

KIC 010187494

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})
010187494-01	OBS	No	1.735834	132.931789	45.9	8.077	7.9	8.3	0.79	5196	0.52	589.81
010187494-02	OBS	No	156.898508	235.942184	339.5	2.096	22.1	3.4	0.79	5196	1.58	1.45
010187494-03	OBS	No	105.623267	226.358121	771.1	6.093	25.4	9.4	0.79	5196	2.34	2.46
010187494-04	OBS	No	540.826851	245.859484	467.7	46.884	15.8	2.4	0.79	5196	2.02	0.28
010187494-05	OBS	No	166.204534	285.808832	483.0	2.935	11.7	4.4	0.79	5196	1.97	1.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010187494-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
010187494-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010187494-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010187494-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010187494-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

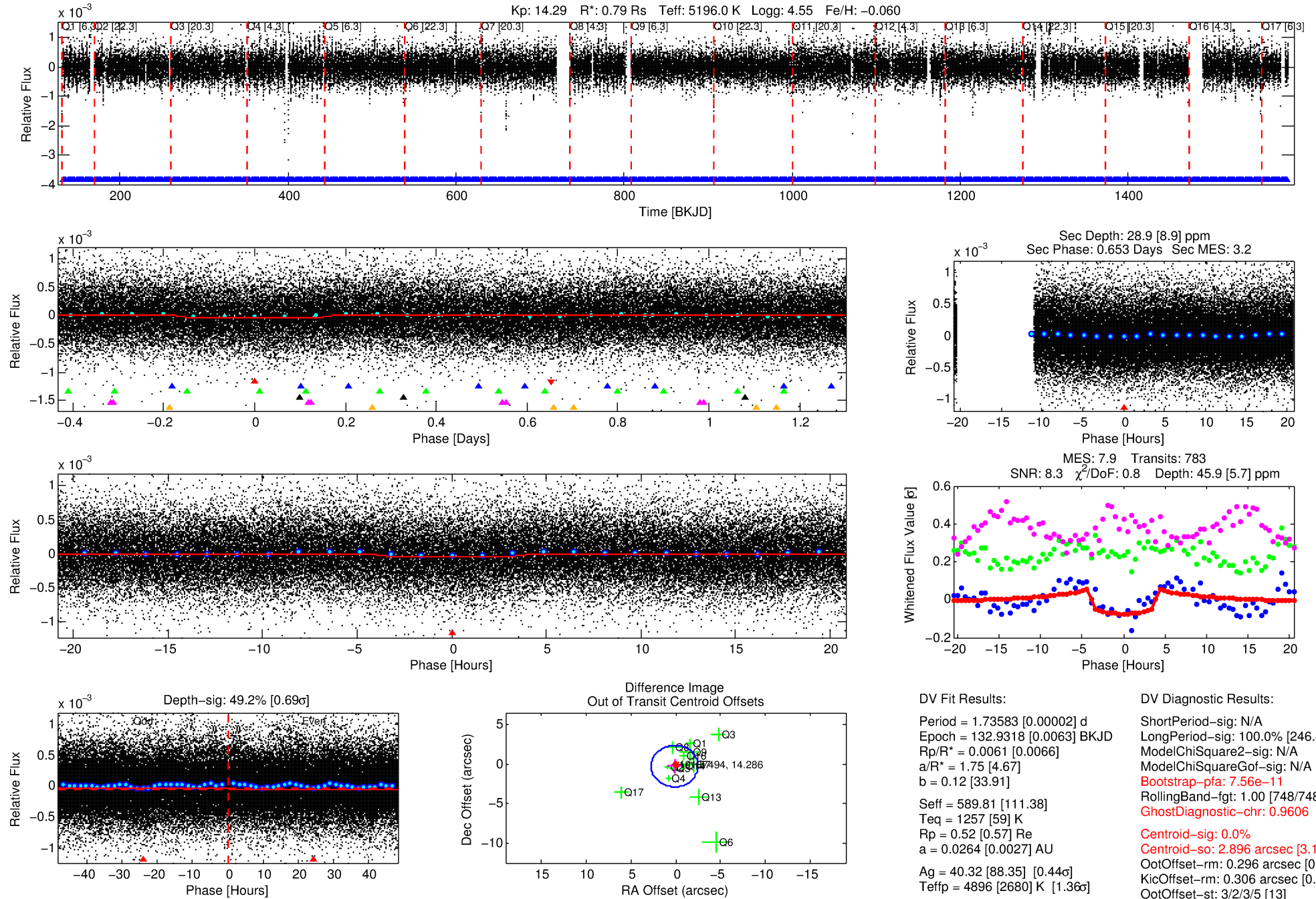
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010187494-01

No Significant Match Found

DV One-Page Summary

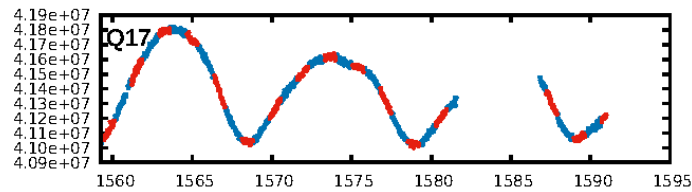
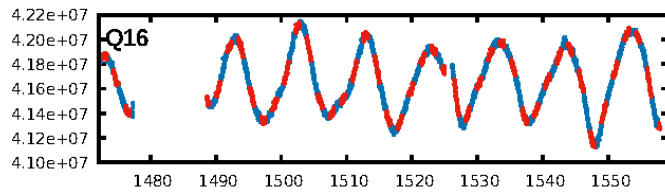
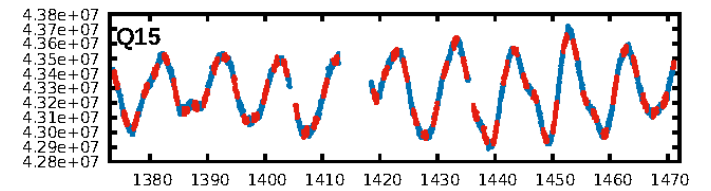
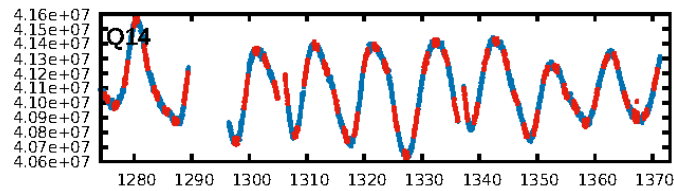
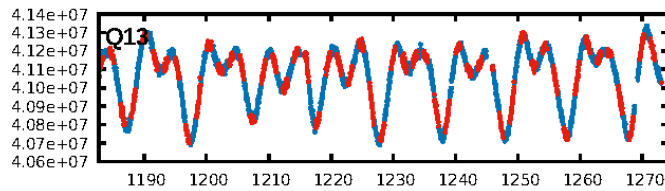
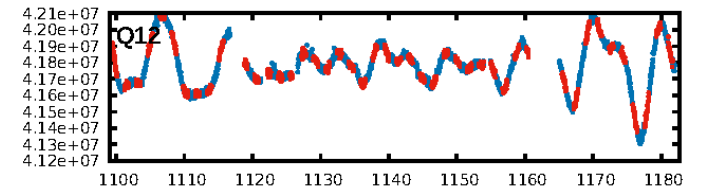
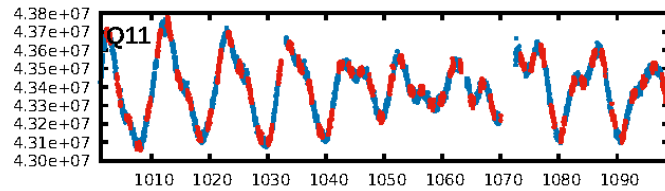
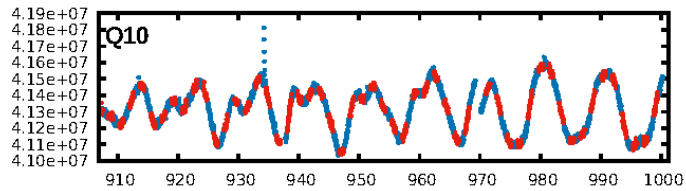
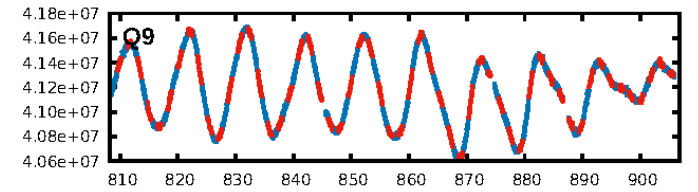
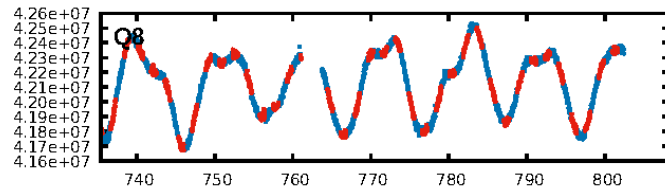
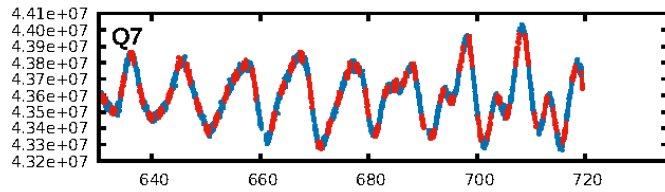
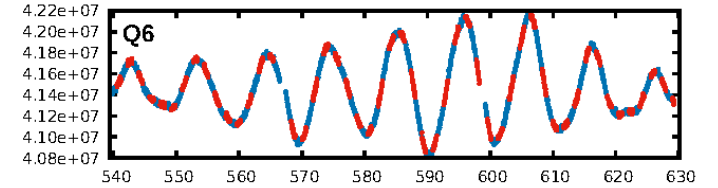
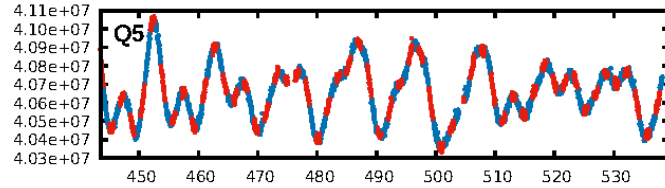
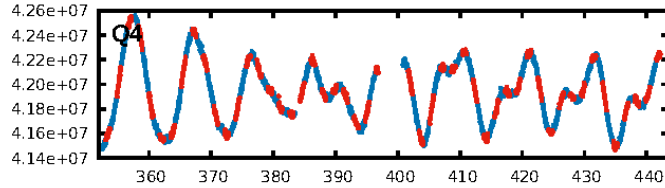
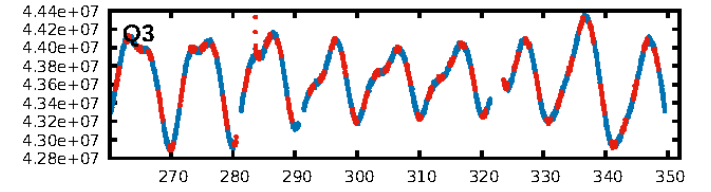
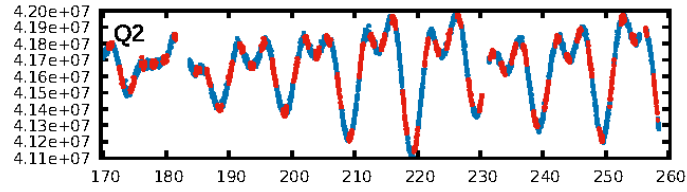
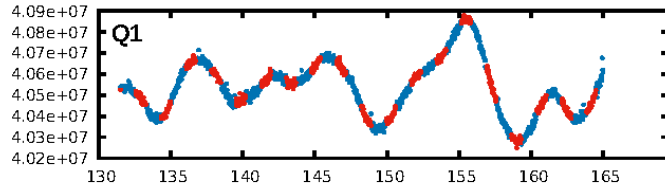
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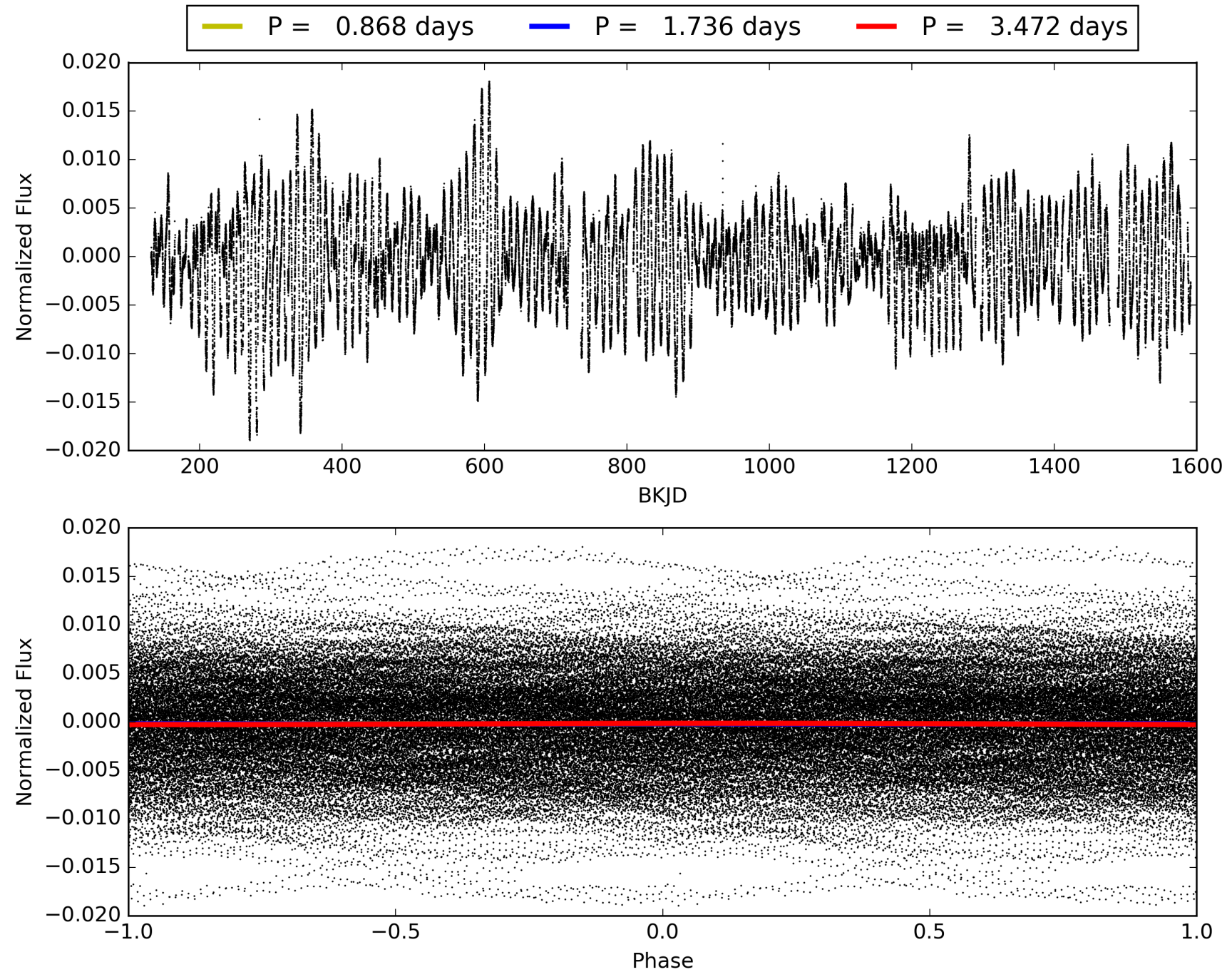
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010187494-01, PDC Light Curves

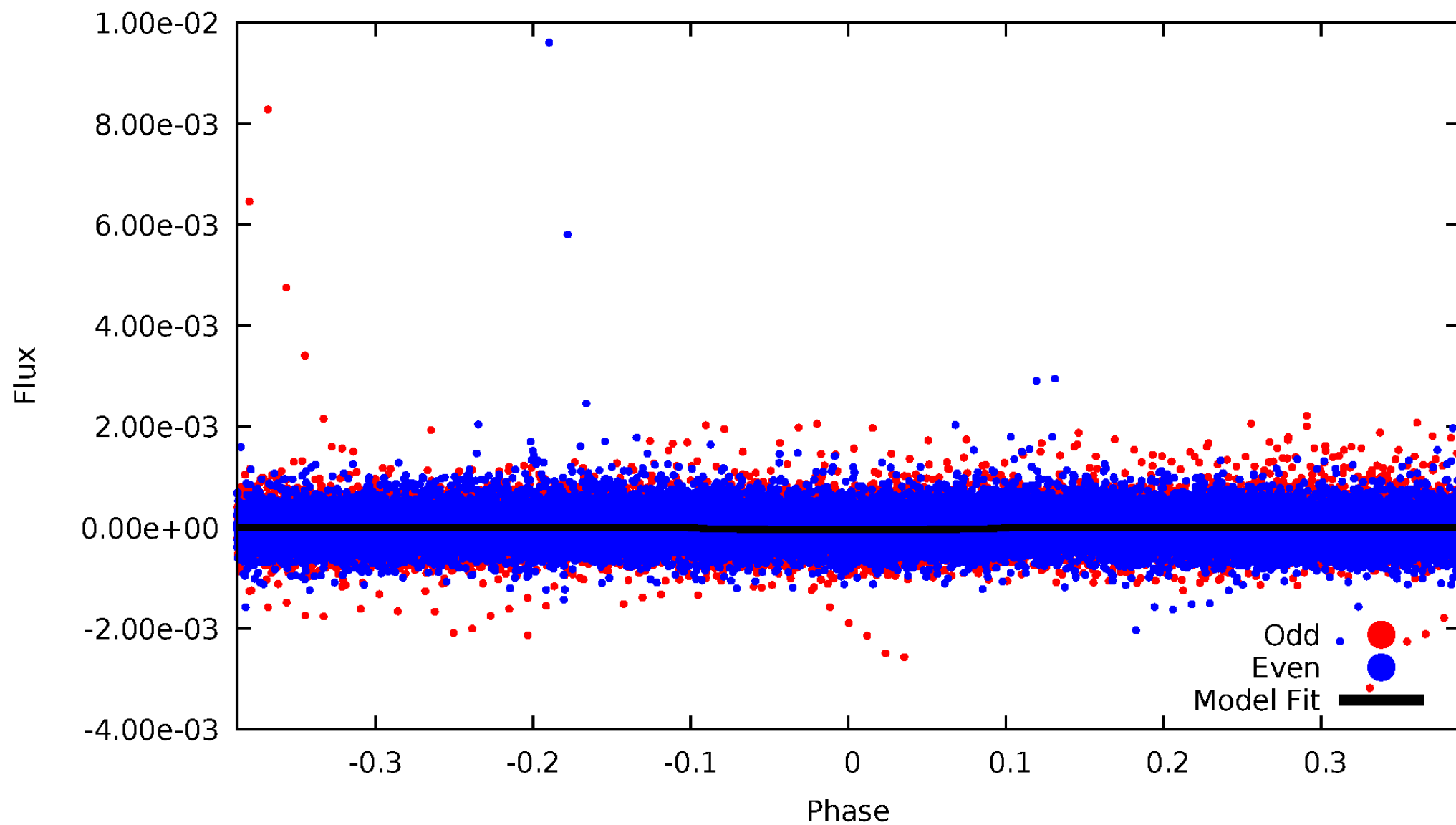


TCE 010187494-01



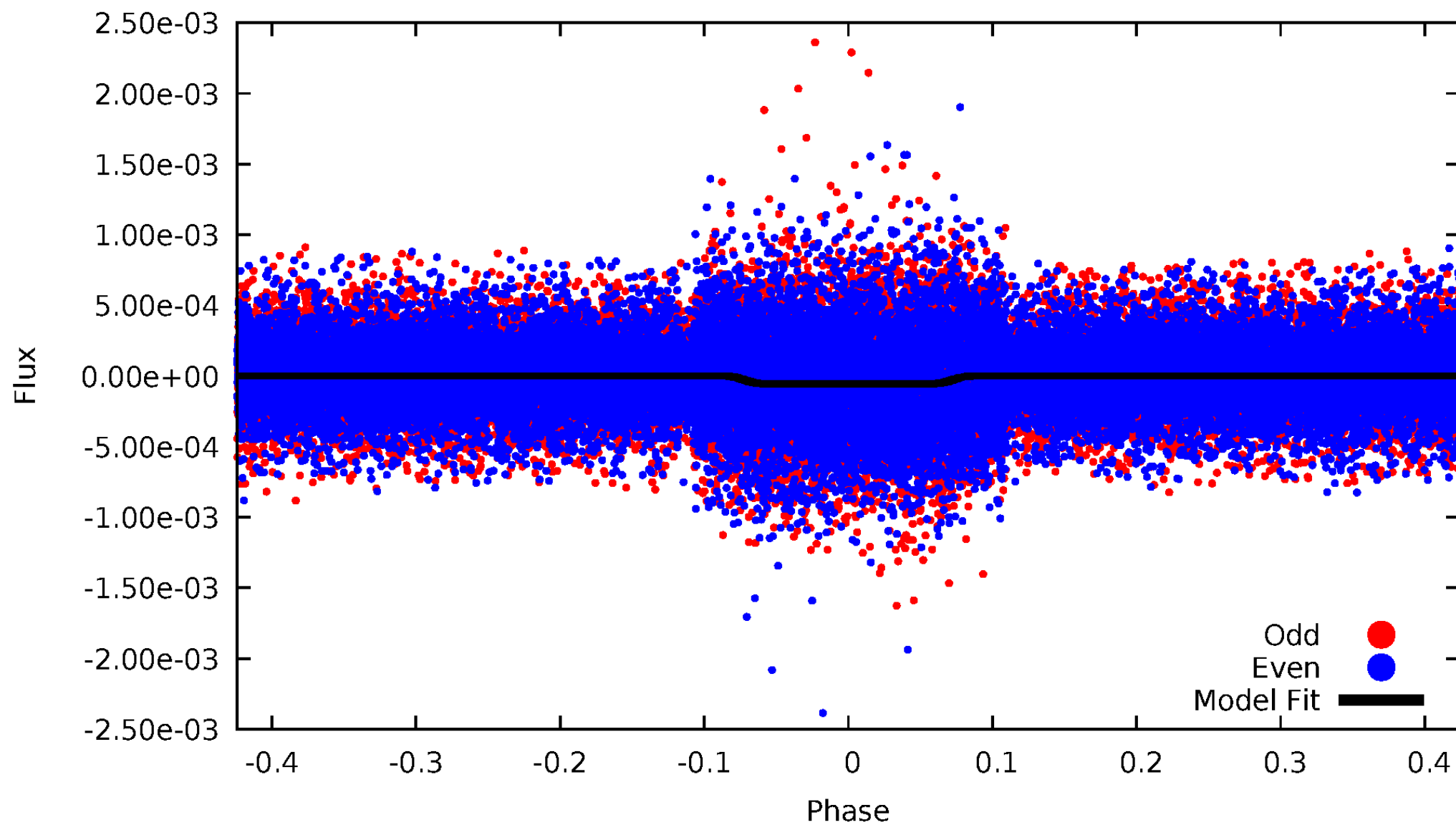
DV Odd/Even

TCE 010187494-01

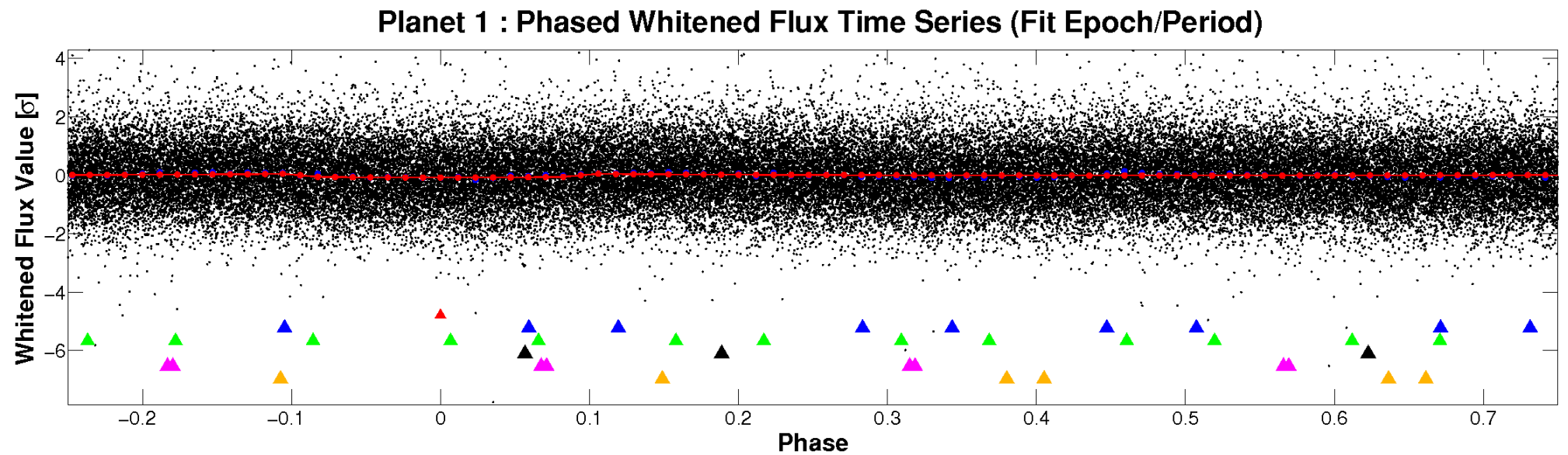
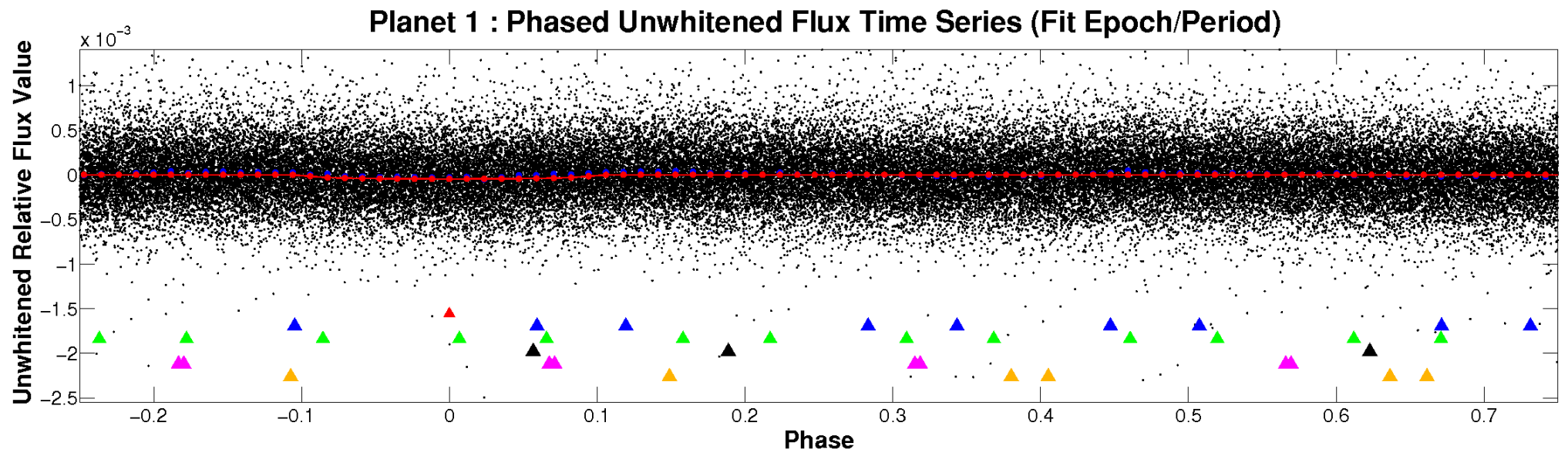


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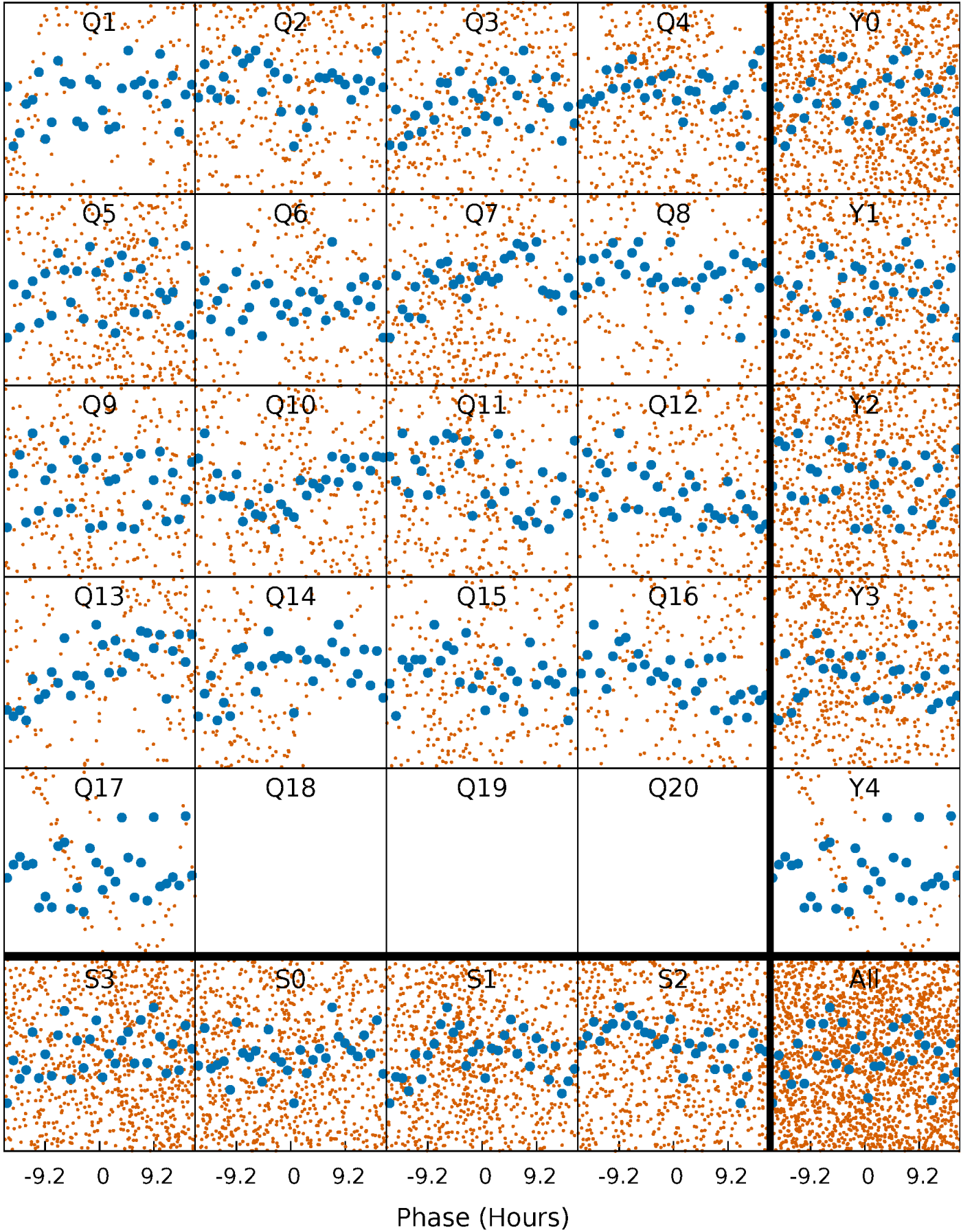


Non-Whitened Vs. Whitened Light Curve



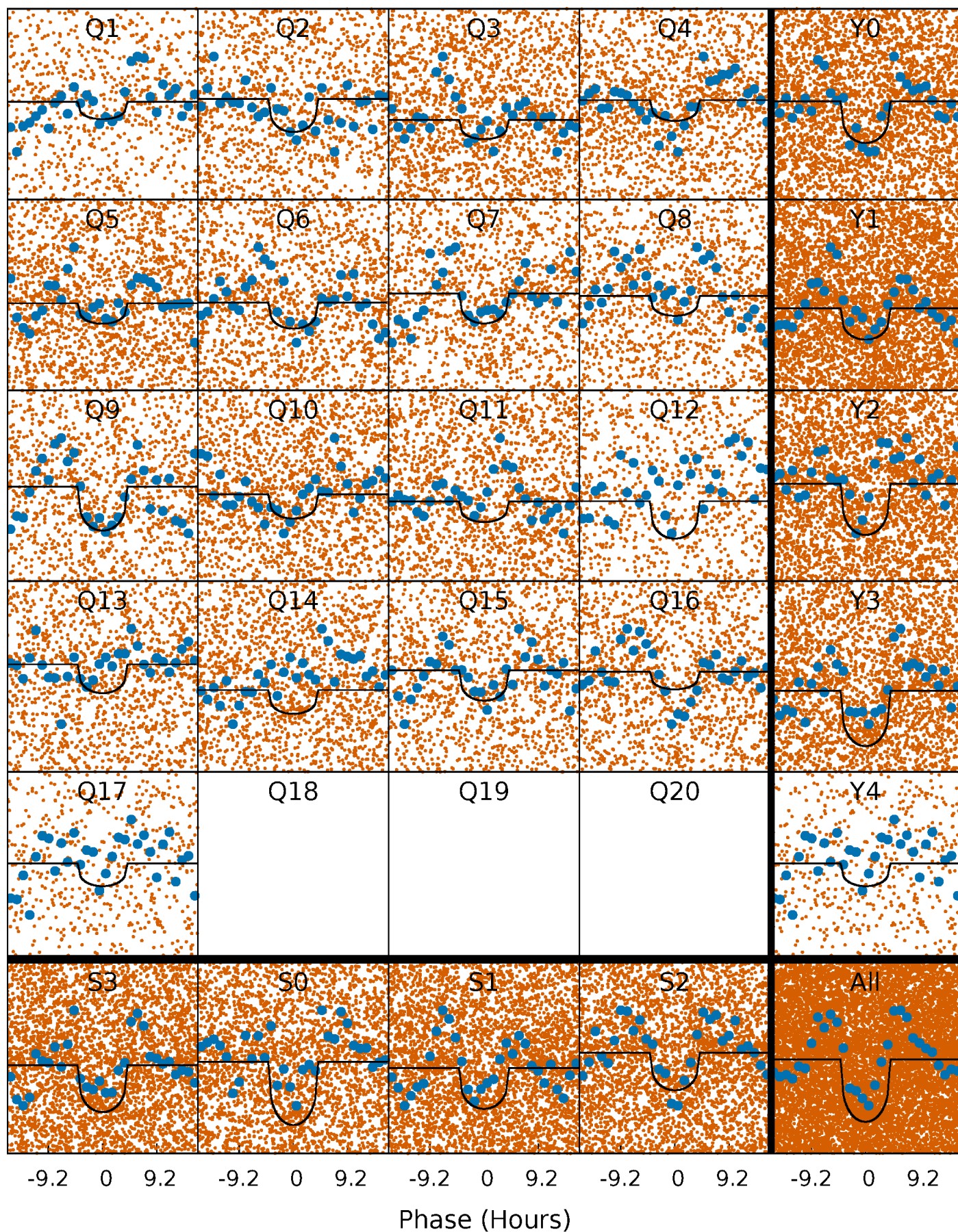
PDC Quarter-Phased Transit Curves

TCE 010187494-01 $P = 1.735834$ Days $T_0 = 132.931789$ (BKJD)



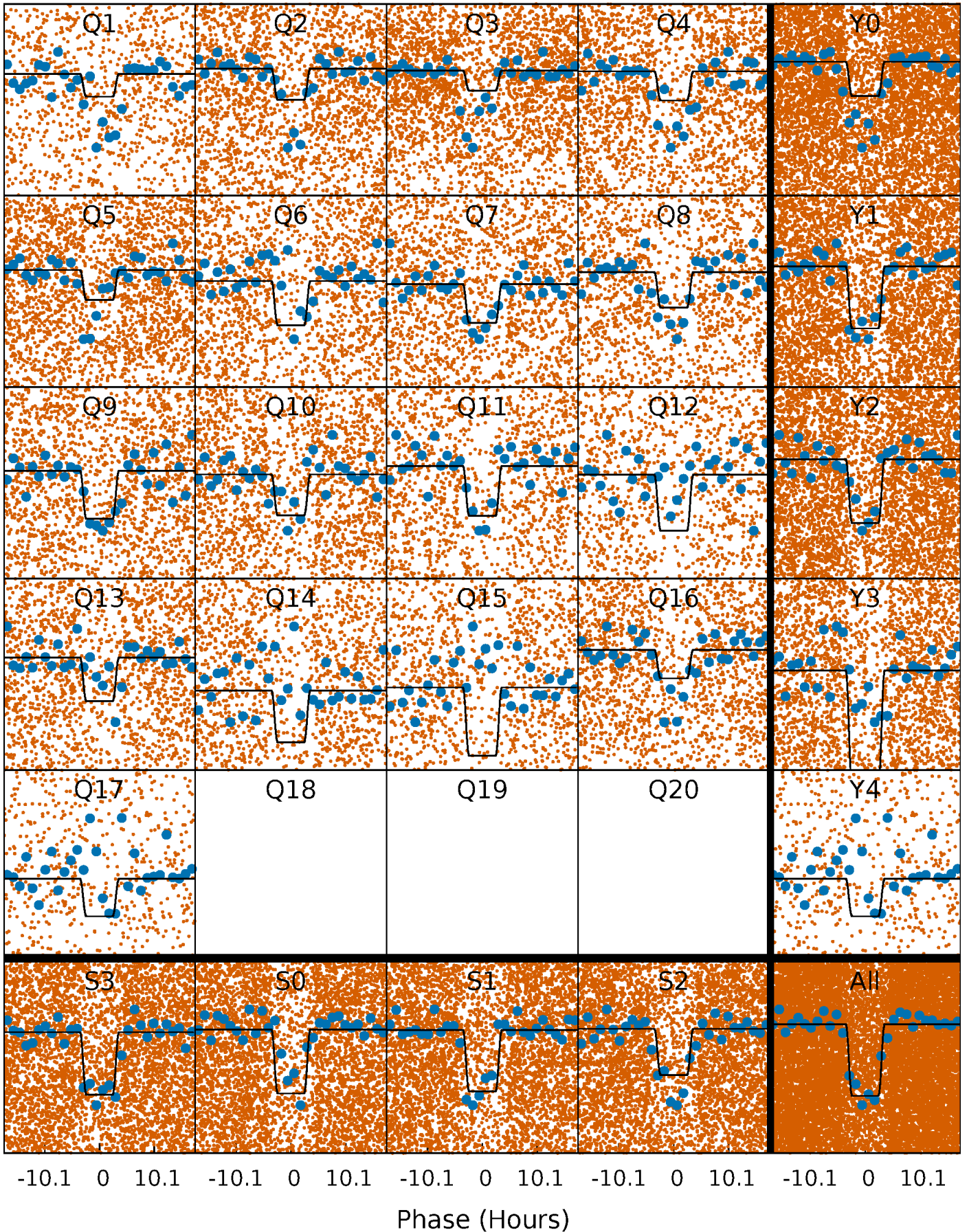
DV Quarter-Phased Transit Curves

TCE 010187494-01 P= 1.735834 Days $T_0=132.931789$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

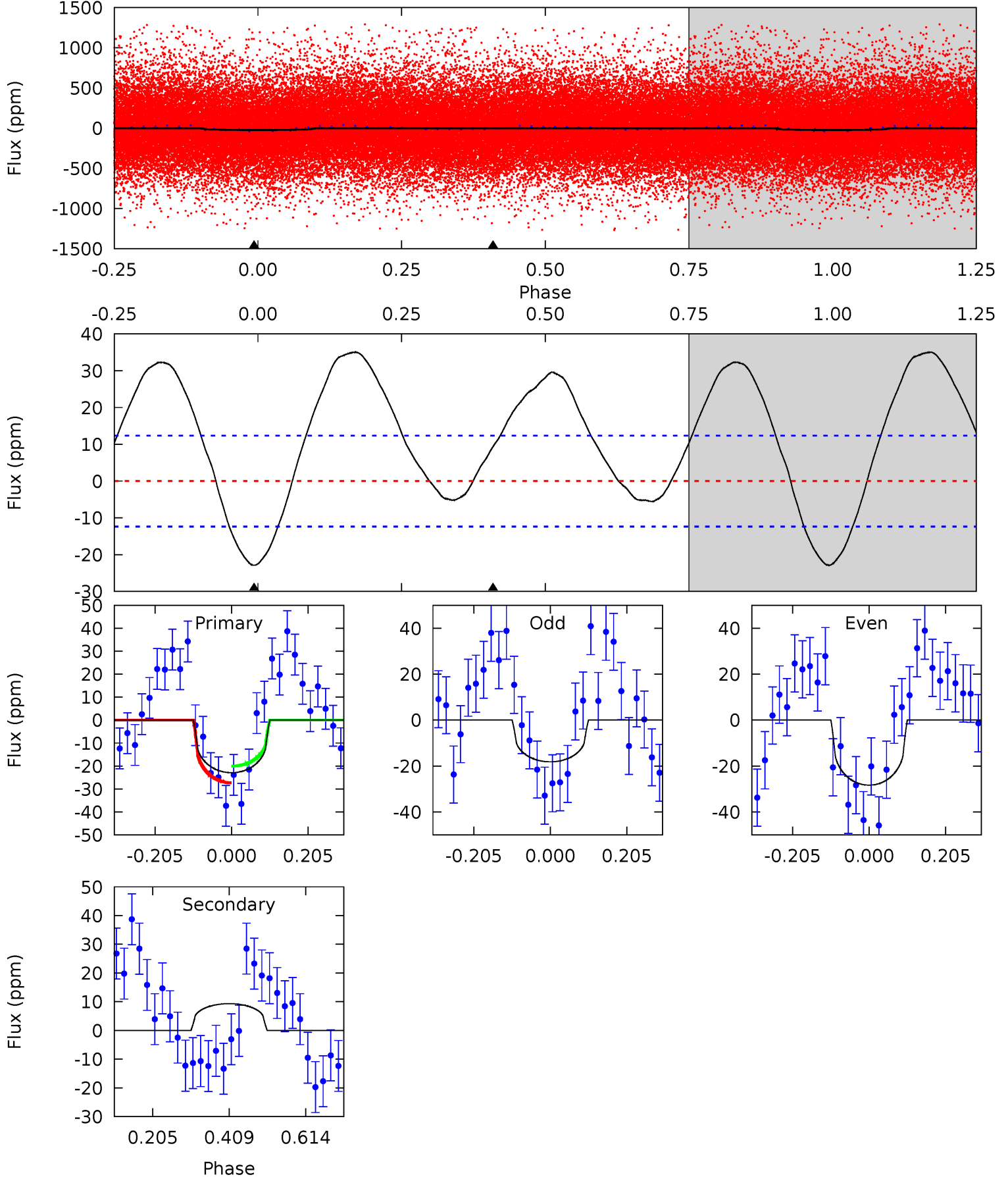
TCE 010187494-01 P= 1.735798 Days $T_0=132.920178$ (BKJD)



DV Model-Shift Uniqueness Test

010187494-01, P = 1.735834 Days, E = 131.195955 Days

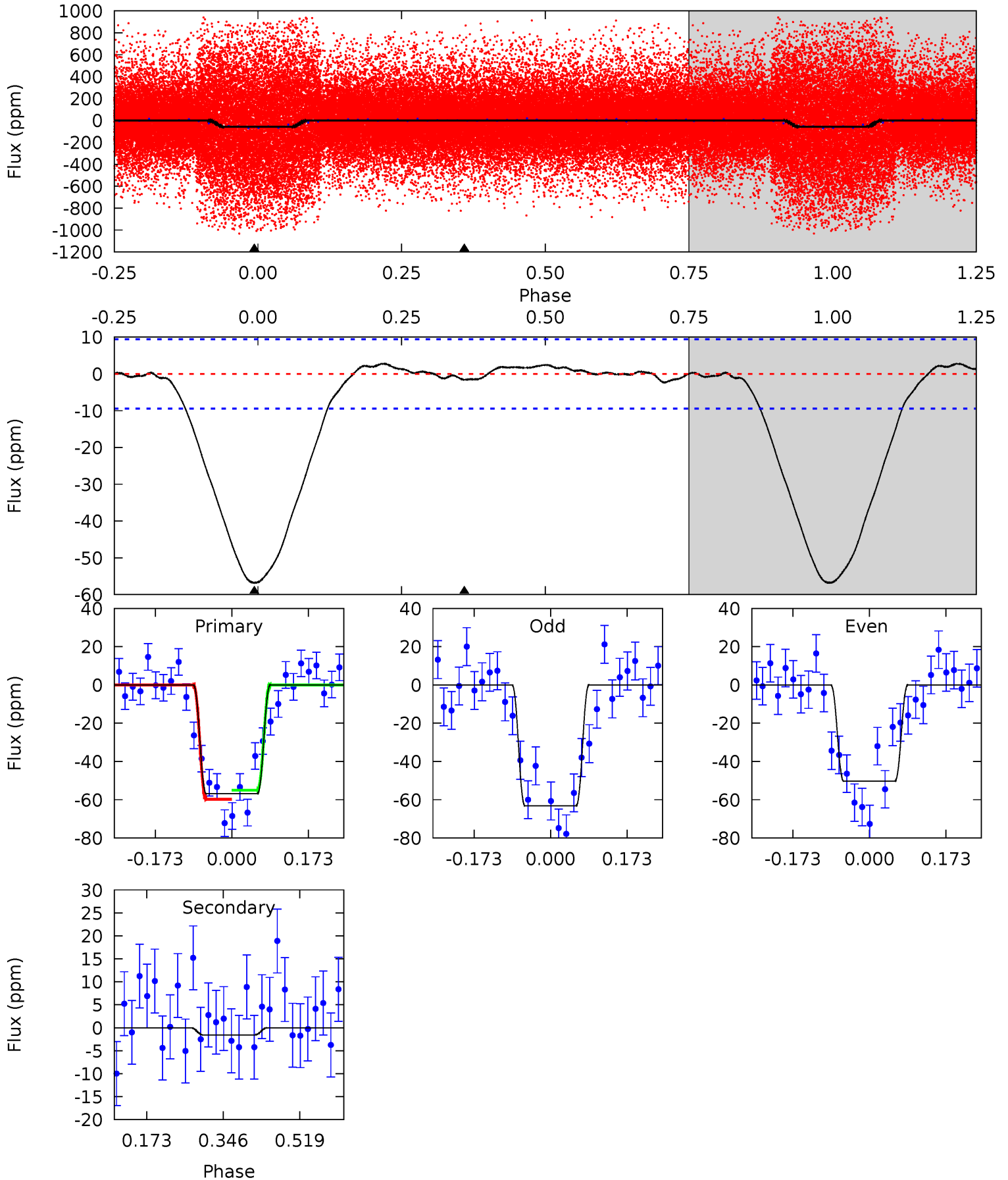
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.19	-3.33	0	0	4.41	1.27	3.60	8.19	8.19	-3.33	-3.33	1.82	0.62	0.60	1.31



Alt Model-Shift Uniqueness Test

010187494-01, P = 1.735798 Days, E = 131.184380 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.8	0.74	0	0	4.45	1.36	0.43	26.8	26.8	0.74	0.74	3.02	1.22	0.05	1.13



Stellar Parameters For KIC 010187494

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5196^{+155}_{-140}	$4.549^{+0.052}_{-0.078}$	$-0.060^{+0.300}_{-0.300}$	$0.792^{+0.100}_{-0.073}$	$0.811^{+0.085}_{-0.076}$	$2.296^{+0.514}_{-0.600}$
	+3%/-3%	+1%/-2%	+500%/-500%	+13%/-9%	+10%/-9%	+22%/-26%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010187494-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	9 ± 3	$0.64^{+0.52}_{-0.41}$	1765^{+72}_{-67}	-3701^{+601}_{-1687}	$-8.459^{+6.115}_{-49.389}$
Alt.	-2 ± 2	$0.70^{+0.59}_{-0.43}$	1766^{+71}_{-67}	2500^{+1011}_{-5094}	$0.844^{+5.475}_{-1.284}$

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 $A_{\text{obs}} \gg 1.0$

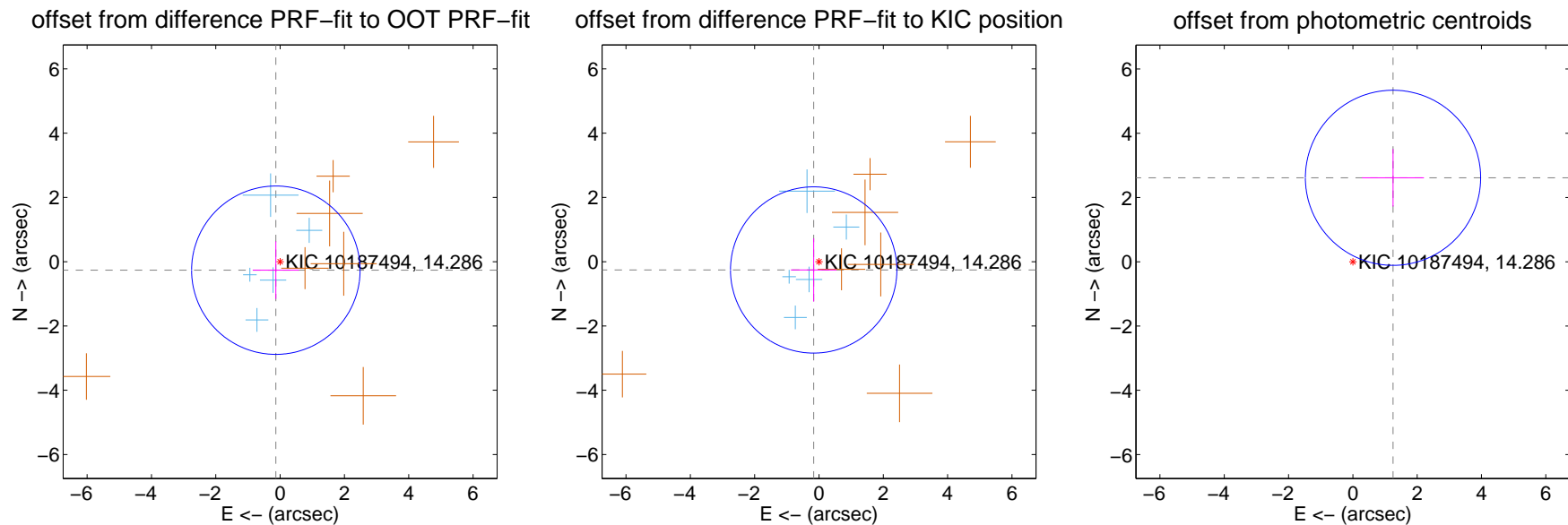
DV Centroid Data

Supplemental centroid analysis for 010187494-01. Kepler magnitude: 14.29. Transit SNR 8.29

