

KIC 004565985

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})
004565985-01	OBS	6424.01	17.511813	134.397021	795.9	7.357	186.1	188.5	20.89	4029	129.26	6023.37
004565985-02	OBS	No	17.511840	145.344527	721.7	7.111	177.9	176.4	20.89	4029	123.60	6023.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004565985-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_SATURATED
004565985-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED

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 004565985-01

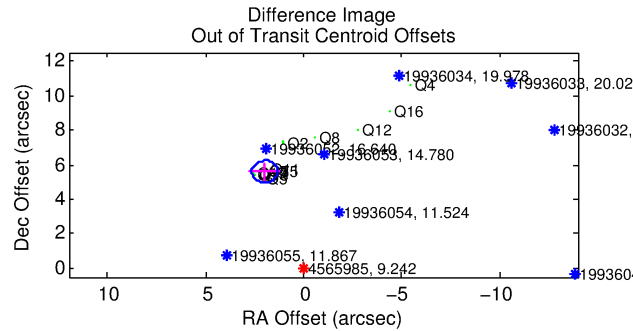
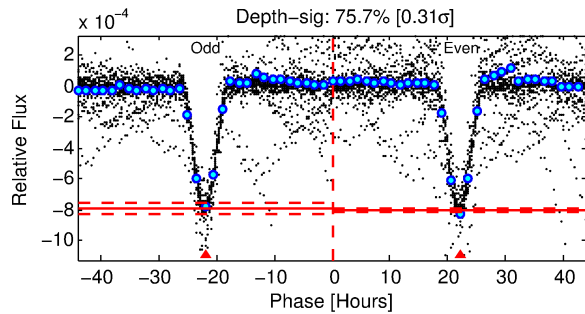
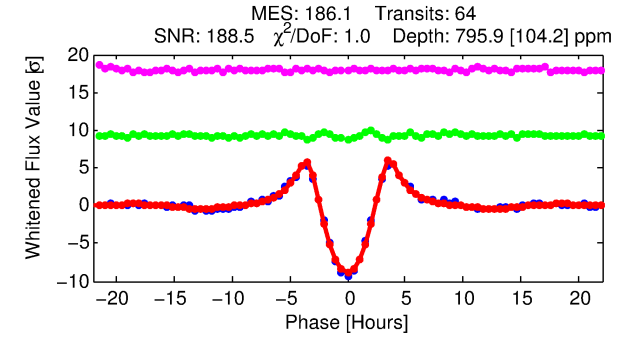
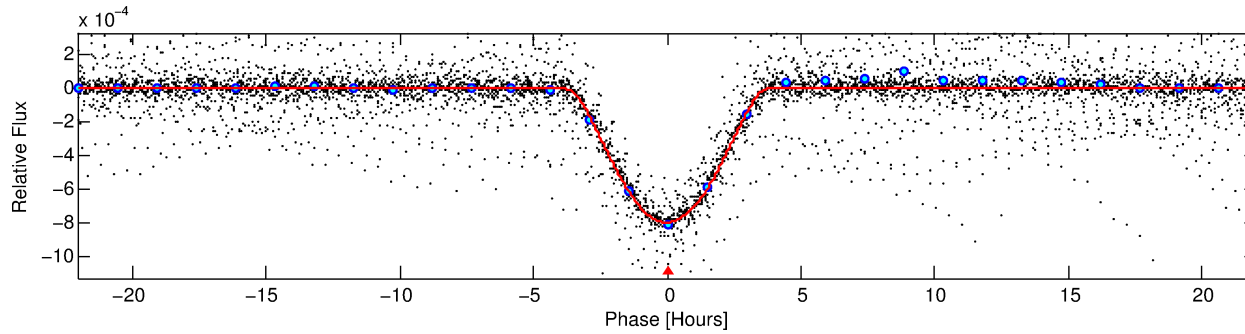
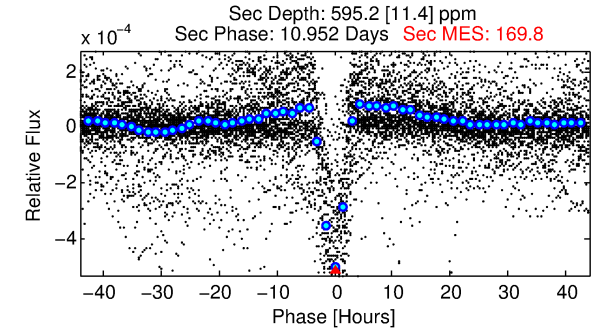
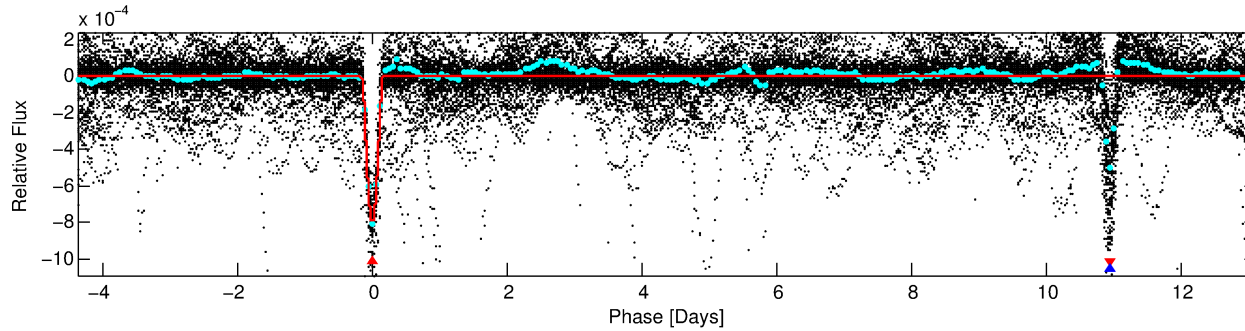
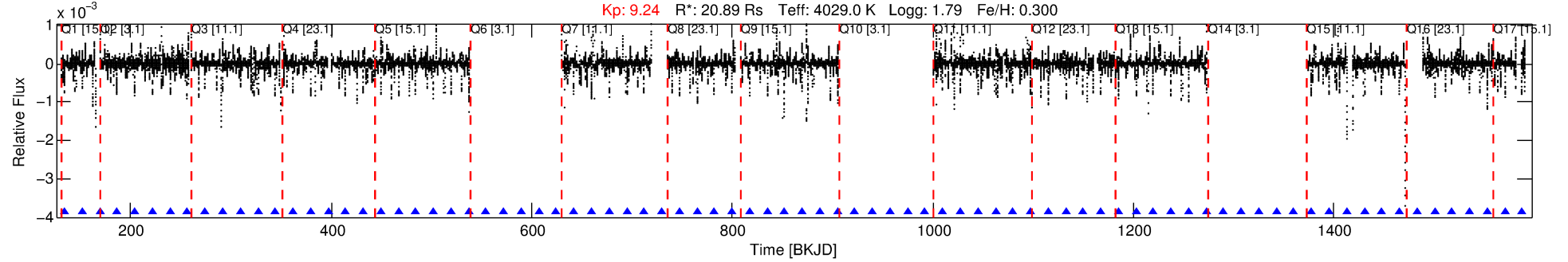
No Significant Match Found

DV One-Page Summary

KIC: 4565985 Candidate: 1 of 2 Period: 17.512 d

KOI: K06424.01 Corr: 0.863

Kp: 9.24 R*: 20.89 Rs Teff: 4029.0 K Logg: 1.79 Fe/H: 0.300



DV Fit Results:

Period = 17.51181 [0.00001] d
Epoch = 134.3970 [0.0006] BKJD
Rp/R* = 0.0567 [0.0062]
a/R* = 6.29 [0.15]
b = 1.00 [0.00]
Seff = 6023.37 [3252.43]
Teq = 2246 [303] K
Rp = 129.26 [67.01] Re
a = 0.1308 [0.0510] AU
Ag = 0.34 [0.19] [-3.53σ]
Teffp = 2643 [179] K [1.13σ]

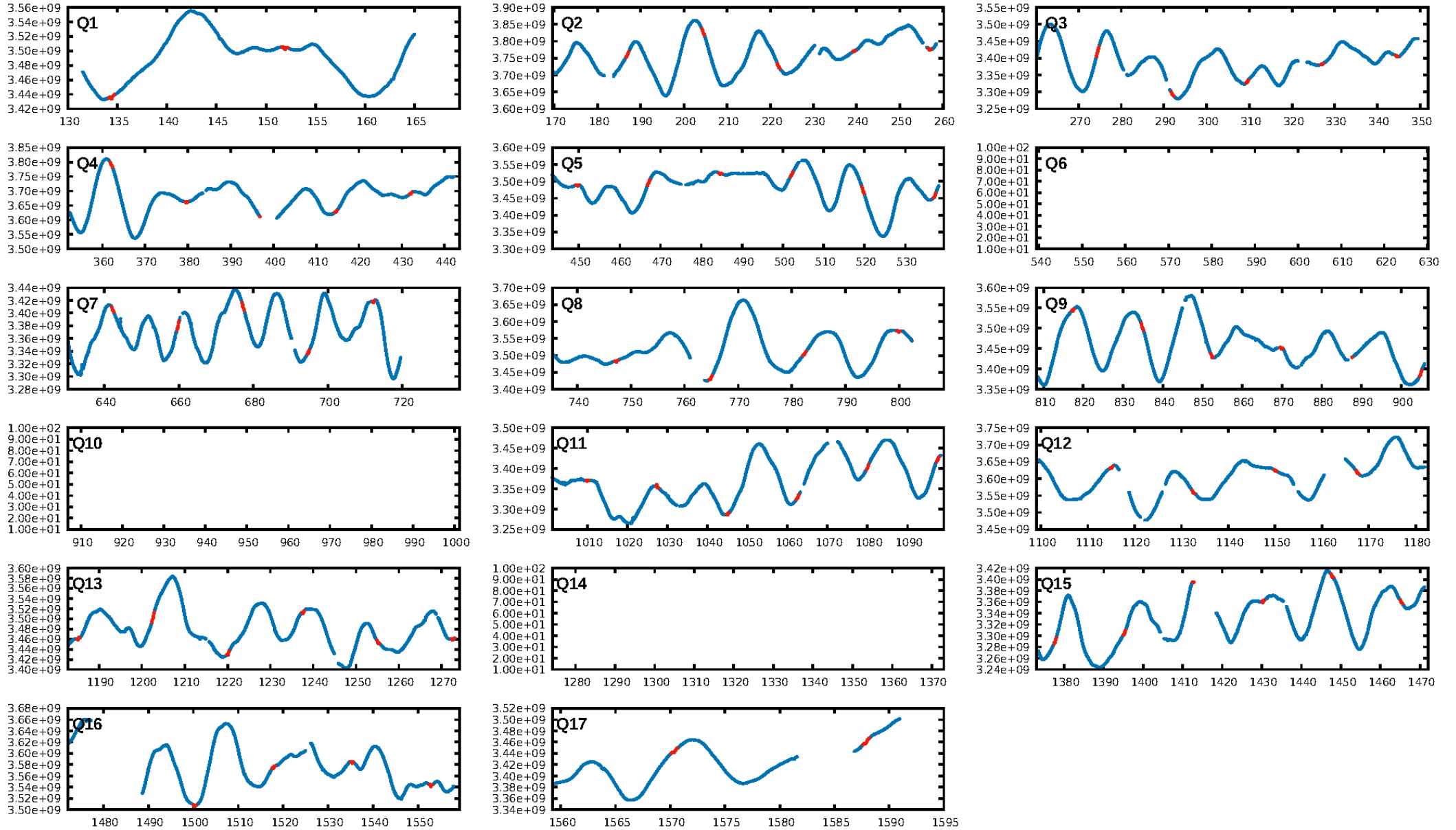
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [60/60]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.0%
Centroid-so: 5.561 arcsec [26.70σ]
OotOffset-rm: 5.935 arcsec [27.64σ]
KicOffset-rm: 7.250 arcsec [19.94σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.36 [5/14]
DiffImageOverlap-fno: 1.00 [14/14]

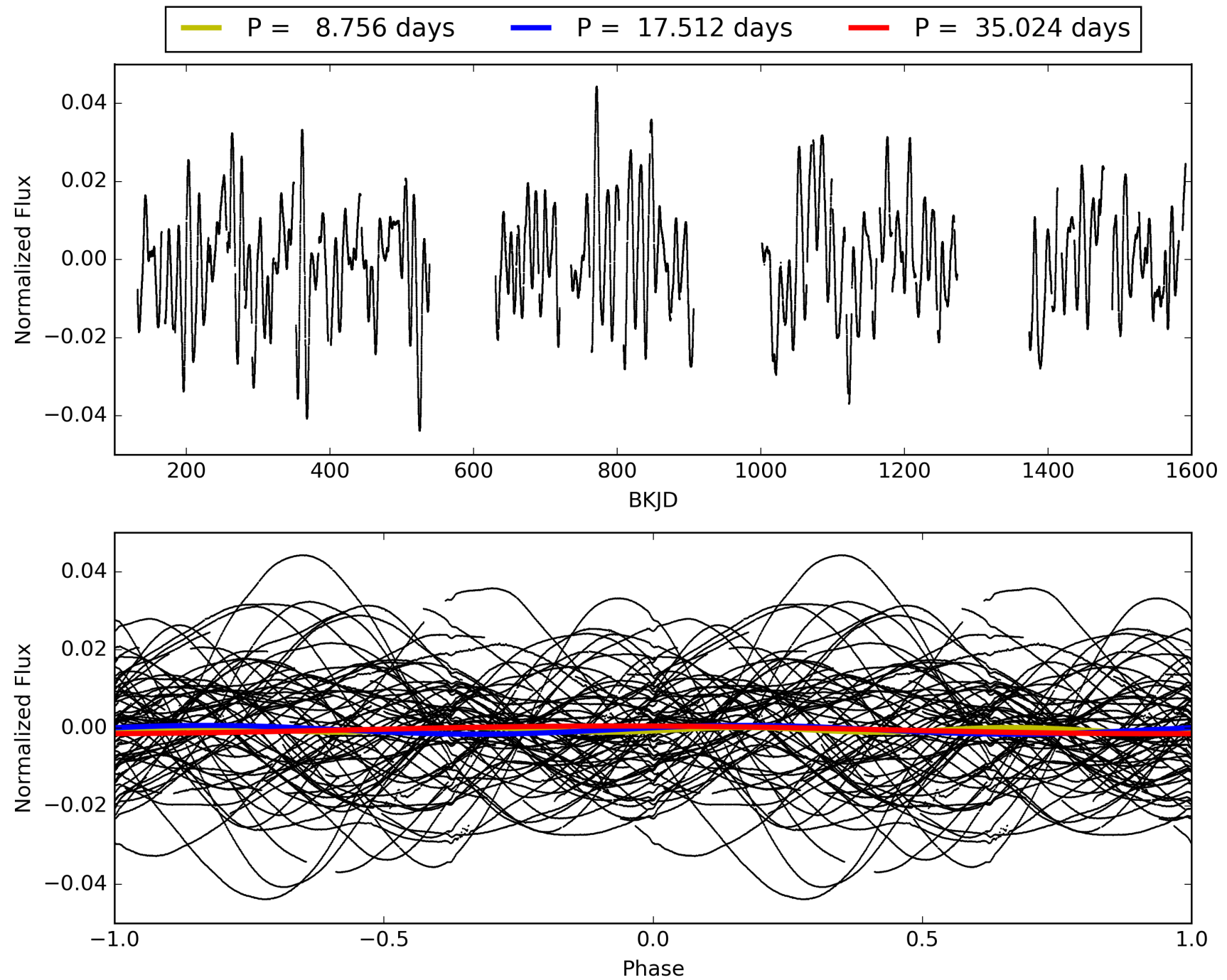
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:25:09 Z

