

KIC 002578077

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})
002578077-01	OBS	No	1.879106	133.229814	8.9	7.566	8.7	9.0	4.59	8020	1.44	48320.94
002578077-02	OBS	No	1.878547	132.993875	18.2	20.232	10.6	13.8	4.59	8020	2.10	48340.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002578077-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL —LPP_DV —CENT_SATURATED
002578077-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA —SWEET_NTL —LPP_DV —LPP_ALT —SAME_NTL_PERIOD —CENT_SATURATED

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

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

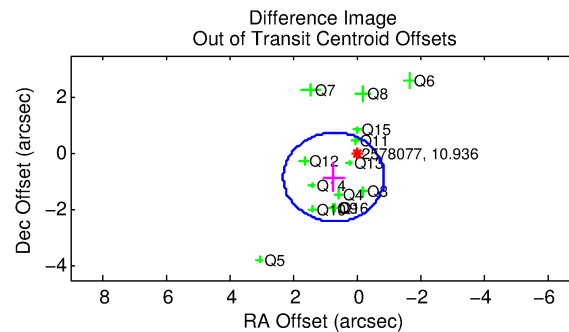
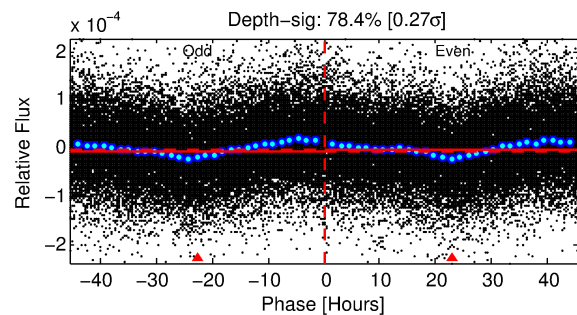
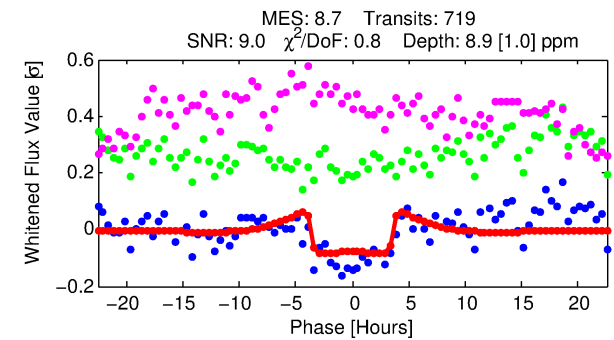
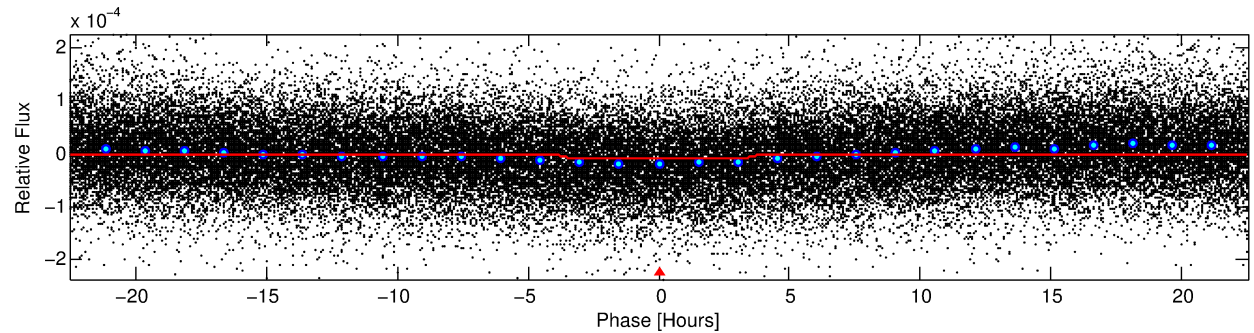
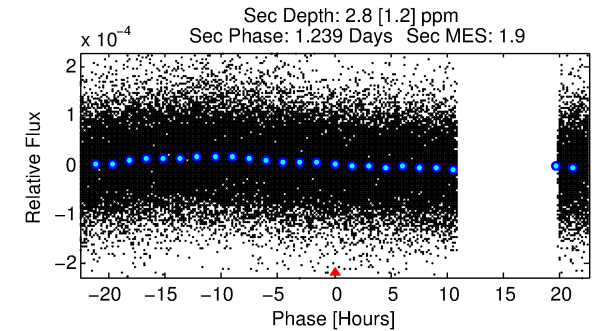
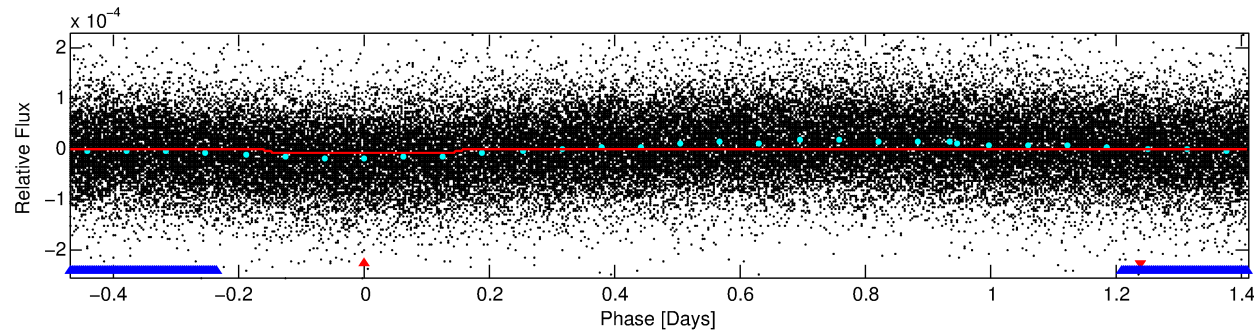
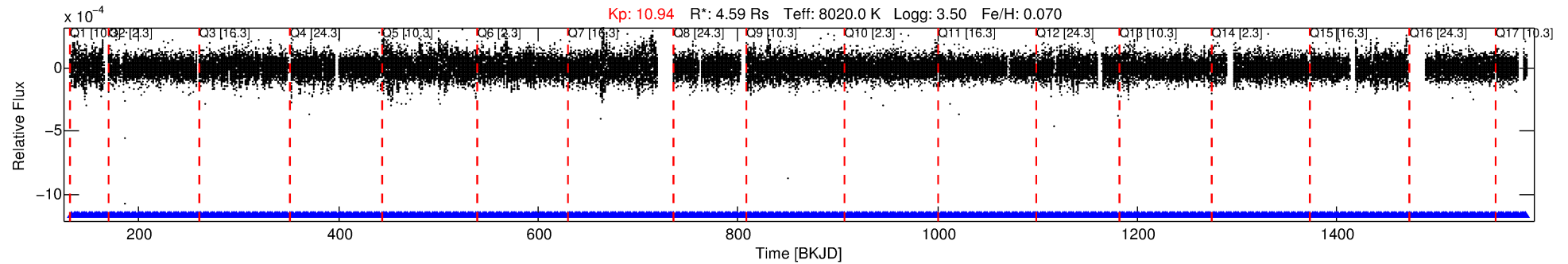
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002578077-01

No Significant Match Found

DV One-Page Summary

KIC: 2578077 Candidate: 1 of 2 Period: 1.879 d



DV Fit Results:

Period = 1.87911 [0.00002] d
Epoch = 133.2298 [0.0044] BKJD
Rp/R* = 0.0029 [0.0003]
a/R* = 1.68 [0.58]
b = 0.62 [0.53]
Seff = 48320.94 [47514.56]
Teq = 3781 [929] K
Rp = 1.44 [0.83] Re
a = 0.0402 [0.0234] AU
Ag = 1.21 [1.31] [0.16σ]
Teffp = 6137 [795] K [1.93σ]

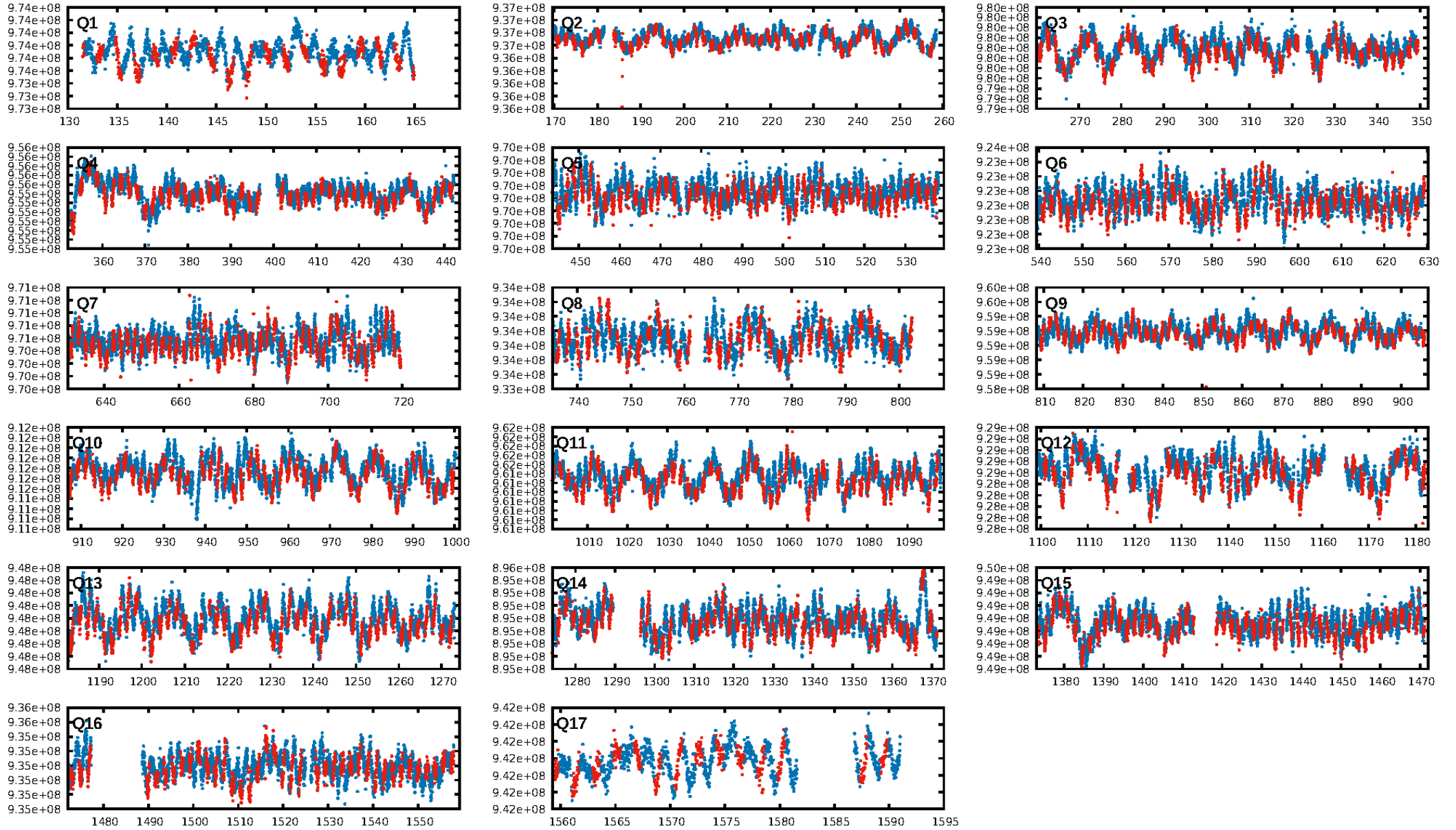
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [687/687]
GhostDiagnostic-chr: 2.232
Centroid-sig: 70.0%
Centroid-so: 0.553 arcsec [0.49σ]
OotOffset-rm: 1.098 arcsec [2.07σ]
OotOffset-st: 3/4/4/3 [14]
KicOffset-rm: 1.043 arcsec [1.89σ]
KicOffset-st: 3/4/4/3 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 0.00 [0/17]

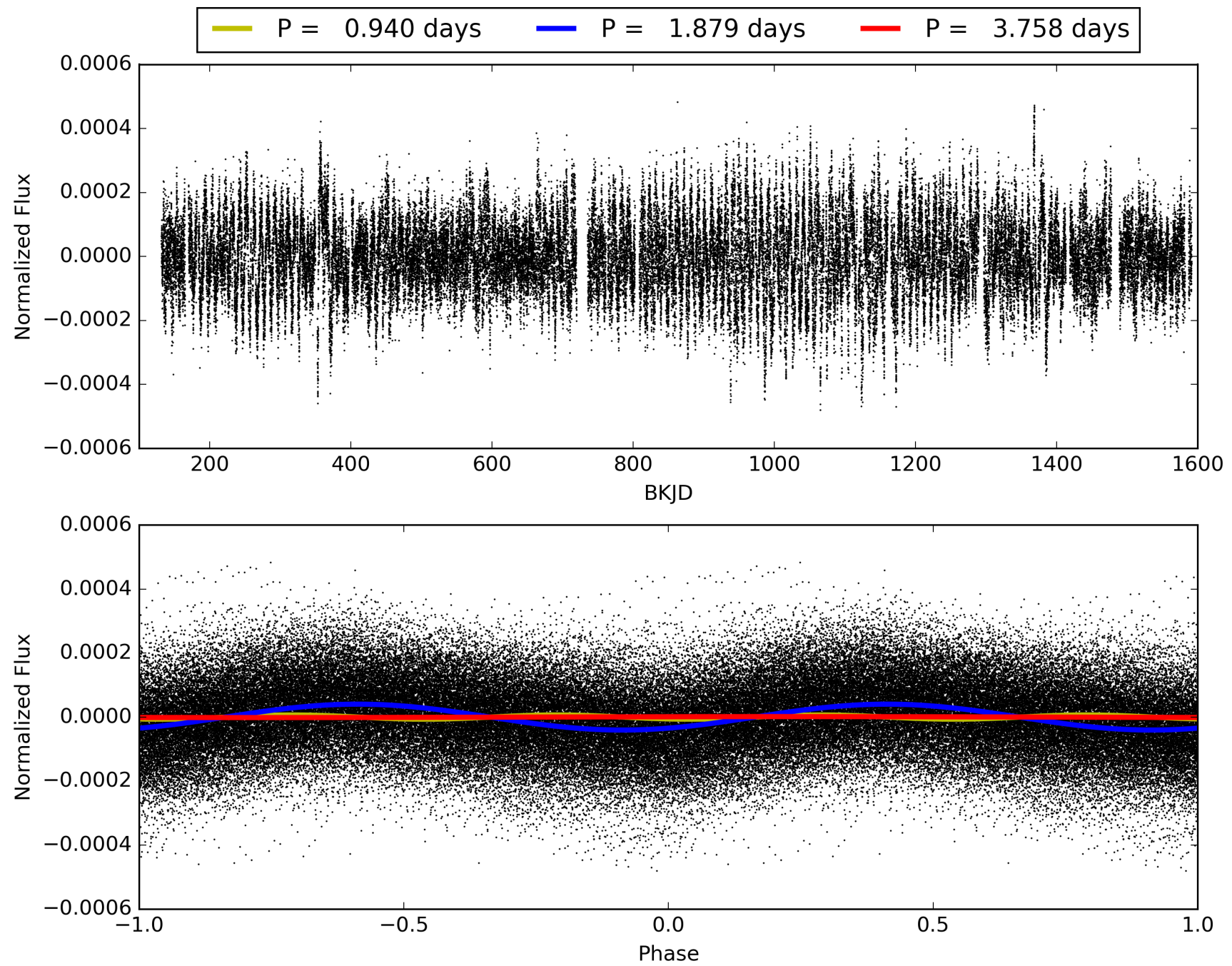
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:52:24 Z

