

KIC 009050785

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})
009050785-01	OBS	No	1.853932	133.004872	0.0	7.912	8.7	0.0	2.08	6359	0.01	6172.71
009050785-02	OBS	No	107.568804	174.187260	190.7	6.741	7.5	6.7	2.08	6359	3.30	27.48

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009050785-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV
009050785-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS

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

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

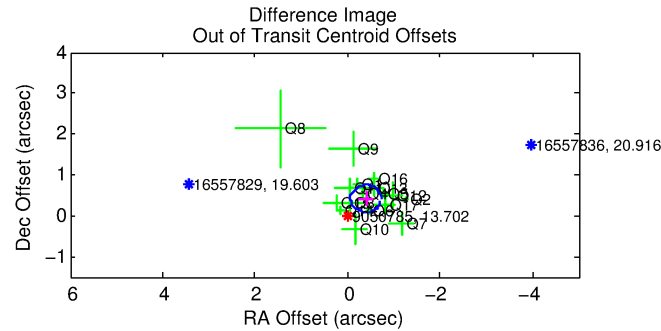
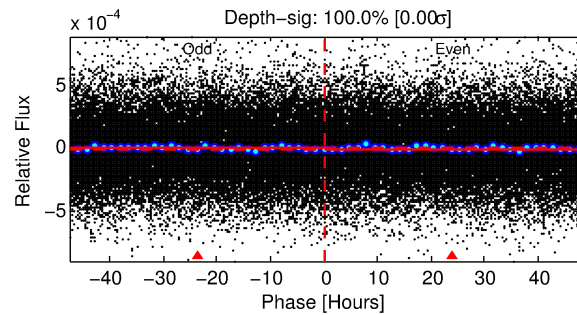
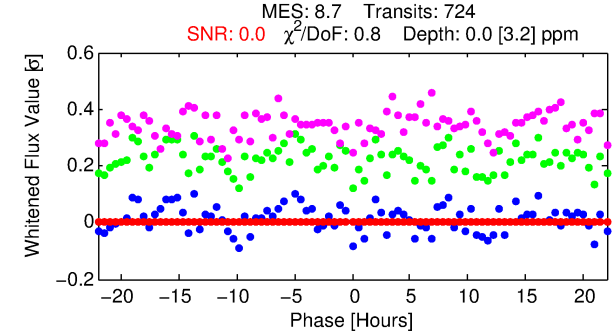
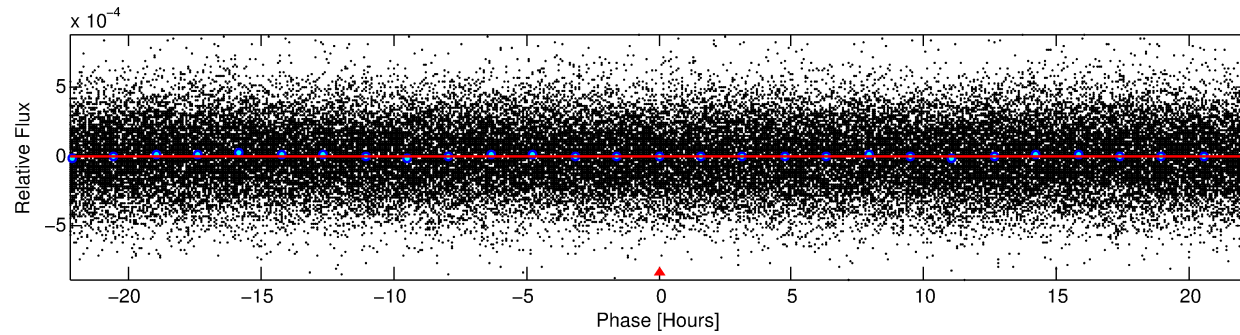
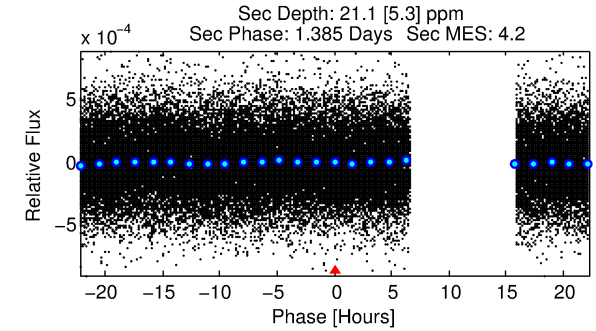
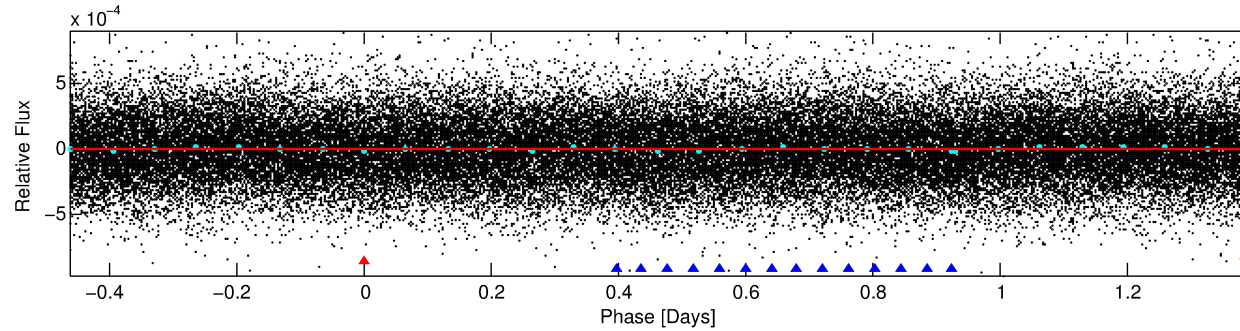
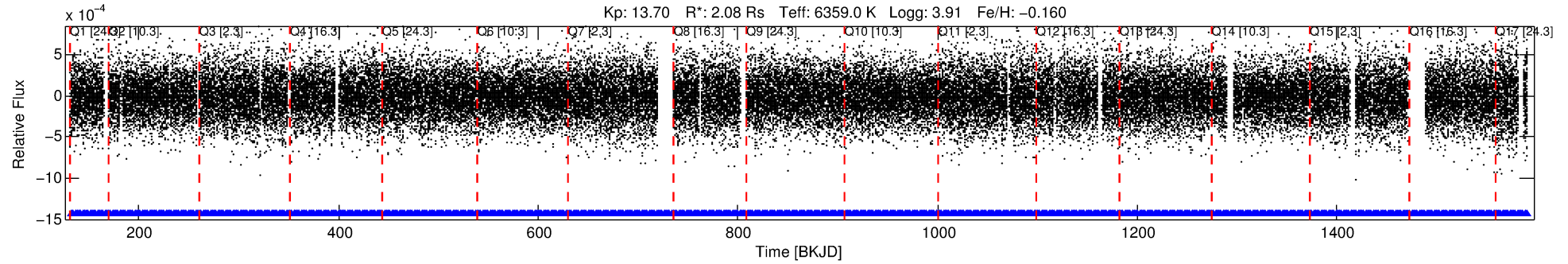
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009050785-01

No Significant Match Found

DV One-Page Summary

KIC: 9050785 Candidate: 1 of 2 Period: 1.854 d



DV Fit Results:

Period = 1.85393 [0.78748] d
Epoch = 133.0049 [190.3210] BKJD
Rp/R* = 0.0000 [0.0670]
a/R* = 1.05 [65.65]
b = 0.98 [44.10]
Seff = 6172.71 [5569.14]
Teq = 2260 [510] K
Rp = 0.01 [15.17] Re
a = 0.0320 [0.0165] AU
Ag = 174797.46 [643356459.70] [0.00σ]
Teffp = 71453 [65749623] K [0.00σ]

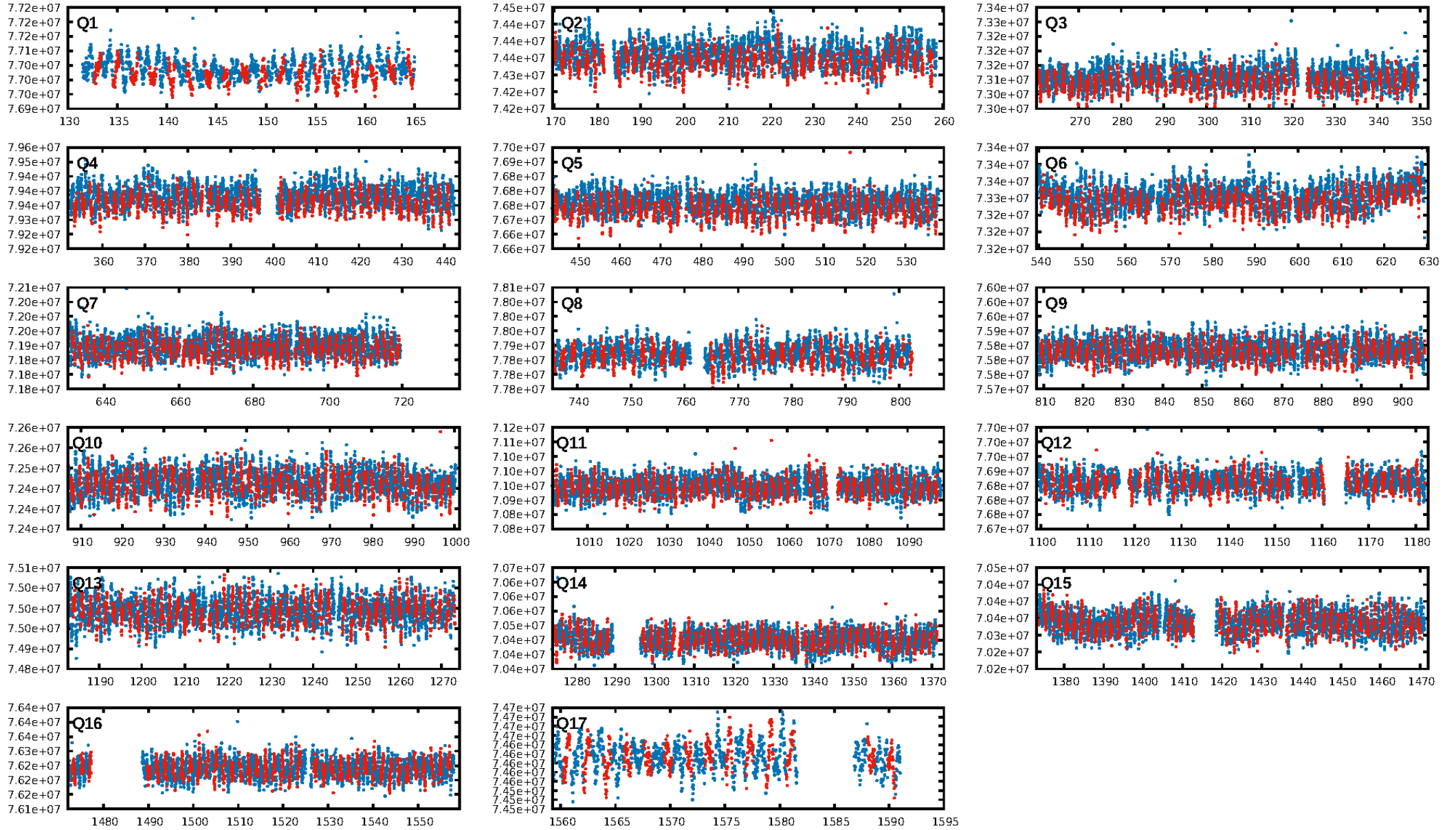
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [244.10σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.00e-13
RollingBand-fgt: 1.00 [692/692]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.573 arcsec [5.15σ]
KicOffset-rm: 0.246 arcsec [2.24σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.59 [10/17]
DiffImageOverlap-fno: 1.00 [17/17]

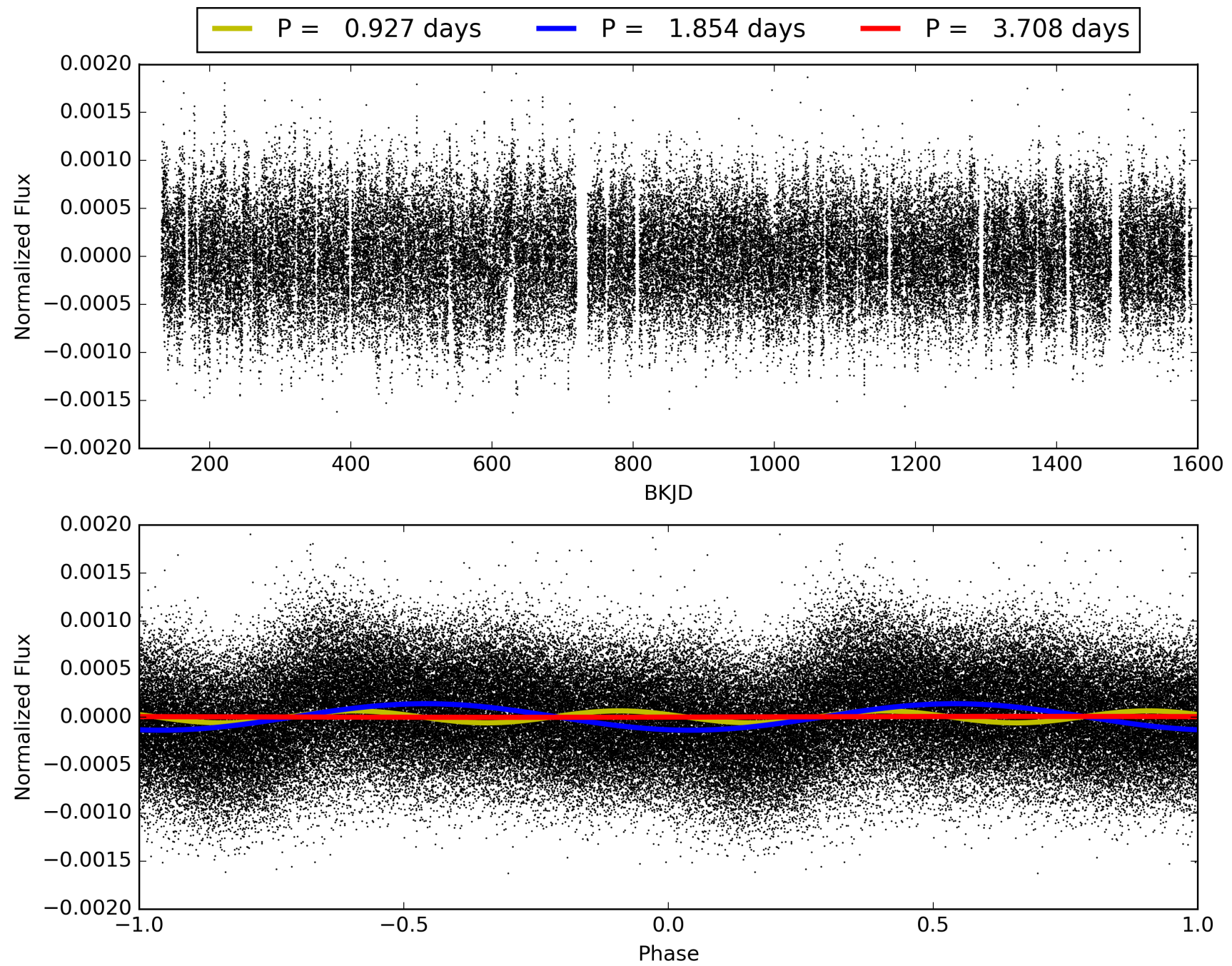
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:49:47 Z

