

KIC 004380560

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})
004380560-01	OBS	7548.01	0.705741	132.030682	44.8	5.187	9.8	6.7	0.97	6106	0.66	4688.63
004380560-02	OBS	No	10.220635	137.420370	2263.7	1.500	12.8	-1.0	0.97	6106	4.61	132.82
004380560-03	OBS	No	37.751773	146.264270	761.0	3.698	10.6	10.0	0.97	6106	2.75	23.26
004380560-04	OBS	No	18.571153	135.872599	1532.2	1.118	10.3	11.0	0.97	6106	4.02	59.90

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004380560-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_KIC_POS—HALO_GHOST—EPHEM_MATCH
004380560-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
004380560-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004380560-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

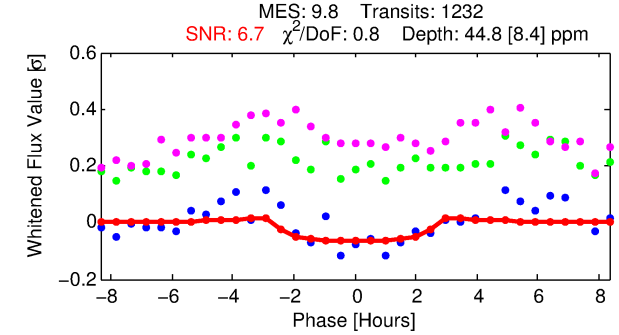
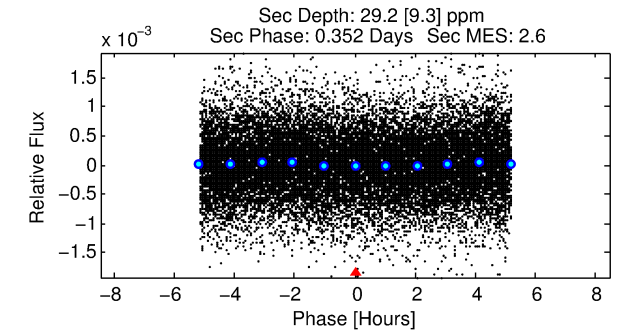
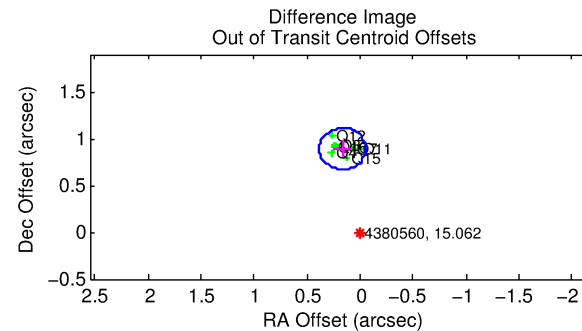
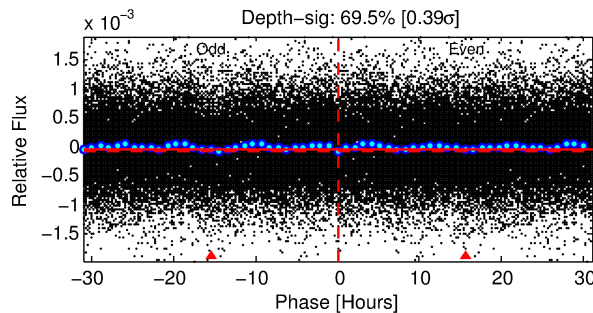
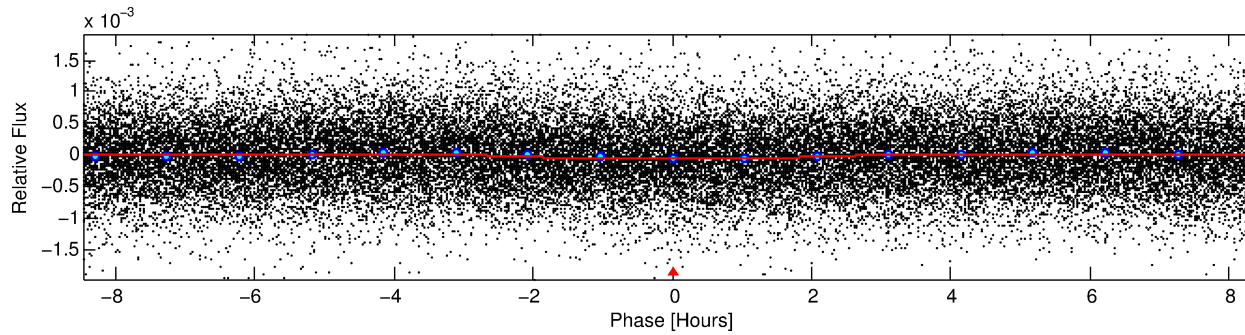
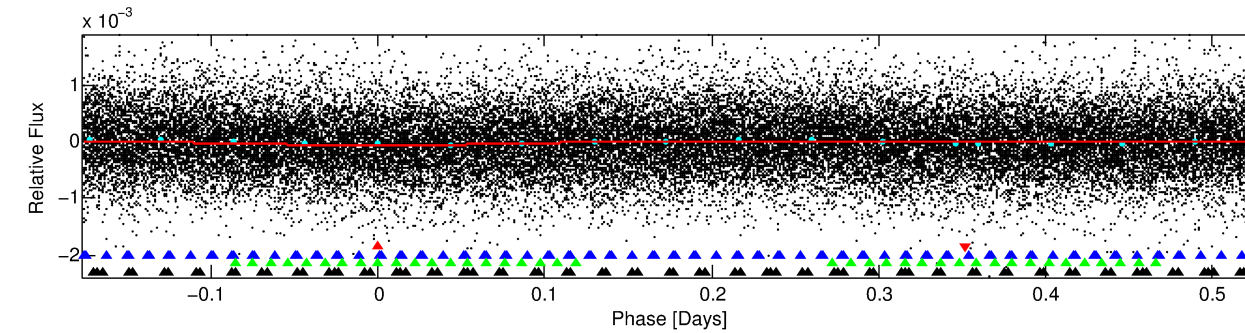
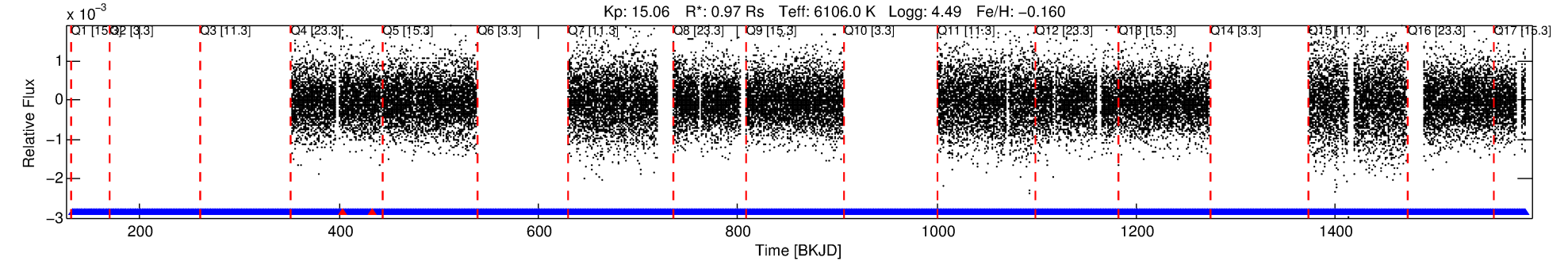
Ephemeris Match Information For 004380560-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
004380560-01	4380560	004380558-01	4380558	1:1	4.3	-1	0	14.42	15.06	1.24	Direct-PRF	0	1.68	0.37

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 4380560 Candidate: 1 of 4 Period: 0.706 d
KOI: K07548.01 Corr: 0.848



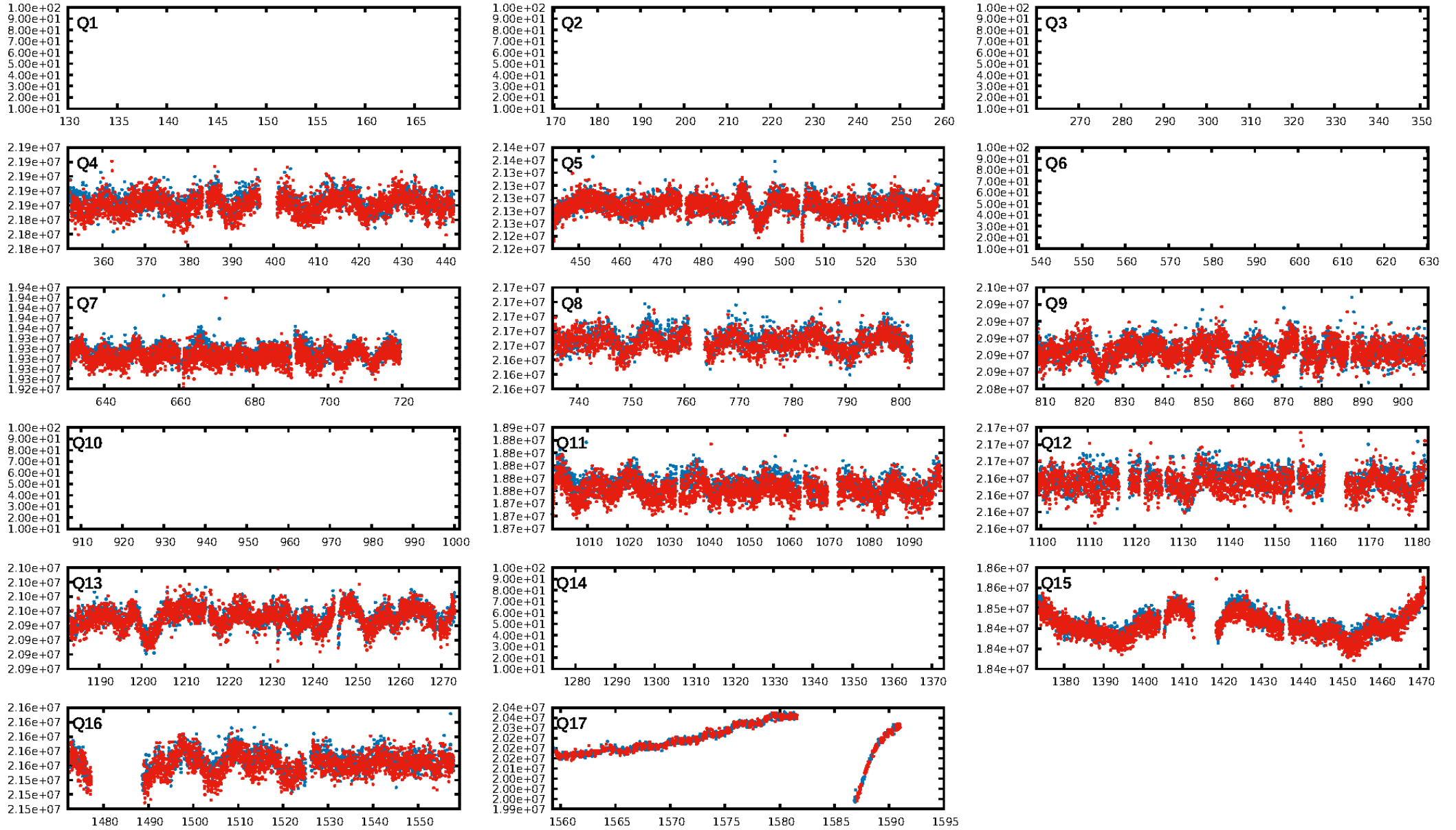
DV Fit Results:

Period = 0.70574 [0.00002] d
Epoch = 132.0307 [0.0069] BKJD
Rp/R* = 0.0063 [0.0106]
a/R* = 1.18 [2.72]
b = 0.49 [13.16]
Seff = 4688.63 [1927.83]
Teq = 2110 [217] K
Rp = 0.66 [1.13] Re
a = 0.0157 [0.0042] AU
Ag = 9.02 [30.63] [0.26 σ]
Teffp = 5654 [4771] K [0.74 σ]

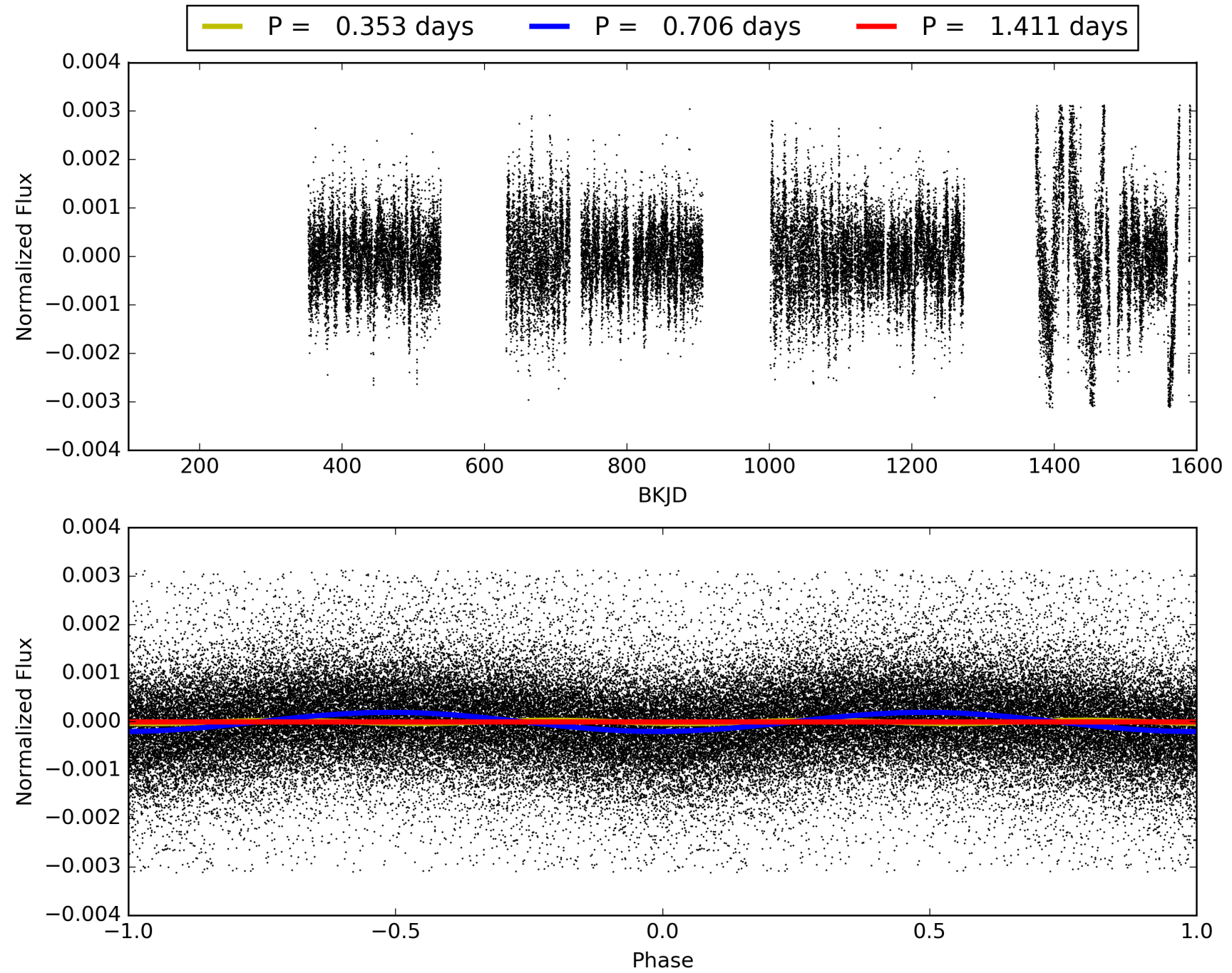
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [42.29 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.19e-07
RollingBand-fgt: 1.00 [1192/1194]
GhostDiagnostic-chr: 0.07619
Centroid-sig: 0.0%
Centroid-so: 4.598 arcsec [6.31 σ]
OotOffset-rm: 0.906 arcsec [12.31 σ]
KicOffset-rm: 3.825 arcsec [17.63 σ]
OotOffset-st: 0/3/4/0 [7]
KicOffset-st: 0/3/4/0 [7]
DiffImageQuality-fgm: 1.00 [7/7]
DiffImageOverlap-fno: 1.00 [11/11]

TCE 004380560-01, PDC Light Curves

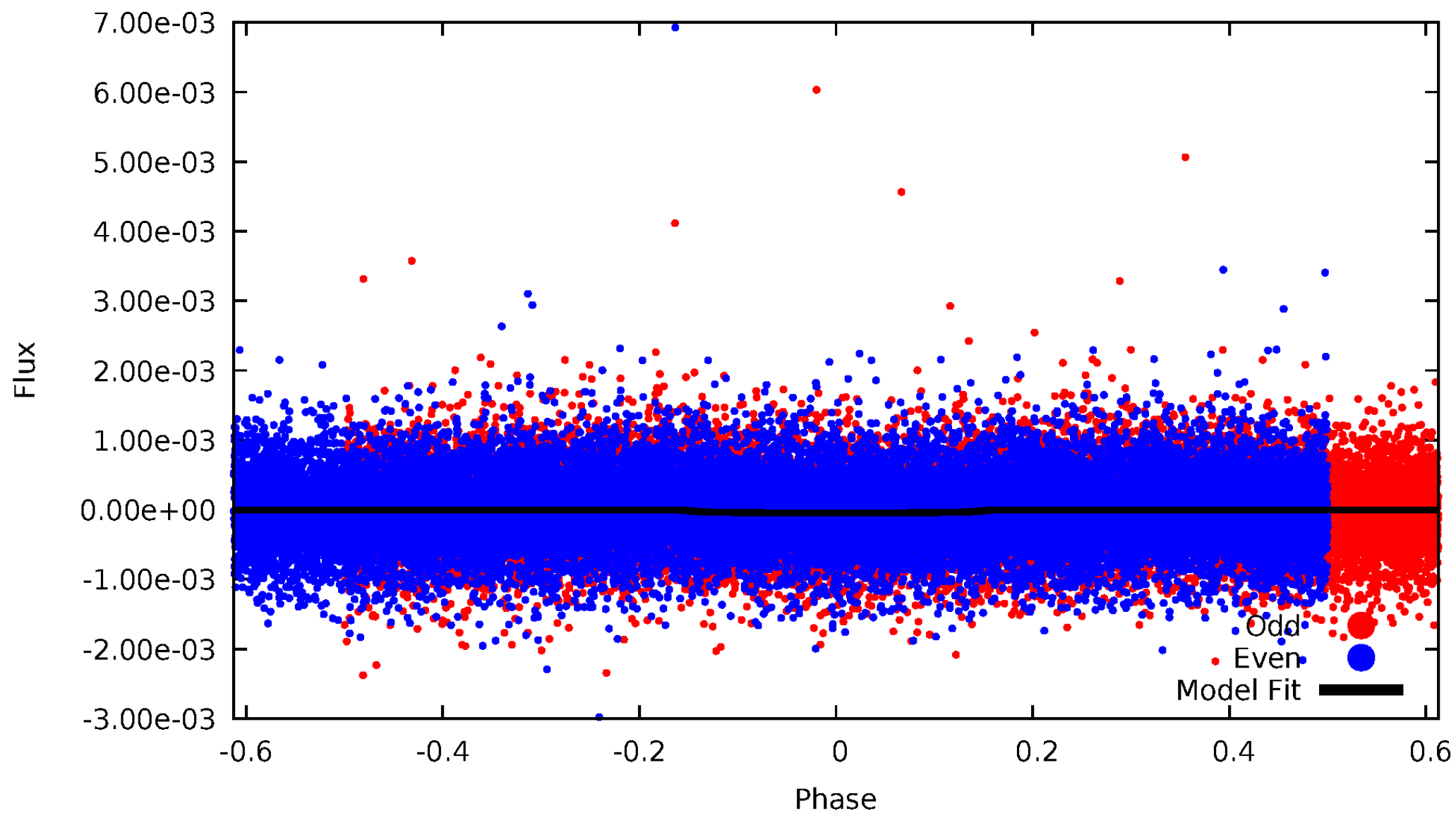


TCE 004380560-01



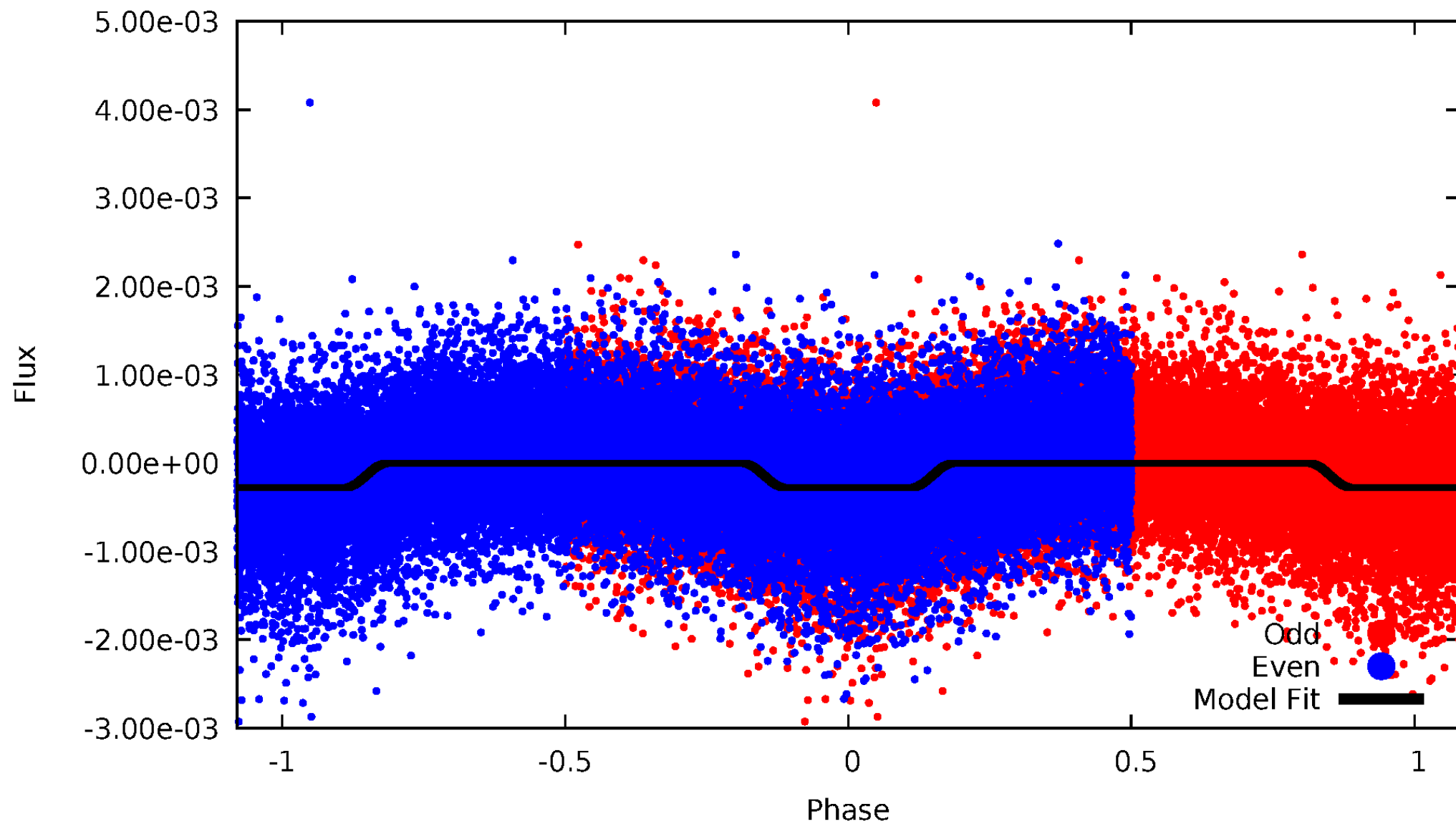
DV Odd/Even

TCE 004380560-01

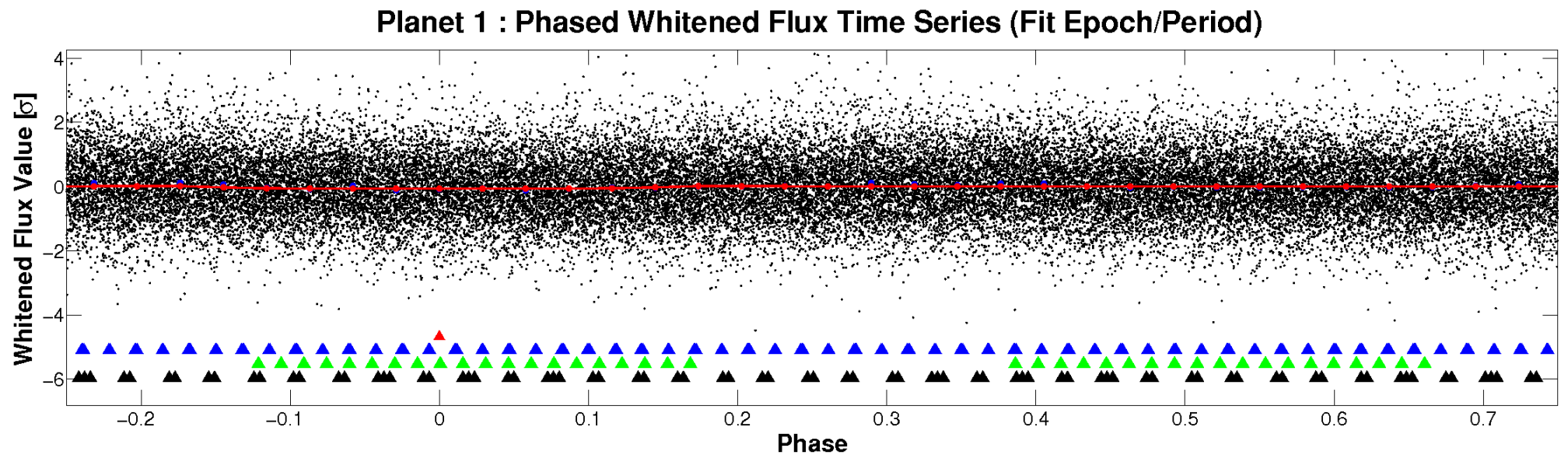
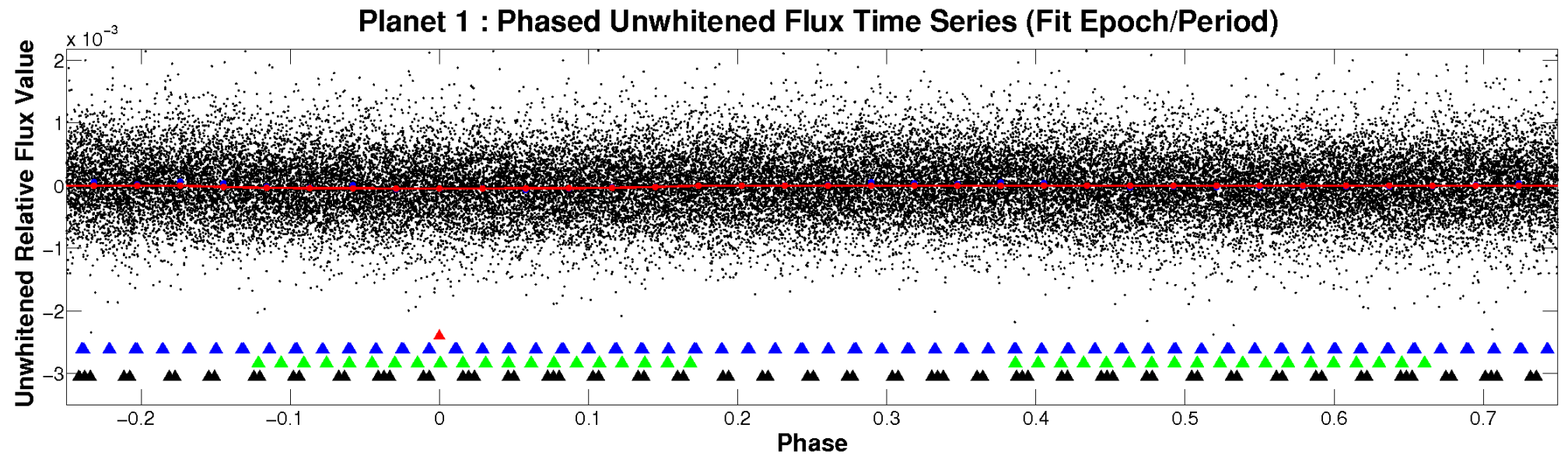


ALT Odd/Even

TCE 004380560-01

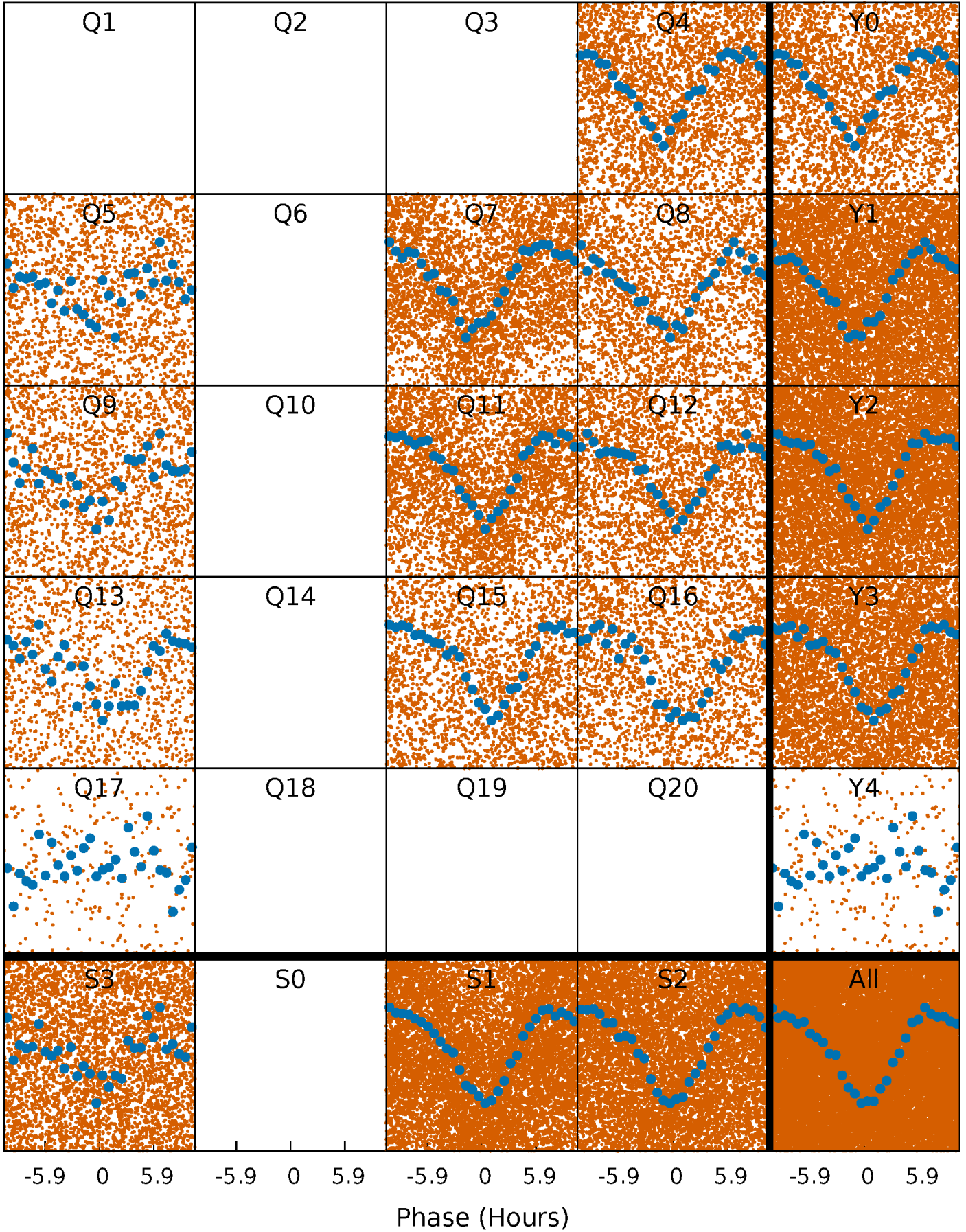


Non-Whitened Vs. Whitened Light Curve



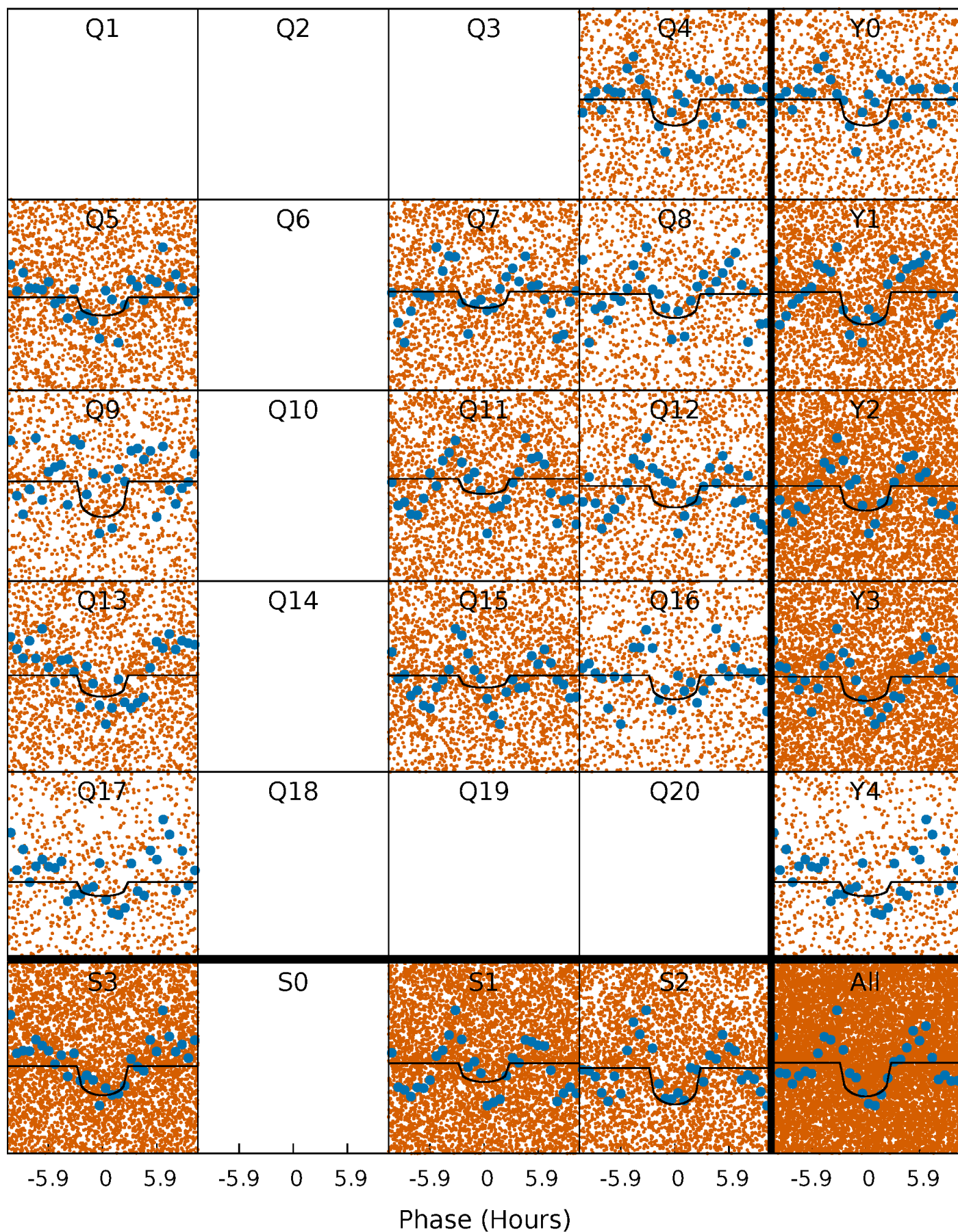
PDC Quarter-Phased Transit Curves

TCE 004380560-01 P= 0.705741 Days $T_0=132.030682$ (BKJD)



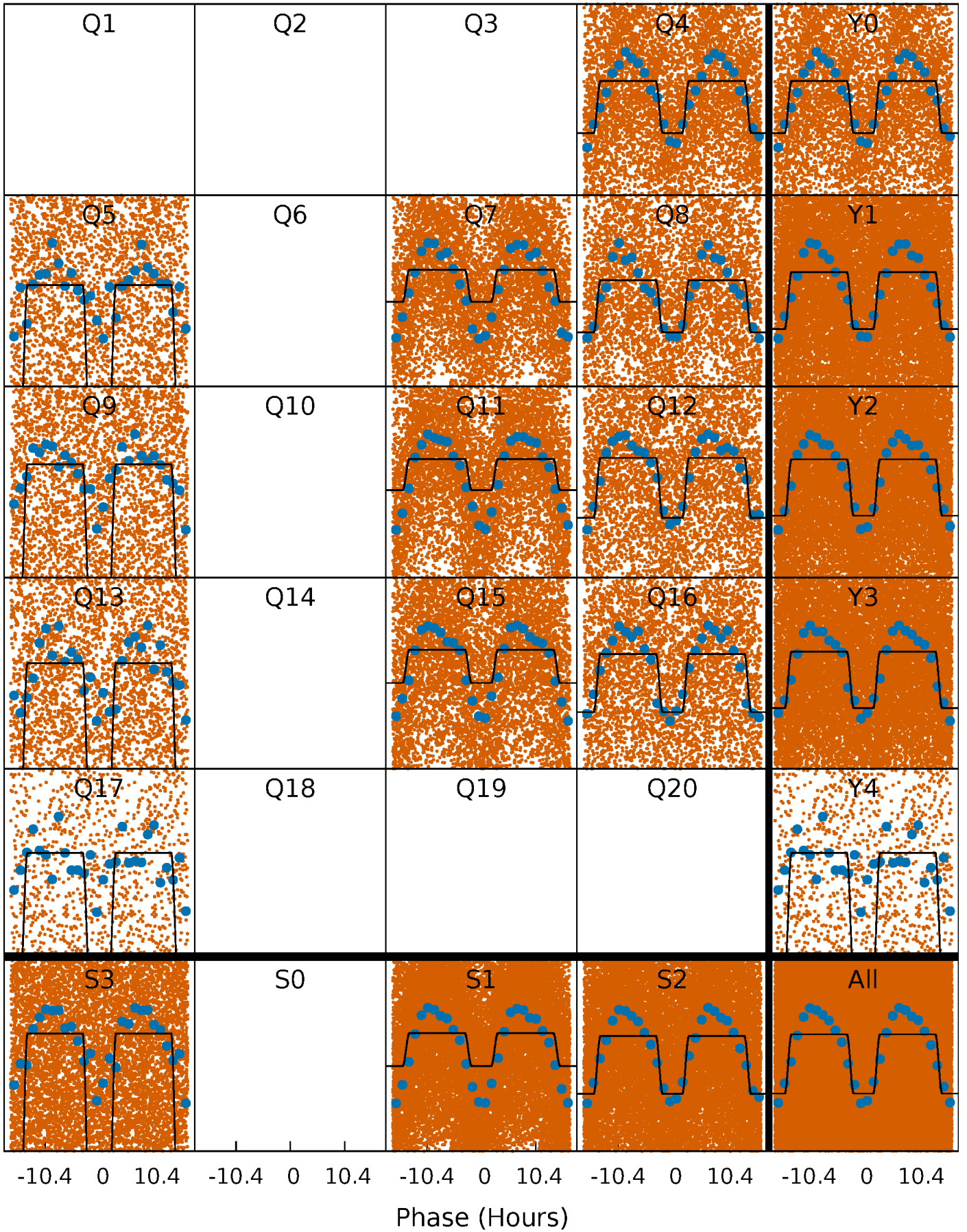
DV Quarter-Phased Transit Curves

TCE 004380560-01 P= 0.705741 Days $T_0=132.030682$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

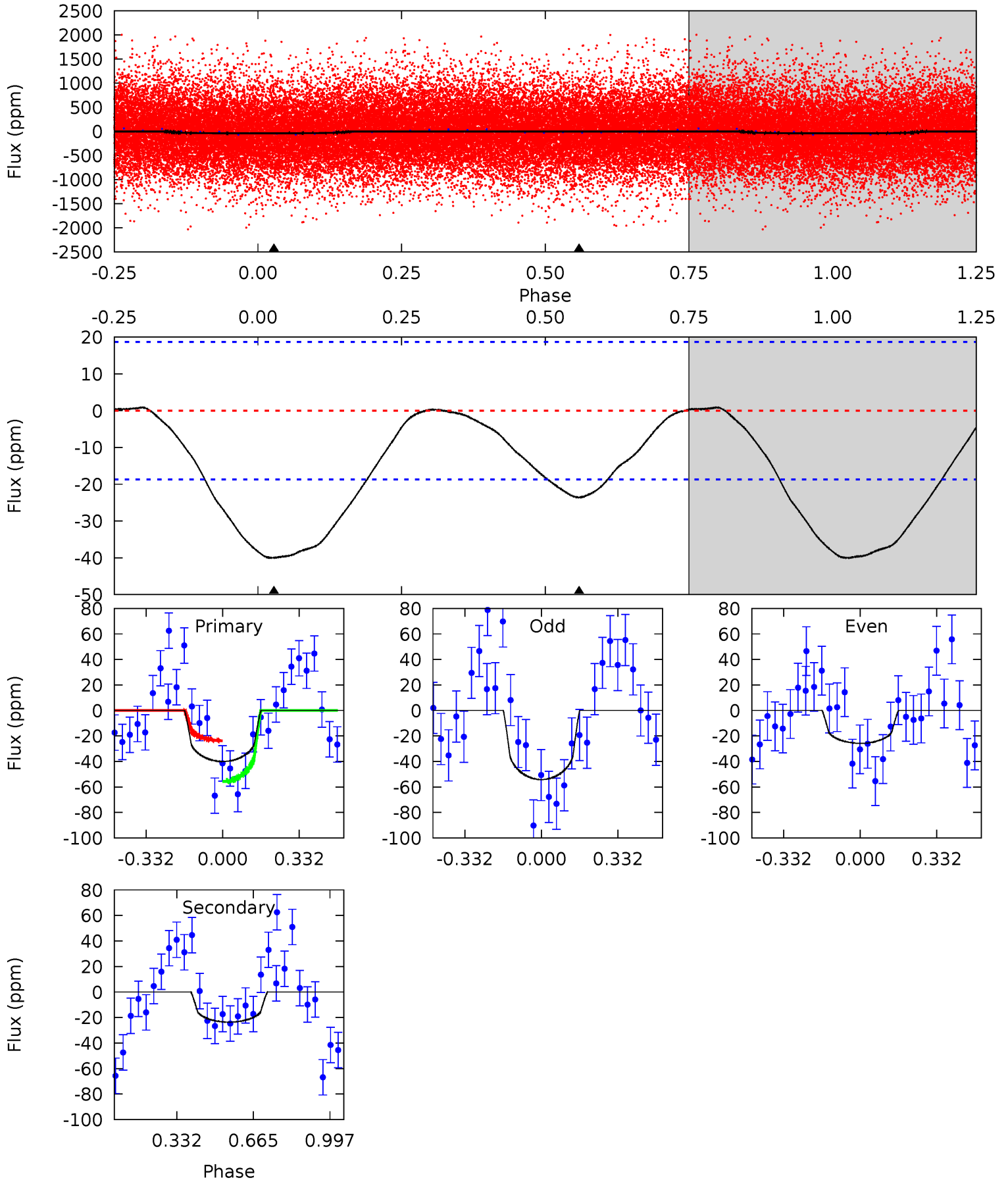
TCE 004380560-01 P= 0.705820 Days $T_0=131.939172$ (BKJD)



