

KIC 007509281

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})
007509281-01	OBS	No	495.349153	146.690329	2359.1	5.011	12.3	7.2	0.36	3514	1.78	0.02
007509281-02	OBS	No	692.166905	193.864416	3834.8	5.446	11.7	11.3	0.36	3514	2.19	0.01
007509281-03	OBS	No	391.329919	436.945038	1314.2	15.000	11.2	-1.0	0.36	3514	1.28	0.03
007509281-04	OBS	No	310.829106	239.404934	2908.4	15.364	10.6	7.3	0.36	3514	2.31	0.04
007509281-05	OBS	No	350.536672	212.159784	547.7	7.021	11.0	1.9	0.36	3514	0.87	0.04
007509281-06	OBS	No	188.860962	239.174780	2397.9	3.029	11.7	7.4	0.36	3514	1.84	0.08
007509281-07	OBS	No	454.443040	341.799460	2133.5	4.279	10.4	6.7	0.36	3514	1.68	0.03
007509281-08	OBS	No	282.560172	296.603971	1474.0	21.758	9.4	4.4	0.36	3514	1.36	0.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007509281-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
007509281-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_NOFITS
007509281-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

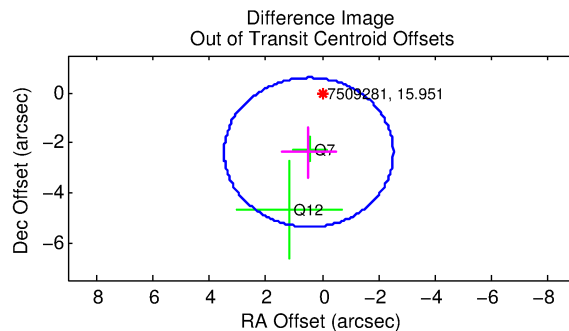
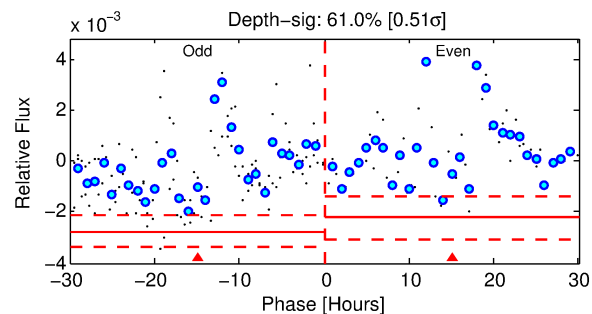
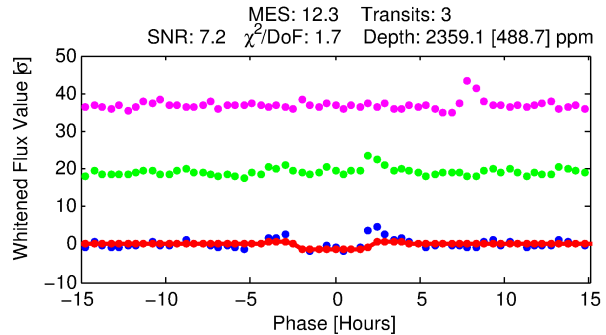
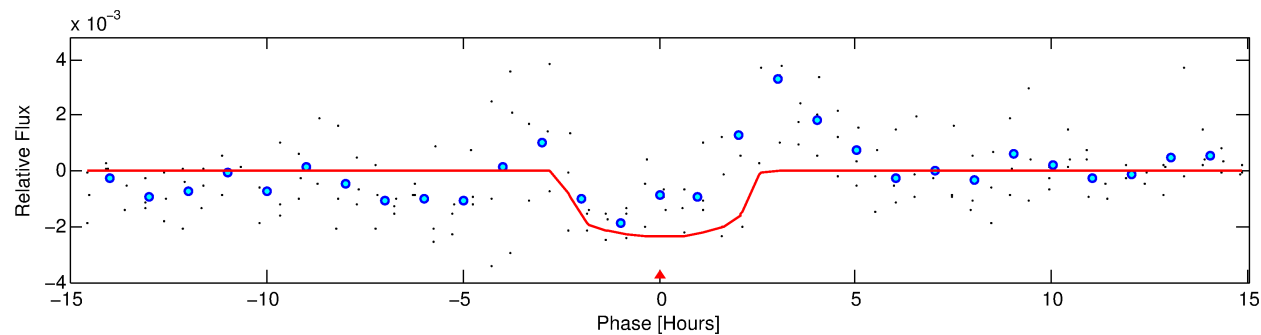
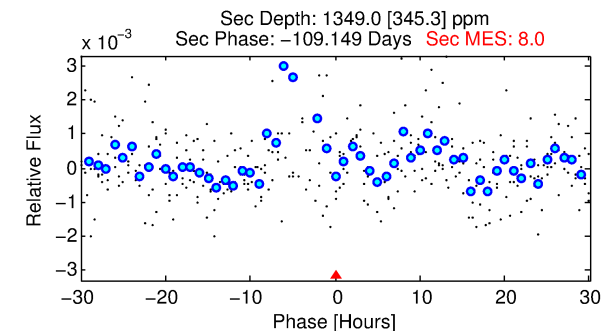
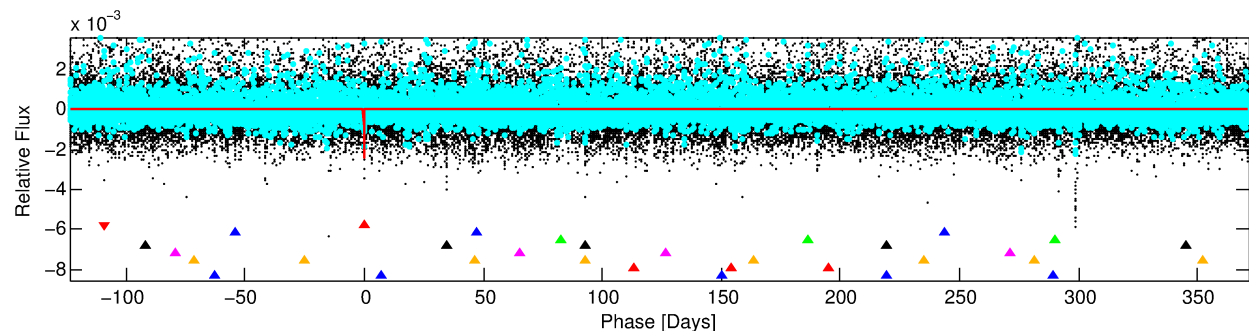
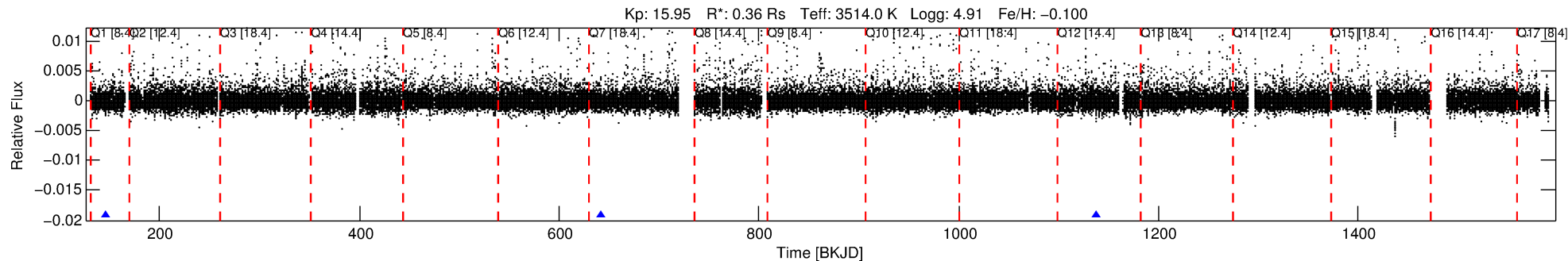
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007509281-01

No Significant Match Found

DV One-Page Summary

KIC: 7509281 Candidate: 1 of 8 Period: 495.349 d



DV Fit Results:

Period = 495.34915 [0.00818] d
Epoch = 146.6903 [0.0115] BKJD
Rp/R* = 0.0455 [0.0308]
a/R* = 686.36 [1943.92]
b = 0.52 [4.02]
Seff = 0.02 [0.00]
Teq = 99 [3] K
Rp = 1.78 [1.22] Re
a = 0.8856 [0.0709] AU
Ag = 183937.27 [253684.65] [0.73σ]
Teff = 3156 [1087] K [2.81σ]

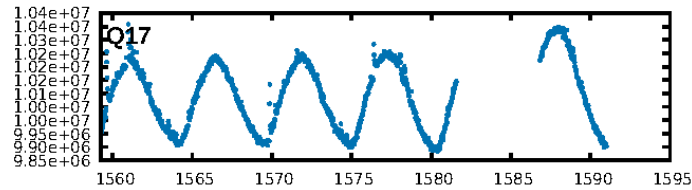
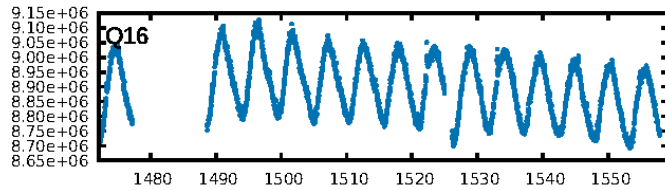
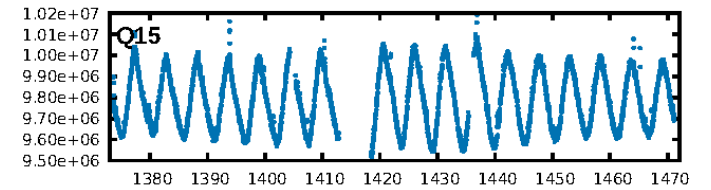
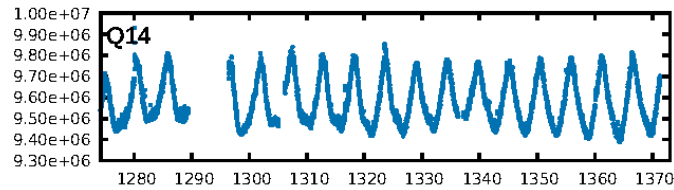
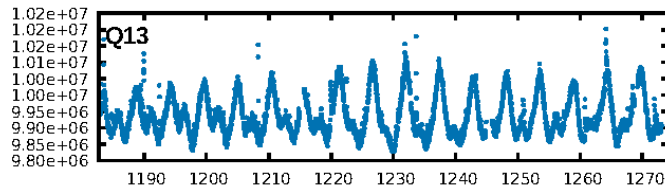
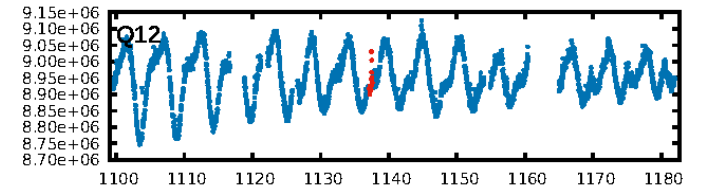
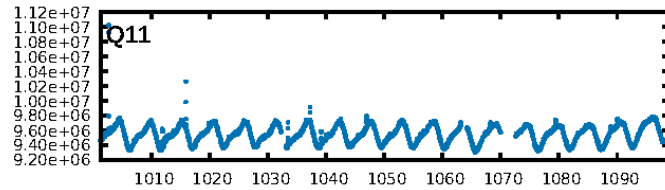
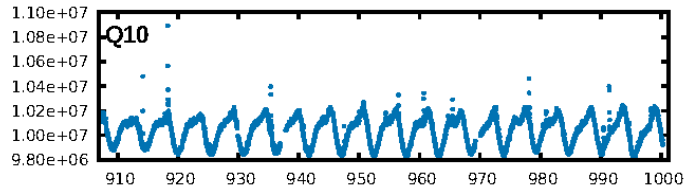
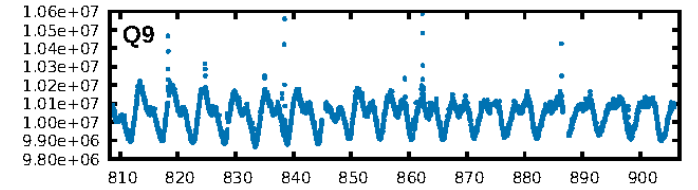
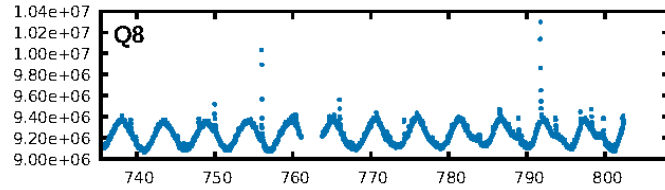
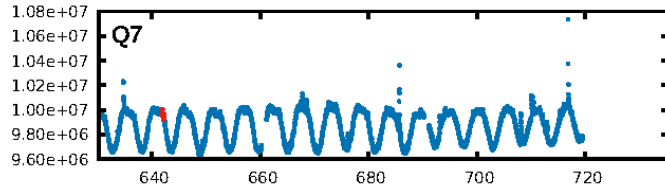
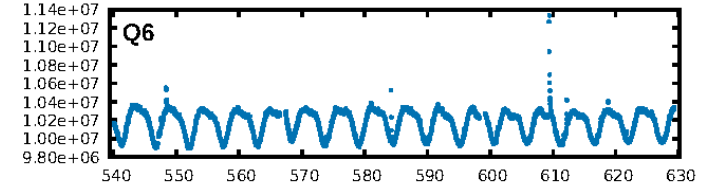
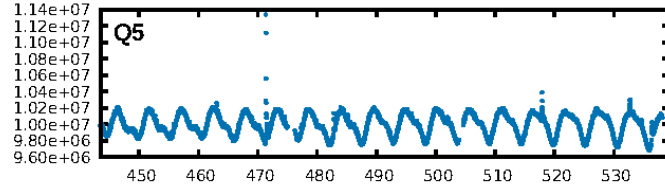
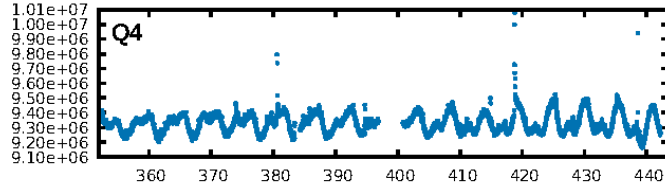
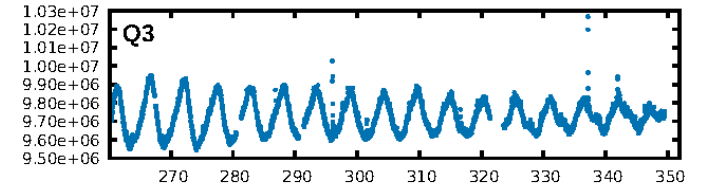
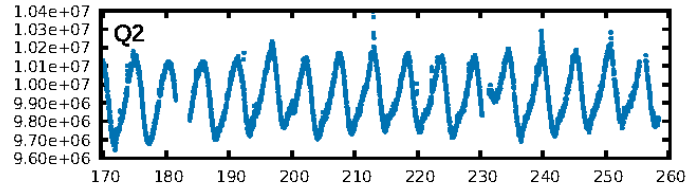
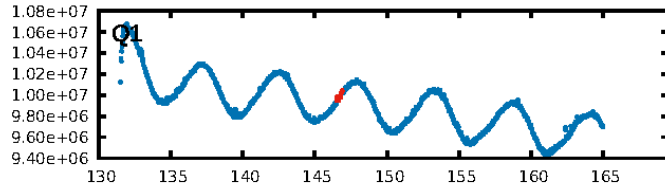
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [148.98σ]
LongPeriod-sig: 100.0% [638.26σ]
ModelChiSquare2-sig: 17.8%
ModelChiSquareGof-sig: 28.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 1.505
Centroid-sig: N/A
Centroid-so: 0.538 arcsec [0.59σ]
OotOffset-rm: 2.434 arcsec [2.44σ]
KicOffset-rm: 2.195 arcsec [2.20σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 1.00 [3/3]

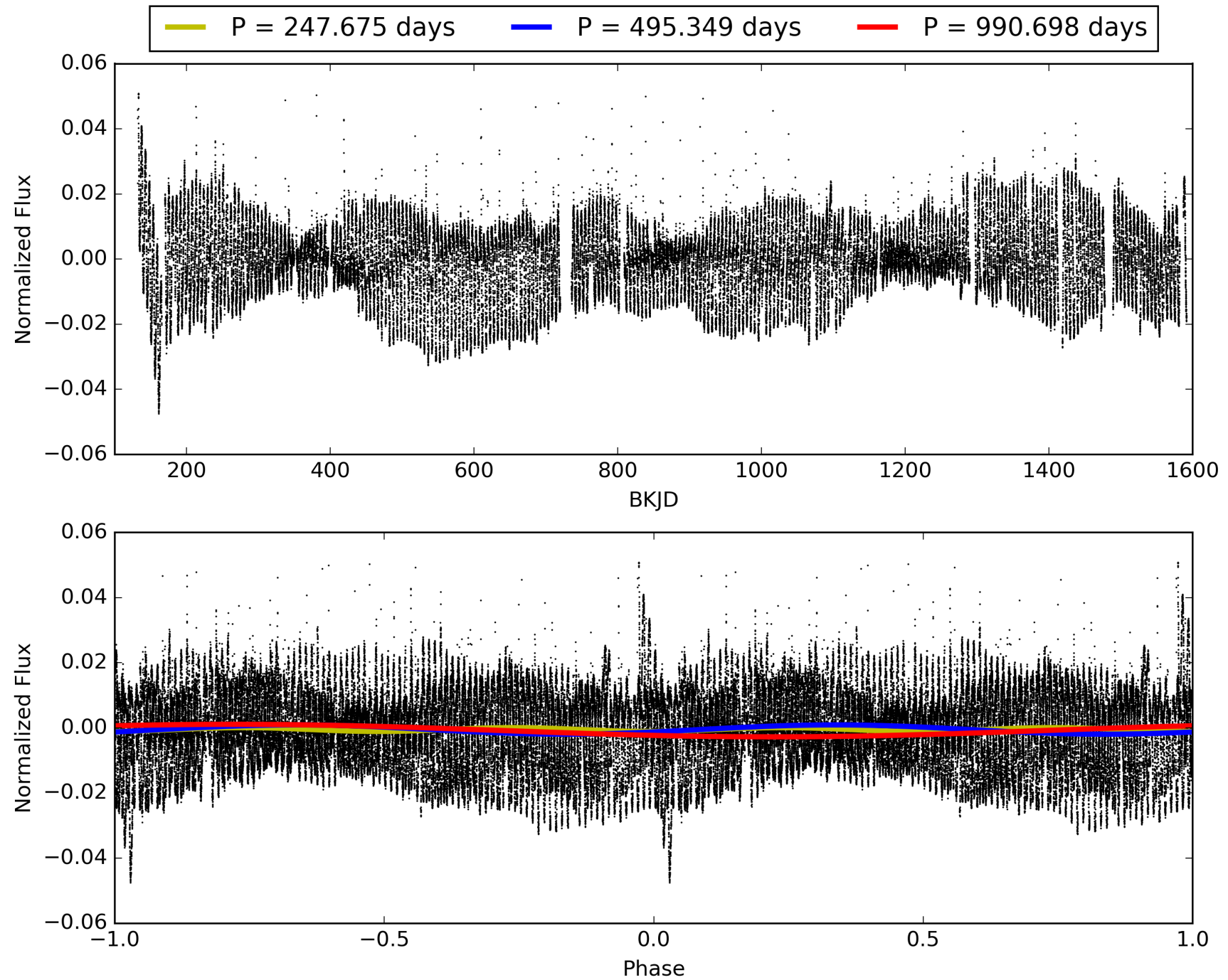
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:46:29 Z

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

TCE 007509281-01, PDC Light Curves

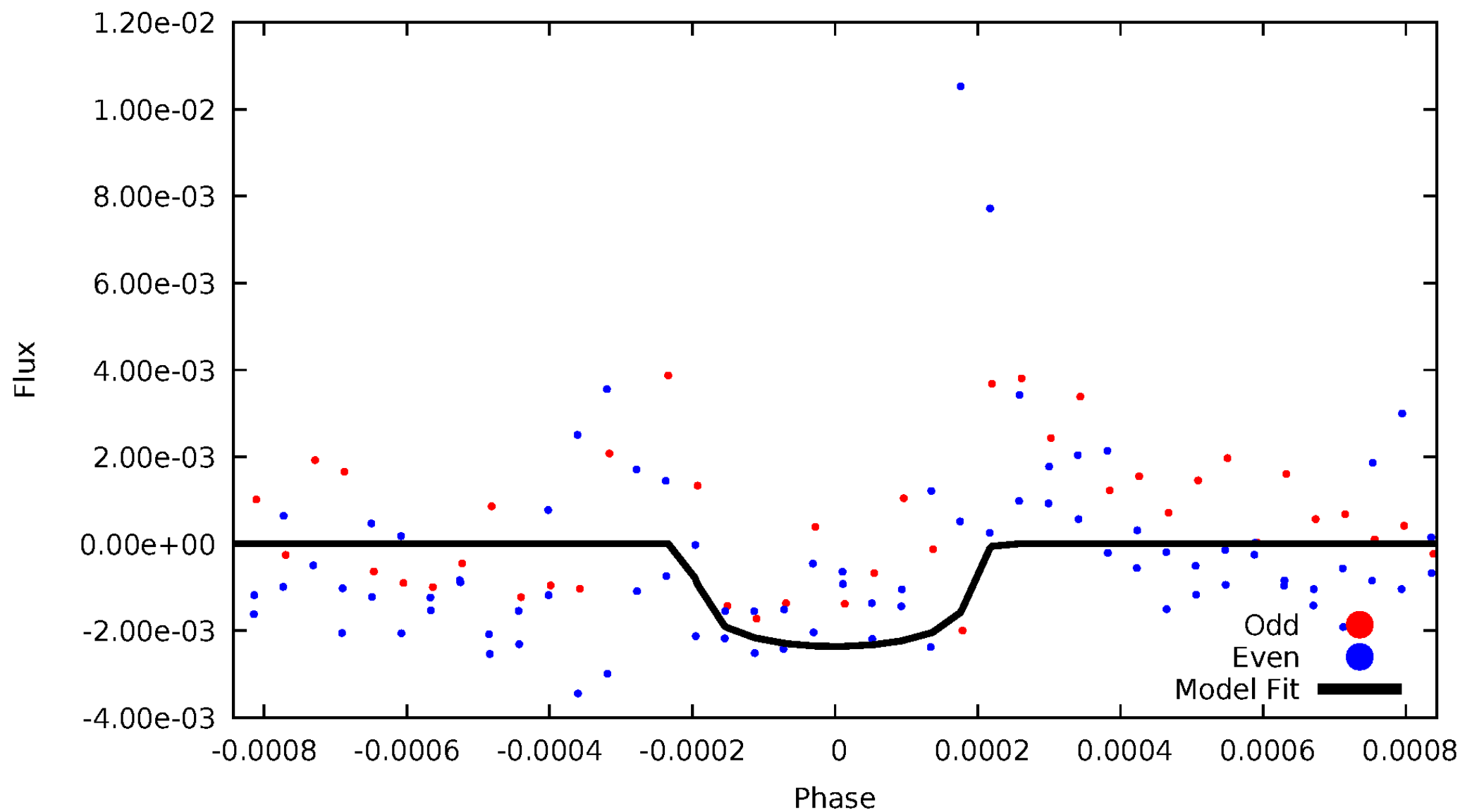


TCE 007509281-01



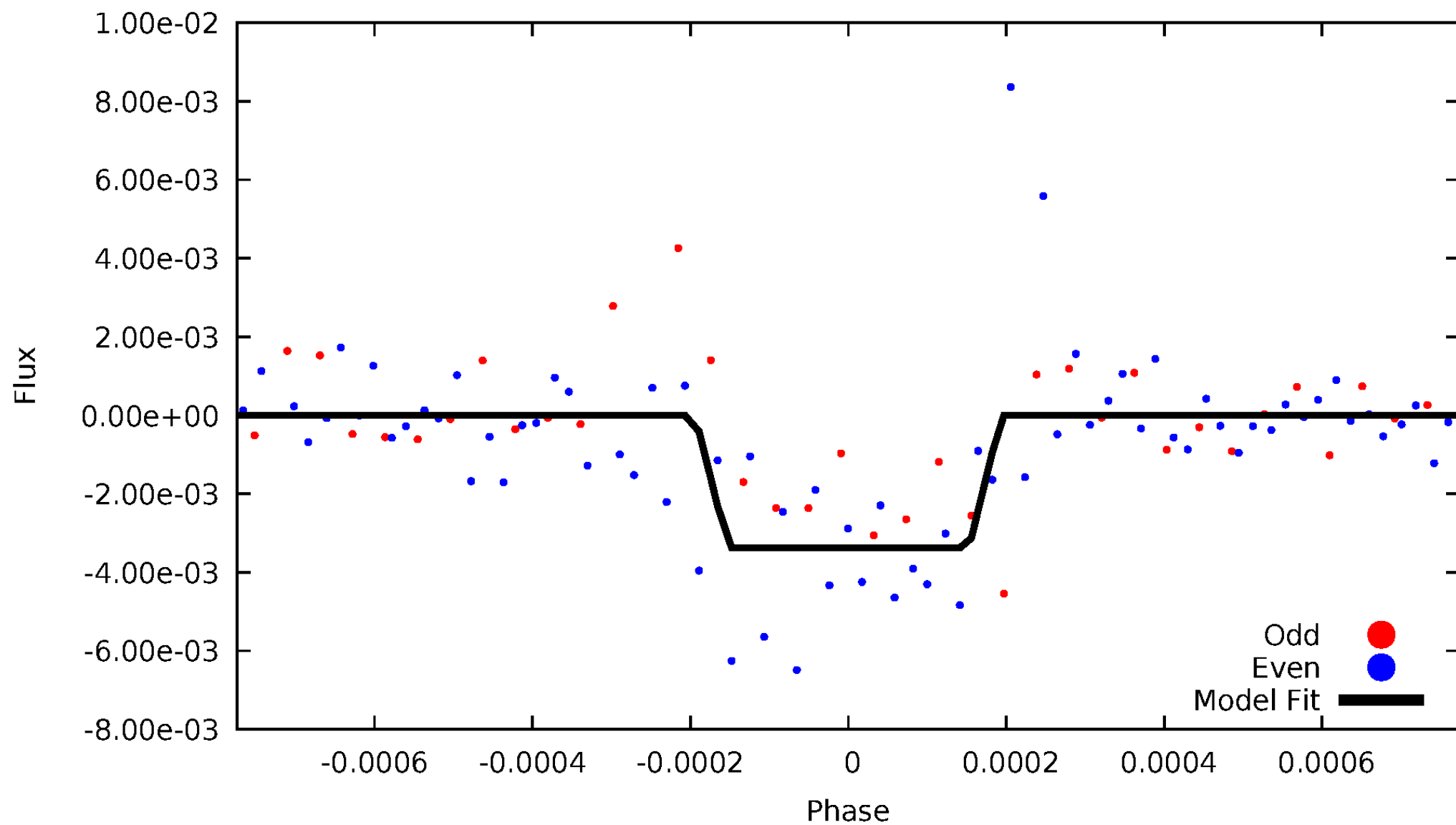
DV Odd/Even

TCE 007509281-01

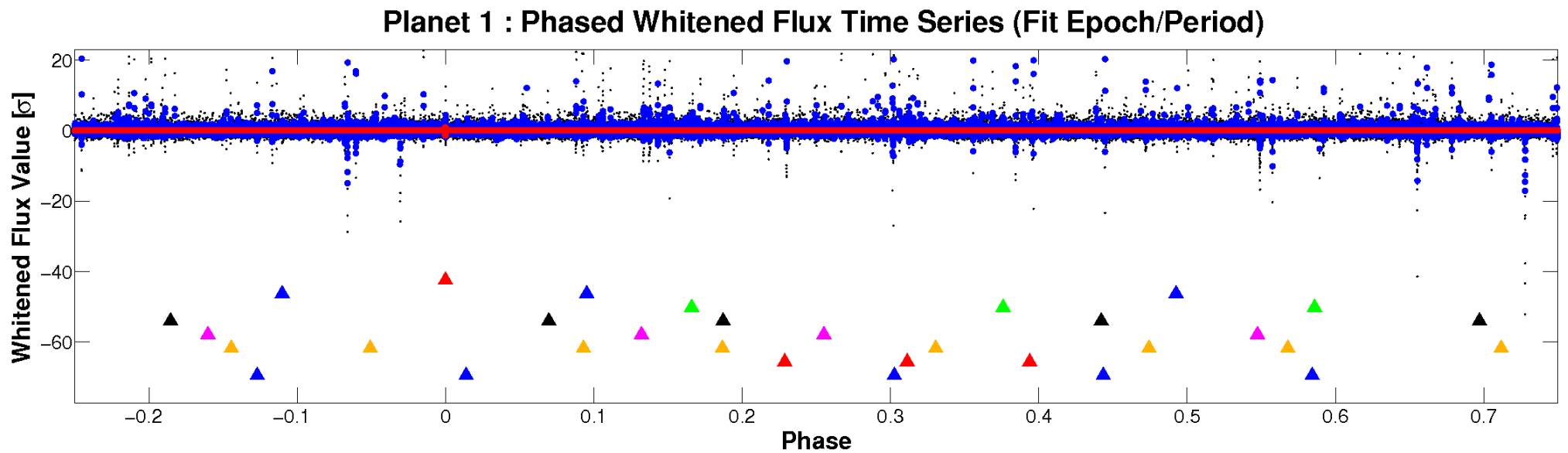
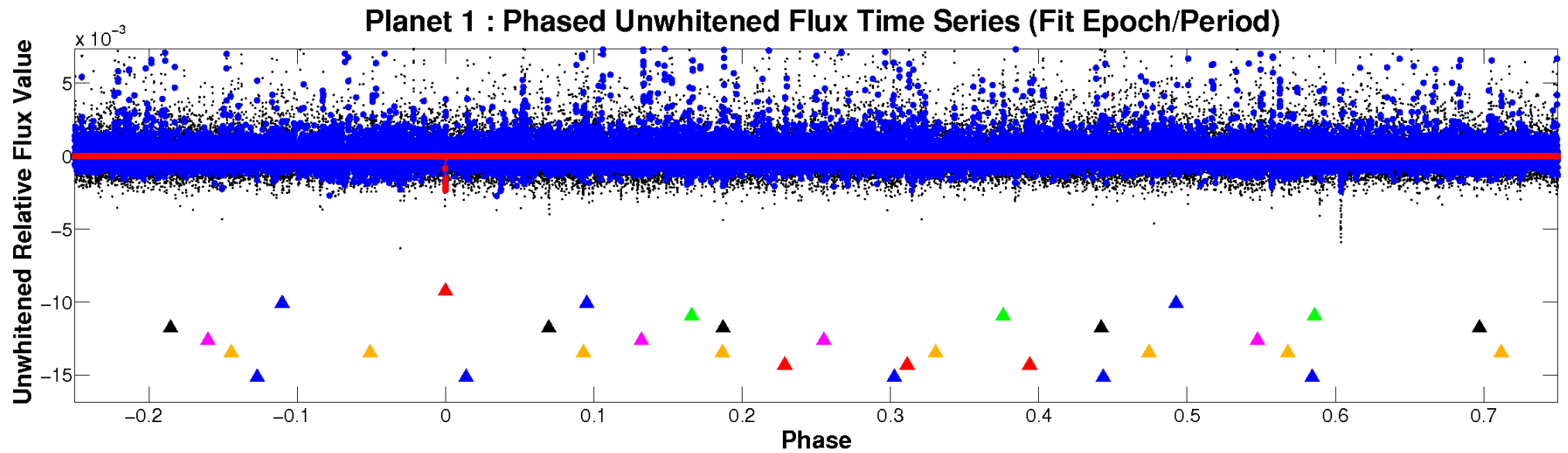


ALT Odd/Even

TCE 007509281-01

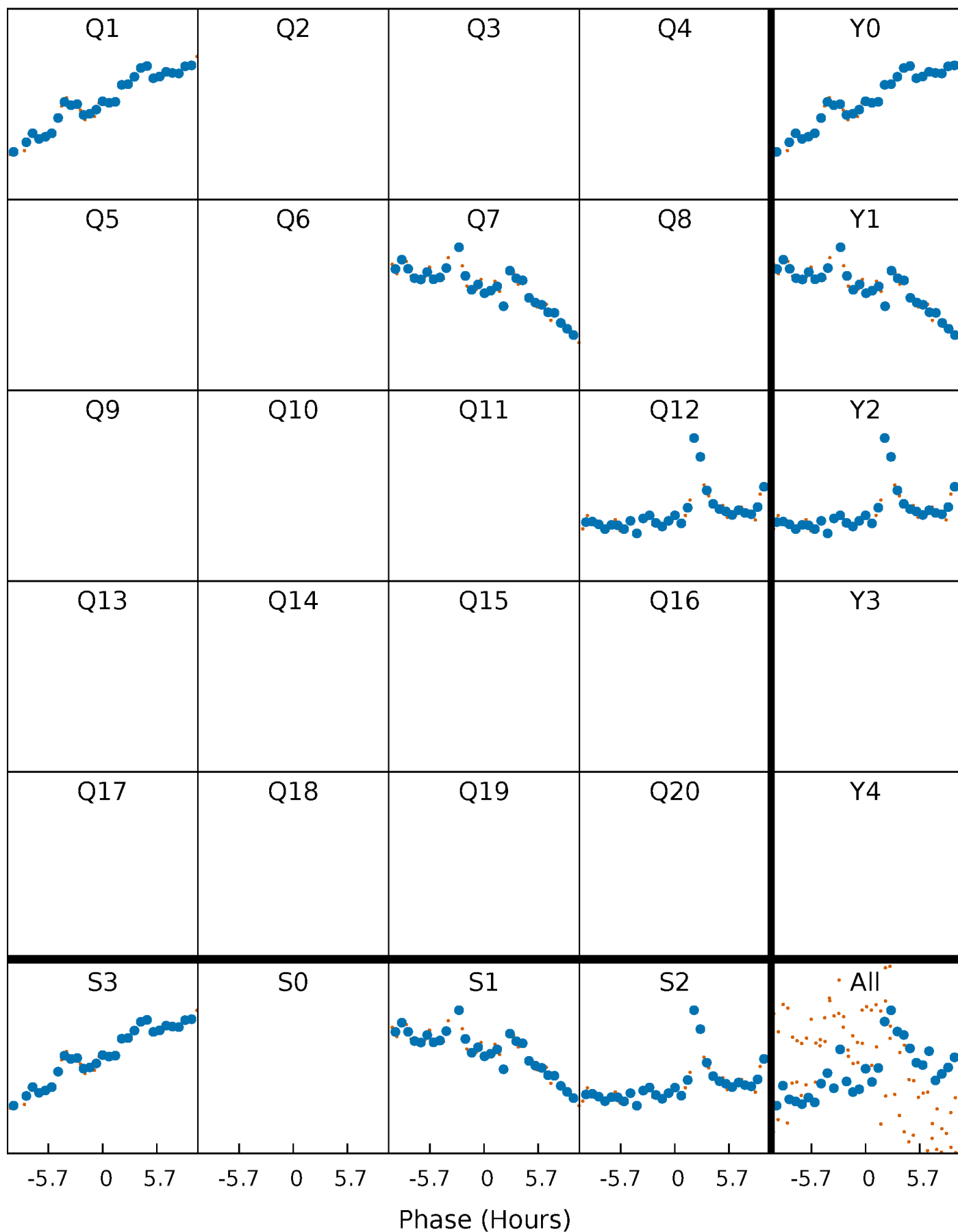


Non-Whitened Vs. Whitened Light Curve



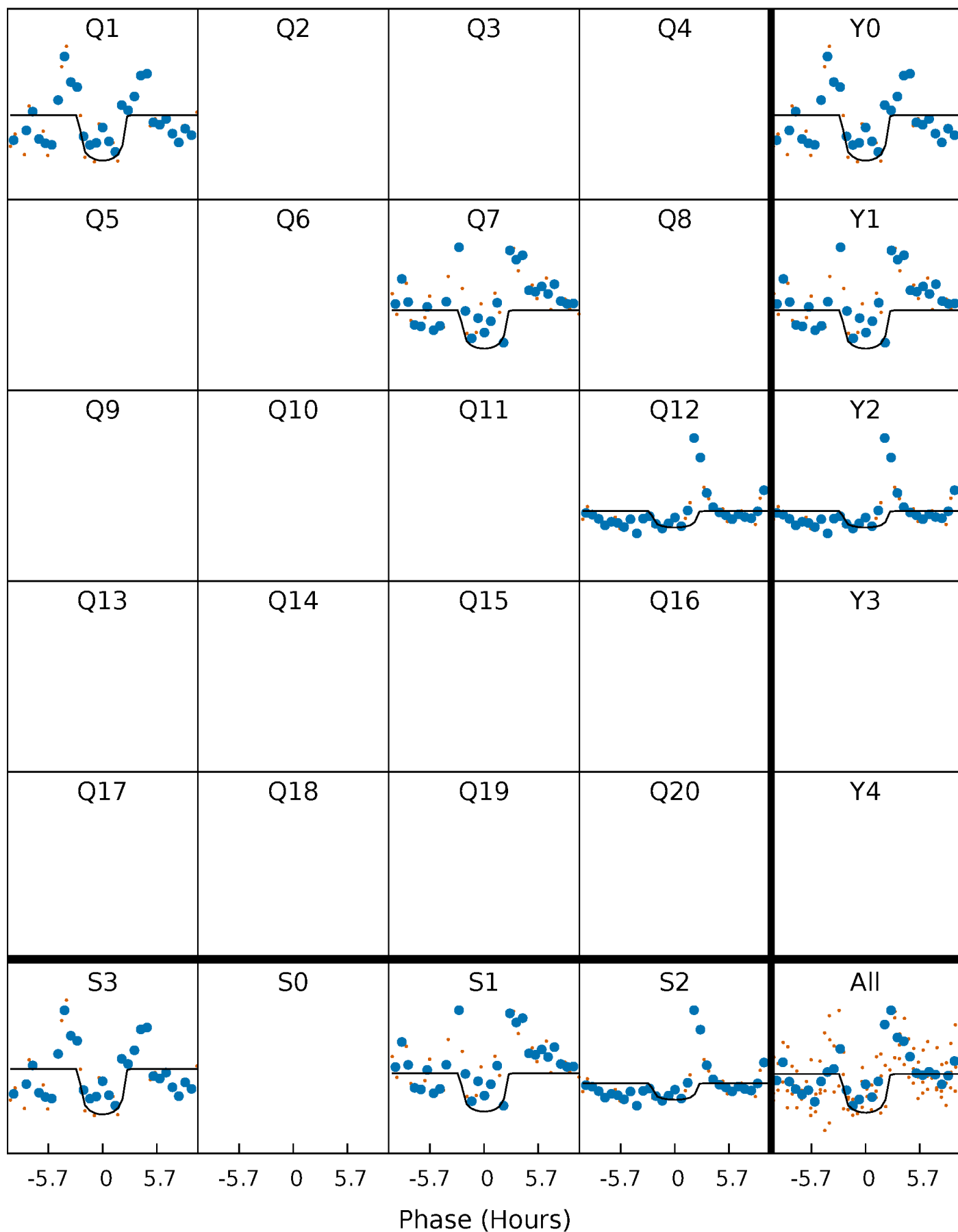
PDC Quarter-Phased Transit Curves

TCE 007509281-01 P=495.349153 Days $T_0=146.690329$ (BKJD)



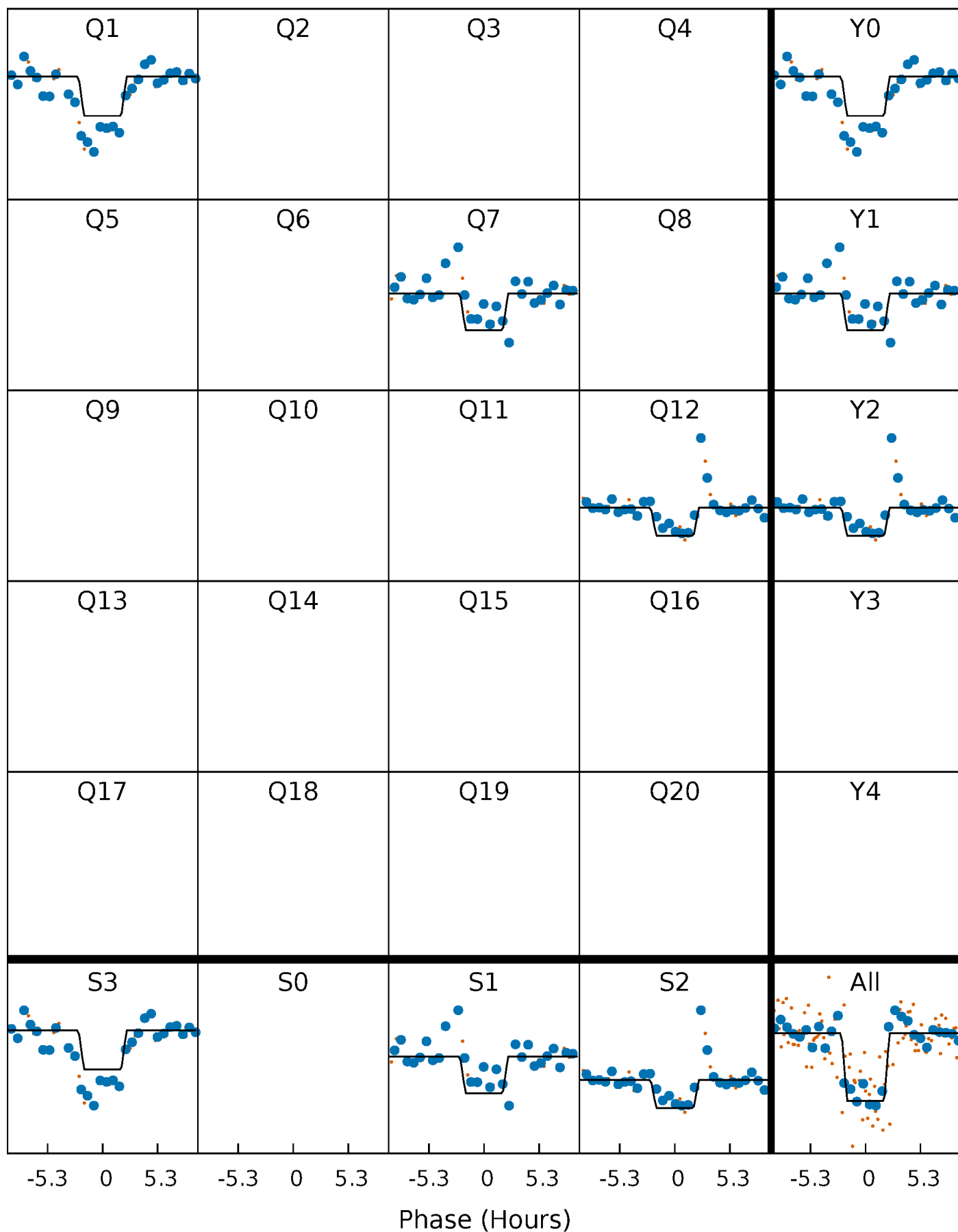
DV Quarter-Phased Transit Curves

TCE 007509281-01 P=495.349153 Days $T_0=146.690329$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

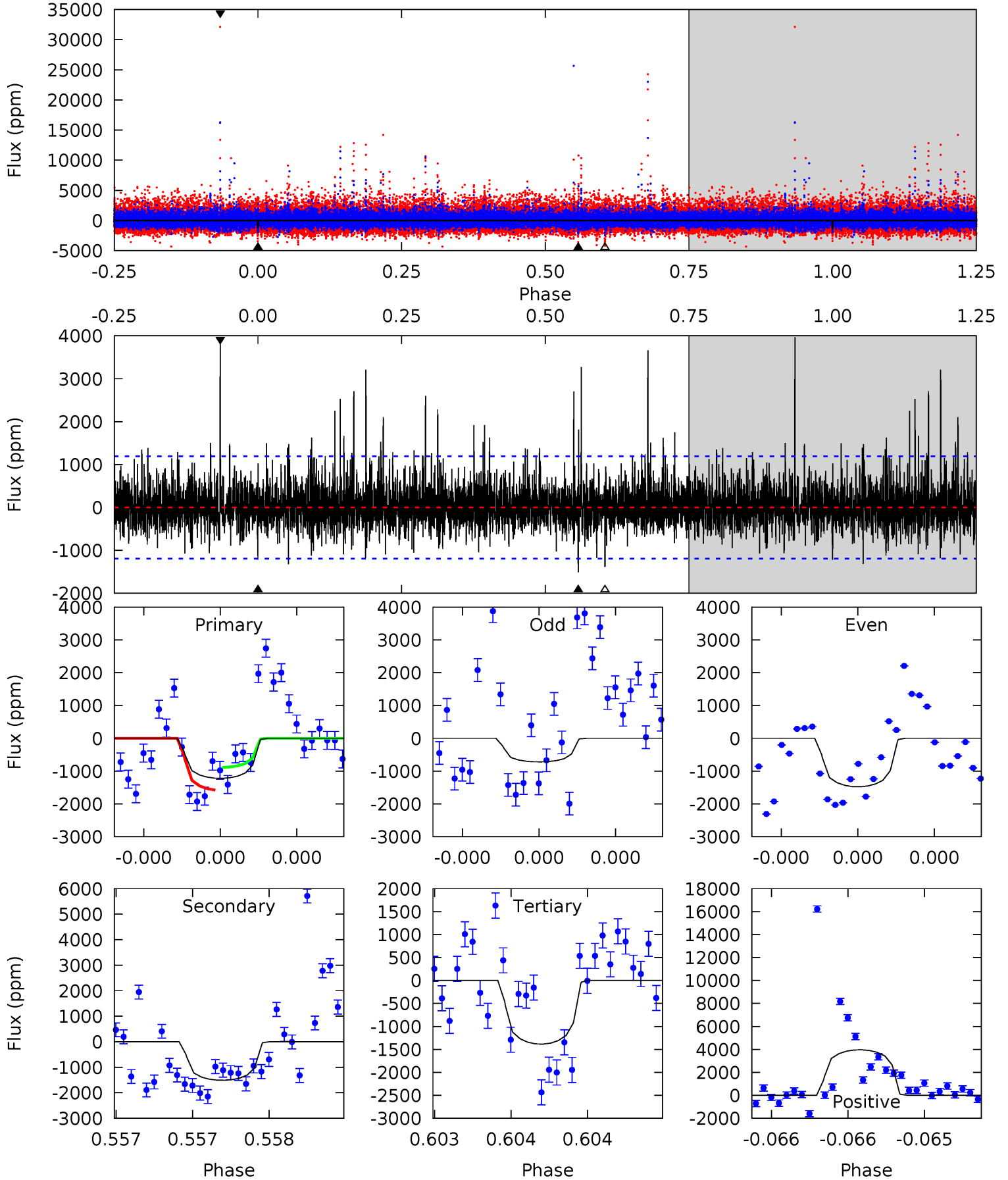
TCE 007509281-01 P=495.343550 Days $T_0=146.686876$ (BKJD)



DV Model-Shift Uniqueness Test

007509281-01, P = 495.349153 Days, E = 146.690329 Days

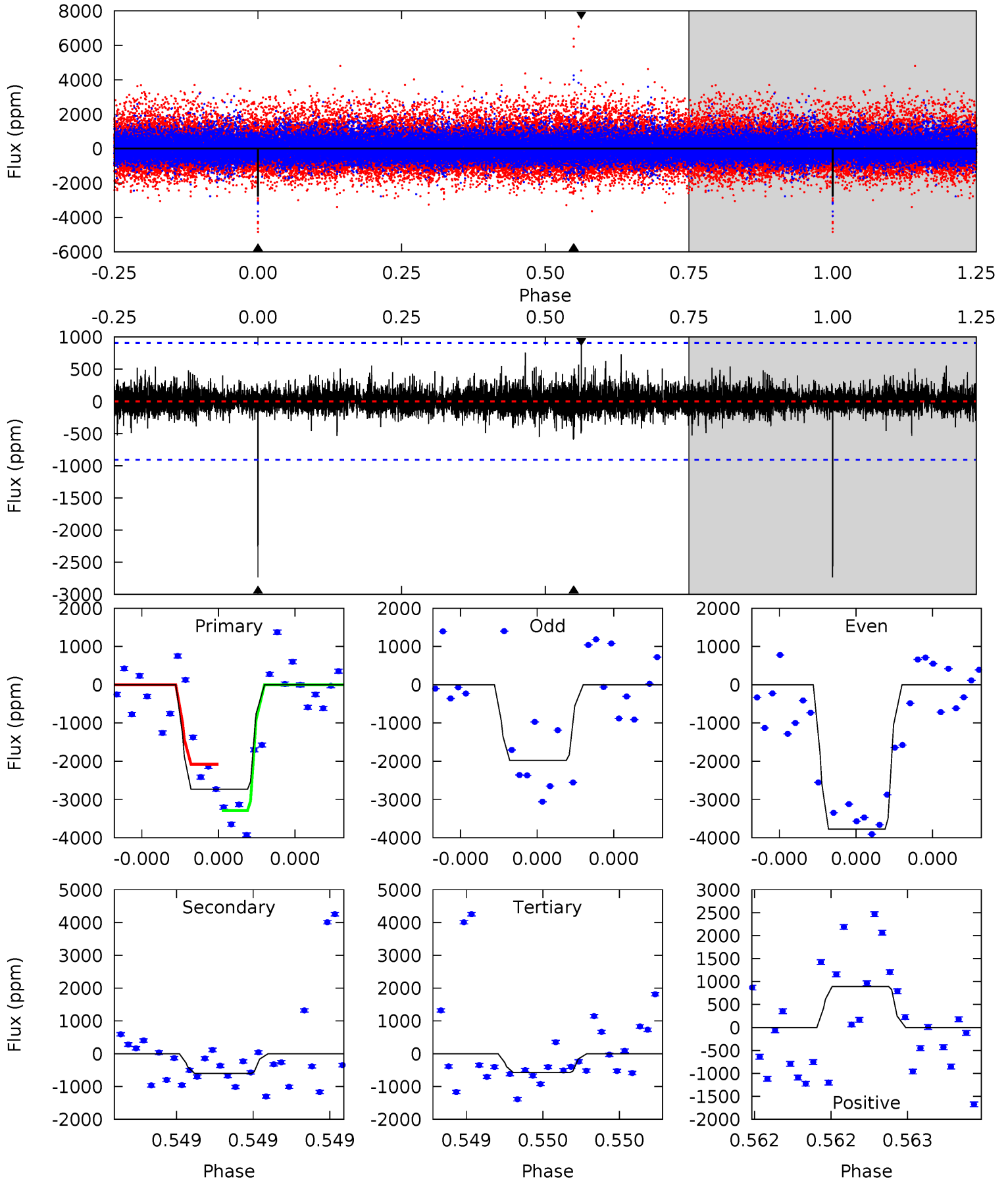
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.74	7.10	6.52	18.6	5.61	3.53	1.94	-0.78	-12.9	0.59	-11.5	1.07	1.22	0.72	1.62



Alt Model-Shift Uniqueness Test

007509281-01, P = 495.343550 Days, E = 146.686876 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.9	3.71	3.57	5.53	5.62	3.56	0.77	13.4	11.4	0.13	-1.82	5.19	1.33	0.25	3.71



Stellar Parameters For KIC 007509281

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3514^{+56}_{-63}	$4.907^{+0.040}_{-0.044}$	$-0.100^{+0.100}_{-0.100}$	$0.358^{+0.039}_{-0.039}$	$0.380^{+0.040}_{-0.054}$	$11.650^{+2.693}_{-2.189}$
	+2%/-2%	+1%/-1%	+100%/-100%	+11%/-11%	+11%/-14%	+23%/-19%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 007509281-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1510 ± 213	$1.90^{+1.12}_{-1.08}$	138^{+3}_{-4}	3277^{+1093}_{-405}	$178683^{+787940}_{-107805}$
Alt.	-598 ± 161	$2.31^{+1.12}_{-1.13}$	138^{+3}_{-3}	2737^{+537}_{-298}	$48516^{+133874}_{-28895}$

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

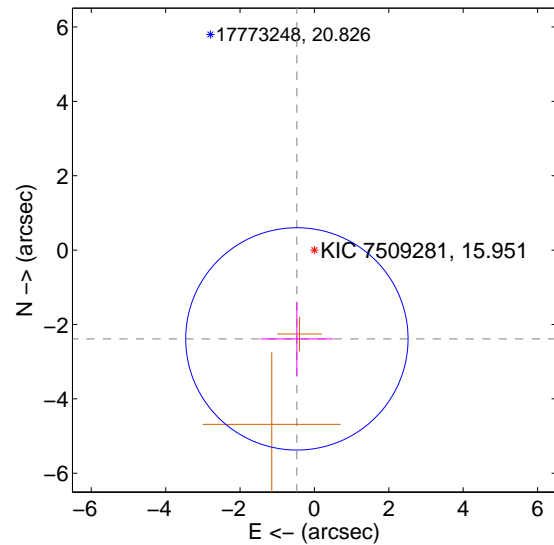
Supplemental centroid analysis for 007509281-01. Kepler magnitude: 15.95. Transit SNR 7.18

There are 0 quarters with good PRF difference image offsets

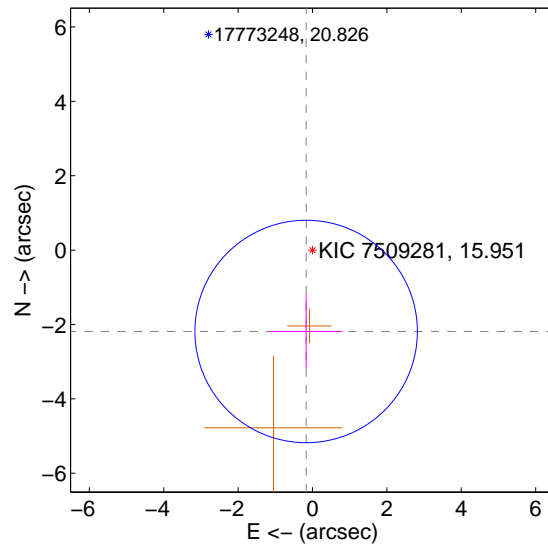
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.434 ± 0.996	2.44	0.472 ± 0.976	-2.387 ± 0.997
PRF-fit source offset from KIC position	2.195 ± 0.997	2.20	0.172 ± 0.976	-2.188 ± 0.997
photometric centroid source offset	0.54 ± 0.91	0.59	-0.32 ± 0.89	0.43 ± 0.92

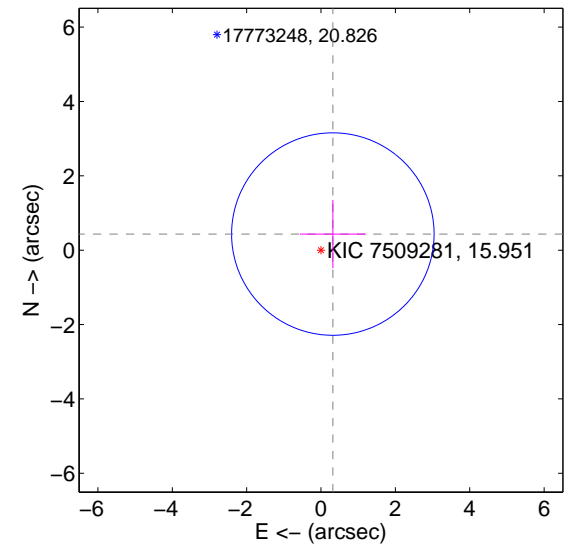
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

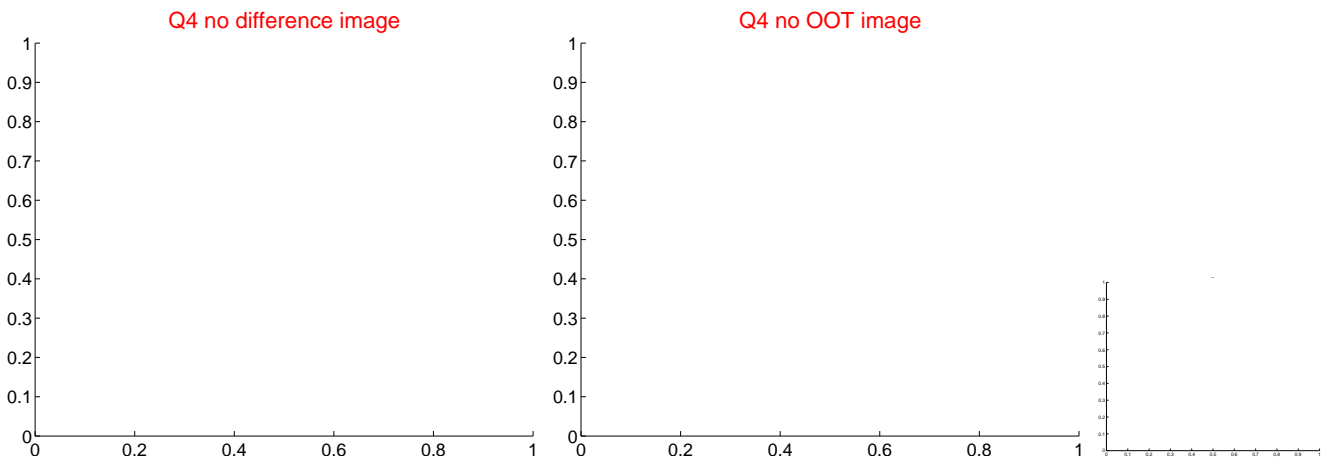
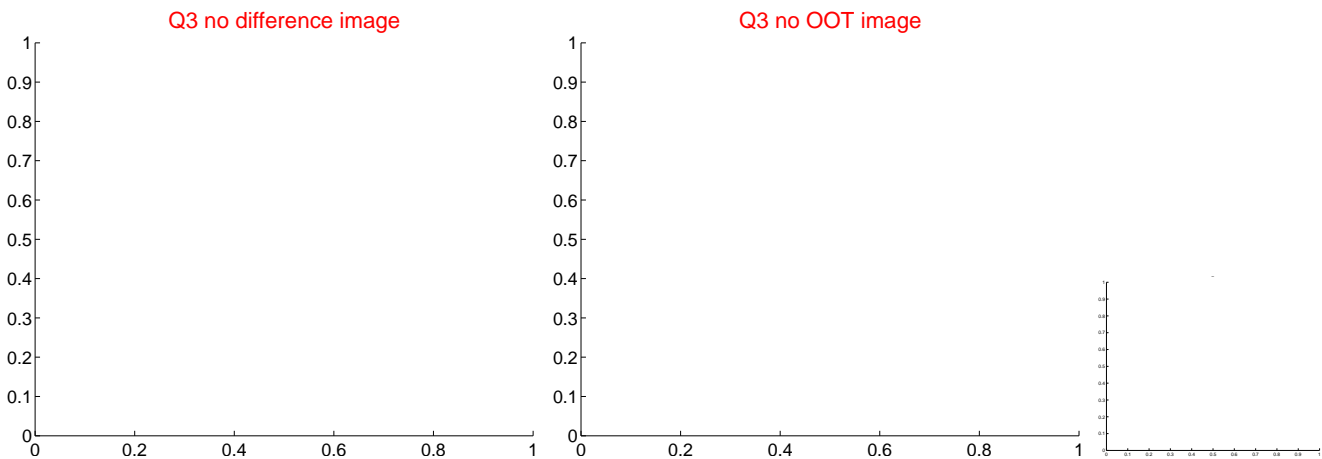
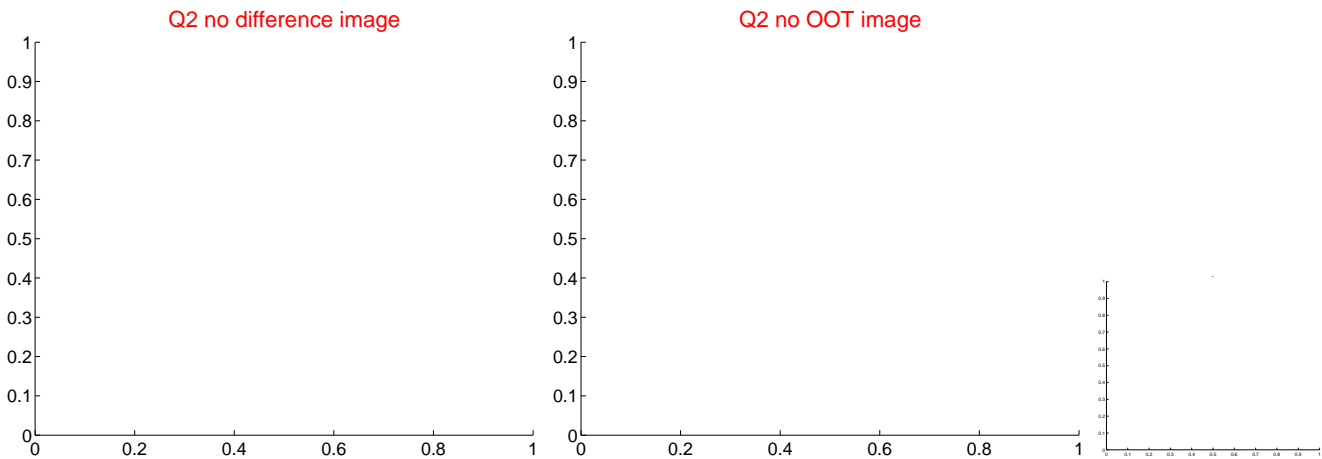
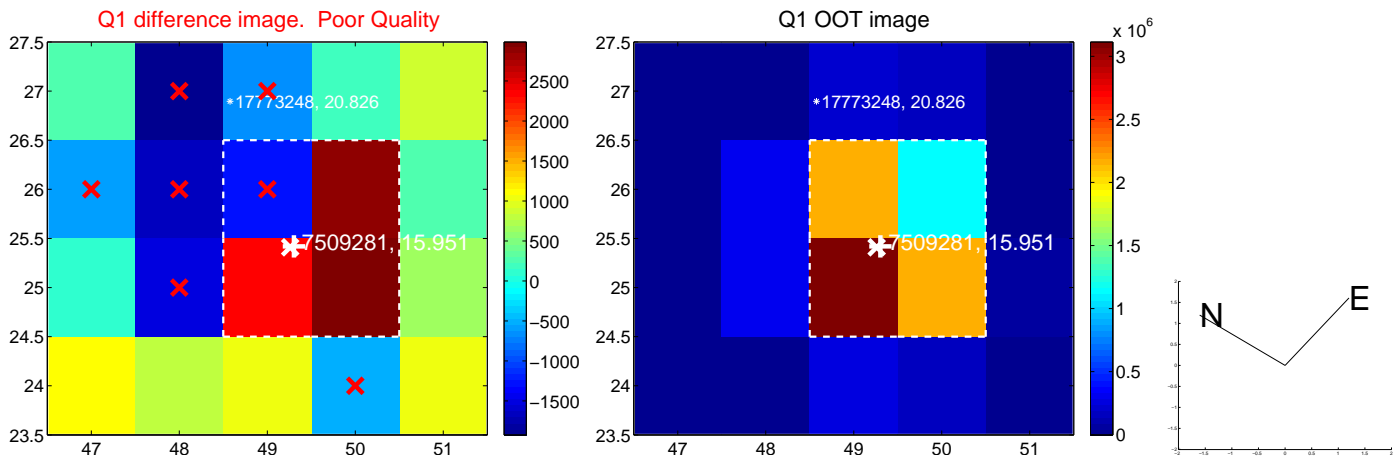


offset from photometric centroids



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

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

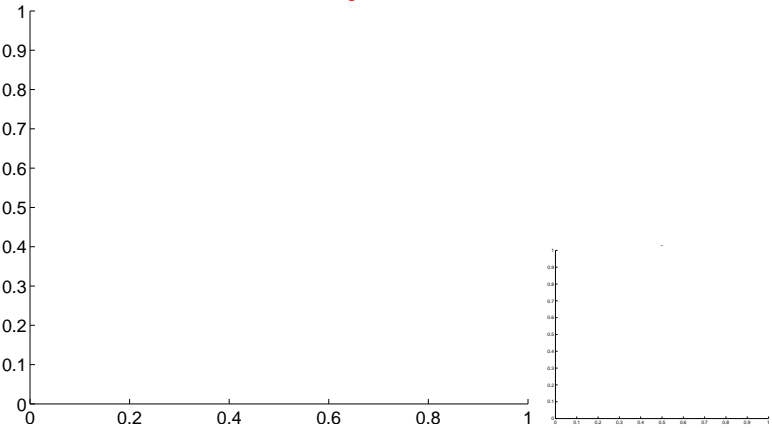


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q5 no difference image



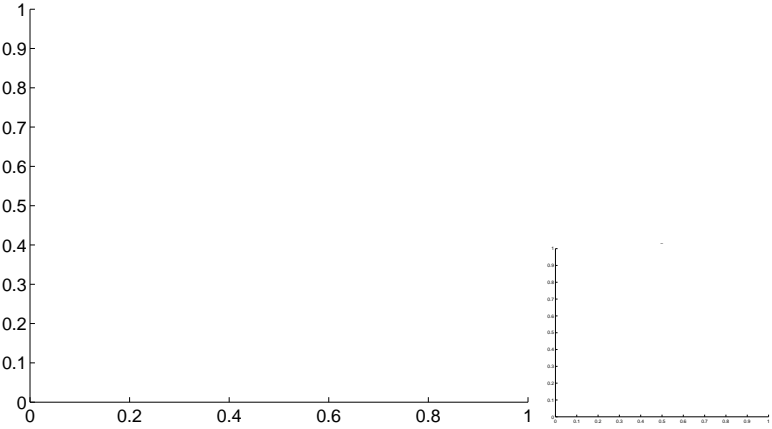
Q5 no OOT image



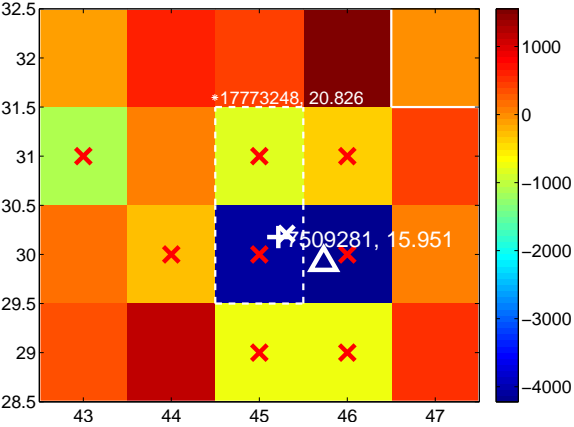
Q6 no difference image



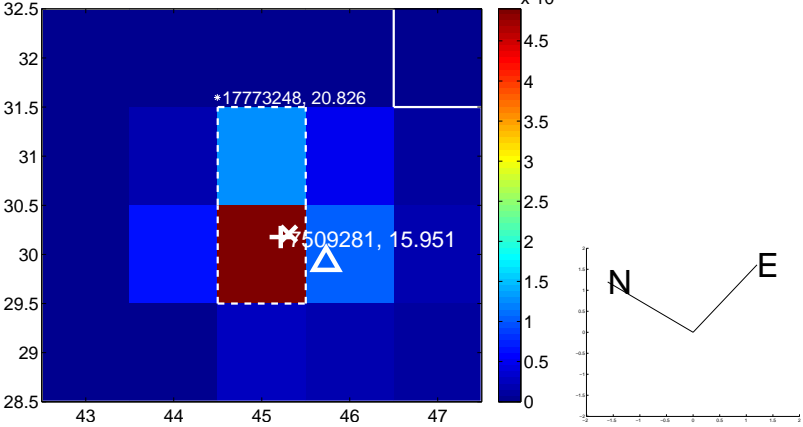
Q6 no OOT image



Q7 difference image. Poor Quality



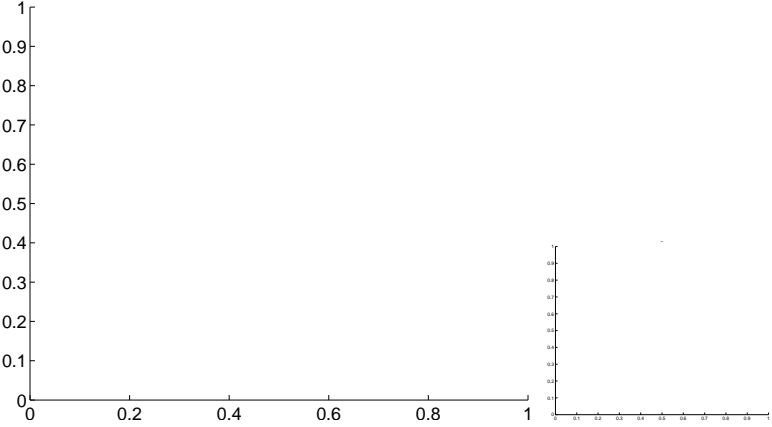
Q7 OOT image



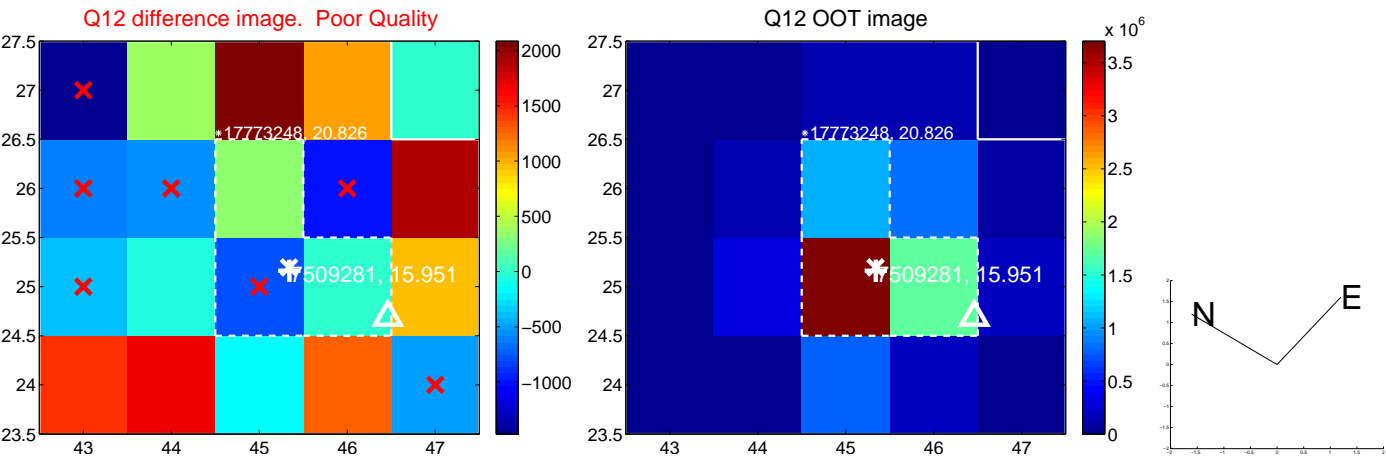
Q8 no difference image



Q8 no OOT image



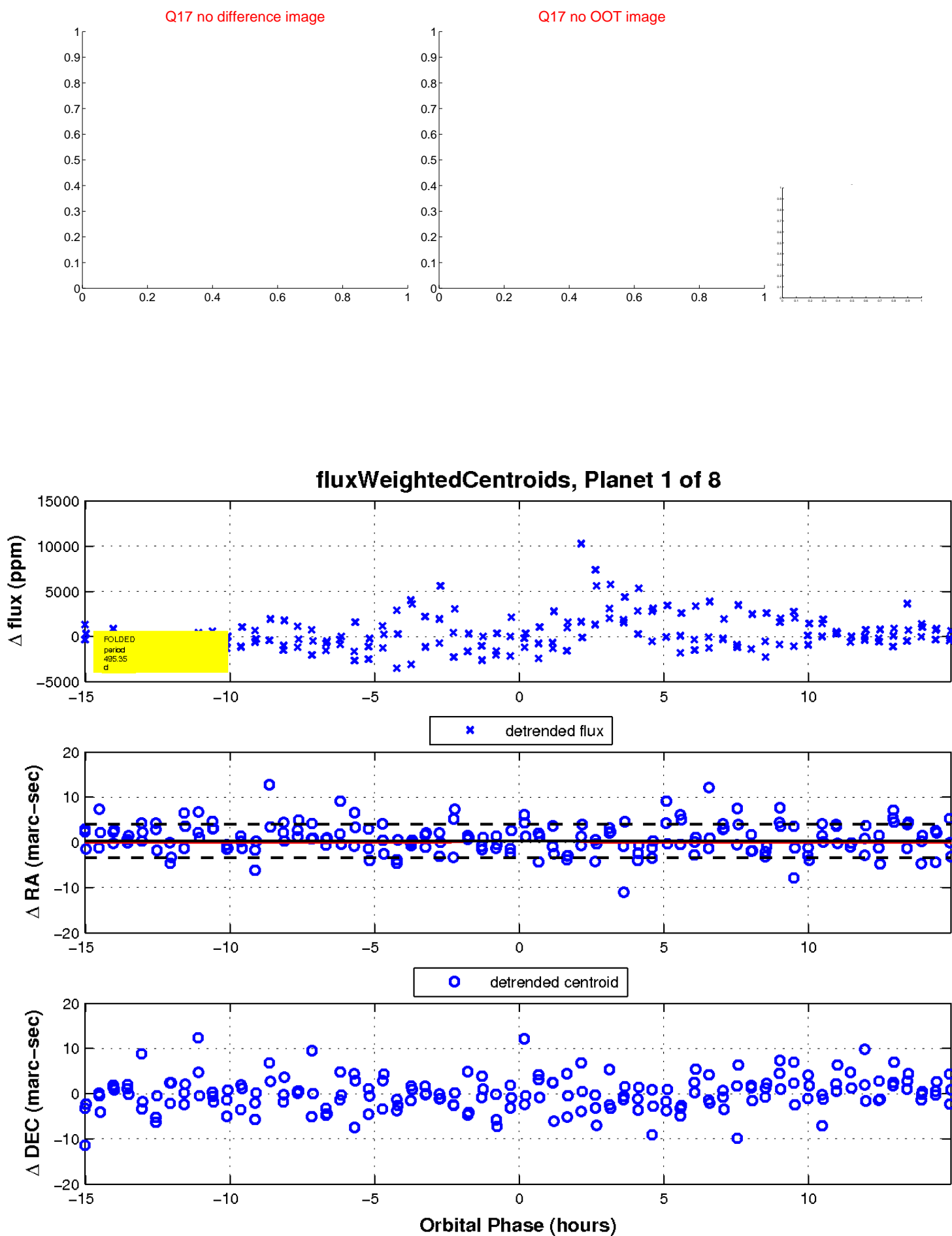
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

