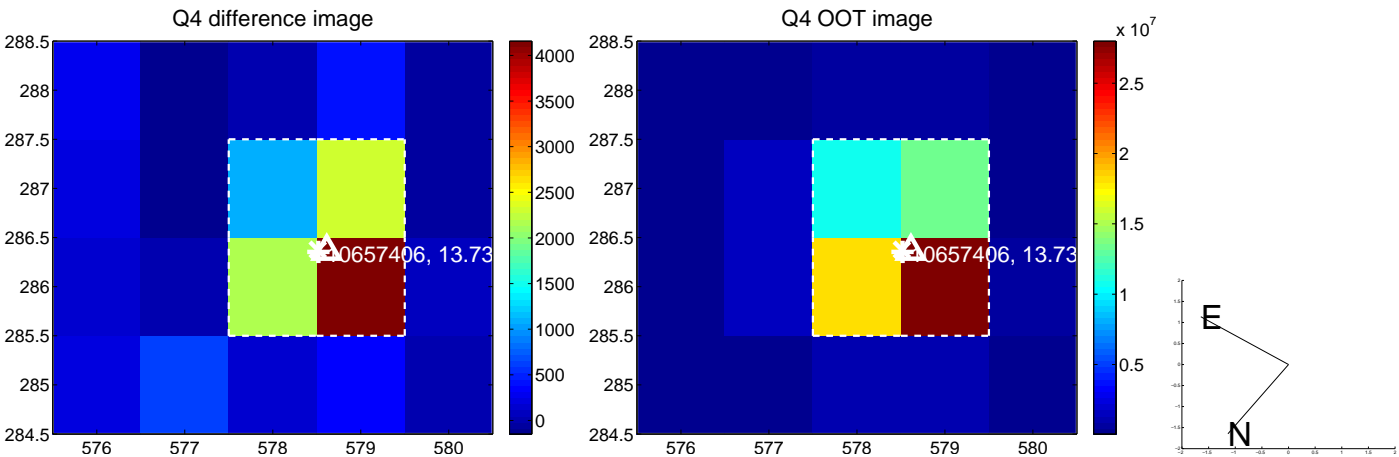
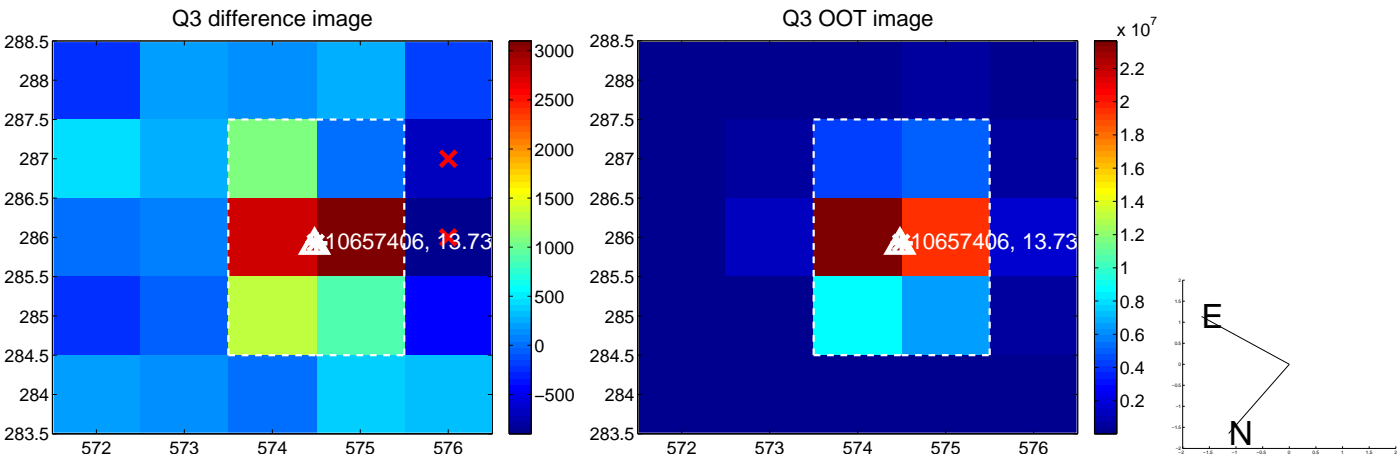
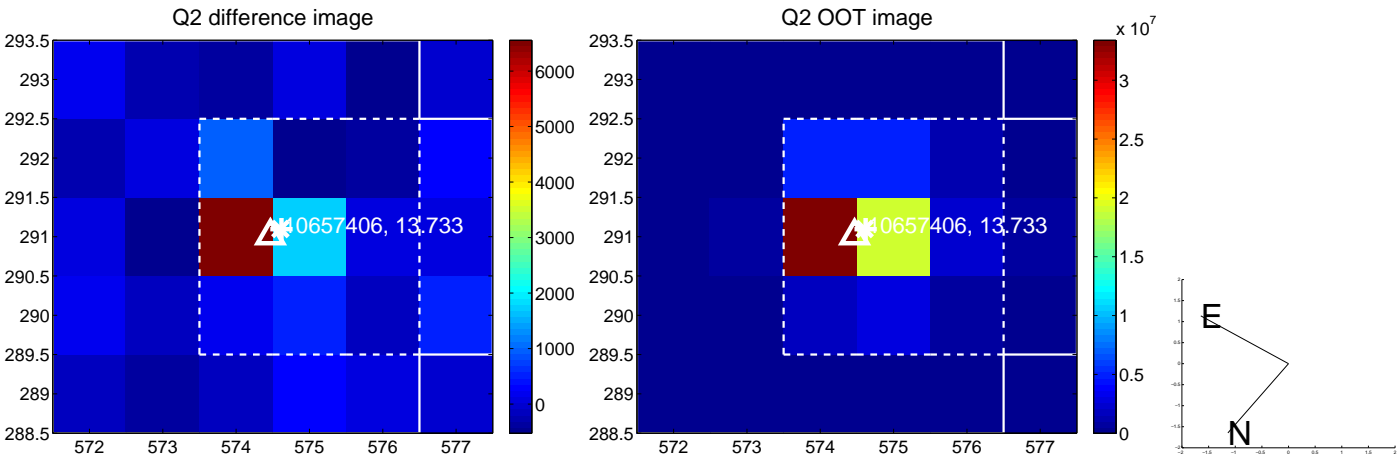
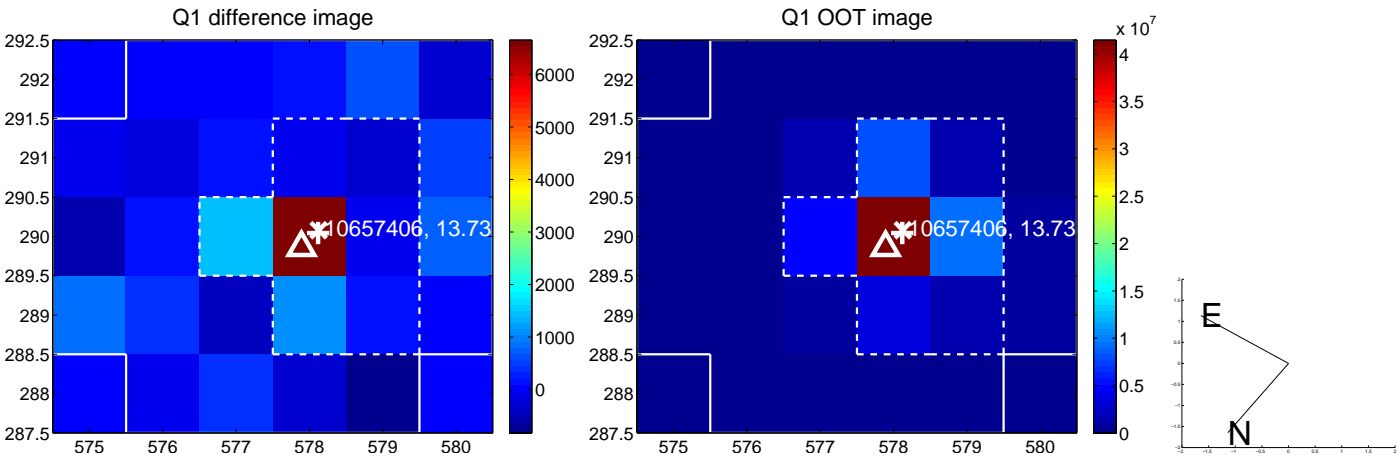
