

KIC 005641490

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})
005641490-01	OBS	No	1.029114	132.477442	5.8	5.732	7.9	9.6	2.82	8853	0.72	70566.51
005641490-02	OBS	No	325.254537	373.996493	72.1	51.827	12.4	6.6	2.82	8853	2.72	32.78

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005641490-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED
005641490-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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

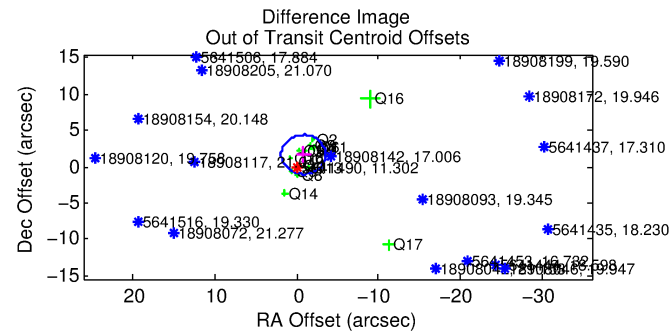
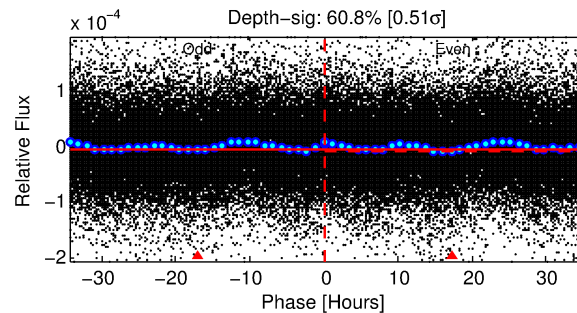
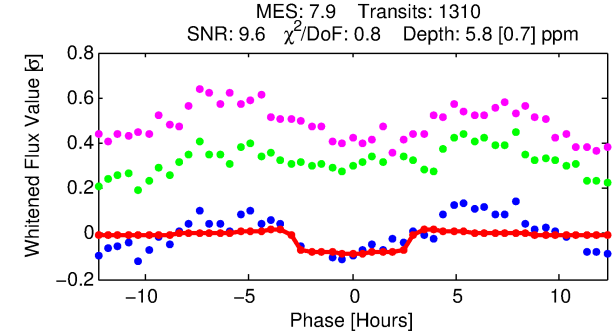
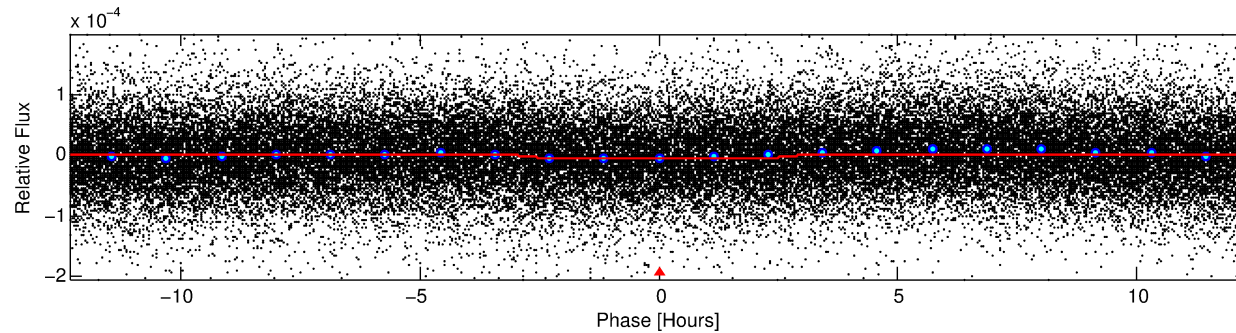
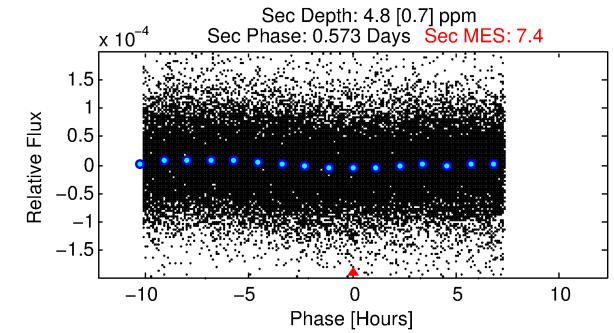
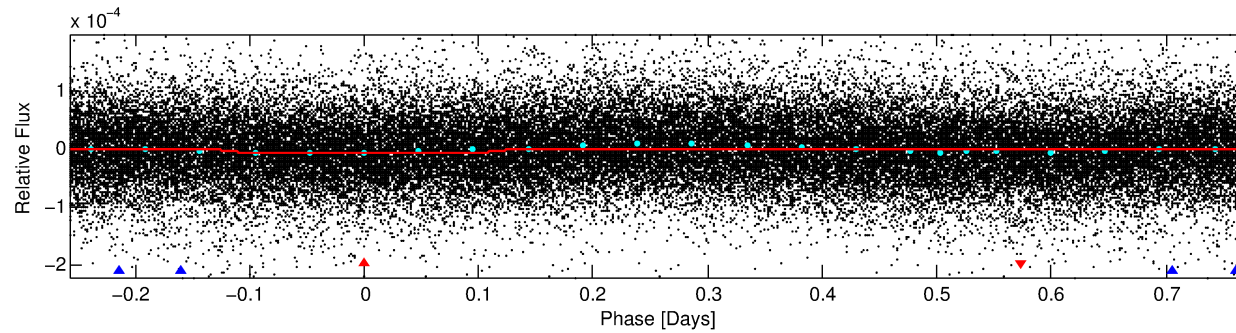
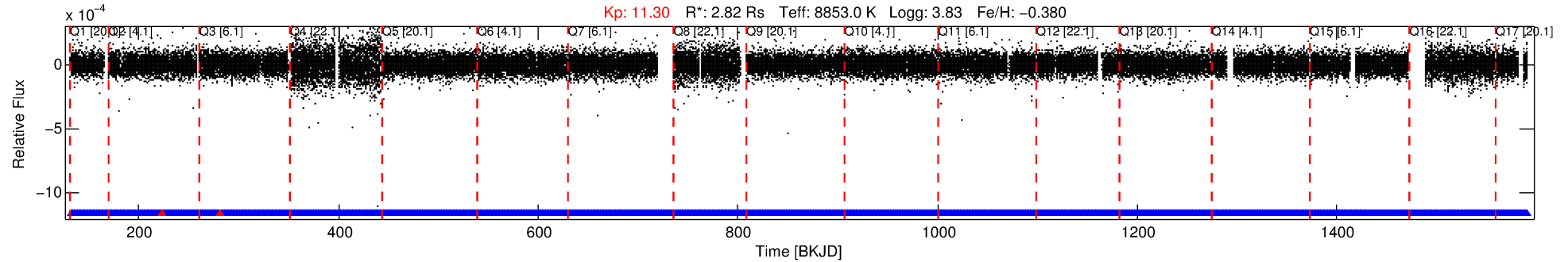
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005641490-01

No Significant Match Found

DV One-Page Summary

KIC: 5641490 Candidate: 1 of 2 Period: 1.029 d



DV Fit Results:

Period = 1.02911 [0.00001] d
Epoch = 132.4774 [0.0050] BKJD
Rp/R* = 0.0023 [0.0003]
a/R* = 1.34 [0.52]
b = 0.62 [0.90]
Seff = 70566.51 [28232.39]
Teq = 4156 [416] K
Rp = 0.72 [0.22] Re
a = 0.0249 [0.0062] AU
Ag = 3.19 [1.66] [1.32σ]
Teffp = 8584 [726] K [5.29σ]

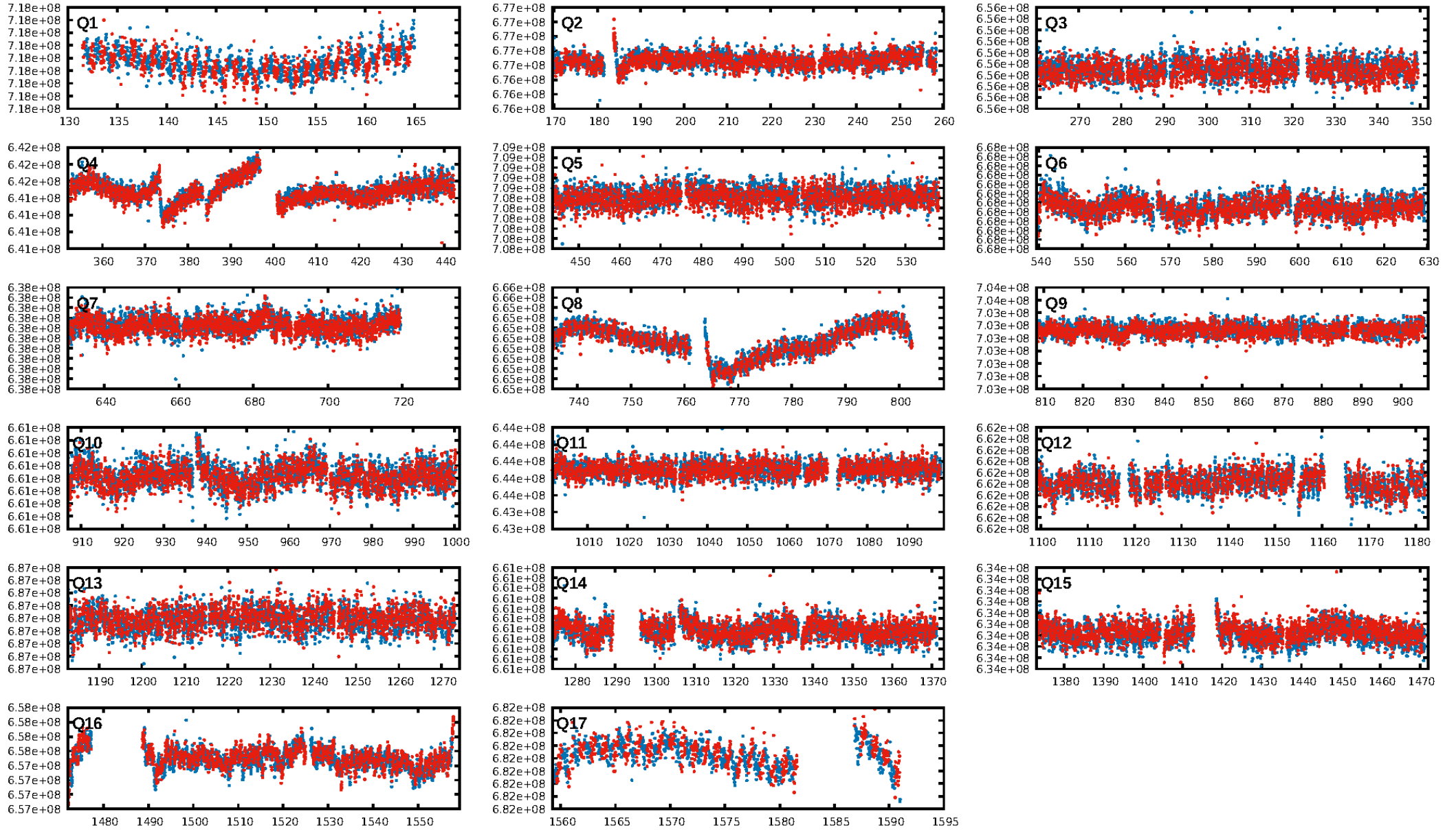
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [149.23σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.52e-11
RollingBand-fgt: 1.00 [1249/1251]
GhostDiagnostic-chr: 2.02
Centroid-sig: 0.2%
Centroid-so: 3.291 arcsec [2.82σ]
OotOffset-rm: 1.865 arcsec [2.06σ]
KicOffset-rm: 2.117 arcsec [2.37σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.56 [9/16]
DiffImageOverlap-fno: 1.00 [17/17]

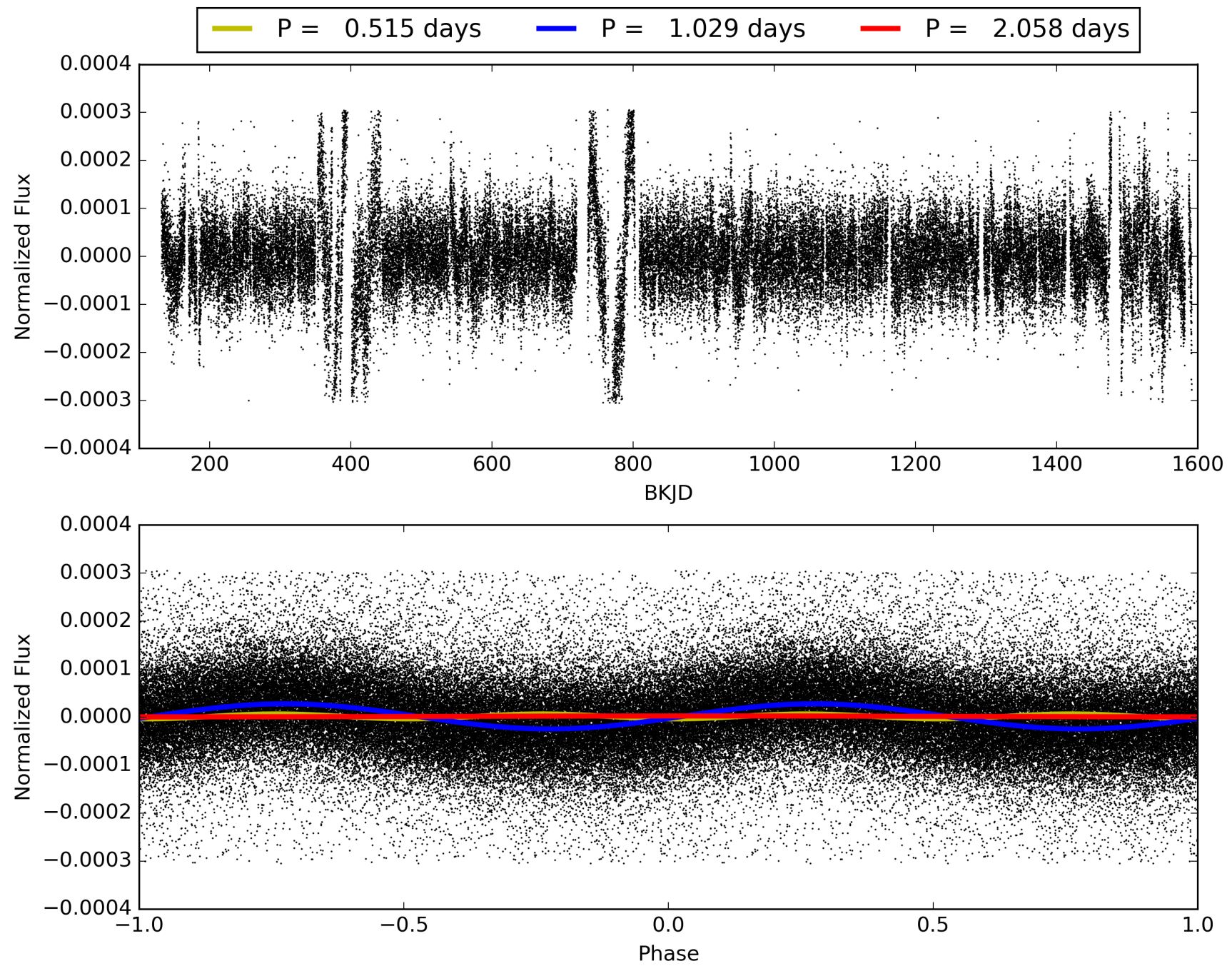
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:20:37 Z