There are 5 quarters with good PRF difference image offsets

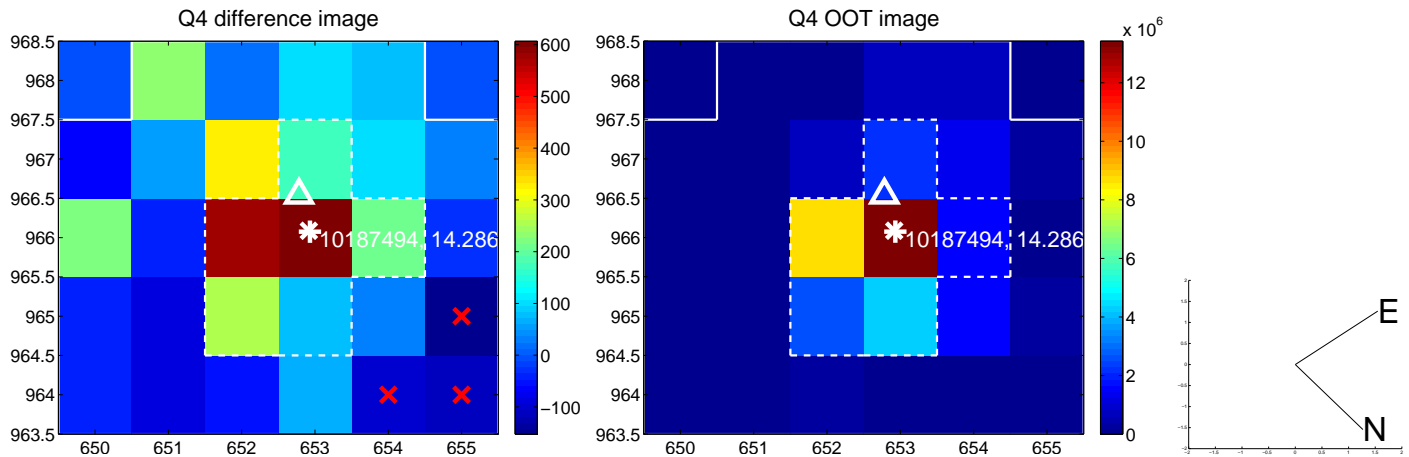
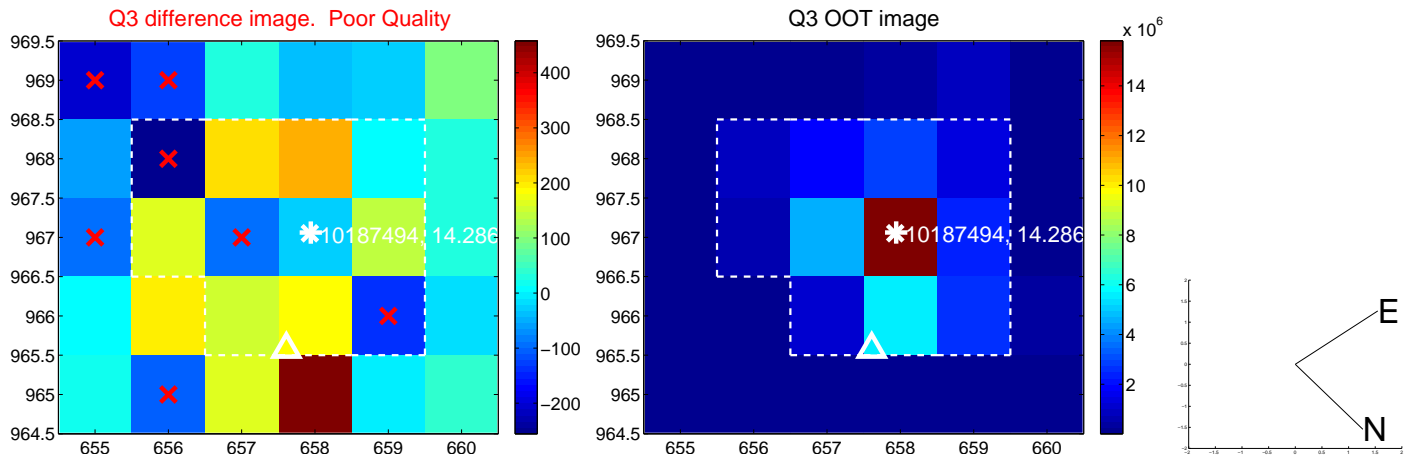
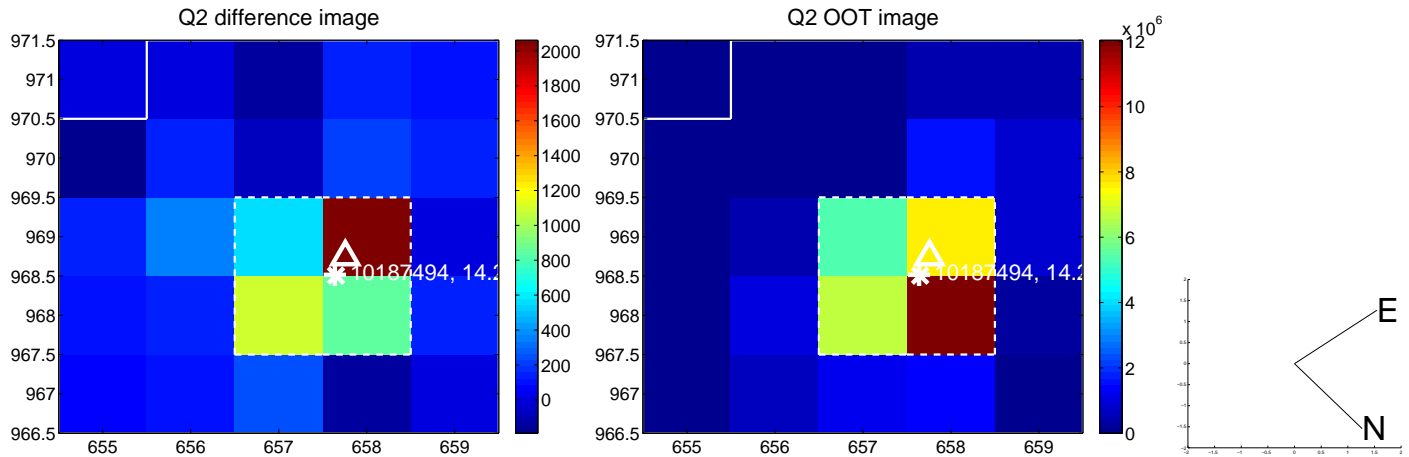
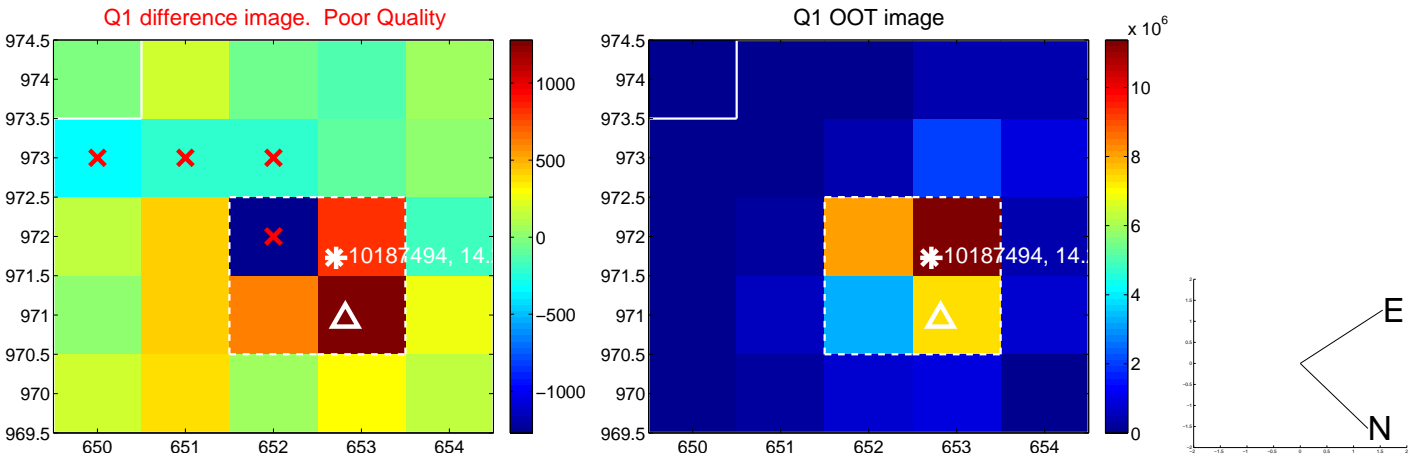
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.296 ± 0.873	0.34	0.133 ± 0.719	-0.264 ± 0.897
PRF-fit source offset from KIC position	0.306 ± 0.862	0.35	0.165 ± 0.709	-0.257 ± 0.983
photometric centroid source offset	2.90 ± 0.91	3.19	-1.25 ± 0.96	2.61 ± 0.90

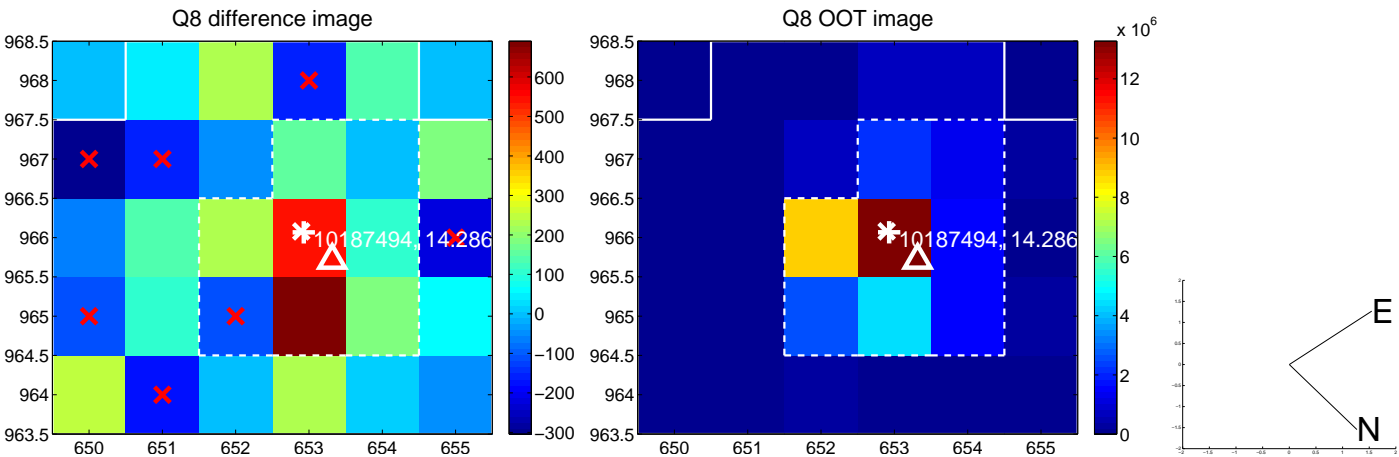
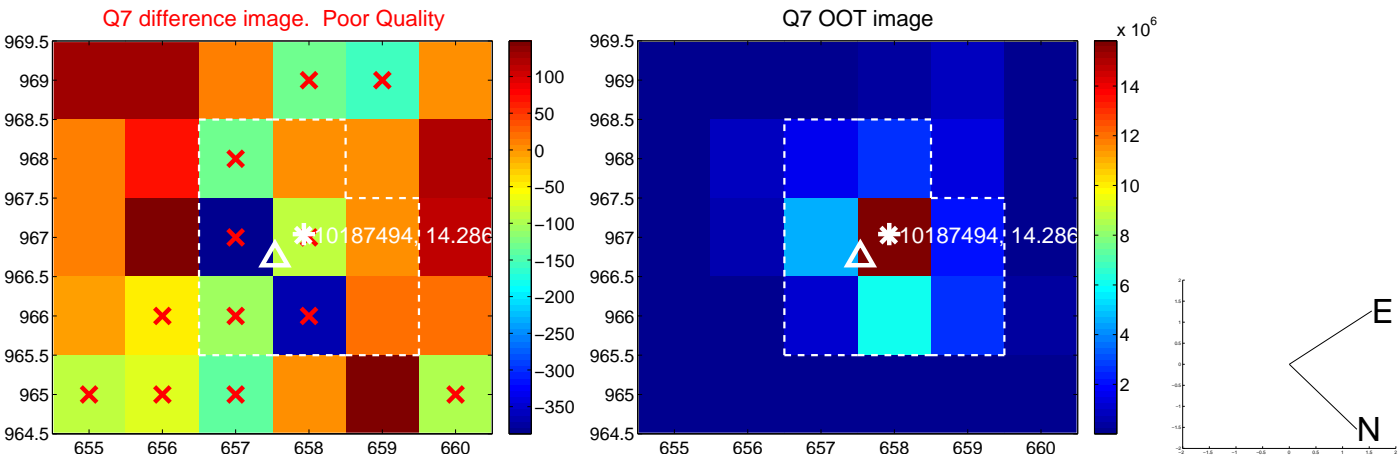
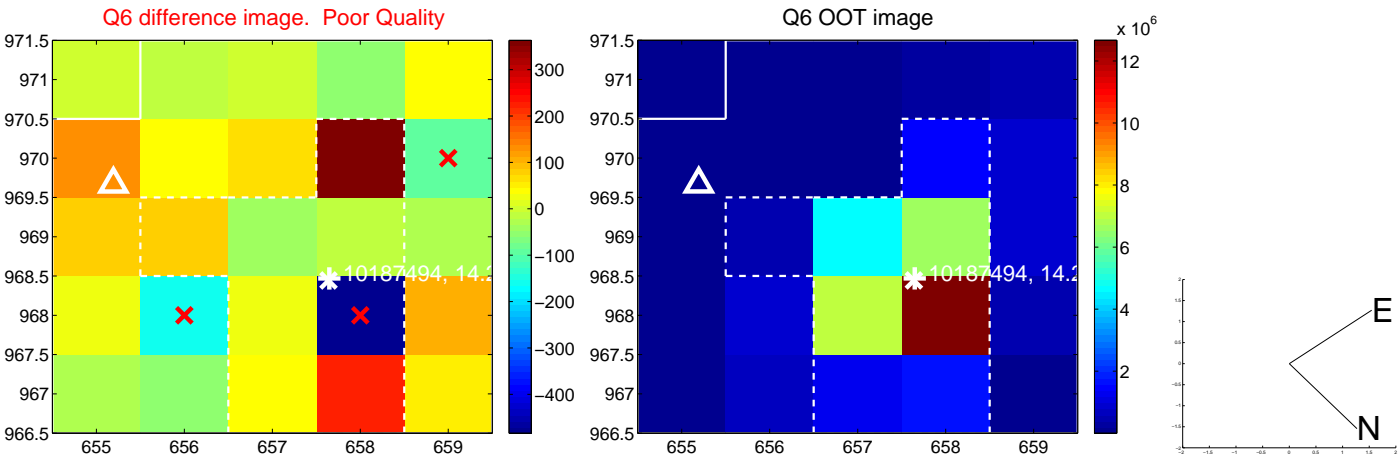
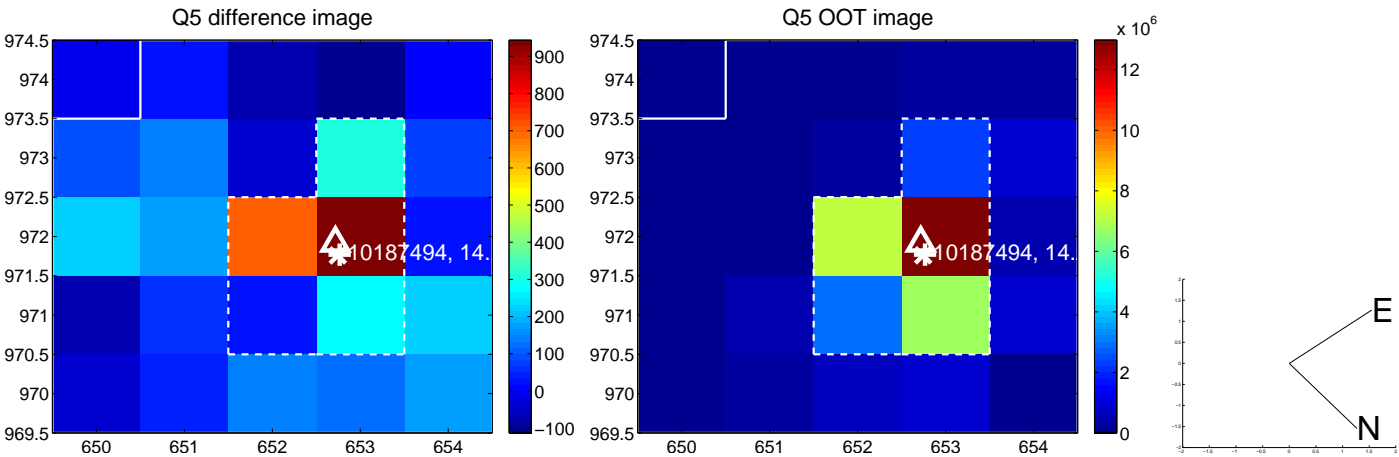


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- 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.

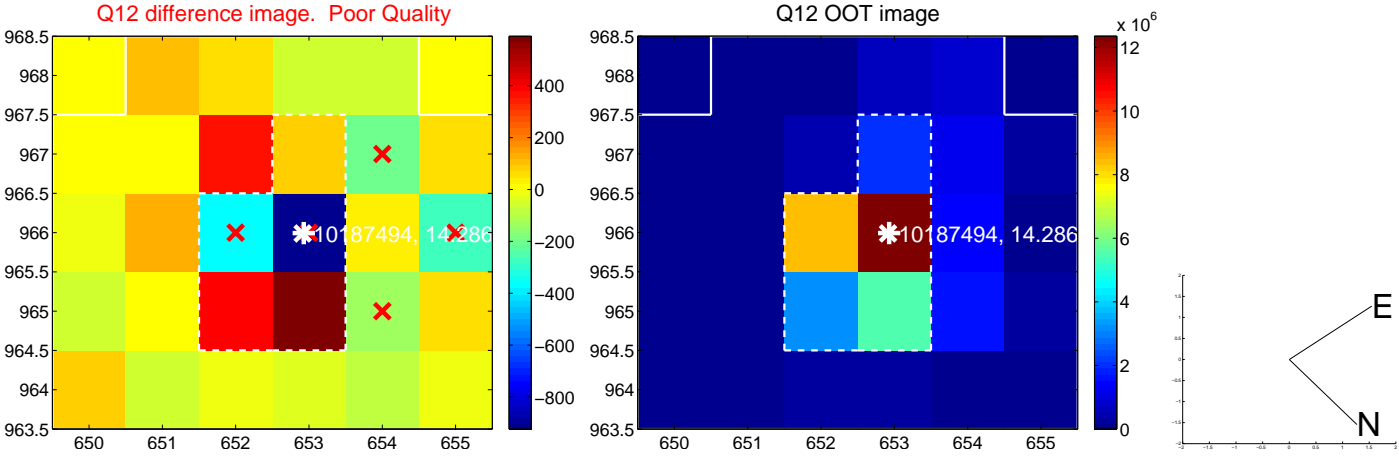
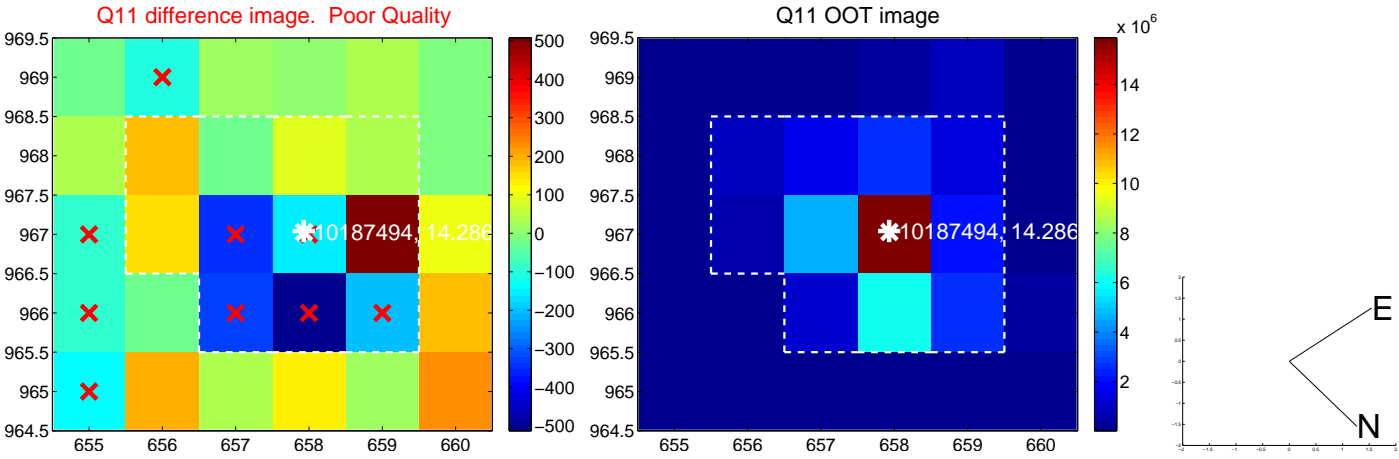
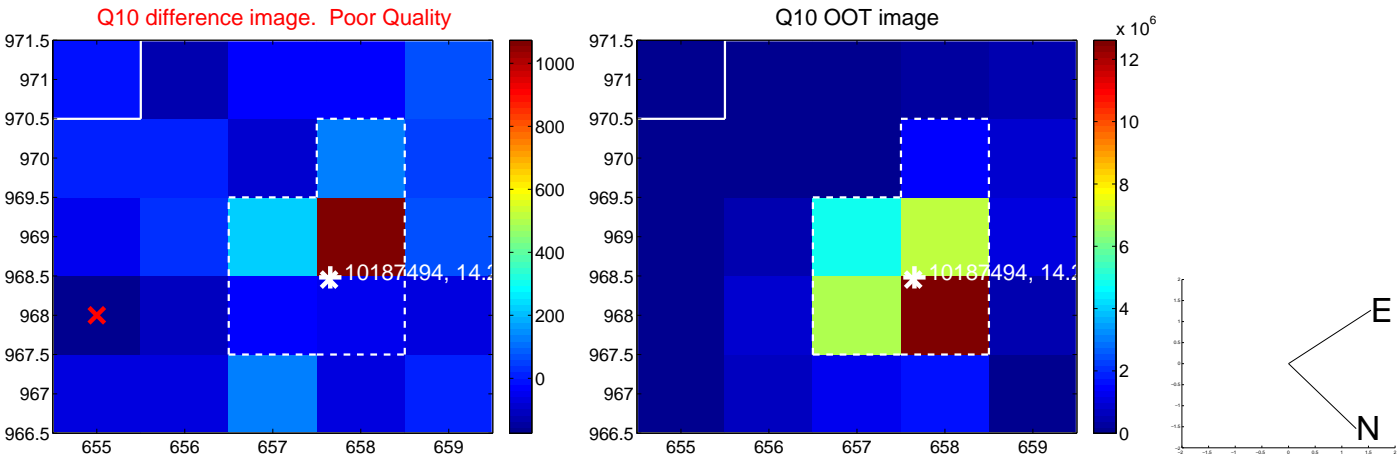
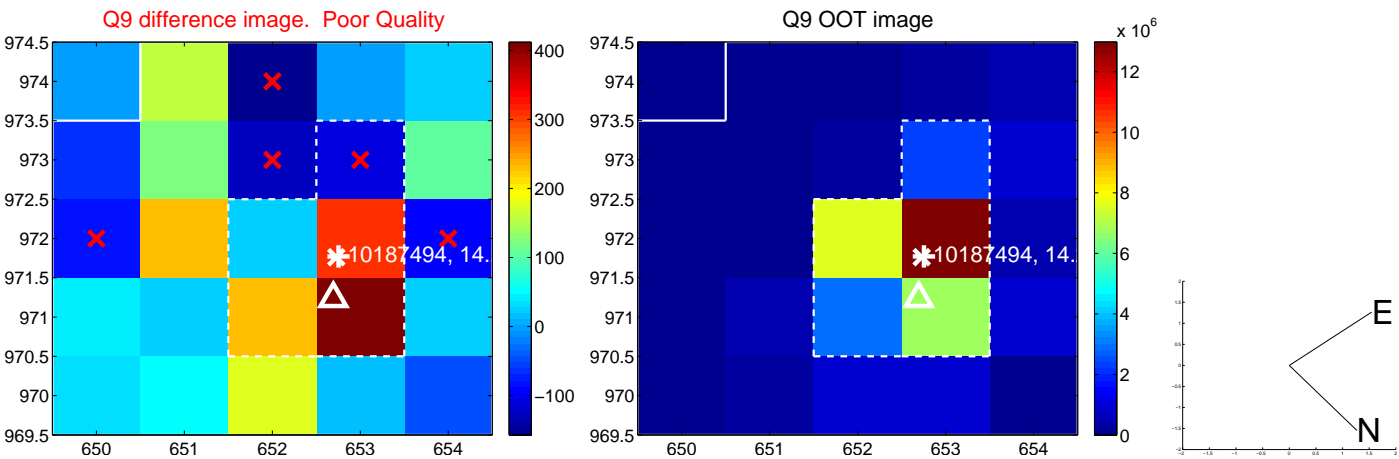
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



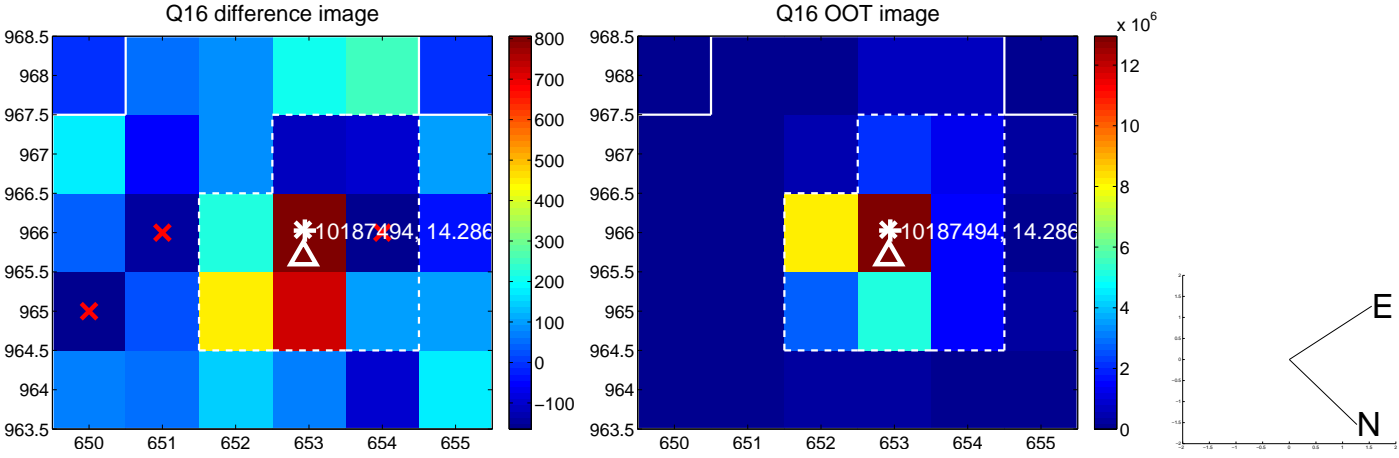
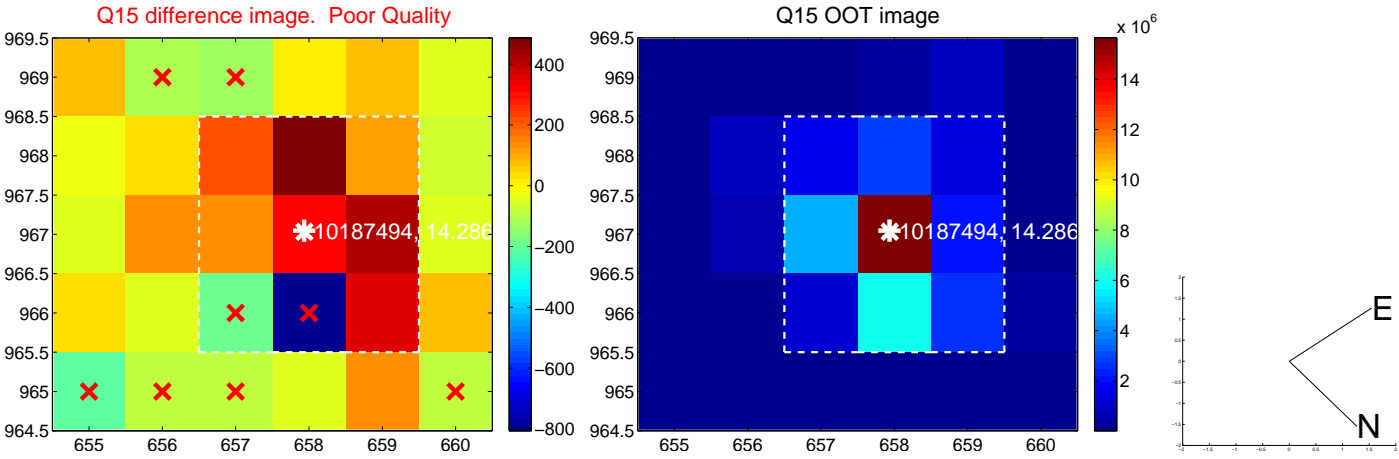
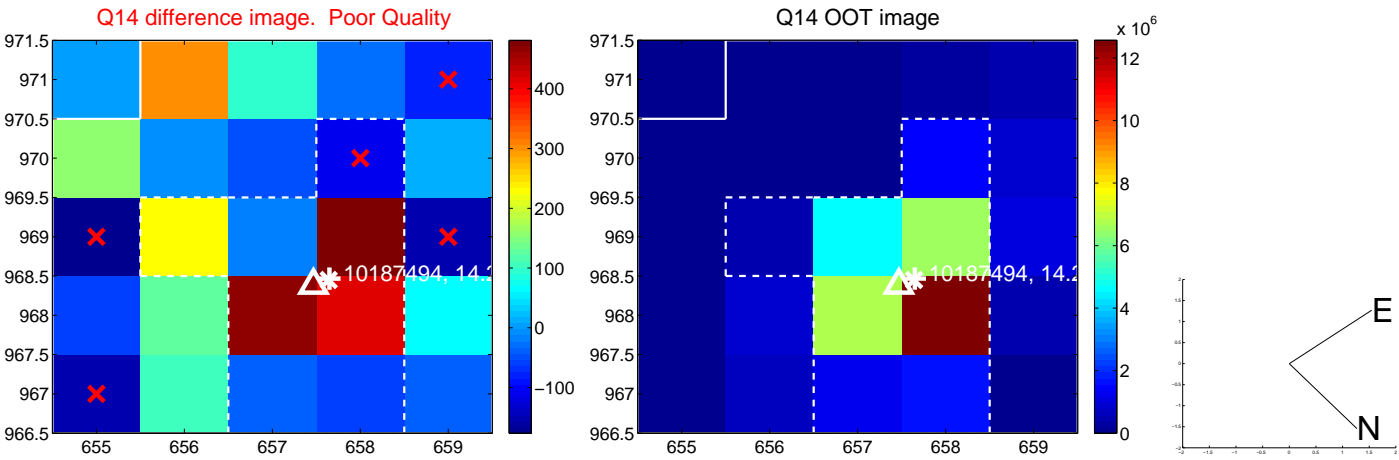
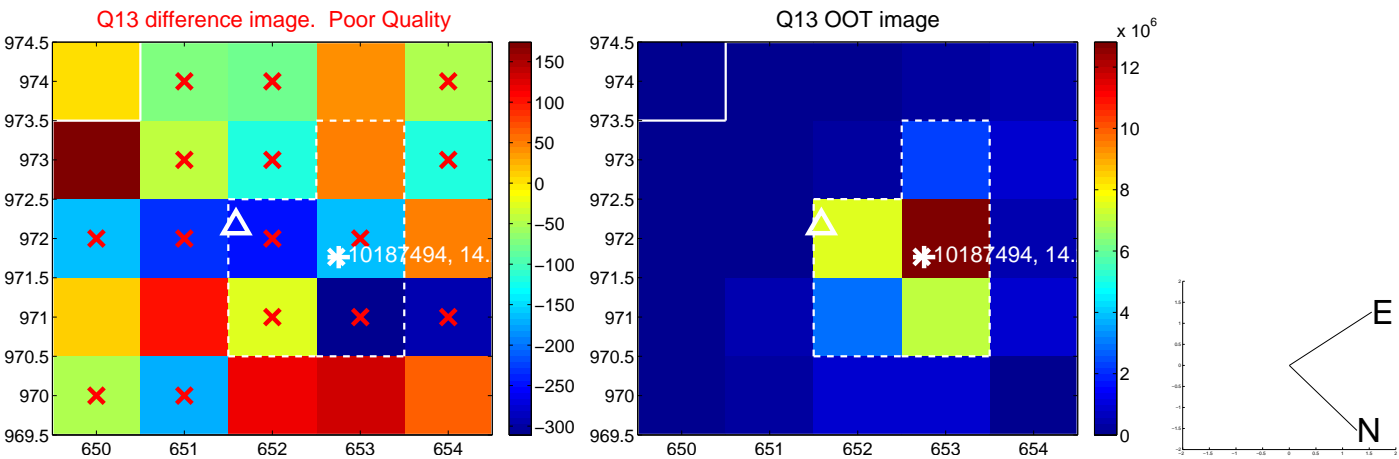
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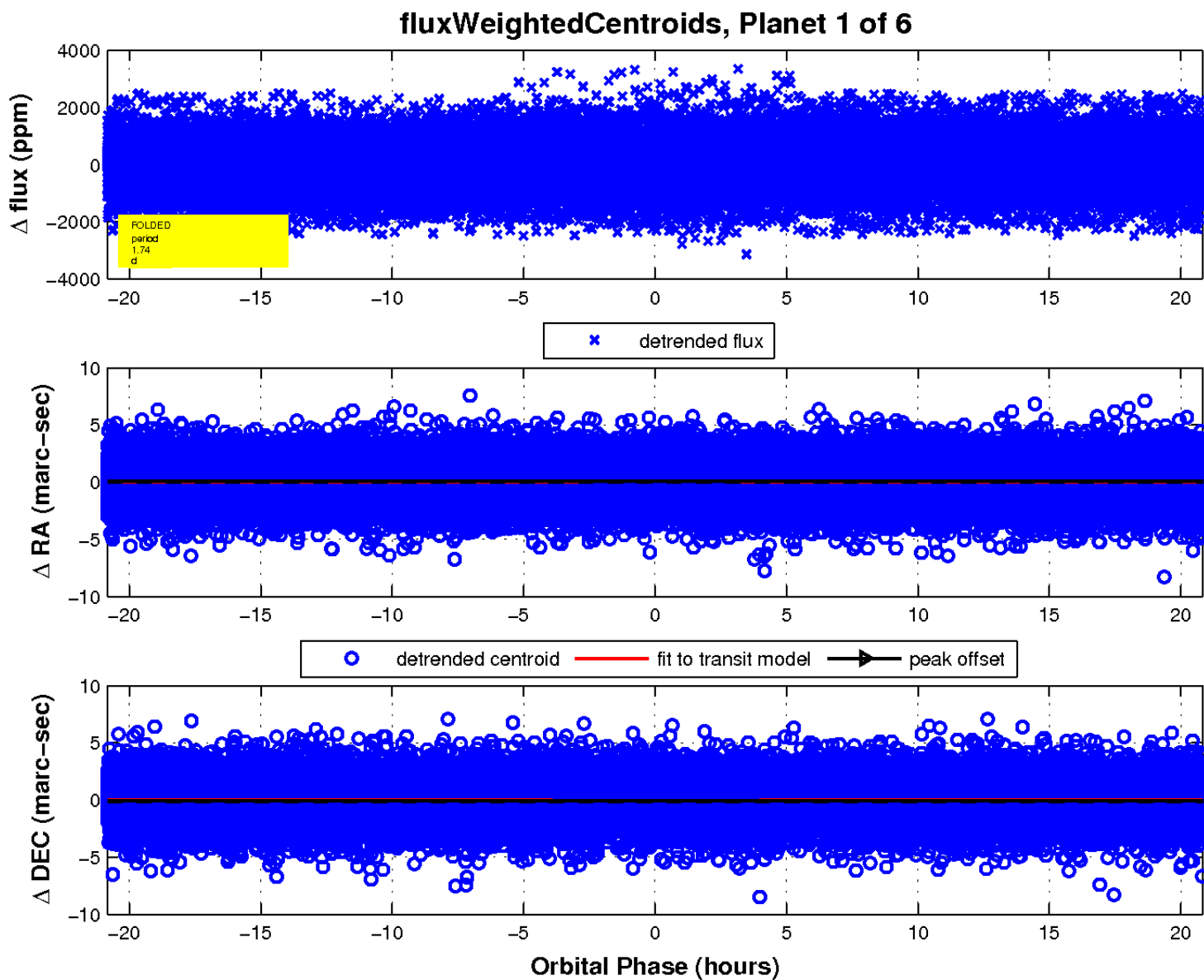
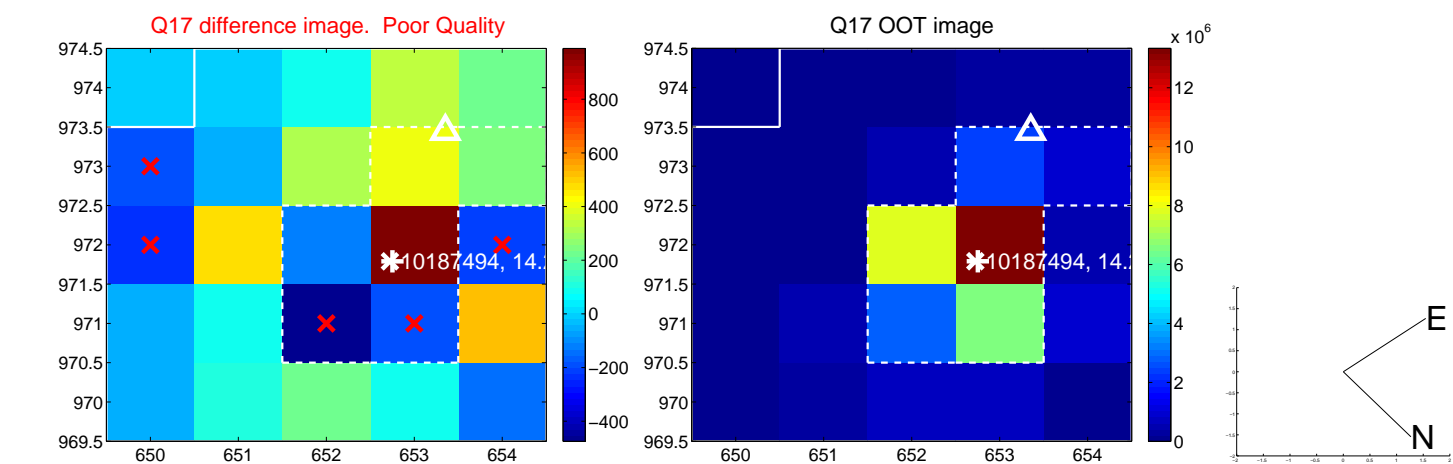
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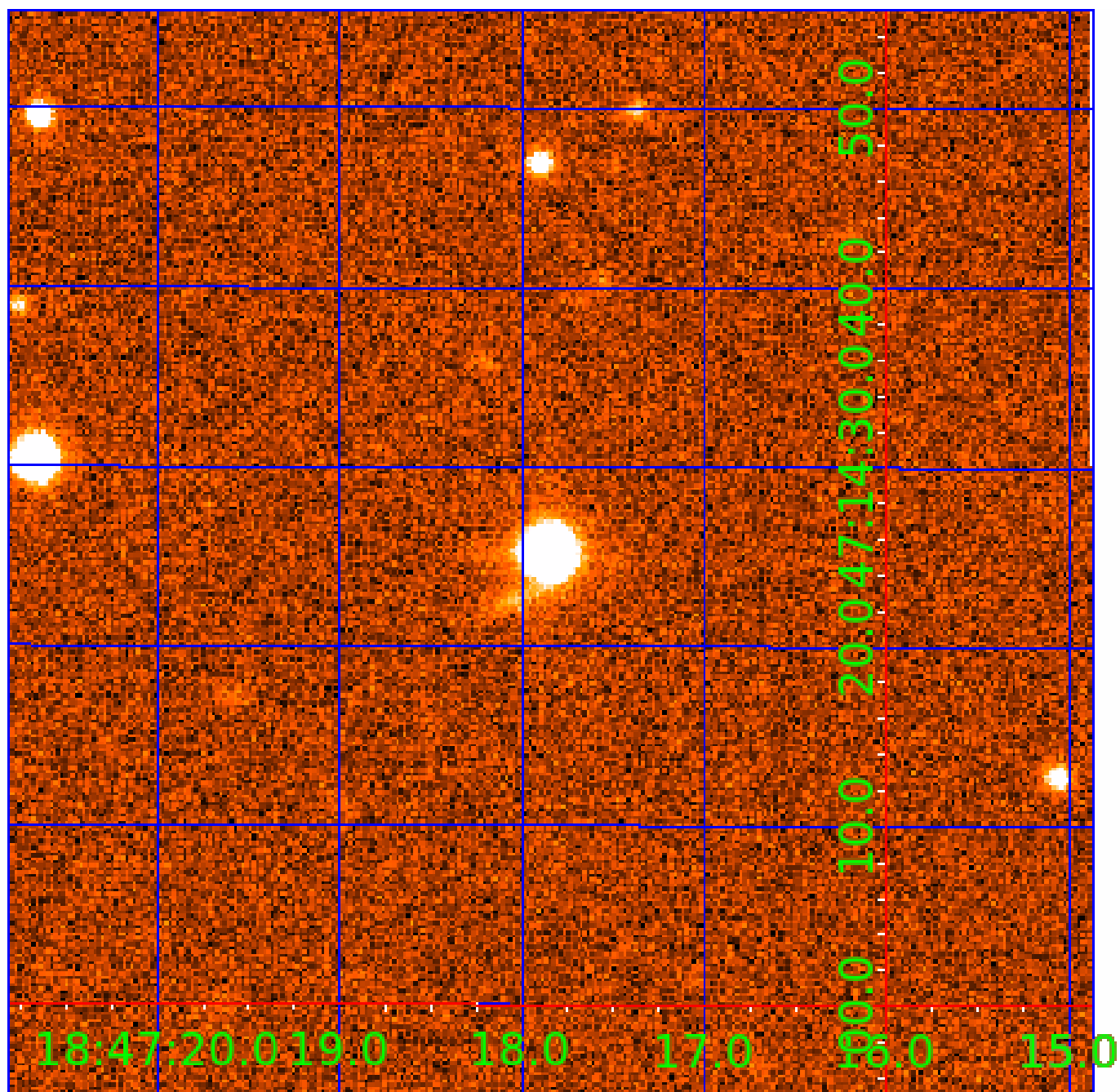


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UKIRT Image

Declination



KIC 010187494

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010187494-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010187494-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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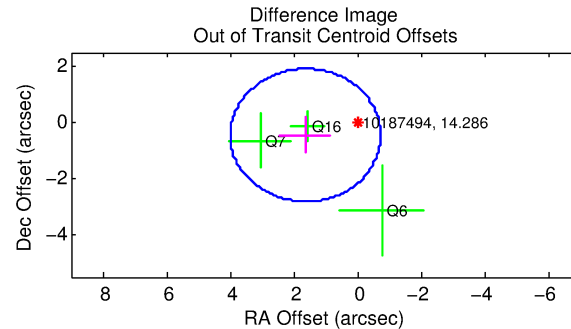
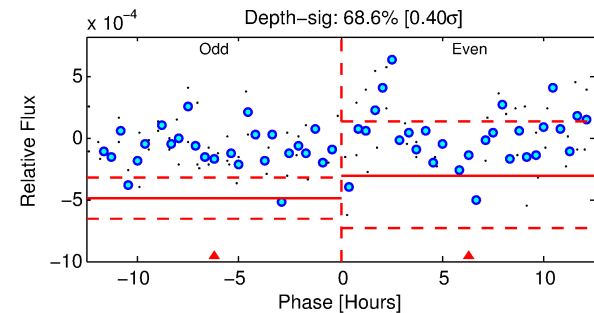
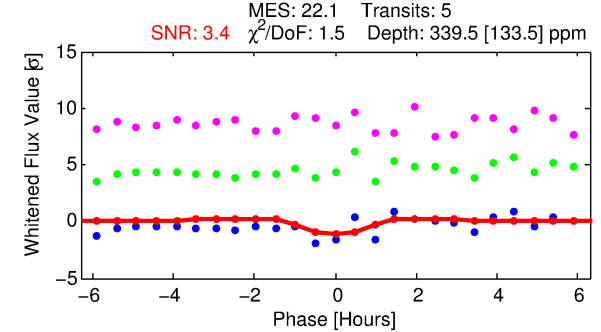
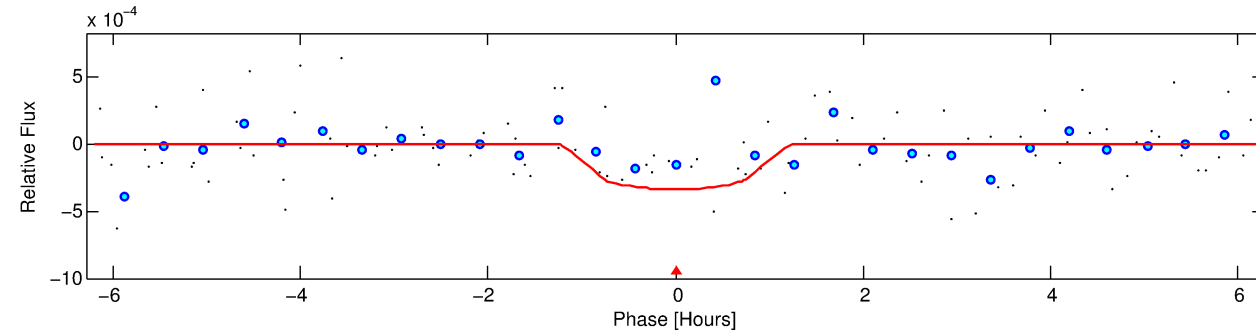
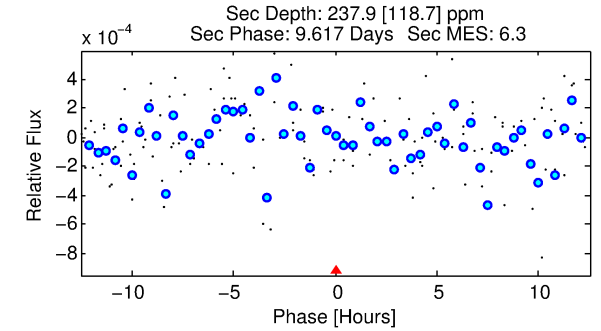
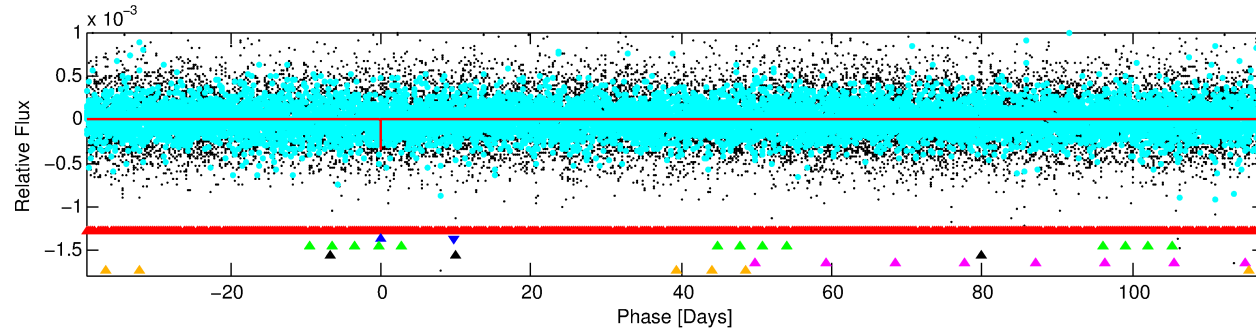
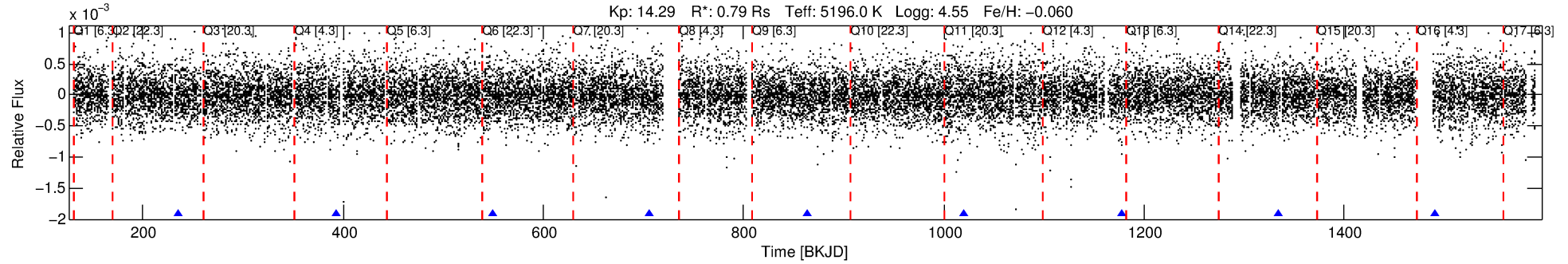
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010187494-02