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.136 ± 0.127	1.07	0.091 ± 0.110	0.101 ± 0.139
PRF-fit source offset from KIC position	0.149 ± 0.138	1.08	0.025 ± 0.103	0.147 ± 0.137
photometric centroid source offset	0.47 ± 0.32	1.49	0.09 ± 0.35	0.47 ± 0.32

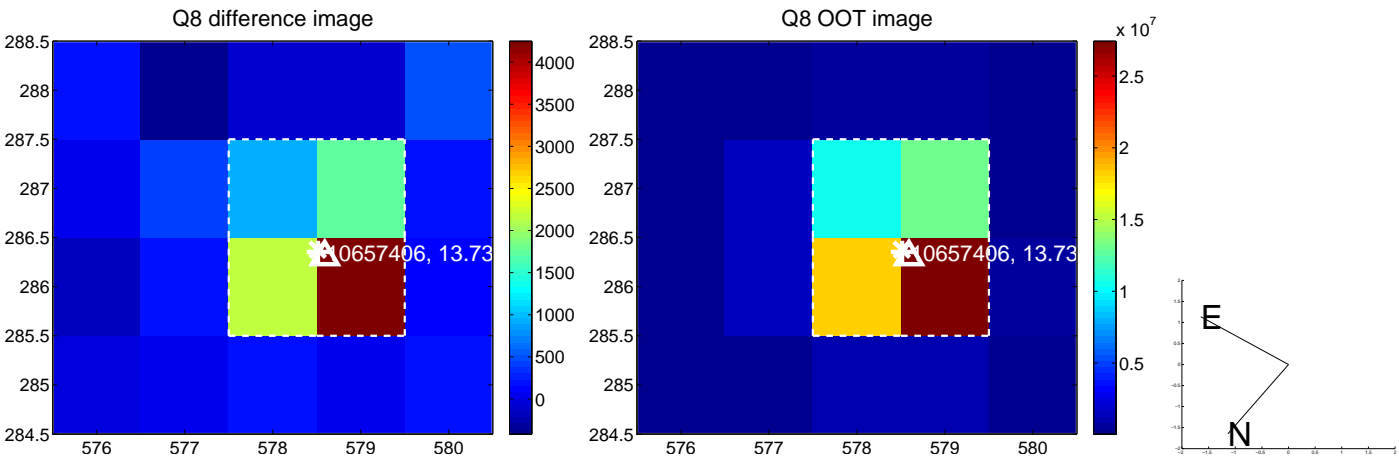