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

TCE 005641490-01, PDC Light Curves

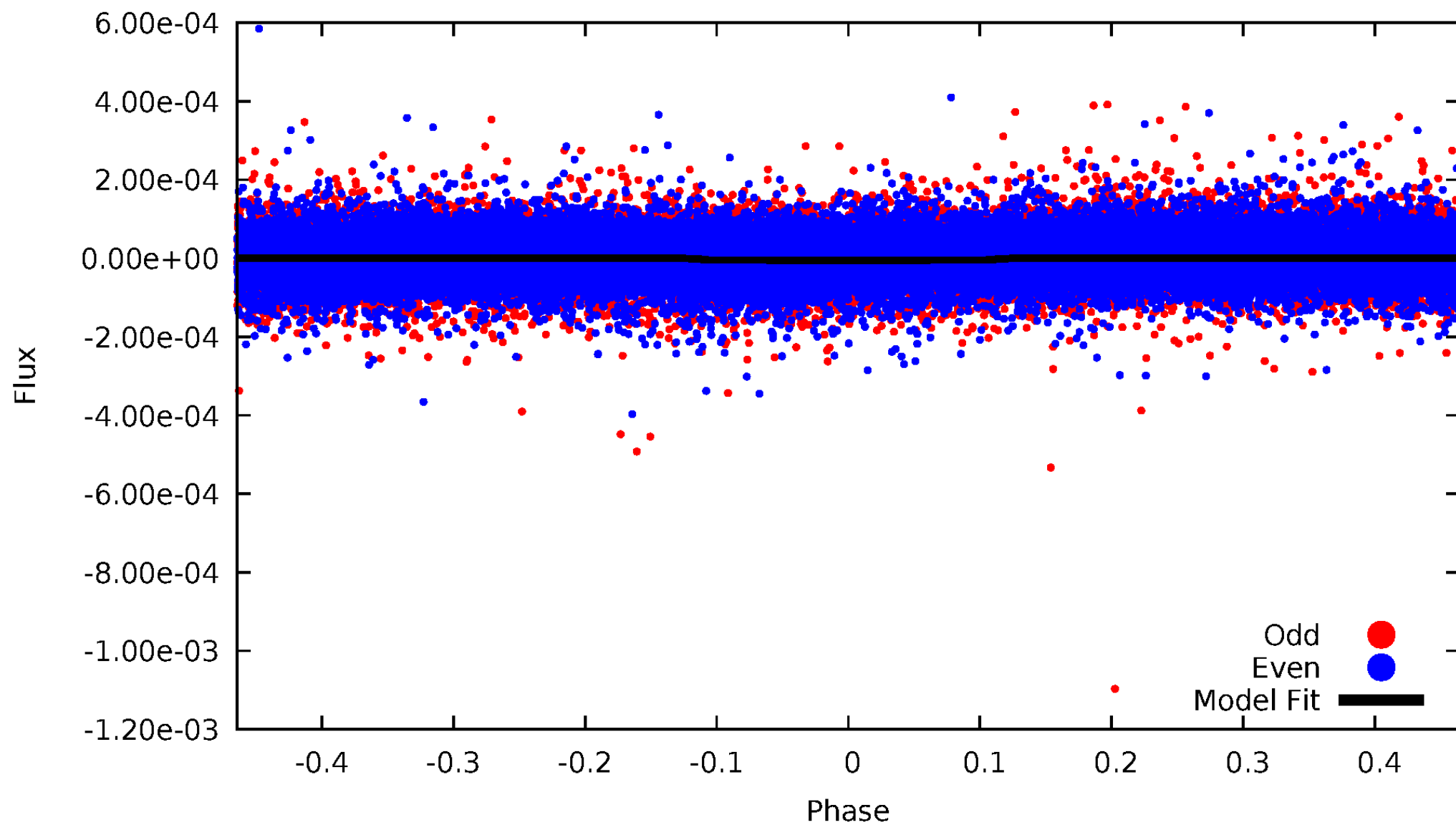


TCE 005641490-01



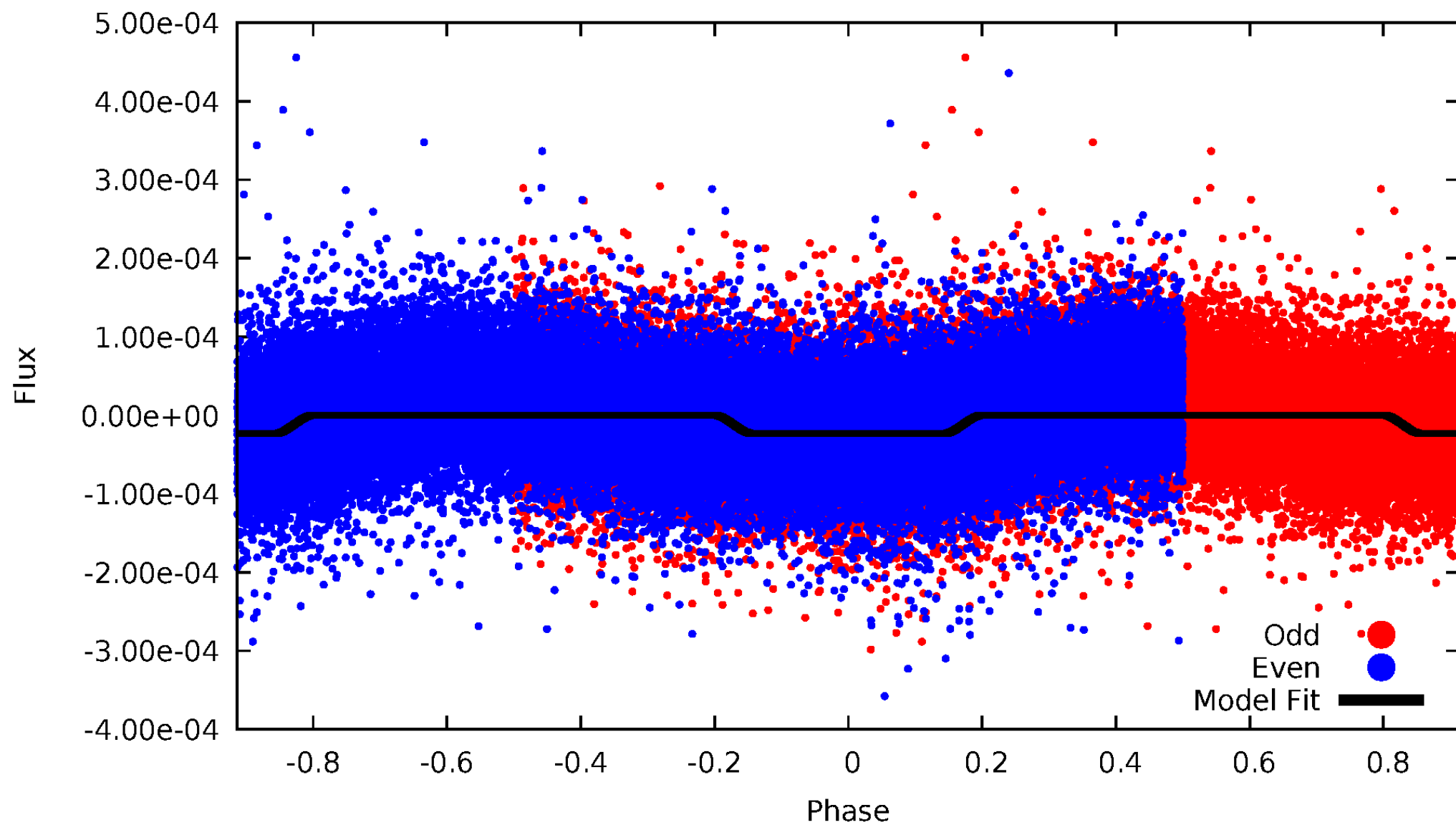
DV Odd/Even

TCE 005641490-01



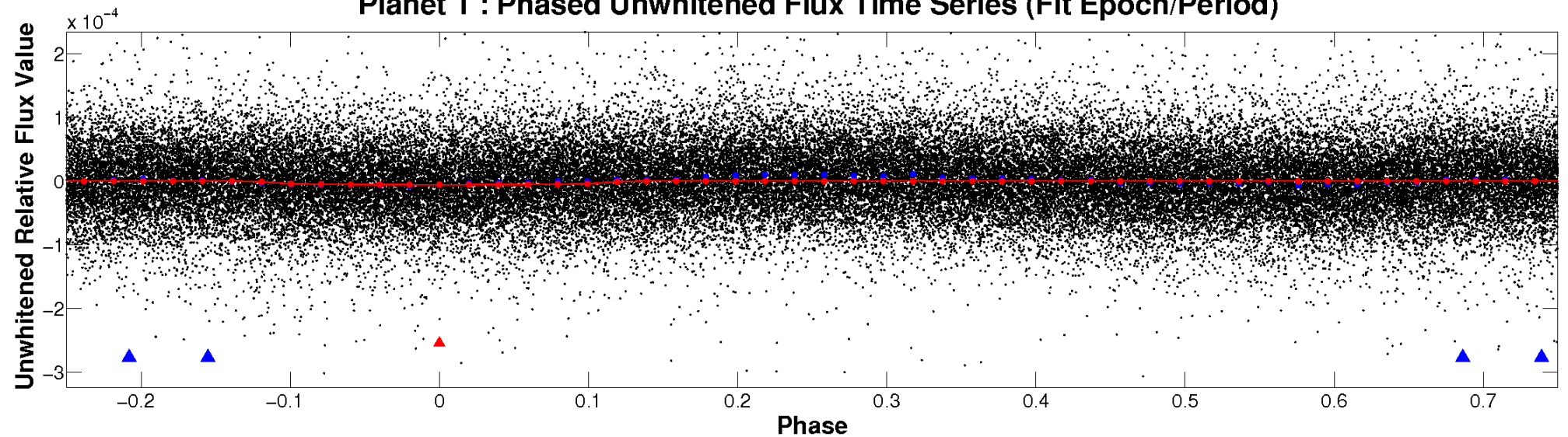
ALT Odd/Even

TCE 005641490-01

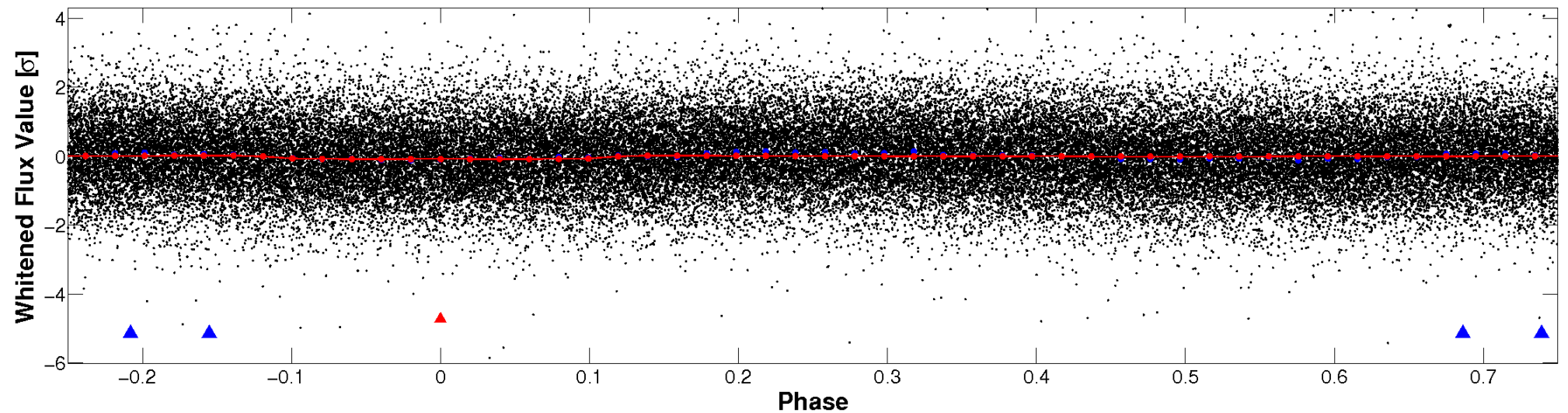


Non-Whitened Vs. Whitened Light Curve

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

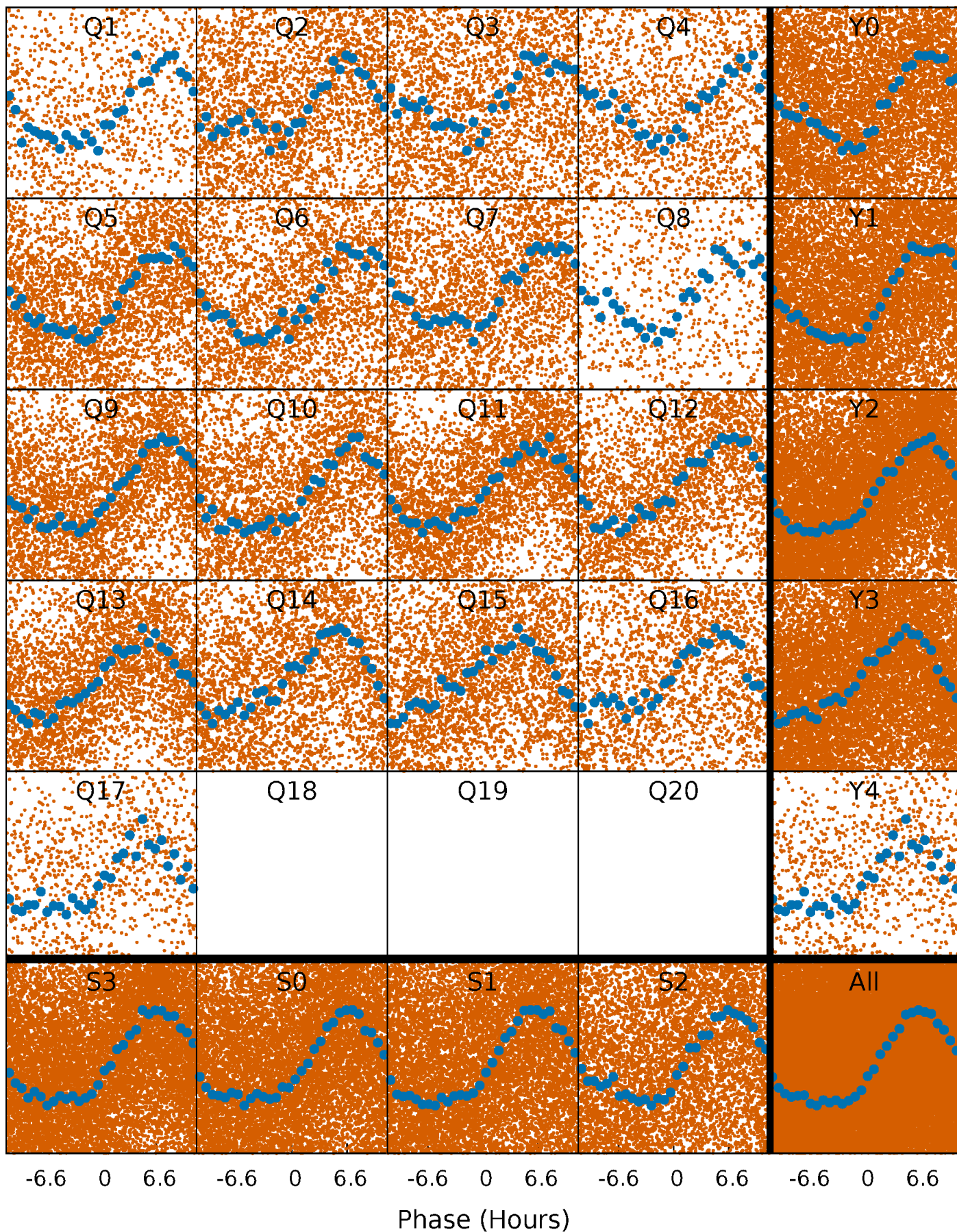


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



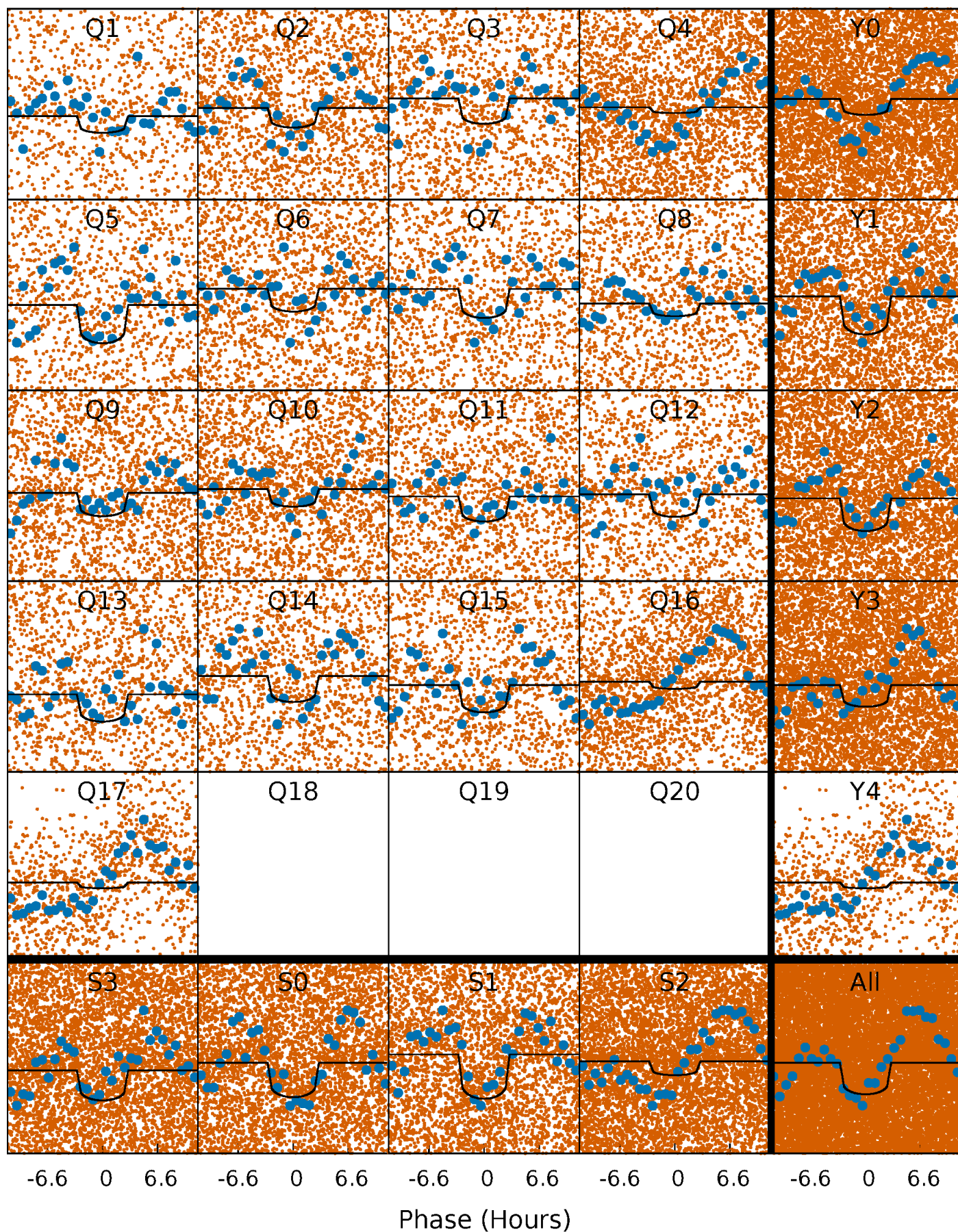
PDC Quarter-Phased Transit Curves

TCE 005641490-01 P= 1.029114 Days $T_0=132.477442$ (BKJD)