DV Model-Shift Uniqueness Test

004380560-01, P = 0.705741 Days, E = 132.030682 Days

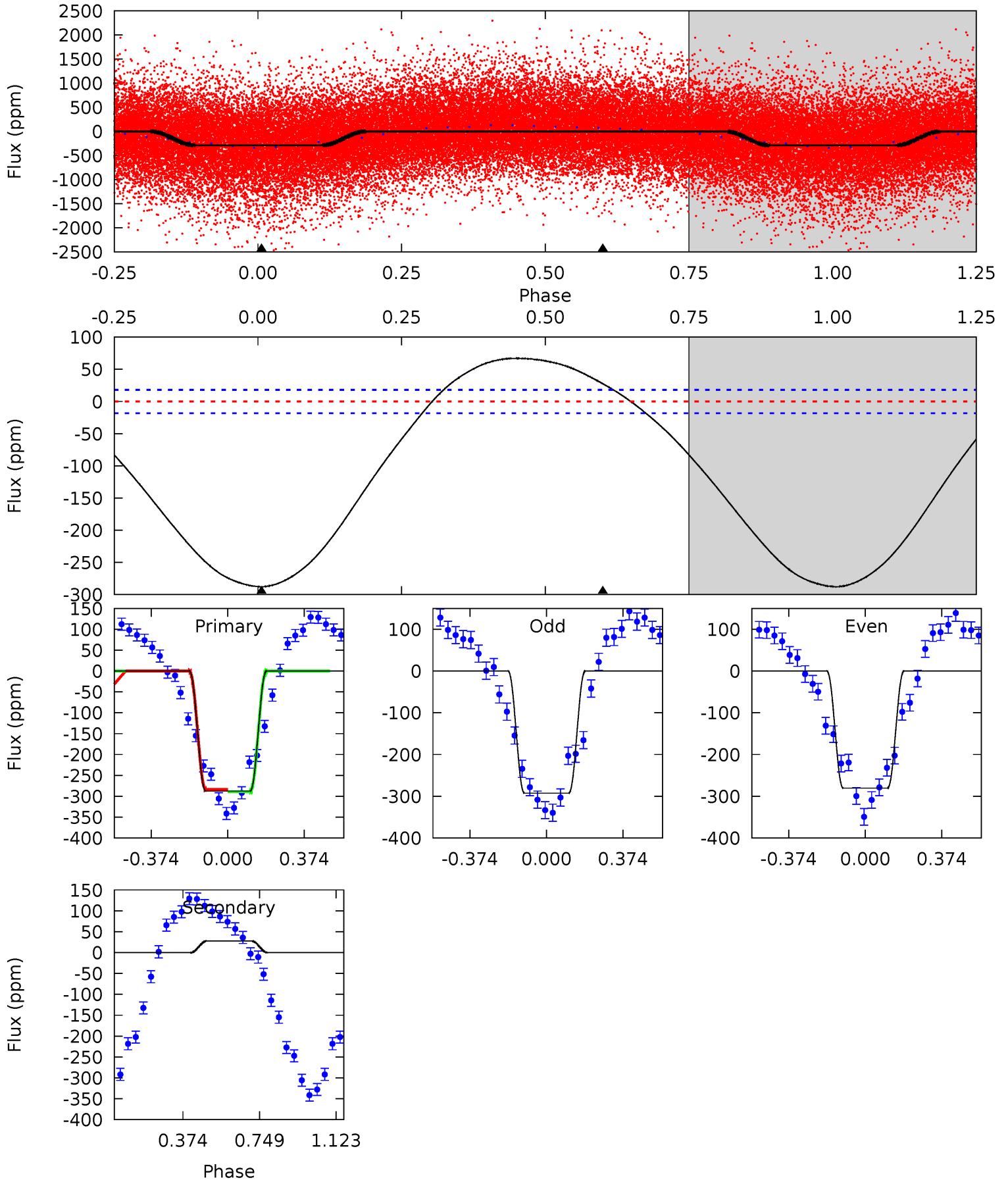
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.22	5.43	0	0	4.31	0.97	0.27	9.22	9.22	5.43	5.43	3.23	0.99	0.02	3.70



Alt Model-Shift Uniqueness Test

004380560-01, P = 0.705820 Days, E = 131.939172 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
68.0	-6.55	0	0	4.28	0.89	6.76	68.0	68.0	-6.55	-6.55	1.42	1.28	0.19	0.65



Stellar Parameters For KIC 004380560

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6106^{+190}_{-232}	$4.487^{+0.052}_{-0.208}$	$-0.160^{+0.250}_{-0.350}$	$0.966^{+0.304}_{-0.101}$	$1.043^{+0.140}_{-0.154}$	$1.631^{+0.444}_{-0.838}$
	+3%/-4%	+1%/-5%	+156%/-219%	+31%/-10%	+13%/-15%	+27%/-51%
Source	KIC0	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 004380560-01 / KOI 7548.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-24 ± 4	$1.15^{+1.04}_{-0.77}$	3006^{+228}_{-153}	4236^{+2889}_{-1062}	$2.290^{+18.231}_{-1.662}$
Alt.	28 ± 4	$1.90^{+1.27}_{-0.96}$	3017^{+205}_{-159}	-3936^{+407}_{-972}	$-1.025^{+0.667}_{-3.047}$

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

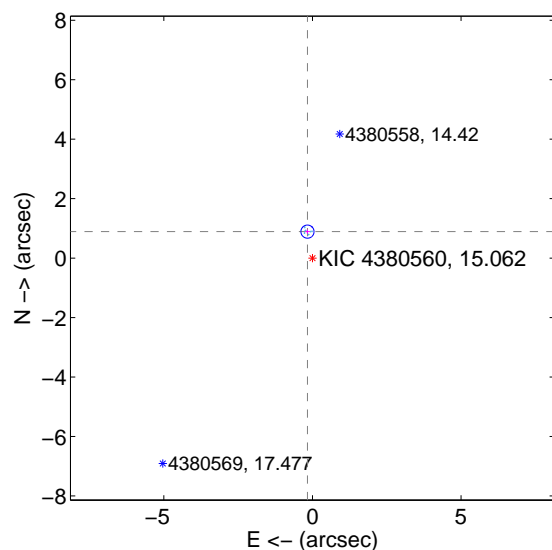
Supplemental centroid analysis for 004380560-01. Kepler magnitude: 15.06. Transit SNR 6.72

There are 7 quarters with good PRF difference image offsets

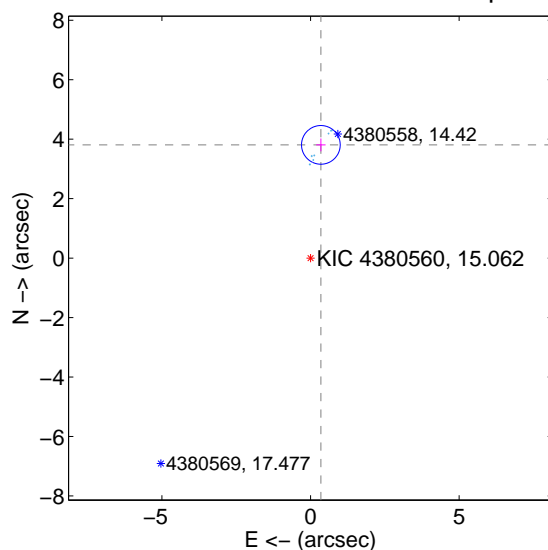
The OOT PRF centroid is offset from the target star catalog position by about 2.25 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.906 ± 0.074	12.31	0.167 ± 0.080	0.891 ± 0.073
PRF-fit source offset from KIC position	3.825 ± 0.217	17.63	-0.348 ± 0.157	3.809 ± 0.217
photometric centroid source offset	4.60 ± 0.73	6.31	-3.42 ± 0.62	3.08 ± 0.85

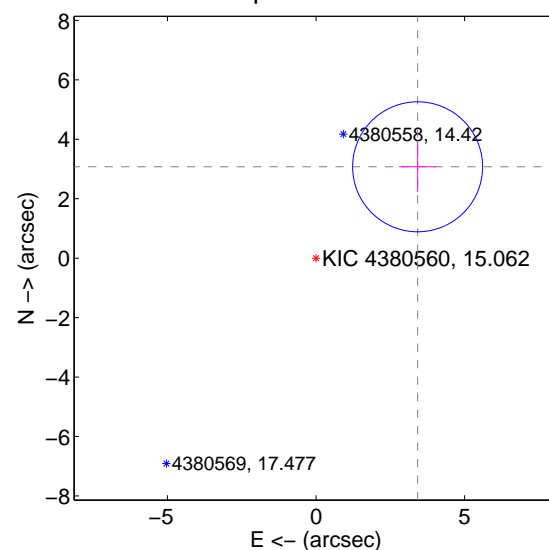
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

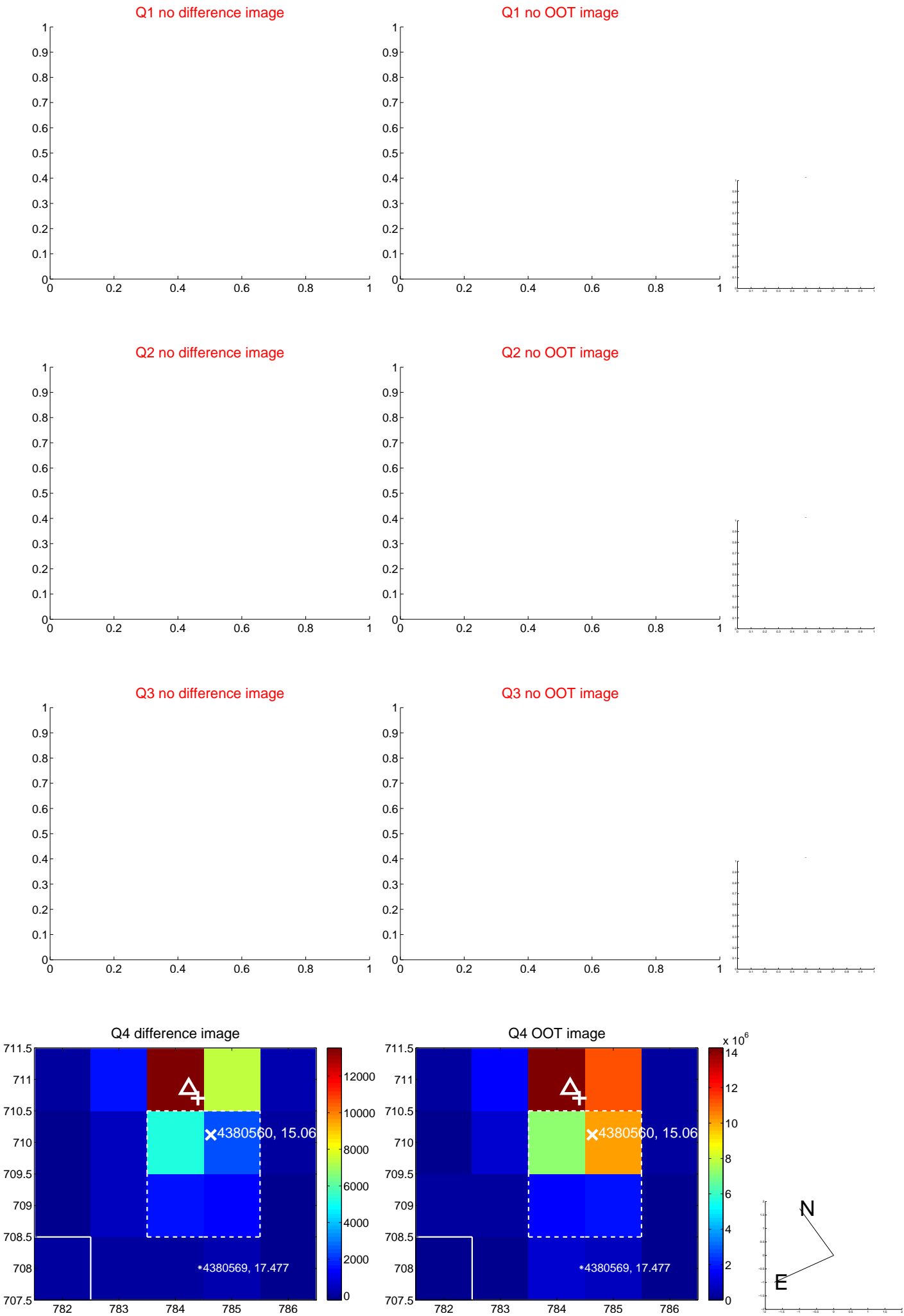


offset from photometric centroids

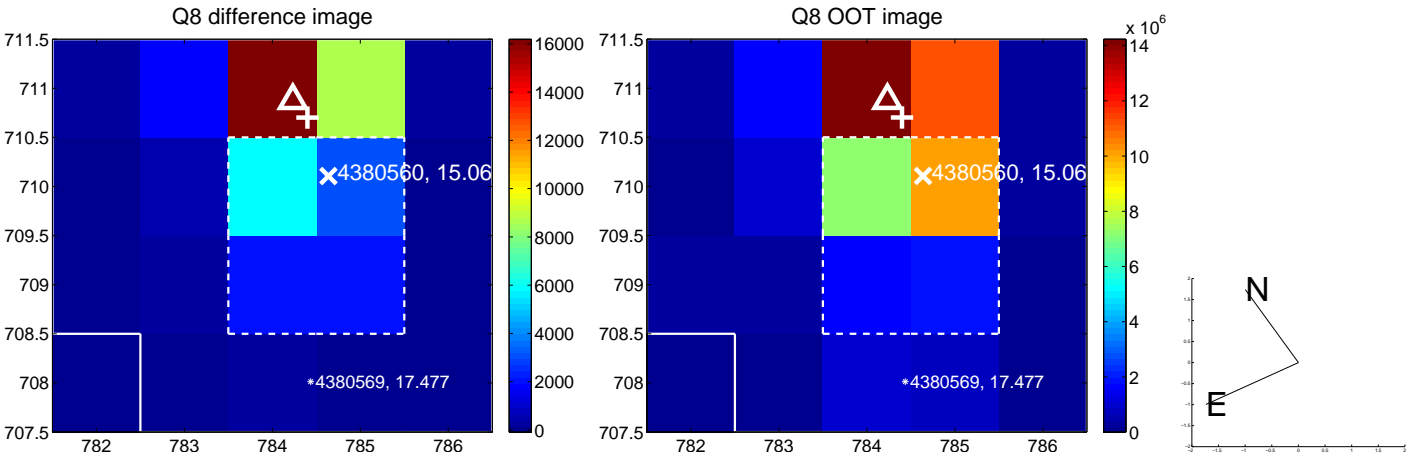
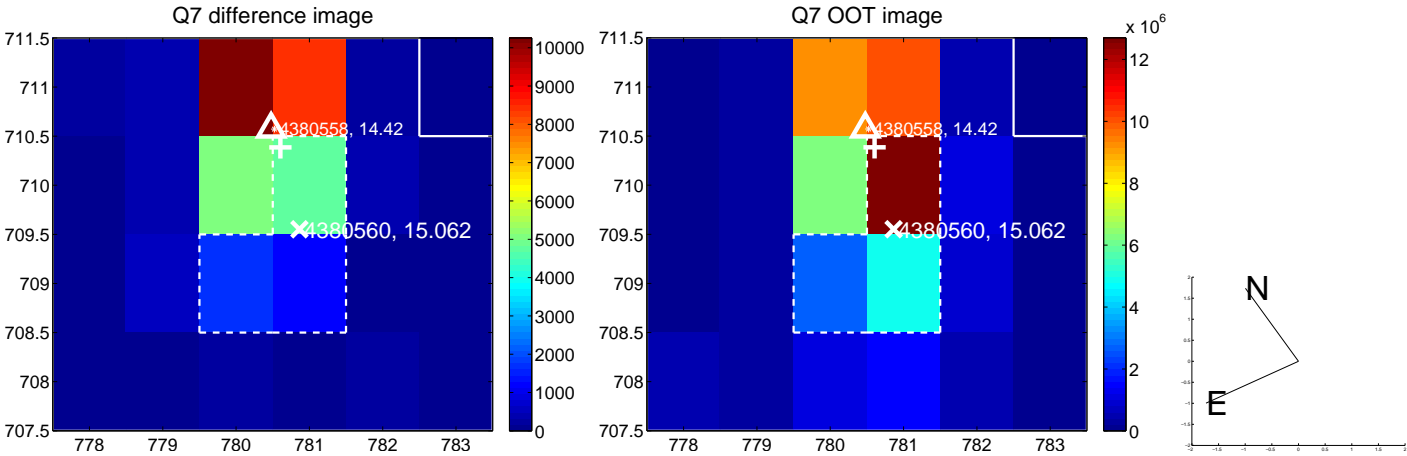
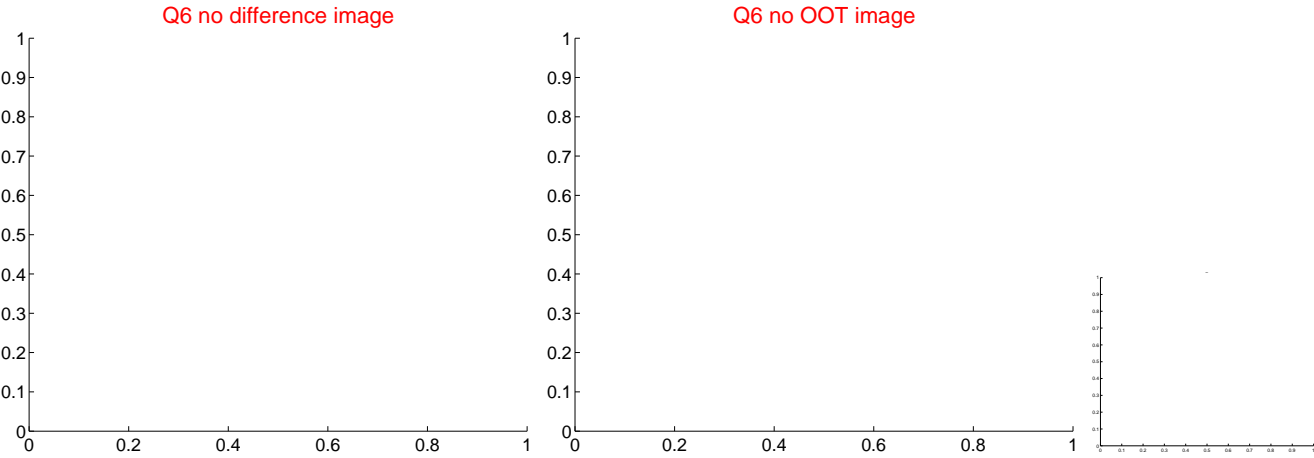
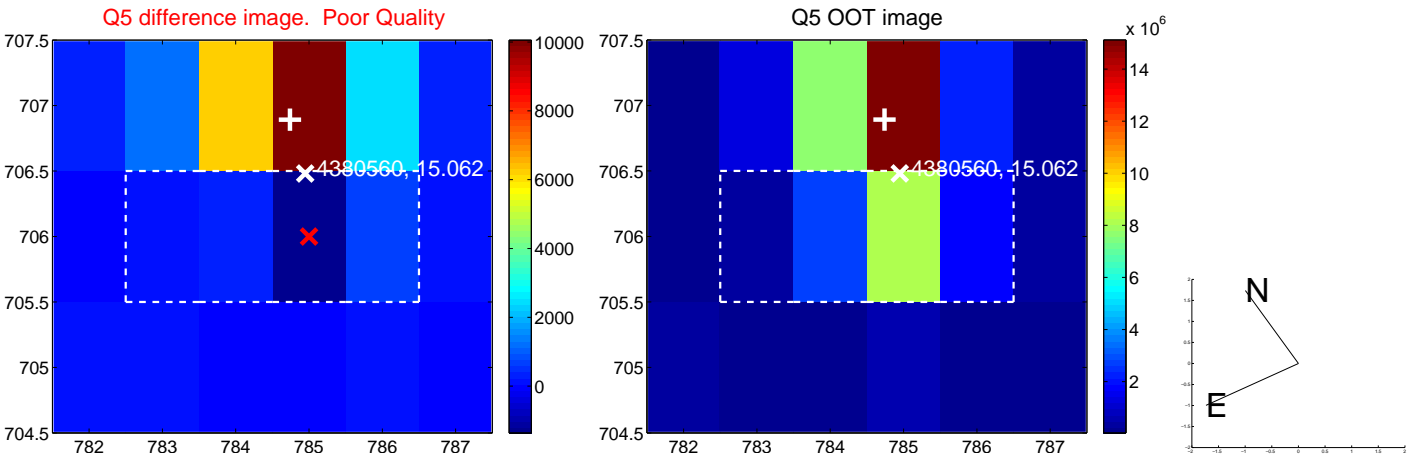


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

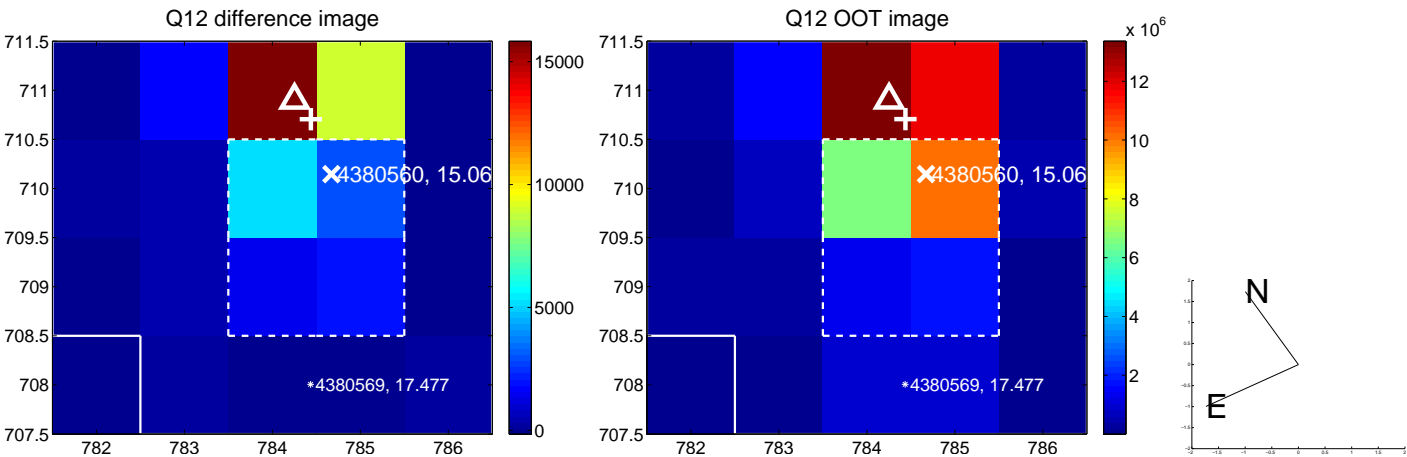
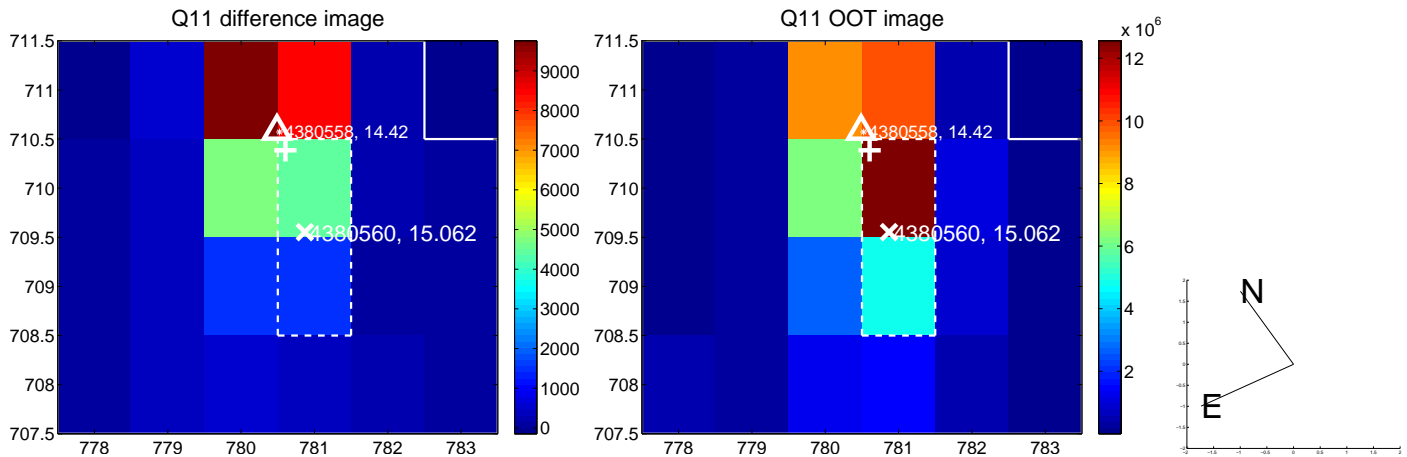
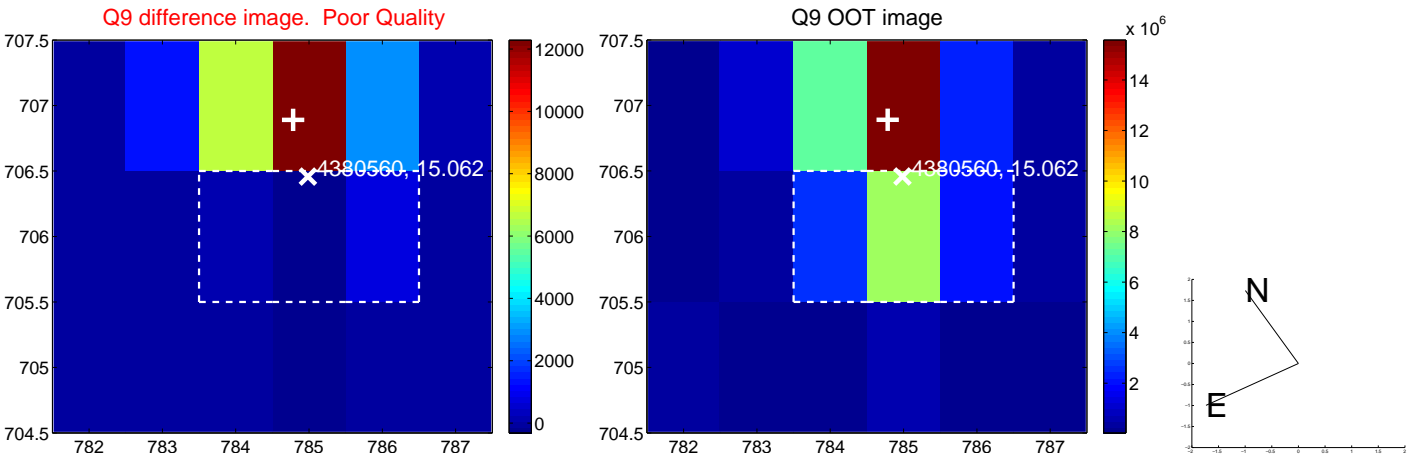
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



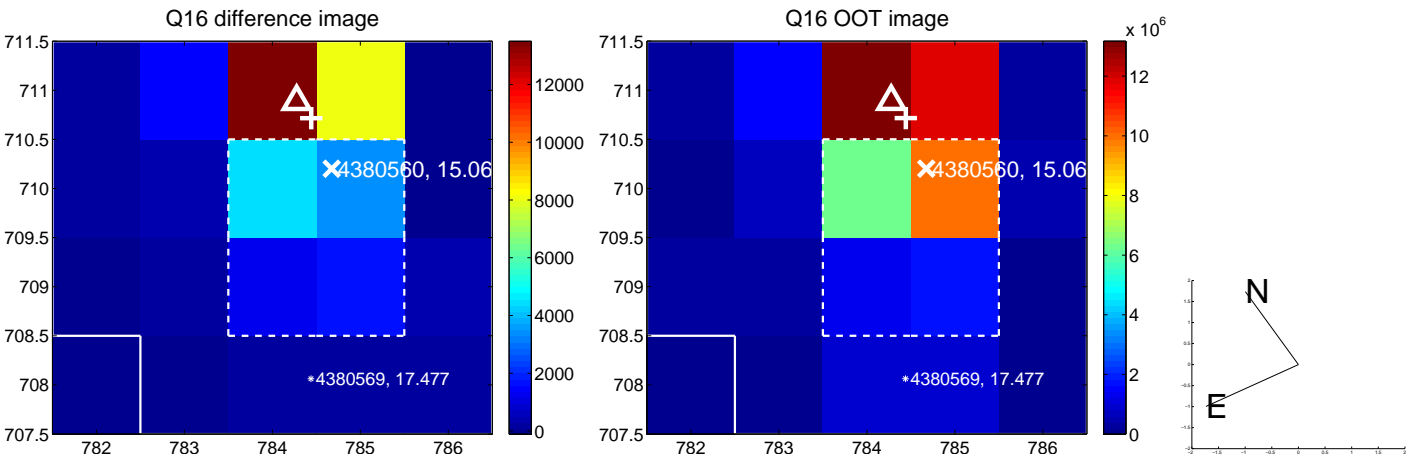
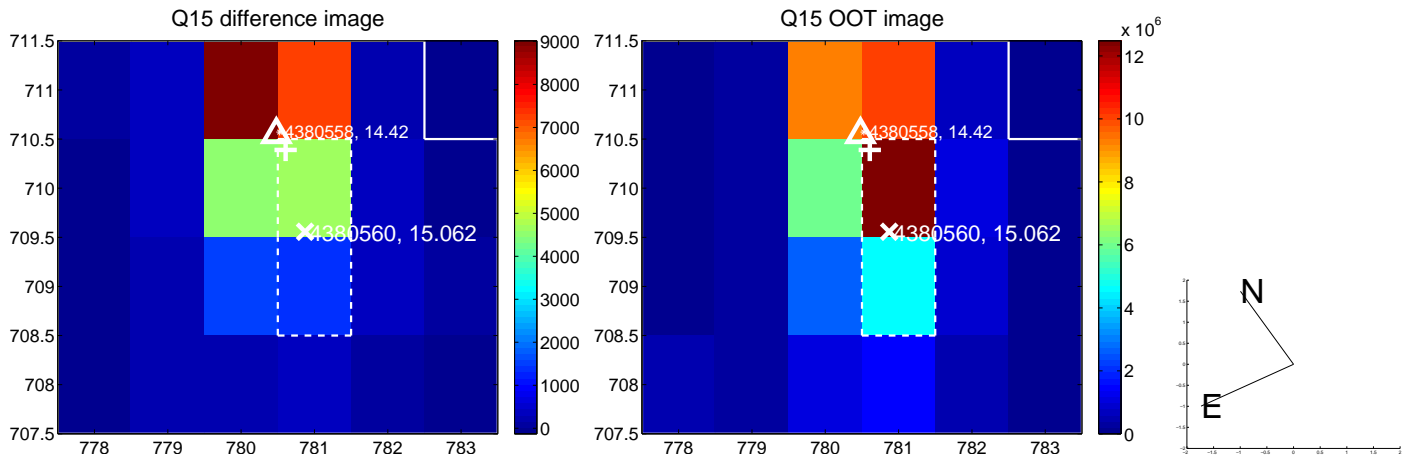
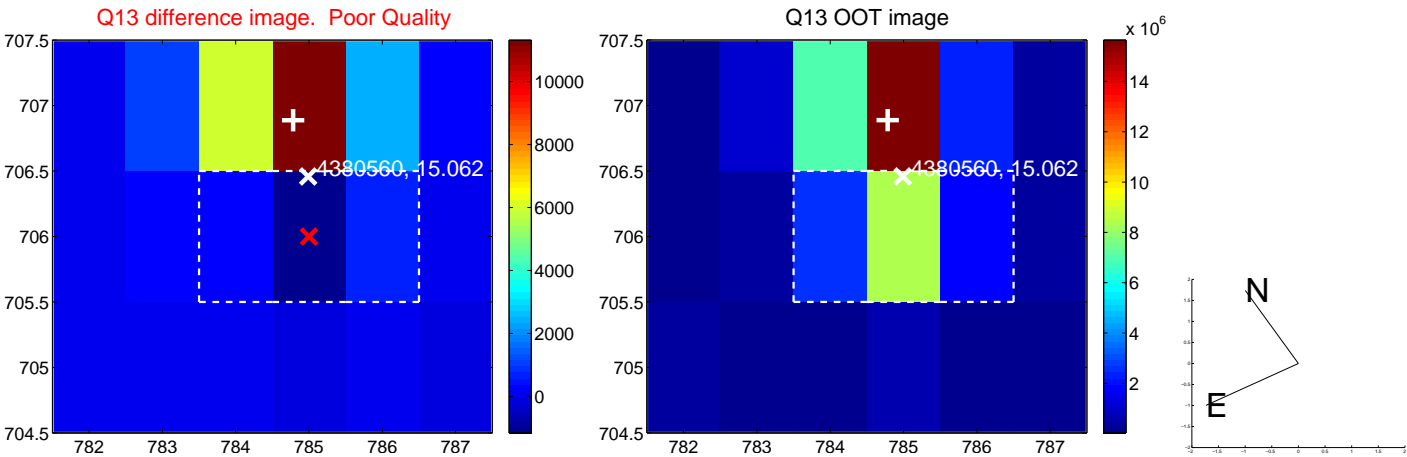
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



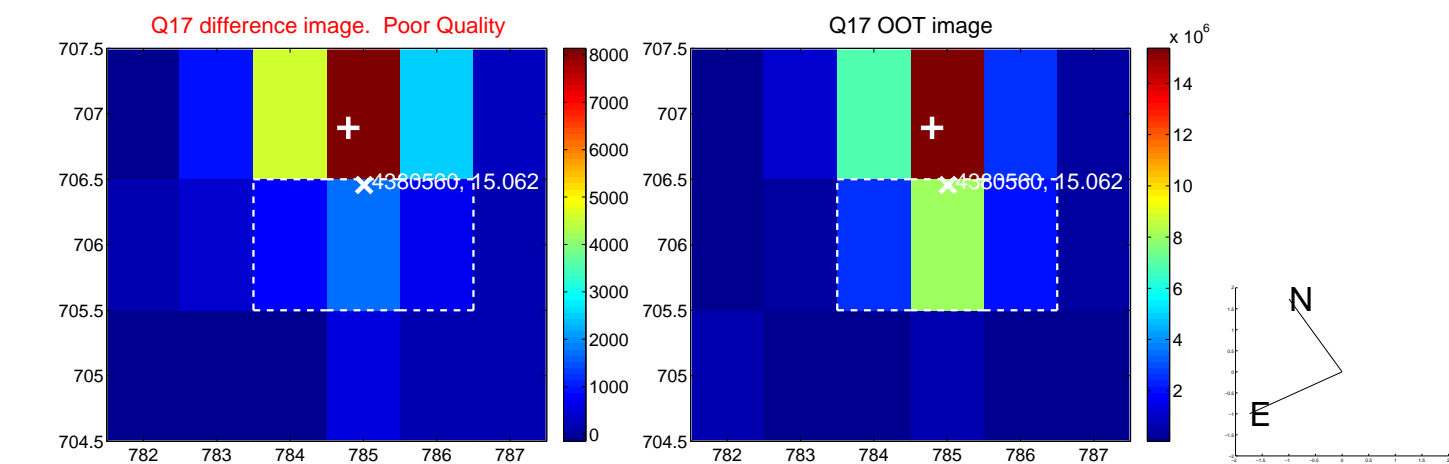
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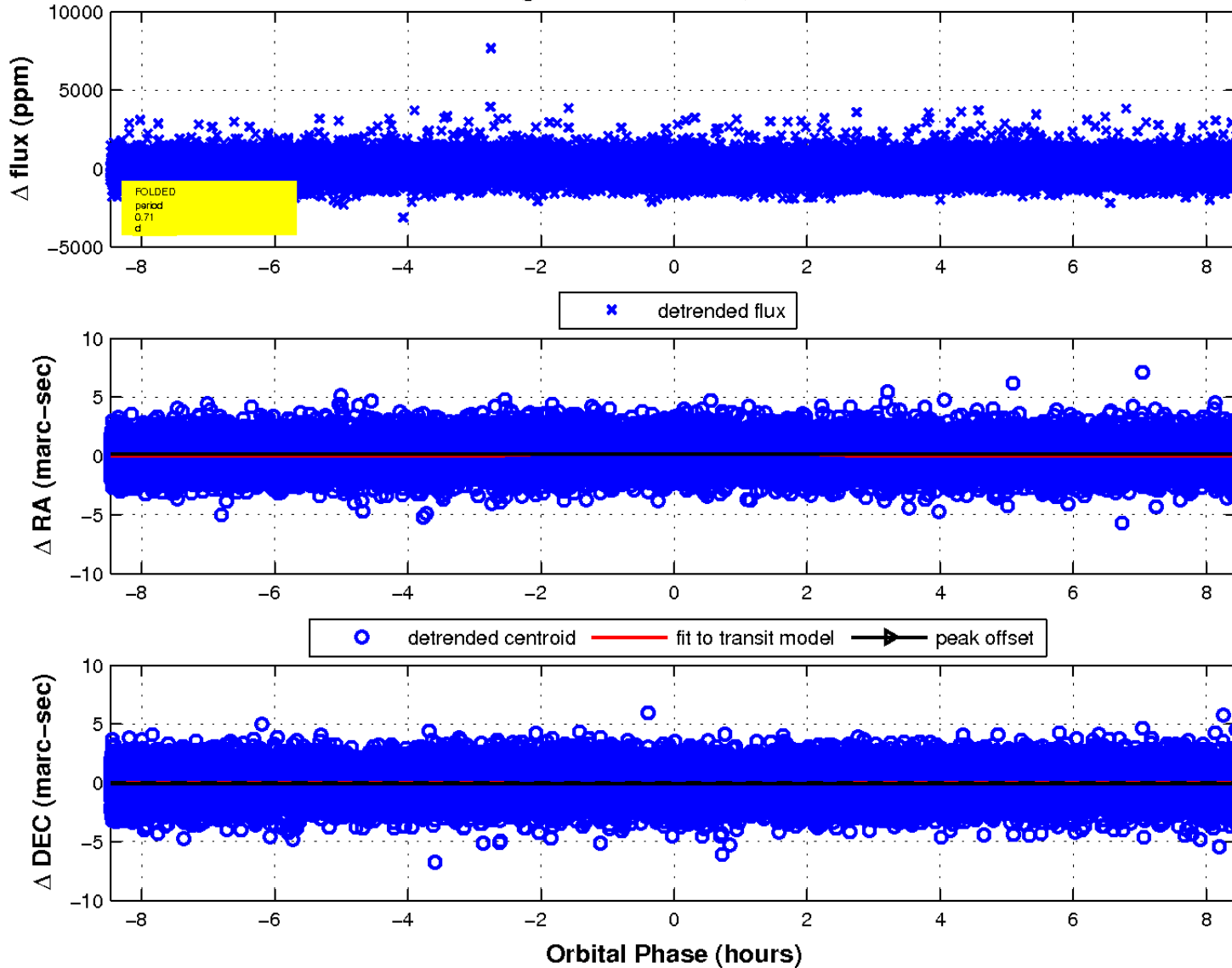
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



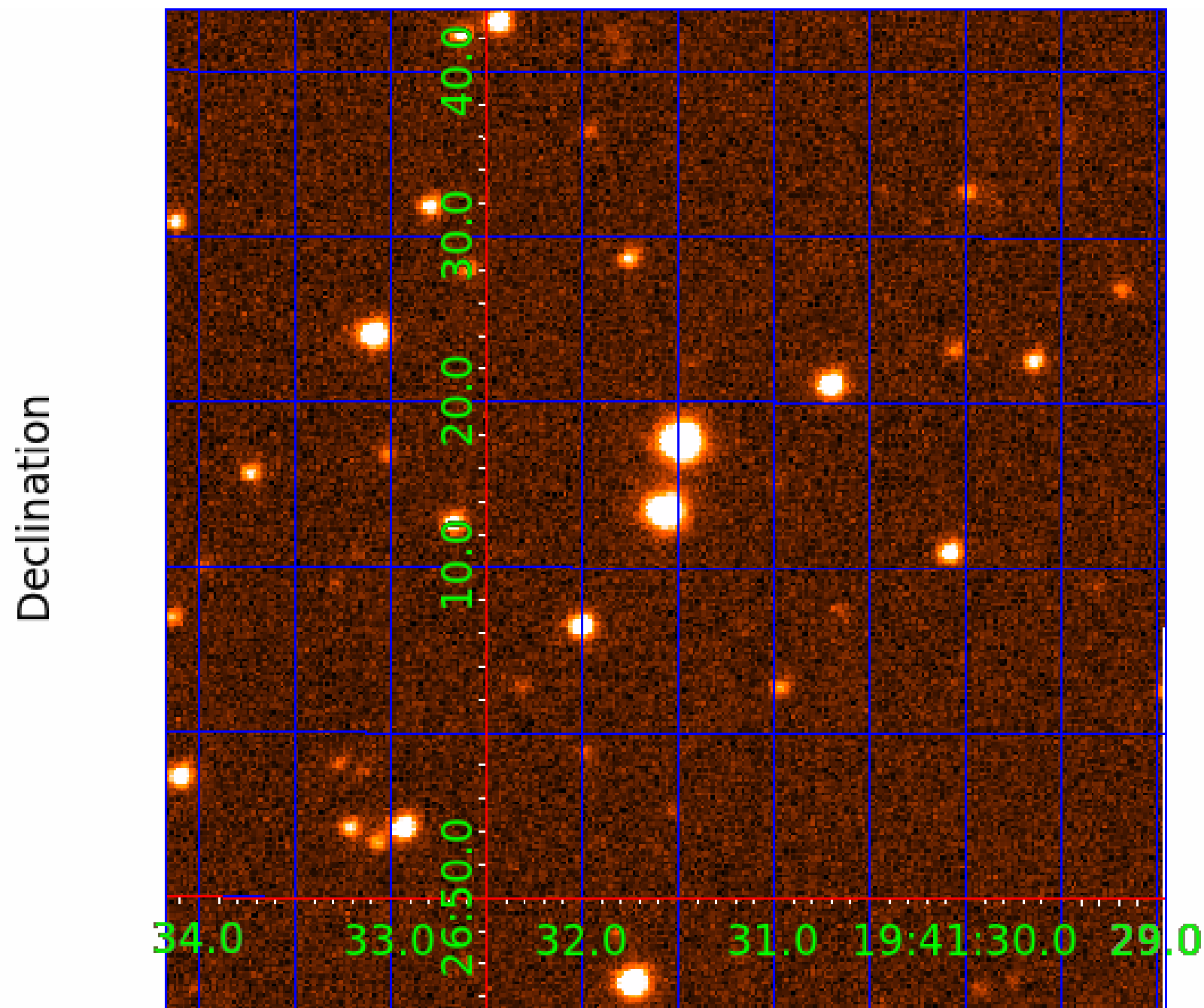
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 4



UKIRT Image



KIC 004380560

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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004380560-04	OBS	No	18.571153	135.872599	1532.2	1.118	10.3	11.0	0.97	6106	4.02	59.90

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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004380560-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
004380560-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004380560-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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 004380560-02