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

TCE 009050785-01, PDC Light Curves

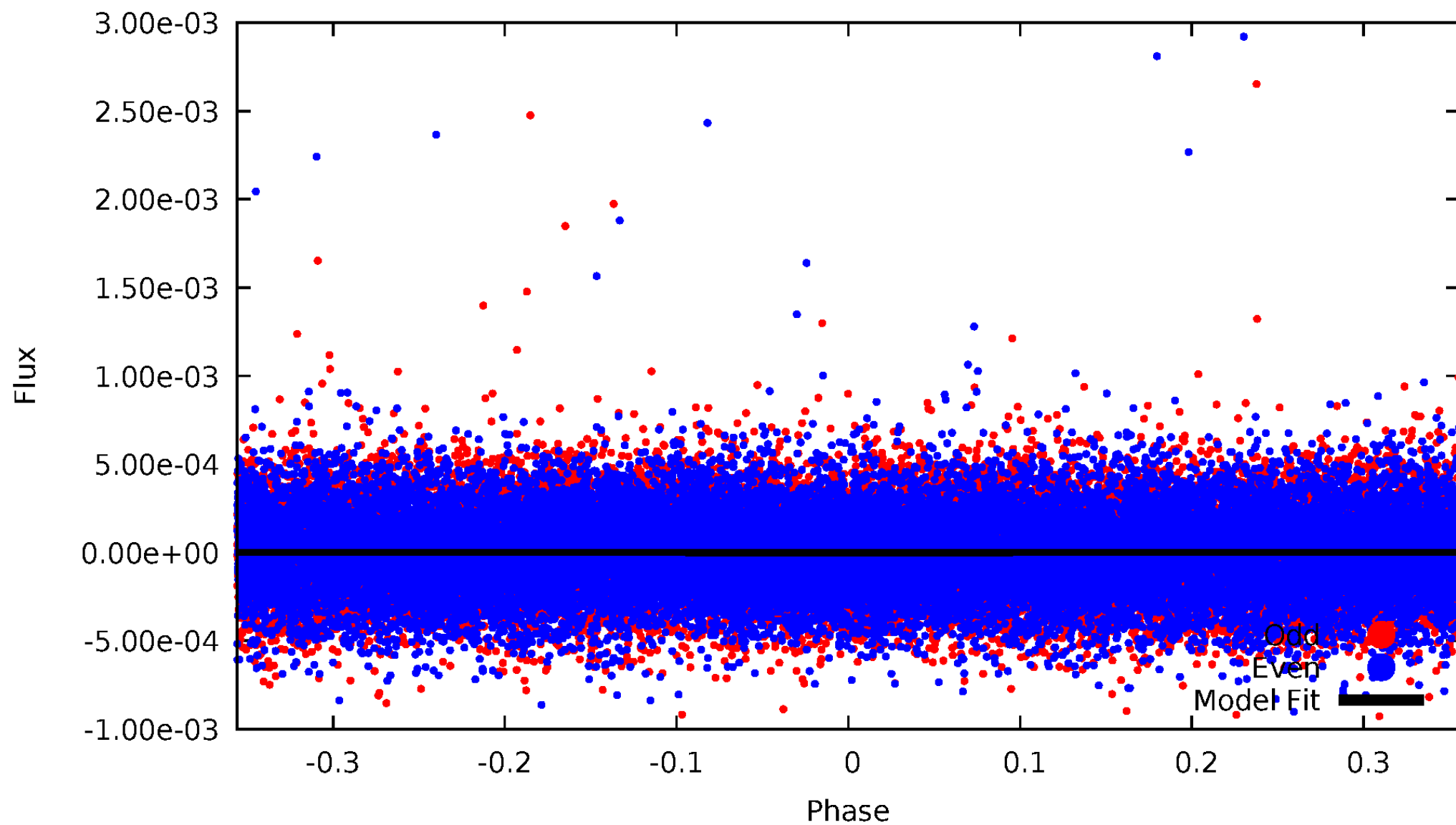


TCE 009050785-01



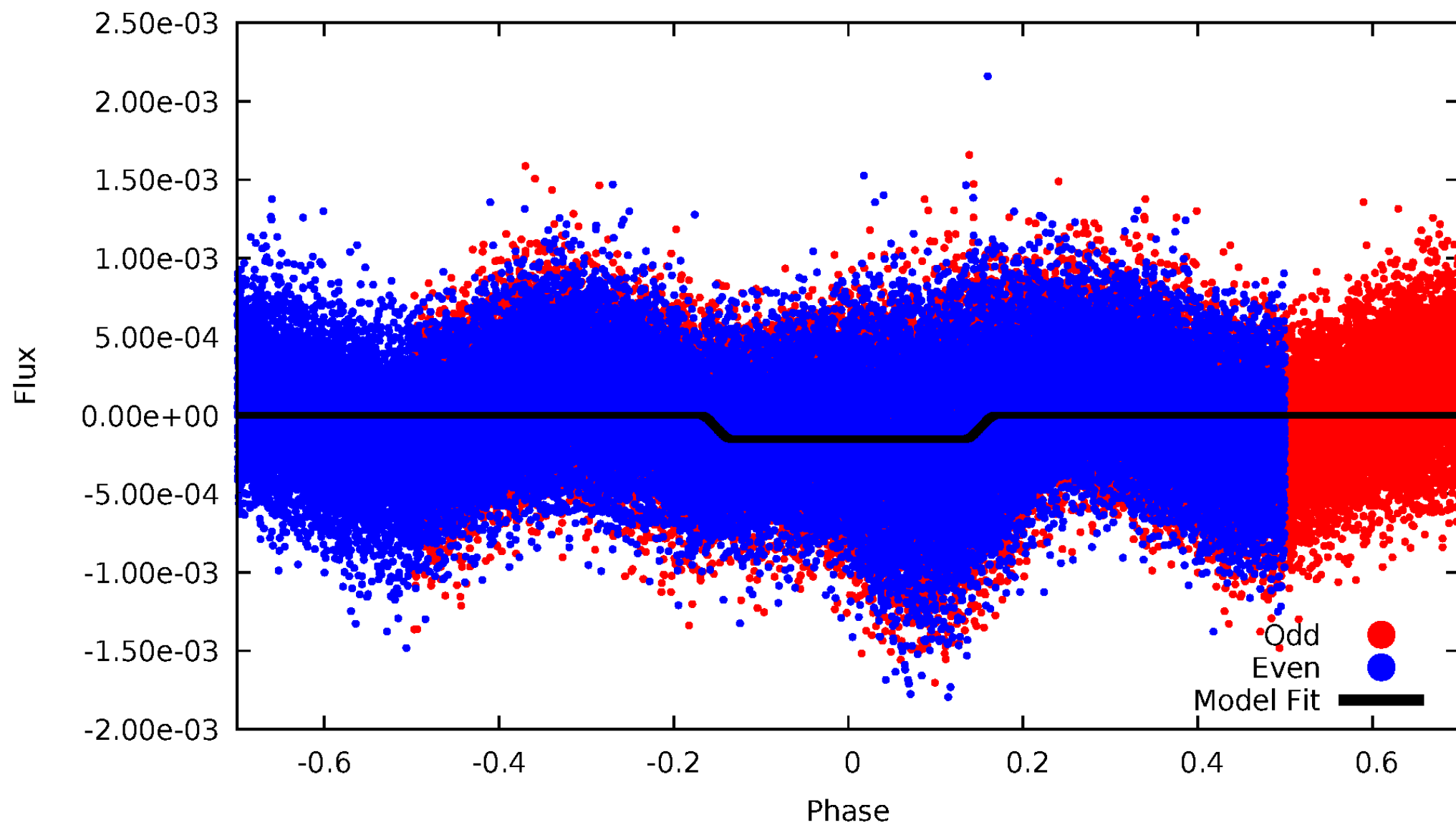
DV Odd/Even

TCE 009050785-01



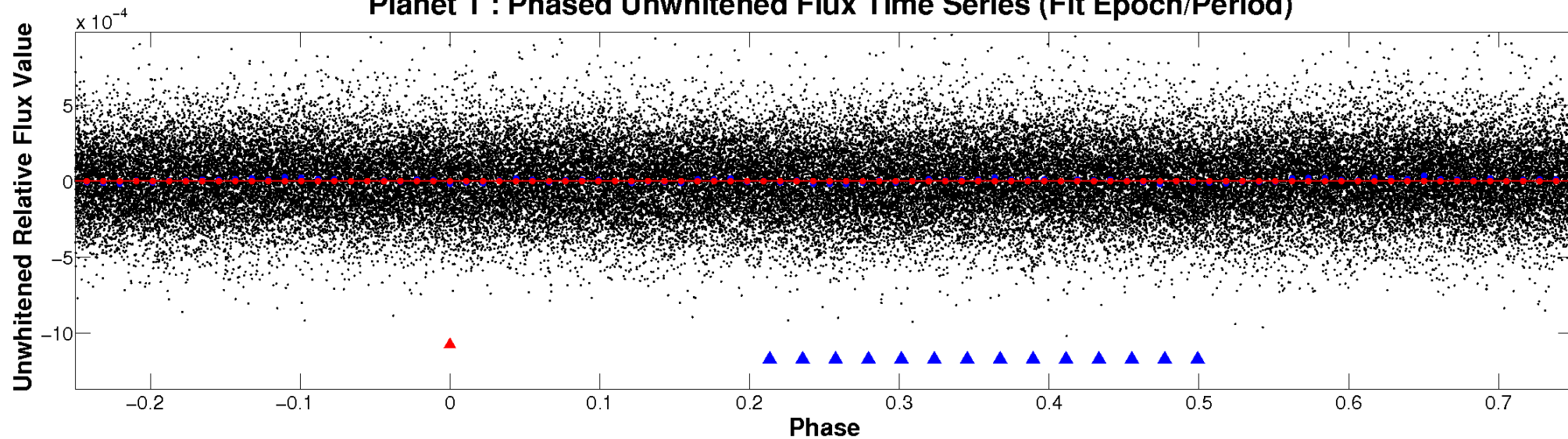
ALT Odd/Even

TCE 009050785-01

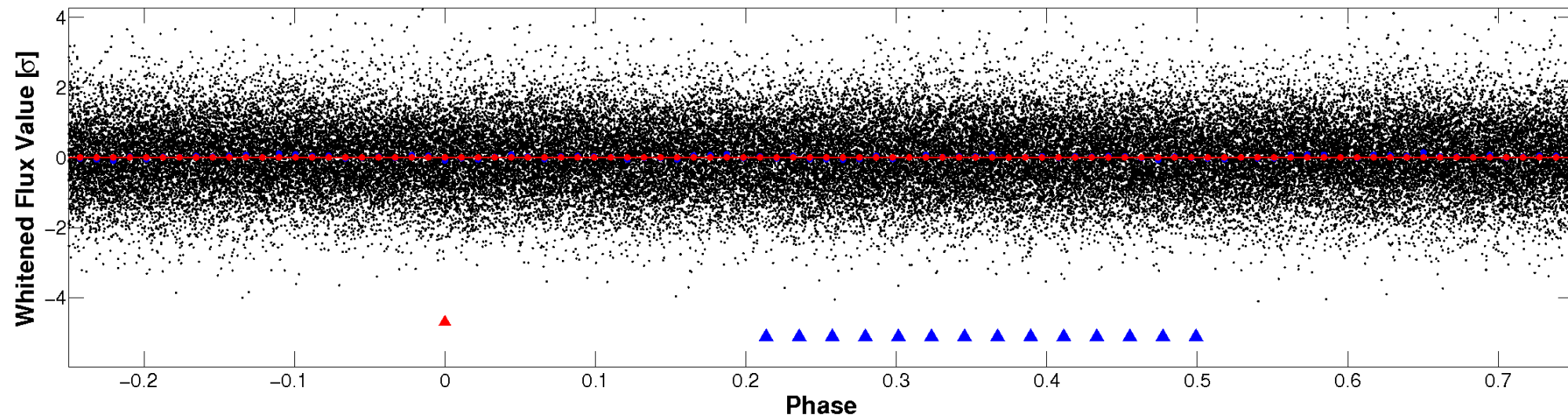


Non-Whitened Vs. Whitened Light Curve

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

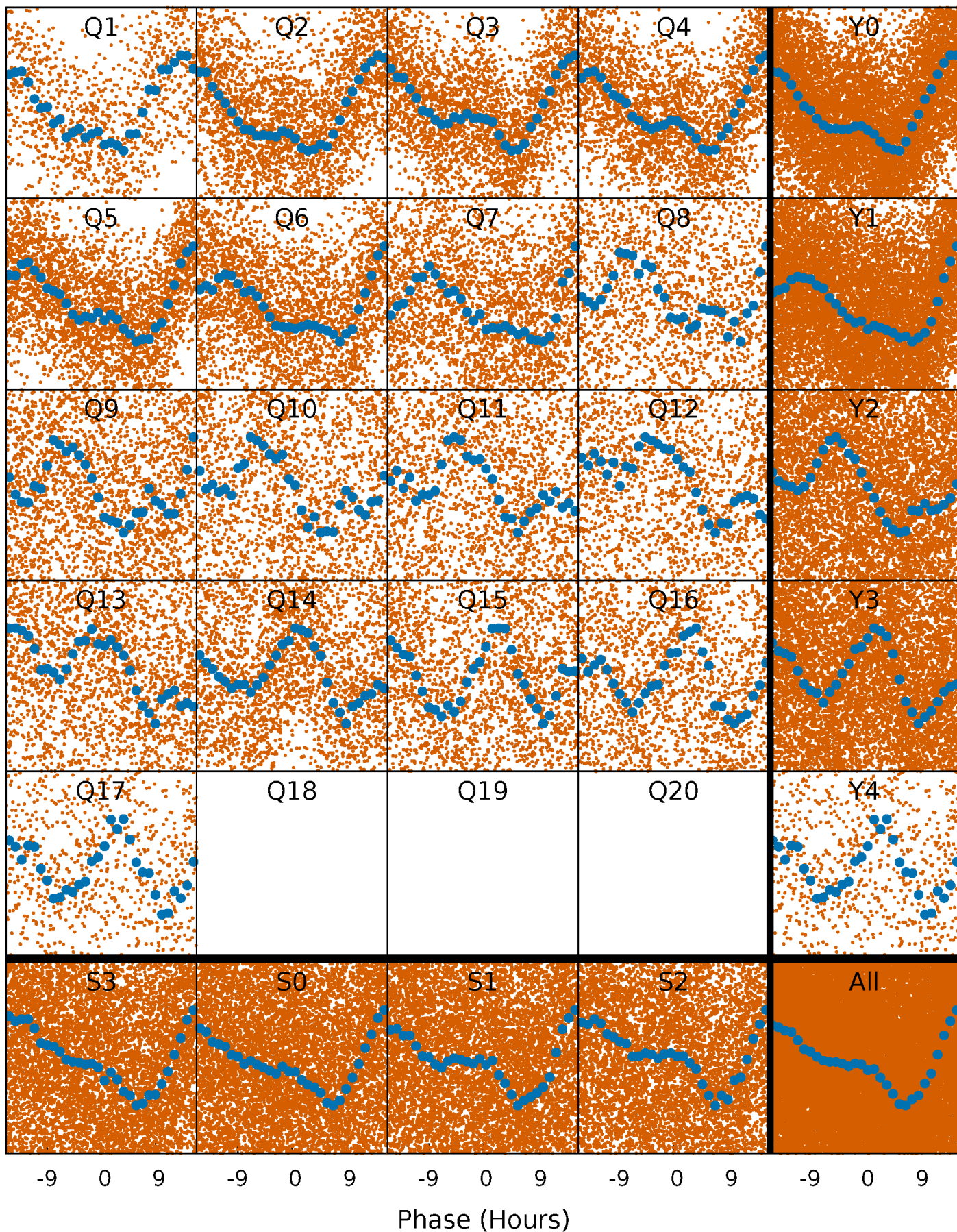


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



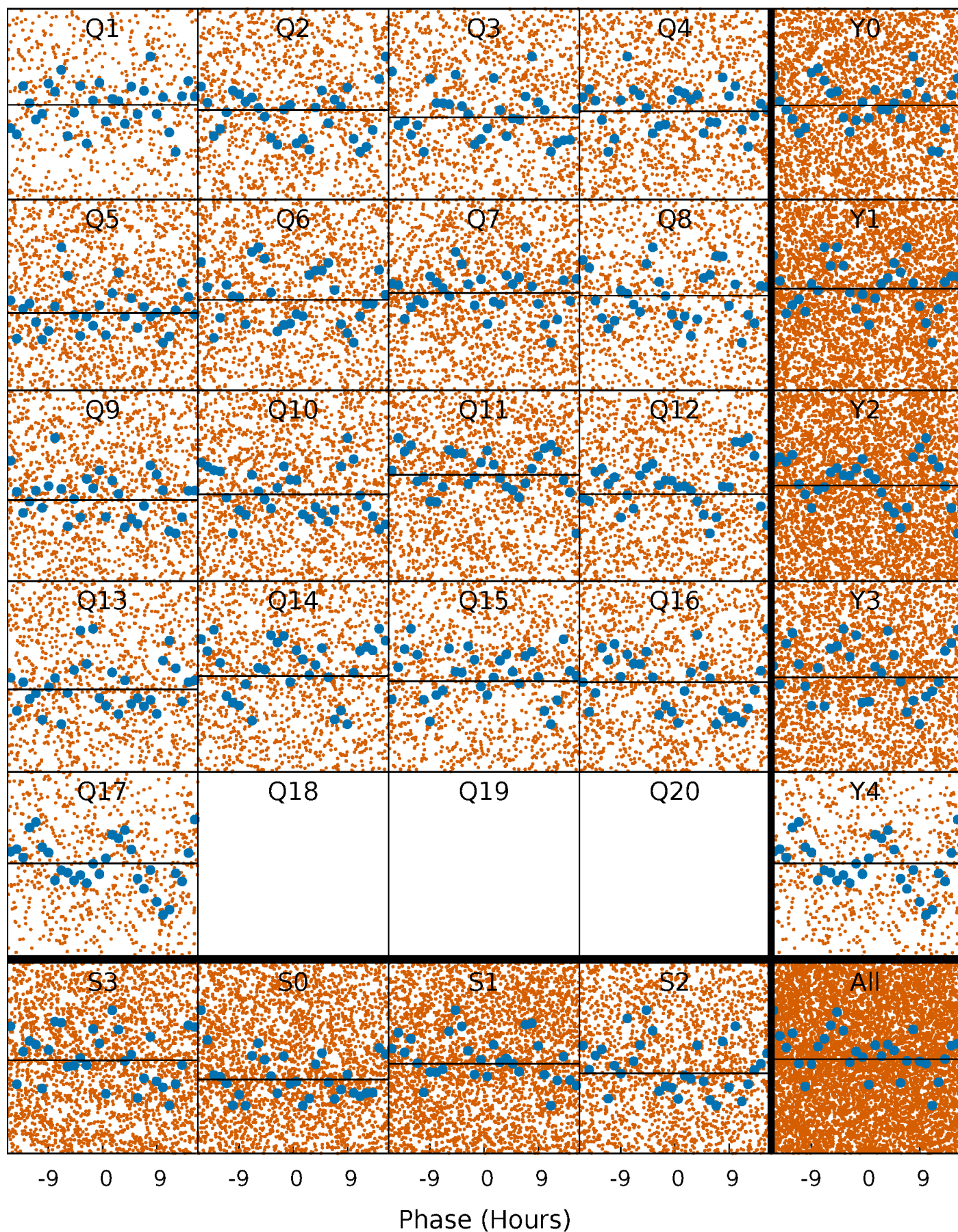
PDC Quarter-Phased Transit Curves

TCE 009050785-01 P= 1.853932 Days $T_0=133.004872$ (BKJD)



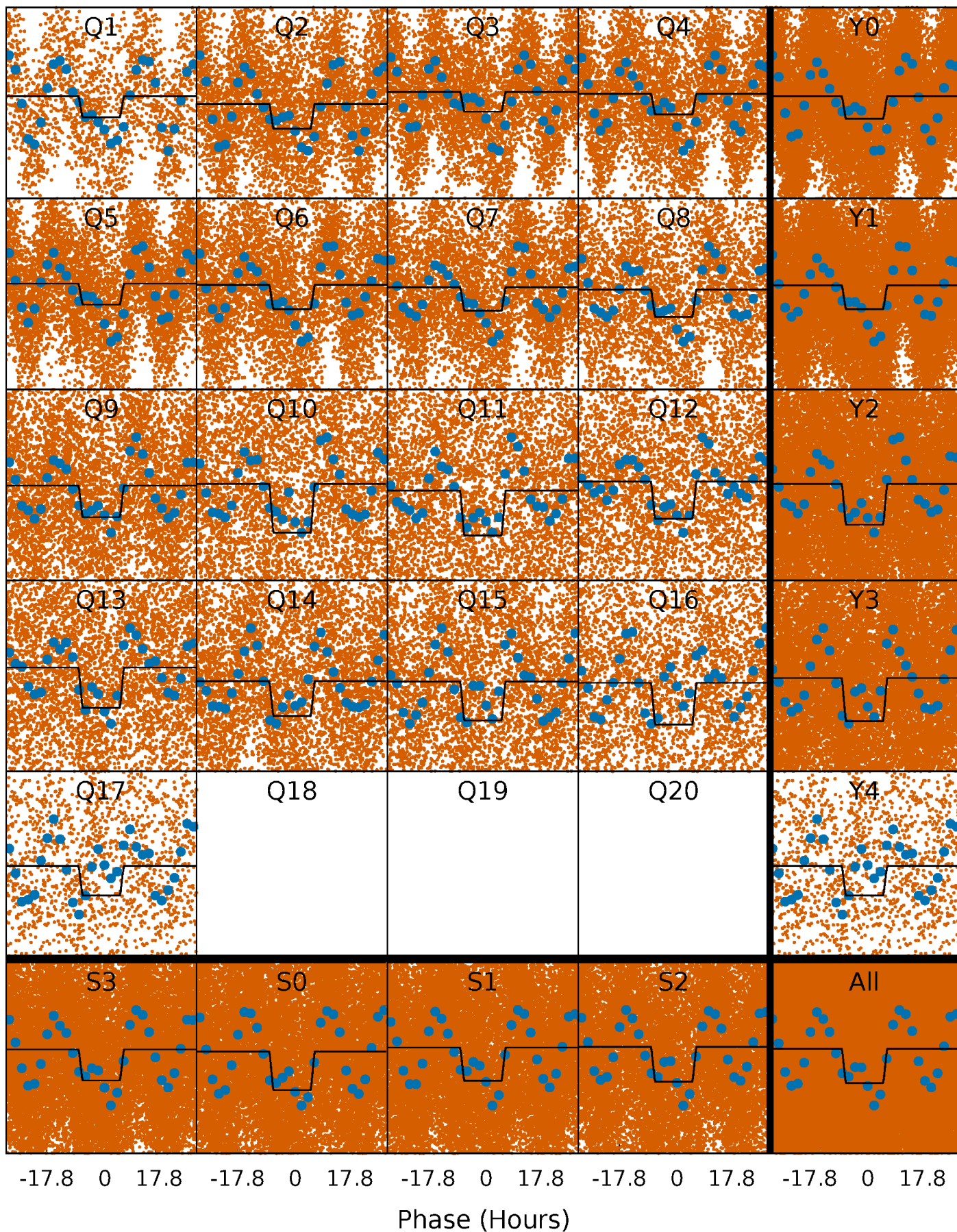
DV Quarter-Phased Transit Curves

TCE 009050785-01 P= 1.853932 Days $T_0=133.004872$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

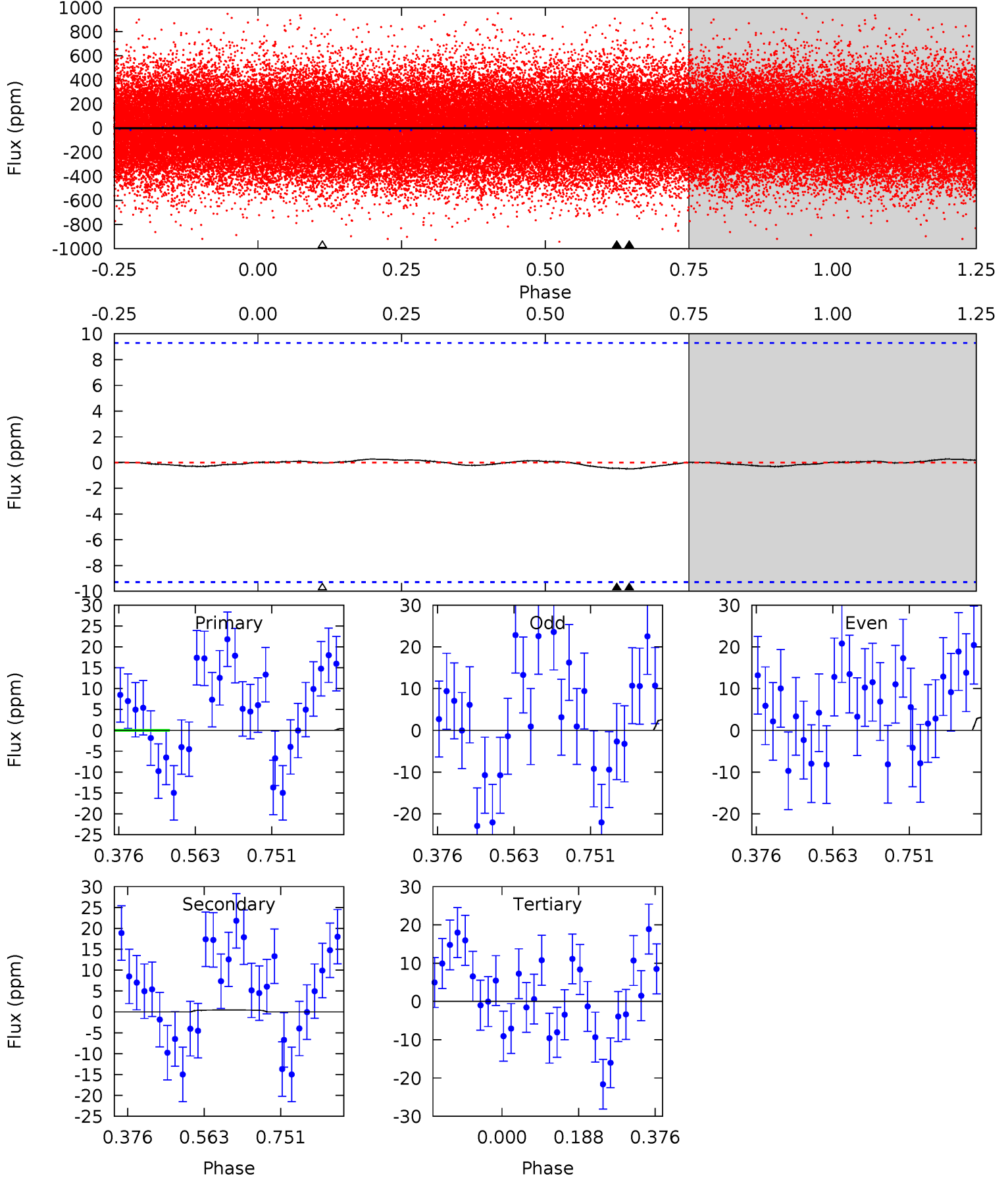
TCE 009050785-01 P= 1.854972 Days $T_0=132.956426$ (BKJD)