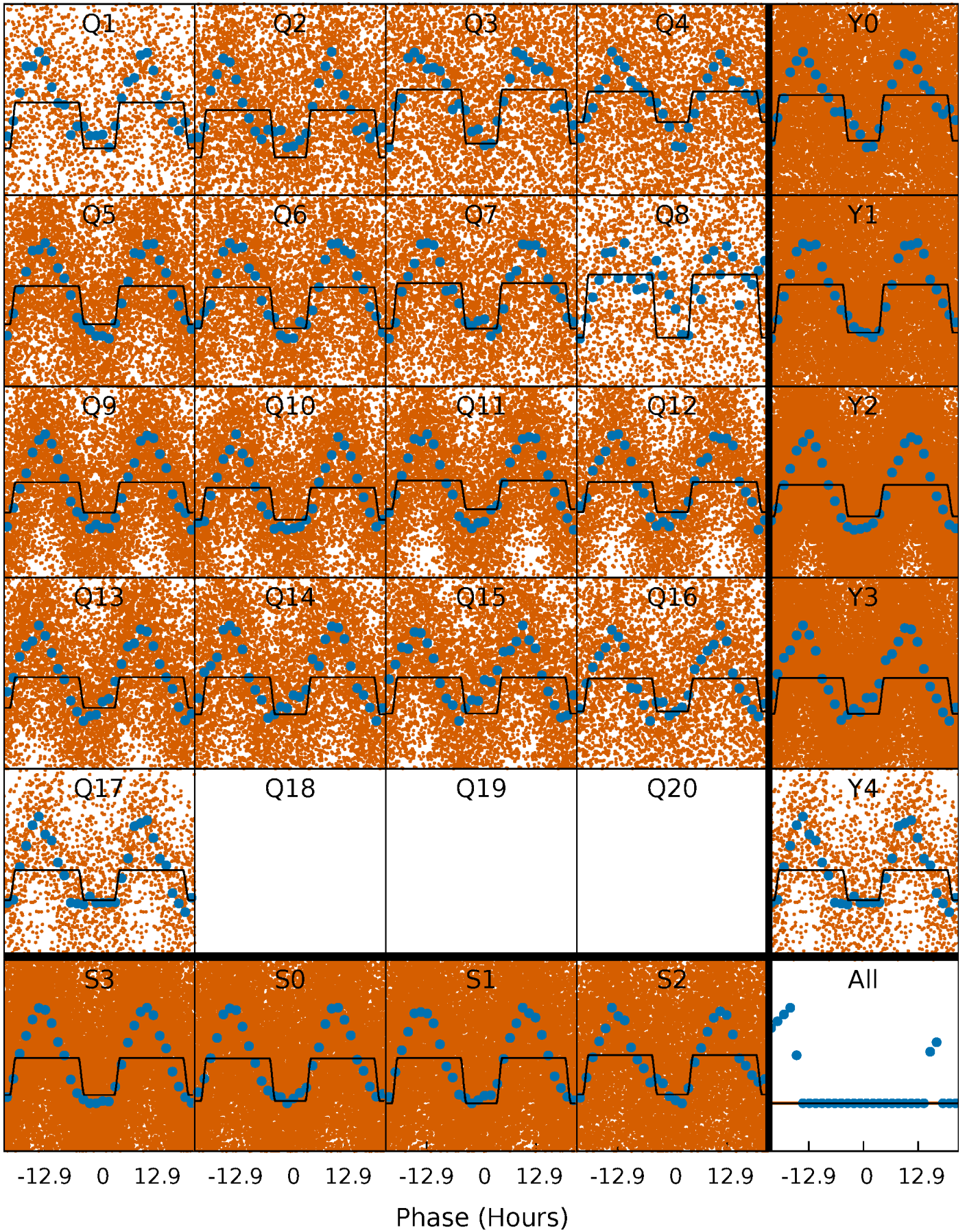
DV Quarter-Phased Transit Curves

TCE 005641490-01 P= 1.029114 Days $T_0=132.477442$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

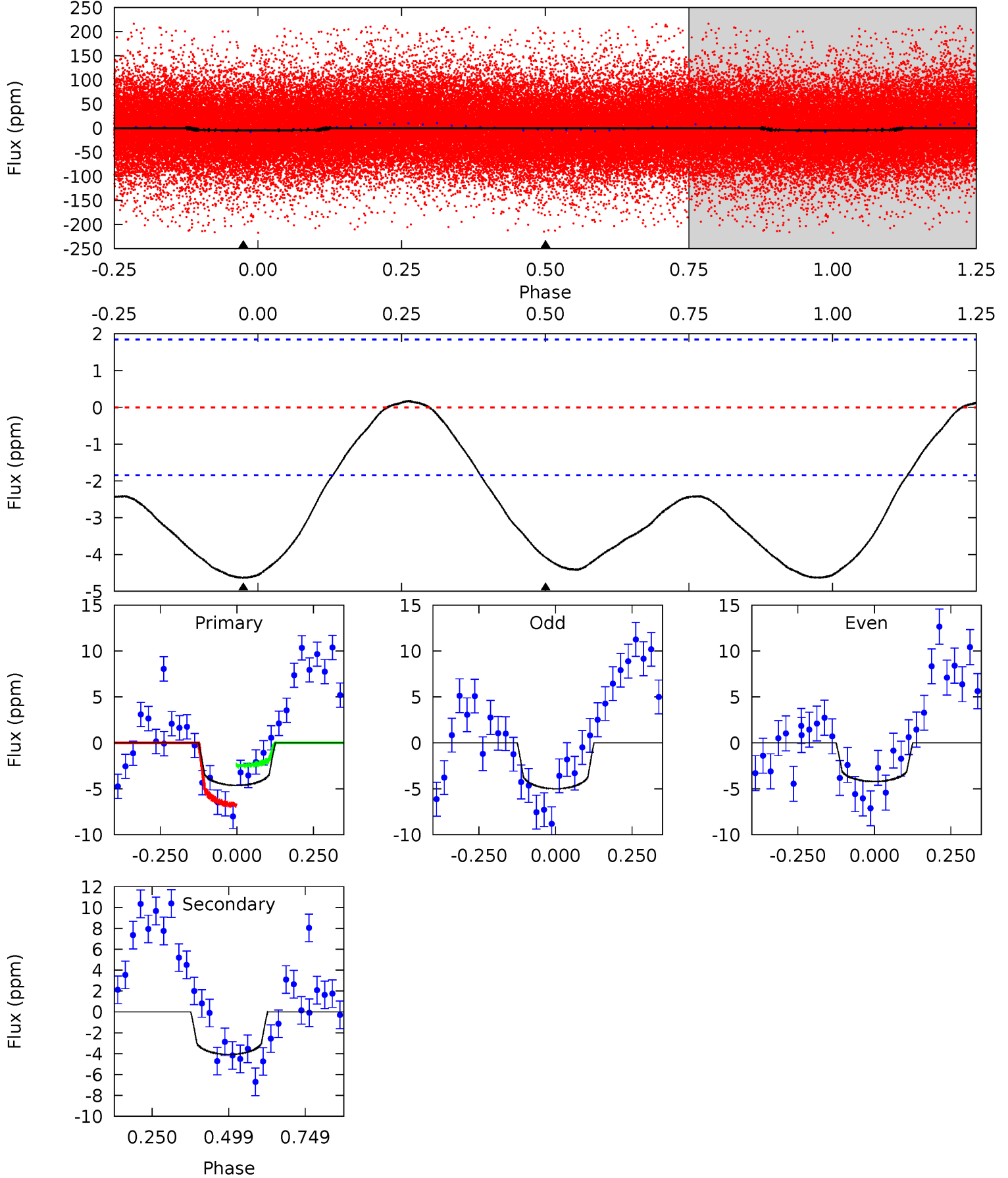
TCE 005641490-01 P= 1.029025 Days $T_0=132.369067$ (BKJD)



DV Model-Shift Uniqueness Test

005641490-01, P = 1.029114 Days, E = 131.448328 Days

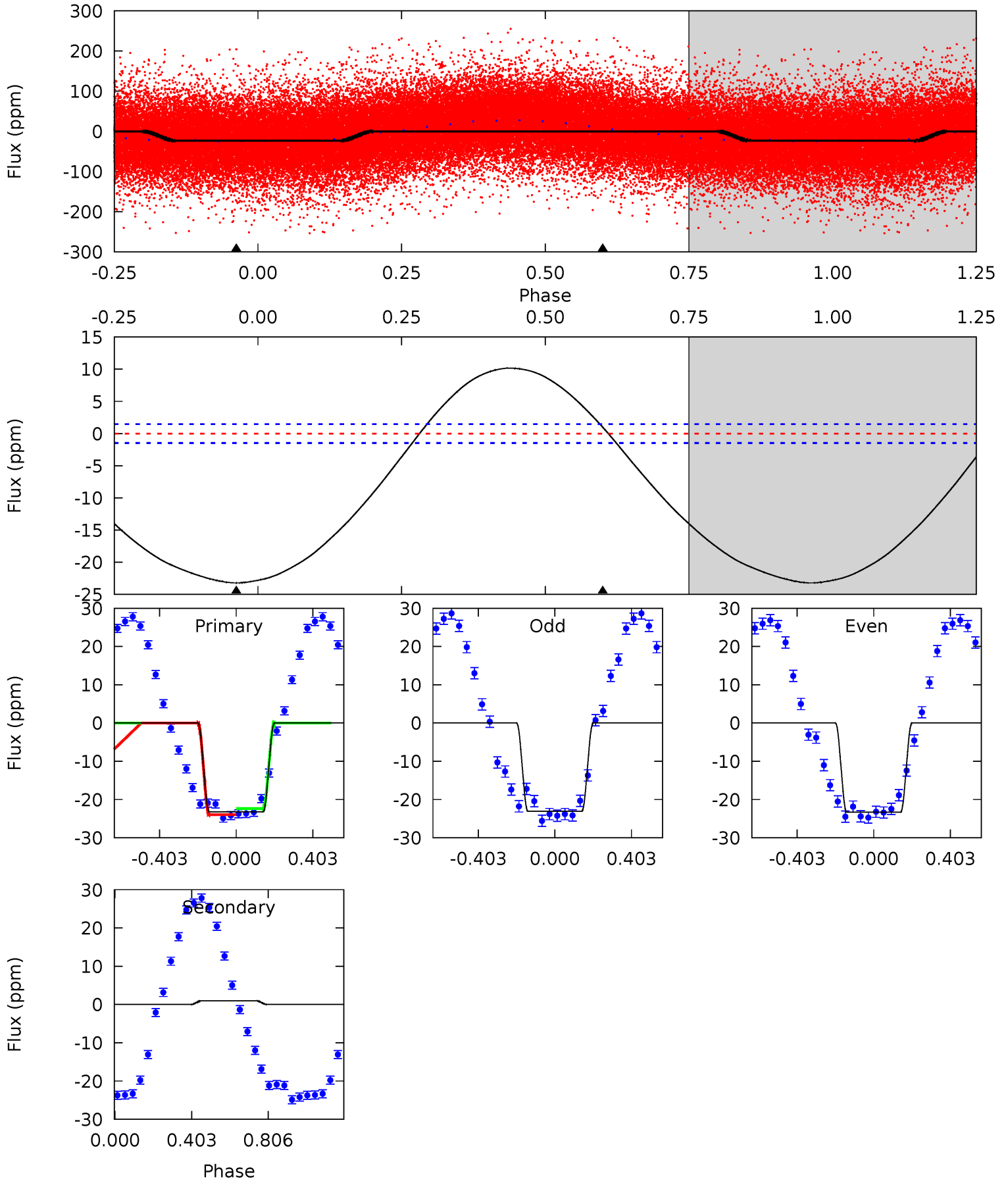
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	9.67	0	0	4.37	1.15	2.60	11.0	11.0	9.67	9.67	0.94	1.32	0.03	5.07



Alt Model-Shift Uniqueness Test

005641490-01, P = 1.029025 Days, E = 131.340042 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
67.3	-2.85	0	0	4.26	0.84	9.49	67.3	67.3	-2.85	-2.85	0.38	1.05	0.30	2.30



Stellar Parameters For KIC 005641490

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8853^{+70}_{-97}	$3.826^{+0.232}_{-0.058}$	$-0.380^{+0.150}_{-0.200}$	$2.818^{+0.374}_{-0.748}$	$1.941^{+0.168}_{-0.186}$	$0.122^{+0.165}_{-0.028}$
	+1%/-1%	+6%/-2%	+39%/-53%	+13%/-27%	+9%/-10%	+135%/-23%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 005641490-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-4 ± 0	$0.69^{+0.12}_{-0.13}$	5703^{+217}_{-379}	7799^{+920}_{-763}	$3.049^{+1.390}_{-0.960}$
Alt.	1 ± 0	$1.42^{+0.17}_{-0.20}$	5706^{+206}_{-393}	-5032^{+204}_{-178}	$-0.166^{+0.061}_{-0.087}$

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

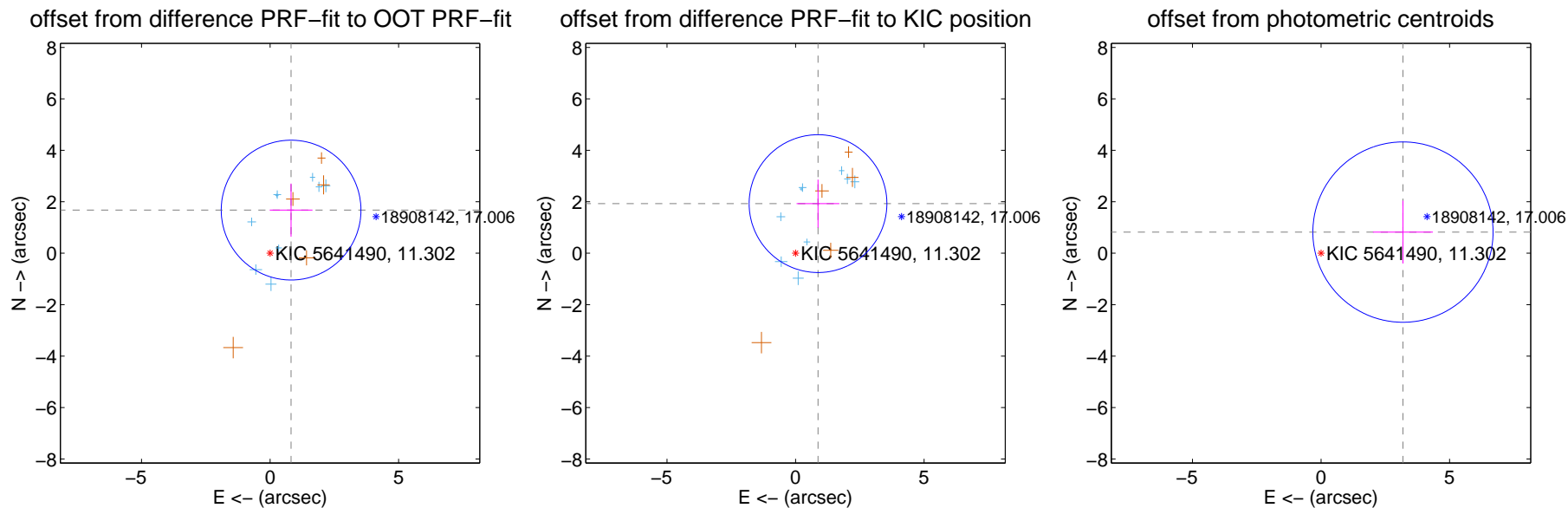
DV Centroid Data

Supplemental centroid analysis for 005641490-01. **Kepler magnitude: 11.30.** Transit SNR 9.59

