

KIC 009825598

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})
009825598-01	OBS	No	465.839147	329.866420	566.5	0.847	16.3	1.9	0.34	3614	0.83	0.03
009825598-02	OBS	No	428.169972	405.594665	2631.2	1.776	17.5	9.8	0.34	3614	1.91	0.03
009825598-03	OBS	No	478.344232	510.992309	796.9	3.947	12.2	3.4	0.34	3614	0.96	0.03
009825598-04	OBS	No	466.517931	330.244108	1858.1	2.863	10.9	7.2	0.34	3614	1.48	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009825598-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_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—HALO_GHOST
009825598-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_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
009825598-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_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
009825598-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

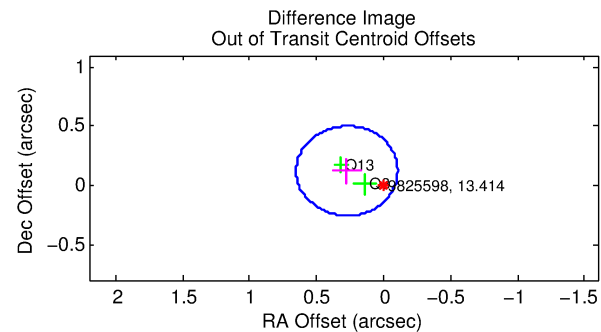
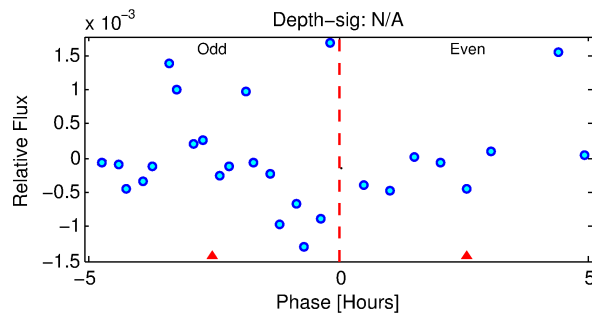
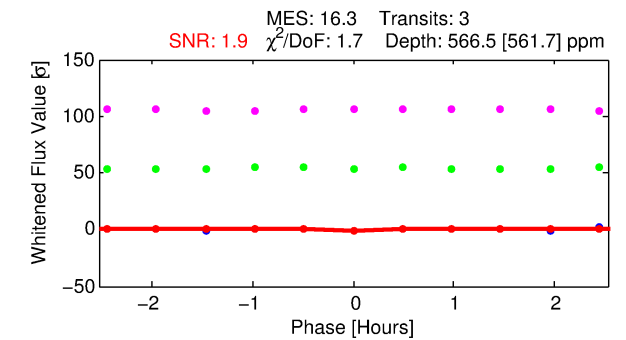
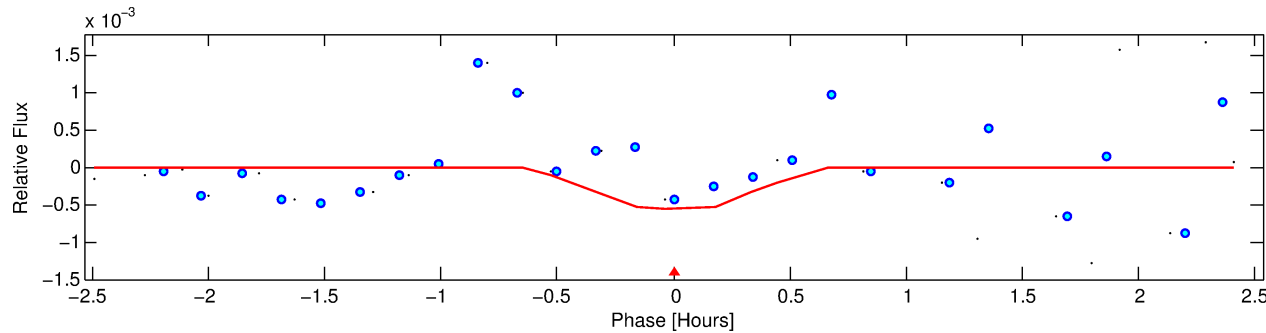
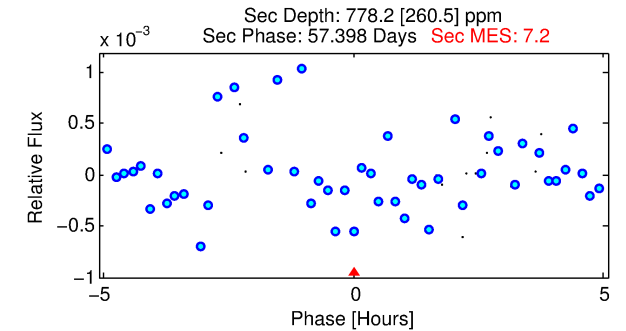
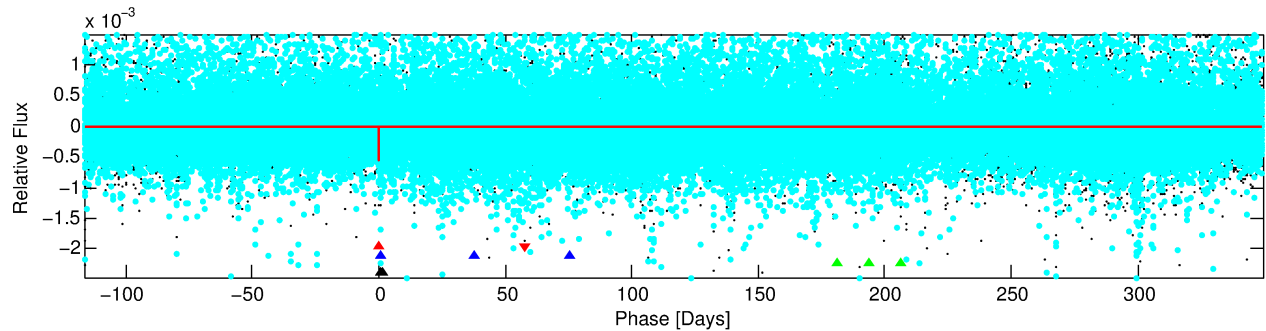
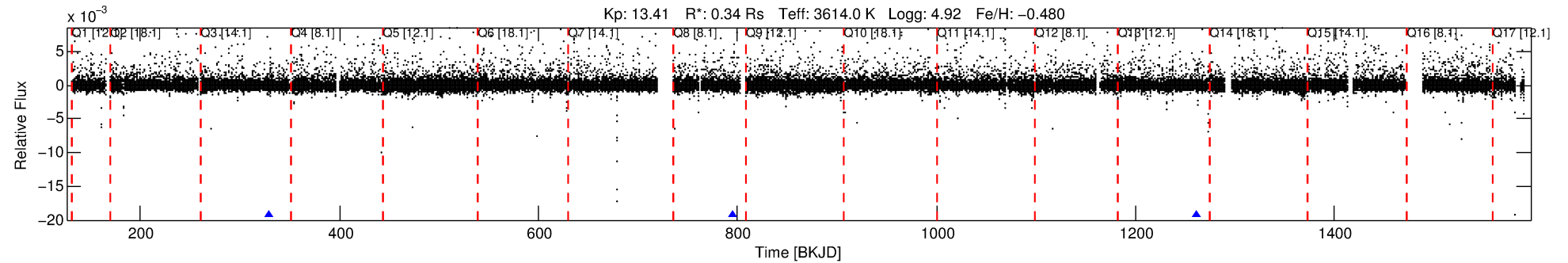
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009825598-01

No Significant Match Found

DV One-Page Summary

KIC: 9825598 Candidate: 1 of 4 Period: 465.839 d



DV Fit Results:

Period = 465.83915 [0.00951] d
Epoch = 329.8664 [0.0199] BKJD
Rp/R* = 0.0224 [0.1884]
a/R* = 4009.24 [182653.59]
b = 0.37 [105.10]
Seff = 0.03 [0.01]
Teq = 102 [7] K
Rp = 0.83 [6.99] Re
a = 0.8276 [0.1486] AU
Ag = 423786.94 [7123586.65] [0.06σ]
Teffp = 4031 [16939] K [0.23σ]

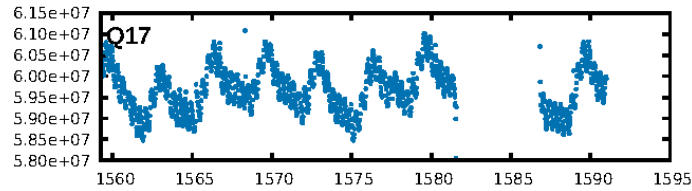
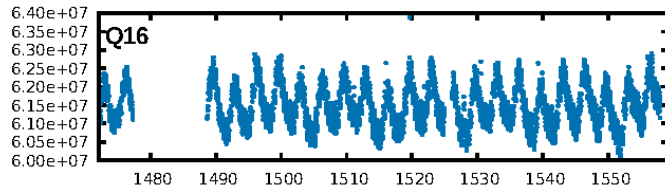
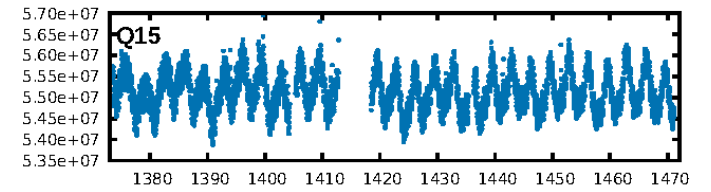
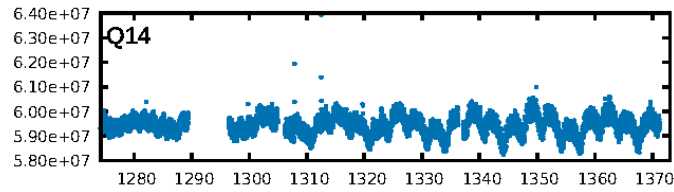
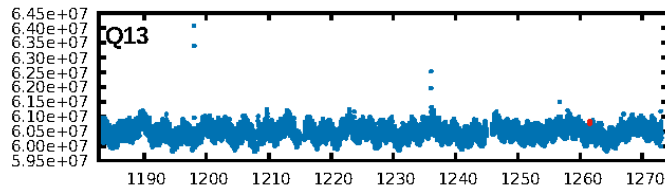
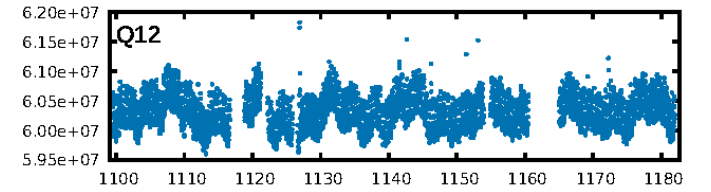
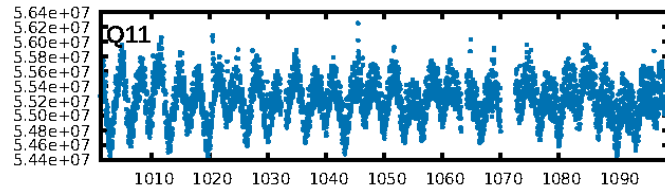
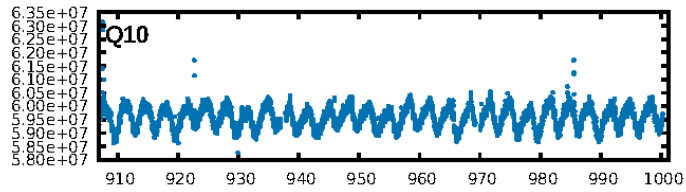
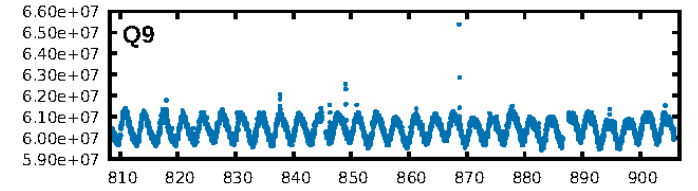
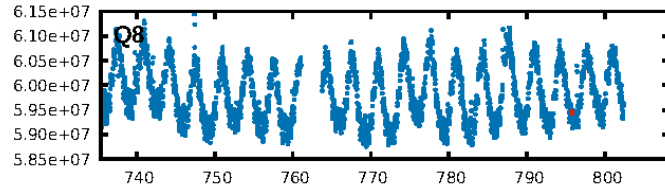
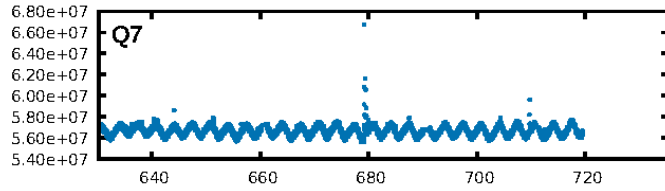
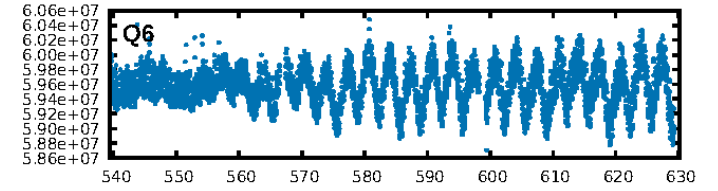
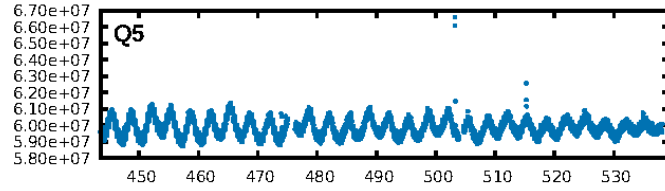
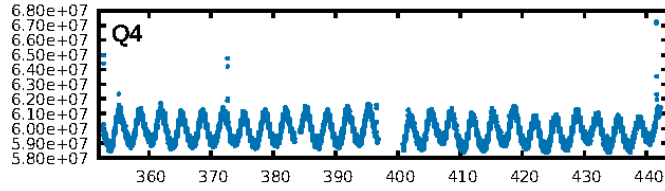
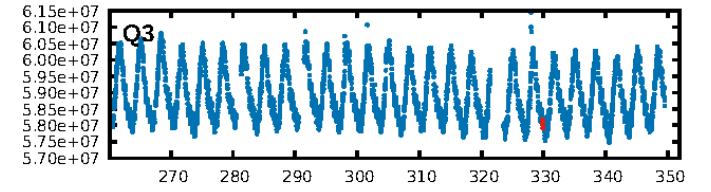
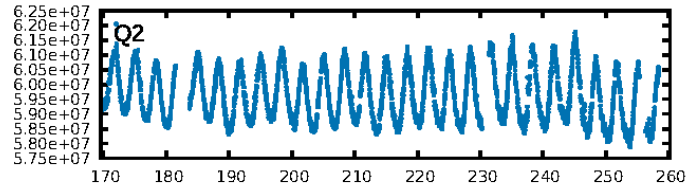
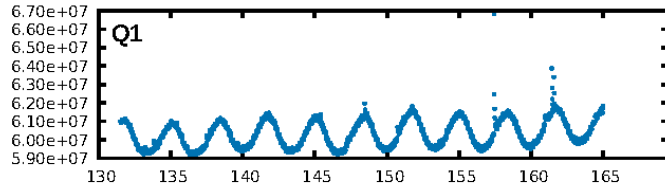
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [459.43σ]
LongPeriod-sig: 100.0% [5.46σ]
ModelChiSquare2-sig: 73.7%
ModelChiSquareGof-sig: 96.8%
Bootstrap-pfa: 1.33e-14
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.1599
Centroid-sig: N/A
Centroid-so: 2.546 arcsec [0.84σ]
OotOffset-rm: 0.300 arcsec [2.37σ]
KicOffset-rm: 0.288 arcsec [2.84σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

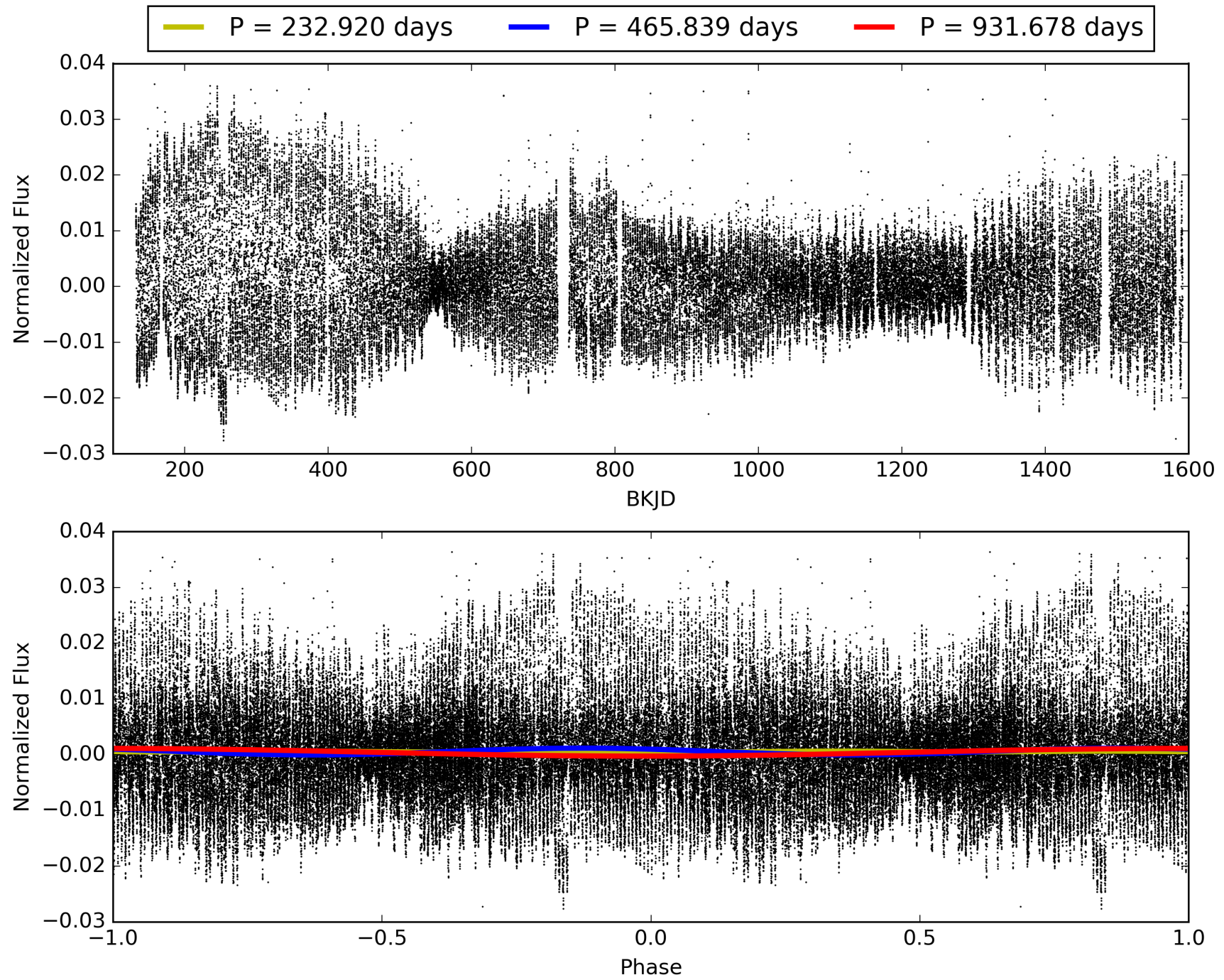
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009825598-01, PDC Light Curves

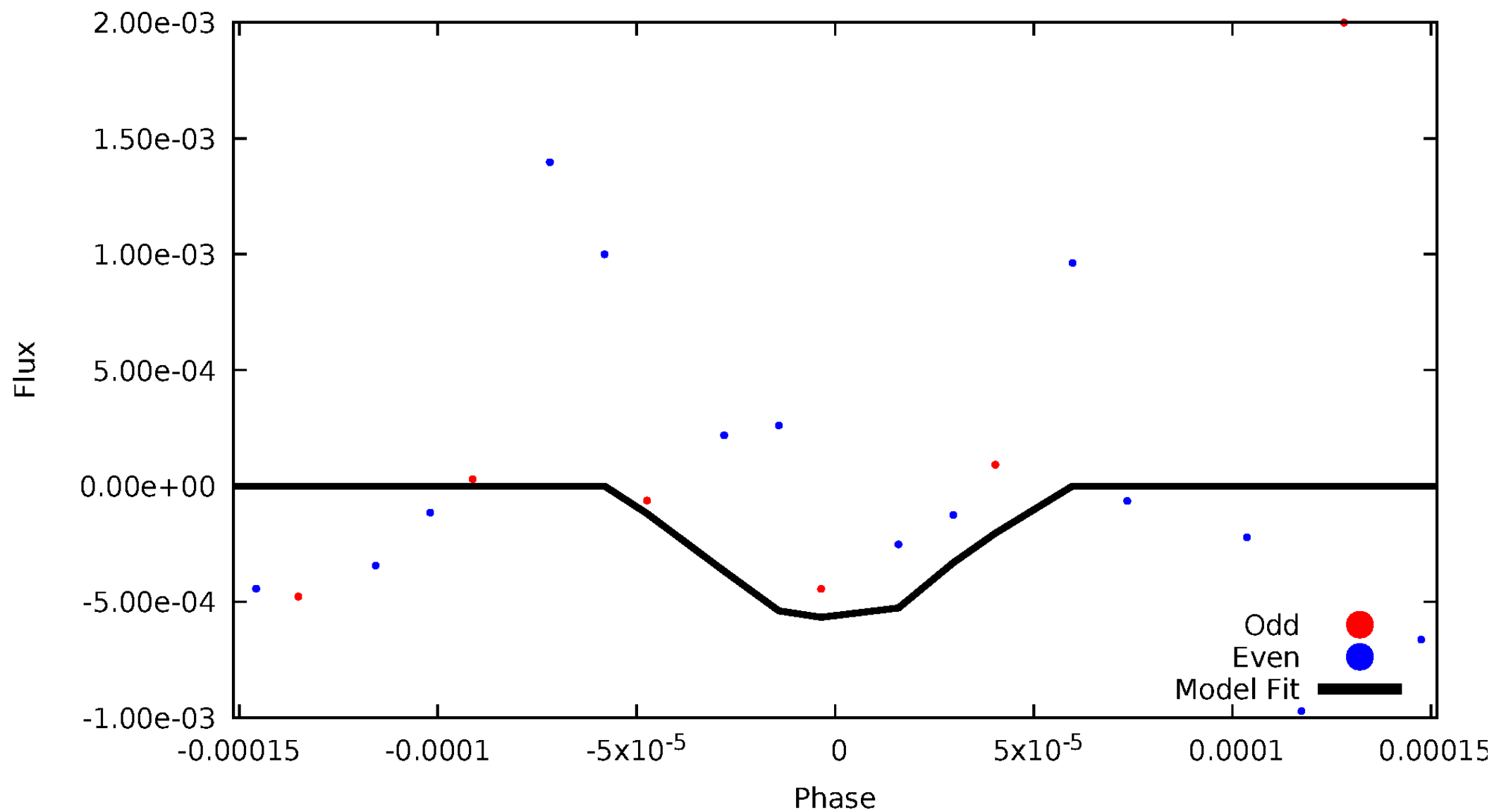


TCE 009825598-01



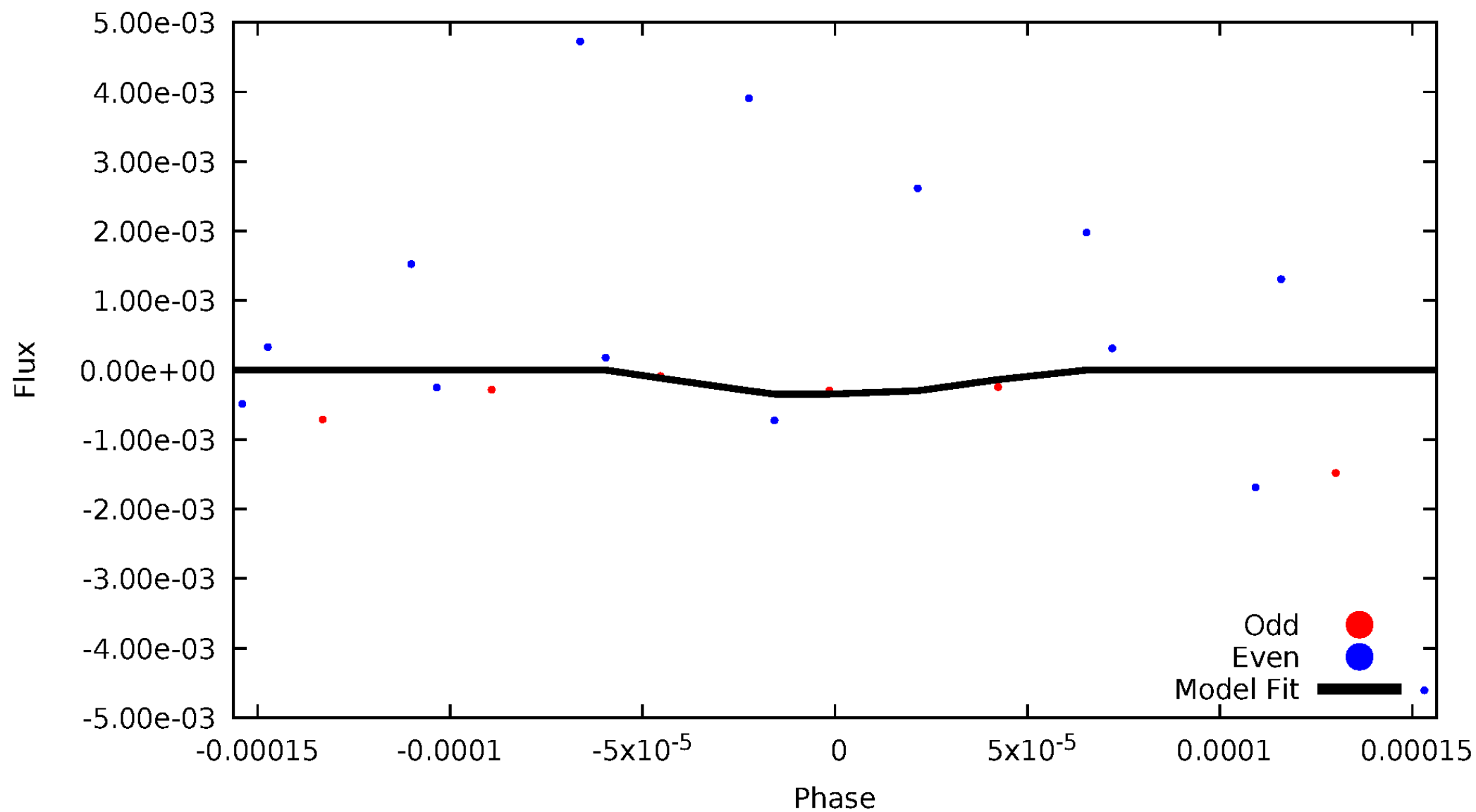
DV Odd/Even

TCE 009825598-01



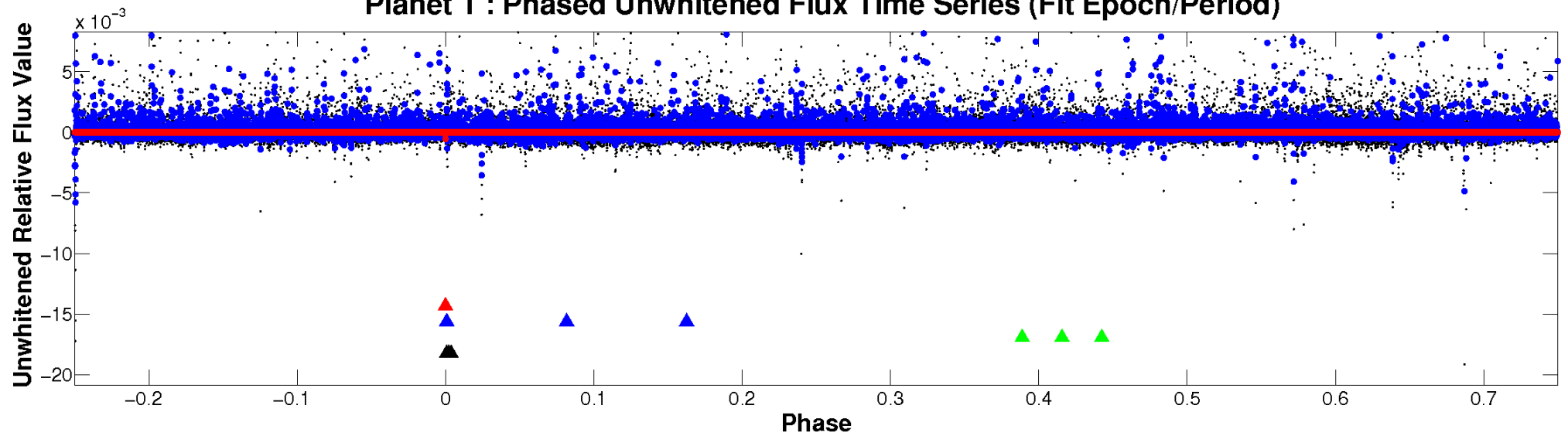
ALT Odd/Even

TCE 009825598-01

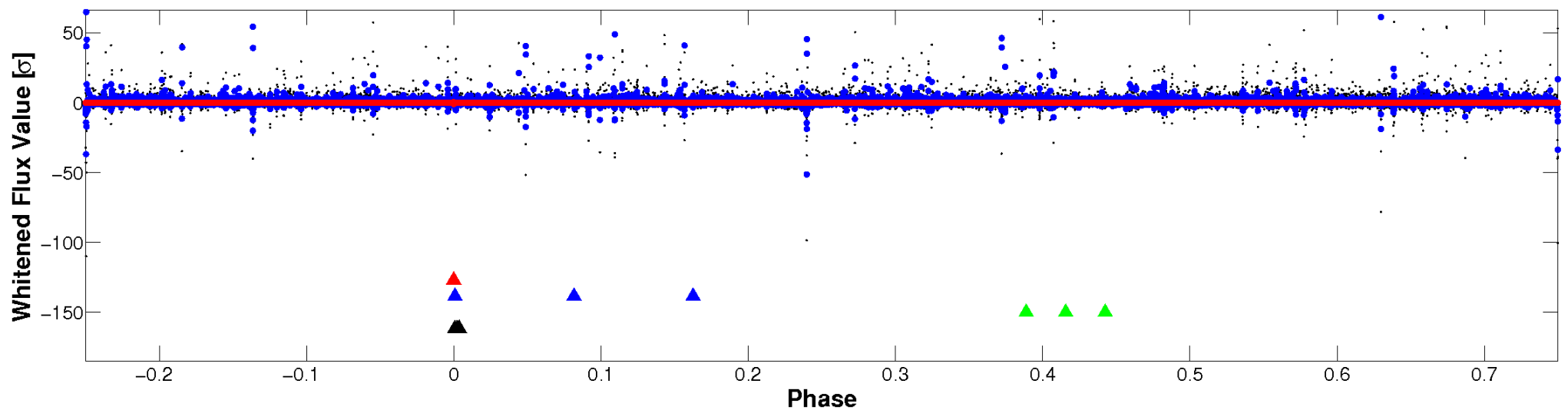


Non-Whitened Vs. Whitened Light Curve

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



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



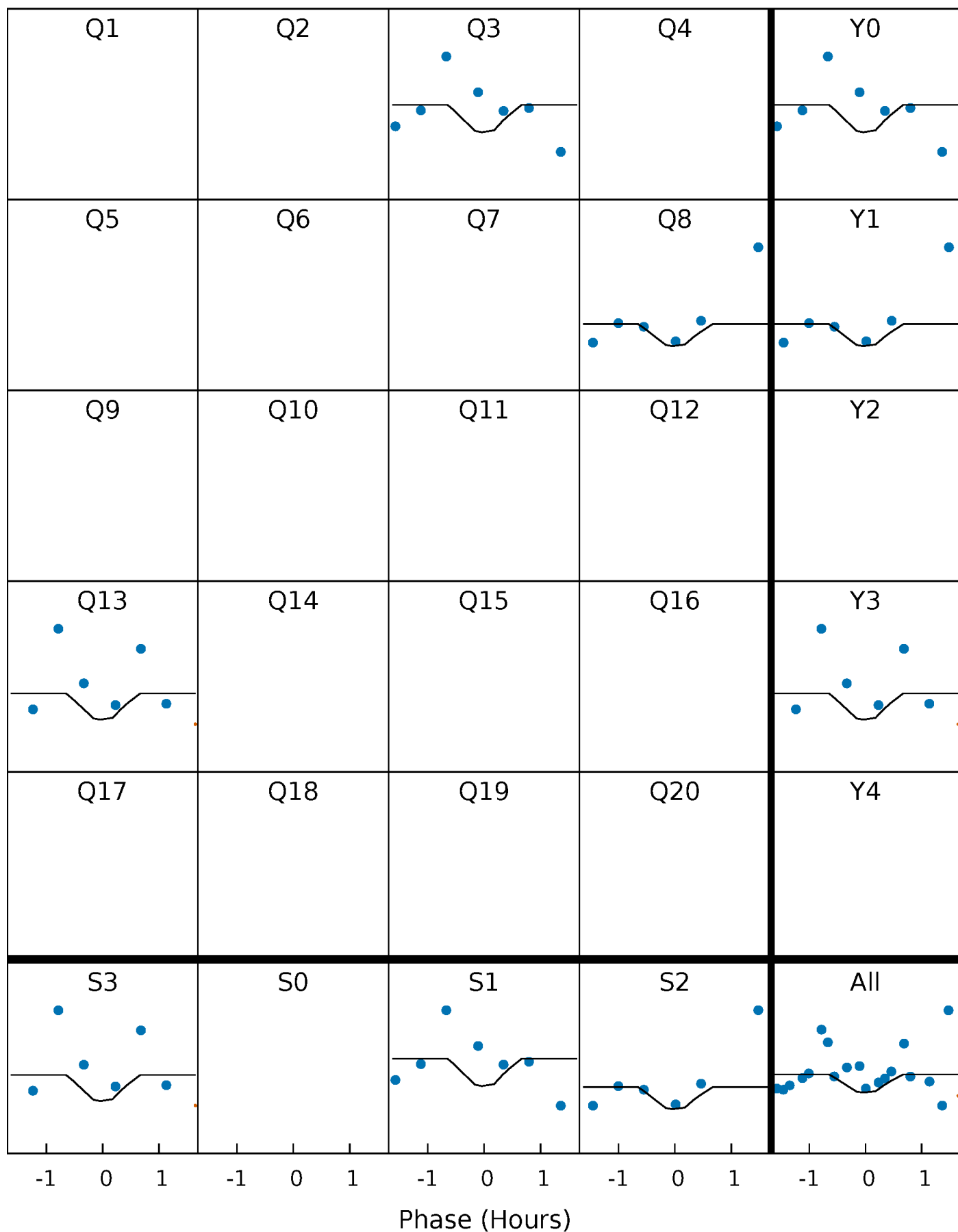
PDC Quarter-Phased Transit Curves

TCE 009825598-01 P=465.839147 Days $T_0=329.866420$ (BKJD)