DV Model-Shift Uniqueness Test

009050785-01, P = 1.853932 Days, E = 131.150940 Days

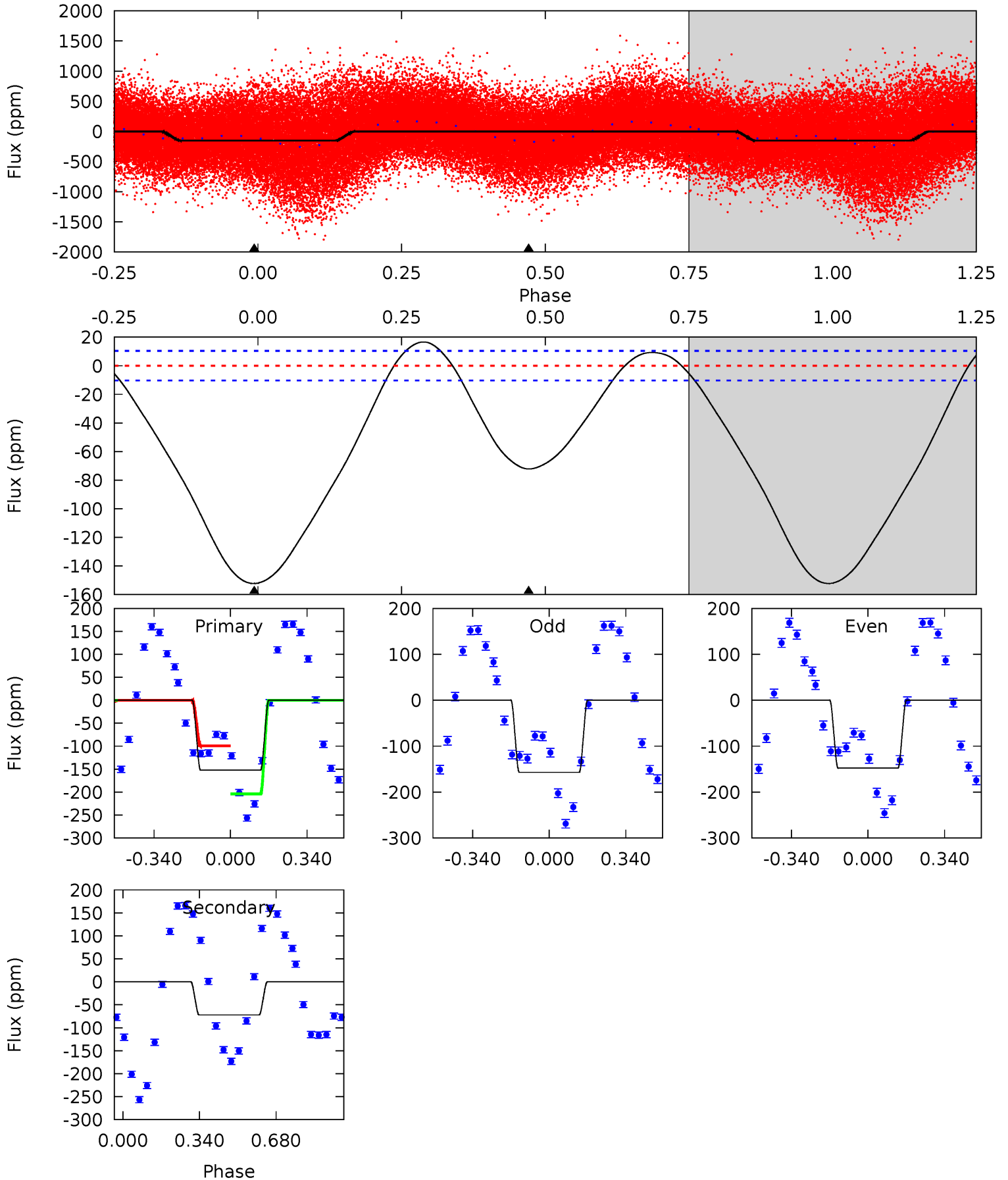
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.23	0.21	0.02	0	4.43	1.32	0.08	0.22	0.23	0.20	0.21	0.15	0.30	0.35	0.15



Alt Model-Shift Uniqueness Test

009050785-01, P = 1.854972 Days, E = 131.101454 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
63.5	30.1	0	0	4.30	0.95	2.95	63.5	63.5	30.1	30.1	1.97	1.03	0.10	18.8



Stellar Parameters For KIC 009050785

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6359^{+194}_{-214}	$3.907^{+0.405}_{-0.135}$	$-0.160^{+0.300}_{-0.300}$	$2.076^{+0.570}_{-0.927}$	$1.270^{+0.205}_{-0.251}$	$0.200^{+0.656}_{-0.083}$
	+3%/-3%	+10%/-3%	+188%/-188%	+27%/-45%	+16%/-20%	+328%/-42%
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 009050785-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-0 ± 2	$9.35^{+10.30}_{-6.57}$	3083^{+629}_{-444}	-3127^{+342}_{-433}	$0.001^{+0.039}_{-0.013}$
Alt.	-72 ± 2	$10.32^{+11.57}_{-7.10}$	3046^{+708}_{-492}	2427^{+2239}_{-5672}	$0.359^{+3.459}_{-0.294}$

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

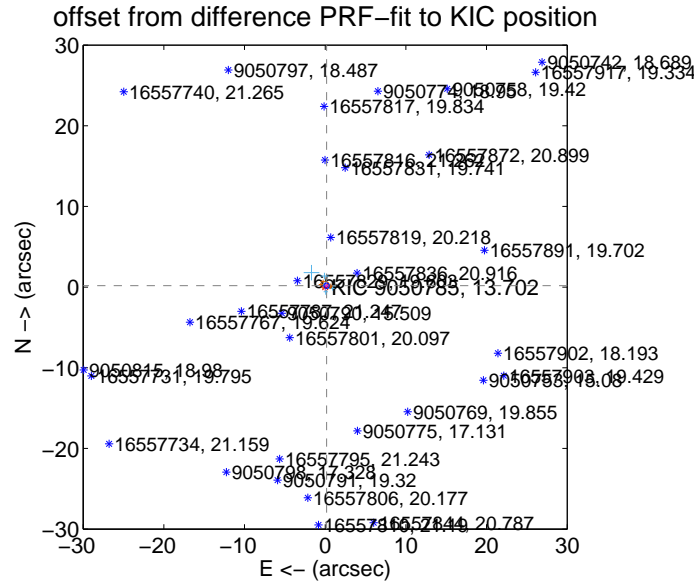
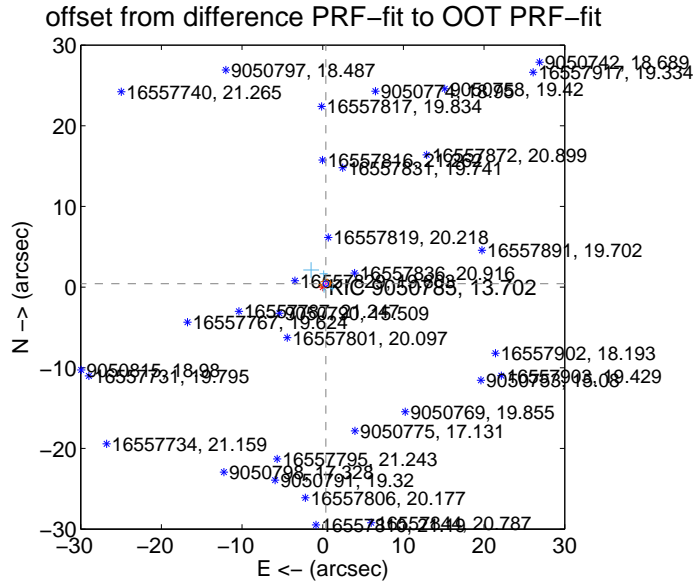
DV Centroid Data

Supplemental centroid analysis for 009050785-01. Kepler magnitude: 13.70. Transit SNR 0.00

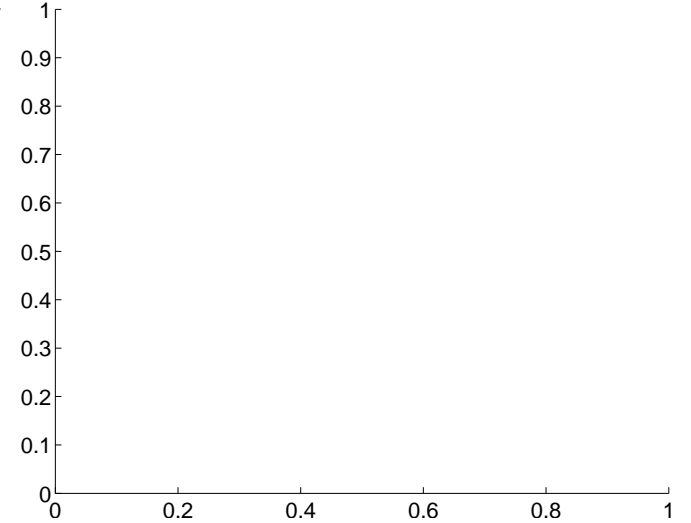
There are 10 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.573 \pm 0.111	5.15	-0.390 \pm 0.158	0.420 \pm 0.149
PRF-fit source offset from KIC position	0.246 \pm 0.110	2.24	-0.176 \pm 0.157	0.172 \pm 0.150
photometric centroid source offset	—	—	—	—

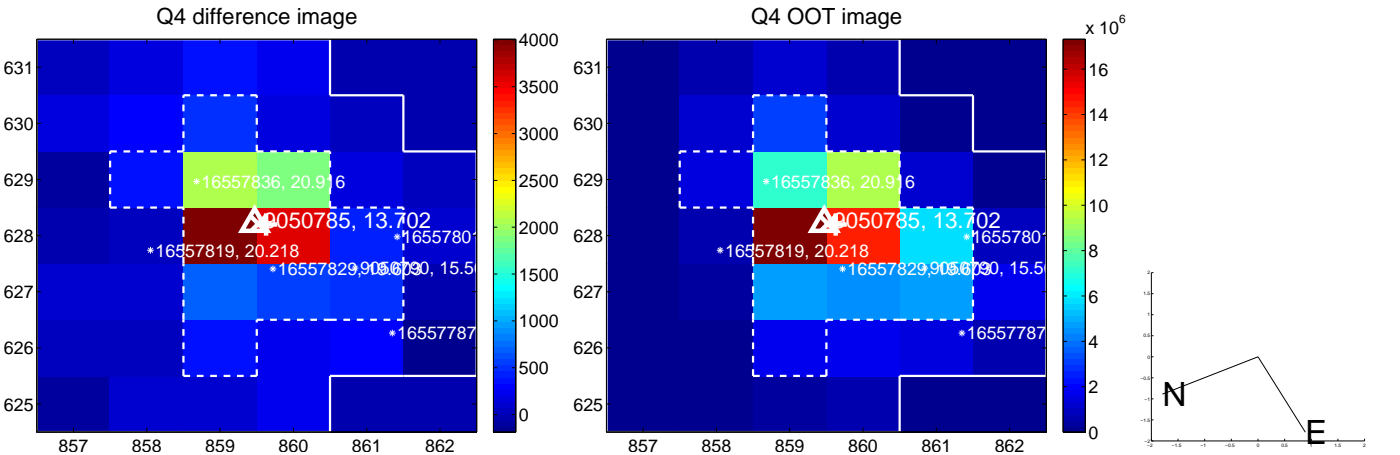
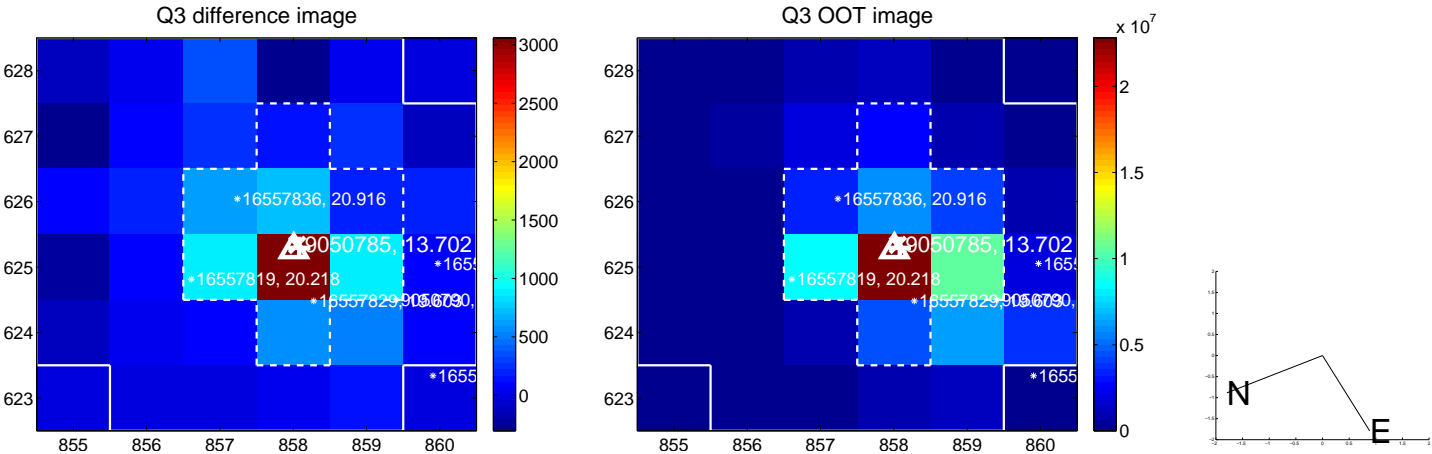
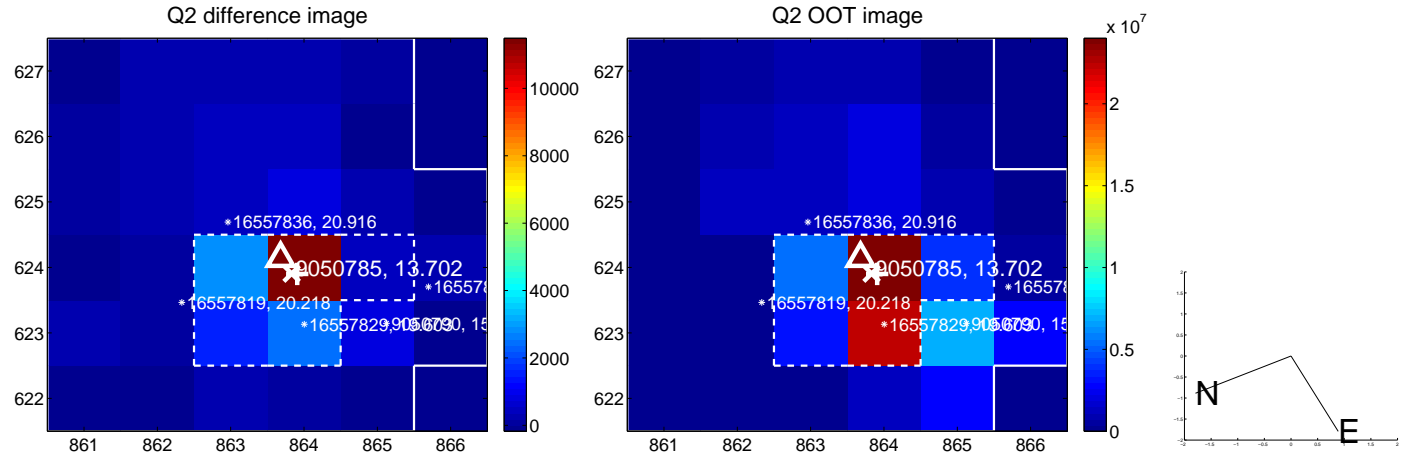
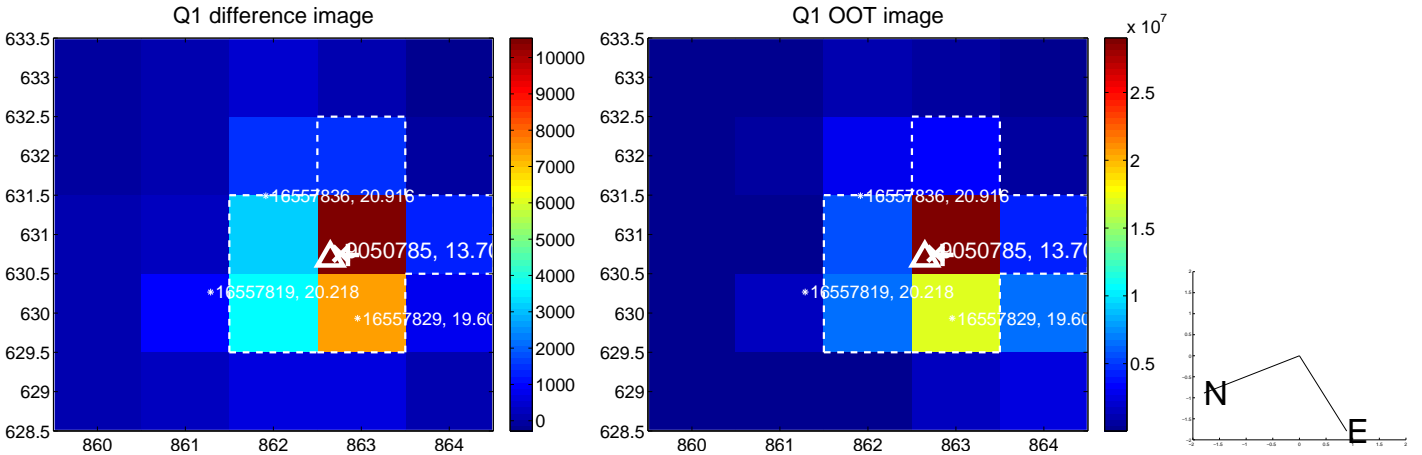