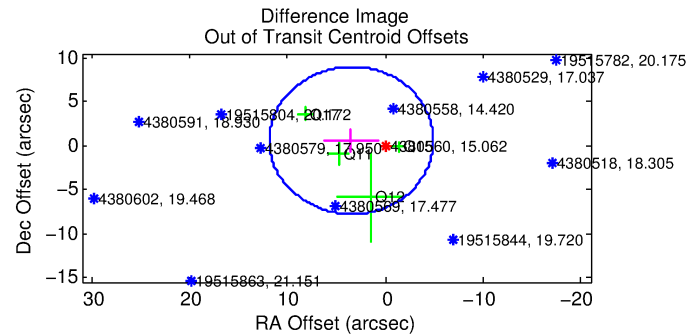
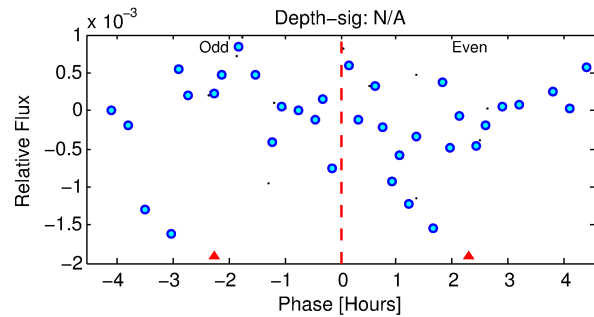
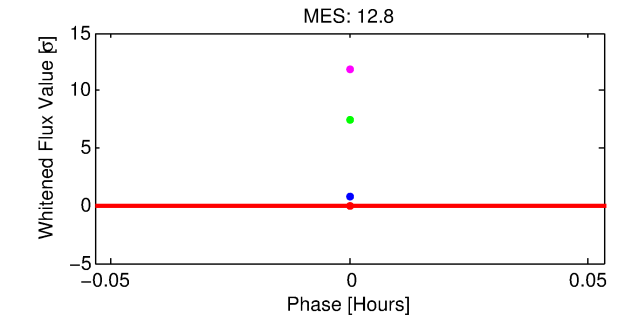
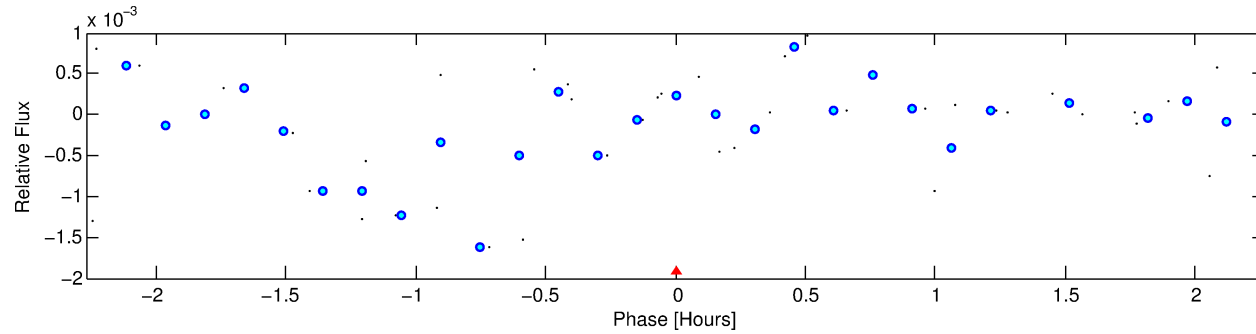
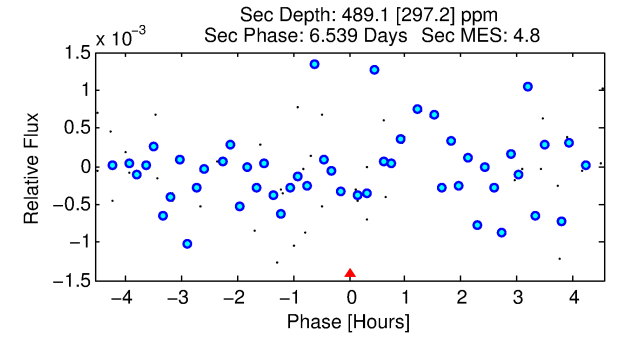
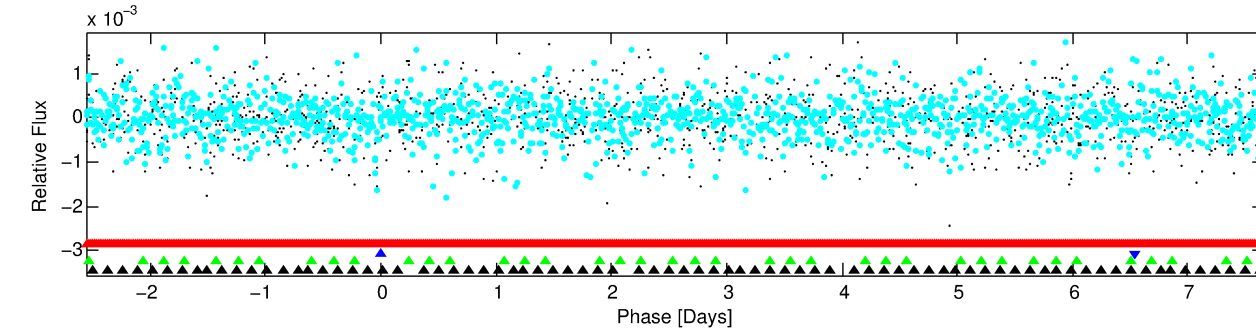
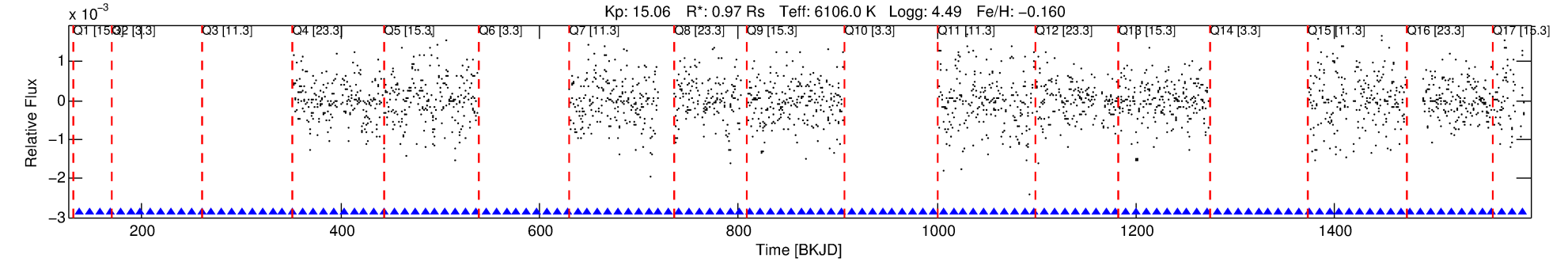
No Significant Match Found

DV One-Page Summary

KIC: 4380560 Candidate: 2 of 4 Period: 10.221 d

KOI: K07548 Corr: No Ephemeris Match

Kp: 15.06 R*: 0.97 Rs Teff: 6106.0 K Logg: 4.49 Fe/H: -0.160



TPS TCE Results:

Period = 10.22063 d
Epoch = 137.4204 BKJD

DV fit results are unavailable

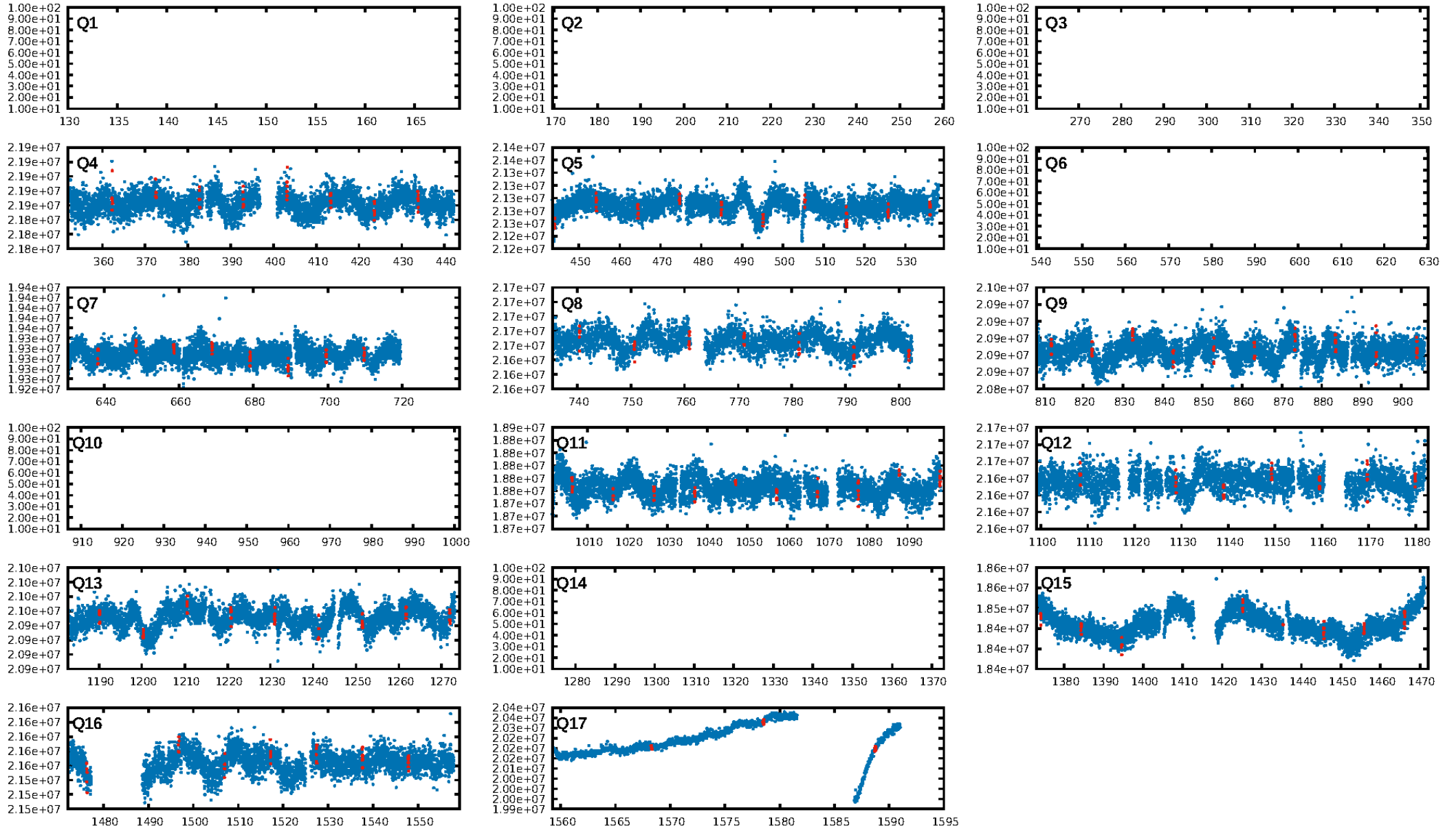
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [42.29σ]
LongPeriod-sig: 100.0% [107.12σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.49e-16
RollingBand-fgt: 1.00 [13/13]
GhostDiagnostic-chr: 0.6428
Centroid-sig: 18.0%
Centroid-so: 1.285 arcsec [11.78σ]
OotOffset-rm: 3.524 arcsec [1.26σ]
KicOffset-rm: 4.730 arcsec [2.37σ]
OotOffset-st: 0/2/1/1 [4]
KicOffset-st: 0/2/1/1 [4]
DiffImageQuality-fgm: 0.00 [0/4]
DiffImageOverlap-fno: 0.36 [4/11]

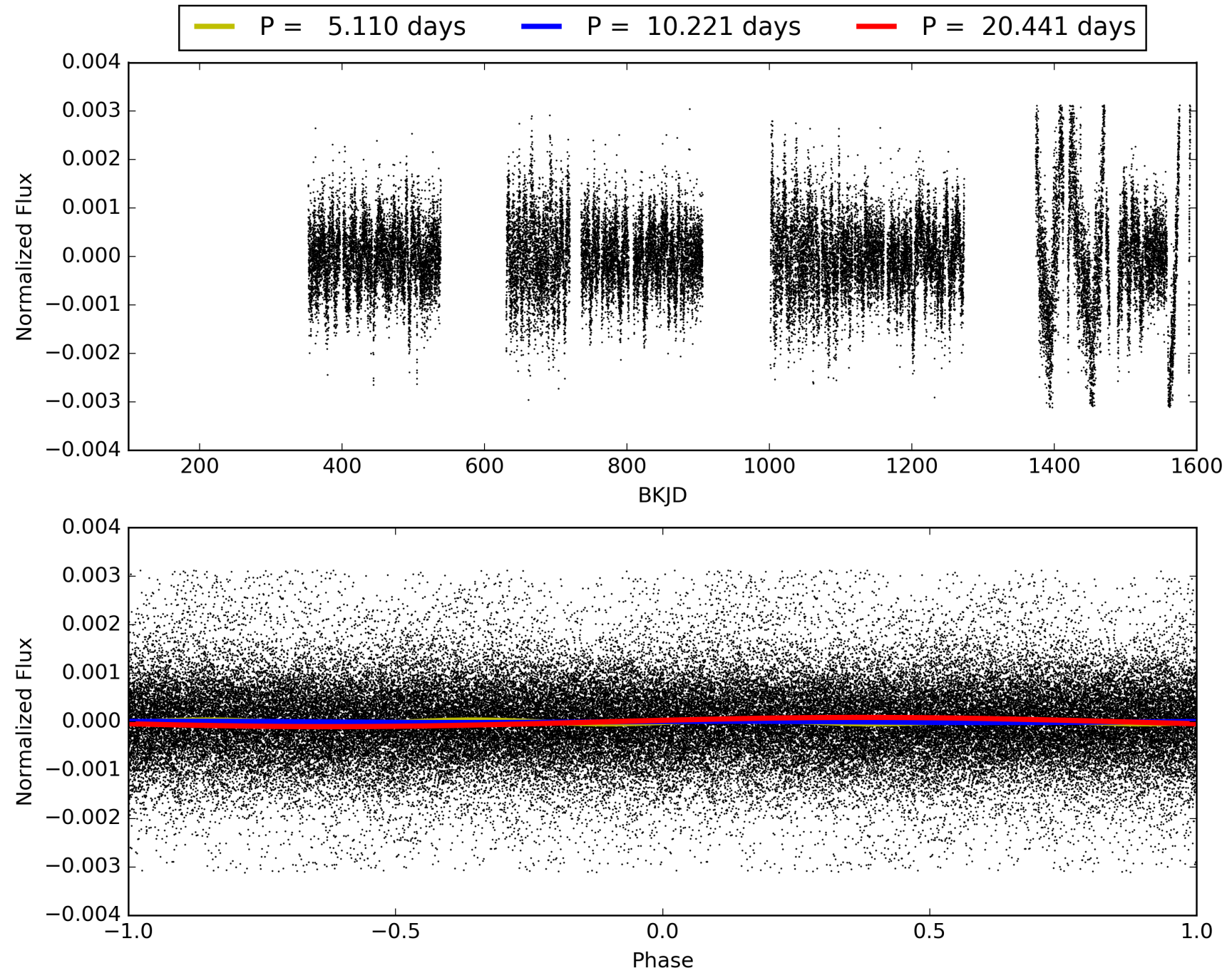
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:25:03 Z

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

TCE 004380560-02, PDC Light Curves

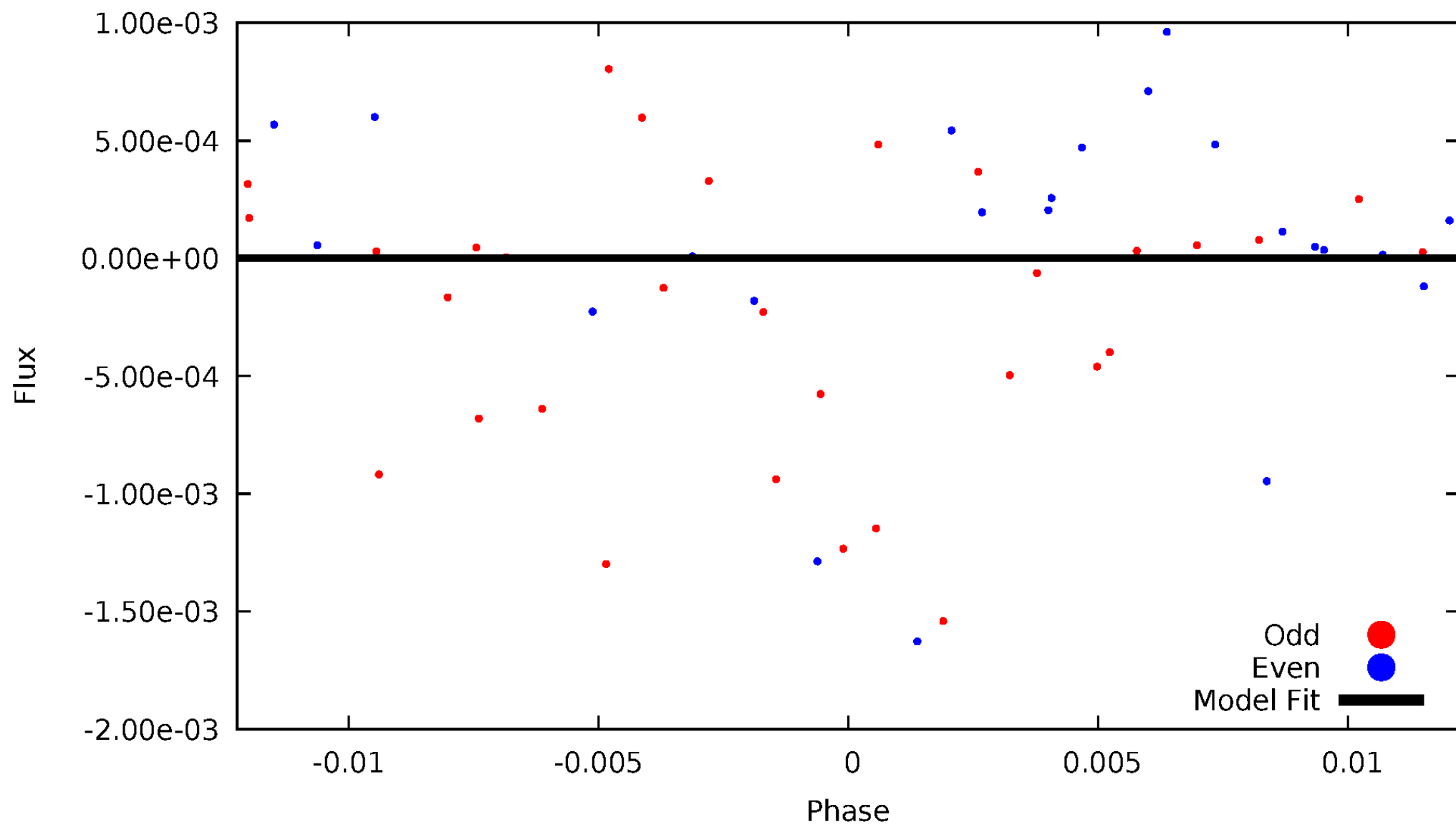


TCE 004380560-02



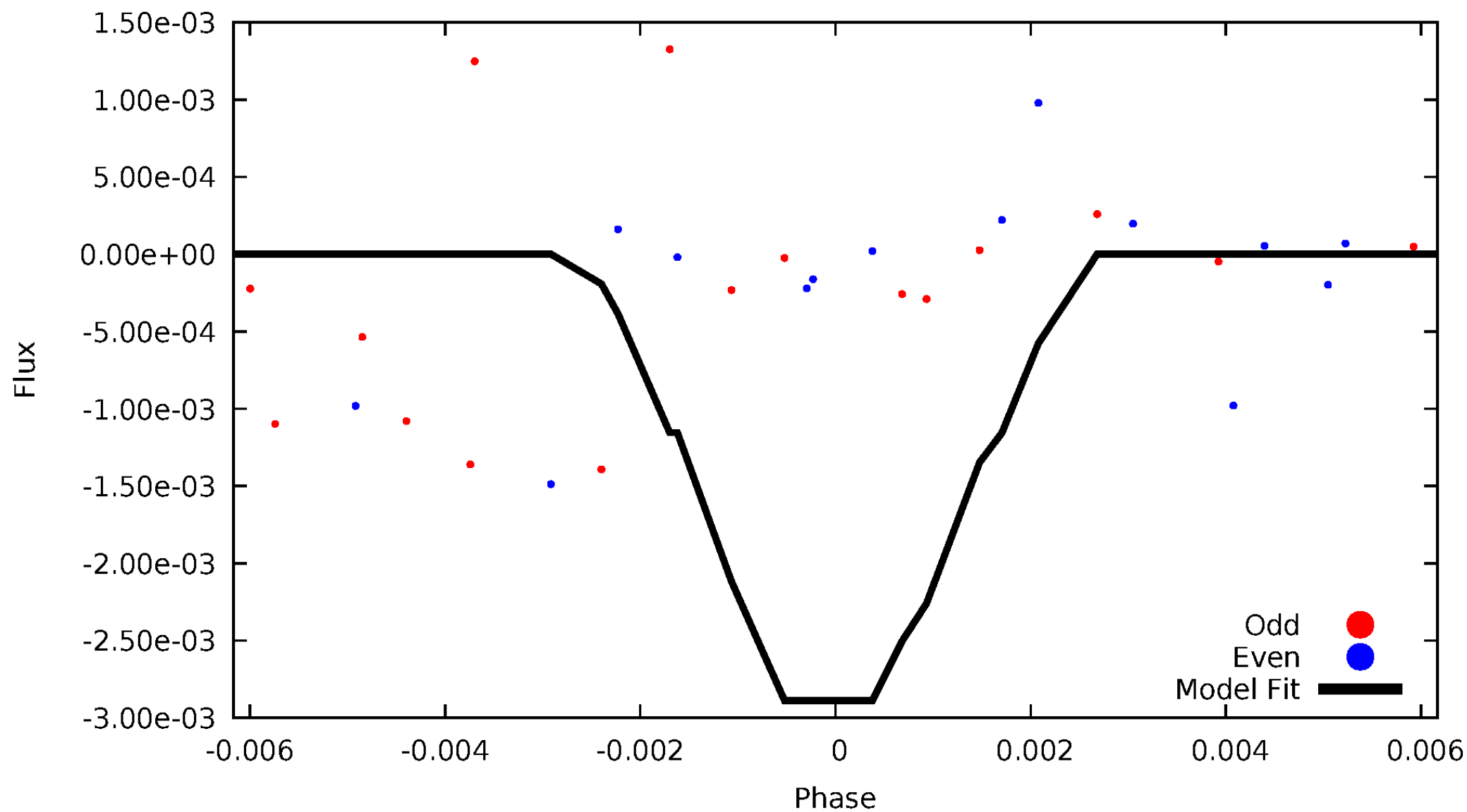
DV Odd/Even

TCE 004380560-02



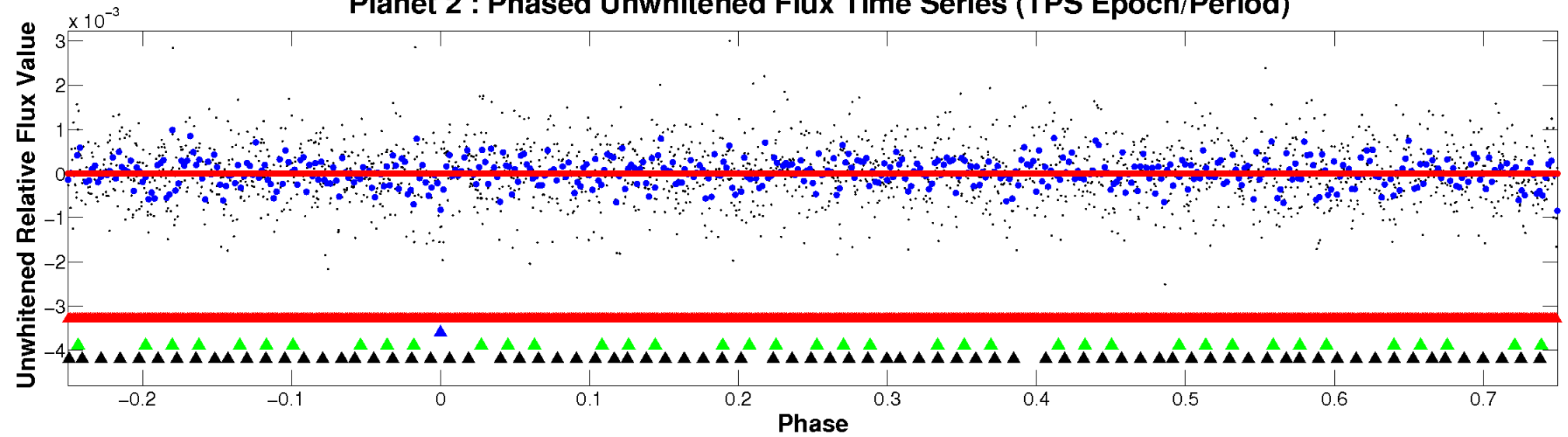
ALT Odd/Even

TCE 004380560-02



Non-Whitened Vs. Whitened Light Curve

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

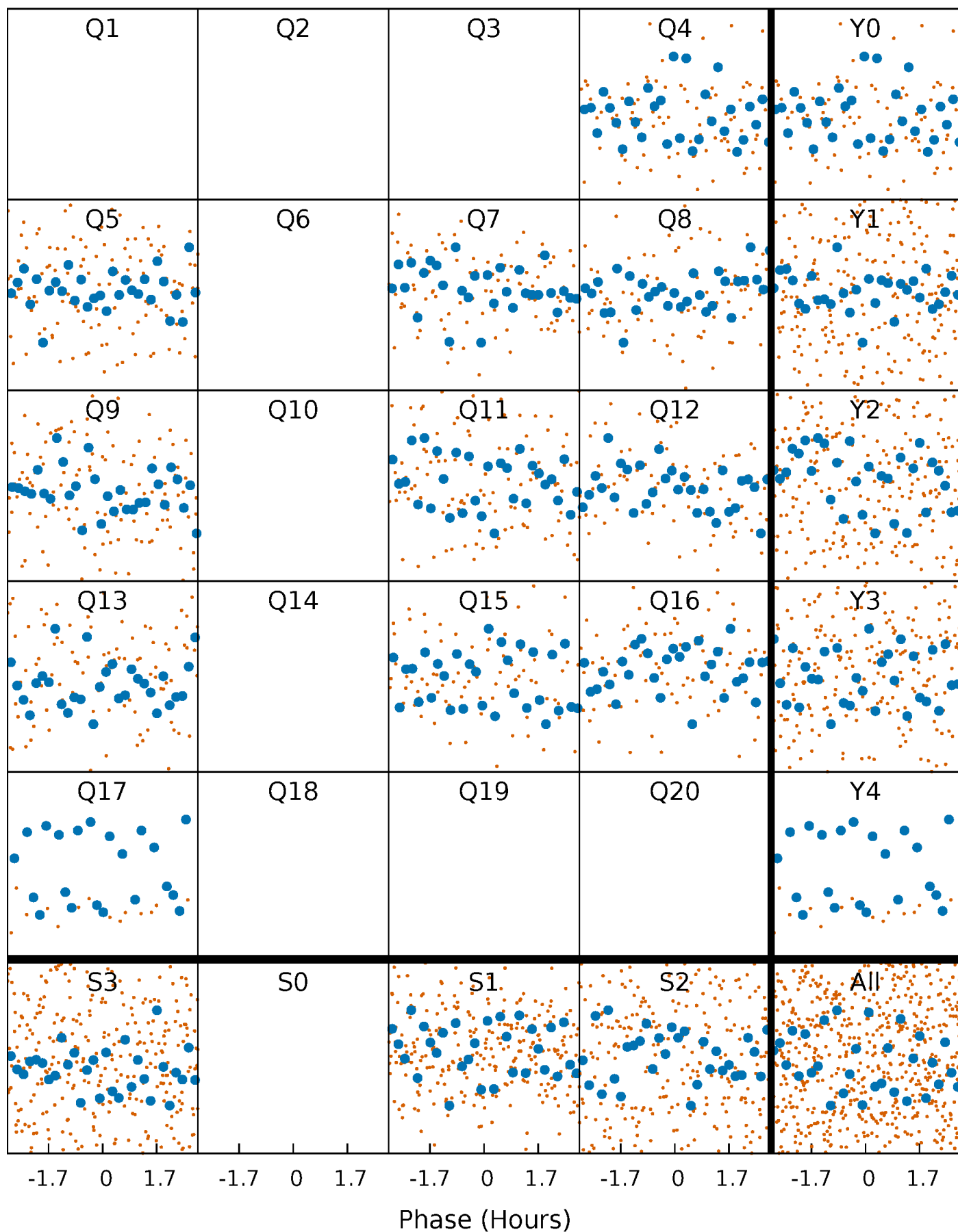


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



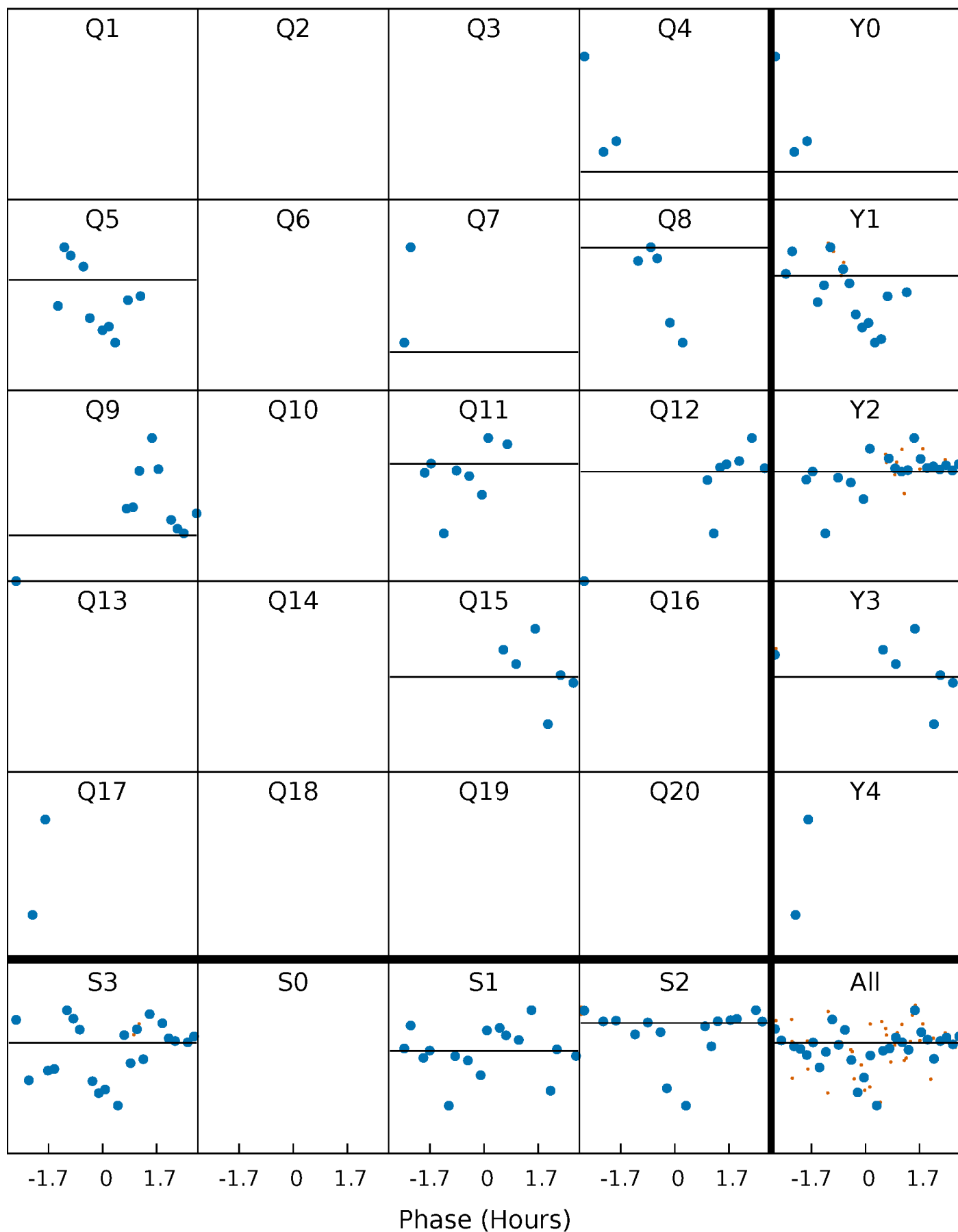
PDC Quarter-Phased Transit Curves

TCE 004380560-02 P= 10.220635 Days $T_0=137.420370$ (BKJD)



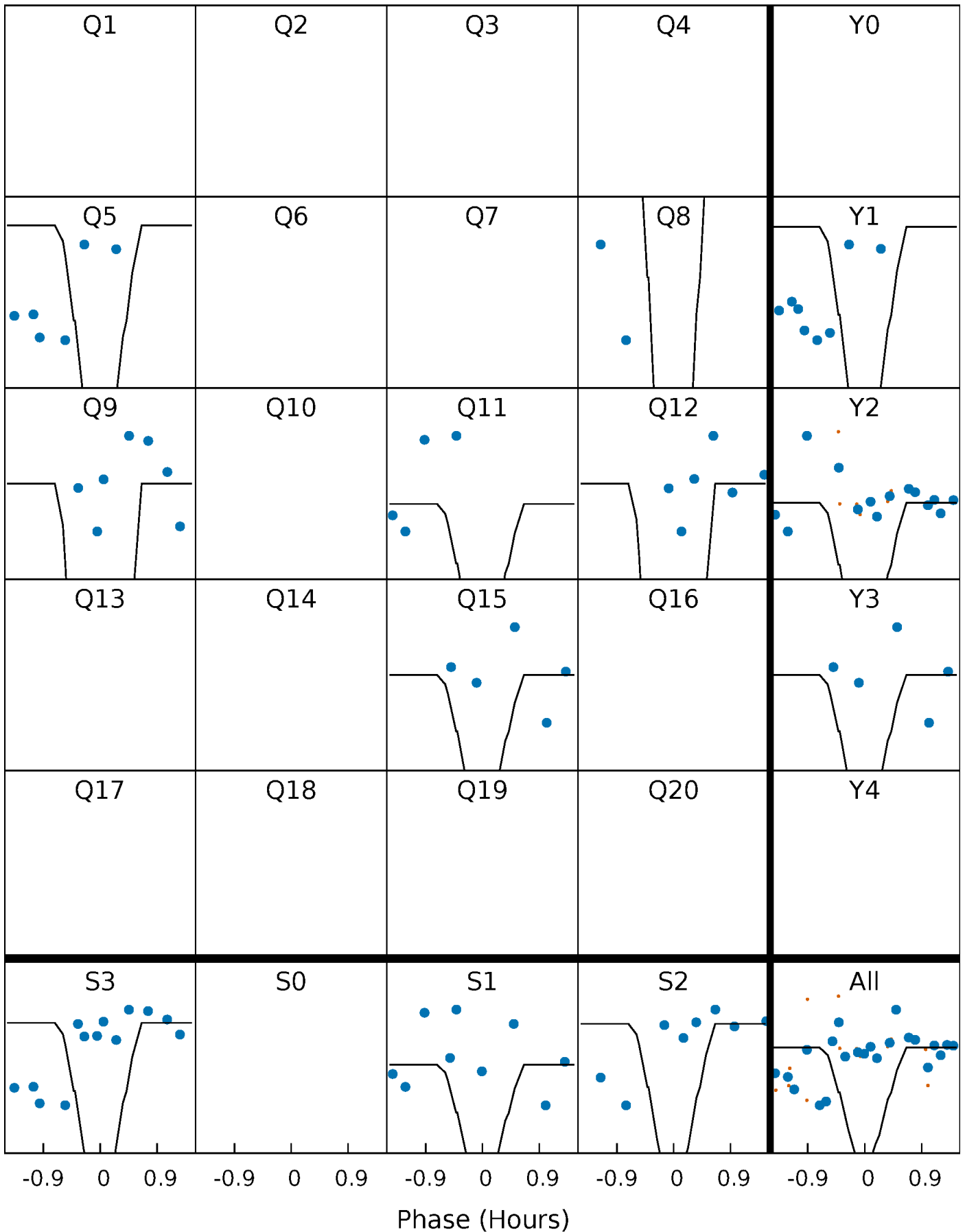
DV Quarter-Phased Transit Curves

TCE 004380560-02 P= 10.220635 Days $T_0=137.420370$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

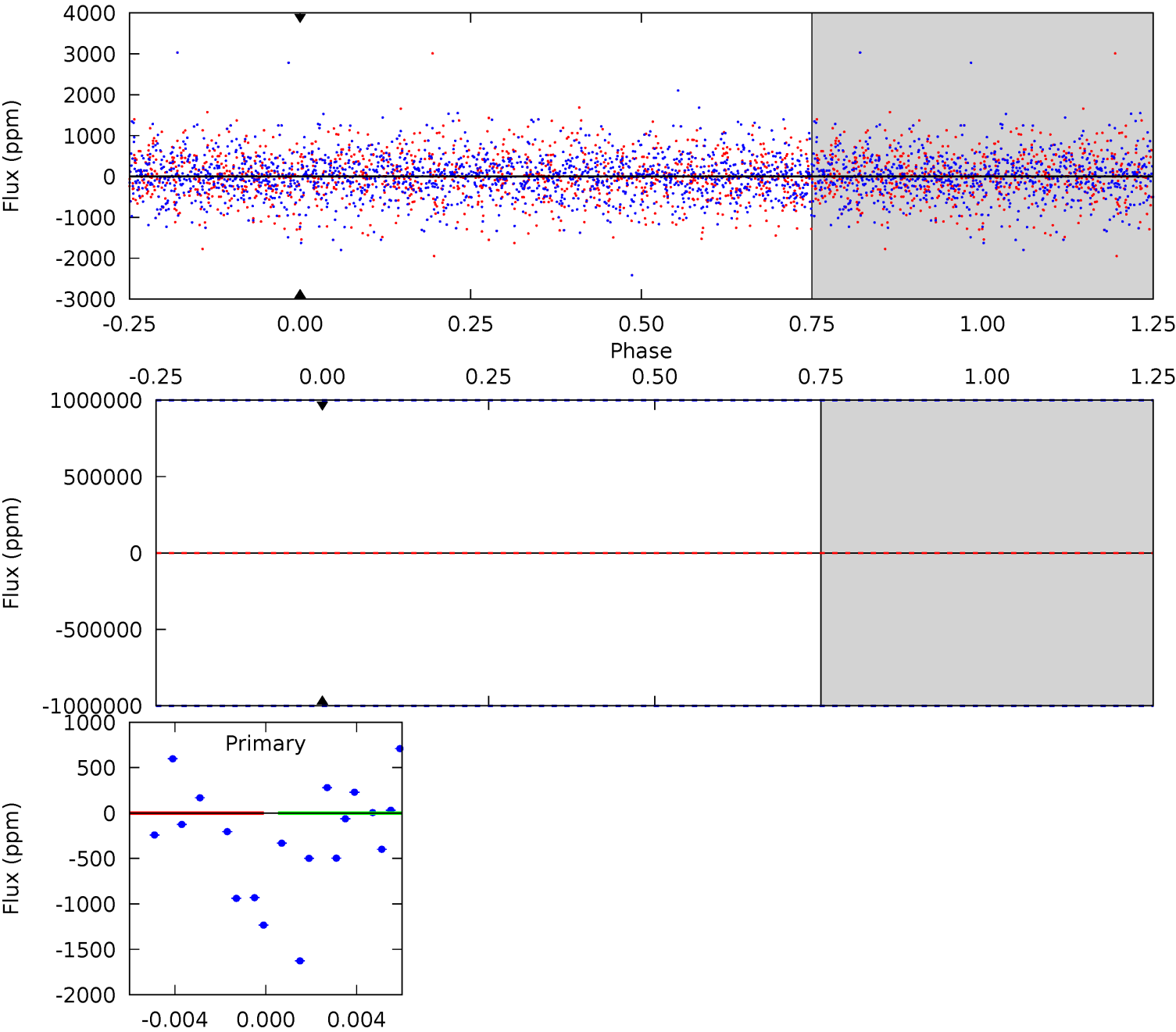
TCE 004380560-02 P= 10.220635 Days $T_0=137.464273$ (BKJD)



DV Model-Shift Uniqueness Test

004380560-02, P = 10.220635 Days, E = 137.420370 Days

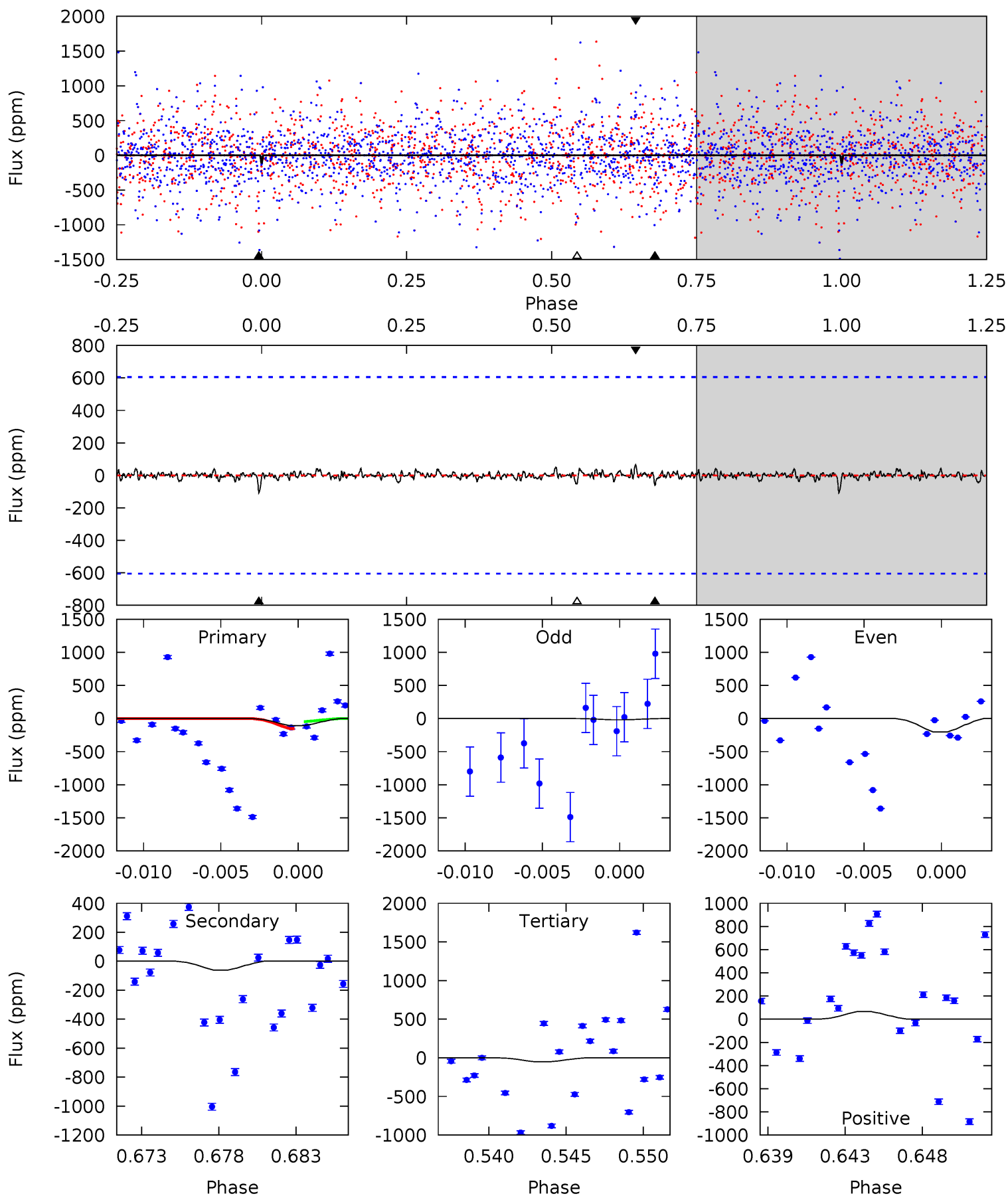
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

004380560-02, P = 10.220635 Days, E = 137.464273 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.92	0.52	0.45	0.56	5.16	2.81	0.12	0.47	0.36	0.08	-0.04	0.80	1.04	0.38	0.45



Stellar Parameters For KIC 004380560

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6106^{+190}_{-232}	$4.487^{+0.052}_{-0.208}$	$-0.160^{+0.250}_{-0.350}$	$0.966^{+0.304}_{-0.101}$	$1.043^{+0.140}_{-0.154}$	$1.631^{+0.444}_{-0.838}$
	+3%/-4%	+1%/-5%	+156%/-219%	+31%/-10%	+13%/-15%	+27%/-51%
Source	KIC0	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 004380560-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$9.47^{+9.13}_{-5.99}$	1235^{+89}_{-66}	4742^{+14428}_{-22903}	129^{+8511}_{-7835}
Alt.	-61 ± 117	$10.46^{+9.43}_{-6.72}$	1237^{+90}_{-65}	2402^{+994}_{-4920}	$1.720^{+18.358}_{-3.496}$

