

KIC 007046148

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})
007046148-01	OBS	No	2.234666	131.670475	14.5	11.345	12.5	4.5	1.00	6628	0.39	1505.48
007046148-02	OBS	No	194.302393	204.515208	267.4	4.115	7.6	7.5	1.00	6628	1.91	3.91
007046148-03	OBS	No	294.814364	292.029832	389.6	8.494	12.3	8.2	1.00	6628	2.20	2.24
007046148-04	OBS	No	155.744119	145.301346	331.3	3.861	7.4	7.3	1.00	6628	2.32	5.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007046148-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007046148-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
007046148-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007046148-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—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.

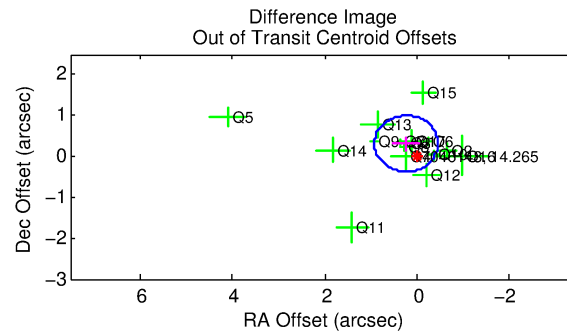
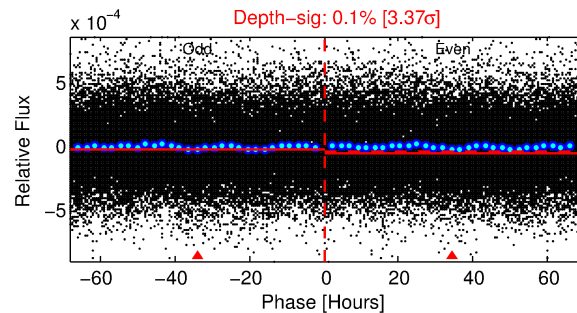
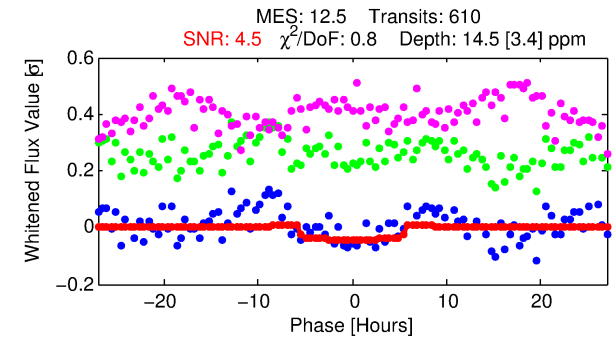
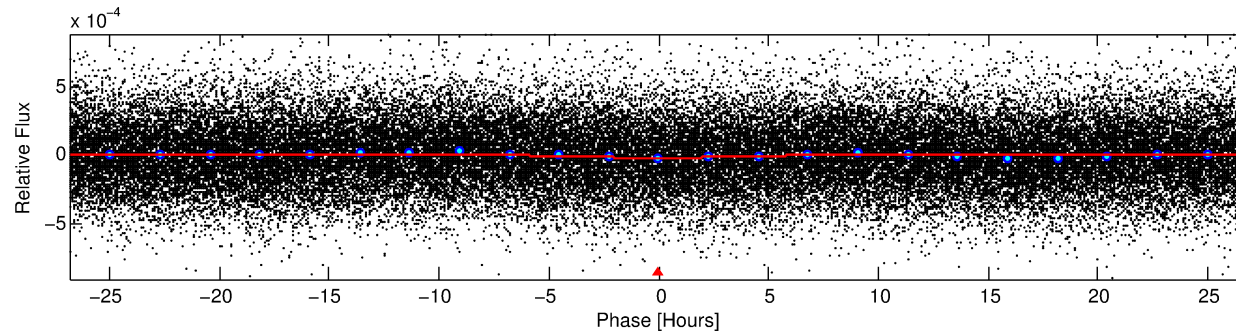
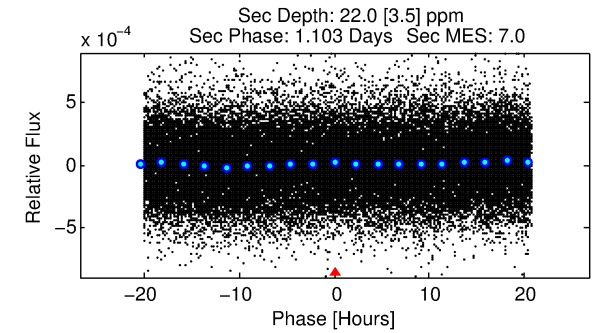
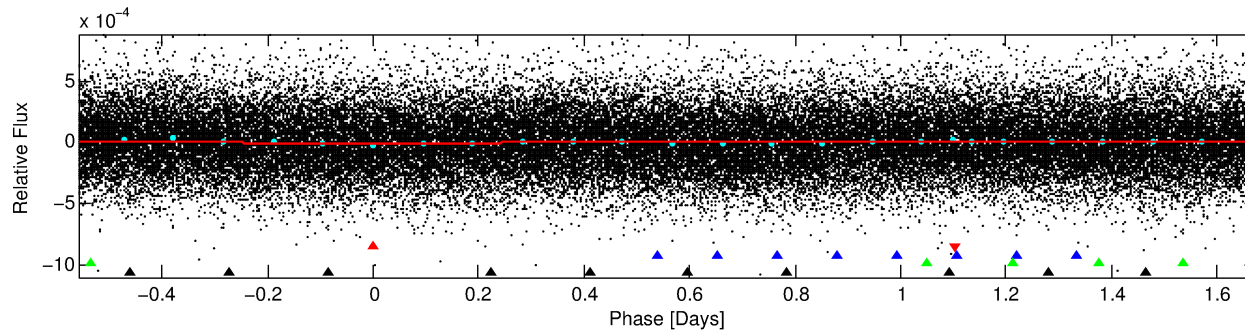
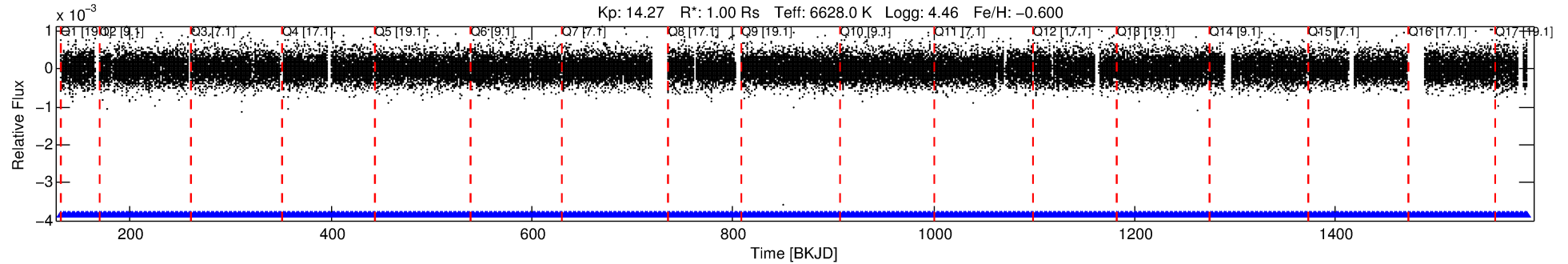
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007046148-01

No Significant Match Found

DV One-Page Summary

KIC: 7046148 Candidate: 1 of 4 Period: 2.235 d



DV Fit Results:

Period = 2.23467 [0.00007] d
Epoch = 131.6705 [0.0171] BKJD
Rp/R* = 0.0036 [0.0046]
a/R* = 1.56 [6.65]
b = 0.36 [17.67]
Seff = 1505.48 [548.30]
Teq = 1588 [145] K
Rp = 0.39 [0.52] Re
a = 0.0340 [0.0078] AU
Ag = 92.51 [243.71] [0.38σ]
Teffp = 7616 [4980] K [1.21σ]

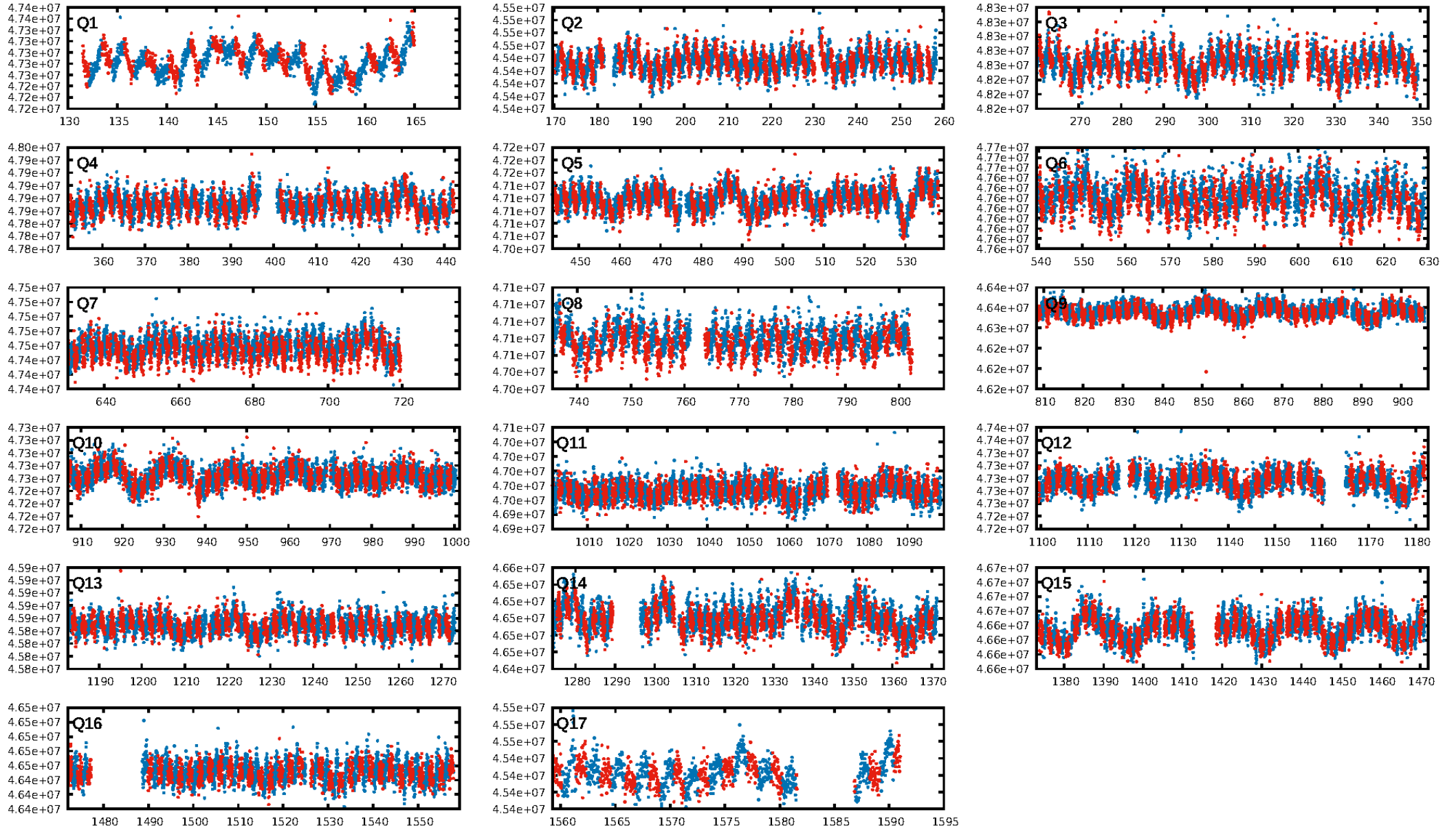
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [307.42σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.10e-26
RollingBand-fgt: 1.00 [582/582]
GhostDiagnostic-chr: 0.6785
Centroid-sig: 49.5%
Centroid-so: 1.411 arcsec [0.71σ]
OotOffset-rm: 0.394 arcsec [1.72σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 0.211 arcsec [0.78σ]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.69 [11/16]
DiffImageOverlap-fno: 1.00 [17/17]

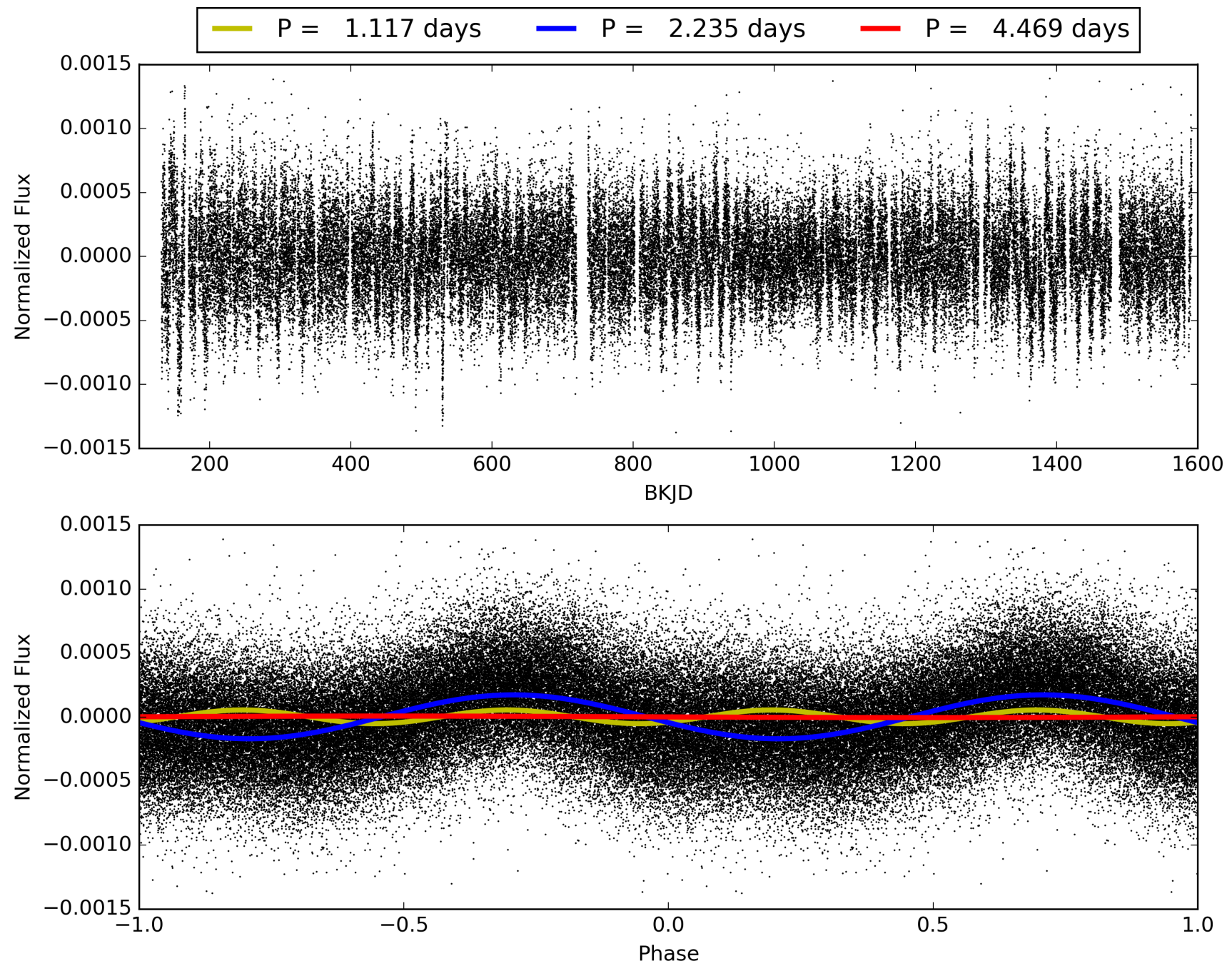
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:48:51 Z

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

TCE 007046148-01, PDC Light Curves

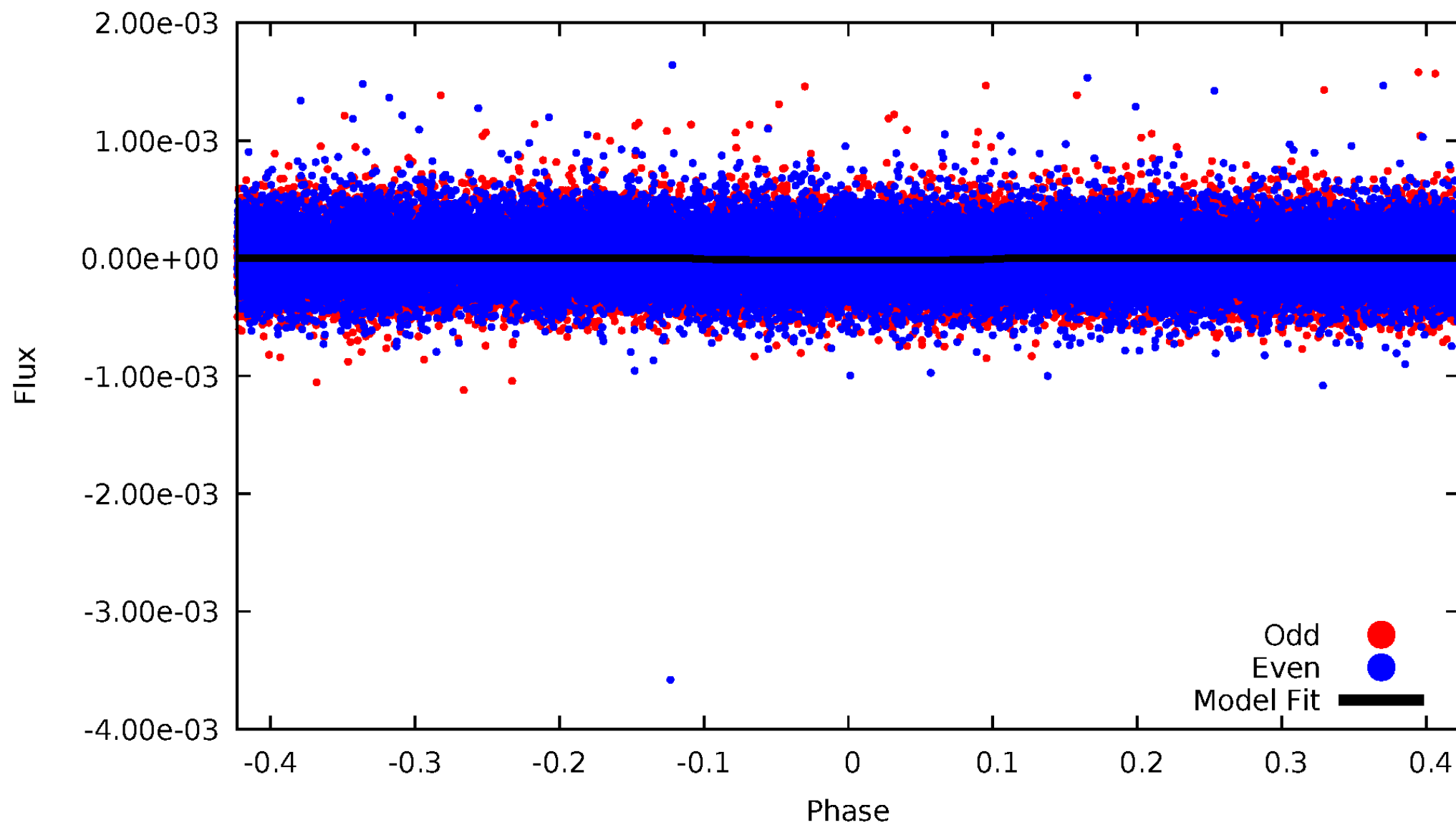


TCE 007046148-01



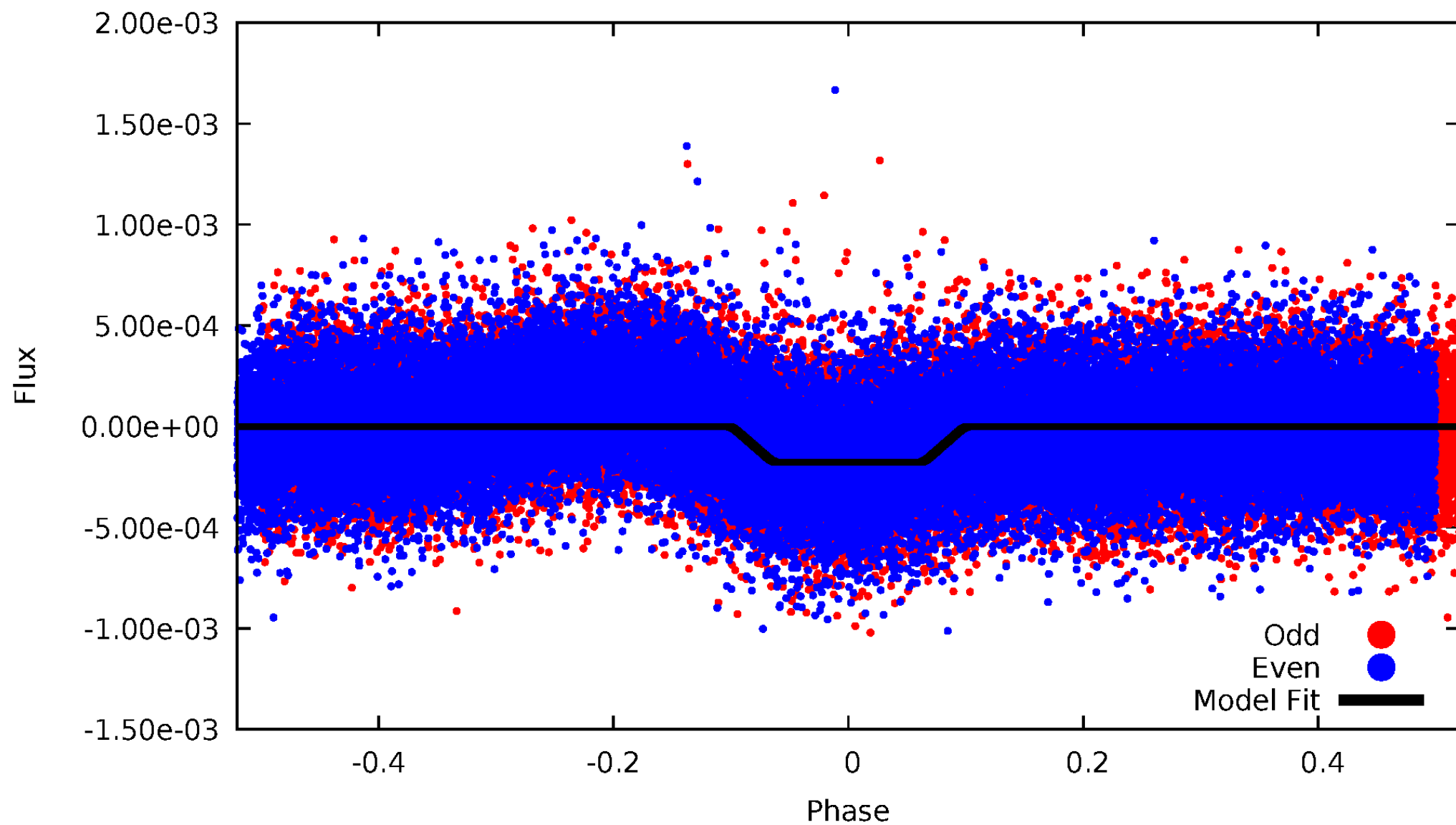
DV Odd/Even

TCE 007046148-01



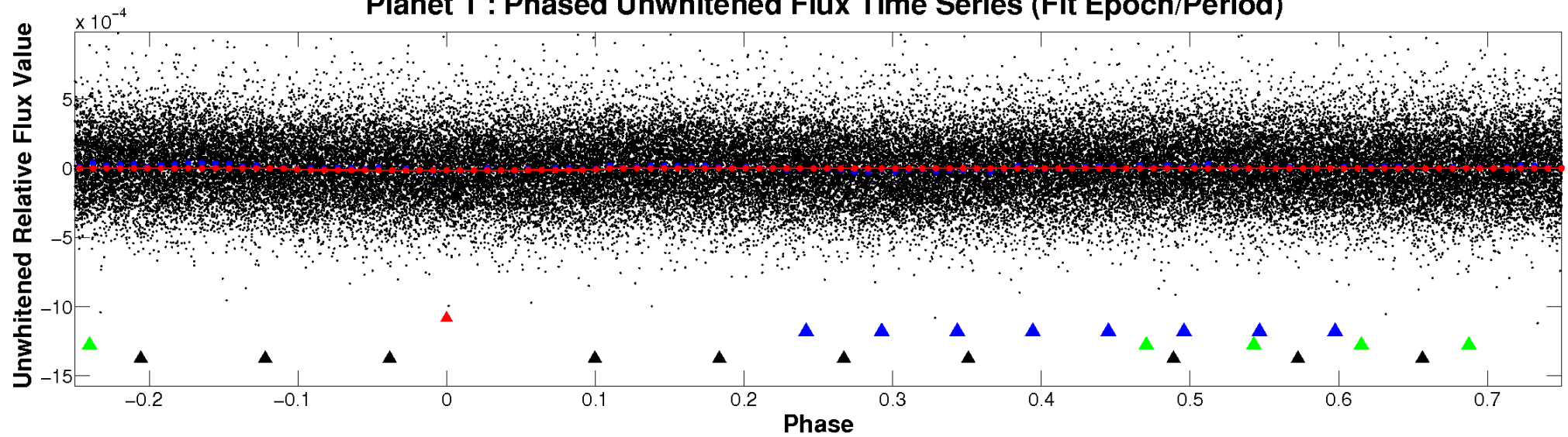
ALT Odd/Even

TCE 007046148-01

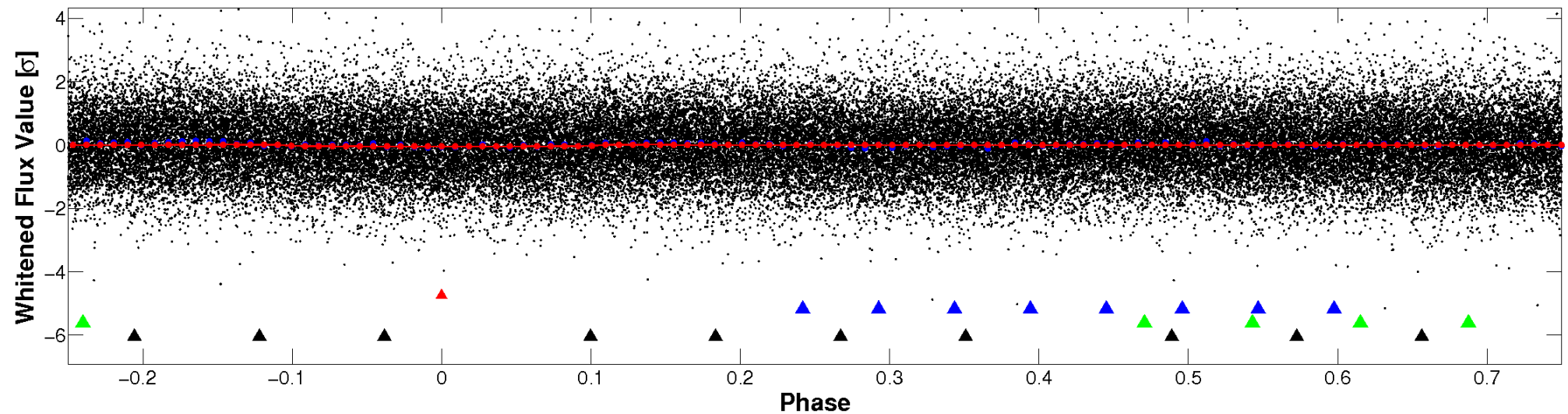


Non-Whitened Vs. Whitened Light Curve

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

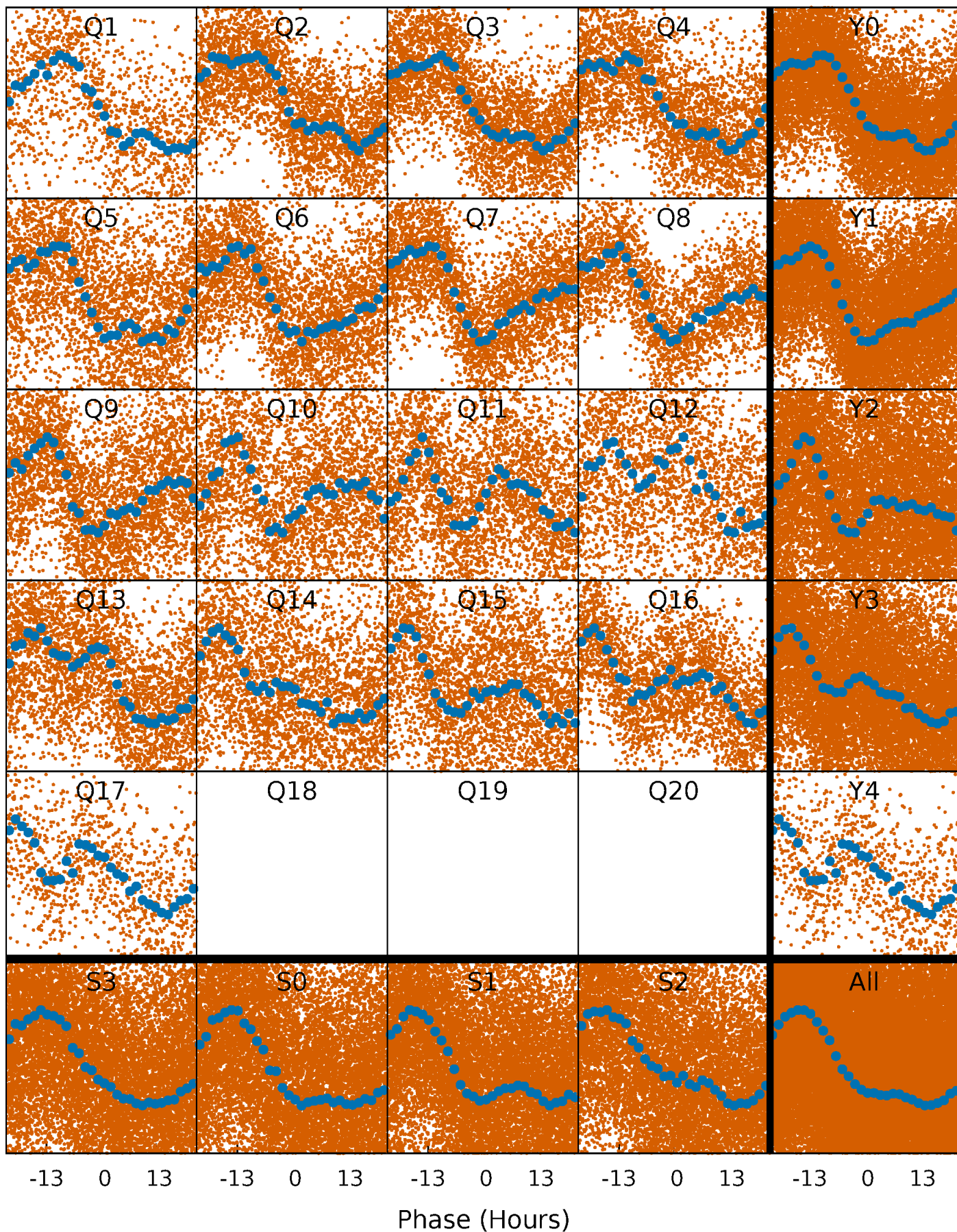


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



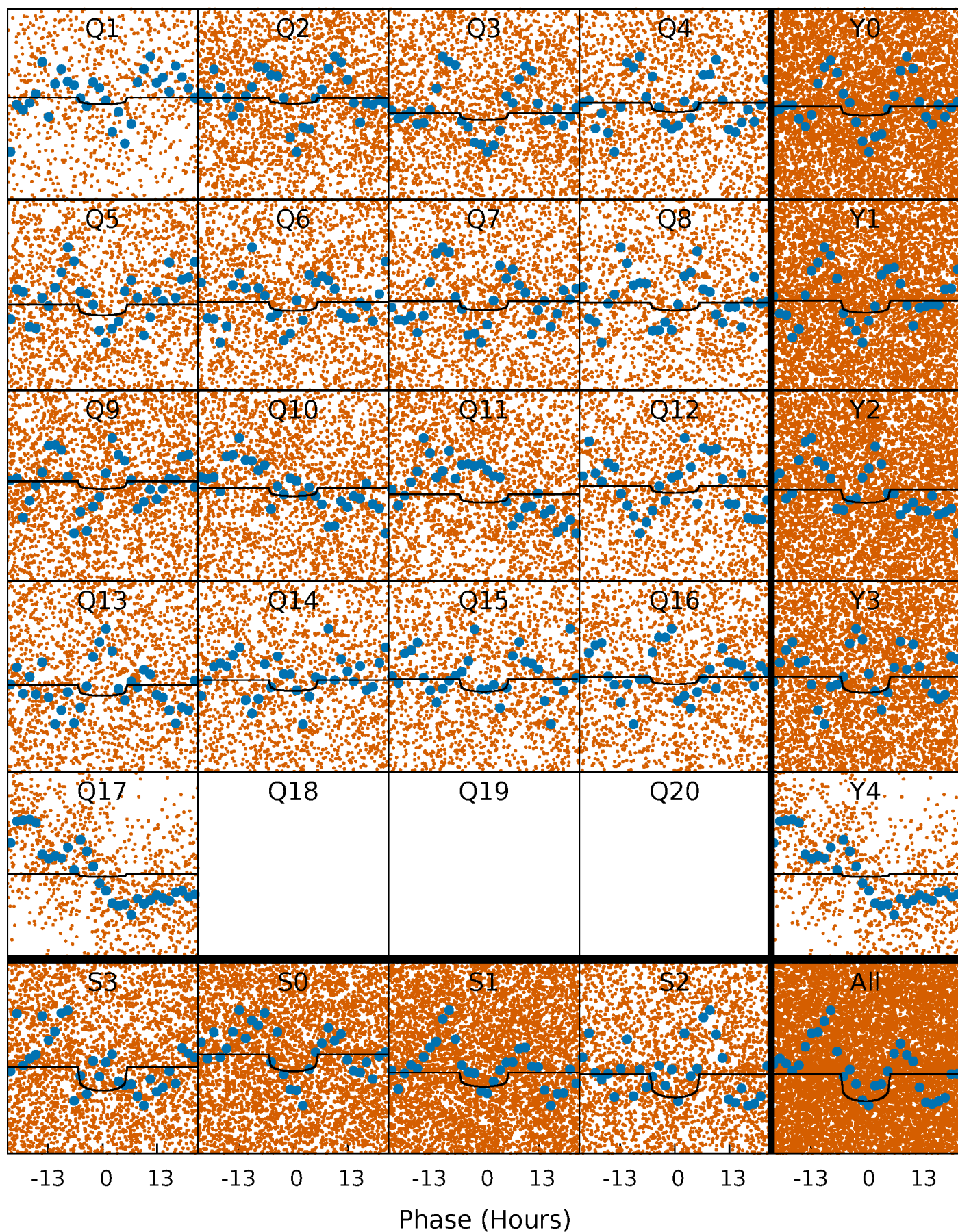
PDC Quarter-Phased Transit Curves

TCE 007046148-01 P= 2.234666 Days $T_0=131.670475$ (BKJD)



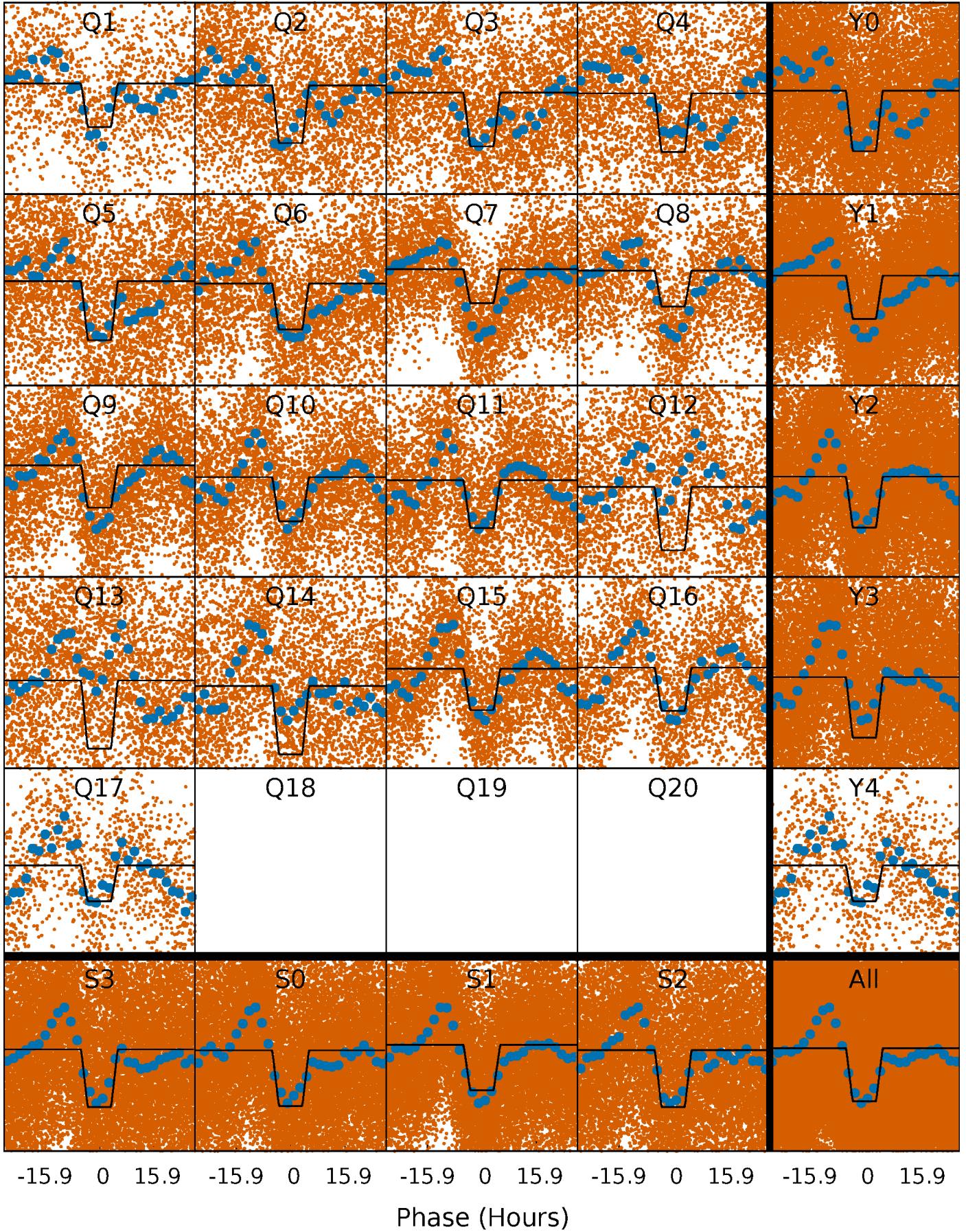
DV Quarter-Phased Transit Curves

TCE 007046148-01 P= 2.234666 Days $T_0=131.670475$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

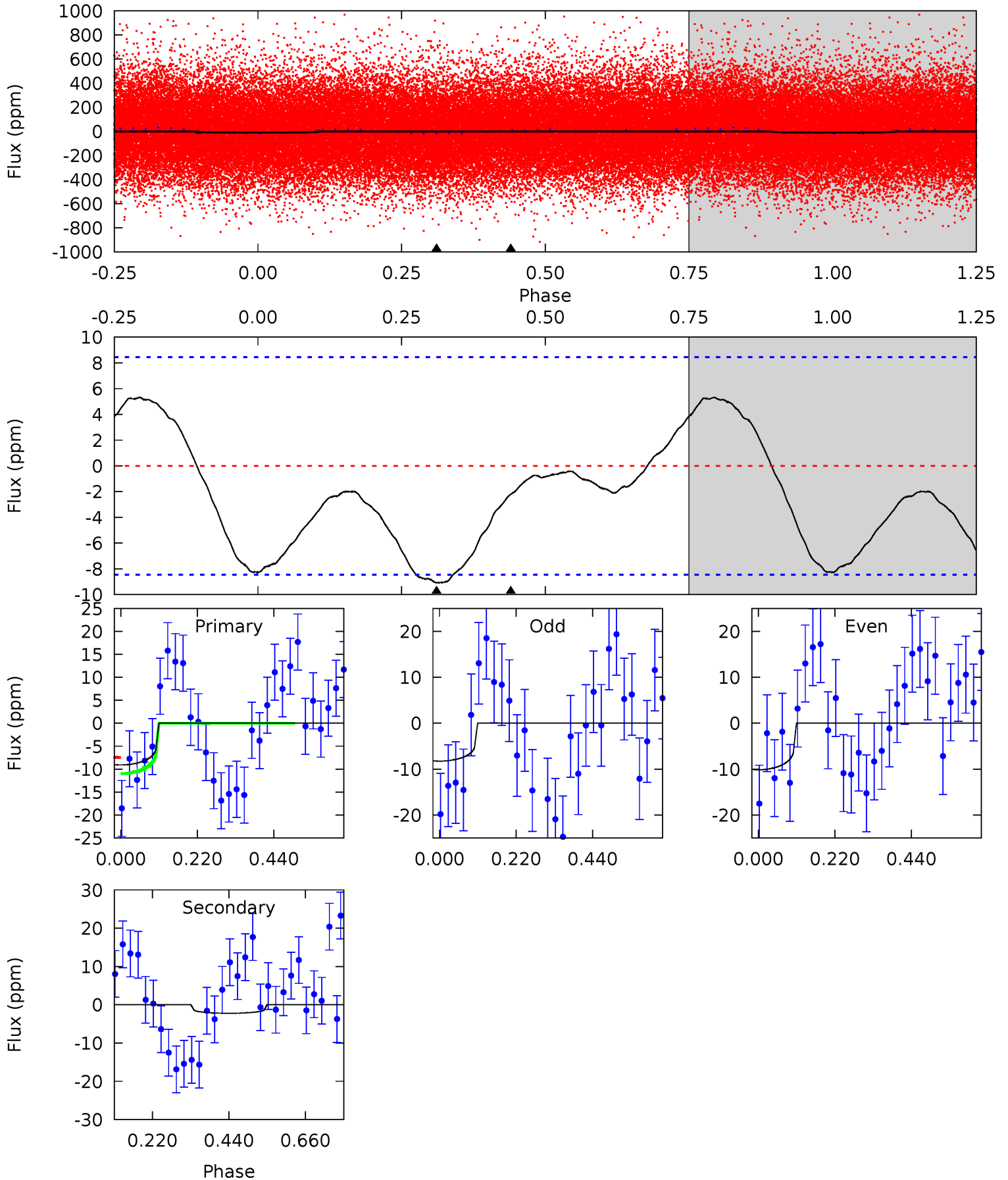
TCE 007046148-01 P= 2.233715 Days $T_0=131.875690$ (BKJD)



