

KIC 011457224

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})
011457224-01	OBS	No	0.633973	132.084866	7.9	4.457	8.8	4.6	0.92	5375	0.25	3308.09
011457224-02	OBS	No	31.685499	155.249415	421.4	1.818	13.2	8.2	0.92	5375	1.91	17.97
011457224-03	OBS	No	29.156067	159.683864	322.6	2.204	12.7	9.6	0.92	5375	1.75	20.08
011457224-04	OBS	No	31.067348	157.130239	216.3	2.945	10.4	6.6	0.92	5375	2.11	18.45
011457224-05	OBS	No	46.259487	147.022600	519.3	2.482	11.1	10.4	0.92	5375	2.19	10.85
011457224-06	OBS	No	9.818013	131.783275	184.3	1.786	9.9	8.6	0.92	5375	1.50	85.70
011457224-07	OBS	No	46.300127	146.318034	552.2	2.206	9.7	8.6	0.92	5375	3.93	10.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011457224-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_DIFFS
011457224-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011457224-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS—HALO_GHOST
011457224-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011457224-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011457224-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
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Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

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

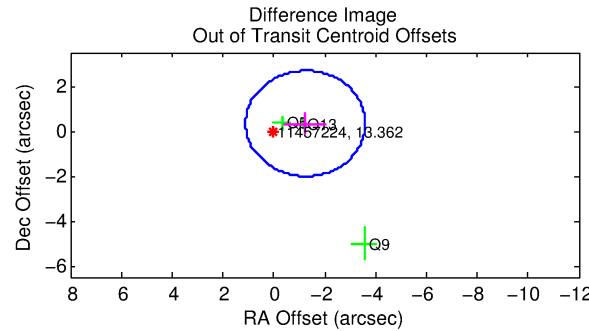
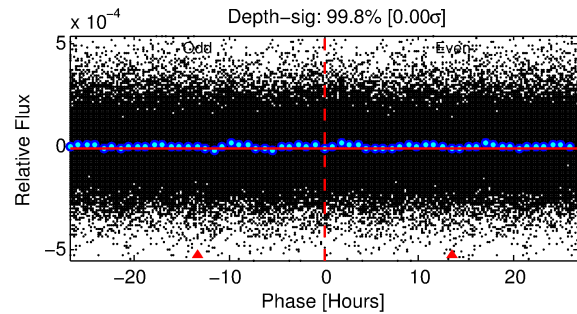
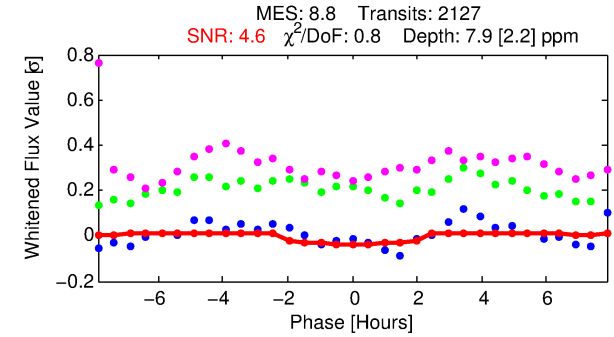
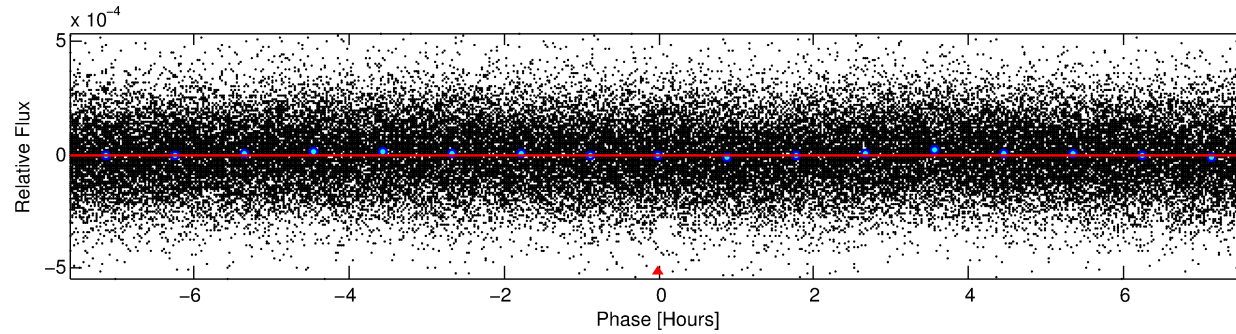
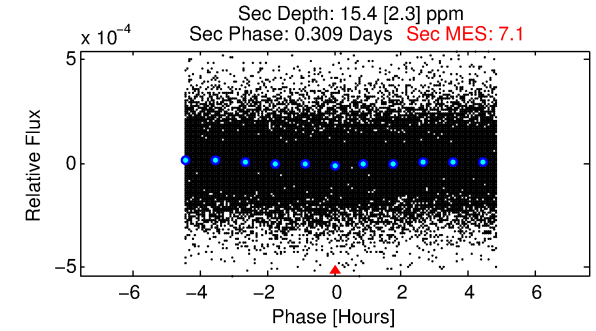
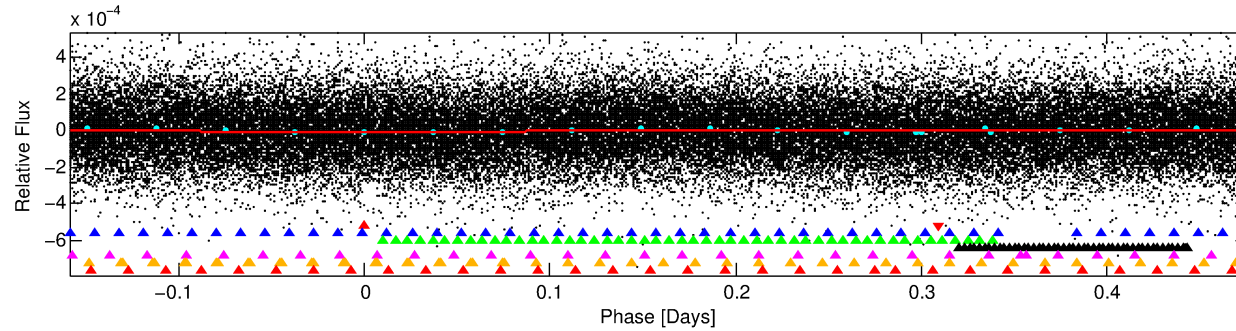
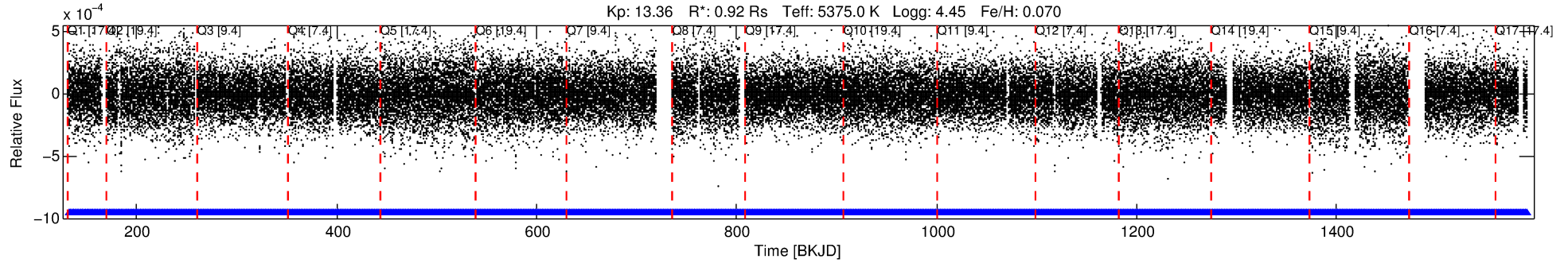
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011457224-01

No Significant Match Found

DV One-Page Summary

KIC: 11457224 Candidate: 1 of 7 Period: 0.634 d



DV Fit Results:

Period = 0.63397 [0.00002] d
Epoch = 132.0849 [0.0086] BKJD
Rp/R* = 0.0025 [0.0043]
a/R* = 1.24 [2.81]
b = 0.29 [20.91]
Seff = 3308.09 [982.30]
Teq = 1934 [144] K
Rp = 0.25 [0.43] Re
a = 0.0138 [0.0025] AU
Ag = 24.93 [84.86] [0.28σ]
Teffp = 6681 [5671] K [0.84σ]

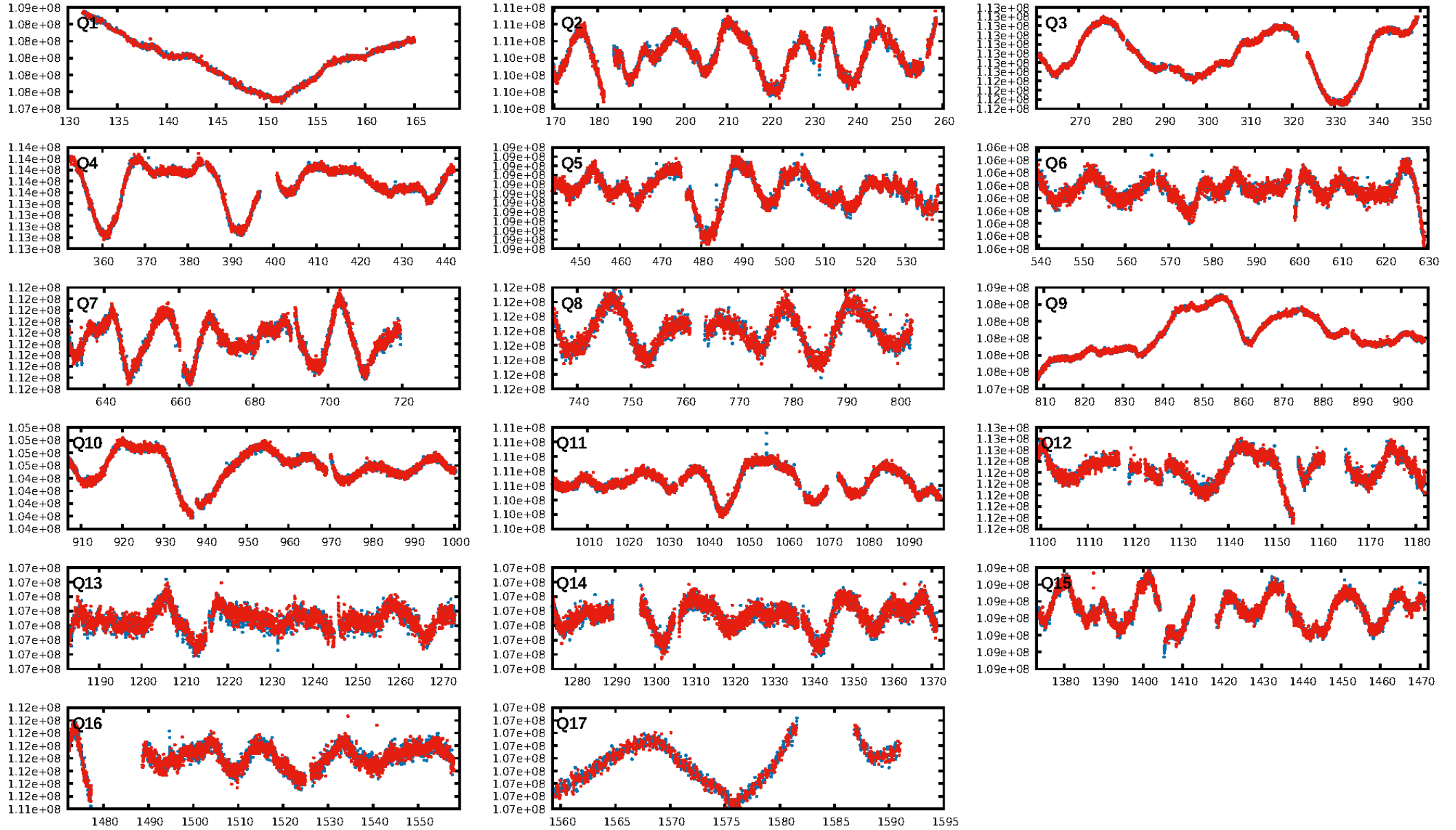
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [45.91σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2030/2030]
GhostDiagnostic-chr: 1.057
Centroid-sig: 44.9%
Centroid-so: 1.072 arcsec [0.66σ]
OotOffset-rm: 1.286 arcsec [1.64σ]
KicOffset-rm: 1.224 arcsec [1.57σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [17/17]

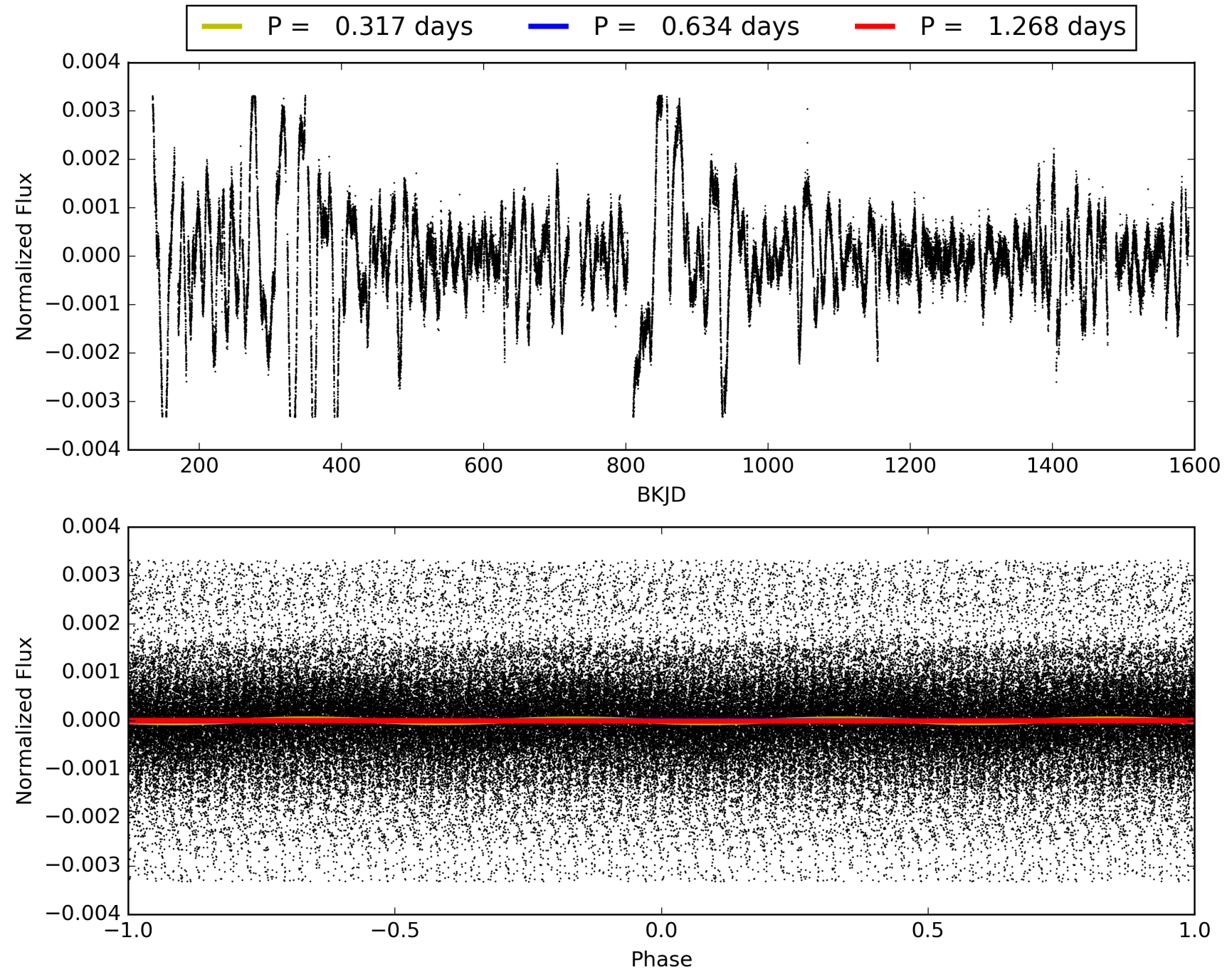
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:08:41 Z