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

TCE 004565985-01, PDC Light Curves

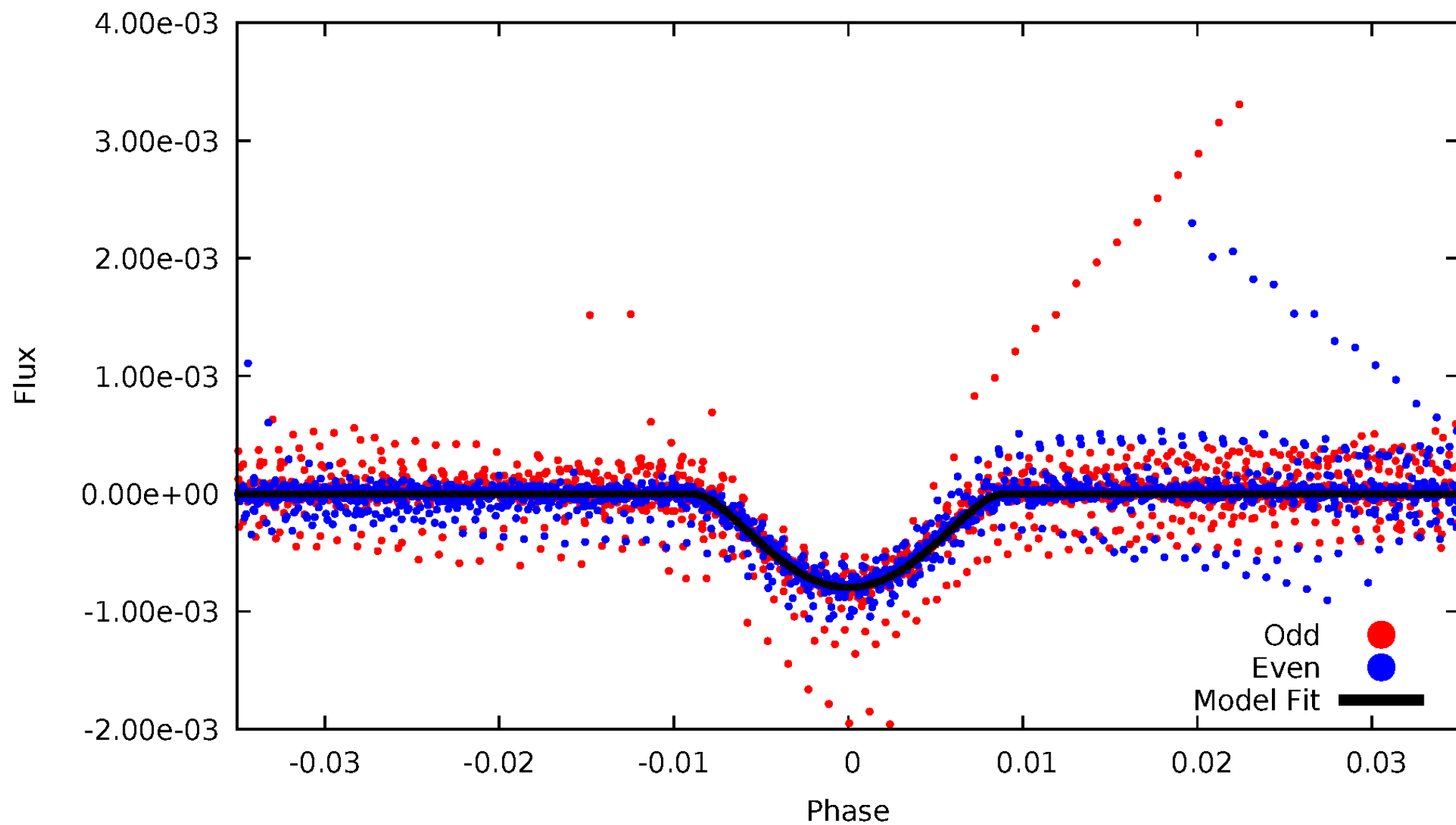


TCE 004565985-01



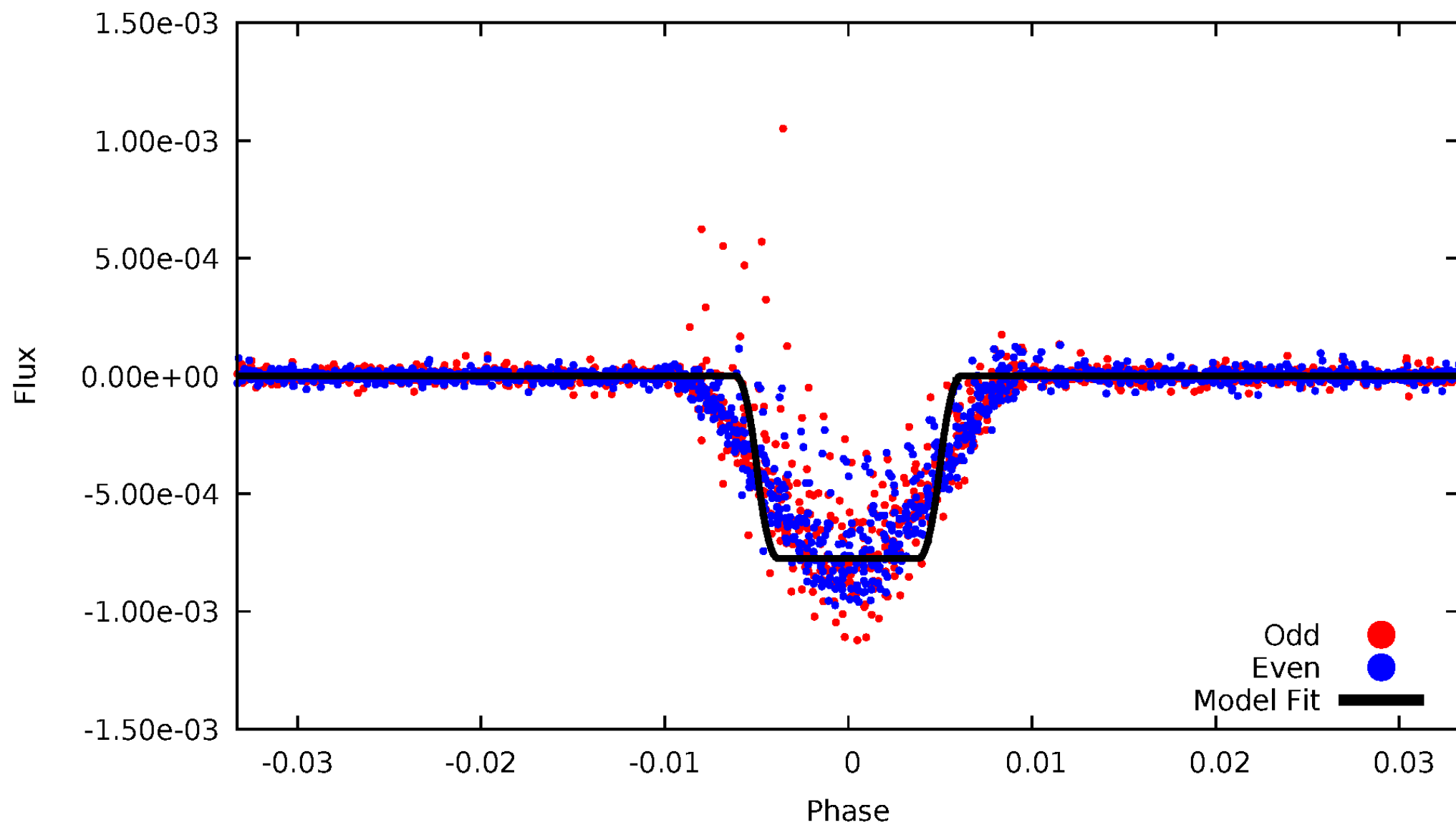
DV Odd/Even

TCE 004565985-01



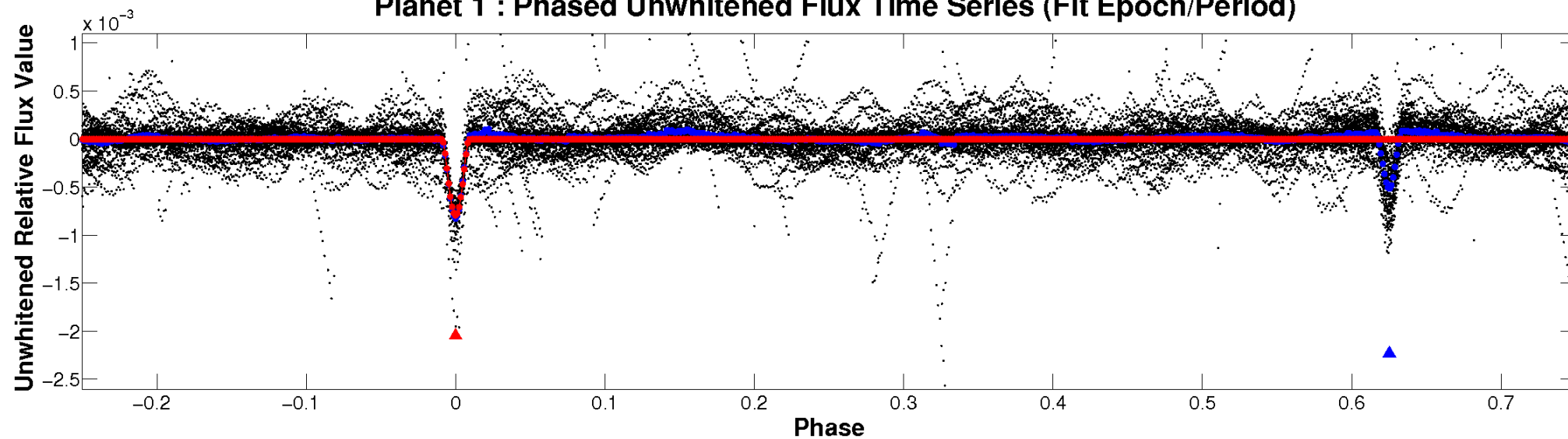
ALT Odd/Even

TCE 004565985-01

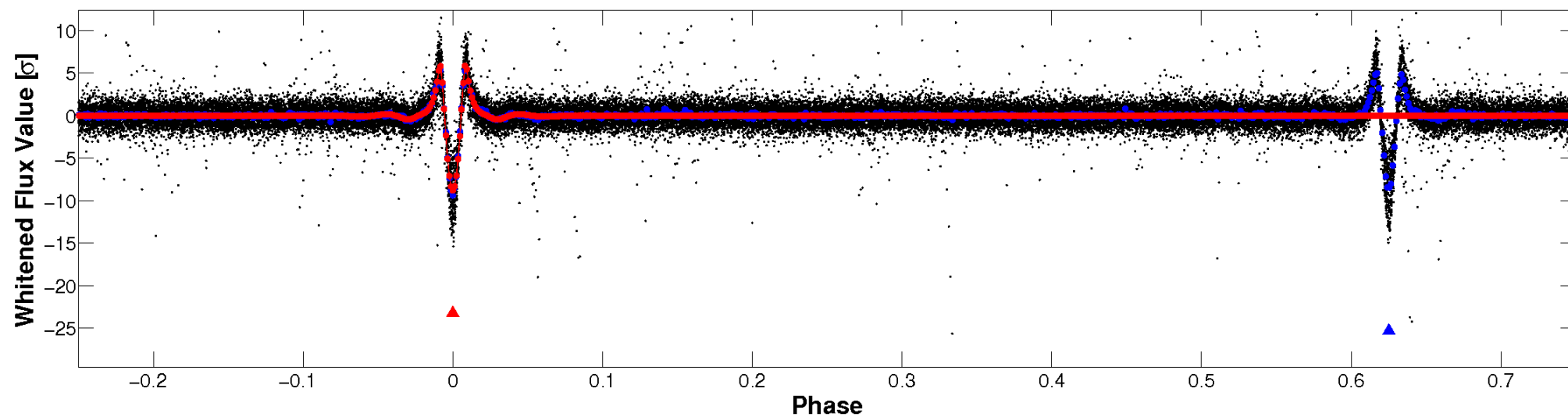


Non-Whitened Vs. Whitened Light Curve

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

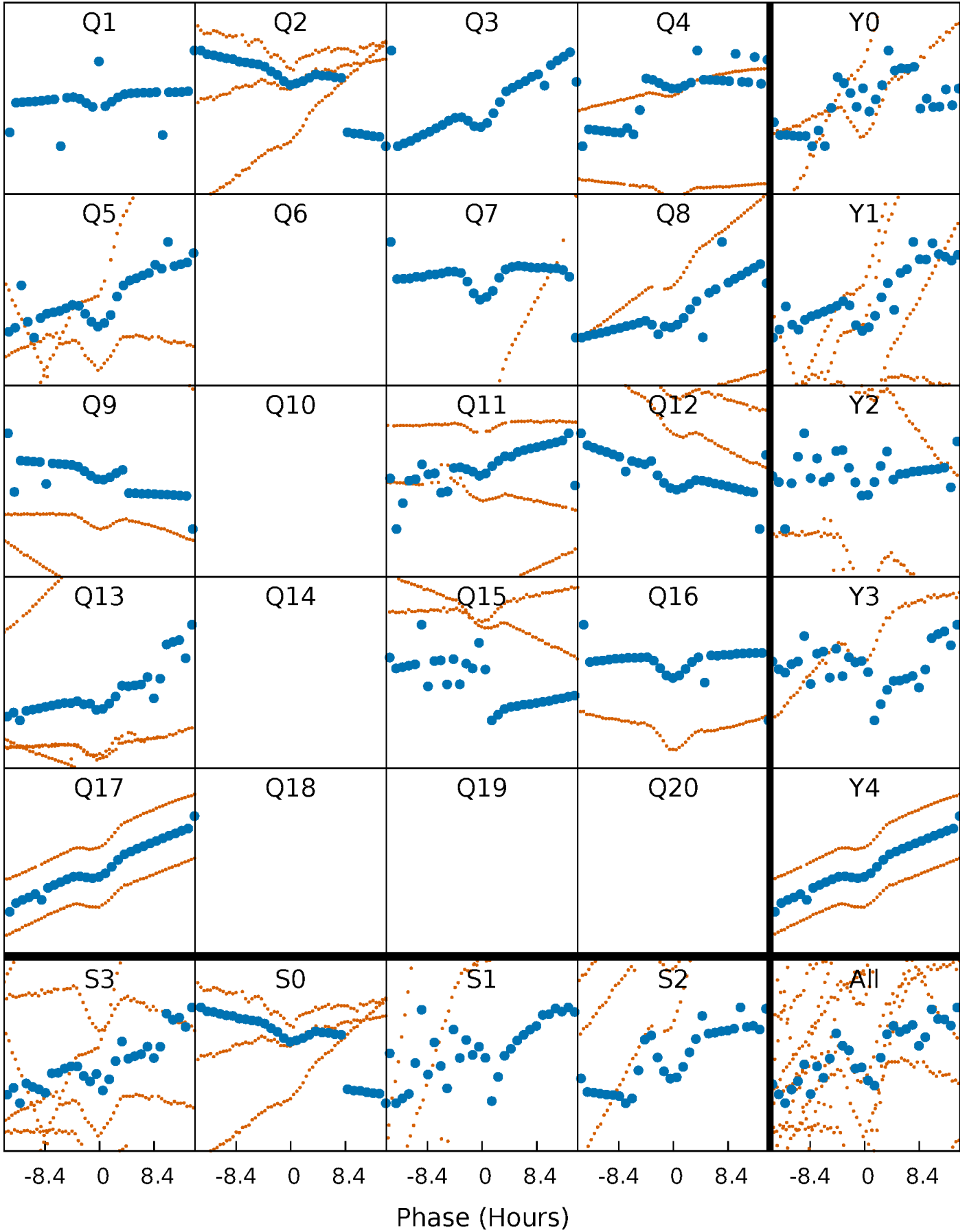


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



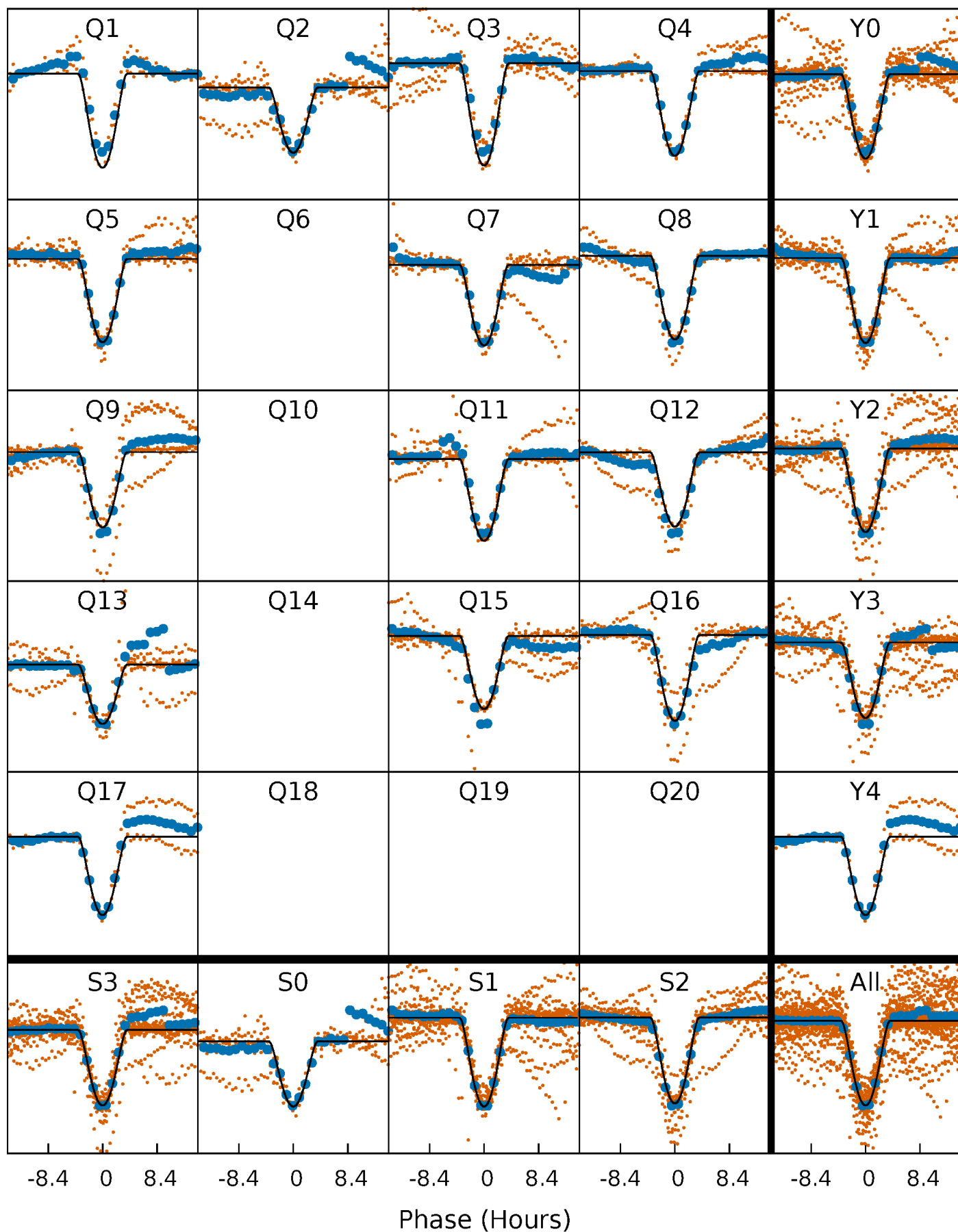
PDC Quarter-Phased Transit Curves

TCE 004565985-01 P= 17.511813 Days $T_0=134.397021$ (BKJD)



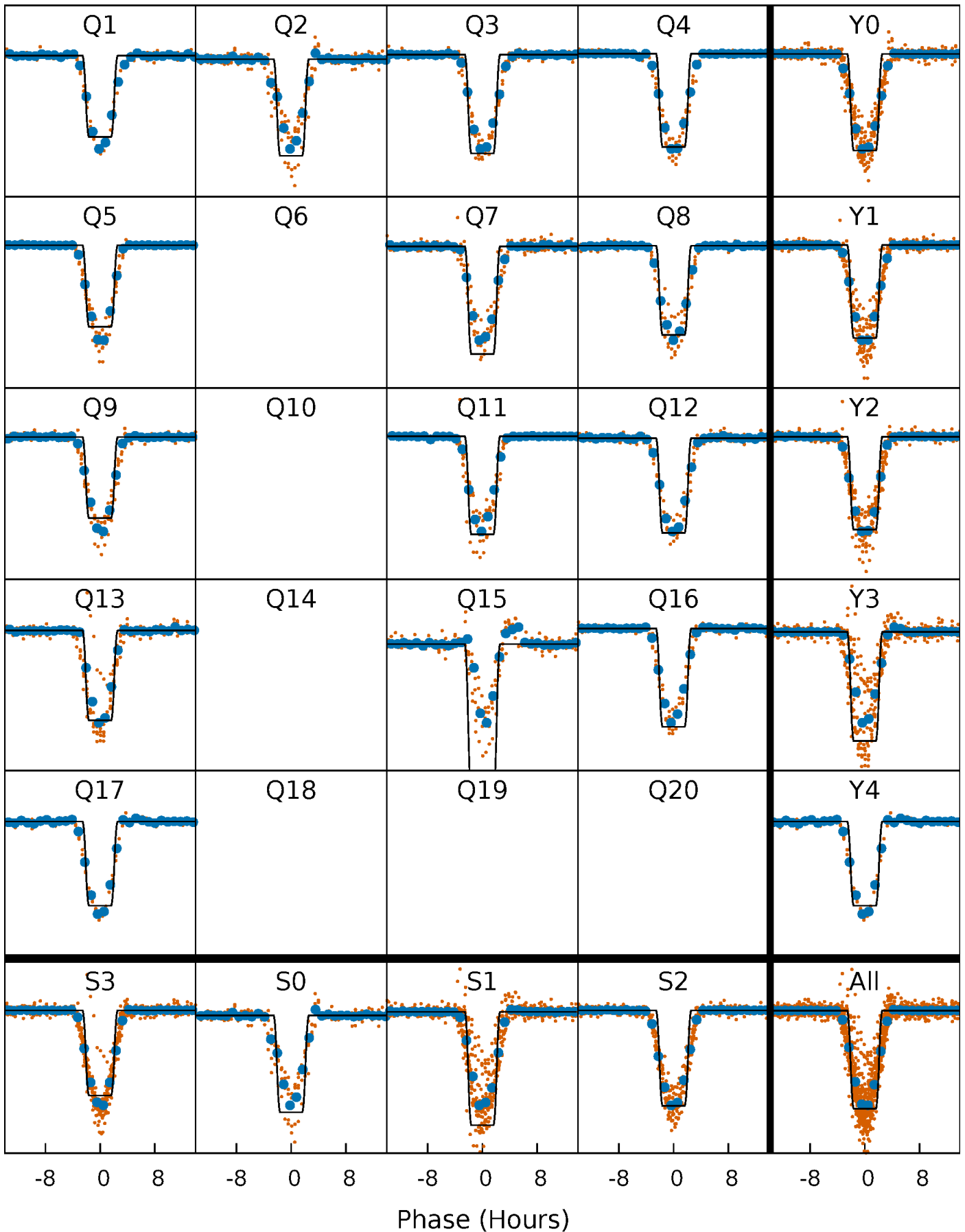
DV Quarter-Phased Transit Curves

TCE 004565985-01 P= 17.511813 Days $T_0=134.397021$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