There are 9 quarters with good PRF difference image offsets

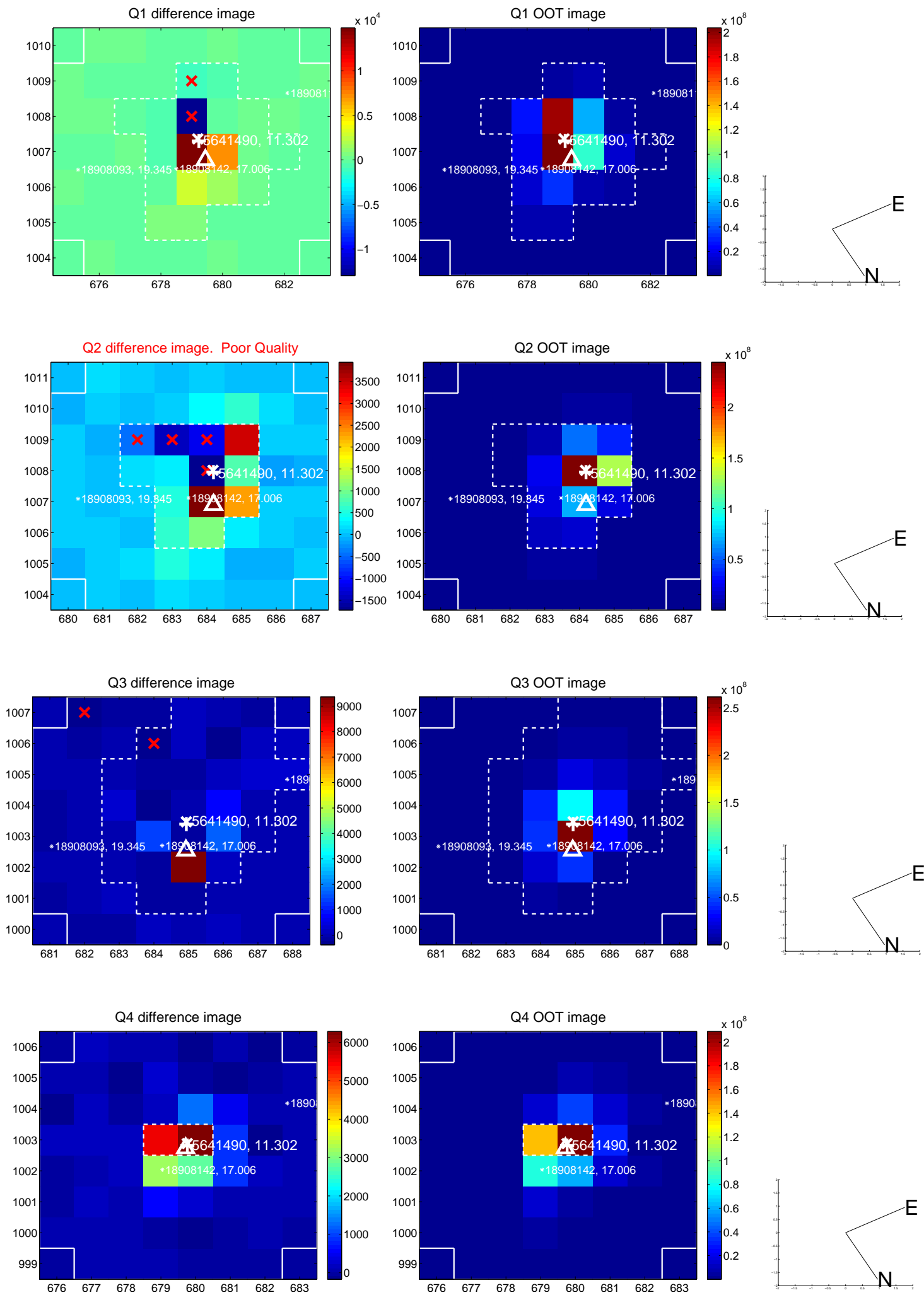
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.865 ± 0.906	2.06	-0.818 ± 0.832	1.677 ± 1.033
PRF-fit source offset from KIC position	2.117 ± 0.893	2.37	-0.873 ± 0.831	1.928 ± 0.934
photometric centroid source offset	3.29 ± 1.17	2.82	-3.19 ± 1.16	0.82 ± 1.22

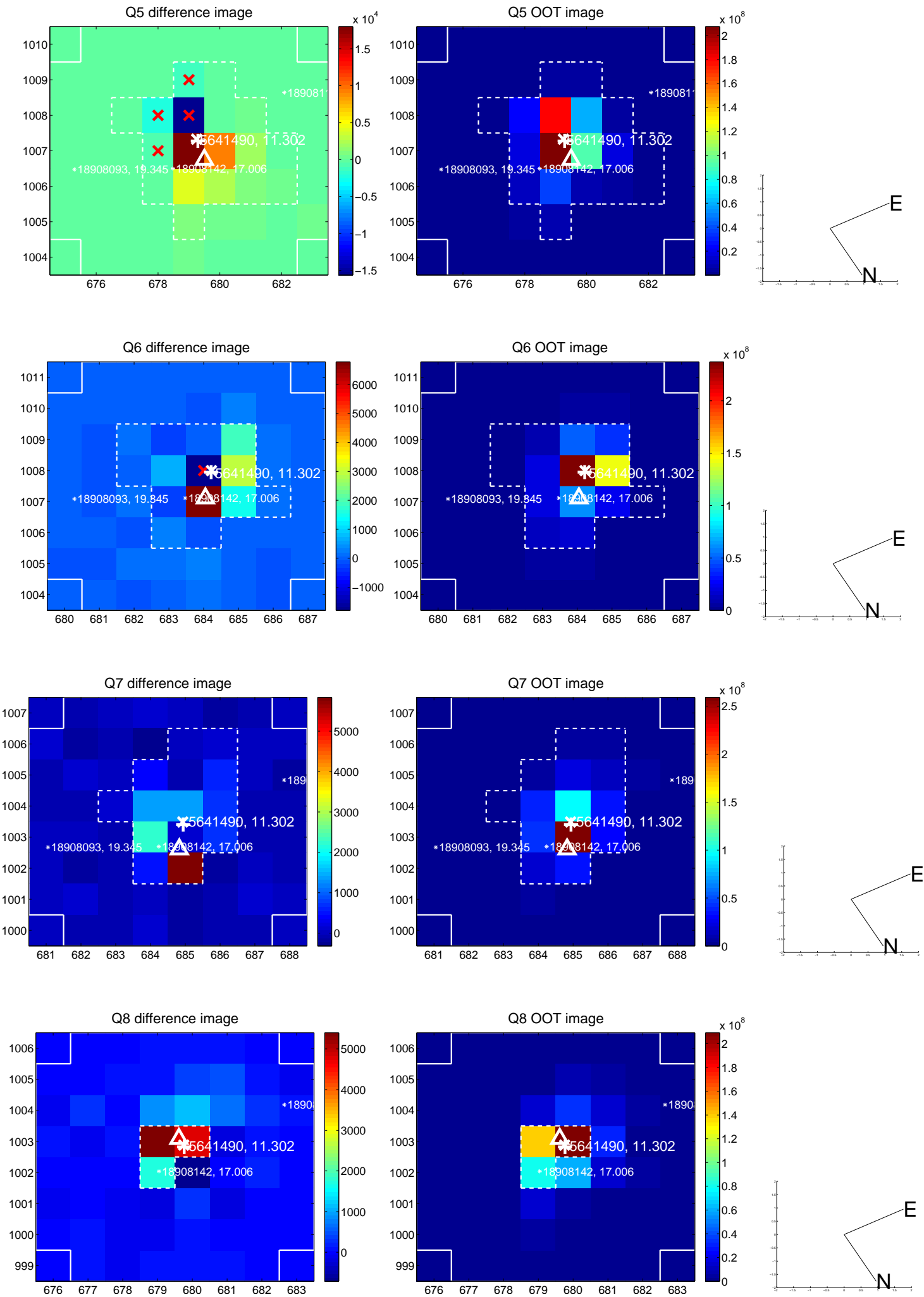


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

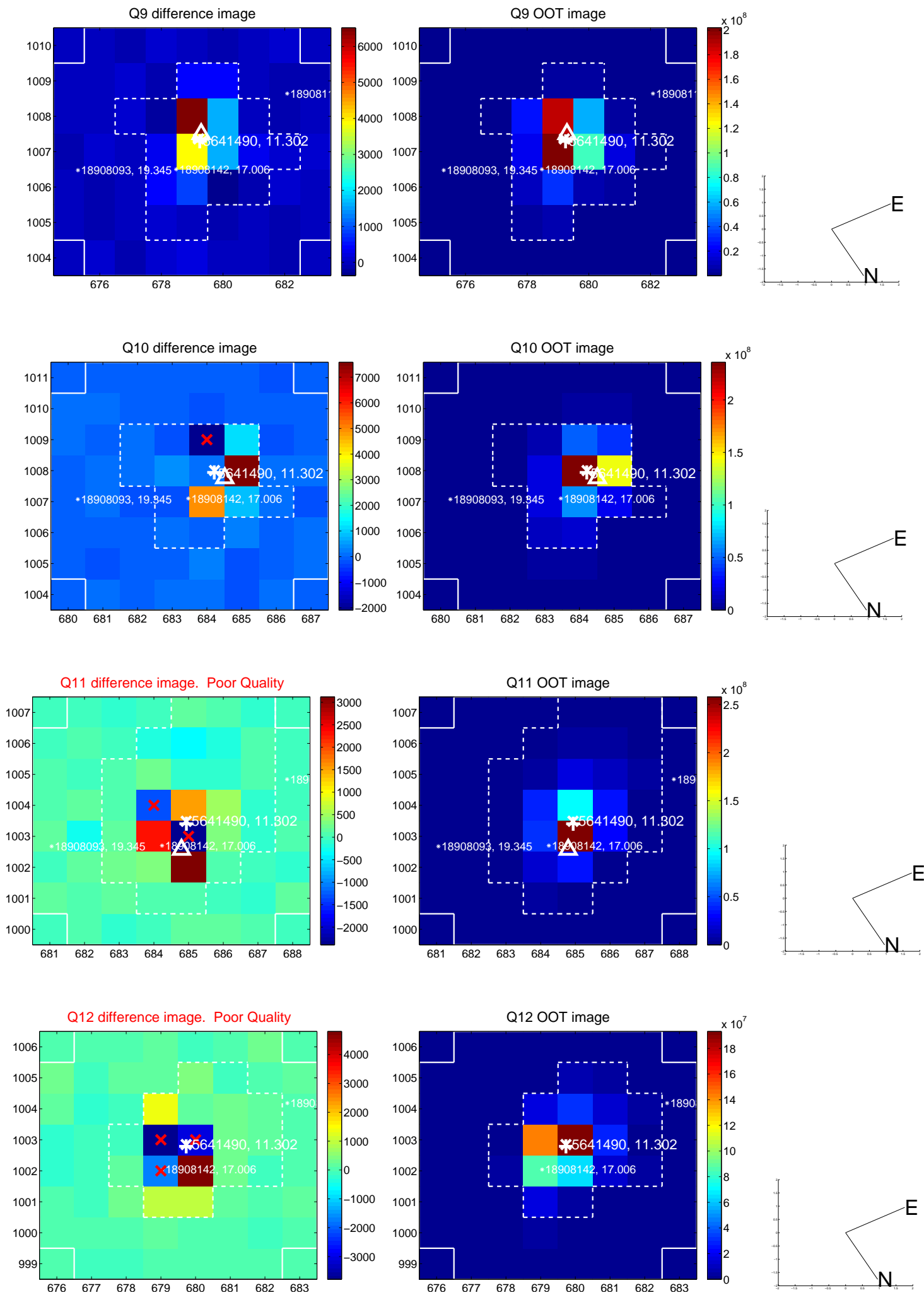
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



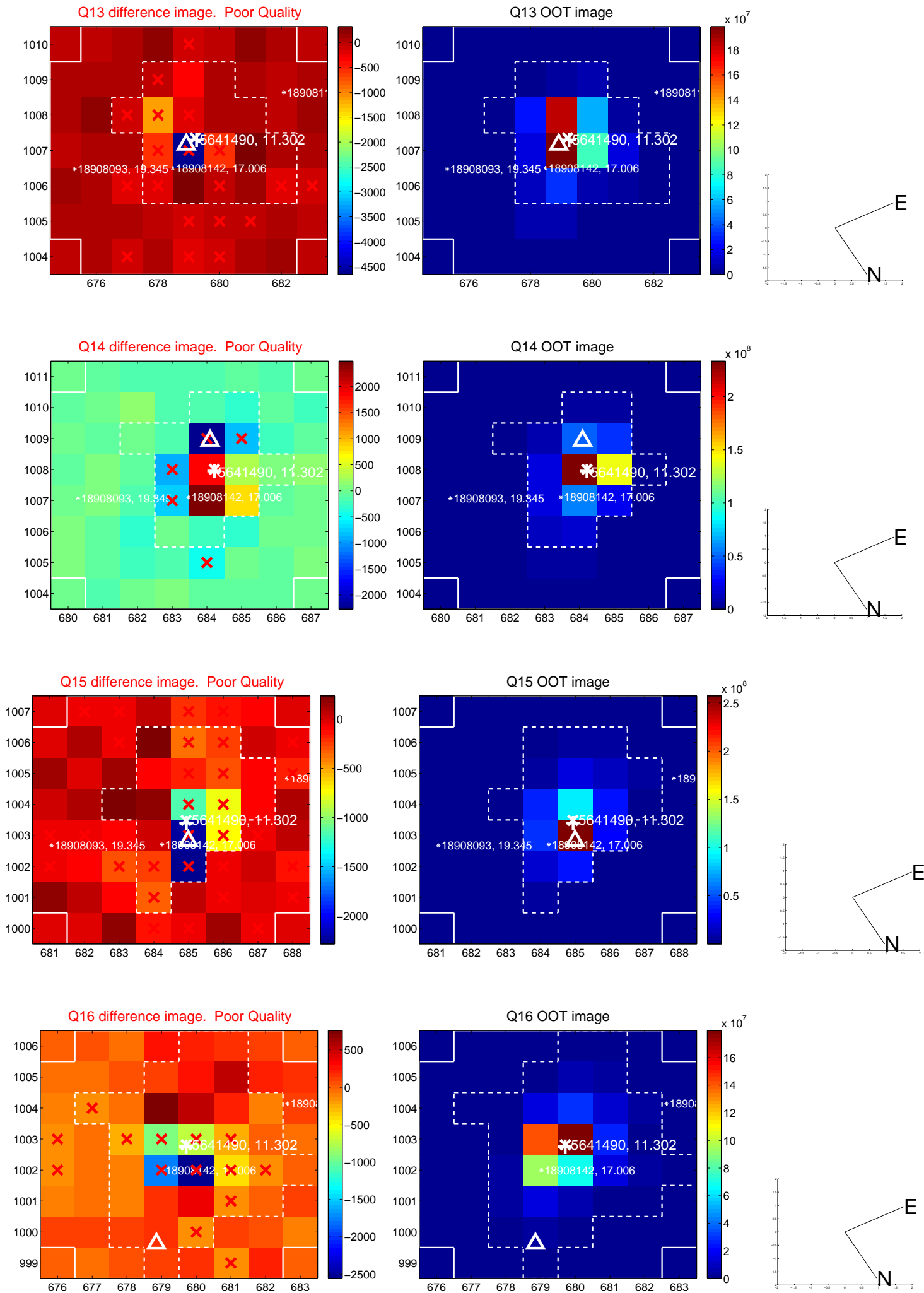
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



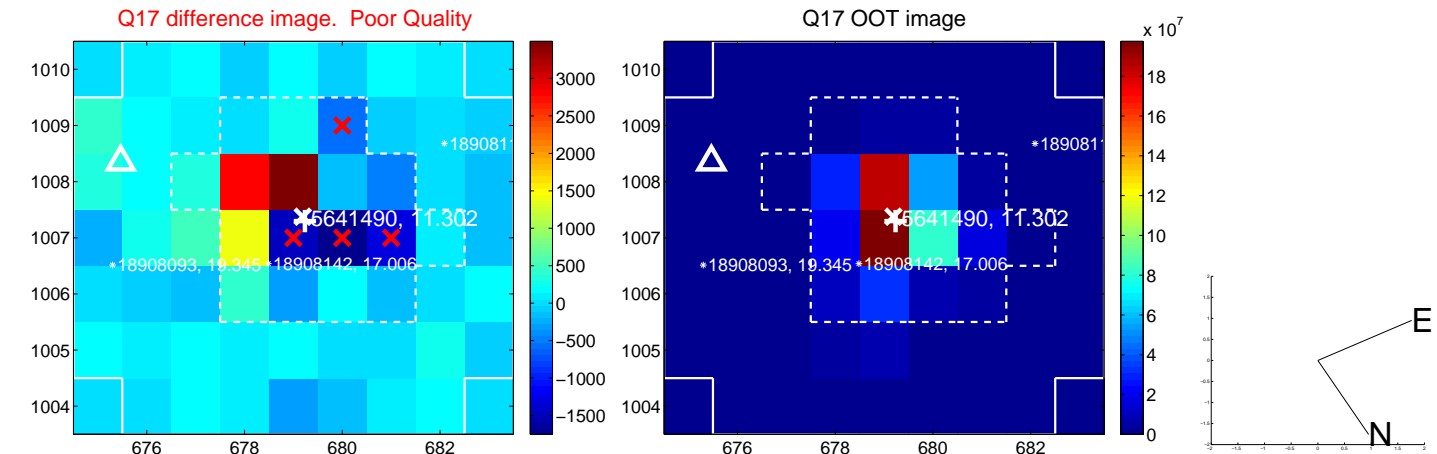
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