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

TCE 002578077-01, PDC Light Curves

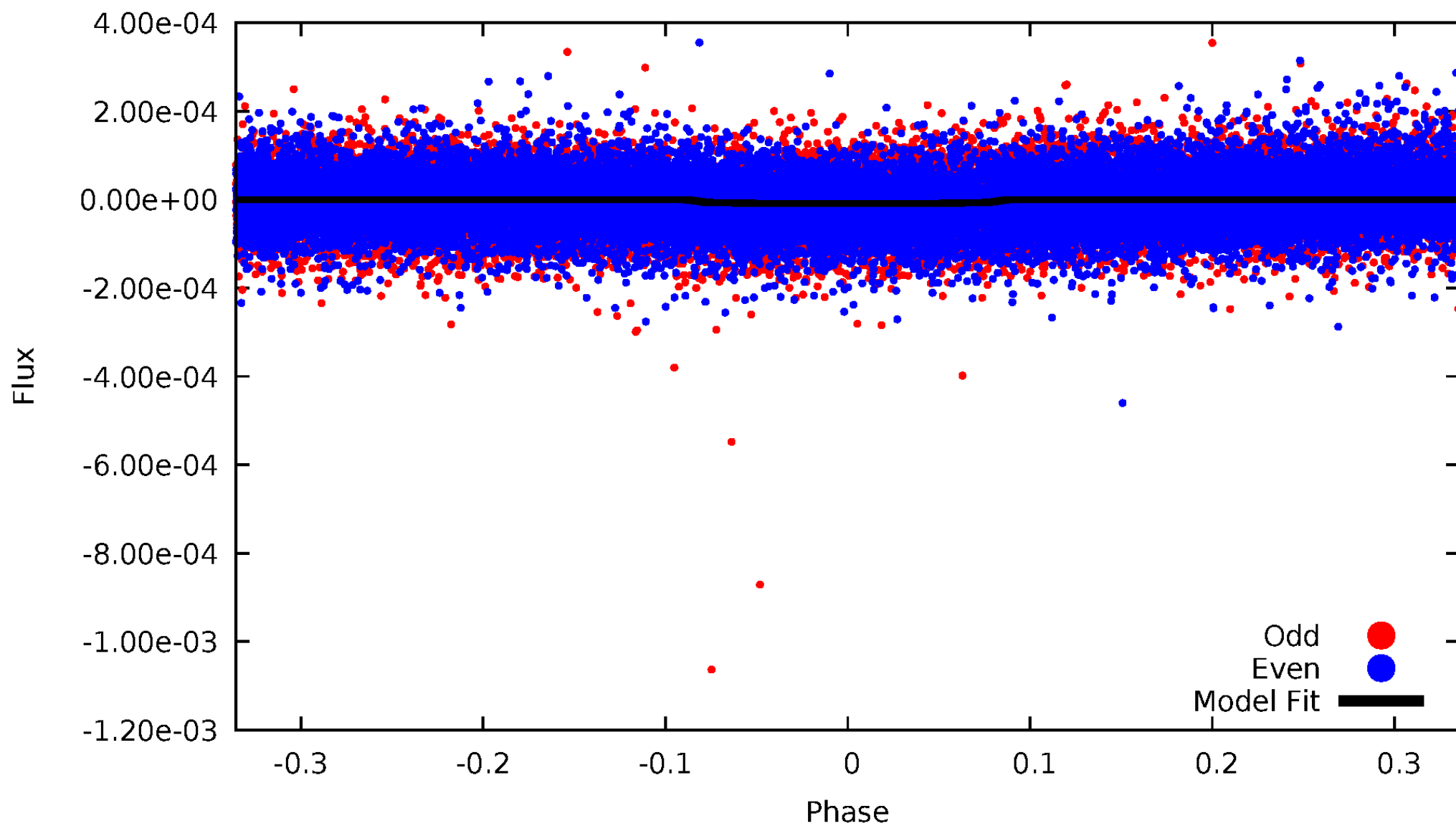


TCE 002578077-01



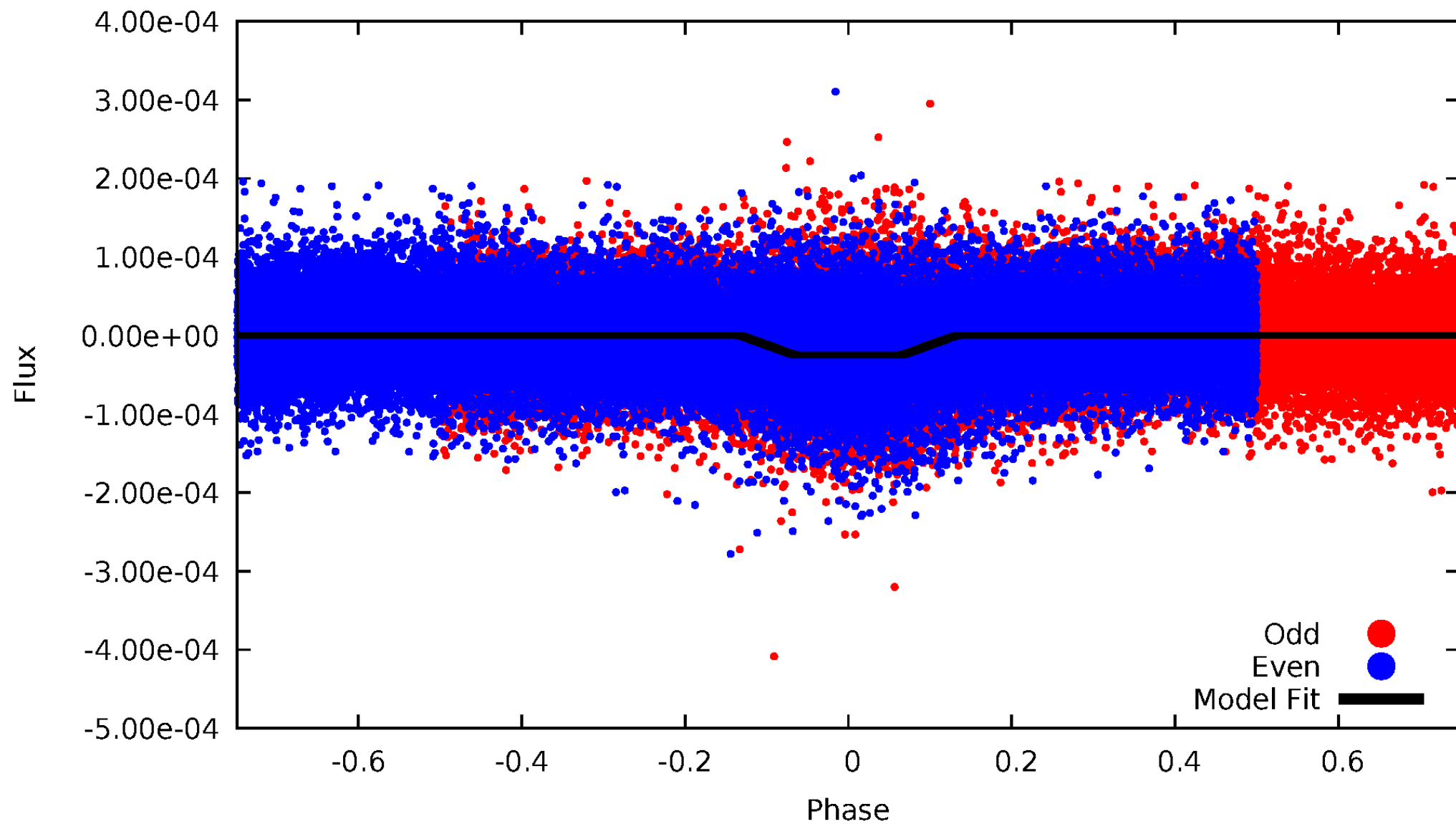
DV Odd/Even

TCE 002578077-01

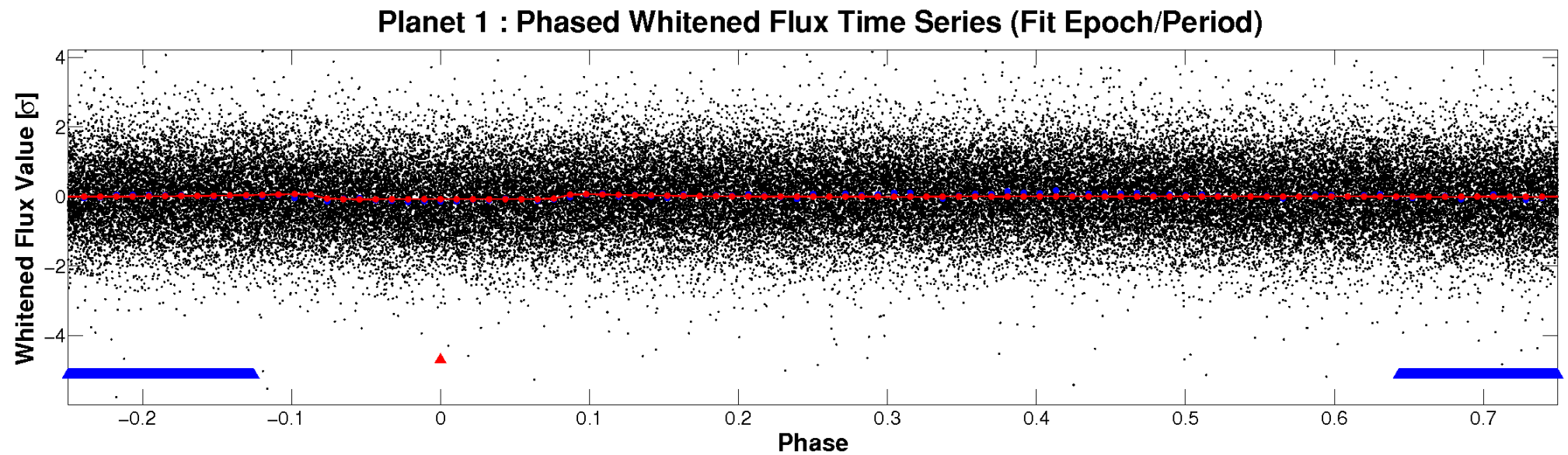
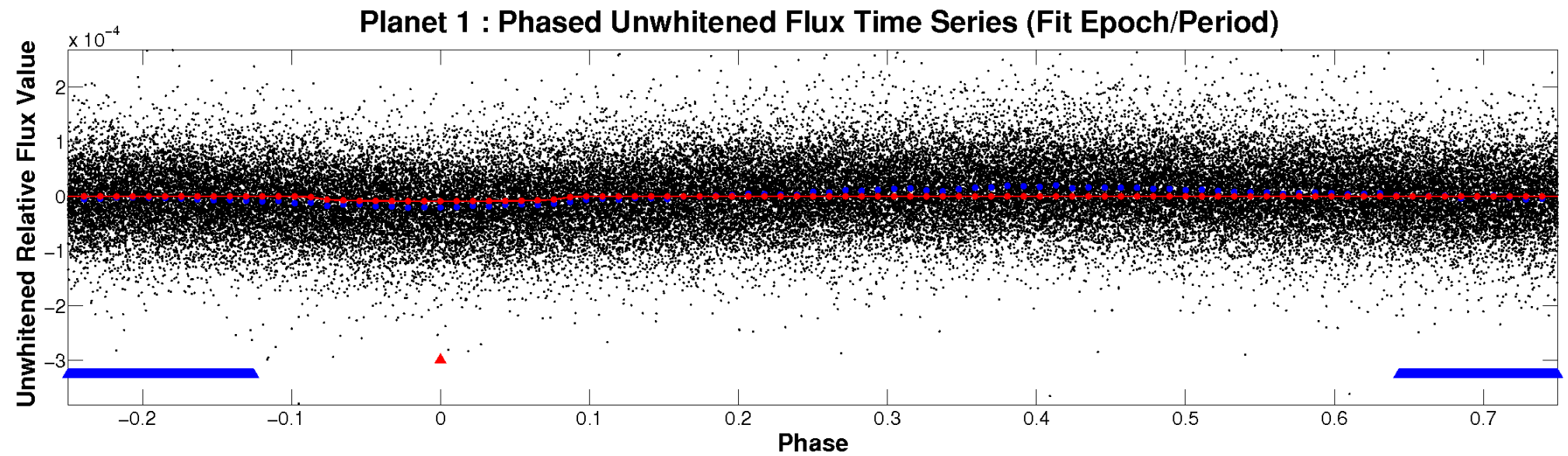


ALT Odd/Even

TCE 002578077-01

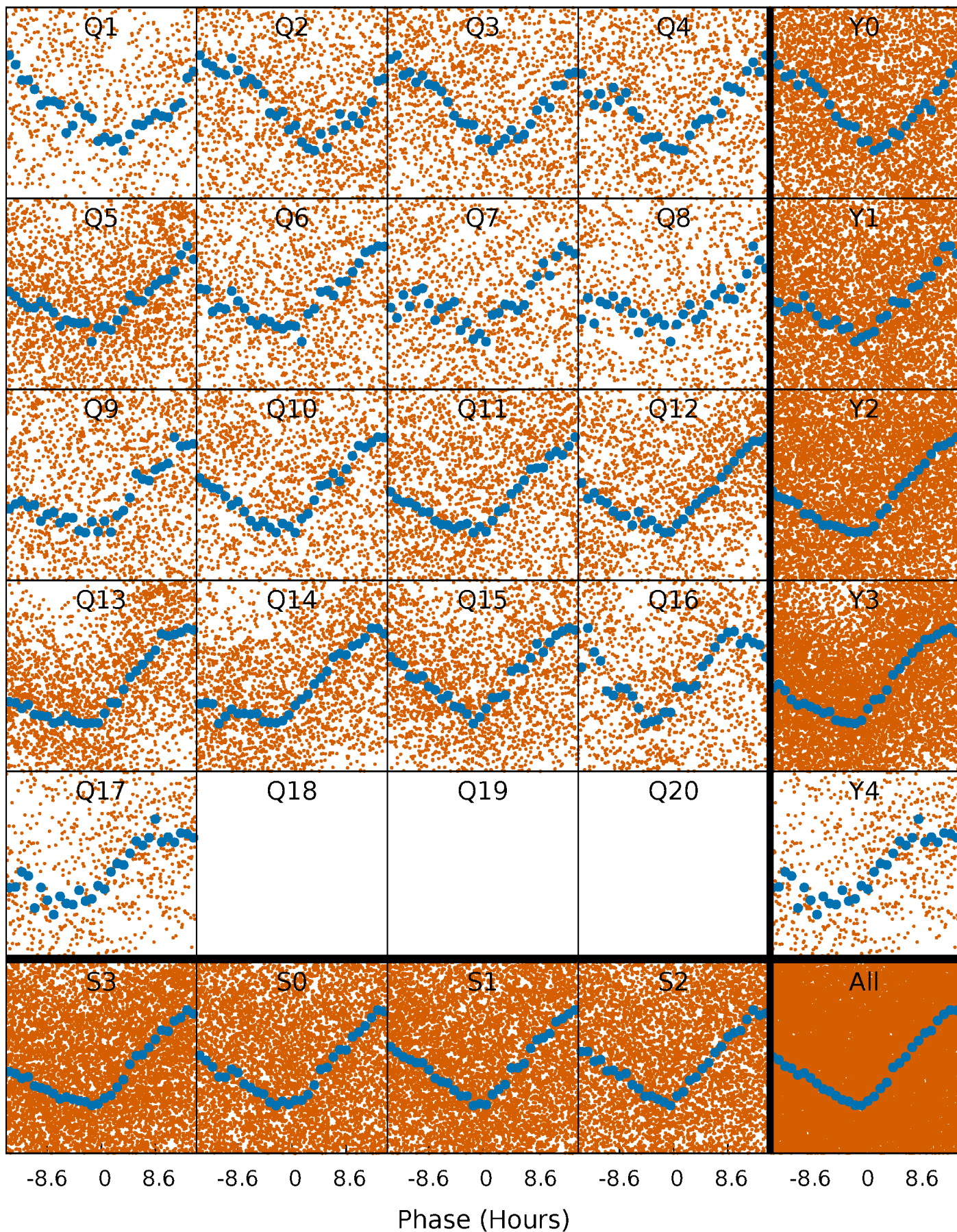


Non-Whitened Vs. Whitened Light Curve



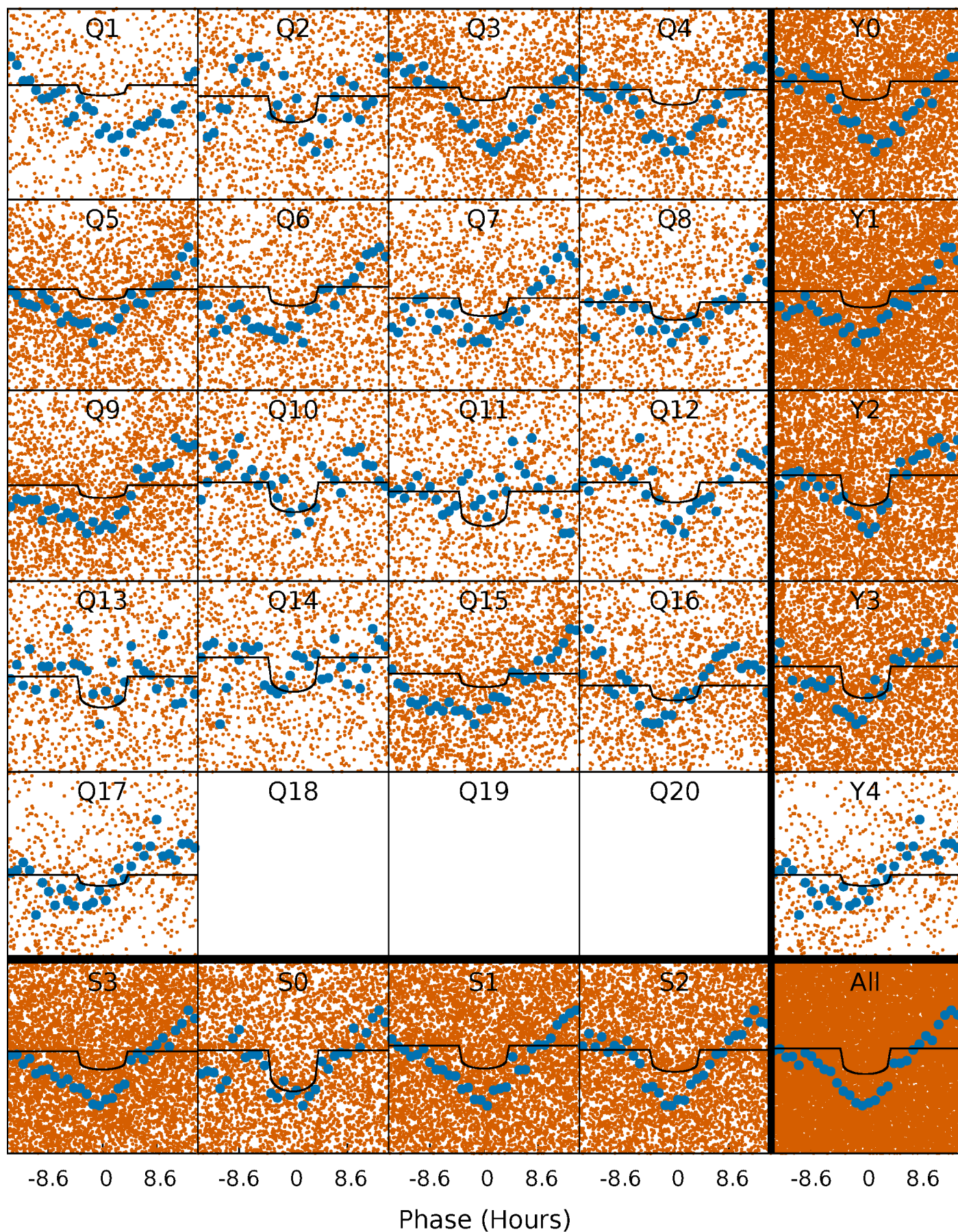
PDC Quarter-Phased Transit Curves

TCE 002578077-01 P= 1.879106 Days $T_0=133.229814$ (BKJD)



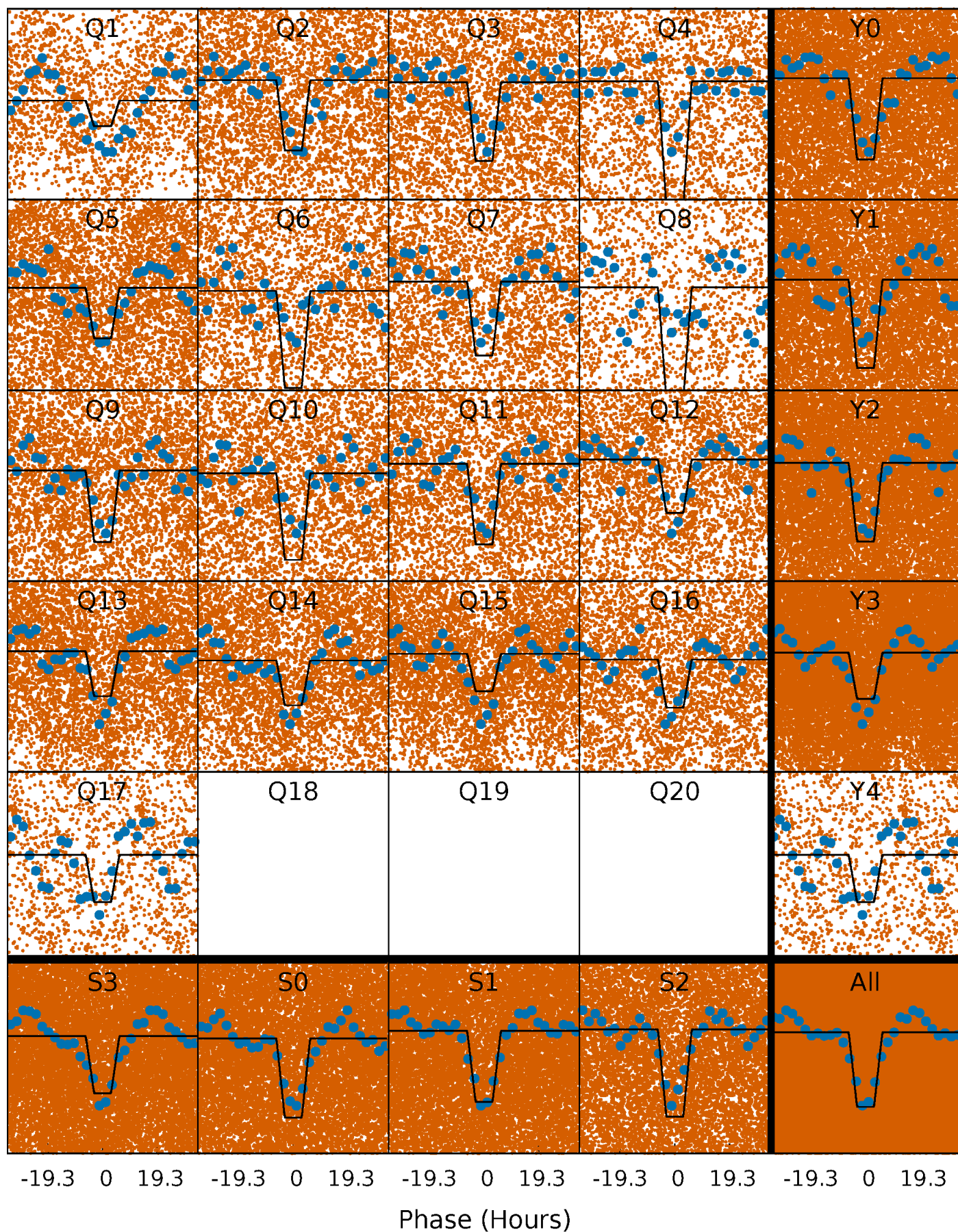
DV Quarter-Phased Transit Curves

TCE 002578077-01 P= 1.879106 Days $T_0=133.229814$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

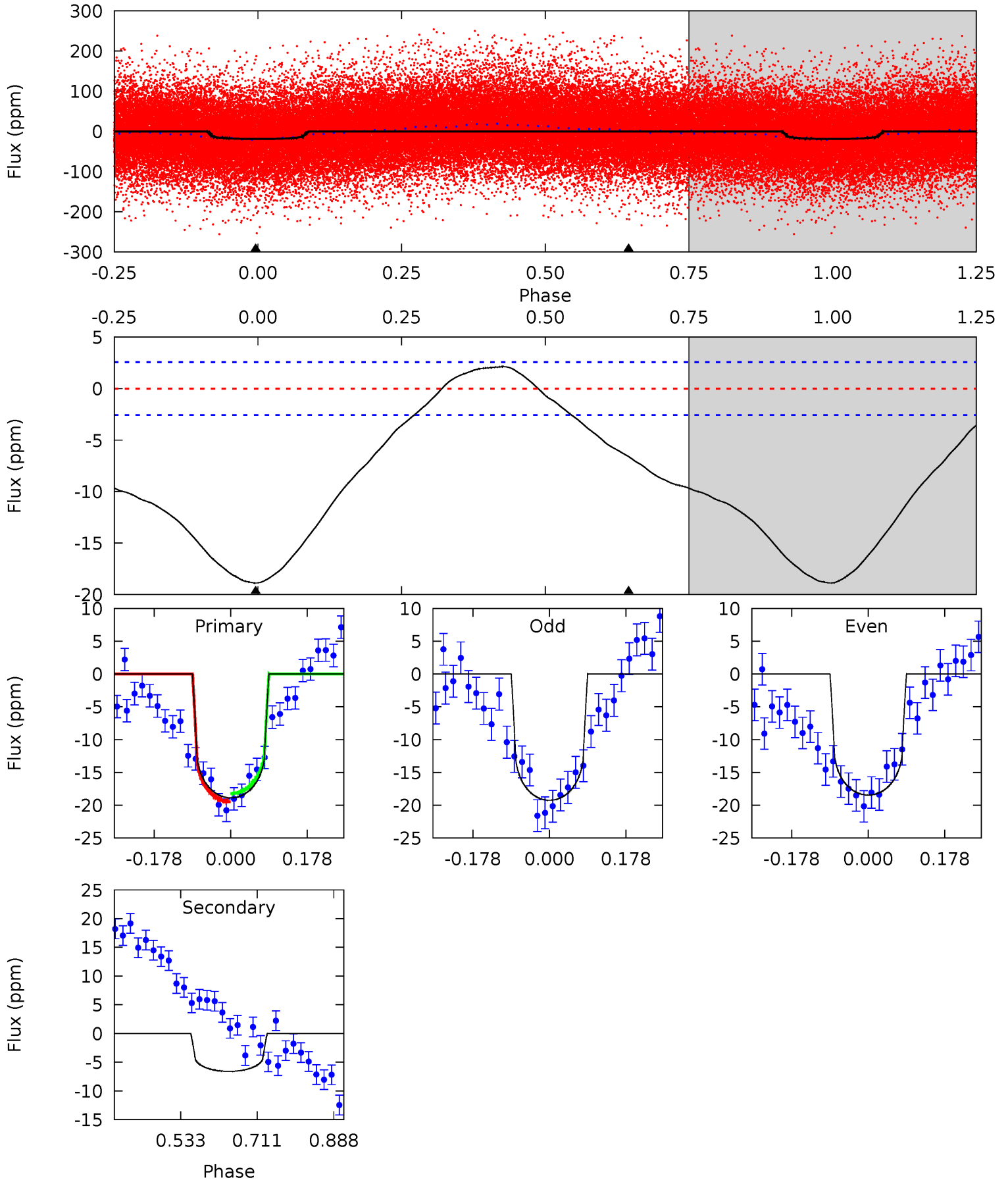
TCE 002578077-01 P= 1.879035 Days $T_0=133.261372$ (BKJD)



DV Model-Shift Uniqueness Test

002578077-01, P = 1.879106 Days, E = 131.350708 Days

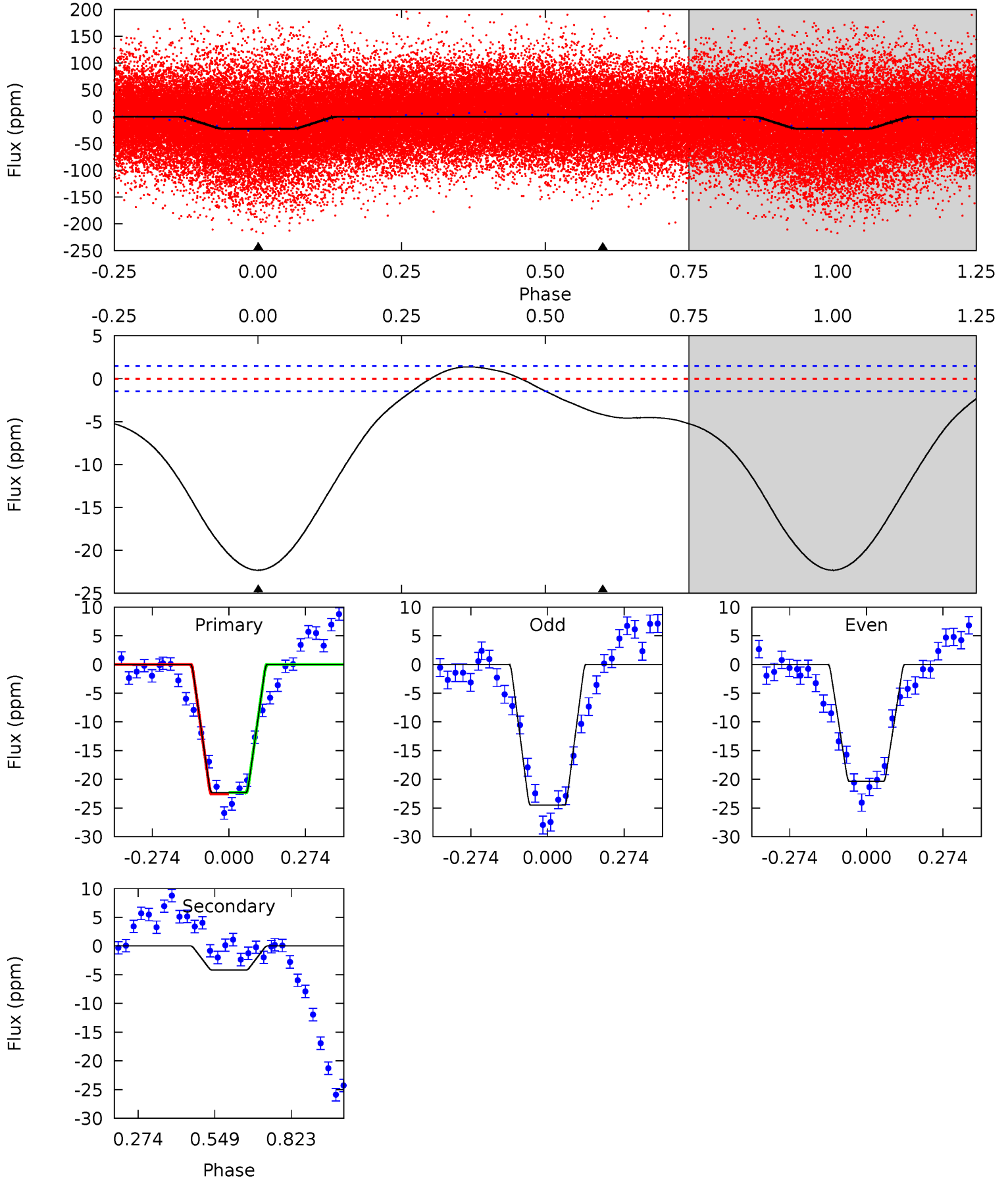
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.8	11.5	0	0	4.44	1.35	5.63	32.8	32.8	11.5	11.5	0.69	1.13	0.10	1.14



