

KIC 009837544

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})
009837544-01	OBS	3529.01	71.661165	172.916198	325293.0	4.500	4634.2	-1.0	0.82	5075	38.32	4.18
009837544-02	OBS	No	71.661673	164.885808	264768.2	3.500	4015.5	-1.0	0.82	5075	40.49	4.18
009837544-03	OBS	No	11.943528	140.767396	12008.6	15.000	148.2	-1.0	0.82	5075	8.76	45.61
009837544-04	OBS	No	212.672492	322.884906	7967.5	15.000	65.3	-1.0	0.82	5075	7.14	0.98
009837544-05	OBS	No	284.865731	174.540434	575.8	14.949	64.7	5.3	0.82	5075	2.08	0.66
009837544-06	OBS	No	288.684275	313.175858	1168.4	10.134	26.5	9.8	0.82	5075	5.39	0.65
009837544-07	OBS	No	284.844834	318.988322	5958.6	3.000	28.9	-1.0	0.82	5075	6.18	0.66
009837544-09	OBS	No	258.775431	371.133438	556.6	17.124	17.9	5.3	0.82	5075	2.22	0.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009837544-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE—CENT_NOFITS
009837544-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
009837544-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS—HALO_GHOST
009837544-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009837544-05	OBS	FP	0.00	1	0	1	0	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
009837544-06	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009837544-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009837544-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—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

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.

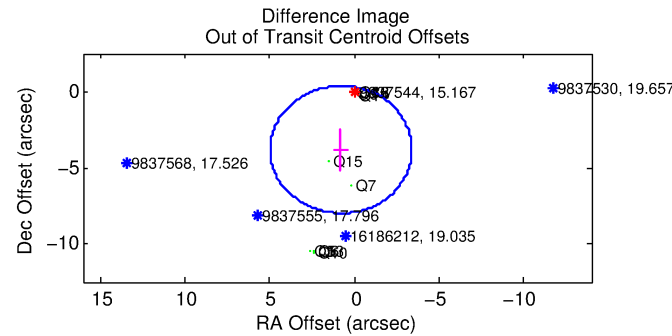
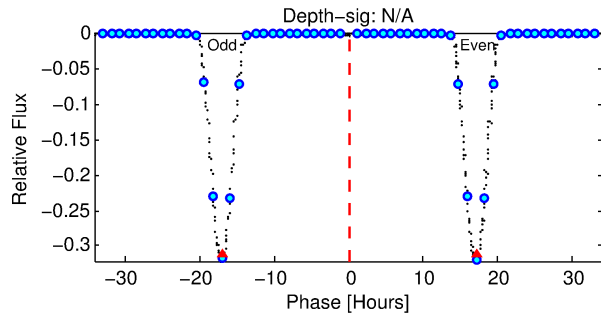
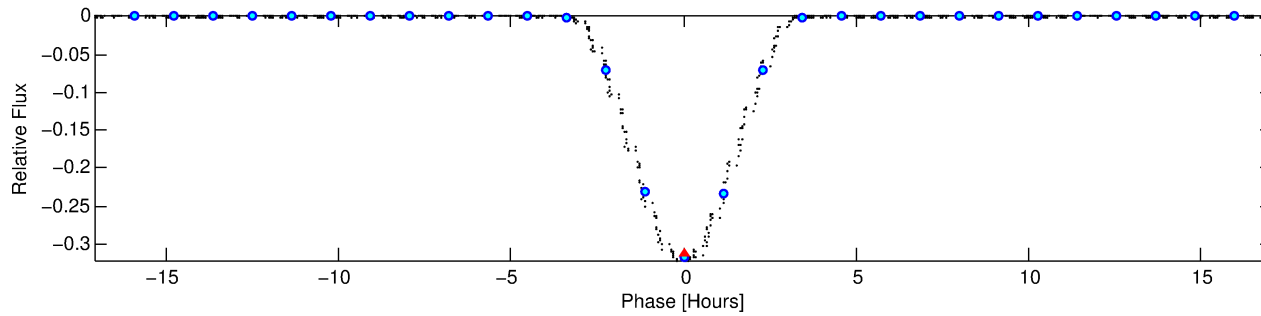
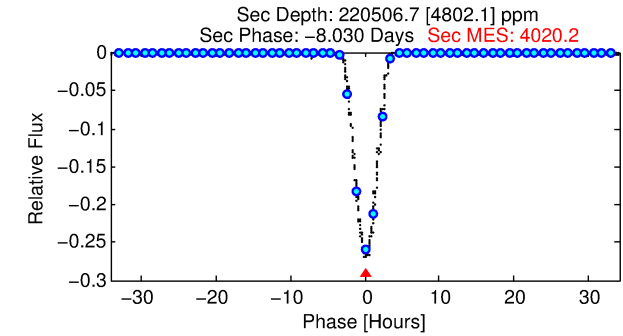
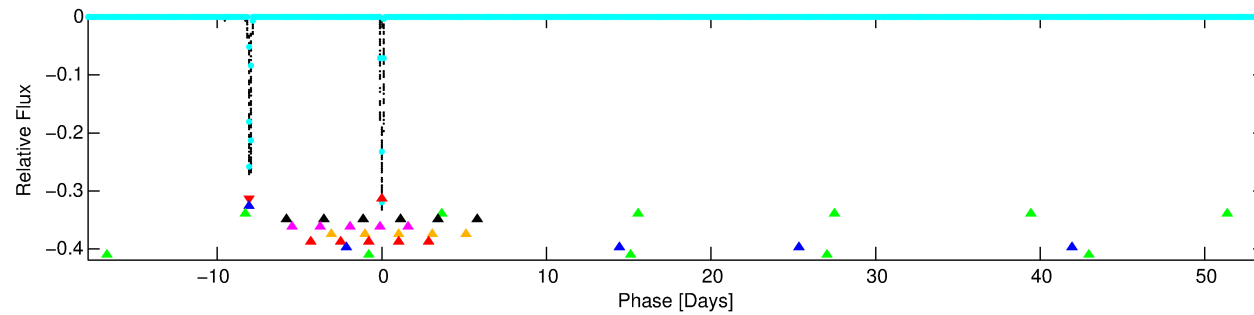
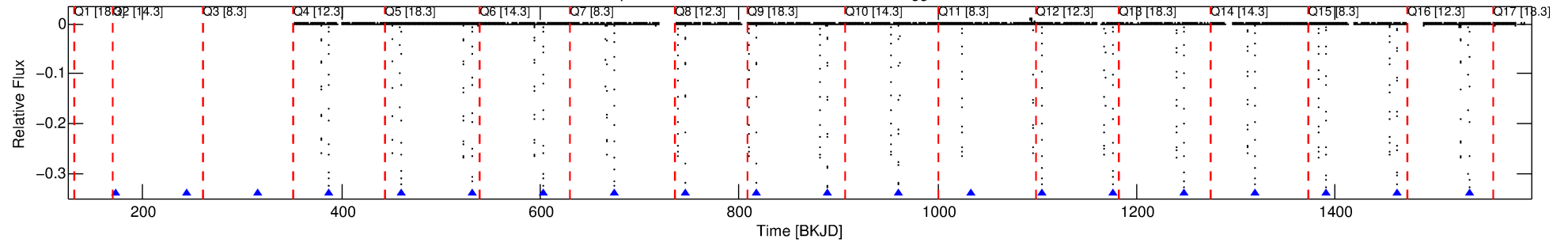
Ephemeris Match Information For 009837544-01

No Significant Match Found

DV One-Page Summary

KIC: 9837544 Candidate: 1 of 9 Period: 71.661 d
KOI: K03529.01 Corr: 0.840

Kp: 15.17 R*: 0.82 Rs Teff: 5075.0 K Logg: 4.50 Fe/H: 0.020



TPS TCE Results:

Period = 71.66117 d
Epoch = 172.9162 BKJD

DV fit results are unavailable

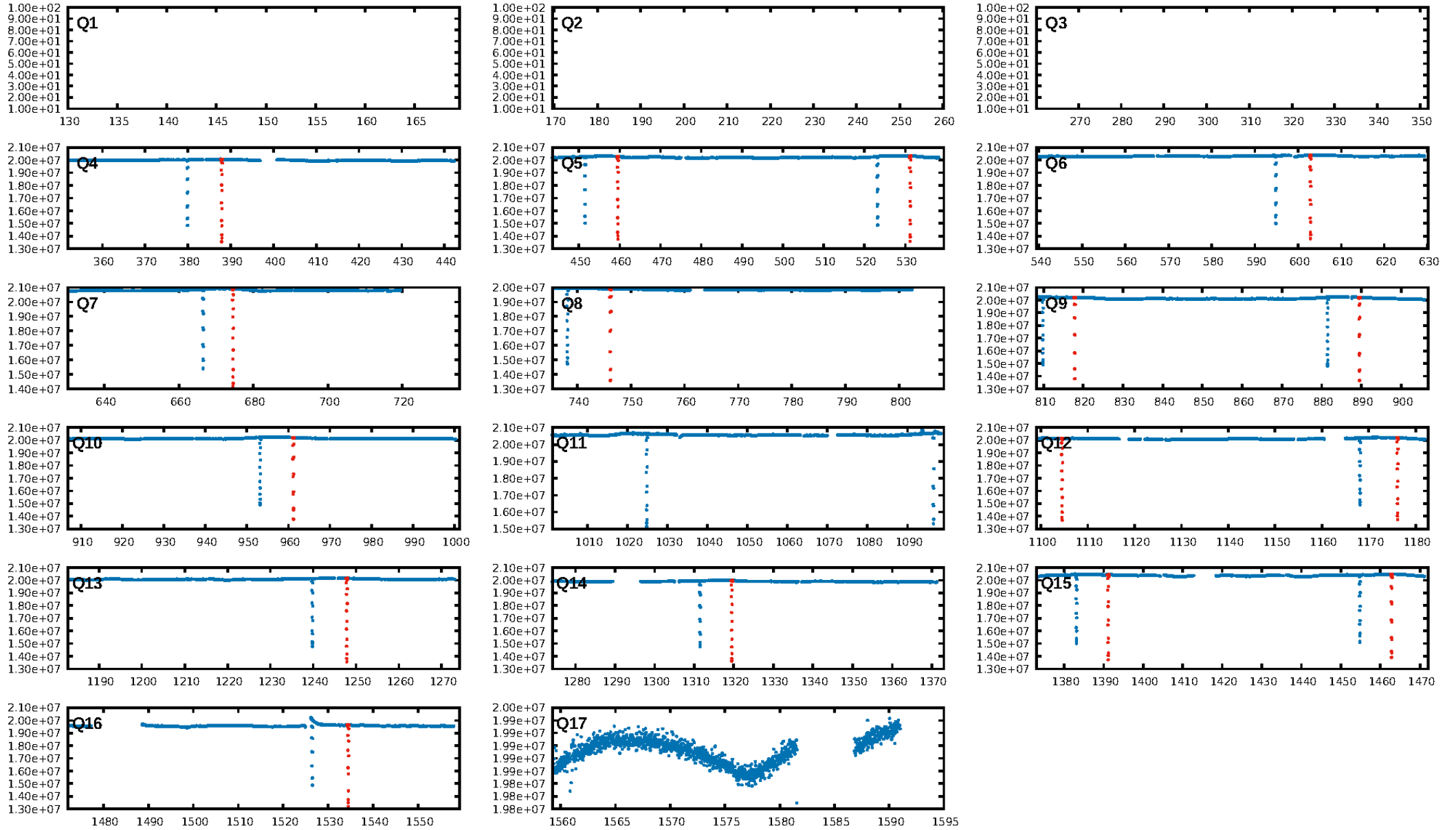
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [91.52σ]
LongPeriod-sig: 0.2% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [16/16]
GhostDiagnostic-chr: 6.073
Centroid-sig: 0.0%
Centroid-so: 0.577 arcsec [296.87σ]
OotOffset-rm: 3.884 arcsec [2.79σ]
KicOffset-rm: 0.083 arcsec [1.22σ]
OotOffset-st: 3/2/4/3 [12]
KicOffset-st: 3/2/4/3 [12]
DiffImageQuality-fgm: 1.00 [12/12]
DiffImageOverlap-fno: 1.00 [12/12]

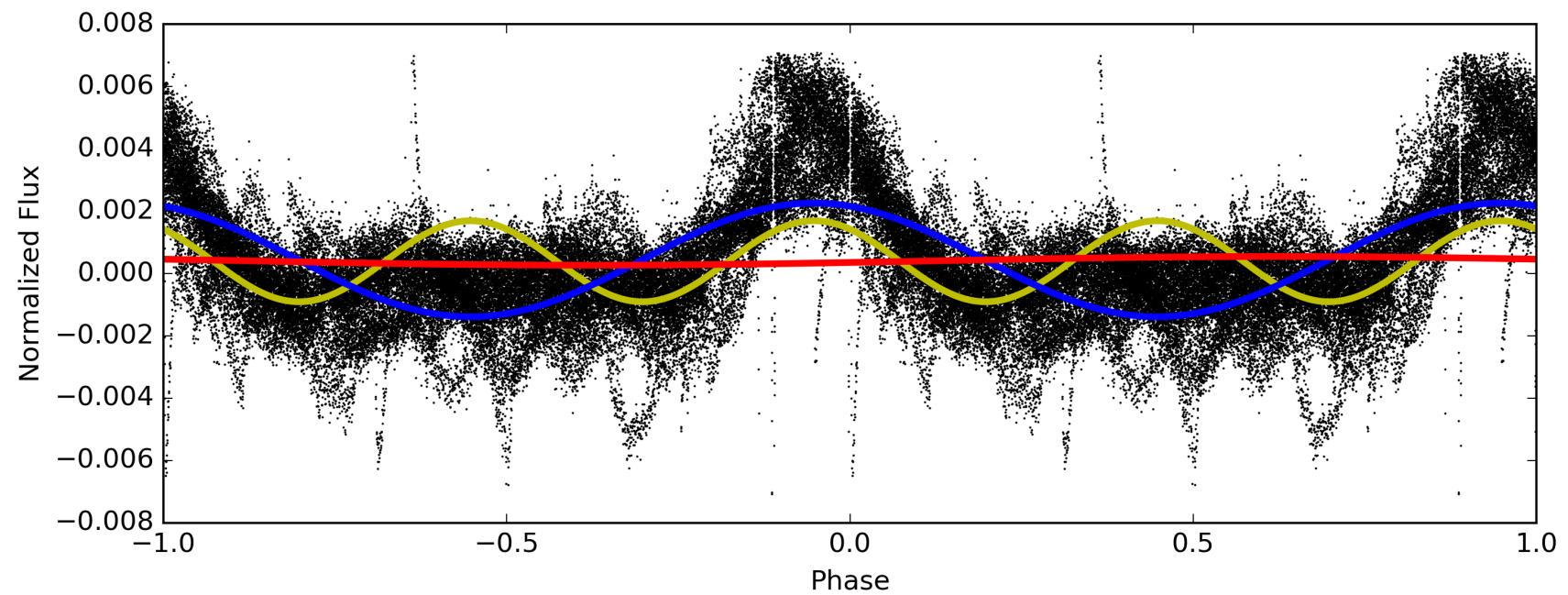
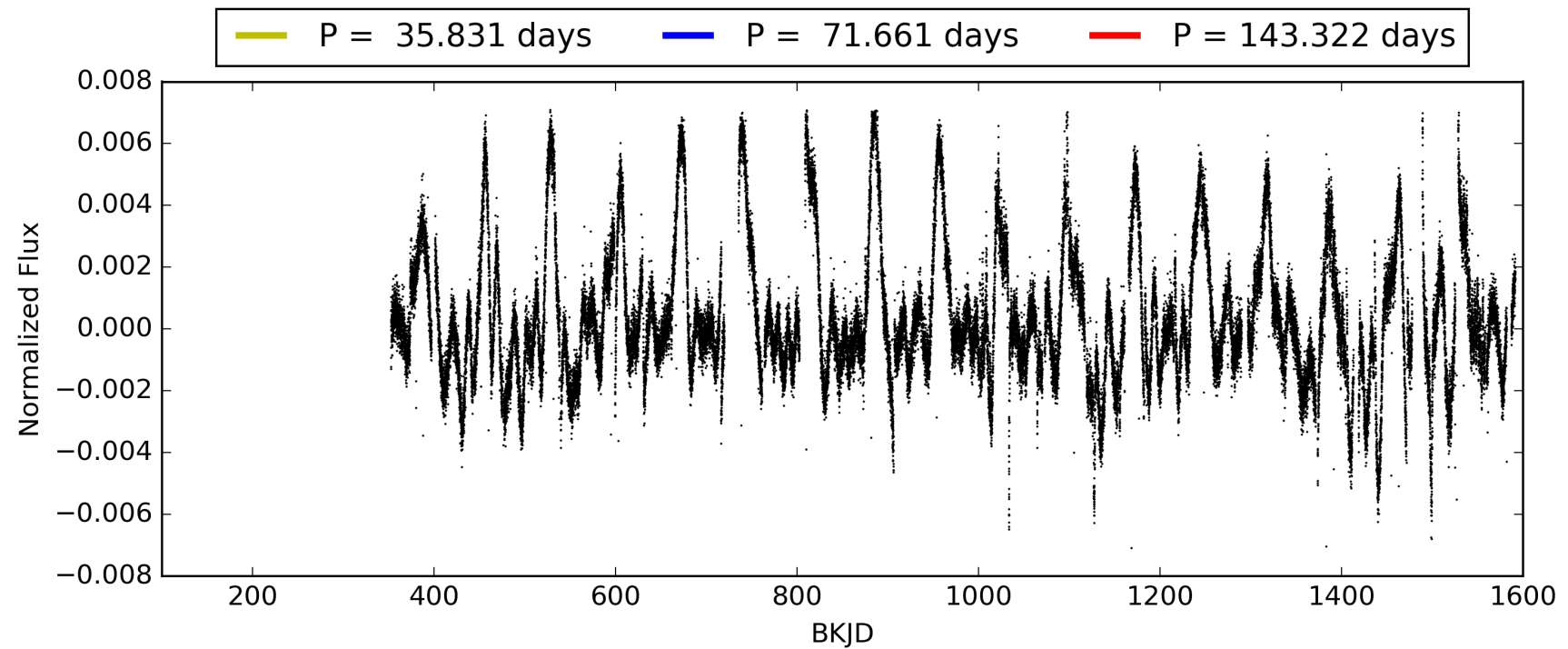
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009837544-01, PDC Light Curves

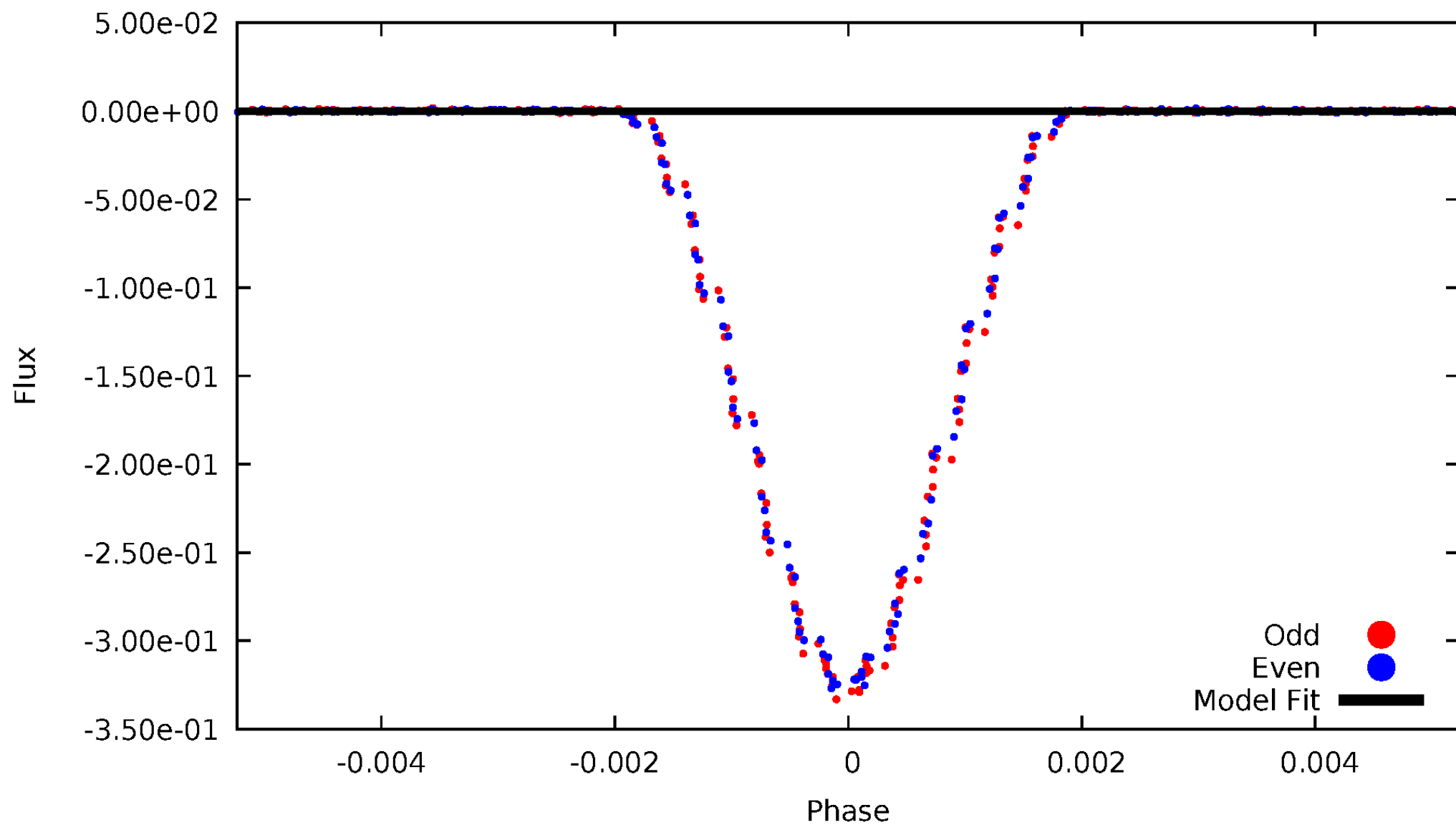


TCE 009837544-01



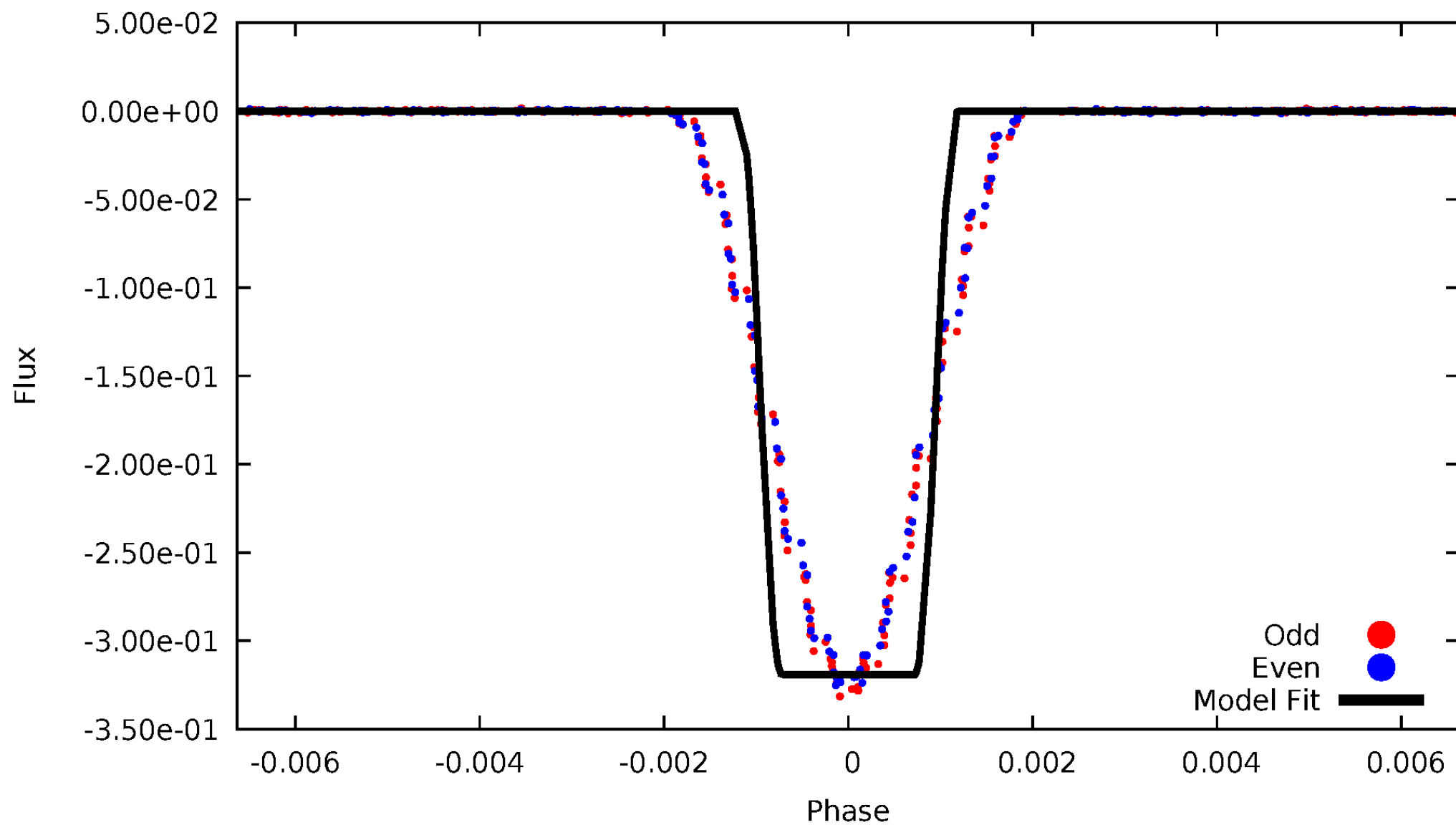
DV Odd/Even

TCE 009837544-01



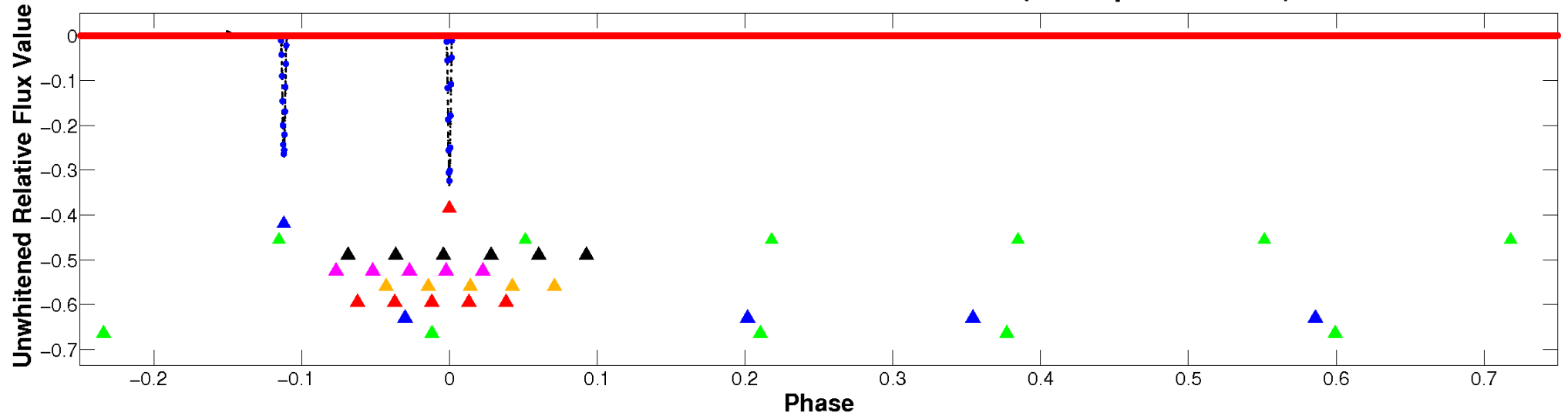
ALT Odd/Even

TCE 009837544-01



Non-Whitened Vs. Whitened Light Curve

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

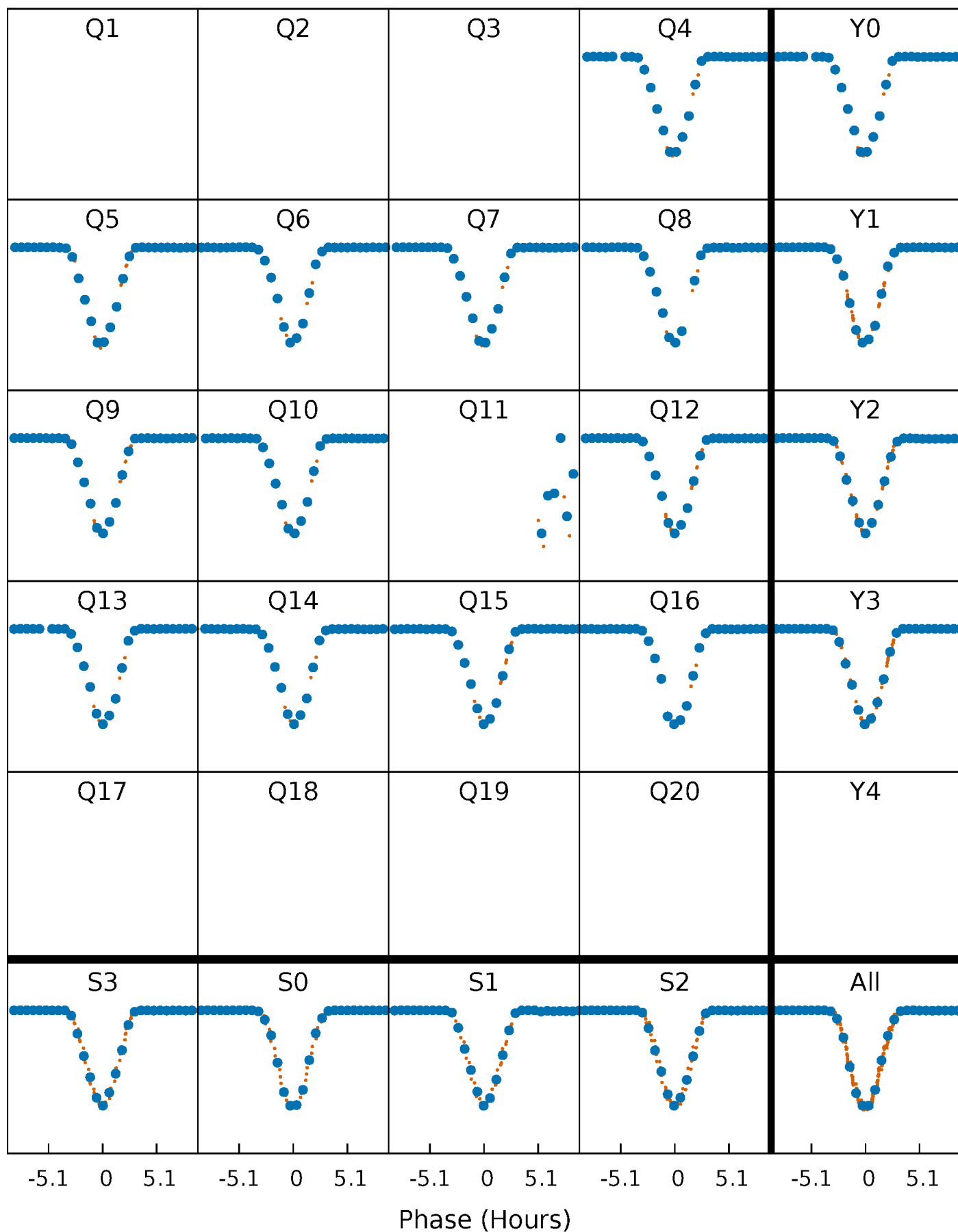


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



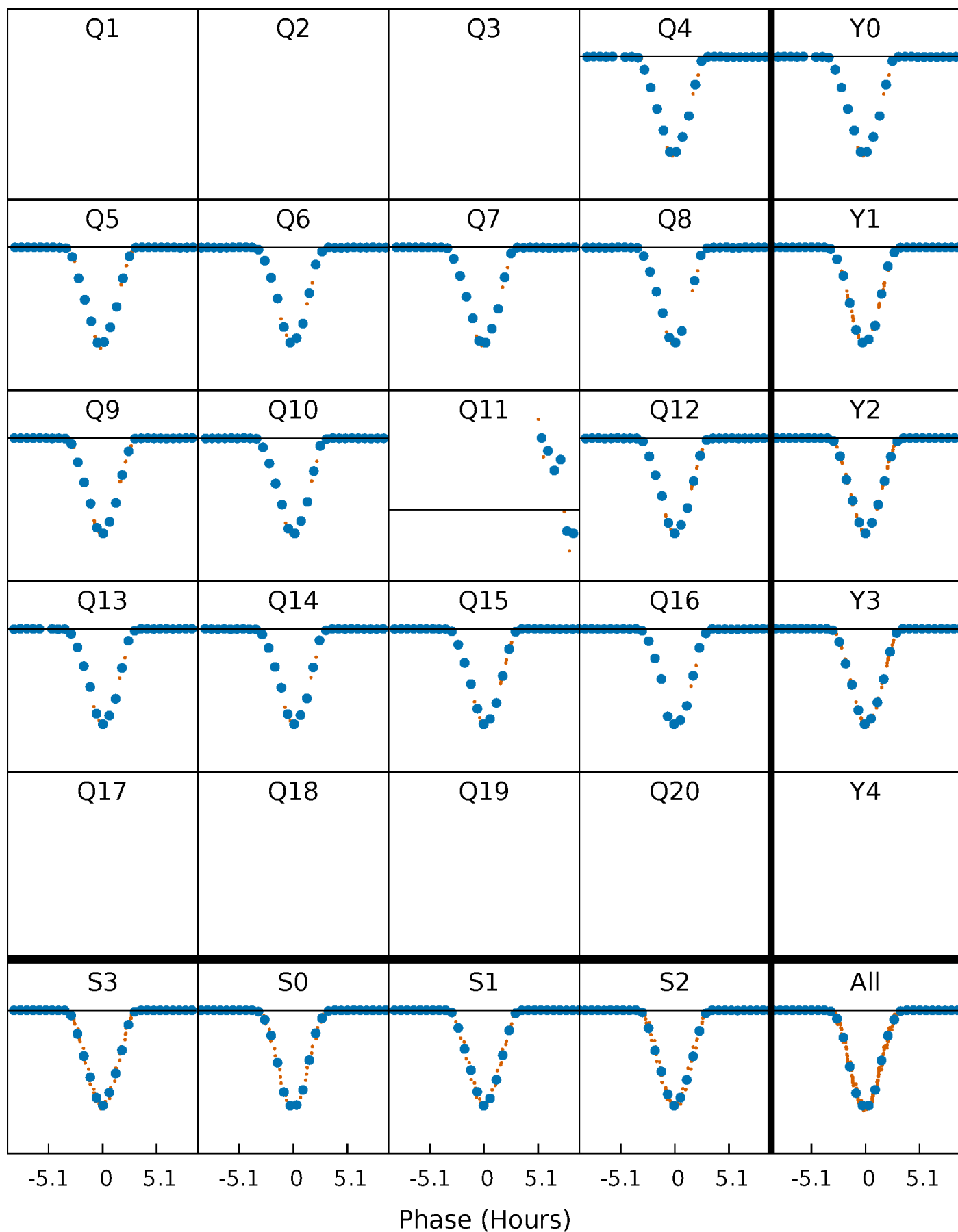
PDC Quarter-Phased Transit Curves

TCE 009837544-01 P= 71.661165 Days $T_0=172.916198$ (BKJD)



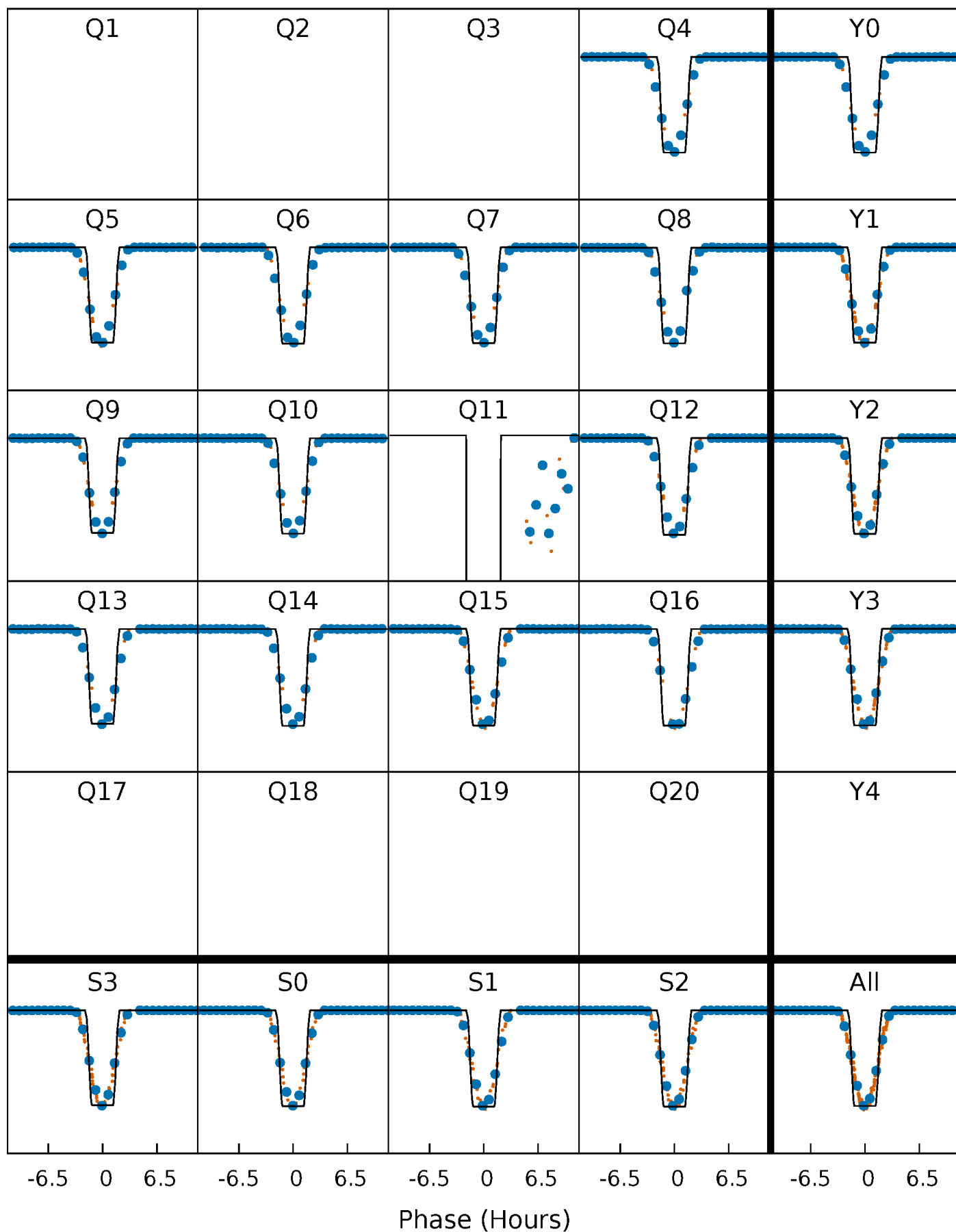
DV Quarter-Phased Transit Curves

TCE 009837544-01 P= 71.661165 Days $T_0=172.916198$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

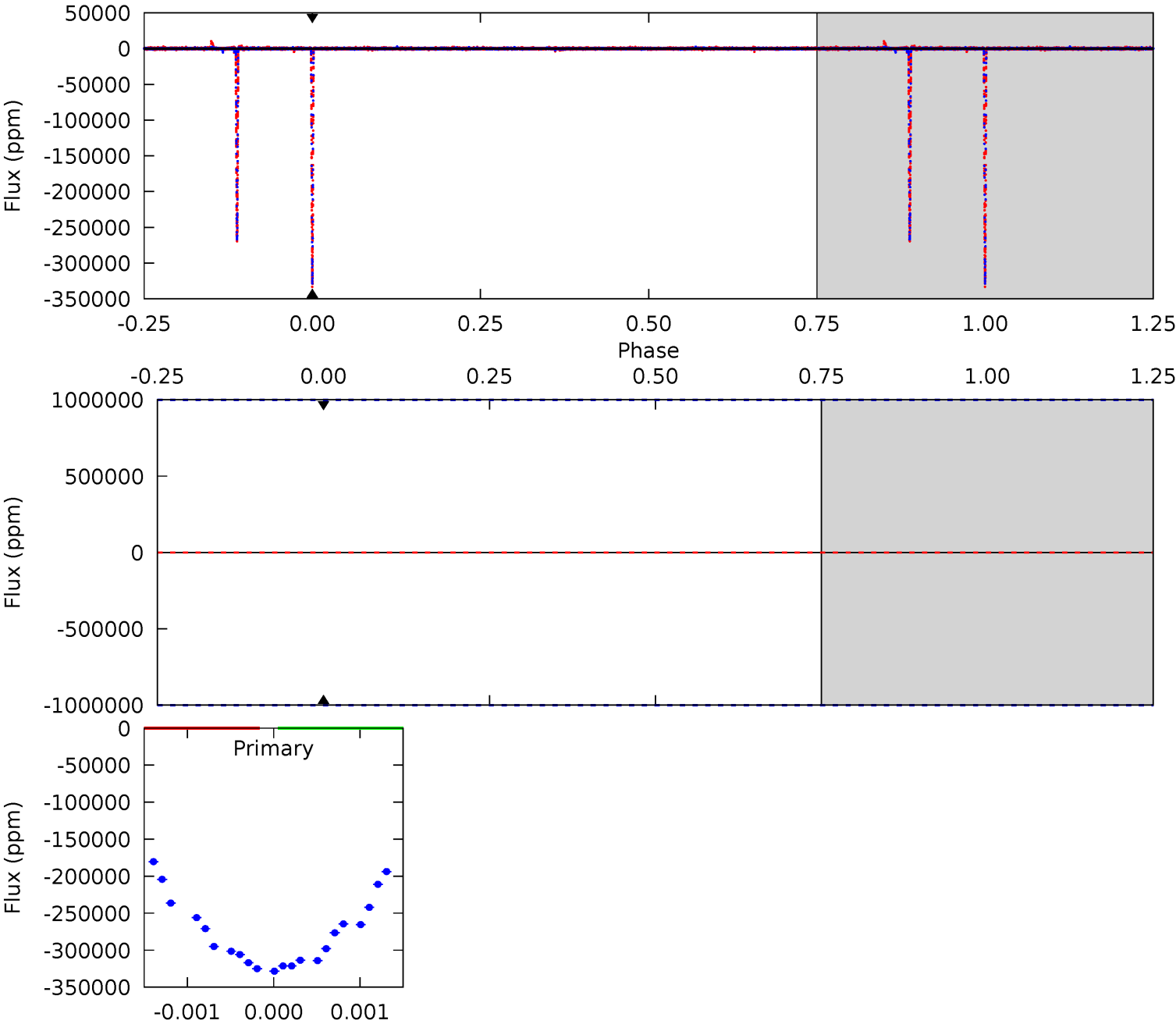
TCE 009837544-01 P= 71.661165 Days $T_0=172.915414$ (BKJD)



DV Model-Shift Uniqueness Test

009837544-01, P = 71.661165 Days, E = 172.916198 Days

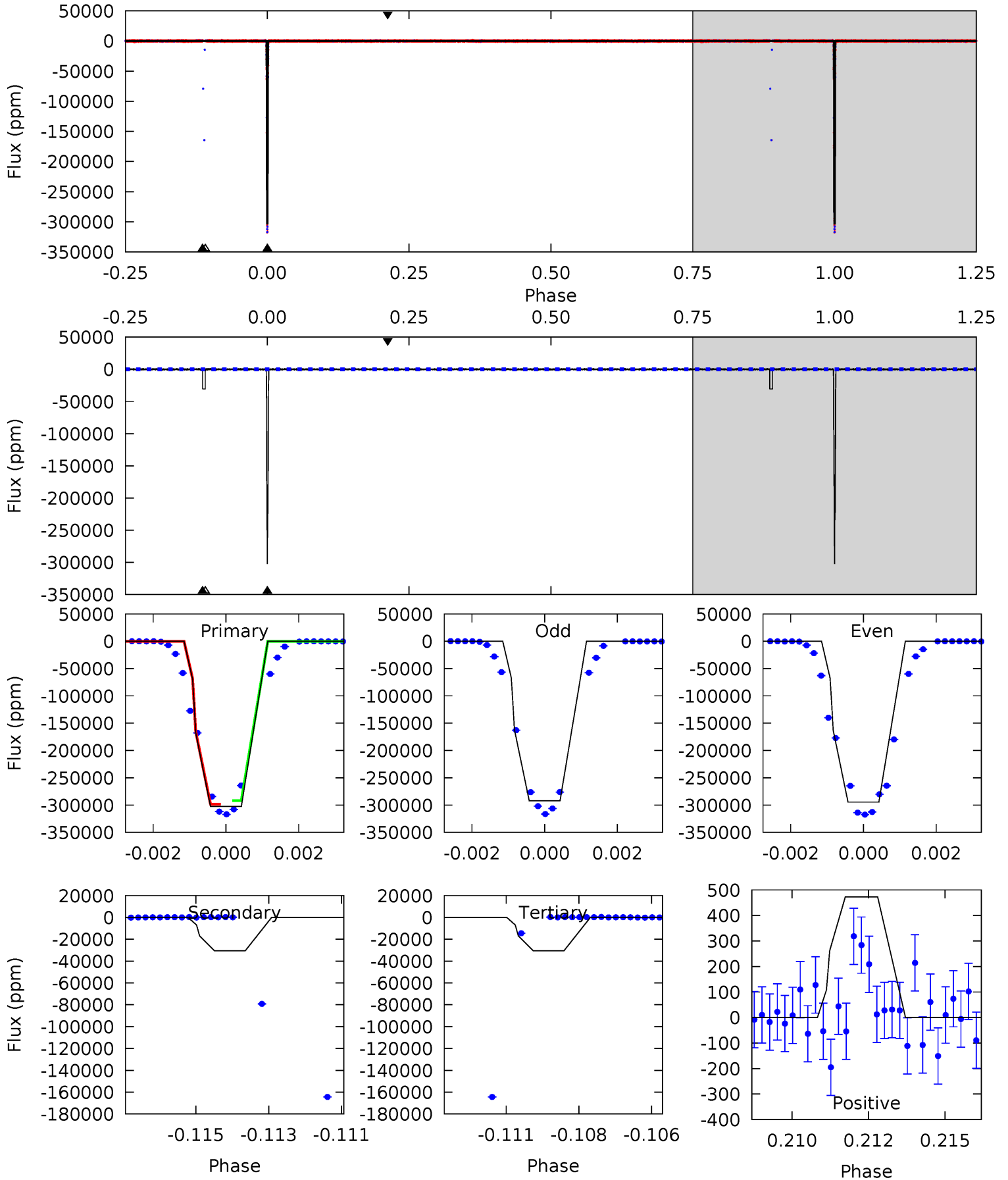
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009837544-01, P = 71.661165 Days, E = 172.915414 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1152	116.2	116.2	1.80	5.30	3.05	1.55	1036	1150	0.00	114.4	8.37	1.00	0.00	0



Stellar Parameters For KIC 009837544

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5075^{+179}_{-179}	$4.497^{+0.095}_{-0.095}$	$0.020^{+0.300}_{-0.300}$	$0.824^{+0.088}_{-0.097}$	$0.777^{+0.098}_{-0.057}$	$1.957^{+0.744}_{-0.493}$
	+4%/-4%	+2%/-2%	+1500%/-1500%	+11%/-12%	+13%/-7%	+38%/-25%
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 009837544-01 / KOI 3529.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$38.53^{+10.06}_{-9.60}$	511^{+22}_{-26}	-2510^{+7179}_{-1995}	$-91.216^{+4435.027}_{-3603.670}$
Alt.	-30520 ± 263	$51.19^{+9.88}_{-9.88}$	511^{+25}_{-25}	3354^{+231}_{-185}	647^{+335}_{-197}

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 $A_{obs} \gg 1.0$

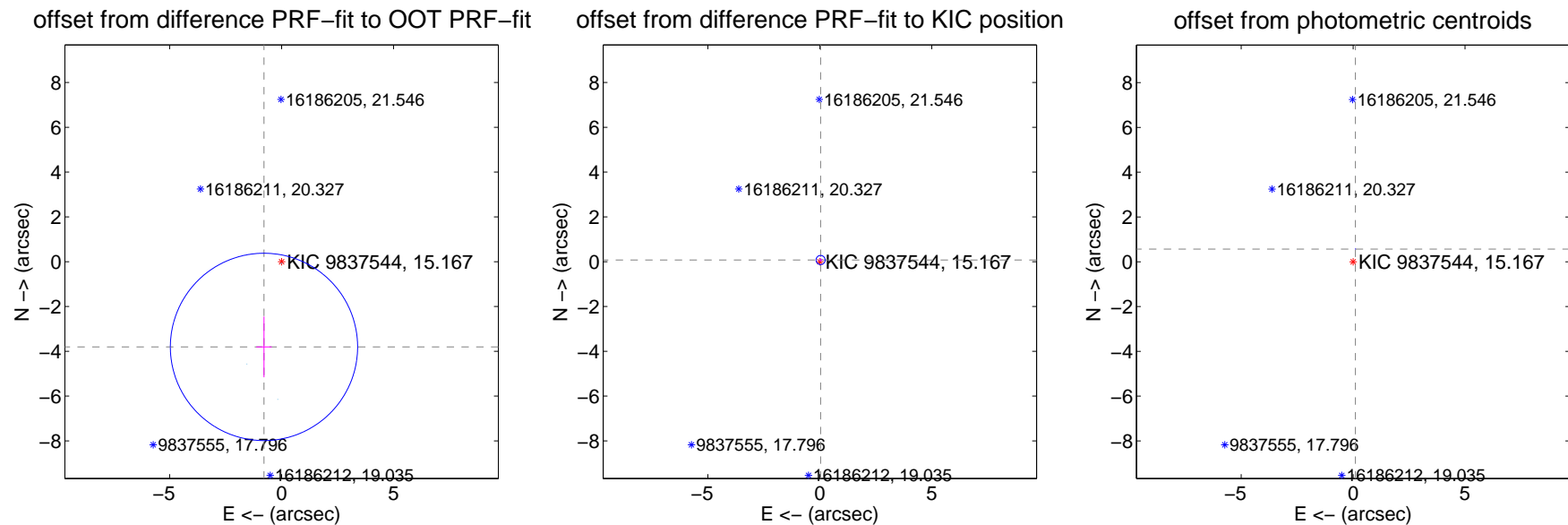
DV Centroid Data

Supplemental centroid analysis for 009837544-01. Kepler magnitude: 15.17. Transit SNR -1.00

There are 12 quarters with good PRF difference image offsets

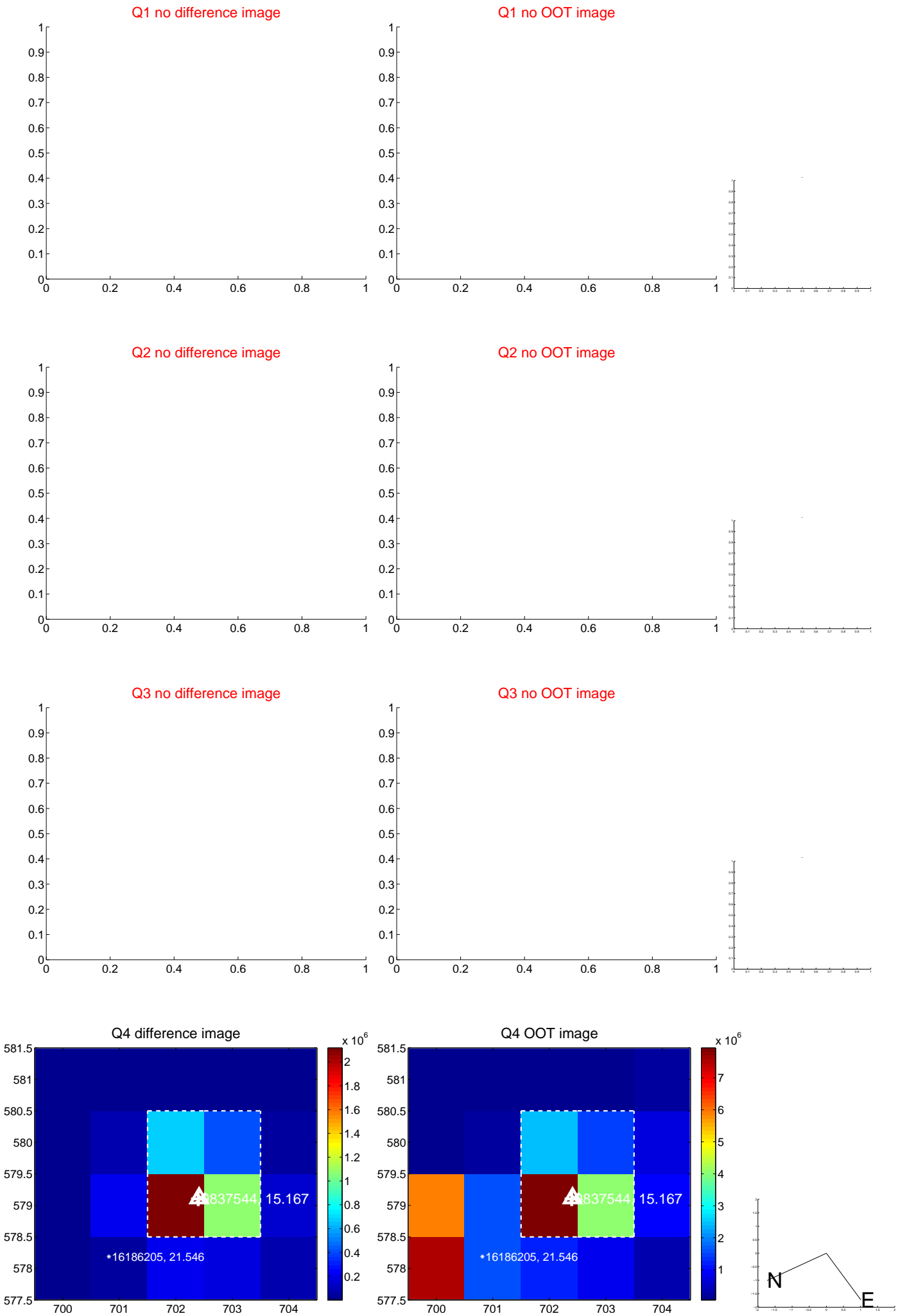
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.884 ± 1.394	2.79	0.785 ± 0.343	-3.804 ± 1.358
PRF-fit source offset from KIC position	0.083 ± 0.068	1.22	-0.035 ± 0.069	0.075 ± 0.068
photometric centroid source offset	0.58 ± 0.00	296.87	-0.11 ± 0.00	0.57 ± 0.00

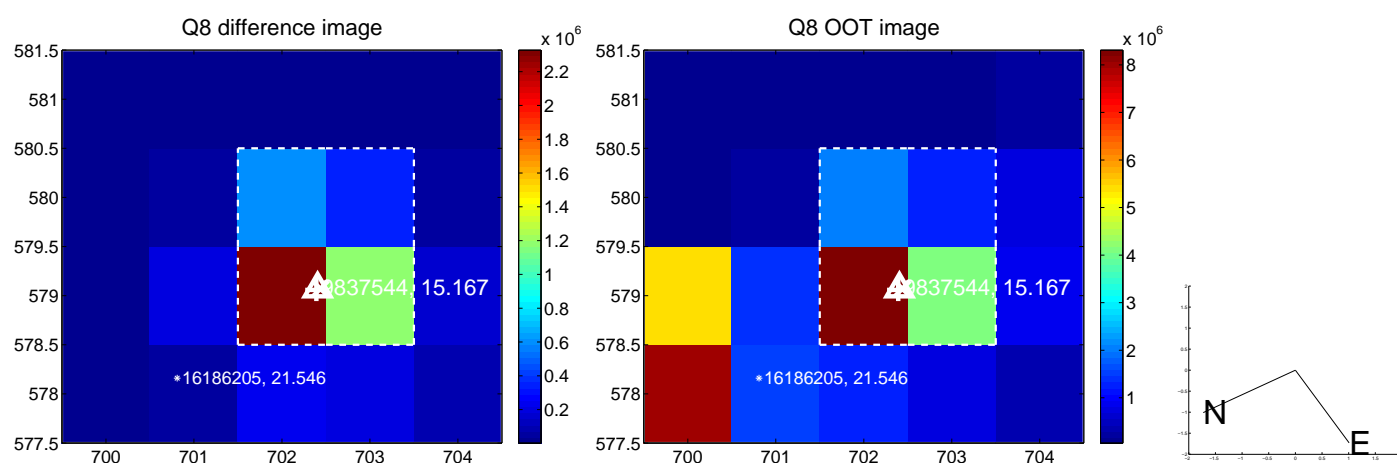
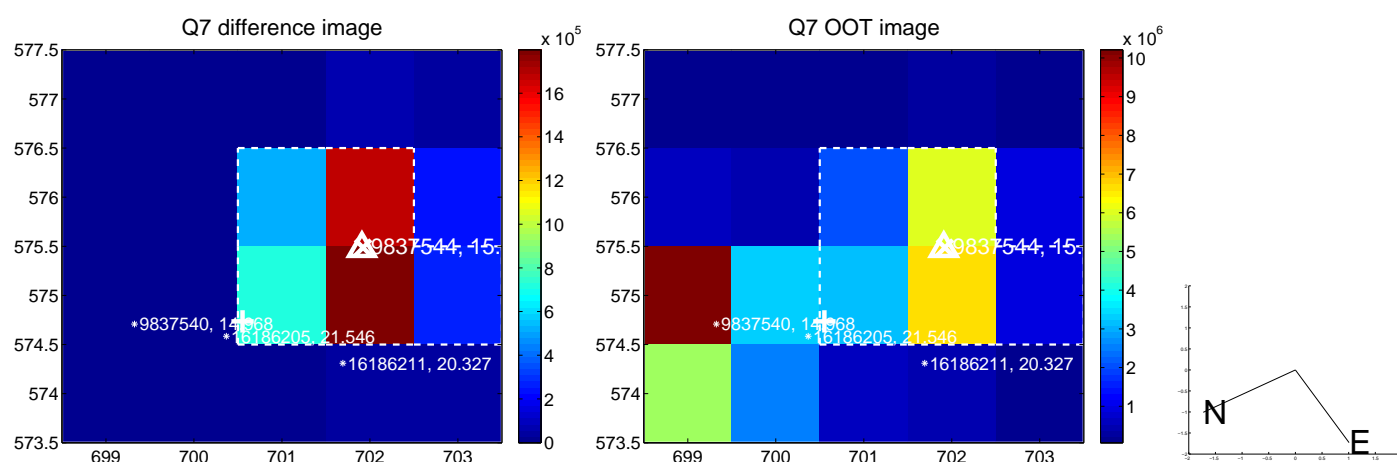
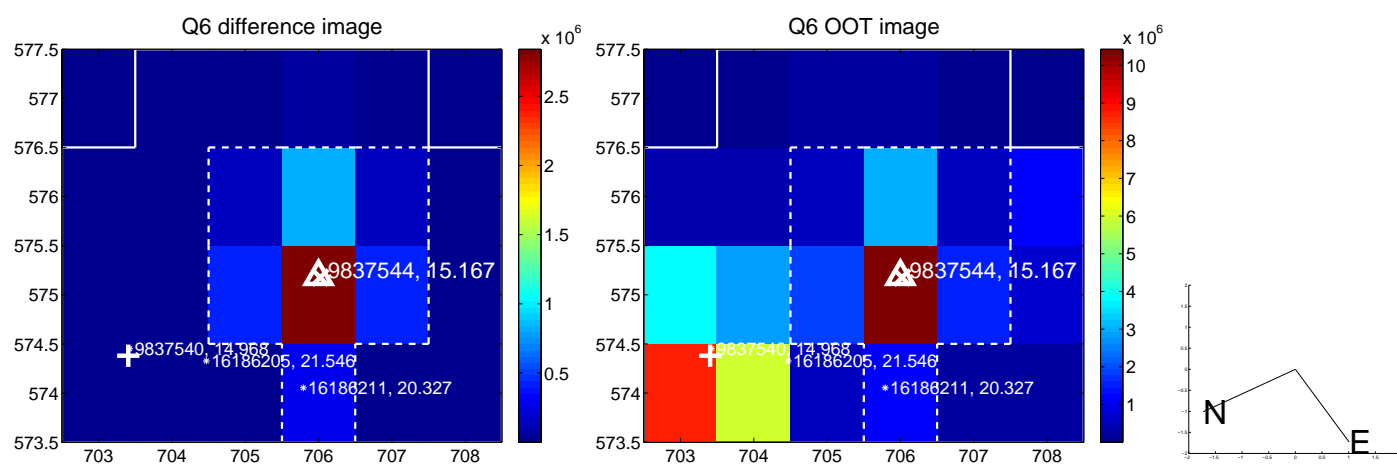
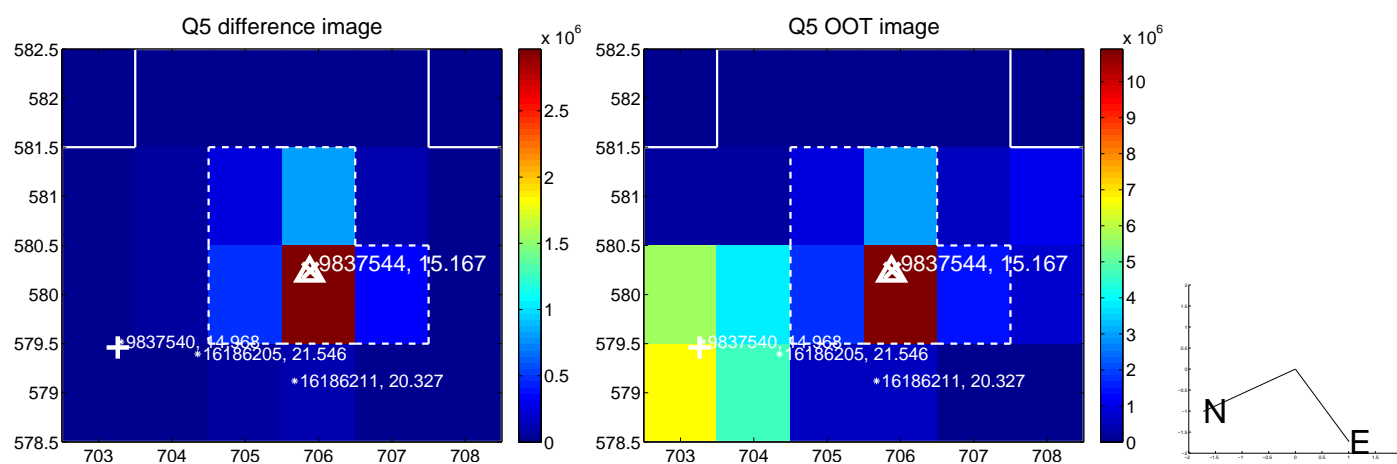


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

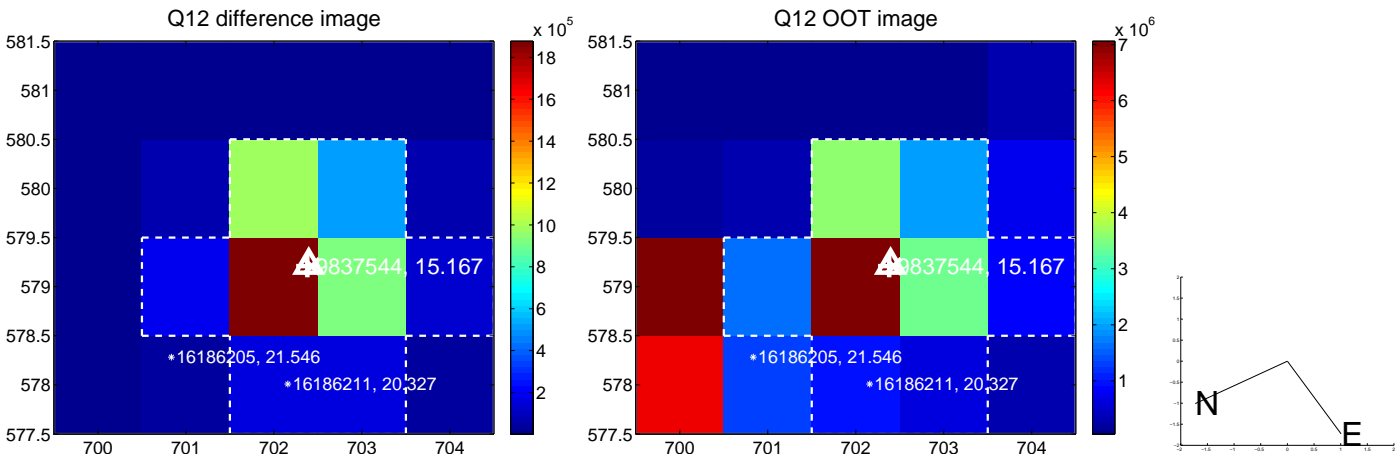
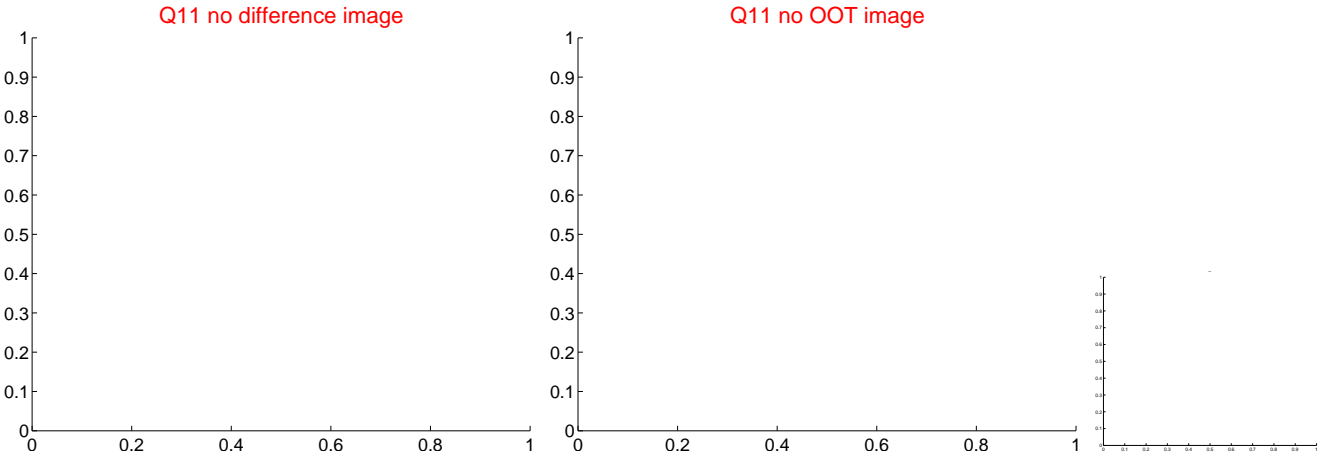
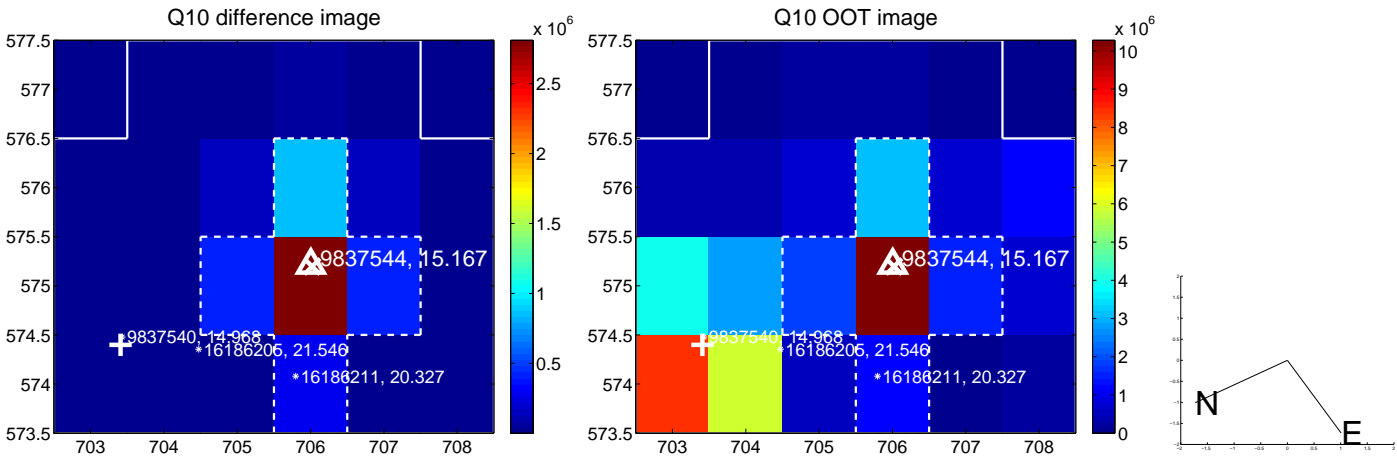
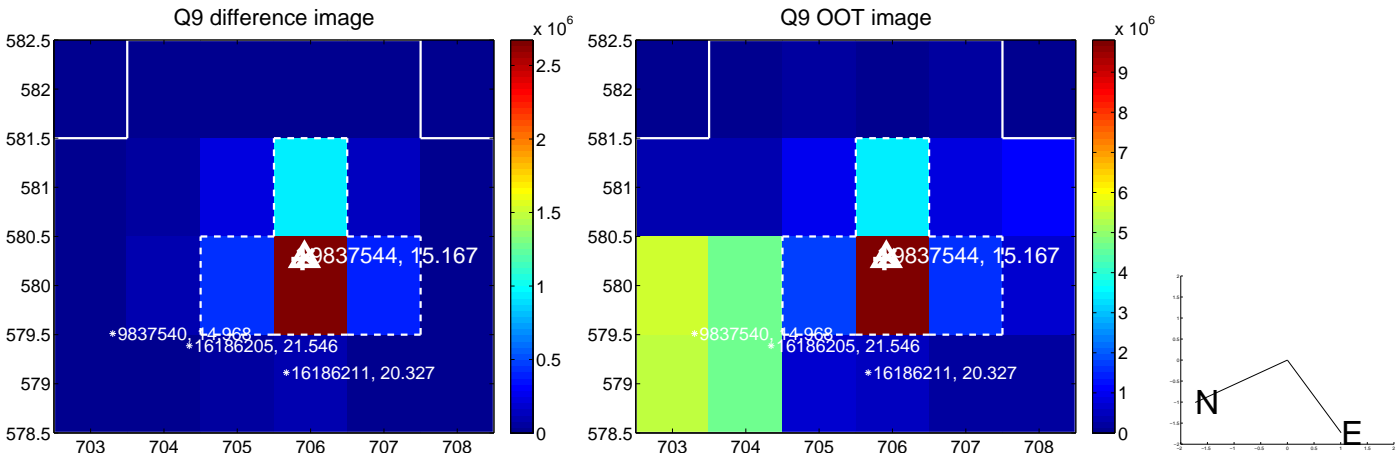
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



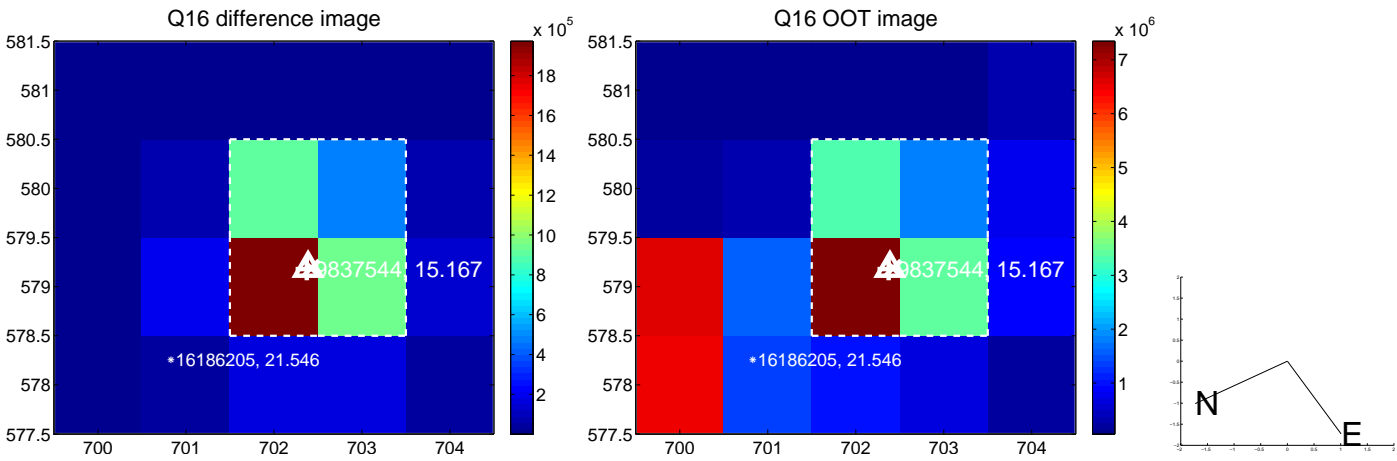
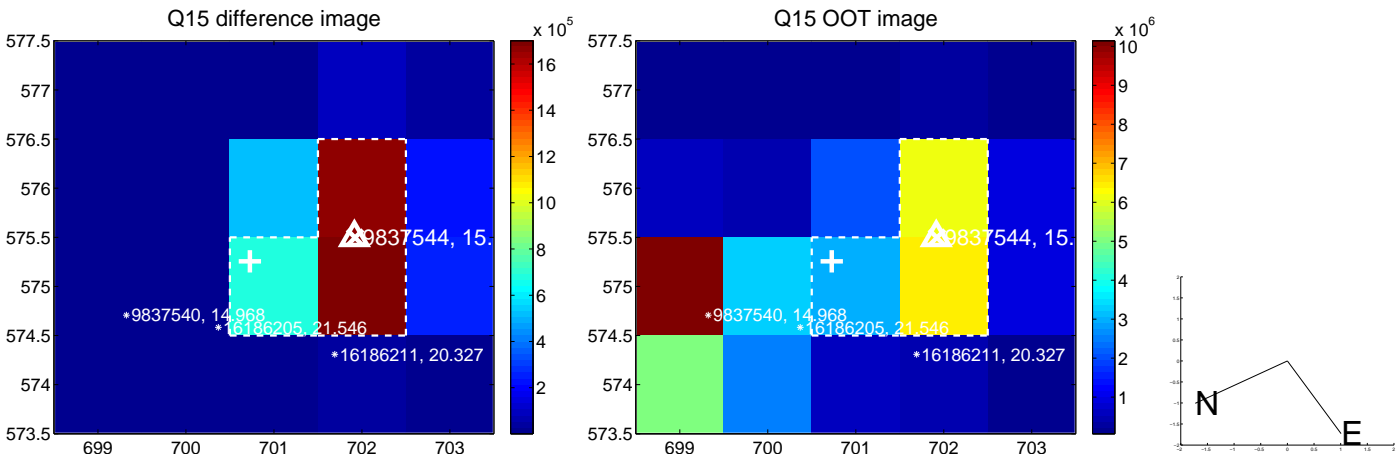
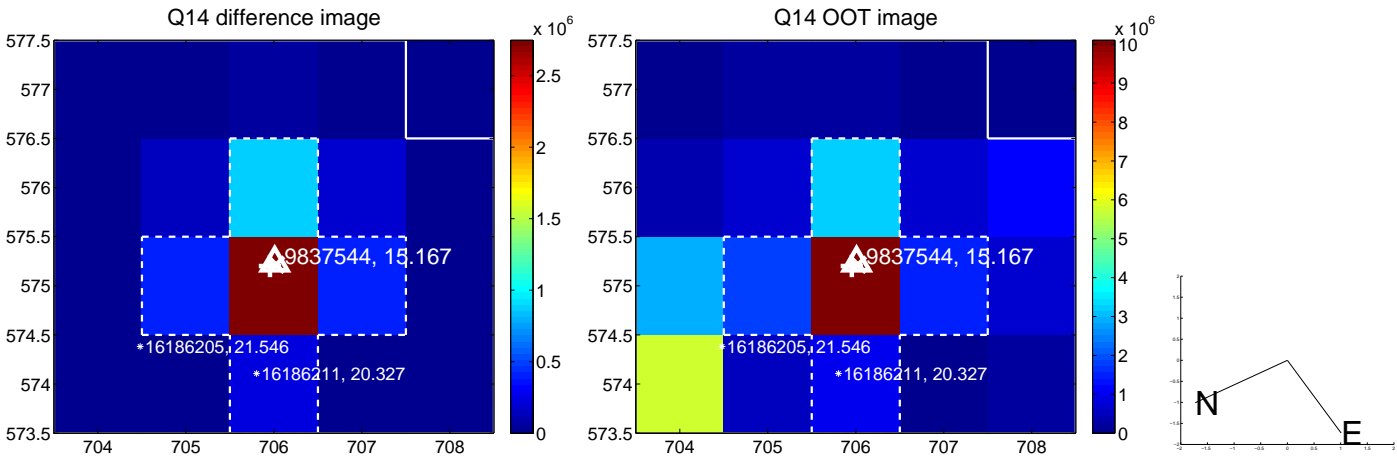
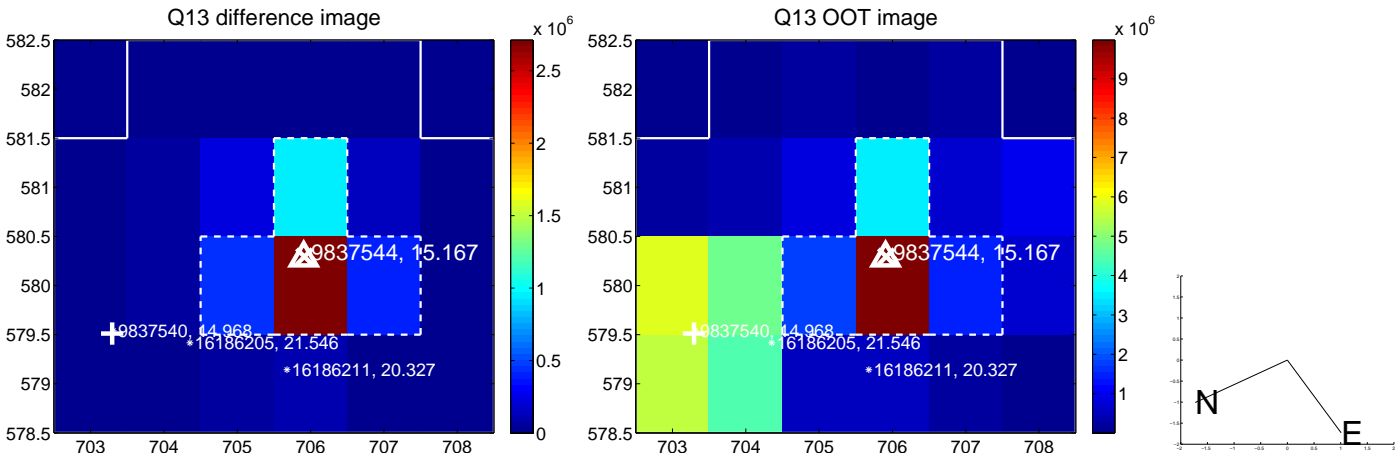
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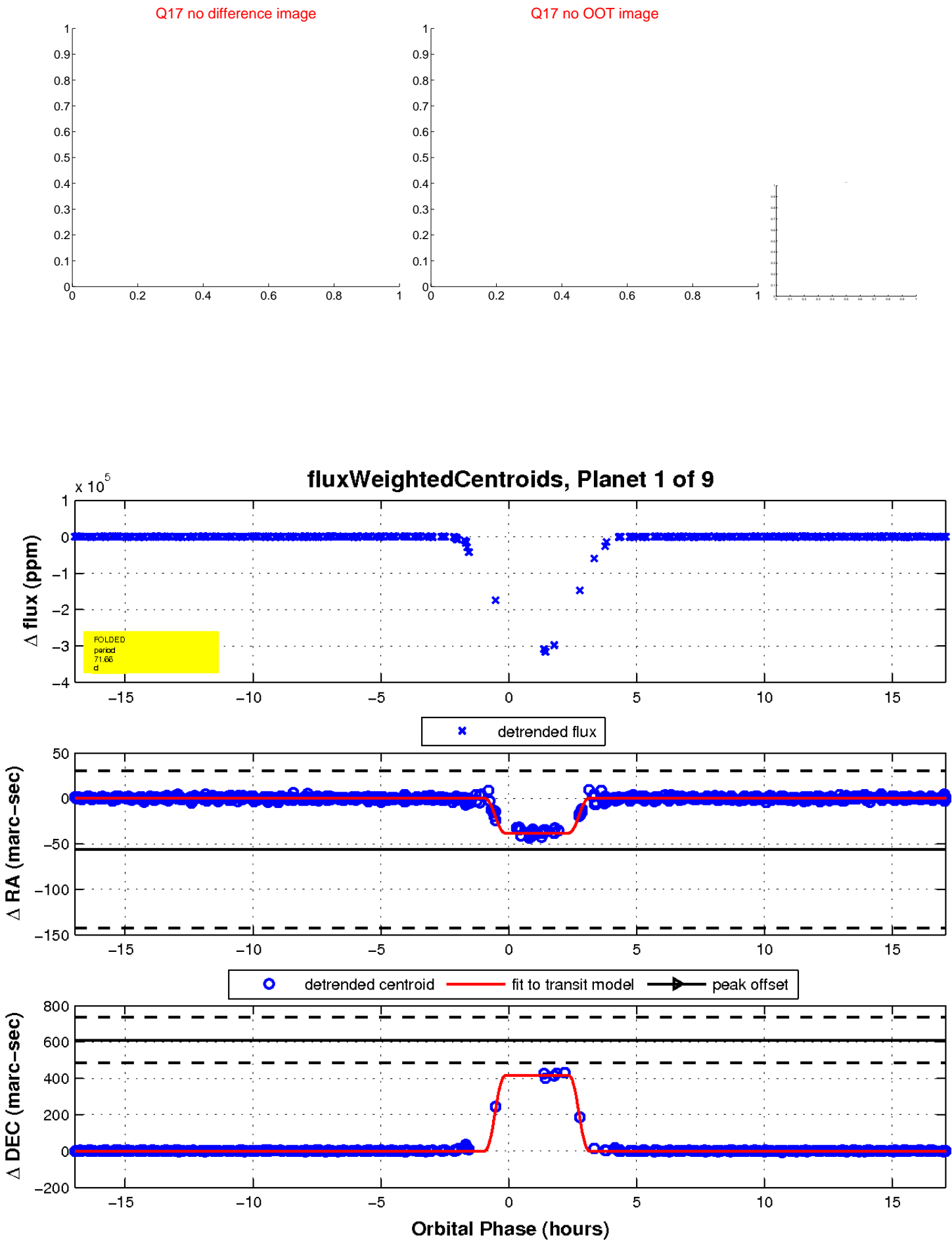
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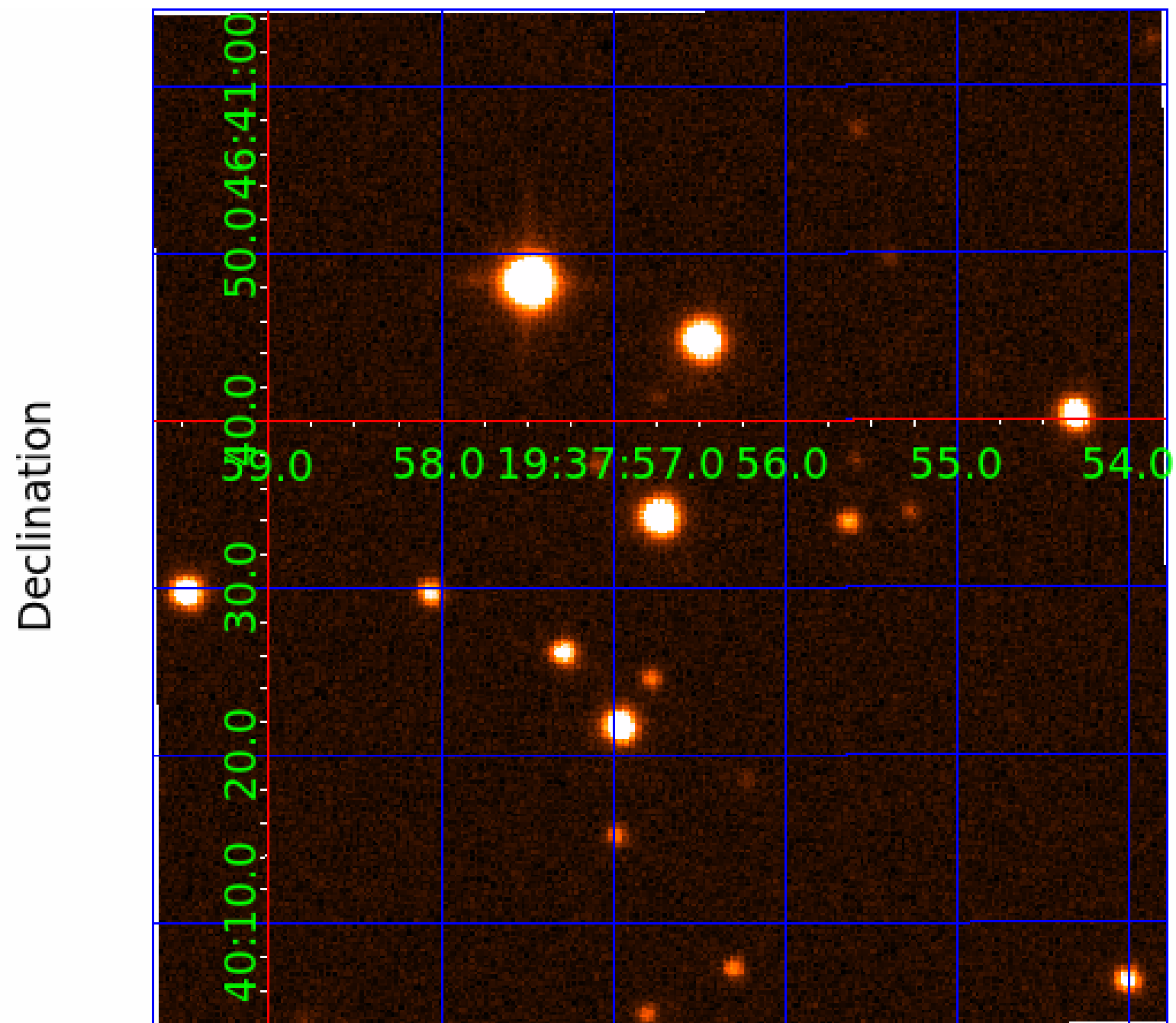
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UKIRT Image



KIC 009837544

Q1-17 DR25 TCE Parameters

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009837544-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
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009837544-06	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009837544-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009837544-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—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

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.