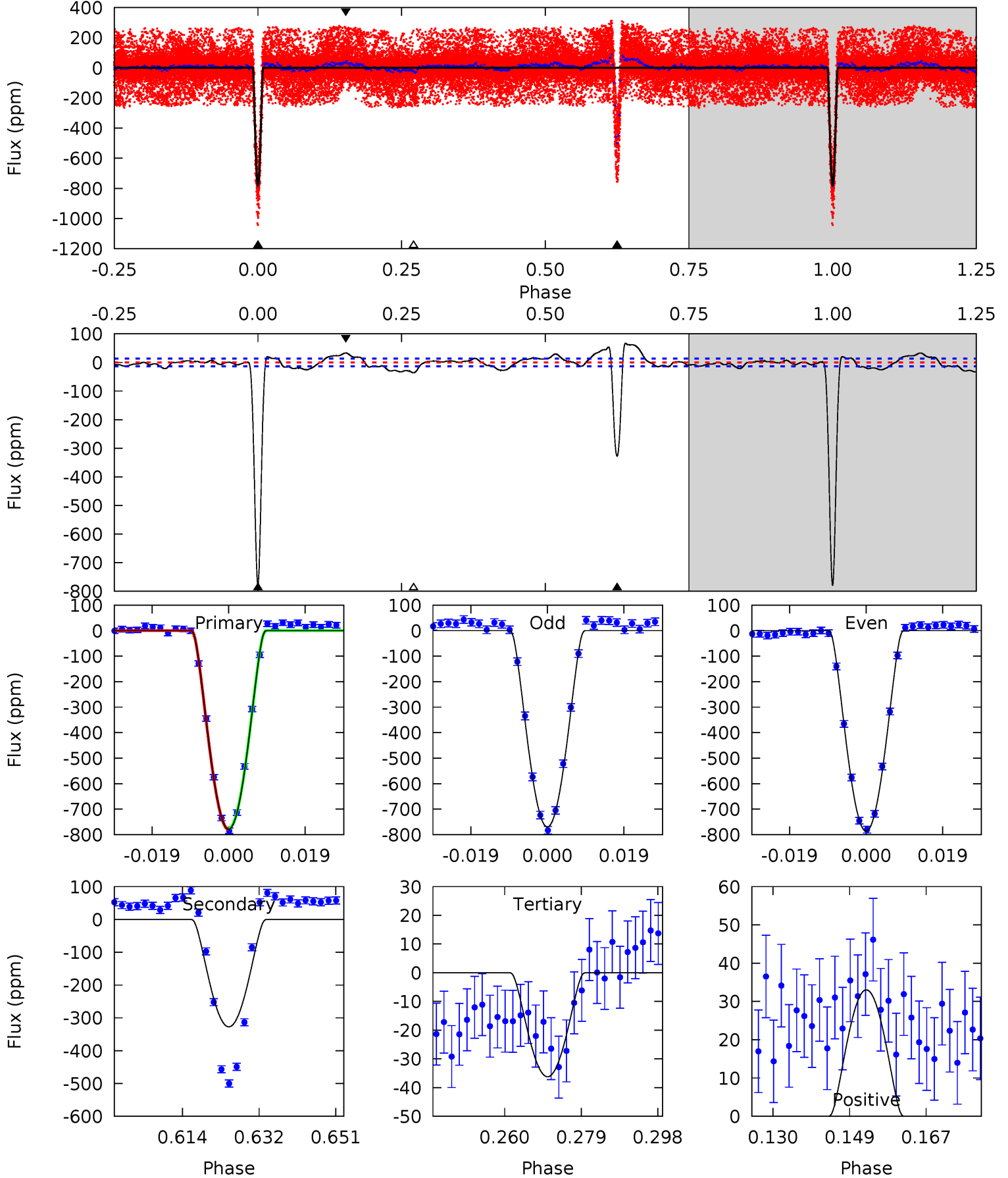
TCE 004565985-01 P= 17.511919 Days $T_0=134.391024$ (BKJD)



DV Model-Shift Uniqueness Test

004565985-01, P = 17.511813 Days, E = 116.885208 Days

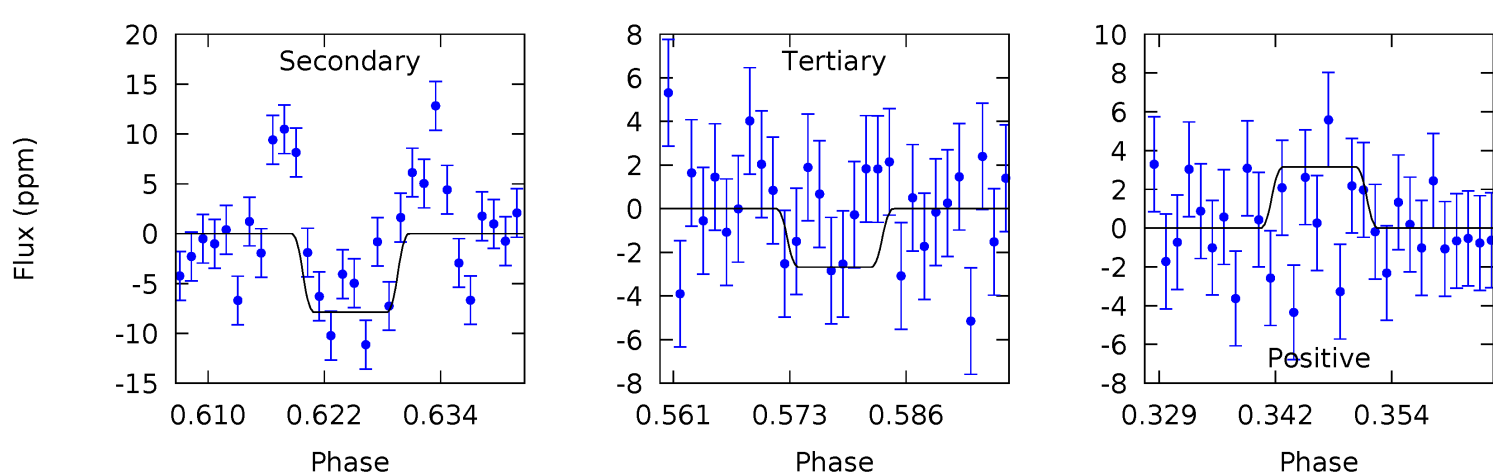
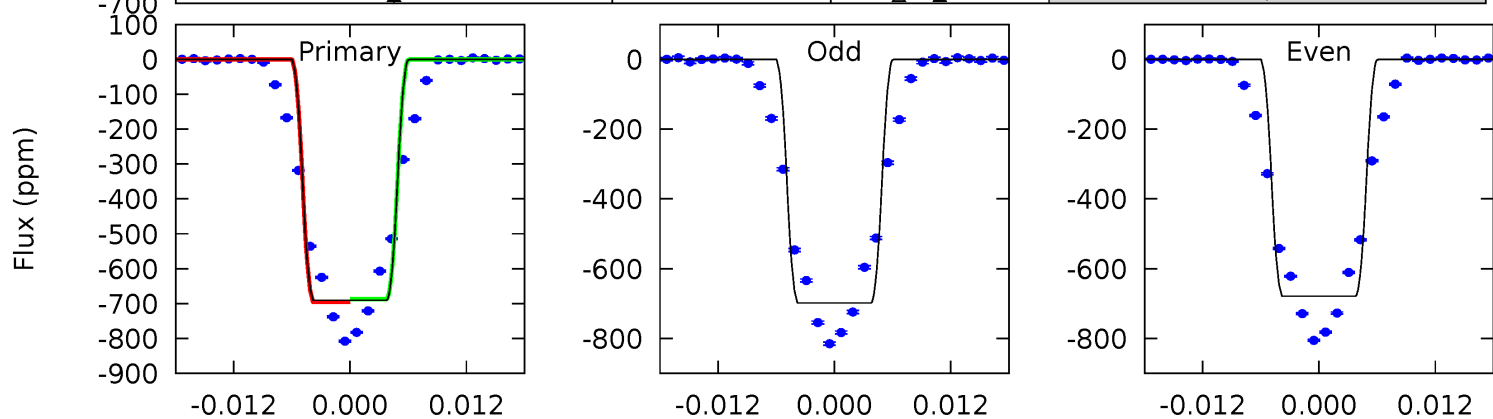
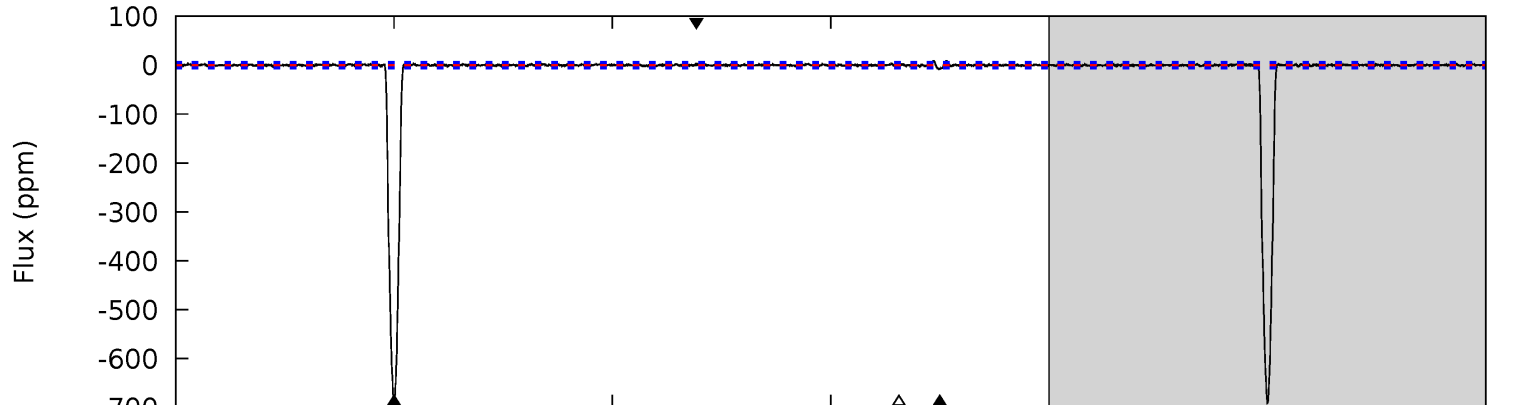
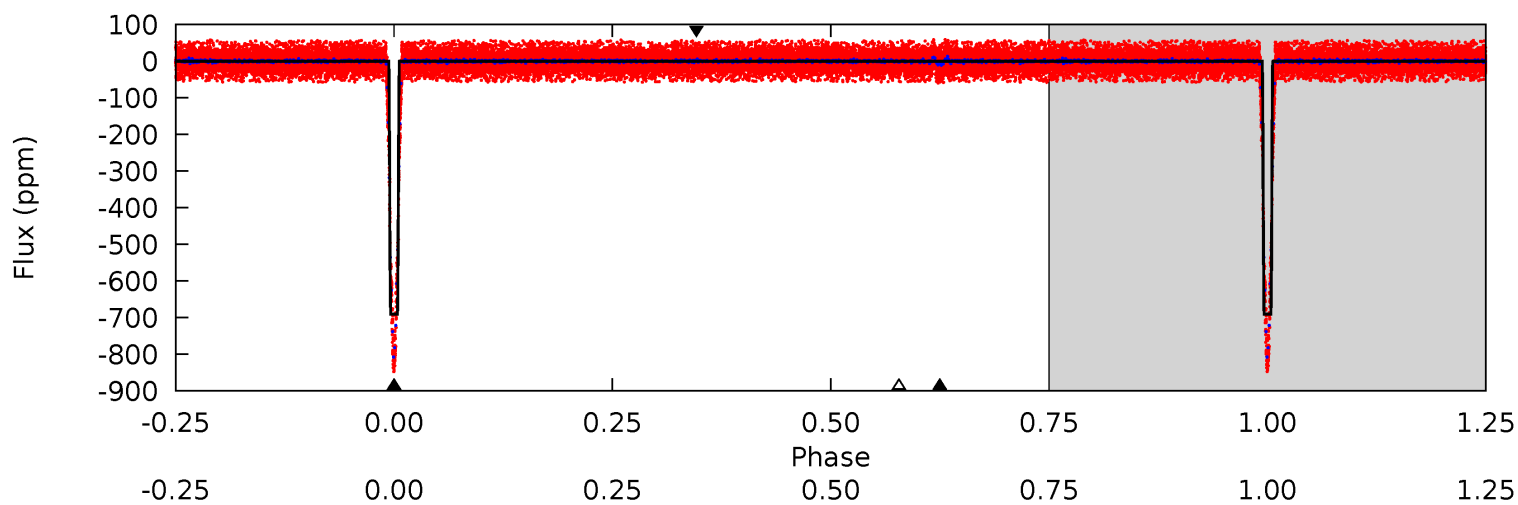
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
289.4	121.6	13.5	12.3	4.91	2.35	6.67	275.9	277.1	108.1	109.3	3.05	1.03	0.08	0.57



Alt Model-Shift Uniqueness Test

004565985-01, P = 17.511919 Days, E = 116.879105 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
609.3	6.95	2.36	2.78	4.99	2.51	0.77	606.9	606.5	4.59	4.17	8.59	0.92	0.01	3.90



Stellar Parameters For KIC 004565985

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4029^{+157}_{-96}	$1.786^{+0.255}_{-0.255}$	$0.300^{+0.150}_{-0.200}$	$20.888^{+10.581}_{-4.535}$	$0.972^{+0.497}_{-0.026}$	$0.000^{+0.000}_{-0.000}$
	+4%/-2%	+14%/-14%	+50%/-67%	+51%/-22%	+51%/-3%	+125%/-64%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004565985-01 / KOI 6424.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-327 ± 3	$132.12^{+41.20}_{-24.61}$	3141^{+379}_{-249}	-2647^{+609}_{-360}	$0.186^{+0.100}_{-0.069}$
Alt.	-8 ± 1	$65.17^{+23.54}_{-16.53}$	3140^{+338}_{-263}	-3007^{+160}_{-203}	$0.019^{+0.015}_{-0.008}$

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

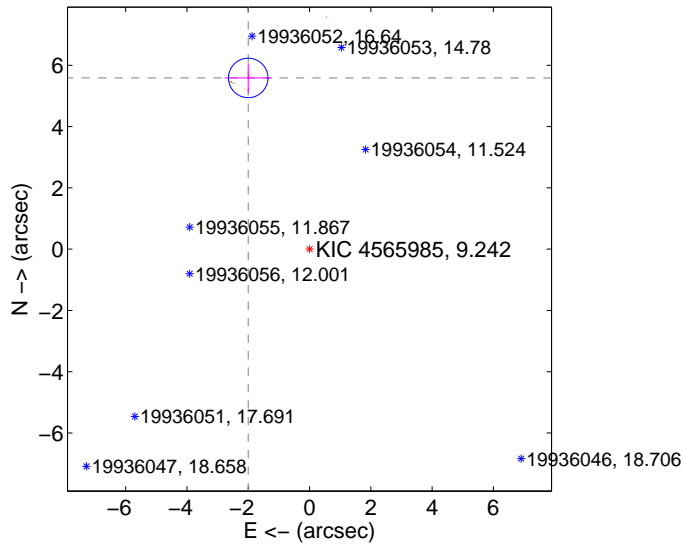
Supplemental centroid analysis for 004565985-01. **Kepler magnitude: 9.24.** Transit SNR 188.51

There are 5 quarters with good PRF difference image offsets

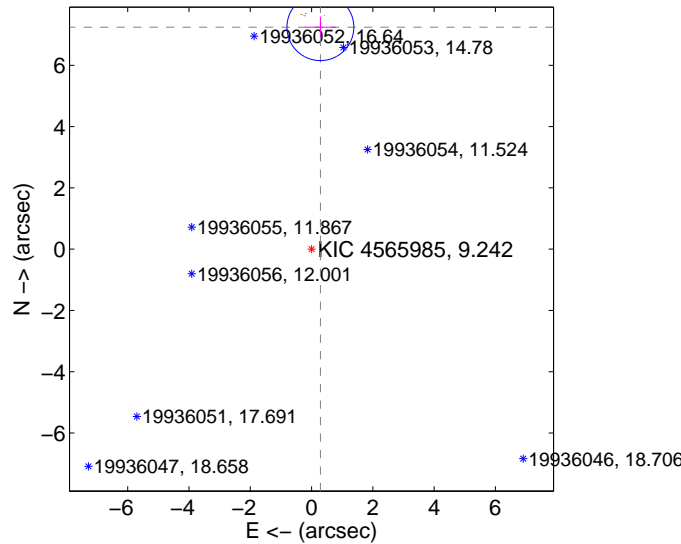
The OOT PRF centroid is offset from the target star catalog position by about 3.14 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.935 ± 0.215	27.64	2.001 ± 0.771	5.588 ± 0.480
PRF-fit source offset from KIC position	7.250 ± 0.364	19.94	-0.288 ± 0.506	7.244 ± 0.346
photometric centroid source offset	5.56 ± 0.21	26.70	-0.65 ± 0.13	5.52 ± 0.21

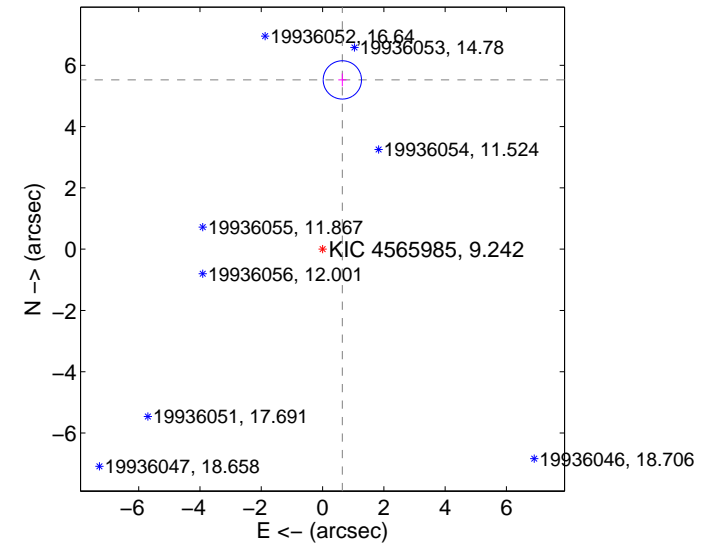
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