Alt Model-Shift Uniqueness Test

002578077-01, P = 1.879035 Days, E = 131.382337 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
65.9	12.4	0	0	4.35	1.09	3.30	65.9	65.9	12.4	12.4	6.12	1.05	0.06	0.43



Stellar Parameters For KIC 002578077

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8020^{+222}_{-361}	$3.504^{+0.580}_{-0.031}$	$0.070^{+0.300}_{-0.350}$	$4.589^{+0.457}_{-2.592}$	$2.451^{+0.267}_{-0.802}$	$0.036^{+0.290}_{-0.004}$
	+3%/-5%	+17%/-1%	+429%/-500%	+10%/-56%	+11%/-33%	+811%/-11%
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 002578077-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-7 ± 1	$1.27^{+0.29}_{-0.39}$	4977^{+370}_{-742}	7278^{+646}_{-541}	$3.651^{+3.491}_{-1.127}$
Alt.	-4 ± 0	$2.28^{+0.37}_{-0.69}$	4987^{+378}_{-665}	4589^{+294}_{-361}	$0.735^{+0.604}_{-0.181}$

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

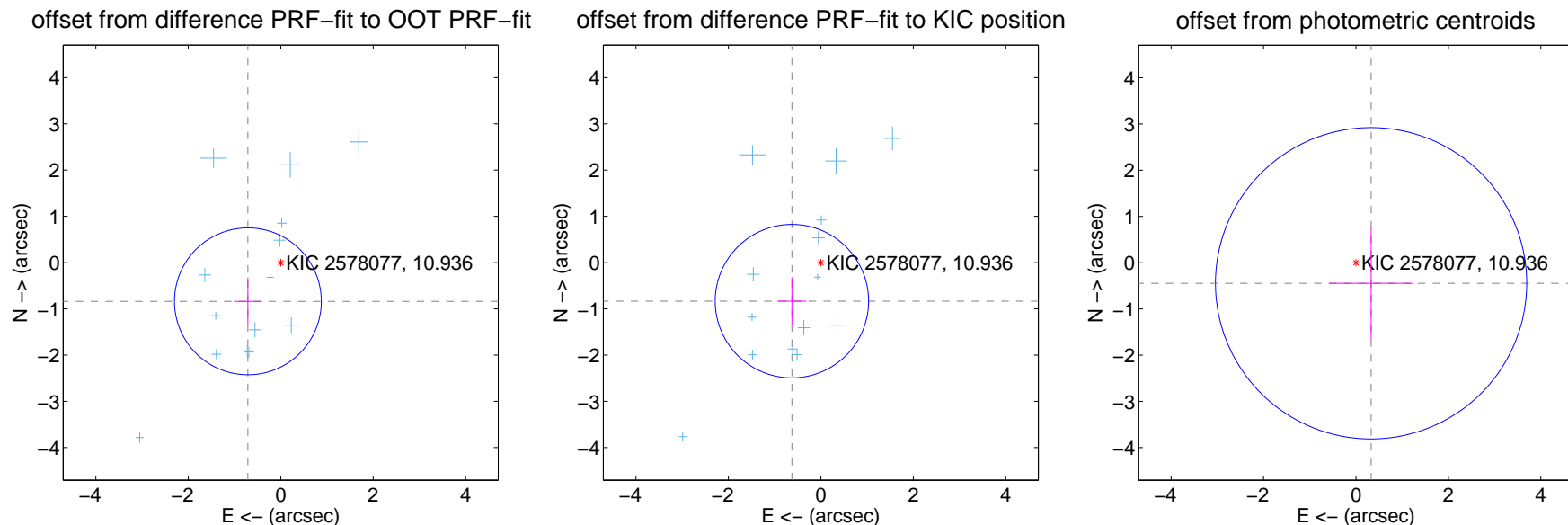
DV Centroid Data

Supplemental centroid analysis for 002578077-01. **Kepler magnitude: 10.94.** Transit SNR 9.03

There are 14 quarters with good PRF difference image offsets

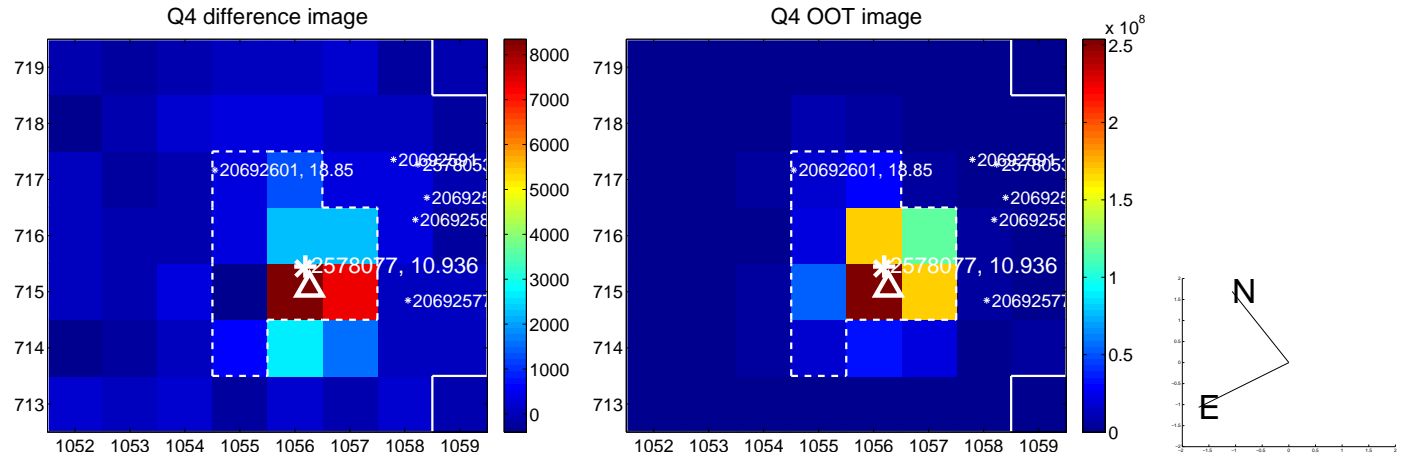
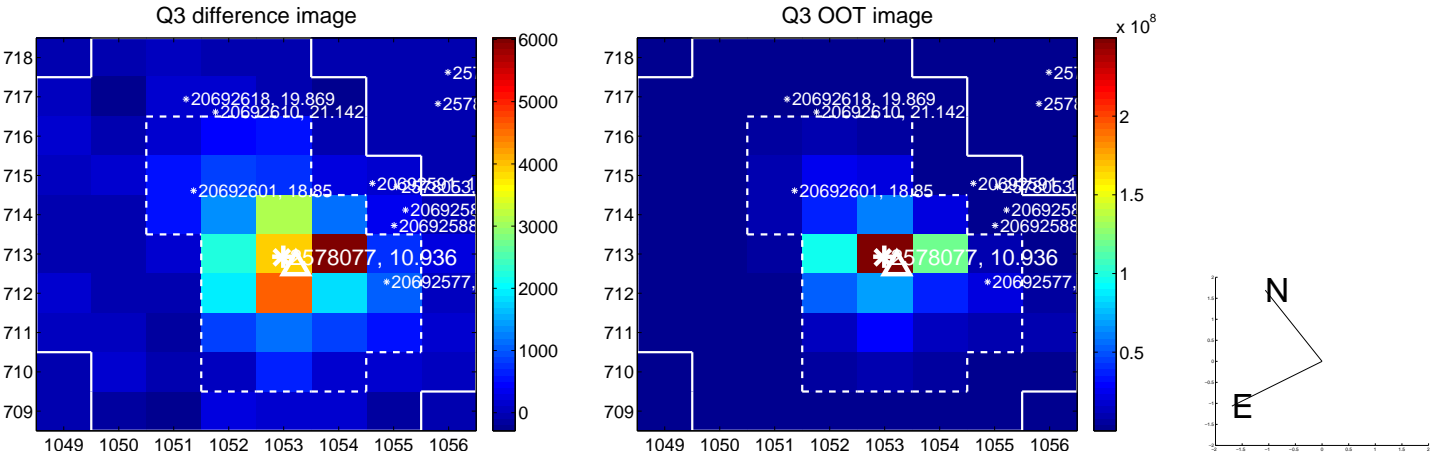
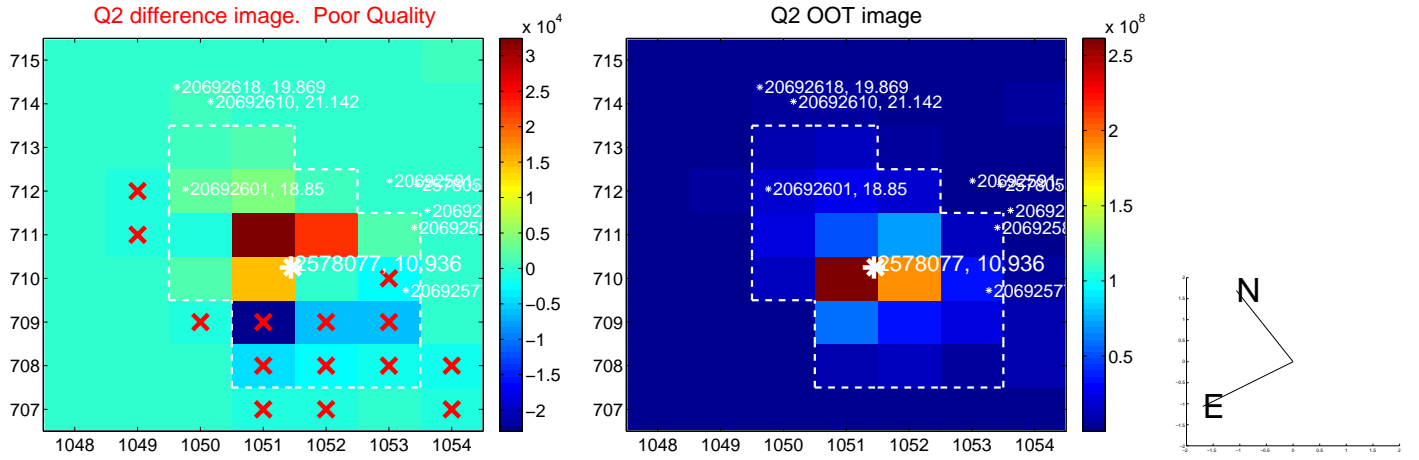
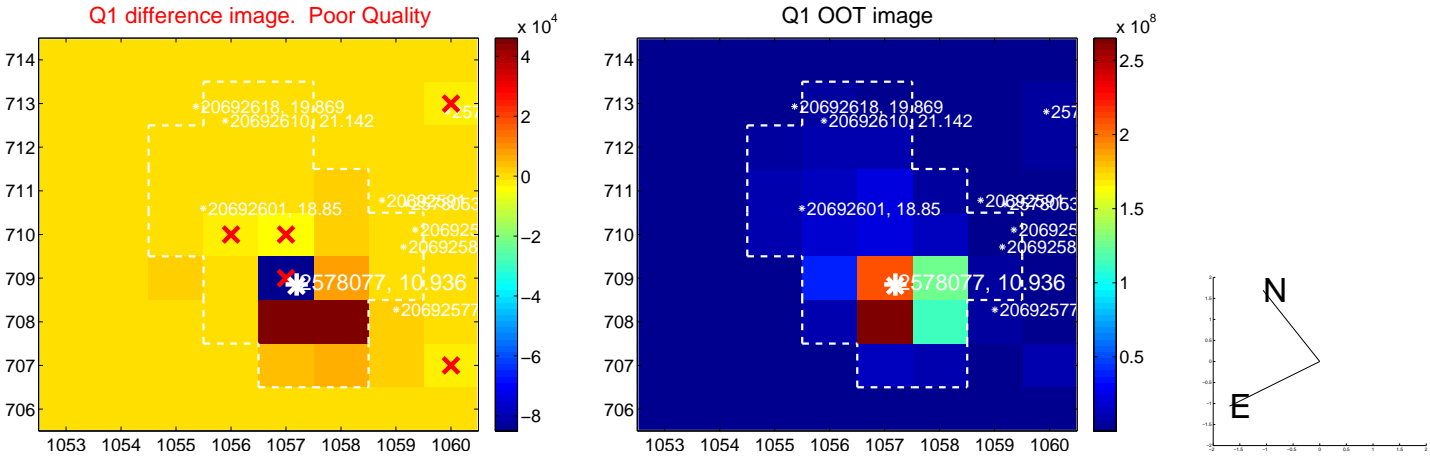
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.098 ± 0.529	2.07	0.711 ± 0.303	-0.837 ± 0.512
PRF-fit source offset from KIC position	1.043 ± 0.553	1.89	0.627 ± 0.315	-0.833 ± 0.519
photometric centroid source offset	0.55 ± 1.12	0.49	-0.33 ± 0.91	-0.45 ± 1.22

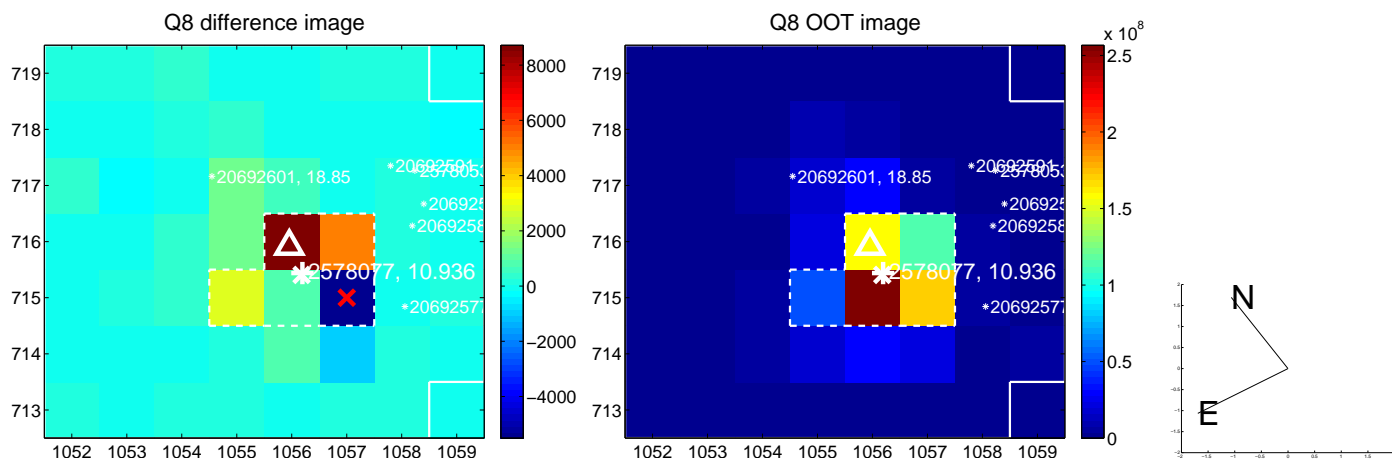
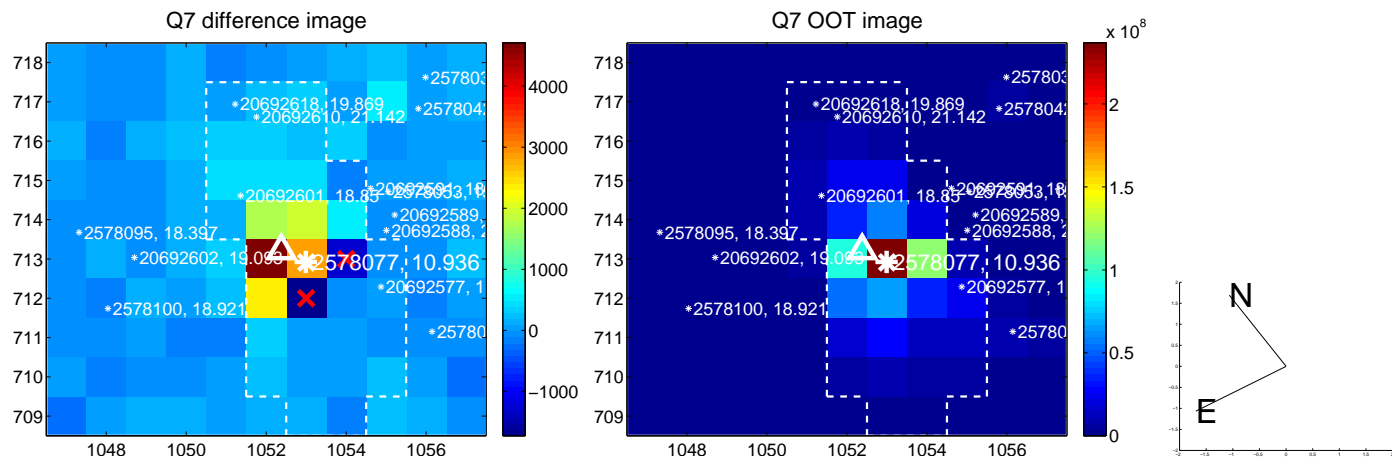
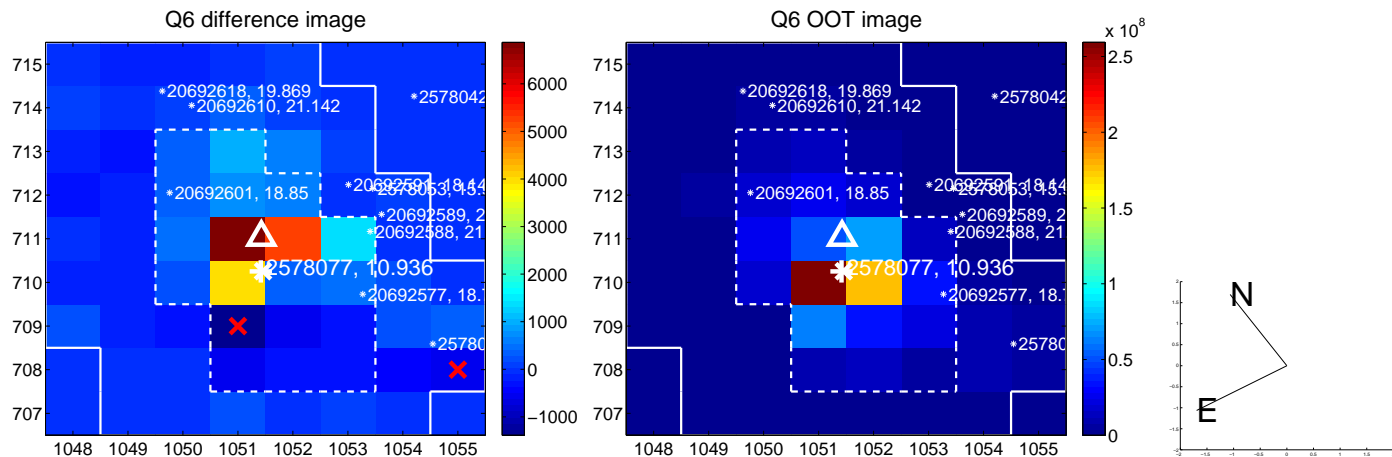
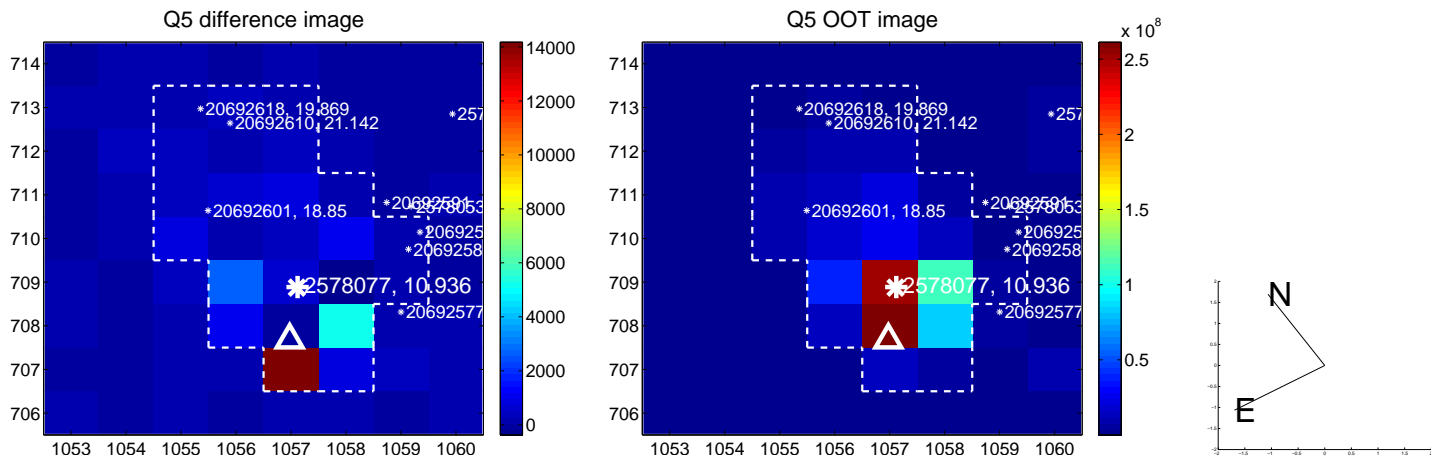