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

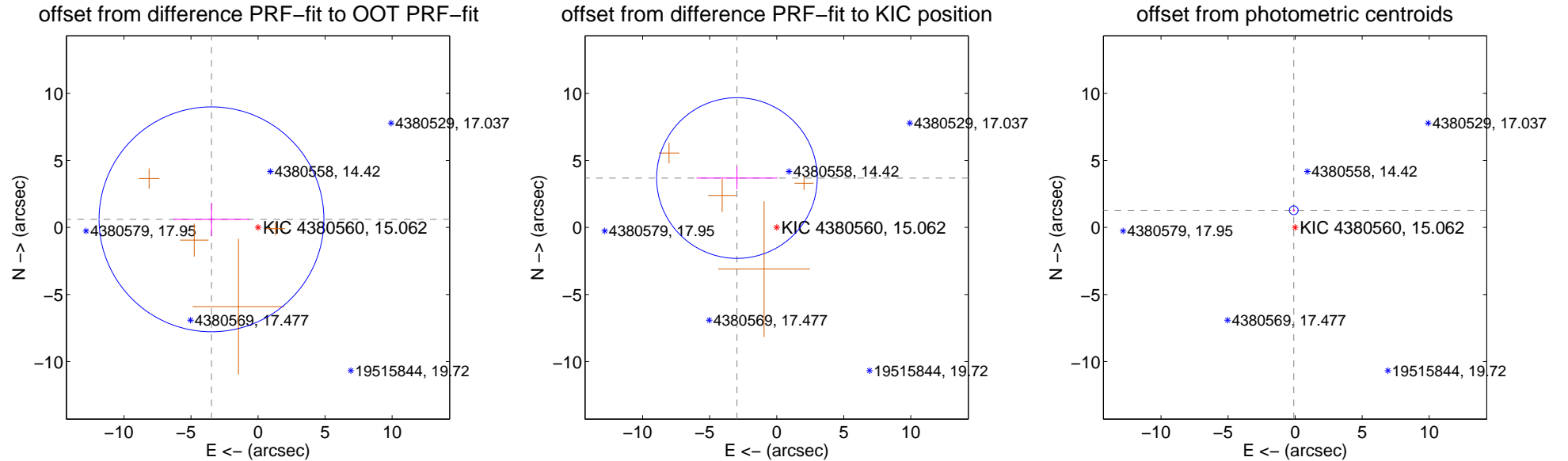
DV Centroid Data

Supplemental centroid analysis for 004380560-02. Kepler magnitude: 15.06. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

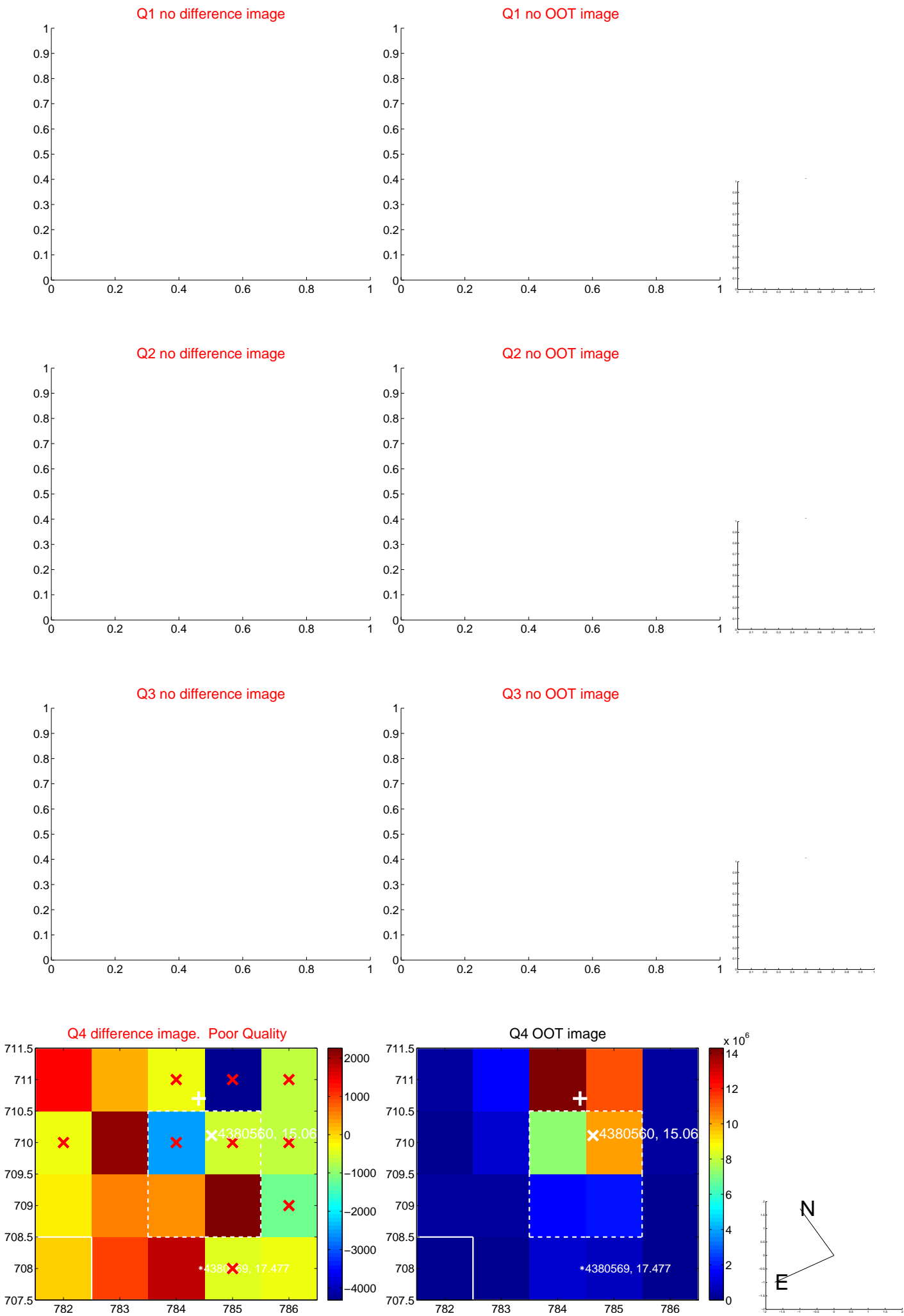
The direct PRF centroid is offset from the target star catalog position by about 1.90 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.524 ± 2.794	1.26	3.472 ± 2.828	0.606 ± 1.243
PRF-fit source offset from KIC position	4.730 ± 1.996	2.37	2.966 ± 3.008	3.685 ± 0.839
photometric centroid source offset	1.29 ± 0.11	11.78	0.10 ± 0.09	1.28 ± 0.11

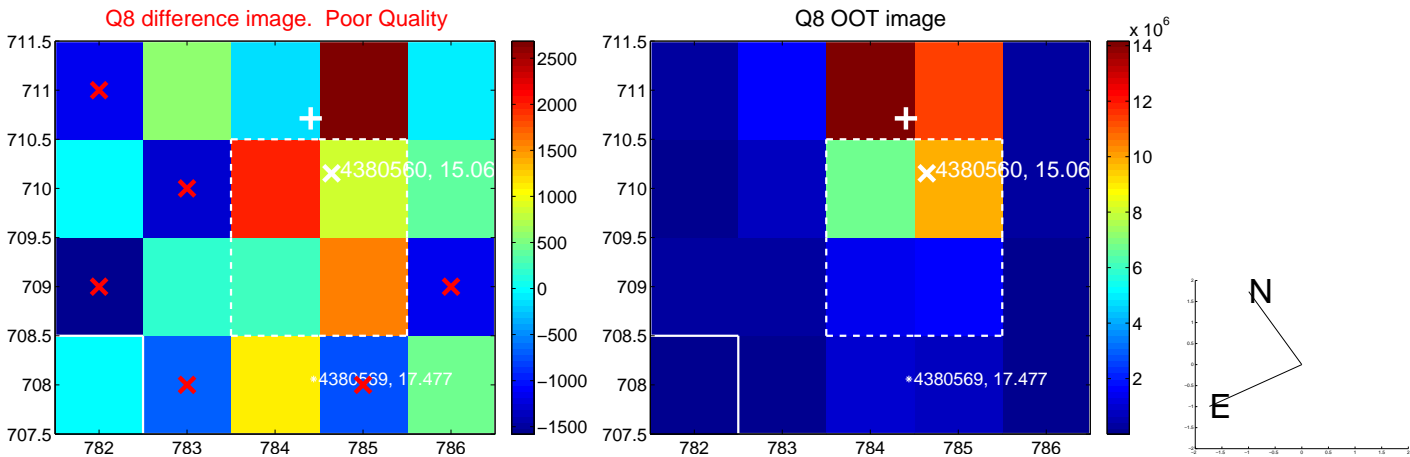
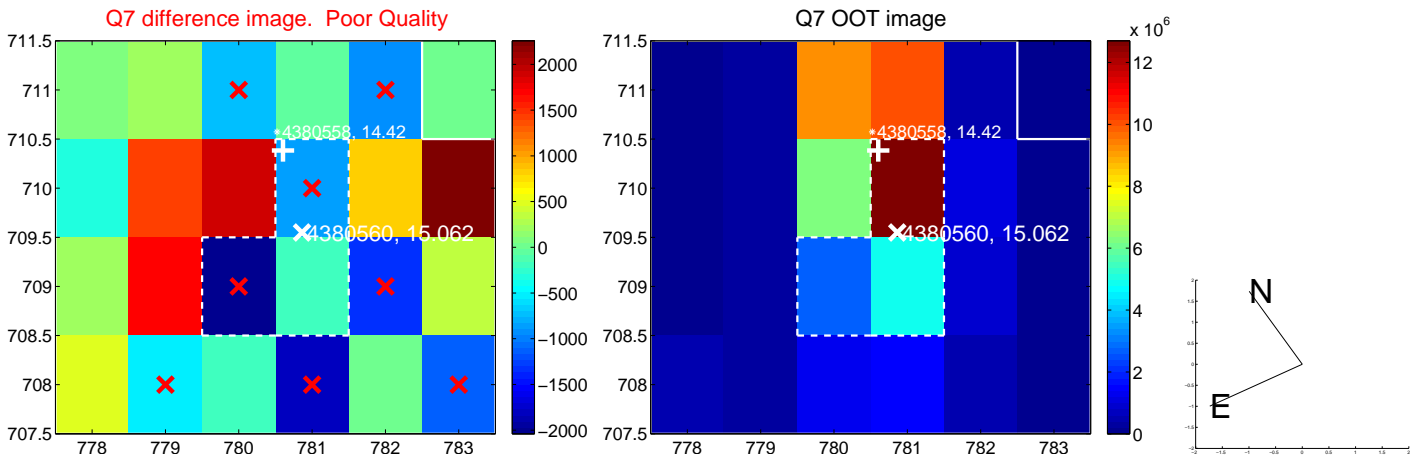
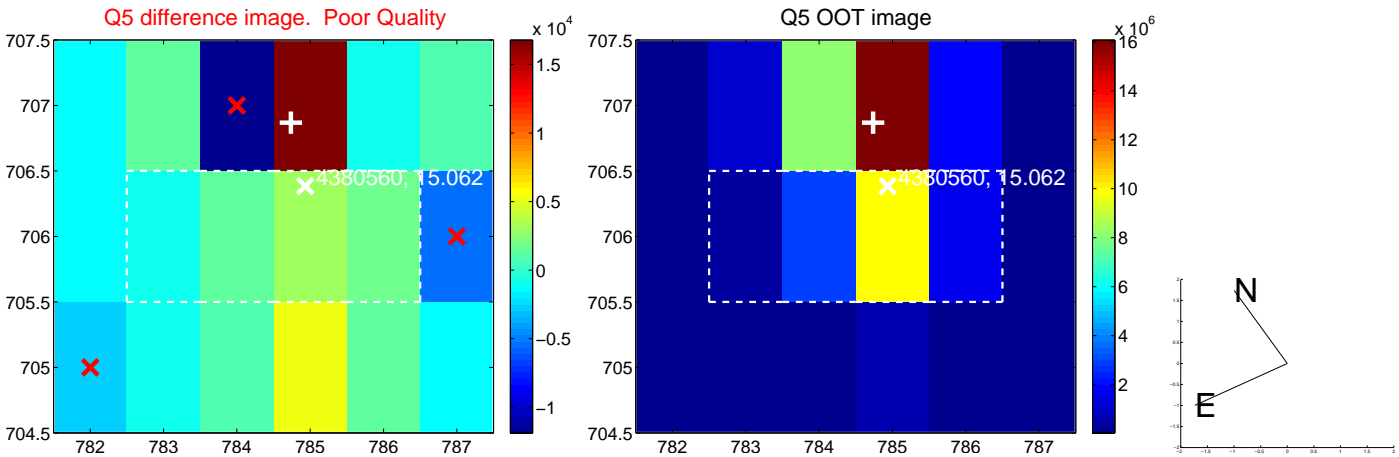


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

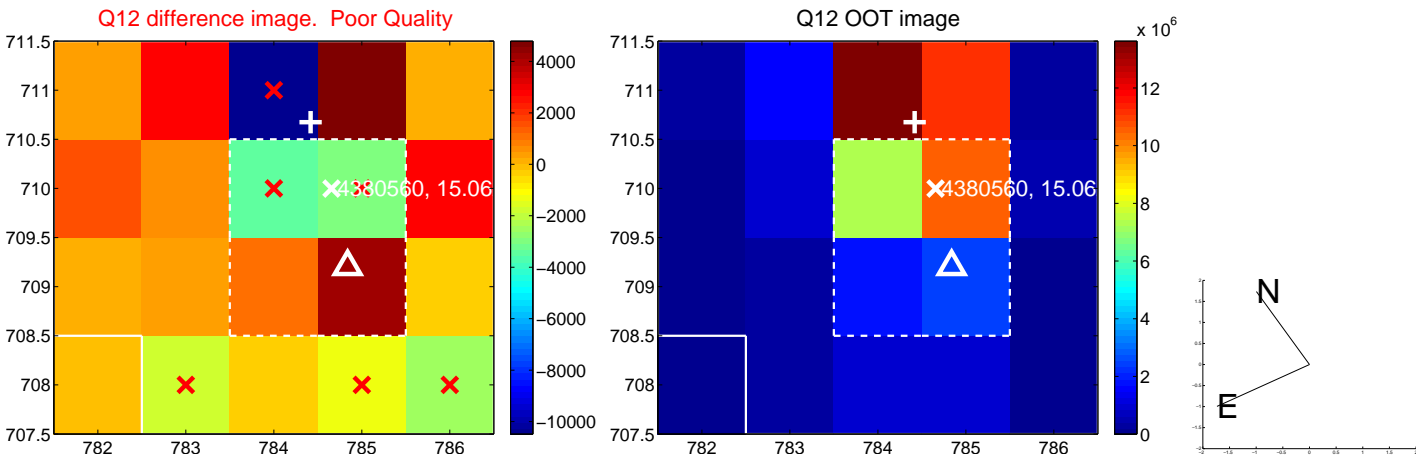
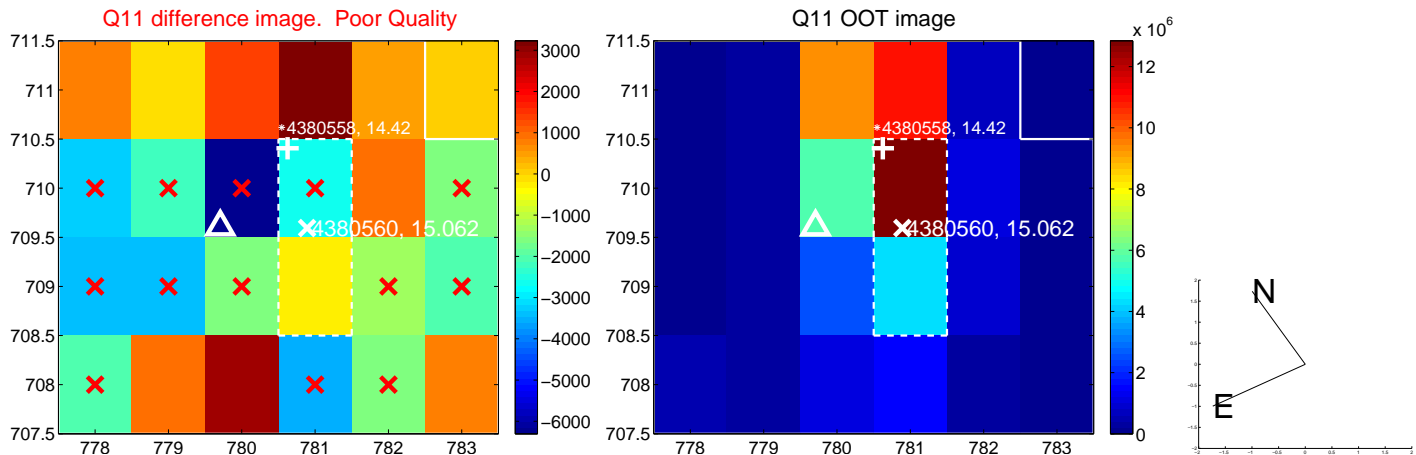
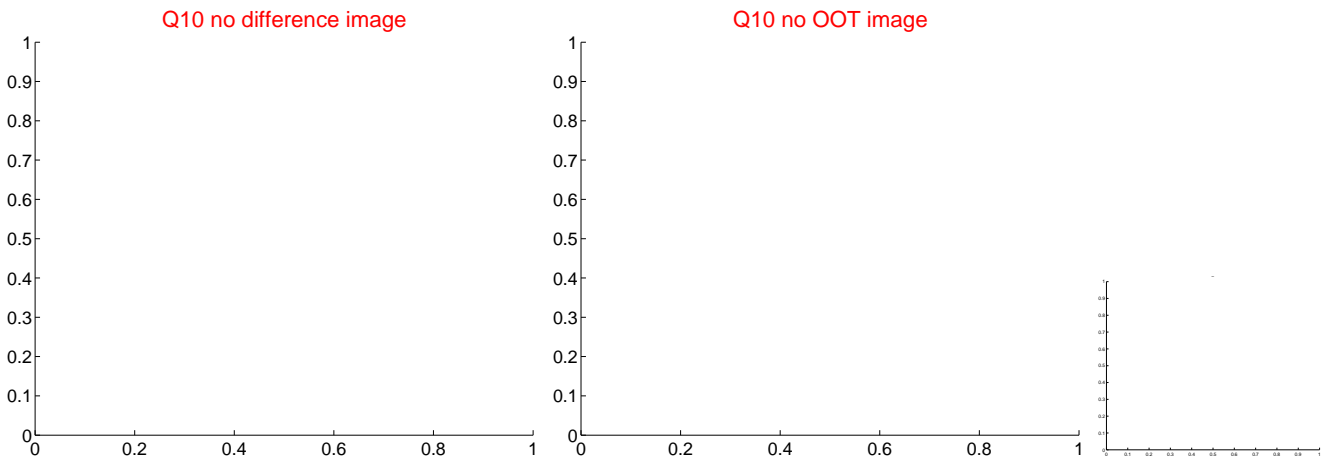
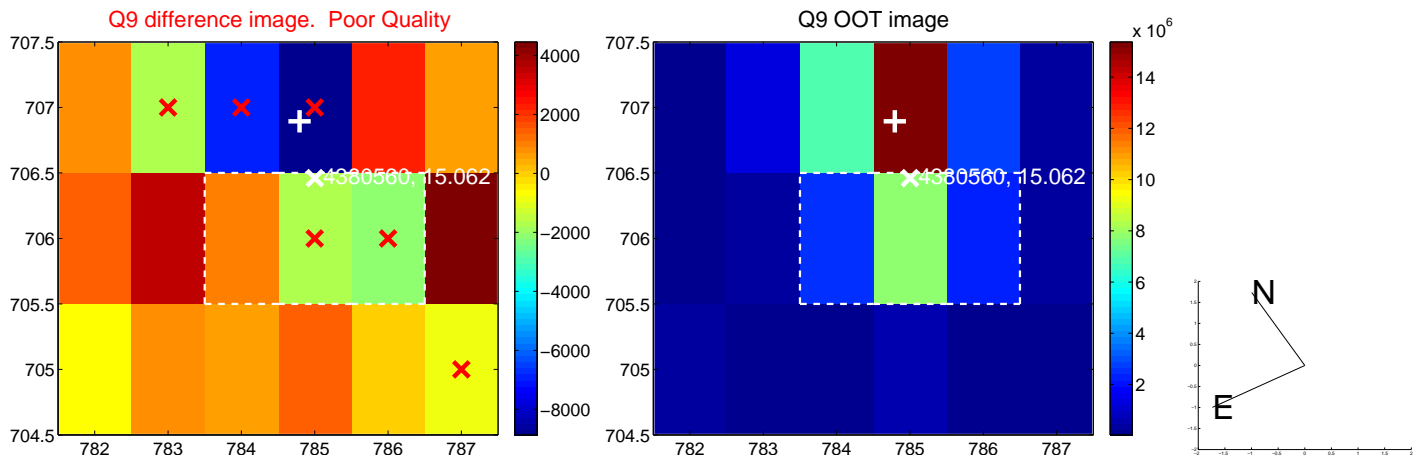
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



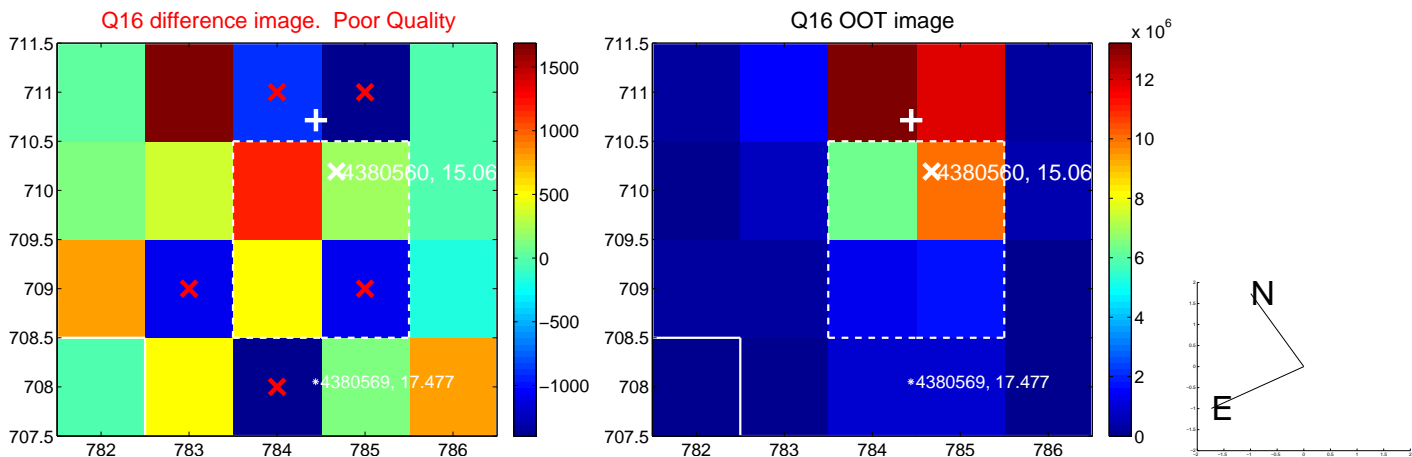
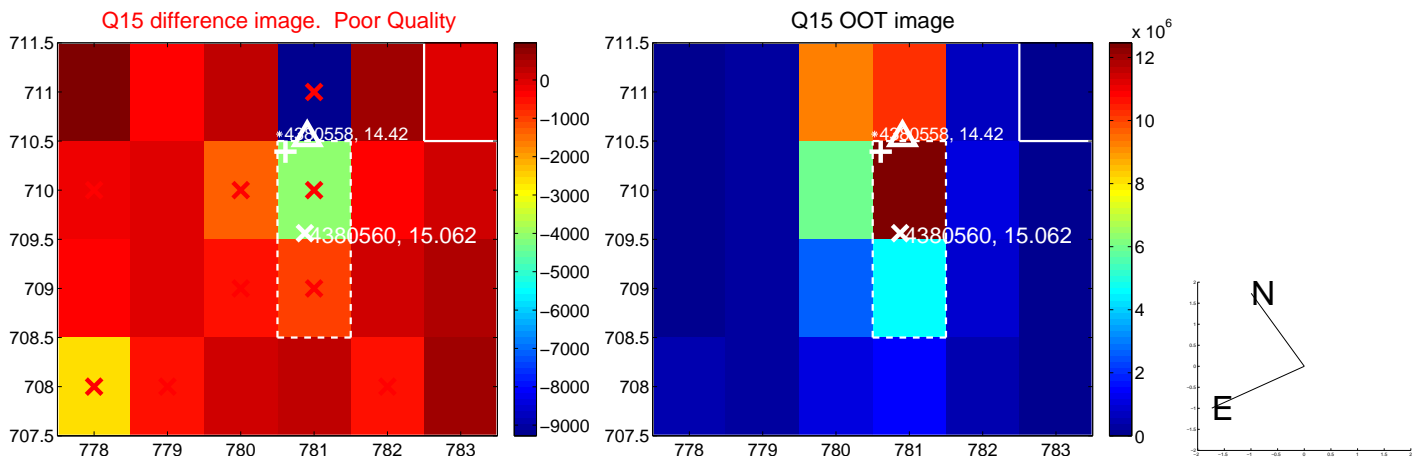
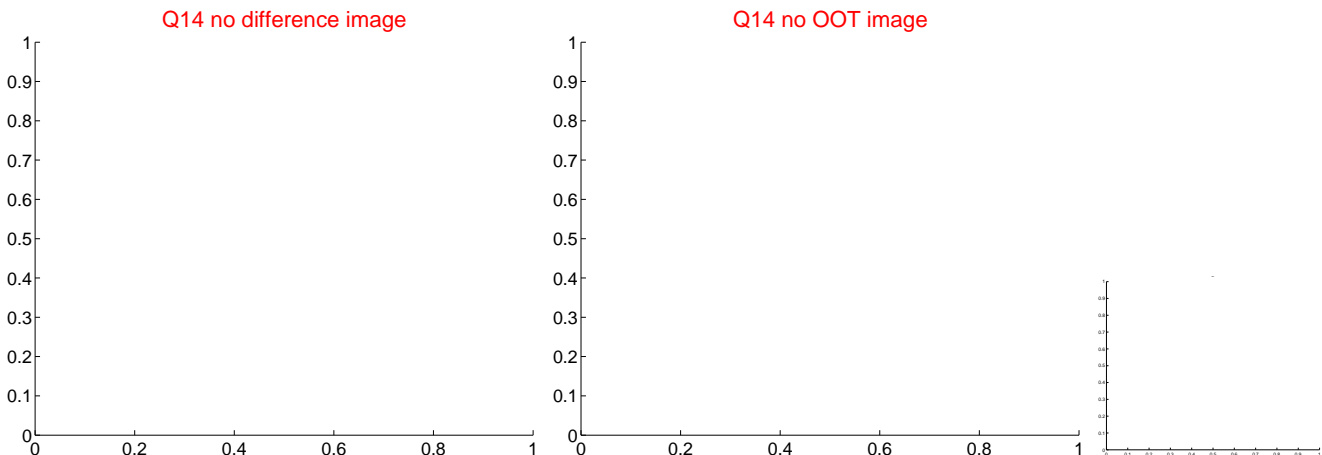
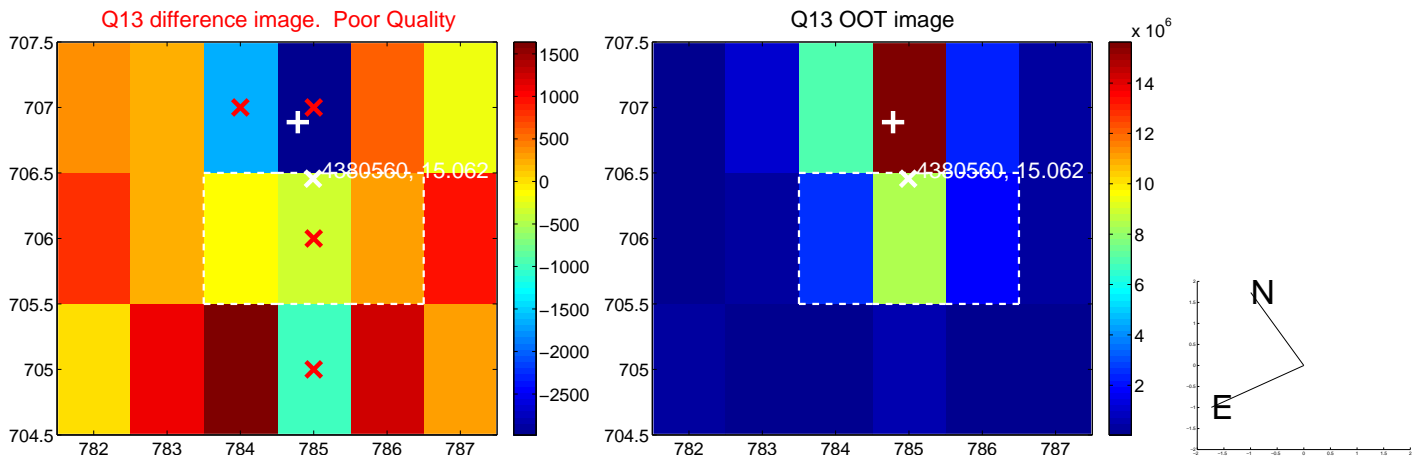
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



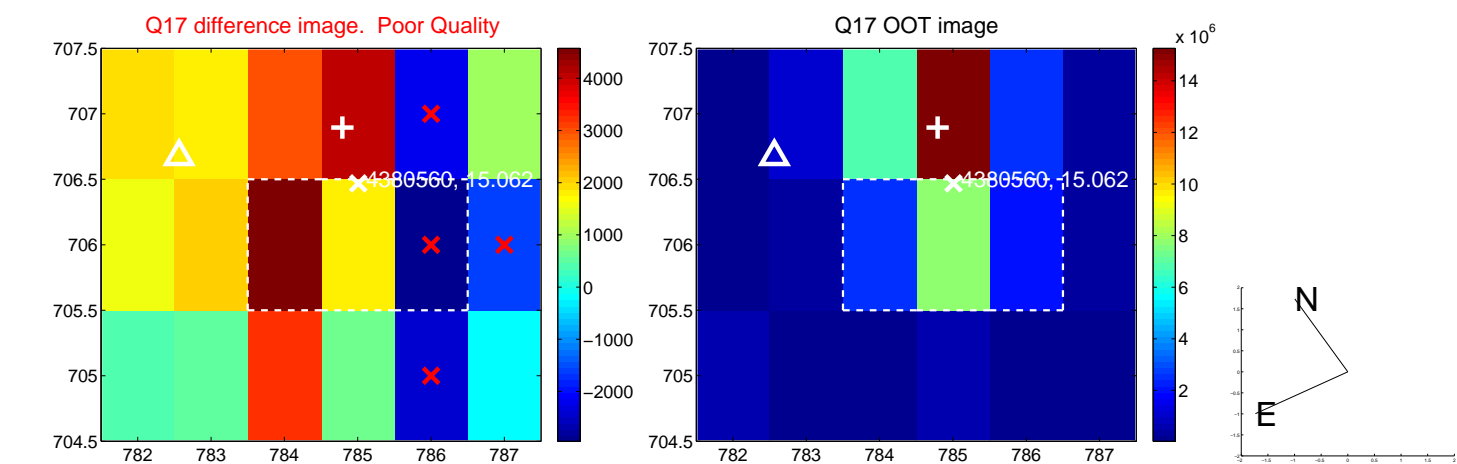
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



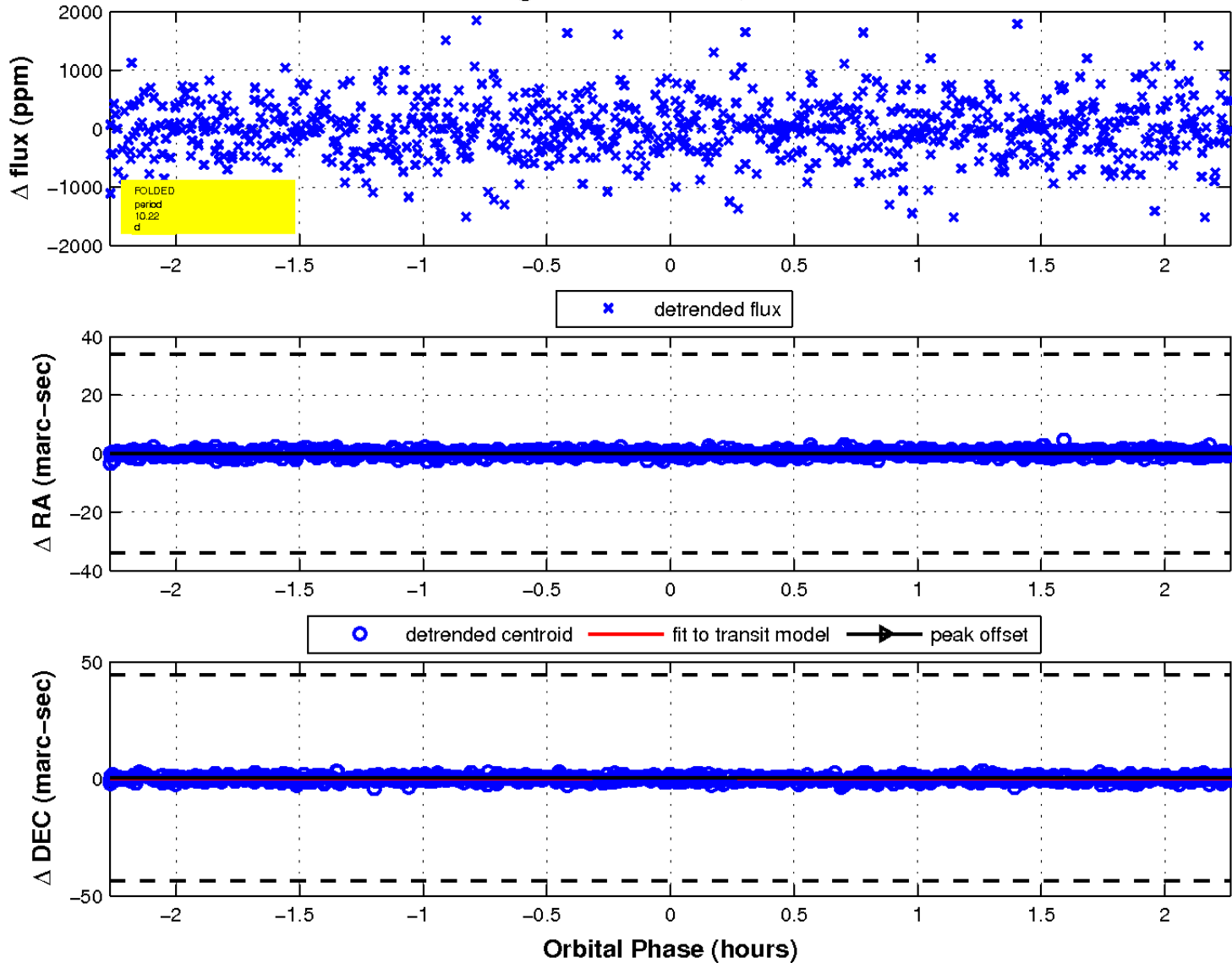
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



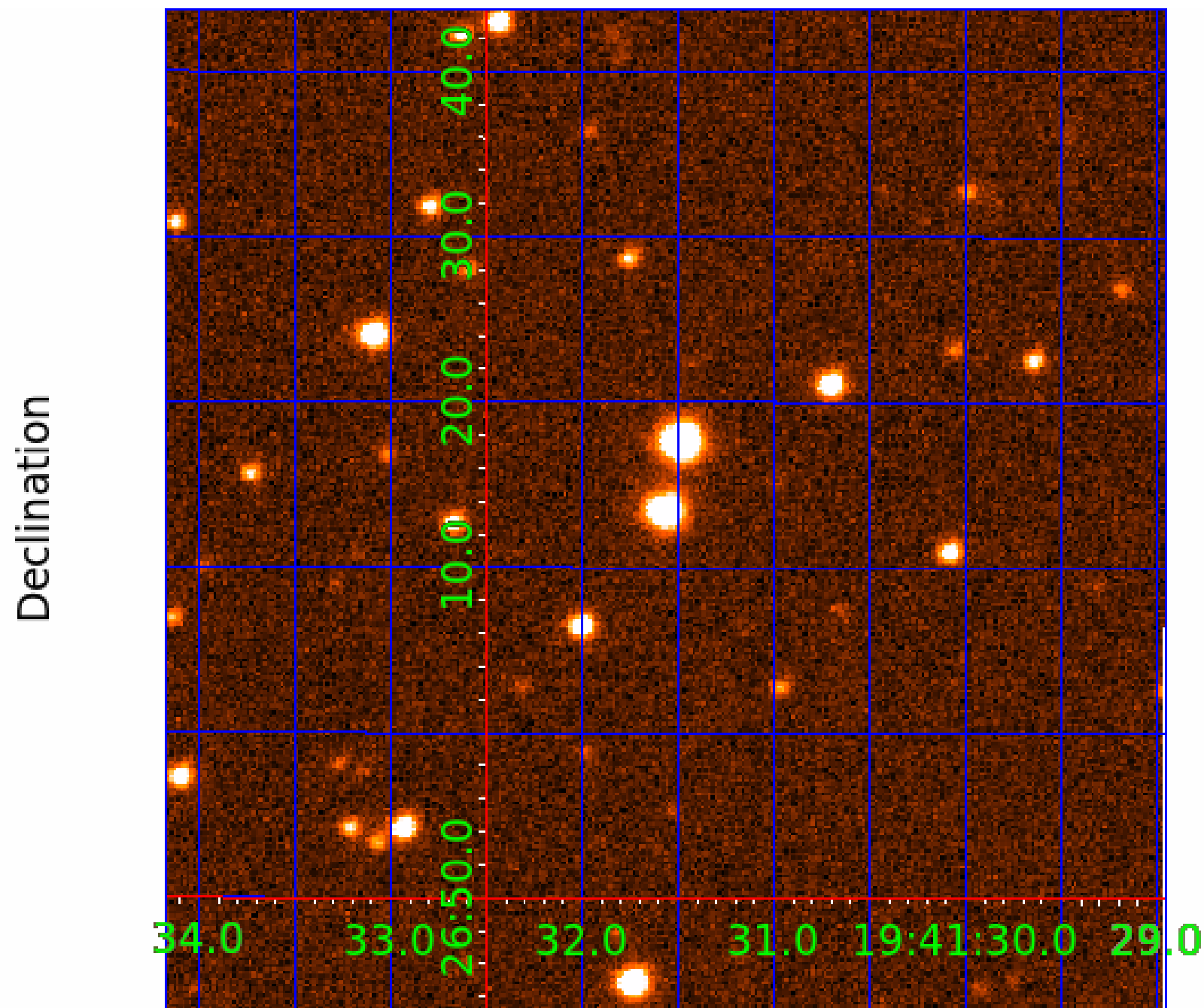
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 4



UKIRT Image



KIC 004380560

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})
004380560-01	OBS	7548.01	0.705741	132.030682	44.8	5.187	9.8	6.7	0.97	6106	0.66	4688.63
004380560-02	OBS	No	10.220635	137.420370	2263.7	1.500	12.8	-1.0	0.97	6106	4.61	132.82
004380560-03	OBS	No	37.751773	146.264270	761.0	3.698	10.6	10.0	0.97	6106	2.75	23.26
004380560-04	OBS	No	18.571153	135.872599	1532.2	1.118	10.3	11.0	0.97	6106	4.02	59.90

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004380560-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_KIC_POS—HALO_GHOST—EPHEM_MATCH
004380560-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
004380560-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004380560-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

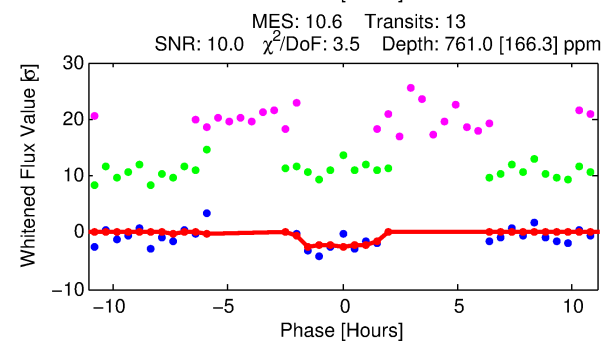
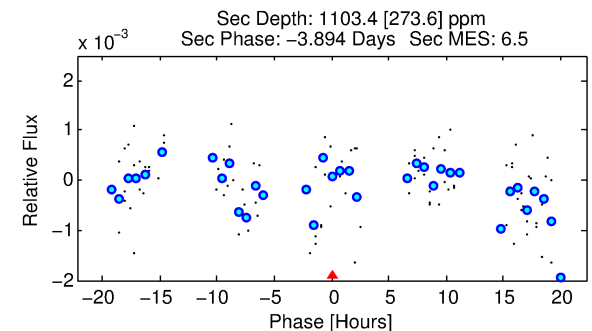
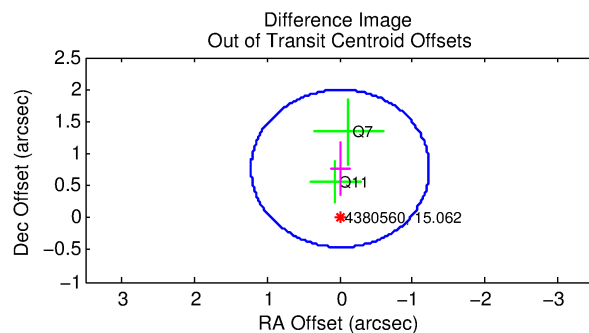
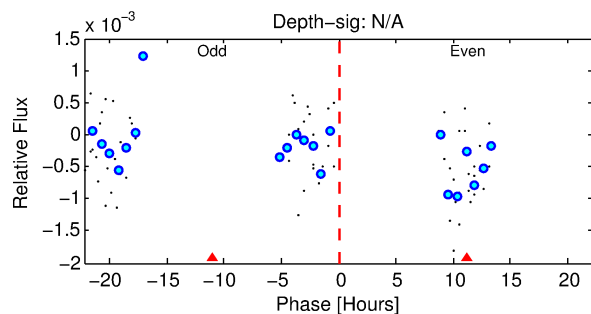
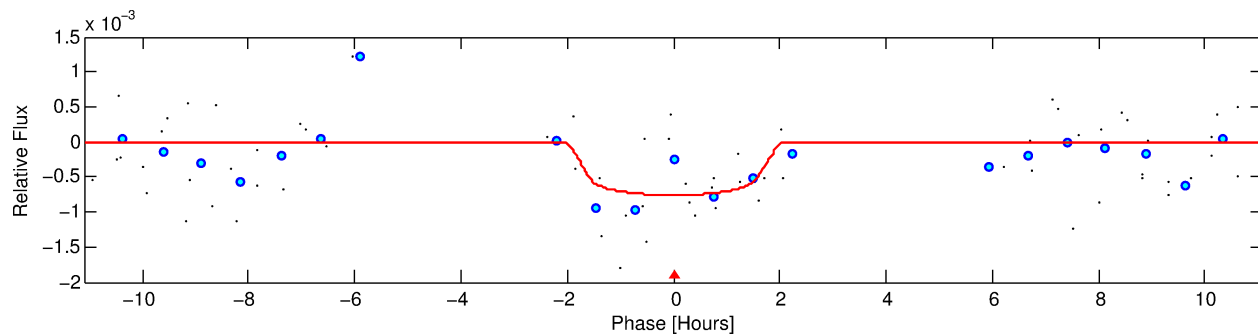
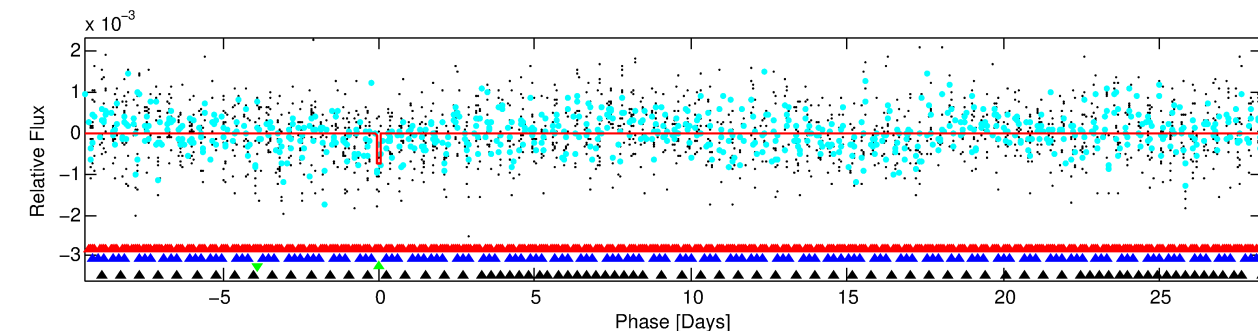
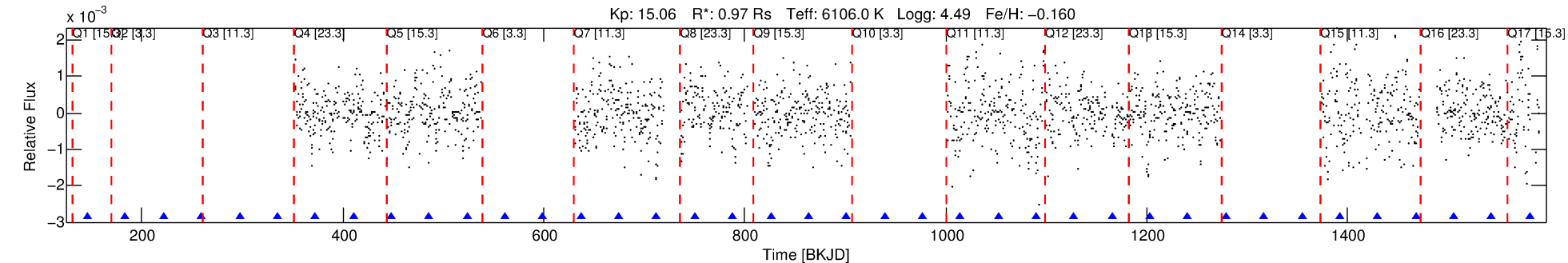
Ephemeris Match Information For 004380560-03