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

TCE 011457224-01, PDC Light Curves

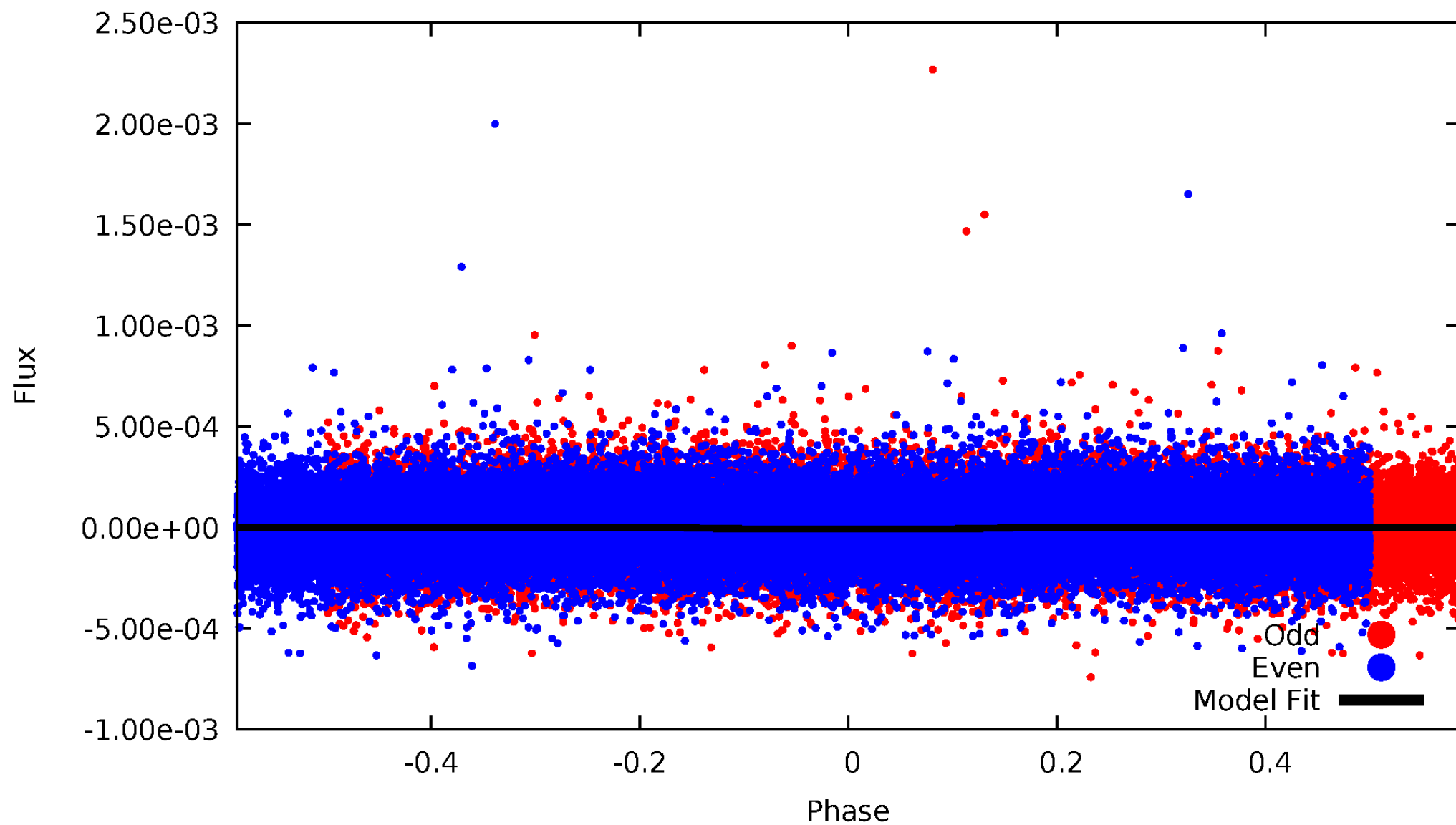


TCE 011457224-01



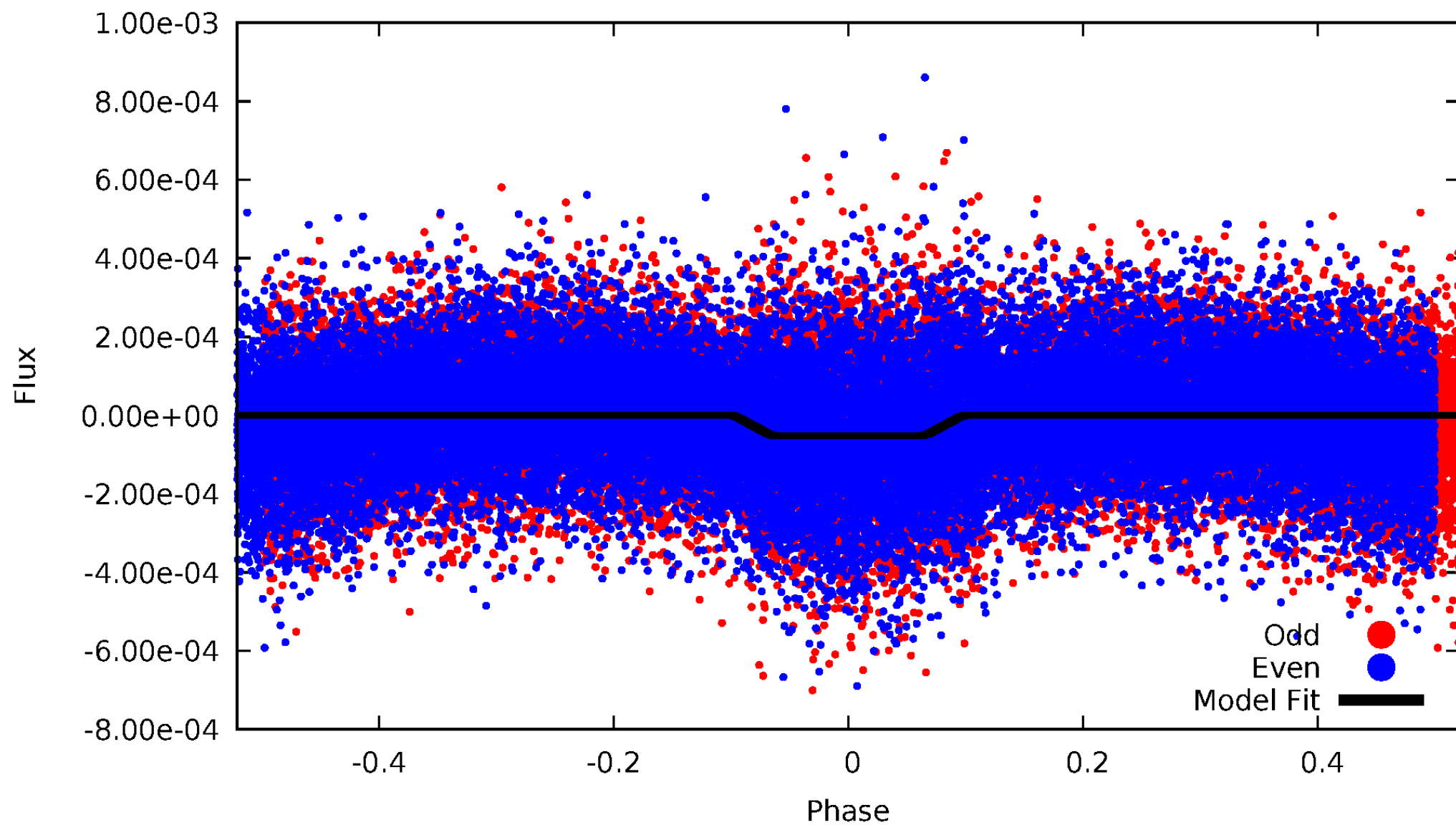
DV Odd/Even

TCE 011457224-01



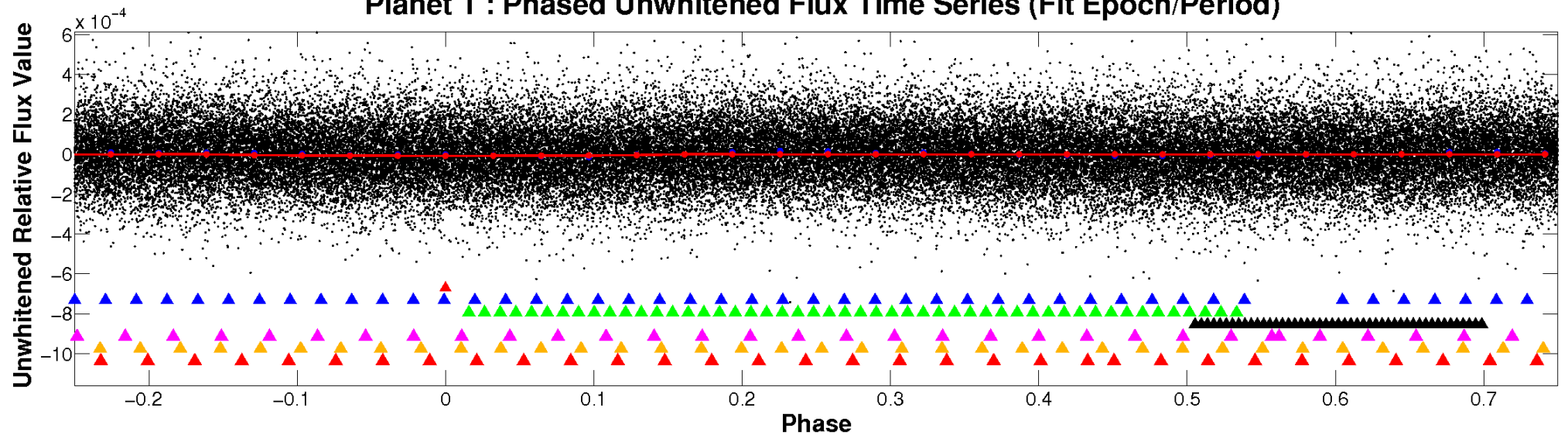
ALT Odd/Even

TCE 011457224-01

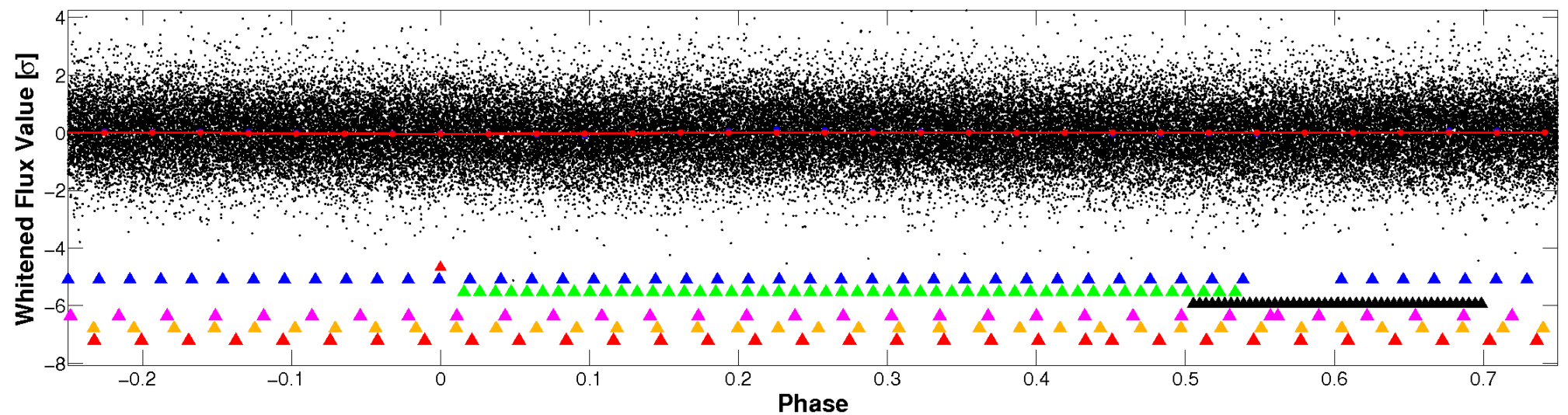


Non-Whitened Vs. Whitened Light Curve

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

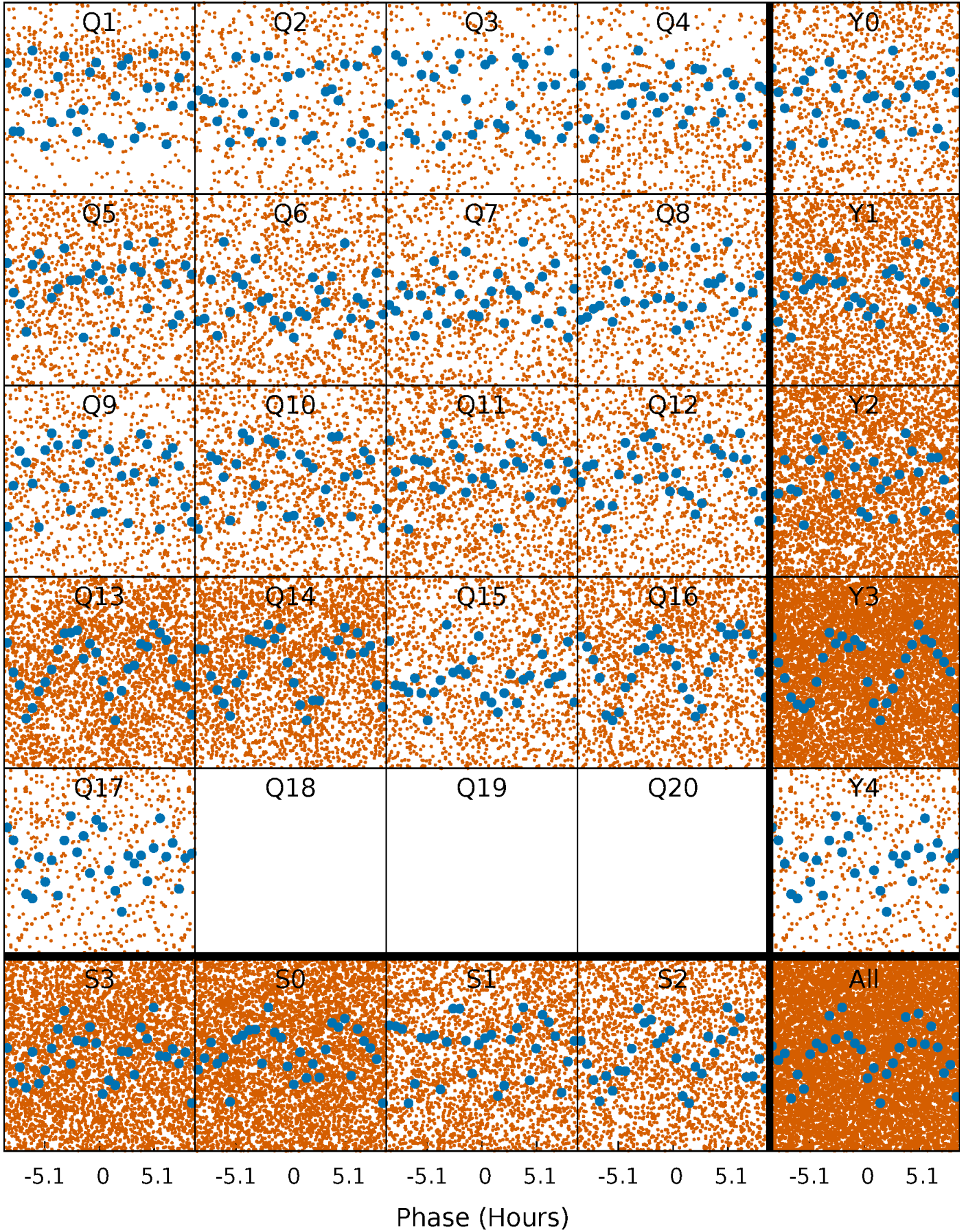


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



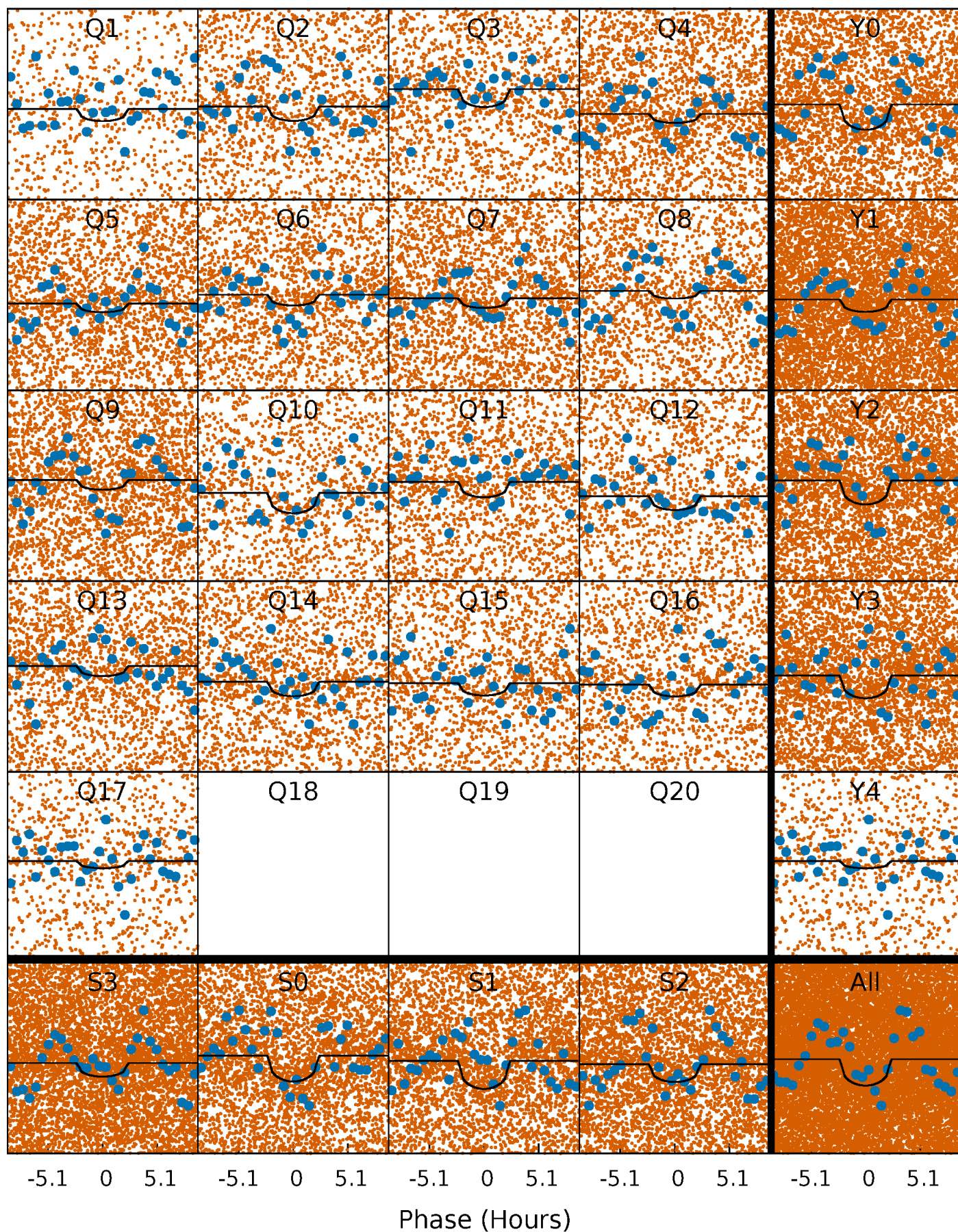
PDC Quarter-Phased Transit Curves

TCE 011457224-01 P= 0.633973 Days $T_0=132.084866$ (BKJD)



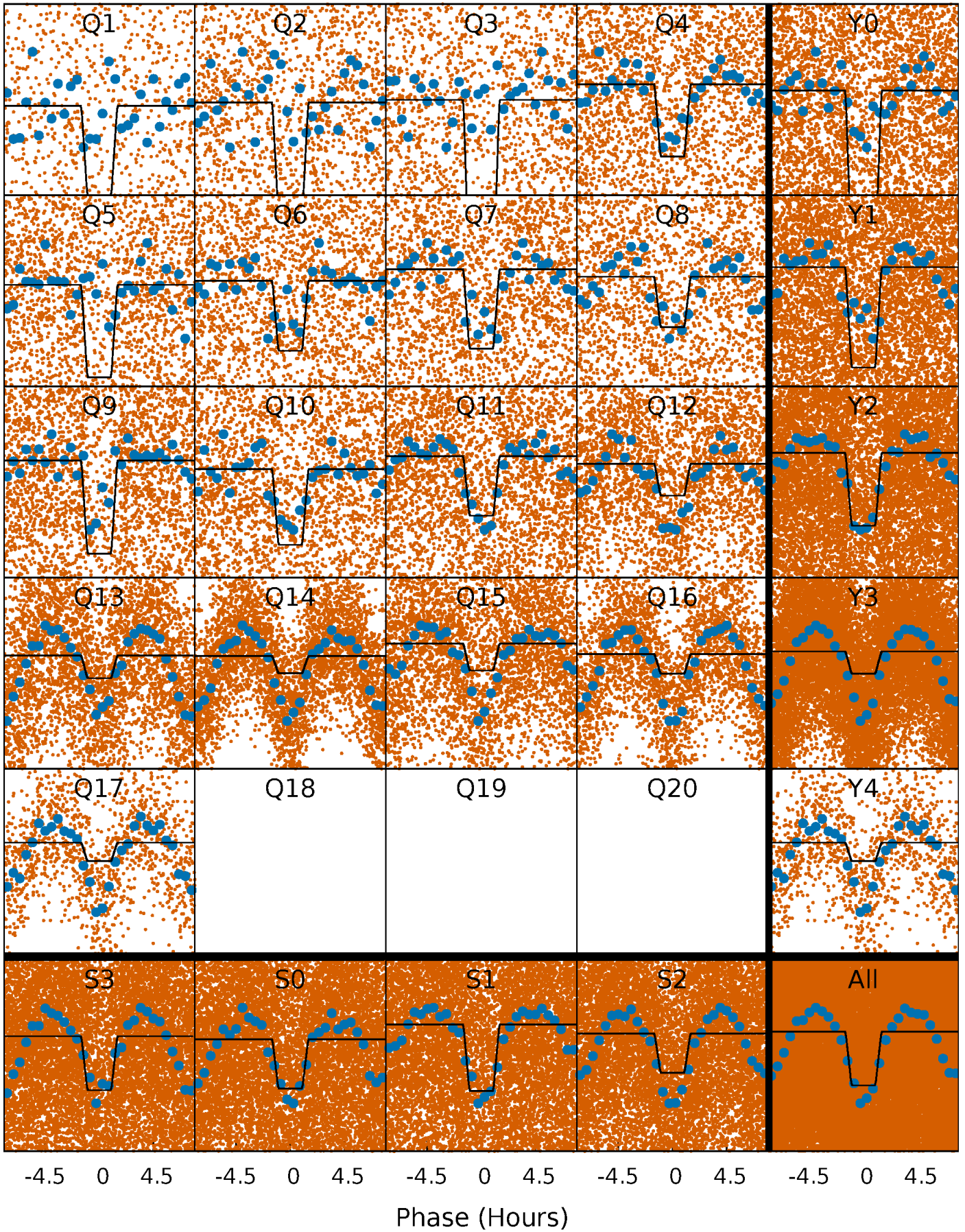
DV Quarter-Phased Transit Curves

TCE 011457224-01 P= 0.633973 Days $T_0=132.084866$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

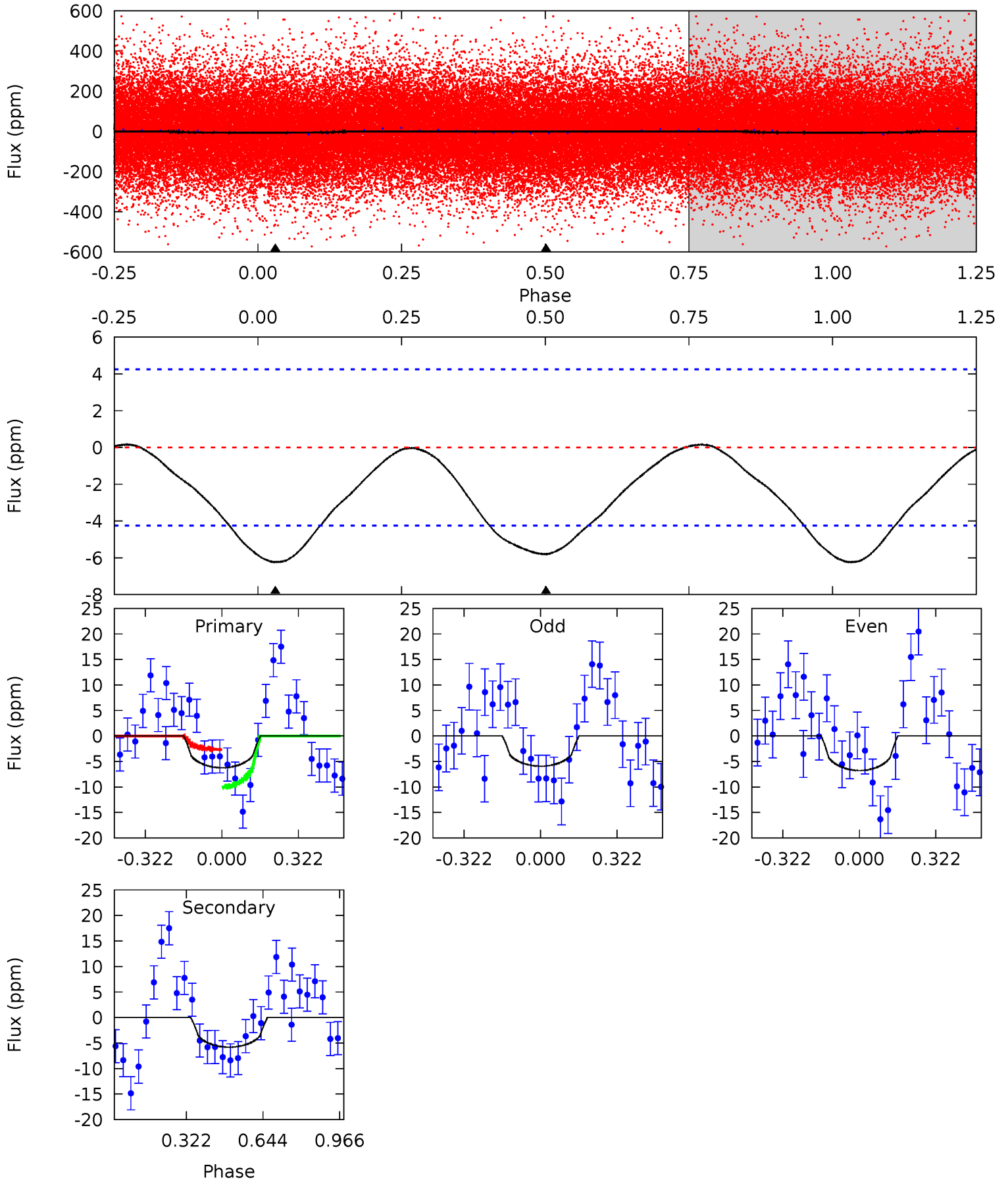
TCE 011457224-01 P= 0.634025 Days $T_0=132.053878$ (BKJD)



DV Model-Shift Uniqueness Test

011457224-01, P = 0.633973 Days, E = 131.450893 Days

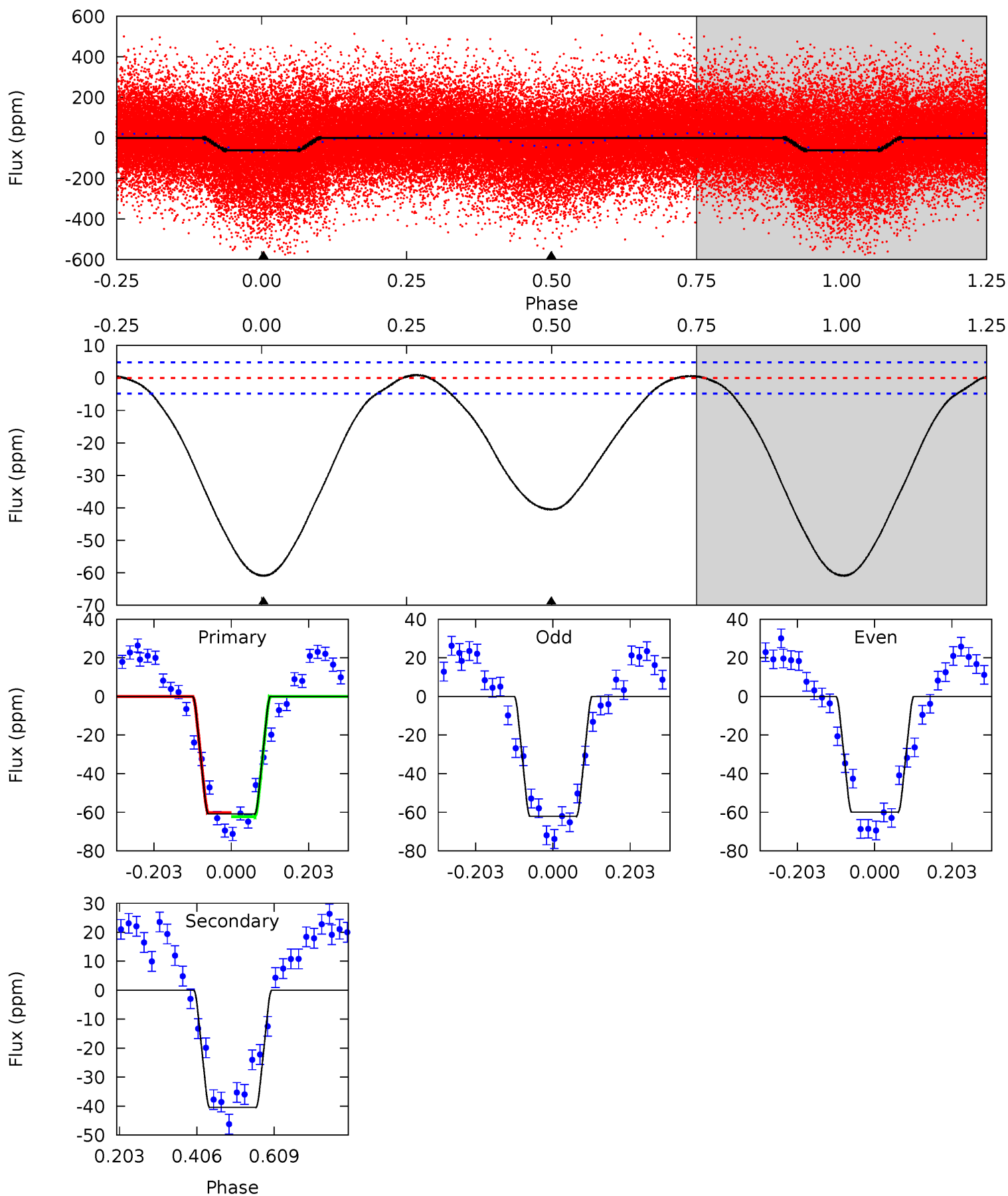
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.33	5.90	0	0	4.31	0.99	0.11	6.33	6.33	5.90	5.90	0.43	0.99	0.03	3.74



Alt Model-Shift Uniqueness Test

011457224-01, P = 0.634025 Days, E = 131.419853 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
56.0	37.2	0	0	4.41	1.27	1.14	56.0	56.0	37.2	37.2	1.02	0.99	0.01	0.95



Stellar Parameters For KIC 011457224

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5375^{+160}_{-144}	$4.452^{+0.100}_{-0.150}$	$0.070^{+0.250}_{-0.300}$	$0.916^{+0.199}_{-0.107}$	$0.866^{+0.097}_{-0.073}$	$1.587^{+0.688}_{-0.663}$
	+3%/-3%	+2%/-3%	+357%/-429%	+22%/-12%	+11%/-8%	+43%/-42%
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 011457224-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-6 ± 1	$0.41^{+0.39}_{-0.27}$	2723^{+162}_{-130}	4286^{+3013}_{-1021}	$3.736^{+29.916}_{-2.751}$
Alt.	-40 ± 1	$0.78^{+0.44}_{-0.40}$	2722^{+178}_{-134}	4928^{+2116}_{-828}	$6.954^{+23.590}_{-4.053}$

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 $A_{obs} \gg 1.0$

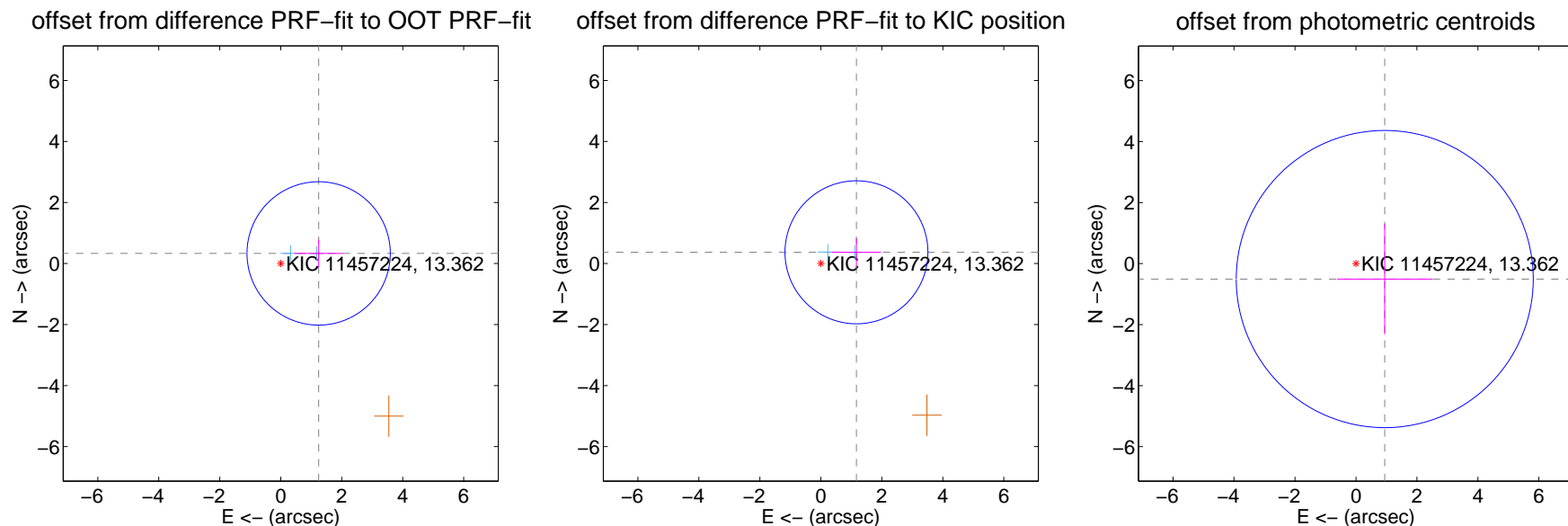
DV Centroid Data

Supplemental centroid analysis for 011457224-01. Kepler magnitude: 13.36. Transit SNR 4.62

There are 2 quarters with good PRF difference image offsets

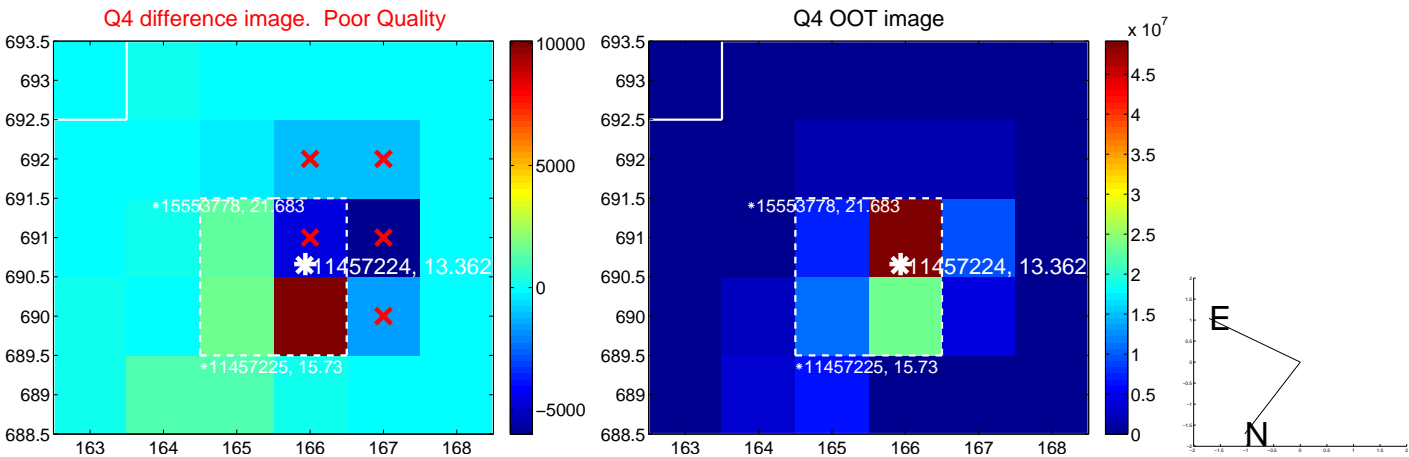
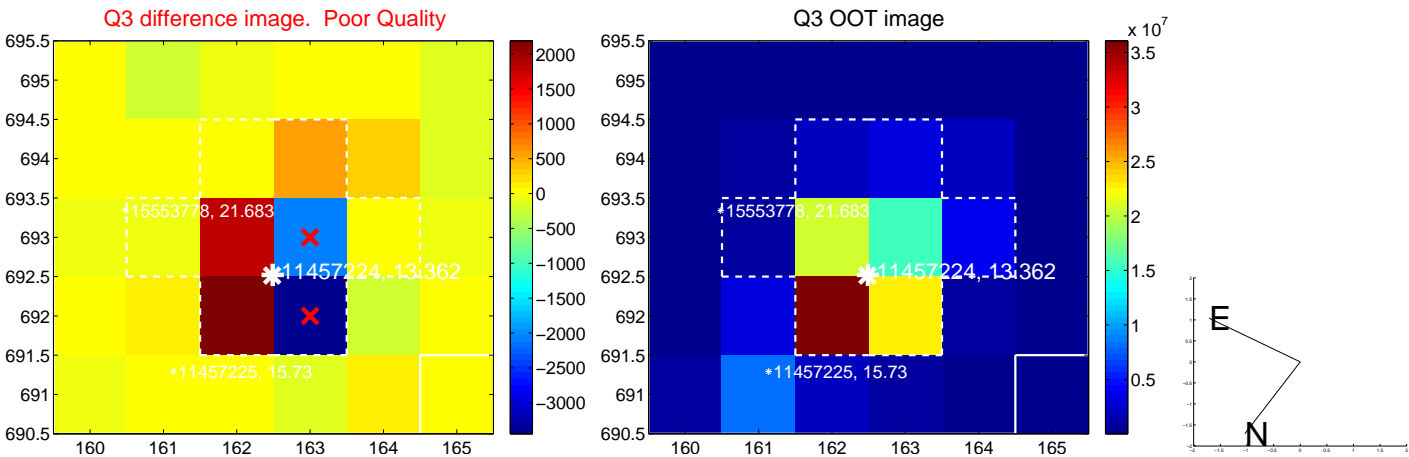
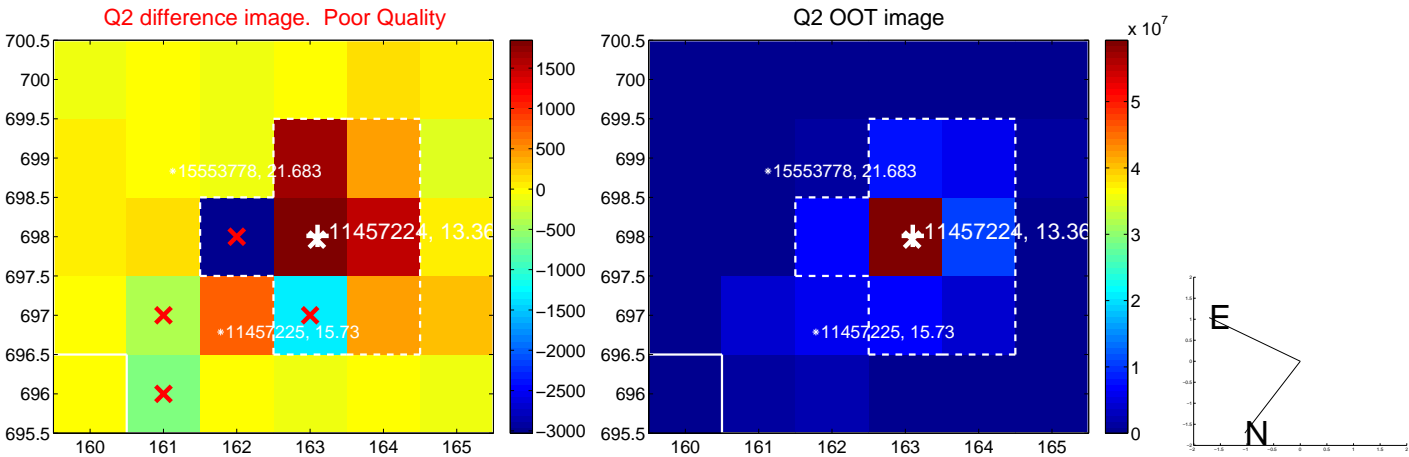
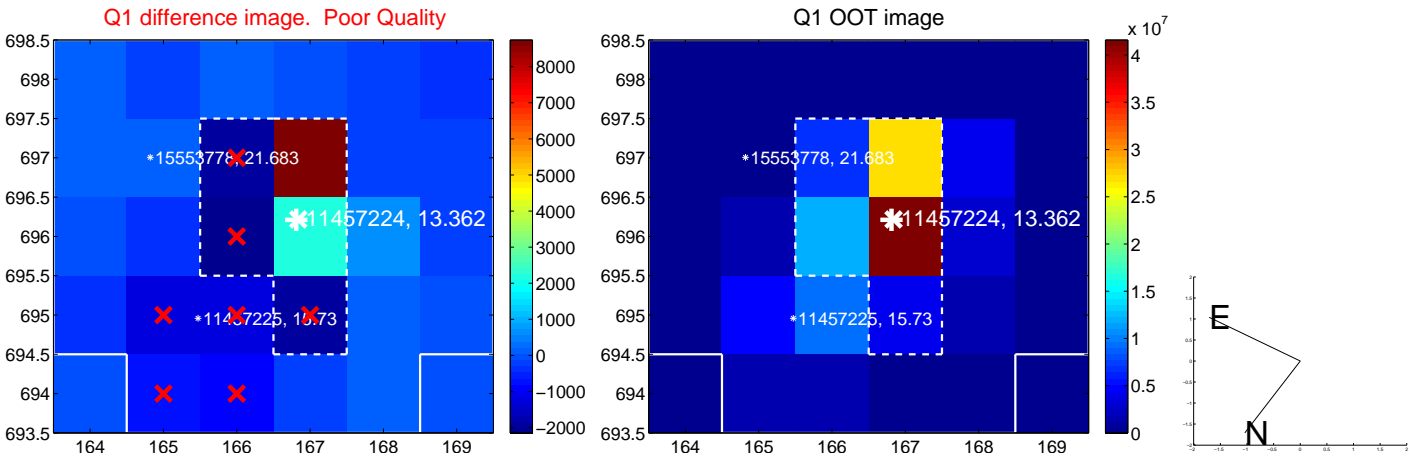
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.286 ± 0.783	1.64	-1.243 ± 0.801	0.332 ± 0.458
PRF-fit source offset from KIC position	1.224 ± 0.781	1.57	-1.167 ± 0.806	0.369 ± 0.458
photometric centroid source offset	1.07 ± 1.62	0.66	-0.94 ± 1.57	-0.51 ± 1.81