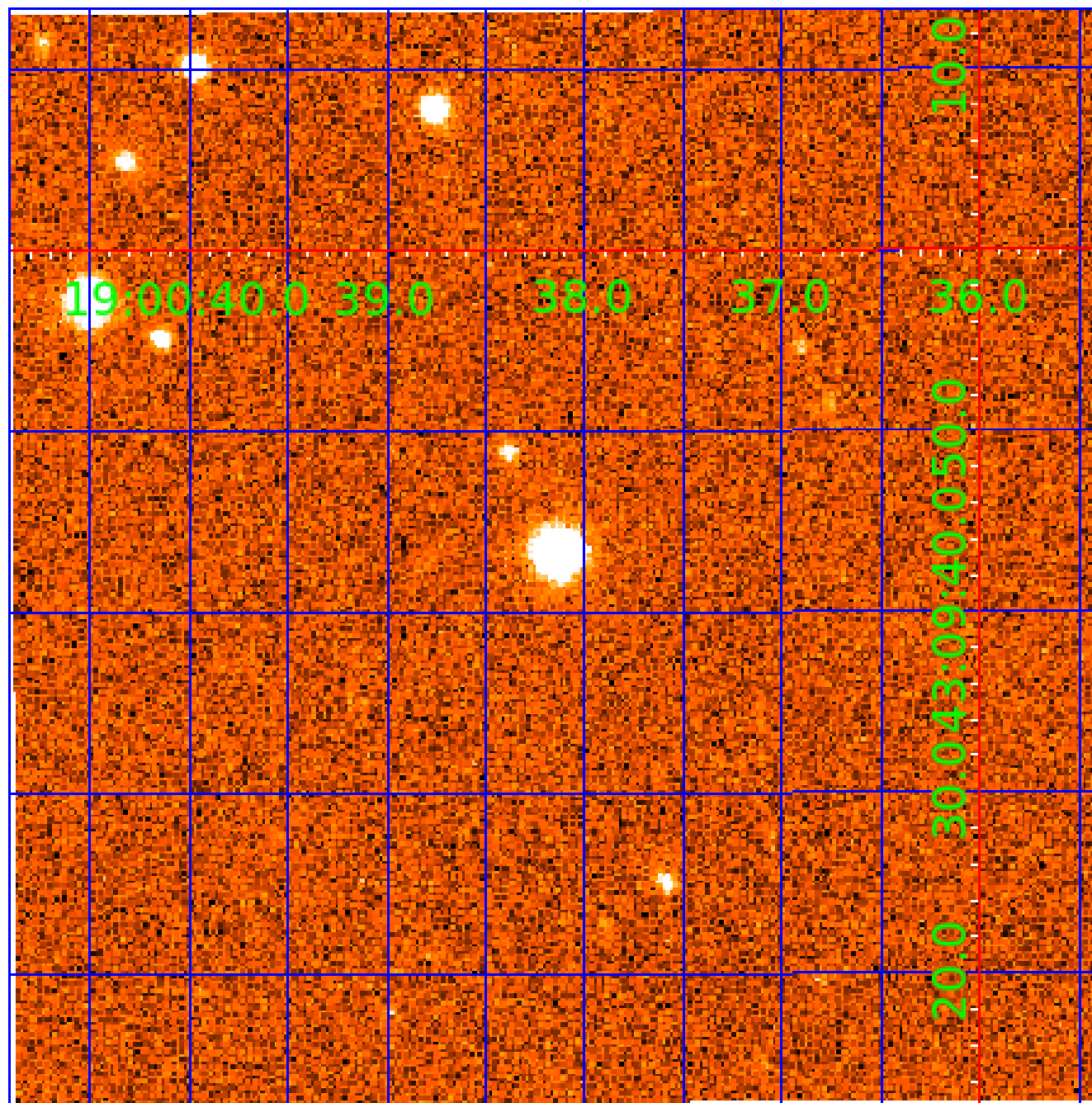


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007509281

Q1-17 DR25 TCE Parameters

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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007509281-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
007509281-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_NOFITS
007509281-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

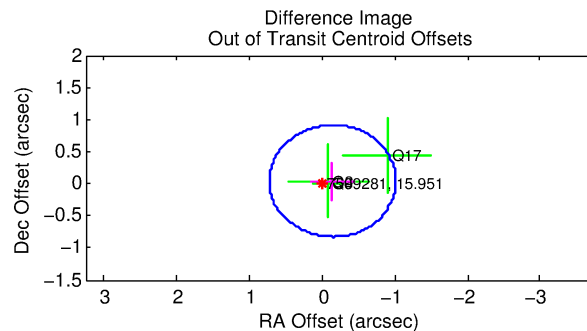
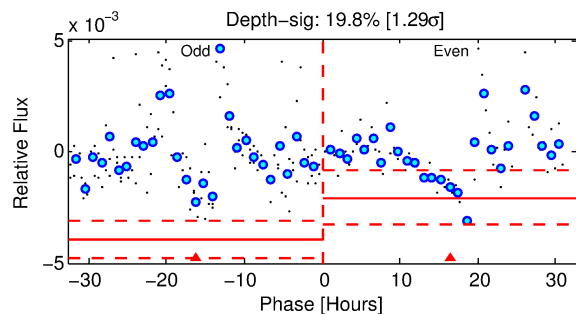
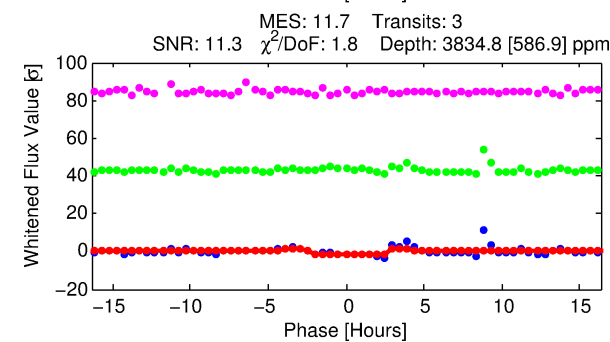
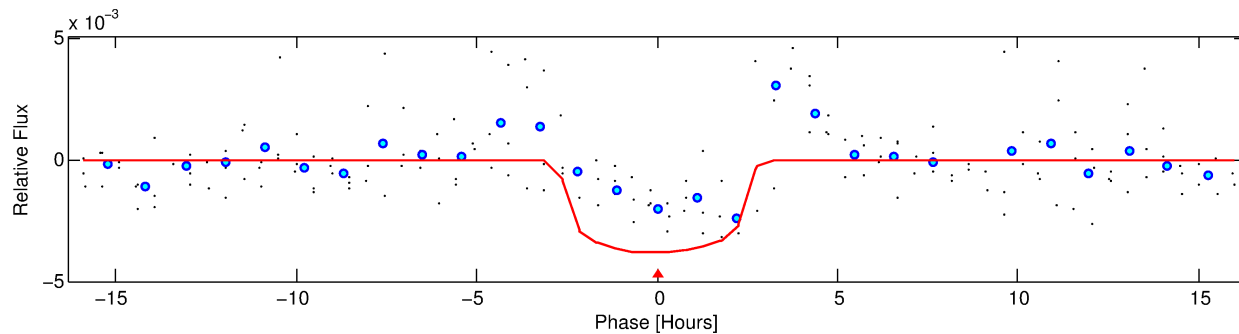
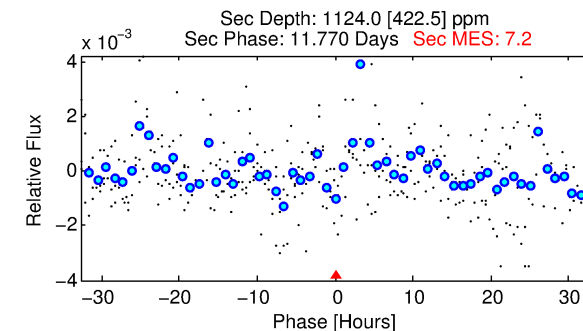
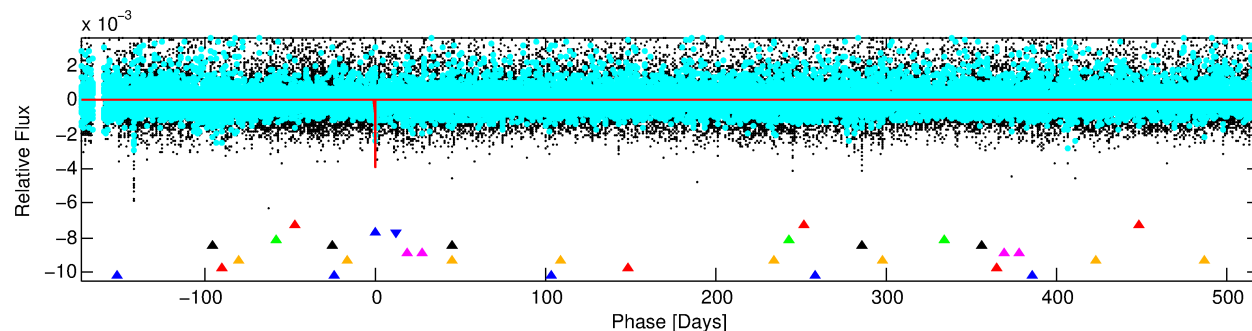
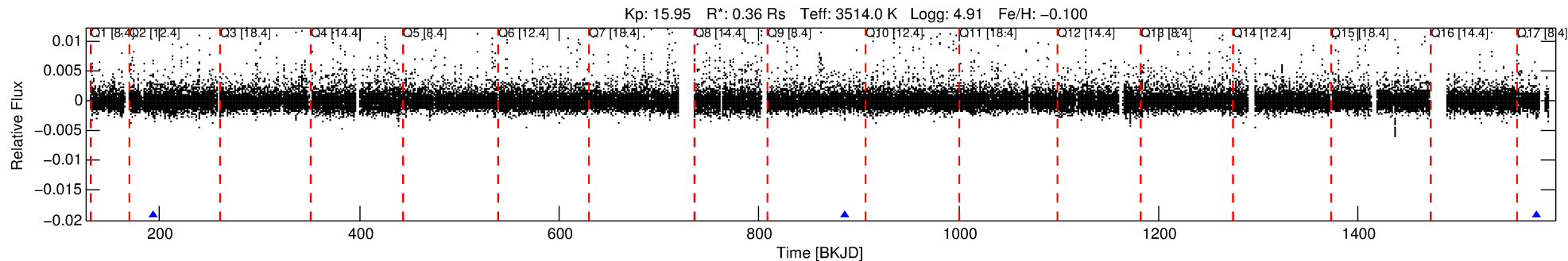
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007509281-02

No Significant Match Found

DV One-Page Summary

KIC: 7509281 Candidate: 2 of 8 Period: 692.167 d



DV Fit Results:

Period = 692.16690 [0.00690] d
Epoch = 193.8644 [0.0103] BKJD
Rp/R* = 0.0561 [0.0325]
a/R* = 1024.56 [2515.11]
b = 0.04 [57.88]
Seff = 0.01 [0.00]
Teq = 88 [3] K
Rp = 2.19 [1.29] Re
a = 1.1069 [0.0887] AU
Ag = 157785.23 [192810.00] [0.82σ]
Teff = 2717 [829] K [3.17σ]

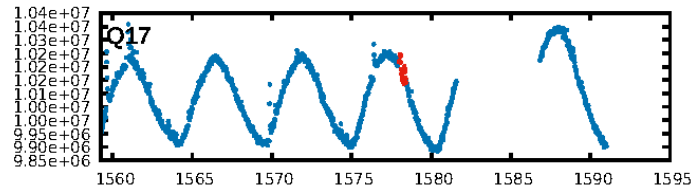
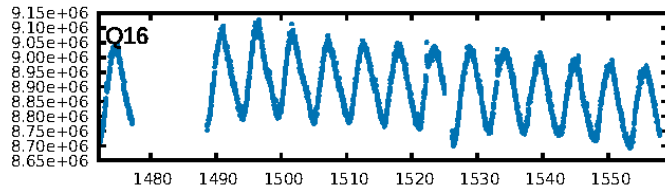
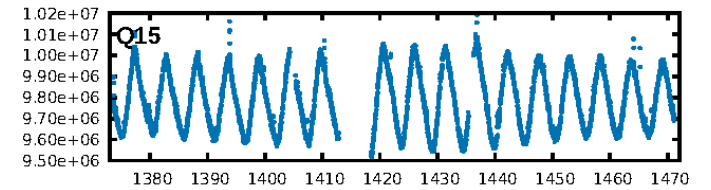
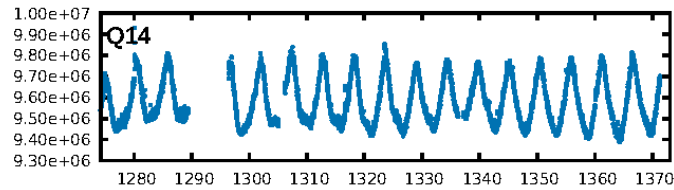
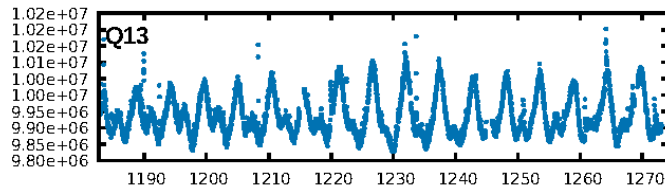
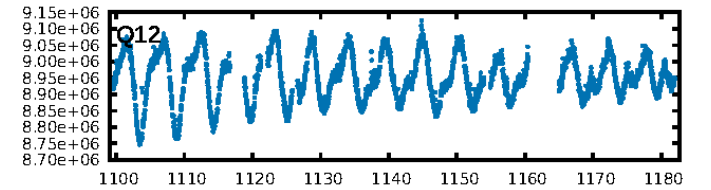
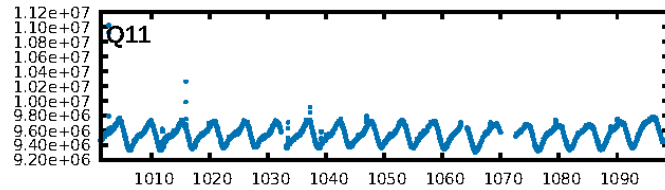
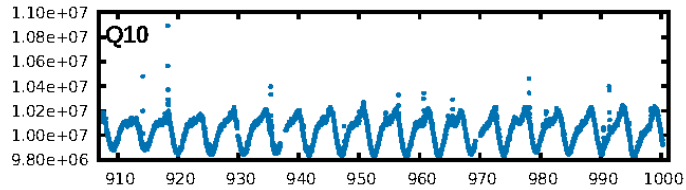
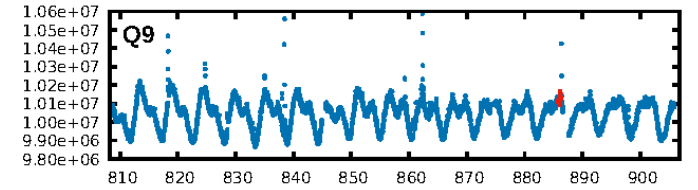
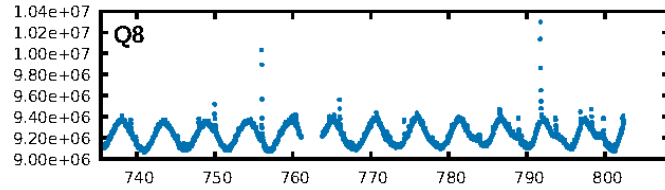
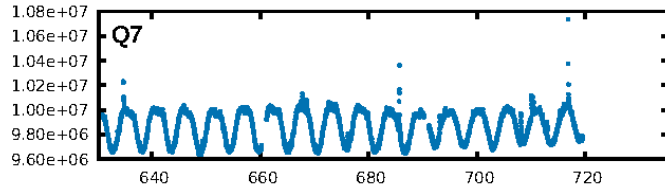
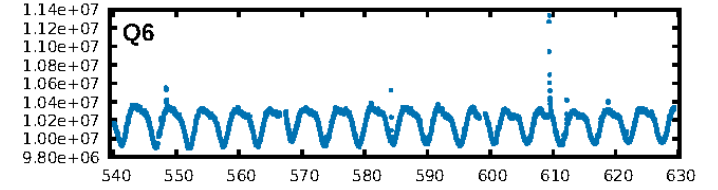
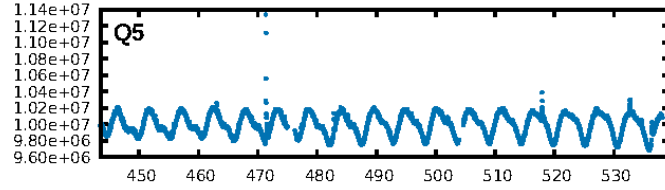
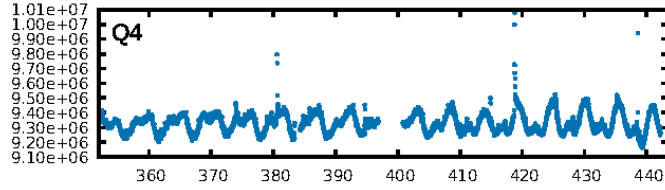
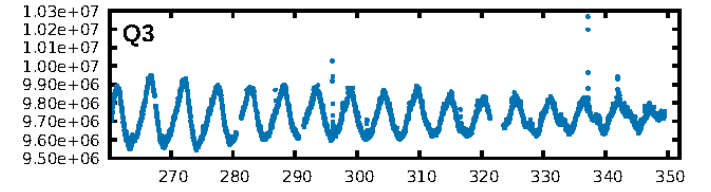
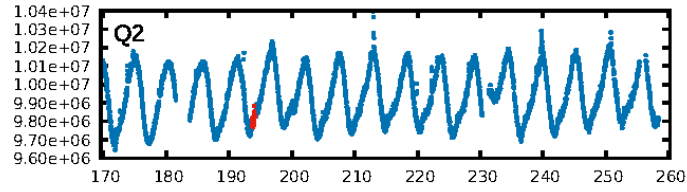
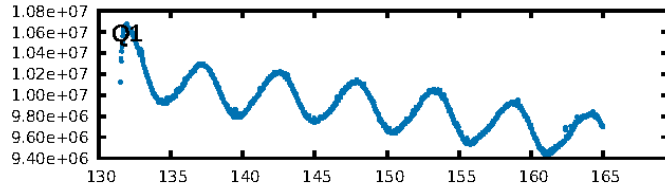
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [638.26σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 28.8%
ModelChiSquareGof-sig: 60.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 1.535
Centroid-sig: N/A
Centroid-so: 0.787 arcsec [1.40σ]
OotOffset-rm: 0.152 arcsec [0.52σ]
KicOffset-rm: 0.172 arcsec [0.59σ]
OotOffset-st: 1/0/0/2 [3]
KicOffset-st: 1/0/0/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

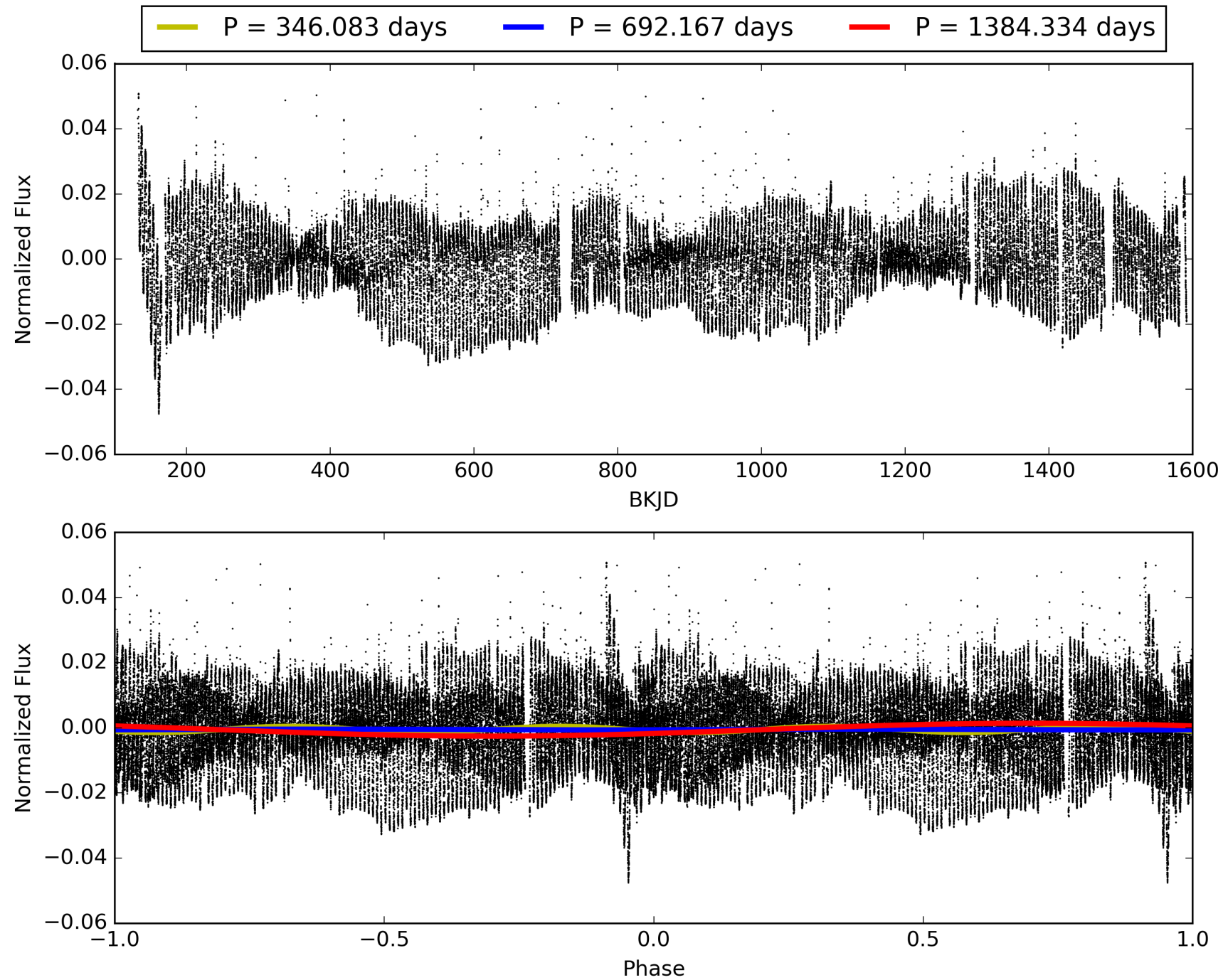
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:46:48 Z

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

TCE 007509281-02, PDC Light Curves

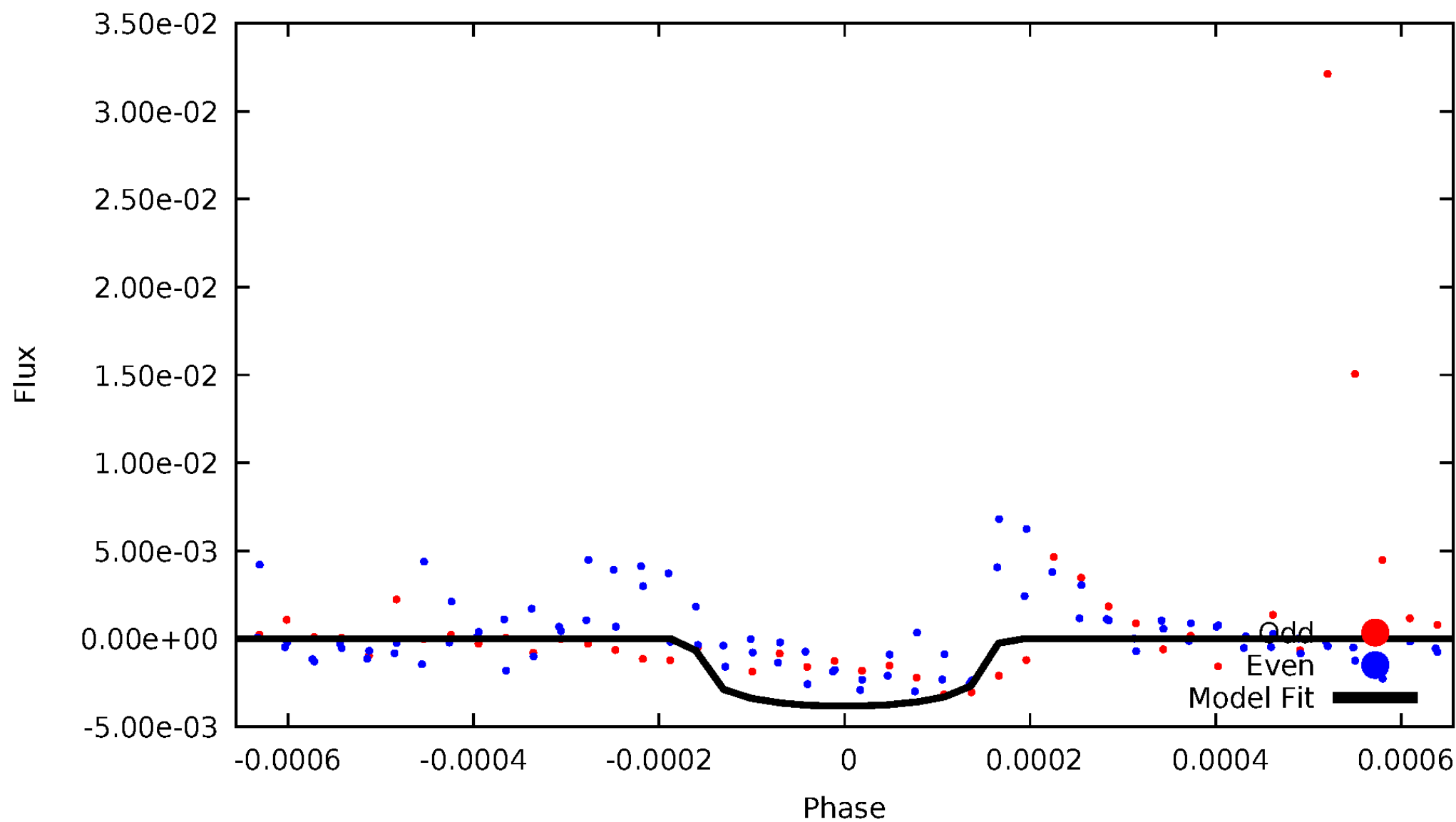


TCE 007509281-02



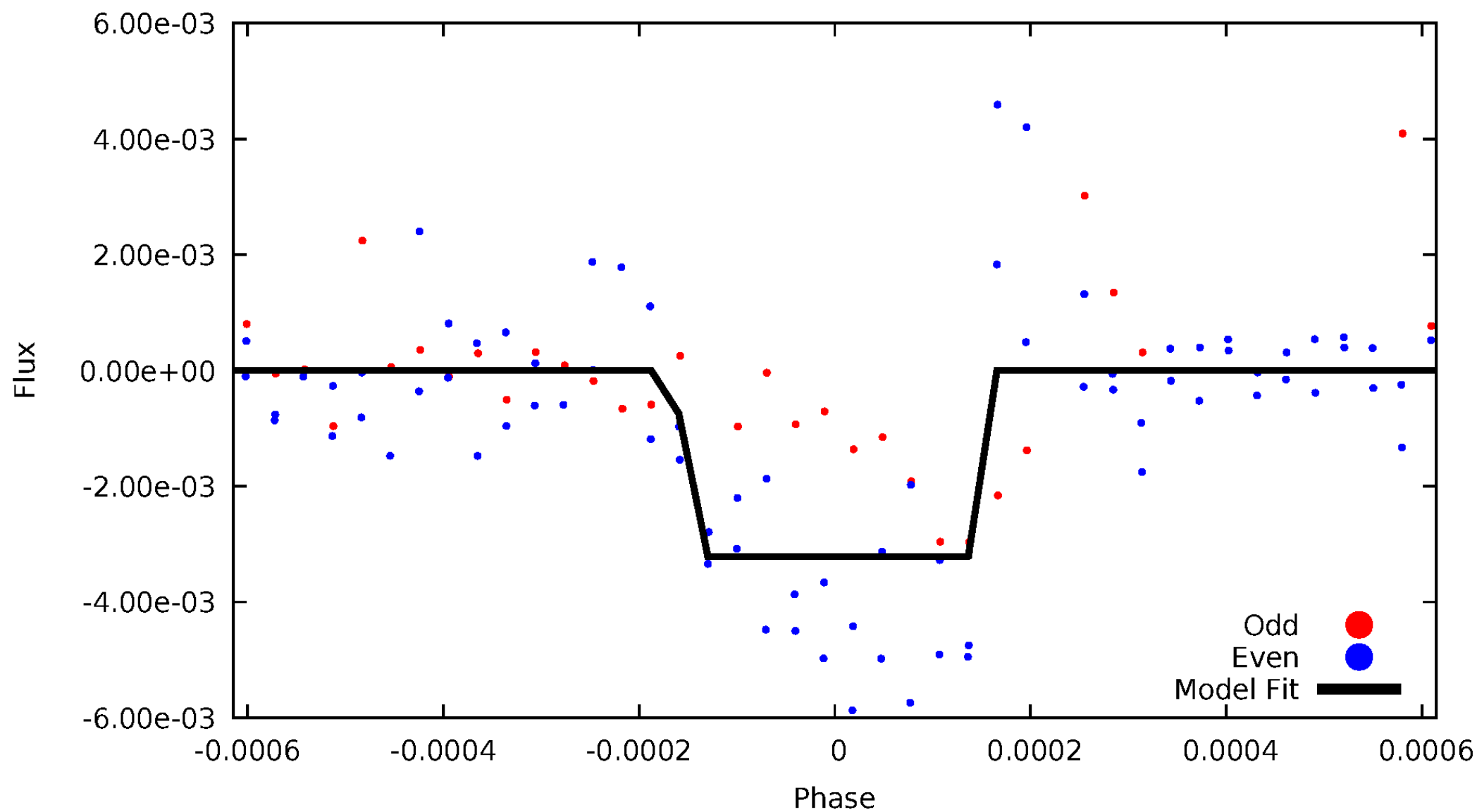
DV Odd/Even

TCE 007509281-02



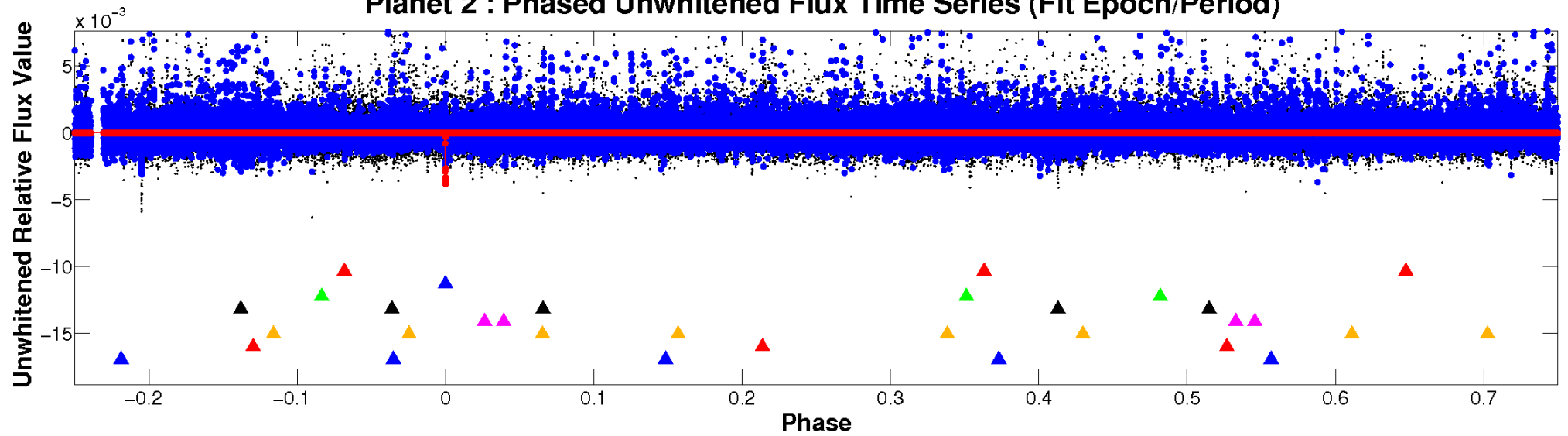
ALT Odd/Even

TCE 007509281-02

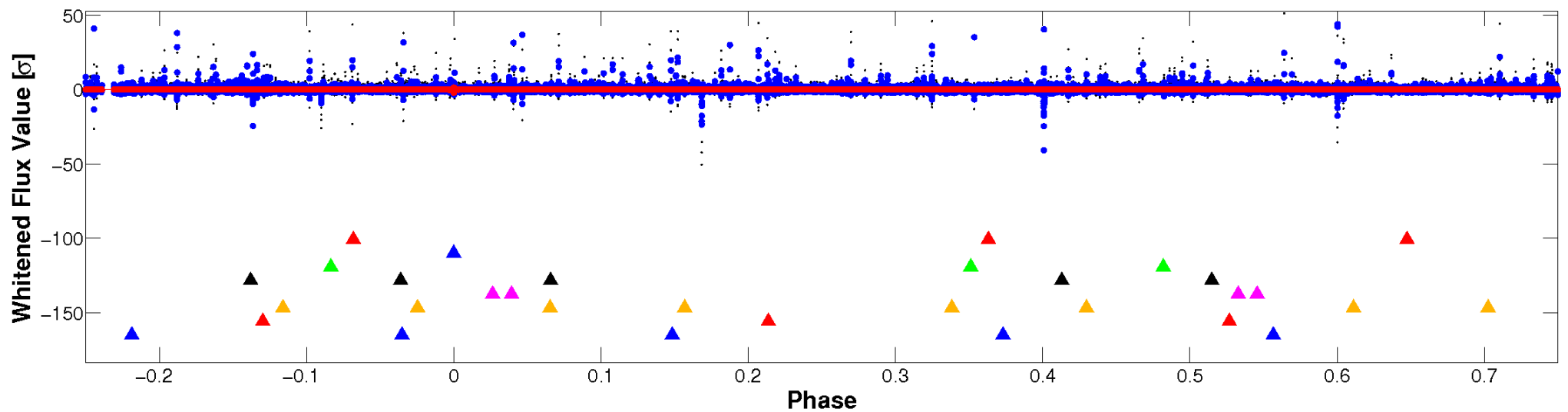


Non-Whitened Vs. Whitened Light Curve

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

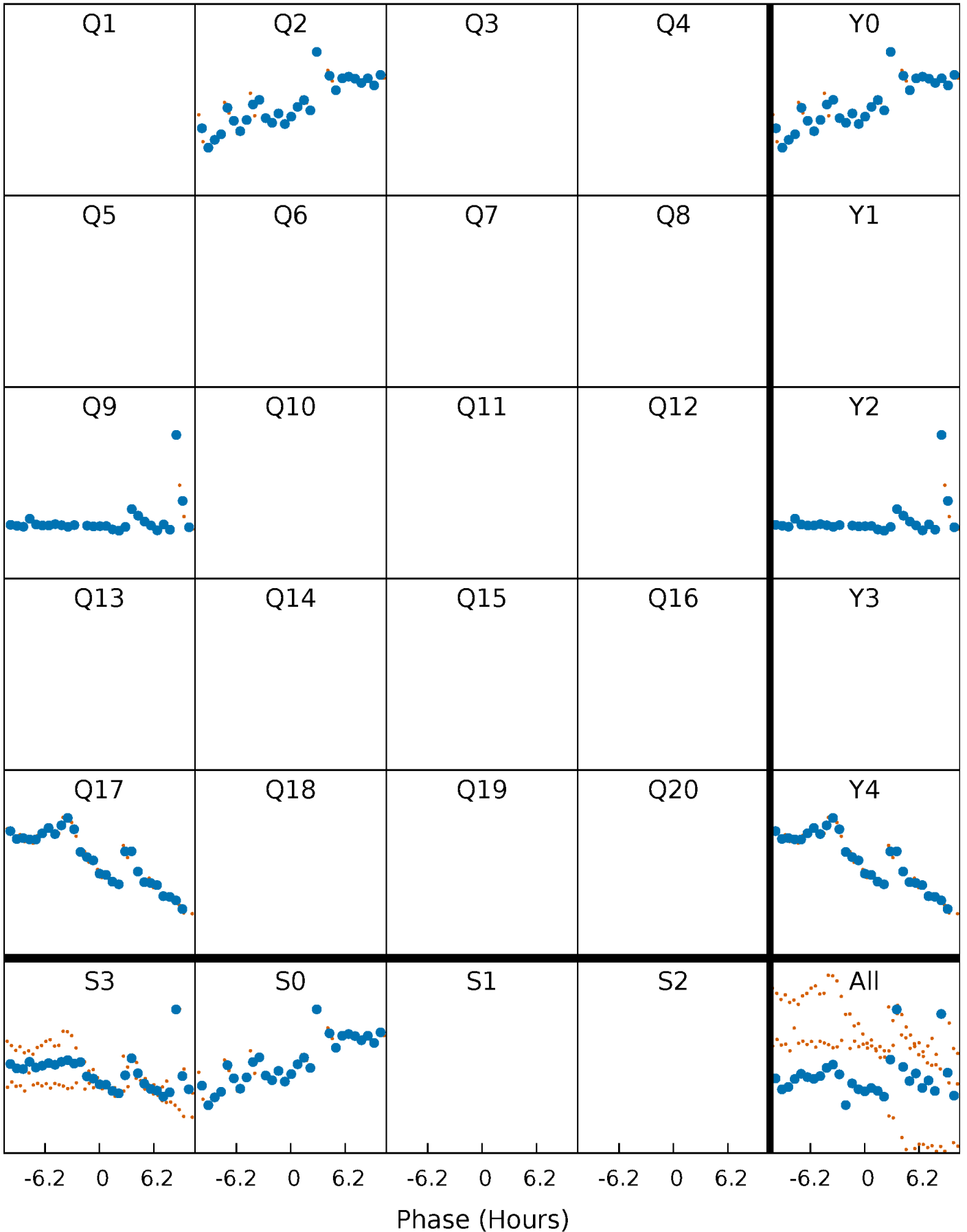


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



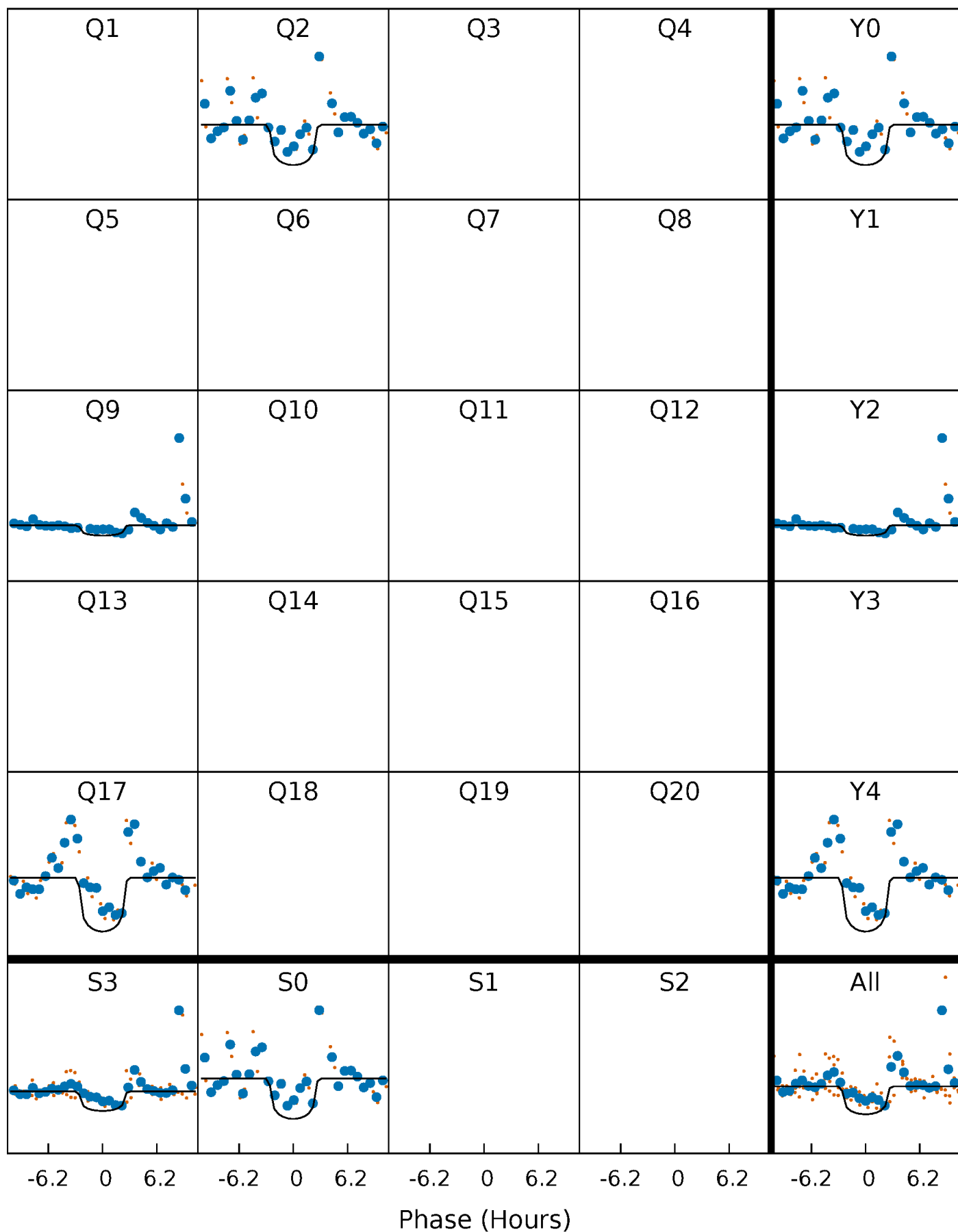
PDC Quarter-Phased Transit Curves

TCE 007509281-02 $P=692.166905$ Days $T_0=193.864416$ (BKJD)



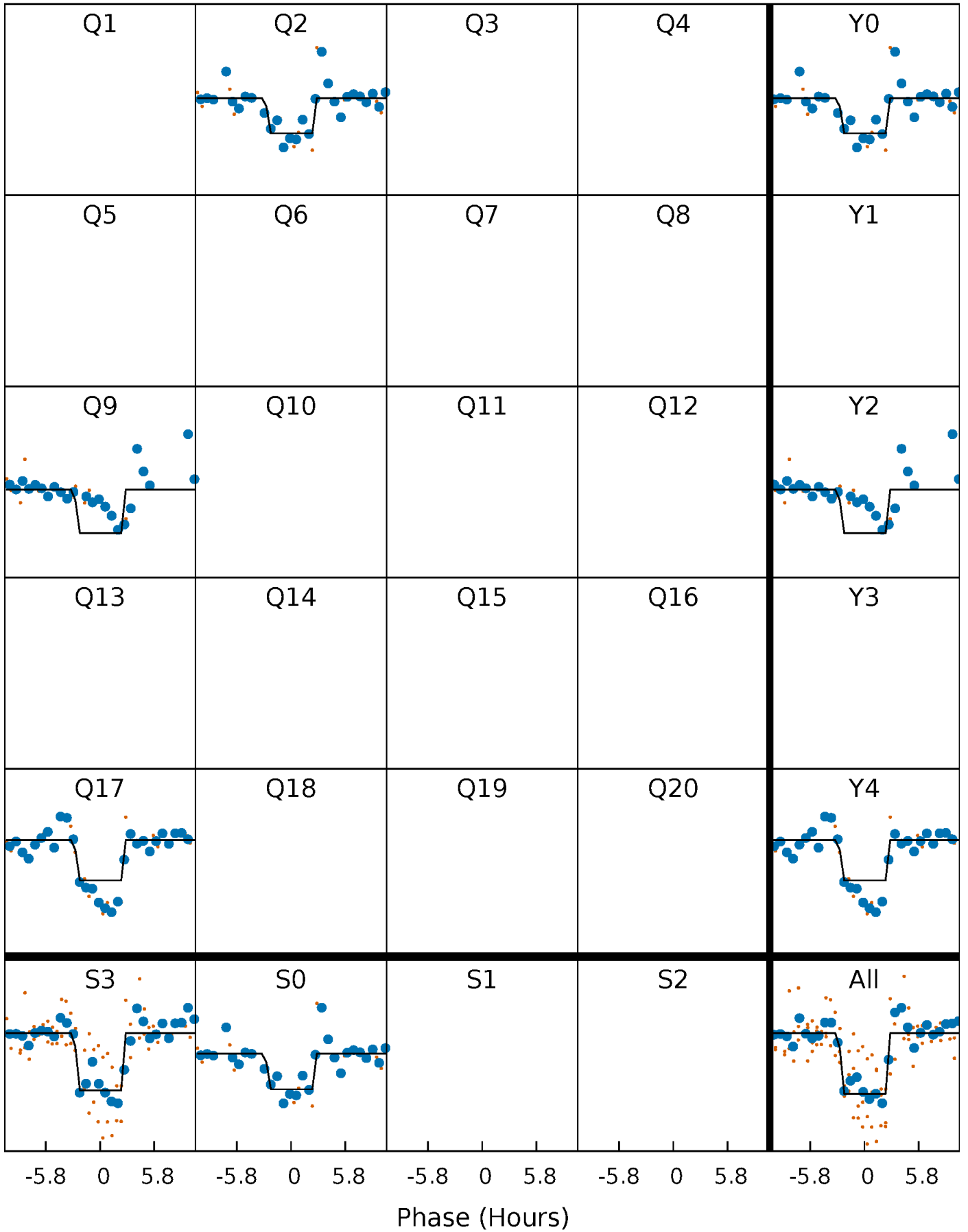
DV Quarter-Phased Transit Curves

TCE 007509281-02 $P=692.166905$ Days $T_0=193.864416$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

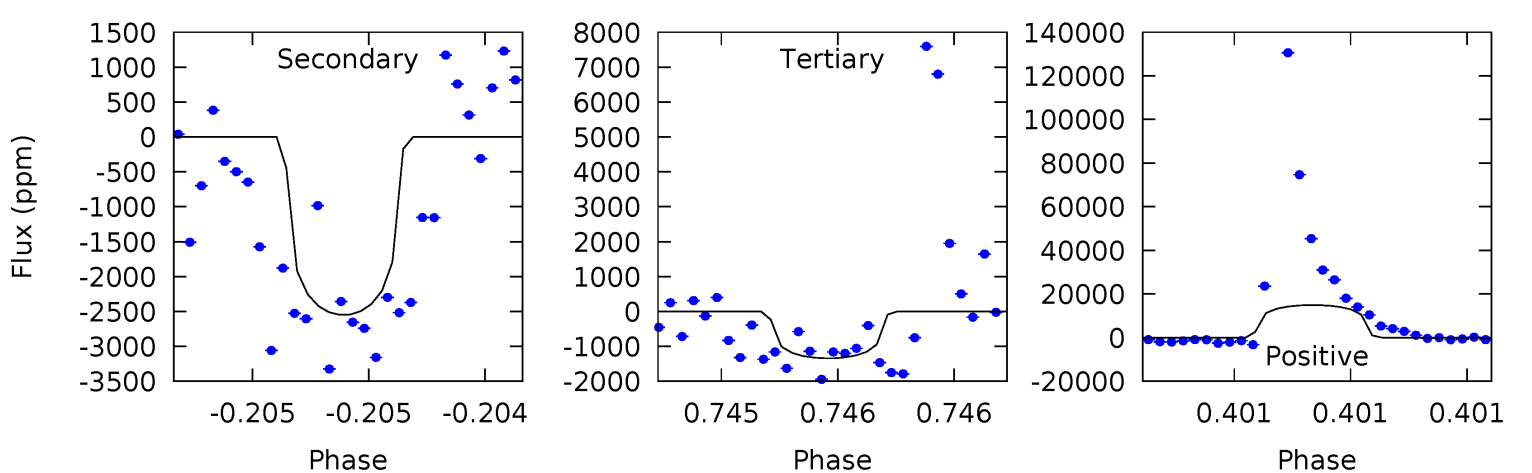
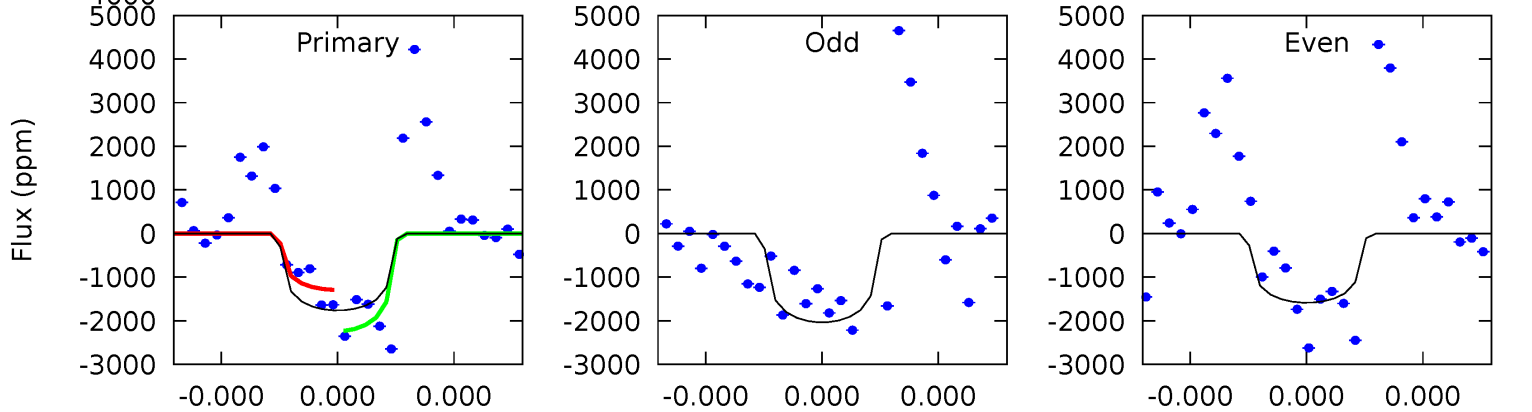
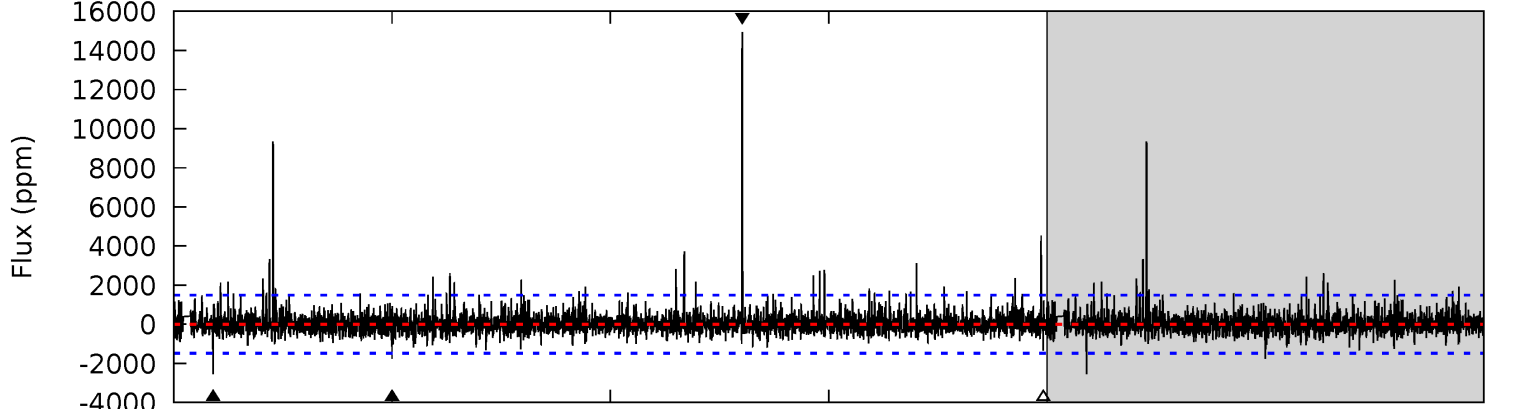
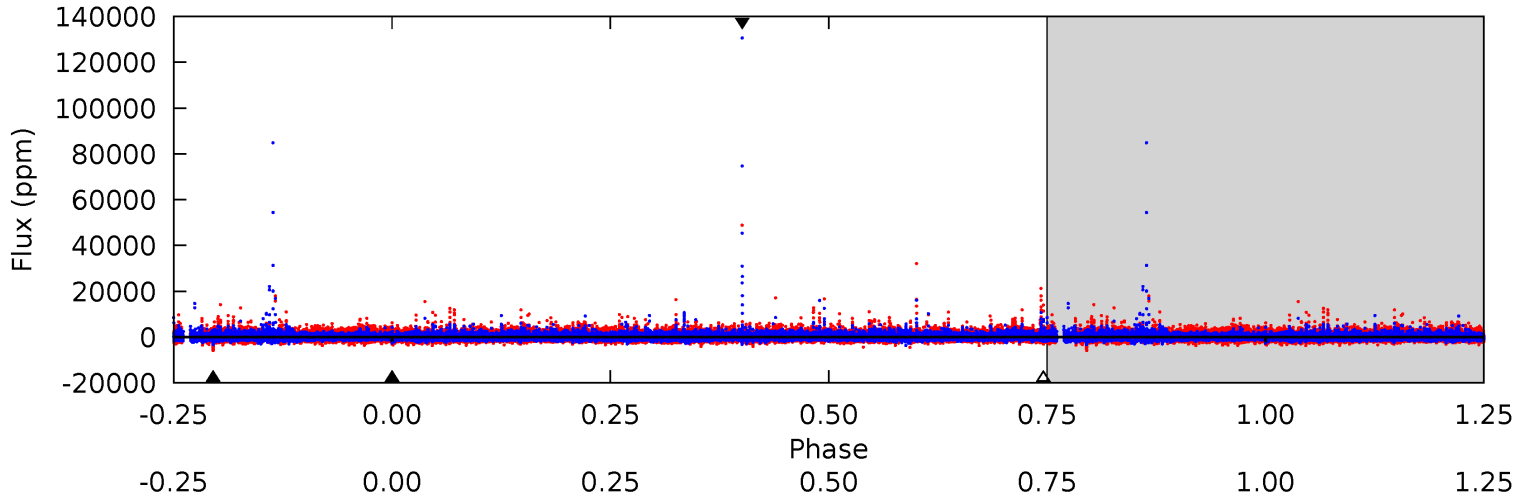
TCE 007509281-02 P=692.166411 Days $T_0=193.864534$ (BKJD)



DV Model-Shift Uniqueness Test

007509281-02, P = 692.166905 Days, E = 193.864416 Days

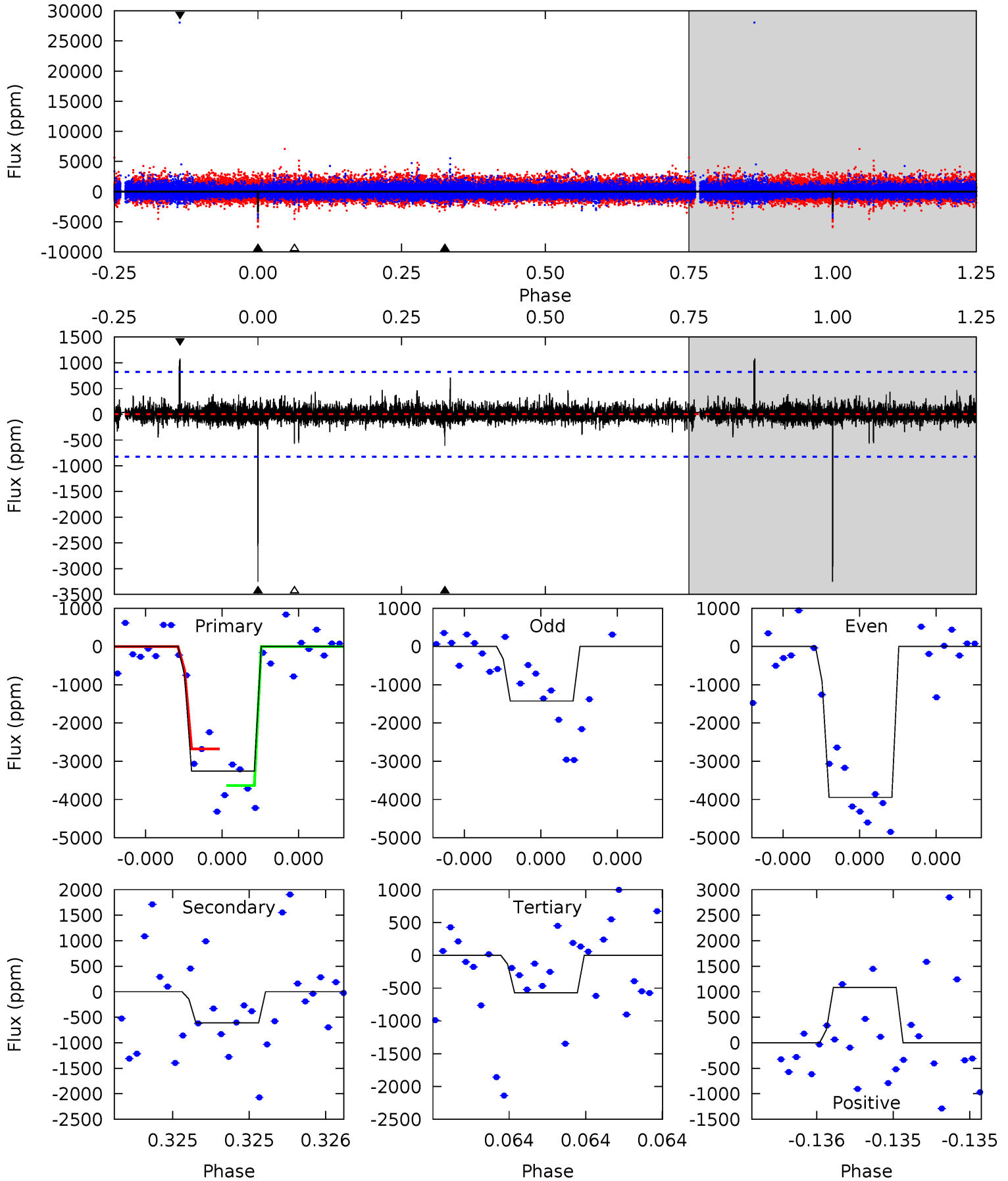
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.70	9.68	5.10	56.8	5.65	3.59	2.08	1.60	-50.1	4.58	-47.1	0.56	0.96	0.85	1.79



Alt Model-Shift Uniqueness Test

007509281-02, P = 692.166411 Days, E = 193.864534 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.3	4.17	3.90	7.43	5.65	3.60	0.62	18.4	14.9	0.26	-3.26	7.71	0.95	0.25	3.35



Stellar Parameters For KIC 007509281

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3514^{+56}_{-63}	$4.907^{+0.040}_{-0.044}$	$-0.100^{+0.100}_{-0.100}$	$0.358^{+0.039}_{-0.039}$	$0.380^{+0.040}_{-0.054}$	$11.650^{+2.693}_{-2.189}$
	+2%/-2%	+1%/-1%	+100%/-100%	+11%/-11%	+11%/-14%	+23%/-19%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 007509281-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2549 ± 263	$2.34^{+1.25}_{-1.19}$	123^{+3}_{-3}	3330^{+898}_{-380}	$309919^{+1013796}_{-173424}$
Alt.	-608 ± 146	$2.24^{+1.24}_{-1.08}$	123^{+3}_{-3}	2741^{+596}_{-302}	$78012^{+238669}_{-46891}$

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

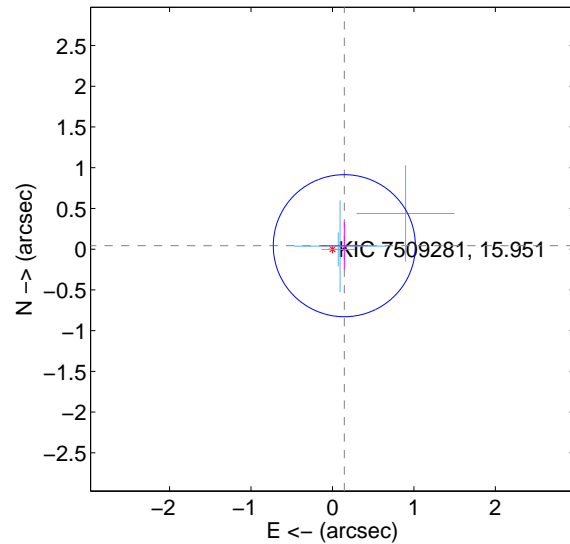
Supplemental centroid analysis for 007509281-02. Kepler magnitude: 15.95. Transit SNR 11.30

There are 3 quarters with good PRF difference image offsets

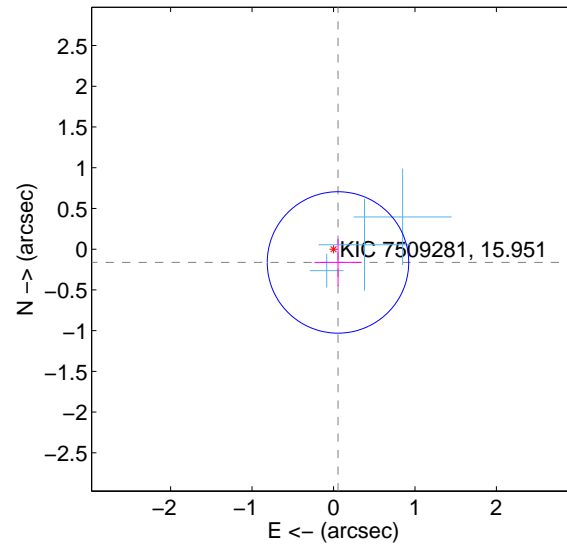
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.152 ± 0.291	0.52	-0.145 ± 0.291	0.043 ± 0.289
PRF-fit source offset from KIC position	0.172 ± 0.289	0.59	-0.055 ± 0.291	-0.163 ± 0.289
photometric centroid source offset	0.79 ± 0.56	1.40	0.49 ± 0.55	0.62 ± 0.57

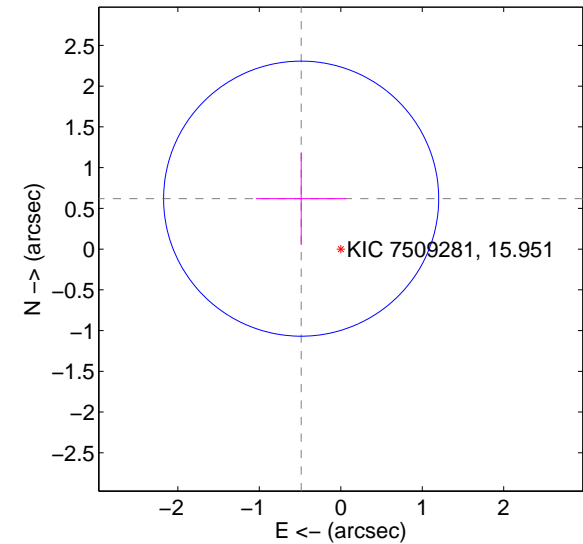
offset from difference PRF-fit to OOT PRF-fit



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.

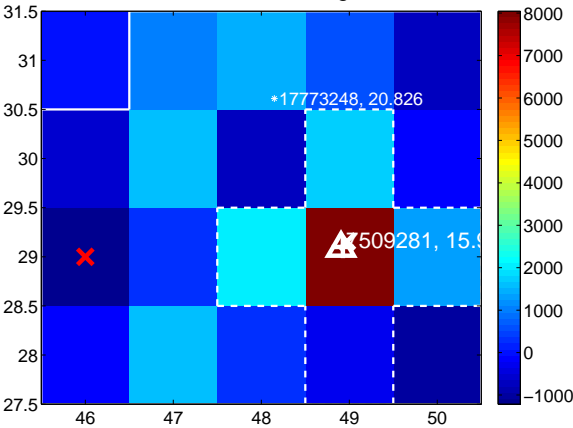
Q1 no difference image



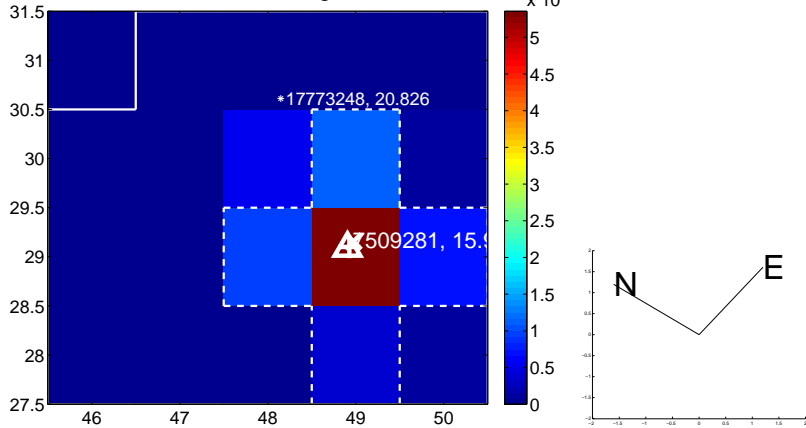
Q1 no OOT image



Q2 difference image



Q2 OOT image



Q3 no difference image



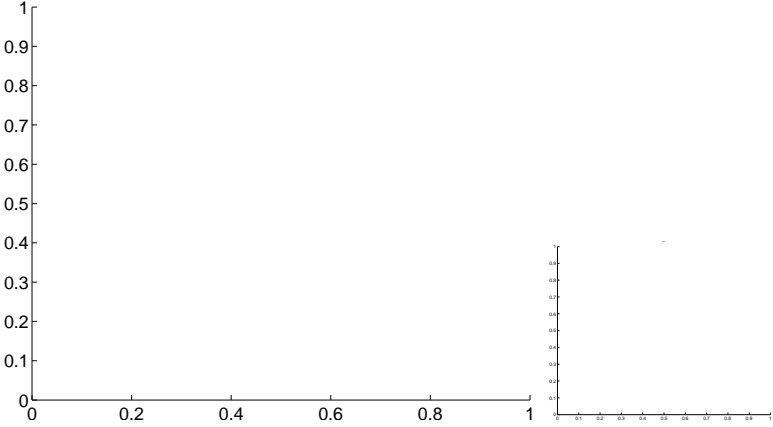
Q3 no OOT image



Q4 no difference image



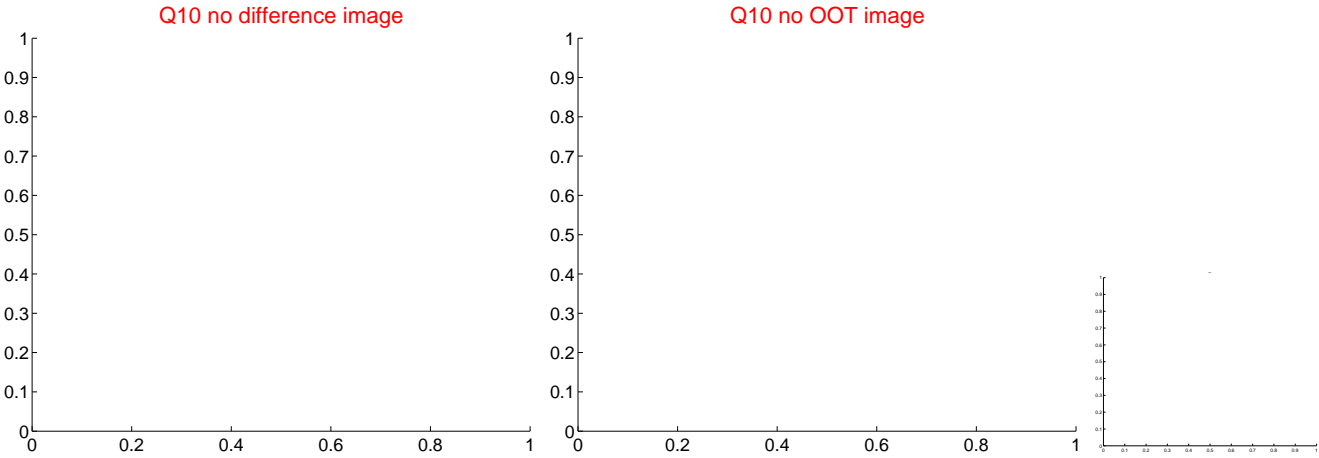
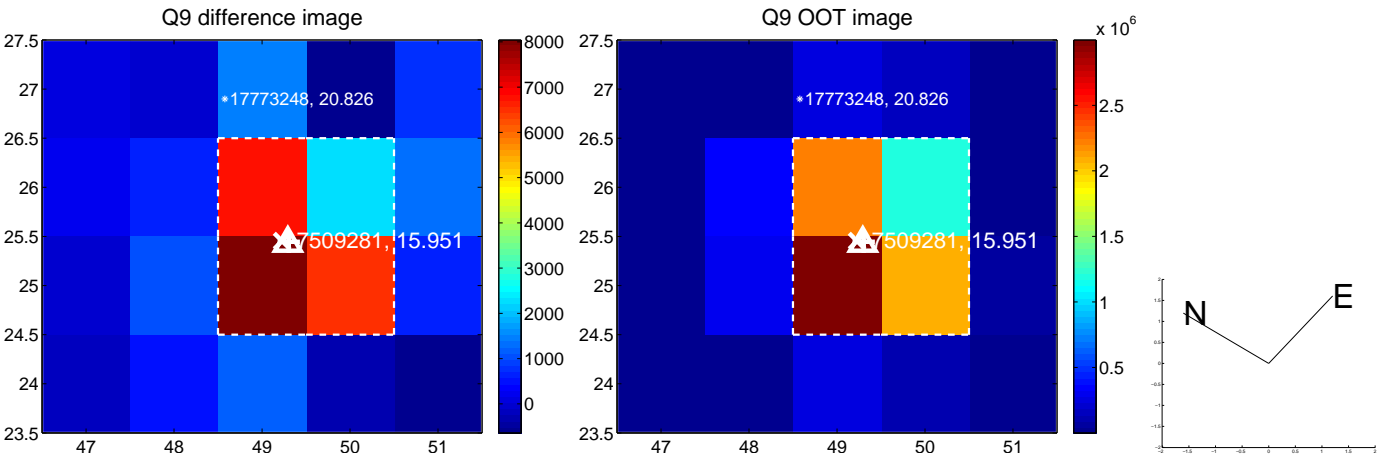
Q4 no OOT image



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



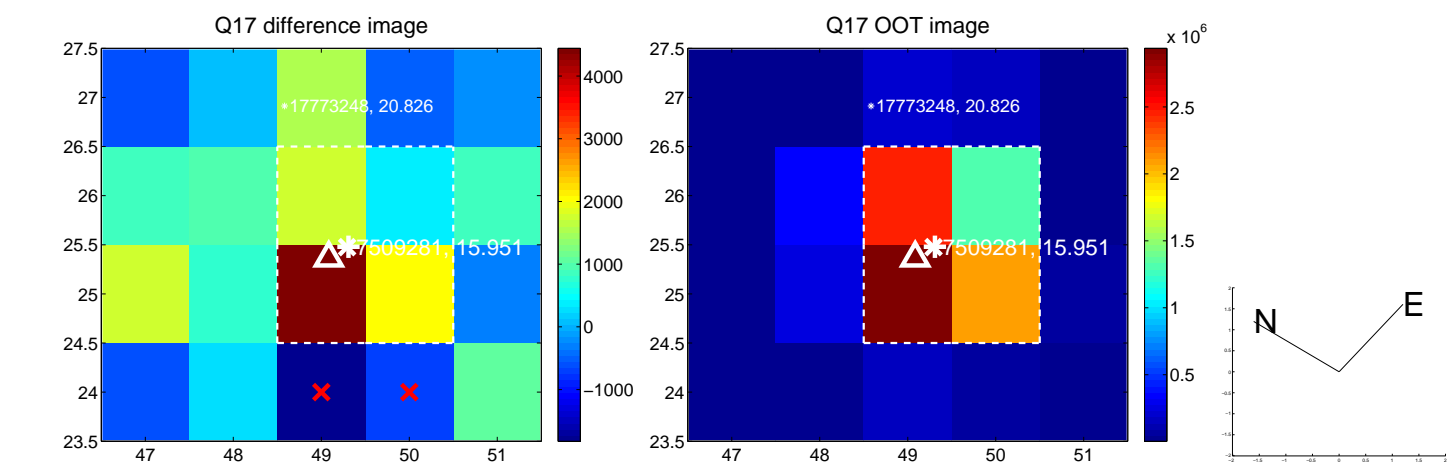
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



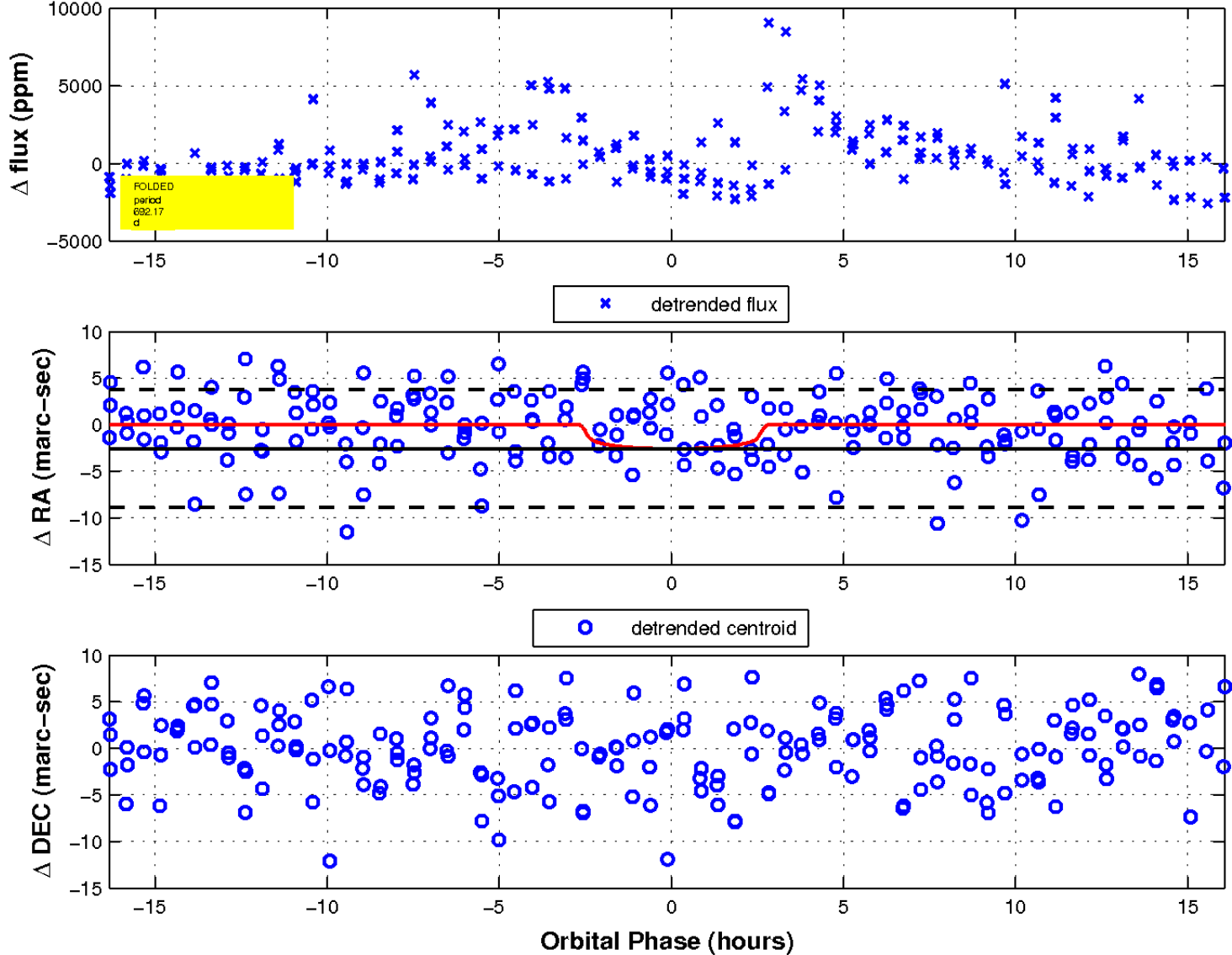
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