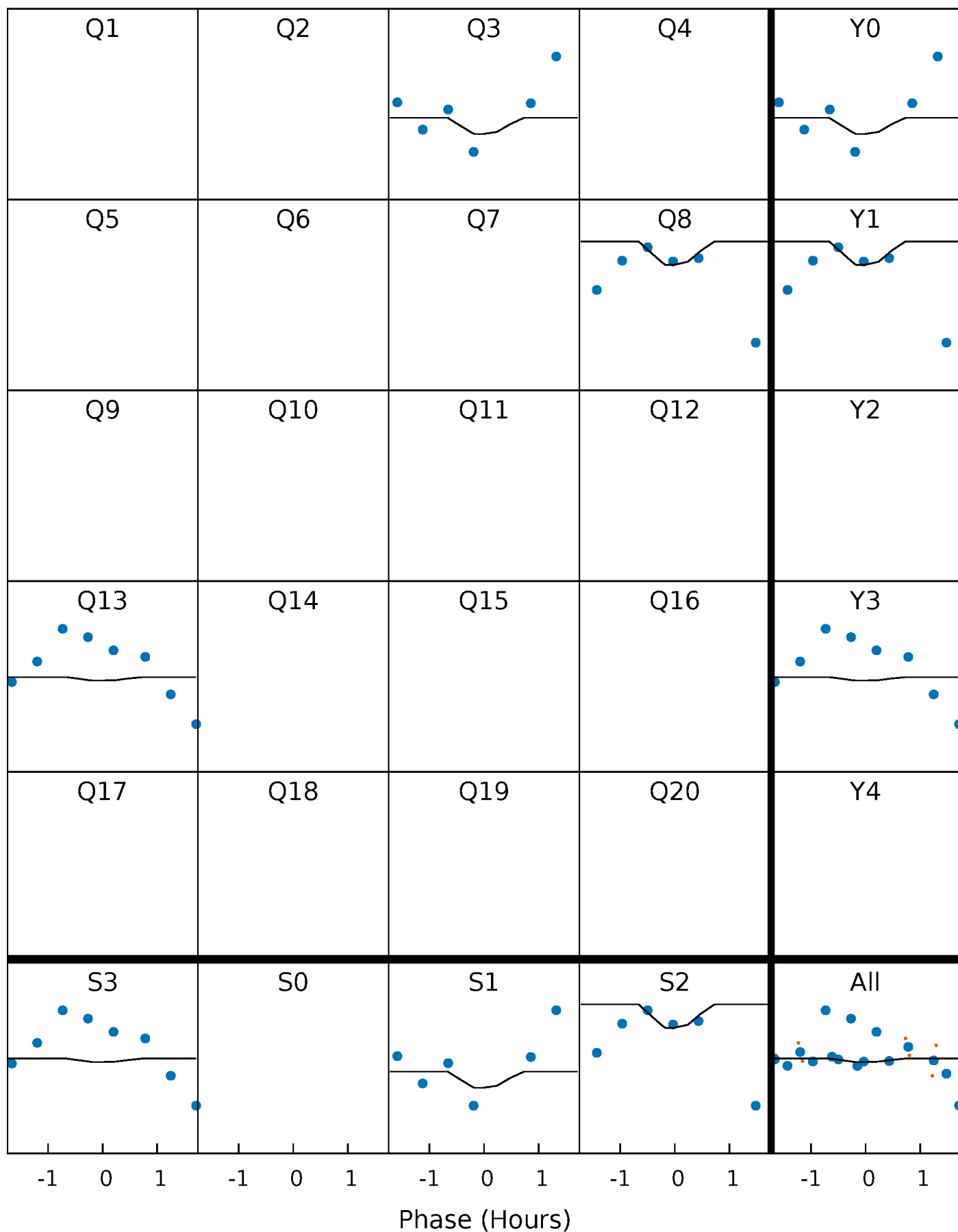
DV Quarter-Phased Transit Curves

TCE 009825598-01 P=465.839147 Days $T_0=329.866420$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

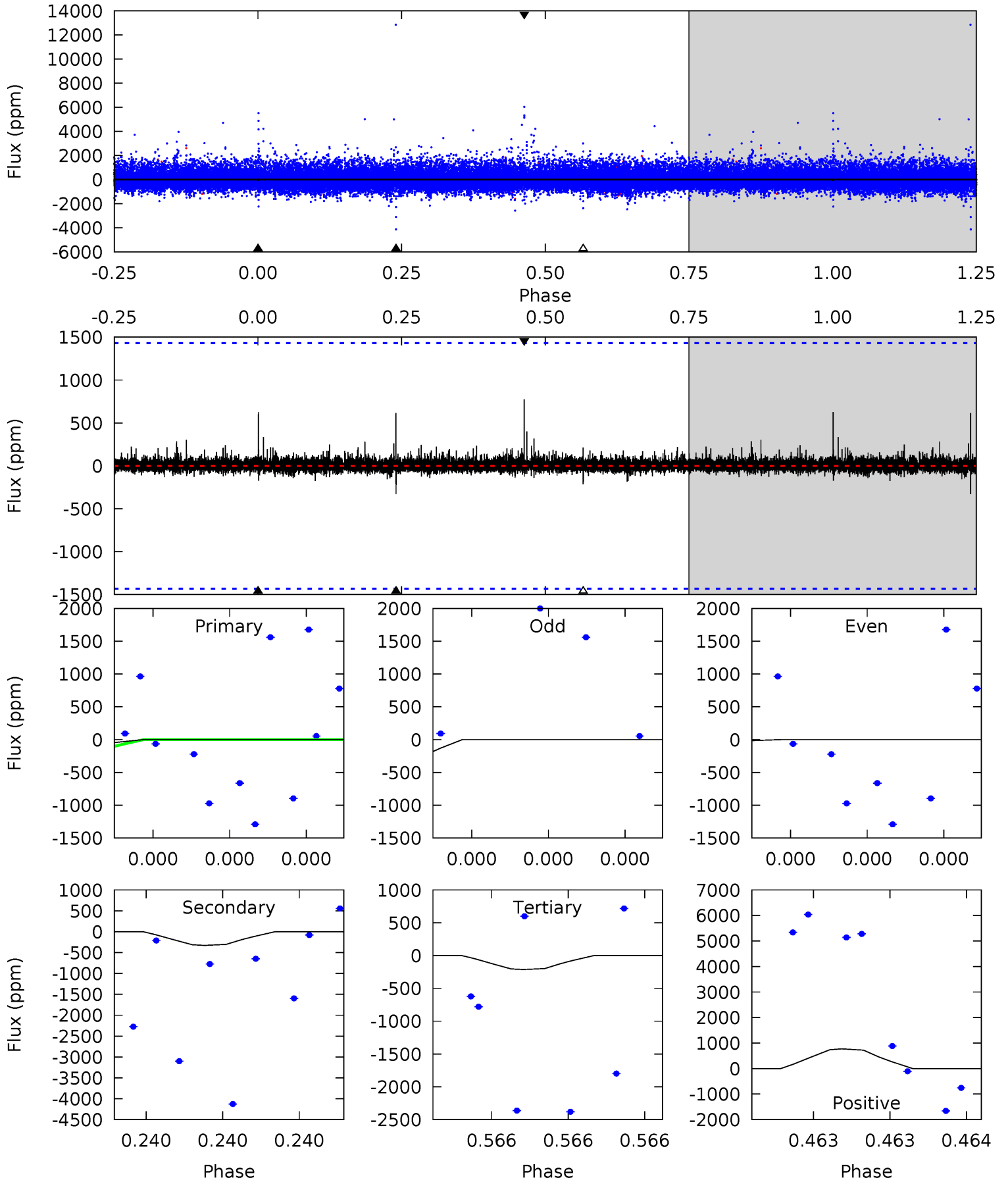
TCE 009825598-01 P=465.837490 Days $T_0=329.867125$ (BKJD)



DV Model-Shift Uniqueness Test

009825598-01, P = 465.839147 Days, E = 329.866420 Days

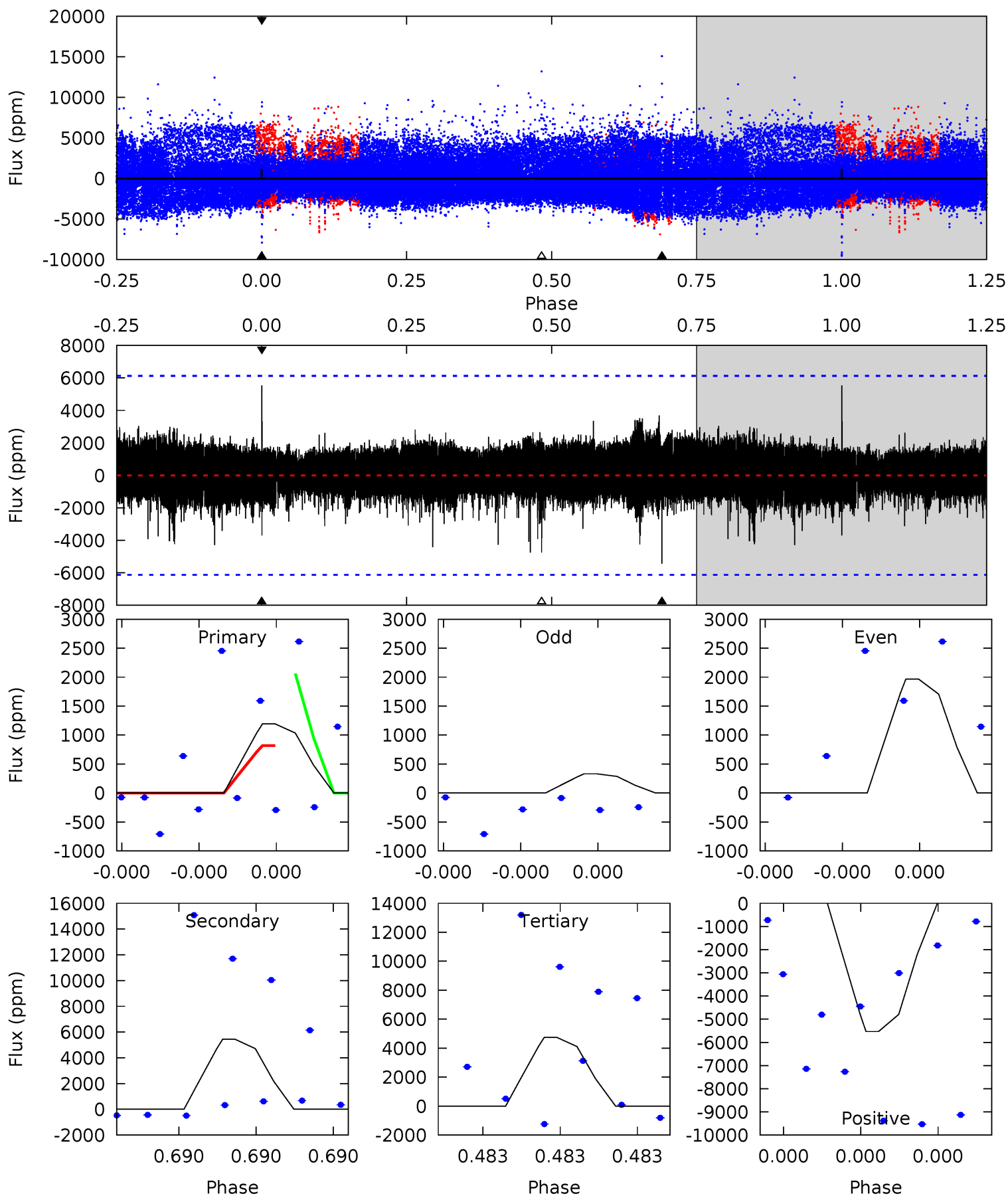
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.38	1.36	0.88	3.20	5.91	3.98	0.17	-0.50	-2.82	0.48	-1.84	0.28	1.36	0.70	0.34



Alt Model-Shift Uniqueness Test

009825598-01, P = 465.837490 Days, E = 329.867125 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.14	5.21	4.55	5.30	5.87	3.92	1.02	-3.40	-4.16	0.66	-0.09	0.68	1.00	0.50	0.54



Stellar Parameters For KIC 009825598

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3614^{+107}_{-118}	$4.917^{+0.104}_{-0.085}$	$-0.480^{+0.300}_{-0.300}$	$0.340^{+0.074}_{-0.082}$	$0.348^{+0.082}_{-0.101}$	$12.500^{+9.082}_{-3.793}$
	+3%/-3%	+2%/-2%	+62%/-62%	+22%/-24%	+24%/-29%	+73%/-30%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009825598-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-329 ± 242	$4.89^{+5.29}_{-3.38}$	142^{+7}_{-8}	2072^{+700}_{-380}	3898^{+42306}_{-3434}
Alt.	-5436 ± 1043	$5.14^{+5.04}_{-3.55}$	142^{+8}_{-7}	2974^{+1338}_{-488}	$79370^{+693003}_{-60047}$

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 $A_{obs} \gg 1.0$

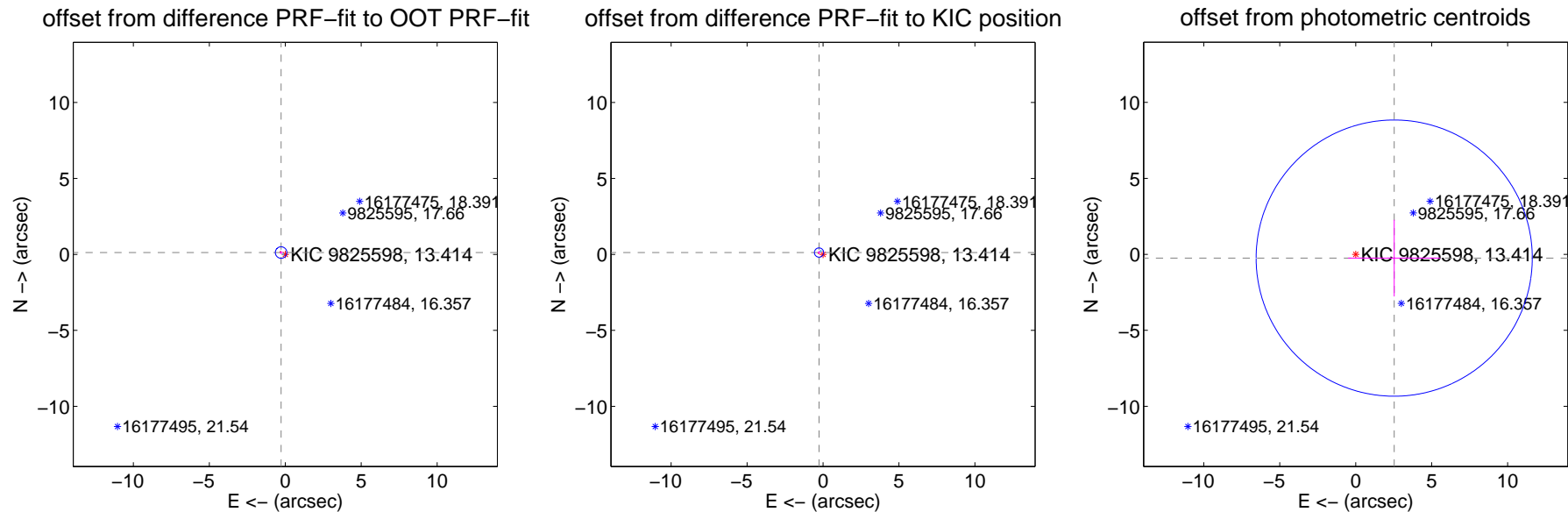
DV Centroid Data

Supplemental centroid analysis for 009825598-01. Kepler magnitude: 13.41. Transit SNR 1.95

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.300 ± 0.126	2.37	0.273 ± 0.107	0.123 ± 0.100
PRF-fit source offset from KIC position	0.288 ± 0.102	2.84	0.261 ± 0.102	0.121 ± 0.099
photometric centroid source offset	2.55 ± 3.03	0.84	-2.53 ± 3.03	-0.25 ± 2.53



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.

Q1 no difference image



Q1 no OOT image



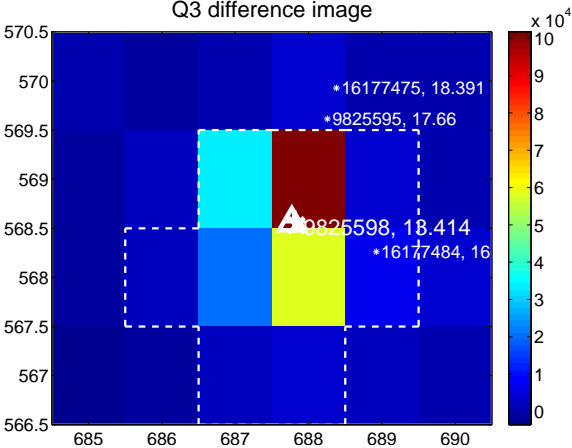
Q2 no difference image



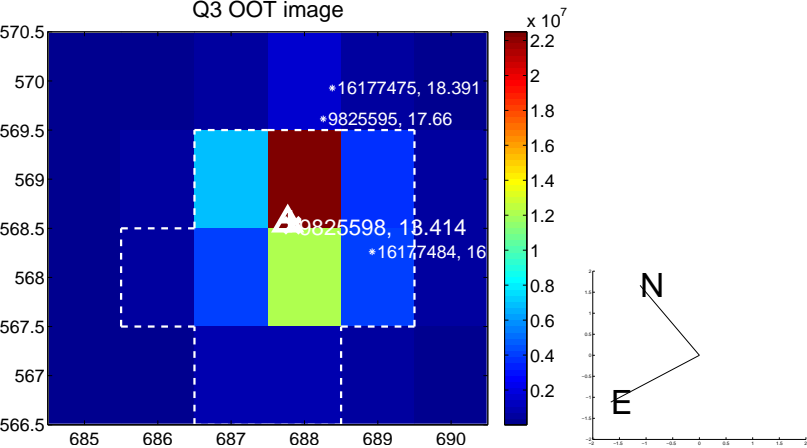
Q2 no OOT image



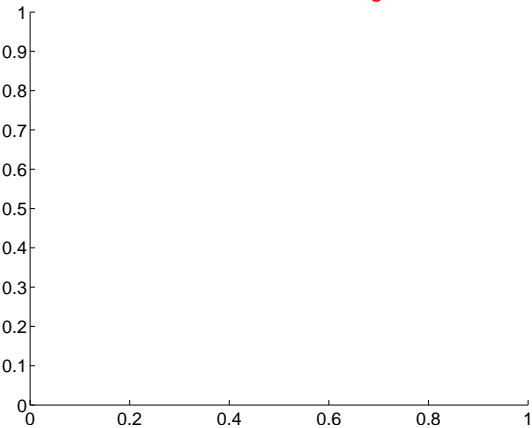
Q3 difference image



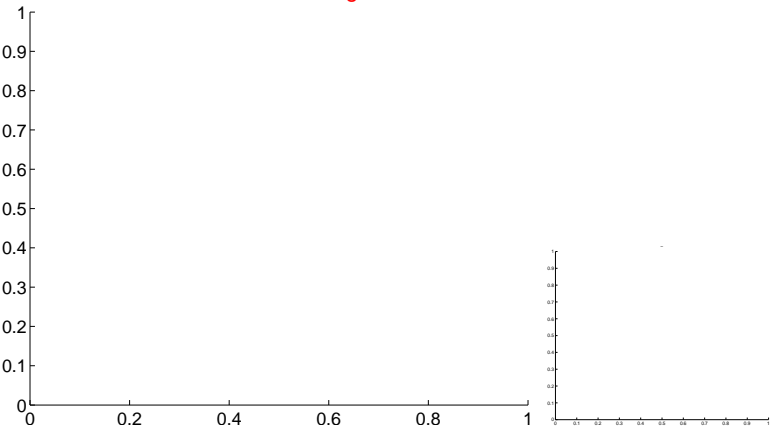
Q3 OOT image



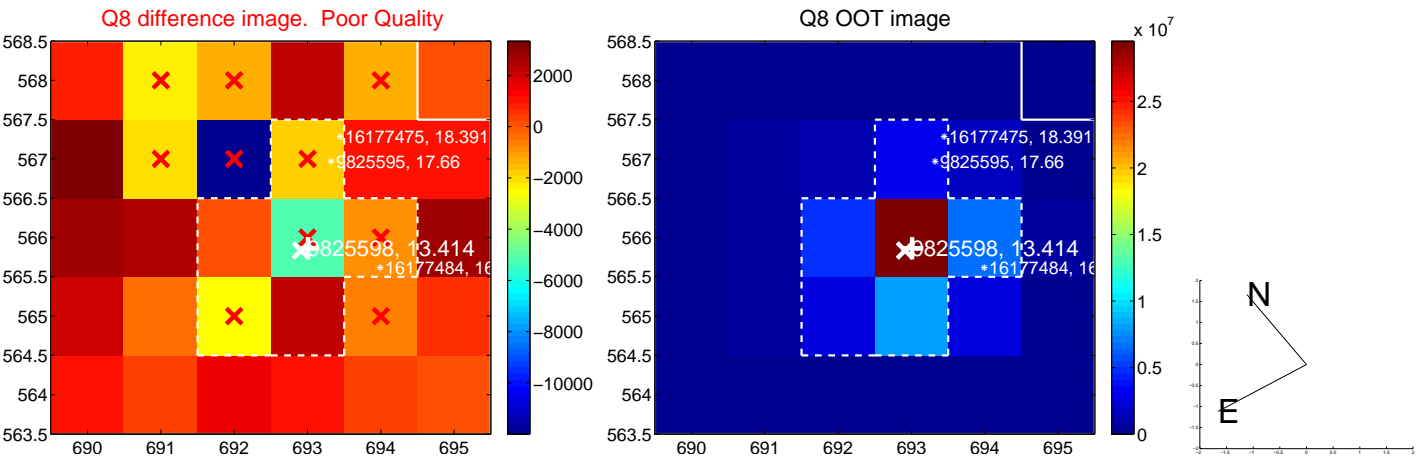
Q4 no difference image



Q4 no OOT image



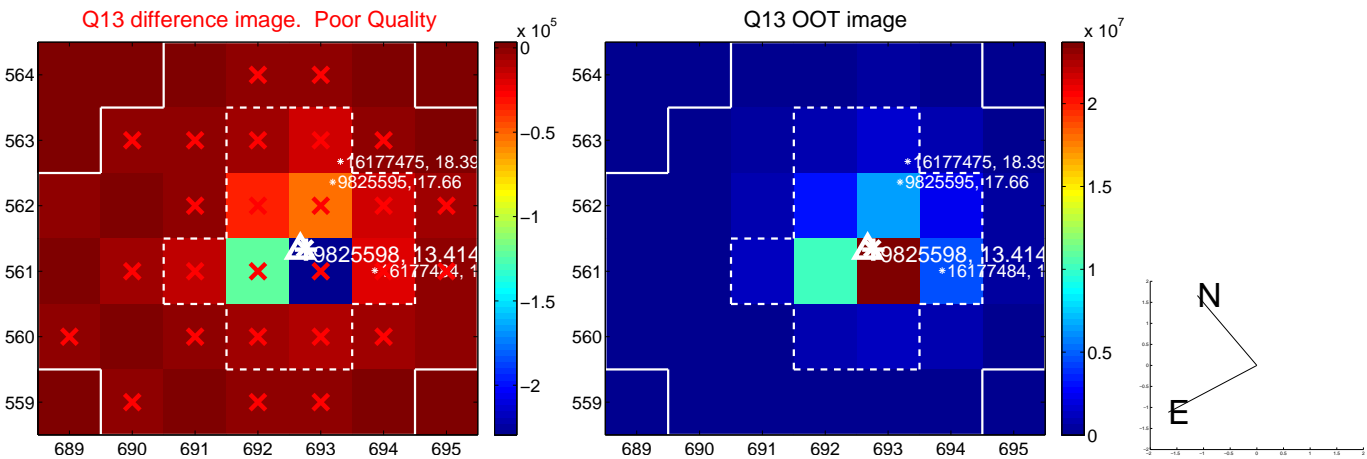
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



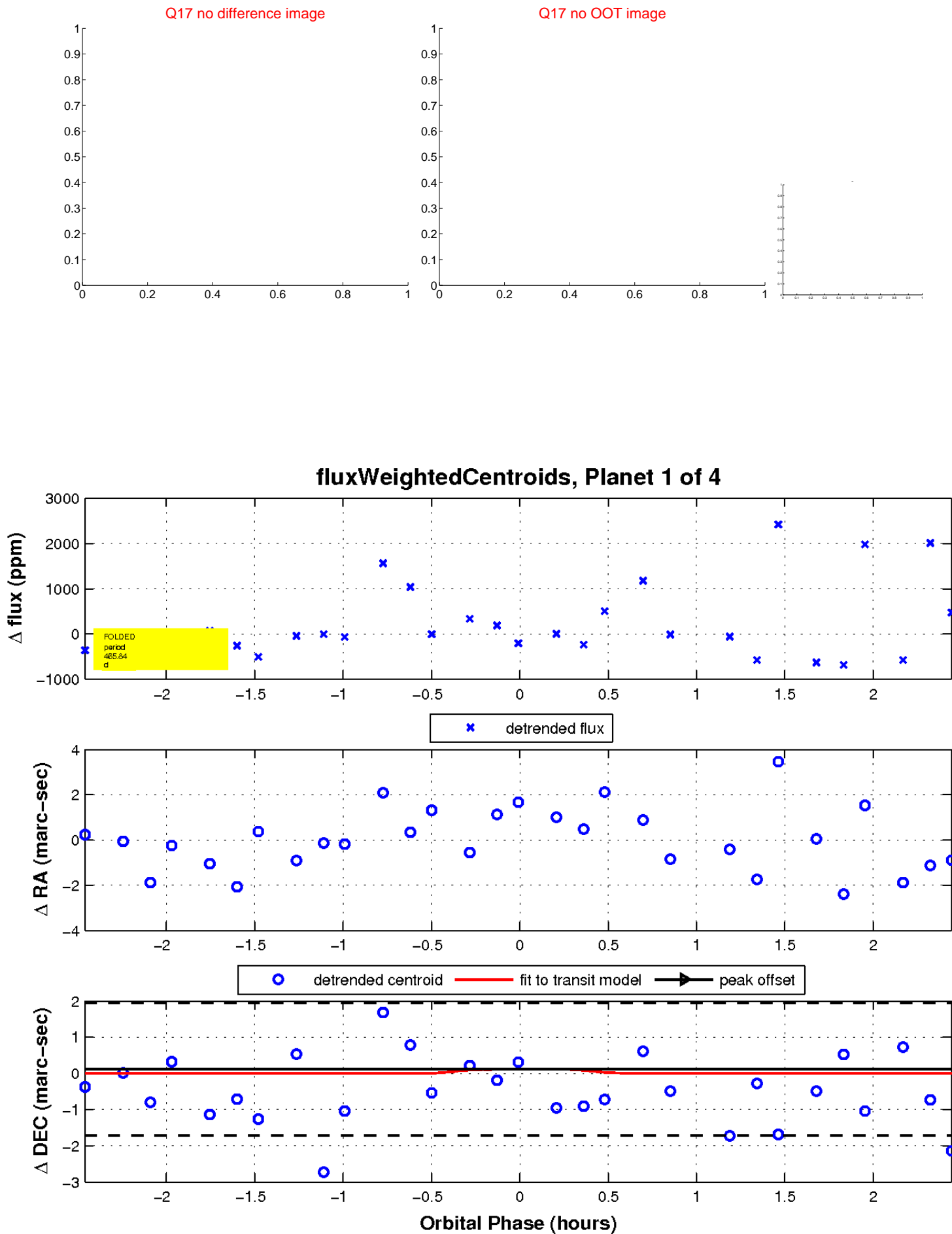
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

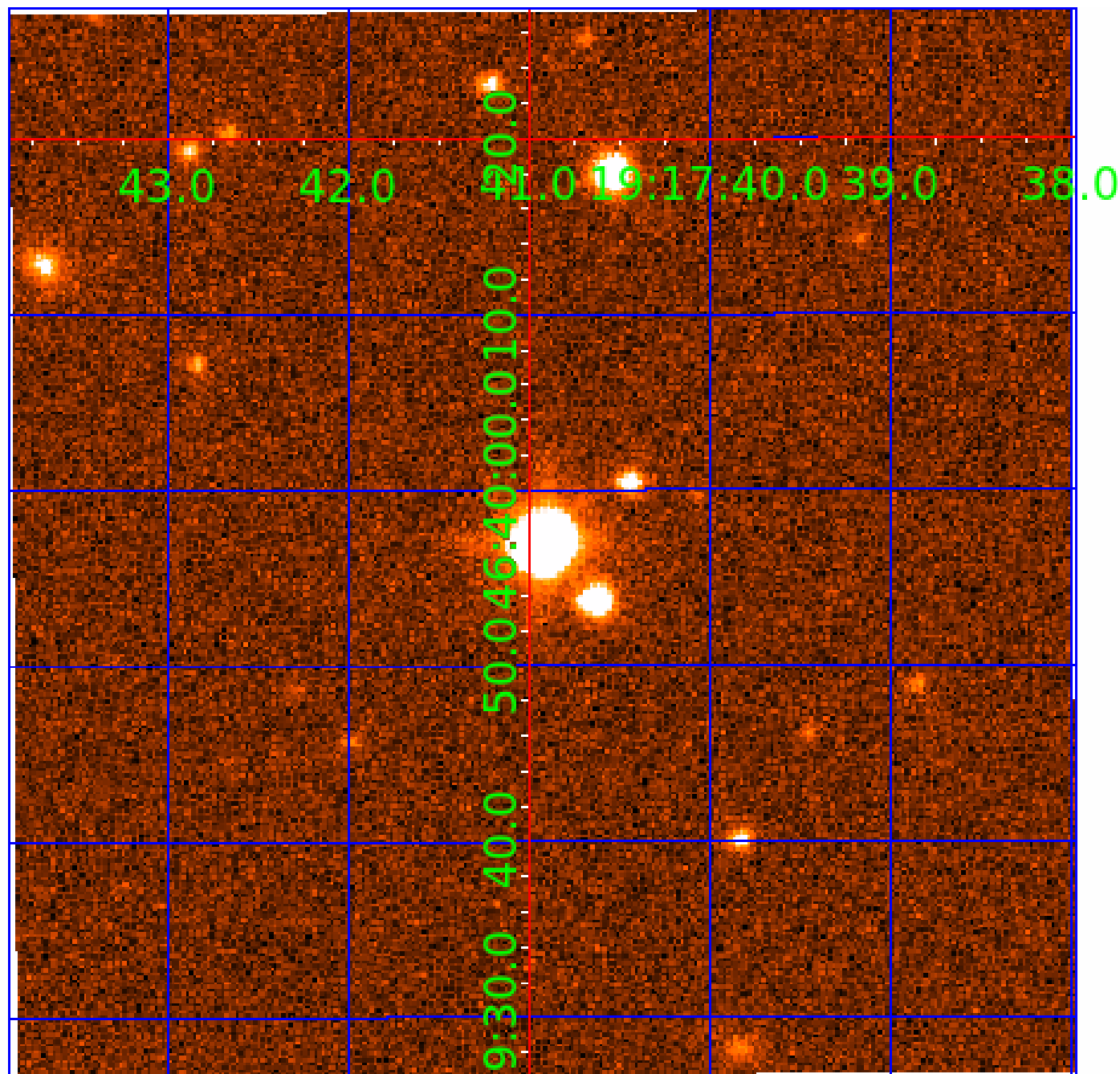


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009825598

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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009825598-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_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
009825598-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_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
009825598-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

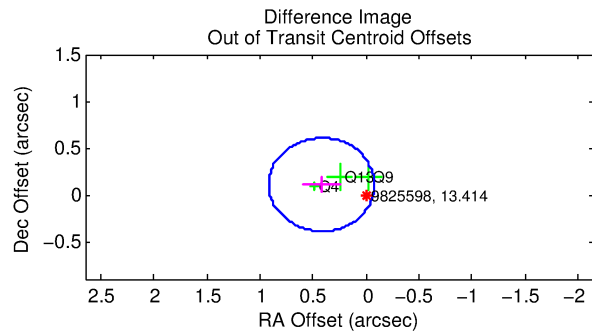
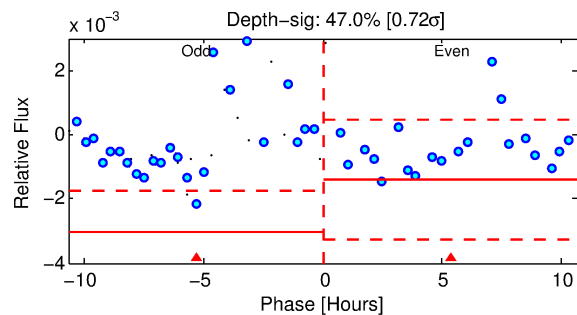
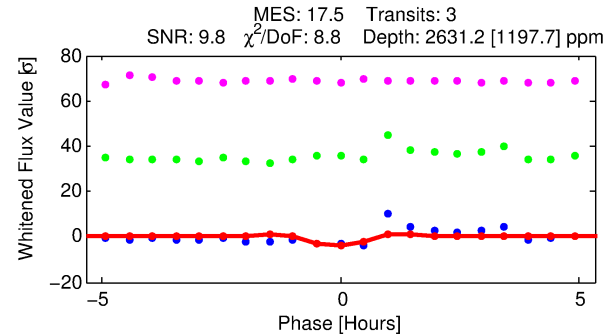
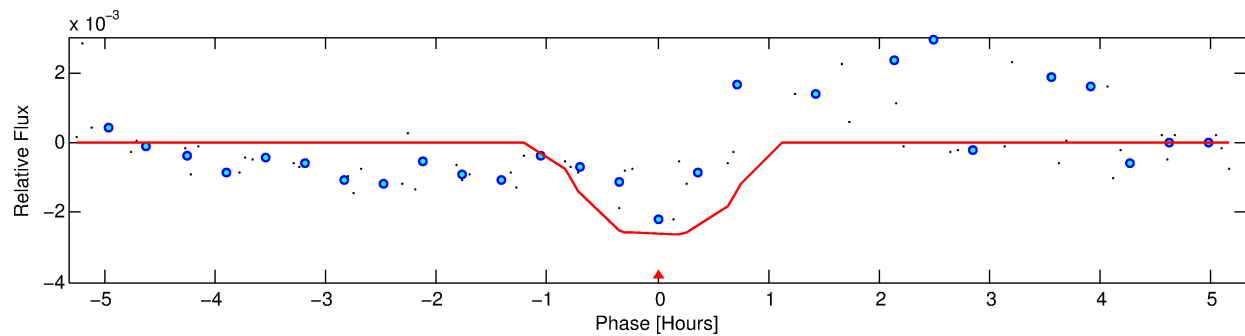
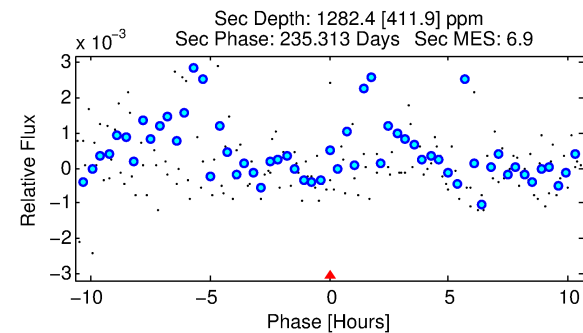
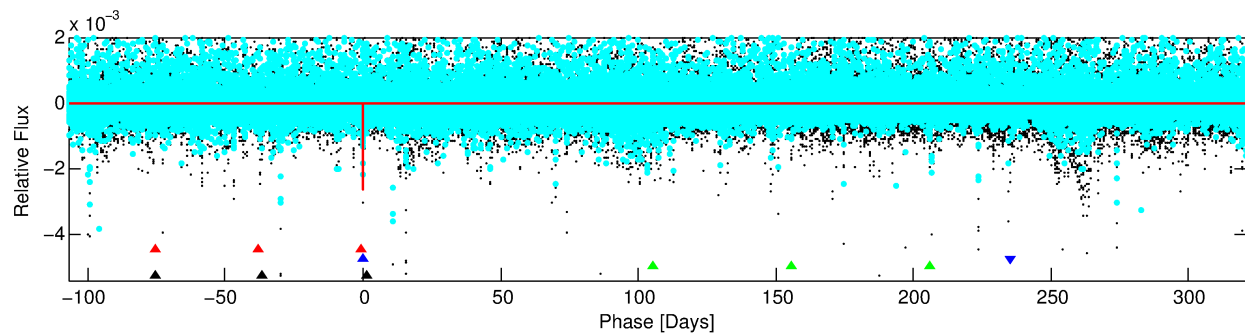
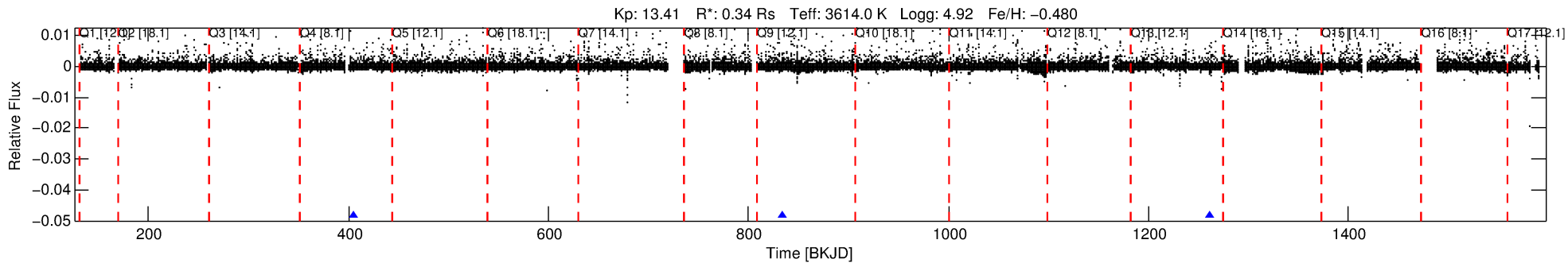
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009825598-02