DV Model-Shift Uniqueness Test

007046148-01, P = 2.234666 Days, E = 129.435809 Days

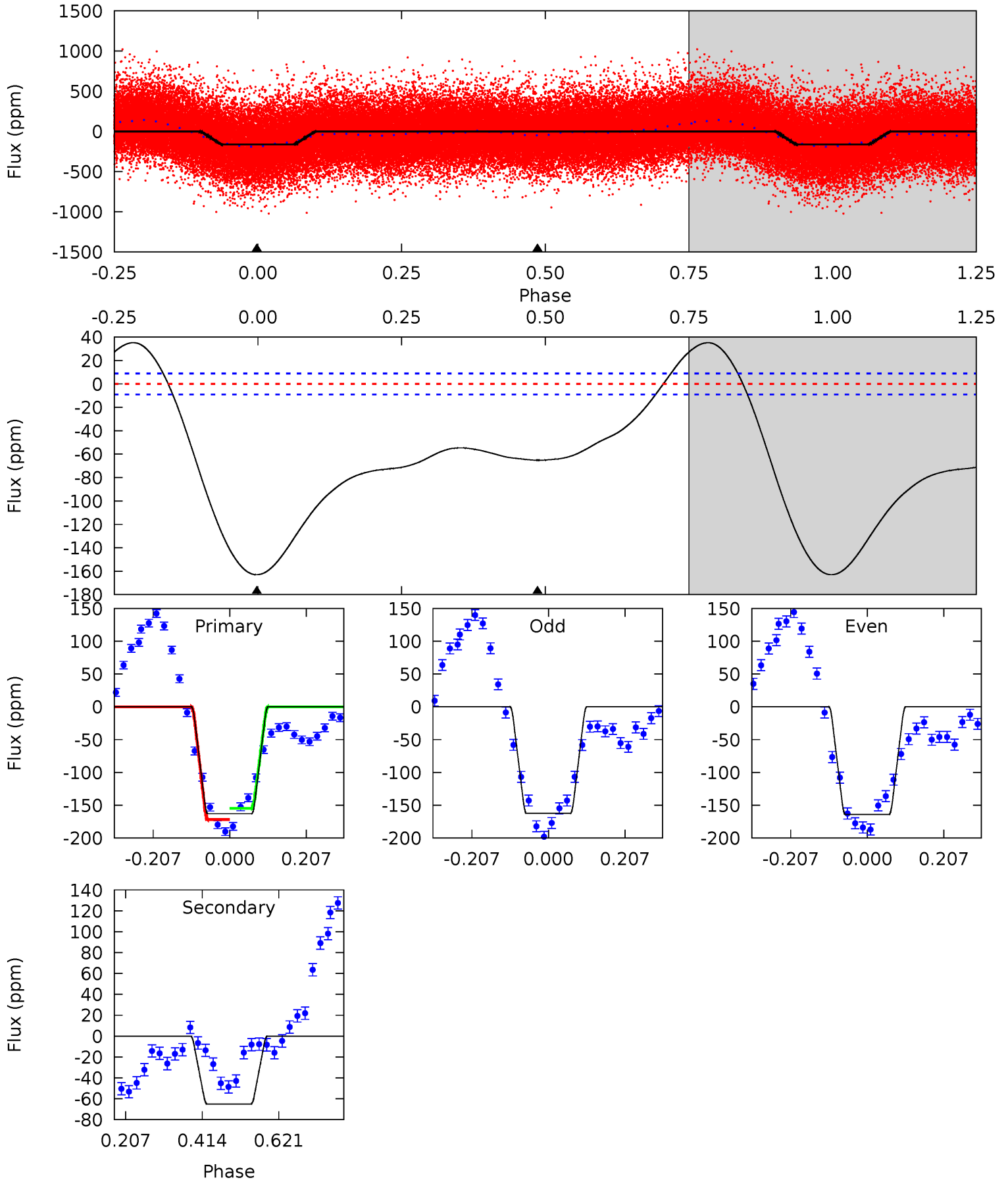
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.73	1.15	0	0	4.40	1.23	2.50	4.73	4.73	1.15	1.15	0.49	0.94	0.37	0.93



Alt Model-Shift Uniqueness Test

007046148-01, P = 2.233715 Days, E = 129.641975 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
79.9	31.9	0	0	4.41	1.26	22.7	79.9	79.9	31.9	31.9	0.36	0.92	0.18	4.16



Stellar Parameters For KIC 007046148

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6628^{+177}_{-217}	$4.456^{+0.050}_{-0.188}$	$-0.600^{+0.300}_{-0.350}$	$1.003^{+0.270}_{-0.108}$	$1.049^{+0.124}_{-0.137}$	$1.463^{+0.361}_{-0.704}$
	+3%/-3%	+1%/-4%	+50%/-58%	+27%/-11%	+12%/-13%	+25%/-48%
Source	PHO1	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 007046148-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2 ± 2	$0.59^{+0.45}_{-0.39}$	2262^{+162}_{-110}	3692^{+1982}_{-6039}	$3.165^{+23.432}_{-2.976}$
Alt.	-65 ± 2	$1.51^{+0.60}_{-0.57}$	2260^{+145}_{-106}	5160^{+1345}_{-593}	18^{+29}_{-9}

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

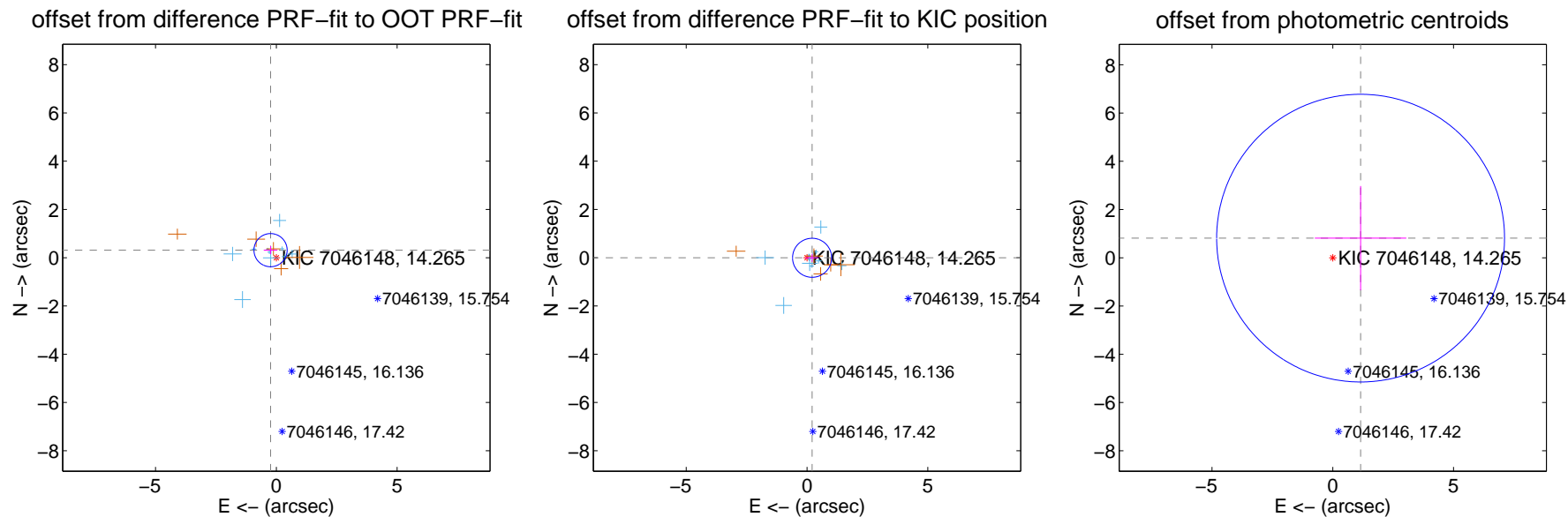
DV Centroid Data

Supplemental centroid analysis for 007046148-01. Kepler magnitude: 14.27. Transit SNR 4.53

There are 11 quarters with good PRF difference image offsets

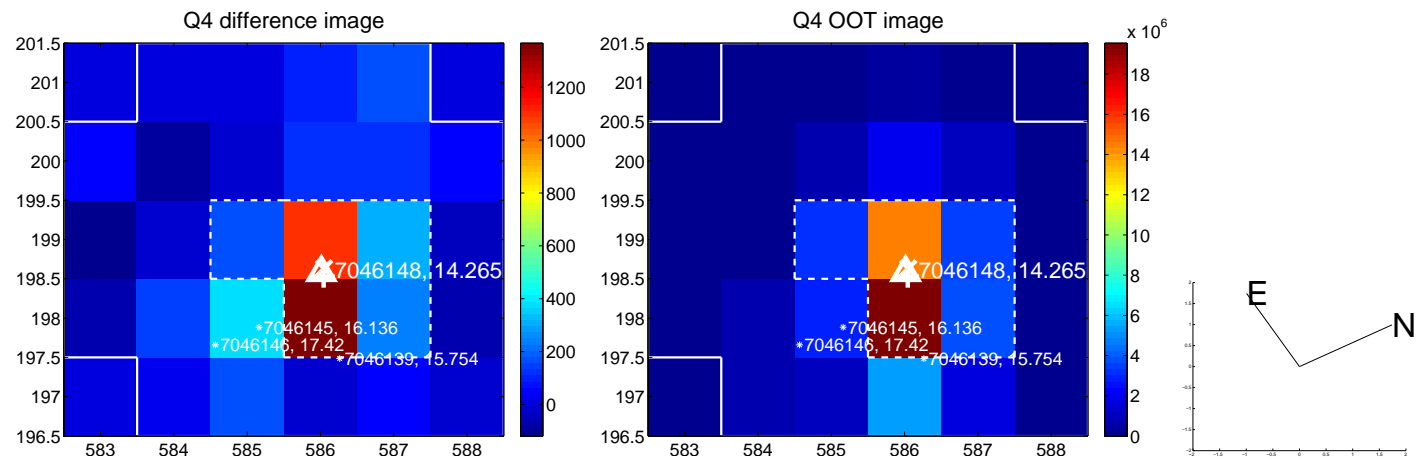
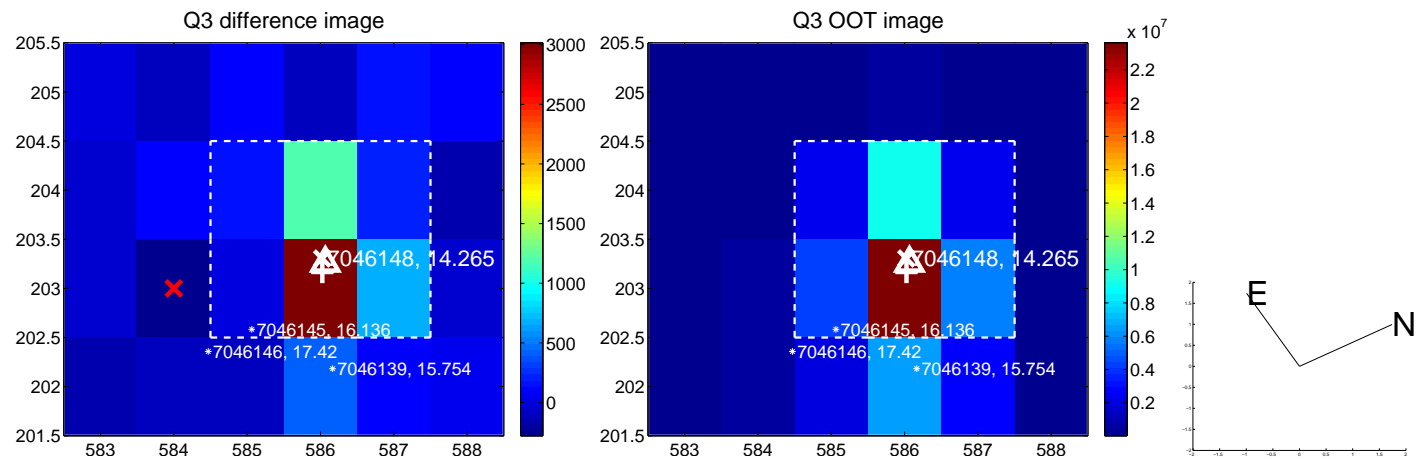
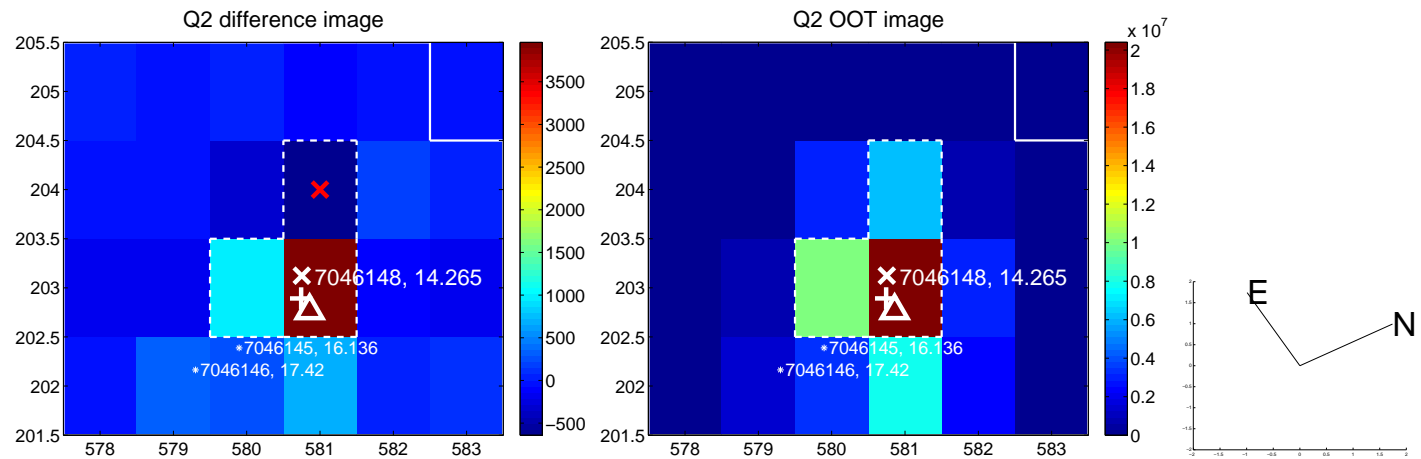
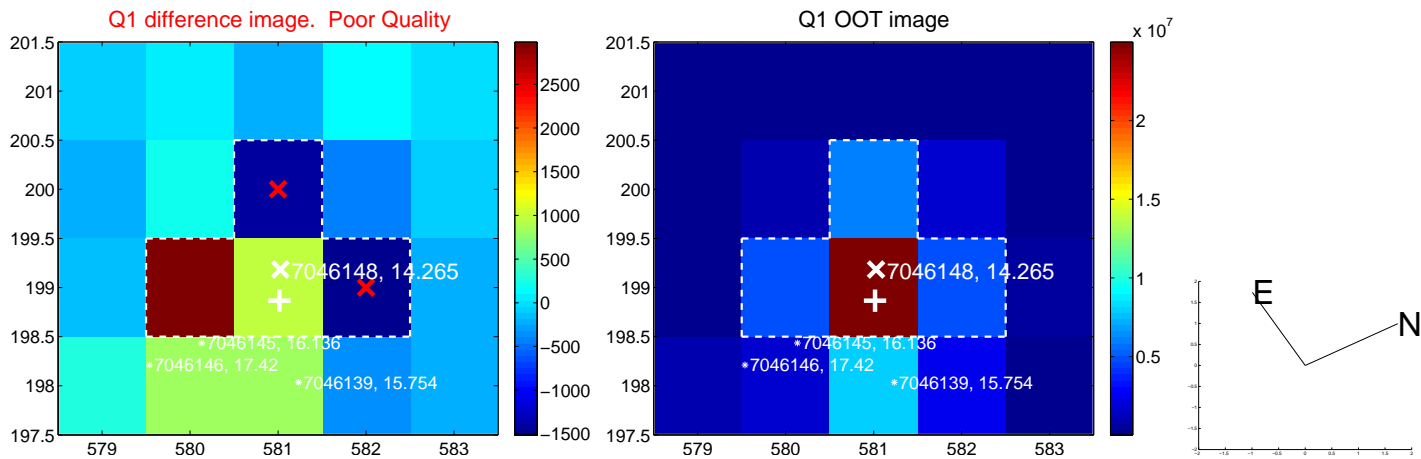
The direct PRF centroid is offset from the target star catalog position by about 1.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.394 ± 0.229	1.72	0.239 ± 0.283	0.313 ± 0.170
PRF-fit source offset from KIC position	0.211 ± 0.270	0.78	-0.211 ± 0.270	-0.003 ± 0.163
photometric centroid source offset	1.41 ± 1.99	0.71	-1.15 ± 1.89	0.81 ± 2.16

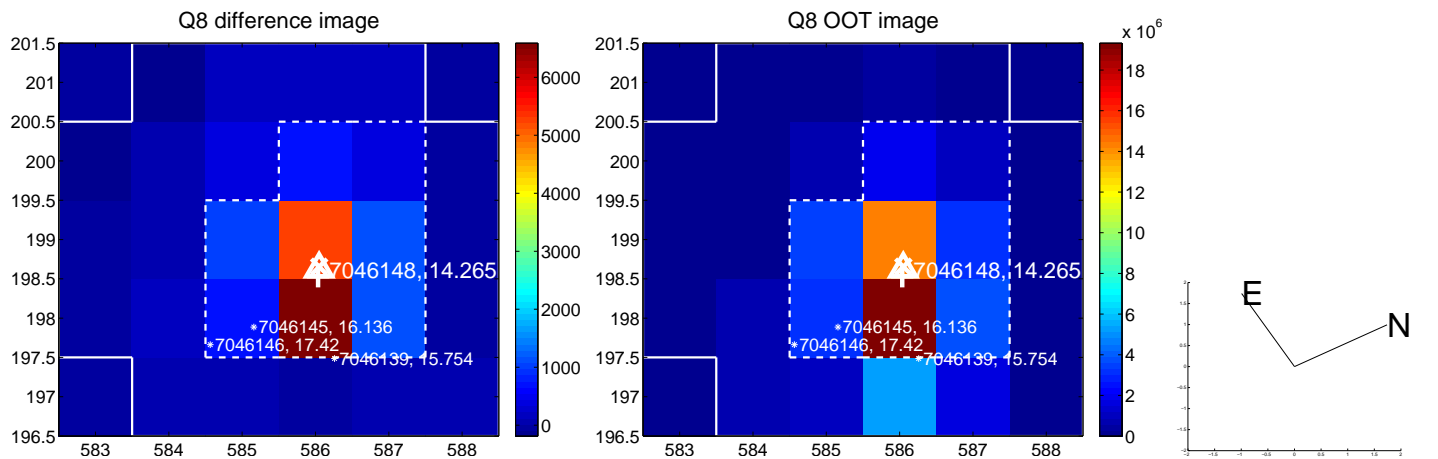
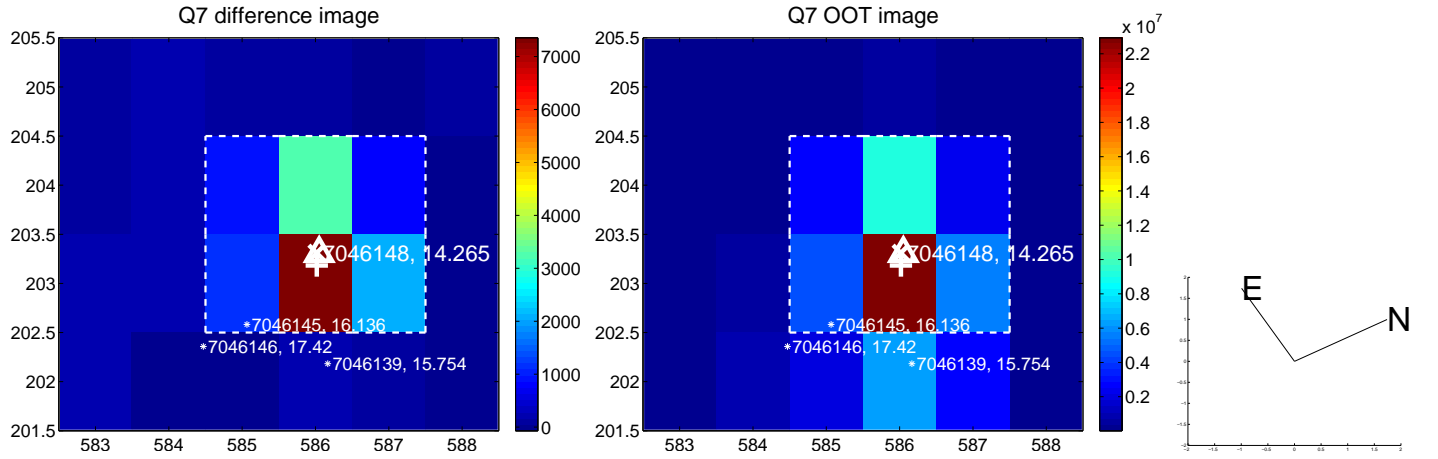
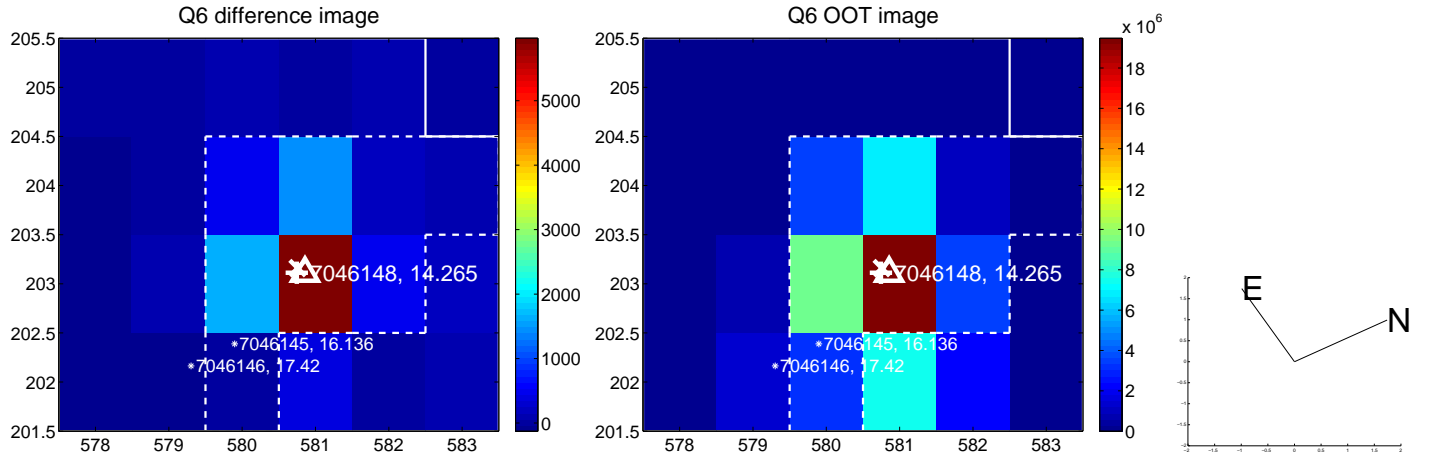
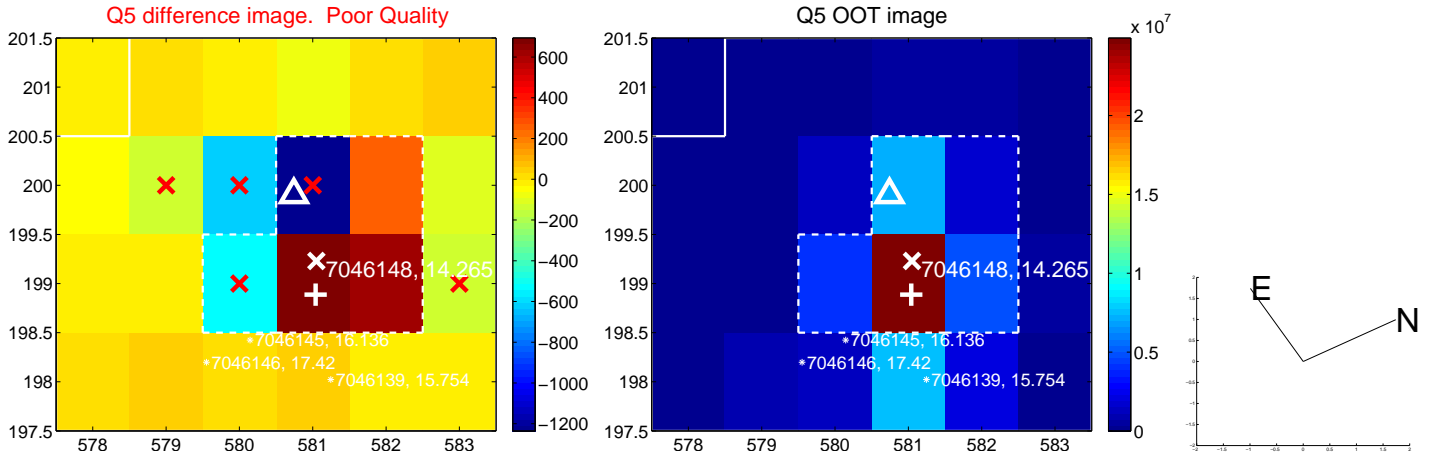


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

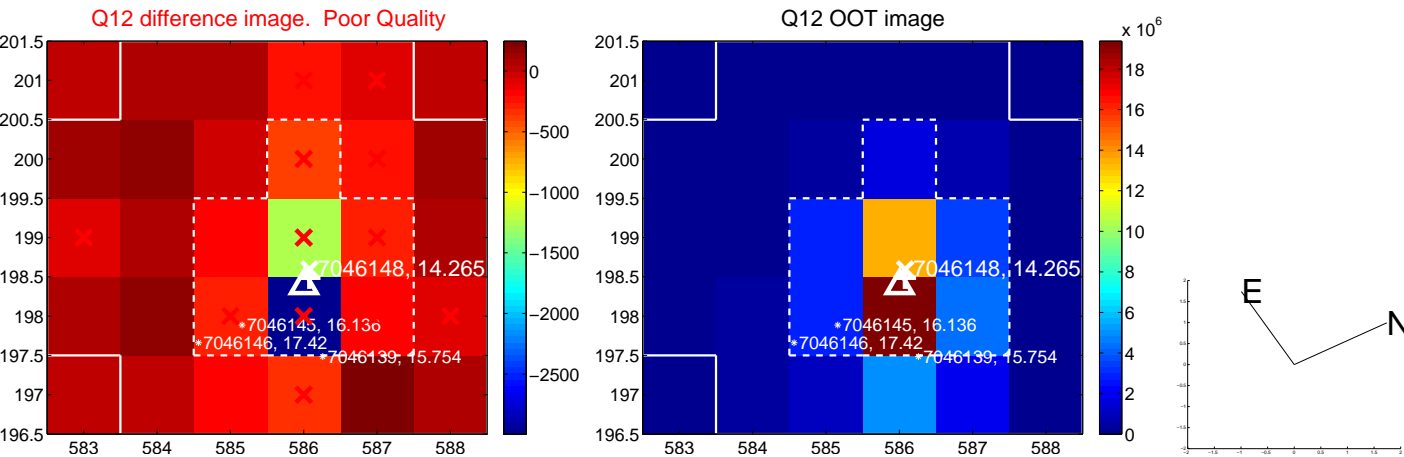
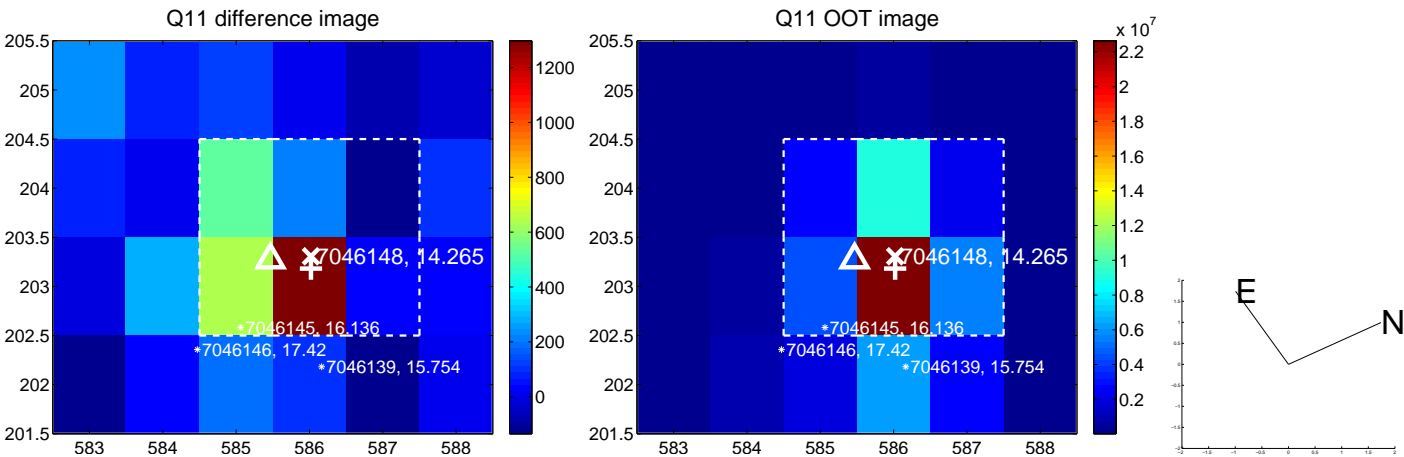
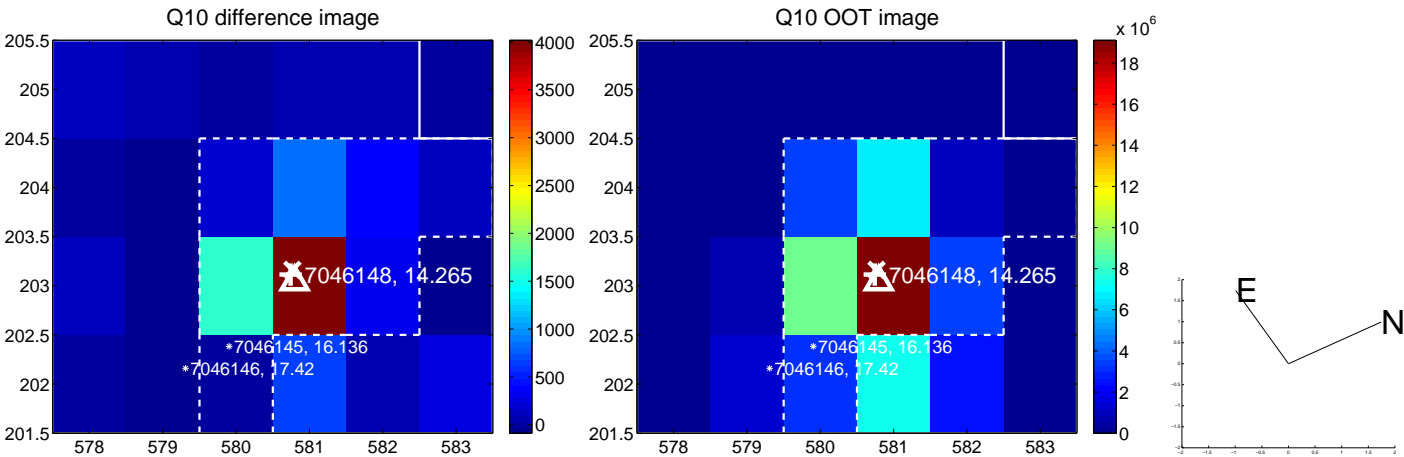
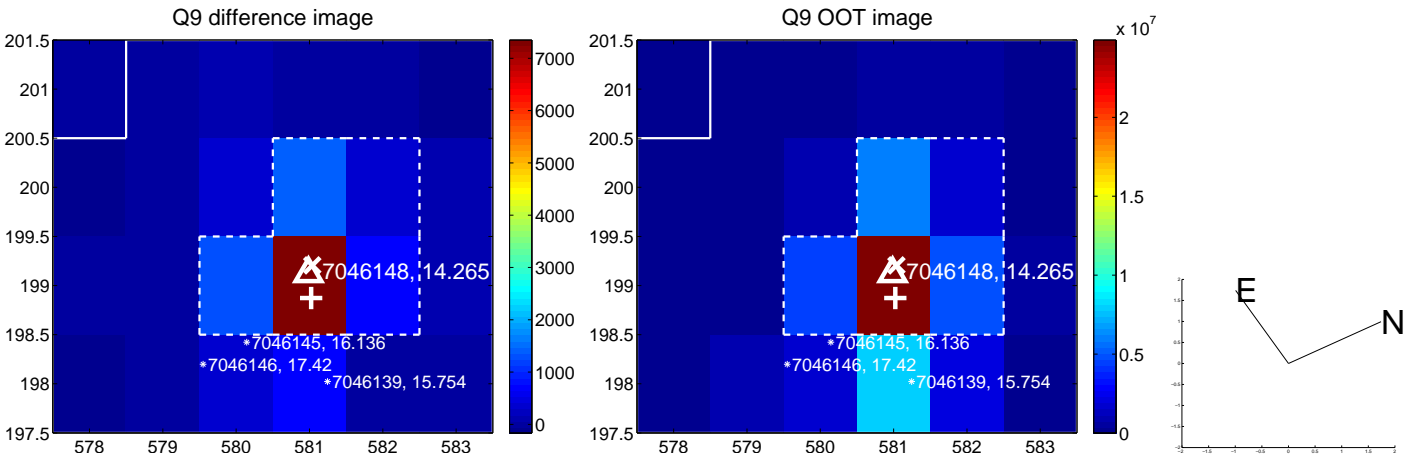
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



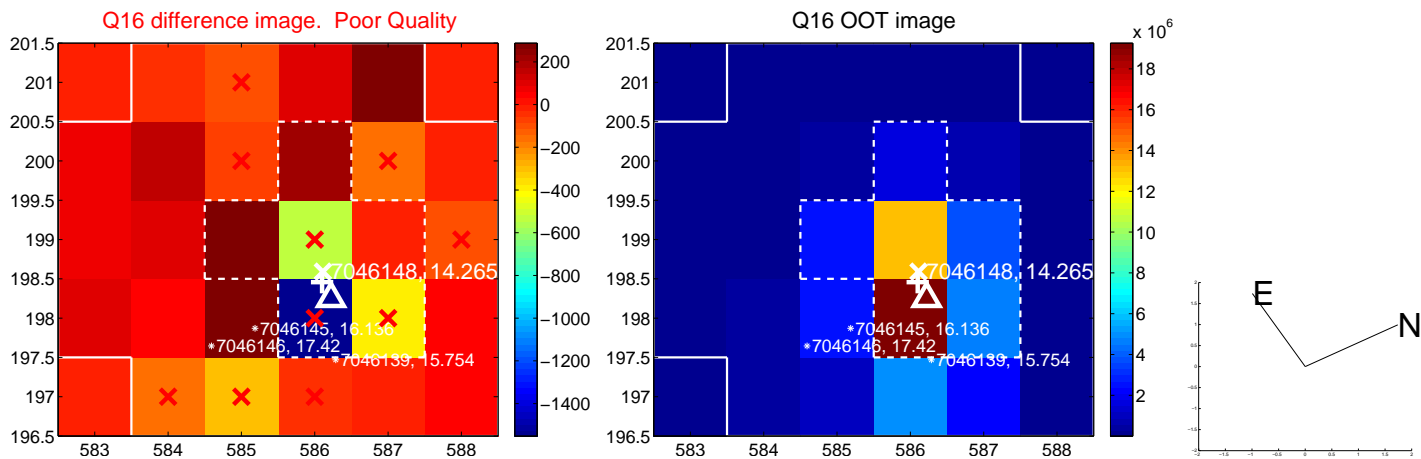
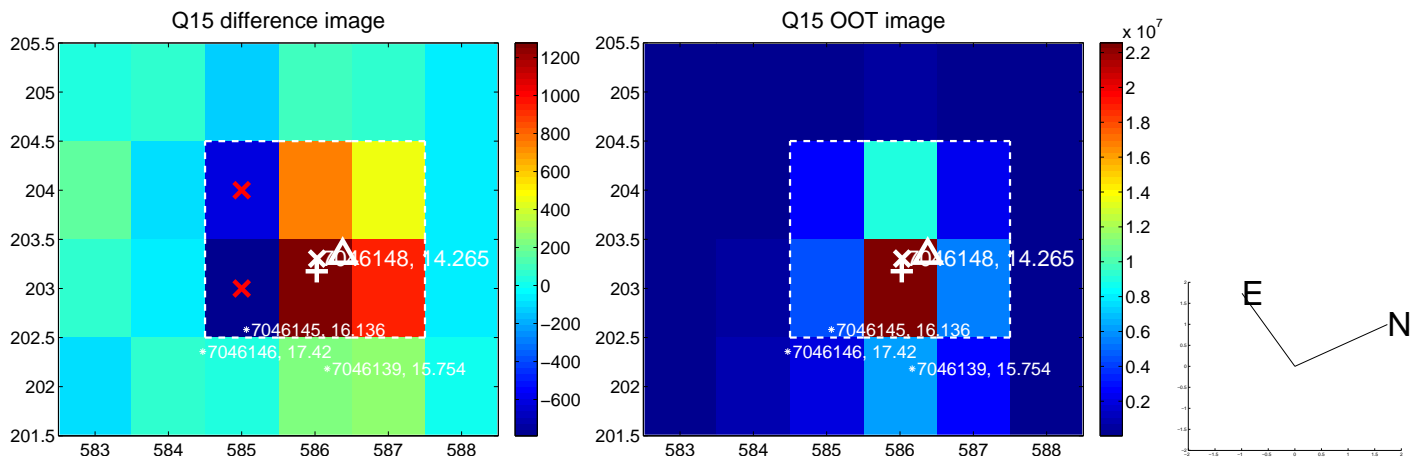
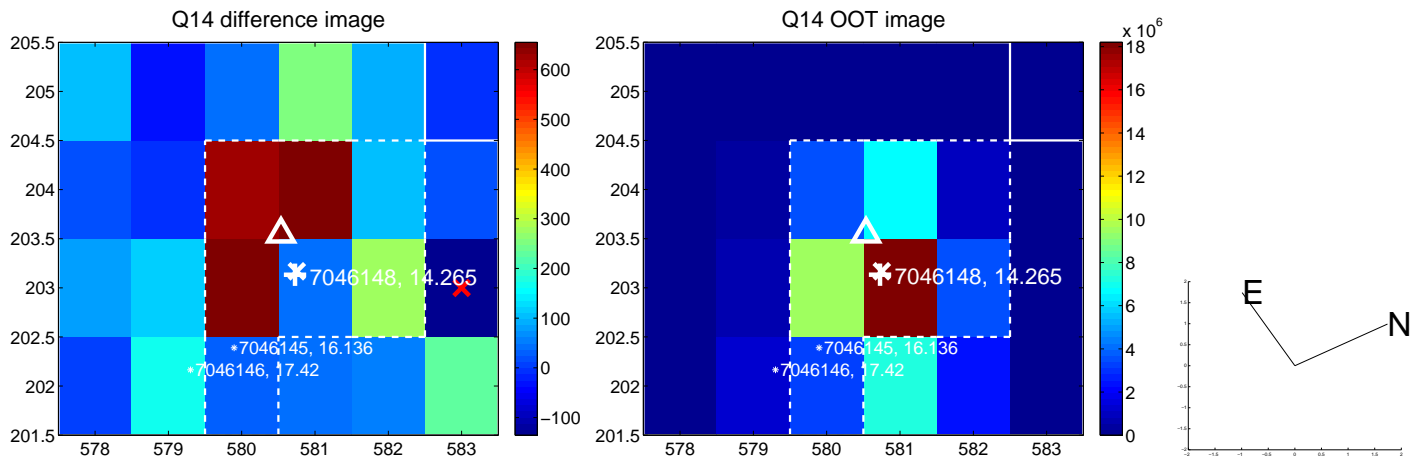
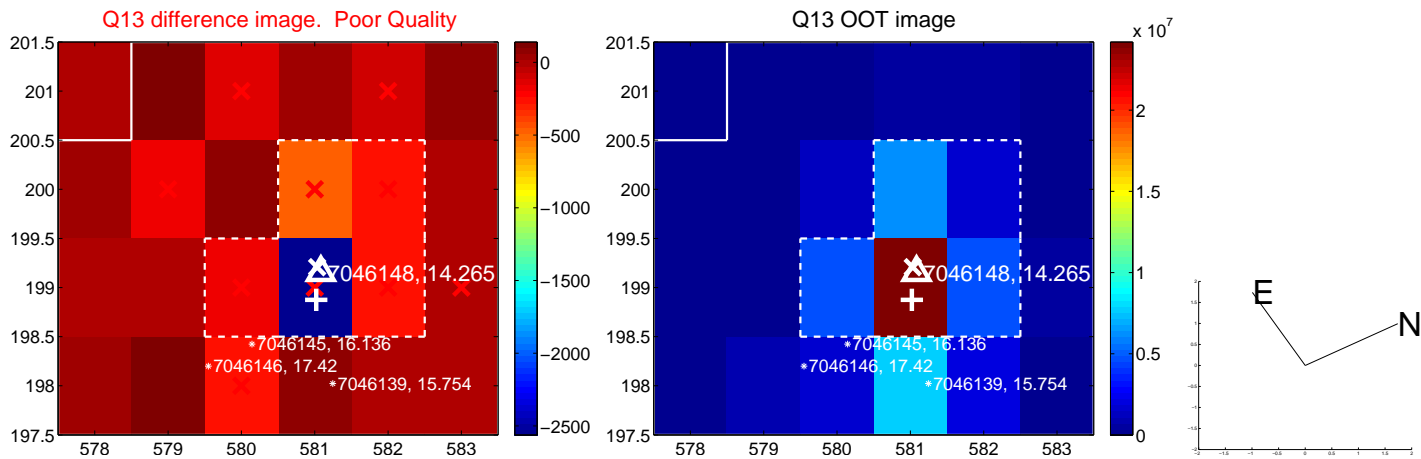
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