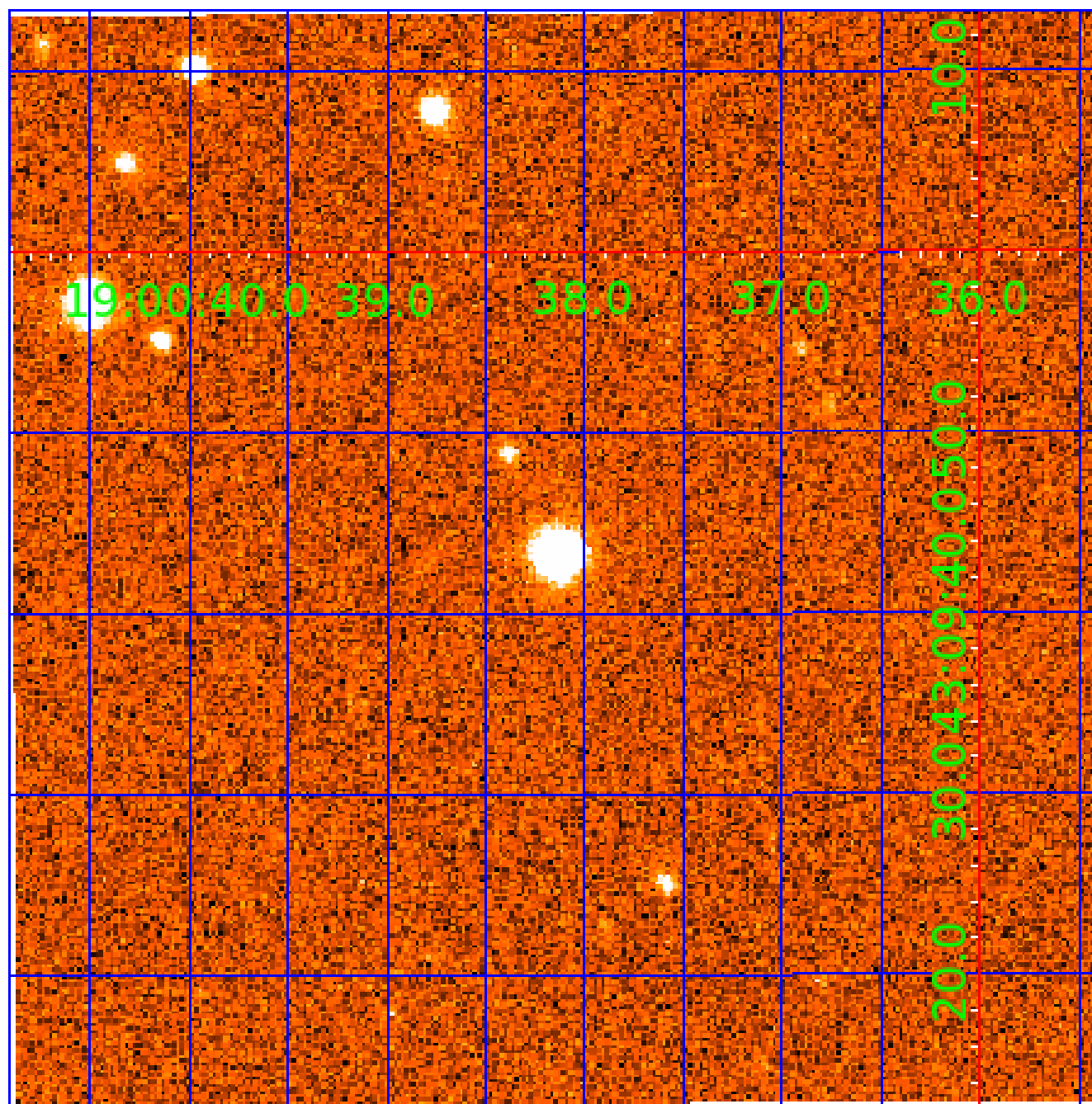


fluxWeightedCentroids, Planet 2 of 8



UKIRT Image

Declination



KIC 007509281

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})
007509281-01	OBS	No	495.349153	146.690329	2359.1	5.011	12.3	7.2	0.36	3514	1.78	0.02
007509281-02	OBS	No	692.166905	193.864416	3834.8	5.446	11.7	11.3	0.36	3514	2.19	0.01
007509281-03	OBS	No	391.329919	436.945038	1314.2	15.000	11.2	-1.0	0.36	3514	1.28	0.03
007509281-04	OBS	No	310.829106	239.404934	2908.4	15.364	10.6	7.3	0.36	3514	2.31	0.04
007509281-05	OBS	No	350.536672	212.159784	547.7	7.021	11.0	1.9	0.36	3514	0.87	0.04
007509281-06	OBS	No	188.860962	239.174780	2397.9	3.029	11.7	7.4	0.36	3514	1.84	0.08
007509281-07	OBS	No	454.443040	341.799460	2133.5	4.279	10.4	6.7	0.36	3514	1.68	0.03
007509281-08	OBS	No	282.560172	296.603971	1474.0	21.758	9.4	4.4	0.36	3514	1.36	0.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007509281-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
007509281-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_NOFITS
007509281-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

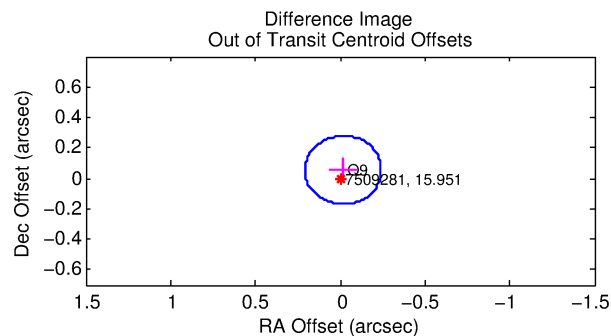
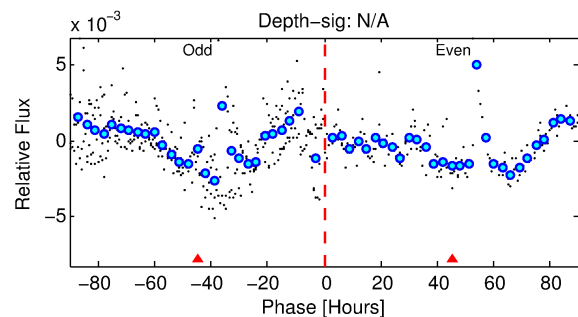
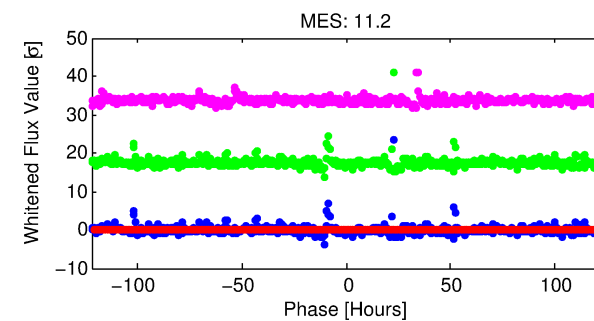
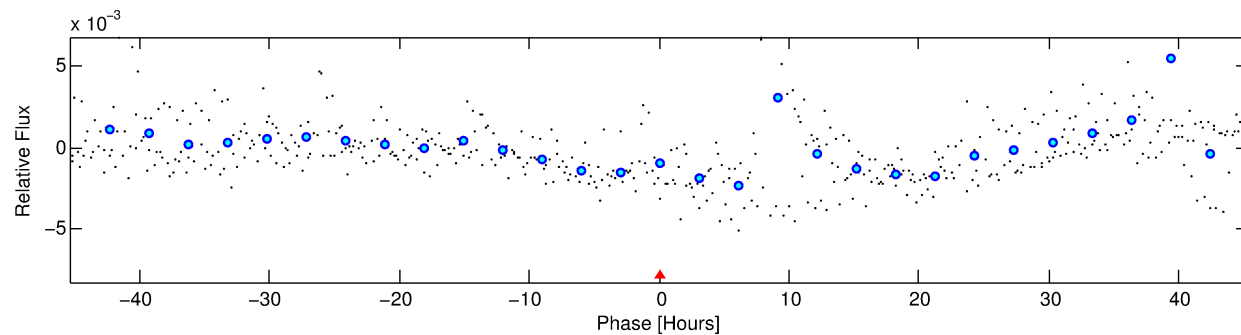
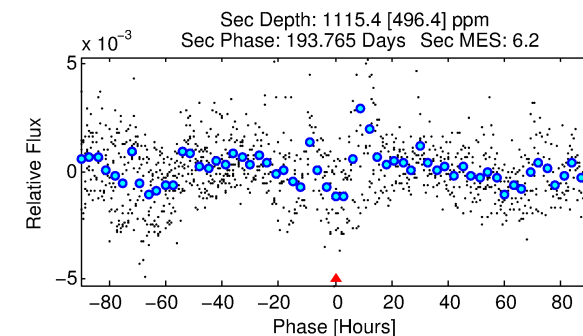
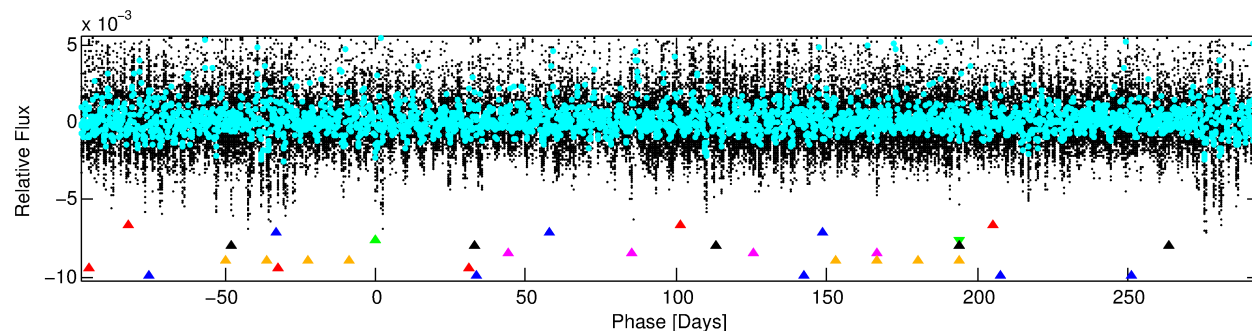
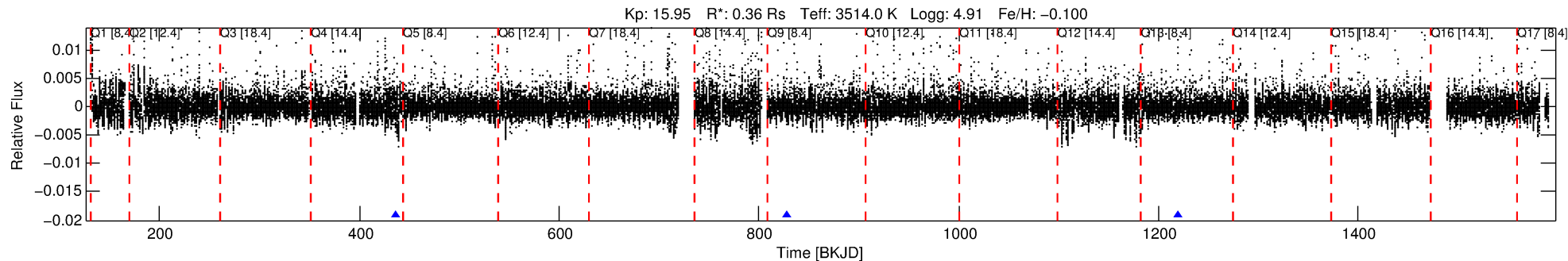
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007509281-03

No Significant Match Found

DV One-Page Summary

KIC: 7509281 Candidate: 3 of 8 Period: 391.330 d



TPS TCE Results:

Period = 391.32992 d
Epoch = 436.9450 BKJD

DV fit results are unavailable

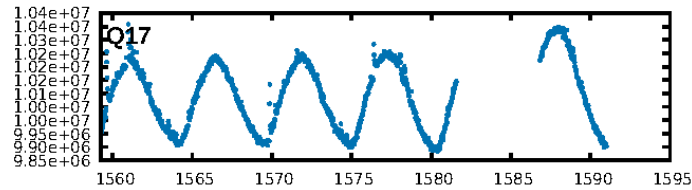
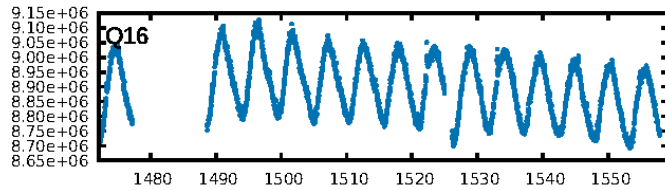
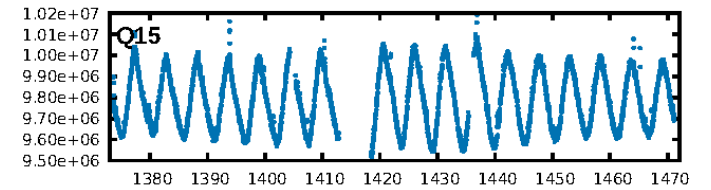
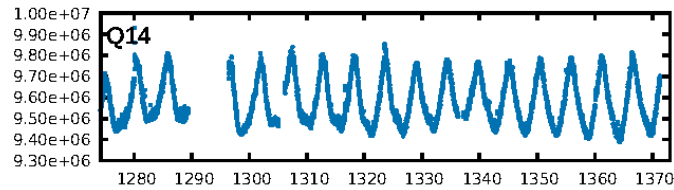
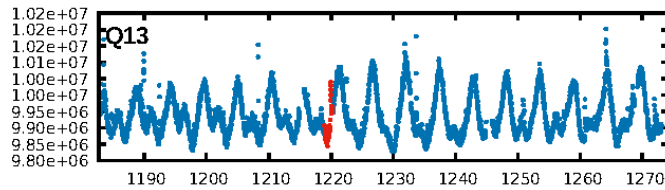
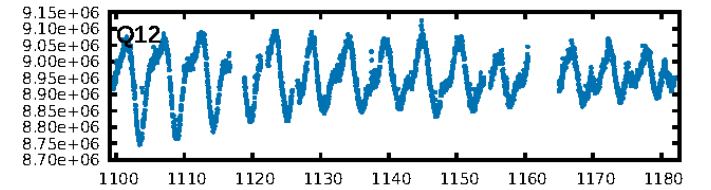
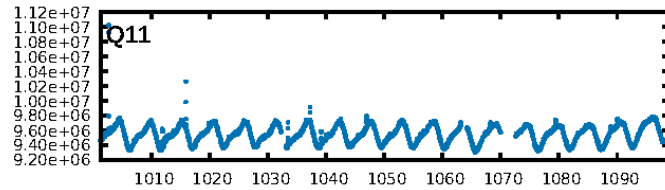
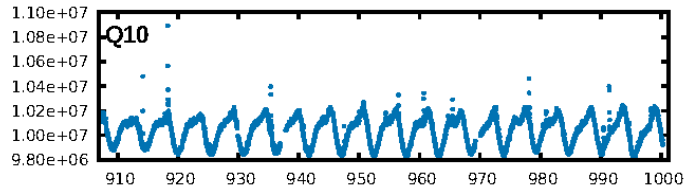
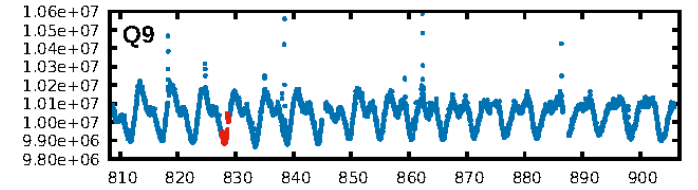
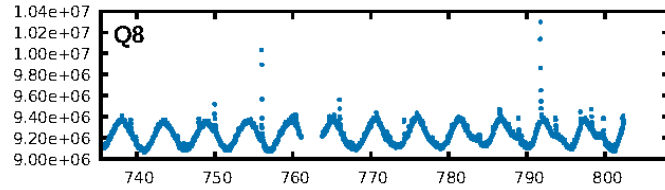
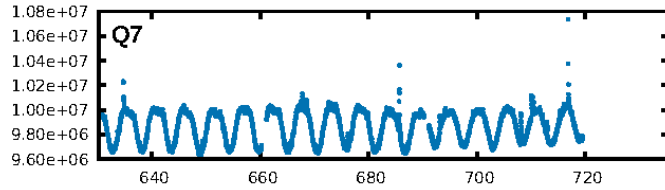
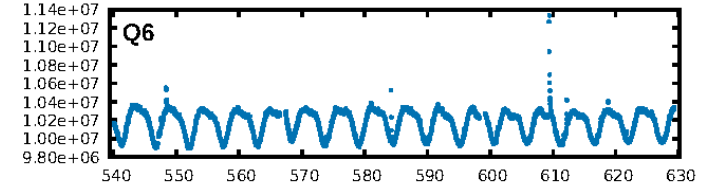
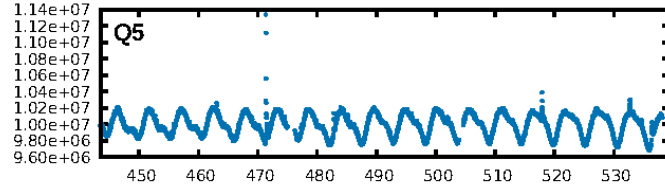
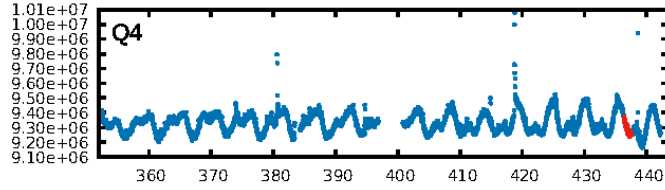
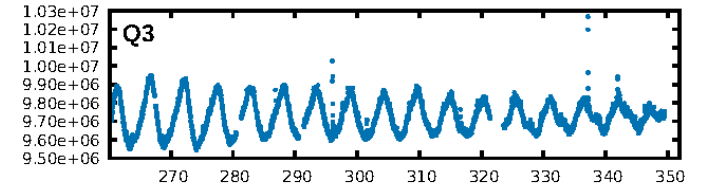
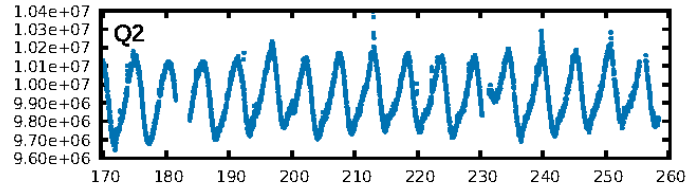
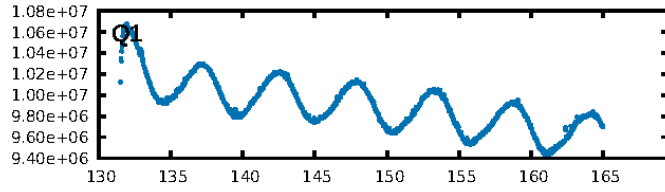
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [59.11 σ]
LongPeriod-sig: 100.0% [97.11 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.5319
Centroid-sig: N/A
Centroid-so: 0.698 arcsec [0.89 σ]
OotOffset-rm: 0.057 arcsec [0.76 σ]
KicOffset-rm: 0.158 arcsec [2.10 σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [1/1]

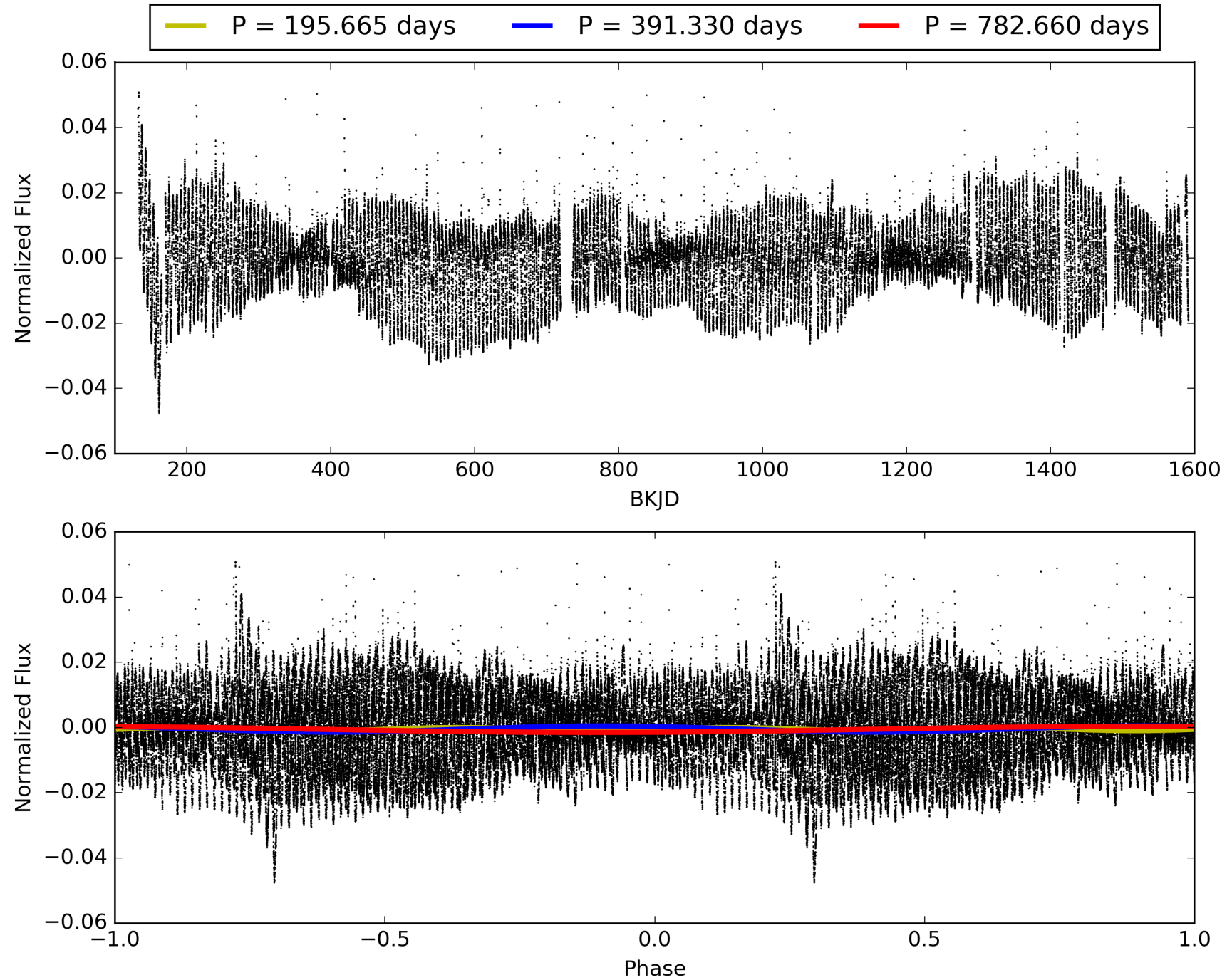
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:46:56 Z

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

TCE 007509281-03, PDC Light Curves

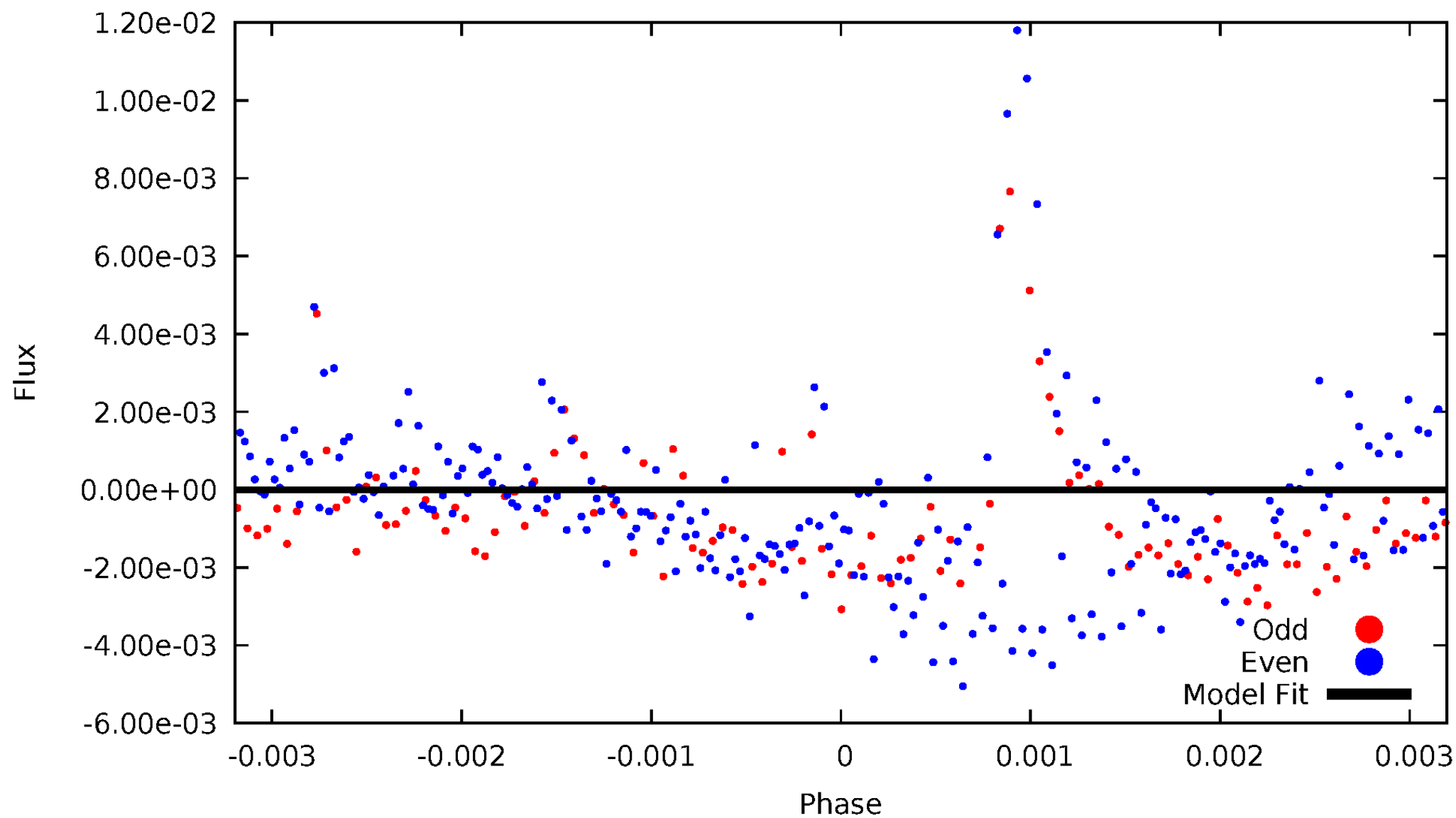


TCE 007509281-03



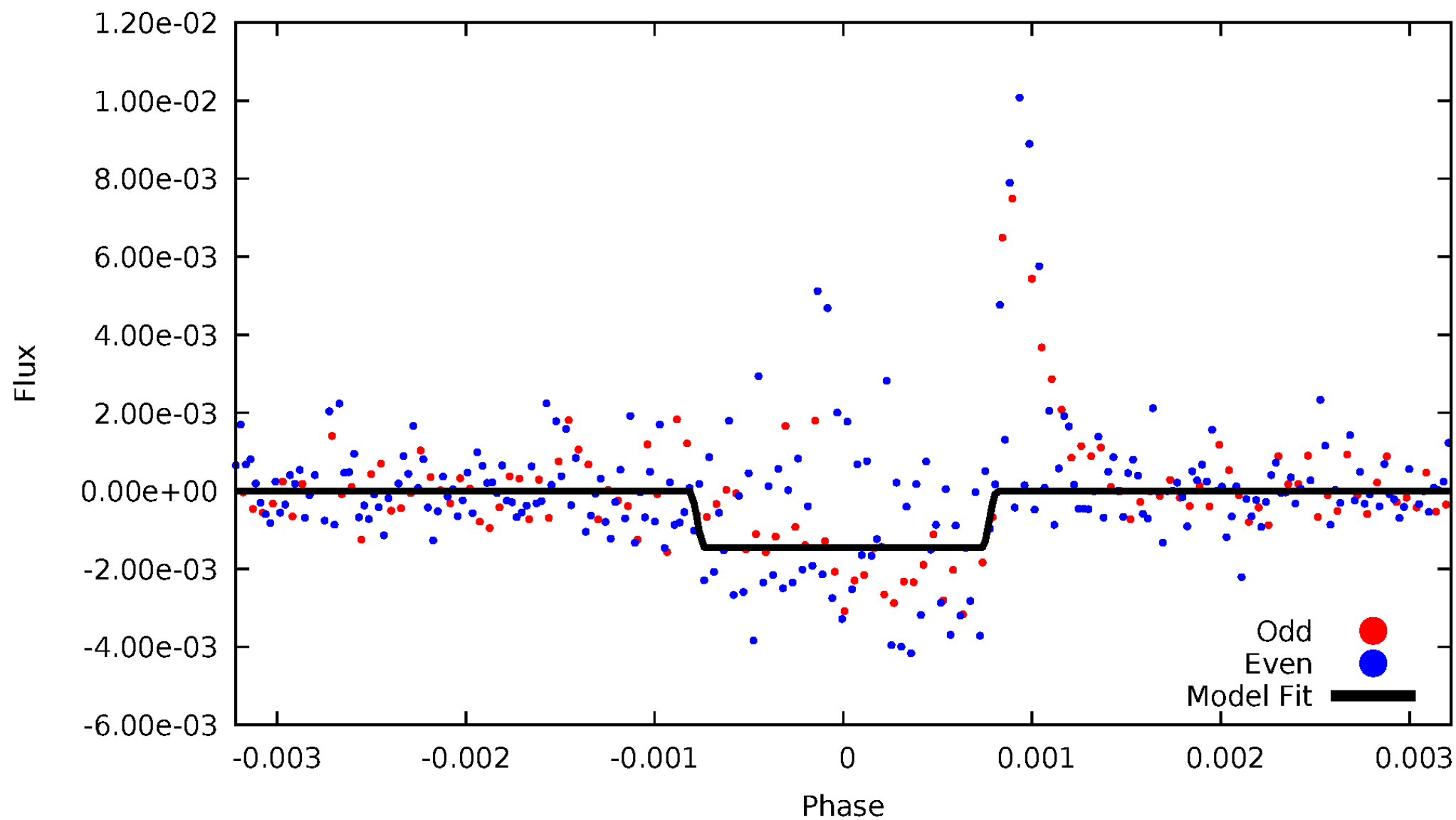
DV Odd/Even

TCE 007509281-03

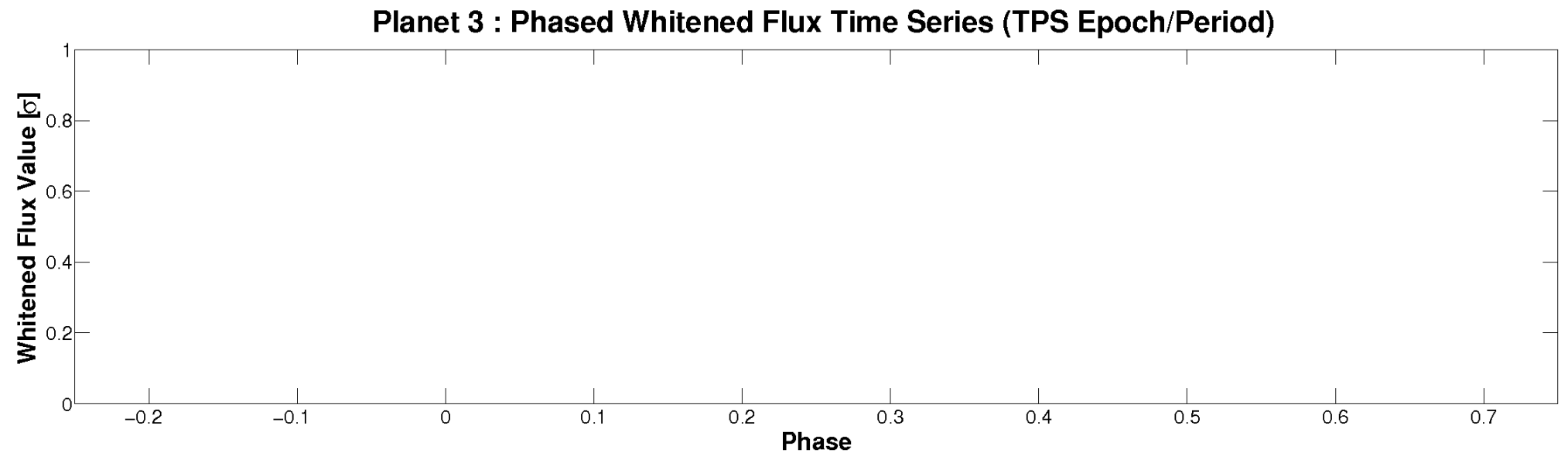
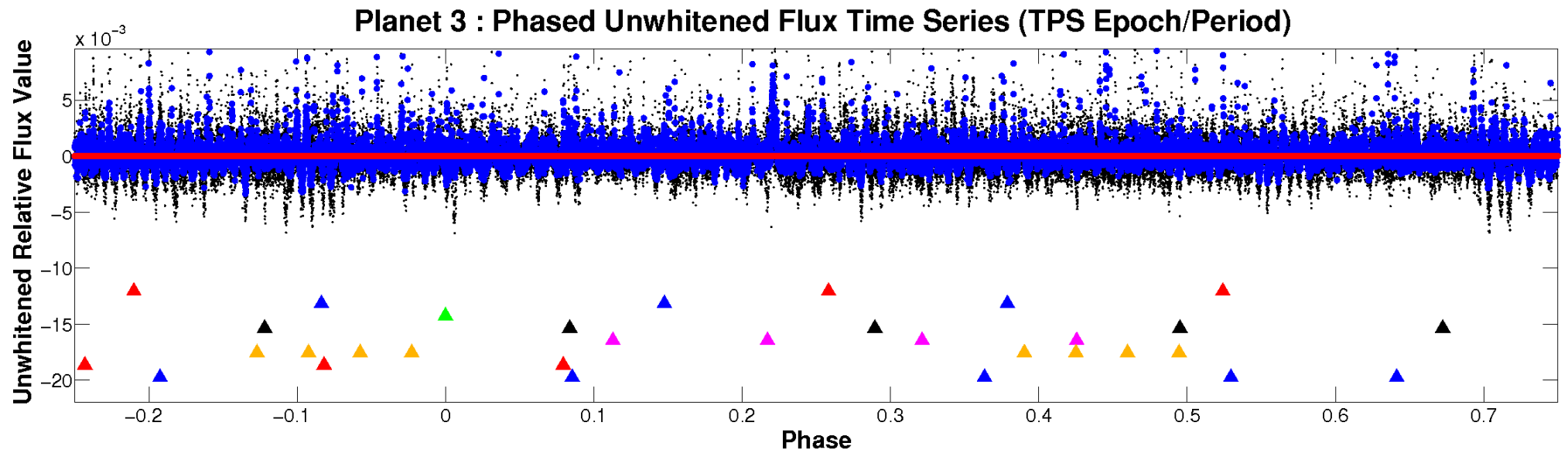


ALT Odd/Even

TCE 007509281-03

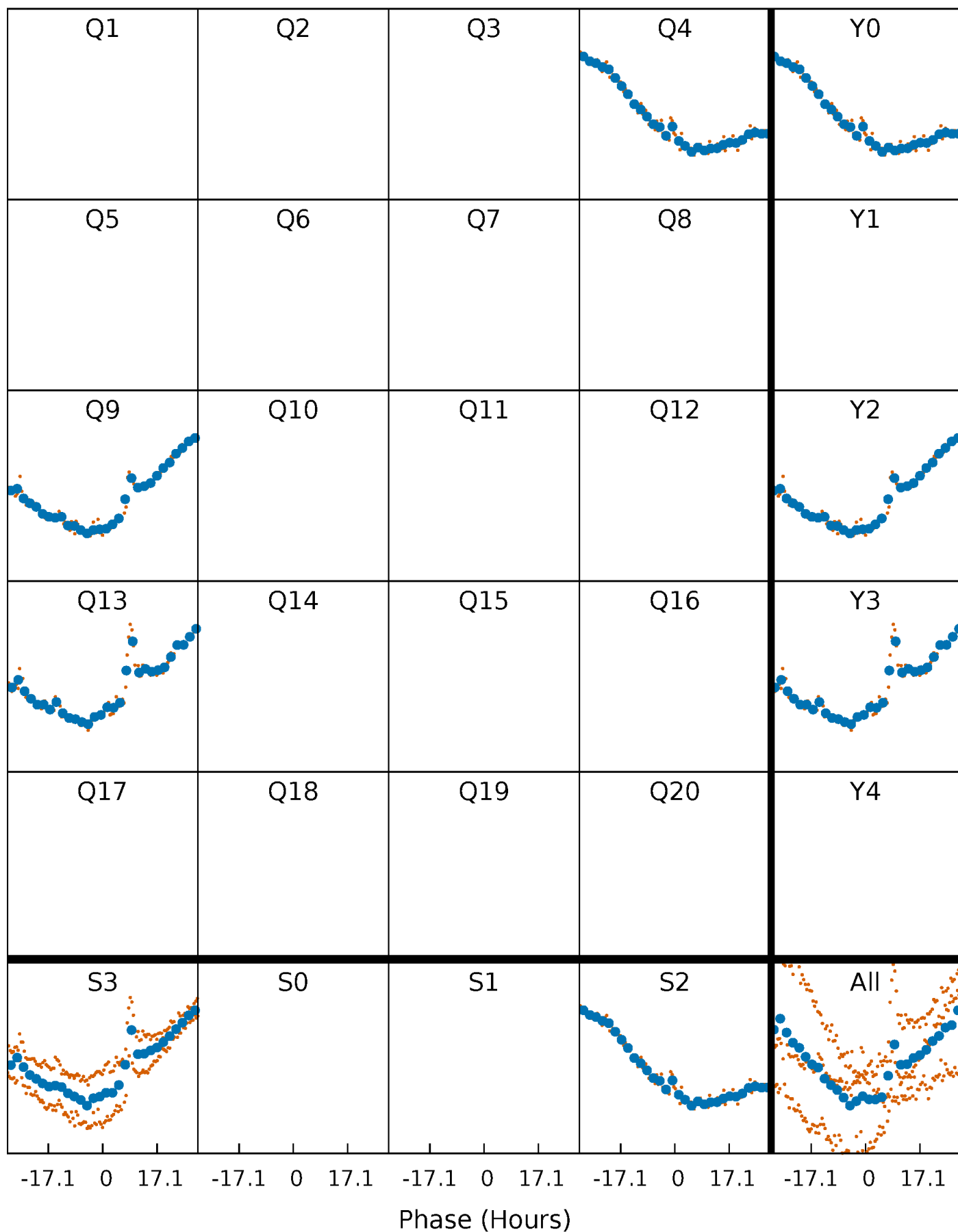


Non-Whitened Vs. Whitened Light Curve



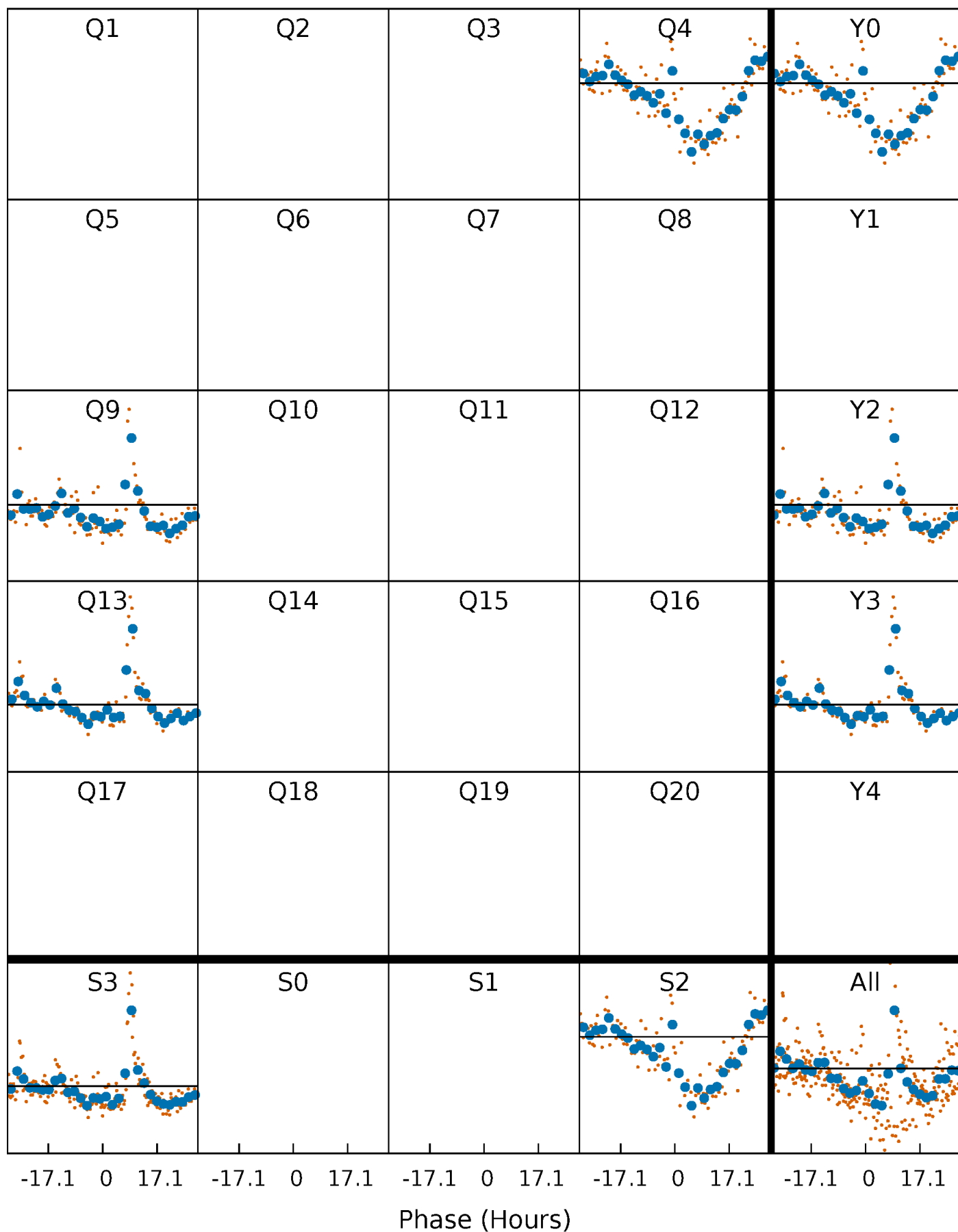
PDC Quarter-Phased Transit Curves

TCE 007509281-03 $P=391.329919$ Days $T_0=436.945038$ (BKJD)



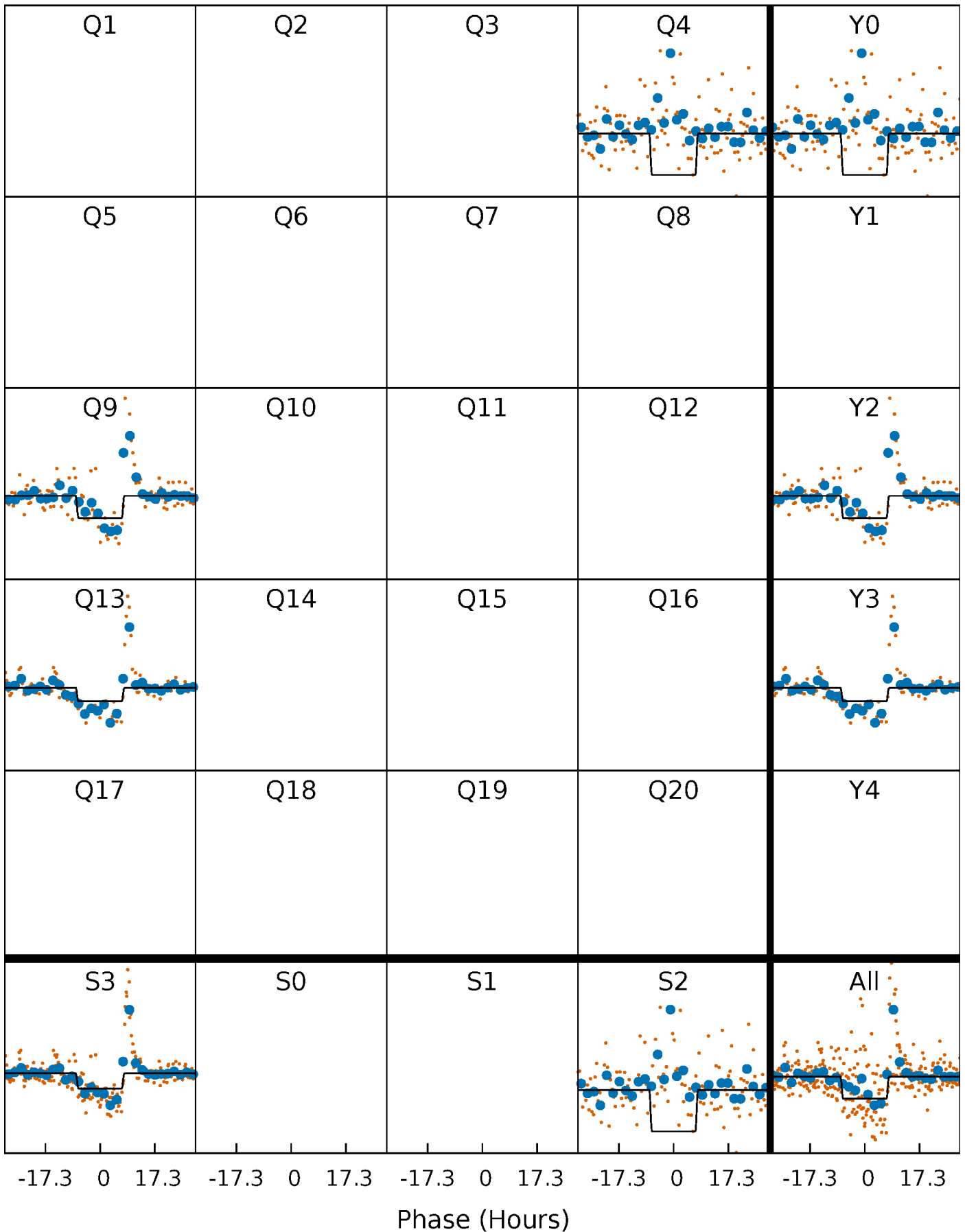
DV Quarter-Phased Transit Curves

TCE 007509281-03 $P=391.329919$ Days $T_0=436.945038$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

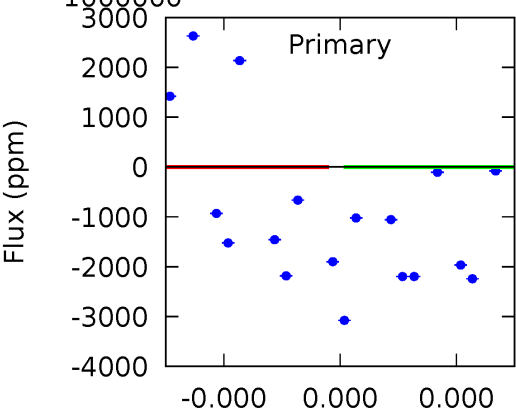
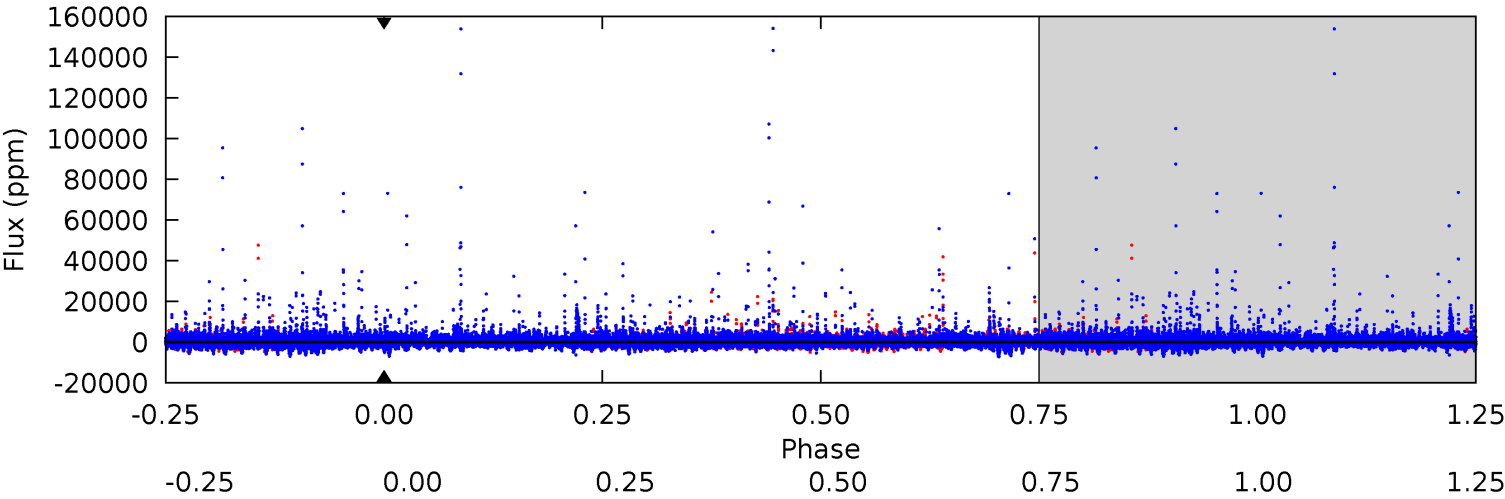
TCE 007509281-03 $P=391.329919$ Days $T_0=436.943634$ (BKJD)



DV Model-Shift Uniqueness Test

007509281-03, P = 391.329919 Days, E = 45.615119 Days

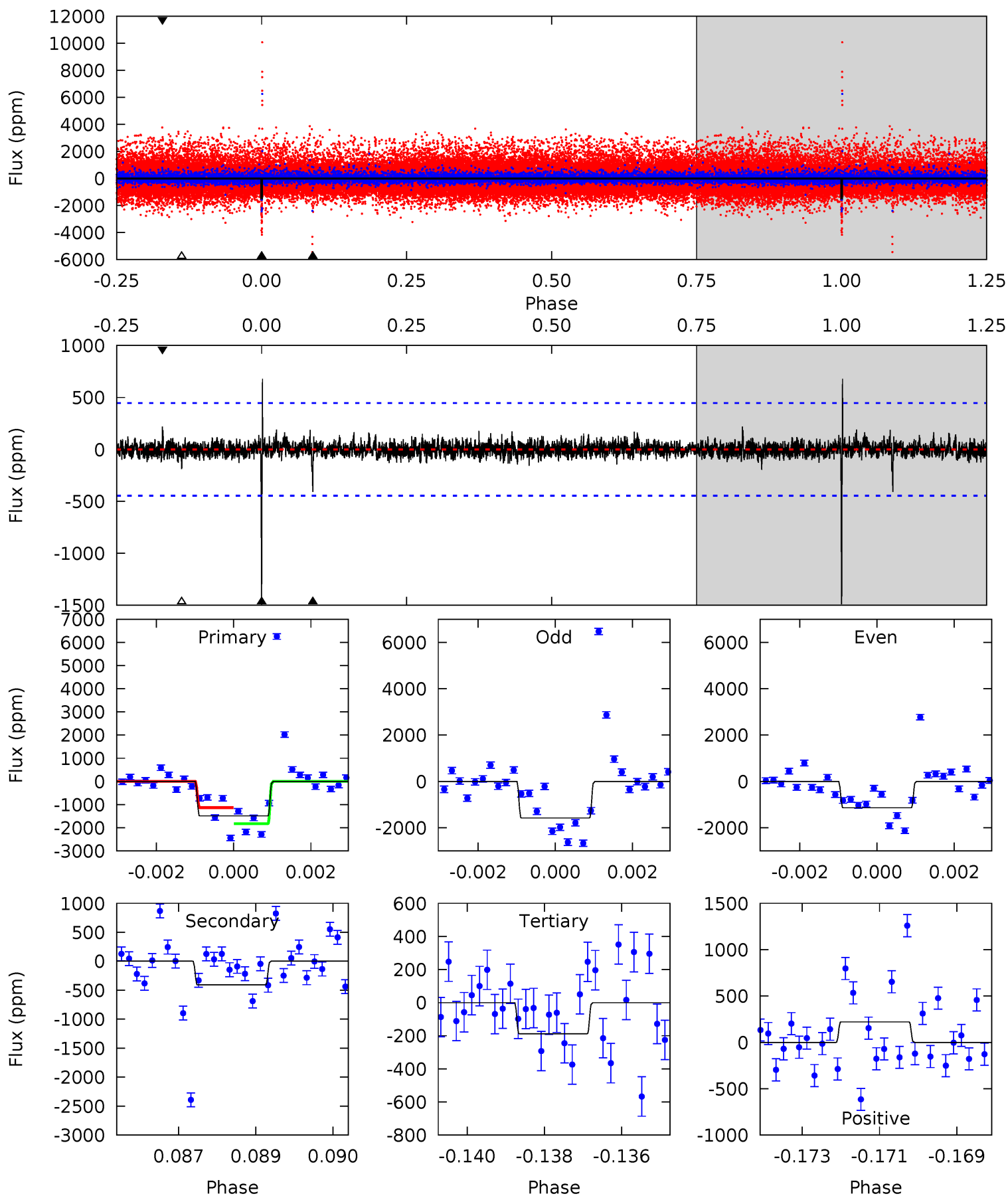
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

007509281-03, P = 391.329919 Days, E = 45.613715 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.9	4.89	2.26	2.65	5.36	3.15	0.53	15.6	15.2	2.64	2.25	2.51	0.77	0.31	4.20



Stellar Parameters For KIC 007509281

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3514^{+56}_{-63}	$4.907^{+0.040}_{-0.044}$	$-0.100^{+0.100}_{-0.100}$	$0.358^{+0.039}_{-0.039}$	$0.380^{+0.040}_{-0.054}$	$11.650^{+2.693}_{-2.189}$
	+2%/-2%	+1%/-1%	+100%/-100%	+11%/-11%	+11%/-14%	+23%/-19%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 007509281-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$3.21^{+3.14}_{-2.22}$	149^{+4}_{-4}	2836^{+4118}_{-9270}	$47374^{+5675600}_{-4119155}$
Alt.	-407 ± 83	$3.18^{+3.21}_{-2.15}$	149^{+3}_{-4}	2381^{+858}_{-337}	$12323^{+105550}_{-9381}$

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

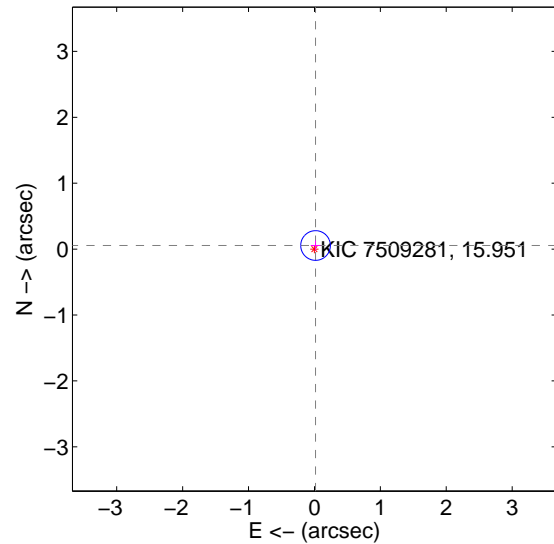
Supplemental centroid analysis for 007509281-03. Kepler magnitude: 15.95. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

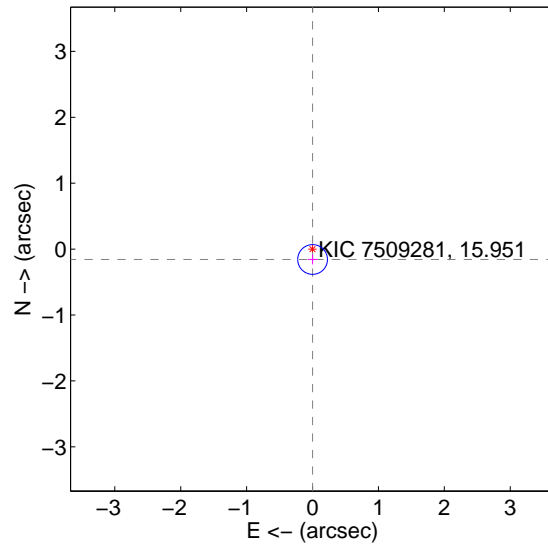
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.057 ± 0.075	0.76	-0.017 ± 0.073	0.054 ± 0.075
PRF-fit source offset from KIC position	0.158 ± 0.075	2.10	-0.001 ± 0.073	-0.158 ± 0.075
photometric centroid source offset	0.70 ± 0.79	0.89	0.68 ± 0.79	0.14 ± 0.84

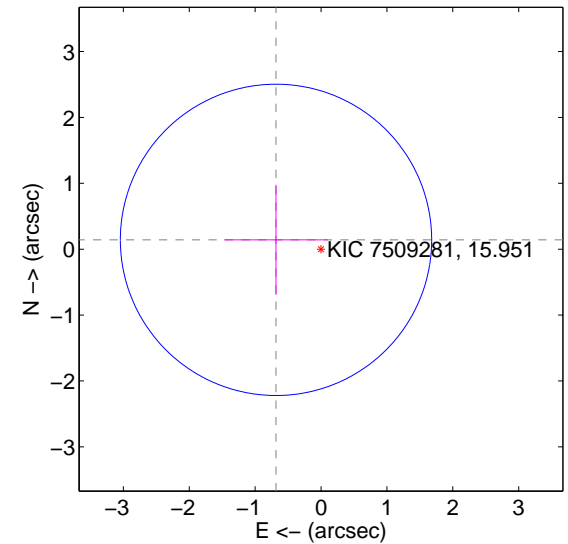
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



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

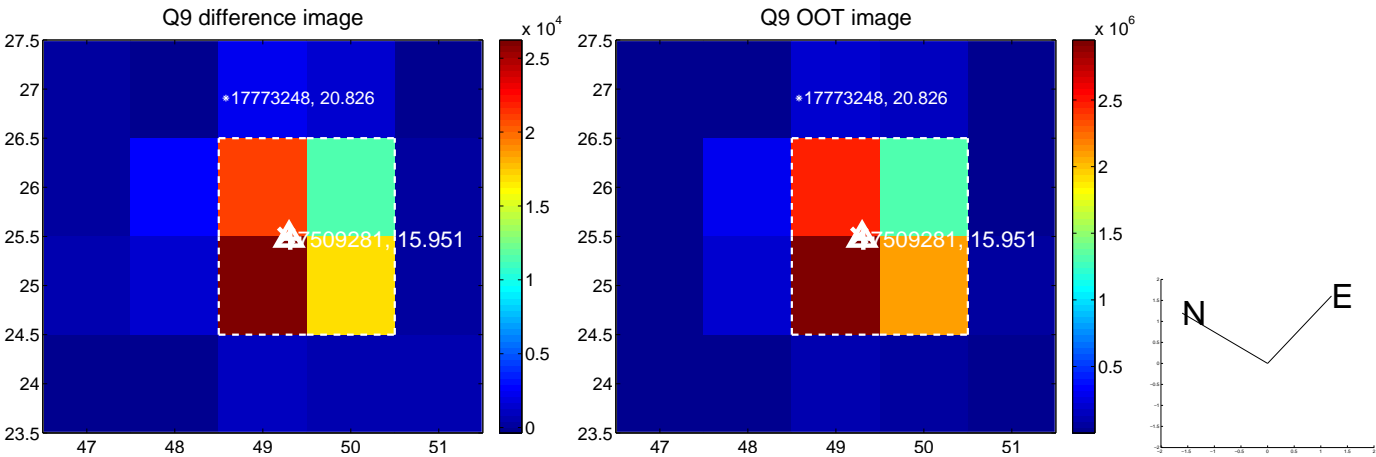
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



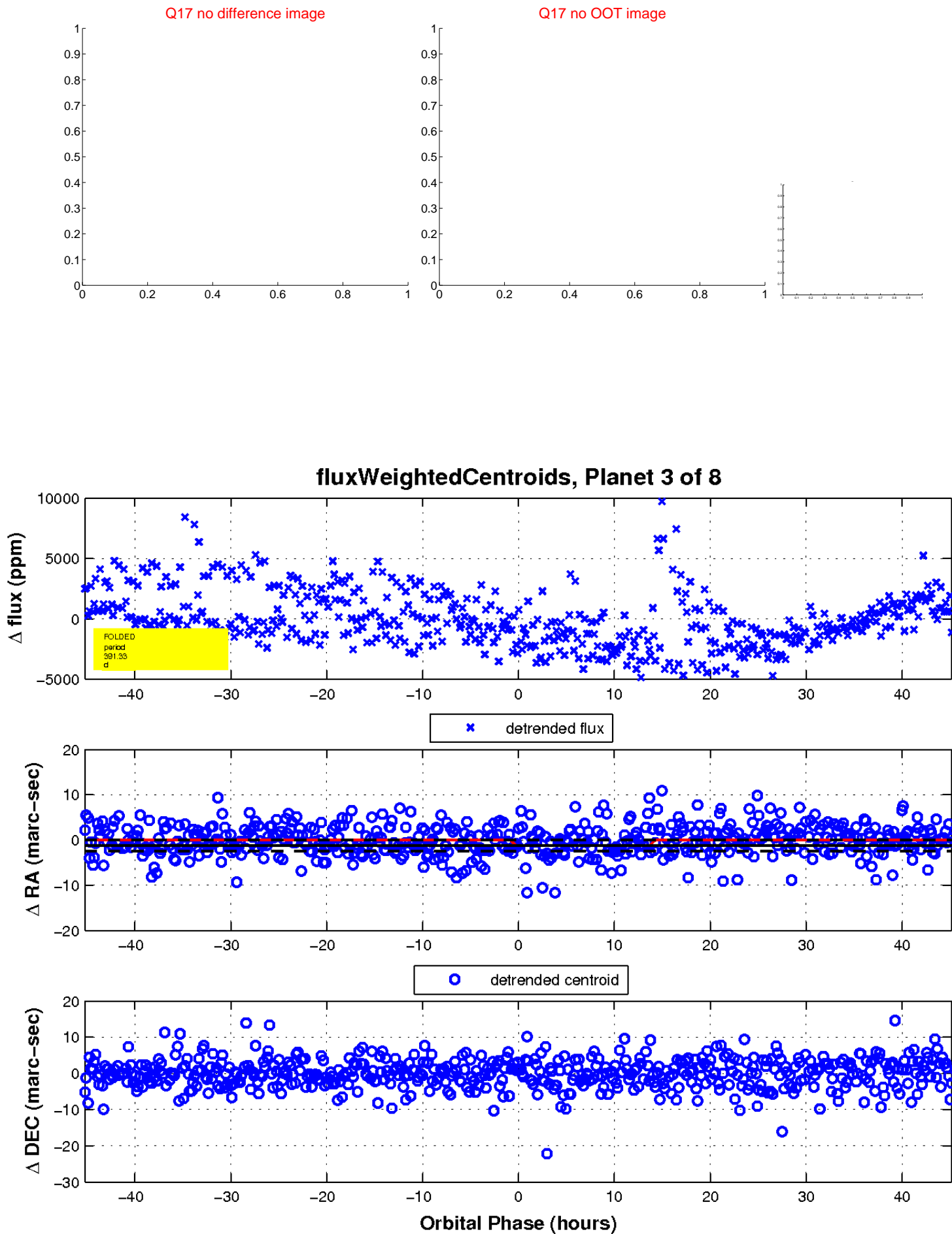
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

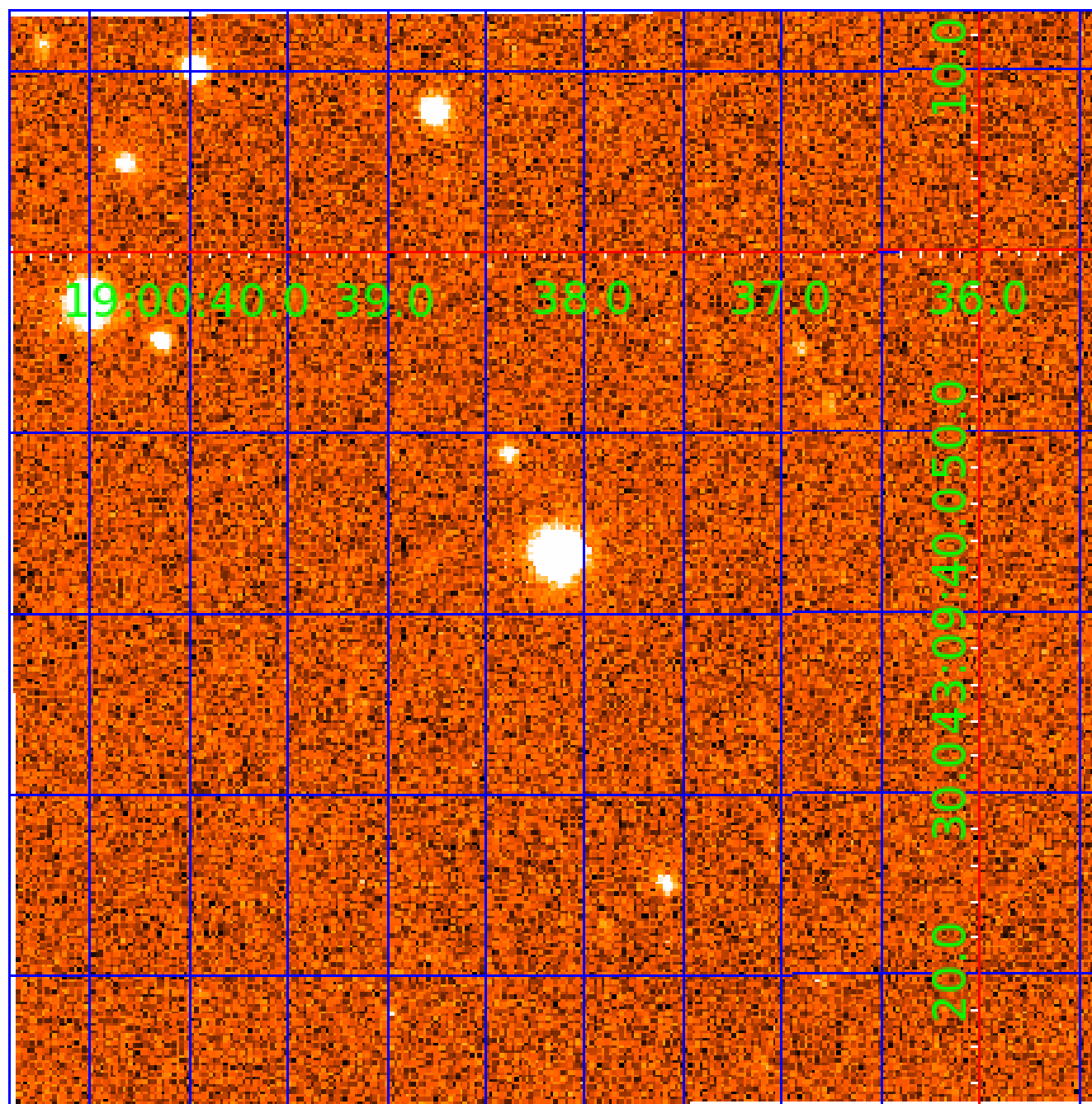


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007509281

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})
007509281-01	OBS	No	495.349153	146.690329	2359.1	5.011	12.3	7.2	0.36	3514	1.78	0.02
007509281-02	OBS	No	692.166905	193.864416	3834.8	5.446	11.7	11.3	0.36	3514	2.19	0.01
007509281-03	OBS	No	391.329919	436.945038	1314.2	15.000	11.2	-1.0	0.36	3514	1.28	0.03
007509281-04	OBS	No	310.829106	239.404934	2908.4	15.364	10.6	7.3	0.36	3514	2.31	0.04
007509281-05	OBS	No	350.536672	212.159784	547.7	7.021	11.0	1.9	0.36	3514	0.87	0.04
007509281-06	OBS	No	188.860962	239.174780	2397.9	3.029	11.7	7.4	0.36	3514	1.84	0.08
007509281-07	OBS	No	454.443040	341.799460	2133.5	4.279	10.4	6.7	0.36	3514	1.68	0.03
007509281-08	OBS	No	282.560172	296.603971	1474.0	21.758	9.4	4.4	0.36	3514	1.36	0.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007509281-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
007509281-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_NOFITS
007509281-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

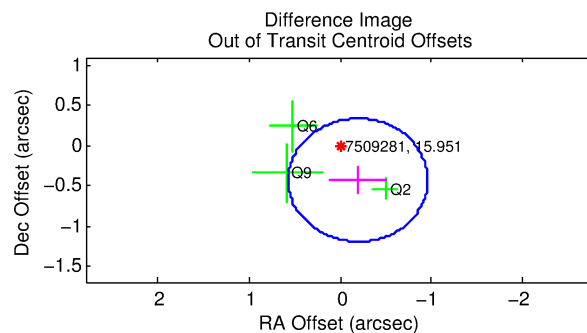
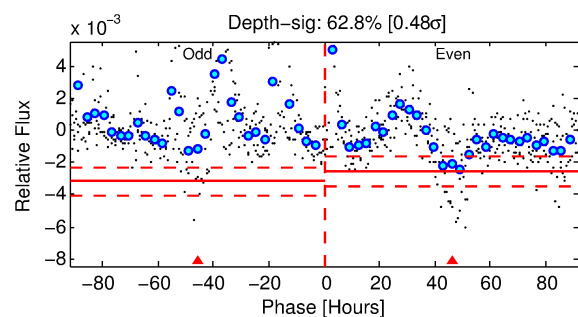
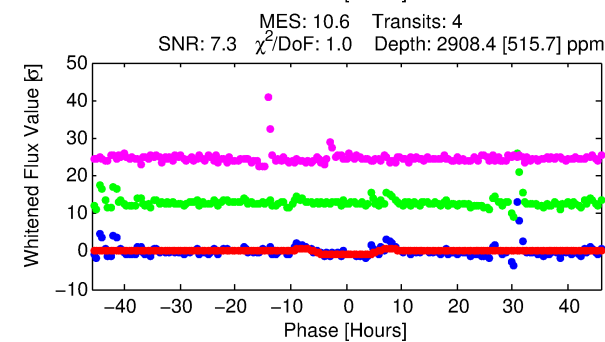
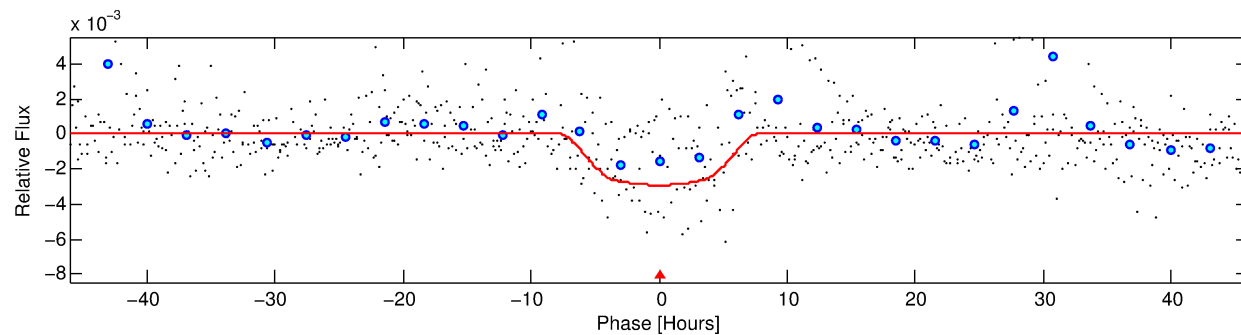
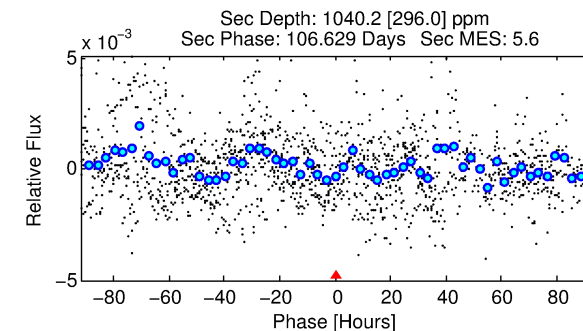
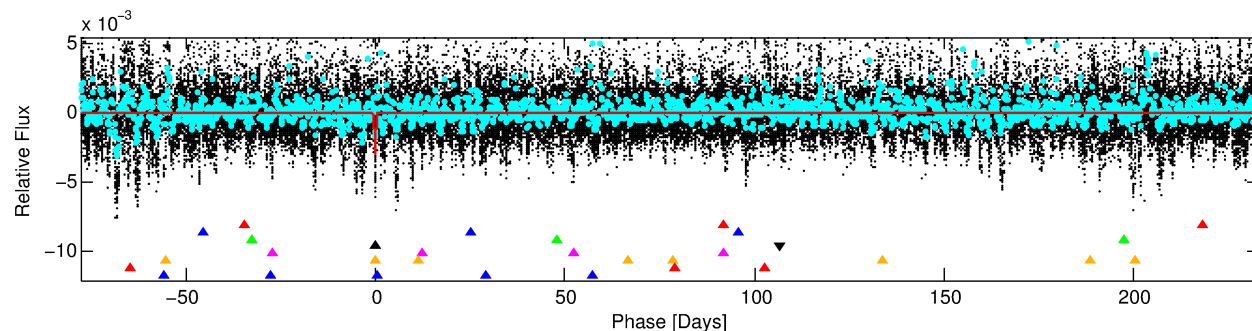
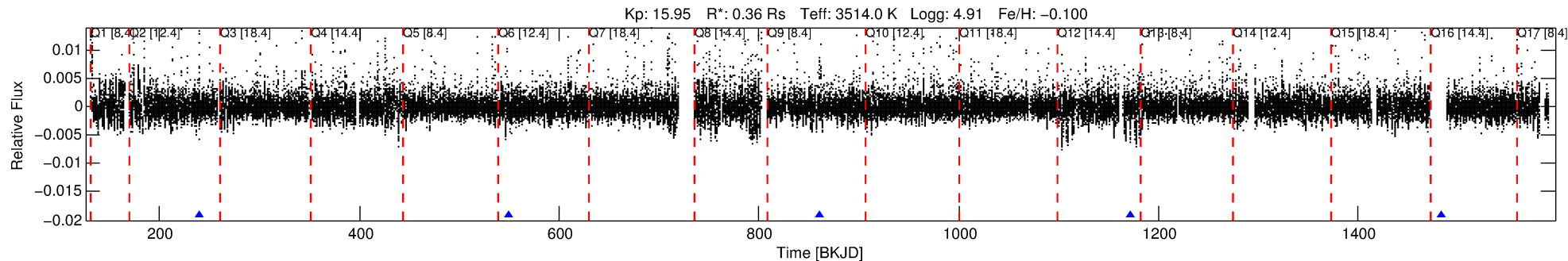
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007509281-04

No Significant Match Found

DV One-Page Summary

KIC: 7509281 Candidate: 4 of 8 Period: 310.829 d



DV Fit Results:

Period = 310.82911 [0.01426] d
Epoch = 239.4049 [0.0274] BKJD
Rp/R* = 0.0590 [0.0063]
a/R* = 86.23 [14.76]
b = 0.90 [0.04]
Seff = 0.04 [0.01]
Teq = 115 [4] K
Rp = 2.31 [0.35] Re
a = 0.6491 [0.0520] AU
Ag = 45319.58 [16715.45] [2.71σ]
Teffp = 2597 [235] K [10.55σ]