No Significant Match Found

DV One-Page Summary

KIC: 9825598 Candidate: 2 of 4 Period: 428.170 d



DV Fit Results:

Period = 428.16997 [0.00651] d
Epoch = 405.5947 [0.0079] BKJD
Rp/R* = 0.0515 [0.3822]
a/R* = 1324.06 [50125.25]
b = 0.77 [20.26]
Seff = 0.03 [0.01]
Teq = 105 [7] K
Rp = 1.91 [14.19] Re
a = 0.7824 [0.1404] AU
Ag = 118108.07 [1752371.94] [0.07σ]
Teffp = 3012 [11173] K [0.26σ]

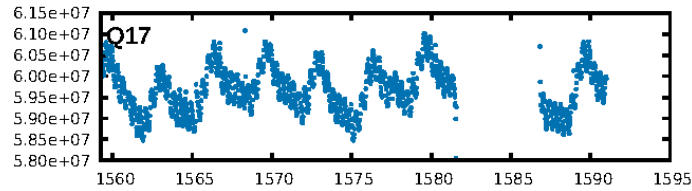
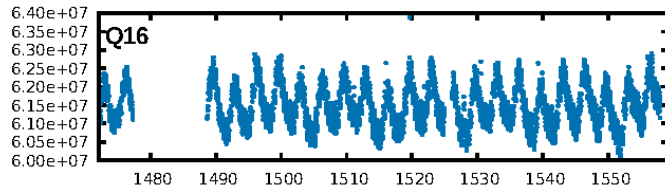
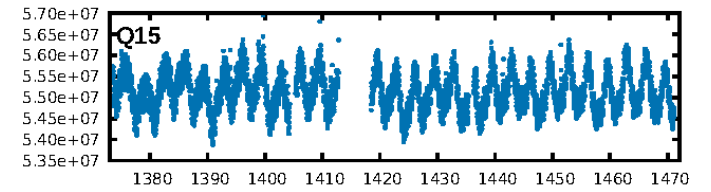
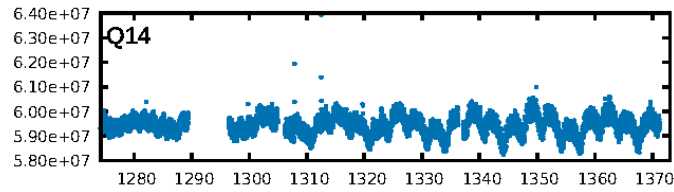
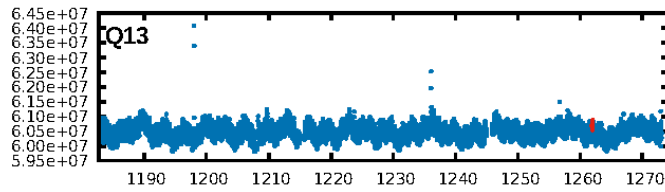
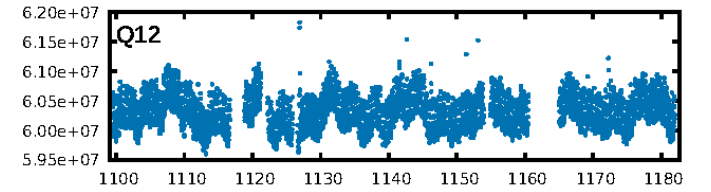
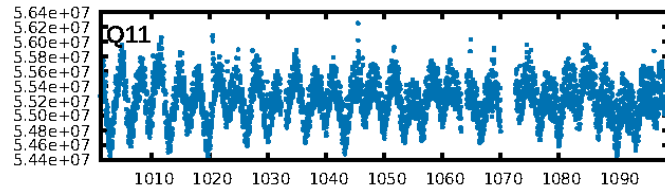
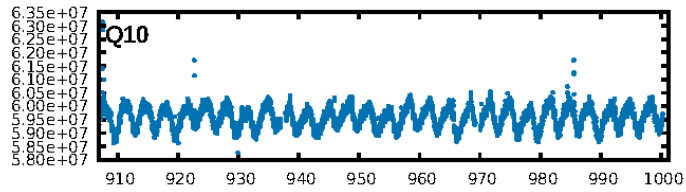
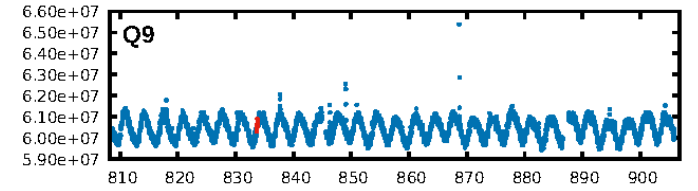
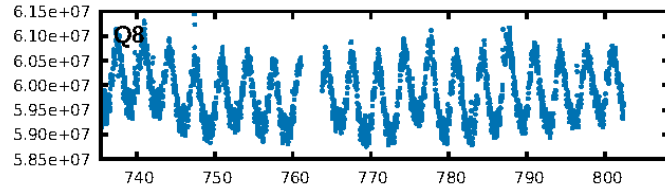
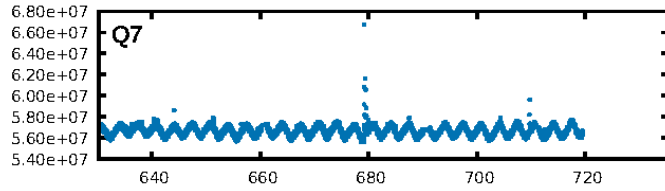
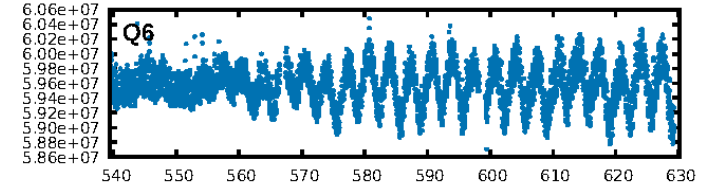
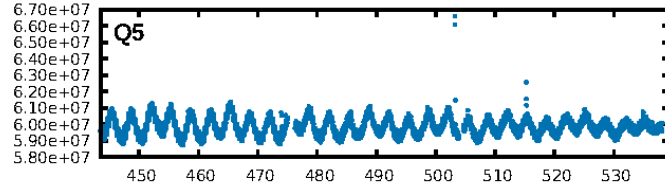
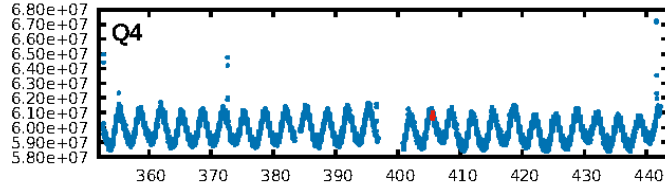
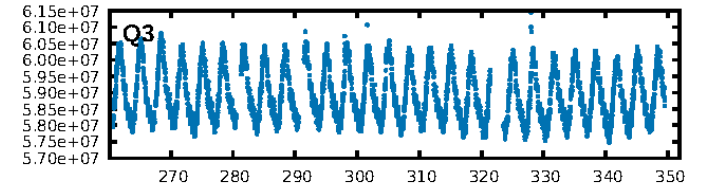
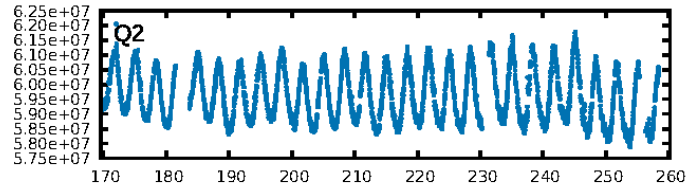
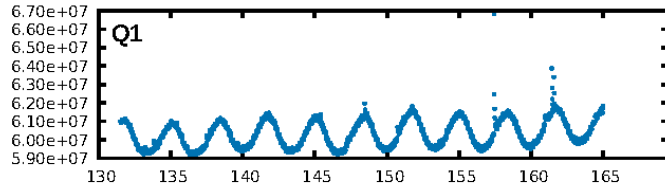
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [459.43σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 0.1%
Bootstrap-pfa: 2.91e-15
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -54.26
Centroid-sig: N/A
Centroid-so: 0.805 arcsec [1.72σ]
OotOffset-rm: 0.434 arcsec [2.61σ]
OotOffset-st: 0/0/1/2 [3]
KicOffset-rm: 0.103 arcsec [1.05σ]
KicOffset-st: 0/0/1/2 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

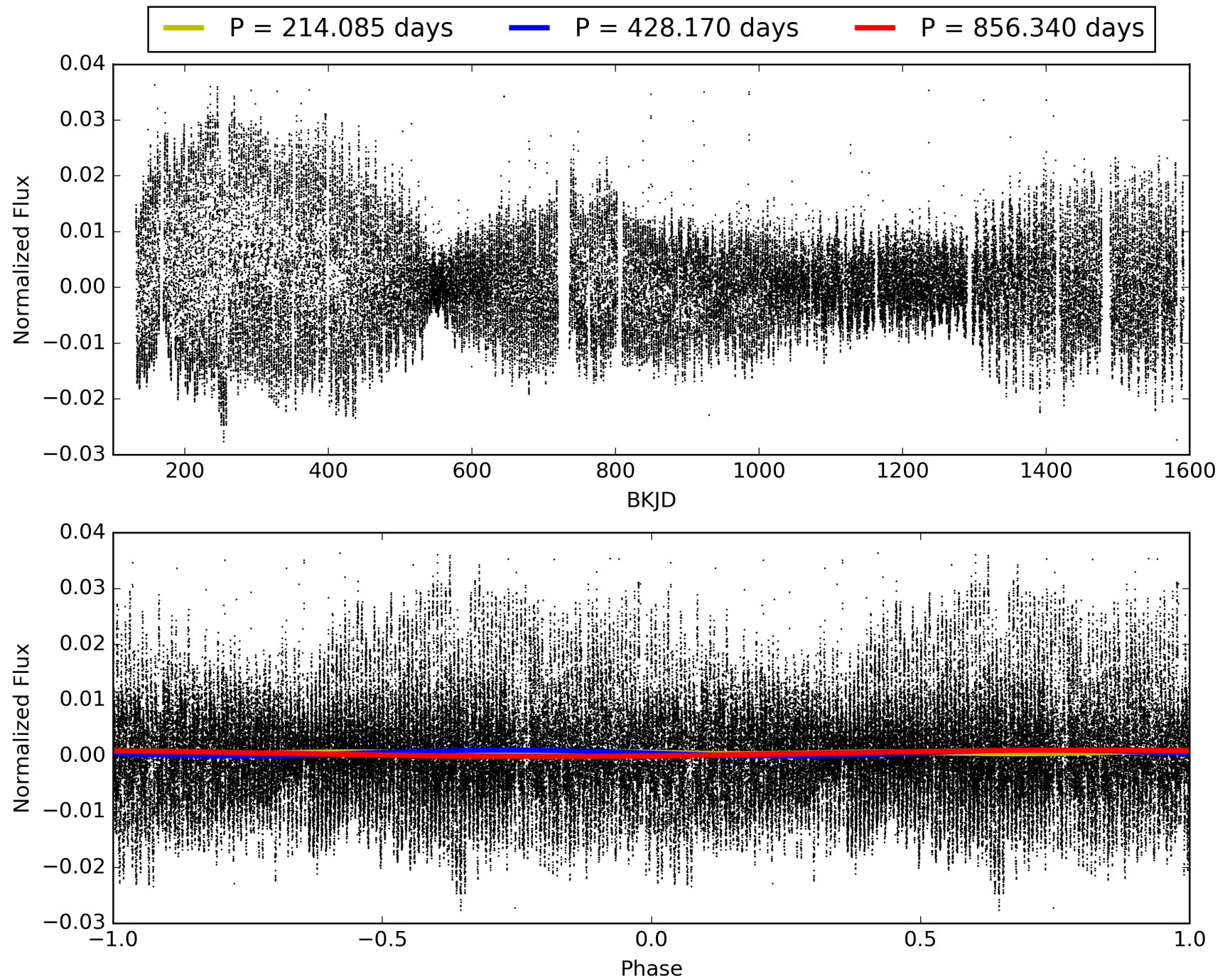
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:08:07 Z

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

TCE 009825598-02, PDC Light Curves

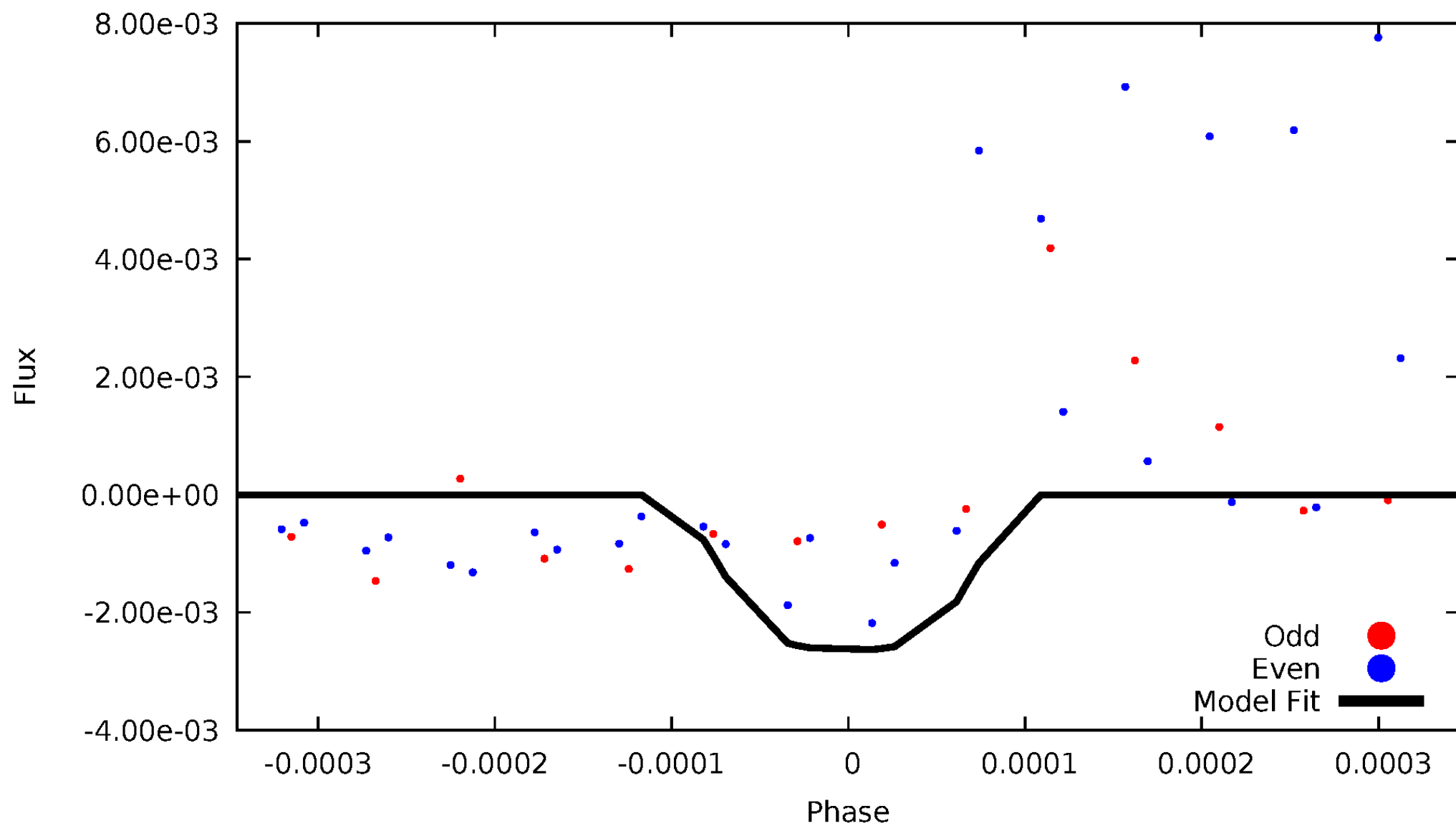


TCE 009825598-02



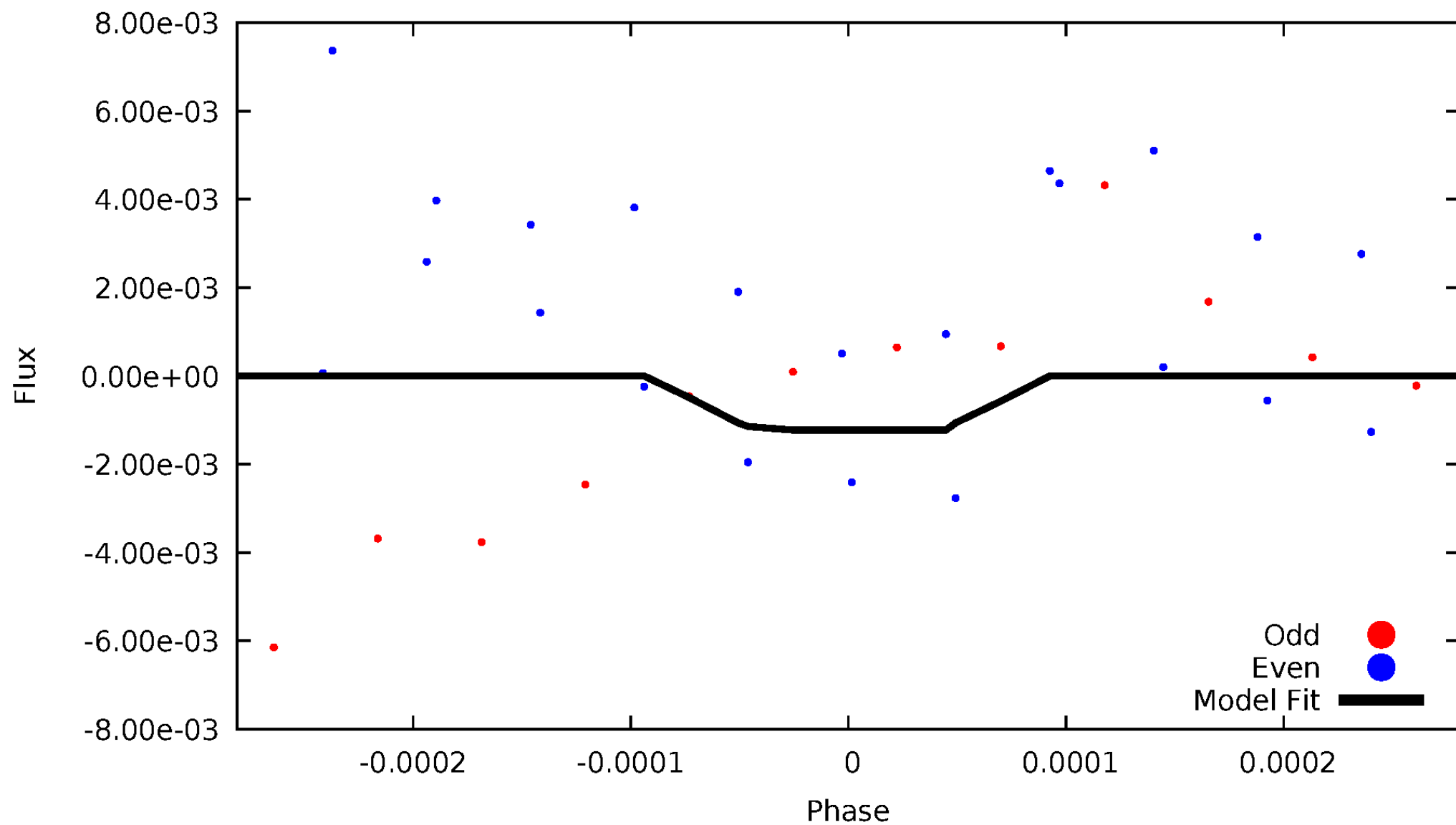
DV Odd/Even

TCE 009825598-02



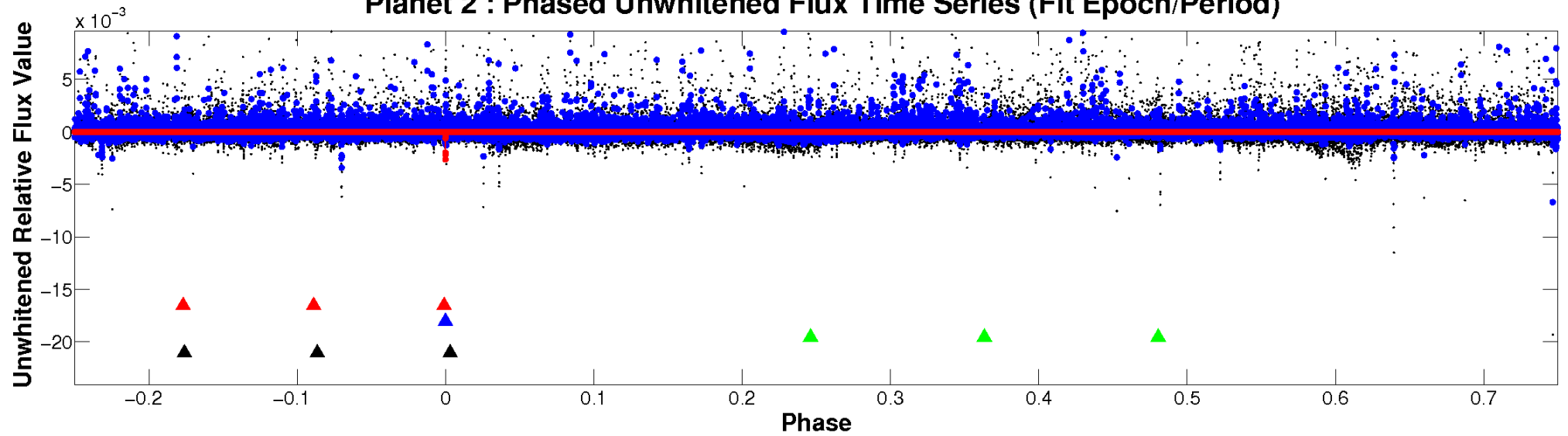
ALT Odd/Even

TCE 009825598-02

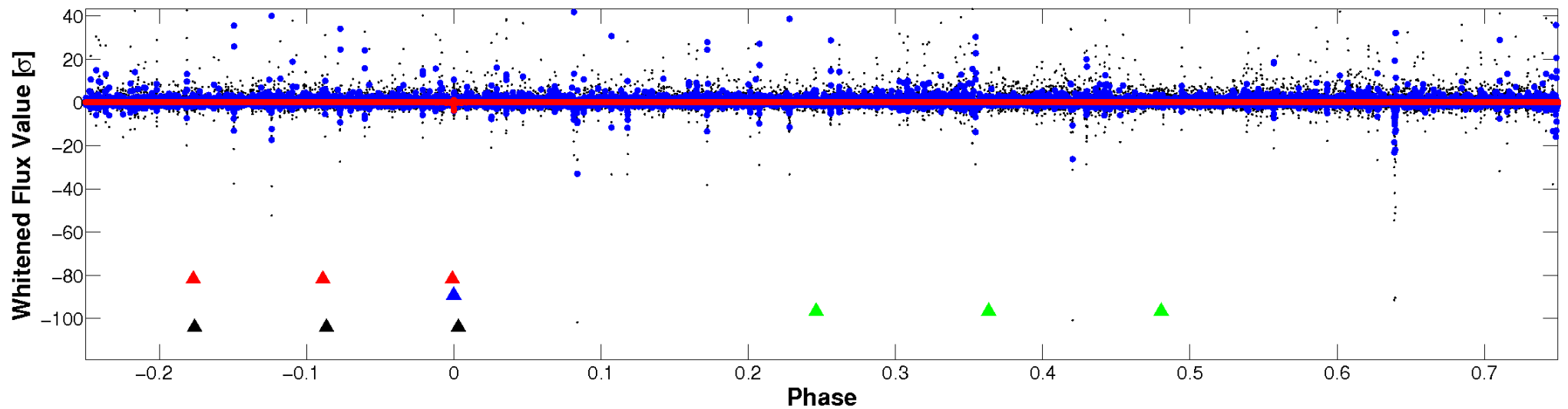


Non-Whitened Vs. Whitened Light Curve

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

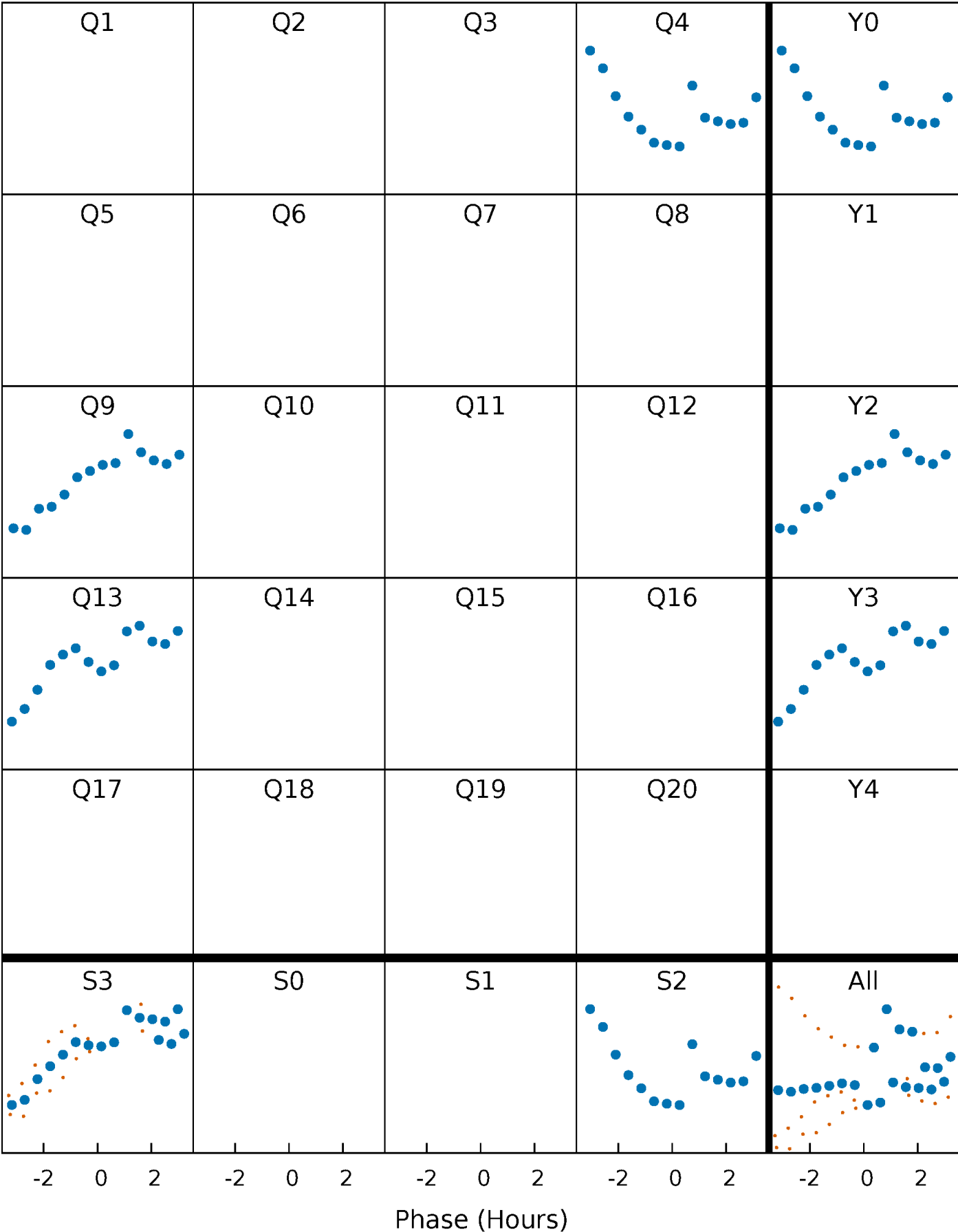


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



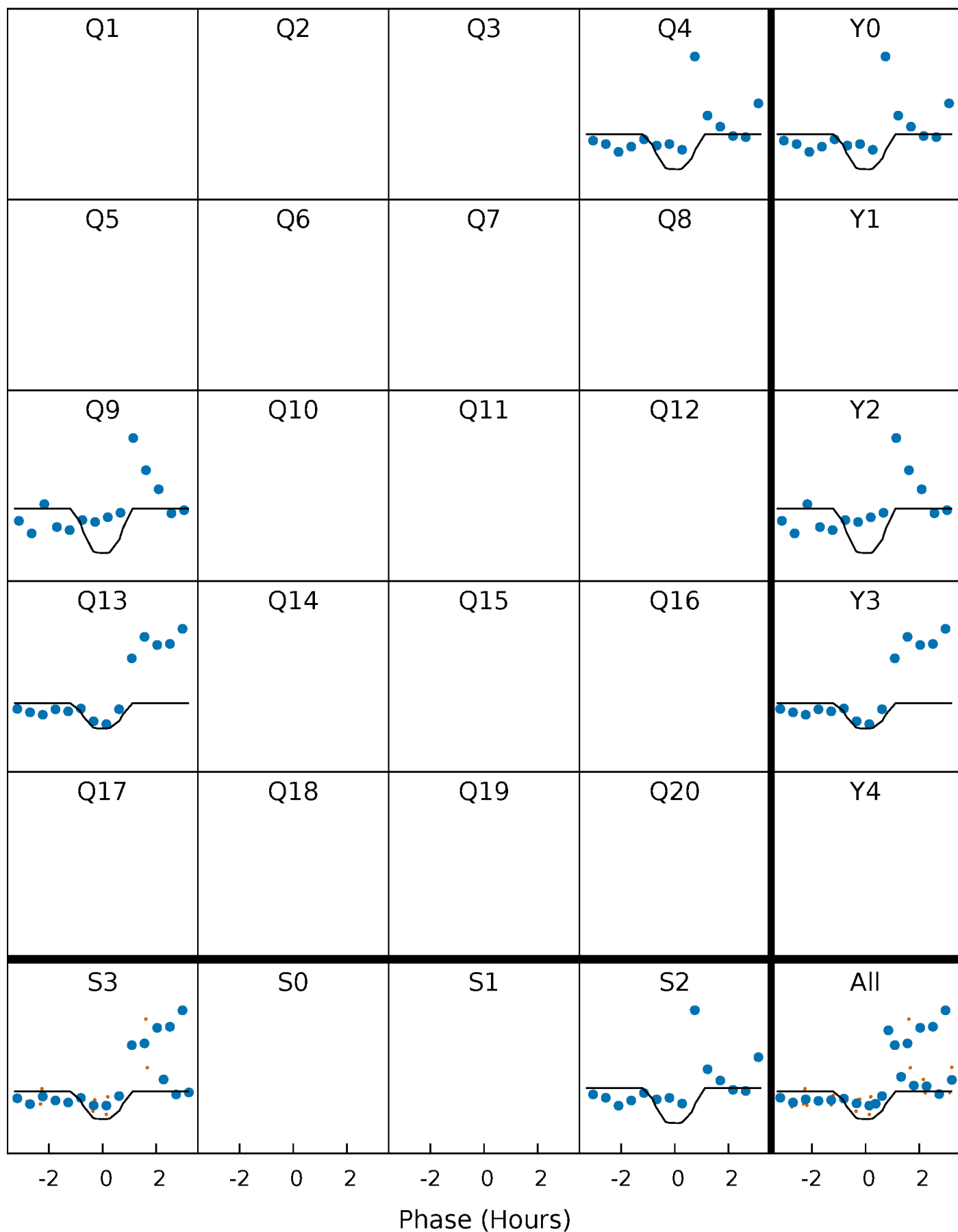
PDC Quarter-Phased Transit Curves

TCE 009825598-02 P=428.169972 Days T₀=405.594665 (BKJD)



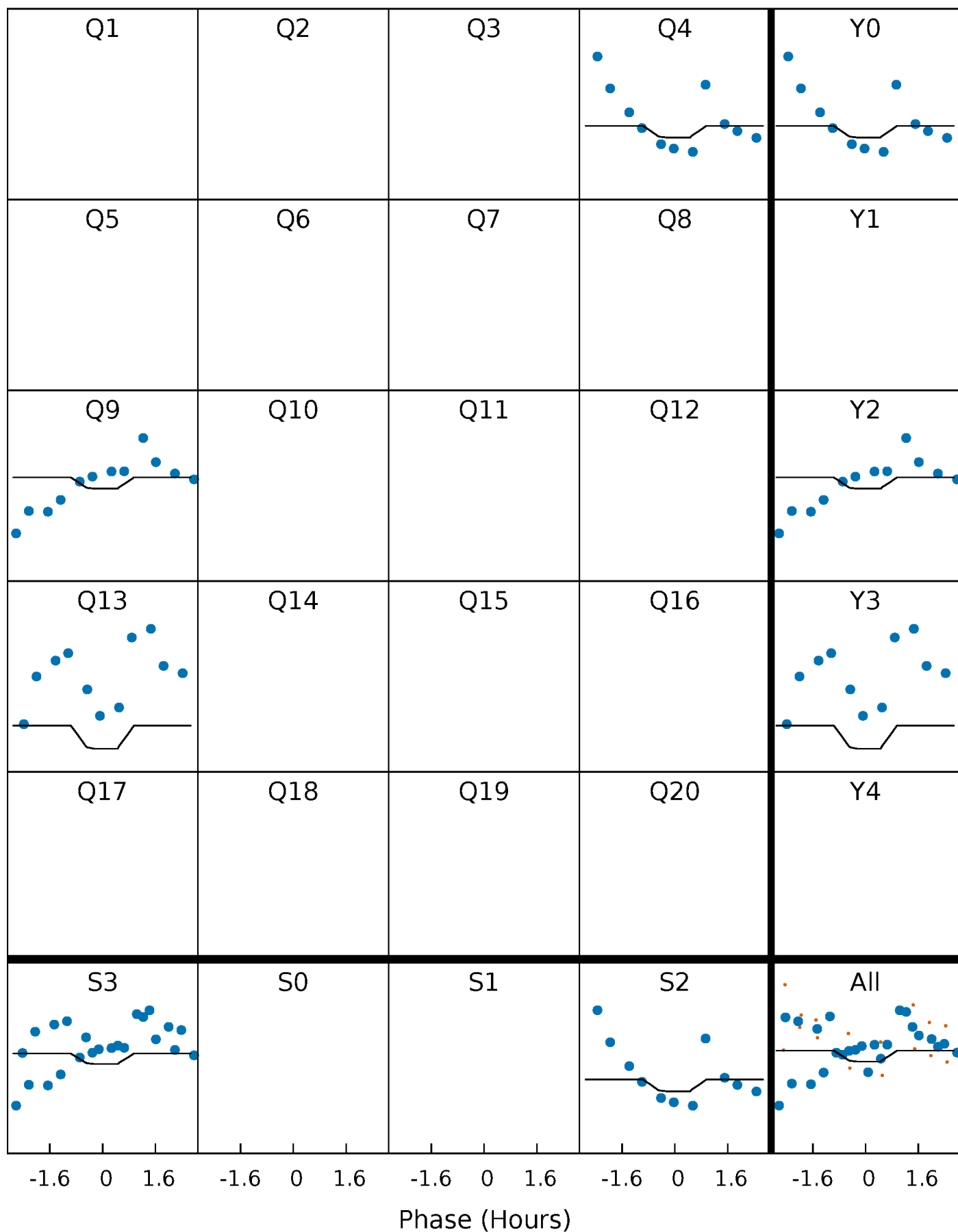
DV Quarter-Phased Transit Curves

TCE 009825598-02 $P=428.169972$ Days $T_0=405.594665$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