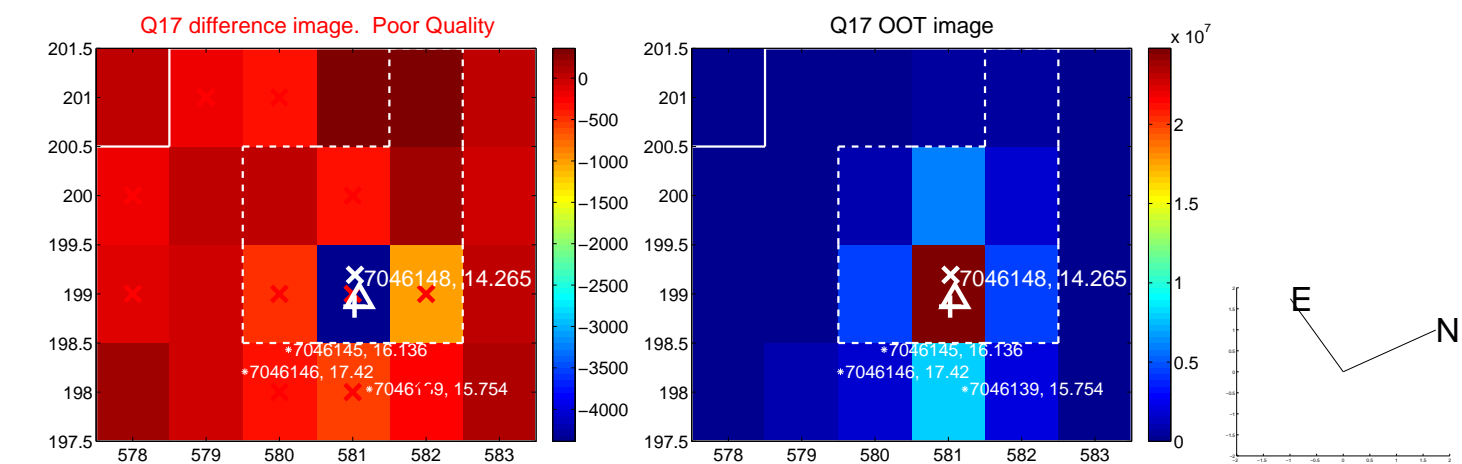
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



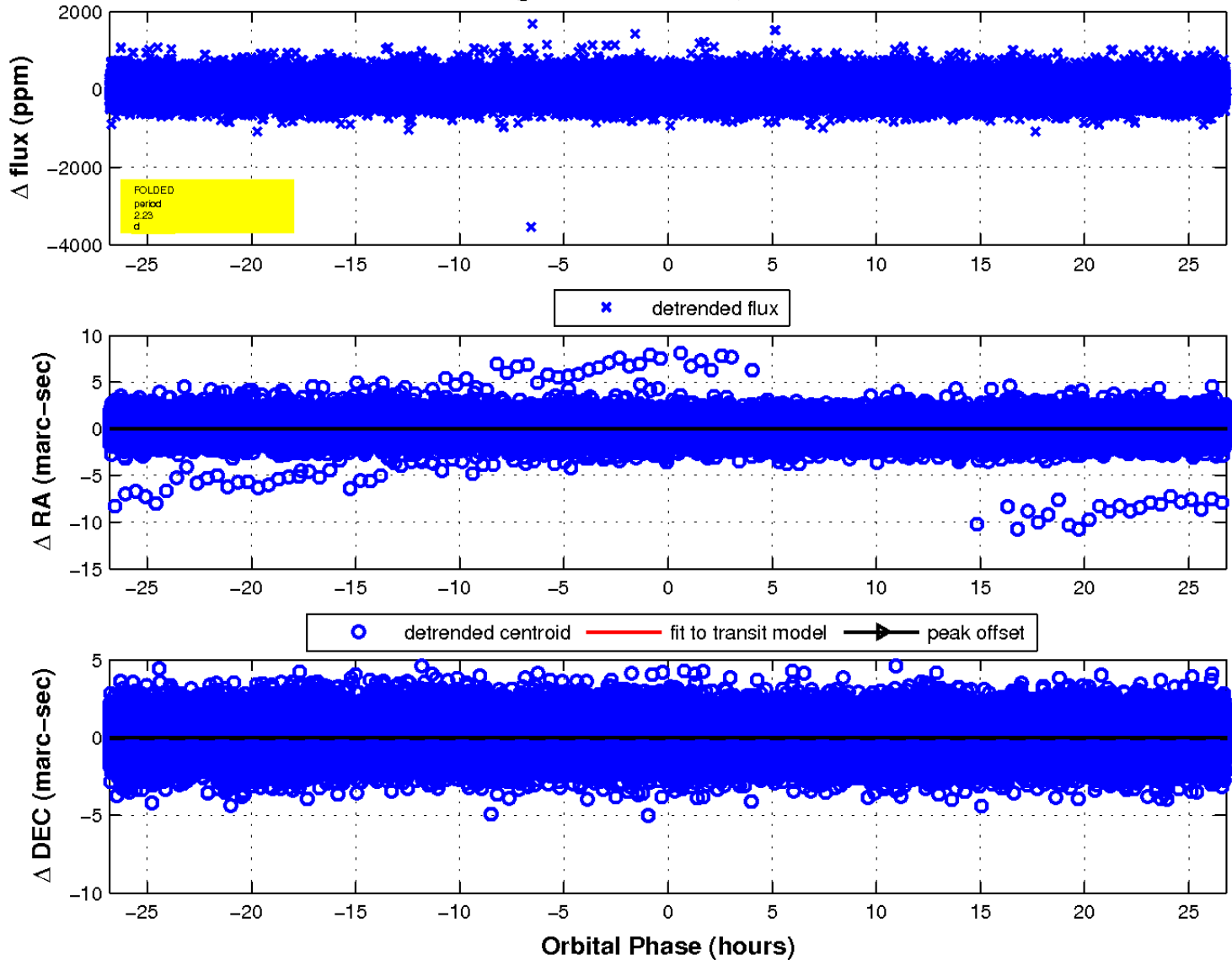
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

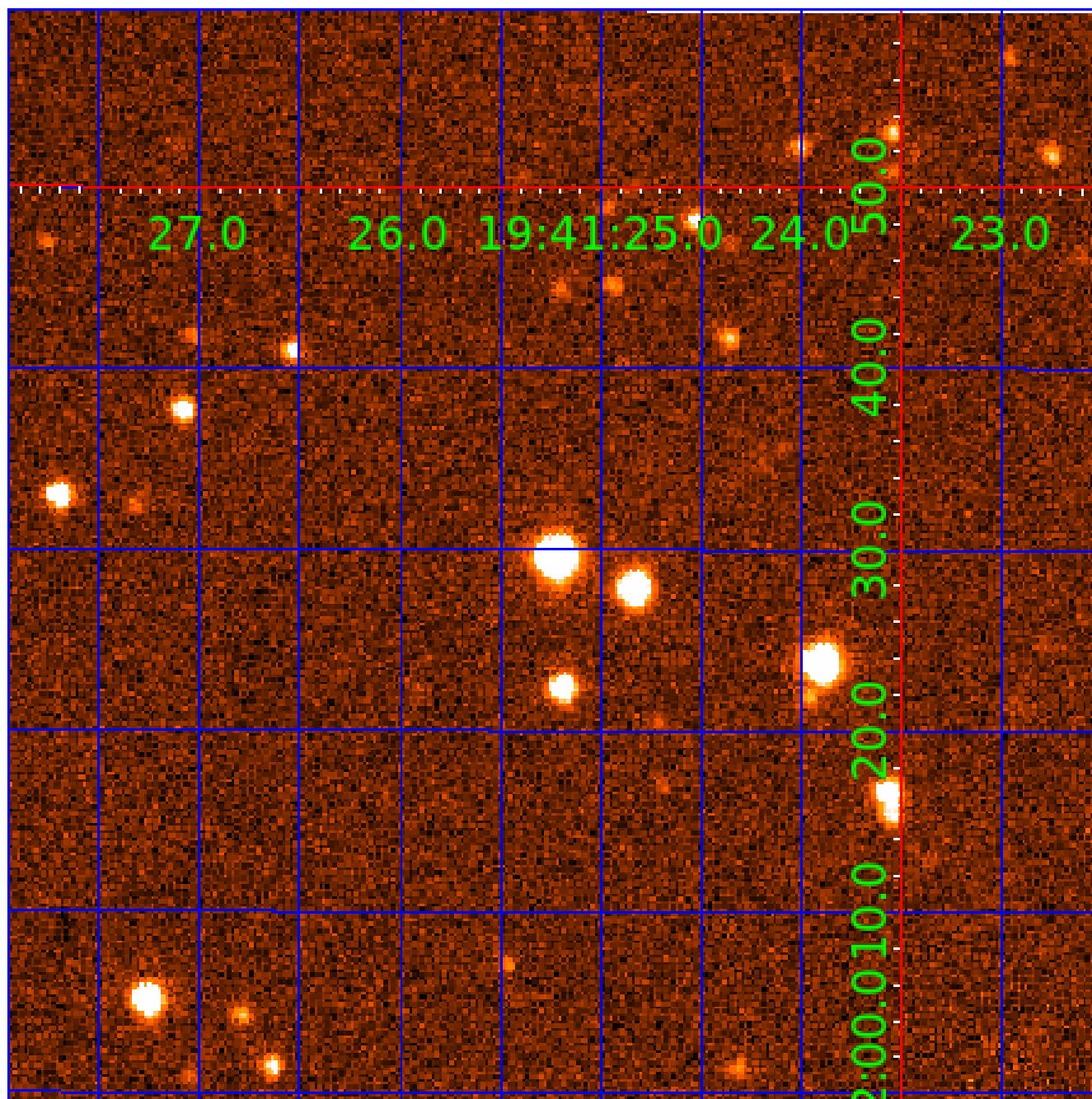


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 007046148

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})
007046148-01	OBS	No	2.234666	131.670475	14.5	11.345	12.5	4.5	1.00	6628	0.39	1505.48
007046148-02	OBS	No	194.302393	204.515208	267.4	4.115	7.6	7.5	1.00	6628	1.91	3.91
007046148-03	OBS	No	294.814364	292.029832	389.6	8.494	12.3	8.2	1.00	6628	2.20	2.24
007046148-04	OBS	No	155.744119	145.301346	331.3	3.861	7.4	7.3	1.00	6628	2.32	5.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007046148-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007046148-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
007046148-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007046148-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—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.

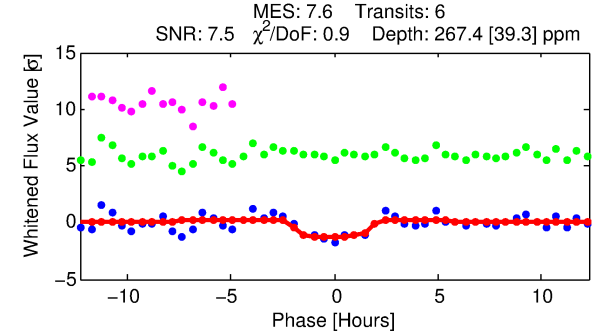
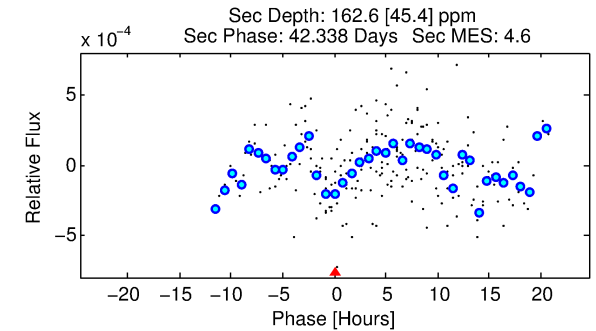
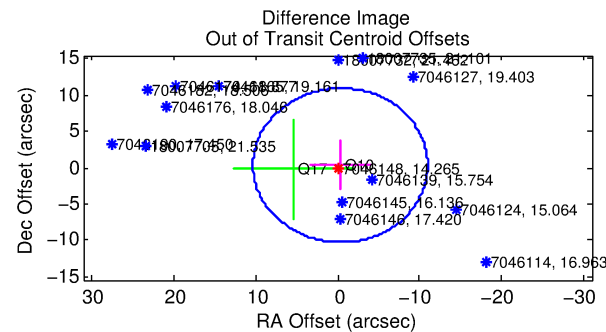
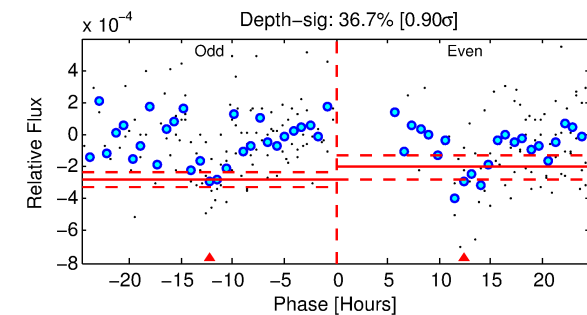
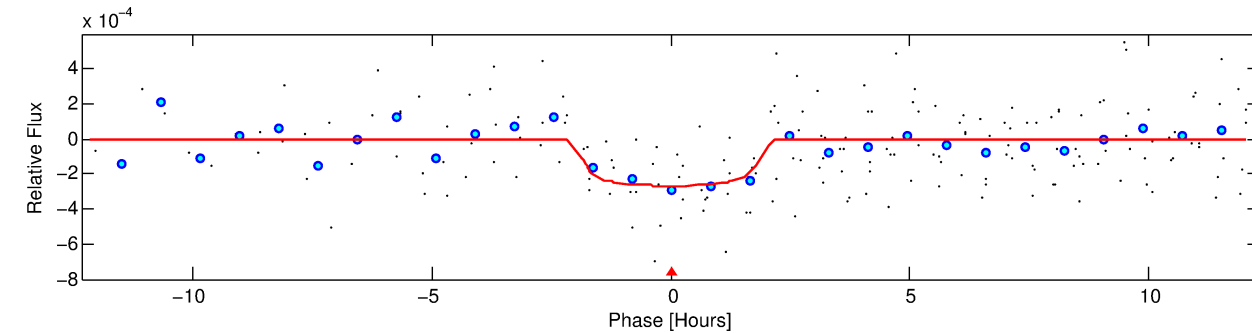
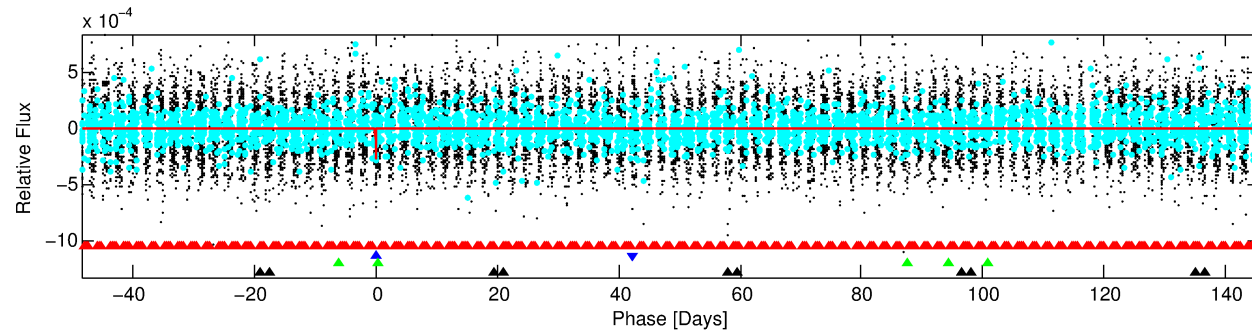
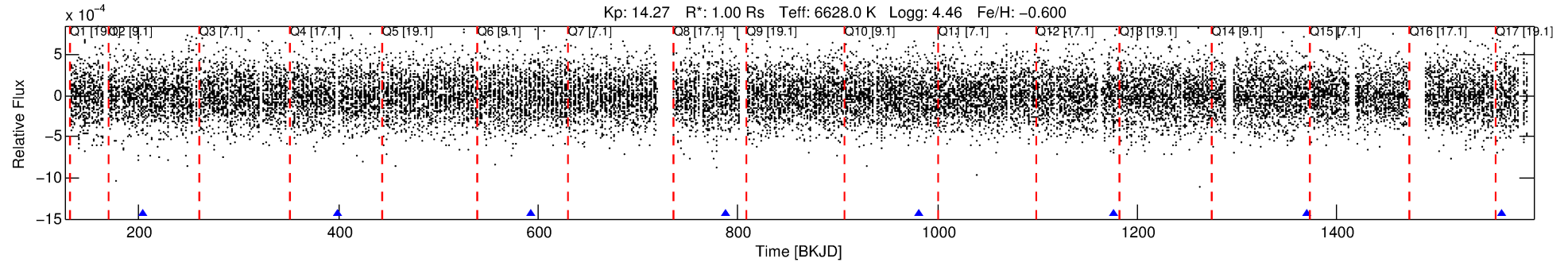
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007046148-02

No Significant Match Found

DV One-Page Summary

KIC: 7046148 Candidate: 2 of 4 Period: 194.302 d



DV Fit Results:

Period = 194.30239 [0.00333] d
Epoch = 204.5152 [0.0116] BKJD
Rp/R* = 0.0174 [0.0061]
a/R* = 172.00 [344.77]
b = 0.90 [0.43]
Seff = 3.91 [1.42]
Teq = 359 [33] K
Rp = 1.91 [0.84] Re
a = 0.6671 [0.1536] AU
Ag = 10917.08 [9008.23] [1.21σ]
Teff = 5666 [1081] K [4.91σ]

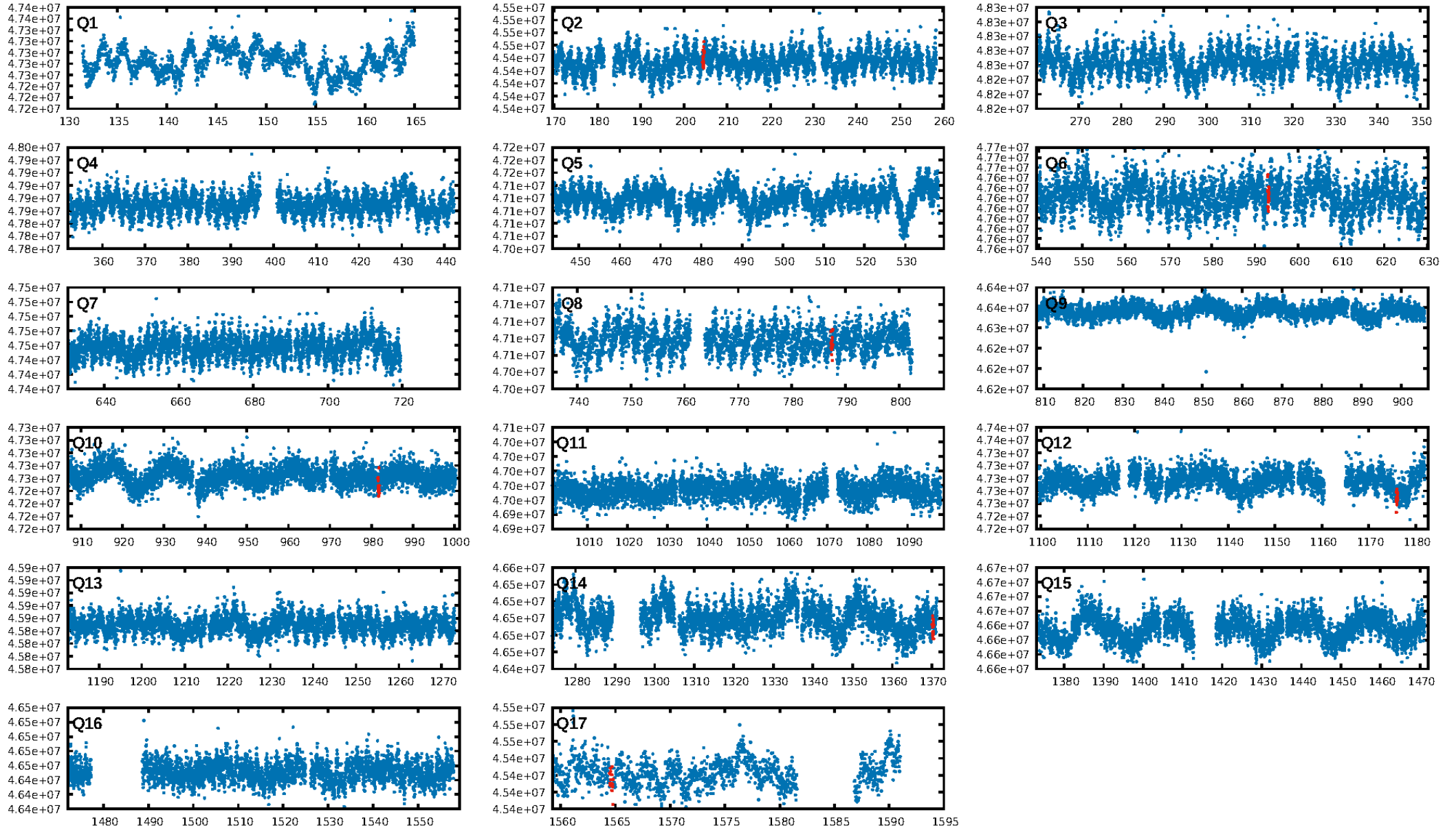
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [163.99σ]
LongPeriod-sig: 100.0% [255.59σ]
ModelChiSquare2-sig: 42.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.18e-09
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -4.191
Centroid-sig: 82.1%
Centroid-so: 0.330 arcsec [0.21σ]
OotOffset-rm: 0.458 arcsec [0.13σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-rm: 0.419 arcsec [0.12σ]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.67 [4/6]

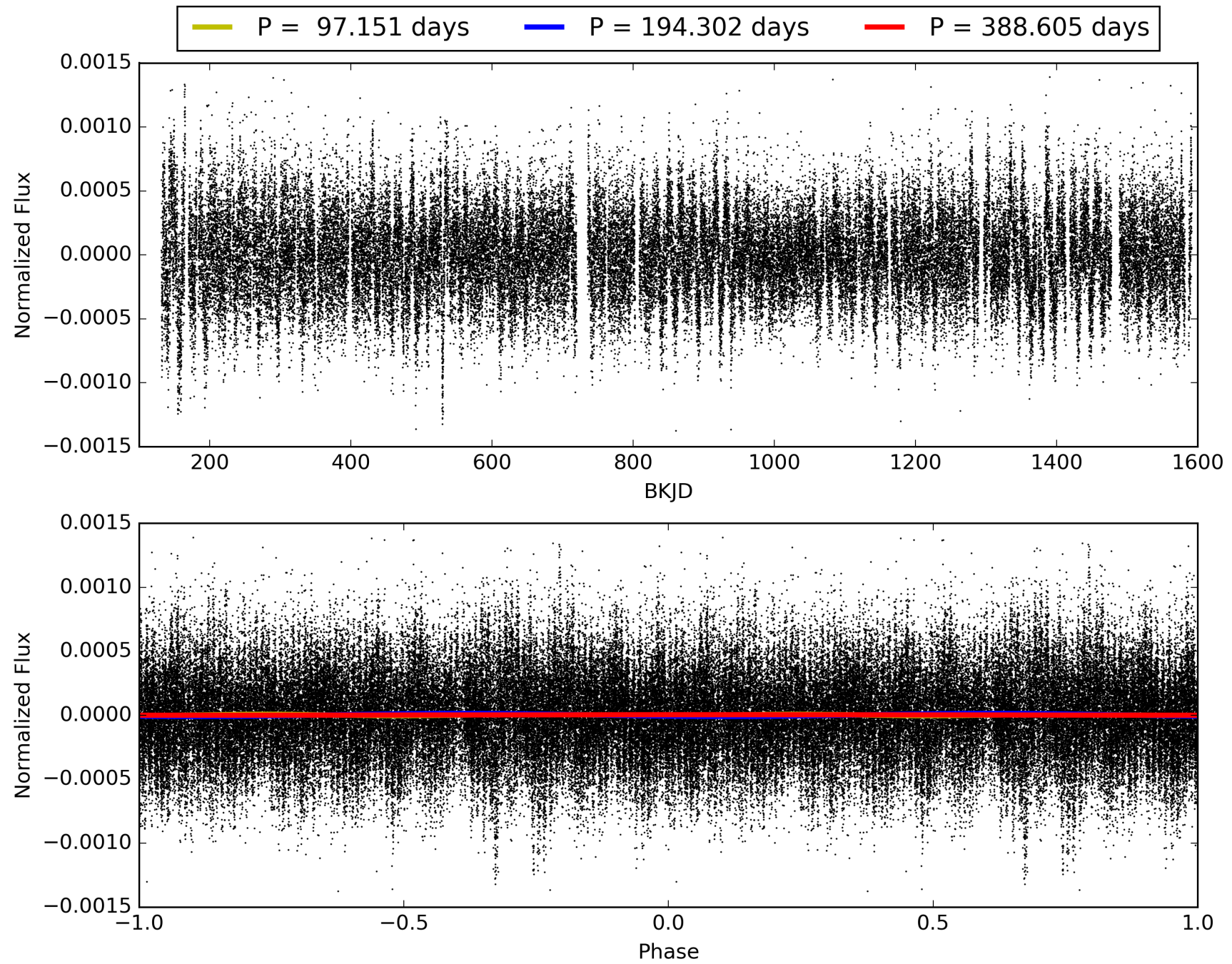
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:49:09 Z

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

TCE 007046148-02, PDC Light Curves

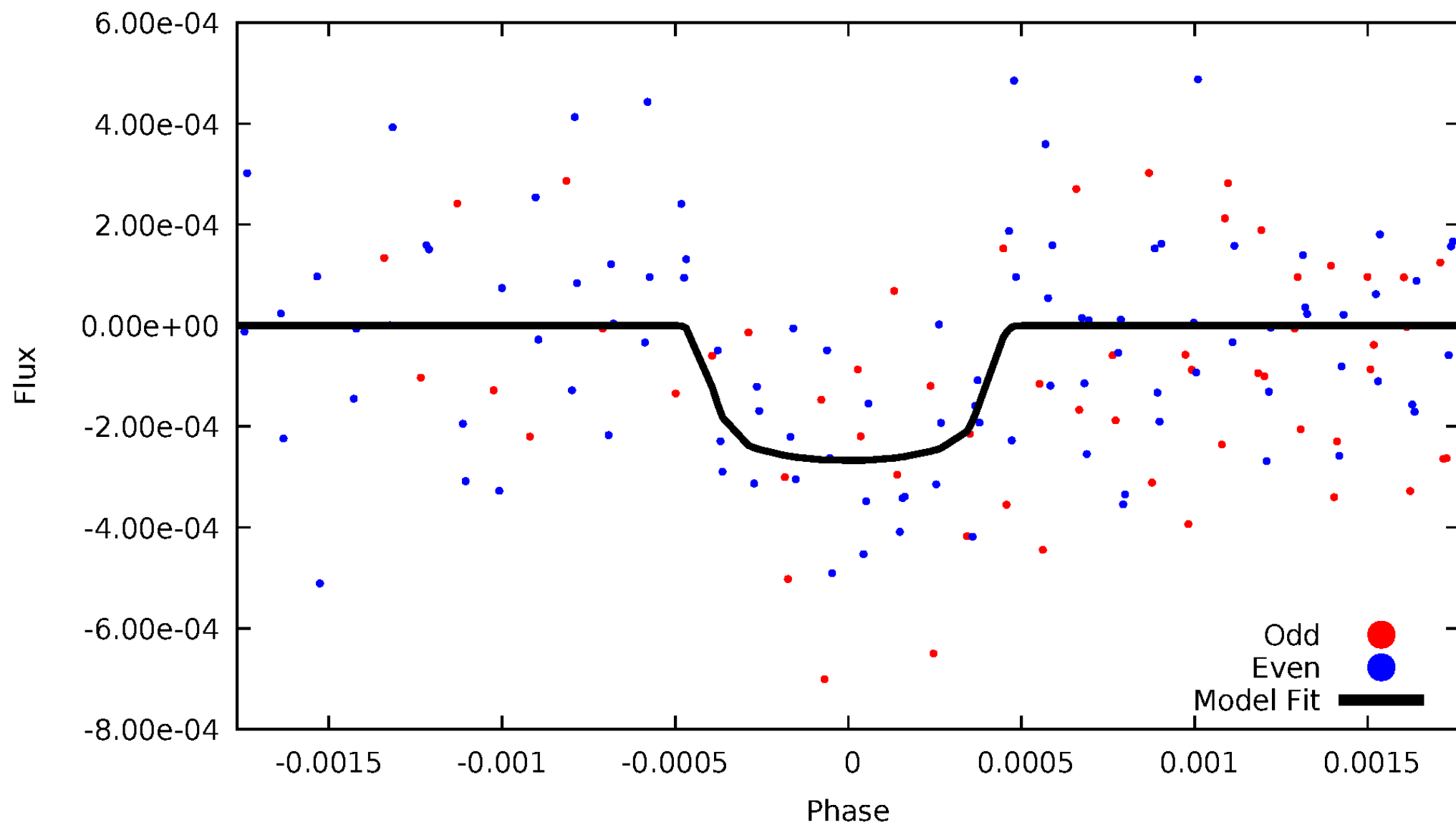


TCE 007046148-02



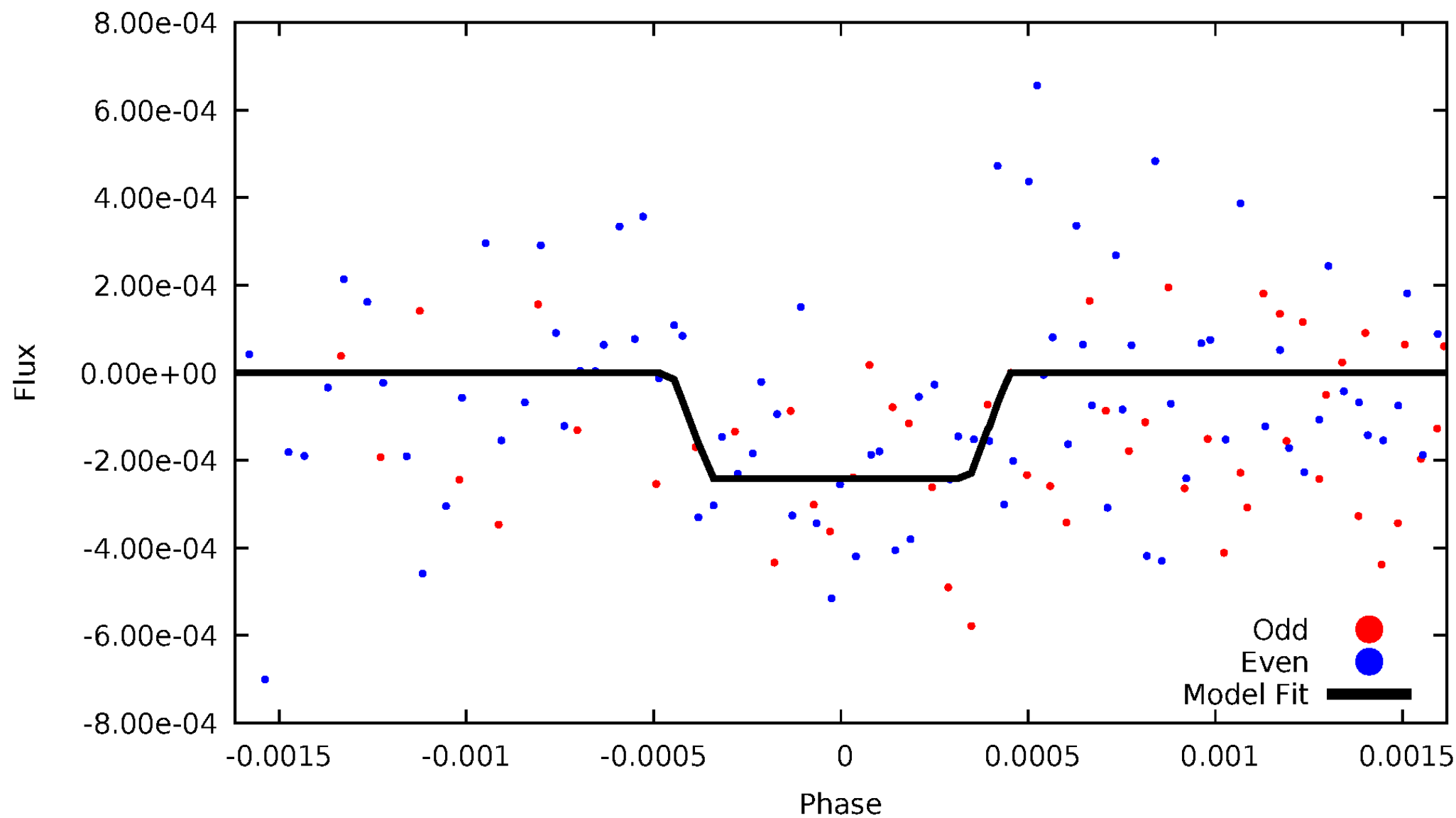
DV Odd/Even

TCE 007046148-02



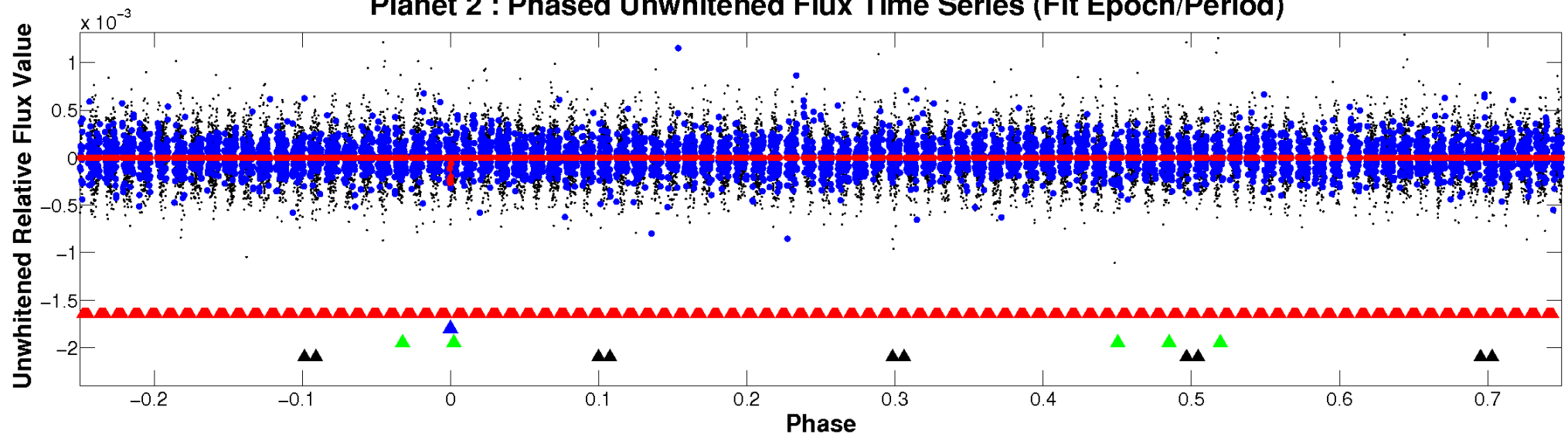
ALT Odd/Even

TCE 007046148-02

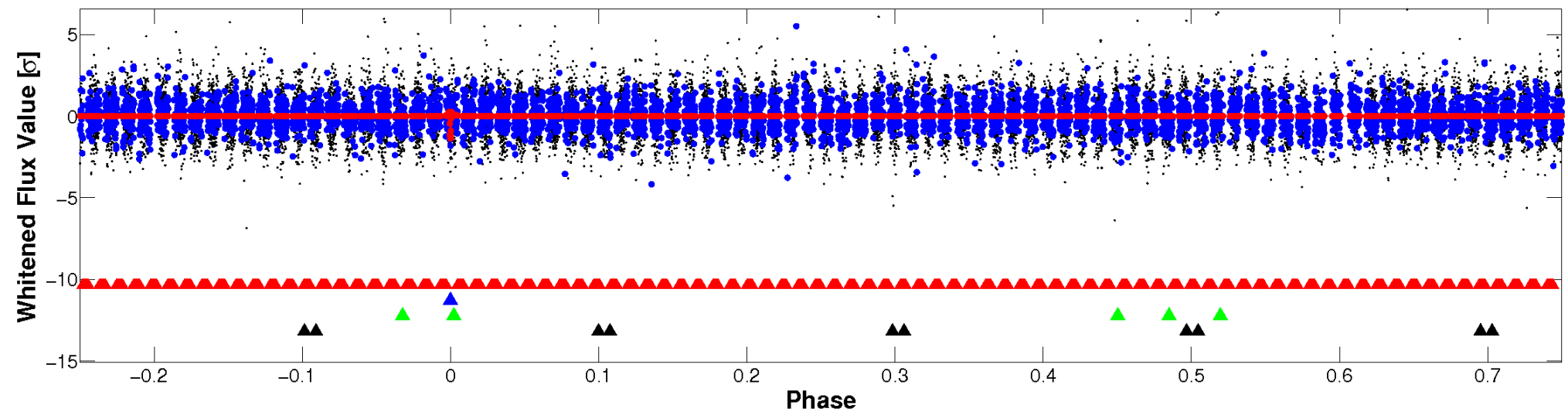


Non-Whitened Vs. Whitened Light Curve

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

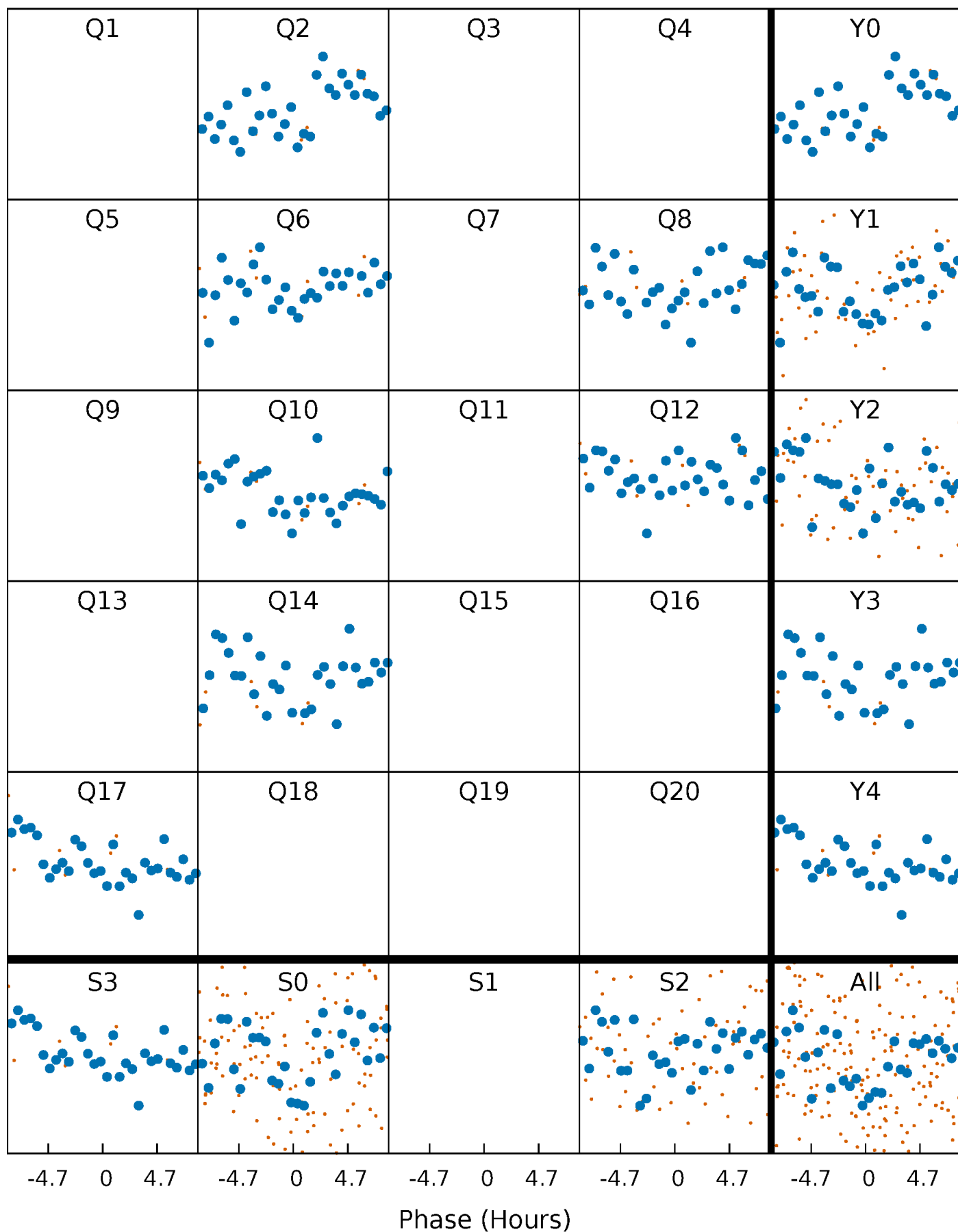


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



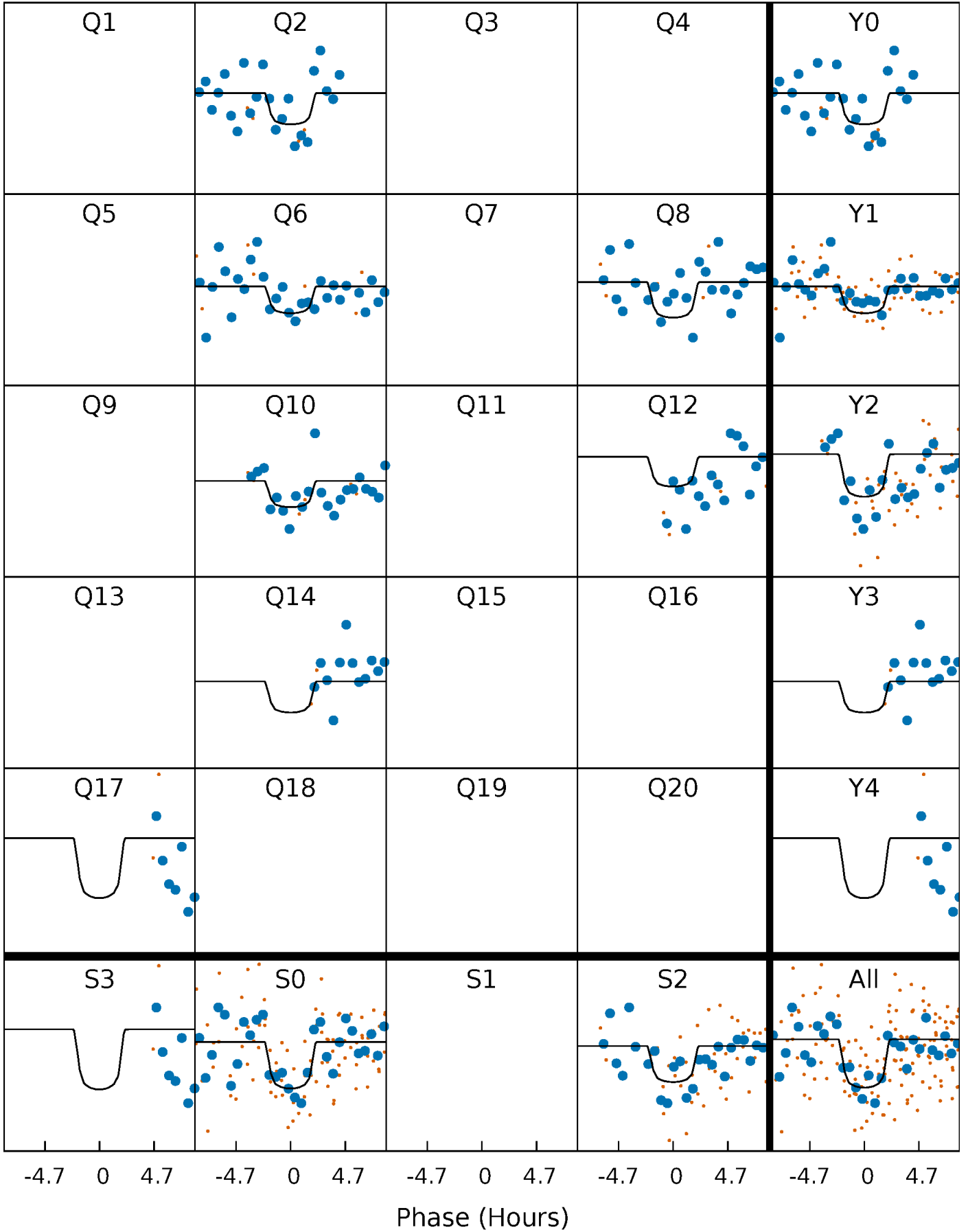
PDC Quarter-Phased Transit Curves

TCE 007046148-02 P=194.302393 Days $T_0=204.515208$ (BKJD)