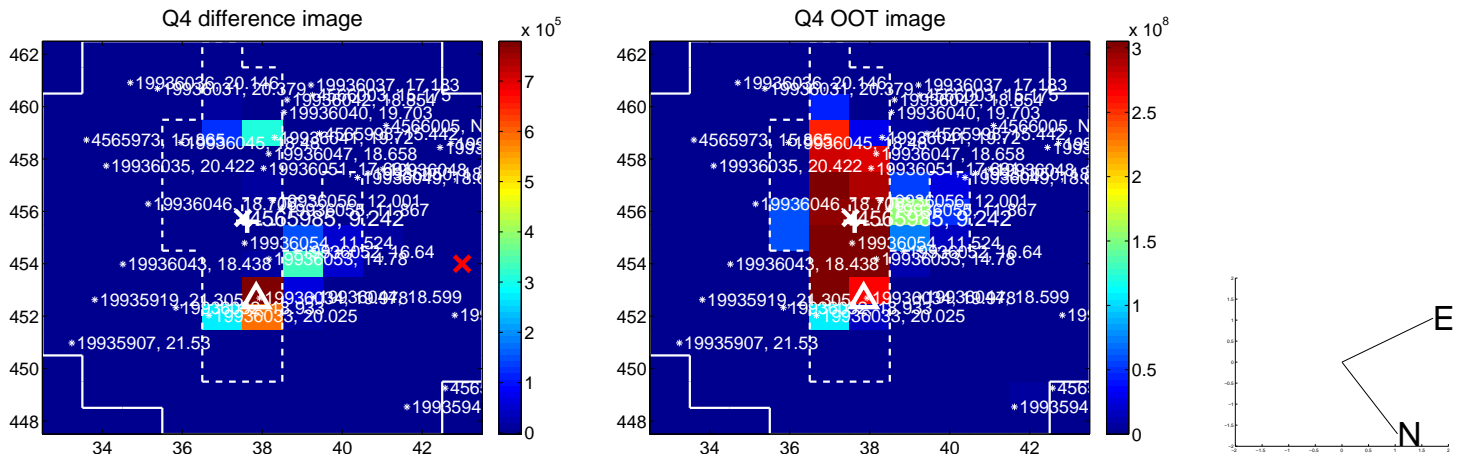
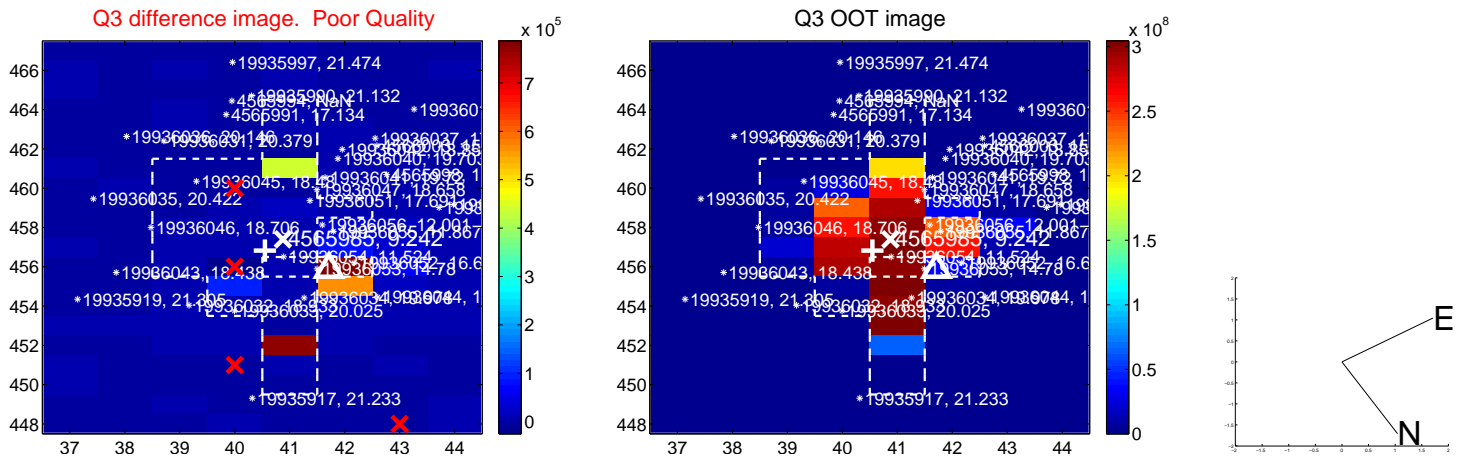
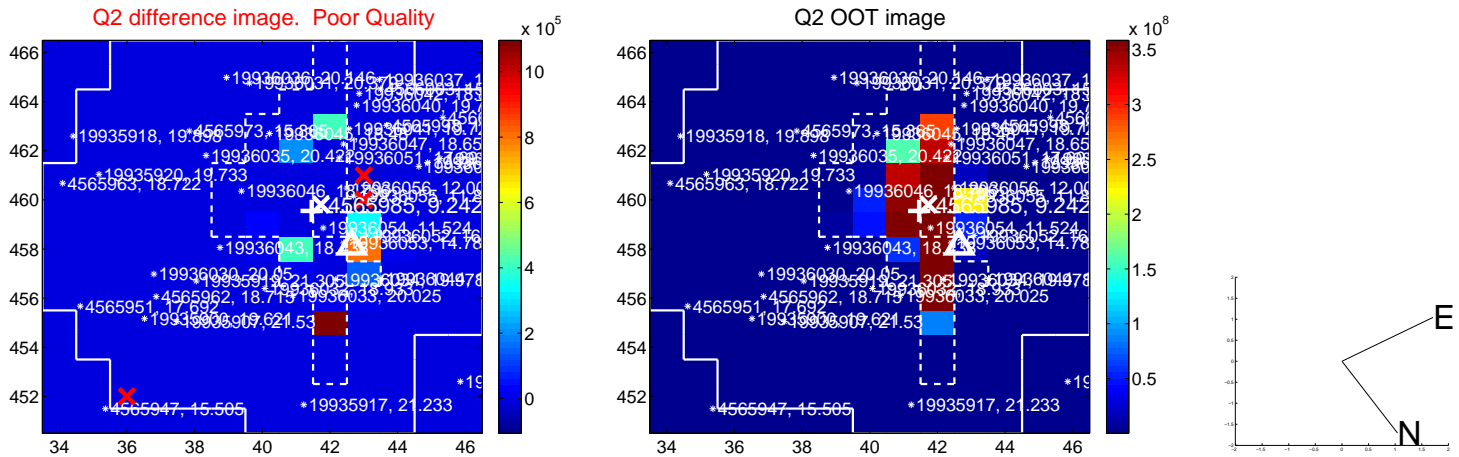
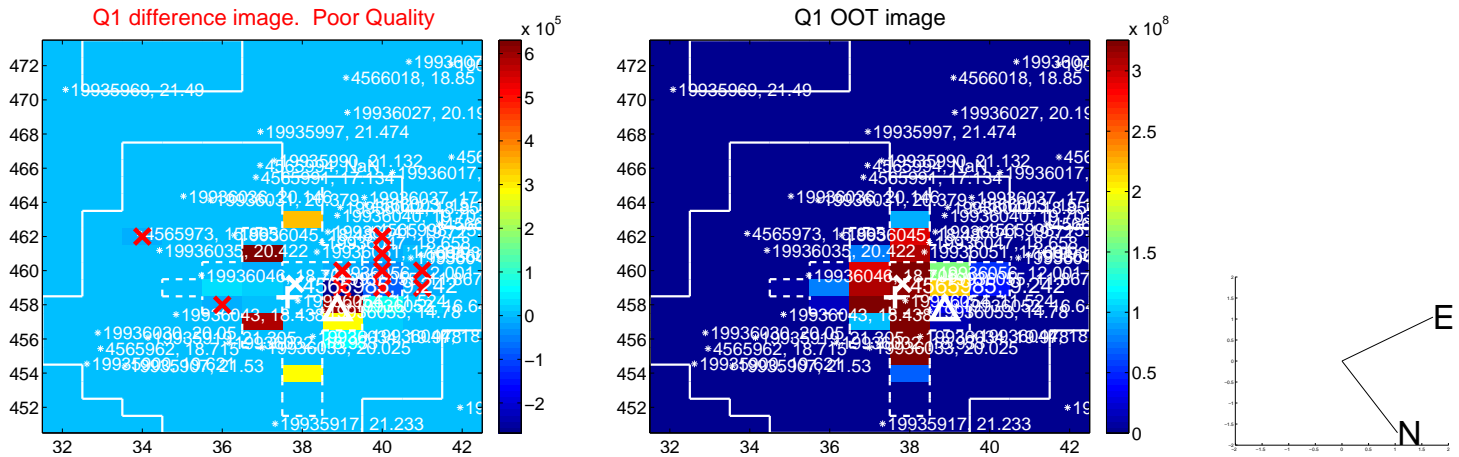


offset from photometric centroids

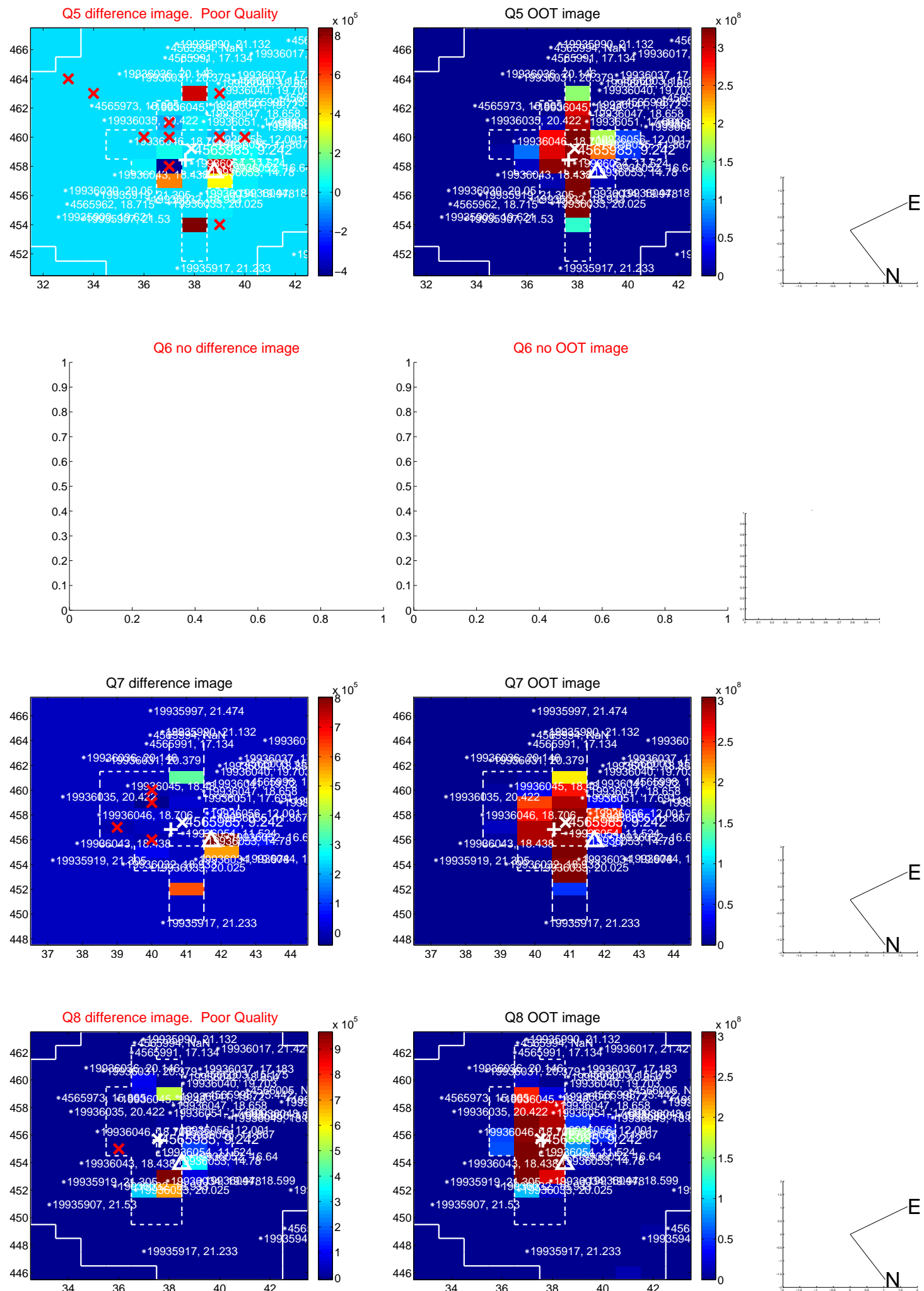


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

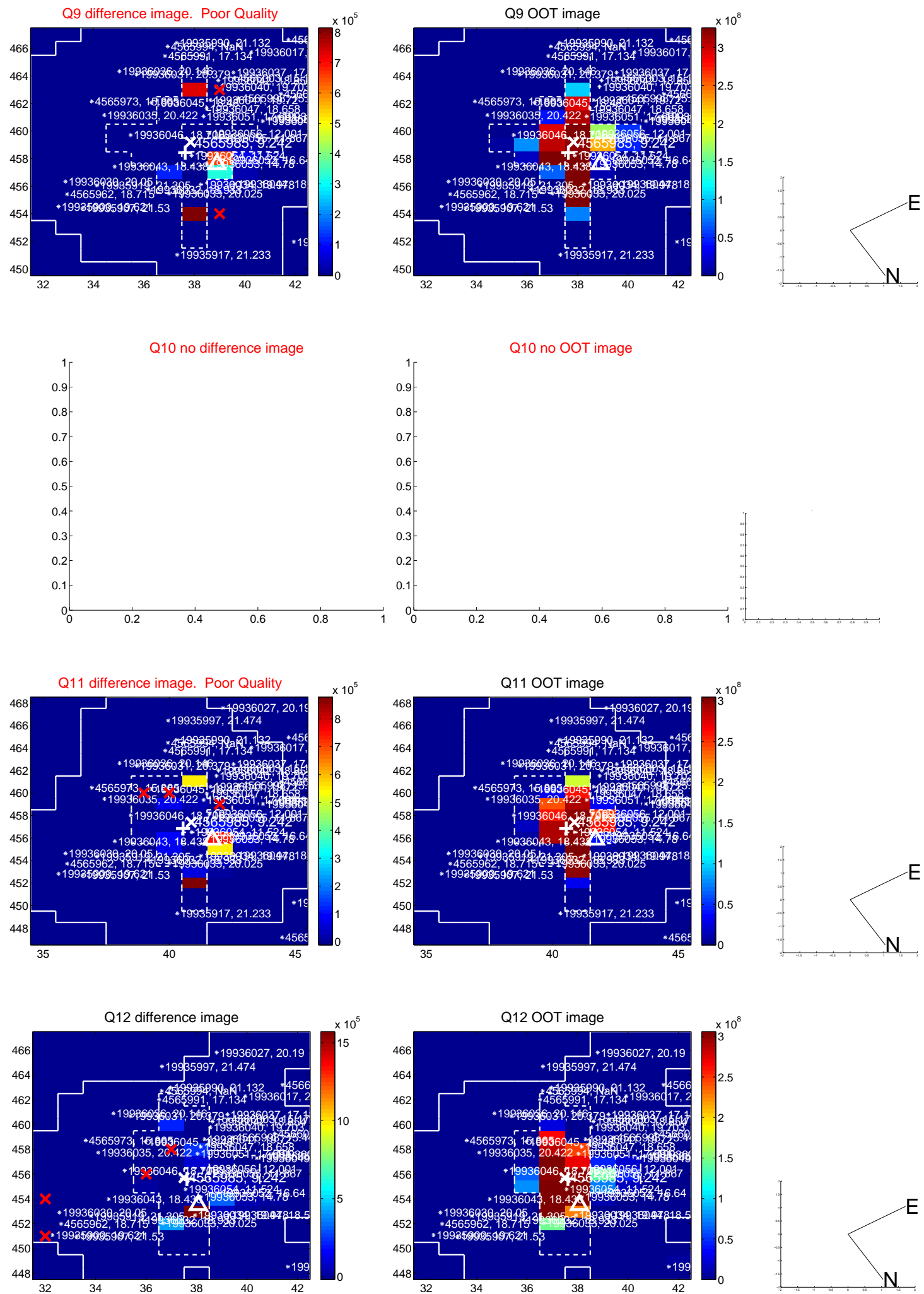
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