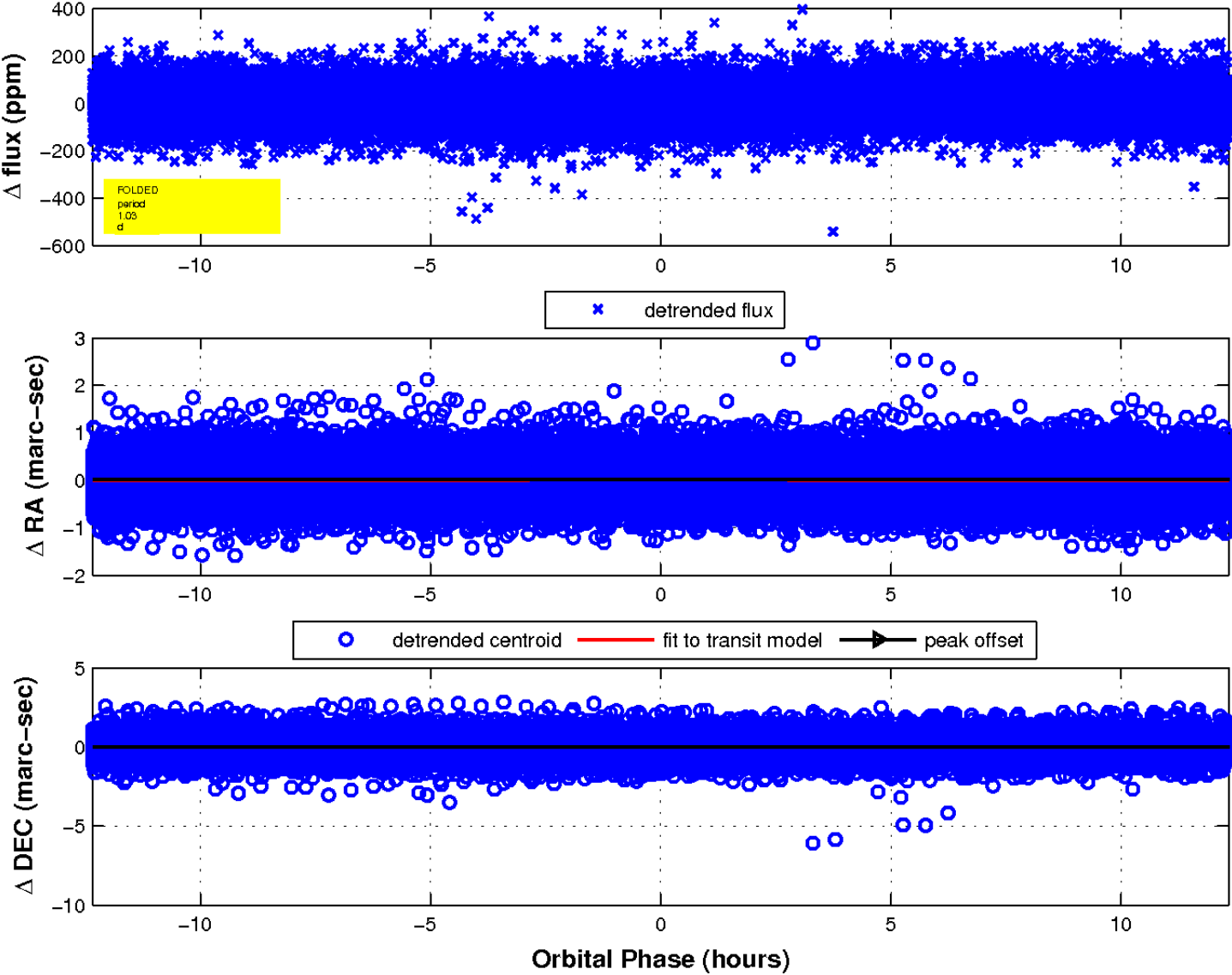
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

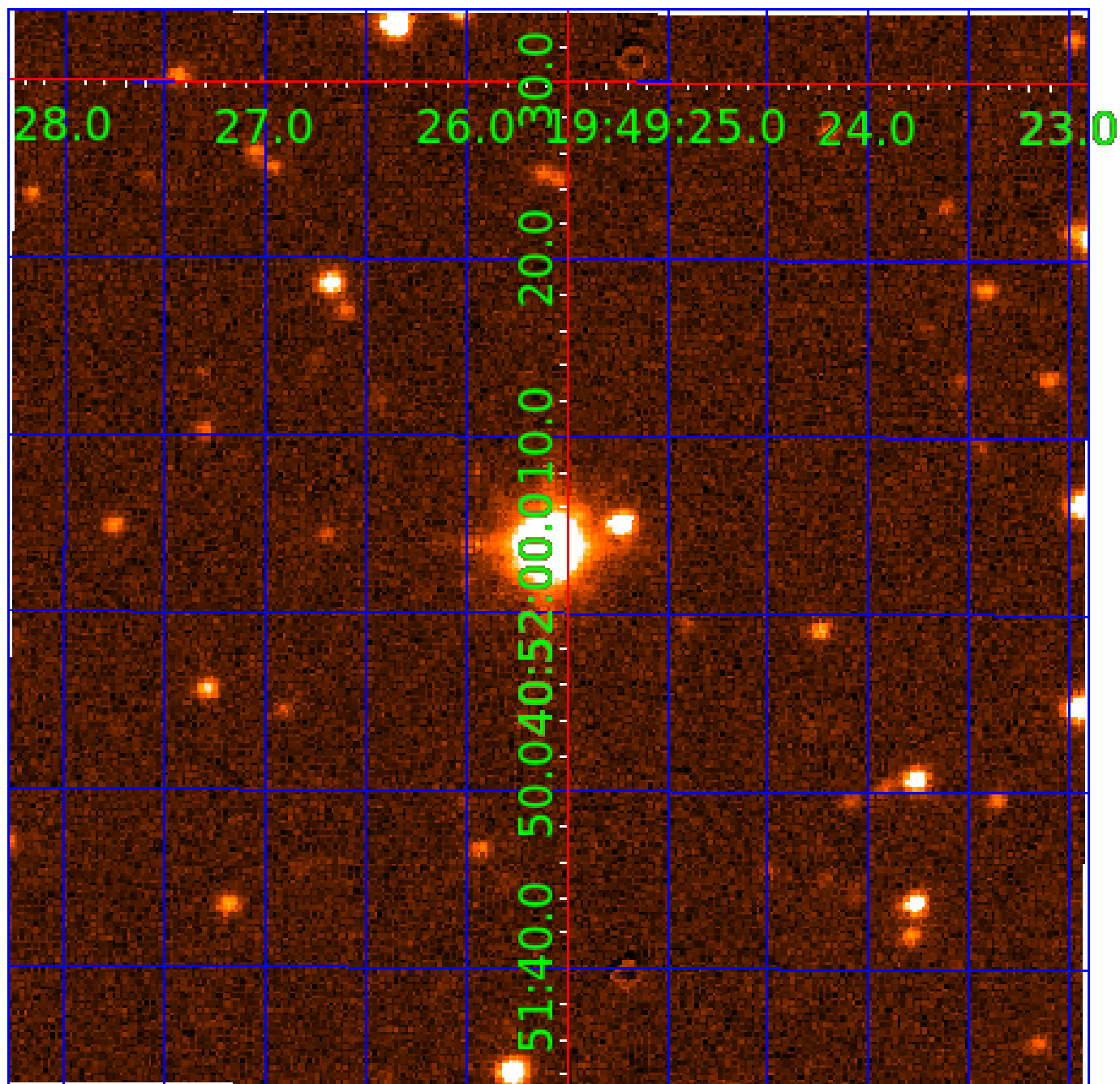


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 005641490

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})
005641490-01	OBS	No	1.029114	132.477442	5.8	5.732	7.9	9.6	2.82	8853	0.72	70566.51
005641490-02	OBS	No	325.254537	373.996493	72.1	51.827	12.4	6.6	2.82	8853	2.72	32.78

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005641490-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED
005641490-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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

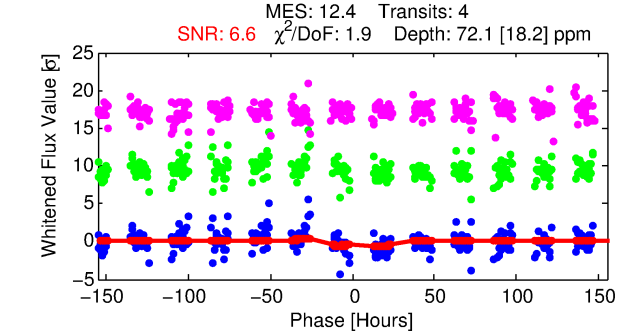
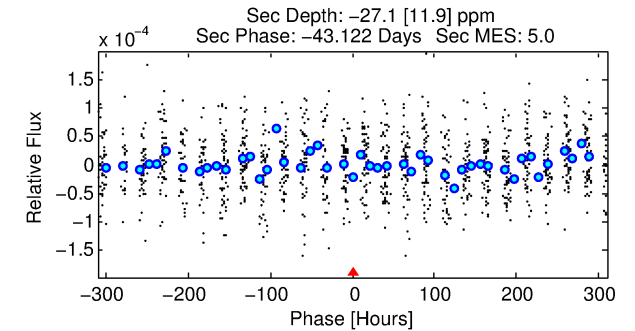
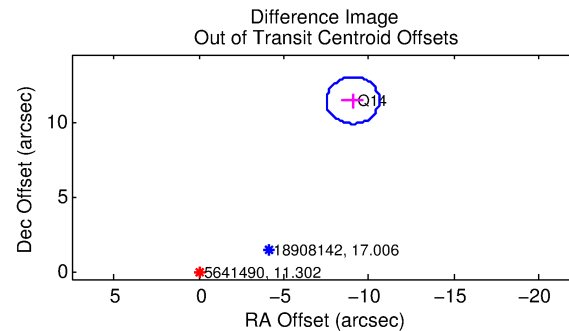
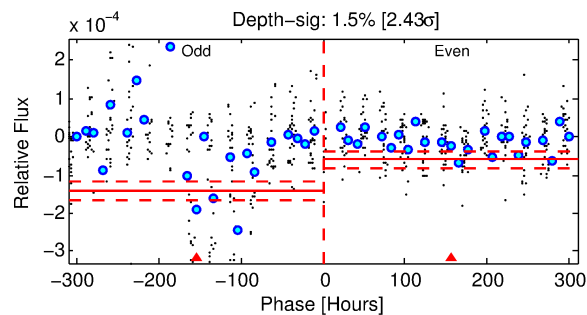
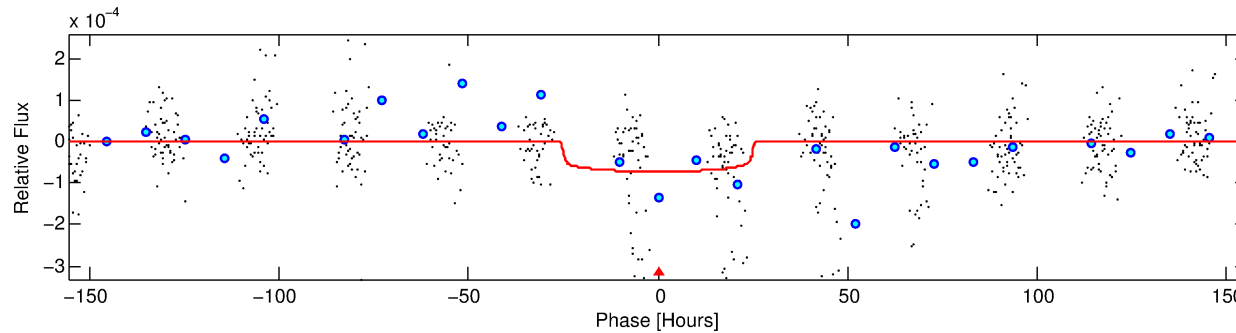
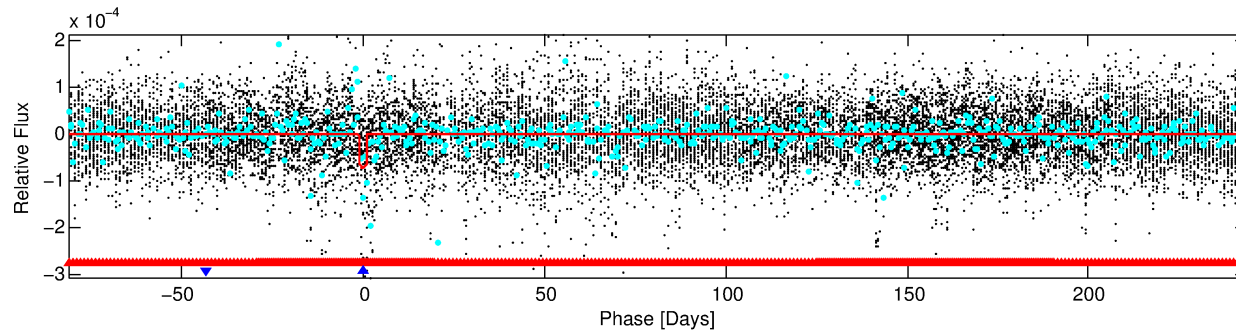
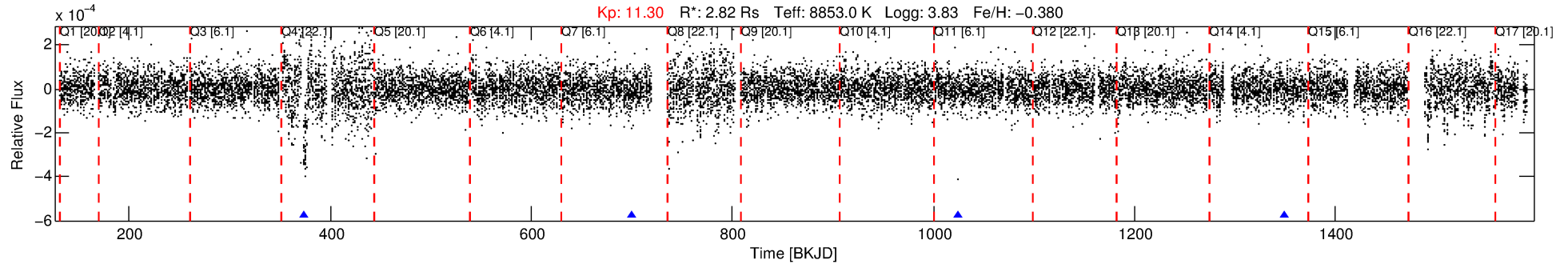
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005641490-02

No Significant Match Found

DV One-Page Summary

KIC: 5641490 Candidate: 2 of 2 Period: 325.255 d



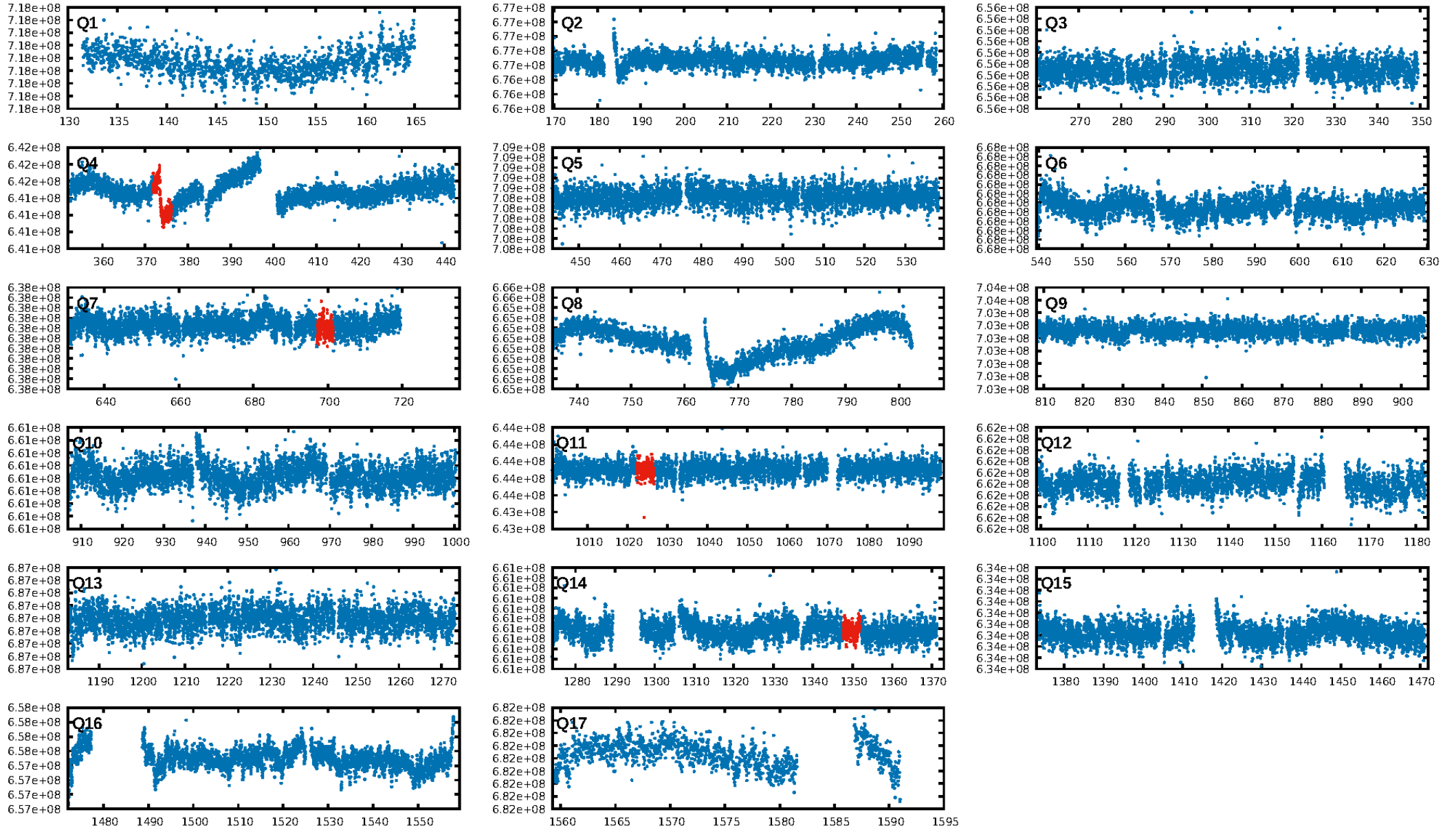
DV Fit Results:

Period = 325.25454 [0.27738] d
Epoch = 373.9965 [0.5371] BKJD
Rp/R* = 0.0088 [0.0057]
a/R* = 24.32 [111.14]
b = 0.87 [1.27]
Seff = 32.78 [13.11]
Teff = 610 [61] K
Rp = 2.72 [1.91] Re
a = 1.1547 [0.2899] AU
Ag = N/A
Teffp = N/A