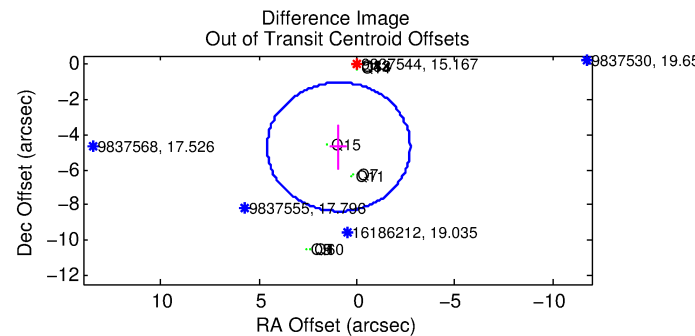
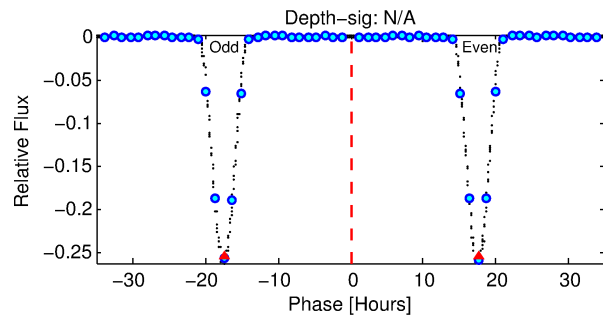
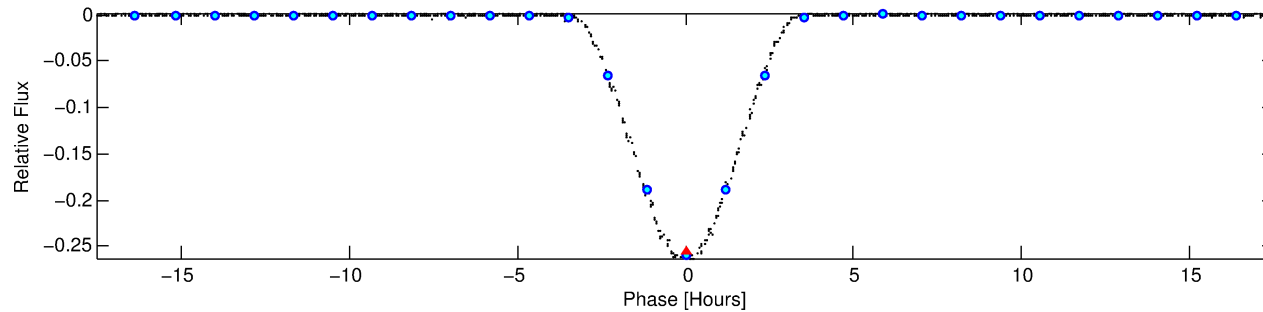
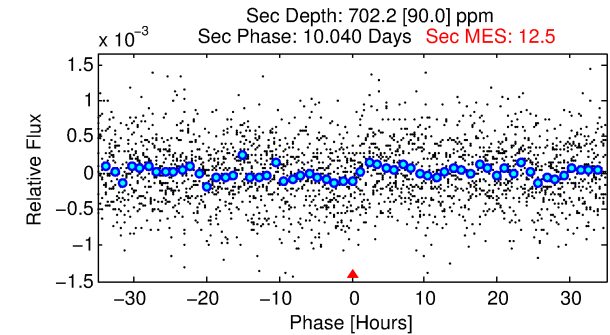
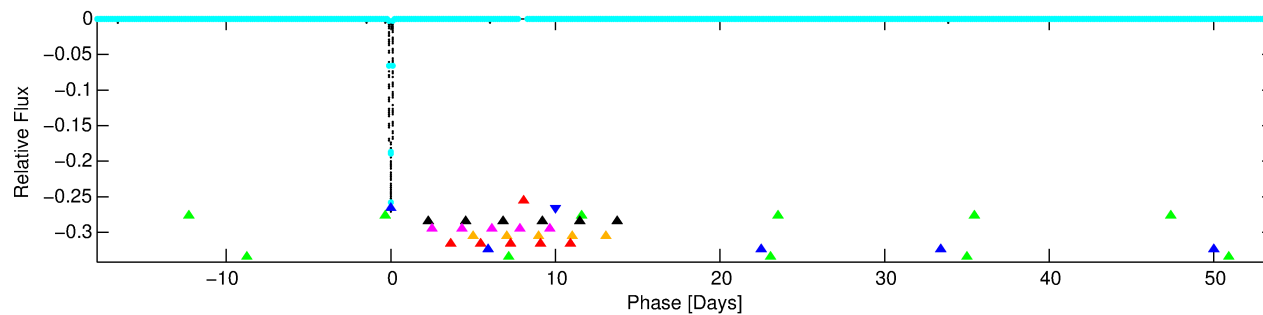
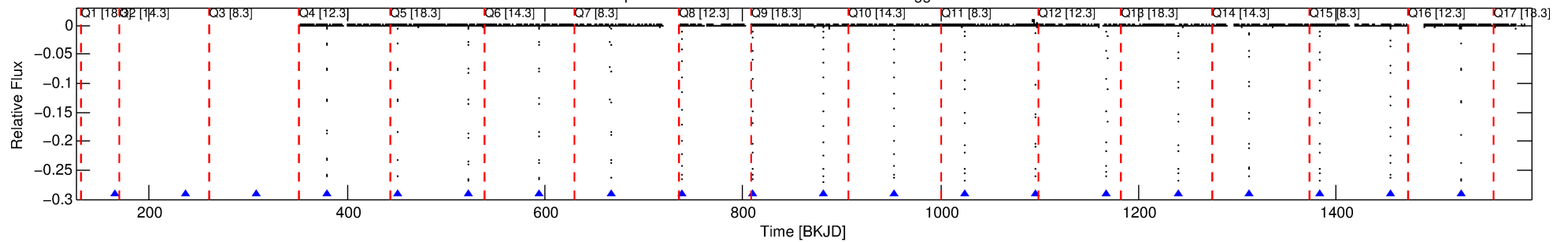
Ephemeris Match Information For 009837544-02

No Significant Match Found

DV One-Page Summary

KIC: 9837544 Candidate: 2 of 9 Period: 71.662 d
KOI: K03529 Corr: No Ephemeris Match

Kp: 15.17 R*: 0.82 Rs Teff: 5075.0 K Logg: 4.50 Fe/H: 0.020



TPS TCE Results:

Period = 71.66167 d
Epoch = 164.8858 BKJD

DV fit results are unavailable

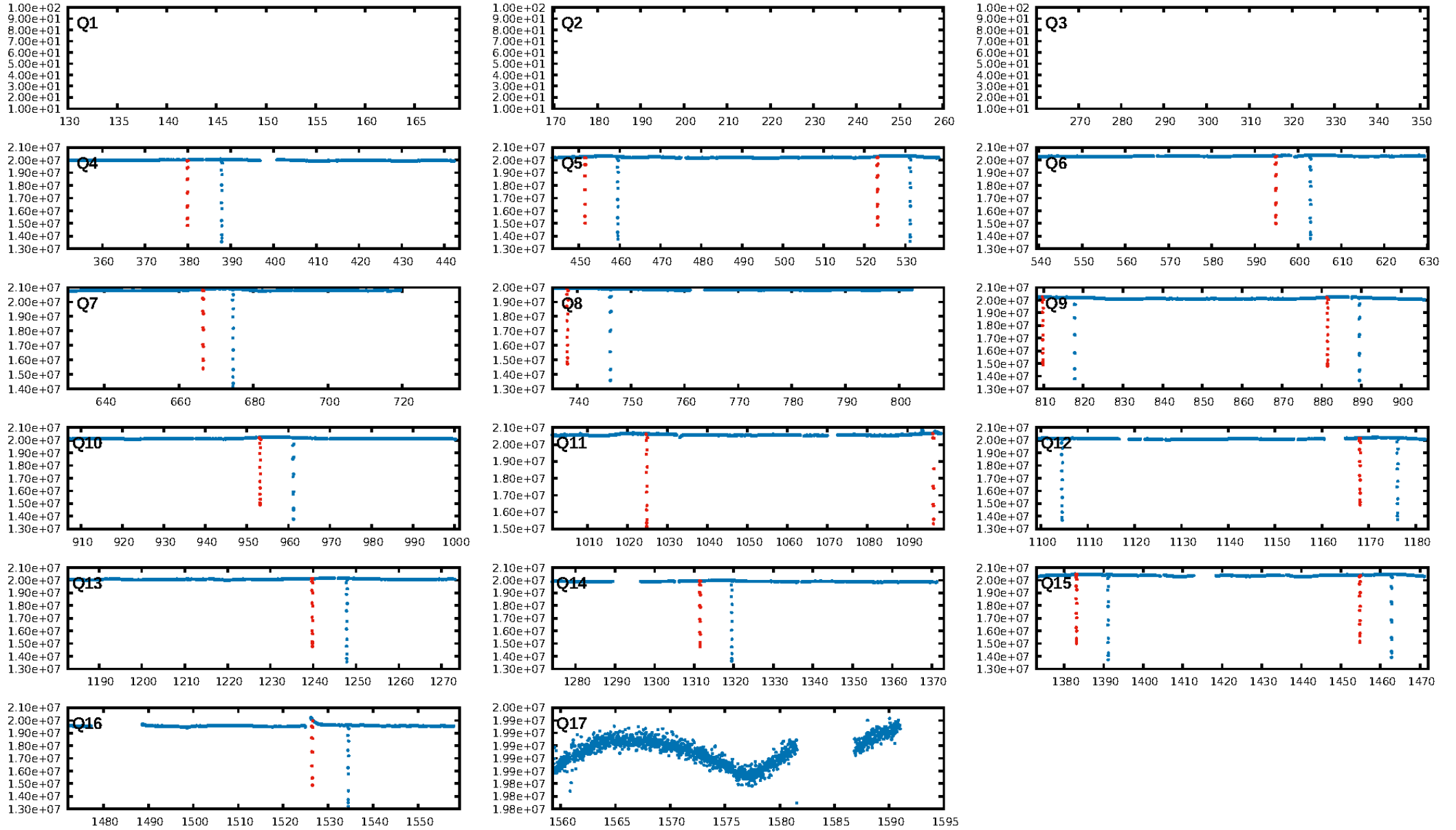
DV Diagnostic Results:

ShortPeriod-sig: 0.2% [0.00σ]
LongPeriod-sig: 100.0% [219.72σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [17/17]
GhostDiagnostic-chr: 3.232
Centroid-sig: 0.0%
Centroid-so: 0.626 arcsec [281.73σ]
OotOffset-rm: 4.788 arcsec [3.92σ]
KicOffset-rm: 0.078 arcsec [1.15σ]
OotOffset-st: 3/3/3/3 [12]
KicOffset-st: 3/3/3/3 [12]
DiffImageQuality-fgm: 1.00 [12/12]
DiffImageOverlap-fno: 0.00 [0/12]

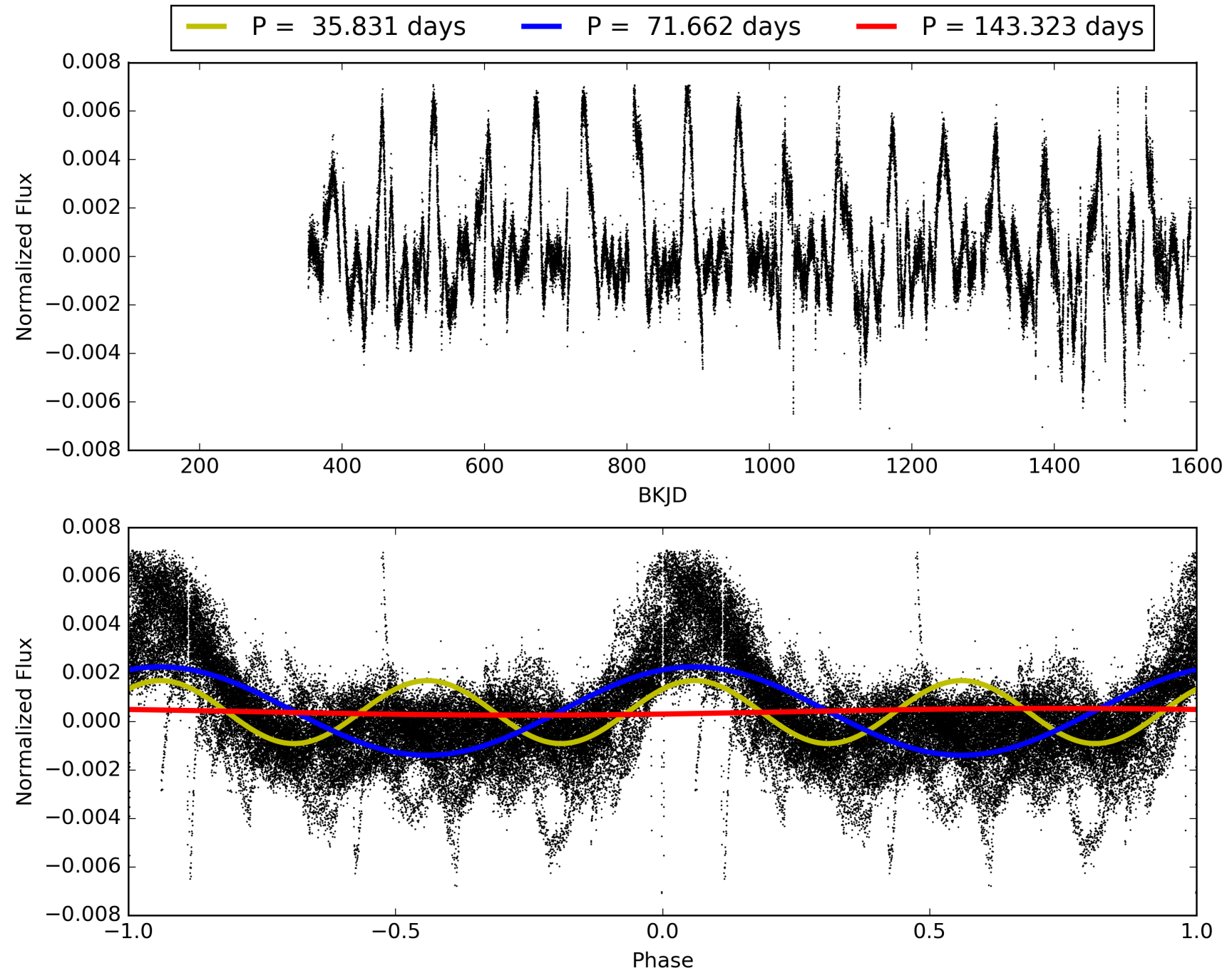
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:08:06 Z

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

TCE 009837544-02, PDC Light Curves

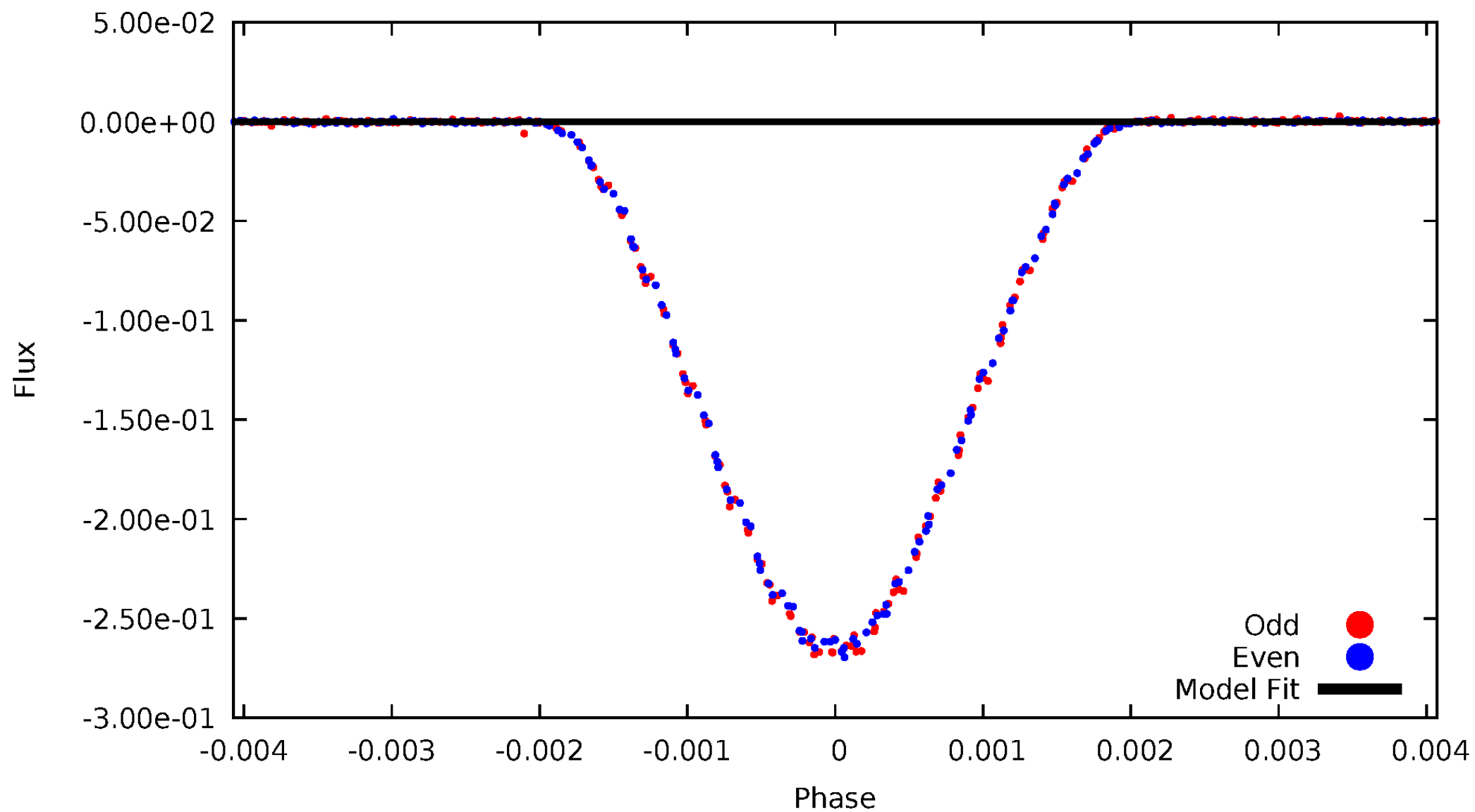


TCE 009837544-02



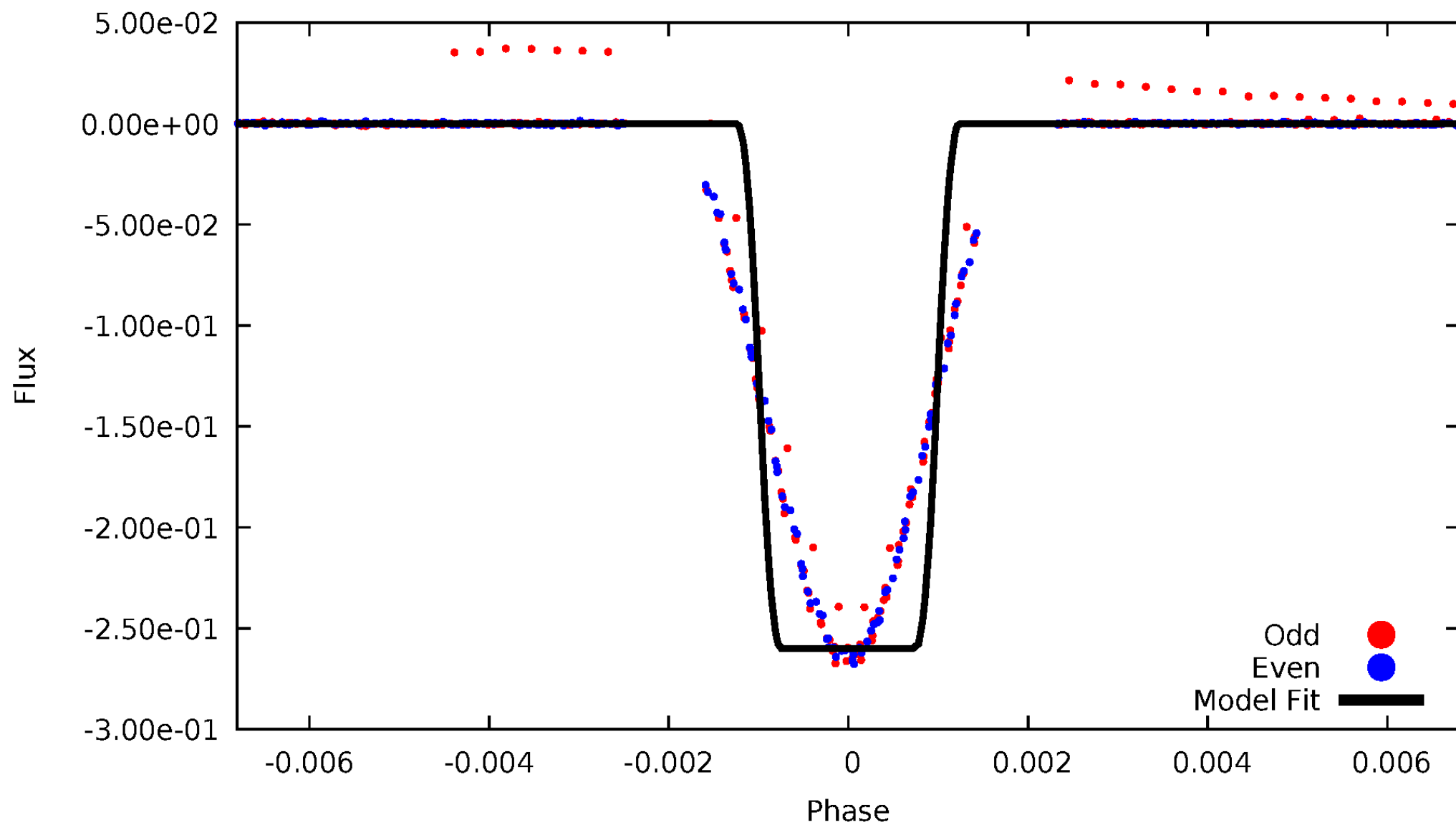
DV Odd/Even

TCE 009837544-02



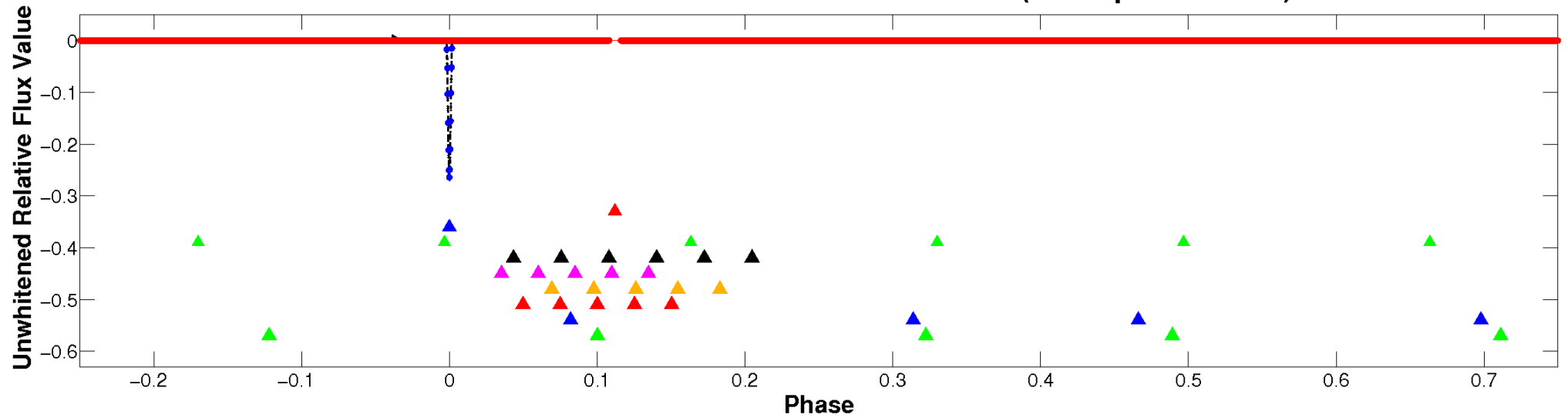
ALT Odd/Even

TCE 009837544-02

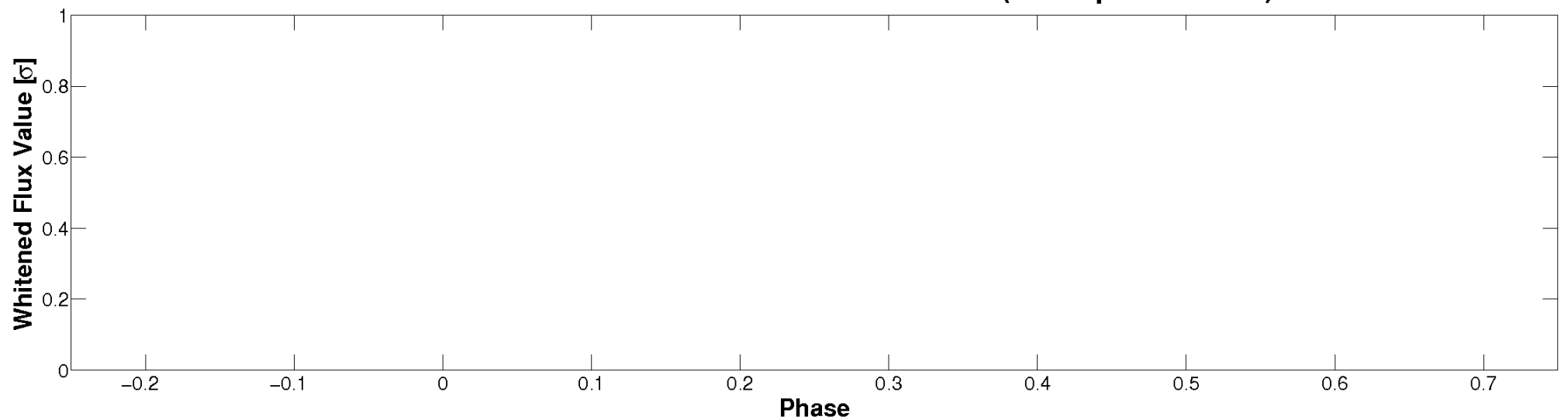


Non-Whitened Vs. Whitened Light Curve

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

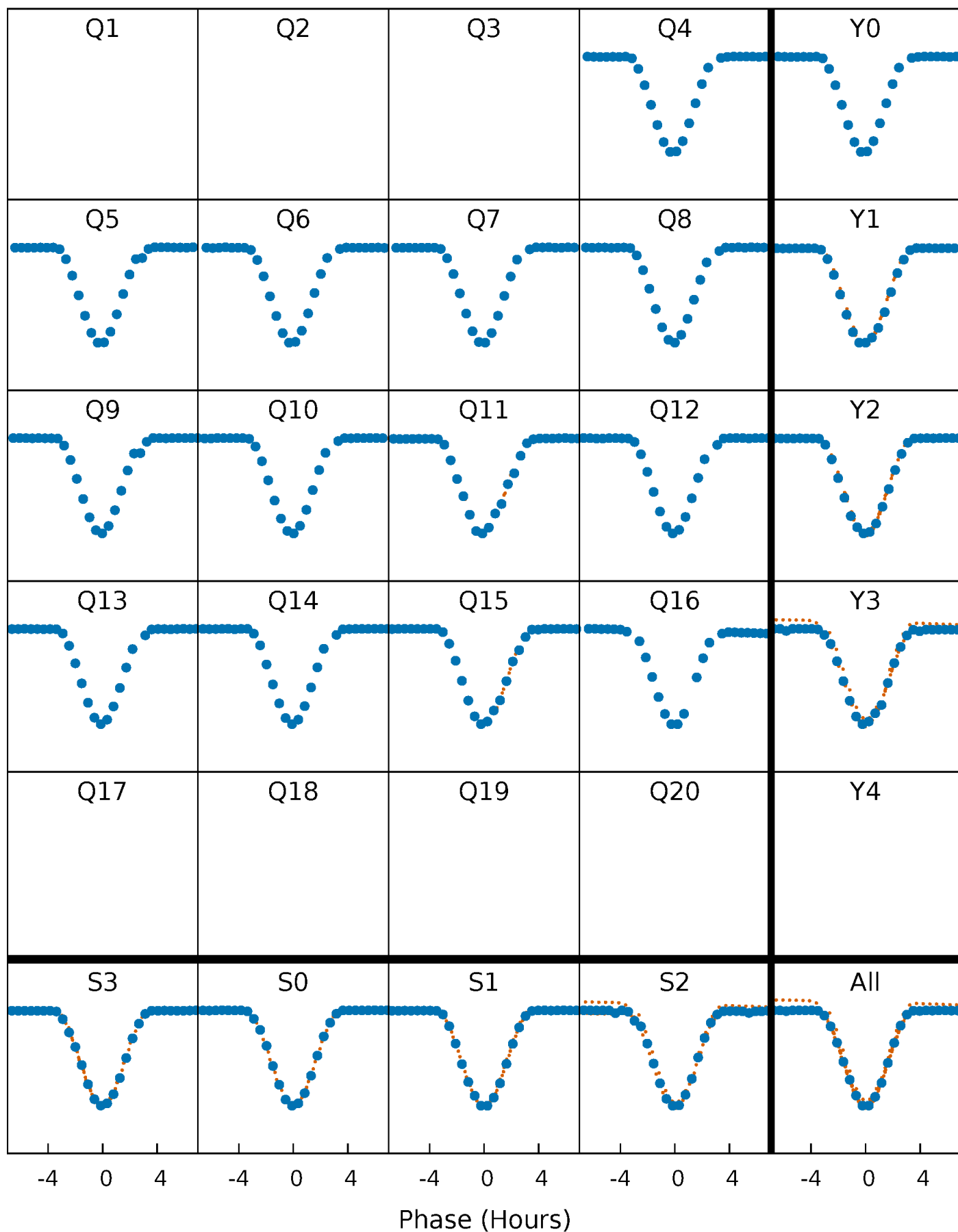


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



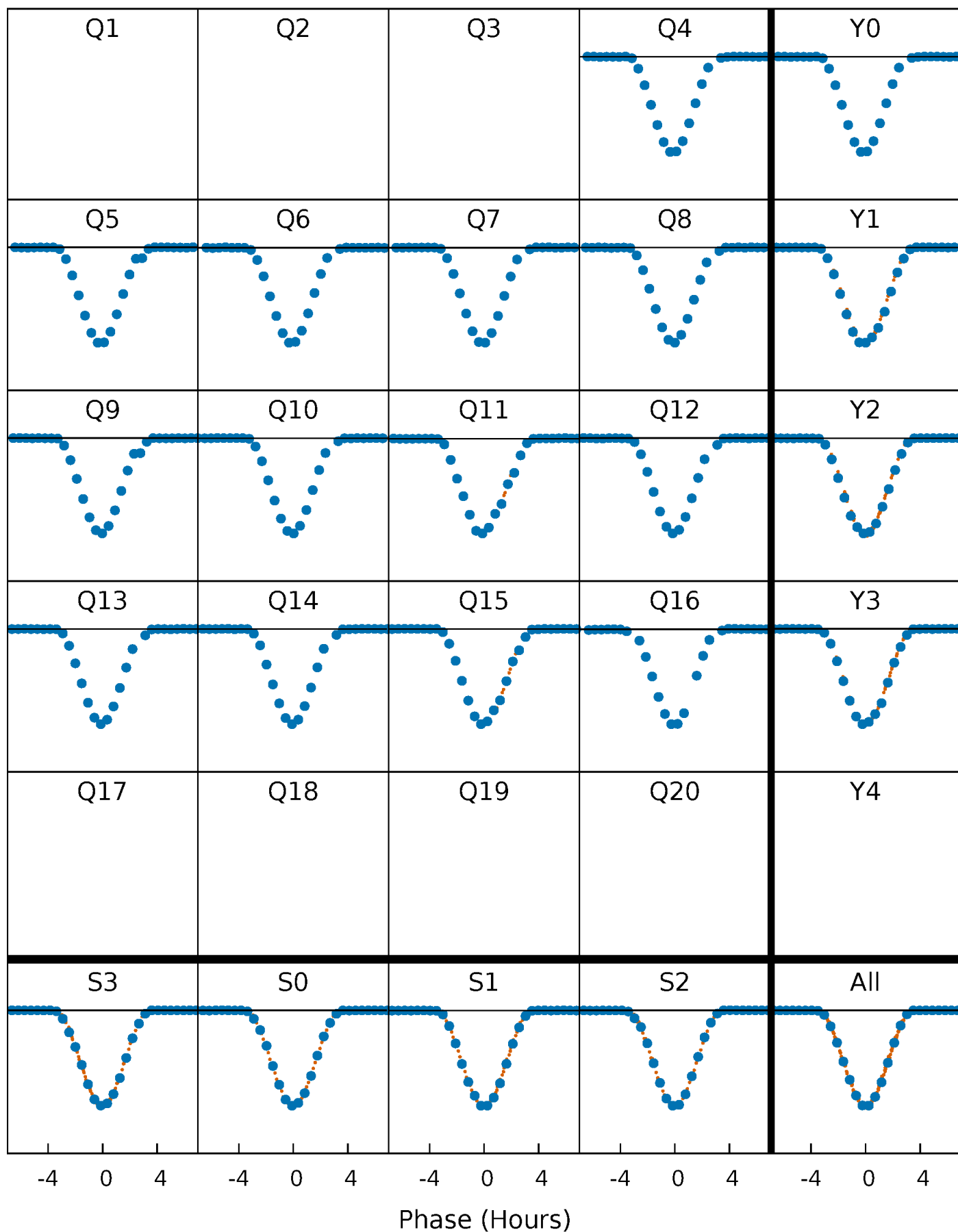
PDC Quarter-Phased Transit Curves

TCE 009837544-02 P= 71.661673 Days $T_0=164.885808$ (BKJD)



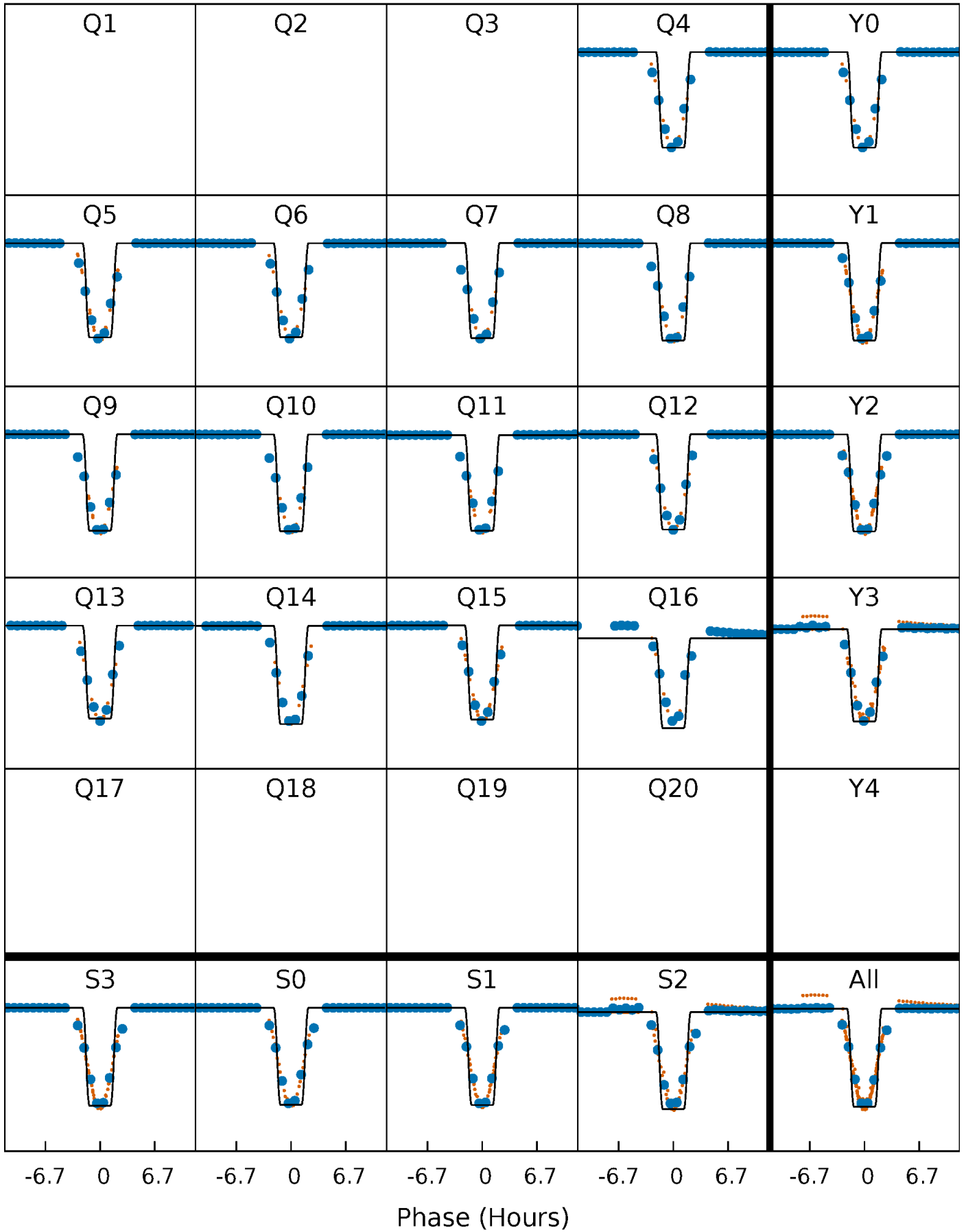
DV Quarter-Phased Transit Curves

TCE 009837544-02 P= 71.661673 Days $T_0=164.885808$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

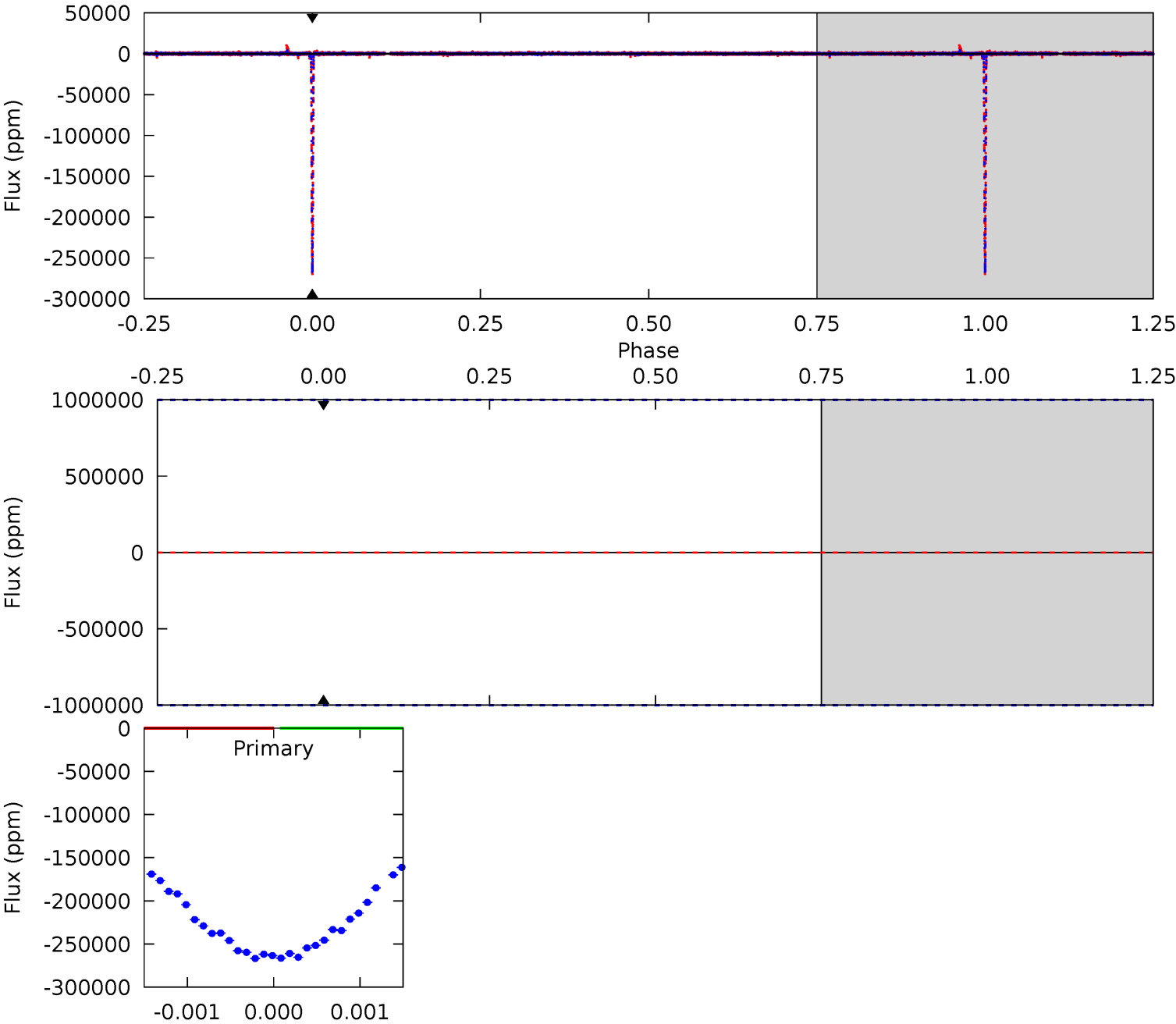
TCE 009837544-02 P= 71.661673 Days $T_0=164.885798$ (BKJD)



DV Model-Shift Uniqueness Test

009837544-02, P = 71.661673 Days, E = 164.885808 Days

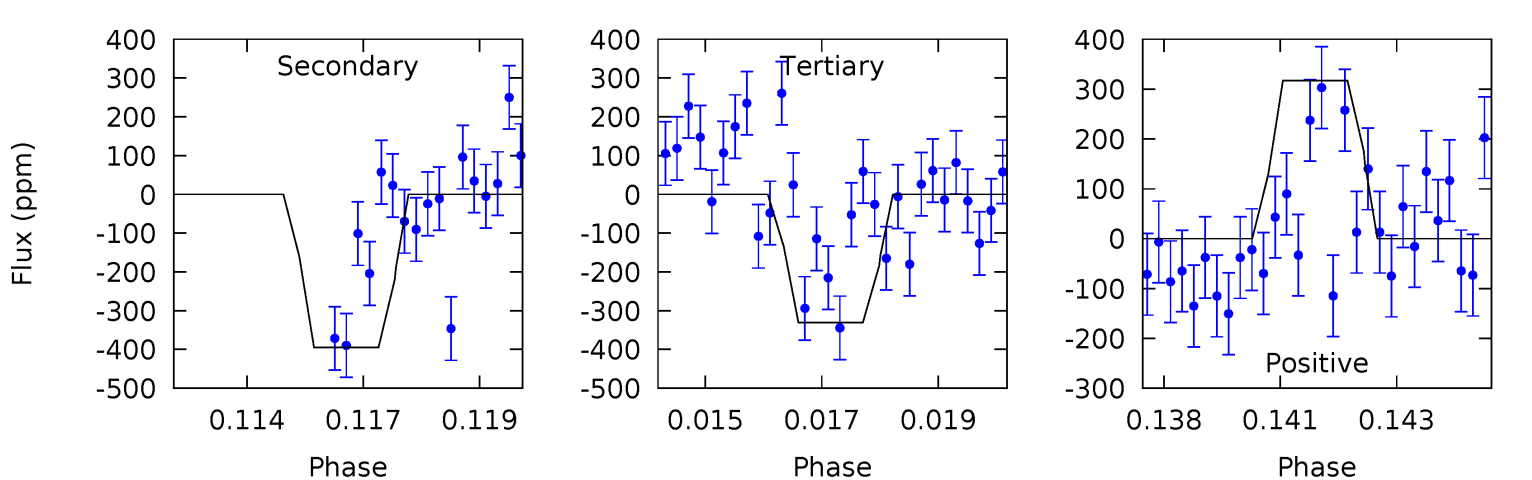
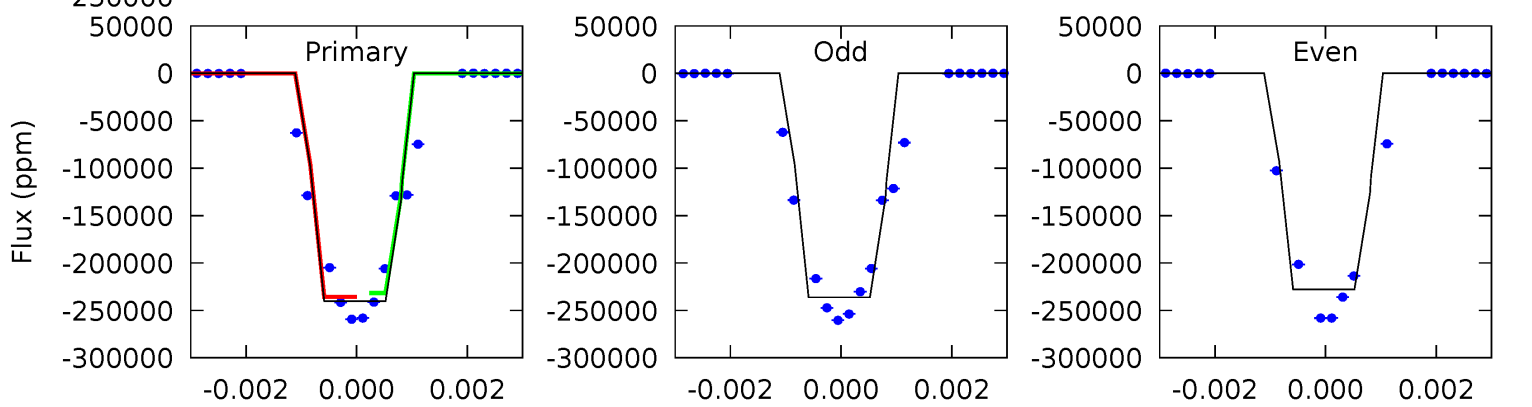
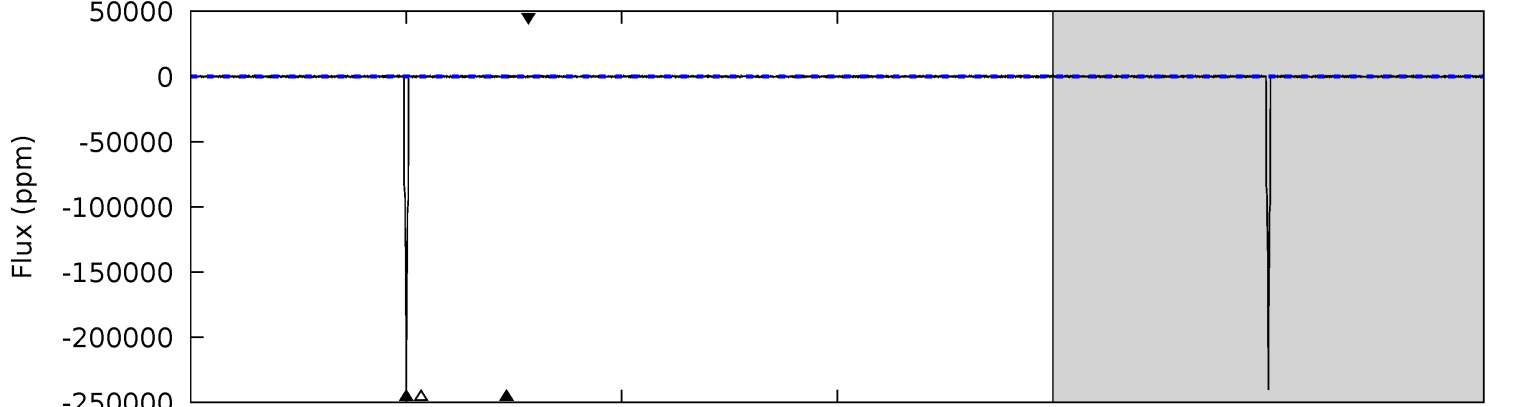
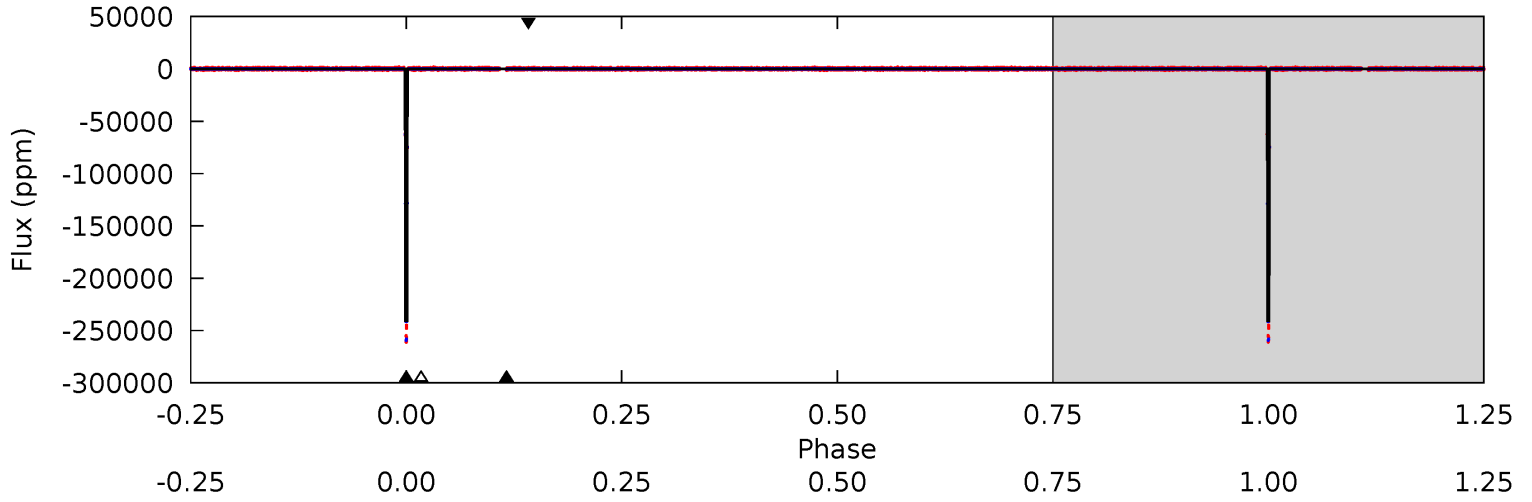
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009837544-02, P = 71.661673 Days, E = 164.885798 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3192	5.25	4.39	4.21	5.29	3.03	9.09	3187	3187	0.86	1.03	61.3	1.00	0.00	23.0



Stellar Parameters For KIC 009837544

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5075^{+179}_{-179}	$4.497^{+0.095}_{-0.095}$	$0.020^{+0.300}_{-0.300}$	$0.824^{+0.088}_{-0.097}$	$0.777^{+0.098}_{-0.057}$	$1.957^{+0.744}_{-0.493}$
	+4%/-4%	+2%/-2%	+1500%/-1500%	+11%/-12%	+13%/-7%	+38%/-25%
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 009837544-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$40.73^{+9.94}_{-8.70}$	510^{+25}_{-26}	-1714^{+6245}_{-2664}	$-1.446^{+3700.815}_{-3179.717}$
Alt.	-395 ± 75	$46.19^{+9.40}_{-10.05}$	510^{+24}_{-23}	1986^{+111}_{-81}	10^{+6}_{-3}

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

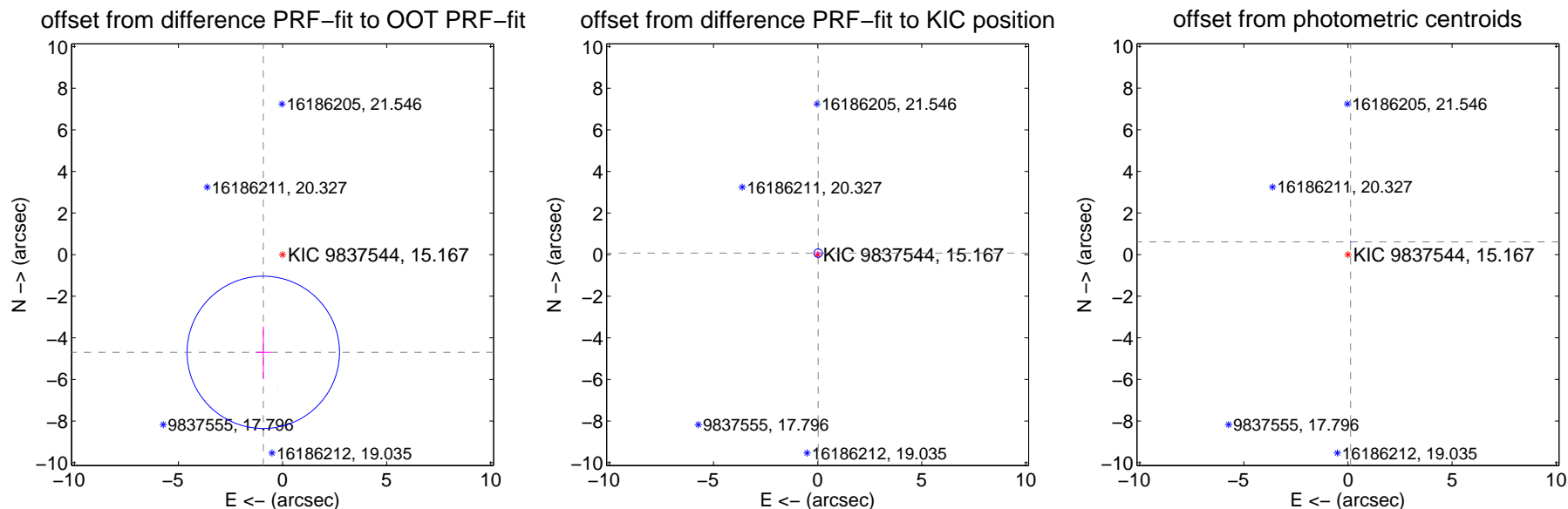
DV Centroid Data

Supplemental centroid analysis for 009837544-02. Kepler magnitude: 15.17. Transit SNR -1.00

There are 12 quarters with good PRF difference image offsets

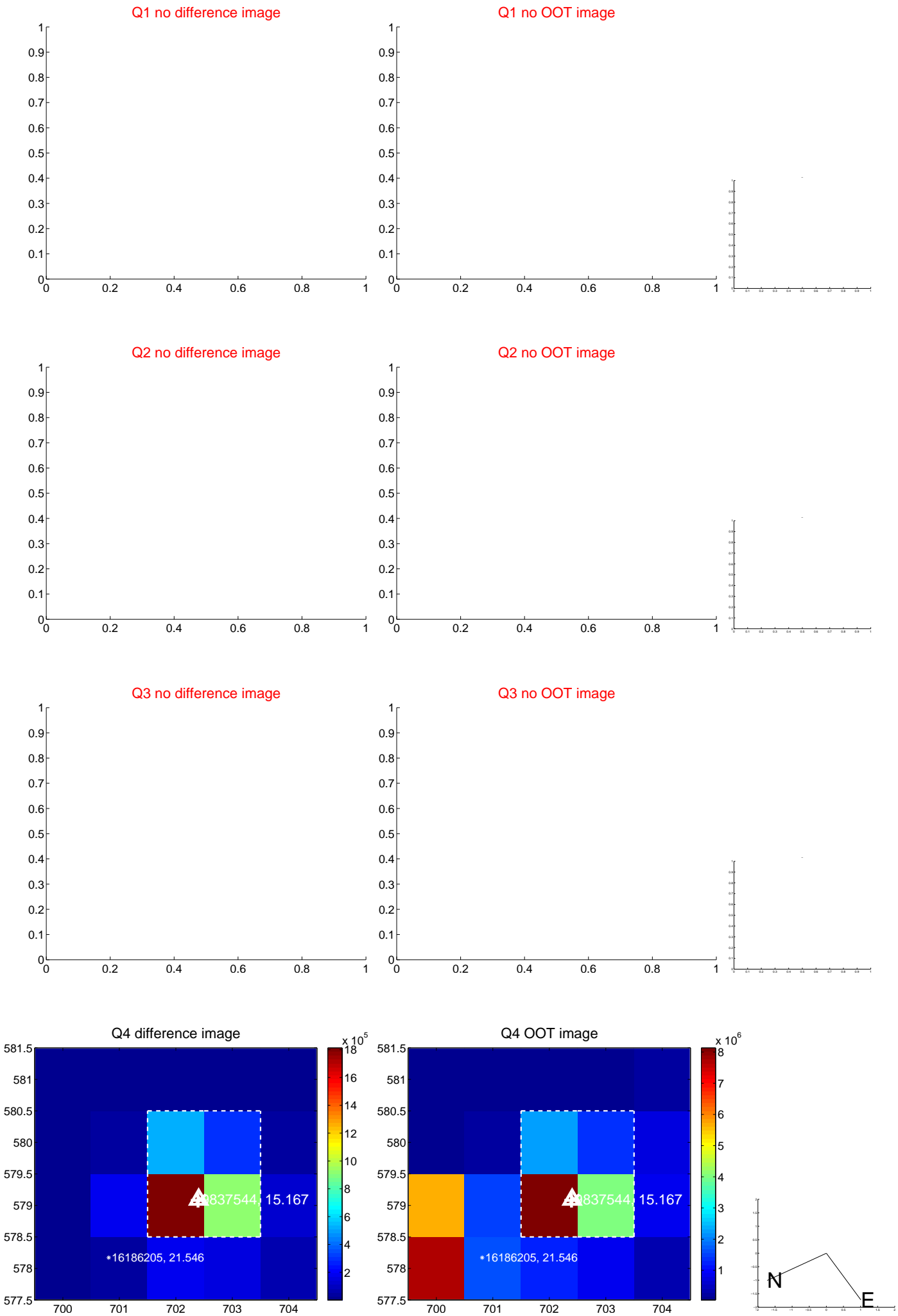
The OOT PRF centroid is offset from the target star catalog position by about 4.86 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.788 ± 1.221	3.92	0.926 ± 0.372	-4.697 ± 1.242
PRF-fit source offset from KIC position	0.078 ± 0.068	1.15	-0.026 ± 0.069	0.073 ± 0.068
photometric centroid source offset	0.63 ± 0.00	281.73	-0.13 ± 0.00	0.61 ± 0.00

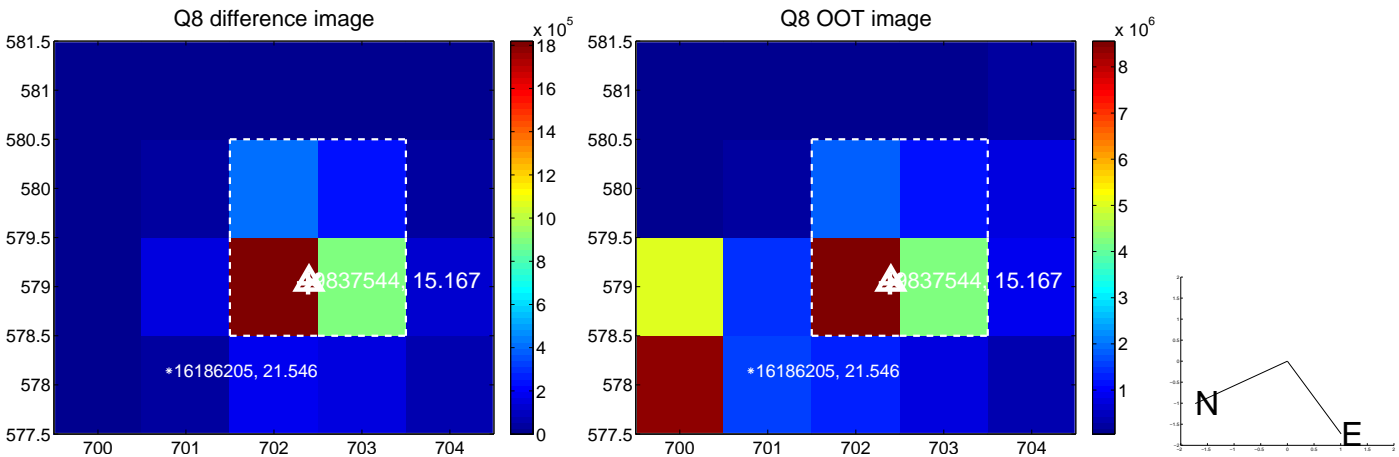
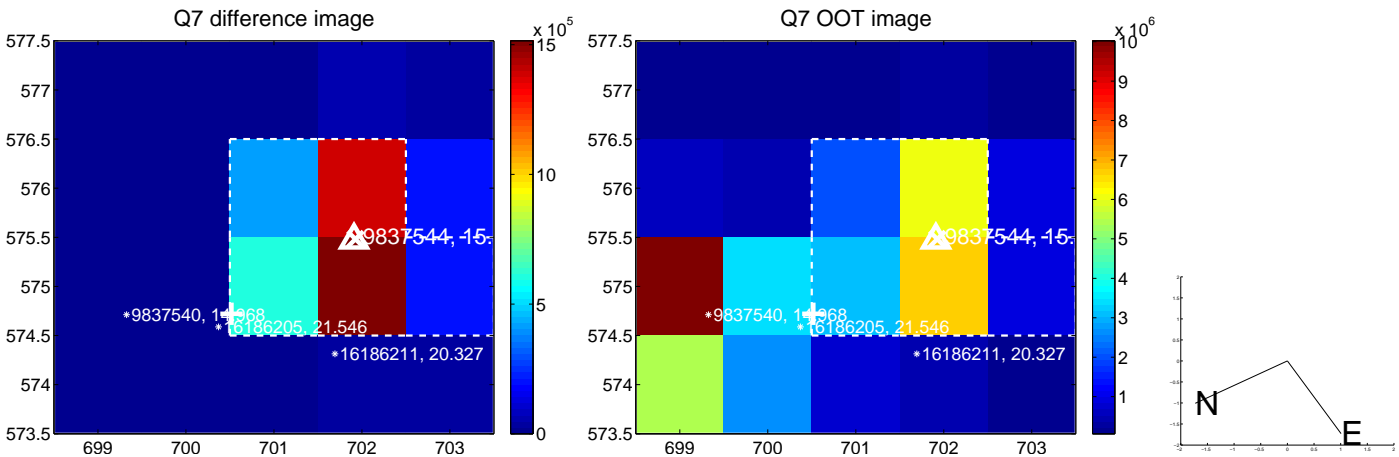
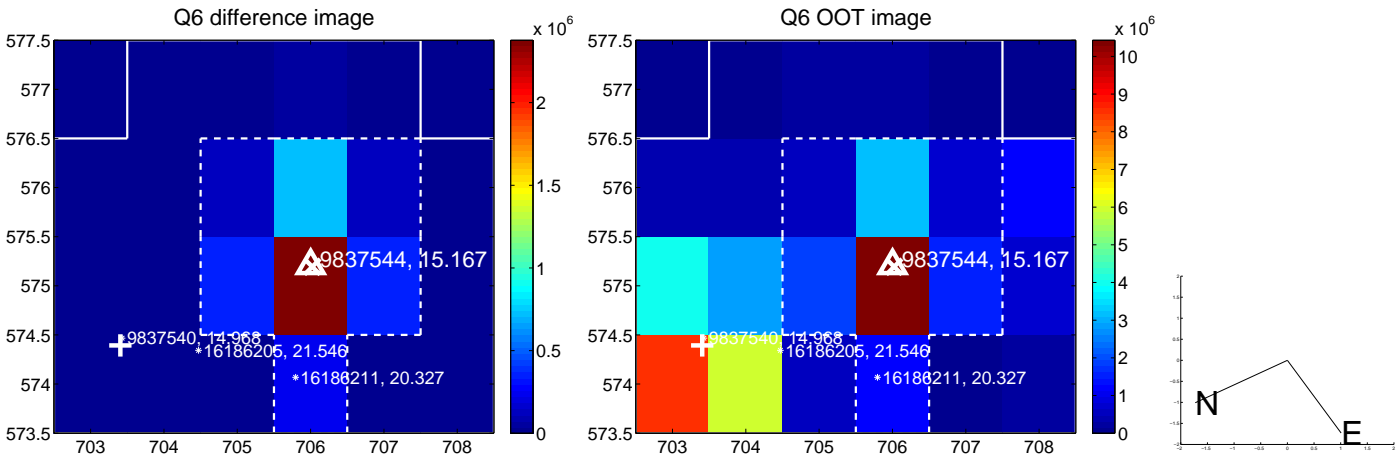
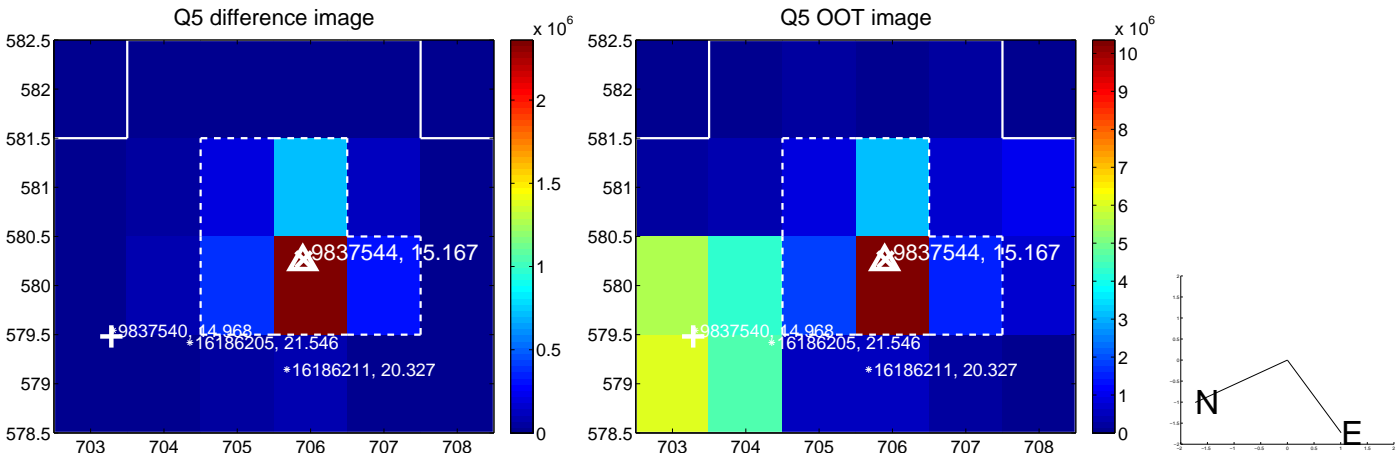


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

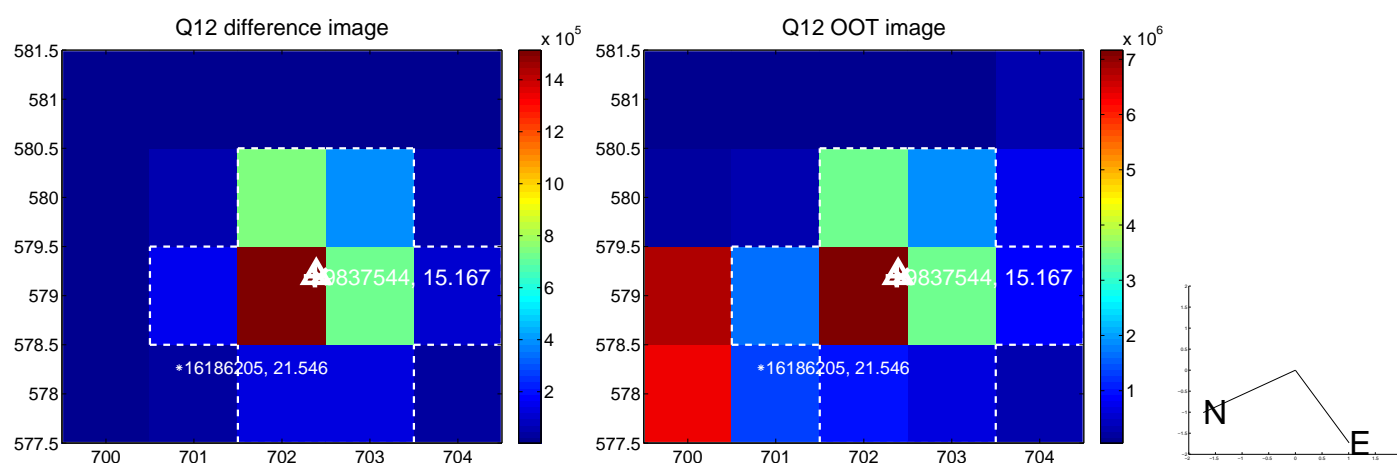
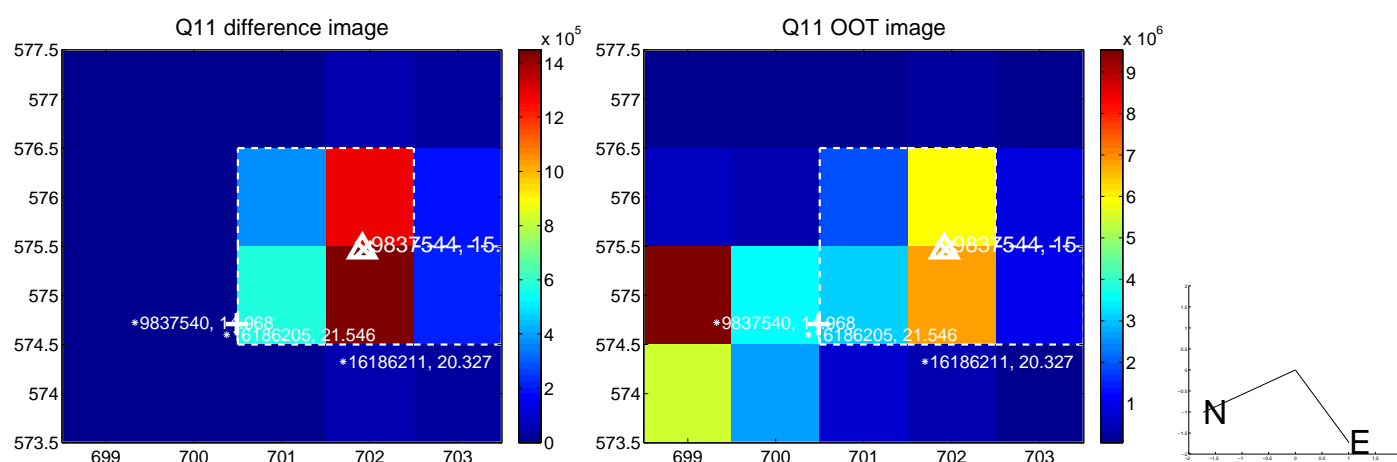
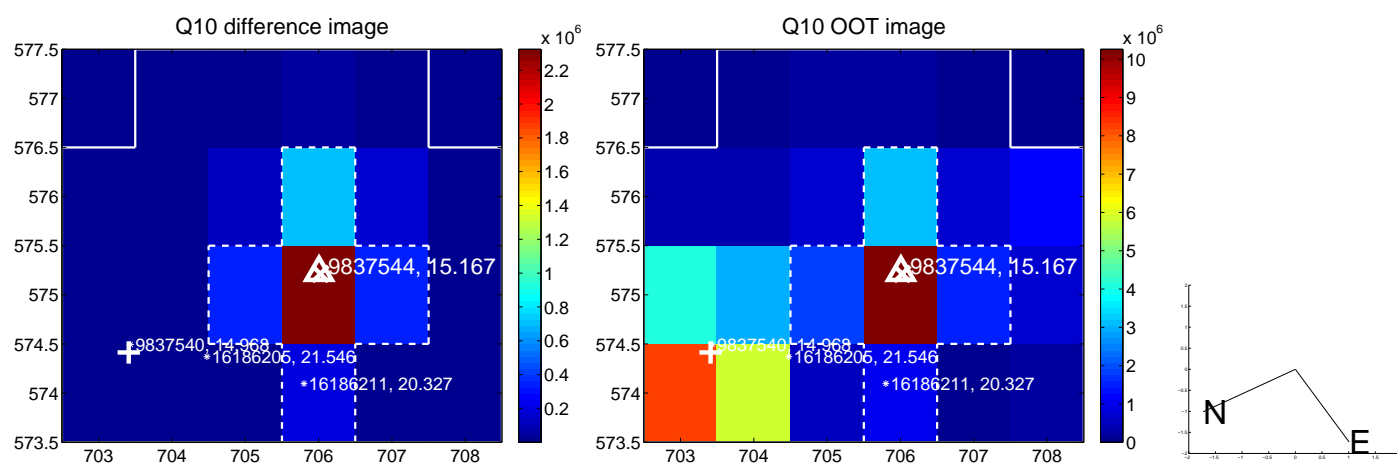
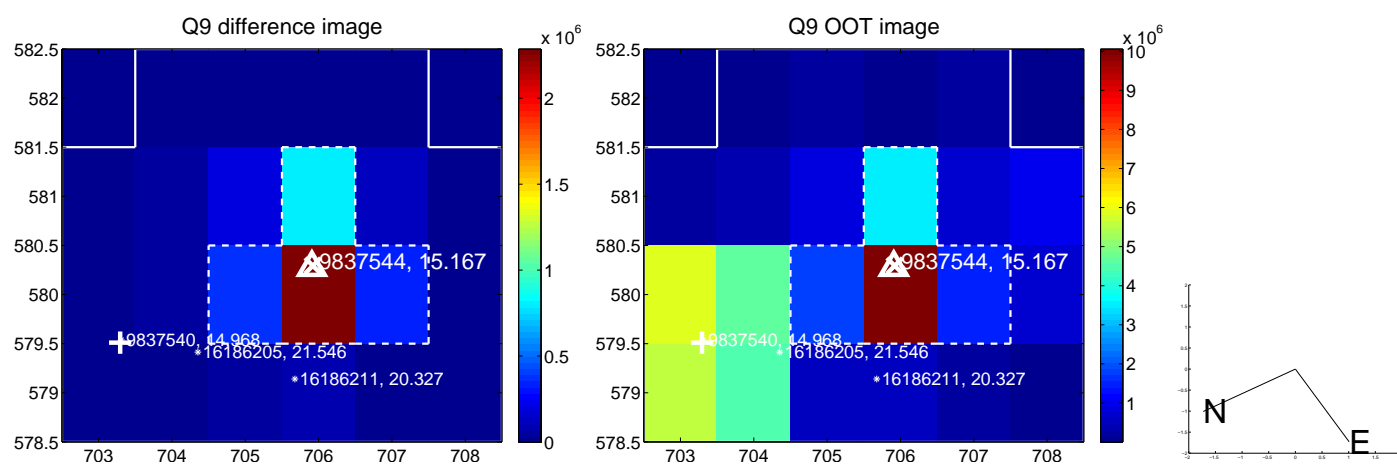
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