No Significant Match Found

DV One-Page Summary

KIC: 10187494 Candidate: 2 of 6 Period: 156.899 d



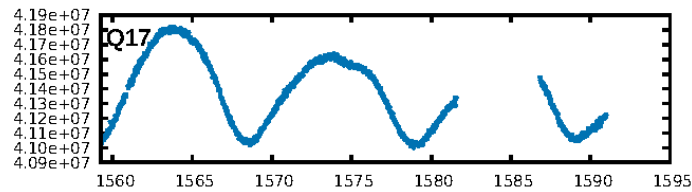
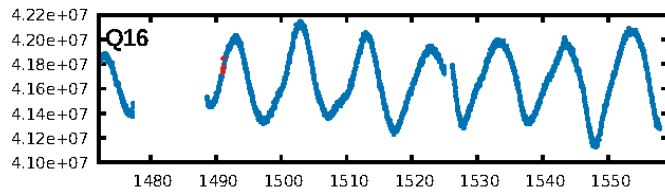
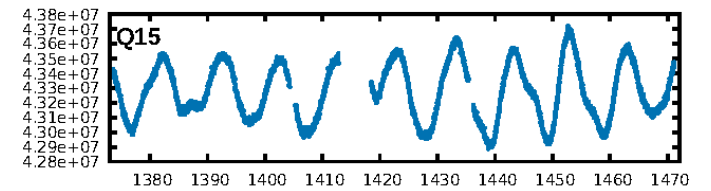
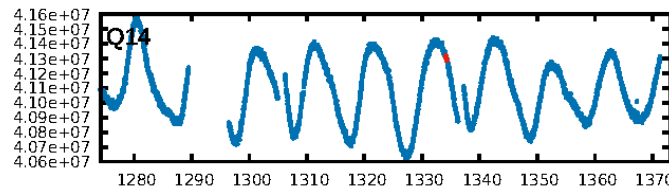
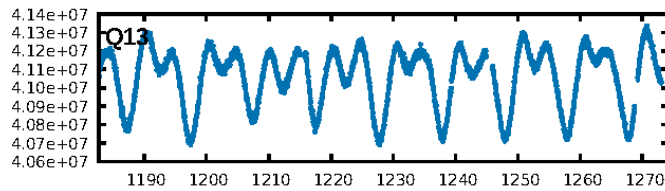
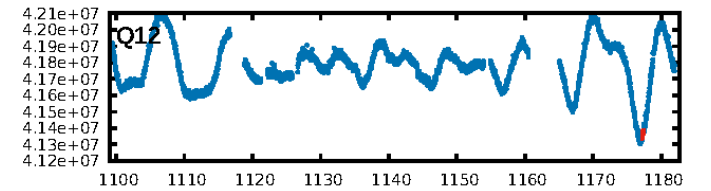
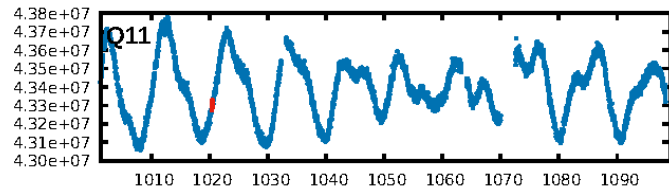
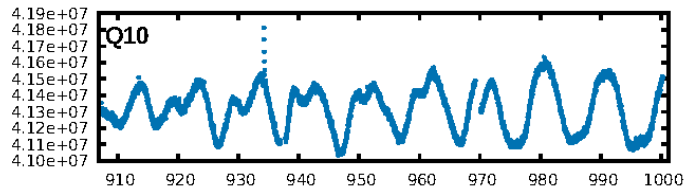
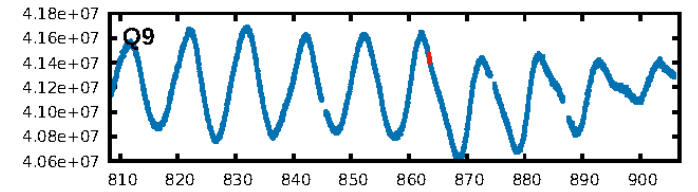
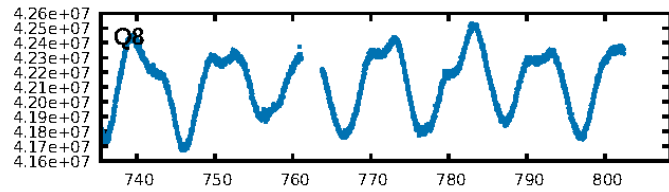
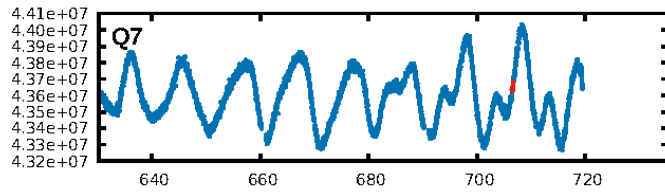
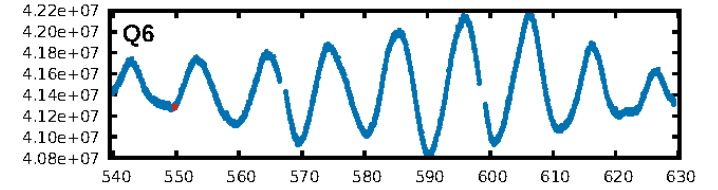
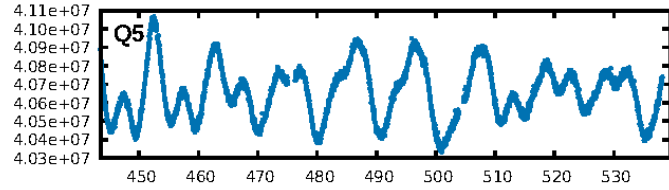
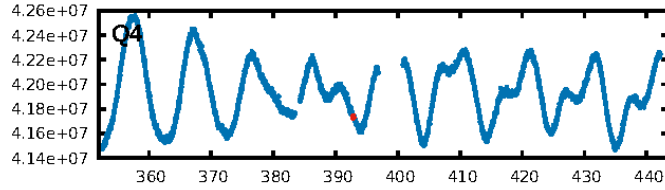
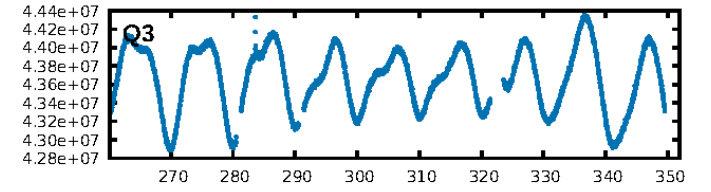
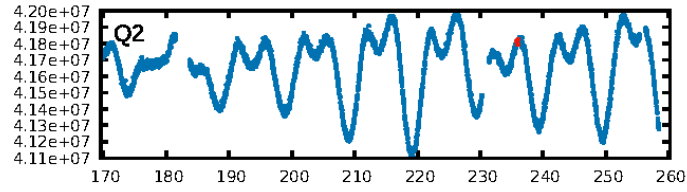
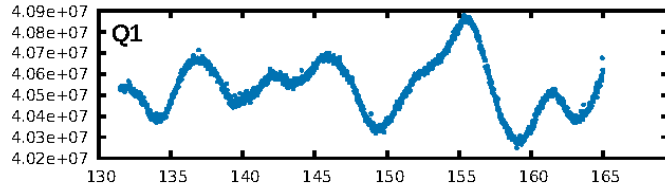
DV Fit Results:

Period = 156.89851 [0.00328] d
Epoch = 235.9422 [0.0154] BKJD
Rp/R* = 0.0182 [0.0830]
a/R* = 408.07 [6883.00]
b = 0.73 [11.22]
Seff = 1.45 [0.27]
Teq = 280 [13] K
Rp = 1.58 [7.18] Re
a = 0.5308 [0.0548] AU
Ag = 14844.14 [135339.62] [0.11 σ]
Teffp = 4779 [10891] K [0.41 σ]

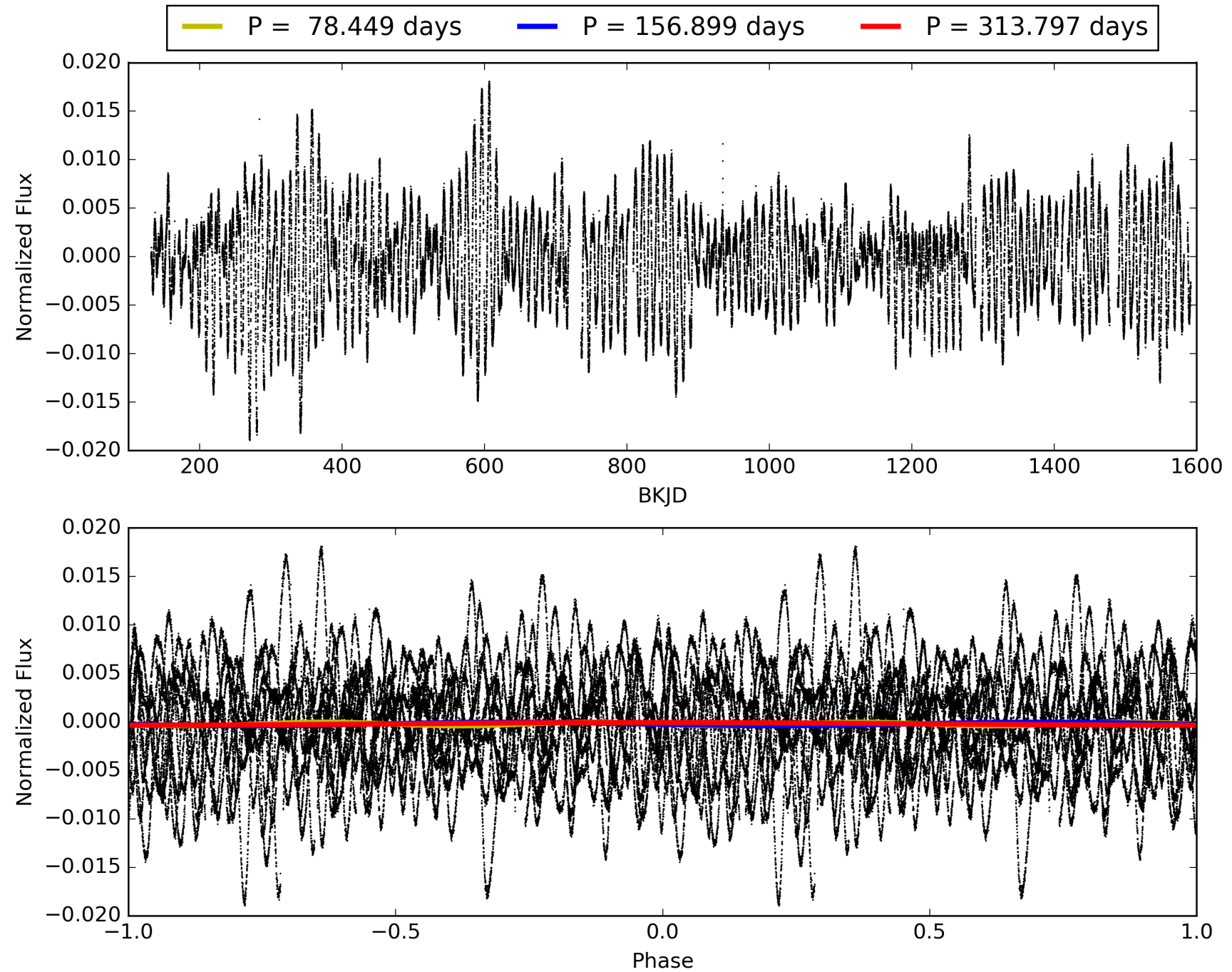
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [190.97 σ]
LongPeriod-sig: 100.0% [61.93 σ]
ModelChiSquare2-sig: 0.4%
ModelChiSquareGof-sig: 94.0%
Bootstrap-pfa: 5.47e-40
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.6493
Centroid-sig: 71.0%
Centroid-so: 1.226 arcsec [0.55 σ]
OotOffset-rm: 1.691 arcsec [2.14 σ]
KicOffset-rm: 1.736 arcsec [1.82 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 0.62 [5/8]

TCE 010187494-02, PDC Light Curves

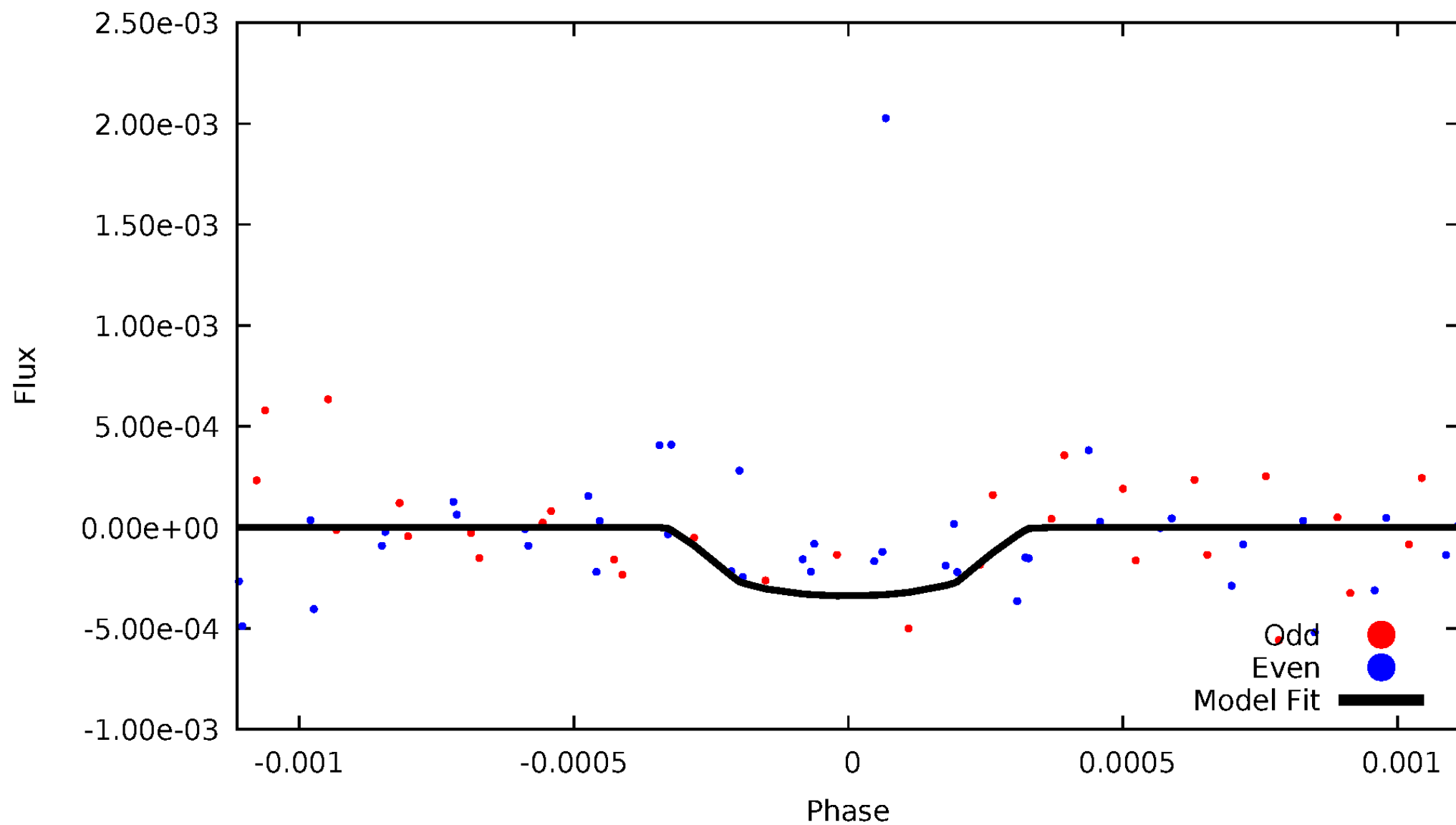


TCE 010187494-02



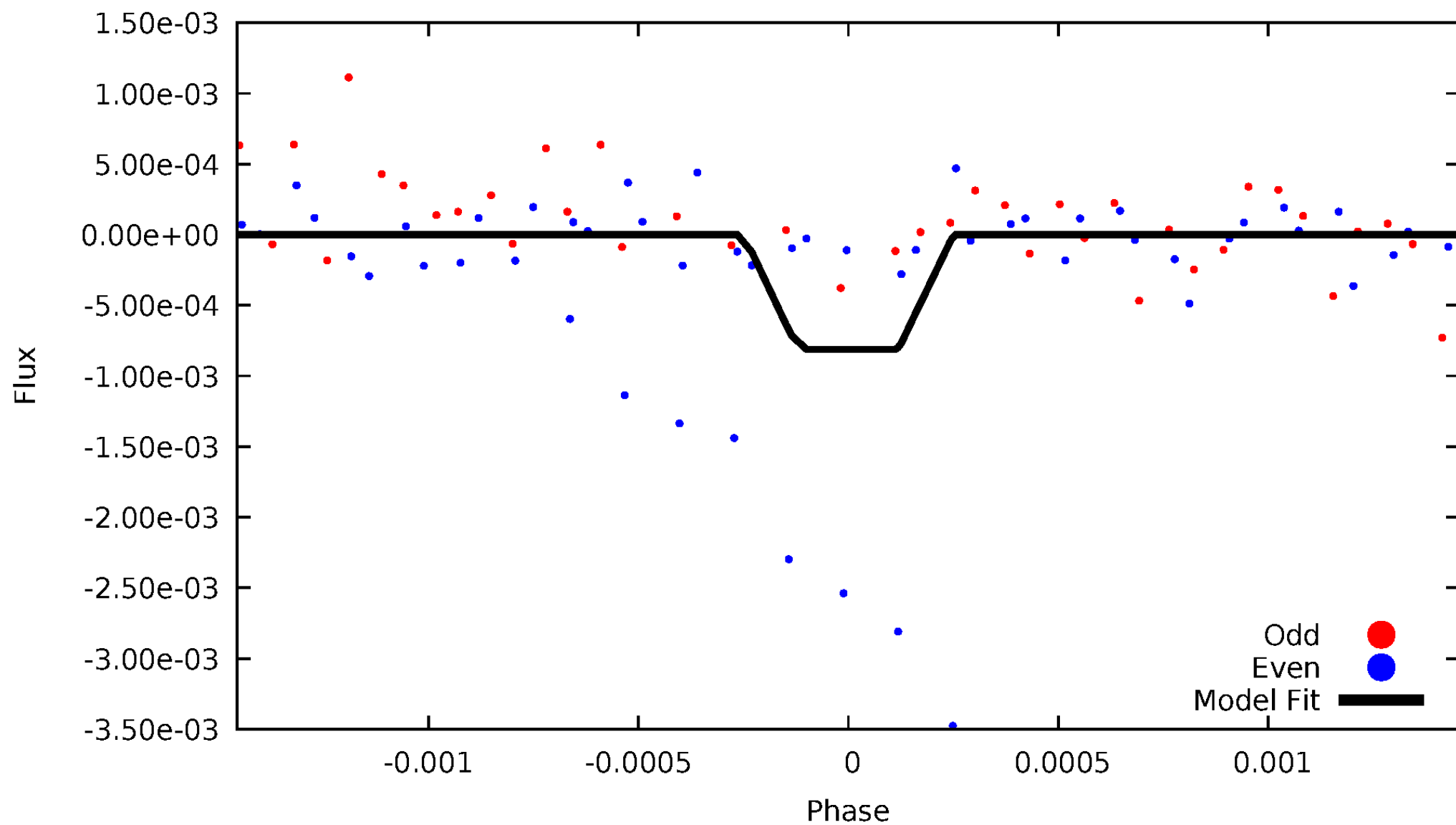
DV Odd/Even

TCE 010187494-02



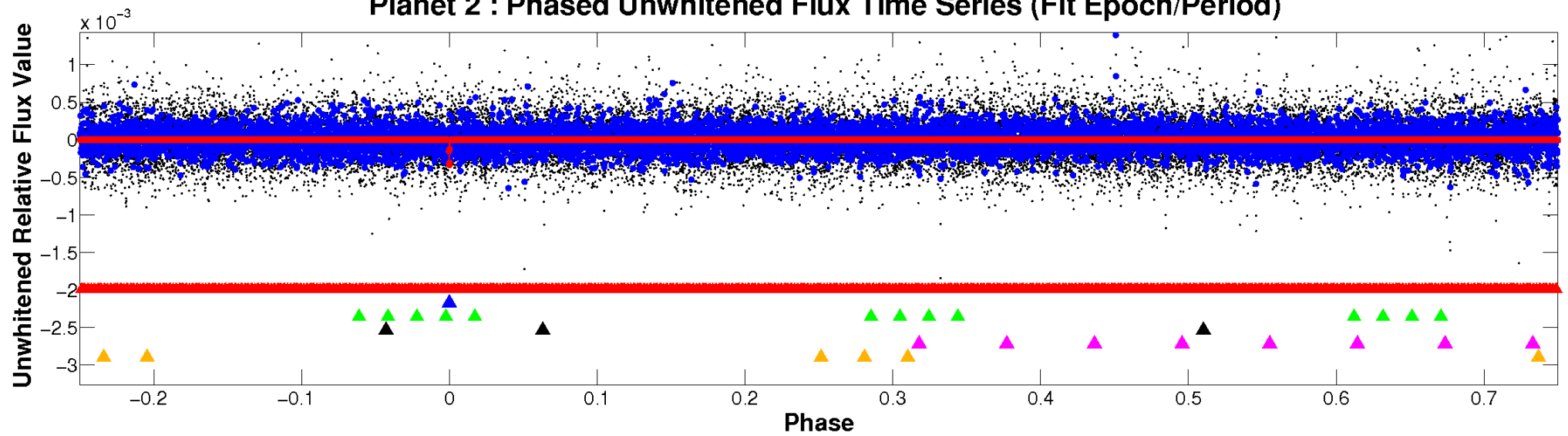
ALT Odd/Even

TCE 010187494-02

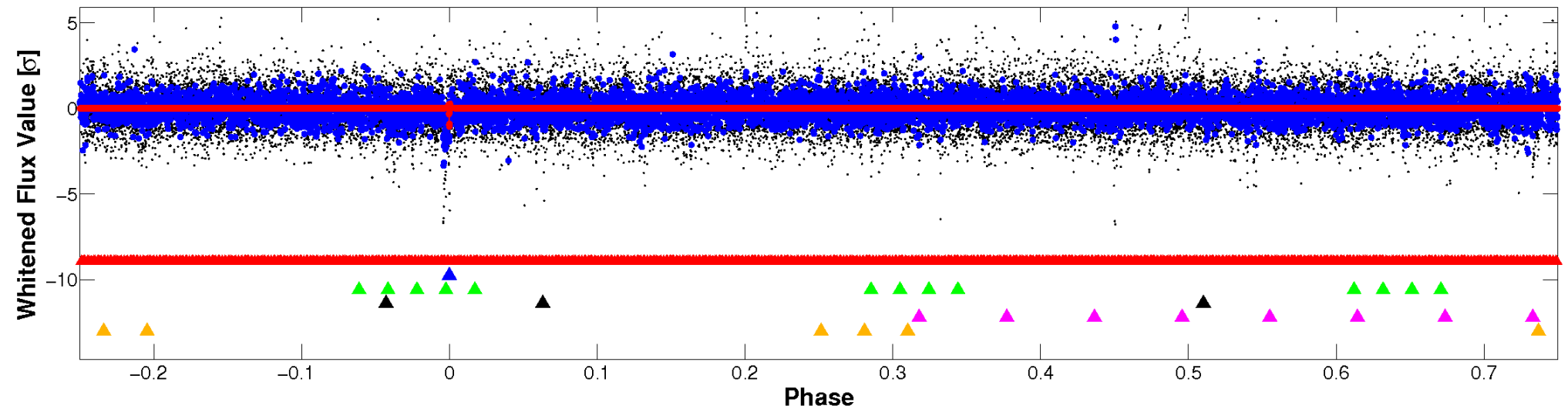


Non-Whitened Vs. Whitened Light Curve

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

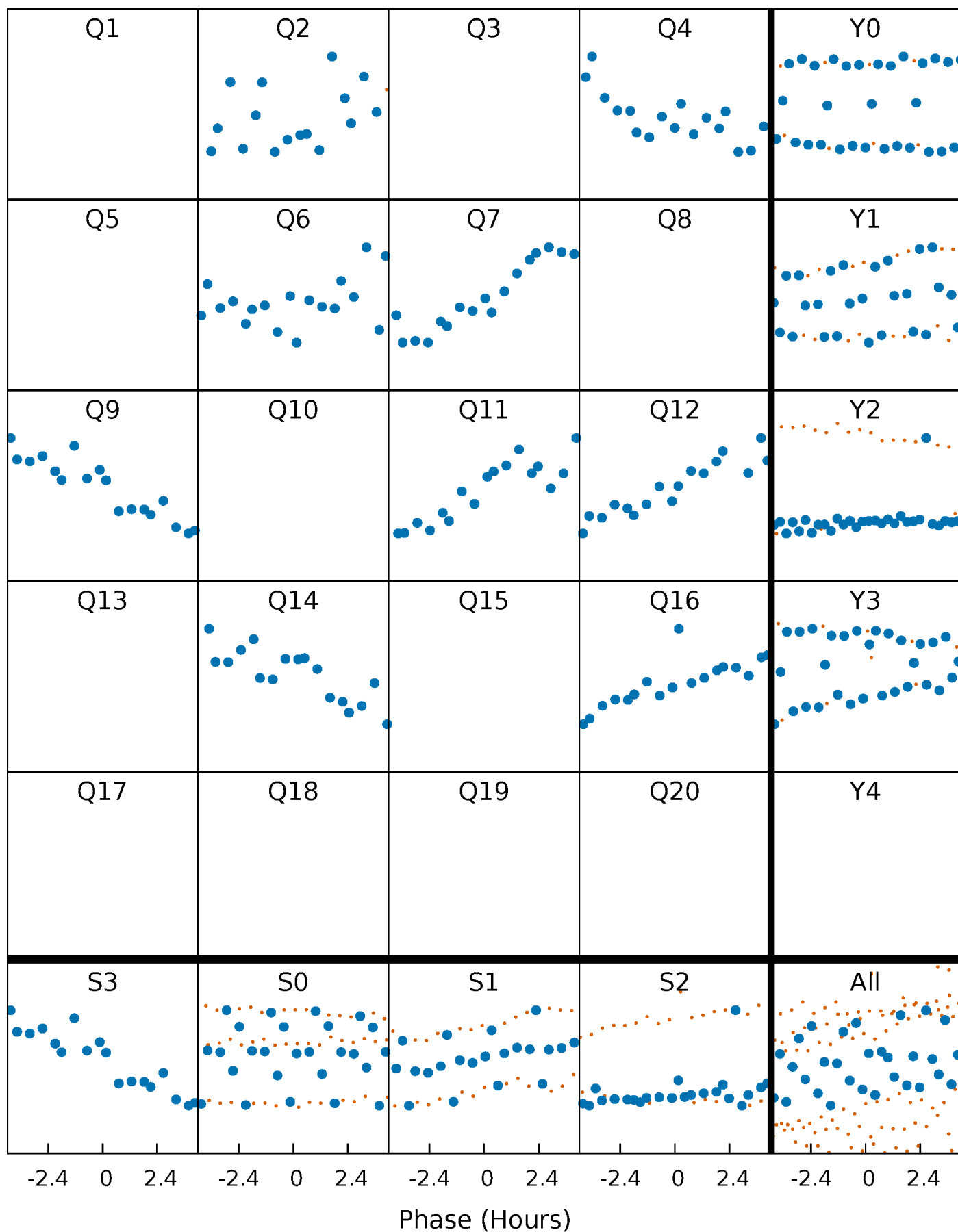


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



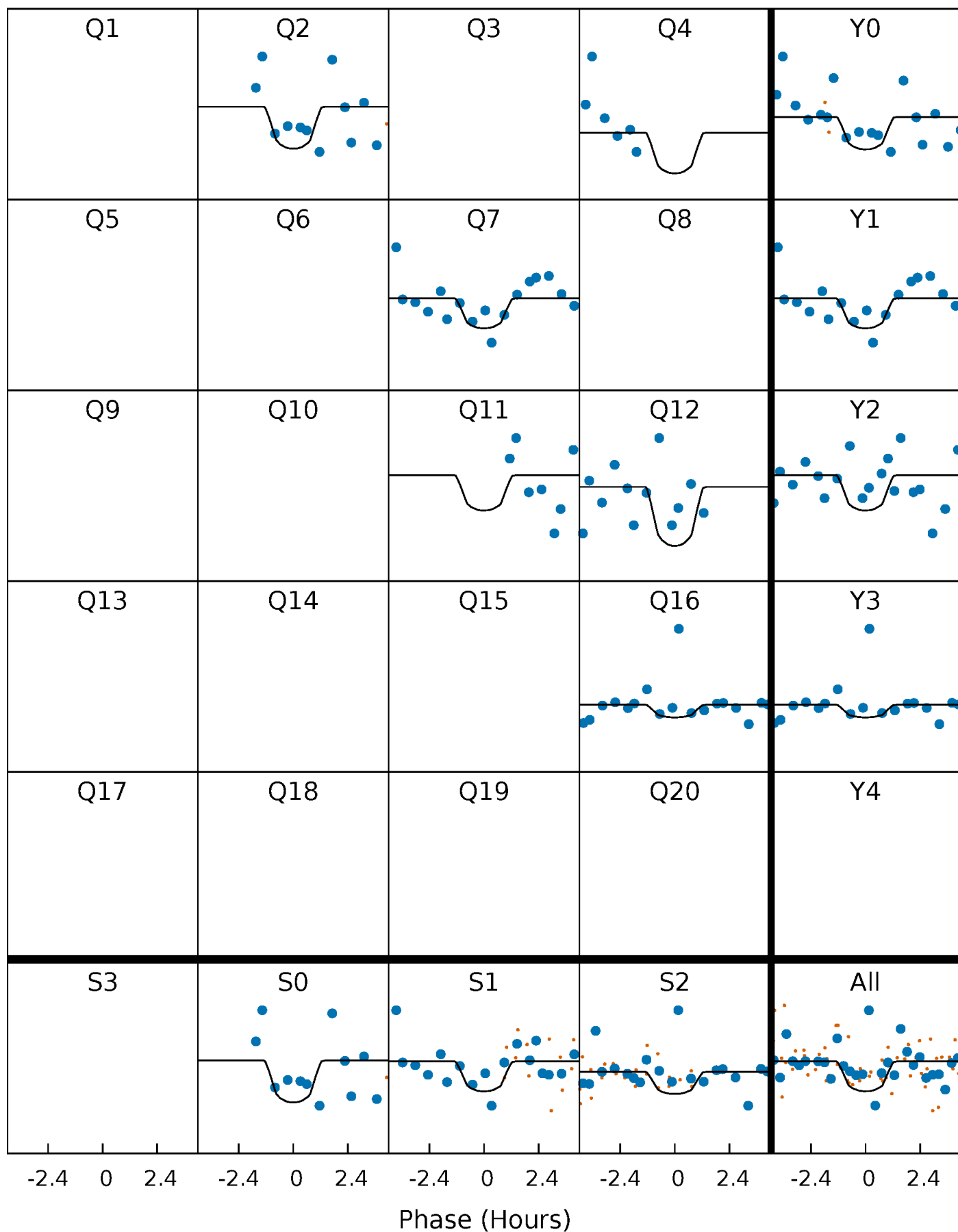
PDC Quarter-Phased Transit Curves

TCE 010187494-02 P=156.898508 Days $T_0=235.942184$ (BKJD)



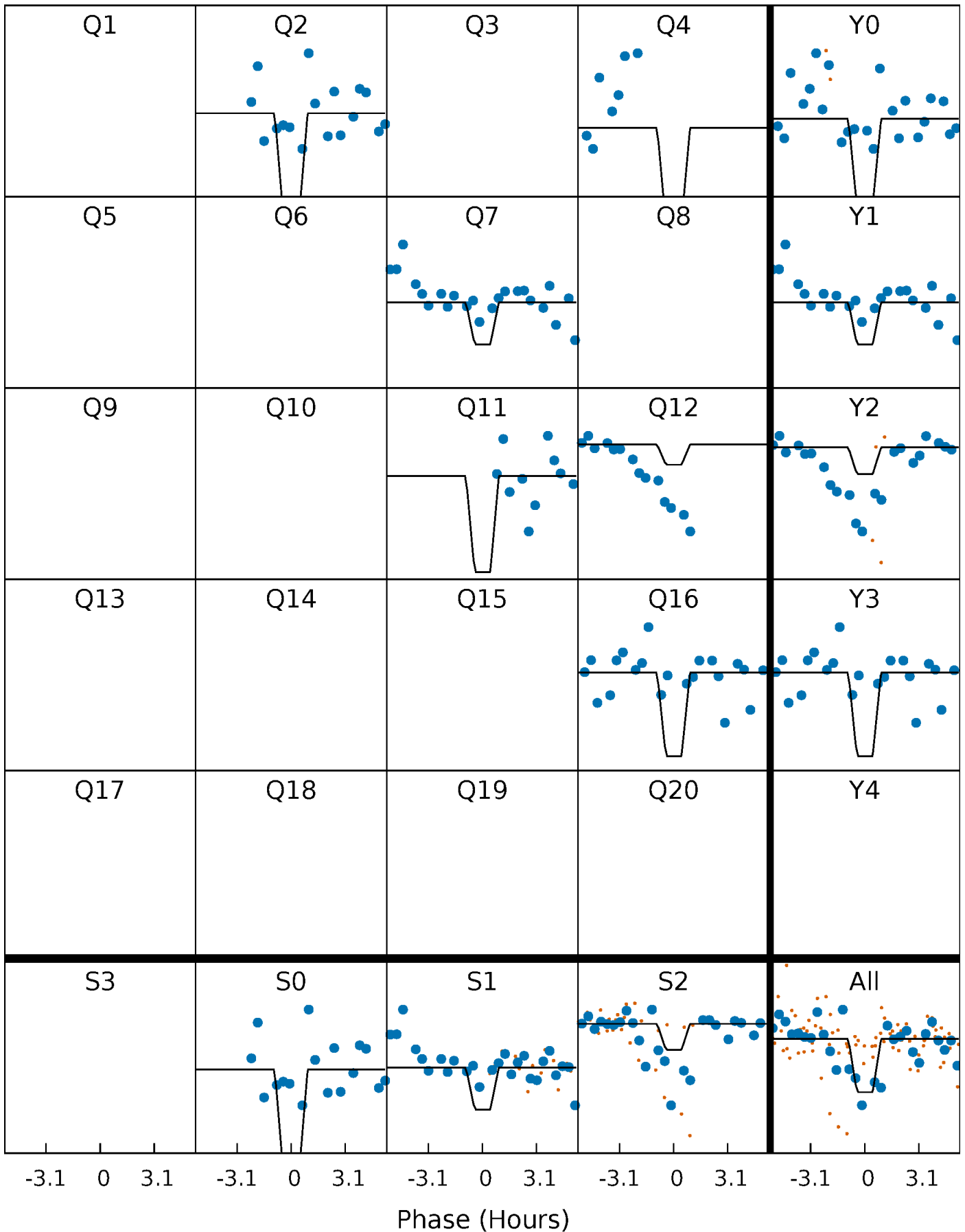
DV Quarter-Phased Transit Curves

TCE 010187494-02 P=156.898508 Days $T_0=235.942184$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

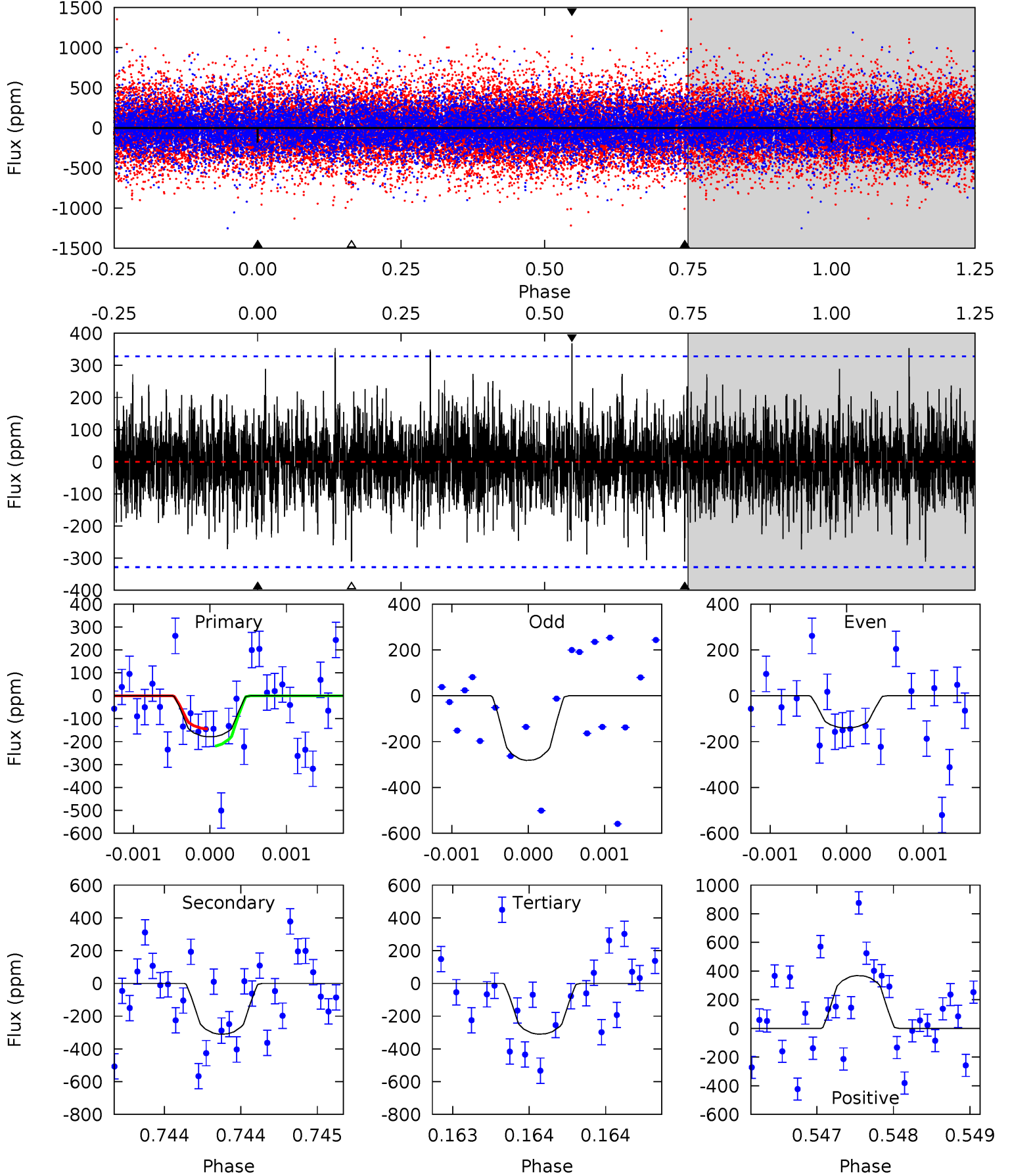
TCE 010187494-02 P=156.895685 Days $T_0=235.970652$ (BKJD)



DV Model-Shift Uniqueness Test

010187494-02, P = 156.898508 Days, E = 79.043676 Days

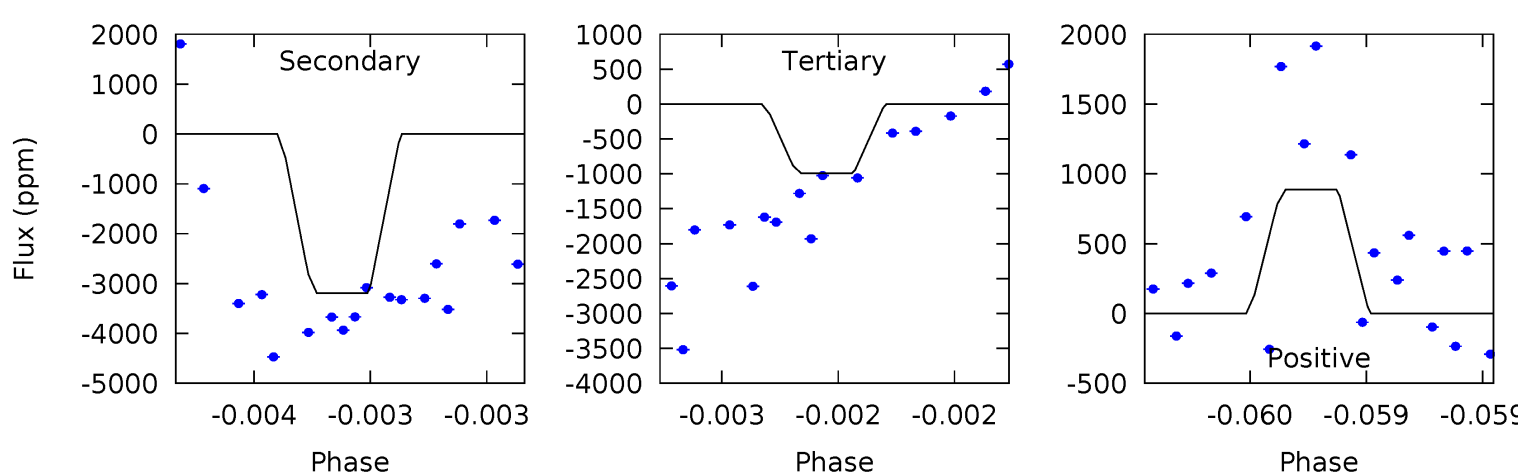
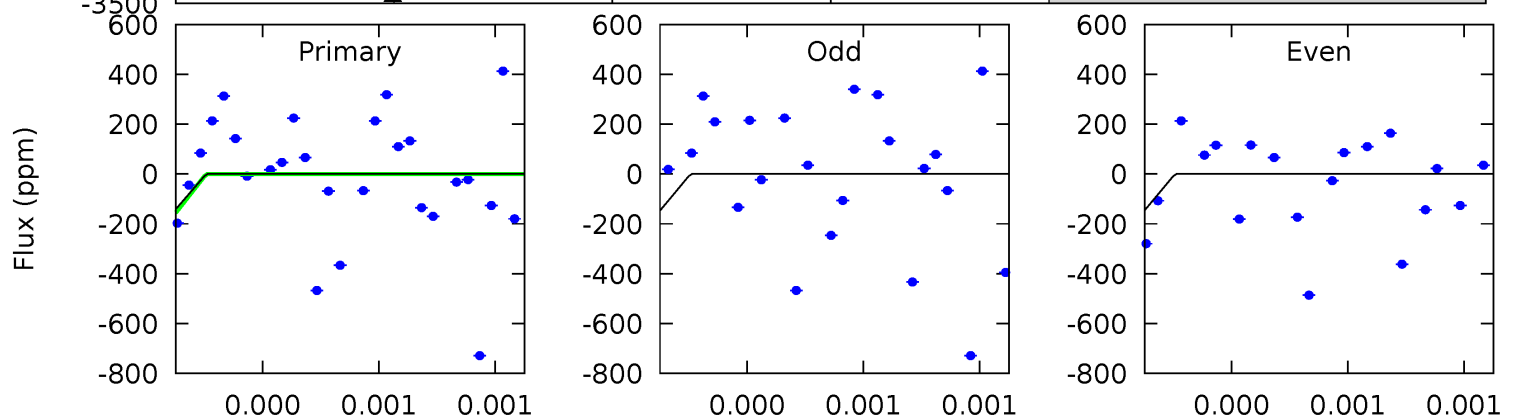
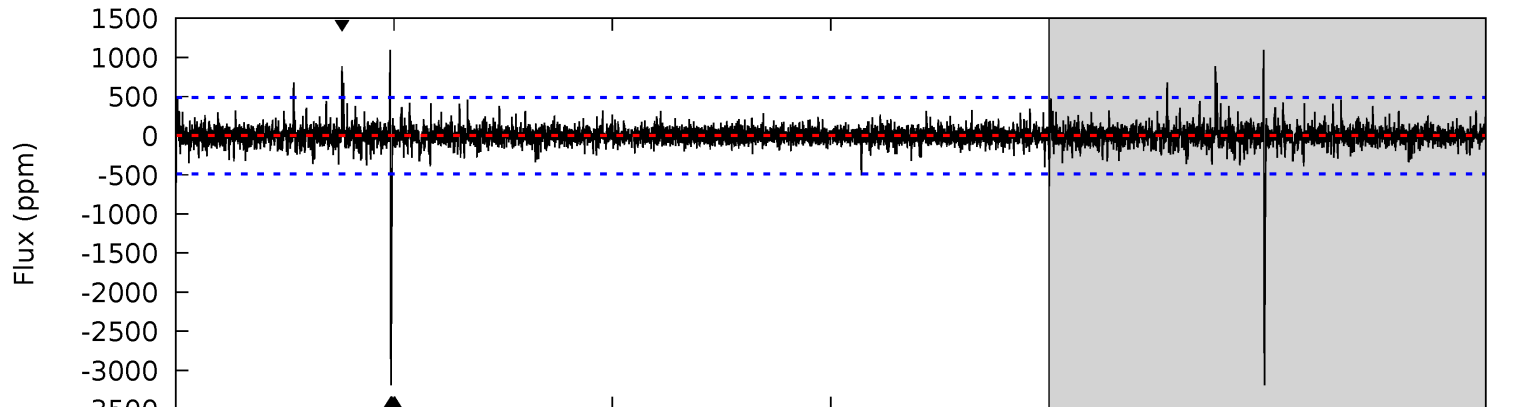
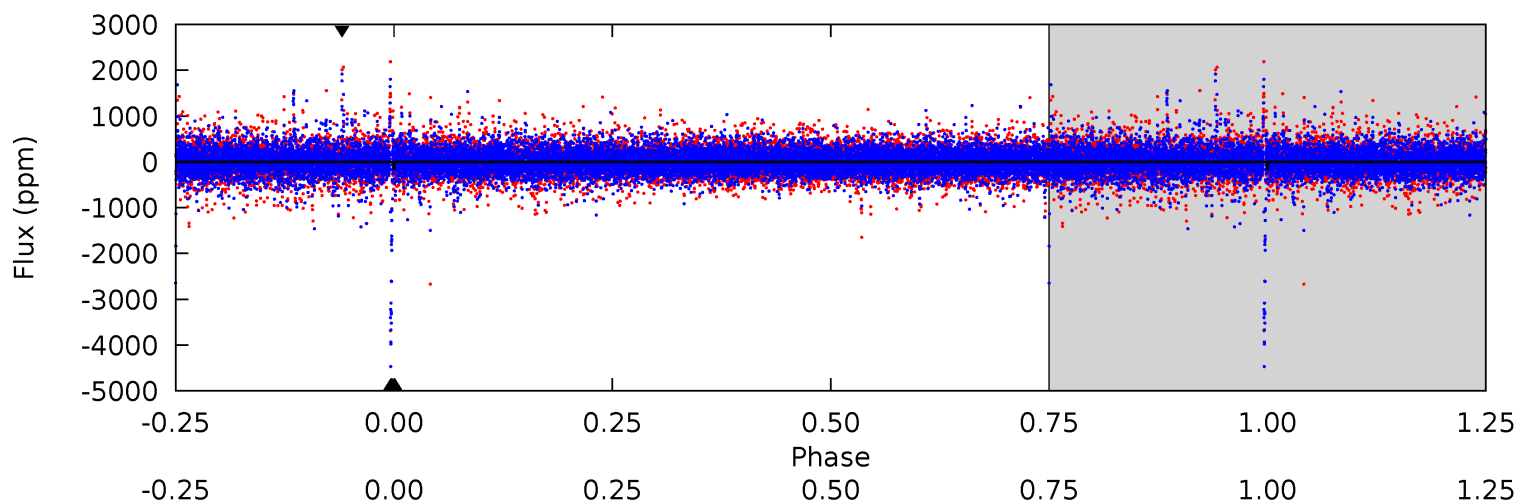
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.01	5.22	5.21	6.20	5.51	3.39	1.37	-2.20	-3.19	0.01	-0.98	1.06	0.17	0.54	0.63



Alt Model-Shift Uniqueness Test

010187494-02, P = 156.895685 Days, E = 79.074967 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.67	36.5	11.4	10.2	5.58	3.49	1.07	-9.72	-8.50	25.1	26.4	0.00	4.58	0.26	0.14



Stellar Parameters For KIC 010187494

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5196^{+155}_{-140}	$4.549^{+0.052}_{-0.078}$	$-0.060^{+0.300}_{-0.300}$	$0.792^{+0.100}_{-0.073}$	$0.811^{+0.085}_{-0.076}$	$2.296^{+0.514}_{-0.600}$
	+3%/-3%	+1%/-2%	+500%/-500%	+13%/-9%	+10%/-9%	+22%/-26%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010187494-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-311 ± 60	$5.66^{+5.66}_{-4.07}$	393^{+18}_{-14}	3234^{+1780}_{-562}	1481^{+15756}_{-1106}
Alt.	-3190 ± 87	$6.32^{+6.16}_{-4.35}$	395^{+15}_{-15}	4737^{+3871}_{-1060}	$12540^{+117740}_{-9331}$

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 $A_{\text{obs}} \gg 1.0$

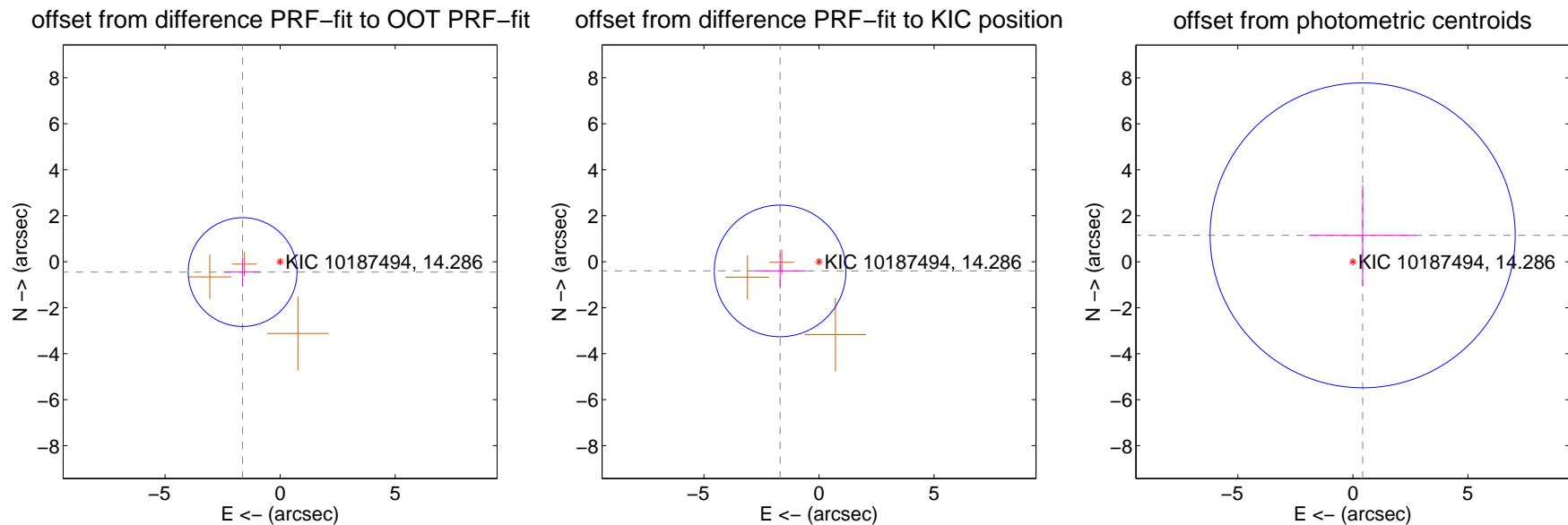
DV Centroid Data

Supplemental centroid analysis for 010187494-02. Kepler magnitude: 14.29. Transit SNR 3.39

There are 0 quarters with good PRF difference image offsets

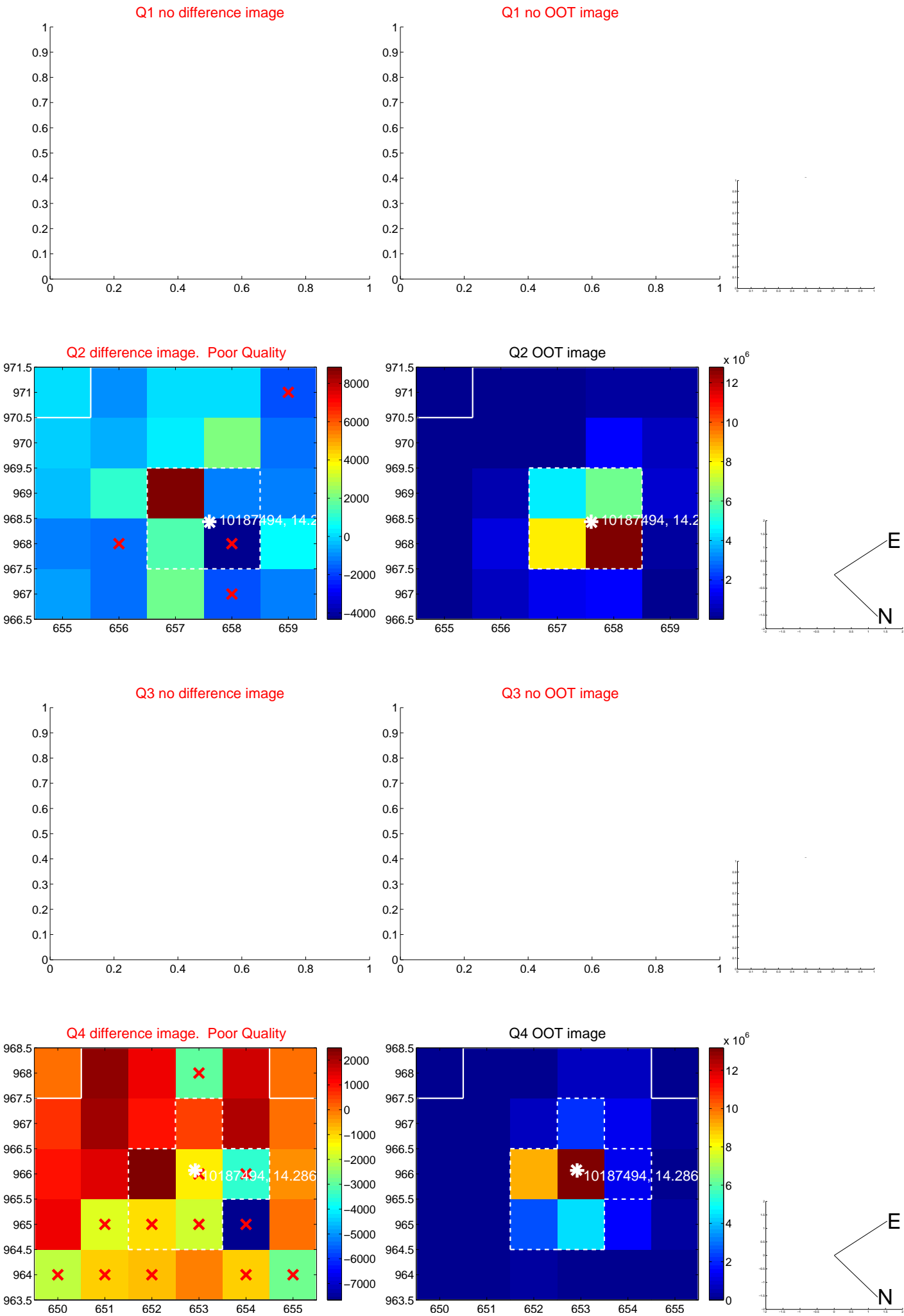
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.691 ± 0.788	2.14	1.629 ± 0.799	-0.452 ± 0.631
PRF-fit source offset from KIC position	1.736 ± 0.954	1.82	1.689 ± 1.127	-0.401 ± 0.763
photometric centroid source offset	1.23 ± 2.21	0.55	-0.43 ± 2.33	1.15 ± 2.19

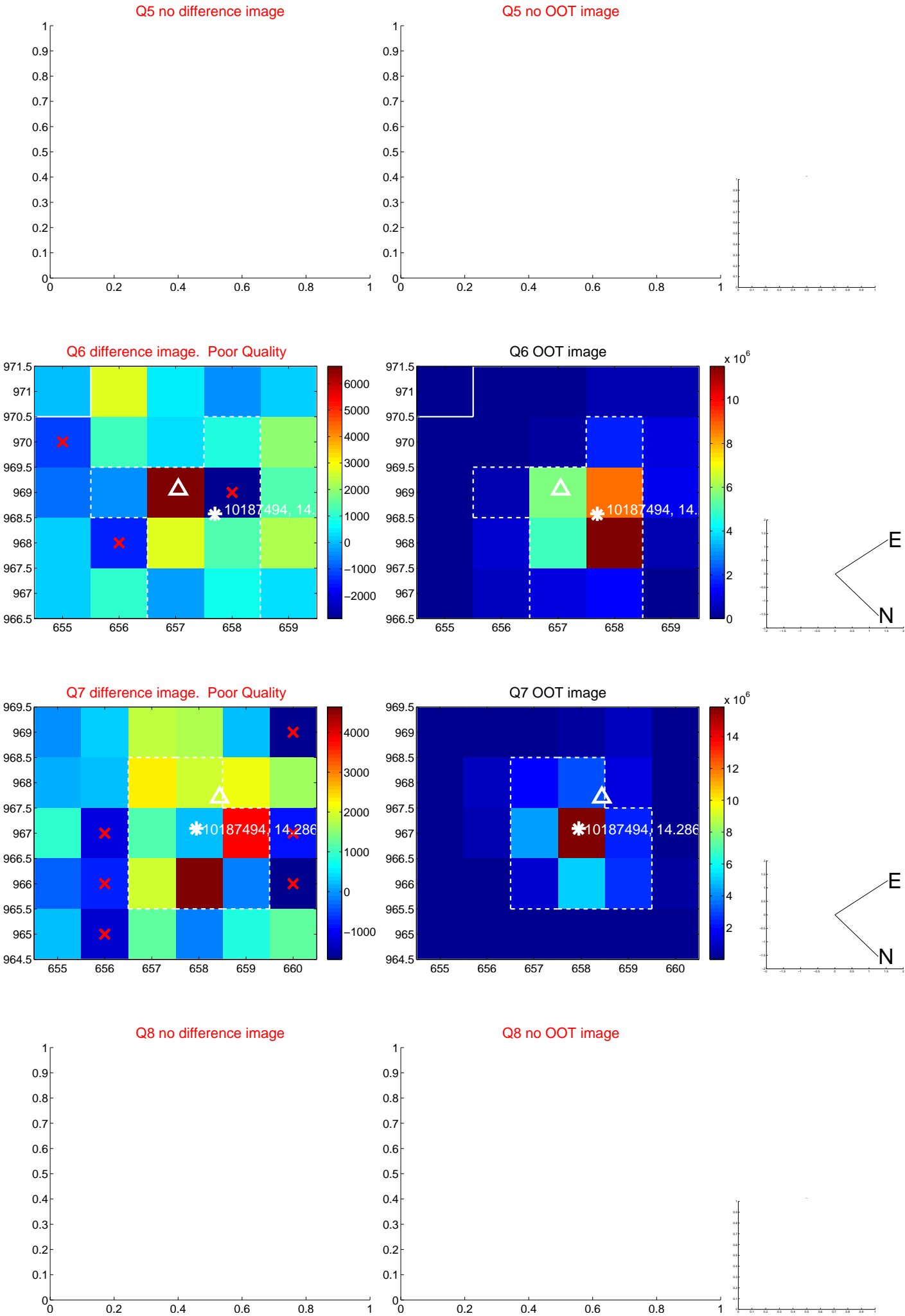


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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.