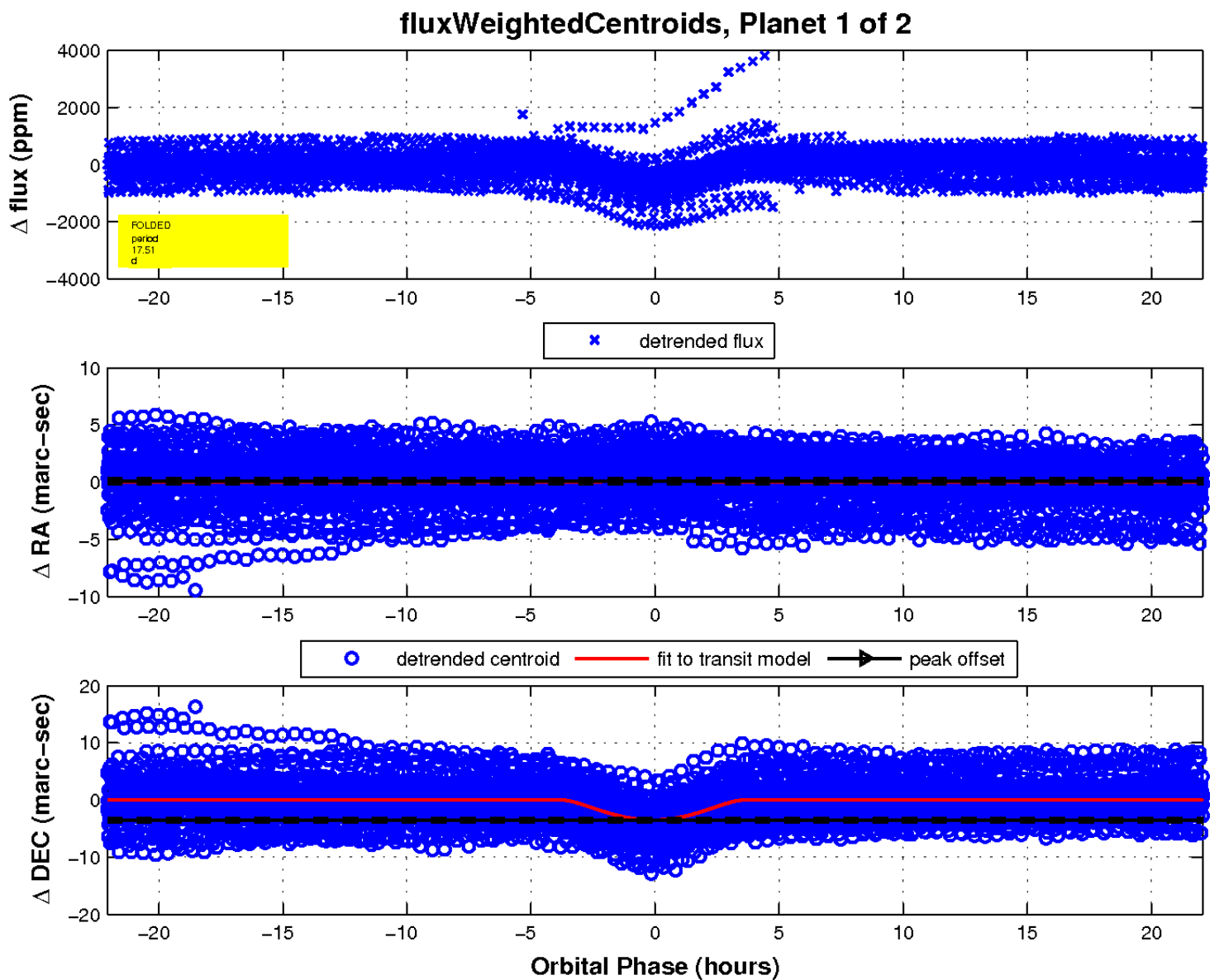
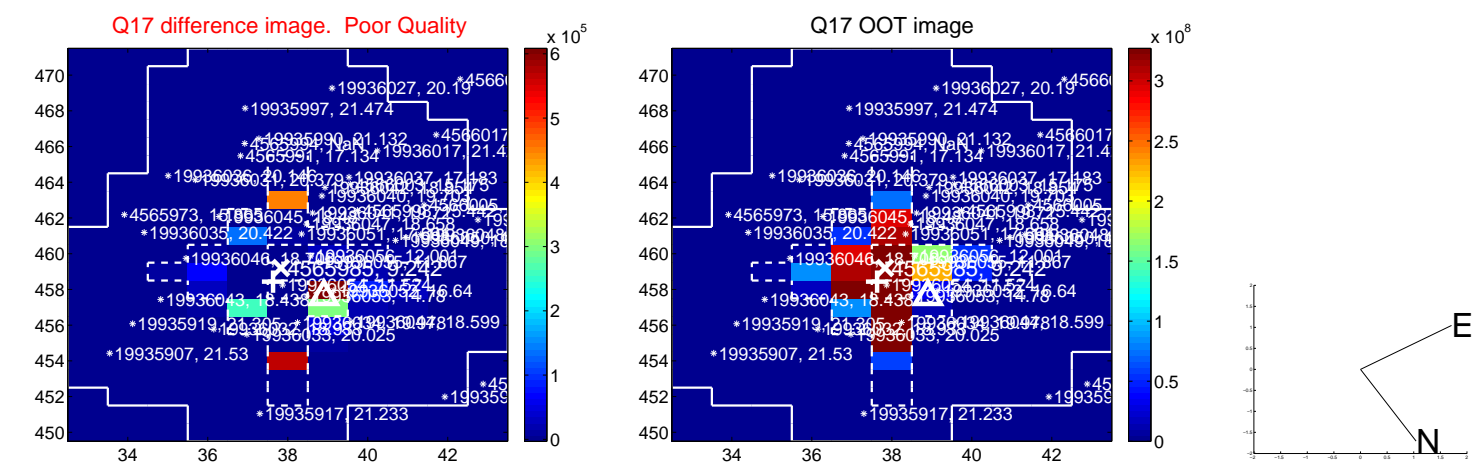
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



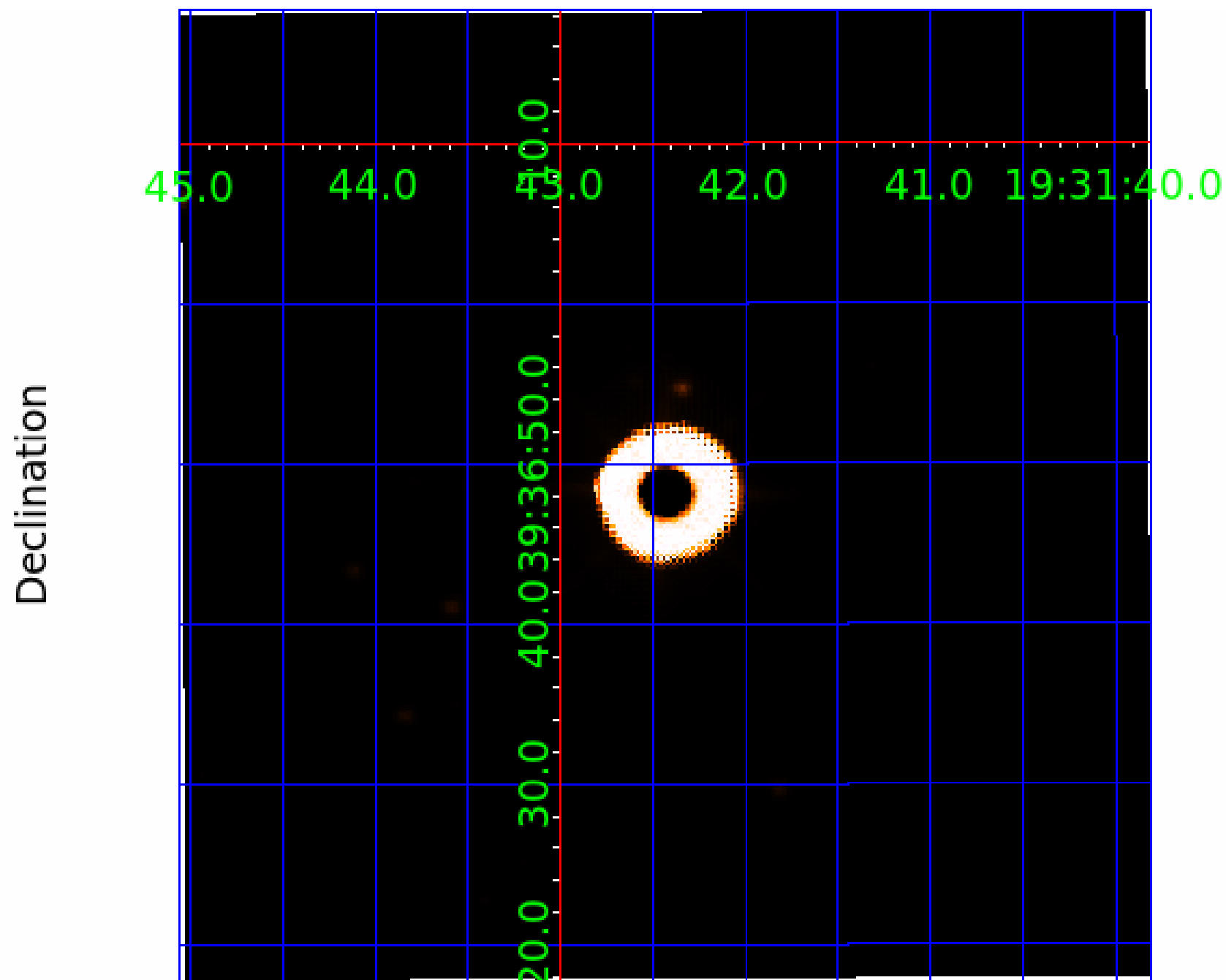
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004565985

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})
004565985-01	OBS	6424.01	17.511813	134.397021	795.9	7.357	186.1	188.5	20.89	4029	129.26	6023.37
004565985-02	OBS	No	17.511840	145.344527	721.7	7.111	177.9	176.4	20.89	4029	123.60	6023.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004565985-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_SATURATED
004565985-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED

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 004565985-02

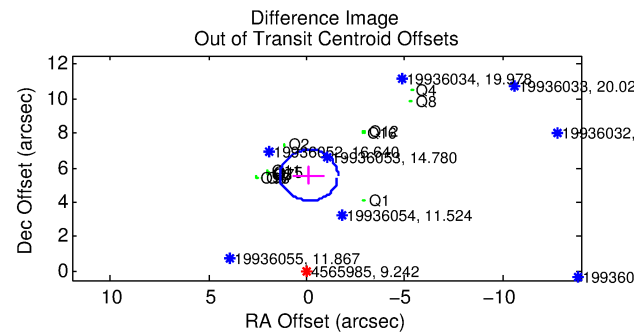
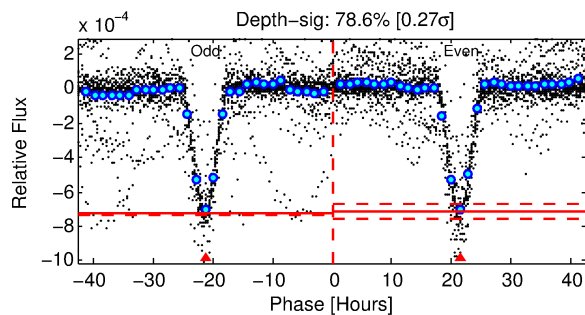
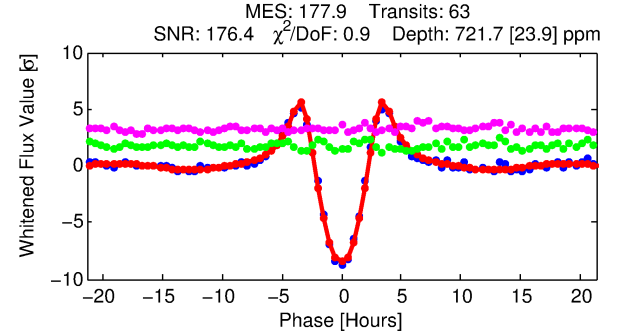
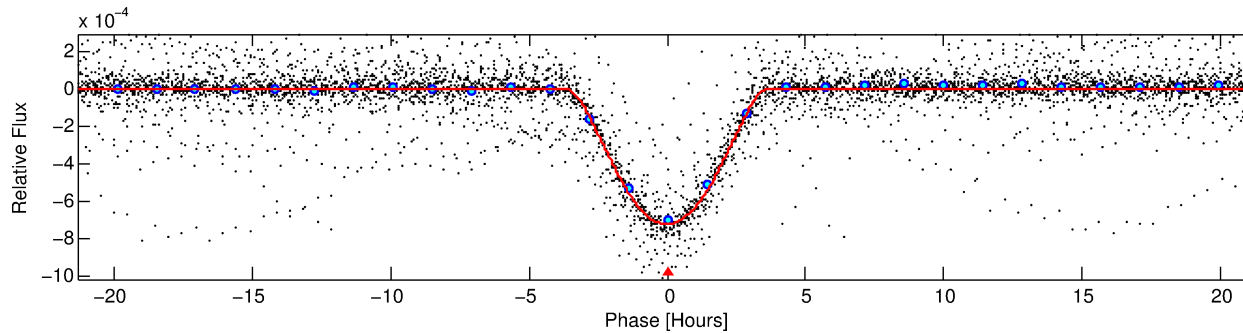
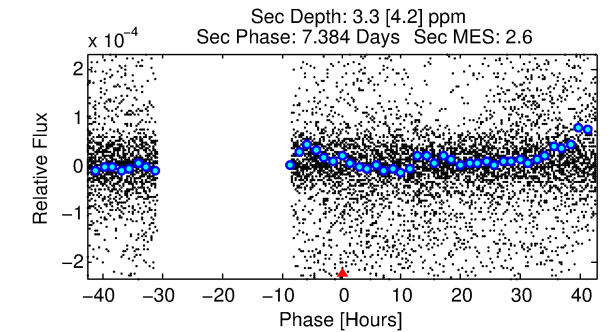
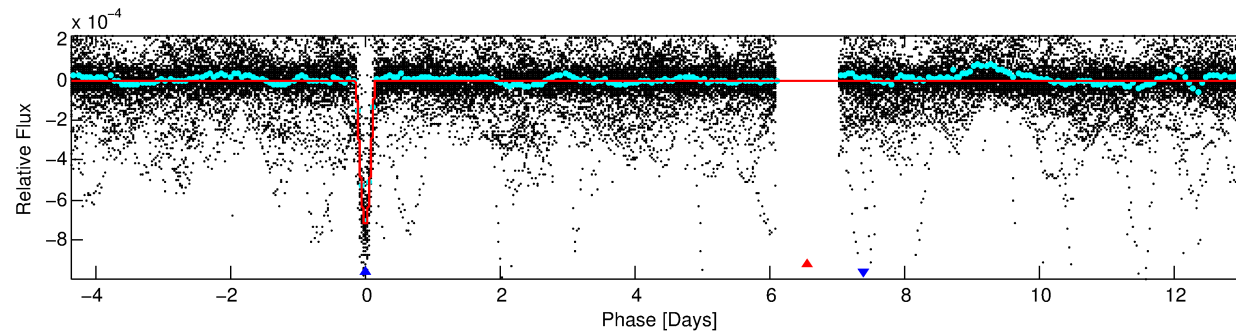
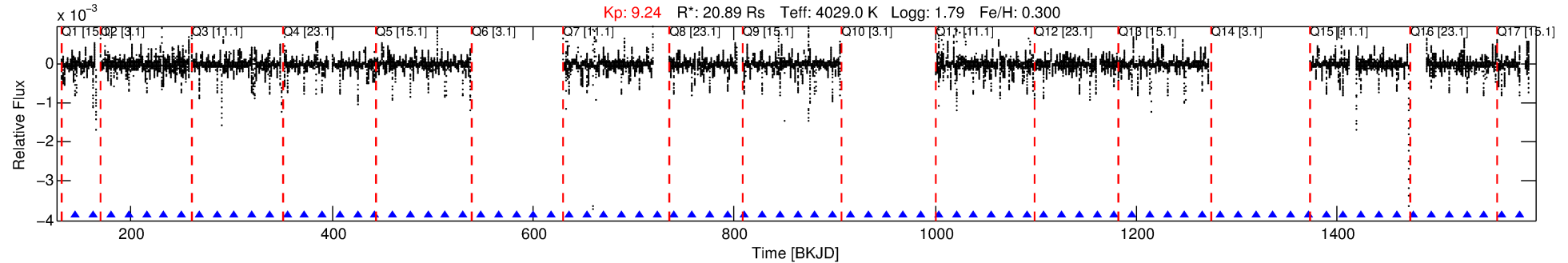
No Significant Match Found

DV One-Page Summary

KIC: 4565985 Candidate: 2 of 2 Period: 17.512 d

KOI: K06424 Corr: No Ephemeris Match

Kp: 9.24 R*: 20.89 Rs Teff: 4029.0 K Logg: 1.79 Fe/H: 0.300



DV Fit Results:

Period = 17.51184 [0.00001] d
Epoch = 145.3445 [0.0006] BKJD
Rp/R* = 0.0542 [0.0063]
a/R* = 6.36 [0.16]
b = 1.00 [0.01]
Seff = 6023.36 [3252.42]
Teq = 2246 [303] K
Rp = 123.60 [64.24] Re
a = 0.1308 [0.0510] AU
Ag = 0.00 [0.00] [-351.48σ]
Teffp = 738 [241] K [-3.90σ]

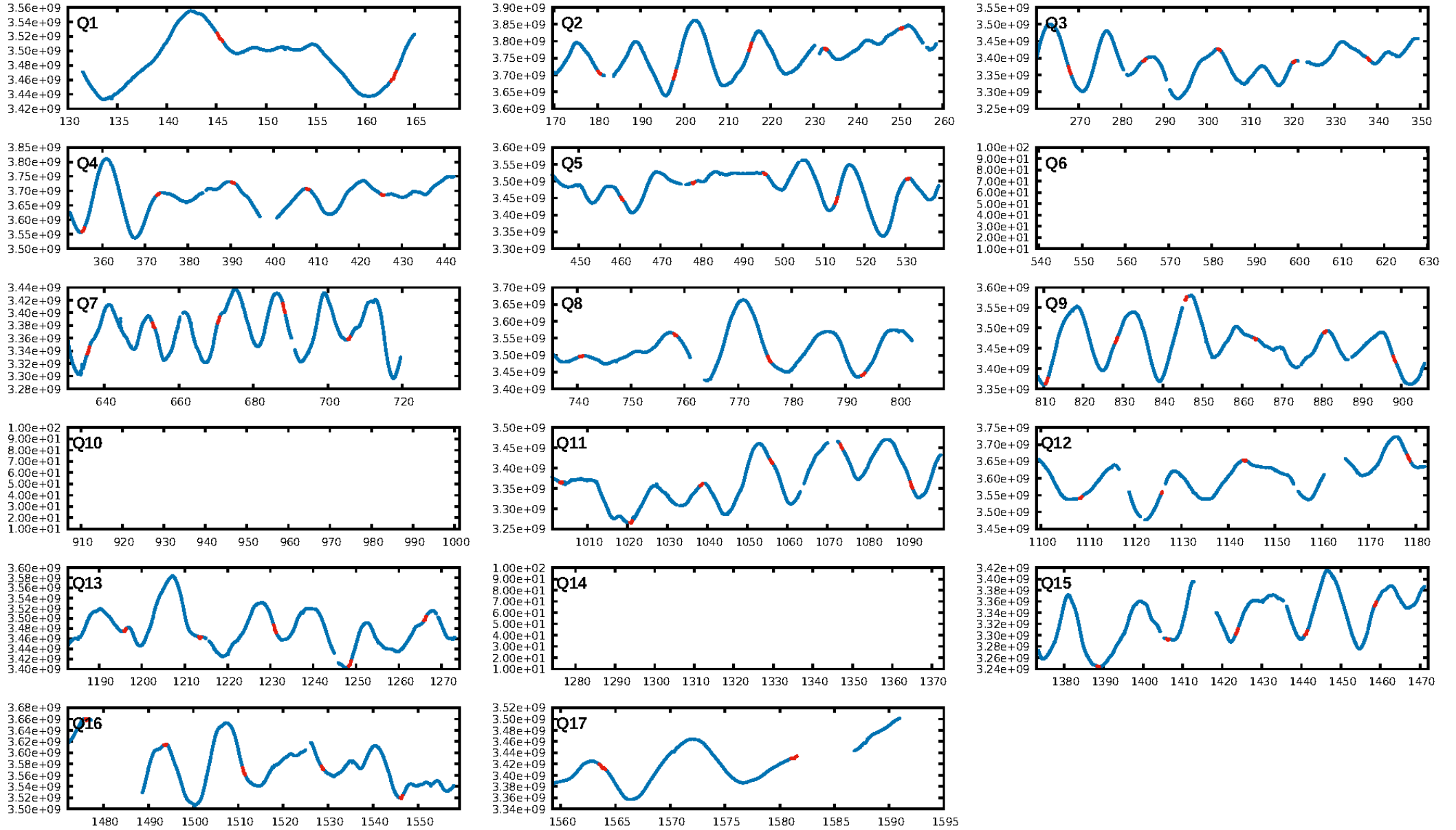
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [59/59]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.0%
Centroid-so: 6.522 arcsec [28.44σ]
OotOffset-rm: 5.565 arcsec [11.34σ]
KicOffset-rm: 7.380 arcsec [18.03σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.43 [6/14]
DiffImageOverlap-fno: 1.00 [14/14]