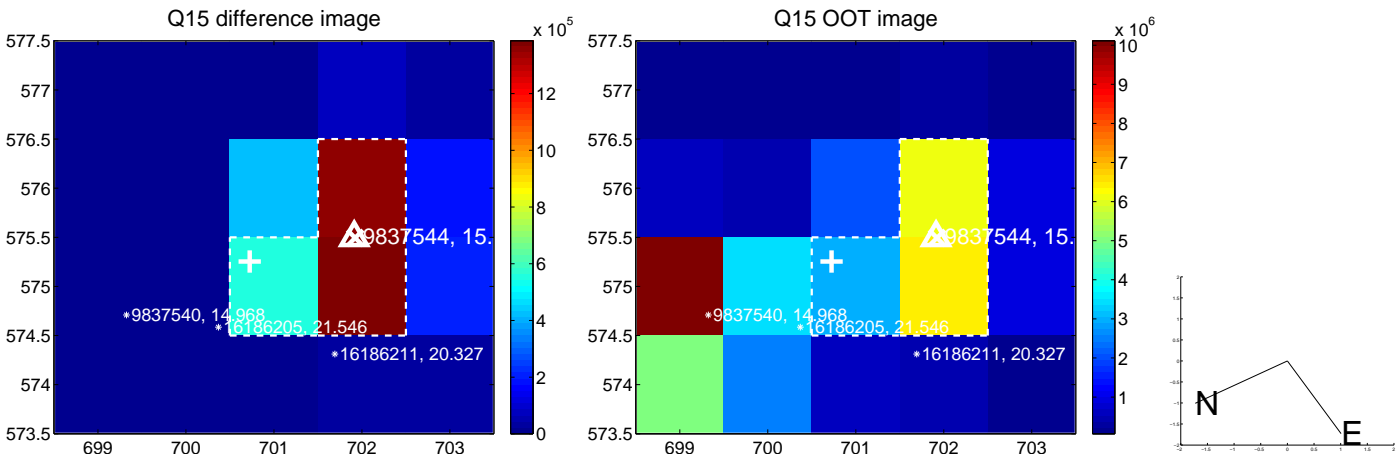
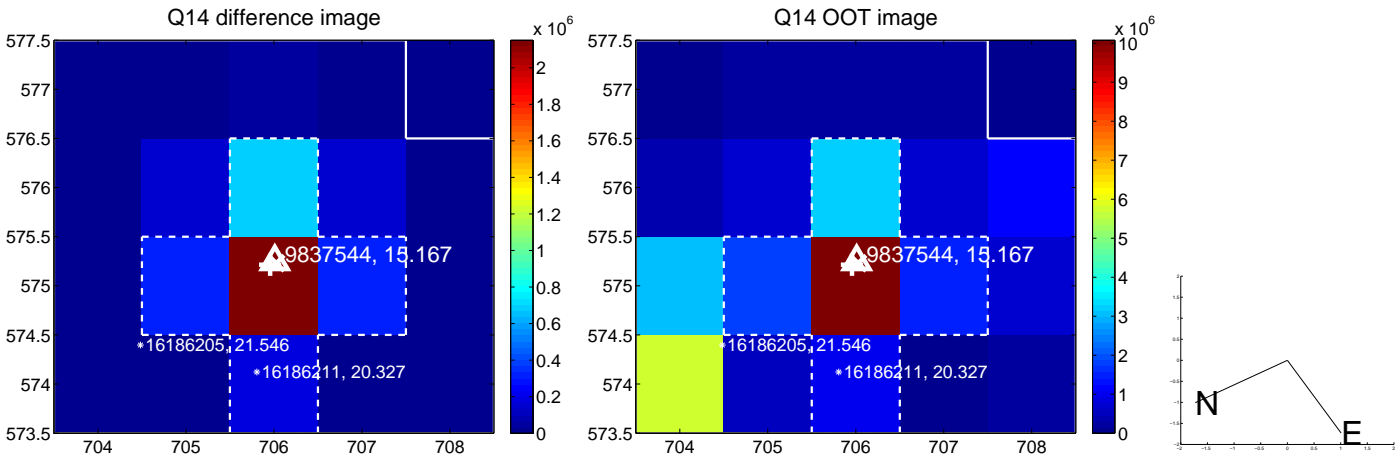
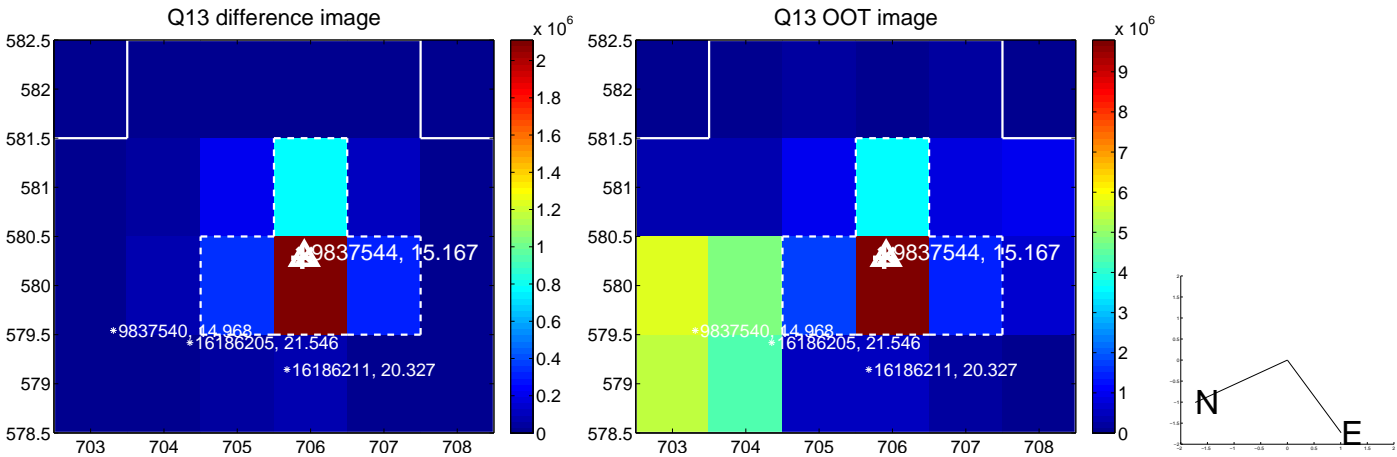
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



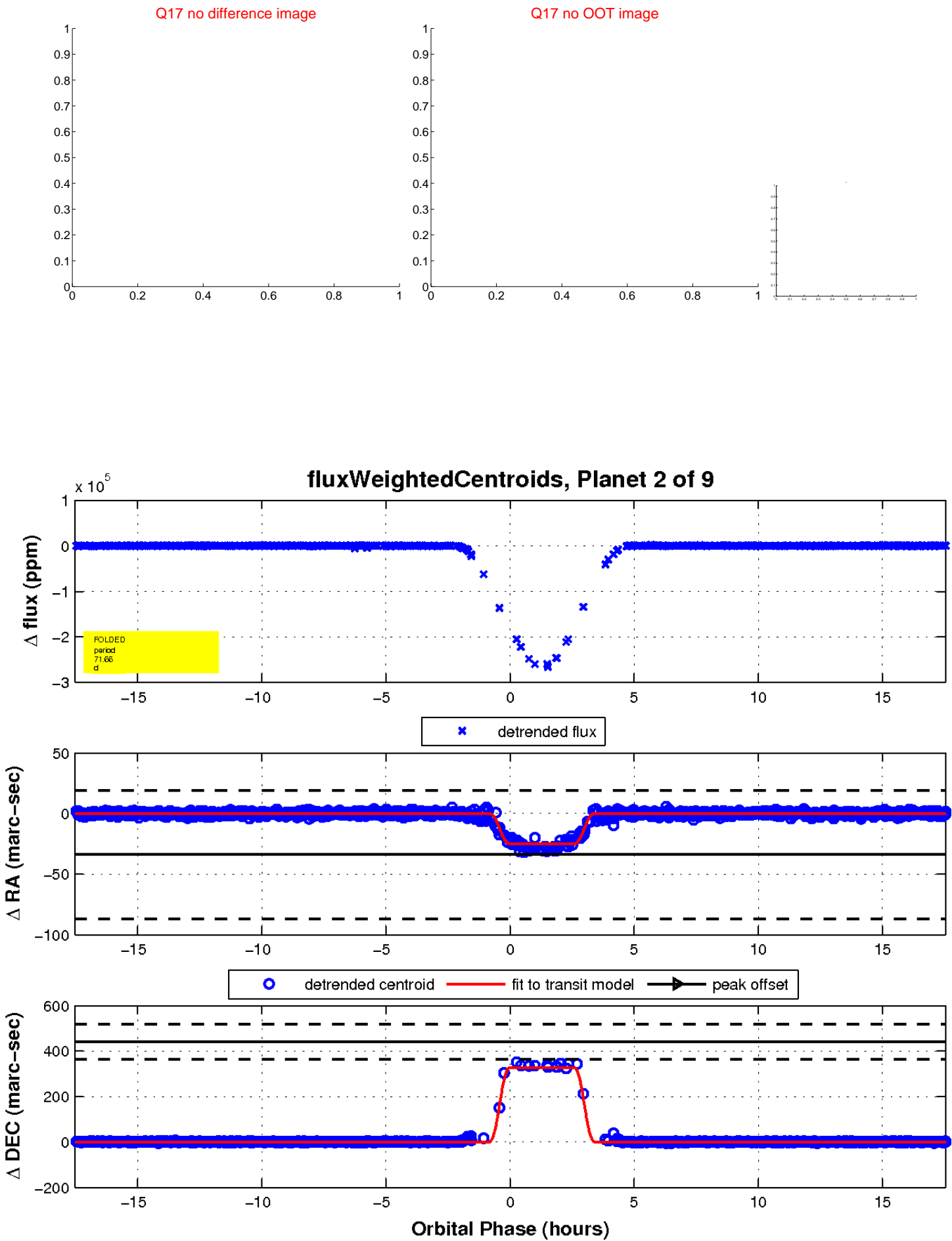
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



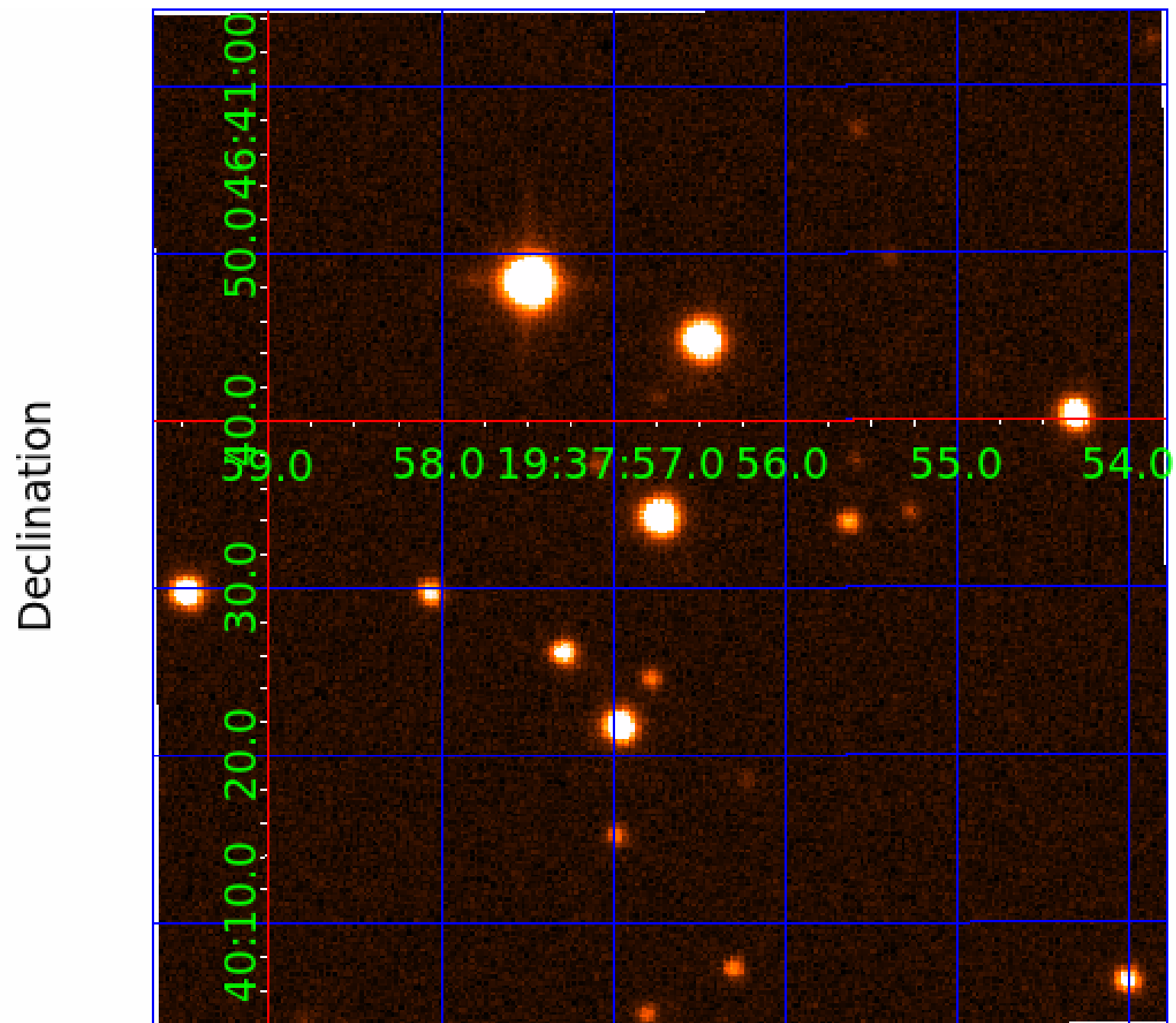
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009837544

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})
009837544-01	OBS	3529.01	71.661165	172.916198	325293.0	4.500	4634.2	-1.0	0.82	5075	38.32	4.18
009837544-02	OBS	No	71.661673	164.885808	264768.2	3.500	4015.5	-1.0	0.82	5075	40.49	4.18
009837544-03	OBS	No	11.943528	140.767396	12008.6	15.000	148.2	-1.0	0.82	5075	8.76	45.61
009837544-04	OBS	No	212.672492	322.884906	7967.5	15.000	65.3	-1.0	0.82	5075	7.14	0.98
009837544-05	OBS	No	284.865731	174.540434	575.8	14.949	64.7	5.3	0.82	5075	2.08	0.66
009837544-06	OBS	No	288.684275	313.175858	1168.4	10.134	26.5	9.8	0.82	5075	5.39	0.65
009837544-07	OBS	No	284.844834	318.988322	5958.6	3.000	28.9	-1.0	0.82	5075	6.18	0.66
009837544-09	OBS	No	258.775431	371.133438	556.6	17.124	17.9	5.3	0.82	5075	2.22	0.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009837544-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE—CENT_NOFITS
009837544-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
009837544-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS—HALO_GHOST
009837544-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009837544-05	OBS	FP	0.00	1	0	1	0	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
009837544-06	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009837544-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009837544-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—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

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 009837544-03

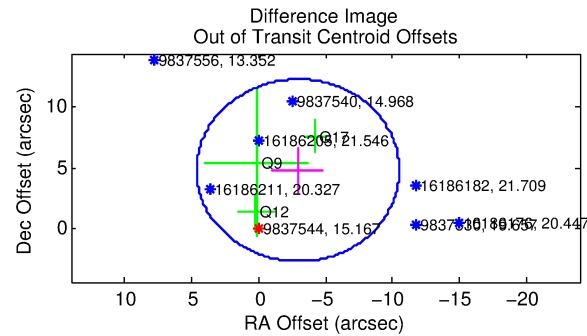
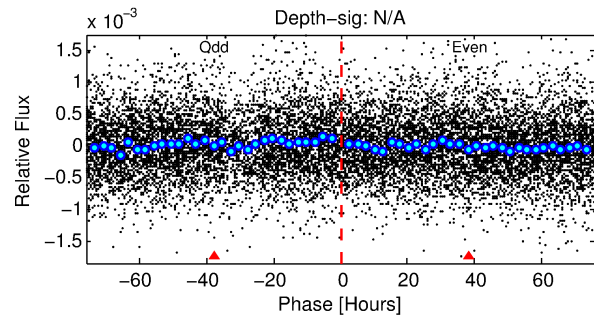
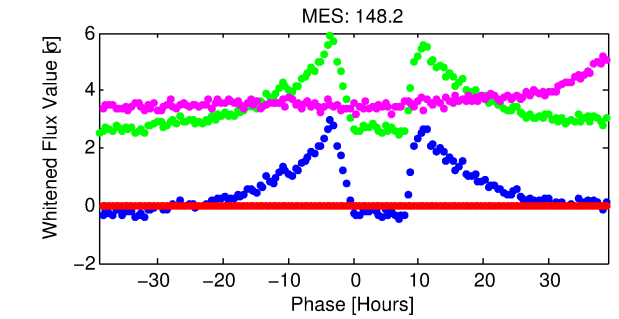
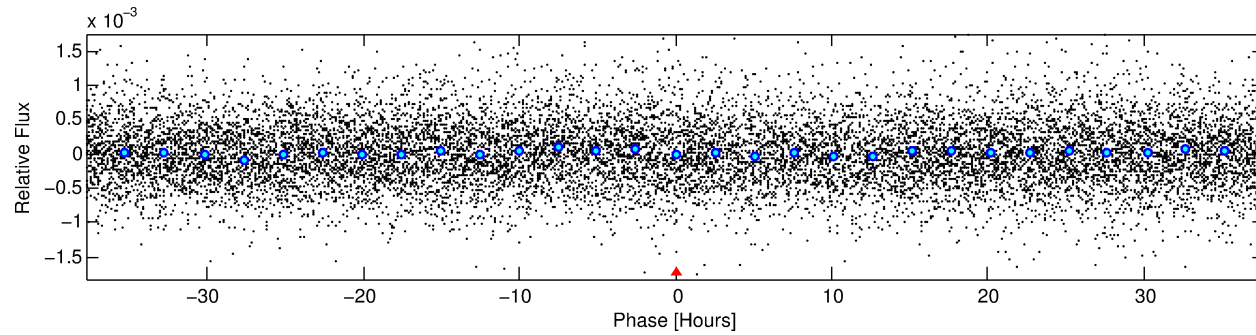
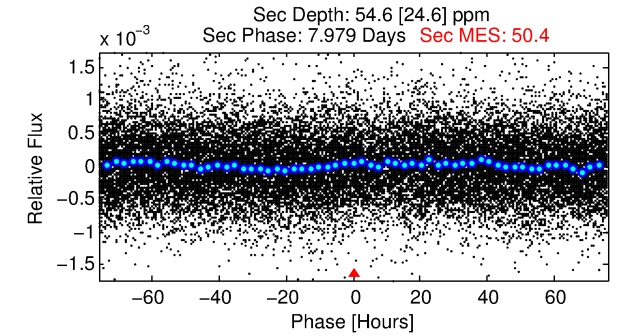
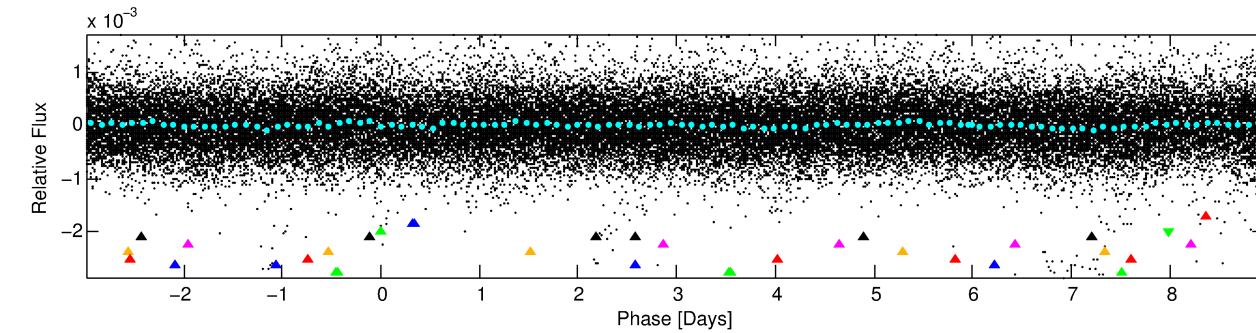
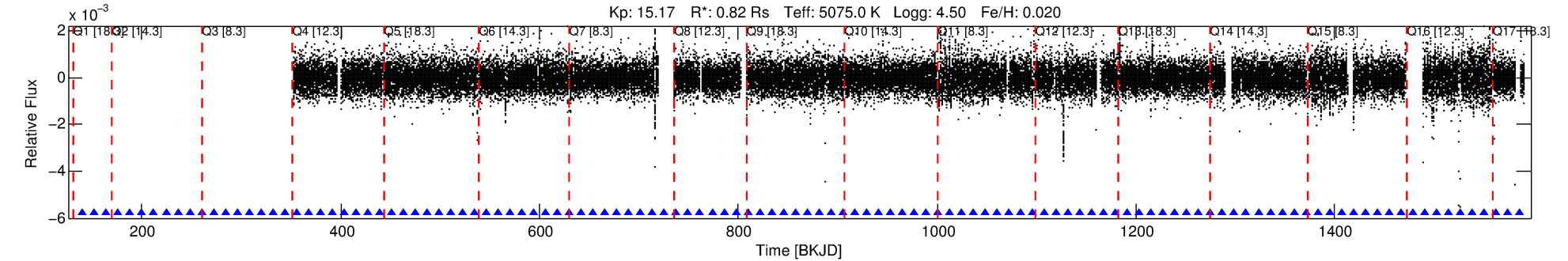
No Significant Match Found

DV One-Page Summary

KIC: 9837544 Candidate: 3 of 9 Period: 11.944 d

KOI: K03529 Corr: No Ephemeris Match

Kp: 15.17 R*: 0.82 Rs Teff: 5075.0 K Logg: 4.50 Fe/H: 0.020



TPS TCE Results:

Period = 11.94353 d

Epoch = 140.7674 BKJD

DV fit results are unavailable

DV Diagnostic Results:

ShortPeriod-sig: N/A

LongPeriod-sig: 100.0% [91.52σ]

ModelChiSquare2-sig: N/A

ModelChiSquareGof-sig: N/A

Bootstrap-pfa: N/A

RollingBand-fgt: 1.00 [95/95]

GhostDiagnostic-chr: -0.1853

Centroid-sig: 58.9%

Centroid-so: 1.614 arcsec [0.78σ]

OotOffset-rm: 5.625 arcsec [2.23σ]

KicOffset-rm: 5.788 arcsec [2.65σ]

OotOffset-st: 0/0/1/2 [3]

KicOffset-st: 0/0/1/2 [3]

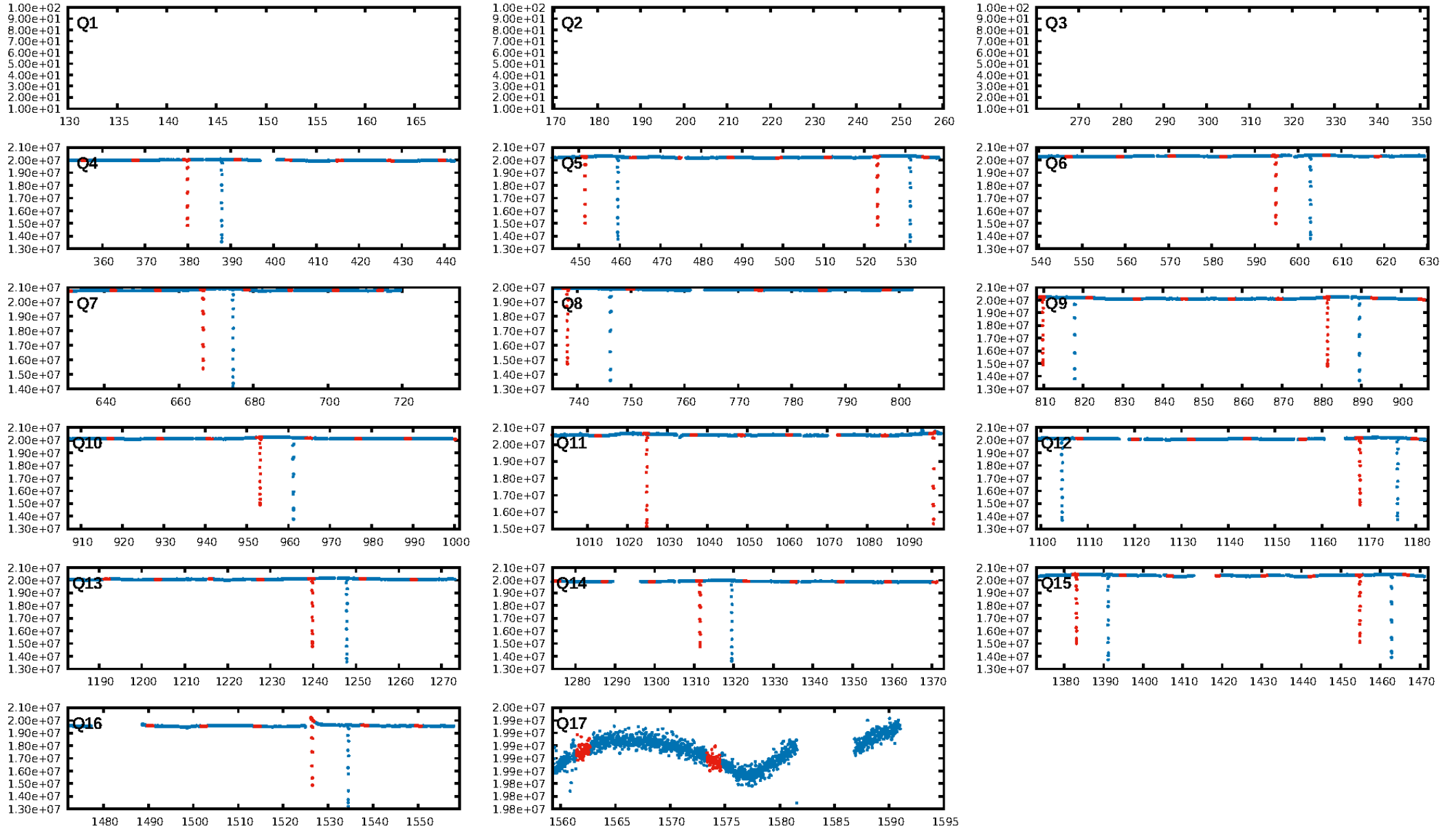
DiffImageQuality-fgm: 0.00 [0/3]

DiffImageOverlap-fno: 1.00 [14/14]

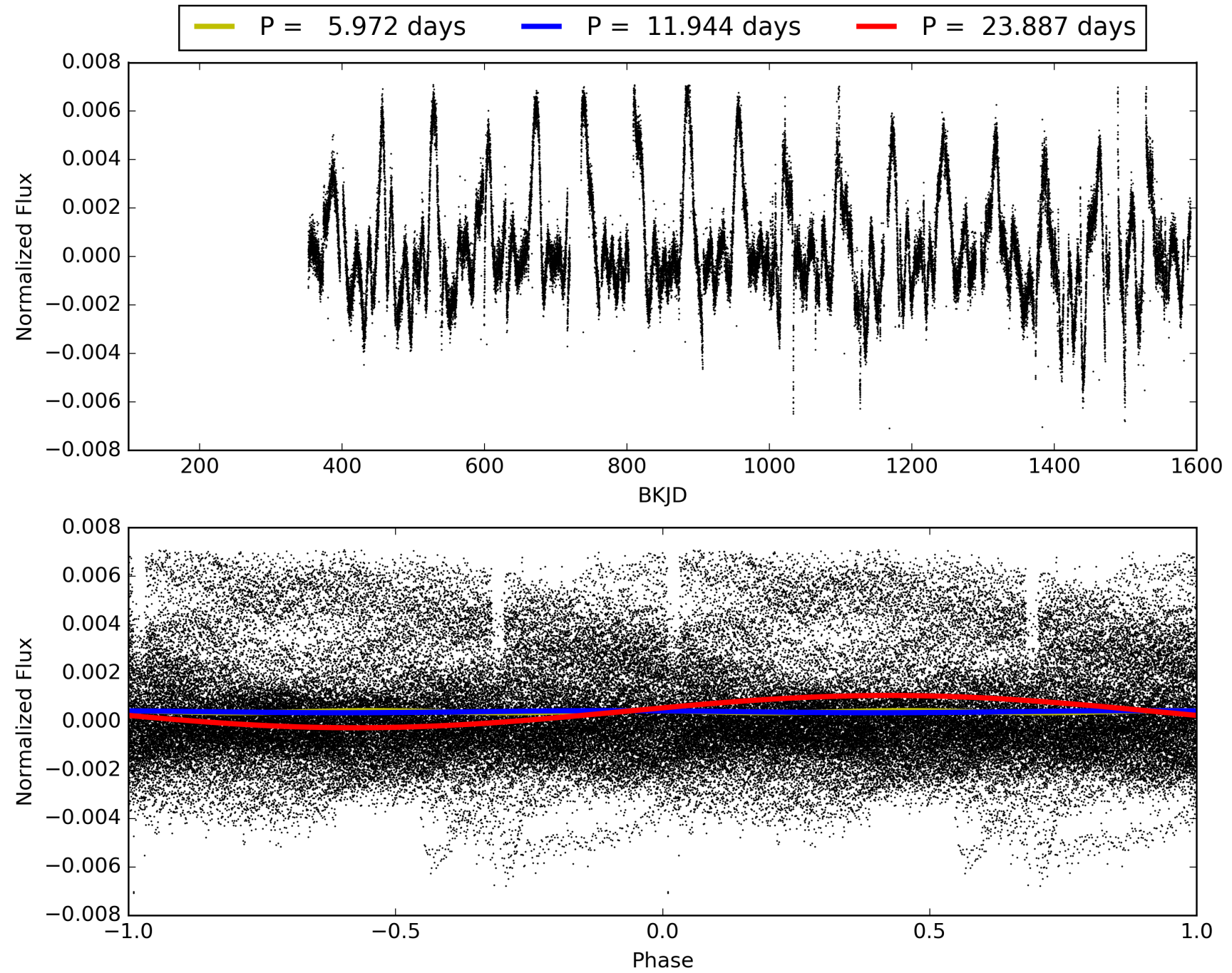
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:08:10 Z

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

TCE 009837544-03, PDC Light Curves

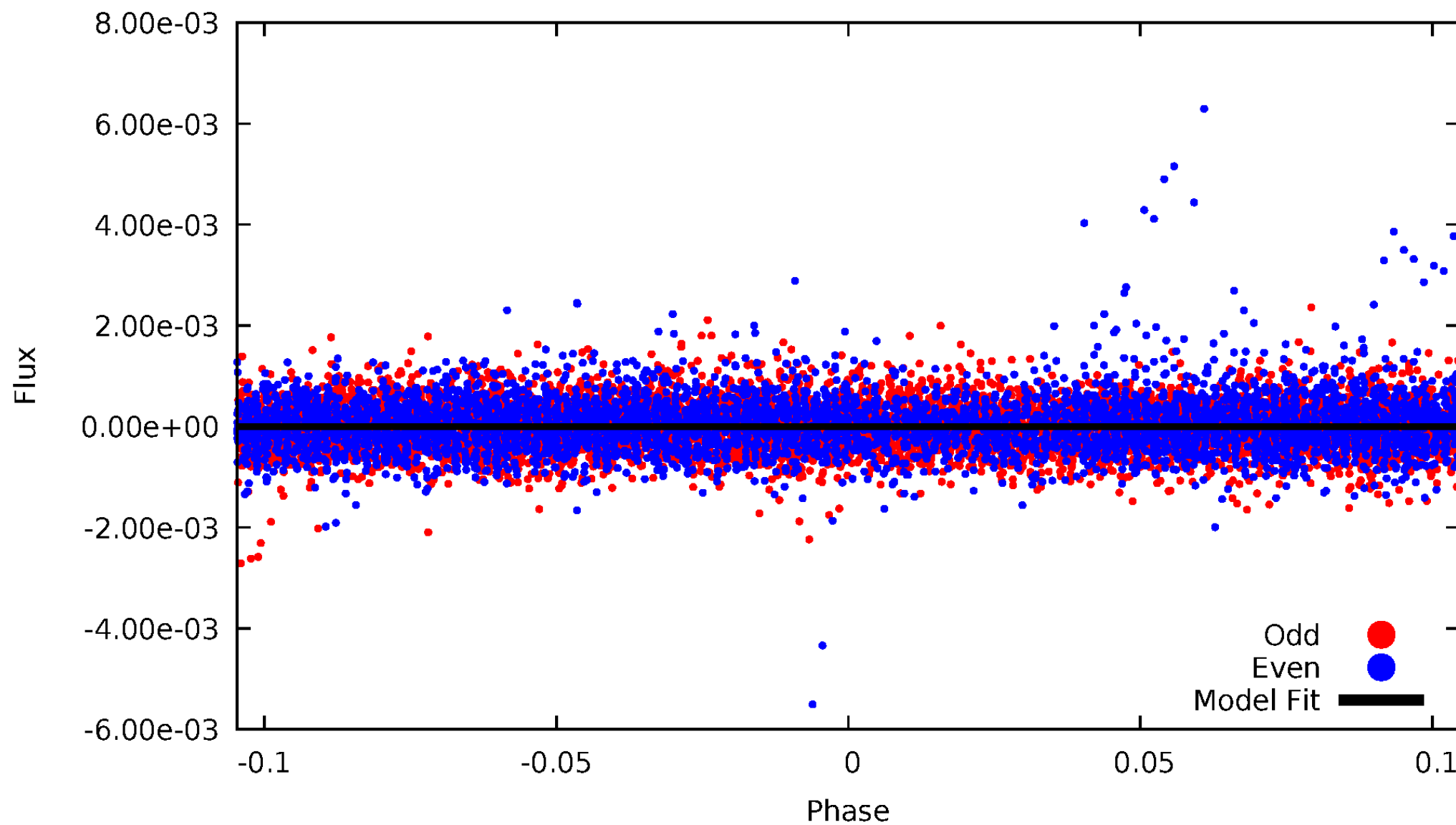


TCE 009837544-03



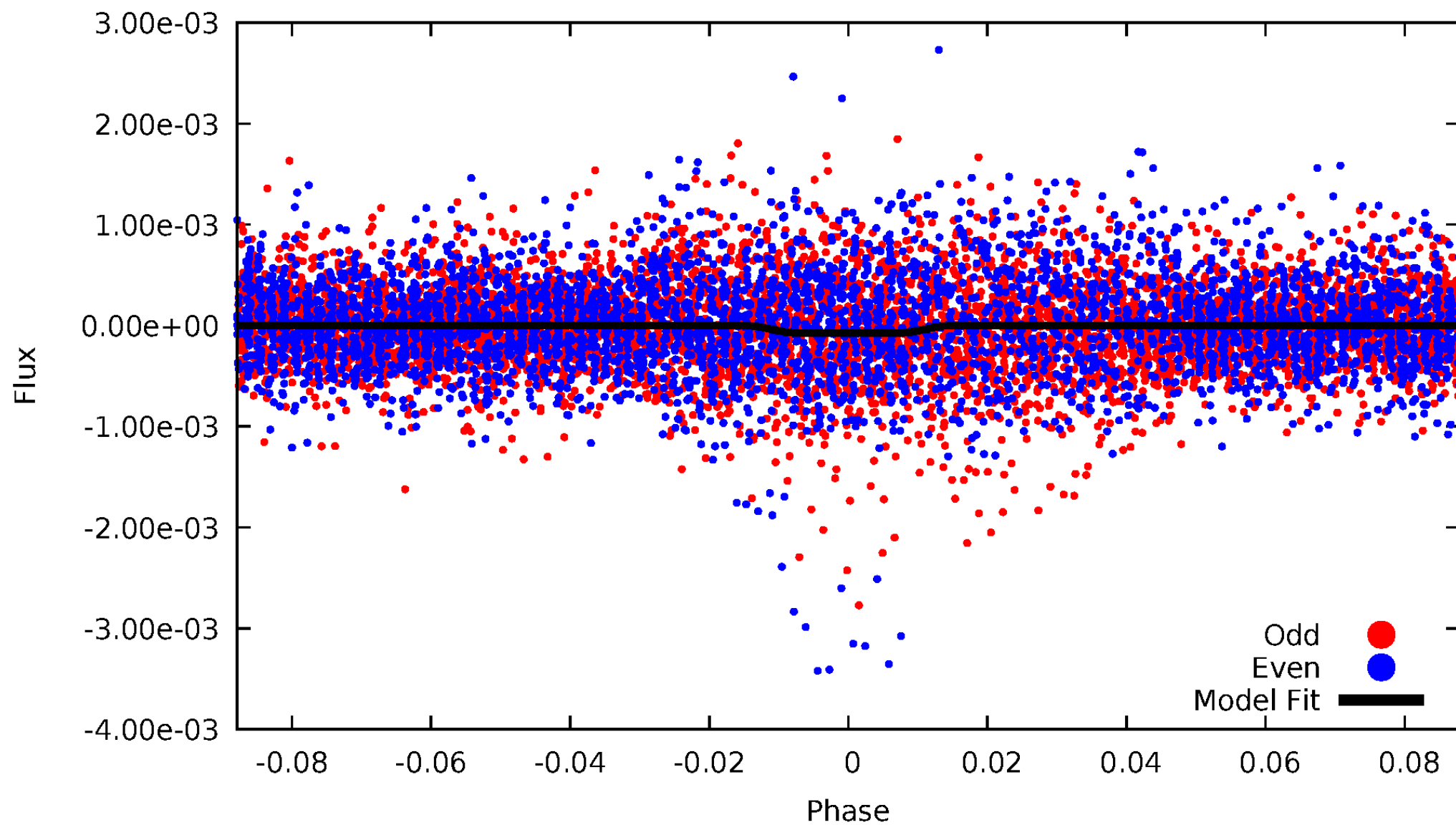
DV Odd/Even

TCE 009837544-03



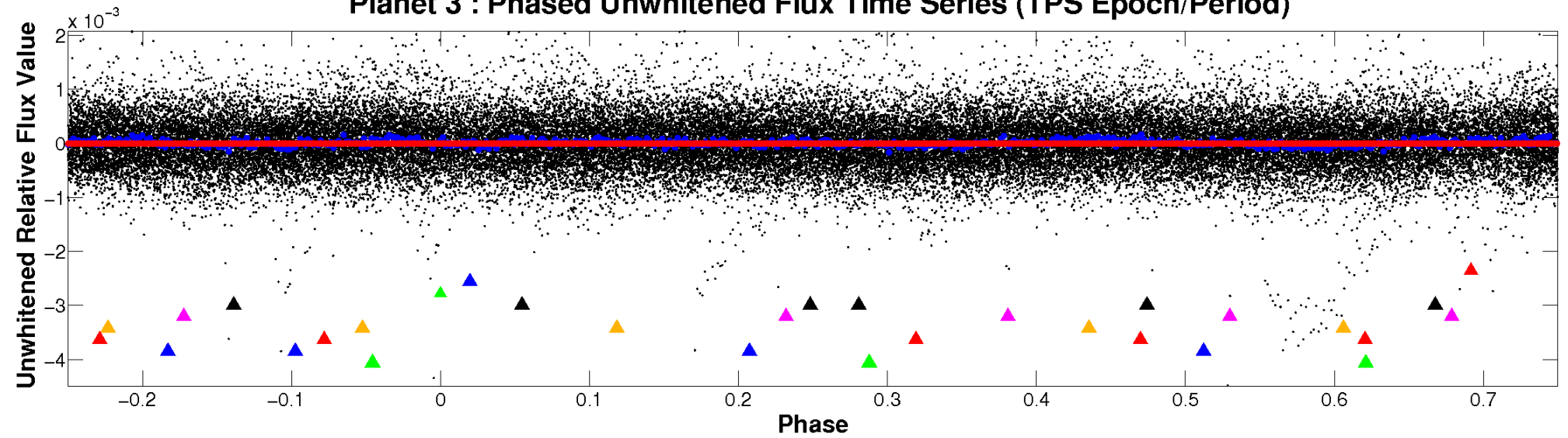
ALT Odd/Even

TCE 009837544-03

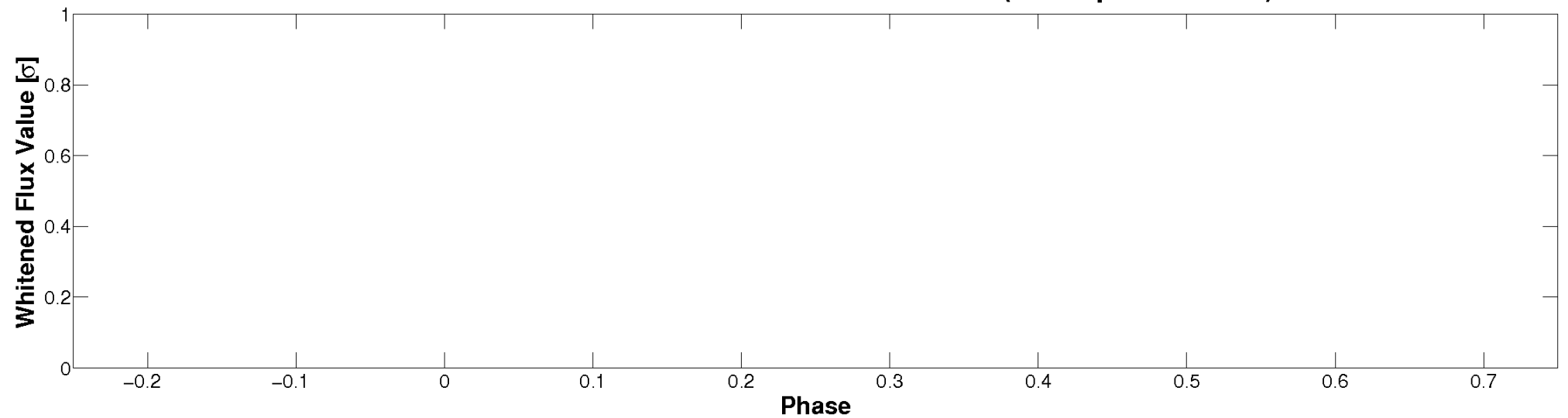


Non-Whitened Vs. Whitened Light Curve

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

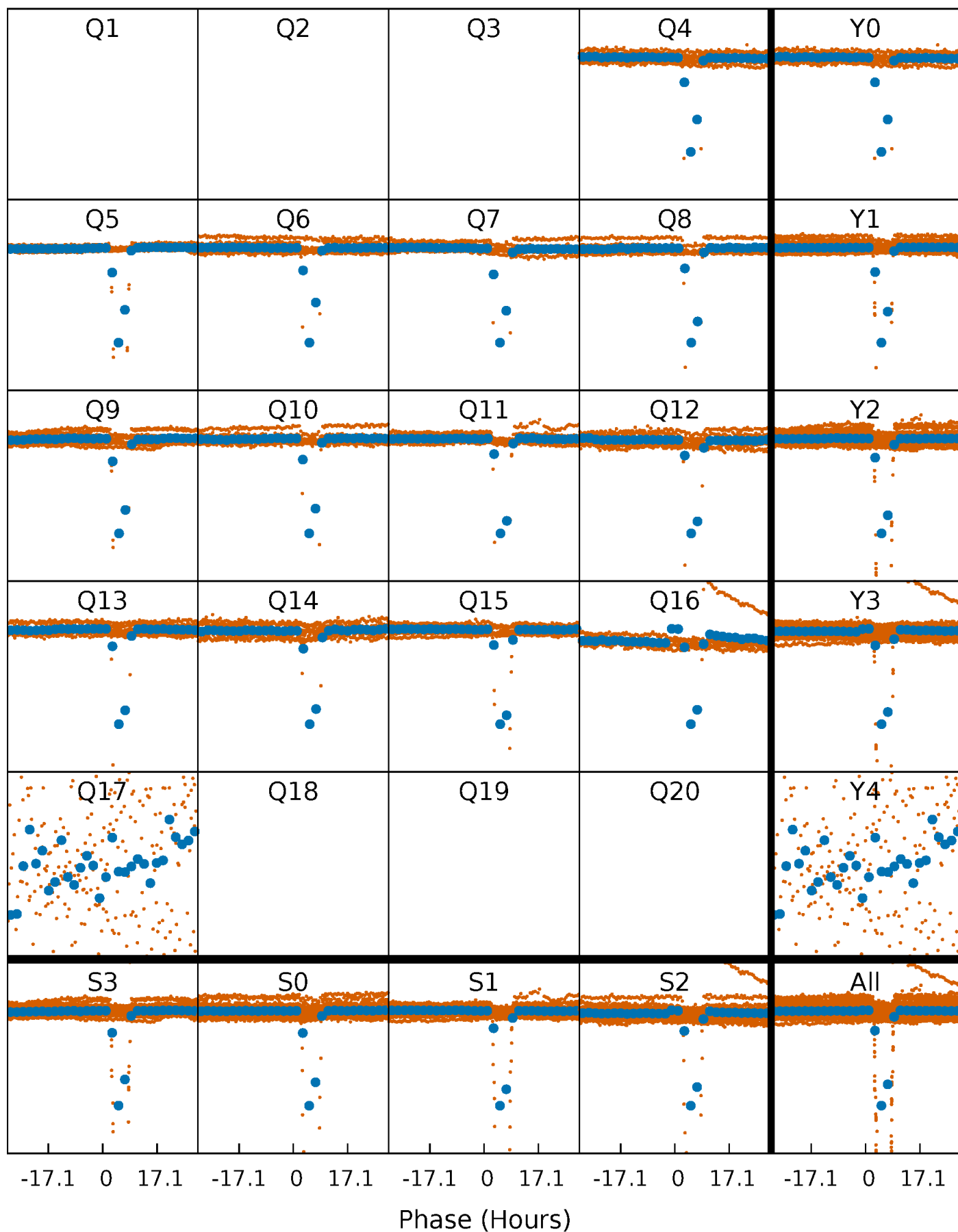


Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)



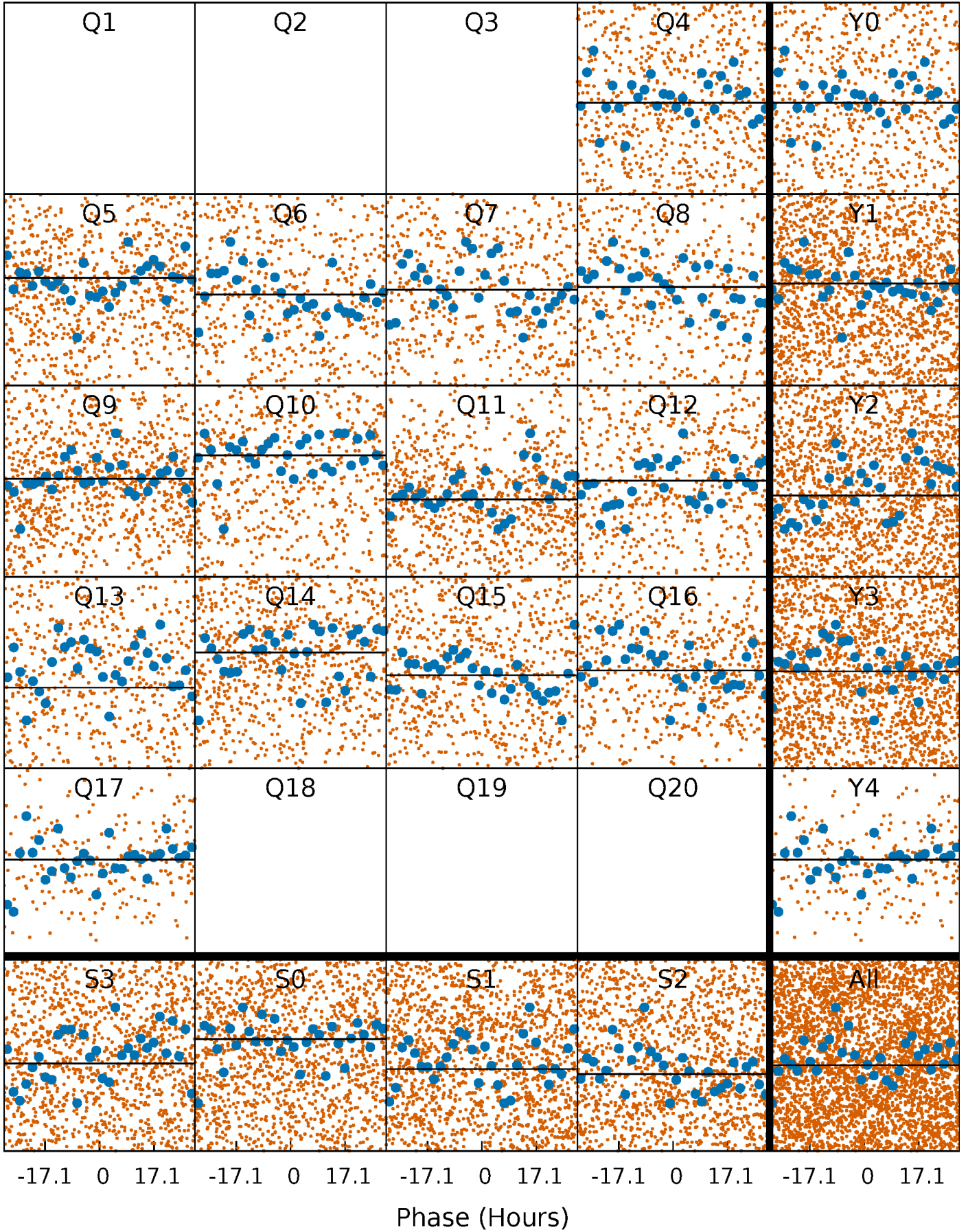
PDC Quarter-Phased Transit Curves

TCE 009837544-03 P= 11.943528 Days $T_0=140.767396$ (BKJD)



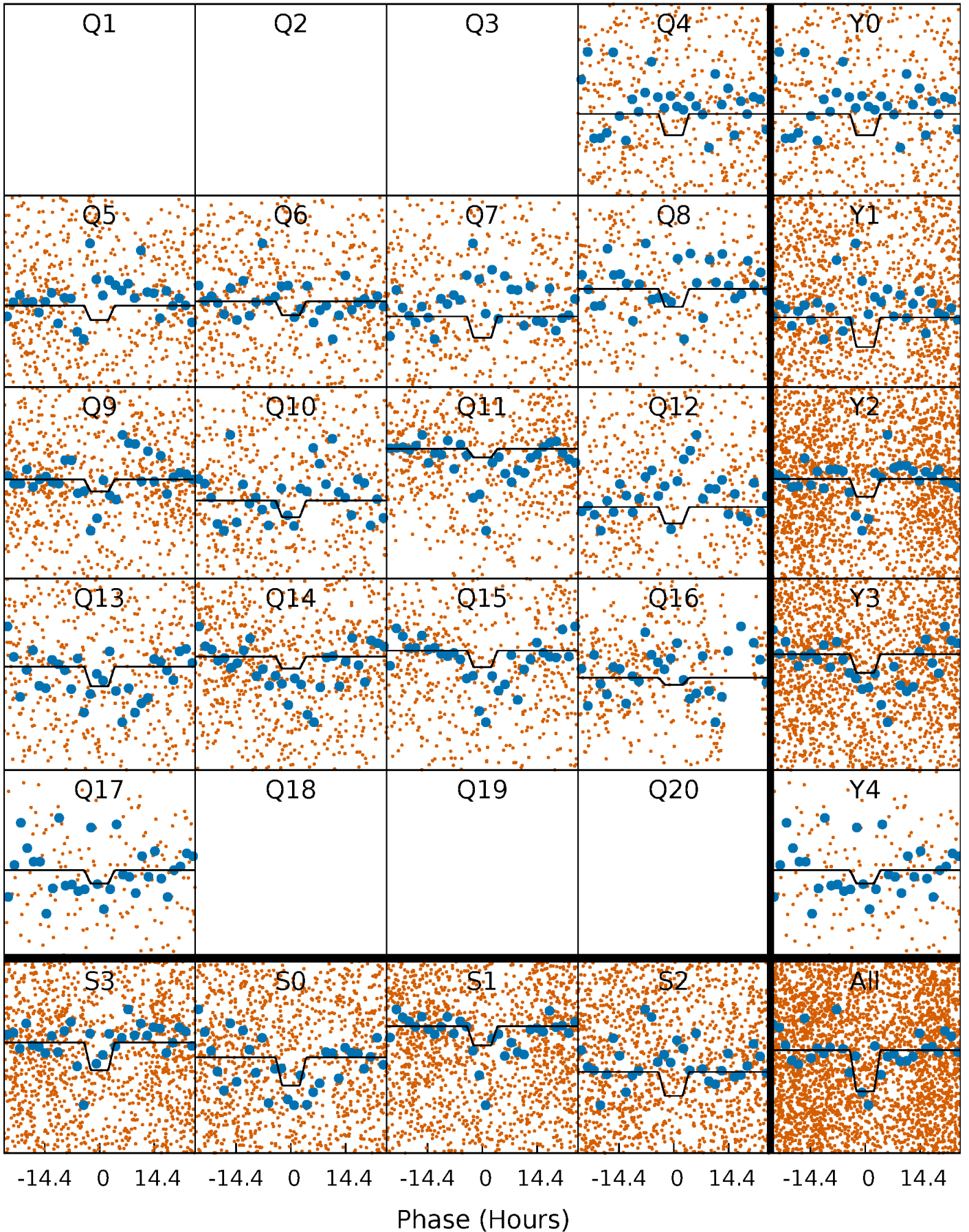
DV Quarter-Phased Transit Curves

TCE 009837544-03 P= 11.943528 Days $T_0=140.767396$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

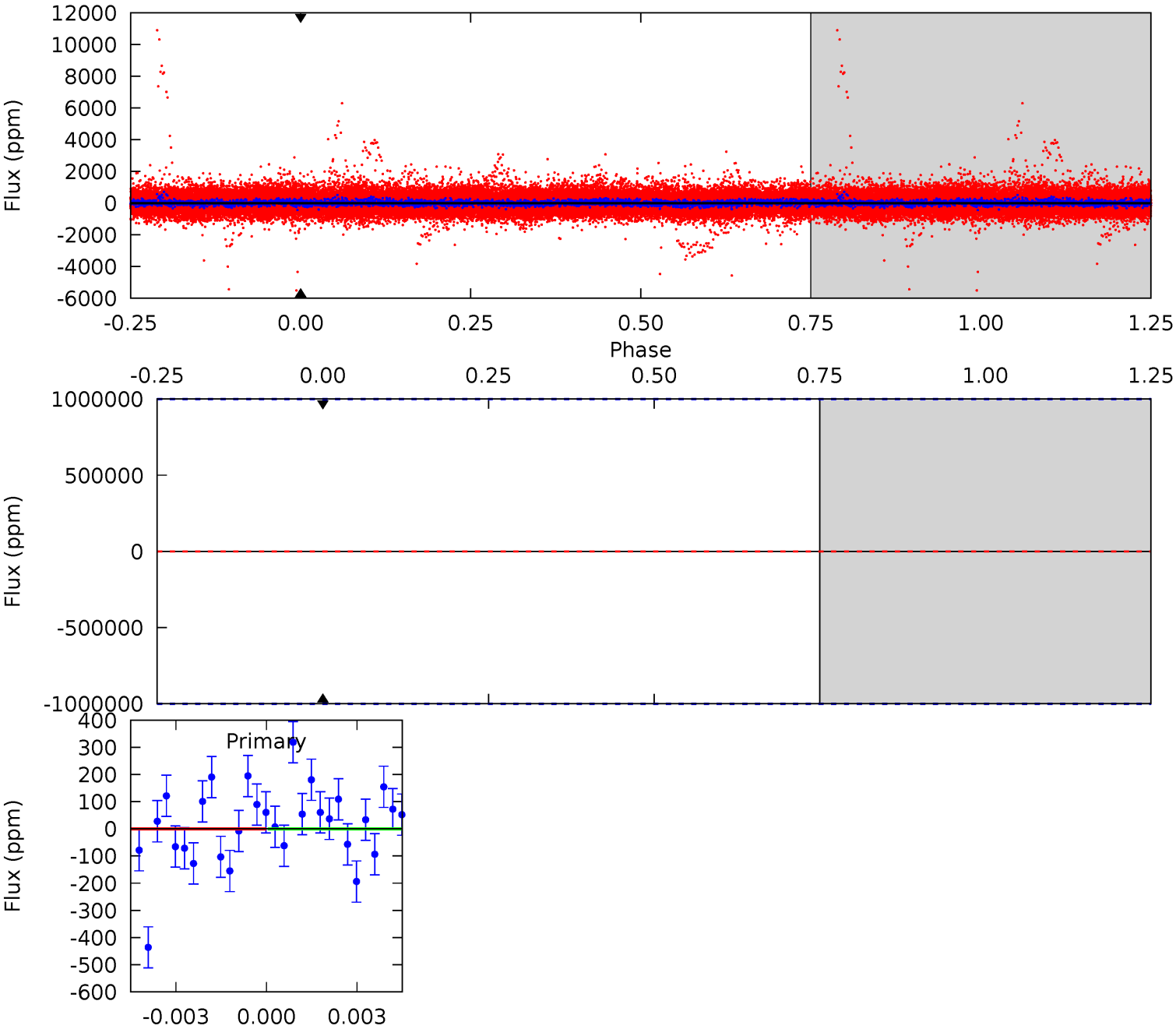
TCE 009837544-03 P= 11.943528 Days $T_0=140.669391$ (BKJD)



DV Model-Shift Uniqueness Test

009837544-03, P = 11.943528 Days, E = 140.767396 Days

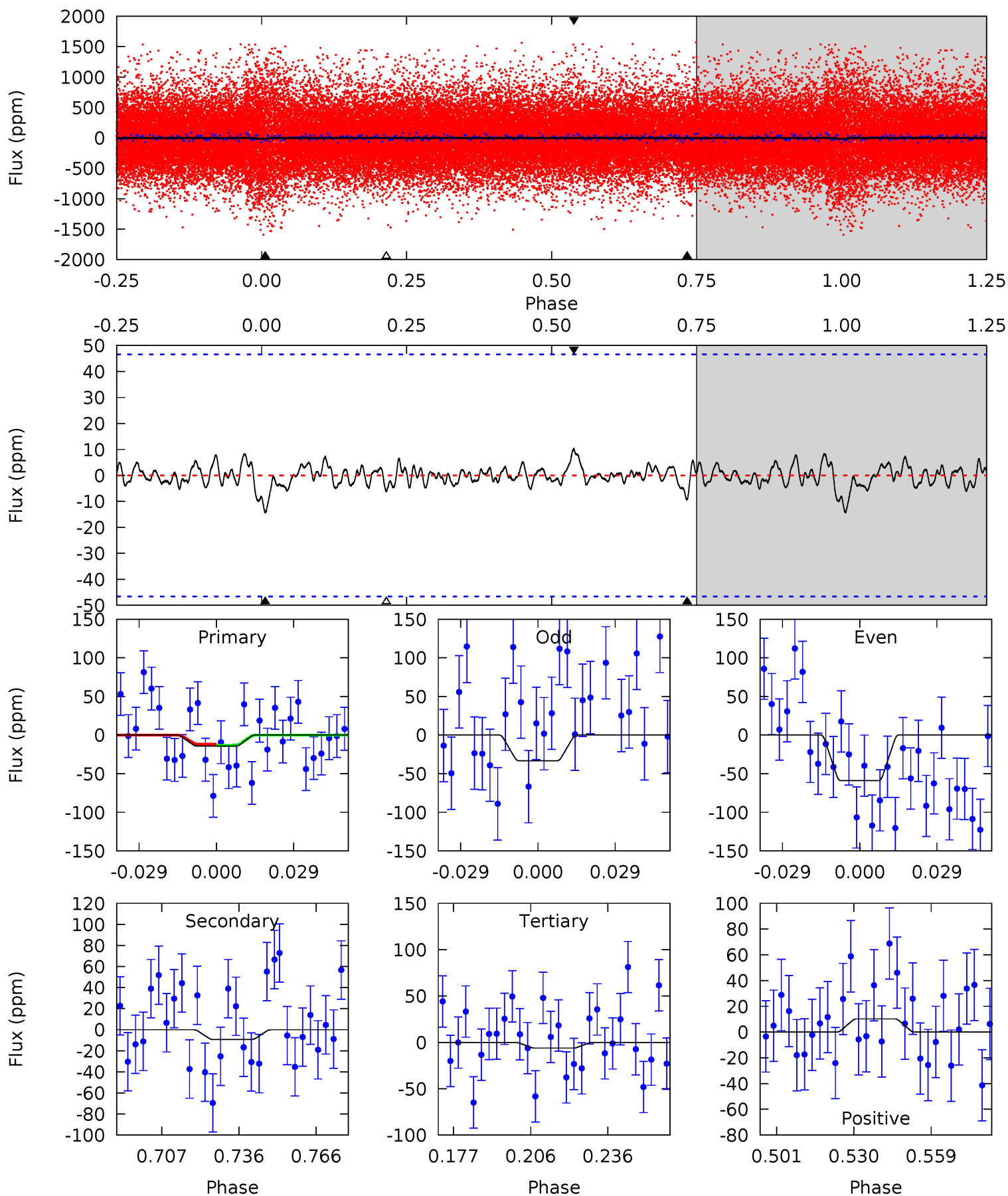
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009837544-03, P = 11.943528 Days, E = 140.669391 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.48	0.96	0.64	1.06	4.81	2.18	0.30	0.84	0.42	0.32	-0.10	1.32	5.03	0.42	0.09



Stellar Parameters For KIC 009837544

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5075^{+179}_{-179}	$4.497^{+0.095}_{-0.095}$	$0.020^{+0.300}_{-0.300}$	$0.824^{+0.088}_{-0.097}$	$0.777^{+0.098}_{-0.057}$	$1.957^{+0.744}_{-0.493}$
	+4%/-4%	+2%/-2%	+1500%/-1500%	+11%/-12%	+13%/-7%	+38%/-25%
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 009837544-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$10.40^{+8.38}_{-6.89}$	927^{+44}_{-46}	2868^{+7011}_{-13106}	21^{+6586}_{-8282}
Alt.	-9 ± 10	$6.53^{+6.93}_{-4.53}$	929^{+42}_{-50}	1847^{+752}_{-3656}	$0.705^{+9.554}_{-0.742}$

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

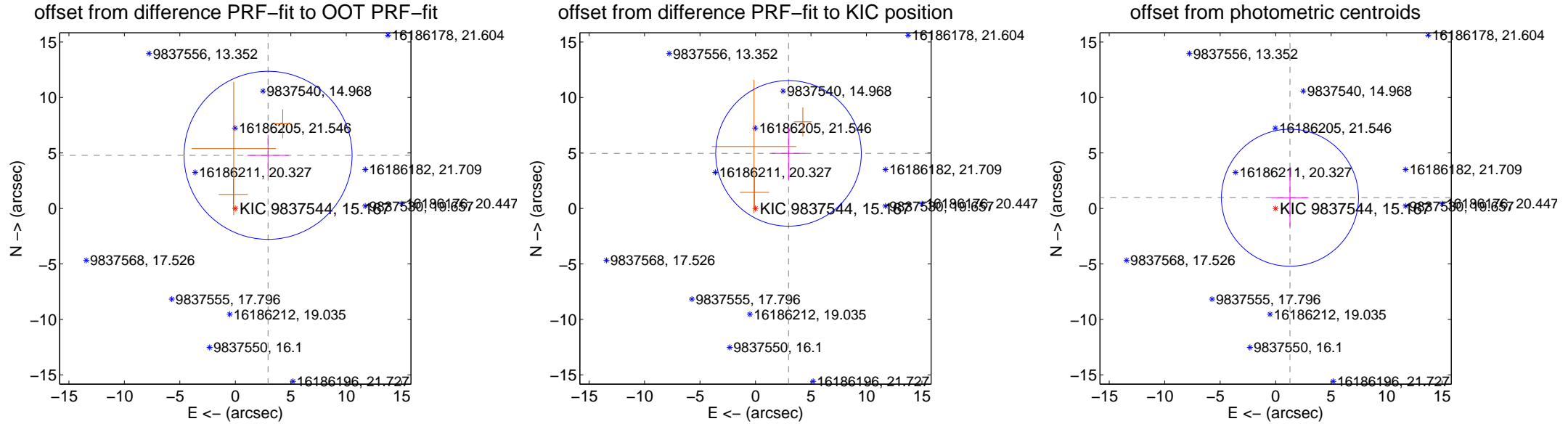
DV Centroid Data

Supplemental centroid analysis for 009837544-03. Kepler magnitude: 15.17. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

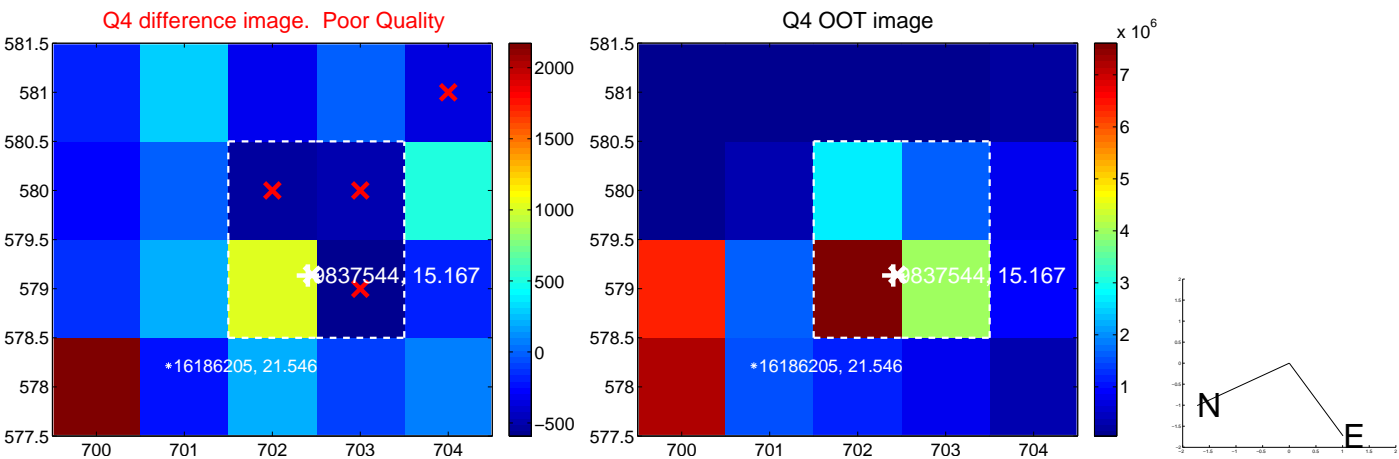
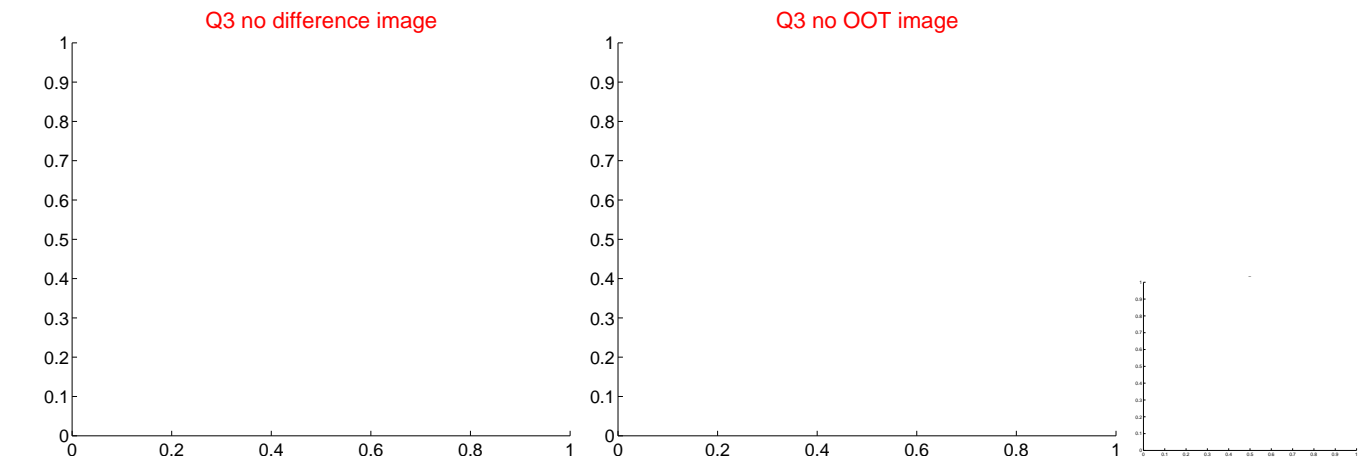
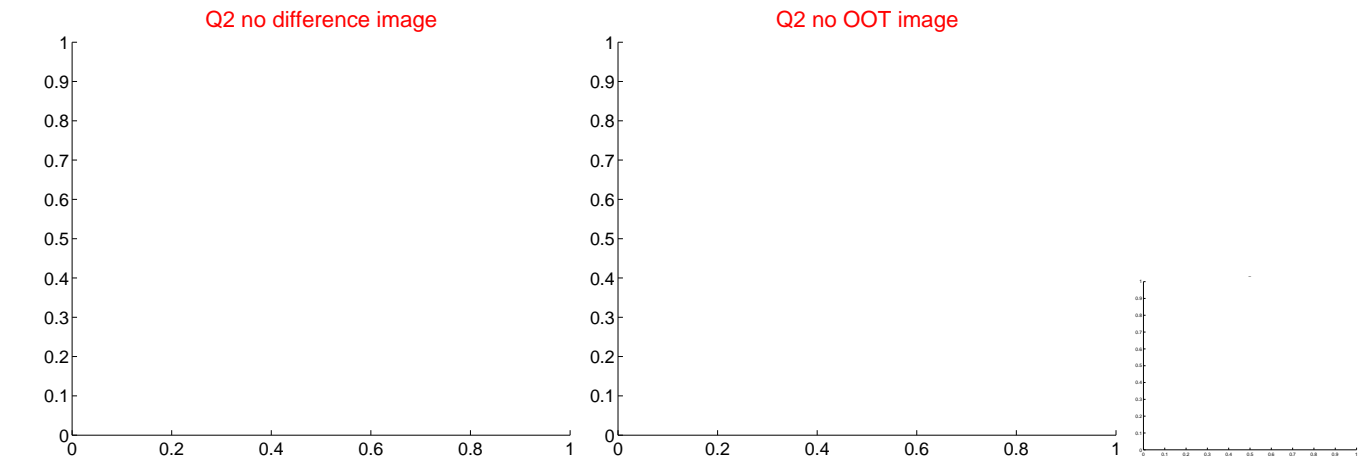
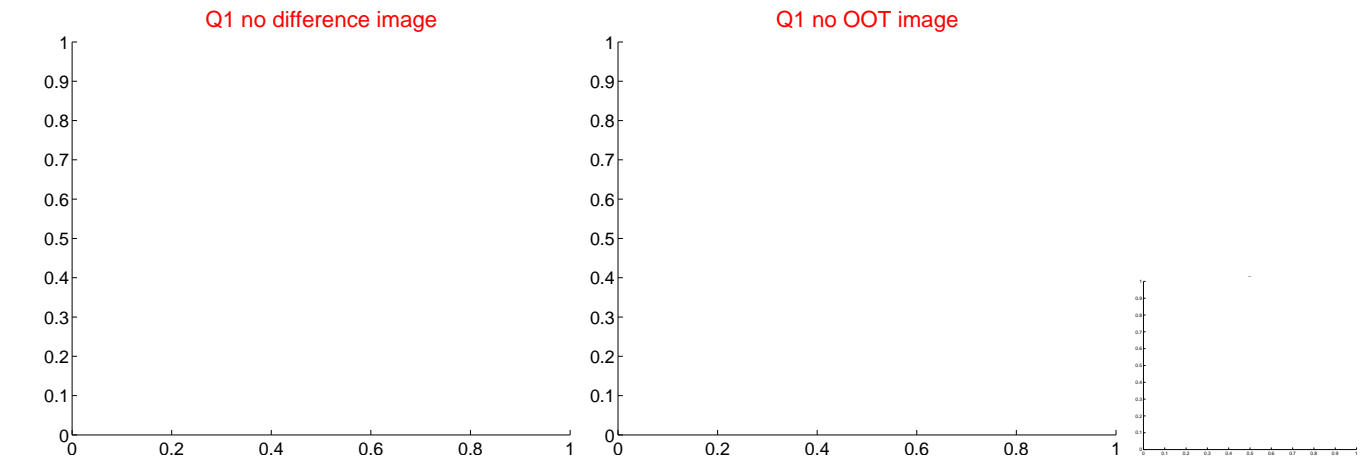
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.625 ± 2.525	2.23	-2.951 ± 1.874	4.789 ± 1.842
PRF-fit source offset from KIC position	5.788 ± 2.187	2.65	-2.977 ± 1.540	4.964 ± 2.378
photometric centroid source offset	1.61 ± 2.06	0.78	-1.29 ± 1.68	0.97 ± 2.61