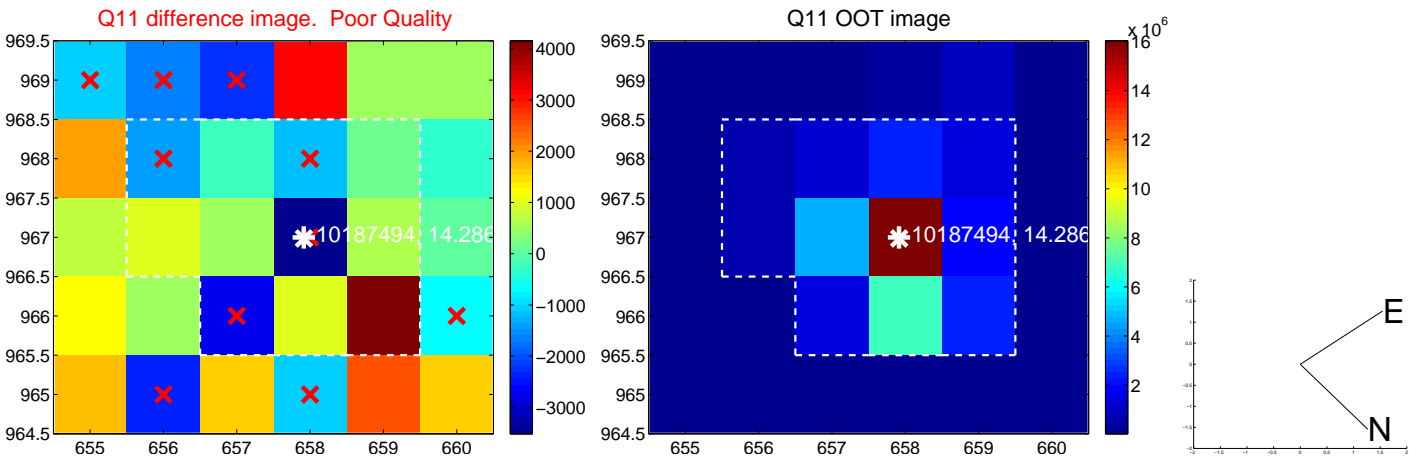
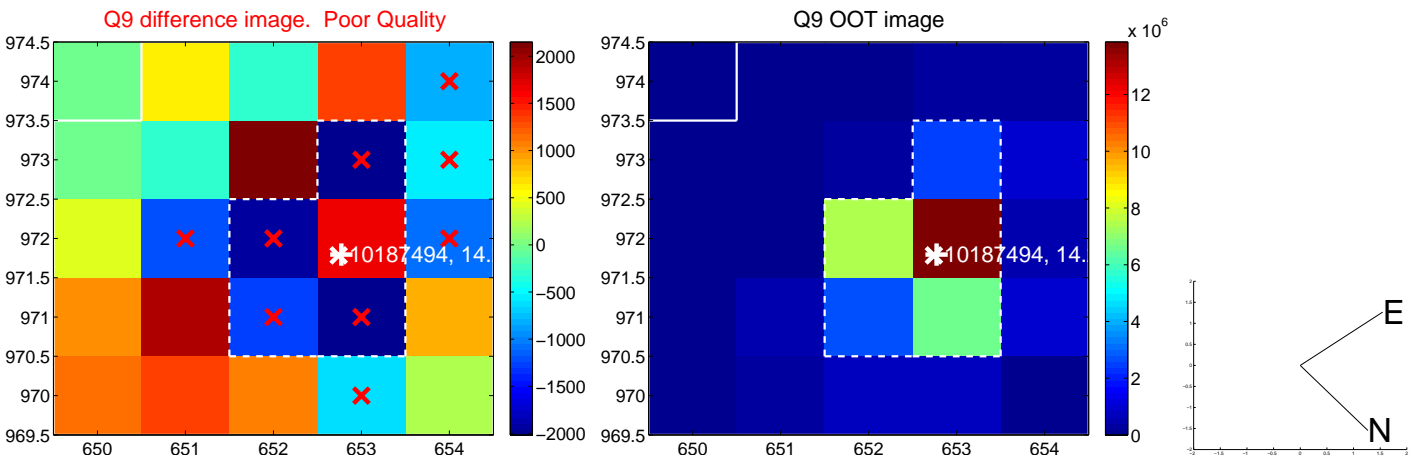
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



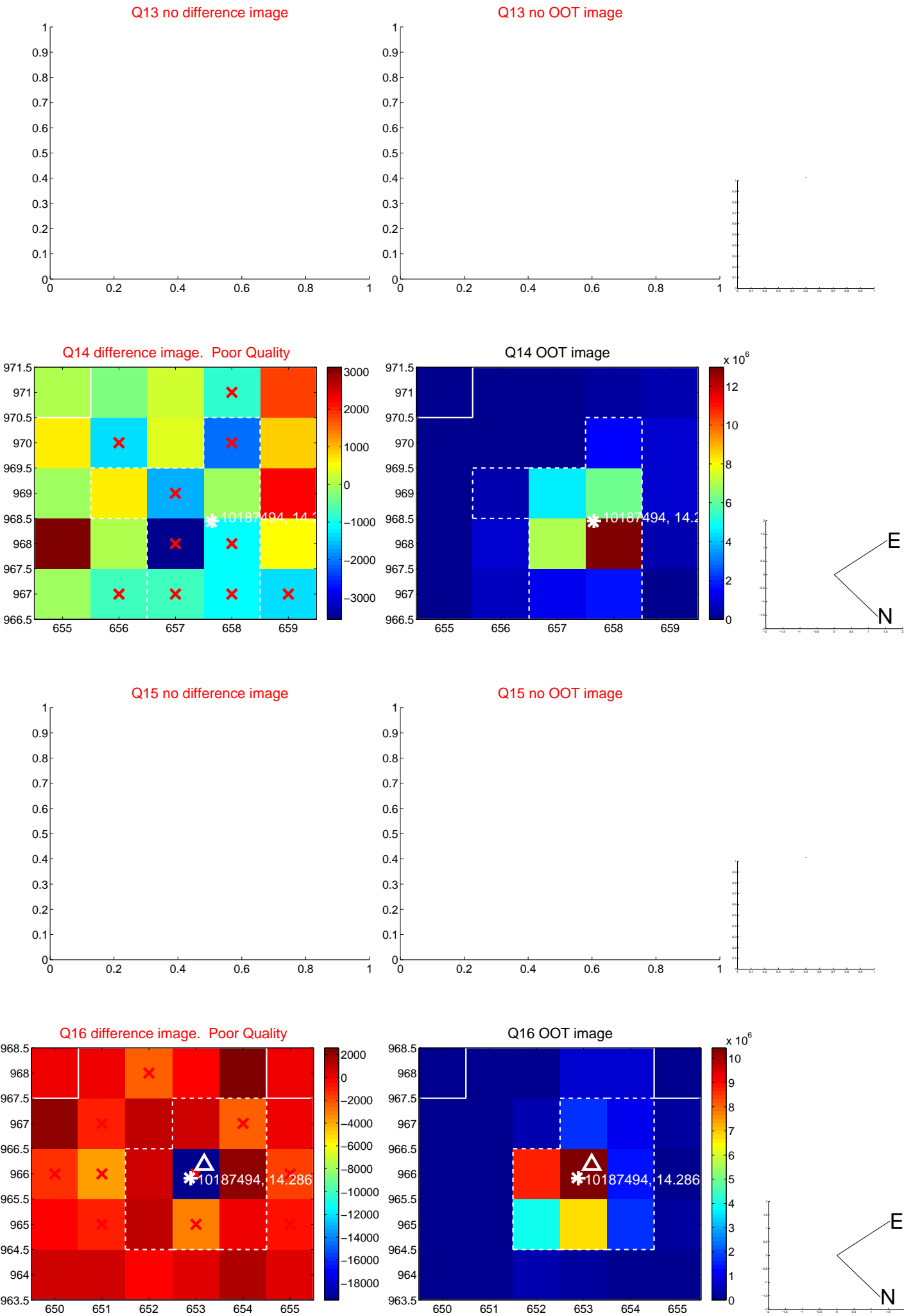
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



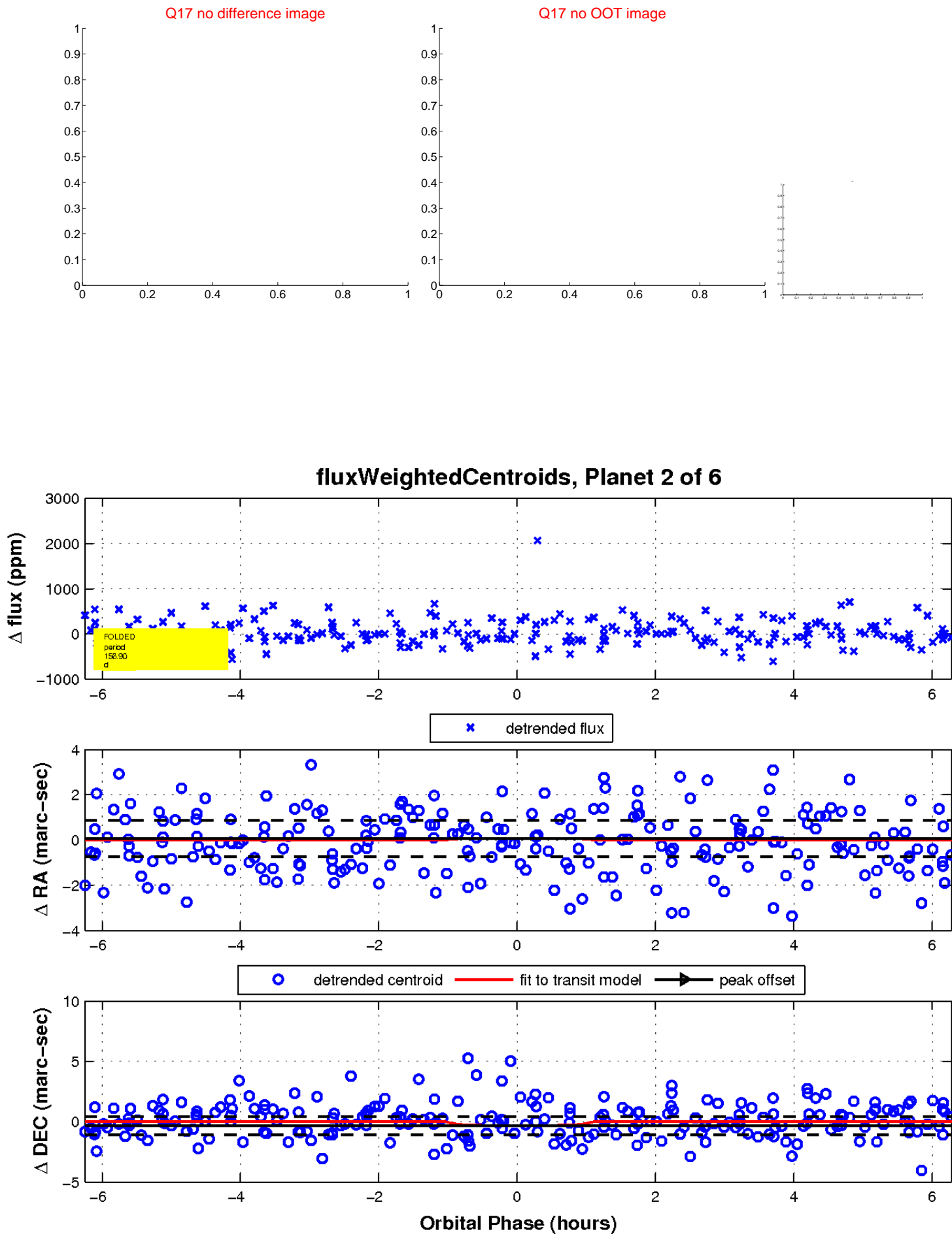
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

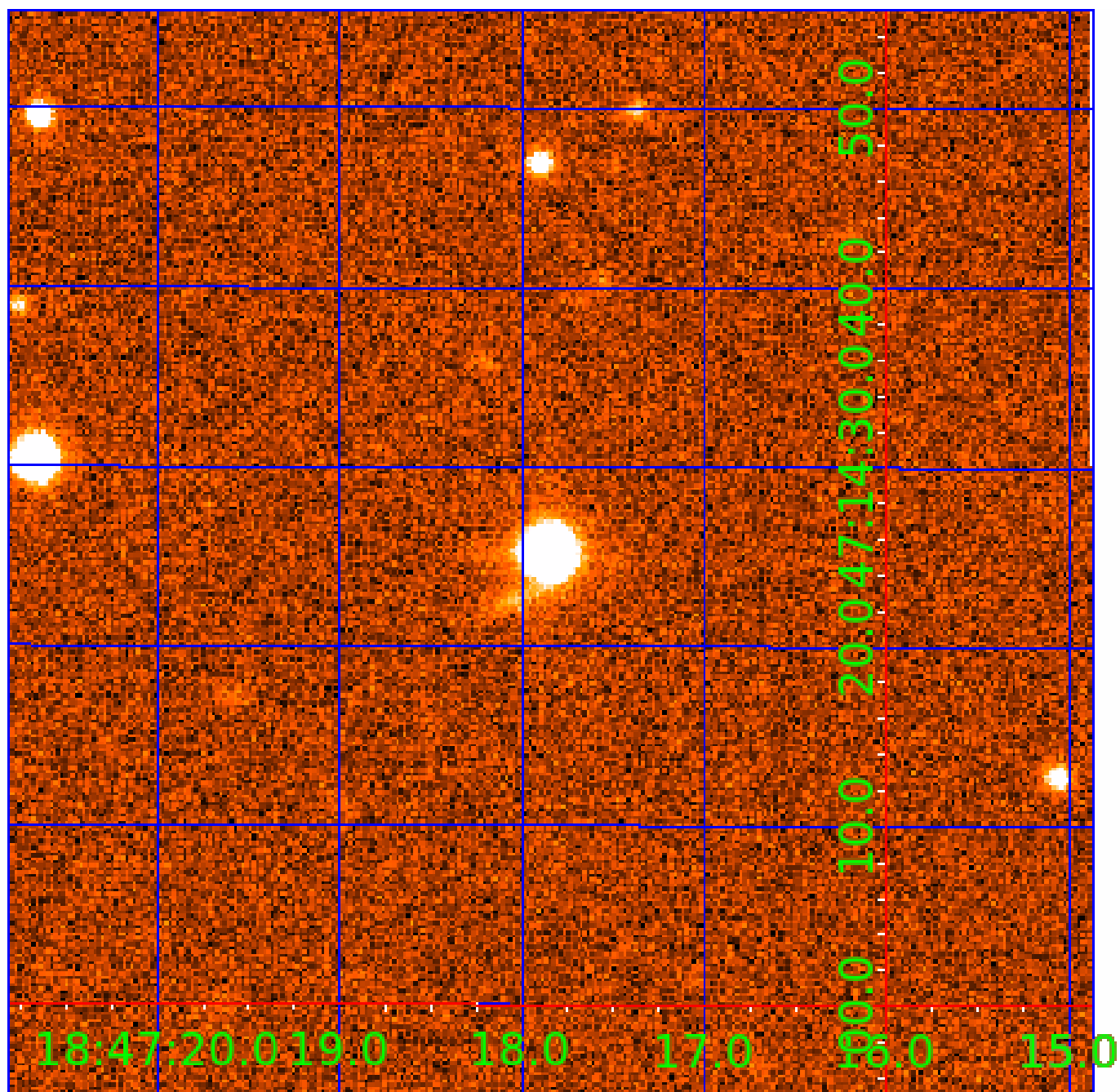


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010187494

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})
010187494-01	OBS	No	1.735834	132.931789	45.9	8.077	7.9	8.3	0.79	5196	0.52	589.81
010187494-02	OBS	No	156.898508	235.942184	339.5	2.096	22.1	3.4	0.79	5196	1.58	1.45
010187494-03	OBS	No	105.623267	226.358121	771.1	6.093	25.4	9.4	0.79	5196	2.34	2.46
010187494-04	OBS	No	540.826851	245.859484	467.7	46.884	15.8	2.4	0.79	5196	2.02	0.28
010187494-05	OBS	No	166.204534	285.808832	483.0	2.935	11.7	4.4	0.79	5196	1.97	1.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010187494-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
010187494-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010187494-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010187494-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010187494-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

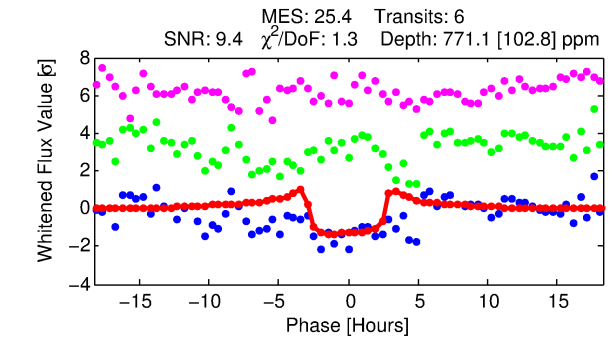
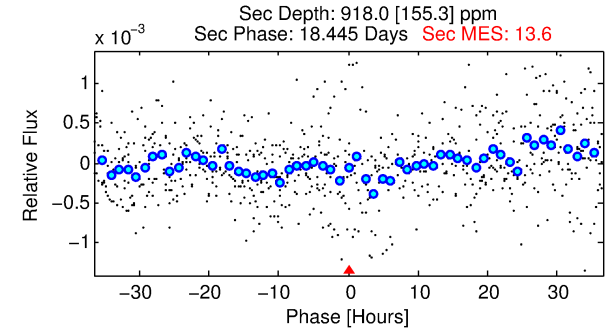
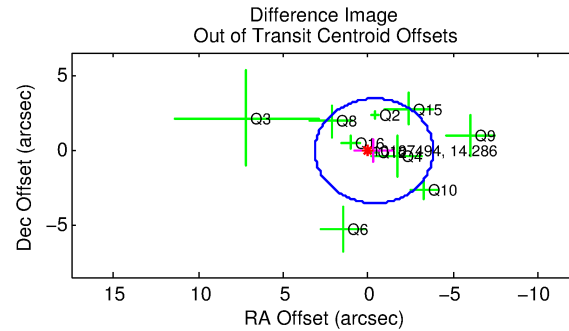
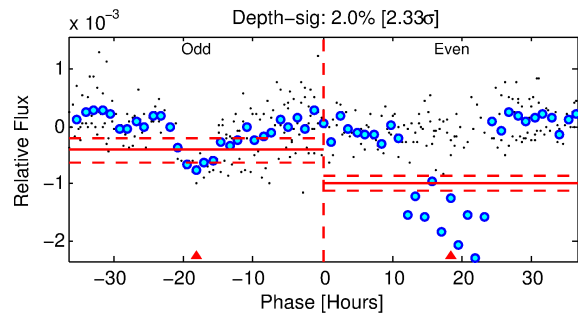
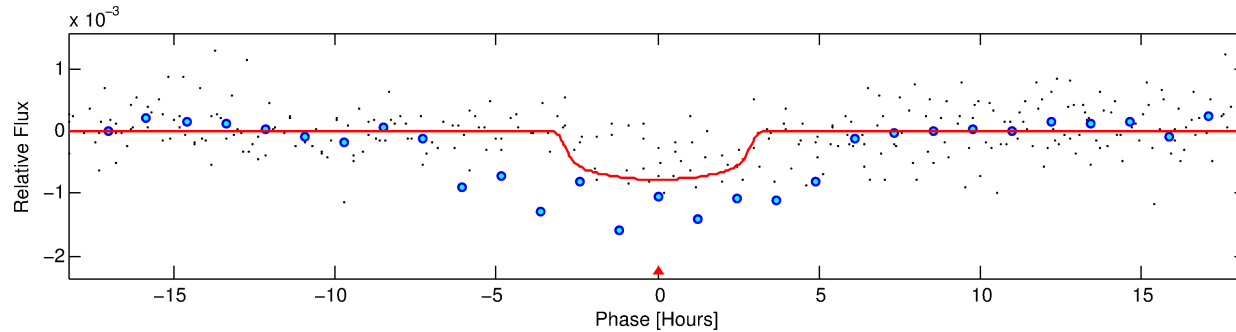
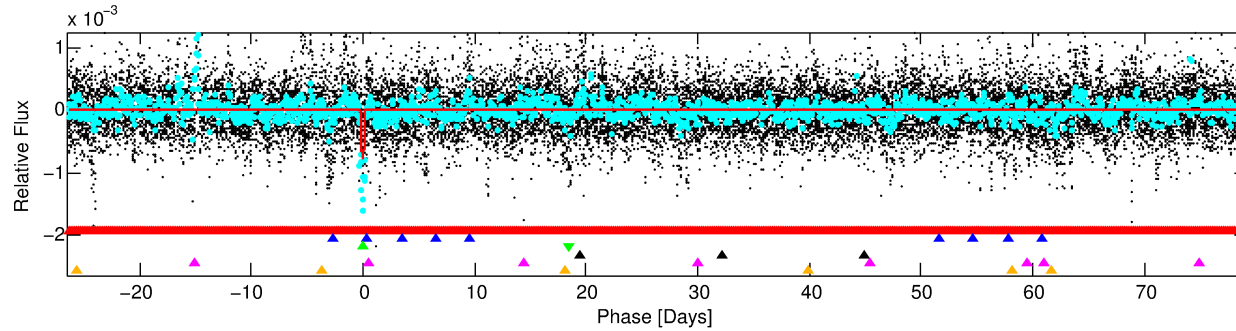
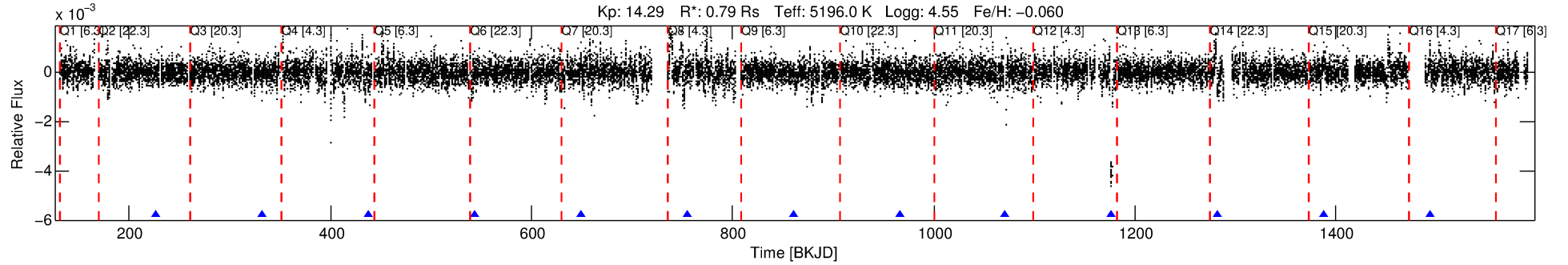
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010187494-03

No Significant Match Found

DV One-Page Summary

KIC: 10187494 Candidate: 3 of 6 Period: 105.623 d



DV Fit Results:

Period = 105.62327 [0.00162] d
Epoch = 226.3581 [0.0093] BKJD
Rp/R* = 0.0271 [0.0196]
a/R* = 99.82 [263.78]
b = 0.70 [1.98]
Seff = 2.46 [0.47]
Teq = 319 [15] K
Rp = 2.34 [1.72] Re
a = 0.4077 [0.0421] AU
Ag = 15287.06 [22371.81] [0.68 σ]
Teffp = 5493 [2006] K [2.58 σ]

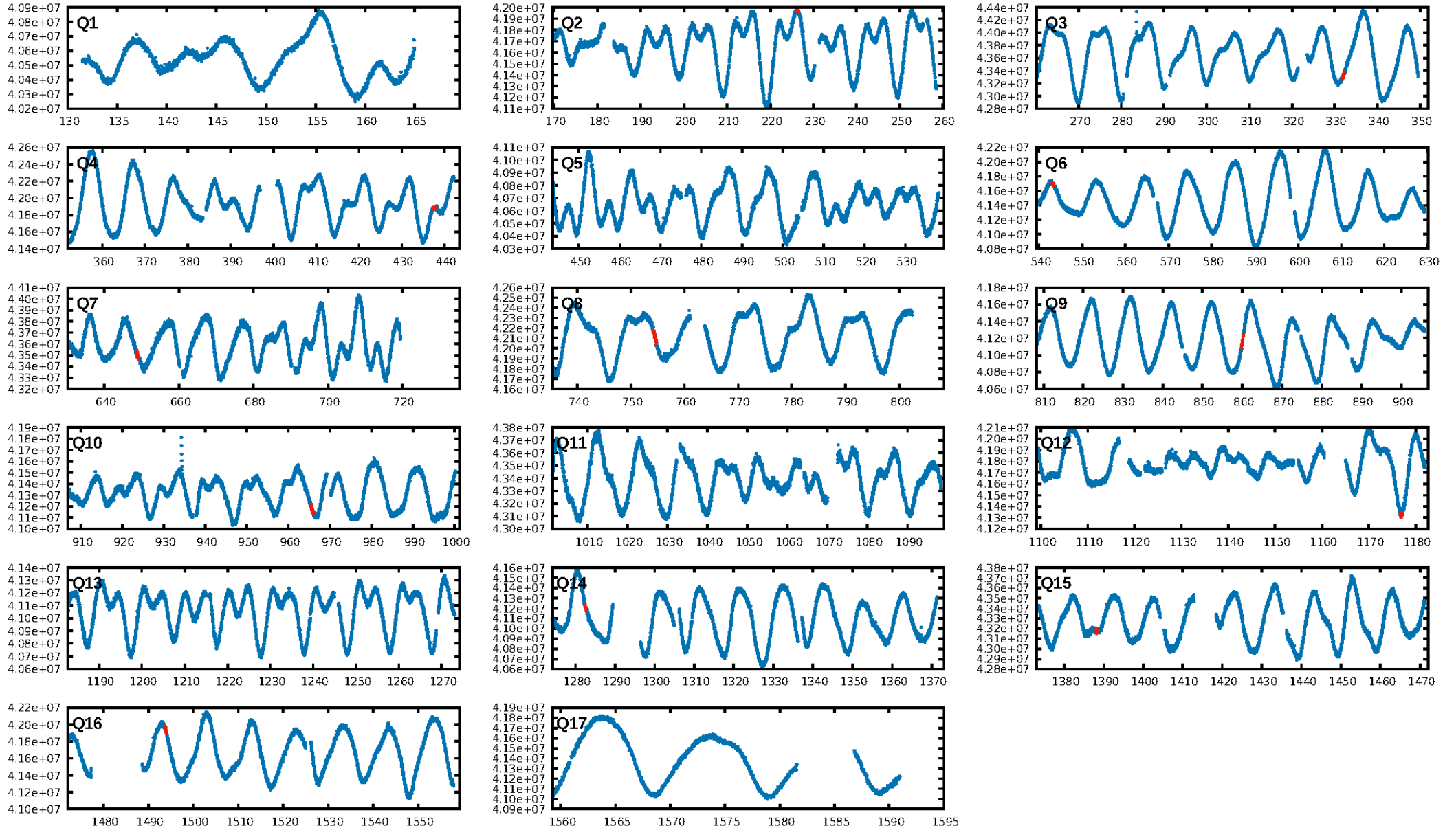
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [246.42 σ]
LongPeriod-sig: 100.0% [190.97 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 86.9%
Bootstrap-pfa: 1.26e-42
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -0.3247
Centroid-sig: 0.9%
Centroid-so: 0.636 arcsec [1.23 σ]
OotOffset-rm: 0.373 arcsec [0.32 σ]
OotOffset-st: 3/2/4/1 [10]
KicOffset-rm: 0.340 arcsec [0.34 σ]
KicOffset-st: 3/2/4/1 [10]
DiffImageQuality-fgm: 0.10 [1/10]
DiffImageOverlap-fno: 0.09 [1/11]

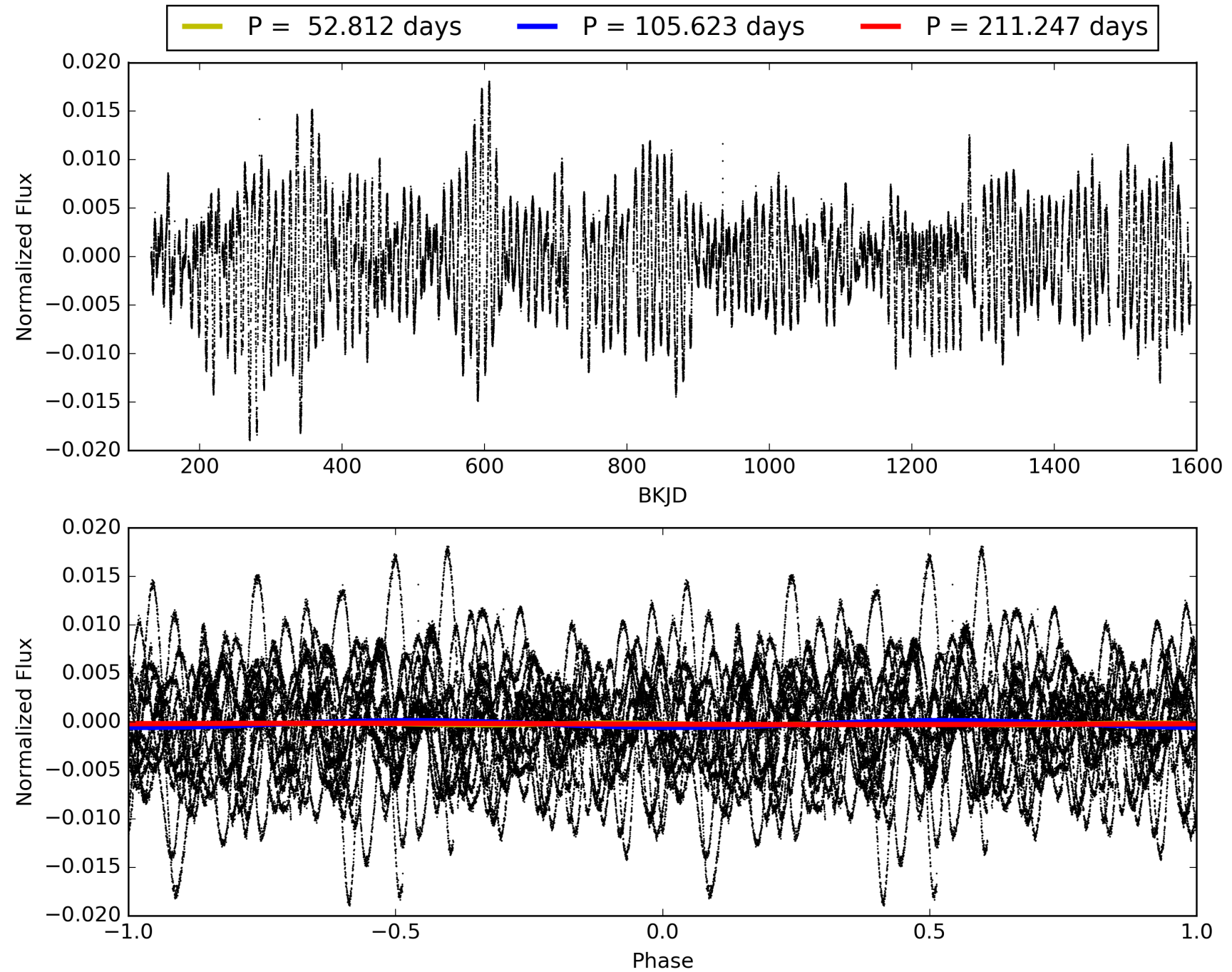
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:08:37 Z

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

TCE 010187494-03, PDC Light Curves

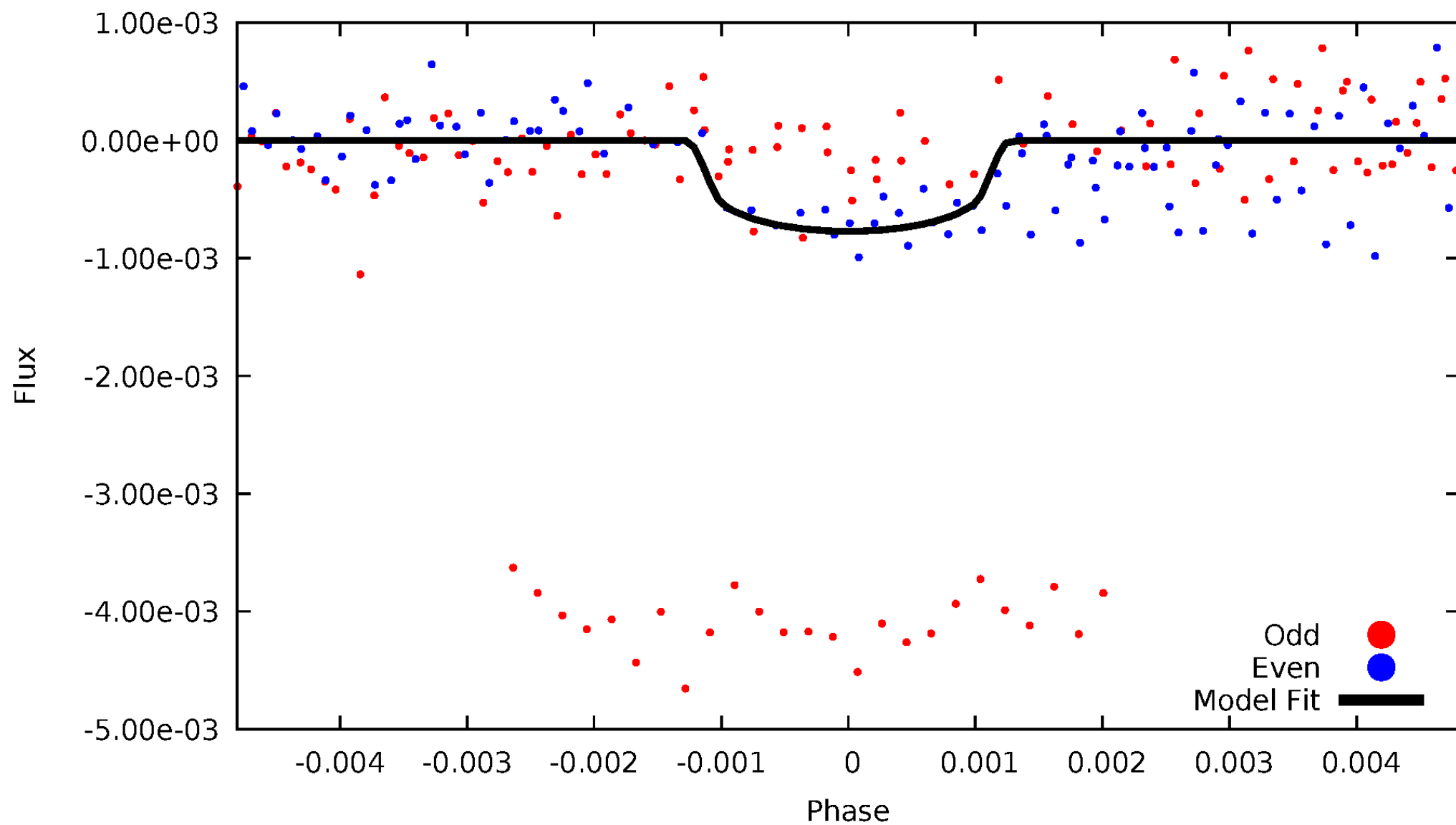


TCE 010187494-03



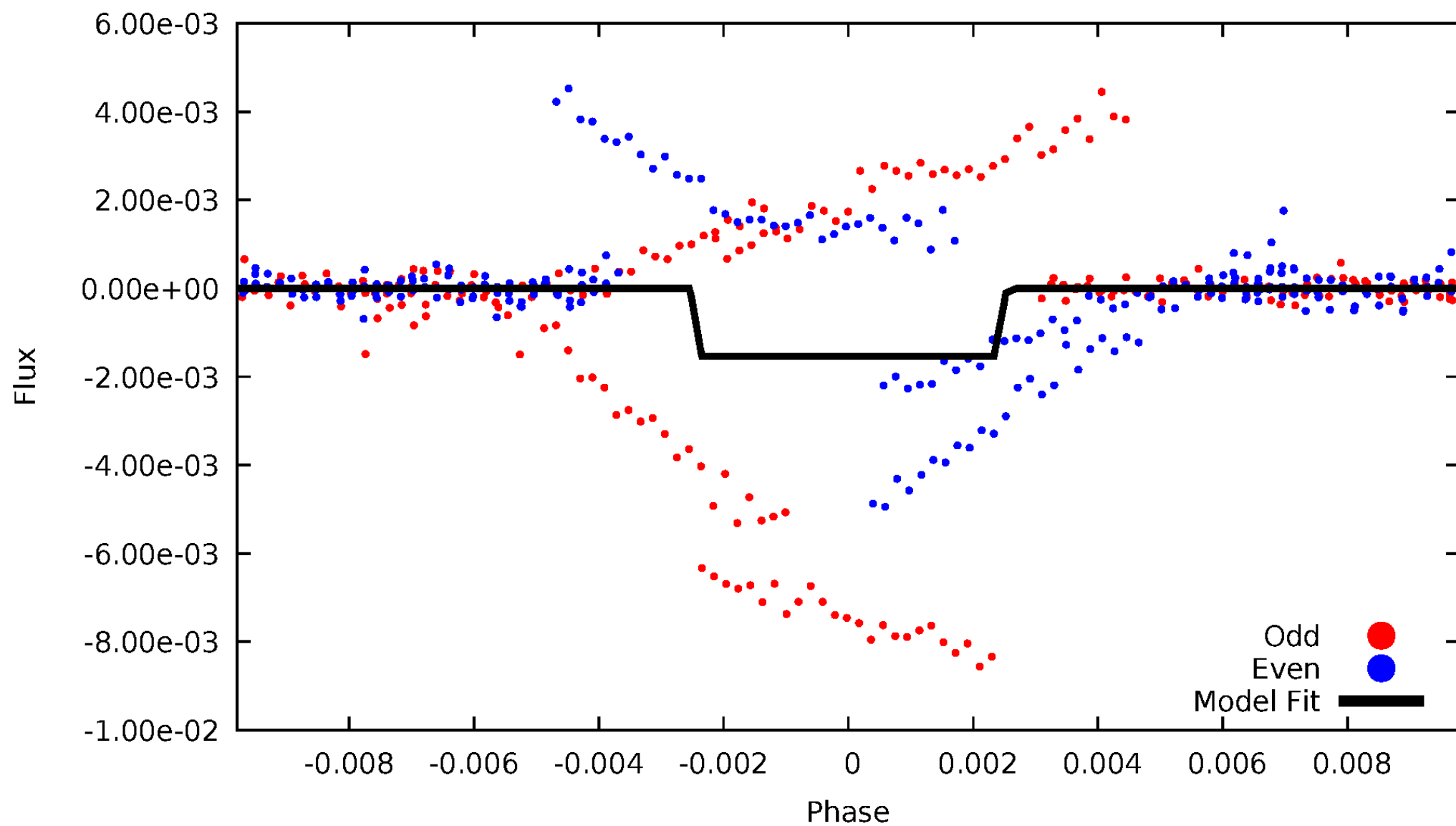
DV Odd/Even

TCE 010187494-03



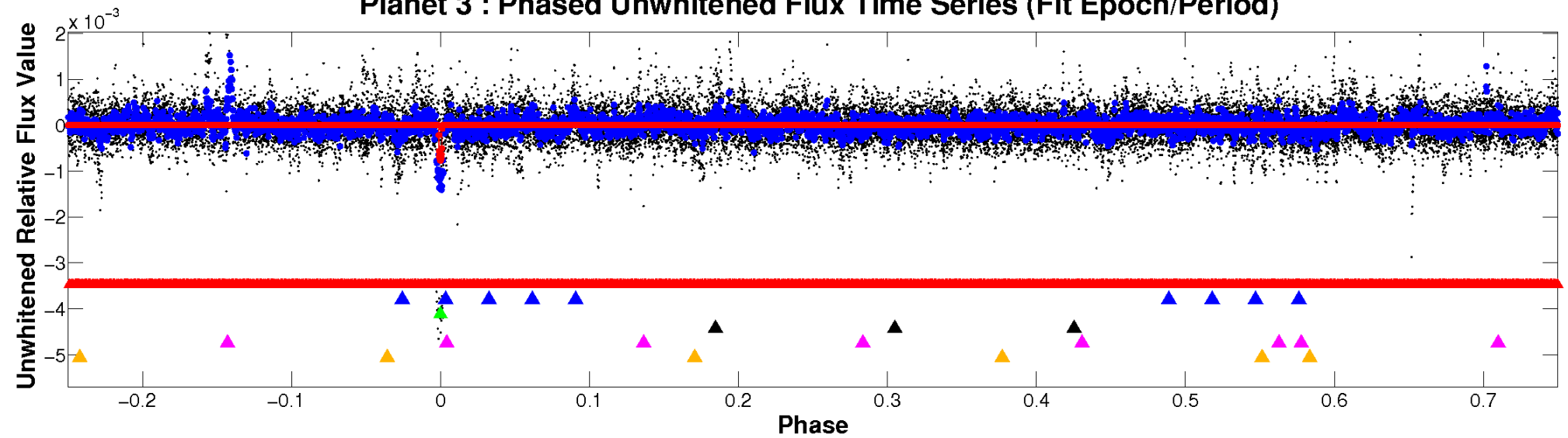
ALT Odd/Even

TCE 010187494-03

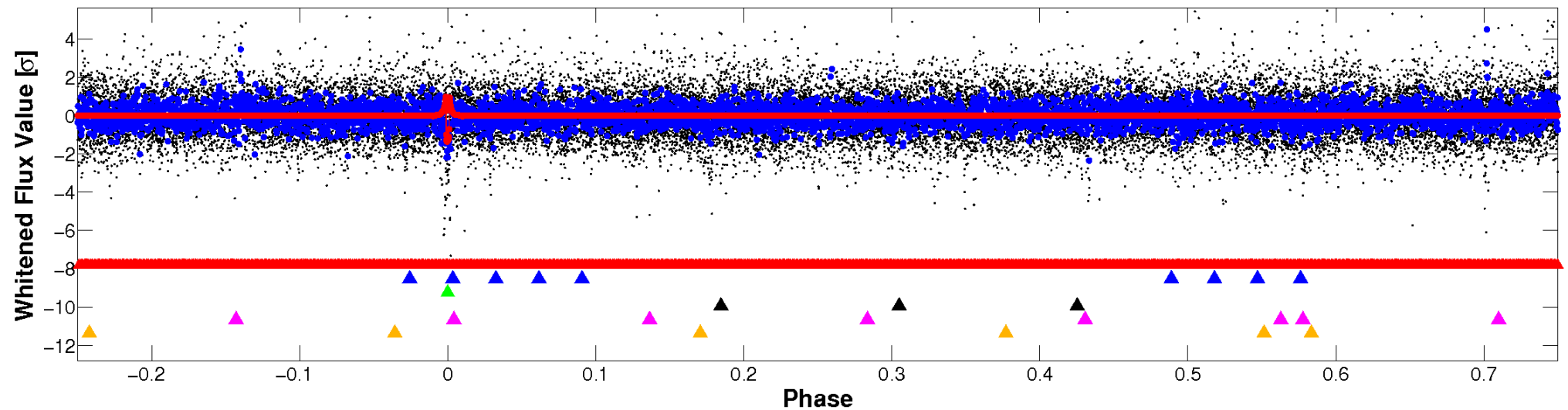


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

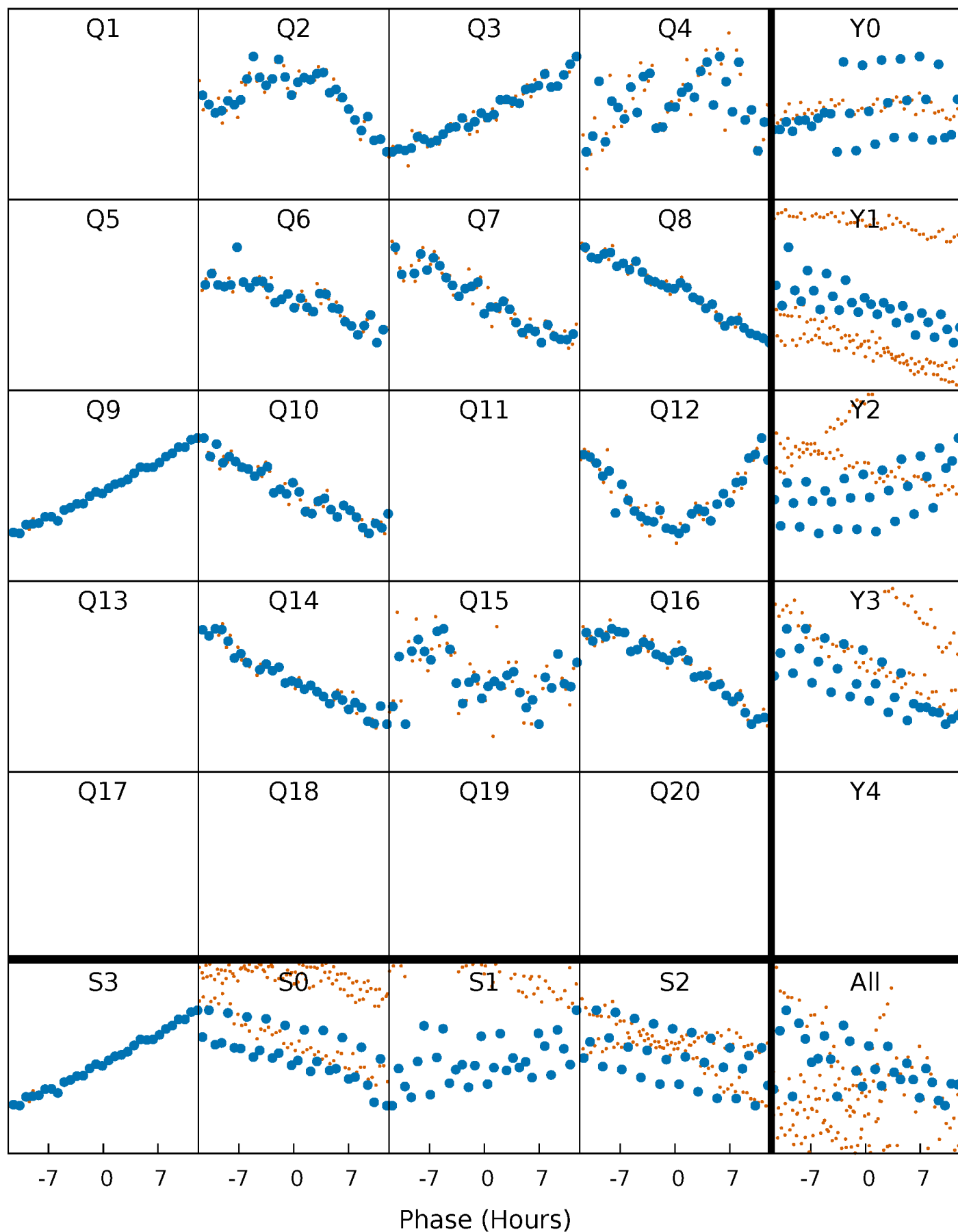


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



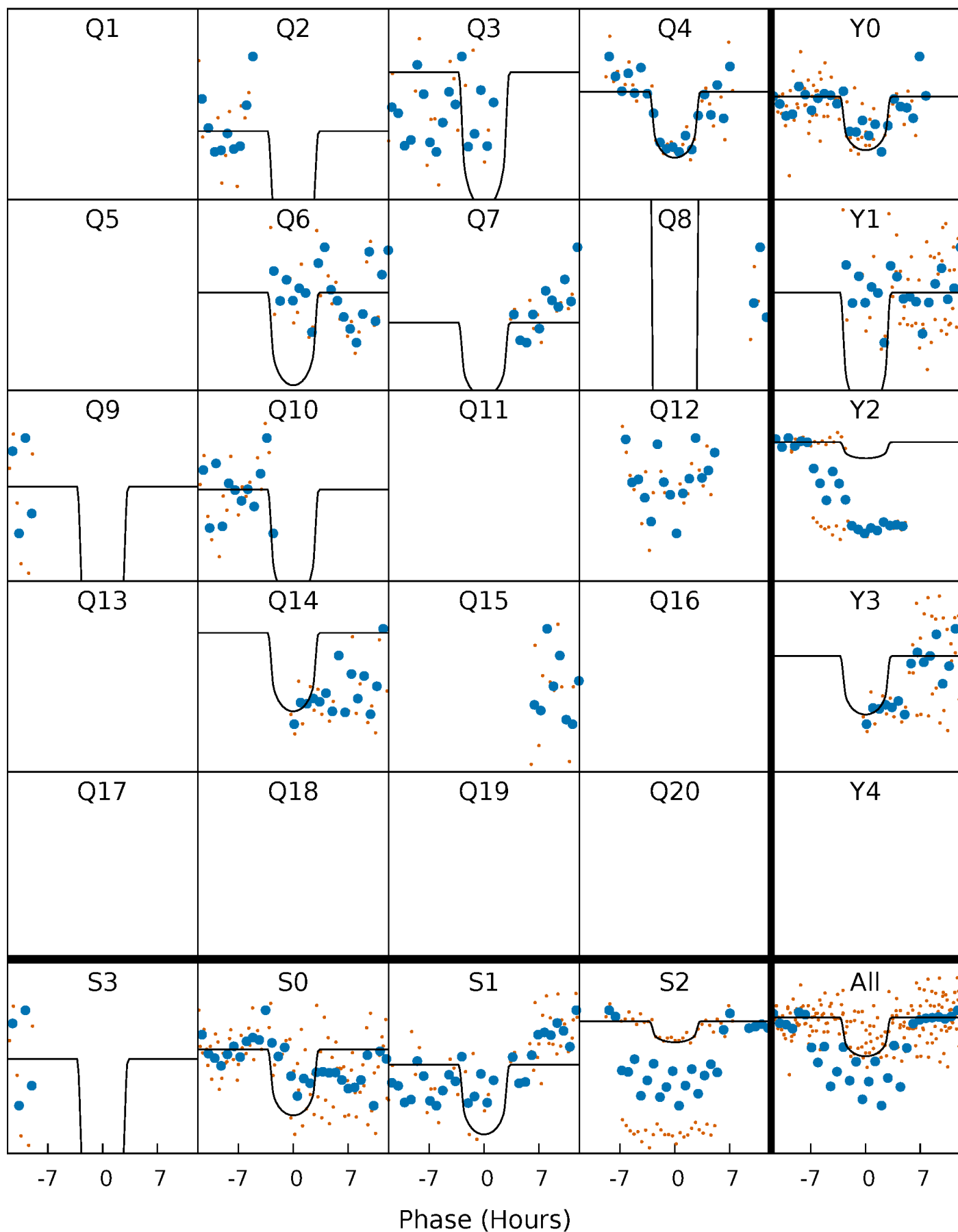
PDC Quarter-Phased Transit Curves

TCE 010187494-03 P=105.623267 Days $T_0=226.358121$ (BKJD)