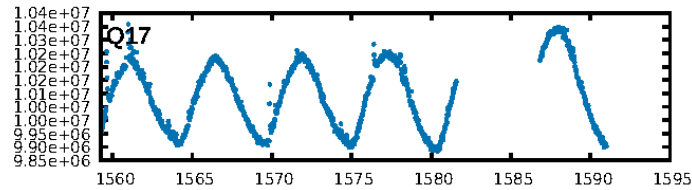
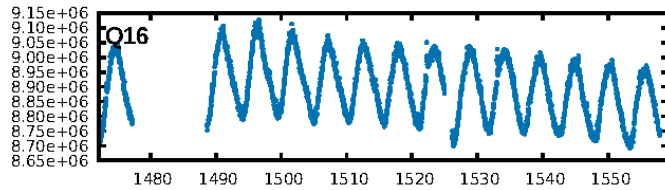
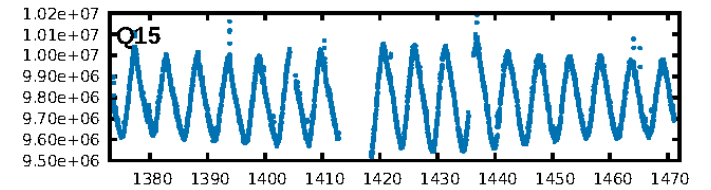
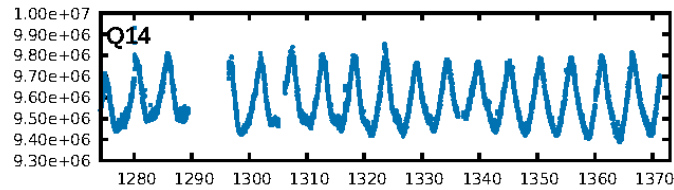
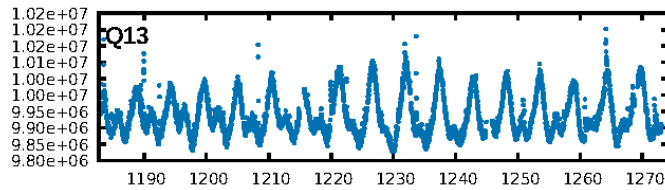
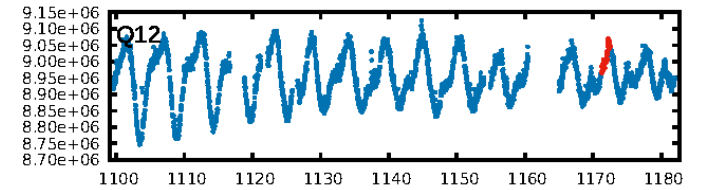
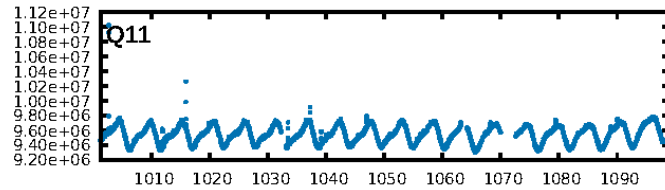
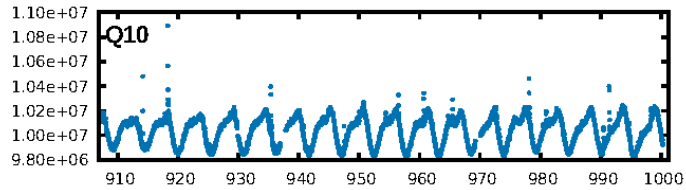
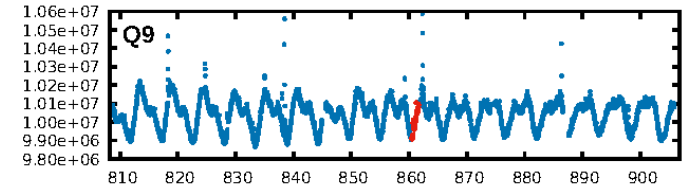
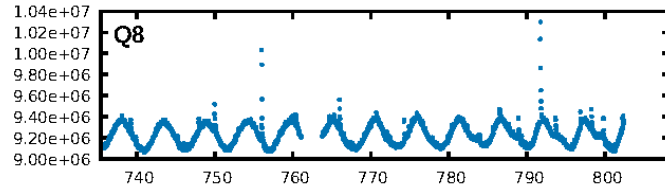
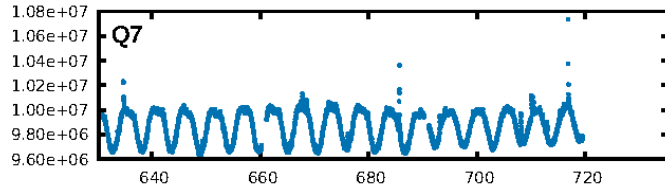
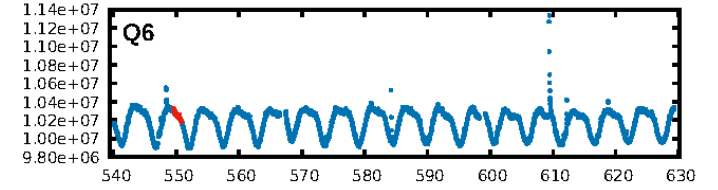
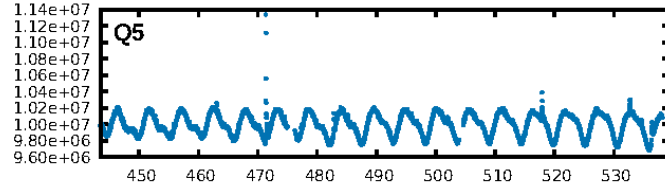
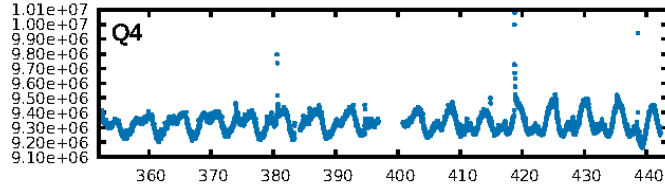
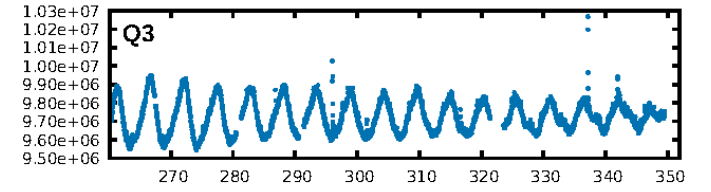
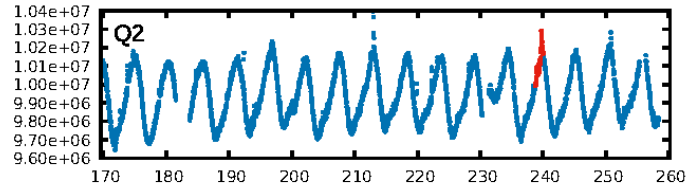
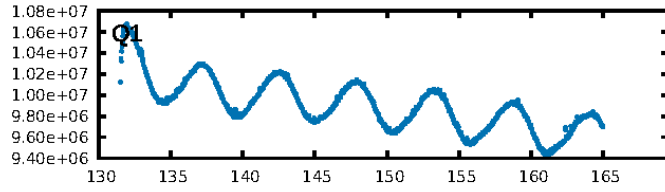
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [25.47σ]
LongPeriod-sig: 100.0% [56.42σ]
ModelChiSquare2-sig: 13.1%
ModelChiSquareGof-sig: 99.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -10.89
Centroid-sig: N/A
Centroid-so: 0.273 arcsec [0.56σ]
OotOffset-rm: 0.472 arcsec [1.84σ]
KicOffset-rm: 0.643 arcsec [1.73σ]
OotOffset-st: 2/0/0/1 [3]
KicOffset-st: 2/0/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.33 [1/3]

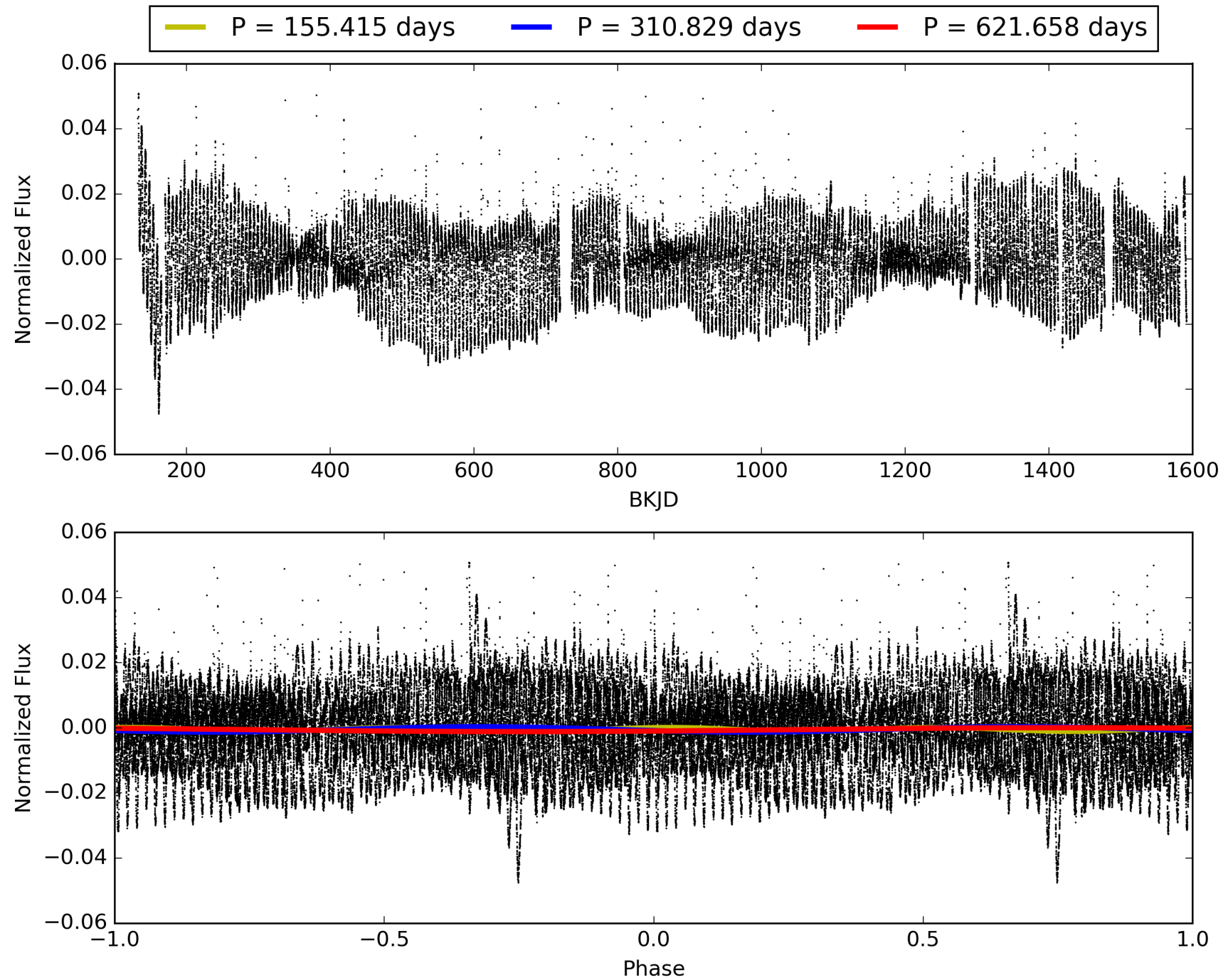
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:47:04 Z

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

TCE 007509281-04, PDC Light Curves

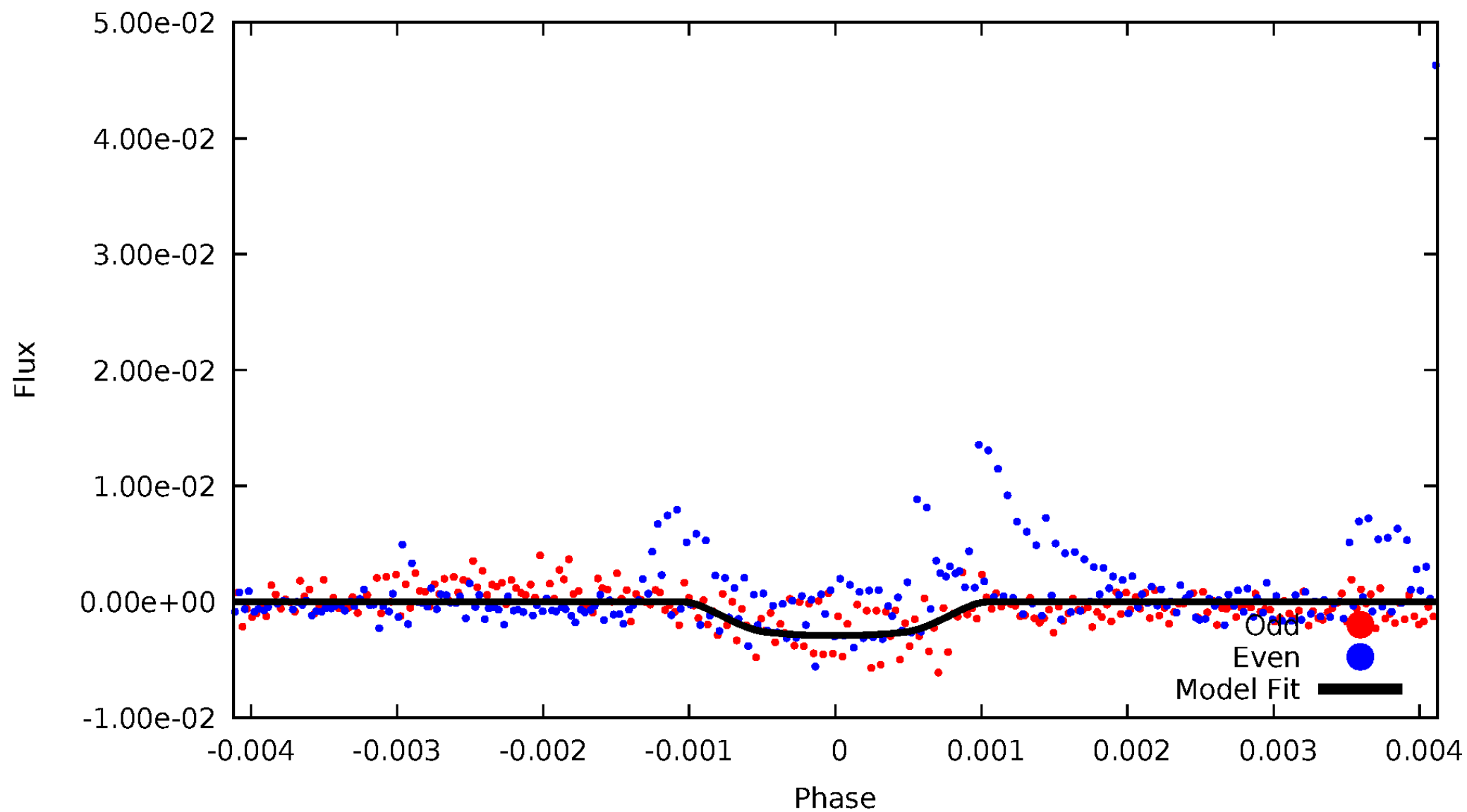


TCE 007509281-04



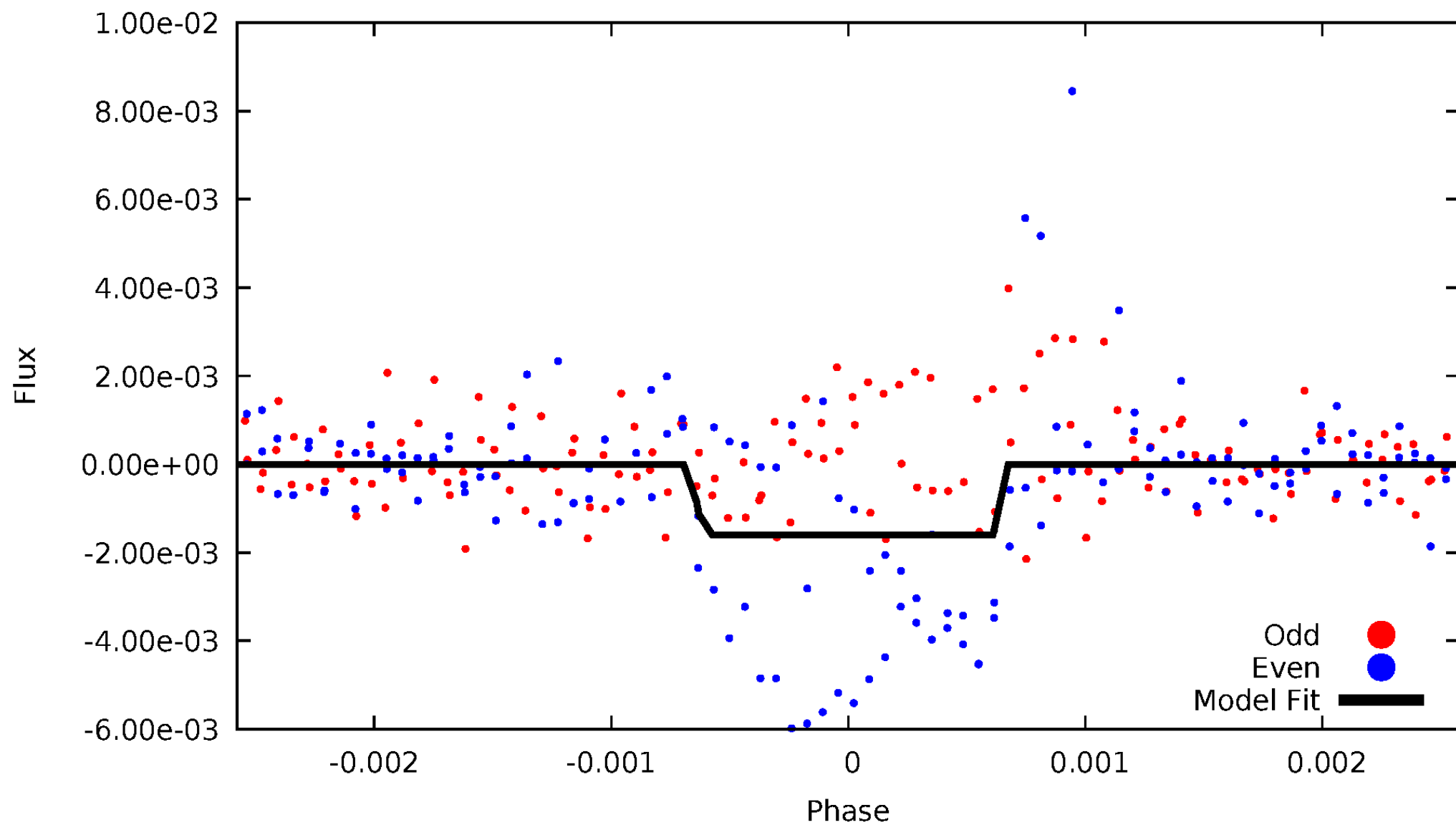
DV Odd/Even

TCE 007509281-04



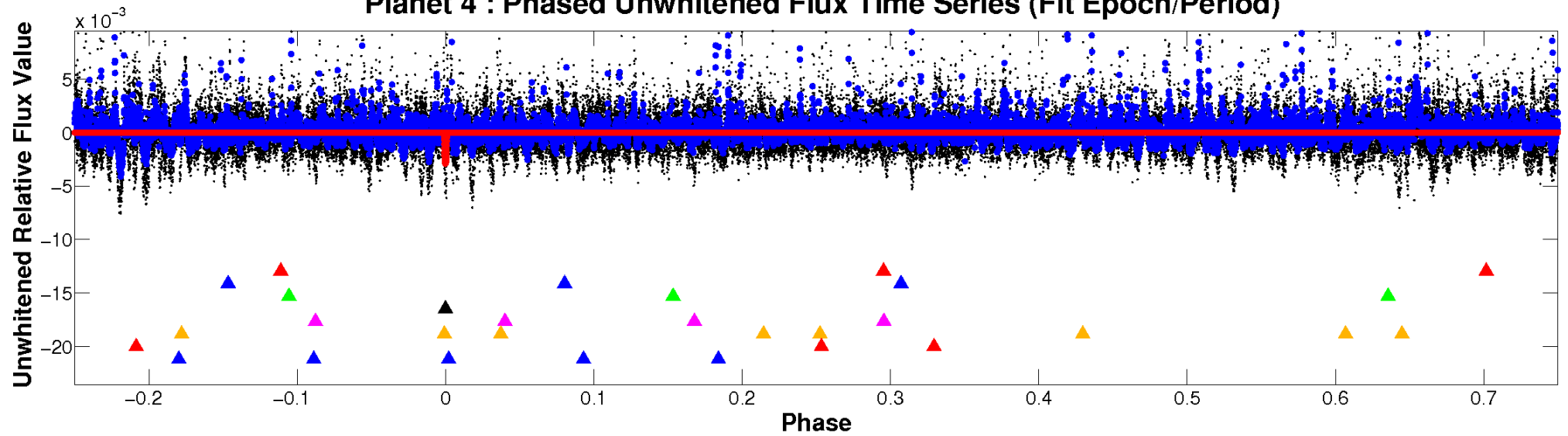
ALT Odd/Even

TCE 007509281-04

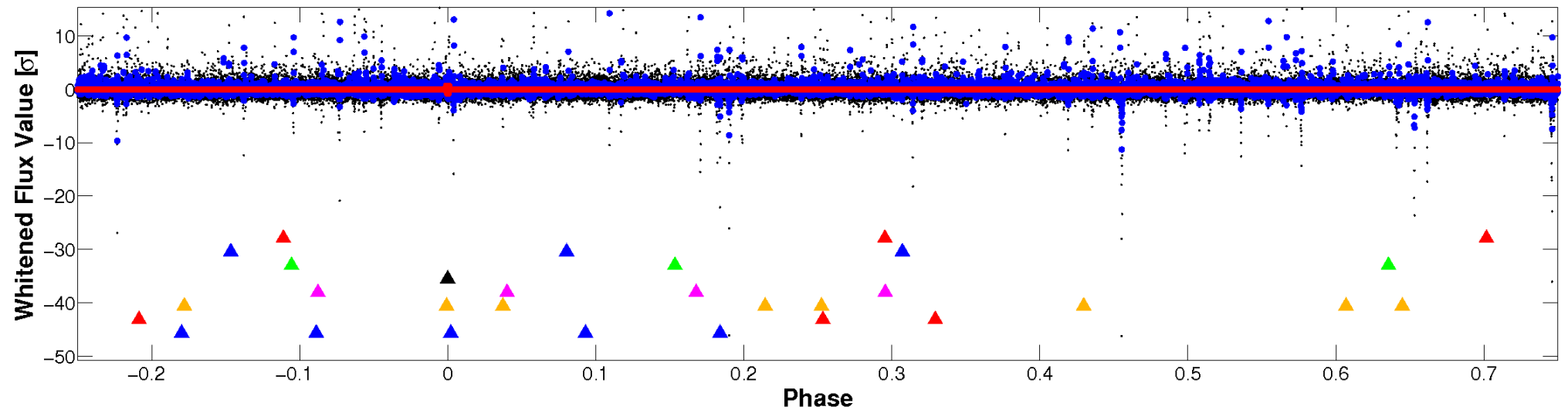


Non-Whitened Vs. Whitened Light Curve

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

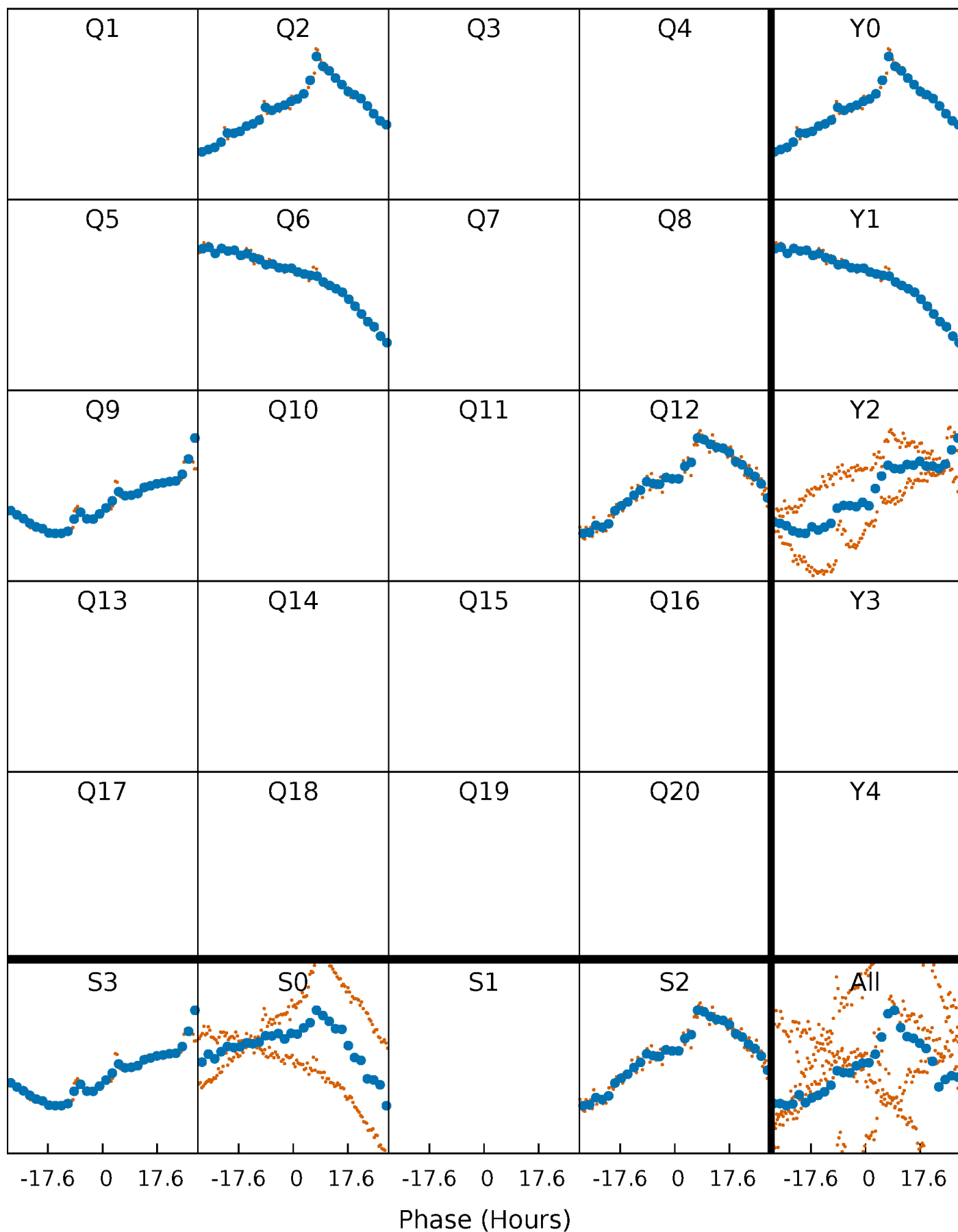


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



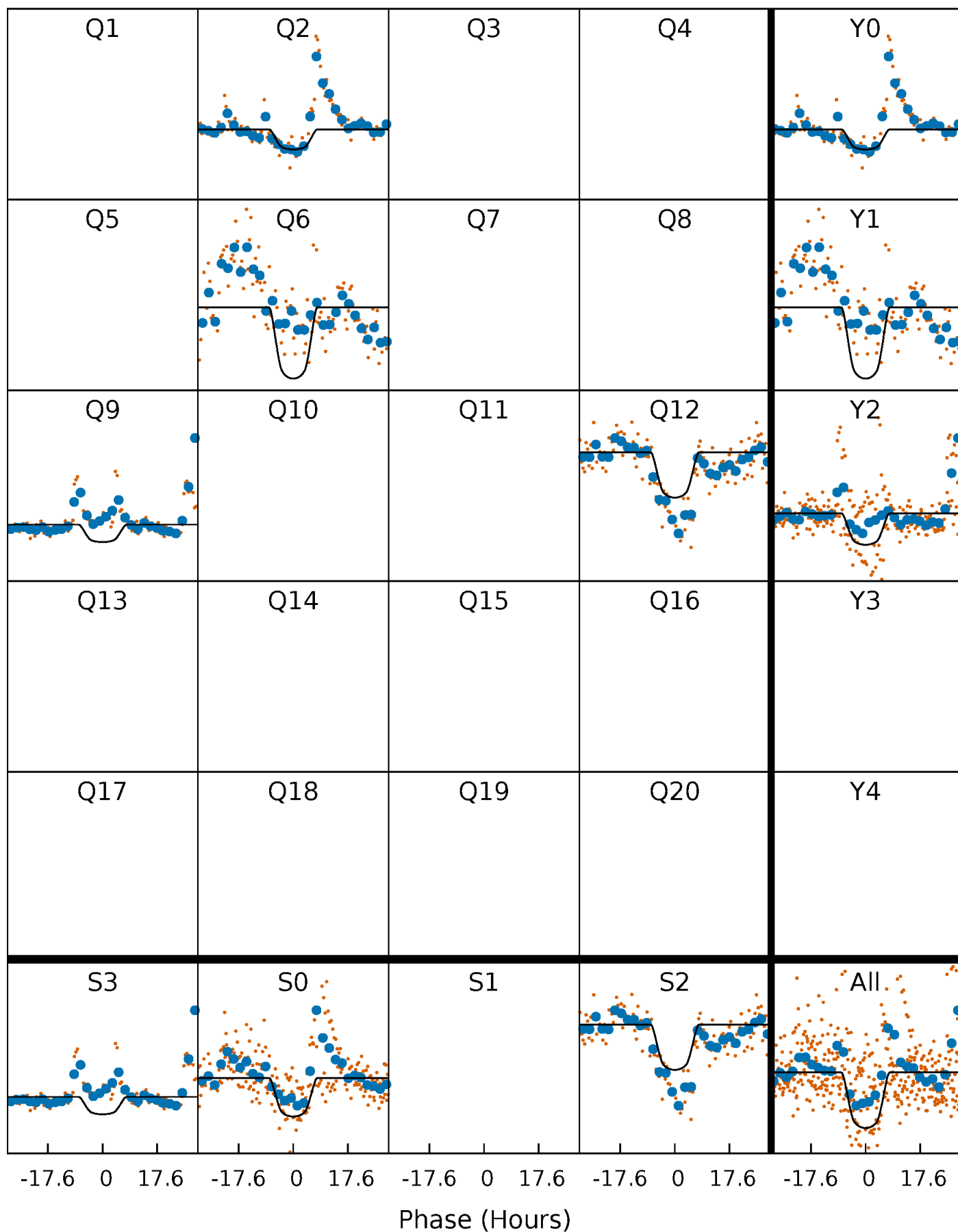
PDC Quarter-Phased Transit Curves

TCE 007509281-04 P=310.829106 Days $T_0=239.404934$ (BKJD)



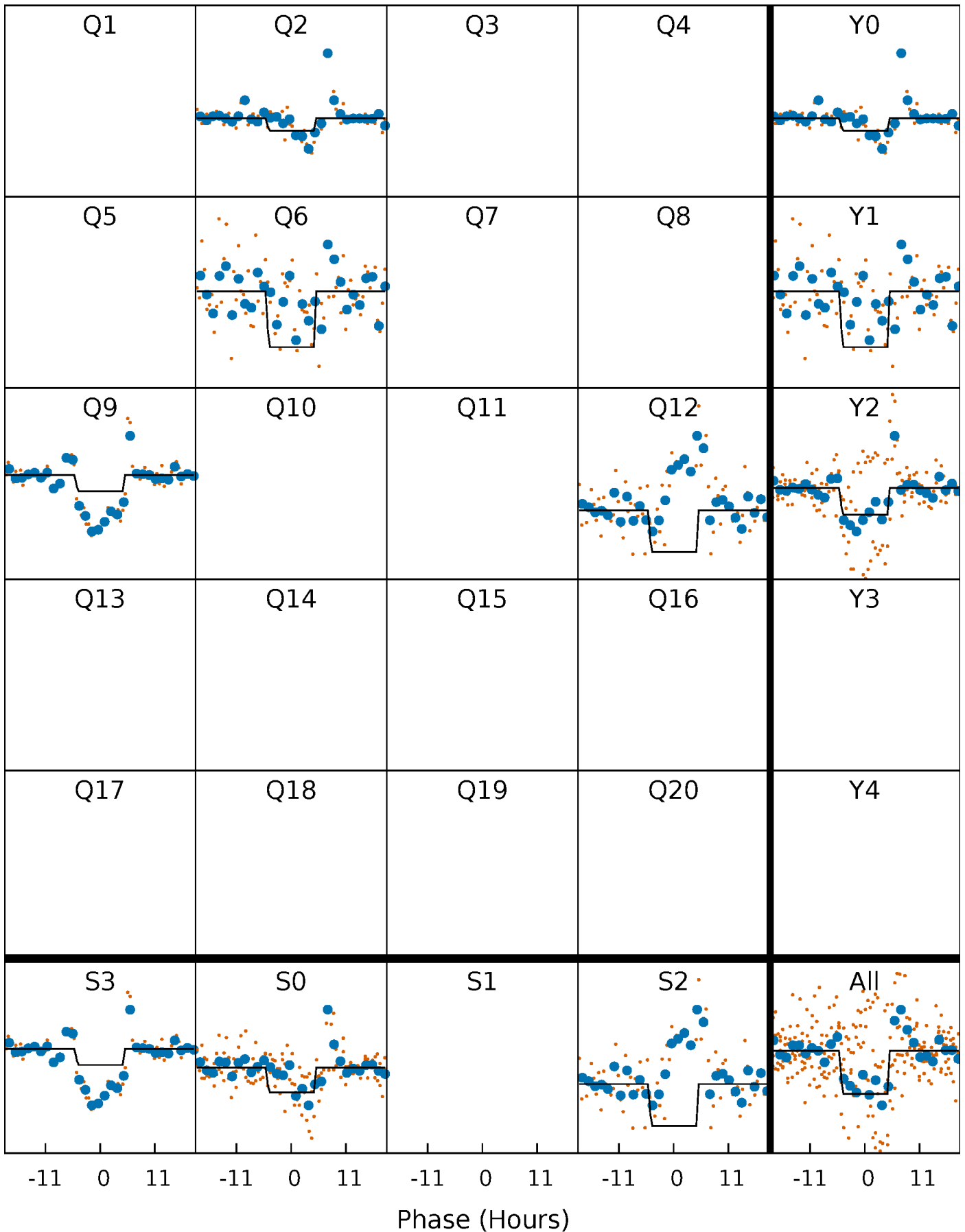
DV Quarter-Phased Transit Curves

TCE 007509281-04 P=310.829106 Days $T_0=239.404934$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

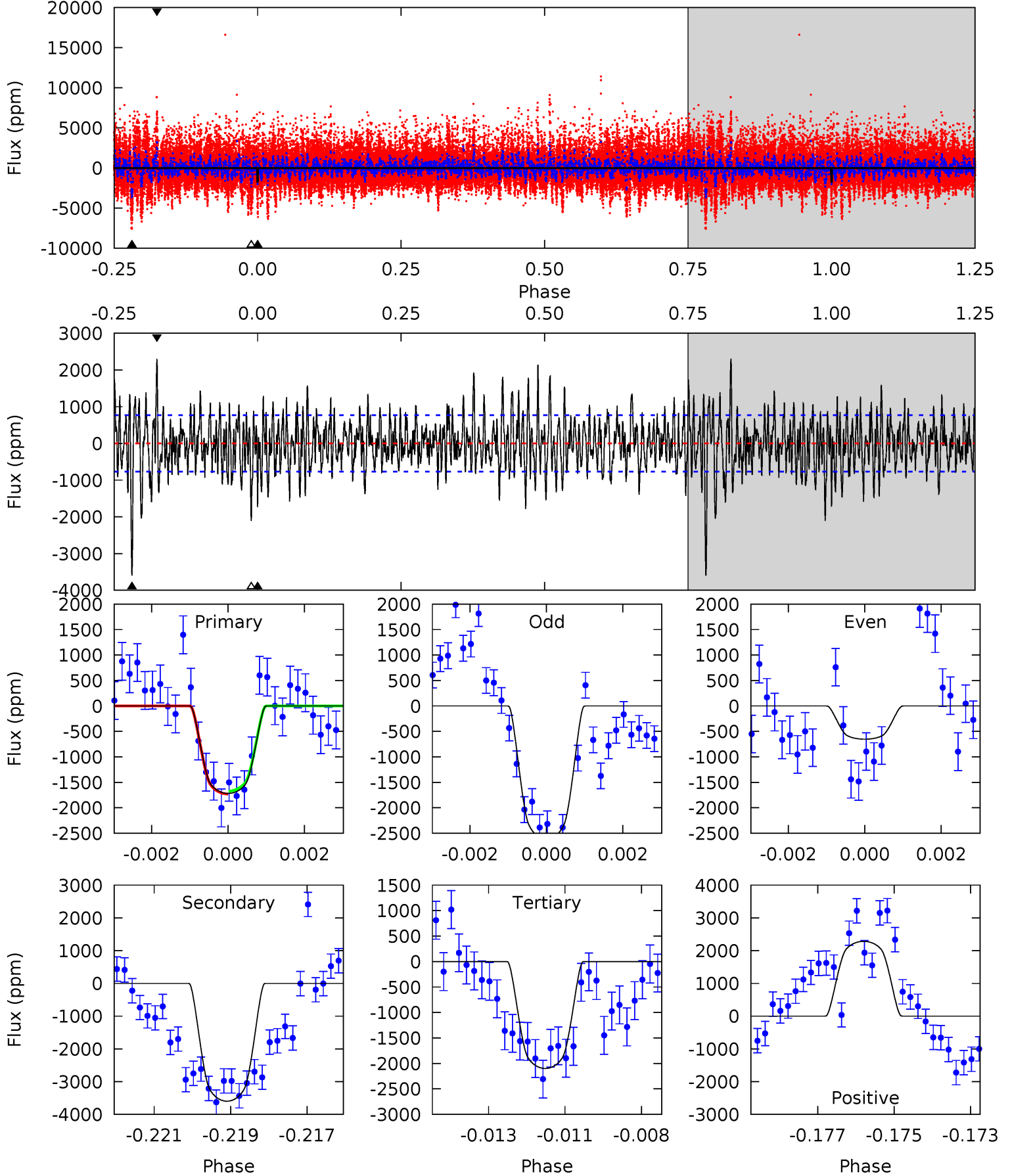
TCE 007509281-04 P=310.794448 Days $T_0=239.415996$ (BKJD)



DV Model-Shift Uniqueness Test

007509281-04, P = 310.829106 Days, E = 239.404934 Days

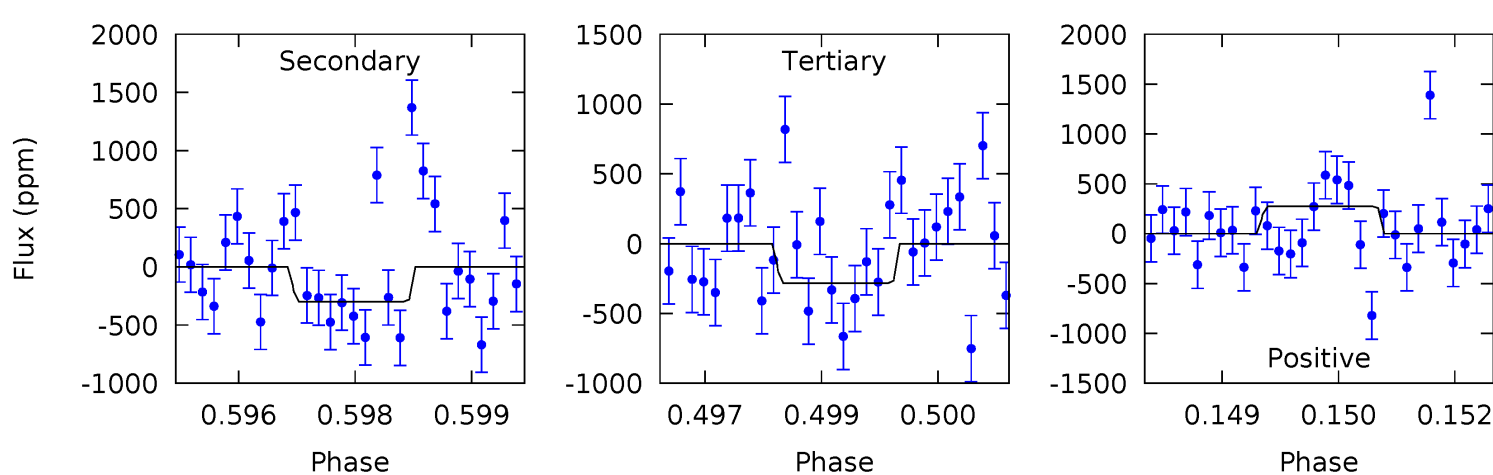
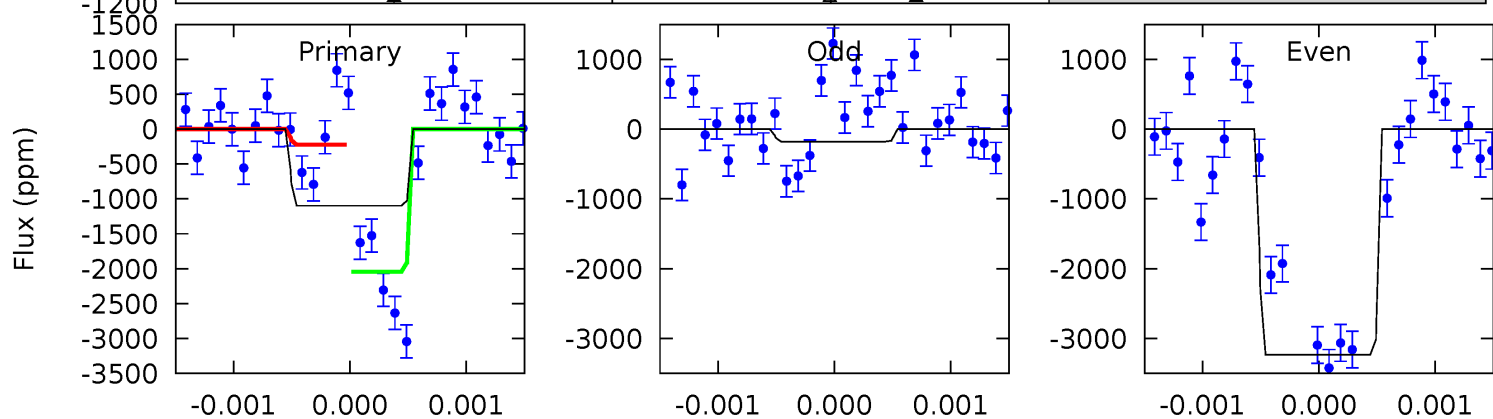
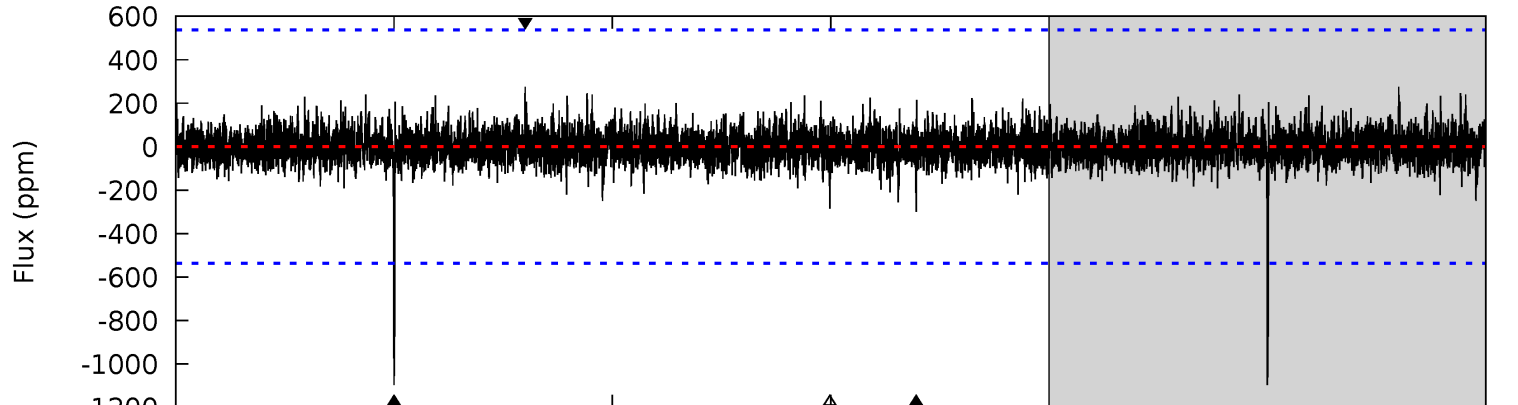
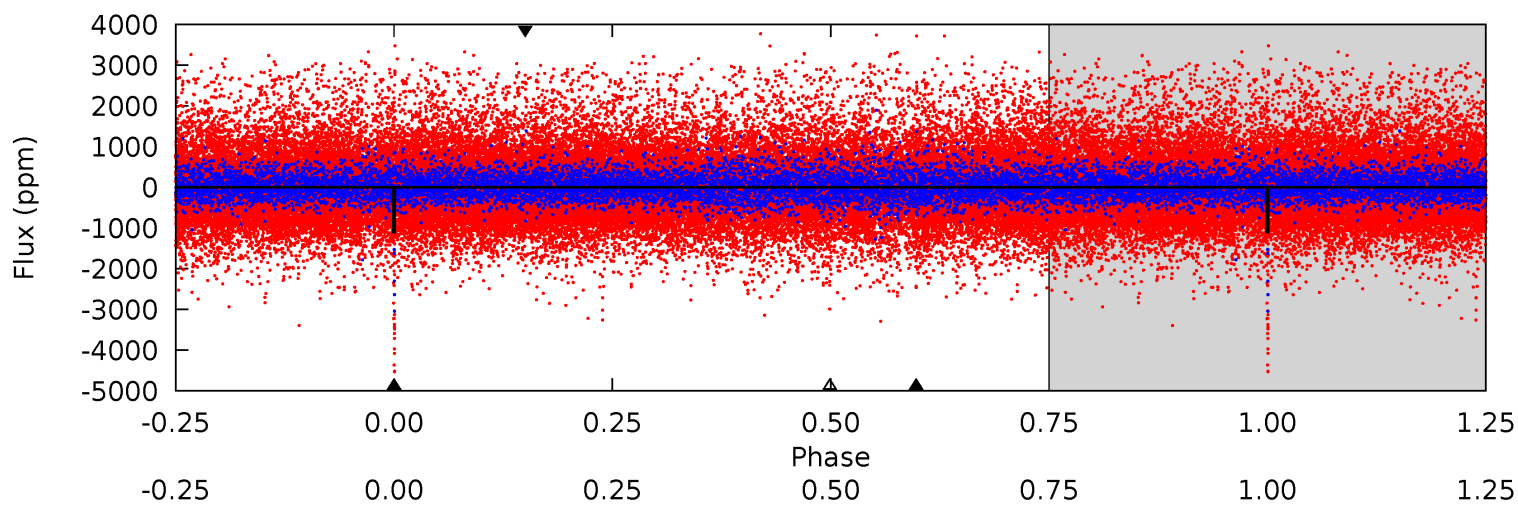
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	24.9	14.5	15.8	5.32	3.08	4.17	-2.64	-3.92	10.4	9.09	6.40	0.91	0.39	0.20



Alt Model-Shift Uniqueness Test

007509281-04, P = 310.794448 Days, E = 239.415996 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	3.02	2.86	2.77	5.41	3.23	0.58	8.19	8.29	0.16	0.25	16.8	1.40	0.20	9.15



Stellar Parameters For KIC 007509281

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3514^{+56}_{-63}	$4.907^{+0.040}_{-0.044}$	$-0.100^{+0.100}_{-0.100}$	$0.358^{+0.039}_{-0.039}$	$0.380^{+0.040}_{-0.054}$	$11.650^{+2.693}_{-2.189}$
	+2%/-2%	+1%/-1%	+100%/-100%	+11%/-11%	+11%/-14%	+23%/-19%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 007509281-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-3597 ± 145	$2.33^{+0.25}_{-0.29}$	161^{+4}_{-4}	3534^{+149}_{-124}	155705^{+41132}_{-28713}
Alt.	-300 ± 99	$1.55^{+0.28}_{-0.23}$	161^{+4}_{-4}	2756^{+167}_{-178}	28097^{+16146}_{-10991}

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 $A_{obs} \gg 1.0$

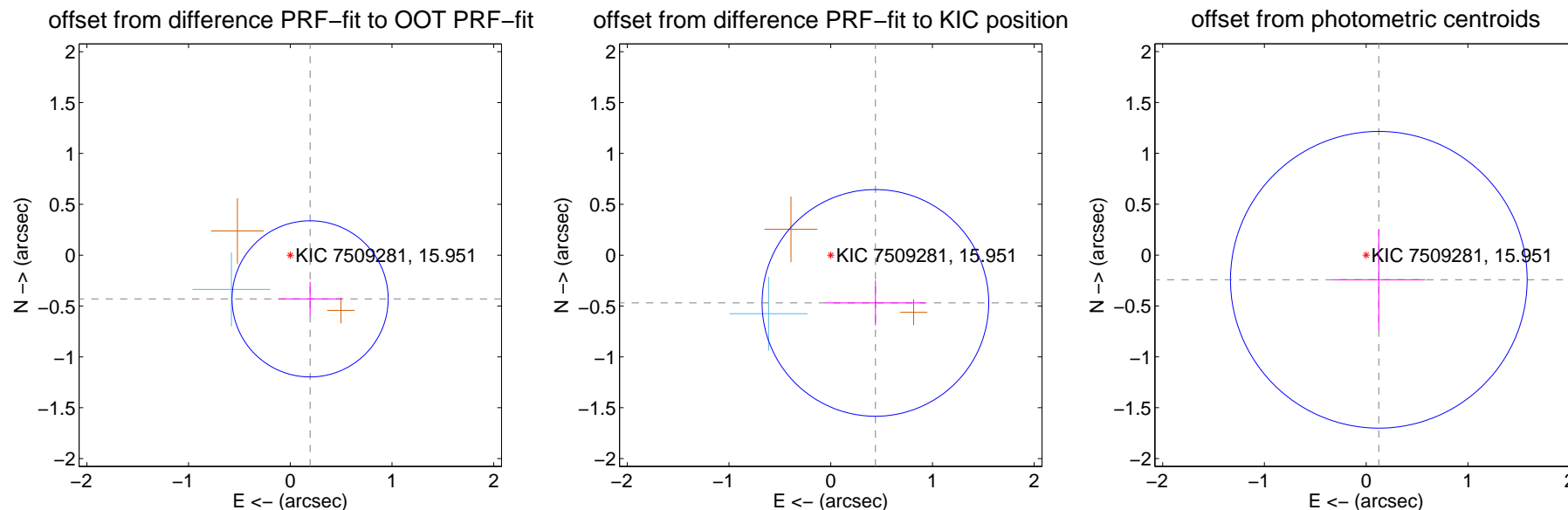
DV Centroid Data

Supplemental centroid analysis for 007509281-04. Kepler magnitude: 15.95. Transit SNR 7.32

There are 1 quarters with good PRF difference image offsets

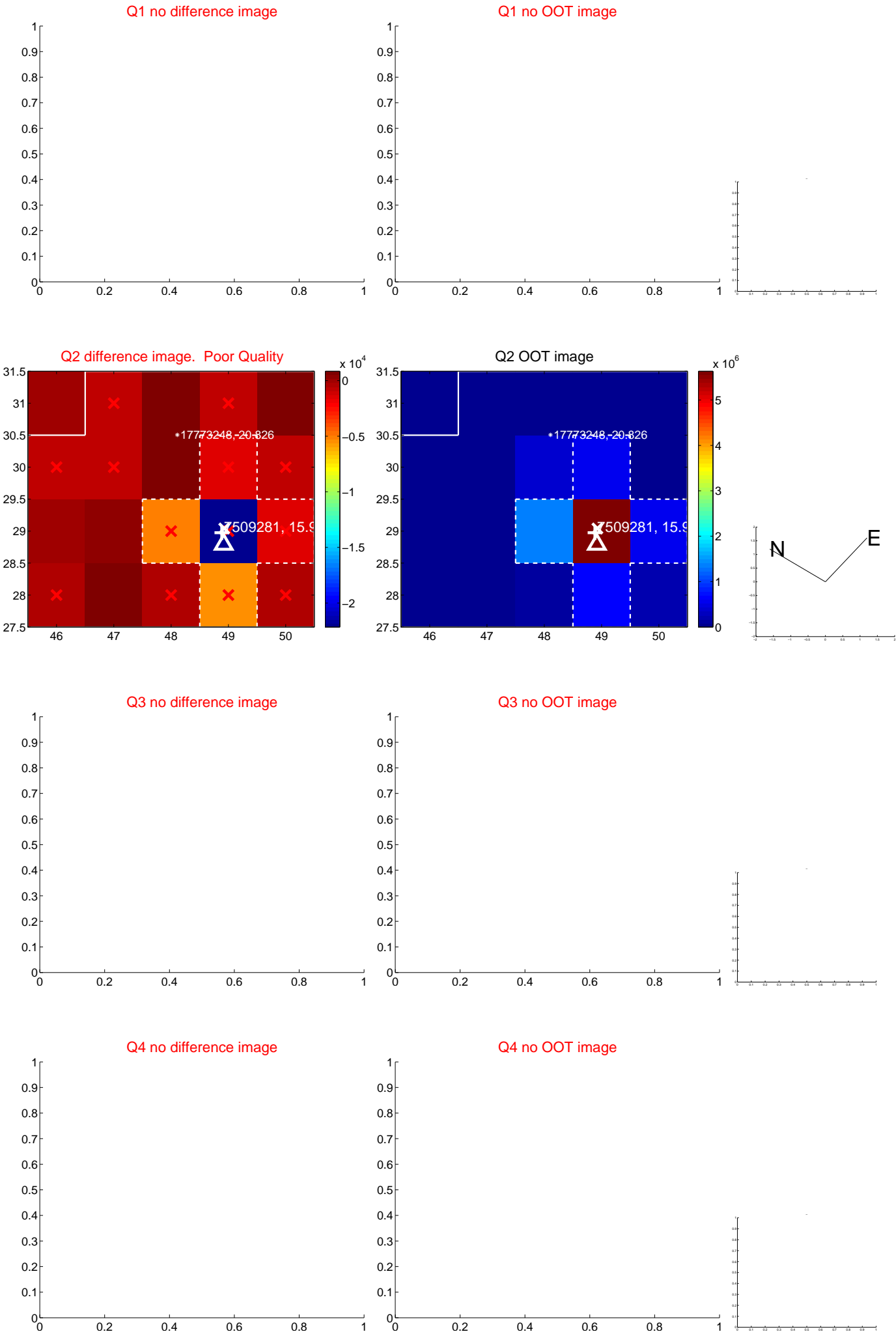
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.472 ± 0.256	1.84	-0.195 ± 0.313	-0.430 ± 0.167
PRF-fit source offset from KIC position	0.643 ± 0.371	1.73	-0.439 ± 0.490	-0.469 ± 0.220
photometric centroid source offset	0.27 ± 0.49	0.56	-0.12 ± 0.46	-0.24 ± 0.49



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.

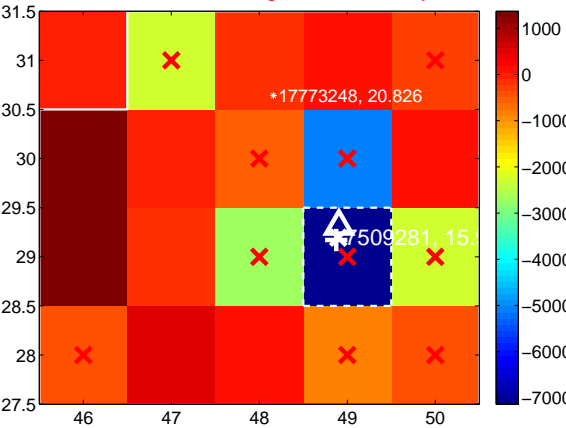
Q5 no difference image



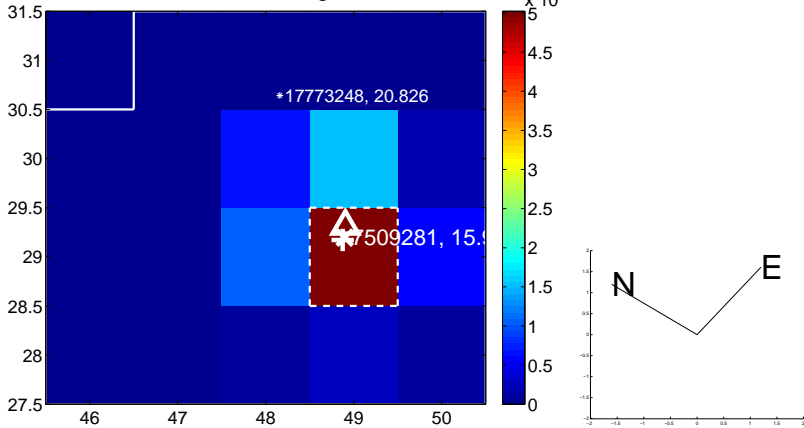
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



Q7 no difference image



Q7 no OOT image



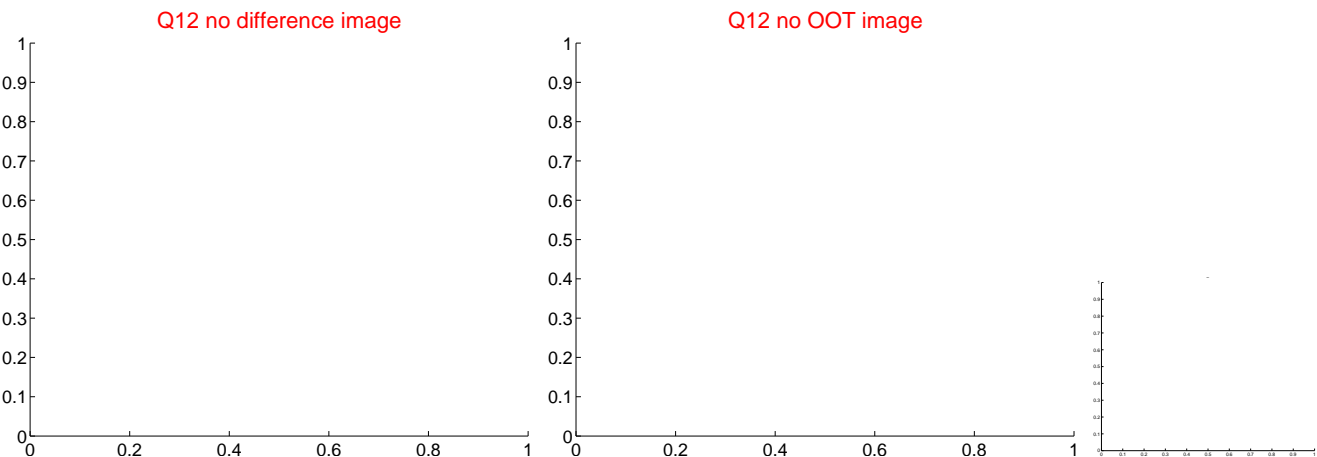
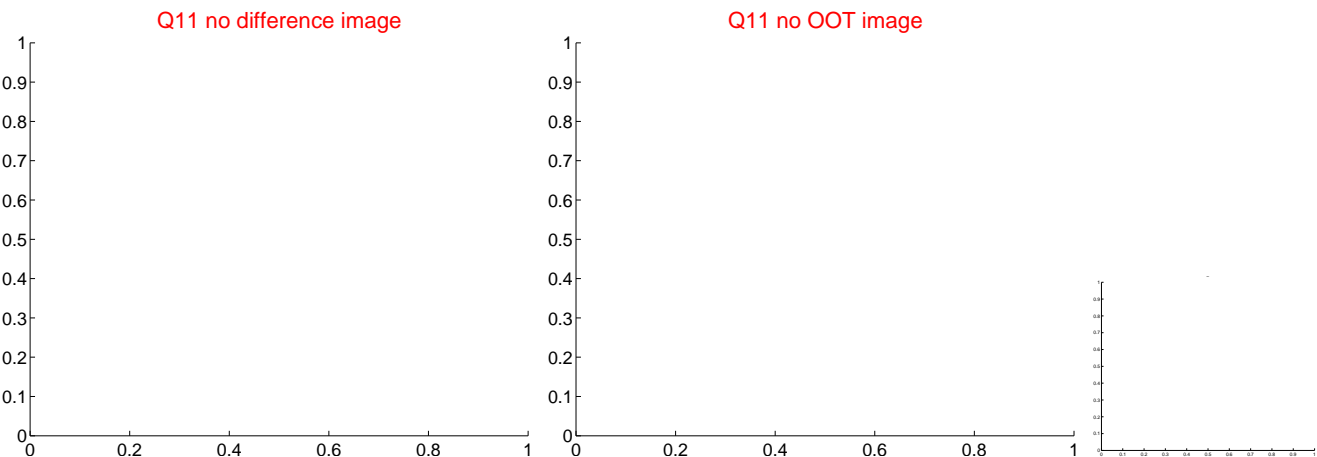
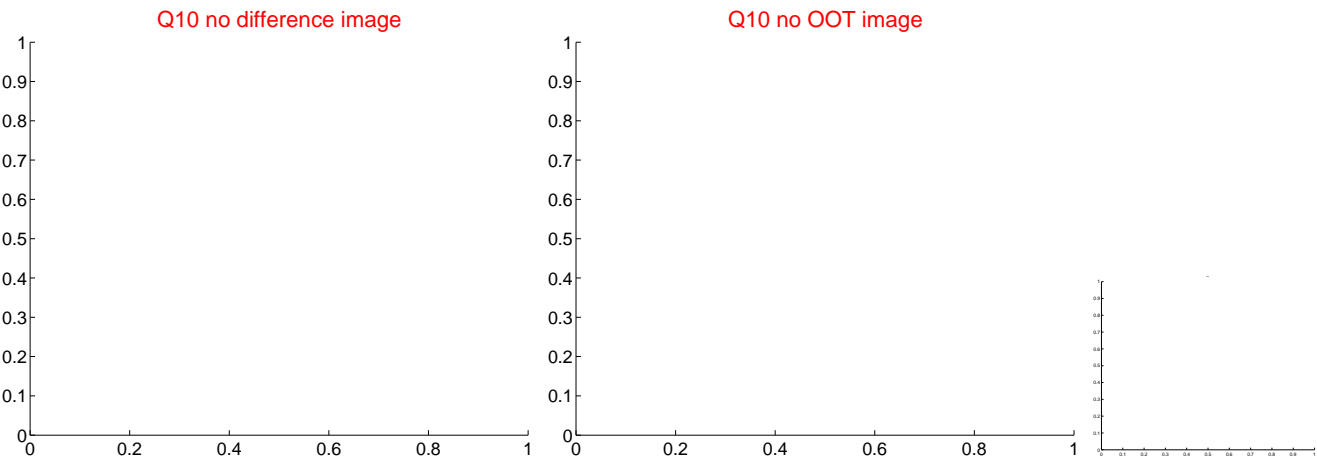
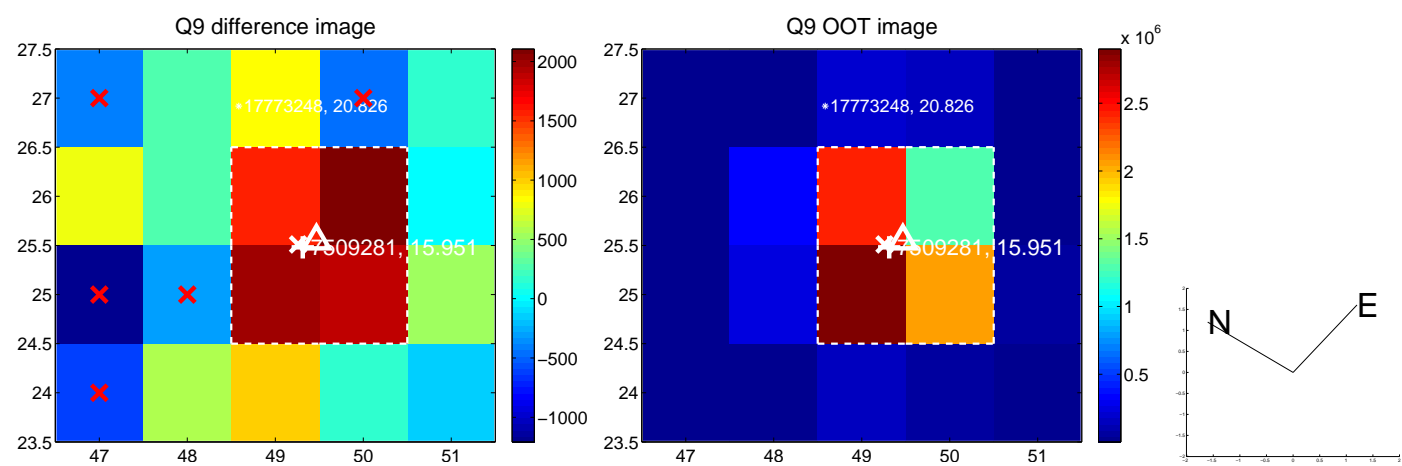
Q8 no difference image



Q8 no OOT image



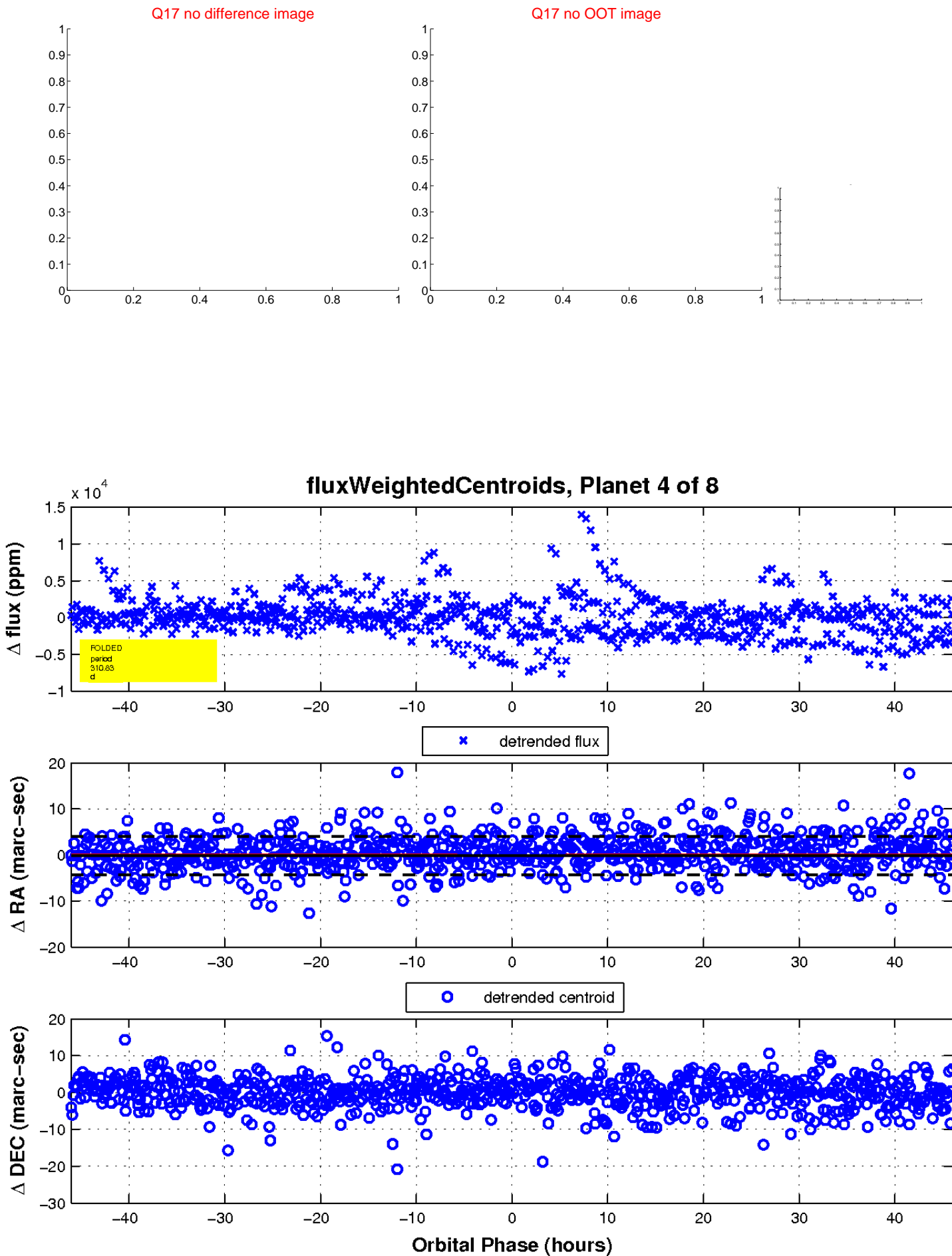
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

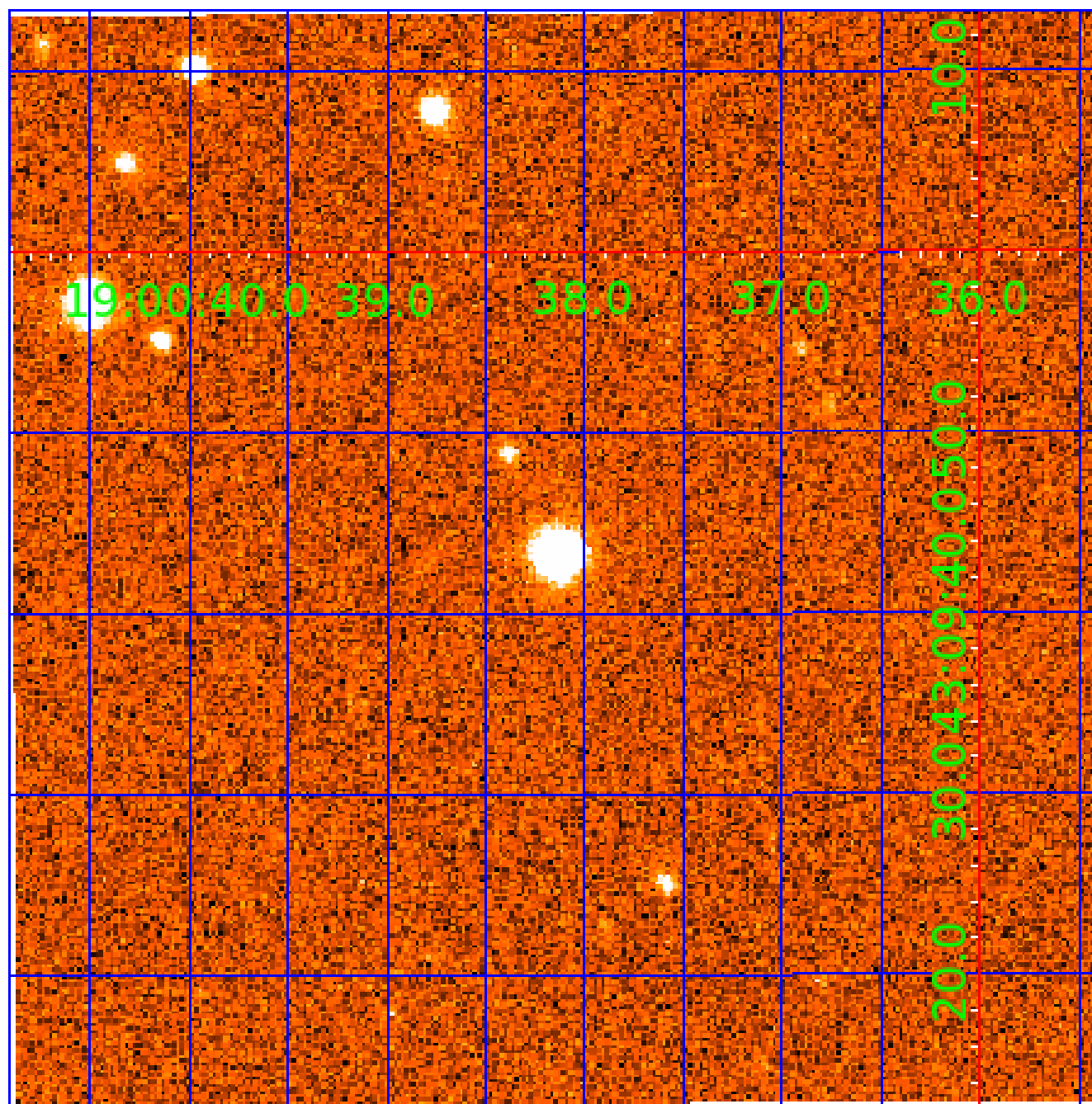


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007509281

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})
007509281-01	OBS	No	495.349153	146.690329	2359.1	5.011	12.3	7.2	0.36	3514	1.78	0.02
007509281-02	OBS	No	692.166905	193.864416	3834.8	5.446	11.7	11.3	0.36	3514	2.19	0.01
007509281-03	OBS	No	391.329919	436.945038	1314.2	15.000	11.2	-1.0	0.36	3514	1.28	0.03
007509281-04	OBS	No	310.829106	239.404934	2908.4	15.364	10.6	7.3	0.36	3514	2.31	0.04
007509281-05	OBS	No	350.536672	212.159784	547.7	7.021	11.0	1.9	0.36	3514	0.87	0.04
007509281-06	OBS	No	188.860962	239.174780	2397.9	3.029	11.7	7.4	0.36	3514	1.84	0.08
007509281-07	OBS	No	454.443040	341.799460	2133.5	4.279	10.4	6.7	0.36	3514	1.68	0.03
007509281-08	OBS	No	282.560172	296.603971	1474.0	21.758	9.4	4.4	0.36	3514	1.36	0.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007509281-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
007509281-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_NOFITS
007509281-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