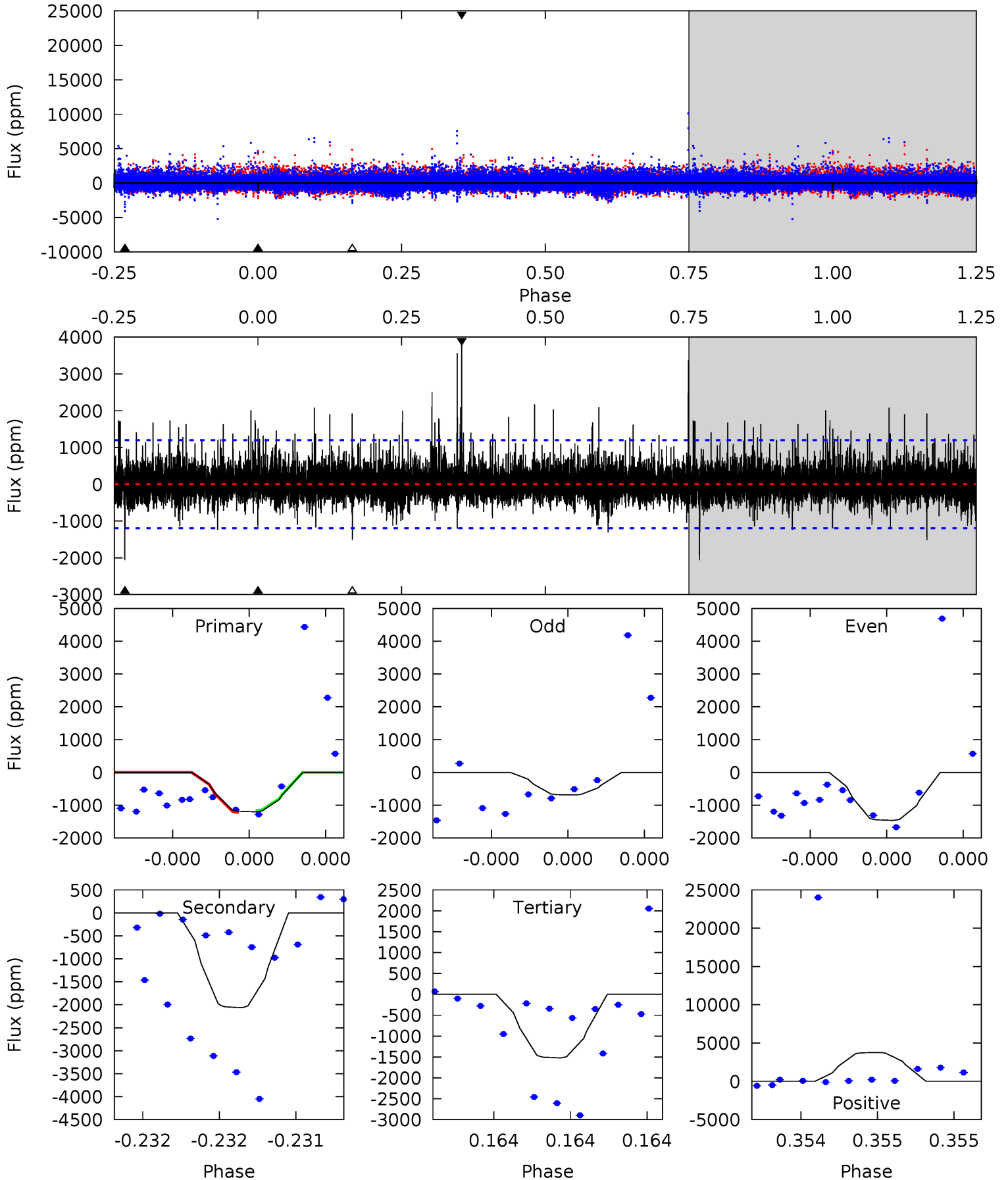
TCE 009825598-02 P=428.178439 Days $T_0=405.584740$ (BKJD)



DV Model-Shift Uniqueness Test

009825598-02, P = 428.169972 Days, E = 405.594665 Days

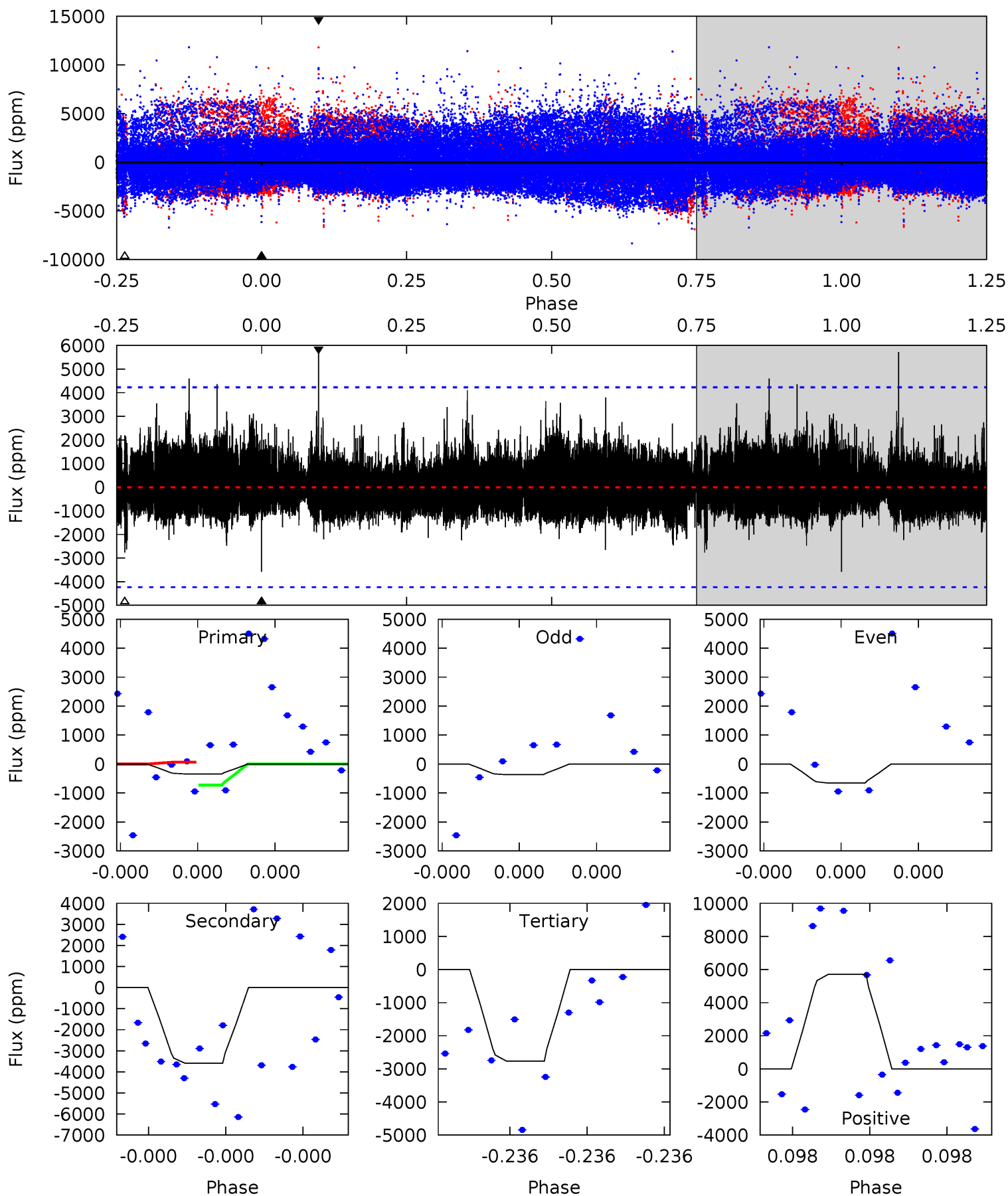
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.78	9.95	7.34	18.2	5.77	3.78	1.58	-1.56	-12.4	2.61	-8.21	1.31	1.16	0.65	0.14



Alt Model-Shift Uniqueness Test

009825598-02, P = 428.178439 Days, E = 405.584740 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.47	4.91	3.79	7.82	5.79	3.80	1.19	-3.32	-7.35	1.12	-2.91	0.20	-0.94	0.61	0.44



Stellar Parameters For KIC 009825598

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3614^{+107}_{-118}	$4.917^{+0.104}_{-0.085}$	$-0.480^{+0.300}_{-0.300}$	$0.340^{+0.074}_{-0.082}$	$0.348^{+0.082}_{-0.101}$	$12.500^{+9.082}_{-3.793}$
	+3%/-3%	+2%/-2%	+62%/-62%	+22%/-24%	+24%/-29%	+73%/-30%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009825598-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2065 ± 208	$10.11^{+13.17}_{-7.17}$	146^{+8}_{-8}	2220^{+791}_{-329}	6619^{+73608}_{-5308}
Alt.	-3585 ± 731	$9.52^{+11.87}_{-6.53}$	146^{+8}_{-8}	2391^{+857}_{-367}	$12751^{+111961}_{-10055}$

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

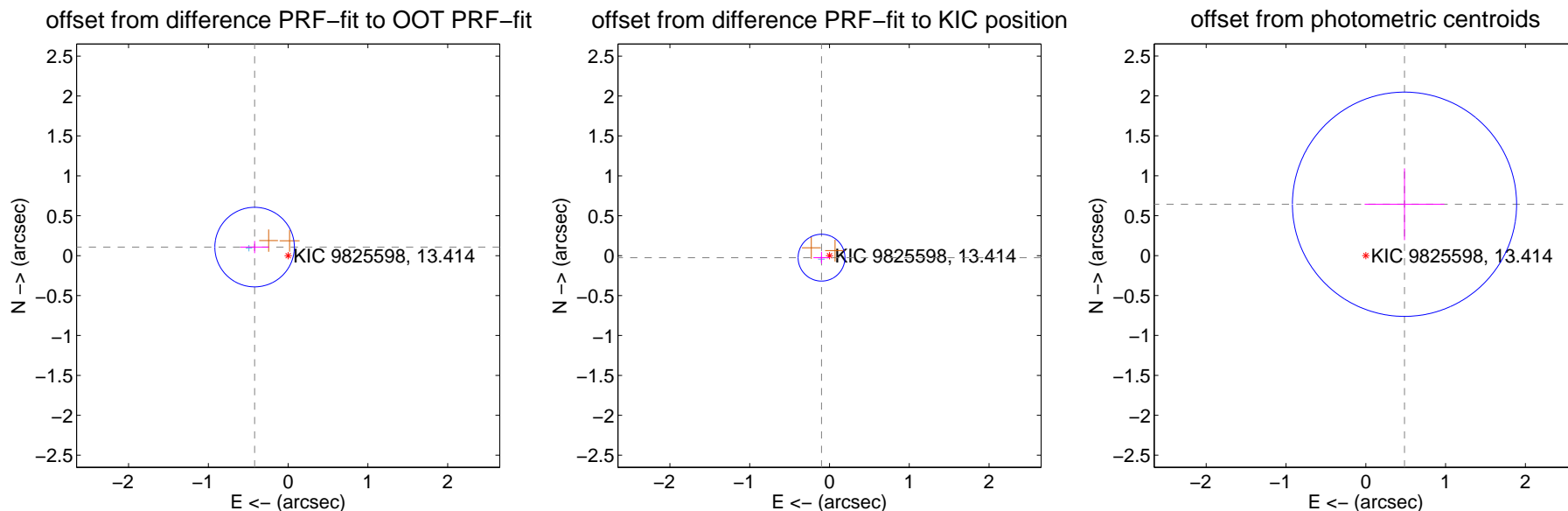
DV Centroid Data

Supplemental centroid analysis for 009825598-02. Kepler magnitude: 13.41. Transit SNR 9.78

There are 1 quarters with good PRF difference image offsets

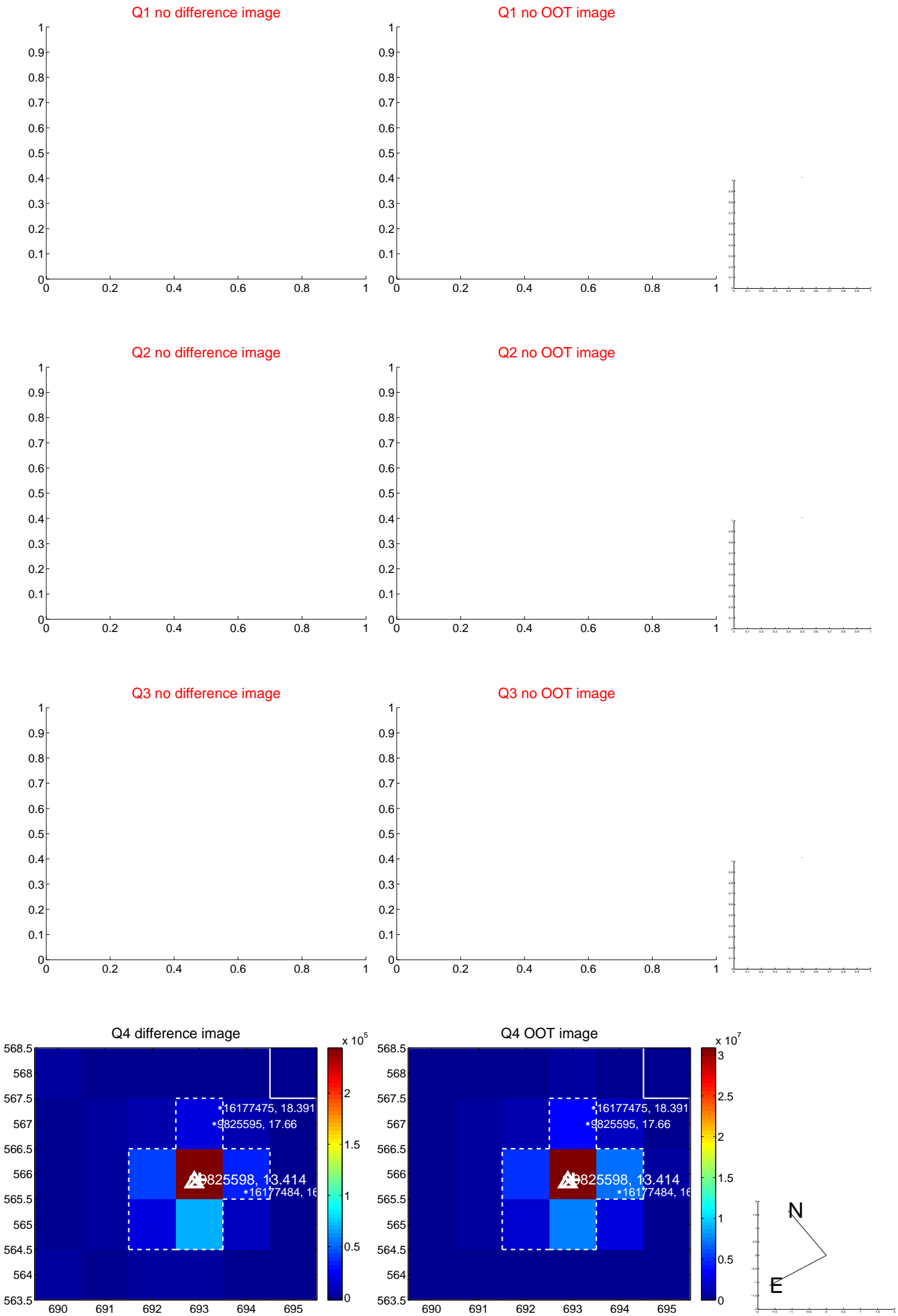
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.434 ± 0.166	2.61	0.420 ± 0.179	0.107 ± 0.076
PRF-fit source offset from KIC position	0.103 ± 0.098	1.05	0.100 ± 0.102	-0.025 ± 0.074
photometric centroid source offset	0.81 ± 0.47	1.72	-0.49 ± 0.50	0.64 ± 0.45



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.

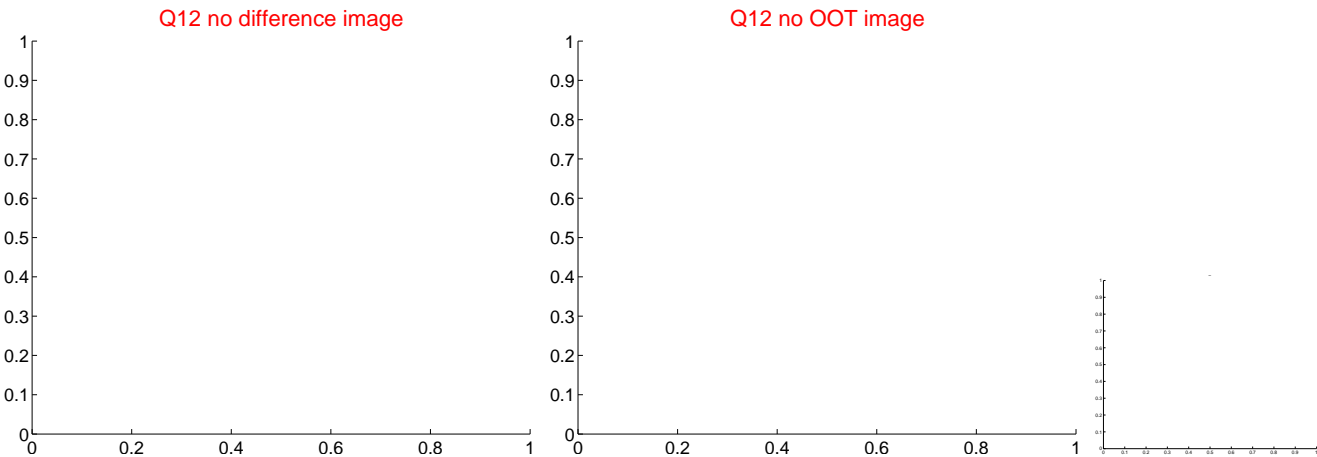
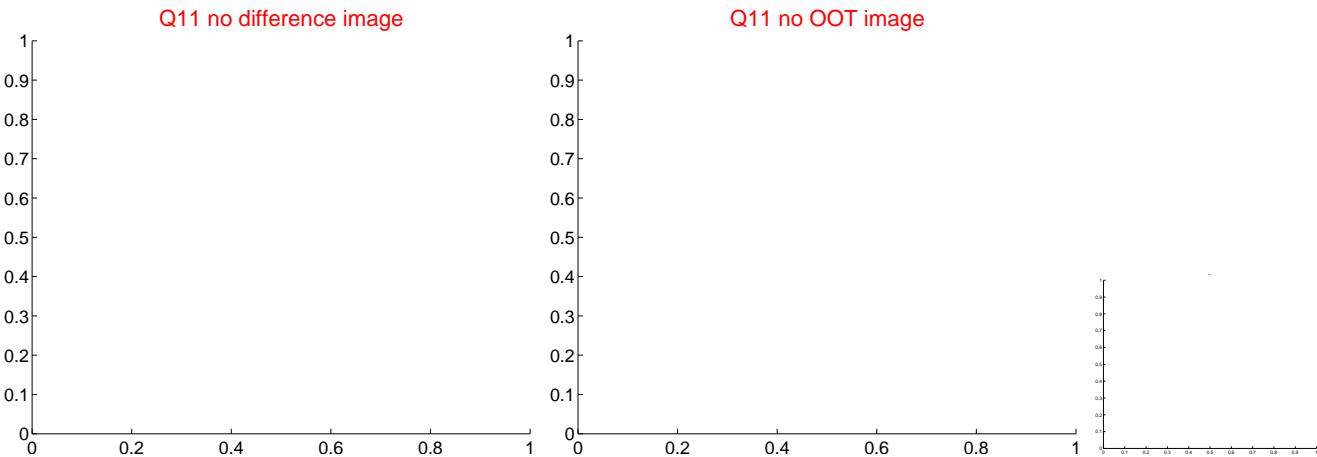
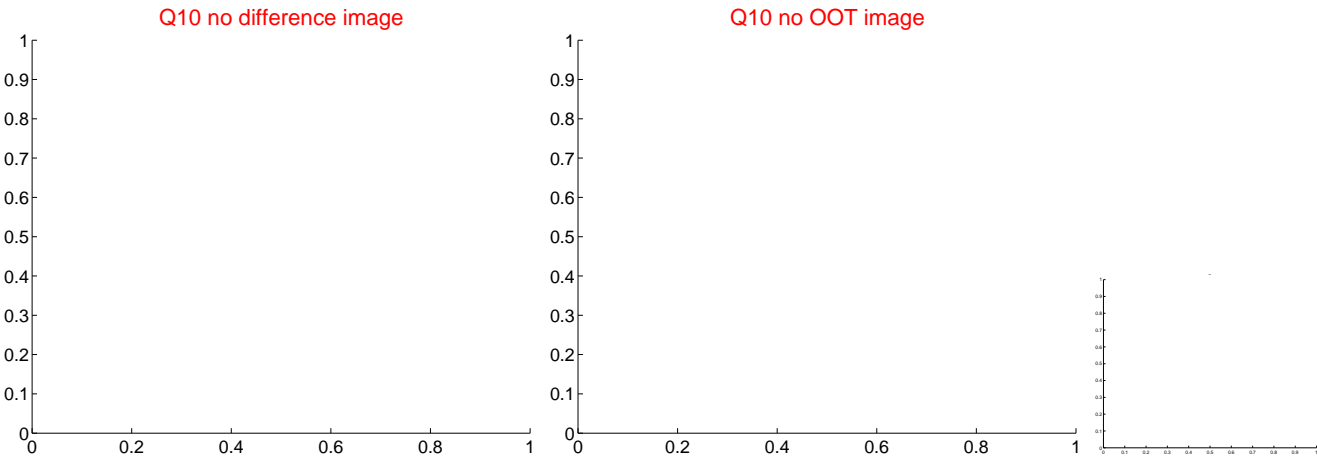
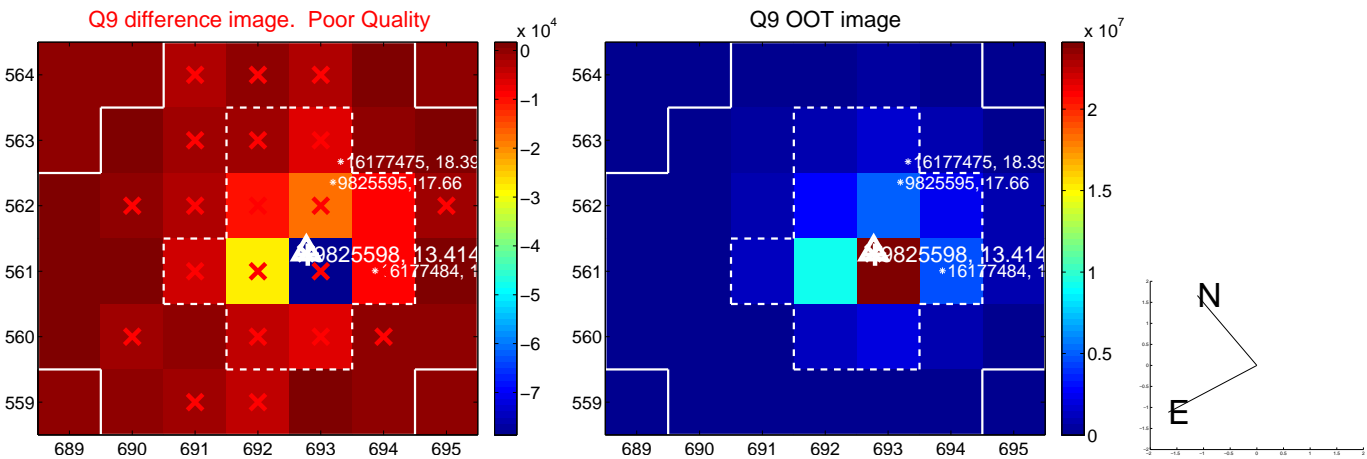
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



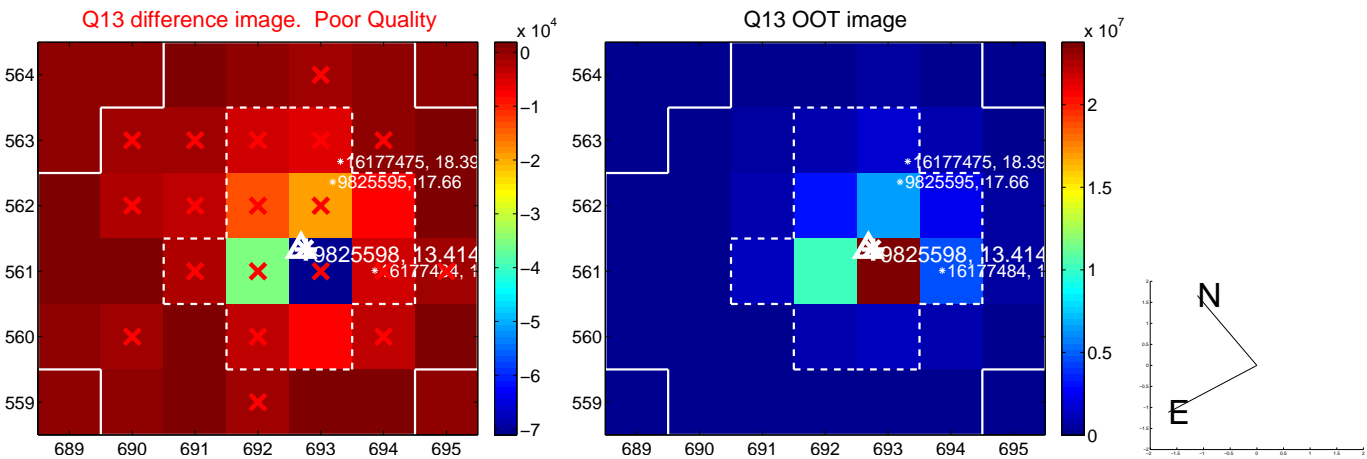
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



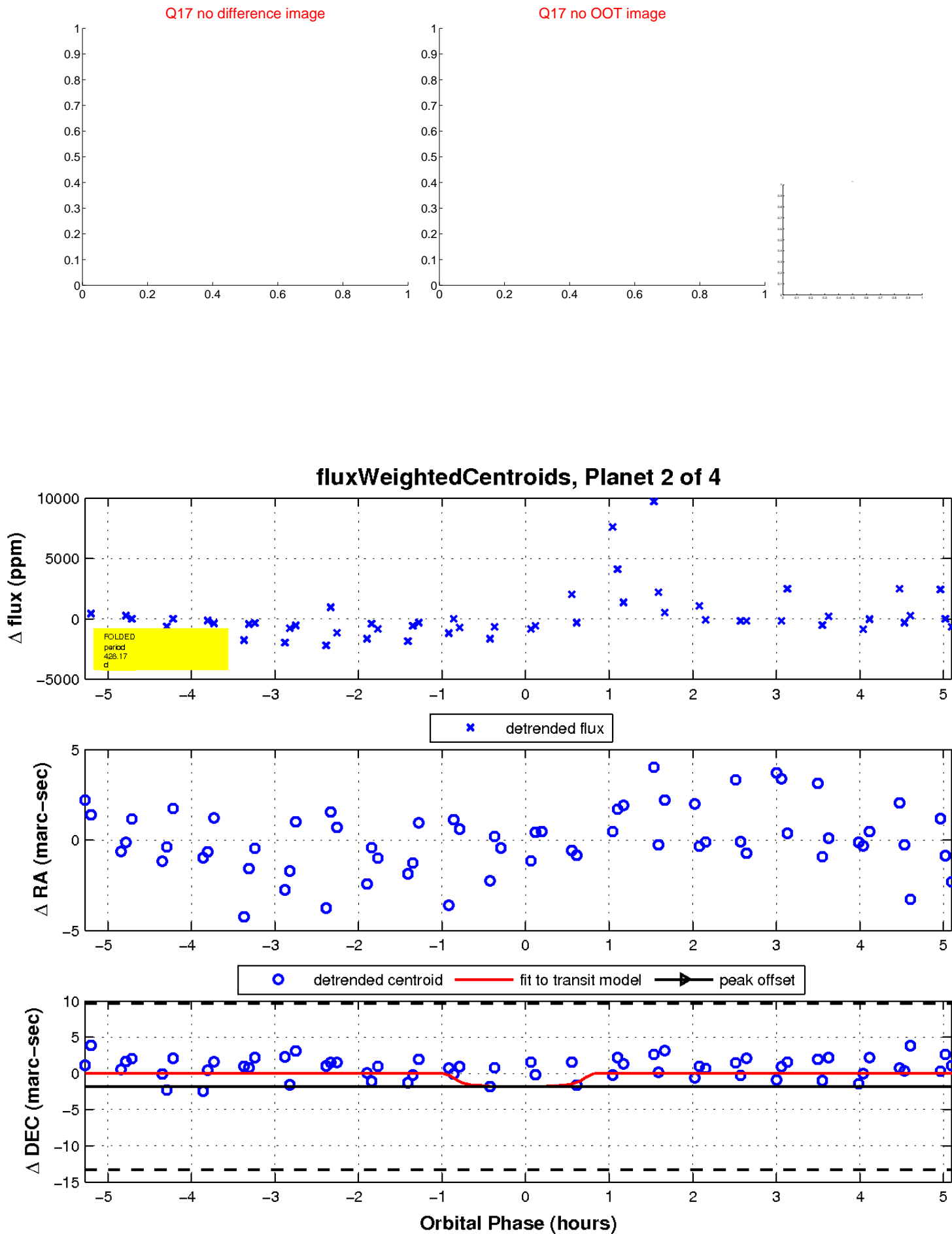
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

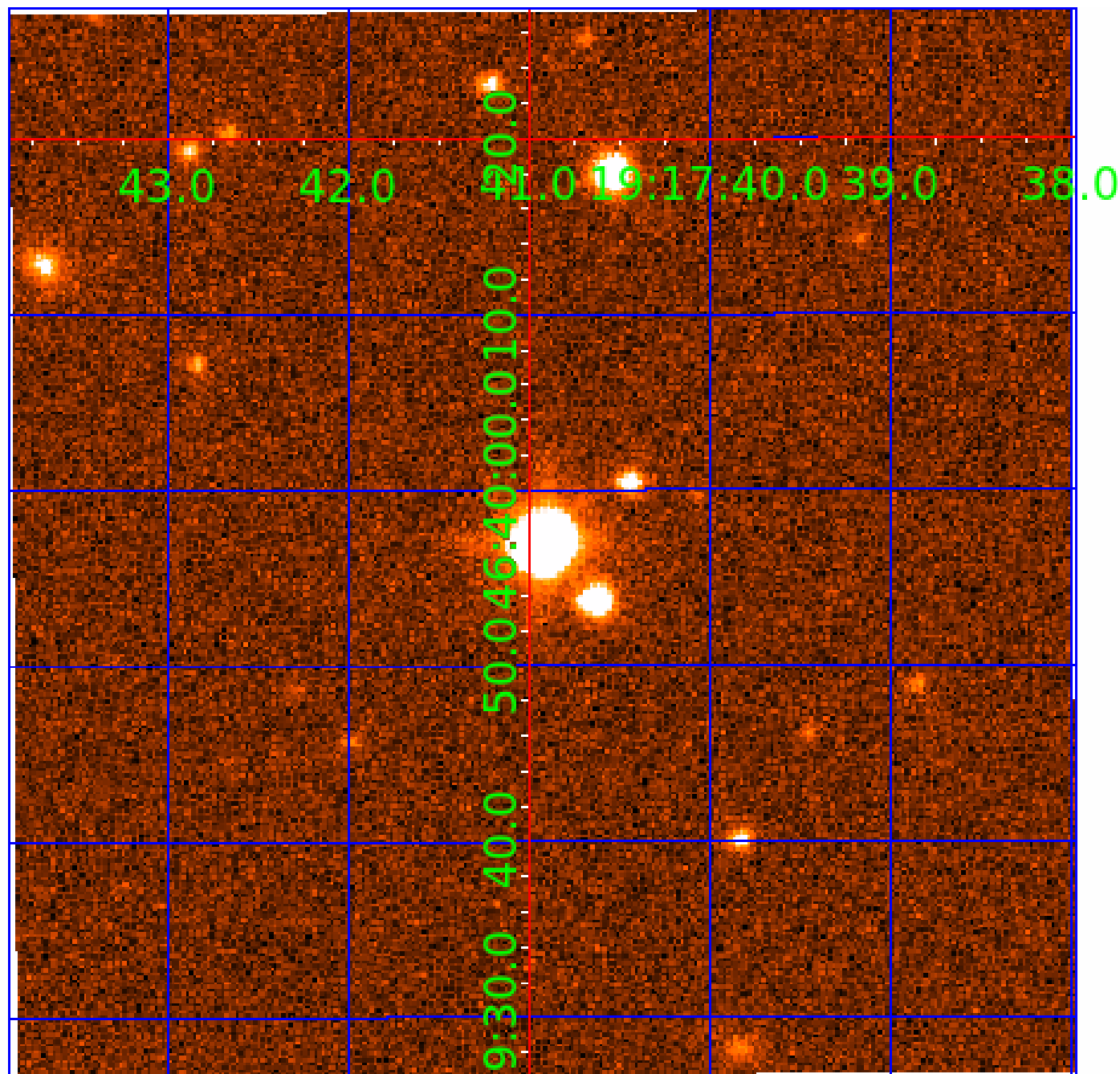


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009825598

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})
009825598-01	OBS	No	465.839147	329.866420	566.5	0.847	16.3	1.9	0.34	3614	0.83	0.03
009825598-02	OBS	No	428.169972	405.594665	2631.2	1.776	17.5	9.8	0.34	3614	1.91	0.03
009825598-03	OBS	No	478.344232	510.992309	796.9	3.947	12.2	3.4	0.34	3614	0.96	0.03
009825598-04	OBS	No	466.517931	330.244108	1858.1	2.863	10.9	7.2	0.34	3614	1.48	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009825598-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_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—HALO_GHOST
009825598-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_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
009825598-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_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
009825598-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