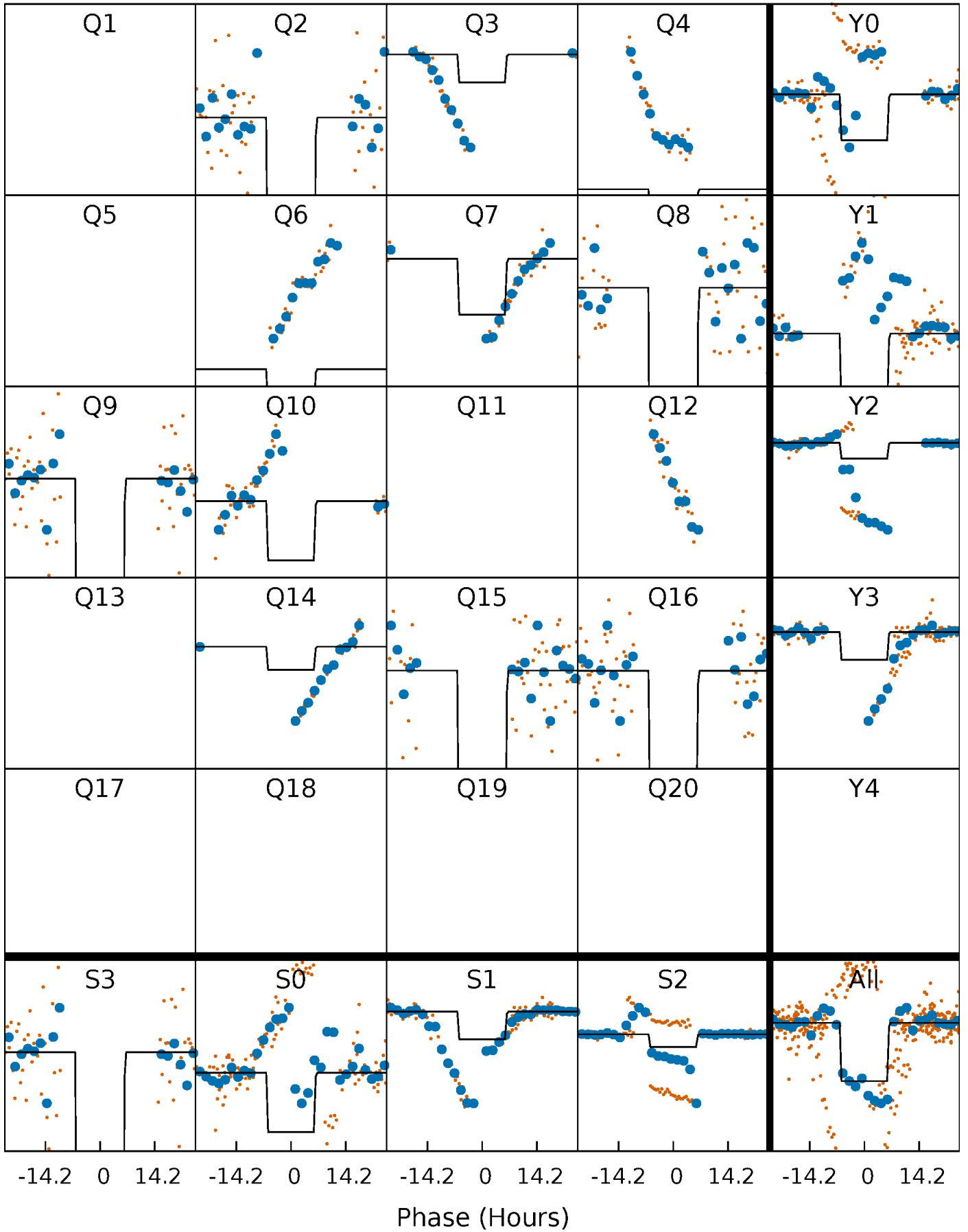
DV Quarter-Phased Transit Curves

TCE 010187494-03 $P=105.623267$ Days $T_0=226.358121$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

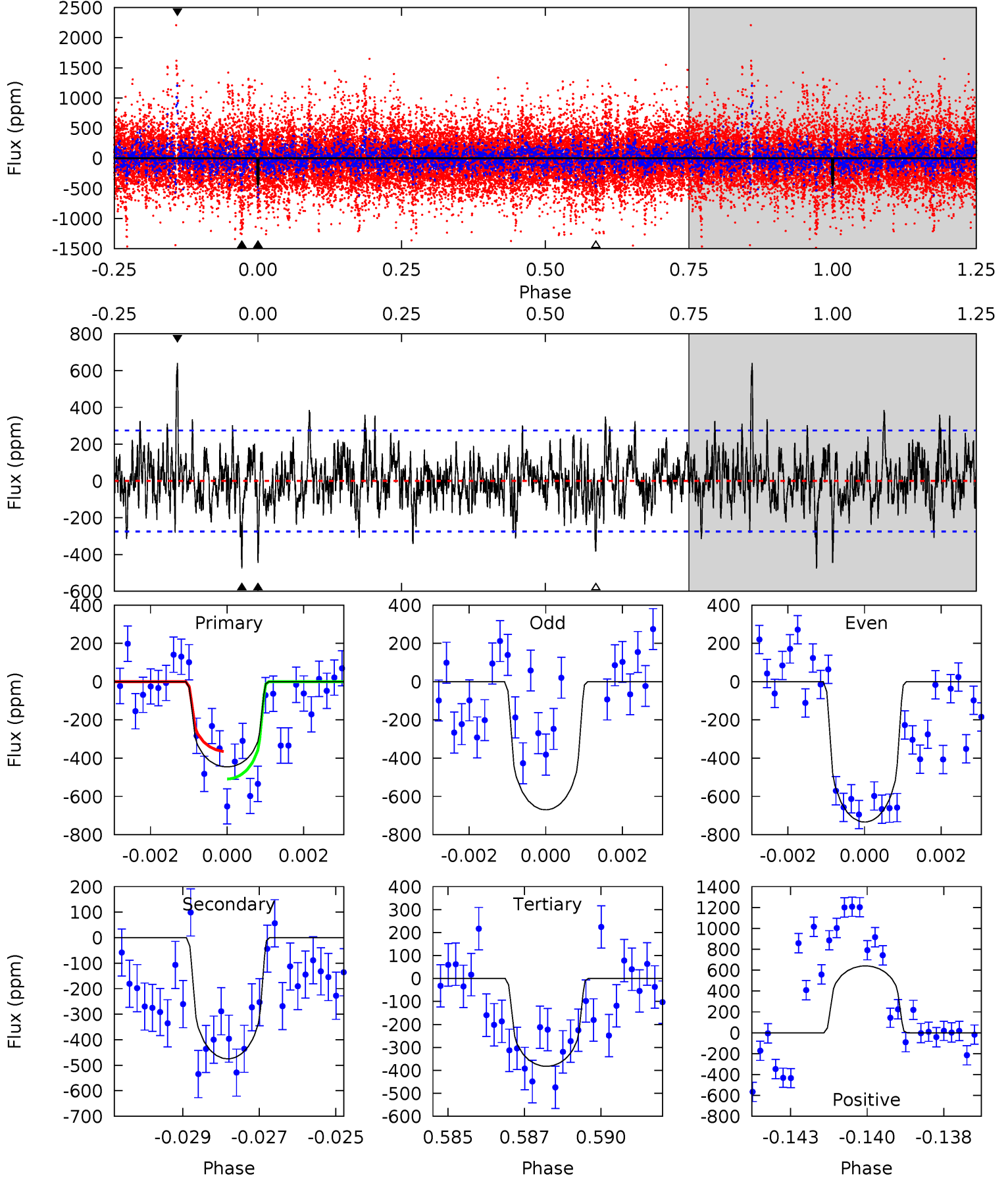
TCE 010187494-03 P=105.600638 Days $T_0=226.530969$ (BKJD)



DV Model-Shift Uniqueness Test

010187494-03, P = 105.623267 Days, E = 120.734854 Days

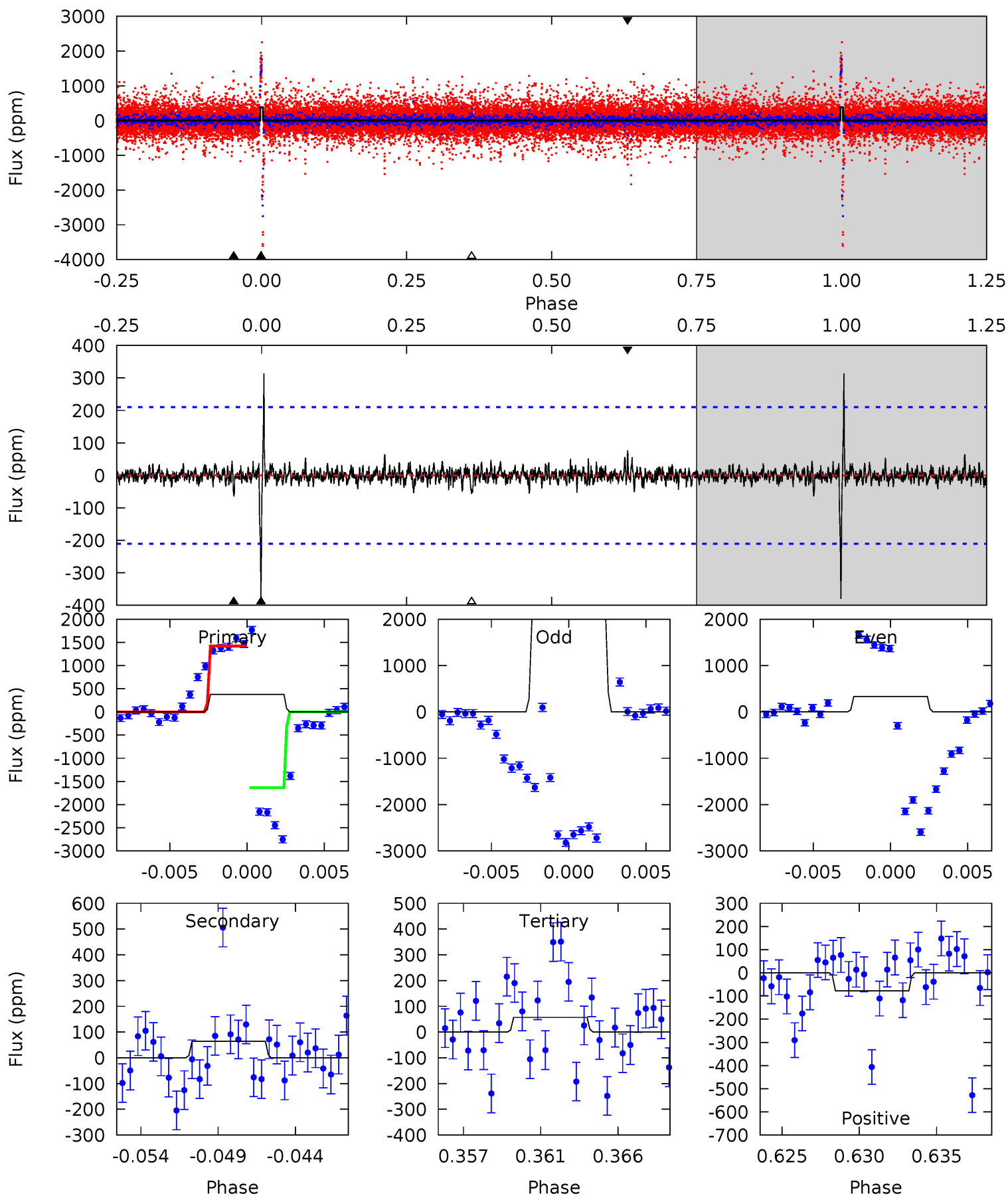
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.58	9.14	7.36	12.3	5.29	3.03	2.08	1.22	-3.75	1.78	-3.19	0.62	2.11	0.57	1.39



Alt Model-Shift Uniqueness Test

010187494-03, P = 105.600638 Days, E = 120.930331 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.32	1.58	1.39	1.90	5.16	2.81	0.39	7.92	7.42	0.19	-0.32	26.0	1.00	0.45	2.52



Stellar Parameters For KIC 010187494

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5196^{+155}_{-140}	$4.549^{+0.052}_{-0.078}$	$-0.060^{+0.300}_{-0.300}$	$0.792^{+0.100}_{-0.073}$	$0.811^{+0.085}_{-0.076}$	$2.296^{+0.514}_{-0.600}$
	+3%/-3%	+1%/-2%	+500%/-500%	+13%/-9%	+10%/-9%	+22%/-26%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010187494-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-475 ± 52	$2.57^{+1.75}_{-1.35}$	449^{+16}_{-17}	4607^{+1823}_{-802}	6553^{+22799}_{-4193}
Alt.	-65 ± 41	$3.41^{+1.68}_{-1.60}$	450^{+16}_{-17}	2968^{+681}_{-455}	464^{+1370}_{-339}

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 $A_{\text{obs}} \gg 1.0$

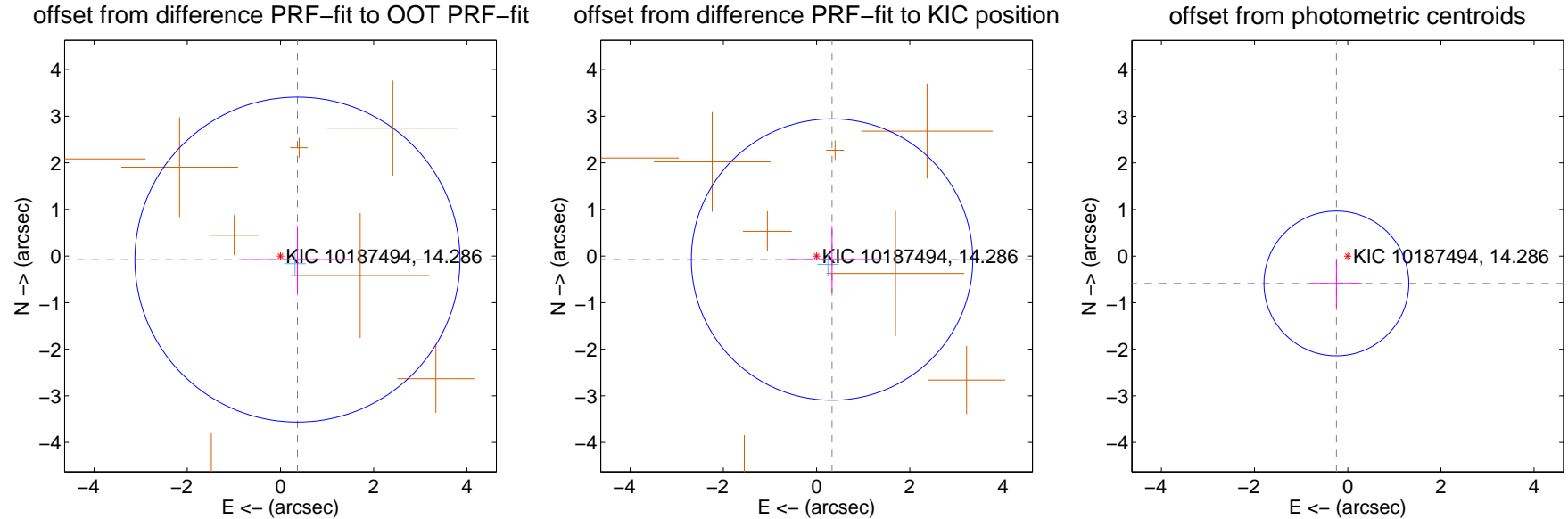
DV Centroid Data

Supplemental centroid analysis for 010187494-03. Kepler magnitude: 14.29. Transit SNR 9.45

There are 1 quarters with good PRF difference image offsets

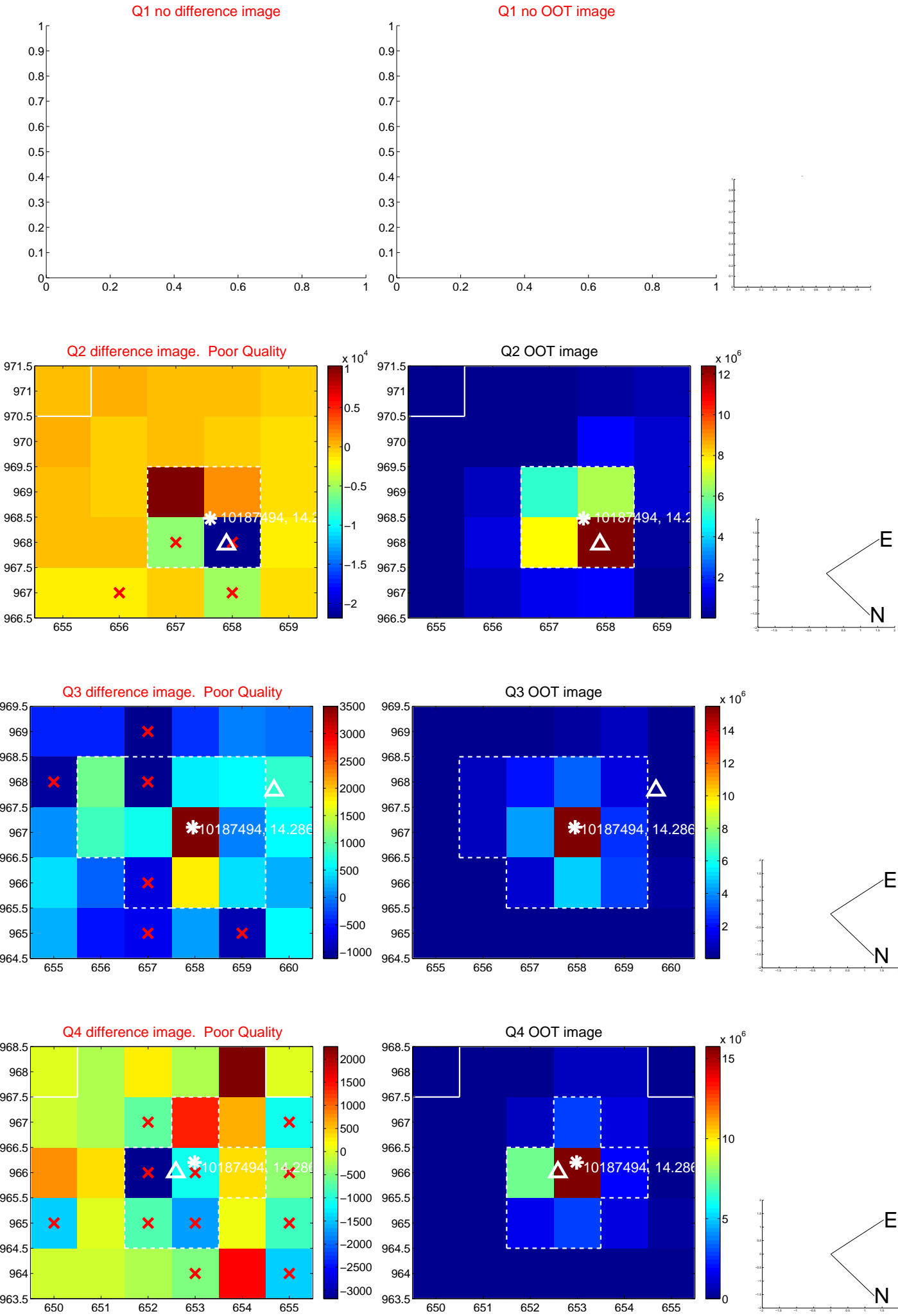
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.373 ± 1.163	0.32	-0.365 ± 1.176	-0.077 ± 0.718
PRF-fit source offset from KIC position	0.340 ± 1.007	0.34	-0.332 ± 0.999	-0.076 ± 0.720
photometric centroid source offset	0.64 ± 0.52	1.23	0.24 ± 0.55	-0.59 ± 0.51

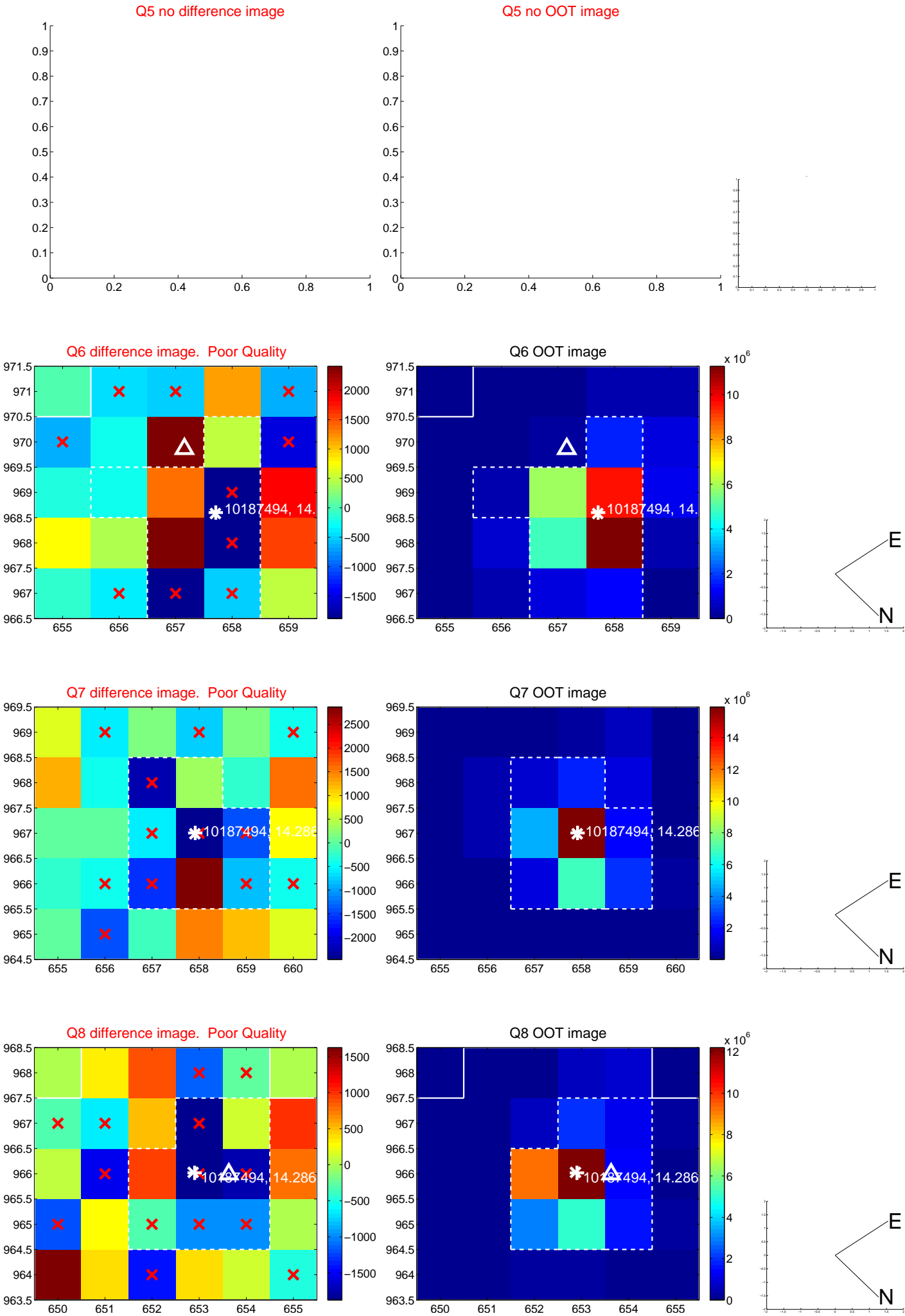


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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.

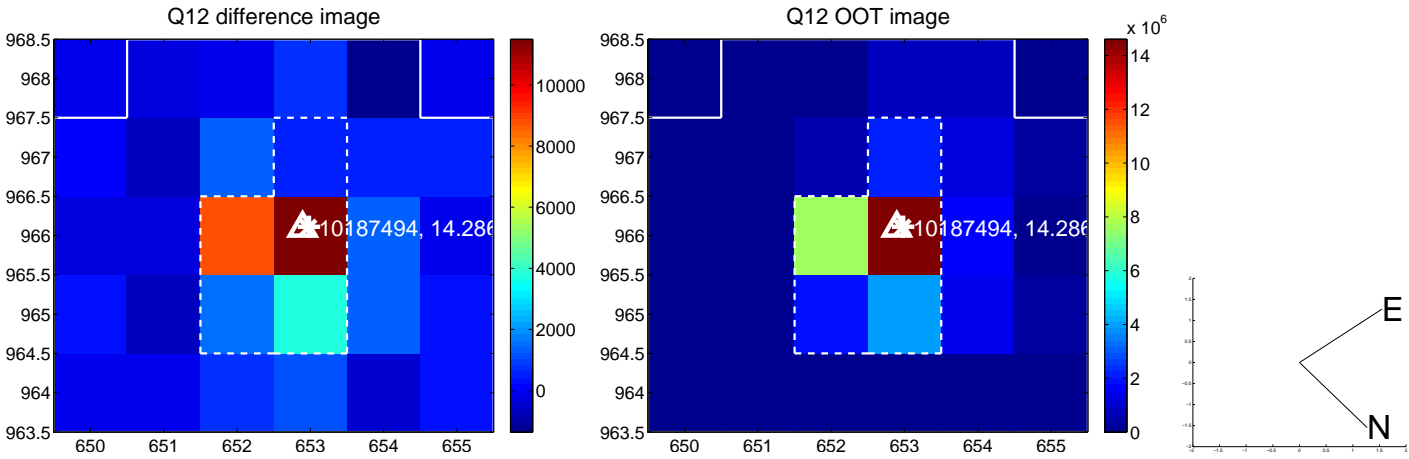
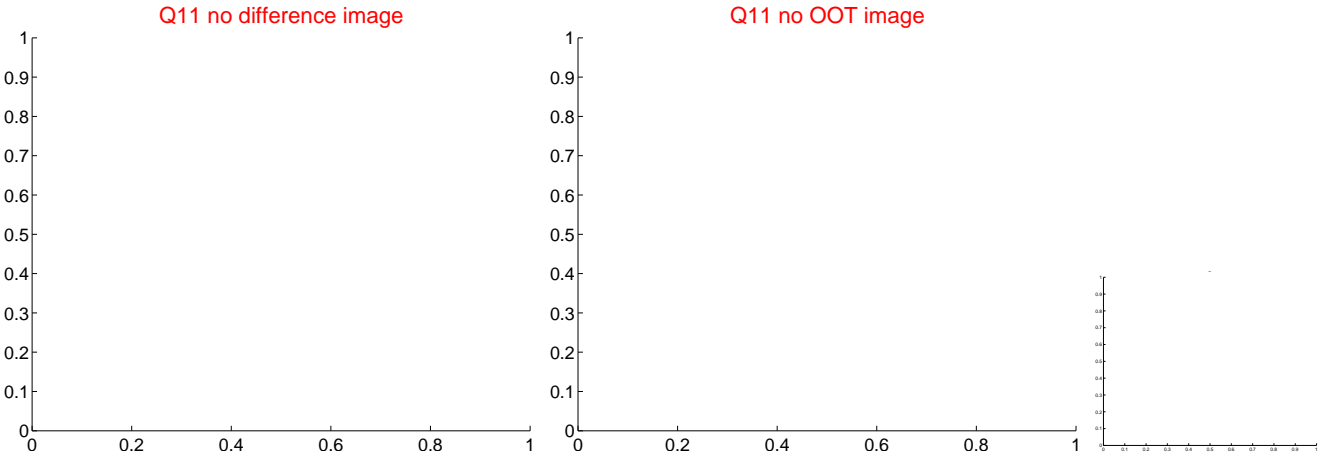
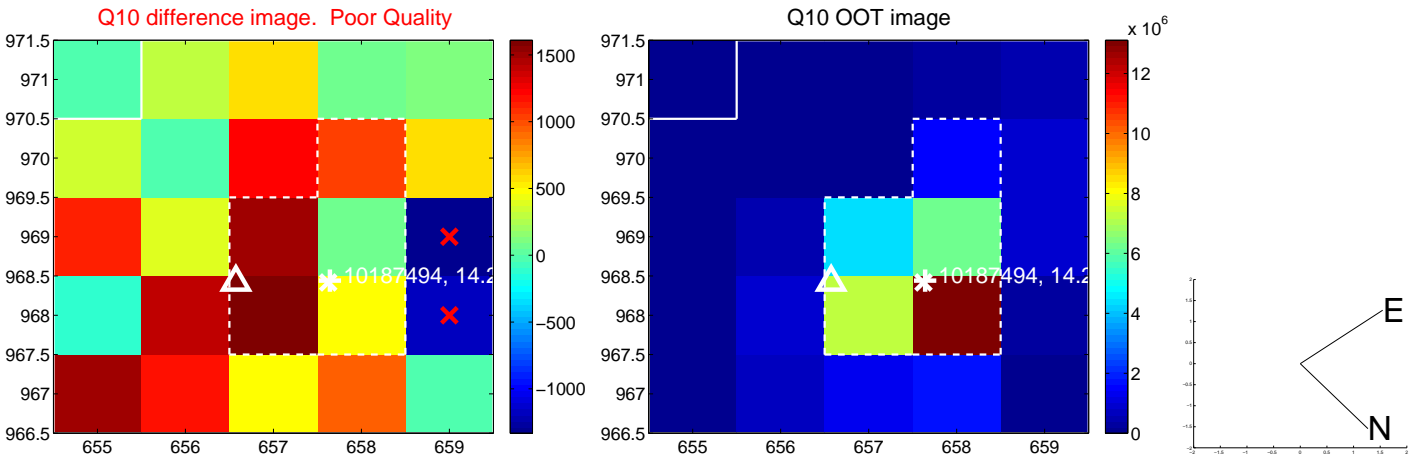
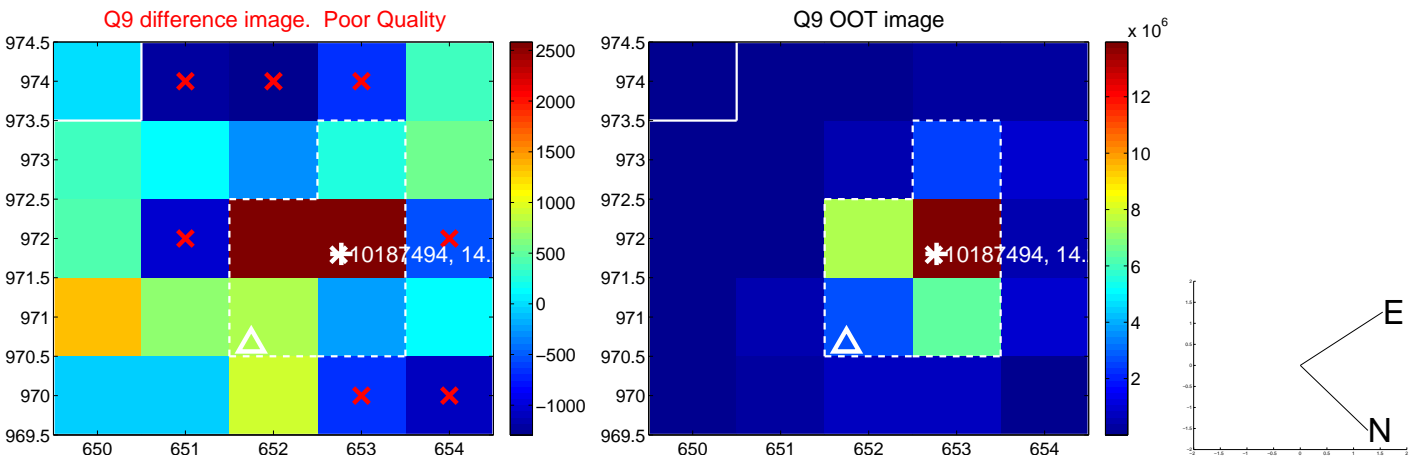
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



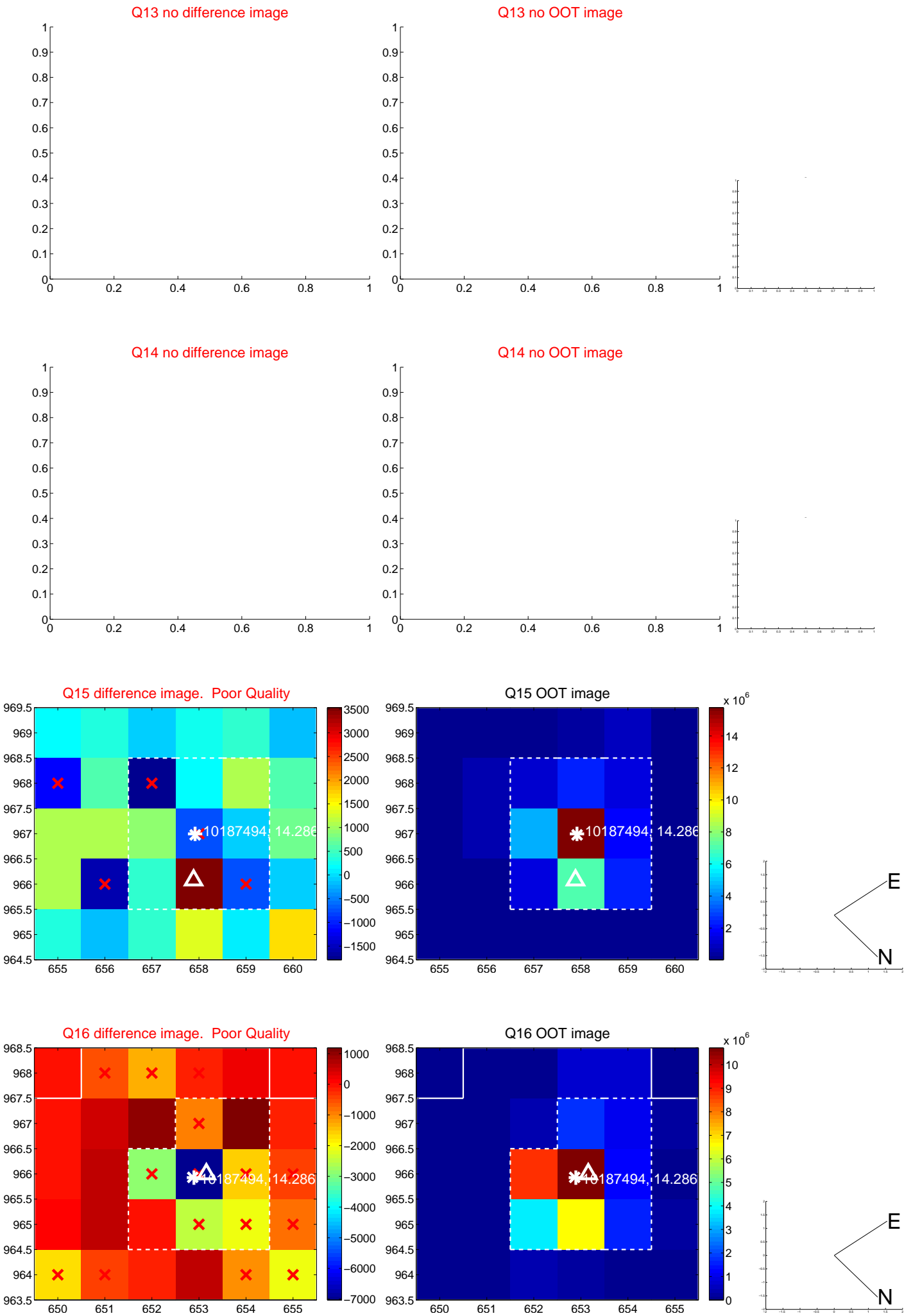
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



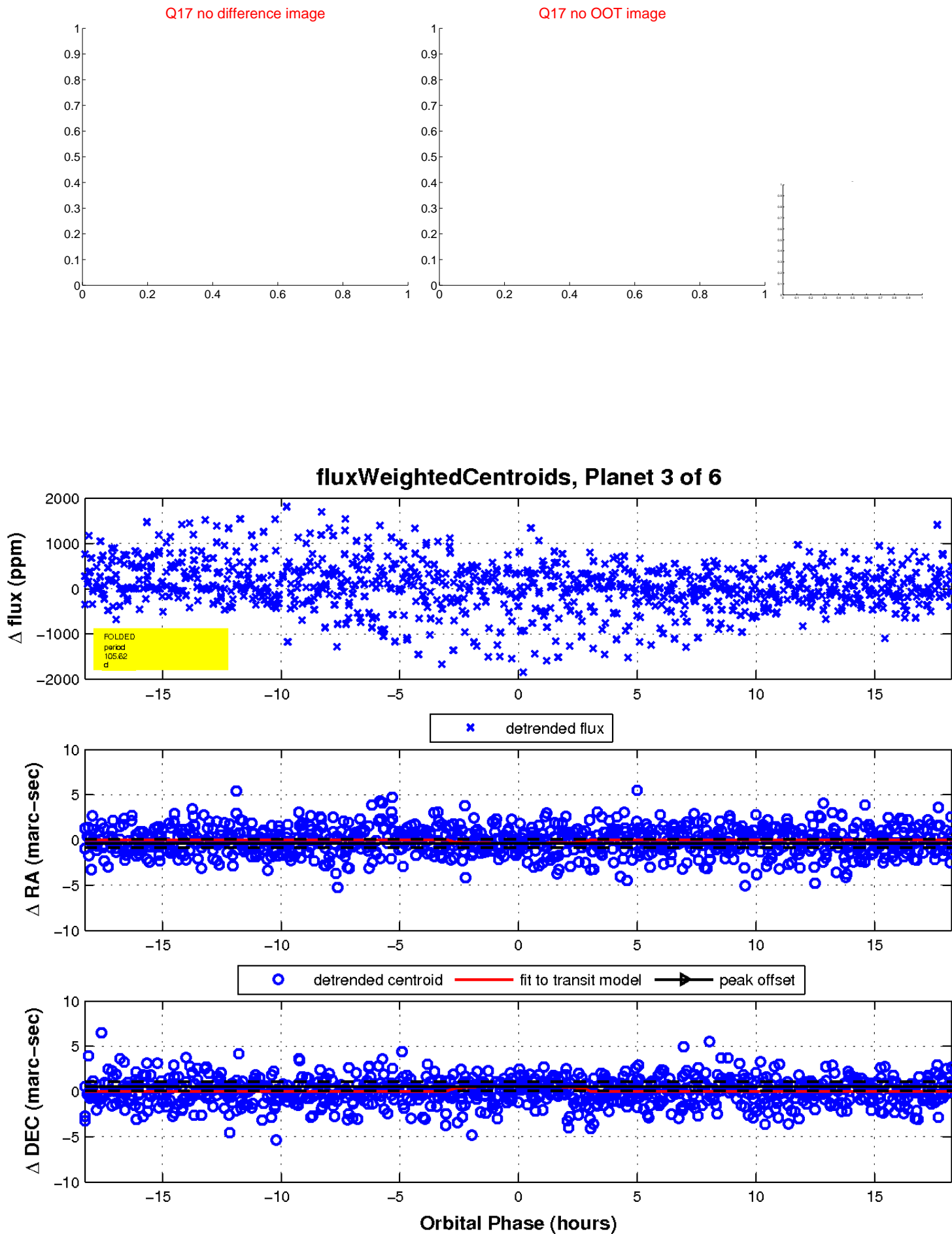
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

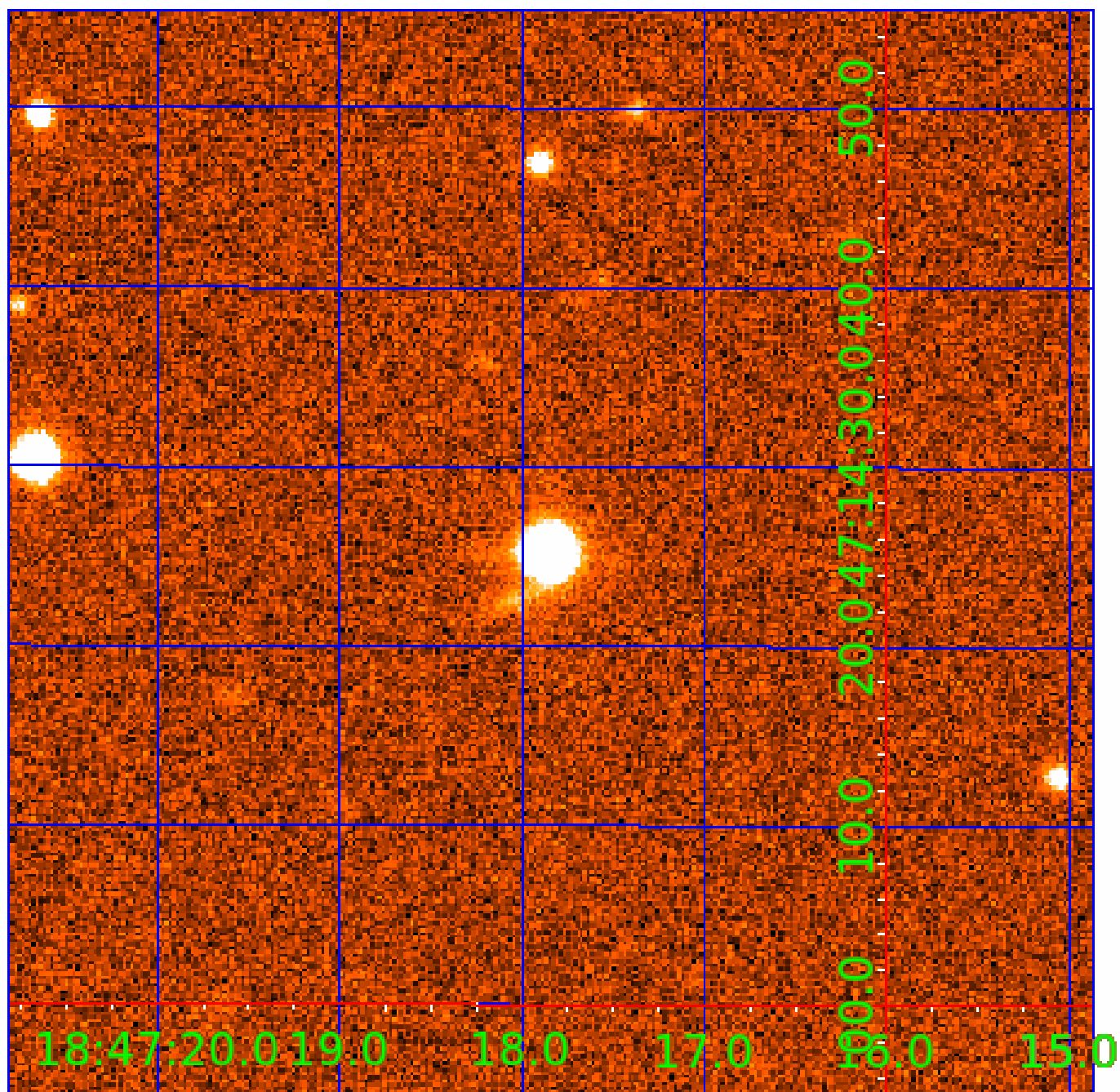


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010187494

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})
010187494-01	OBS	No	1.735834	132.931789	45.9	8.077	7.9	8.3	0.79	5196	0.52	589.81
010187494-02	OBS	No	156.898508	235.942184	339.5	2.096	22.1	3.4	0.79	5196	1.58	1.45
010187494-03	OBS	No	105.623267	226.358121	771.1	6.093	25.4	9.4	0.79	5196	2.34	2.46
010187494-04	OBS	No	540.826851	245.859484	467.7	46.884	15.8	2.4	0.79	5196	2.02	0.28
010187494-05	OBS	No	166.204534	285.808832	483.0	2.935	11.7	4.4	0.79	5196	1.97	1.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010187494-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
010187494-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010187494-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010187494-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010187494-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