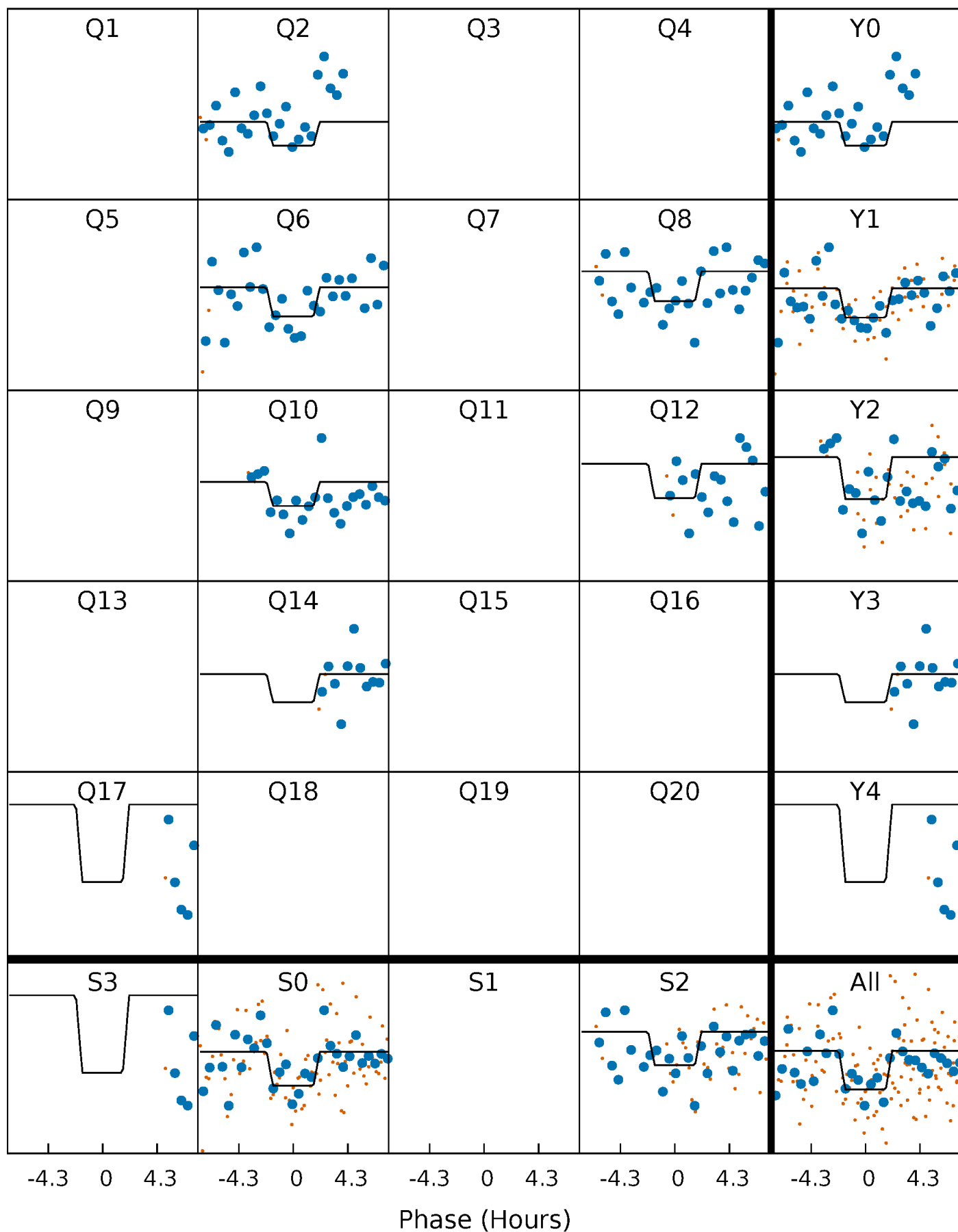
DV Quarter-Phased Transit Curves

TCE 007046148-02 P=194.302393 Days $T_0=204.515208$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

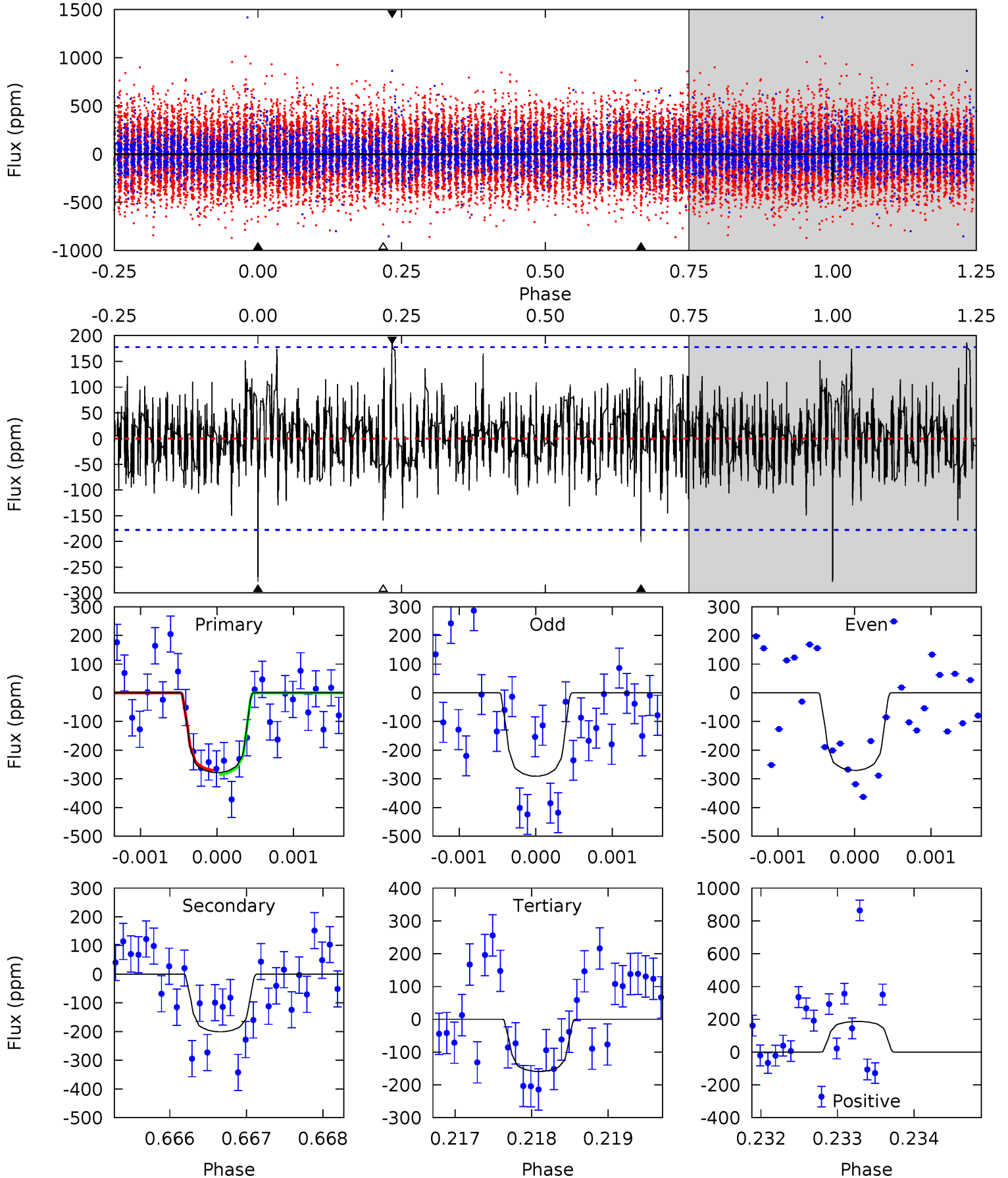
TCE 007046148-02 P=194.299039 Days $T_0=204.524137$ (BKJD)



DV Model-Shift Uniqueness Test

007046148-02, P = 194.302393 Days, E = 10.212815 Days

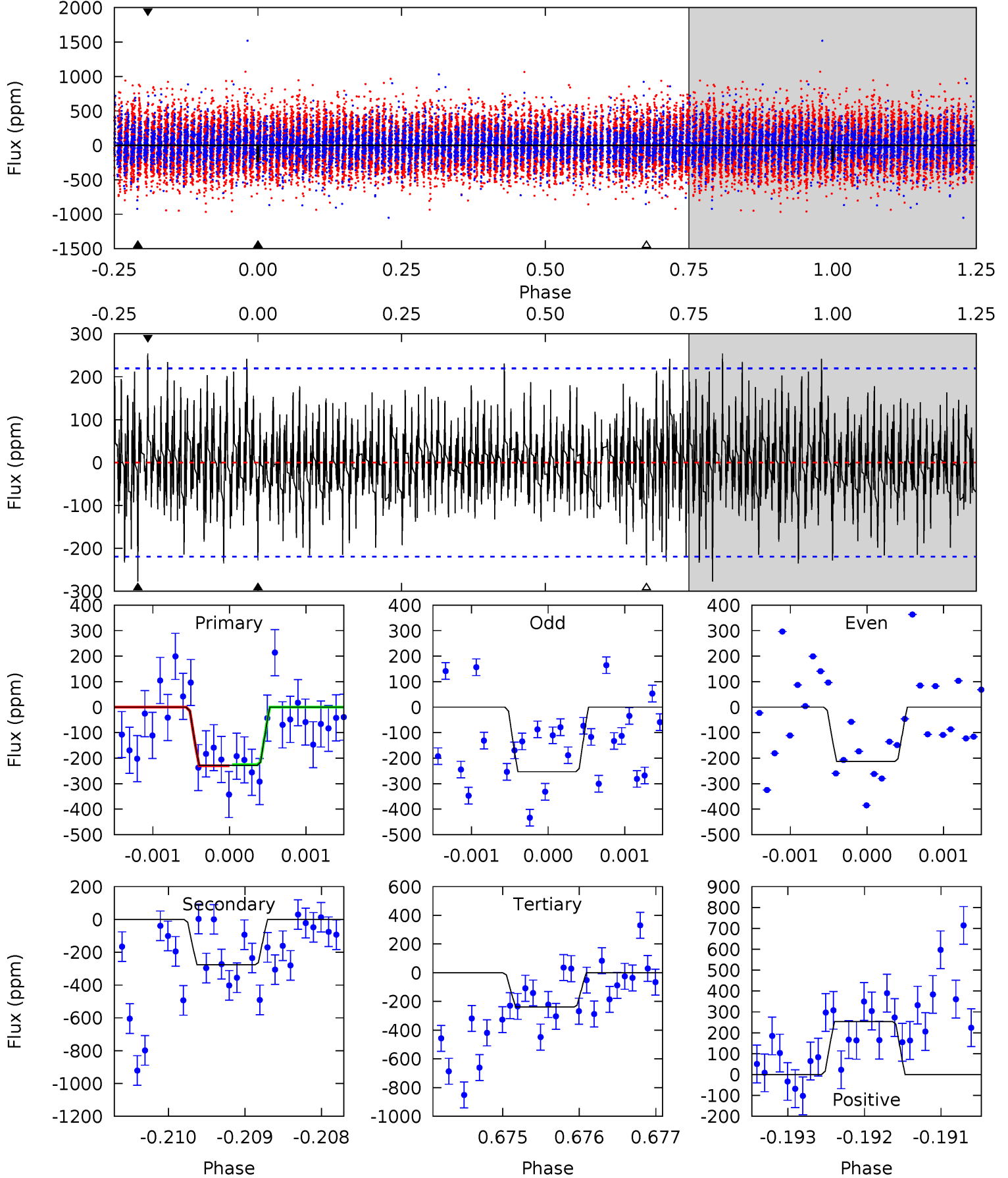
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.54	6.16	4.88	5.72	5.45	3.28	1.40	3.66	2.82	1.28	0.44	0.30	0.97	0.40	0.22



Alt Model-Shift Uniqueness Test

007046148-02, $P = 194.299039$ Days, $E = 10.225098$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.69	6.91	5.96	6.35	5.48	3.33	1.63	-0.28	-0.66	0.95	0.56	0.49	0.87	0.48	0.05



Stellar Parameters For KIC 007046148

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6628^{+177}_{-217}	$4.456^{+0.050}_{-0.188}$	$-0.600^{+0.300}_{-0.350}$	$1.003^{+0.270}_{-0.108}$	$1.049^{+0.124}_{-0.137}$	$1.463^{+0.361}_{-0.704}$
	+3%/-3%	+1%/-4%	+50%/-58%	+27%/-11%	+12%/-13%	+25%/-48%
Source	PHO1	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 007046148-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-201 ± 33	$1.98^{+0.74}_{-0.74}$	511^{+32}_{-23}	5964^{+1815}_{-830}	12111^{+19492}_{-5712}
Alt.	-277 ± 40	$1.82^{+0.67}_{-0.73}$	511^{+32}_{-23}	6803^{+2326}_{-1078}	20415^{+33641}_{-9900}

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

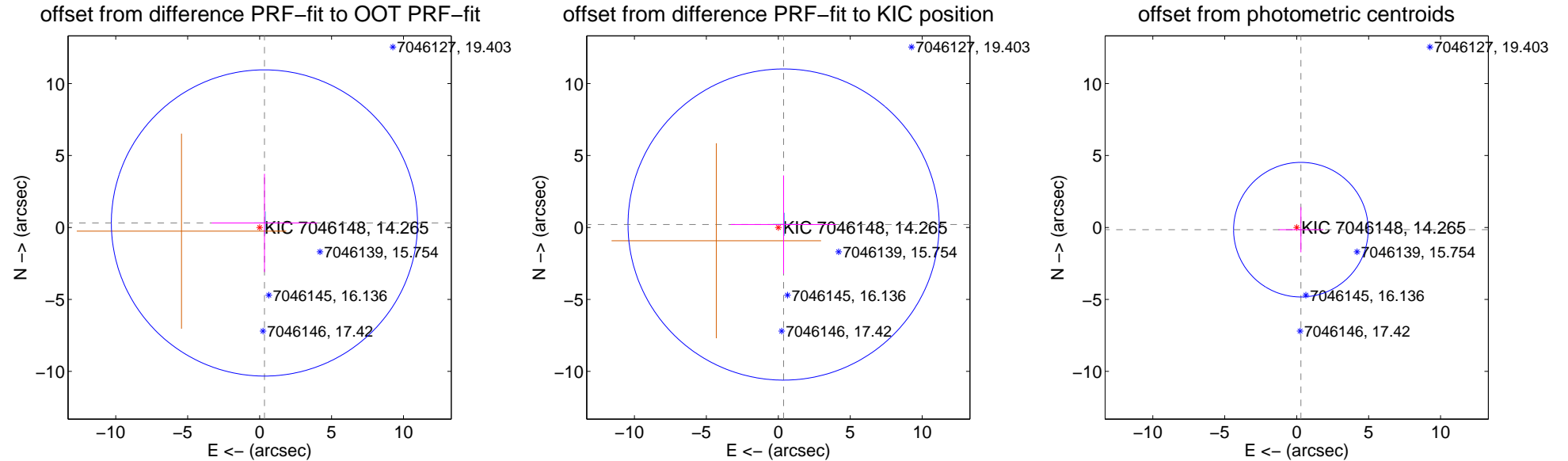
DV Centroid Data

Supplemental centroid analysis for 007046148-02. Kepler magnitude: 14.27. Transit SNR 7.49

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.458 ± 3.546	0.13	-0.334 ± 3.660	0.313 ± 3.412
PRF-fit source offset from KIC position	0.419 ± 3.603	0.12	-0.367 ± 3.660	0.203 ± 3.412
photometric centroid source offset	0.33 ± 1.56	0.21	-0.29 ± 1.56	-0.15 ± 1.57



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 are from the UKIRT catalog.

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

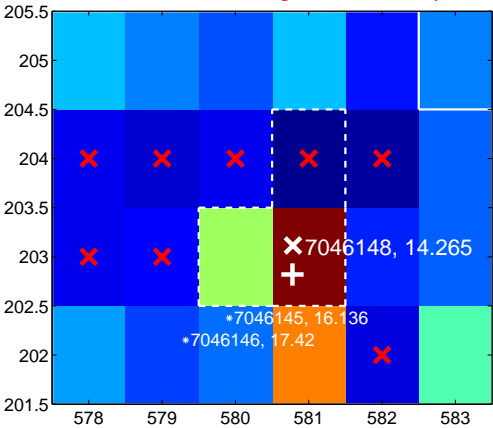
Q1 no difference image



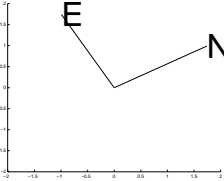
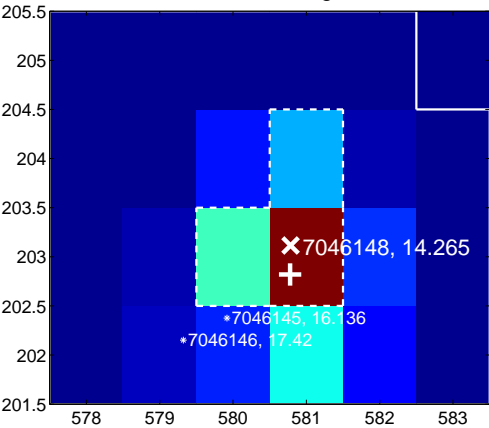
Q1 no OOT image



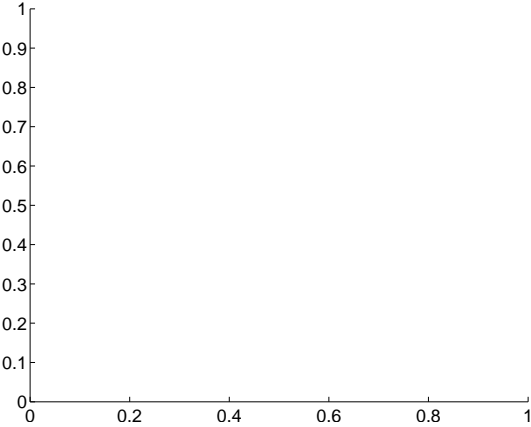
Q2 difference image. Poor Quality



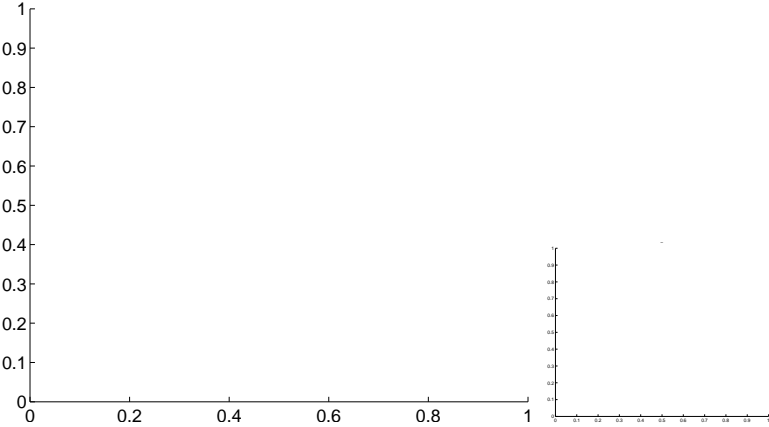
Q2 OOT image



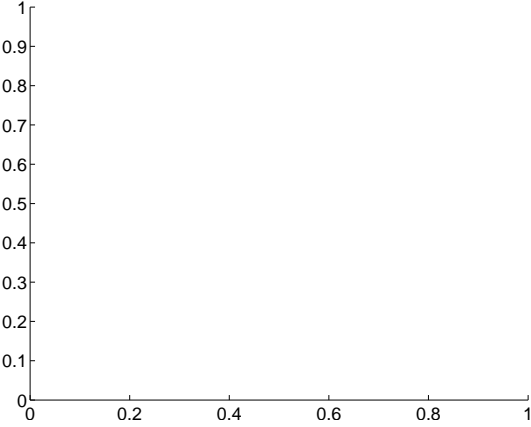
Q3 no difference image



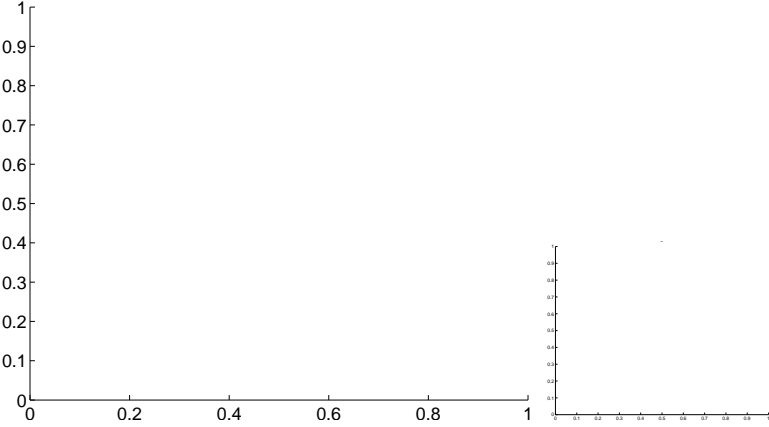
Q3 no OOT image



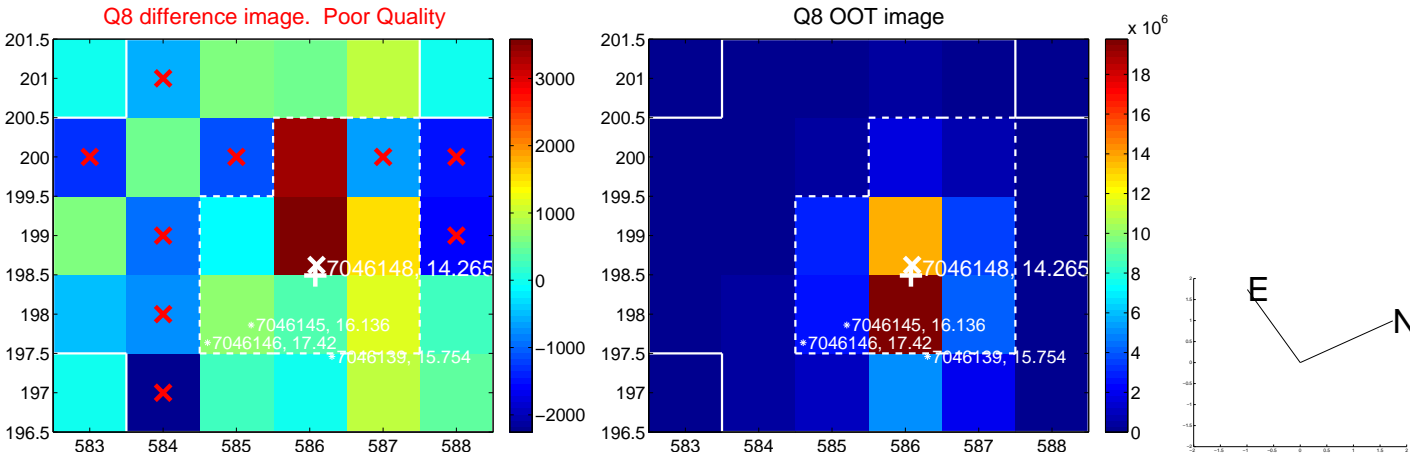
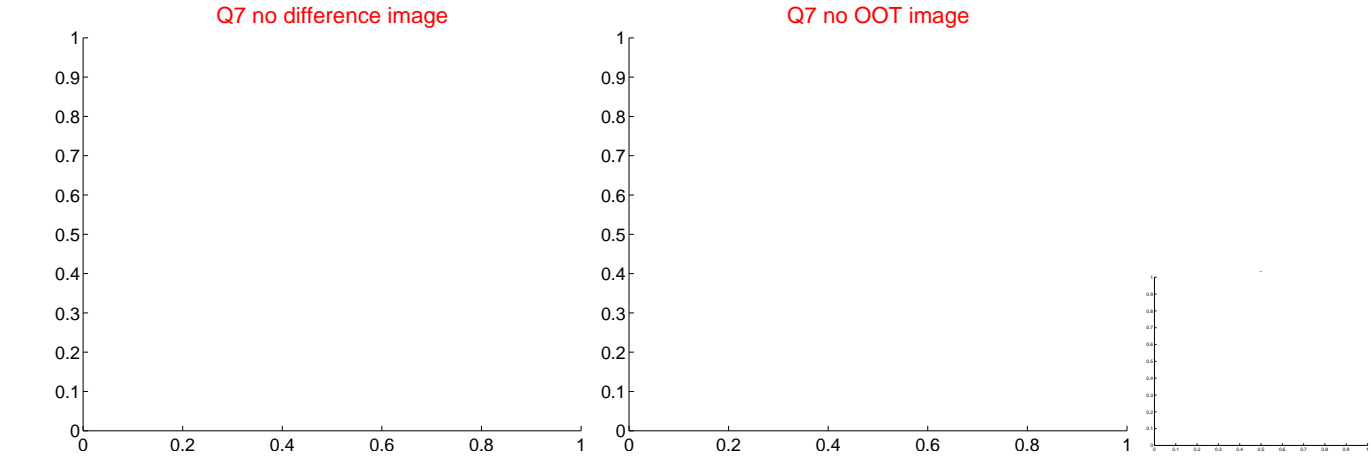
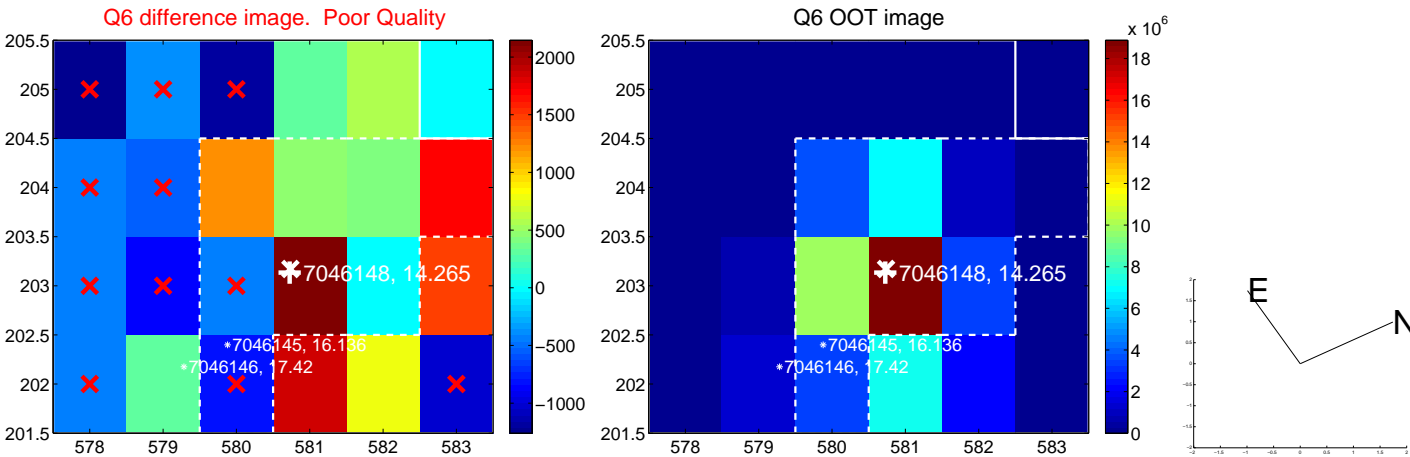
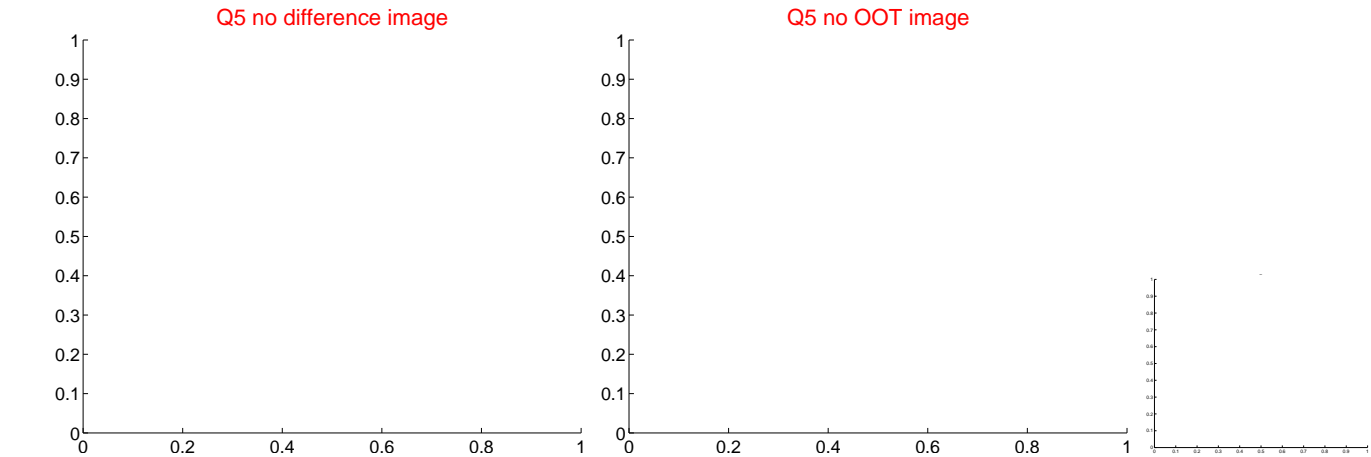
Q4 no difference image



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.

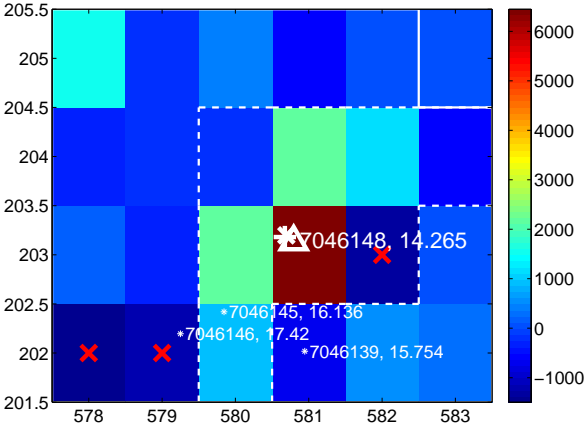
Q9 no difference image



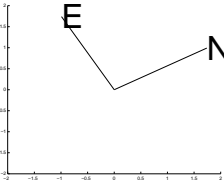
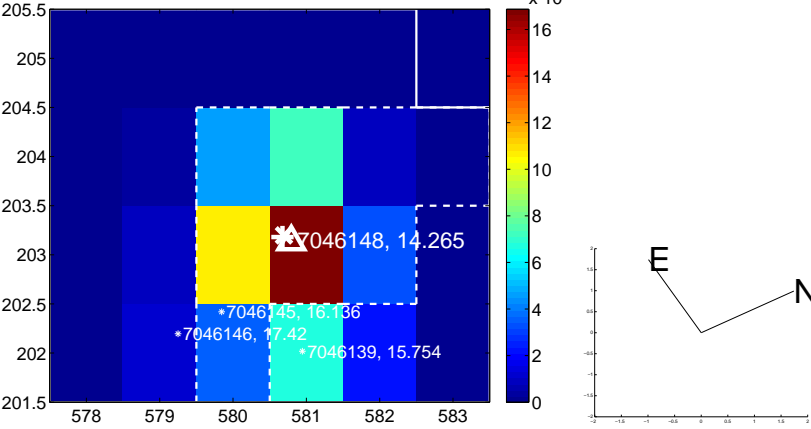
Q9 no OOT image



Q10 difference image



Q10 OOT image



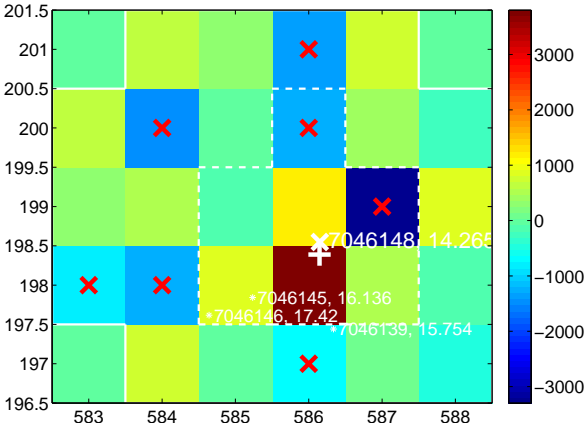
Q11 no difference image



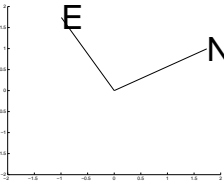
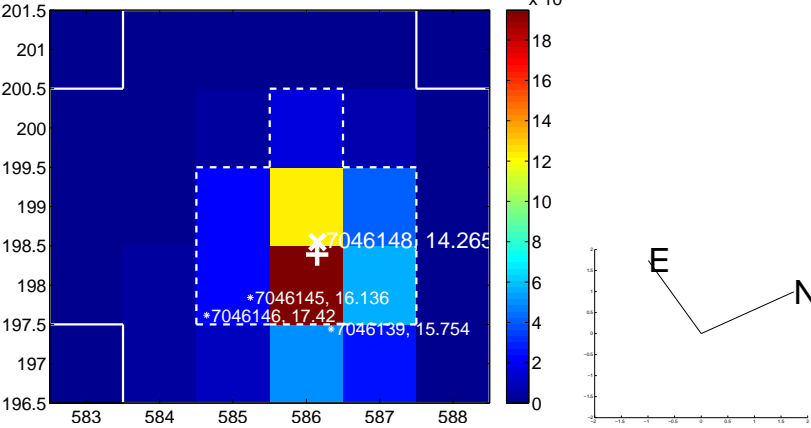
Q11 no OOT image



Q12 difference image. Poor Quality



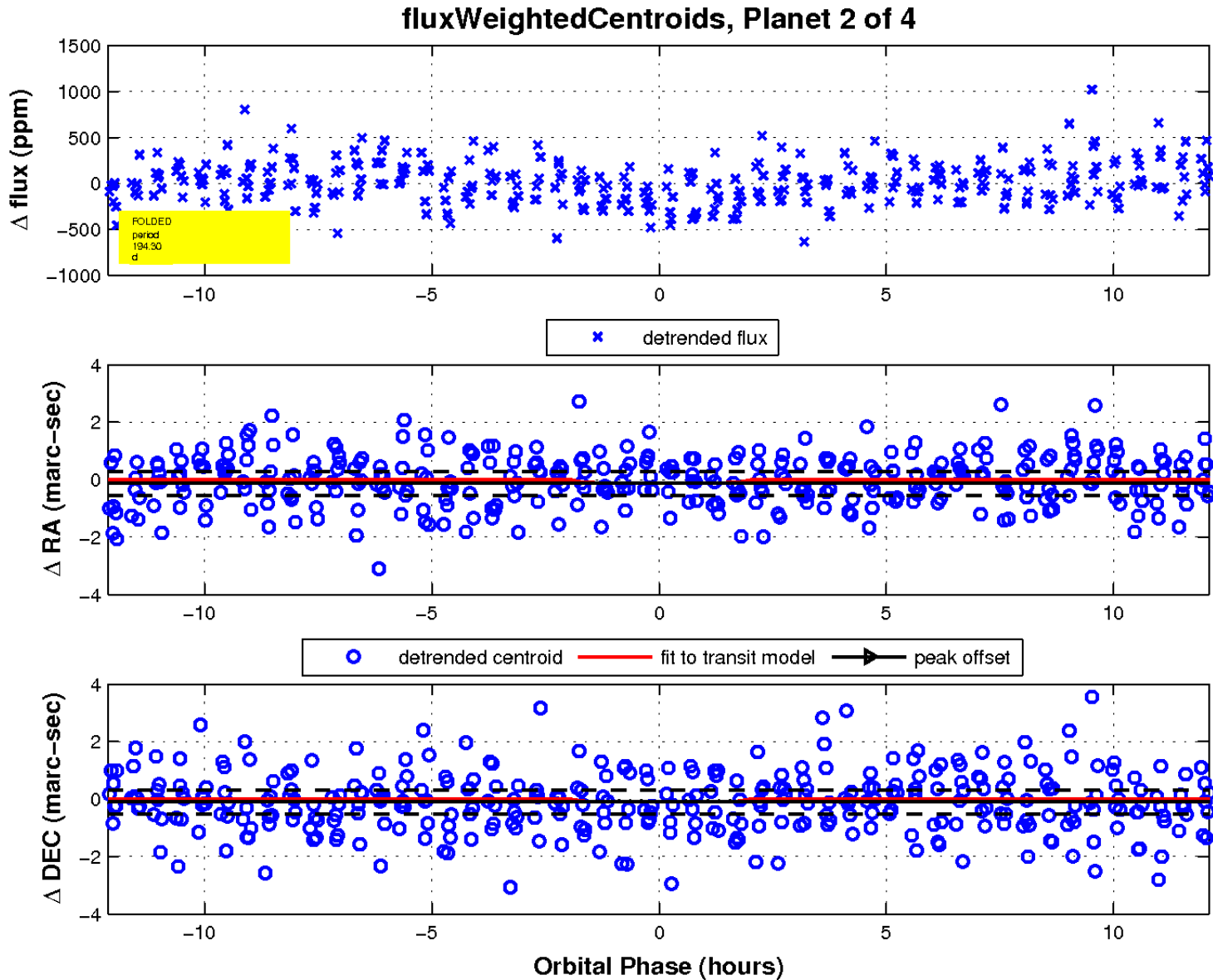
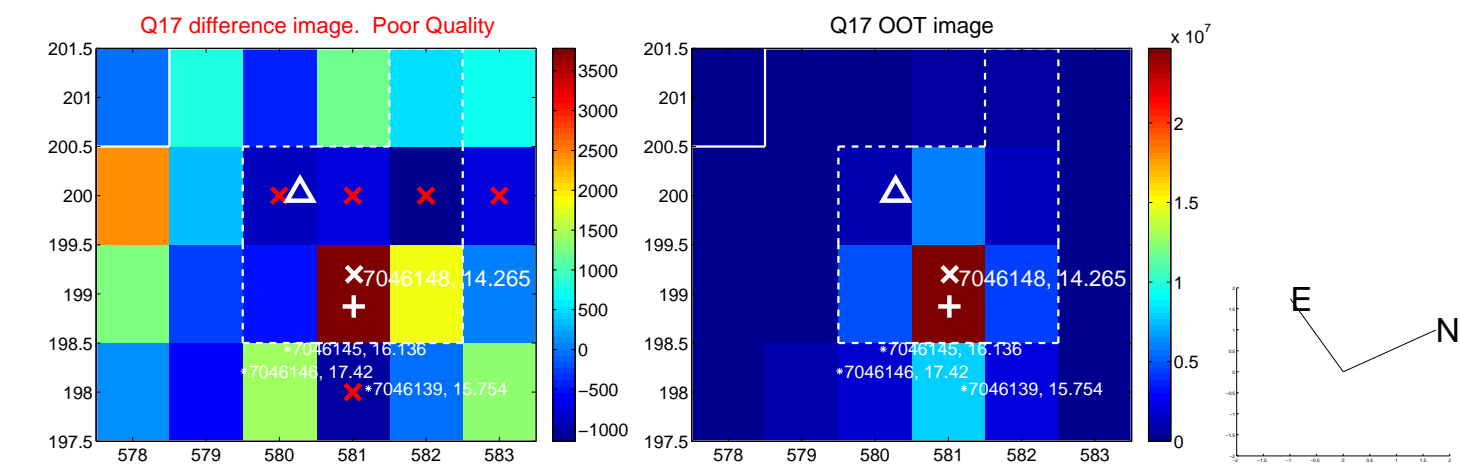
Q12 OOT image



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

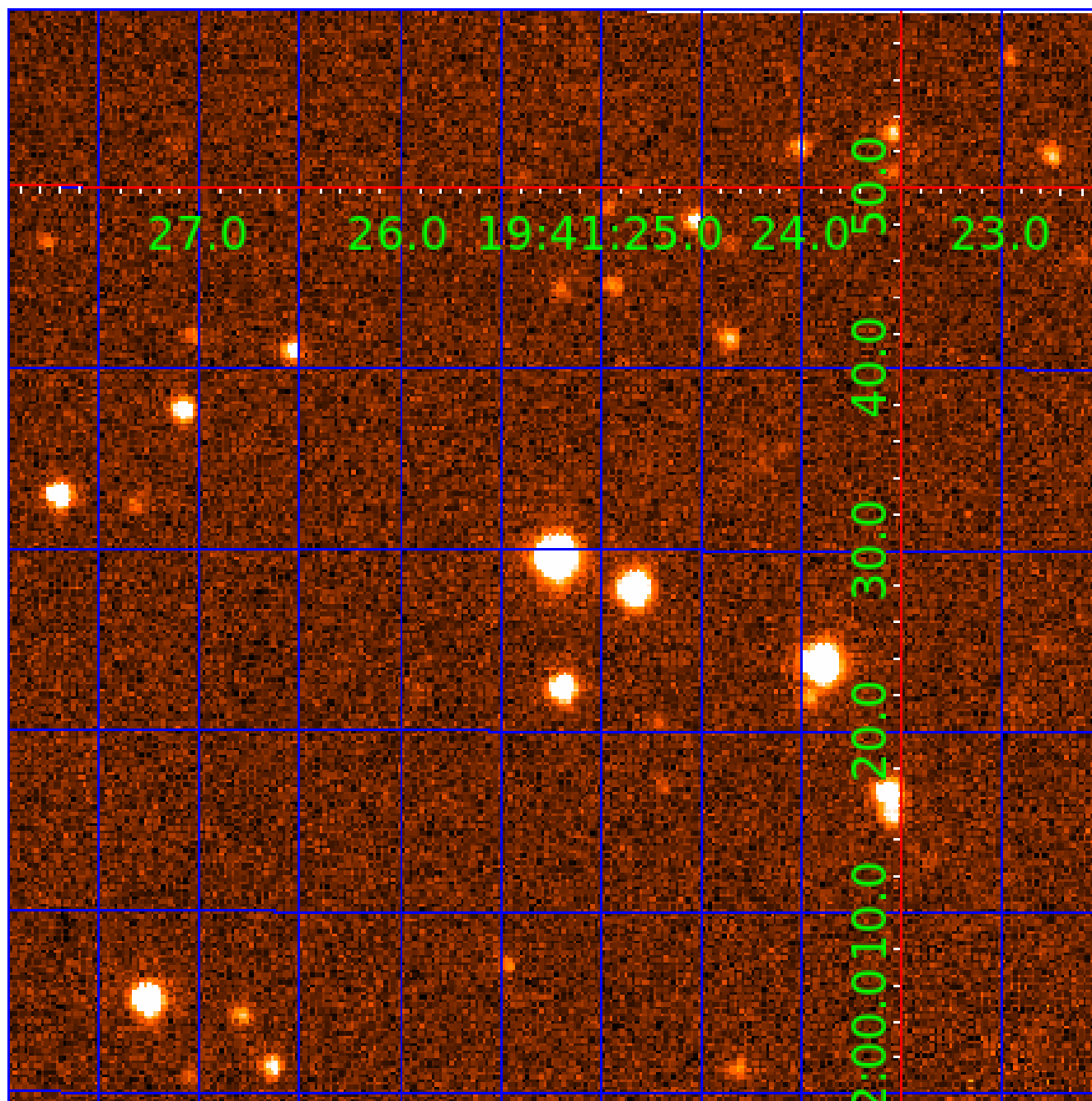


white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007046148

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})
007046148-01	OBS	No	2.234666	131.670475	14.5	11.345	12.5	4.5	1.00	6628	0.39	1505.48
007046148-02	OBS	No	194.302393	204.515208	267.4	4.115	7.6	7.5	1.00	6628	1.91	3.91
007046148-03	OBS	No	294.814364	292.029832	389.6	8.494	12.3	8.2	1.00	6628	2.20	2.24
007046148-04	OBS	No	155.744119	145.301346	331.3	3.861	7.4	7.3	1.00	6628	2.32	5.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007046148-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007046148-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
007046148-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007046148-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—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.