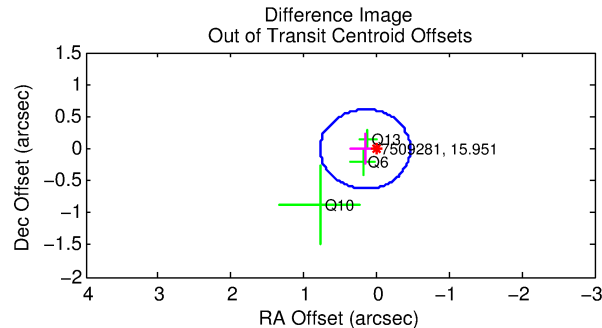
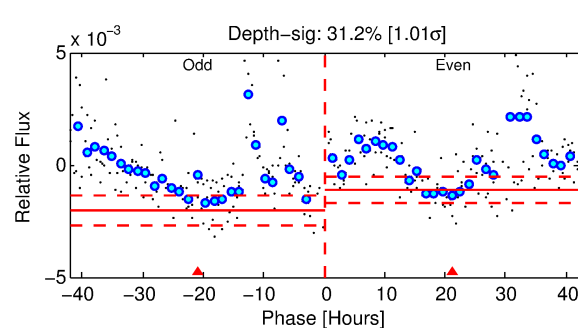
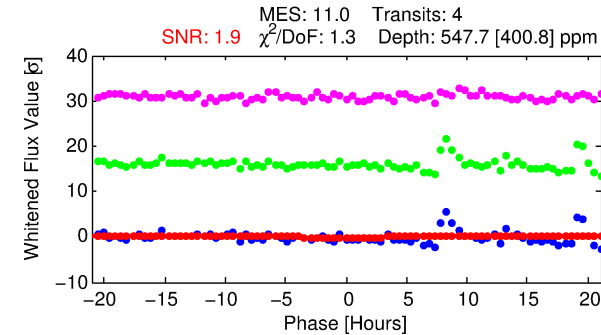
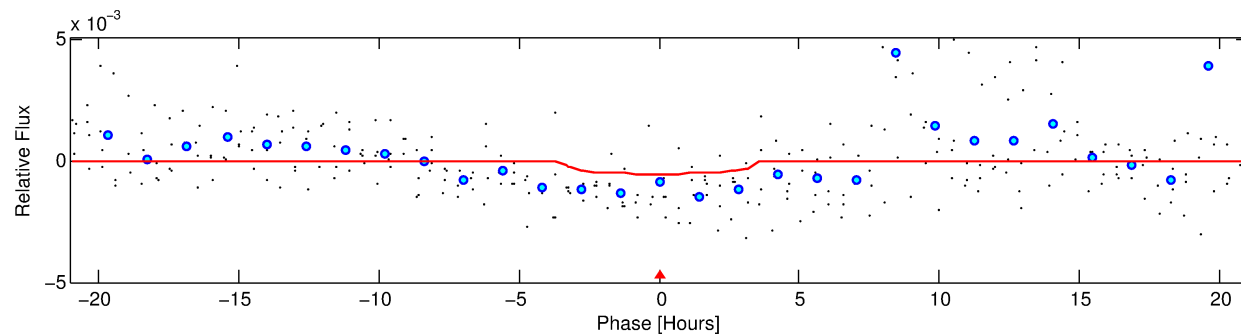
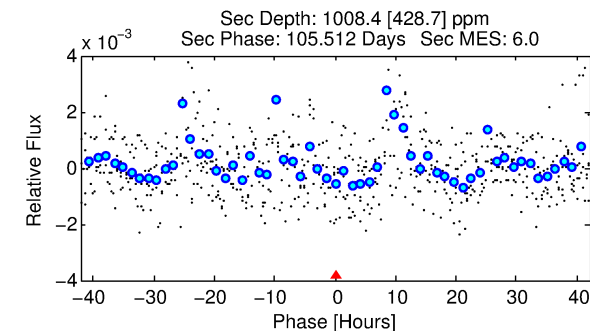
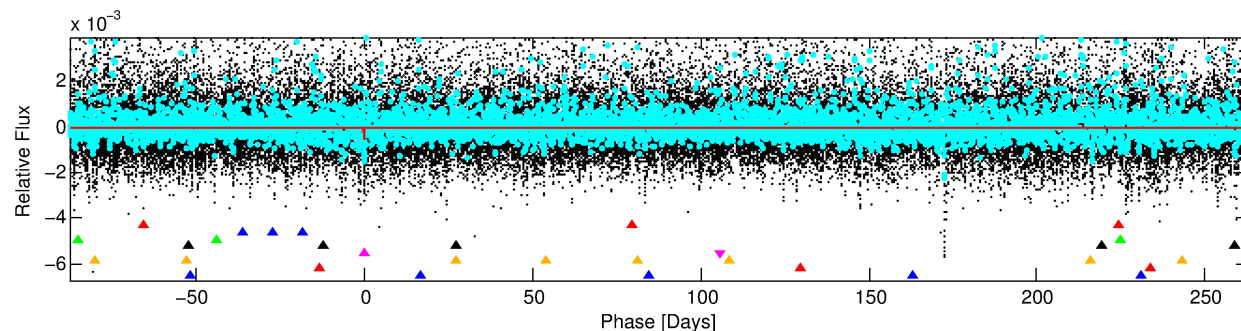
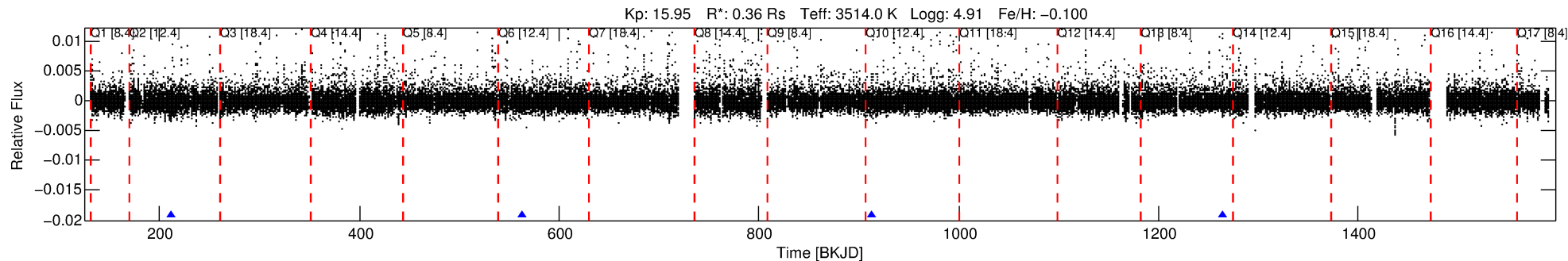
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007509281-05

No Significant Match Found

DV One-Page Summary

KIC: 7509281 Candidate: 5 of 8 Period: 350.537 d



DV Fit Results:

Period = 350.53667 [0.02291] d
Epoch = 212.1598 [0.0494] BKJD
Rp/R* = 0.0222 [0.0649]
a/R* = 319.70 [3988.02]
b = 0.59 [14.02]
Seff = 0.04 [0.00]
Teq = 111 [3] K
Rp = 0.87 [2.54] Re
a = 0.7032 [0.0563] AU
Ag = 364810.46 [2139948.66] [0.17σ]
Teffp = 4203 [6163] K [0.66σ]

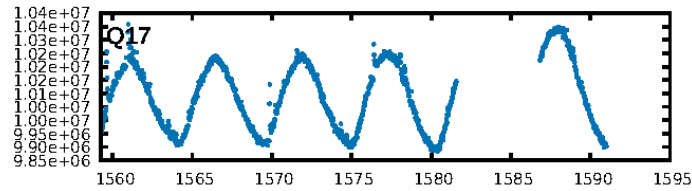
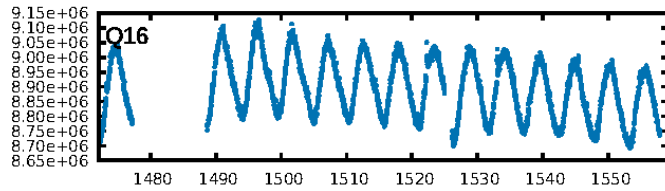
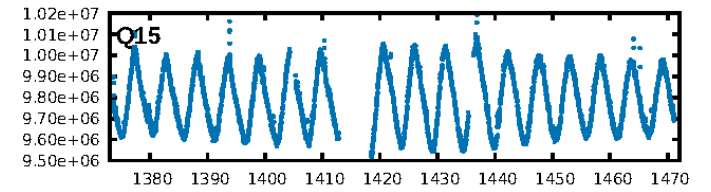
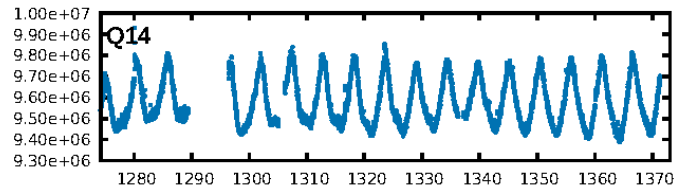
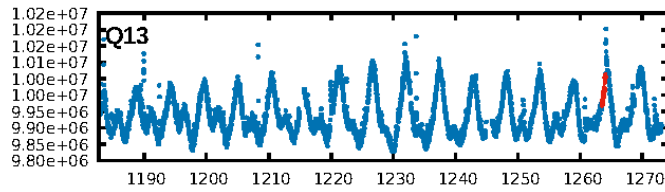
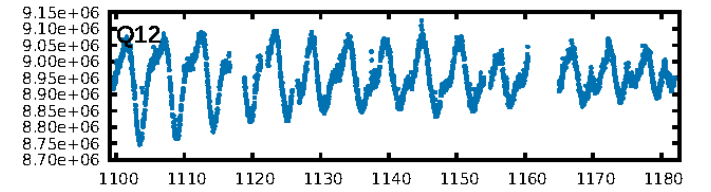
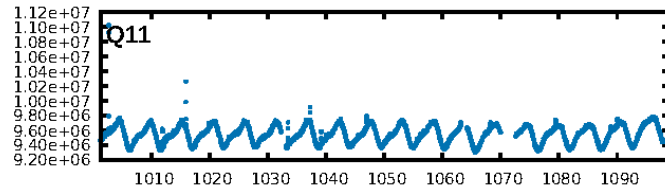
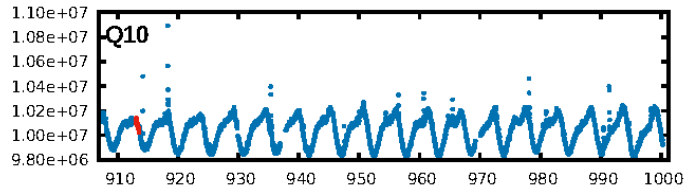
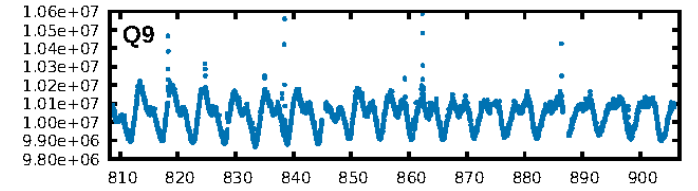
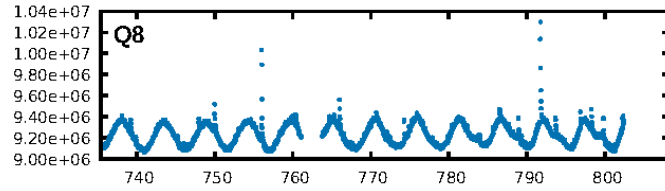
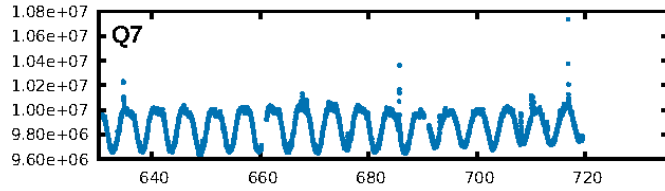
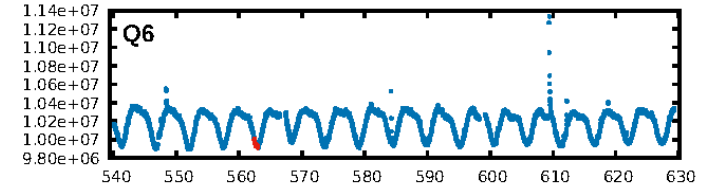
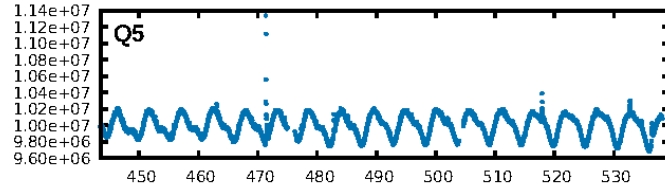
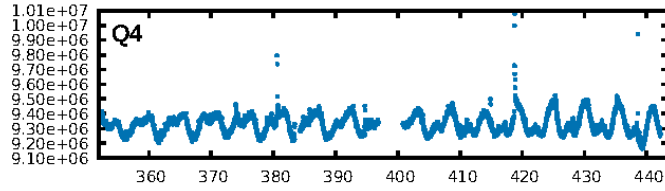
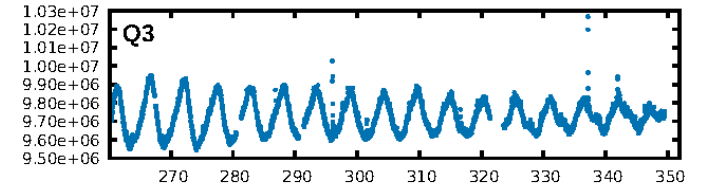
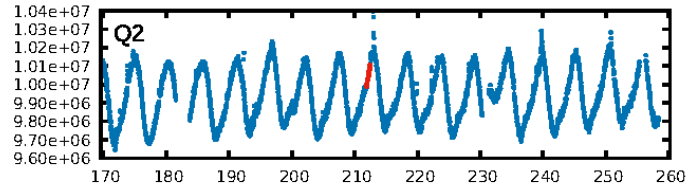
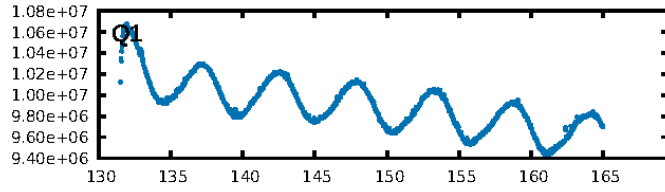
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [56.42σ]
LongPeriod-sig: 100.0% [59.11σ]
ModelChiSquare2-sig: 77.4%
ModelChiSquareGof-sig: 96.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -9.117
Centroid-sig: N/A
Centroid-so: 3.679 arcsec [1.27σ]
OotOffset-rm: 0.156 arcsec [0.76σ]
OotOffset-st: 2/0/0/1 [3]
KicOffset-rm: 0.242 arcsec [1.14σ]
KicOffset-st: 2/0/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [4/4]

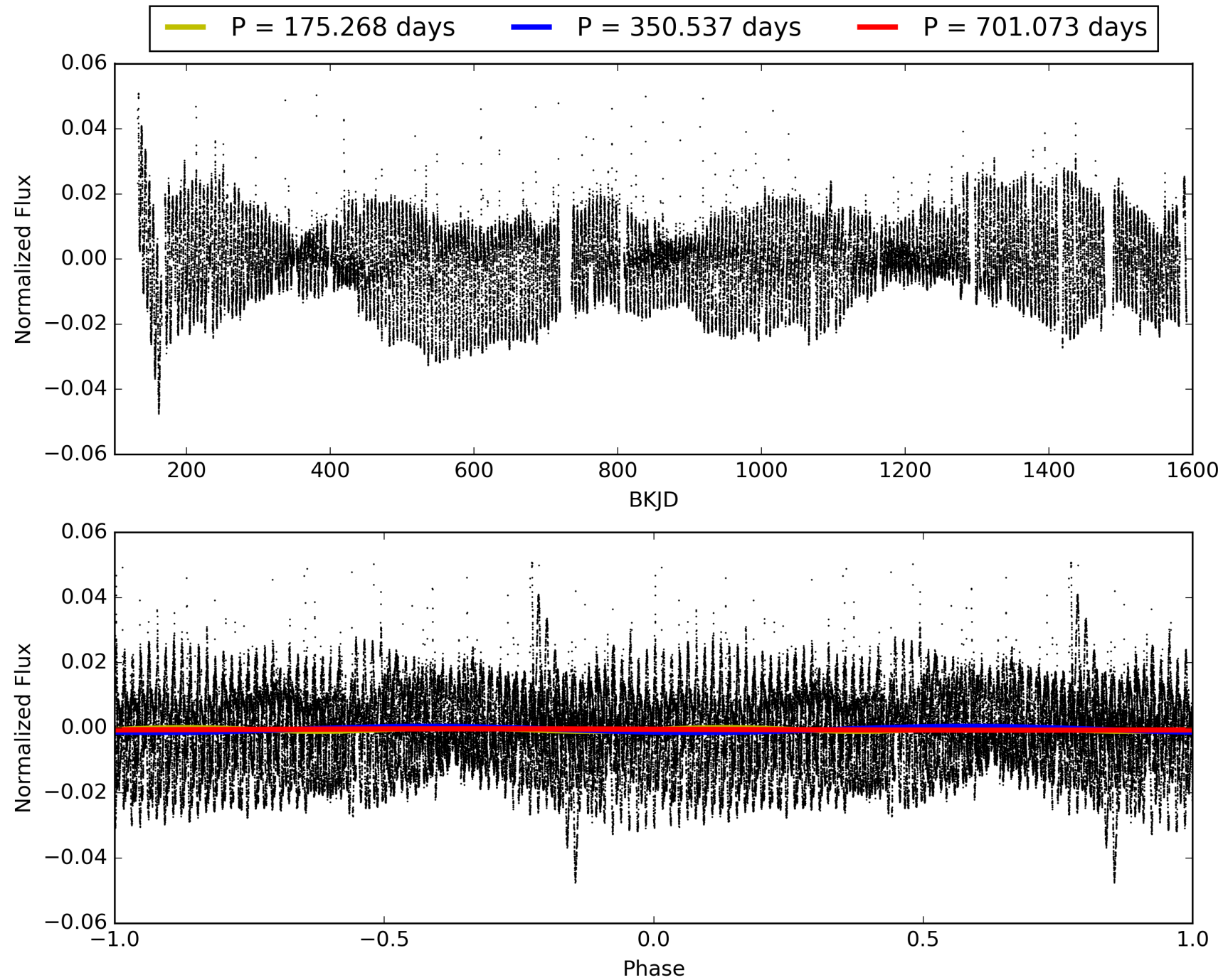
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:47:15 Z

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

TCE 007509281-05, PDC Light Curves

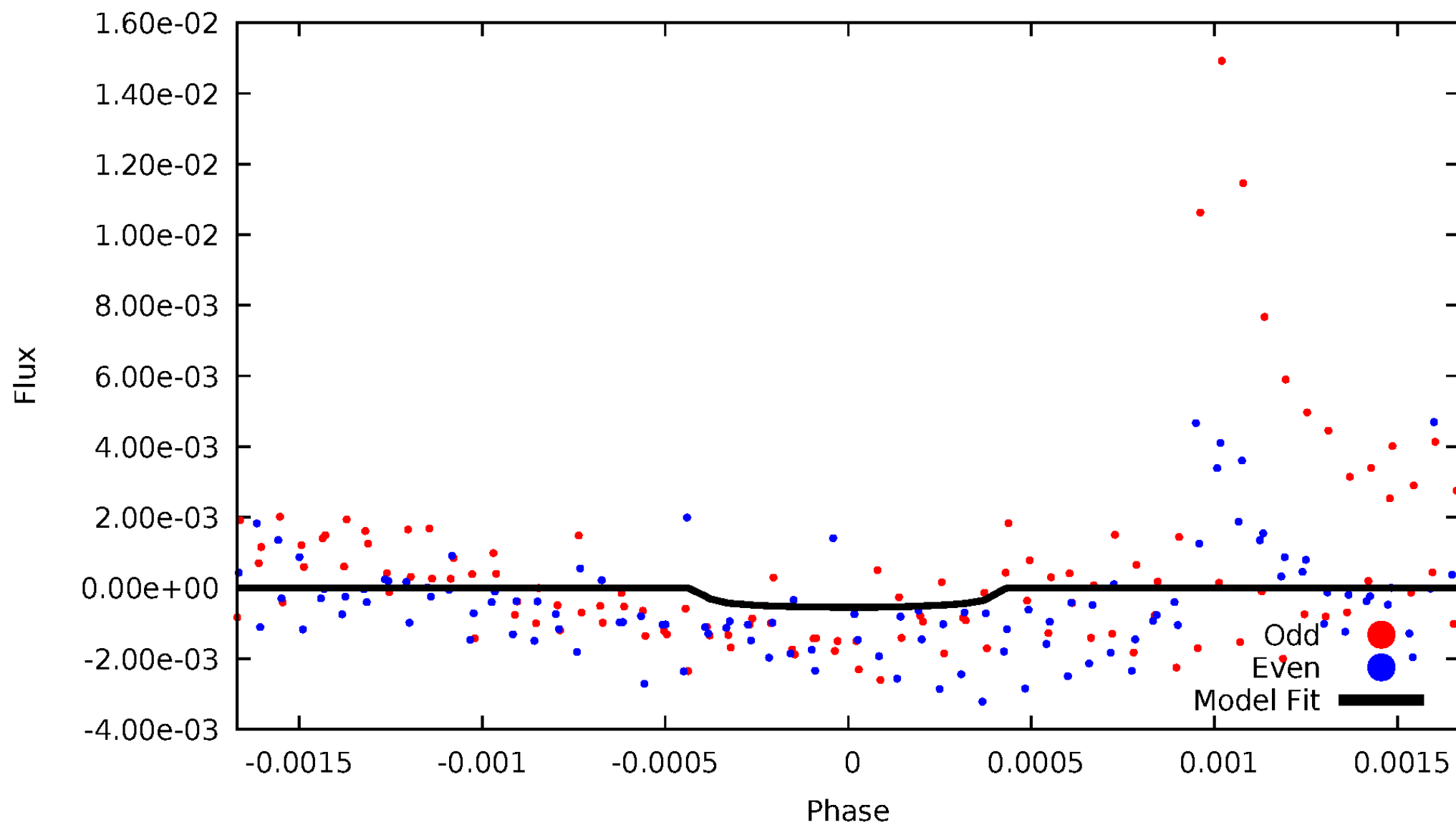


TCE 007509281-05



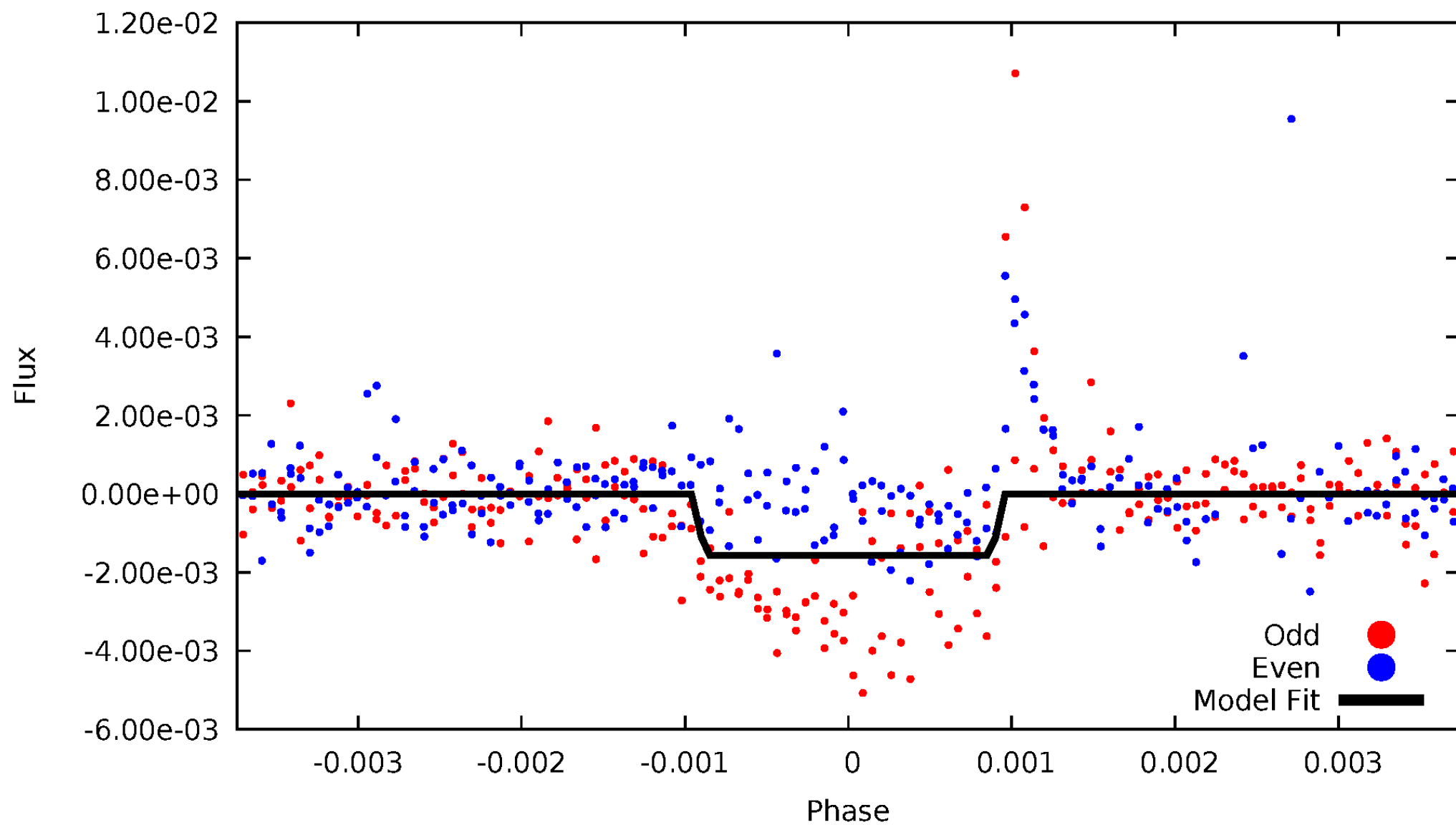
DV Odd/Even

TCE 007509281-05



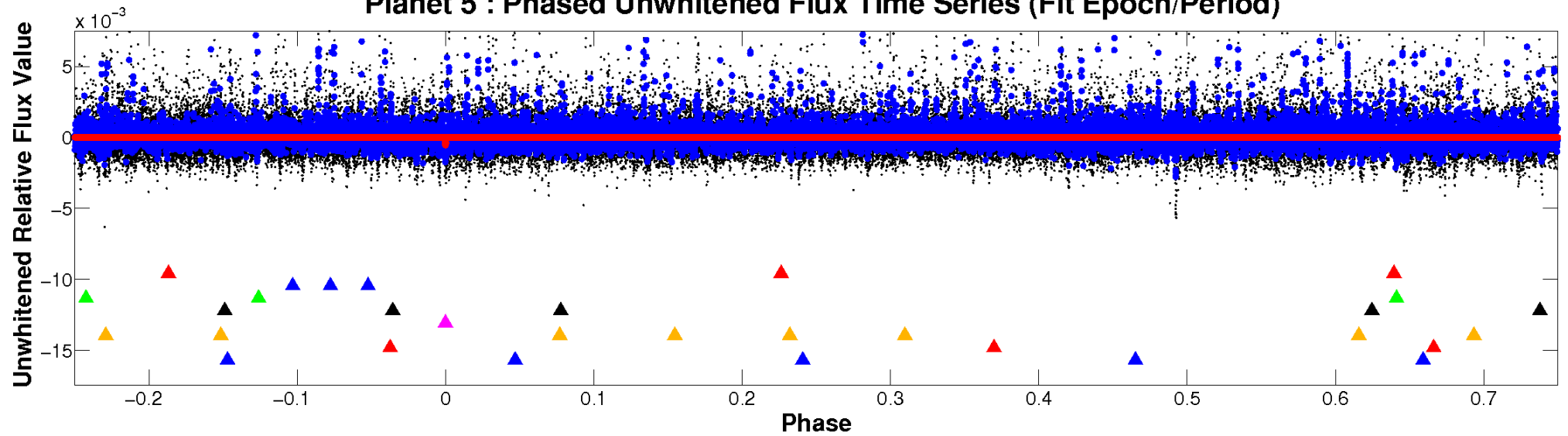
ALT Odd/Even

TCE 007509281-05

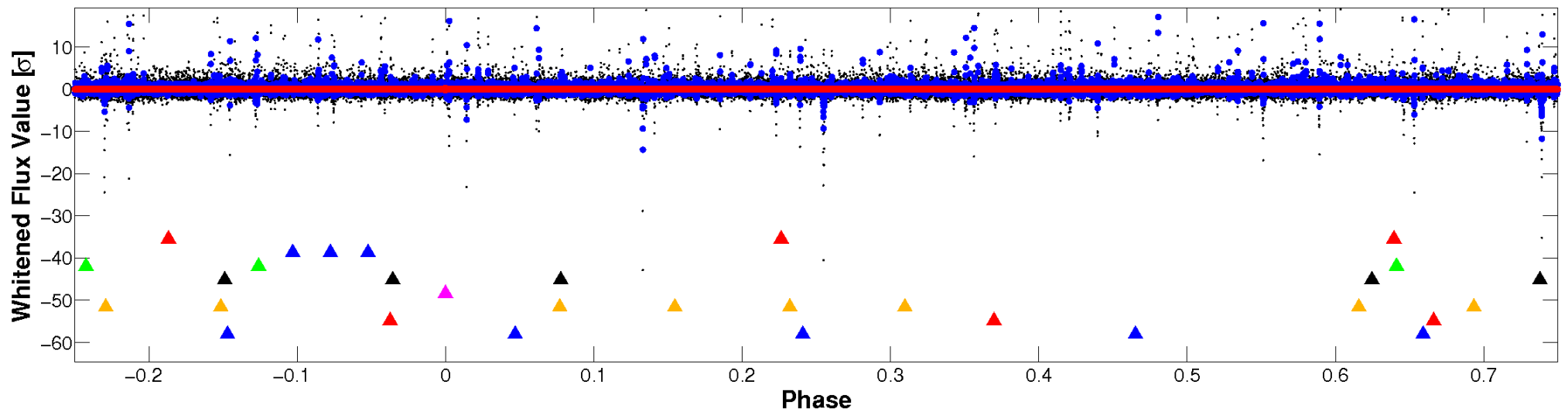


Non-Whitened Vs. Whitened Light Curve

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

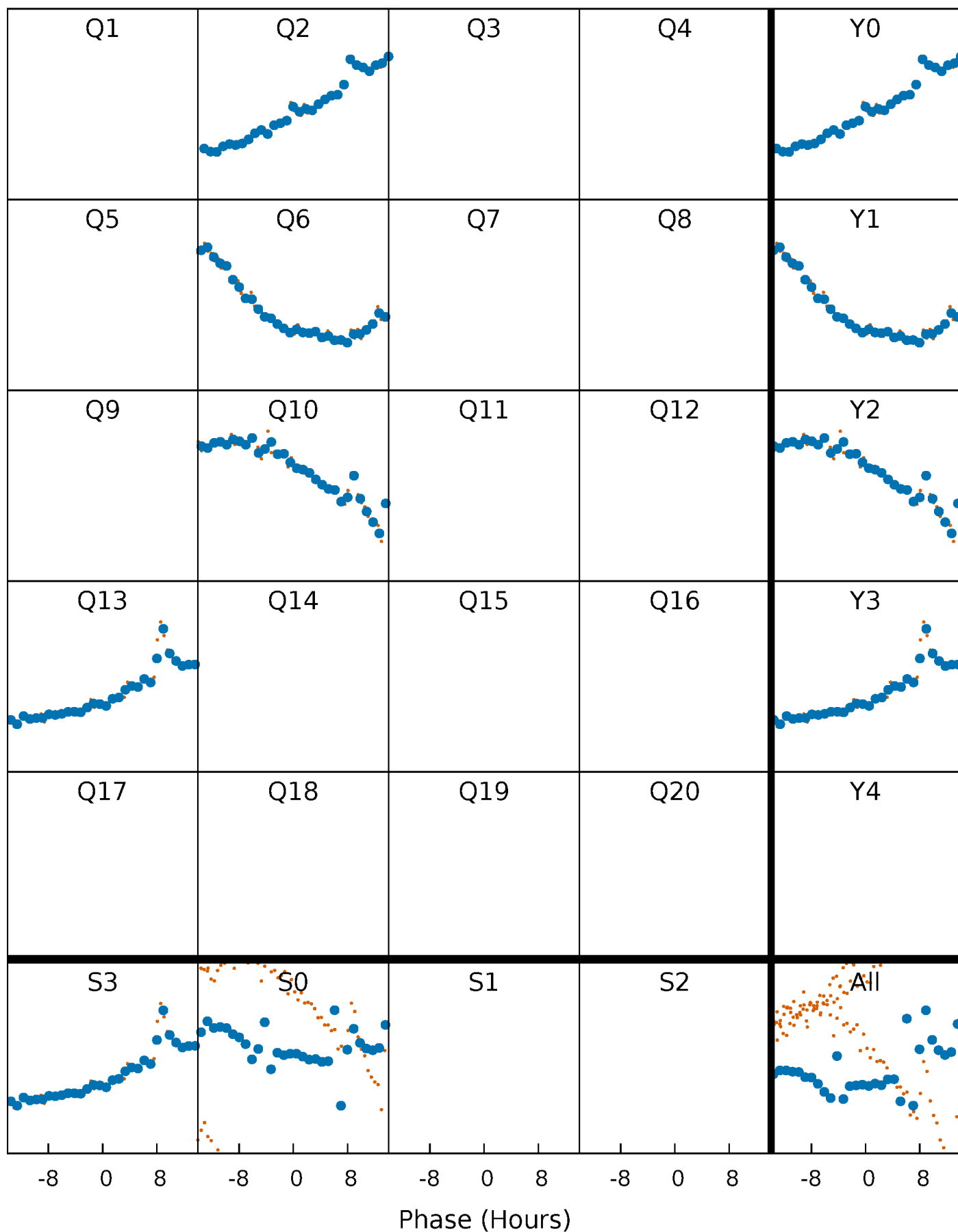


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



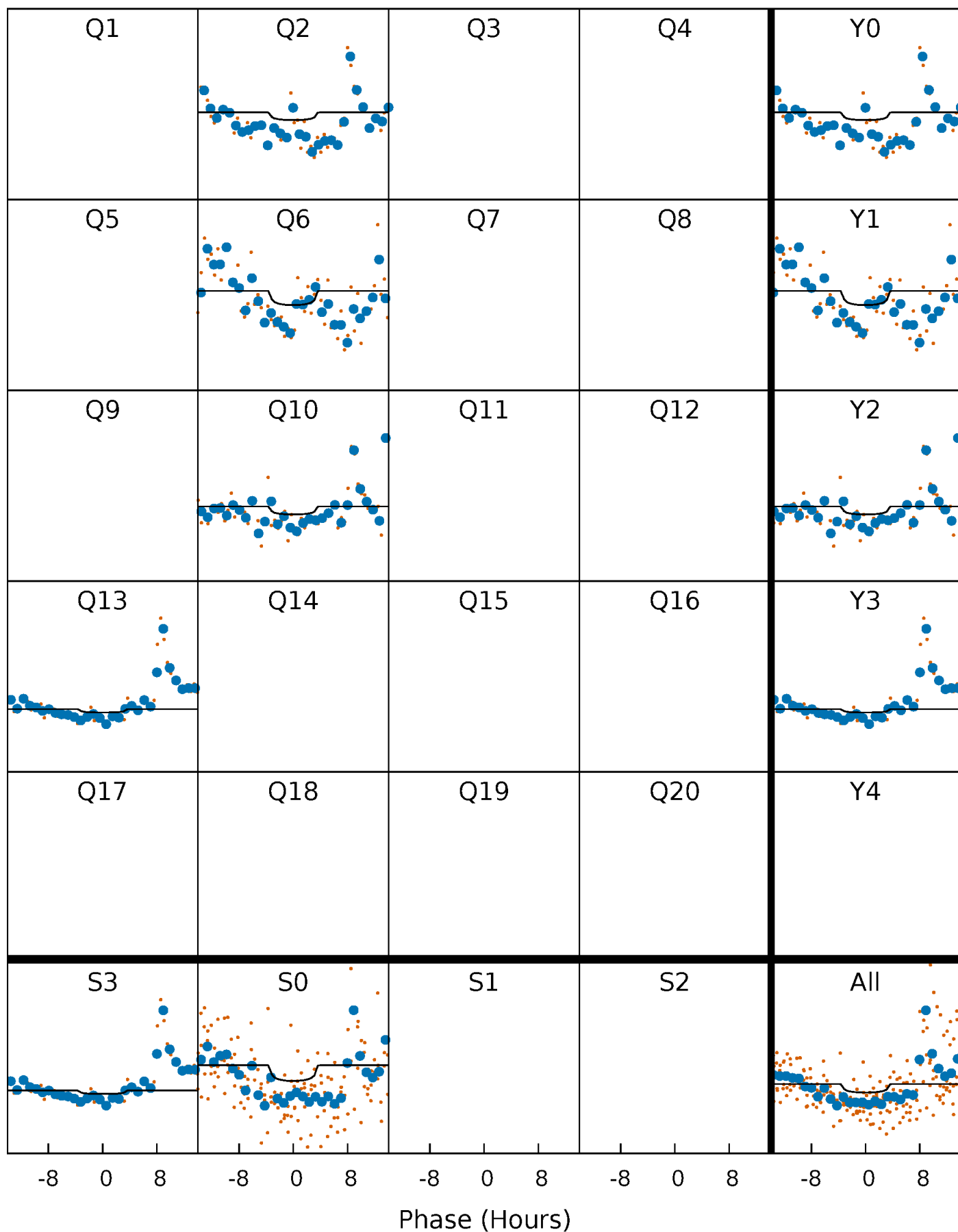
PDC Quarter-Phased Transit Curves

TCE 007509281-05 $P=350.536672$ Days $T_0=212.159784$ (BKJD)



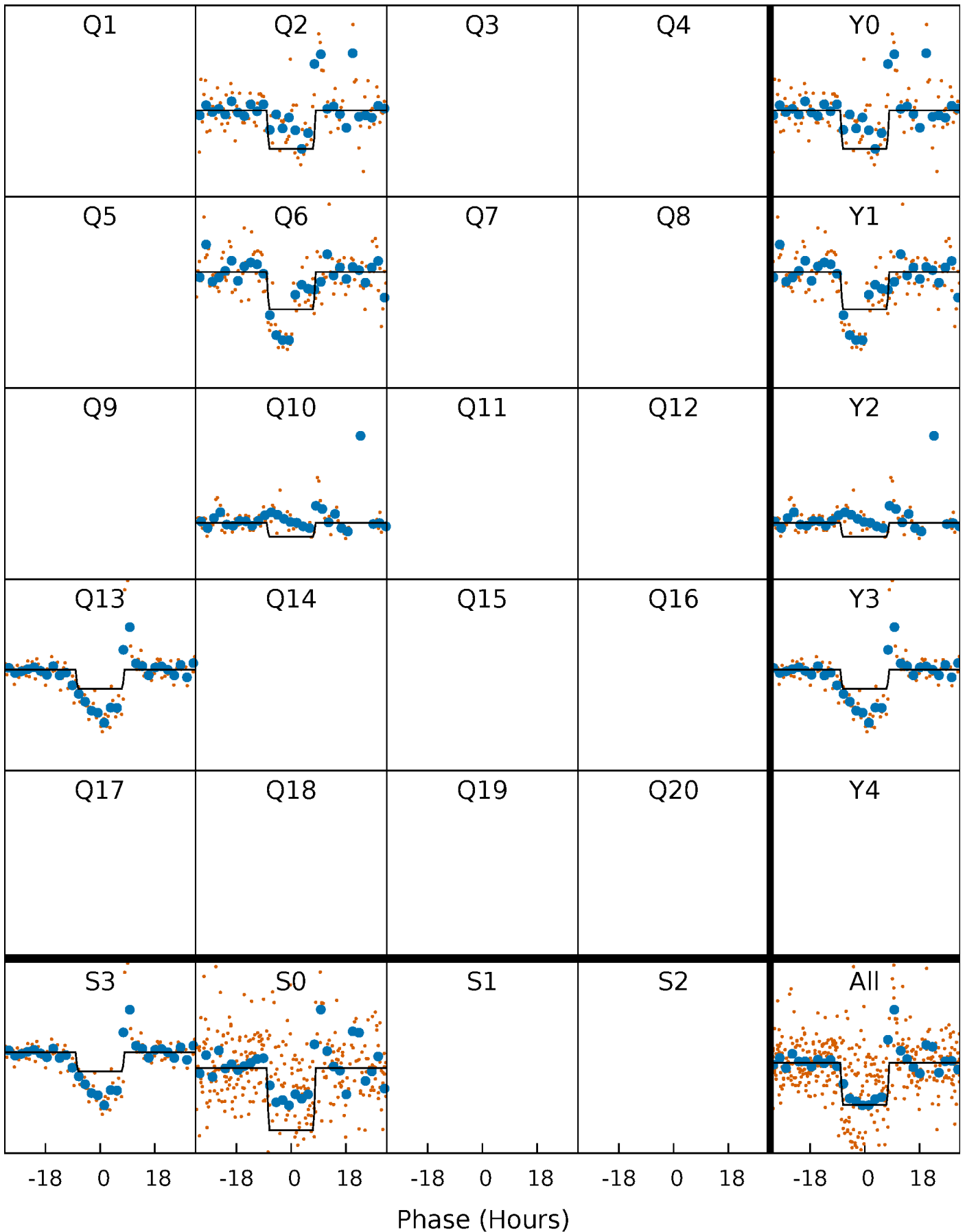
DV Quarter-Phased Transit Curves

TCE 007509281-05 $P=350.536672$ Days $T_0=212.159784$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

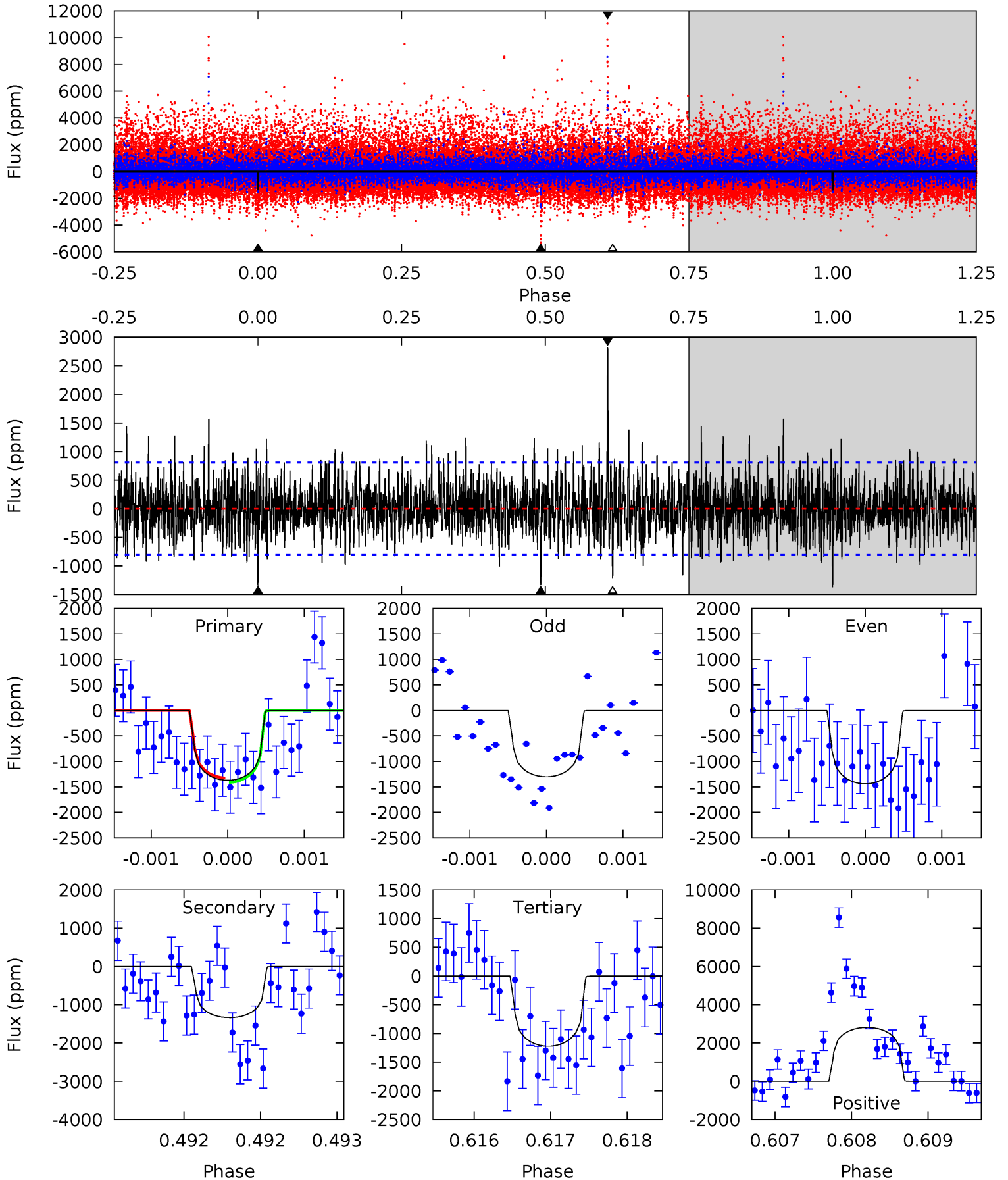
TCE 007509281-05 $P=350.537722$ Days $T_0=212.156318$ (BKJD)



DV Model-Shift Uniqueness Test

007509281-05, P = 350.536672 Days, E = 212.159784 Days

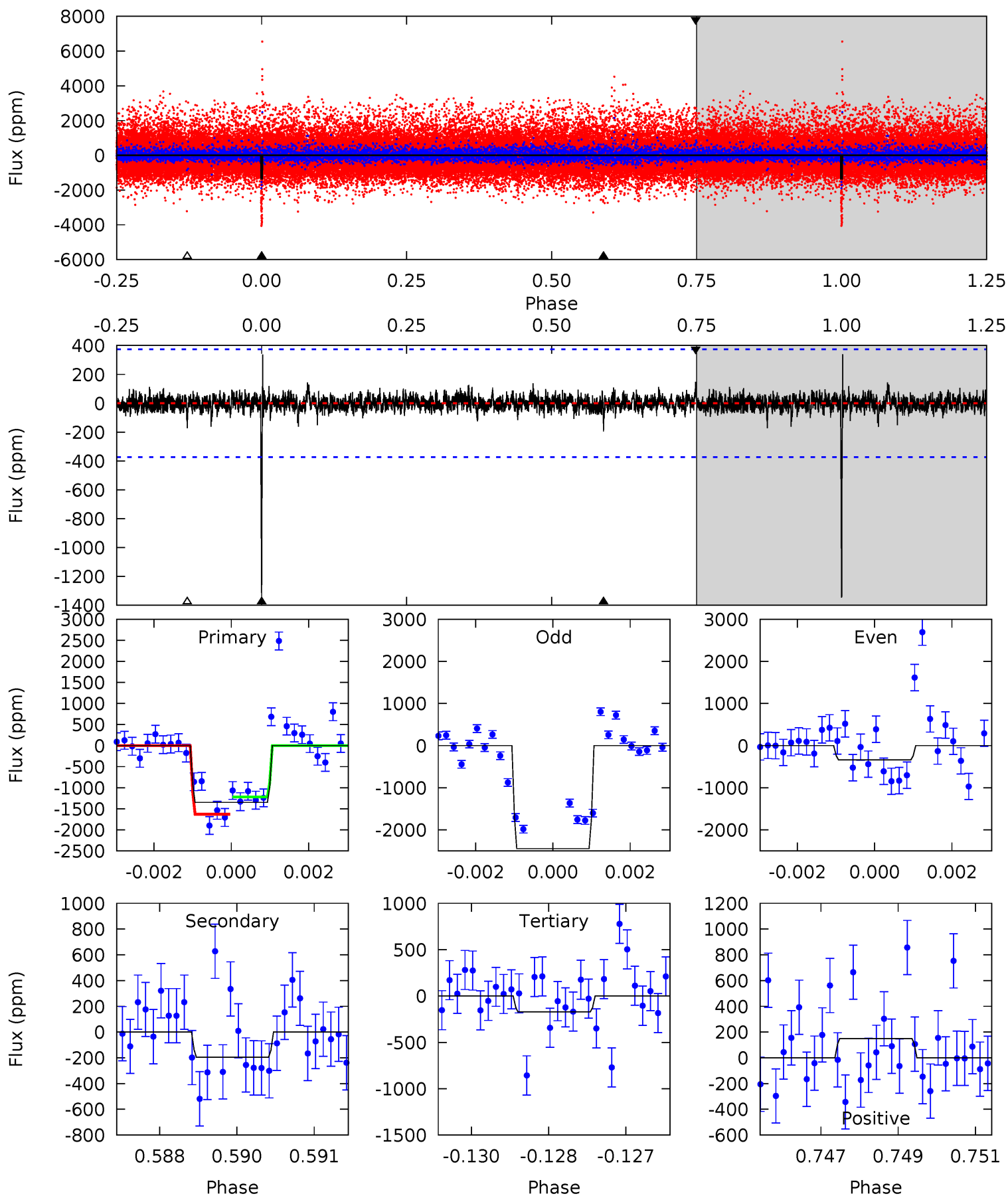
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.27	9.04	8.27	19.1	5.47	3.33	2.50	1.00	-9.80	0.77	-10.0	0.36	0.95	0.67	0.29



Alt Model-Shift Uniqueness Test

007509281-05, P = 350.537722 Days, E = 212.156318 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	2.79	2.46	2.13	5.34	3.12	0.49	16.8	17.1	0.33	0.66	15.0	1.11	0.20	2.90



Stellar Parameters For KIC 007509281

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3514^{+56}_{-63}	$4.907^{+0.040}_{-0.044}$	$-0.100^{+0.100}_{-0.100}$	$0.358^{+0.039}_{-0.039}$	$0.380^{+0.040}_{-0.054}$	$11.650^{+2.693}_{-2.189}$
	+2%/-2%	+1%/-1%	+100%/-100%	+11%/-11%	+11%/-14%	+23%/-19%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 007509281-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1336 ± 148	$2.08^{+1.99}_{-1.43}$	155^{+4}_{-4}	3121^{+1515}_{-511}	$83539^{+787667}_{-61662}$
Alt.	-195 ± 70	$2.50^{+2.08}_{-1.64}$	155^{+4}_{-4}	2320^{+775}_{-302}	8326^{+69361}_{-6105}

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 $A_{obs} \gg 1.0$

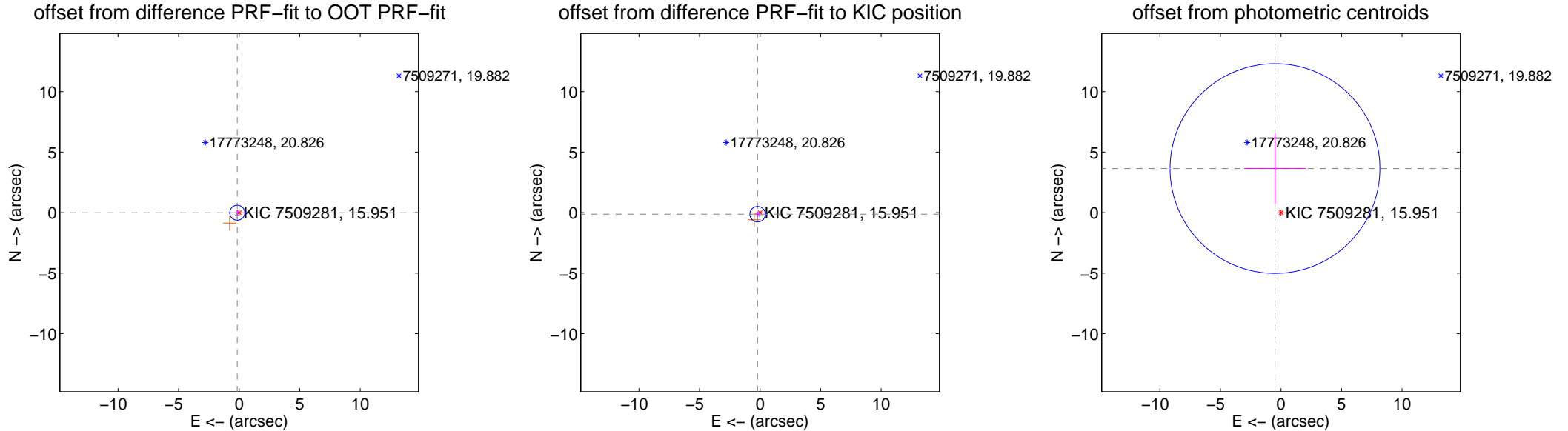
DV Centroid Data

Supplemental centroid analysis for 007509281-05. Kepler magnitude: 15.95. Transit SNR 1.87

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.156 ± 0.206	0.76	0.156 ± 0.206	-0.008 ± 0.229
PRF-fit source offset from KIC position	0.242 ± 0.213	1.14	0.205 ± 0.206	-0.128 ± 0.229
photometric centroid source offset	3.68 ± 2.89	1.27	0.50 ± 2.55	3.64 ± 2.89



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

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

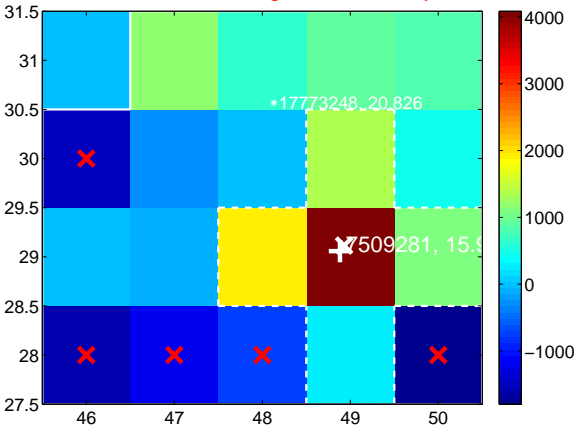
Q1 no difference image



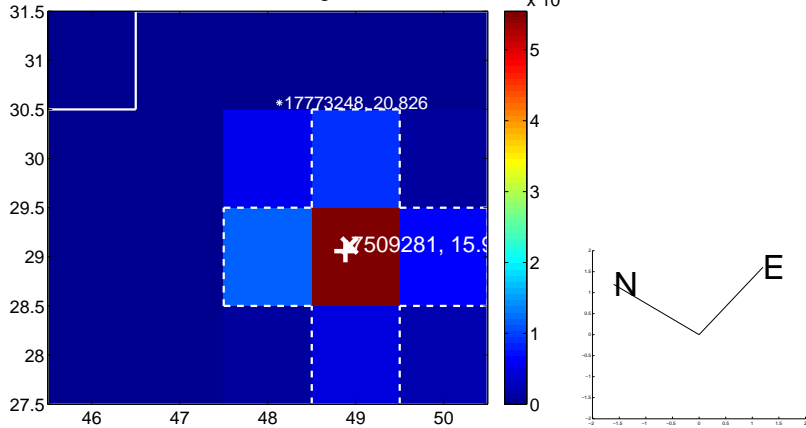
Q1 no OOT image



Q2 difference image. Poor Quality



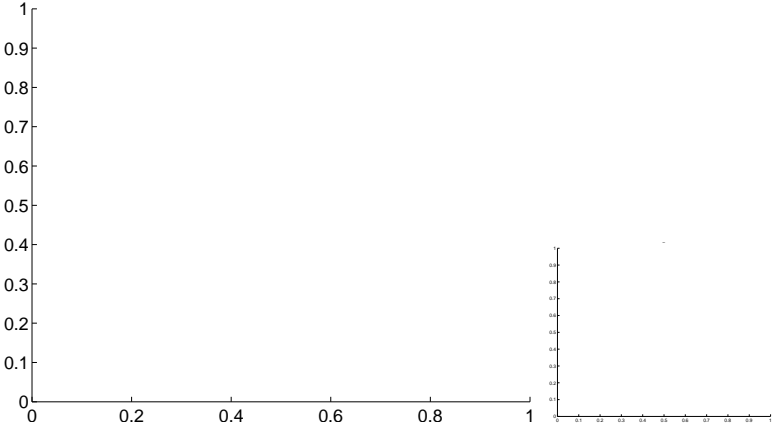
Q2 OOT image



Q3 no difference image



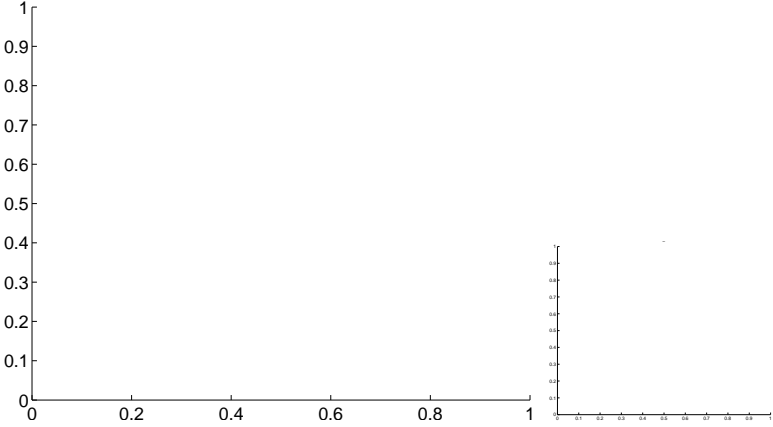
Q3 no OOT image



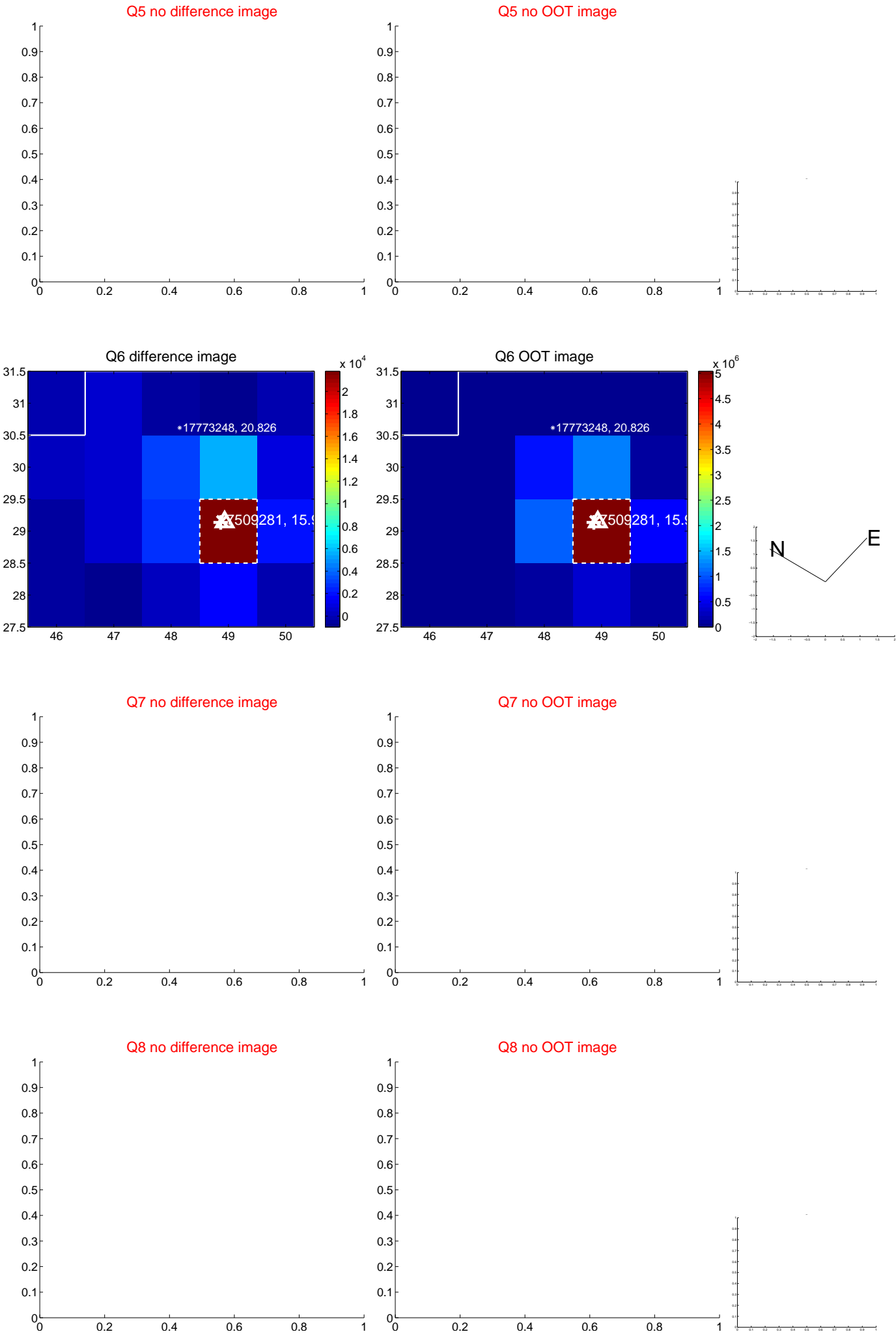
Q4 no difference image



Q4 no OOT image



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



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

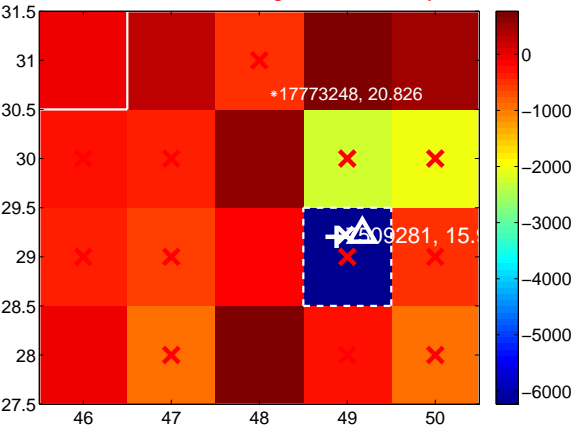
Q9 no difference image



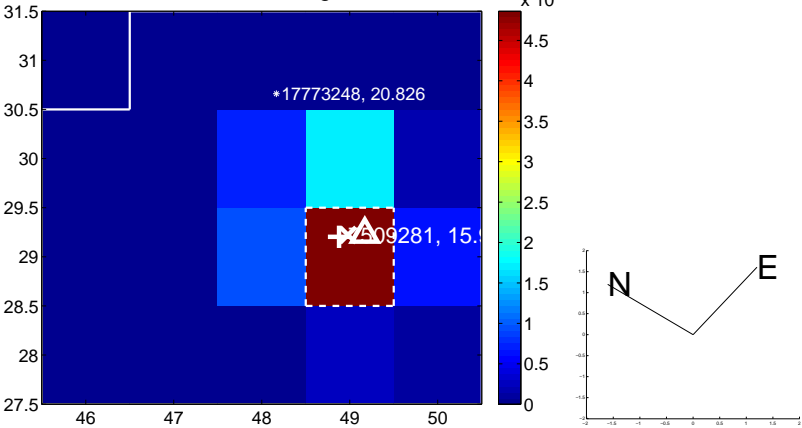
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



Q11 no difference image



Q11 no OOT image



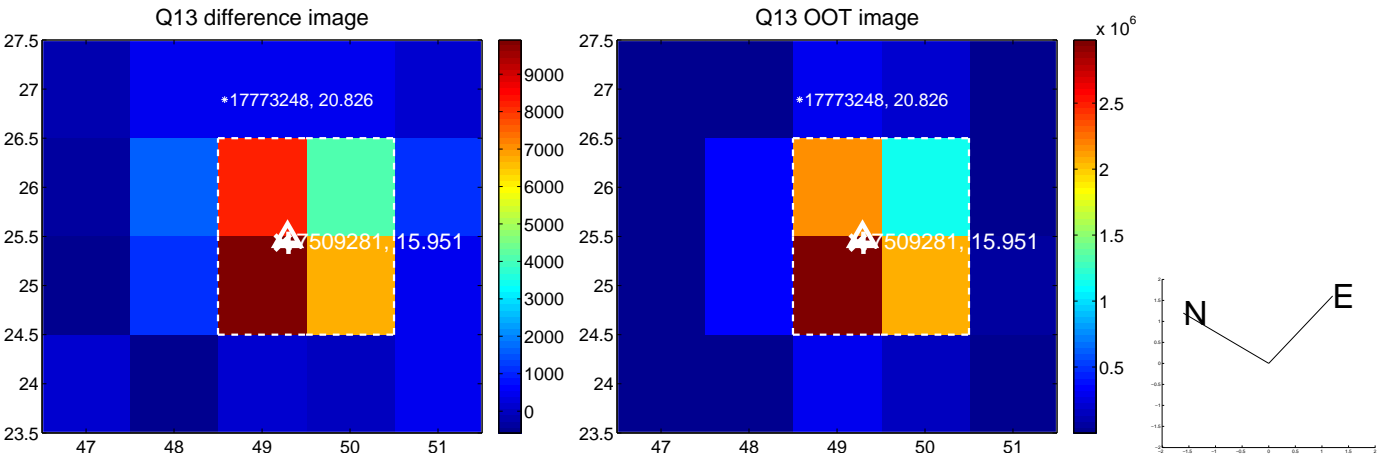
Q12 no difference image



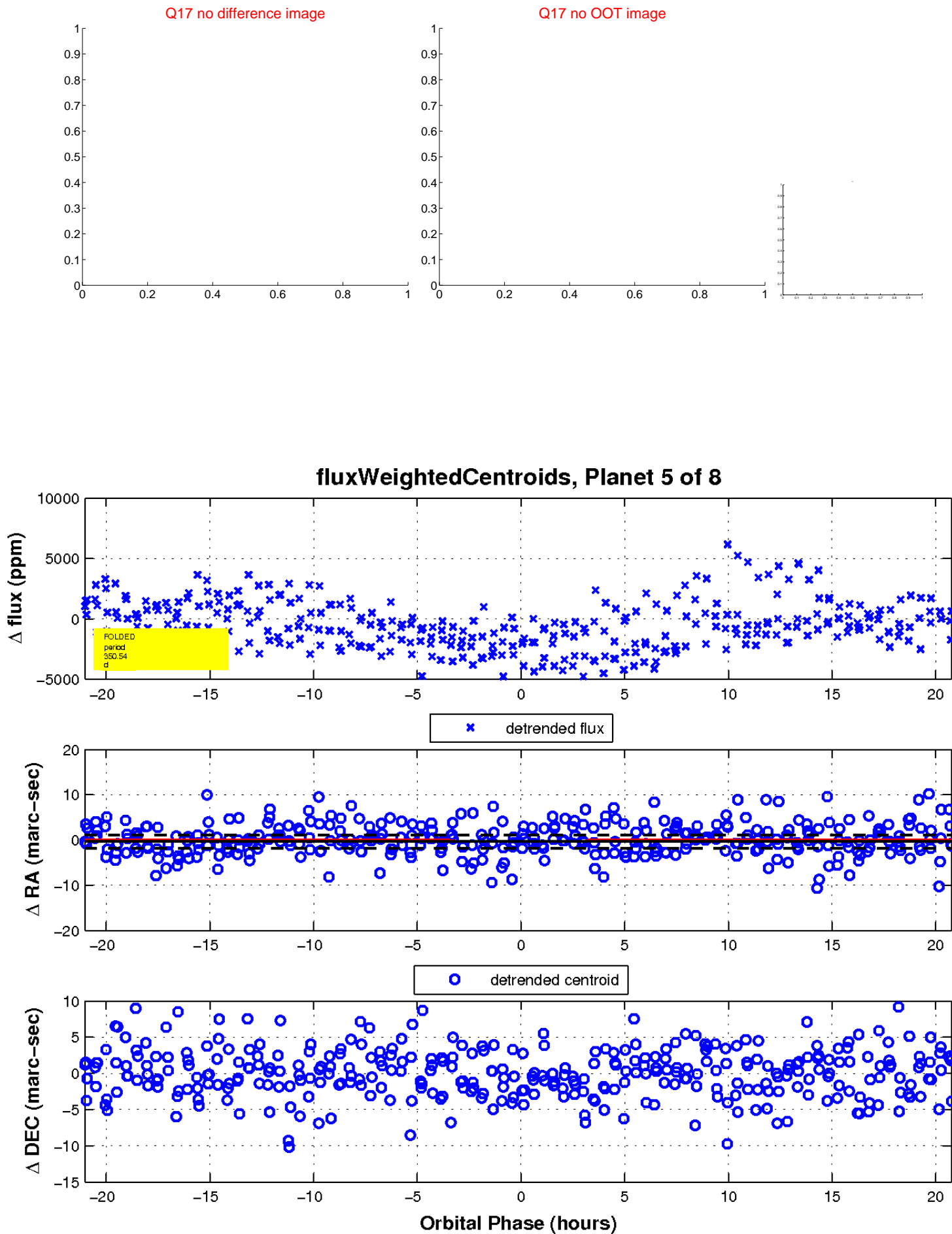
Q12 no OOT image



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

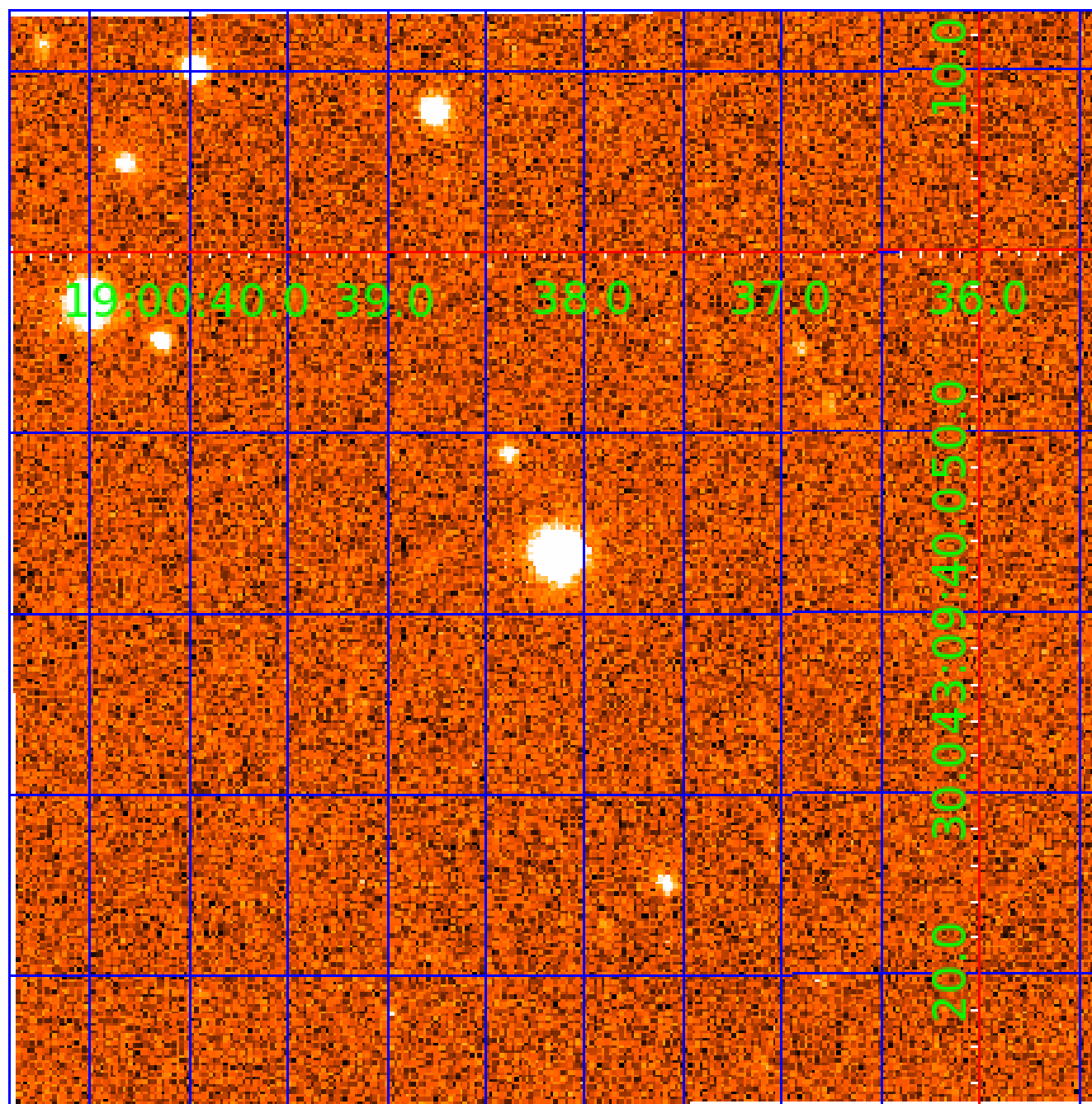


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007509281

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})
007509281-01	OBS	No	495.349153	146.690329	2359.1	5.011	12.3	7.2	0.36	3514	1.78	0.02
007509281-02	OBS	No	692.166905	193.864416	3834.8	5.446	11.7	11.3	0.36	3514	2.19	0.01
007509281-03	OBS	No	391.329919	436.945038	1314.2	15.000	11.2	-1.0	0.36	3514	1.28	0.03
007509281-04	OBS	No	310.829106	239.404934	2908.4	15.364	10.6	7.3	0.36	3514	2.31	0.04
007509281-05	OBS	No	350.536672	212.159784	547.7	7.021	11.0	1.9	0.36	3514	0.87	0.04
007509281-06	OBS	No	188.860962	239.174780	2397.9	3.029	11.7	7.4	0.36	3514	1.84	0.08
007509281-07	OBS	No	454.443040	341.799460	2133.5	4.279	10.4	6.7	0.36	3514	1.68	0.03
007509281-08	OBS	No	282.560172	296.603971	1474.0	21.758	9.4	4.4	0.36	3514	1.36	0.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007509281-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
007509281-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_NOFITS
007509281-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