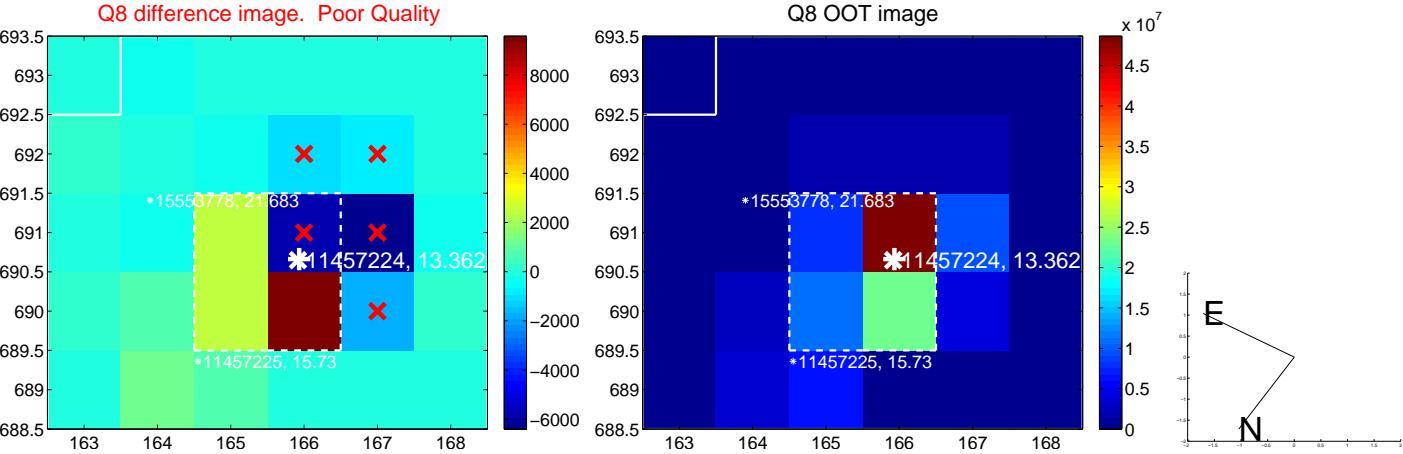
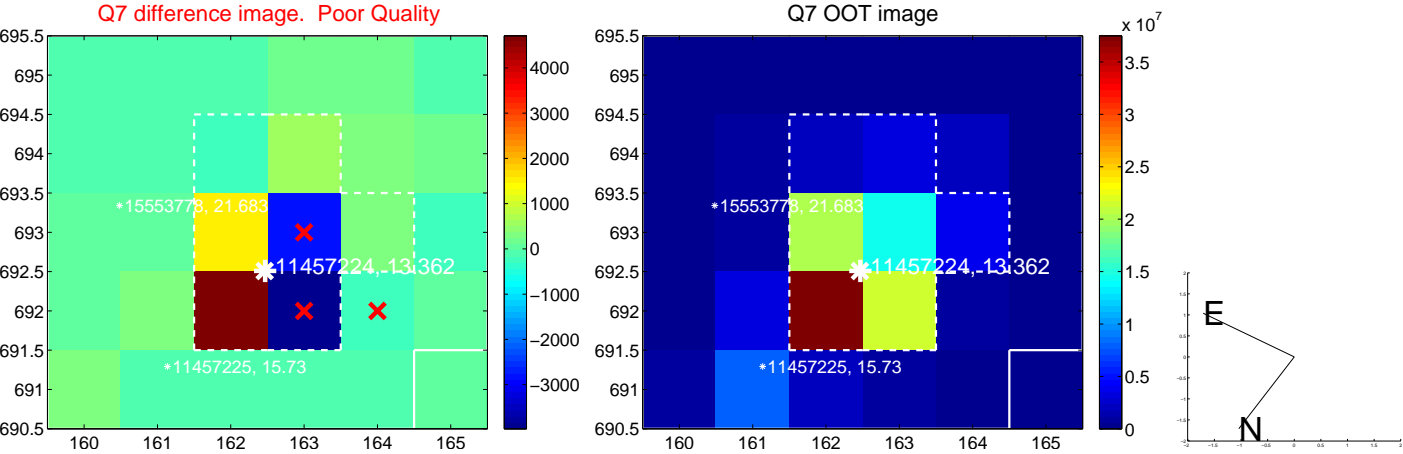
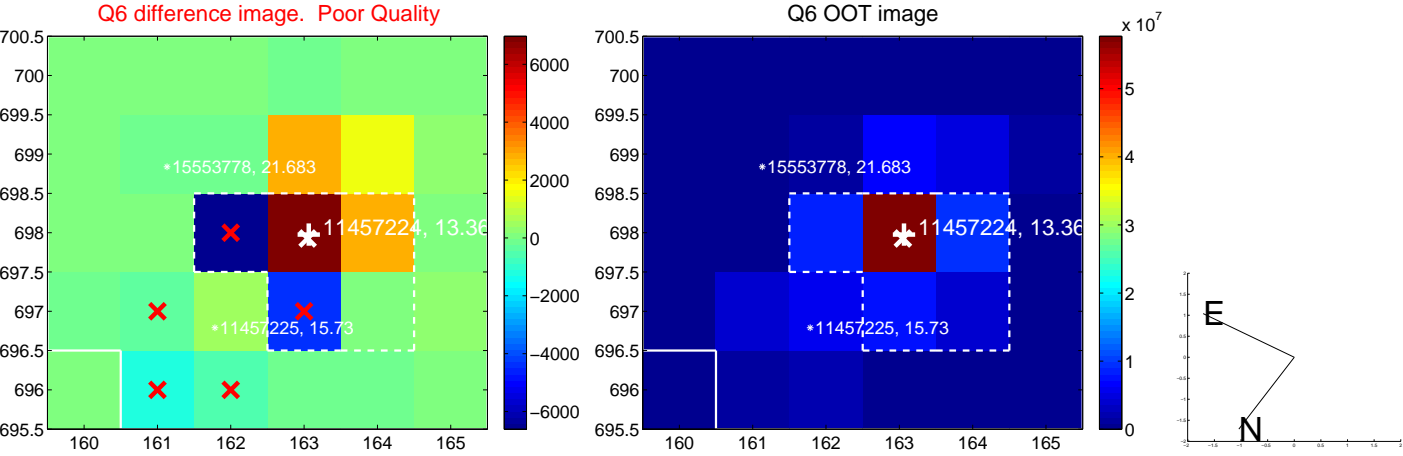
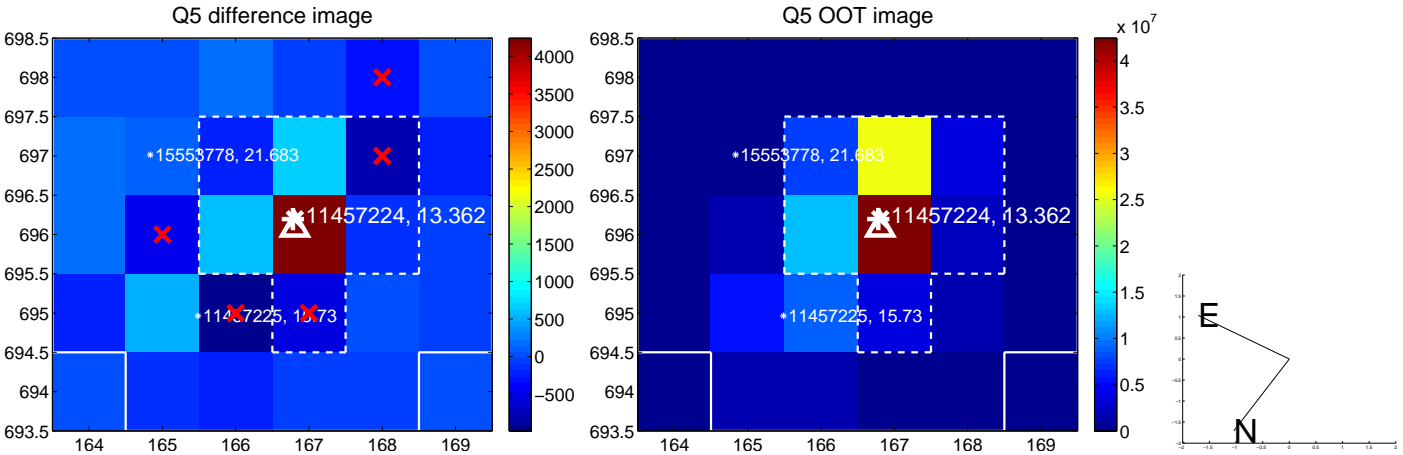


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

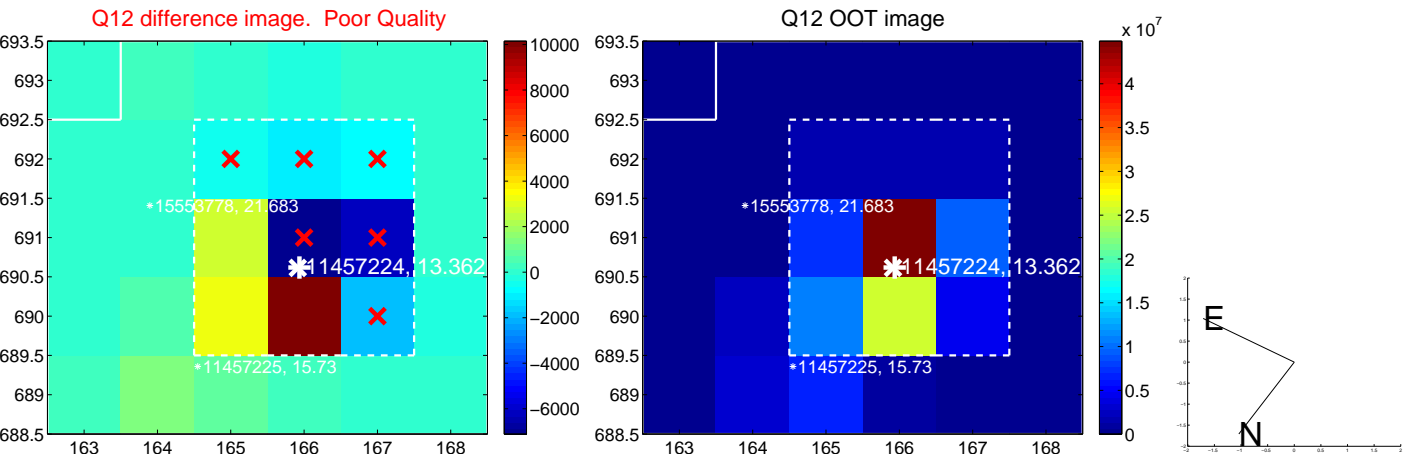
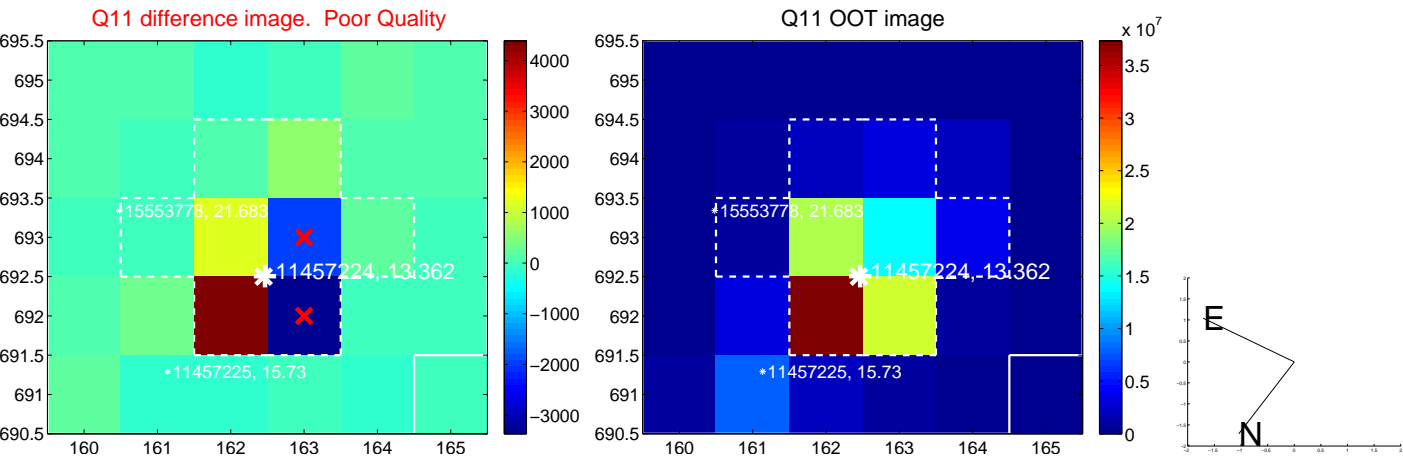
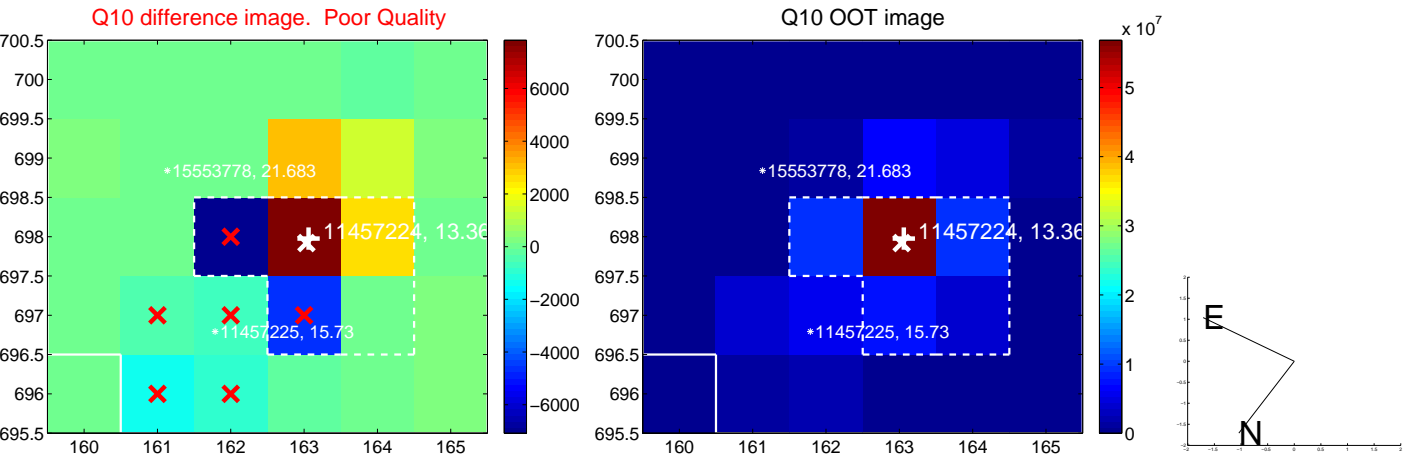
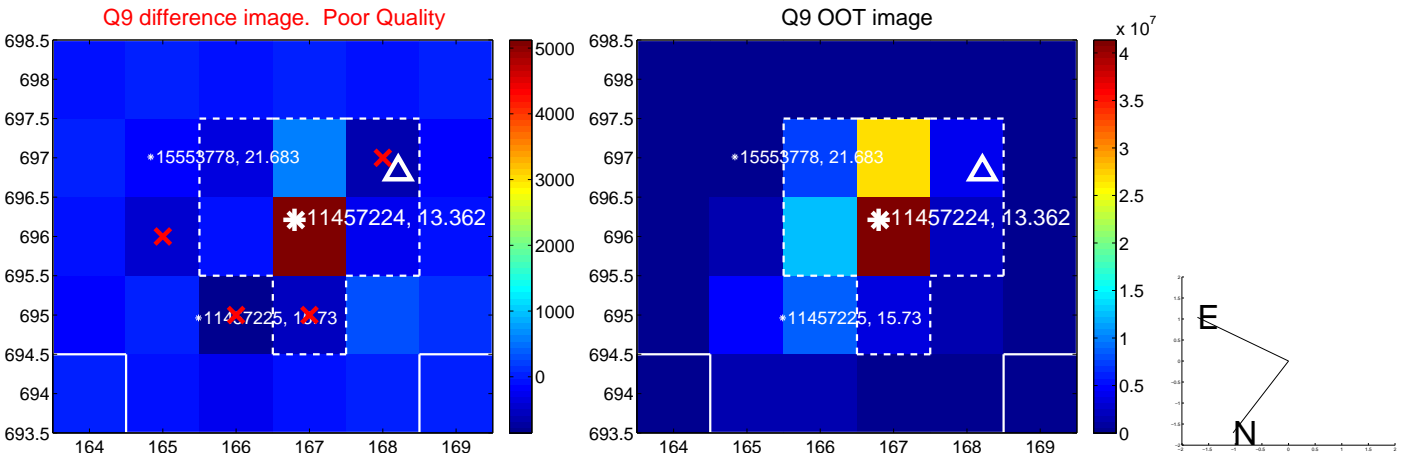
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



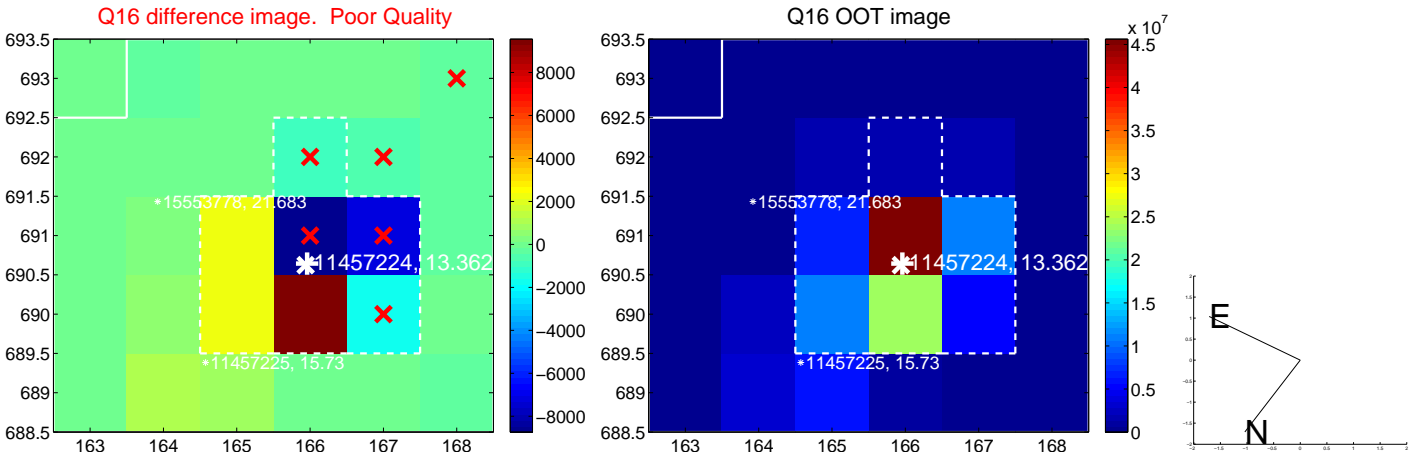
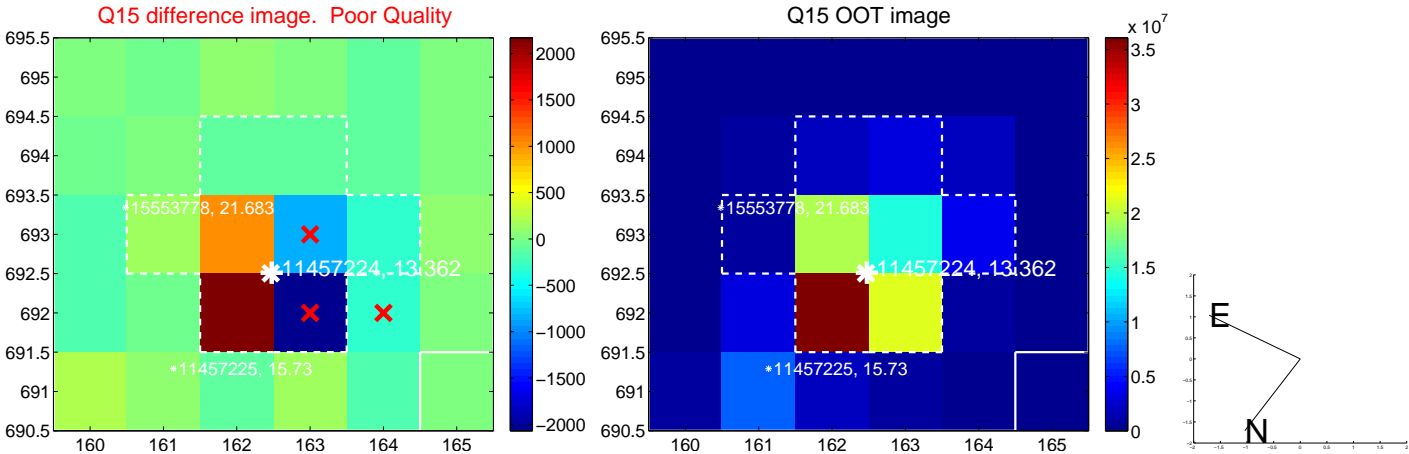
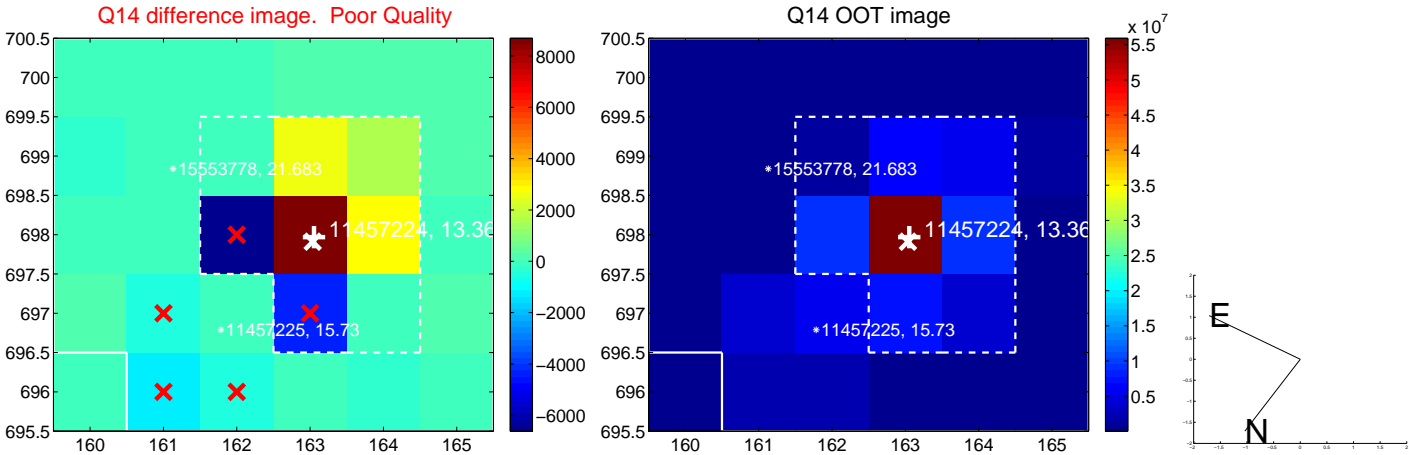
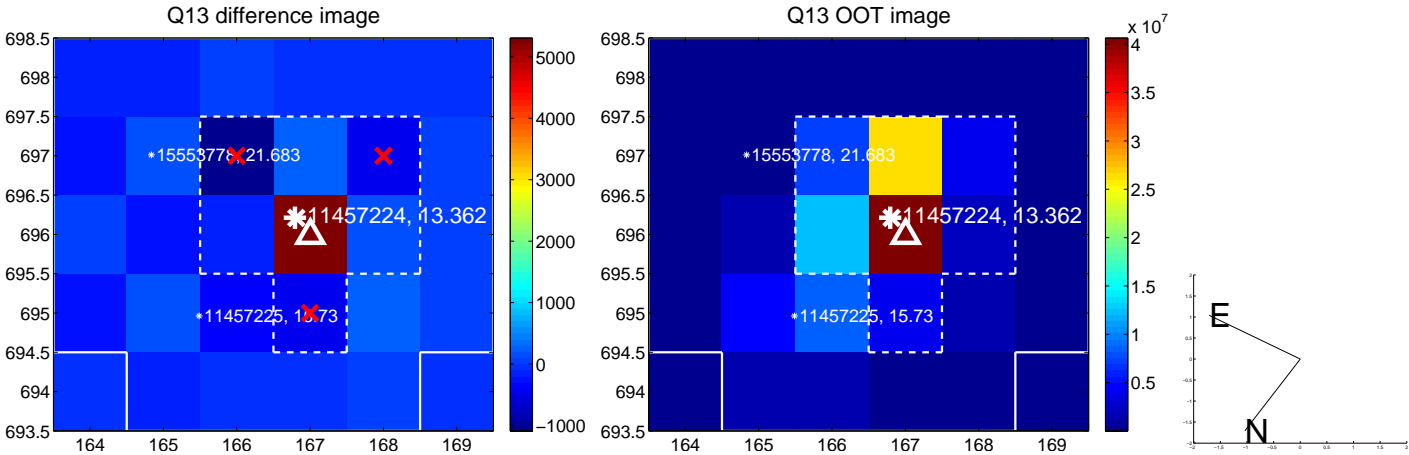
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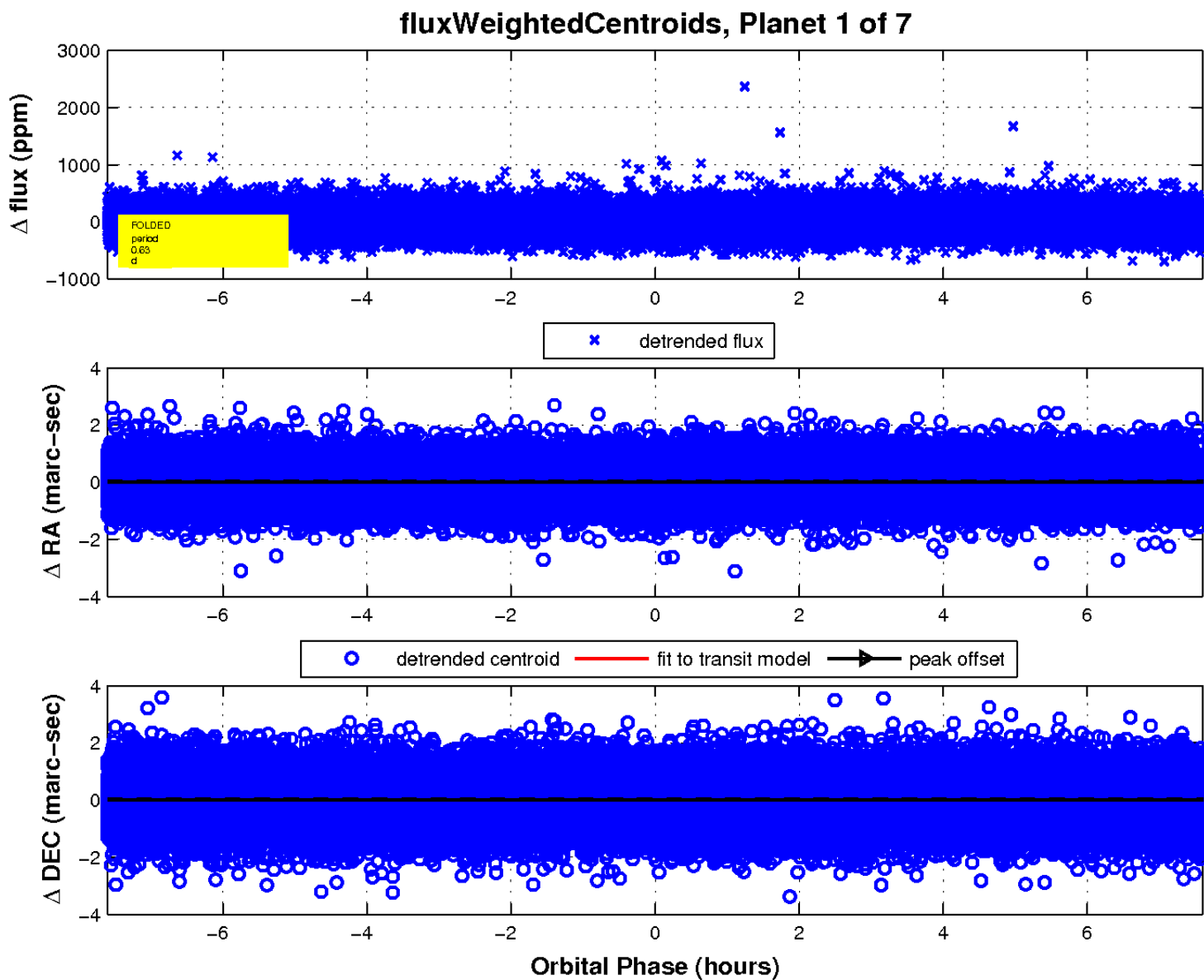
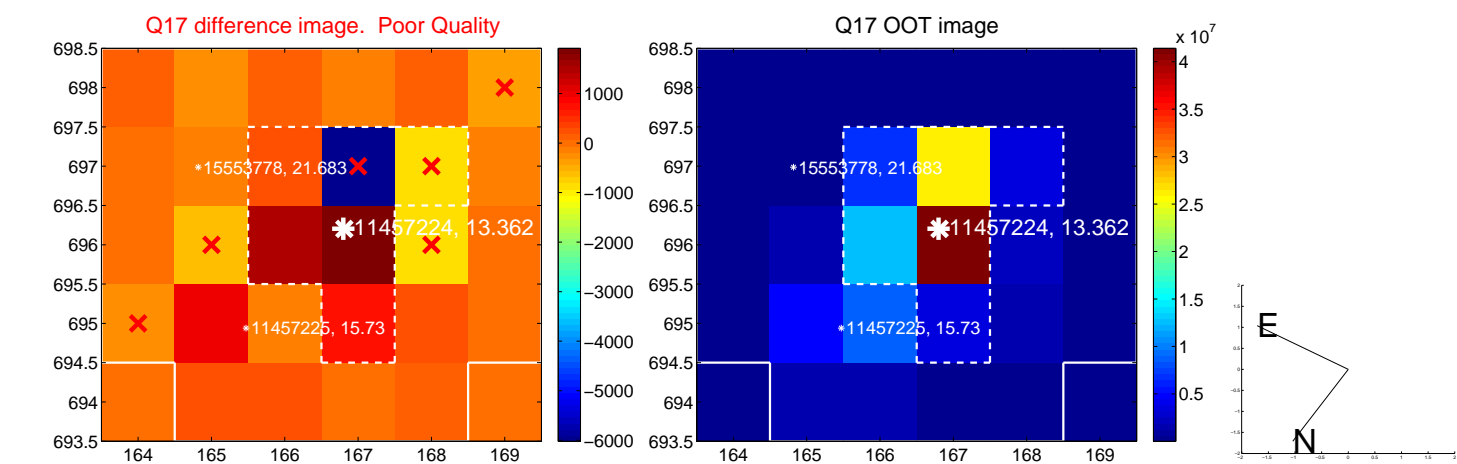
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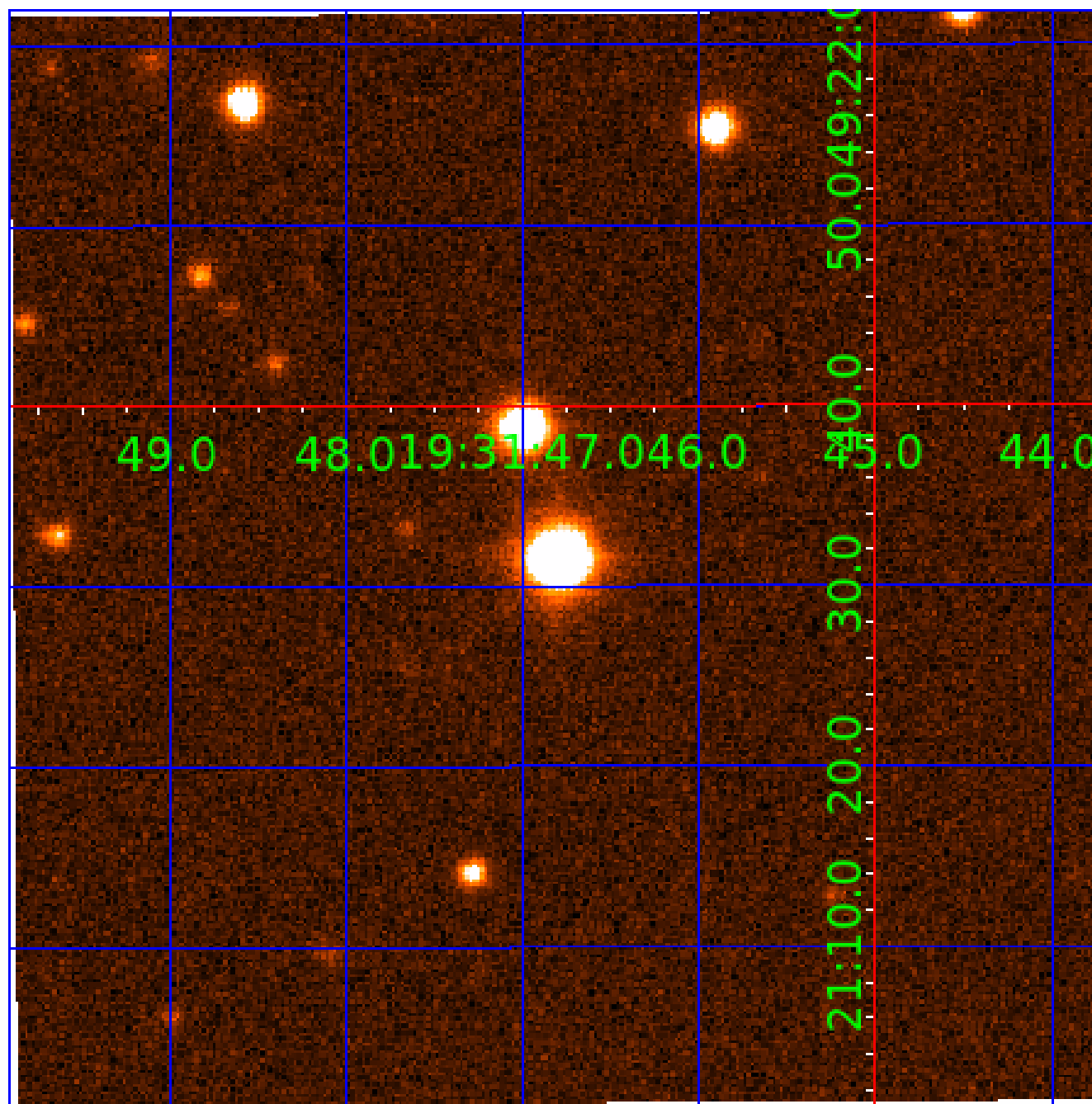