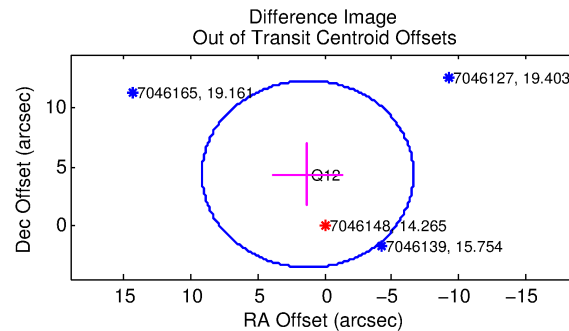
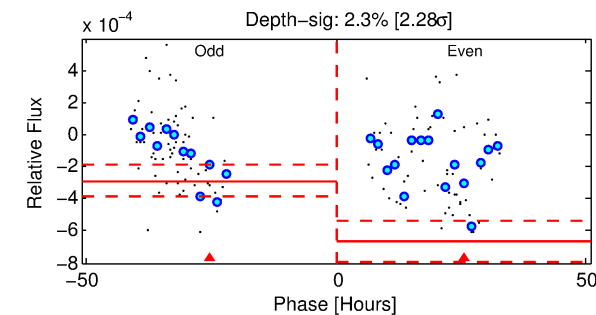
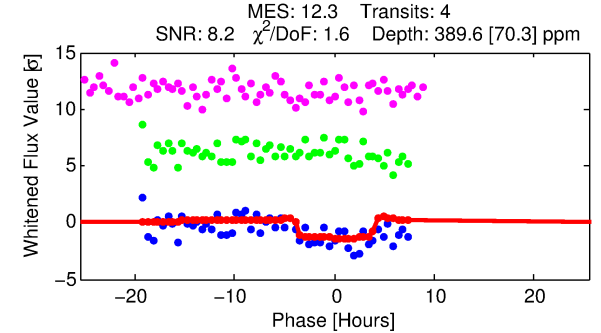
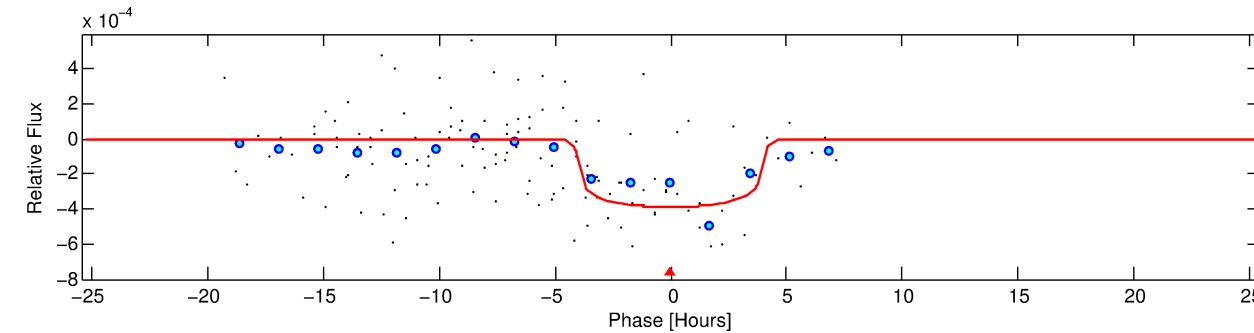
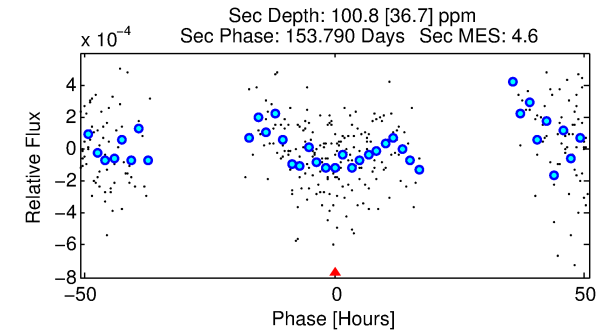
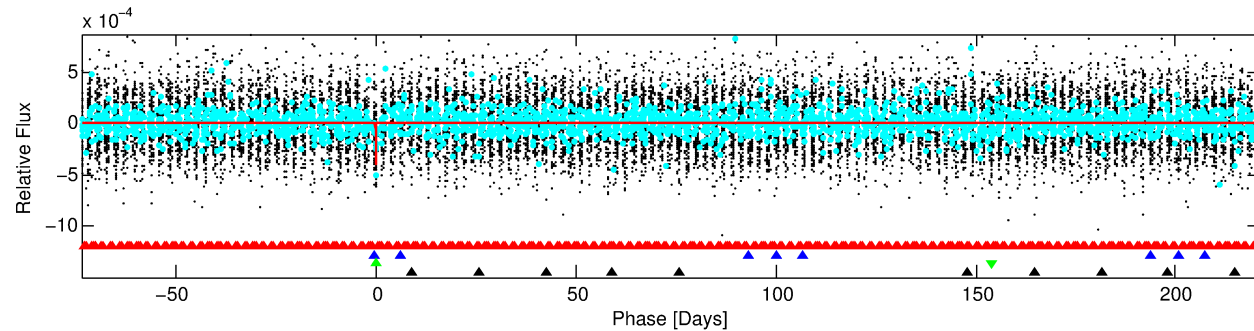
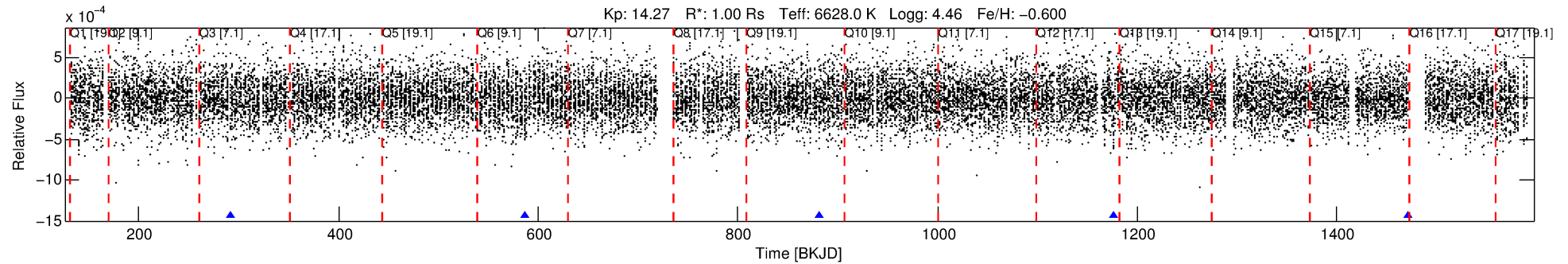
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007046148-03

No Significant Match Found

DV One-Page Summary

KIC: 7046148 Candidate: 3 of 4 Period: 294.814 d



DV Fit Results:

Period = 294.81436 [0.00997] d
Epoch = 292.0298 [0.0302] BKJD
Rp/R* = 0.0201 [0.0075]
a/R* = 163.73 [324.18]
b = 0.81 [0.86]
Seff = 2.24 [0.82]
Teq = 312 [28] K
Rp = 2.20 [1.01] Re
a = 0.8809 [0.2029] AU
Ag = 8922.80 [8021.25] [1.11σ]
Teffp = 4688 [988] K [4.43σ]

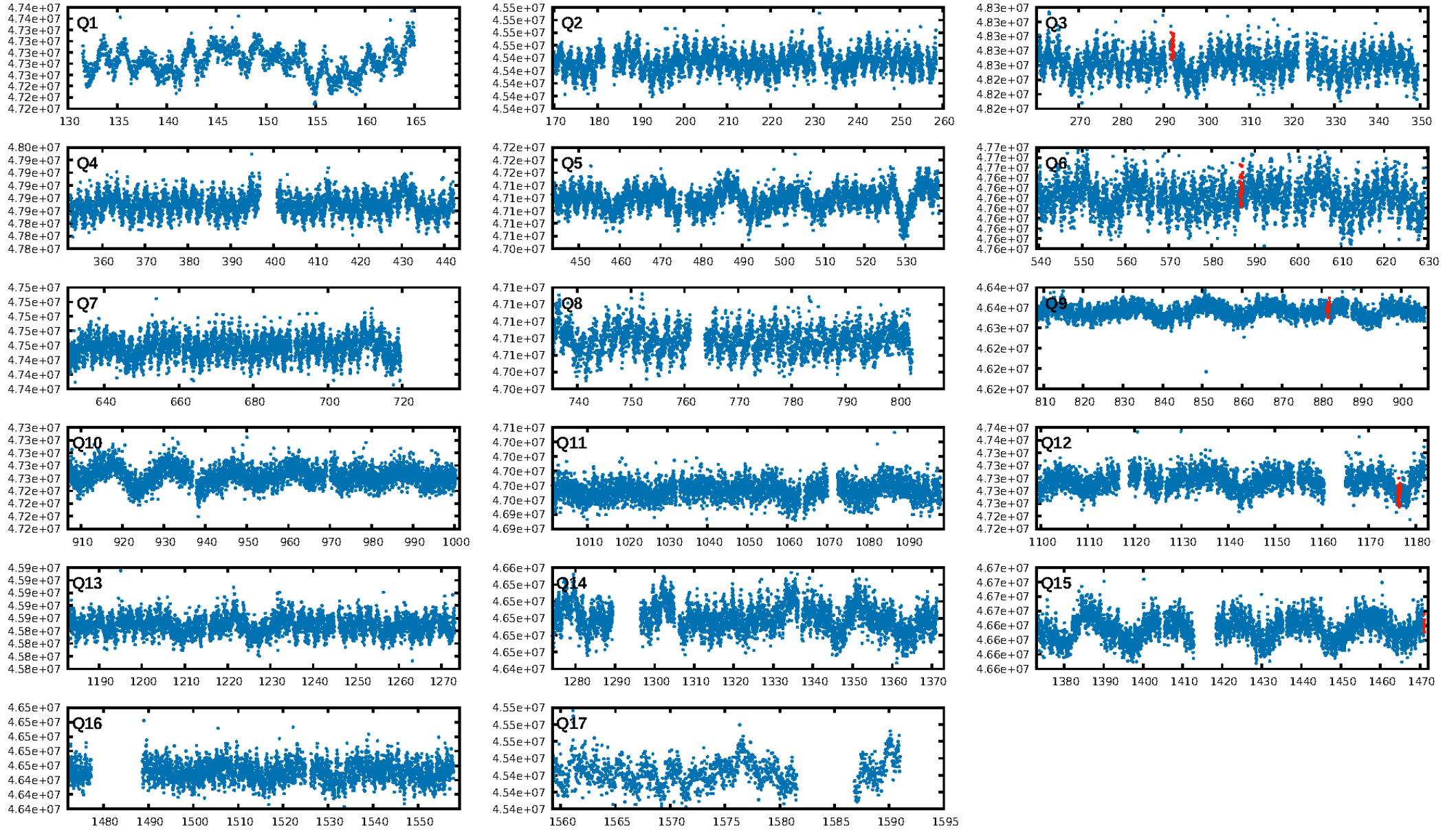
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [255.59σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.3%
ModelChiSquareGof-sig: 98.7%
Bootstrap-pfa: 2.01e-16
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.8823
Centroid-sig: 82.6%
Centroid-so: 0.850 arcsec [0.82σ]
OotOffset-rm: 4.542 arcsec [1.72σ]
KicOffset-rm: 4.099 arcsec [1.55σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-st: 0/0/1/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.00 [0/3]

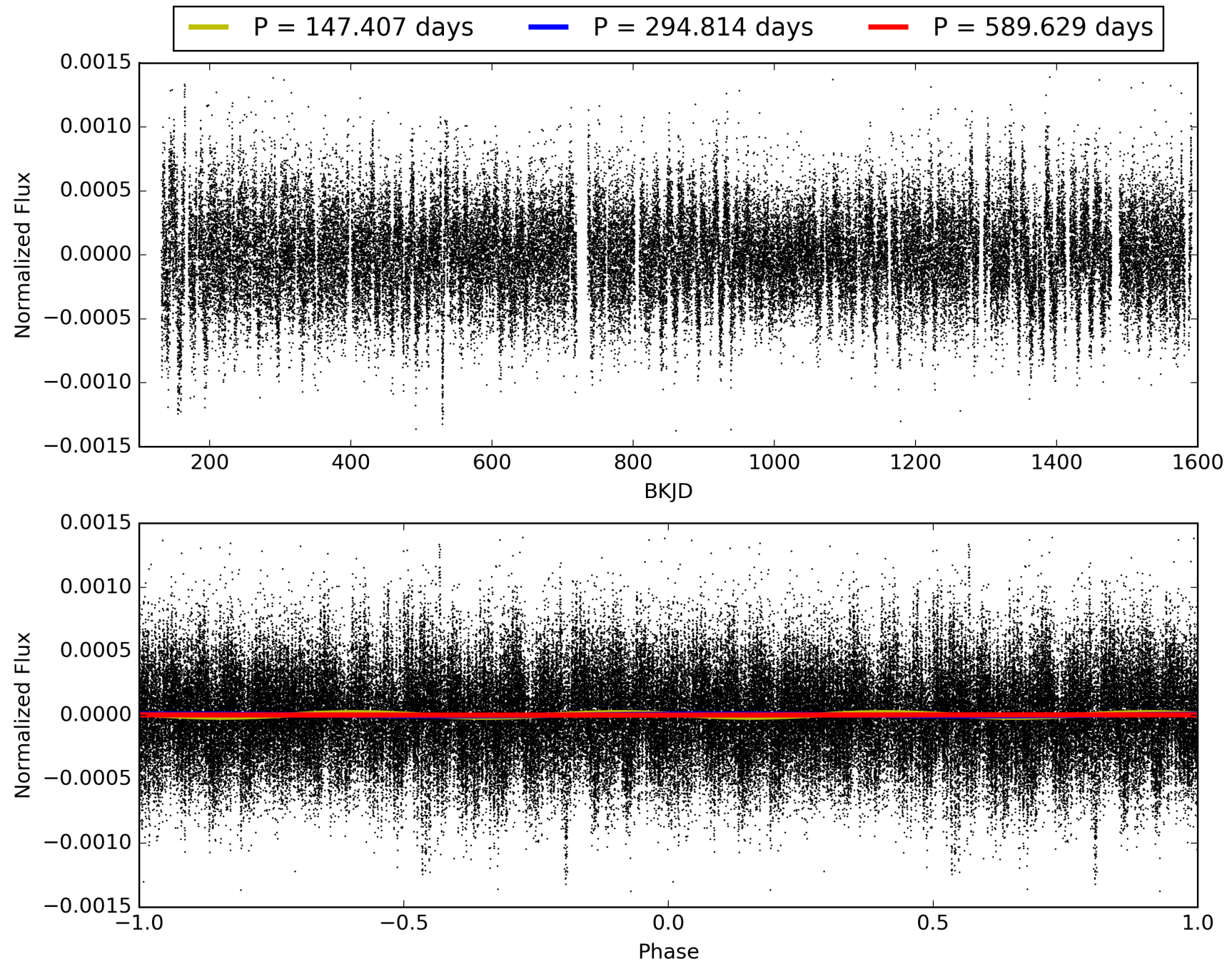
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:49:16 Z

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

TCE 007046148-03, PDC Light Curves

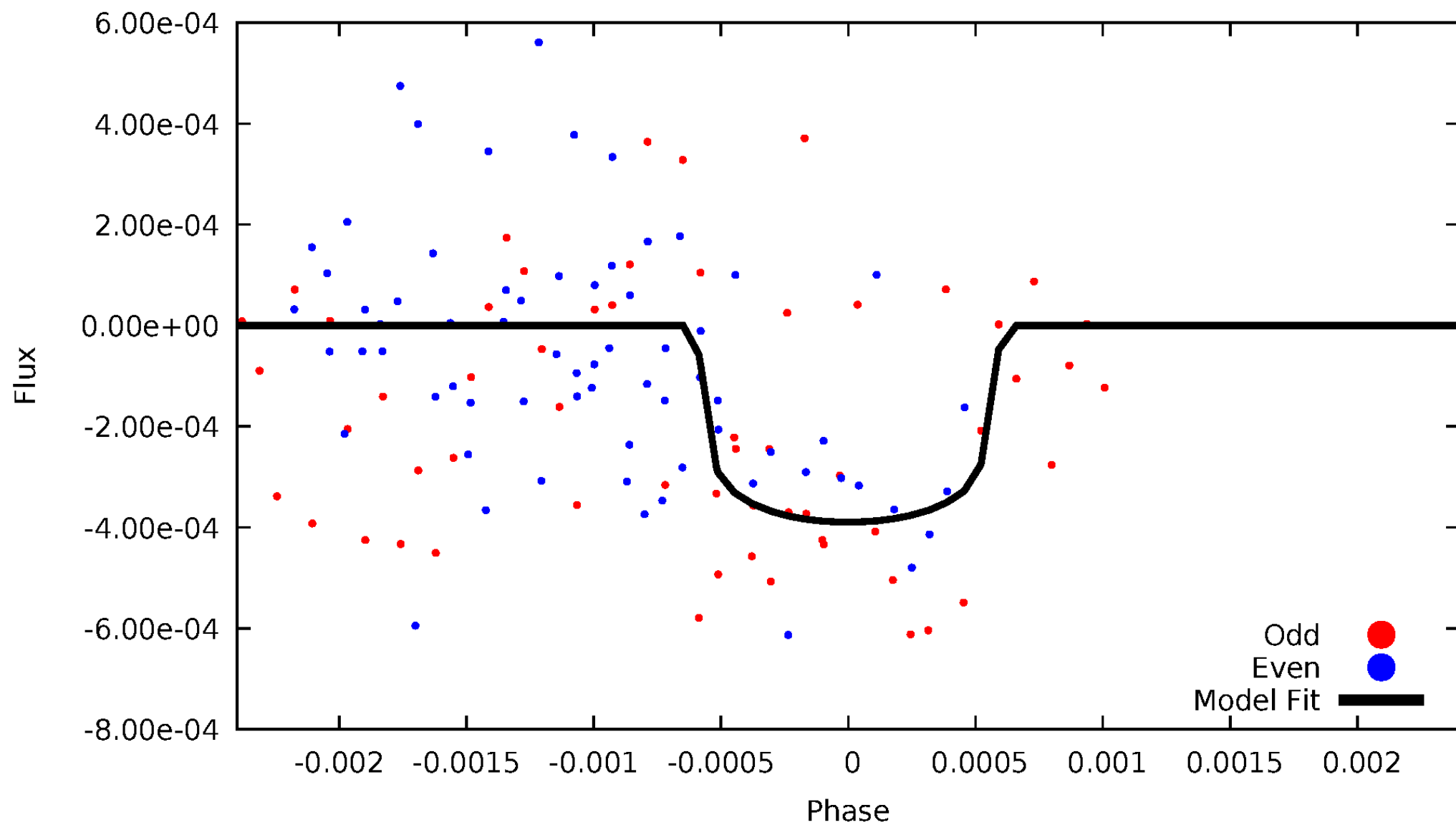


TCE 007046148-03



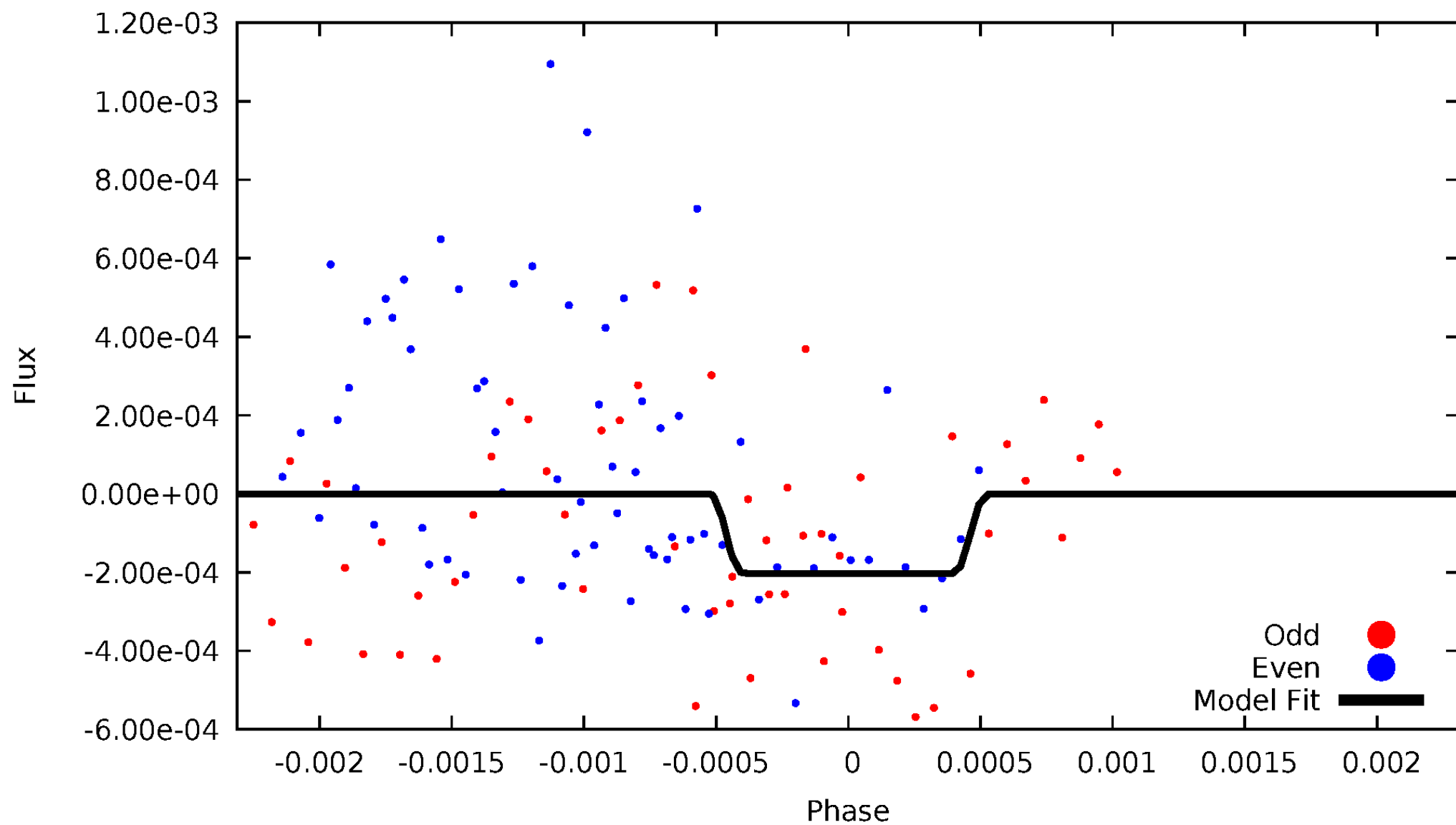
DV Odd/Even

TCE 007046148-03



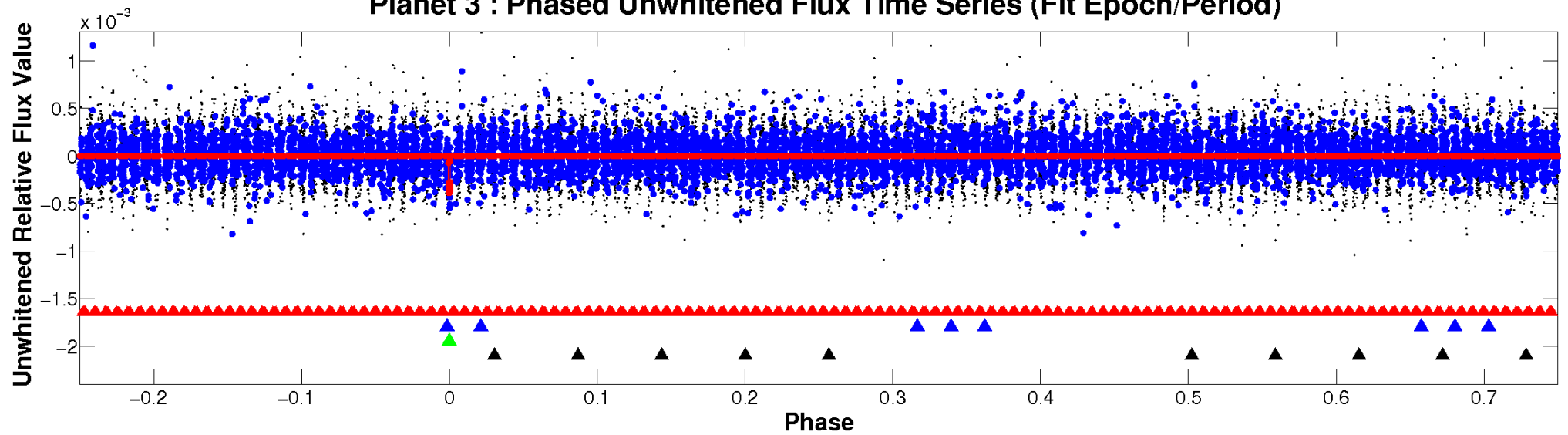
ALT Odd/Even

TCE 007046148-03

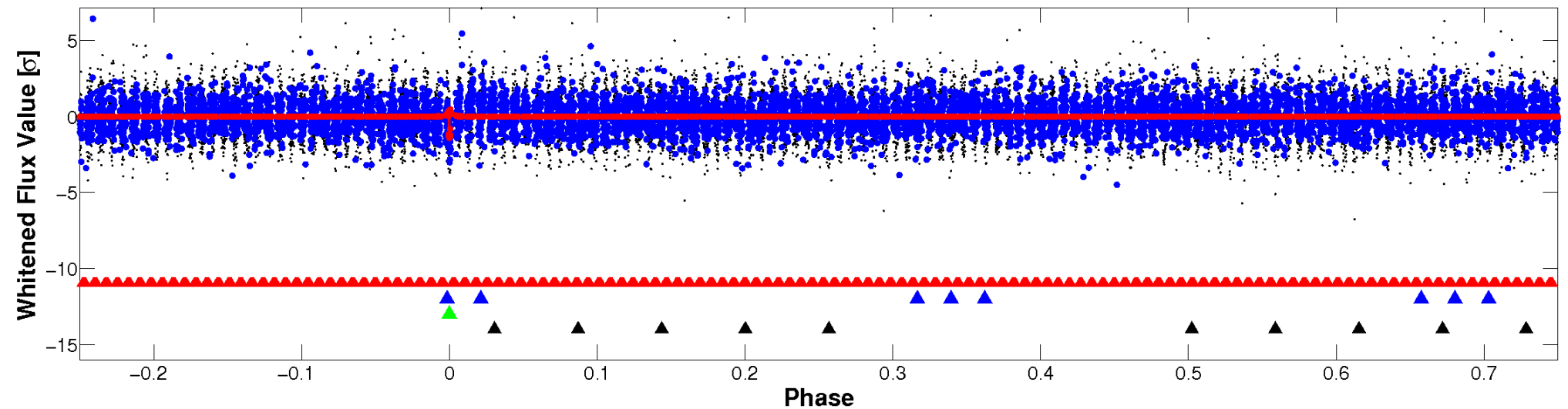


Non-Whitened Vs. Whitened Light Curve

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

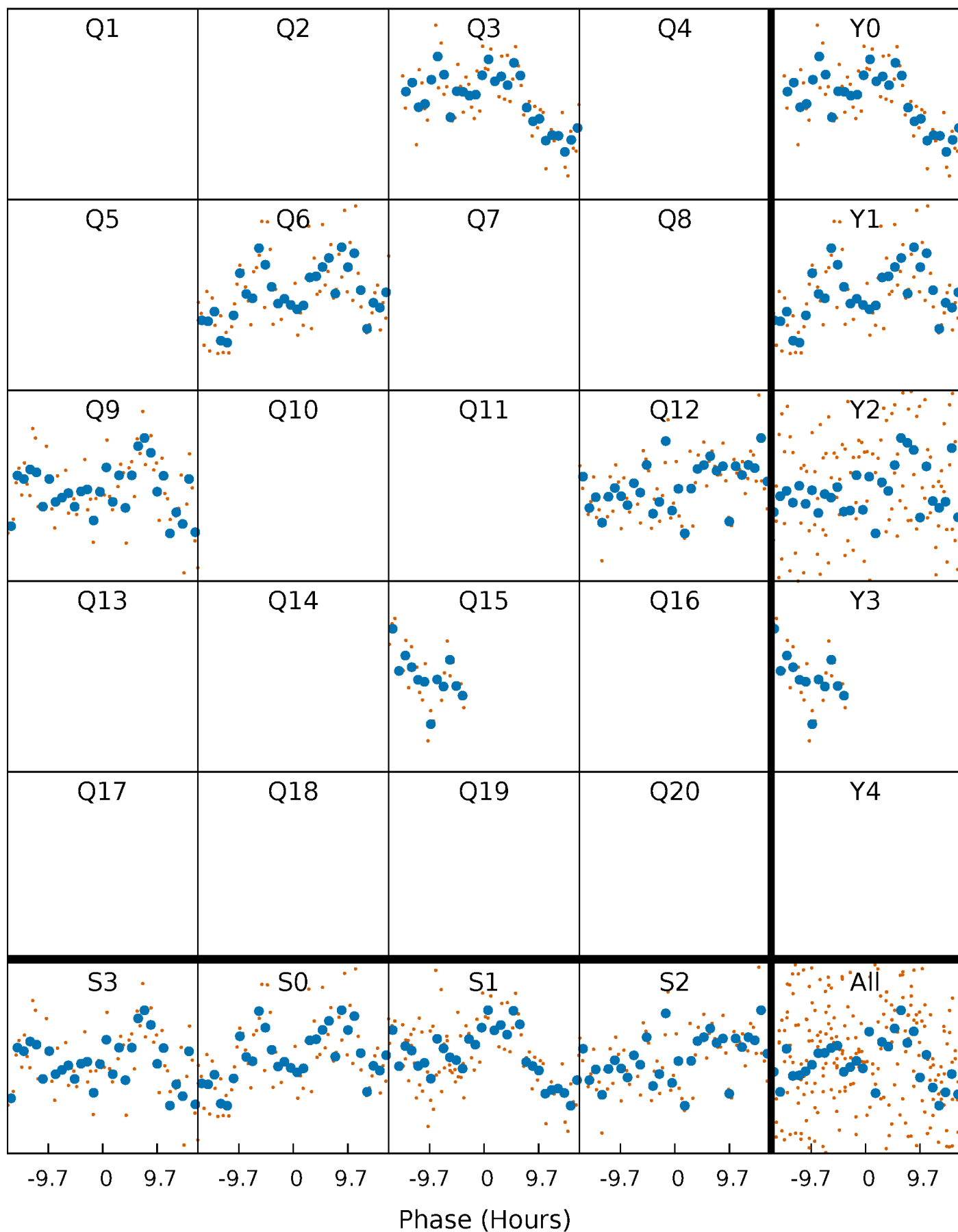


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



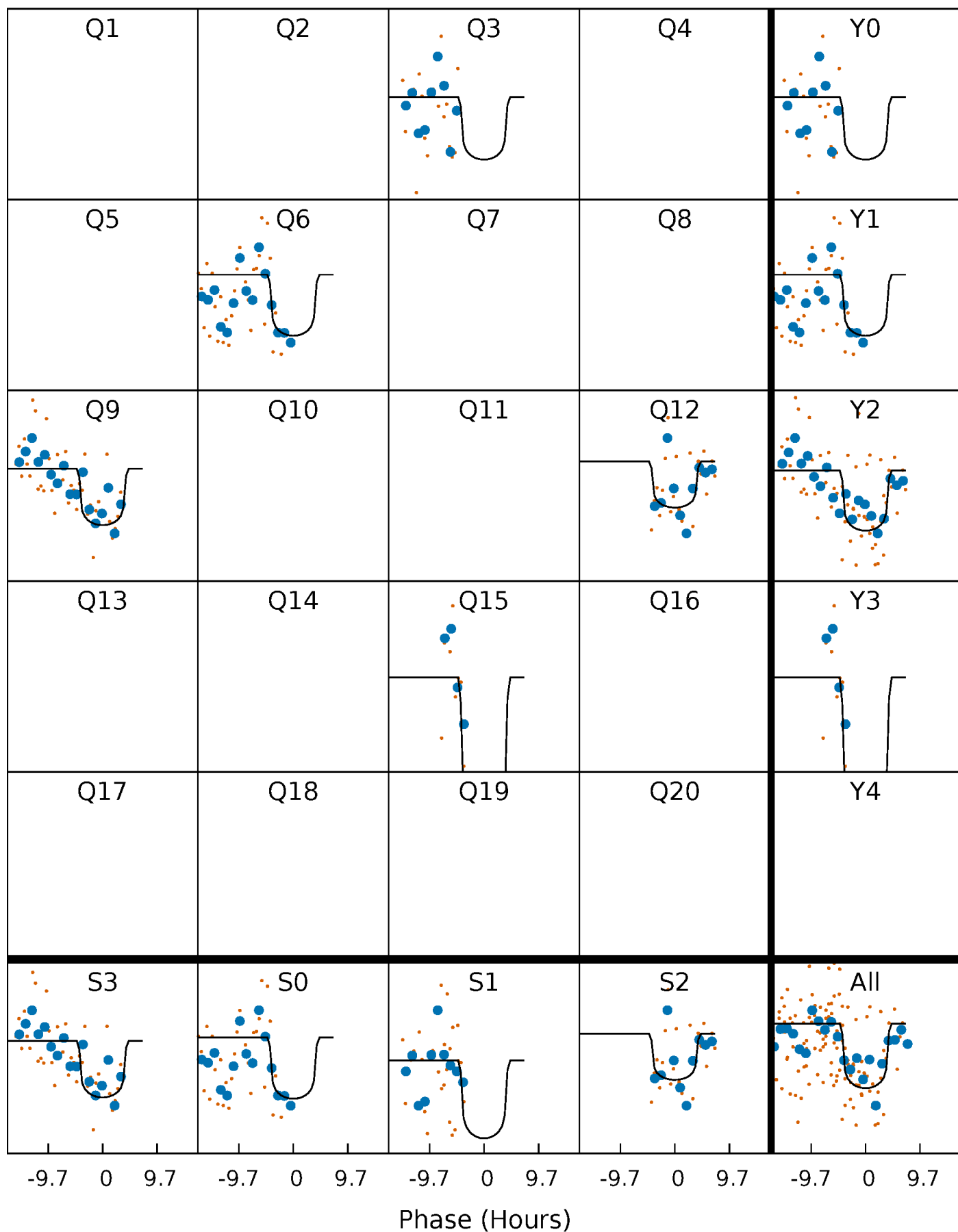
PDC Quarter-Phased Transit Curves

TCE 007046148-03 P=294.814364 Days $T_0=292.029832$ (BKJD)



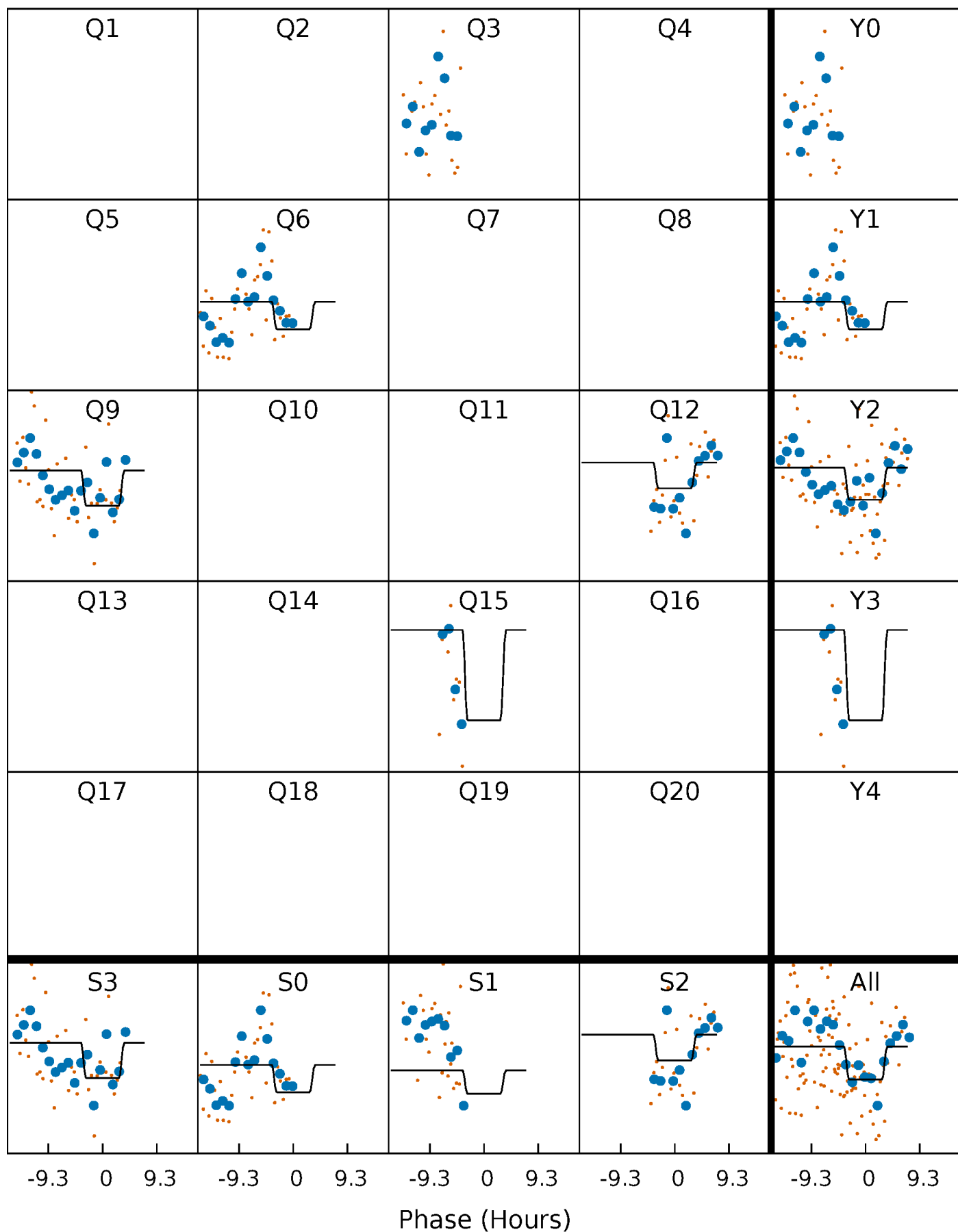
DV Quarter-Phased Transit Curves

TCE 007046148-03 P=294.814364 Days $T_0=292.029832$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