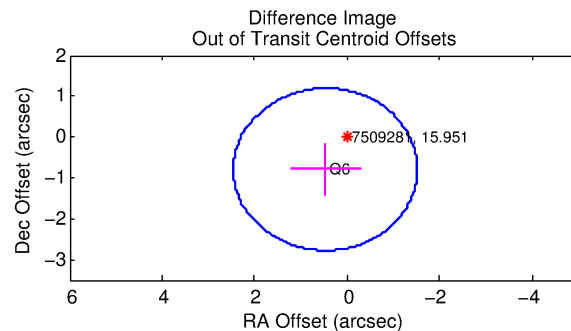
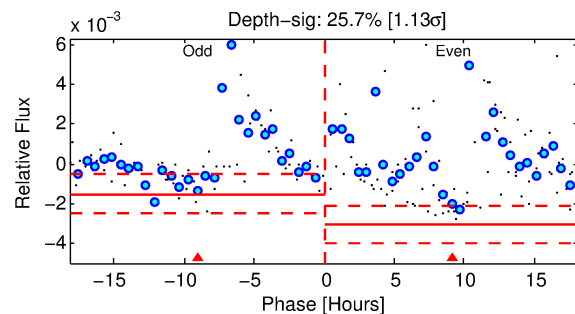
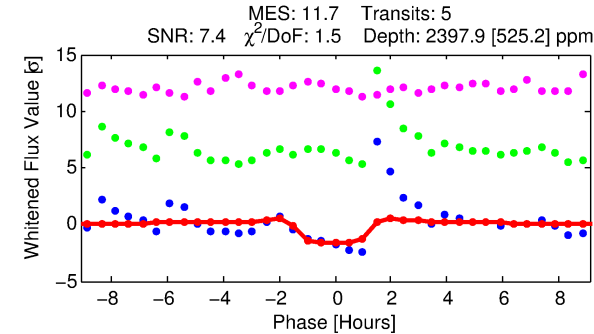
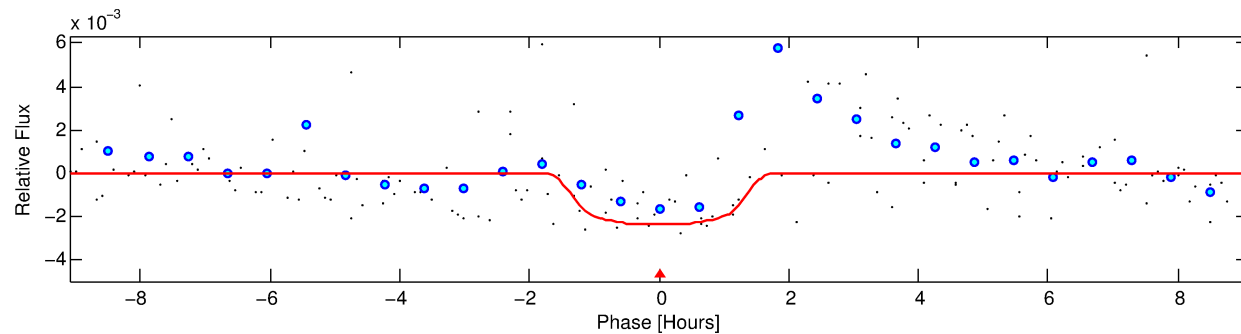
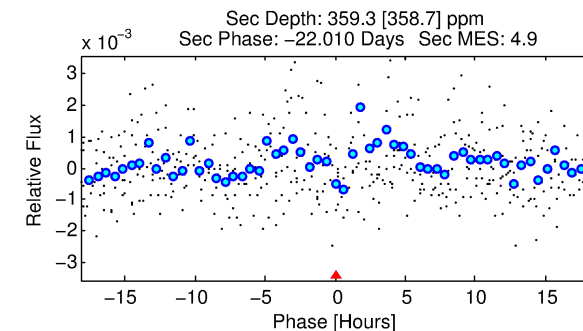
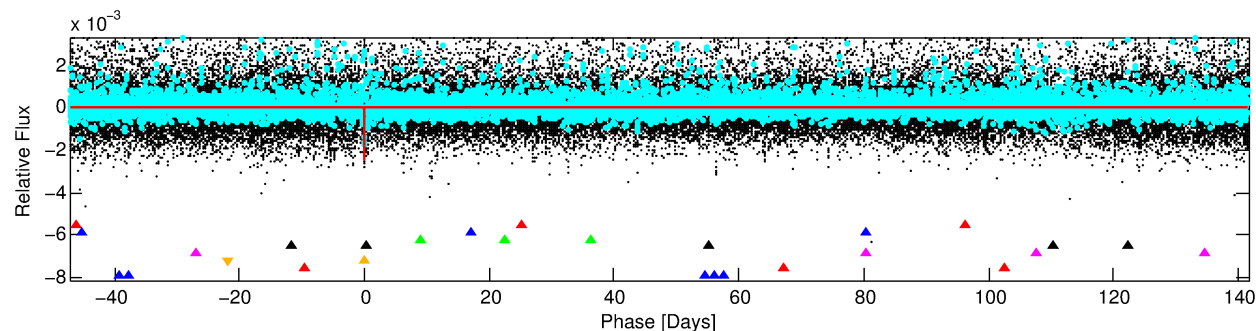
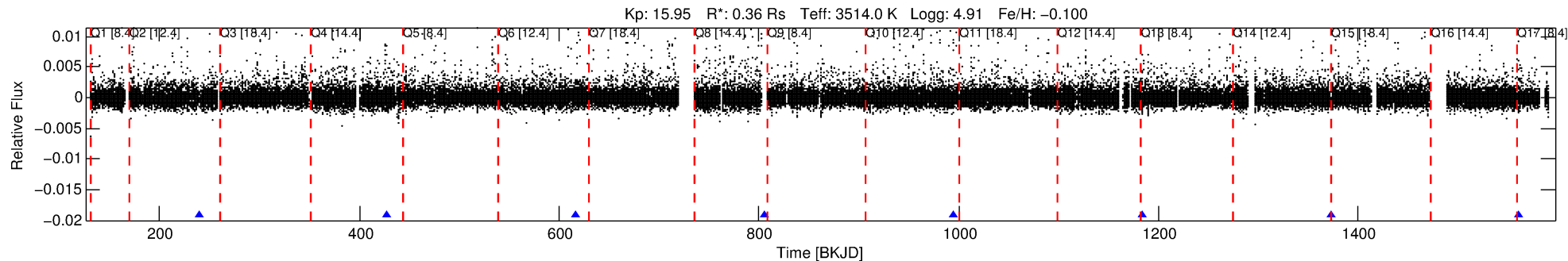
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007509281-06

No Significant Match Found

DV One-Page Summary

KIC: 7509281 Candidate: 6 of 8 Period: 188.861 d



DV Fit Results:

Period = 188.86096 [0.00292] d
Epoch = 239.1748 [0.0132] BKJD
Rp/R* = 0.0471 [0.0424]
a/R* = 392.12 [1492.18]
b = 0.65 [3.42]
Seff = 0.08 [0.01]
Teq = 136 [4] K
Rp = 1.84 [1.67] Re
a = 0.4656 [0.0373] AU
Ag = 12631.26 [26000.00] [0.49σ]
Teffp = 2228 [1146] K [1.83σ]

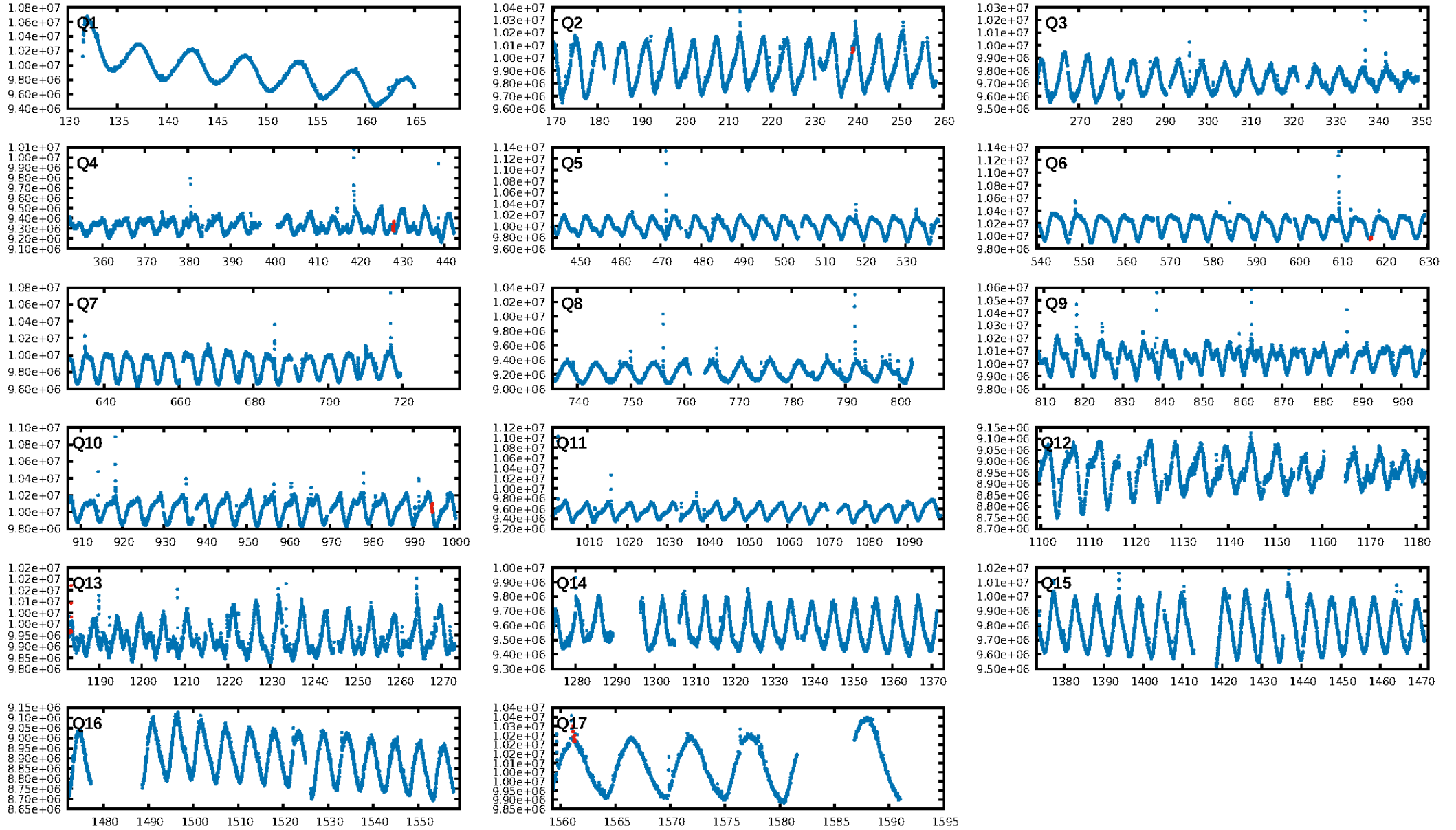
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [102.37σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 62.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 9.48
Centroid-sig: N/A
Centroid-so: 1.461 arcsec [1.76σ]
OotOffset-rm: 0.925 arcsec [1.40σ]
KicOffset-rm: 0.959 arcsec [1.50σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 0.75 [3/4]

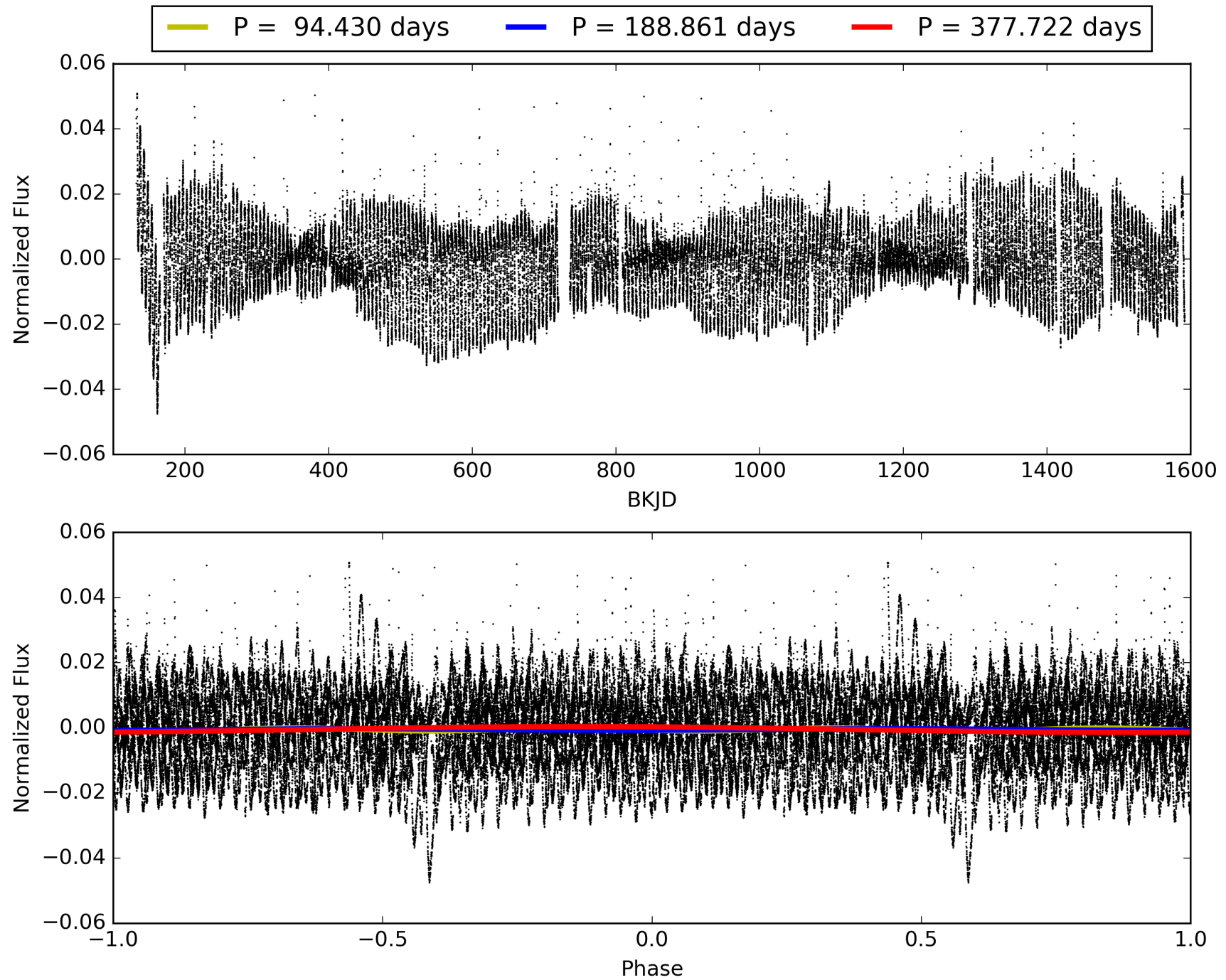
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:47:27 Z

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

TCE 007509281-06, PDC Light Curves

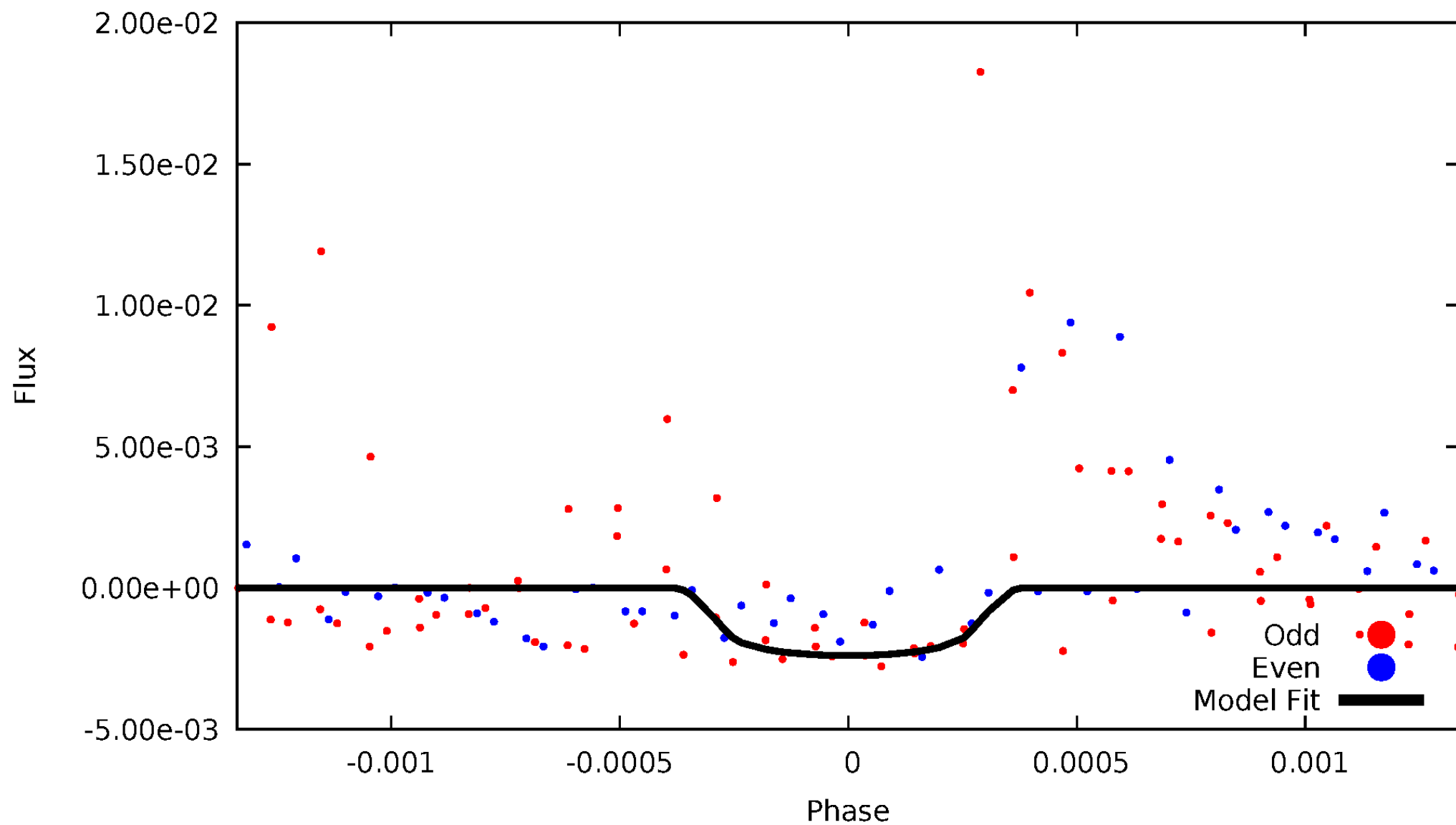


TCE 007509281-06



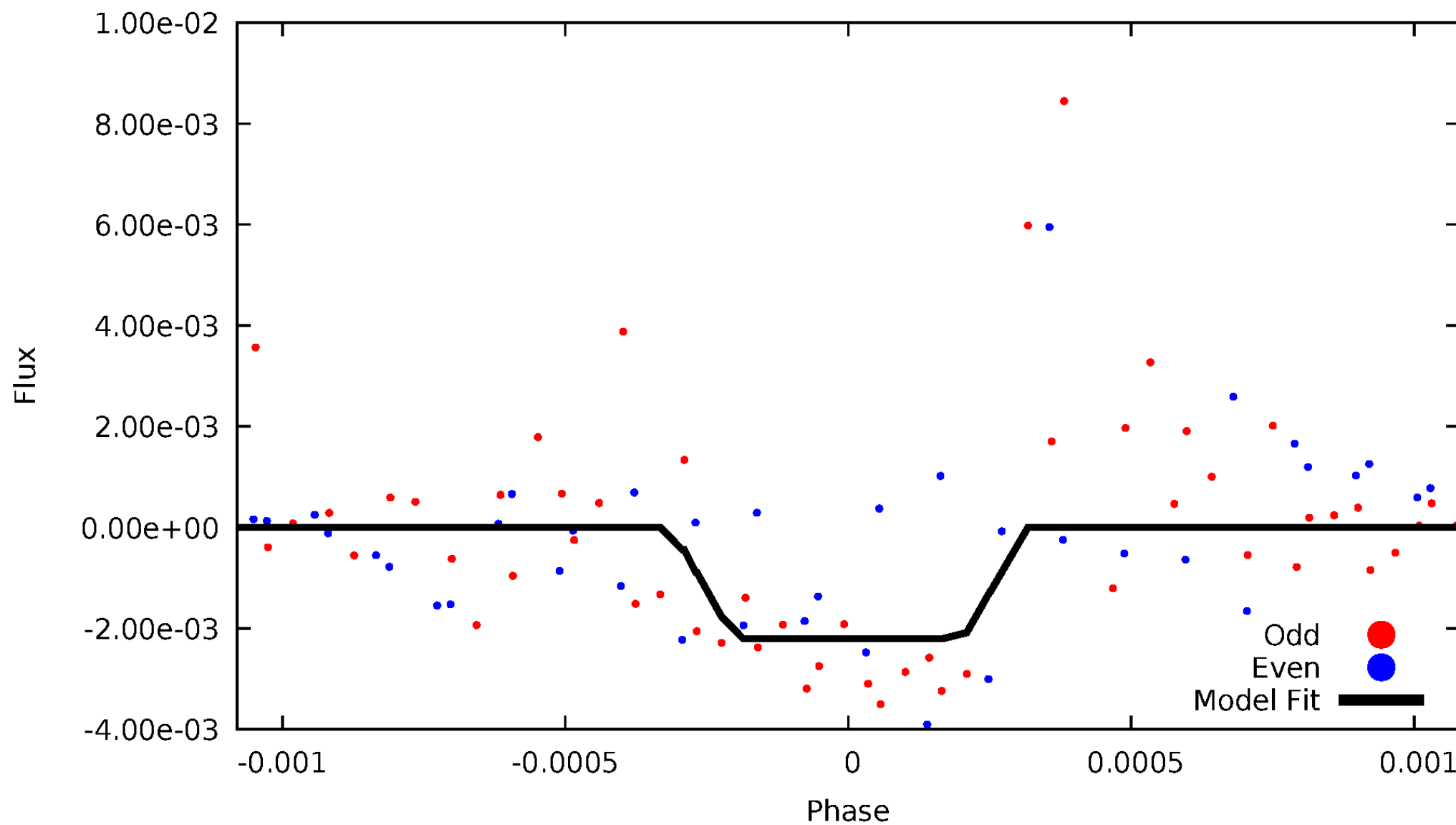
DV Odd/Even

TCE 007509281-06



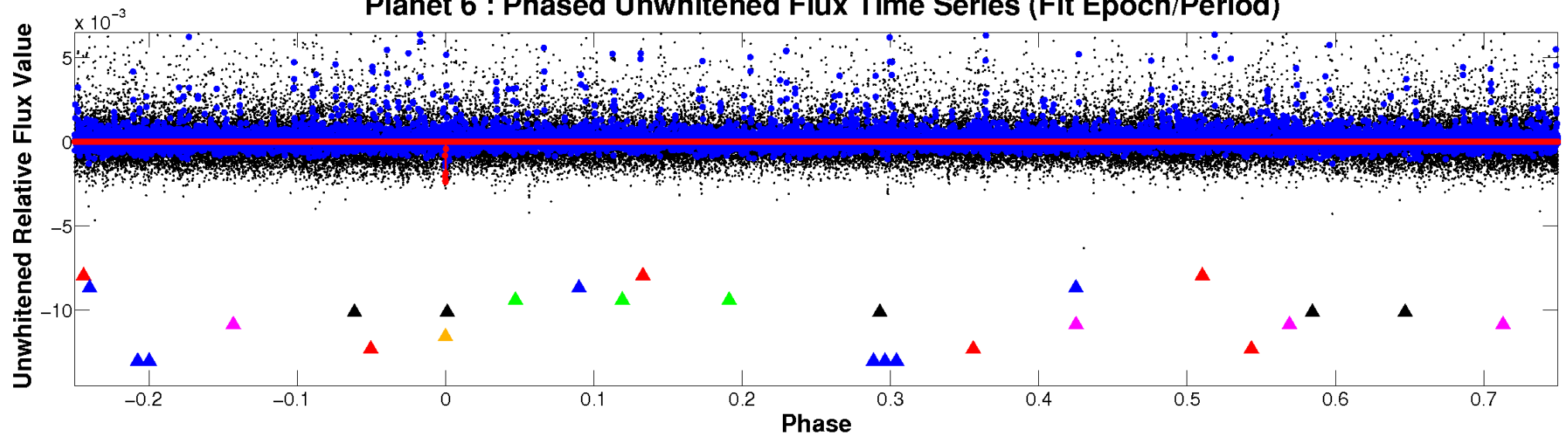
ALT Odd/Even

TCE 007509281-06

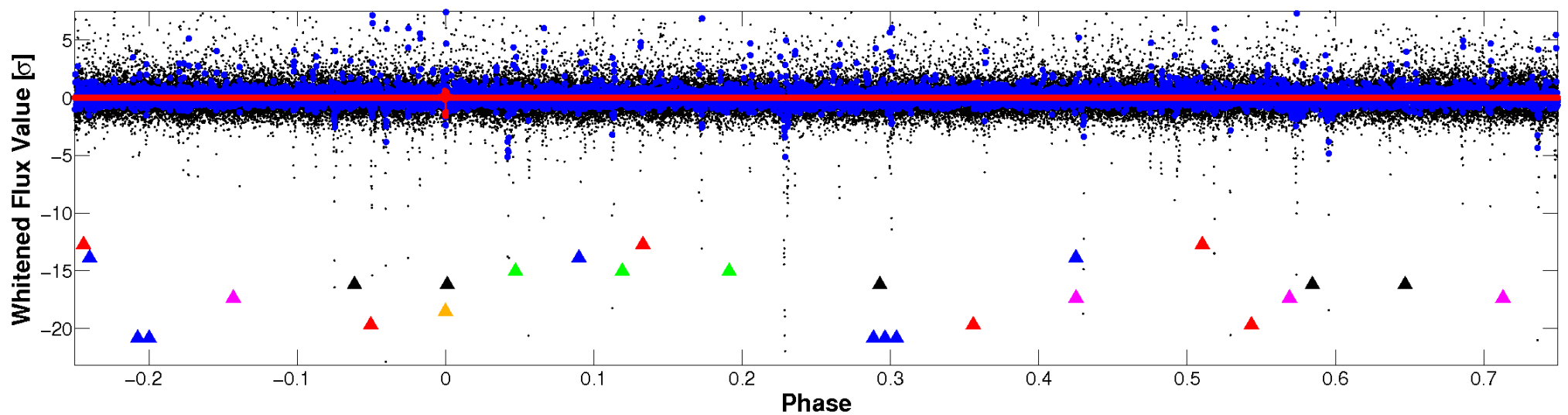


Non-Whitened Vs. Whitened Light Curve

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

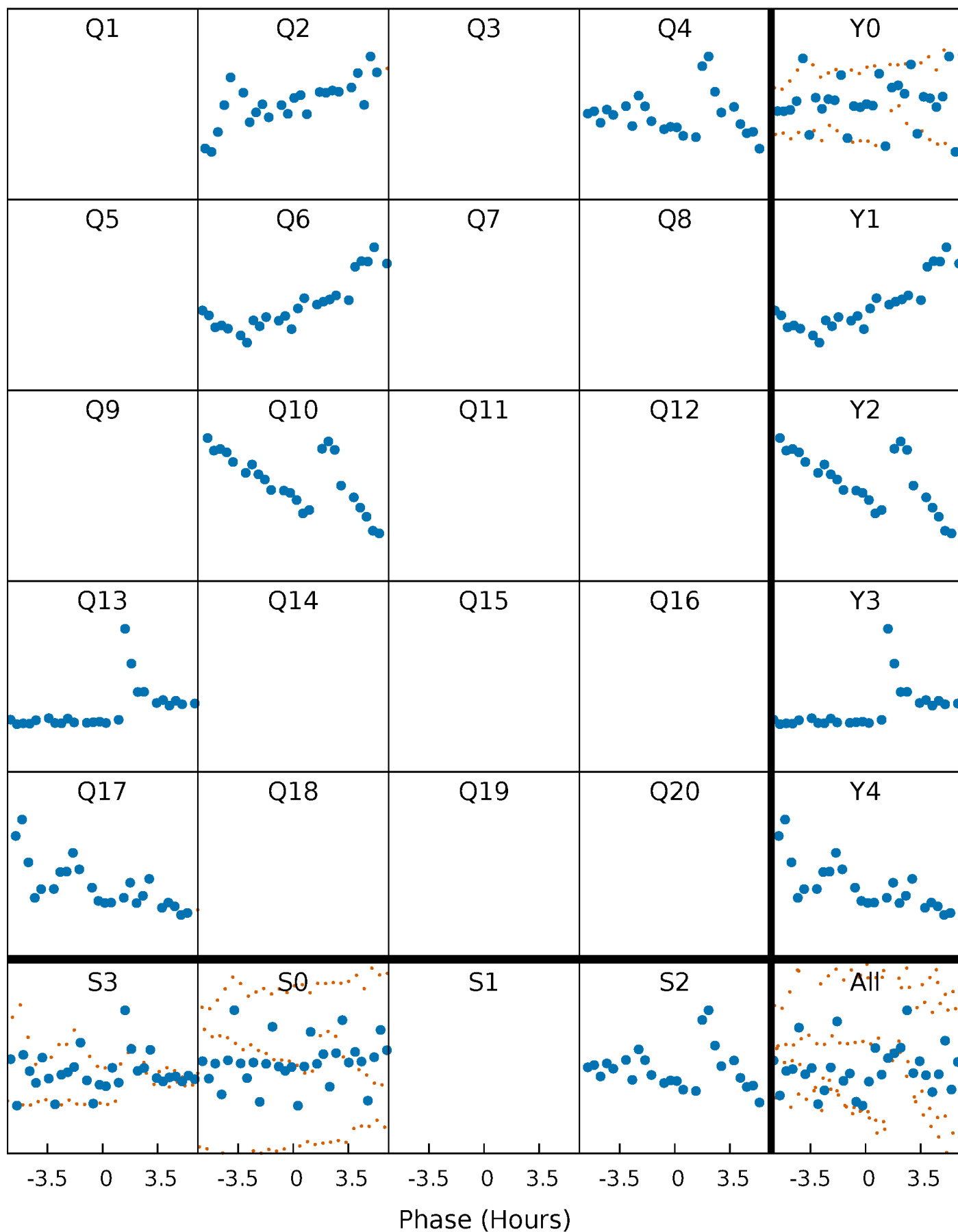


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



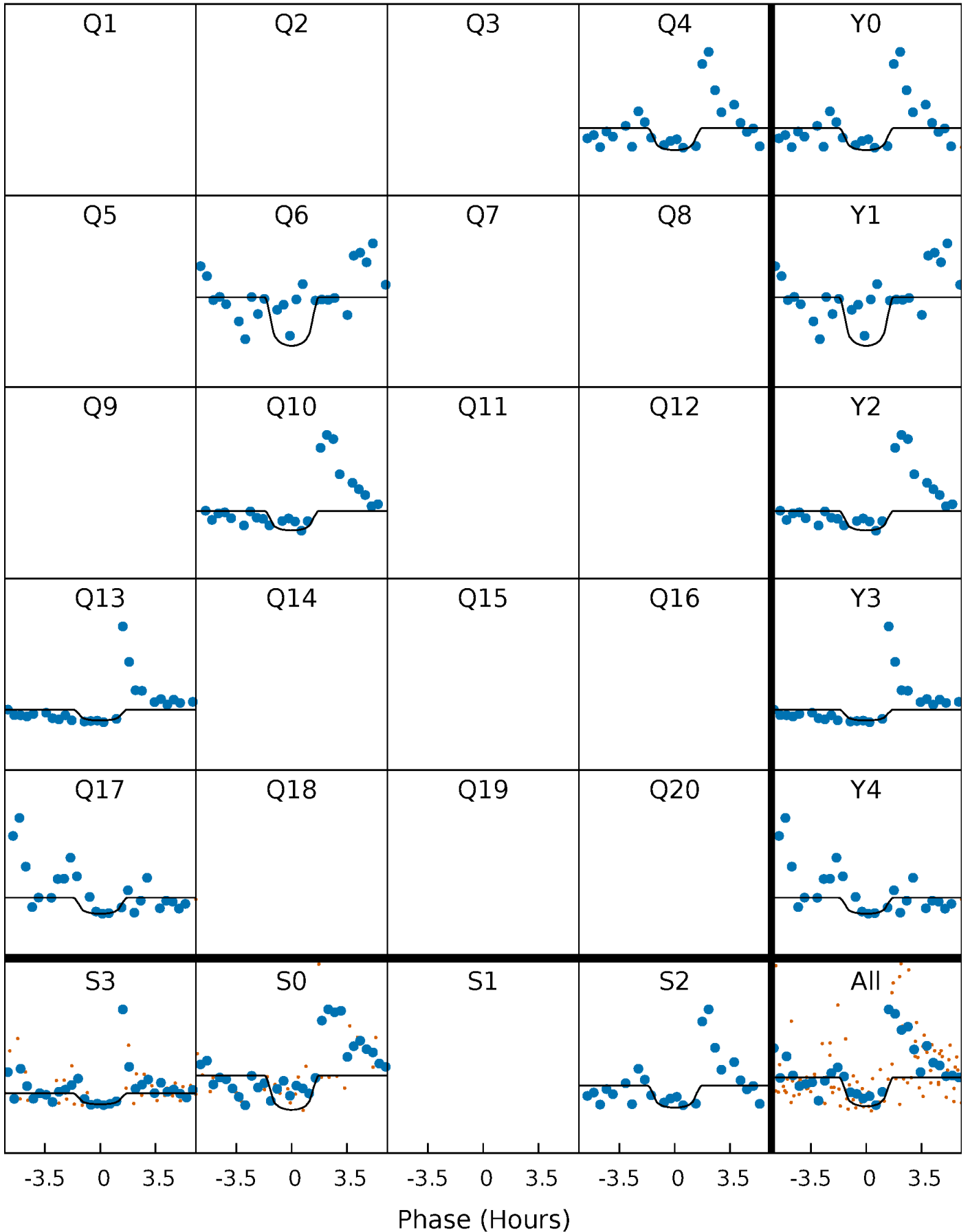
PDC Quarter-Phased Transit Curves

TCE 007509281-06 P=188.860962 Days $T_0=239.174780$ (BKJD)



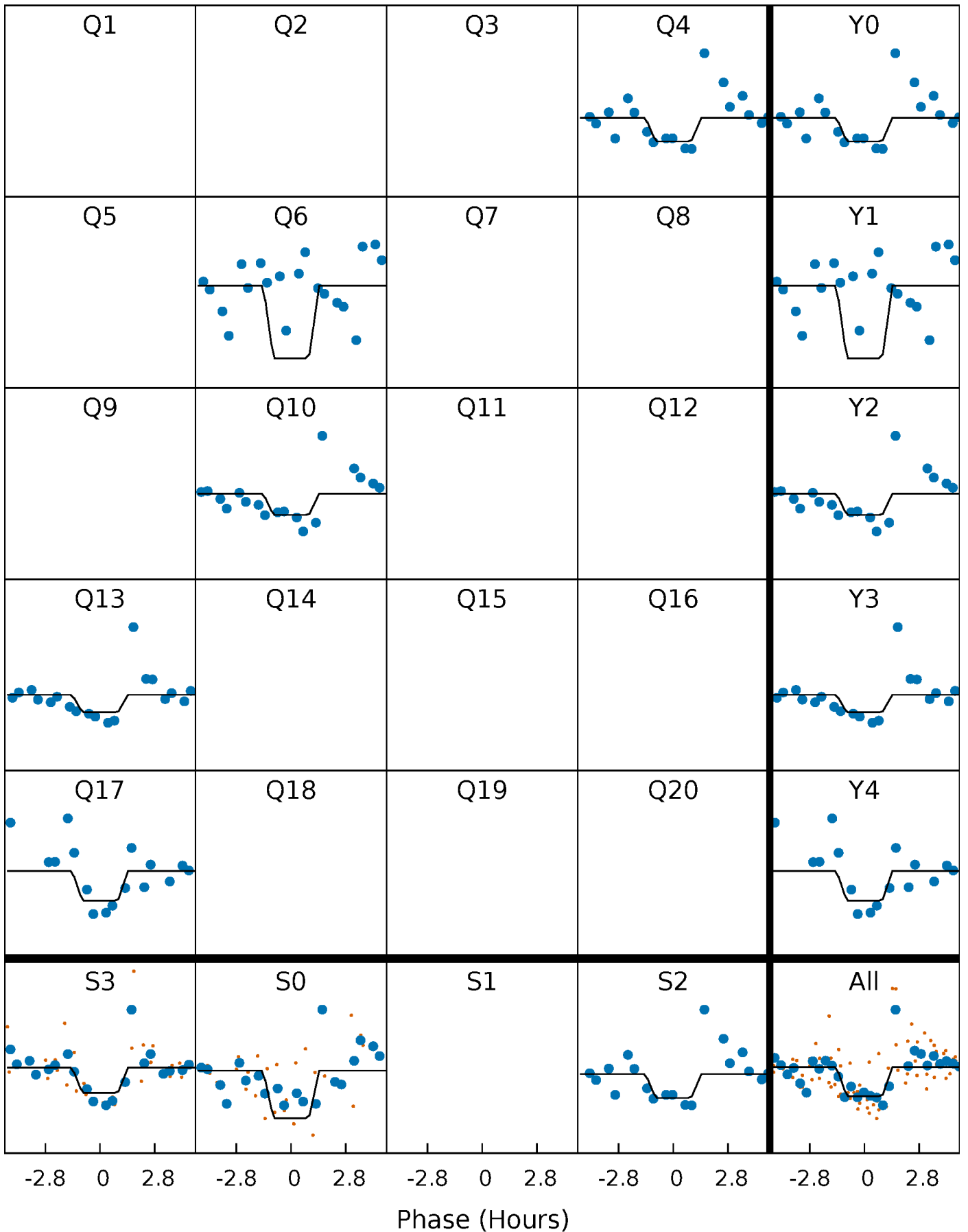
DV Quarter-Phased Transit Curves

TCE 007509281-06 P=188.860962 Days $T_0=239.174780$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

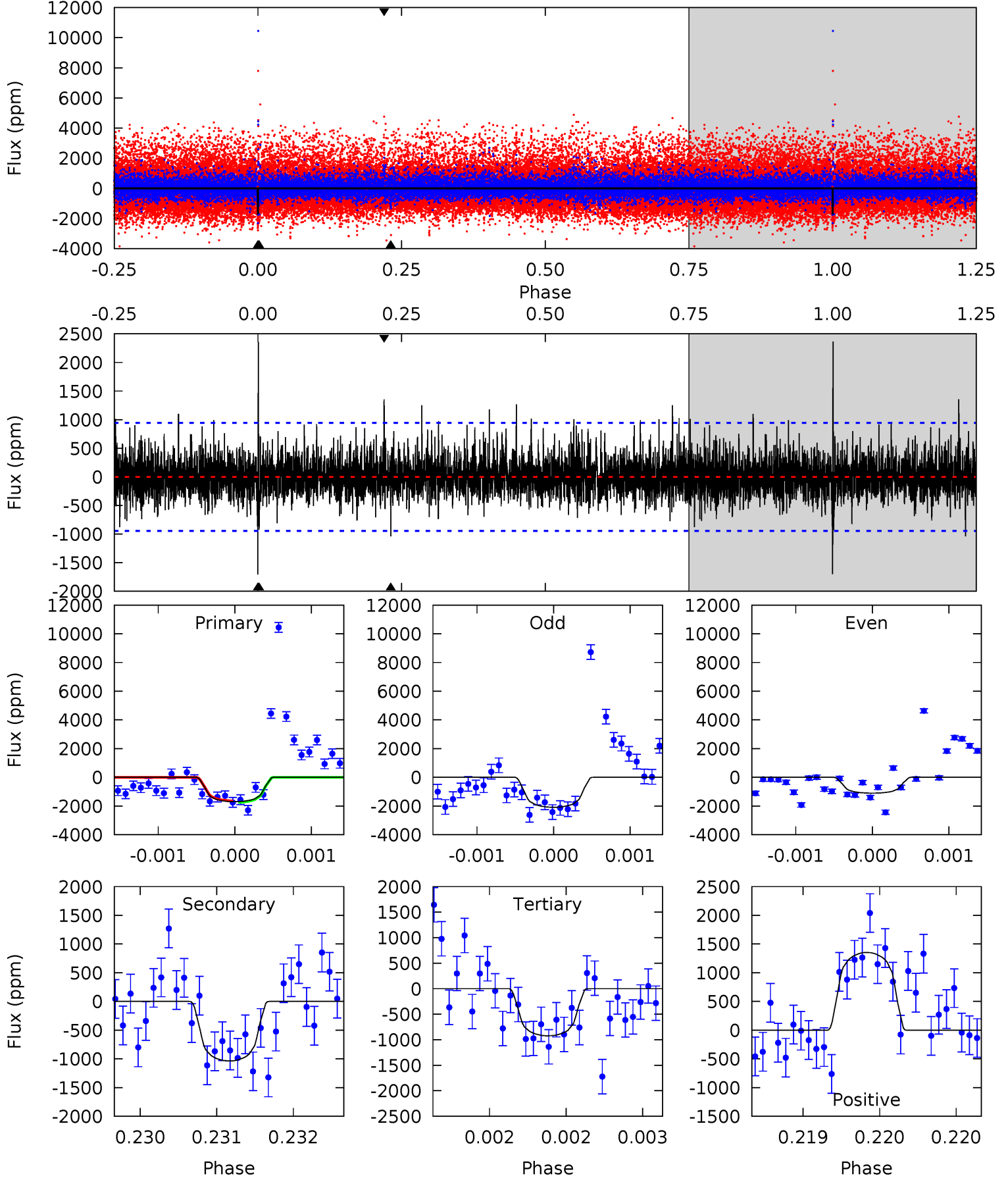
TCE 007509281-06 P=188.859697 Days $T_0=239.184052$ (BKJD)



DV Model-Shift Uniqueness Test

007509281-06, P = 188.860962 Days, E = 50.313818 Days

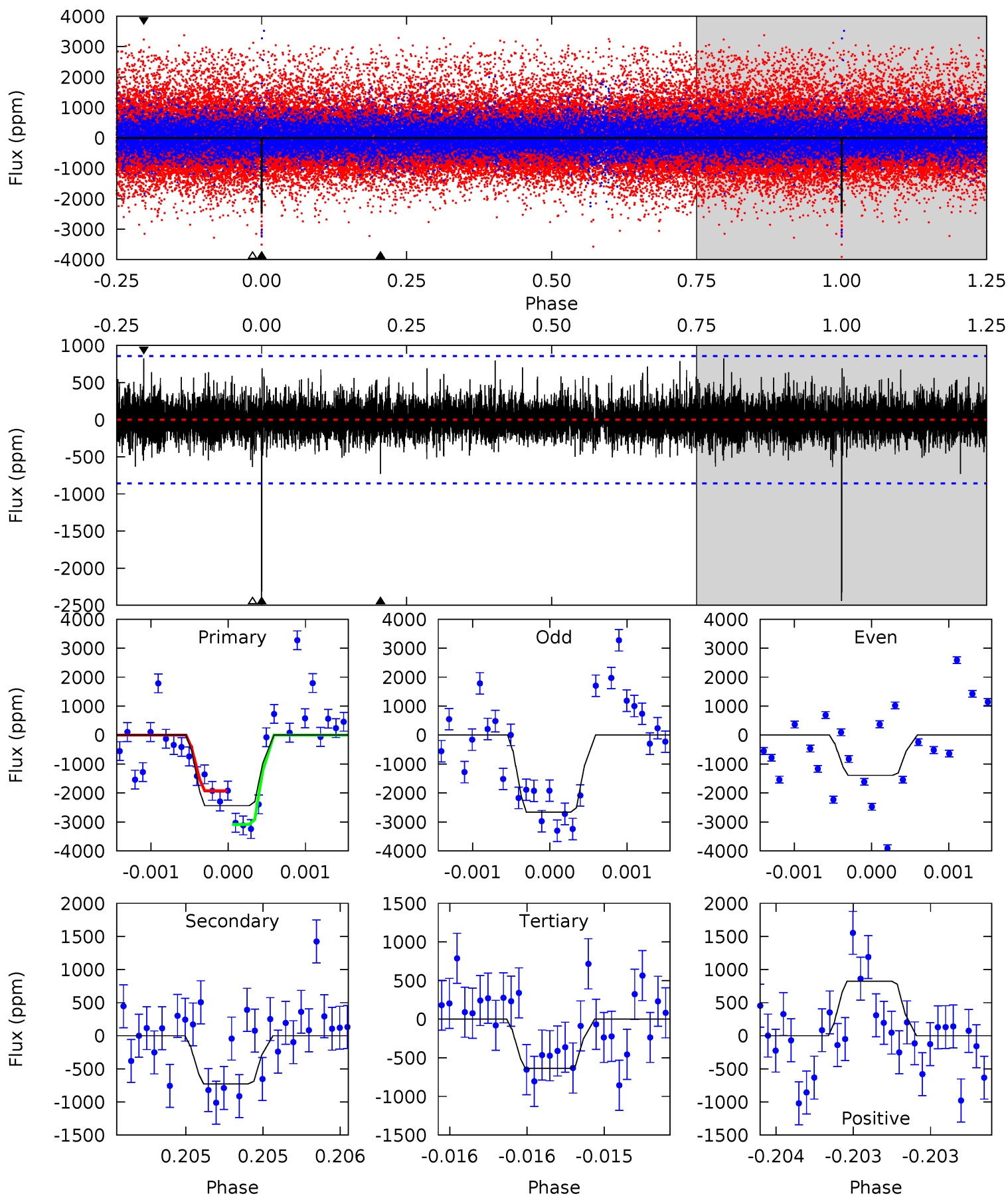
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.91	6.04	5.38	7.89	5.50	3.37	1.54	4.53	2.02	0.66	-1.84	2.84	0.88	0.58	0.29



Alt Model-Shift Uniqueness Test

007509281-06, $P = 188.859697$ Days, $E = 50.324355$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	4.70	4.12	5.33	5.54	3.43	1.09	11.6	10.4	0.59	-0.63	4.22	0.86	0.25	3.78



Stellar Parameters For KIC 007509281

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3514^{+56}_{-63}	$4.907^{+0.040}_{-0.044}$	$-0.100^{+0.100}_{-0.100}$	$0.358^{+0.039}_{-0.039}$	$0.380^{+0.040}_{-0.054}$	$11.650^{+2.693}_{-2.189}$
	+2%/-2%	+1%/-1%	+100%/-100%	+11%/-11%	+11%/-14%	+23%/-19%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 007509281-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1036 ± 171	$2.20^{+1.45}_{-1.36}$	190^{+5}_{-5}	2975^{+997}_{-381}	$25694^{+142836}_{-16557}$
Alt.	-727 ± 155	$2.24^{+1.46}_{-1.43}$	190^{+5}_{-5}	2839^{+996}_{-379}	$17783^{+107437}_{-11642}$

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 $A_{obs} \gg 1.0$

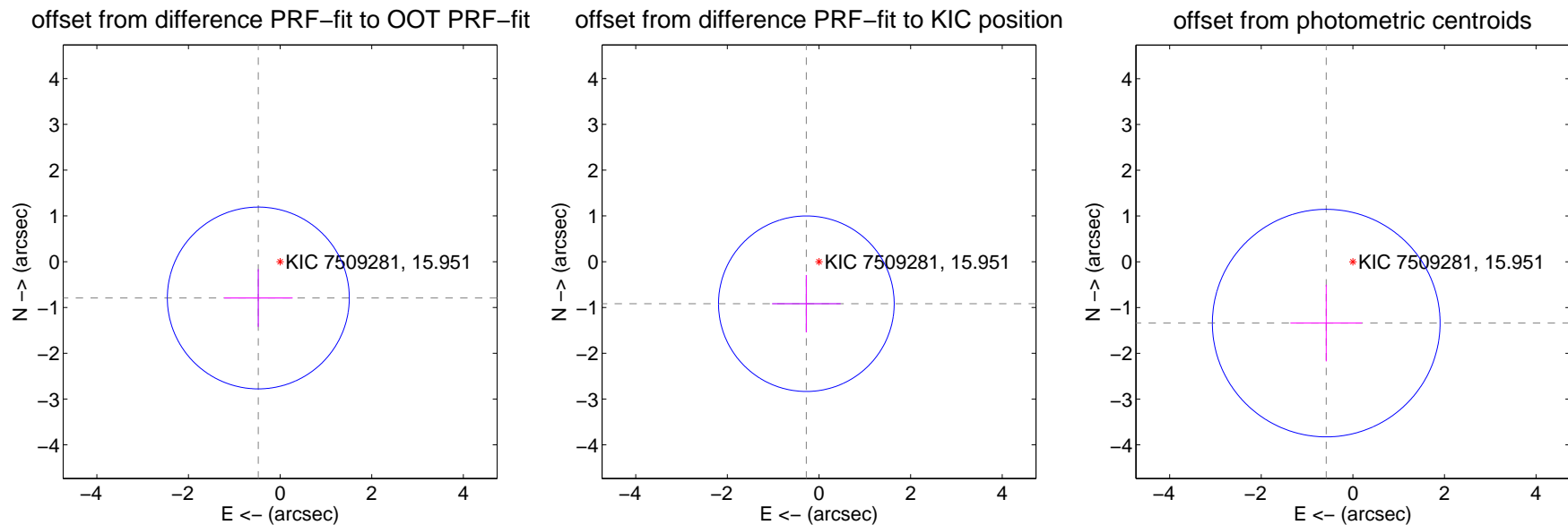
DV Centroid Data

Supplemental centroid analysis for 007509281-06. Kepler magnitude: 15.95. Transit SNR 7.39

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.925 ± 0.662	1.40	0.476 ± 0.747	-0.793 ± 0.628
PRF-fit source offset from KIC position	0.959 ± 0.639	1.50	0.276 ± 0.747	-0.918 ± 0.628
photometric centroid source offset	1.46 ± 0.83	1.76	0.58 ± 0.78	-1.34 ± 0.84



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

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

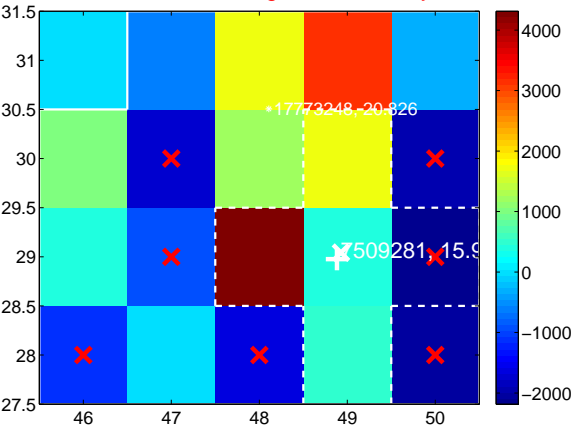
Q1 no difference image



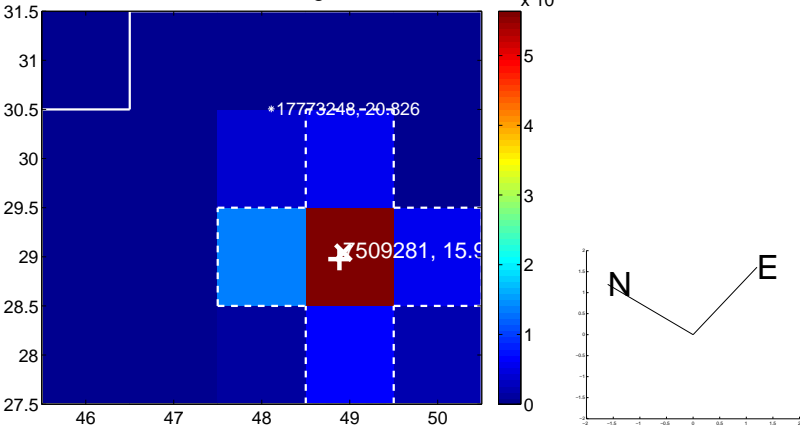
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



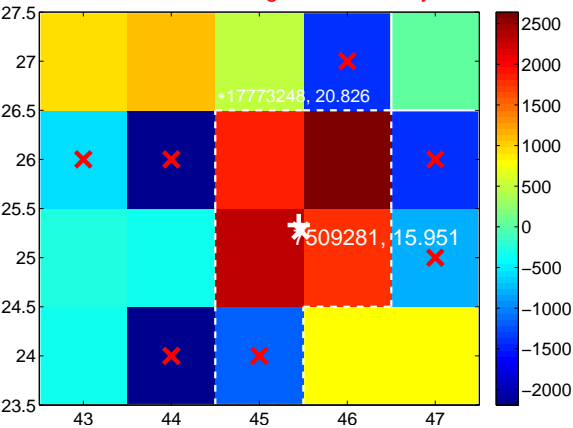
Q3 no difference image



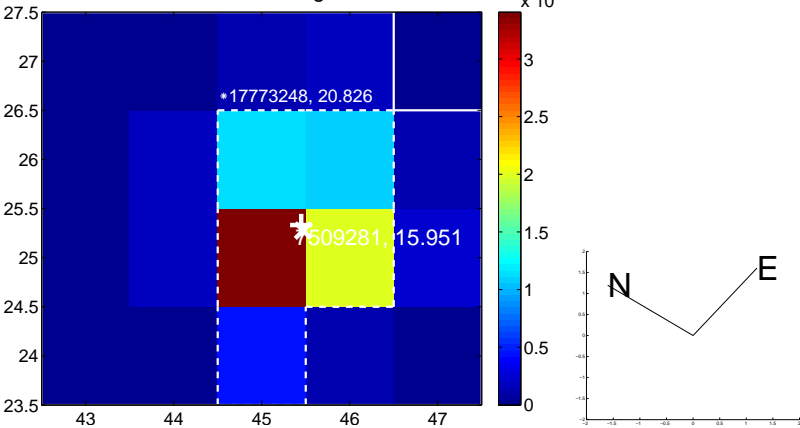
Q3 no OOT image



Q4 difference image. Poor Quality



Q4 OOT image

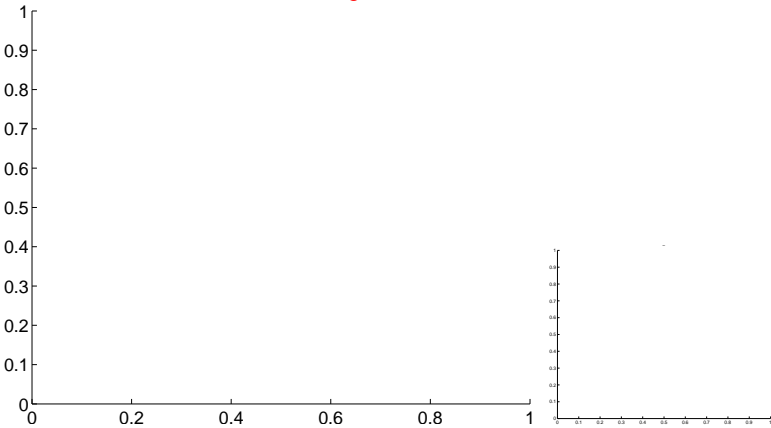


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

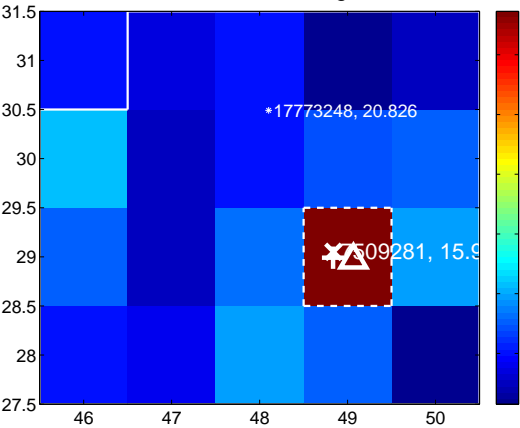
Q5 no difference image



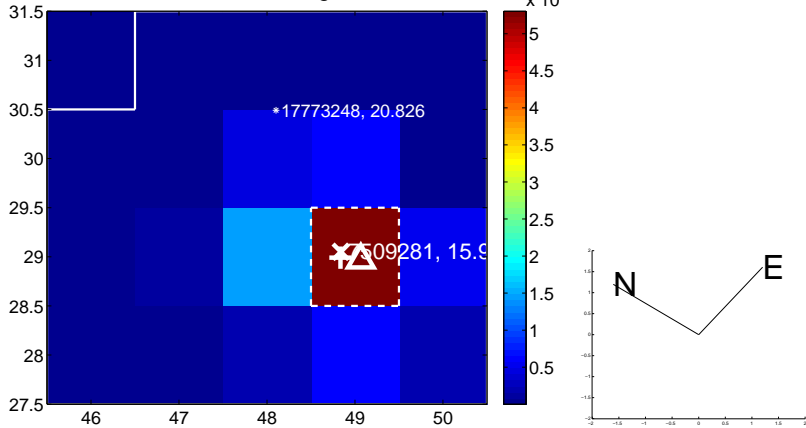
Q5 no OOT image



Q6 difference image



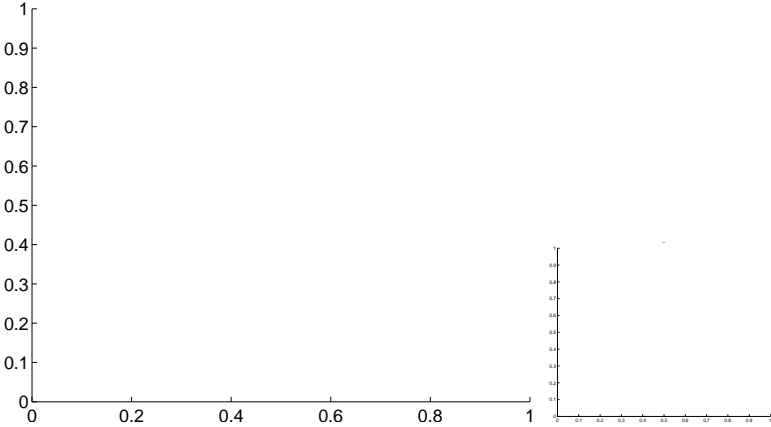
Q6 OOT image



Q7 no difference image



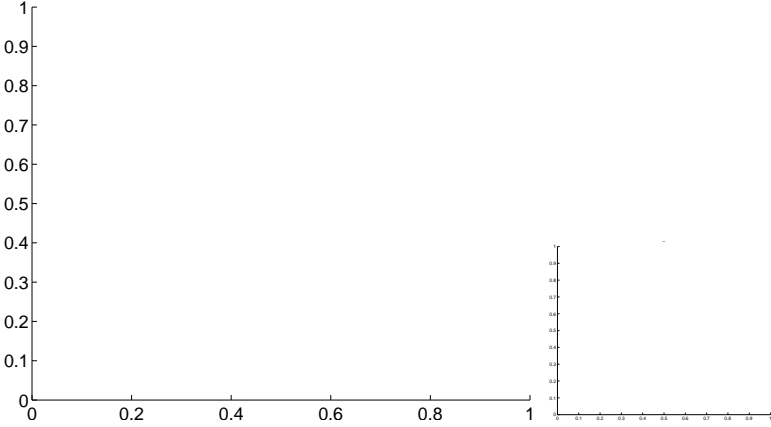
Q7 no OOT image



Q8 no difference image



Q8 no OOT image



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

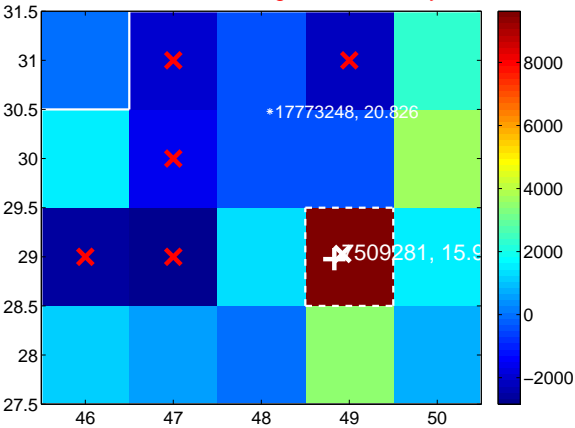
Q9 no difference image



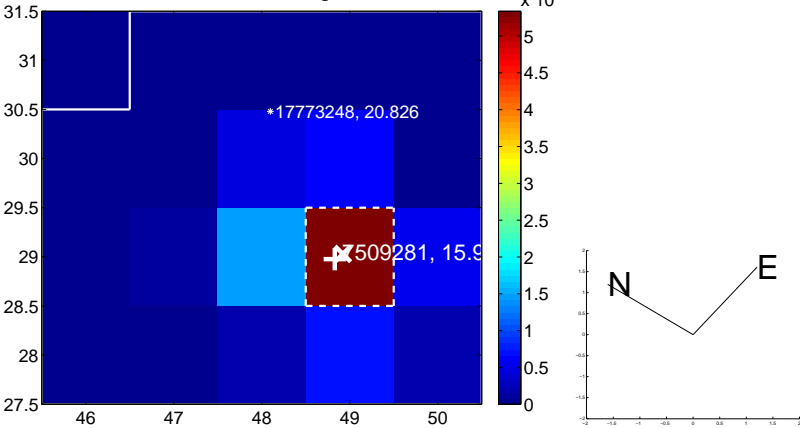
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



Q11 no difference image



Q11 no OOT image



Q12 no difference image



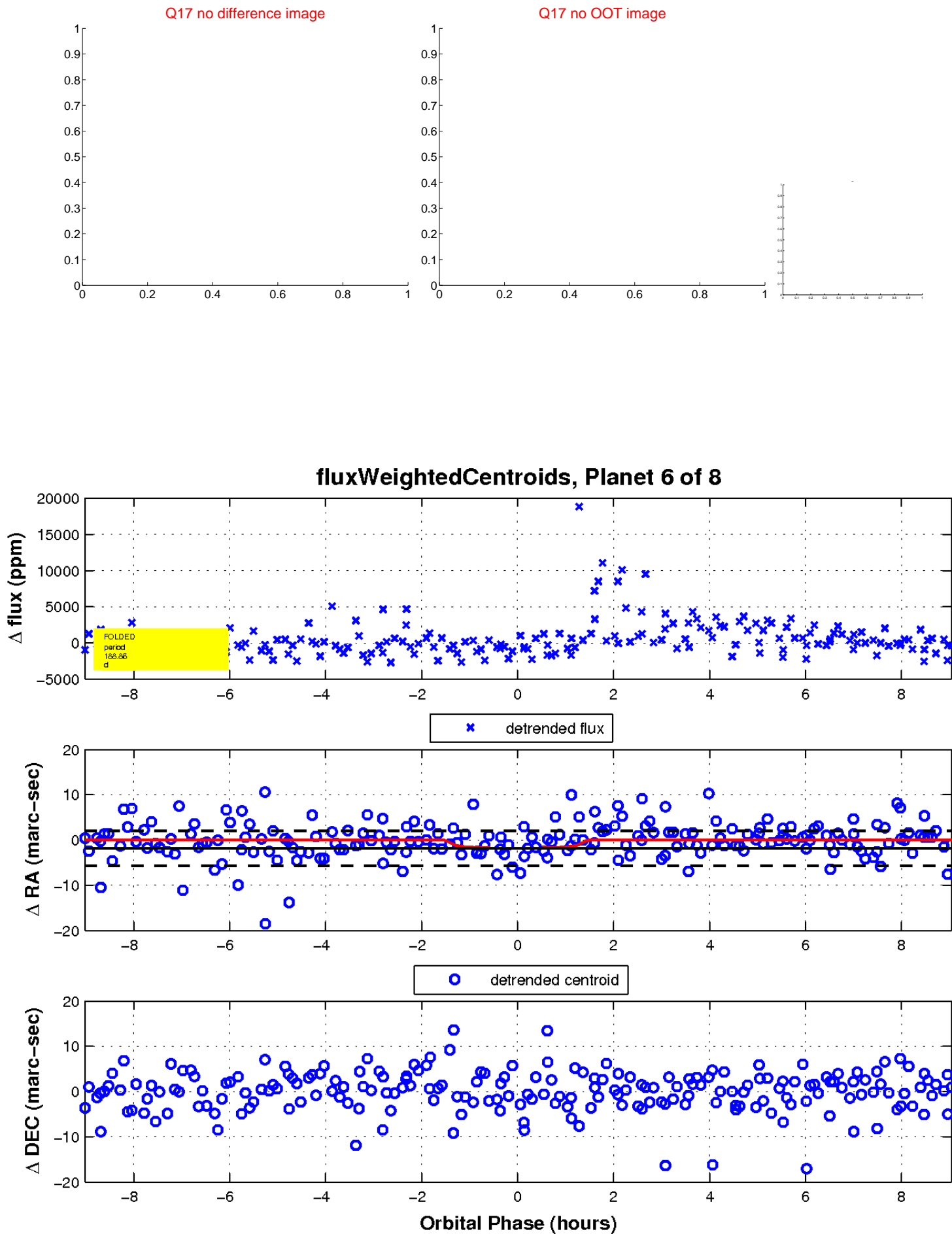
Q12 no OOT image



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

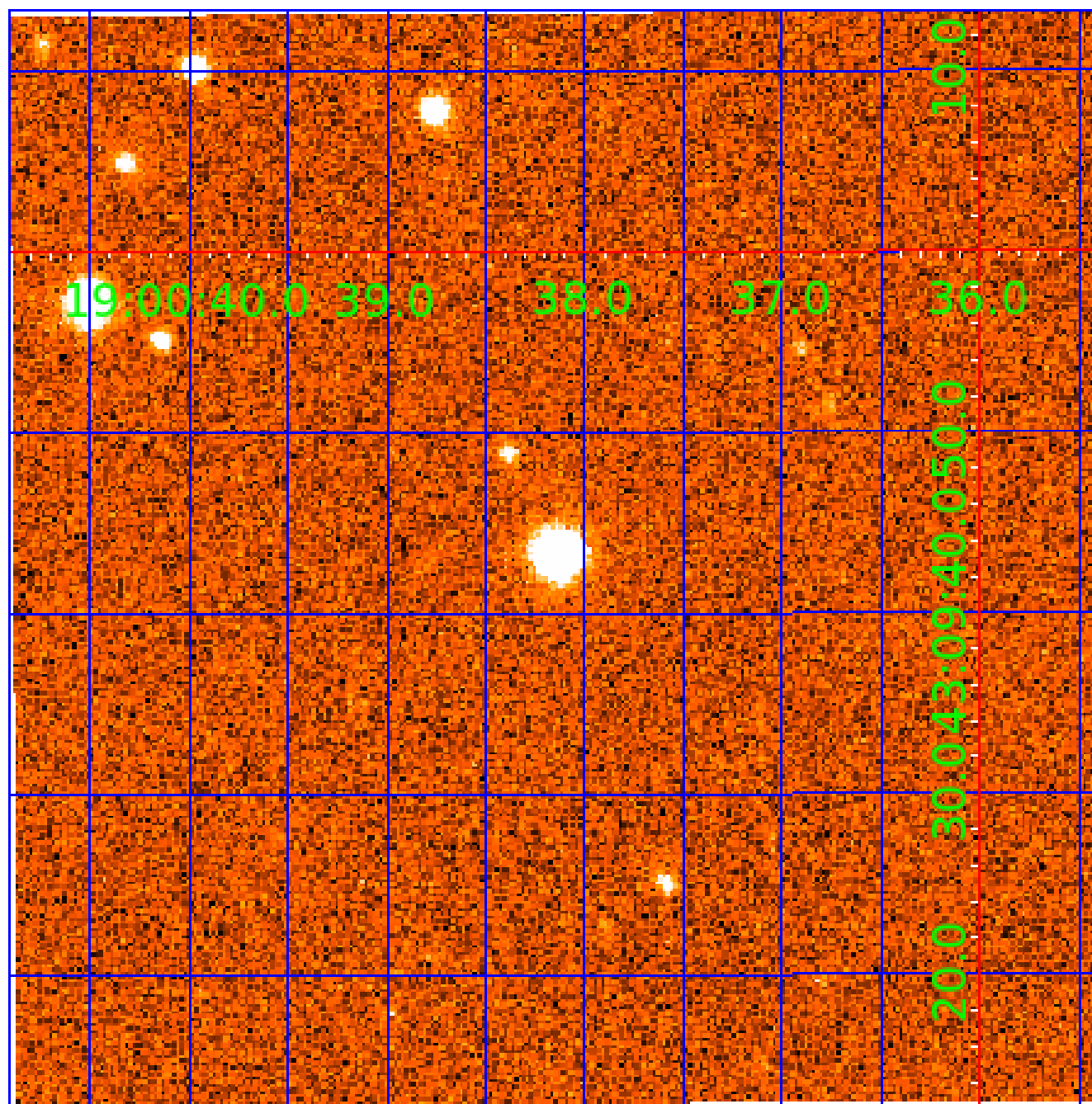


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007509281

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})
007509281-01	OBS	No	495.349153	146.690329	2359.1	5.011	12.3	7.2	0.36	3514	1.78	0.02
007509281-02	OBS	No	692.166905	193.864416	3834.8	5.446	11.7	11.3	0.36	3514	2.19	0.01
007509281-03	OBS	No	391.329919	436.945038	1314.2	15.000	11.2	-1.0	0.36	3514	1.28	0.03
007509281-04	OBS	No	310.829106	239.404934	2908.4	15.364	10.6	7.3	0.36	3514	2.31	0.04
007509281-05	OBS	No	350.536672	212.159784	547.7	7.021	11.0	1.9	0.36	3514	0.87	0.04
007509281-06	OBS	No	188.860962	239.174780	2397.9	3.029	11.7	7.4	0.36	3514	1.84	0.08
007509281-07	OBS	No	454.443040	341.799460	2133.5	4.279	10.4	6.7	0.36	3514	1.68	0.03
007509281-08	OBS	No	282.560172	296.603971	1474.0	21.758	9.4	4.4	0.36	3514	1.36	0.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007509281-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
007509281-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_NOFITS
007509281-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

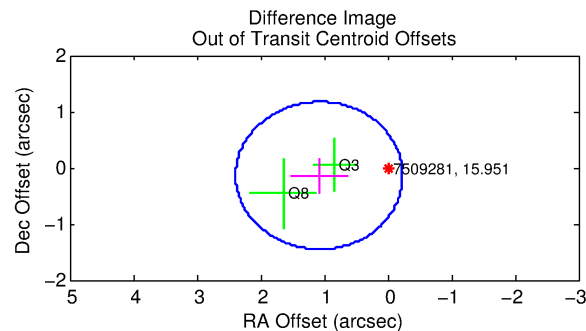
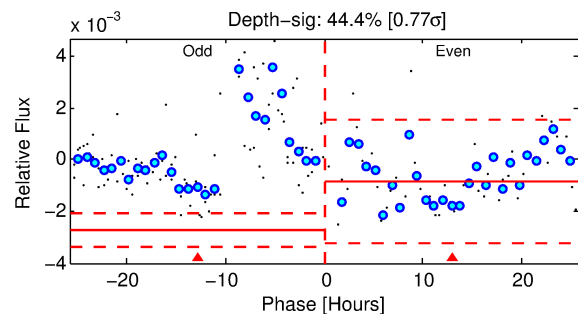
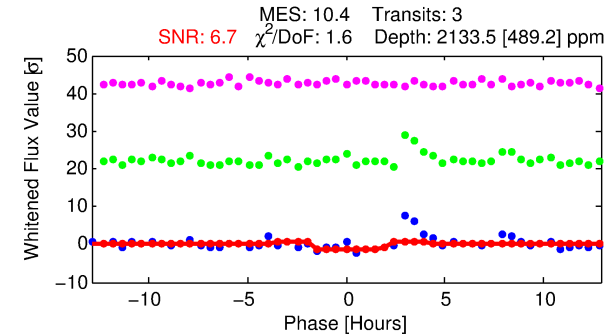
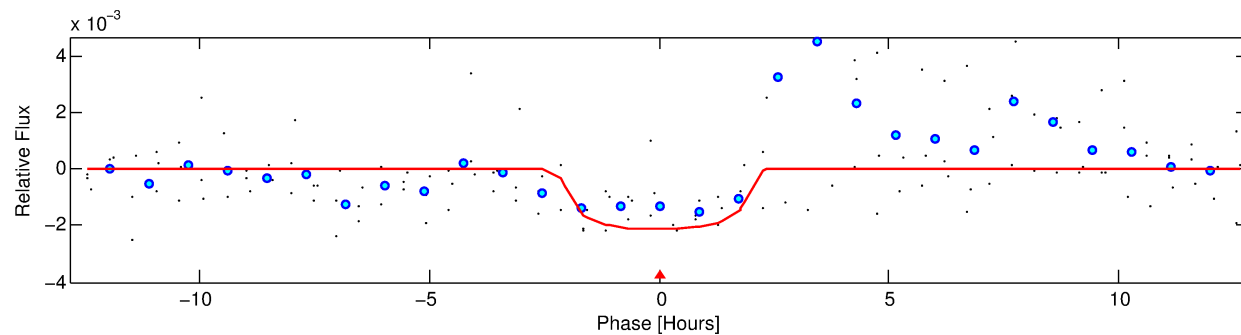
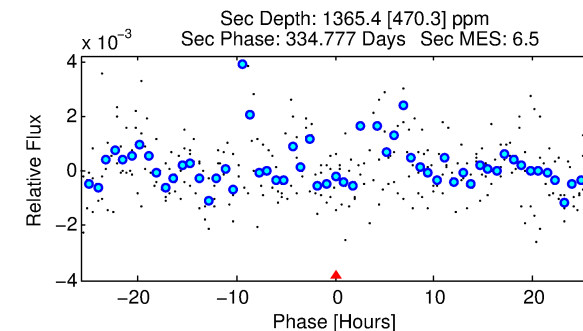
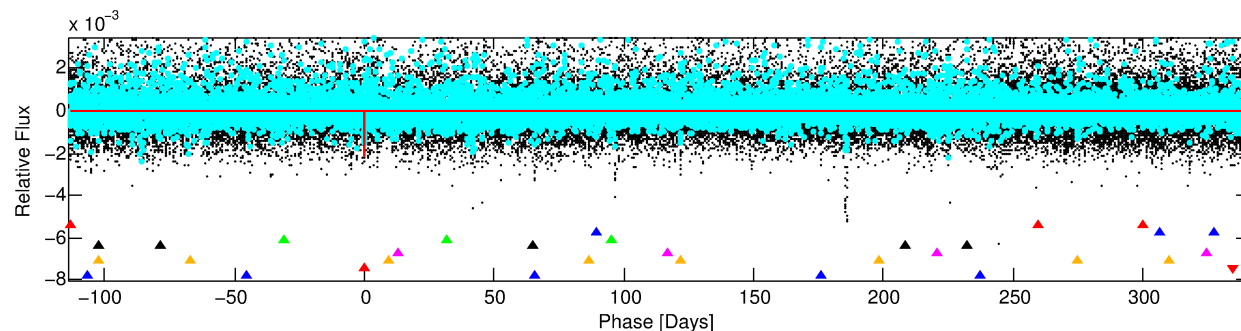
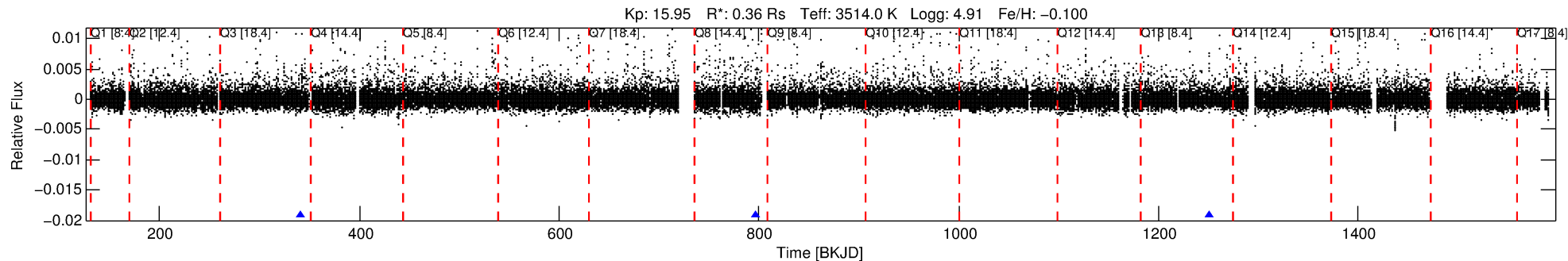
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007509281-07

No Significant Match Found

DV One-Page Summary

KIC: 7509281 Candidate: 7 of 8 Period: 454.443 d



DV Fit Results:

Period = 454.44304 [0.00994] d
Epoch = 341.7995 [0.0140] BKJD
Rp/R* = 0.0430 [0.0420]
a/R* = 752.90 [3142.46]
b = 0.48 [6.77]
Seff = 0.03 [0.00]
Teq = 101 [3] K
Rp = 1.68 [1.65] Re
a = 0.8361 [0.0670] AU
Ag = 185706.60 [368741.43] [0.50σ]
Teffp = 3256 [1615] K [1.95σ]