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

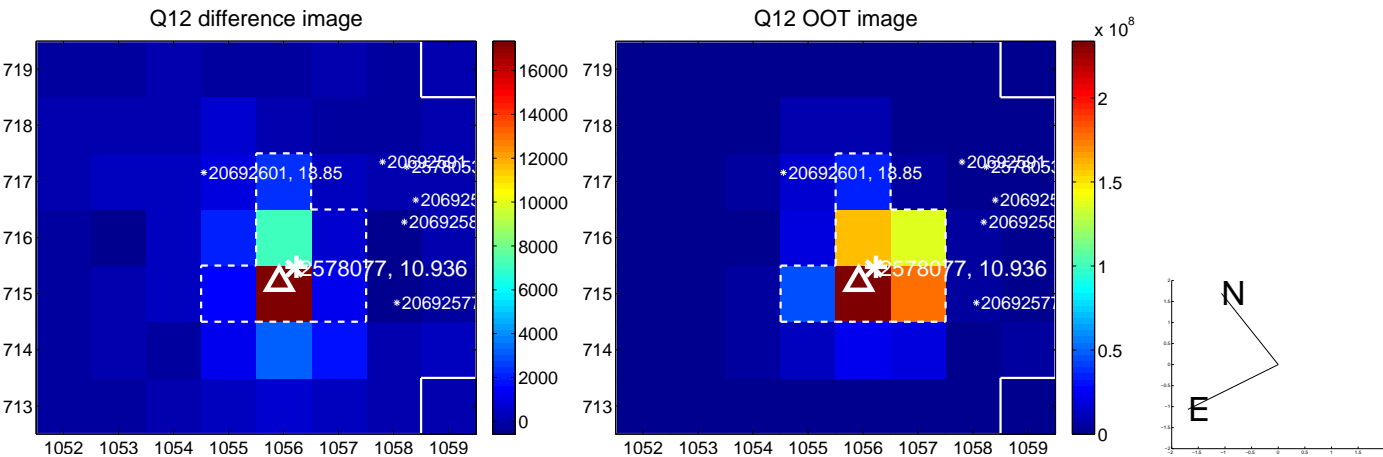
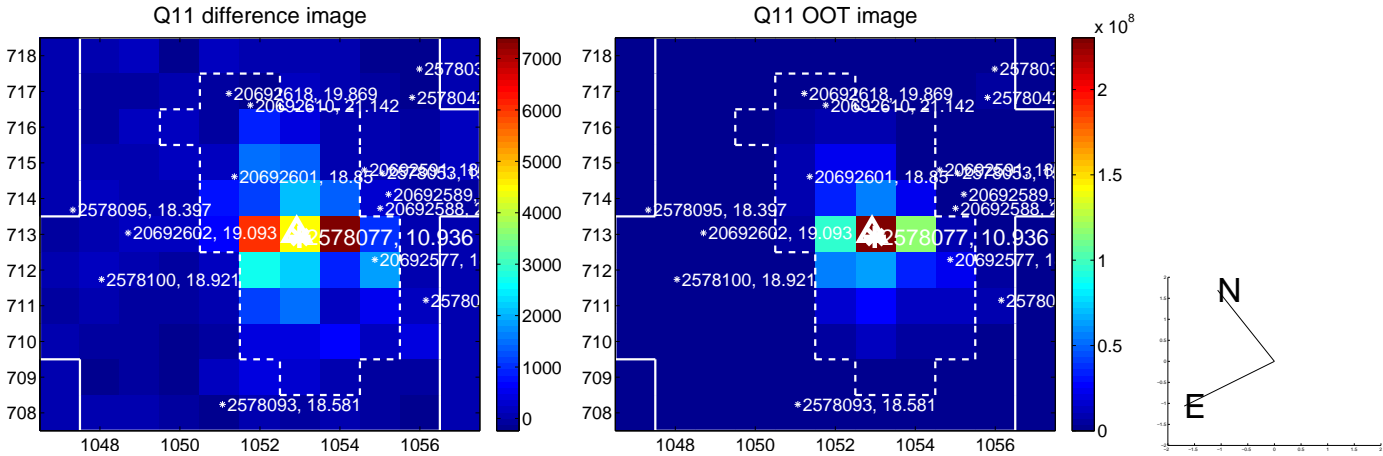
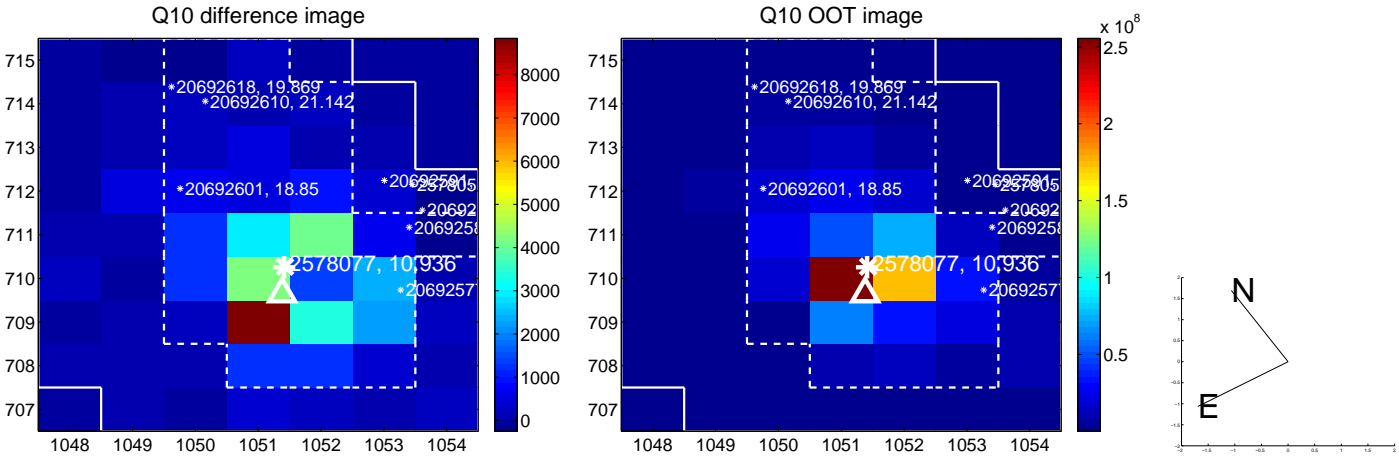
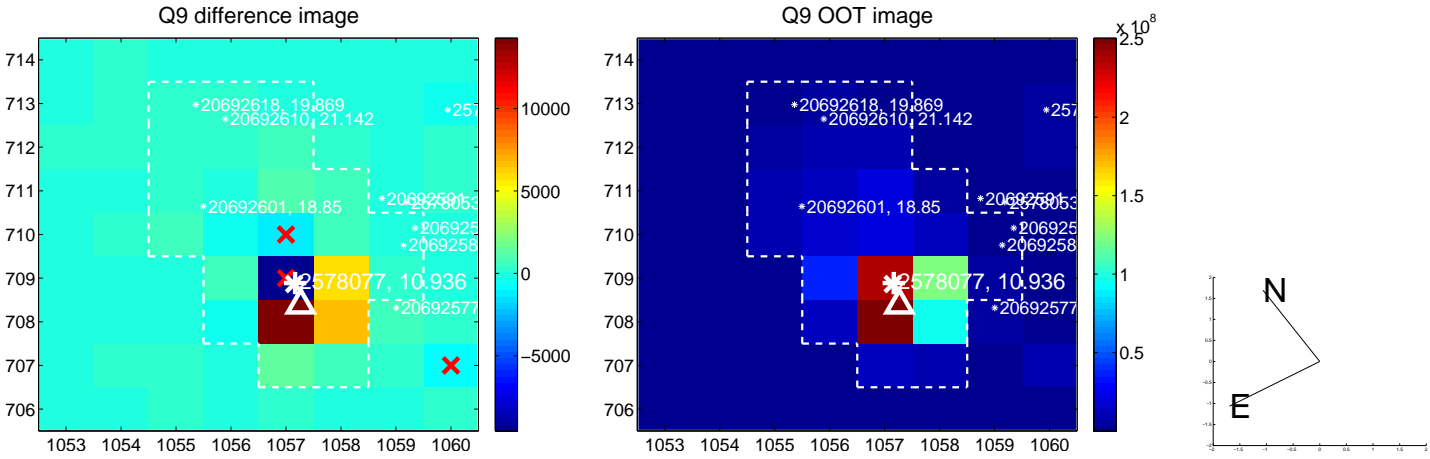
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



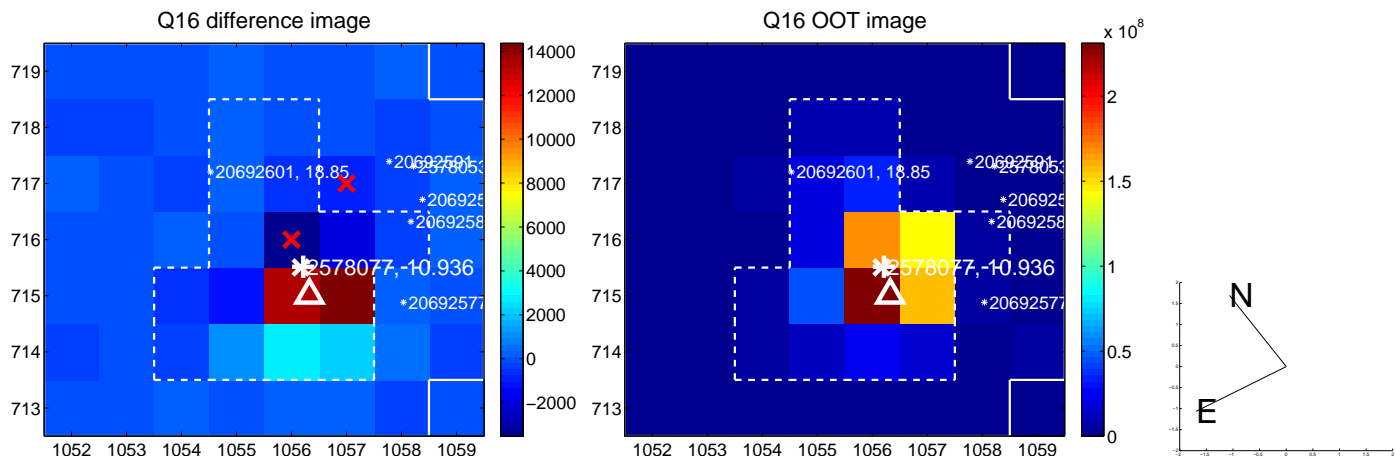
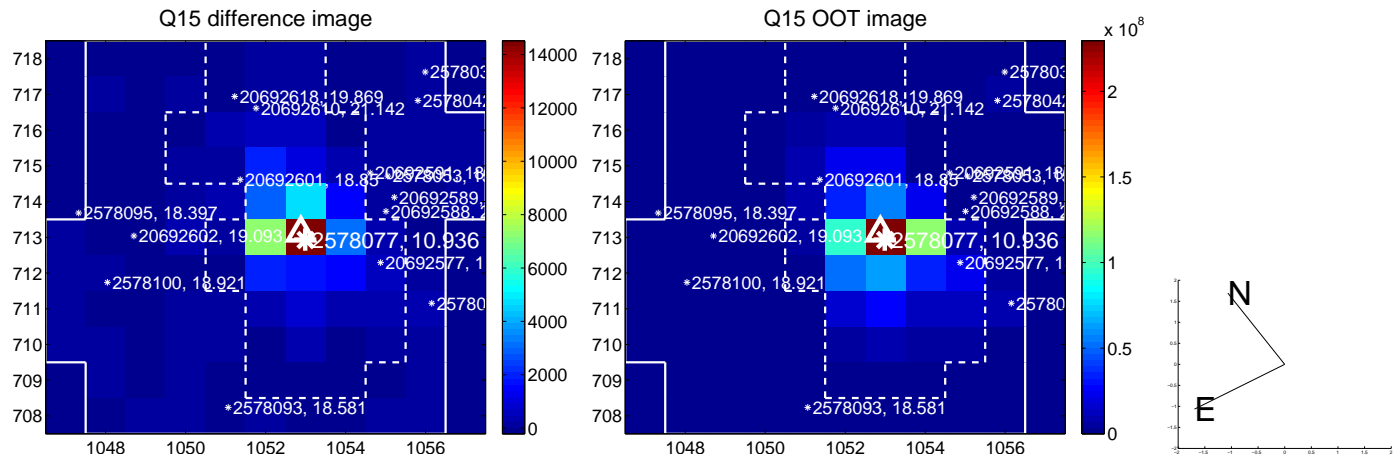
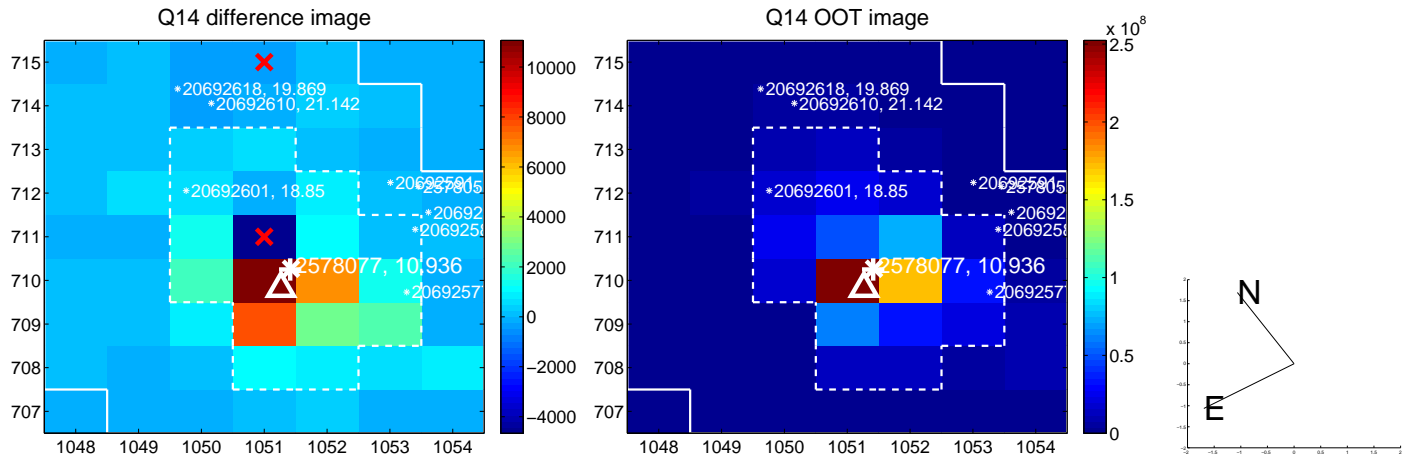
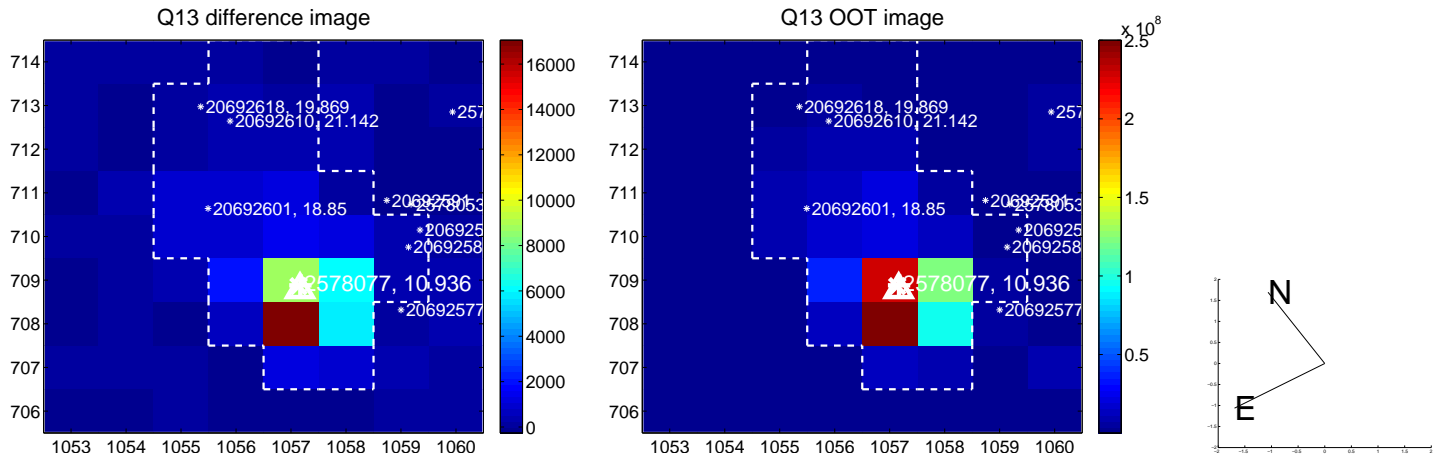
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



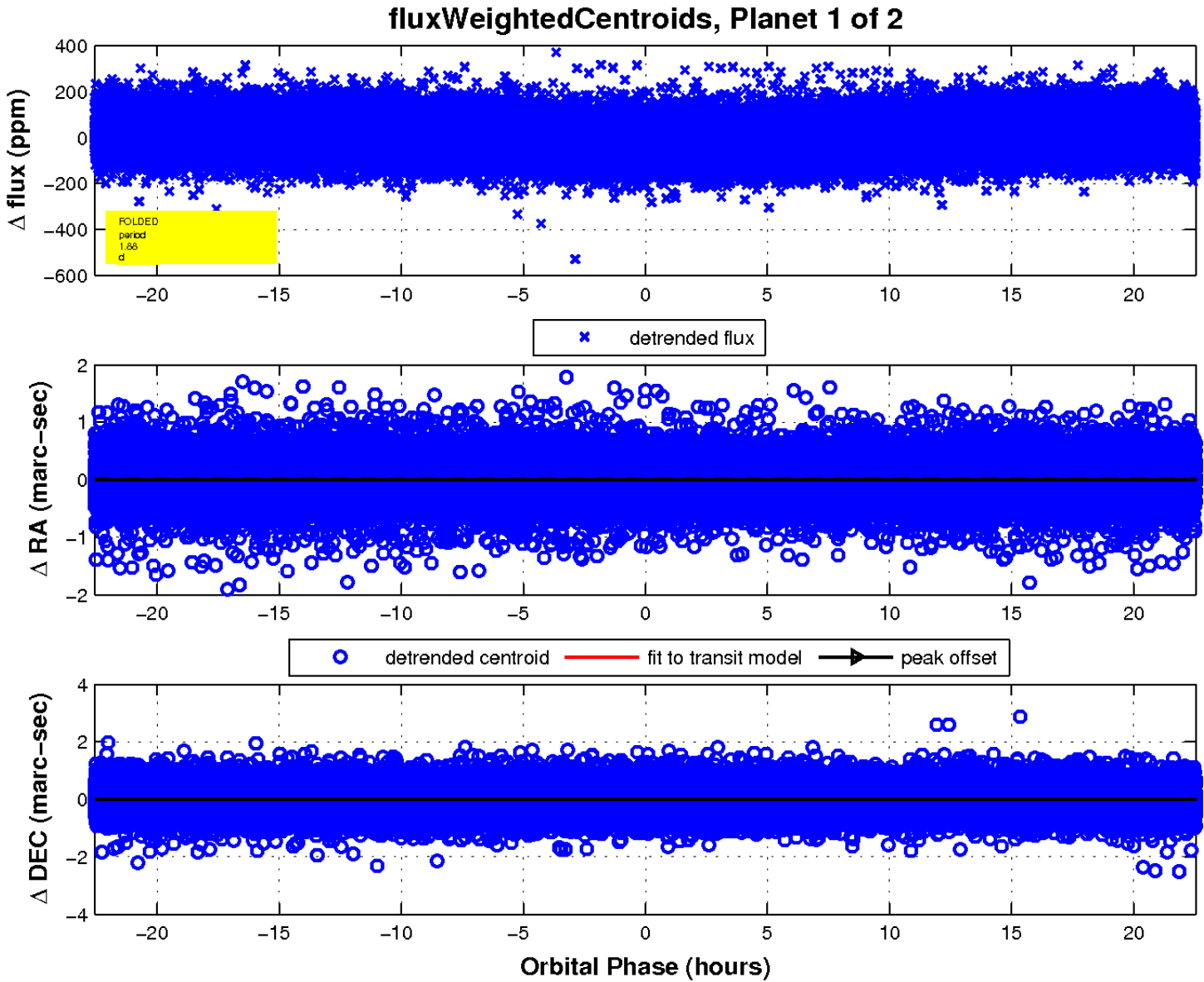
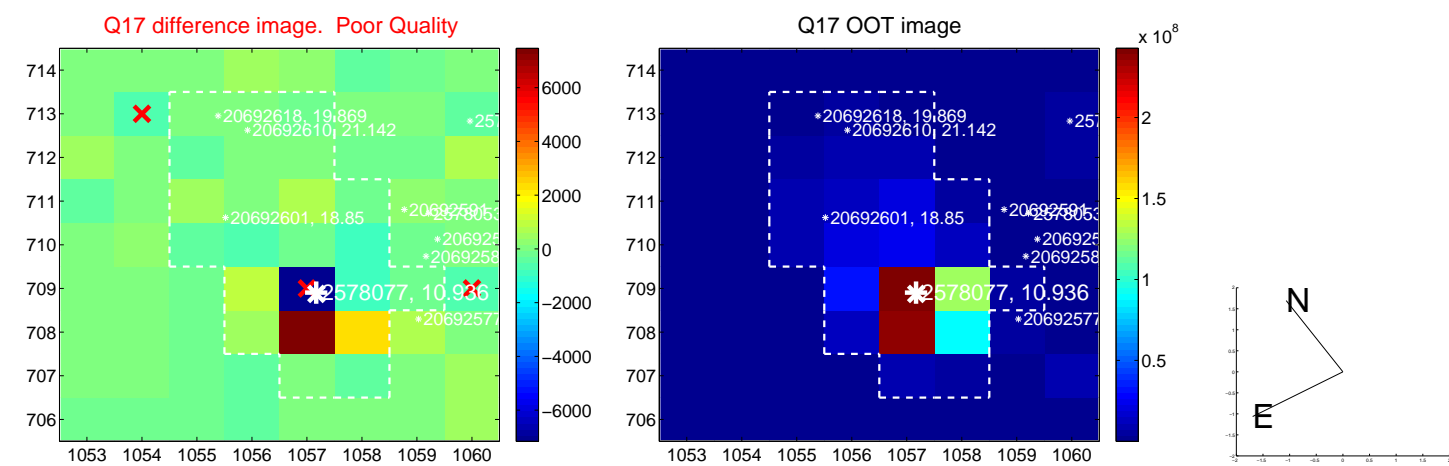
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