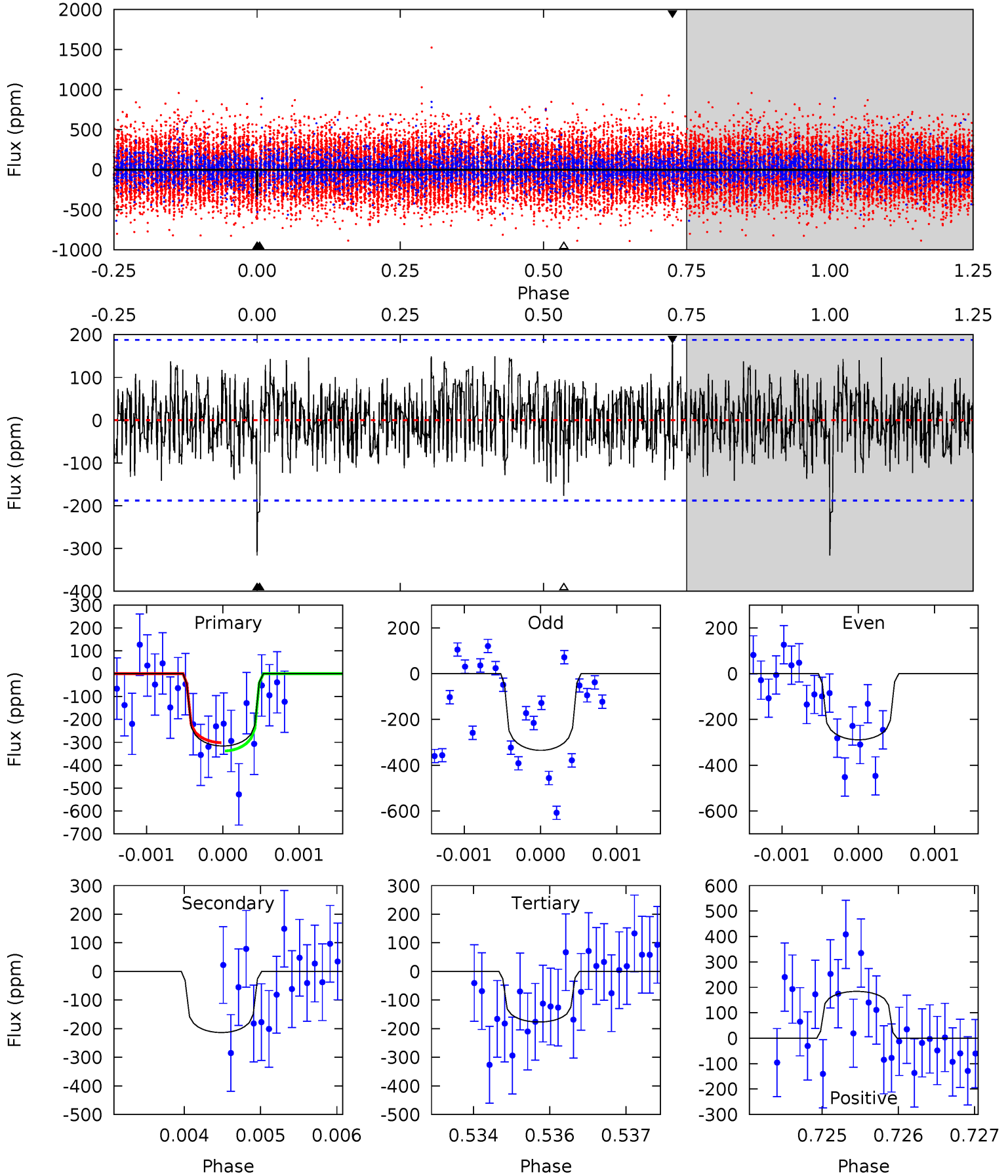
TCE 007046148-03 P=294.822215 Days $T_0=292.003365$ (BKJD)



DV Model-Shift Uniqueness Test

007046148-03, P = 294.814364 Days, E = 292.029832 Days

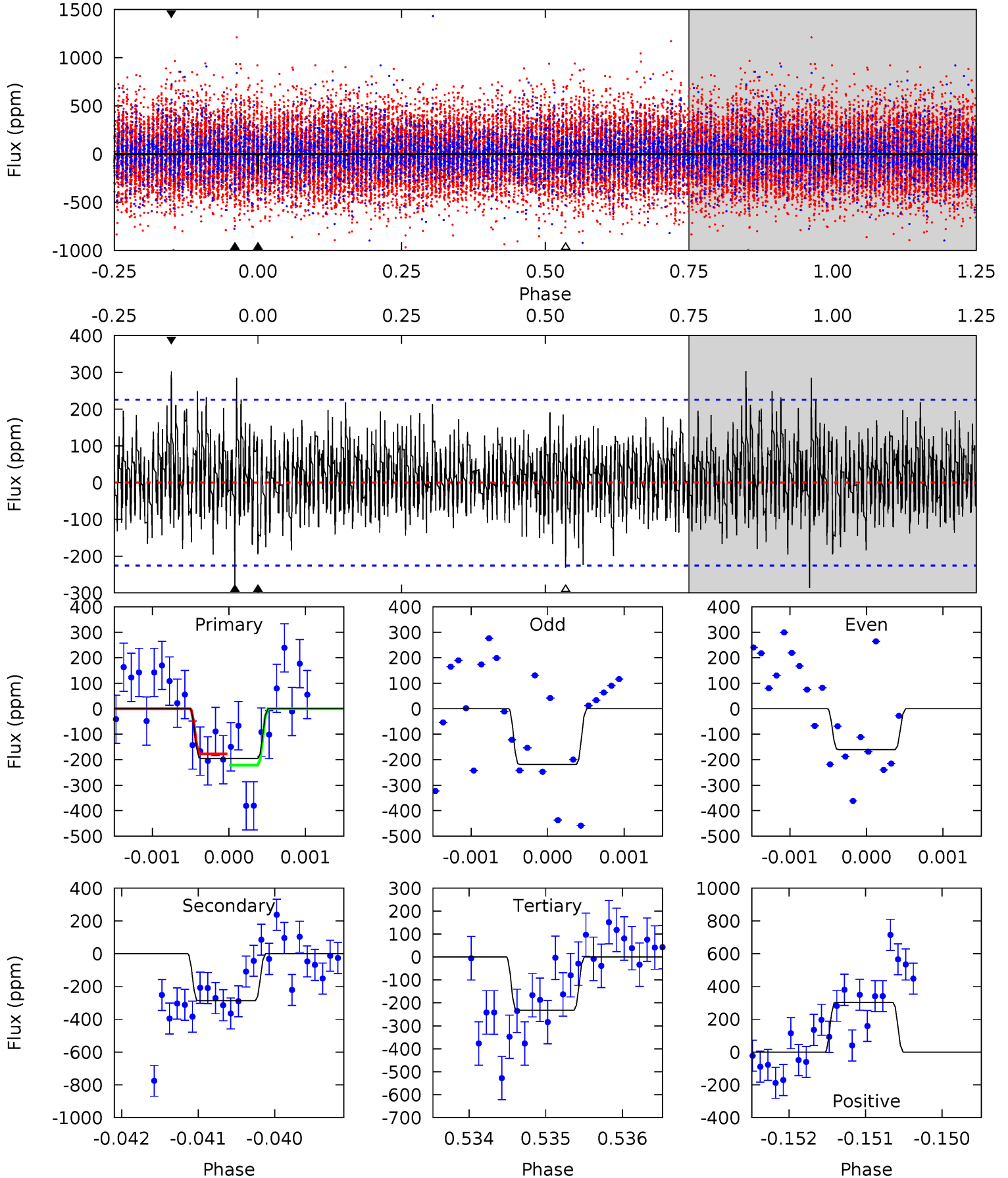
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.11	6.16	5.09	5.31	5.41	3.23	1.40	4.01	3.80	1.06	0.85	0.65	1.08	0.37	0.51



Alt Model-Shift Uniqueness Test

007046148-03, P = 294.822215 Days, E = 292.003365 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.71	6.91	5.59	7.32	5.44	3.28	1.54	-0.88	-2.61	1.32	-0.41	0.69	1.17	0.51	0.52



Stellar Parameters For KIC 007046148

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6628^{+177}_{-217}	$4.456^{+0.050}_{-0.188}$	$-0.600^{+0.300}_{-0.350}$	$1.003^{+0.270}_{-0.108}$	$1.049^{+0.124}_{-0.137}$	$1.463^{+0.361}_{-0.704}$
	+3%/-3%	+1%/-4%	+50%/-58%	+27%/-11%	+12%/-13%	+25%/-48%
Source	PHO1	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 007046148-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-214 ± 35	$2.33^{+0.96}_{-0.83}$	445^{+30}_{-23}	5580^{+1437}_{-748}	16375^{+23922}_{-8406}
Alt.	-286 ± 41	$1.66^{+0.94}_{-0.75}$	444^{+26}_{-19}	7144^{+3616}_{-1457}	42319^{+99406}_{-24836}

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 $A_{obs} \gg 1.0$

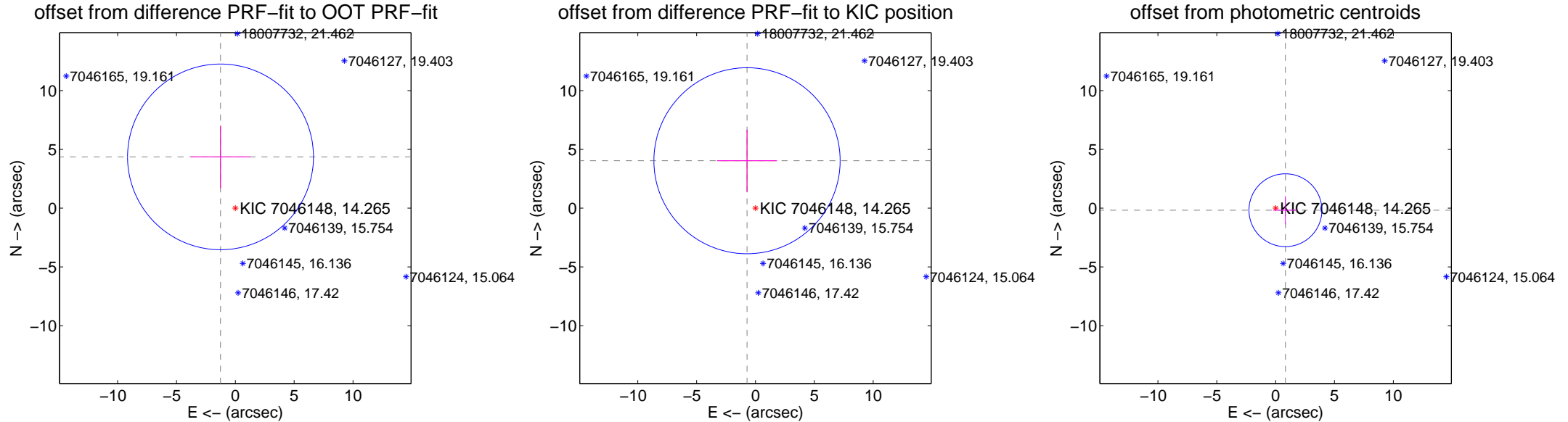
DV Centroid Data

Supplemental centroid analysis for 007046148-03. Kepler magnitude: 14.27. Transit SNR 8.18

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.63 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.542 ± 2.633	1.72	1.260 ± 2.541	4.363 ± 2.640
PRF-fit source offset from KIC position	4.099 ± 2.637	1.55	0.720 ± 2.541	4.035 ± 2.640
photometric centroid source offset	0.85 ± 1.03	0.82	-0.83 ± 1.02	-0.17 ± 1.21



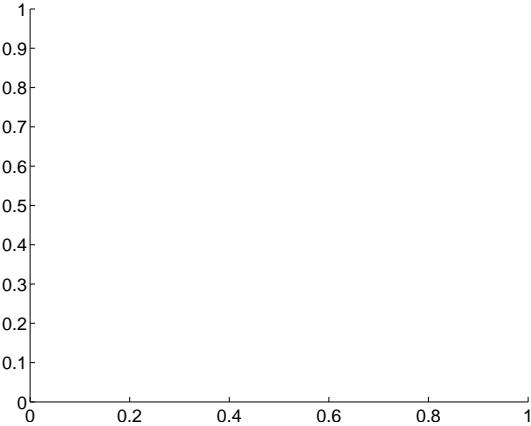
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

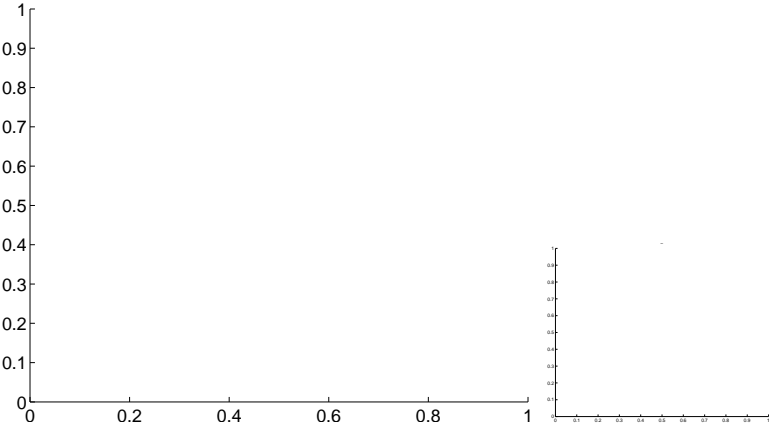


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

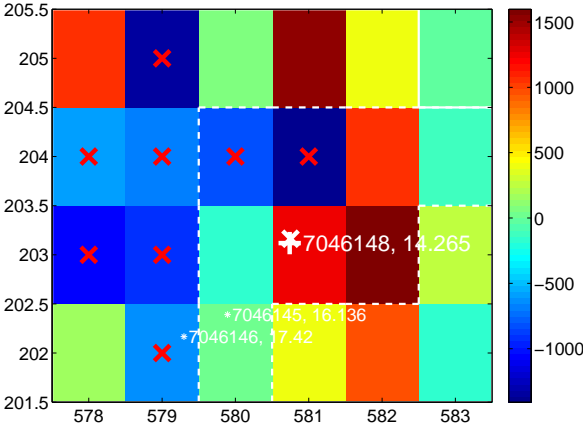
Q5 no difference image



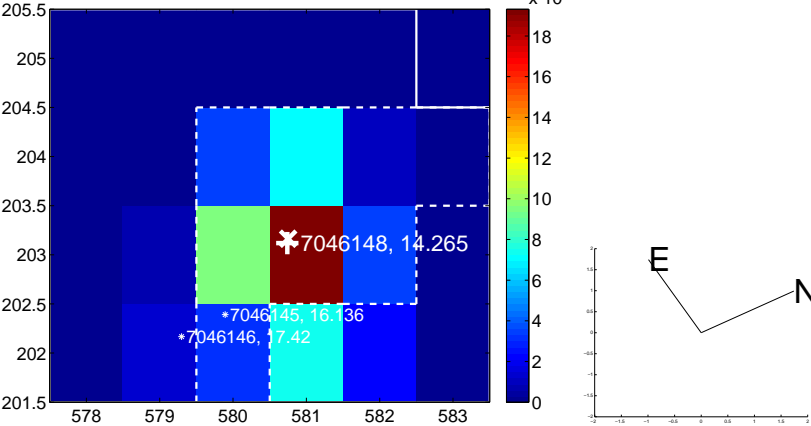
Q5 no OOT image



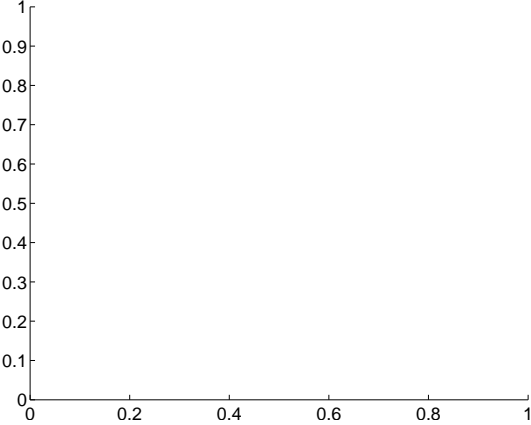
Q6 difference image. Poor Quality



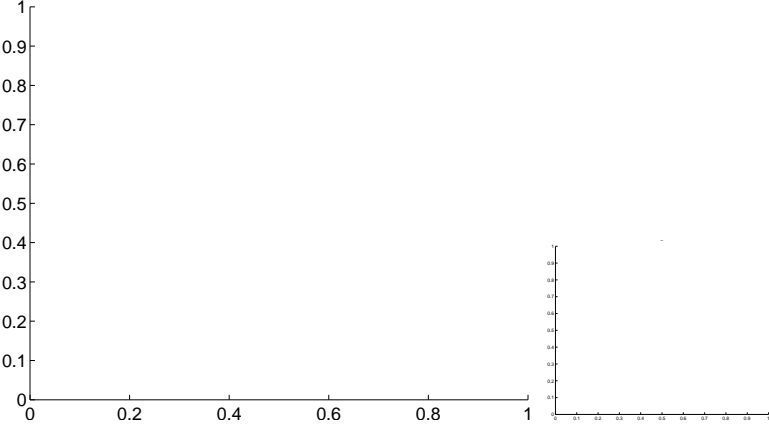
Q6 OOT image



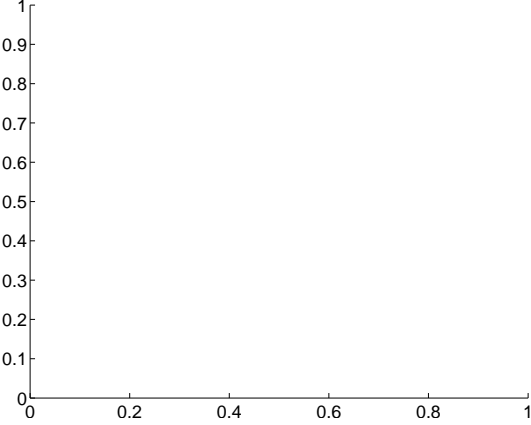
Q7 no difference image



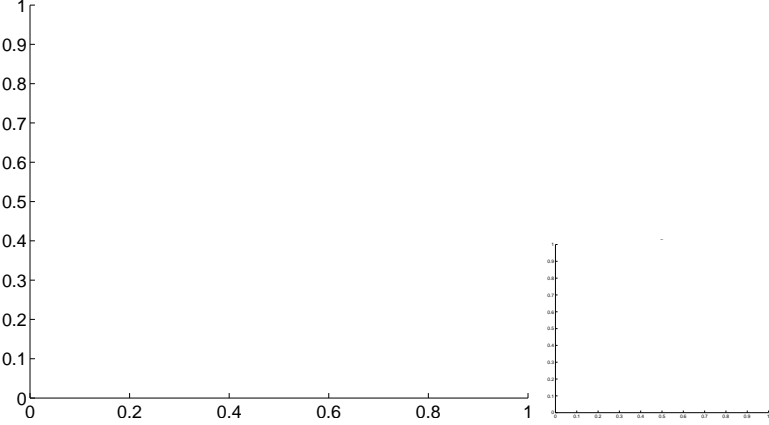
Q7 no OOT image



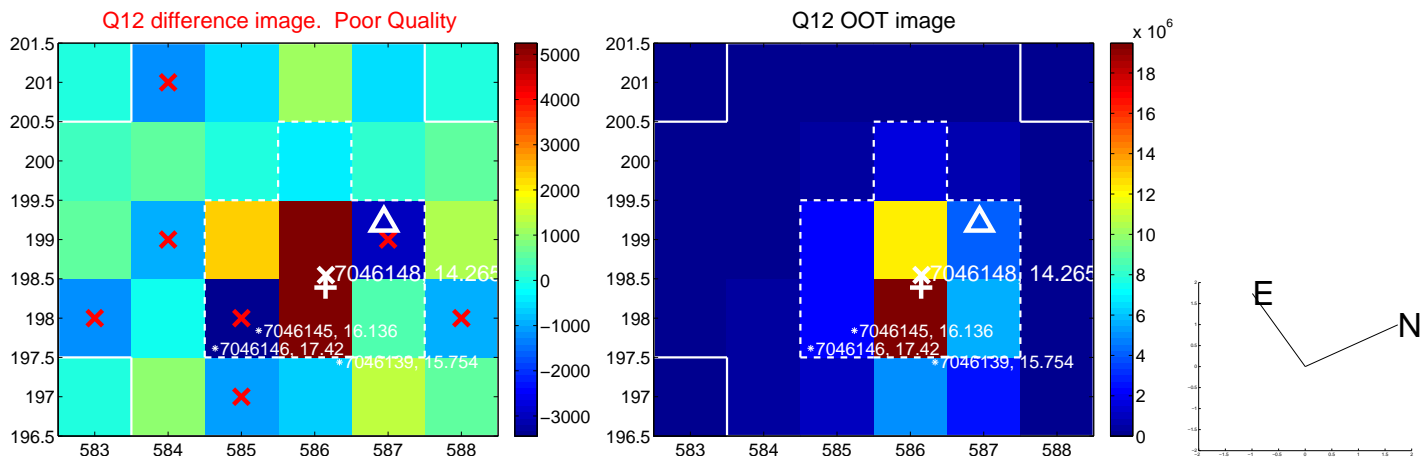
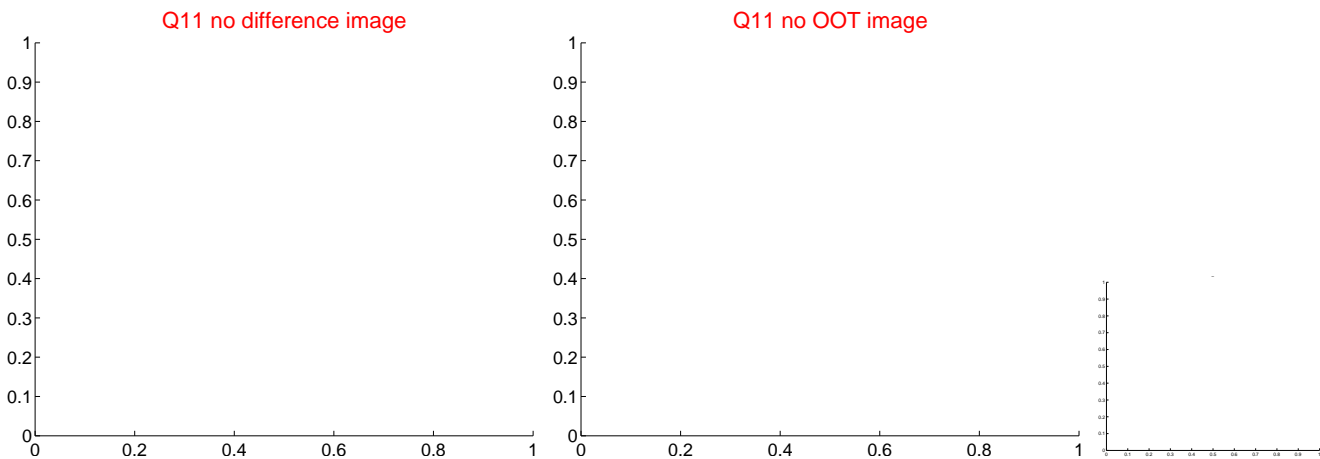
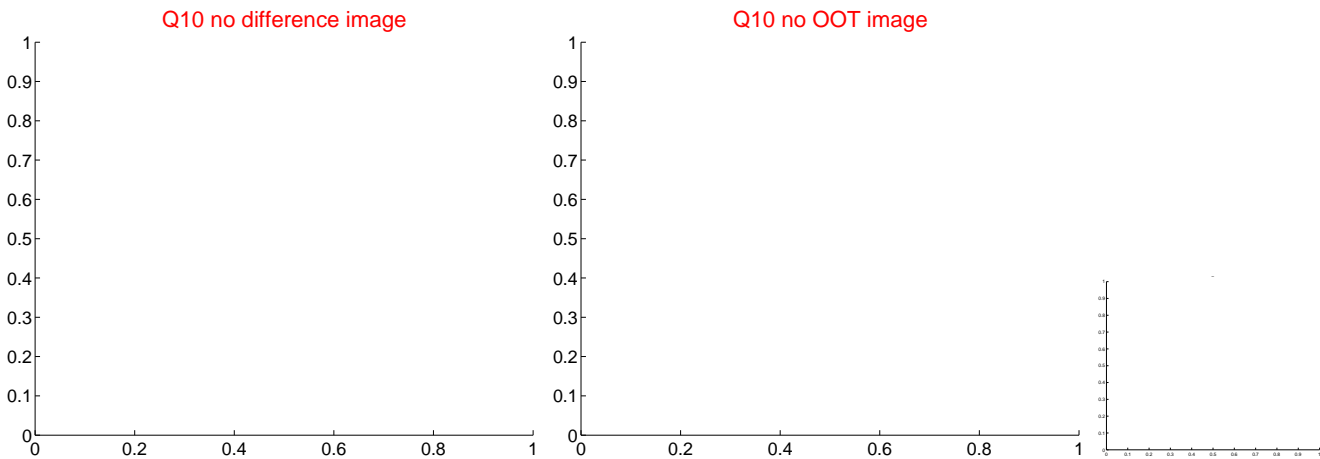
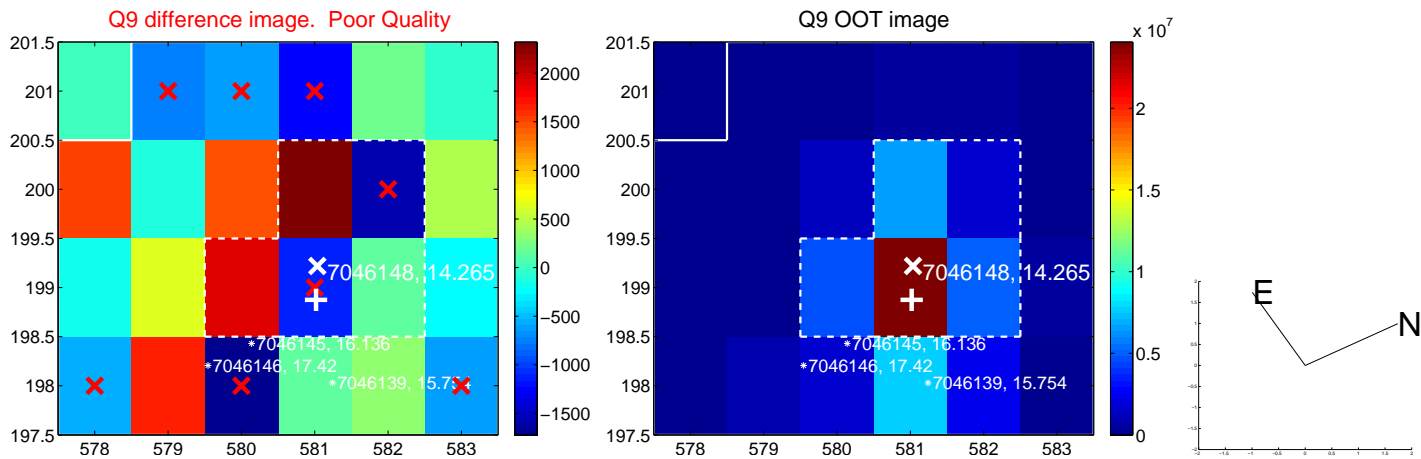
Q8 no difference image



Q8 no OOT image



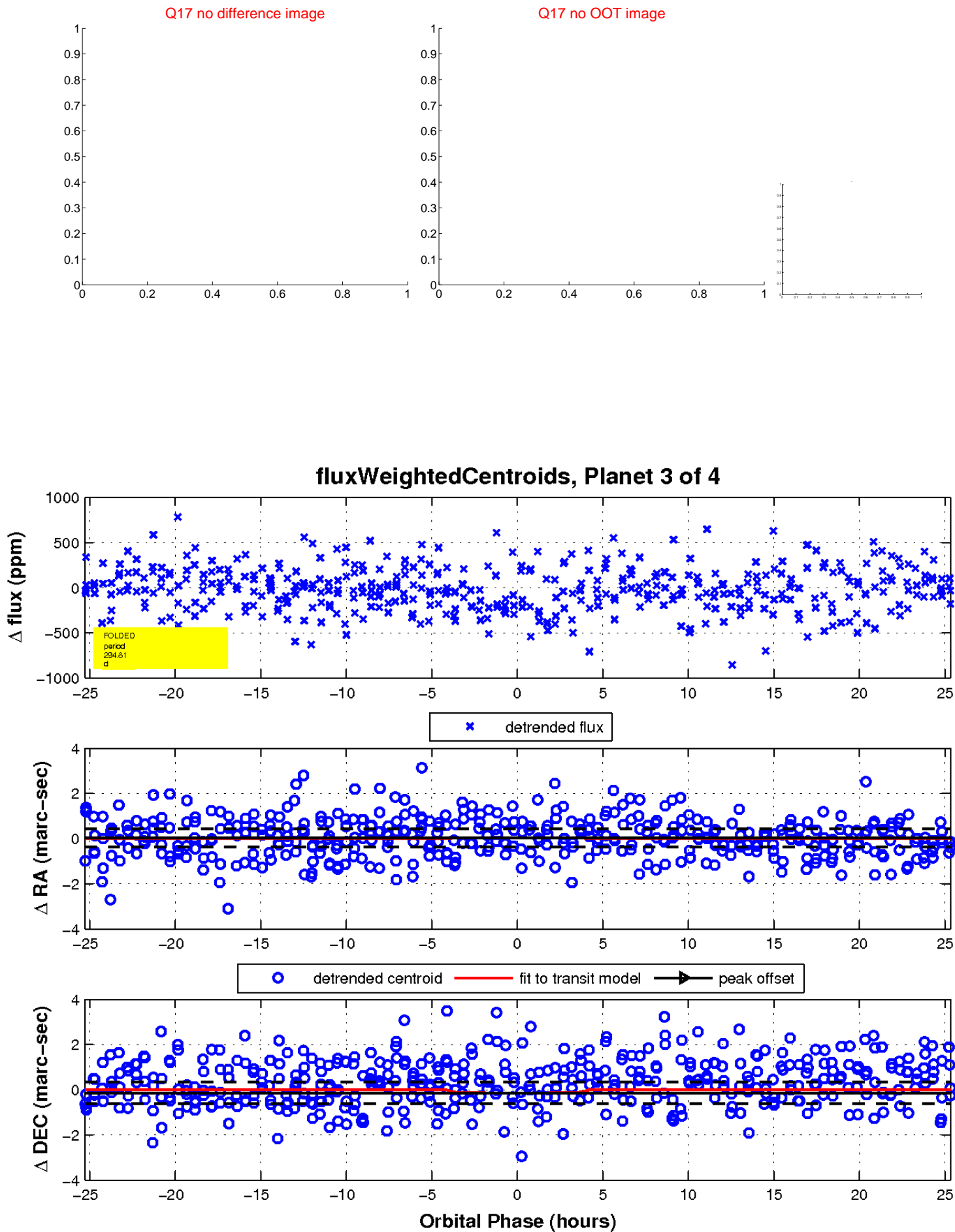
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

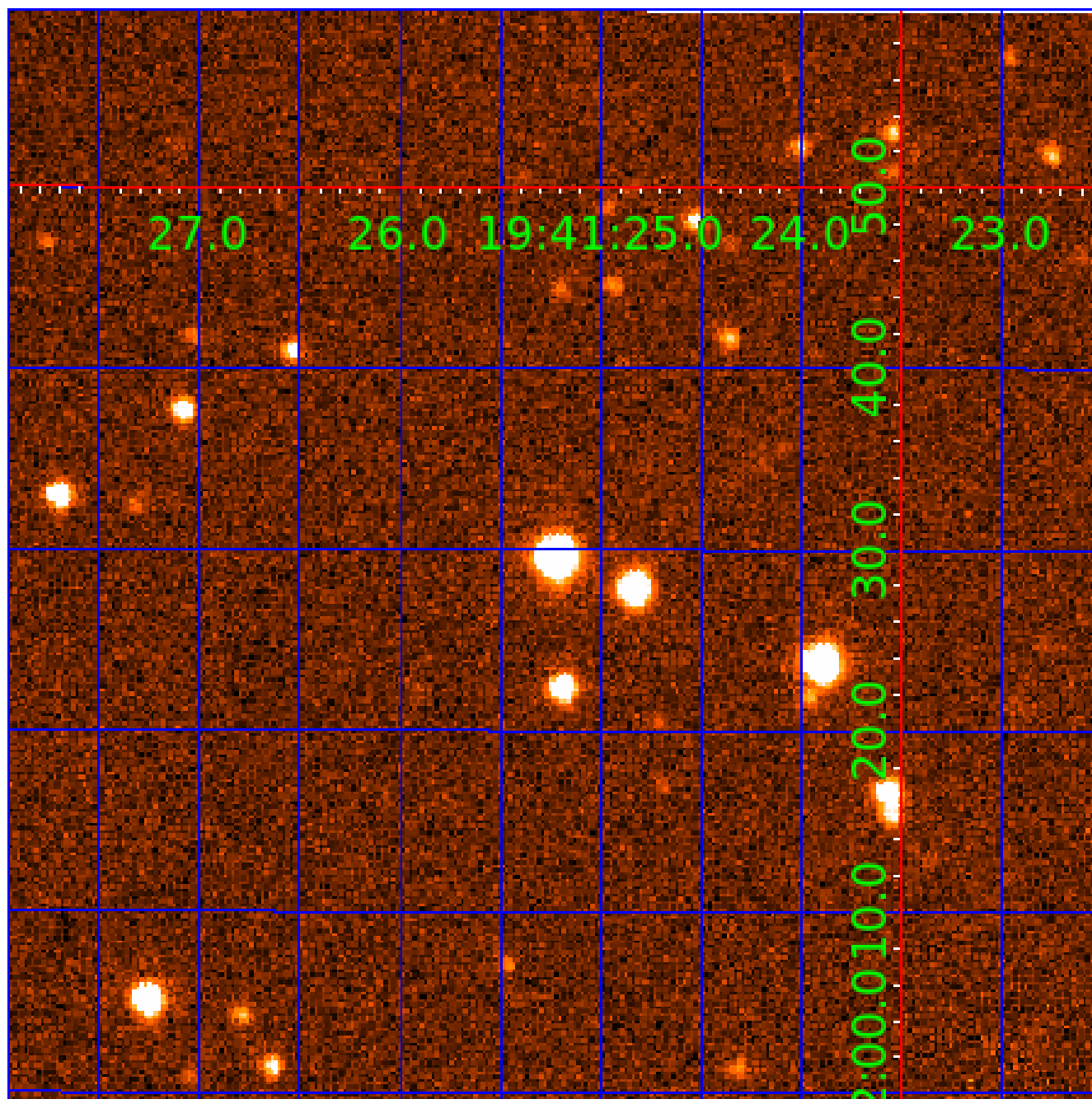


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007046148

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})
007046148-01	OBS	No	2.234666	131.670475	14.5	11.345	12.5	4.5	1.00	6628	0.39	1505.48
007046148-02	OBS	No	194.302393	204.515208	267.4	4.115	7.6	7.5	1.00	6628	1.91	3.91
007046148-03	OBS	No	294.814364	292.029832	389.6	8.494	12.3	8.2	1.00	6628	2.20	2.24
007046148-04	OBS	No	155.744119	145.301346	331.3	3.861	7.4	7.3	1.00	6628	2.32	5.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007046148-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007046148-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
007046148-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007046148-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—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.