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UKIRT Image

Declination



KIC 011457224

Q1-17 DR25 TCE Parameters

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011457224-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011457224-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011457224-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011457224-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

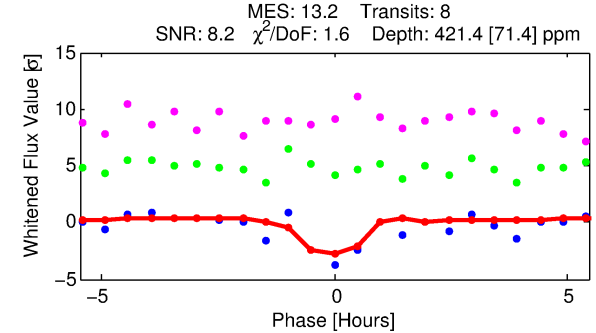
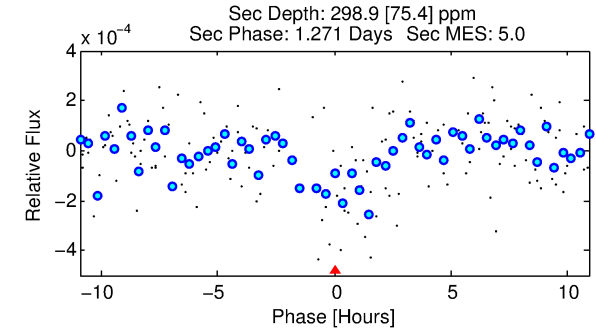
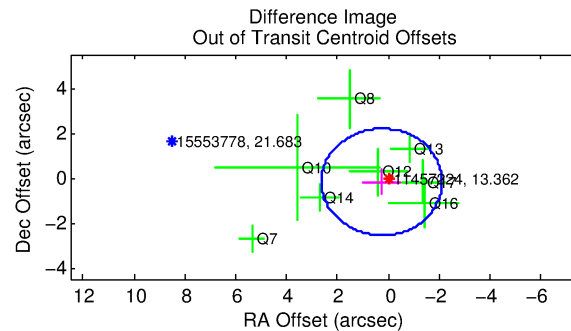
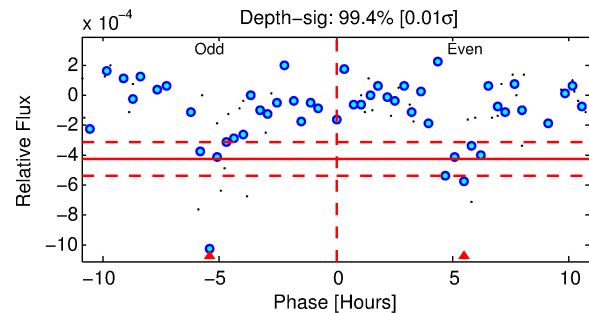
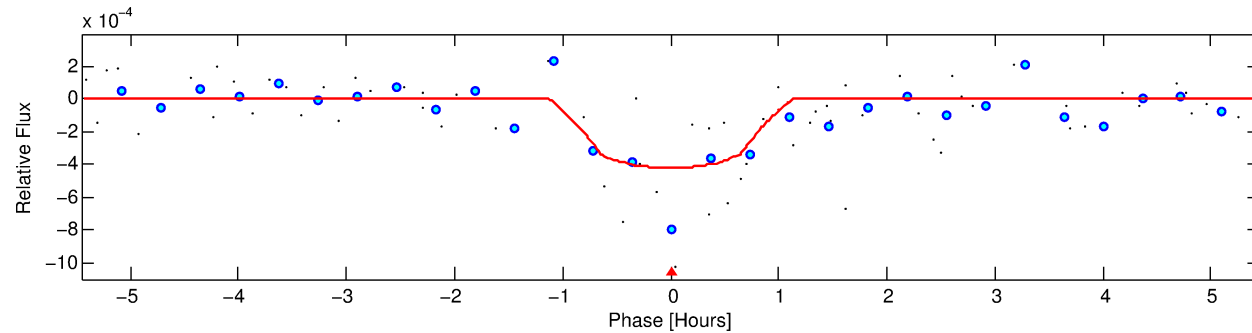
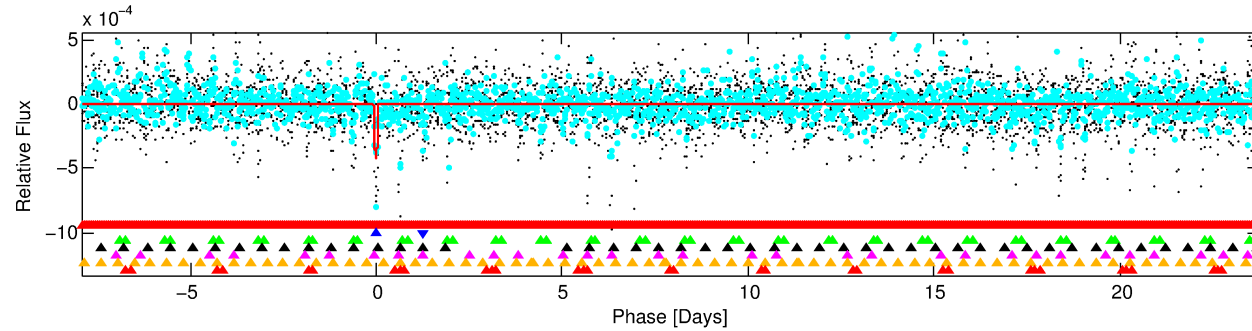
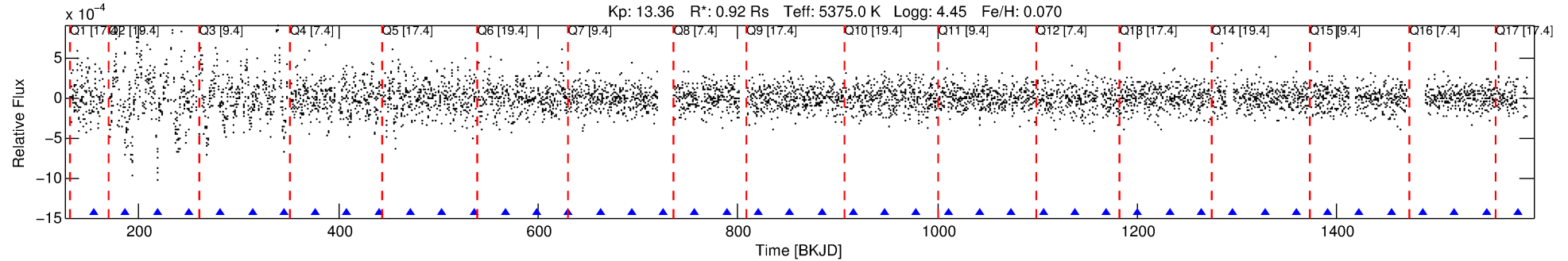
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011457224-02

No Significant Match Found

DV One-Page Summary

KIC: 11457224 Candidate: 2 of 7 Period: 31.685 d



DV Fit Results:

Period = 31.68550 [0.00124] d
Epoch = 155.2494 [0.0059] BKJD
Rp/R* = 0.0191 [0.0350]
a/R* = 118.34 [803.94]
b = 0.50 [10.43]
Seff = 17.97 [5.34]
Teq = 525 [39] K
Rp = 1.91 [3.53] Re
a = 0.1869 [0.0346] AU
Ag = 1569.20 [5777.15] [0.27 σ]
Teff = 5109 [4692] K [0.98 σ]

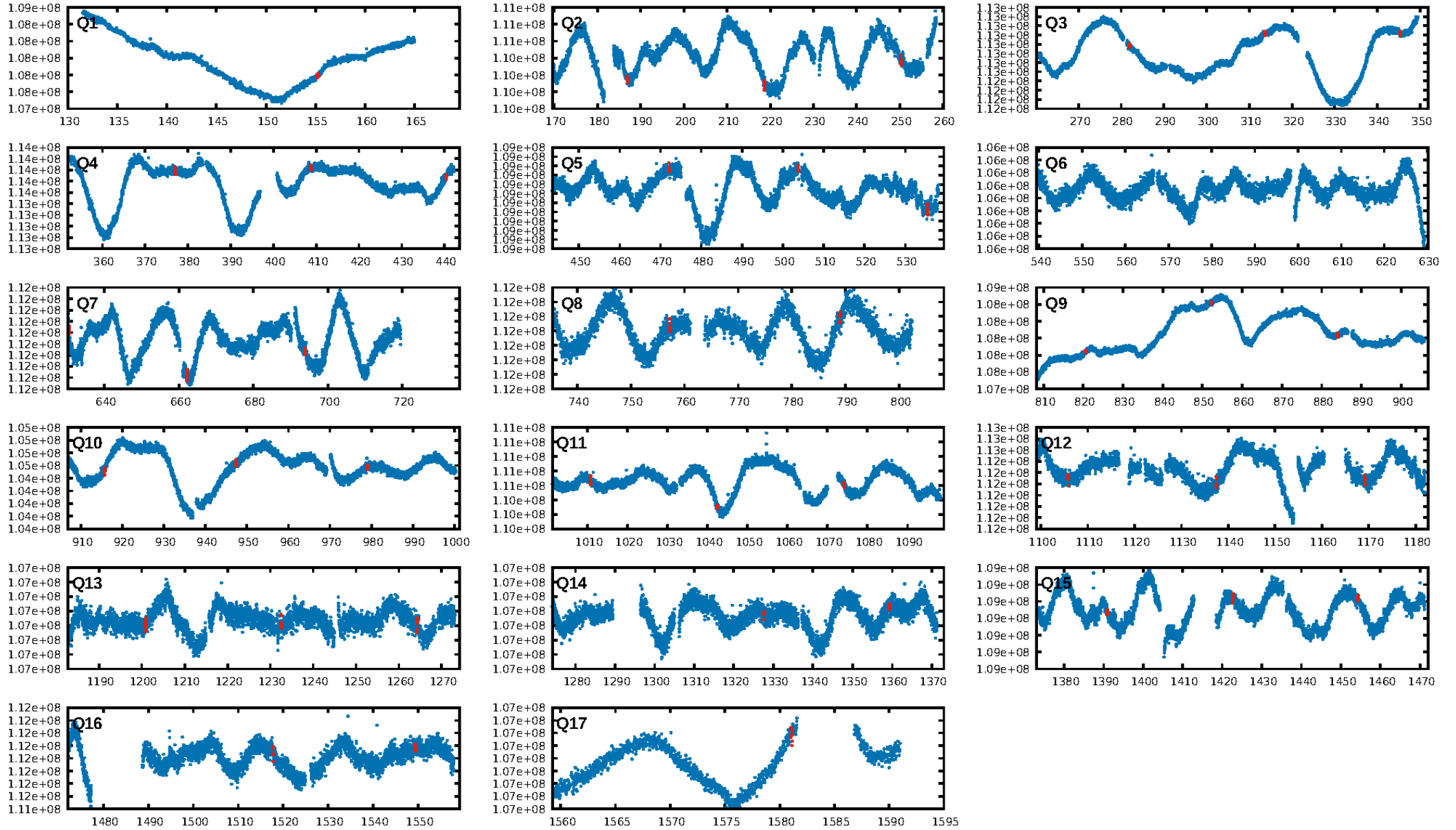
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.29 σ]
LongPeriod-sig: 100.0% [113.69 σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 96.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 0.6536
Centroid-sig: 1.7%
Centroid-so: 0.939 arcsec [2.68 σ]
OotOffset-rm: 0.315 arcsec [0.40 σ]
KicOffset-rm: 0.427 arcsec [0.53 σ]
OotOffset-st: 2/1/3/2 [8]
KicOffset-st: 2/1/3/2 [8]
DiffImageQuality-fgm: 0.12 [1/8]
DiffImageOverlap-fno: 0.00 [0/16]

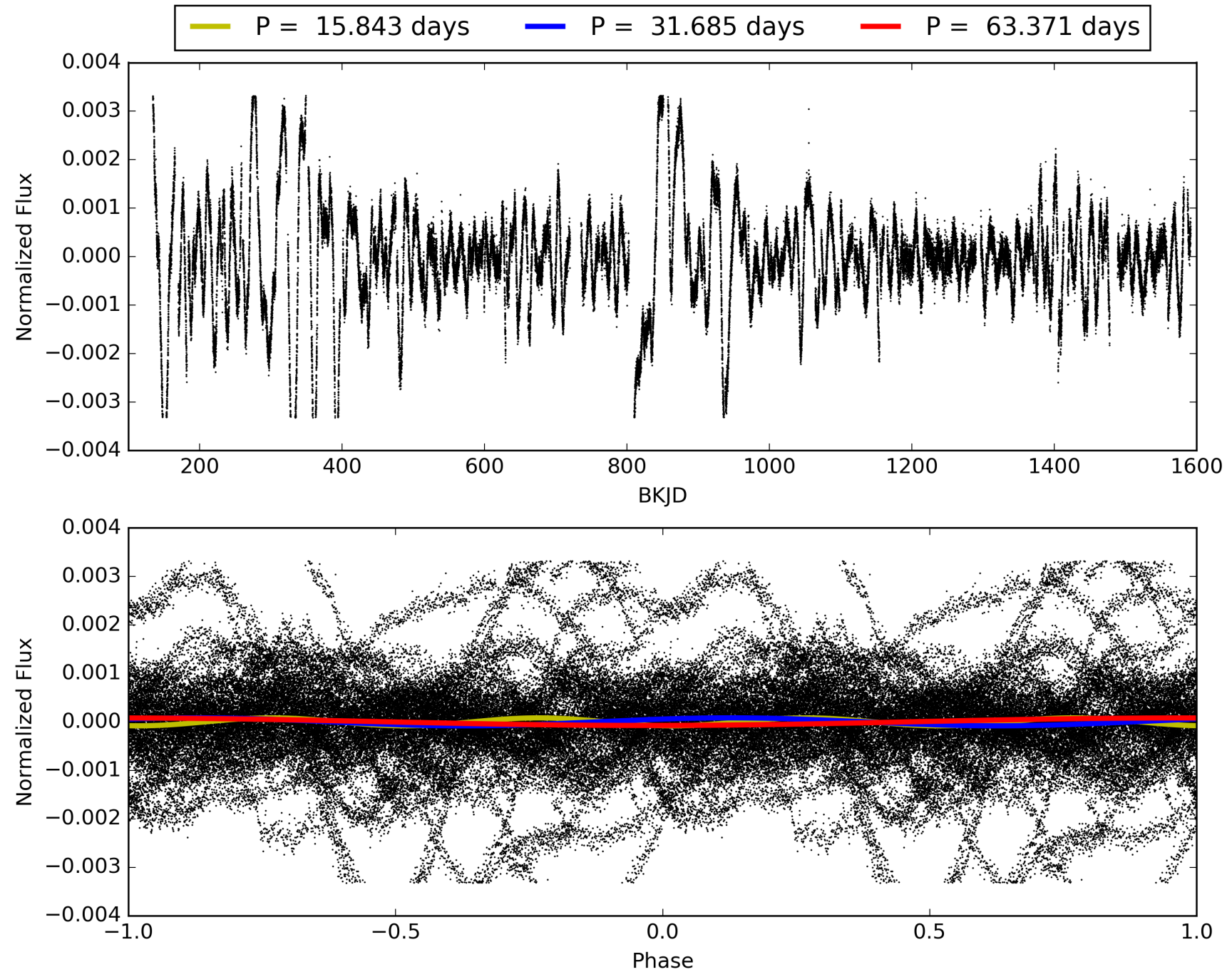
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:08:52 Z