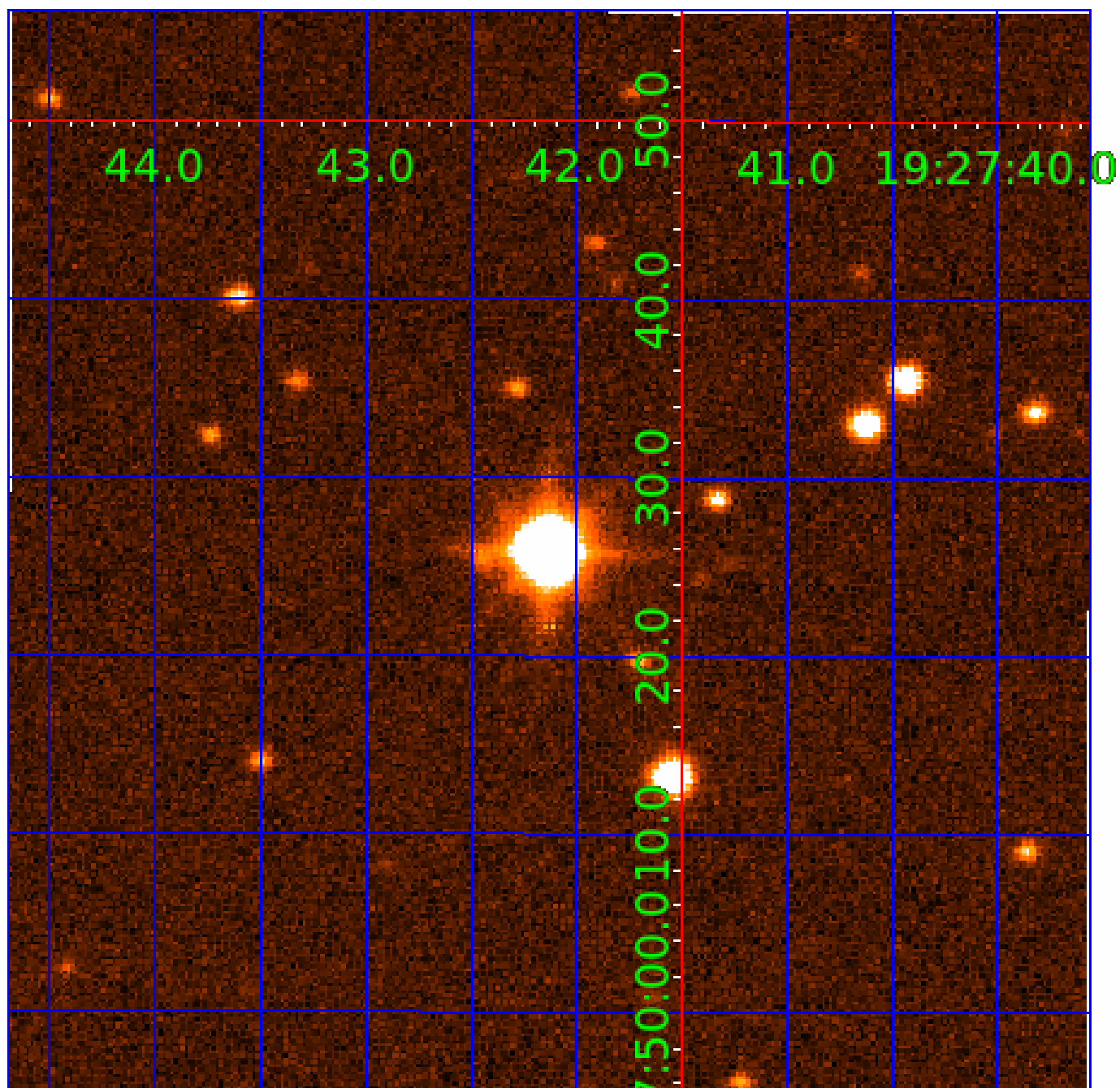


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002578077

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})
002578077-01	OBS	No	1.879106	133.229814	8.9	7.566	8.7	9.0	4.59	8020	1.44	48320.94
002578077-02	OBS	No	1.878547	132.993875	18.2	20.232	10.6	13.8	4.59	8020	2.10	48340.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002578077-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
002578077-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—SWEET_NTL—LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

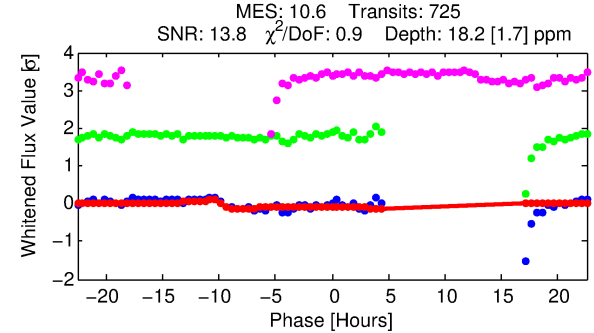
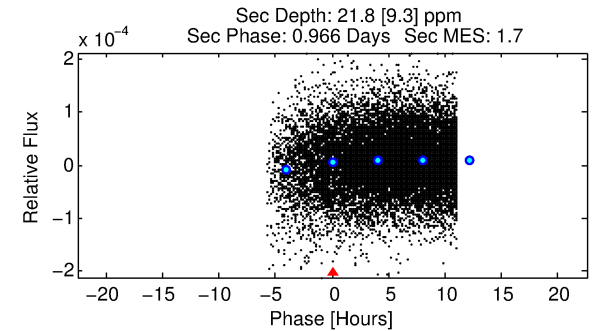
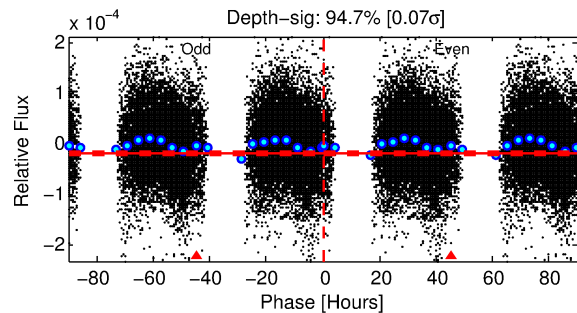
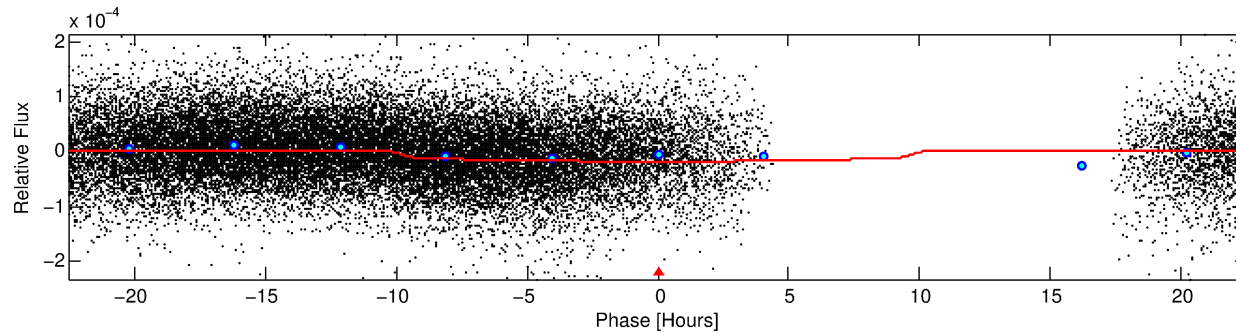
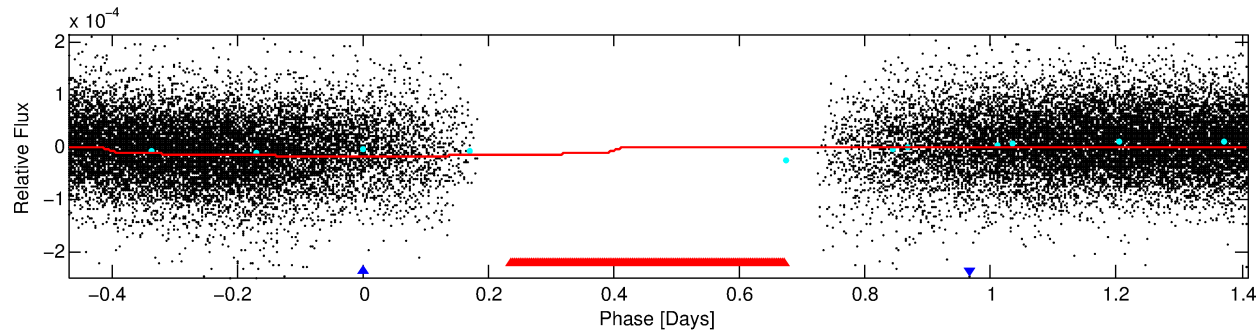
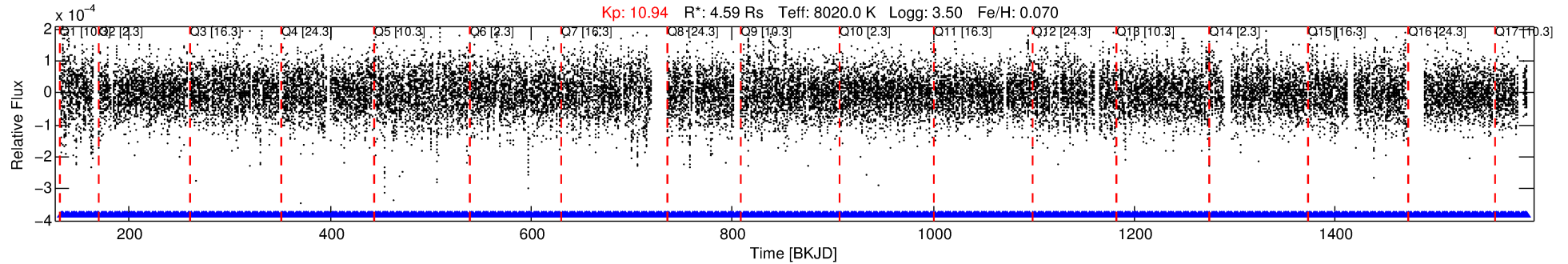
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002578077-02

No Significant Match Found

DV One-Page Summary

KIC: 2578077 Candidate: 2 of 2 Period: 1.879 d



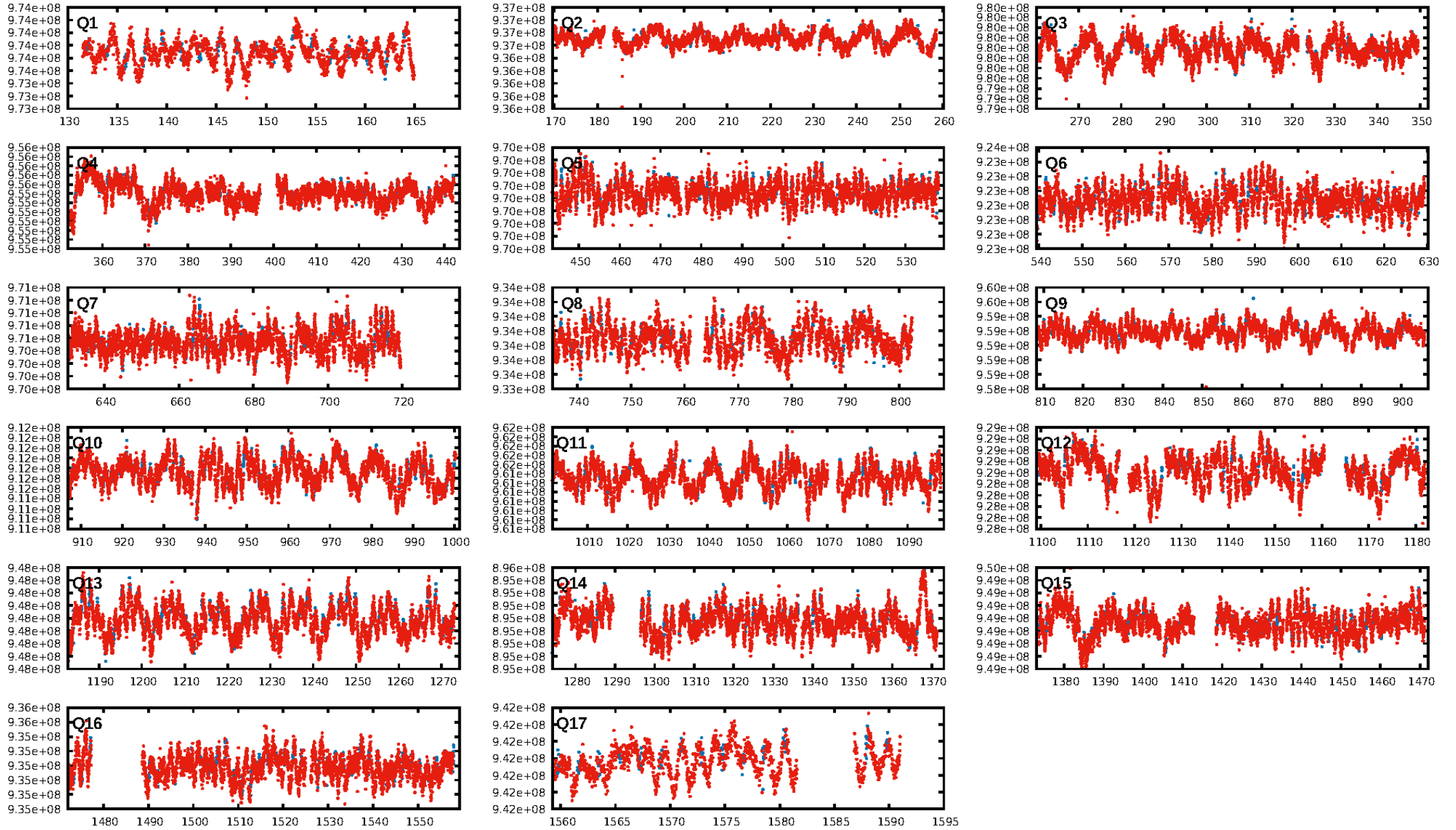
DV Fit Results:

Period = 1.87855 [0.00002] d
Epoch = 132.9939 [0.0331] BKJD
 $R_p/R^* = 0.0042$ [0.0007]
 $a/R^* = 1.01$ [0.01]
 $b = 0.71$ [0.68]
 $S_{\text{eff}} = 48340.13$ [47533.43]
 $T_{\text{eq}} = 3781$ [929] K
 $R_p = 2.10$ [1.23] R_e
 $a = 0.0402$ [0.0234] AU
 $A_g = 4.36$ [4.81] [0.70 σ]
 $T_{\text{effp}} = 8448$ [1185] K [3.10 σ]

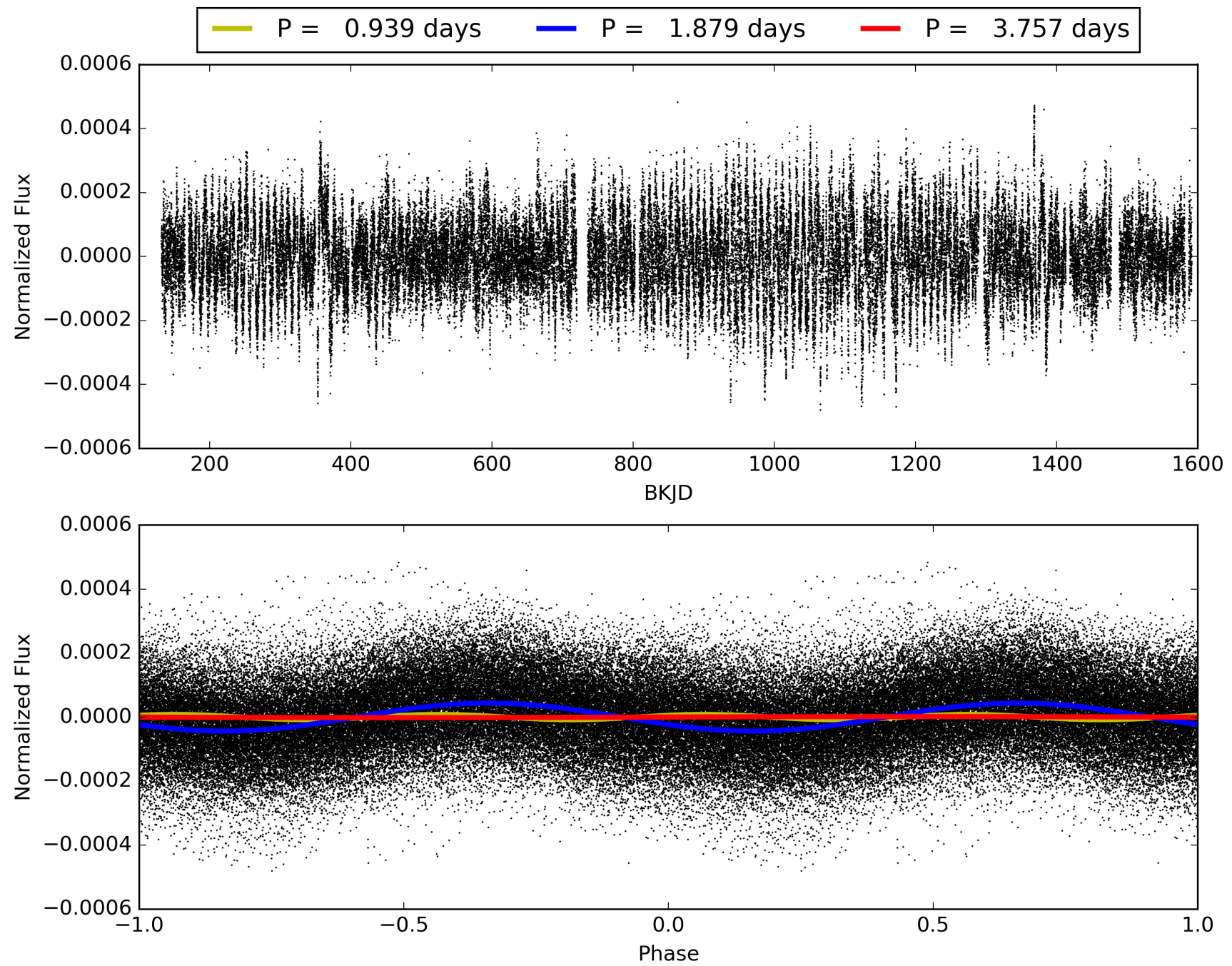
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [692/692]
GhostDiagnostic-chr: 3.501
Centroid-sig: 48.9%
Centroid-so: 0.326 arcsec [0.83 σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 0.00 [0/17]