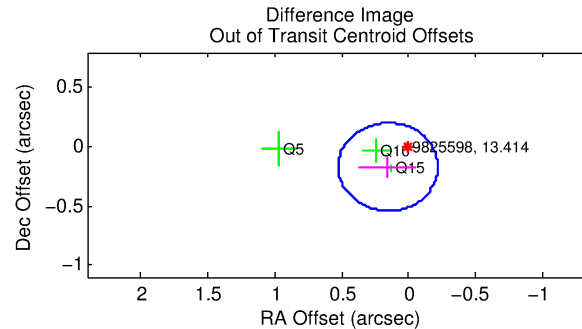
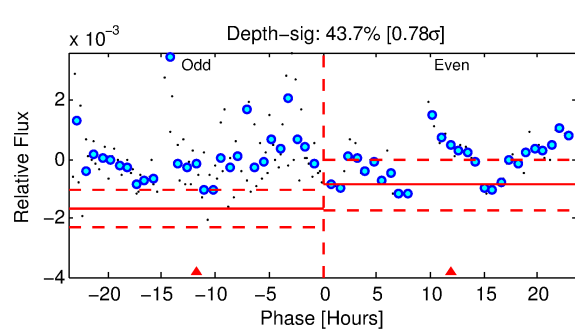
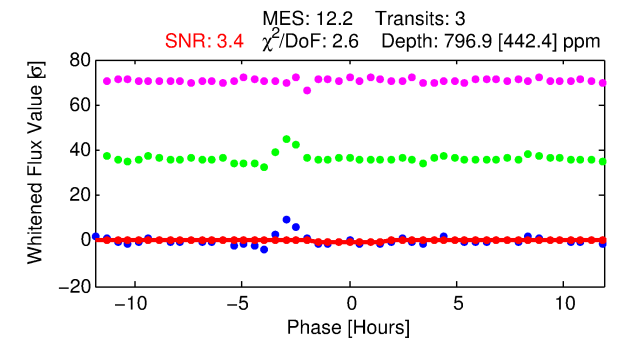
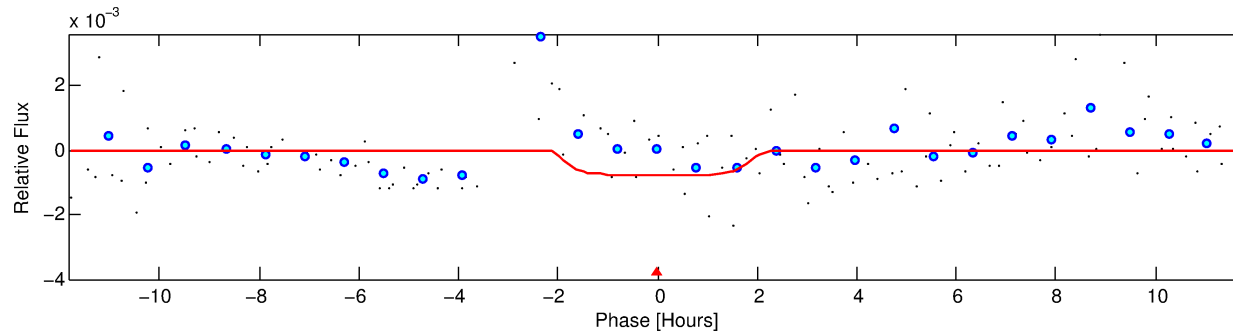
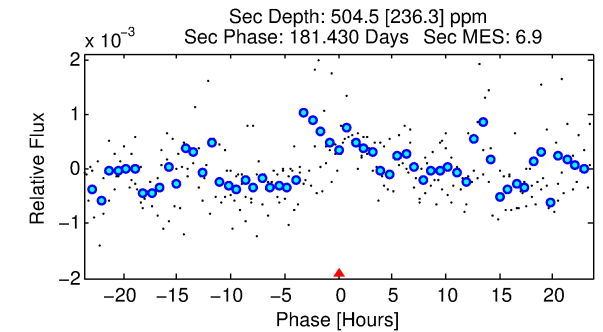
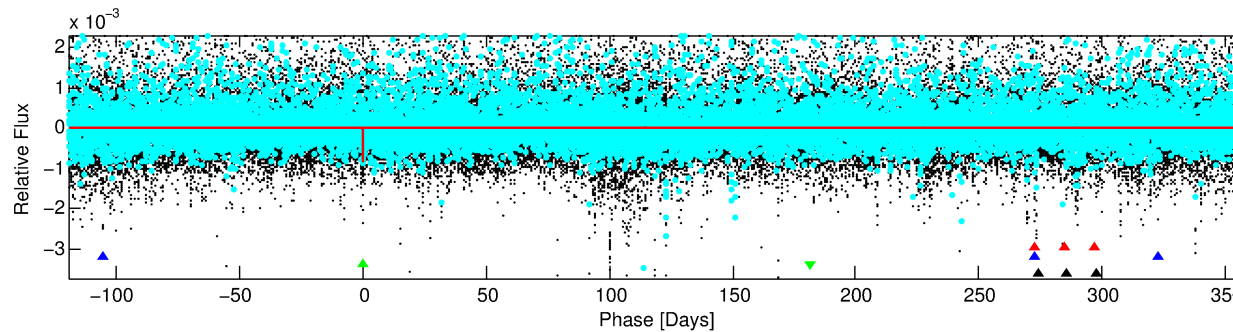
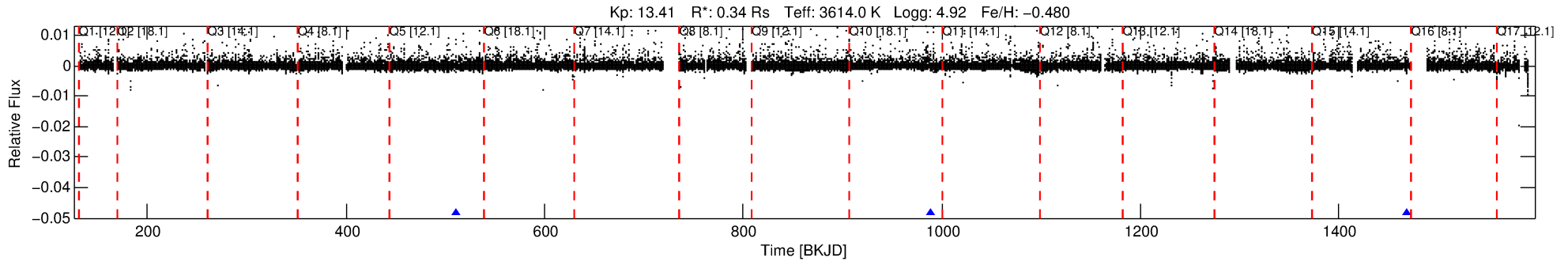
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009825598-03

No Significant Match Found

DV One-Page Summary

KIC: 9825598 Candidate: 3 of 4 Period: 478.344 d



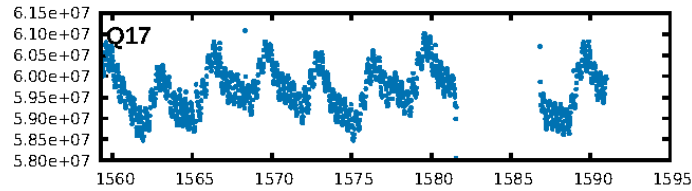
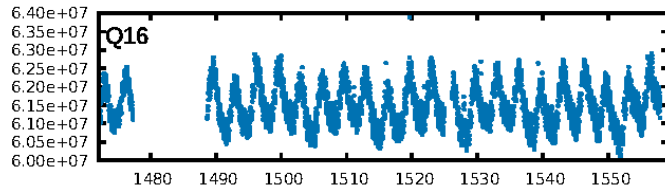
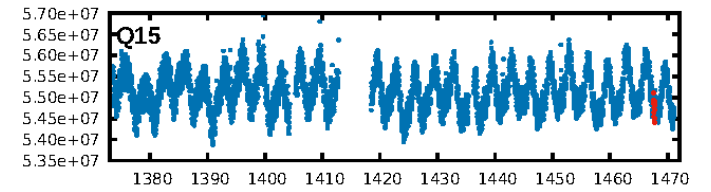
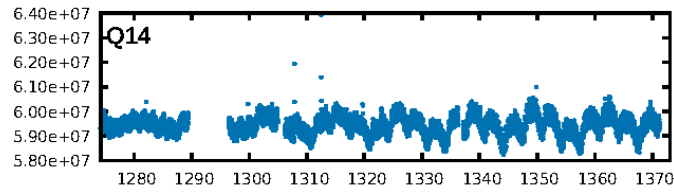
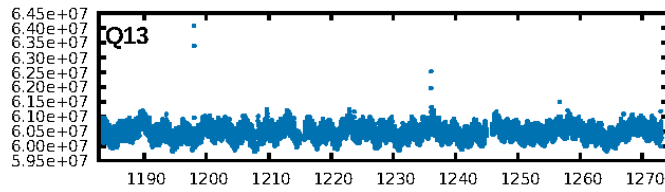
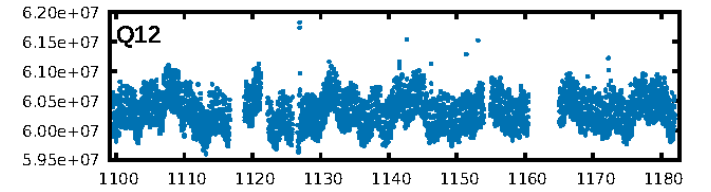
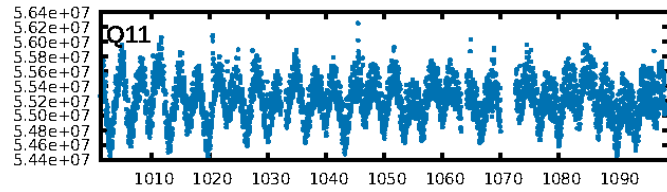
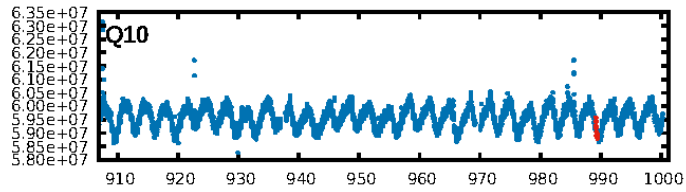
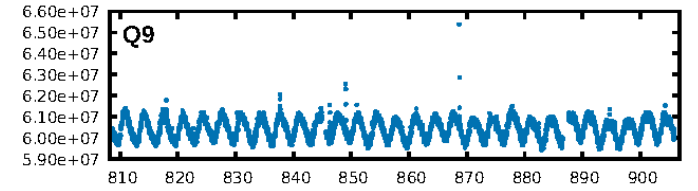
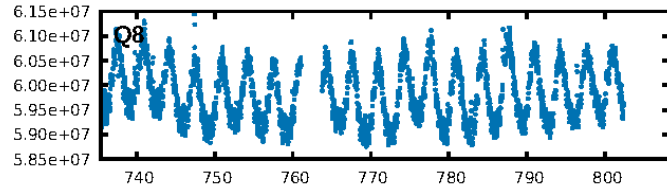
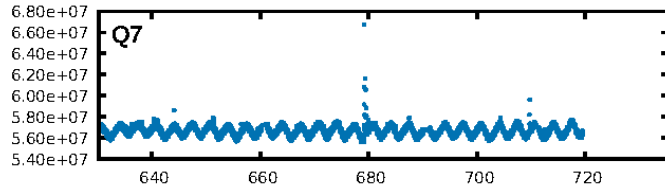
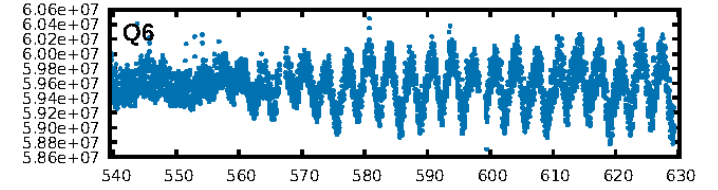
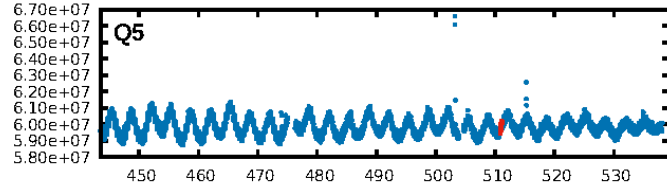
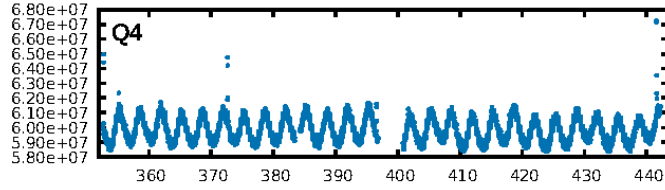
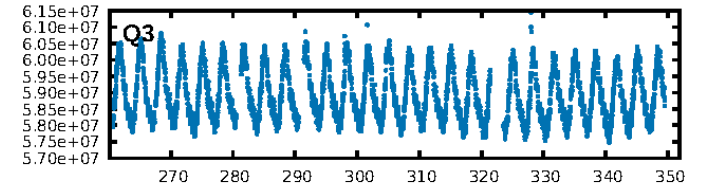
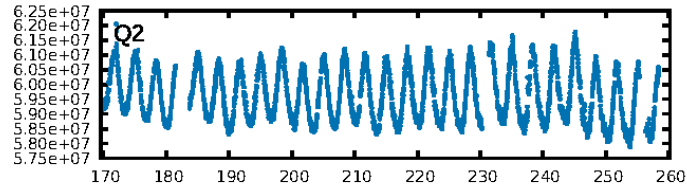
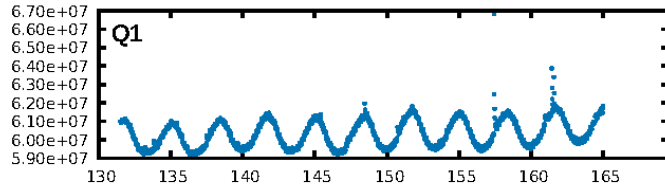
DV Fit Results:

Period = 478.34423 [0.01898] d
Epoch = 510.9923 [0.0237] BKJD
Rp/R* = 0.0259 [0.2233]
a/R* = 949.64 [42082.89]
b = 0.02 [2098.05]
Seff = 0.02 [0.01]
Teq = 101 [7] K
Rp = 0.96 [8.29] Re
a = 0.8424 [0.1512] AU
Ag = 213692.26 [3690616.50] [0.06σ]
Teffp = 3367 [14537] K [0.22σ]

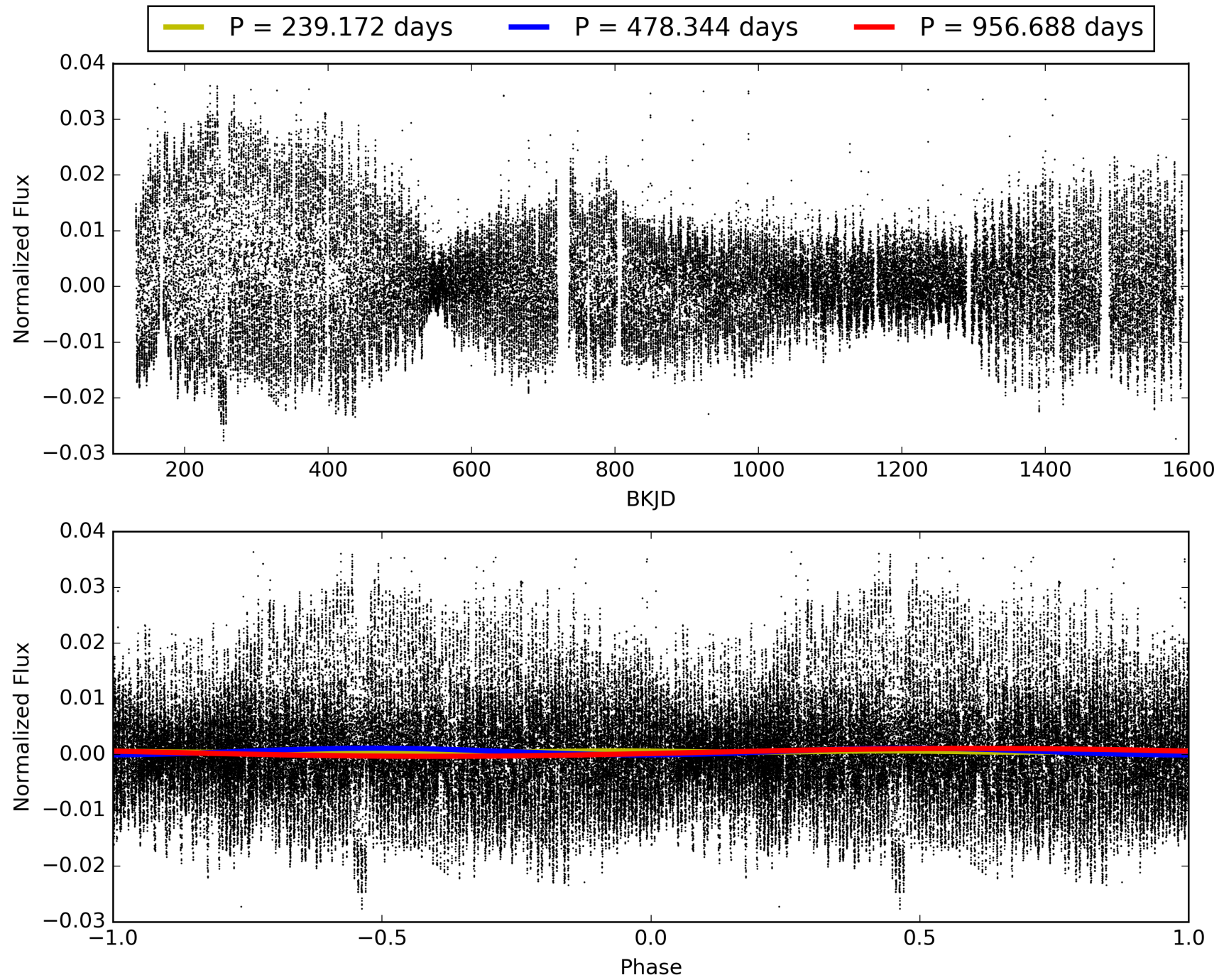
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [58.21σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 38.2%
Bootstrap-pfa: 7.19e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.3678
Centroid-sig: N/A
Centroid-so: 0.707 arcsec [0.56σ]
OotOffset-rm: 0.228 arcsec [1.84σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 0.122 arcsec [0.58σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009825598-03, PDC Light Curves

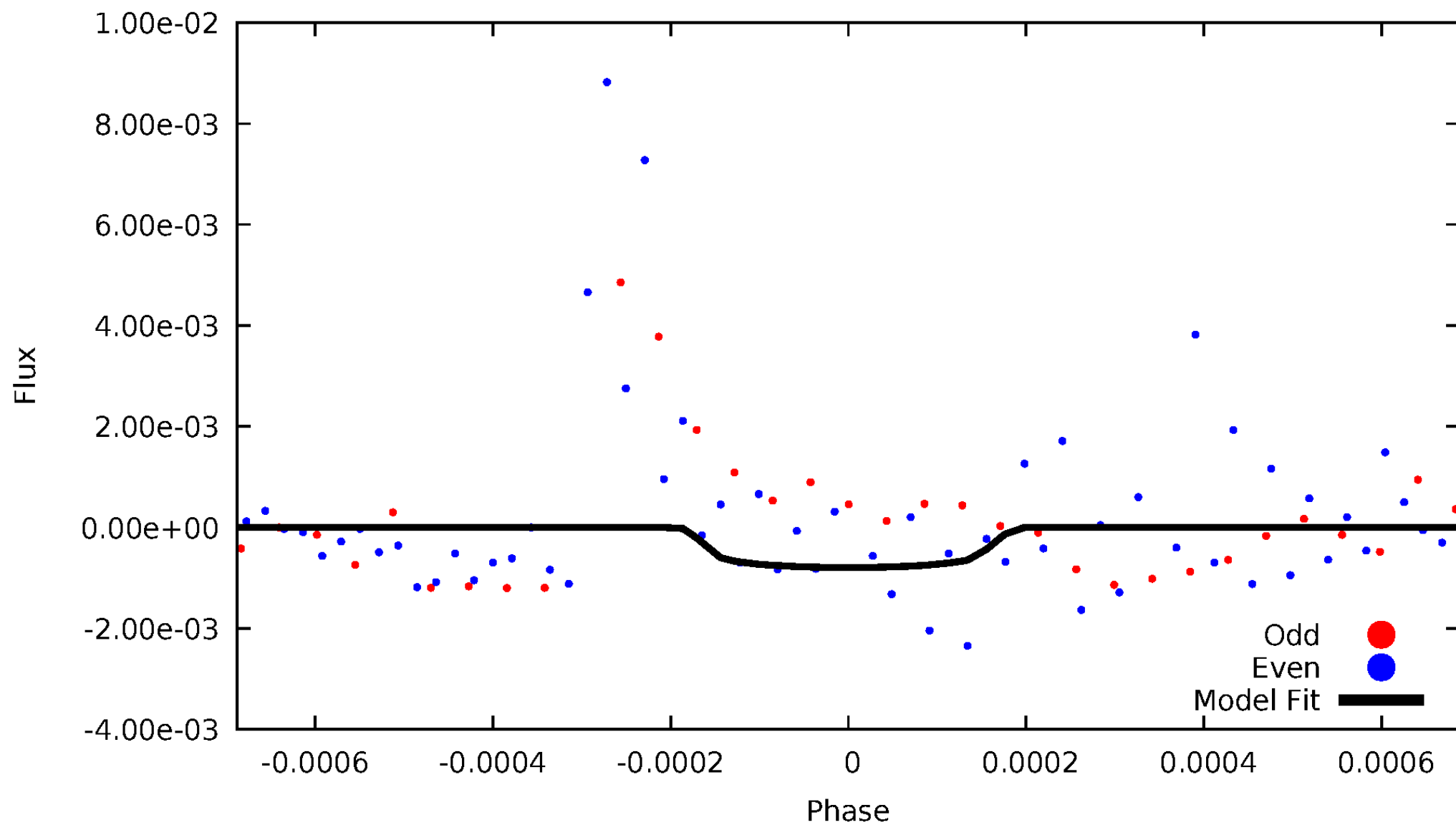


TCE 009825598-03



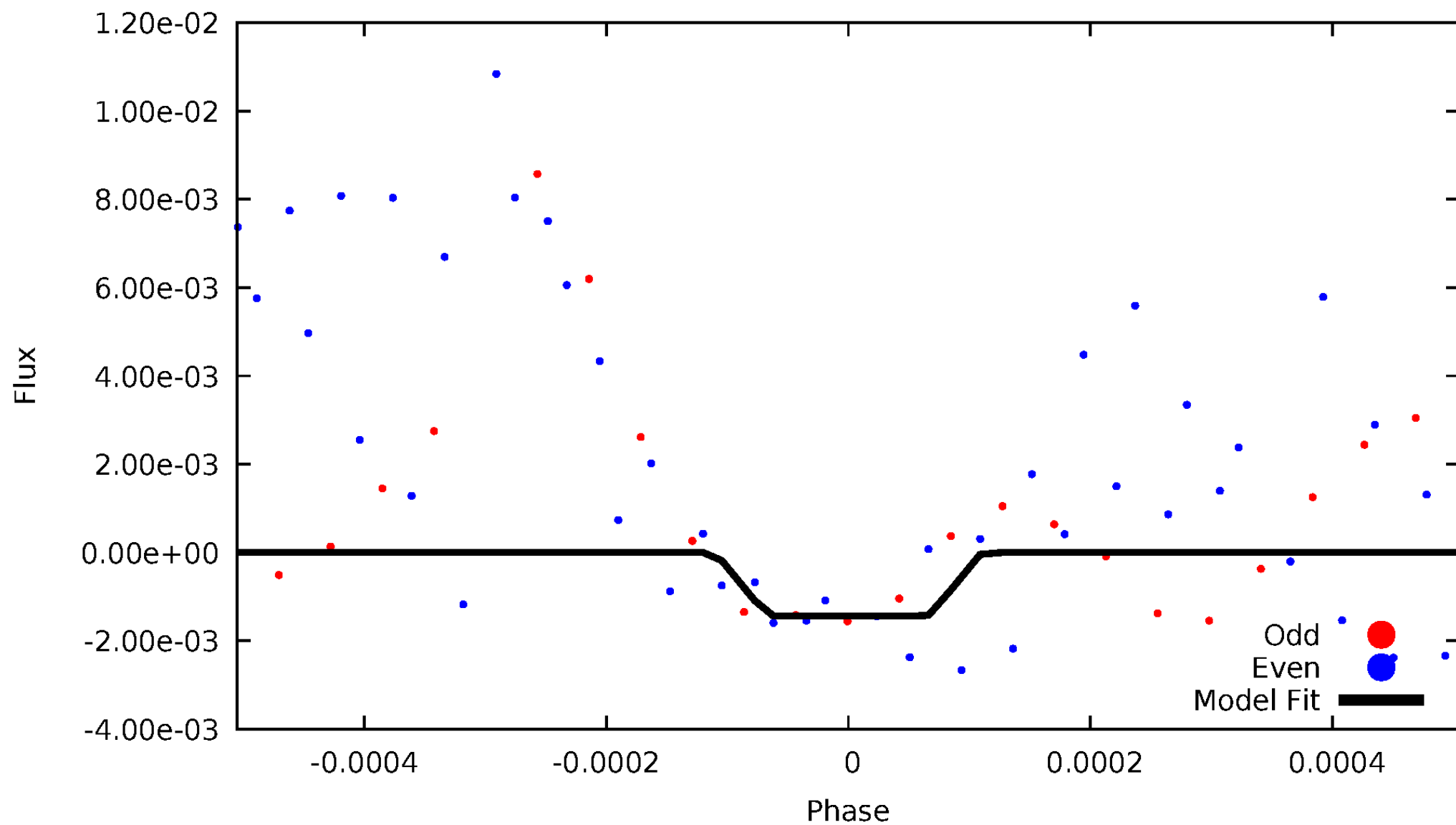
DV Odd/Even

TCE 009825598-03



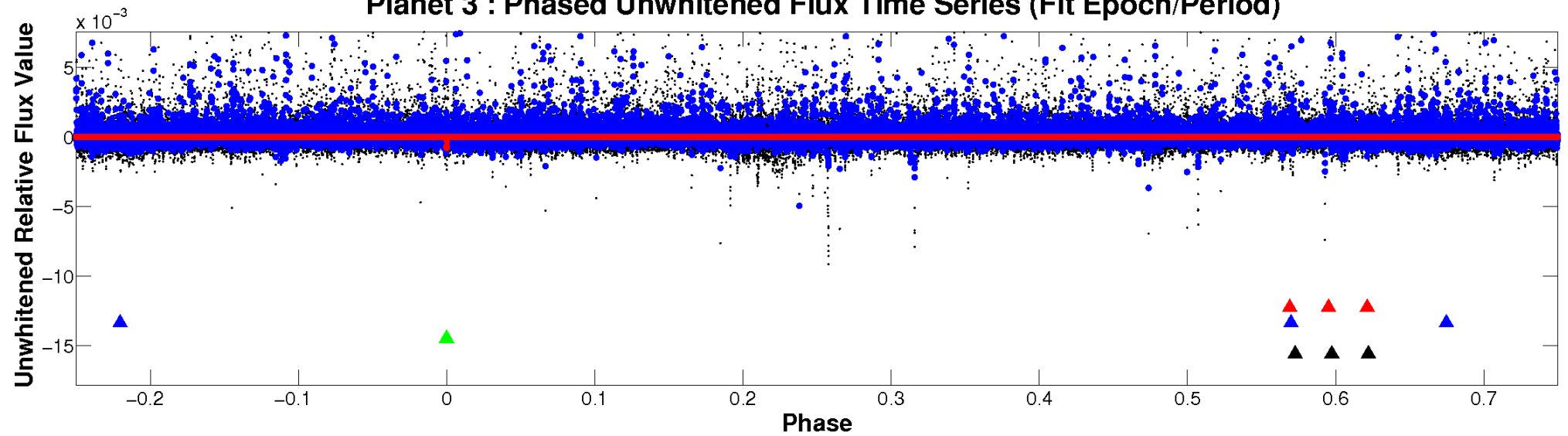
ALT Odd/Even

TCE 009825598-03

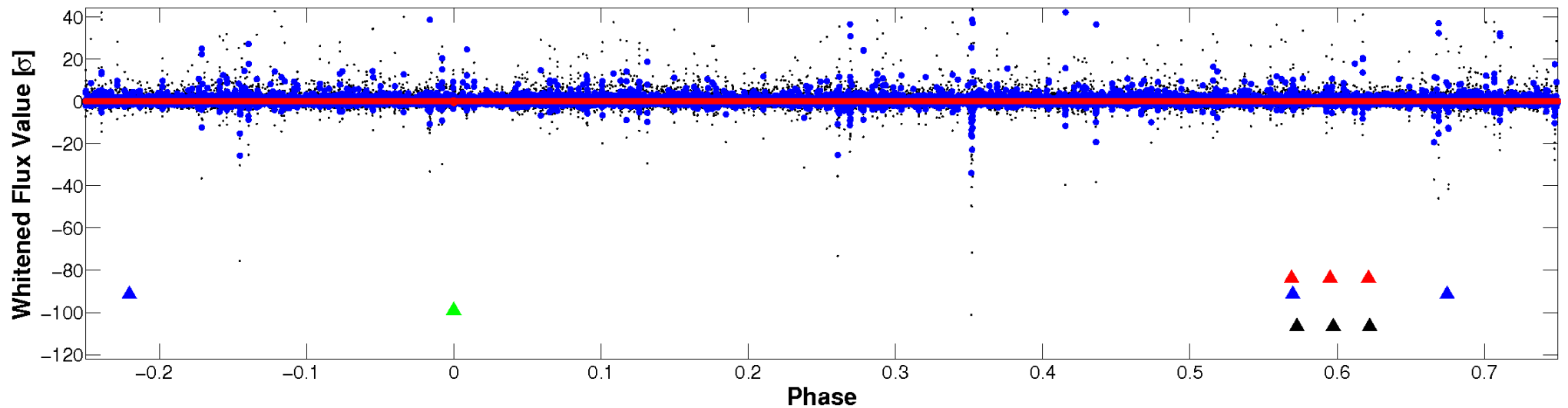


Non-Whitened Vs. Whitened Light Curve

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

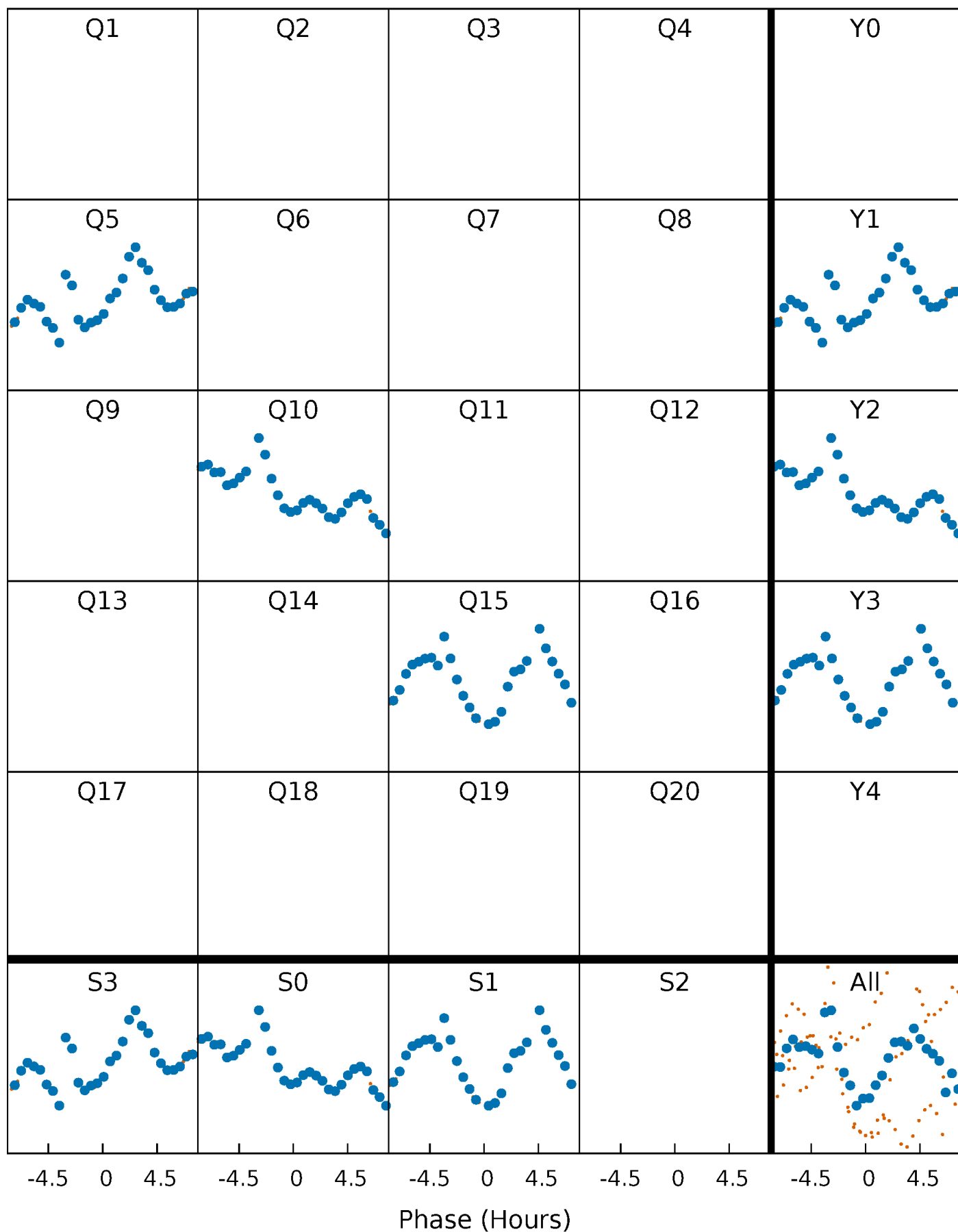


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



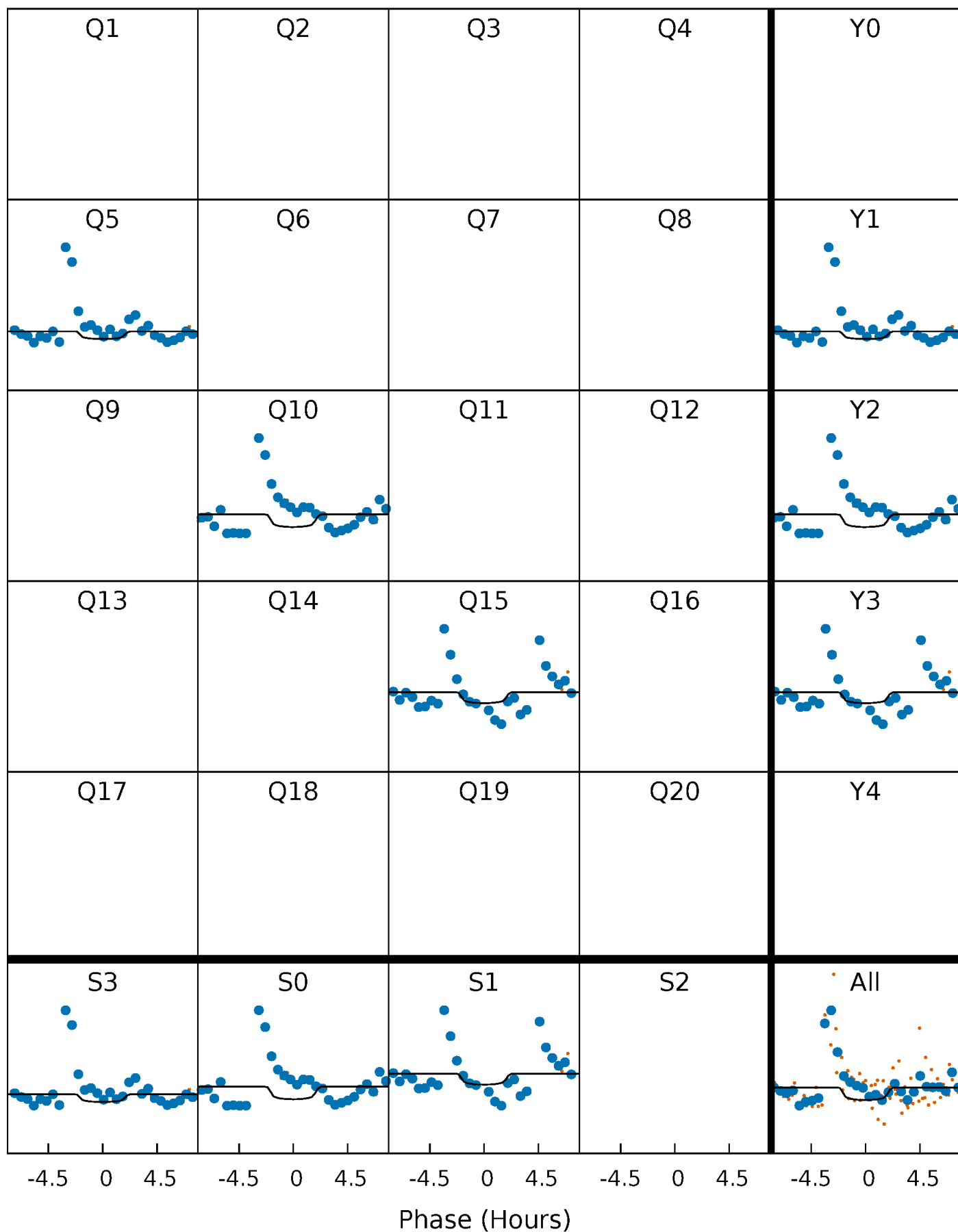
PDC Quarter-Phased Transit Curves

TCE 009825598-03 $P=478.344232$ Days $T_0=510.992309$ (BKJD)