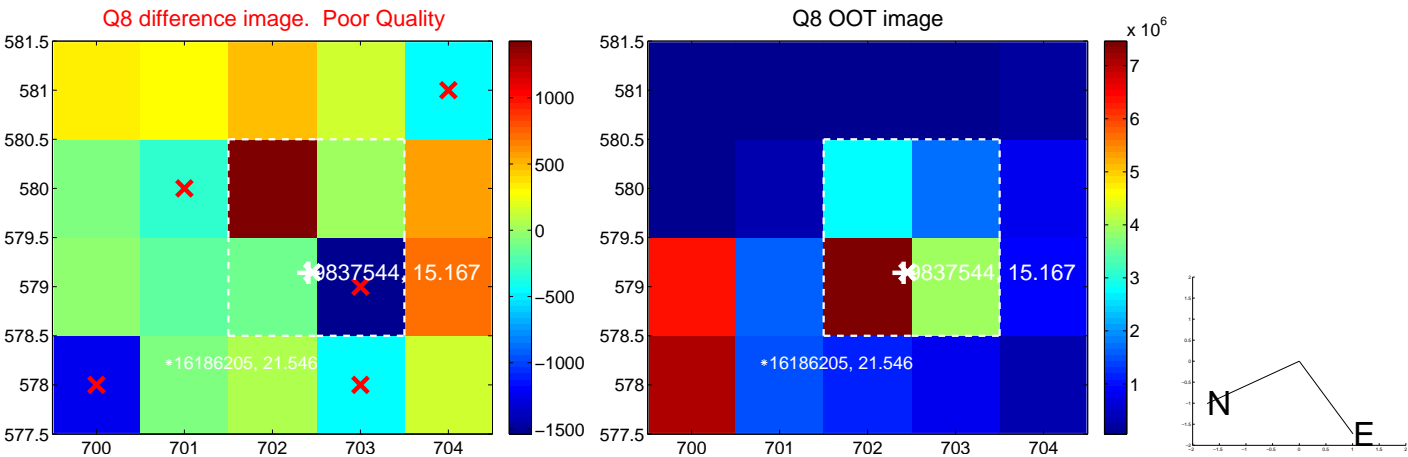
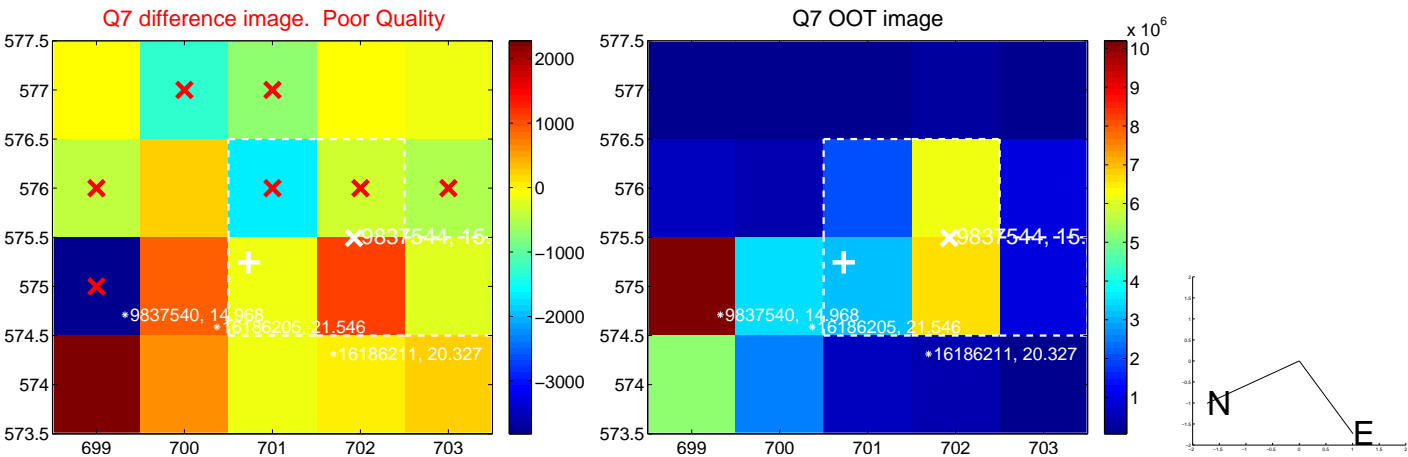
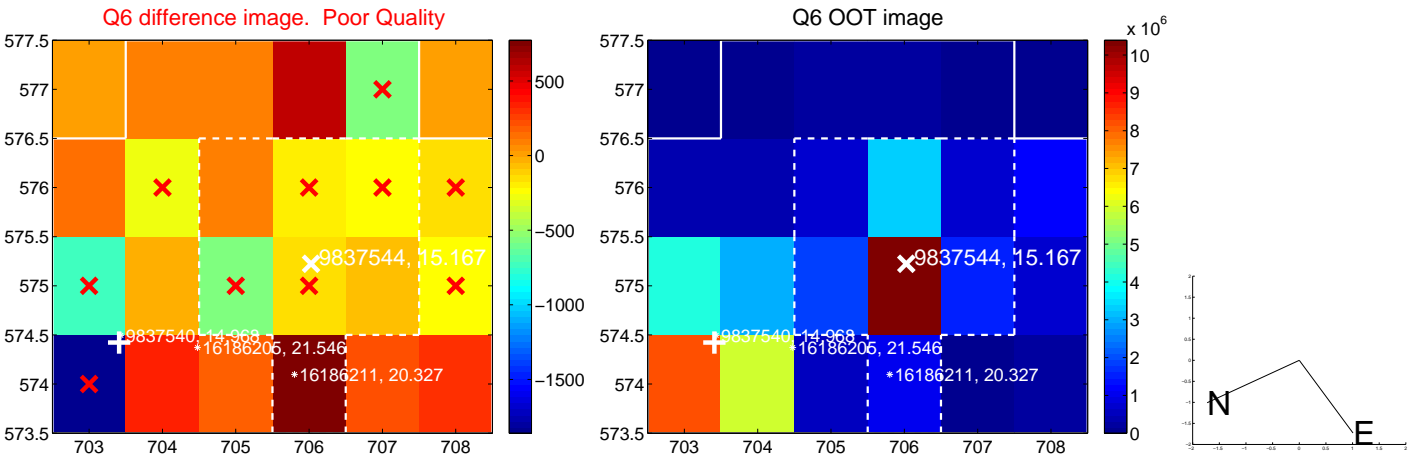
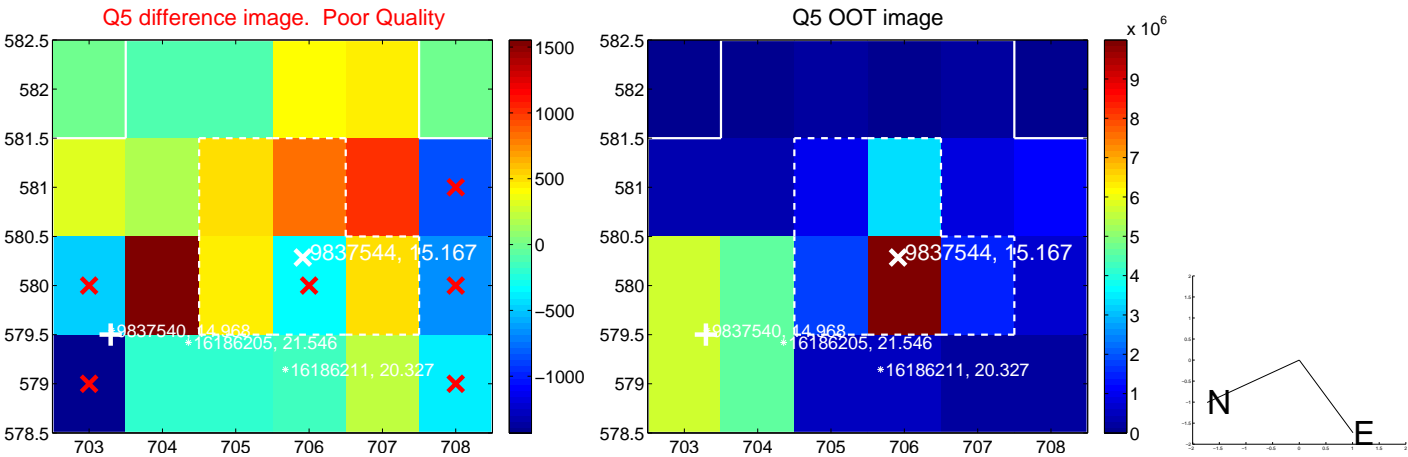


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

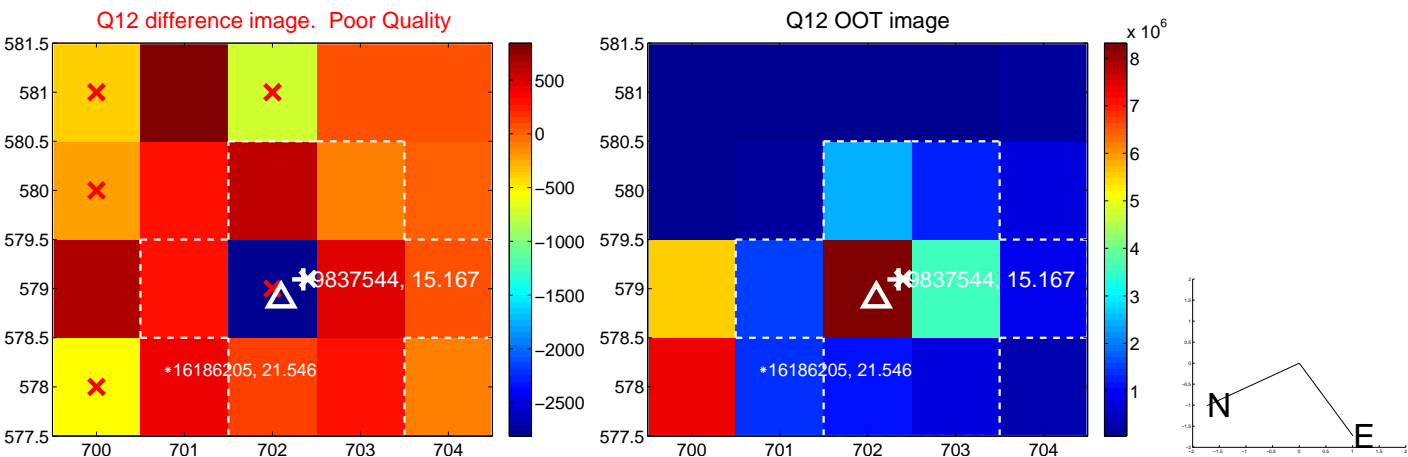
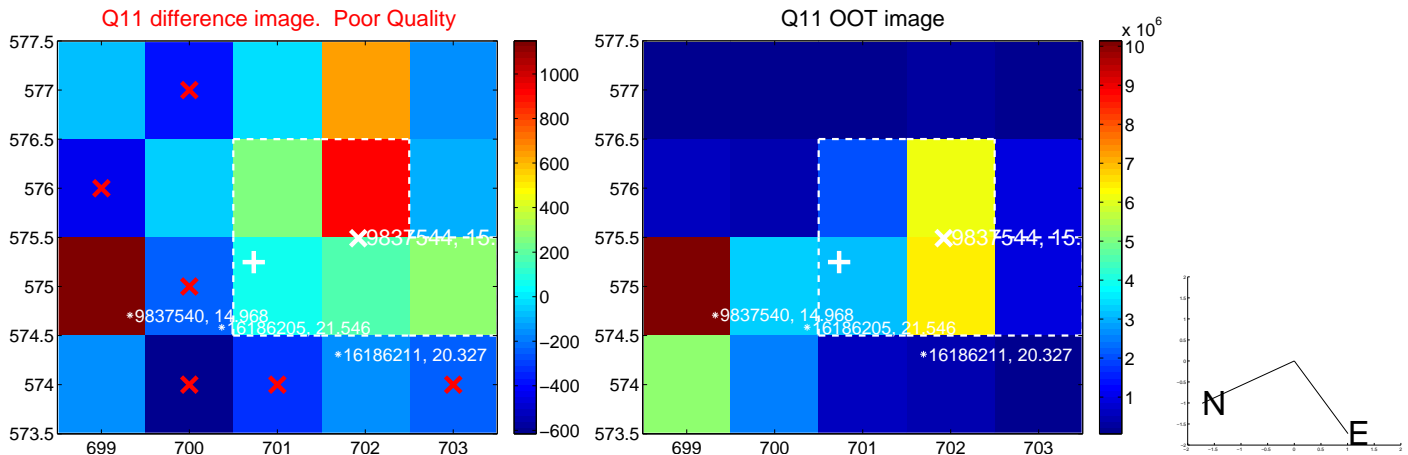
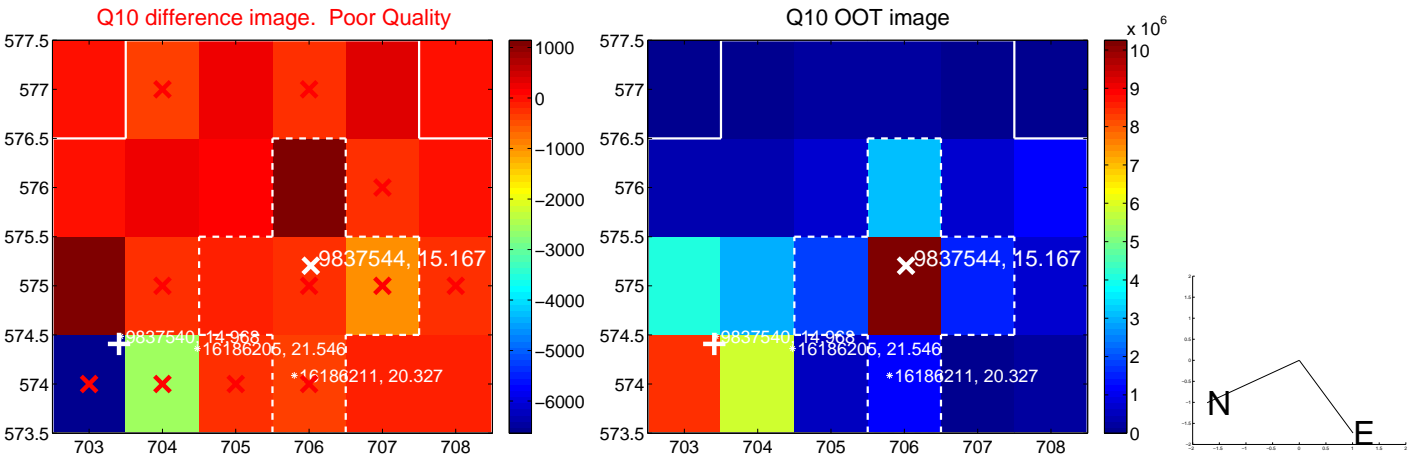
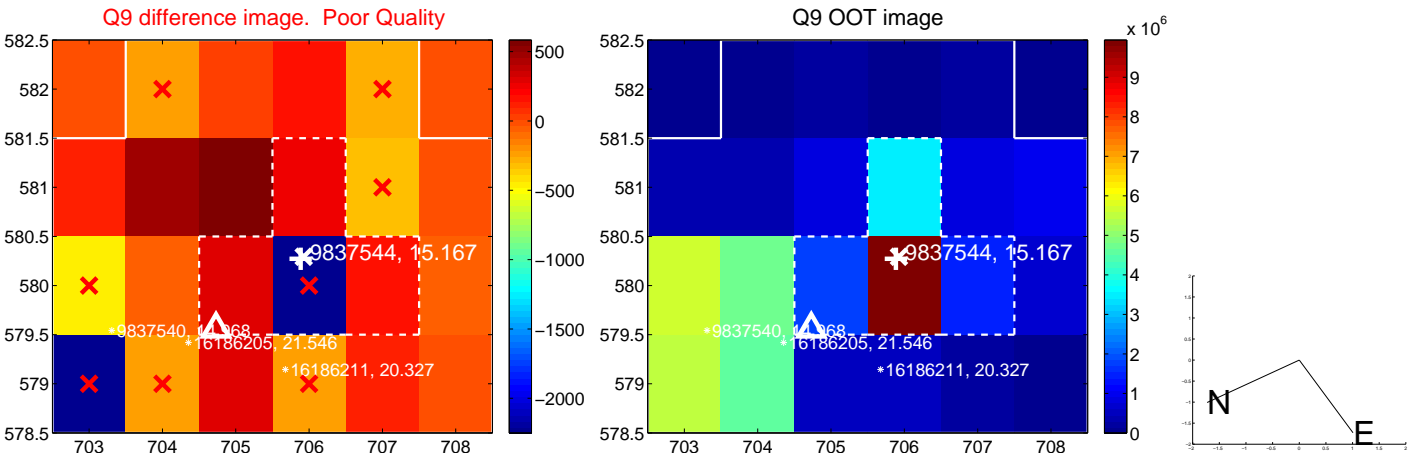
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



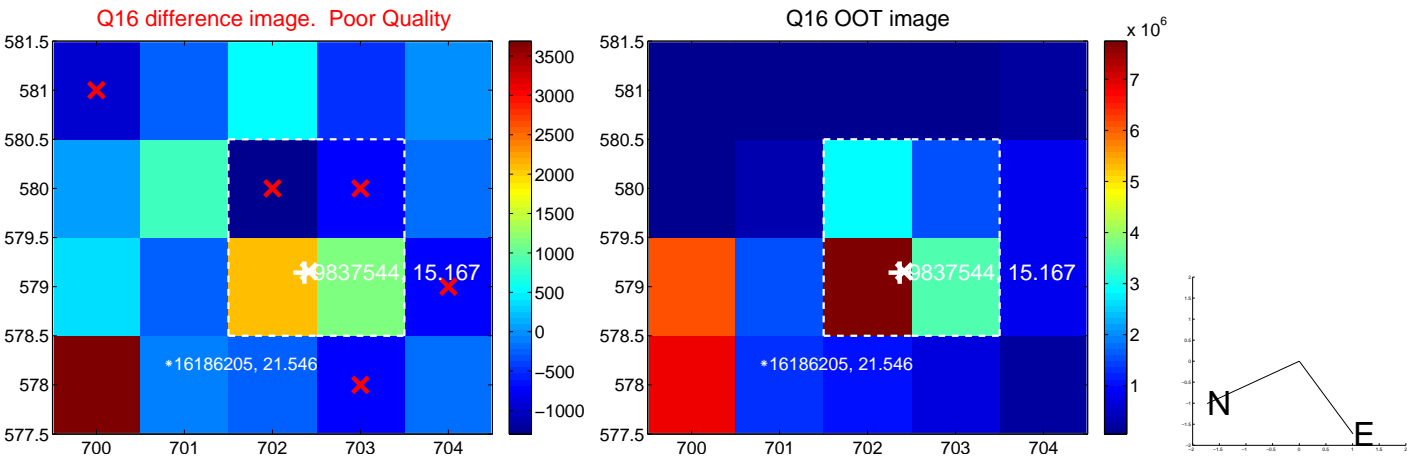
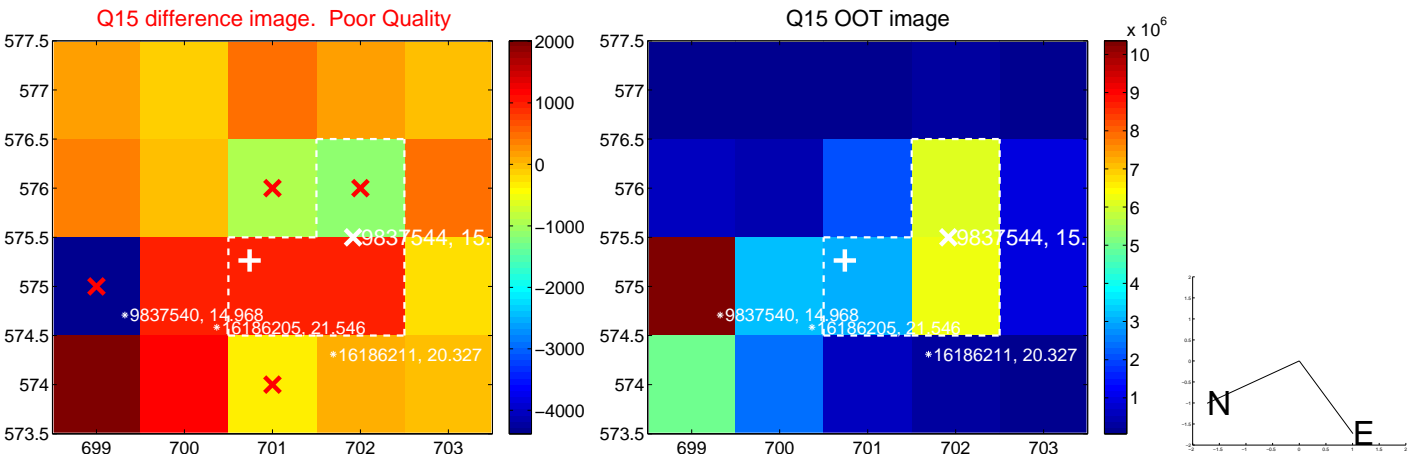
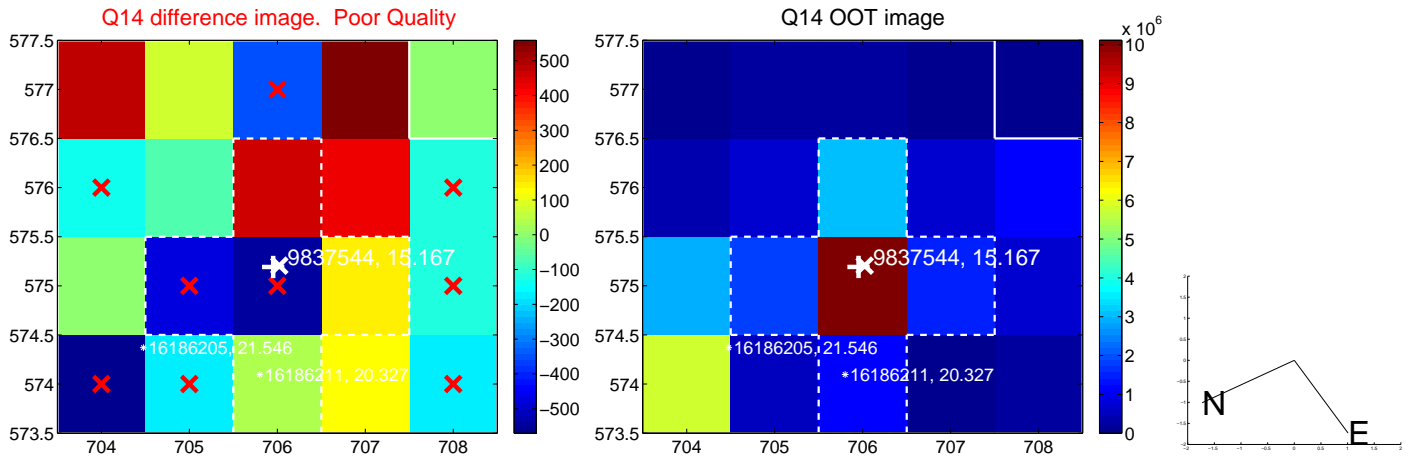
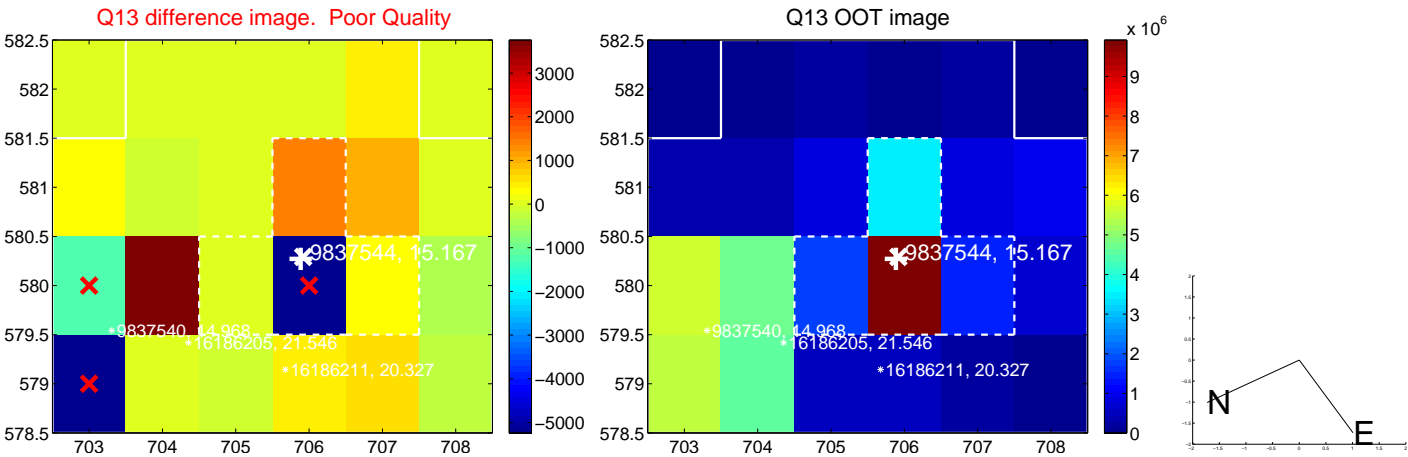
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



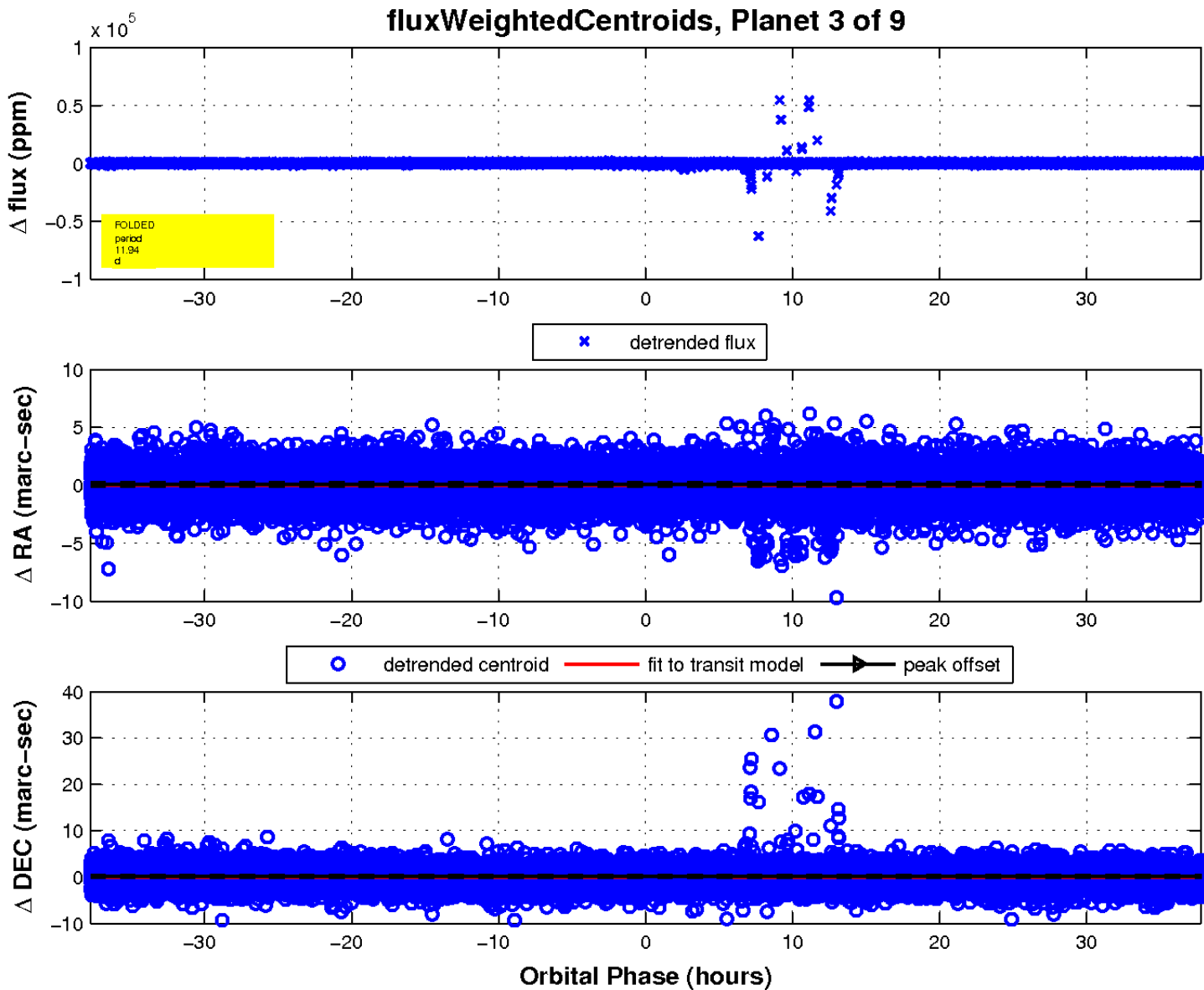
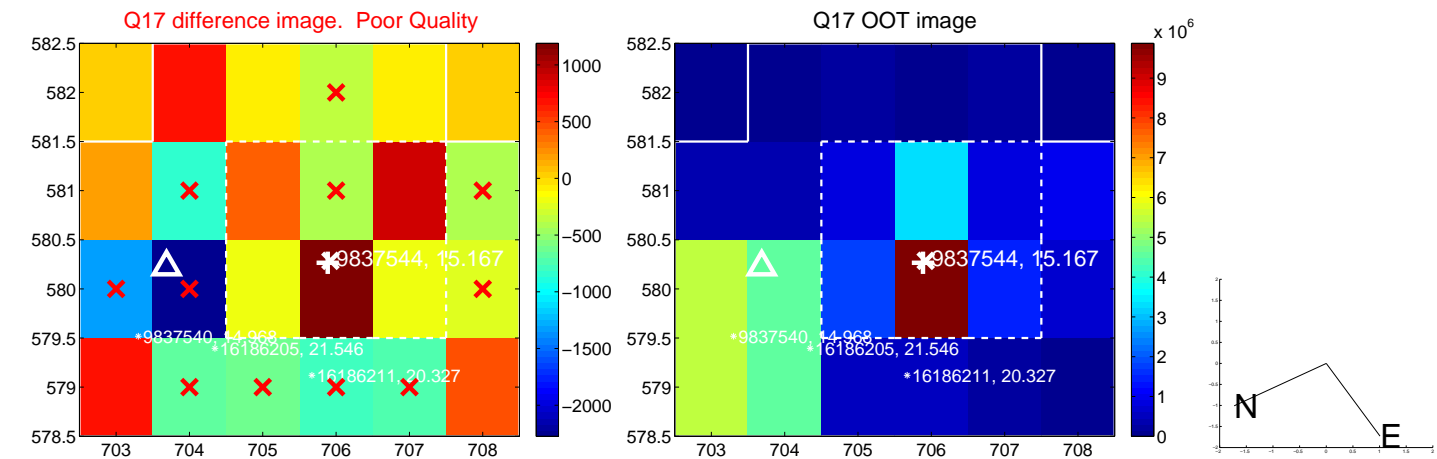
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



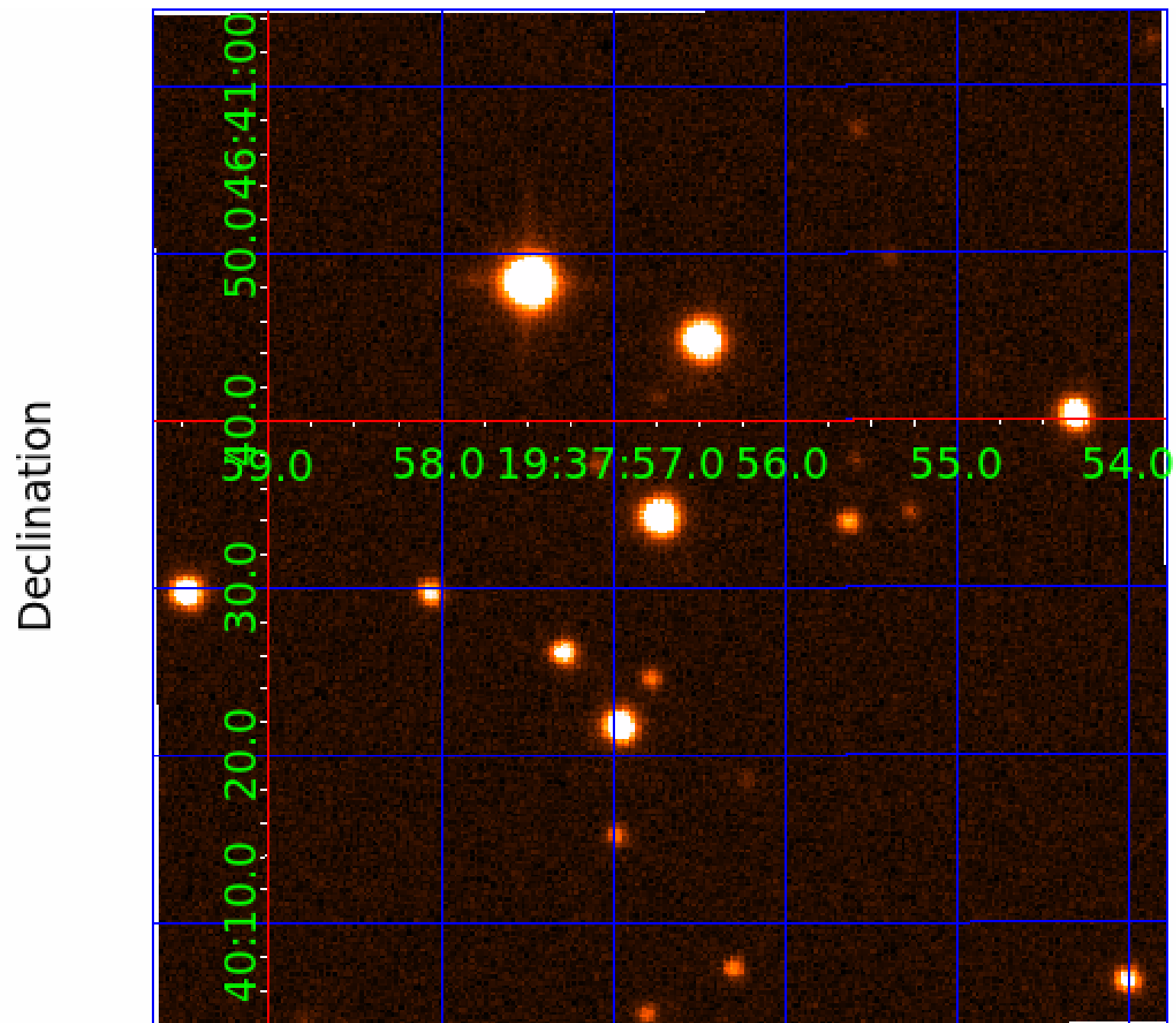
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009837544

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})
009837544-01	OBS	3529.01	71.661165	172.916198	325293.0	4.500	4634.2	-1.0	0.82	5075	38.32	4.18
009837544-02	OBS	No	71.661673	164.885808	264768.2	3.500	4015.5	-1.0	0.82	5075	40.49	4.18
009837544-03	OBS	No	11.943528	140.767396	12008.6	15.000	148.2	-1.0	0.82	5075	8.76	45.61
009837544-04	OBS	No	212.672492	322.884906	7967.5	15.000	65.3	-1.0	0.82	5075	7.14	0.98
009837544-05	OBS	No	284.865731	174.540434	575.8	14.949	64.7	5.3	0.82	5075	2.08	0.66
009837544-06	OBS	No	288.684275	313.175858	1168.4	10.134	26.5	9.8	0.82	5075	5.39	0.65
009837544-07	OBS	No	284.844834	318.988322	5958.6	3.000	28.9	-1.0	0.82	5075	6.18	0.66
009837544-09	OBS	No	258.775431	371.133438	556.6	17.124	17.9	5.3	0.82	5075	2.22	0.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009837544-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE—CENT_NOFITS
009837544-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
009837544-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS—HALO_GHOST
009837544-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009837544-05	OBS	FP	0.00	1	0	1	0	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
009837544-06	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009837544-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009837544-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—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

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 009837544-04

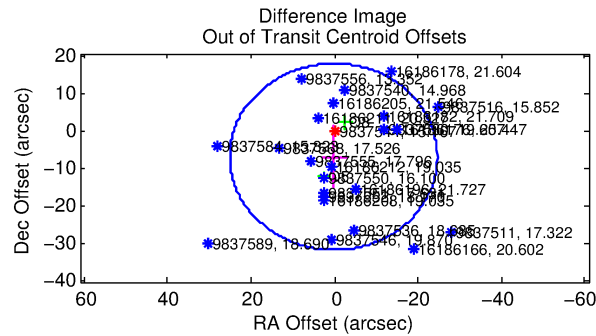
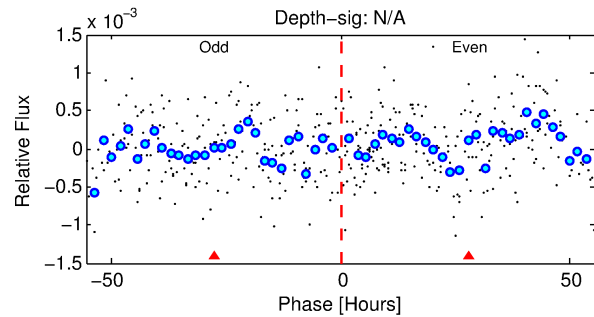
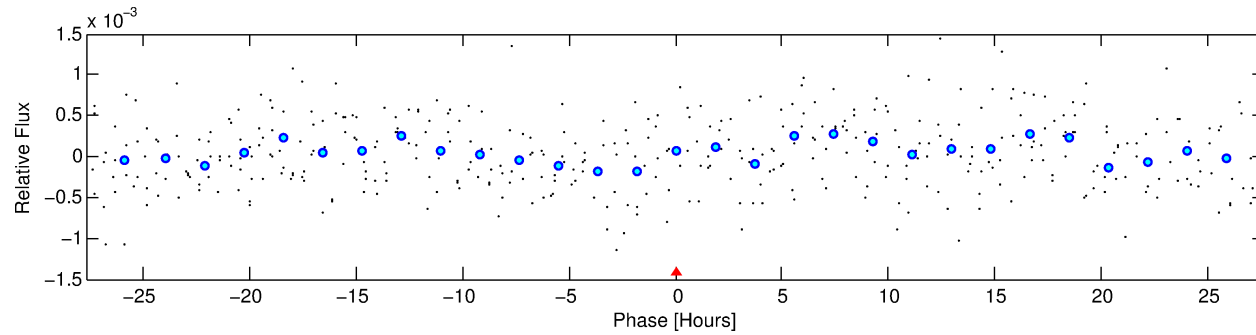
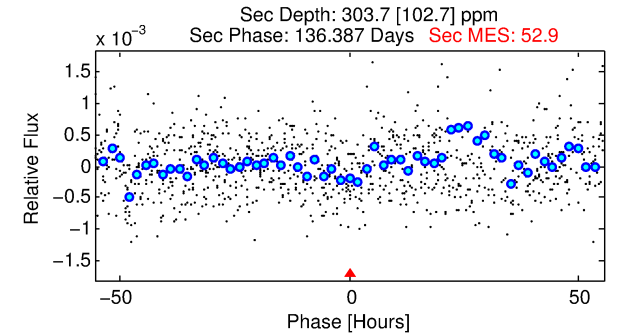
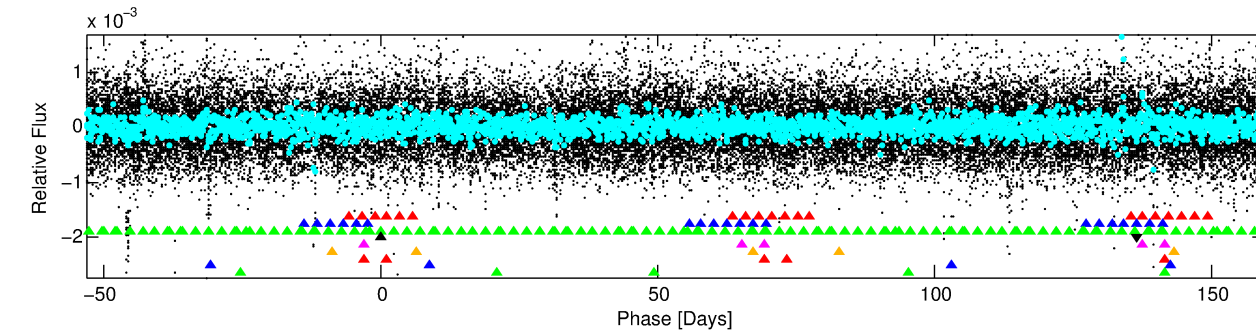
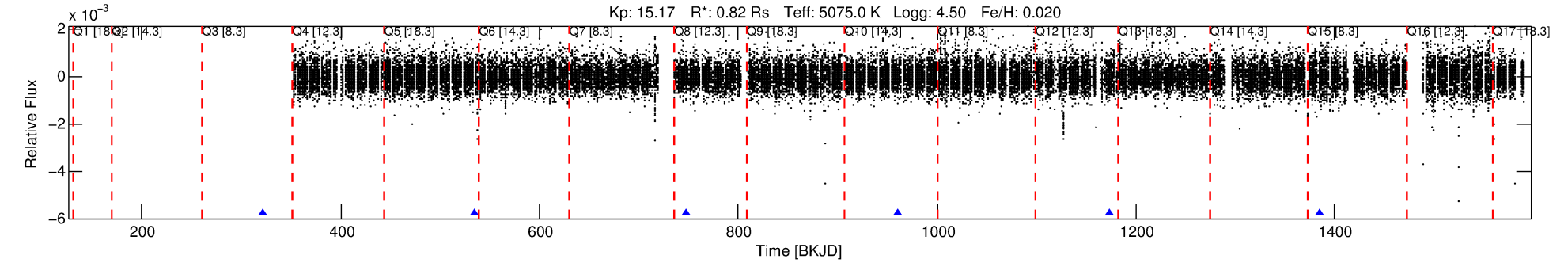
No Significant Match Found

DV One-Page Summary

KIC: 9837544 Candidate: 4 of 9 Period: 212.672 d

KOI: K03529 Corr: No Ephemeris Match

Kp: 15.17 R*: 0.82 Rs Teff: 5075.0 K Logg: 4.50 Fe/H: 0.020



TPS TCE Results:

Period = 212.67249 d

Epoch = 322.8849 BKJD

DV fit results are unavailable

DV Diagnostic Results:

ShortPeriod-sig: 100.0% [219.72σ]

LongPeriod-sig: 100.0% [48.61σ]

ModelChiSquare2-sig: N/A

ModelChiSquareGof-sig: N/A

Bootstrap-pfa: N/A

RollingBand-fgt: 1.00 [4/4]

GhostDiagnostic-chr: 3.691

Centroid-sig: 17.6%

Centroid-so: 30.374 arcsec [0.94σ]

OotOffset-rm: 7.052 arcsec [0.85σ]

KicOffset-rm: 1.272 arcsec [0.87σ]

OotOffset-st: 0/0/1/1 [2]

KicOffset-st: 0/0/1/1 [2]

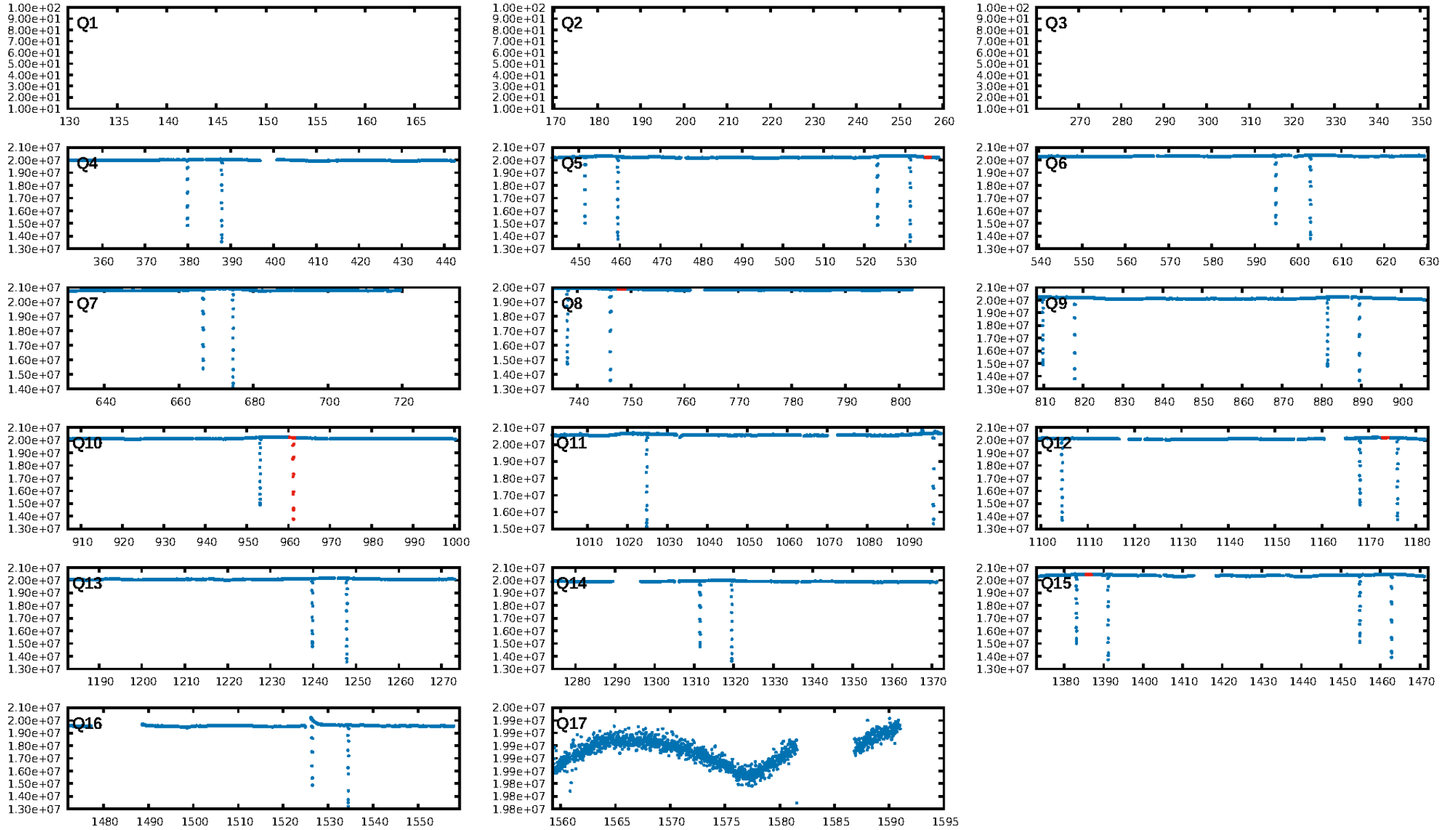
DiffImageQuality-fgm: 0.00 [0/2]

DiffImageOverlap-fno: 0.80 [4/5]

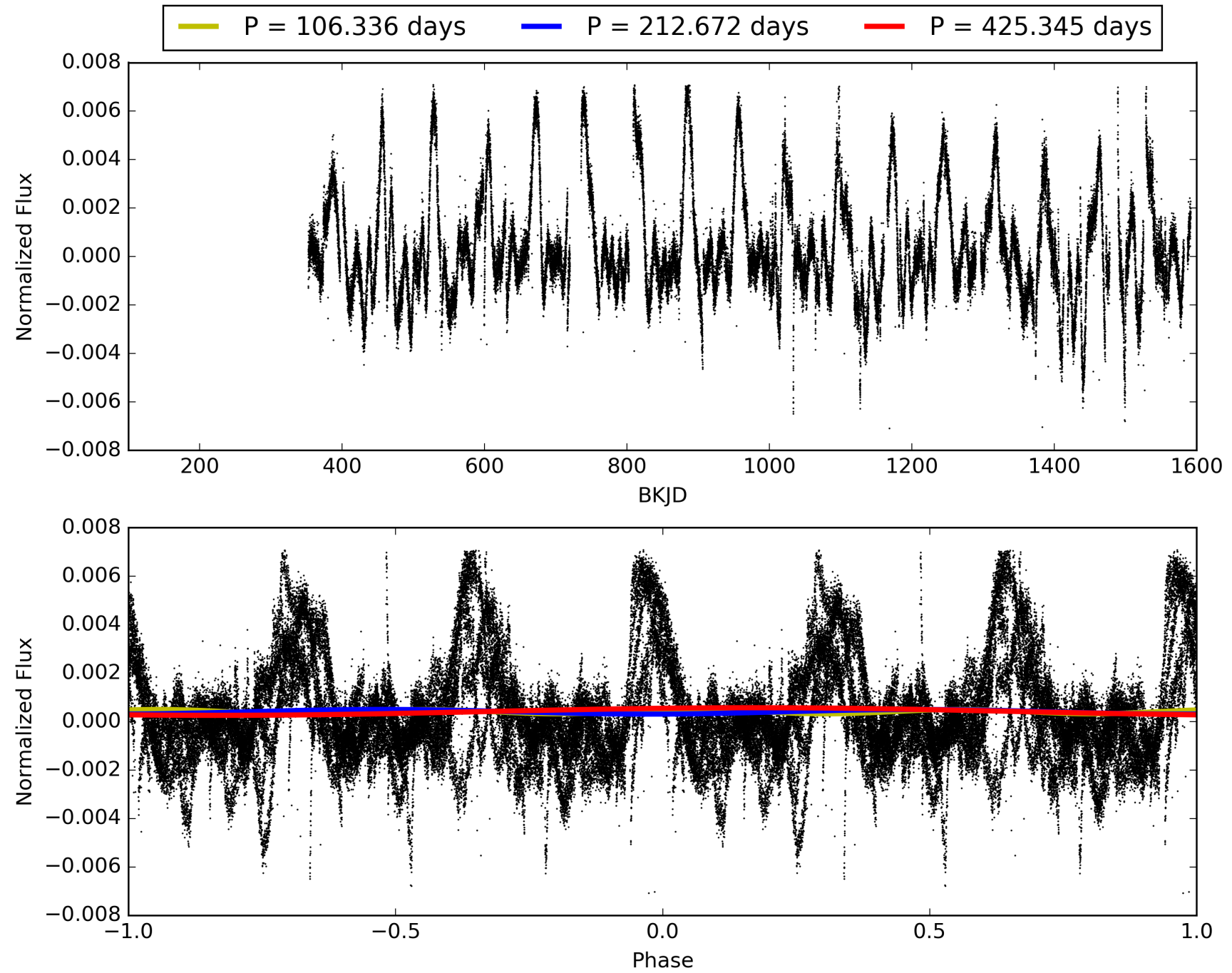
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:08:18 Z

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

TCE 009837544-04, PDC Light Curves

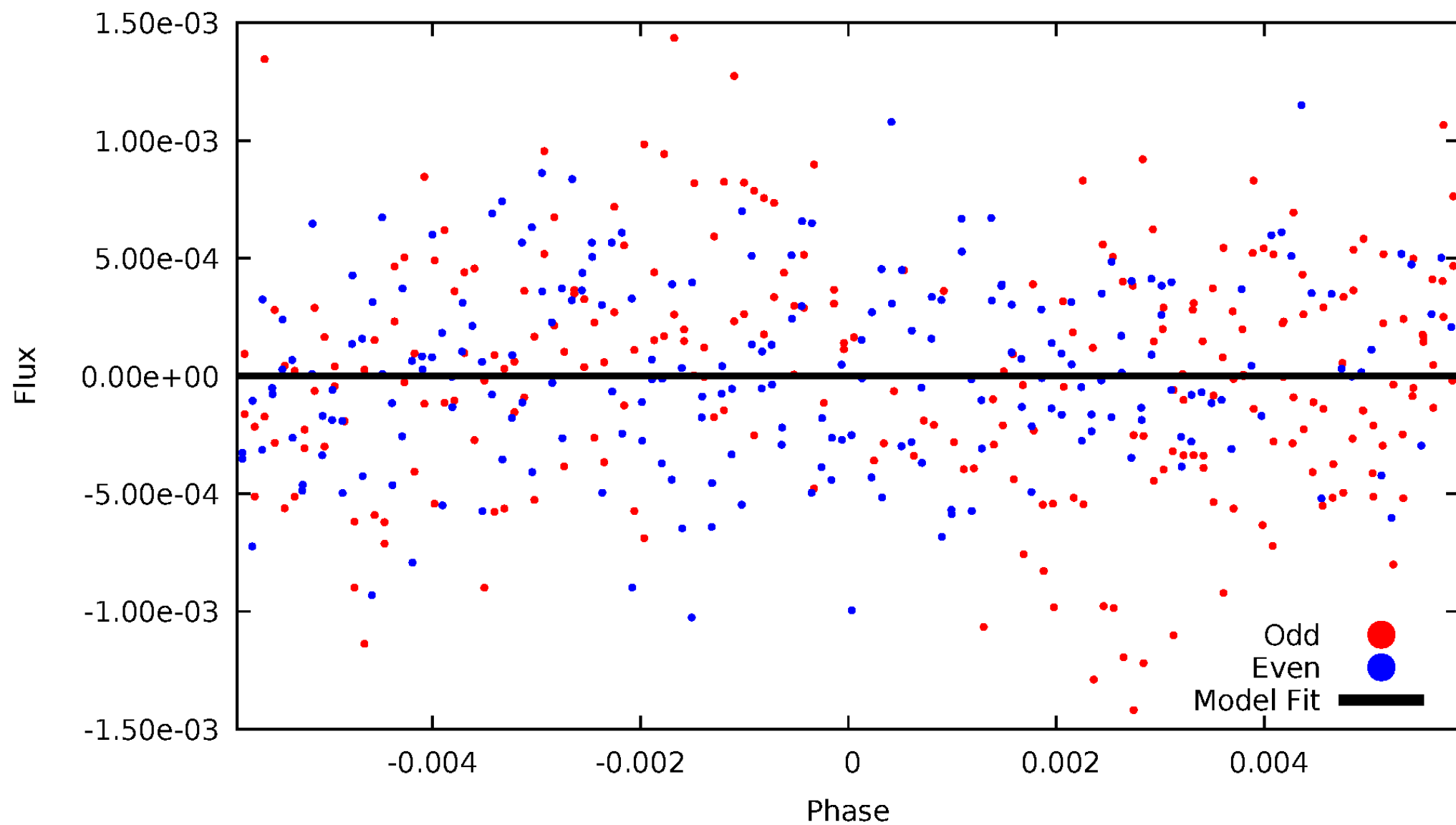


TCE 009837544-04



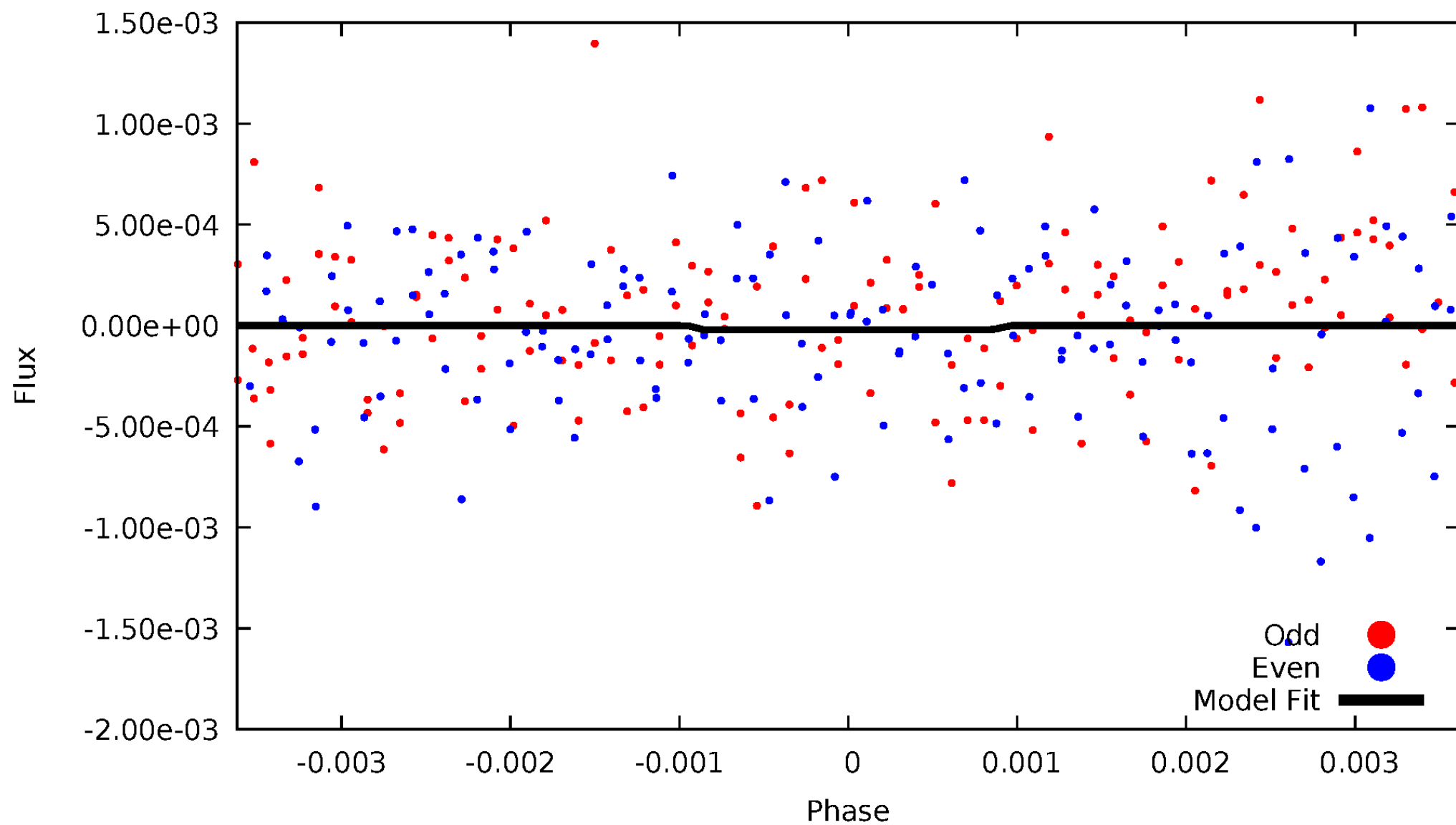
DV Odd/Even

TCE 009837544-04



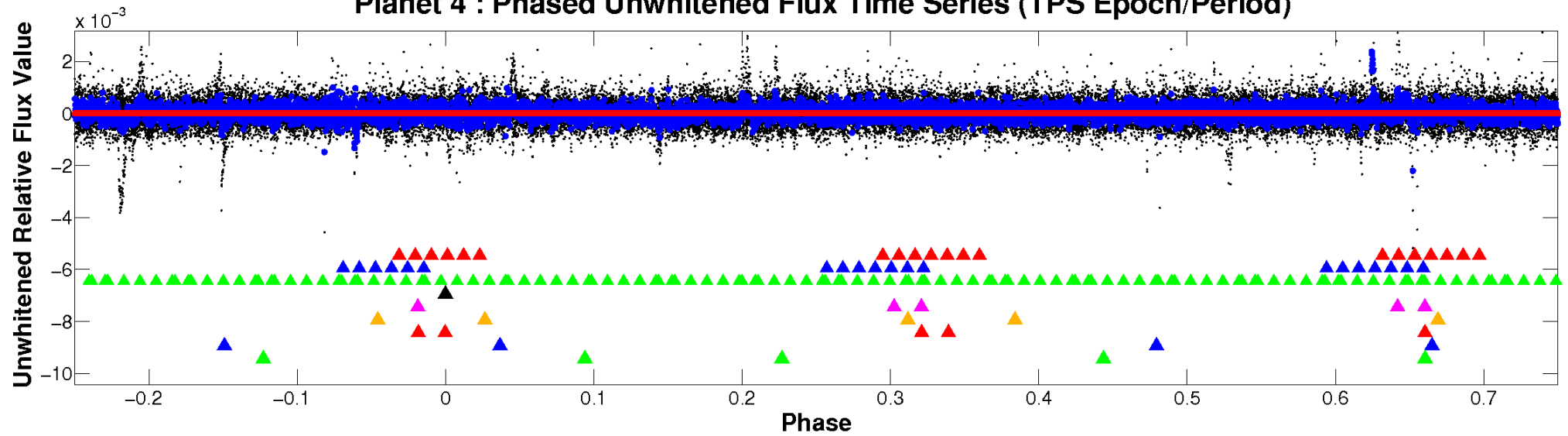
ALT Odd/Even

TCE 009837544-04



Non-Whitened Vs. Whitened Light Curve

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

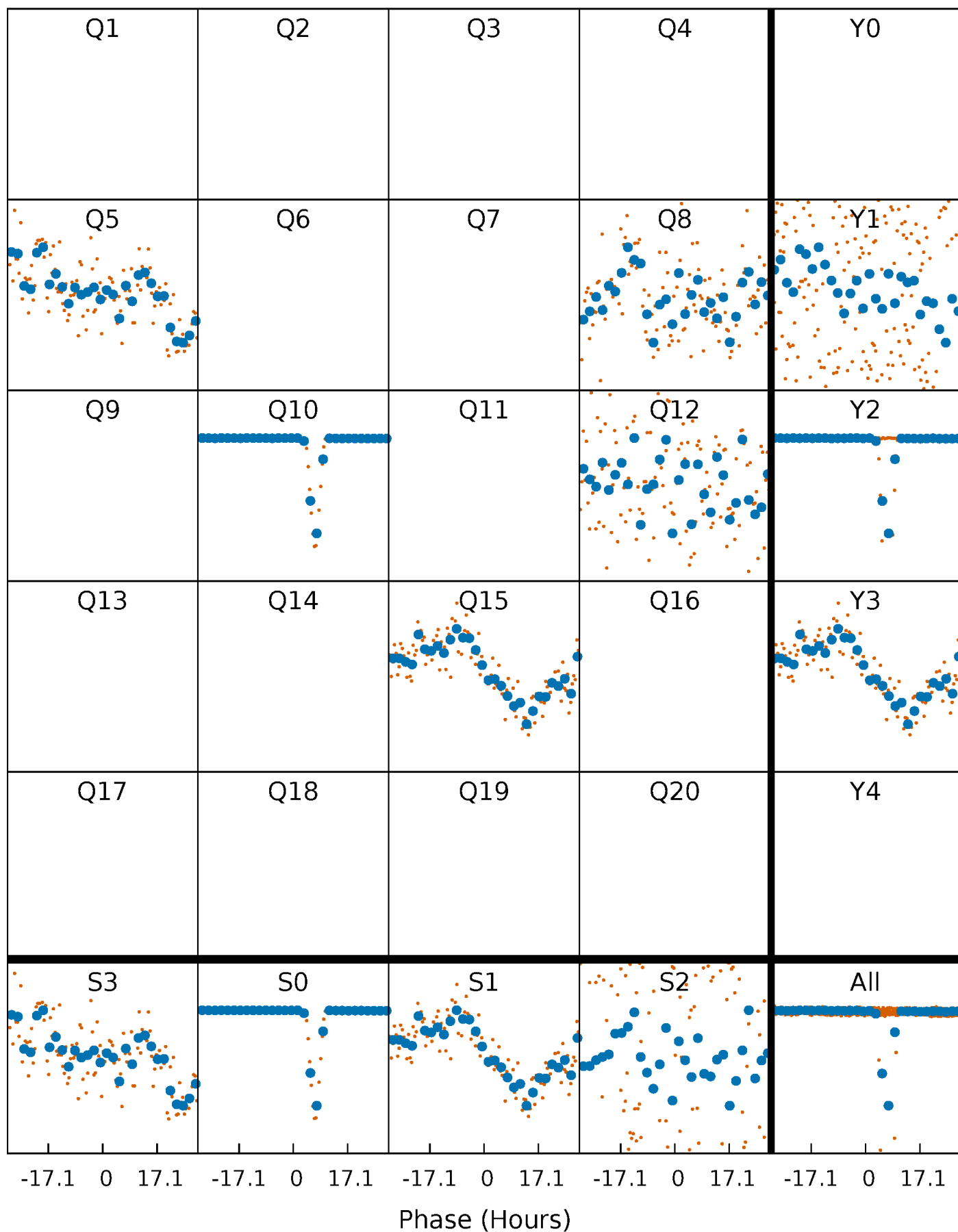


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



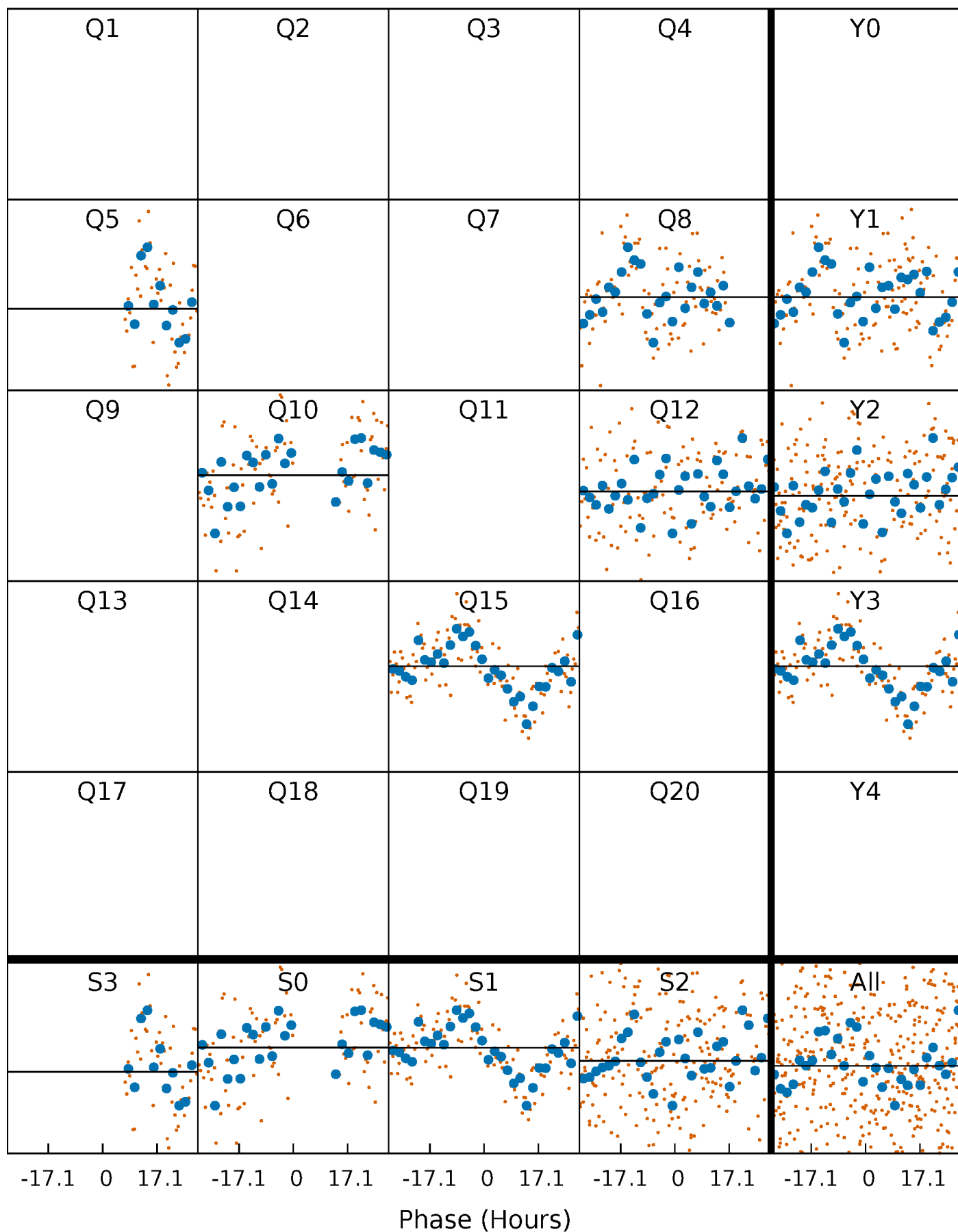
PDC Quarter-Phased Transit Curves

TCE 009837544-04 $P=212.672493$ Days $T_0=322.884906$ (BKJD)



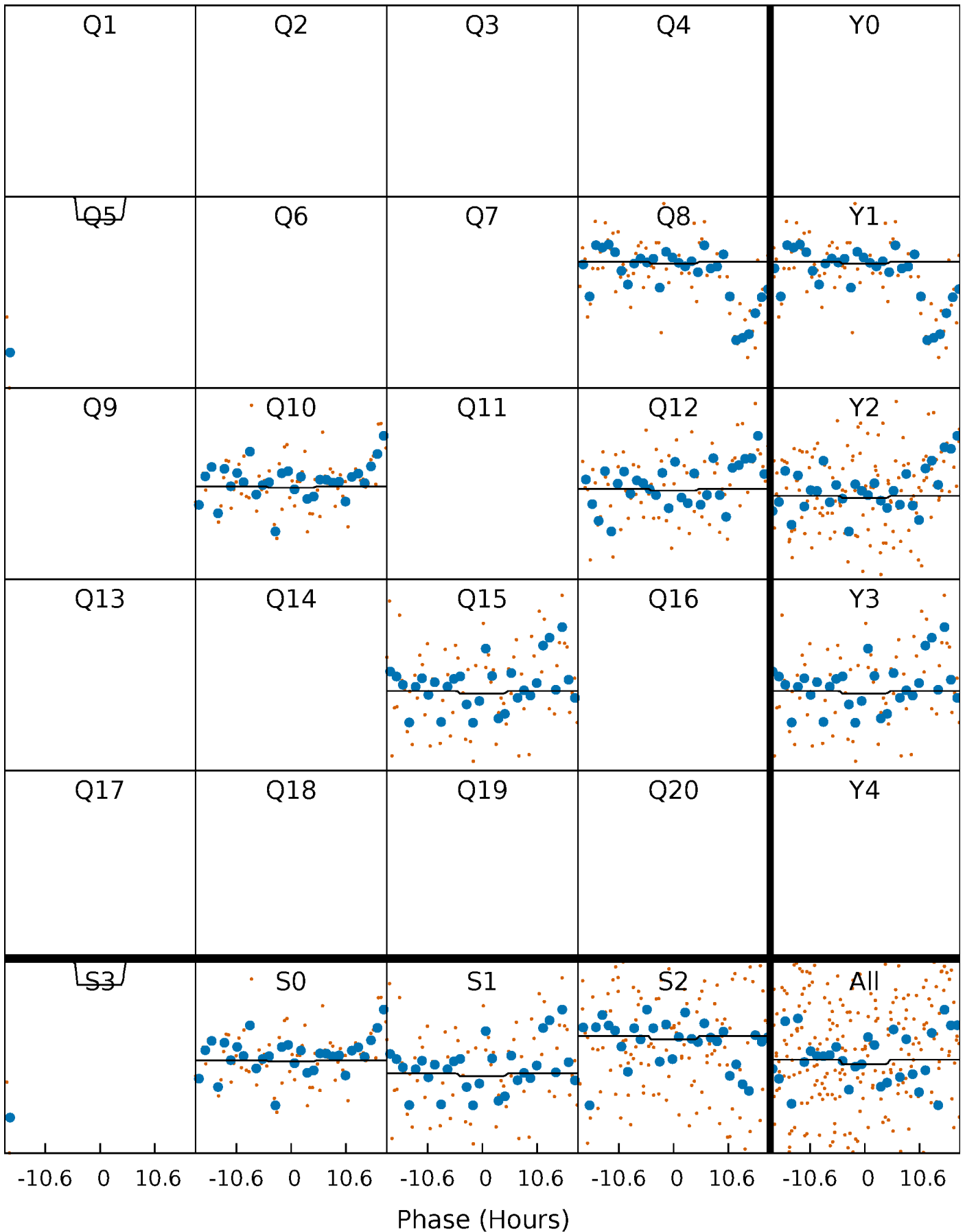
DV Quarter-Phased Transit Curves

TCE 009837544-04 $P=212.672493$ Days $T_0=322.884906$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

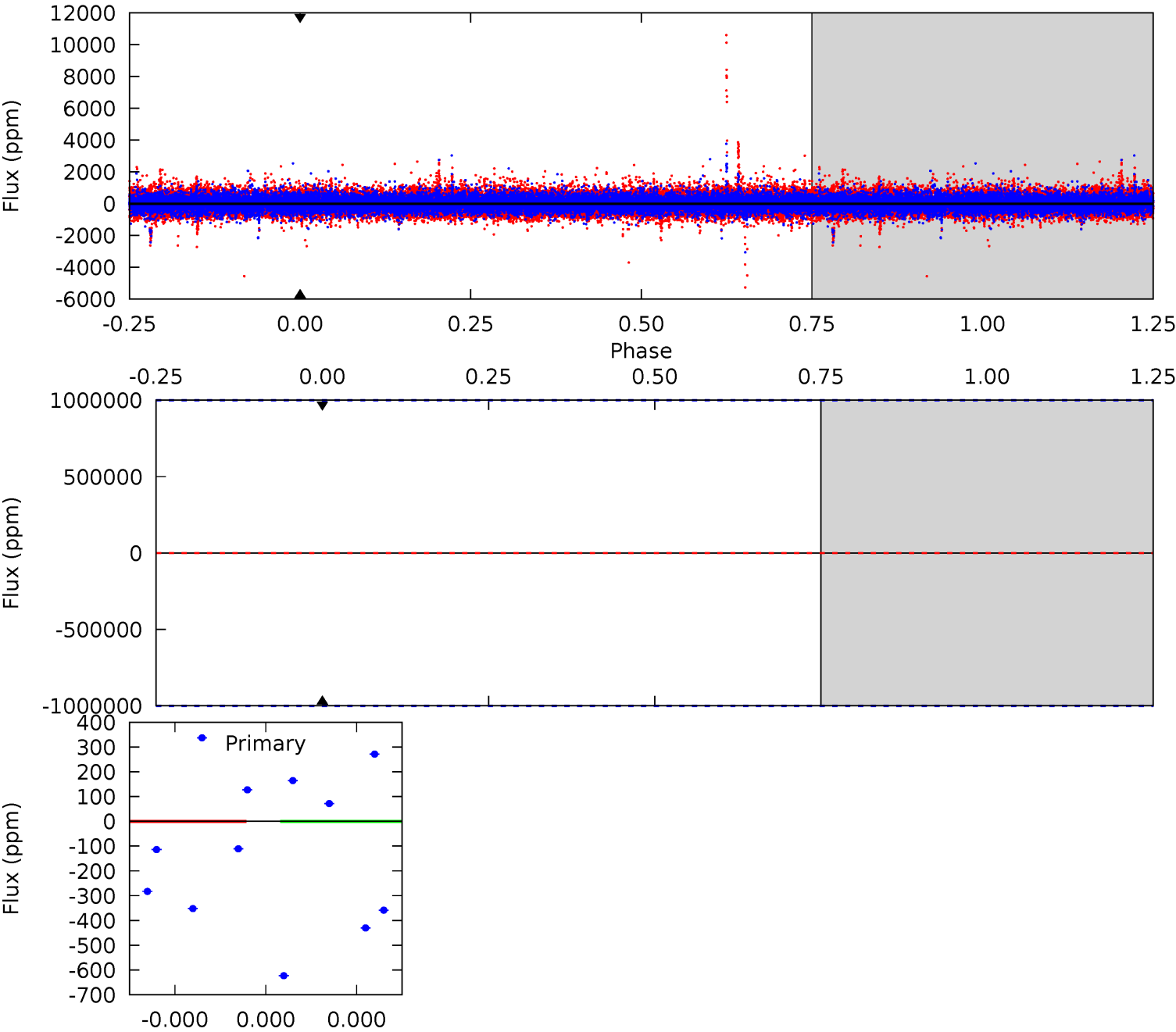
TCE 009837544-04 $P=212.672493$ Days $T_0=322.010318$ (BKJD)



DV Model-Shift Uniqueness Test

009837544-04, P = 212.672493 Days, E = 322.884906 Days

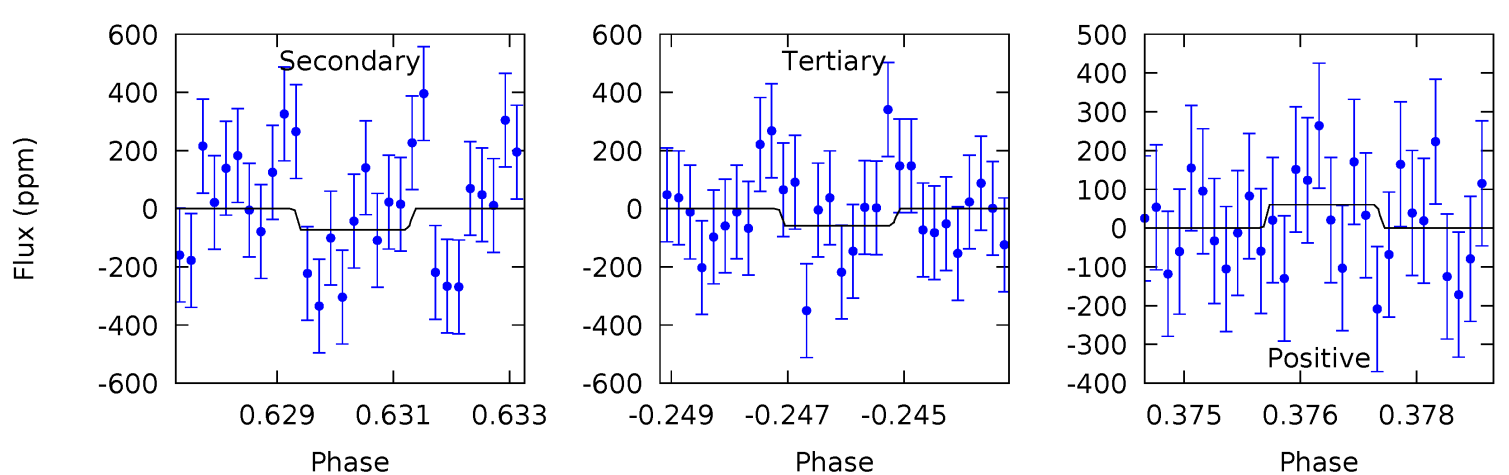
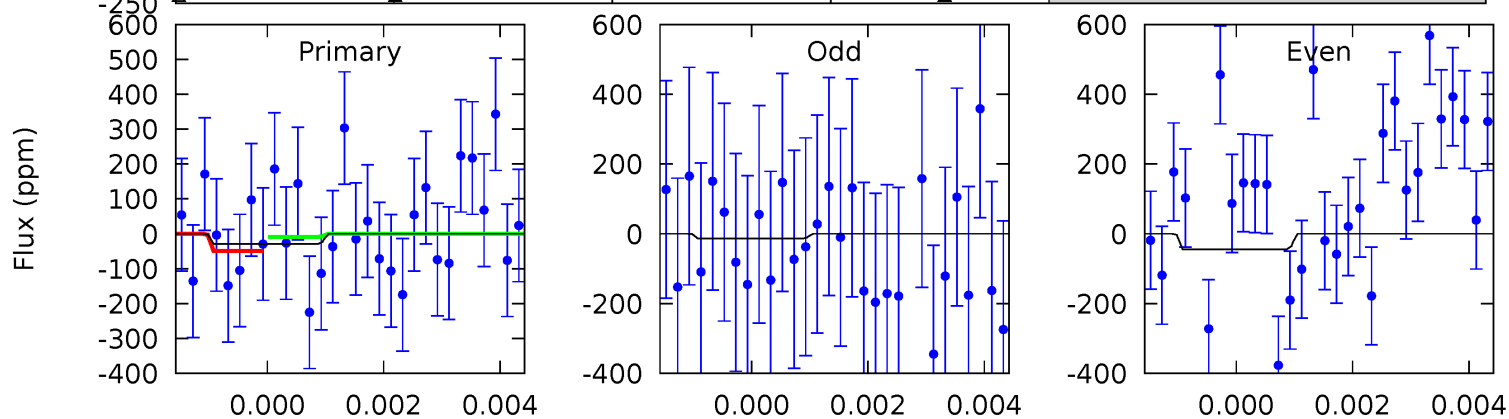
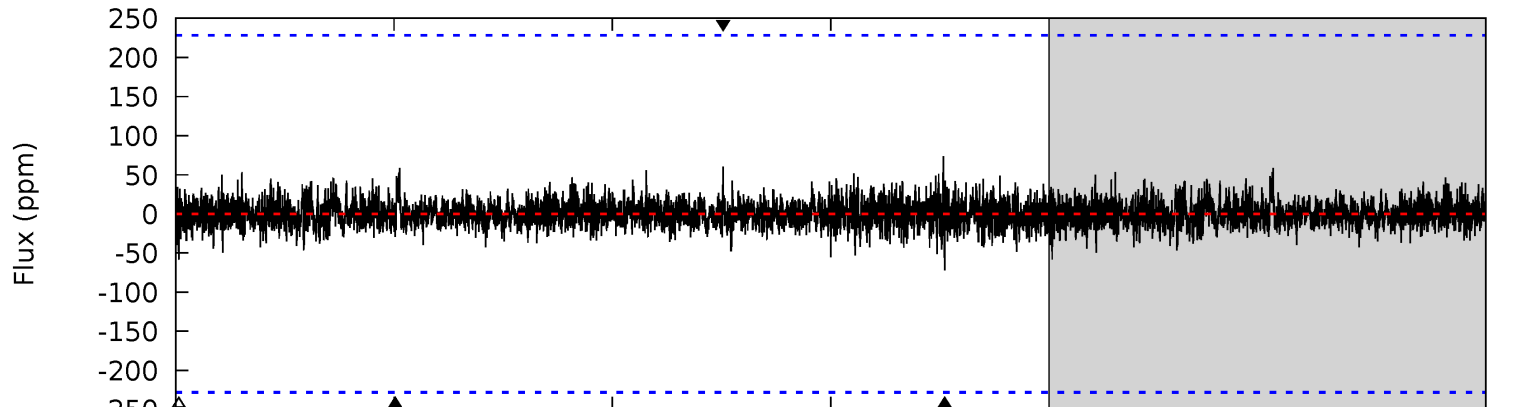
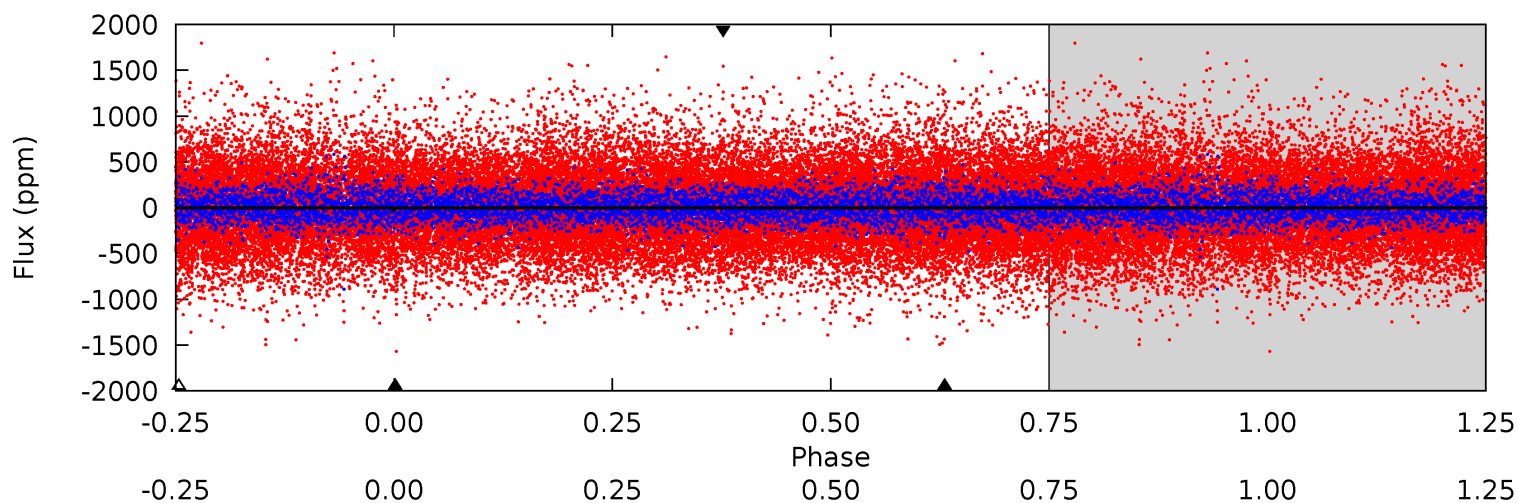
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009837544-04, P = 212.672493 Days, E = 322.010318 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.68	1.69	1.37	1.42	5.34	3.11	0.34	-0.69	-0.73	0.32	0.27	0.36	0.86	0.51	0.47