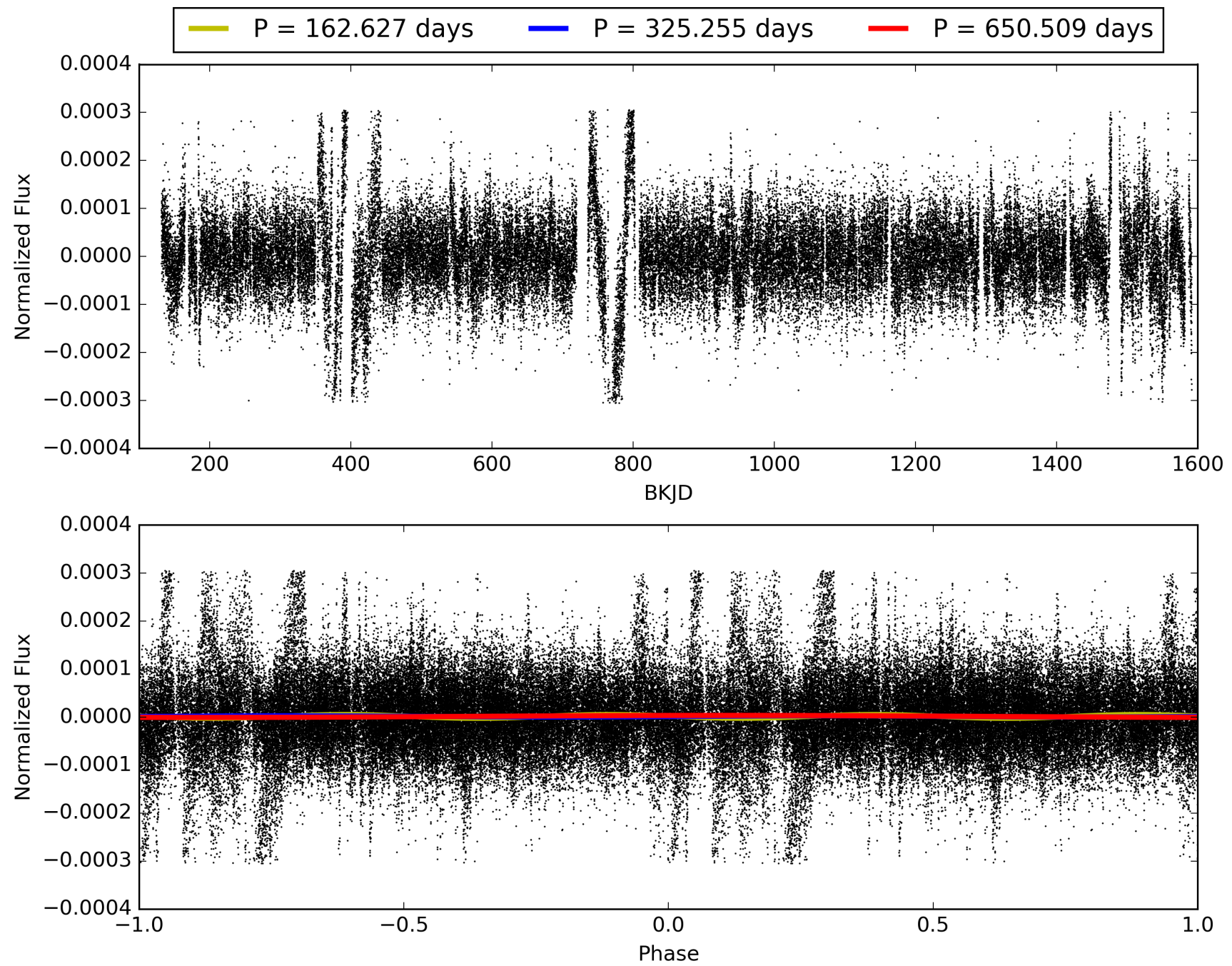
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [149.23 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.19e-19
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.045
Centroid-sig: 1.5%
Centroid-so: 2.072 arcsec [2.00 σ]
OotOffset-rm: 14.583 arcsec [28.02 σ]
KicOffset-rm: 14.781 arcsec [28.42 σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.00 [0/2]

TCE 005641490-02, PDC Light Curves

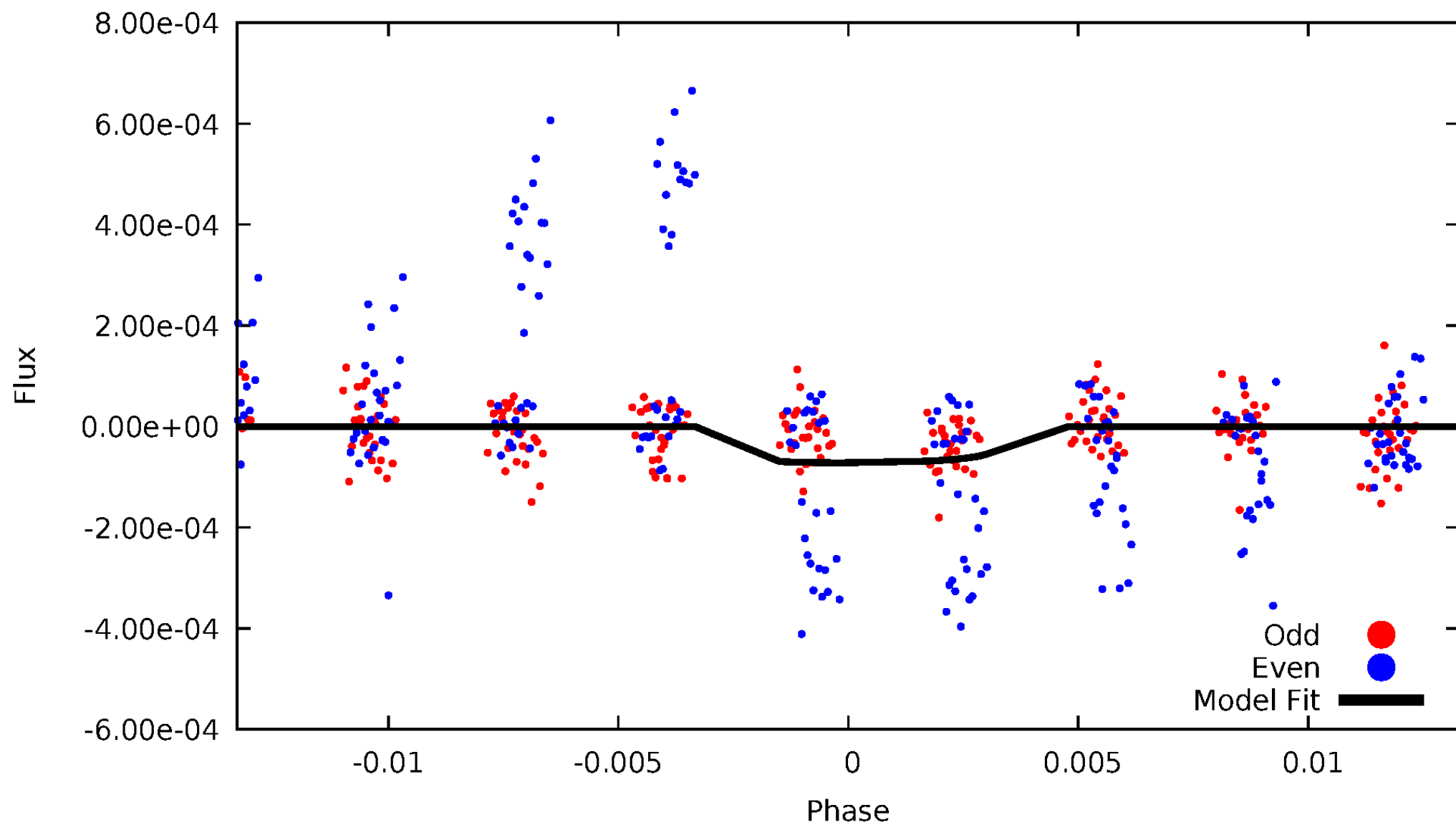


TCE 005641490-02



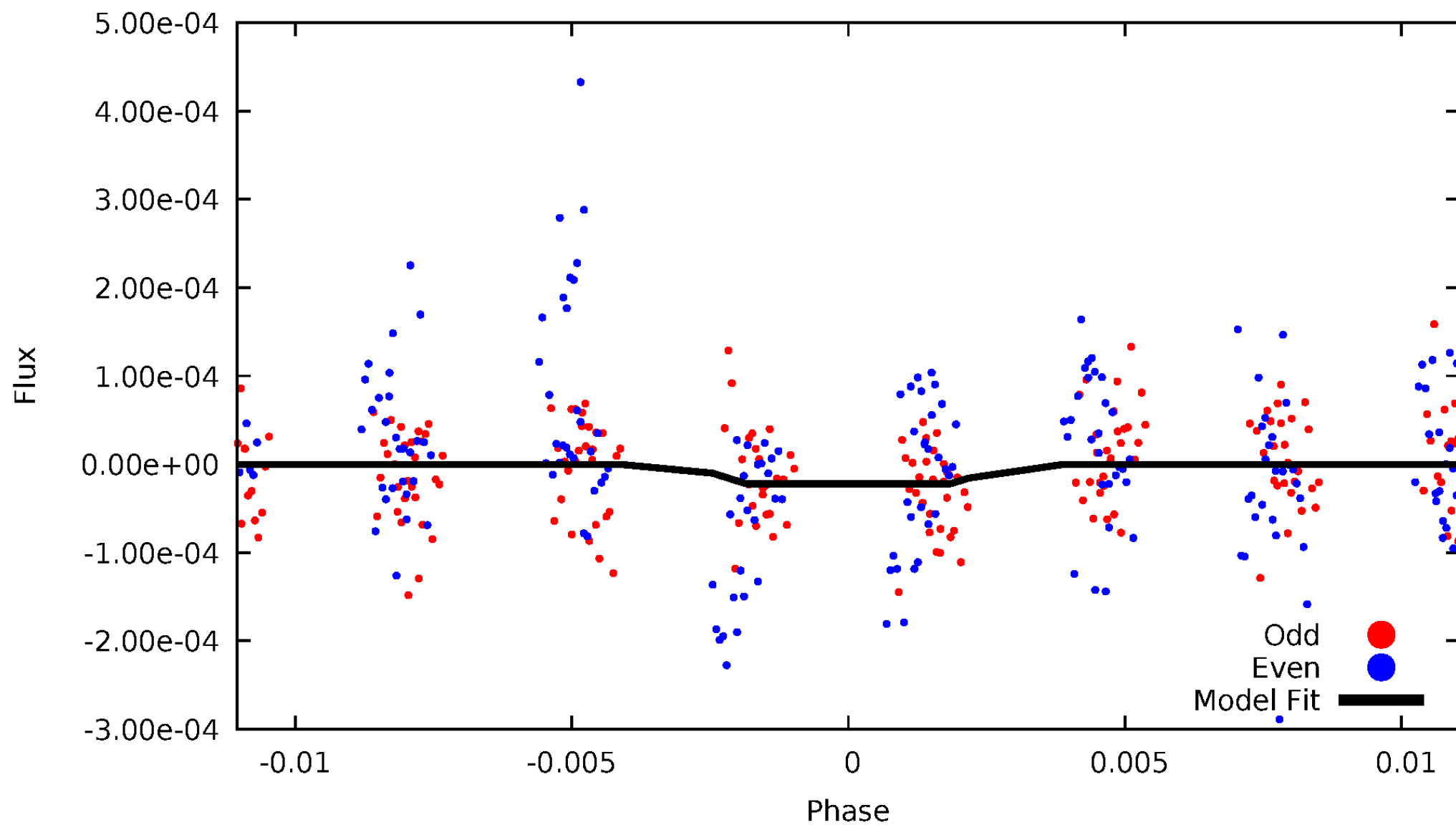
DV Odd/Even

TCE 005641490-02



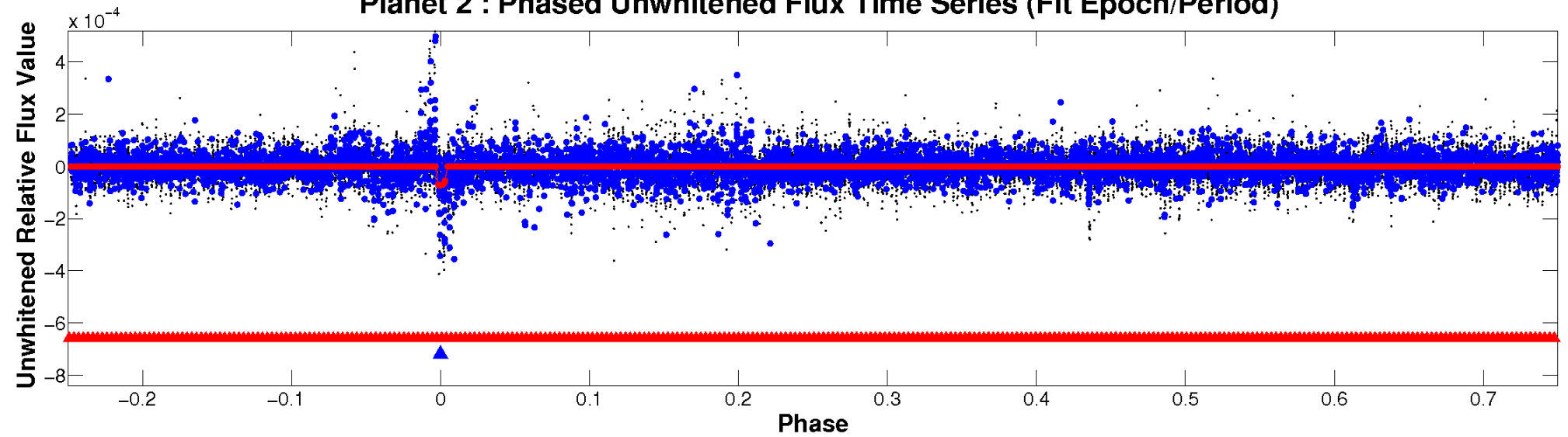
ALT Odd/Even

TCE 005641490-02

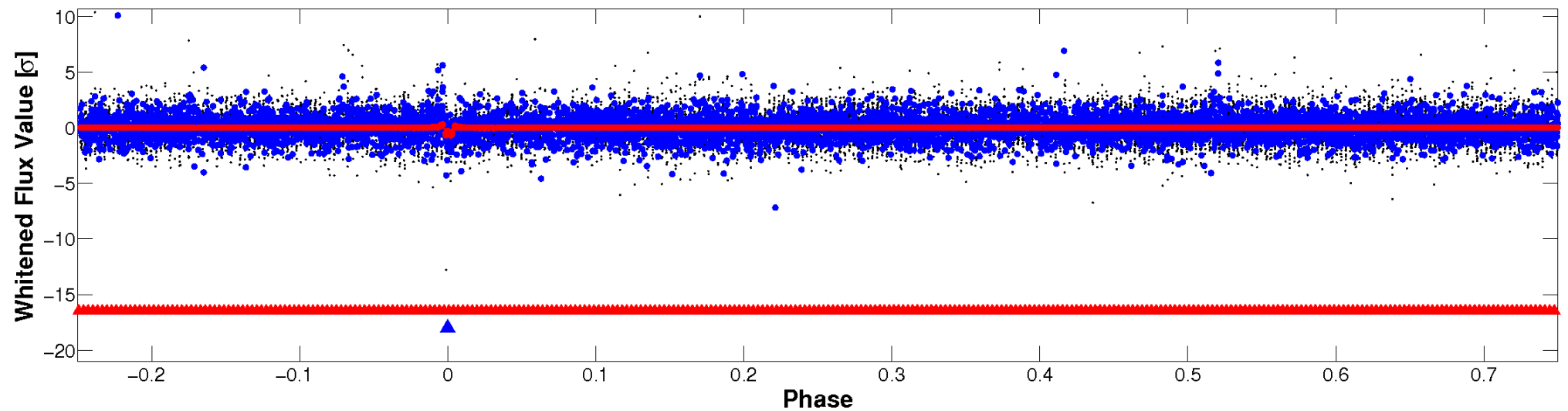


Non-Whitened Vs. Whitened Light Curve

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



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



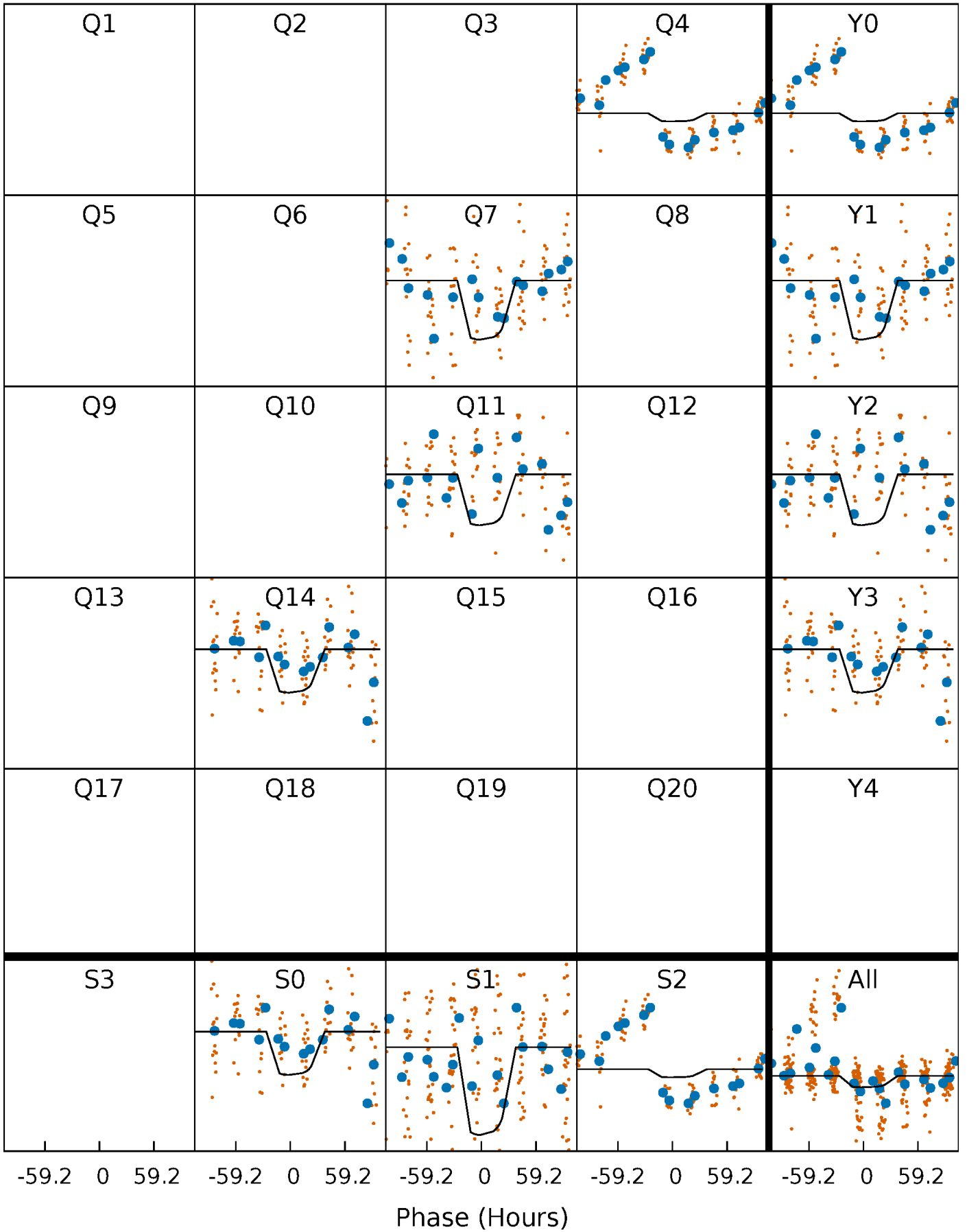
PDC Quarter-Phased Transit Curves

TCE 005641490-02 $P=325.254537$ Days $T_0=373.996493$ (BKJD)