TCE 002578077-02, PDC Light Curves

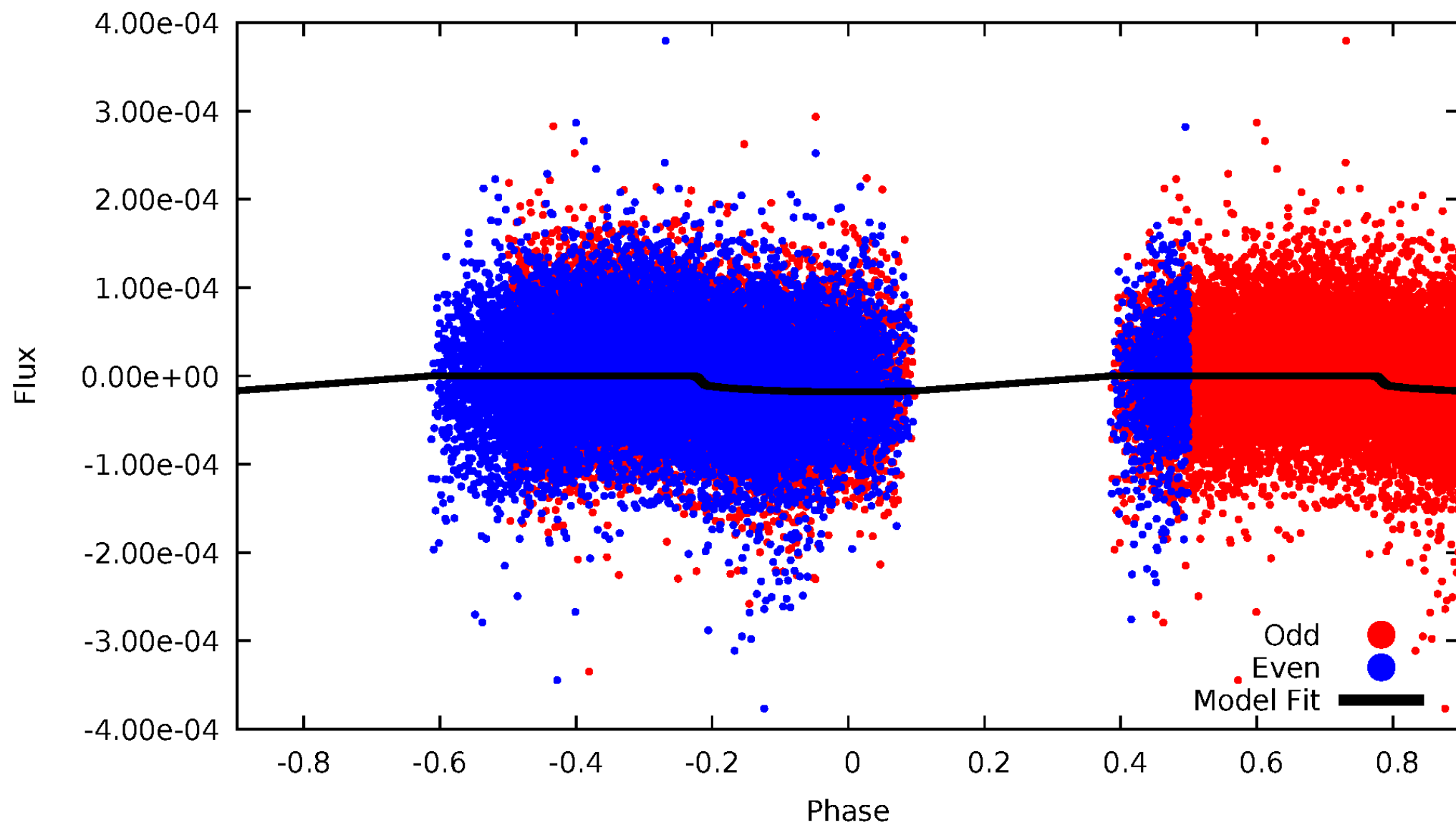


TCE 002578077-02



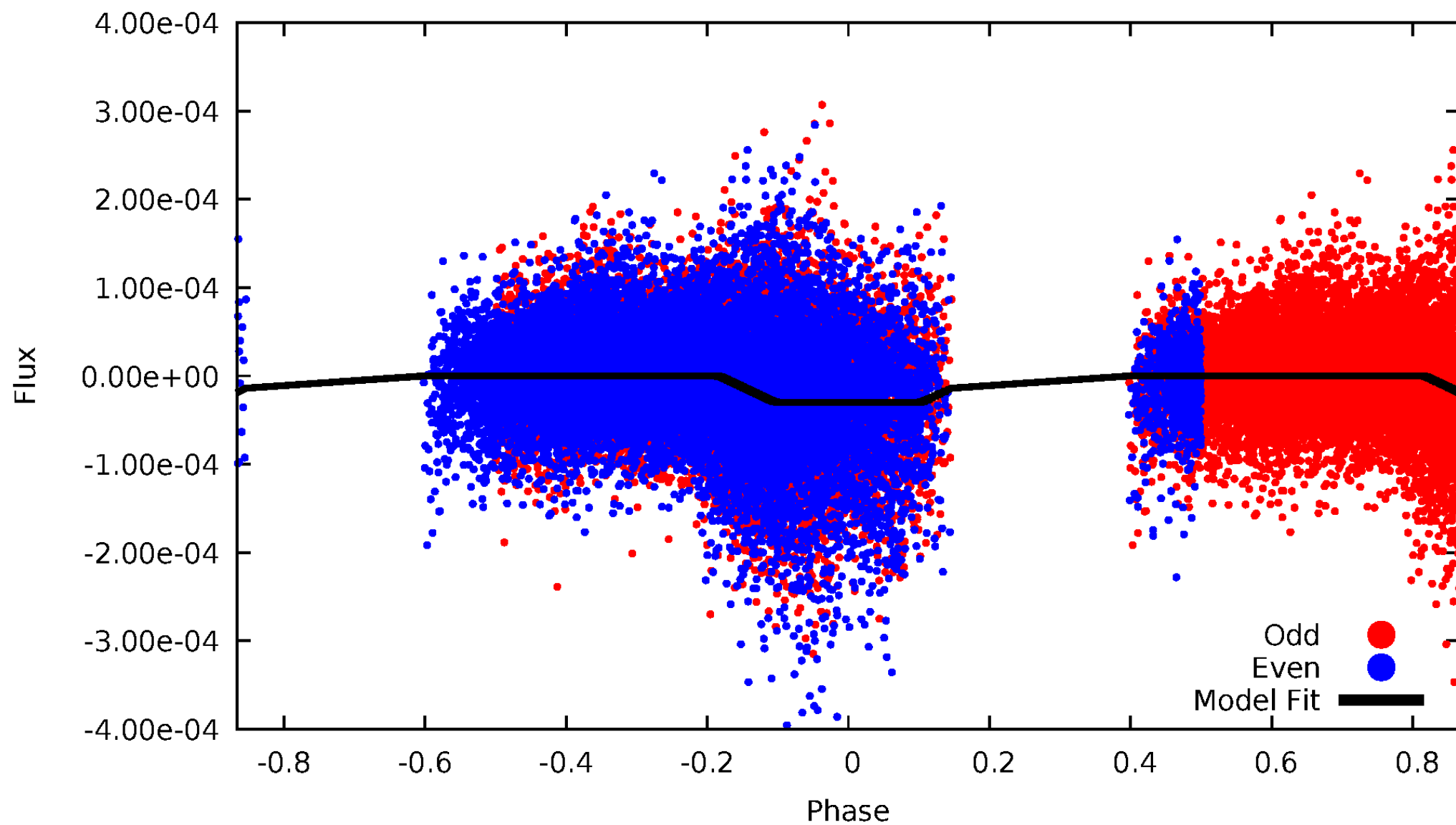
DV Odd/Even

TCE 002578077-02



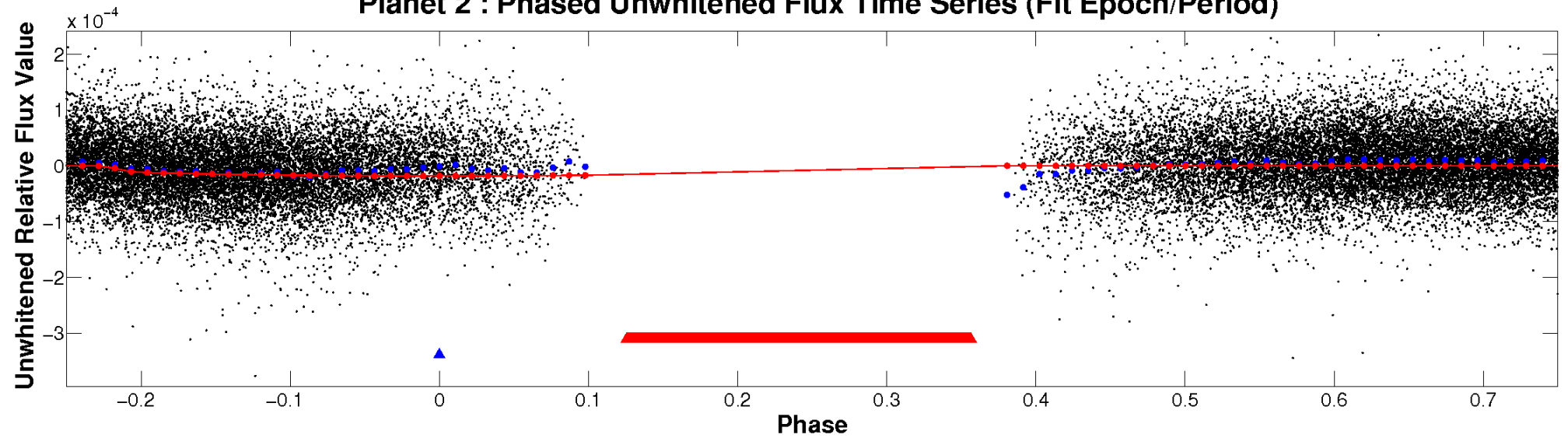
ALT Odd/Even

TCE 002578077-02

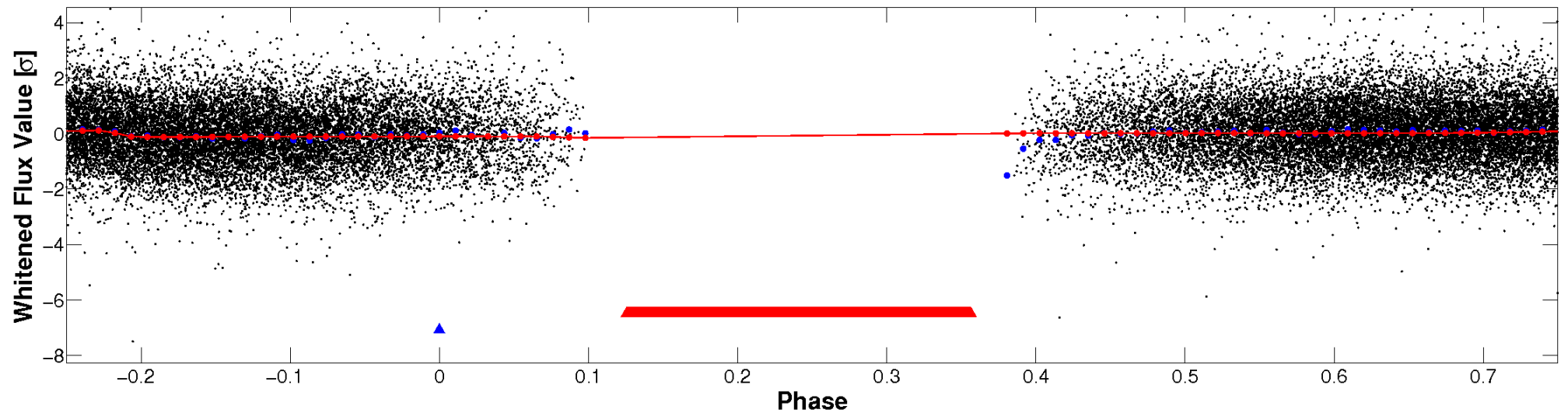


Non-Whitened Vs. Whitened Light Curve

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

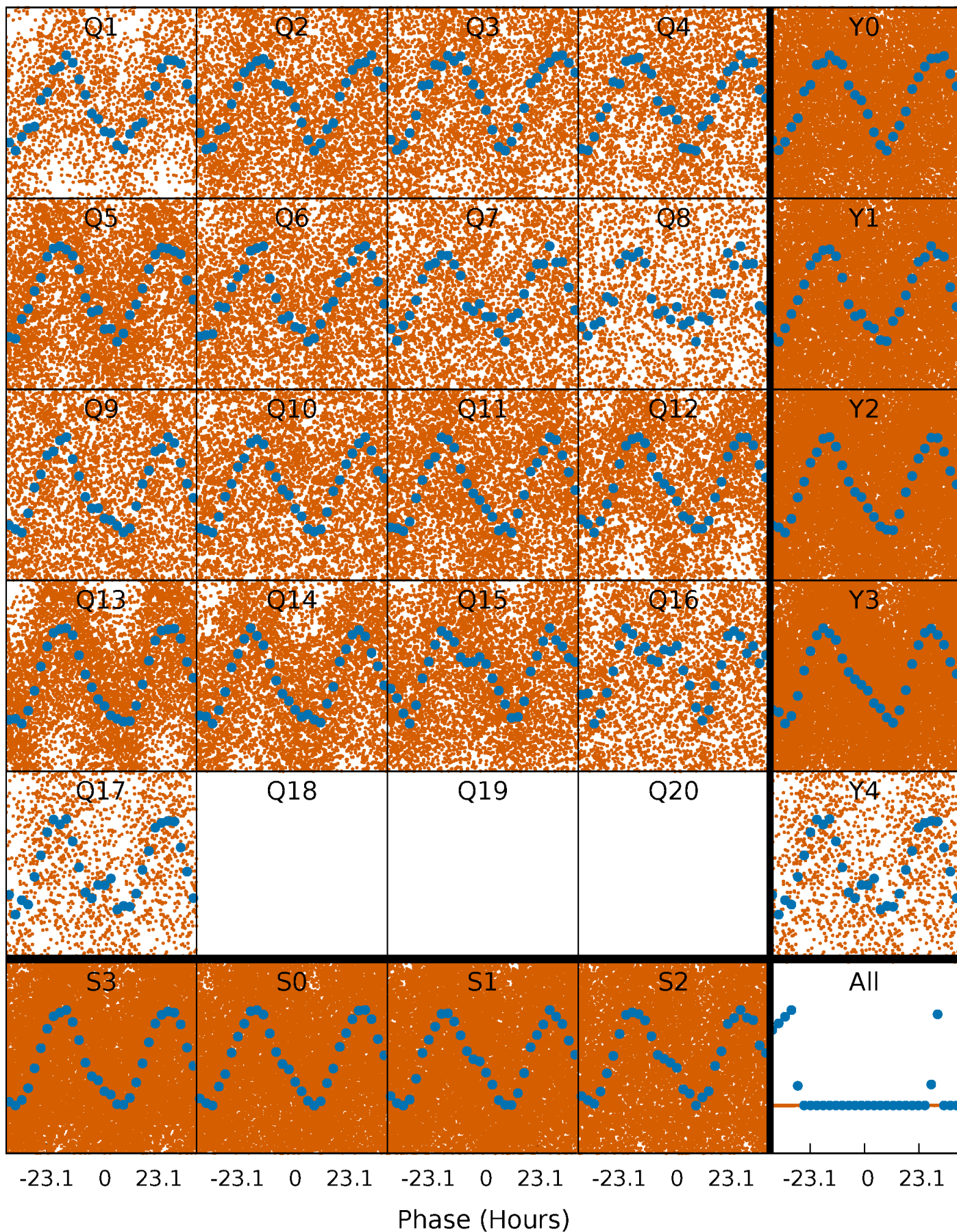


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



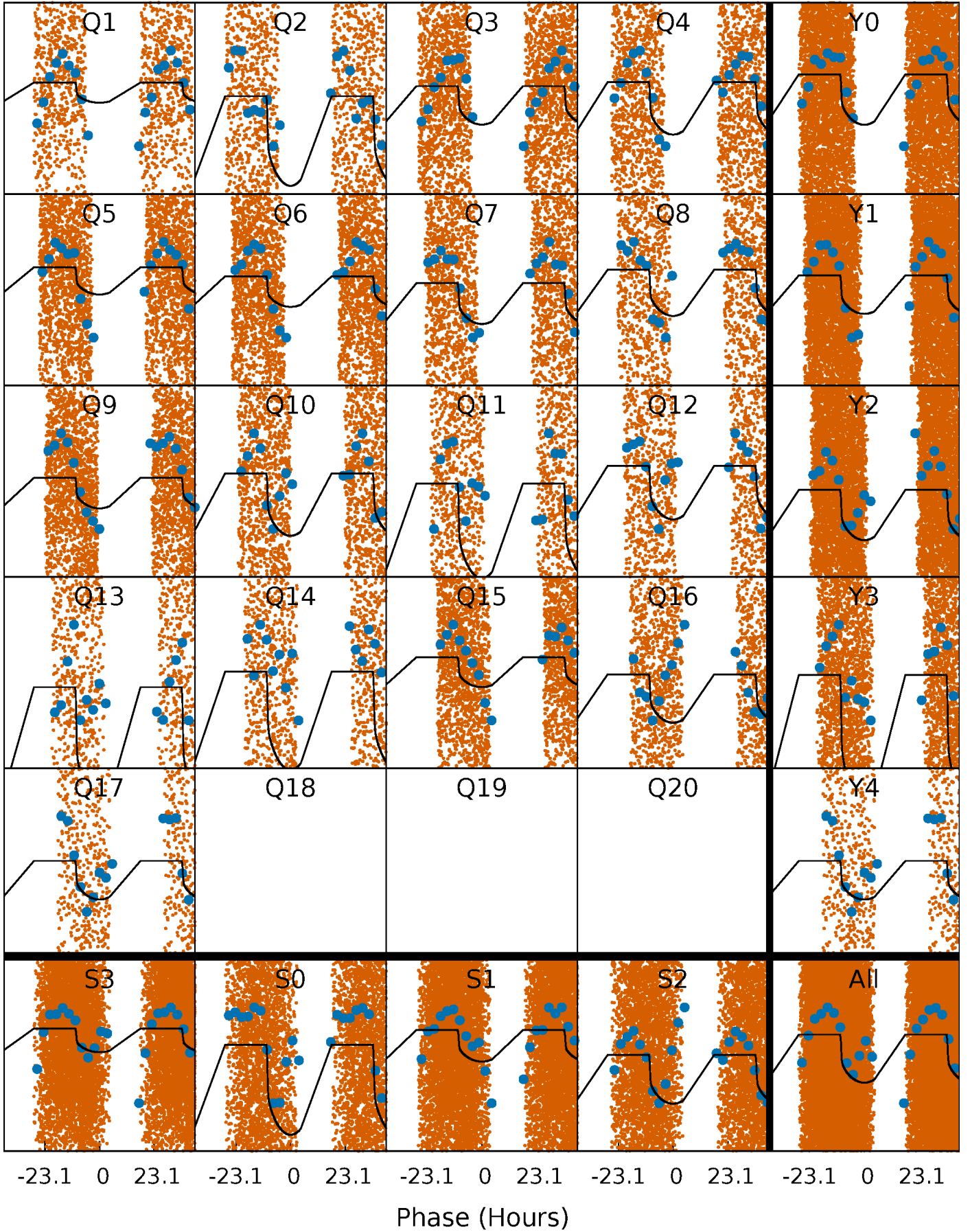
PDC Quarter-Phased Transit Curves

TCE 002578077-02 P= 1.878547 Days $T_0=132.993875$ (BKJD)



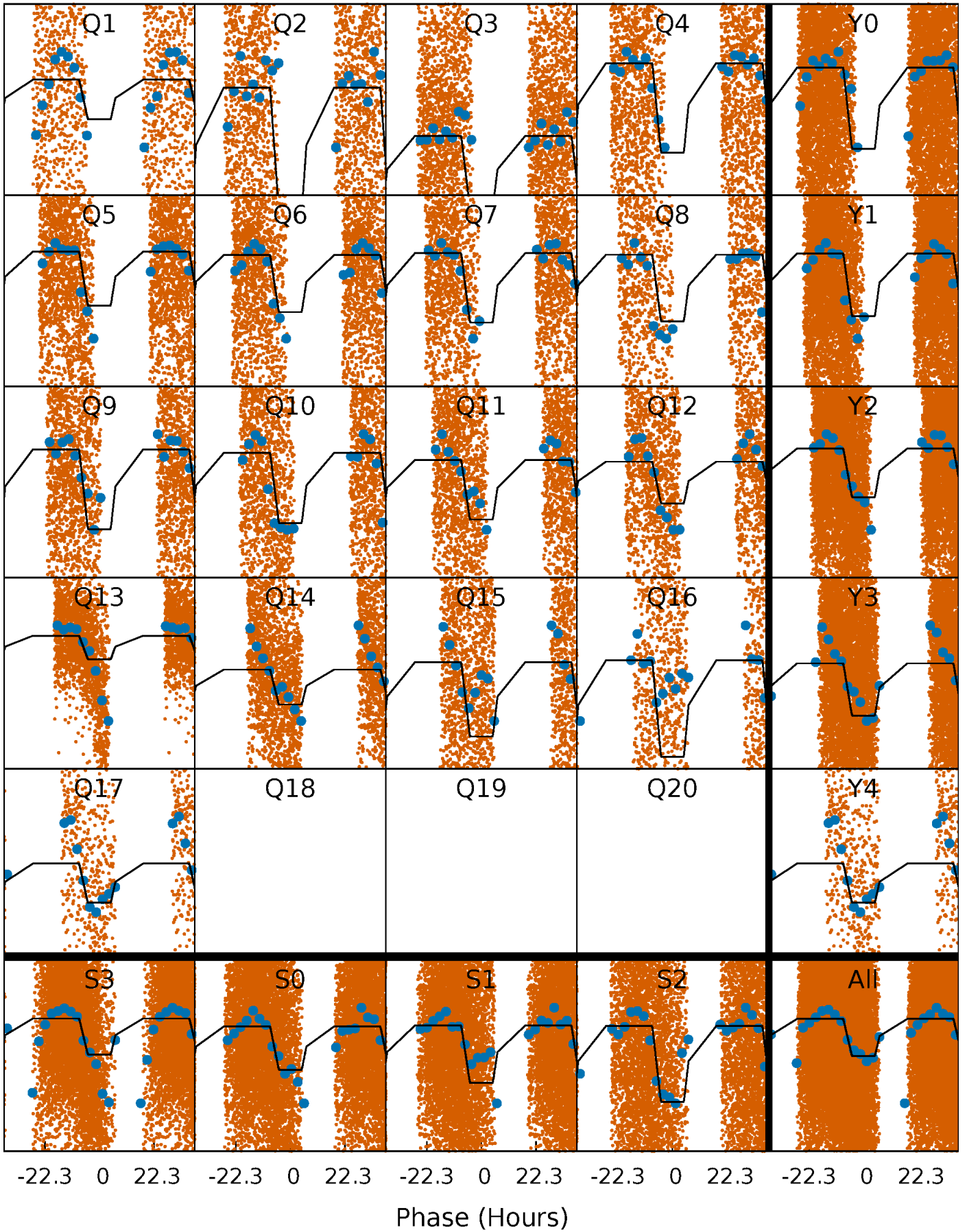
DV Quarter-Phased Transit Curves

TCE 002578077-02 $P = 1.878547$ Days $T_0 = 132.993875$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

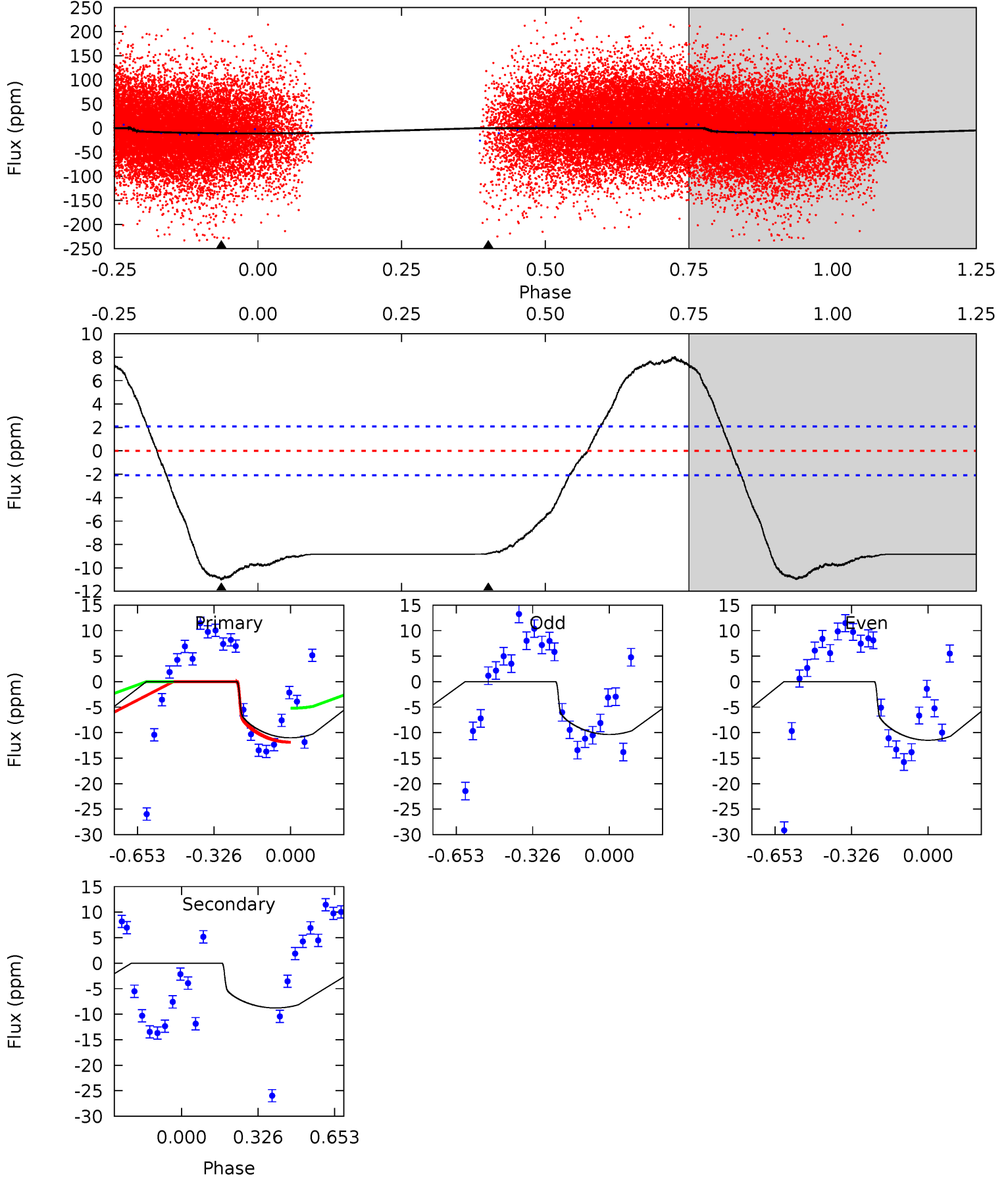
TCE 002578077-02 P= 1.878456 Days $T_0=132.971361$ (BKJD)



DV Model-Shift Uniqueness Test

002578077-02, P = 1.878547 Days, E = 131.115328 Days

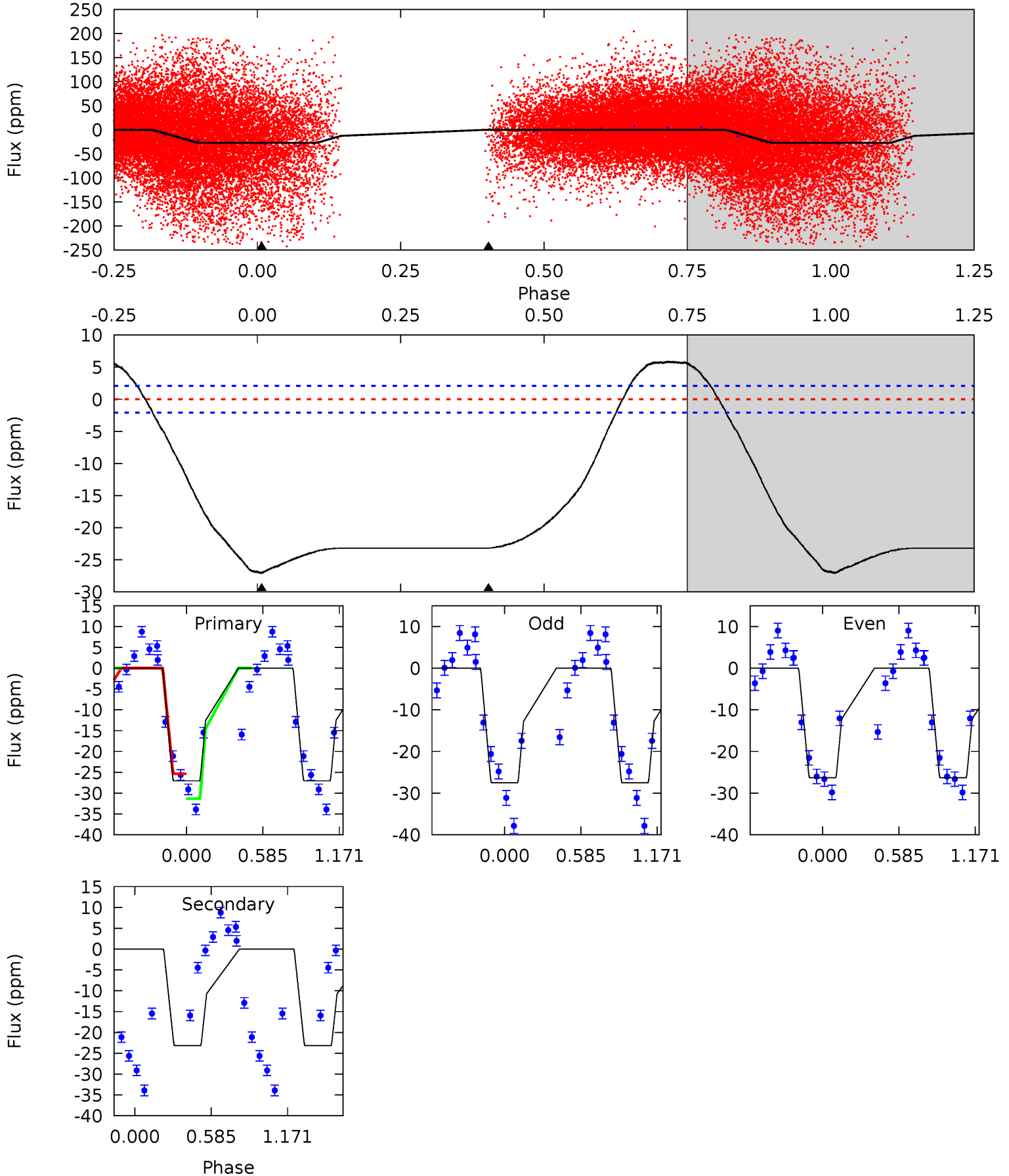
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.7	18.1	0	0	4.31	0.98	2.72	22.7	22.7	18.1	18.1	1.18	1.30	0.42	3.79