There are no photometric centroids

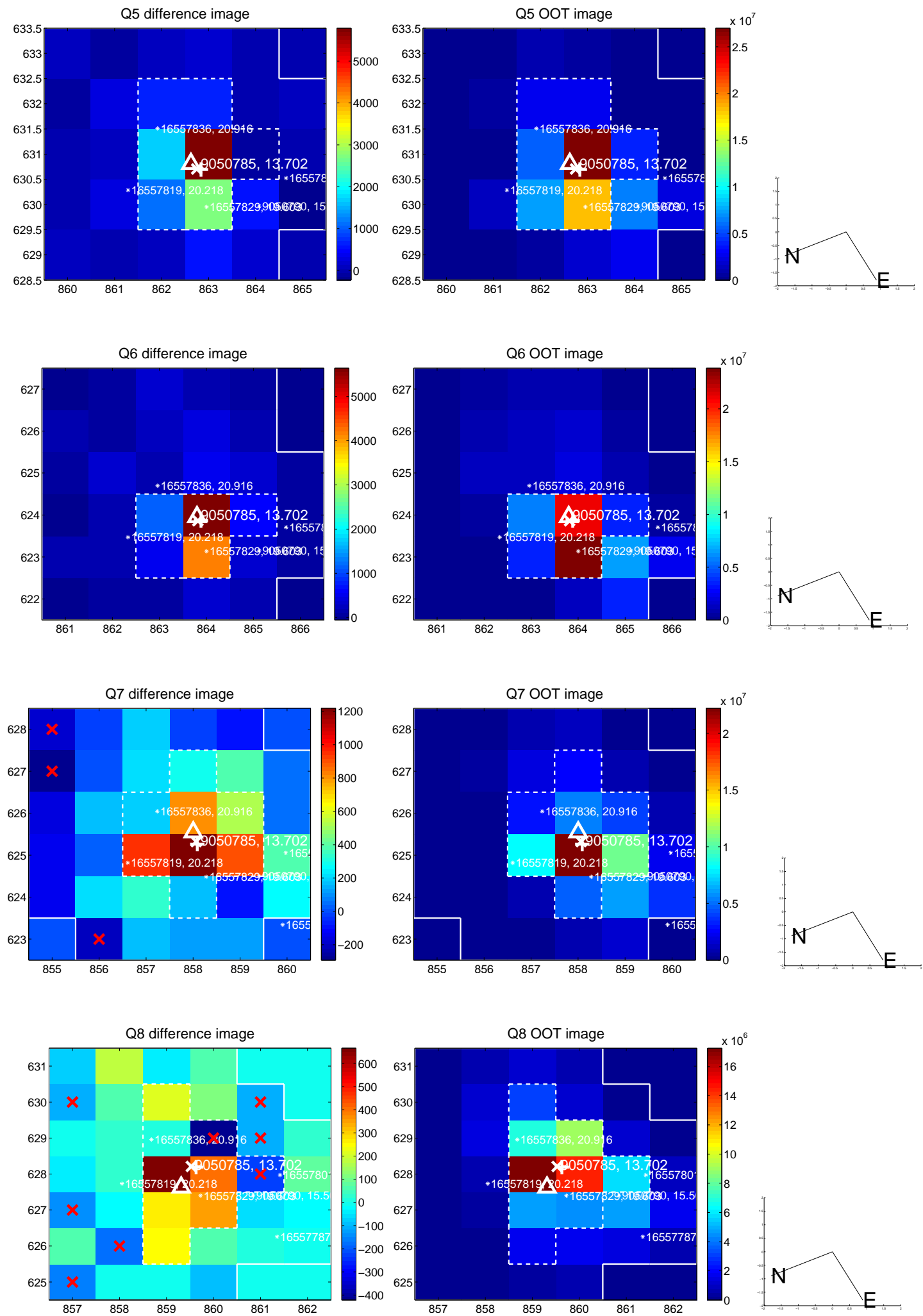


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

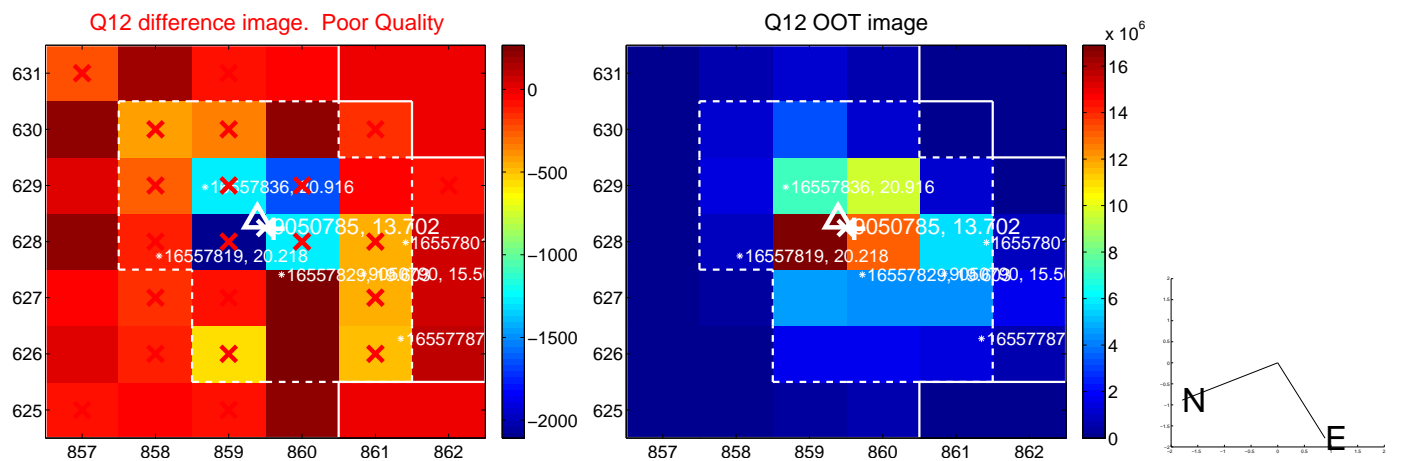
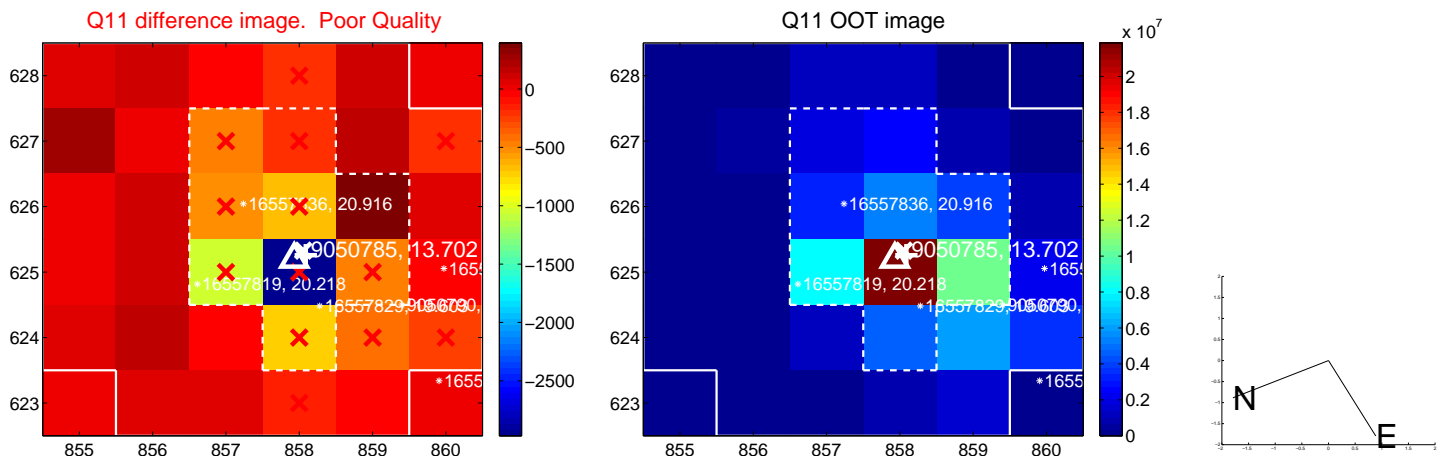
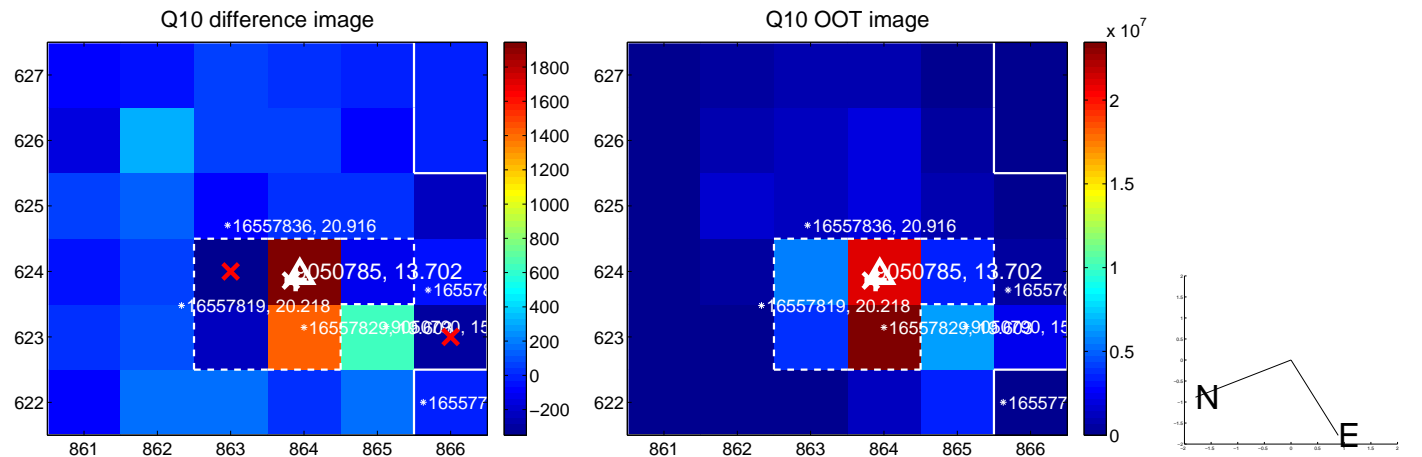
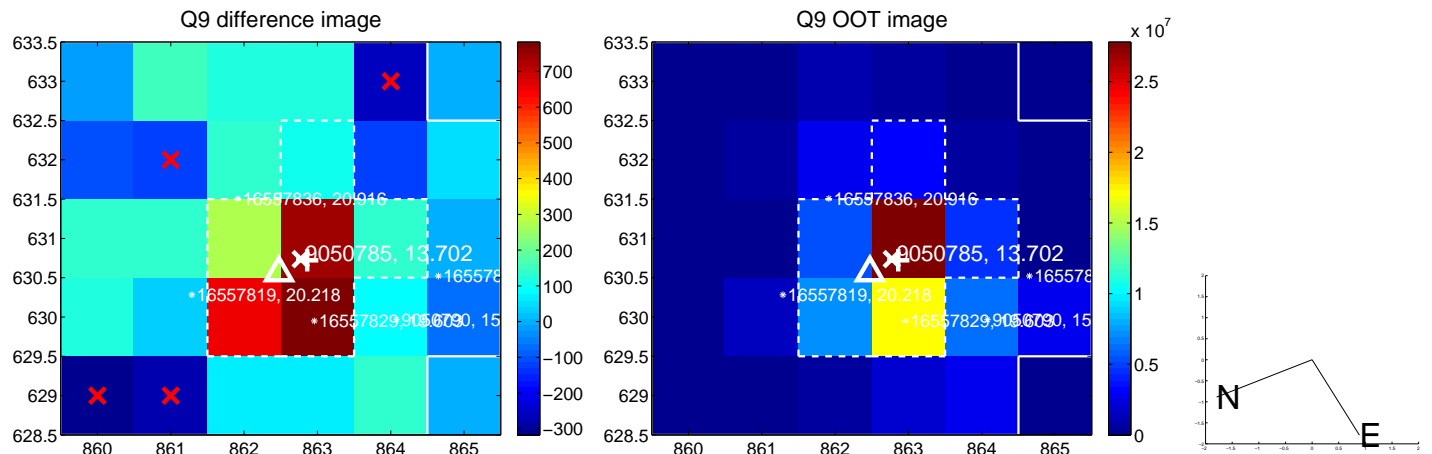
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



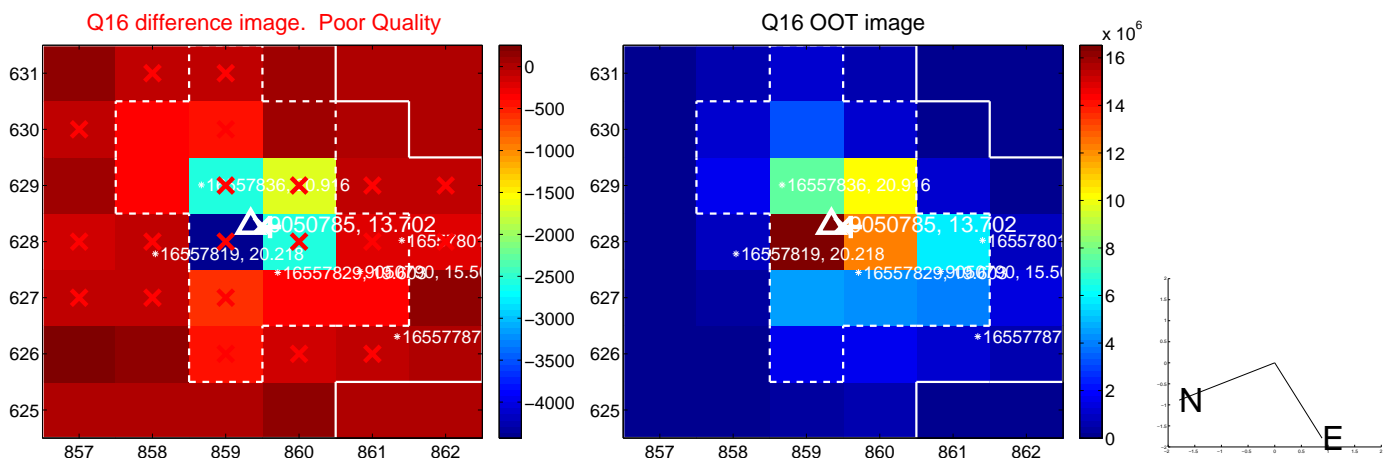
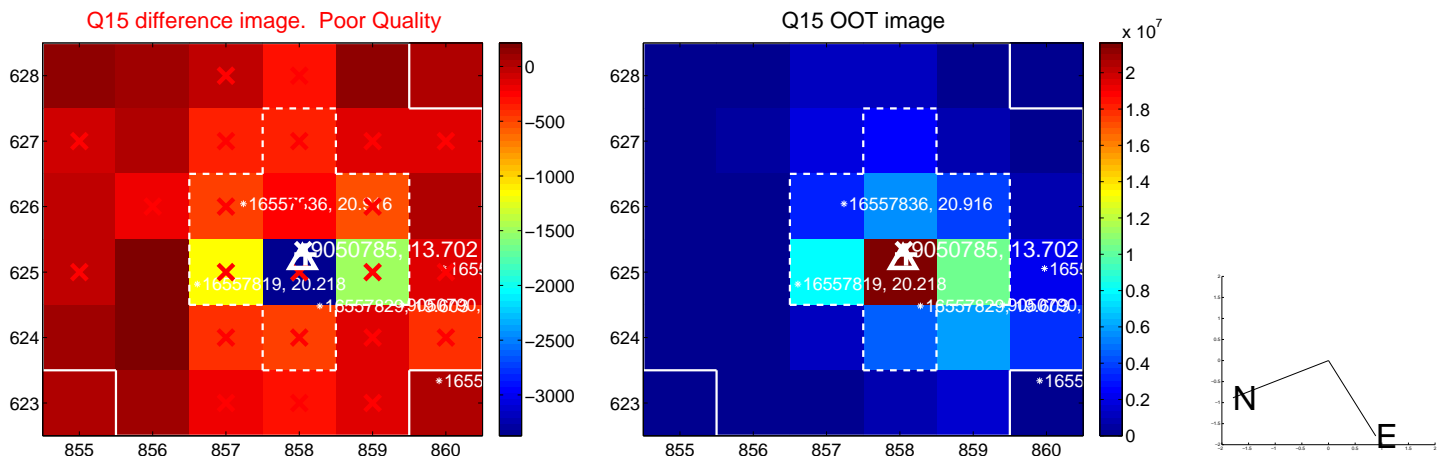
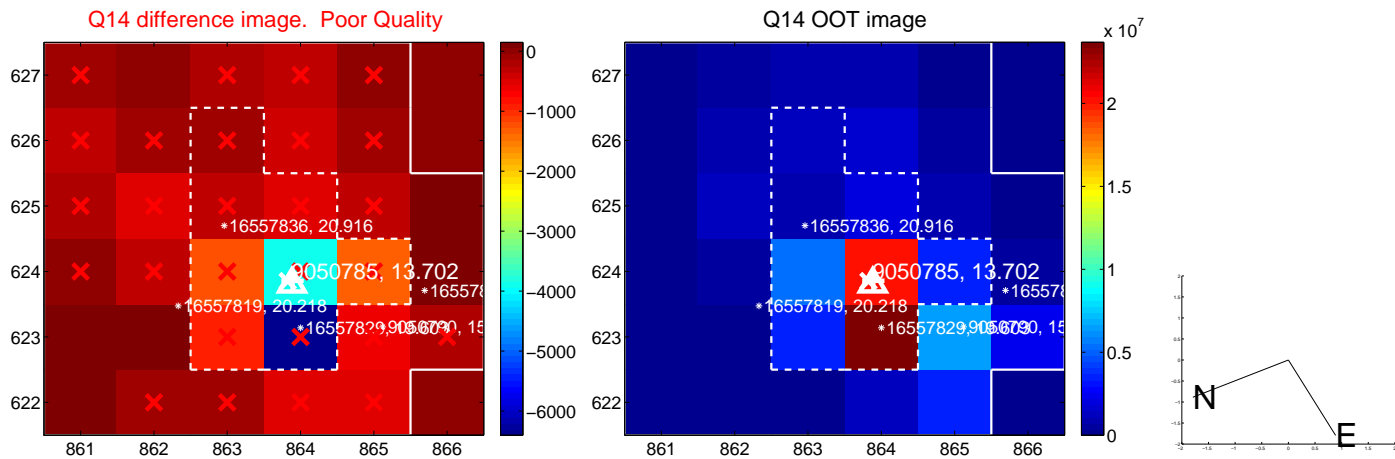
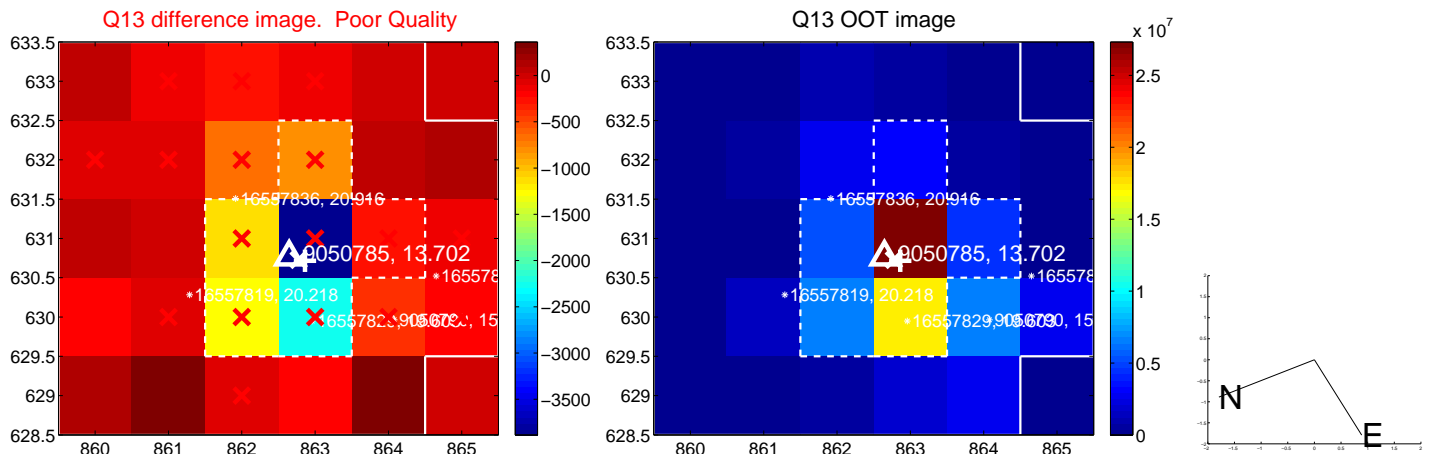
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



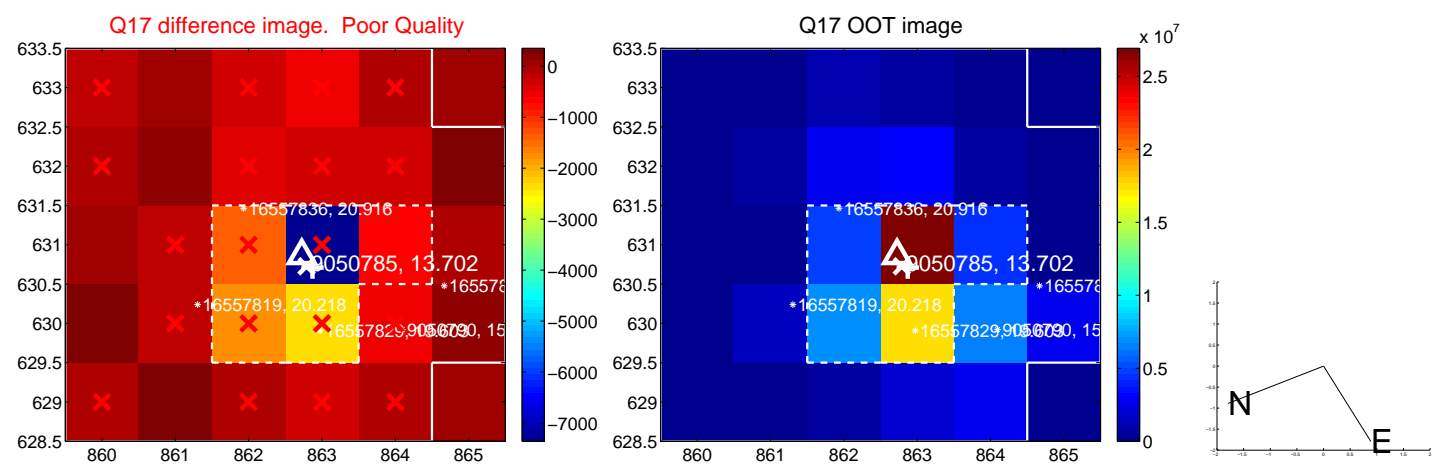
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



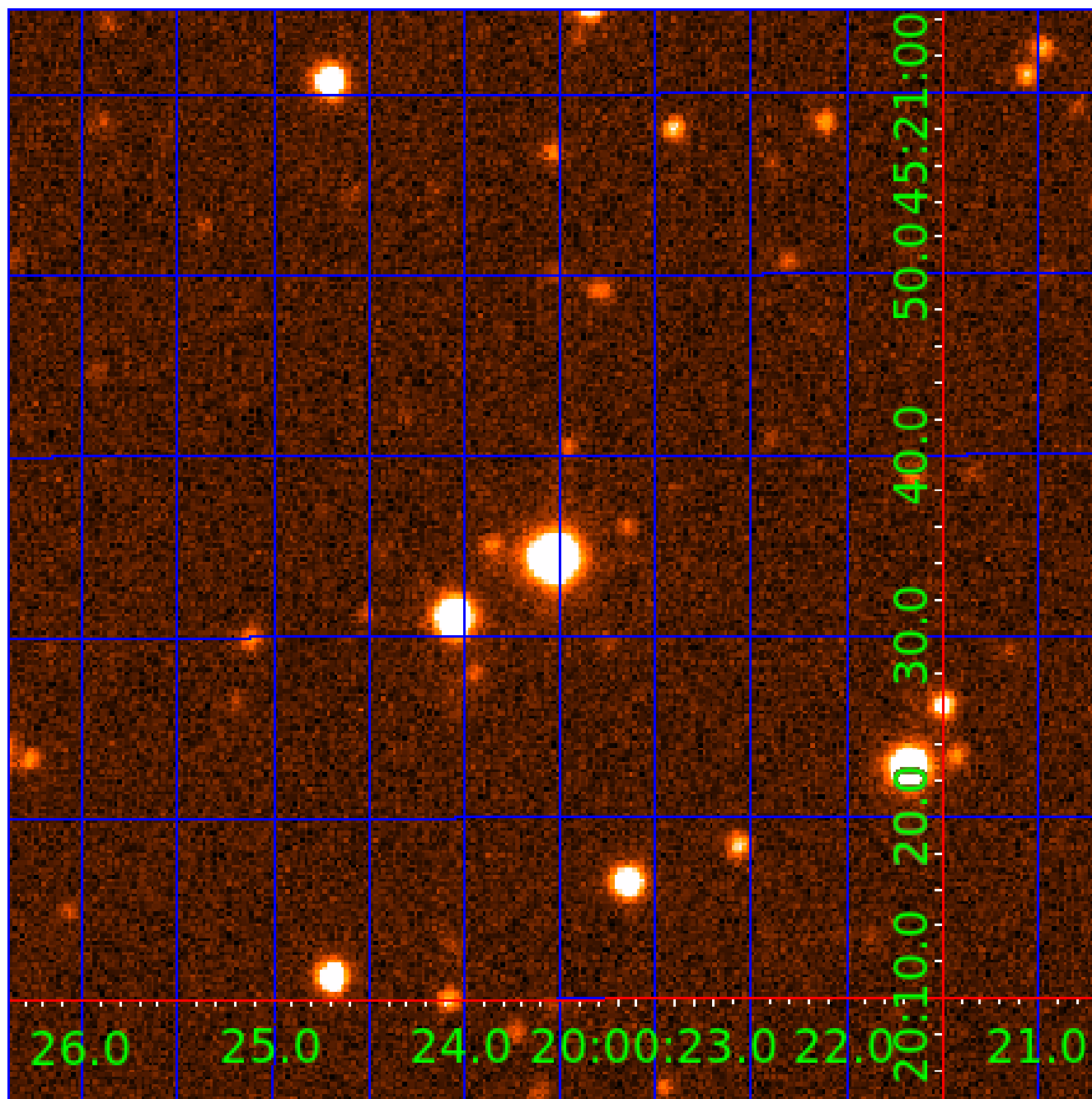
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 009050785