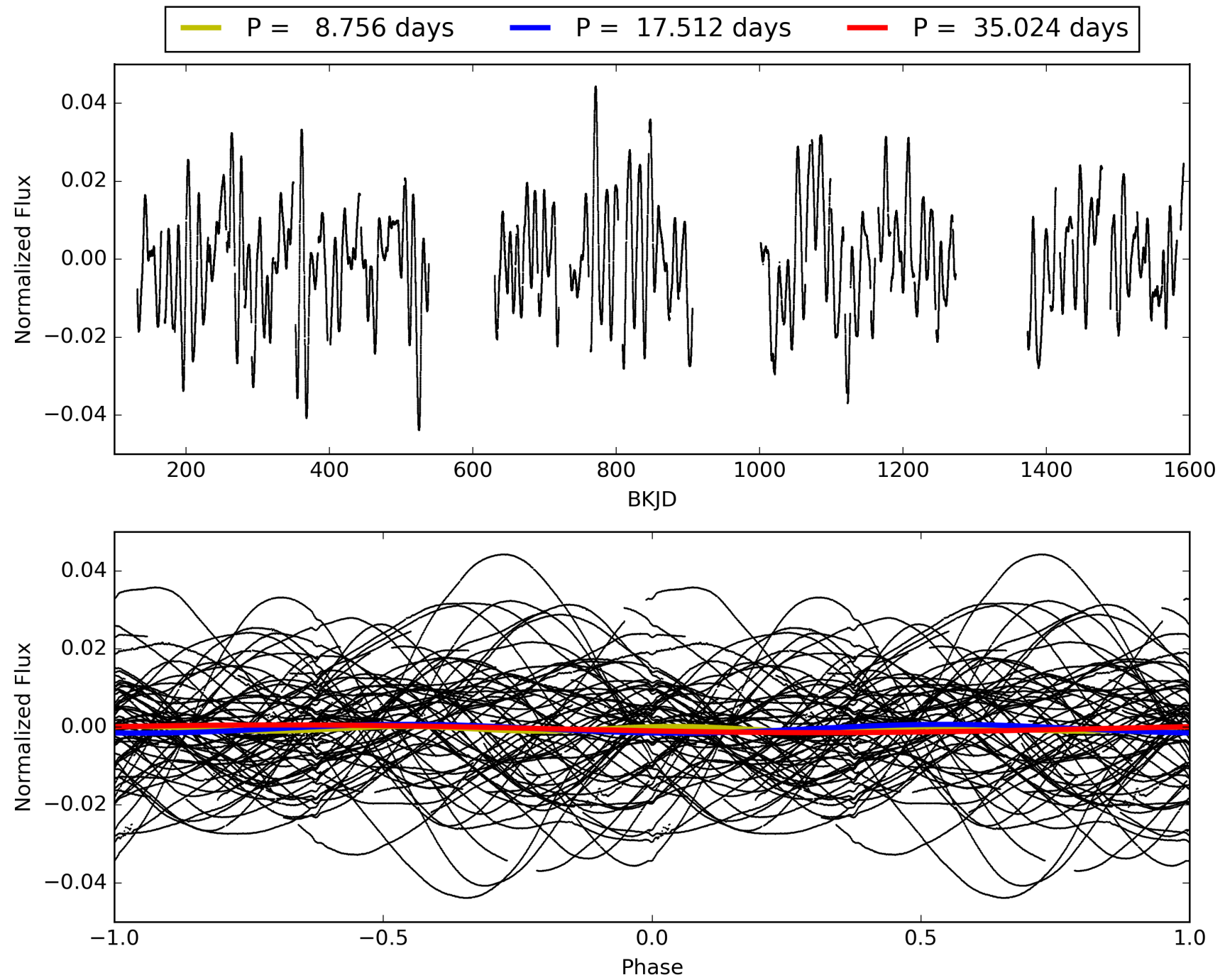
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:25:14 Z