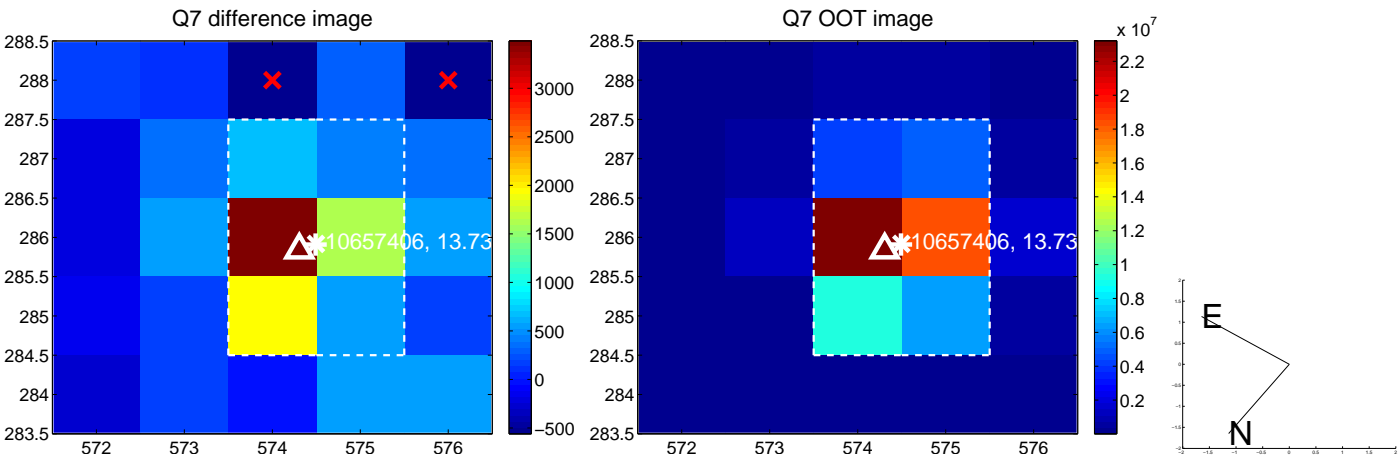
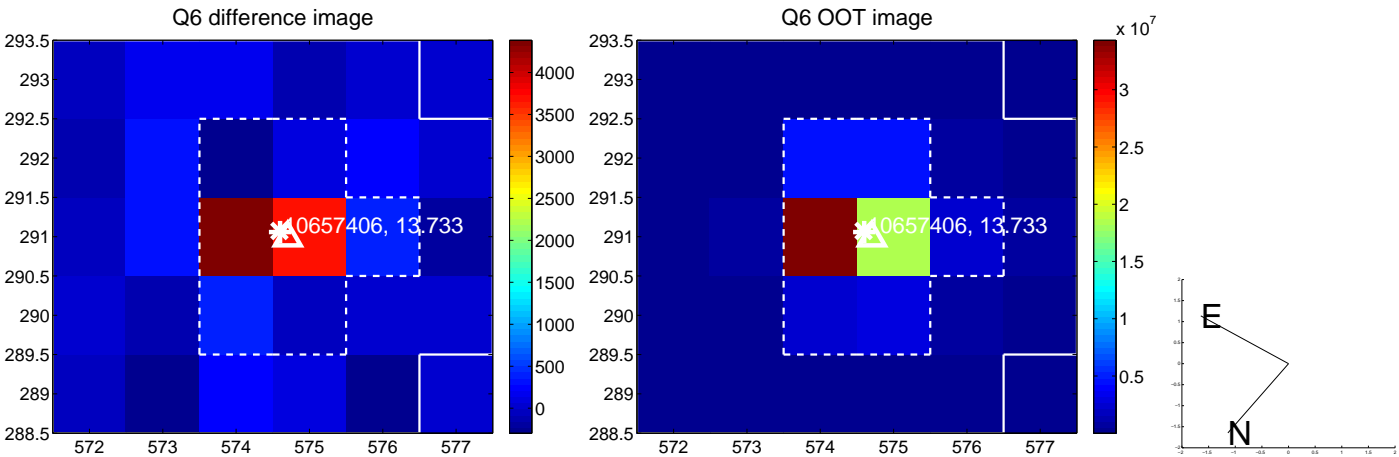
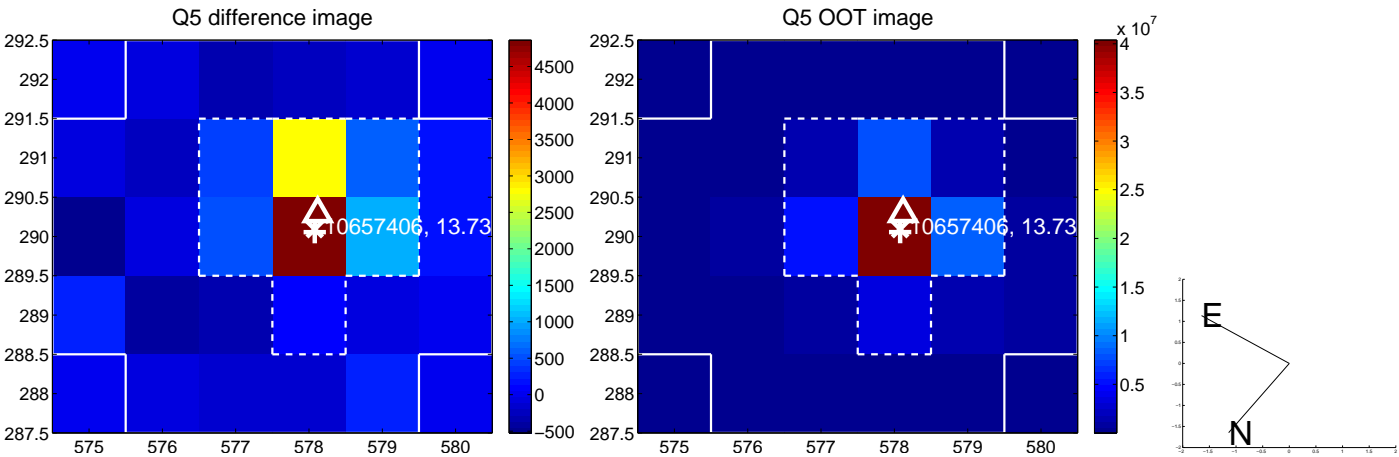


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