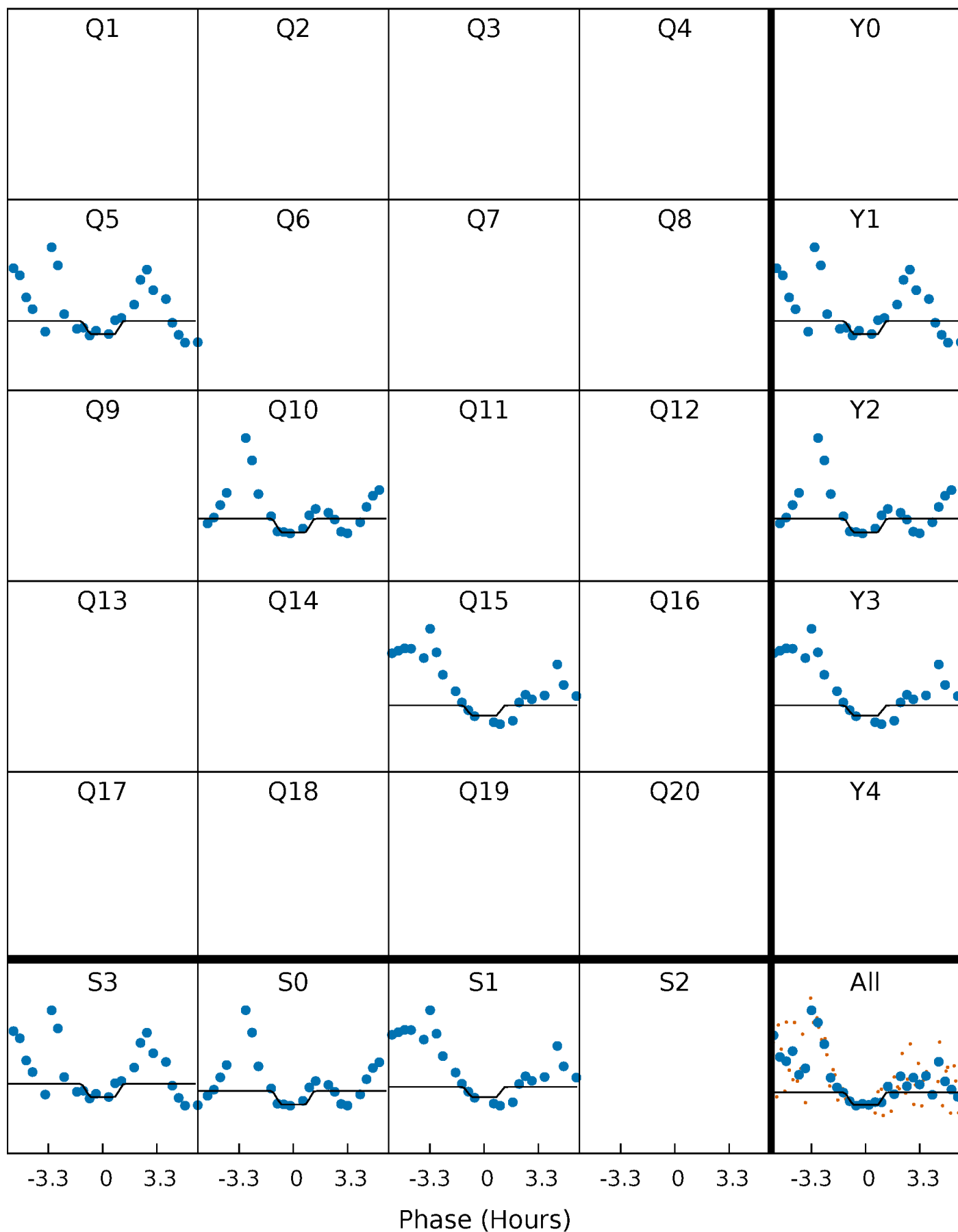
DV Quarter-Phased Transit Curves

TCE 009825598-03 $P=478.344232$ Days $T_0=510.992309$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

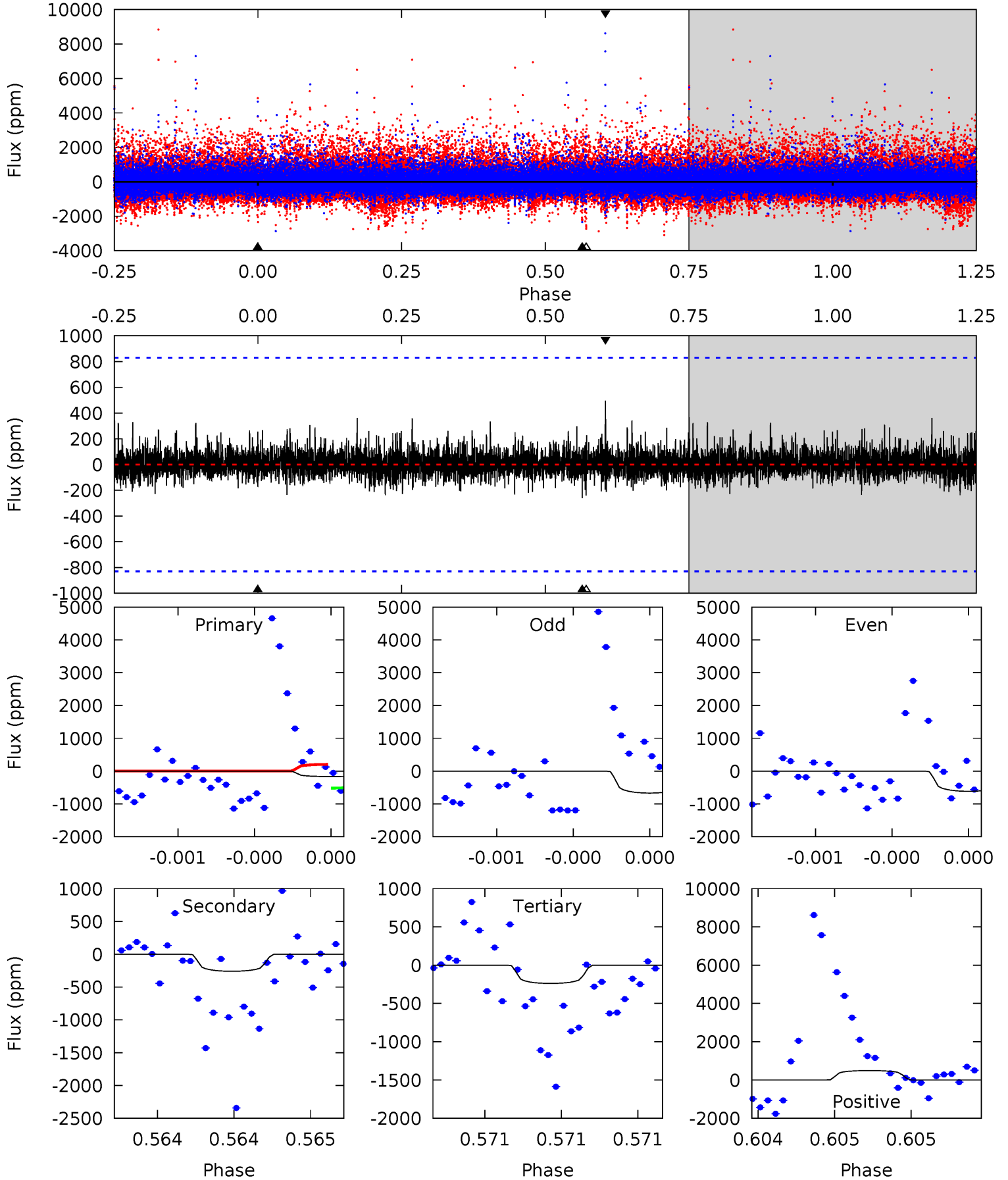
TCE 009825598-03 $P=478.342828$ Days $T_0=510.994134$ (BKJD)



DV Model-Shift Uniqueness Test

009825598-03, P = 478.344232 Days, E = 32.648077 Days

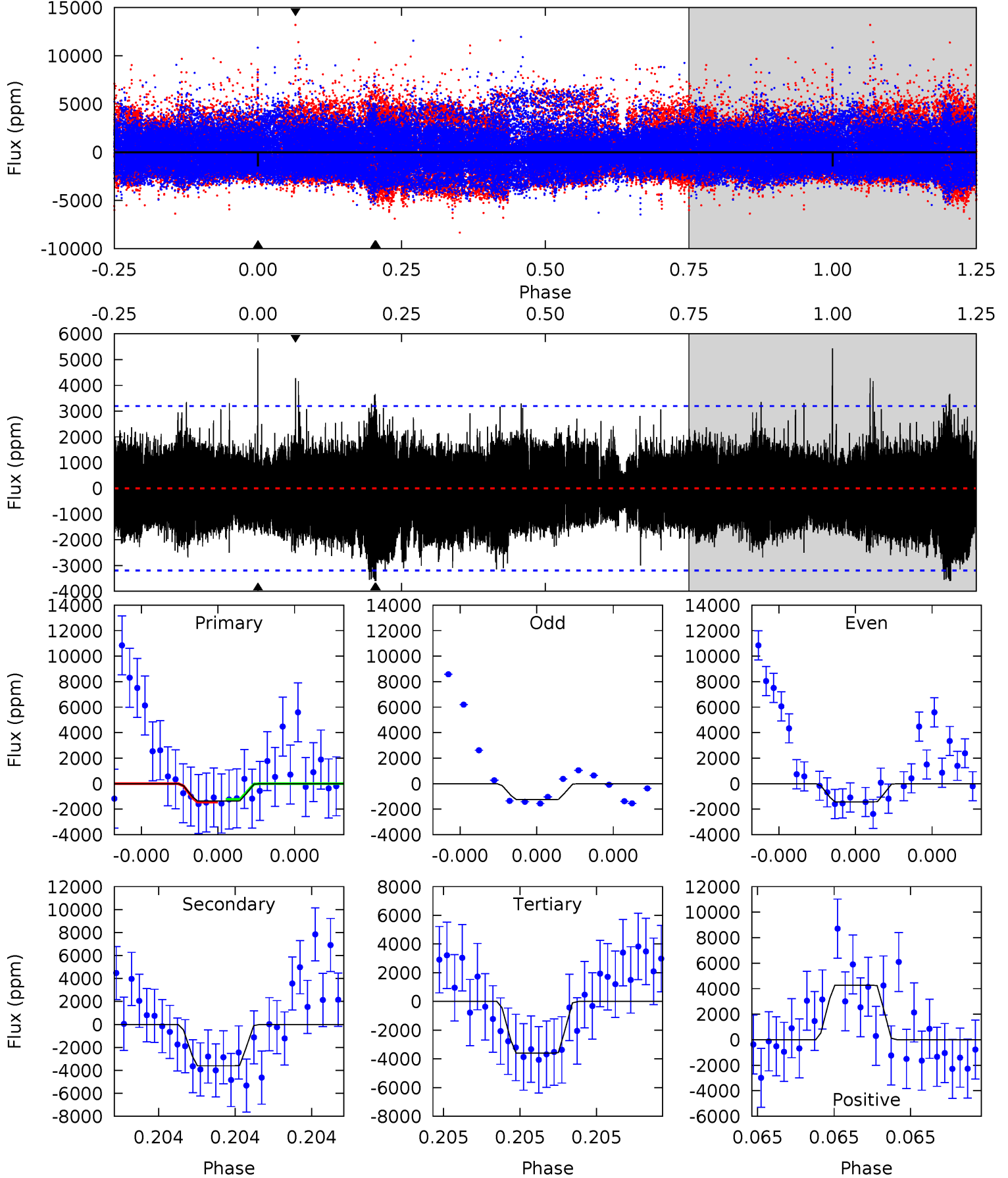
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.13	1.76	1.62	3.36	5.63	3.57	0.50	-0.49	-2.23	0.14	-1.60	0.12	-4.82	0.66	1.09



Alt Model-Shift Uniqueness Test

009825598-03, P = 478.342828 Days, E = 32.651306 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.43	6.43	6.43	7.63	5.71	3.68	2.12	-4.00	-5.20	0.01	-1.20	0.16	1.15	0.60	0.18



Stellar Parameters For KIC 009825598

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3614^{+107}_{-118}	$4.917^{+0.104}_{-0.085}$	$-0.480^{+0.300}_{-0.300}$	$0.340^{+0.074}_{-0.082}$	$0.348^{+0.082}_{-0.101}$	$12.500^{+9.082}_{-3.793}$
	+3%/-3%	+2%/-2%	+62%/-62%	+22%/-24%	+24%/-29%	+73%/-30%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009825598-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-260 ± 147	$6.04^{+6.70}_{-4.38}$	141^{+7}_{-8}	1964^{+693}_{-290}	2244^{+33524}_{-1791}
Alt.	-3603 ± 560	$6.38^{+6.06}_{-4.40}$	141^{+8}_{-8}	2676^{+1080}_{-425}	$36421^{+312616}_{-27641}$

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

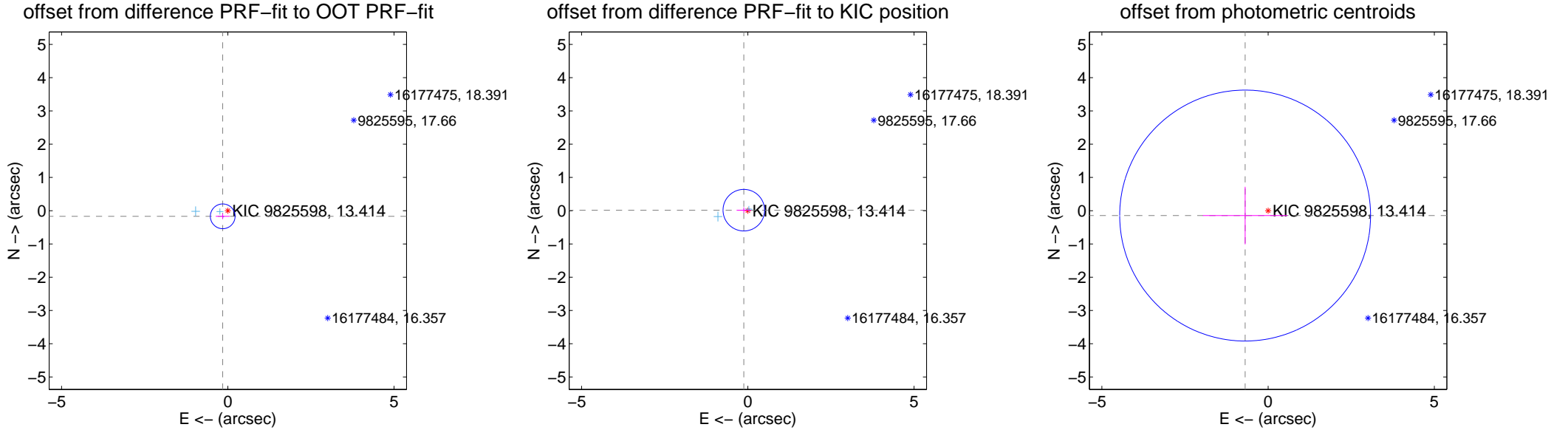
DV Centroid Data

Supplemental centroid analysis for 009825598-03. Kepler magnitude: 13.41. Transit SNR 3.40

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.228 ± 0.124	1.84	0.153 ± 0.209	-0.169 ± 0.081
PRF-fit source offset from KIC position	0.122 ± 0.208	0.58	0.121 ± 0.216	0.015 ± 0.083
photometric centroid source offset	0.71 ± 1.26	0.56	0.69 ± 1.27	-0.15 ± 0.86

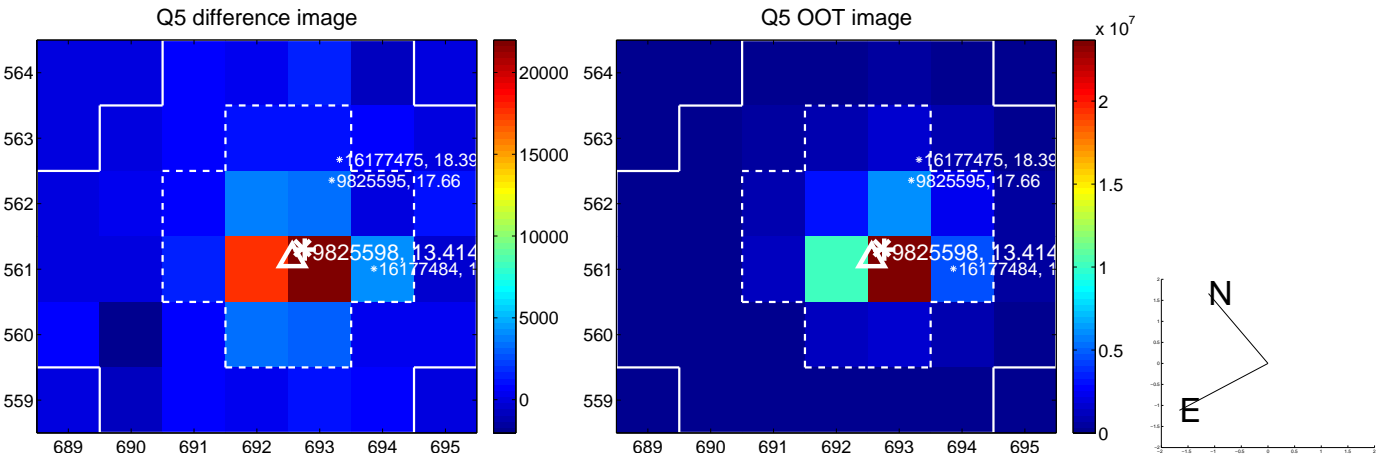


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

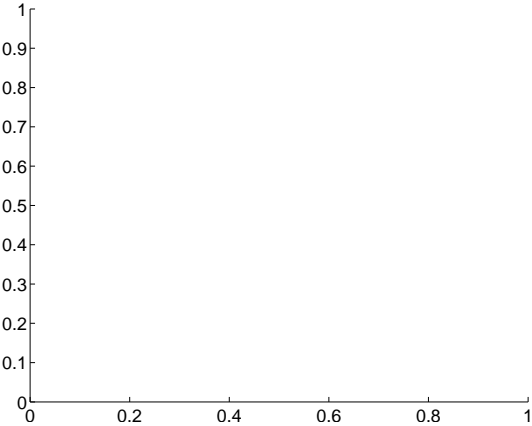


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

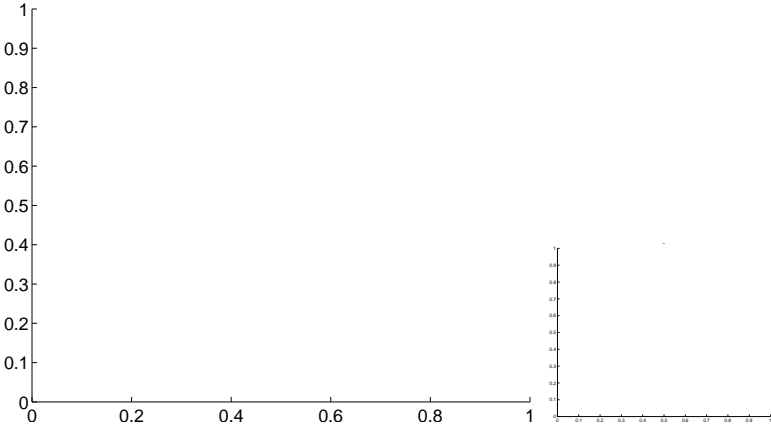


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

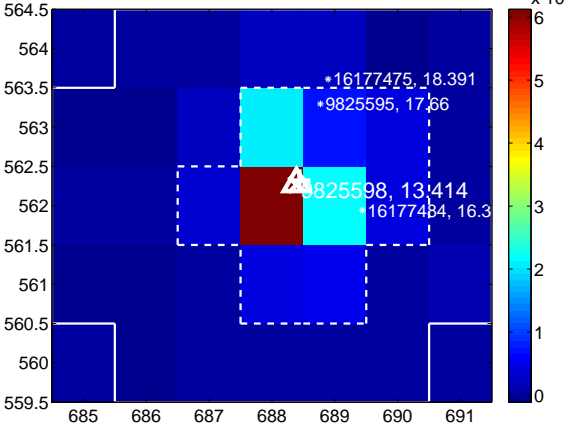
Q9 no difference image



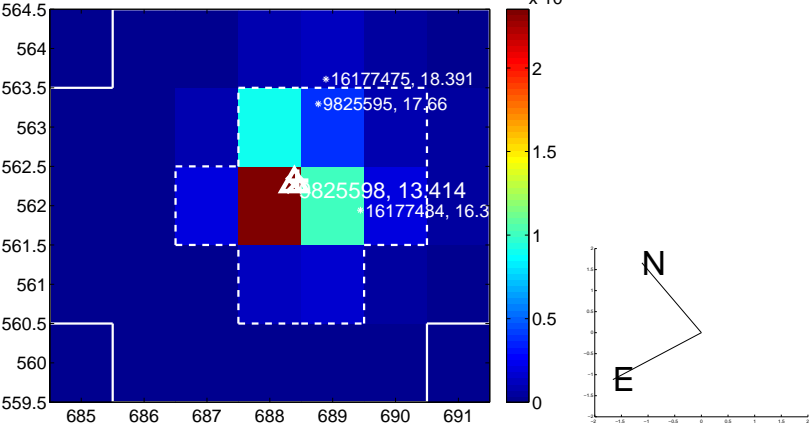
Q9 no OOT image



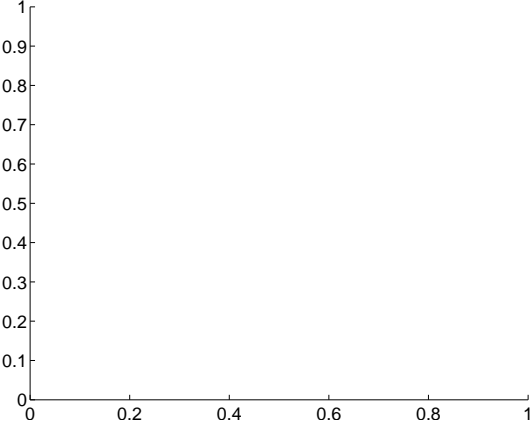
Q10 difference image



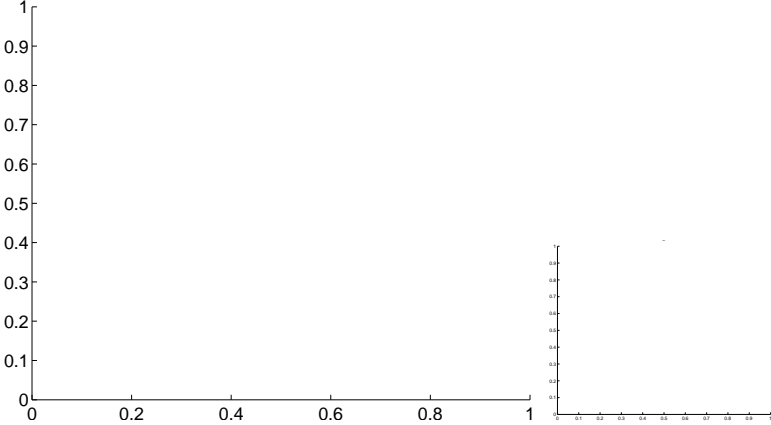
Q10 OOT image



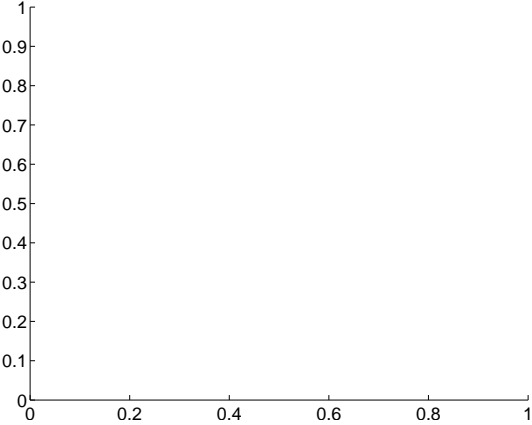
Q11 no difference image



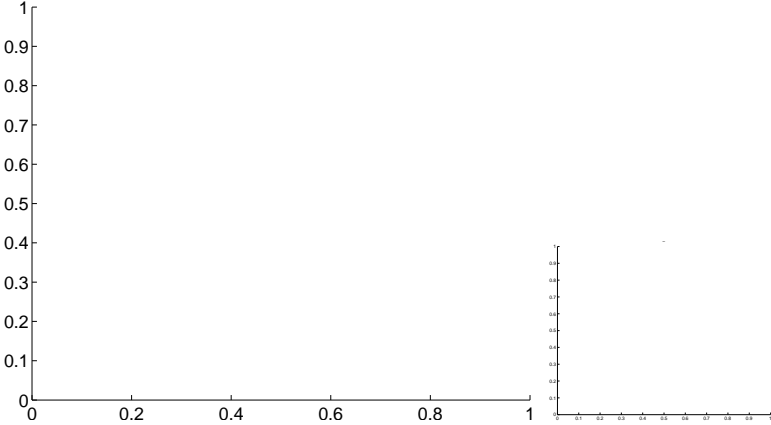
Q11 no OOT image



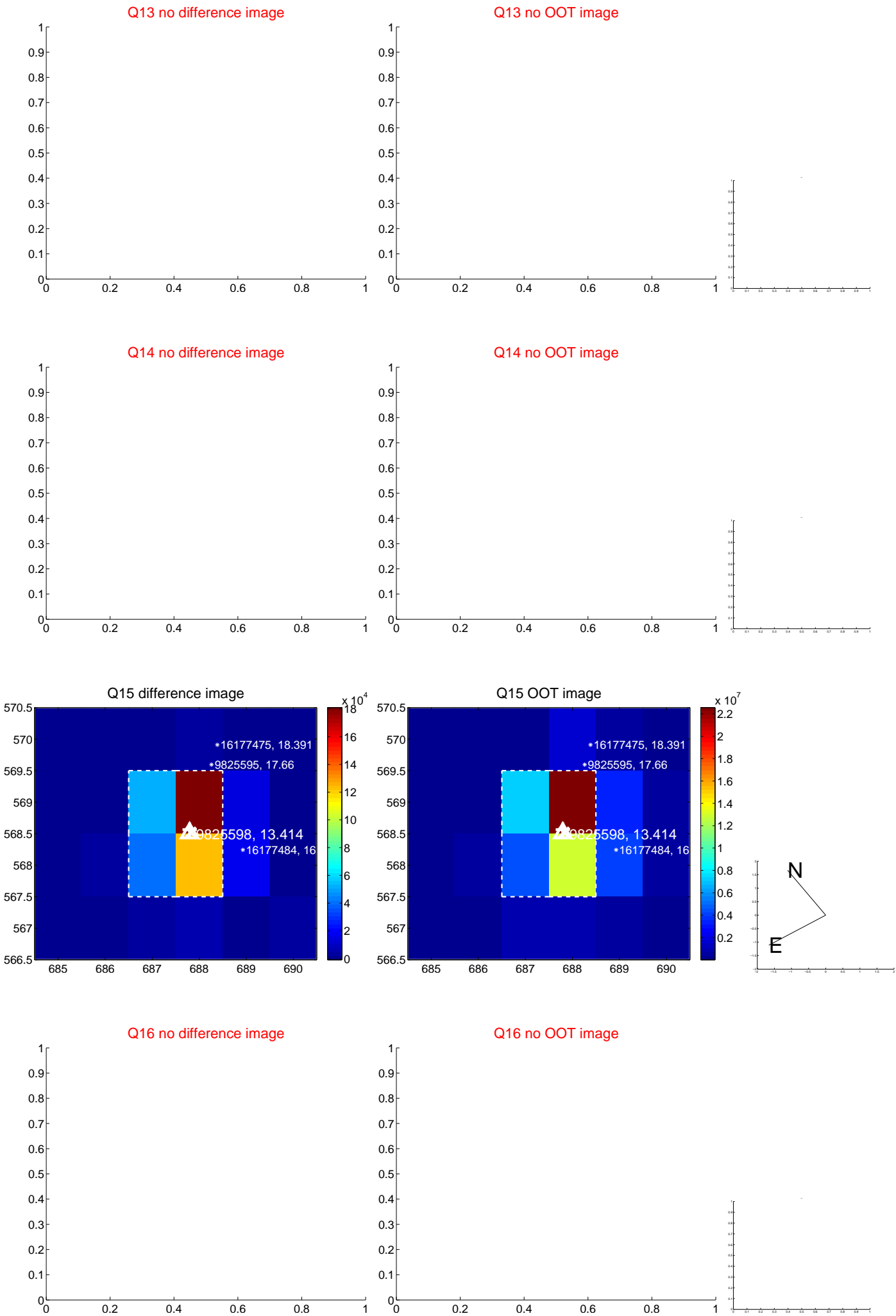
Q12 no difference image



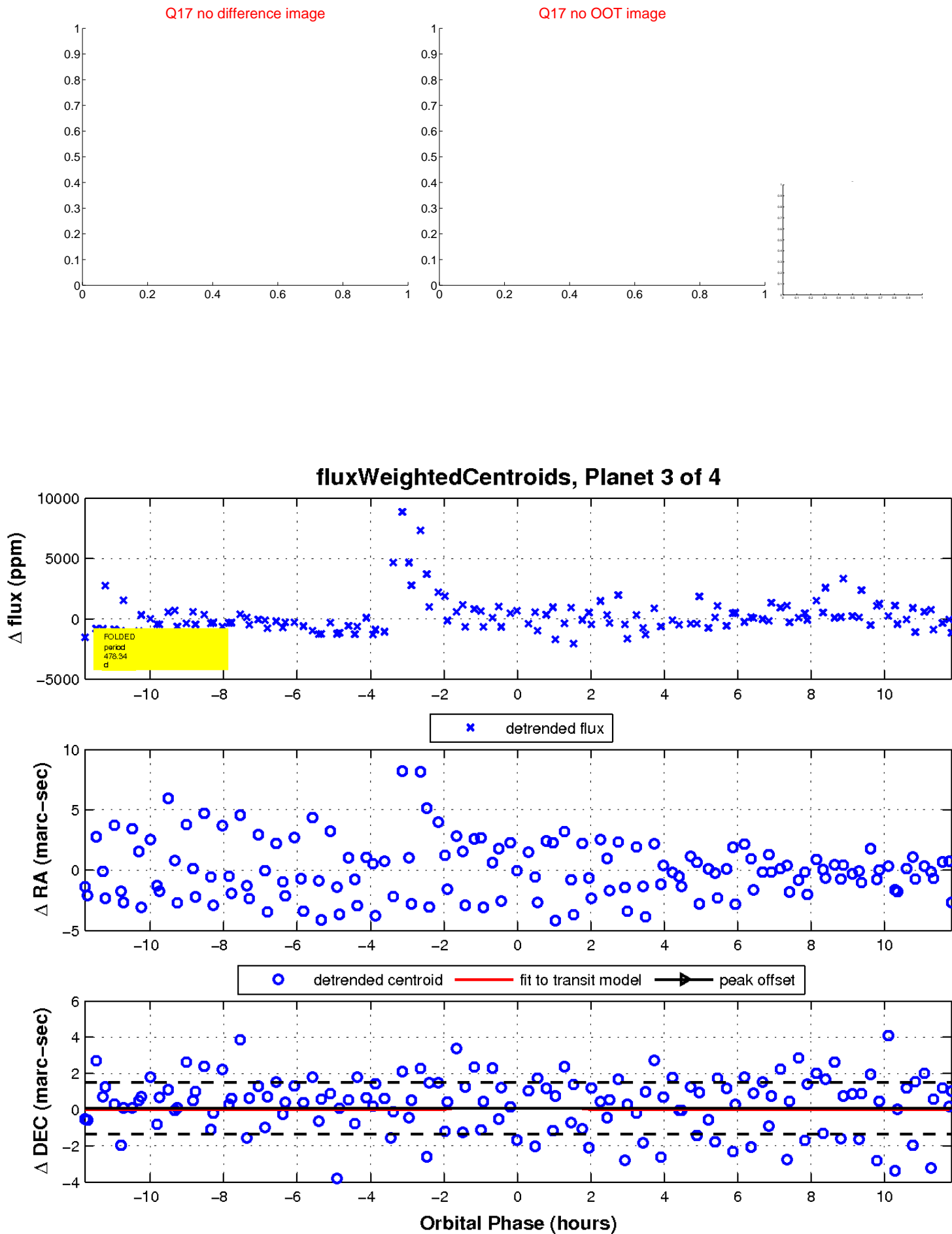
Q12 no OOT image



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

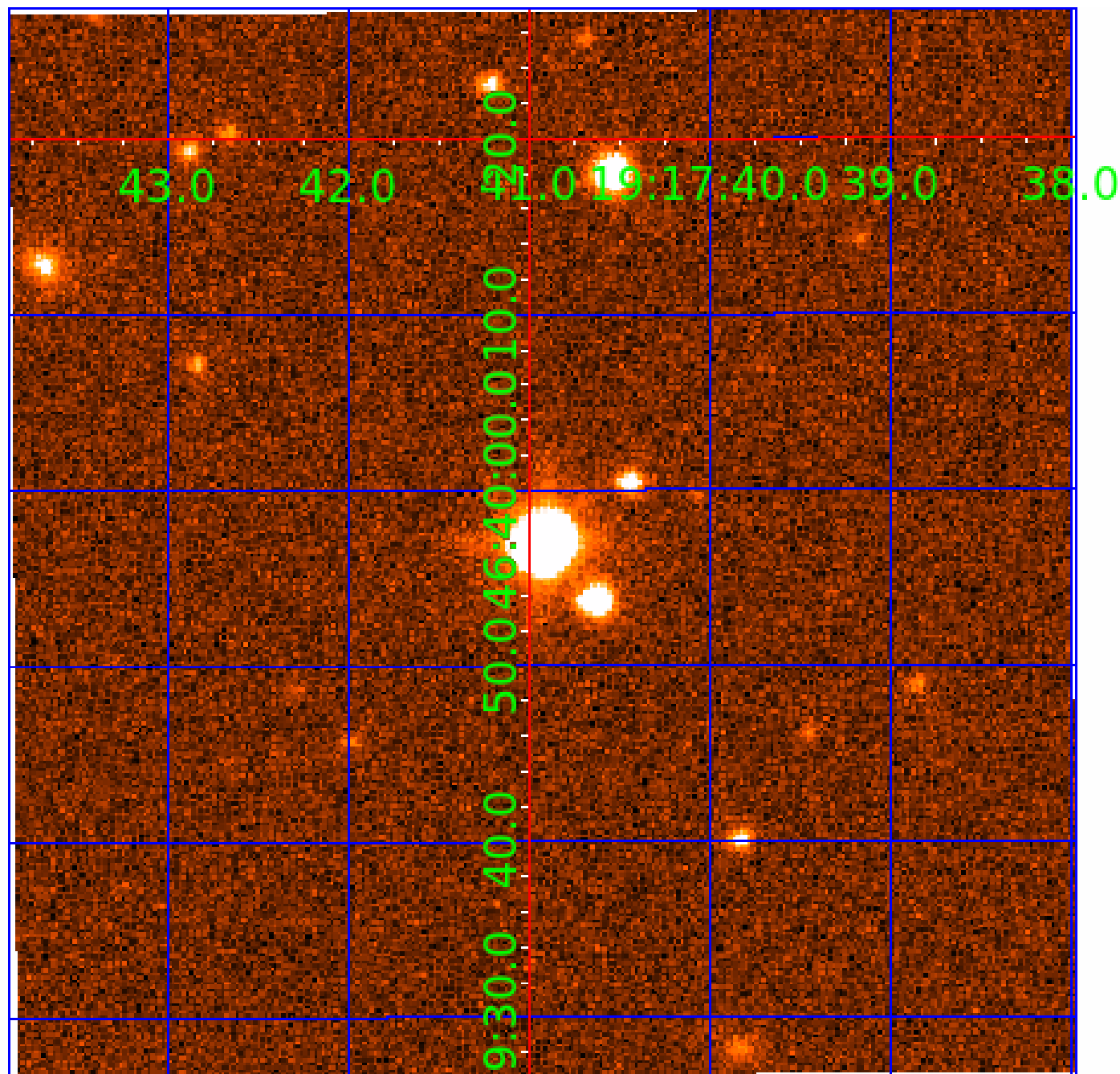


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009825598

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})
009825598-01	OBS	No	465.839147	329.866420	566.5	0.847	16.3	1.9	0.34	3614	0.83	0.03
009825598-02	OBS	No	428.169972	405.594665	2631.2	1.776	17.5	9.8	0.34	3614	1.91	0.03
009825598-03	OBS	No	478.344232	510.992309	796.9	3.947	12.2	3.4	0.34	3614	0.96	0.03
009825598-04	OBS	No	466.517931	330.244108	1858.1	2.863	10.9	7.2	0.34	3614	1.48	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009825598-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_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—HALO_GHOST
009825598-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_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
009825598-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_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
009825598-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