No Significant Match Found

DV One-Page Summary

KIC: 4380560 Candidate: 3 of 4 Period: 37.752 d
KOI: K07548 Corr: No Ephemeris Match

Kp: 15.06 R*: 0.97 Rs Teff: 6106.0 K Logg: 4.49 Fe/H: -0.160



DV Fit Results:

Period = 37.75177 [0.00495] d
Epoch = 146.2643 [0.1049] BKJD
Rp/R* = 0.0261 [0.1200]
a/R* = 68.67 [1589.55]
b = 0.53 [31.24]
Seff = 23.26 [9.56]
Teq = 560 [58] K
Rp = 2.75 [12.68] Re
a = 0.2235 [0.0589] AU
Ag = 4007.07 [36892.69] [0.11σ]
Teffp = 6889 [15844] K [0.40σ]

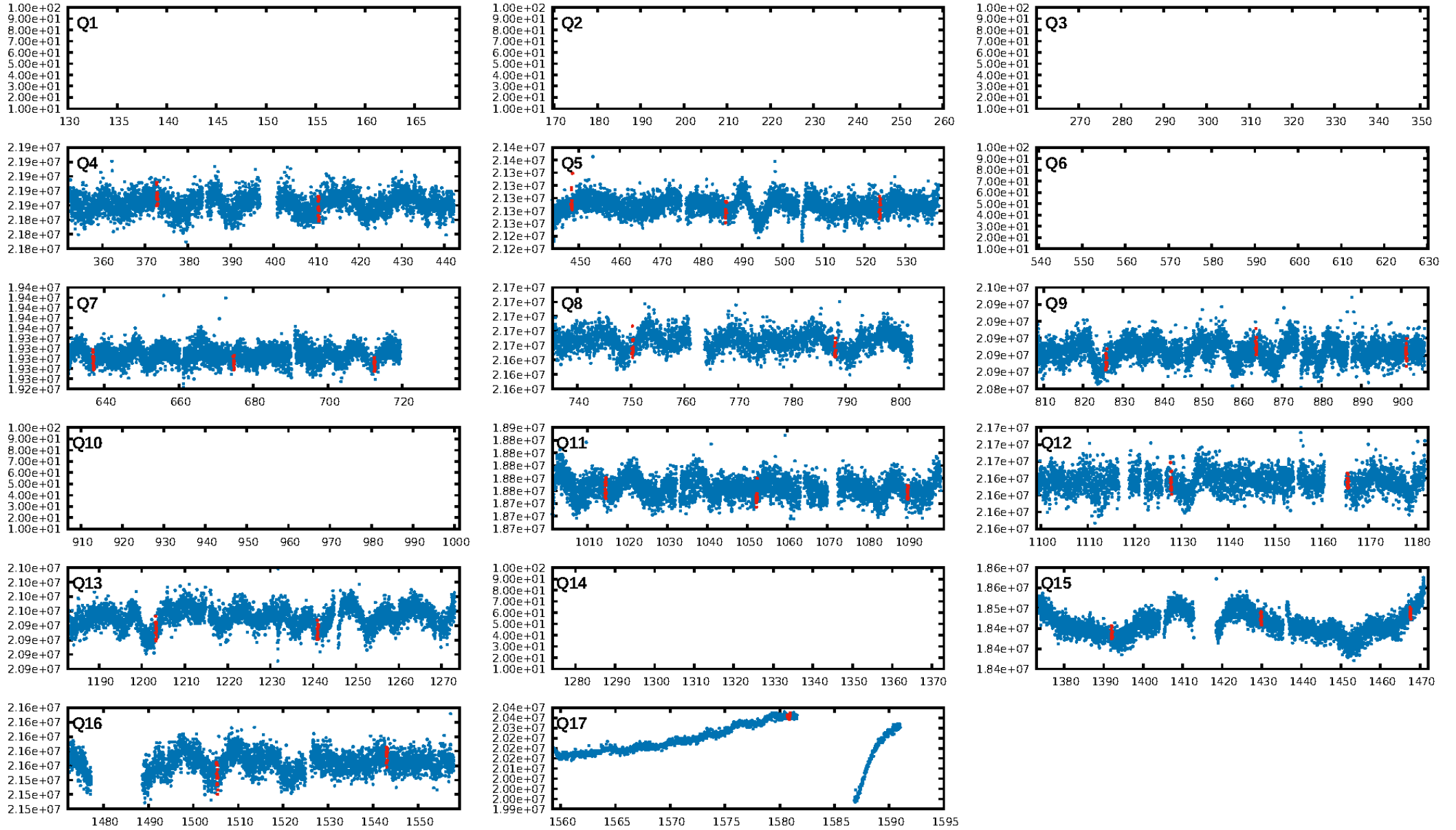
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [119.15σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.81e-11
RollingBand-fgt: 1.00 [13/13]
GhostDiagnostic-chr: 0.6944
Centroid-sig: 0.0%
Centroid-so: 0.991 arcsec [3.03σ]
OotOffset-rm: 0.767 arcsec [1.88σ]
KicOffset-rm: 4.210 arcsec [10.63σ]
OotOffset-st: 0/2/0/0 [2]
KicOffset-st: 0/2/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/11]

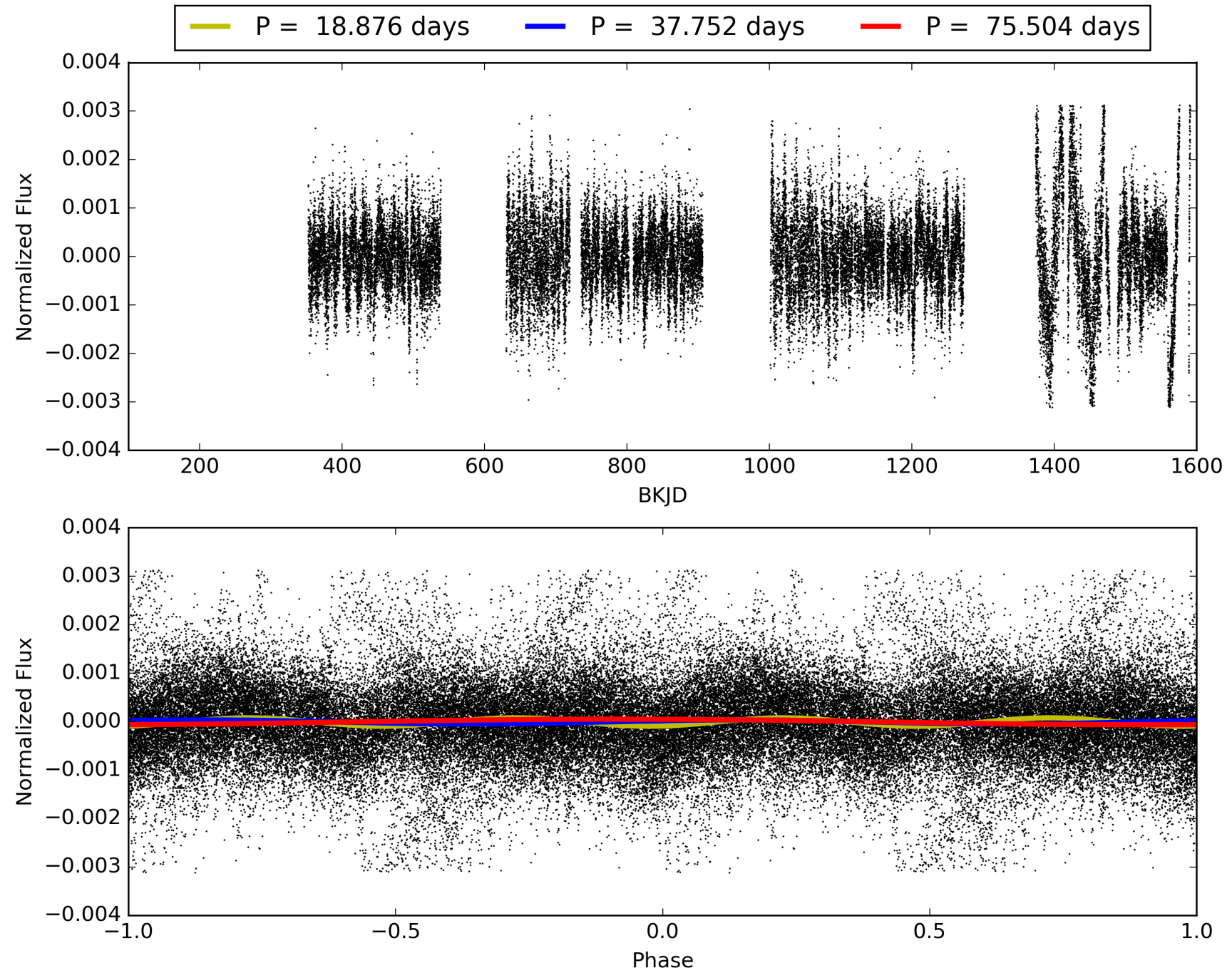
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:25:05 Z

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

TCE 004380560-03, PDC Light Curves

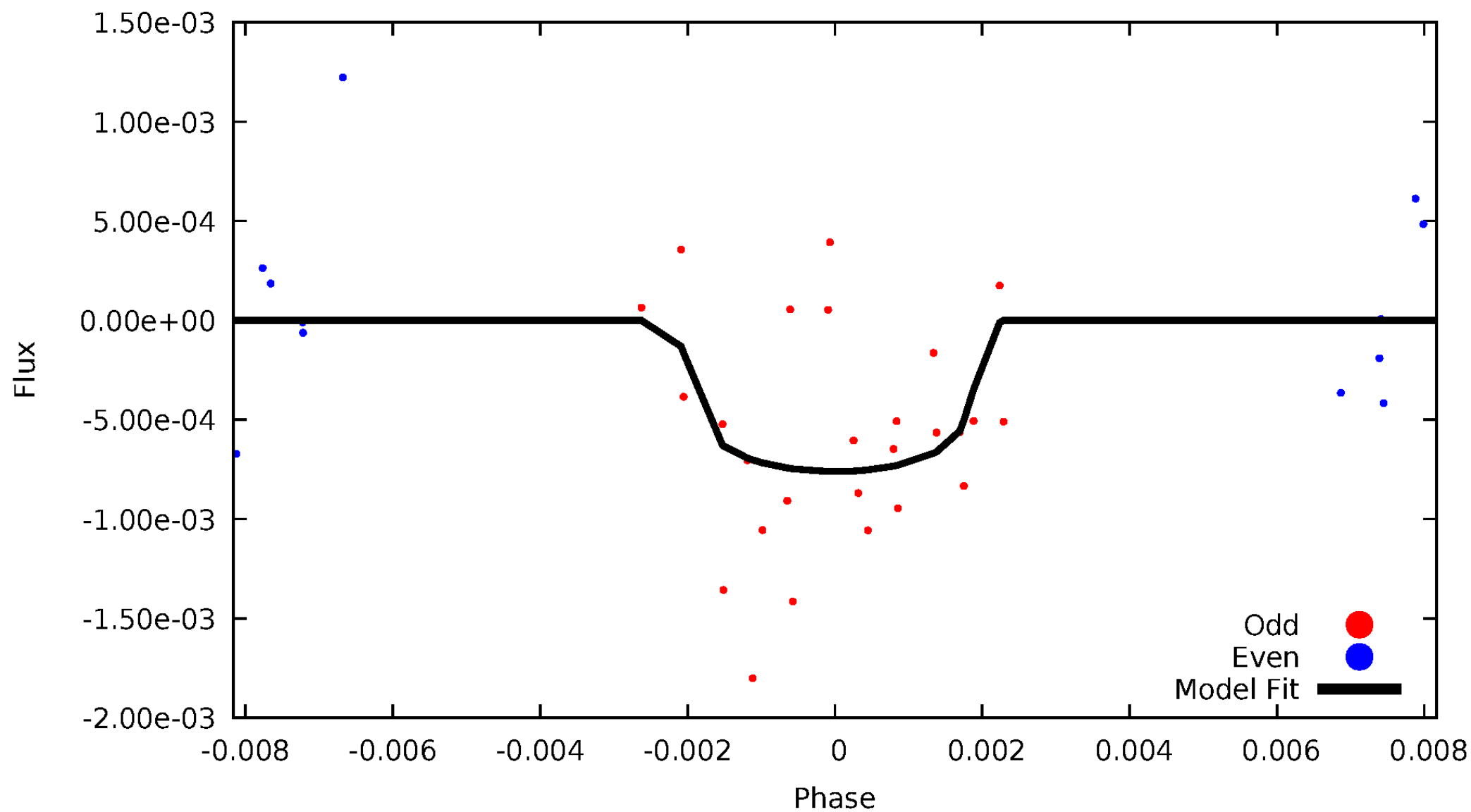


TCE 004380560-03



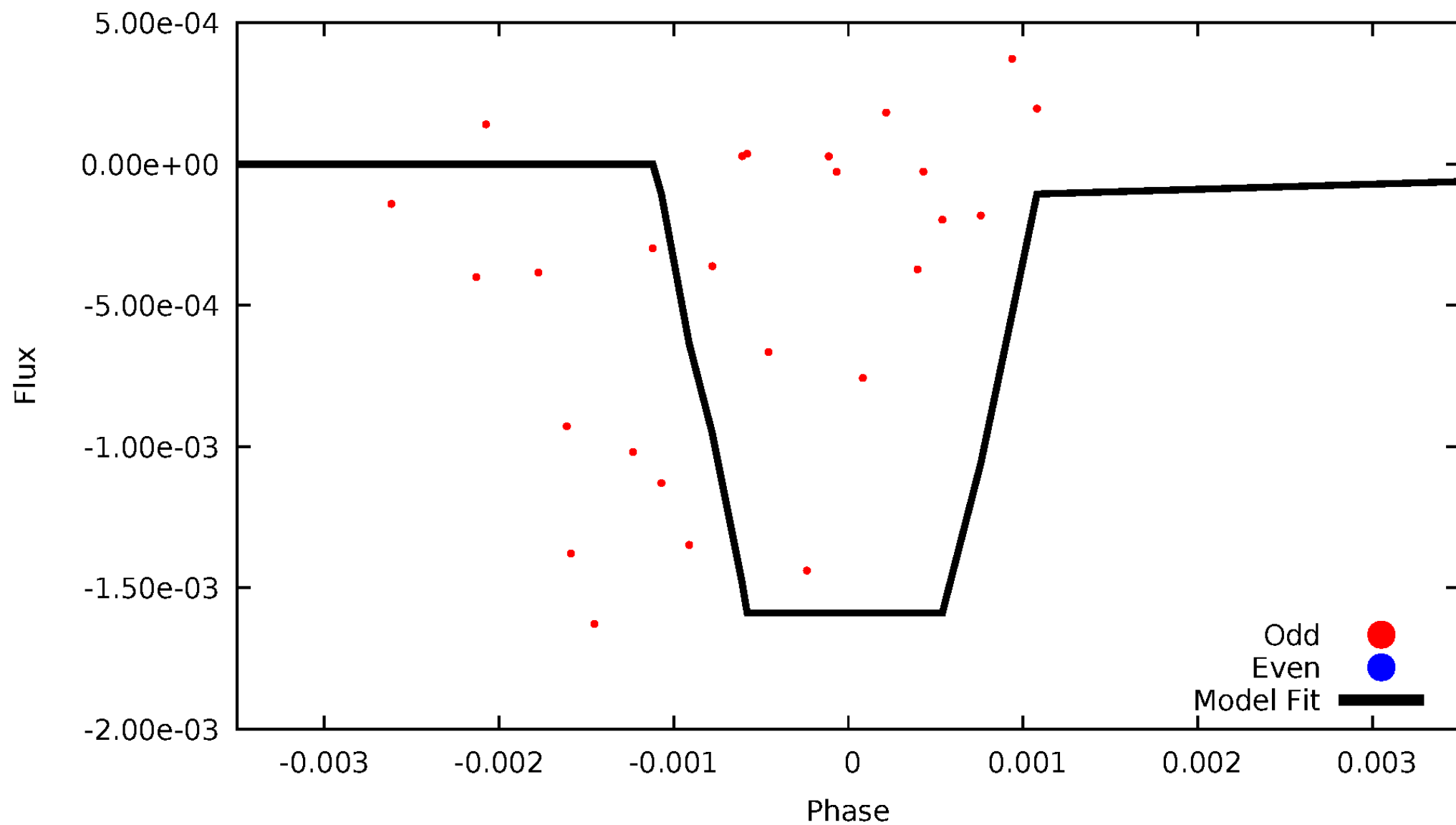
DV Odd/Even

TCE 004380560-03



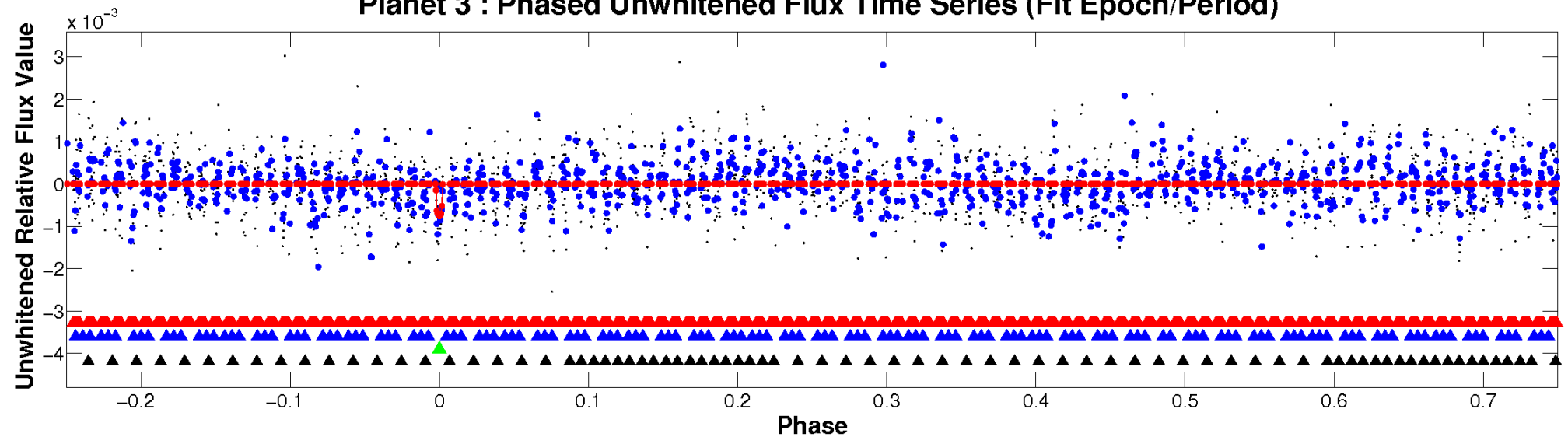
ALT Odd/Even

TCE 004380560-03

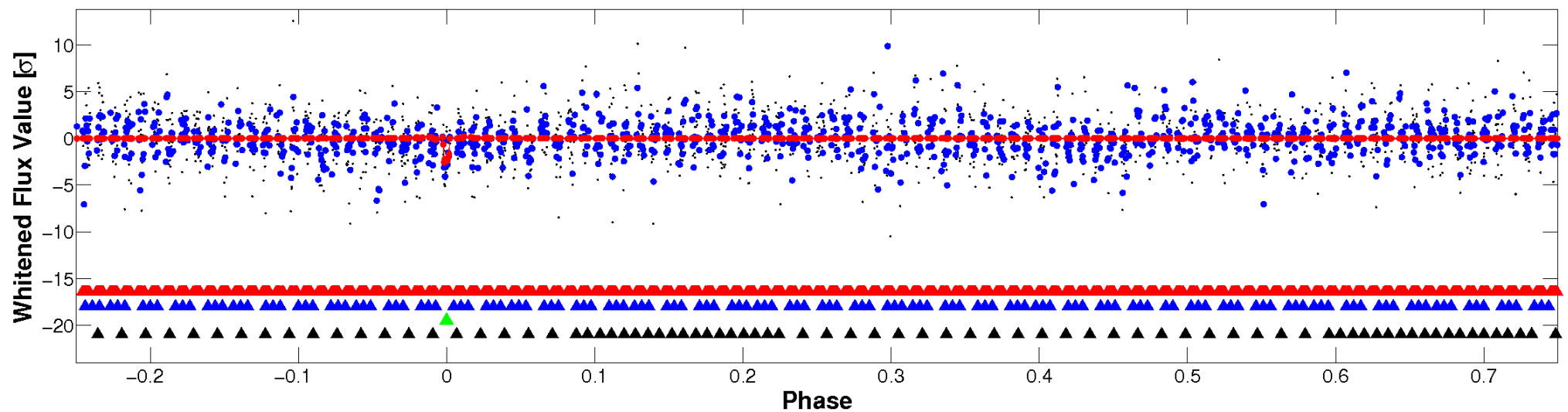


Non-Whitened Vs. Whitened Light Curve

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

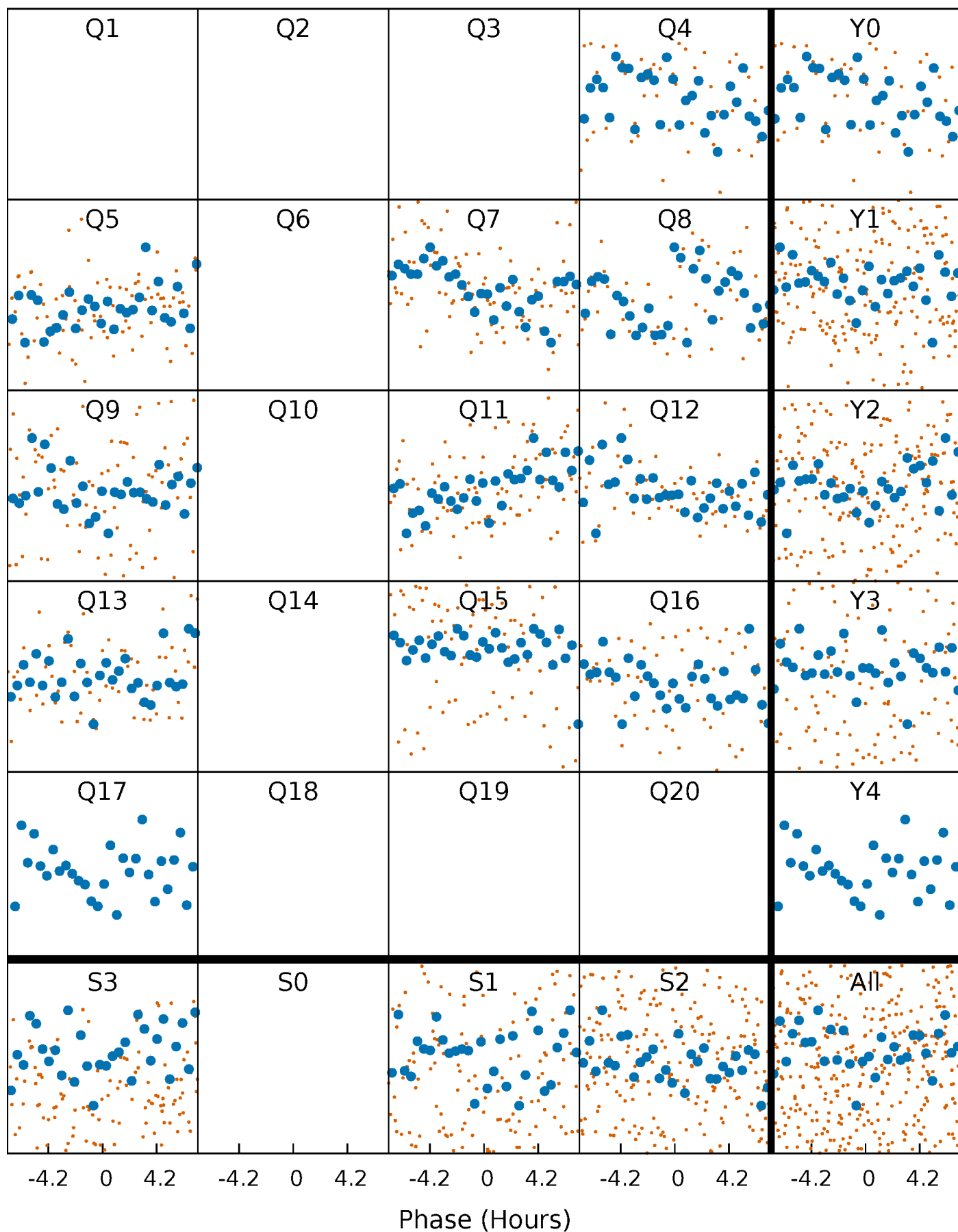


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



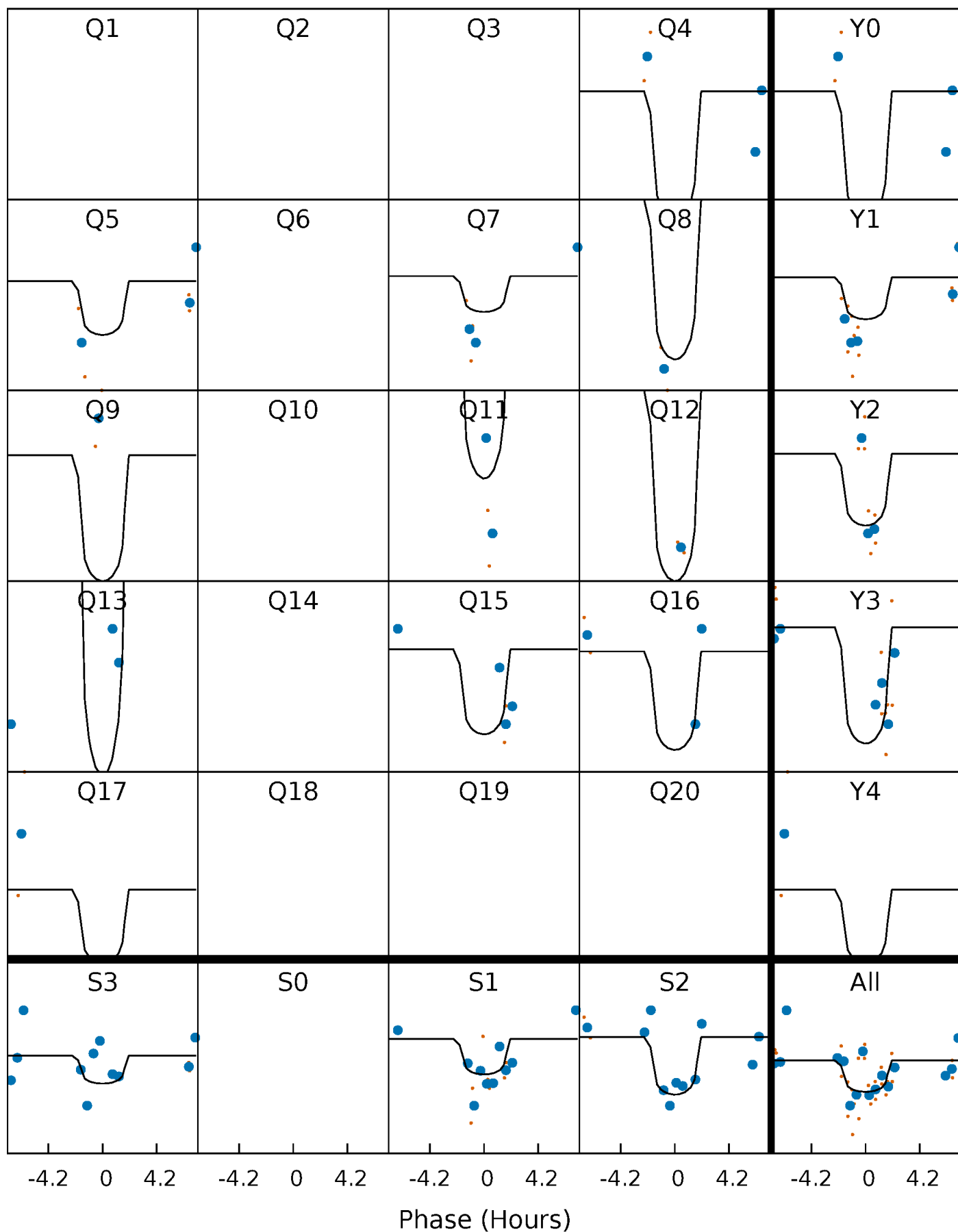
PDC Quarter-Phased Transit Curves

TCE 004380560-03 P= 37.751773 Days $T_0=146.264270$ (BKJD)



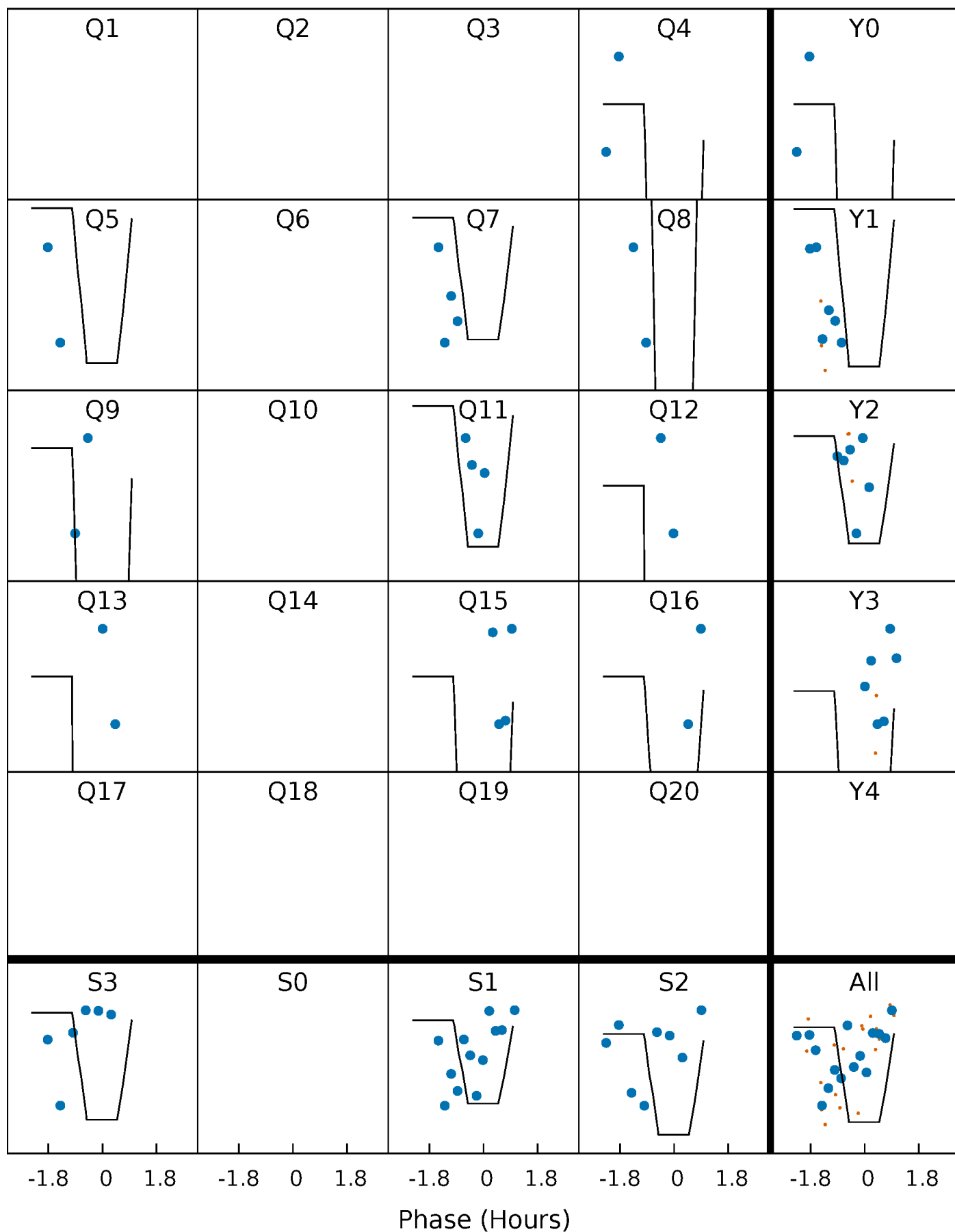
DV Quarter-Phased Transit Curves

TCE 004380560-03 P= 37.751773 Days $T_0=146.264270$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

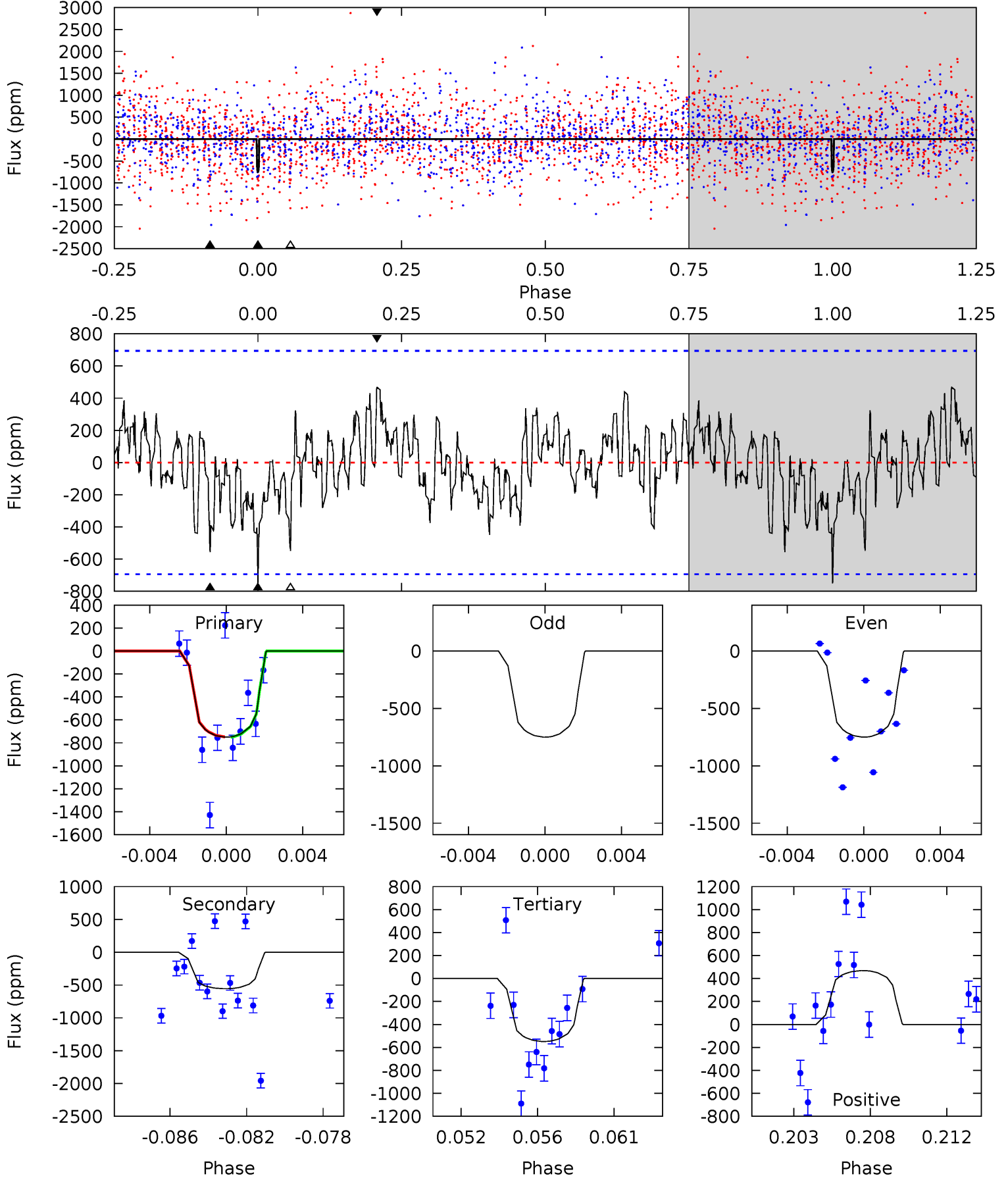
TCE 004380560-03 P= 37.753423 Days $T_0=146.252259$ (BKJD)



DV Model-Shift Uniqueness Test

004380560-03, P = 37.751773 Days, E = 146.264270 Days

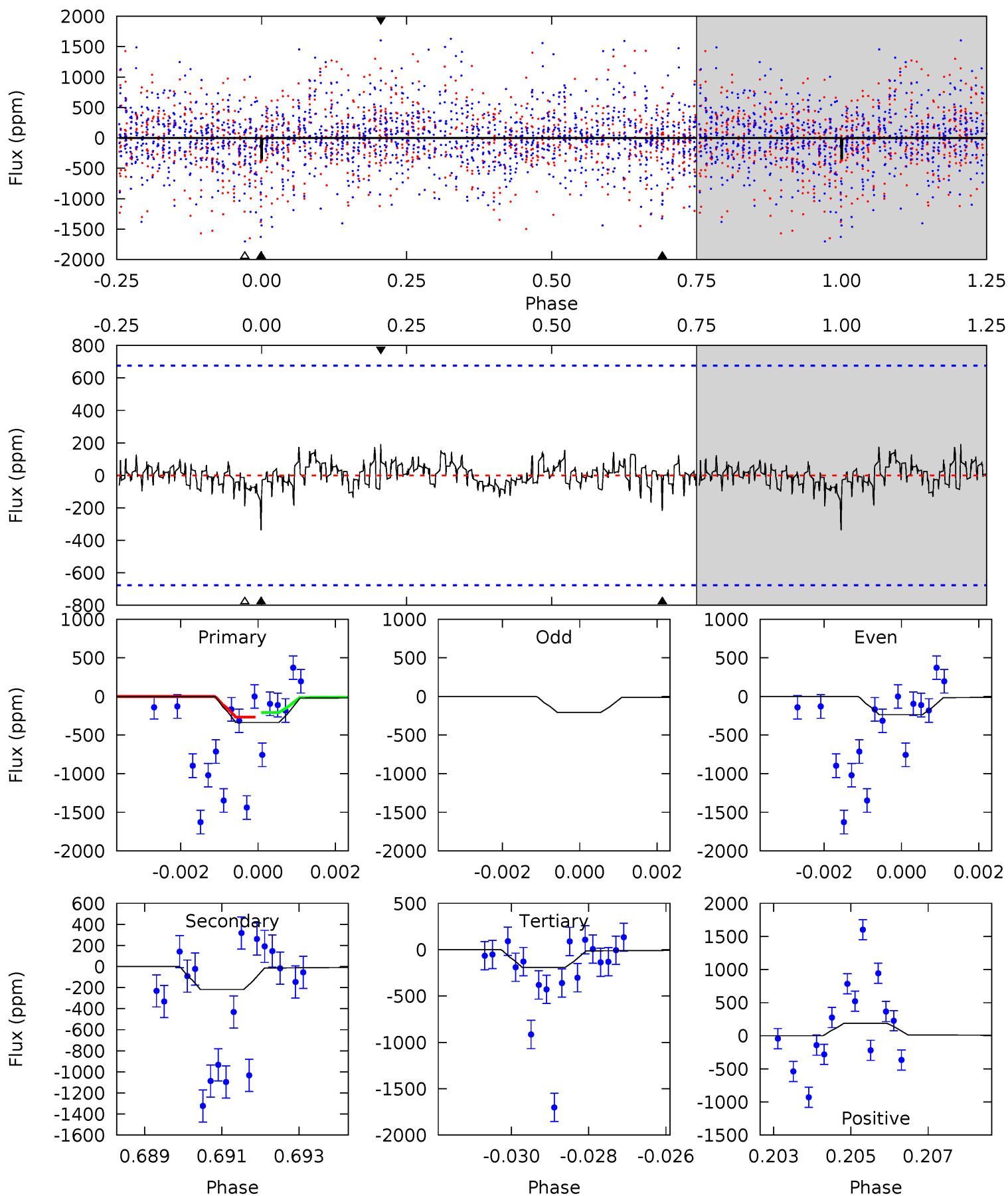
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.60	4.16	4.10	3.50	5.18	2.85	1.40	1.50	2.10	0.06	0.65	0.00	1.03	0.38	0.01



Alt Model-Shift Uniqueness Test

004380560-03, P = 37.753423 Days, E = 146.252259 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.65	1.72	1.50	1.47	5.33	3.09	0.52	1.15	1.18	0.22	0.25	0.13	1.79	0.36	0.23



Stellar Parameters For KIC 004380560

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6106^{+190}_{-232}	$4.487^{+0.052}_{-0.208}$	$-0.160^{+0.250}_{-0.350}$	$0.966^{+0.304}_{-0.101}$	$1.043^{+0.140}_{-0.154}$	$1.631^{+0.444}_{-0.838}$
	+3%/-4%	+1%/-5%	+156%/-219%	+31%/-10%	+13%/-15%	+27%/-51%
Source	KIC0	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 004380560-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-556 ± 134	$9.69^{+10.26}_{-6.67}$	798^{+59}_{-41}	3608^{+2043}_{-742}	155^{+1374}_{-119}
Alt.	-218 ± 127	$10.13^{+11.26}_{-6.87}$	796^{+57}_{-42}	3030^{+1389}_{-656}	50^{+473}_{-42}

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

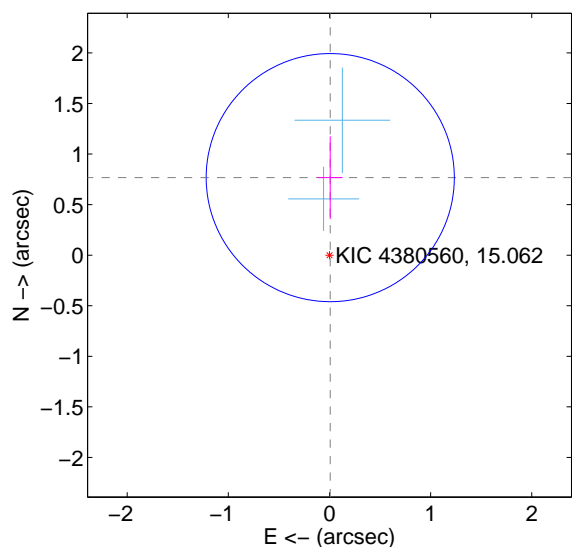
Supplemental centroid analysis for 004380560-03. Kepler magnitude: 15.06. Transit SNR 10.03

There are 2 quarters with good PRF difference image offsets

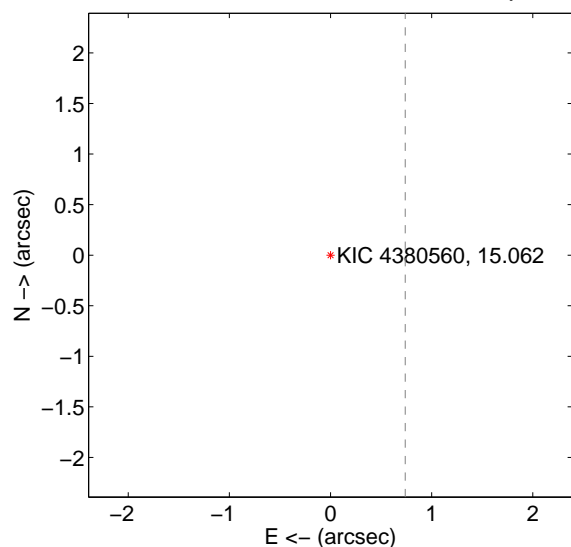
The OOT PRF centroid is offset from the target star catalog position by about 3.46 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.767 ± 0.409	1.88	-0.008 ± 0.123	0.767 ± 0.409
PRF-fit source offset from KIC position	4.210 ± 0.396	10.63	-0.739 ± 0.130	4.145 ± 0.402
photometric centroid source offset	0.99 ± 0.33	3.03	0.83 ± 0.29	0.55 ± 0.41