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})
009050785-01	OBS	No	1.853932	133.004872	0.0	7.912	8.7	0.0	2.08	6359	0.01	6172.71
009050785-02	OBS	No	107.568804	174.187260	190.7	6.741	7.5	6.7	2.08	6359	3.30	27.48

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009050785-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV
009050785-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS

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

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

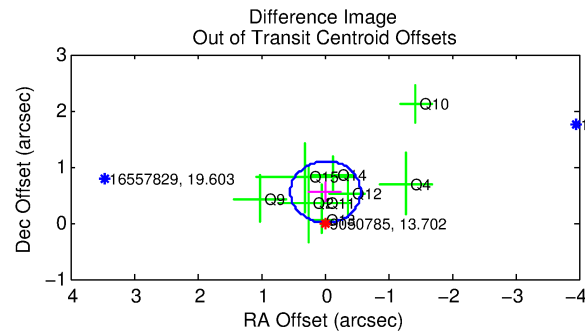
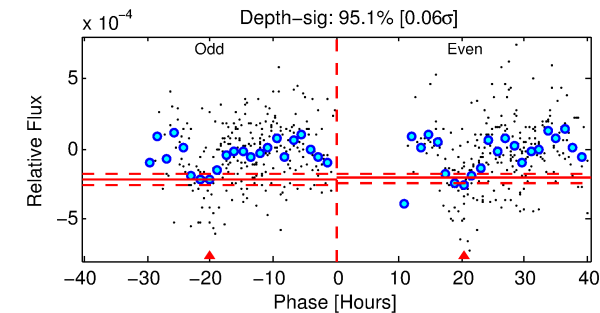
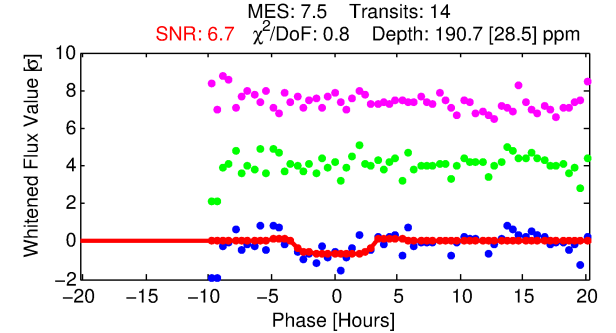
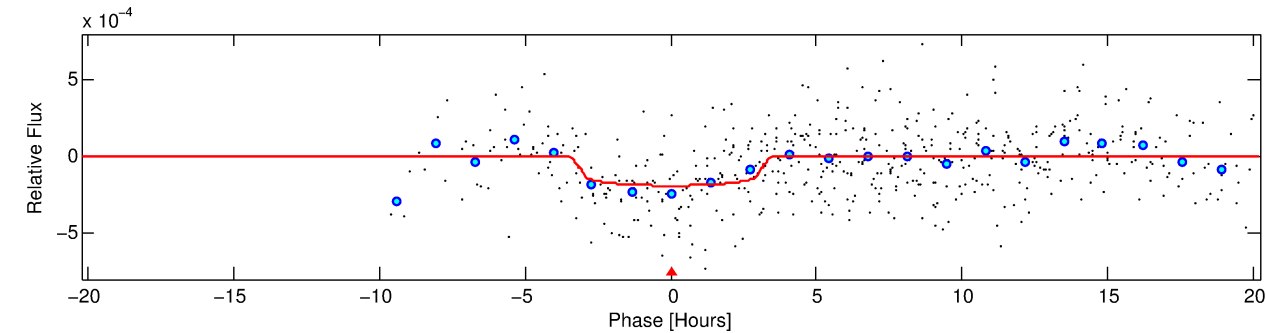
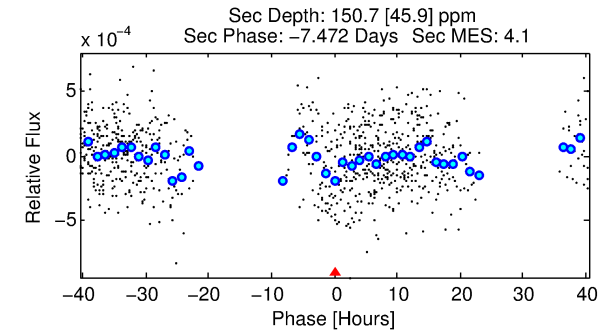
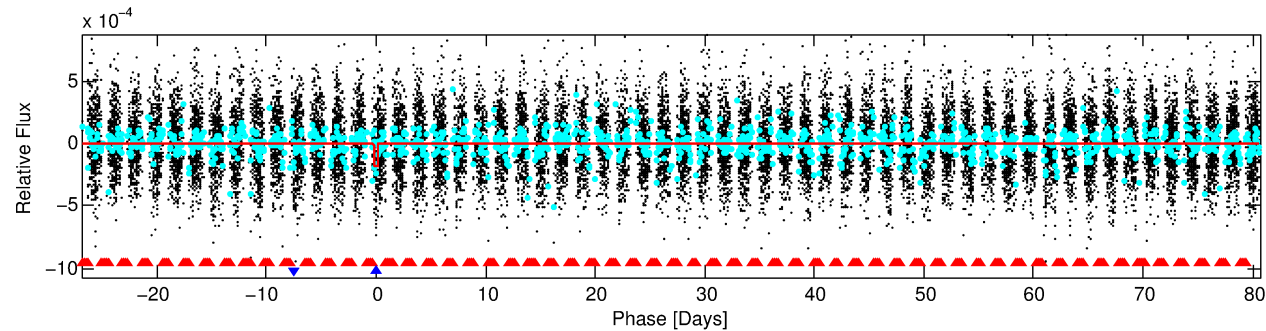
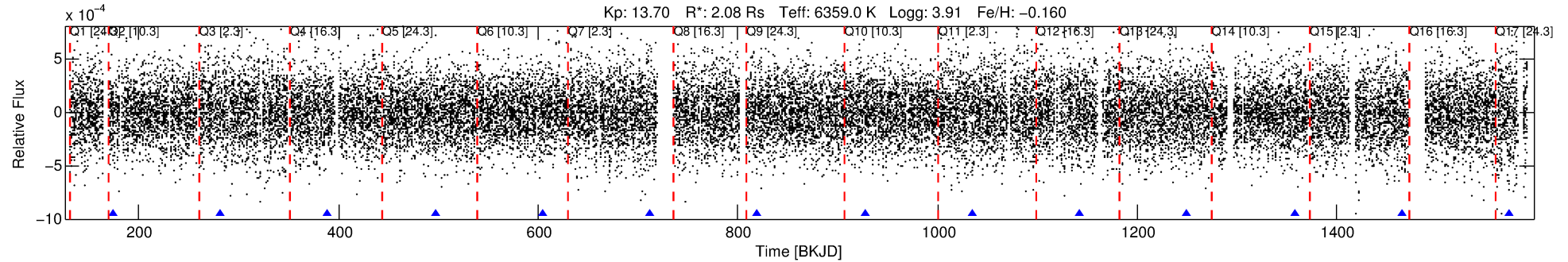
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009050785-02

No Significant Match Found

DV One-Page Summary

KIC: 9050785 Candidate: 2 of 2 Period: 107.569 d



DV Fit Results:

Period = 107.56880 [0.00185] d
Epoch = 174.1873 [0.0166] BKJD
Rp/R* = 0.0145 [0.0064]
a/R* = 62.39 [149.44]
b = 0.88 [0.64]
Seff = 27.48 [19.30]
Teq = 584 [103] K
Rp = 3.30 [2.07] Re
a = 0.4793 [0.2063] AU
Ag = 1754.47 [2038.16] [0.86σ]
Teffp = 5842 [1380] K [3.80σ]

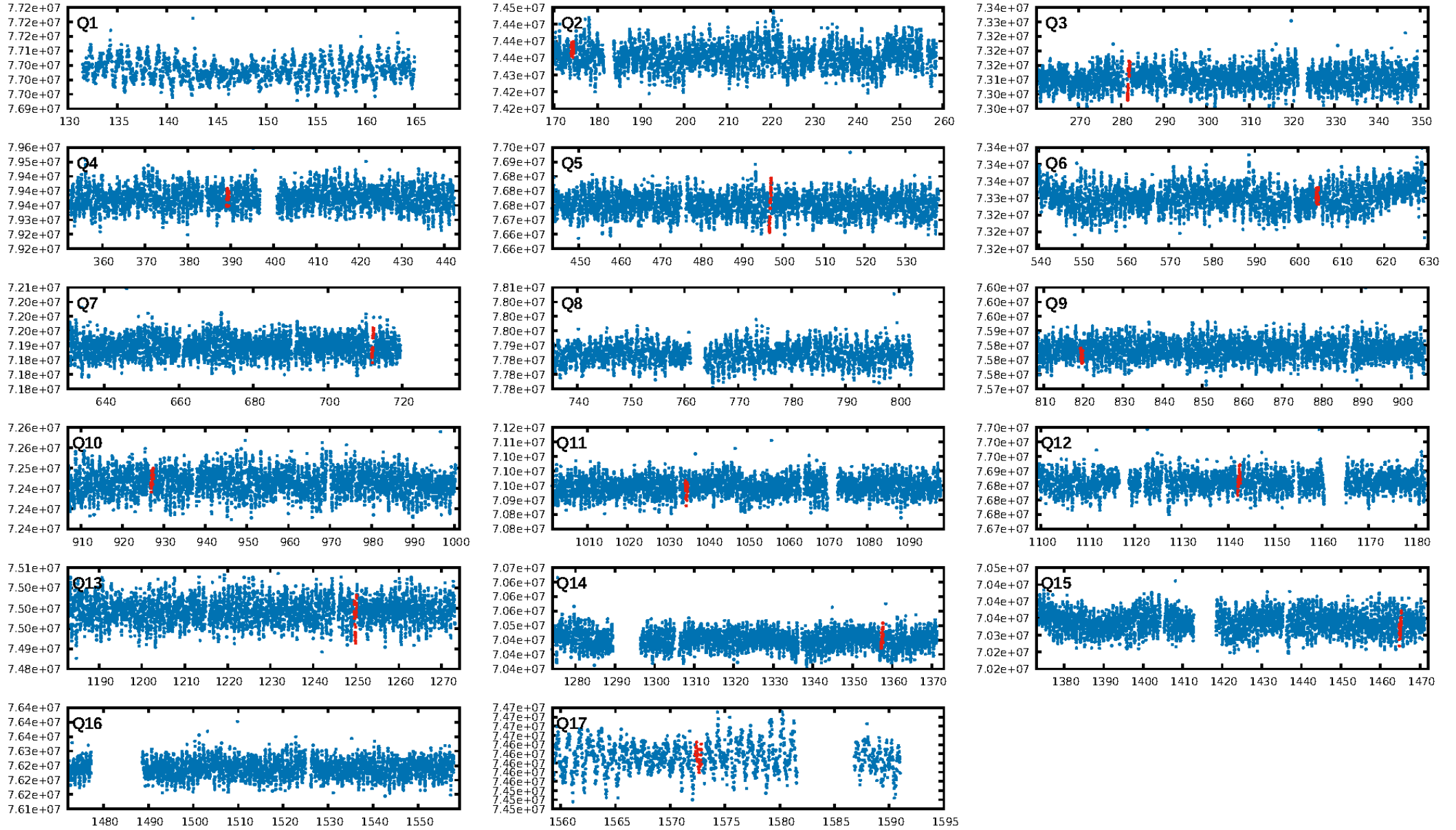
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [244.10σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 82.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.35e-10
RollingBand-fgt: 1.00 [13/13]
GhostDiagnostic-chr: 4.937
Centroid-sig: 54.1%
Centroid-so: 1.559 arcsec [1.12σ]
OotOffset-rm: 0.549 arcsec [2.99σ]
KicOffset-rm: 0.389 arcsec [2.40σ]
OotOffset-st: 3/2/2/2 [9]
KicOffset-st: 3/2/2/2 [9]
DiffImageQuality-fgm: 0.44 [4/9]
DiffImageOverlap-fno: 0.38 [5/13]

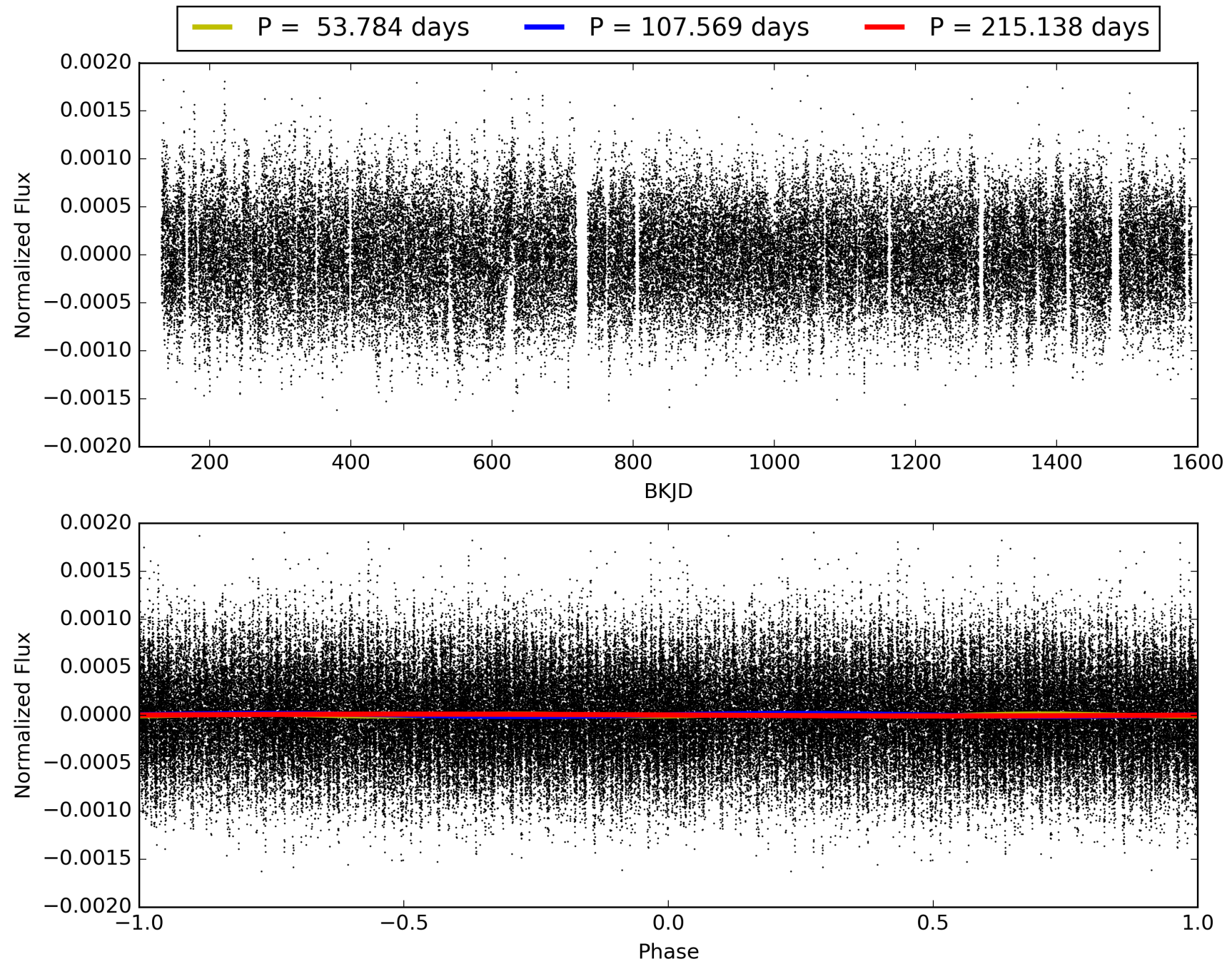
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:49:58 Z