Alt Model-Shift Uniqueness Test

002578077-02, P = 1.878456 Days, E = 131.092905 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
54.4	46.7	0	0	4.18	0.55	4.28	54.4	54.4	46.7	46.7	1.21	1.24	0.18	4.32



Stellar Parameters For KIC 002578077

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8020^{+222}_{-361}	$3.504^{+0.580}_{-0.031}$	$0.070^{+0.300}_{-0.350}$	$4.589^{+0.457}_{-2.592}$	$2.451^{+0.267}_{-0.802}$	$0.036^{+0.290}_{-0.004}$
	+3%/-5%	+17%/-1%	+429%/-500%	+10%/-56%	+11%/-33%	+811%/-11%
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 002578077-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-9 ± 0	$1.84^{+0.51}_{-0.56}$	4979^{+366}_{-719}	6235^{+733}_{-569}	$2.270^{+2.156}_{-0.791}$
Alt.	-23 ± 0	$2.42^{+0.51}_{-0.73}$	4960^{+392}_{-756}	7212^{+651}_{-561}	$3.573^{+2.999}_{-1.068}$

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

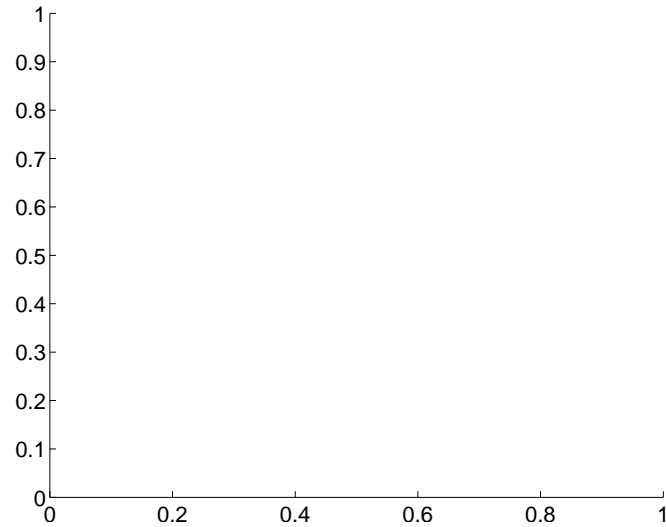
Supplemental centroid analysis for 002578077-02. **Kepler magnitude: 10.94.** Transit SNR 13.81

There are 0 quarters with good PRF difference image offsets

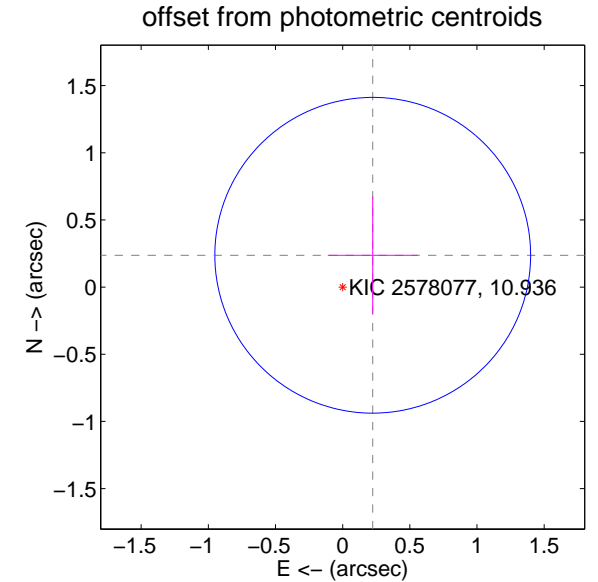
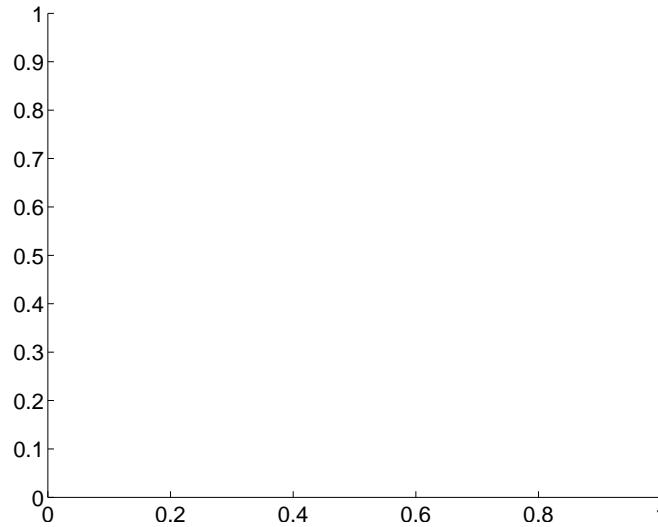
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	0.33 ± 0.39	0.83	-0.22 ± 0.33	0.24 ± 0.44

There is no PRF-fit offset from OOT-fit

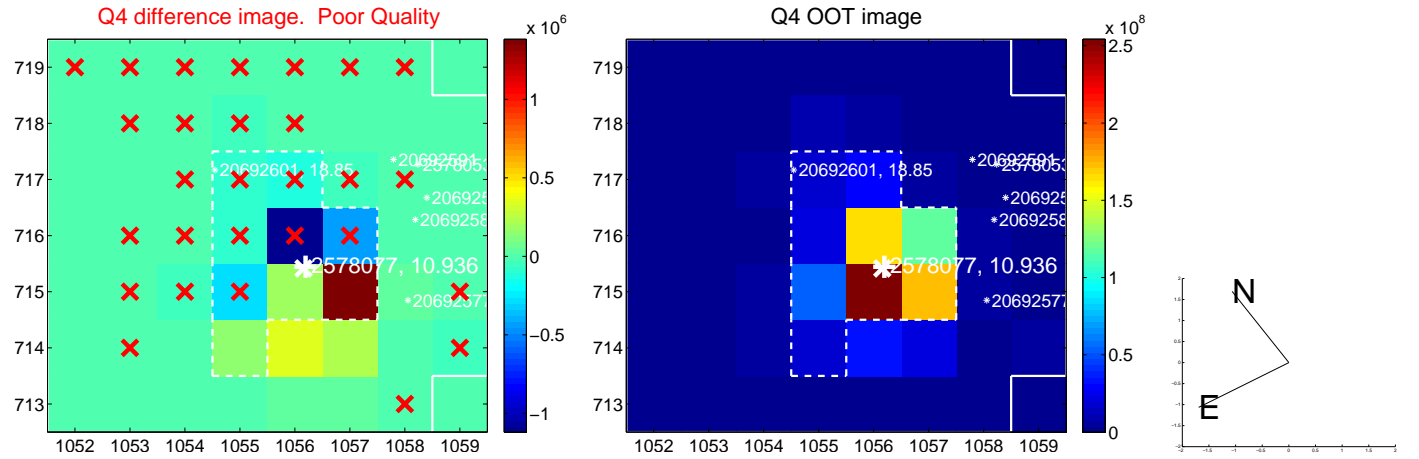
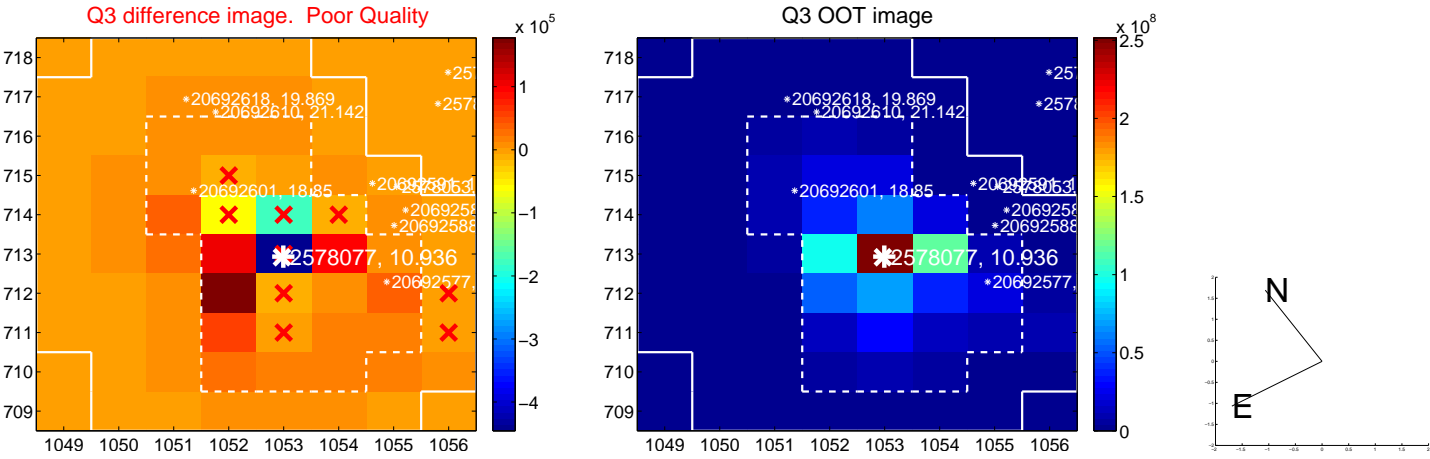
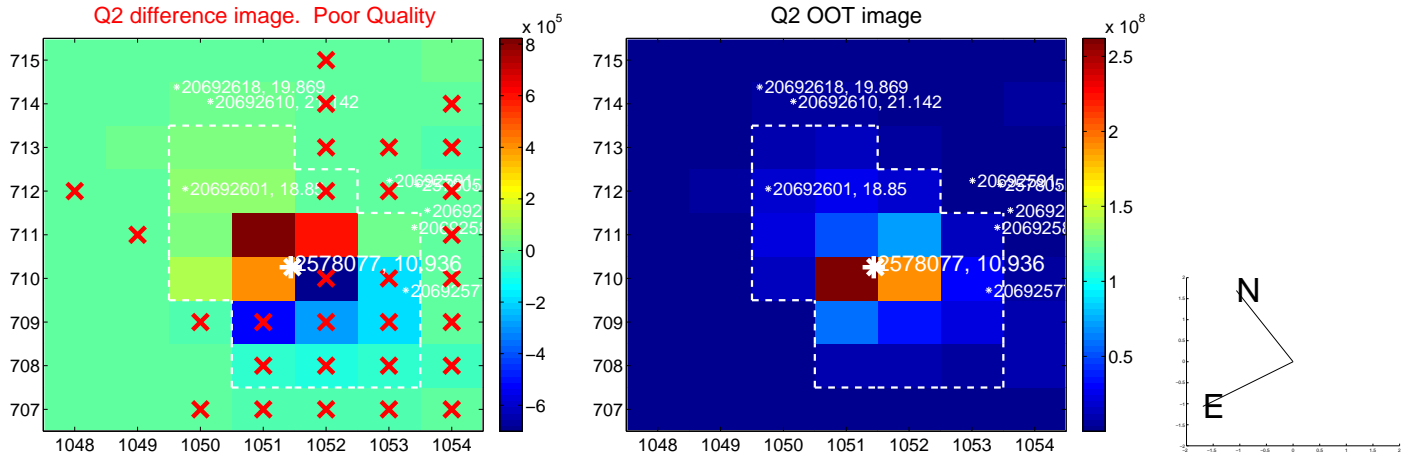
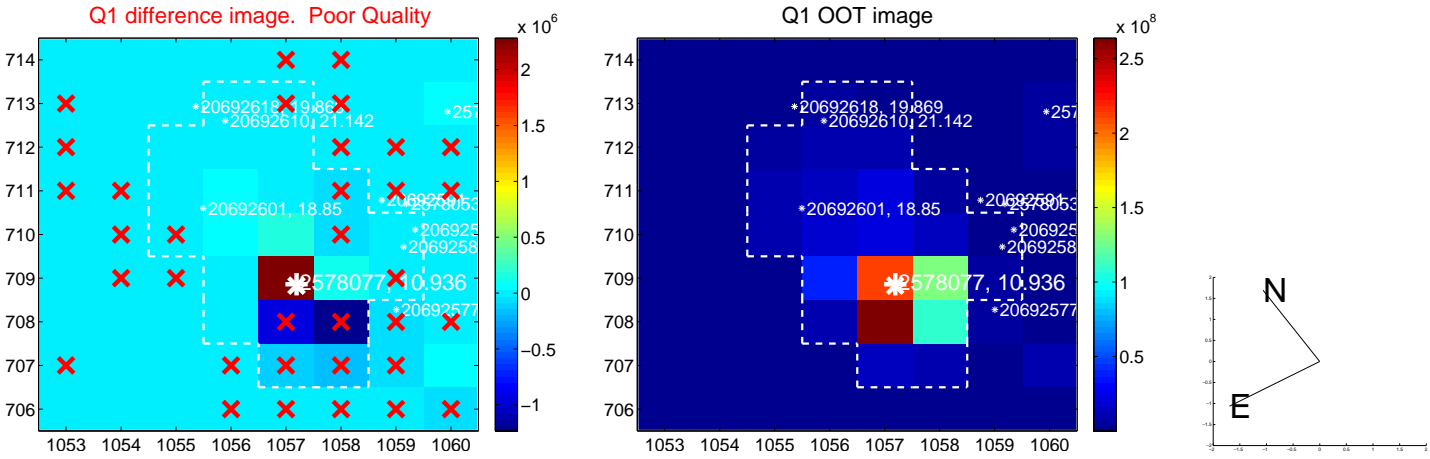


There is no PRF-fit offset from KIC

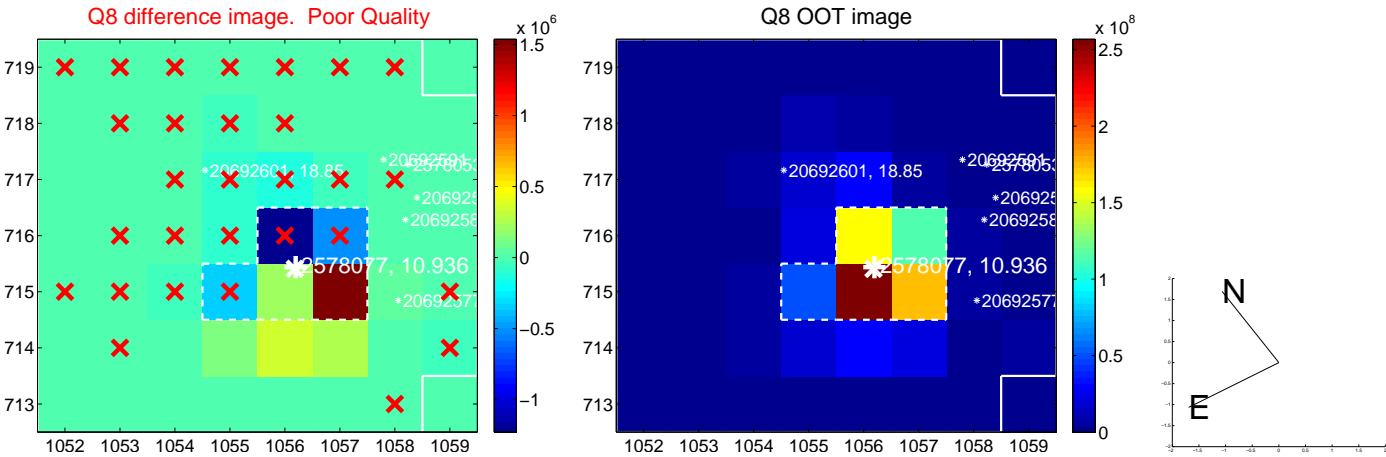
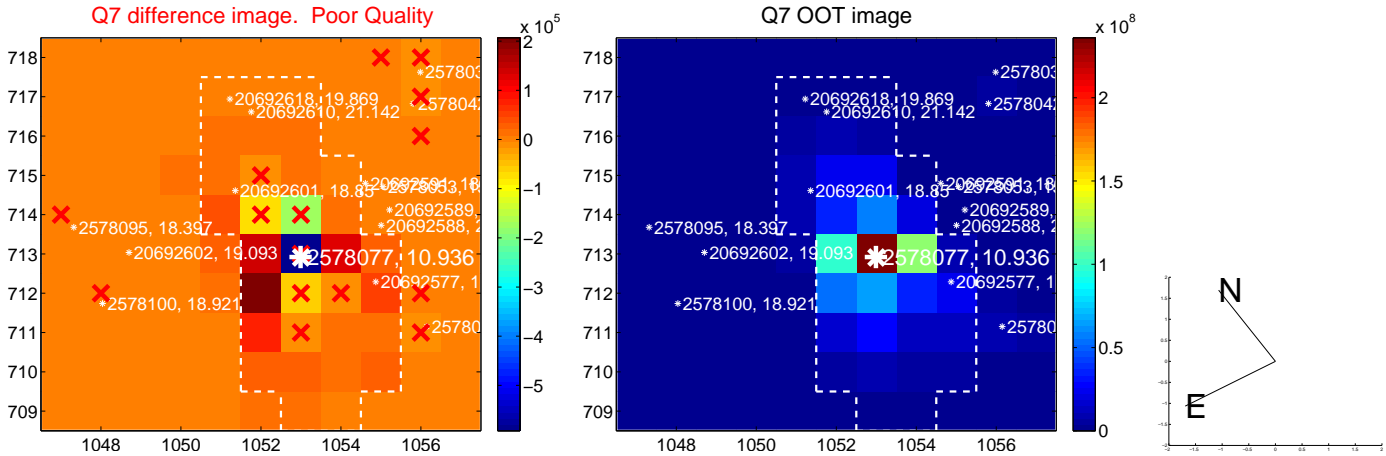
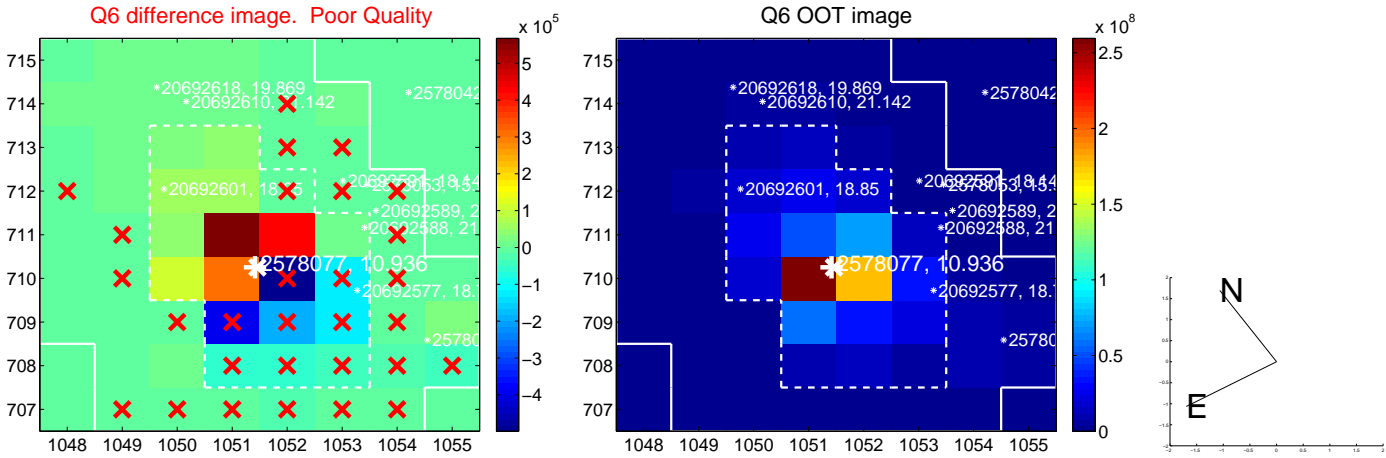
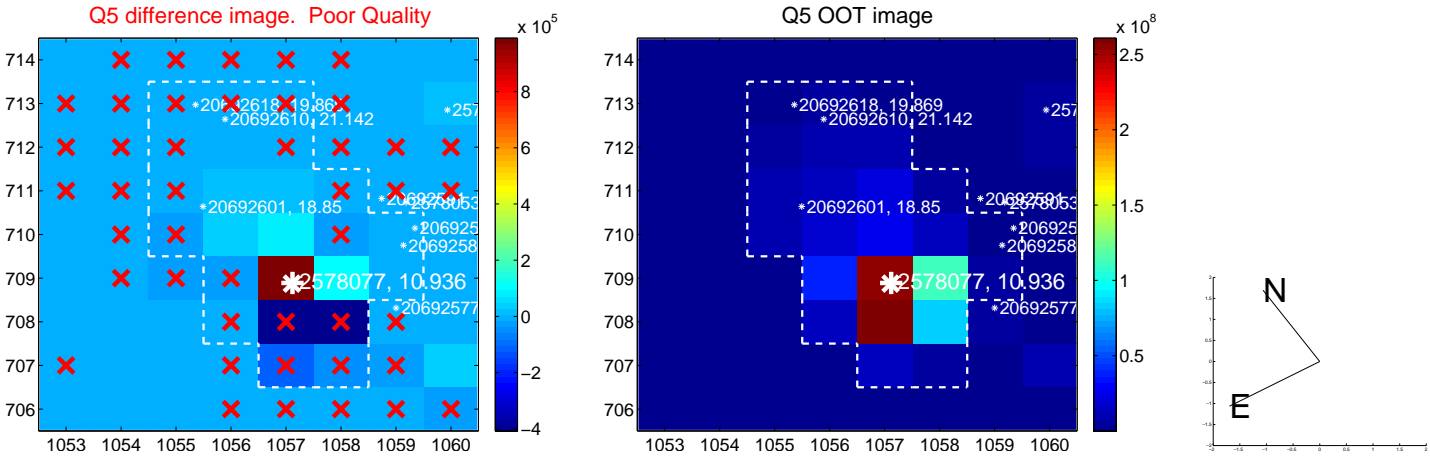