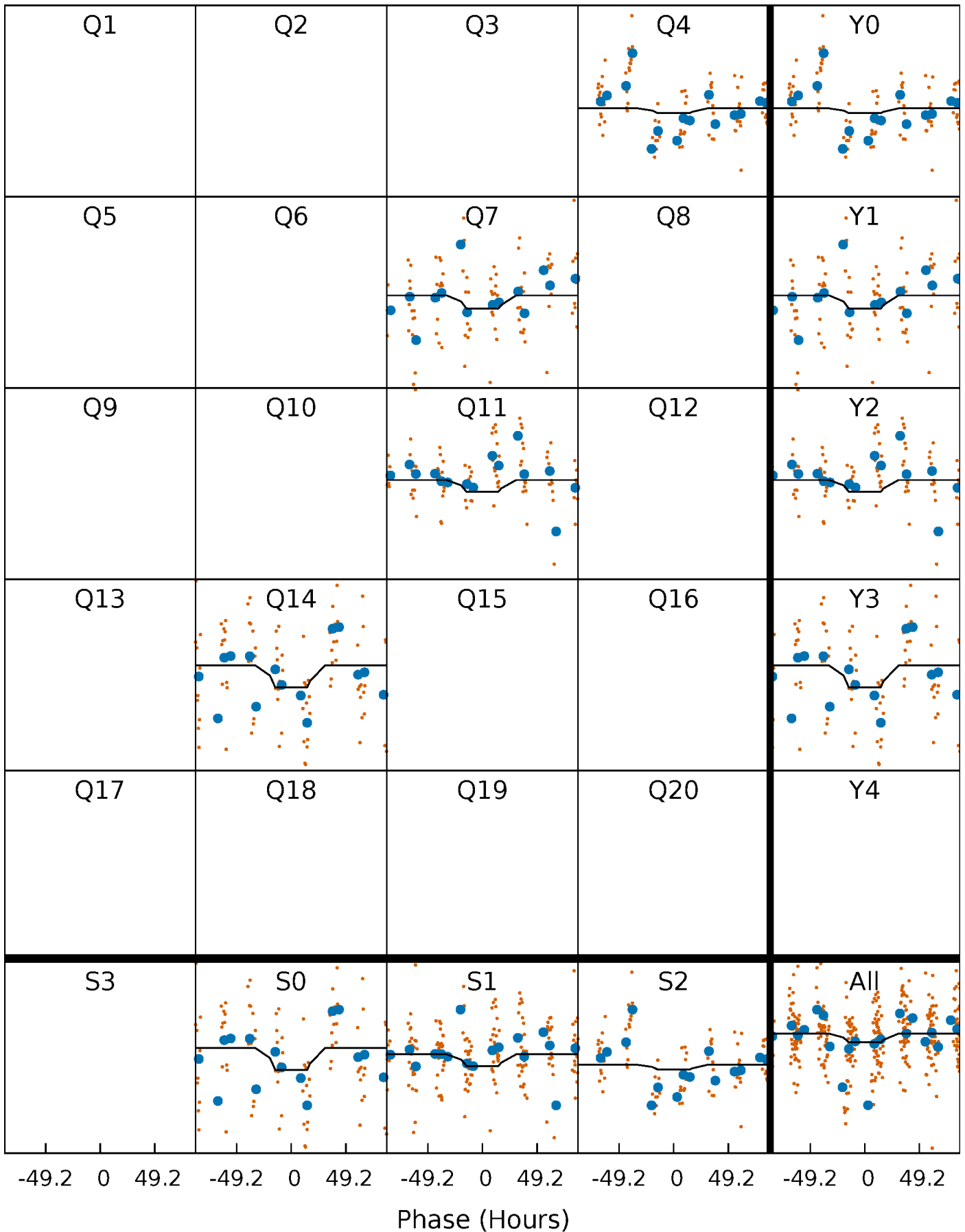
DV Quarter-Phased Transit Curves

TCE 005641490-02 $P=325.254537$ Days $T_0=373.996493$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

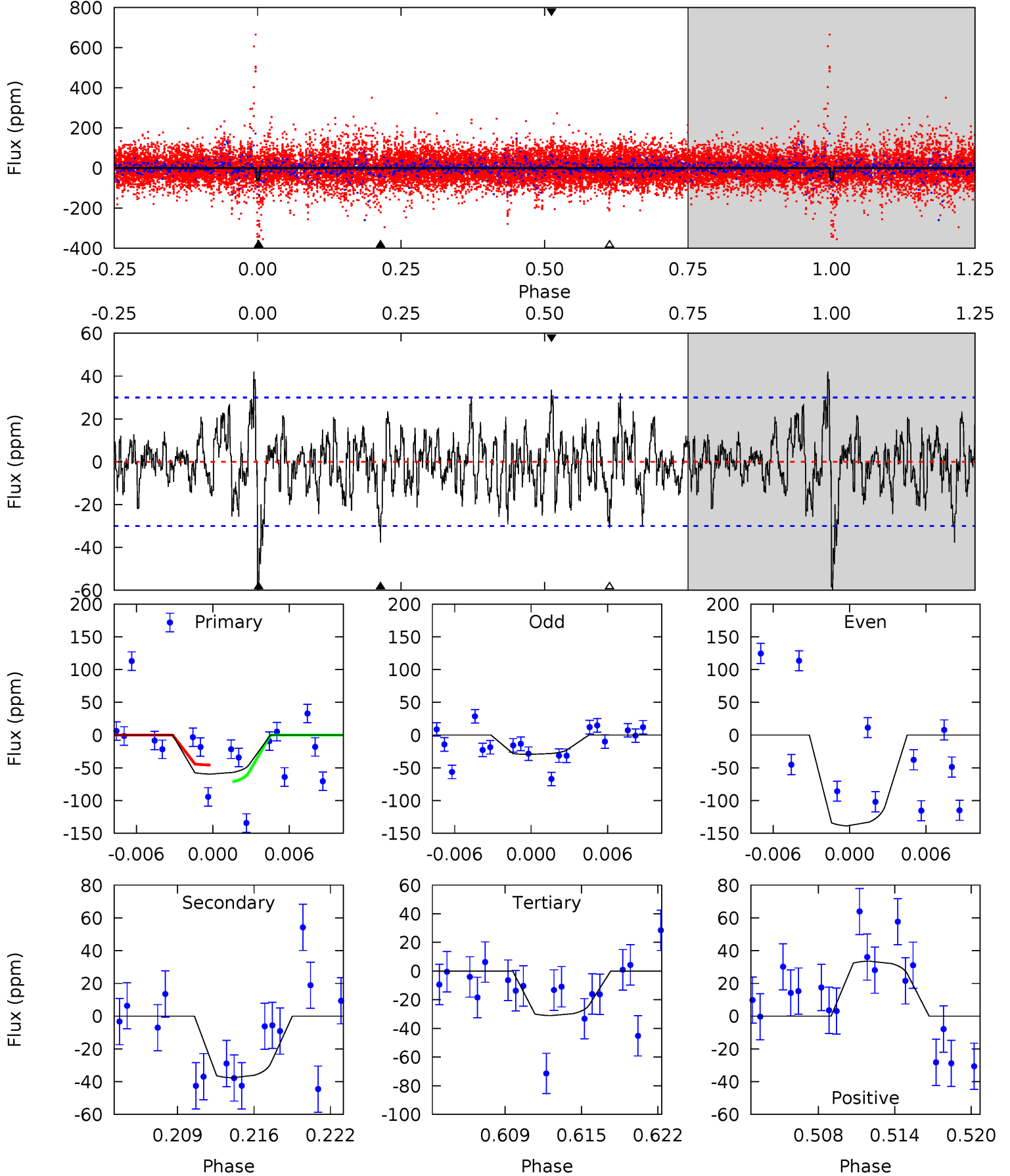
TCE 005641490-02 P=325.131996 Days $T_0=374.464455$ (BKJD)



DV Model-Shift Uniqueness Test

005641490-02, $P = 325.254537$ Days, $E = 48.741956$ Days

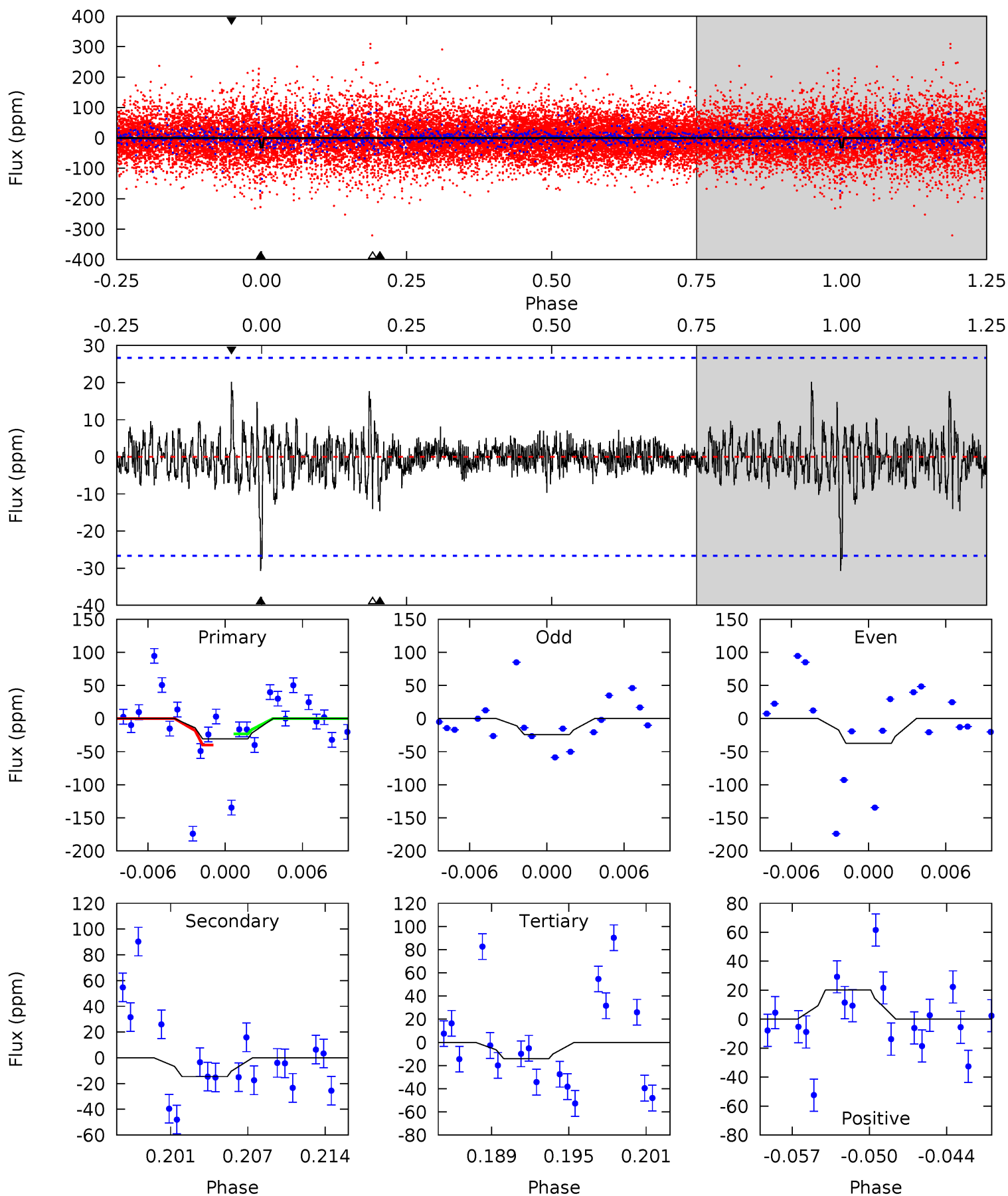
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	6.41	5.29	5.72	5.11	2.73	1.83	4.87	4.44	1.13	0.69	9.61	3.05	0.41	2.21



Alt Model-Shift Uniqueness Test

005641490-02, $P = 325.131996$ Days, $E = 49.332459$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.89	2.80	2.69	3.88	5.11	2.73	0.70	3.20	2.01	0.11	-1.08	1.29	1.33	0.40	1.60



Stellar Parameters For KIC 005641490

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8853^{+70}_{-97}	$3.826^{+0.232}_{-0.058}$	$-0.380^{+0.150}_{-0.200}$	$2.818^{+0.374}_{-0.748}$	$1.941^{+0.168}_{-0.186}$	$0.122^{+0.165}_{-0.028}$
	+1%/-1%	+6%/-2%	+39%/-53%	+13%/-27%	+9%/-10%	+135%/-23%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 005641490-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-38 ± 6	$2.60^{+1.68}_{-1.49}$	840^{+30}_{-54}	6997^{+5677}_{-1500}	4035^{+19465}_{-2574}
Alt.	-15 ± 5	$1.79^{+1.49}_{-1.14}$	838^{+31}_{-54}	6626^{+7061}_{-1746}	3245^{+22958}_{-2383}

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

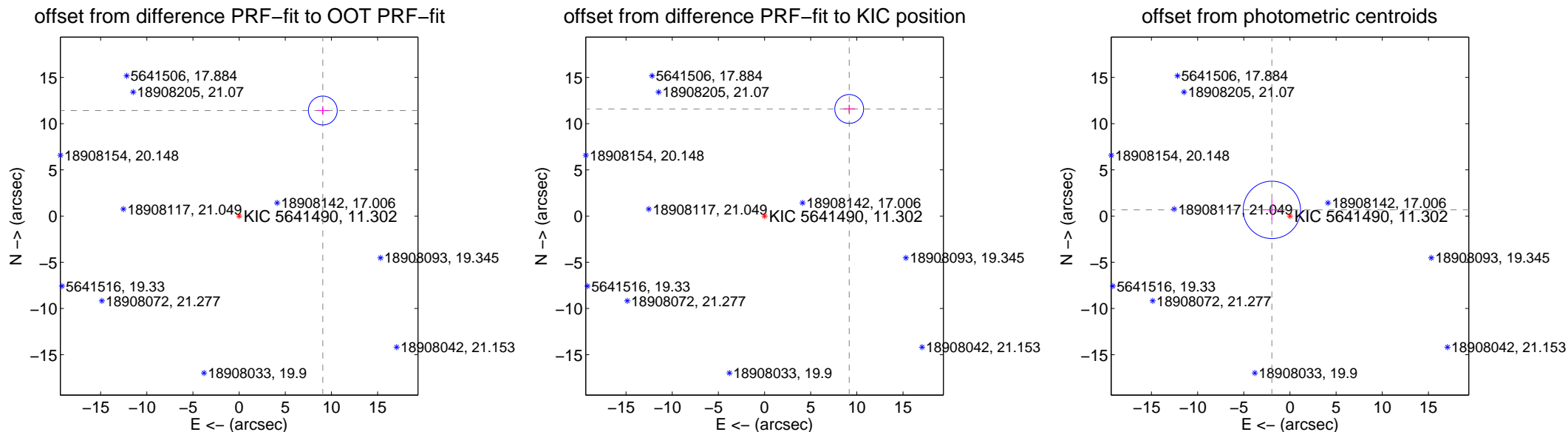
DV Centroid Data

Supplemental centroid analysis for 005641490-02. **Kepler magnitude: 11.30.** Transit SNR 6.56

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	14.583 \pm 0.520	28.02	-9.064 \pm 0.615	11.424 \pm 0.450
PRF-fit source offset from KIC position	14.781 \pm 0.520	28.42	-9.170 \pm 0.615	11.592 \pm 0.450
photometric centroid source offset	2.07 \pm 1.04	2.00	1.96 \pm 1.03	0.67 \pm 1.09



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.