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

TCE 009050785-02, PDC Light Curves

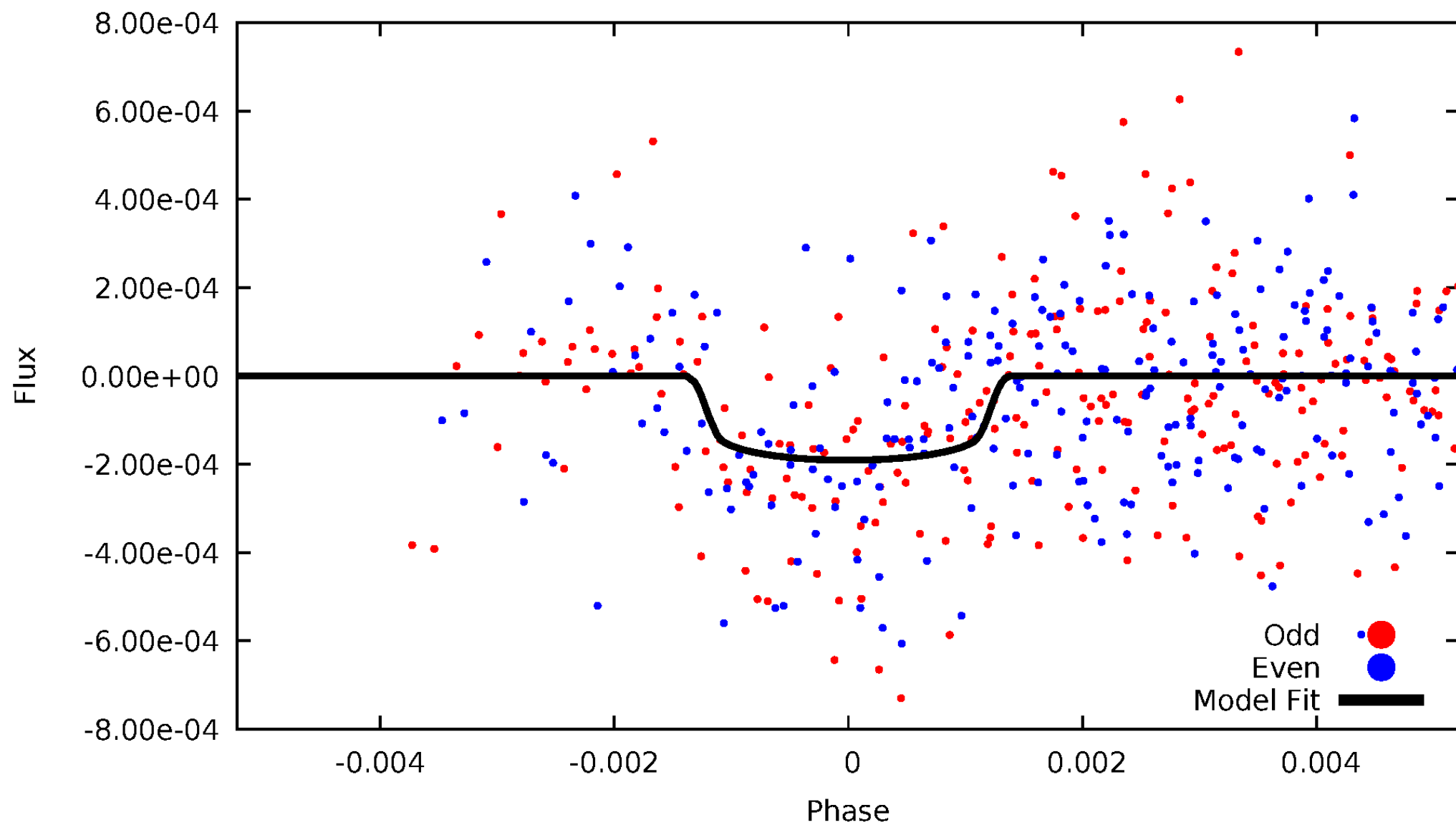


TCE 009050785-02



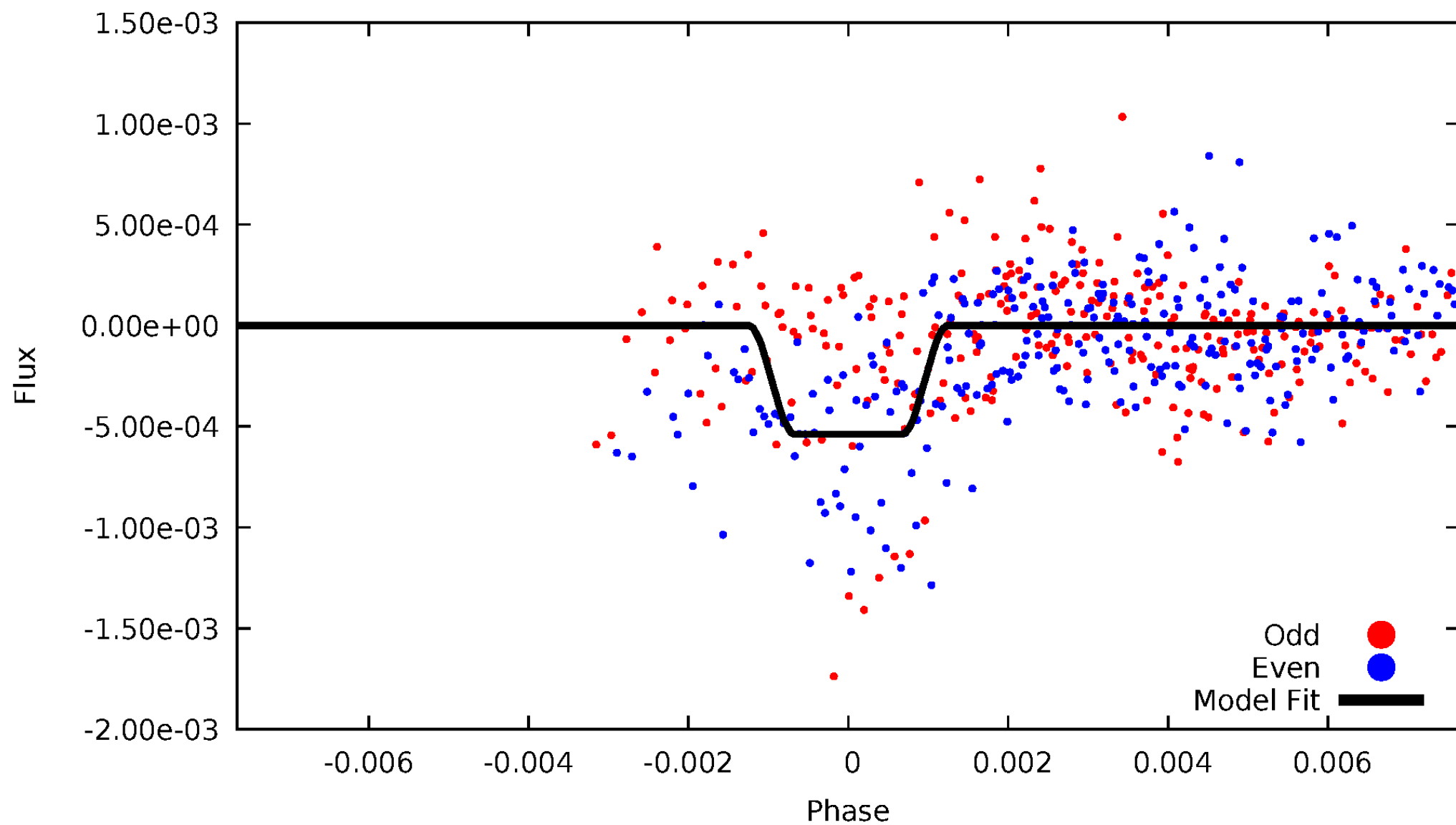
DV Odd/Even

TCE 009050785-02



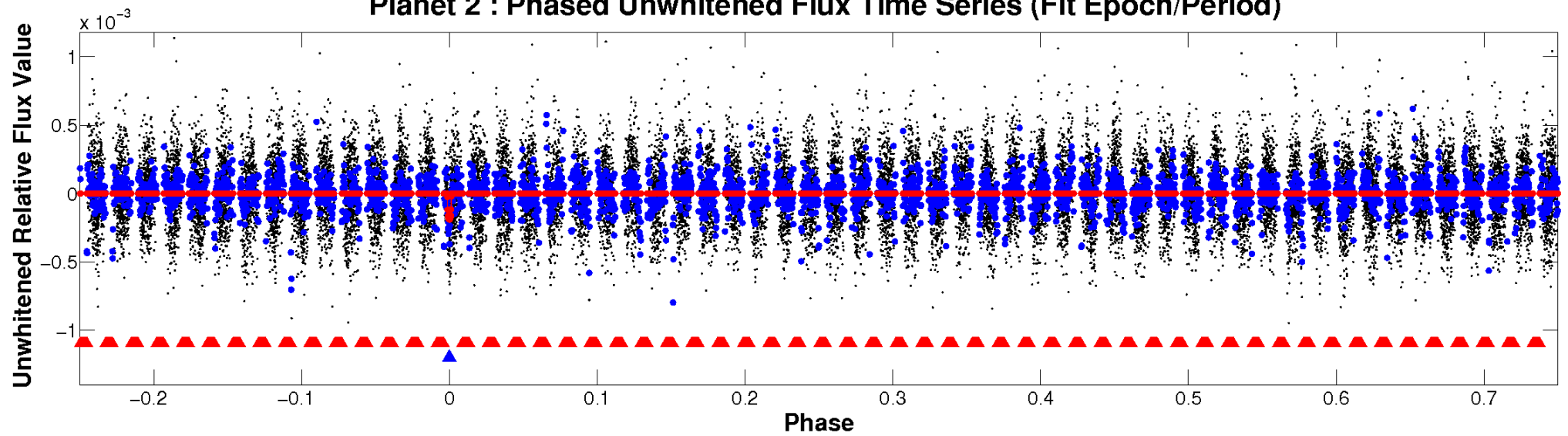
ALT Odd/Even

TCE 009050785-02

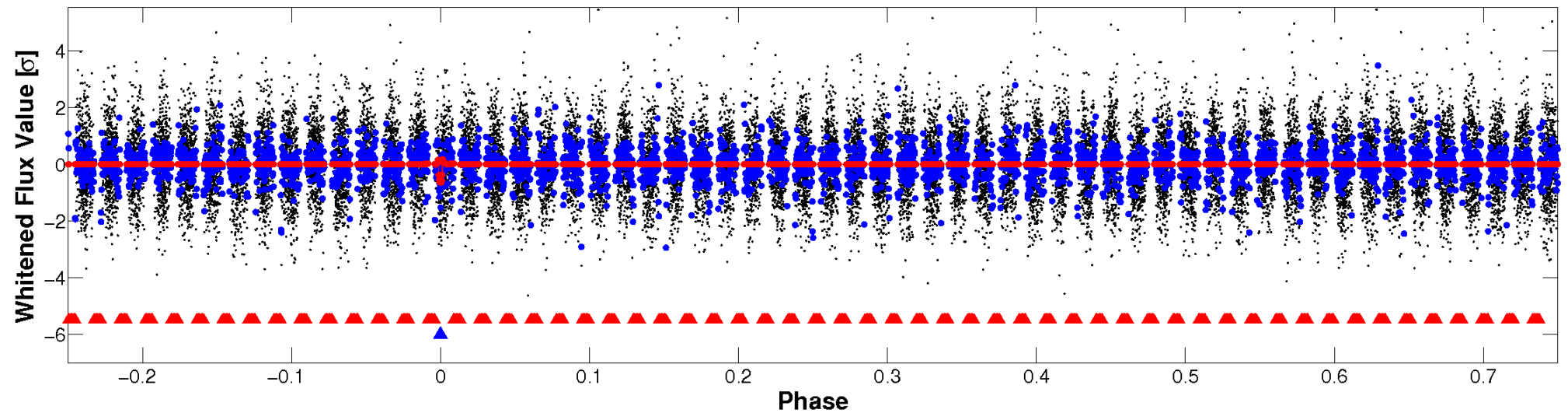


Non-Whitened Vs. Whitened Light Curve

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

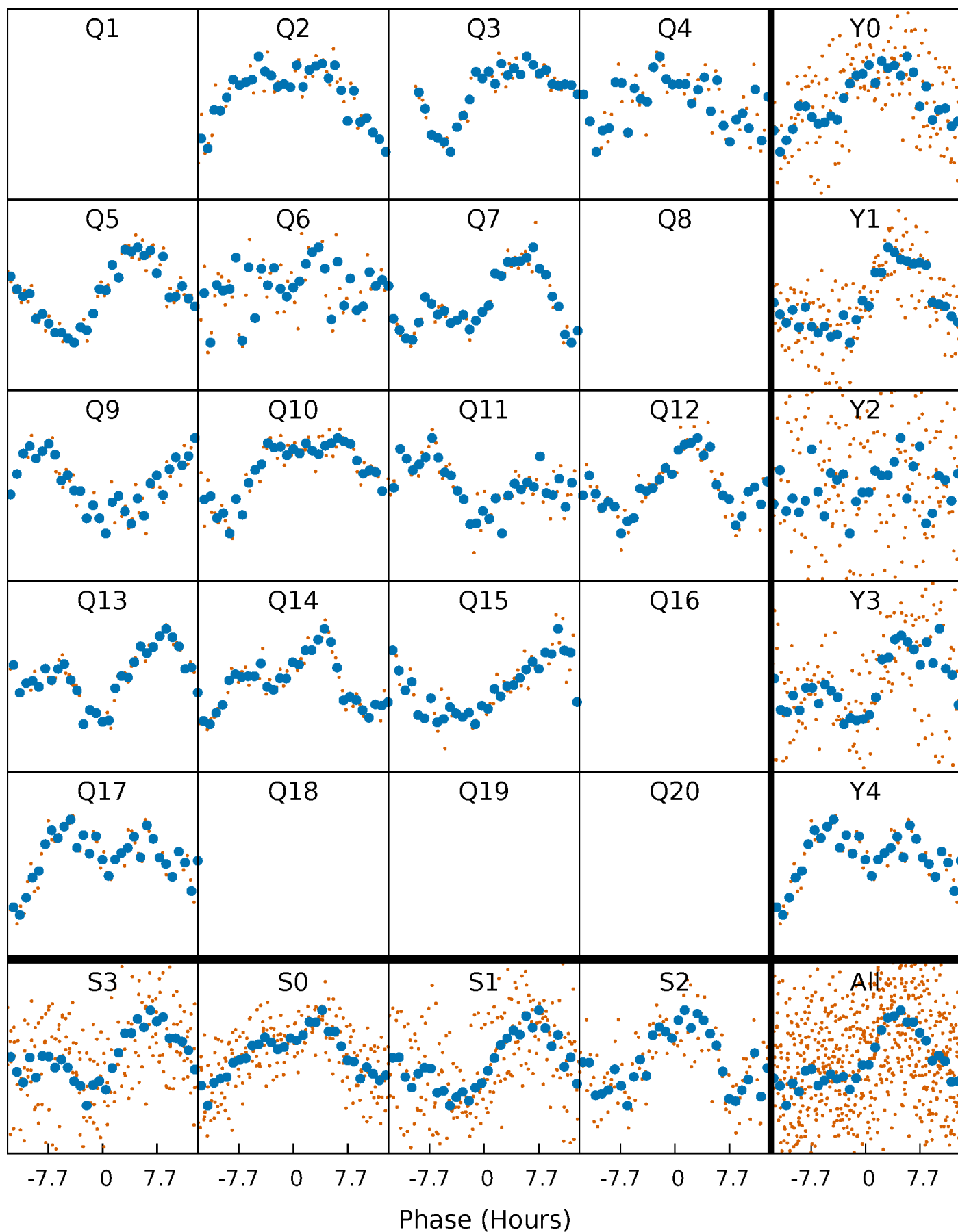


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



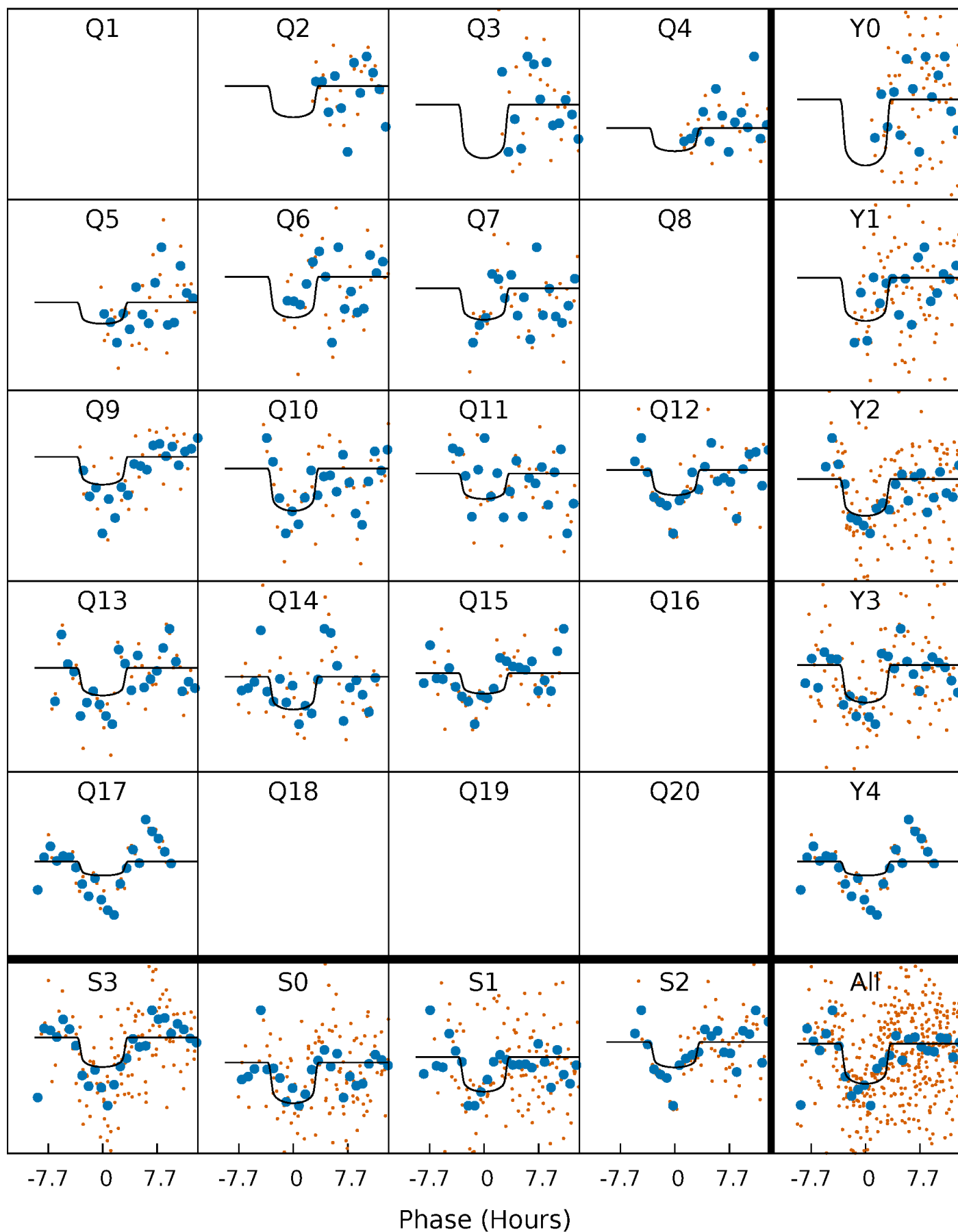
PDC Quarter-Phased Transit Curves

TCE 009050785-02 P=107.568804 Days $T_0=174.187260$ (BKJD)



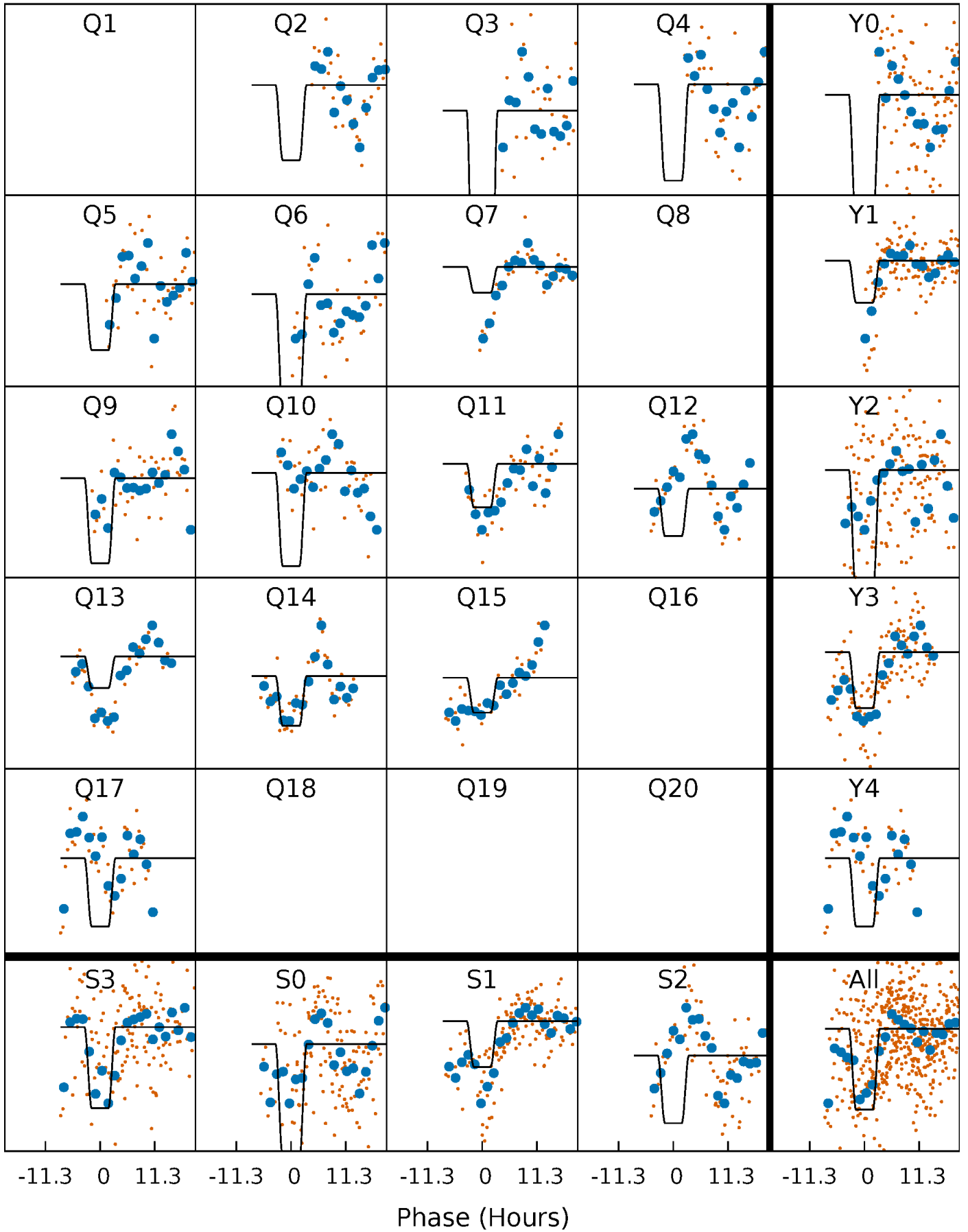
DV Quarter-Phased Transit Curves

TCE 009050785-02 P=107.568804 Days $T_0=174.187260$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

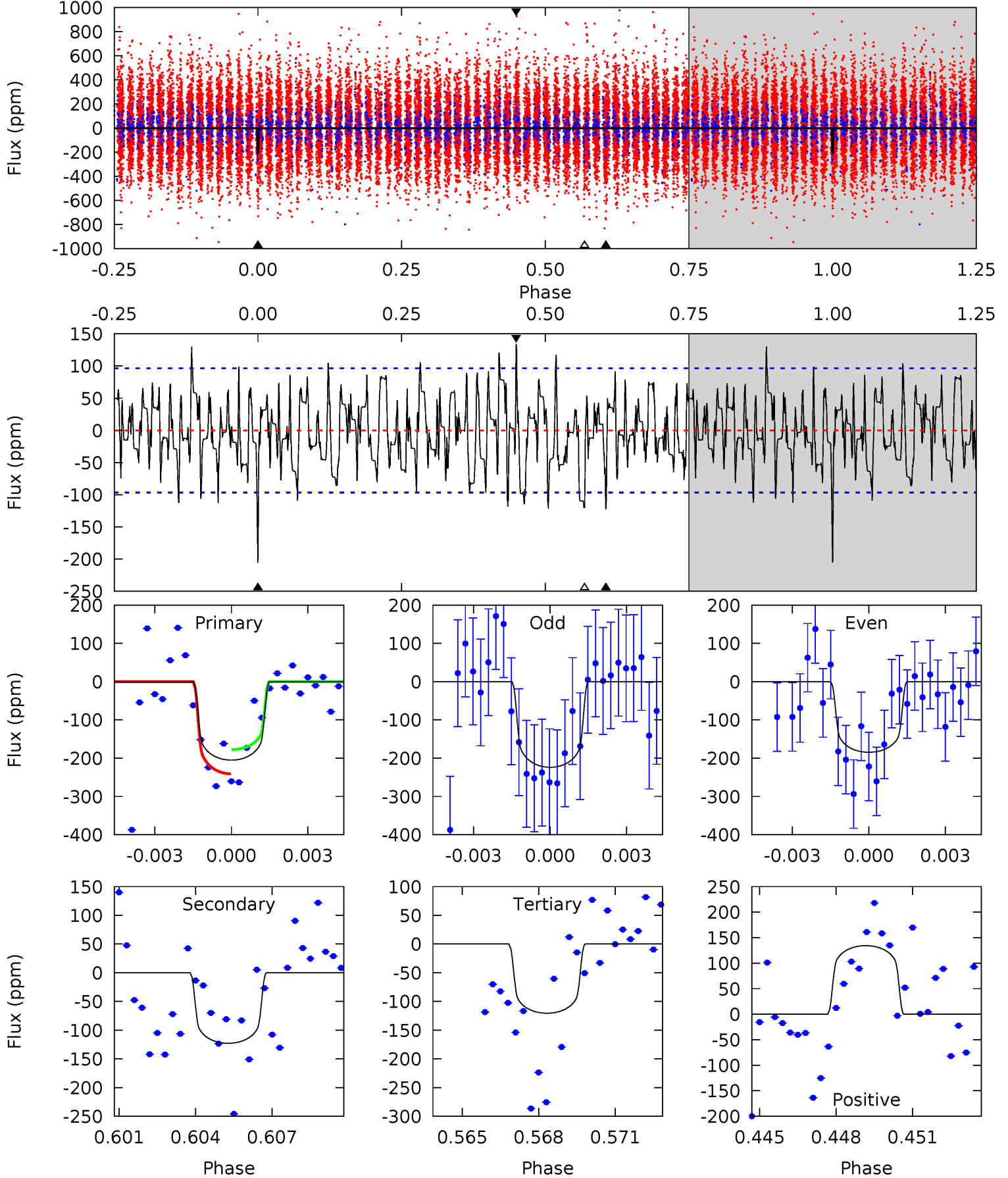
TCE 009050785-02 P=107.569087 Days $T_0=174.121903$ (BKJD)