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

TCE 004565985-02, PDC Light Curves

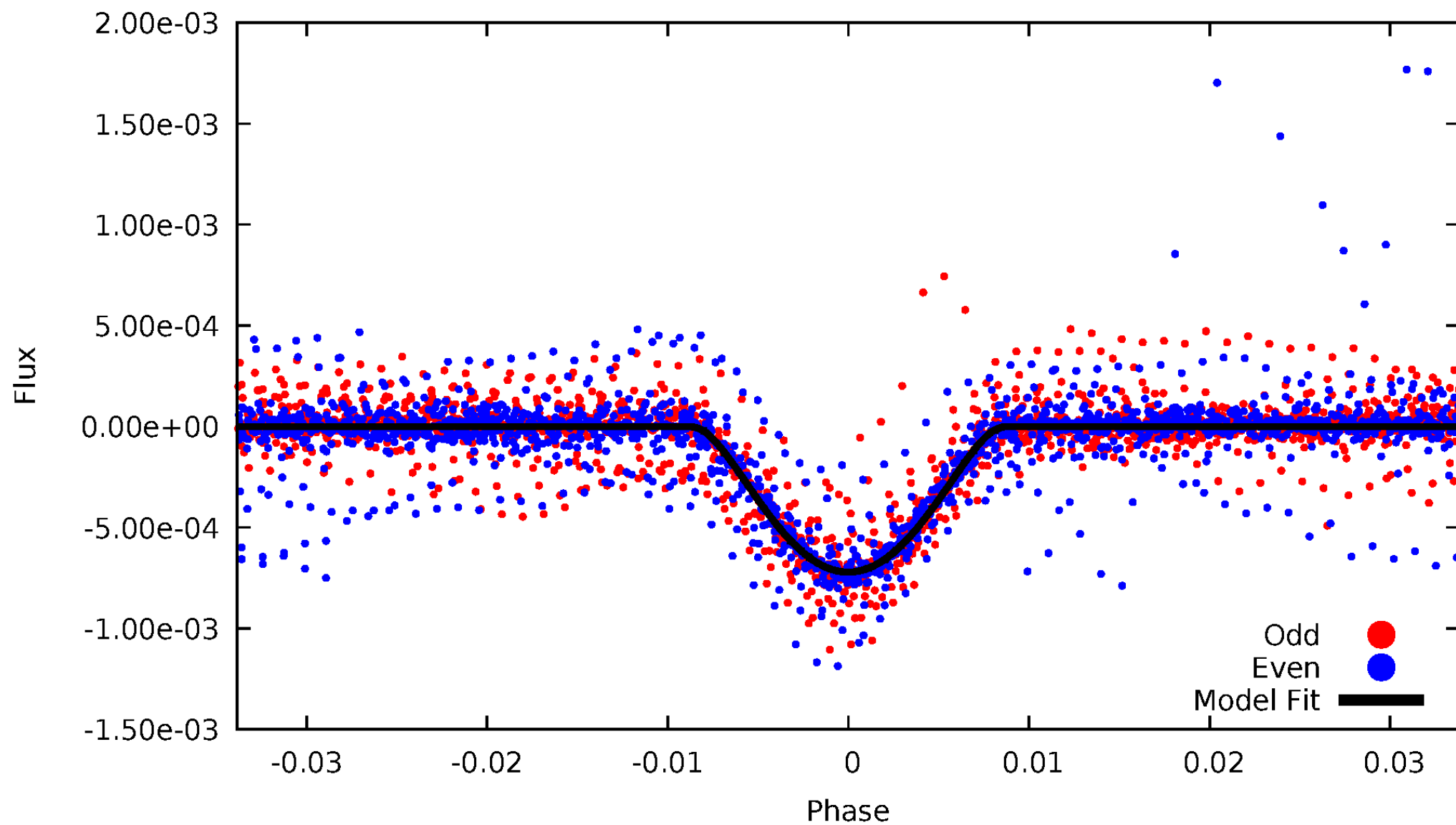


TCE 004565985-02



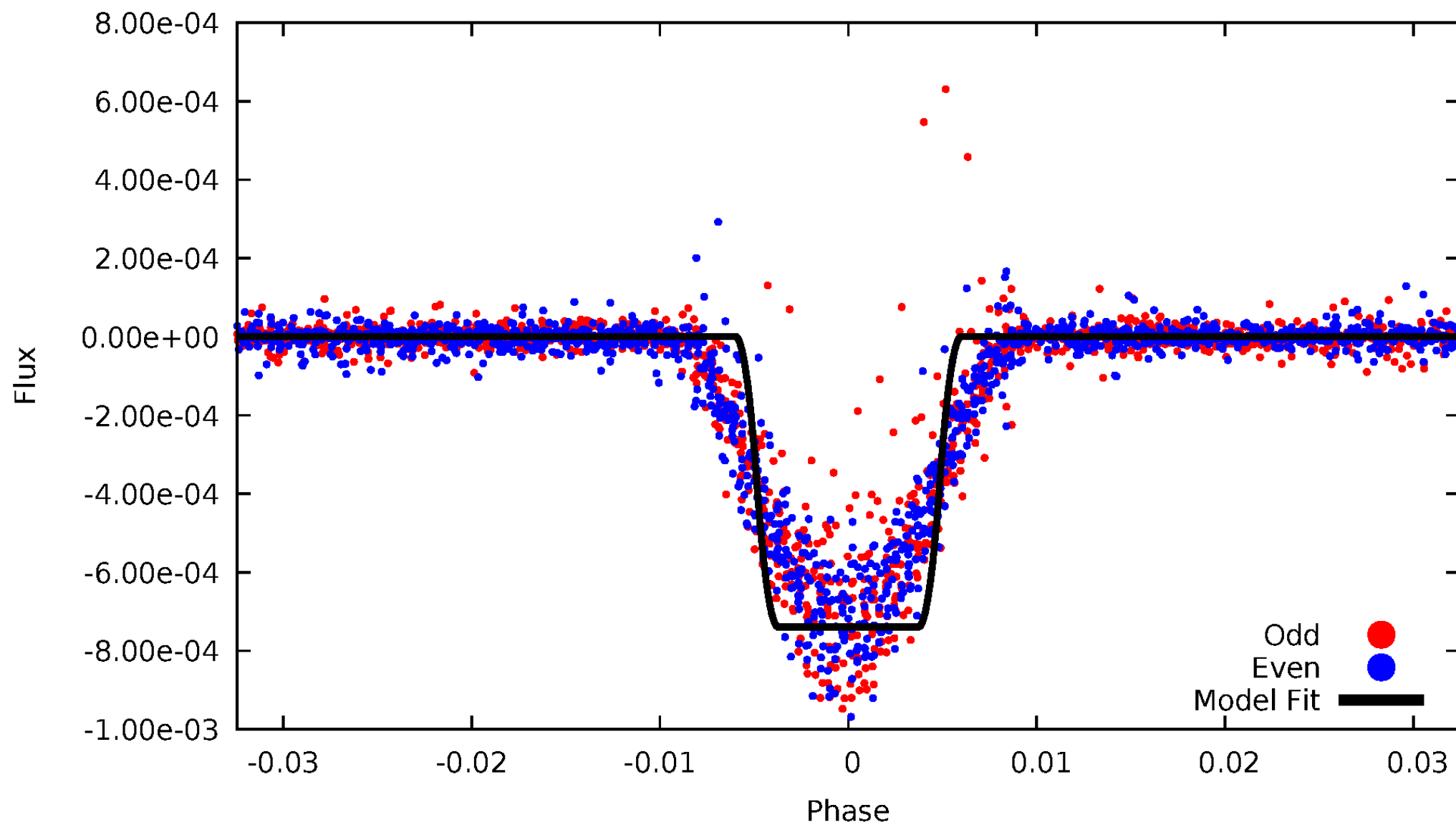
DV Odd/Even

TCE 004565985-02



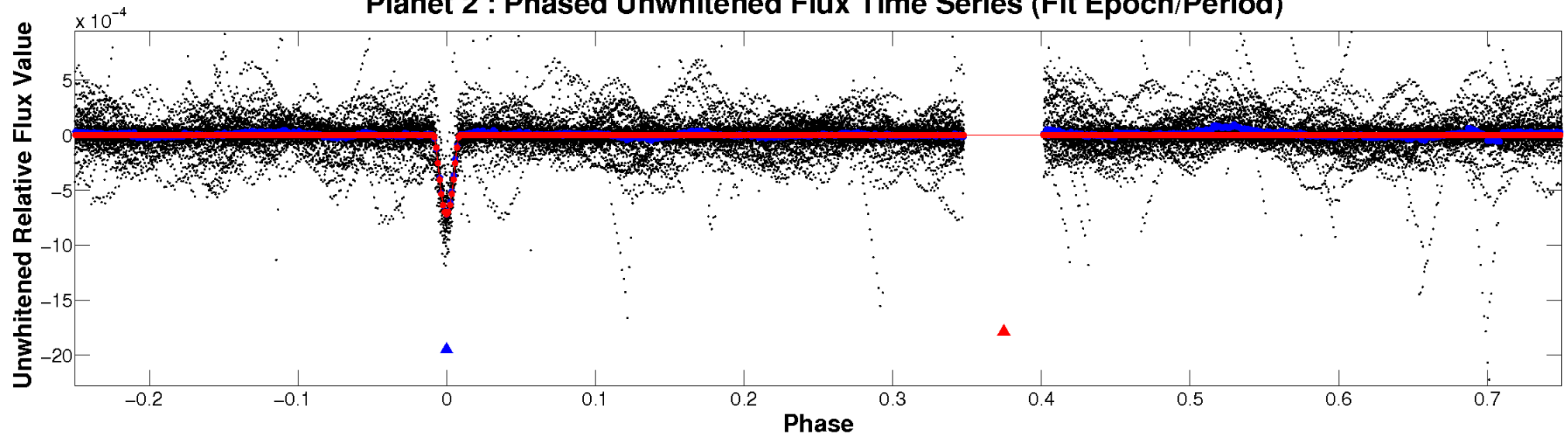
ALT Odd/Even

TCE 004565985-02

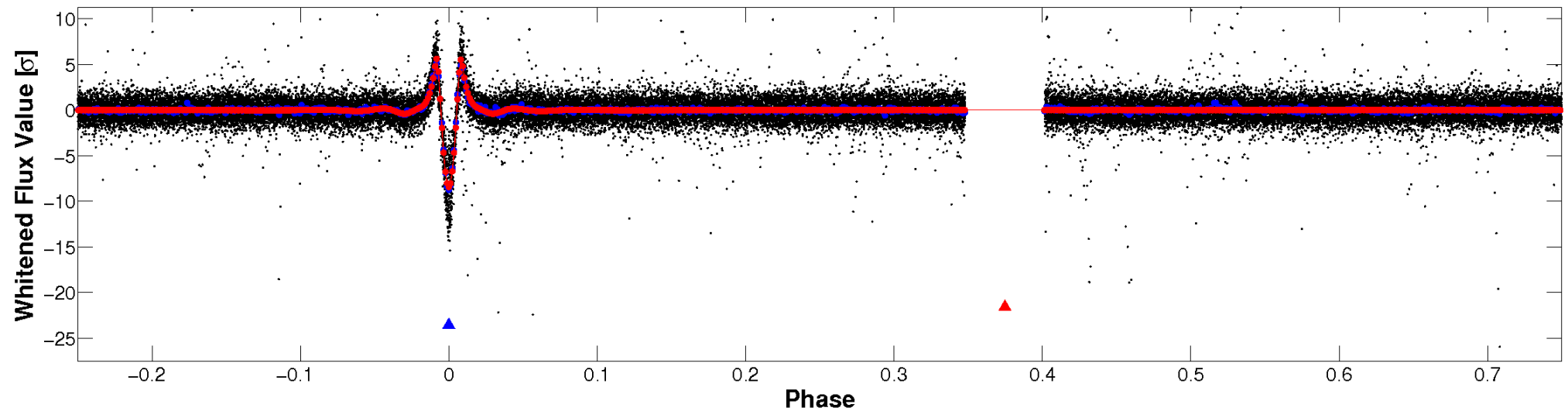


Non-Whitened Vs. Whitened Light Curve

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

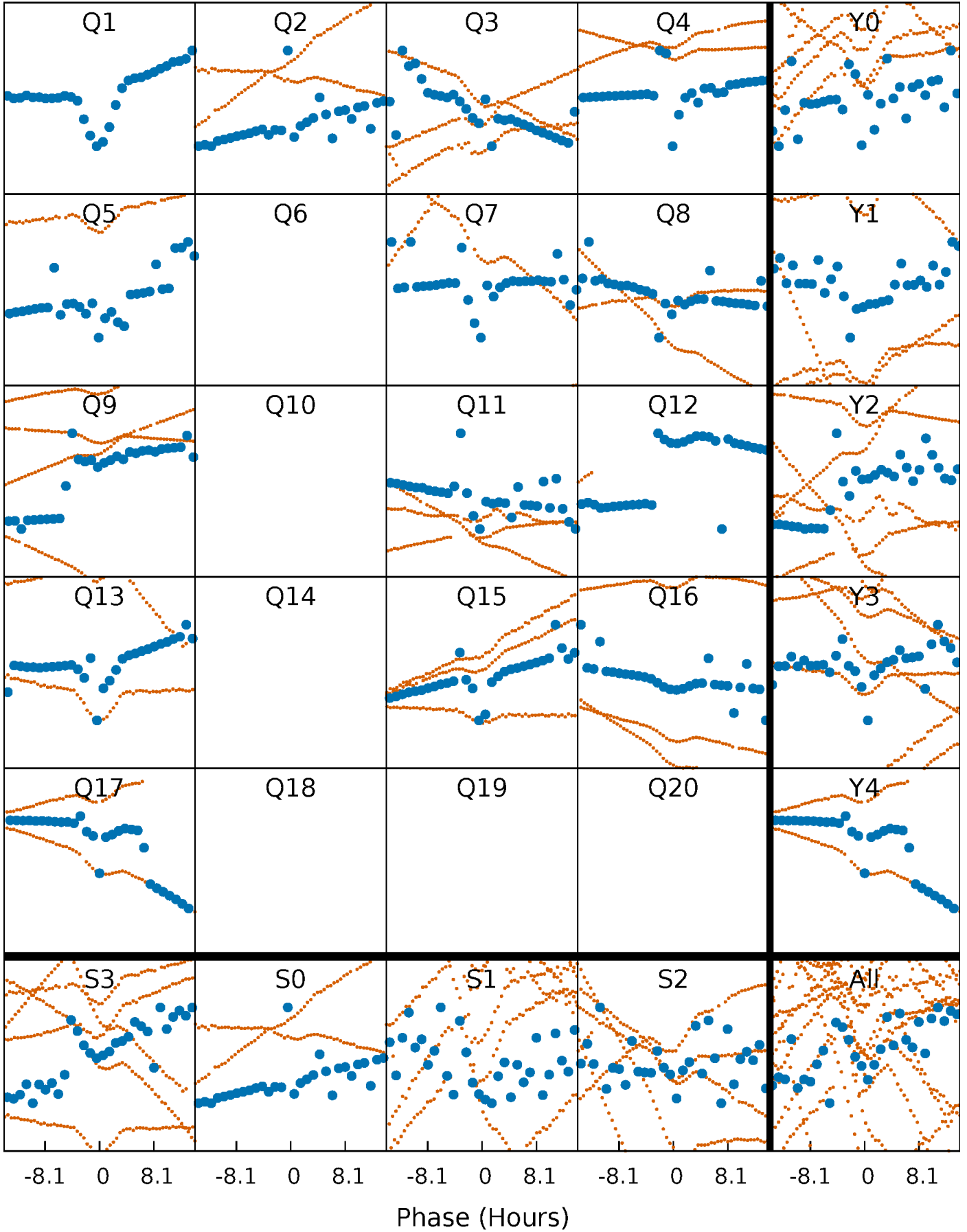


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



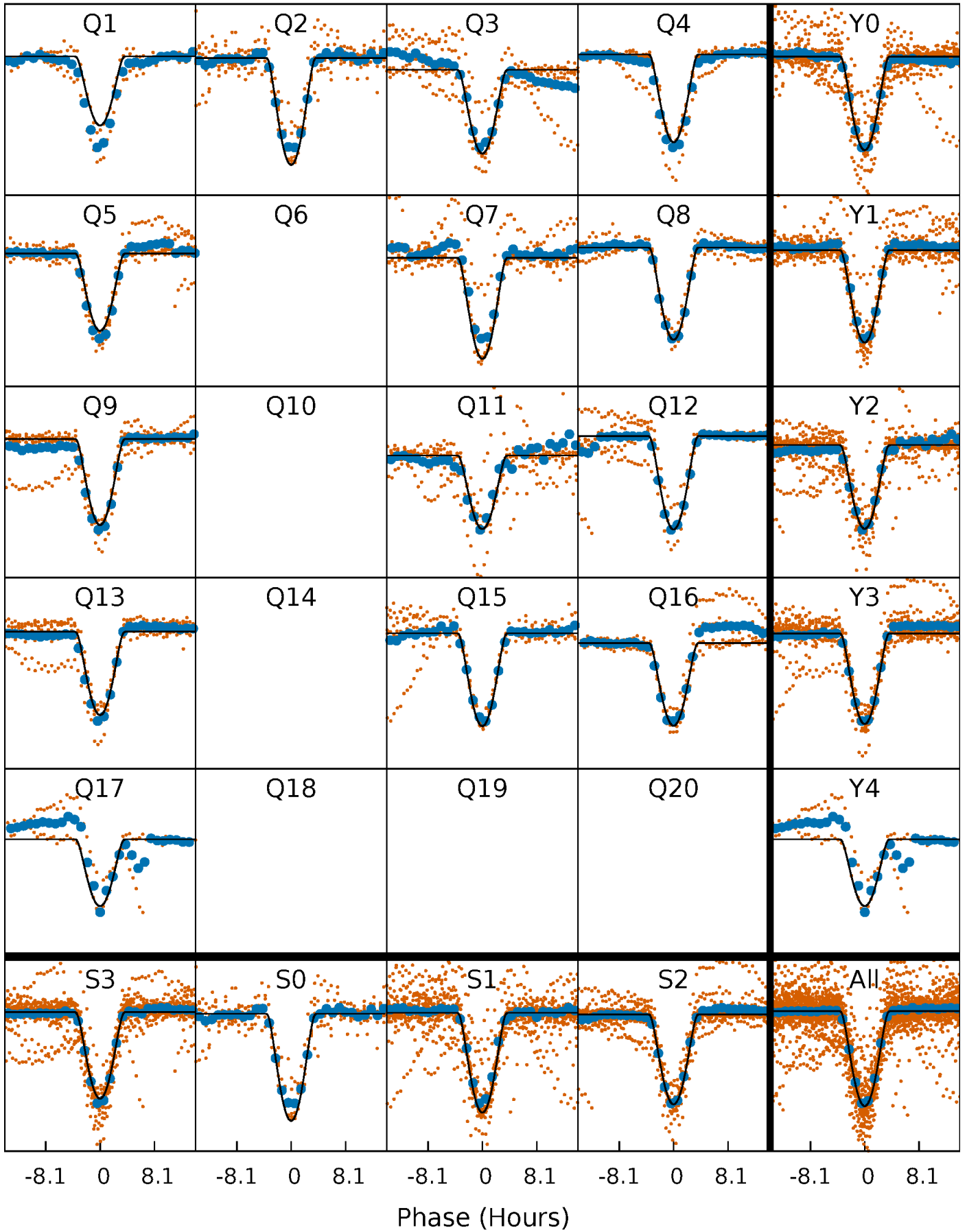
PDC Quarter-Phased Transit Curves

TCE 004565985-02 P= 17.511840 Days $T_0=145.344527$ (BKJD)



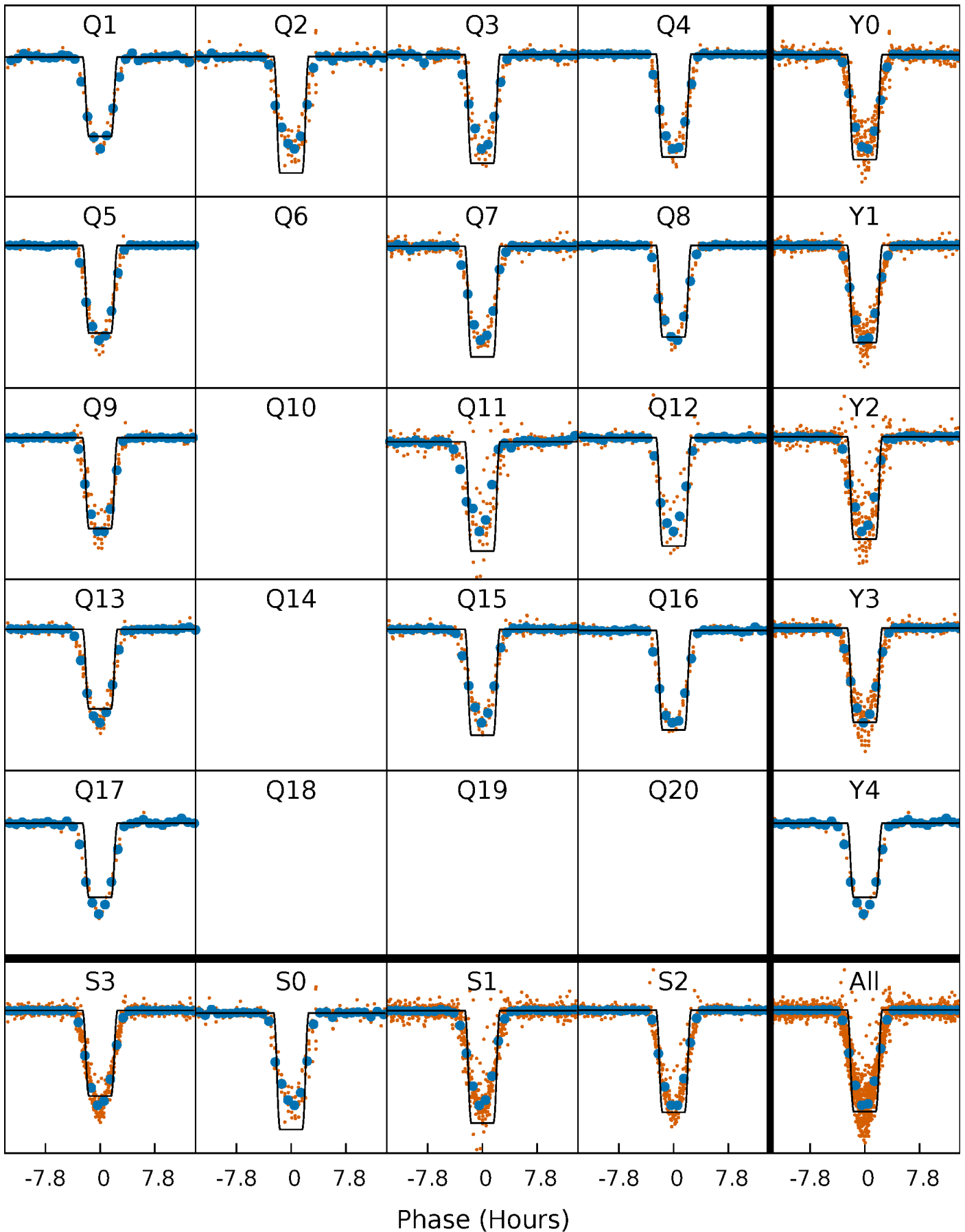
DV Quarter-Phased Transit Curves

TCE 004565985-02 P= 17.511840 Days $T_0=145.344527$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

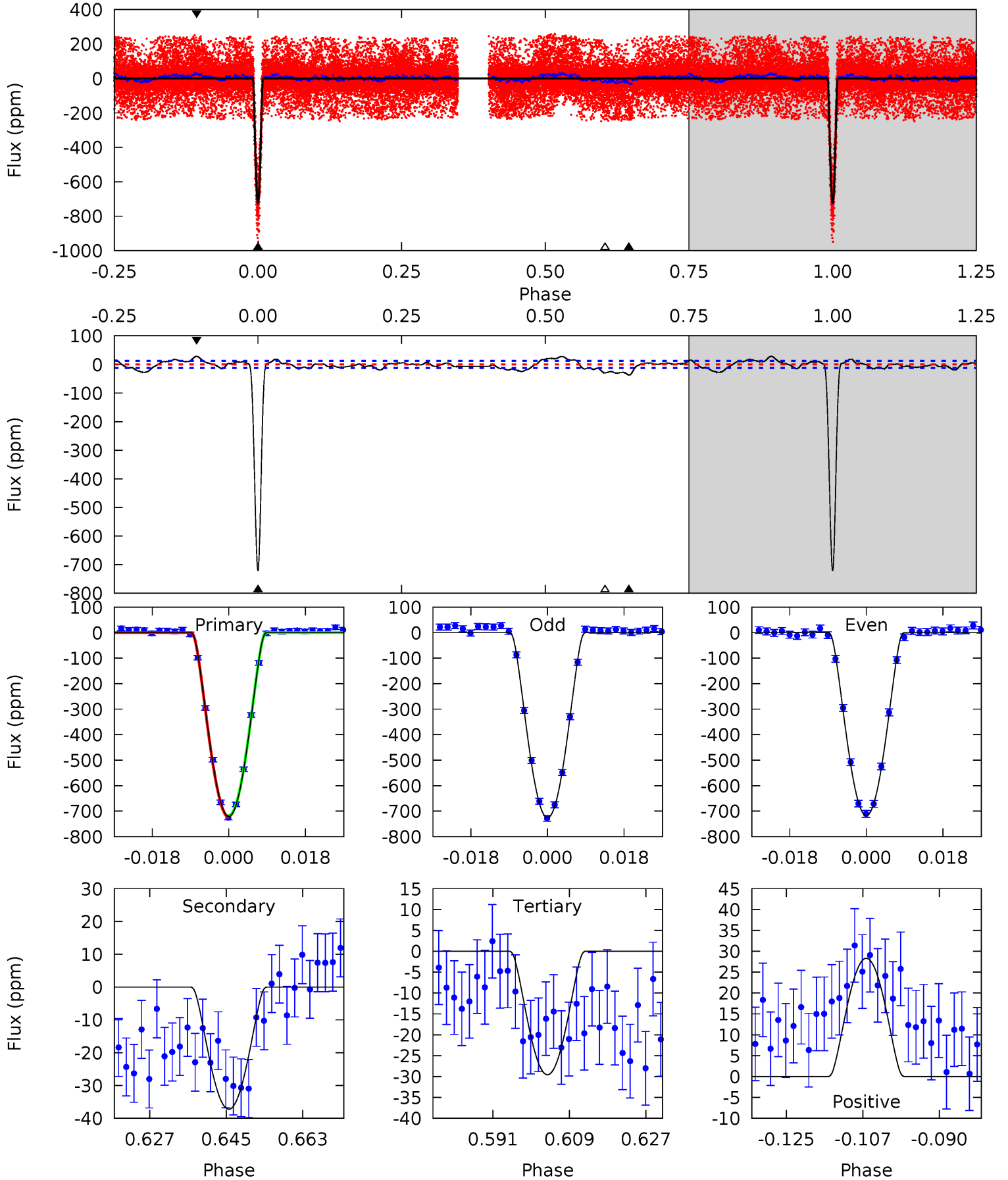
TCE 004565985-02 P= 17.511919 Days $T_0=145.343107$ (BKJD)



DV Model-Shift Uniqueness Test

004565985-02, $P = 17.511840$ Days, $E = 127.832687$ Days

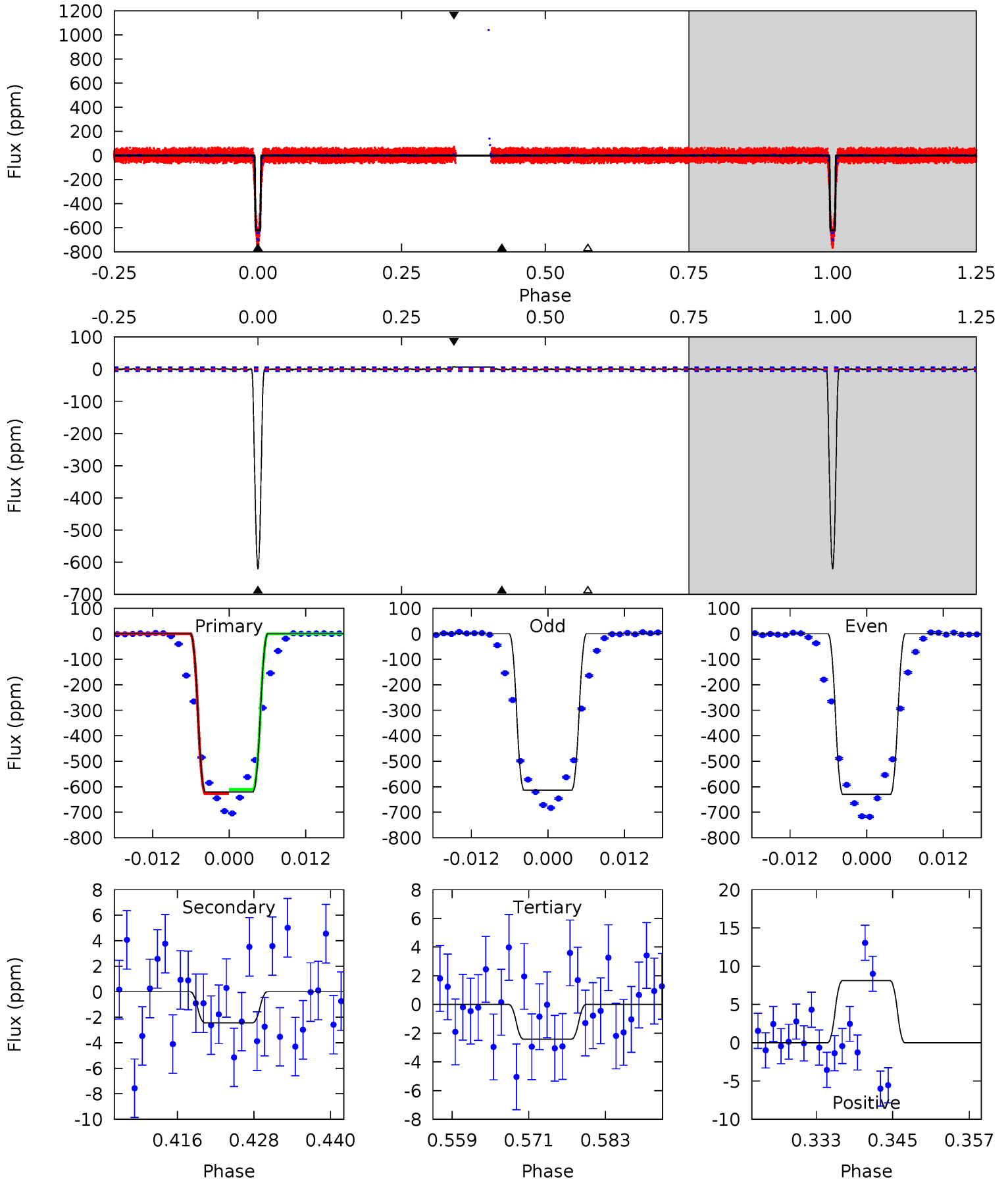
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
277.2	14.3	11.4	10.9	4.91	2.37	4.88	265.9	266.4	2.95	3.43	1.61	0.97	0.04	1.21



Alt Model-Shift Uniqueness Test

004565985-02, P = 17.511919 Days, E = 127.831188 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
536.9	2.11	2.10	7.03	4.99	2.52	0.79	534.8	529.8	0.01	-4.92	6.58	1.01	0.01	0



Stellar Parameters For KIC 004565985

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4029^{+157}_{-96}	$1.786^{+0.255}_{-0.255}$	$0.300^{+0.150}_{-0.200}$	$20.888^{+10.581}_{-4.535}$	$0.972^{+0.497}_{-0.026}$	$0.000^{+0.000}_{-0.000}$
	+4%/-2%	+14%/-14%	+50%/-67%	+51%/-22%	+51%/-3%	+125%/-64%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004565985-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-37 ± 3	$125.99^{+36.68}_{-24.15}$	3120^{+373}_{-253}	-2989^{+160}_{-222}	$0.023^{+0.012}_{-0.009}$
Alt.	-2 ± 1	$63.40^{+22.73}_{-18.93}$	3130^{+352}_{-258}	-3018^{+152}_{-207}	$0.006^{+0.007}_{-0.003}$

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

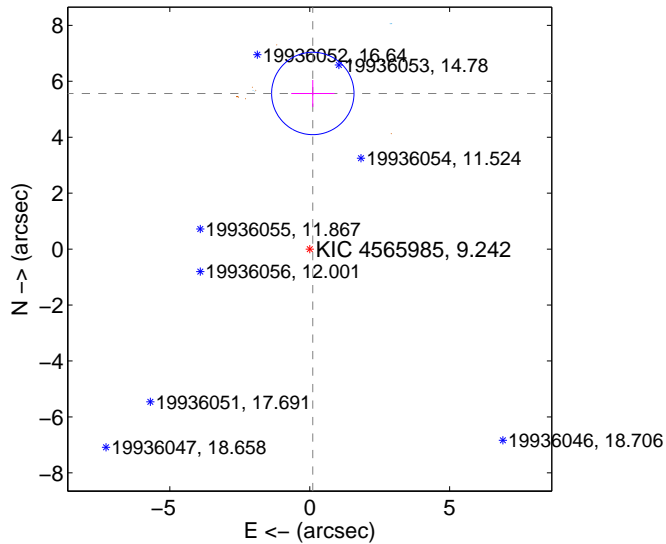
Supplemental centroid analysis for 004565985-02. **Kepler magnitude: 9.24.** Transit SNR 176.37

There are 6 quarters with good PRF difference image offsets

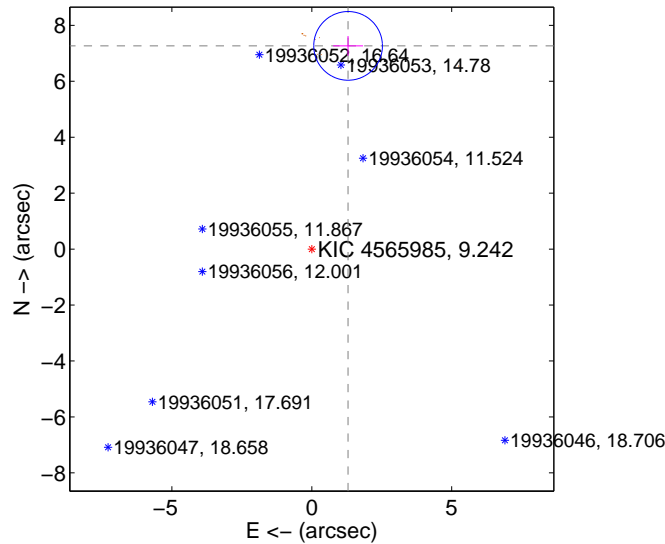
The OOT PRF centroid is offset from the target star catalog position by about 3.19 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.565 ± 0.491	11.34	-0.110 ± 0.771	5.564 ± 0.479
PRF-fit source offset from KIC position	7.380 ± 0.409	18.03	-1.298 ± 0.534	7.265 ± 0.351
photometric centroid source offset	6.52 ± 0.23	28.44	-0.88 ± 0.15	6.46 ± 0.23