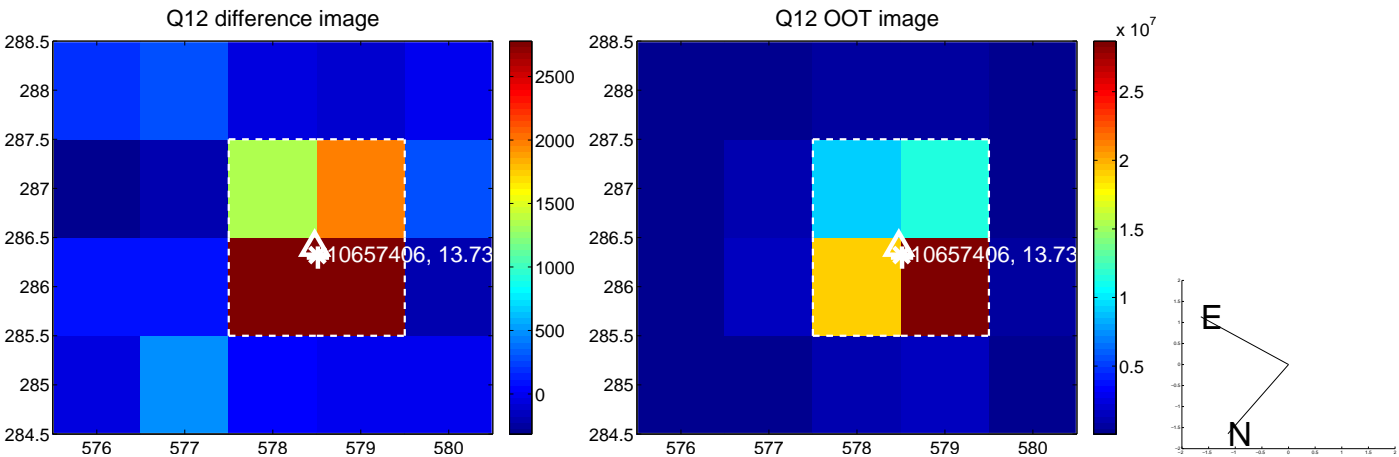
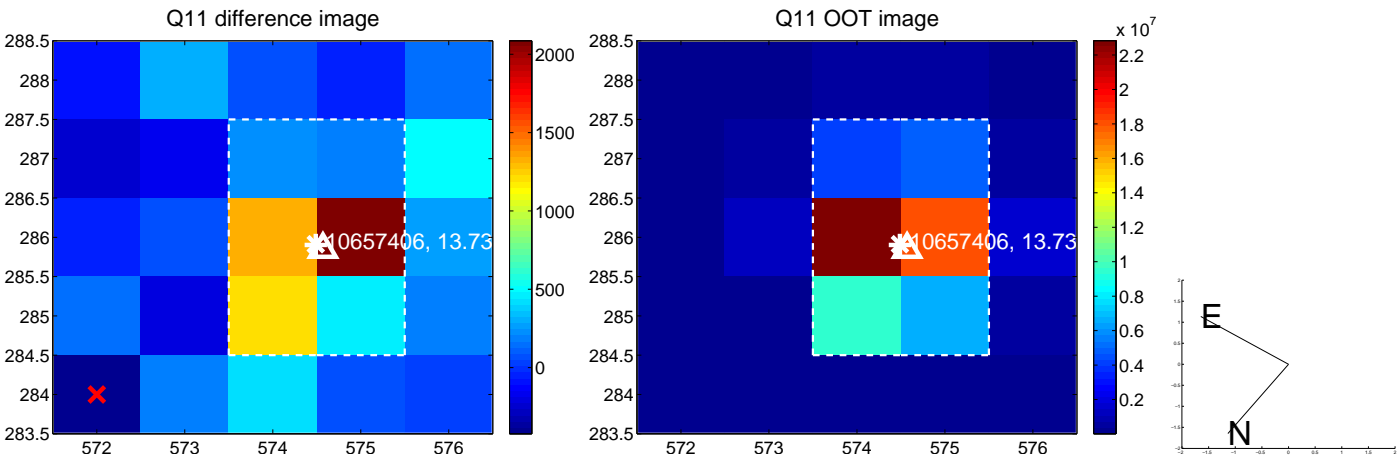
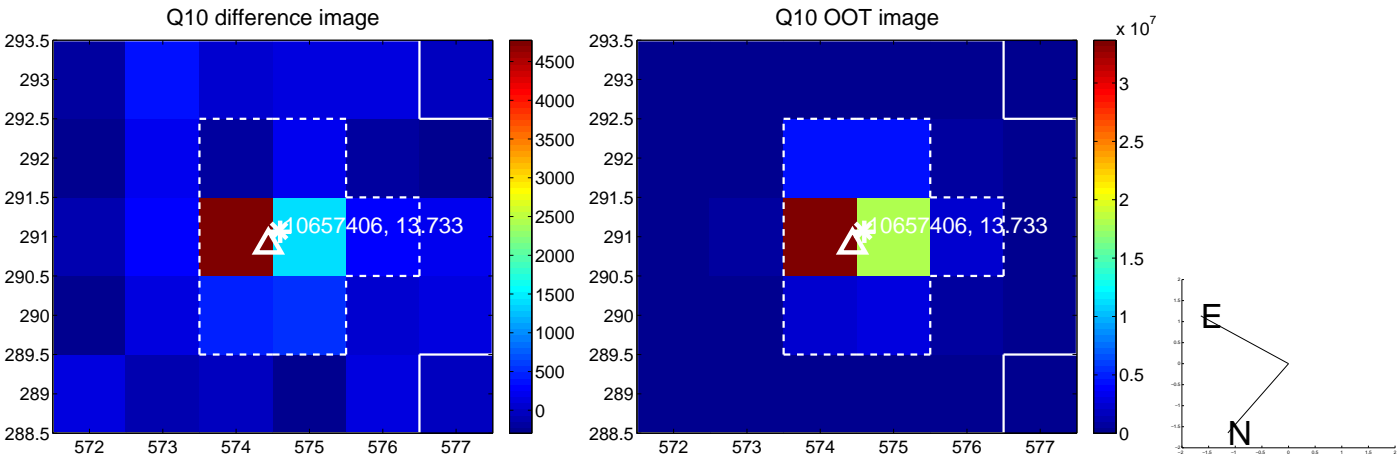
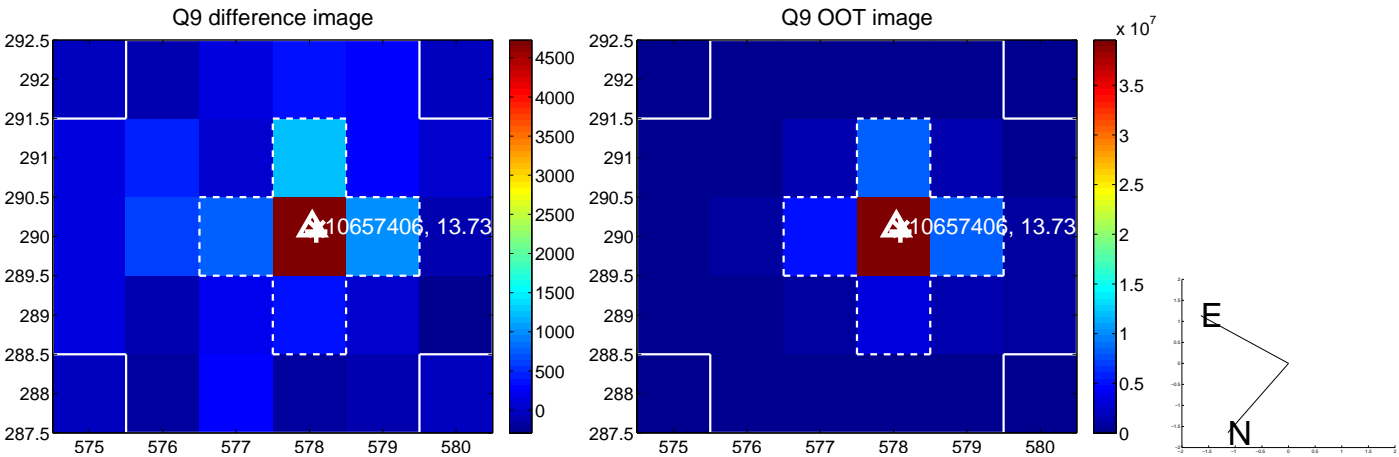