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

TCE 011457224-02, PDC Light Curves

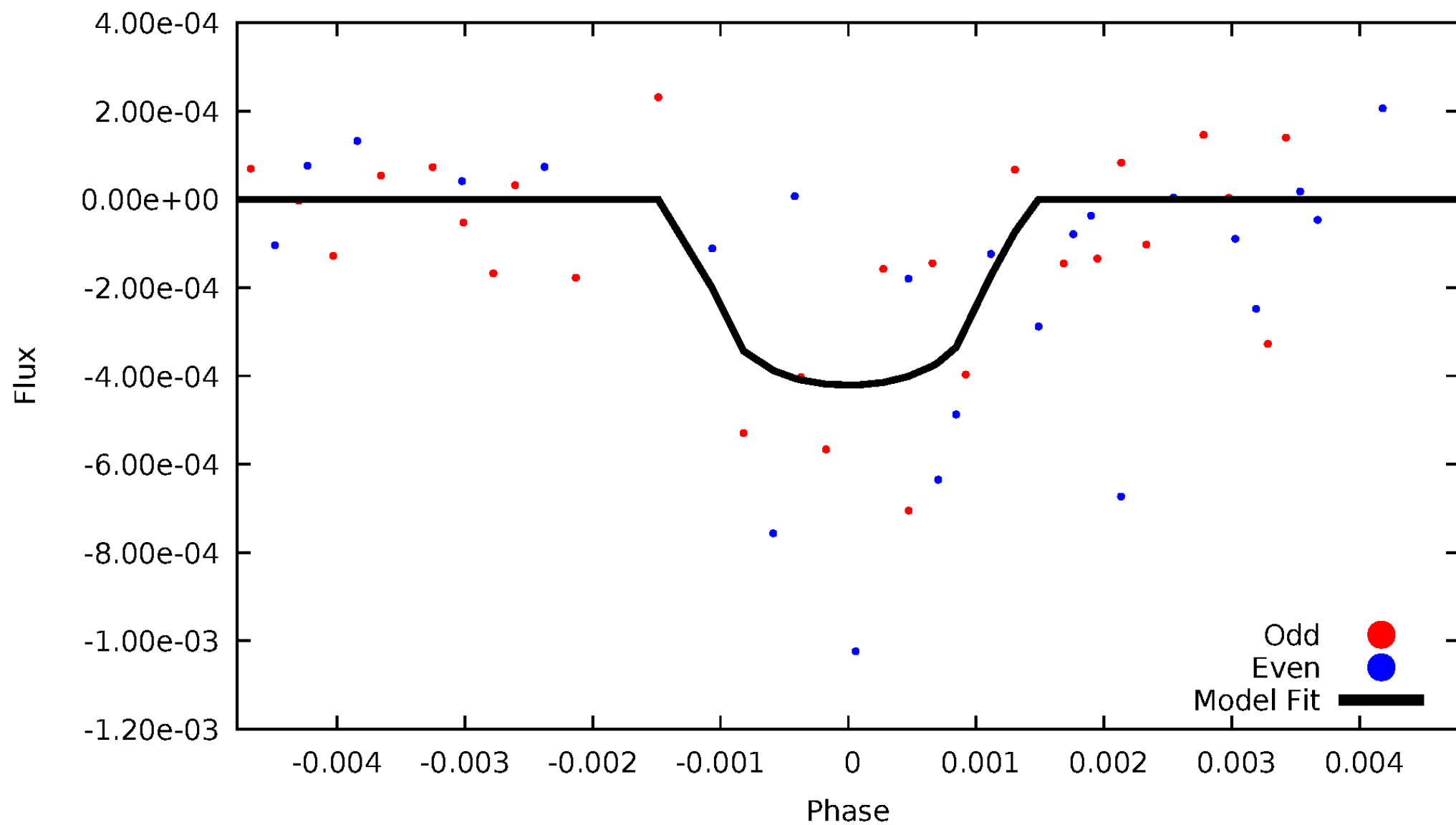


TCE 011457224-02



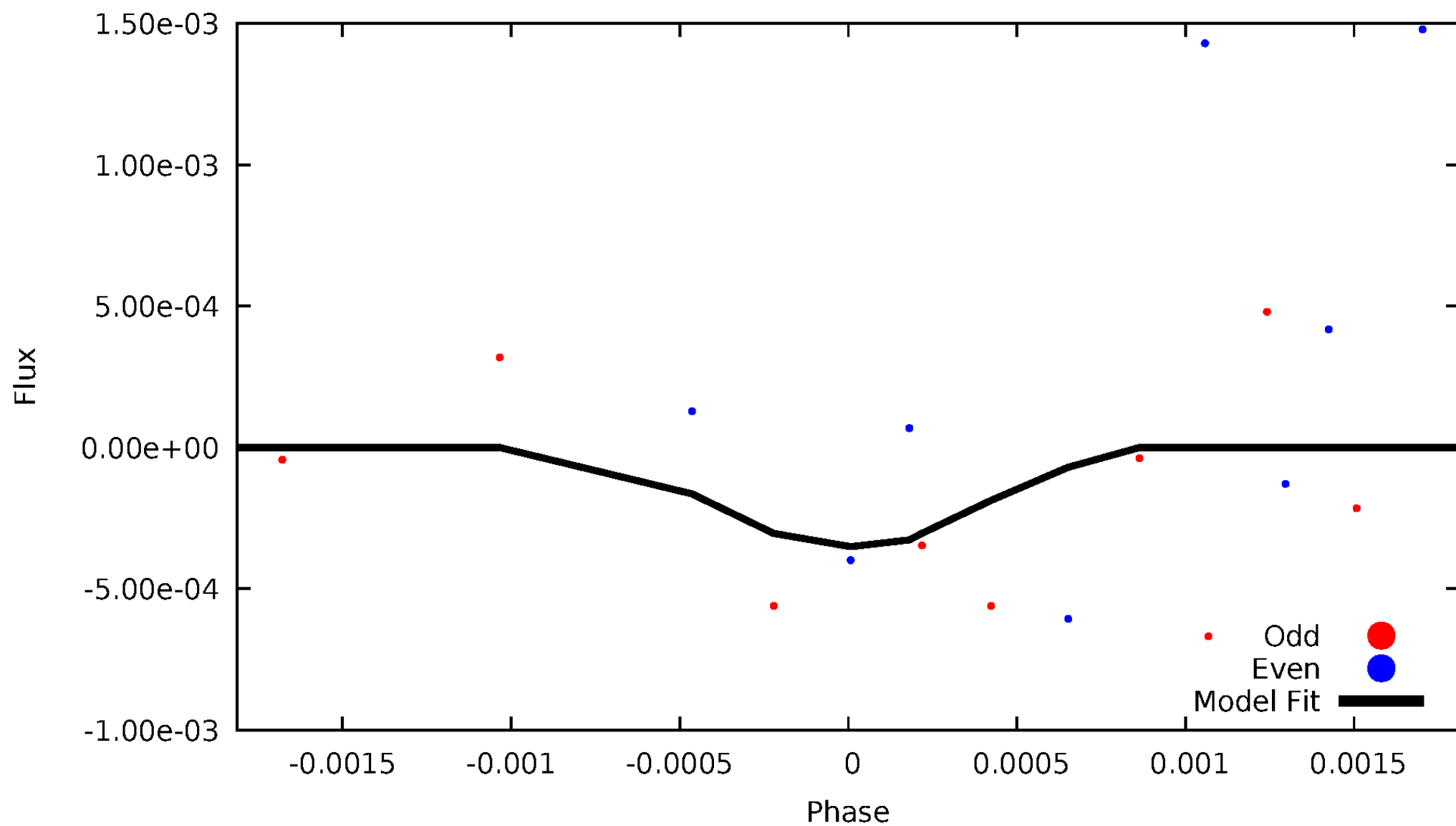
DV Odd/Even

TCE 011457224-02



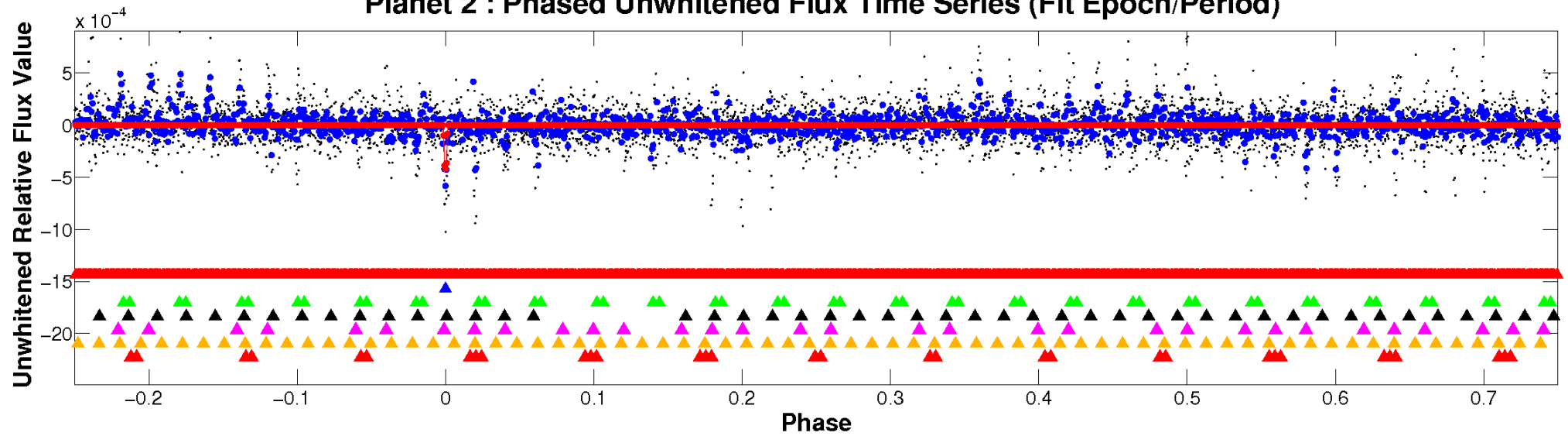
ALT Odd/Even

TCE 011457224-02

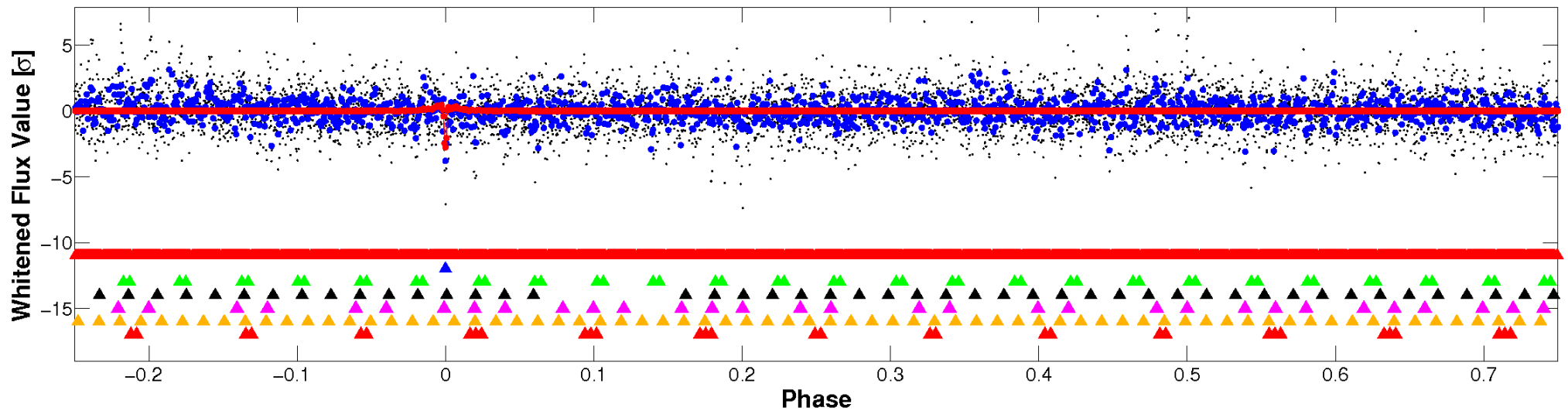


Non-Whitened Vs. Whitened Light Curve

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

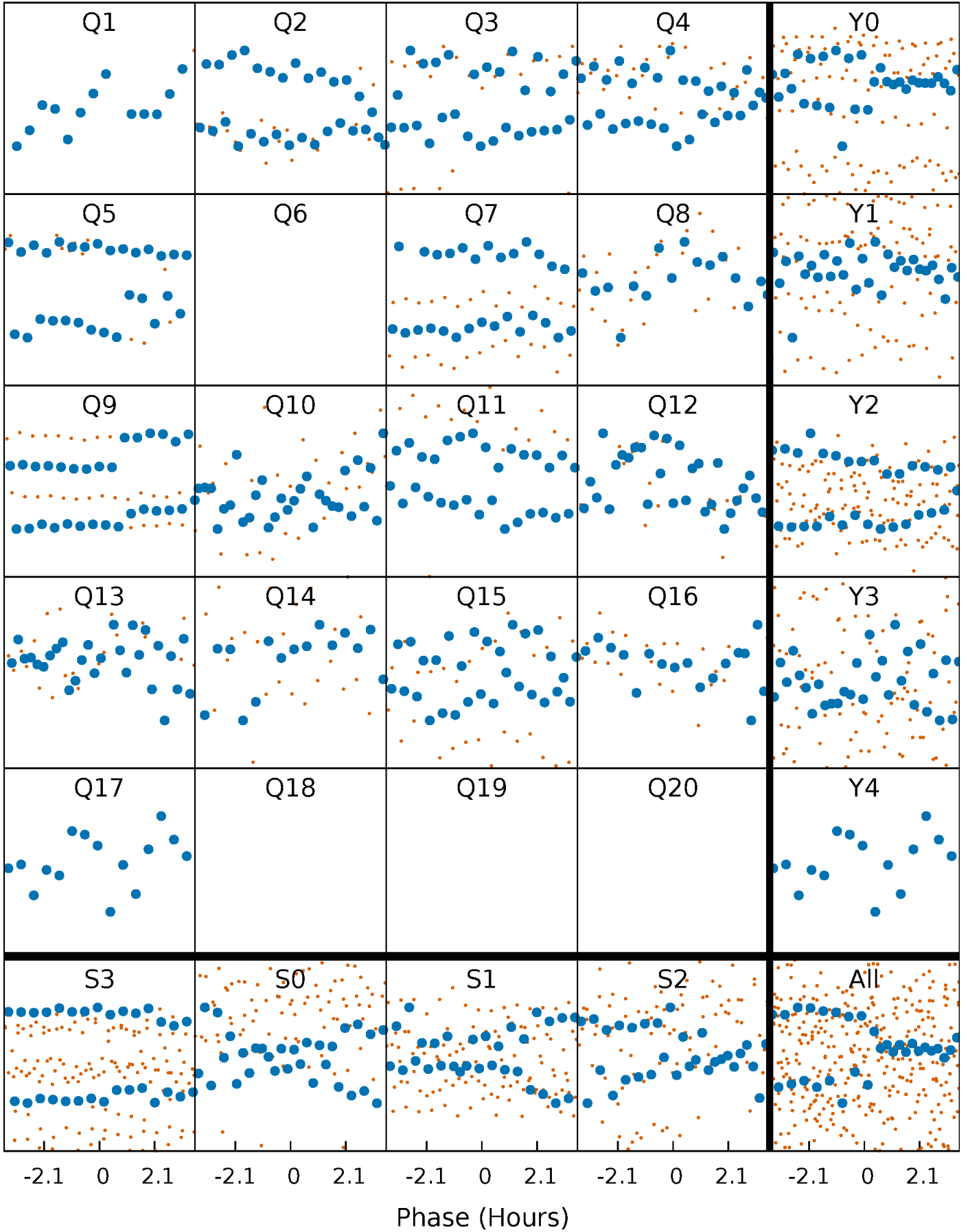


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



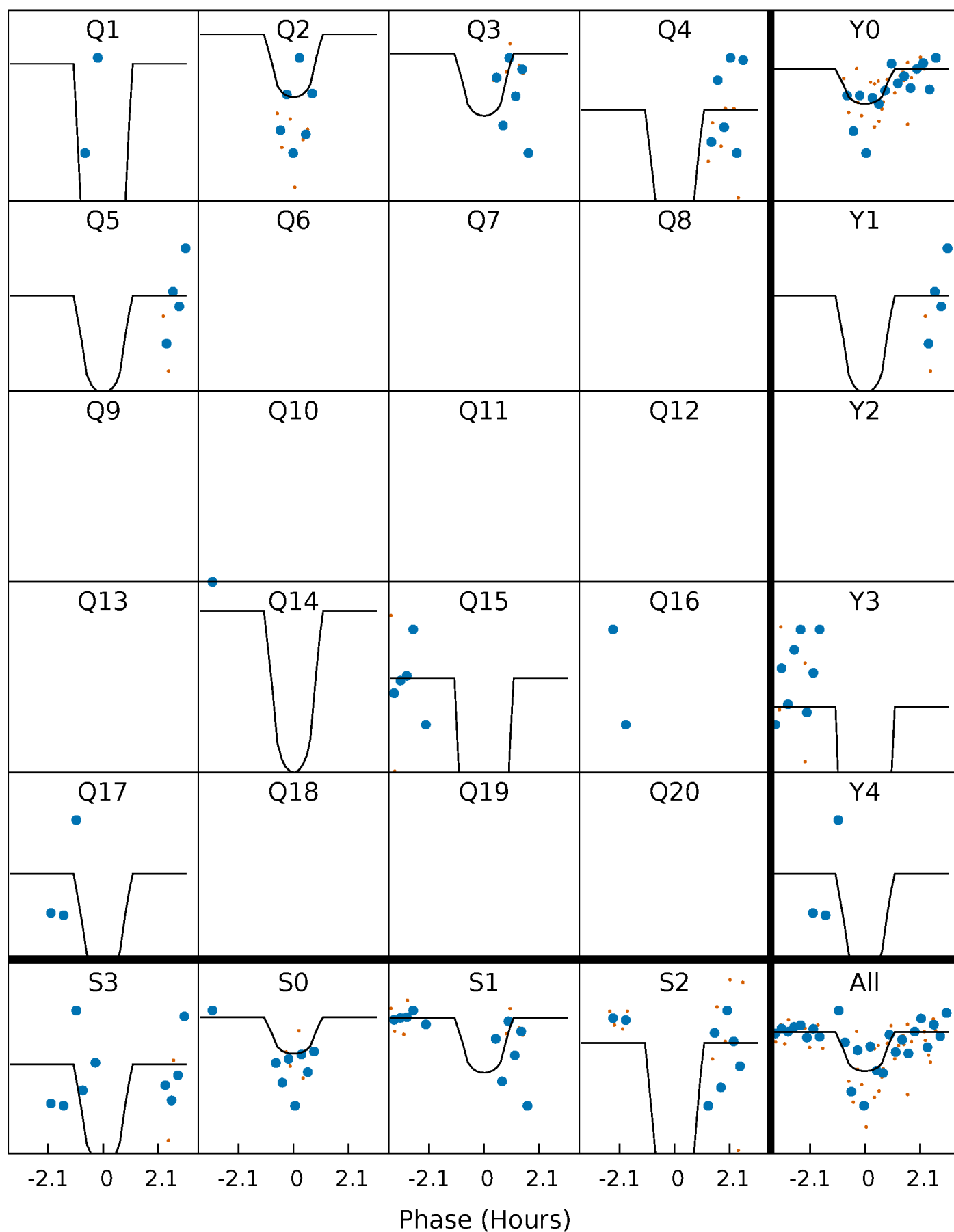
PDC Quarter-Phased Transit Curves

TCE 011457224-02 P= 31.685499 Days $T_0=155.249415$ (BKJD)



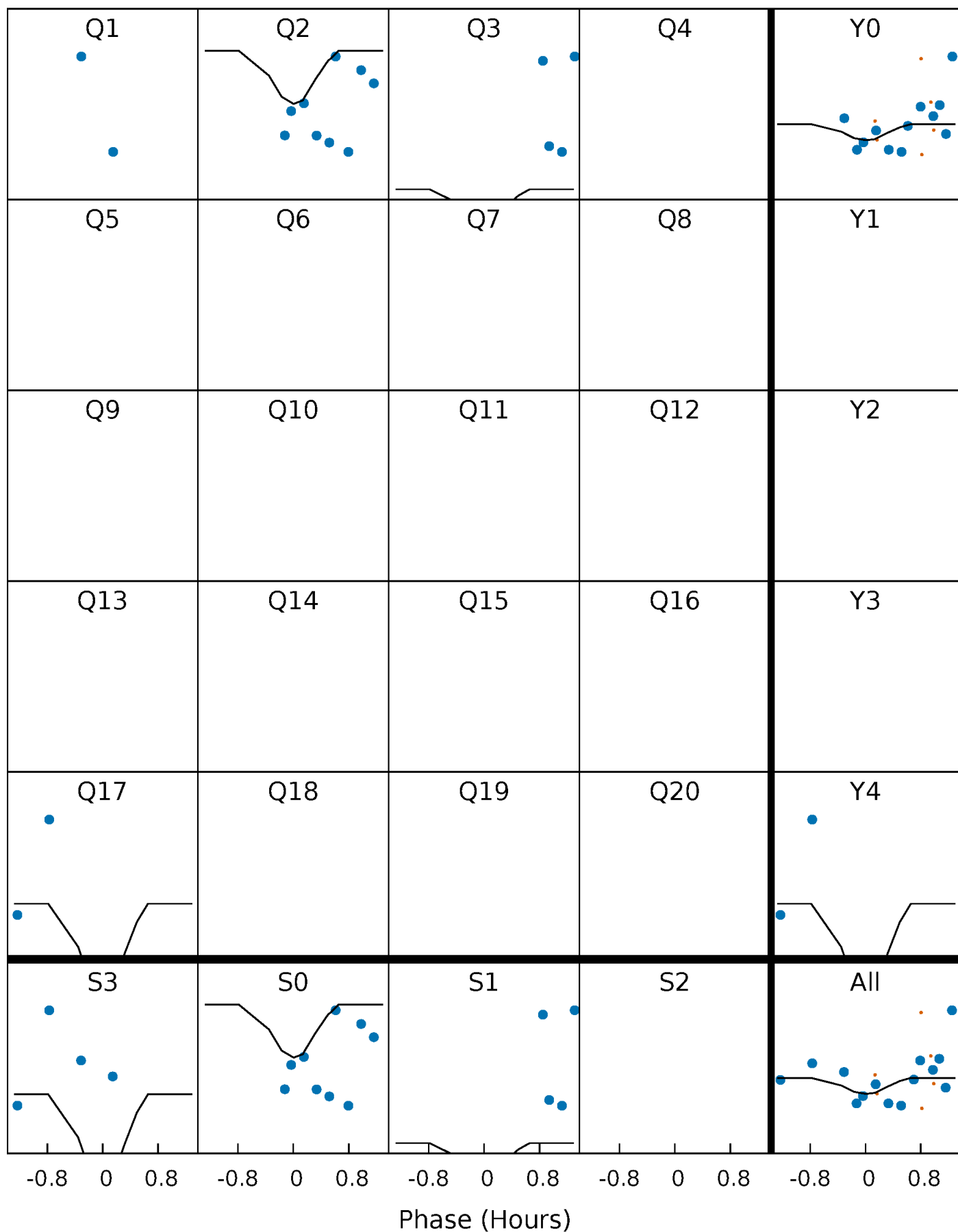
DV Quarter-Phased Transit Curves

TCE 011457224-02 P= 31.685499 Days $T_0=155.249415$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

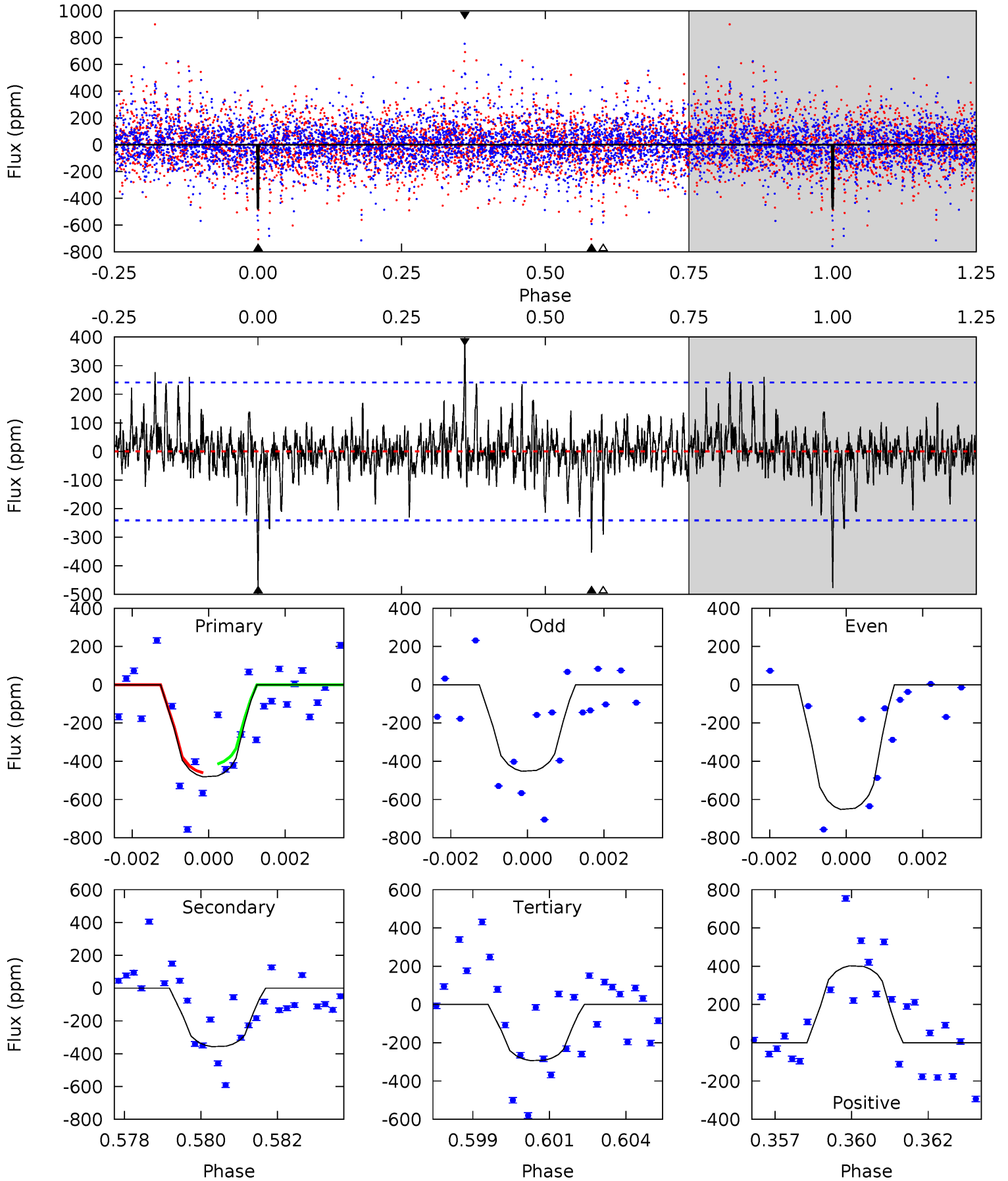
TCE 011457224-02 P= 31.685602 Days $T_0=155.230394$ (BKJD)



DV Model-Shift Uniqueness Test

011457224-02, P = 31.685499 Days, E = 123.563916 Days

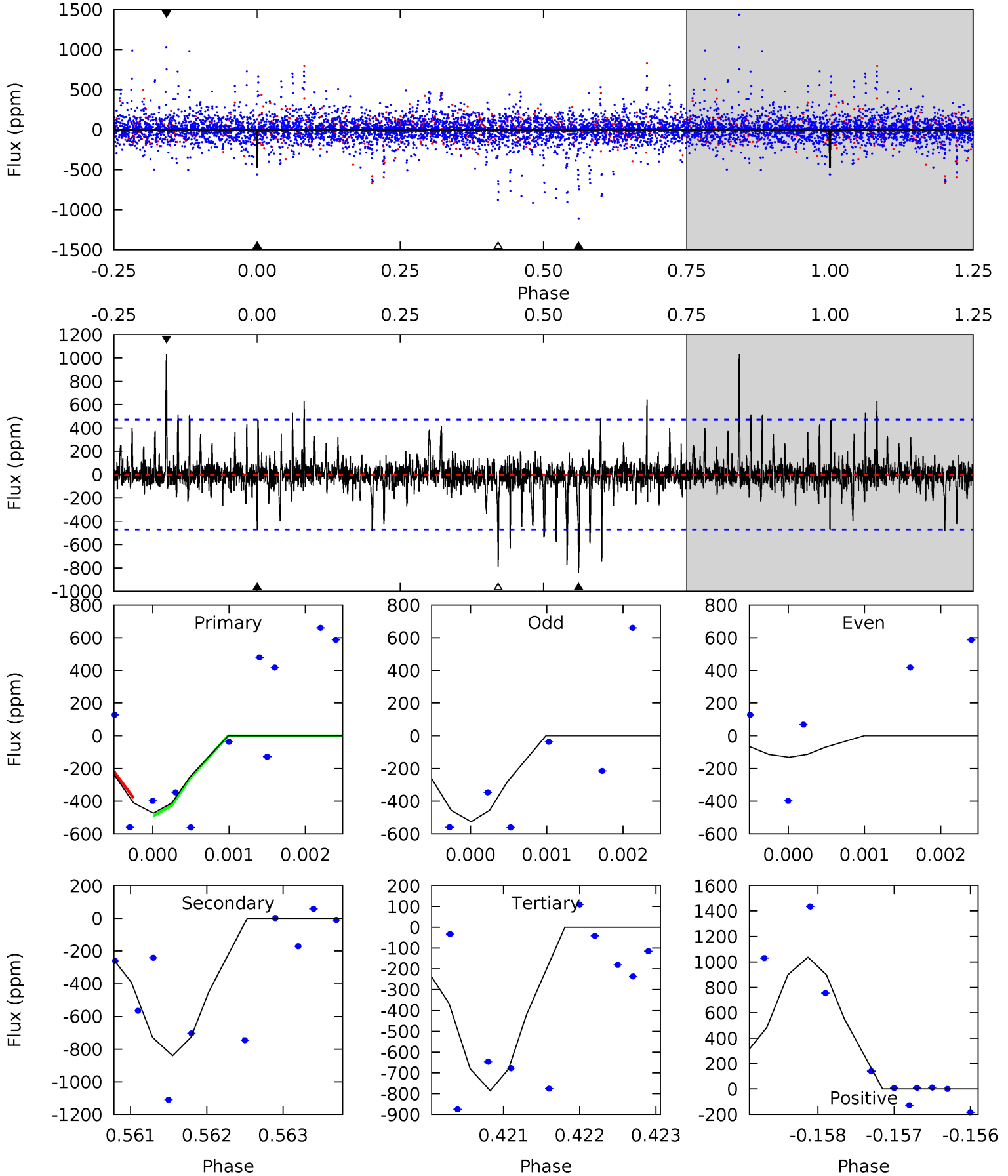
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	7.76	6.38	8.75	5.30	3.04	1.43	4.09	1.72	1.38	-0.98	2.17	1.37	0.46	0.51



Alt Model-Shift Uniqueness Test

011457224-02, P = 31.685602 Days, E = 123.544792 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.51	9.79	9.15	12.1	5.48	3.33	1.25	-3.64	-6.56	0.64	-2.29	1.77	0.76	0.55	0.00



Stellar Parameters For KIC 011457224

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5375^{+160}_{-144}	$4.452^{+0.100}_{-0.150}$	$0.070^{+0.250}_{-0.300}$	$0.916^{+0.199}_{-0.107}$	$0.866^{+0.097}_{-0.073}$	$1.587^{+0.688}_{-0.663}$
	+3%/-3%	+2%/-3%	+357%/-429%	+22%/-12%	+11%/-8%	+43%/-42%
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 011457224-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-354 ± 46	$3.29^{+3.18}_{-2.20}$	739^{+42}_{-37}	4340^{+2774}_{-928}	633^{+4909}_{-474}
Alt.	-840 ± 86	$3.28^{+3.05}_{-2.23}$	736^{+44}_{-34}	5119^{+4344}_{-1130}	1556^{+13067}_{-1160}

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

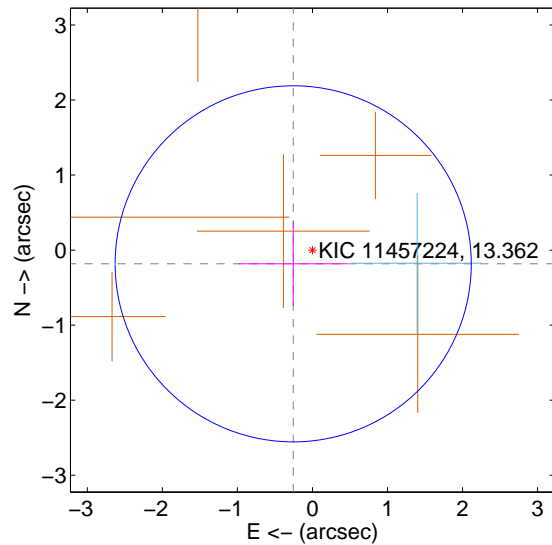
Supplemental centroid analysis for 011457224-02. Kepler magnitude: 13.36. Transit SNR 8.24

There are 1 quarters with good PRF difference image offsets

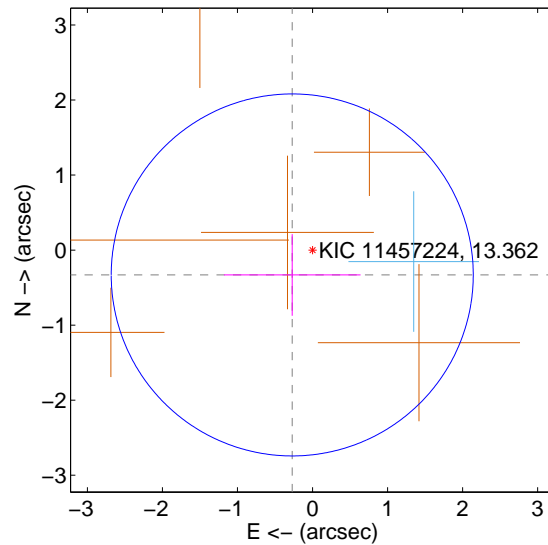
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.315 ± 0.791	0.40	0.256 ± 0.729	-0.183 ± 0.561
PRF-fit source offset from KIC position	0.427 ± 0.804	0.53	0.270 ± 0.910	-0.331 ± 0.544
photometric centroid source offset	0.94 ± 0.35	2.68	-0.22 ± 0.32	0.91 ± 0.35

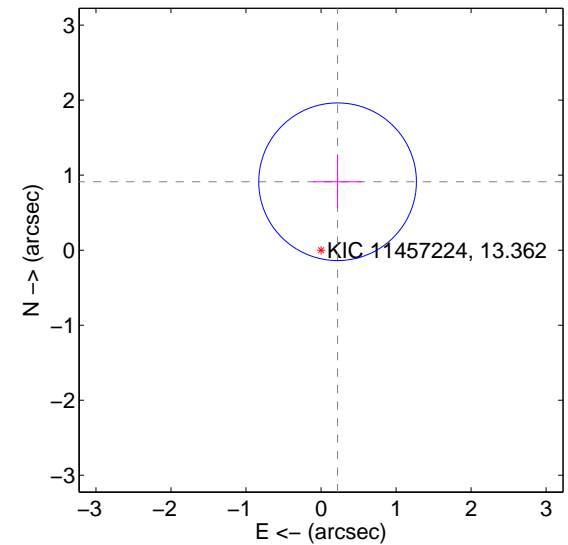
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

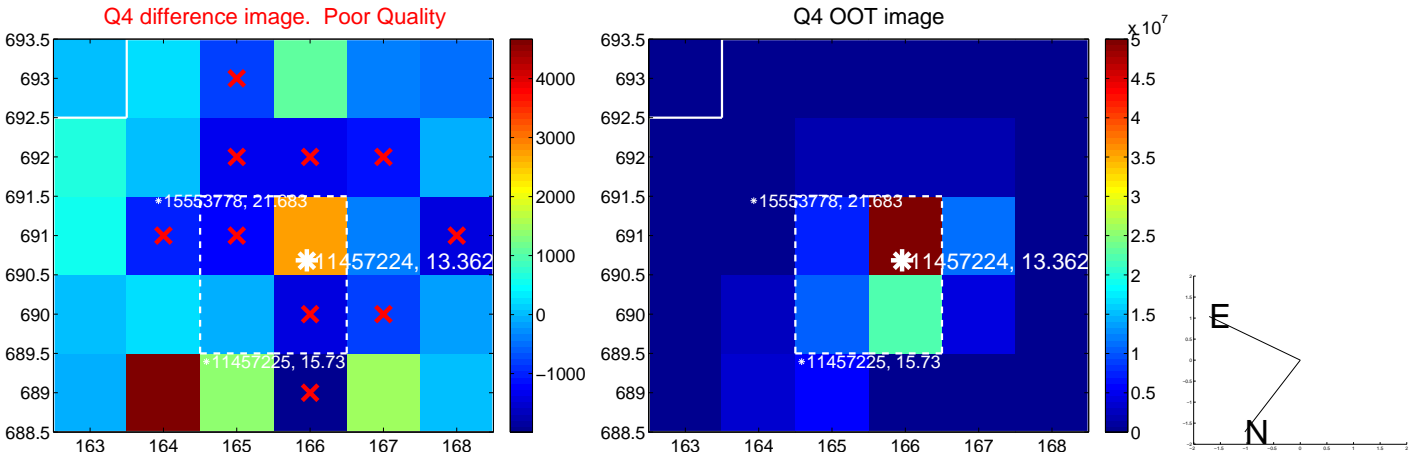
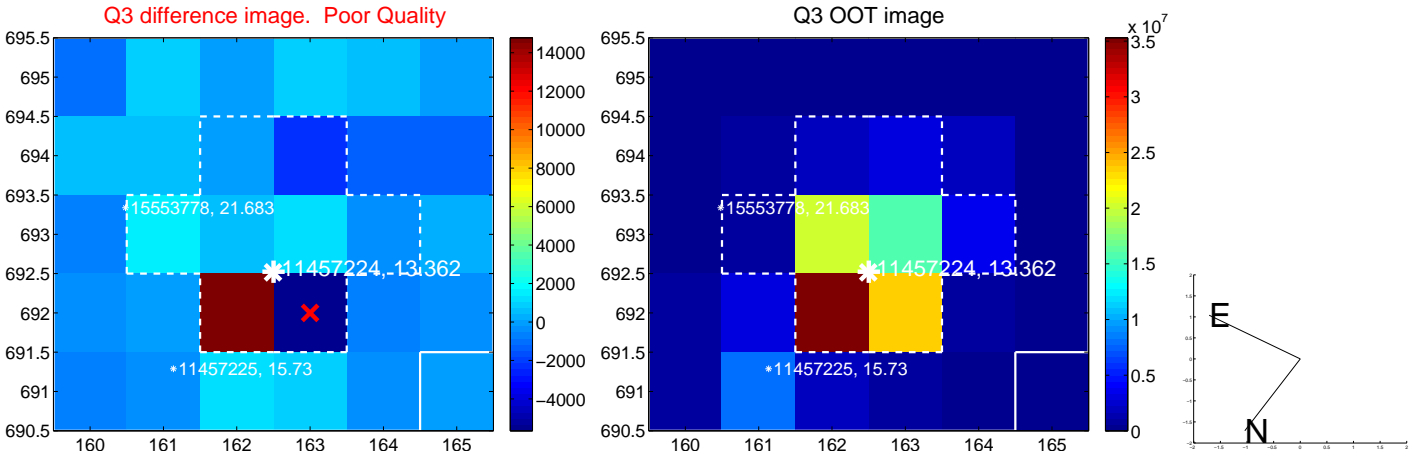
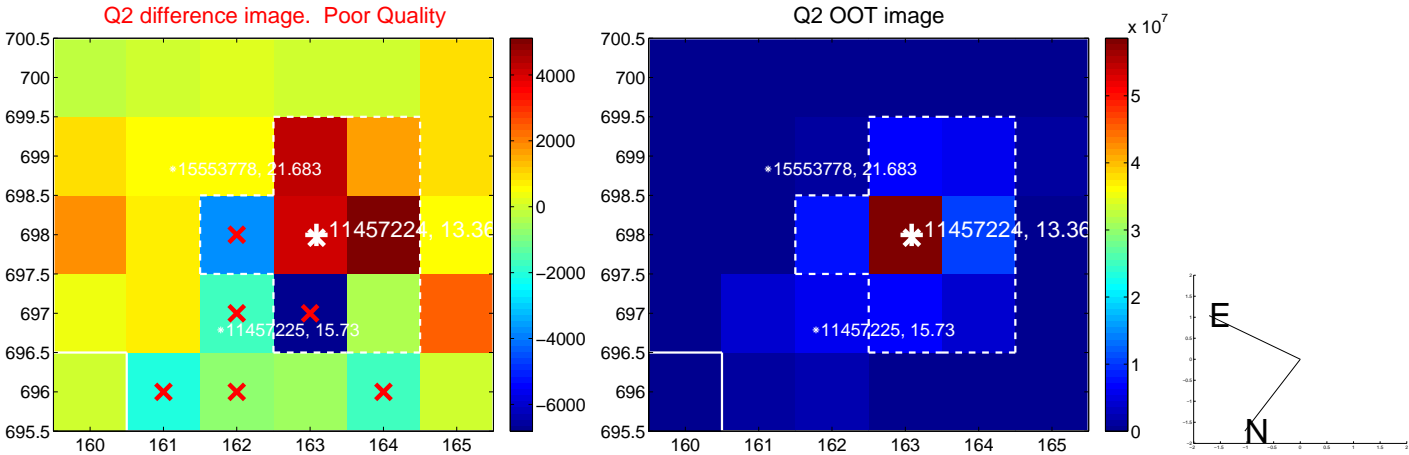
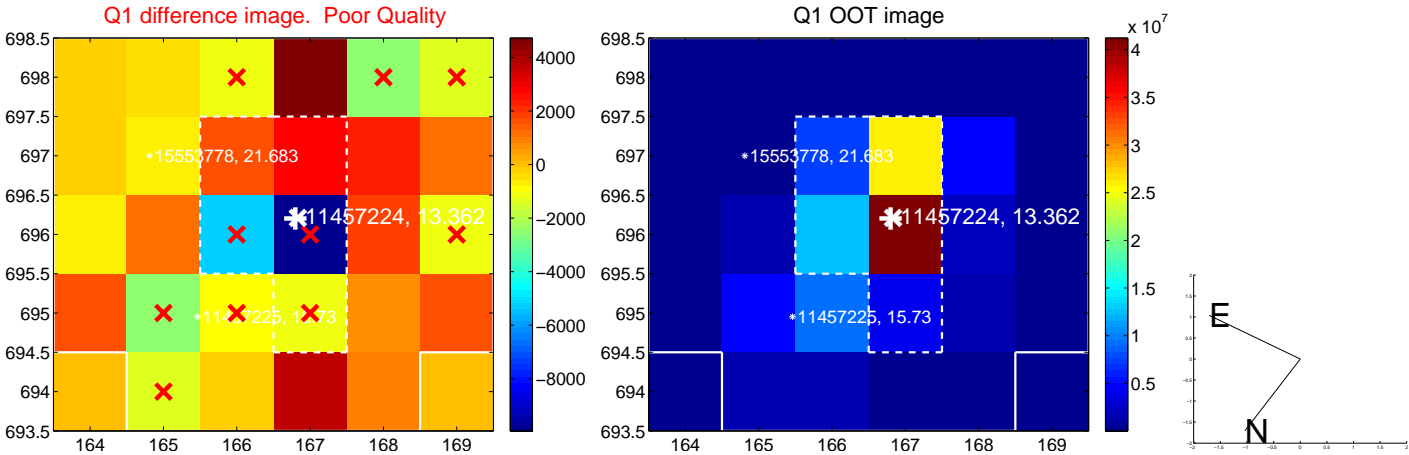