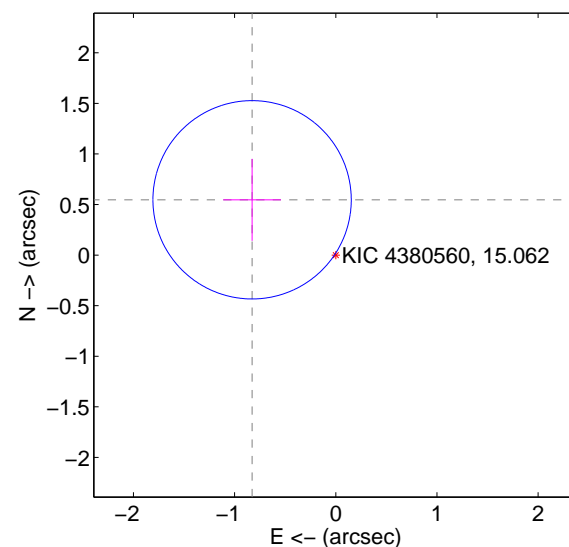
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

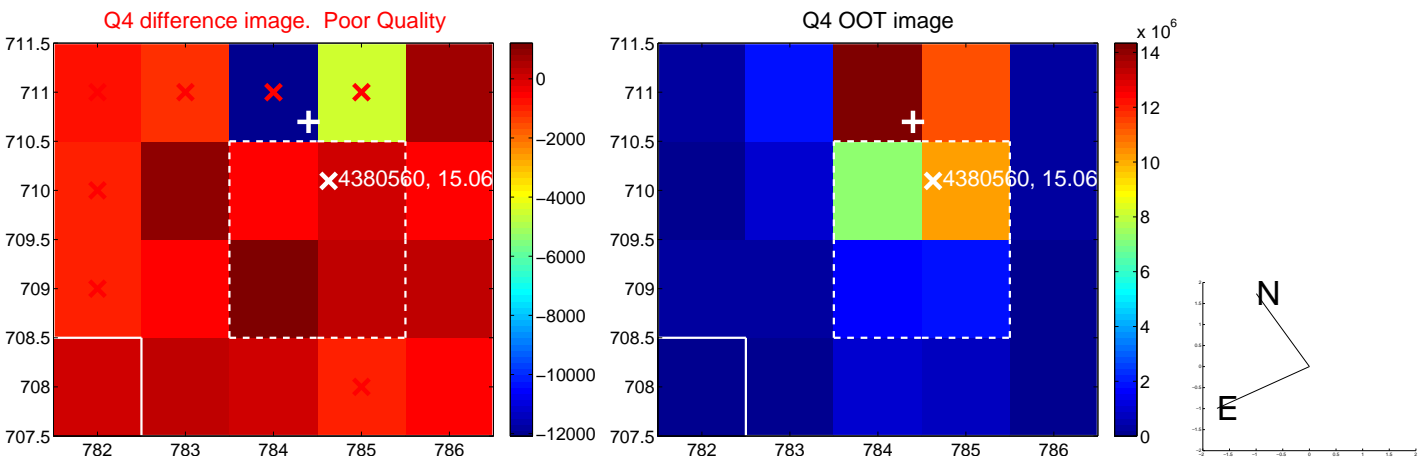
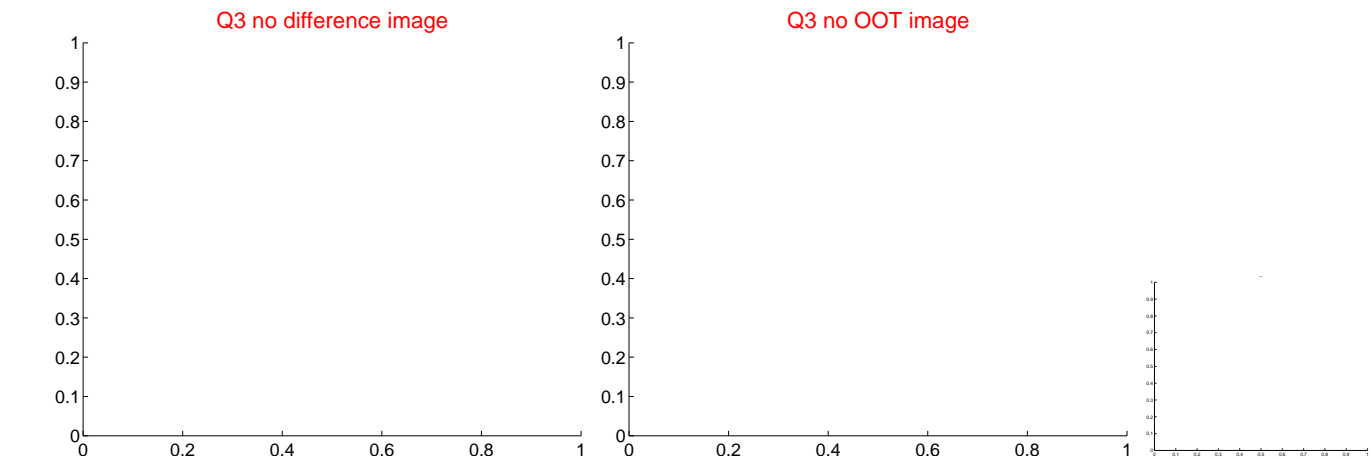
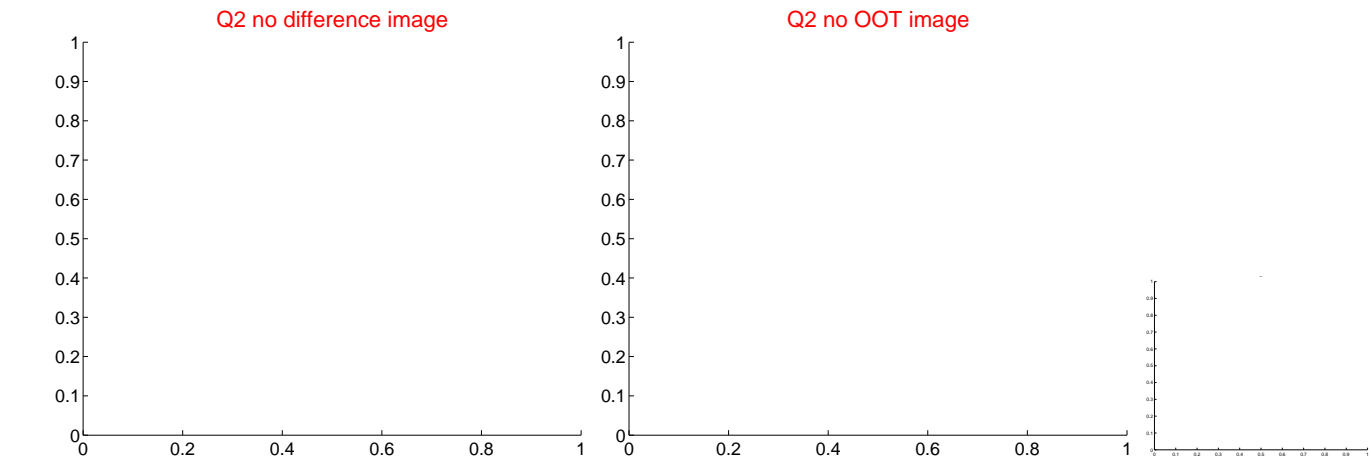
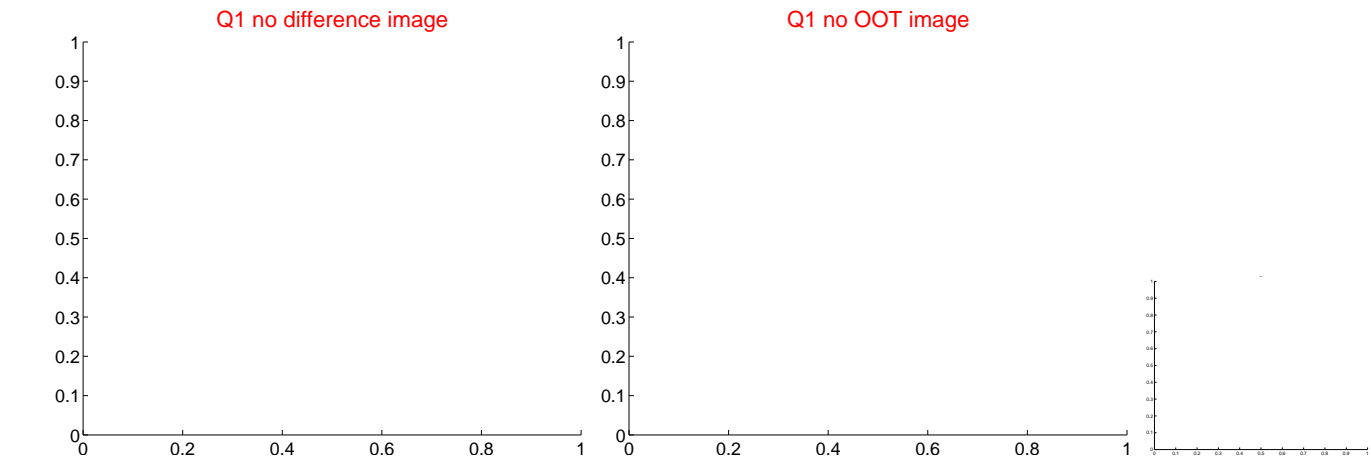


offset from photometric centroids

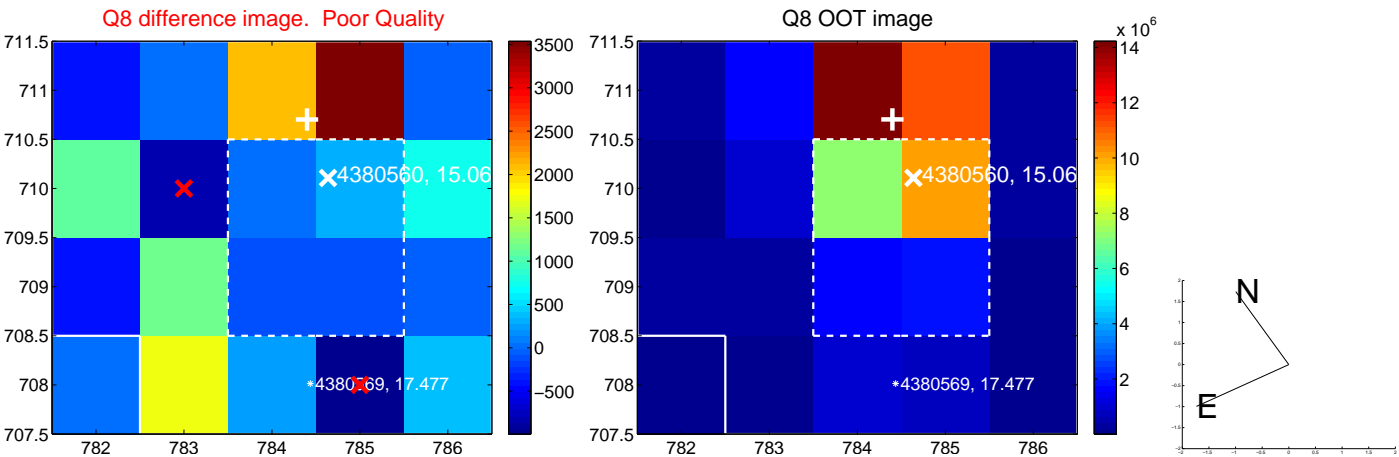
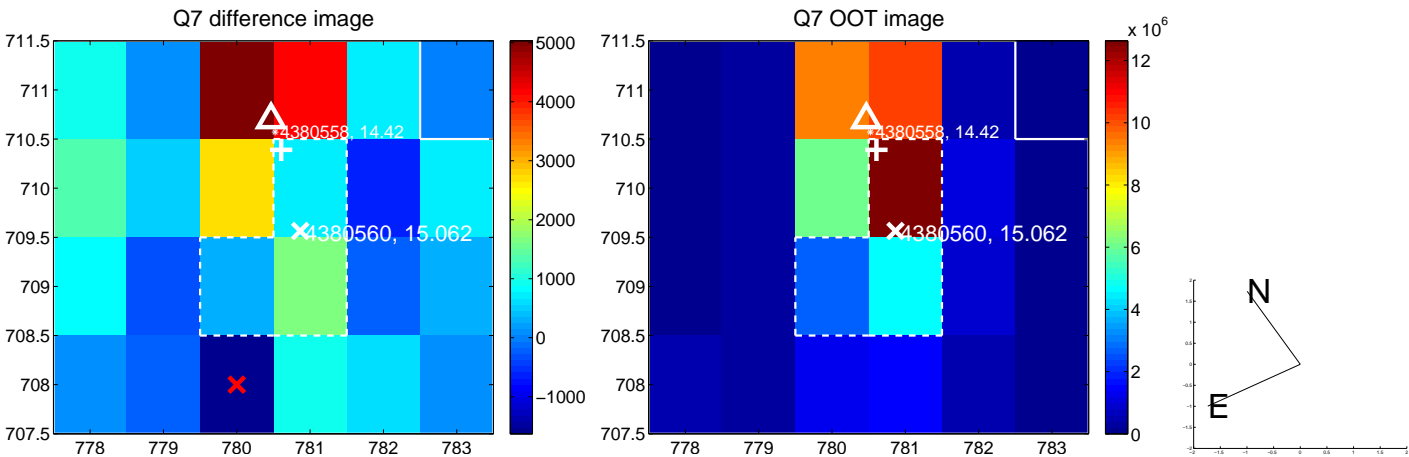
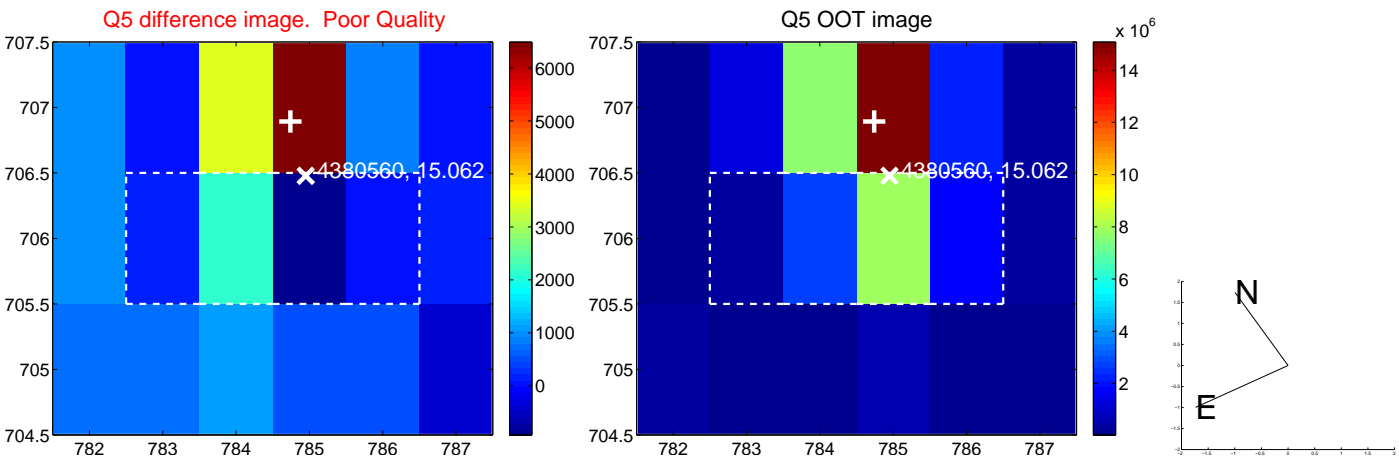


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

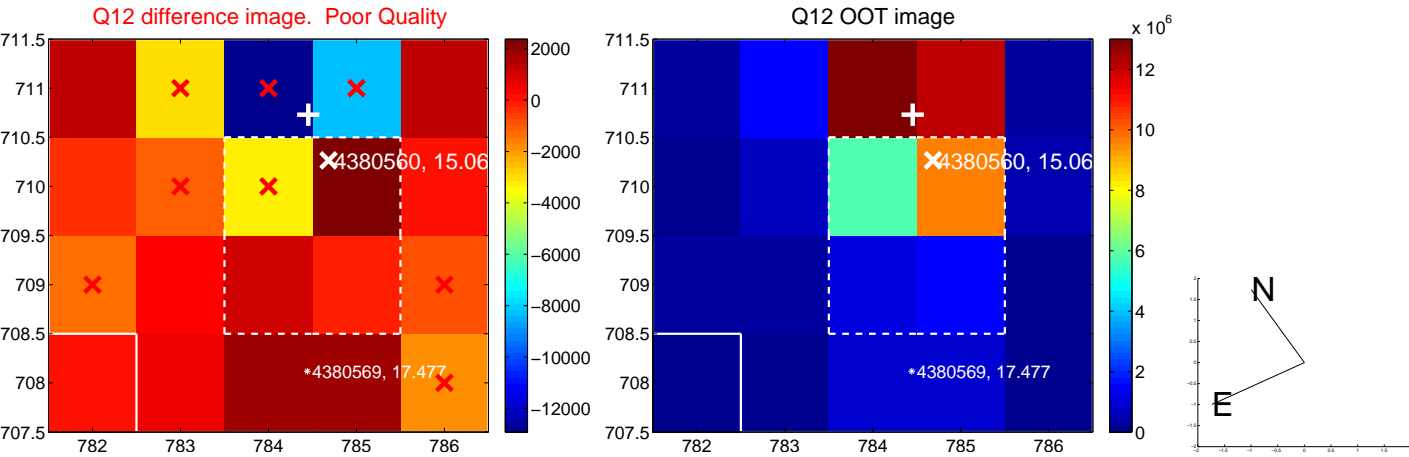
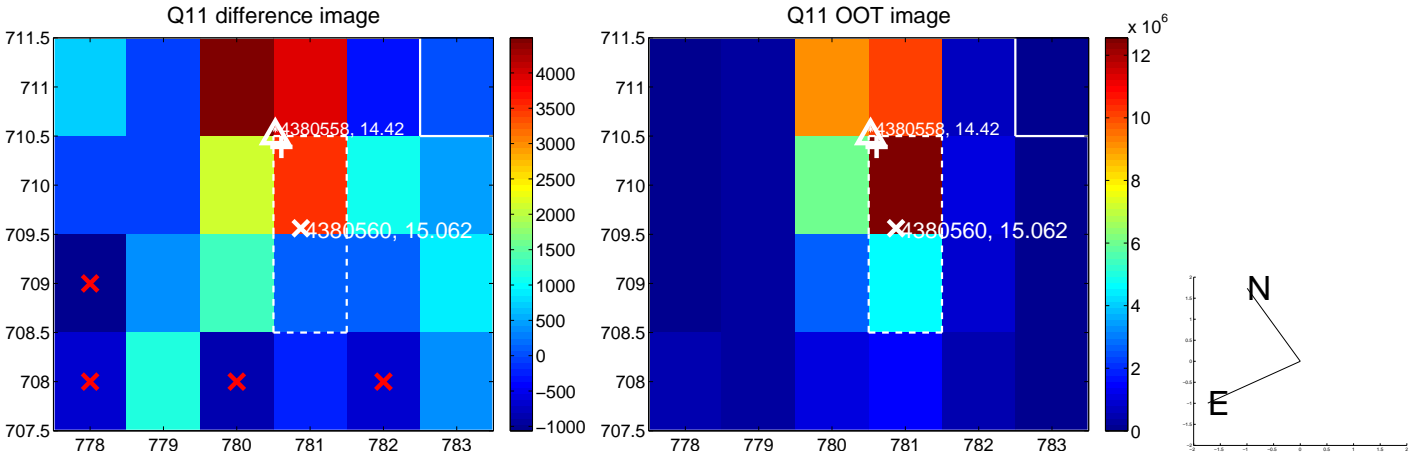
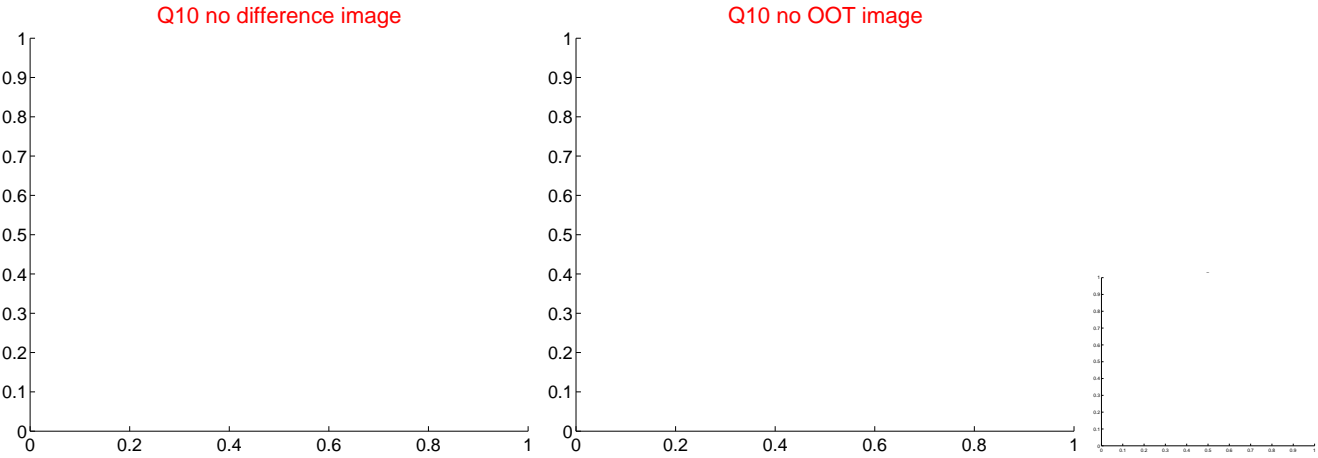
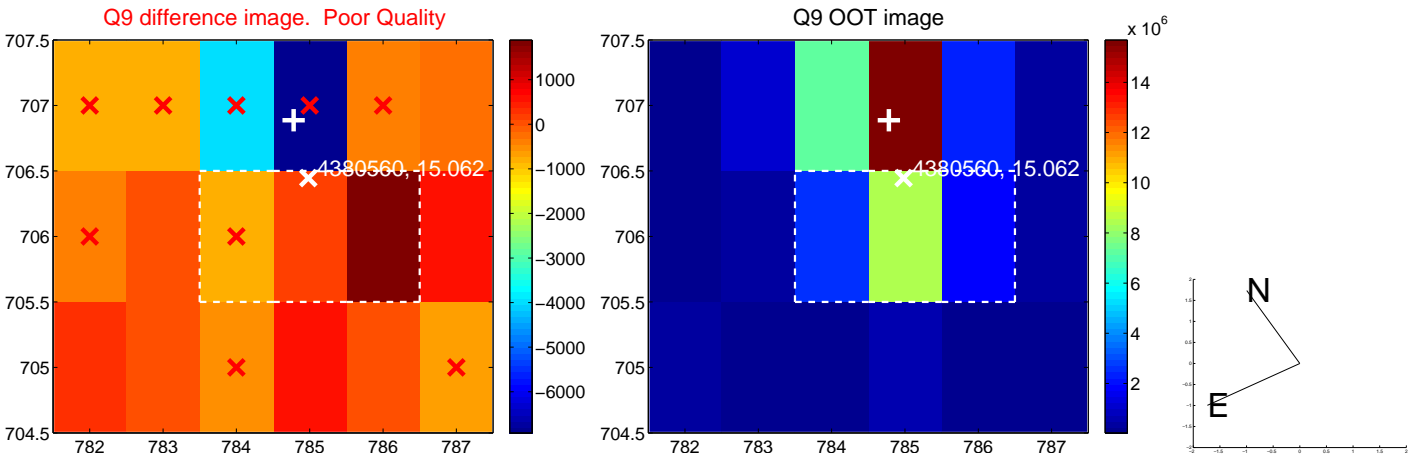
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



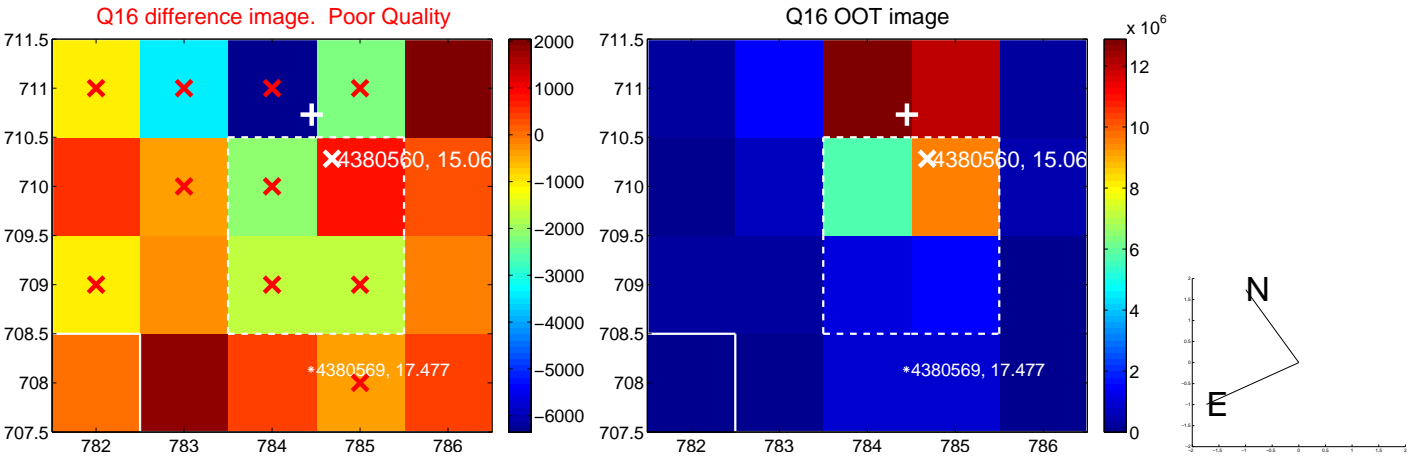
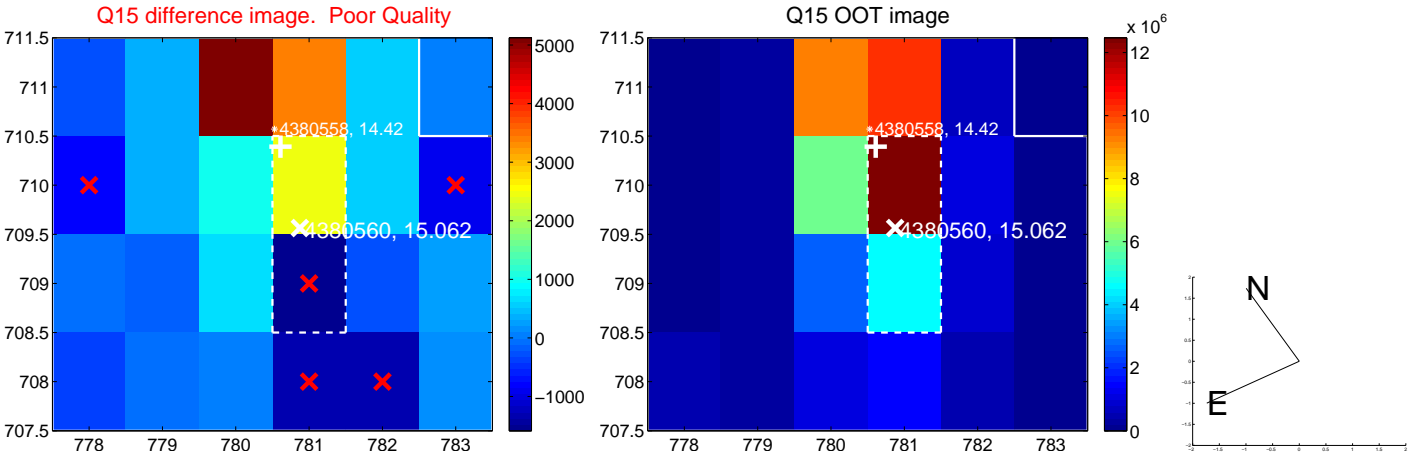
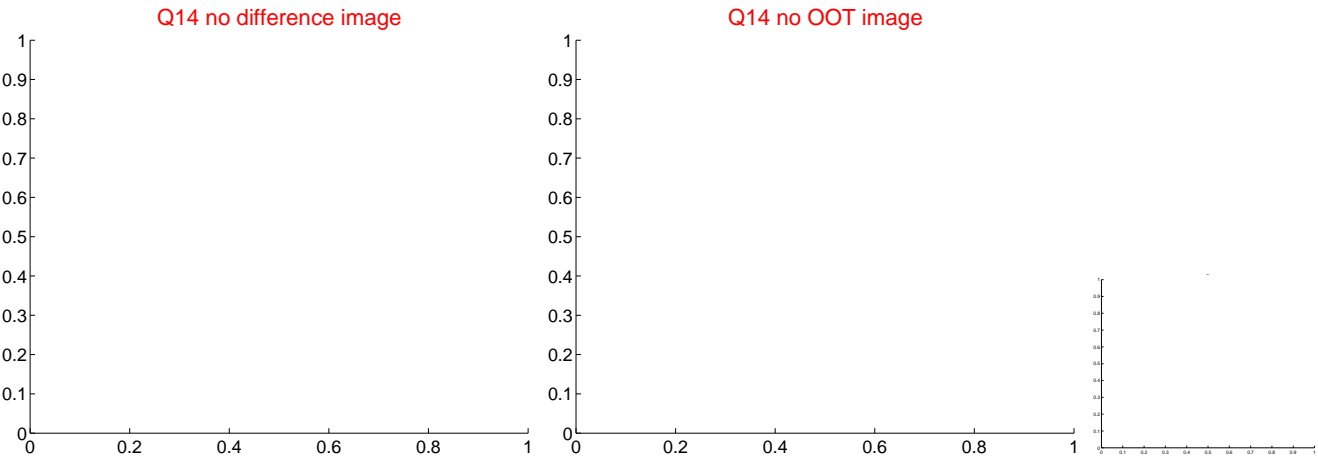
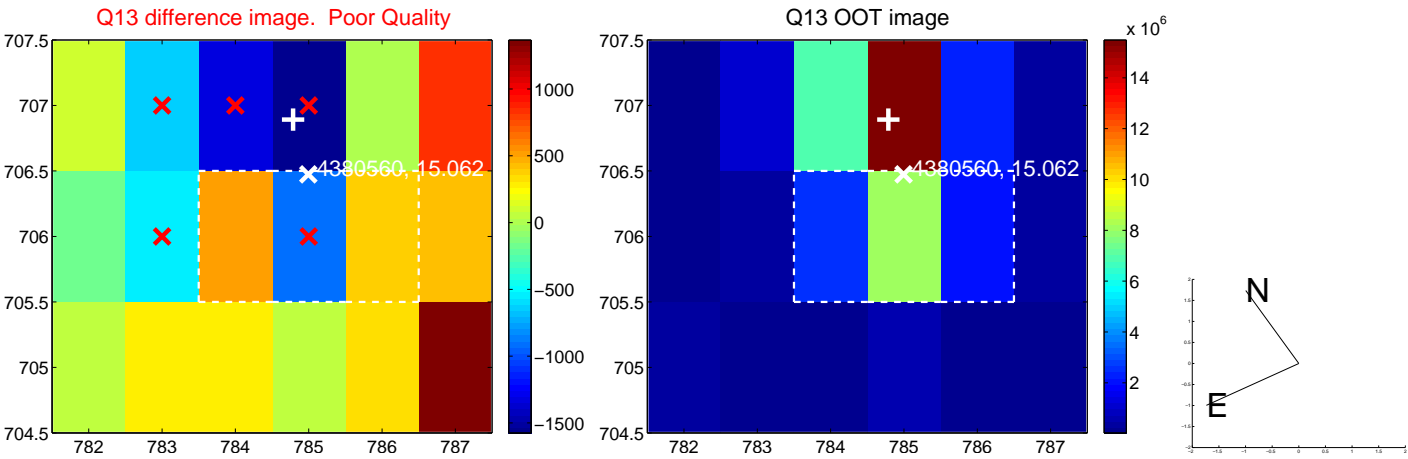
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



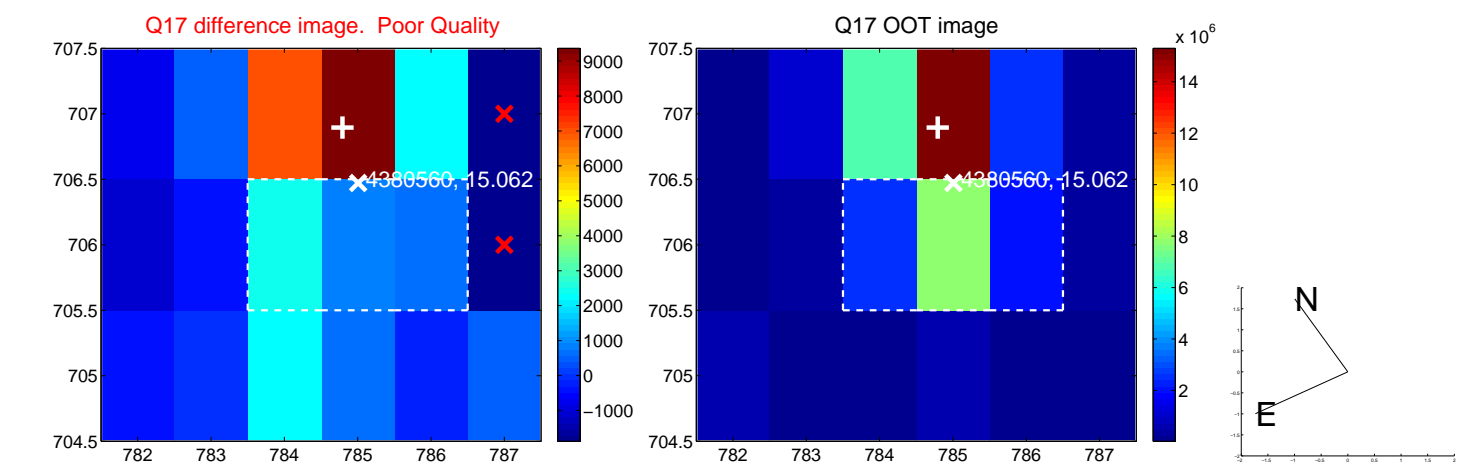
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



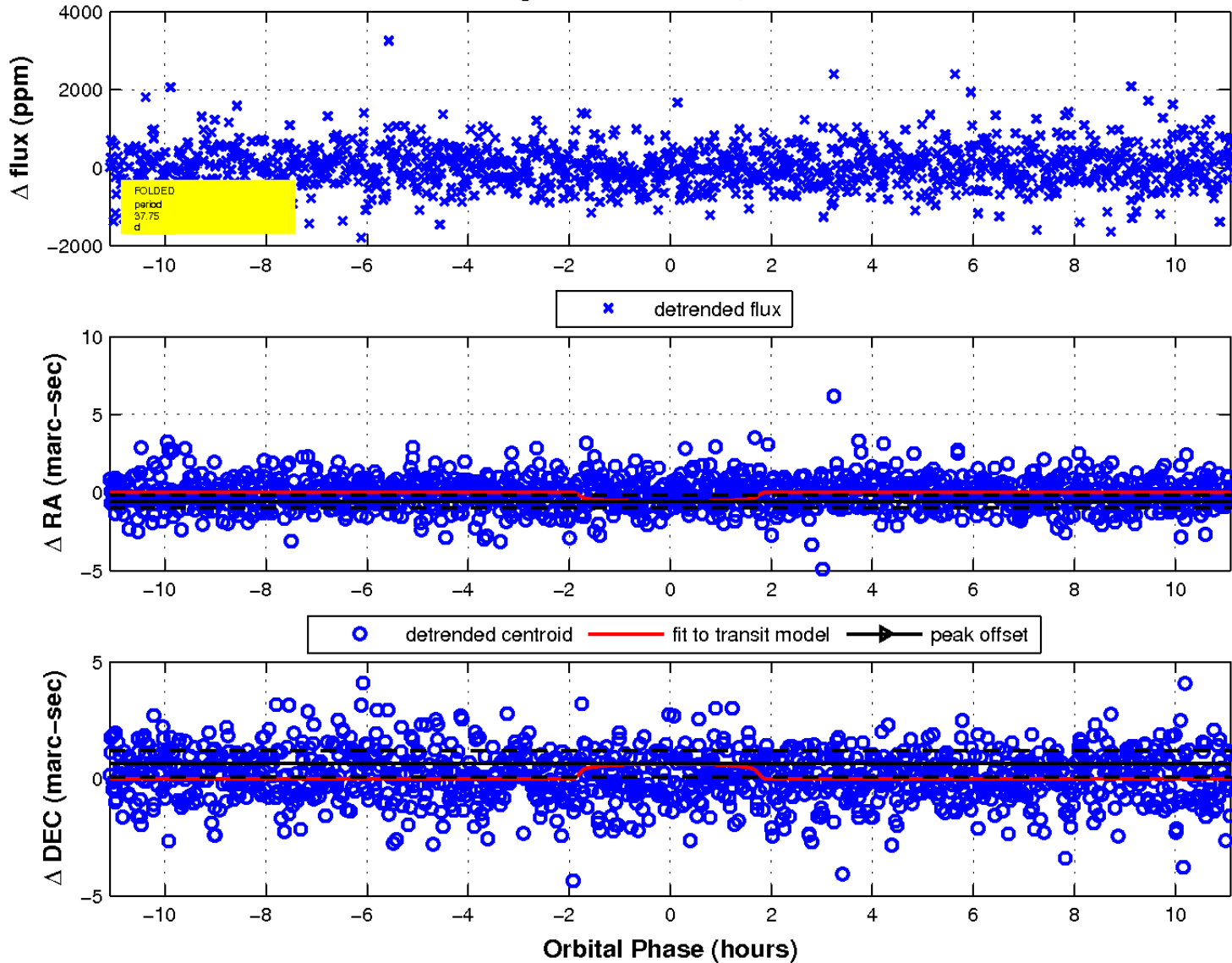
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

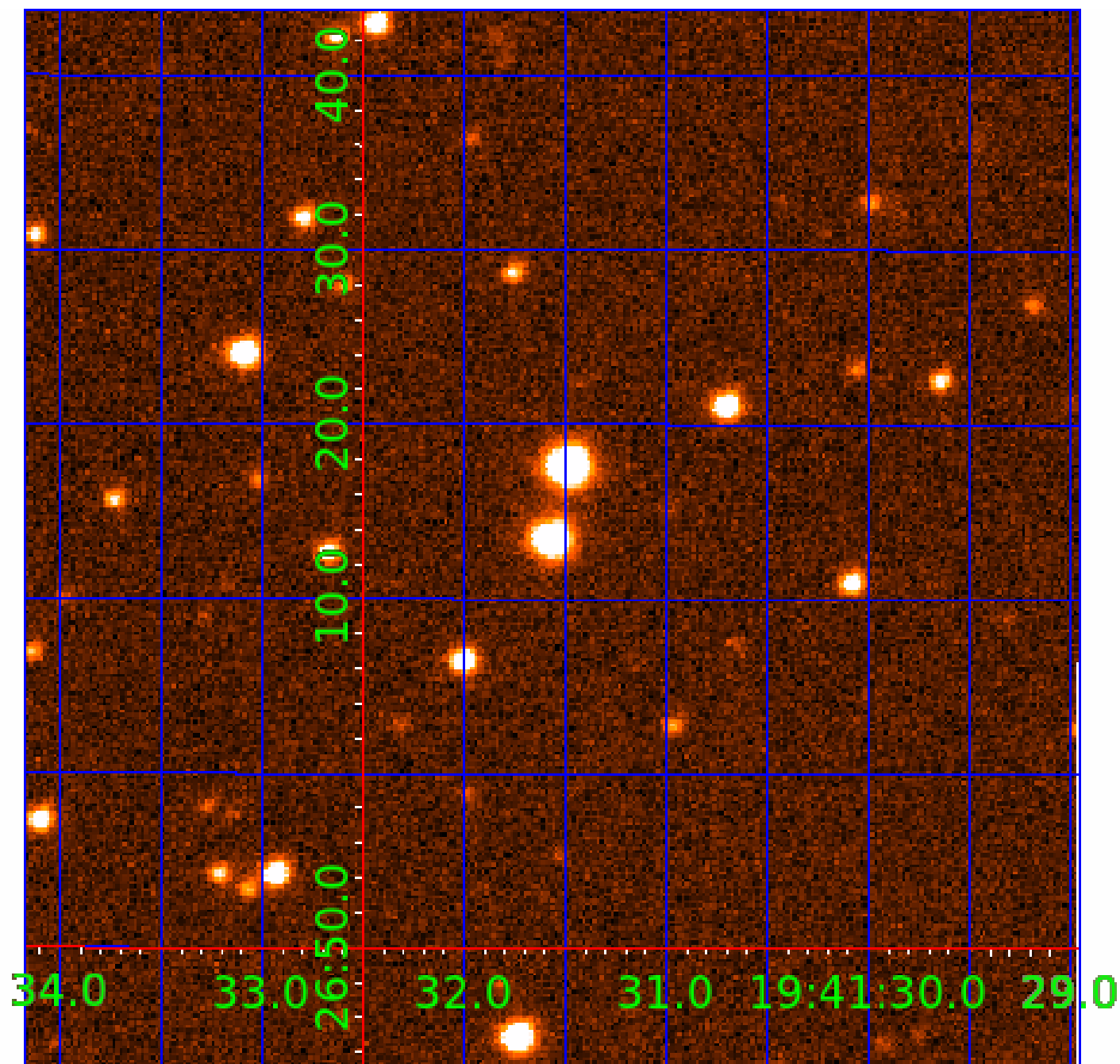


fluxWeightedCentroids, Planet 3 of 4



UKIRT Image

Declination



KIC 004380560

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})
004380560-01	OBS	7548.01	0.705741	132.030682	44.8	5.187	9.8	6.7	0.97	6106	0.66	4688.63
004380560-02	OBS	No	10.220635	137.420370	2263.7	1.500	12.8	-1.0	0.97	6106	4.61	132.82
004380560-03	OBS	No	37.751773	146.264270	761.0	3.698	10.6	10.0	0.97	6106	2.75	23.26
004380560-04	OBS	No	18.571153	135.872599	1532.2	1.118	10.3	11.0	0.97	6106	4.02	59.90

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004380560-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_KIC_POS—HALO_GHOST—EPHEM_MATCH
004380560-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
004380560-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004380560-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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 004380560-04