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



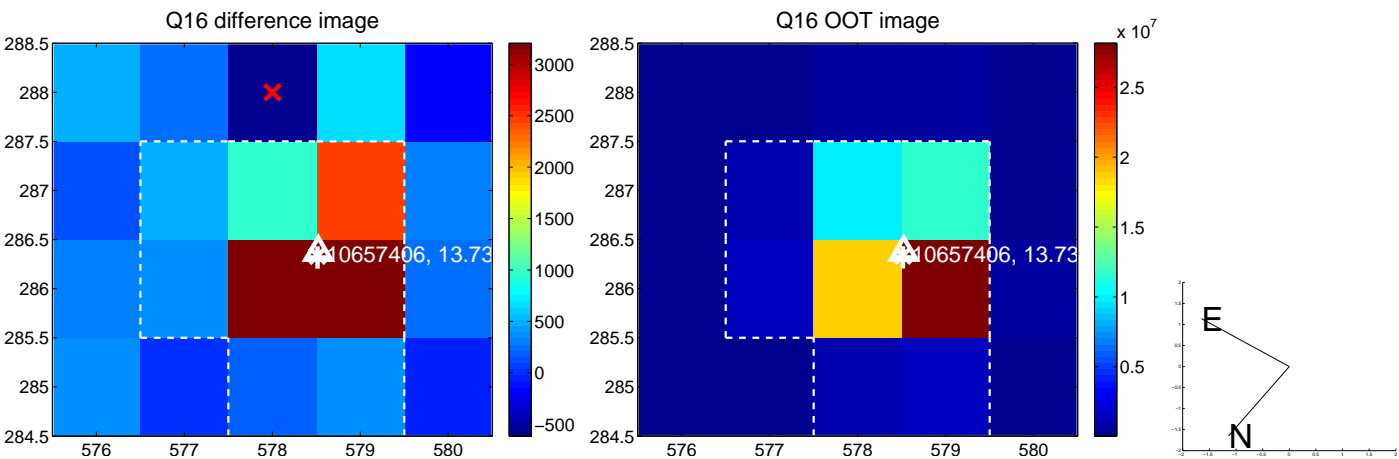
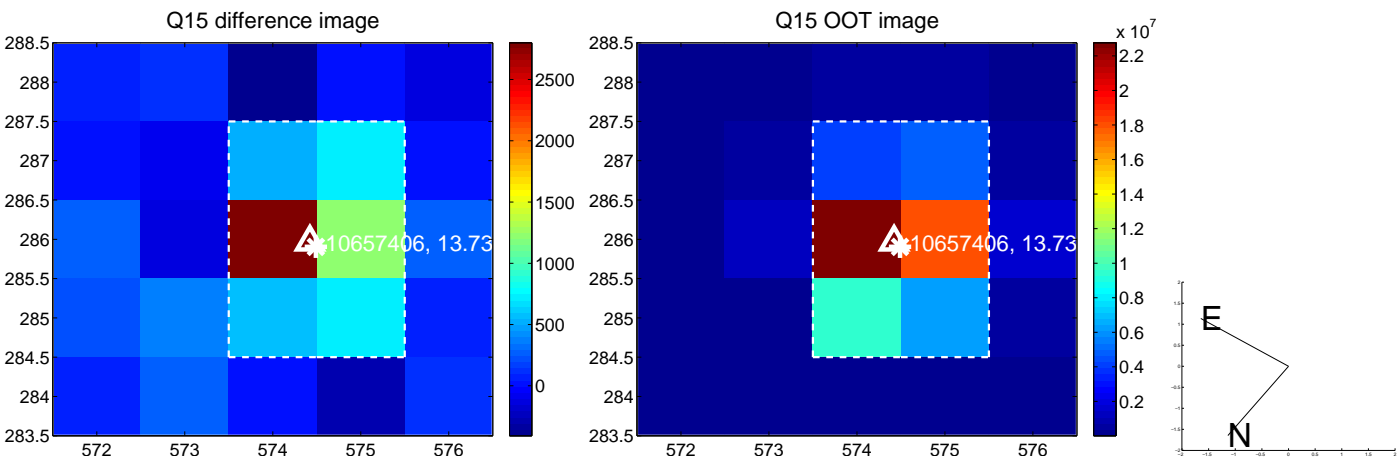