offset from photometric centroids

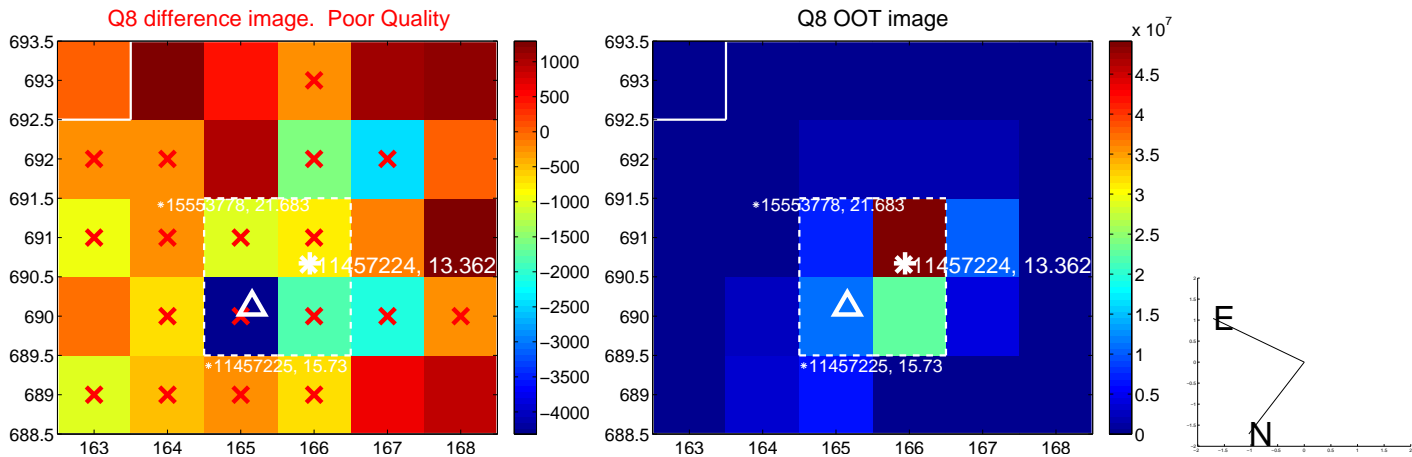
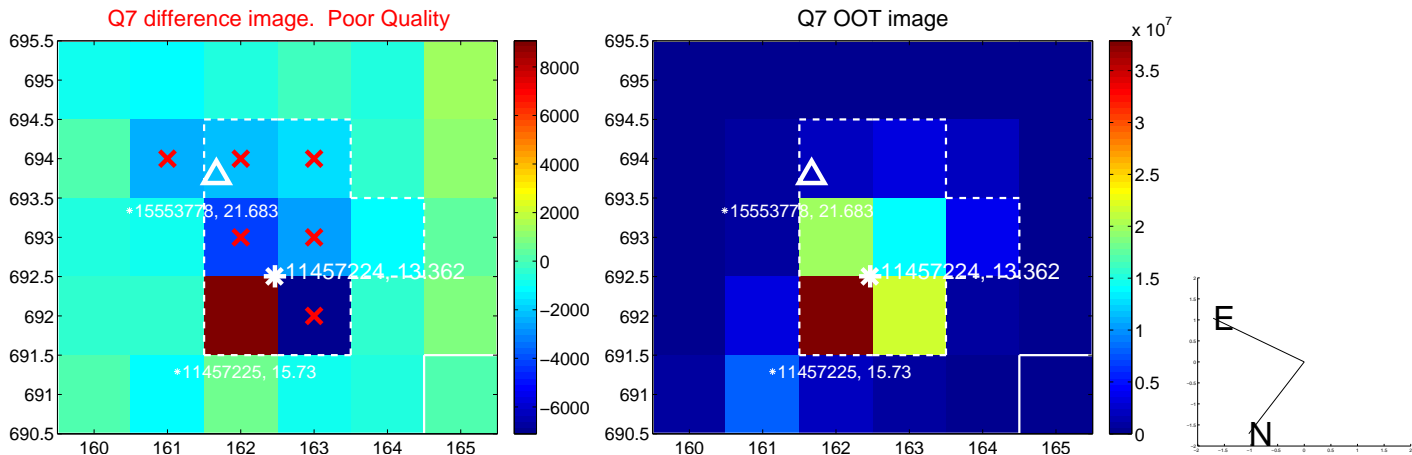
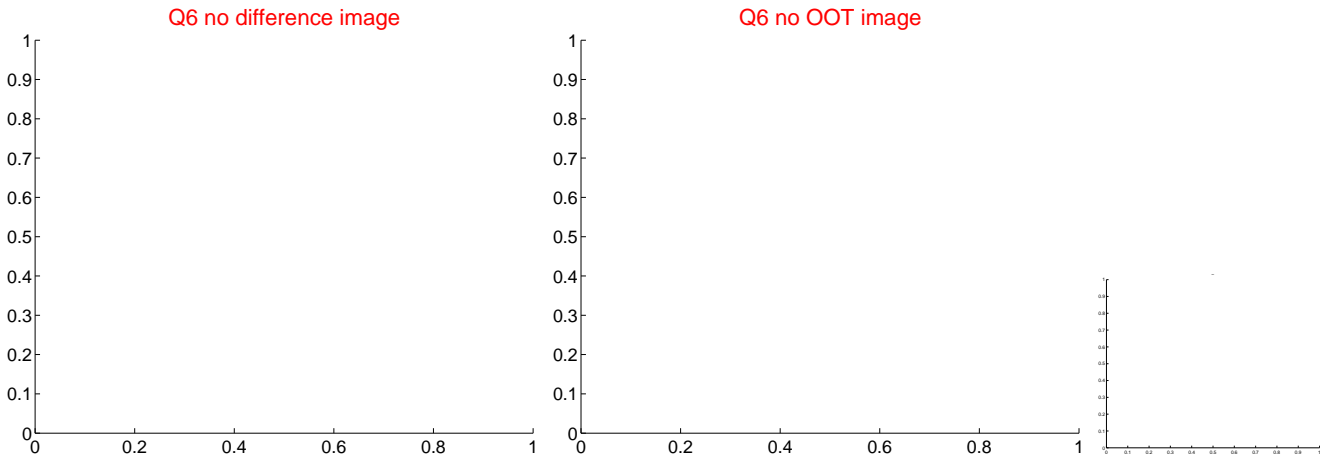
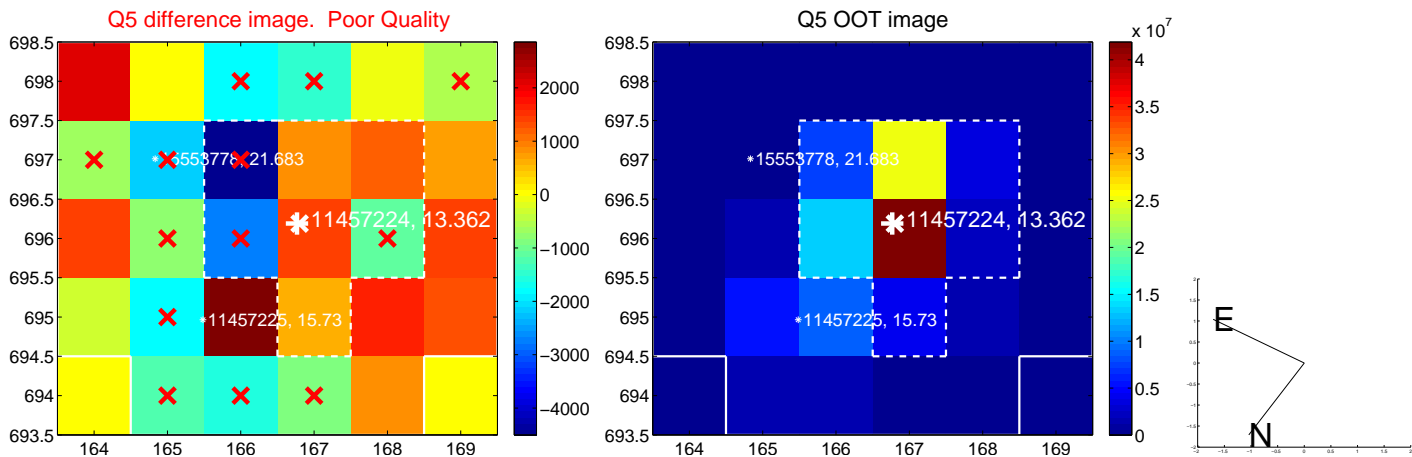


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

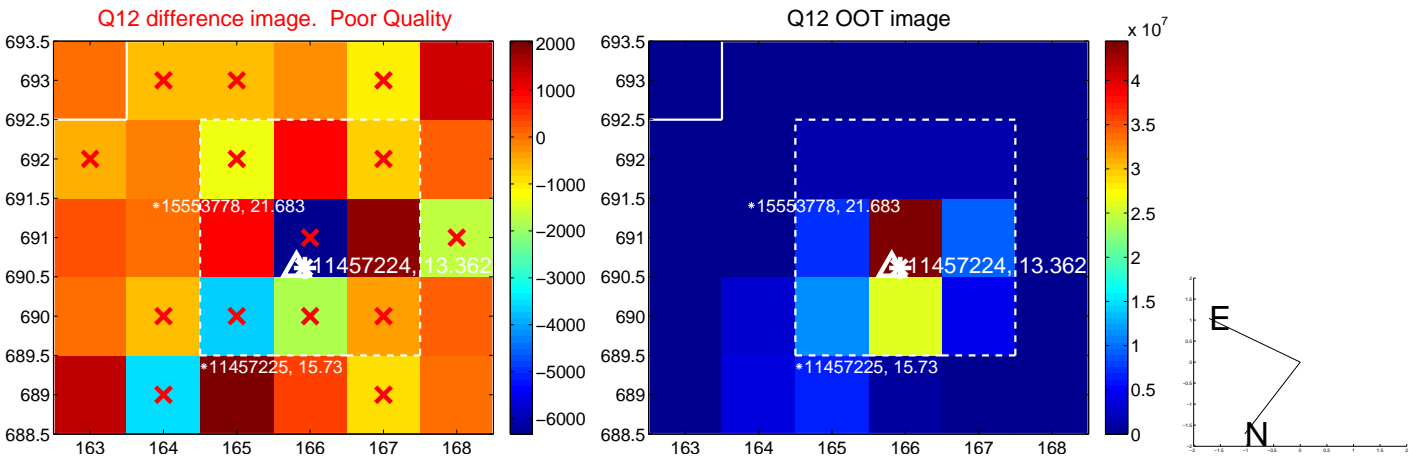
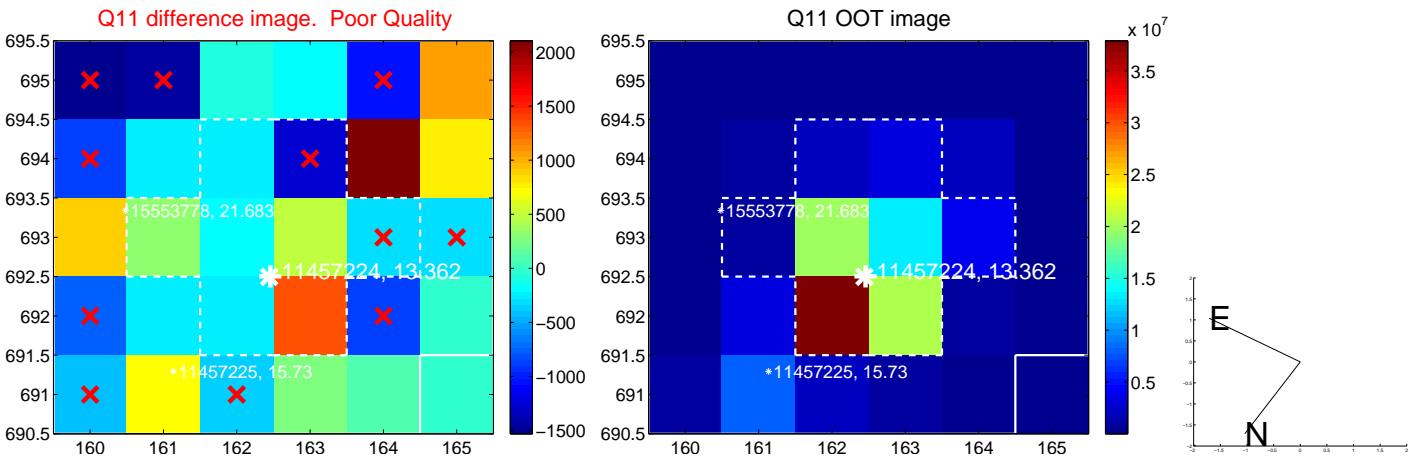
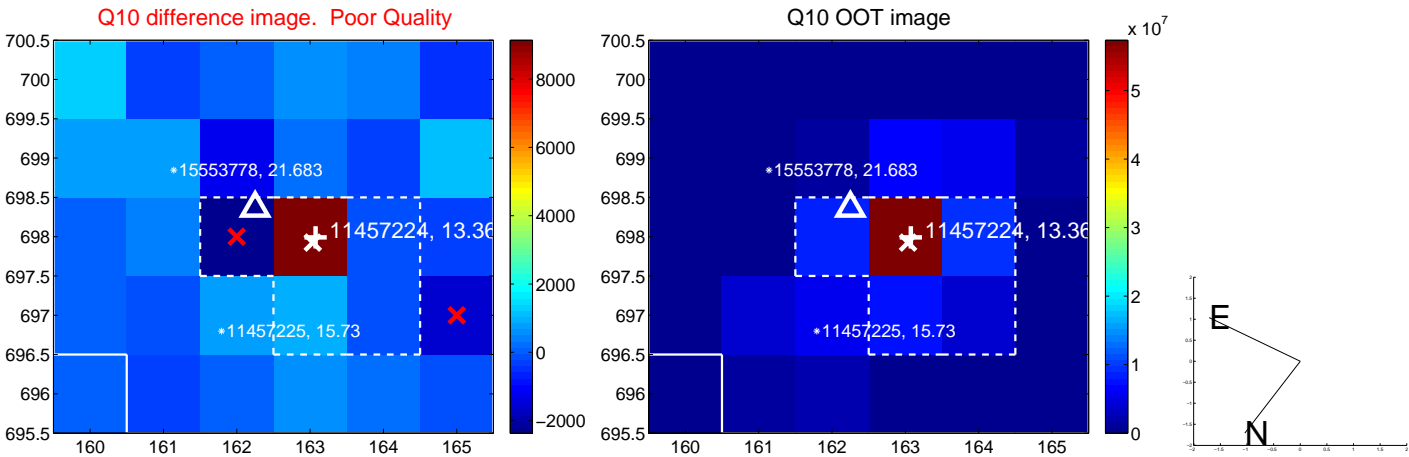
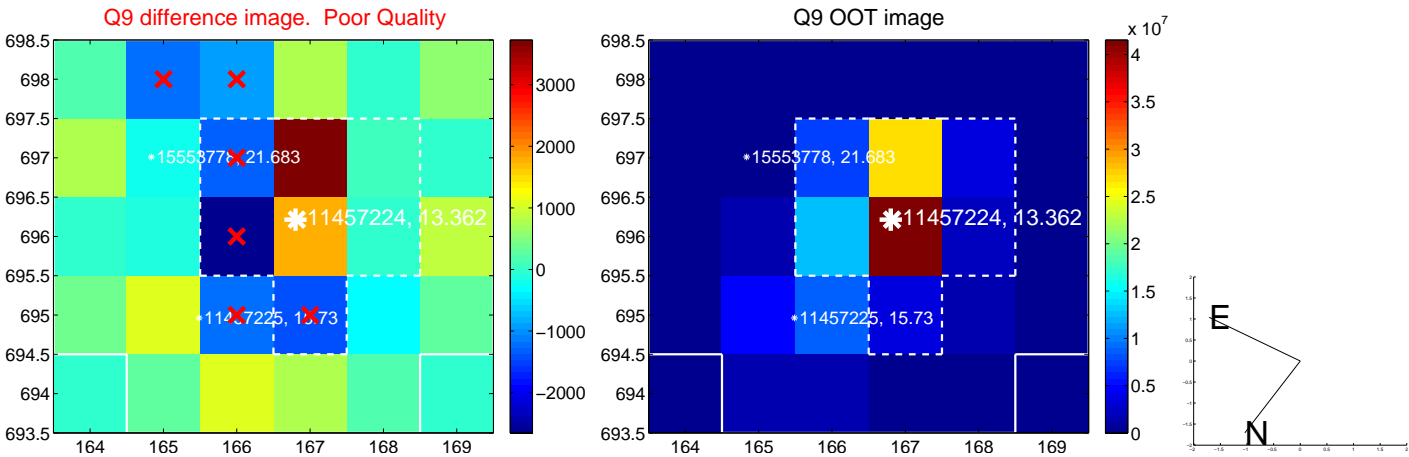
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



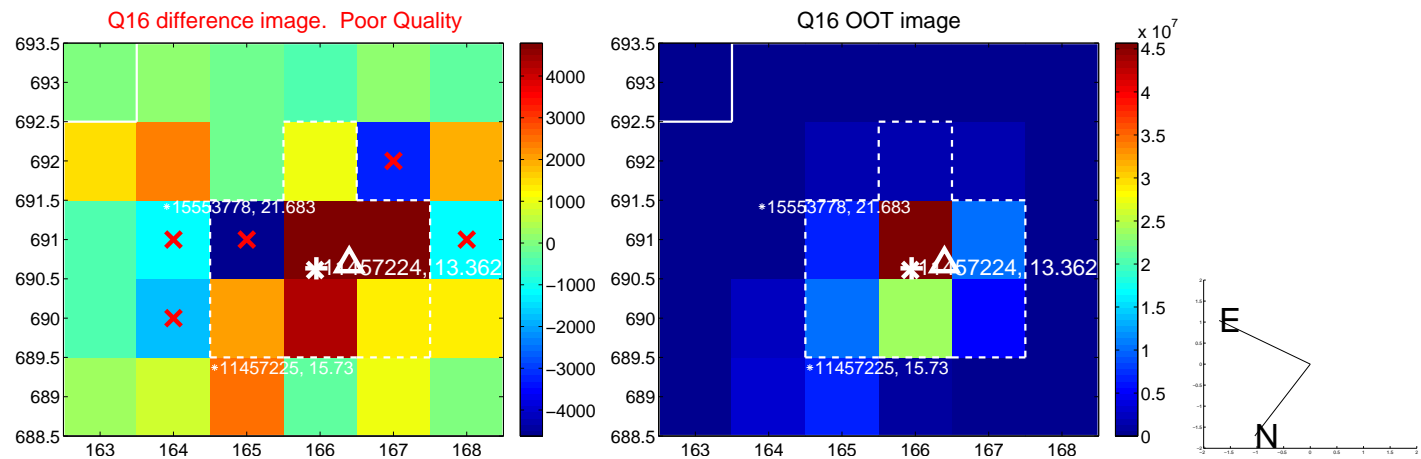
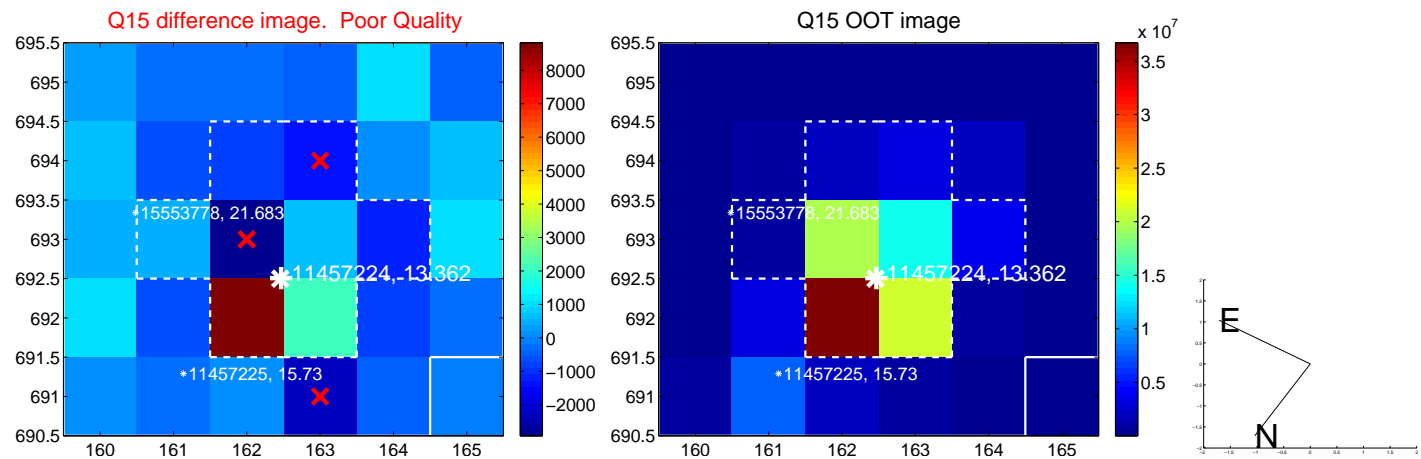
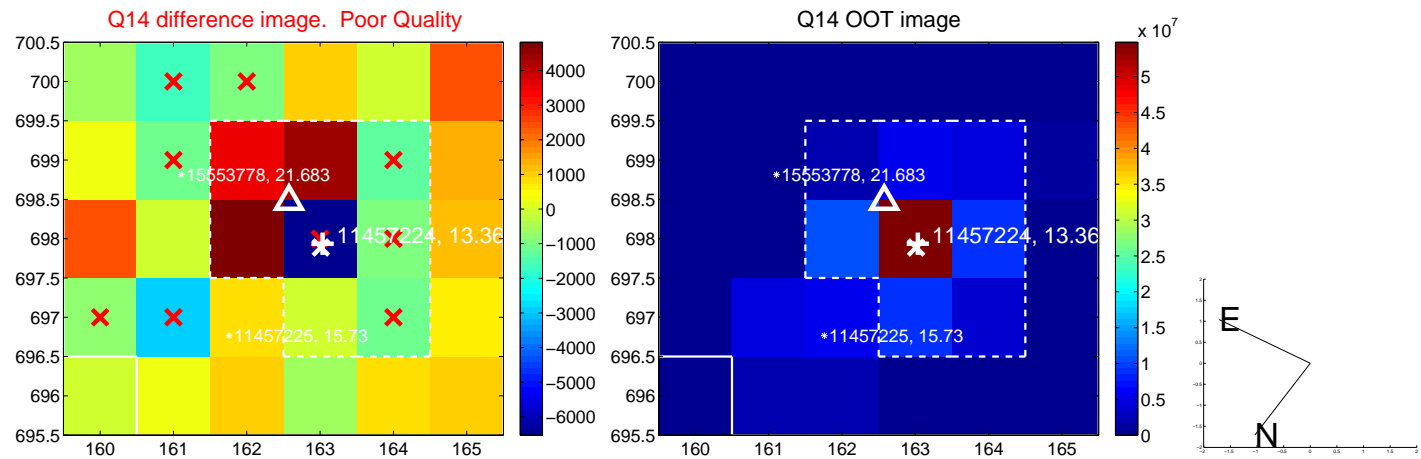
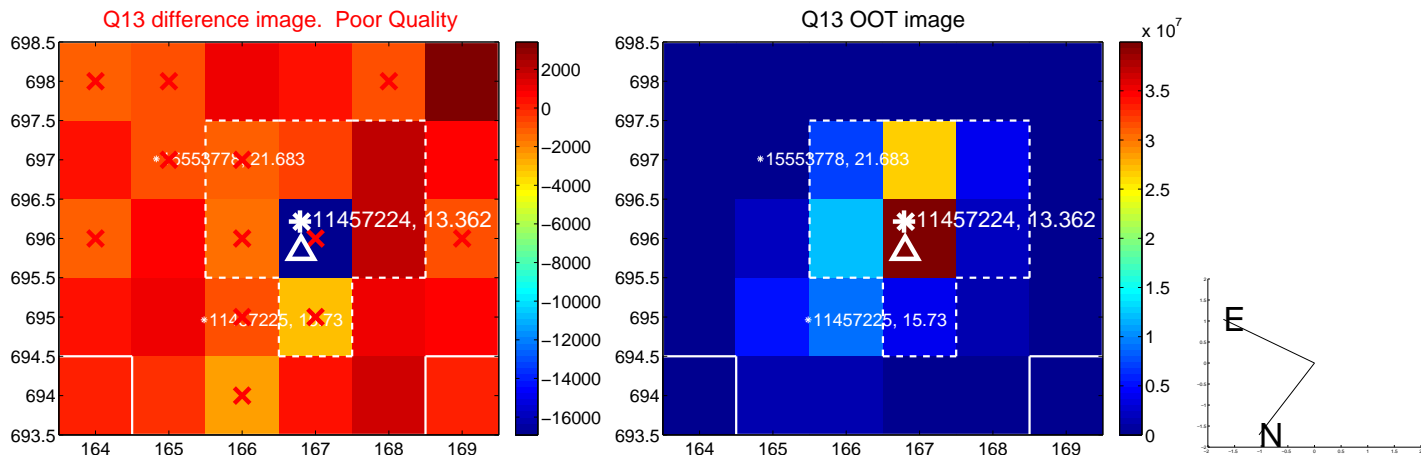
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



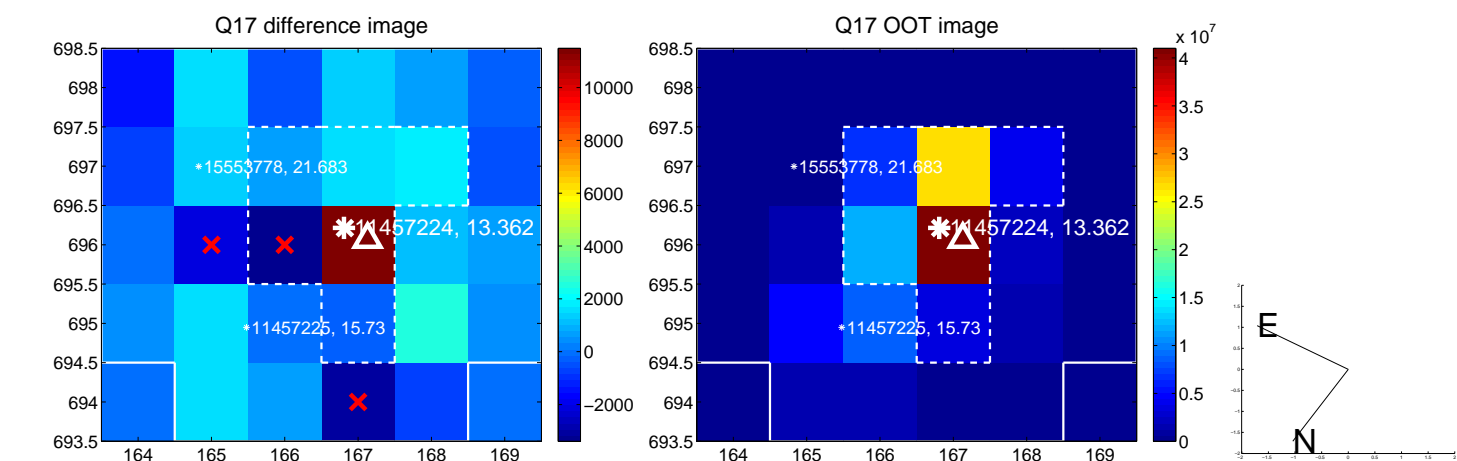
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