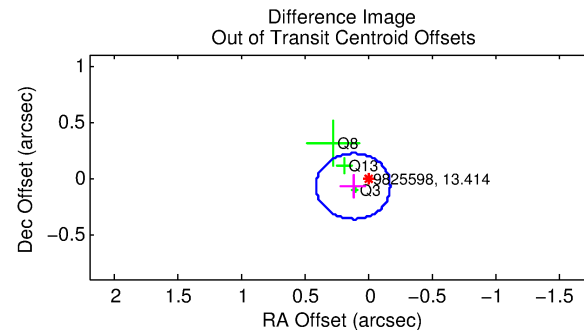
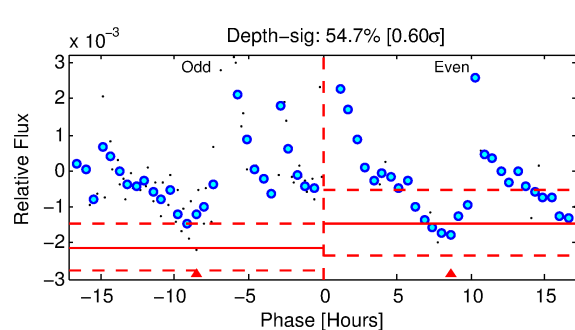
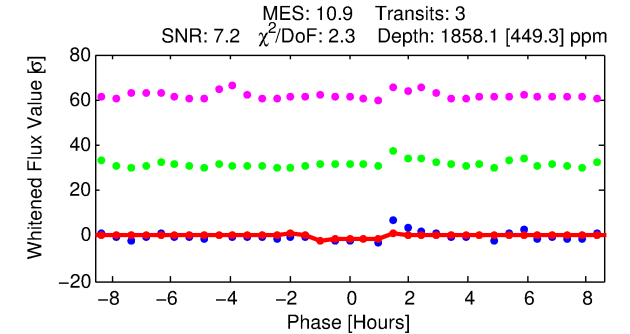
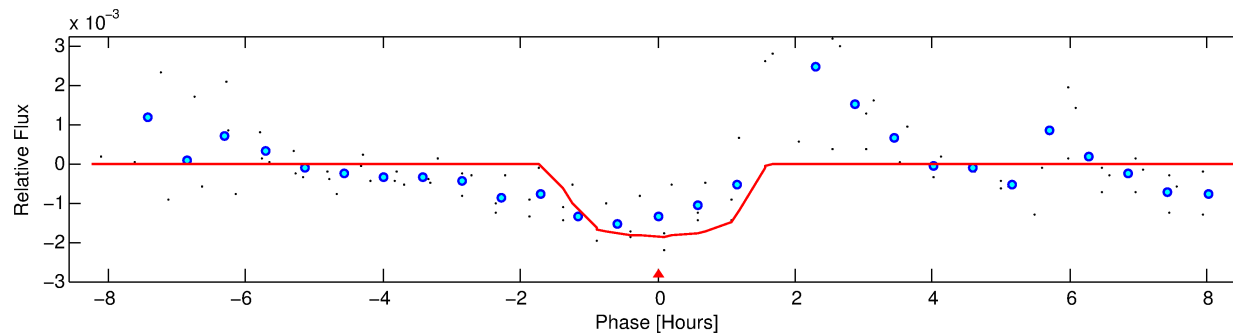
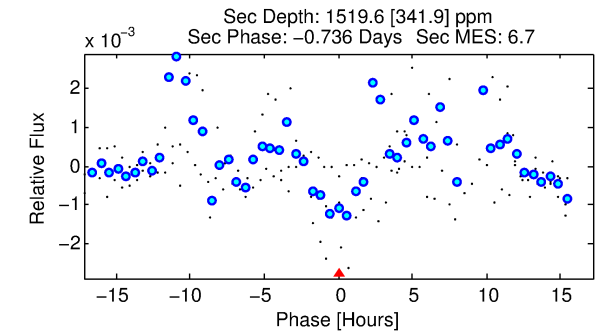
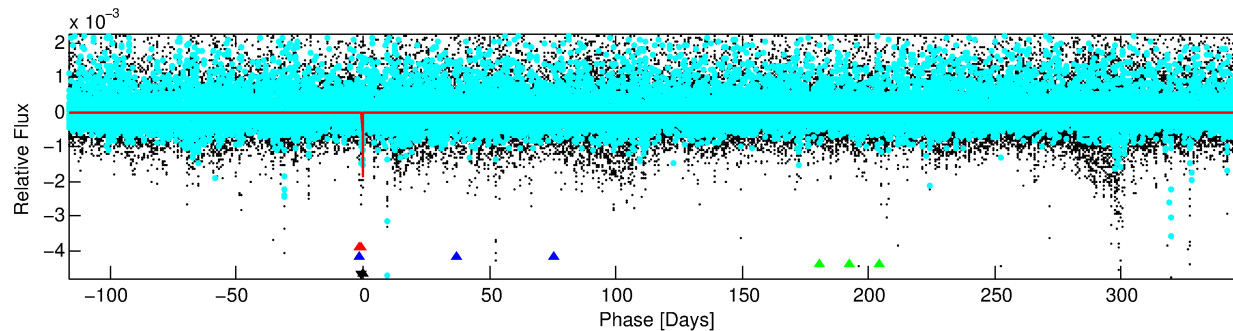
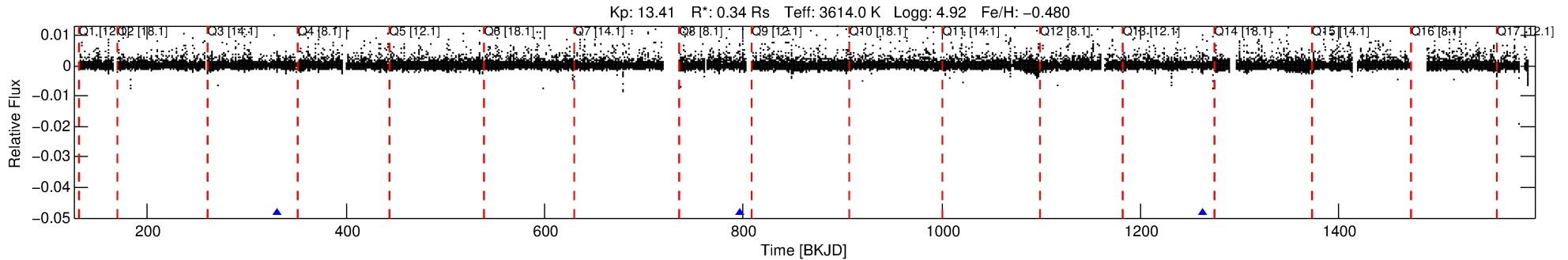
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009825598-04

No Significant Match Found

DV One-Page Summary

KIC: 9825598 Candidate: 4 of 4 Period: 466.518 d



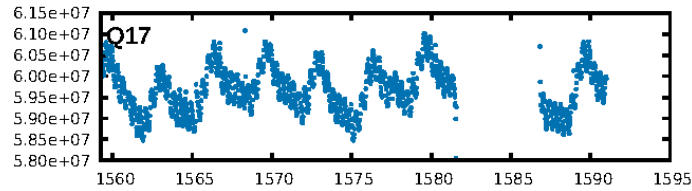
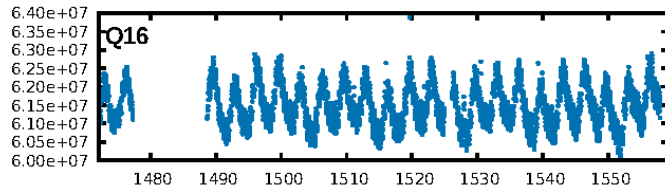
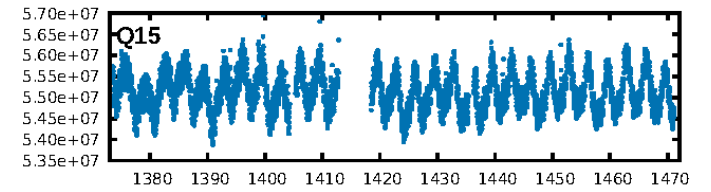
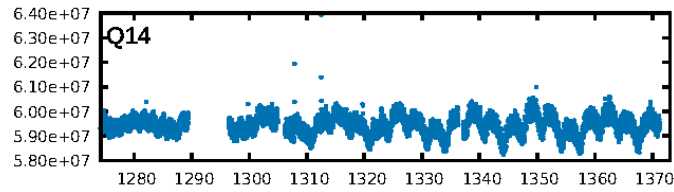
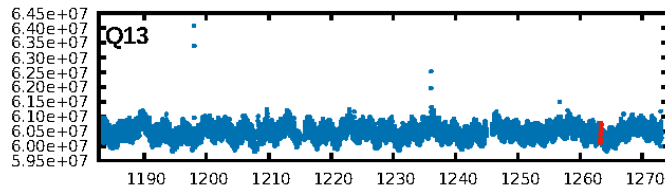
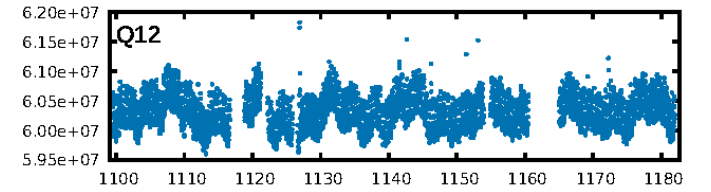
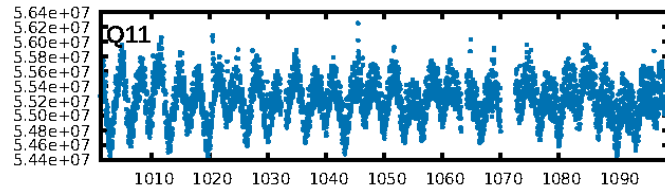
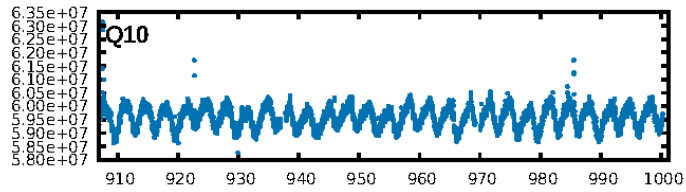
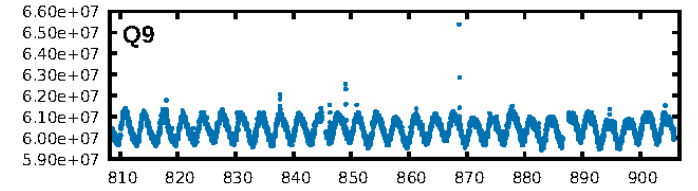
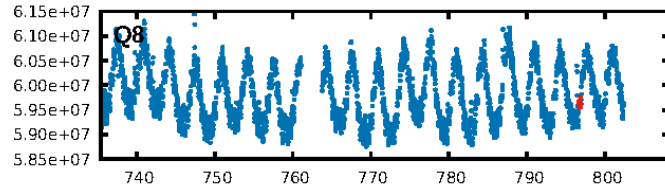
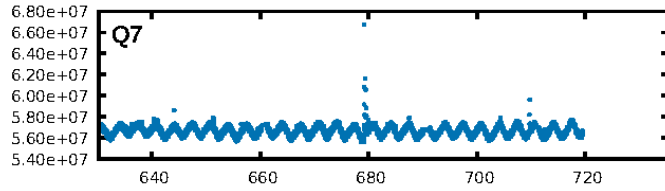
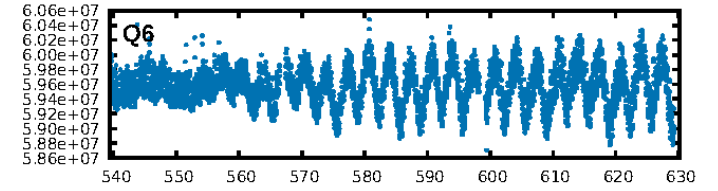
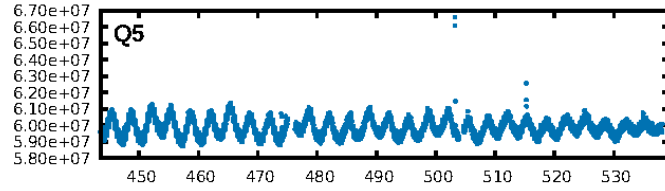
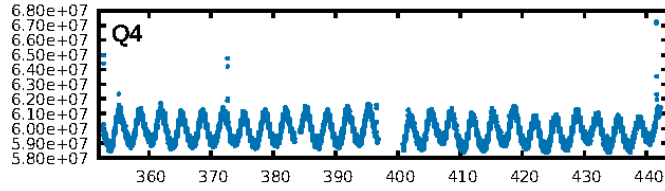
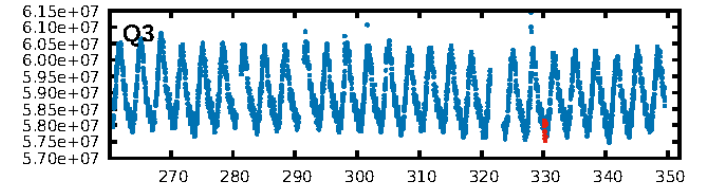
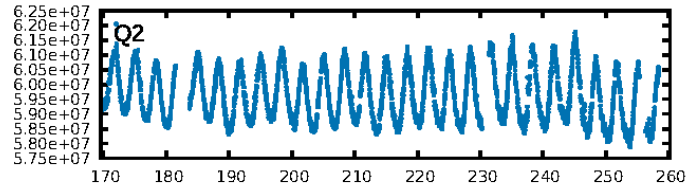
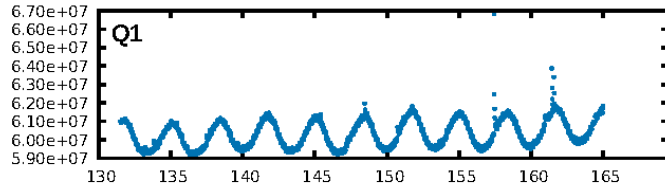
DV Fit Results:

Period = 466.51793 [0.00538] d
Epoch = 330.2441 [0.0073] BKJD
Rp/R* = 0.0398 [0.0916]
a/R* = 1249.02 [14605.81]
b = 0.27 [39.61]
Seff = 0.03 [0.01]
Teq = 102 [7] K
Rp = 1.48 [3.42] Re
a = 0.8284 [0.1487] AU
Ag = 262479.43 [1209555.20] [0.22σ]
Teffp = 3574 [4115] K [0.84σ]

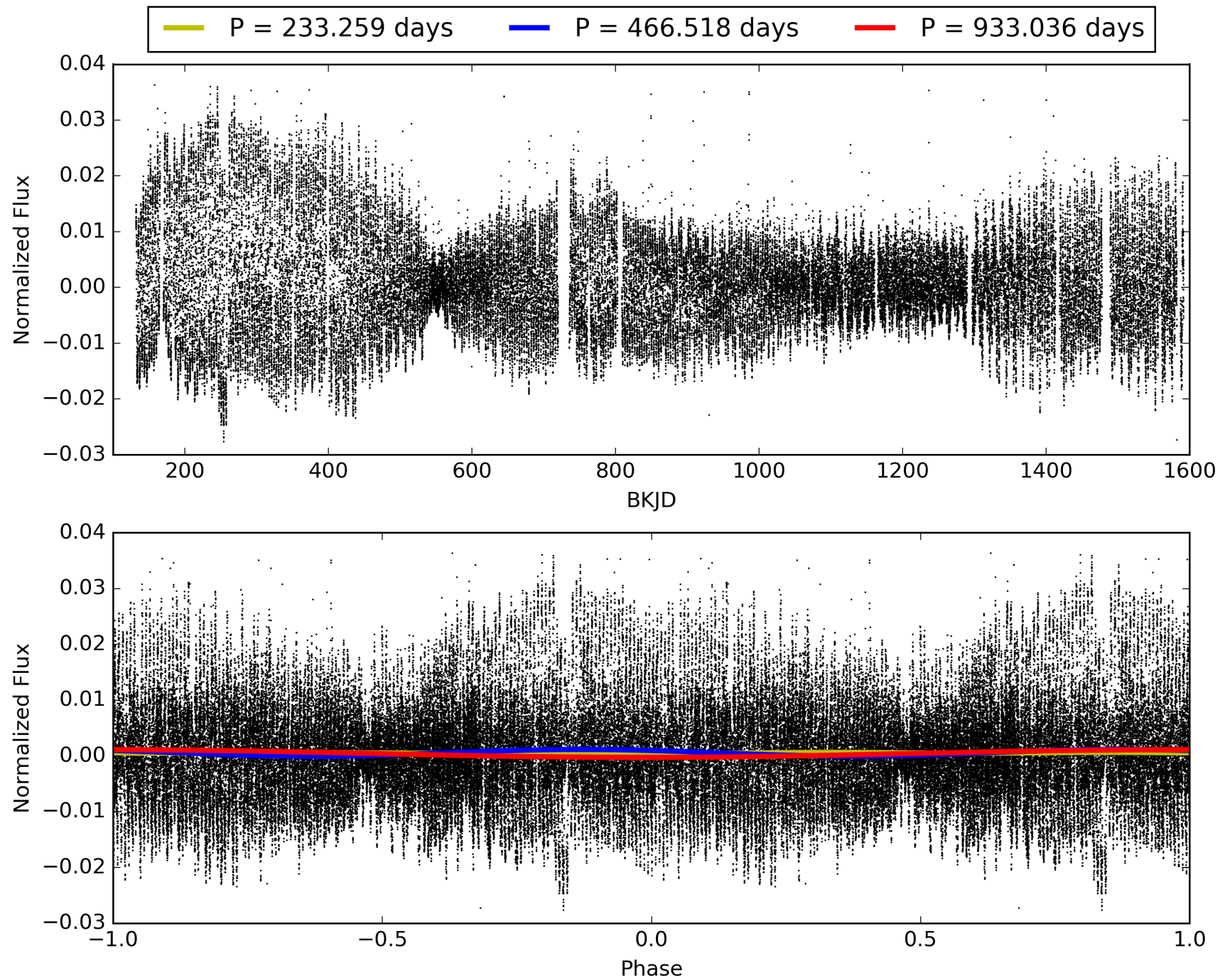
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.46σ]
LongPeriod-sig: 100.0% [58.21σ]
ModelChiSquare2-sig: 23.1%
ModelChiSquareGof-sig: 96.0%
Bootstrap-pfa: 4.69e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.978
Centroid-sig: N/A
Centroid-so: 0.189 arcsec [0.45σ]
OotOffset-rm: 0.145 arcsec [1.49σ]
KicOffset-rm: 0.148 arcsec [1.52σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009825598-04, PDC Light Curves