DV Model-Shift Uniqueness Test

009050785-02, P = 107.568804 Days, E = 66.618456 Days

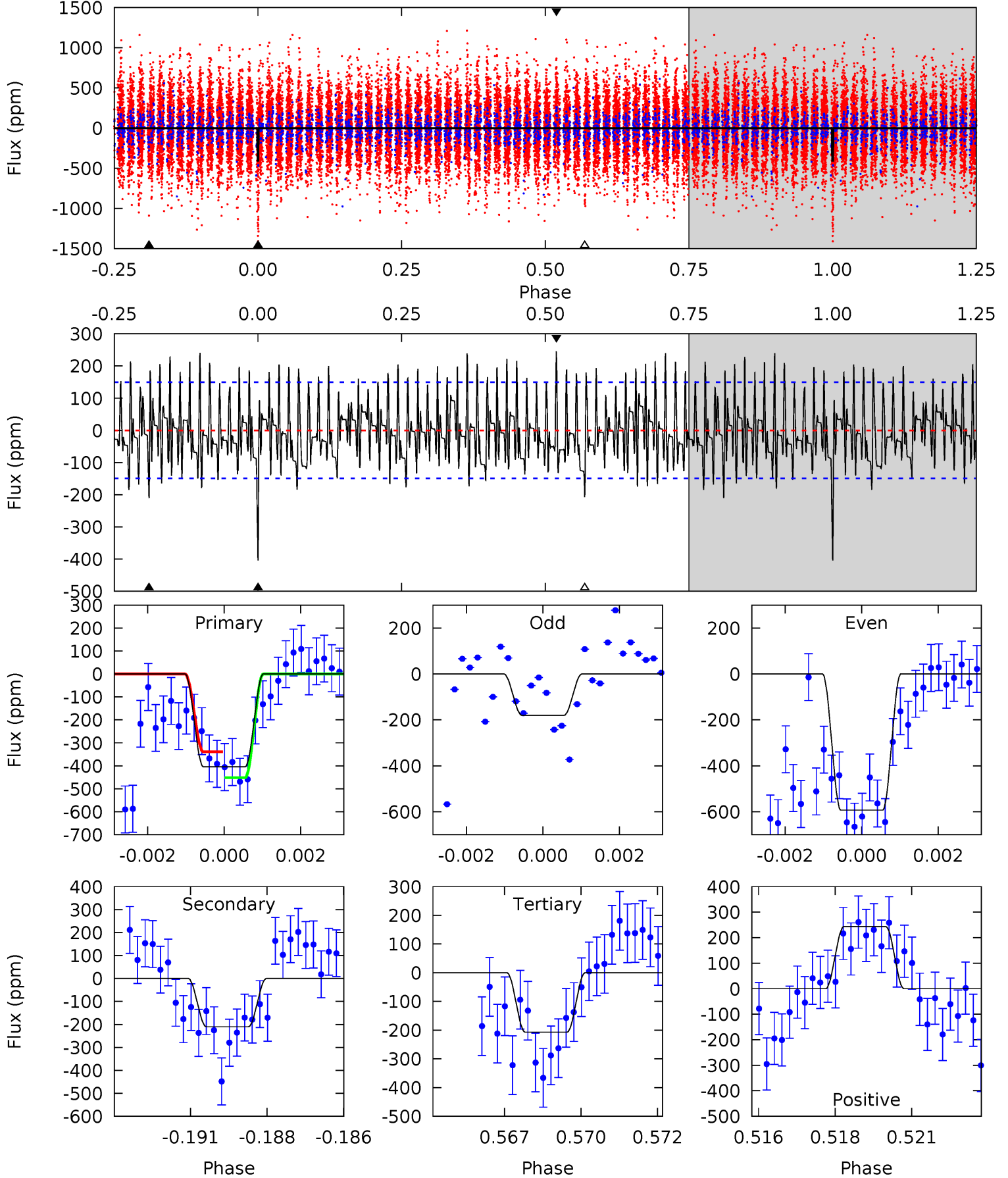
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	6.71	6.58	7.33	5.27	2.99	2.47	4.62	3.86	0.13	-0.63	1.07	1.11	0.40	1.71



Alt Model-Shift Uniqueness Test

009050785-02, P = 107.569087 Days, E = 66.552816 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.3	7.45	7.32	8.61	5.29	3.03	3.33	6.97	5.69	0.12	-1.16	7.31	1.22	0.38	1.95



Stellar Parameters For KIC 009050785

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6359^{+194}_{-214}	$3.907^{+0.405}_{-0.135}$	$-0.160^{+0.300}_{-0.300}$	$2.076^{+0.570}_{-0.927}$	$1.270^{+0.205}_{-0.251}$	$0.200^{+0.656}_{-0.083}$
	+3%/-3%	+10%/-3%	+188%/-188%	+27%/-45%	+16%/-20%	+328%/-42%
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 009050785-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-123 ± 18	$3.05^{+1.58}_{-1.44}$	795^{+67}_{-90}	5537^{+2081}_{-843}	1716^{+4292}_{-1008}
Alt.	-210 ± 28	$4.90^{+1.71}_{-1.57}$	796^{+69}_{-94}	5053^{+854}_{-489}	1101^{+1273}_{-501}

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

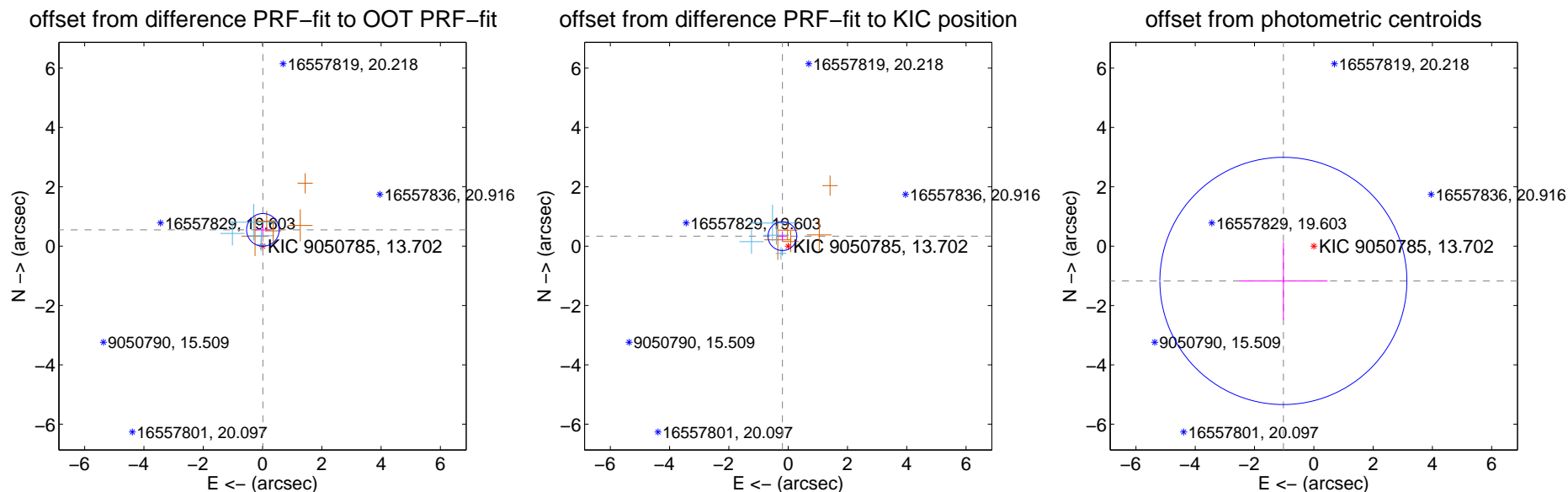
DV Centroid Data

Supplemental centroid analysis for 009050785-02. Kepler magnitude: 13.70. Transit SNR 6.75

There are 4 quarters with good PRF difference image offsets

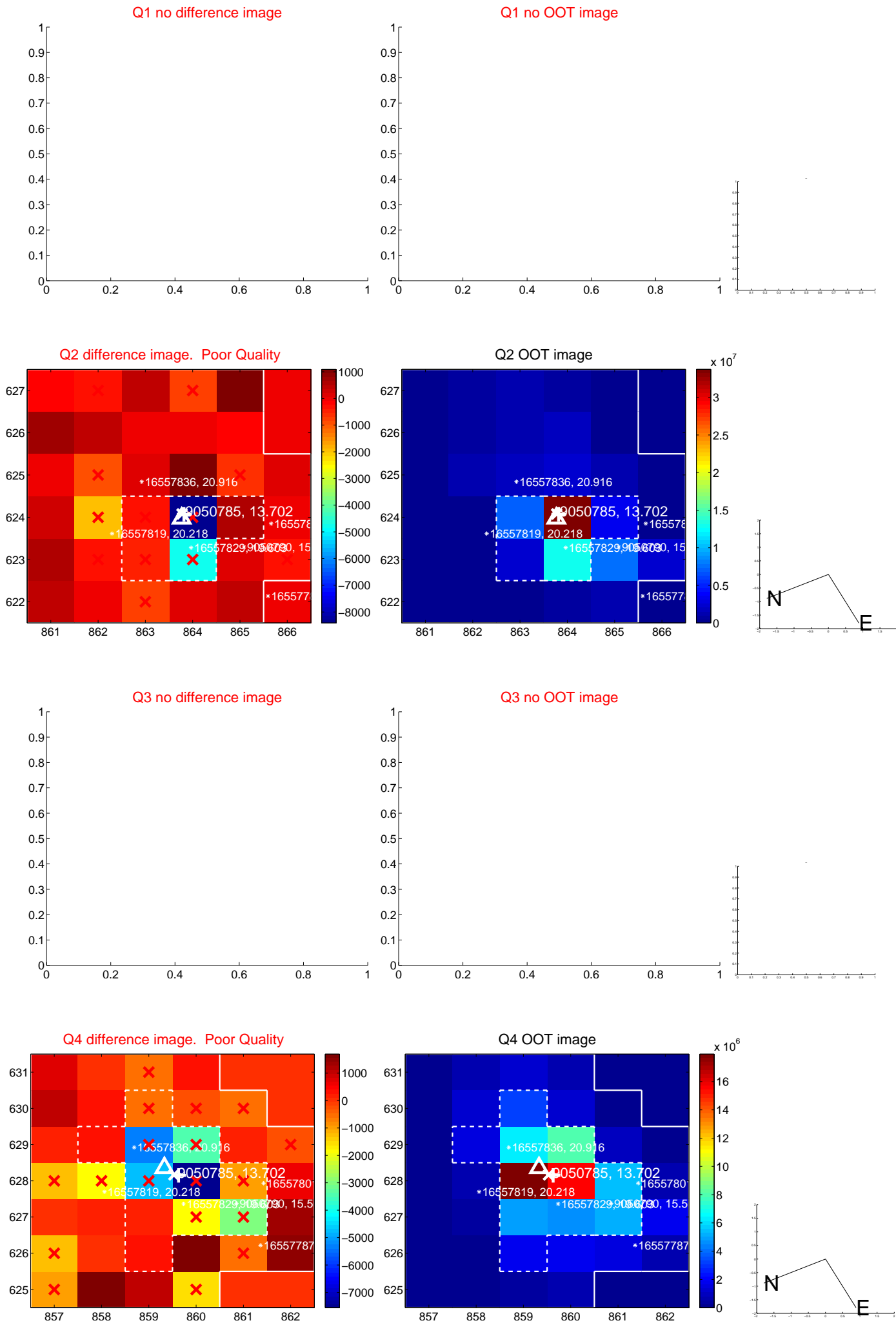
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.549 ± 0.183	2.99	-0.013 ± 0.251	0.549 ± 0.180
PRF-fit source offset from KIC position	0.389 ± 0.162	2.40	0.194 ± 0.156	0.337 ± 0.163
photometric centroid source offset	1.56 ± 1.39	1.12	1.03 ± 1.49	-1.17 ± 1.30

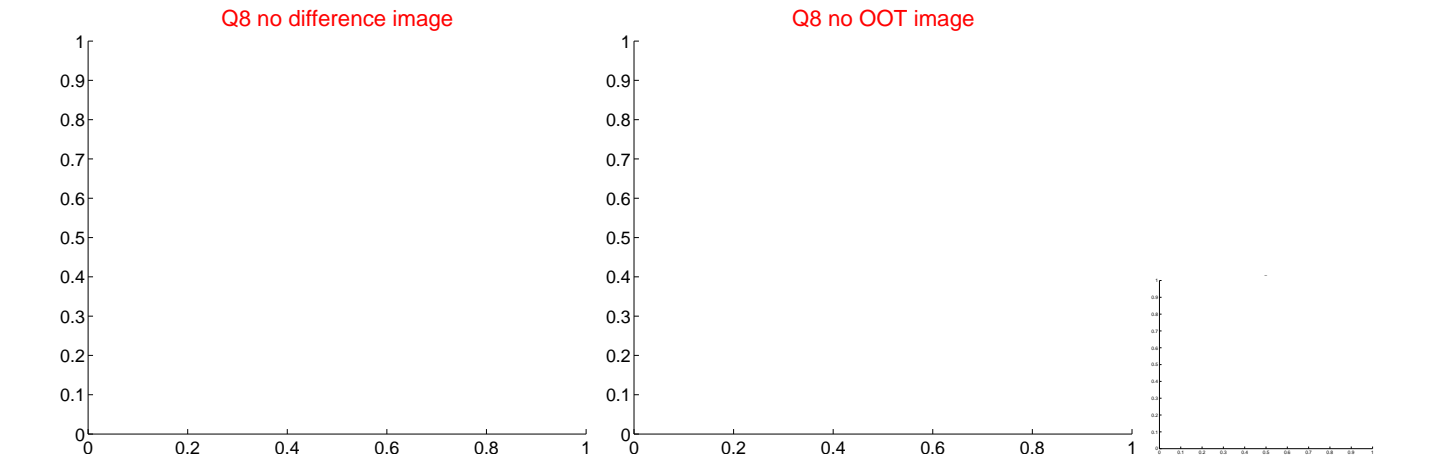
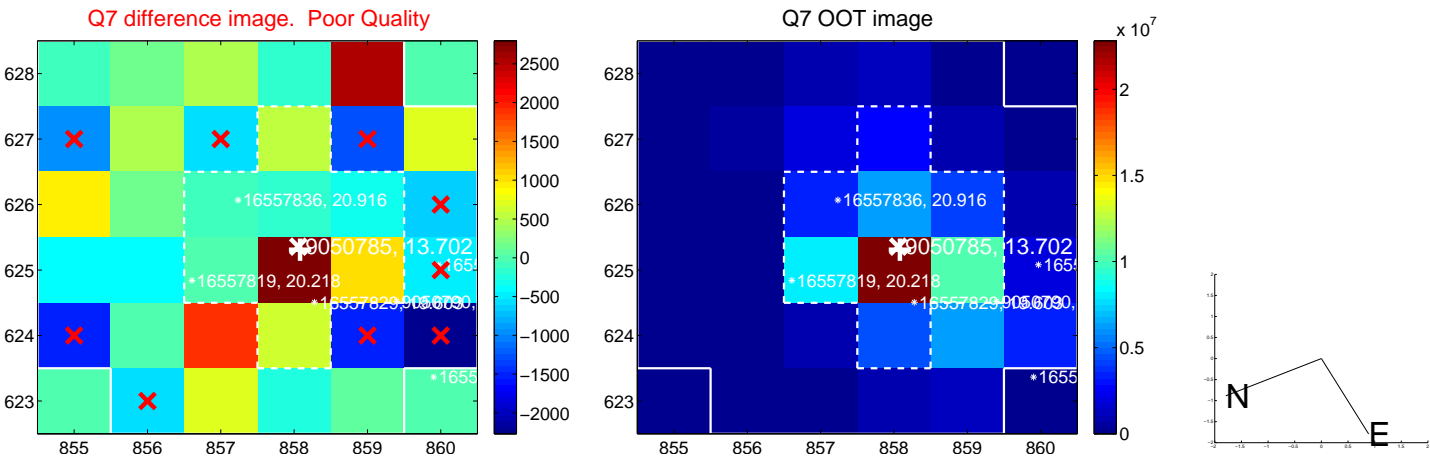
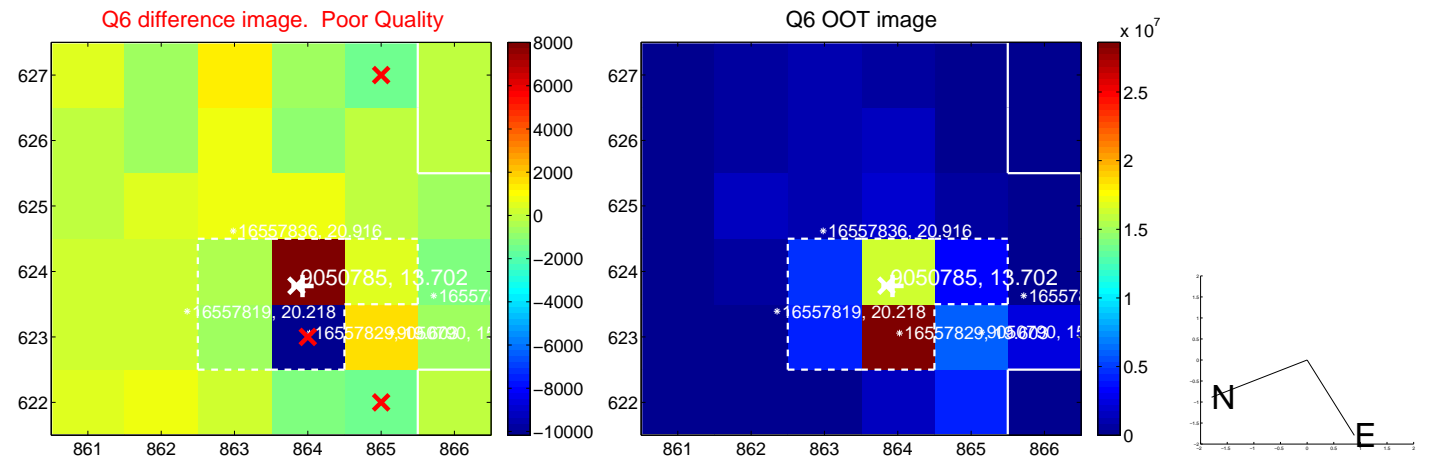
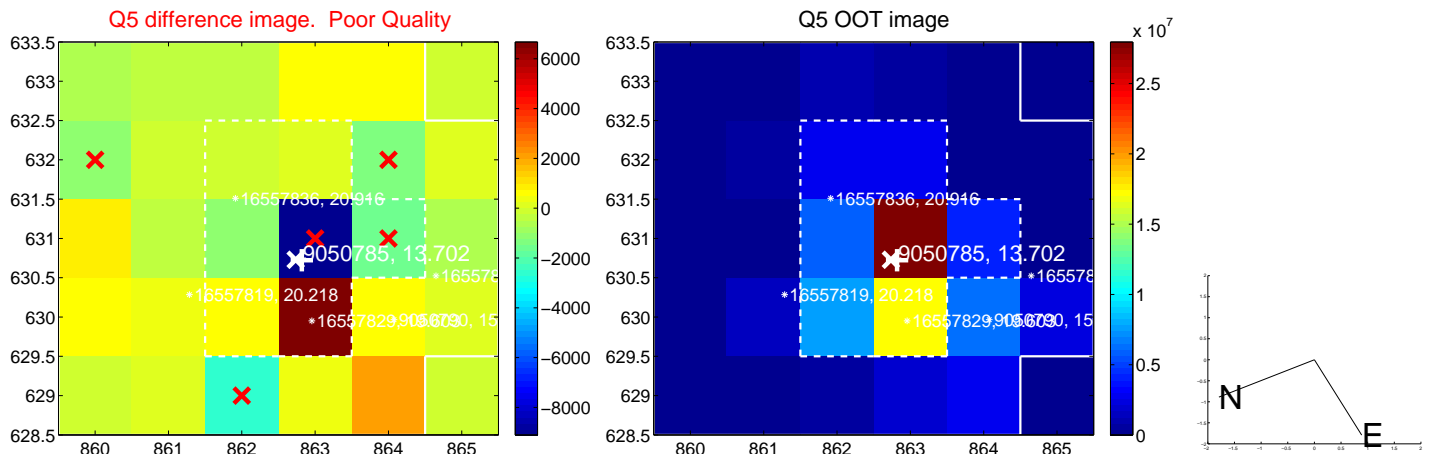