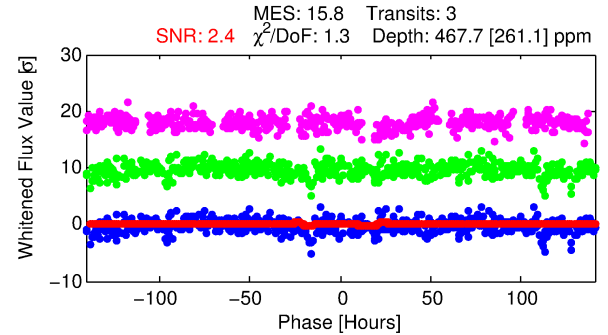
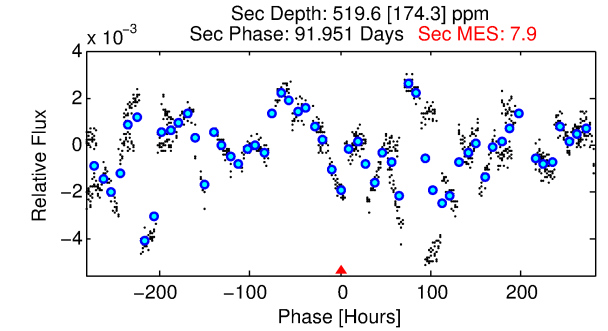
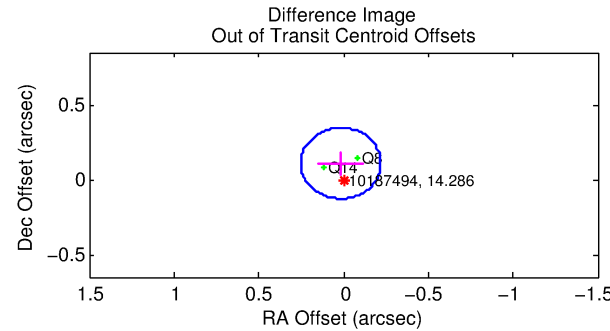
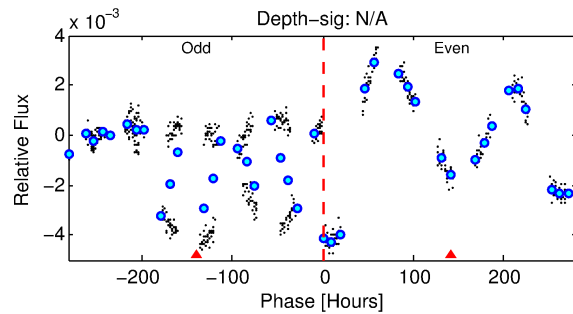
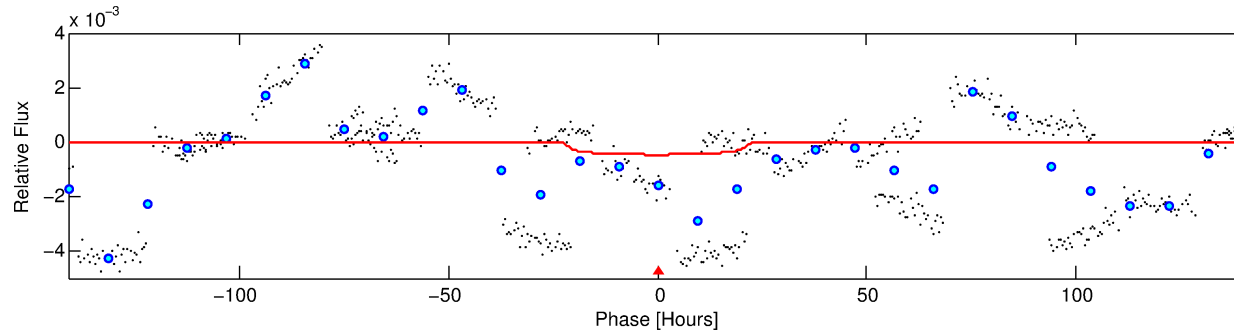
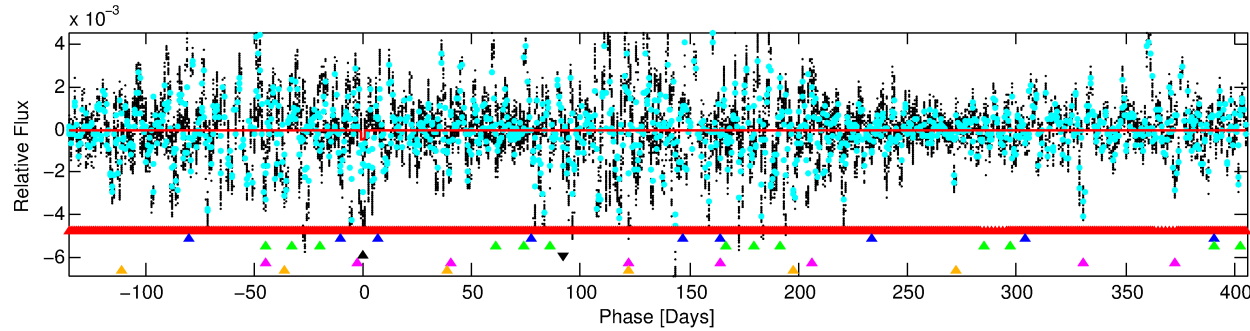
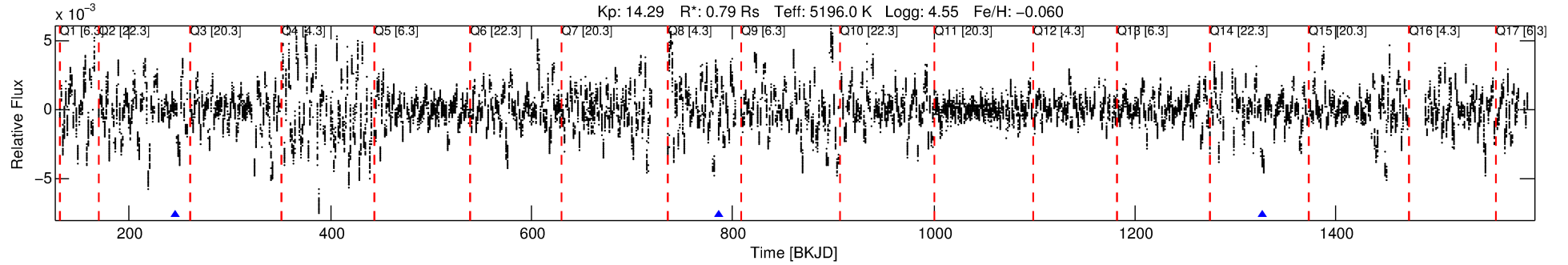
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010187494-04

No Significant Match Found

DV One-Page Summary

KIC: 10187494 Candidate: 4 of 6 Period: 540.827 d



DV Fit Results:

Period = 540.82685 [0.05346] d
Epoch = 245.8595 [0.0520] BKJD
Rp/R* = 0.0233 [0.0076]
a/R* = 47.02 [21.27]
b = 0.87 [0.12]
Seff = 0.28 [0.05]
Teq = 185 [9] K
Rp = 2.02 [0.70] Re
a = 1.2112 [0.1251] AU
Ag = 103224.62 [77084.98] [1.34σ]
Teffp = 5137 [953] K [5.20σ]

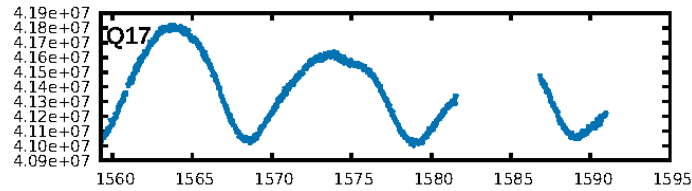
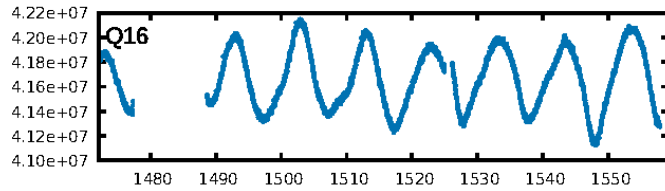
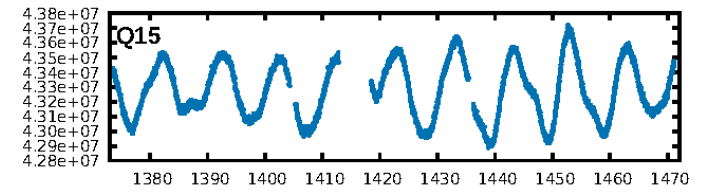
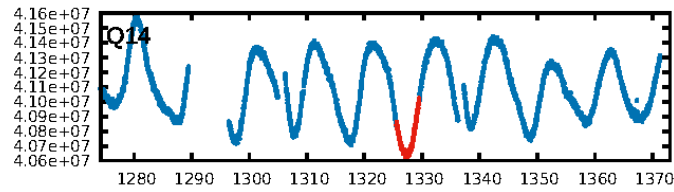
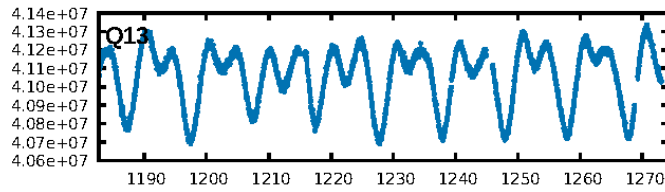
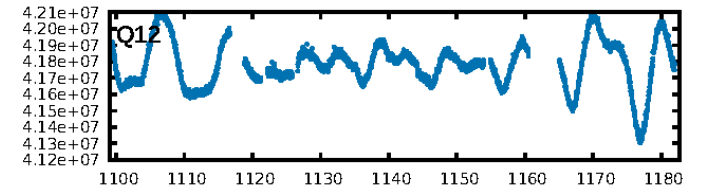
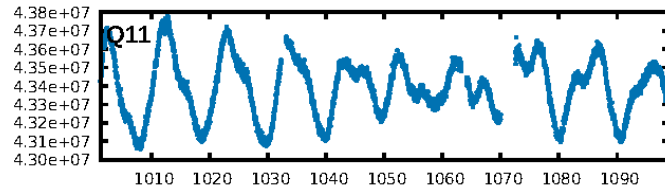
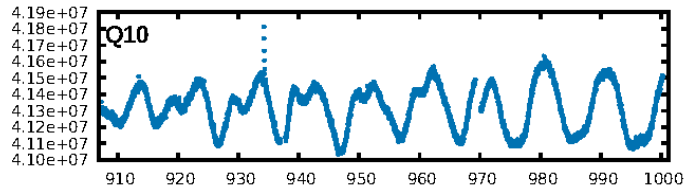
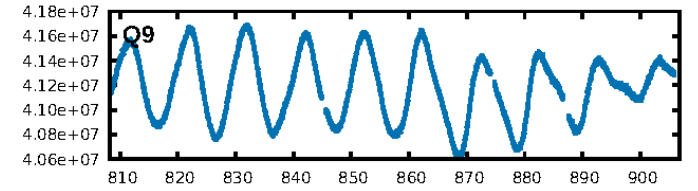
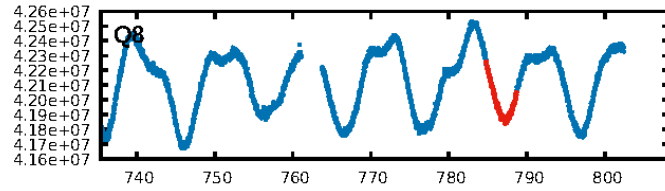
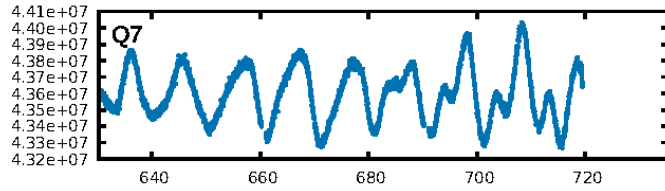
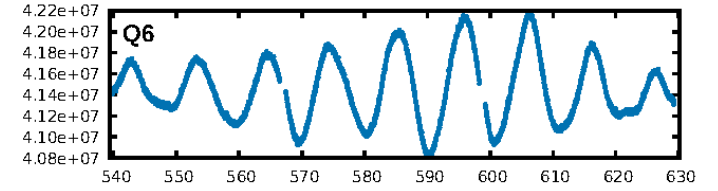
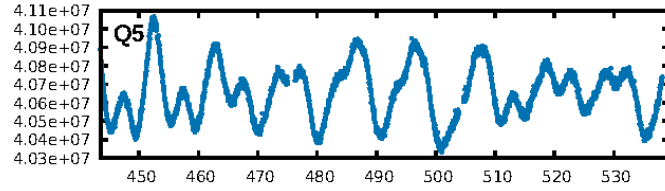
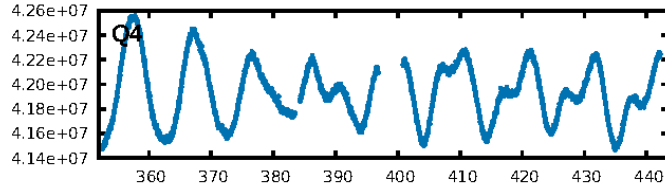
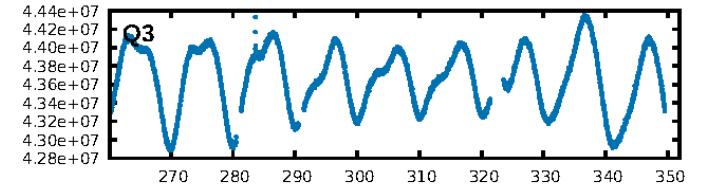
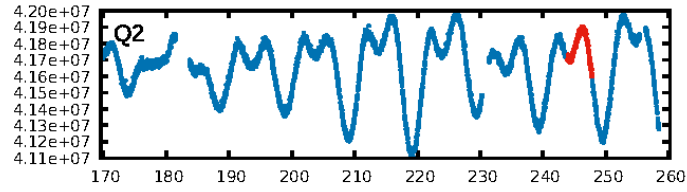
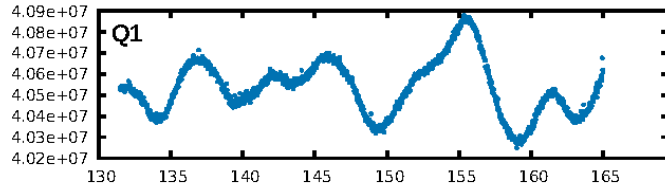
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [155.62σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 9.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.18e-14
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -3.457
Centroid-sig: 15.2%
Centroid-so: 0.845 arcsec [1.17σ]
OotOffset-rm: 0.110 arcsec [1.40σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-rm: 0.174 arcsec [1.31σ]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/2]

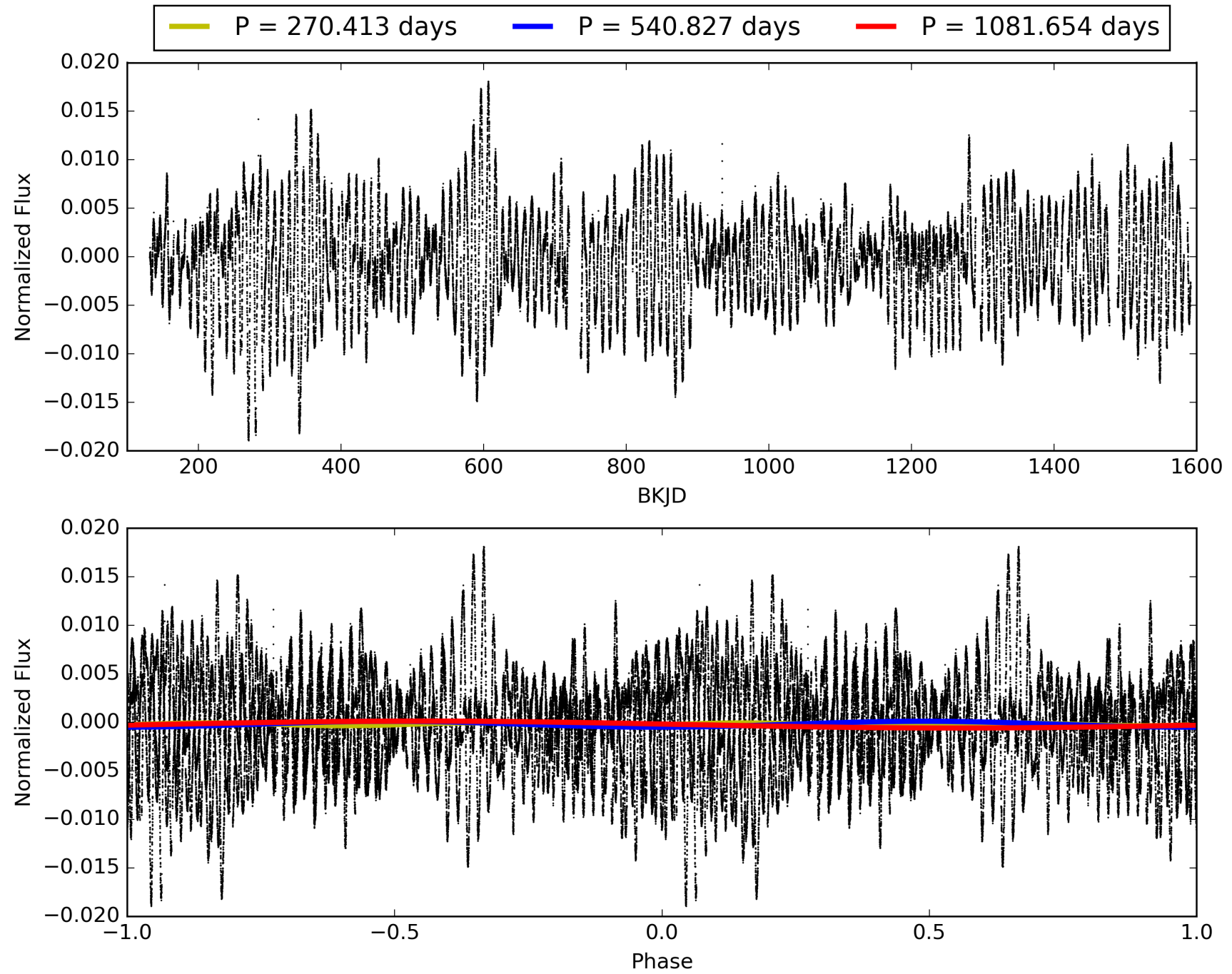
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:08:43 Z

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

TCE 010187494-04, PDC Light Curves

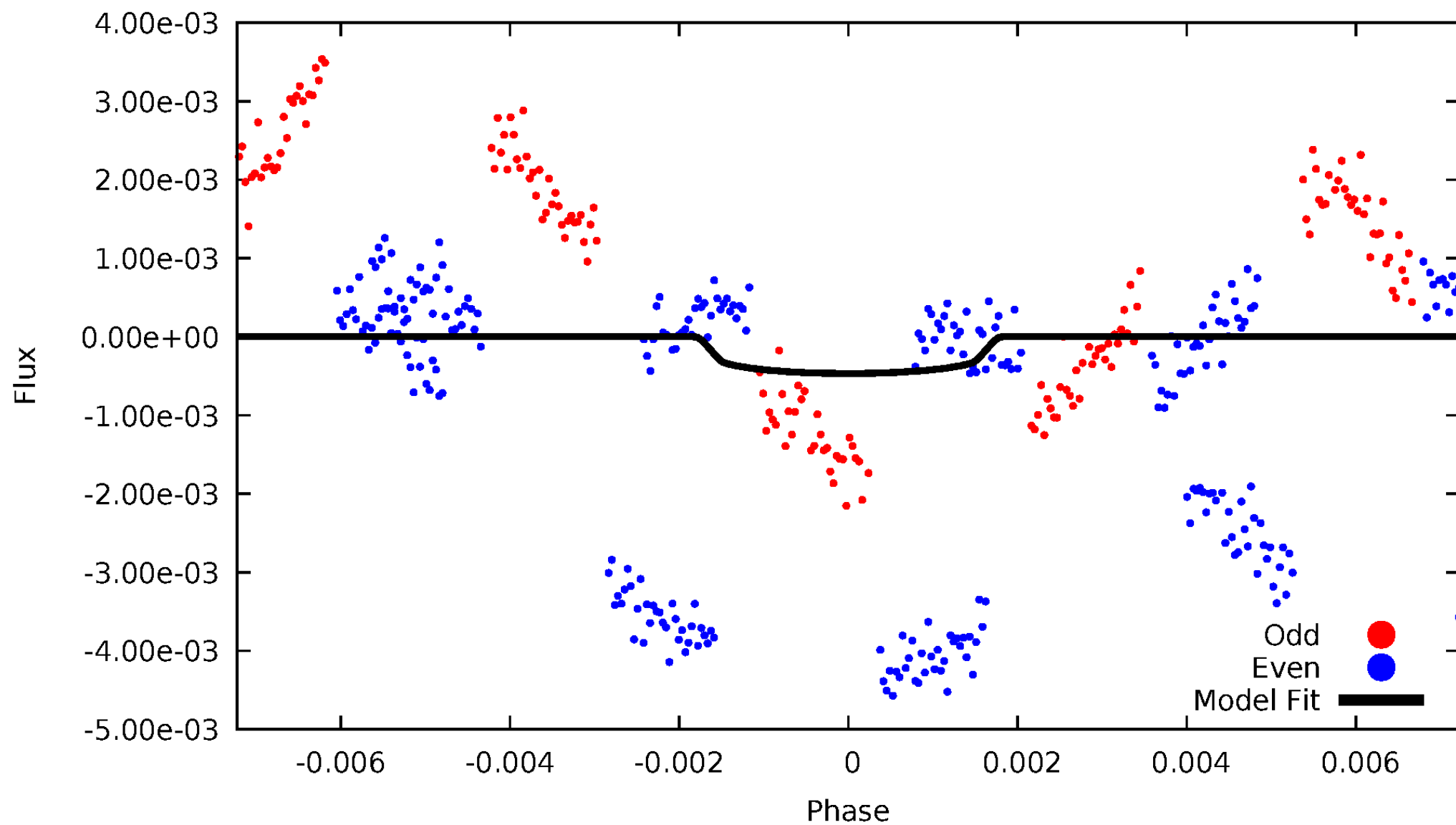


TCE 010187494-04



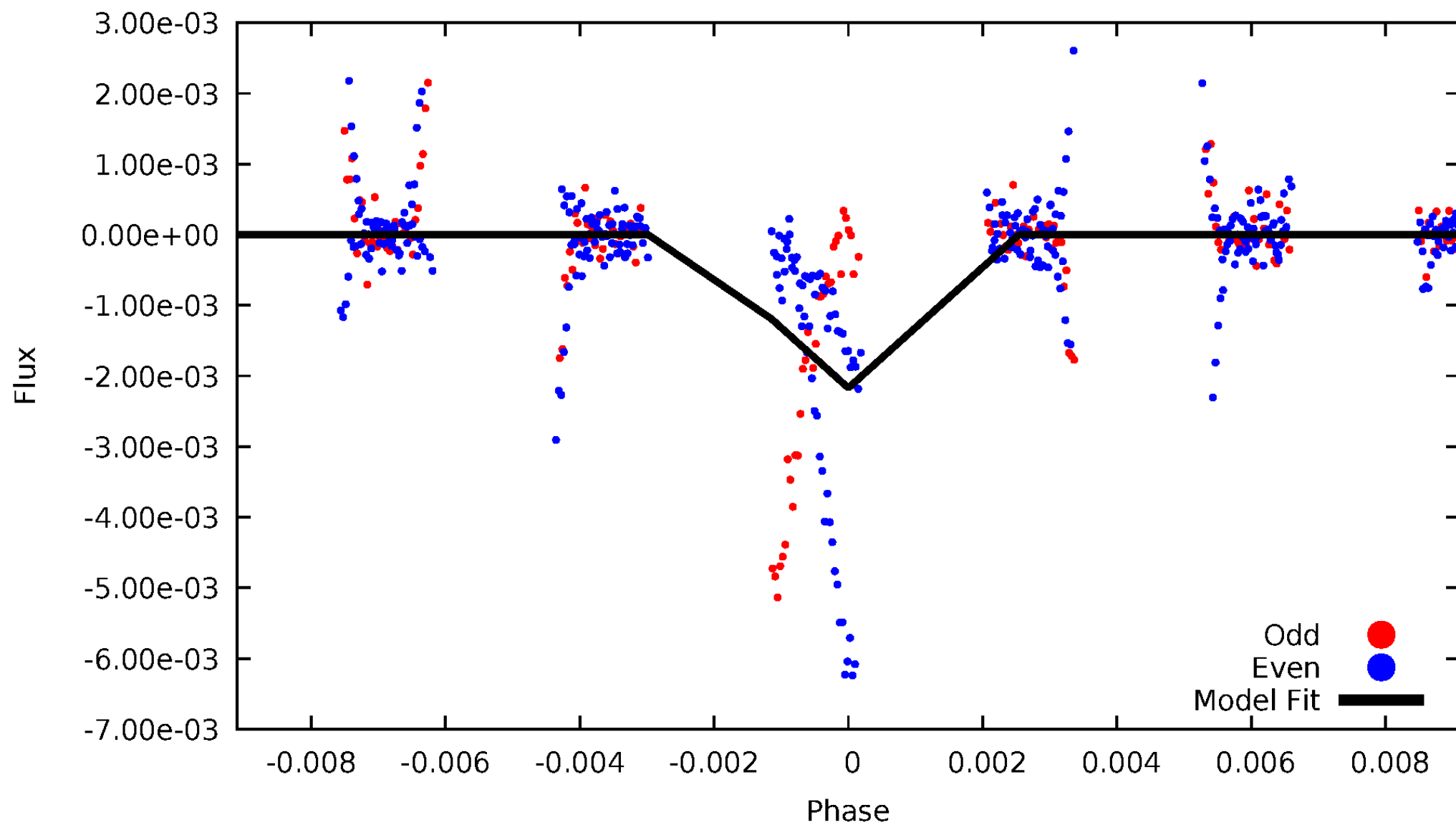
DV Odd/Even

TCE 010187494-04



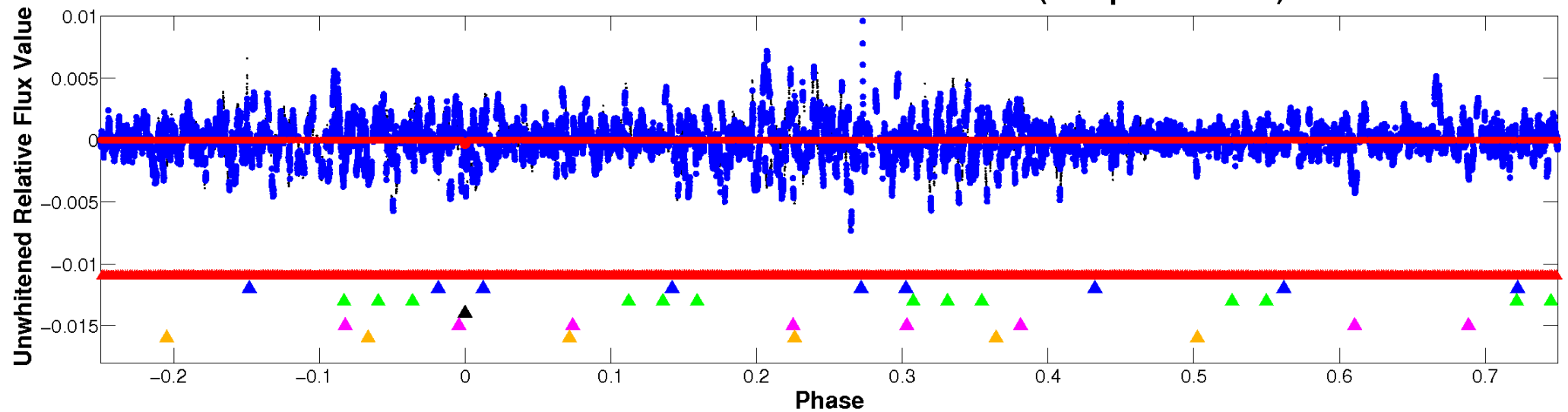
ALT Odd/Even

TCE 010187494-04

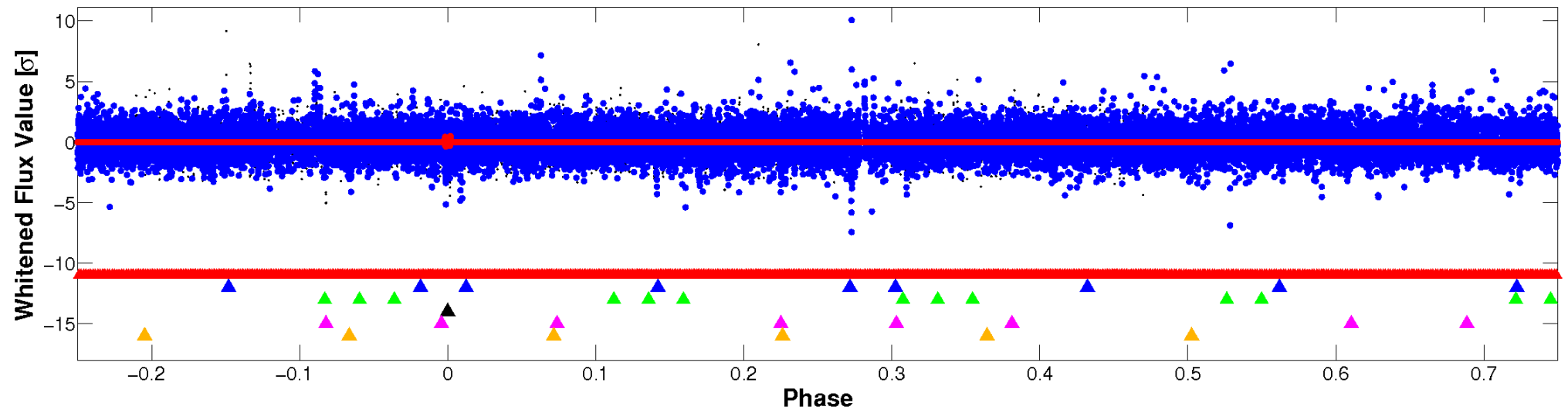


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

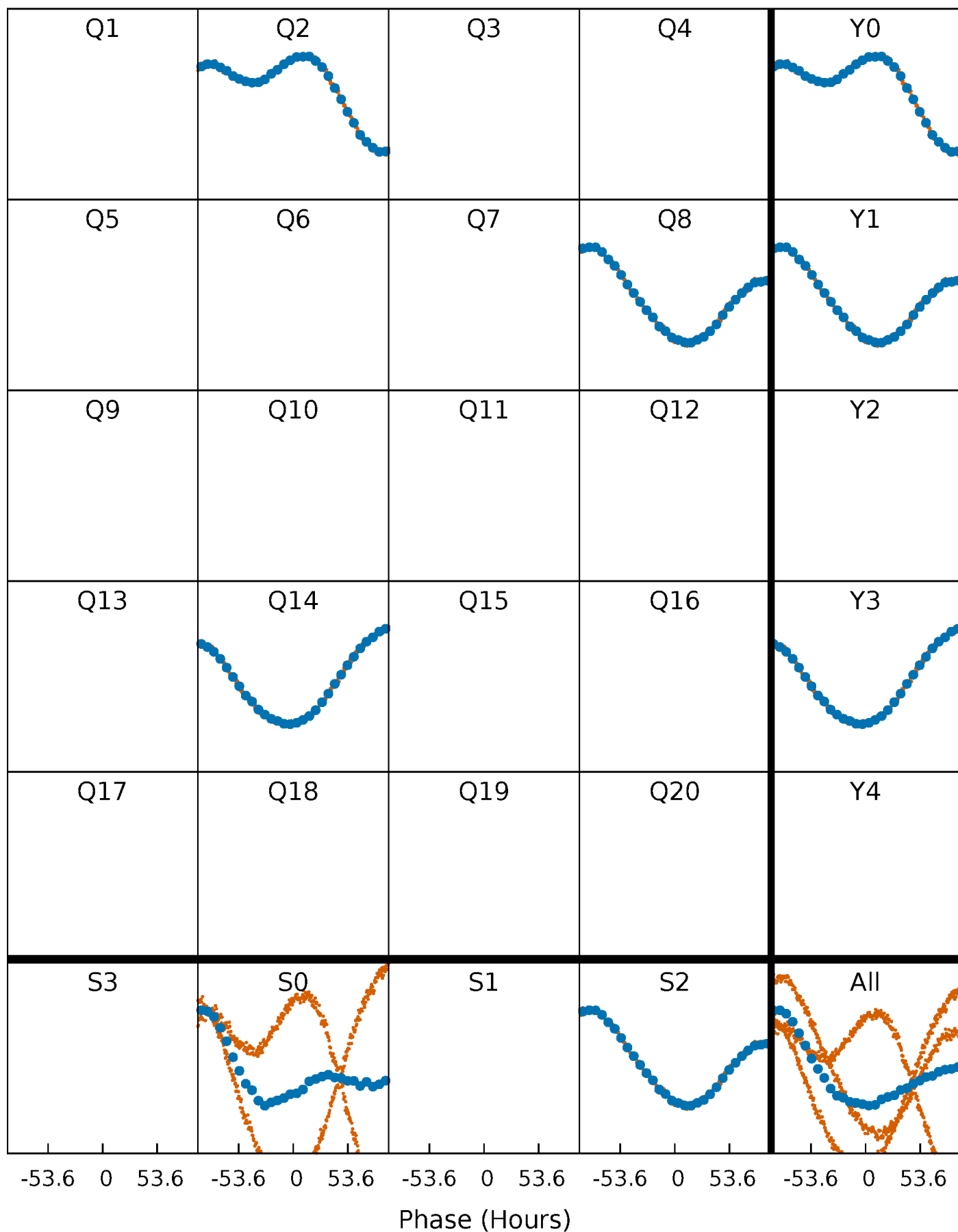


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



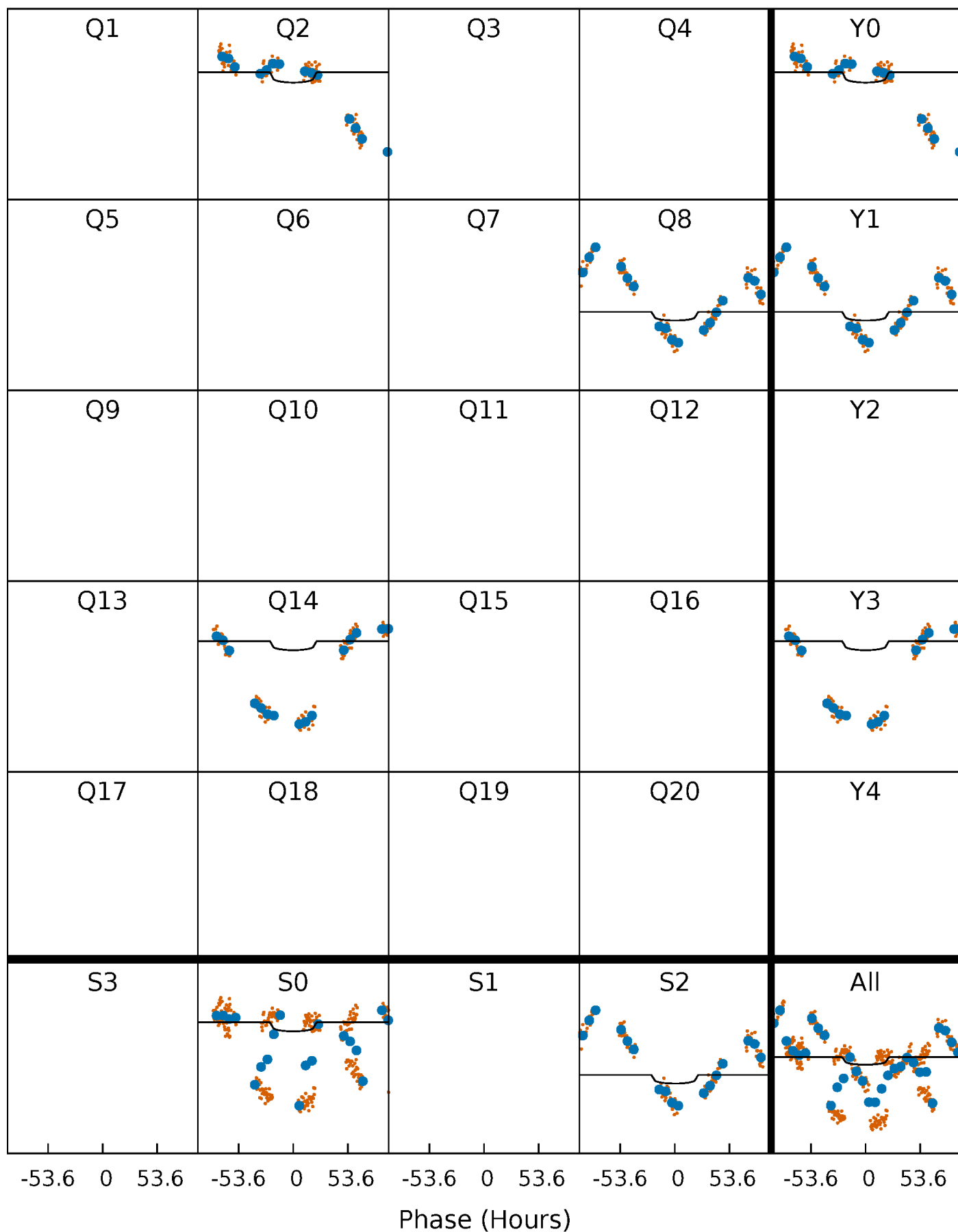
PDC Quarter-Phased Transit Curves

TCE 010187494-04 P=540.826851 Days $T_0=245.859484$ (BKJD)



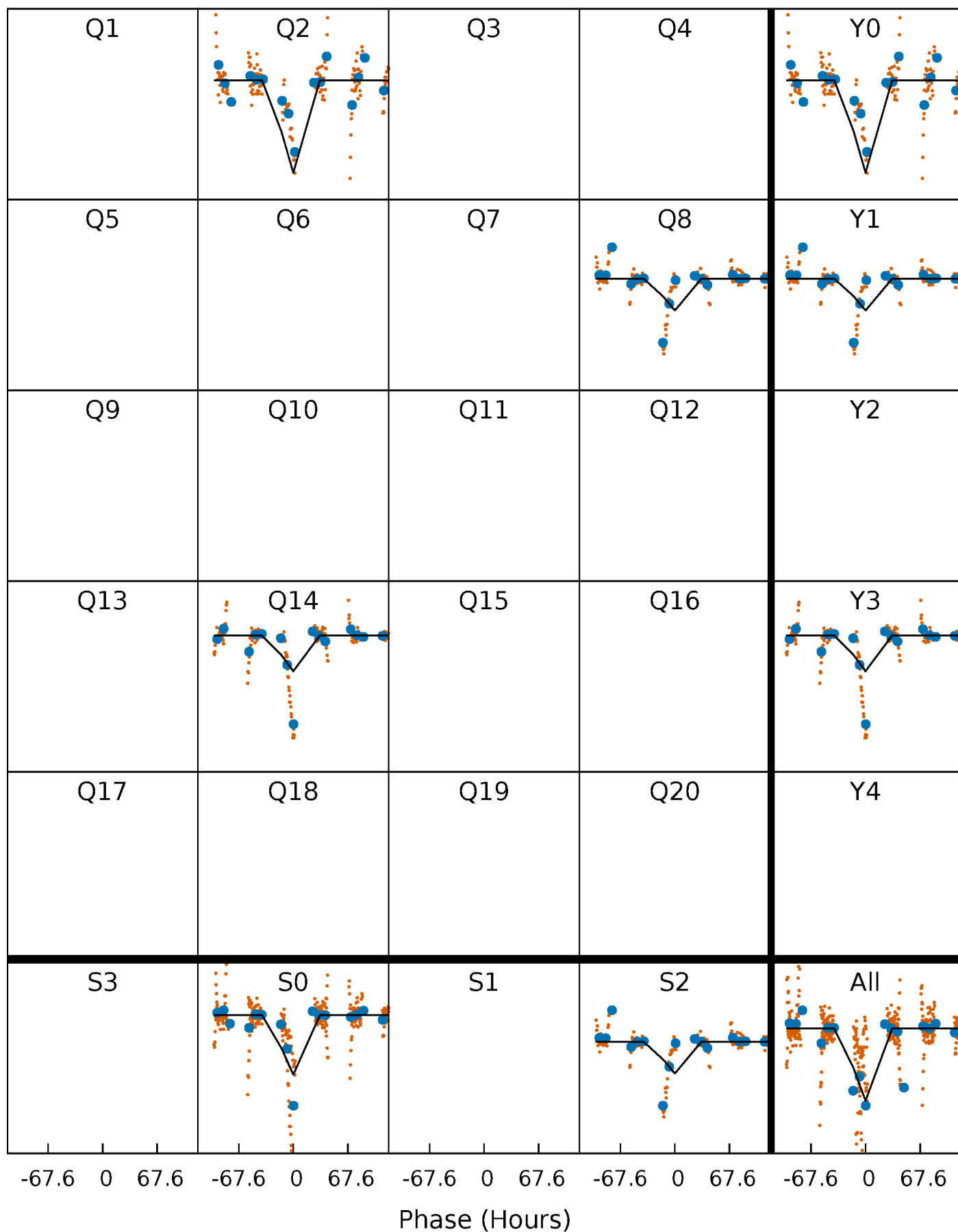
DV Quarter-Phased Transit Curves

TCE 010187494-04 P=540.826851 Days $T_0=245.859484$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

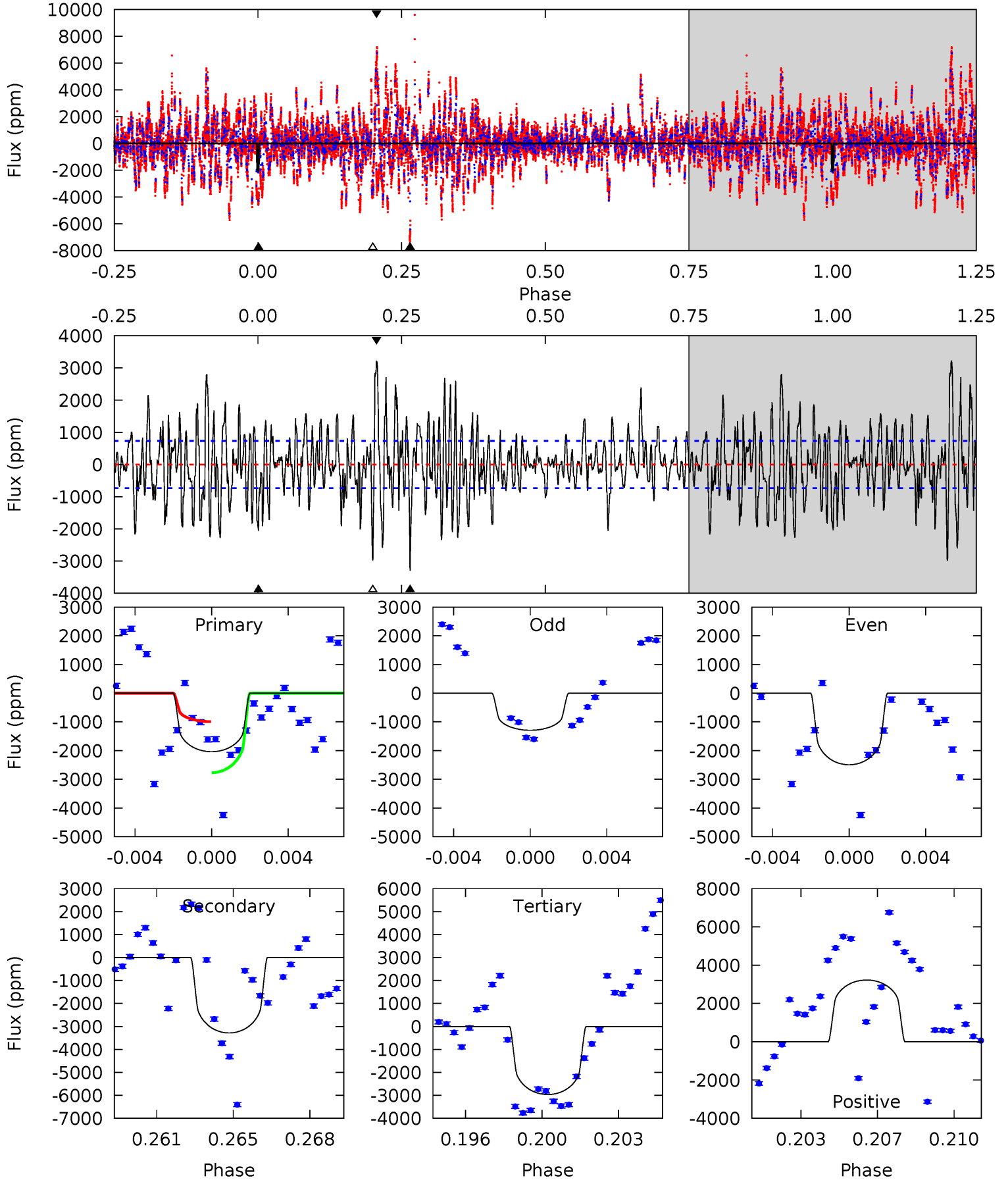
TCE 010187494-04 P=541.605130 Days $T_0=245.126562$ (BKJD)



DV Model-Shift Uniqueness Test

010187494-04, P = 540.826851 Days, E = 245.859484 Days

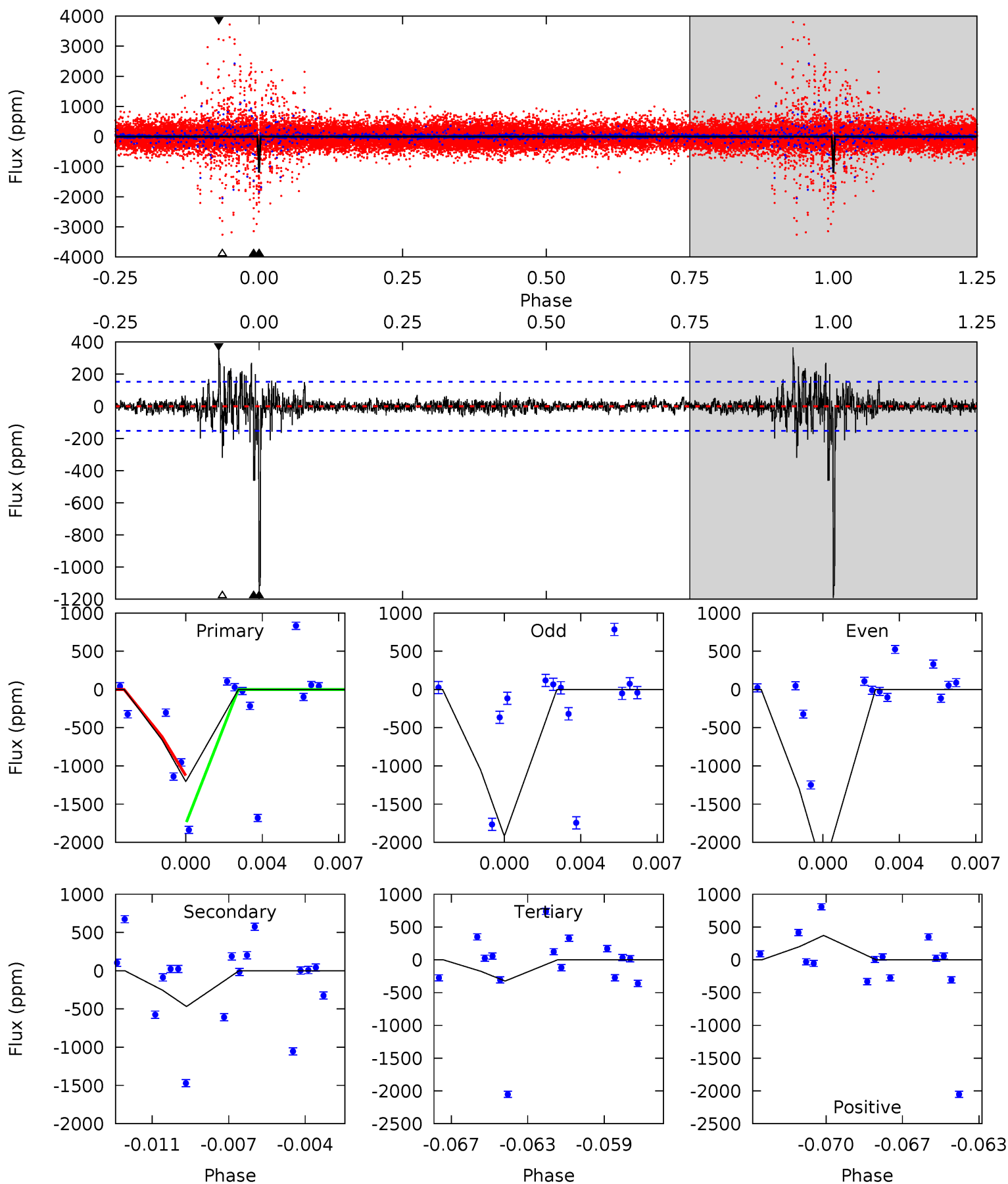
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	23.4	21.1	23.0	5.22	2.91	6.52	-6.60	-8.44	2.27	0.43	3.90	1.53	0.50	6.41



Alt Model-Shift Uniqueness Test

010187494-04, P = 541.605130 Days, E = 245.126562 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.6	15.8	10.9	12.5	5.21	2.90	1.17	29.7	28.1	4.85	3.26	8.18	1.19	0.24	10.2



Stellar Parameters For KIC 010187494

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5196^{+155}_{-140}	$4.549^{+0.052}_{-0.078}$	$-0.060^{+0.300}_{-0.300}$	$0.792^{+0.100}_{-0.073}$	$0.811^{+0.085}_{-0.076}$	$2.296^{+0.514}_{-0.600}$
	+3%/-3%	+1%/-2%	+500%/-500%	+13%/-9%	+10%/-9%	+22%/-26%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010187494-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-3284 ± 140	$2.04^{+0.66}_{-0.67}$	260^{+10}_{-10}	8356^{+2648}_{-1338}	$633955^{+769385}_{-267813}$
Alt.	-462 ± 29	$4.24^{+0.76}_{-0.68}$	261^{+10}_{-10}	3802^{+259}_{-203}	20649^{+8914}_{-5858}

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 $A_{\text{obs}} \gg 1.0$

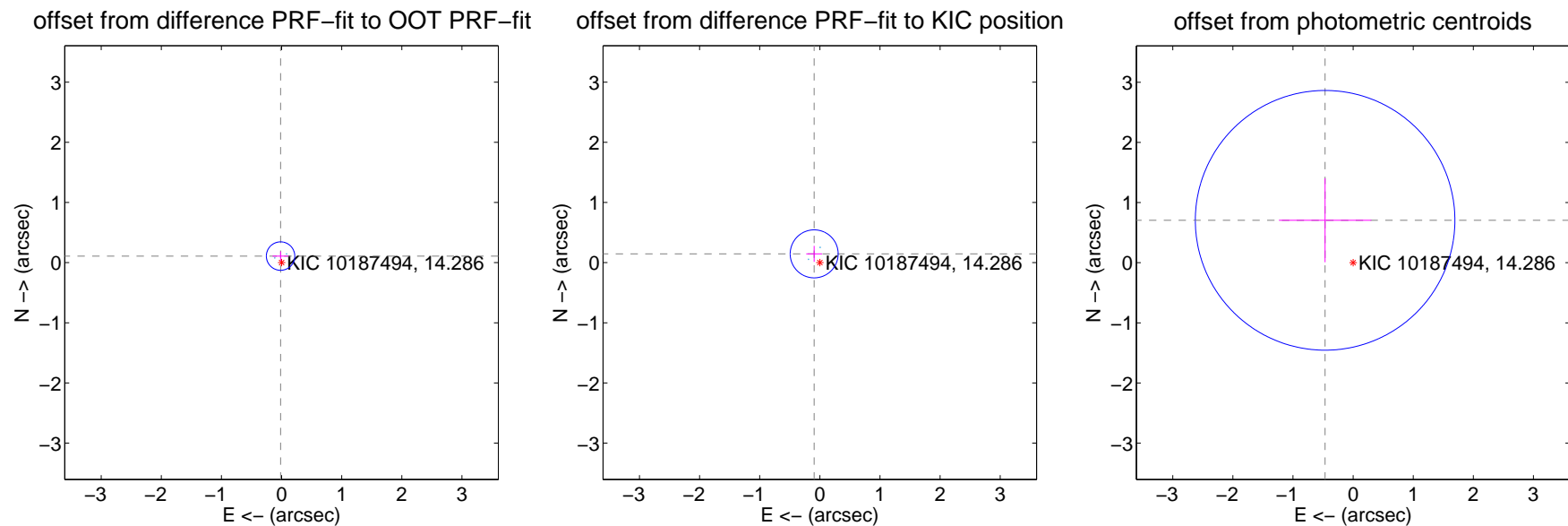
DV Centroid Data

Supplemental centroid analysis for 010187494-04. Kepler magnitude: 14.29. Transit SNR 2.40

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.110 ± 0.079	1.40	0.017 ± 0.133	0.109 ± 0.077
PRF-fit source offset from KIC position	0.174 ± 0.133	1.31	0.094 ± 0.132	0.146 ± 0.134
photometric centroid source offset	0.85 ± 0.72	1.17	0.47 ± 0.77	0.70 ± 0.70

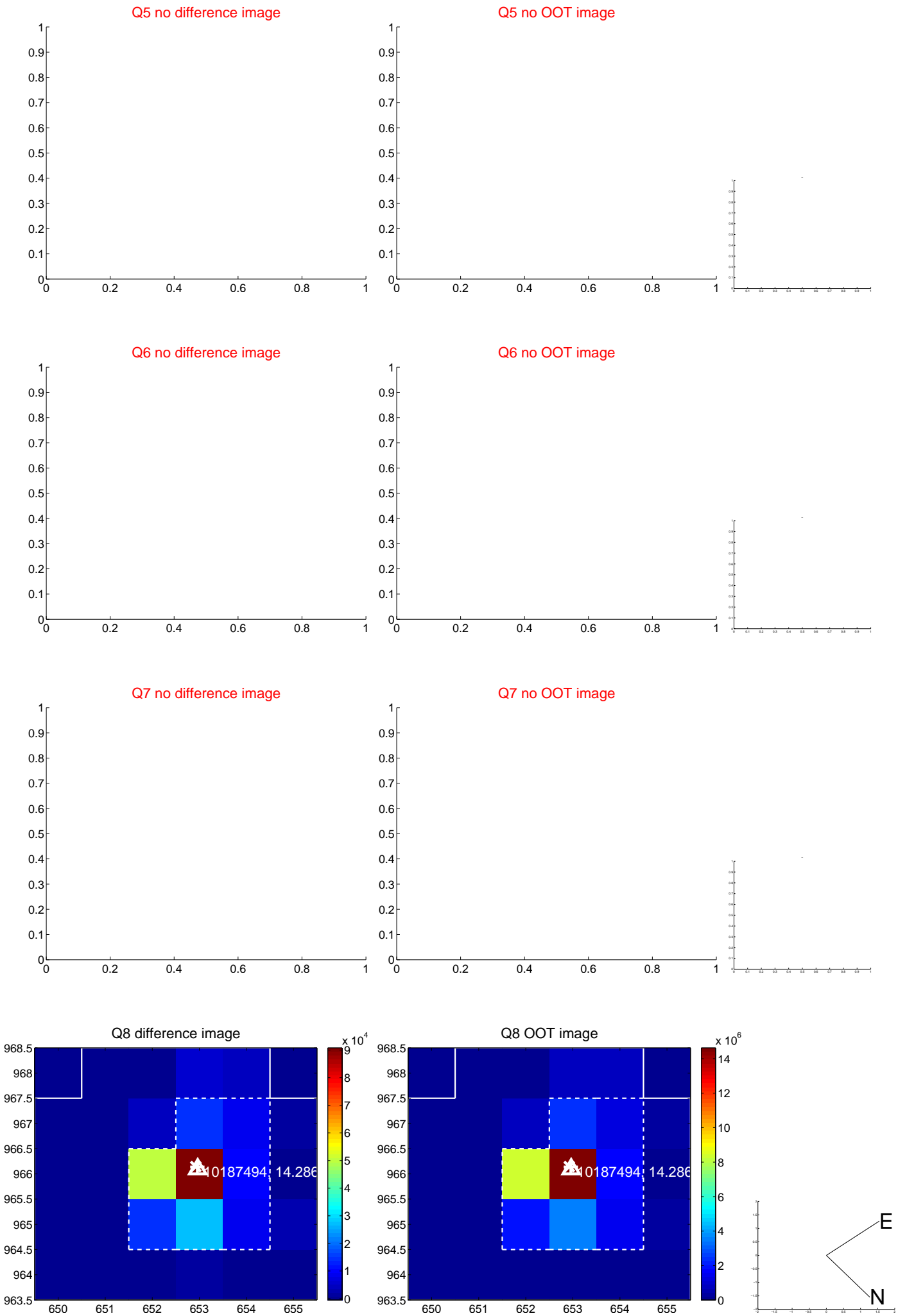


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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.