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

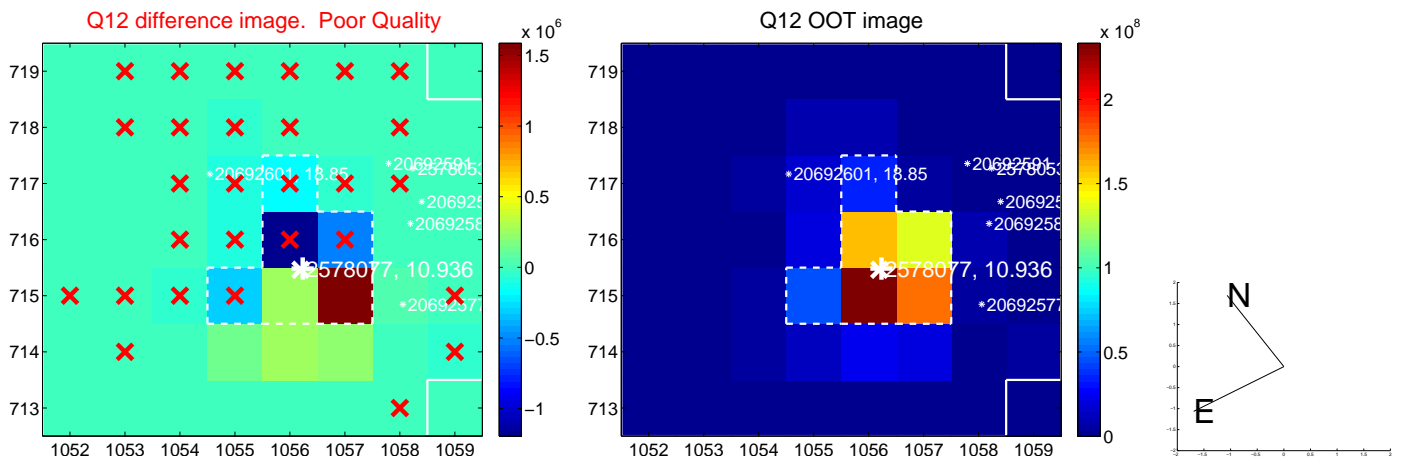
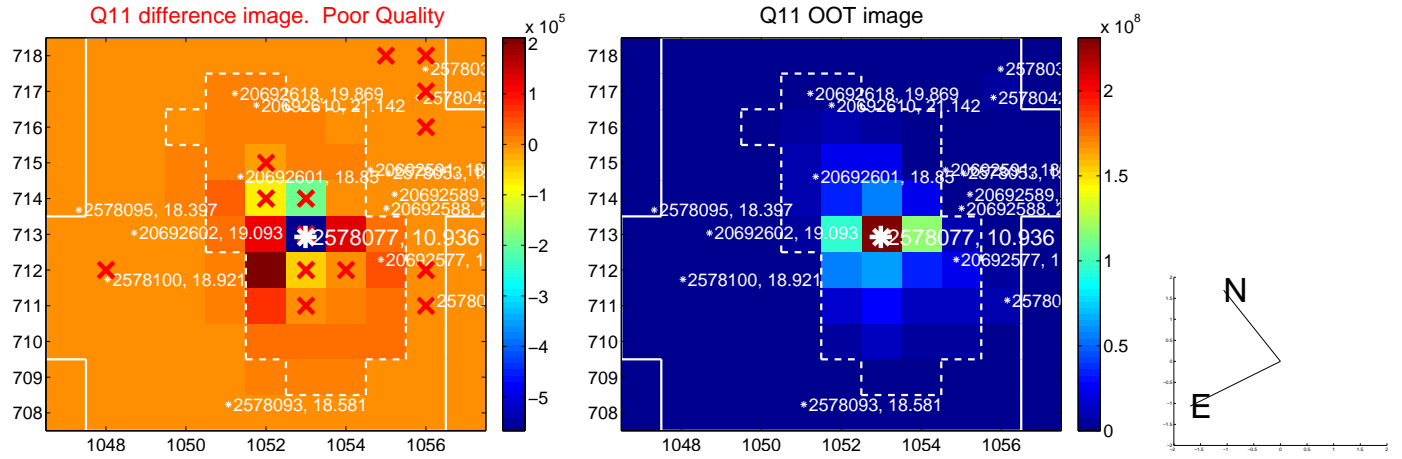
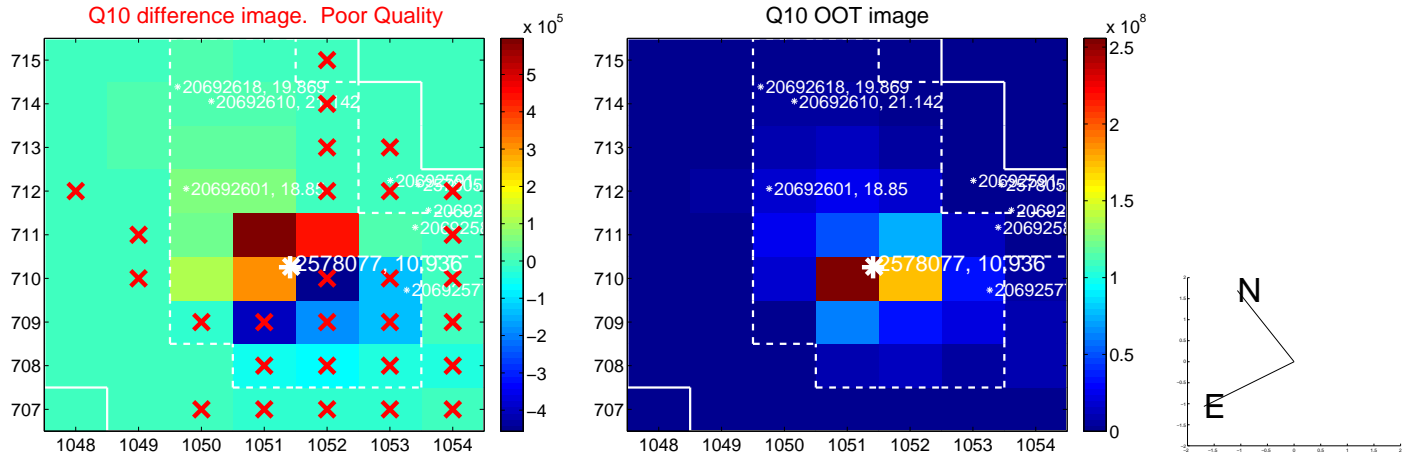
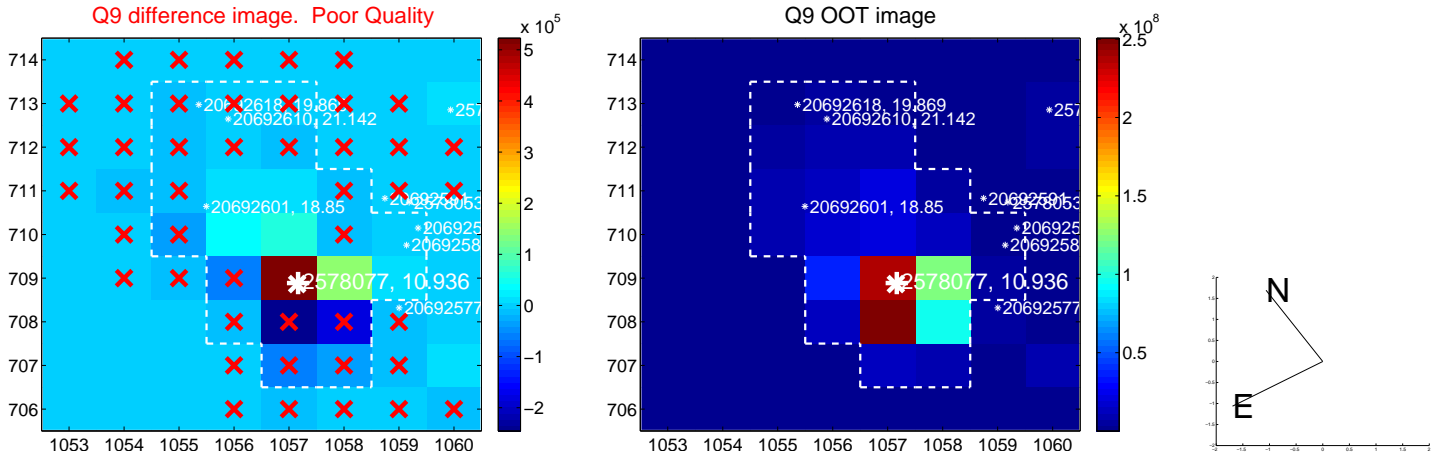
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



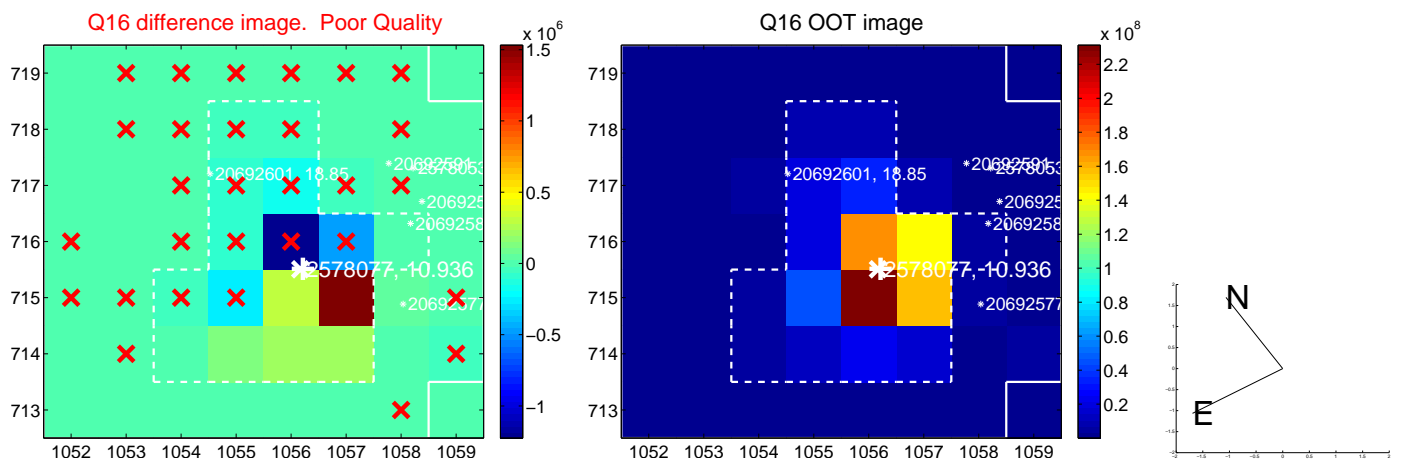
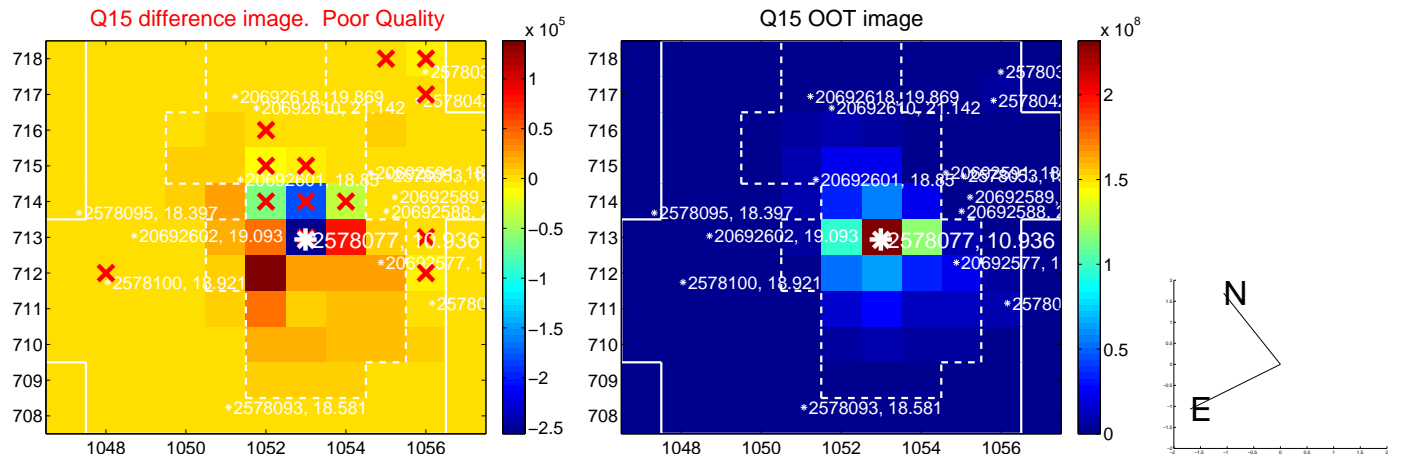
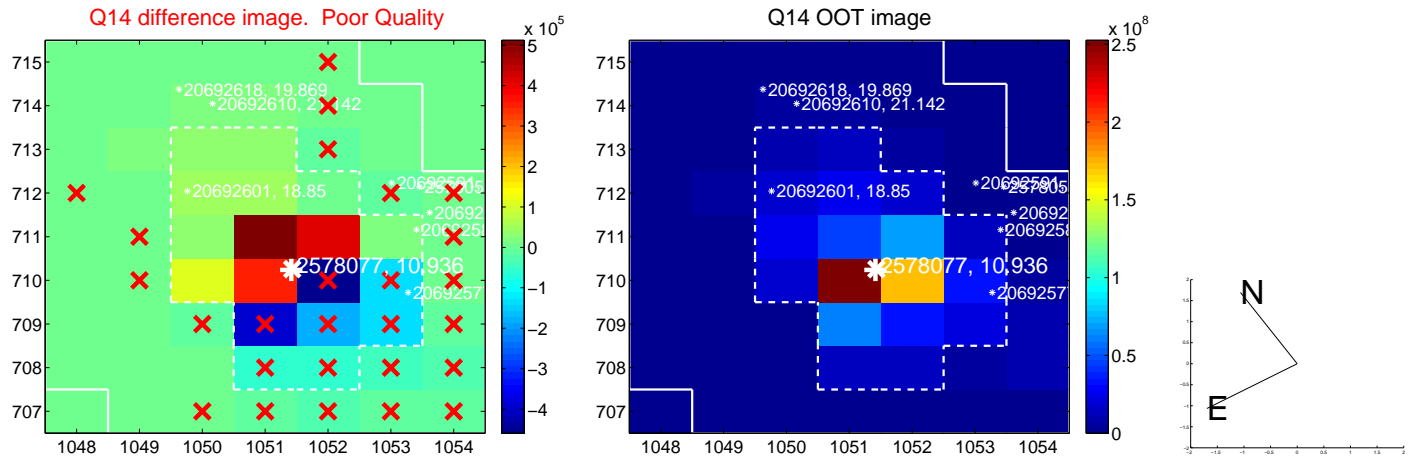
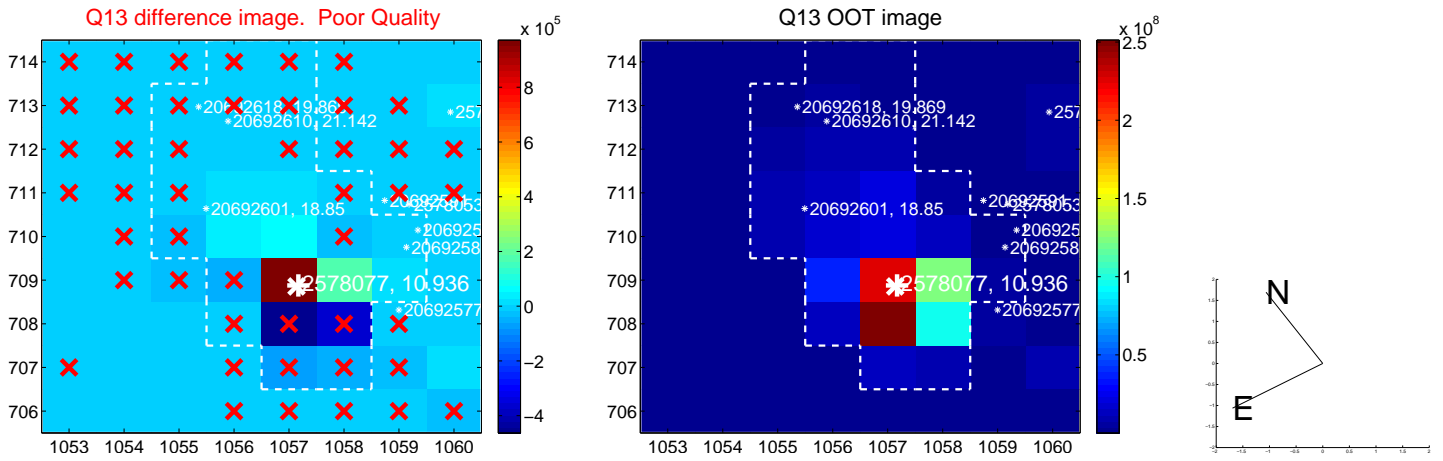
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



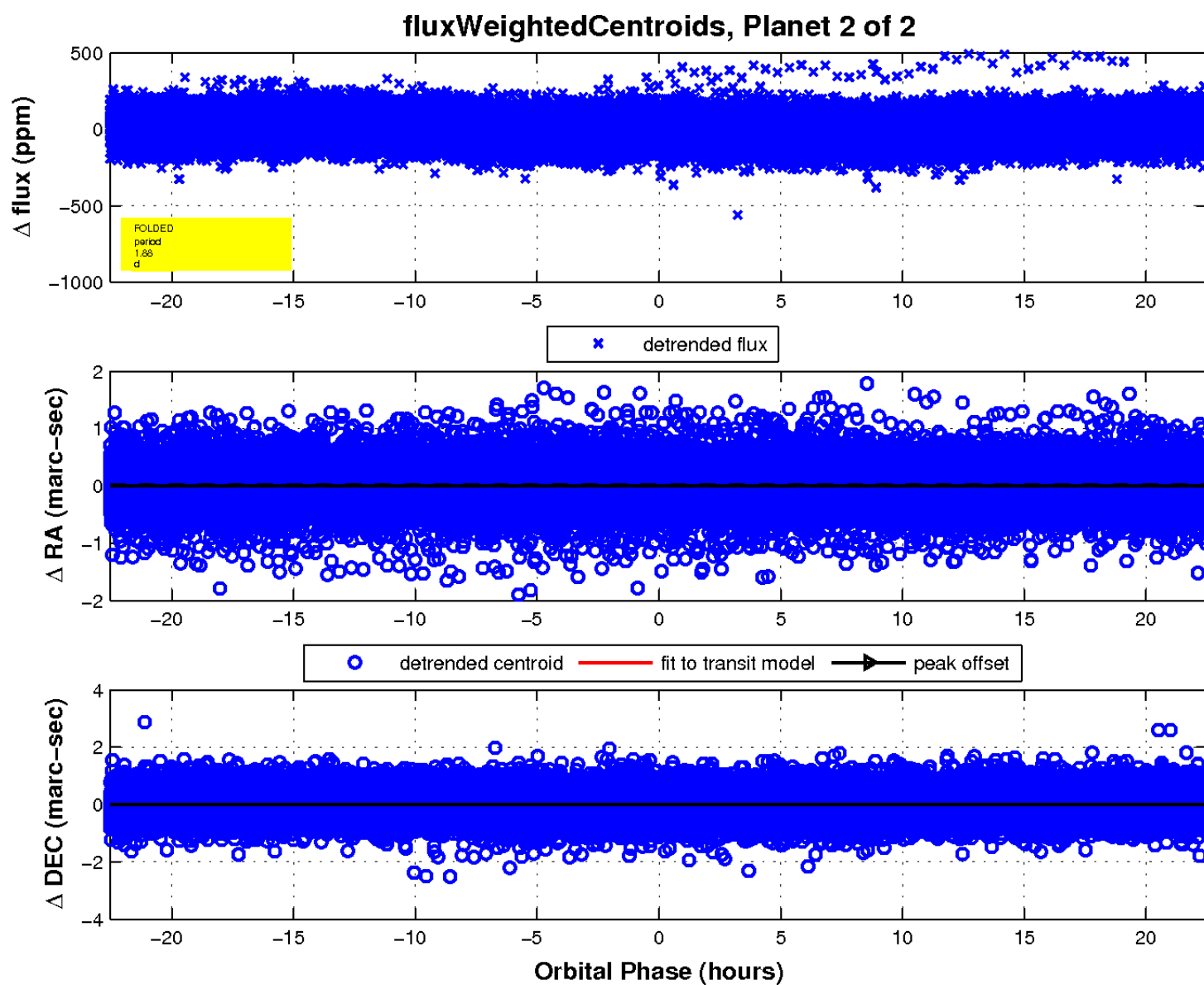
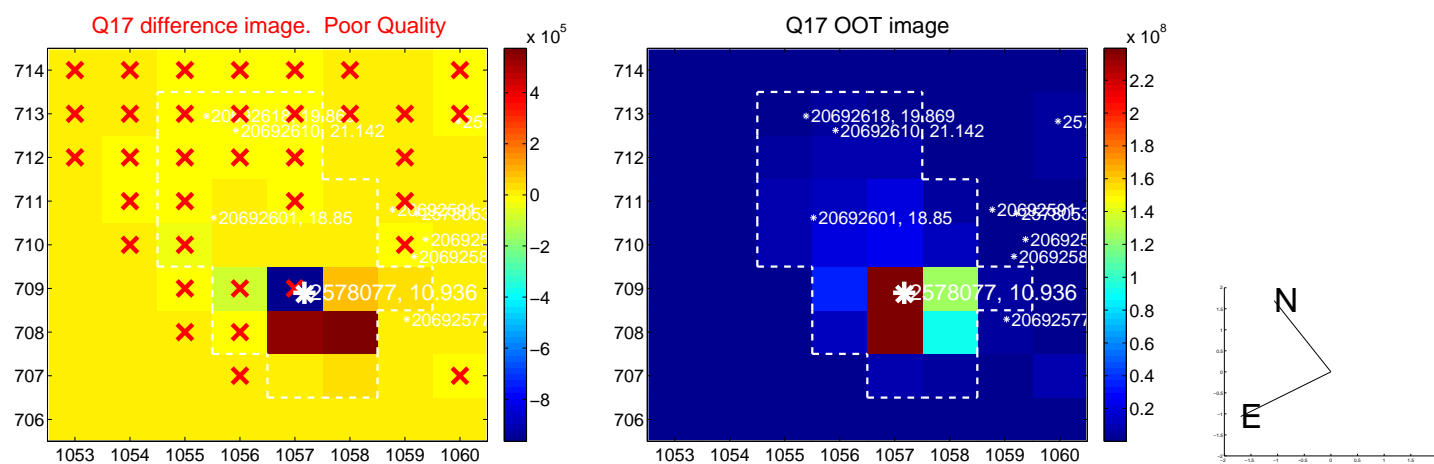
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