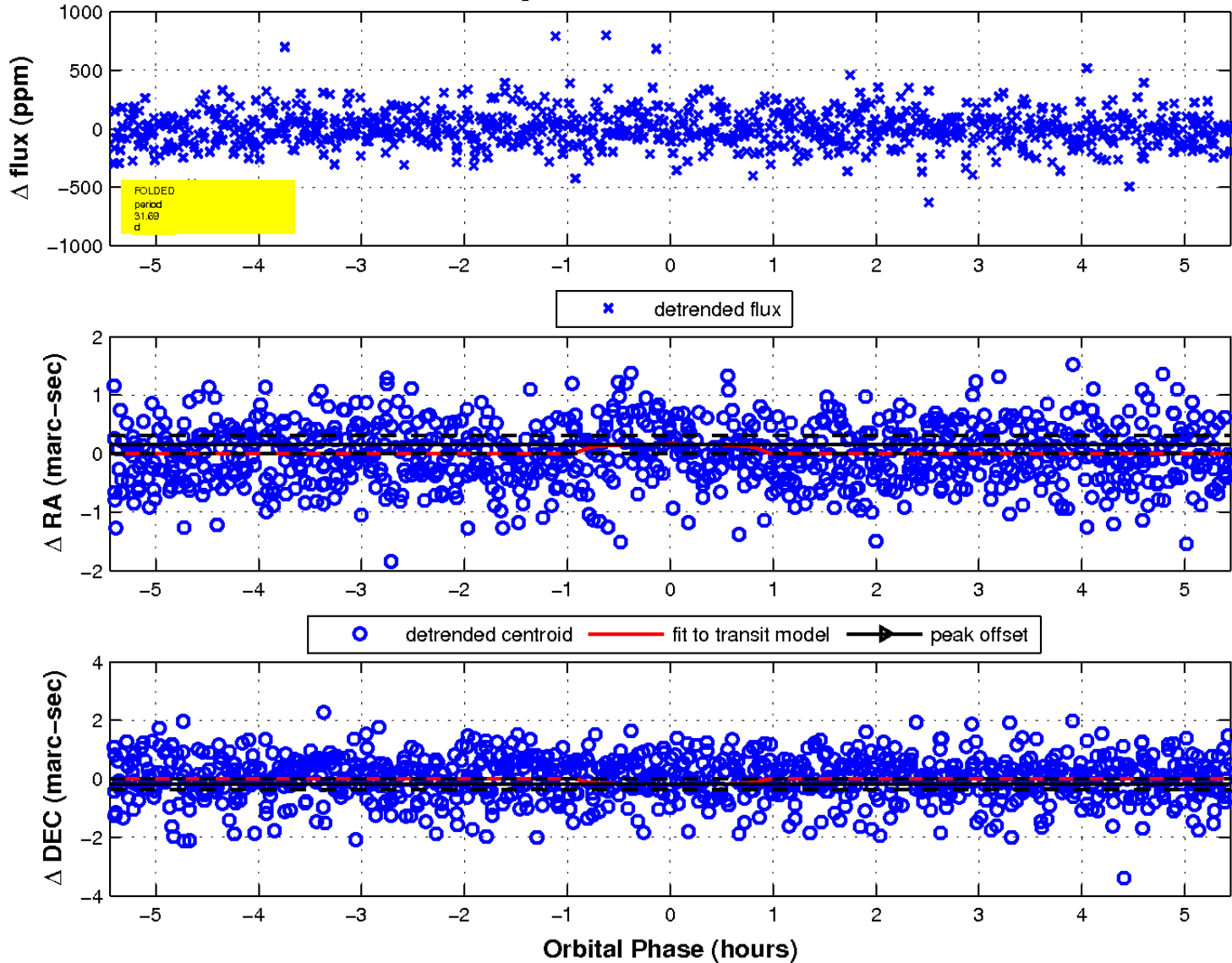
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

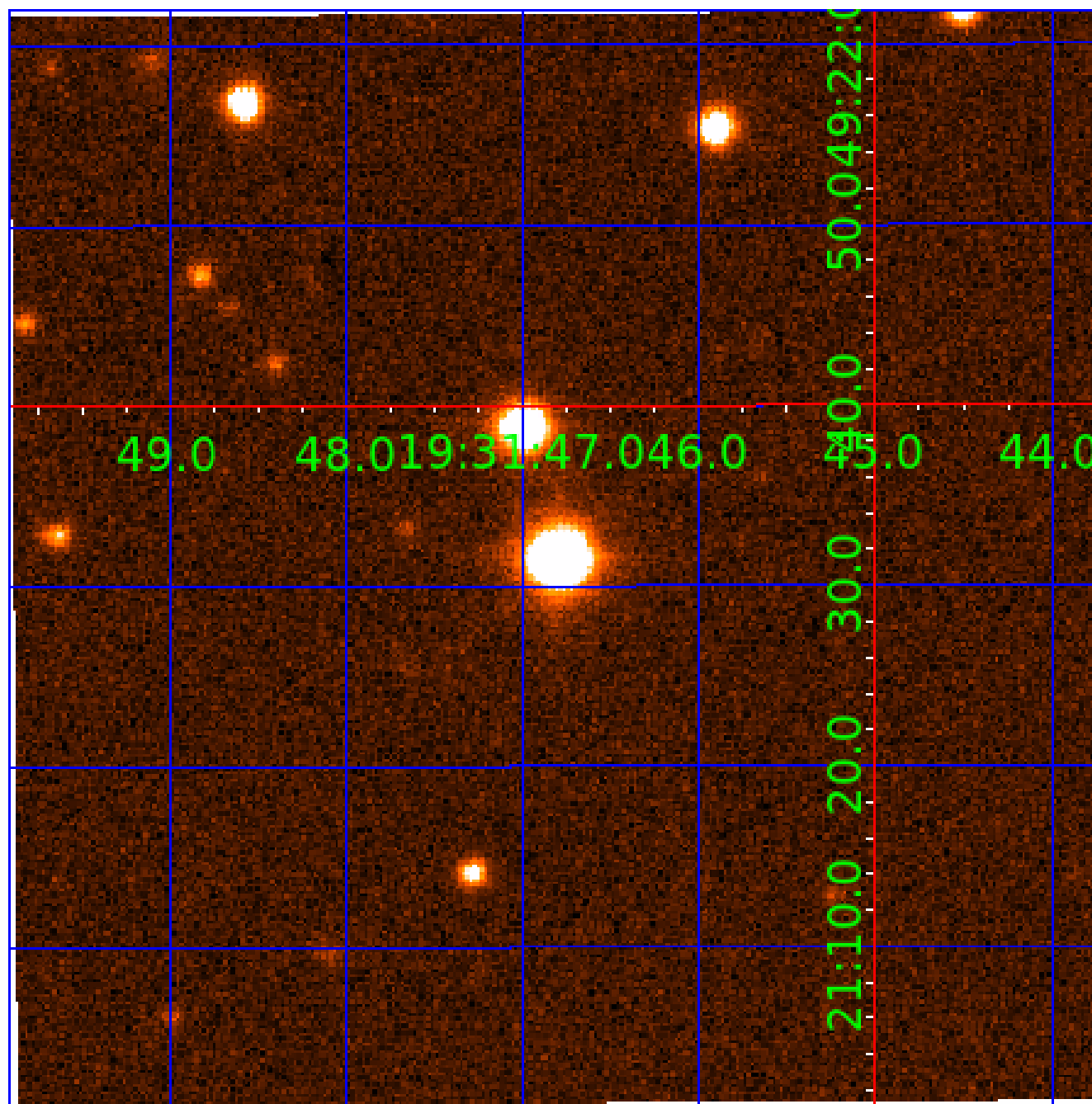


fluxWeightedCentroids, Planet 2 of 7



UKIRT Image

Declination



KIC 011457224

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})
011457224-01	OBS	No	0.633973	132.084866	7.9	4.457	8.8	4.6	0.92	5375	0.25	3308.09
011457224-02	OBS	No	31.685499	155.249415	421.4	1.818	13.2	8.2	0.92	5375	1.91	17.97
011457224-03	OBS	No	29.156067	159.683864	322.6	2.204	12.7	9.6	0.92	5375	1.75	20.08
011457224-04	OBS	No	31.067348	157.130239	216.3	2.945	10.4	6.6	0.92	5375	2.11	18.45
011457224-05	OBS	No	46.259487	147.022600	519.3	2.482	11.1	10.4	0.92	5375	2.19	10.85
011457224-06	OBS	No	9.818013	131.783275	184.3	1.786	9.9	8.6	0.92	5375	1.50	85.70
011457224-07	OBS	No	46.300127	146.318034	552.2	2.206	9.7	8.6	0.92	5375	3.93	10.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011457224-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_DIFFS
011457224-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011457224-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS—HALO_GHOST
011457224-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011457224-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011457224-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011457224-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

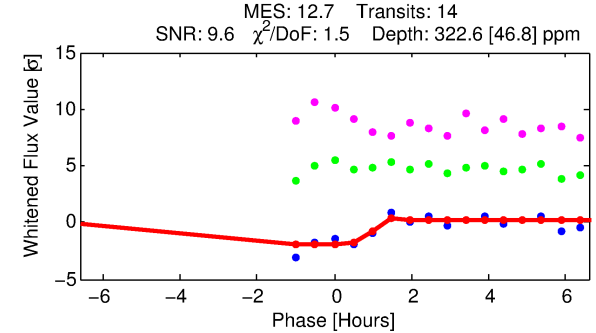
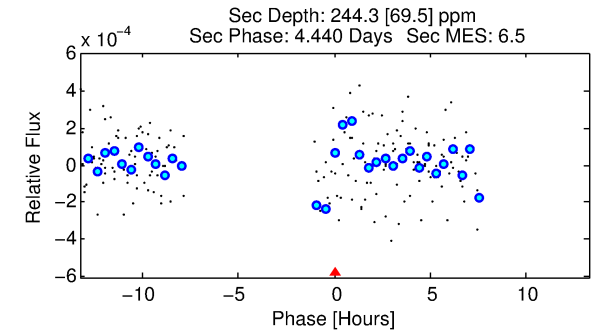
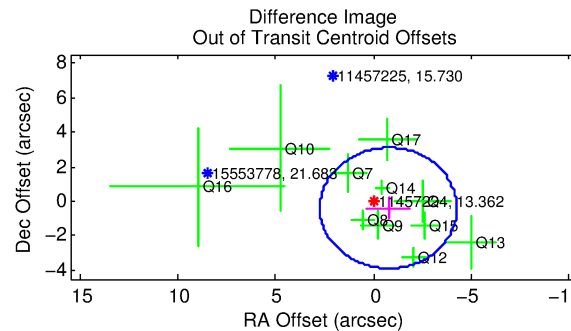
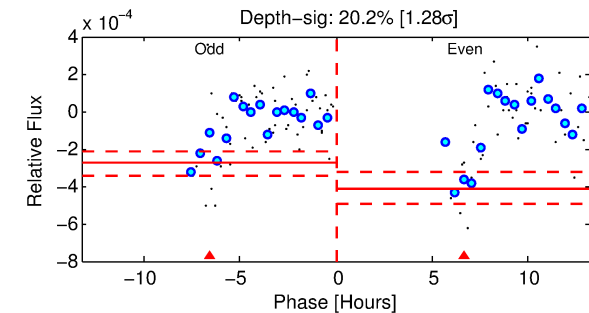
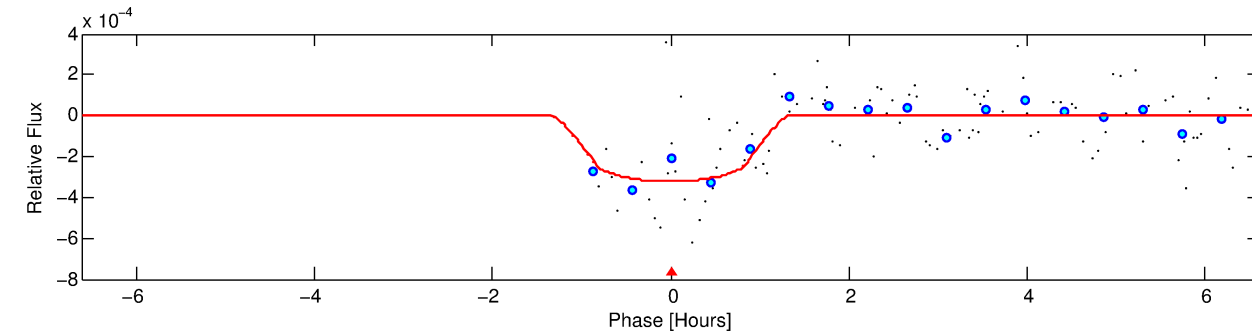
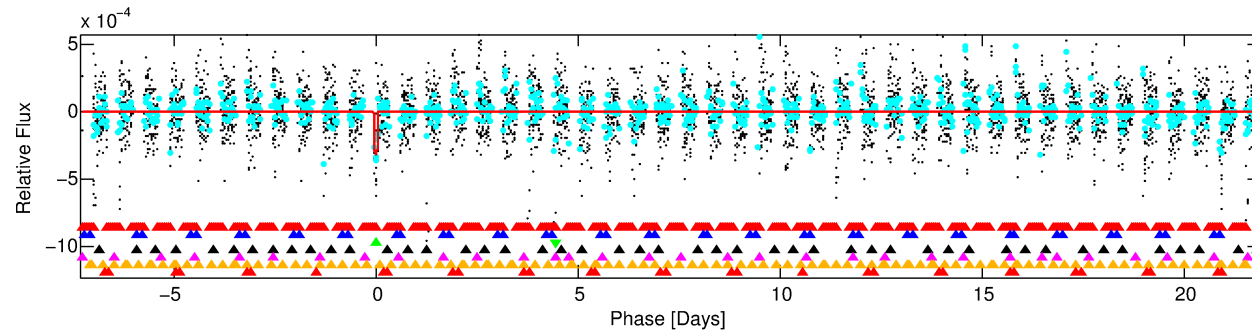
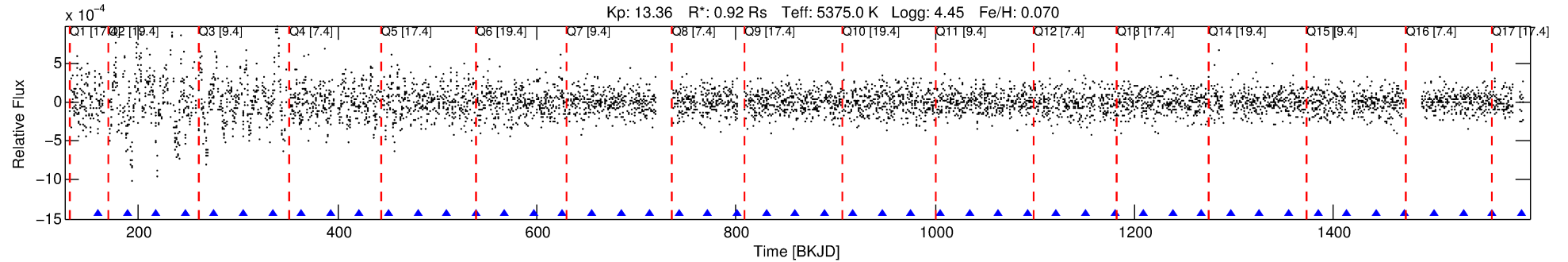
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011457224-03

No Significant Match Found

DV One-Page Summary

KIC: 11457224 Candidate: 3 of 7 Period: 29.156 d



DV Fit Results:

Period = 29.15607 [0.00124] d
Epoch = 159.6839 [0.0073] BKJD
Rp/R* = 0.0175 [0.0308]
a/R* = 76.66 [517.87]
b = 0.68 [5.45]
Seff = 20.08 [5.96]
Teff = 540 [40] K
Rp = 1.75 [3.10] Re
a = 0.1768 [0.0327] AU
Ag = 1378.94 [4896.30] [0.28 σ]
Teffp = 5085 [4504] K [1.01 σ]

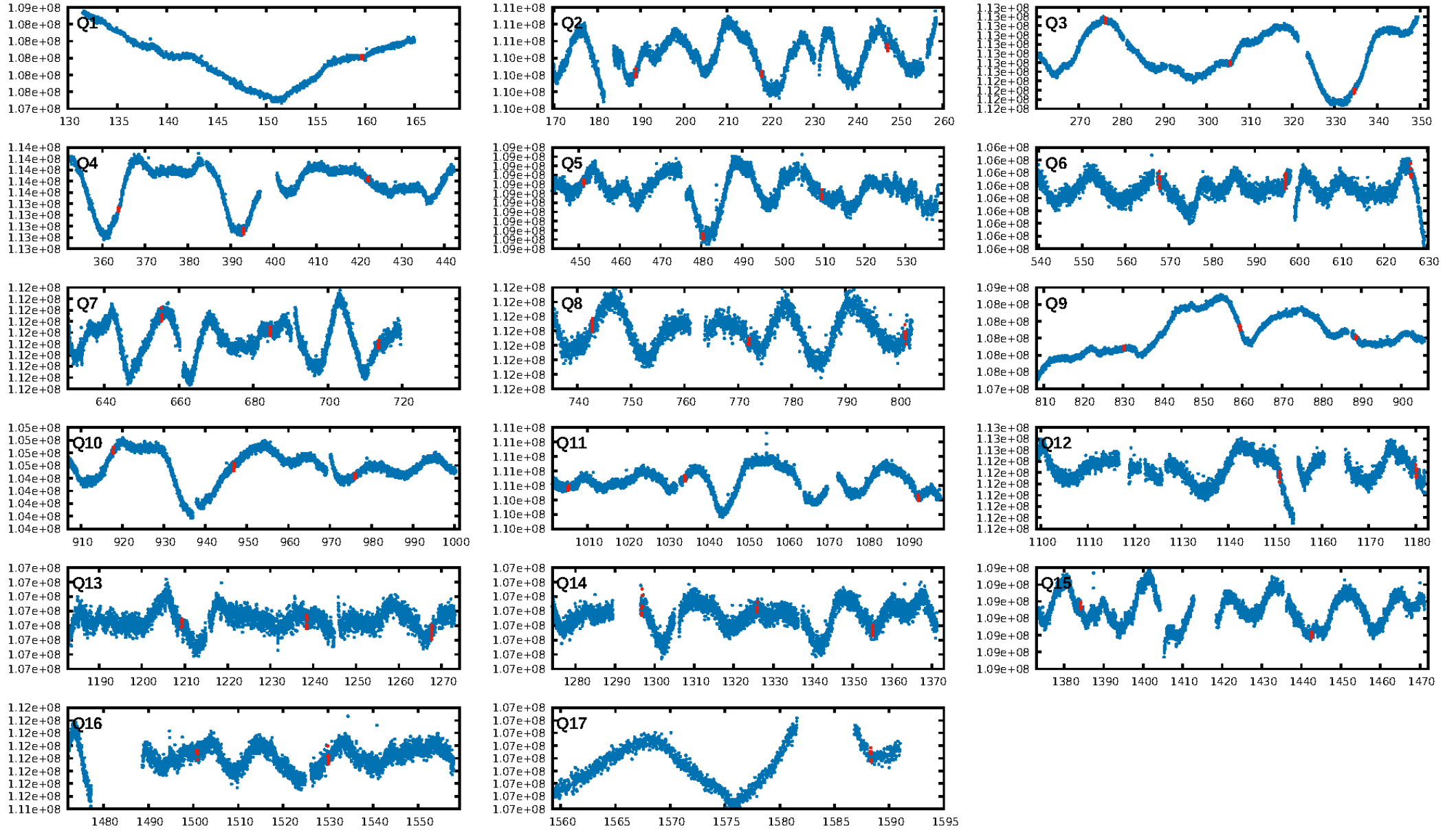
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [163.62 σ]
LongPeriod-sig: 100.0% [12.47 σ]
ModelChiSquare2-sig: 8.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [13/13]
GhostDiagnostic-chr: -0.002436
Centroid-sig: 0.5%
Centroid-so: 0.278 arcsec [0.70 σ]
OotOffset-rm: 0.853 arcsec [0.73 σ]
OotOffset-st: 2/2/4/3 [11]
KicOffset-rm: 0.873 arcsec [0.75 σ]
KicOffset-st: 2/2/4/3 [11]
DiffImageQuality-fgm: 0.09 [1/11]
DiffImageOverlap-fno: 0.00 [0/17]

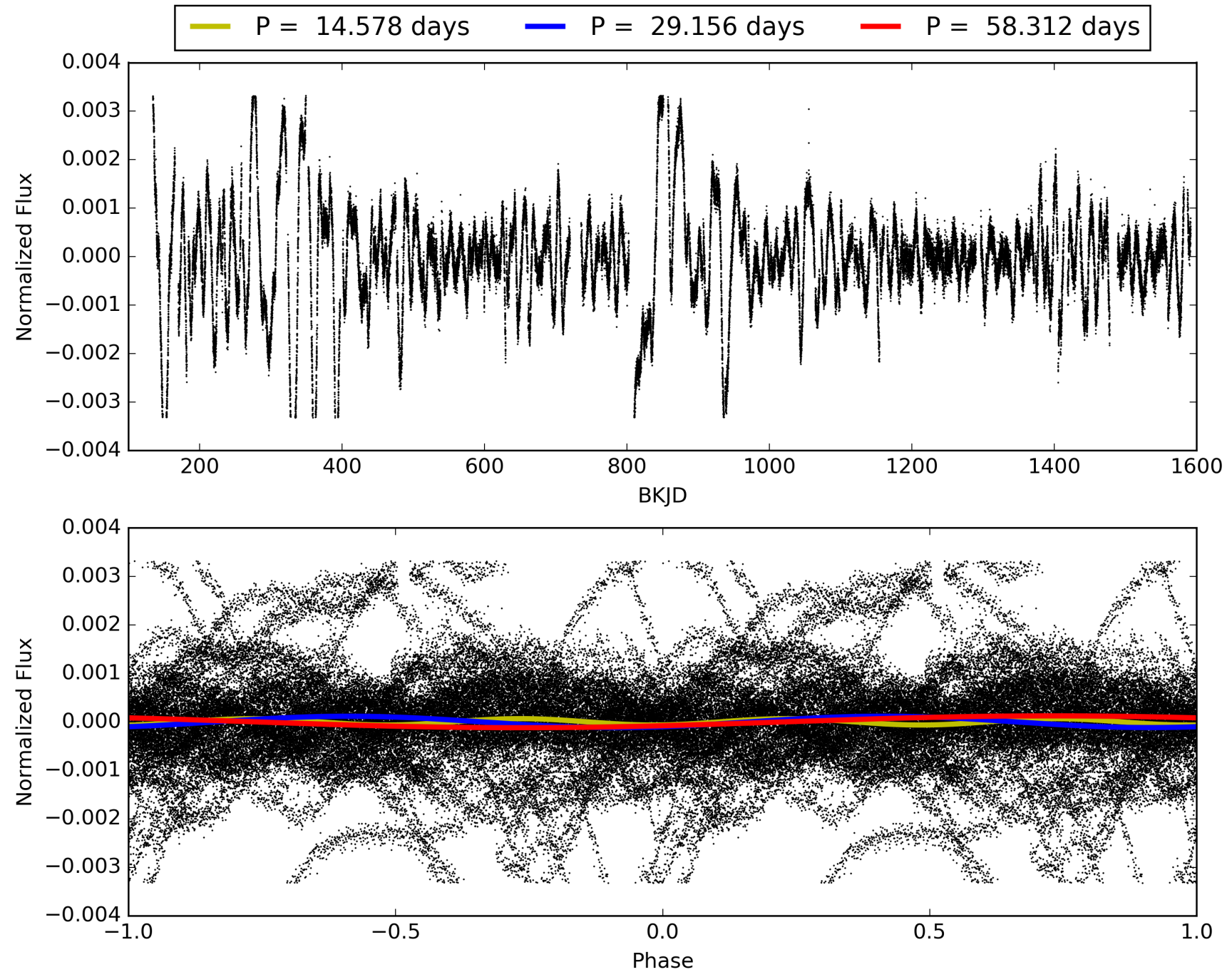
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:08:55 Z