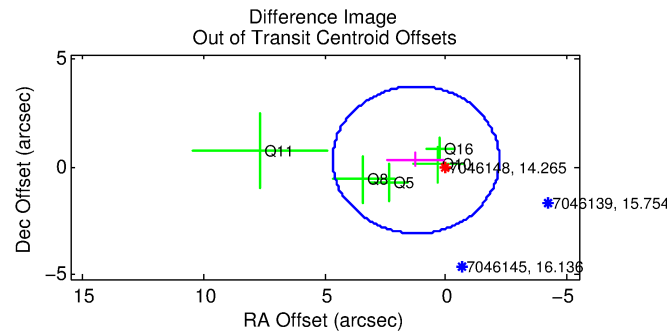
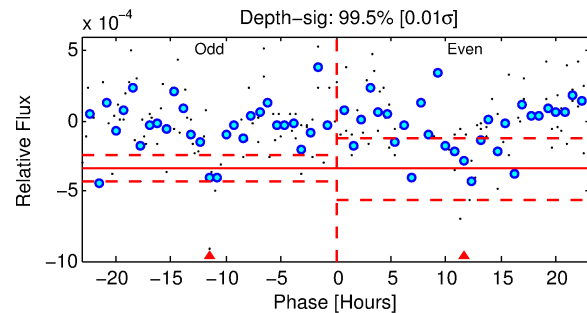
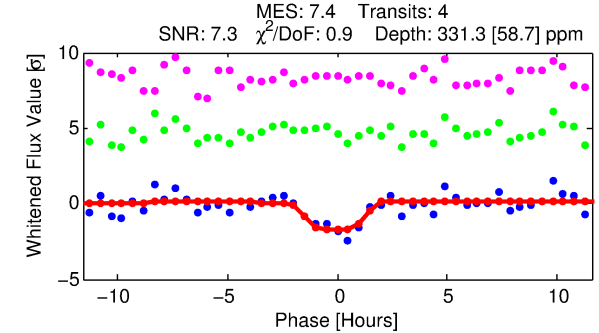
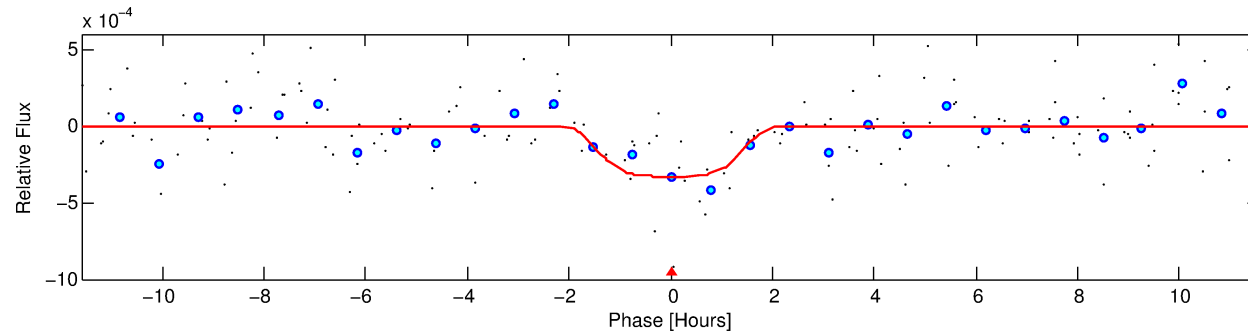
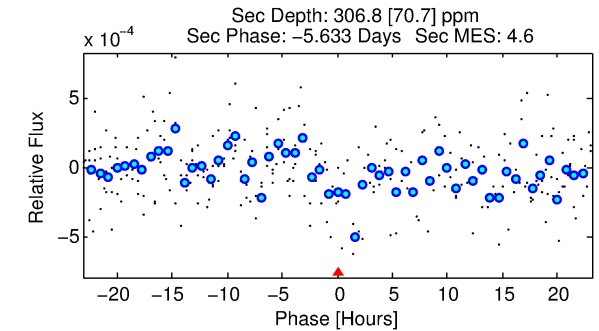
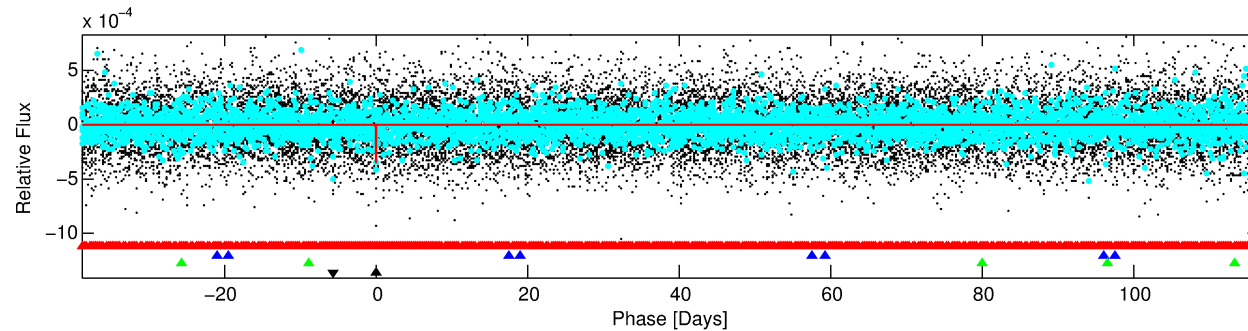
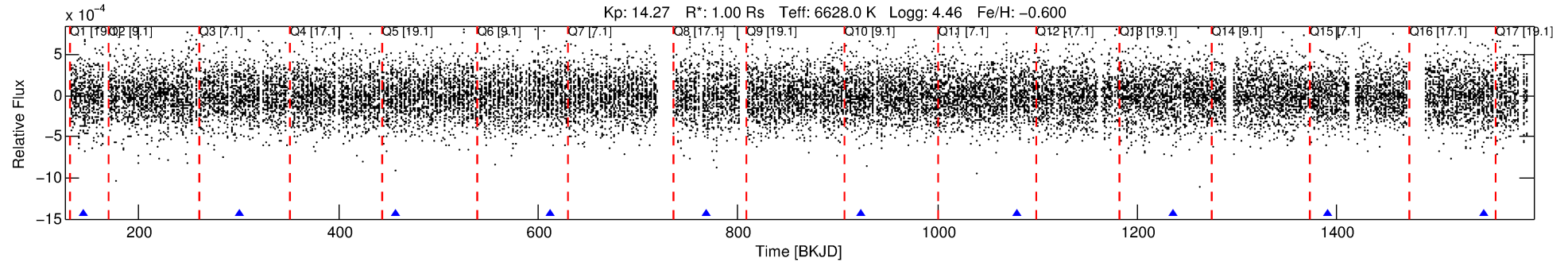
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007046148-04

No Significant Match Found

DV One-Page Summary

KIC: 7046148 Candidate: 4 of 4 Period: 155.744 d



DV Fit Results:

Period = 155.74412 [0.00263] d
Epoch = 145.3013 [0.0169] BKJD
Rp/R* = 0.0212 [0.0031]
a/R* = 101.60 [57.10]
b = 0.97 [0.04]
Seff = 5.25 [1.91]
Teq = 386 [35] K
Rp = 2.32 [0.71] Re
a = 0.5757 [0.1326] AU
Ag = 10405.68 [5266.35] [1.98σ]
Teffp = 6027 [599] K [9.41σ]

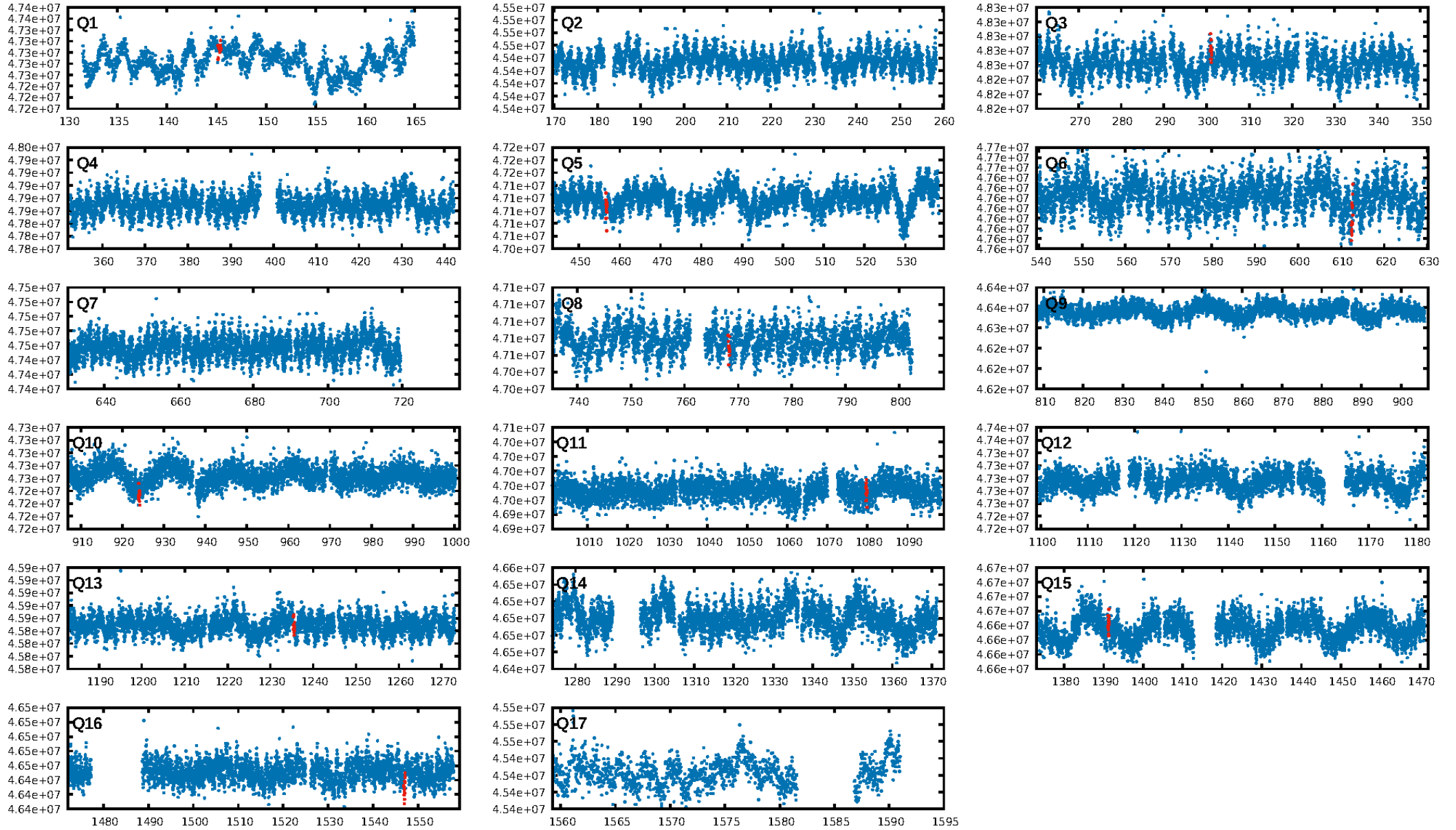
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [307.42σ]
LongPeriod-sig: 100.0% [163.99σ]
ModelChiSquare2-sig: 31.0%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 9.39e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -5.105
Centroid-sig: 2.4%
Centroid-so: 1.677 arcsec [1.44σ]
OotOffset-rm: 1.270 arcsec [1.11σ]
KicOffset-rm: 0.836 arcsec [1.07σ]
OotOffset-st: 1/1/2/1 [5]
KicOffset-st: 1/1/2/1 [5]
DiffImageQuality-fgm: 0.60 [3/5]
DiffImageOverlap-fno: 0.40 [4/10]

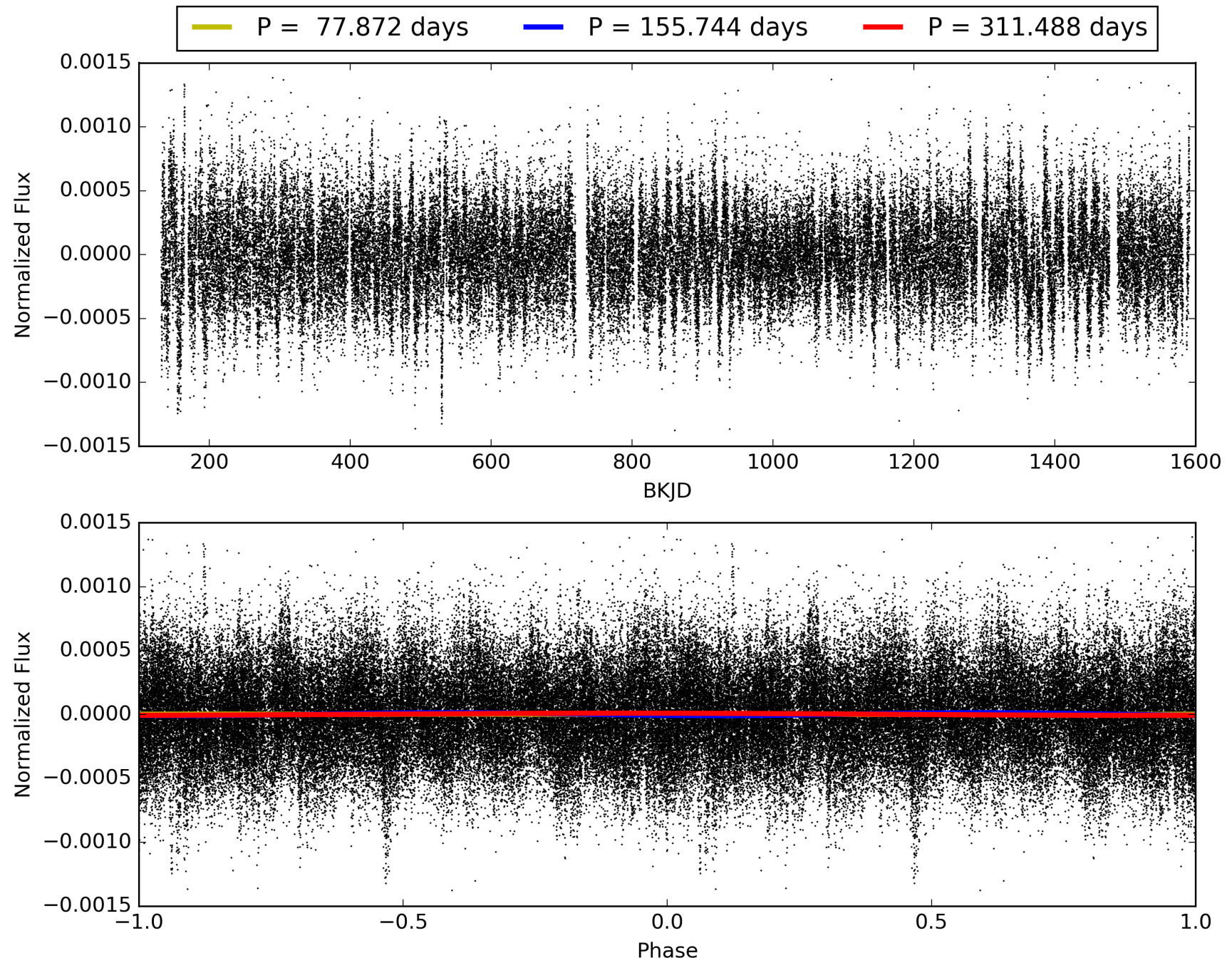
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:49:22 Z

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

TCE 007046148-04, PDC Light Curves

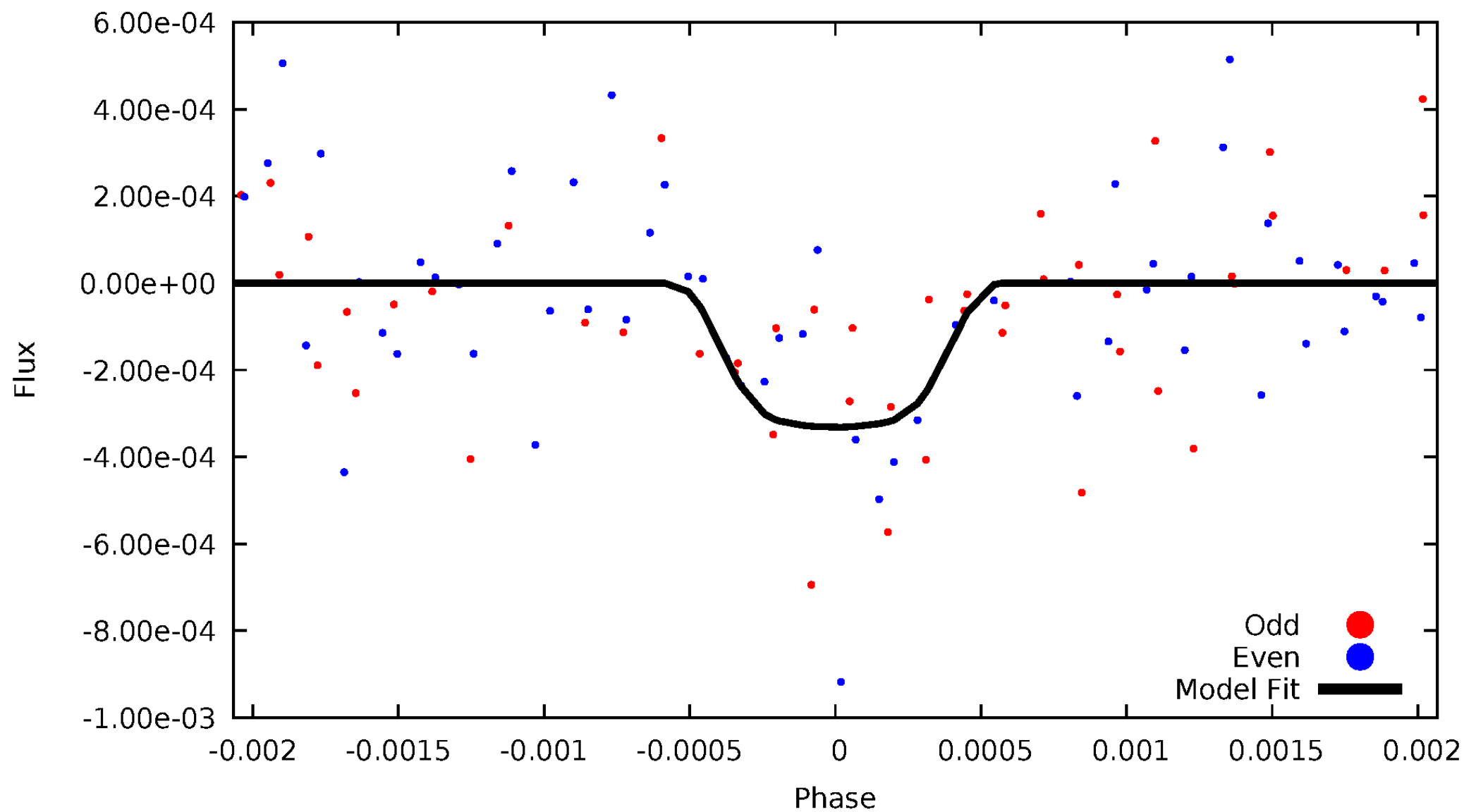


TCE 007046148-04



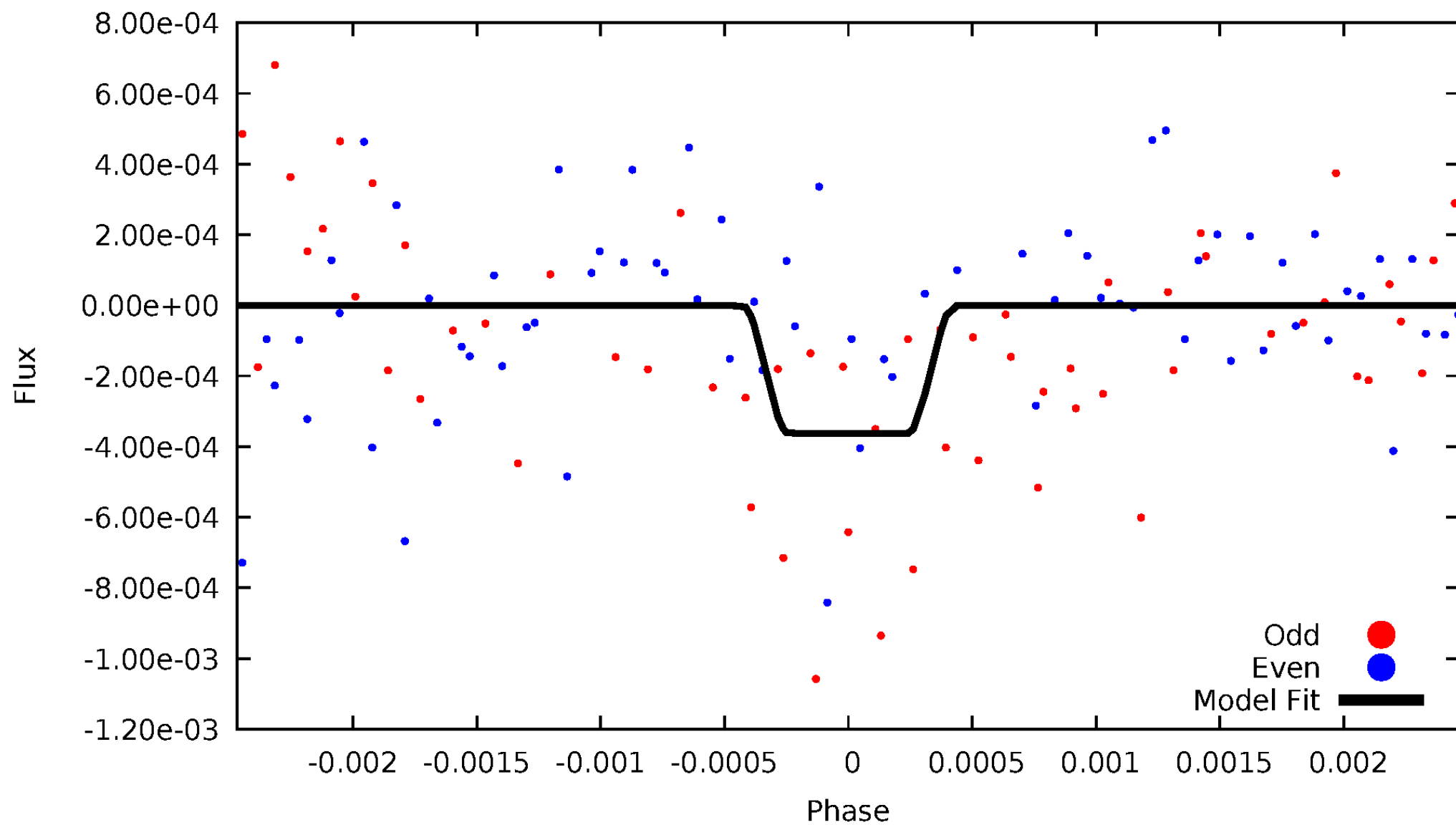
DV Odd/Even

TCE 007046148-04



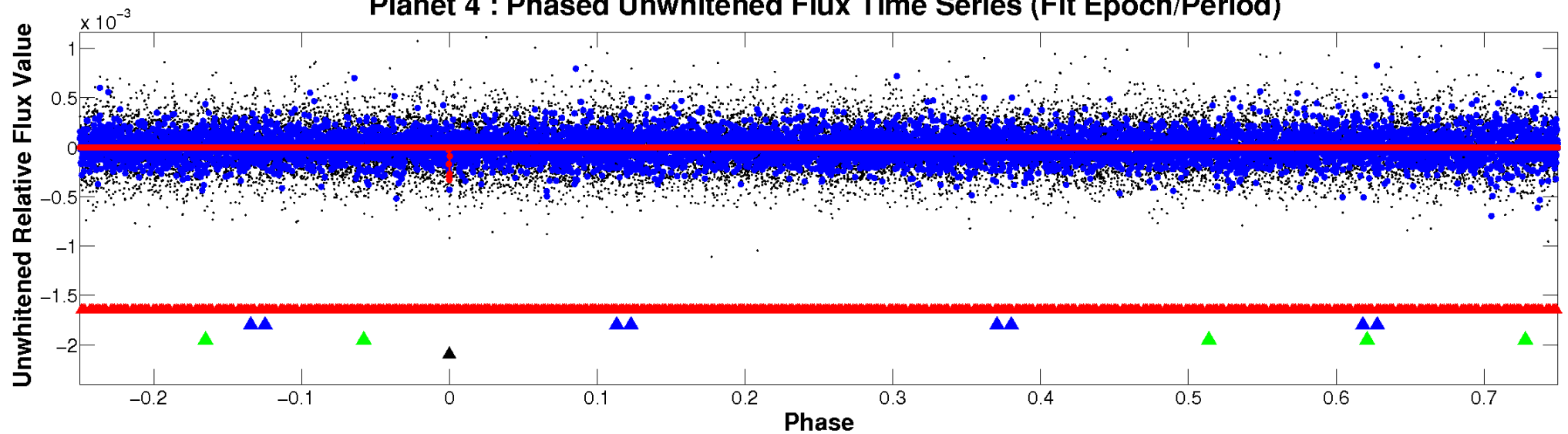
ALT Odd/Even

TCE 007046148-04

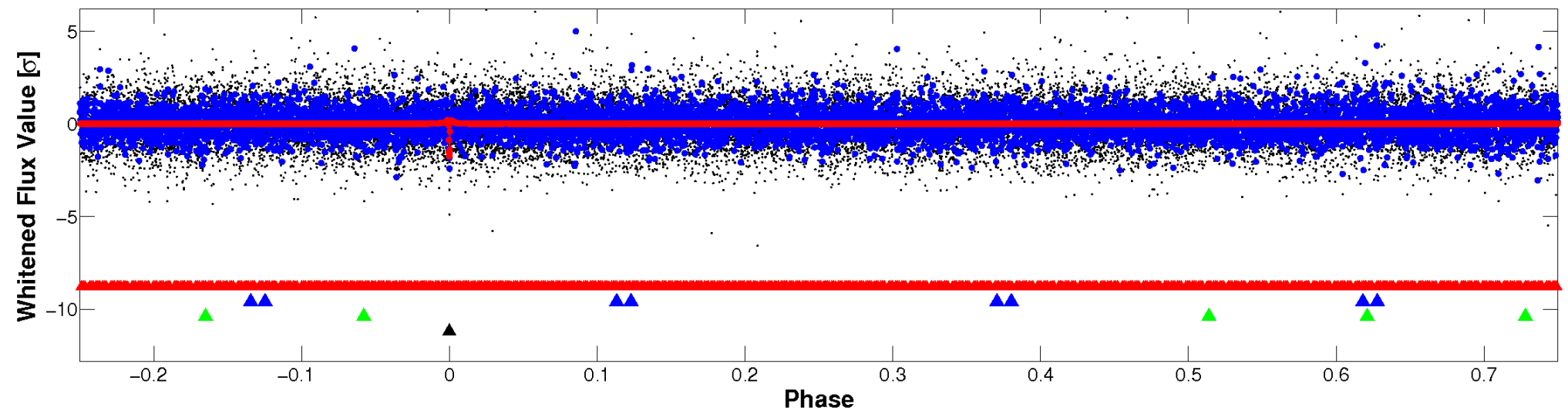


Non-Whitened Vs. Whitened Light Curve

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

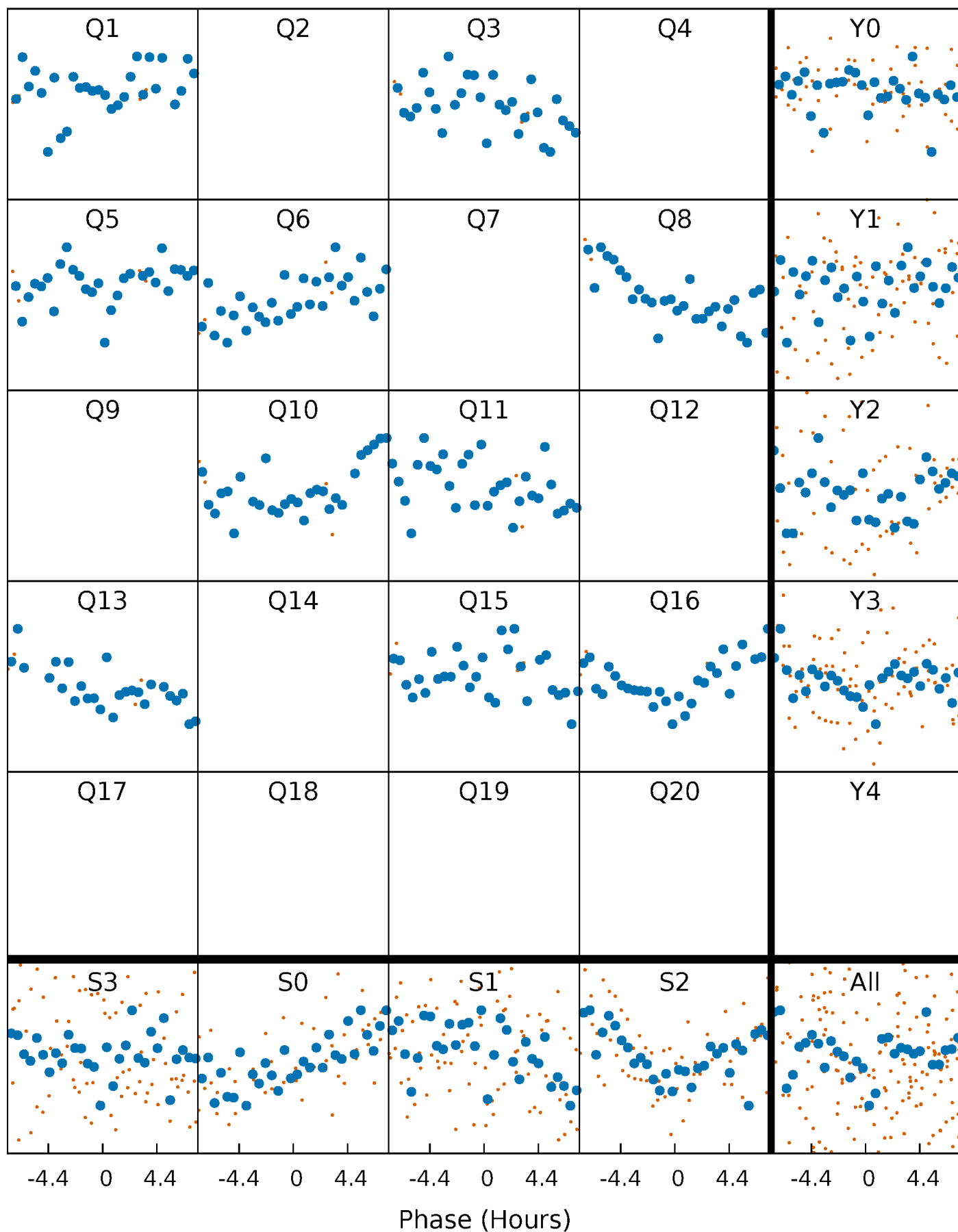


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



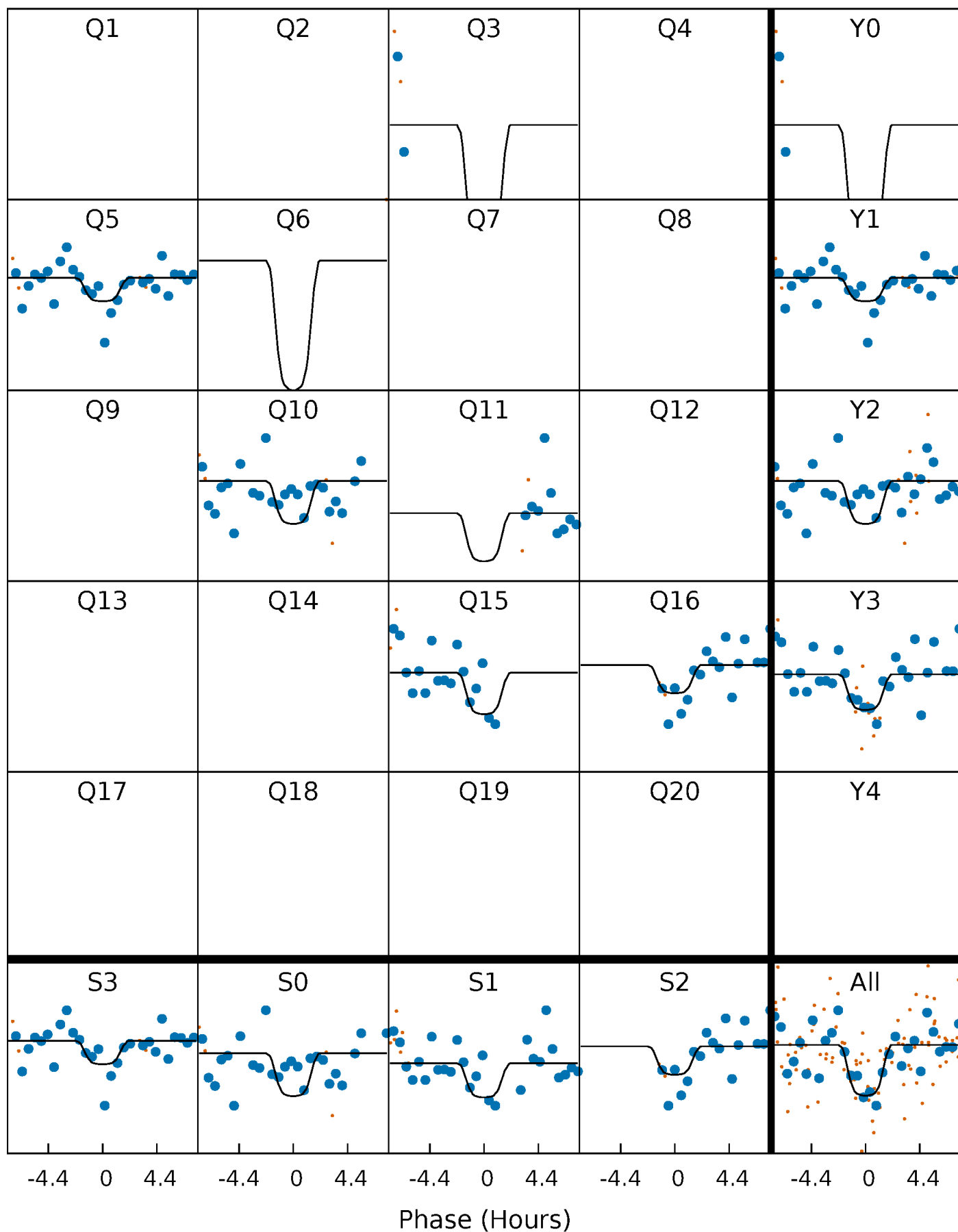
PDC Quarter-Phased Transit Curves

TCE 007046148-04 P=155.744120 Days $T_0=145.301346$ (BKJD)



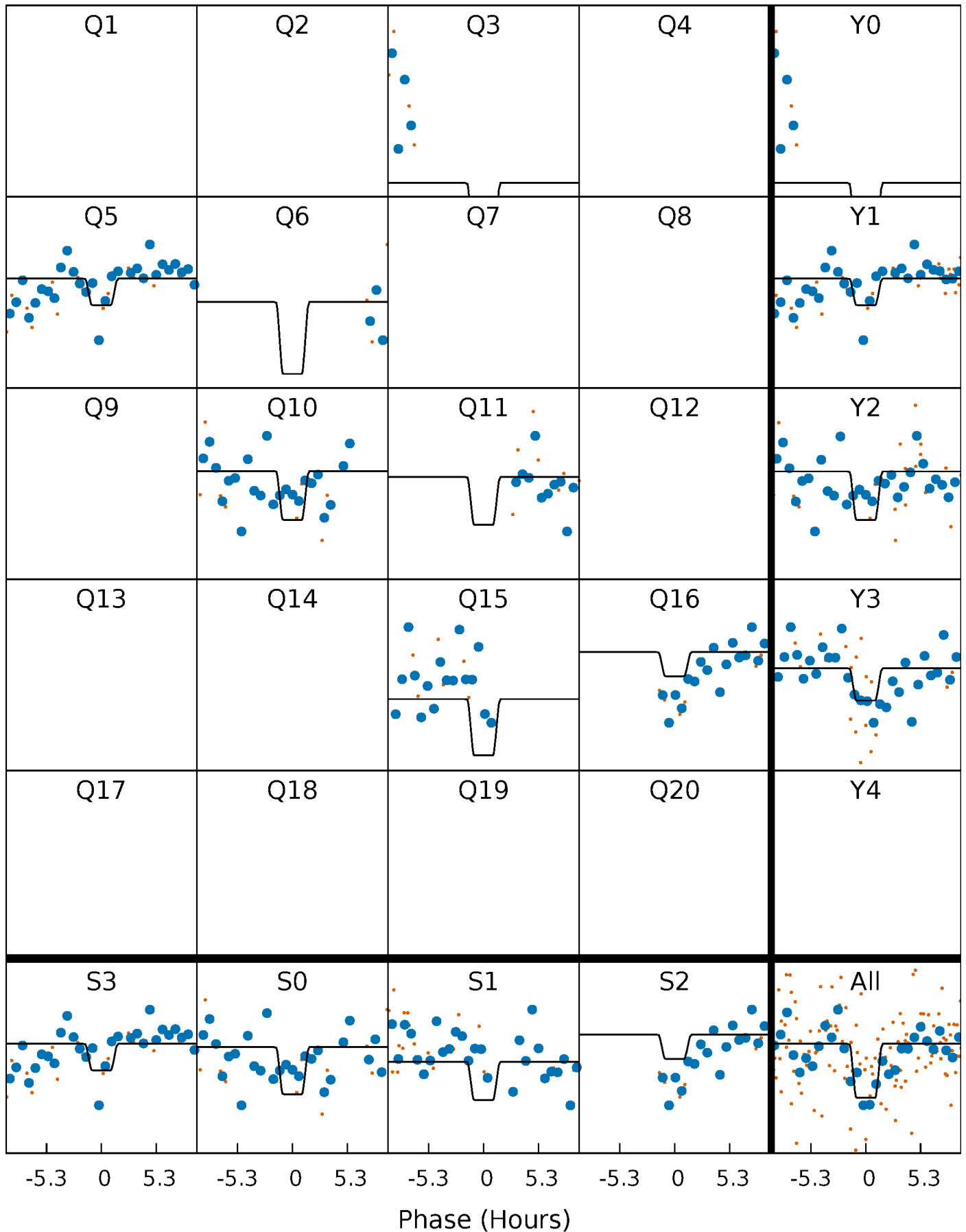
DV Quarter-Phased Transit Curves

TCE 007046148-04 P=155.744120 Days $T_0=145.301346$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

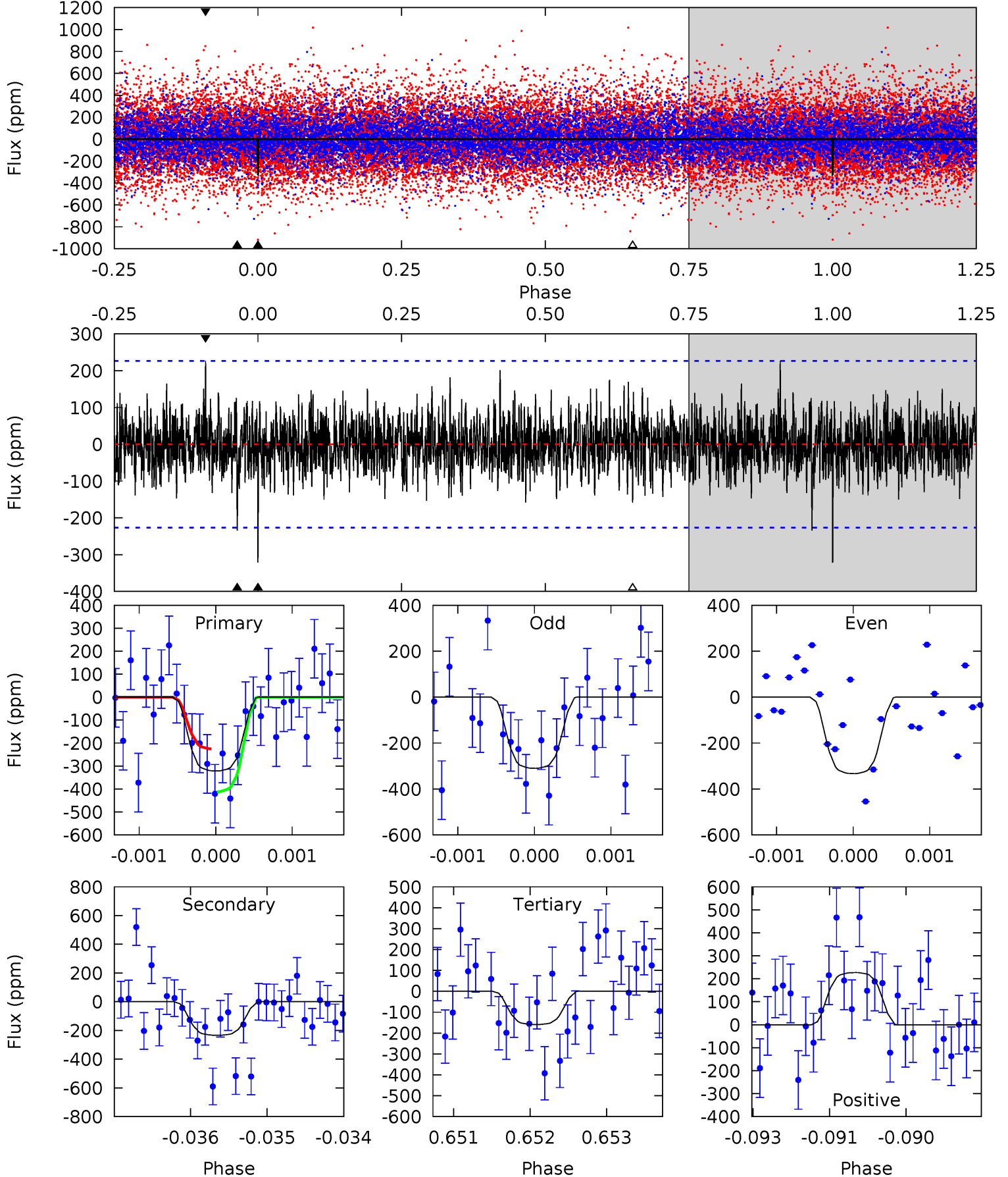
TCE 007046148-04 P=155.742884 Days $T_0=145.320065$ (BKJD)



DV Model-Shift Uniqueness Test

007046148-04, P = 155.744120 Days, E = 145.301346 Days

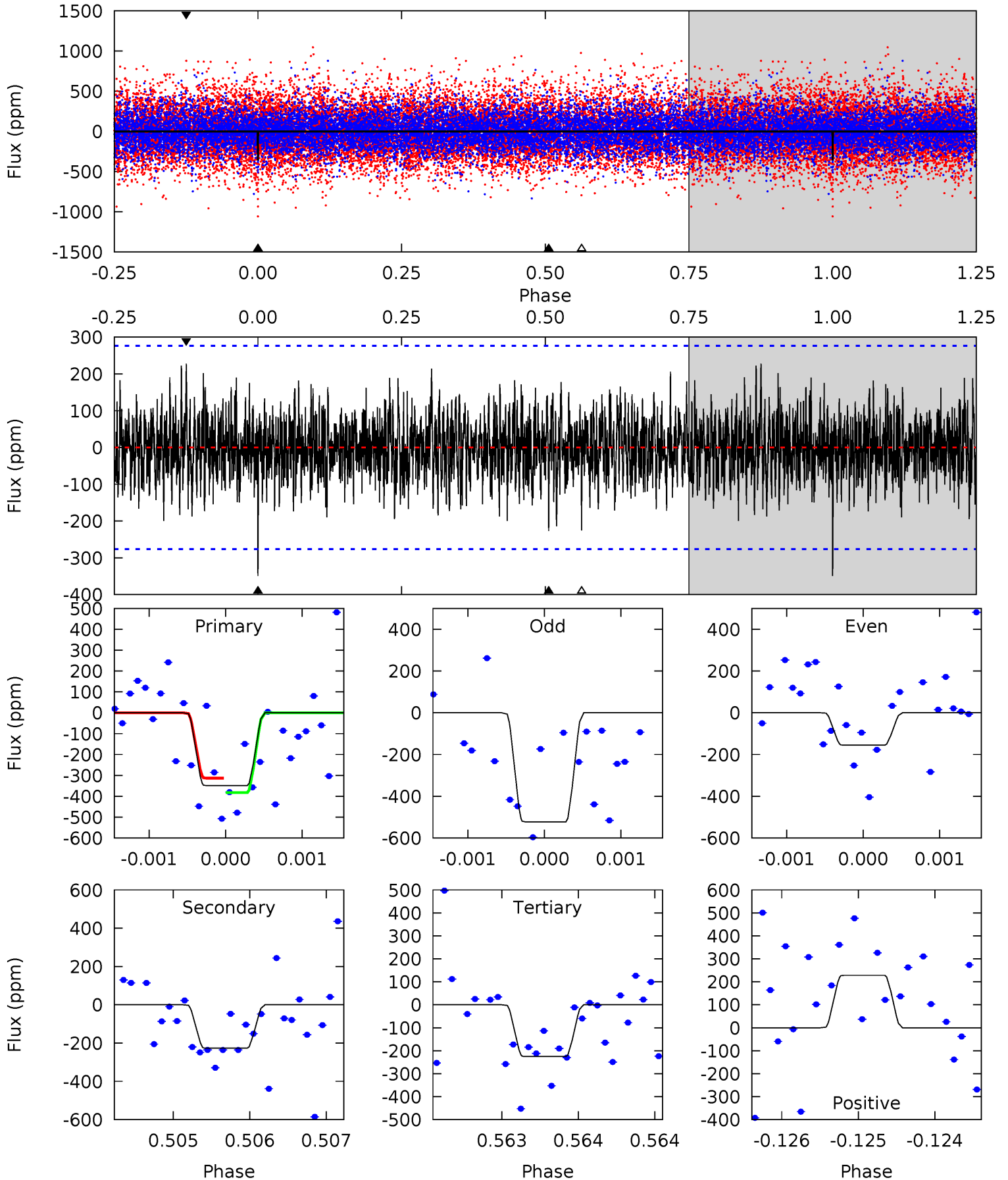
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.73	5.62	3.82	5.45	5.44	3.28	1.31	3.90	2.27	1.79	0.16	0.28	0.97	0.41	2.24



Alt Model-Shift Uniqueness Test

007046148-04, P = 155.742884 Days, E = 145.320065 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.92	4.49	4.47	4.52	5.48	3.33	1.30	2.45	2.40	0.03	-0.02	3.62	1.25	0.40	0.69



Stellar Parameters For KIC 007046148

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6628^{+177}_{-217}	$4.456^{+0.050}_{-0.188}$	$-0.600^{+0.300}_{-0.350}$	$1.003^{+0.270}_{-0.108}$	$1.049^{+0.124}_{-0.137}$	$1.463^{+0.361}_{-0.704}$
	+3%/-3%	+1%/-4%	+50%/-58%	+27%/-11%	+12%/-13%	+25%/-48%
Source	PHO1	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 007046148-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-234 ± 42	$2.43^{+0.47}_{-0.44}$	552^{+34}_{-28}	5635^{+535}_{-474}	7051^{+3580}_{-2420}
Alt.	-227 ± 50	$2.15^{+0.47}_{-0.39}$	550^{+35}_{-26}	5851^{+736}_{-545}	8488^{+5110}_{-2943}