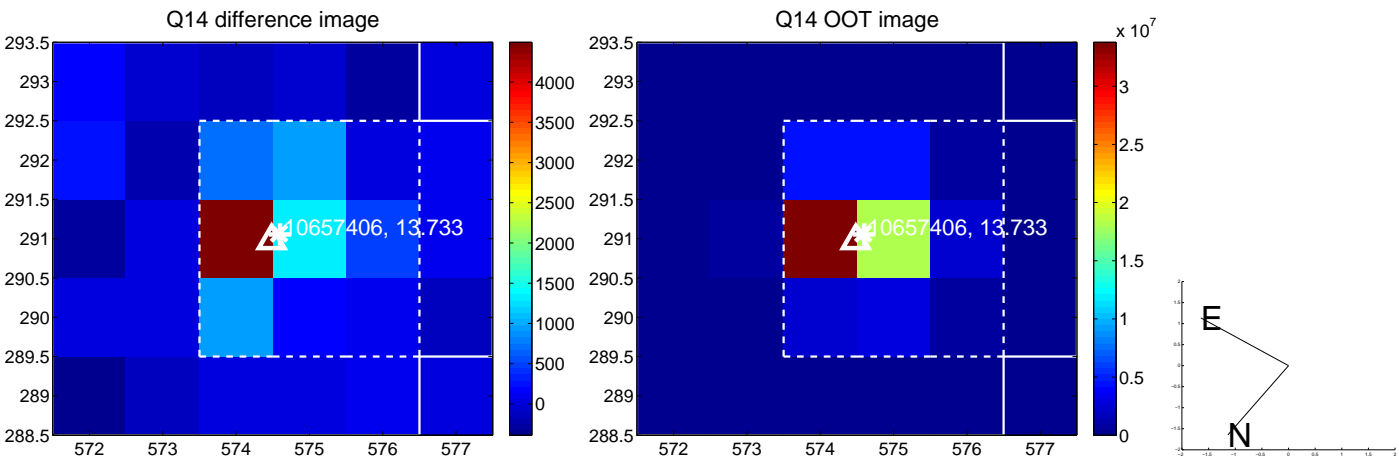
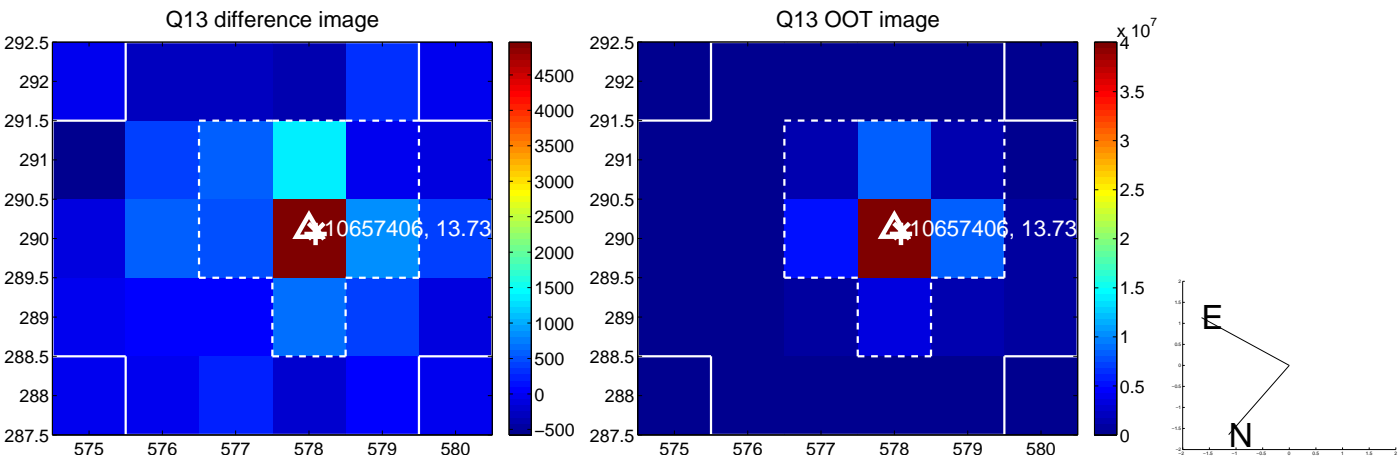
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



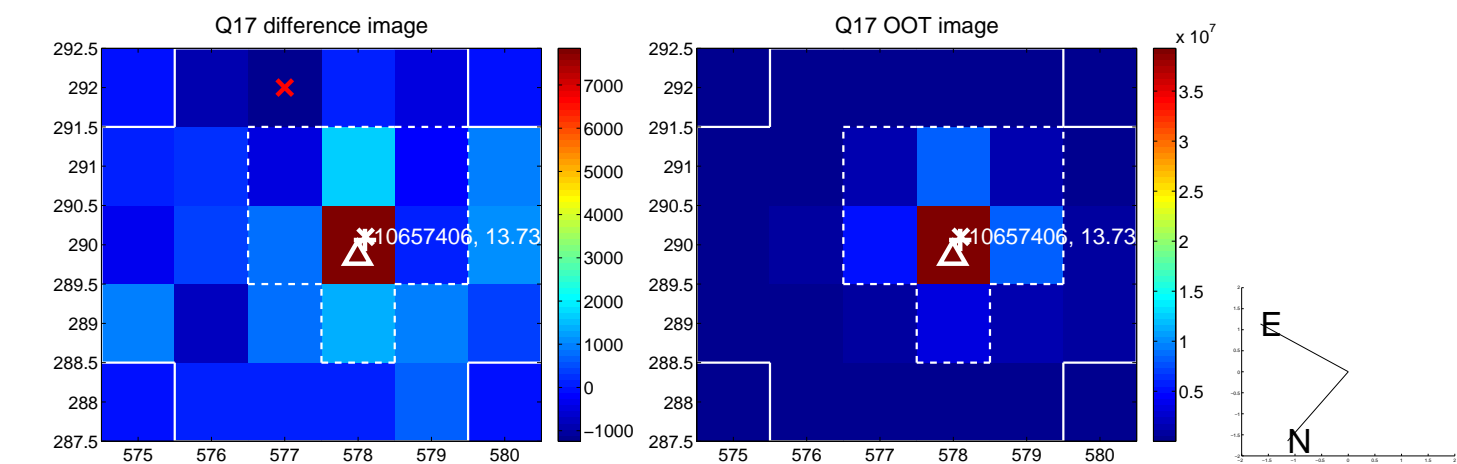