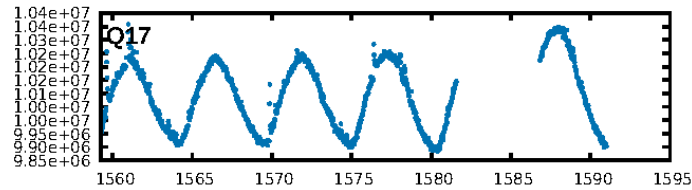
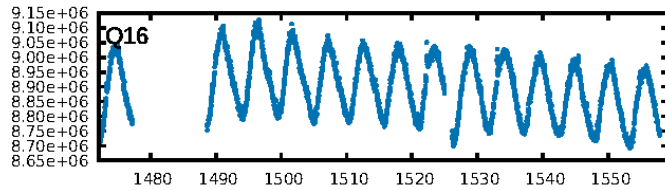
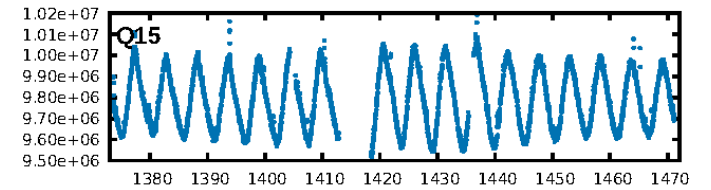
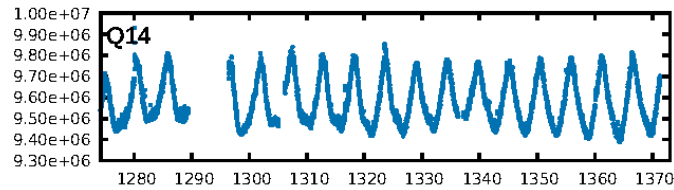
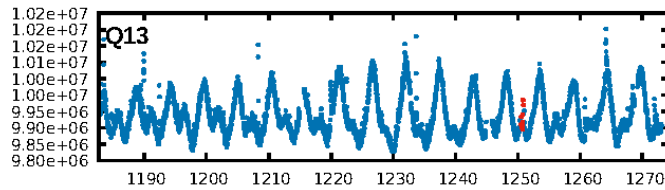
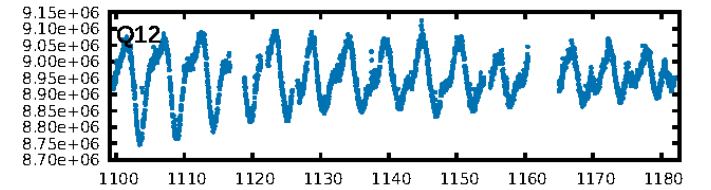
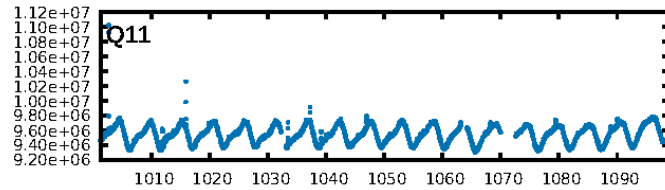
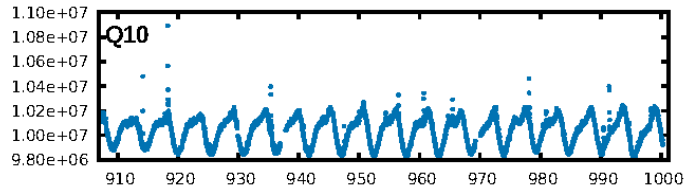
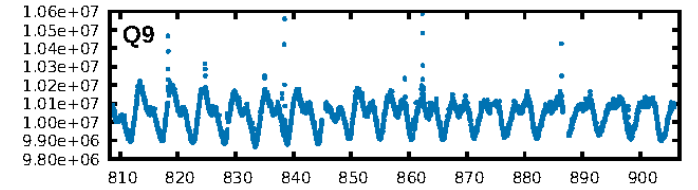
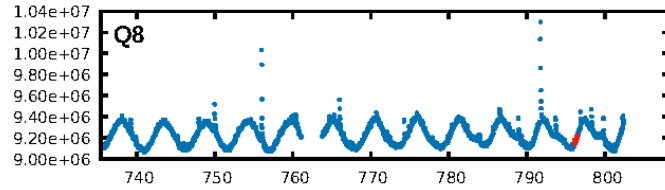
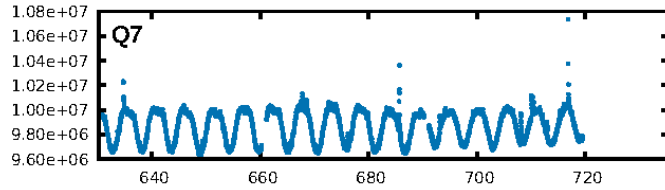
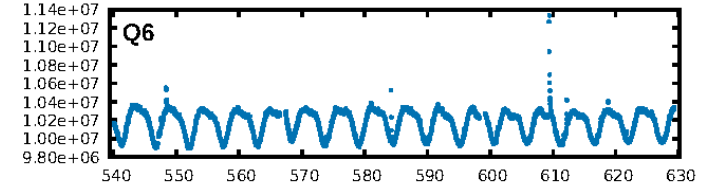
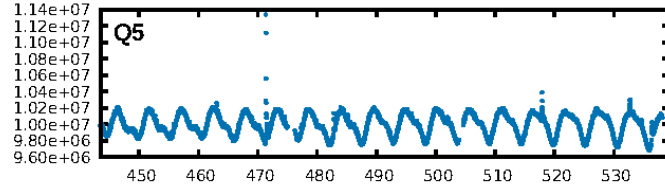
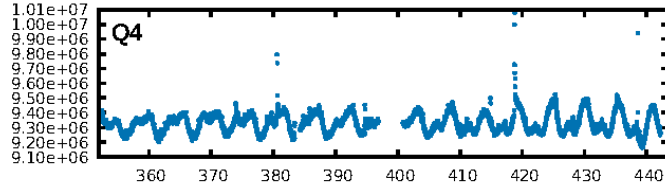
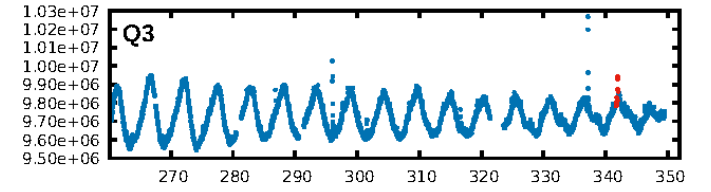
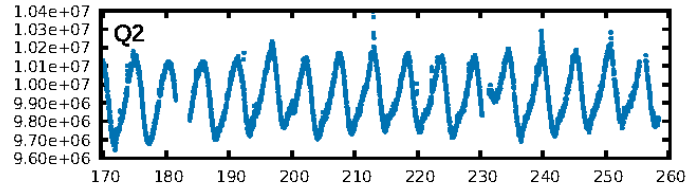
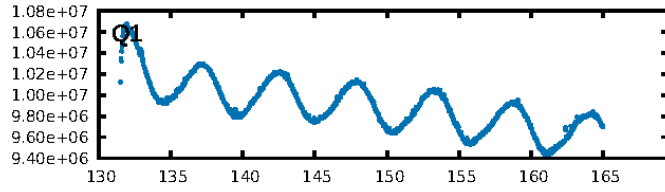
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [97.11σ]
LongPeriod-sig: 100.0% [148.98σ]
ModelChiSquare2-sig: 2.9%
ModelChiSquareGof-sig: 62.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.594
Centroid-sig: N/A
Centroid-so: 0.923 arcsec [0.95σ]
OotOffset-rm: 1.087 arcsec [2.48σ]
KicOffset-rm: 0.968 arcsec [1.54σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

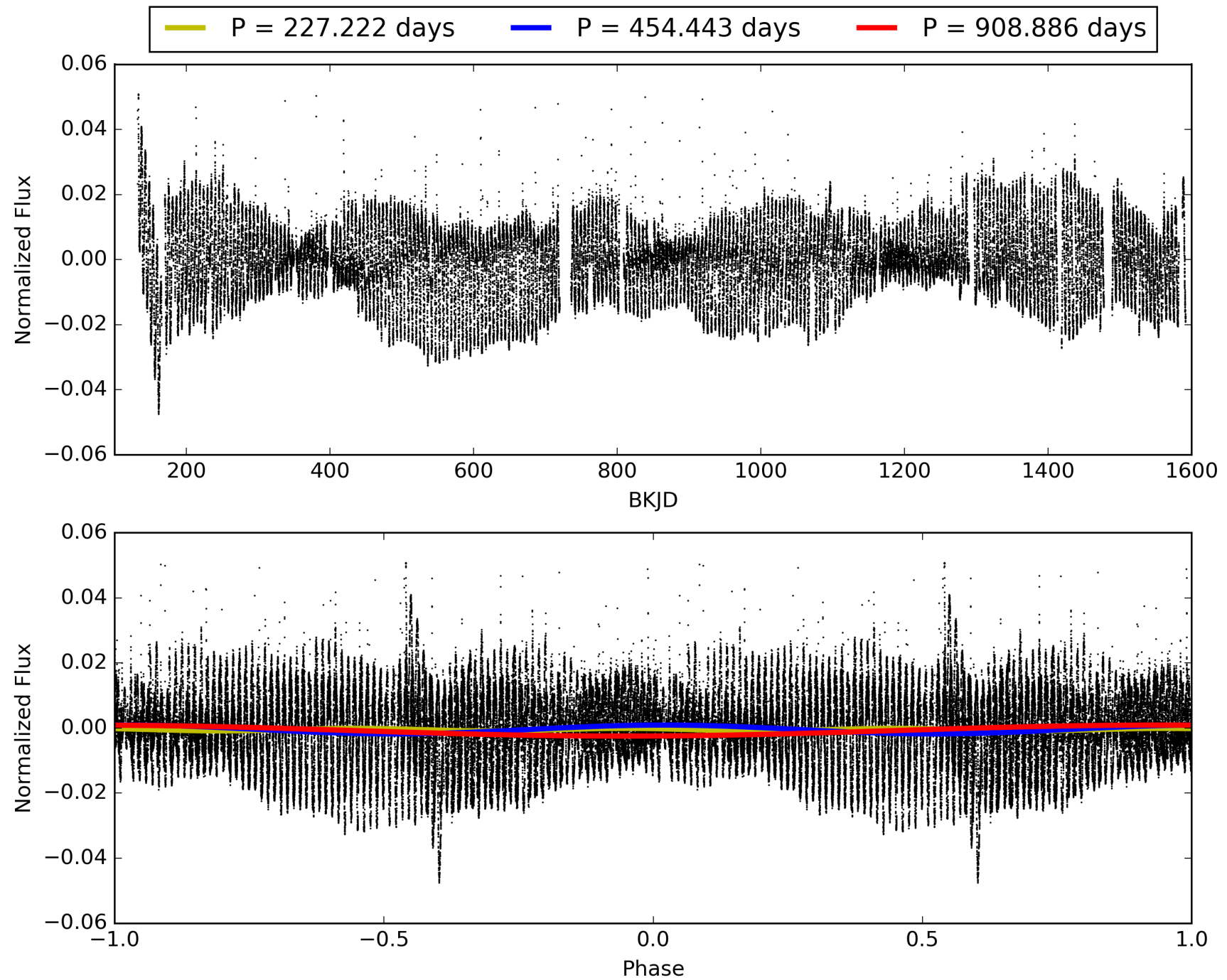
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:47:43 Z

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

TCE 007509281-07, PDC Light Curves

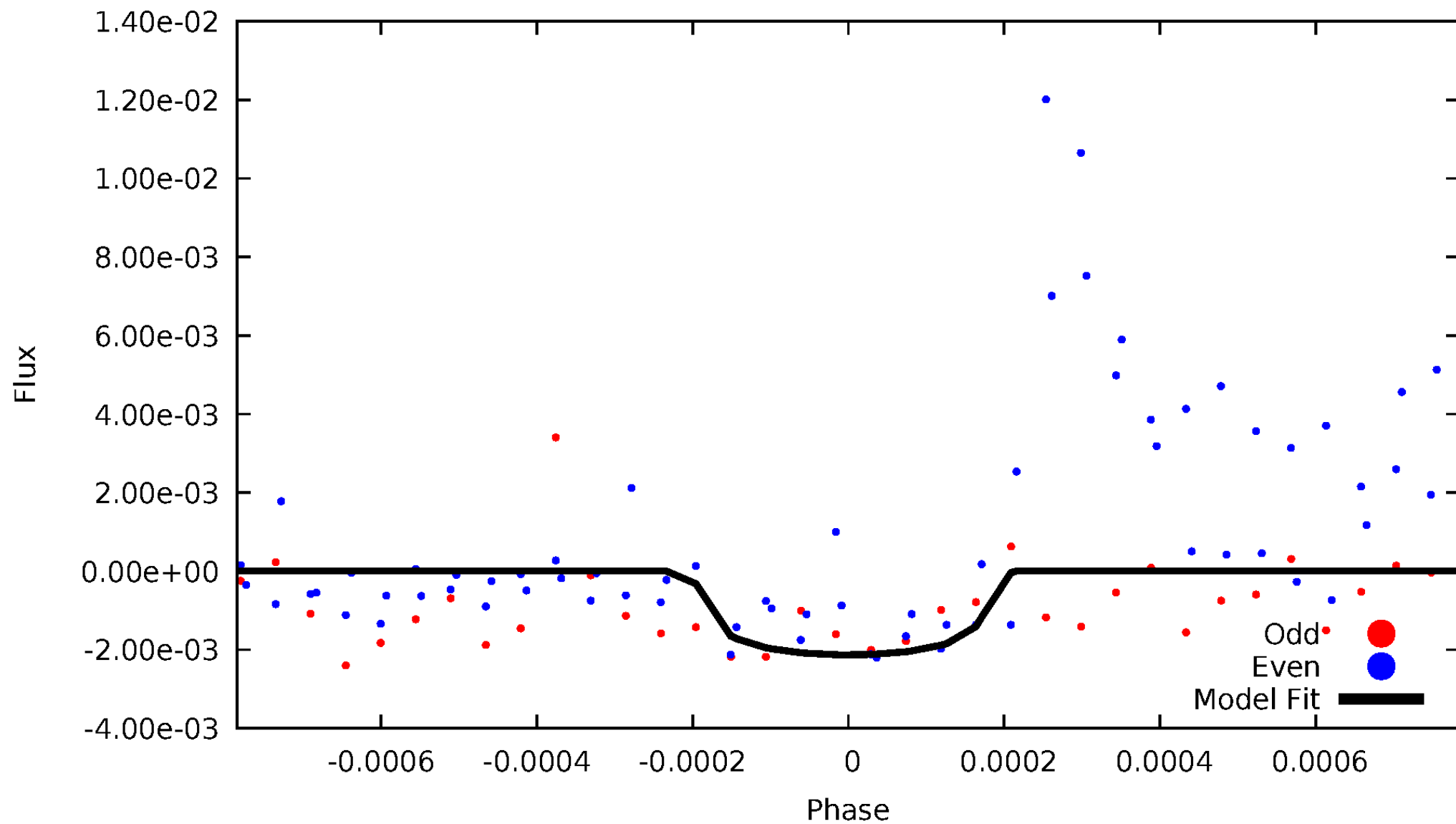


TCE 007509281-07



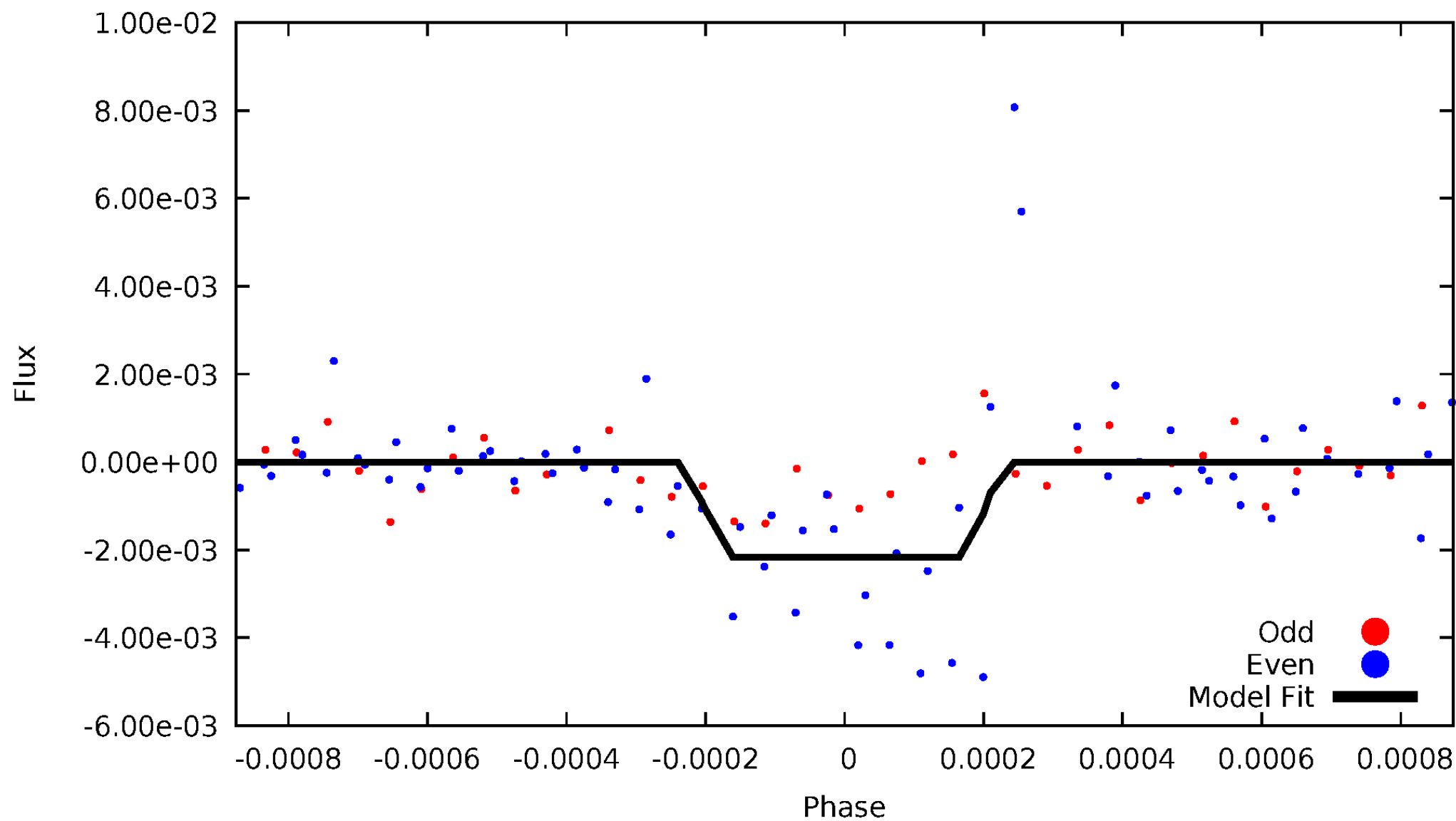
DV Odd/Even

TCE 007509281-07



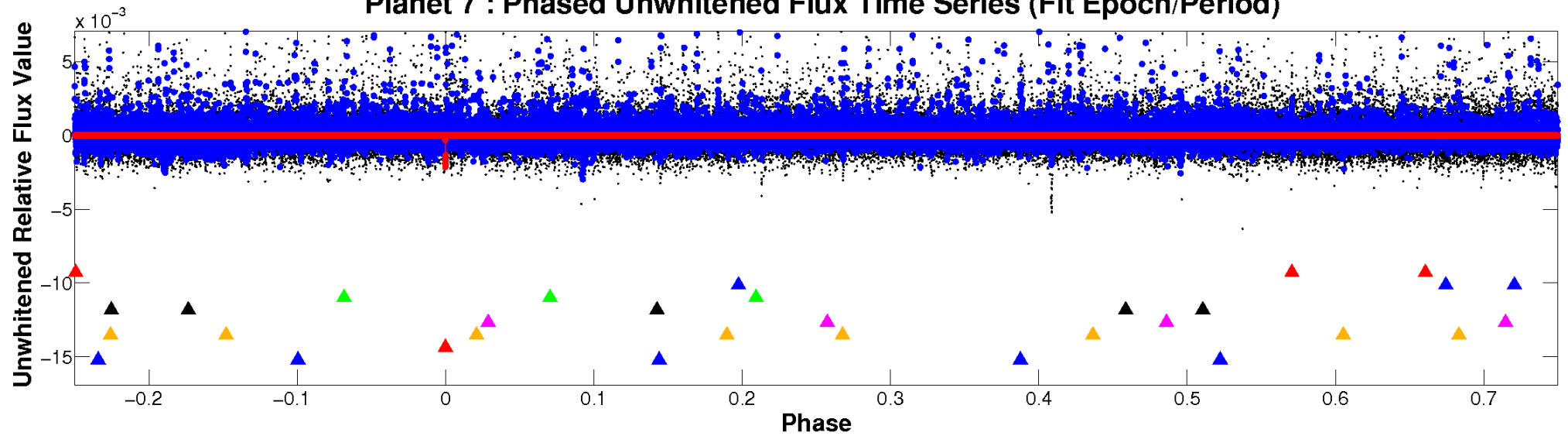
ALT Odd/Even

TCE 007509281-07

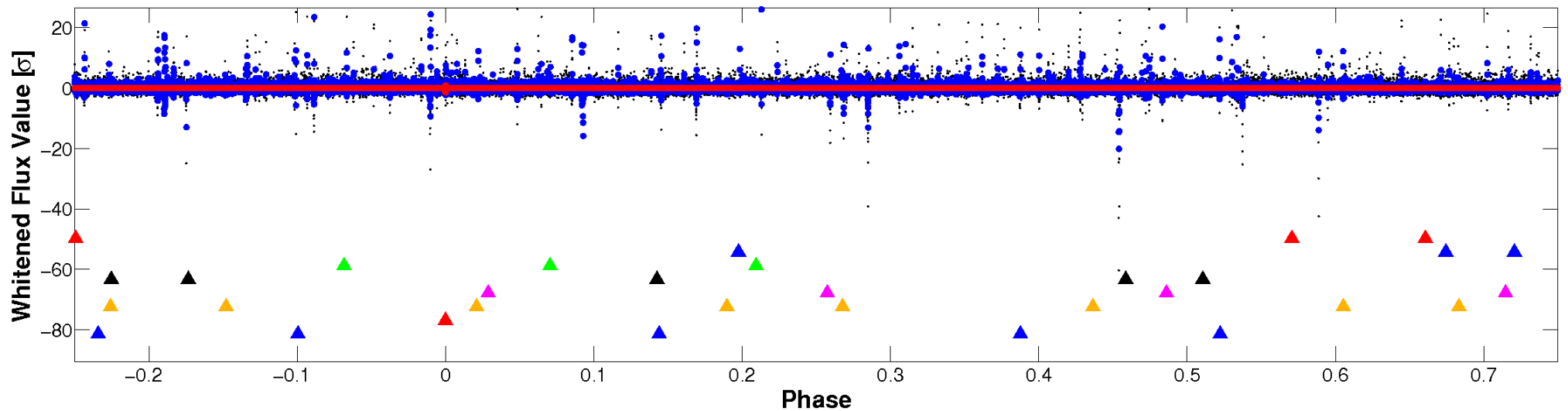


Non-Whitened Vs. Whitened Light Curve

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

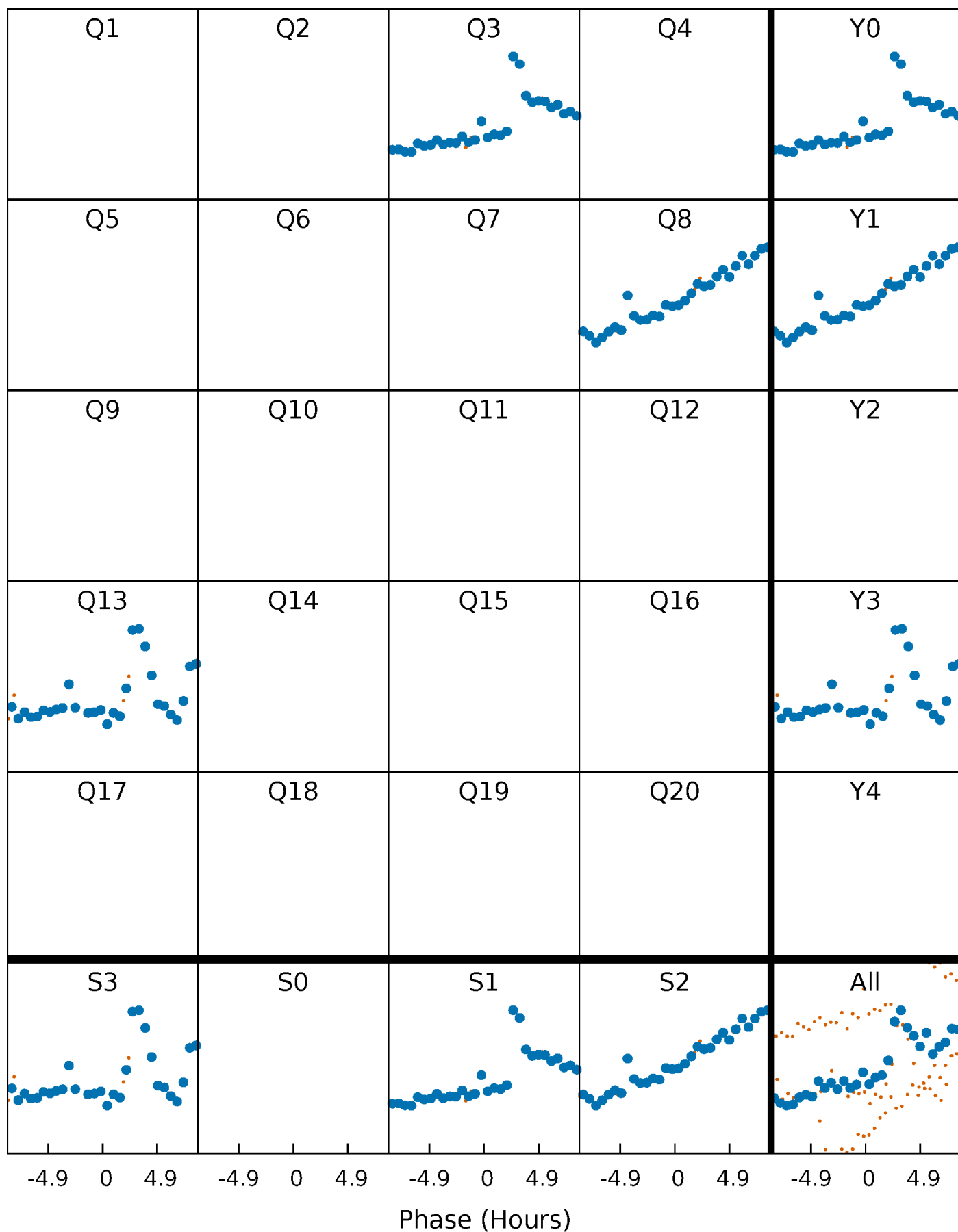


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



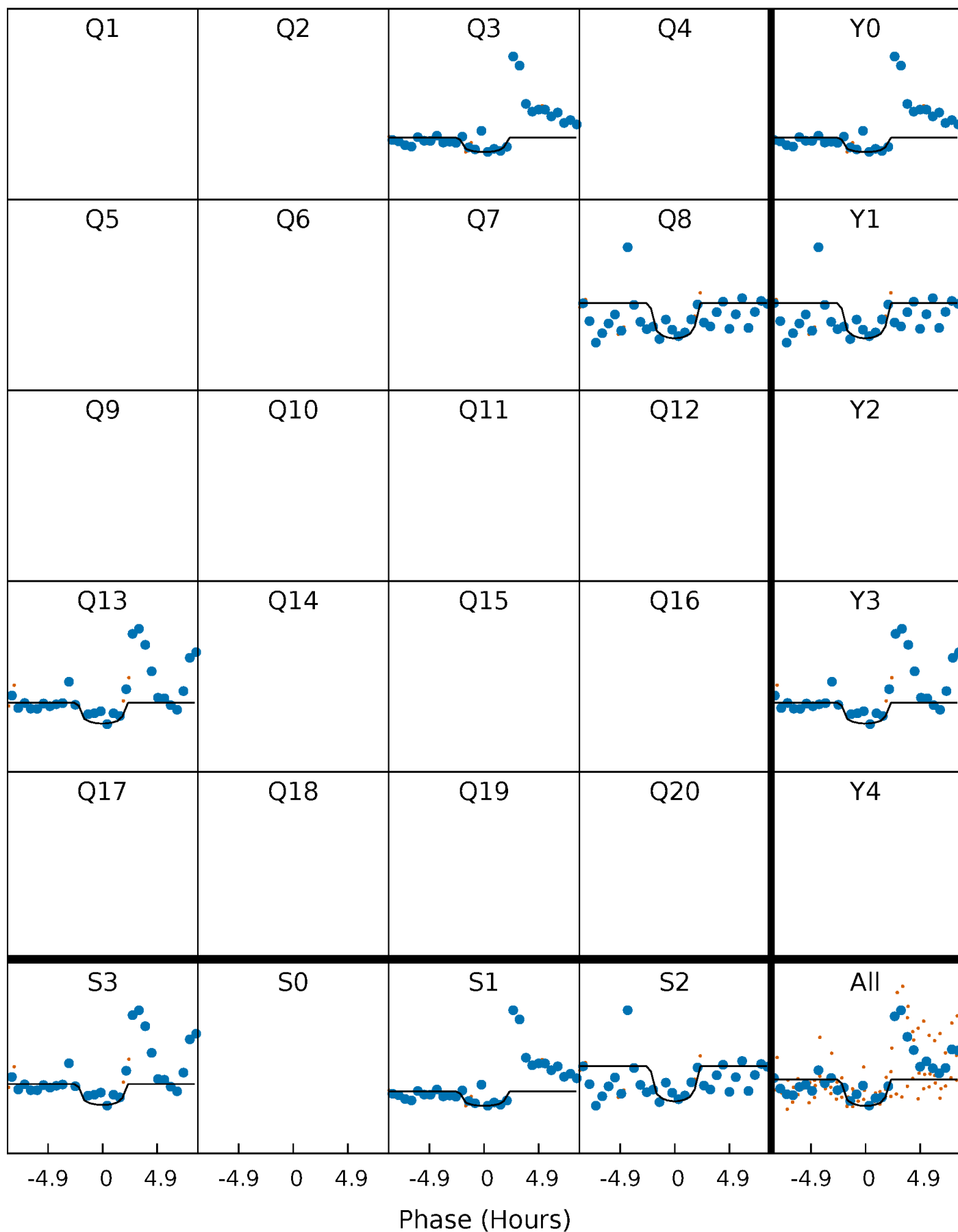
PDC Quarter-Phased Transit Curves

TCE 007509281-07 $P=454.443040$ Days $T_0=341.799460$ (BKJD)



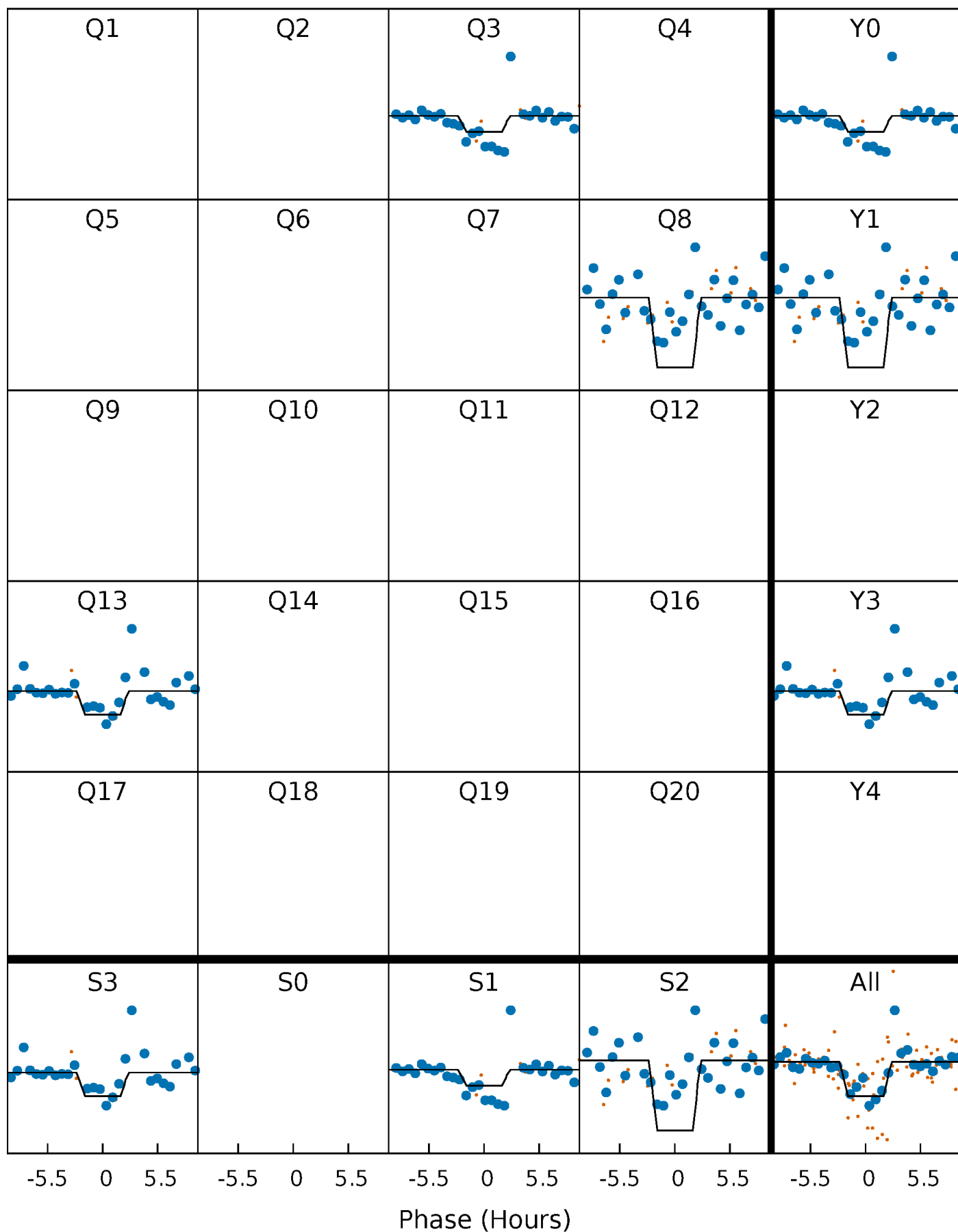
DV Quarter-Phased Transit Curves

TCE 007509281-07 $P=454.443040$ Days $T_0=341.799460$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

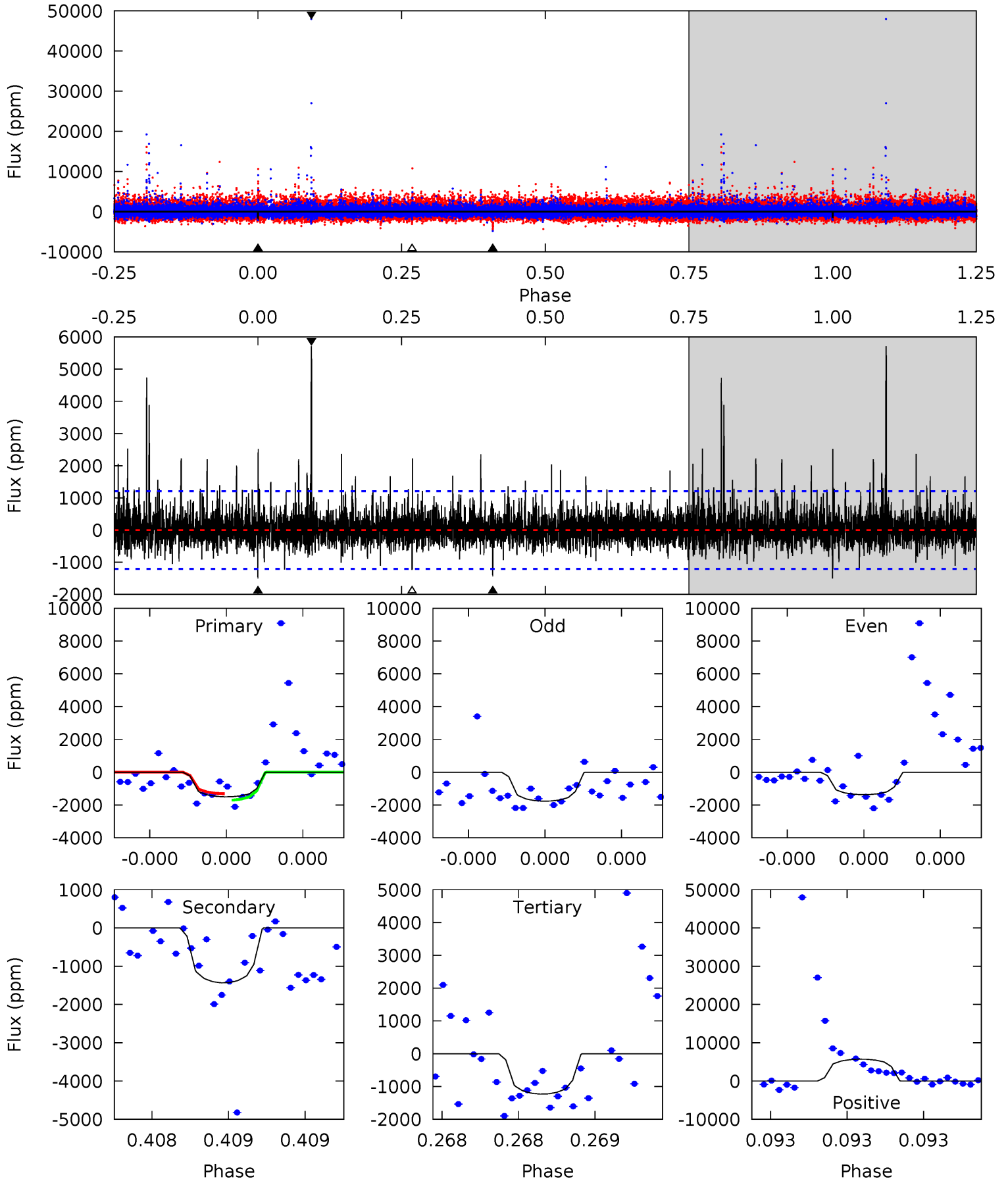
TCE 007509281-07 $P=454.442374$ Days $T_0=341.803767$ (BKJD)



DV Model-Shift Uniqueness Test

007509281-07, P = 454.443040 Days, E = 341.799460 Days

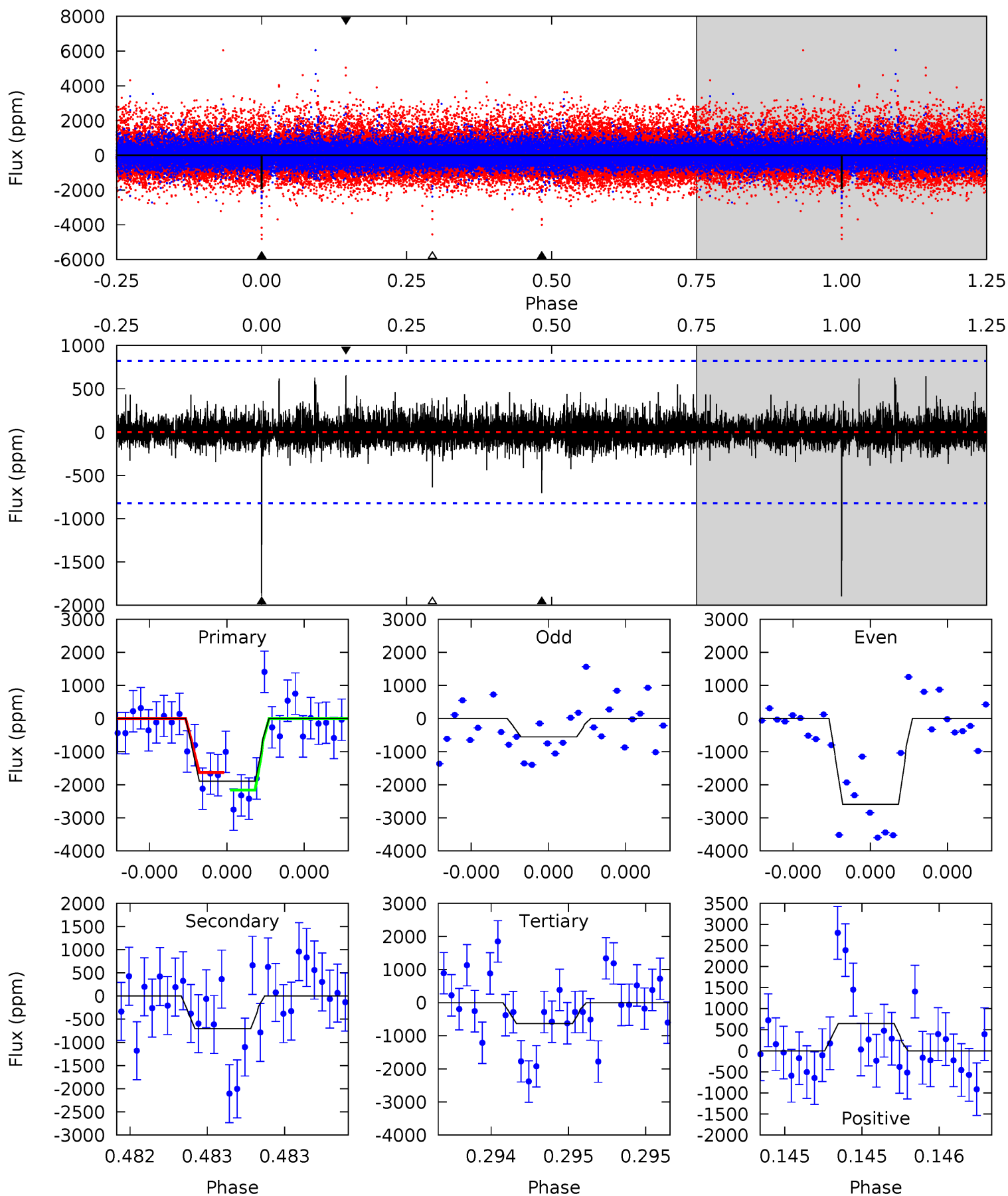
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.98	6.67	5.72	26.5	5.61	3.53	1.80	1.26	-19.6	0.95	-19.9	0.52	1.04	0.79	0.92



Alt Model-Shift Uniqueness Test

007509281-07, $P = 454.442374$ Days, $E = 341.803767$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	4.78	4.34	4.39	5.59	3.51	0.70	8.57	8.51	0.45	0.39	6.37	1.14	0.25	1.81



Stellar Parameters For KIC 007509281

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3514^{+56}_{-63}	$4.907^{+0.040}_{-0.044}$	$-0.100^{+0.100}_{-0.100}$	$0.358^{+0.039}_{-0.039}$	$0.380^{+0.040}_{-0.054}$	$11.650^{+2.693}_{-2.189}$
	+2%/-2%	+1%/-1%	+100%/-100%	+11%/-11%	+11%/-14%	+23%/-19%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 007509281-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1435 ± 215	$1.98^{+1.48}_{-1.20}$	142^{+3}_{-4}	3222^{+1169}_{-472}	$139438^{+834409}_{-93857}$
Alt.	-703 ± 147	$1.99^{+1.66}_{-1.32}$	142^{+4}_{-3}	2892^{+1067}_{-416}	$69050^{+482328}_{-49179}$

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

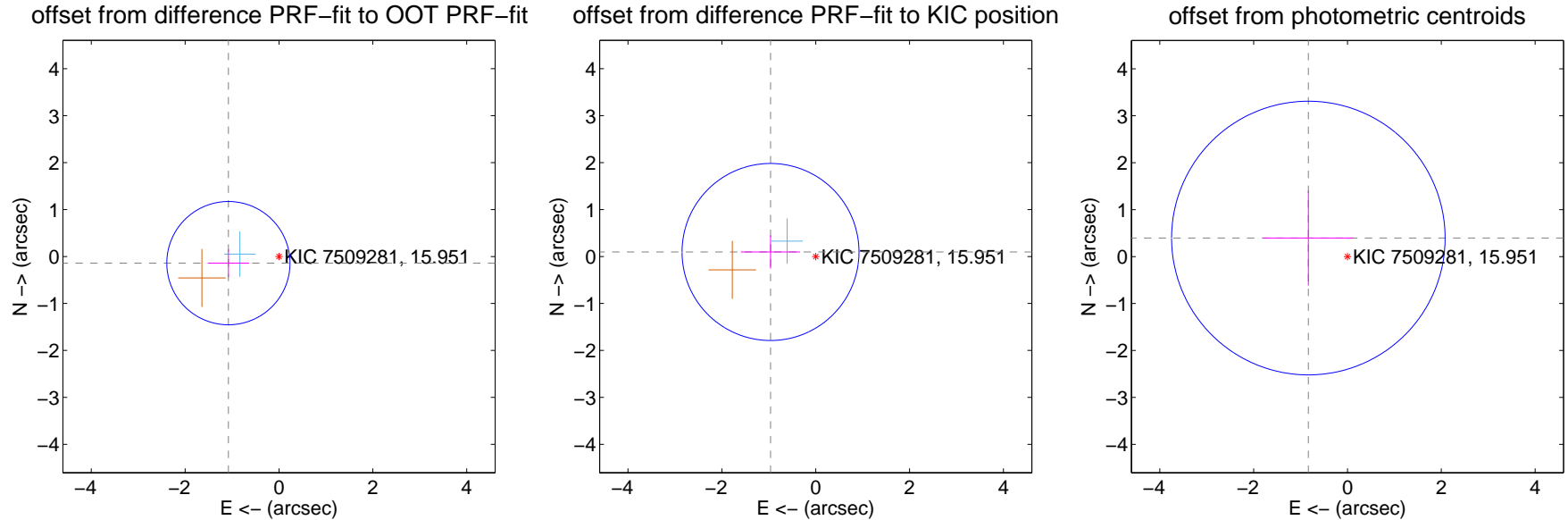
DV Centroid Data

Supplemental centroid analysis for 007509281-07. Kepler magnitude: 15.95. Transit SNR 6.73

There are 1 quarters with good PRF difference image offsets

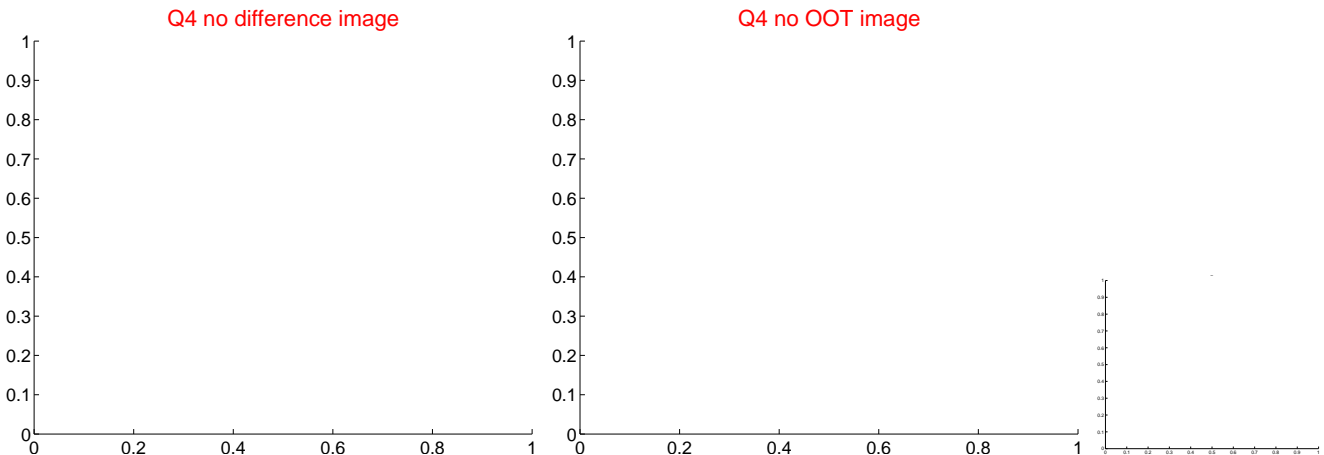
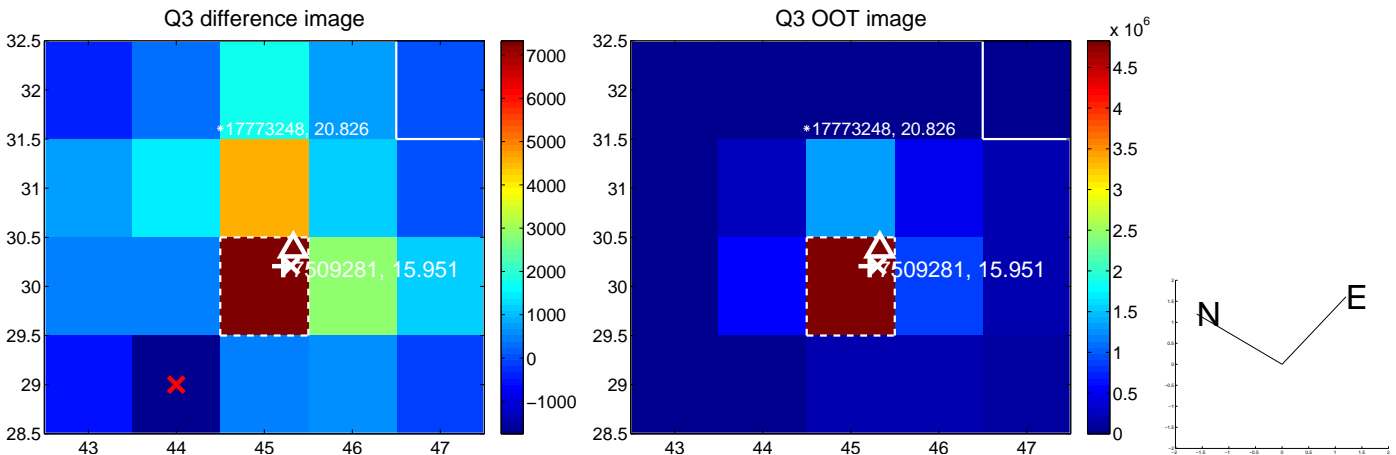
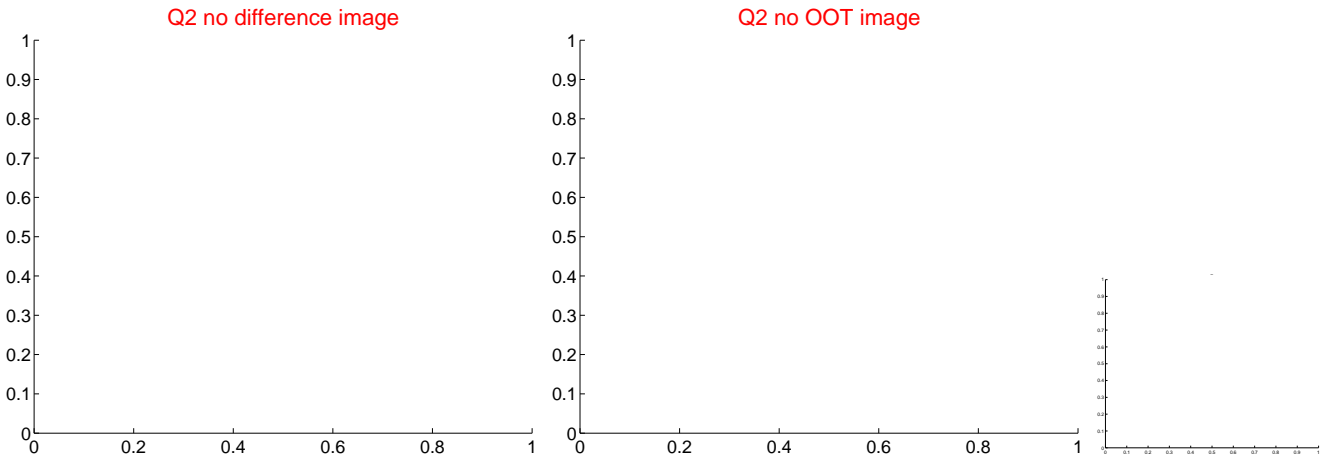
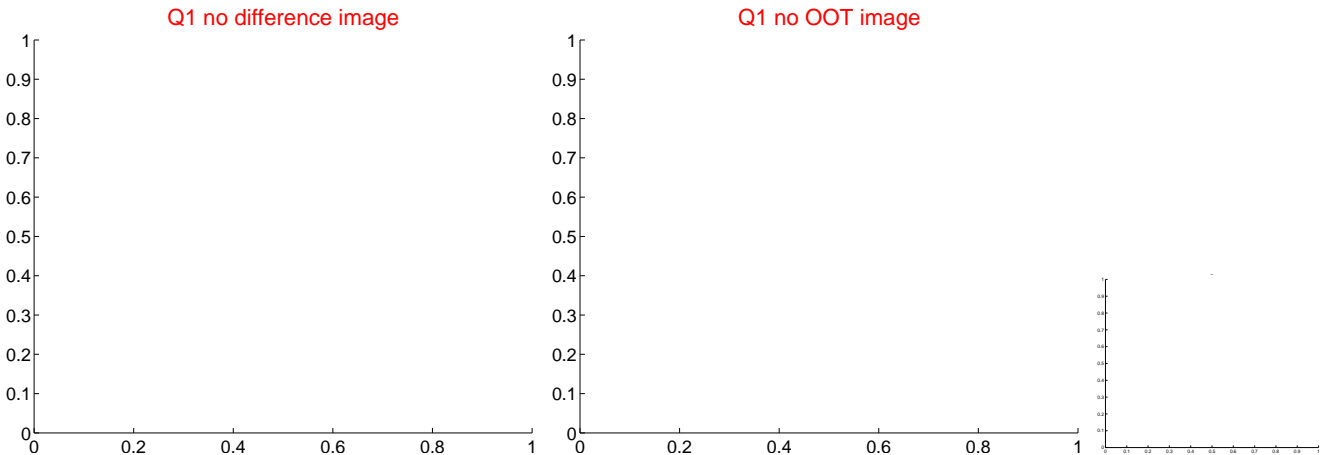
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.087 ± 0.438	2.48	1.078 ± 0.440	-0.141 ± 0.296
PRF-fit source offset from KIC position	0.968 ± 0.629	1.54	0.963 ± 0.631	0.096 ± 0.353
photometric centroid source offset	0.92 ± 0.97	0.95	0.83 ± 0.96	0.39 ± 1.01

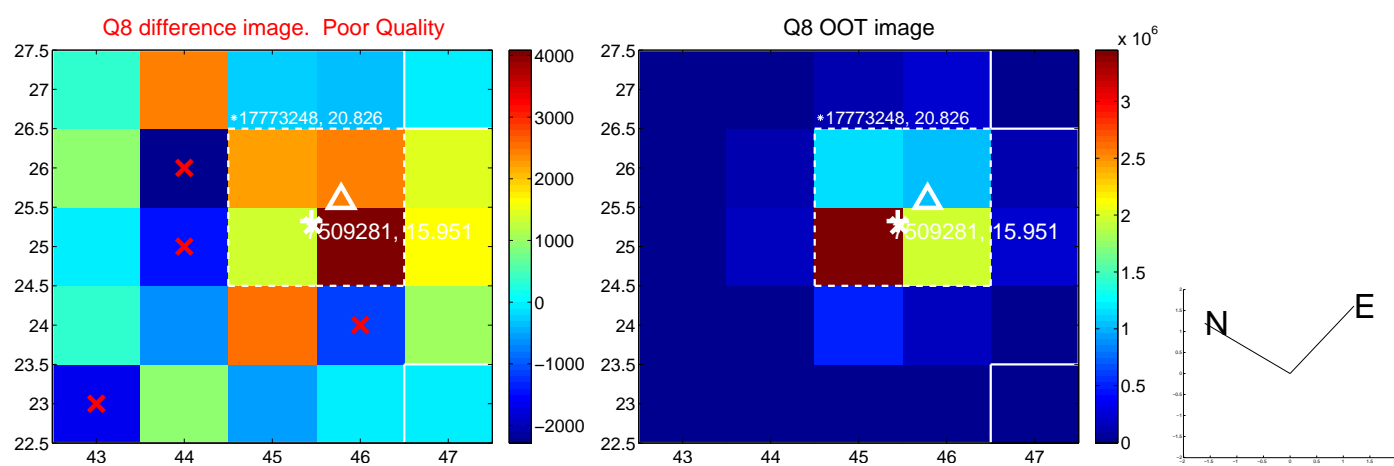
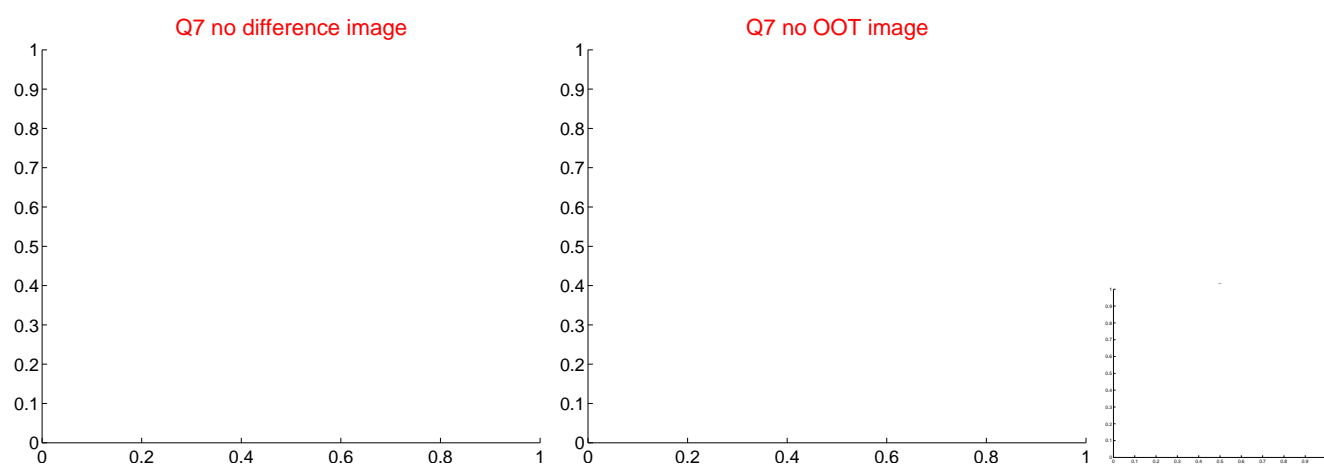
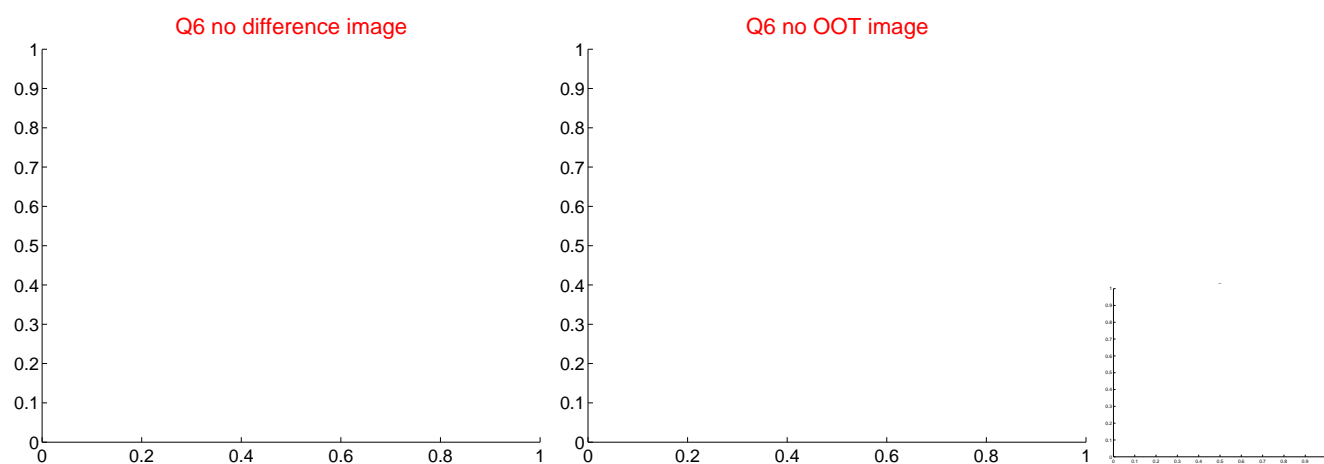
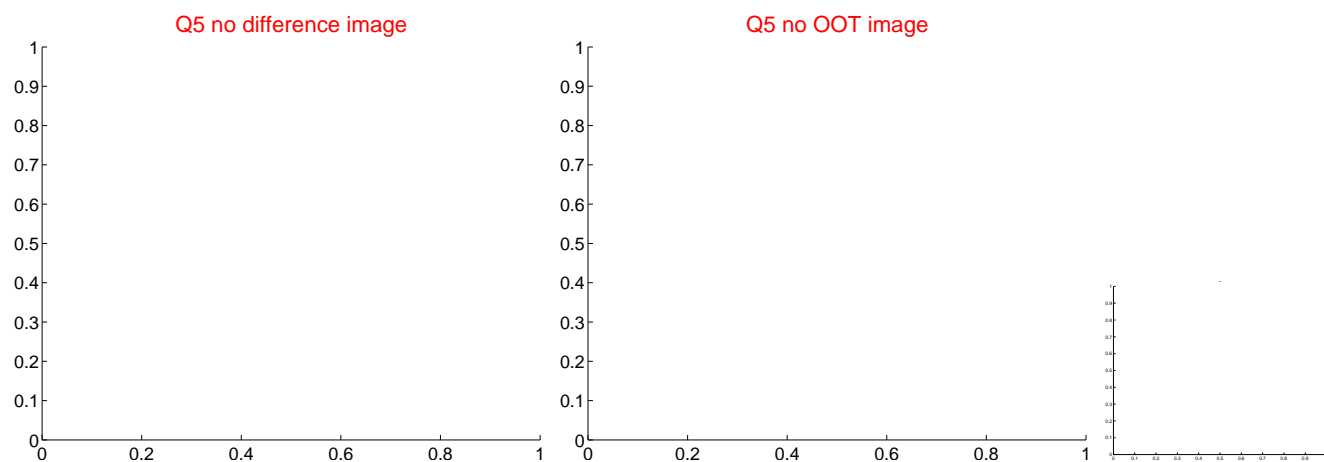


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



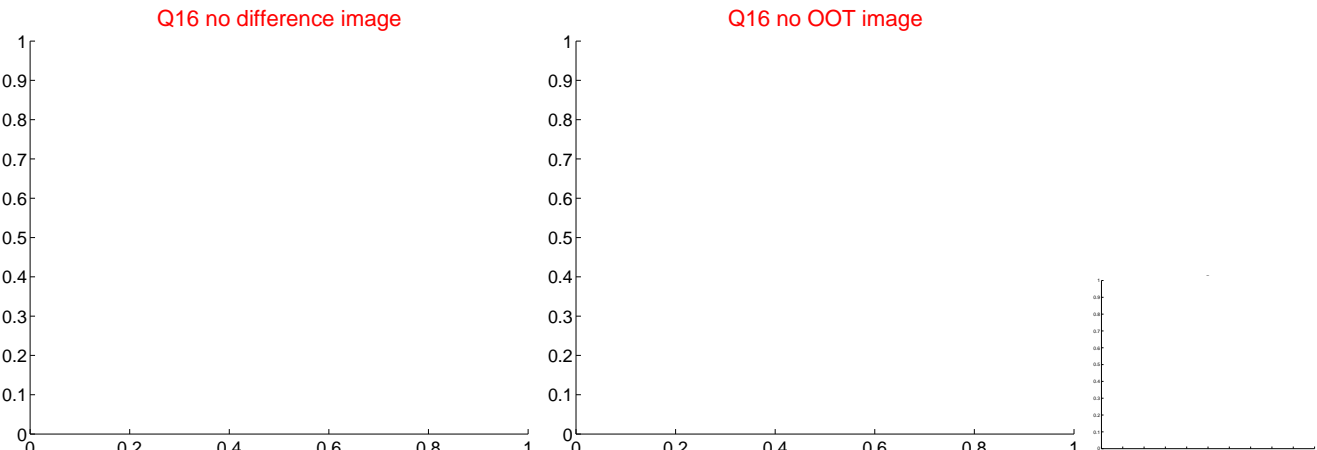
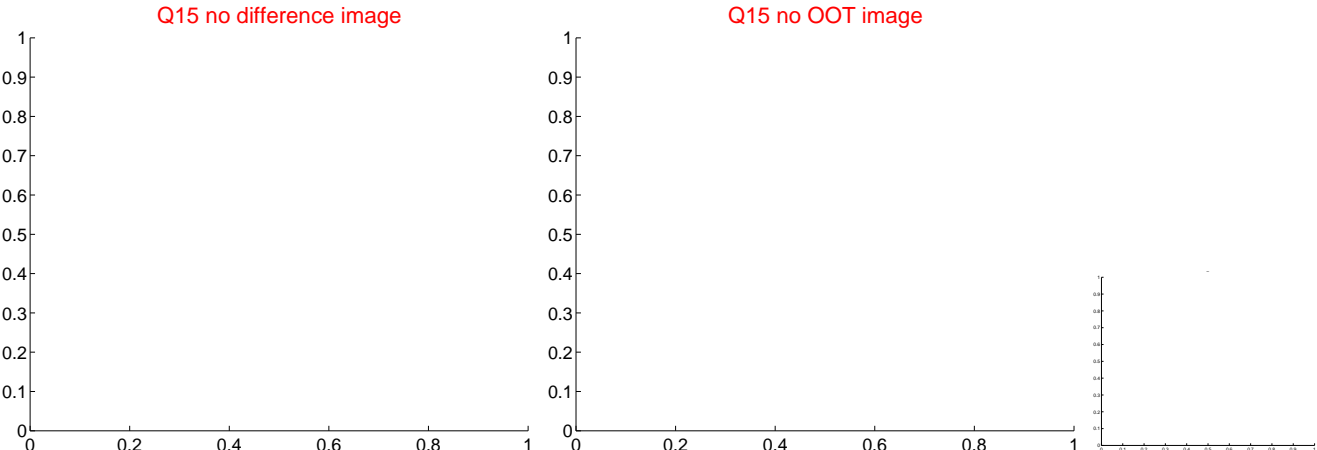
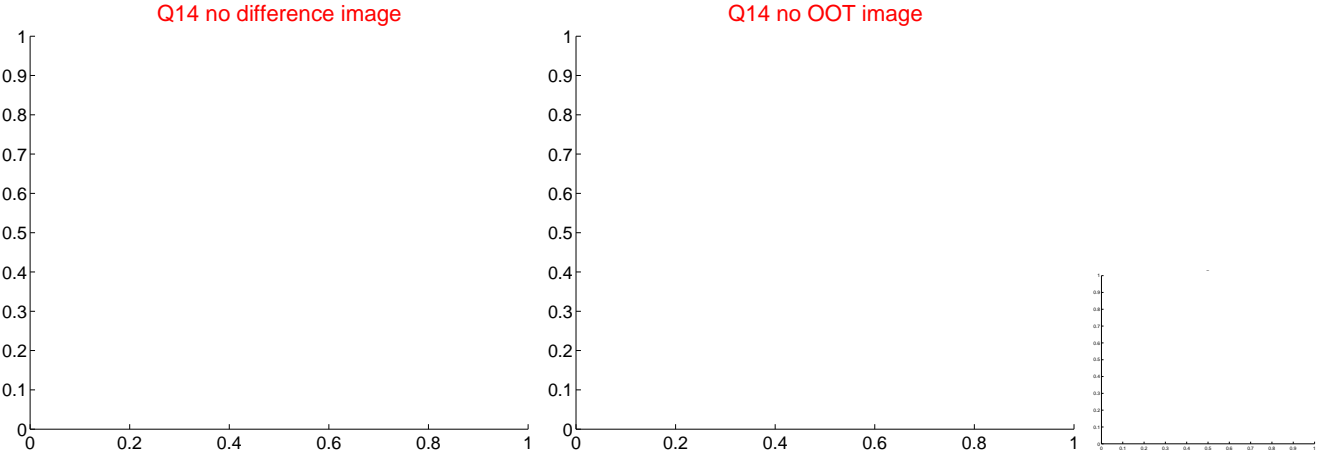
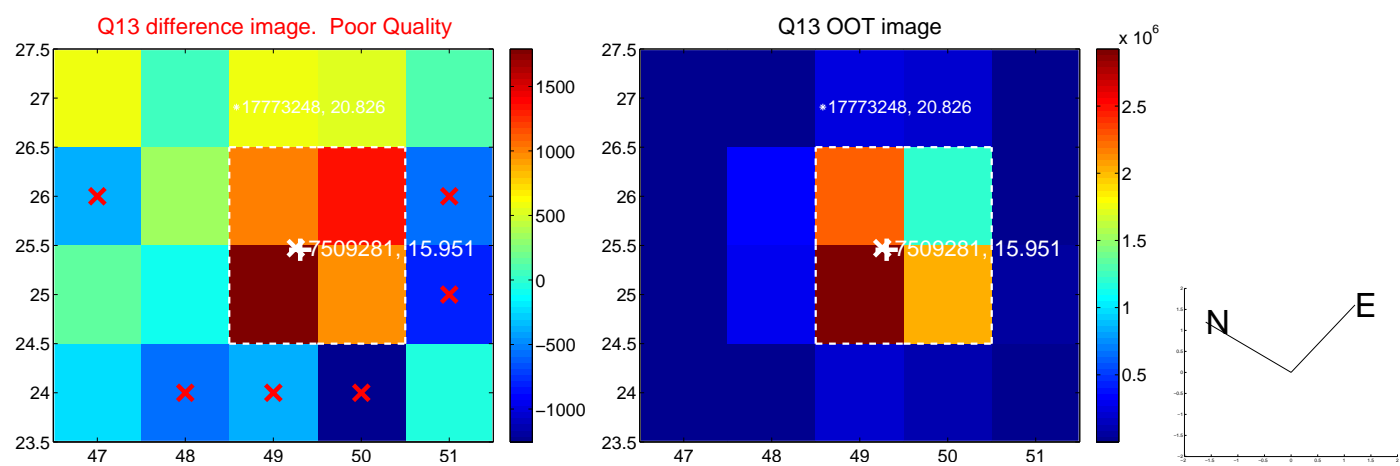
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



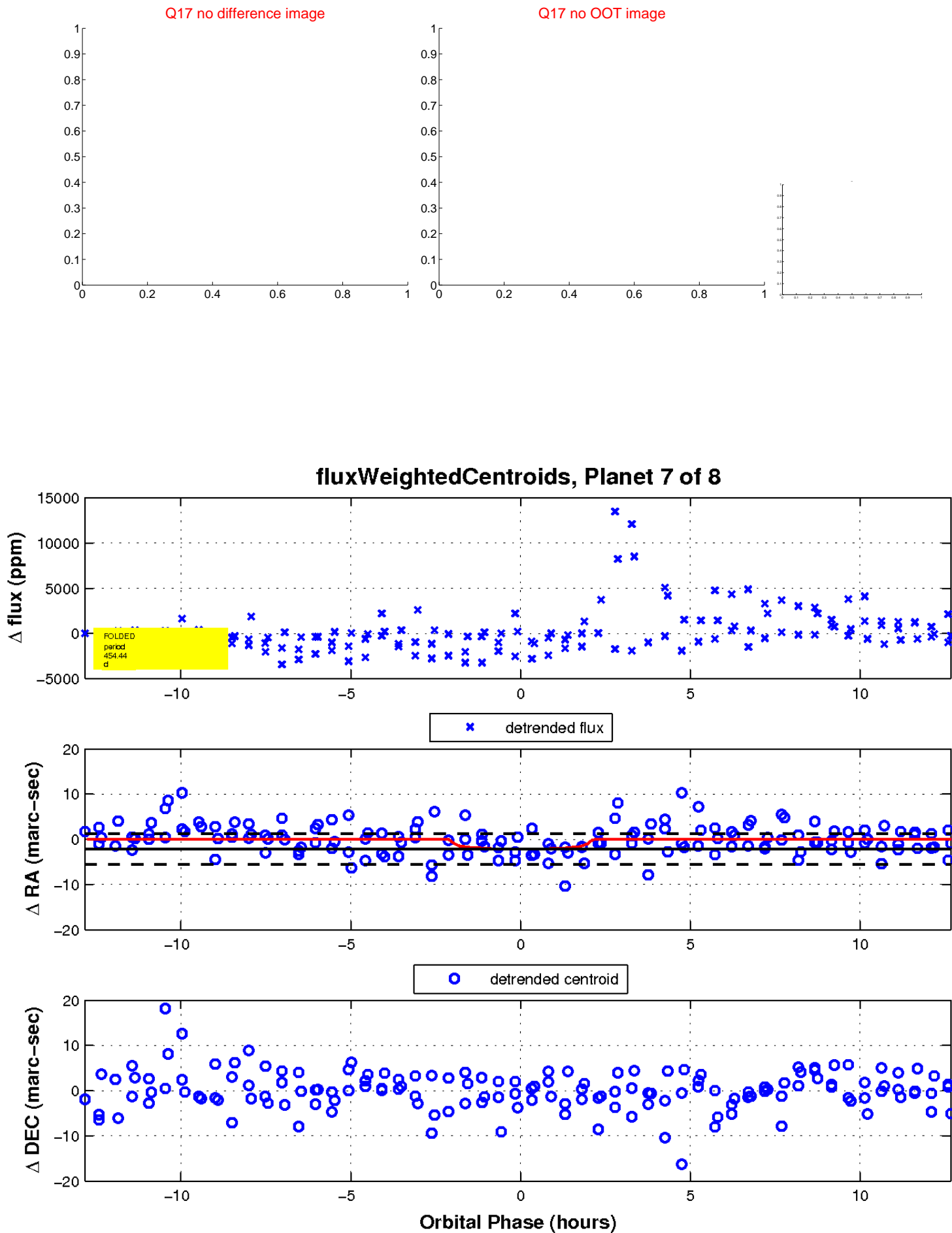
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