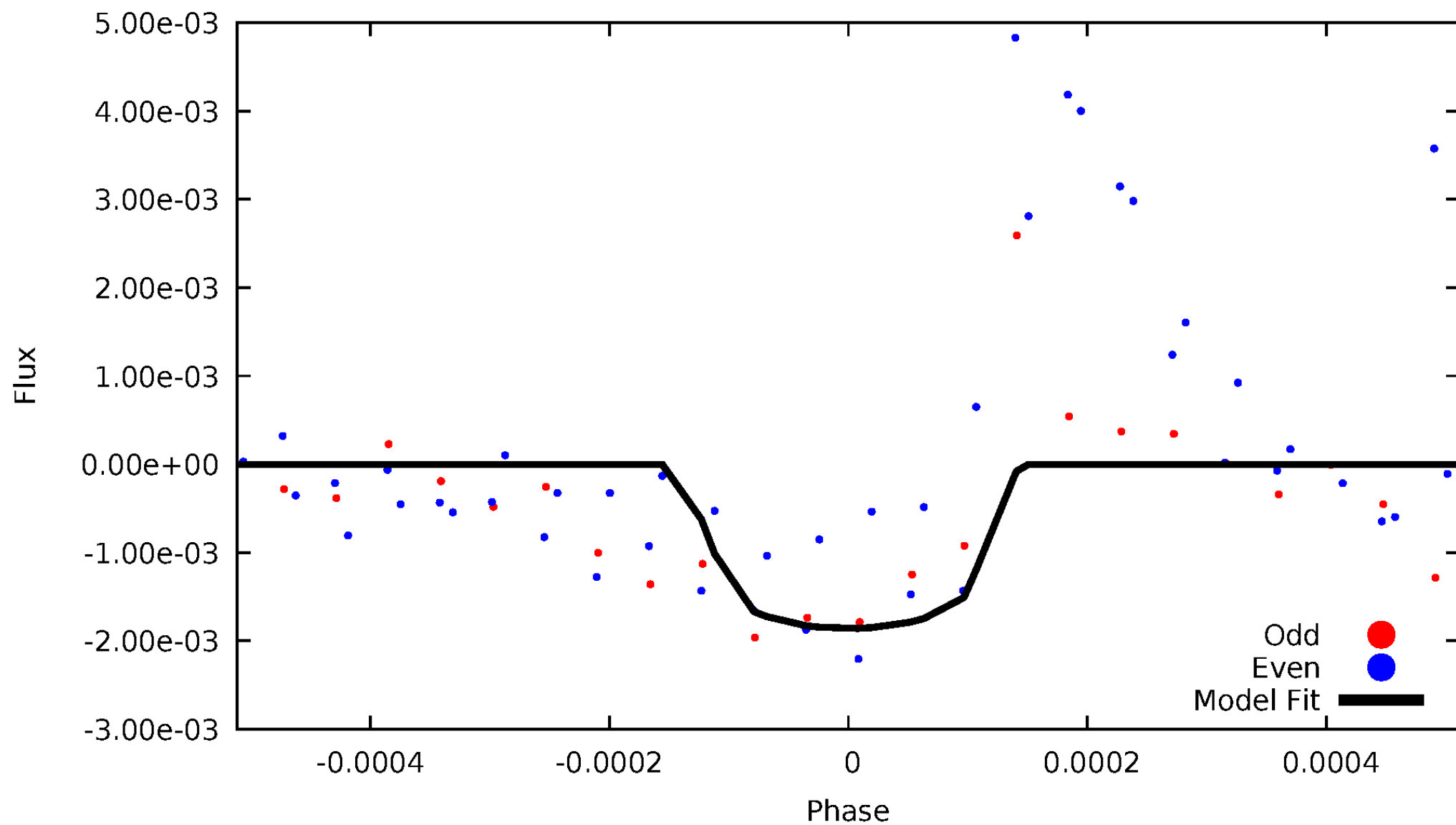


TCE 009825598-04



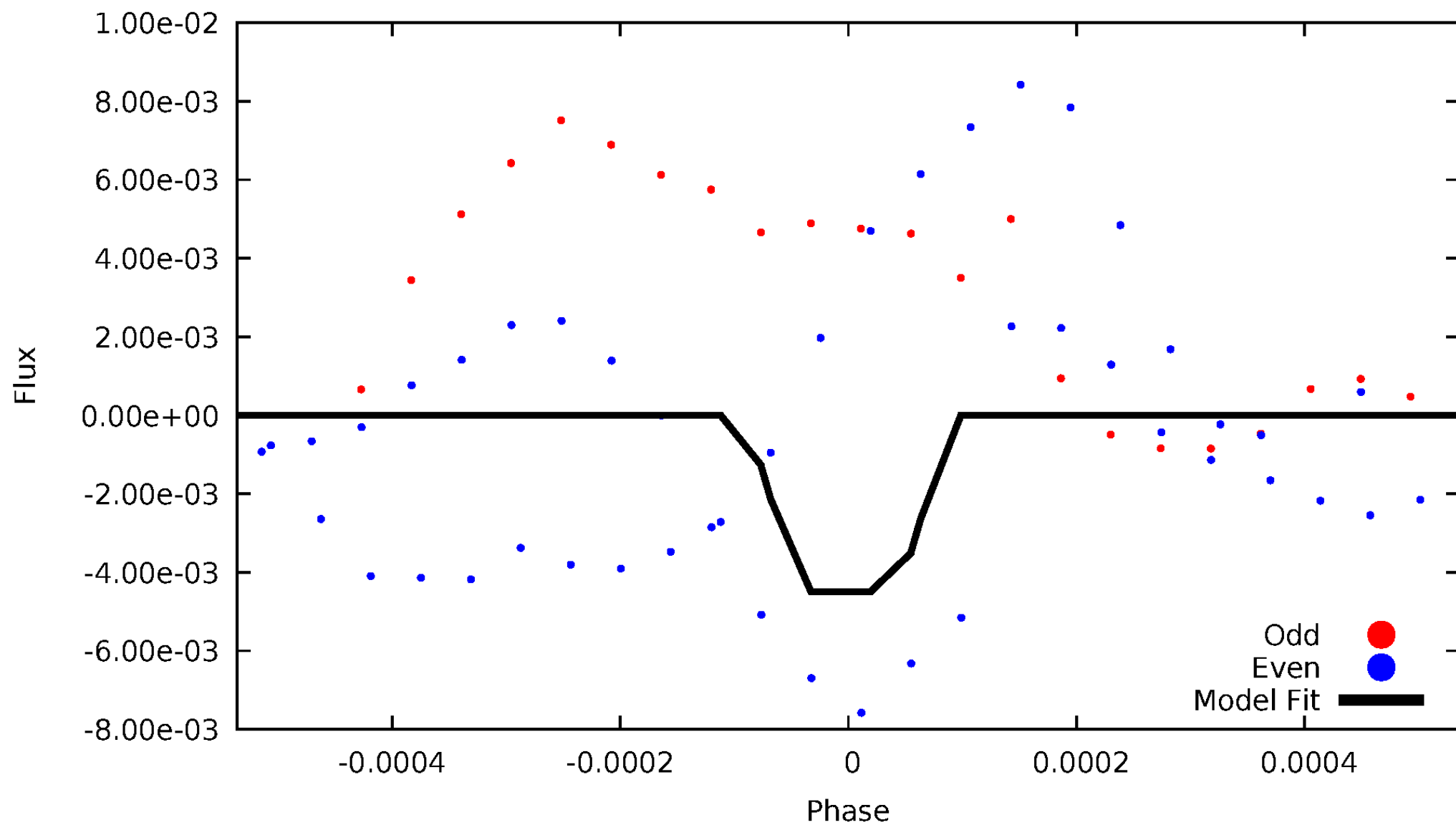
DV Odd/Even

TCE 009825598-04



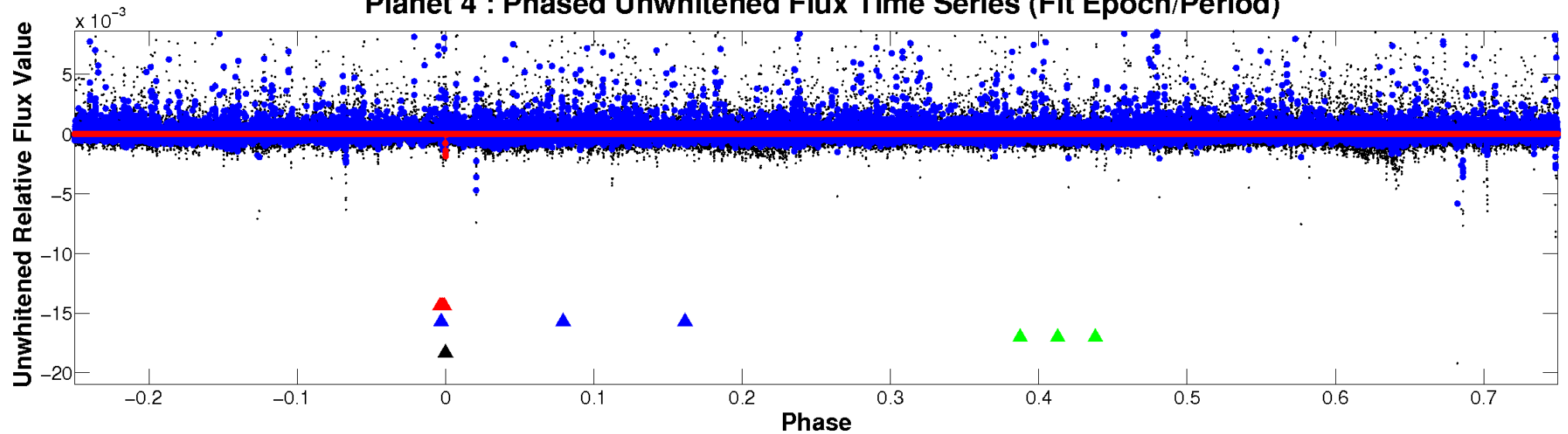
ALT Odd/Even

TCE 009825598-04

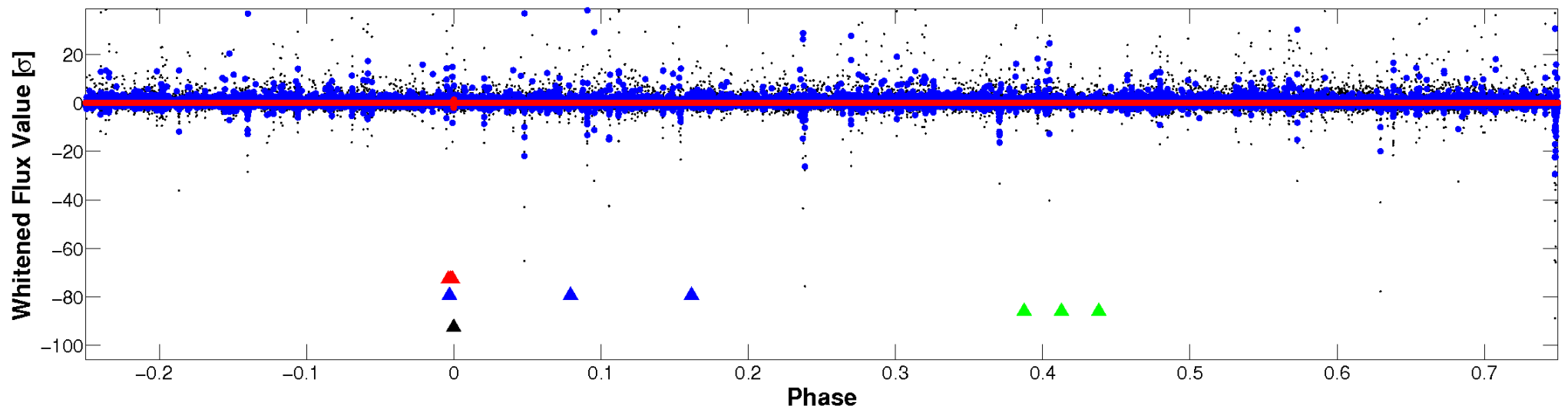


Non-Whitened Vs. Whitened Light Curve

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

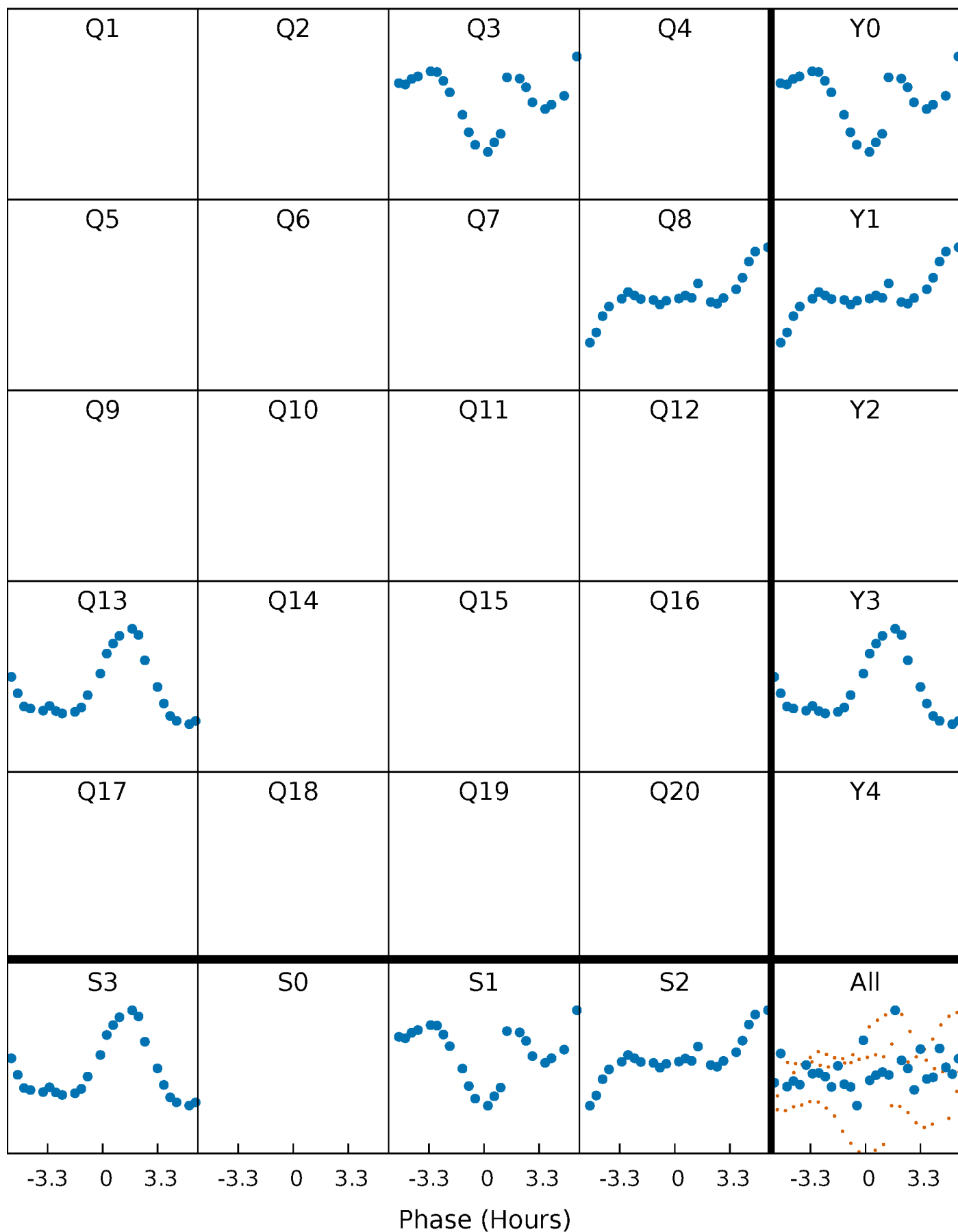


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



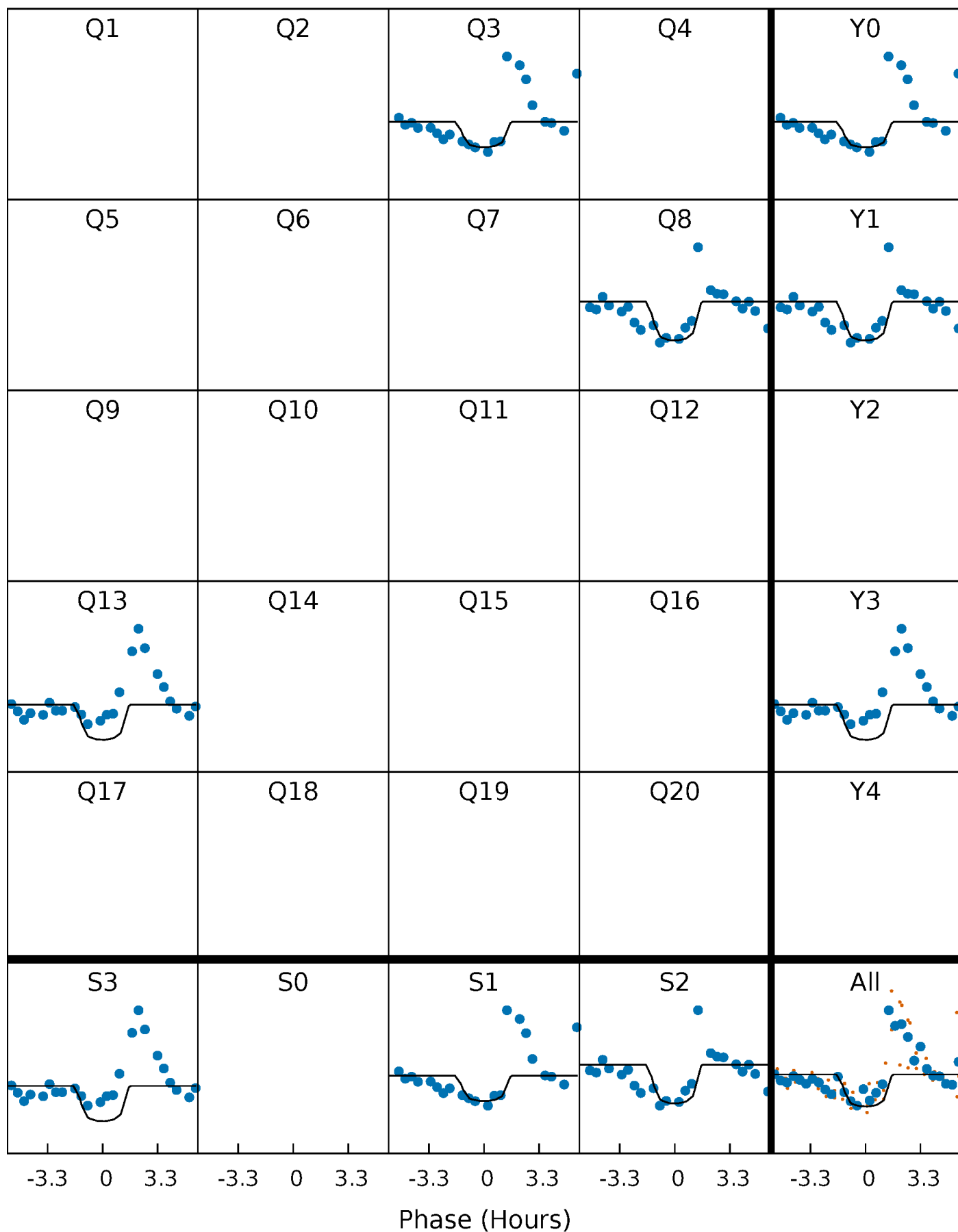
PDC Quarter-Phased Transit Curves

TCE 009825598-04 $P=466.517931$ Days $T_0=330.244108$ (BKJD)



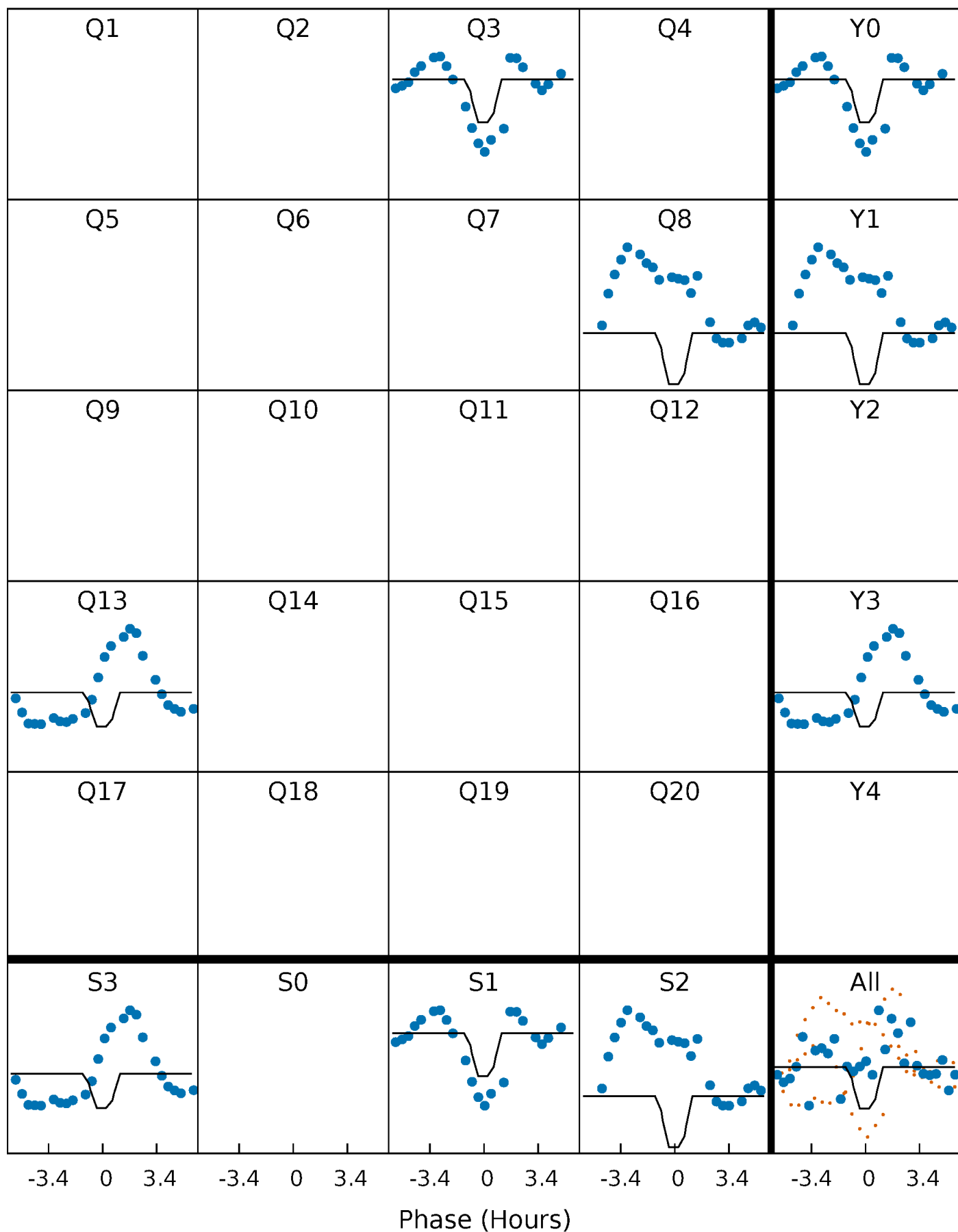
DV Quarter-Phased Transit Curves

TCE 009825598-04 $P=466.517931$ Days $T_0=330.244108$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

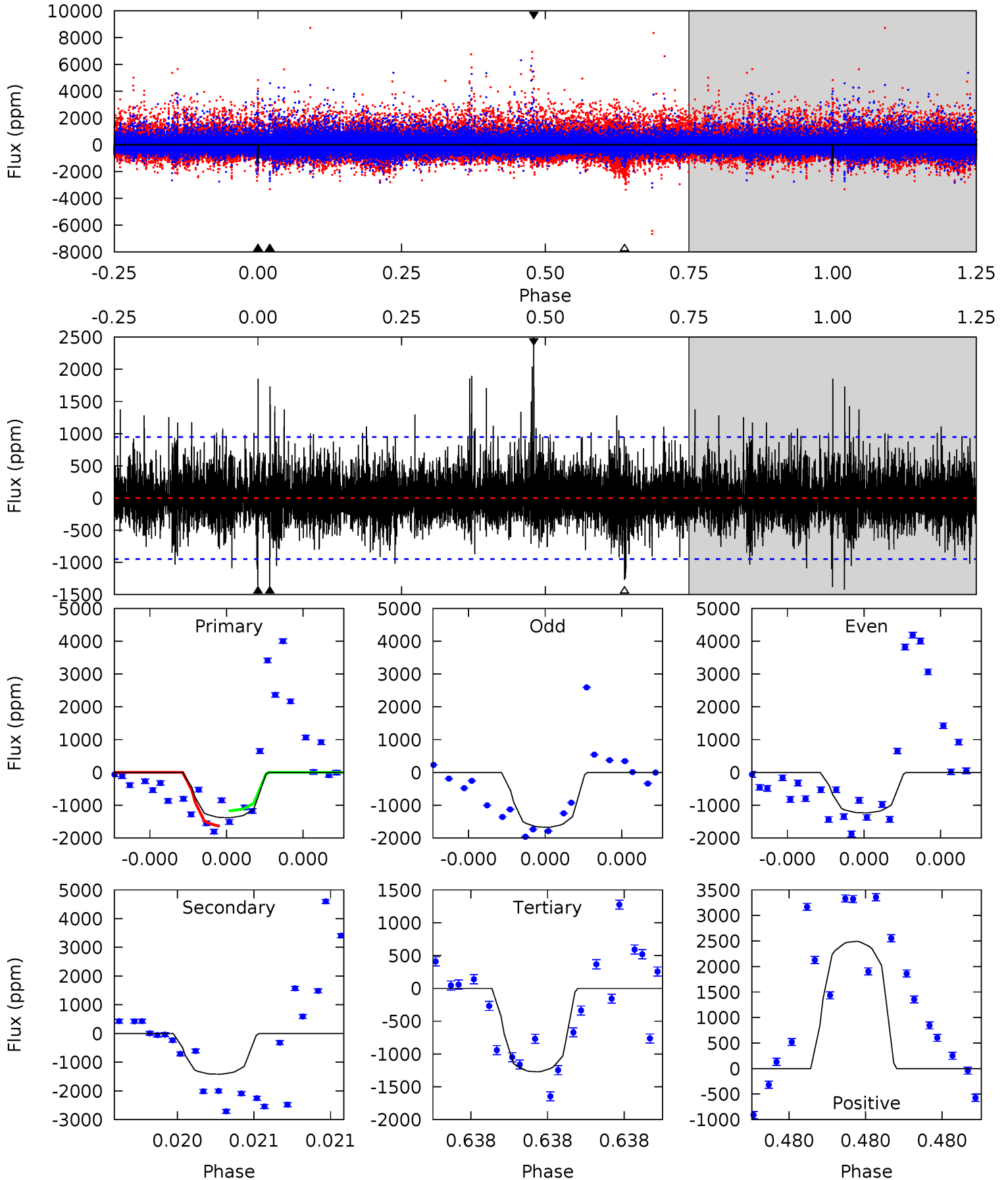
TCE 009825598-04 P=466.518608 Days $T_0=330.242728$ (BKJD)



DV Model-Shift Uniqueness Test

009825598-04, P = 466.517931 Days, E = 330.244108 Days

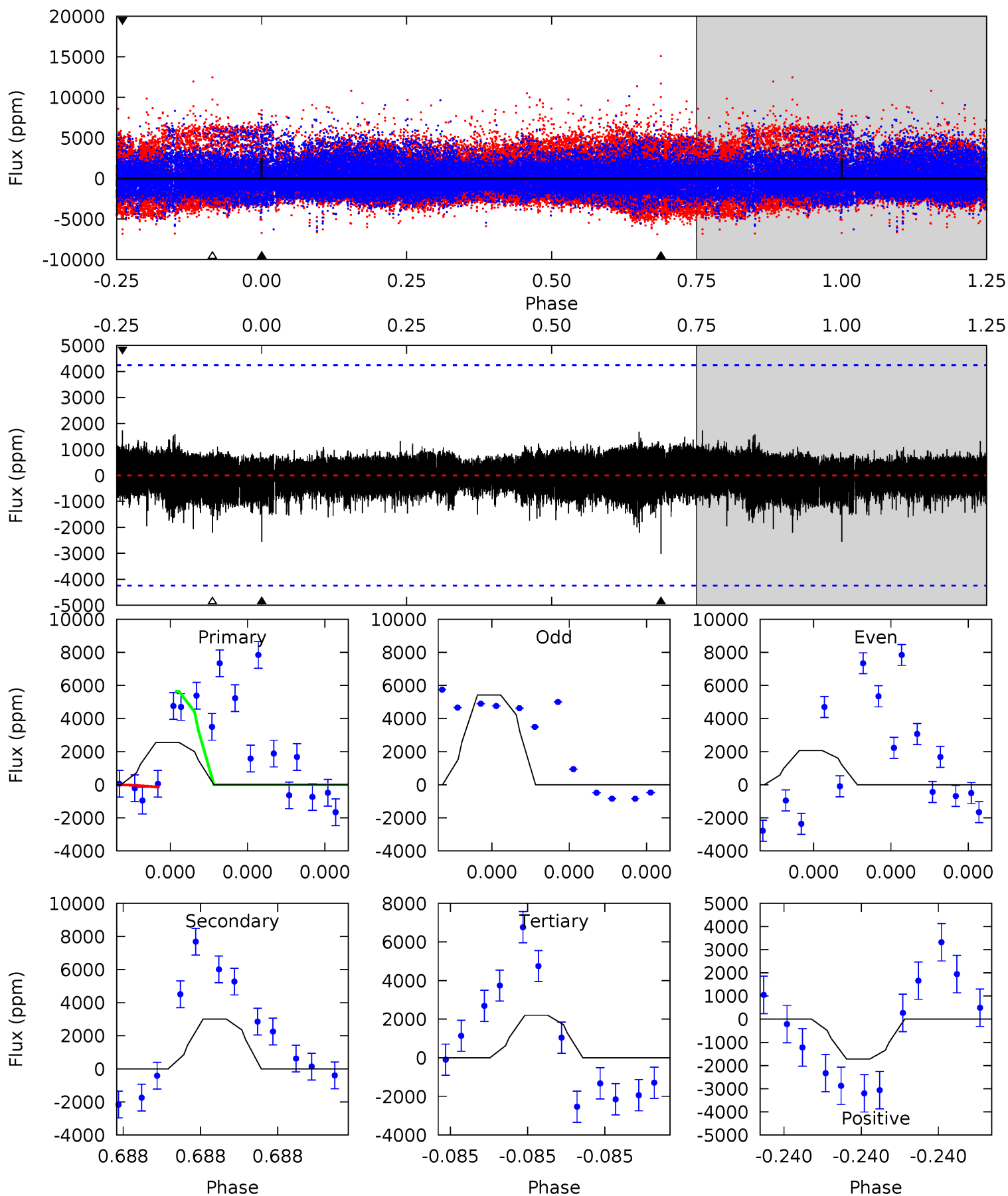
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.27	8.50	7.61	14.9	5.68	3.64	1.75	0.66	-6.65	0.89	-6.42	0.75	0.82	0.64	1.39



Alt Model-Shift Uniqueness Test

009825598-04, P = 466.518608 Days, E = 330.242728 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.46	4.08	2.98	2.33	5.75	3.75	0.68	0.48	1.13	1.10	1.75	2.34	0.13	0.36	3.75



Stellar Parameters For KIC 009825598

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3614^{+107}_{-118}	$4.917^{+0.104}_{-0.085}$	$-0.480^{+0.300}_{-0.300}$	$0.340^{+0.074}_{-0.082}$	$0.348^{+0.082}_{-0.101}$	$12.500^{+9.082}_{-3.793}$
	+3%/-3%	+2%/-2%	+62%/-62%	+22%/-24%	+24%/-29%	+73%/-30%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009825598-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1420 ± 167	$2.61^{+3.26}_{-1.79}$	142^{+7}_{-7}	2955^{+1441}_{-525}	$77470^{+748436}_{-61467}$
Alt.	-3010 ± 738	$3.37^{+2.87}_{-2.04}$	142^{+7}_{-8}	3081^{+1140}_{-477}	$97767^{+547285}_{-69762}$

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

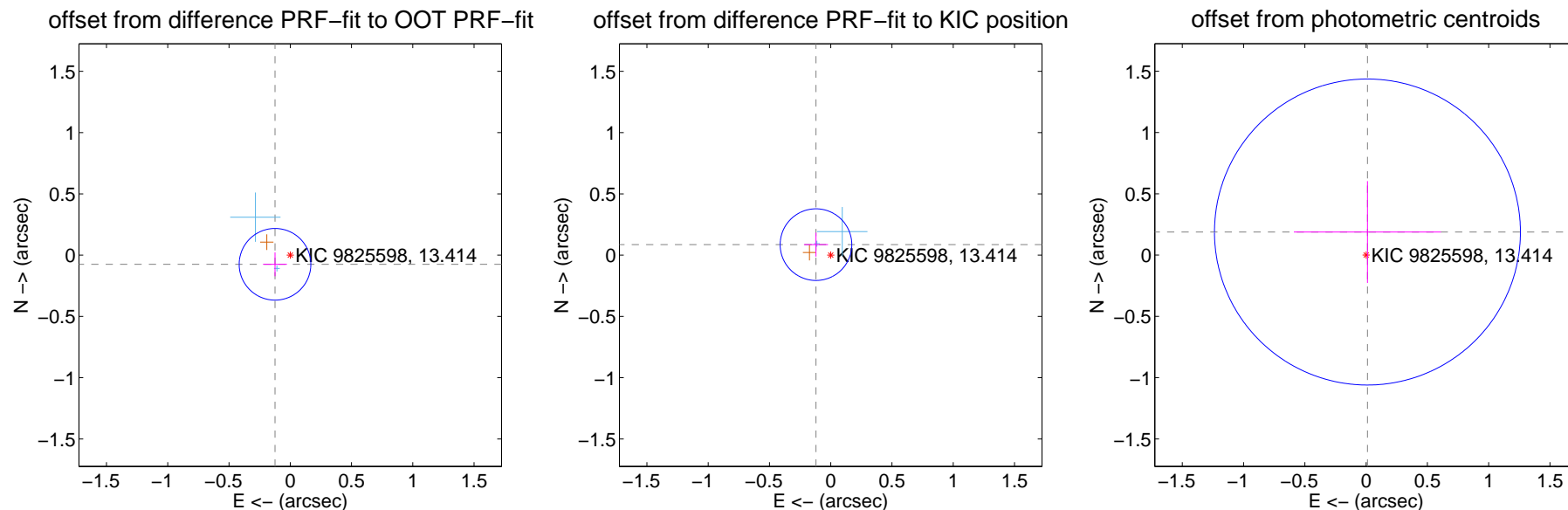
DV Centroid Data

Supplemental centroid analysis for 009825598-04. Kepler magnitude: 13.41. Transit SNR 7.22

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.145 ± 0.097	1.49	0.125 ± 0.098	-0.075 ± 0.097
PRF-fit source offset from KIC position	0.148 ± 0.097	1.52	0.120 ± 0.098	0.086 ± 0.097
photometric centroid source offset	0.19 ± 0.42	0.45	-0.01 ± 0.60	0.19 ± 0.42



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.

Q1 no difference image



Q1 no OOT image



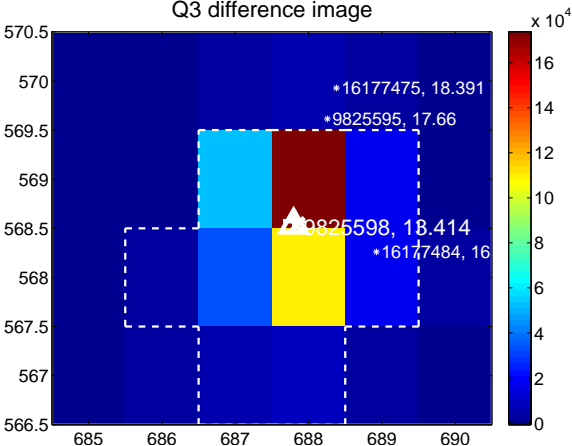
Q2 no difference image



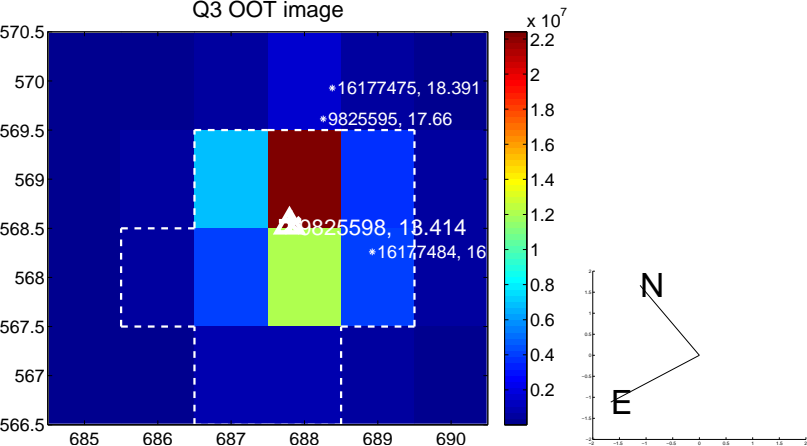
Q2 no OOT image



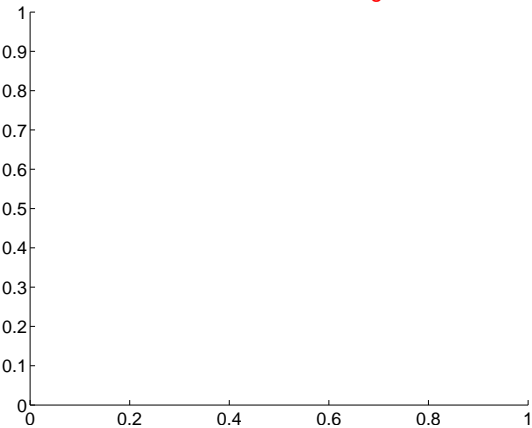
Q3 difference image



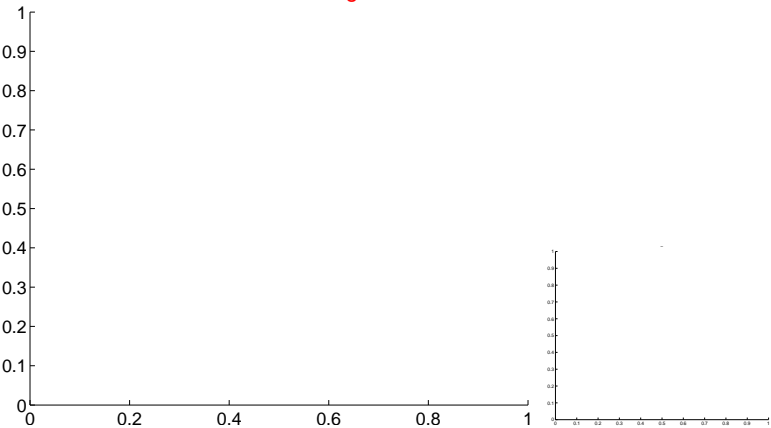
Q3 OOT image



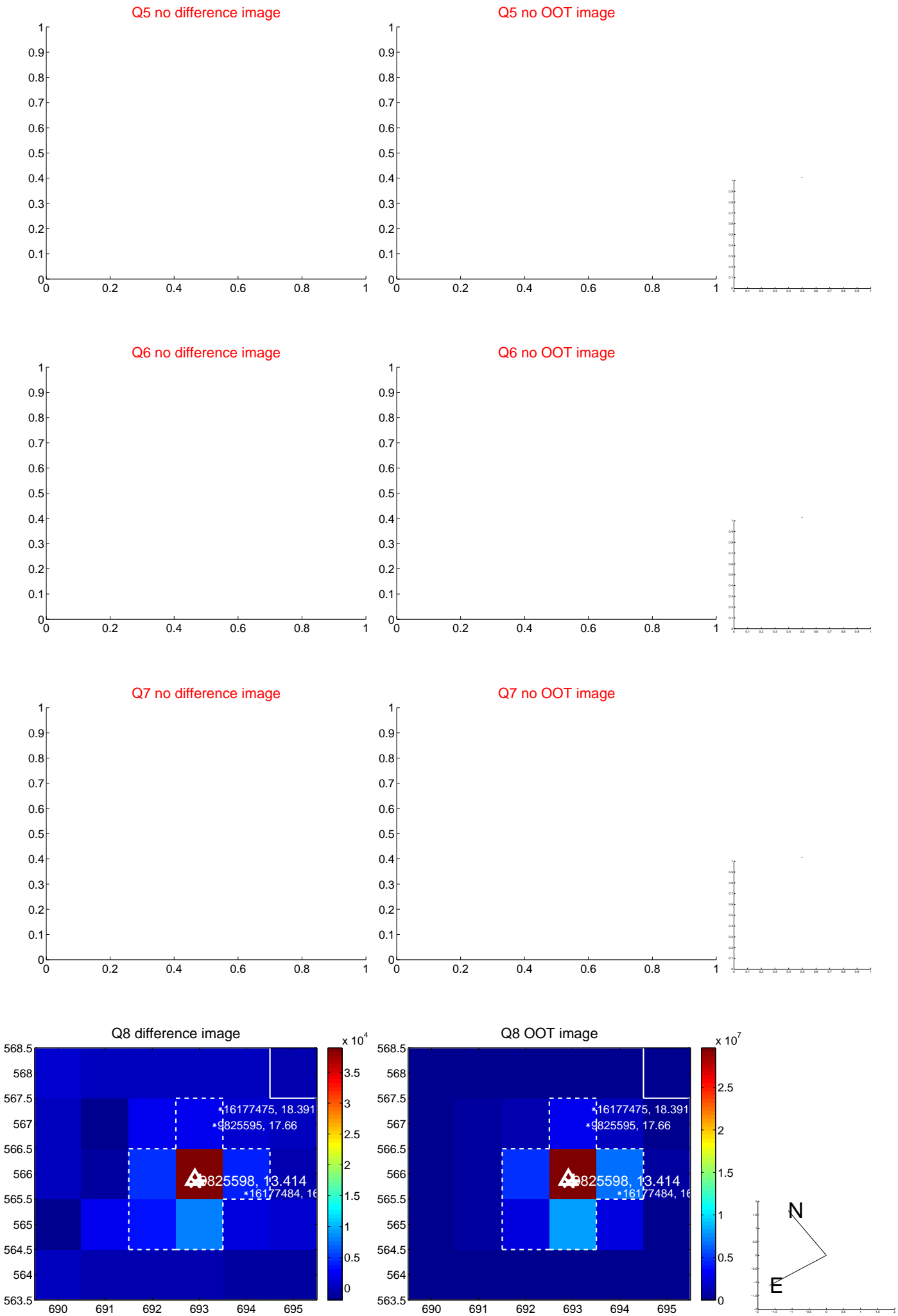
Q4 no difference image



Q4 no OOT image



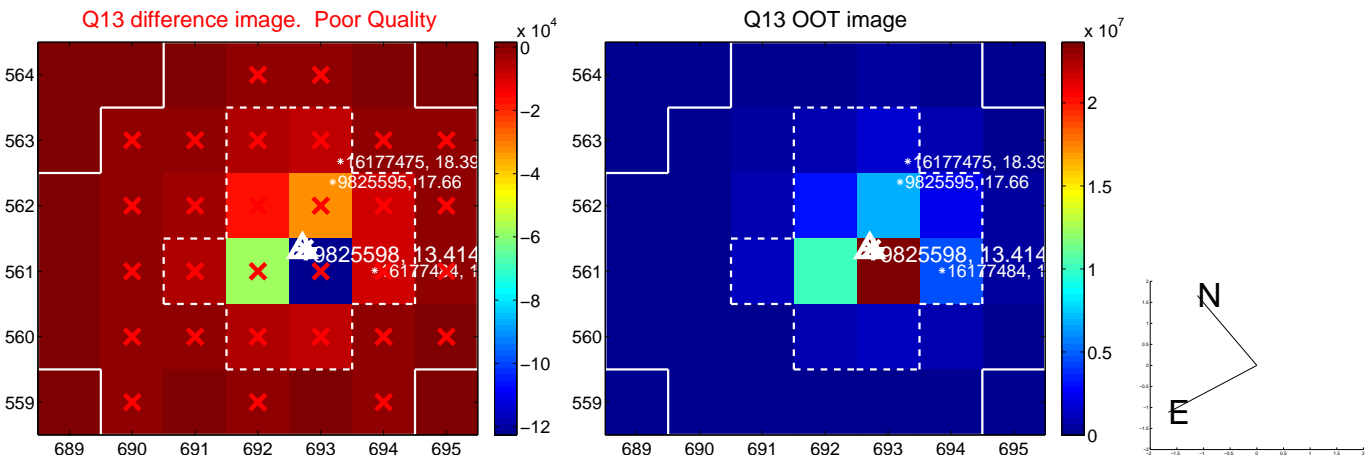
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



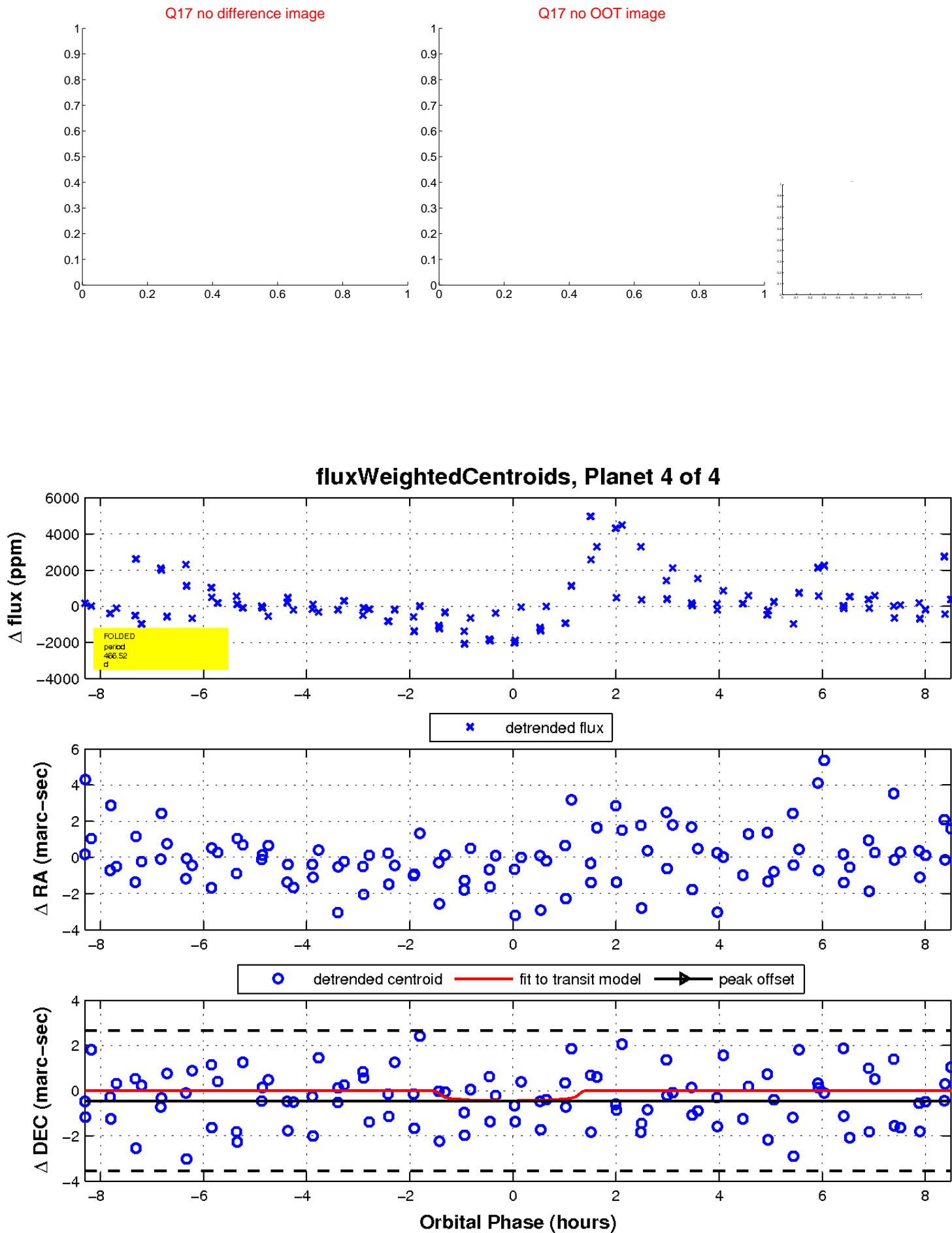
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