Stellar Parameters For KIC 009837544

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5075^{+179}_{-179}	$4.497^{+0.095}_{-0.095}$	$0.020^{+0.300}_{-0.300}$	$0.824^{+0.088}_{-0.097}$	$0.777^{+0.098}_{-0.057}$	$1.957^{+0.744}_{-0.493}$
	+4%/-4%	+2%/-2%	+1500%/-1500%	+11%/-12%	+13%/-7%	+38%/-25%
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 009837544-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$9.69^{+8.29}_{-5.74}$	357^{+16}_{-18}	-3246^{+13316}_{-7783}	$-2227.106^{+309009.327}_{-400022.551}$
Alt.	-72 ± 43	$5.86^{+7.07}_{-4.17}$	355^{+17}_{-16}	2537^{+1243}_{-477}	376^{+5448}_{-315}

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 $A_{obs} \gg 1.0$

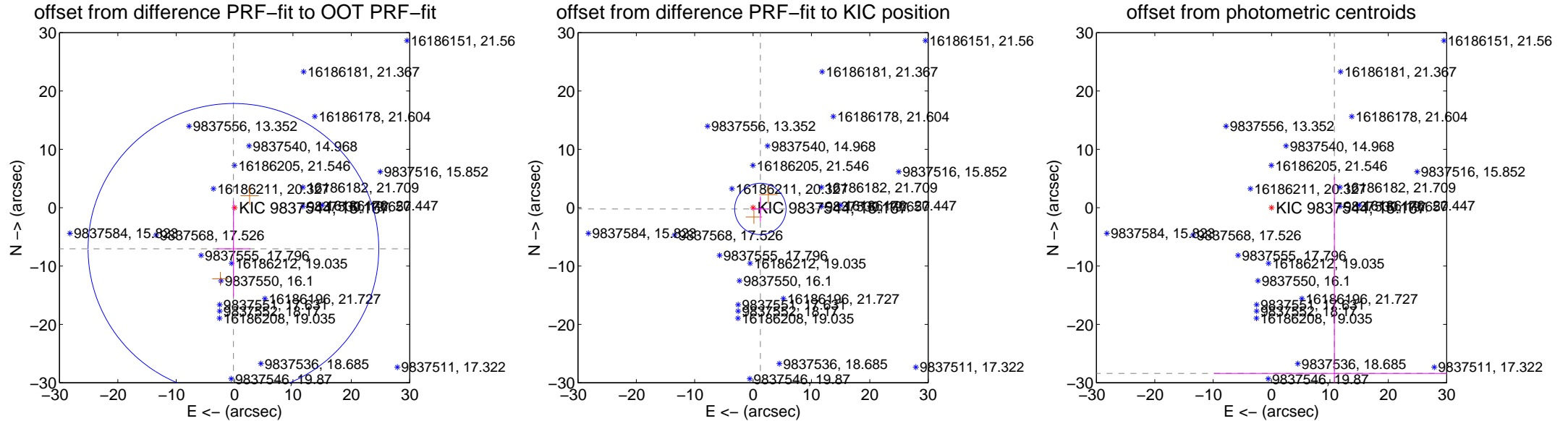
DV Centroid Data

Supplemental centroid analysis for 009837544-04. Kepler magnitude: 15.17. 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 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.052 ± 8.300	0.85	0.197 ± 2.891	-7.049 ± 8.222
PRF-fit source offset from KIC position	1.272 ± 1.467	0.87	-1.253 ± 1.441	-0.217 ± 2.154
photometric centroid source offset	30.37 ± 32.31	0.94	-10.78 ± 20.66	-28.40 ± 33.66

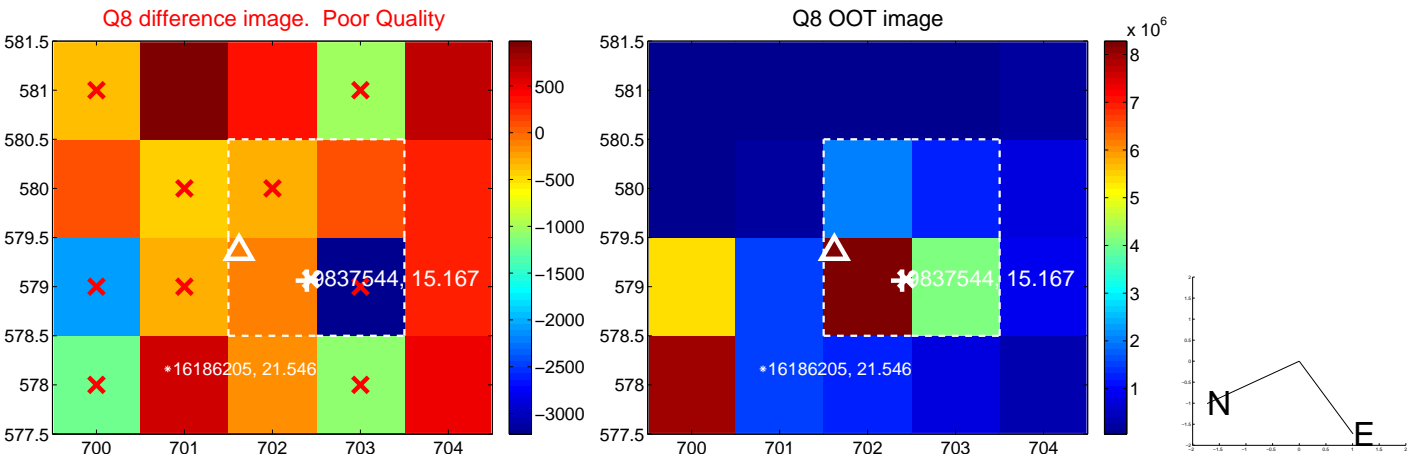
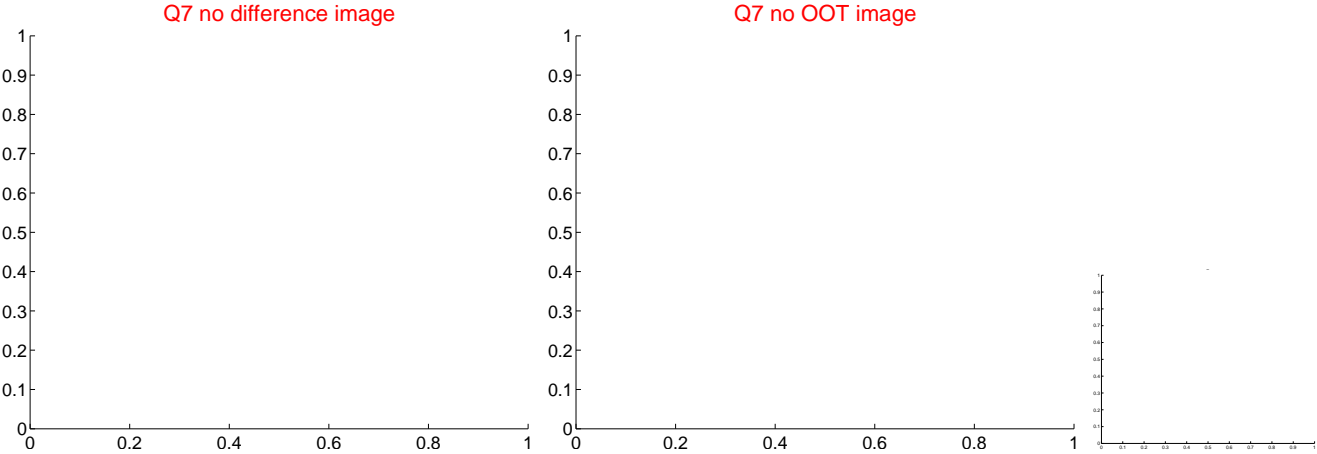
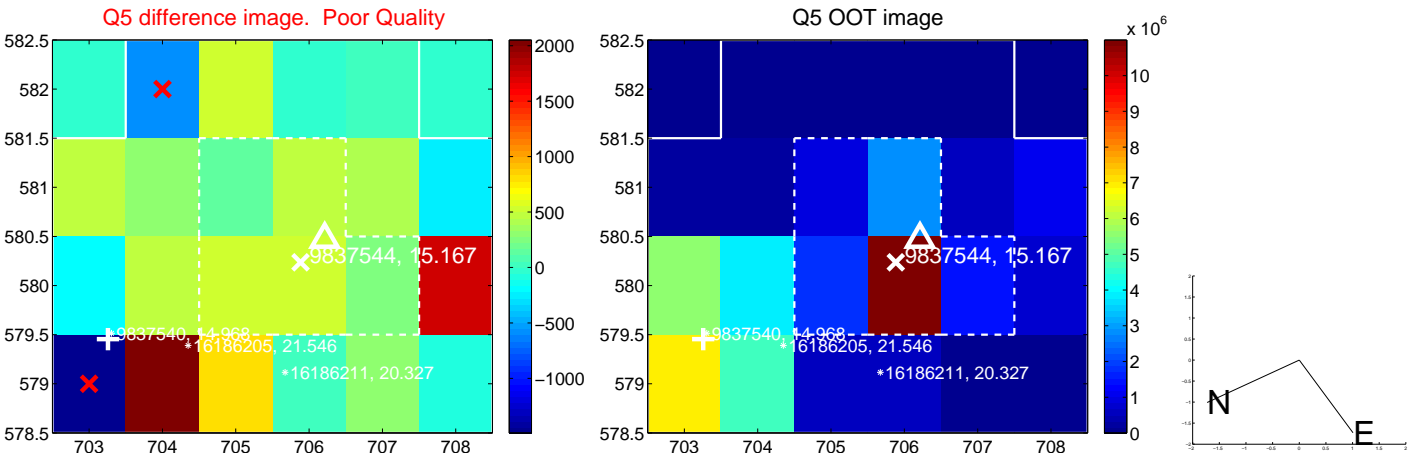


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

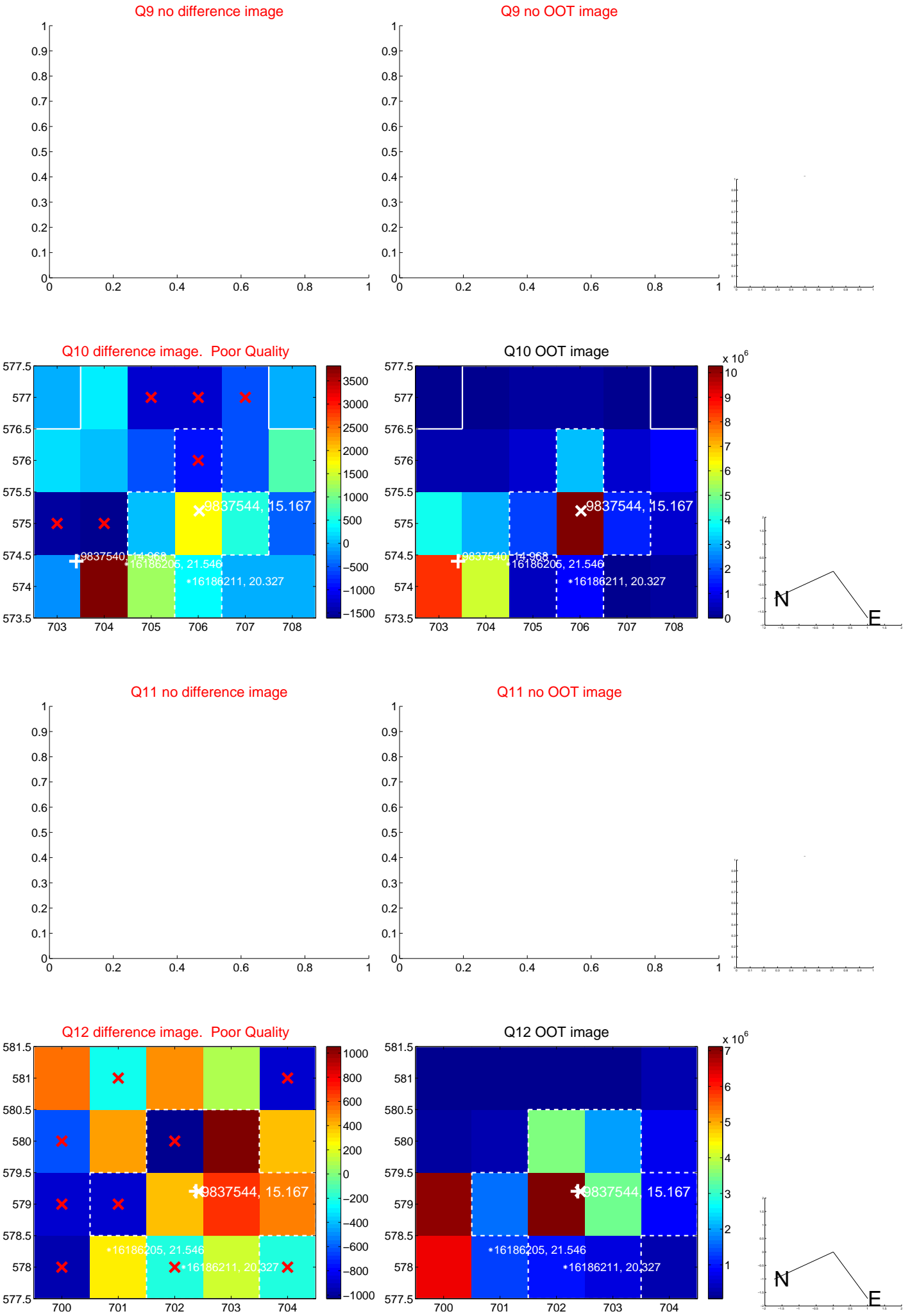
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



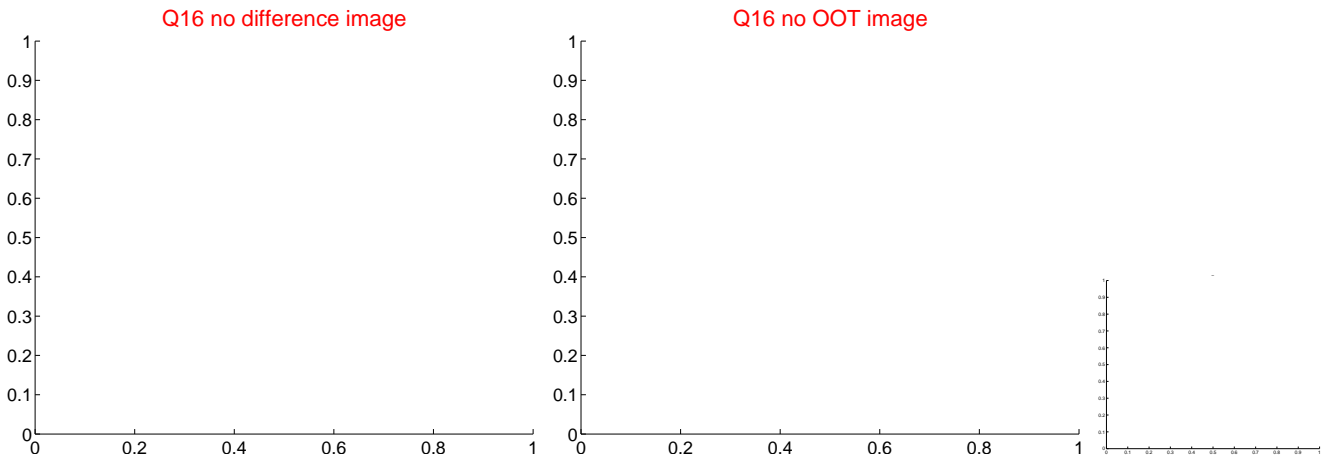
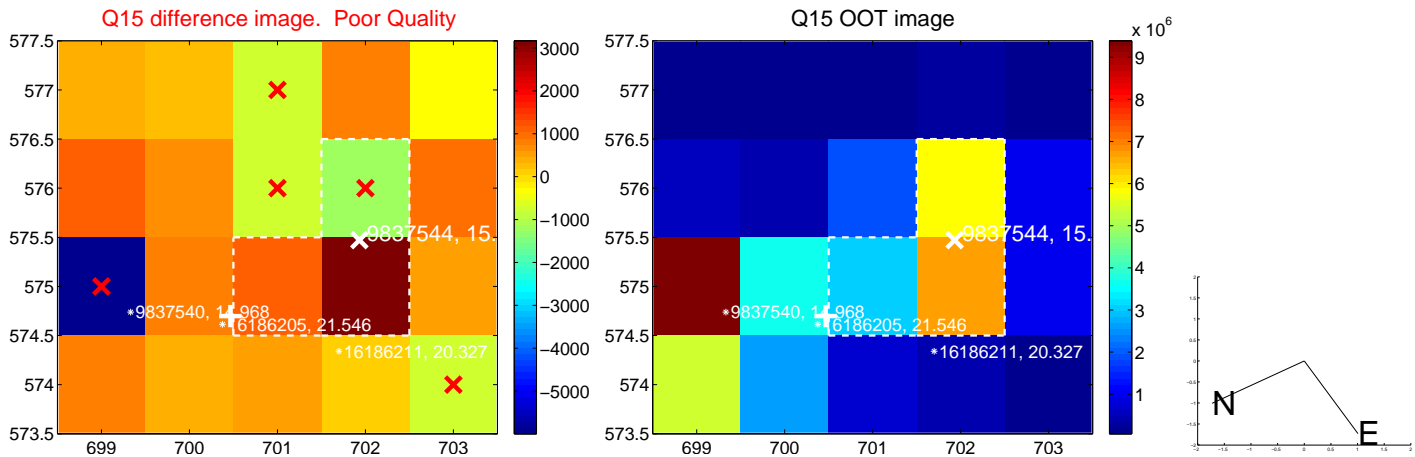
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



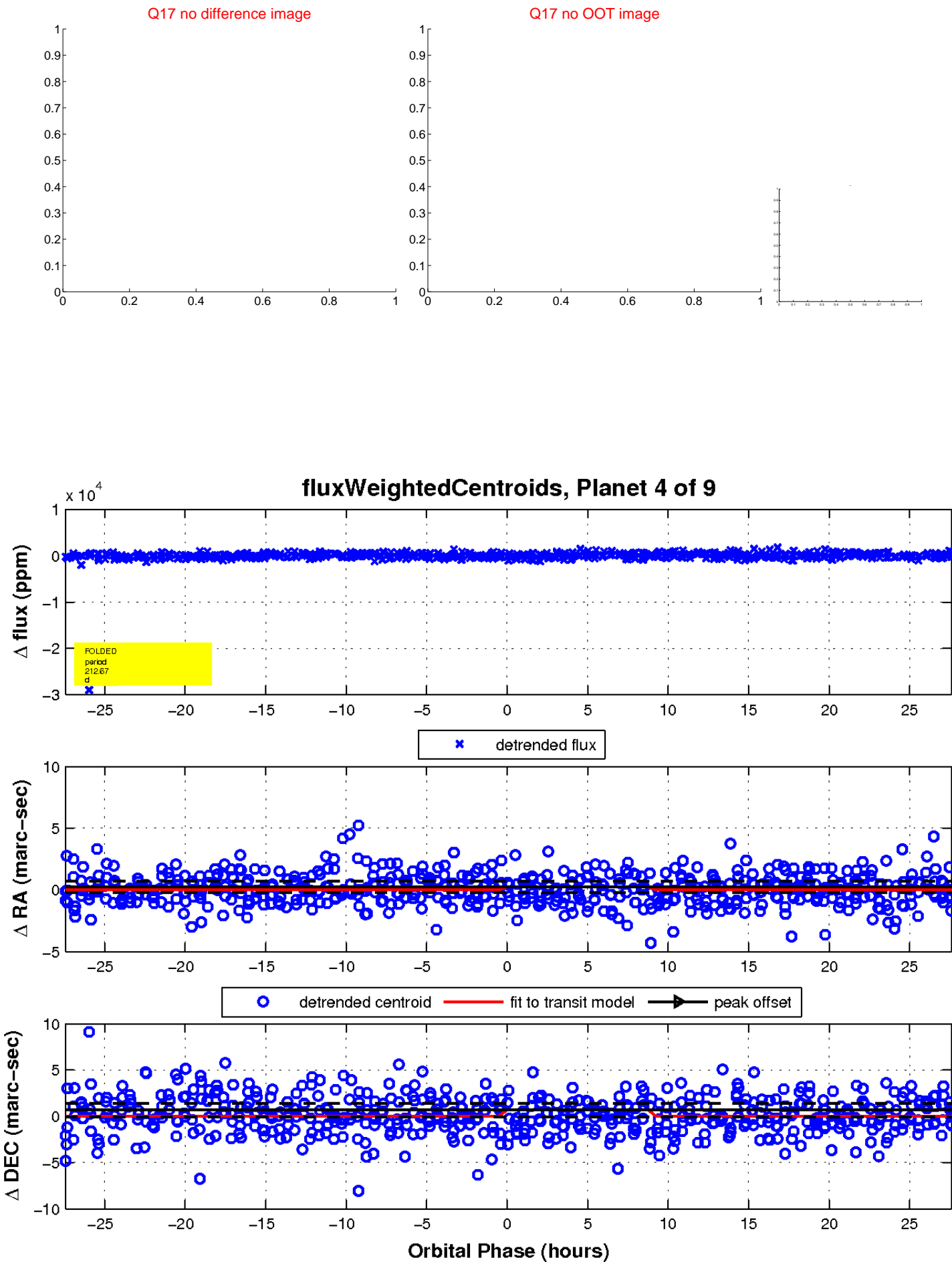
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



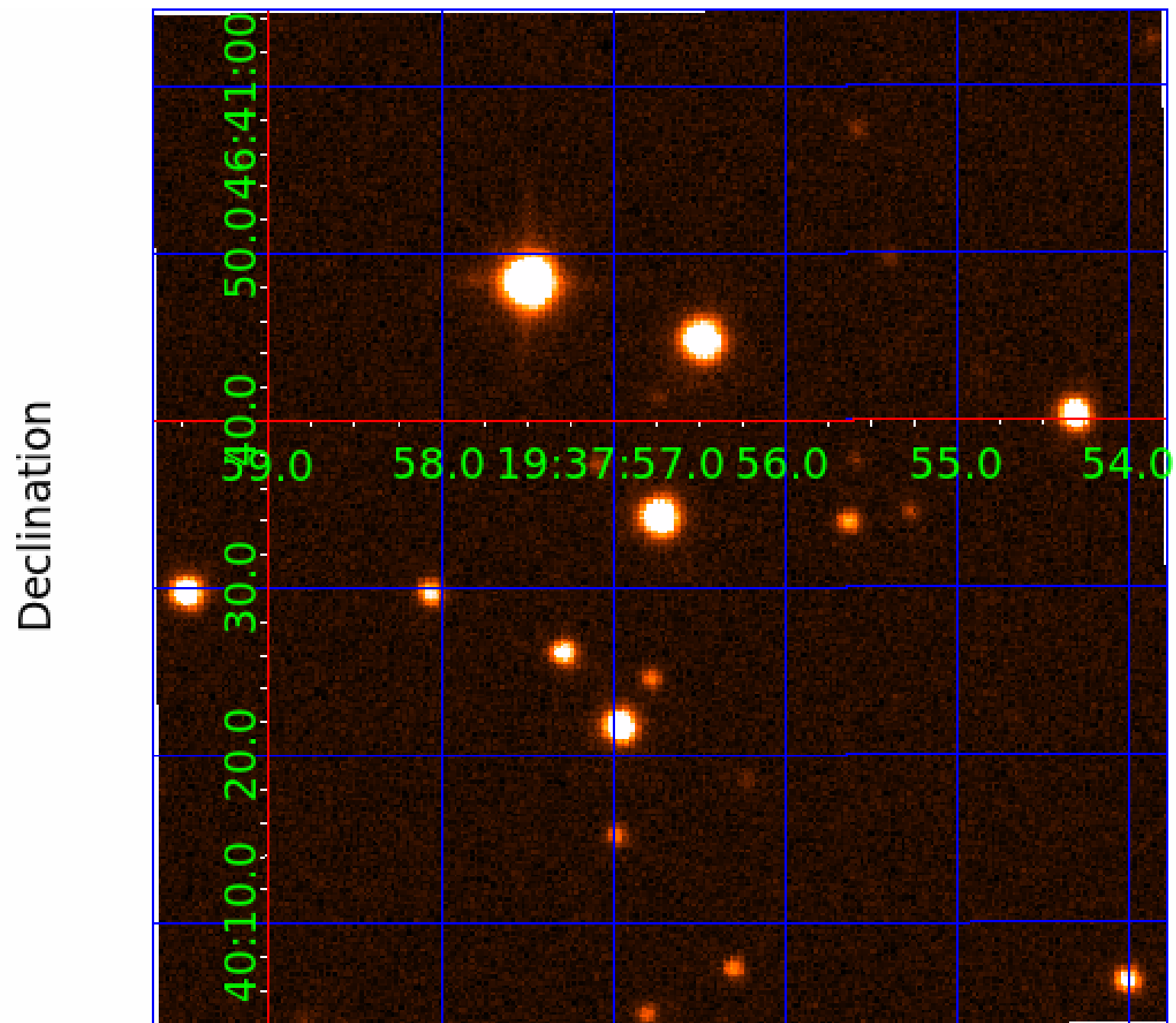
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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



UKIRT Image



KIC 009837544

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})
009837544-01	OBS	3529.01	71.661165	172.916198	325293.0	4.500	4634.2	-1.0	0.82	5075	38.32	4.18
009837544-02	OBS	No	71.661673	164.885808	264768.2	3.500	4015.5	-1.0	0.82	5075	40.49	4.18
009837544-03	OBS	No	11.943528	140.767396	12008.6	15.000	148.2	-1.0	0.82	5075	8.76	45.61
009837544-04	OBS	No	212.672492	322.884906	7967.5	15.000	65.3	-1.0	0.82	5075	7.14	0.98
009837544-05	OBS	No	284.865731	174.540434	575.8	14.949	64.7	5.3	0.82	5075	2.08	0.66
009837544-06	OBS	No	288.684275	313.175858	1168.4	10.134	26.5	9.8	0.82	5075	5.39	0.65
009837544-07	OBS	No	284.844834	318.988322	5958.6	3.000	28.9	-1.0	0.82	5075	6.18	0.66
009837544-09	OBS	No	258.775431	371.133438	556.6	17.124	17.9	5.3	0.82	5075	2.22	0.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009837544-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE—CENT_NOFITS
009837544-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
009837544-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS—HALO_GHOST
009837544-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009837544-05	OBS	FP	0.00	1	0	1	0	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
009837544-06	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009837544-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009837544-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—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

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 009837544-05

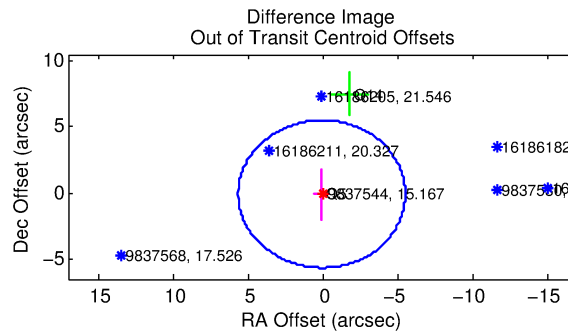
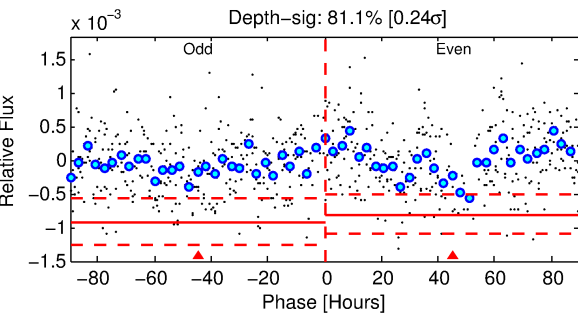
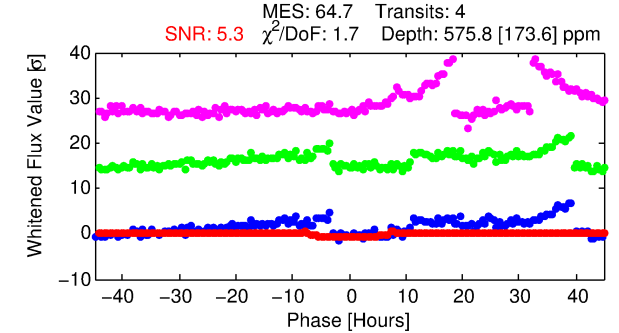
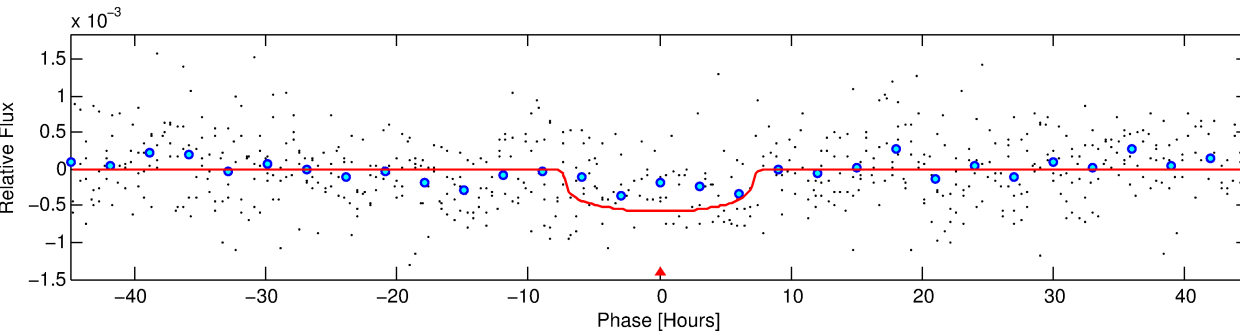
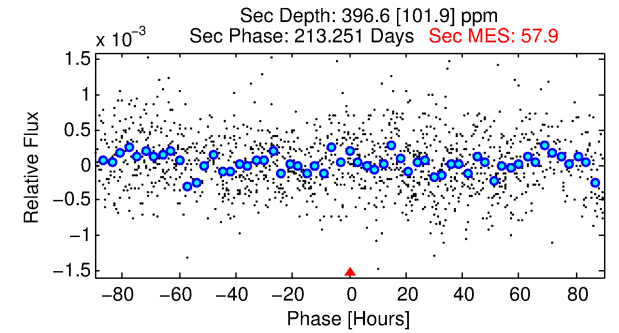
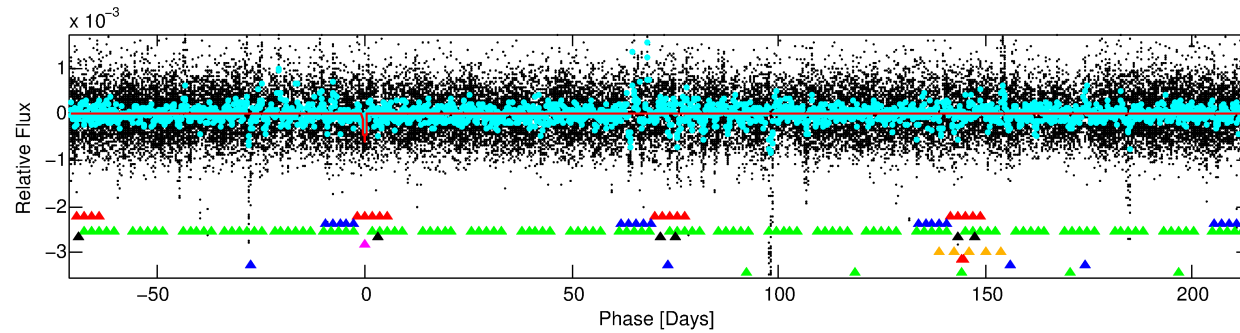
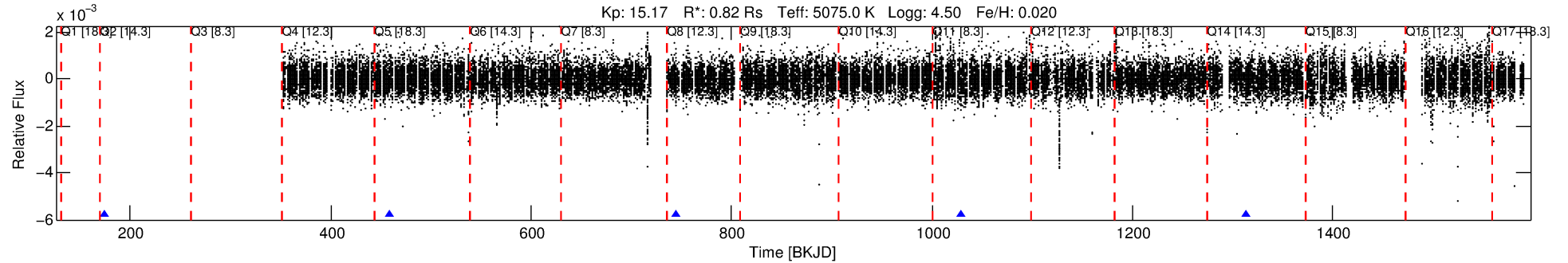
No Significant Match Found

DV One-Page Summary

KIC: 9837544 Candidate: 5 of 9 Period: 284.866 d

KOI: K03529 Corr: No Ephemeris Match

Kp: 15.17 R*: 0.82 Rs T_{eff}: 5075.0 K Logg: 4.50 Fe/H: 0.020



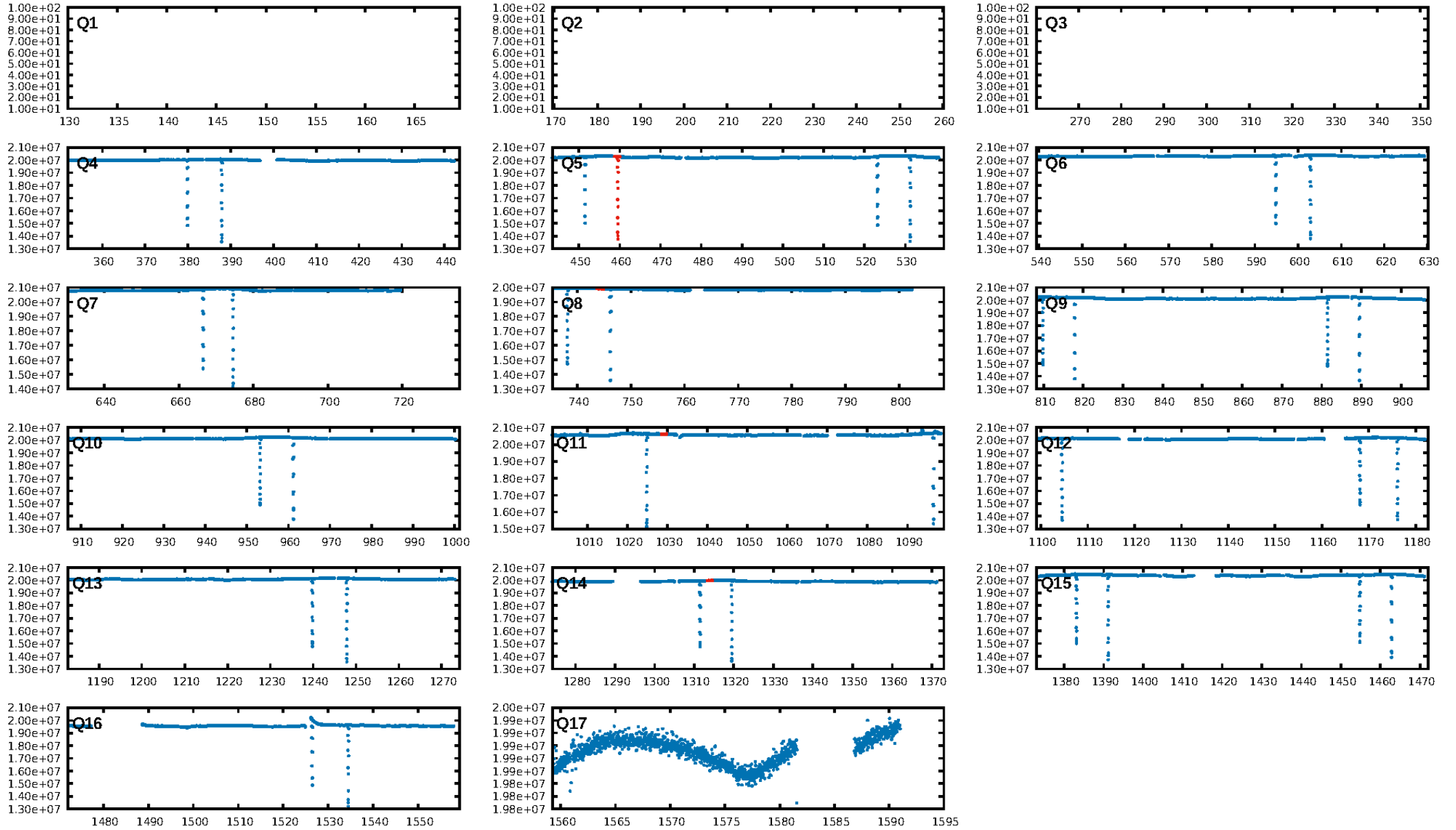
DV Fit Results:

Period = 284.86573 [0.02207] d
Epoch = 174.5404 [0.0646] BKJD
Rp/R* = 0.0231 [0.0169]
a/R* = 113.60 [285.74]
b = 0.66 [2.18]
Seff = 0.66 [0.14]
T_{eq} = 230 [13] K
Rp = 2.08 [1.54] Re
a = 0.7794 [0.0835] AU
Ag = 30658.28 [45861.54] [0.67σ]
T_{eff} = 4710 [1758] K [2.55σ]

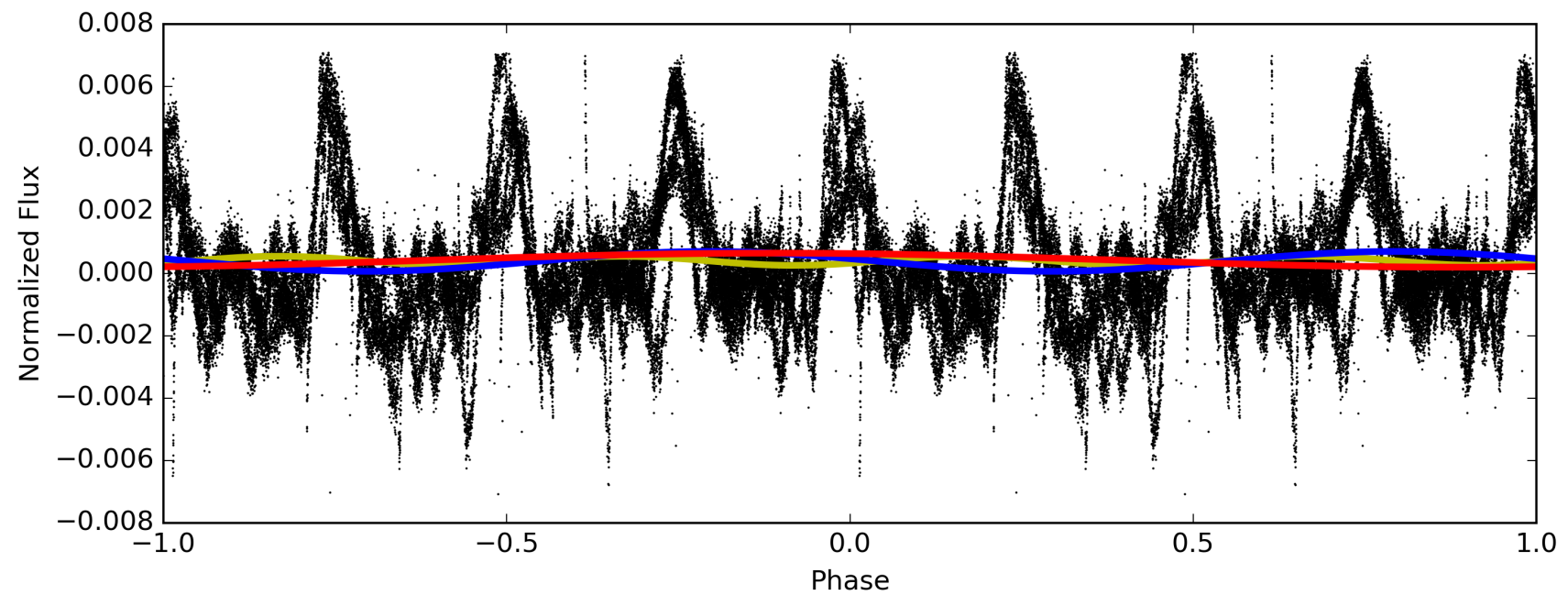
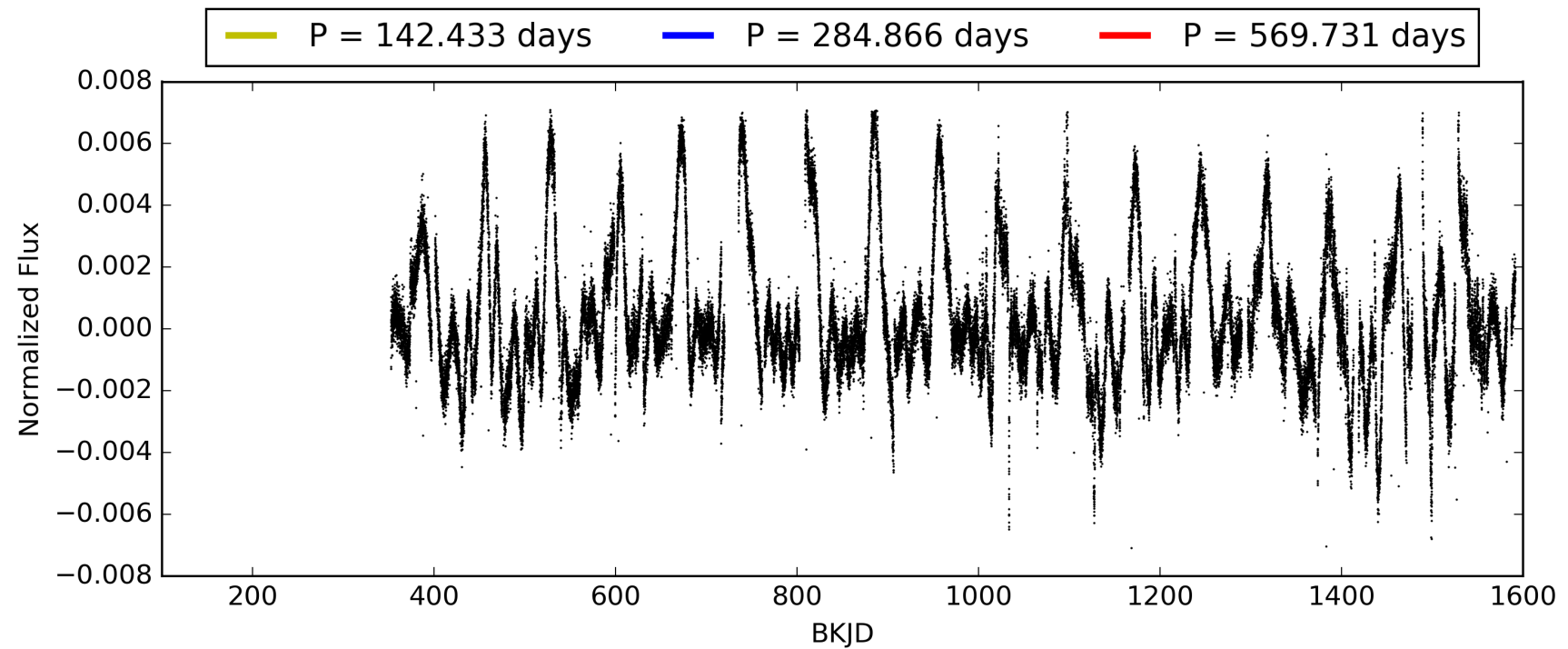
DV Diagnostic Results:

ShortPeriod-sig: 2.6% [0.03σ]
LongPeriod-sig: 100.0% [5.07σ]
ModelChiSquare2-sig: 3.6%
ModelChiSquareGof-sig: 78.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.1471
Centroid-sig: 0.1%
Centroid-so: 4.750 arcsec [3.68σ]
OotOffset-rm: 0.089 arcsec [0.05σ]
KicOffset-rm: 0.110 arcsec [0.06σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.75 [3/4]

TCE 009837544-05, PDC Light Curves

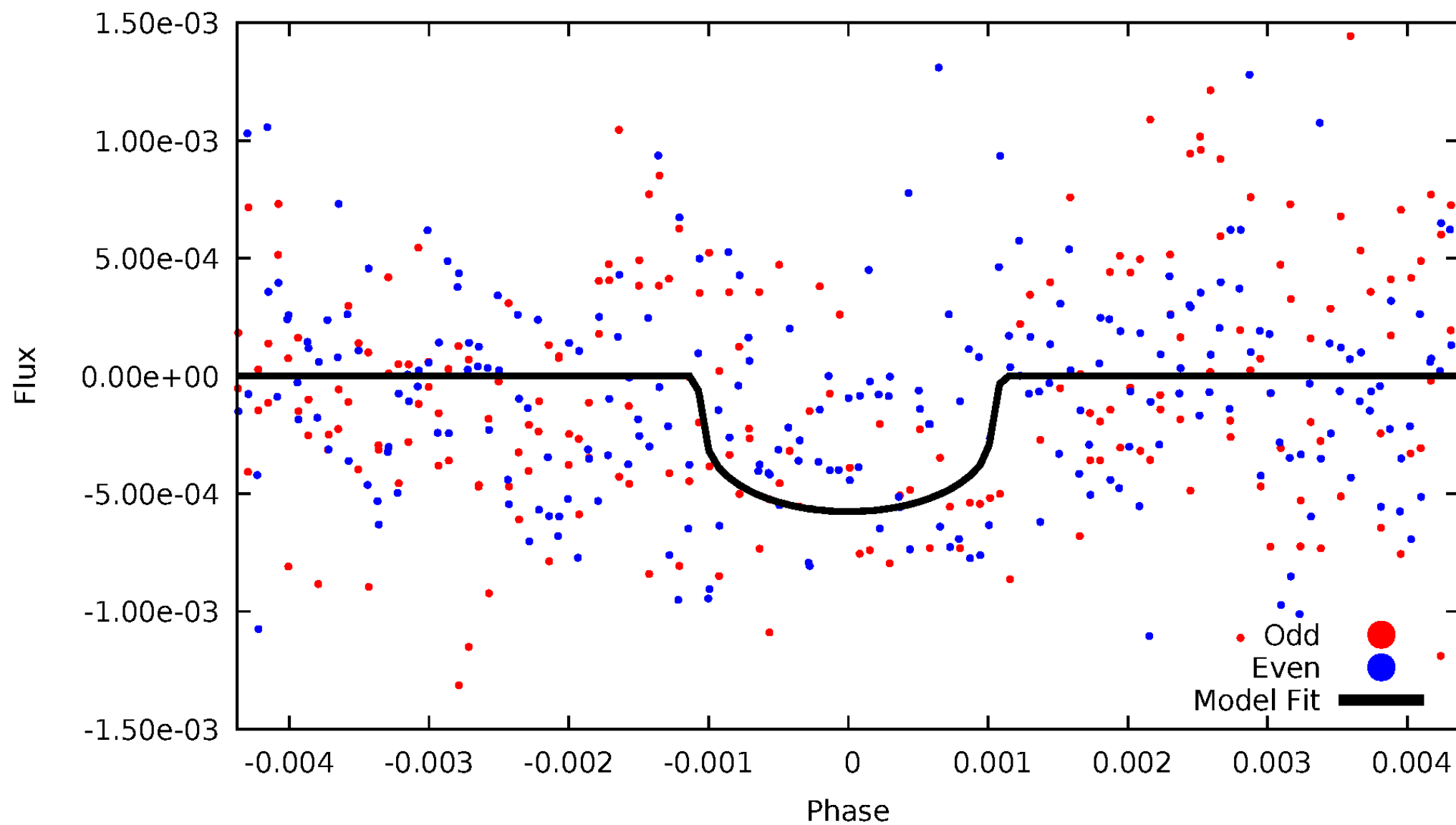


TCE 009837544-05



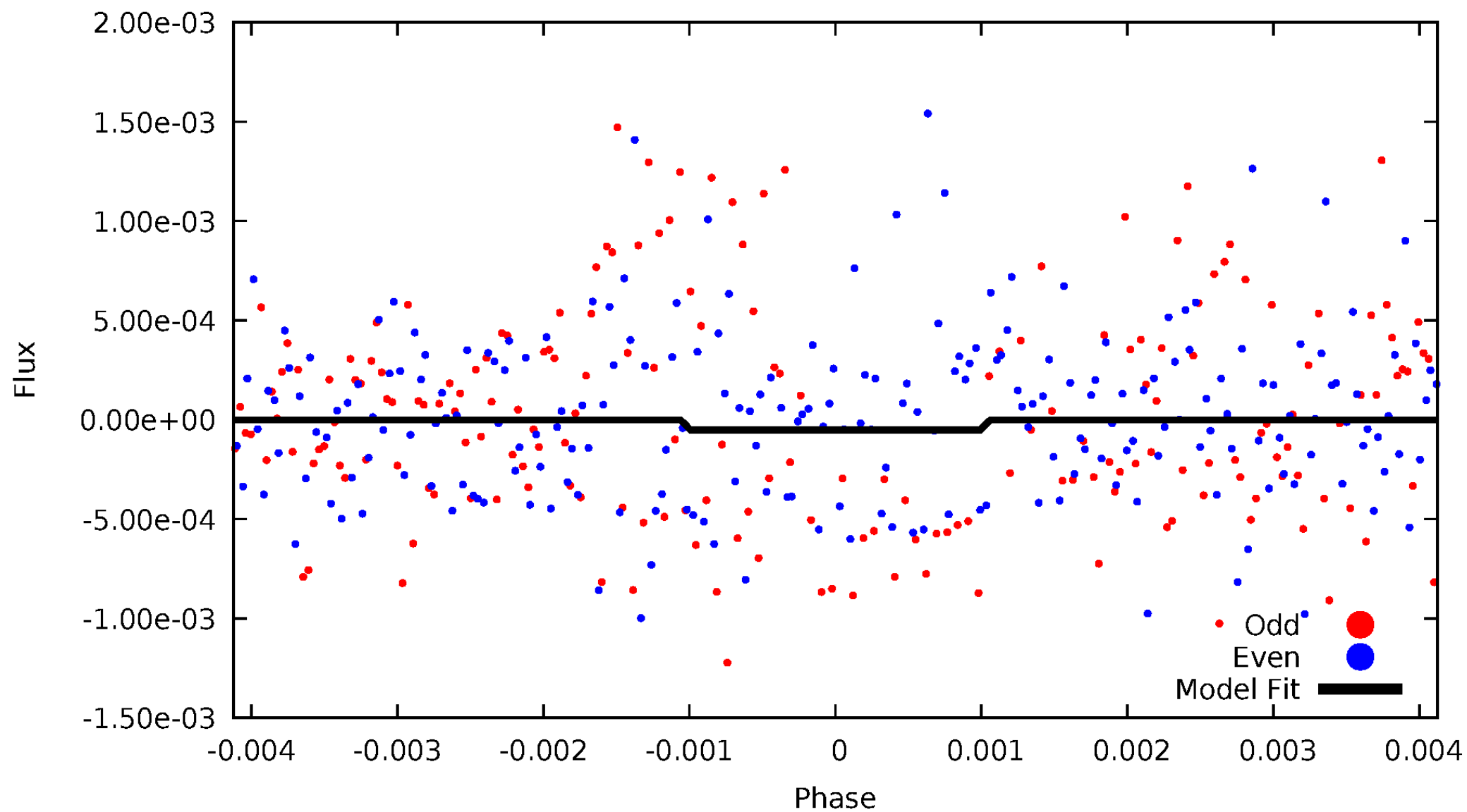
DV Odd/Even

TCE 009837544-05



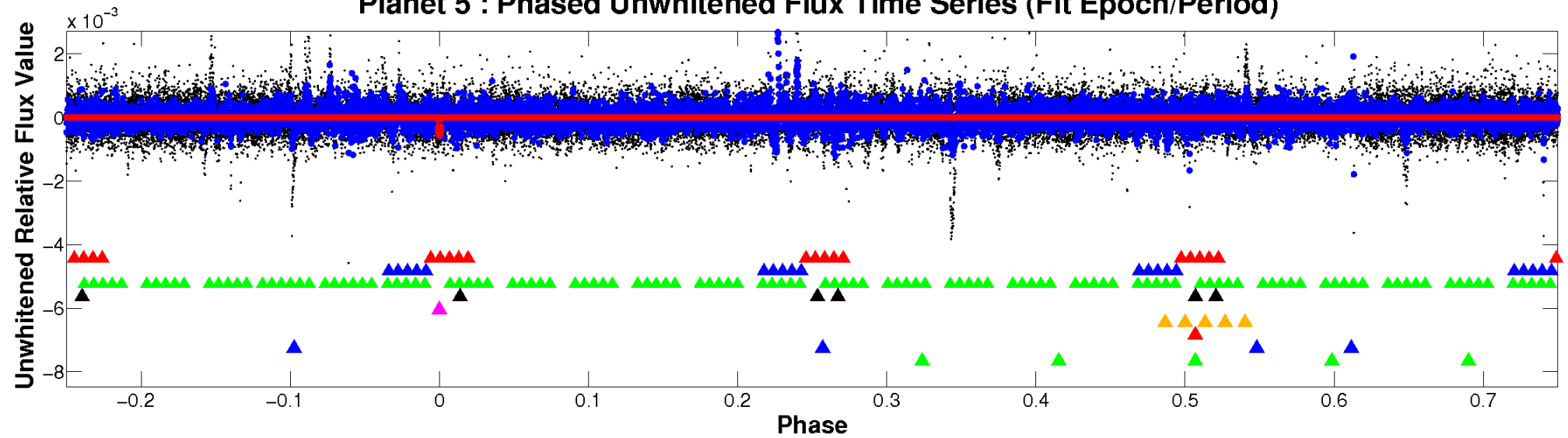
ALT Odd/Even

TCE 009837544-05

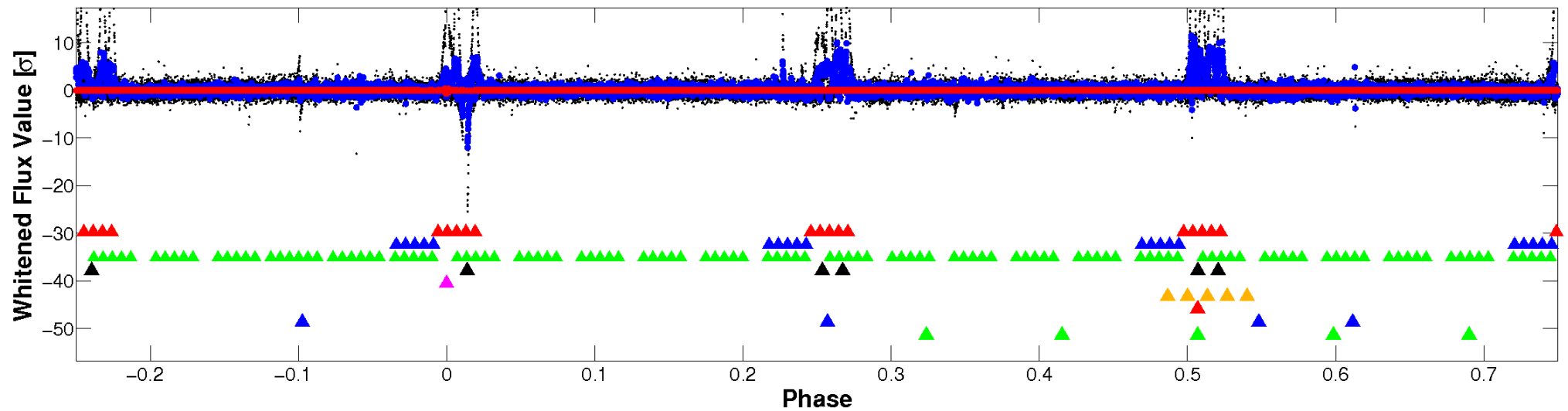


Non-Whitened Vs. Whitened Light Curve

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

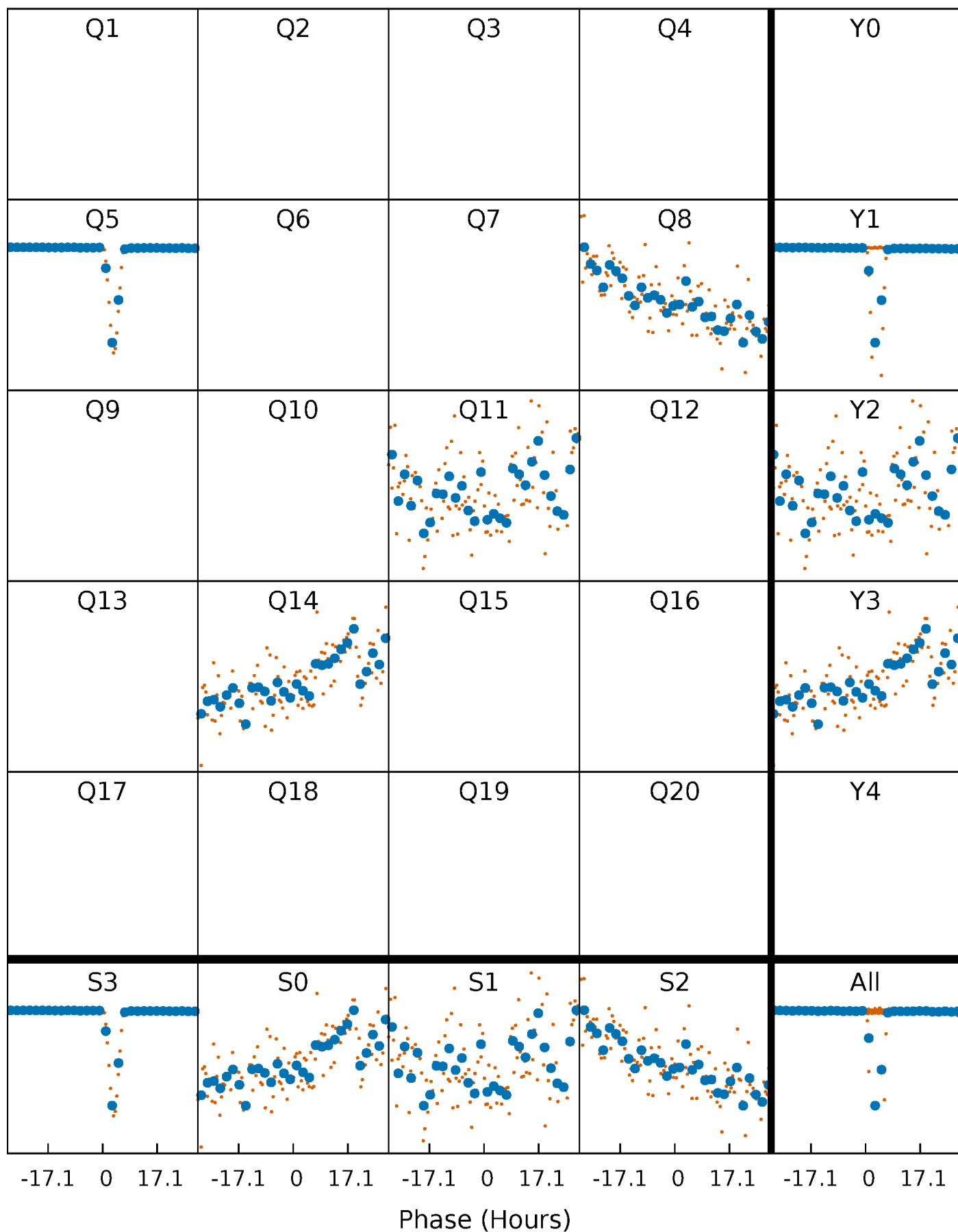


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



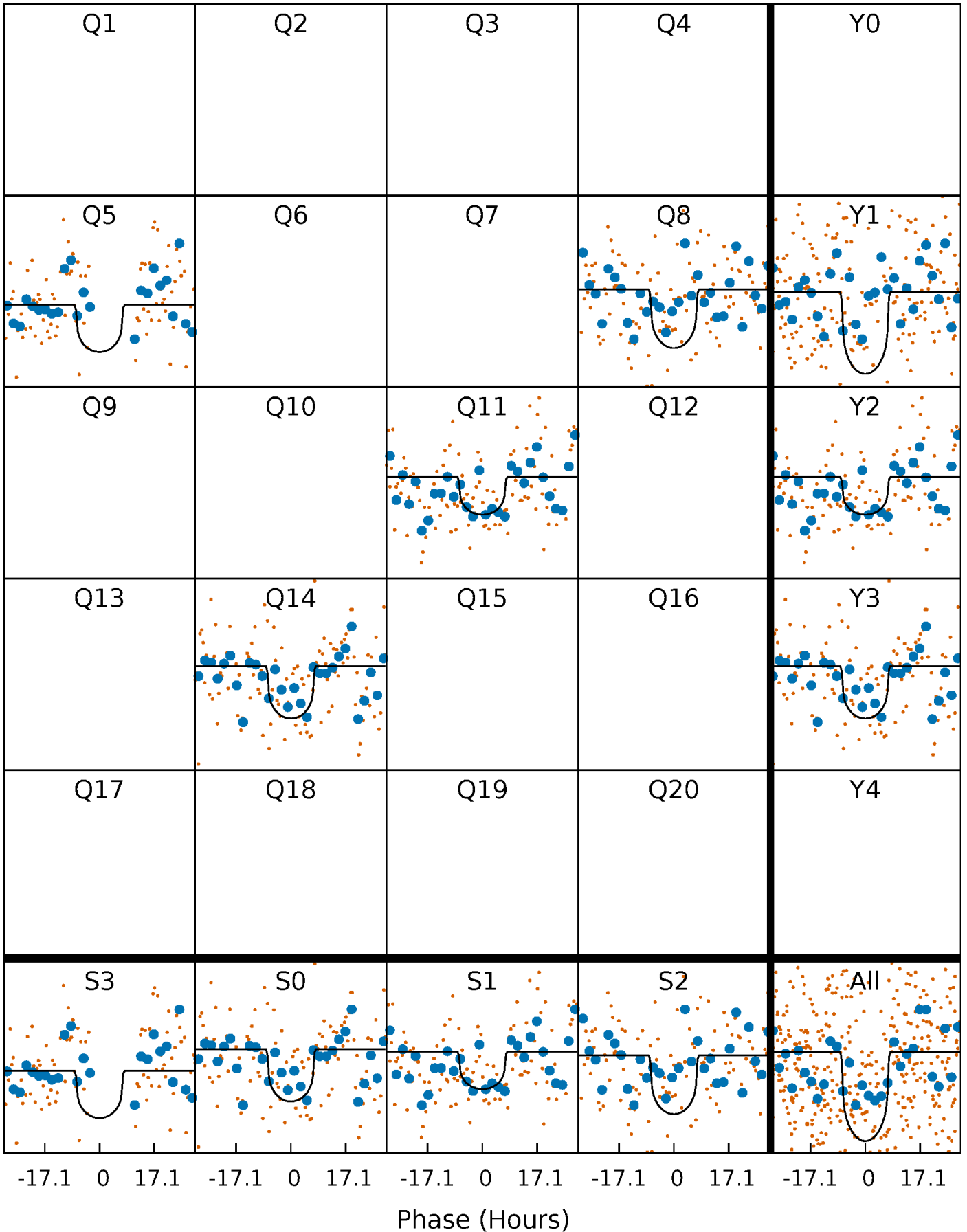
PDC Quarter-Phased Transit Curves

TCE 009837544-05 $P=284.865731$ Days $T_0=174.540434$ (BKJD)



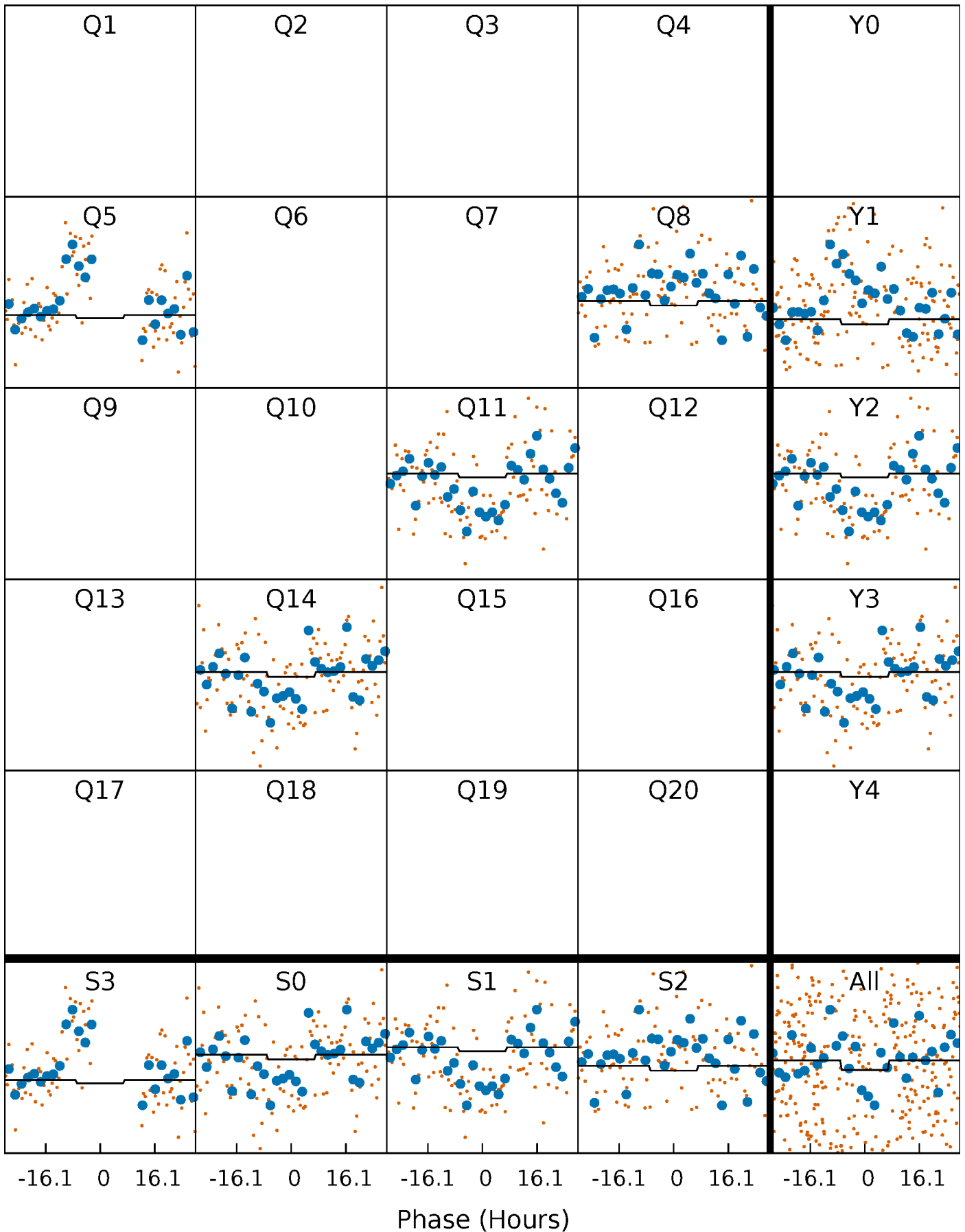
DV Quarter-Phased Transit Curves

TCE 009837544-05 $P=284.865731$ Days $T_0=174.540434$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

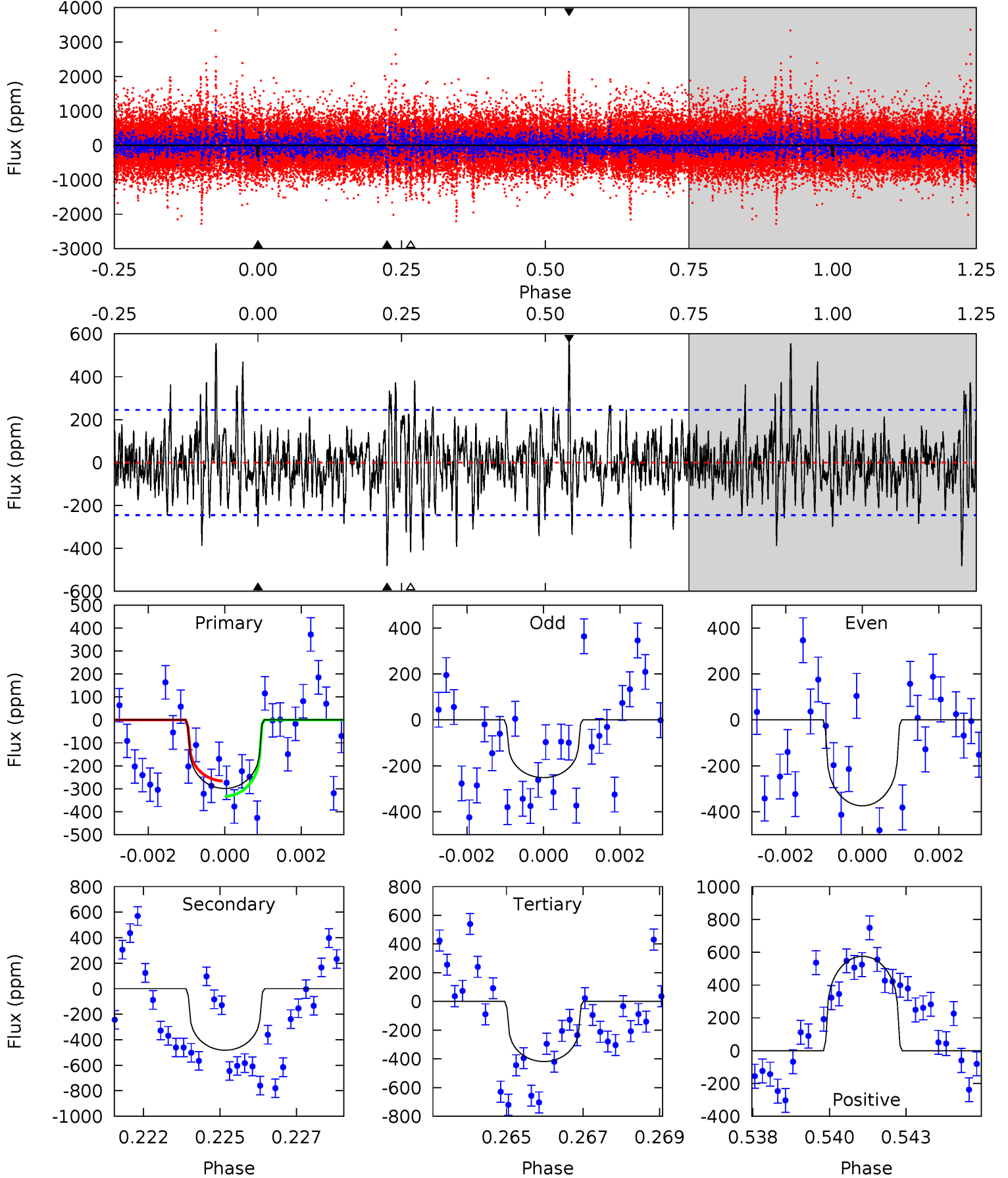
TCE 009837544-05 $P=284.911938$ Days $T_0=174.452180$ (BKJD)



DV Model-Shift Uniqueness Test

009837544-05, P = 284.865731 Days, E = 174.540434 Days

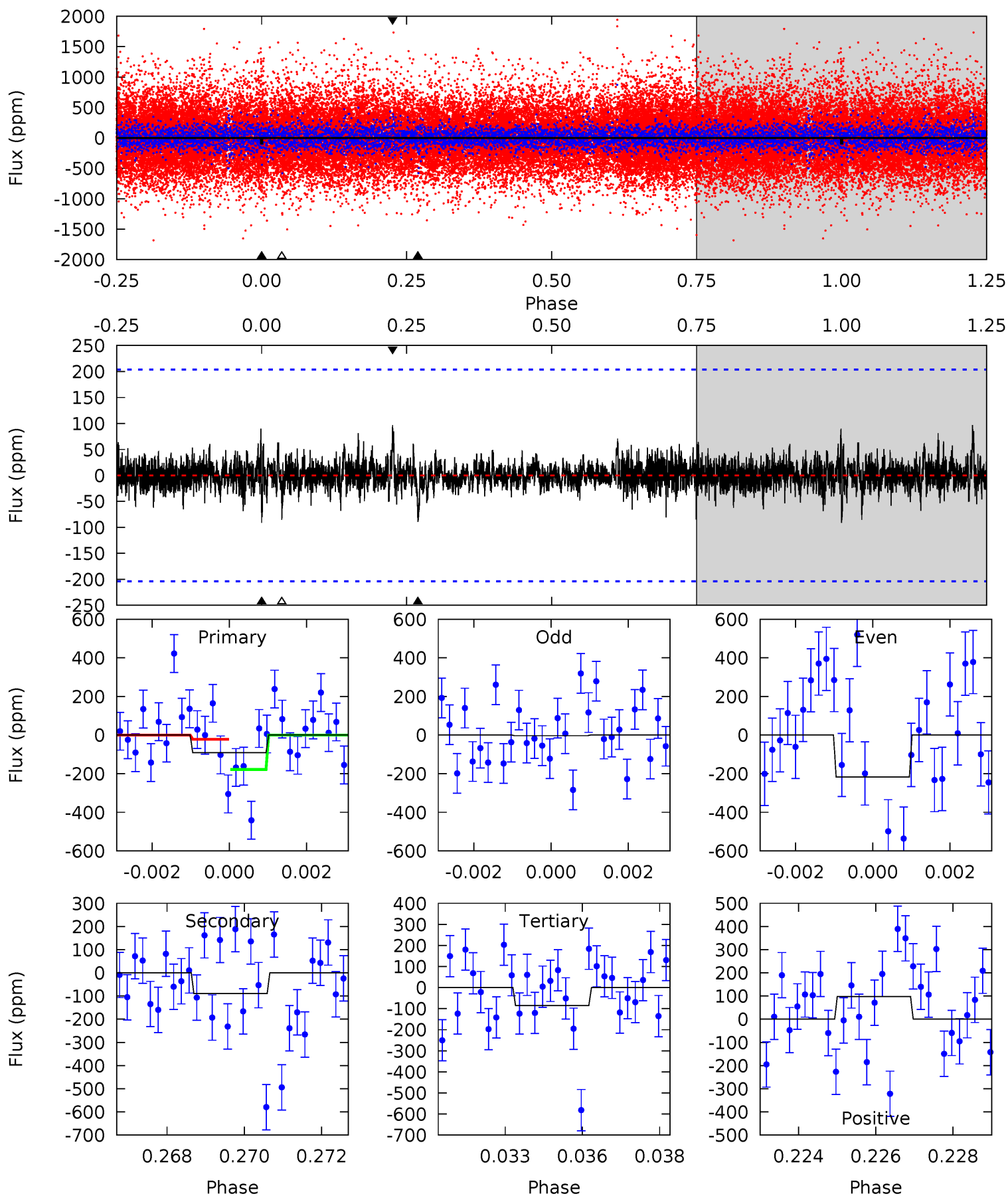
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.47	10.4	9.06	12.4	5.31	3.06	2.48	-2.59	-5.98	1.37	-2.02	1.26	0.93	0.54	0.72