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

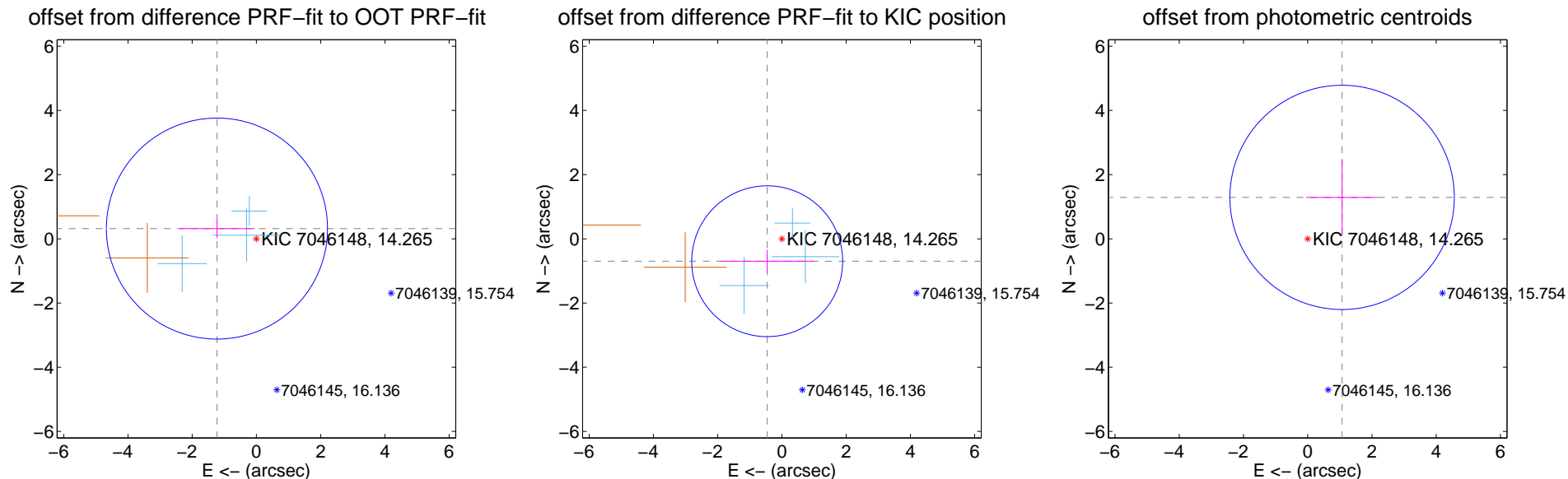
DV Centroid Data

Supplemental centroid analysis for 007046148-04. Kepler magnitude: 14.27. Transit SNR 7.26

There are 3 quarters with good PRF difference image offsets

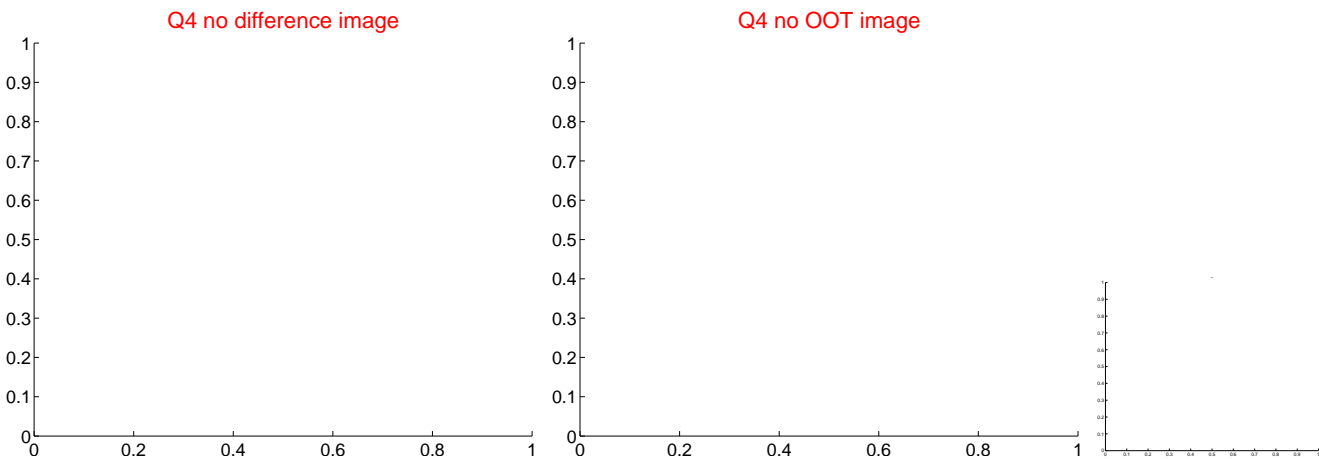
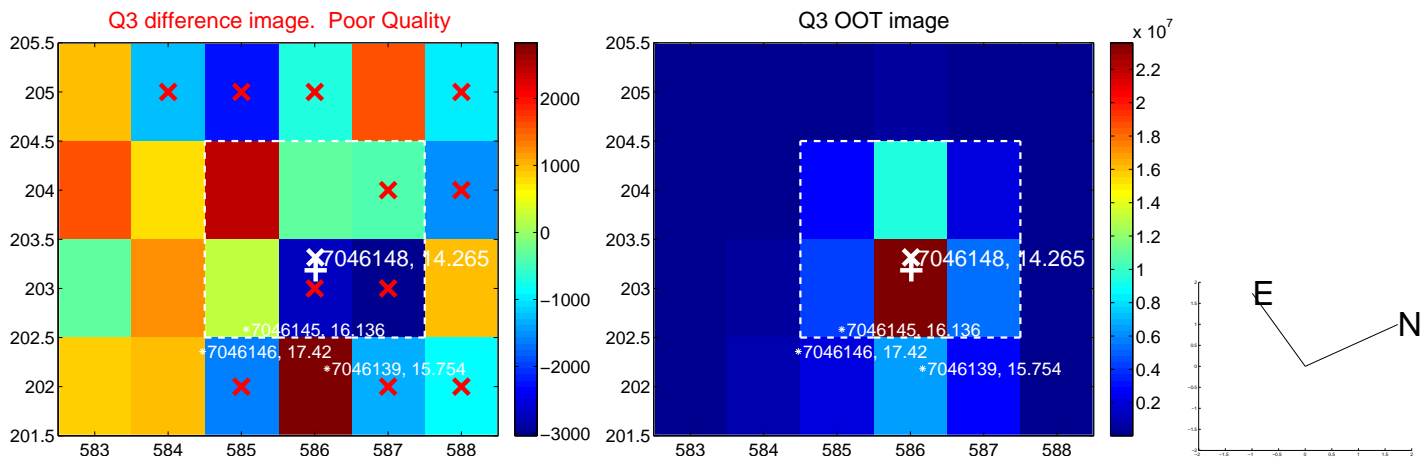
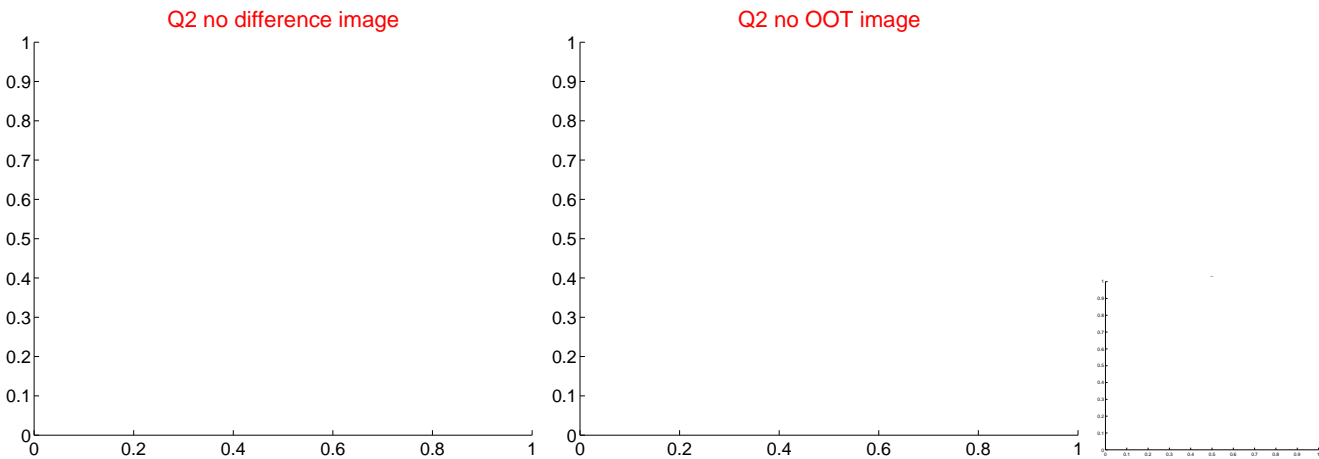
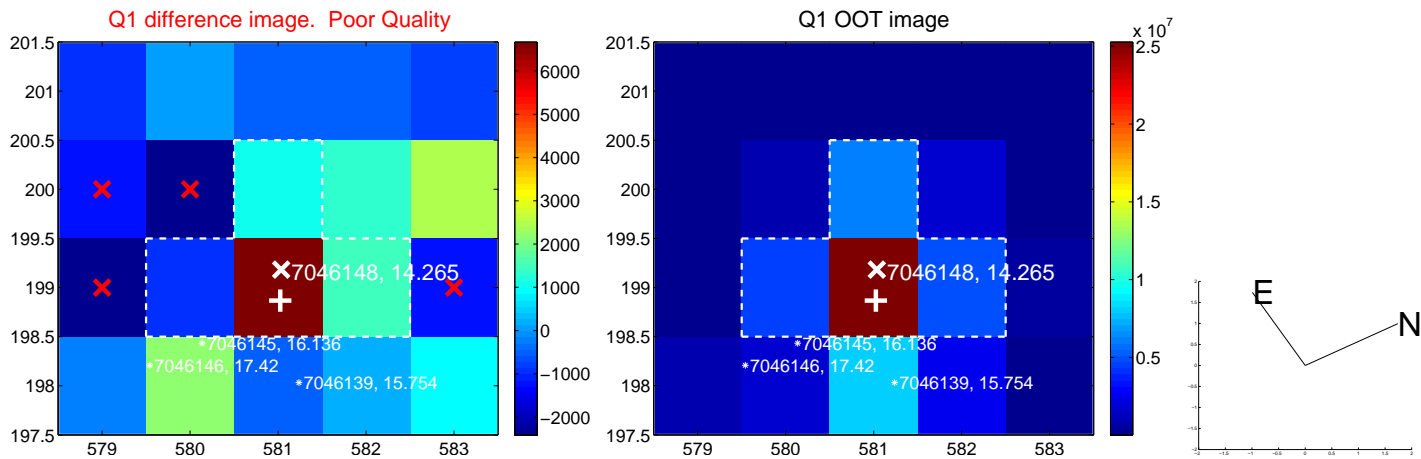
The direct PRF centroid is offset from the target star catalog position by about 0.66 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.270 ± 1.147	1.11	1.229 ± 1.168	0.319 ± 0.298
PRF-fit source offset from KIC position	0.836 ± 0.783	1.07	0.460 ± 1.443	-0.698 ± 0.357
photometric centroid source offset	1.68 ± 1.16	1.44	-1.07 ± 1.11	1.29 ± 1.20

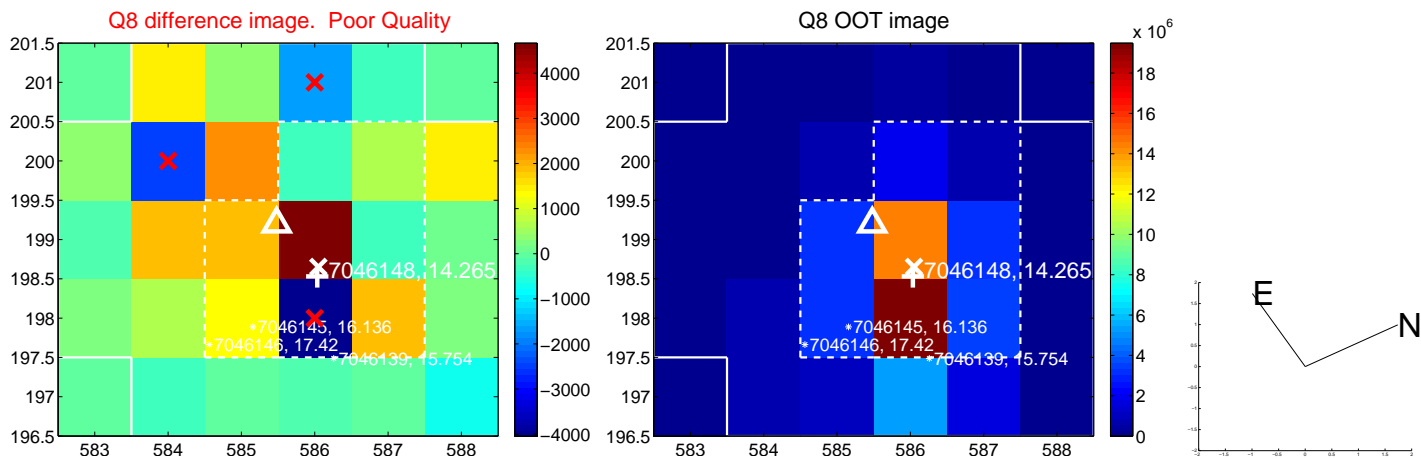
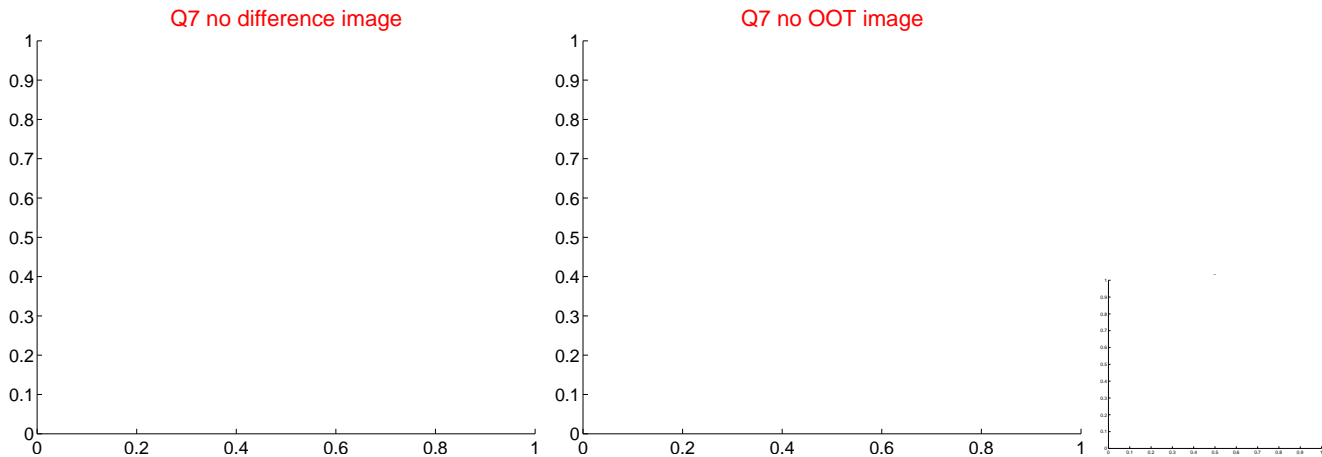
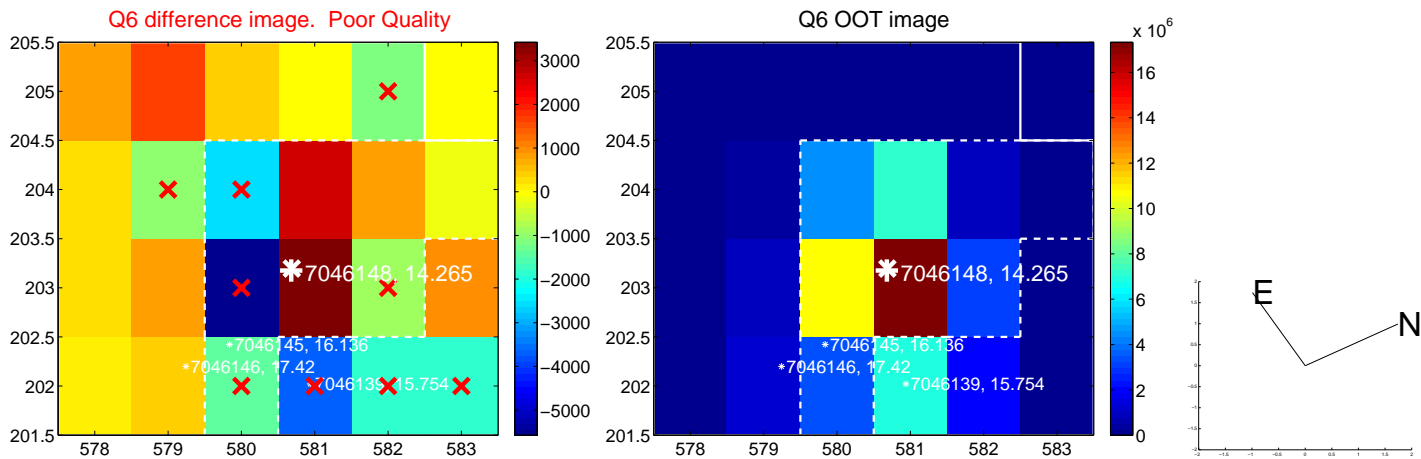
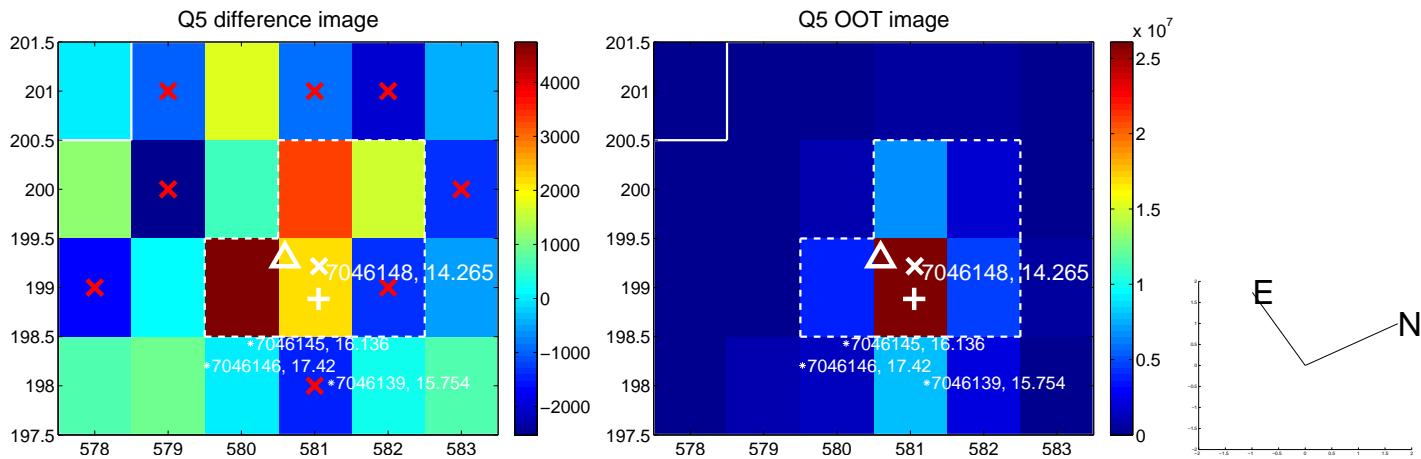


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

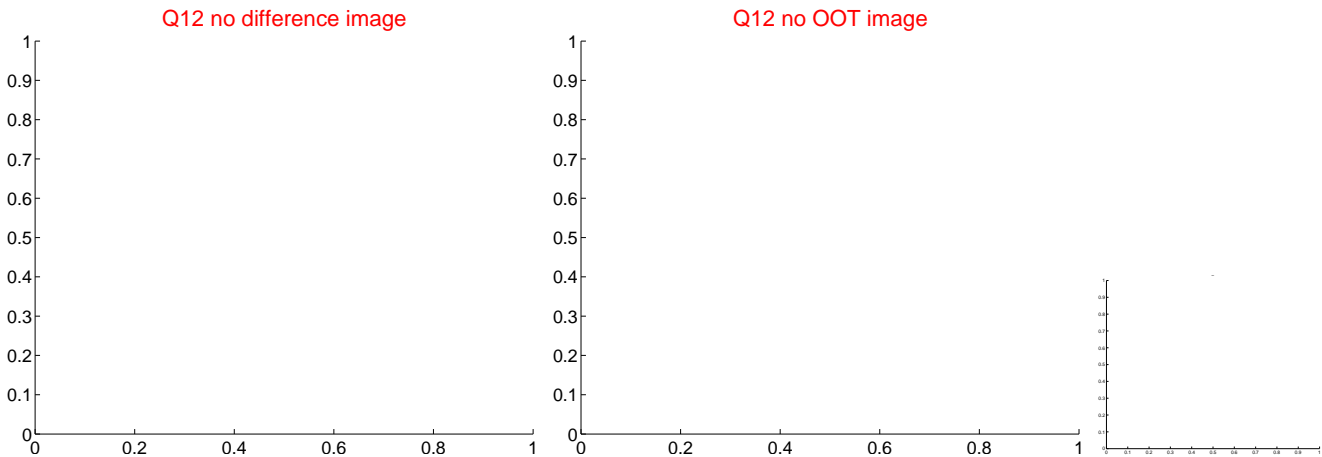
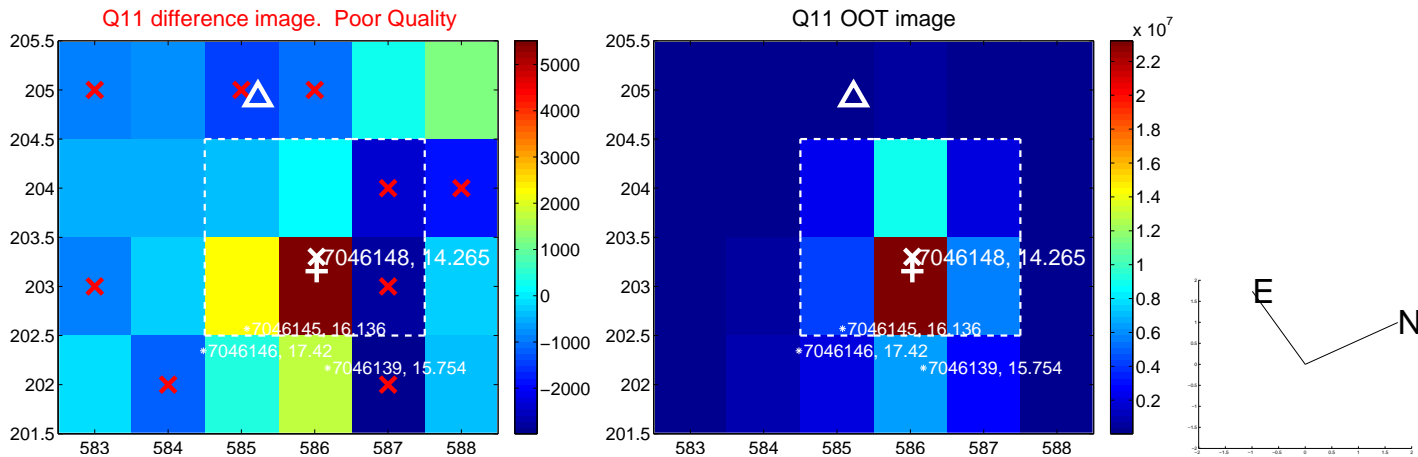
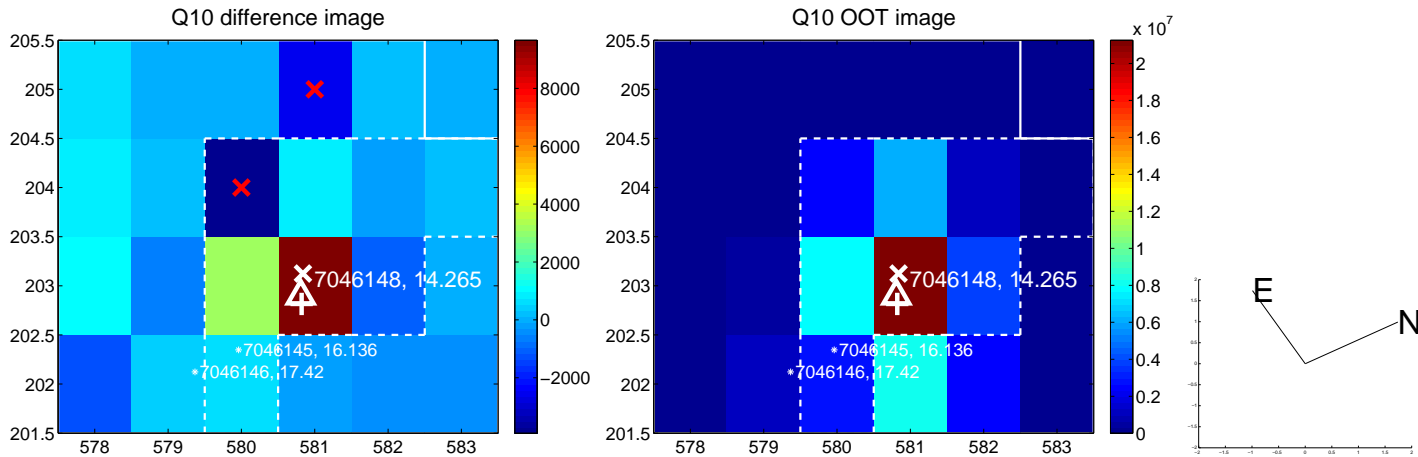
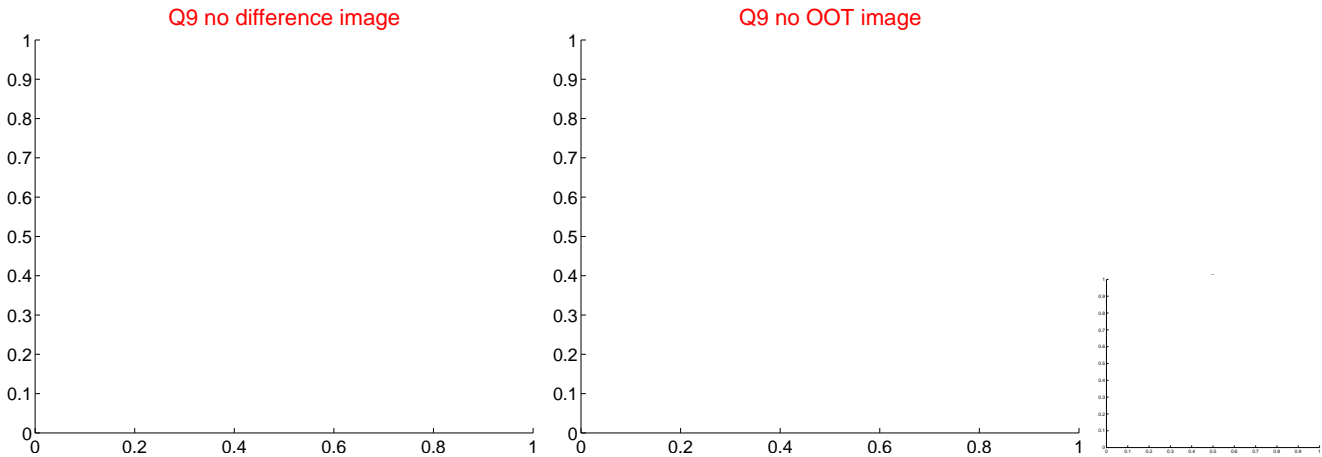
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



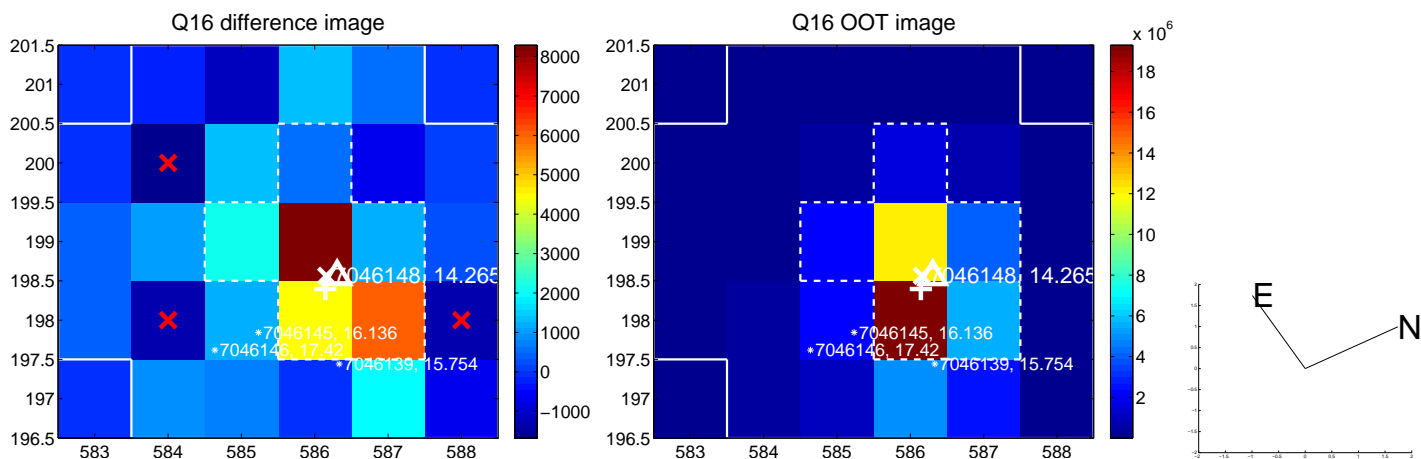
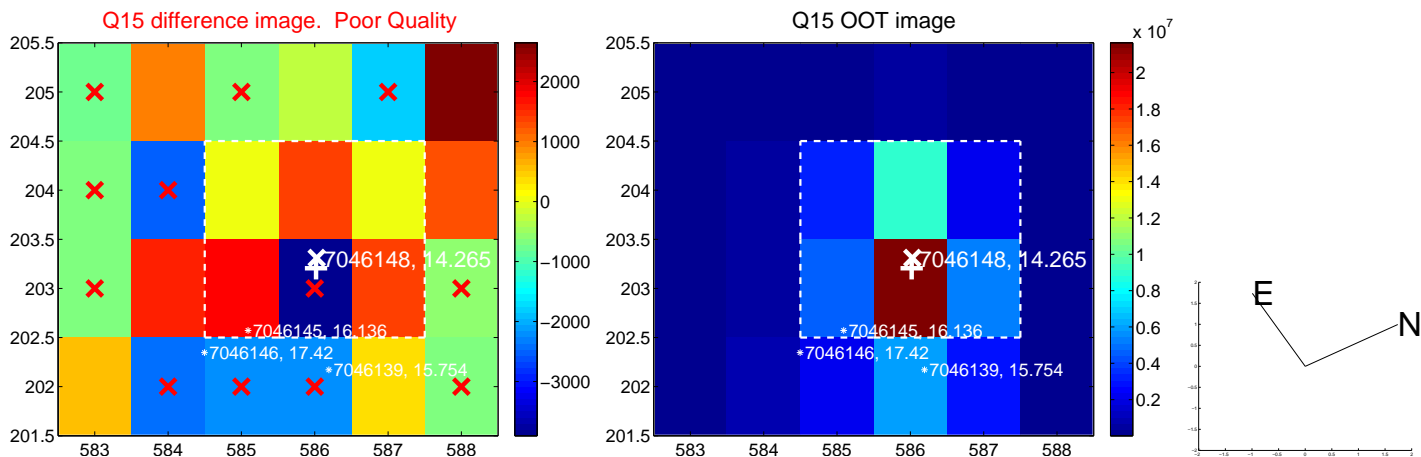
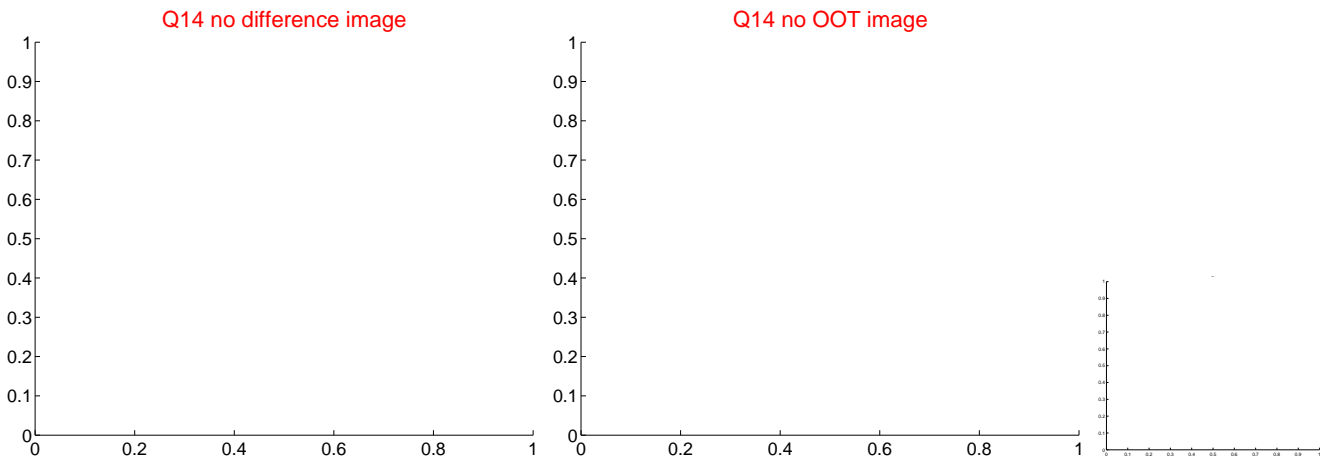
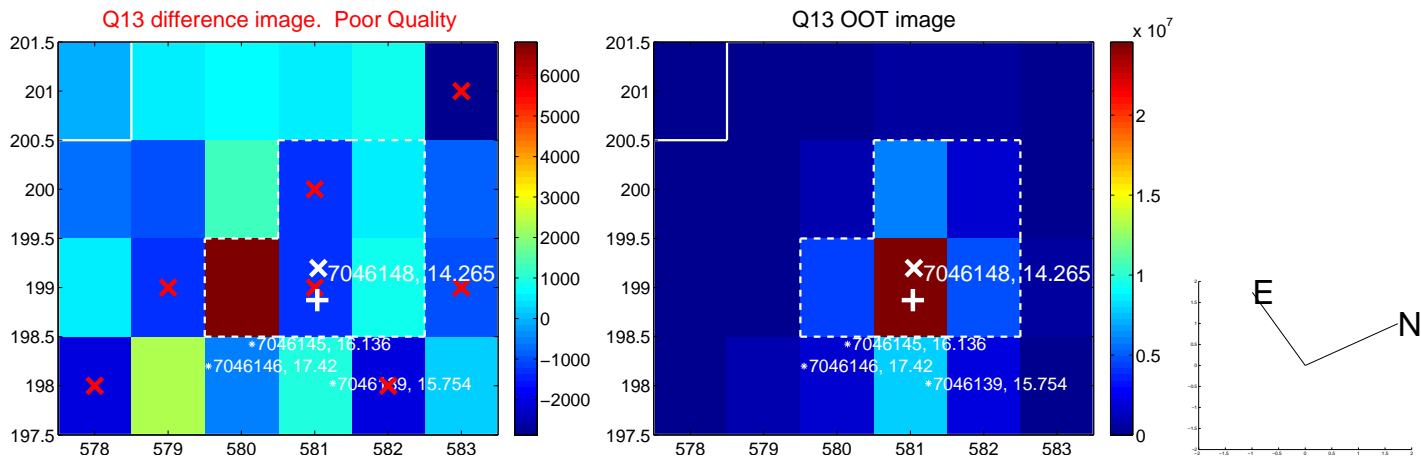
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



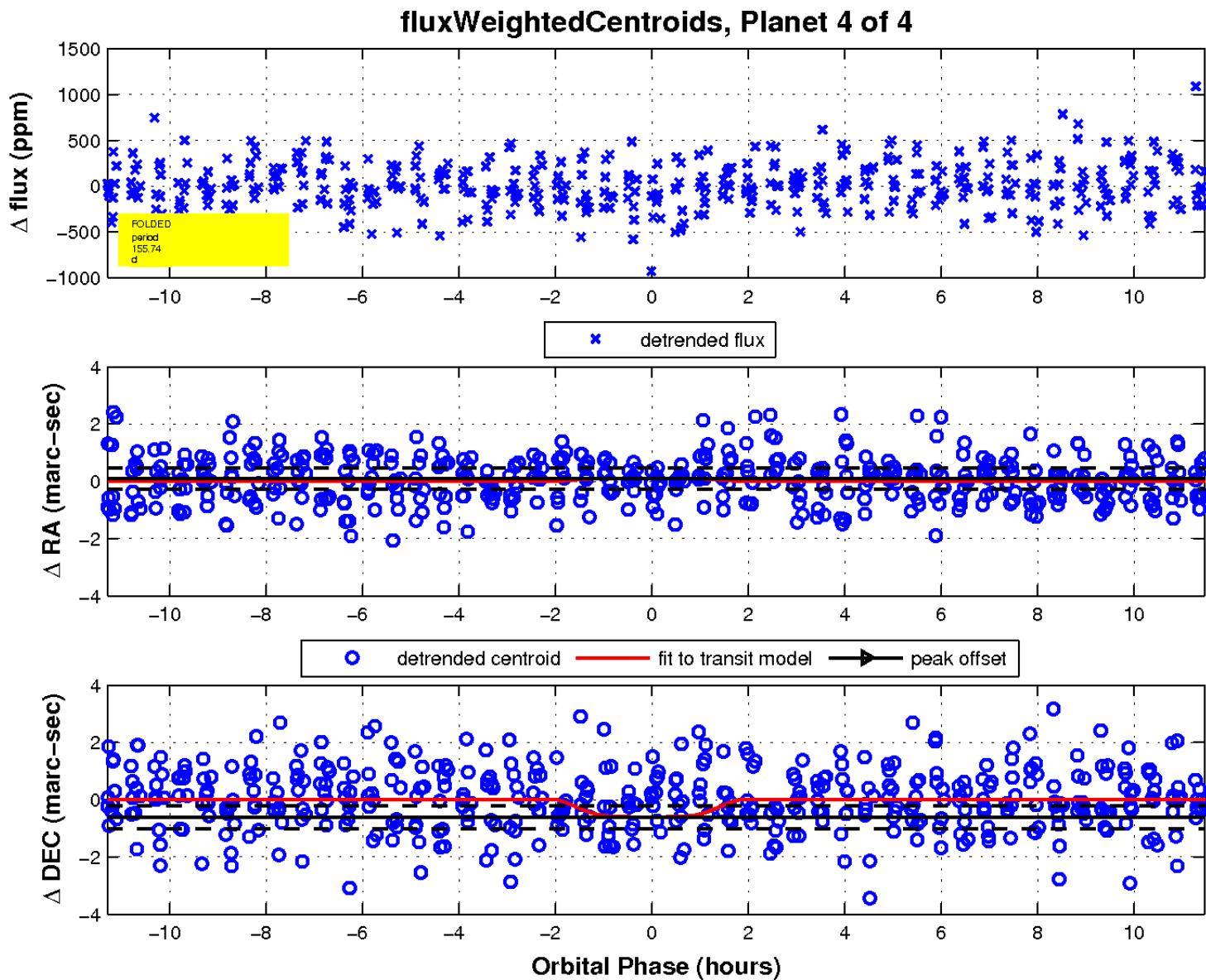
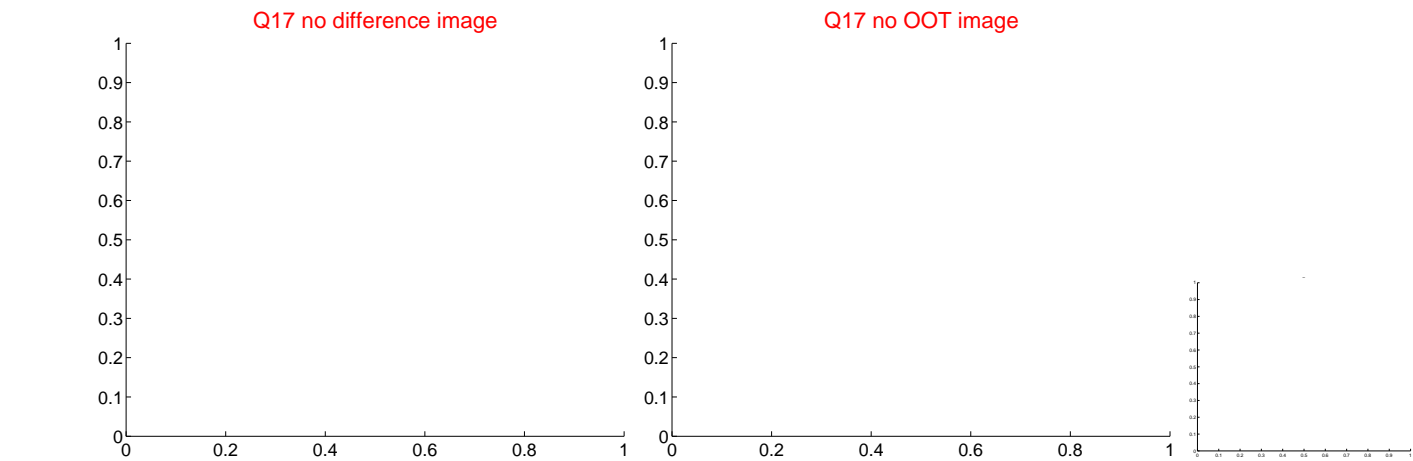
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