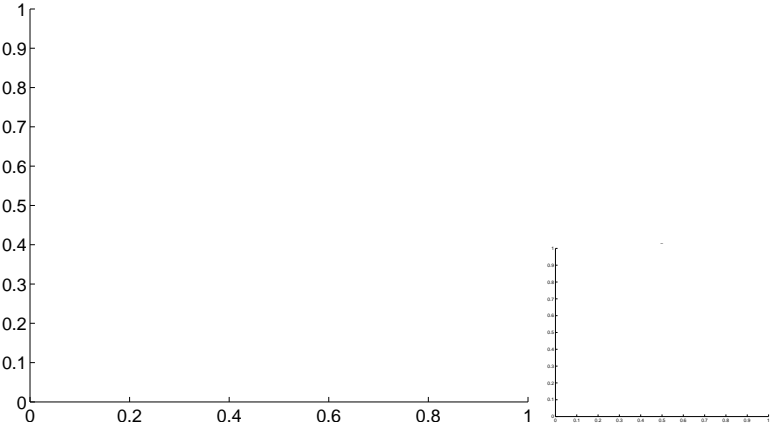


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

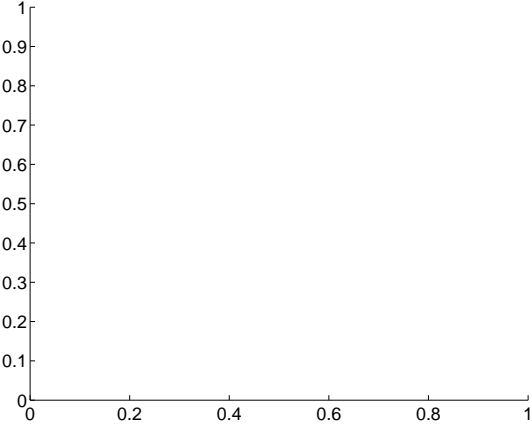
Q5 no difference image



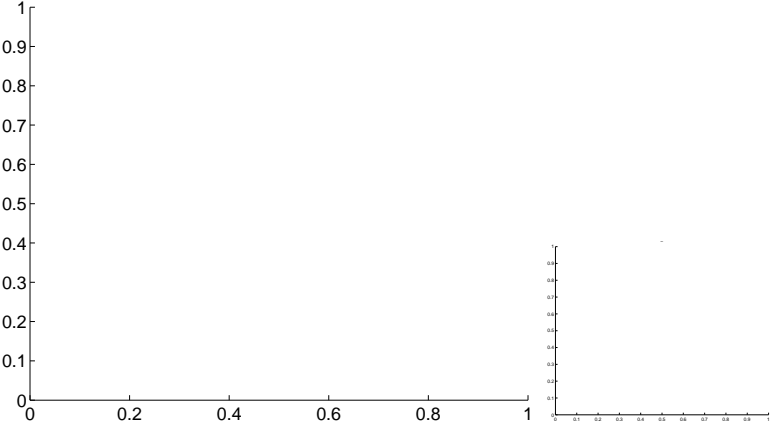
Q5 no OOT image



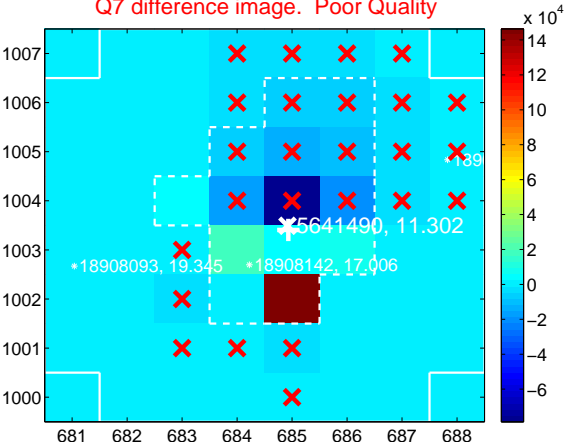
Q6 no difference image



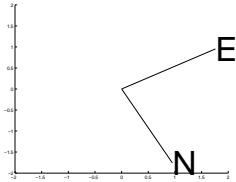
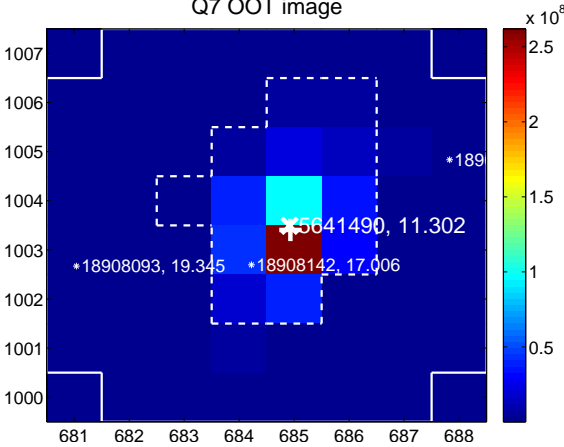
Q6 no OOT image



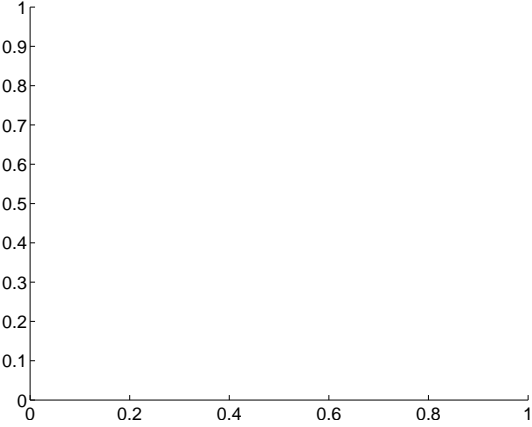
Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



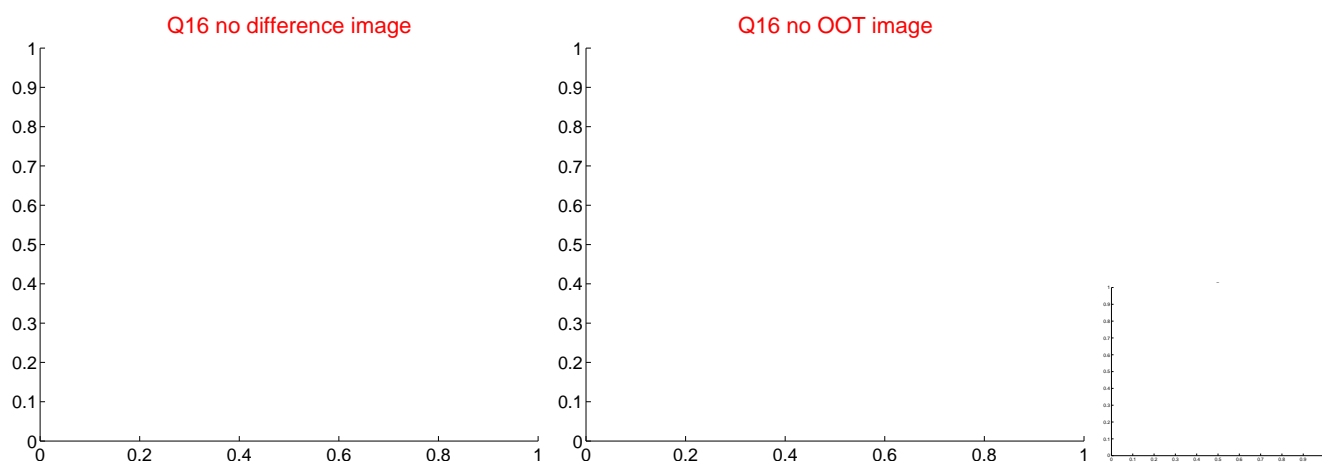
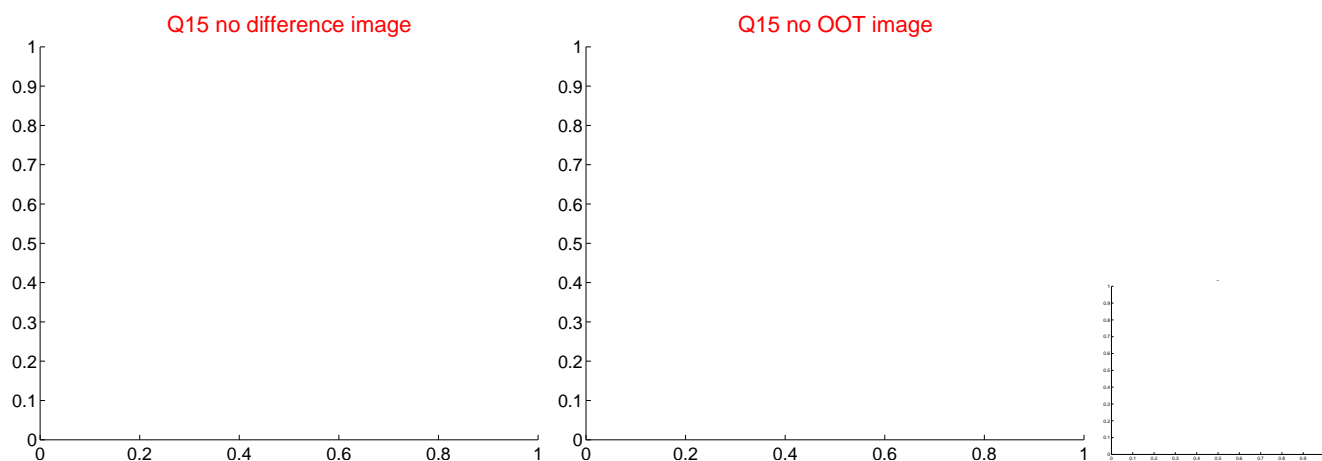
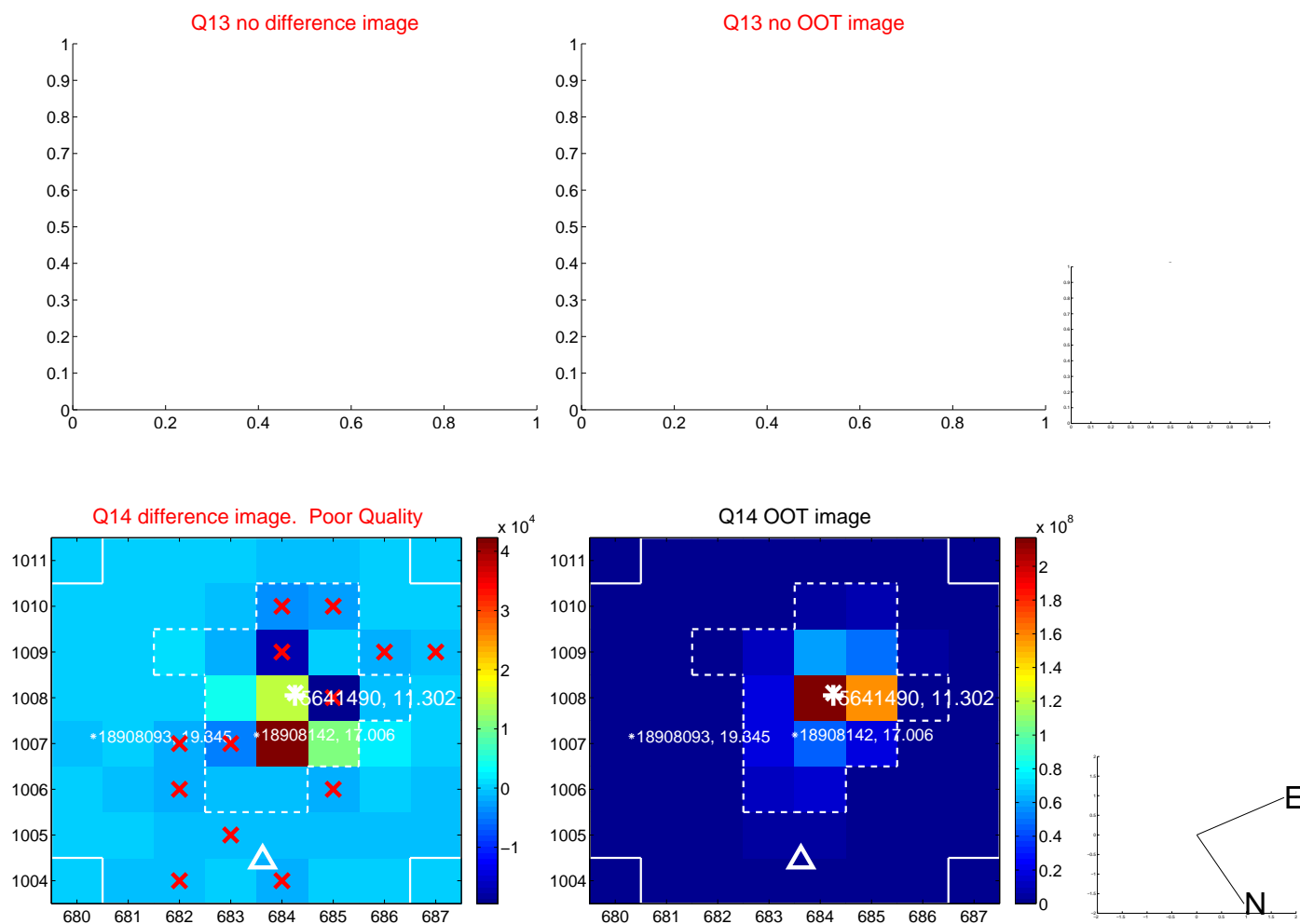
Q8 no OOT image



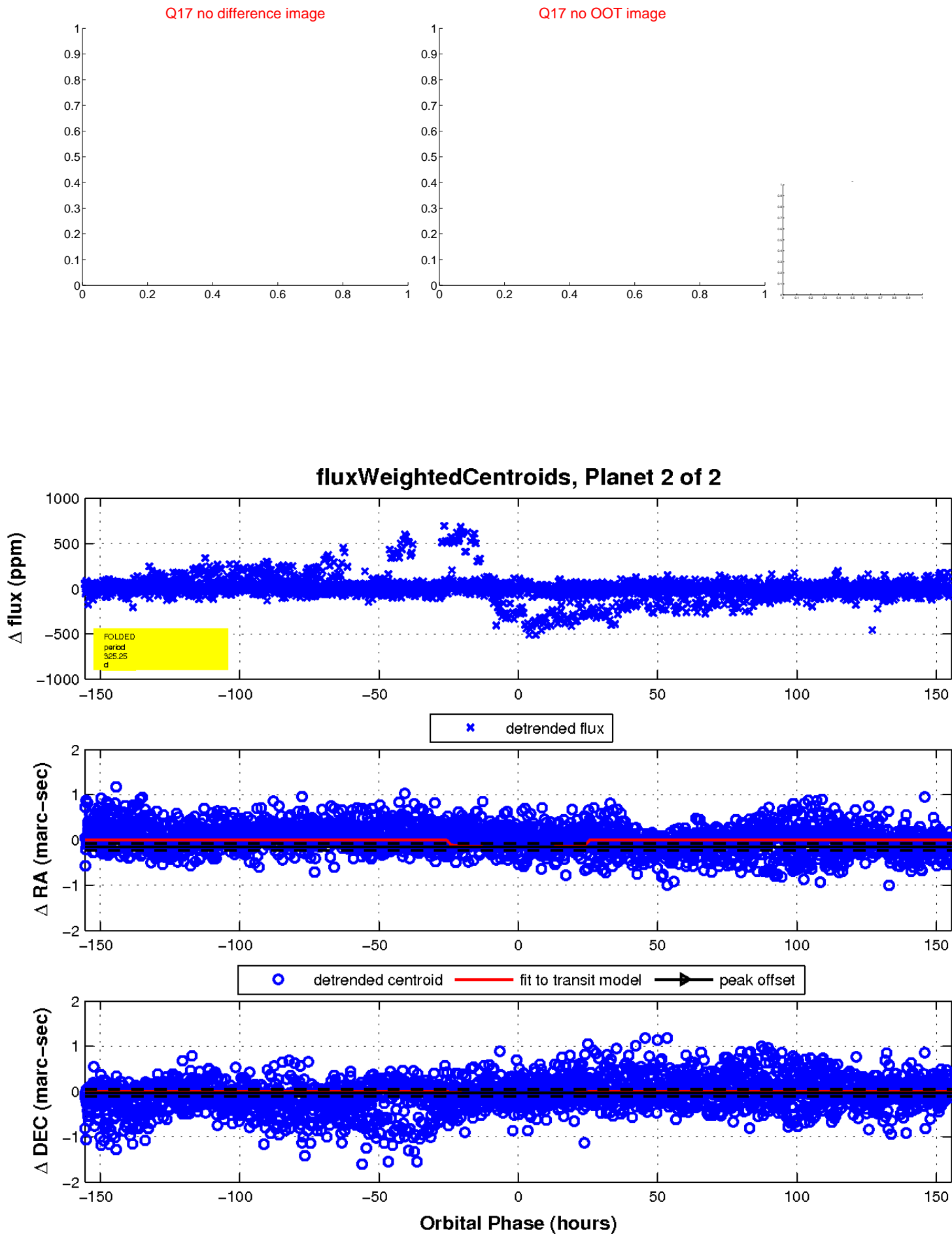
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