Alt Model-Shift Uniqueness Test

009837544-05, P = 284.911938 Days, E = 174.452180 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.39	2.33	2.22	2.53	5.32	3.08	0.47	0.17	-0.15	0.11	-0.21	2.71	2.81	0.51	2.04



Stellar Parameters For KIC 009837544

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5075^{+179}_{-179}	$4.497^{+0.095}_{-0.095}$	$0.020^{+0.300}_{-0.300}$	$0.824^{+0.088}_{-0.097}$	$0.777^{+0.098}_{-0.057}$	$1.957^{+0.744}_{-0.493}$
	+4%/-4%	+2%/-2%	+1500%/-1500%	+11%/-12%	+13%/-7%	+38%/-25%
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 009837544-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-482 ± 46	$2.27^{+1.51}_{-1.30}$	321^{+16}_{-14}	4763^{+2382}_{-791}	$31509^{+142636}_{-19867}$
Alt.	-89 ± 38	$1.26^{+1.25}_{-0.87}$	321^{+16}_{-14}	4233^{+3225}_{-946}	$17032^{+177141}_{-13430}$

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

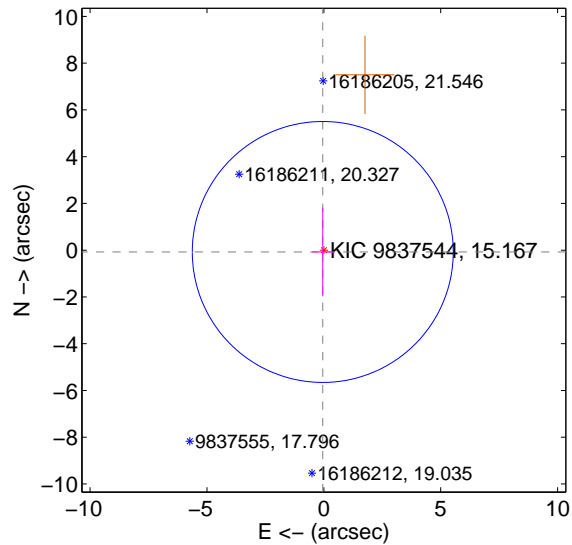
Supplemental centroid analysis for 009837544-05. Kepler magnitude: 15.17. Transit SNR 5.30

There are 1 quarters with good PRF difference image offsets

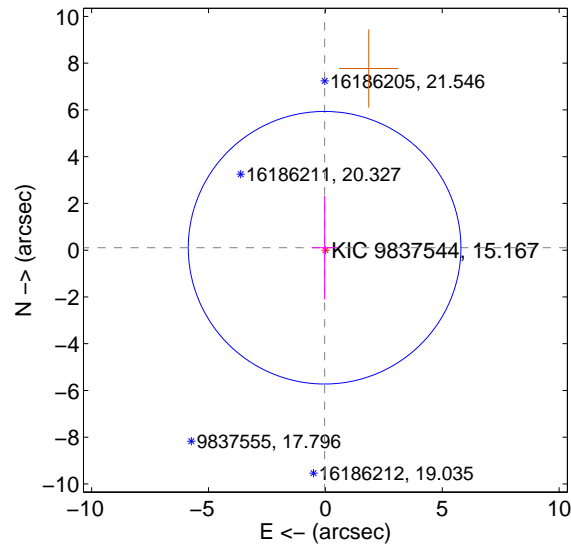
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.089 ± 1.860	0.05	0.045 ± 0.457	-0.076 ± 1.895
PRF-fit source offset from KIC position	0.110 ± 1.943	0.06	0.033 ± 0.548	0.105 ± 2.214
photometric centroid source offset	4.75 ± 1.29	3.68	-1.30 ± 0.86	4.57 ± 1.32

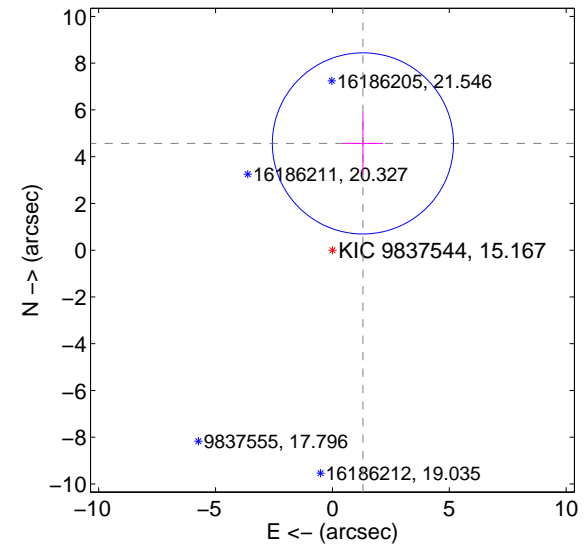
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

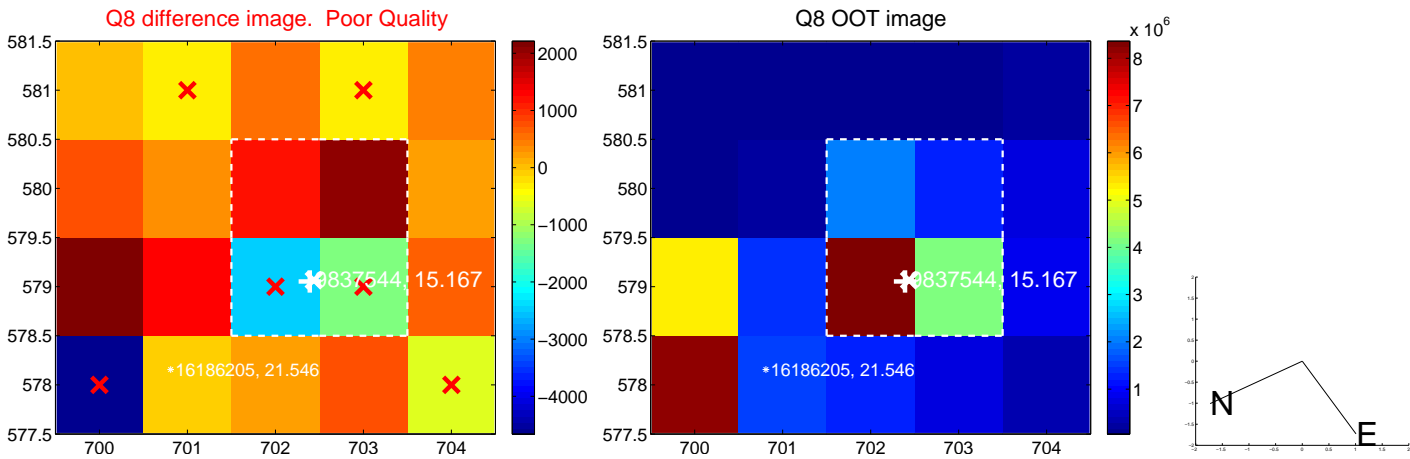
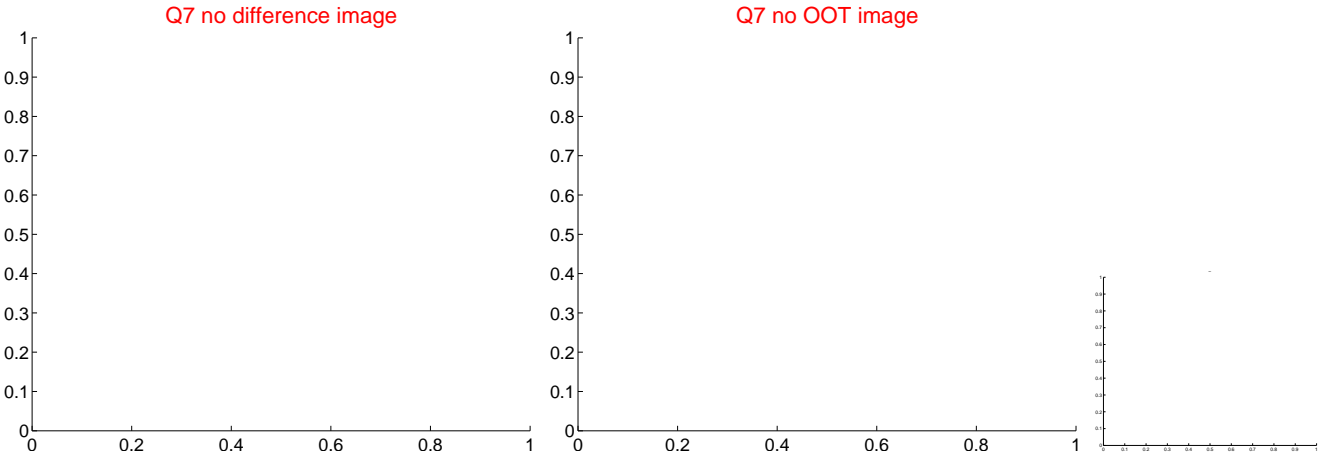
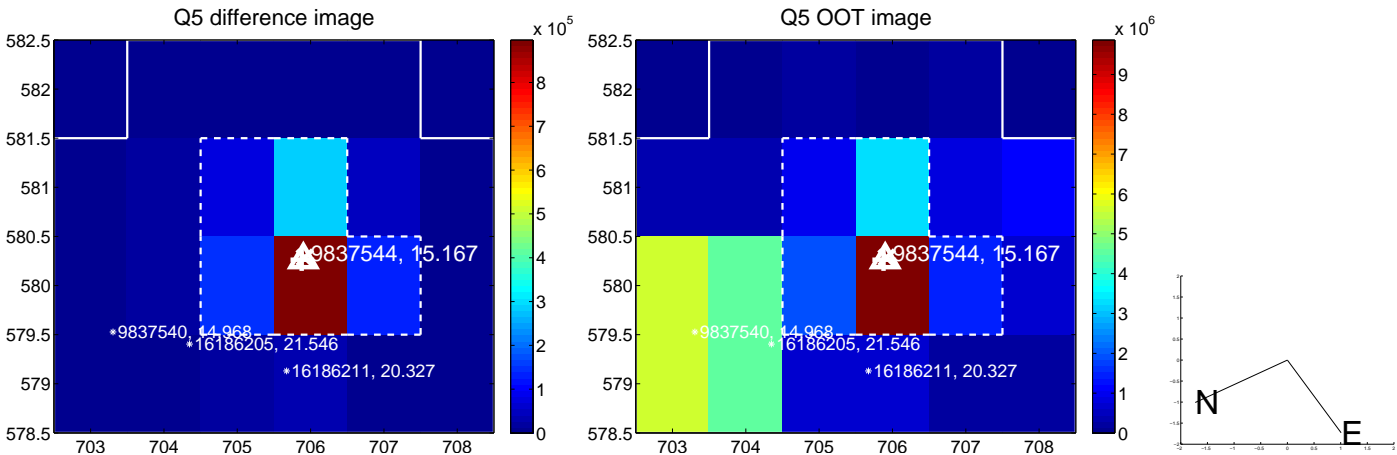


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

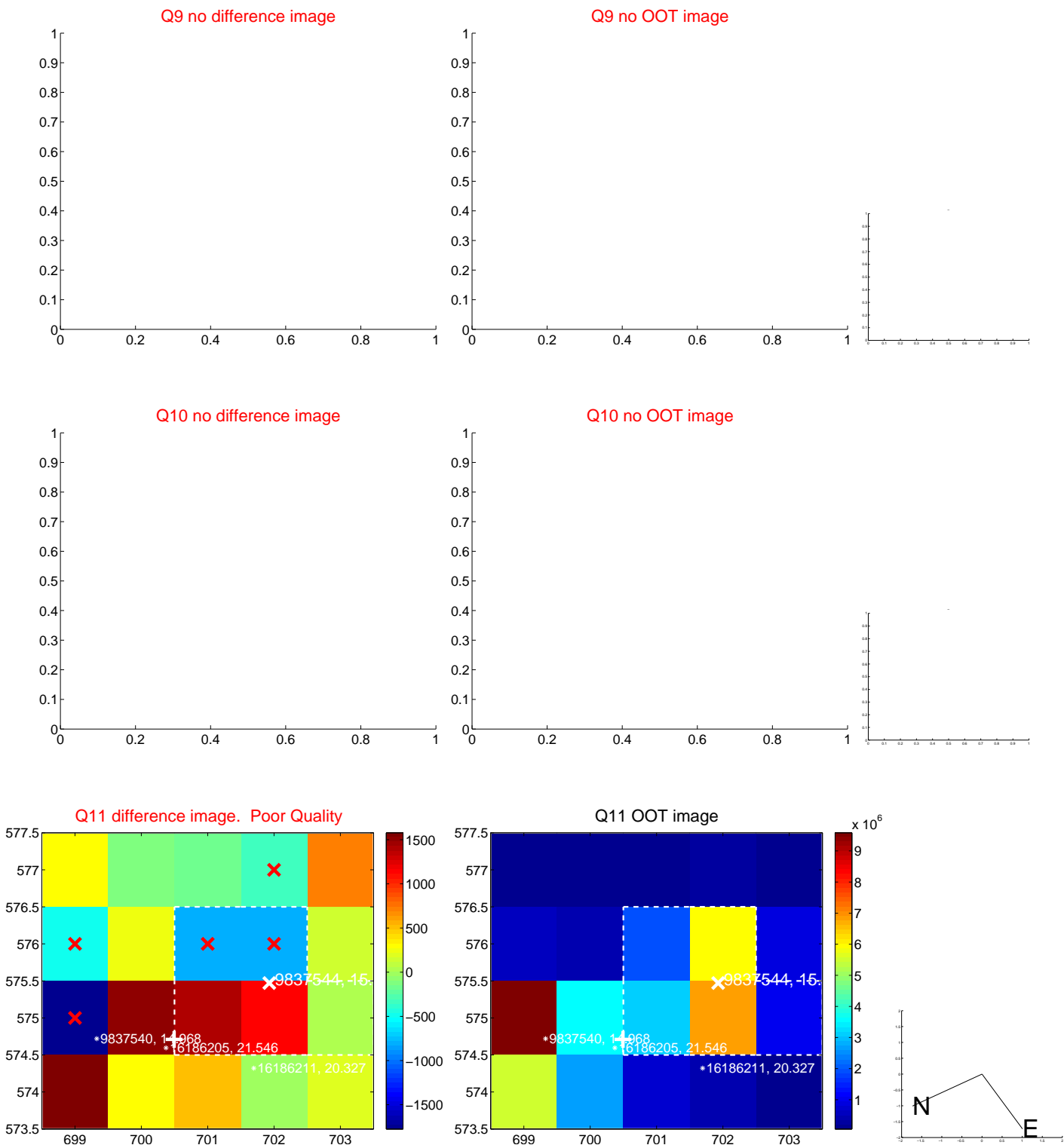
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



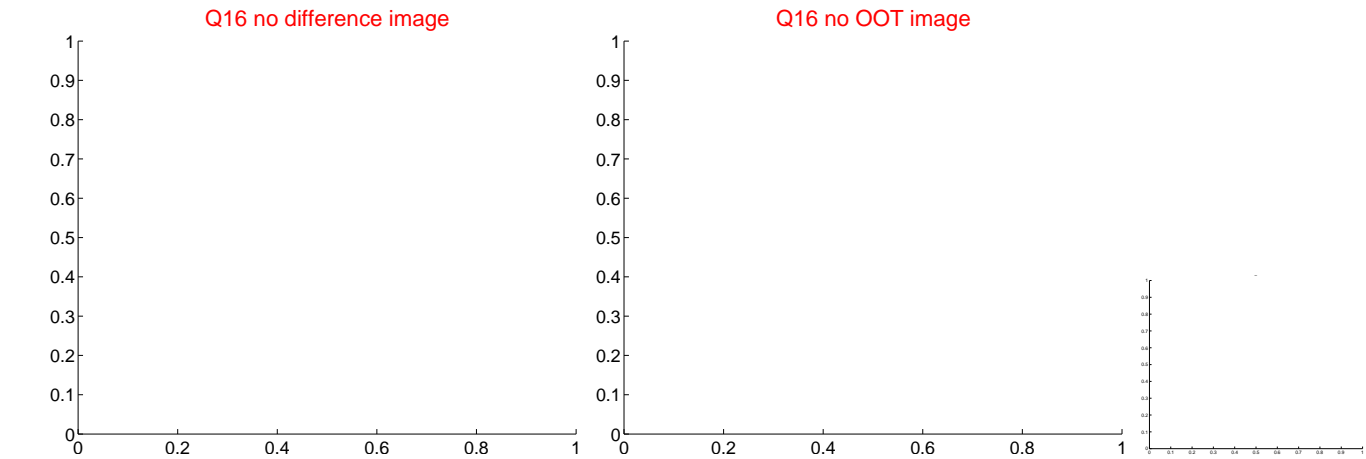
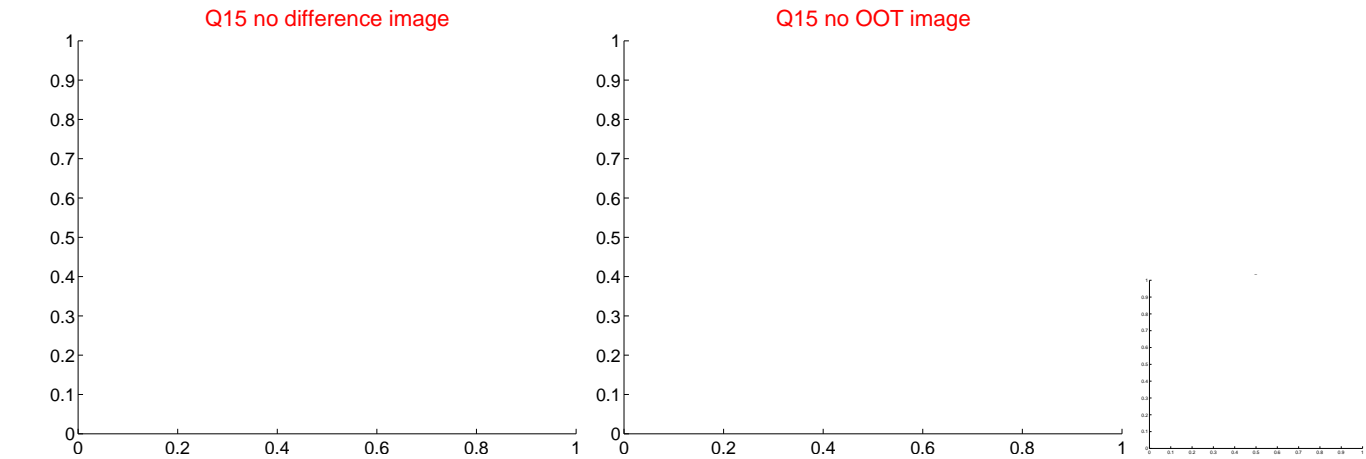
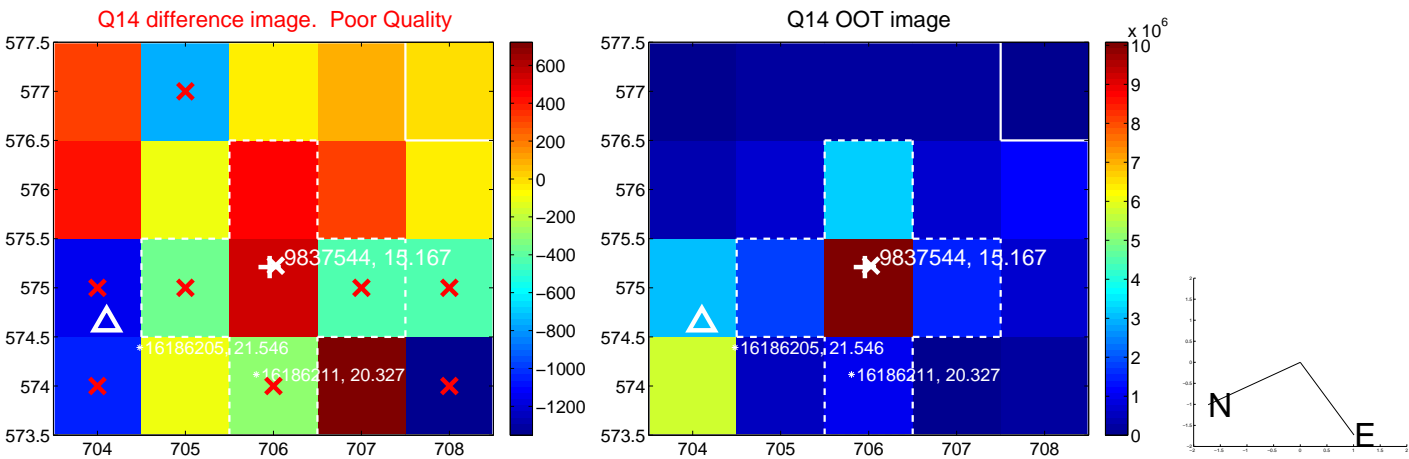
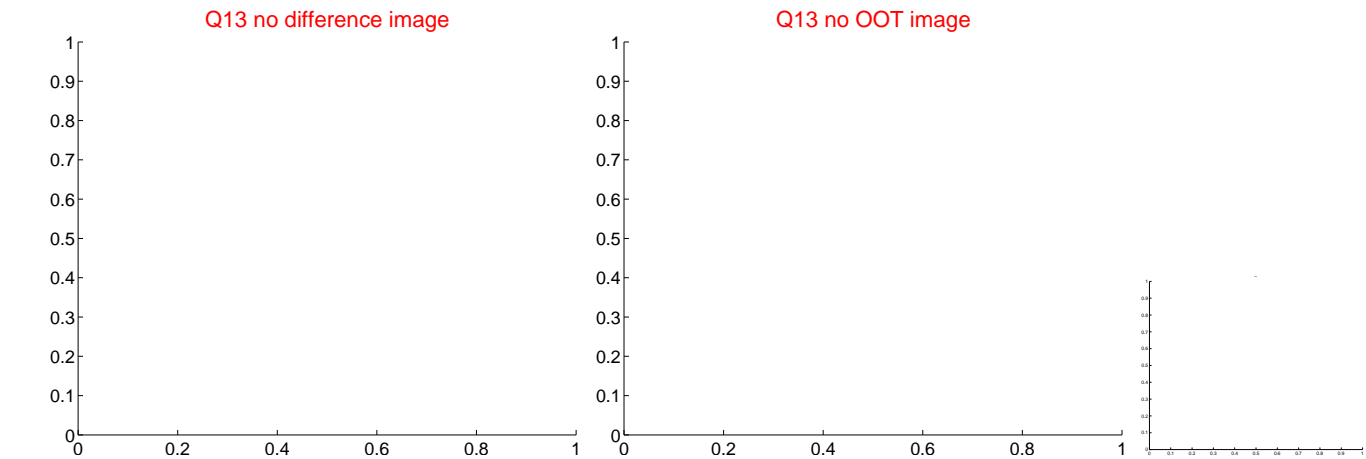
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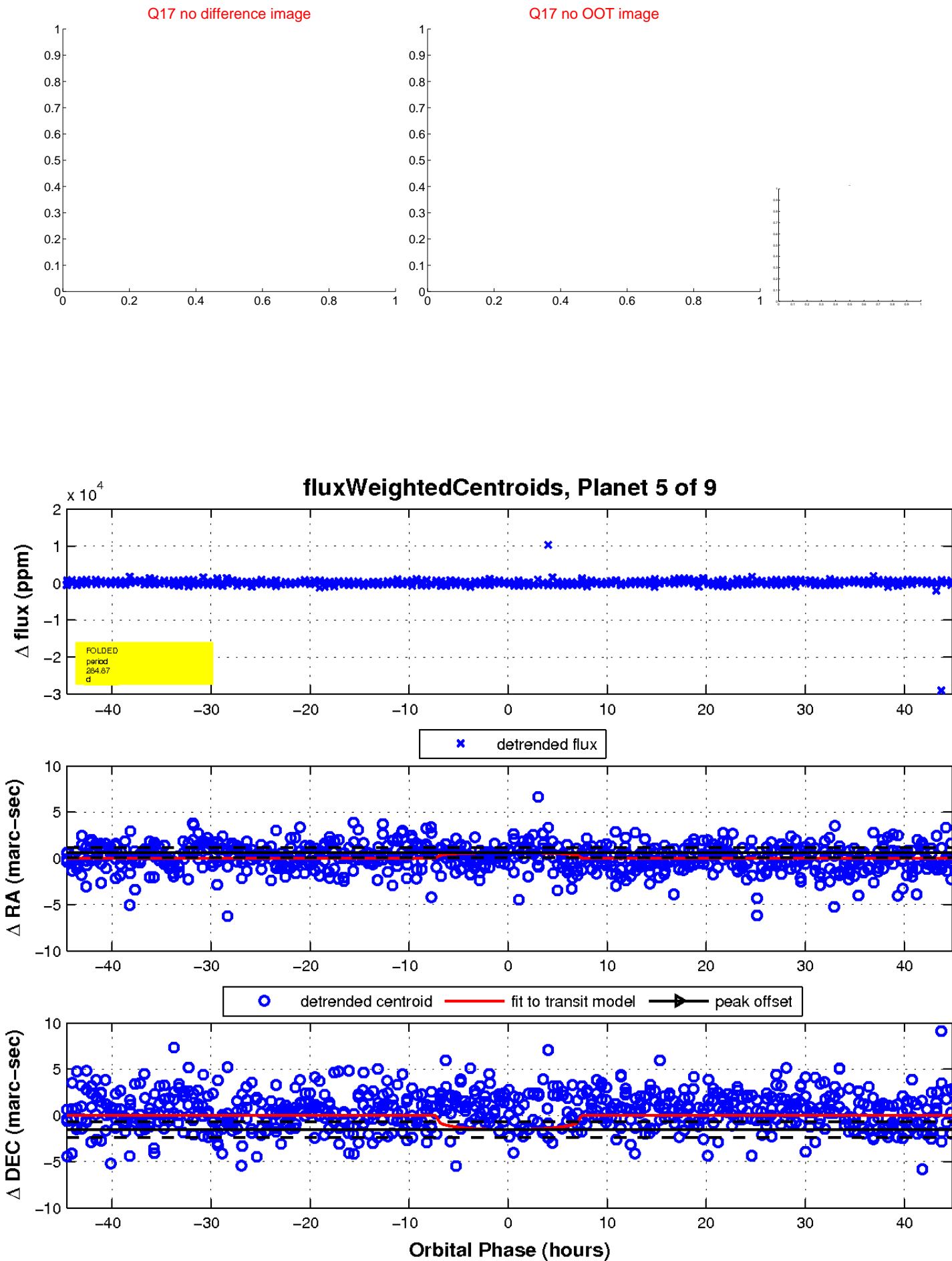
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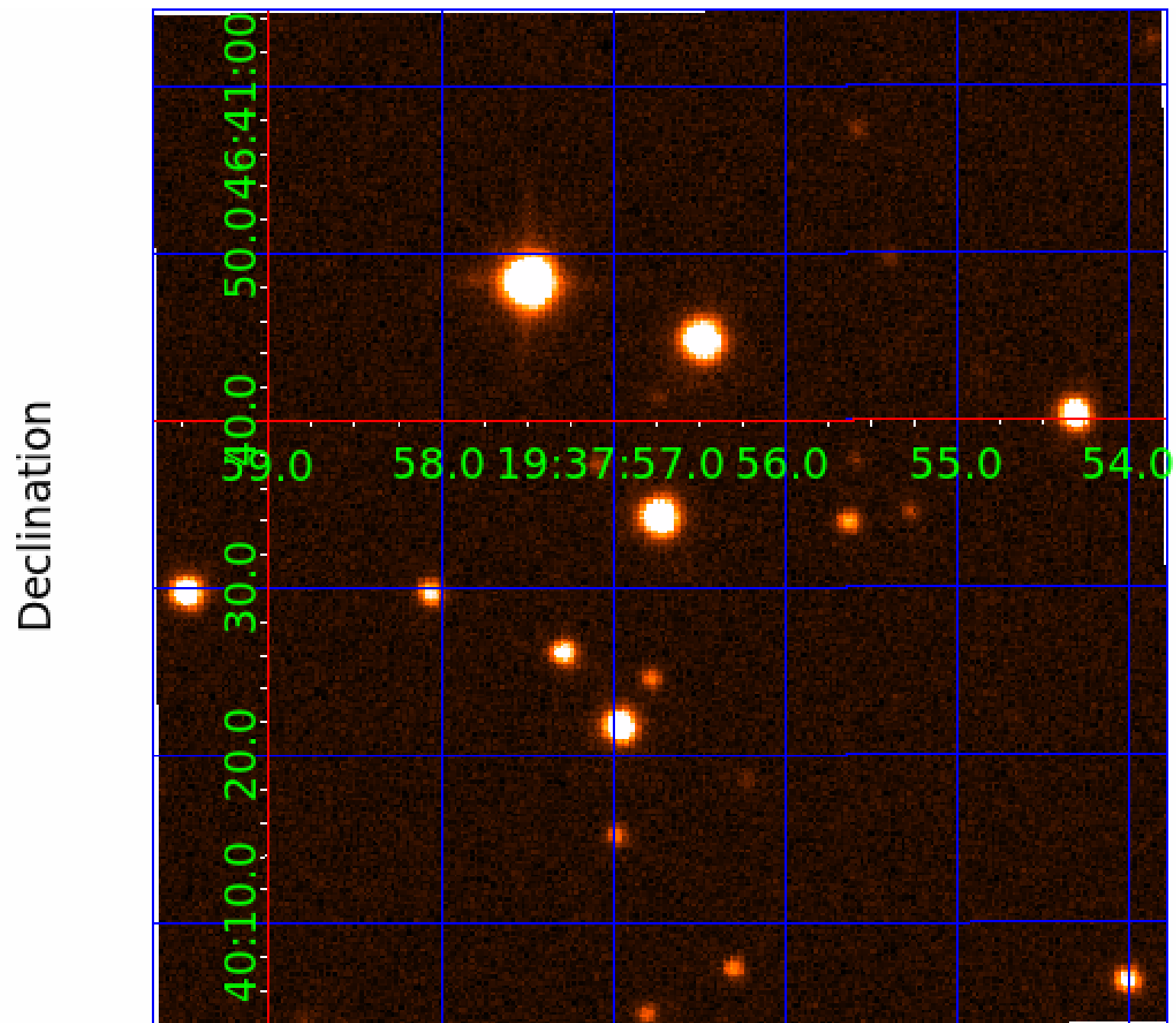
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image



Q1-17 DR25 TCE Parameters

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009837544-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
009837544-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS—HALO_GHOST
009837544-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009837544-05	OBS	FP	0.00	1	0	1	0	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
009837544-06	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009837544-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009837544-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—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

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.

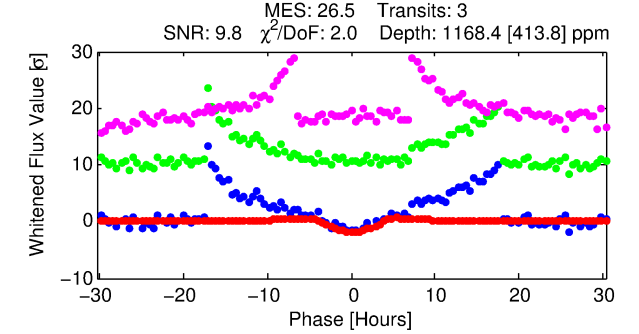
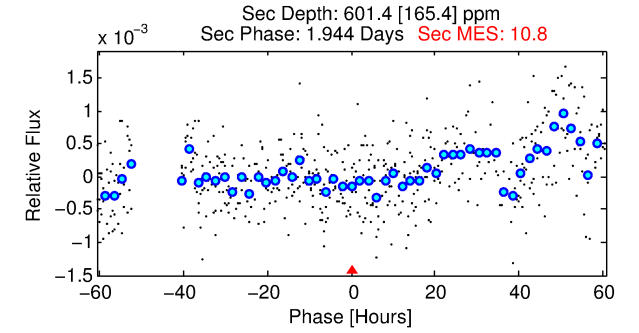
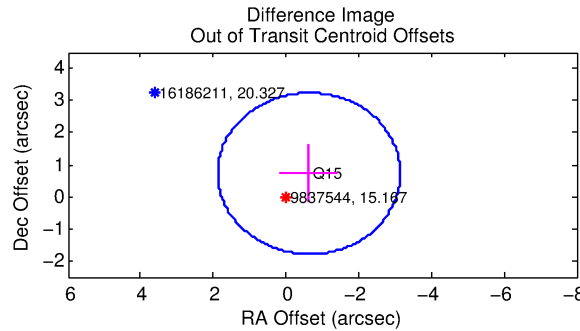
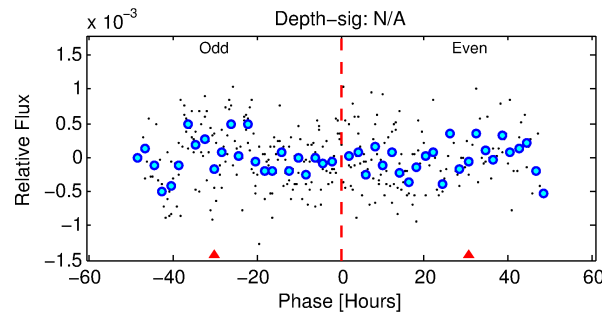
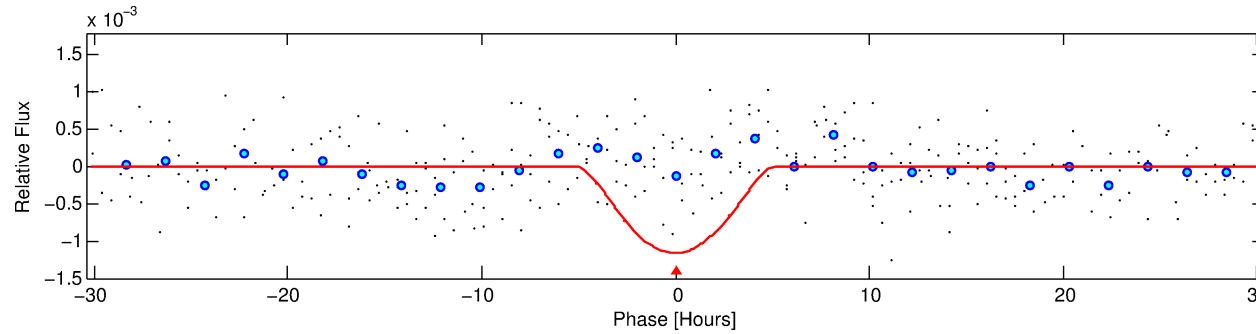
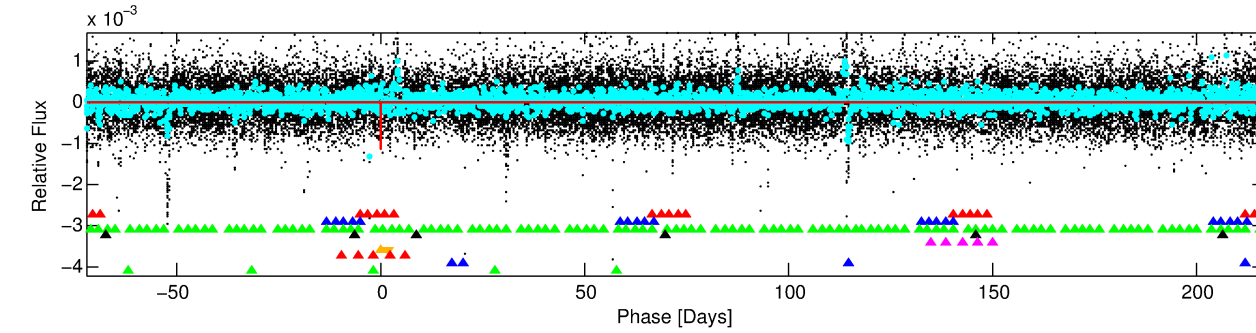
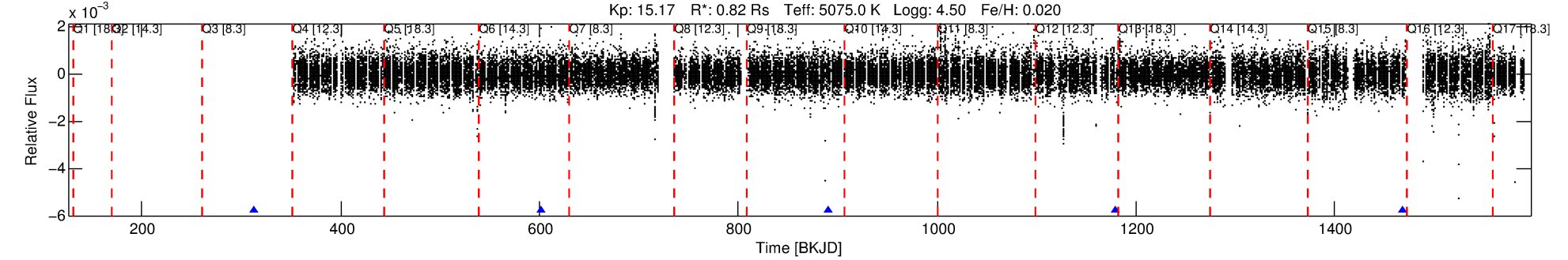
Ephemeris Match Information For 009837544-06

No Significant Match Found

DV One-Page Summary

KIC: 9837544 Candidate: 6 of 9 Period: 288.684 d
KOI: K03529 Corr: No Ephemeris Match

Kp: 15.17 R*: 0.82 Rs Teff: 5075.0 K Logg: 4.50 Fe/H: 0.020



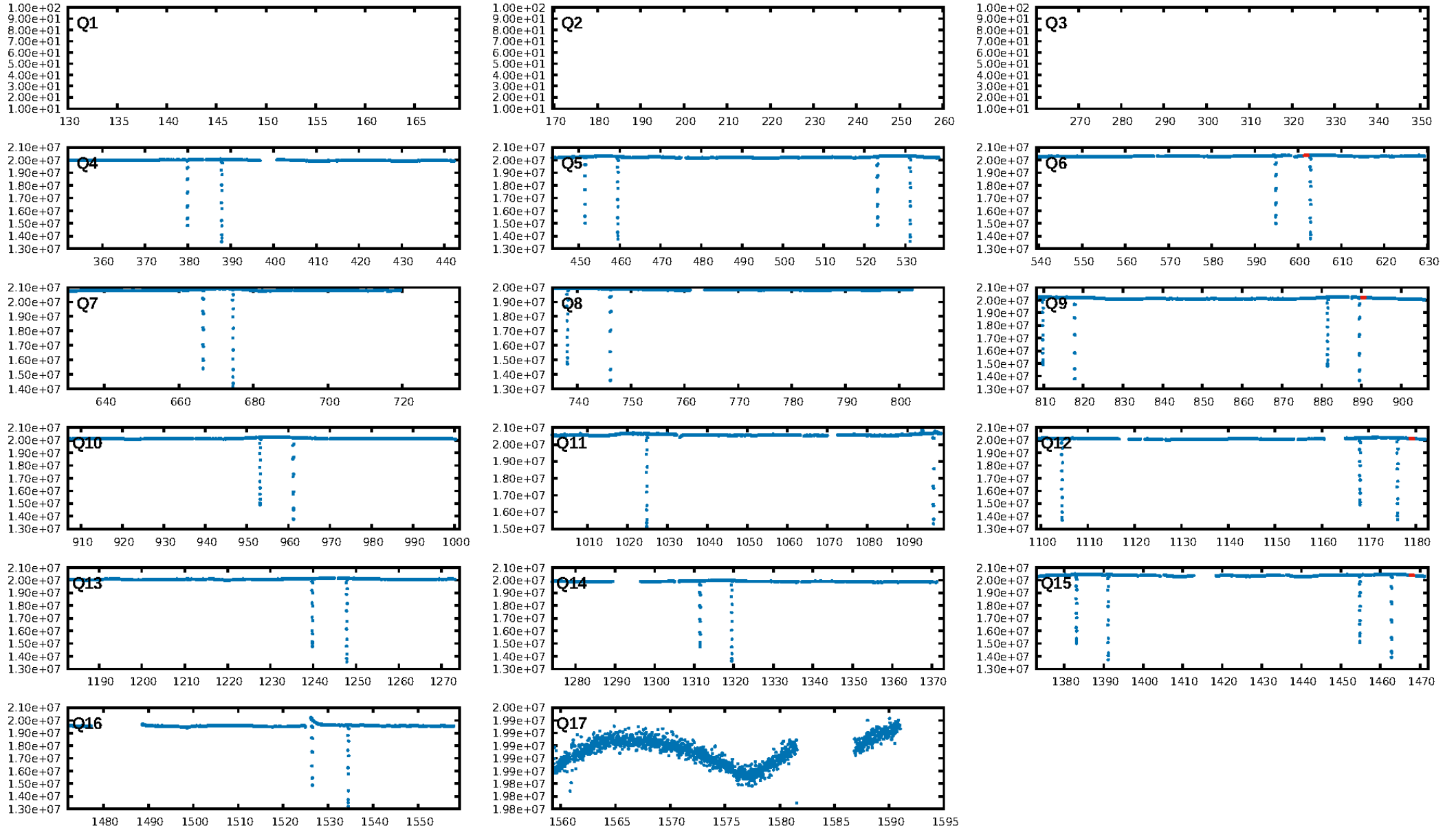
DV Fit Results:

Period = 288.68428 [0.01985] d
Epoch = 313.1759 [0.0573] BKJD
Rp/R* = 0.0600 [0.4303]
a/R* = 79.34 [136.86]
b = 1.00 [0.65]
Seff = 0.65 [0.14]
Teff = 229 [12] K
Rp = 5.39 [38.70] Re
a = 0.7863 [0.0842] AU
Ag = 7032.36 [100930.27] [0.07σ]
Teffp = 3245 [11643] K [0.26σ]

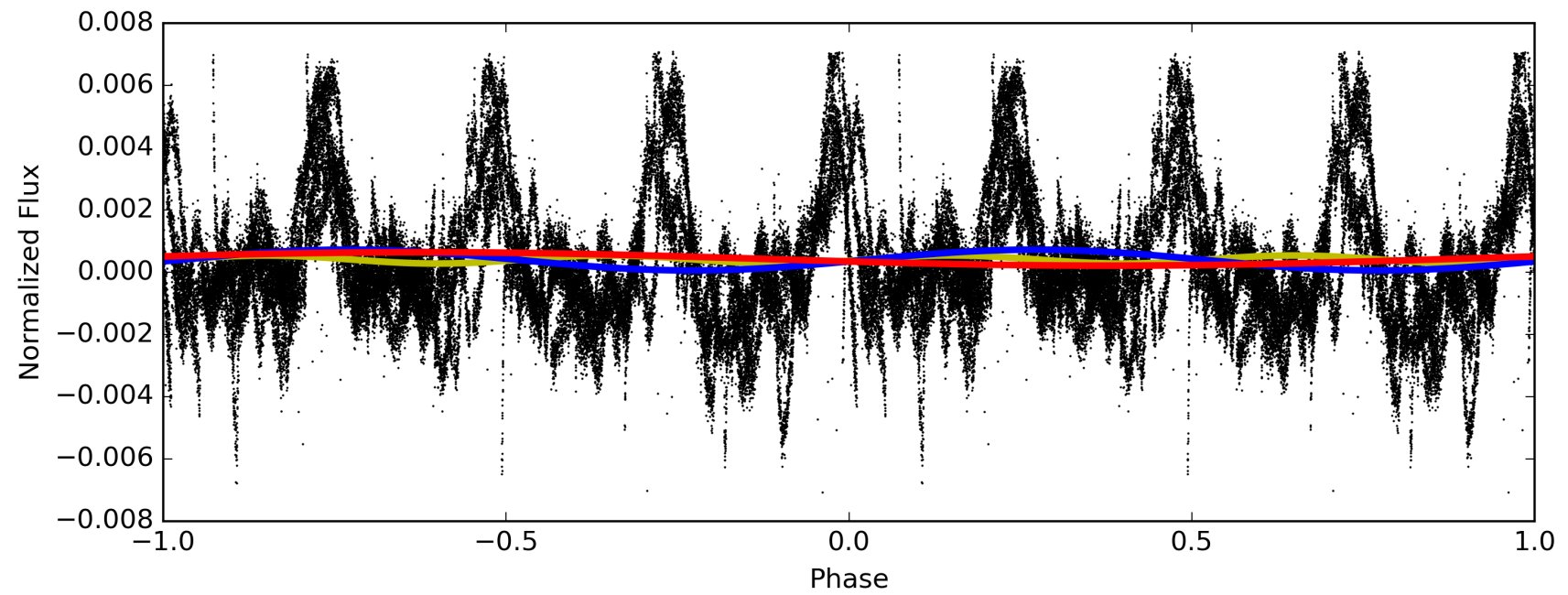
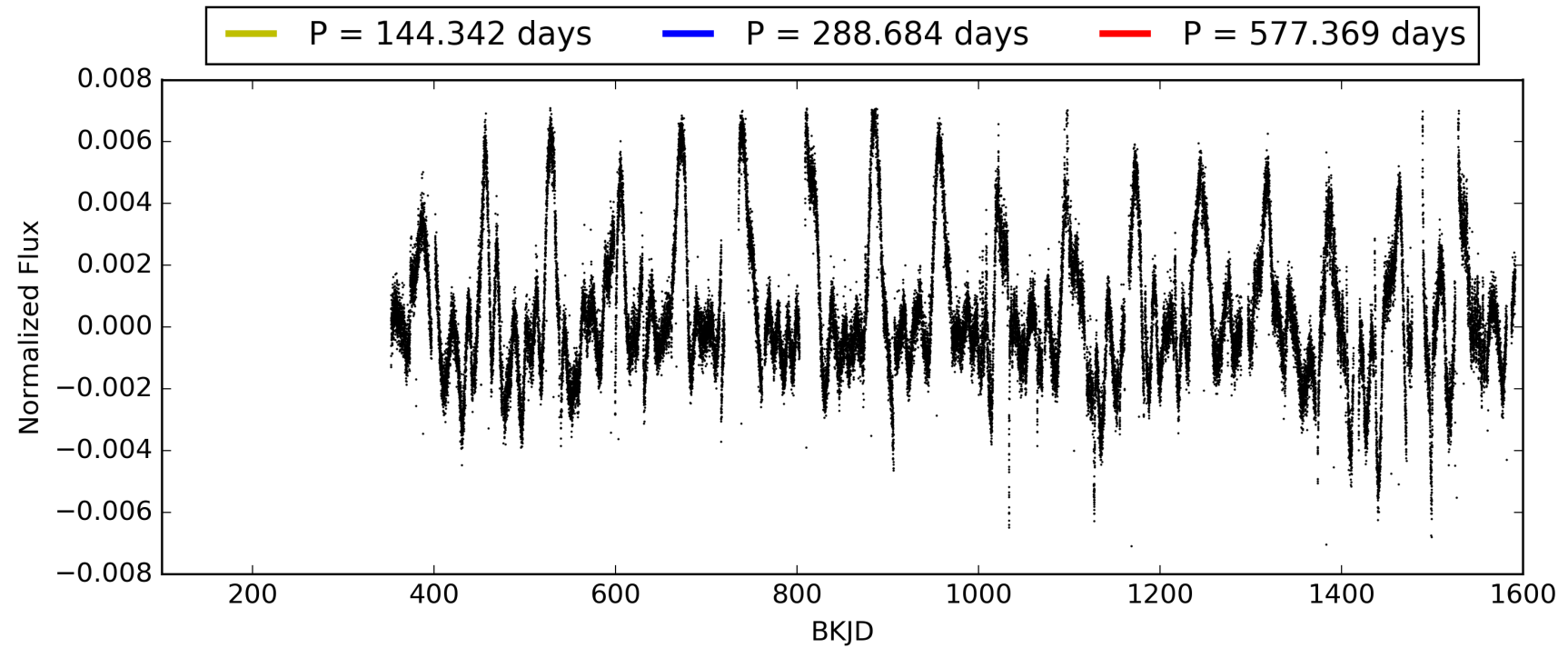
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.07σ]
LongPeriod-sig: 100.0% [81.28σ]
ModelChiSquare2-sig: 13.3%
ModelChiSquareGof-sig: 85.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -19.16
Centroid-sig: 12.4%
Centroid-so: 1.106 arcsec [1.22σ]
OotOffset-rm: 0.960 arcsec [1.15σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-rm: 5.650 arcsec [6.53σ]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009837544-06, PDC Light Curves

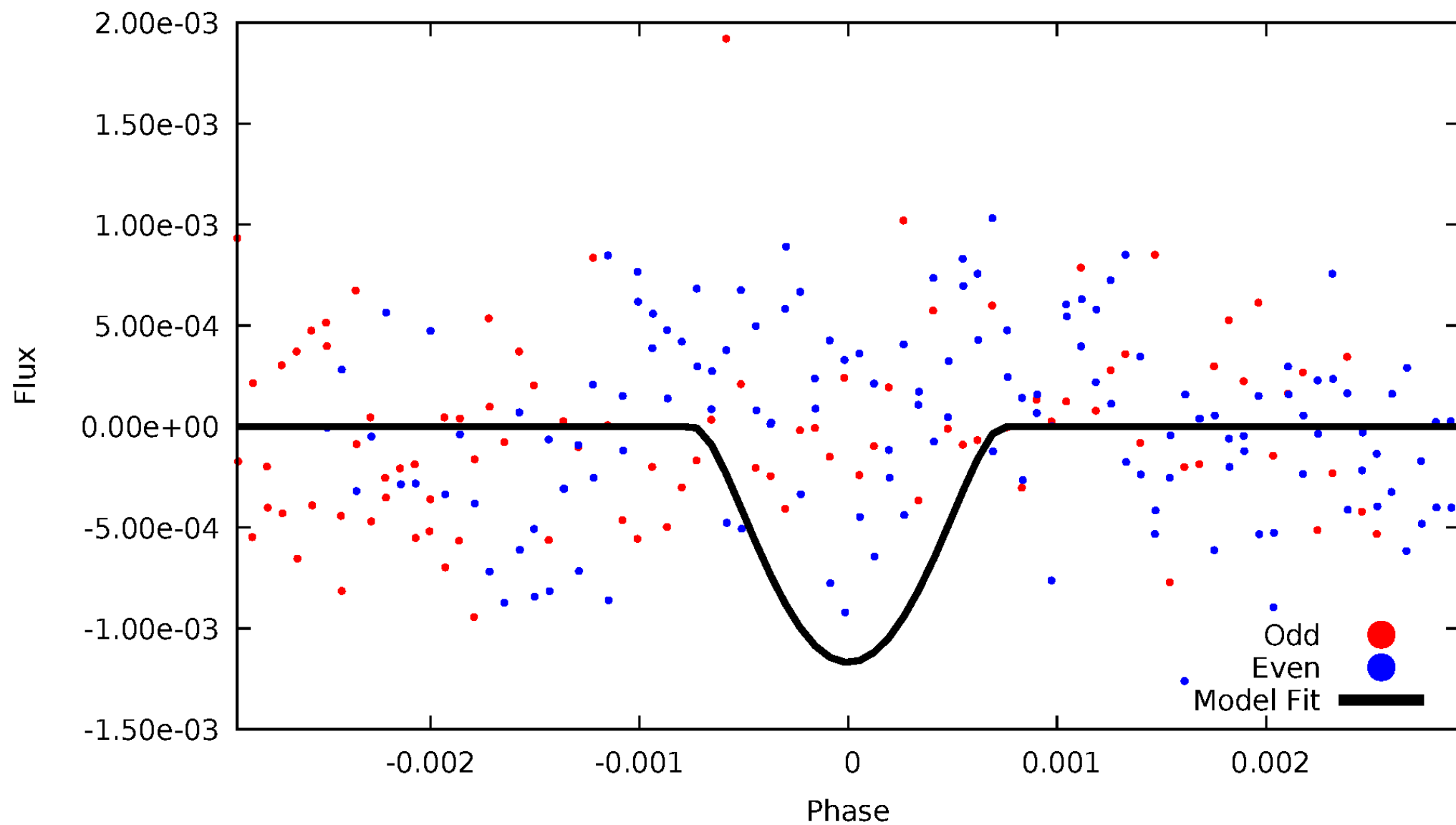


TCE 009837544-06



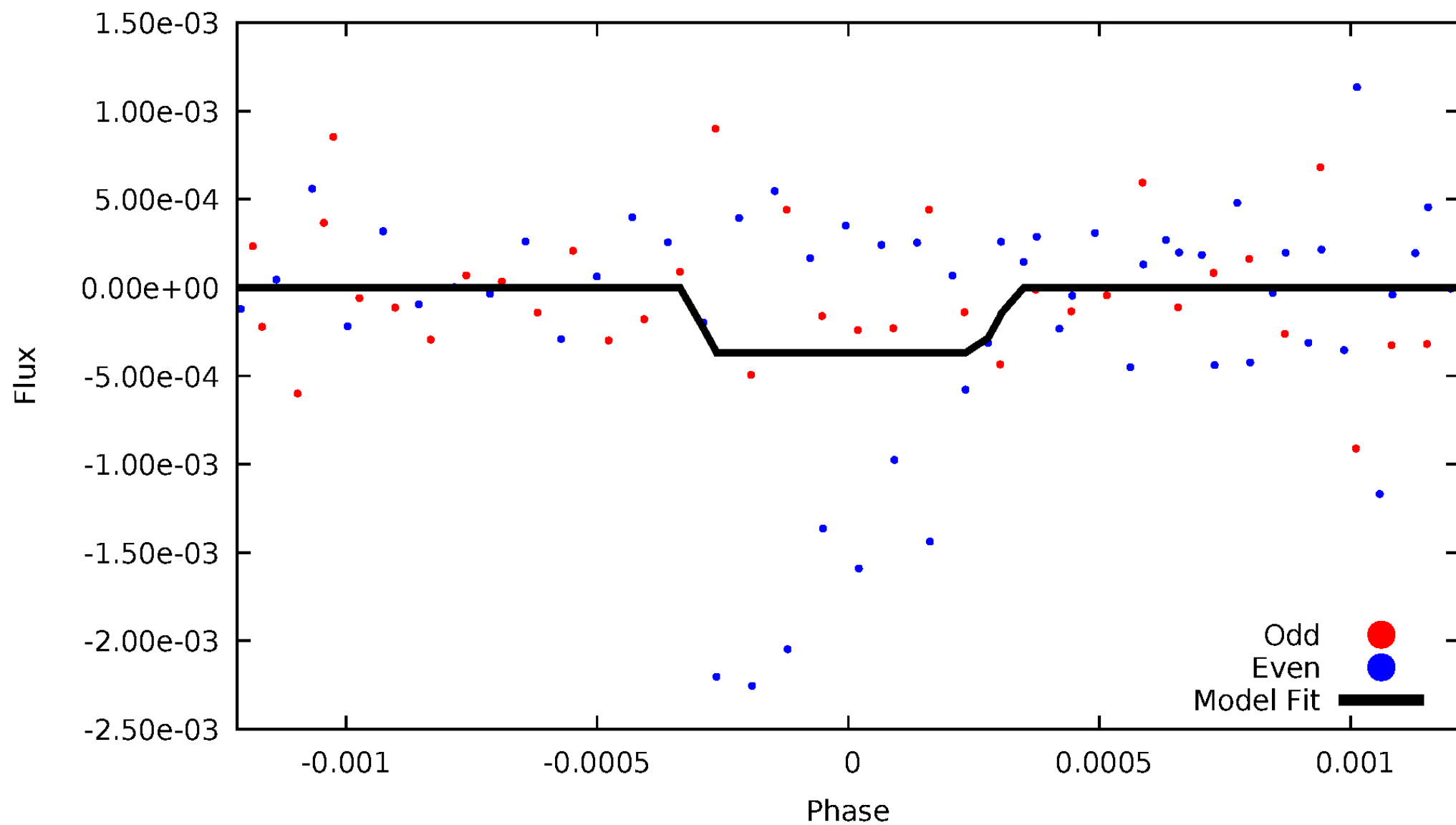
DV Odd/Even

TCE 009837544-06



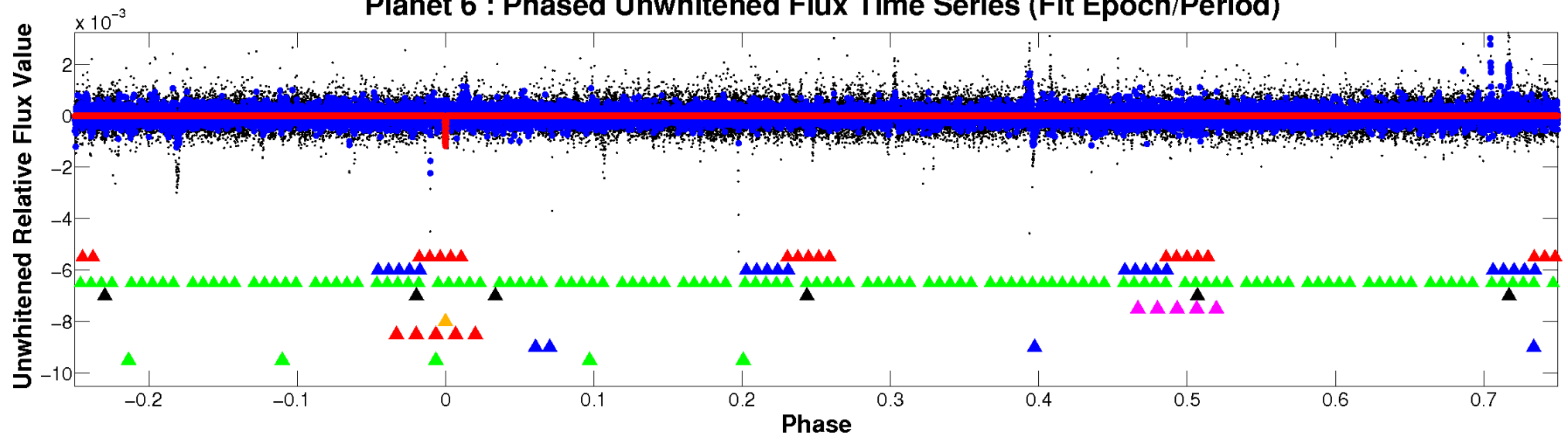
ALT Odd/Even

TCE 009837544-06

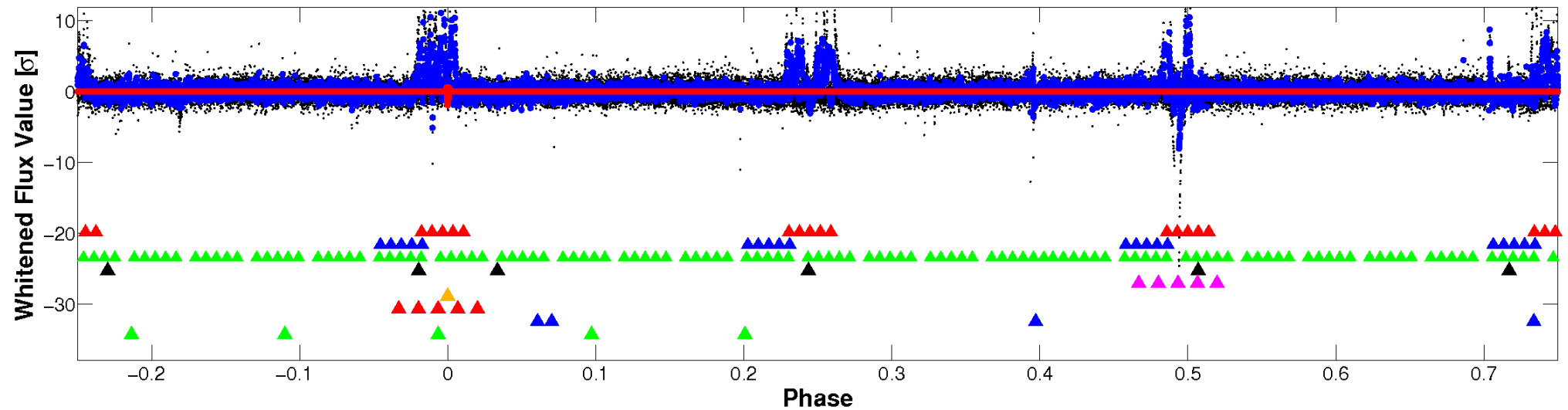


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

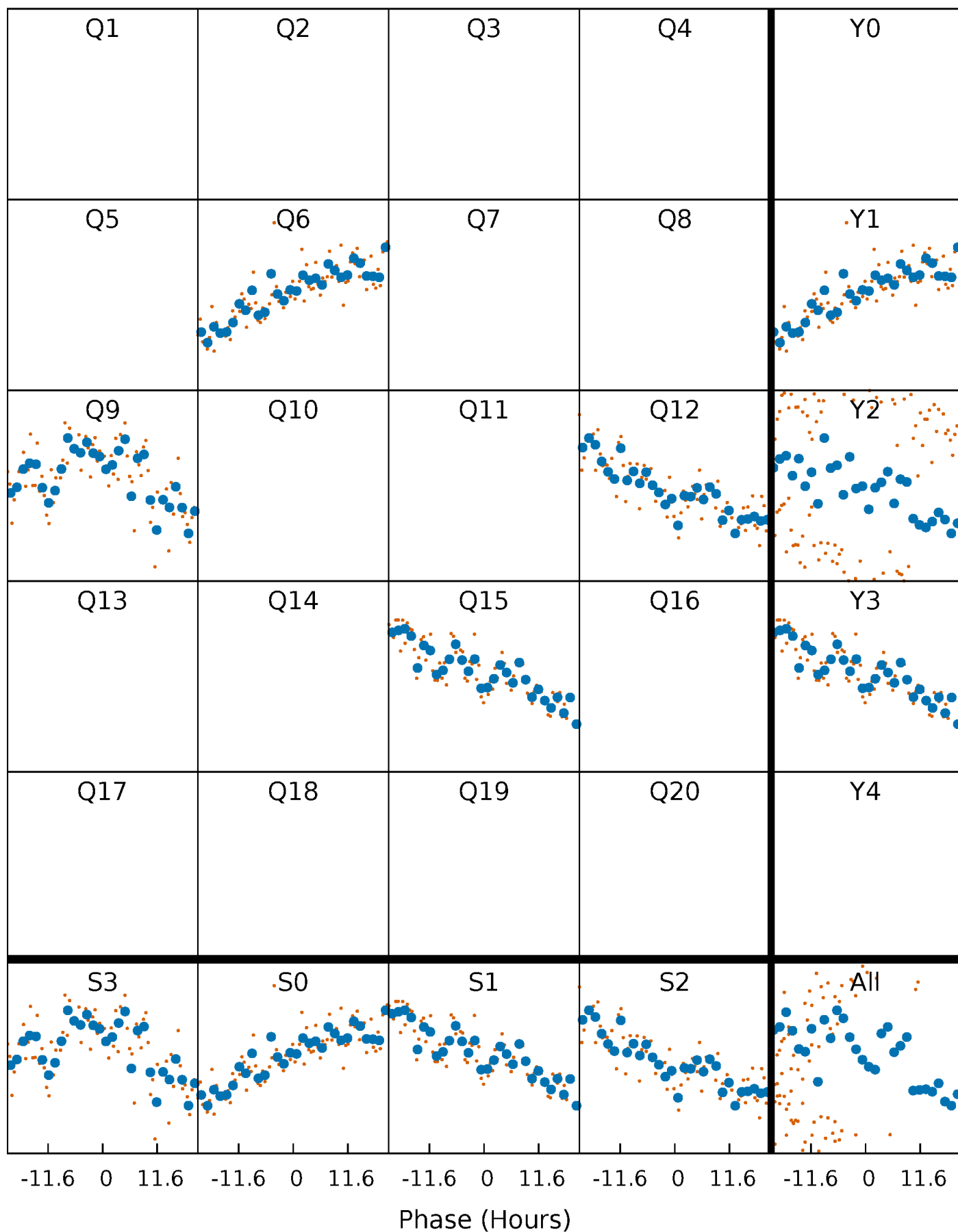


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



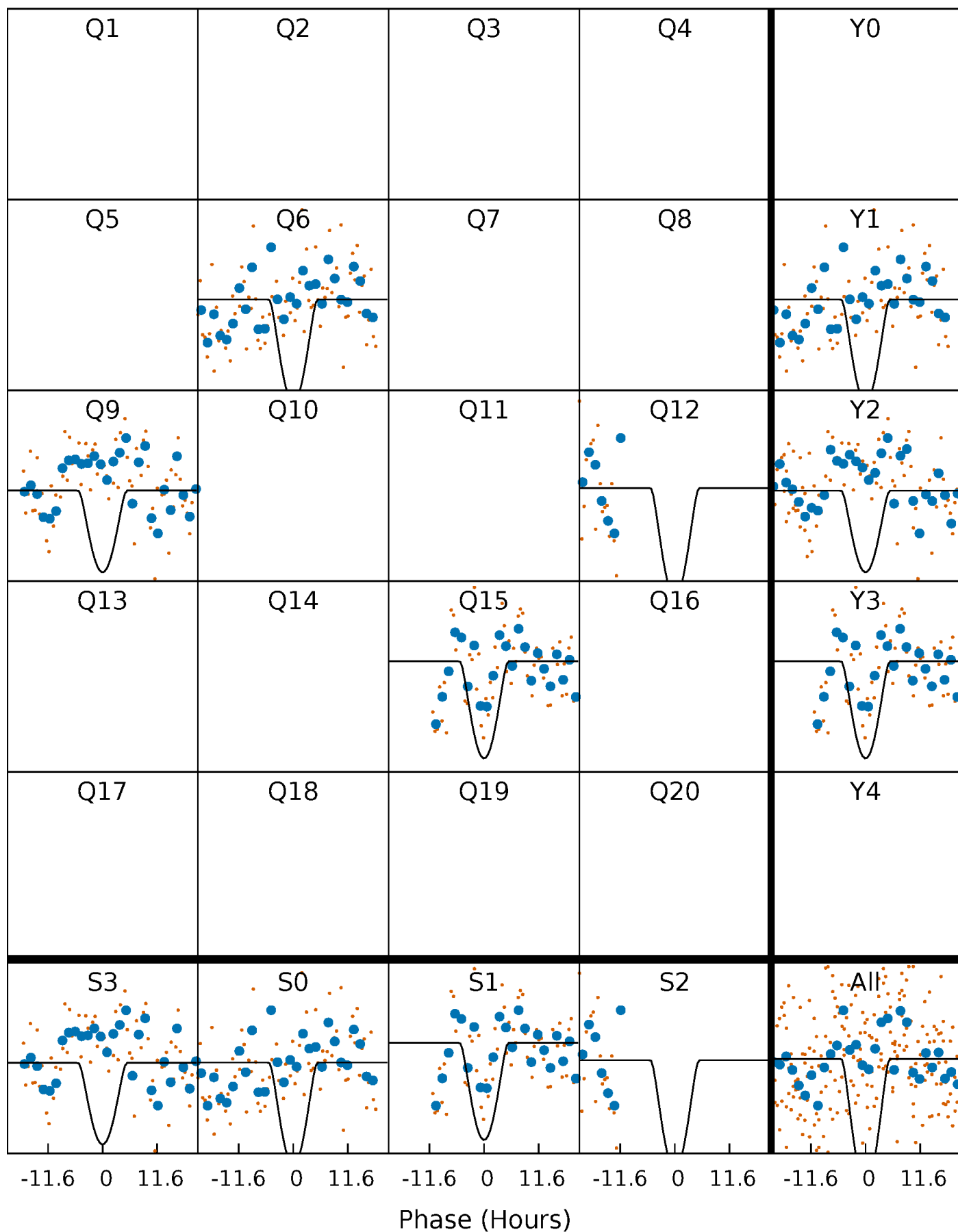
PDC Quarter-Phased Transit Curves

TCE 009837544-06 $P=288.684275$ Days $T_0=313.175859$ (BKJD)



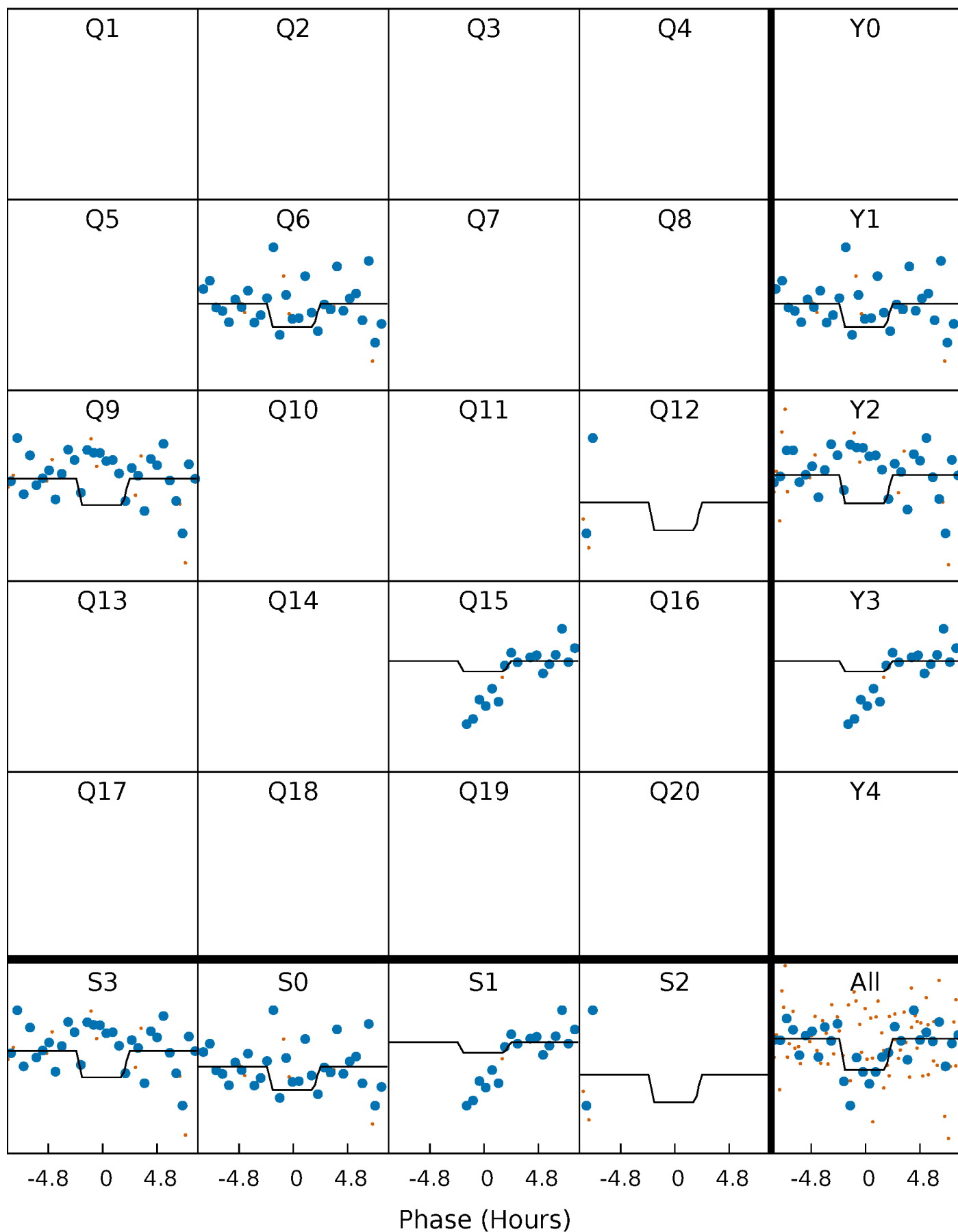
DV Quarter-Phased Transit Curves

TCE 009837544-06 $P=288.684275$ Days $T_0=313.175859$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

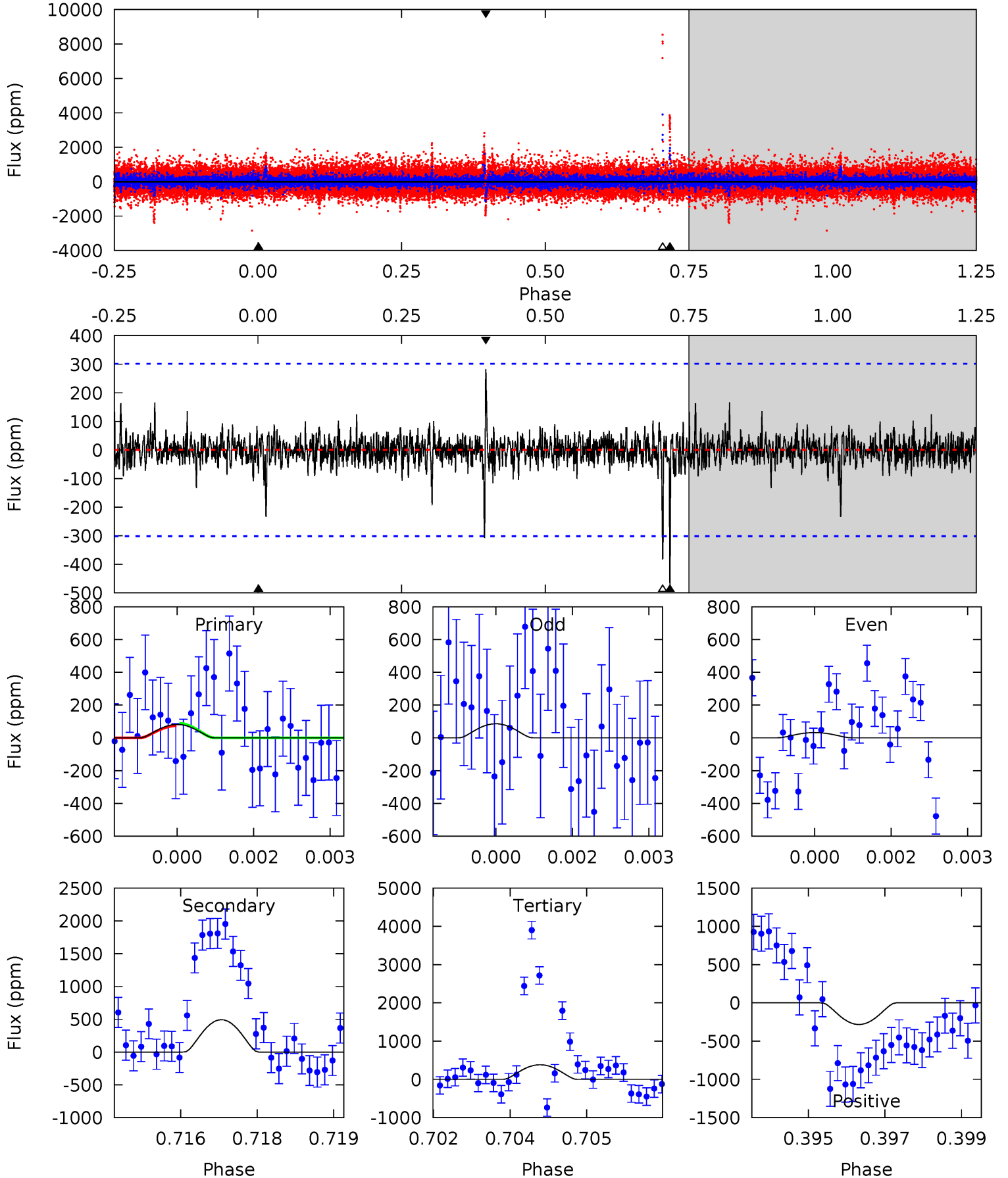
TCE 009837544-06 P=288.507335 Days $T_0=313.505411$ (BKJD)



DV Model-Shift Uniqueness Test

009837544-06, P = 288.684275 Days, E = 313.175859 Days

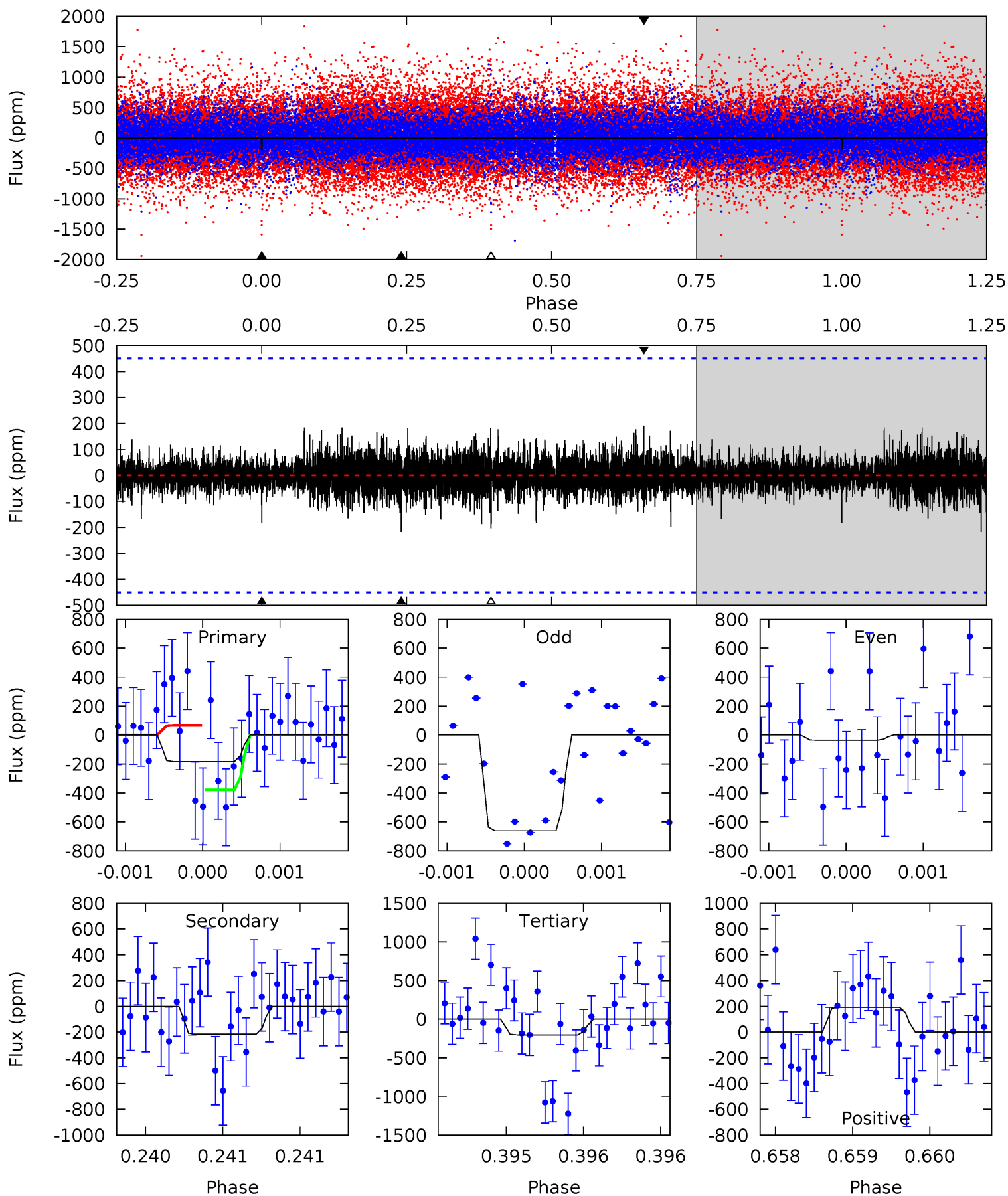
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.46	8.79	6.81	5.04	5.37	3.16	0.71	-5.35	-3.58	1.98	3.76	0.45	1.11	0.36	0.13