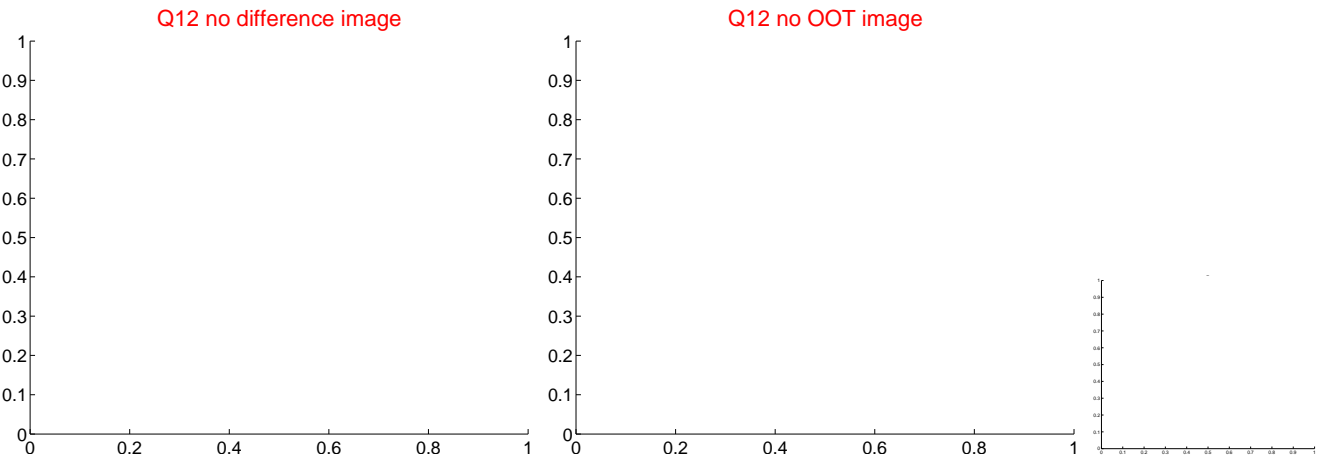
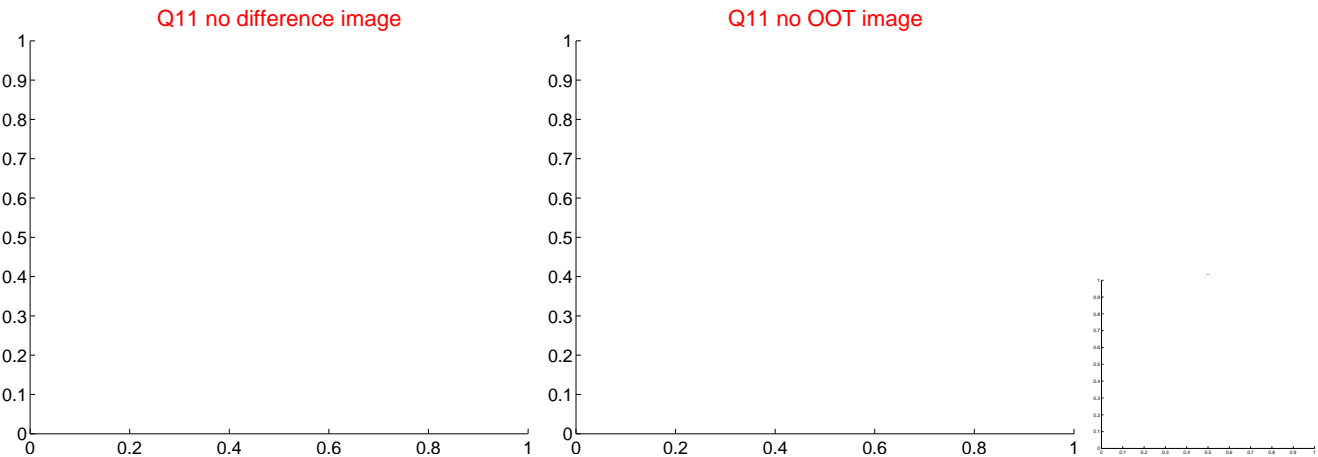
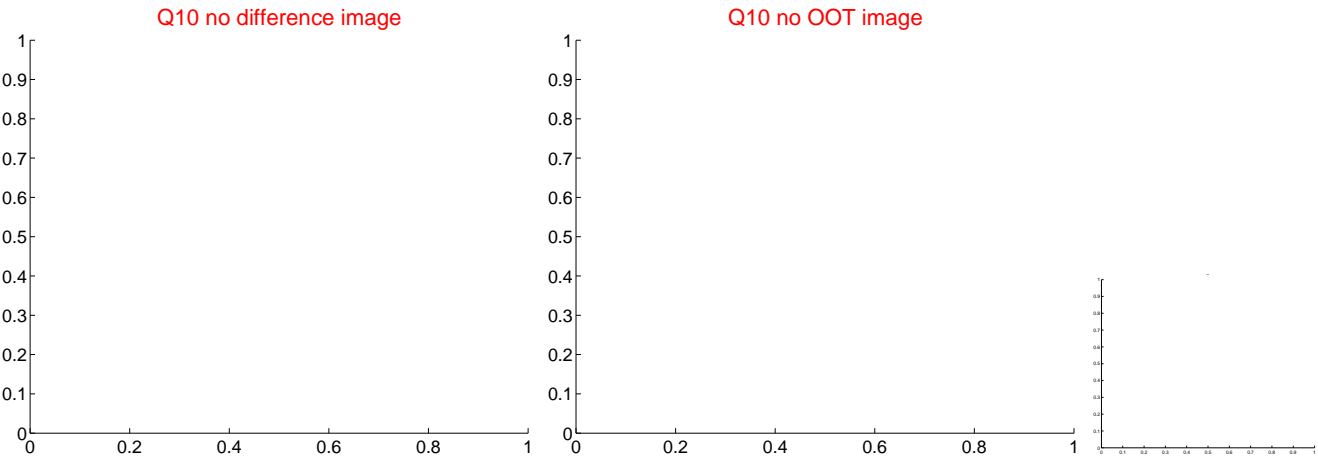
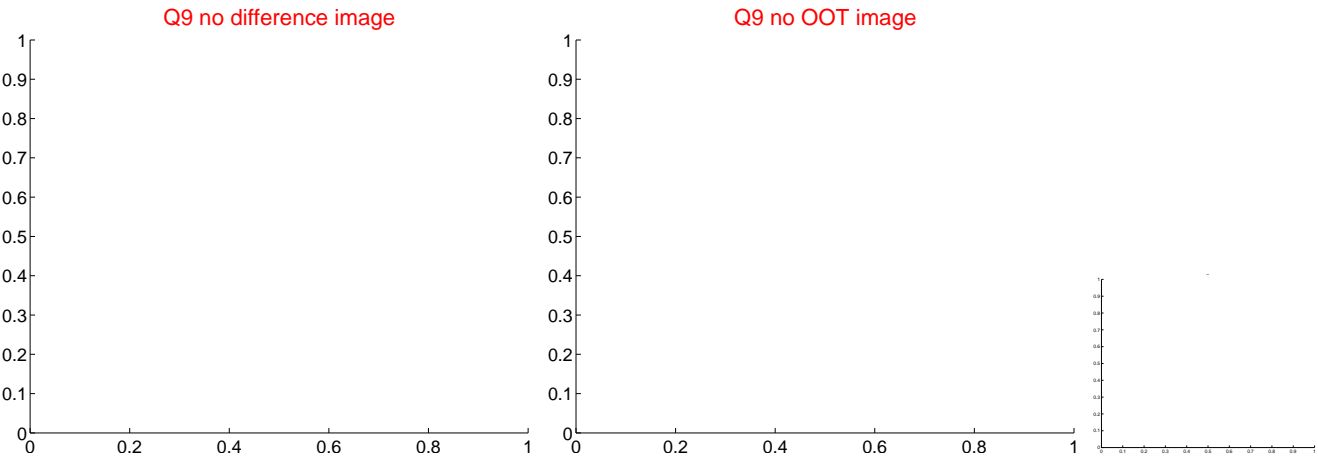
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

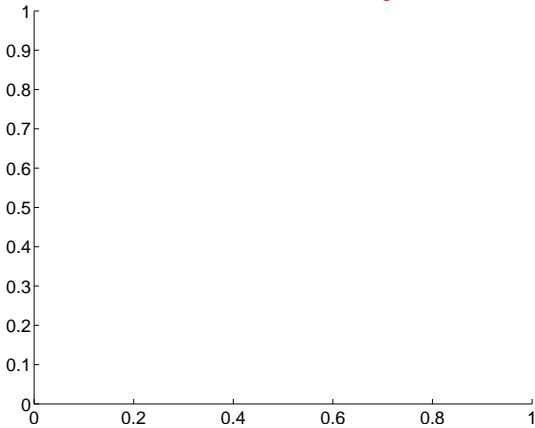


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

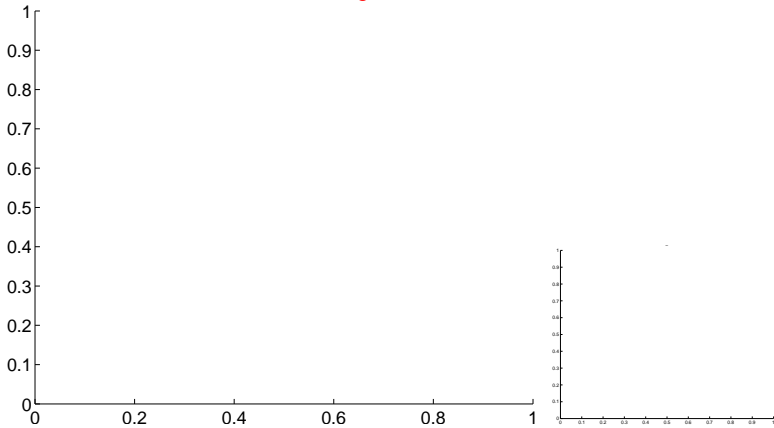


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

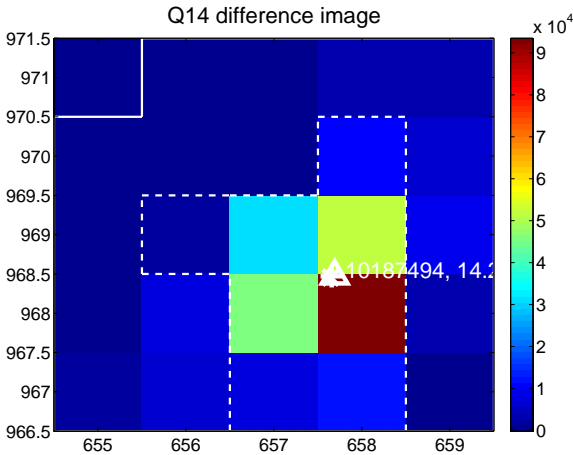
Q13 no difference image



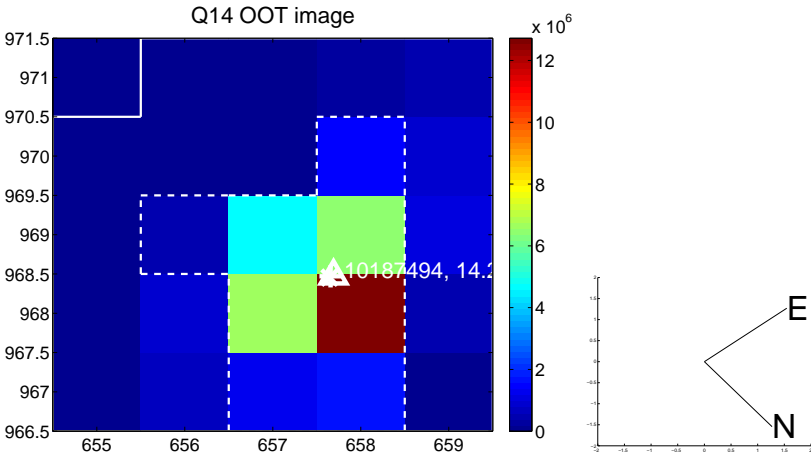
Q13 no OOT image



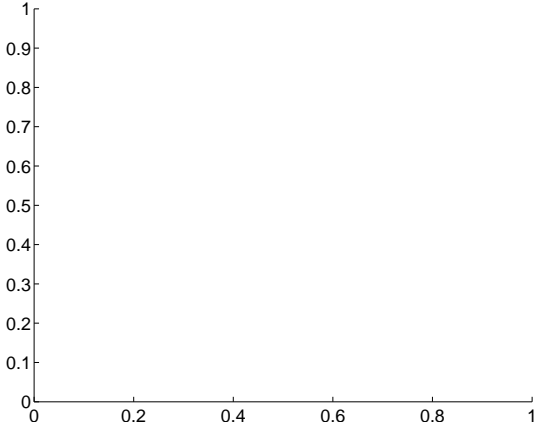
Q14 difference image



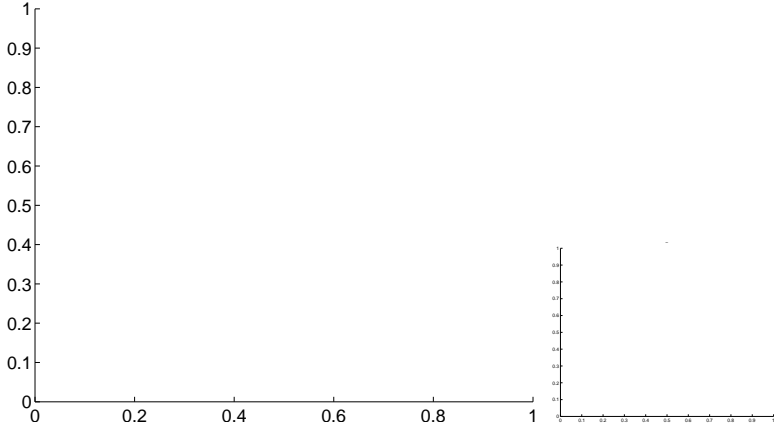
Q14 OOT image



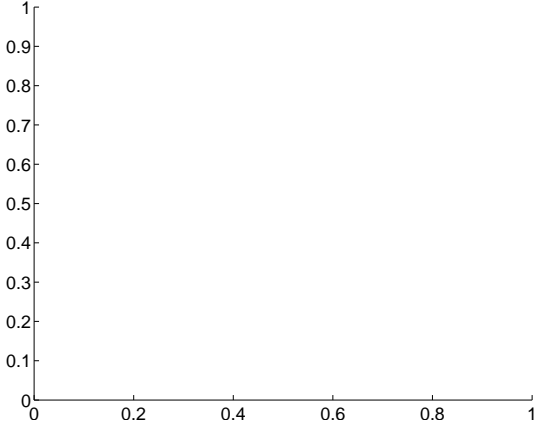
Q15 no difference image



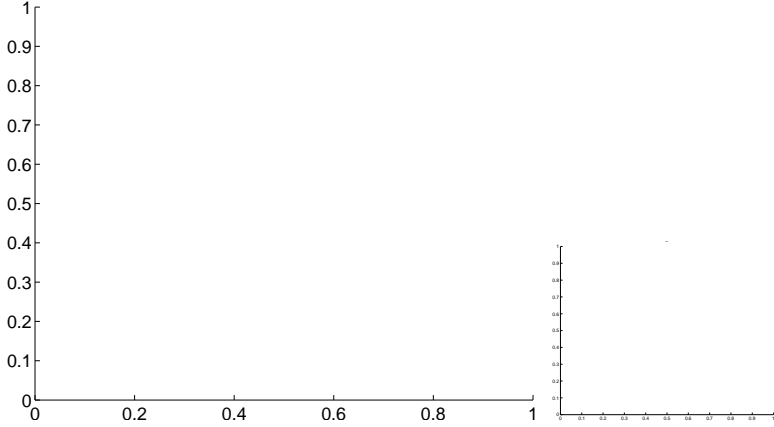
Q15 no OOT image



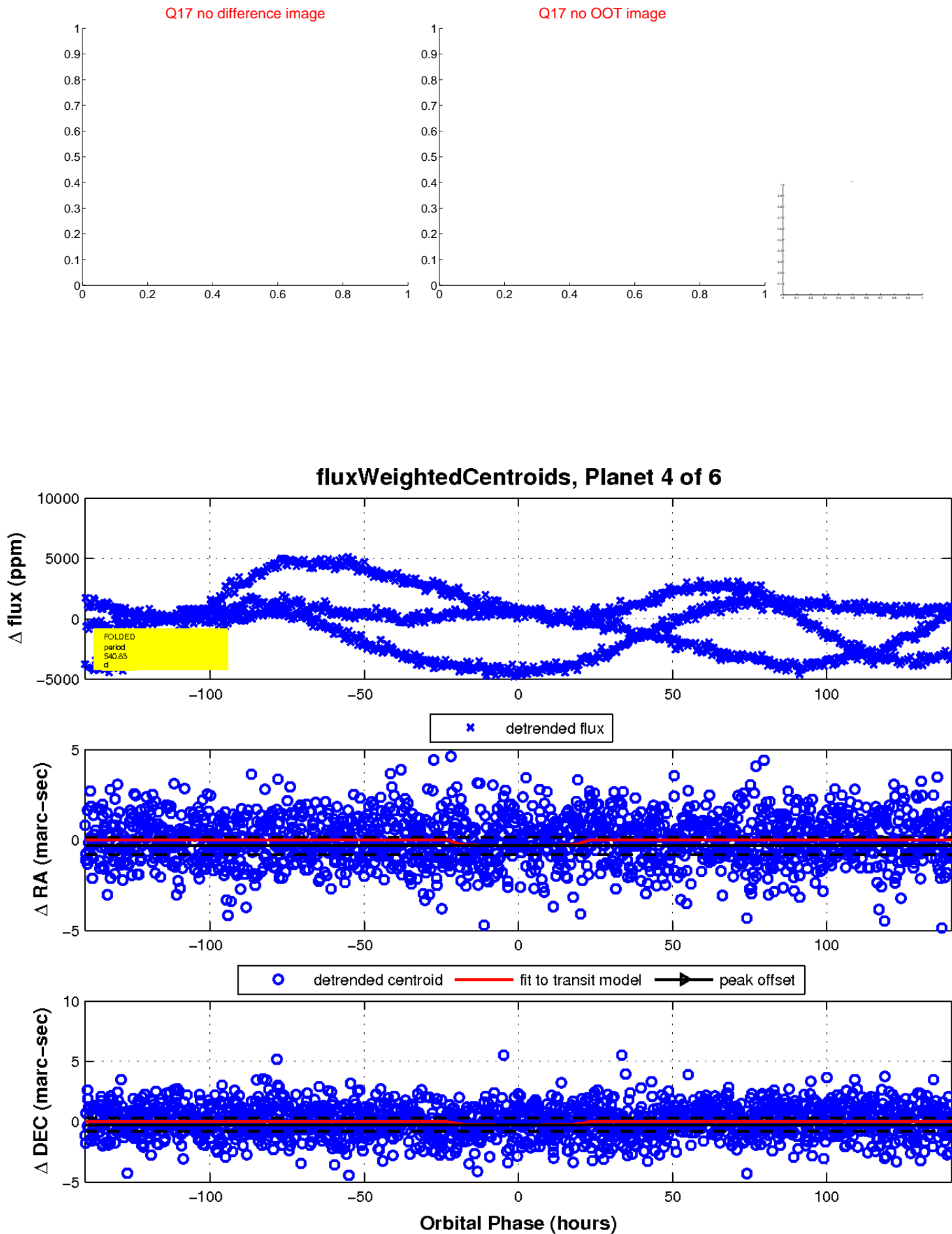
Q16 no difference image



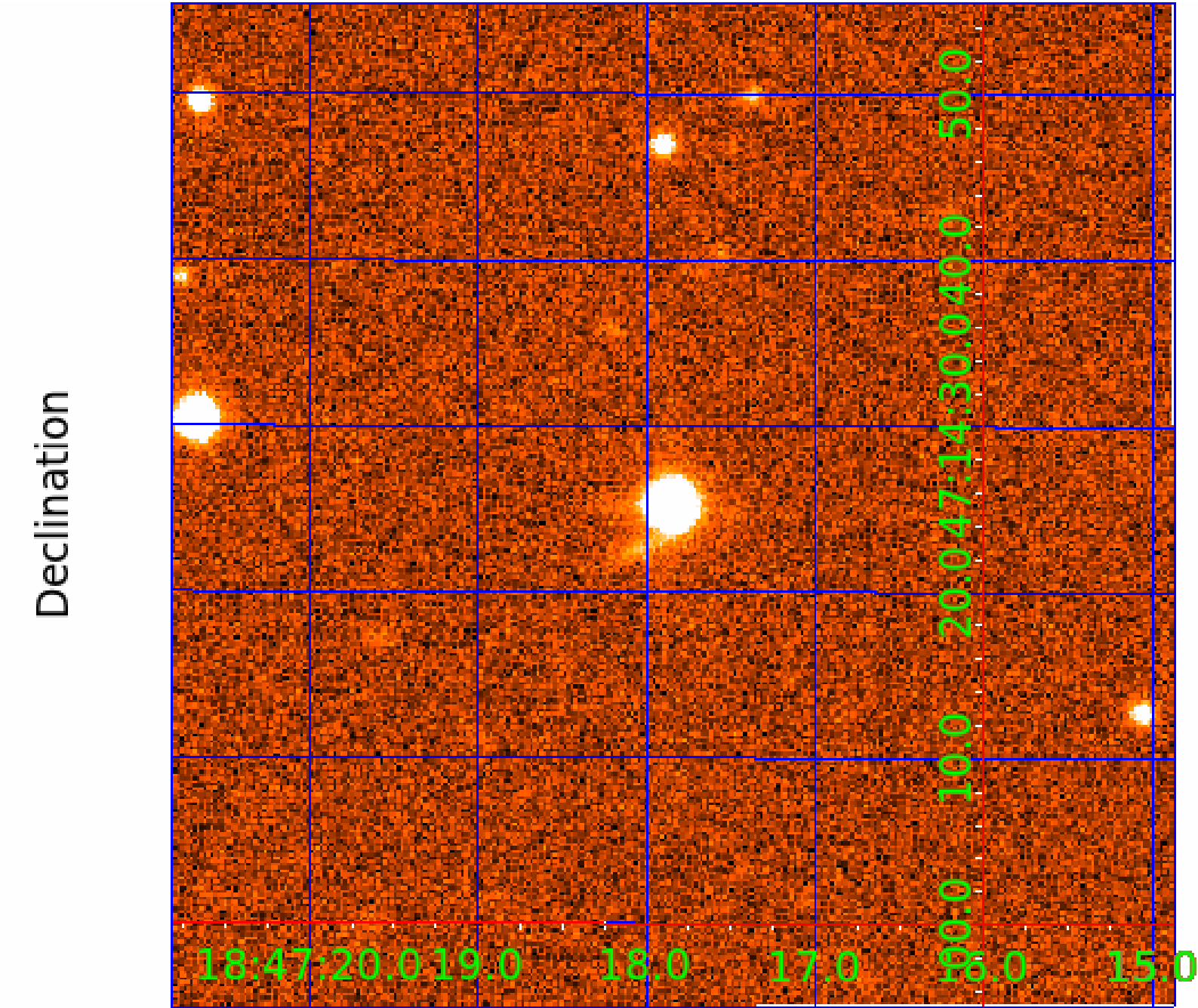
Q16 no OOT image



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



UKIRT Image



KIC 010187494

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})
010187494-01	OBS	No	1.735834	132.931789	45.9	8.077	7.9	8.3	0.79	5196	0.52	589.81
010187494-02	OBS	No	156.898508	235.942184	339.5	2.096	22.1	3.4	0.79	5196	1.58	1.45
010187494-03	OBS	No	105.623267	226.358121	771.1	6.093	25.4	9.4	0.79	5196	2.34	2.46
010187494-04	OBS	No	540.826851	245.859484	467.7	46.884	15.8	2.4	0.79	5196	2.02	0.28
010187494-05	OBS	No	166.204534	285.808832	483.0	2.935	11.7	4.4	0.79	5196	1.97	1.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010187494-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
010187494-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010187494-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010187494-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010187494-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

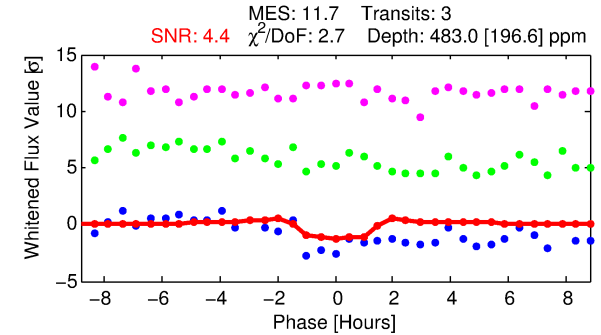
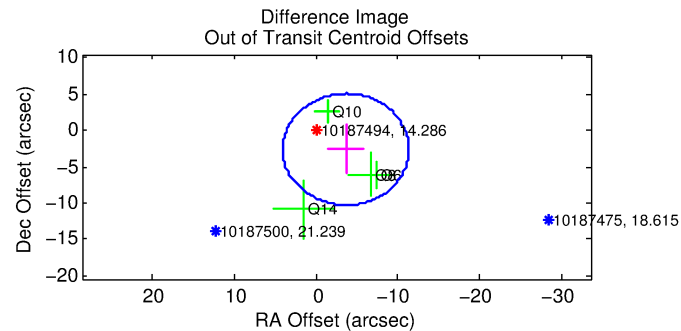
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 010187494-05

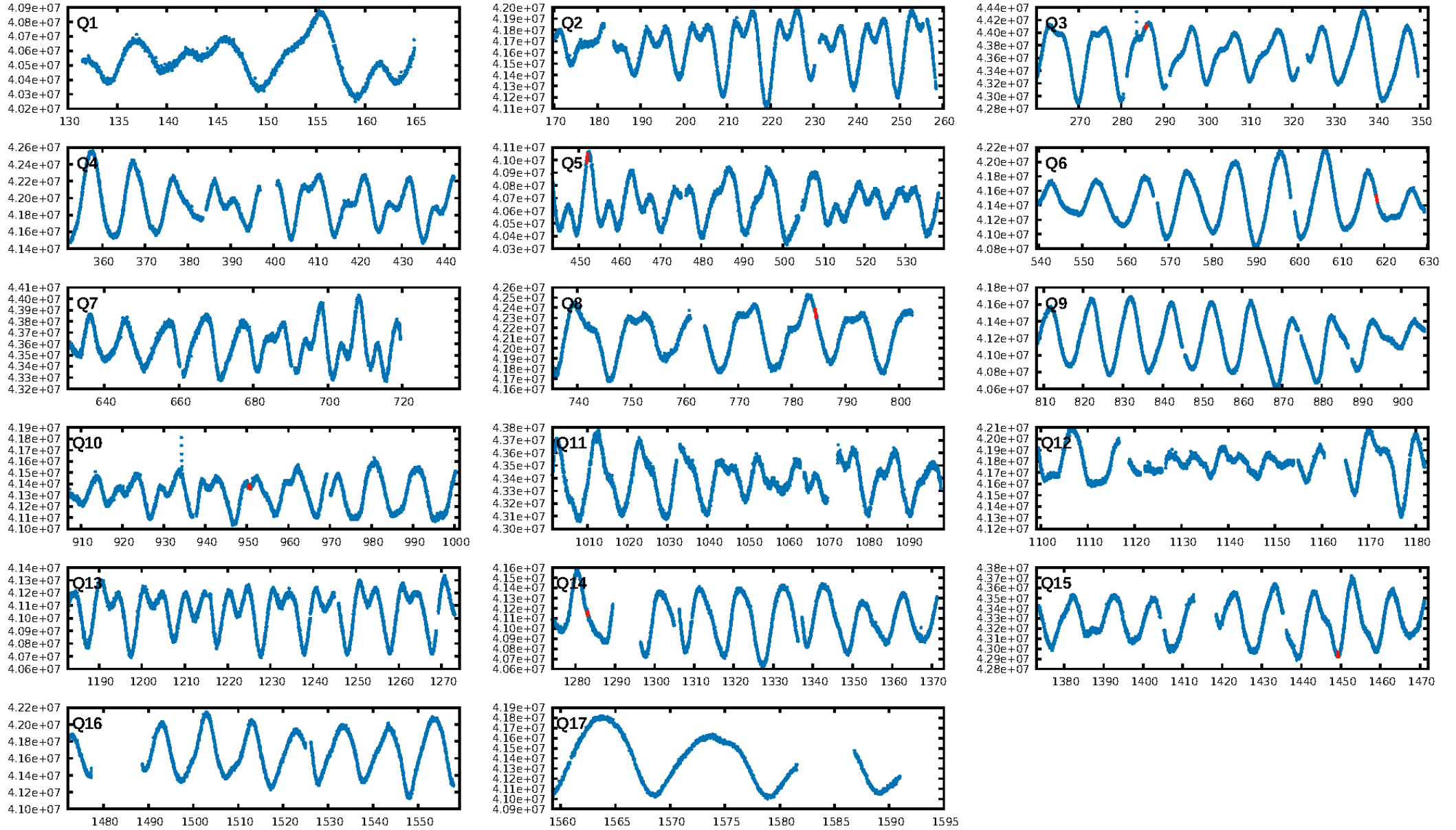
No Significant Match Found

KIC: 10187494 Candidate: 5 of 6 Period: 166.205 d

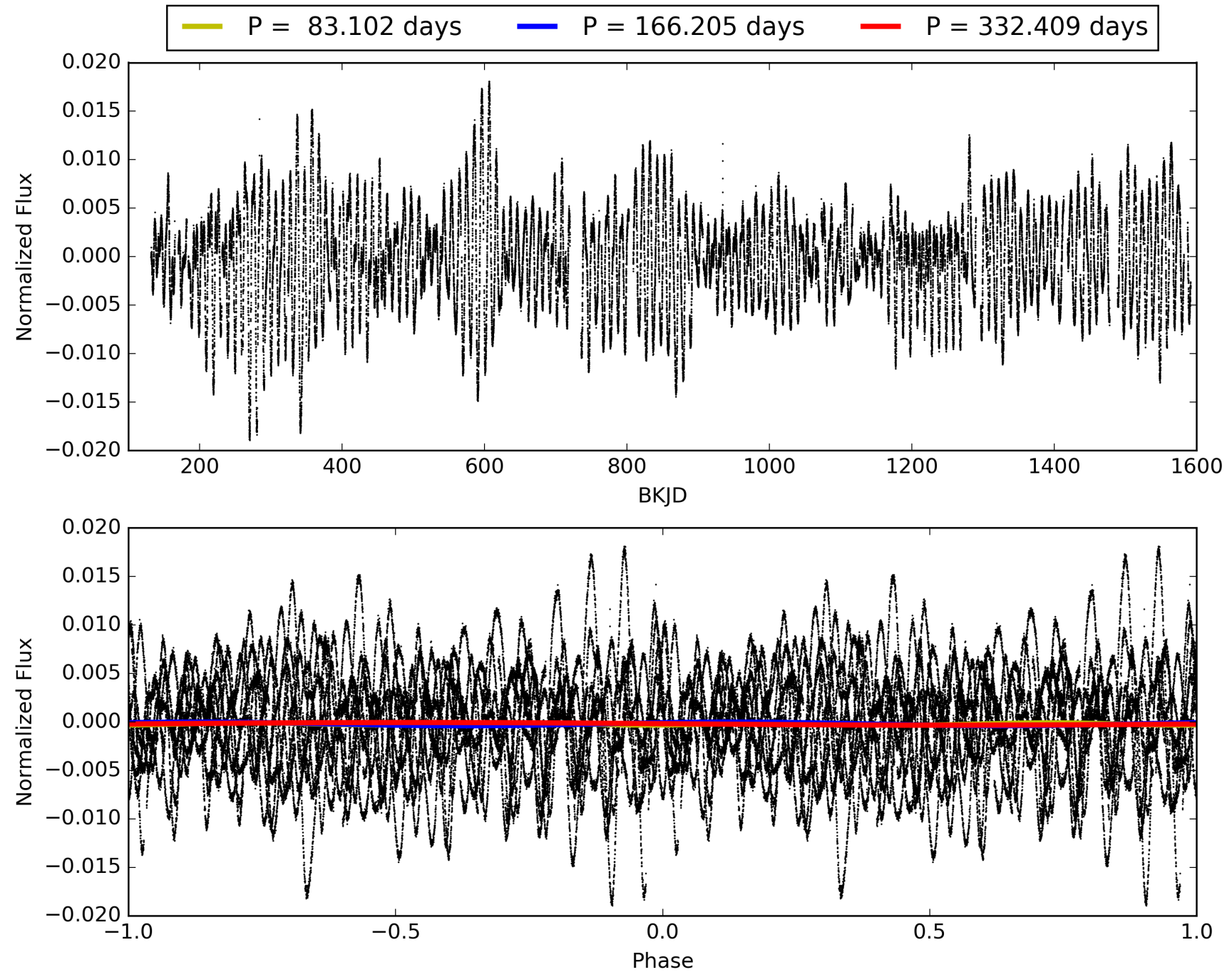


ShortPeriod-sig: 100.0% [61.93σ]
 LongPeriod-sig: 100.0% [201.29σ]
 ModelChiSquare2-sig: 0.1%
 ModelChiSquareGof-sig: 3.6%
 Bootstrap-pfa: 1.01e-15
 RollingBand-fgt: 1.00 [3/3]
 GhostDiagnostic-chr: -1.092
 Centroid-sig: 62.7%
 Centroid-so: 1.474 arcsec [0.87σ]
 OotOffset-rm: 4.482 arcsec [1.75σ]
 KicOffset-rm: 4.404 arcsec [1.71σ]
 OotOffset-st: 3/0/1/0 [4]
 KicOffset-st: 3/0/1/0 [4]
 DiffImageQuality-fgm: 0.00 [0/4]
 DiffImageOverlap-fno: 0.43 [3/7]

TCE 010187494-05, PDC Light Curves

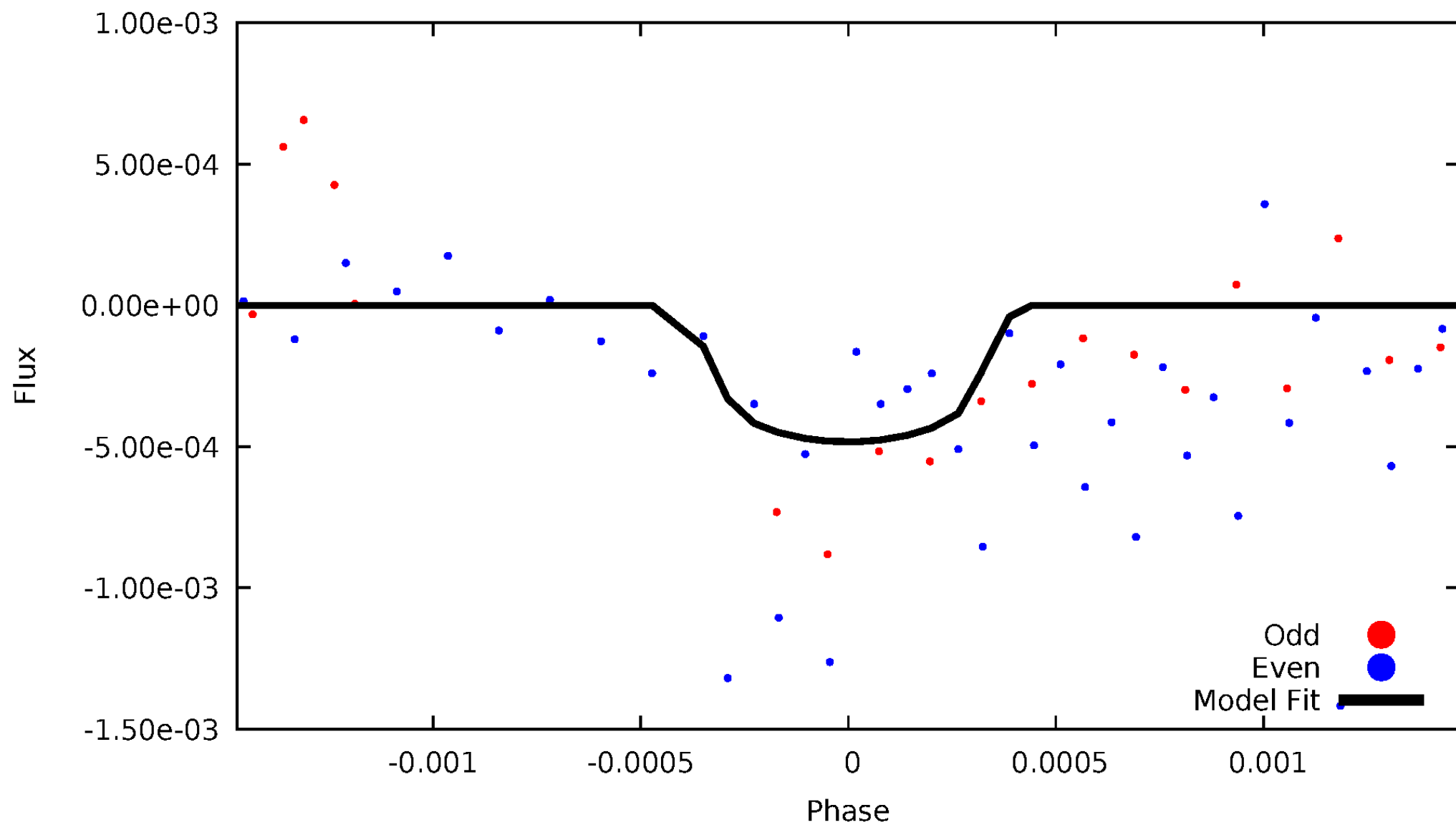


TCE 010187494-05



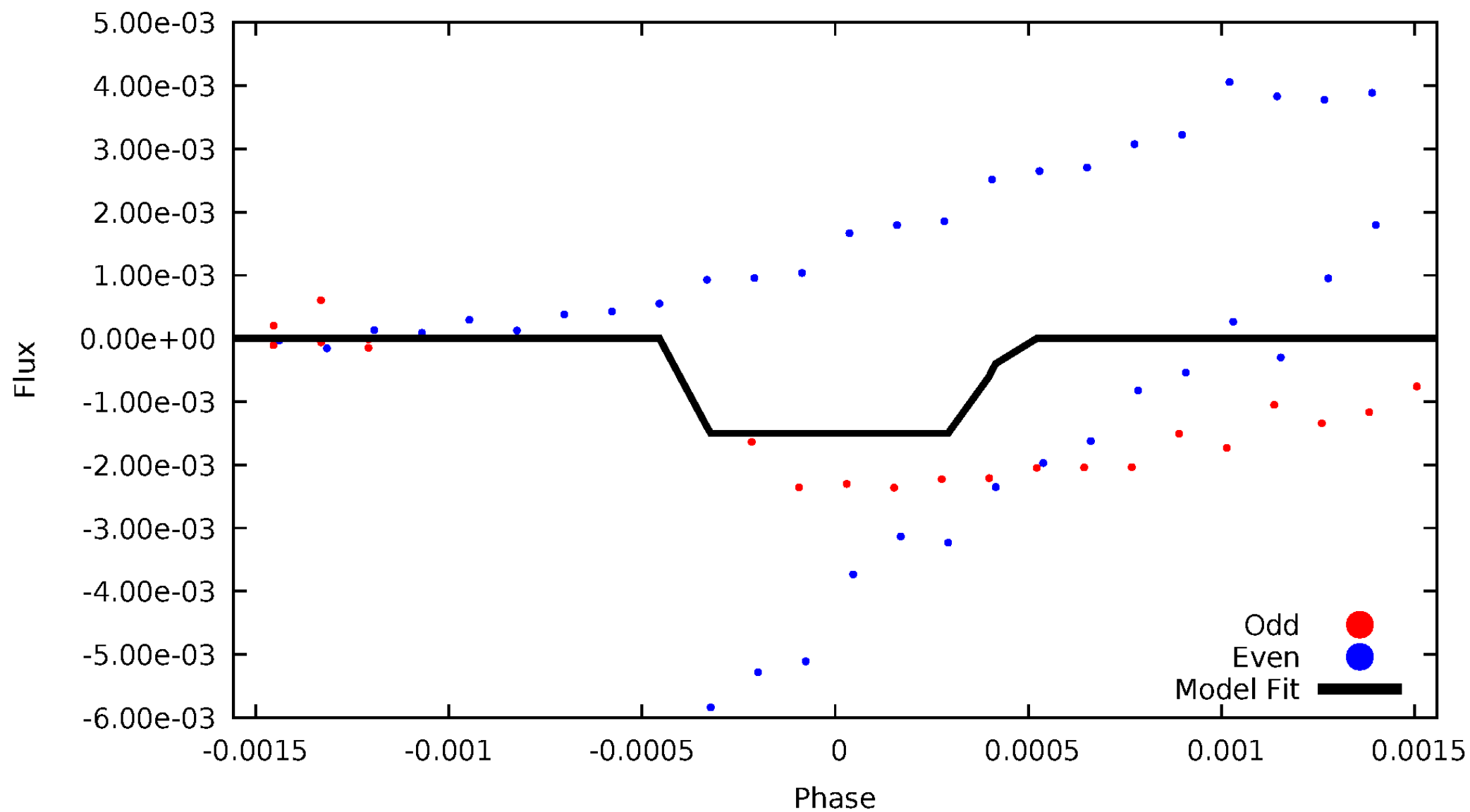
DV Odd/Even

TCE 010187494-05



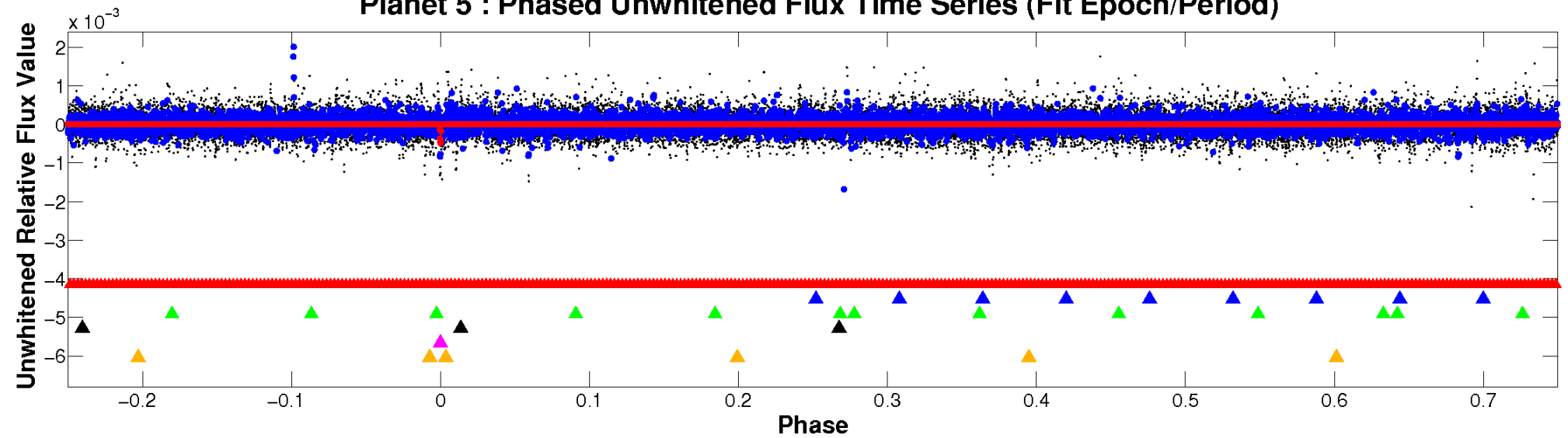
ALT Odd/Even

TCE 010187494-05

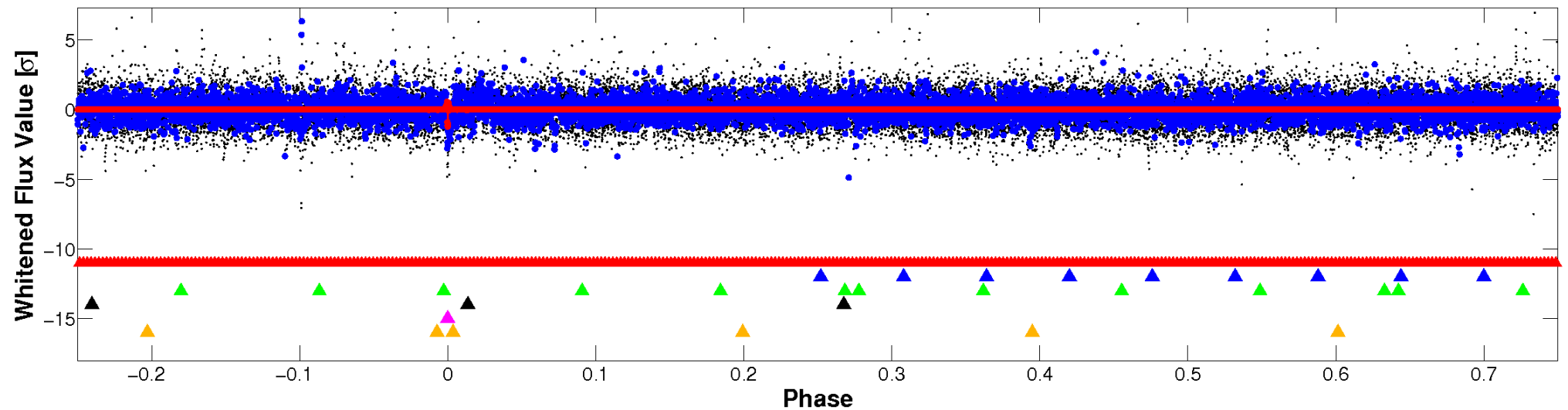


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

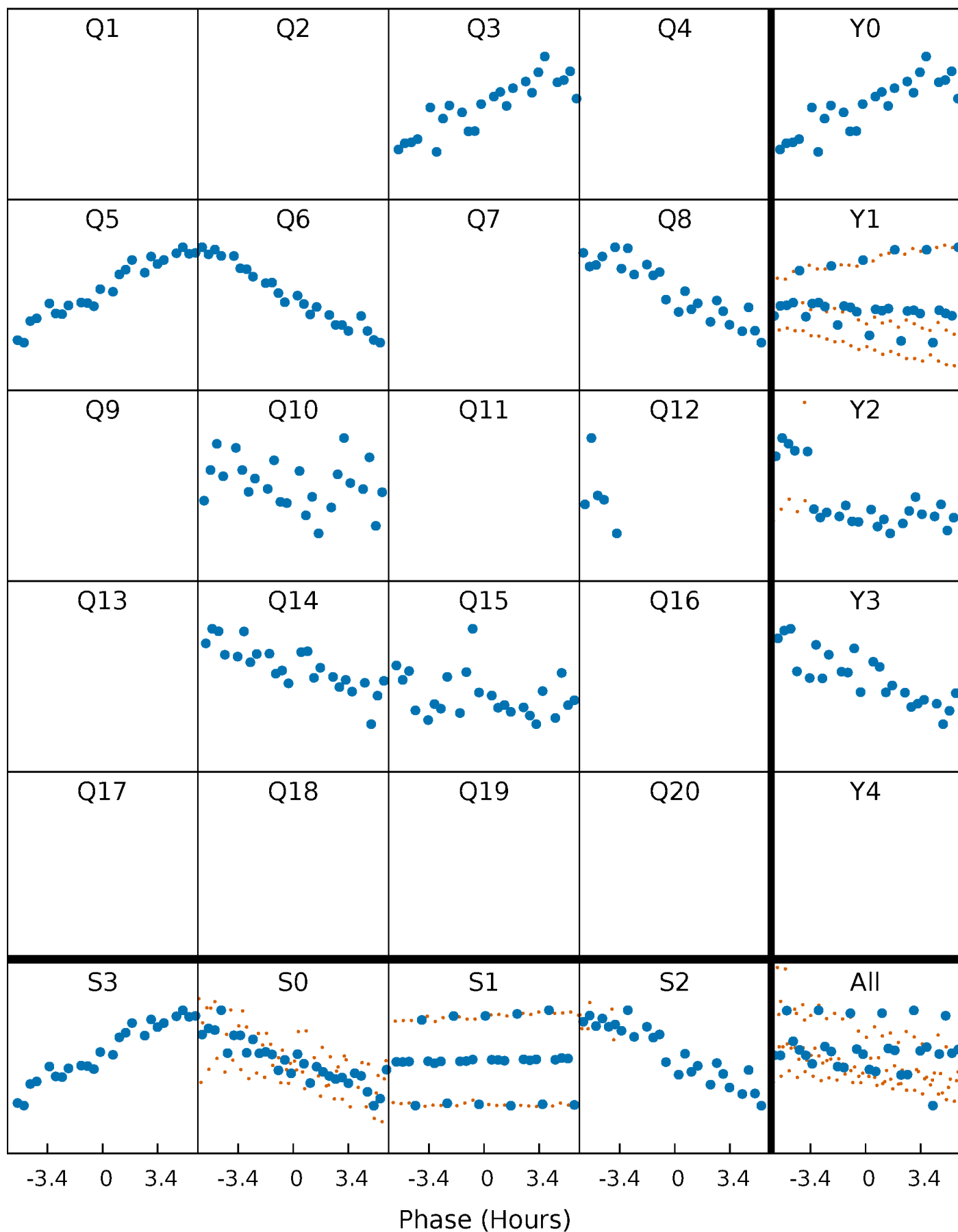


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



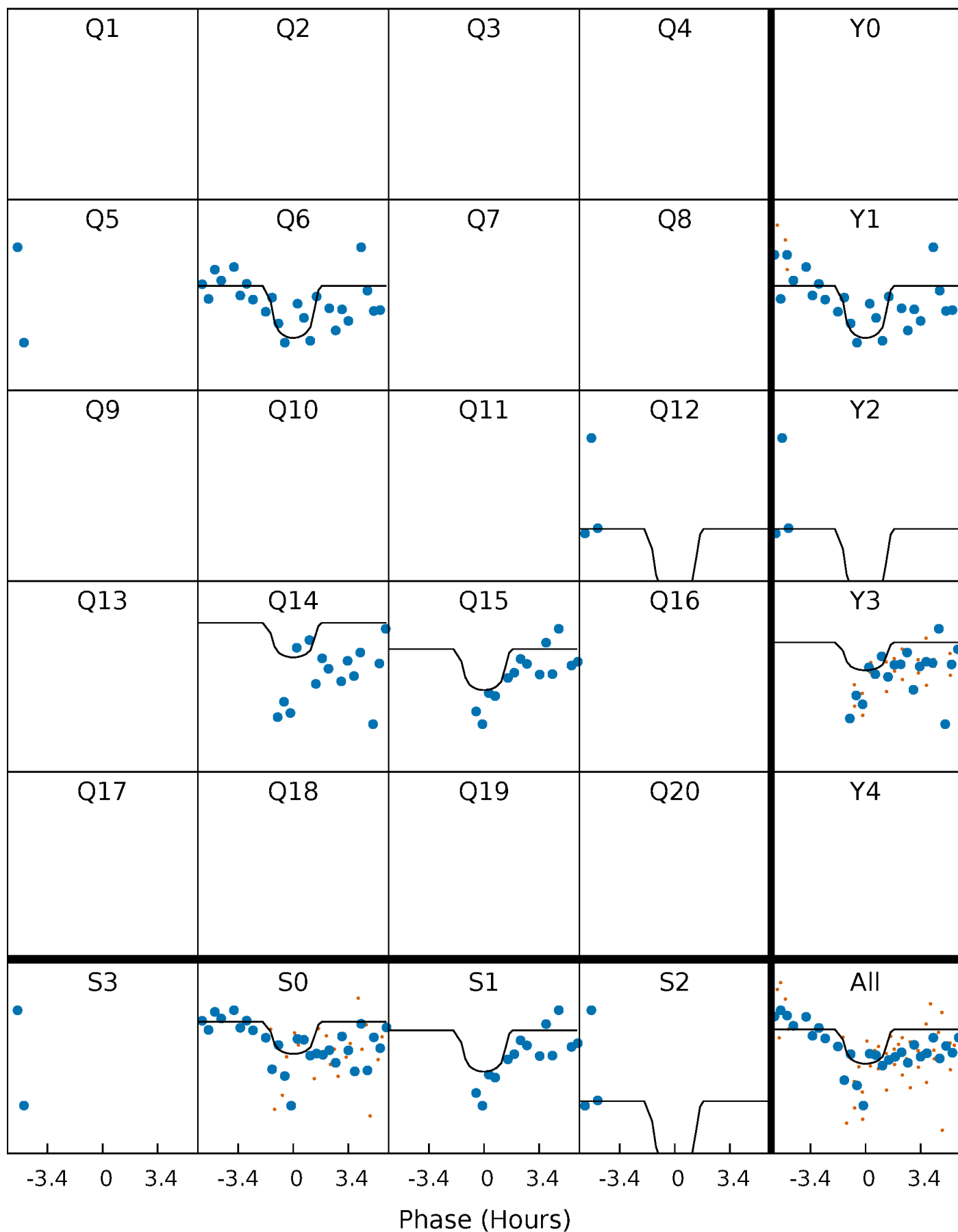
PDC Quarter-Phased Transit Curves

TCE 010187494-05 $P=166.204534$ Days $T_0=285.808832$ (BKJD)