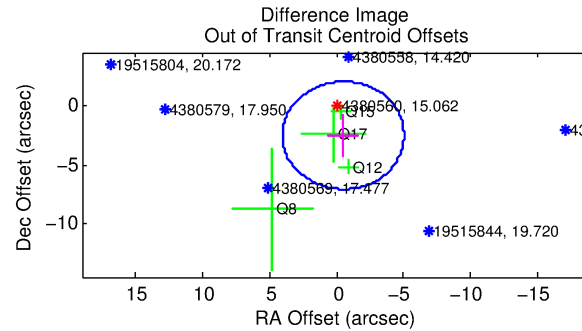
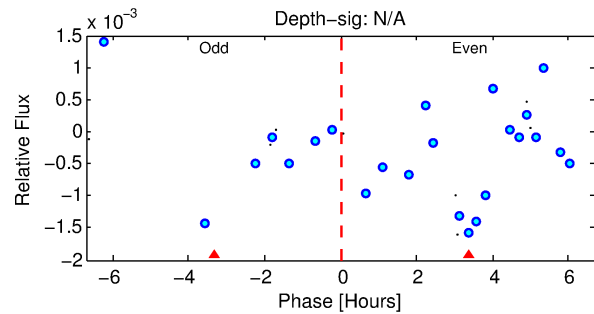
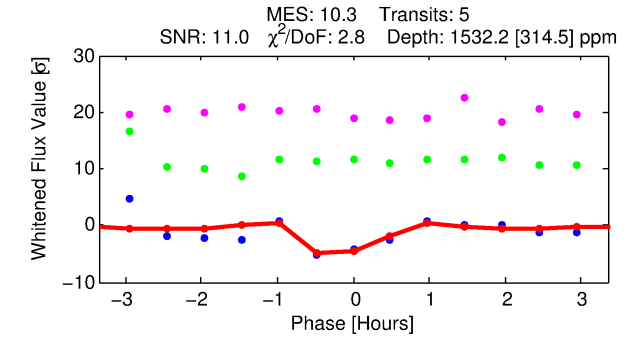
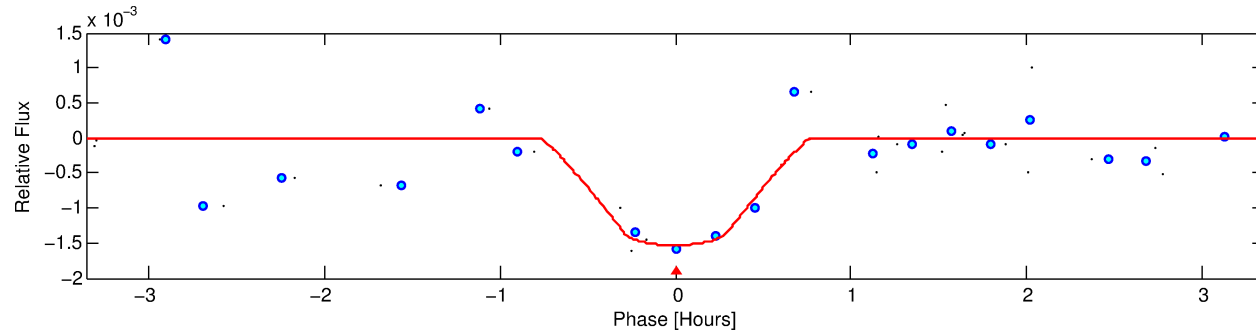
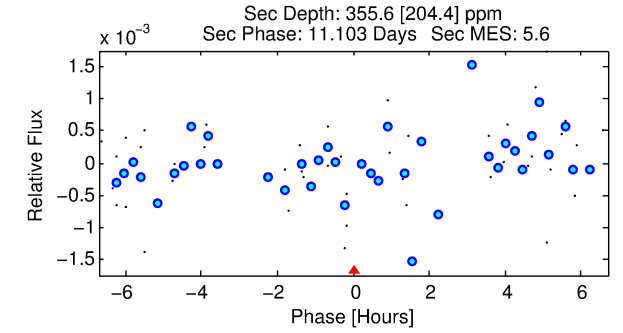
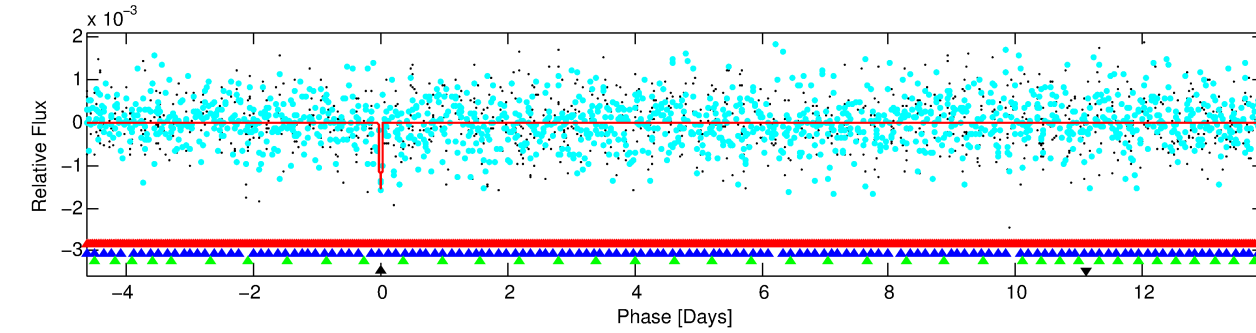
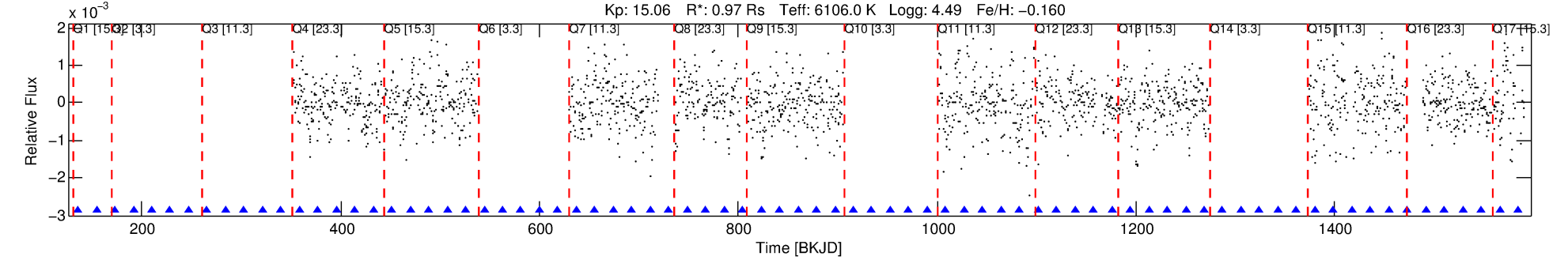
No Significant Match Found

DV One-Page Summary

KIC: 4380560 Candidate: 4 of 4 Period: 18.571 d

KOI: K07548 Corr: No Ephemeris Match

Kp: 15.06 R*: 0.97 Rs Teff: 6106.0 K Logg: 4.49 Fe/H: -0.160



DV Fit Results:

Period = 18.57115 [0.00021] d
Epoch = 135.8726 [0.0099] BKJD
Rp/R* = 0.0381 [0.0588]
a/R* = 102.85 [747.71]
b = 0.65 [6.74]
Seff = 59.90 [24.63]
Teff = 709 [73] K
Rp = 4.02 [6.33] Re
a = 0.1393 [0.0367] AU
Ag = 234.72 [741.43] [0.32σ]
Teffp = 4293 [3369] K [1.06σ]

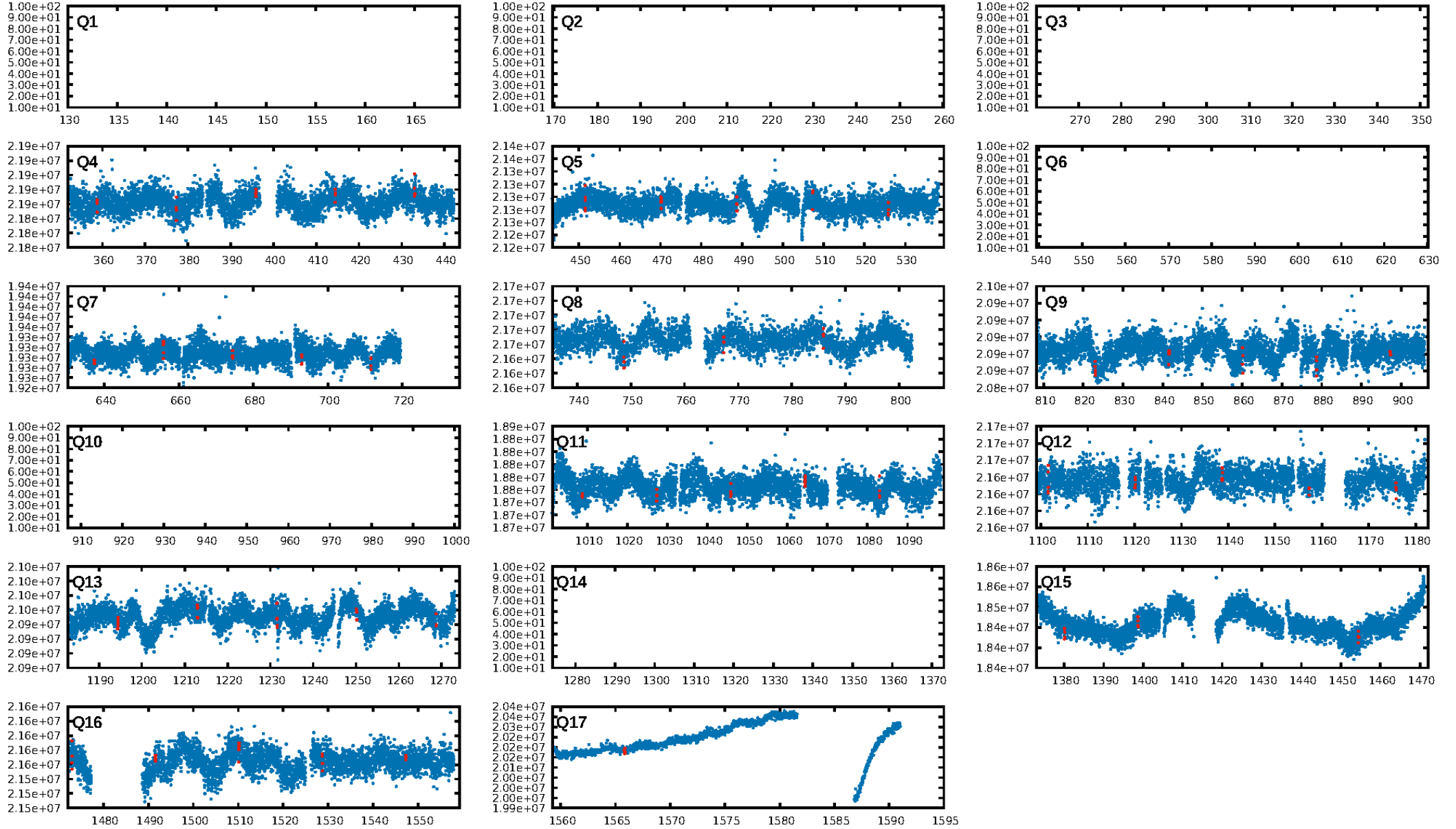
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [107.12σ]
LongPeriod-sig: 100.0% [119.15σ]
ModelChiSquare2-sig: 62.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.03e-11
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -3.54
Centroid-sig: 0.6%
Centroid-so: 0.977 arcsec [4.01σ]
OotOffset-rm: 2.572 arcsec [1.70σ]
KicOffset-rm: 1.124 arcsec [0.68σ]
OotOffset-st: 0/1/2/1 [4]
KicOffset-st: 0/1/2/1 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 0.18 [2/11]

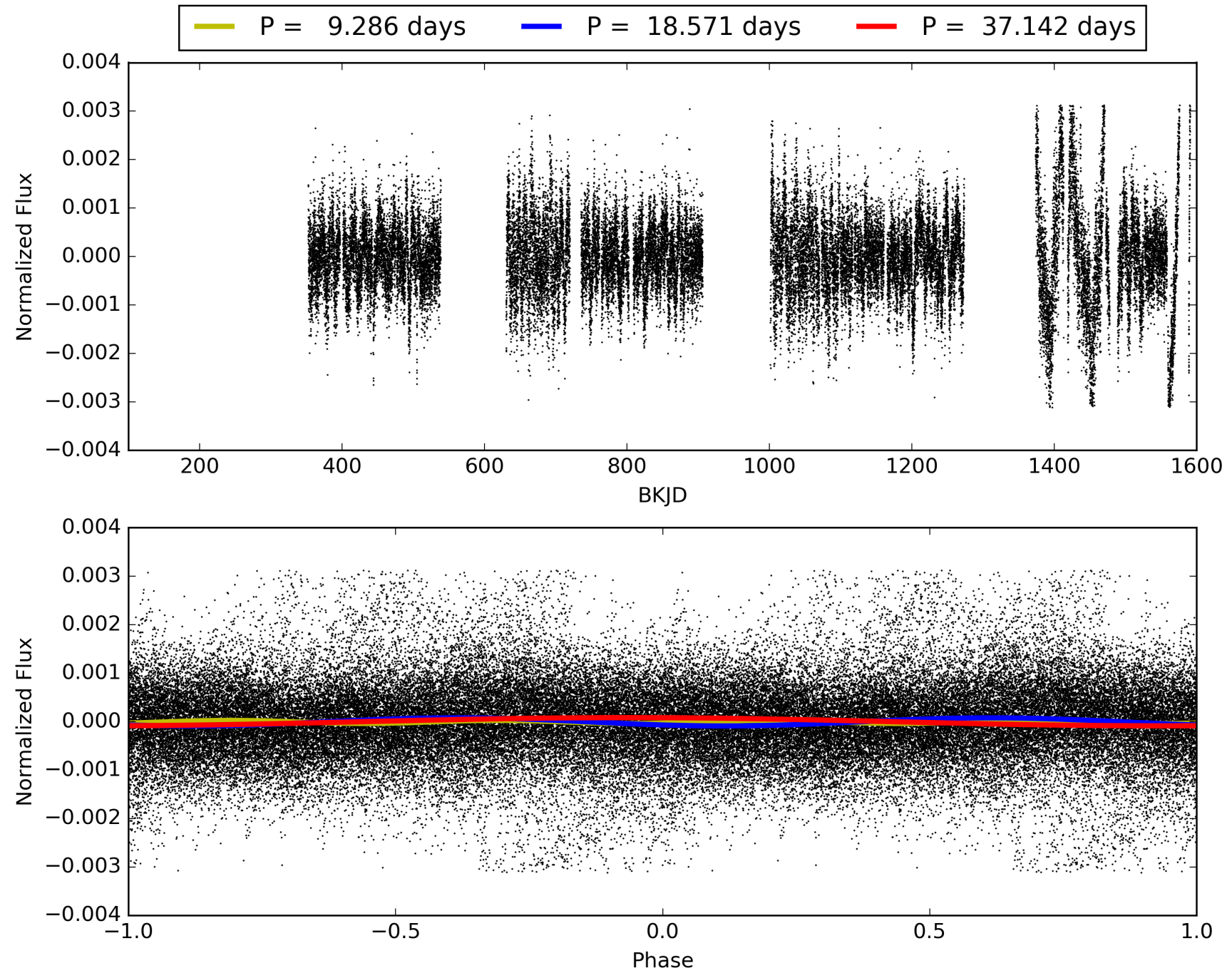
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:25:08 Z

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

TCE 004380560-04, PDC Light Curves

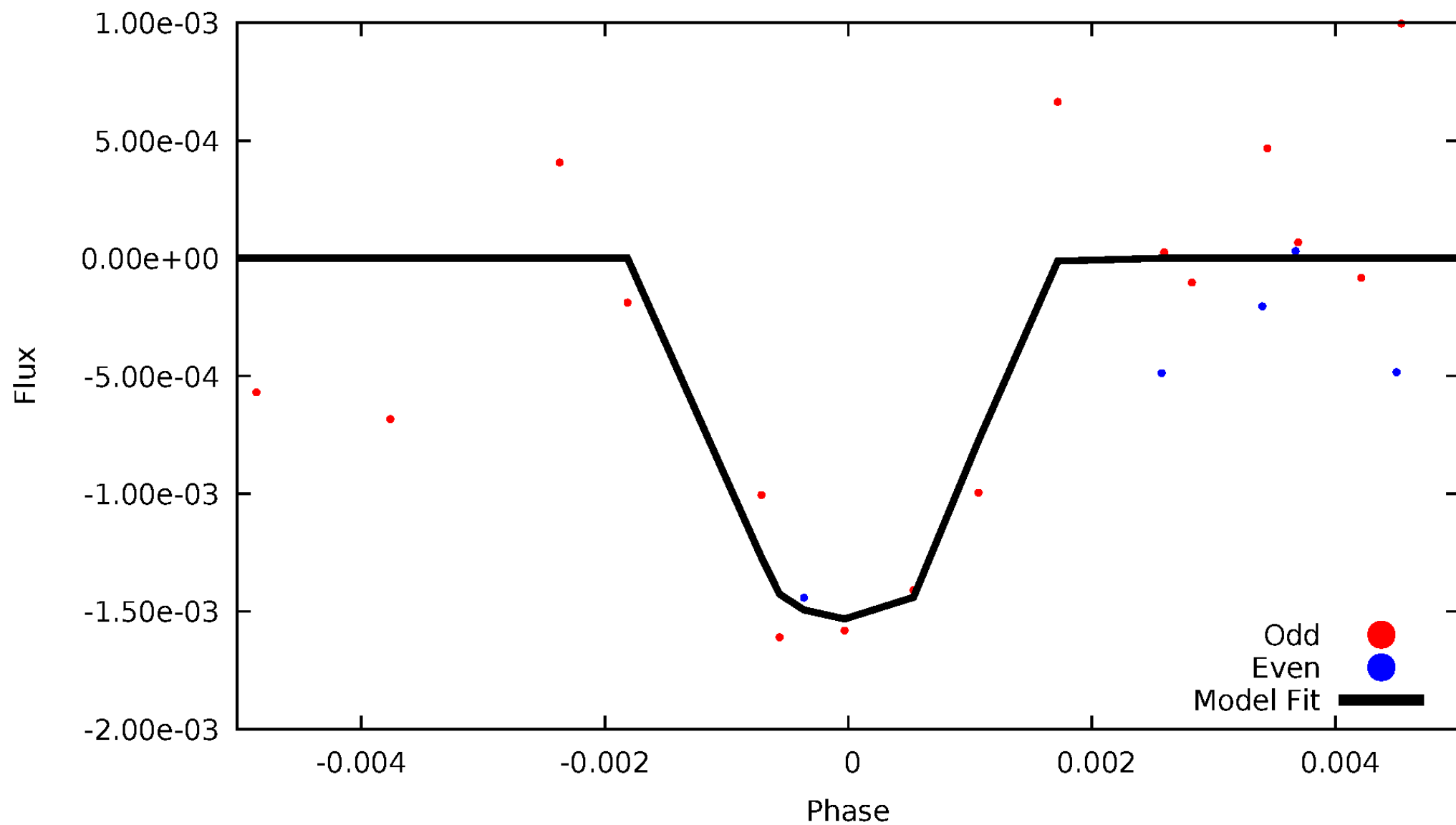


TCE 004380560-04



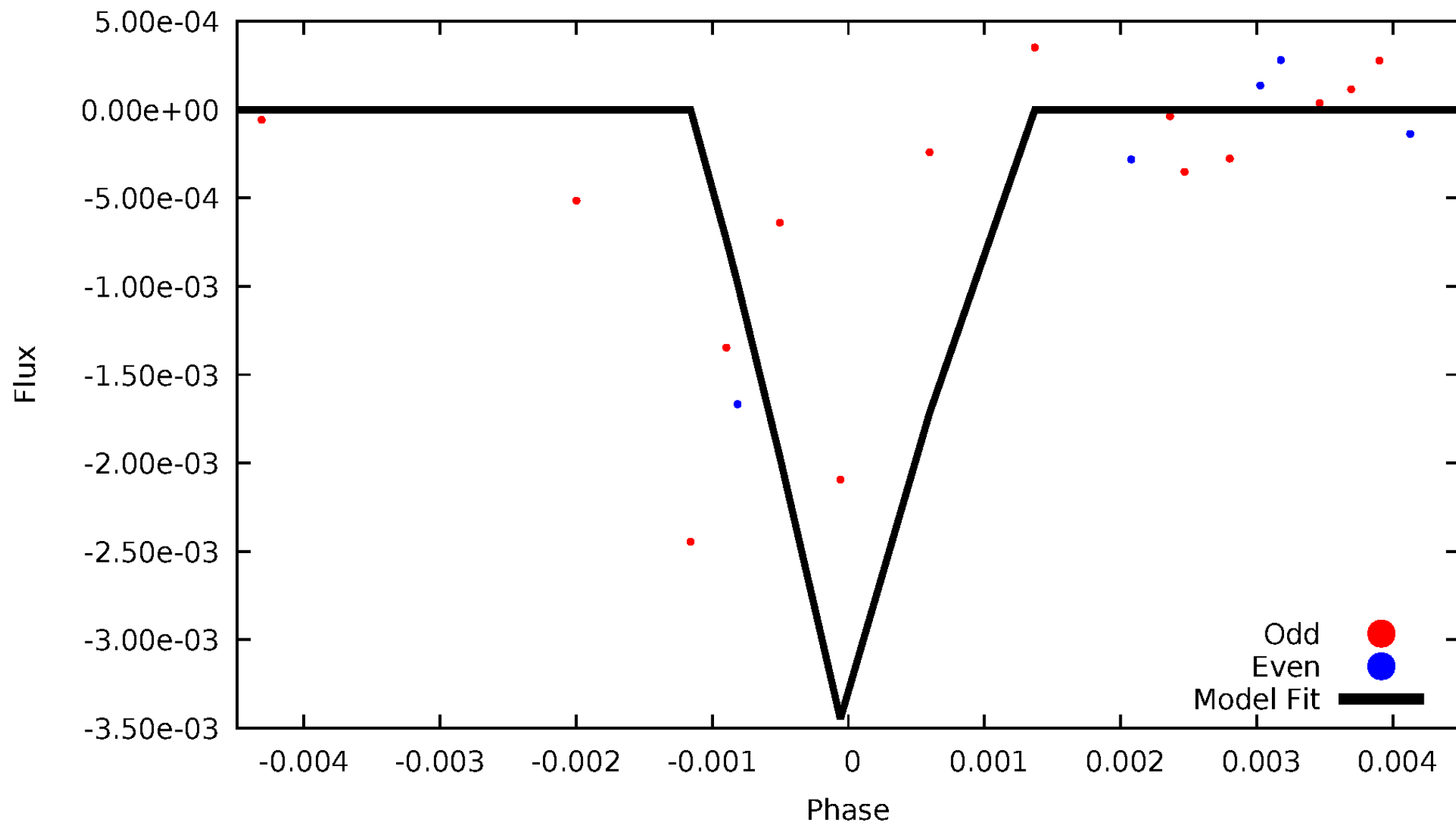
DV Odd/Even

TCE 004380560-04



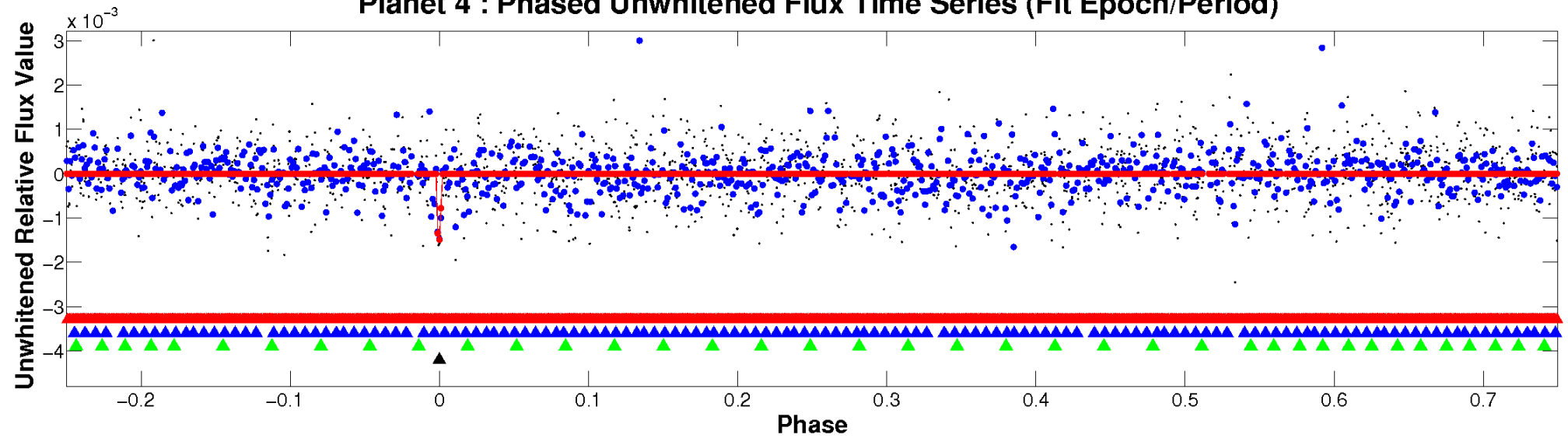
ALT Odd/Even

TCE 004380560-04

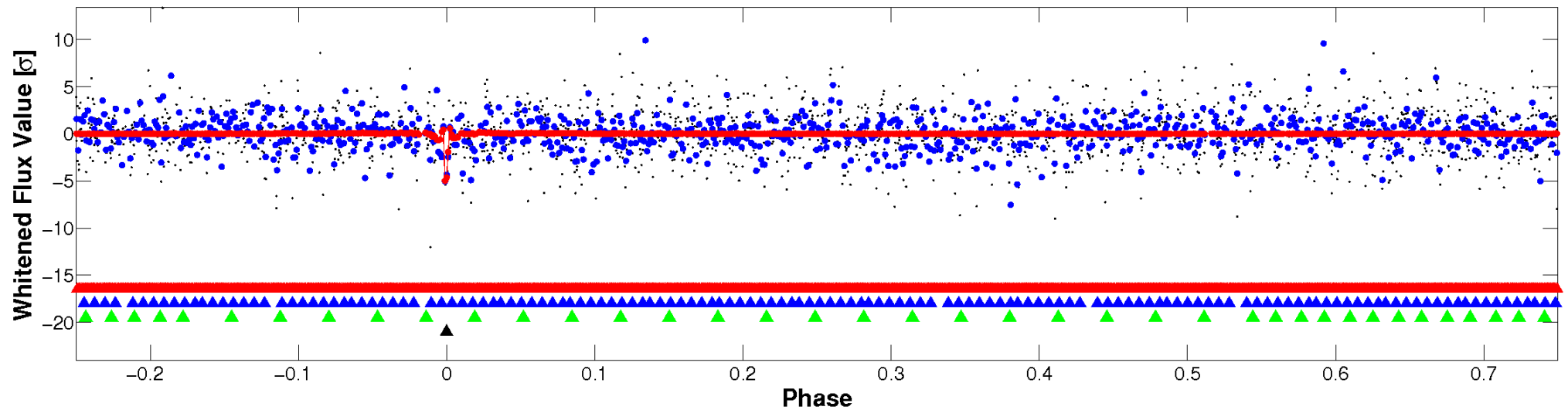


Non-Whitened Vs. Whitened Light Curve

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

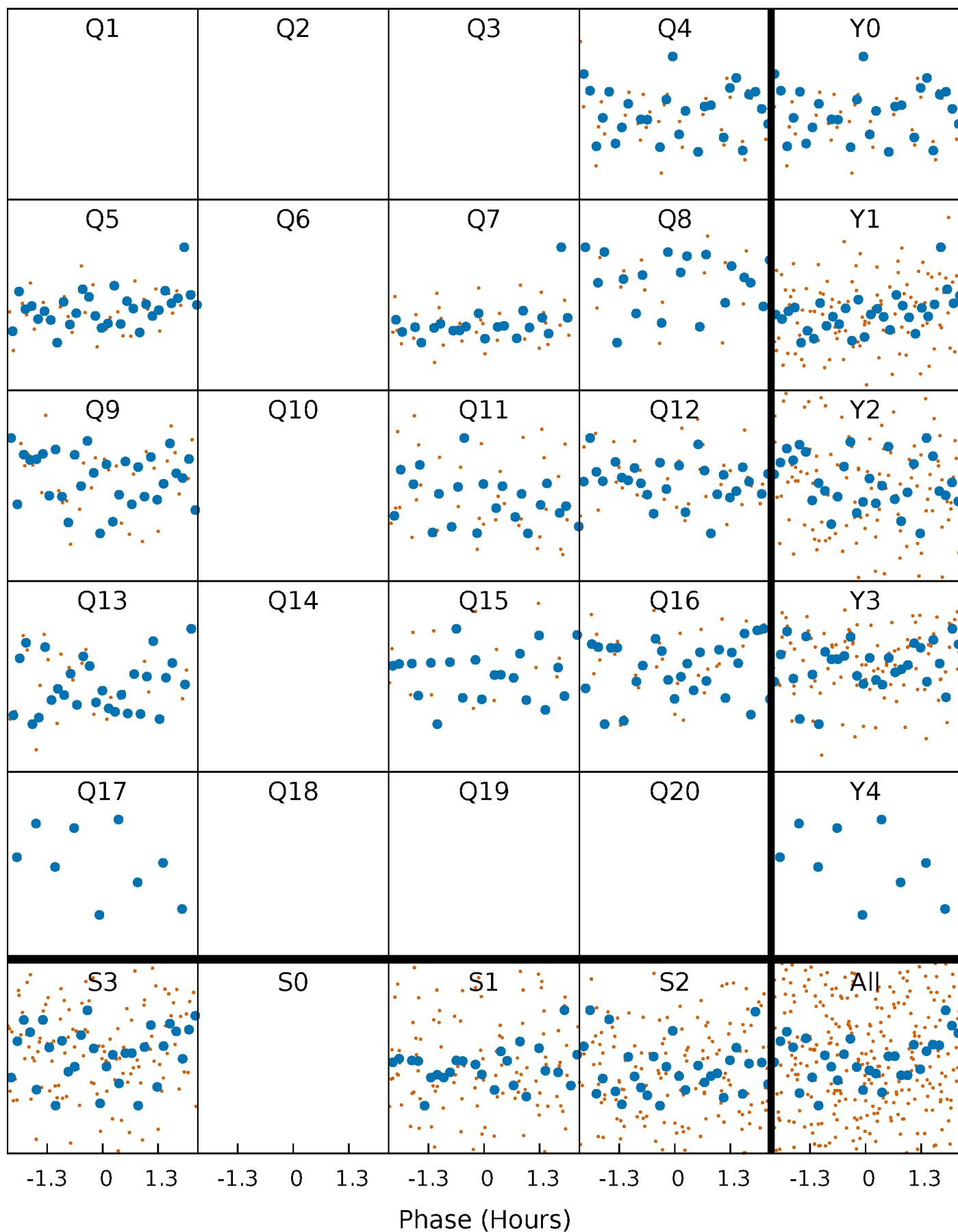


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



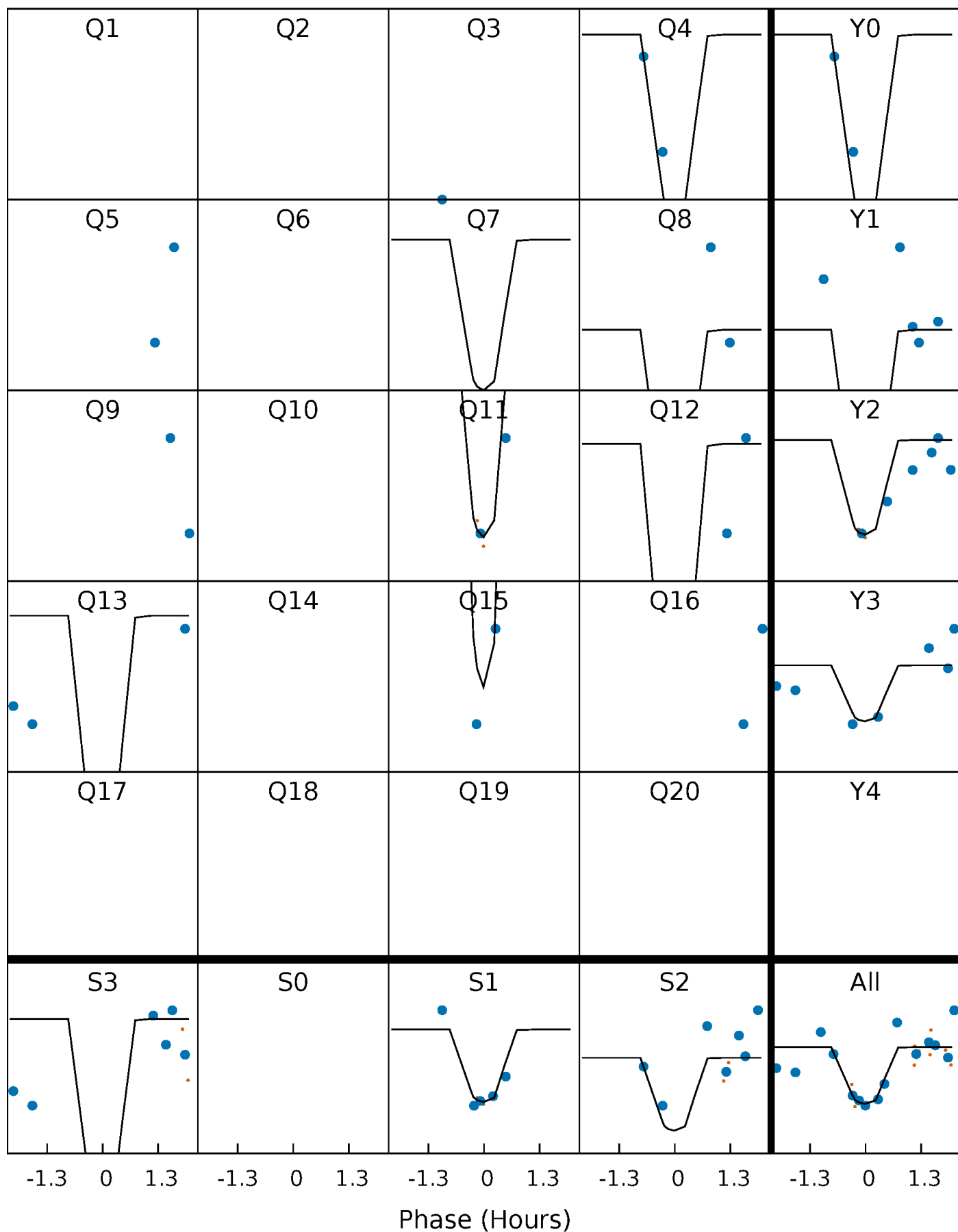
PDC Quarter-Phased Transit Curves

TCE 004380560-04 P= 18.571153 Days $T_0=135.872599$ (BKJD)



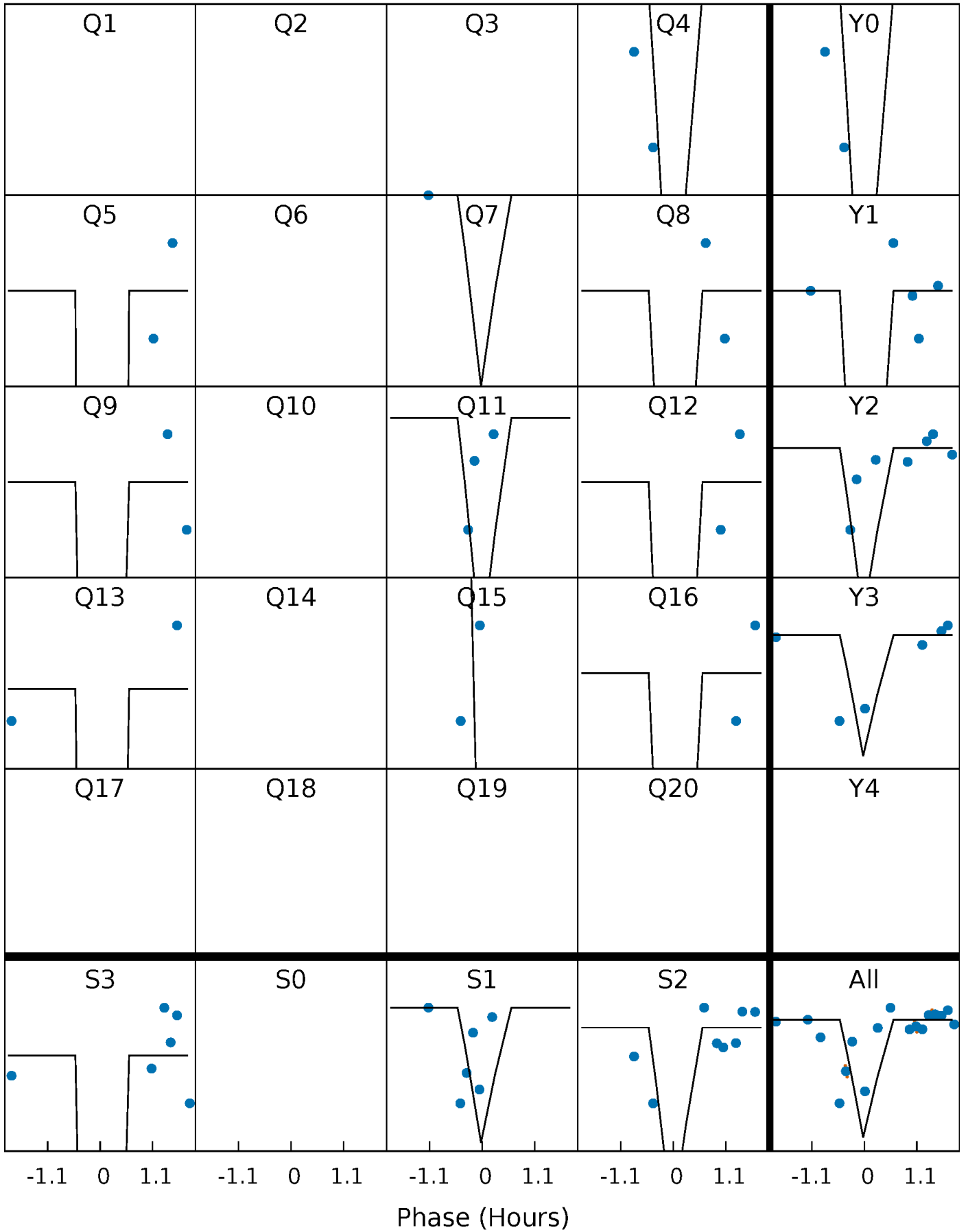
DV Quarter-Phased Transit Curves

TCE 004380560-04 P= 18.571153 Days $T_0=135.872599$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

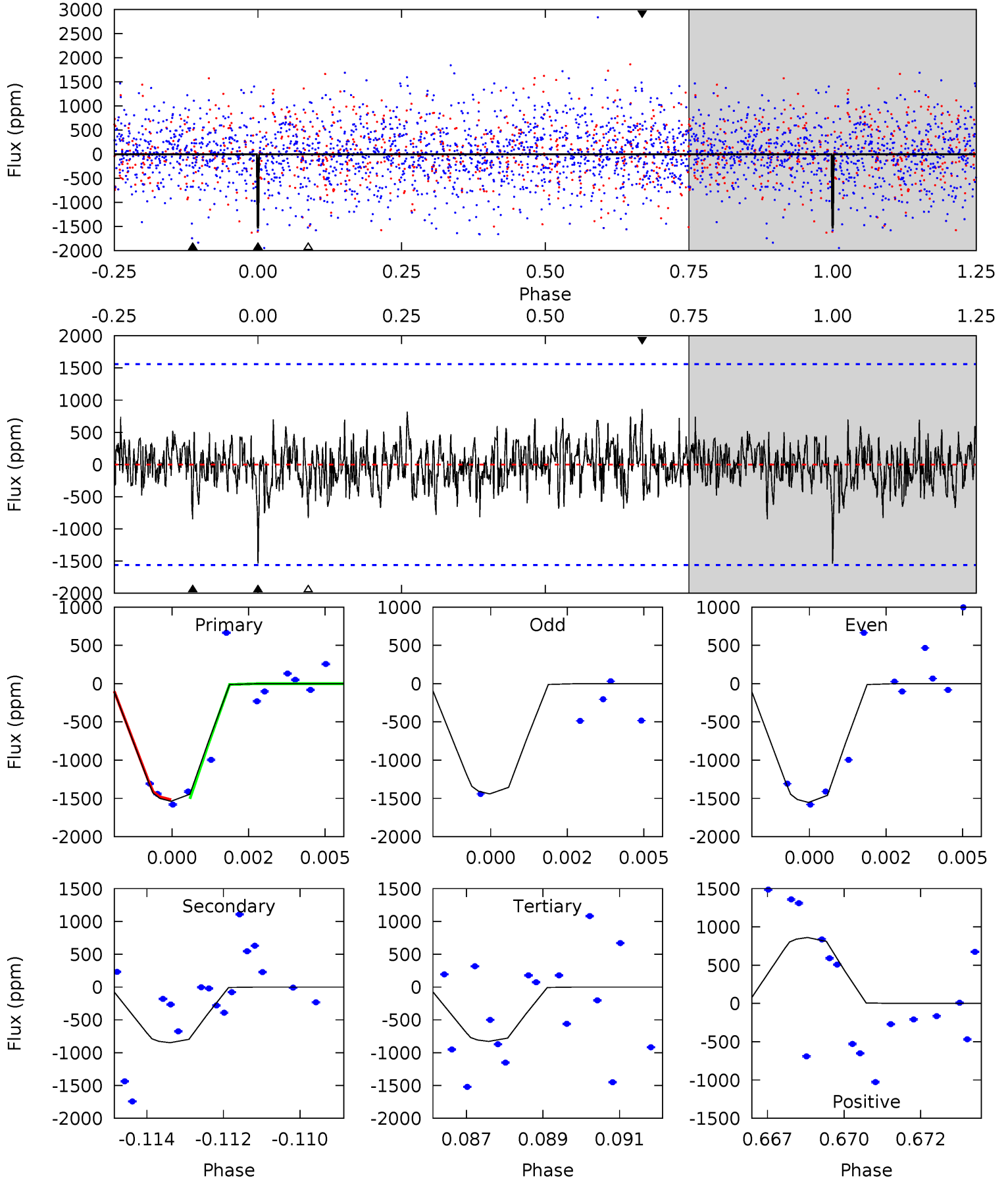
TCE 004380560-04 P= 18.571294 Days $T_0=135.874178$ (BKJD)



DV Model-Shift Uniqueness Test

004380560-04, P = 18.571153 Days, E = 135.872599 Days

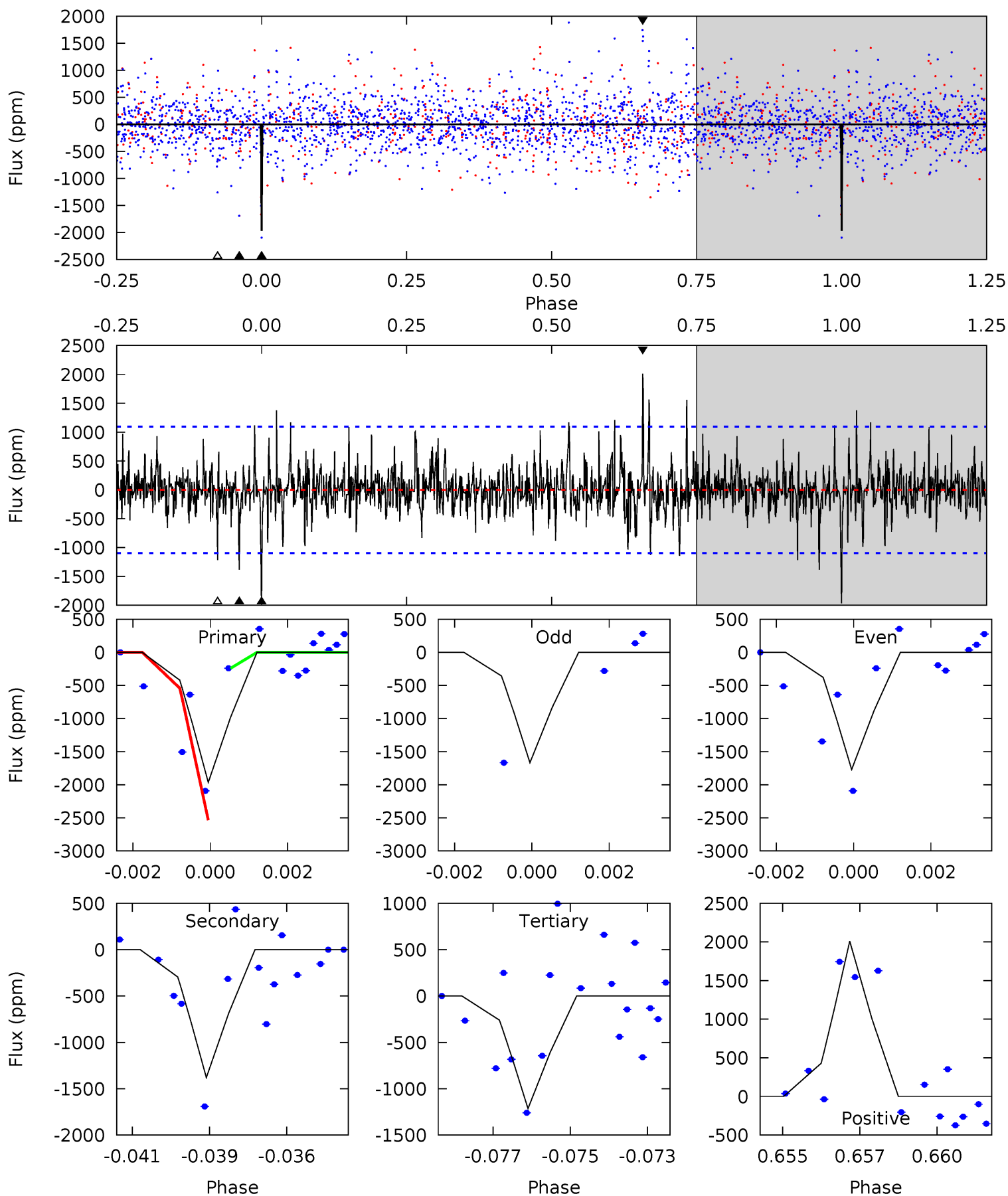
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.22	2.88	2.81	2.93	5.30	3.05	0.91	2.41	2.30	0.07	-0.05	0.17	1.00	0.36	0.02