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

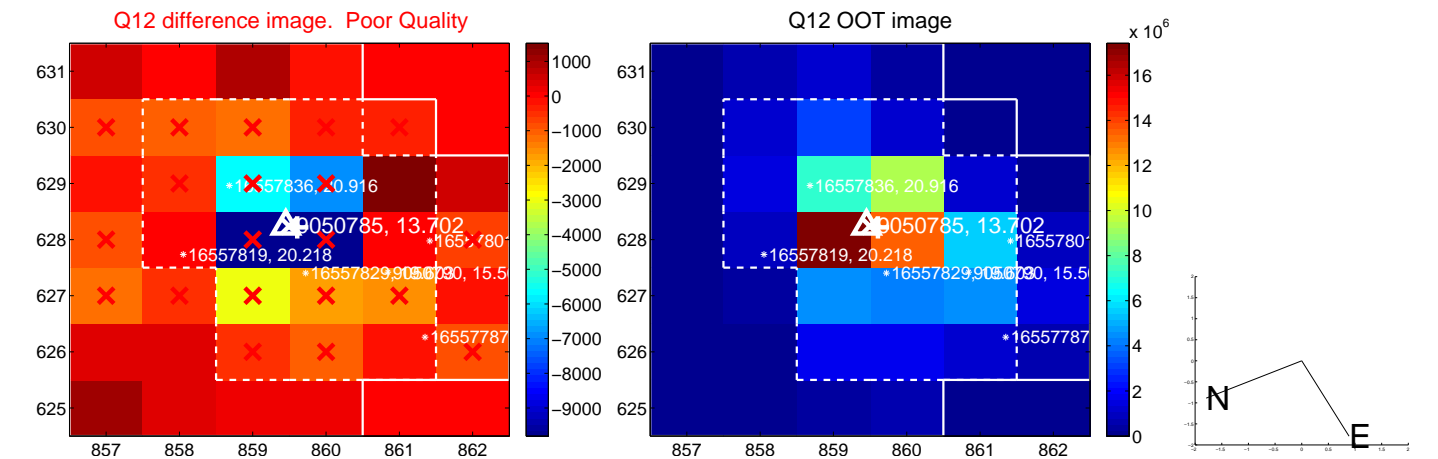
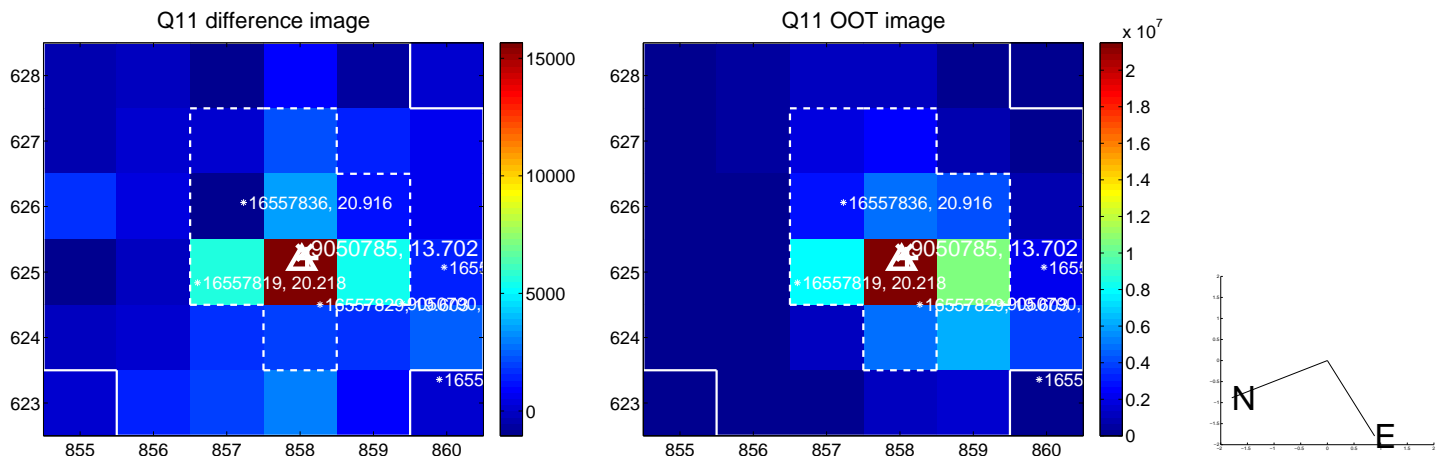
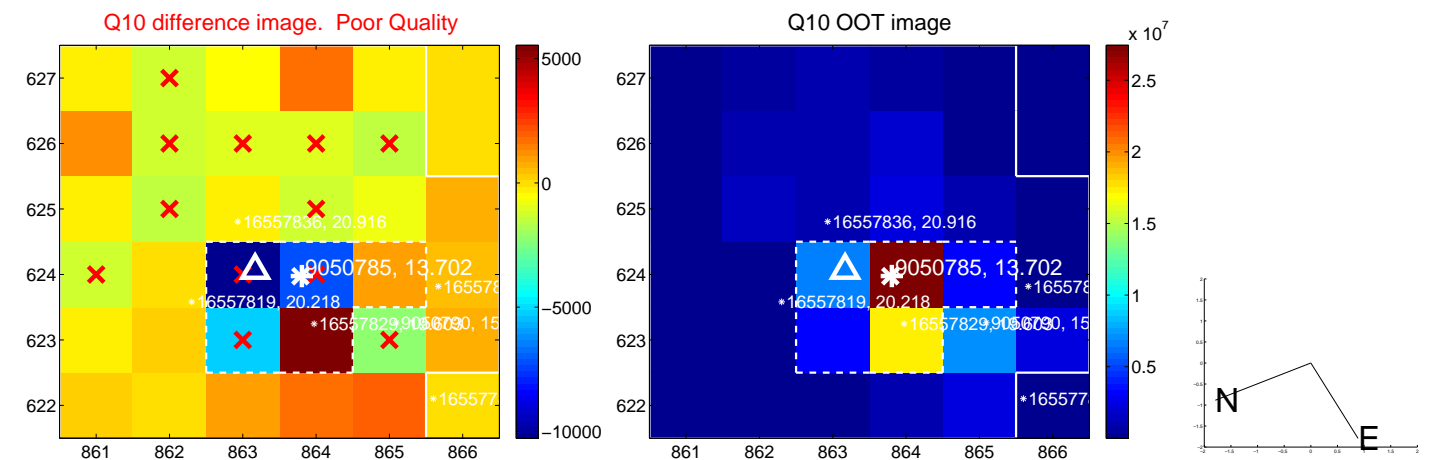
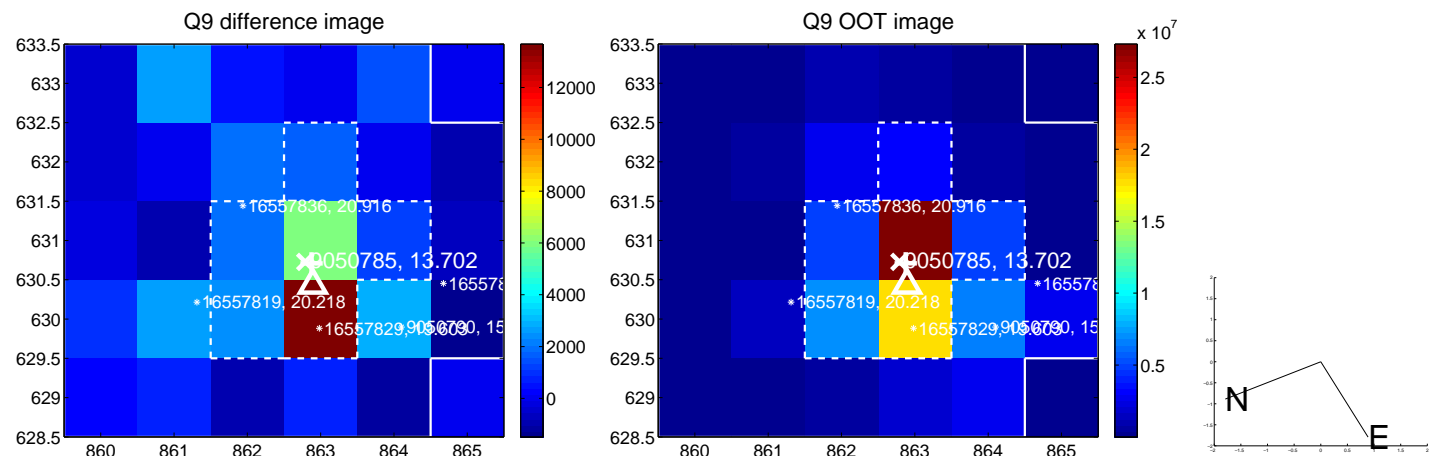
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



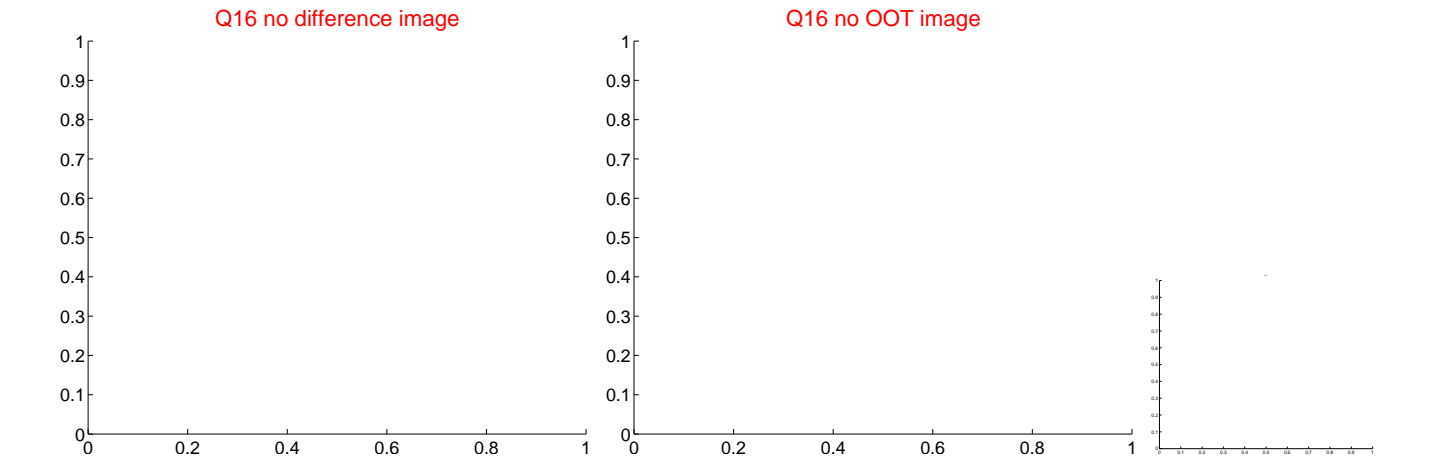
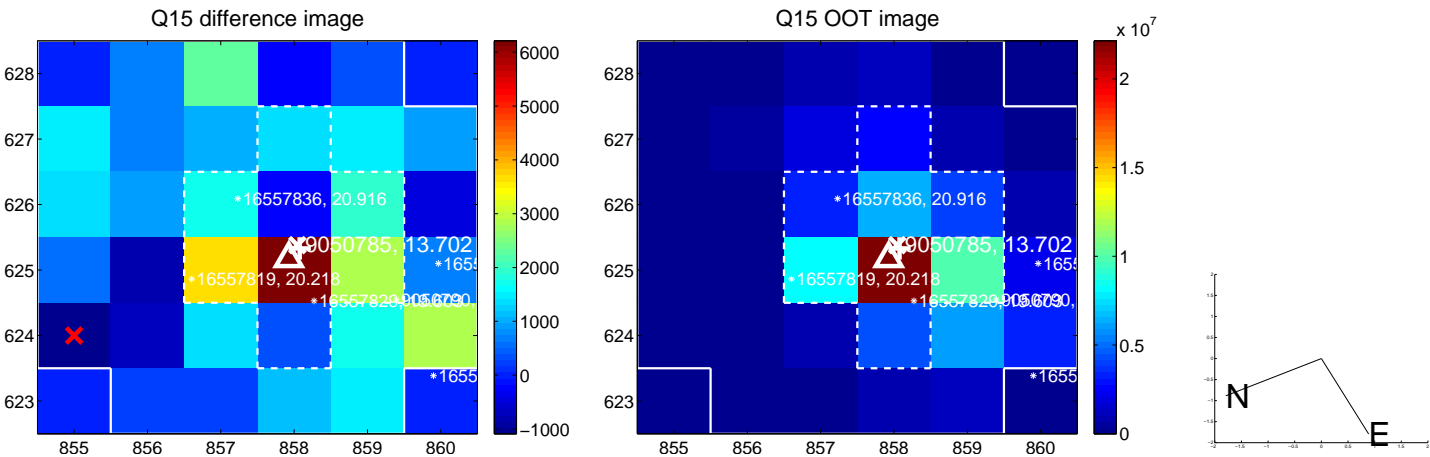
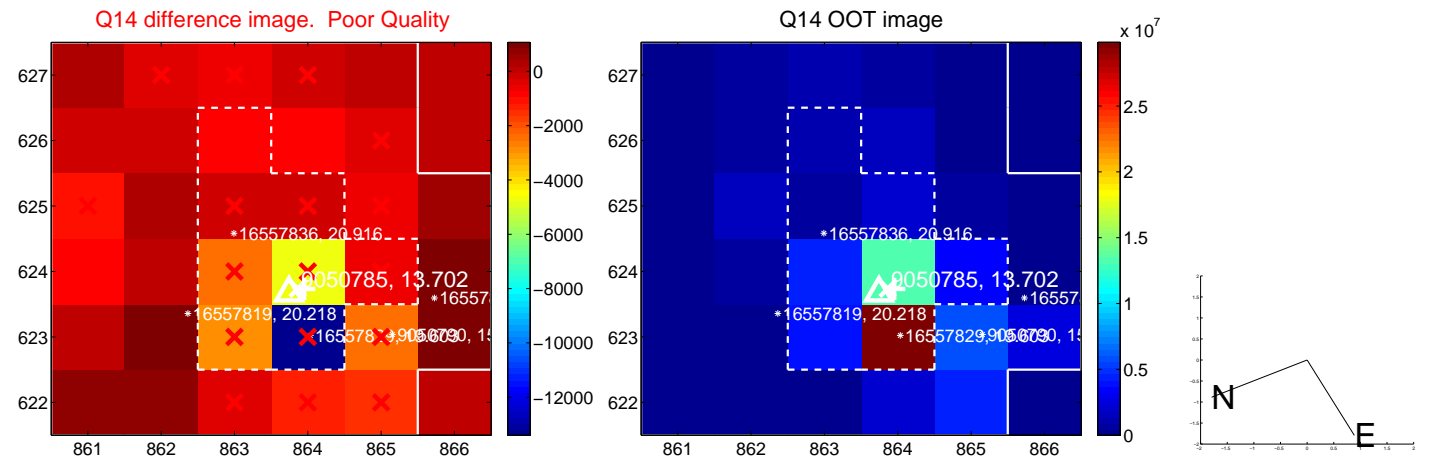
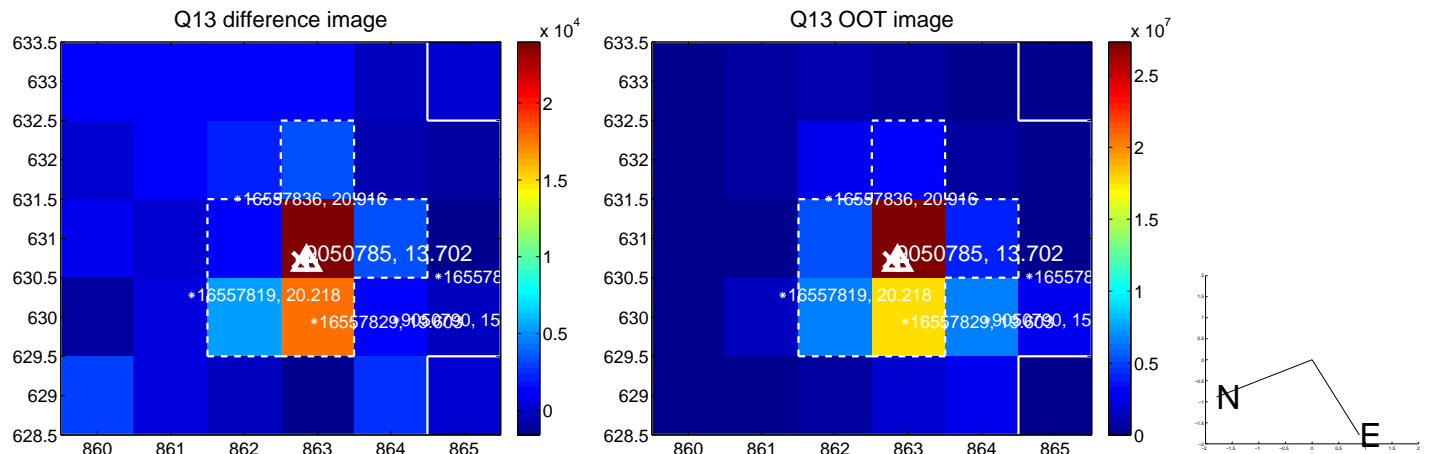
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



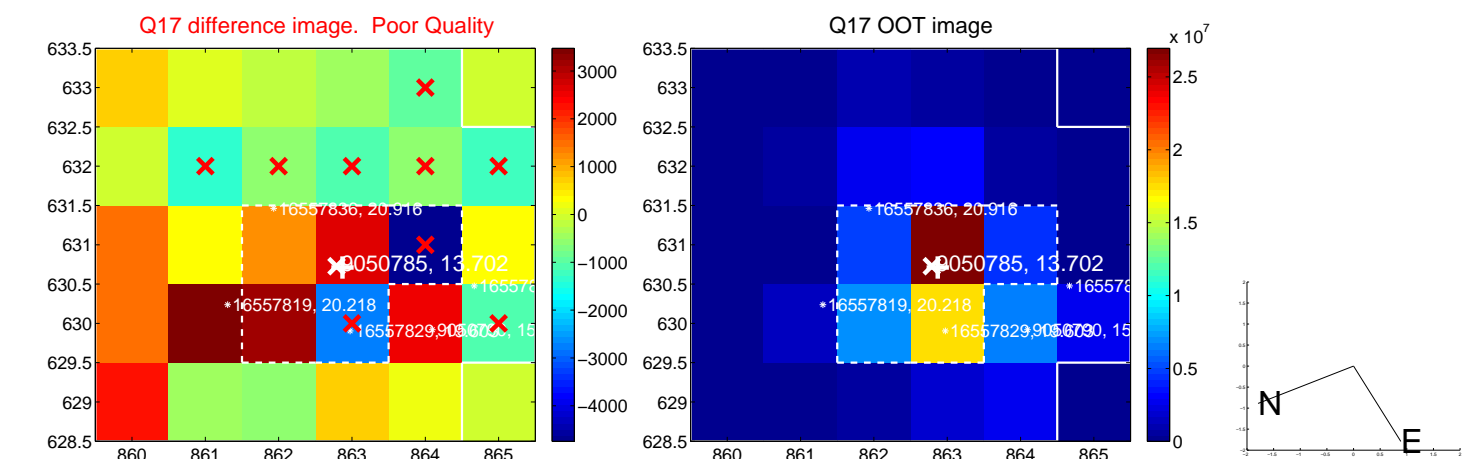
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



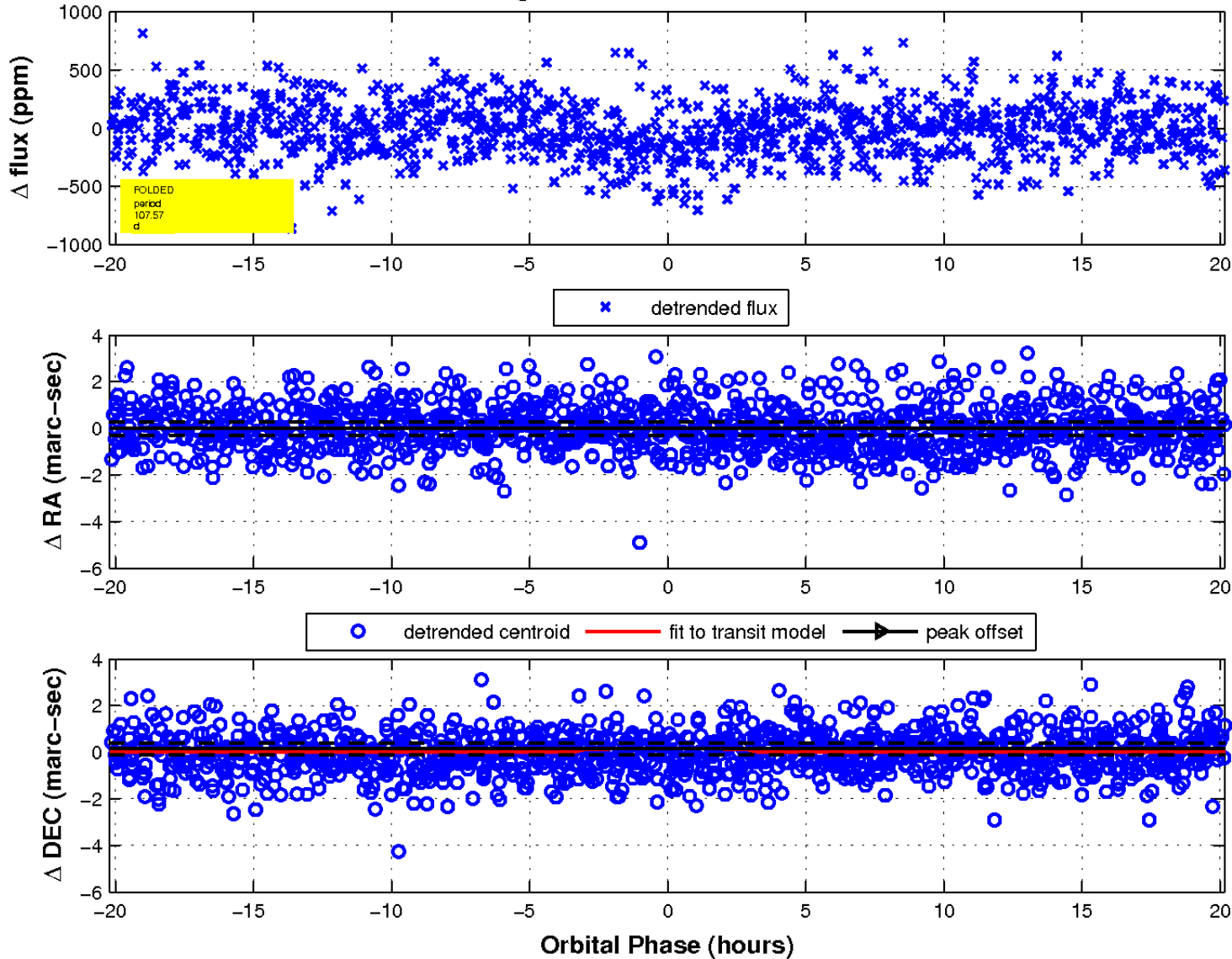
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