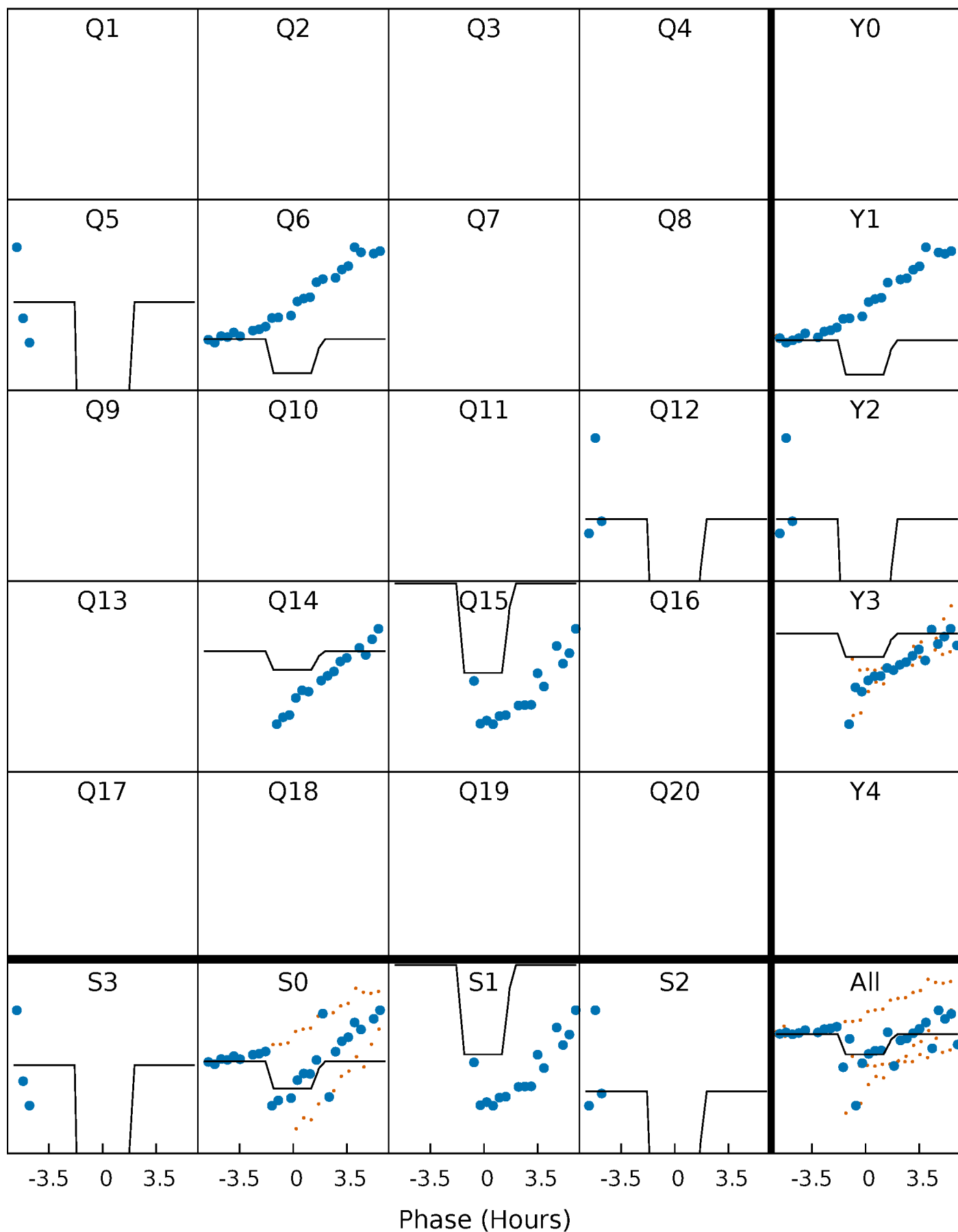
DV Quarter-Phased Transit Curves

TCE 010187494-05 $P=166.204534$ Days $T_0=285.808832$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

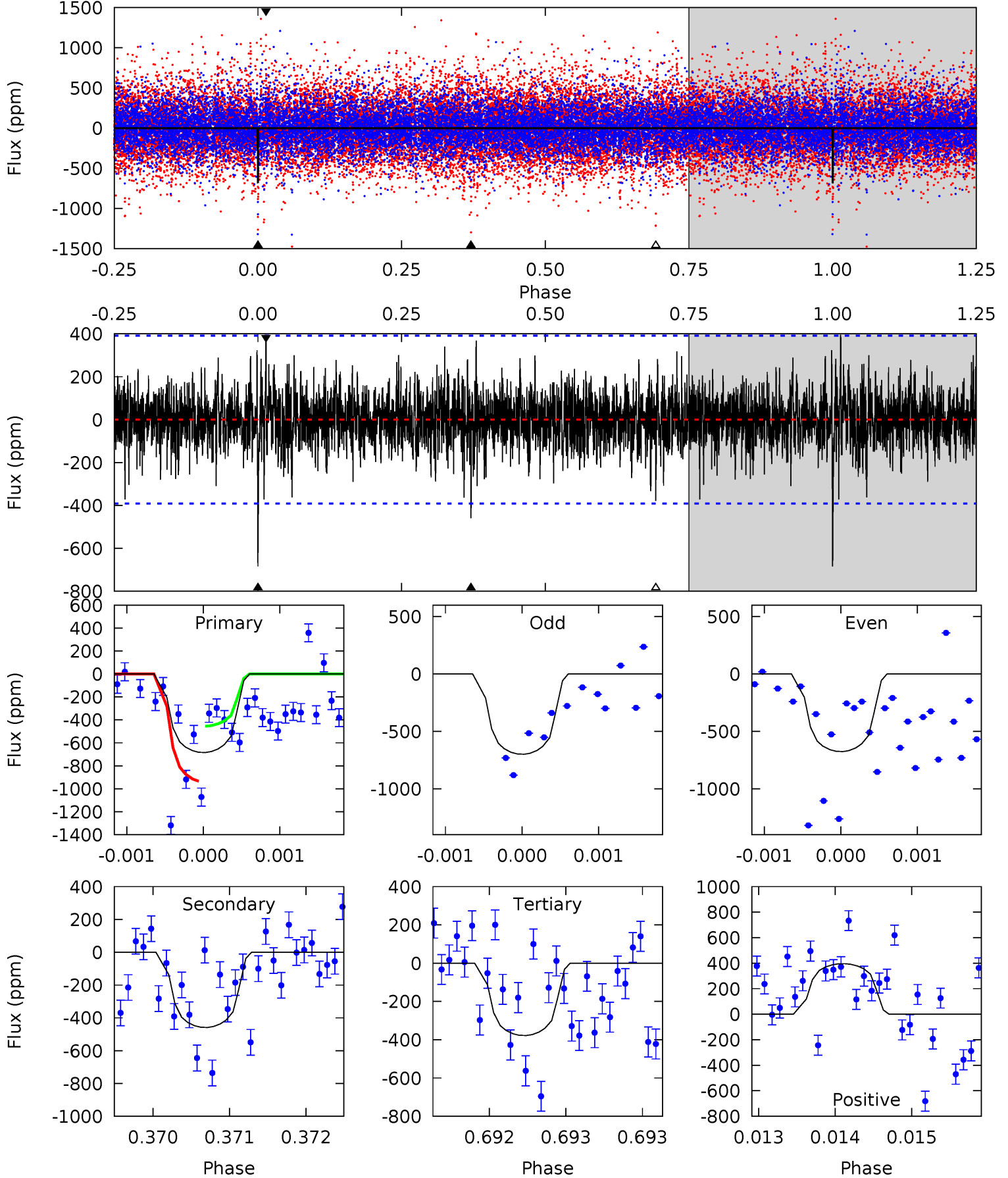
TCE 010187494-05 P=166.206577 Days $T_0=285.801787$ (BKJD)



DV Model-Shift Uniqueness Test

010187494-05, P = 166.204534 Days, E = 119.604298 Days

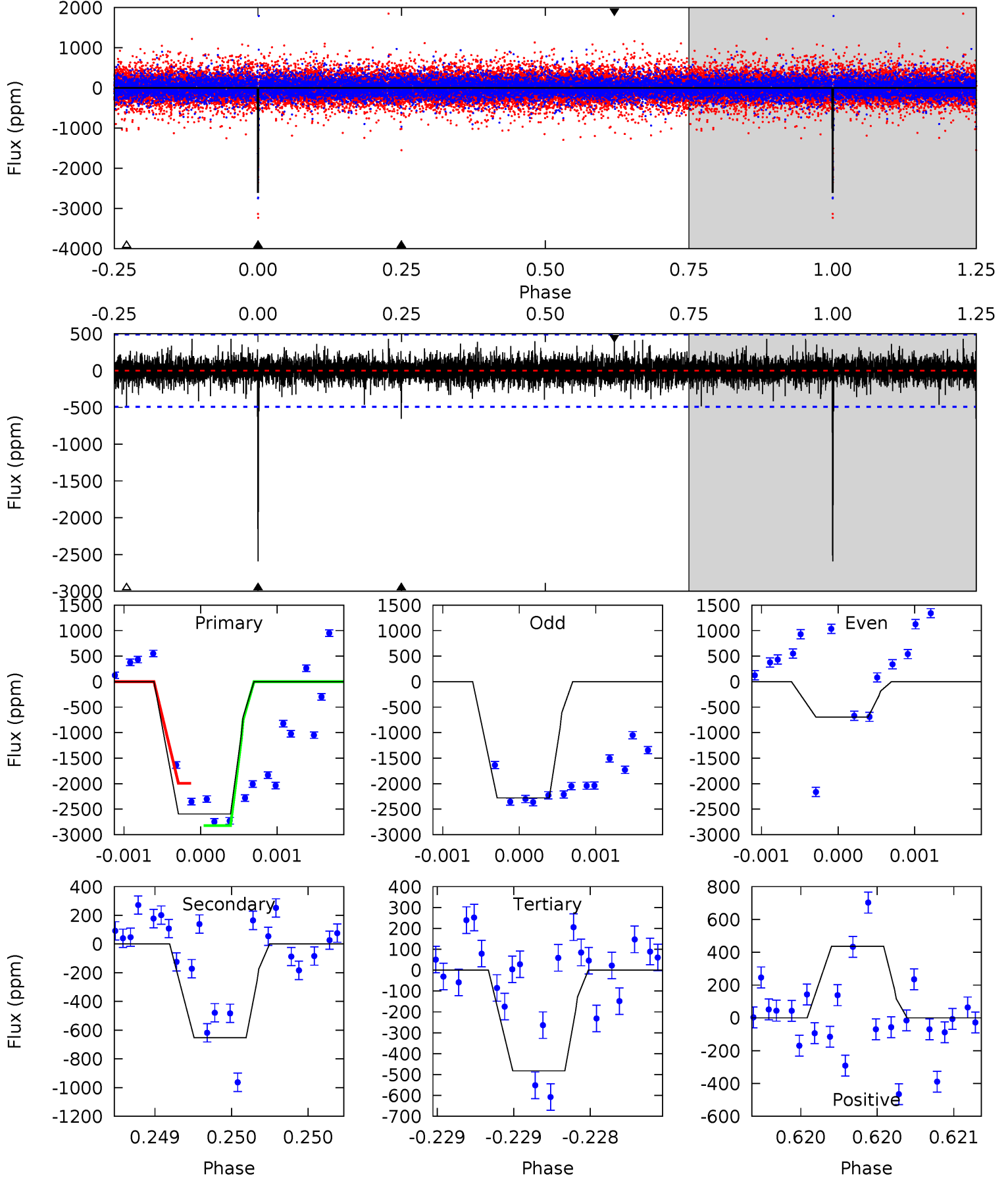
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.63	6.46	5.32	5.58	5.51	3.38	1.35	4.31	4.06	1.13	0.88	0.15	0.98	0.37	3.27



Alt Model-Shift Uniqueness Test

010187494-05, P = 166.206577 Days, E = 119.595210 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.0	7.29	5.39	4.87	5.50	3.37	1.07	23.6	24.1	1.89	2.41	11.4	0.76	0.14	0



Stellar Parameters For KIC 010187494

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5196^{+155}_{-140}	$4.549^{+0.052}_{-0.078}$	$-0.060^{+0.300}_{-0.300}$	$0.792^{+0.100}_{-0.073}$	$0.811^{+0.085}_{-0.076}$	$2.296^{+0.514}_{-0.600}$
	+3%/-3%	+1%/-2%	+500%/-500%	+13%/-9%	+10%/-9%	+22%/-26%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010187494-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-459 ± 71	$7.86^{+7.41}_{-5.61}$	386^{+15}_{-13}	3138^{+1699}_{-537}	1256^{+14094}_{-943}
Alt.	-652 ± 89	$8.01^{+7.01}_{-5.51}$	387^{+15}_{-14}	3289^{+1685}_{-544}	1726^{+16702}_{-1254}

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 $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

DV Centroid Data

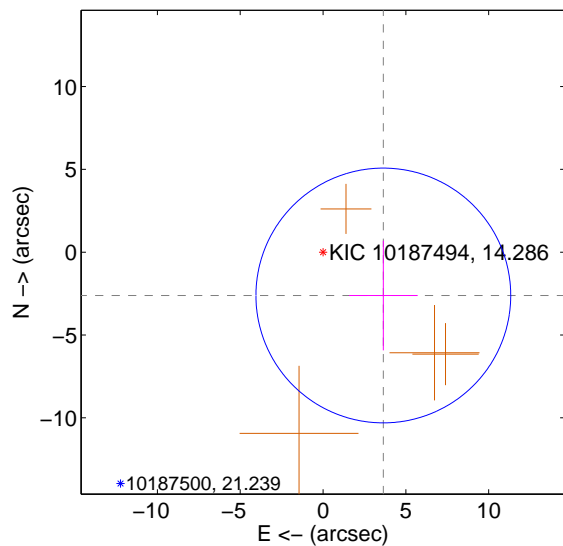
Supplemental centroid analysis for 010187494-05. Kepler magnitude: 14.29. Transit SNR 4.39

There are 0 quarters with good PRF difference image offsets

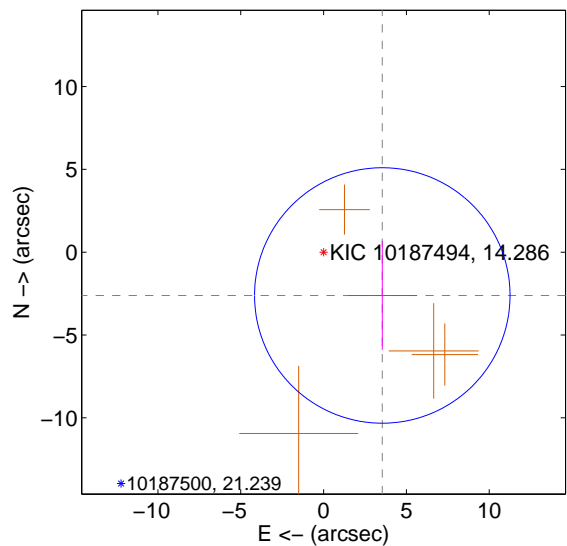
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.482 ± 2.564	1.75	-3.640 ± 2.074	-2.615 ± 3.313
PRF-fit source offset from KIC position	4.404 ± 2.571	1.71	-3.545 ± 2.082	-2.614 ± 3.285
photometric centroid source offset	1.47 ± 1.69	0.87	-1.46 ± 1.69	0.23 ± 1.51

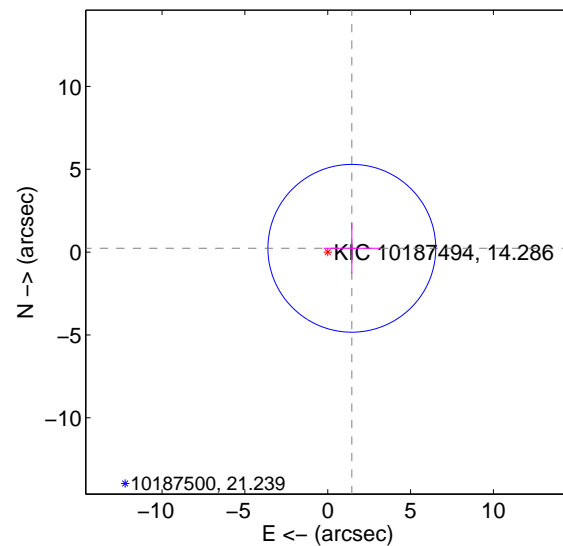
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

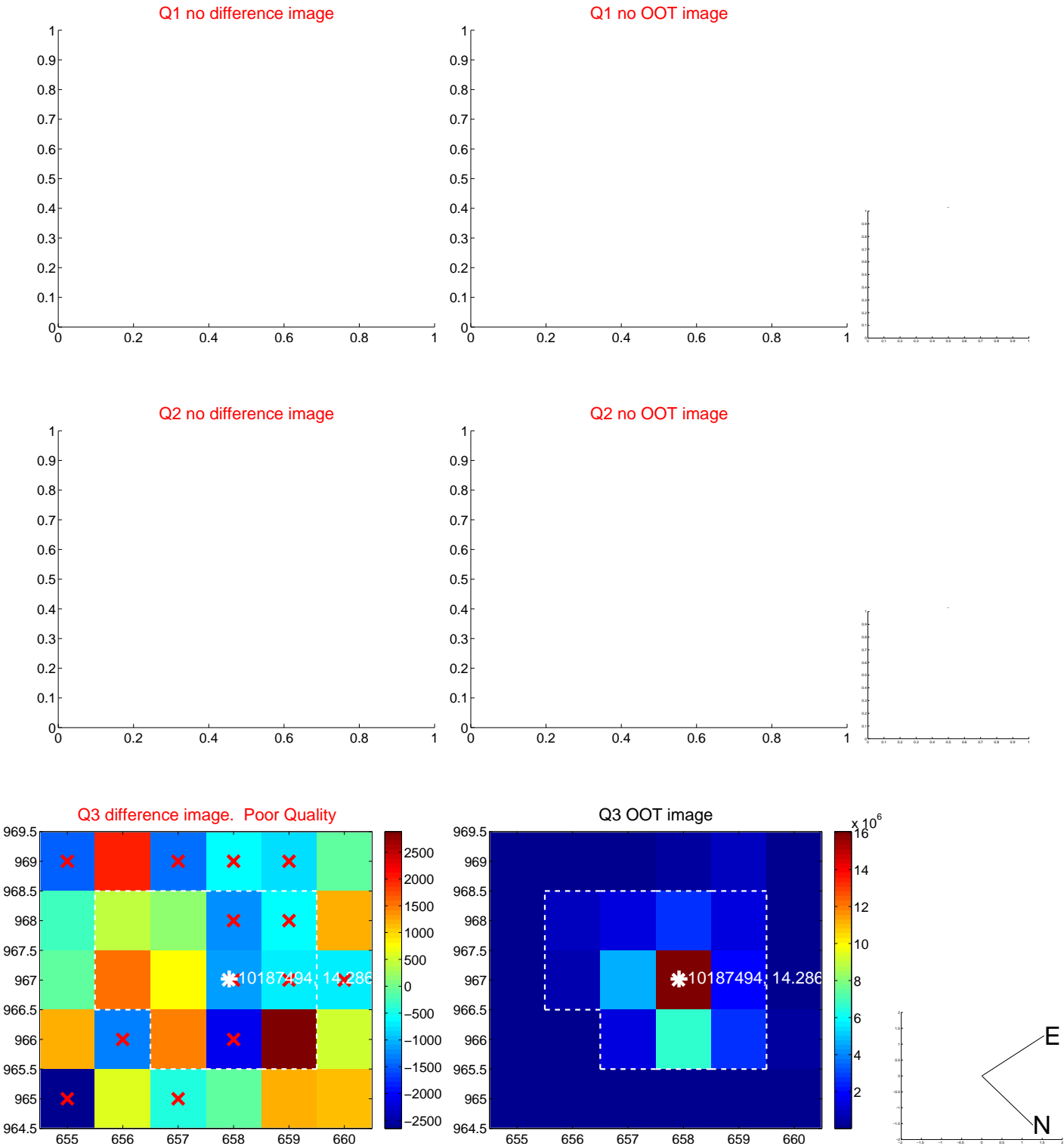


offset from photometric centroids

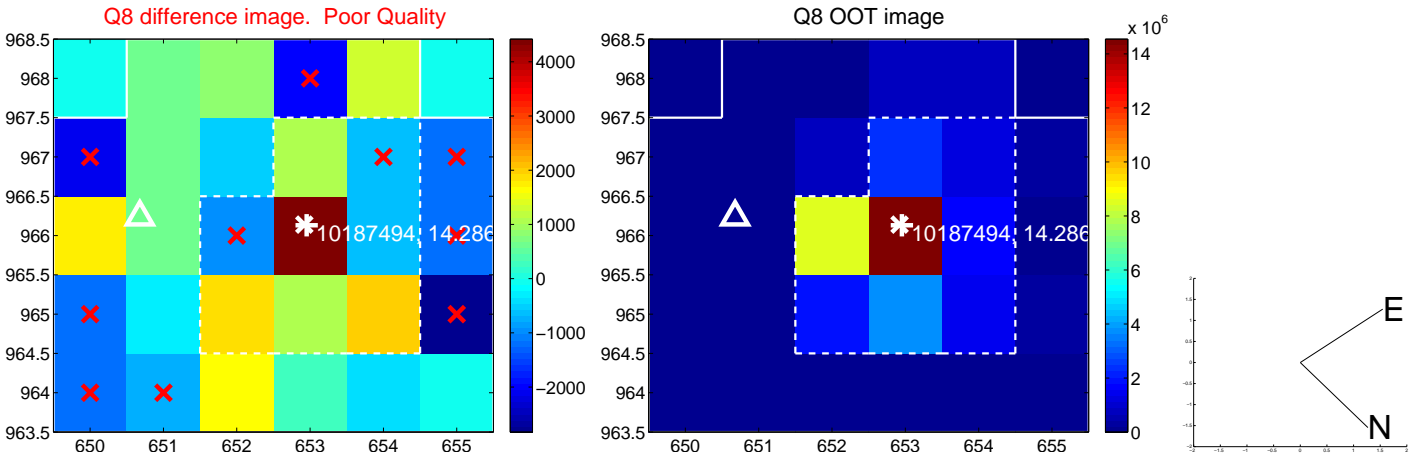
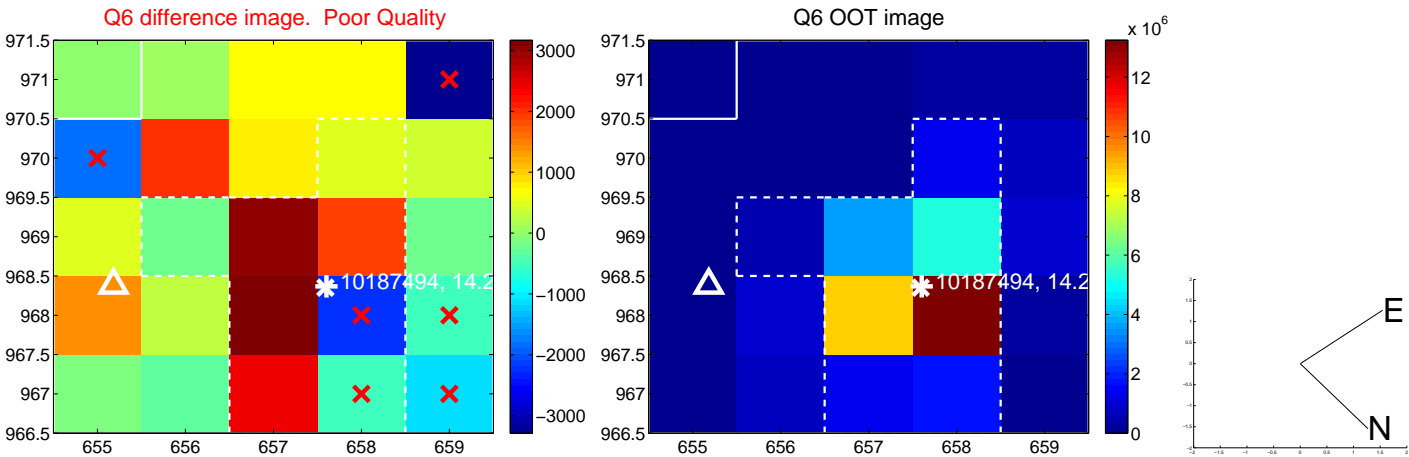
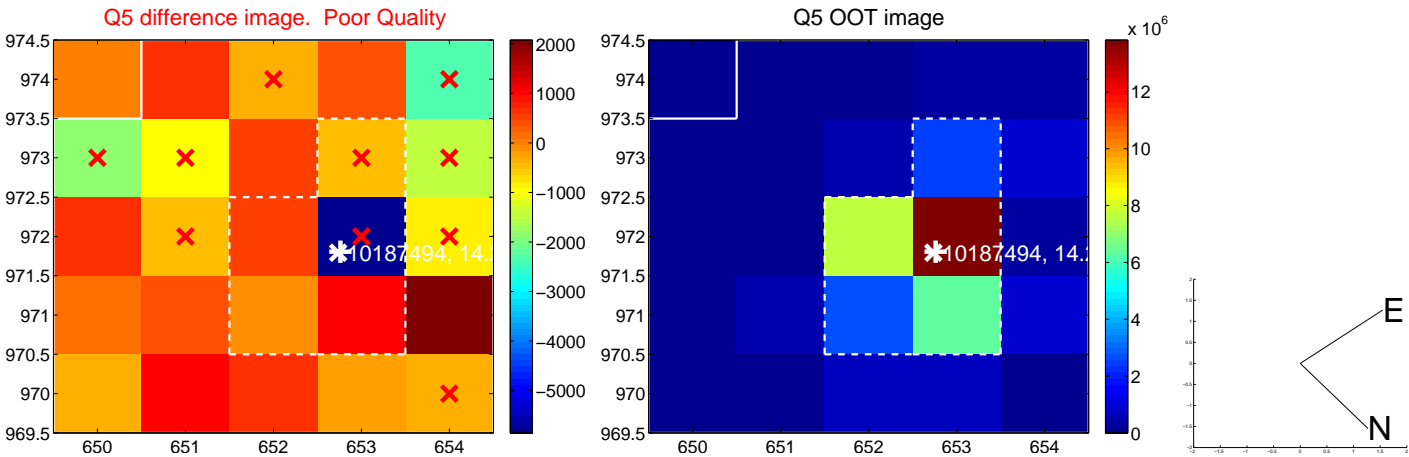


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- 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.

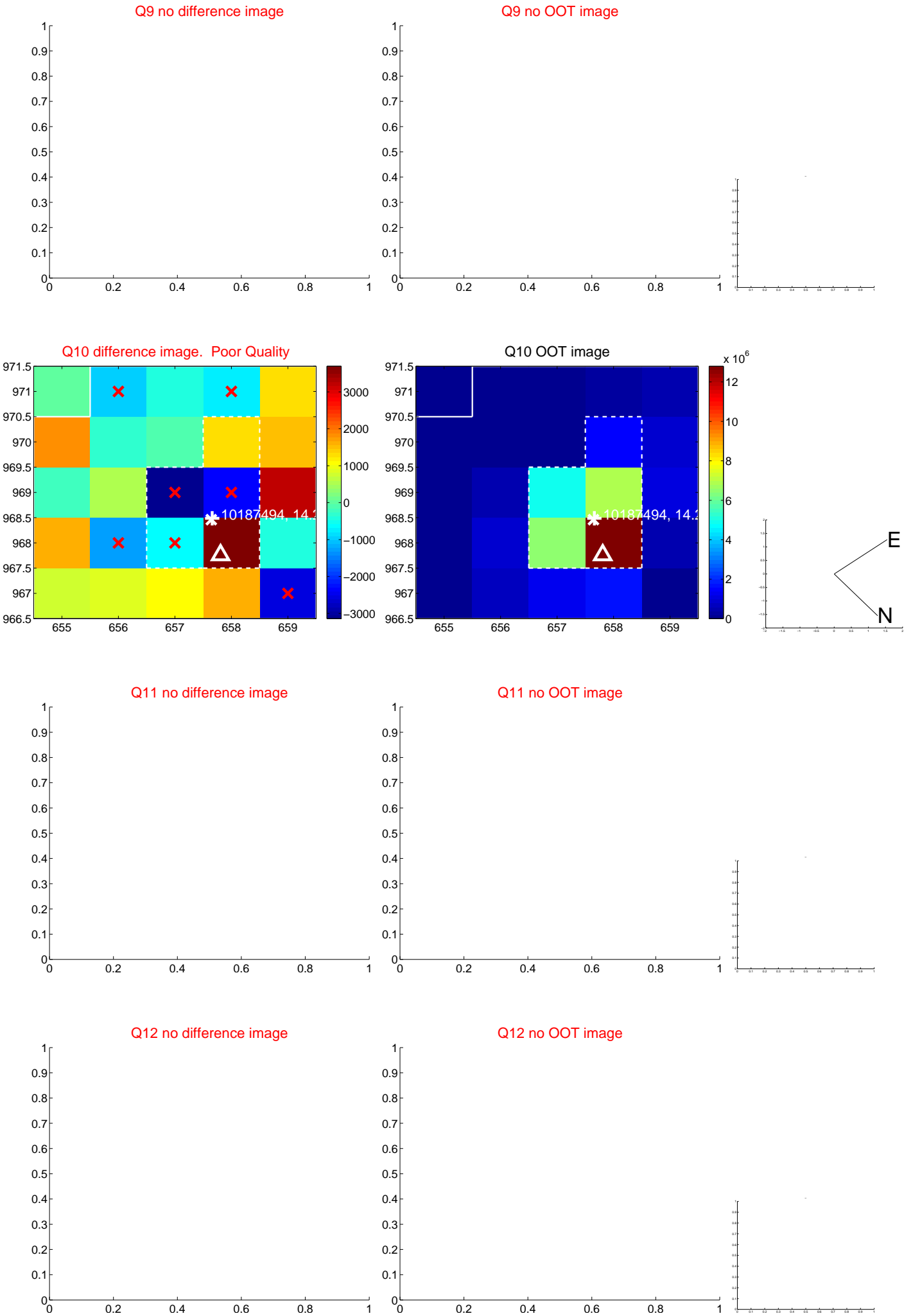
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



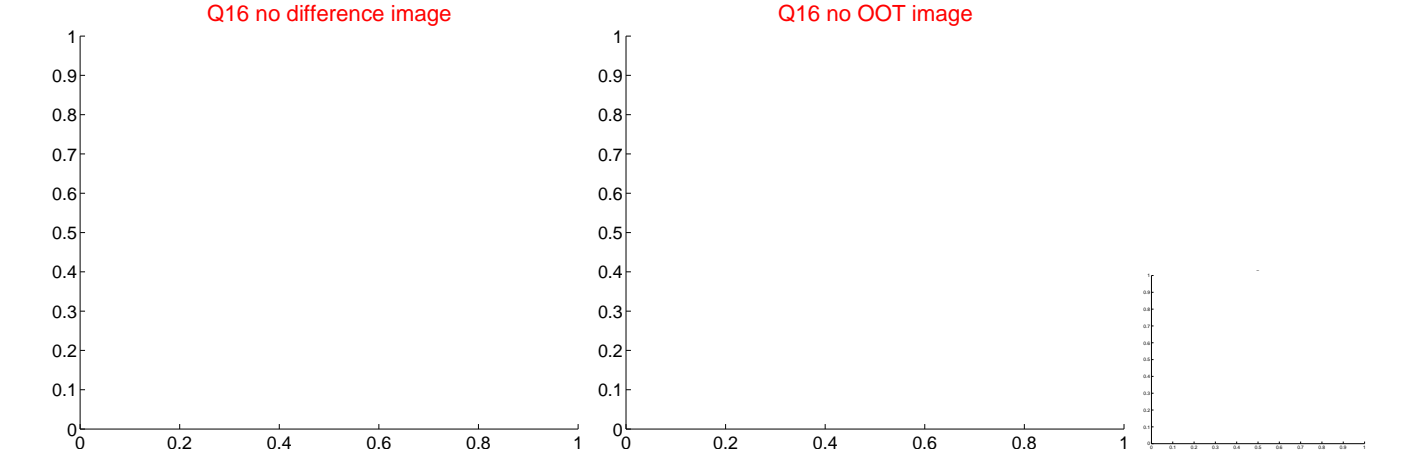
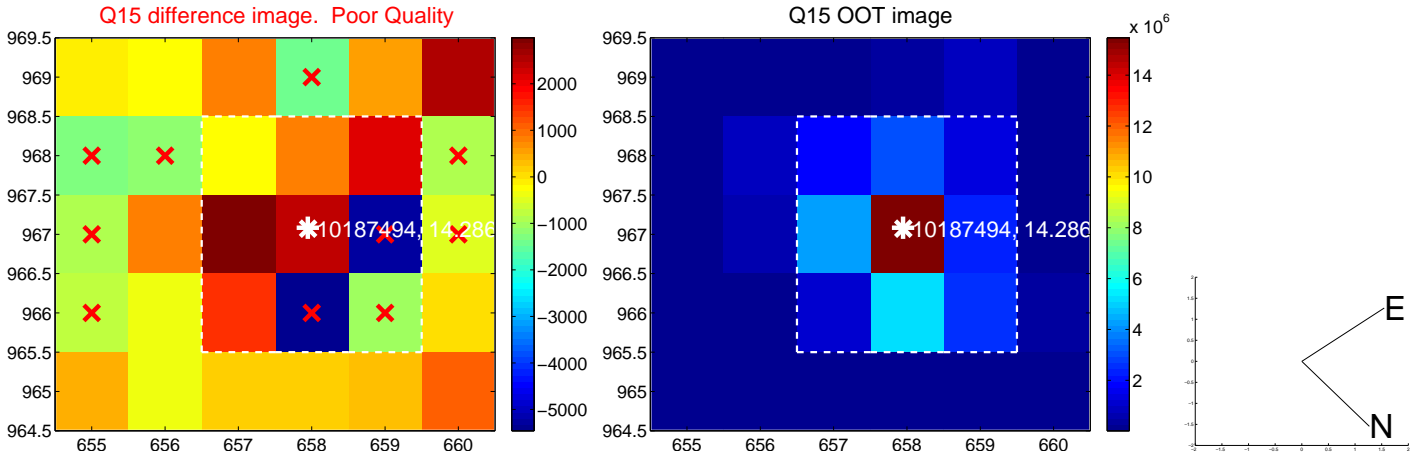
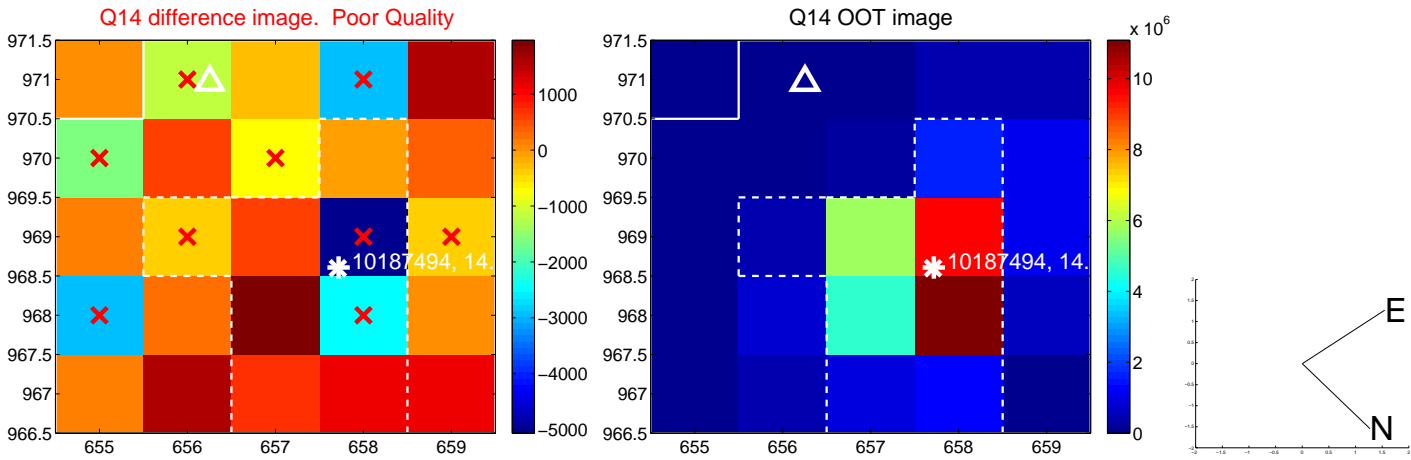
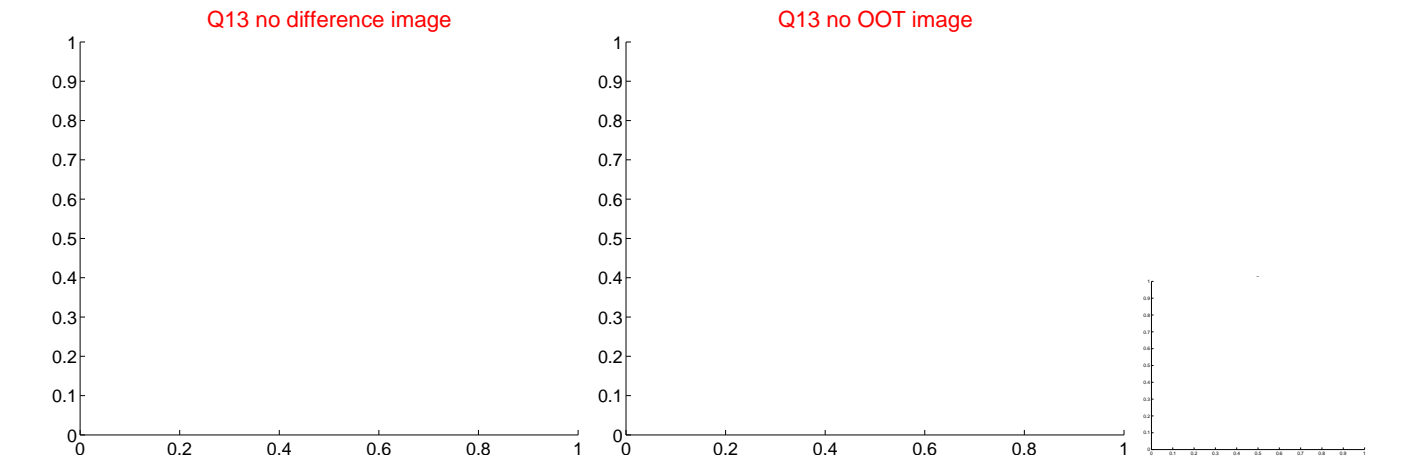
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



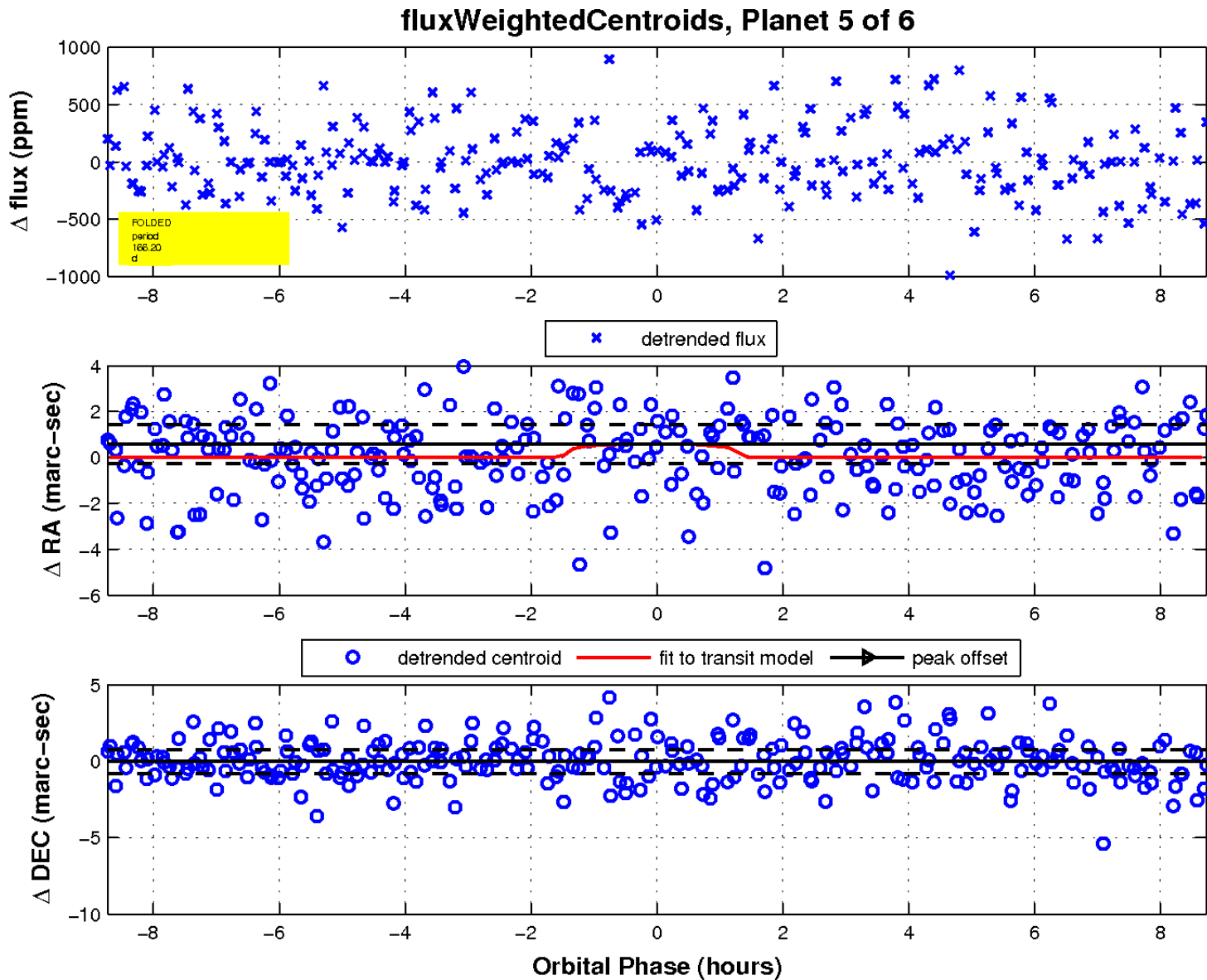
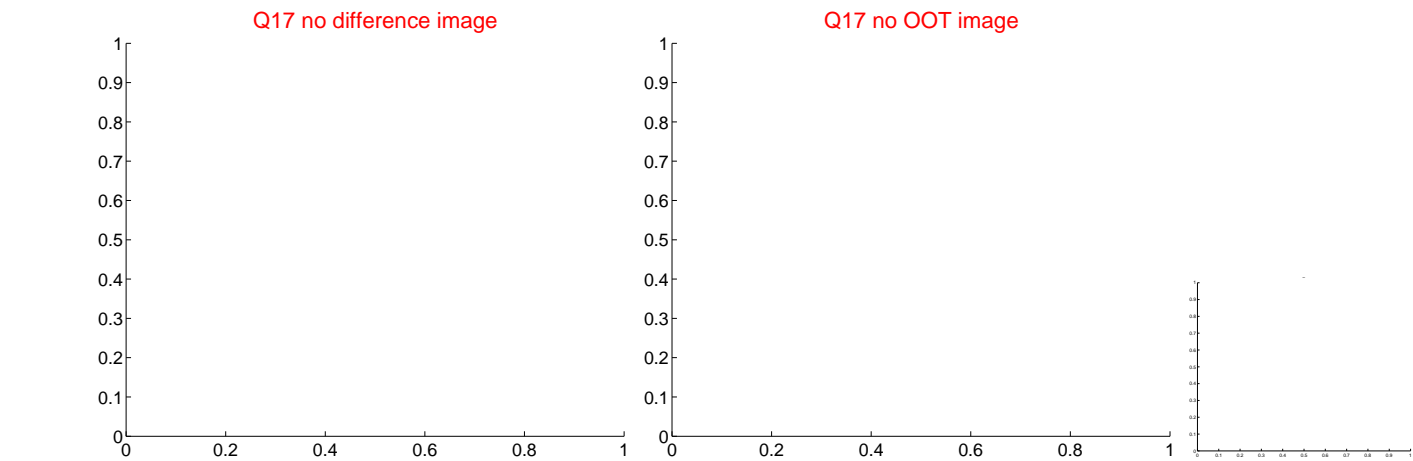
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