Alt Model-Shift Uniqueness Test

009837544-06, P = 288.507335 Days, E = 313.505411 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.26	2.67	2.50	2.36	5.55	3.45	0.56	-0.24	-0.10	0.17	0.32	3.91	-11.7	0.47	1.88



Stellar Parameters For KIC 009837544

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5075^{+179}_{-179}	$4.497^{+0.095}_{-0.095}$	$0.020^{+0.300}_{-0.300}$	$0.824^{+0.088}_{-0.097}$	$0.777^{+0.098}_{-0.057}$	$1.957^{+0.744}_{-0.493}$
	+4%/-4%	+2%/-2%	+1500%/-1500%	+11%/-12%	+13%/-7%	+38%/-25%
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 009837544-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-494 ± 56	$28.20^{+31.33}_{-19.26}$	321^{+15}_{-16}	2253^{+798}_{-318}	217^{+1983}_{-169}
Alt.	-217 ± 81	$25.93^{+30.80}_{-17.99}$	321^{+16}_{-15}	2096^{+680}_{-308}	103^{+979}_{-81}

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

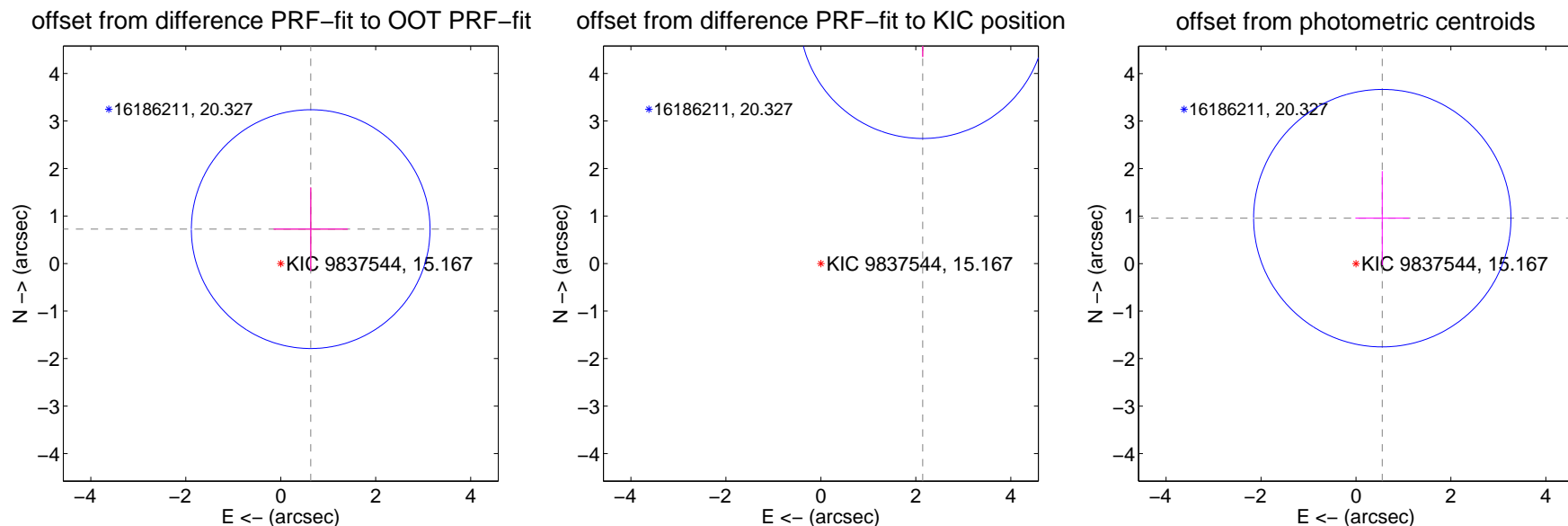
DV Centroid Data

Supplemental centroid analysis for 009837544-06. Kepler magnitude: 15.17. Transit SNR 9.76

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 4.75 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	0.960 ± 0.838	1.15	-0.631 ± 0.780	0.724 ± 0.879
PRF-fit source offset from KIC position	5.650 ± 0.865	6.53	-2.144 ± 0.780	5.227 ± 0.879
photometric centroid source offset	1.11 ± 0.90	1.22	-0.55 ± 0.57	0.96 ± 0.99

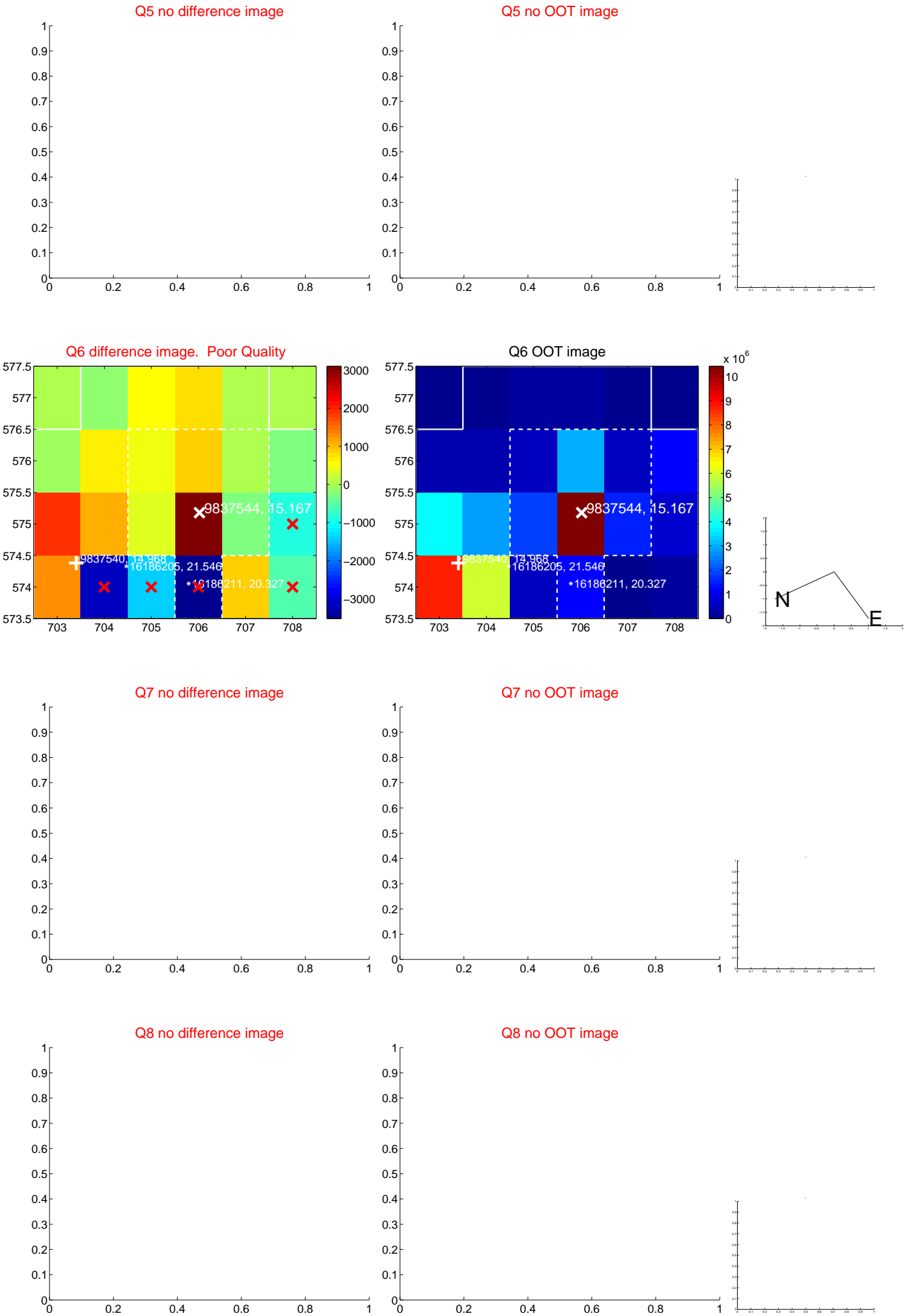


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

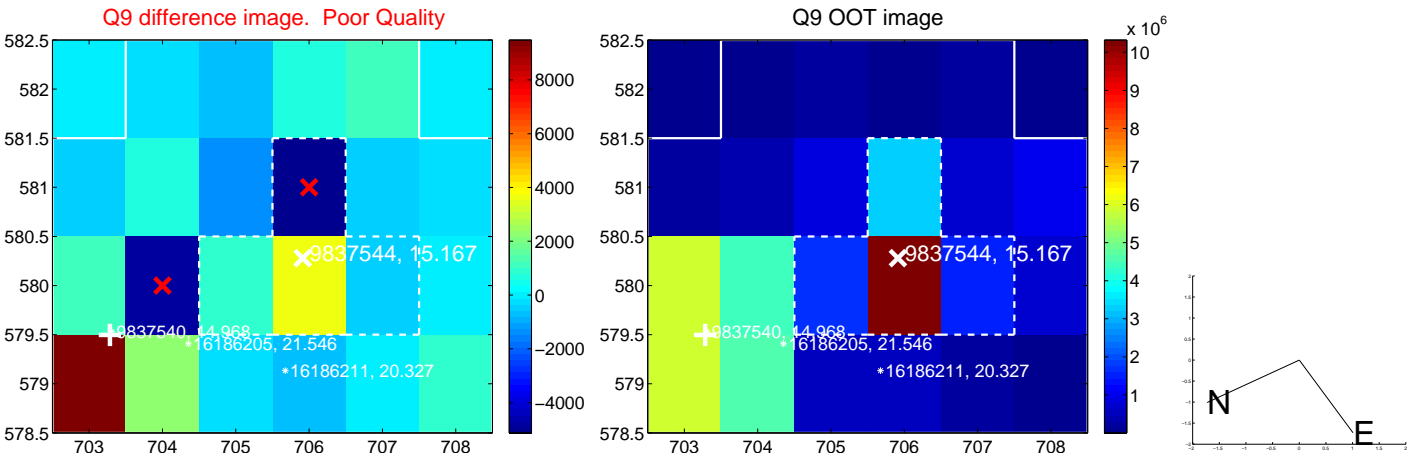
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



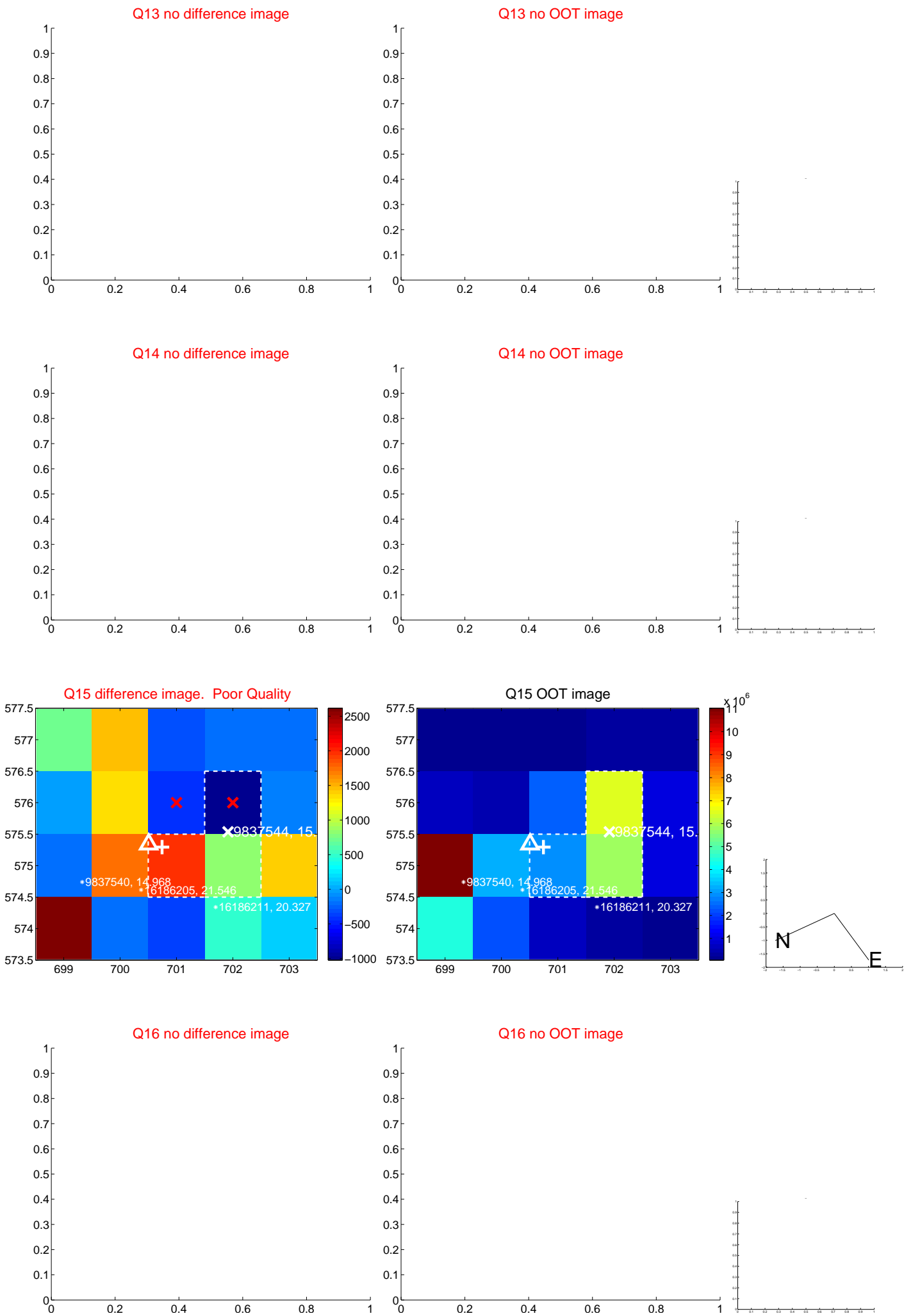
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

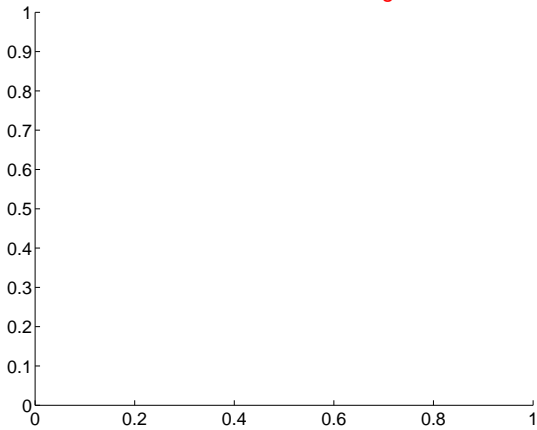


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

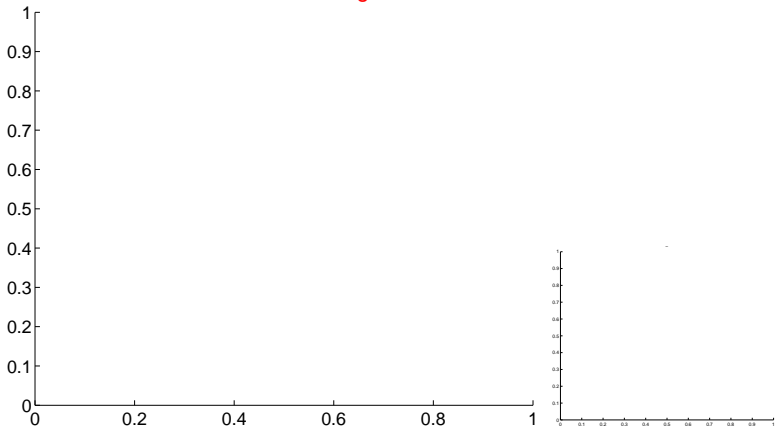


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

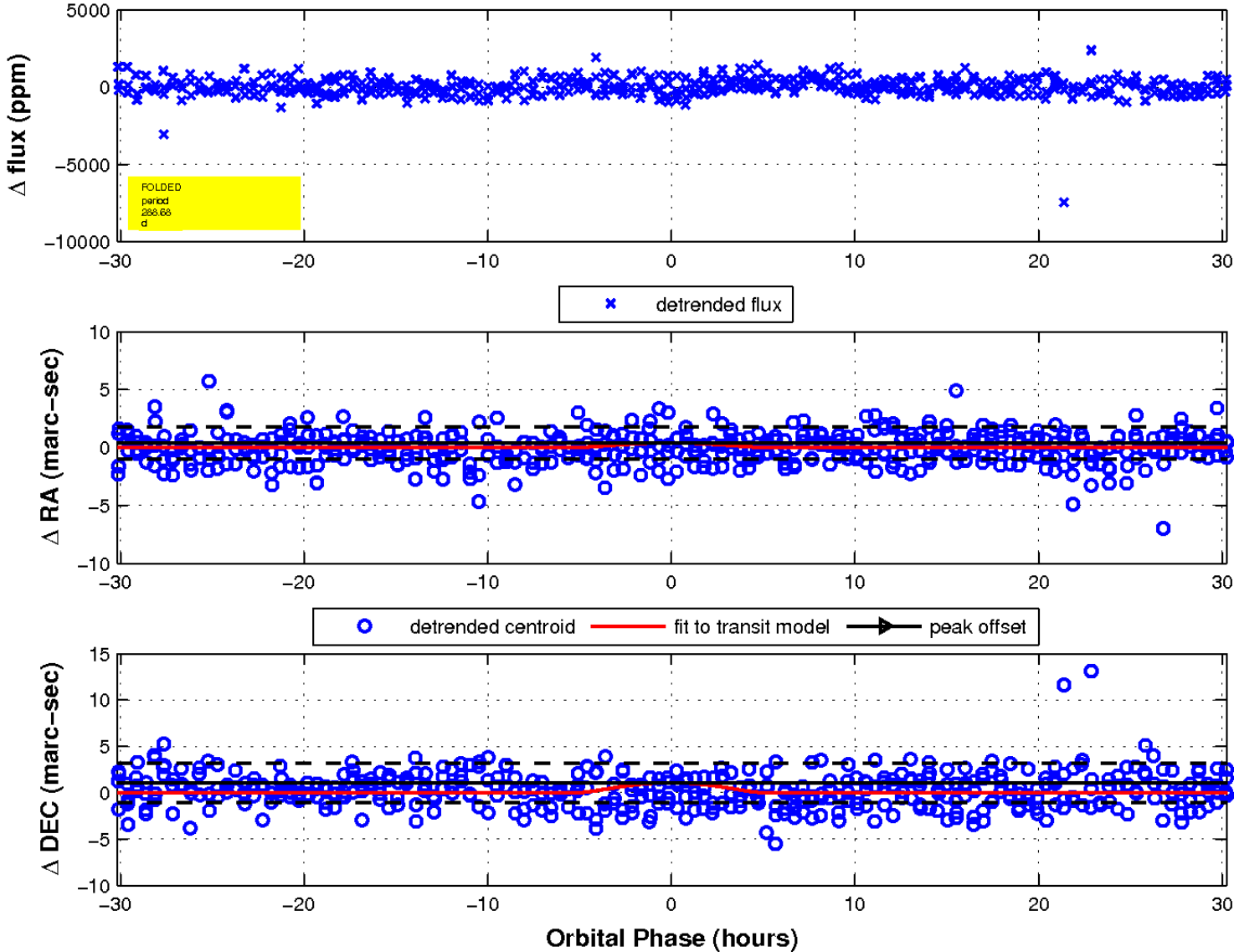
Q17 no difference image



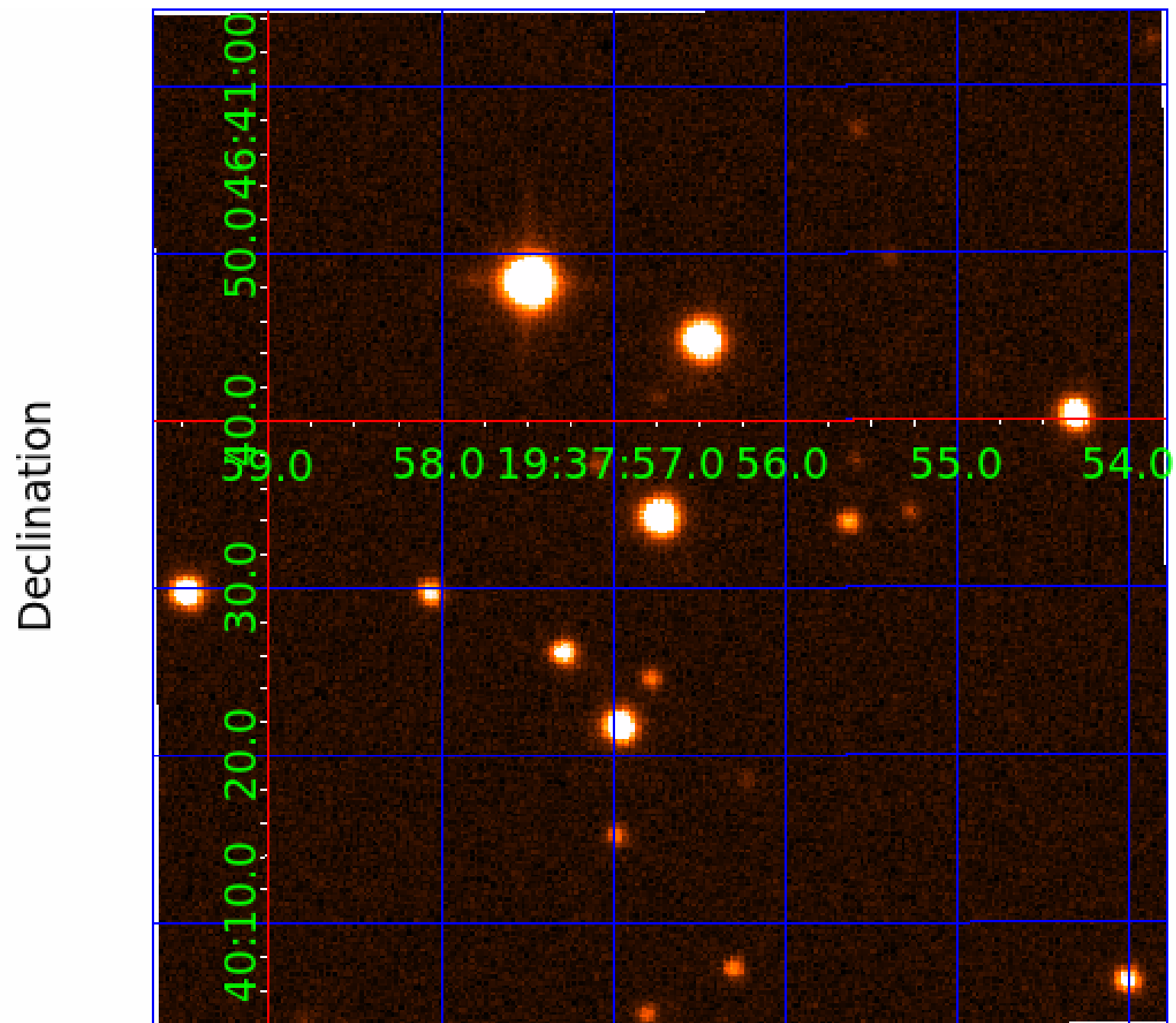
Q17 no OOT image



fluxWeightedCentroids, Planet 6 of 9



UKIRT Image



KIC 009837544

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})
009837544-01	OBS	3529.01	71.661165	172.916198	325293.0	4.500	4634.2	-1.0	0.82	5075	38.32	4.18
009837544-02	OBS	No	71.661673	164.885808	264768.2	3.500	4015.5	-1.0	0.82	5075	40.49	4.18
009837544-03	OBS	No	11.943528	140.767396	12008.6	15.000	148.2	-1.0	0.82	5075	8.76	45.61
009837544-04	OBS	No	212.672492	322.884906	7967.5	15.000	65.3	-1.0	0.82	5075	7.14	0.98
009837544-05	OBS	No	284.865731	174.540434	575.8	14.949	64.7	5.3	0.82	5075	2.08	0.66
009837544-06	OBS	No	288.684275	313.175858	1168.4	10.134	26.5	9.8	0.82	5075	5.39	0.65
009837544-07	OBS	No	284.844834	318.988322	5958.6	3.000	28.9	-1.0	0.82	5075	6.18	0.66
009837544-09	OBS	No	258.775431	371.133438	556.6	17.124	17.9	5.3	0.82	5075	2.22	0.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009837544-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE—CENT_NOFITS
009837544-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
009837544-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS—HALO_GHOST
009837544-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009837544-05	OBS	FP	0.00	1	0	1	0	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
009837544-06	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009837544-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009837544-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—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

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.

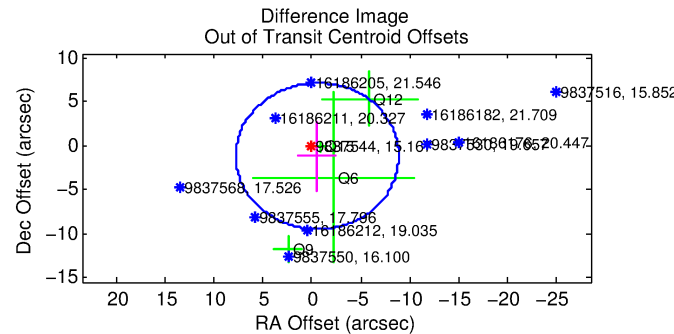
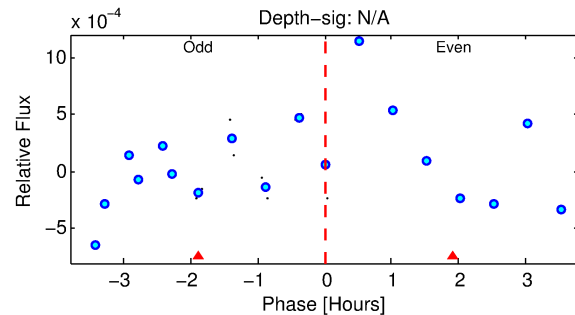
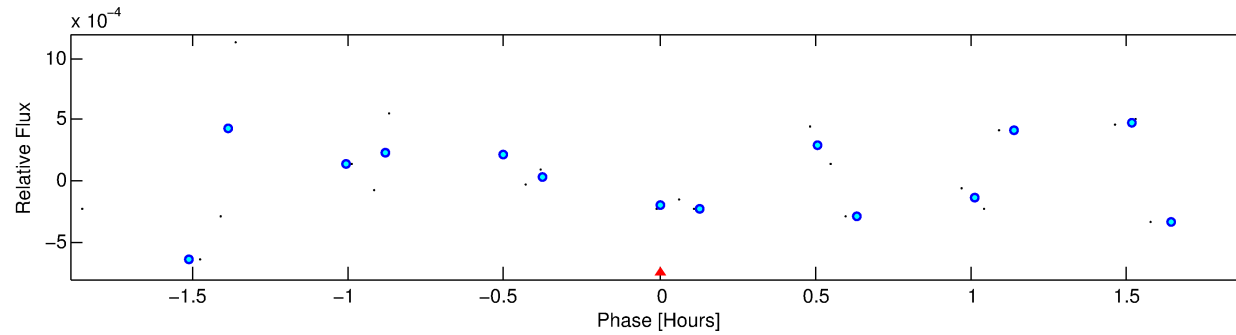
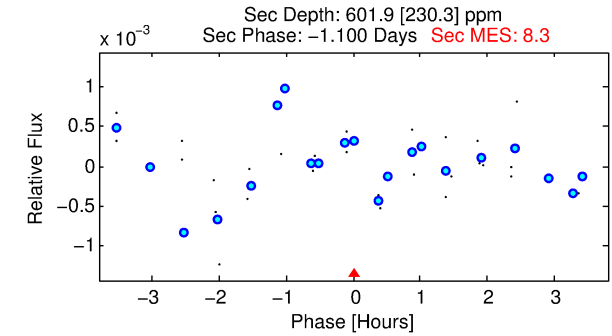
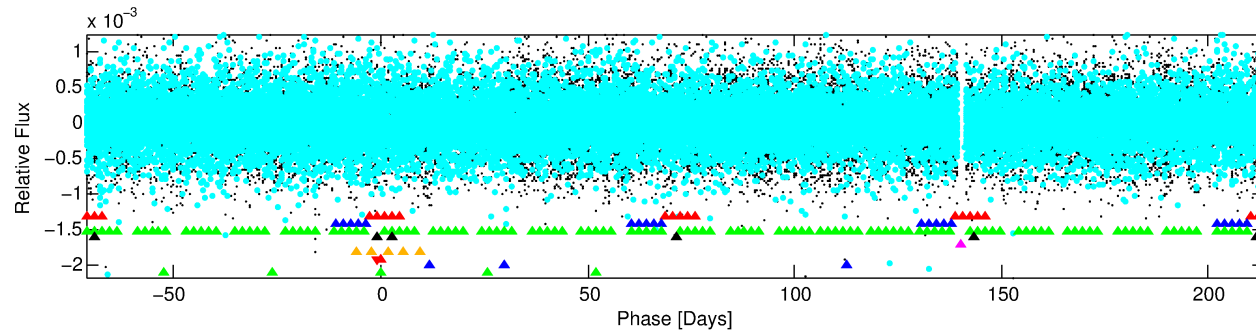
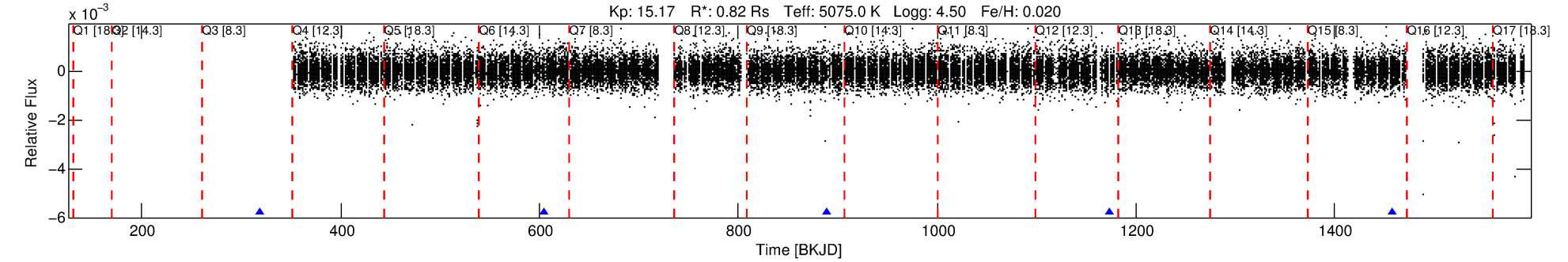
Ephemeris Match Information For 009837544-07

No Significant Match Found

DV One-Page Summary

KIC: 9837544 Candidate: 7 of 9 Period: 284.845 d
KOI: K03529 Corr: No Ephemeris Match

Kp: 15.17 R*: 0.82 Rs Teff: 5075.0 K Logg: 4.50 Fe/H: 0.020



TPS TCE Results:

Period = 284.84483 d
Epoch = 318.9883 BKJD

DV fit results are unavailable

DV Diagnostic Results:

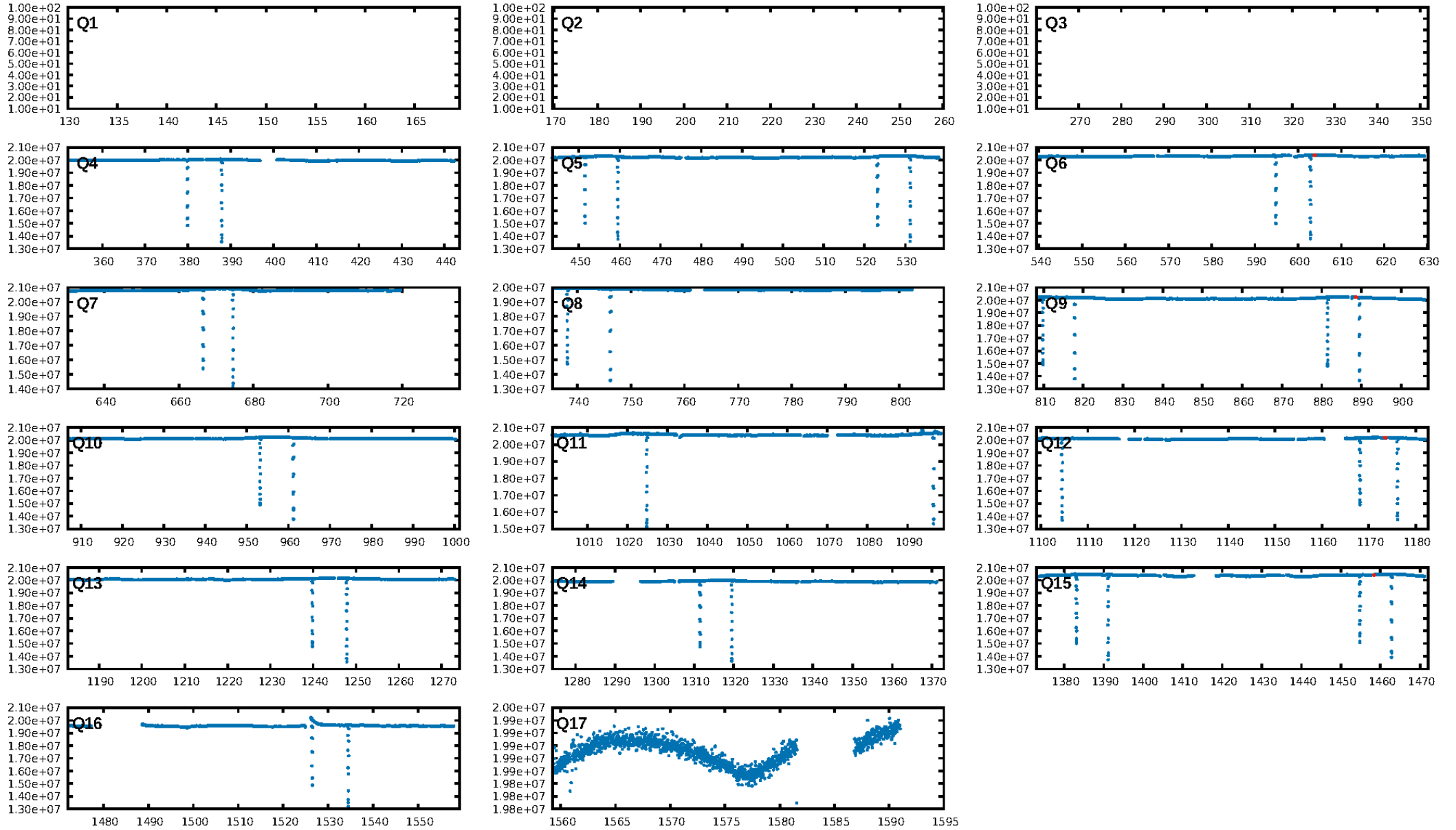
ShortPeriod-sig: 100.0% [35.99σ]
LongPeriod-sig: 2.6% [0.03σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.9963

Centroid-sig: 82.2%
Centroid-so: 3.382 arcsec [0.17σ]
OotOffset-rm: 1.294 arcsec [0.47σ]
KicOffset-rm: 4.428 arcsec [1.74σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.00 [0/4]
DiffImageOverlap-fno: 0.75 [3/4]

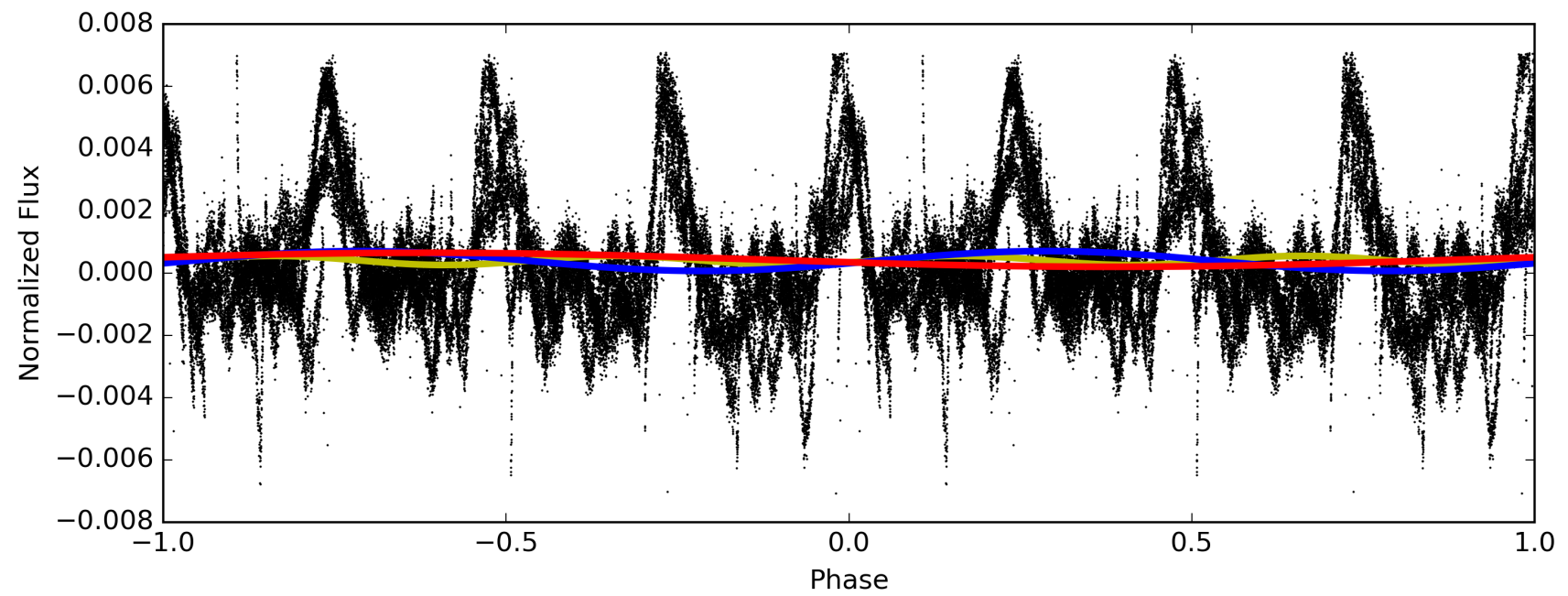
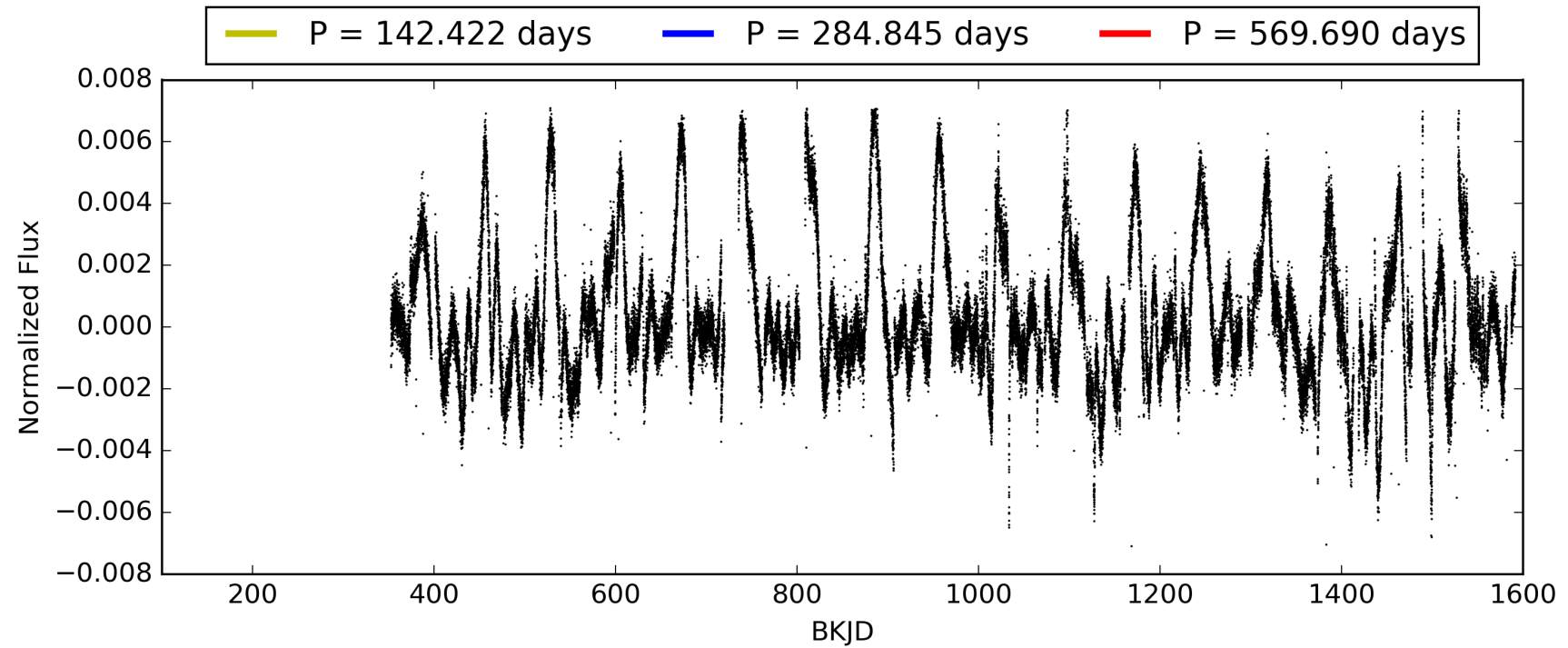
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:09:08 Z

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

TCE 009837544-07, PDC Light Curves

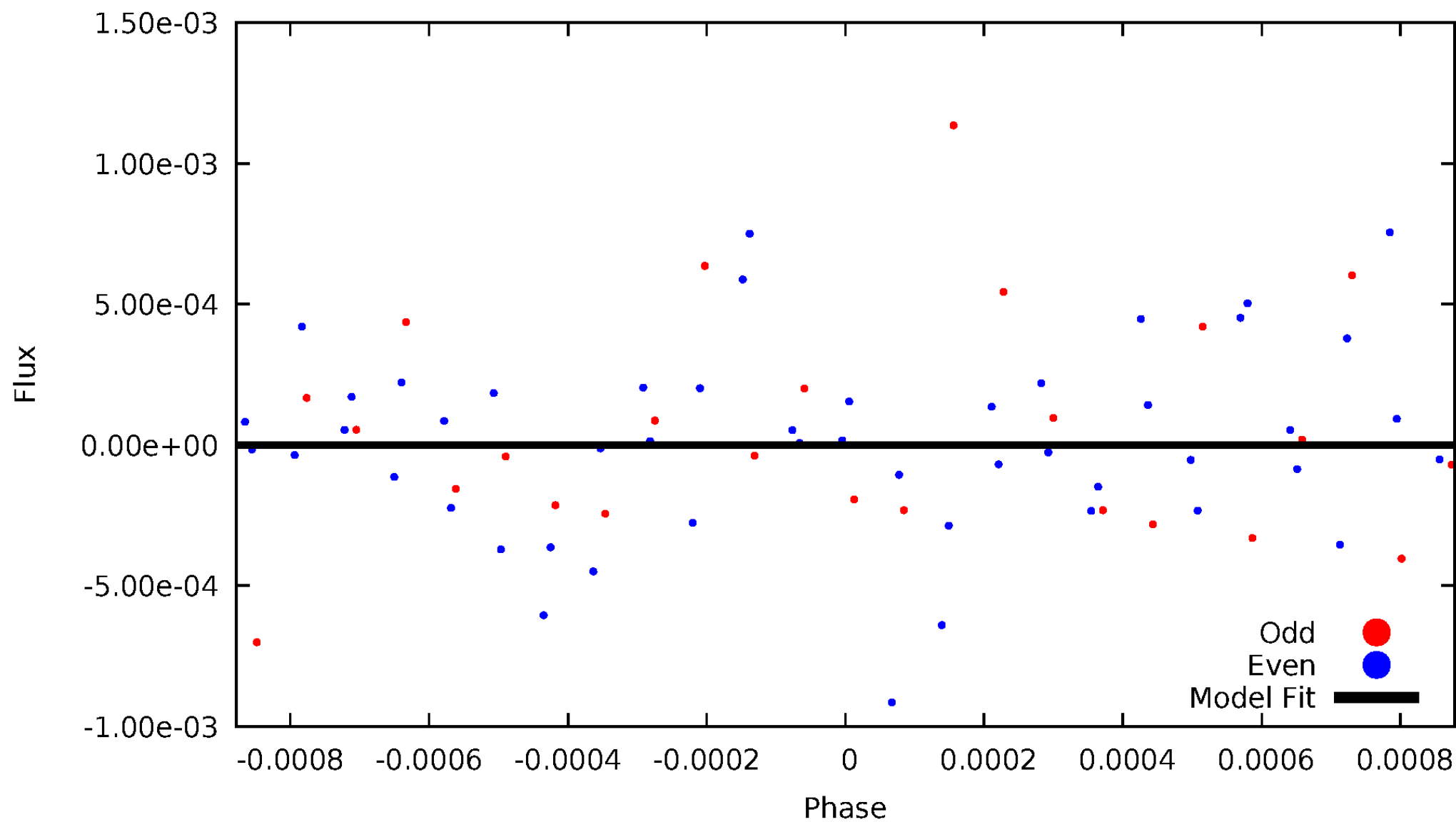


TCE 009837544-07



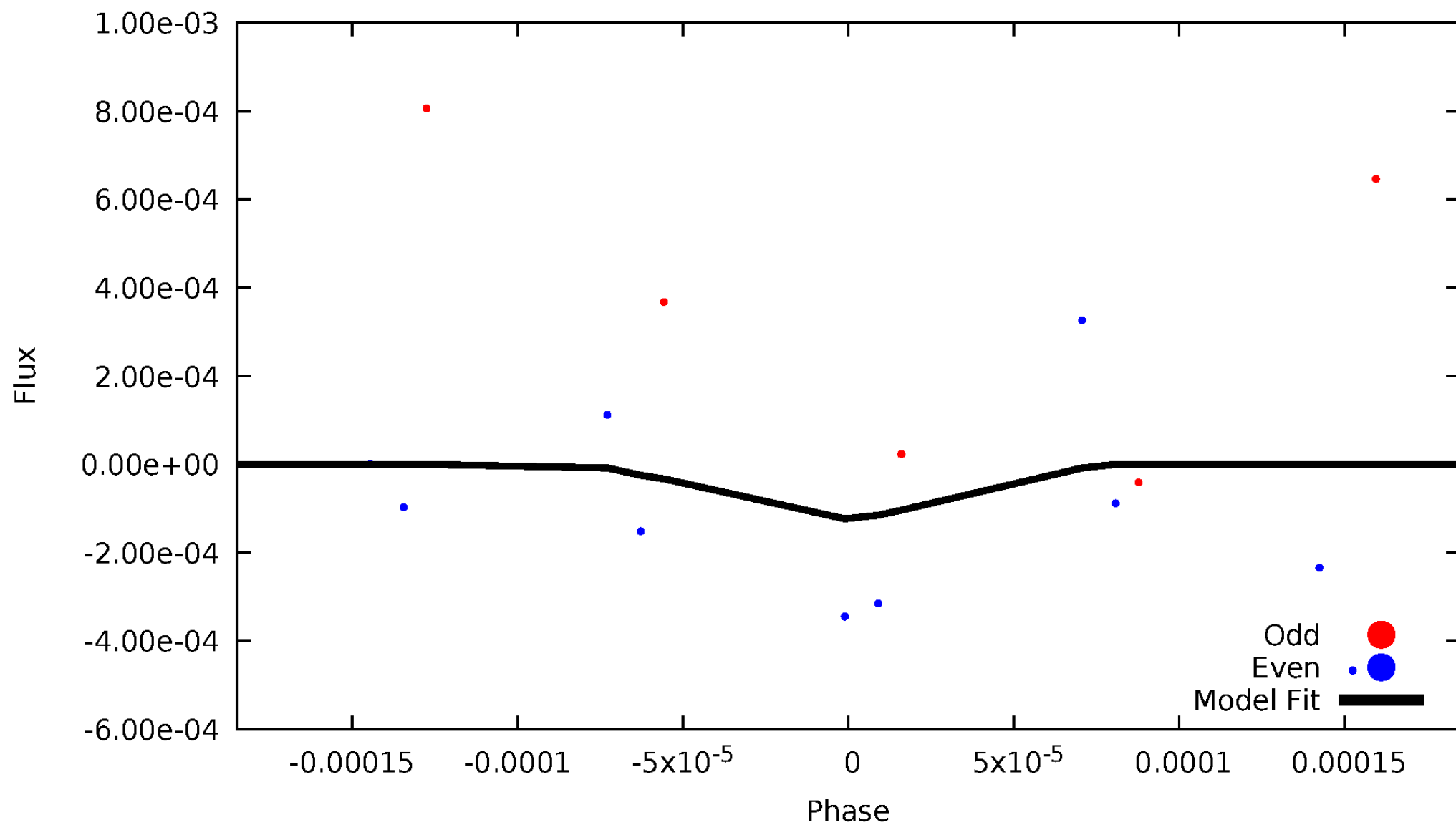
DV Odd/Even

TCE 009837544-07



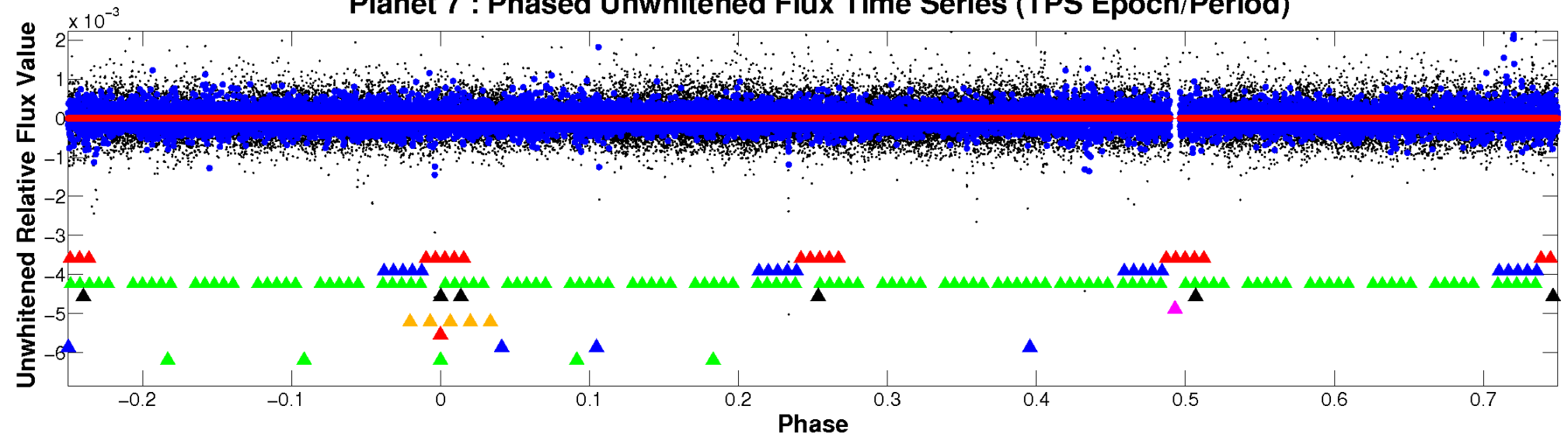
ALT Odd/Even

TCE 009837544-07



Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

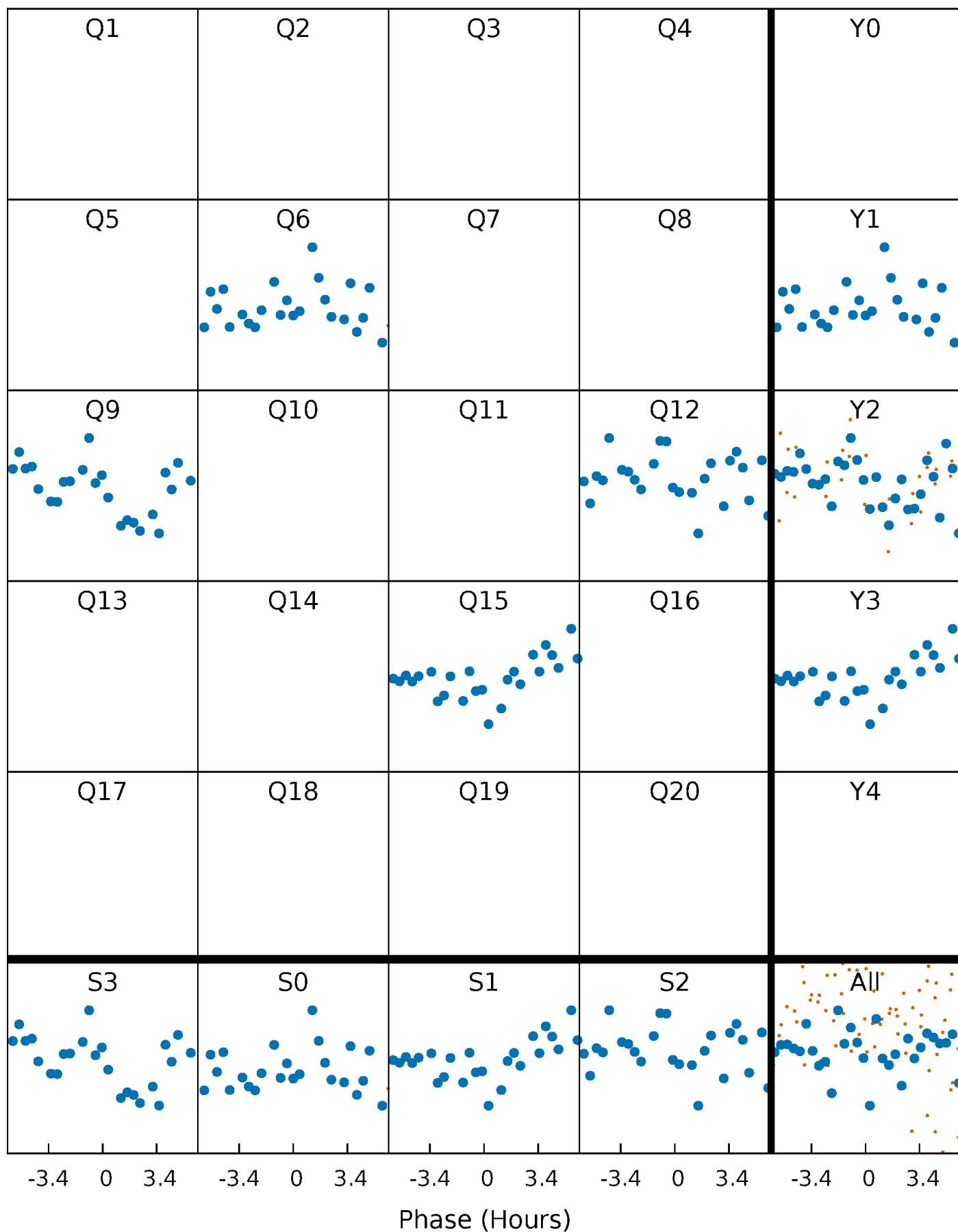


Planet 7 : Phased Whitened Flux Time Series (TPS Epoch/Period)



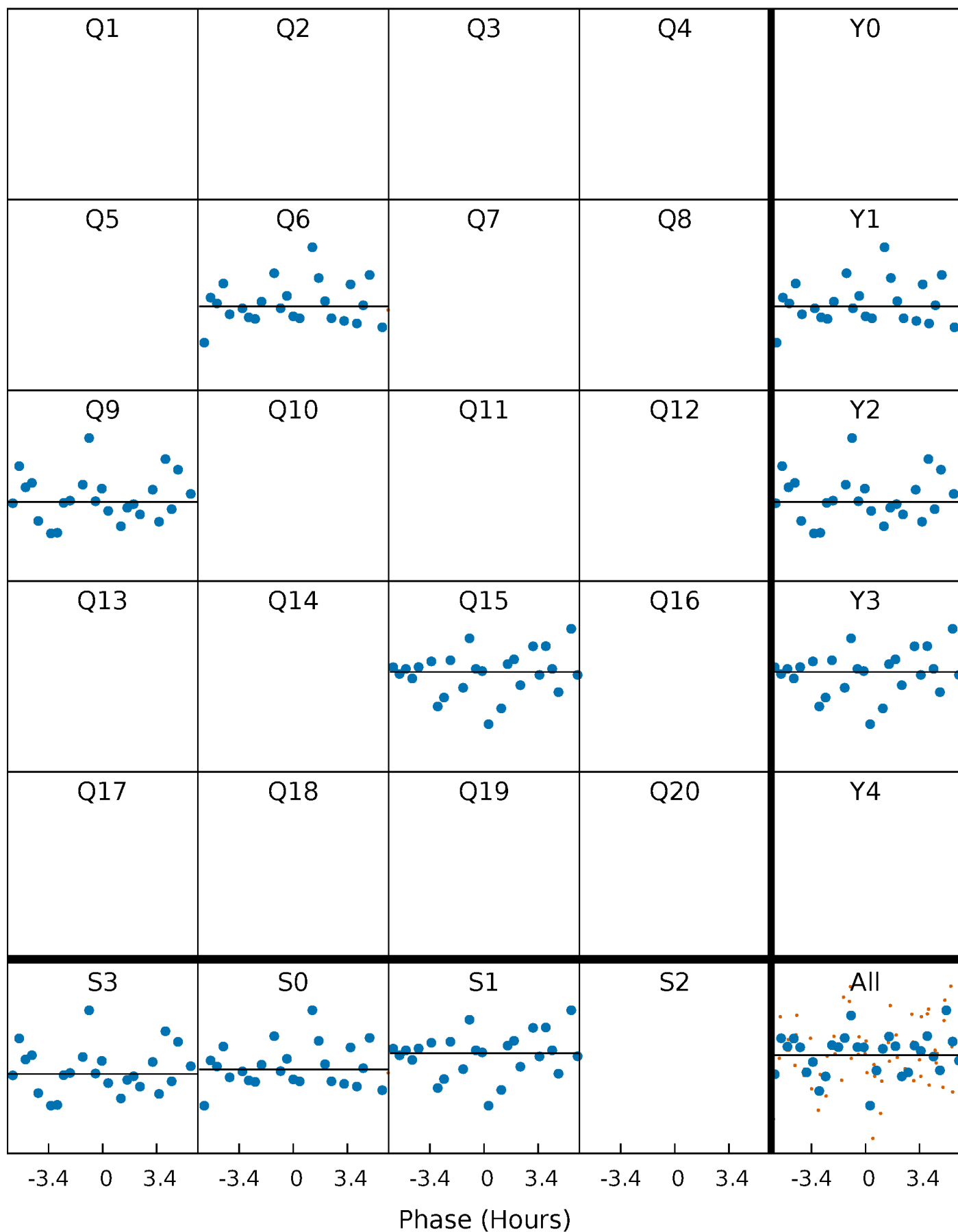
PDC Quarter-Phased Transit Curves

TCE 009837544-07 $P=284.844834$ Days $T_0=318.988322$ (BKJD)



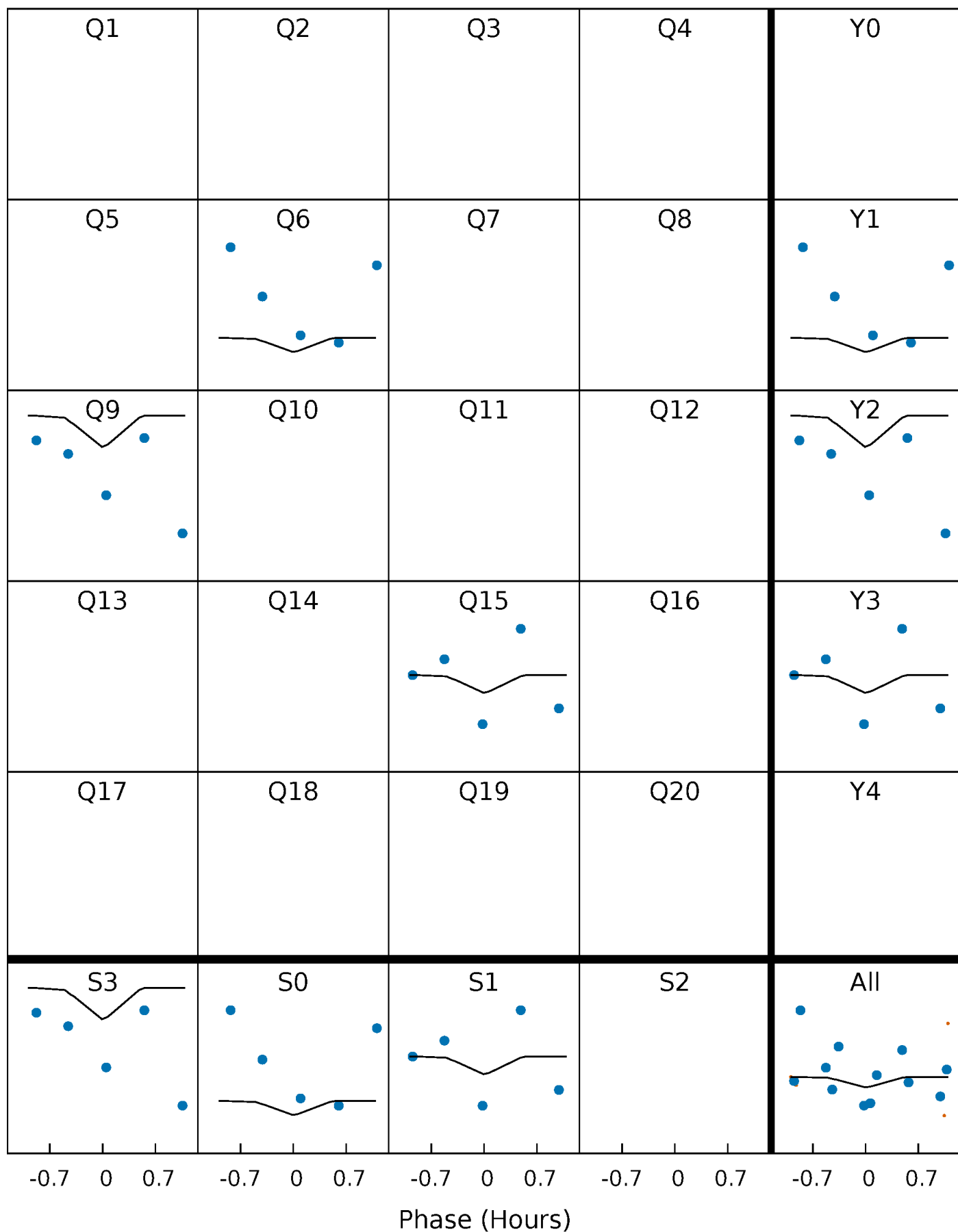
DV Quarter-Phased Transit Curves

TCE 009837544-07 $P=284.844834$ Days $T_0=318.988322$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

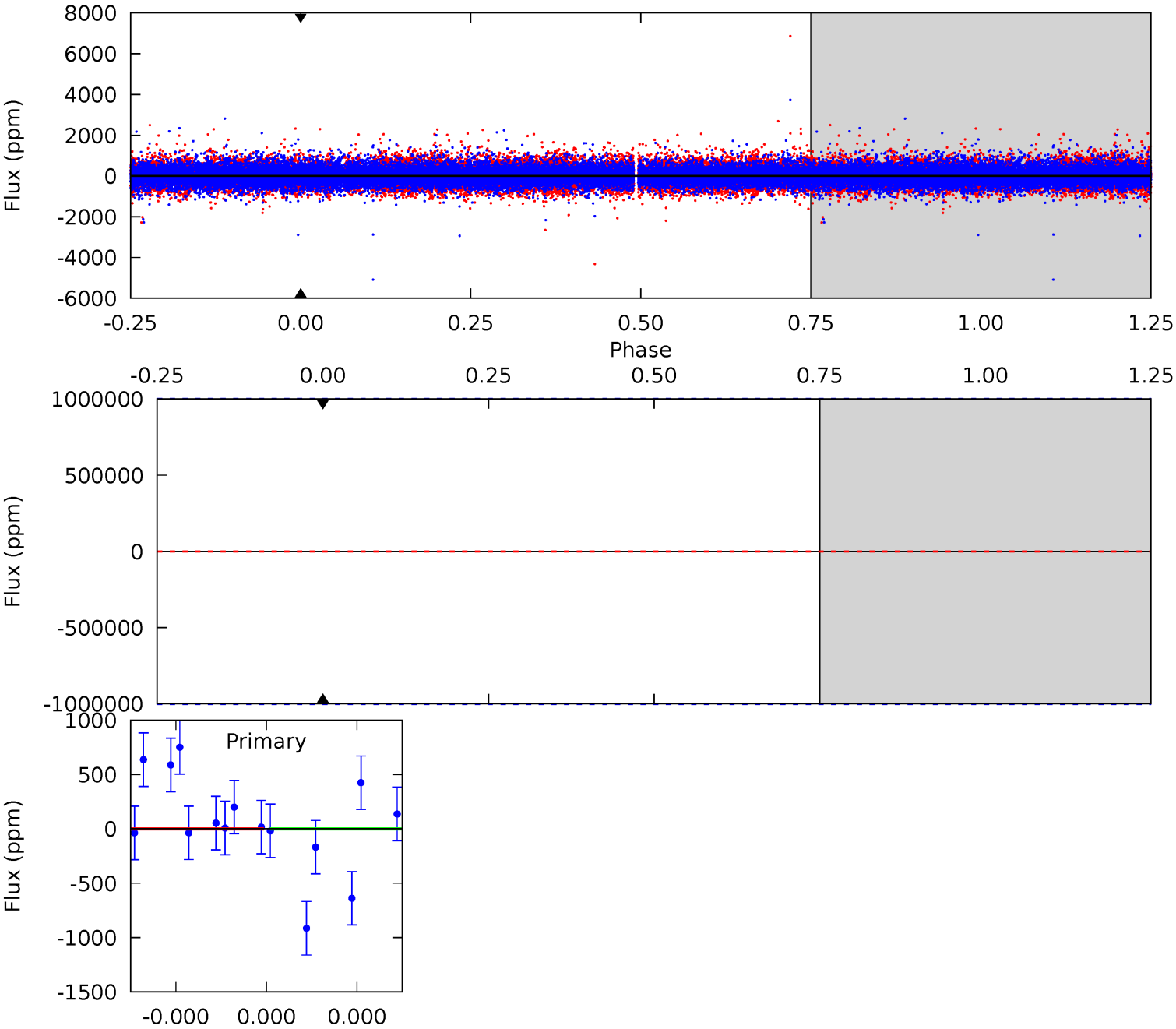
TCE 009837544-07 P=284.844834 Days $T_0=319.089501$ (BKJD)



DV Model-Shift Uniqueness Test

009837544-07, P = 284.844834 Days, E = 318.988322 Days

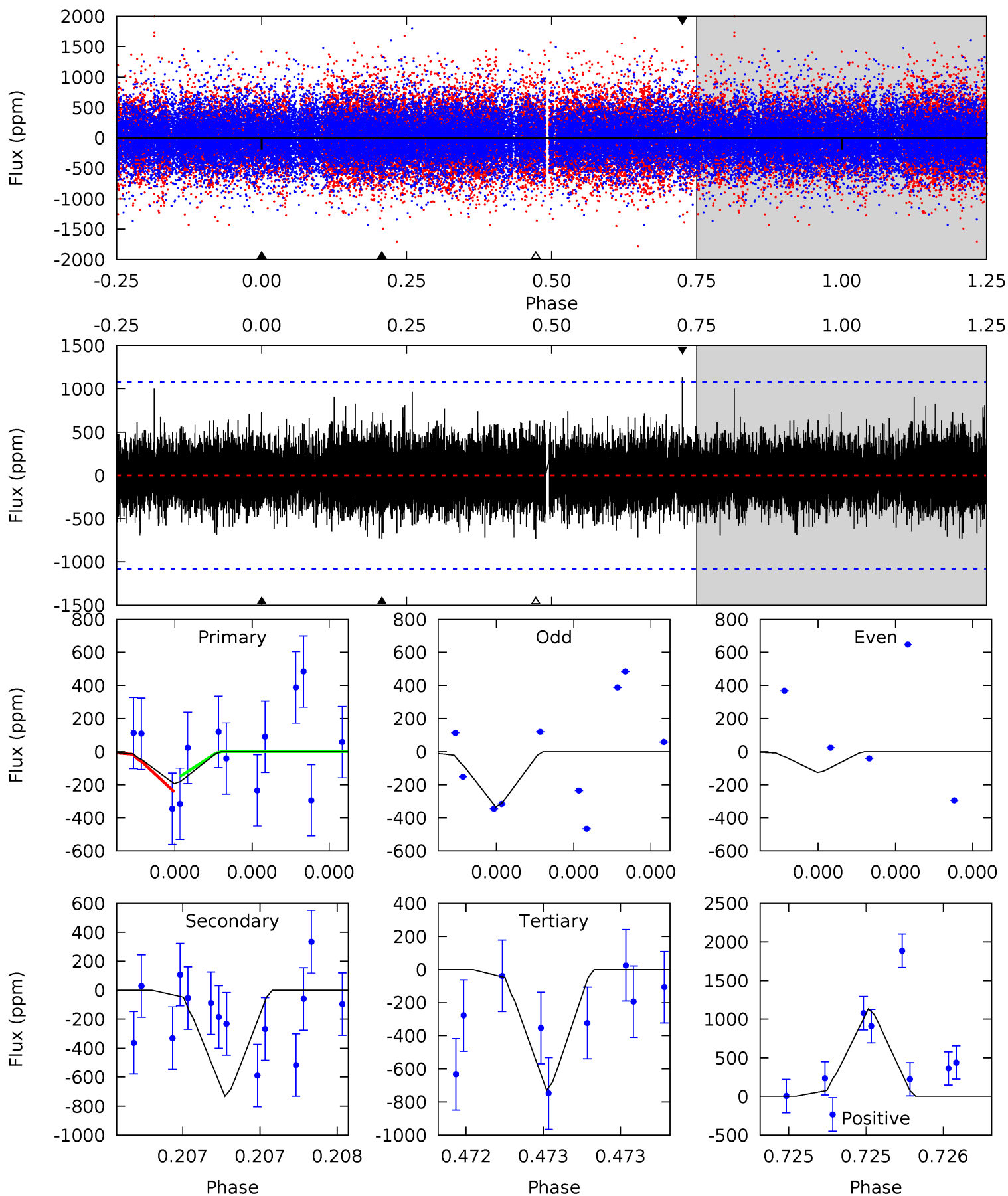
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009837544-07, P = 284.844834 Days, E = 319.089501 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.04	3.94	3.92	6.09	5.80	3.82	1.03	-2.88	-5.05	0.01	-2.15	0.56	0.55	0.61	0.25



Stellar Parameters For KIC 009837544

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5075^{+179}_{-179}	$4.497^{+0.095}_{-0.095}$	$0.020^{+0.300}_{-0.300}$	$0.824^{+0.088}_{-0.097}$	$0.777^{+0.098}_{-0.057}$	$1.957^{+0.744}_{-0.493}$
	+4%/-4%	+2%/-2%	+1500%/-1500%	+11%/-12%	+13%/-7%	+38%/-25%
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 009837544-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$8.93^{+7.96}_{-5.70}$	323^{+16}_{-16}	3834^{+8571}_{-14547}	$8484^{+829539}_{-610985}$
Alt.	-733 ± 186	$6.56^{+6.58}_{-4.51}$	322^{+15}_{-15}	3552^{+2004}_{-724}	5843^{+53994}_{-4537}

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 $A_{obs} \gg 1.0$

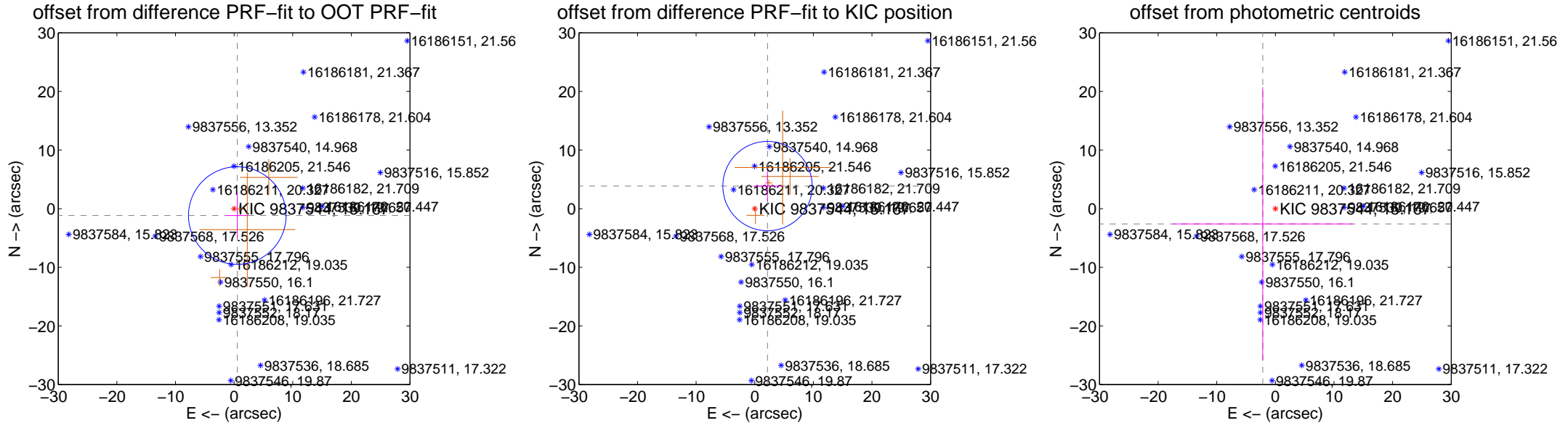
DV Centroid Data

Supplemental centroid analysis for 009837544-07. Kepler magnitude: 15.17. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 4.72 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	1.294 ± 2.775	0.47	-0.542 ± 1.902	-1.175 ± 3.900
PRF-fit source offset from KIC position	4.428 ± 2.540	1.74	-2.182 ± 2.420	3.853 ± 2.577
photometric centroid source offset	3.38 ± 20.46	0.17	2.15 ± 15.35	-2.61 ± 23.31