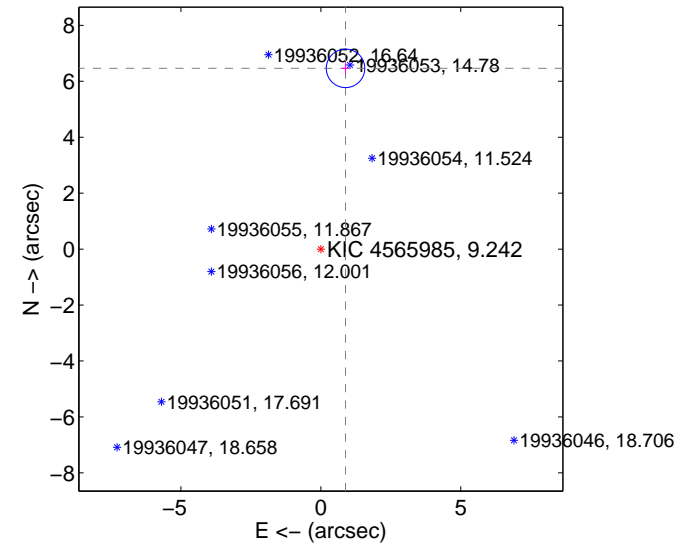
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

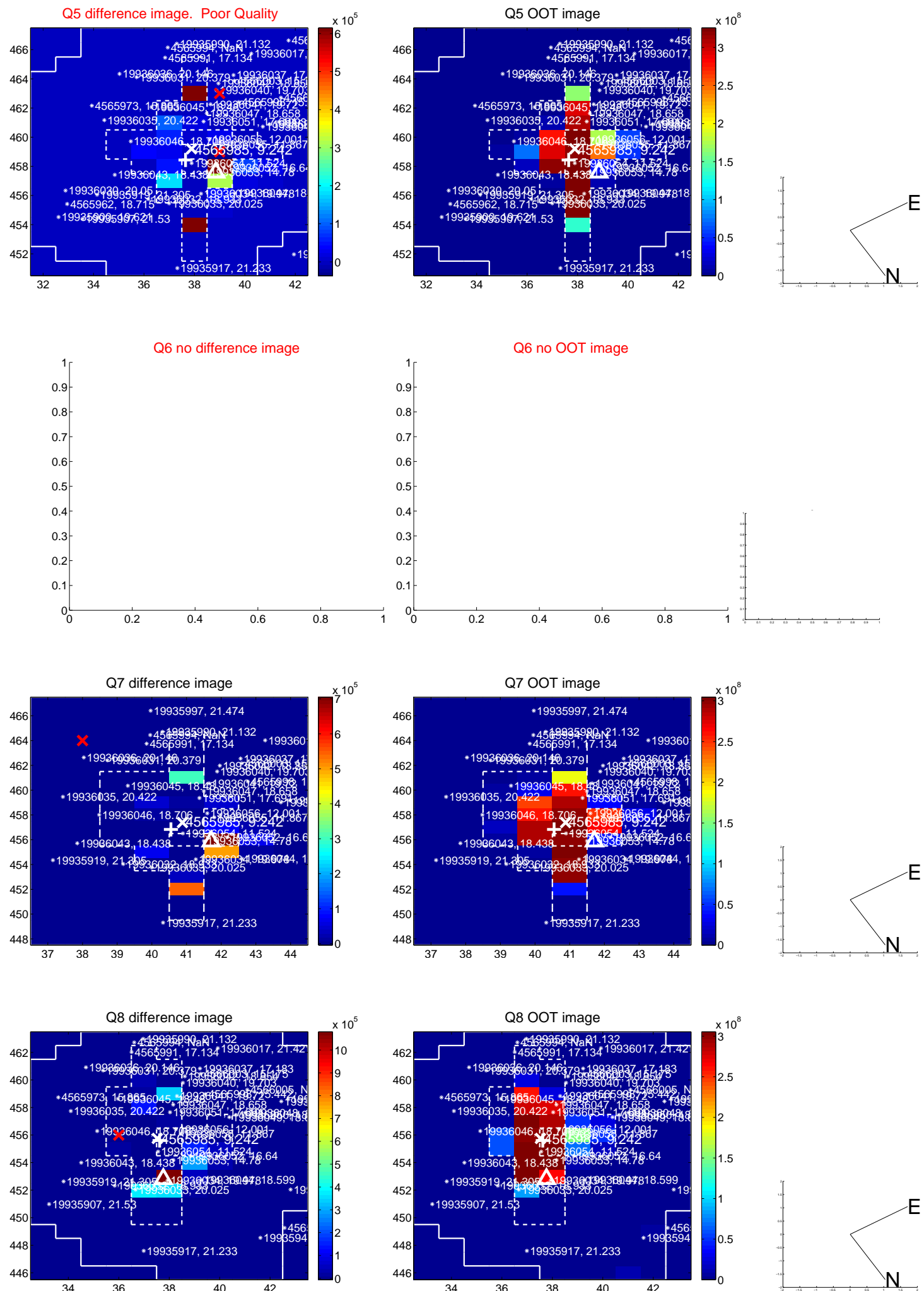


offset from photometric centroids

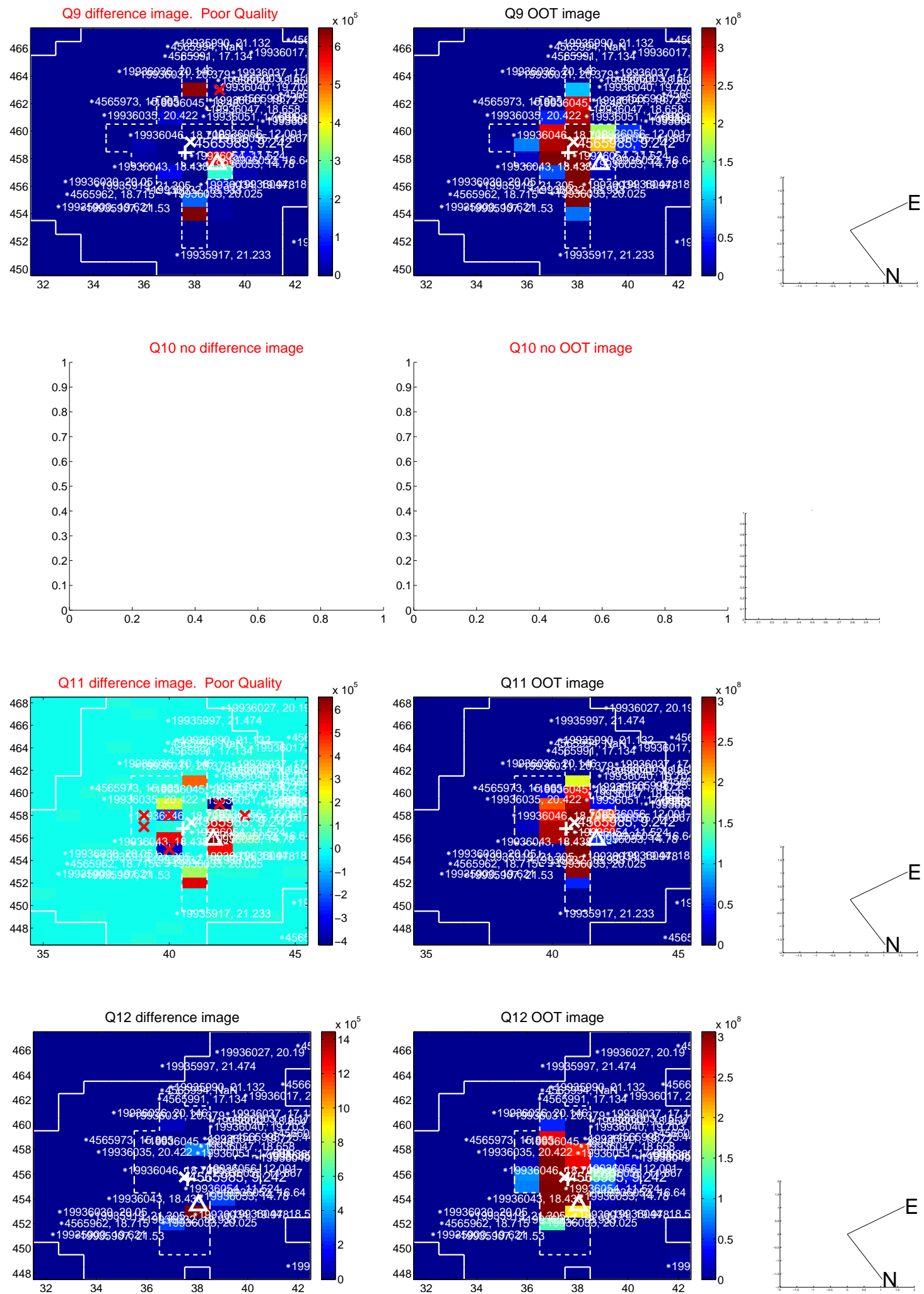


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

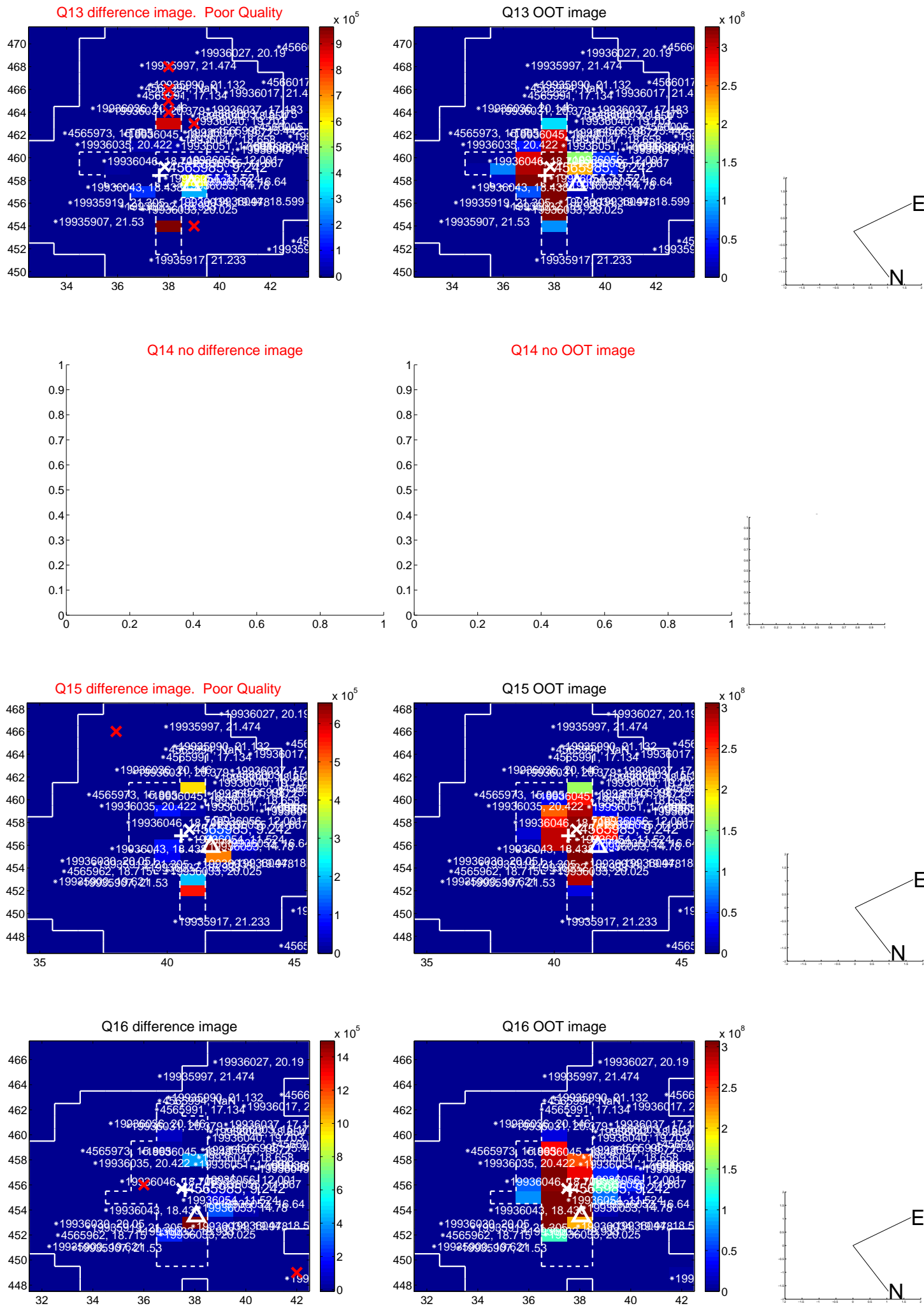
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



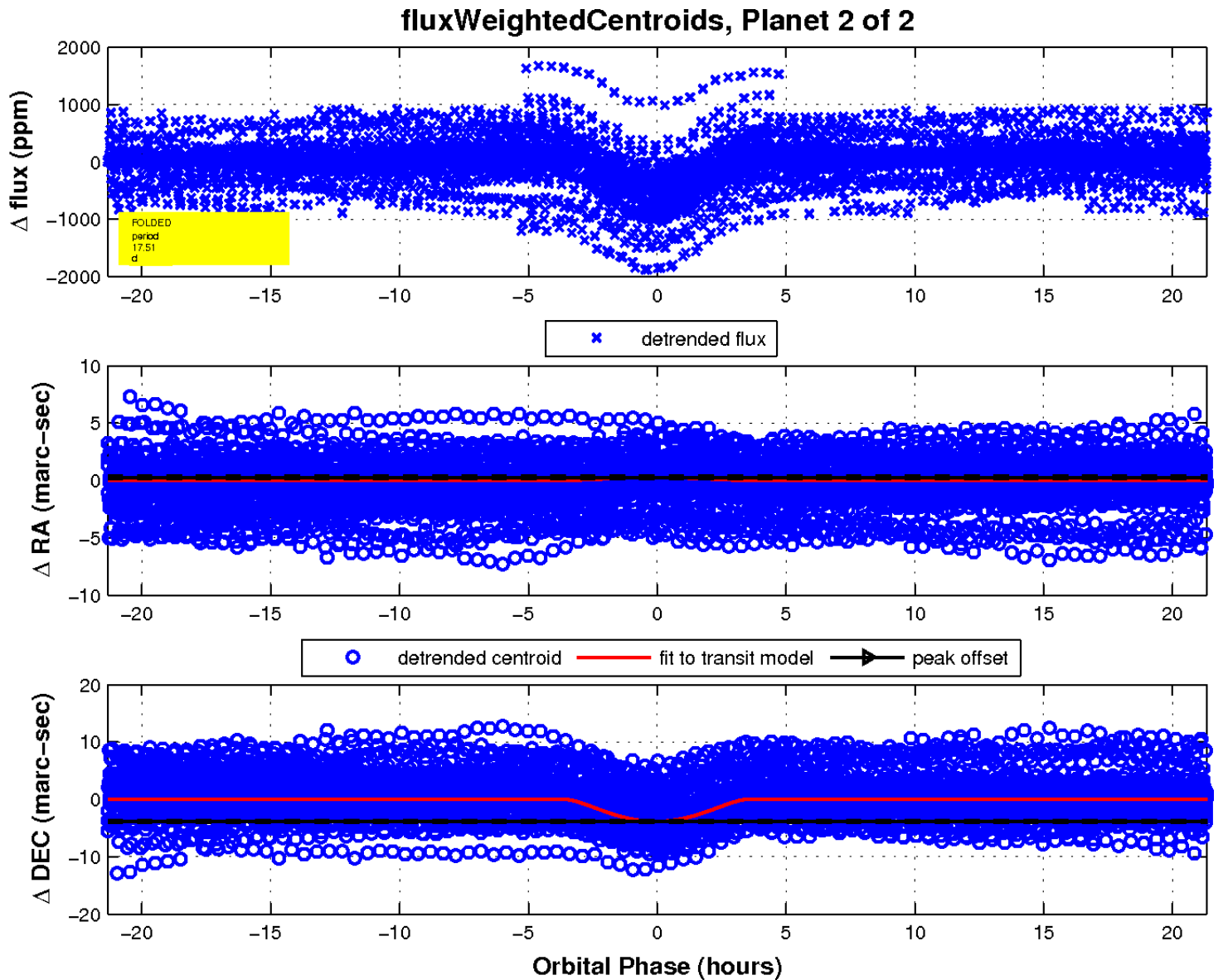
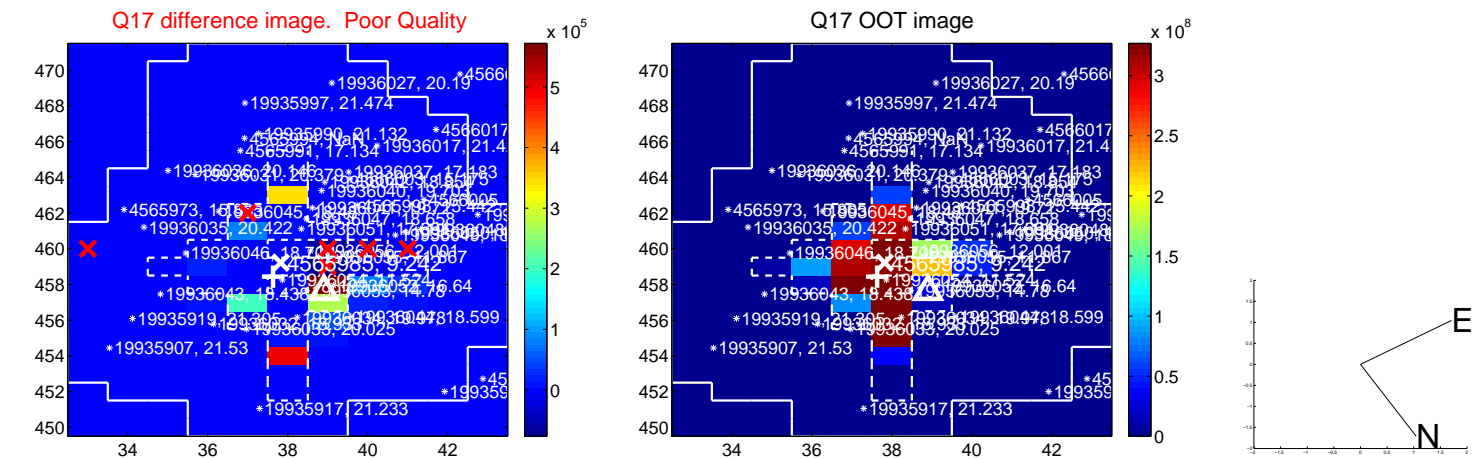
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