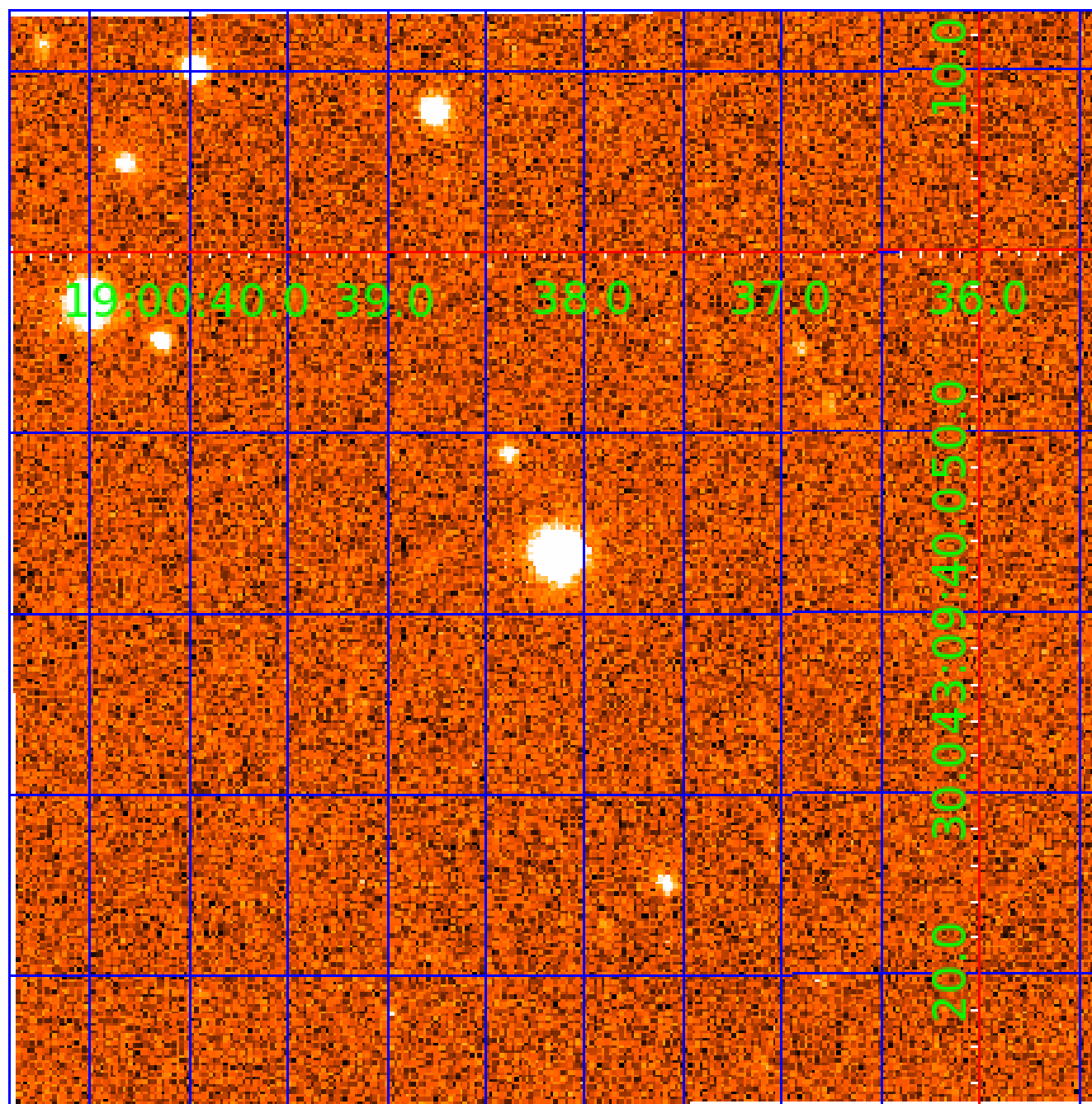


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007509281

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})
007509281-01	OBS	No	495.349153	146.690329	2359.1	5.011	12.3	7.2	0.36	3514	1.78	0.02
007509281-02	OBS	No	692.166905	193.864416	3834.8	5.446	11.7	11.3	0.36	3514	2.19	0.01
007509281-03	OBS	No	391.329919	436.945038	1314.2	15.000	11.2	-1.0	0.36	3514	1.28	0.03
007509281-04	OBS	No	310.829106	239.404934	2908.4	15.364	10.6	7.3	0.36	3514	2.31	0.04
007509281-05	OBS	No	350.536672	212.159784	547.7	7.021	11.0	1.9	0.36	3514	0.87	0.04
007509281-06	OBS	No	188.860962	239.174780	2397.9	3.029	11.7	7.4	0.36	3514	1.84	0.08
007509281-07	OBS	No	454.443040	341.799460	2133.5	4.279	10.4	6.7	0.36	3514	1.68	0.03
007509281-08	OBS	No	282.560172	296.603971	1474.0	21.758	9.4	4.4	0.36	3514	1.36	0.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007509281-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
007509281-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_NOFITS
007509281-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007509281-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

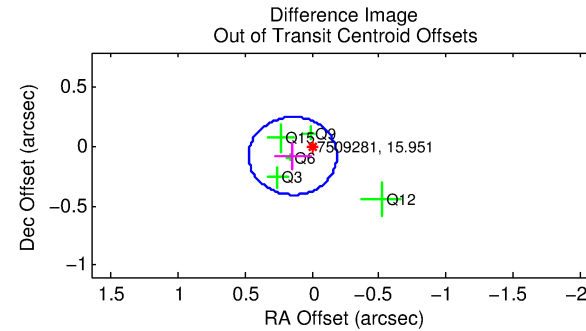
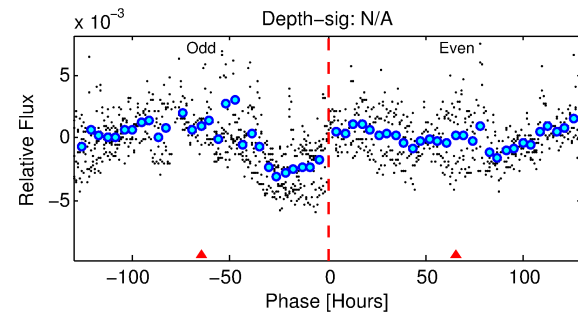
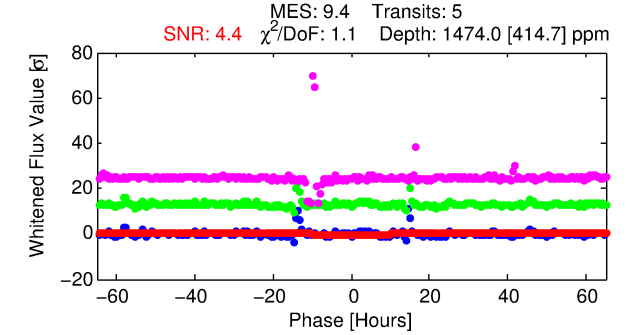
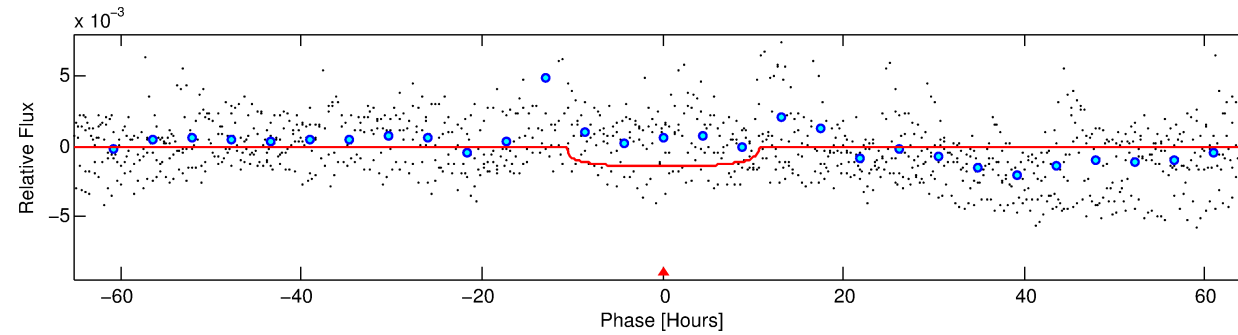
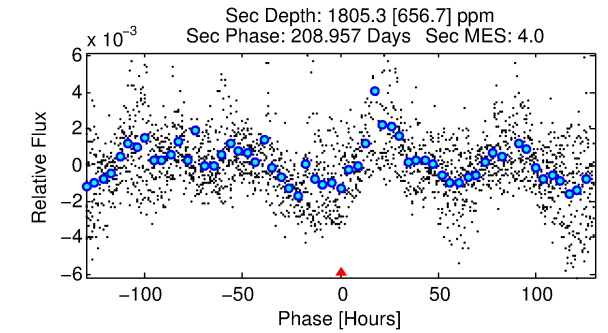
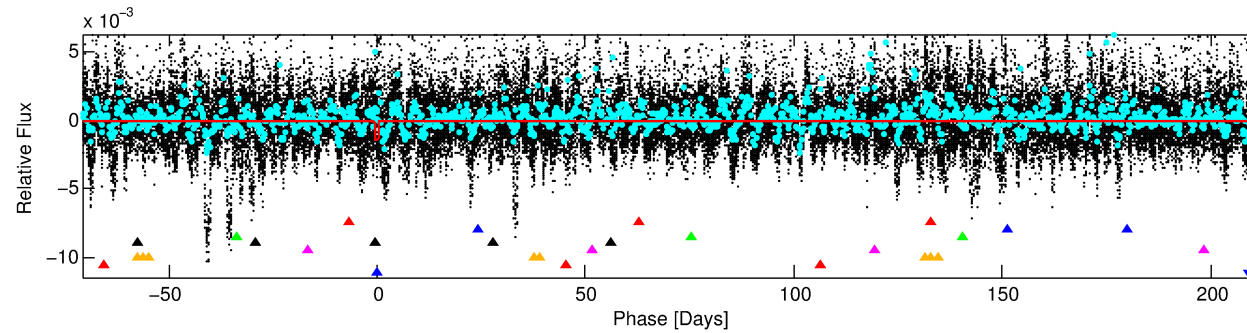
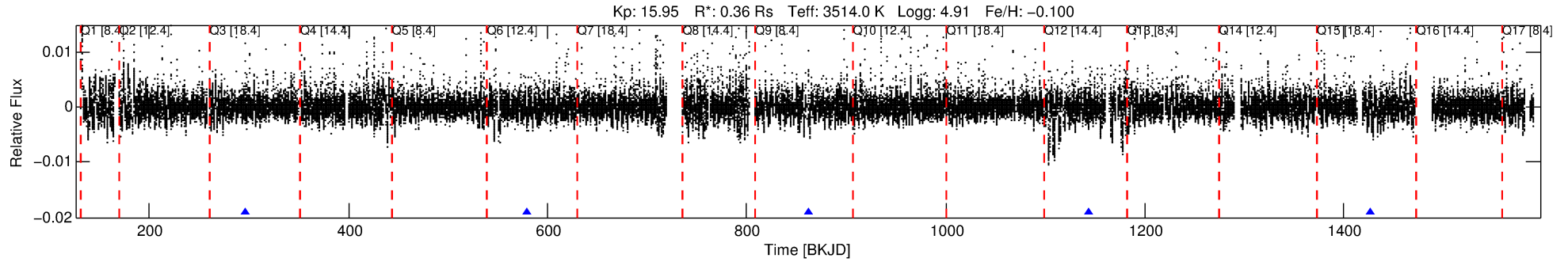
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007509281-08

No Significant Match Found

DV One-Page Summary

KIC: 7509281 Candidate: 8 of 8 Period: 282.560 d



DV Fit Results:

Period = 282.56017 [0.00791] d
Epoch = 296.6040 [0.0203] BKJD
Rp/R* = 0.0347 [0.0131]
a/R* = 102.65 [146.24]
b = 0.01 [109.45]
Seff = 0.05 [0.01]
Teq = 119 [4] K
Rp = 1.36 [0.53] Re
a = 0.6091 [0.0488] AU
Ag = 200104.15 [168747.25] [1.19σ]
Teffp = 3886 [817] K [4.61σ]

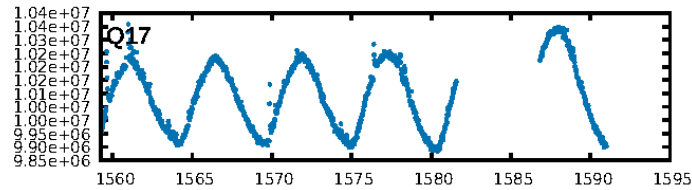
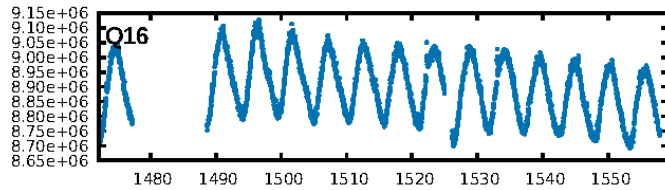
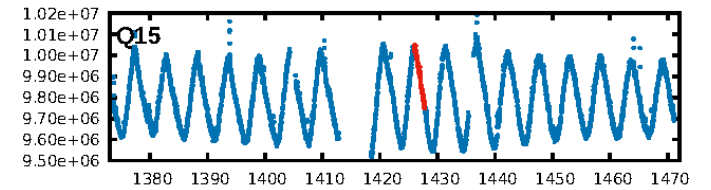
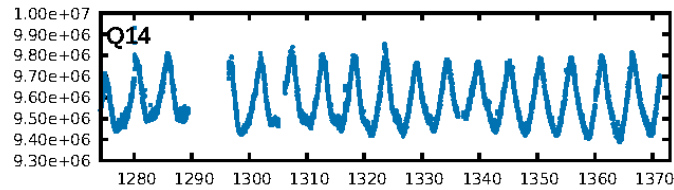
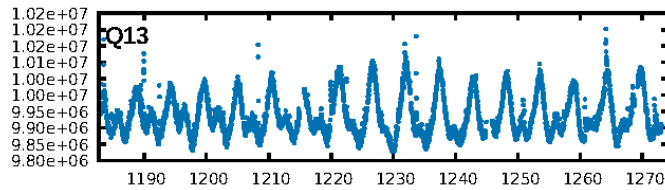
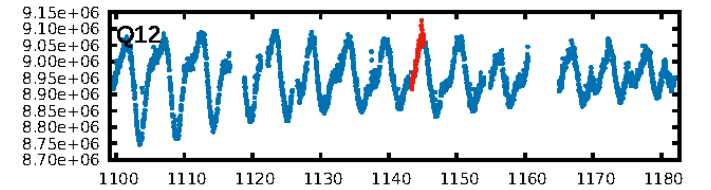
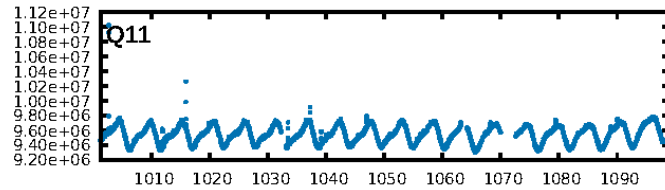
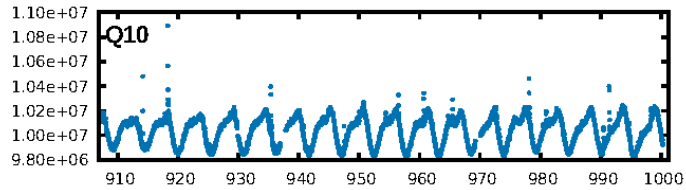
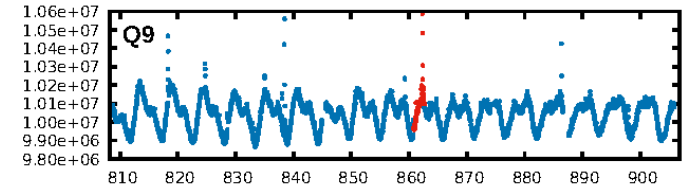
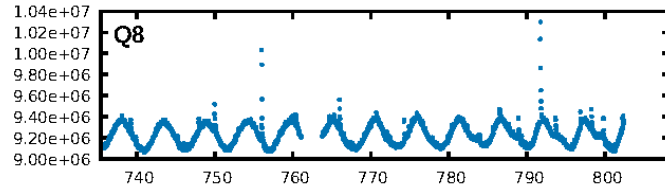
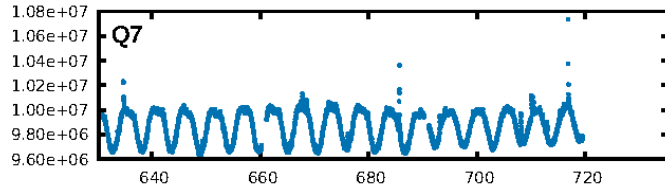
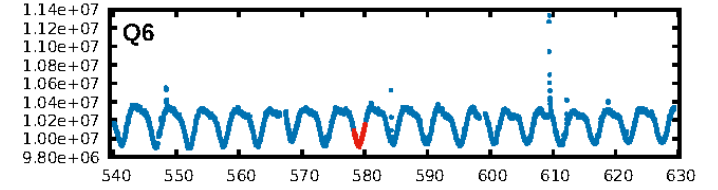
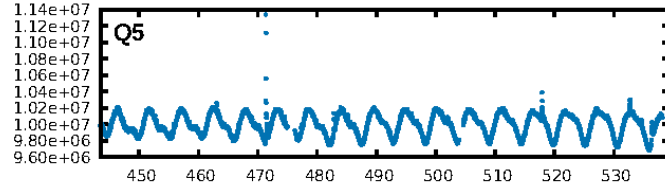
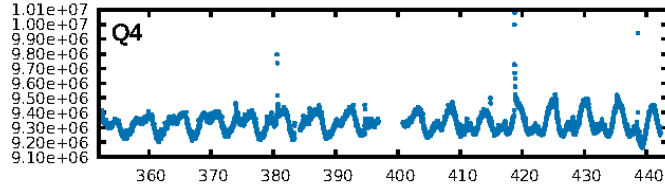
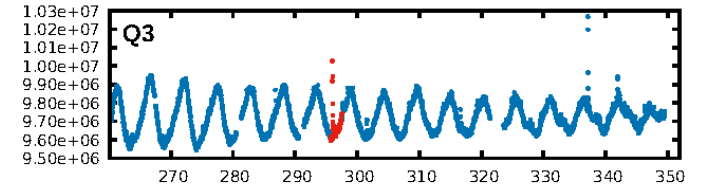
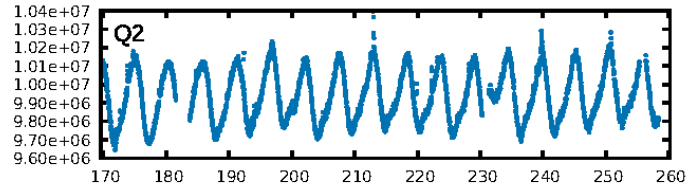
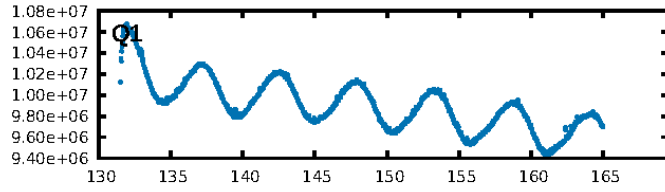
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [102.37σ]
LongPeriod-sig: 100.0% [25.47σ]
ModelChiSquare2-sig: 3.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.068
Centroid-sig: N/A
Centroid-so: 0.998 arcsec [1.79σ]
OotOffset-rm: 0.164 arcsec [1.50σ]
KicOffset-rm: 0.102 arcsec [0.90σ]
OotOffset-st: 1/2/1/1 [5]
KicOffset-st: 1/2/1/1 [5]
DiffImageQuality-fgm: 0.40 [2/5]
DiffImageOverlap-fno: 0.80 [4/5]

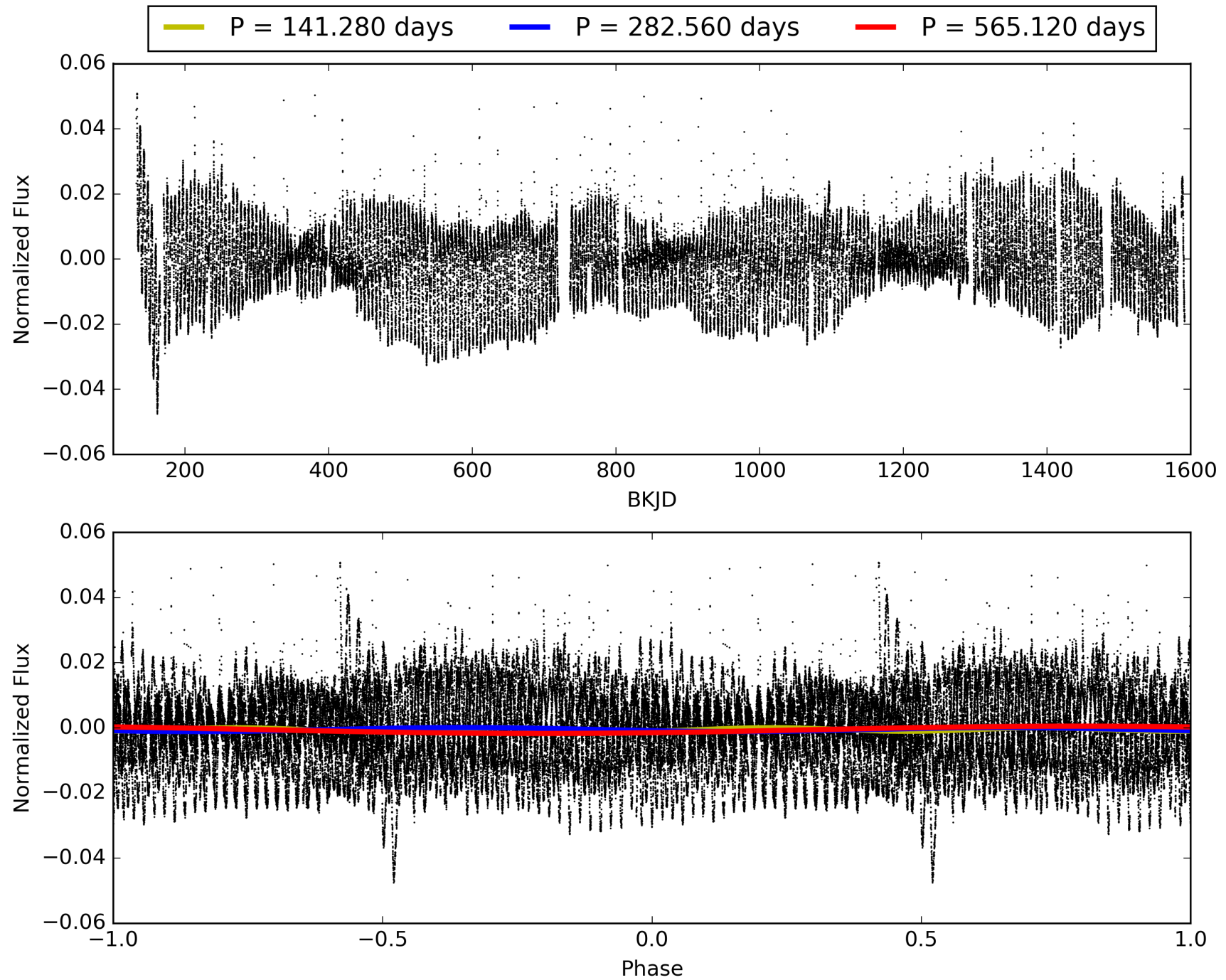
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:47:51 Z

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

TCE 007509281-08, PDC Light Curves

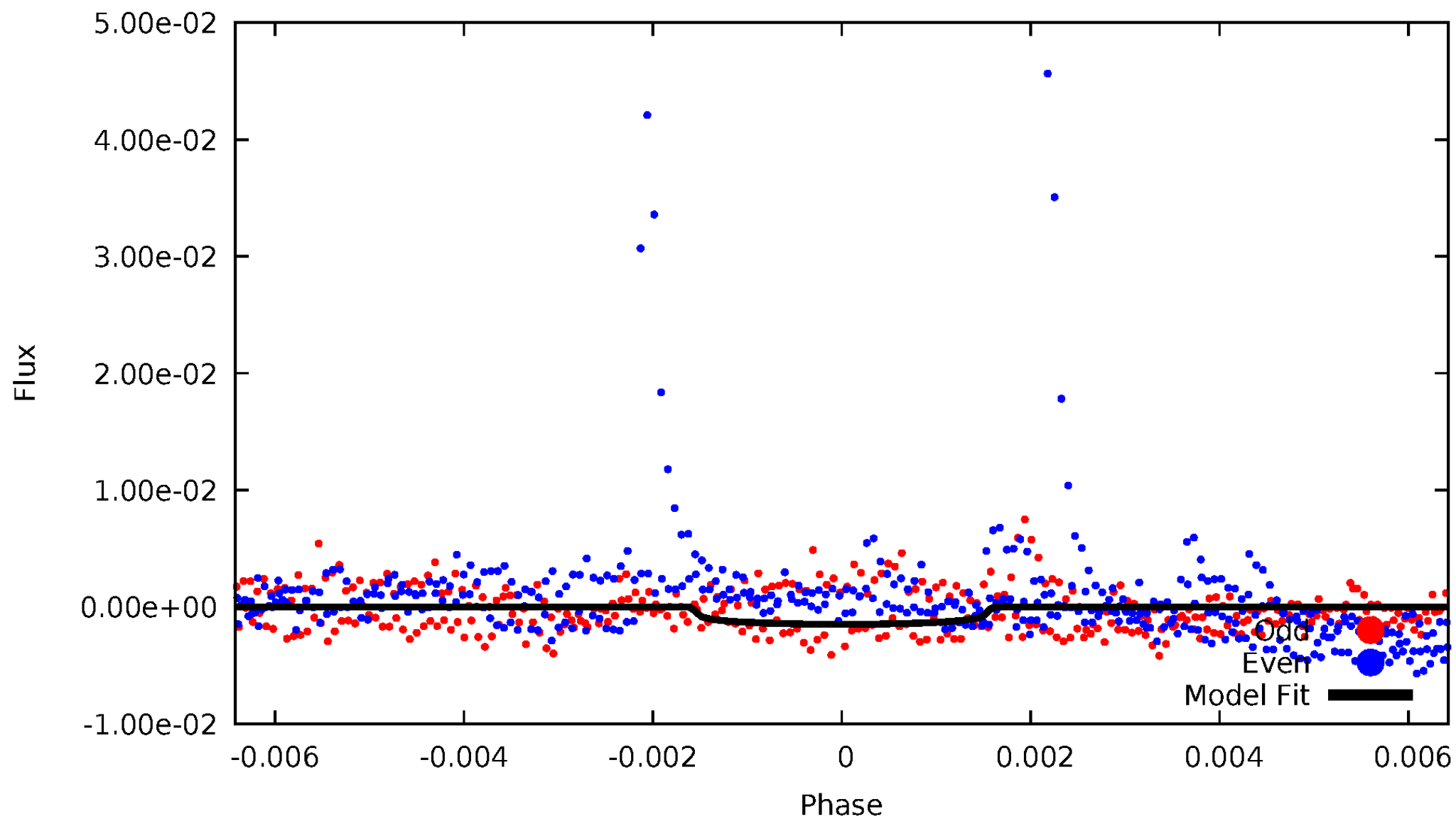


TCE 007509281-08



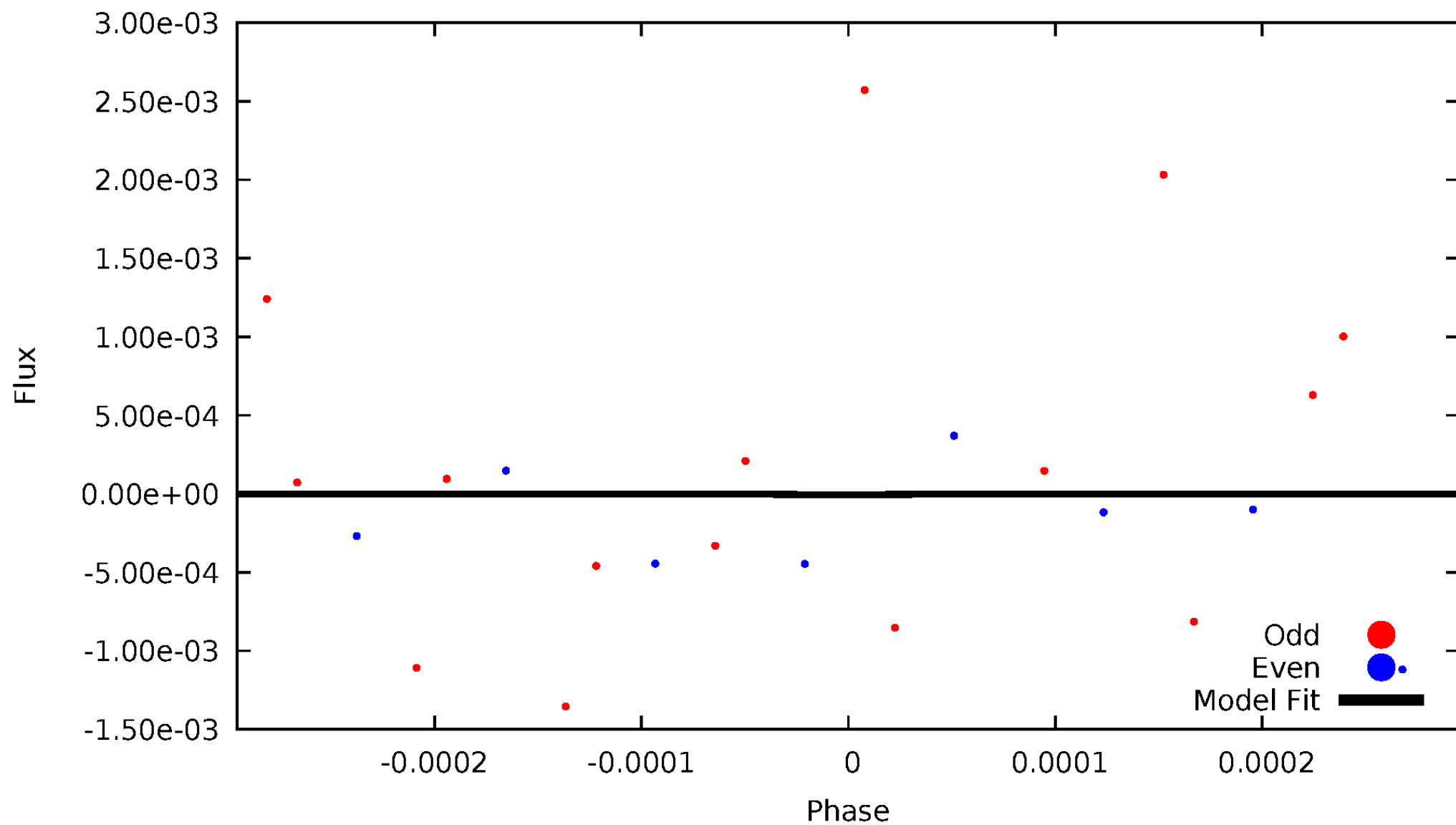
DV Odd/Even

TCE 007509281-08



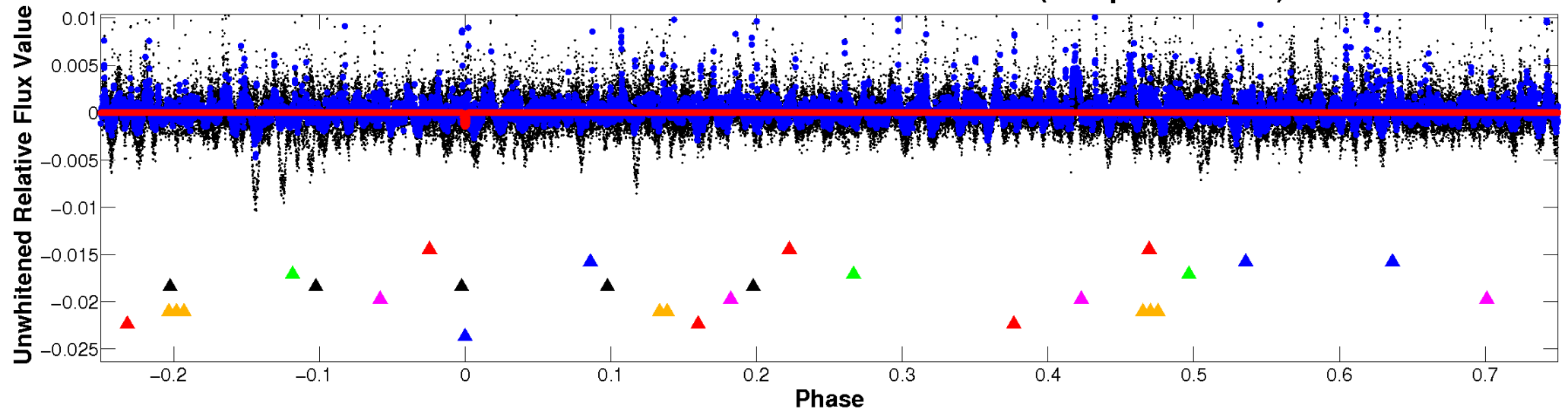
ALT Odd/Even

TCE 007509281-08

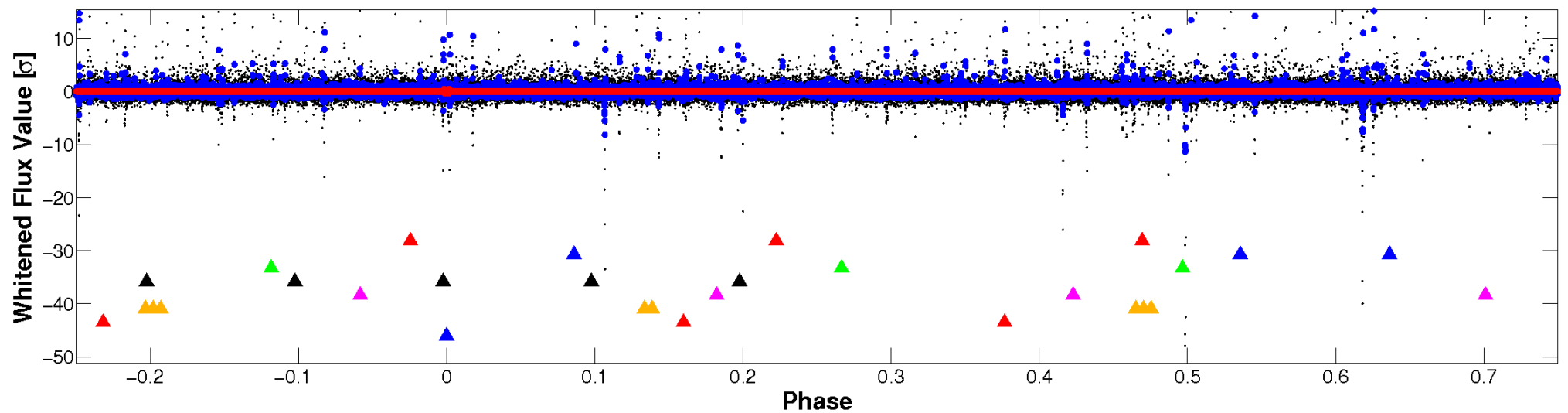


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

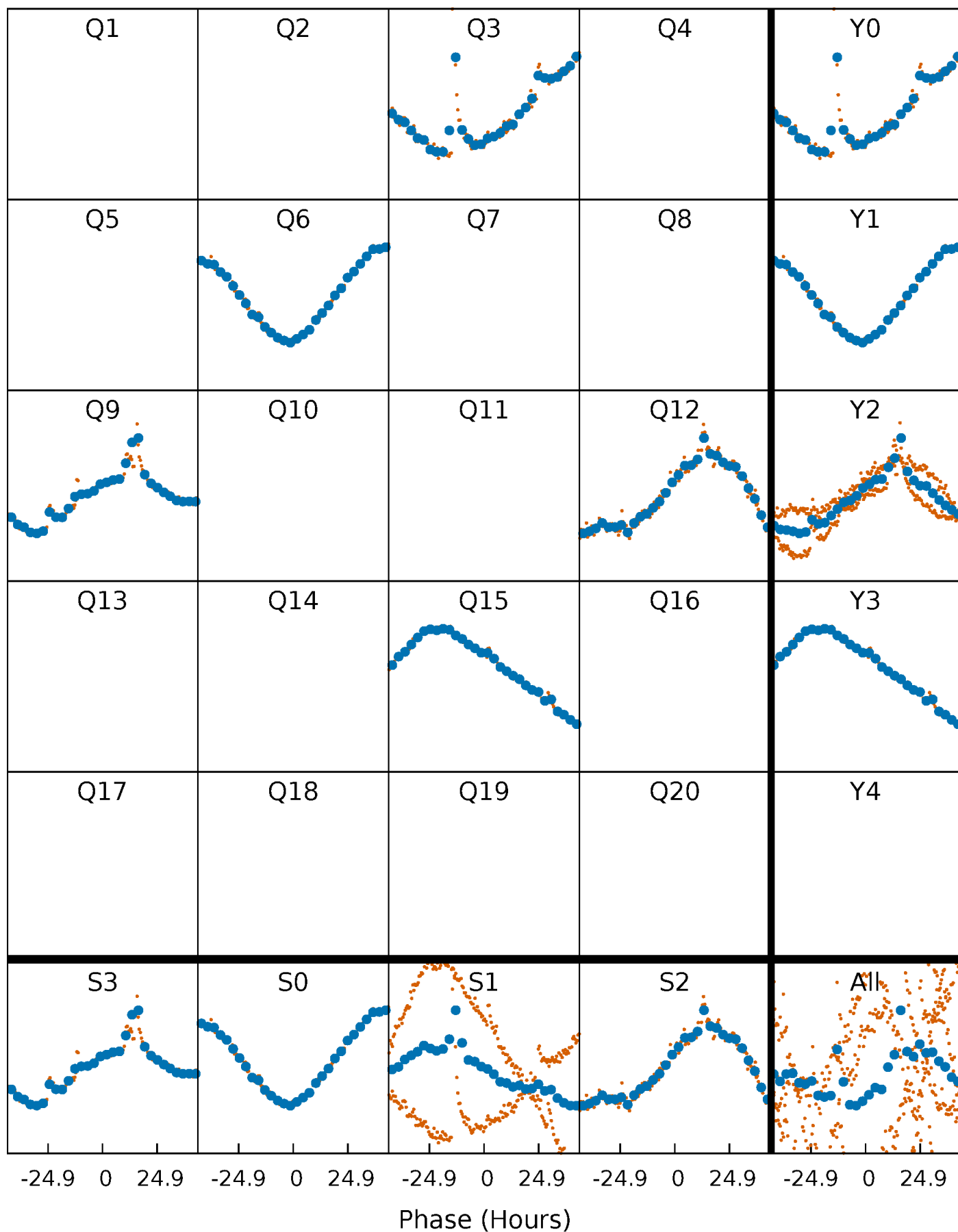


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



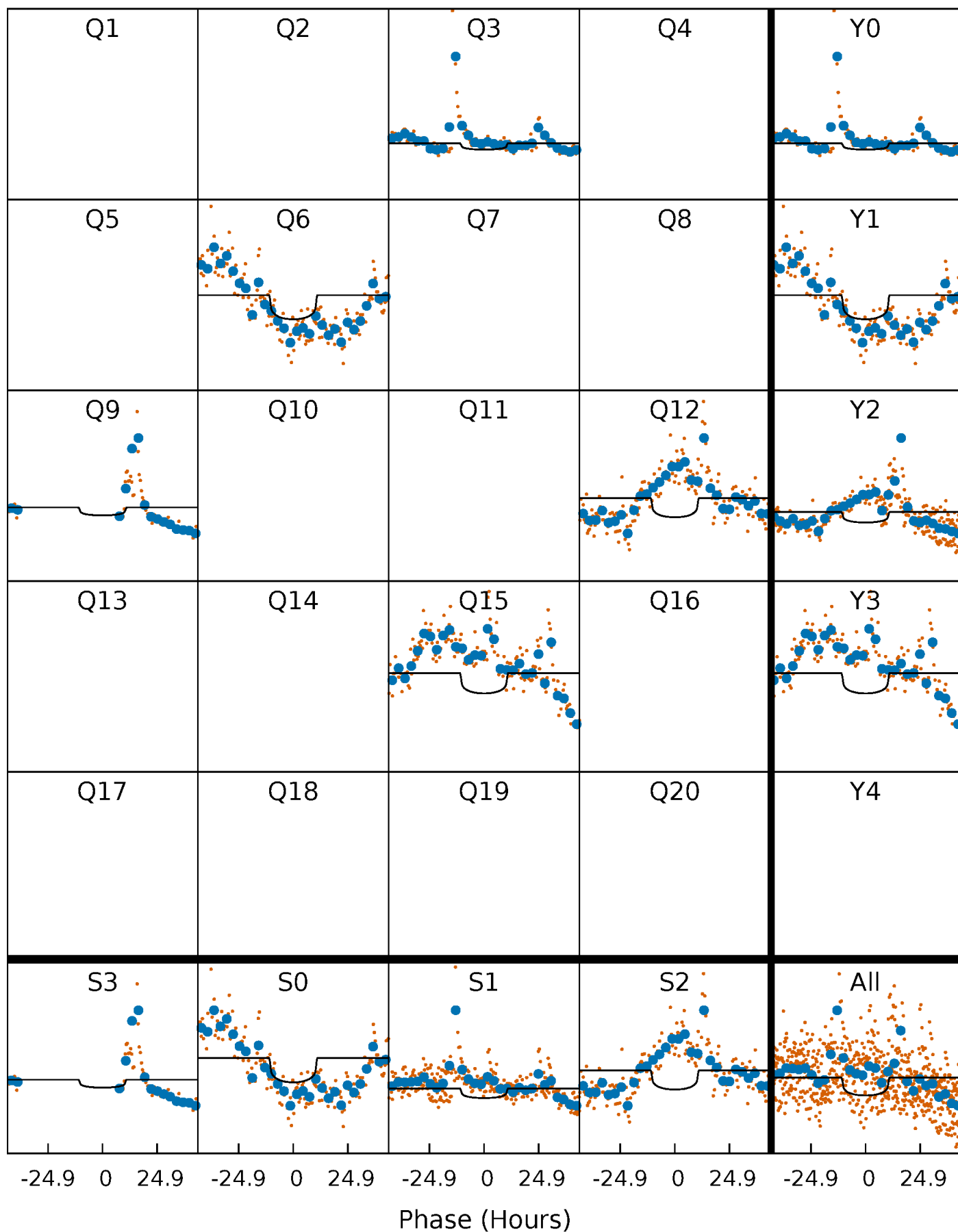
PDC Quarter-Phased Transit Curves

TCE 007509281-08 $P=282.560172$ Days $T_0=296.603971$ (BKJD)



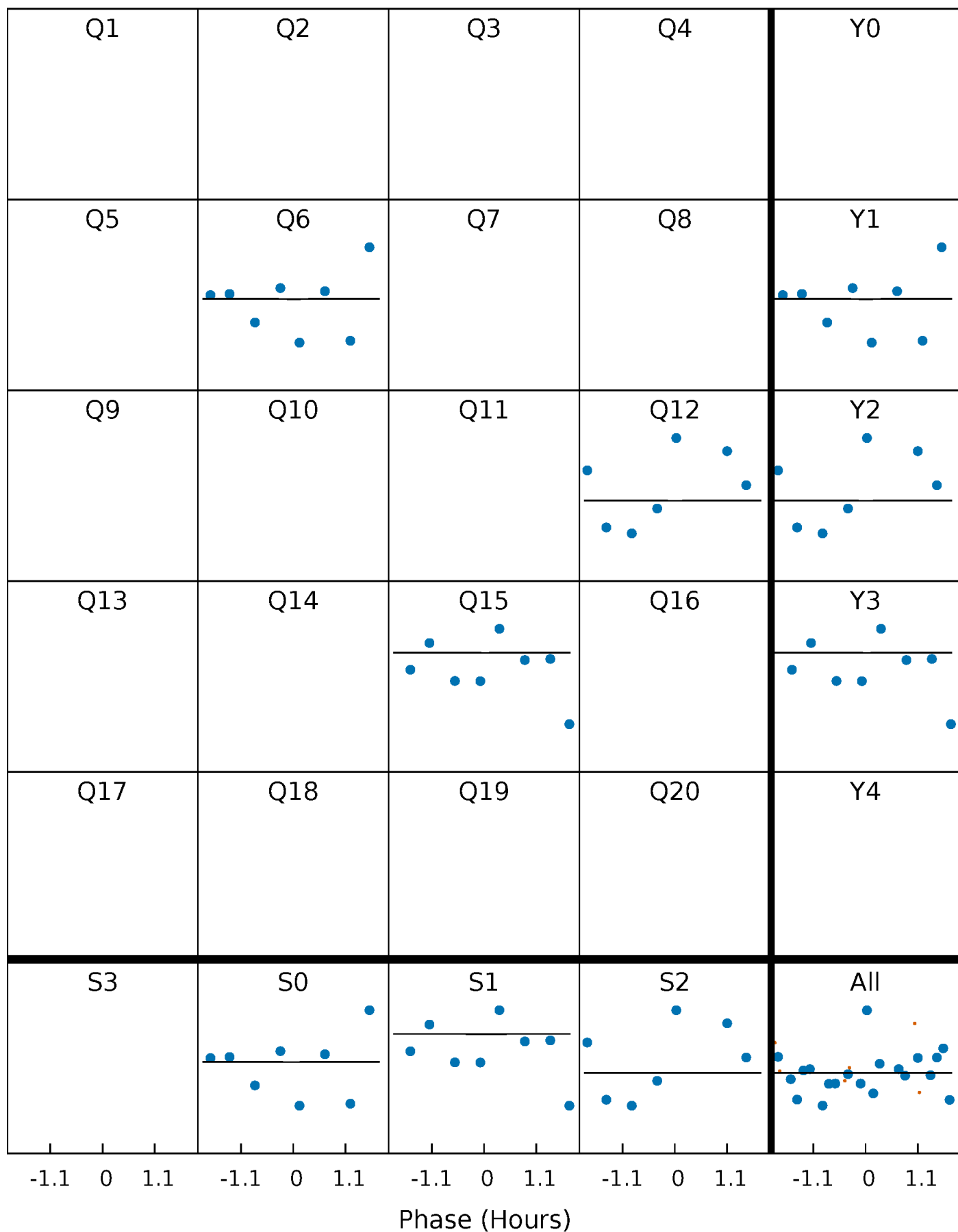
DV Quarter-Phased Transit Curves

TCE 007509281-08 $P=282.560172$ Days $T_0=296.603971$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

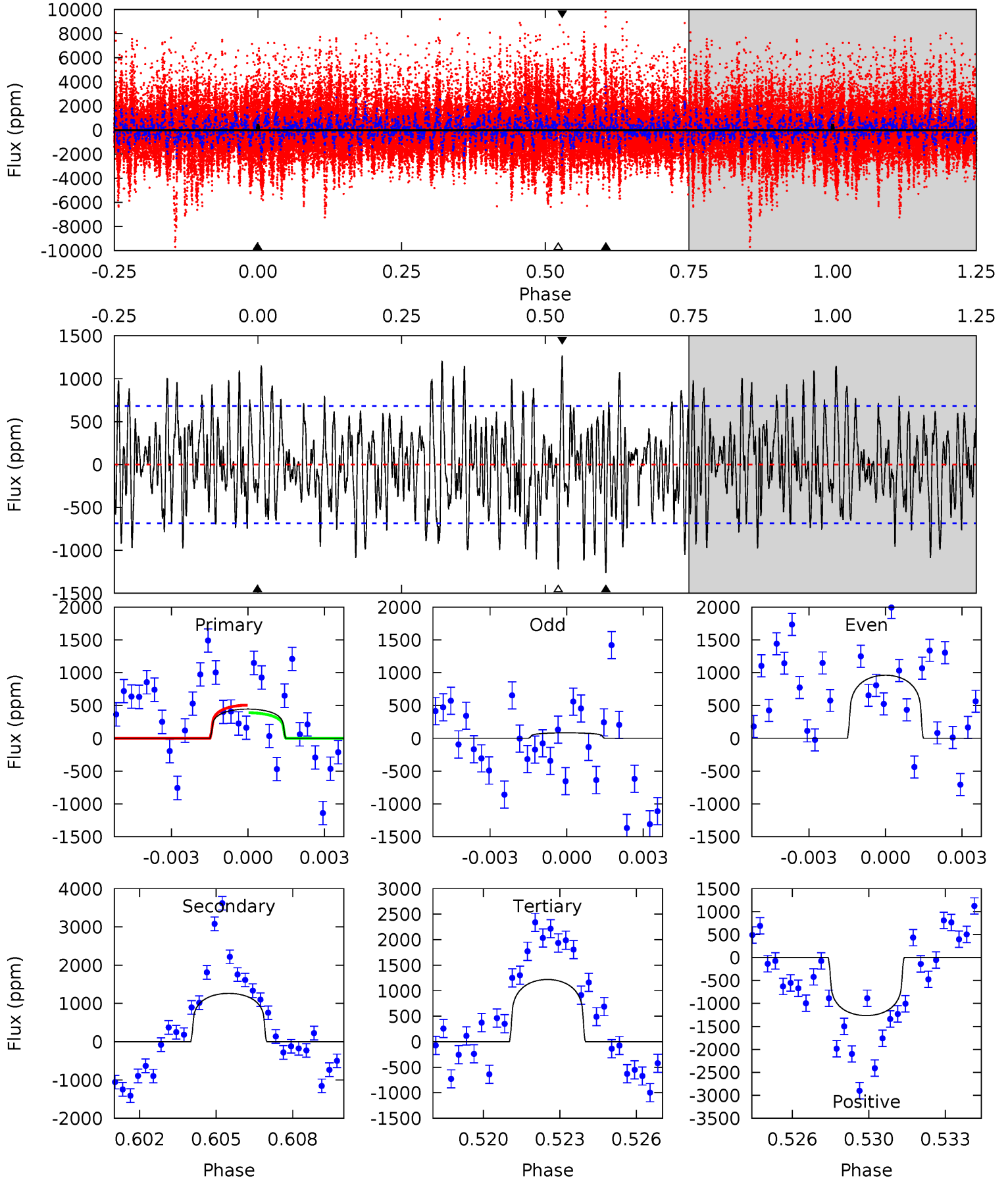
TCE 007509281-08 P=282.953922 Days $T_0=295.947587$ (BKJD)



DV Model-Shift Uniqueness Test

007509281-08, P = 282.560172 Days, E = 14.043799 Days

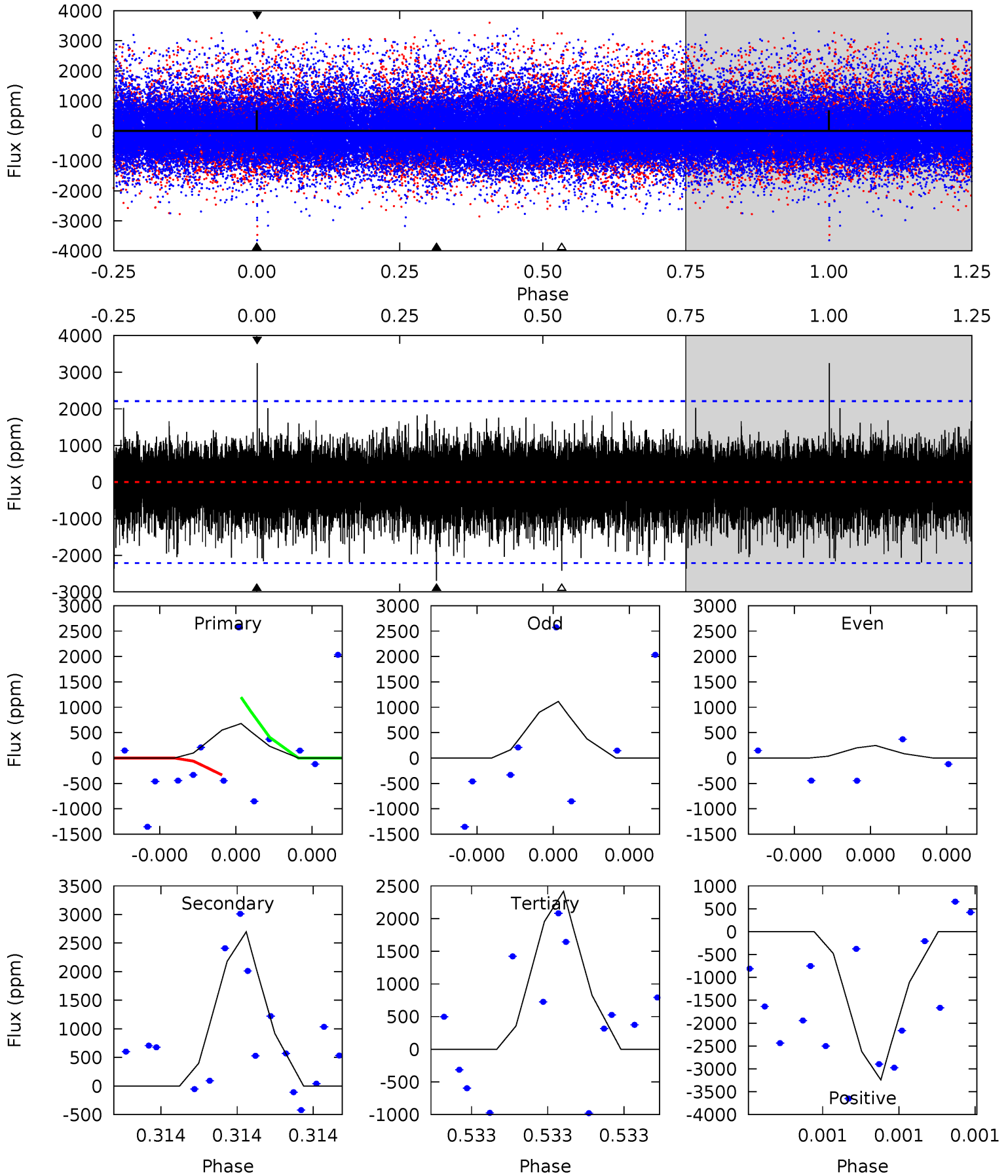
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.42	9.69	9.35	9.70	5.24	2.94	3.32	-5.94	-6.28	0.33	-0.01	3.17	0.29	0.50	0.45



Alt Model-Shift Uniqueness Test

007509281-08, P = 282.953922 Days, E = 12.993665 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.79	7.11	6.37	8.54	5.82	3.86	1.30	-4.58	-6.75	0.74	-1.44	0.97	-1.49	0.55	1.15



Stellar Parameters For KIC 007509281

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3514^{+56}_{-63}	$4.907^{+0.040}_{-0.044}$	$-0.100^{+0.100}_{-0.100}$	$0.358^{+0.039}_{-0.039}$	$0.380^{+0.040}_{-0.054}$	$11.650^{+2.693}_{-2.189}$
	+2%/-2%	+1%/-1%	+100%/-100%	+11%/-11%	+11%/-14%	+23%/-19%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 007509281-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1263 ± 130	$1.37^{+0.52}_{-0.51}$	166^{+4}_{-4}	3526^{+659}_{-343}	$135515^{+219633}_{-65808}$
Alt.	-2698 ± 380	$0.36^{+0.38}_{-0.24}$	166^{+4}_{-4}	7340^{+9901}_{-2293}	$4371049^{+33847665}_{-3379079}$

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

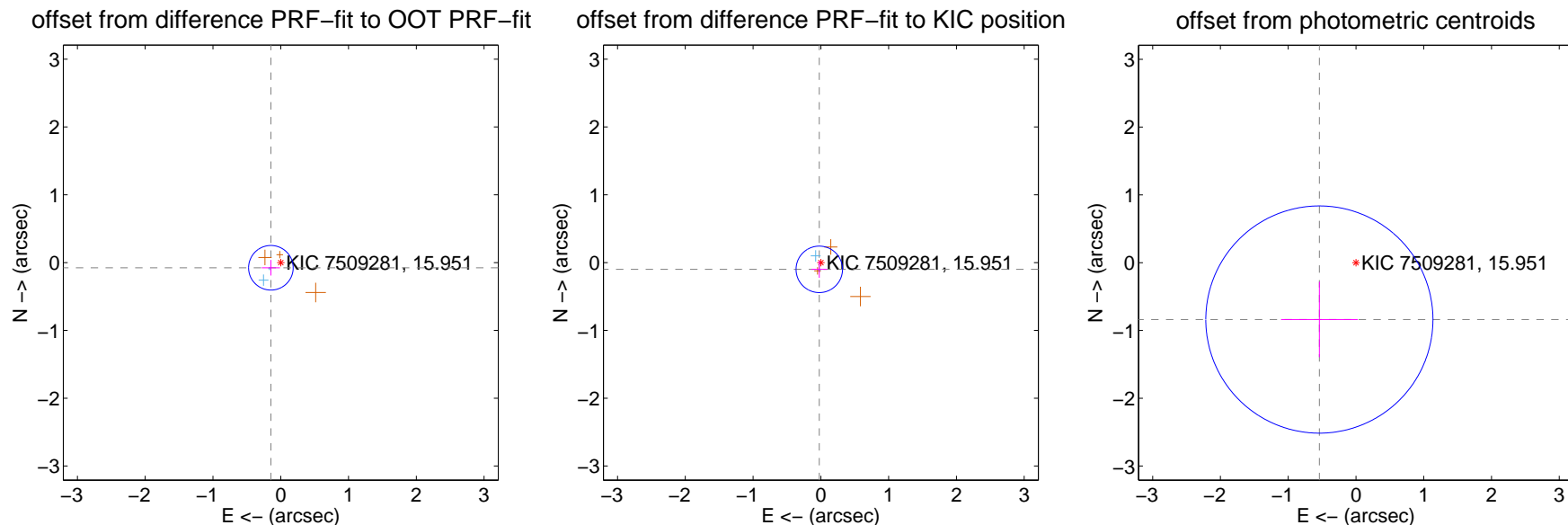
DV Centroid Data

Supplemental centroid analysis for 007509281-08. Kepler magnitude: 15.95. Transit SNR 4.37

There are 2 quarters with good PRF difference image offsets

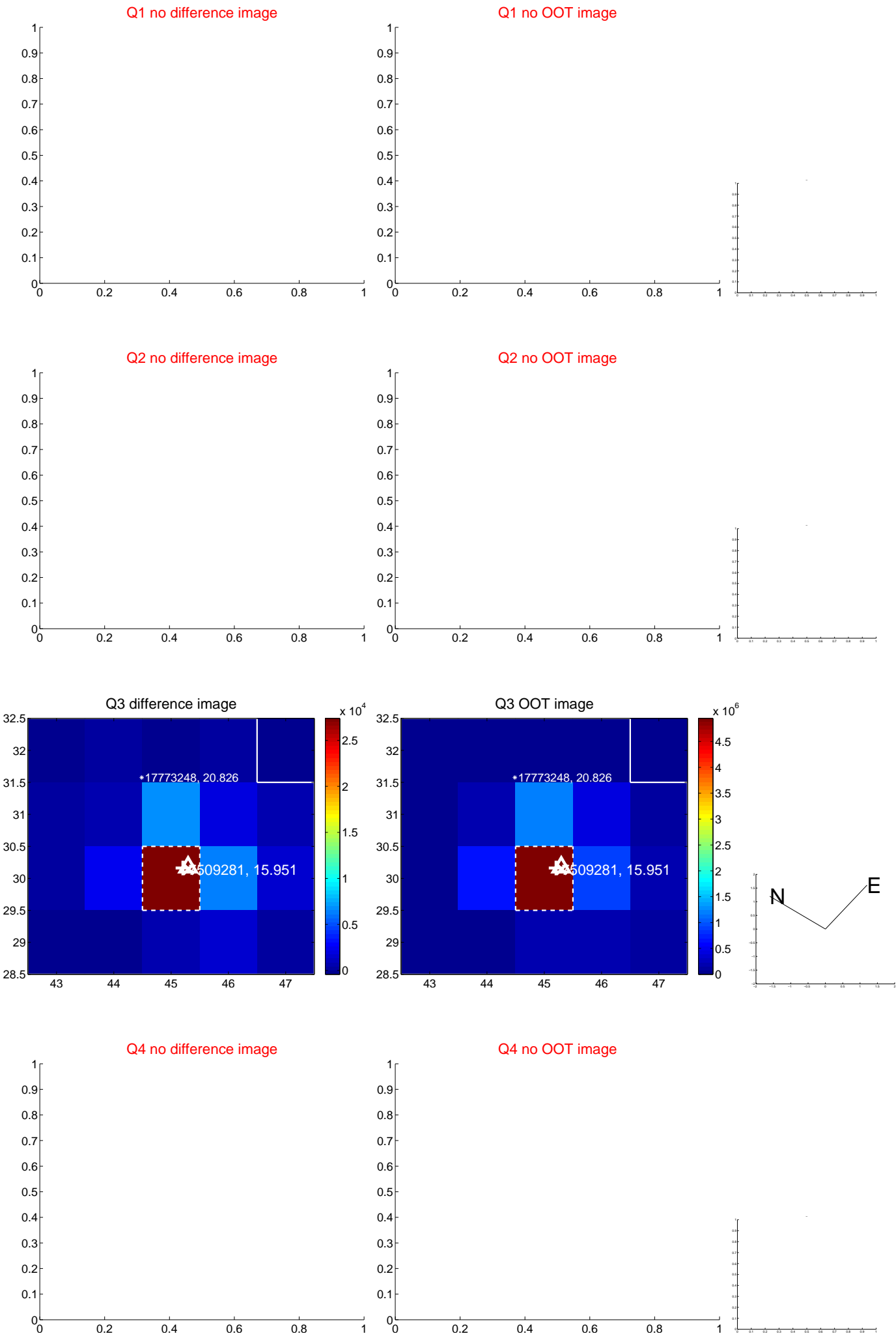
The direct PRF centroid is offset from the target star catalog position by about 0.41 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.164 ± 0.110	1.50	0.145 ± 0.135	-0.076 ± 0.114
PRF-fit source offset from KIC position	0.102 ± 0.114	0.90	0.023 ± 0.115	-0.100 ± 0.125
photometric centroid source offset	1.00 ± 0.56	1.79	0.54 ± 0.57	-0.84 ± 0.56

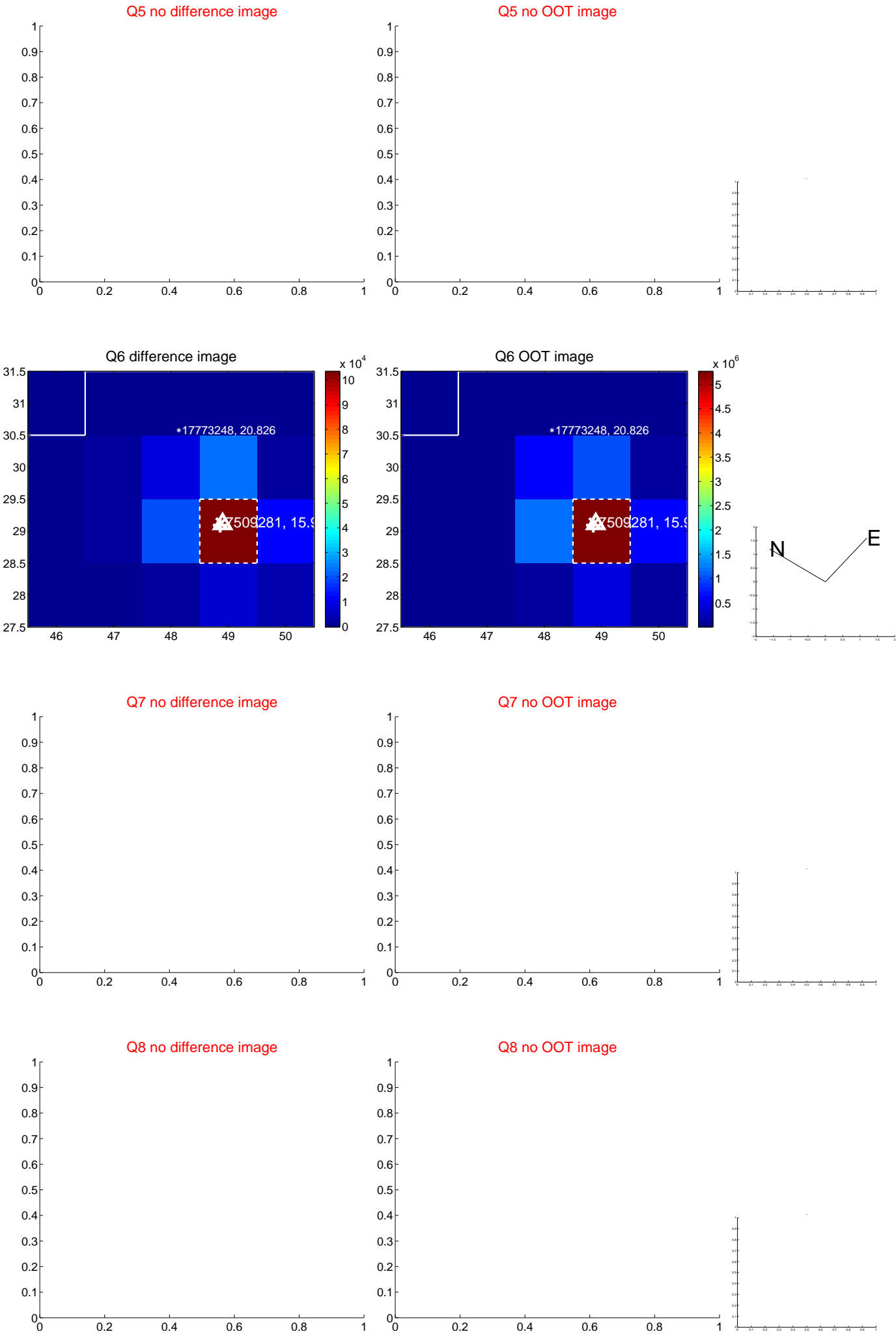


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

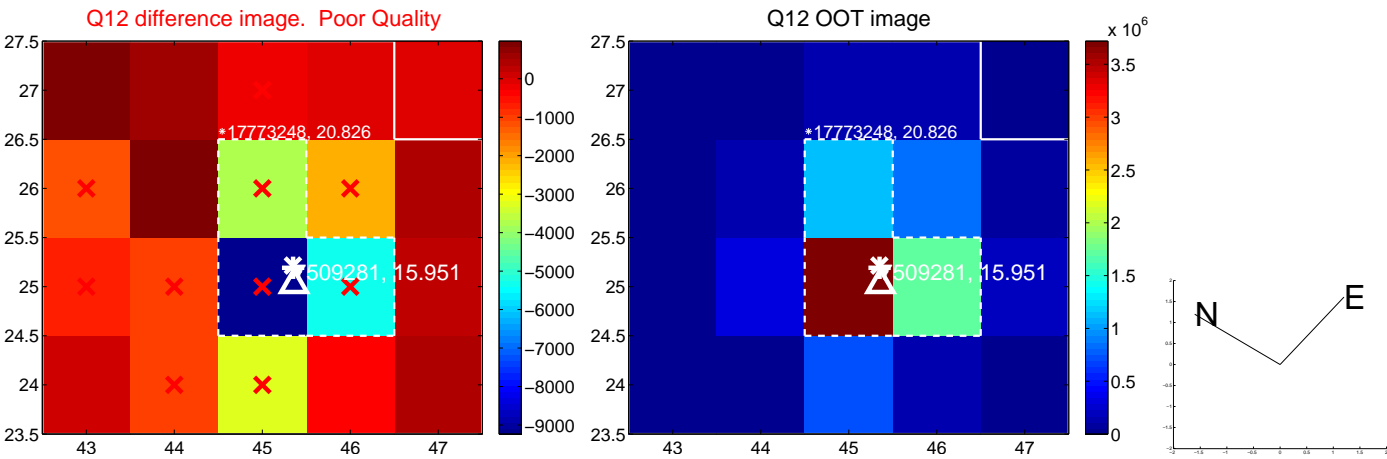
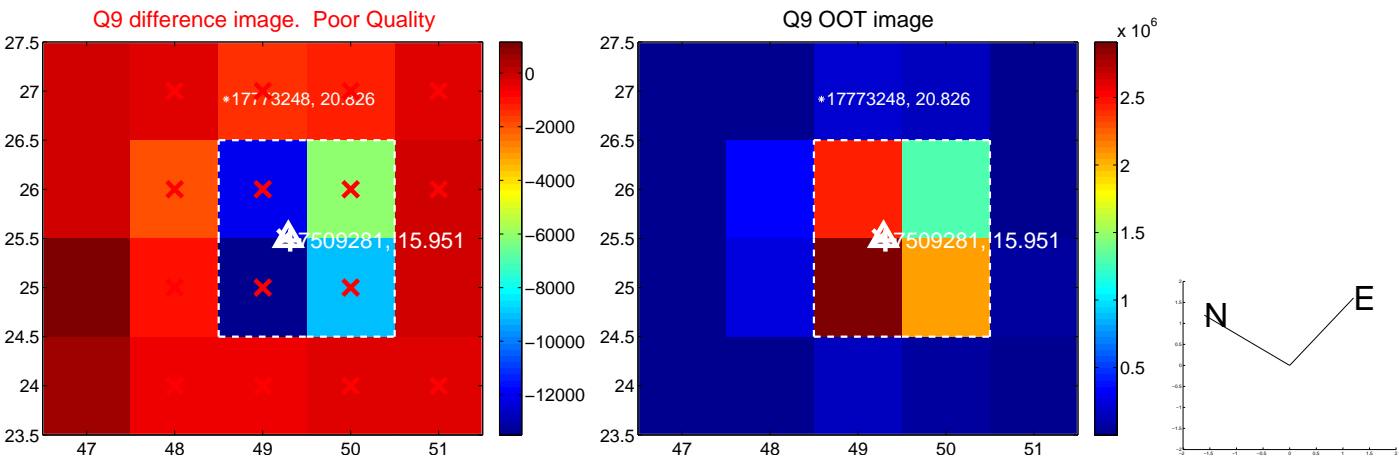
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



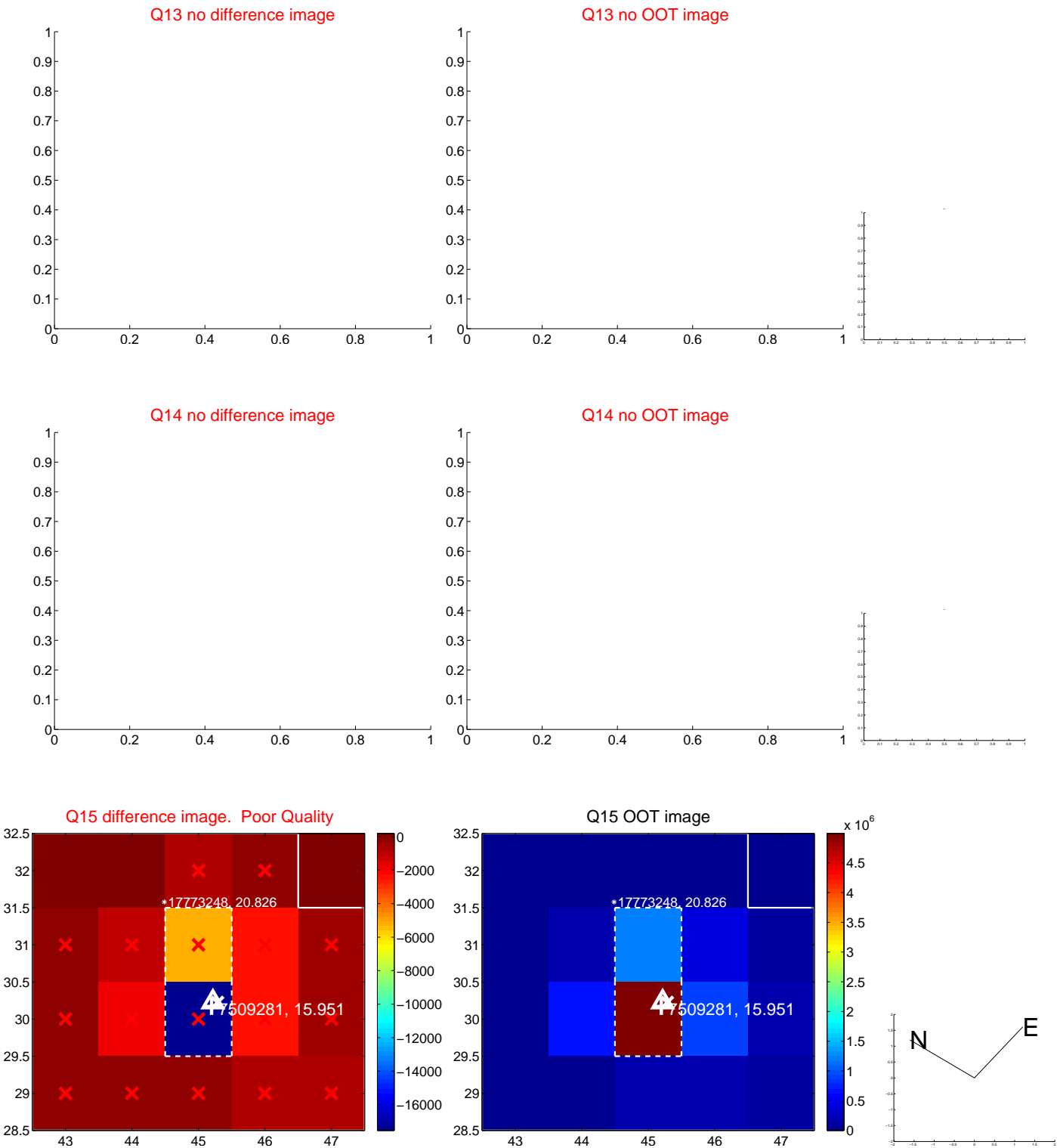
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



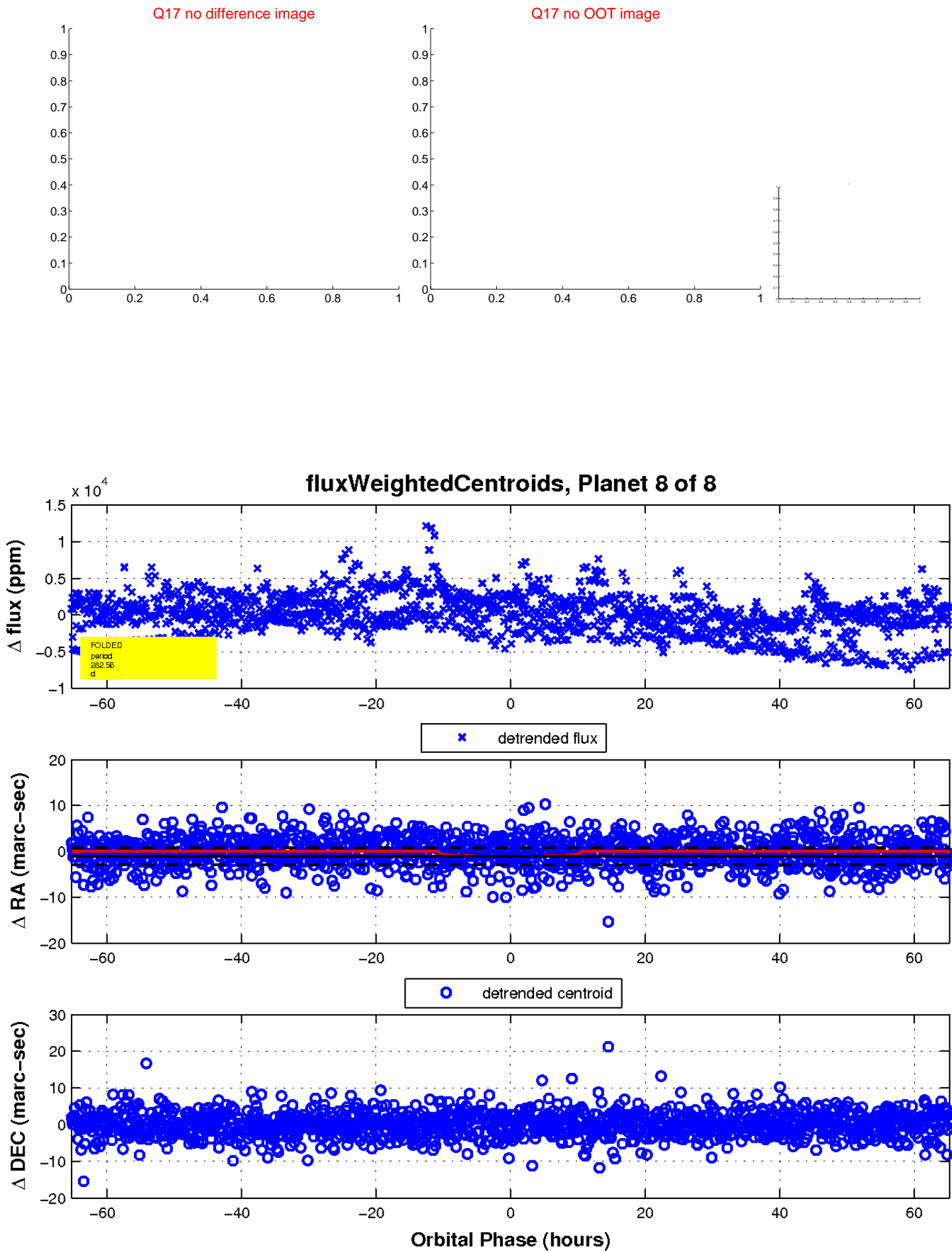
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