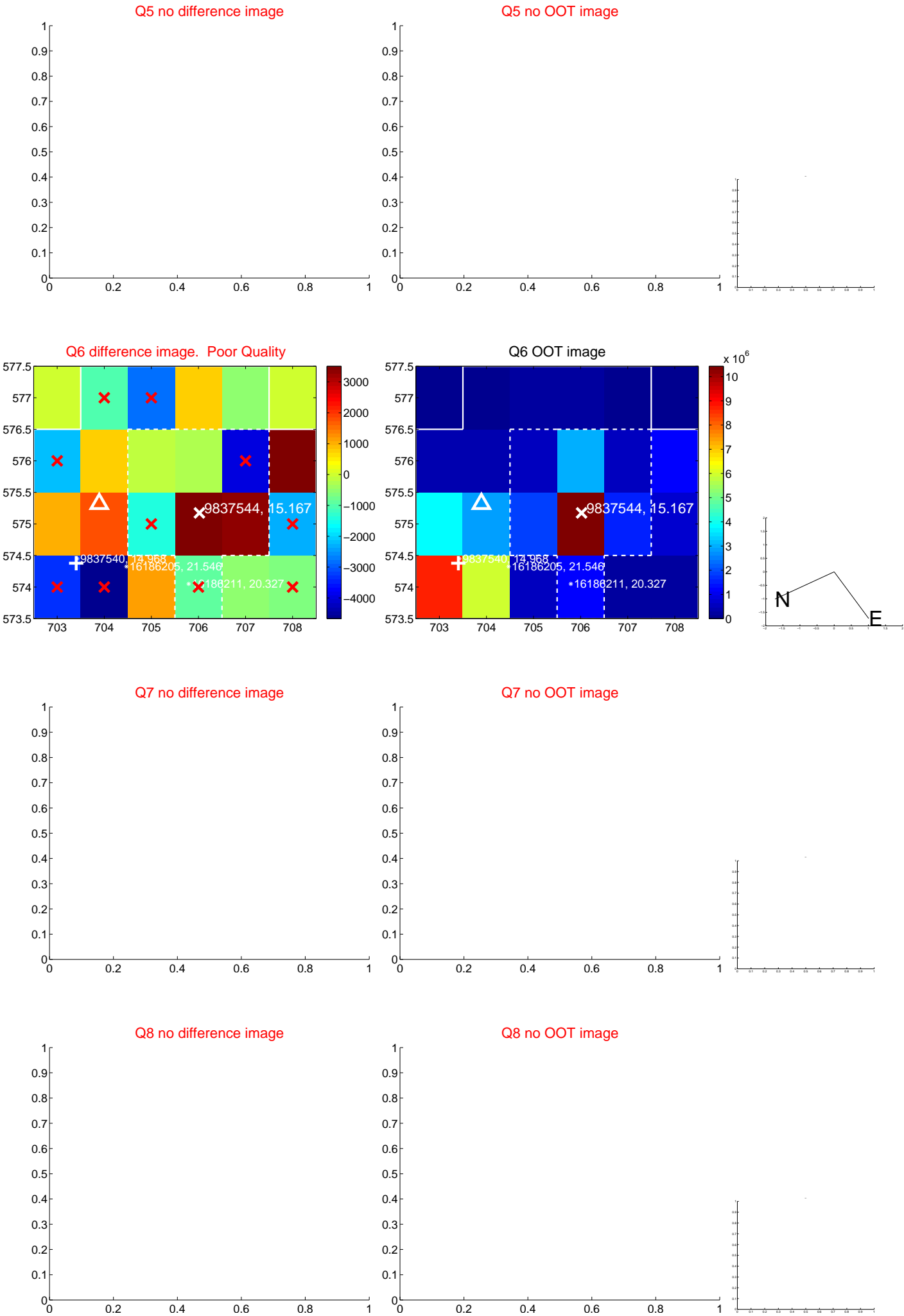


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

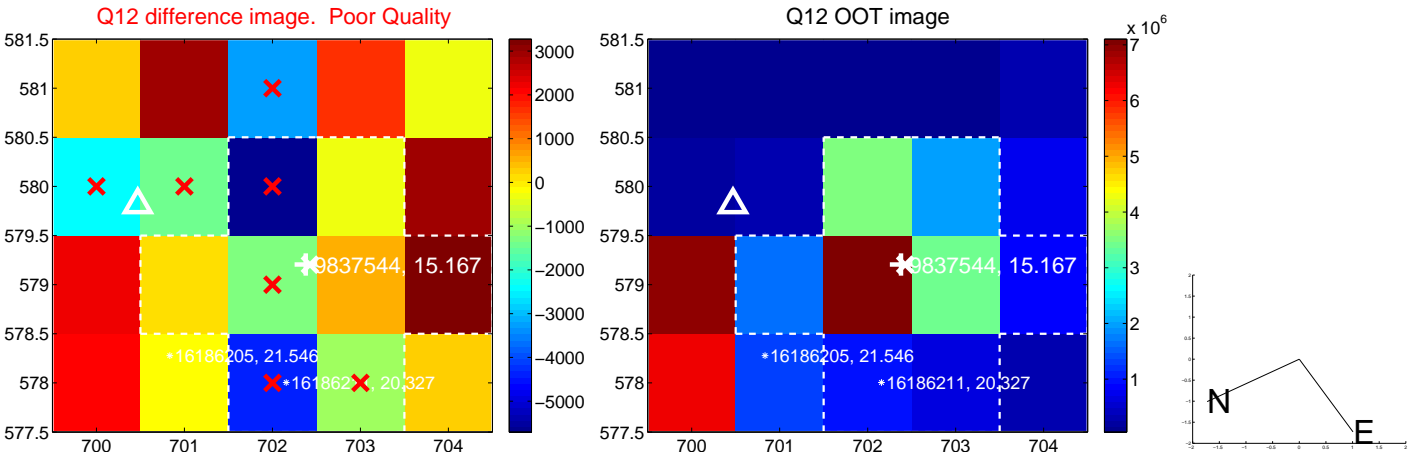
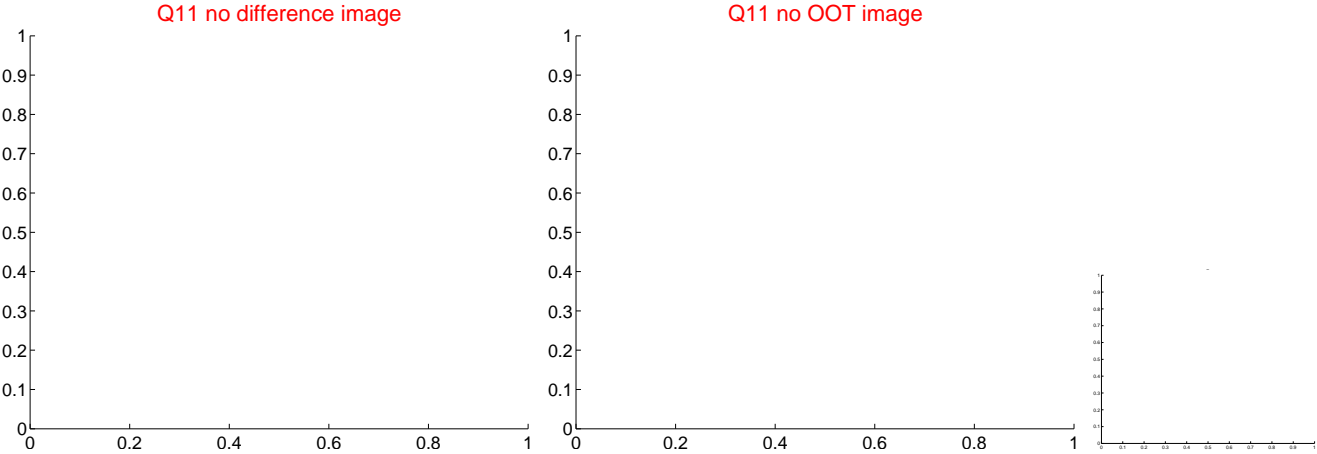
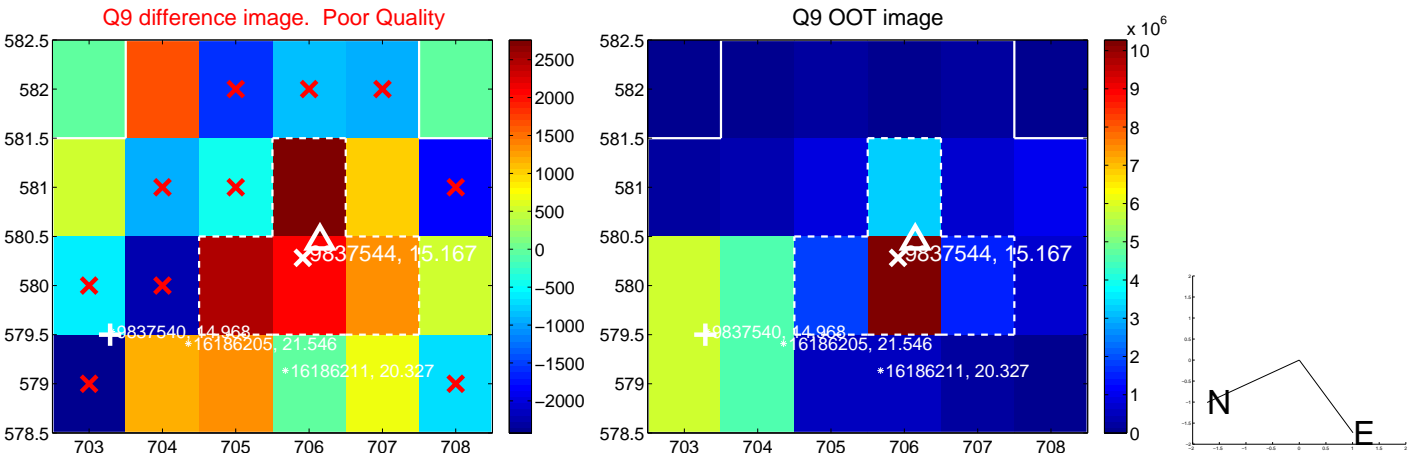
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



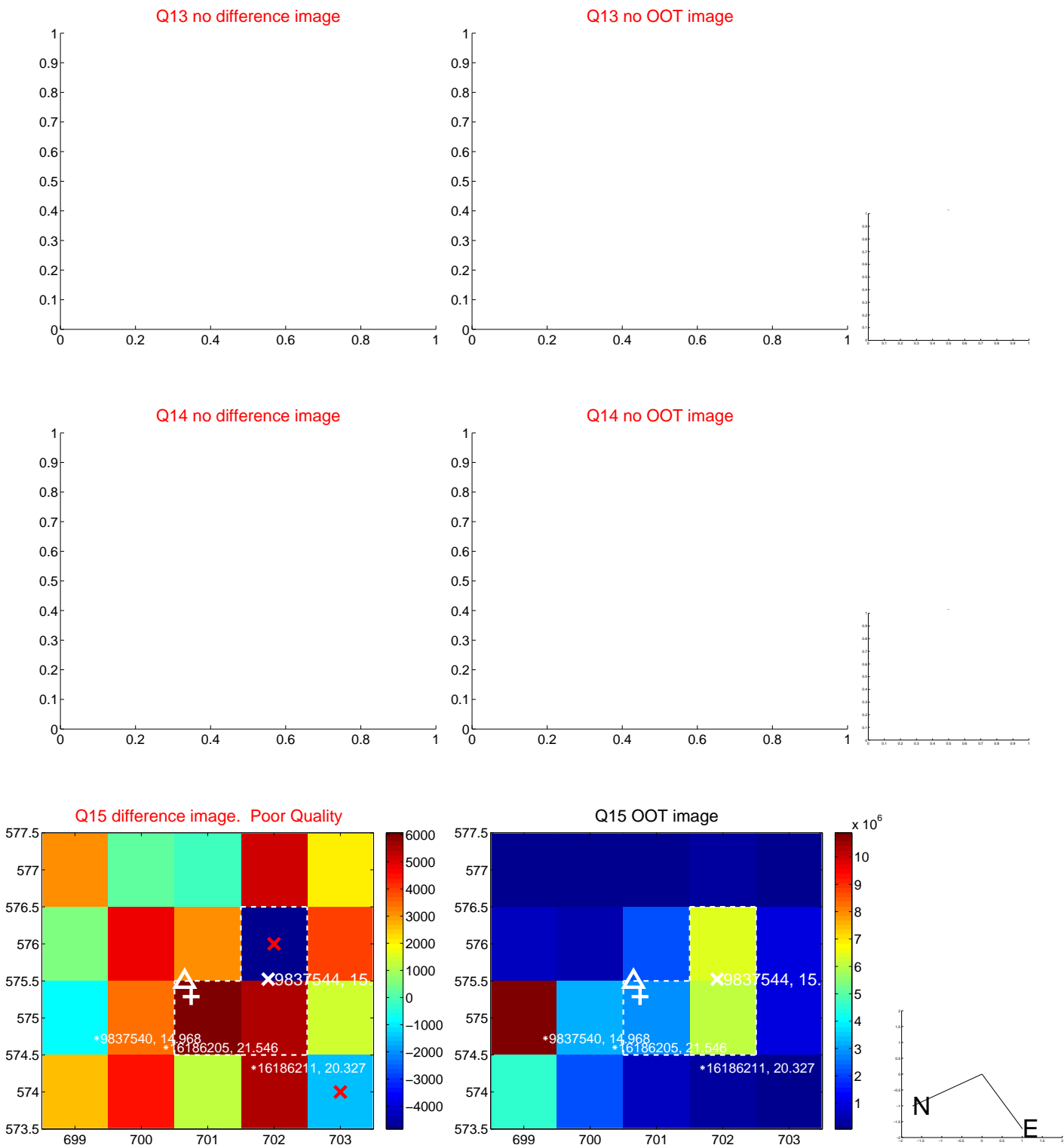
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



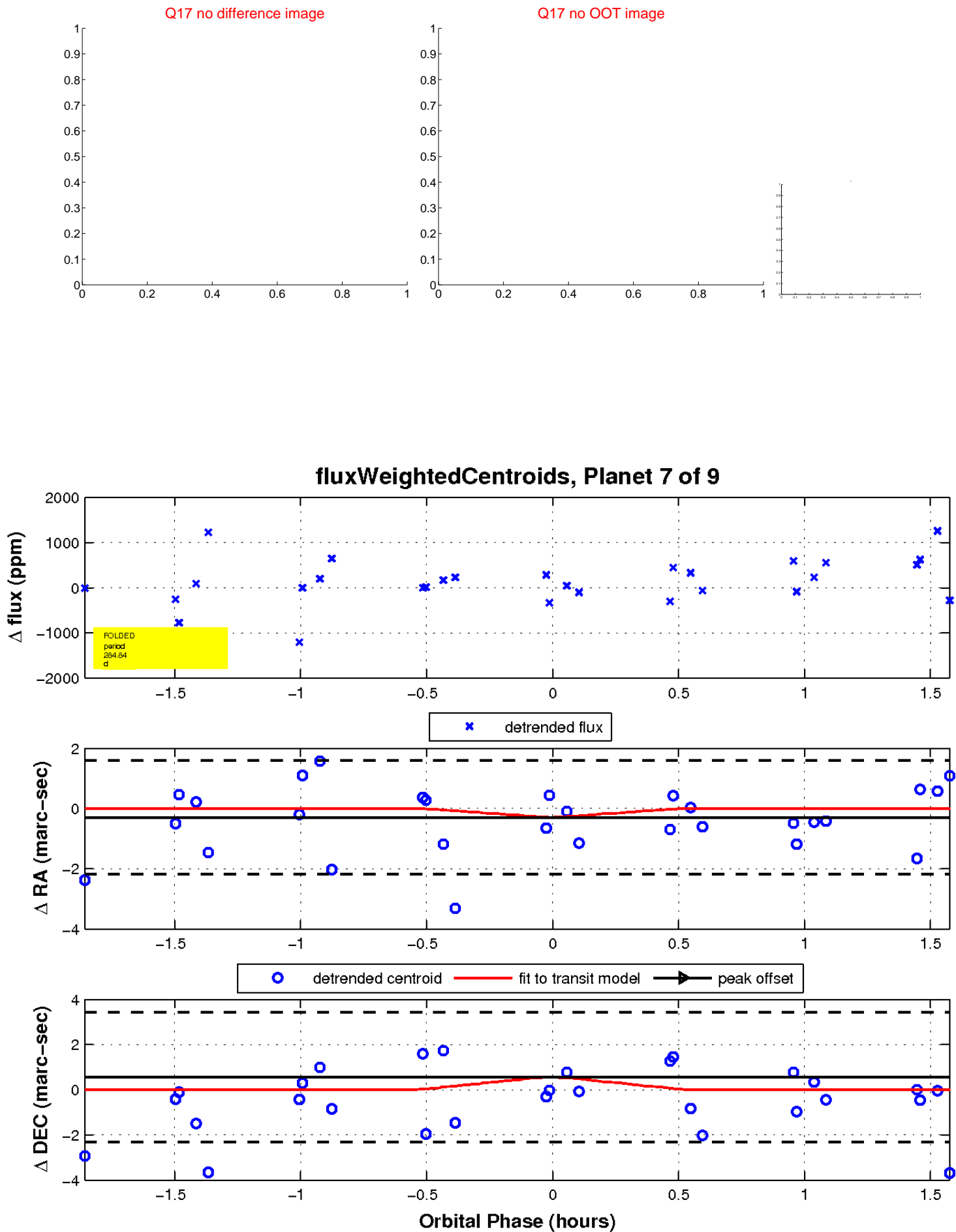
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



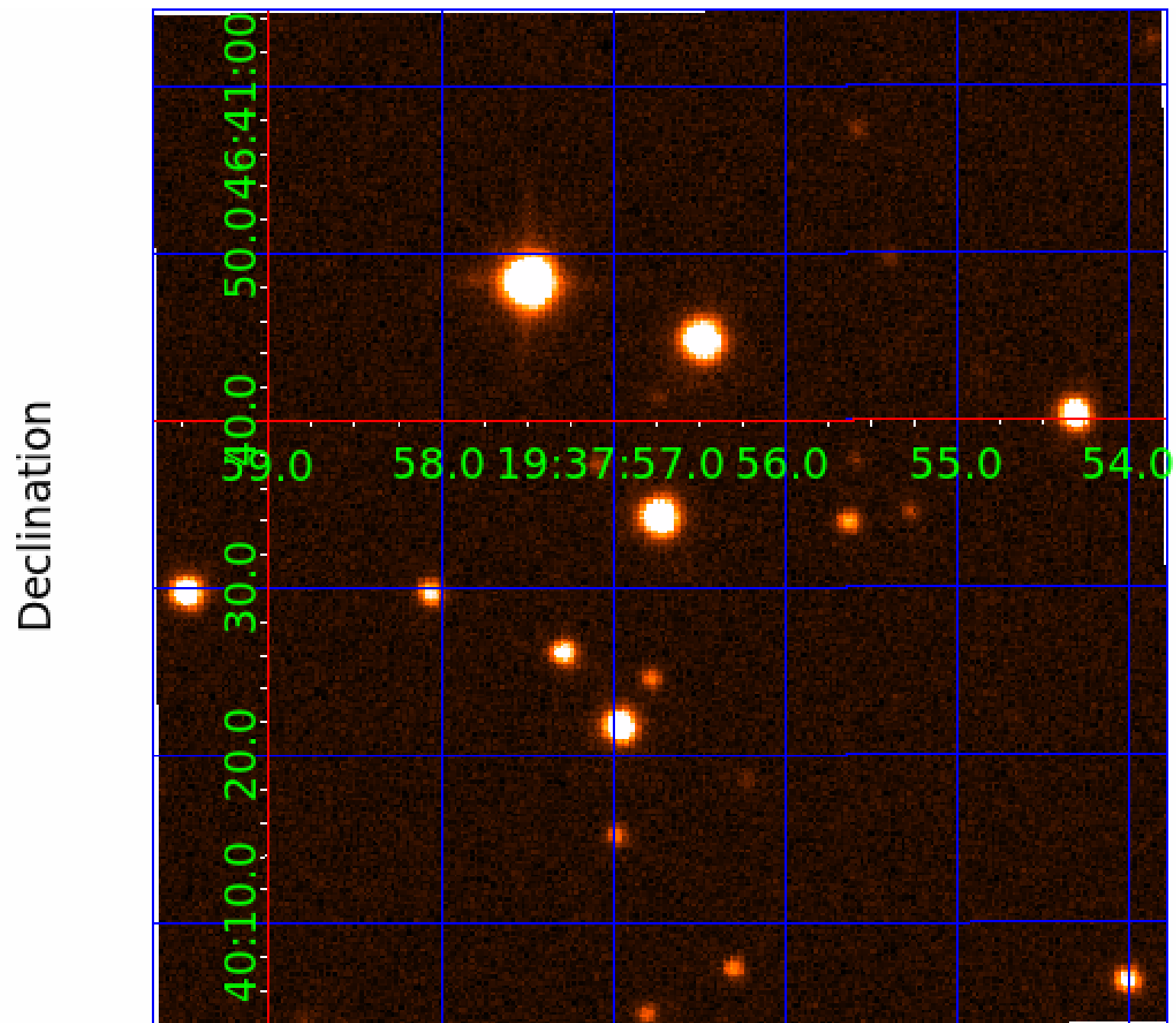
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



UKIRT Image



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})
009837544-01	OBS	3529.01	71.661165	172.916198	325293.0	4.500	4634.2	-1.0	0.82	5075	38.32	4.18
009837544-02	OBS	No	71.661673	164.885808	264768.2	3.500	4015.5	-1.0	0.82	5075	40.49	4.18
009837544-03	OBS	No	11.943528	140.767396	12008.6	15.000	148.2	-1.0	0.82	5075	8.76	45.61
009837544-04	OBS	No	212.672492	322.884906	7967.5	15.000	65.3	-1.0	0.82	5075	7.14	0.98
009837544-05	OBS	No	284.865731	174.540434	575.8	14.949	64.7	5.3	0.82	5075	2.08	0.66
009837544-06	OBS	No	288.684275	313.175858	1168.4	10.134	26.5	9.8	0.82	5075	5.39	0.65
009837544-07	OBS	No	284.844834	318.988322	5958.6	3.000	28.9	-1.0	0.82	5075	6.18	0.66
009837544-09	OBS	No	258.775431	371.133438	556.6	17.124	17.9	5.3	0.82	5075	2.22	0.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009837544-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE—CENT_NOFITS
009837544-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
009837544-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS—HALO_GHOST
009837544-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009837544-05	OBS	FP	0.00	1	0	1	0	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
009837544-06	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—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009837544-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009837544-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—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

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 009837544-09

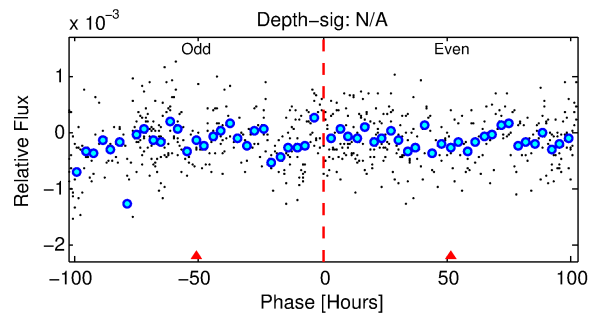
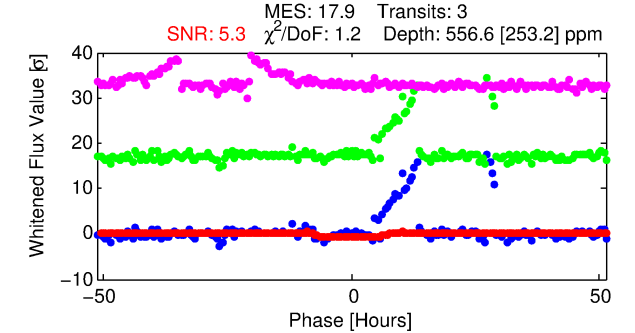
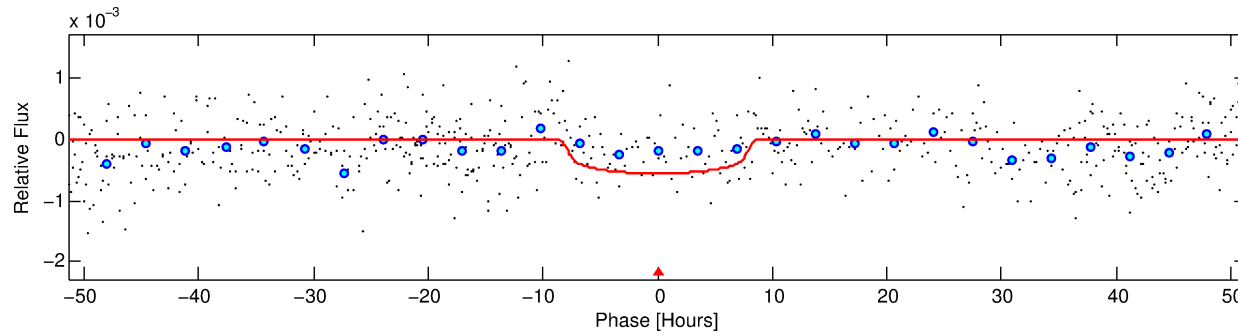
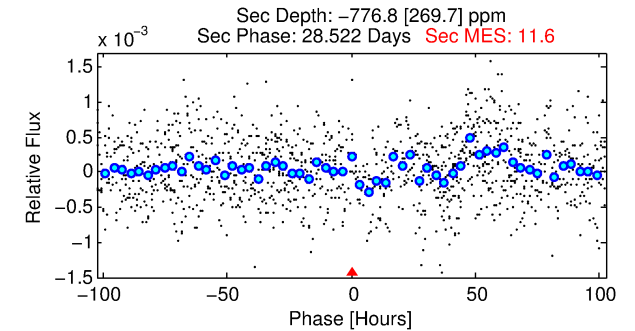
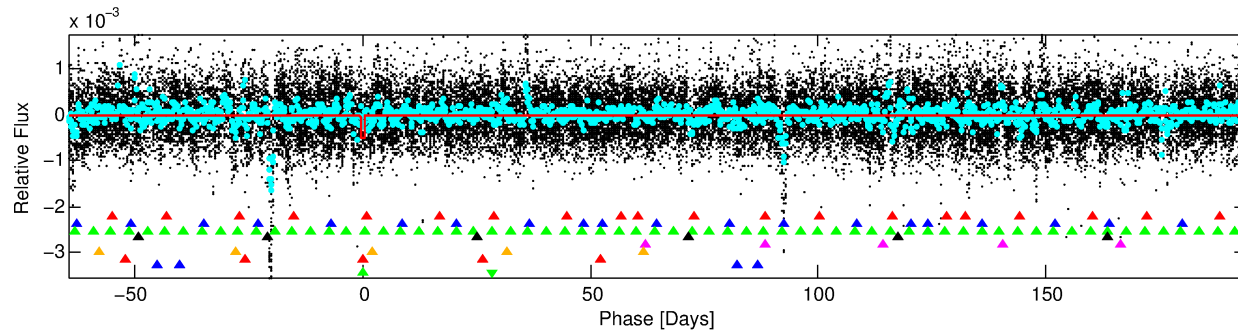
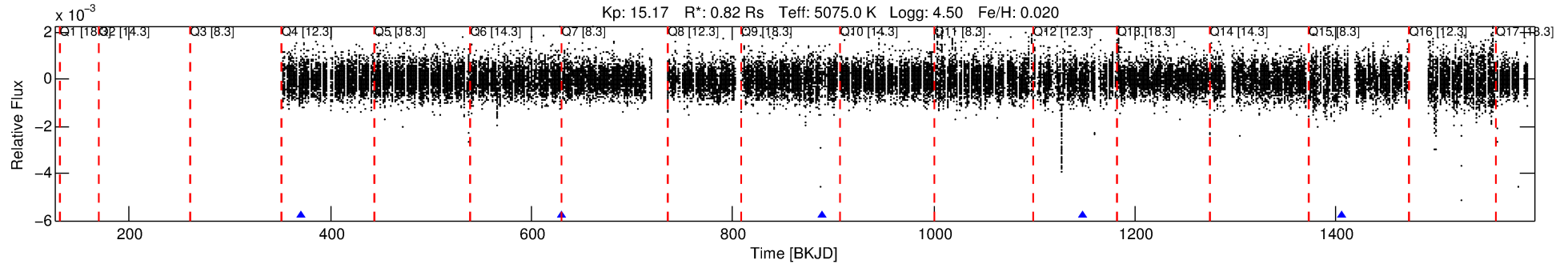
No Significant Match Found

DV One-Page Summary

KIC: 9837544 Candidate: 9 of 9 Period: 258.775 d

KOI: K03529 Corr: No Ephemeris Match

Kp: 15.17 R*: 0.82 Rs Teff: 5075.0 K Logg: 4.50 Fe/H: 0.020



DV Fit Results:

Period = 258.77543 [0.03523] d
Epoch = 371.1334 [0.0773] BKJD
Rp/R* = 0.0247 [0.0148]
a/R* = 69.25 [141.56]
b = 0.83 [0.78]
Seff = 0.76 [0.16]
Teq = 238 [13] K
Rp = 2.22 [1.36] Re
a = 0.7310 [0.0783] AU
Ag = N/A
Teffp = N/A

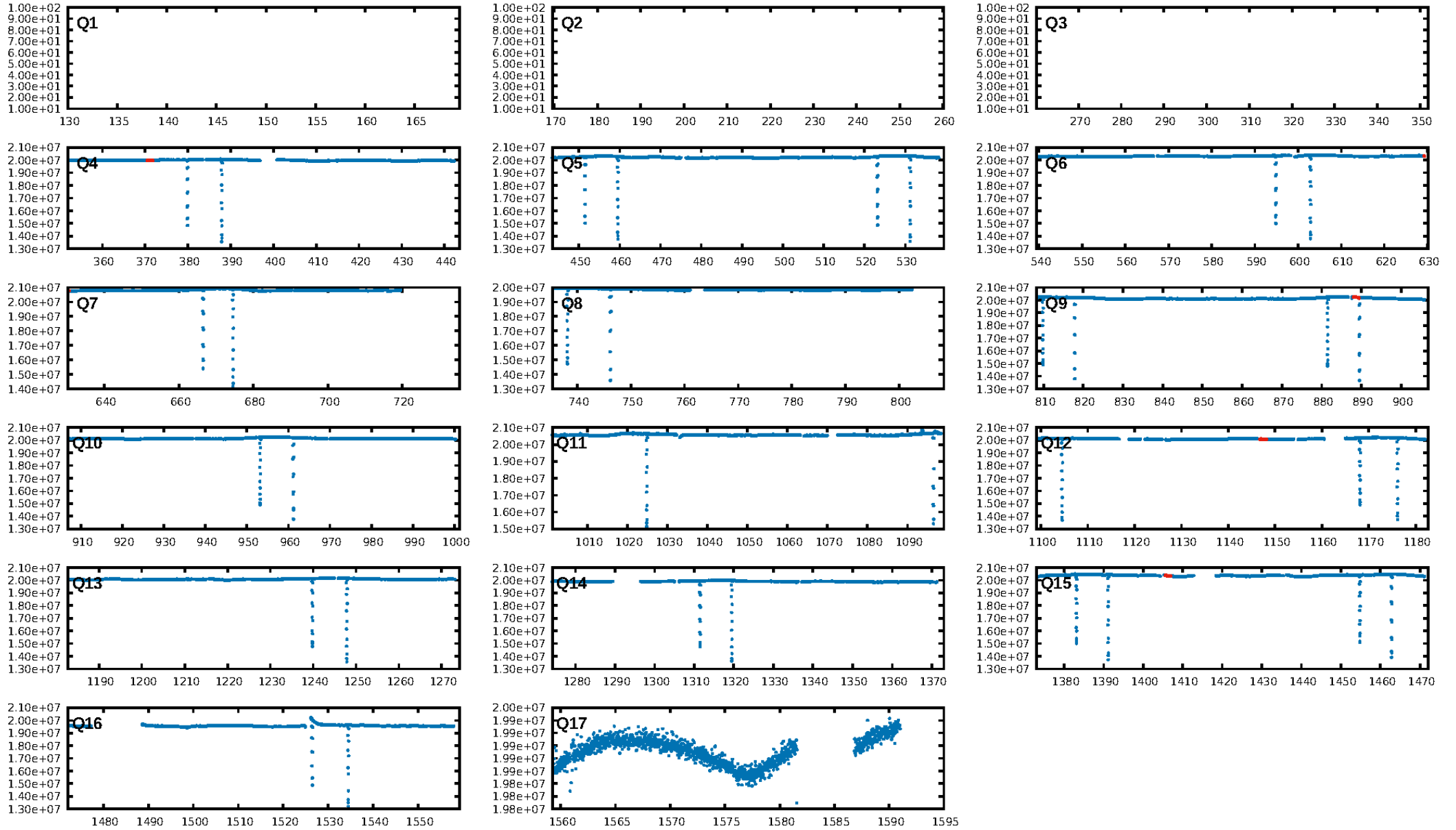
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [48.61σ]
LongPeriod-sig: 100.0% [35.99σ]
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -2.28
Centroid-sig: 12.9%
Centroid-so: 2.908 arcsec [2.11σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [2/2]

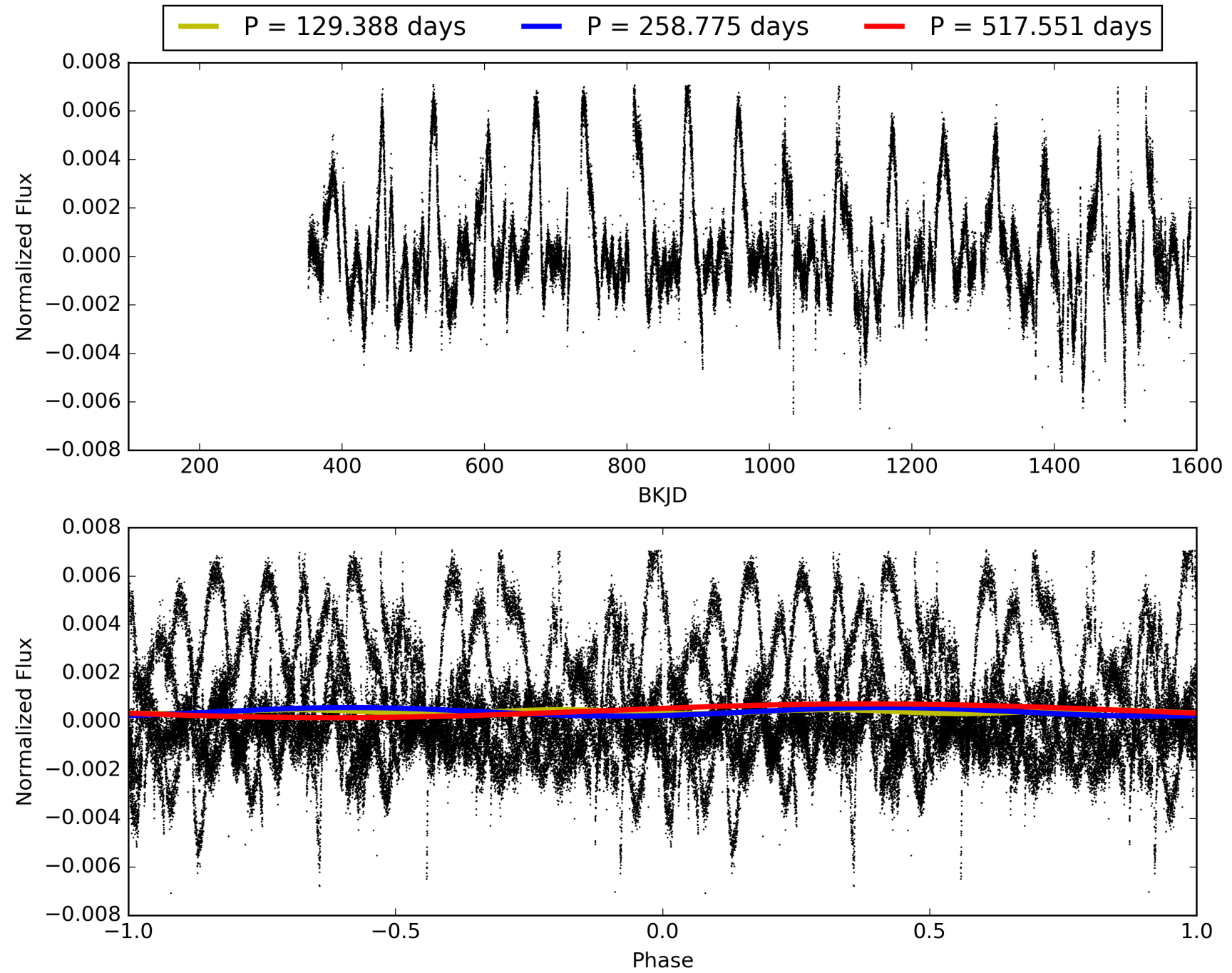
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:09:23 Z

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

TCE 009837544-09, PDC Light Curves

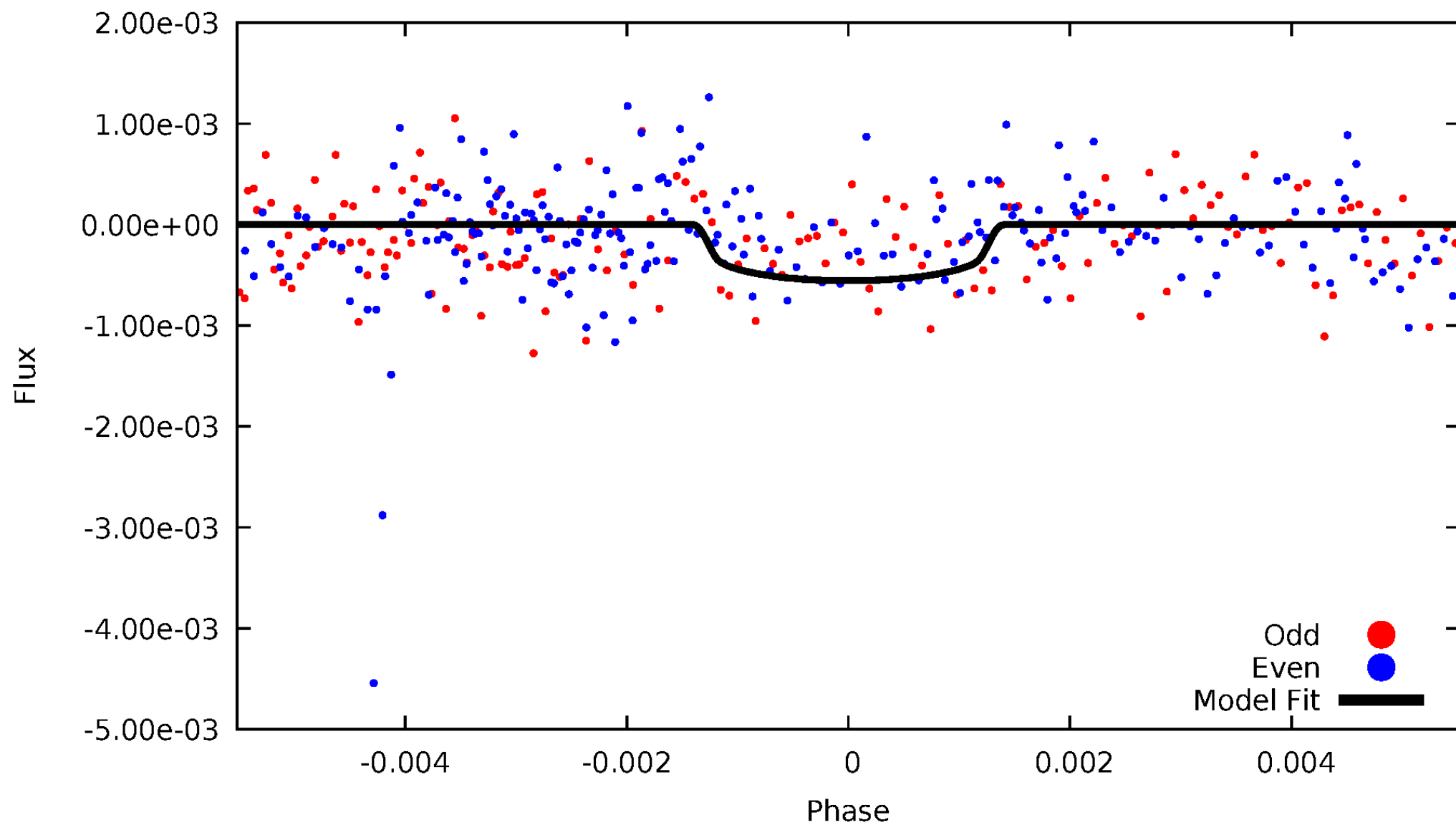


TCE 009837544-09



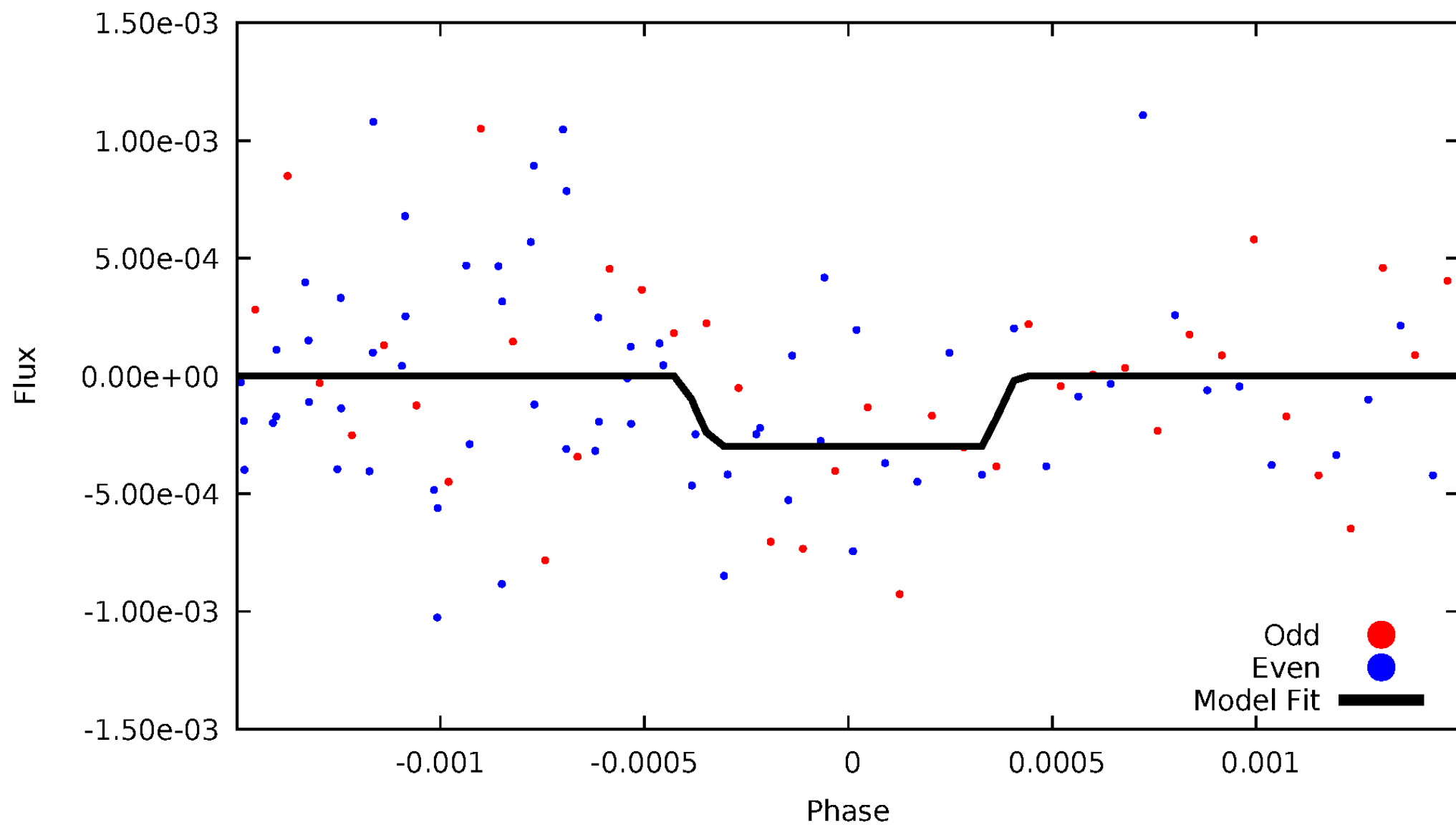
DV Odd/Even

TCE 009837544-09



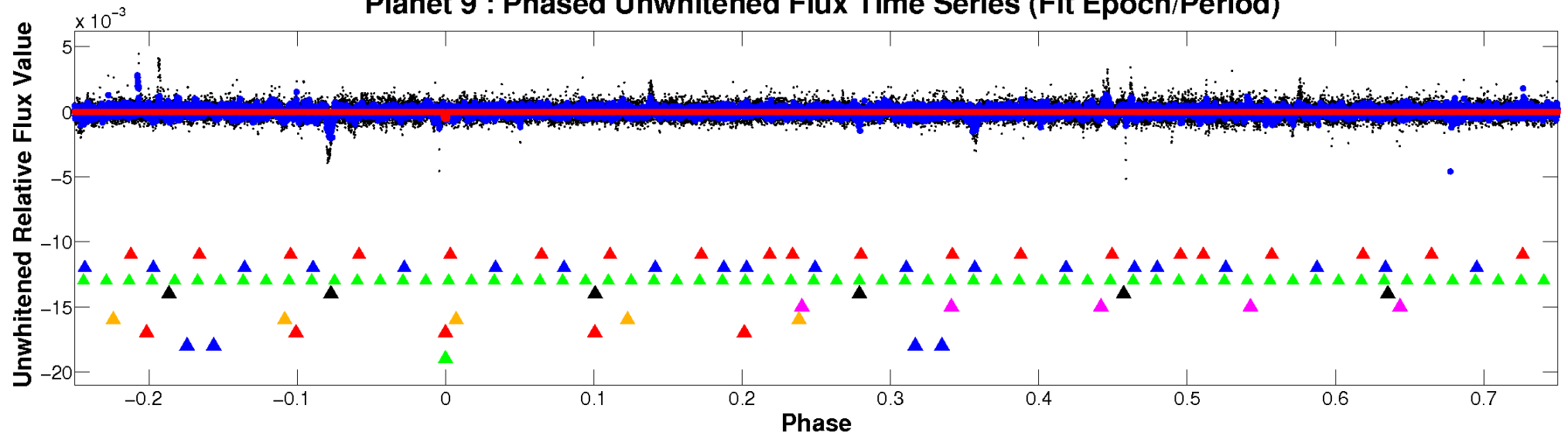
ALT Odd/Even

TCE 009837544-09

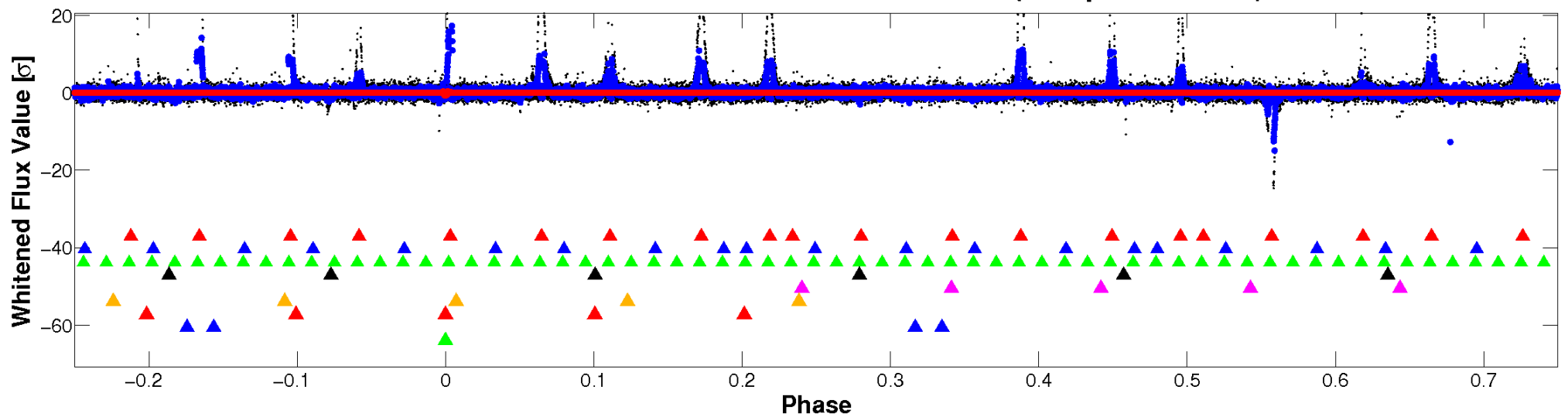


Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

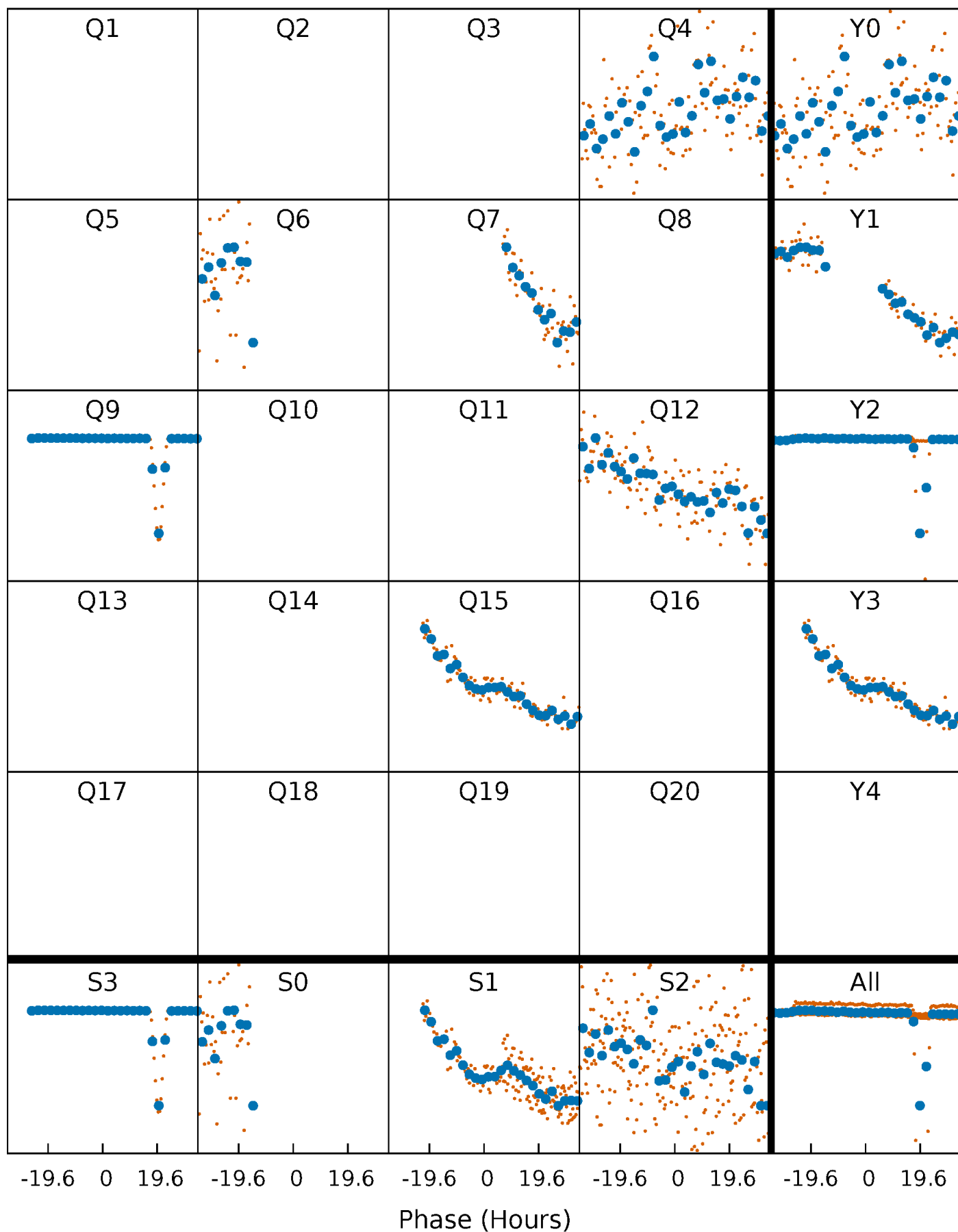


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



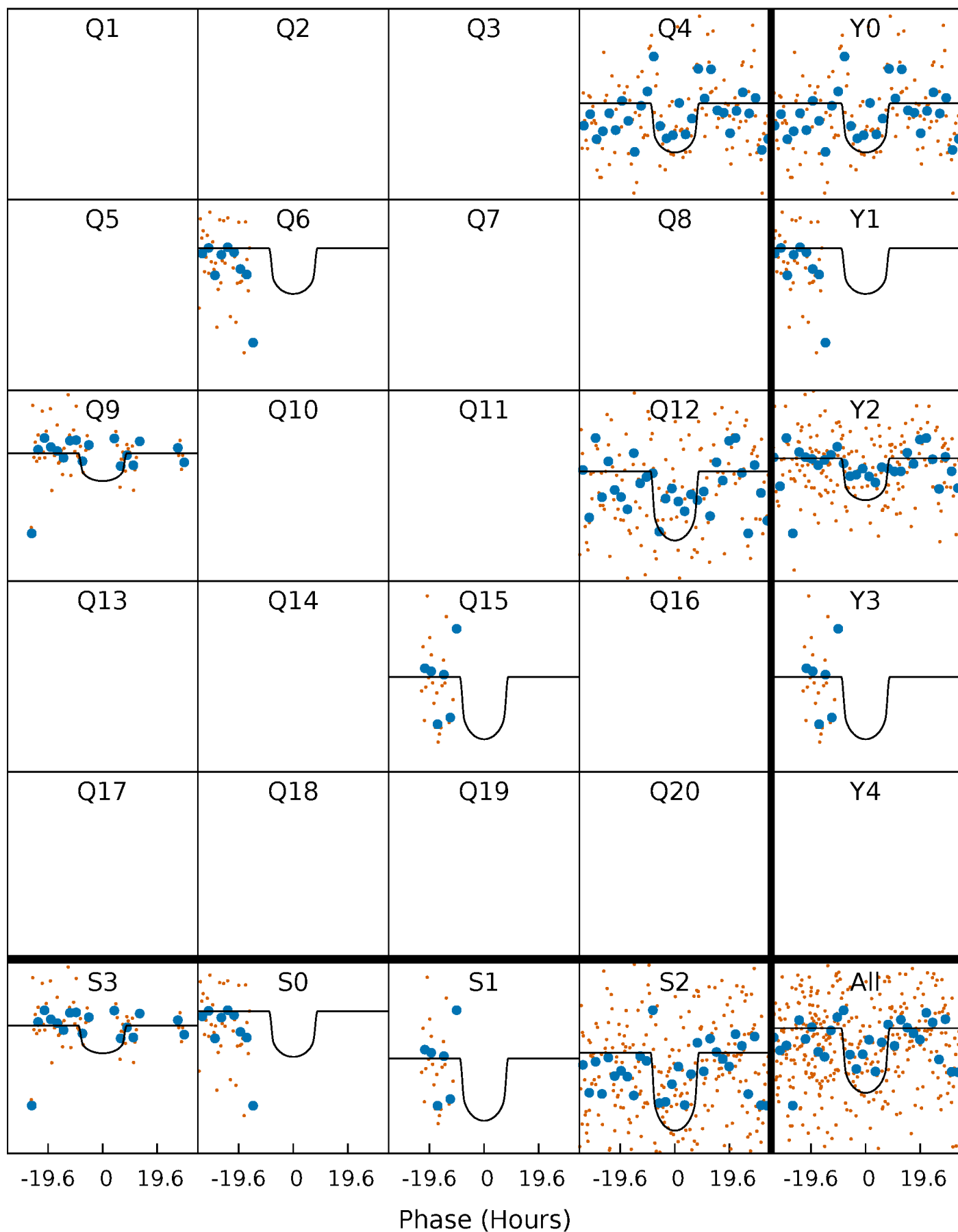
PDC Quarter-Phased Transit Curves

TCE 009837544-09 $P=258.775431$ Days $T_0=371.133438$ (BKJD)



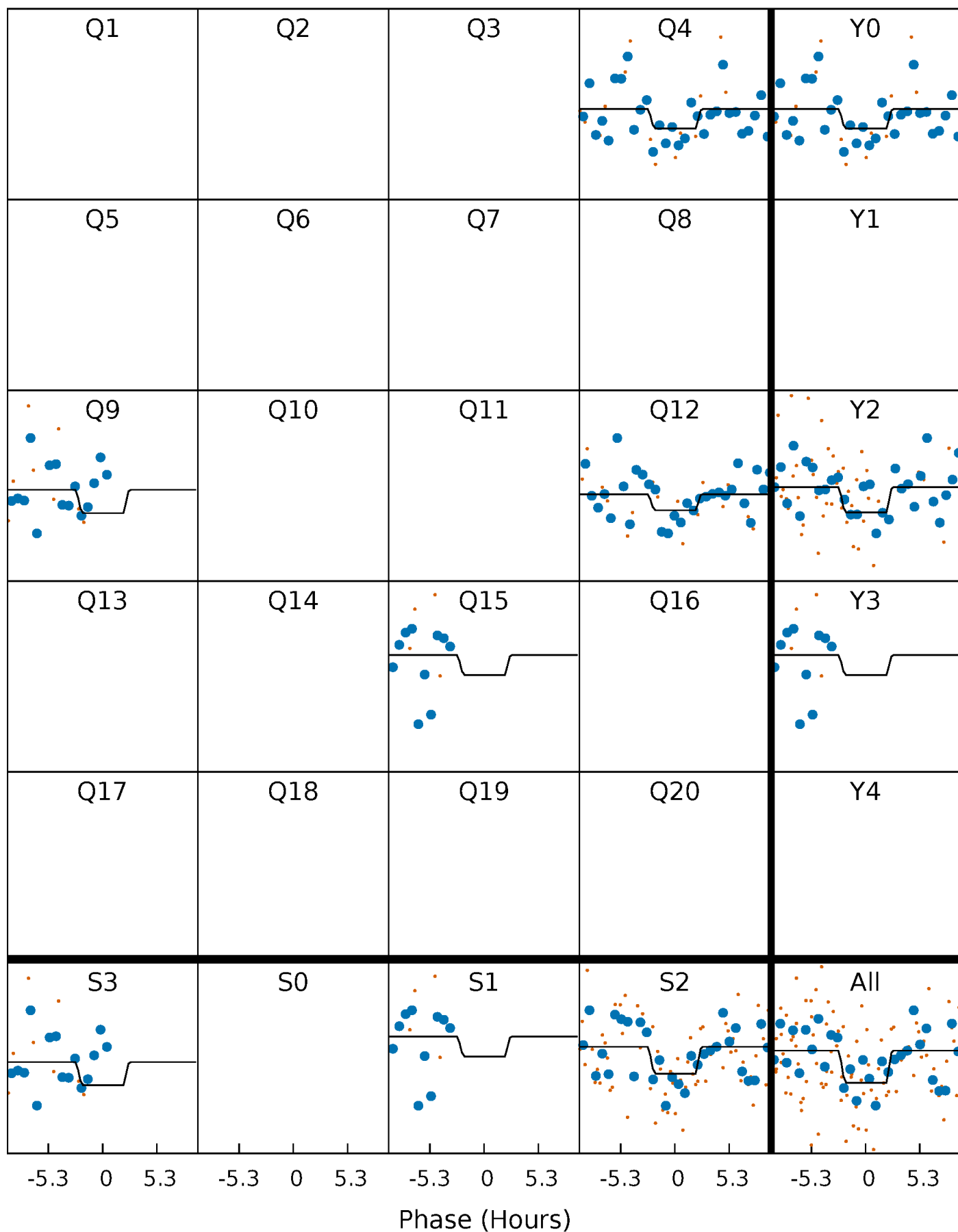
DV Quarter-Phased Transit Curves

TCE 009837544-09 $P=258.775431$ Days $T_0=371.133438$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

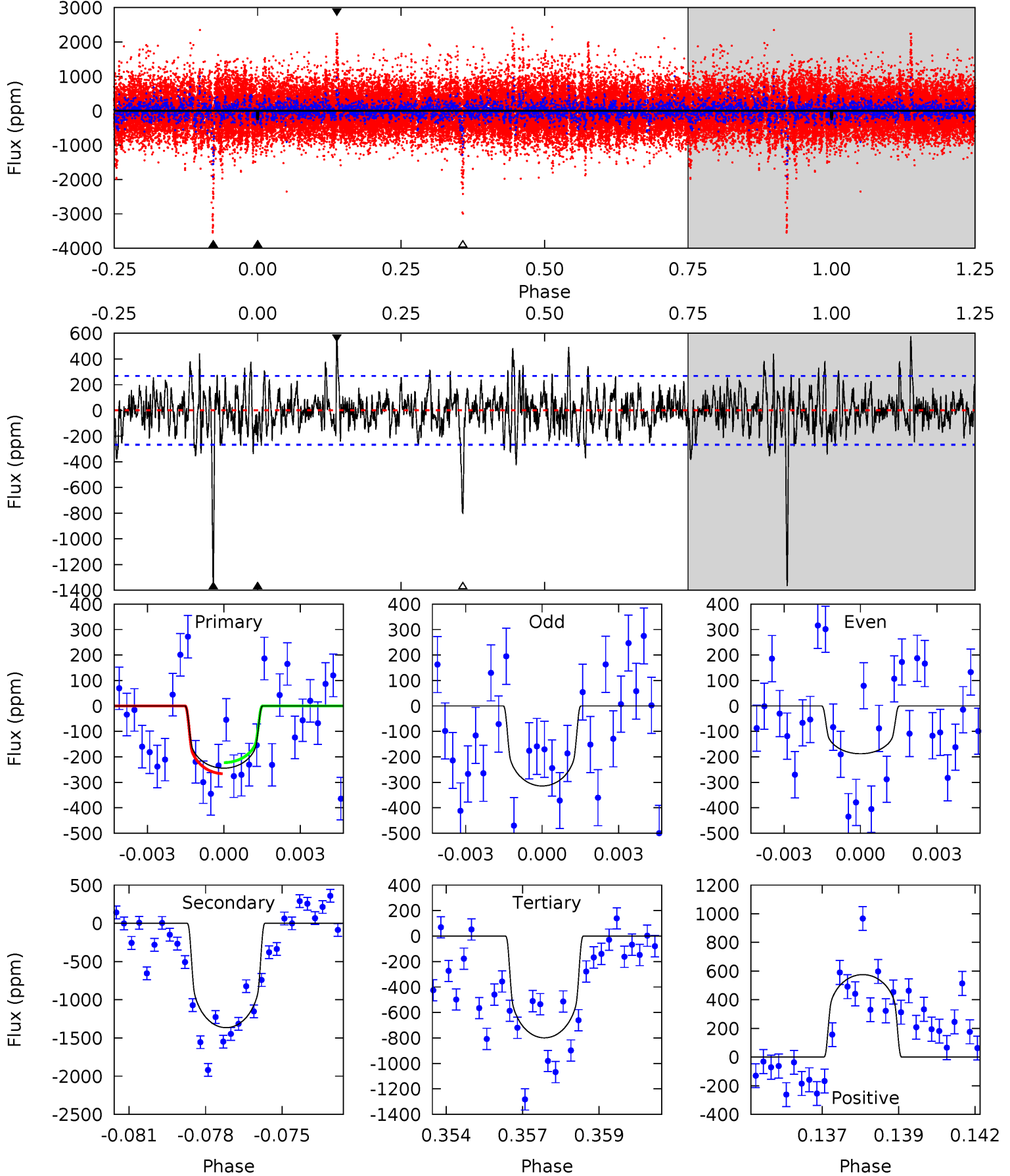
TCE 009837544-09 P=258.740661 Days $T_0=370.988650$ (BKJD)



DV Model-Shift Uniqueness Test

009837544-09, P = 258.775431 Days, E = 112.358007 Days

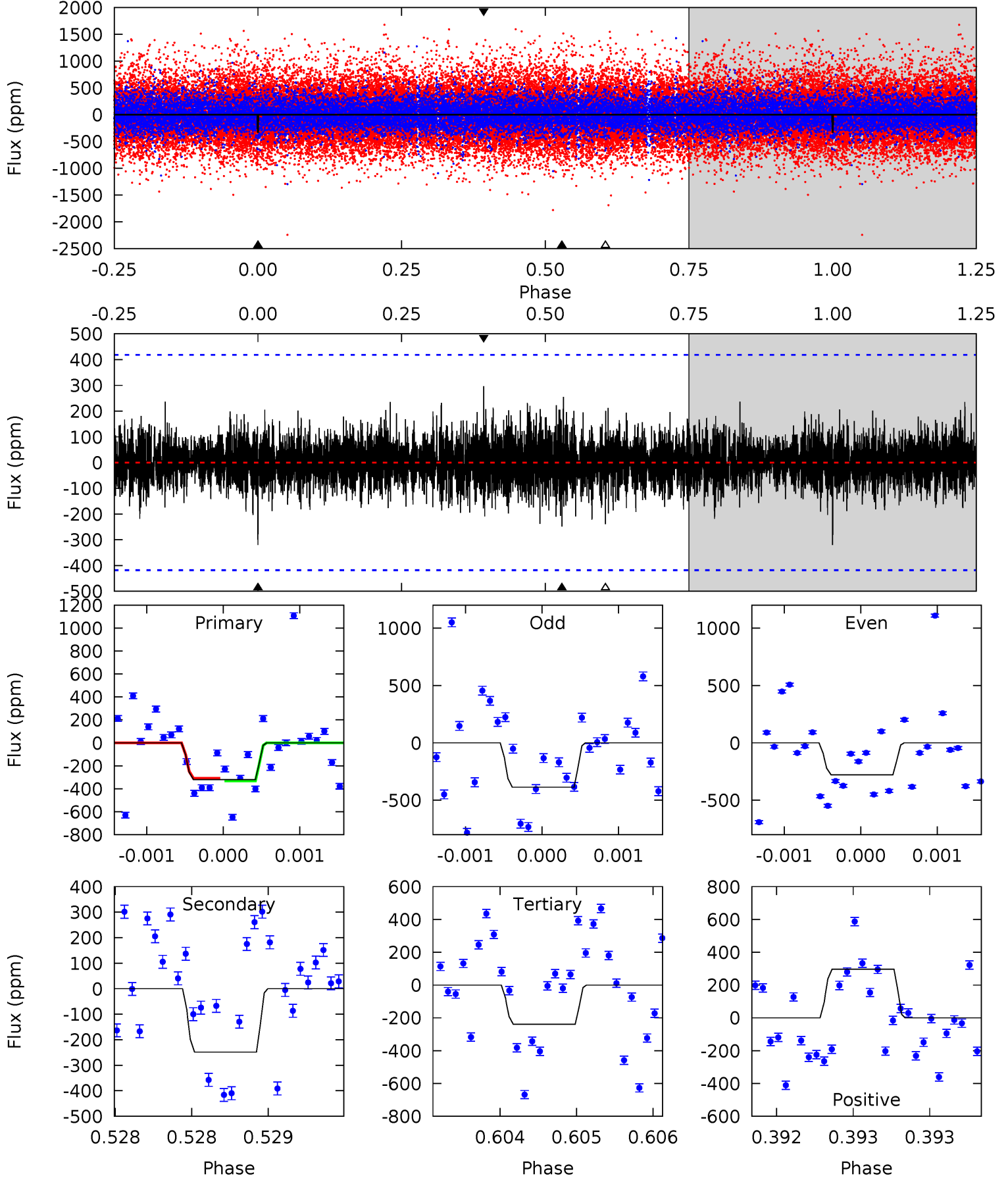
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.81	26.8	15.7	11.3	5.27	2.99	2.52	-10.9	-6.51	11.1	15.5	1.19	0.84	0.30	0.43



Alt Model-Shift Uniqueness Test

009837544-09, P = 258.740661 Days, E = 112.247989 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.20	3.26	3.14	3.90	5.50	3.36	0.83	1.05	0.30	0.12	-0.63	0.71	0.71	0.48	0.14



Stellar Parameters For KIC 009837544

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5075^{+179}_{-179}	$4.497^{+0.095}_{-0.095}$	$0.020^{+0.300}_{-0.300}$	$0.824^{+0.088}_{-0.097}$	$0.777^{+0.098}_{-0.057}$	$1.957^{+0.744}_{-0.493}$
	+4%/-4%	+2%/-2%	+1500%/-1500%	+11%/-12%	+13%/-7%	+38%/-25%
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 009837544-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1365 ± 51	$2.39^{+1.35}_{-1.26}$	332^{+15}_{-16}	5953^{+3073}_{-1116}	$72881^{+250169}_{-42419}$
Alt.	-248 ± 76	$1.79^{+1.31}_{-1.05}$	332^{+16}_{-16}	4572^{+2450}_{-779}	$22609^{+112762}_{-15187}$

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 $A_{obs} \gg 1.0$

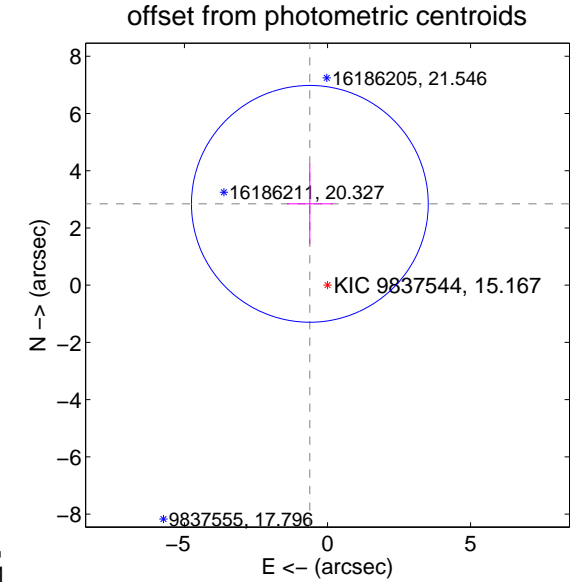
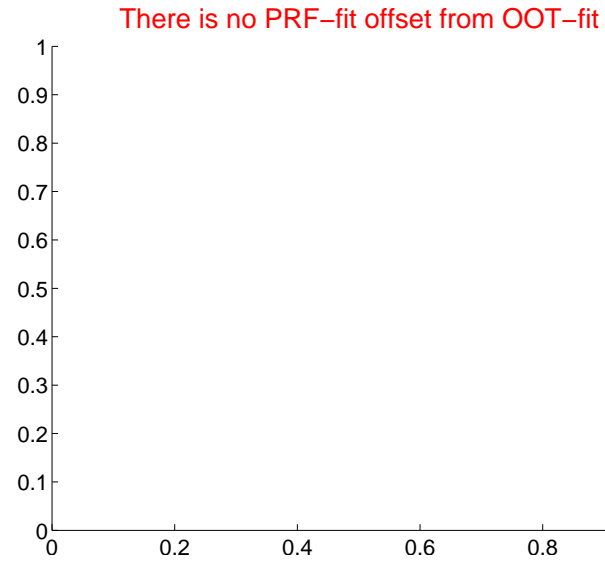
DV Centroid Data

Supplemental centroid analysis for 009837544-09. Kepler magnitude: 15.17. Transit SNR 5.26

There are 0 quarters with good PRF difference image offsets

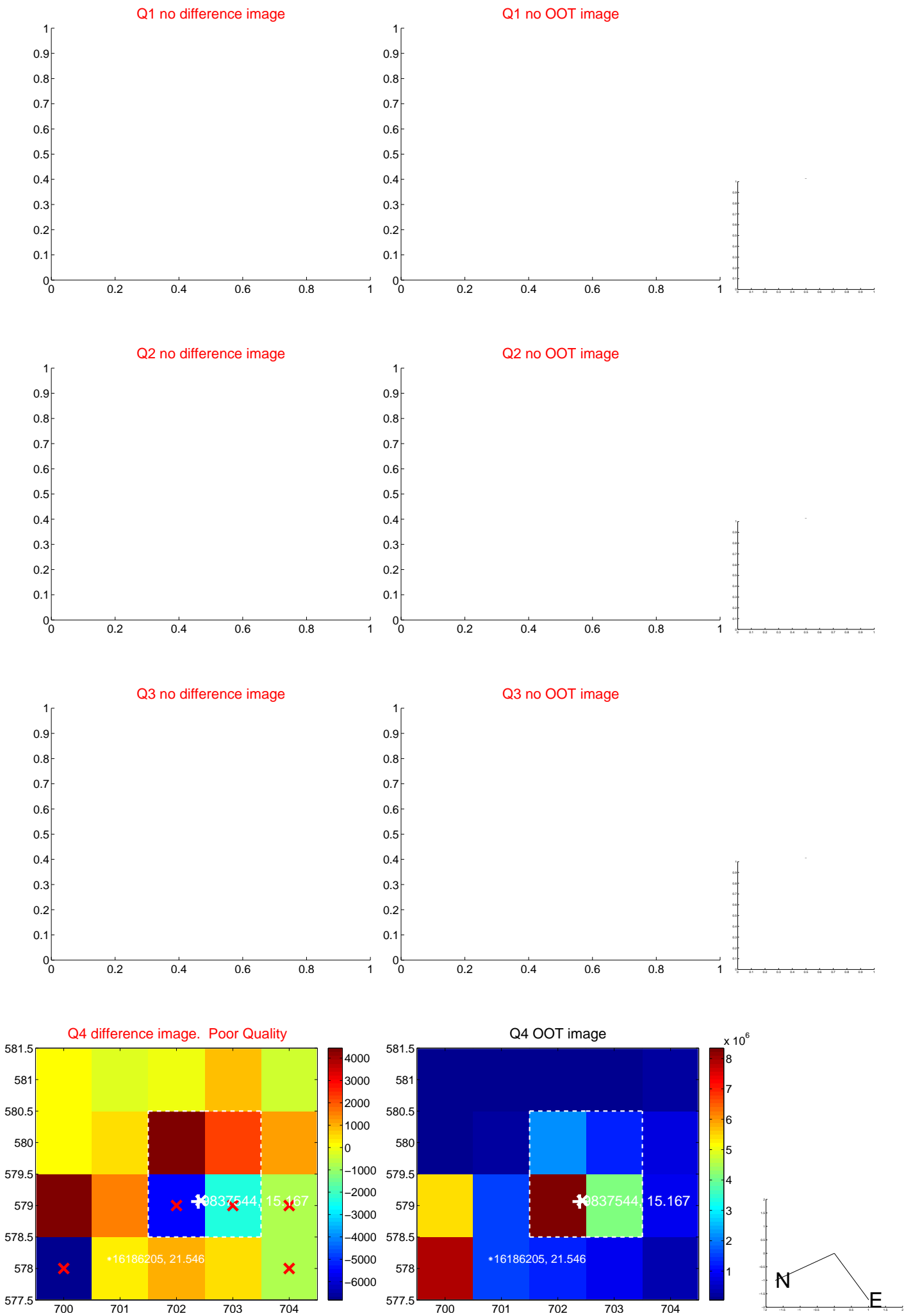
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	2.91 ± 1.38	2.11	0.62 ± 0.80	2.84 ± 1.40



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.

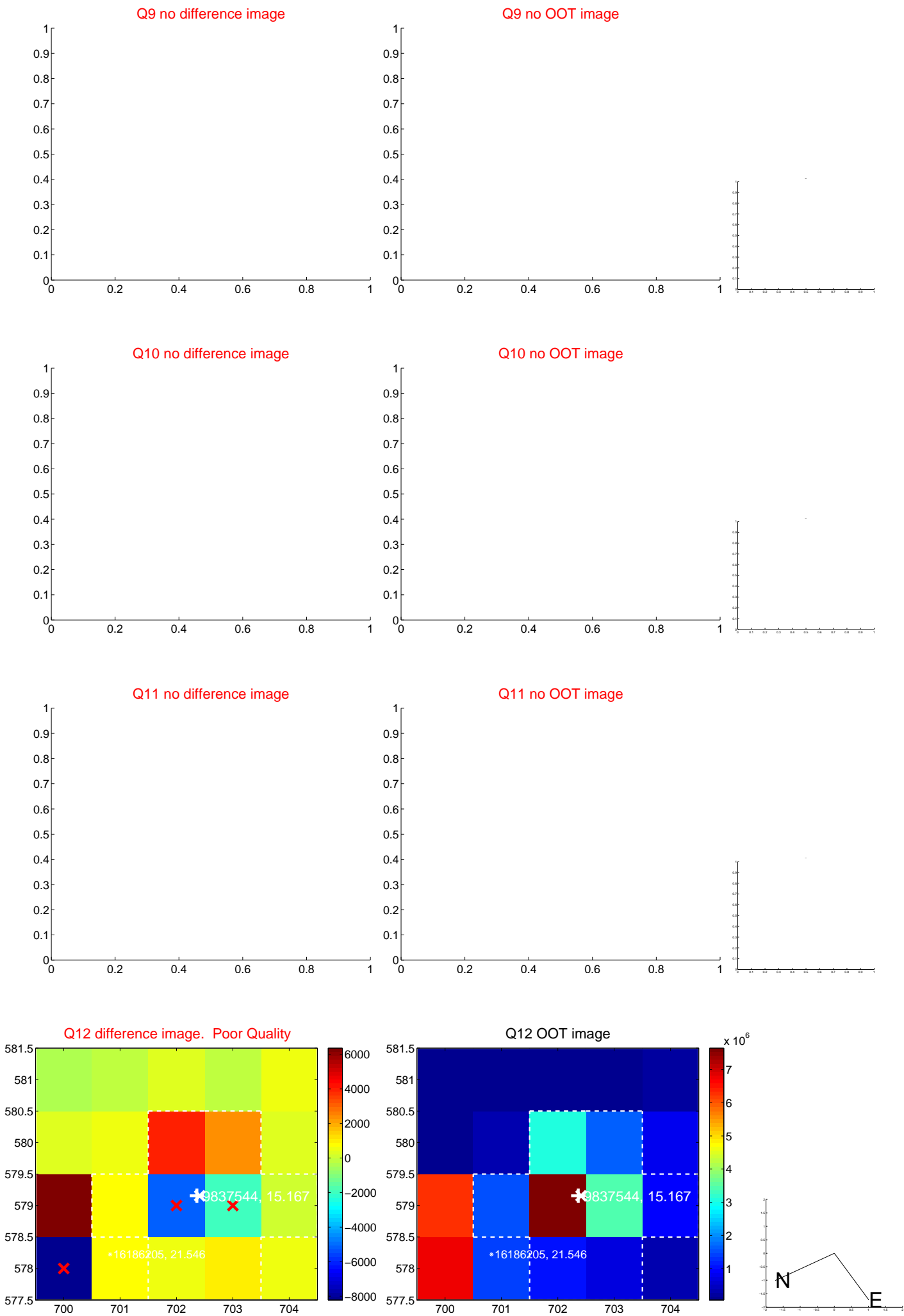
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



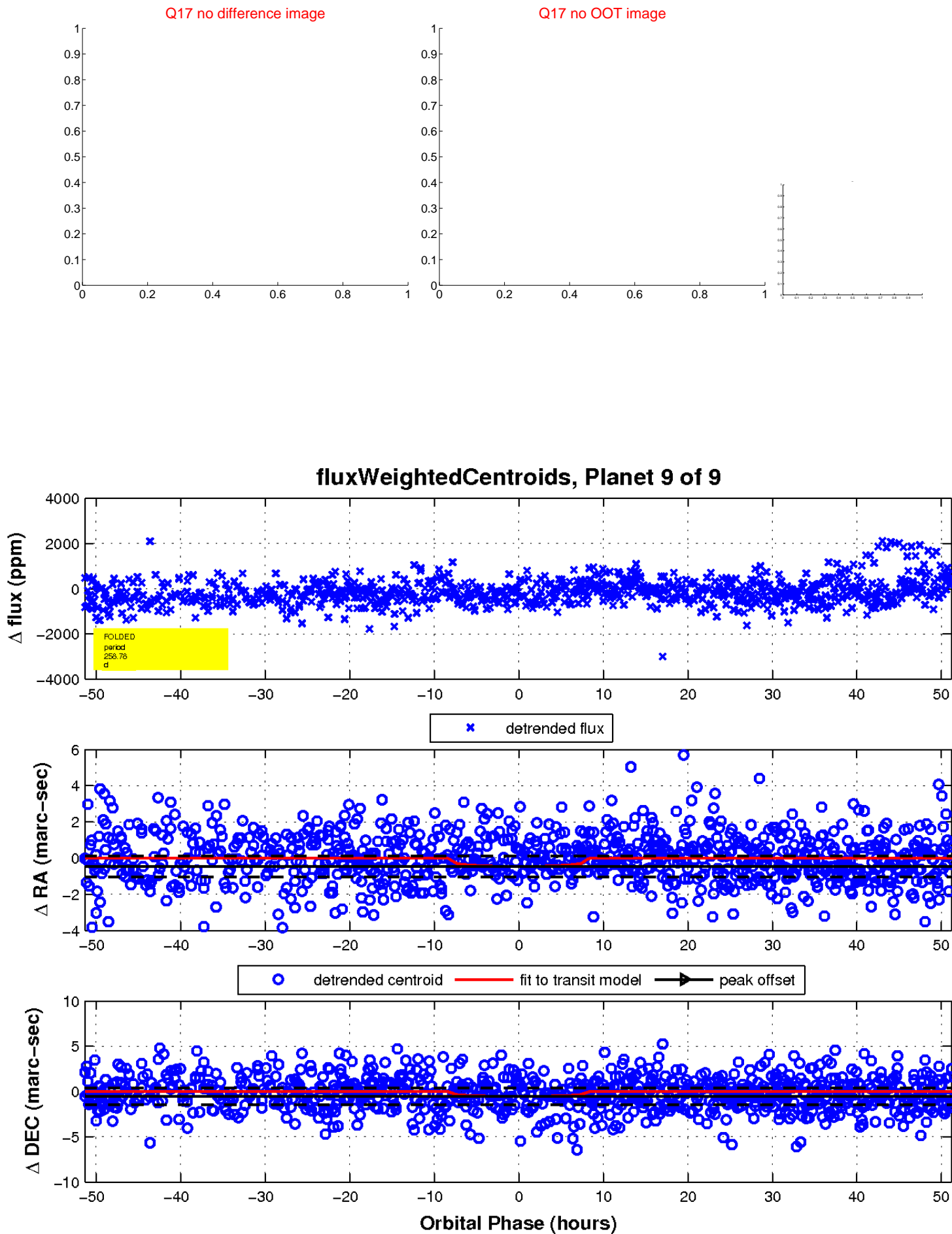
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