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



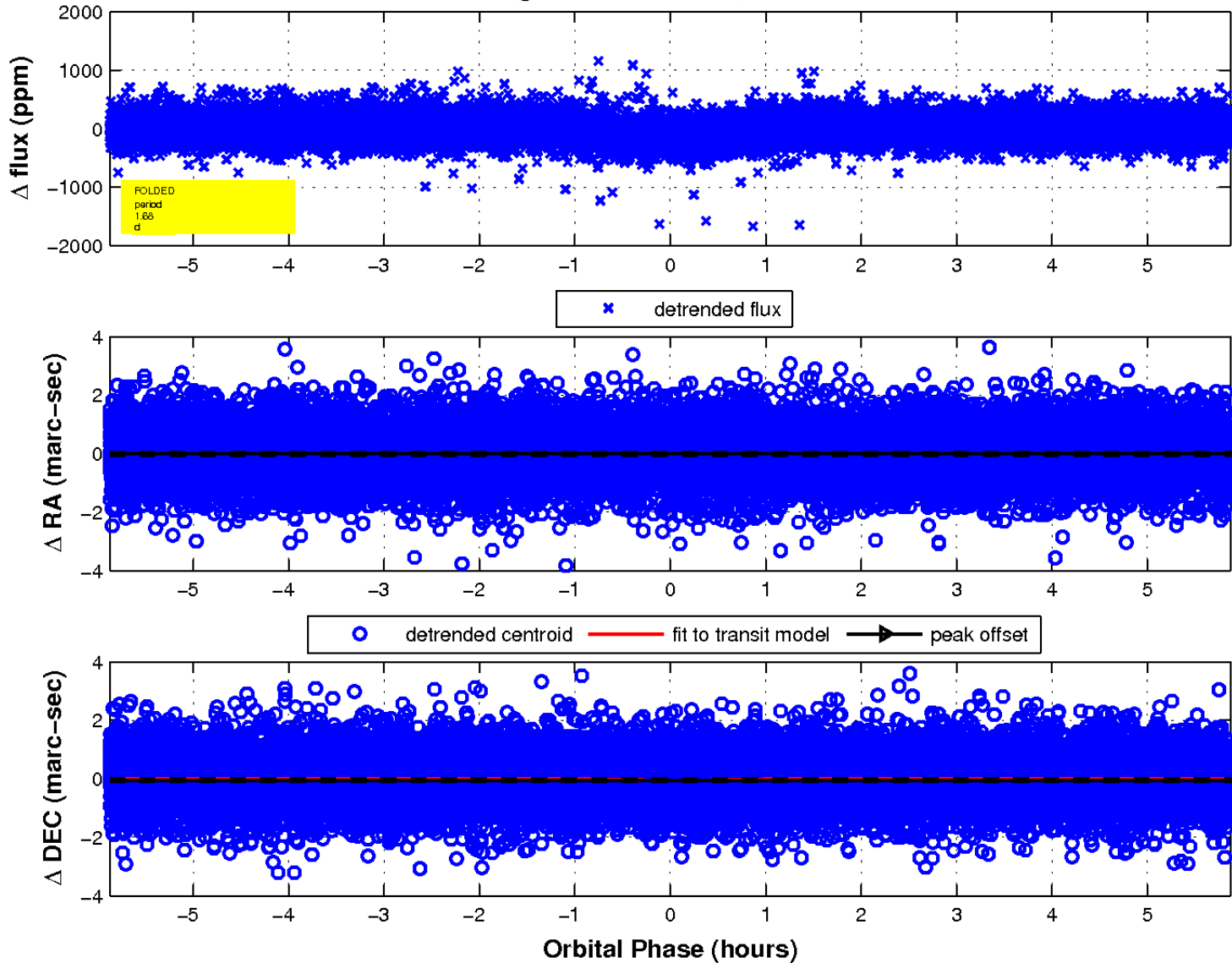
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