Alt Model-Shift Uniqueness Test

004380560-04, P = 18.571294 Days, E = 135.874178 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.51	6.68	5.88	9.73	5.30	3.05	1.60	3.63	-0.21	0.80	-3.05	0.21	1.00	0.51	4.70



Stellar Parameters For KIC 004380560

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6106^{+190}_{-232}	$4.487^{+0.052}_{-0.208}$	$-0.160^{+0.250}_{-0.350}$	$0.966^{+0.304}_{-0.101}$	$1.043^{+0.140}_{-0.154}$	$1.631^{+0.444}_{-0.838}$
	+3%/-4%	+1%/-5%	+156%/-219%	+31%/-10%	+13%/-15%	+27%/-51%
Source	KIC0	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 004380560-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-848 ± 294	$6.60^{+5.54}_{-4.54}$	1012^{+73}_{-52}	4414^{+3187}_{-868}	192^{+1848}_{-140}
Alt.	-1380 ± 207	$7.77^{+6.12}_{-4.49}$	1013^{+74}_{-56}	4580^{+2272}_{-873}	235^{+1070}_{-164}

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

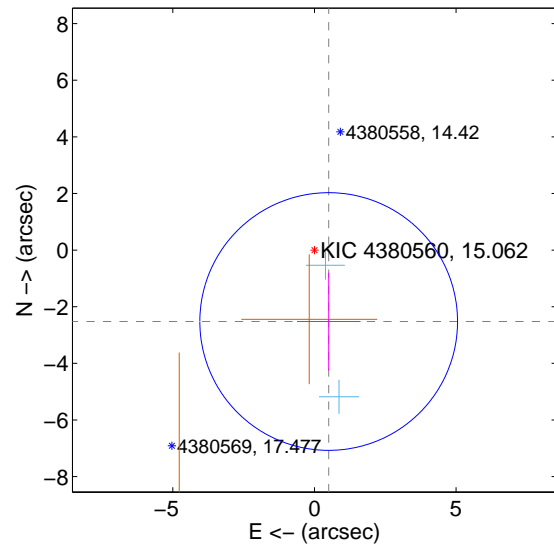
Supplemental centroid analysis for 004380560-04. Kepler magnitude: 15.06. Transit SNR 11.02

There are 2 quarters with good PRF difference image offsets

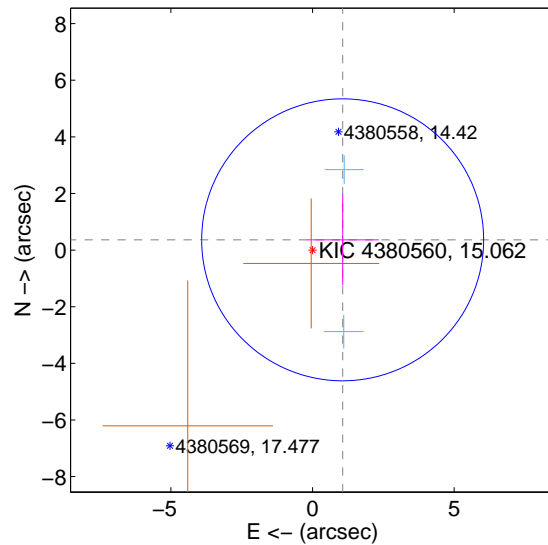
The direct PRF centroid is offset from the target star catalog position by about 1.98 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.572 ± 1.517	1.70	-0.503 ± 1.119	-2.522 ± 1.729
PRF-fit source offset from KIC position	1.124 ± 1.660	0.68	-1.064 ± 1.281	0.363 ± 1.608
photometric centroid source offset	0.98 ± 0.24	4.01	0.17 ± 0.19	0.96 ± 0.24

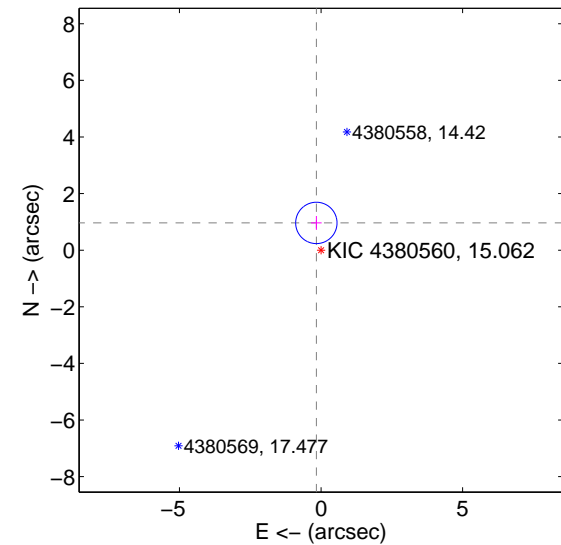
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

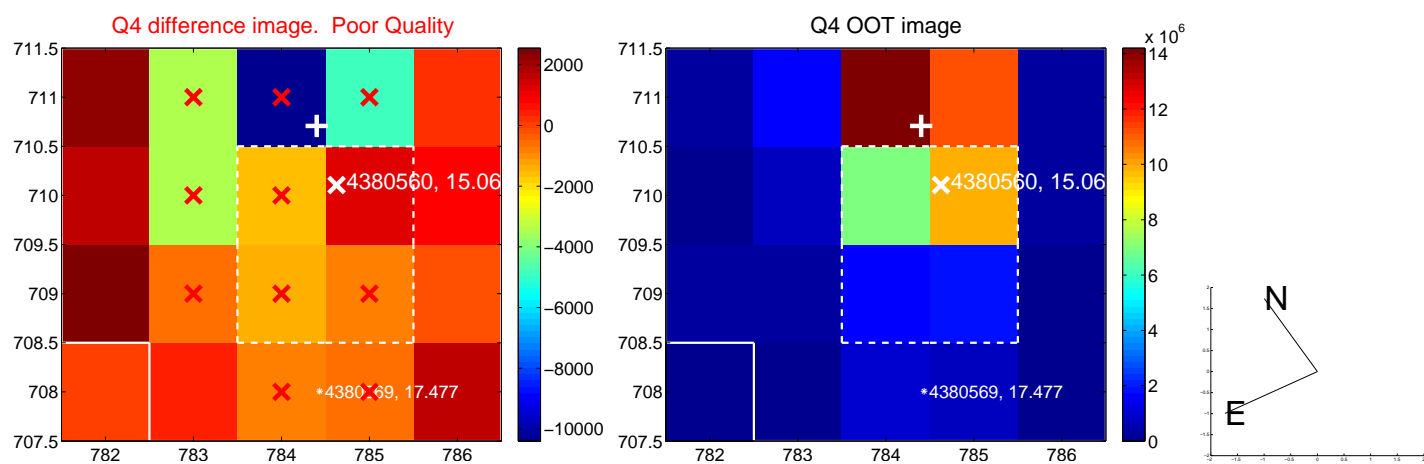
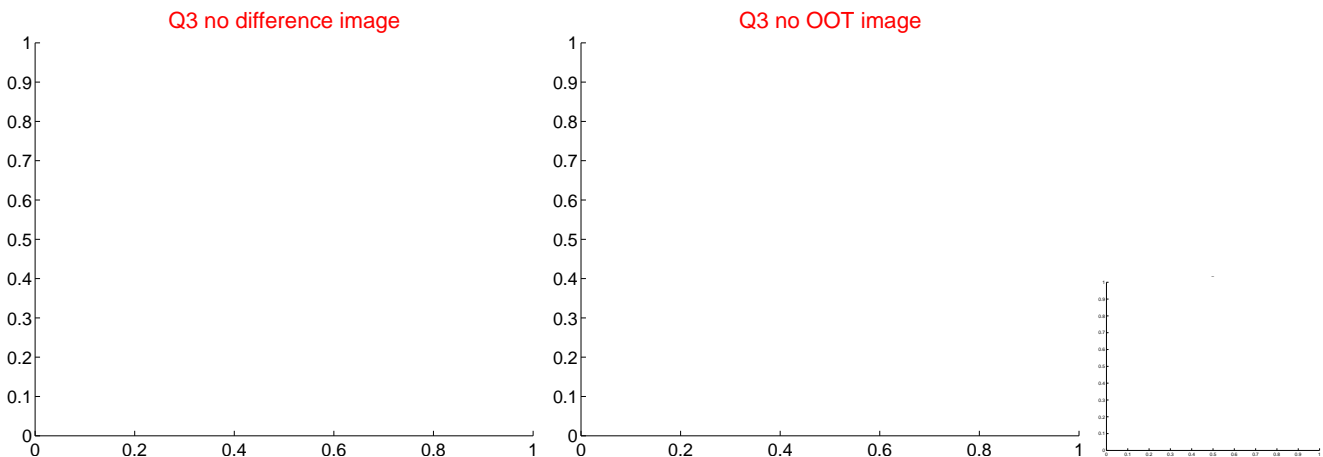
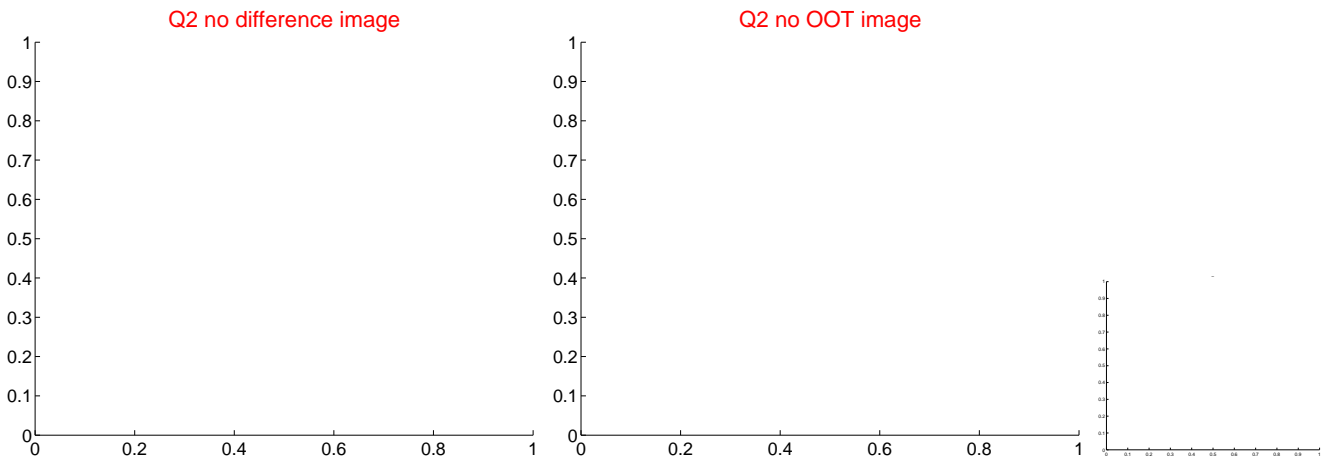
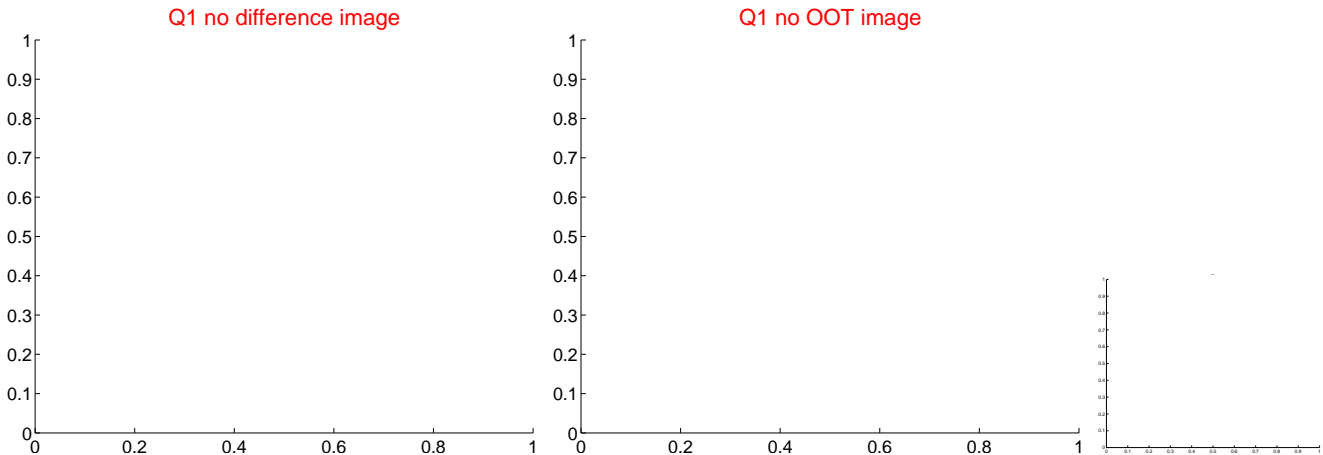


offset from photometric centroids

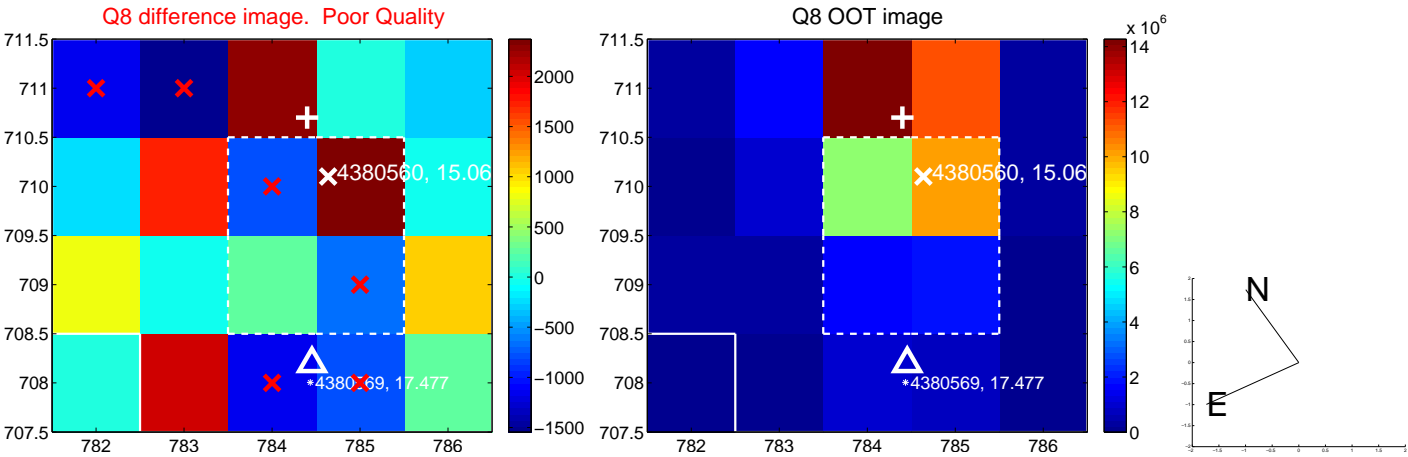
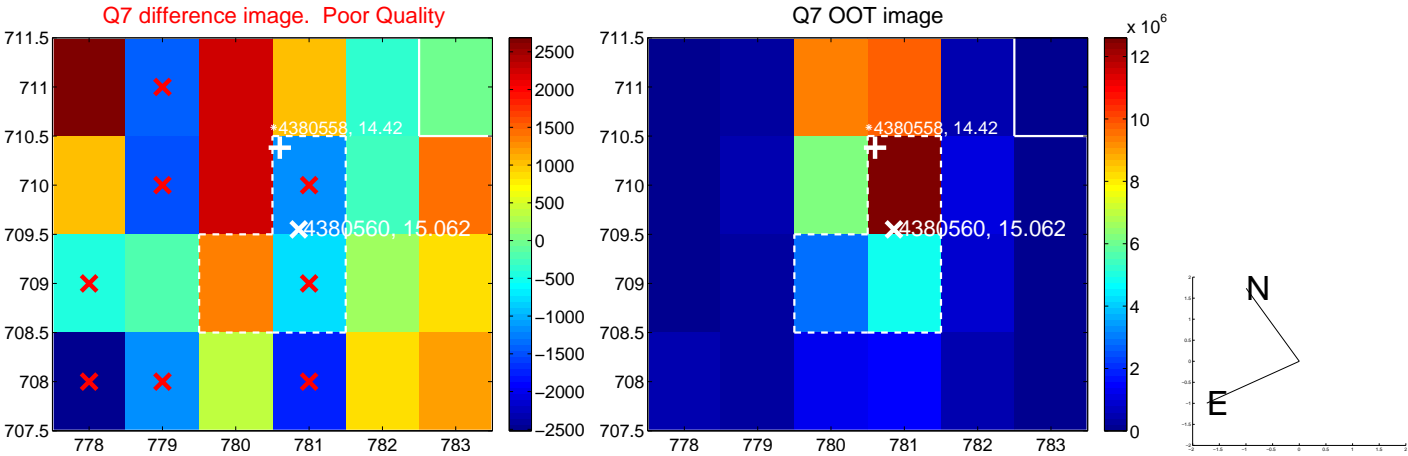
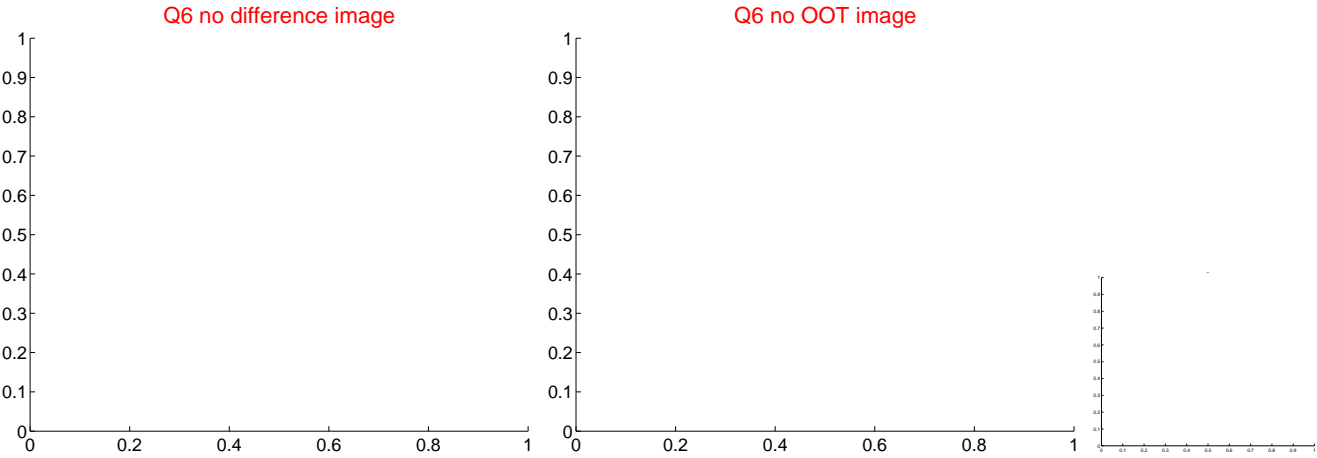
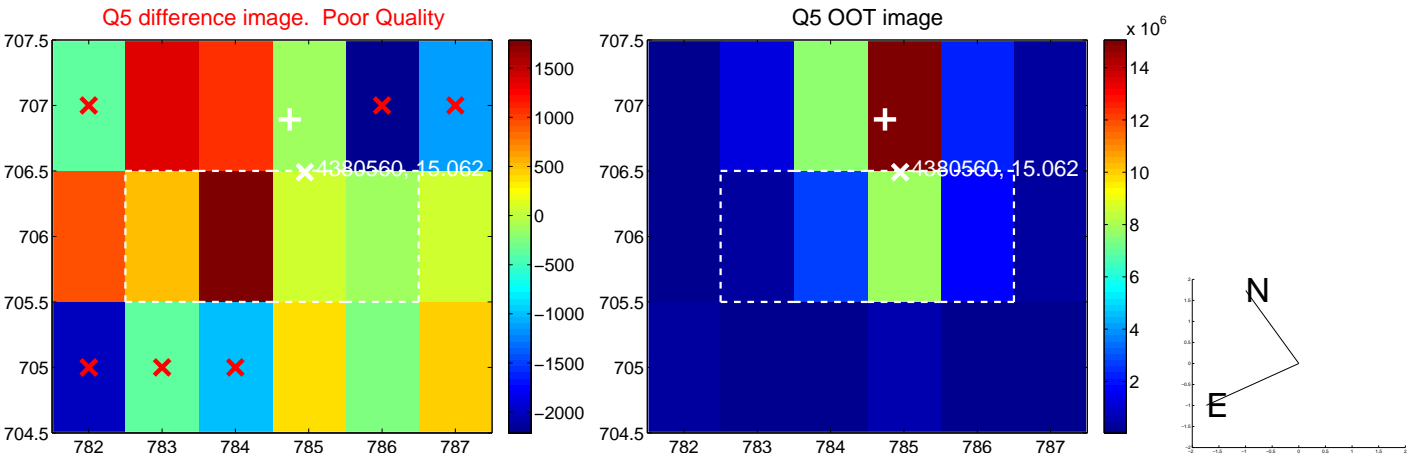


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

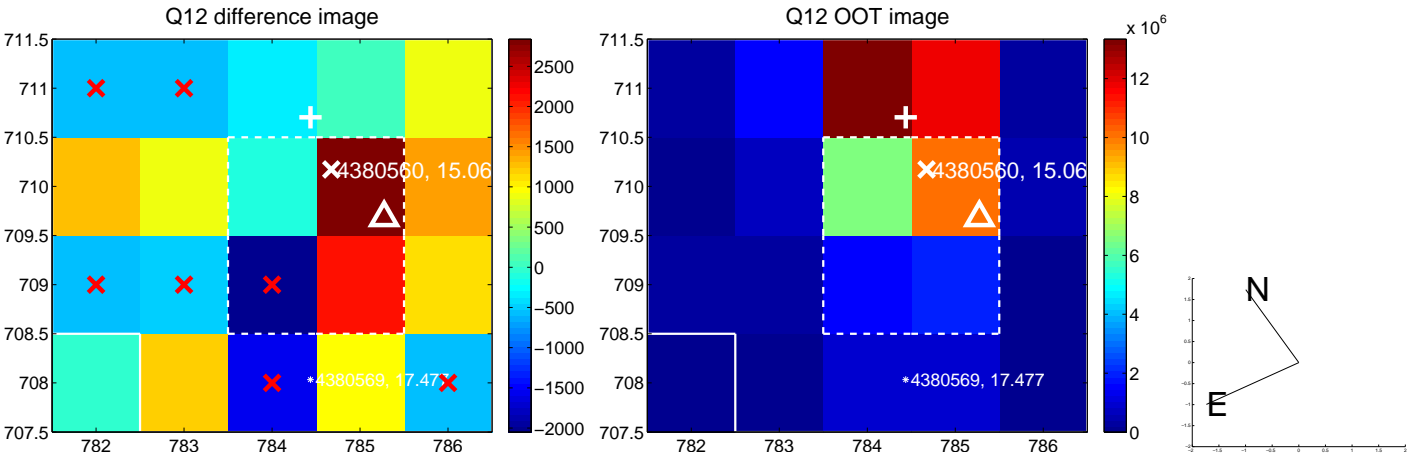
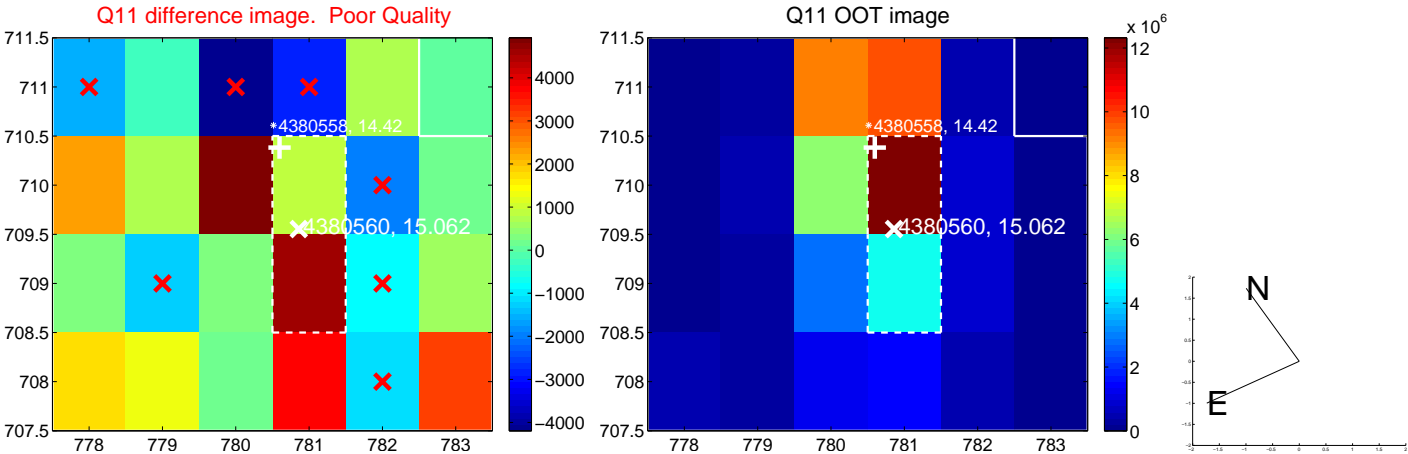
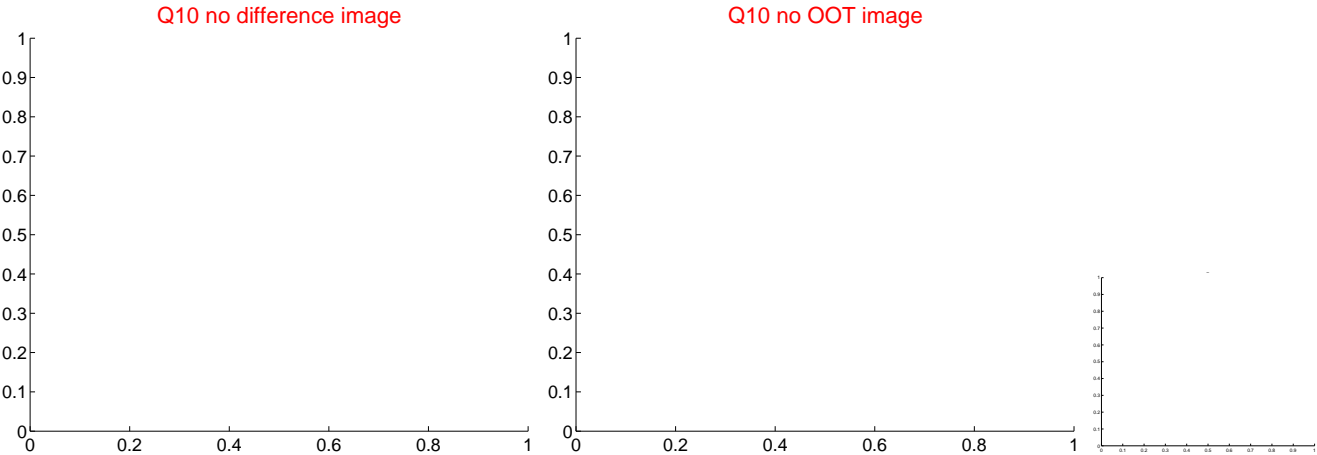
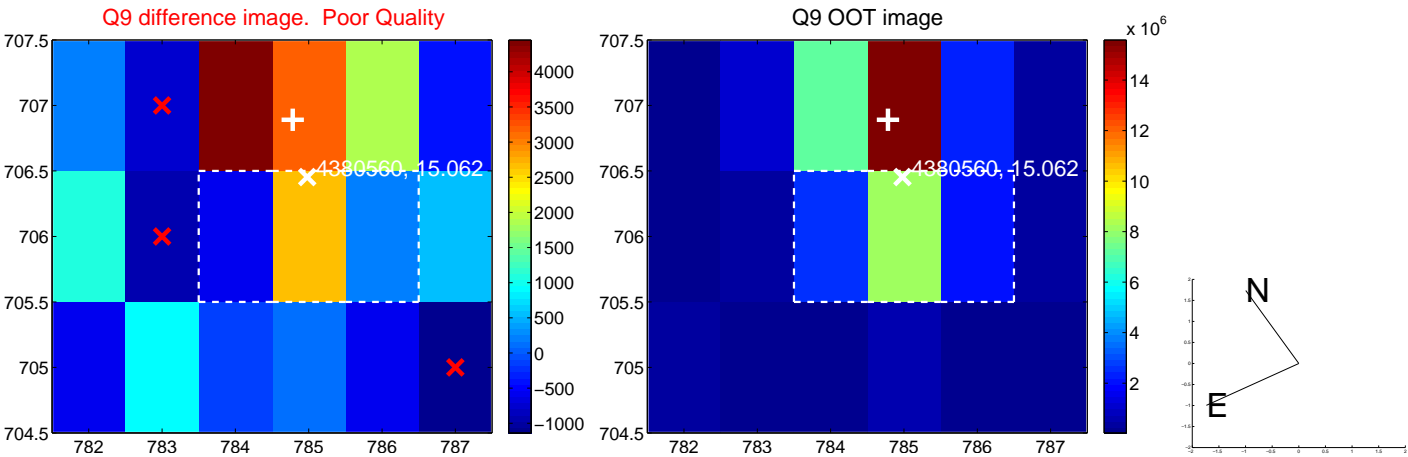
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



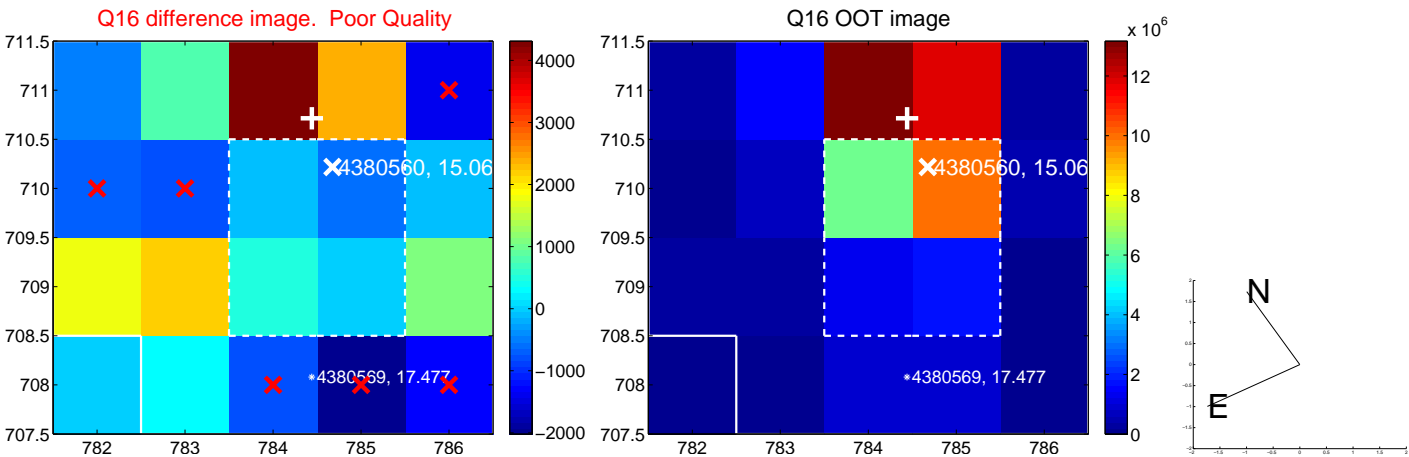
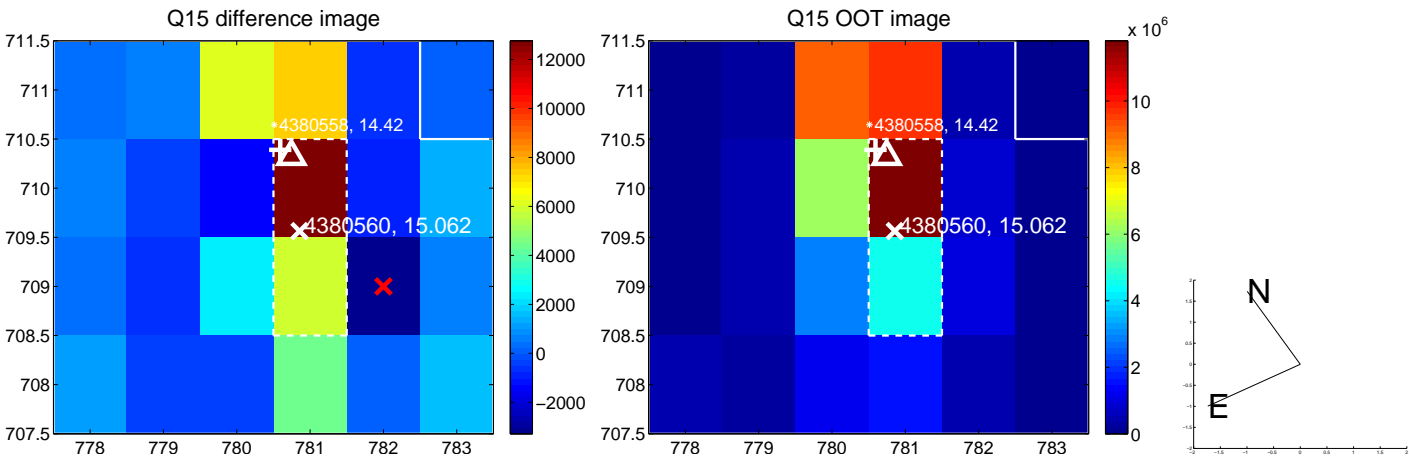
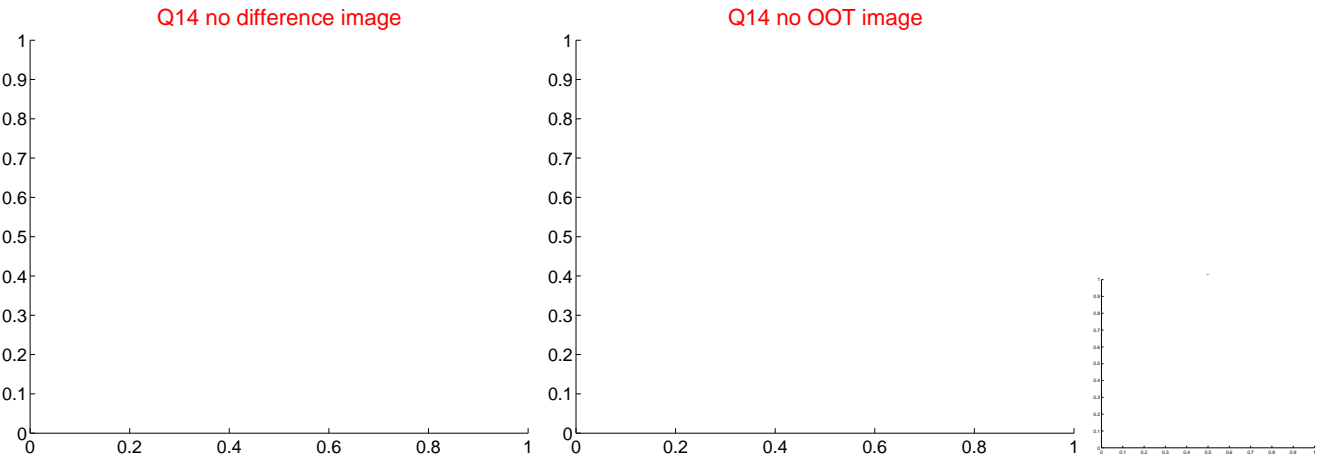
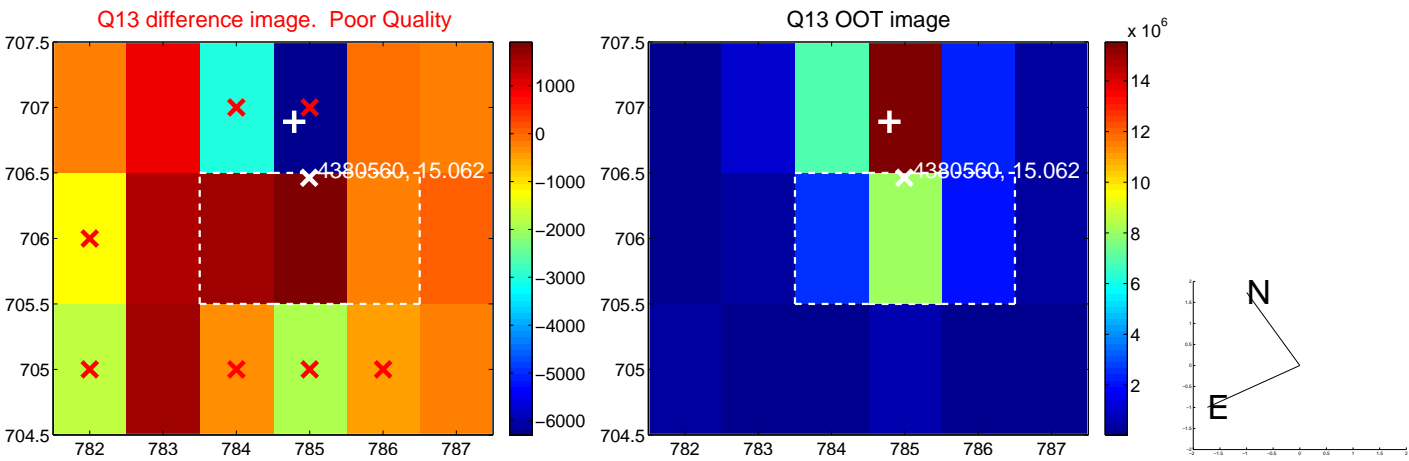
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



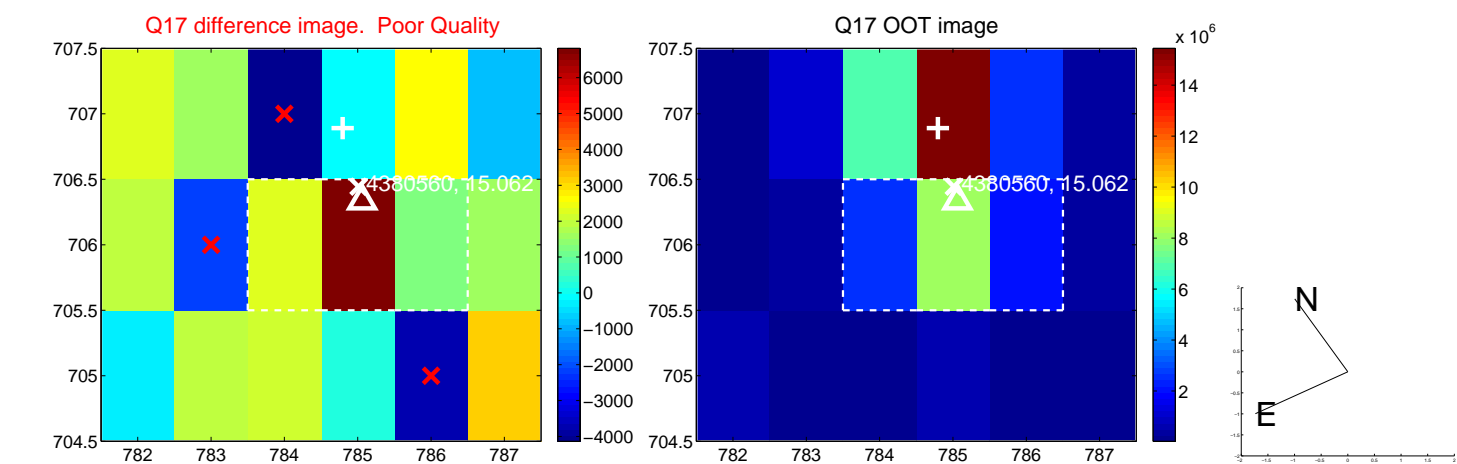
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



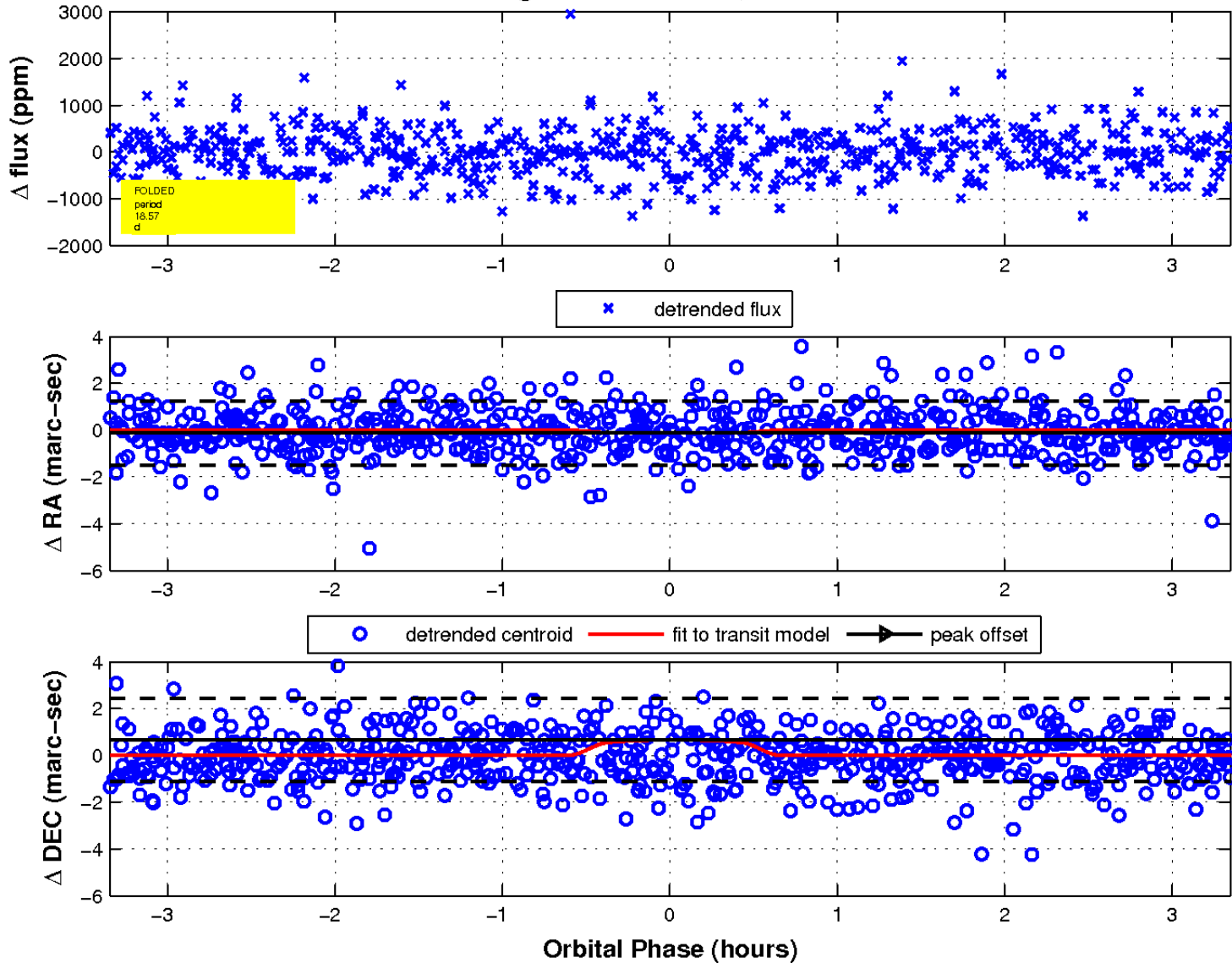
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