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

TCE 011457224-03, PDC Light Curves

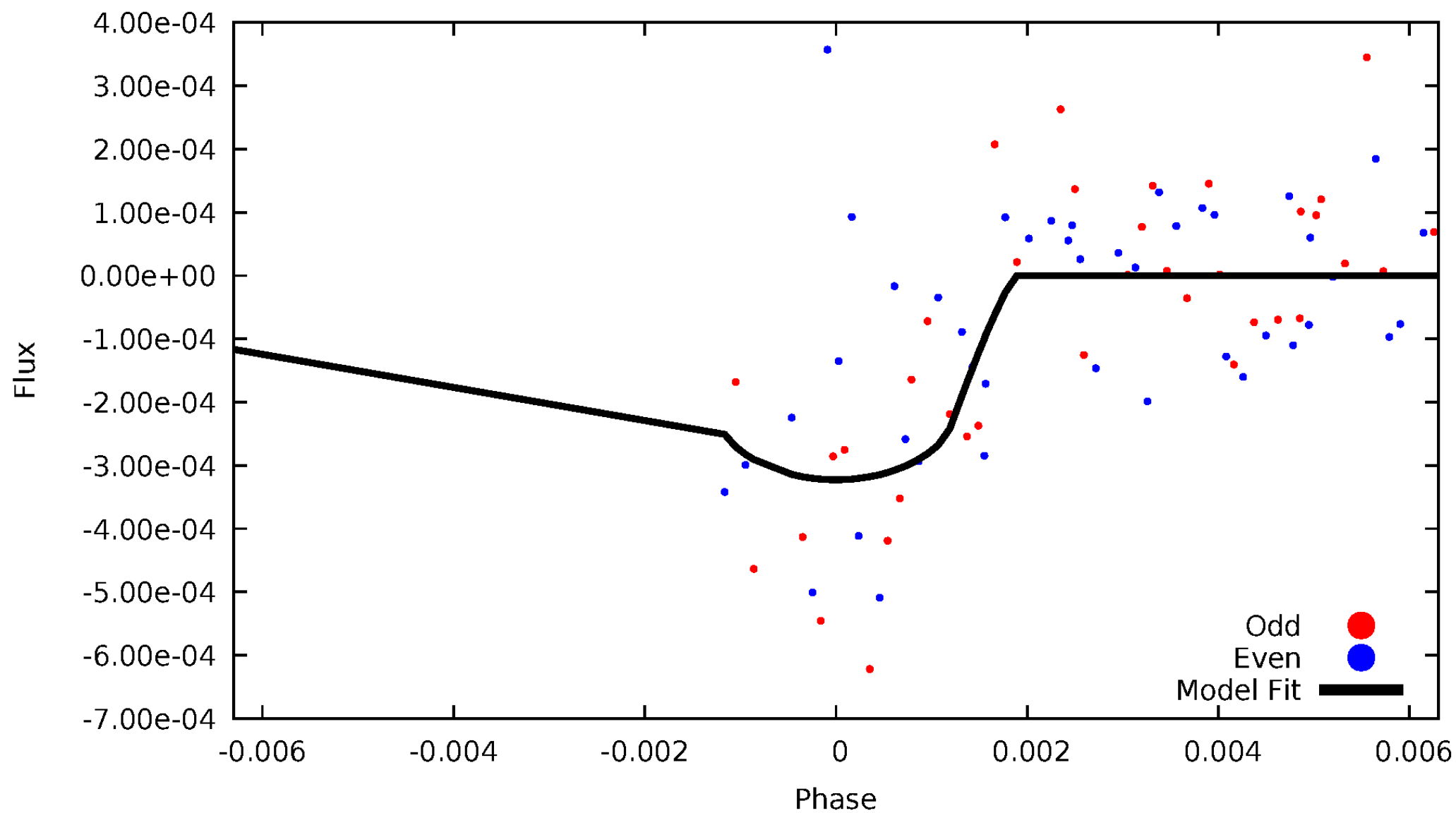


TCE 011457224-03



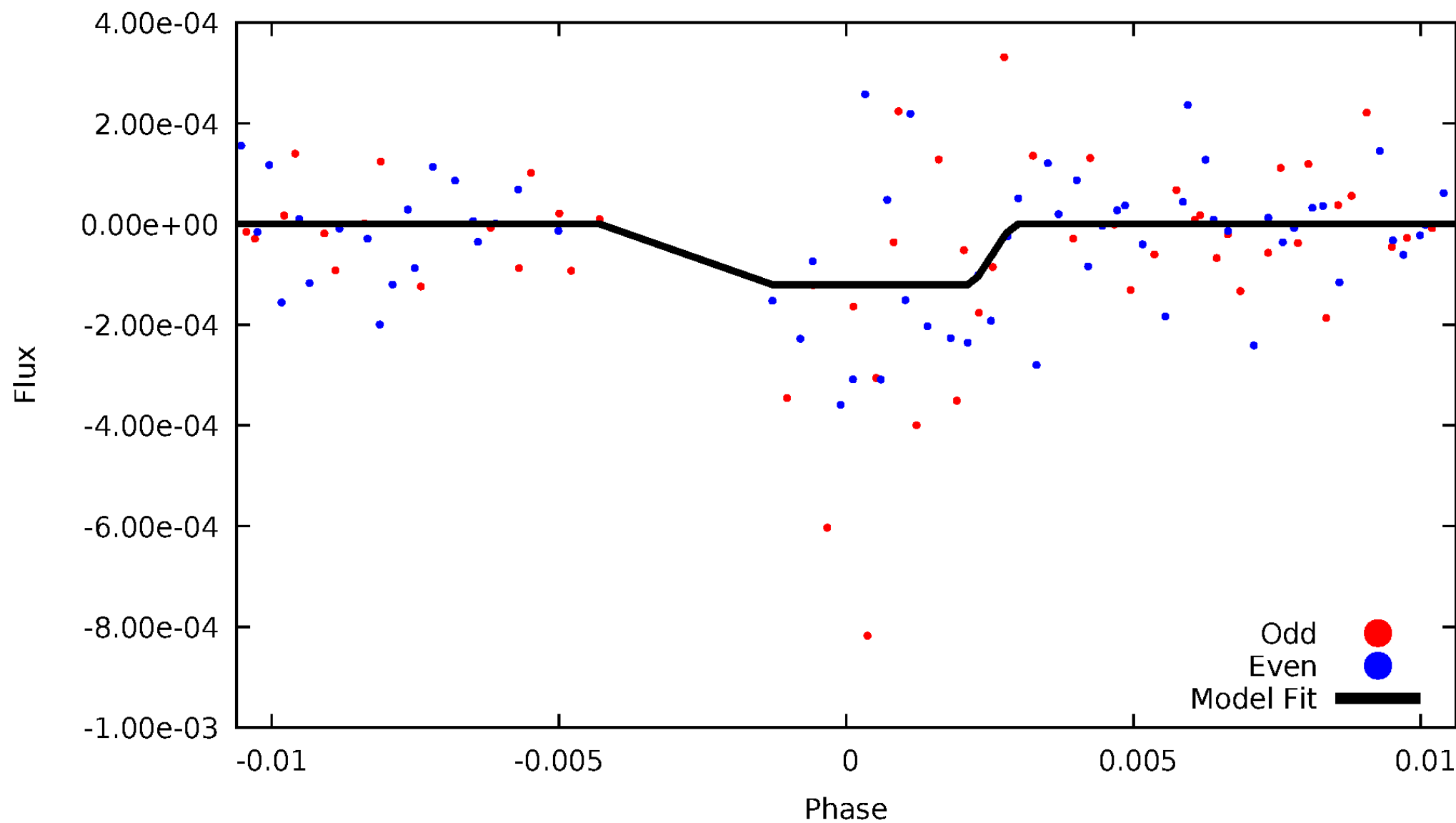
DV Odd/Even

TCE 011457224-03



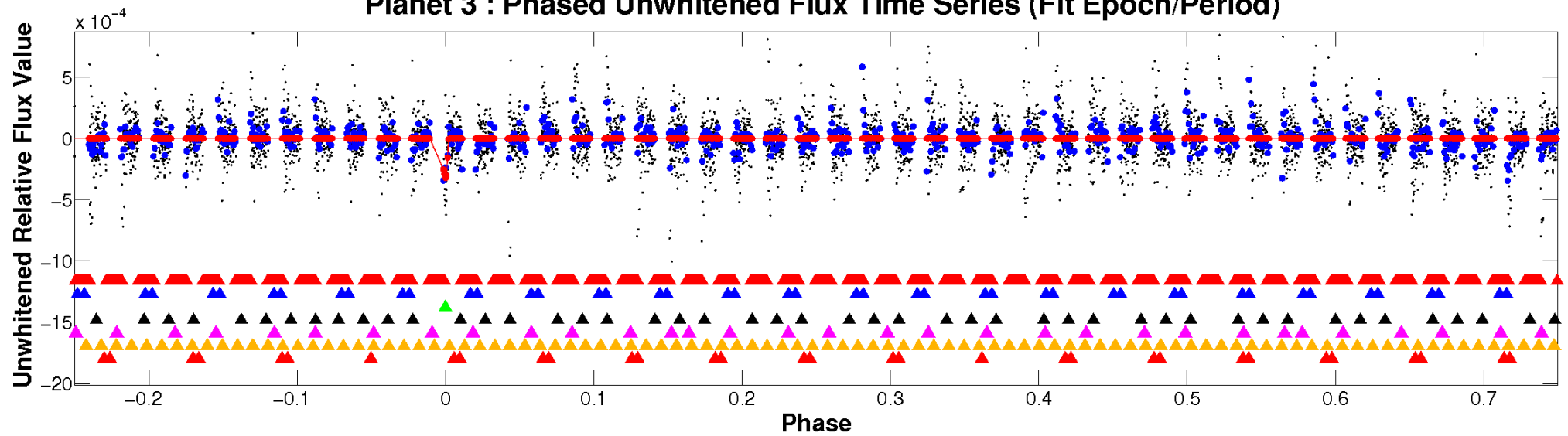
ALT Odd/Even

TCE 011457224-03

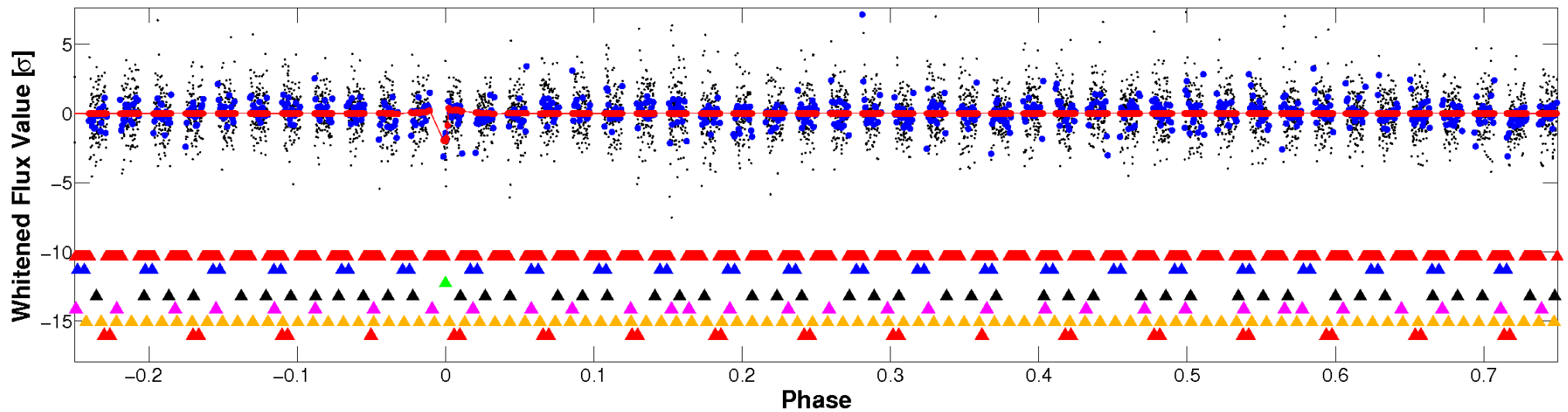


Non-Whitened Vs. Whitened Light Curve

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

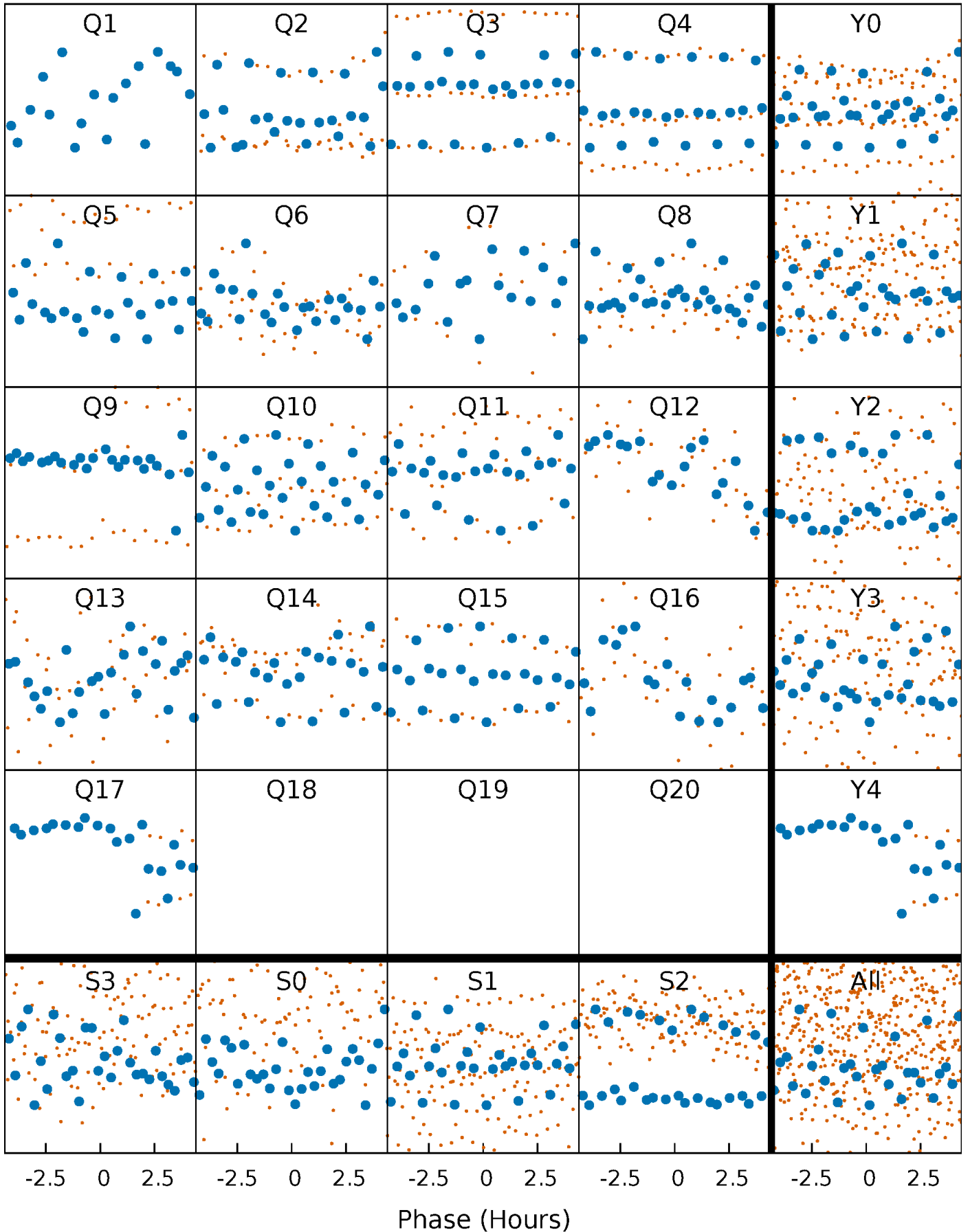


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



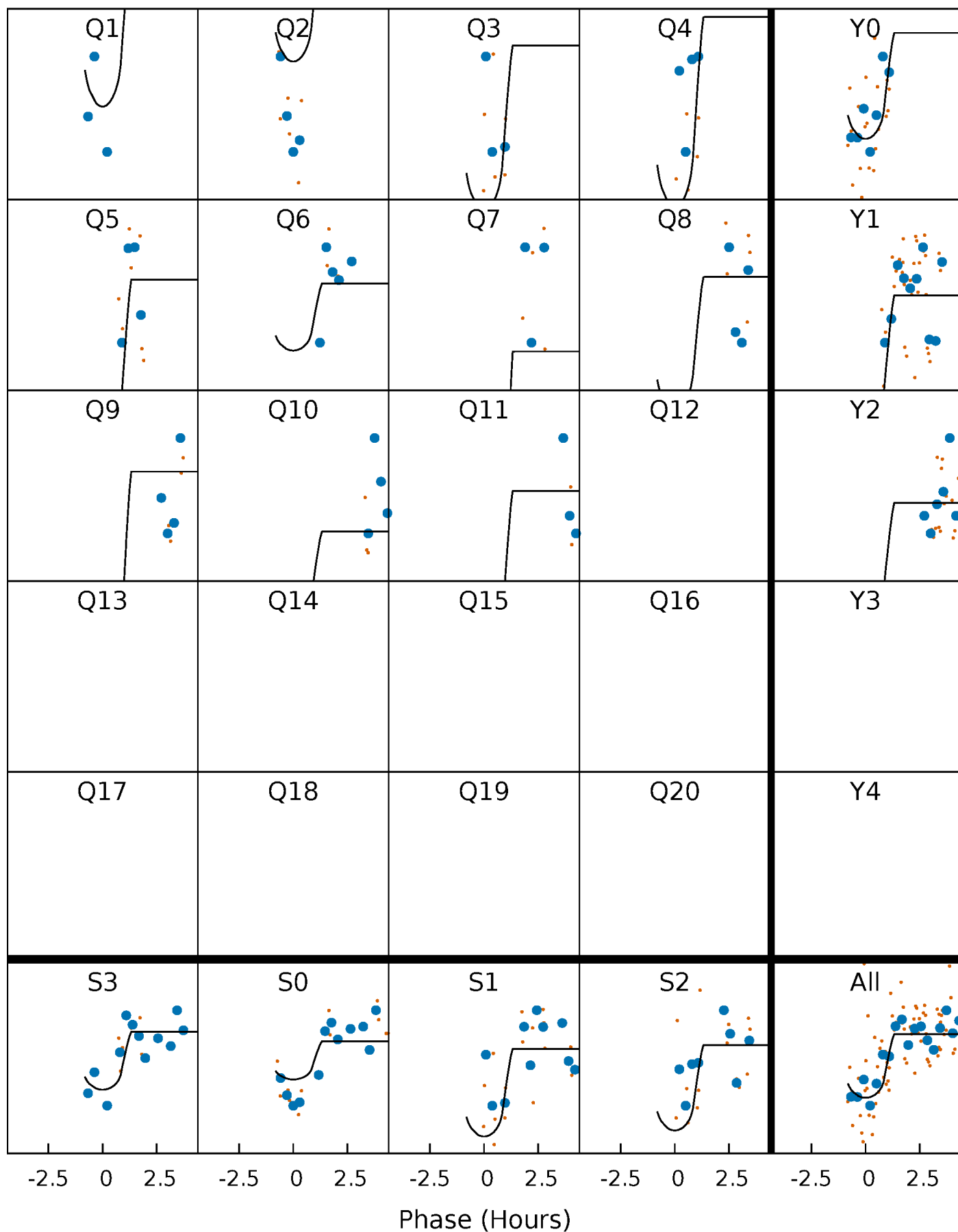
PDC Quarter-Phased Transit Curves

TCE 011457224-03 P= 29.156067 Days $T_0=159.683864$ (BKJD)



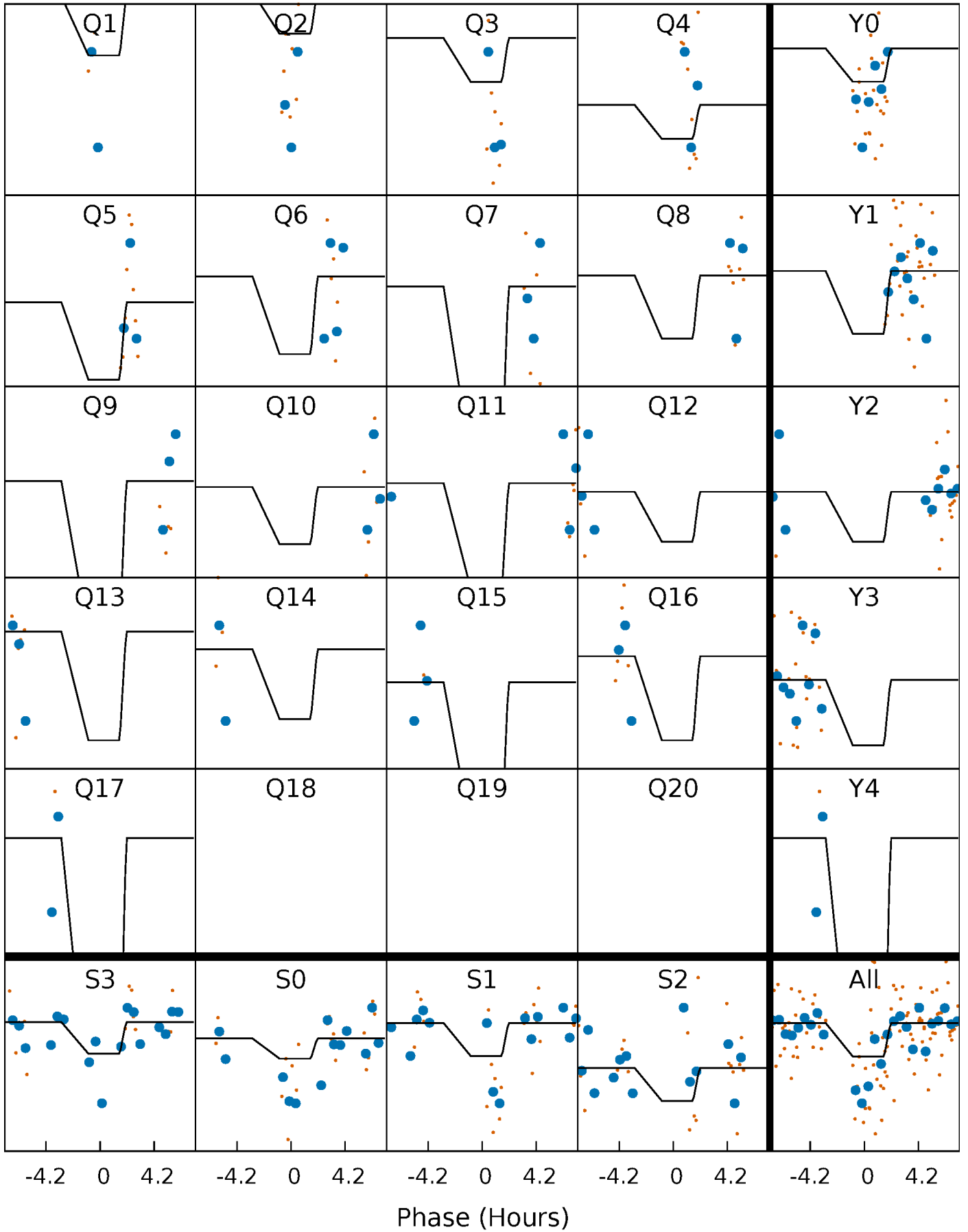
DV Quarter-Phased Transit Curves

TCE 011457224-03 P= 29.156067 Days $T_0=159.683864$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

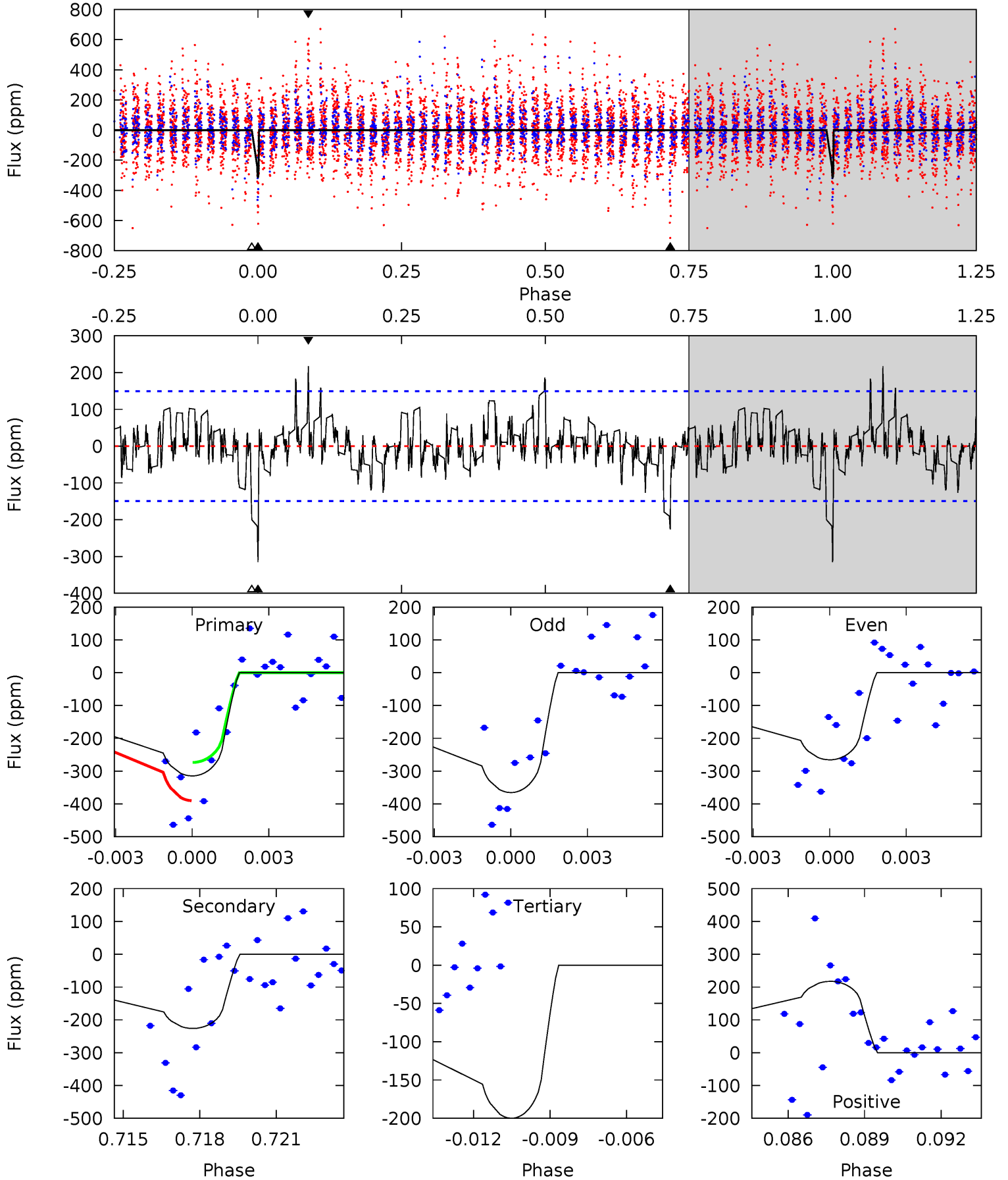
TCE 011457224-03 P= 29.152155 Days $T_0=159.687342$ (BKJD)



DV Model-Shift Uniqueness Test

011457224-03, P = 29.156067 Days, E = 130.527797 Days

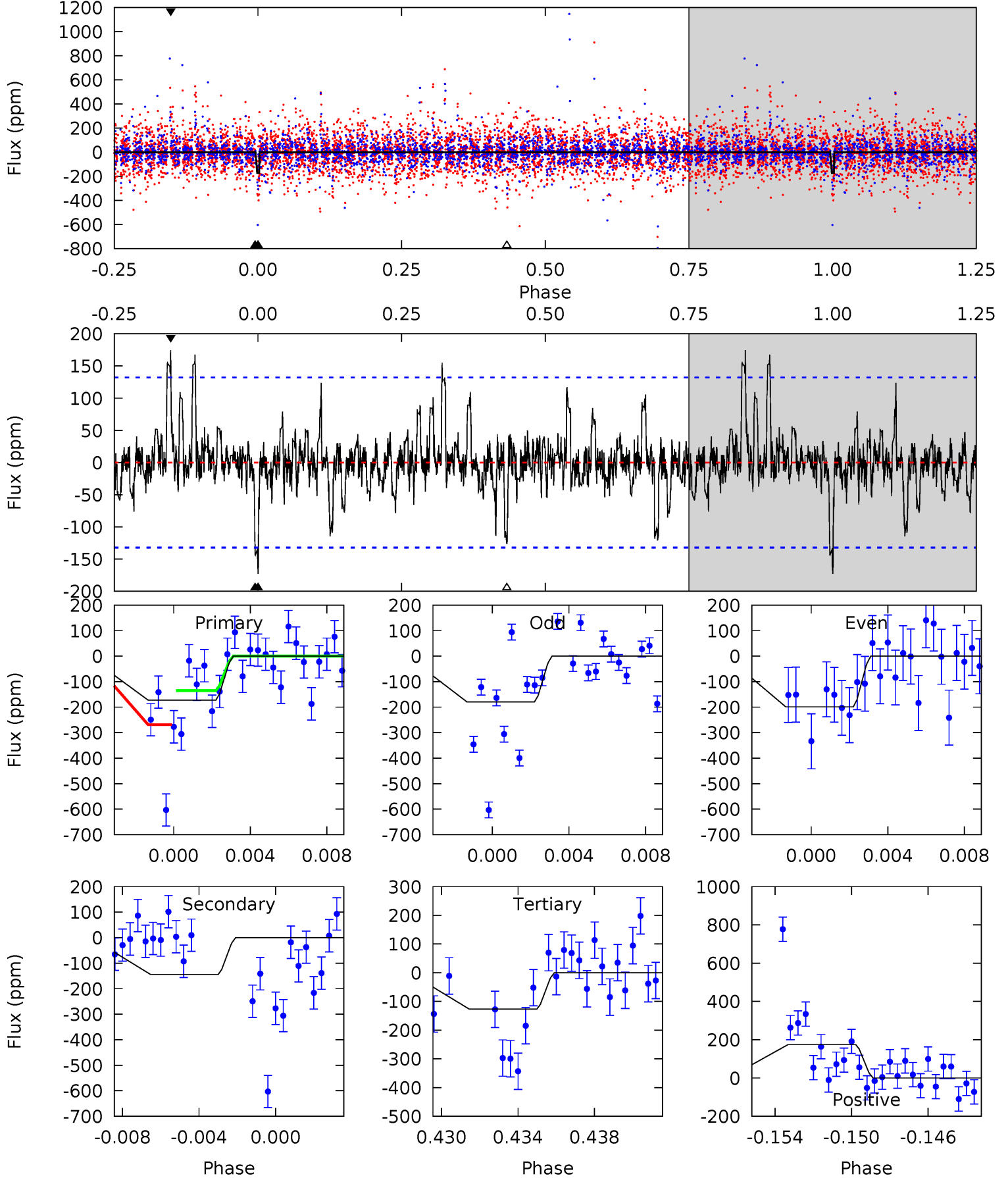
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	7.95	7.03	7.64	5.25	2.96	1.52	4.04	3.42	0.92	0.31	1.73	0.87	0.41	1.76



Alt Model-Shift Uniqueness Test

011457224-03, P = 29.152155 Days, E = 130.535187 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.80	5.67	4.98	6.87	5.21	2.89	1.18	1.82	-0.07	0.69	-1.20	0.31	1.32	0.50	2.16



Stellar Parameters For KIC 011457224

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5375^{+160}_{-144}	$4.452^{+0.100}_{-0.150}$	$0.070^{+0.250}_{-0.300}$	$0.916^{+0.199}_{-0.107}$	$0.866^{+0.097}_{-0.073}$	$1.587^{+0.688}_{-0.663}$
	+3%/-3%	+2%/-3%	+357%/-429%	+22%/-12%	+11%/-8%	+43%/-42%
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 011457224-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-226 ± 28	$2.98^{+2.81}_{-1.95}$	759^{+51}_{-35}	4102^{+2341}_{-834}	442^{+3171}_{-331}
Alt.	-144 ± 25	$2.57^{+2.59}_{-1.84}$	758^{+46}_{-34}	4030^{+2838}_{-829}	384^{+4214}_{-288}

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 $A_{obs} \gg 1.0$

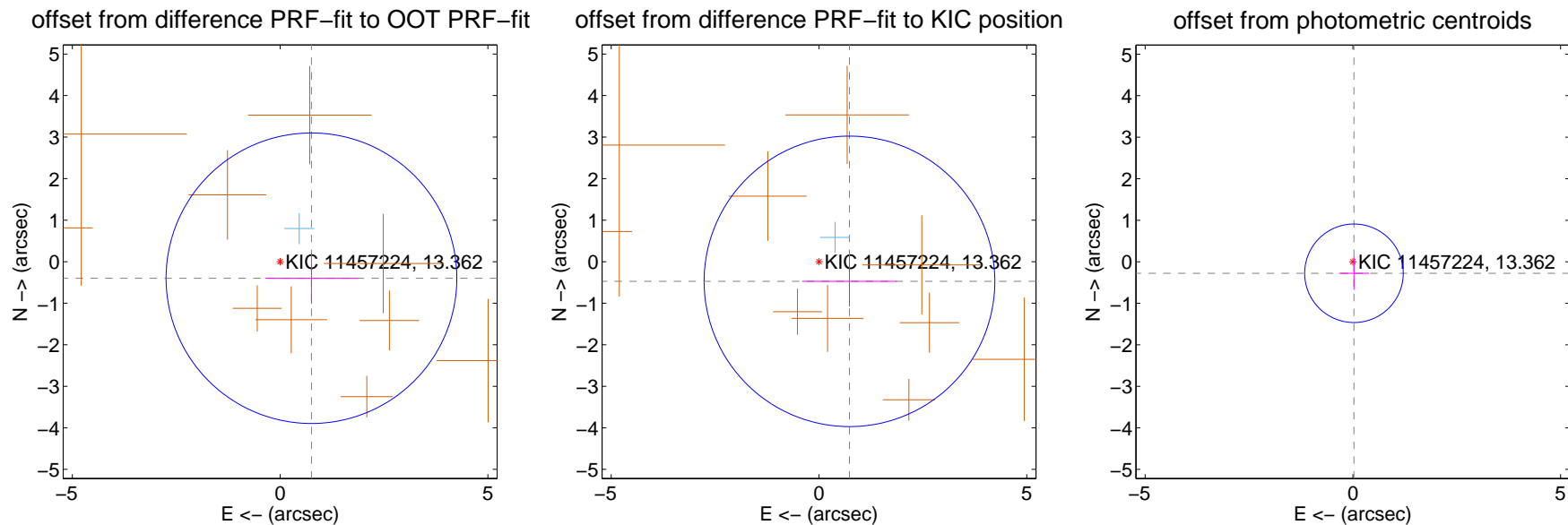
DV Centroid Data

Supplemental centroid analysis for 011457224-03. Kepler magnitude: 13.36. Transit SNR 9.63

There are 1 quarters with good PRF difference image offsets

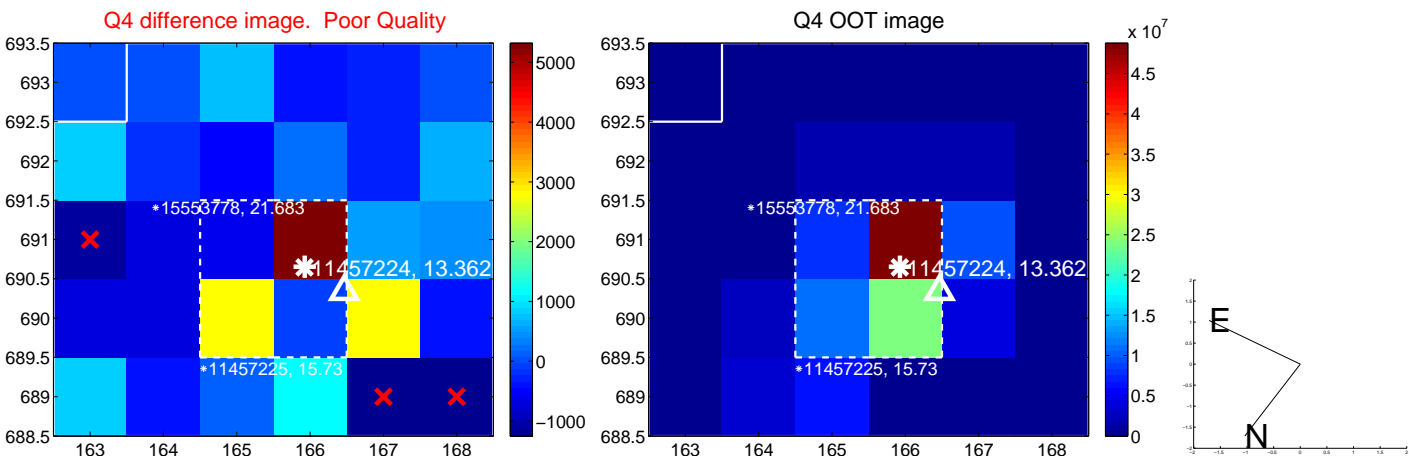
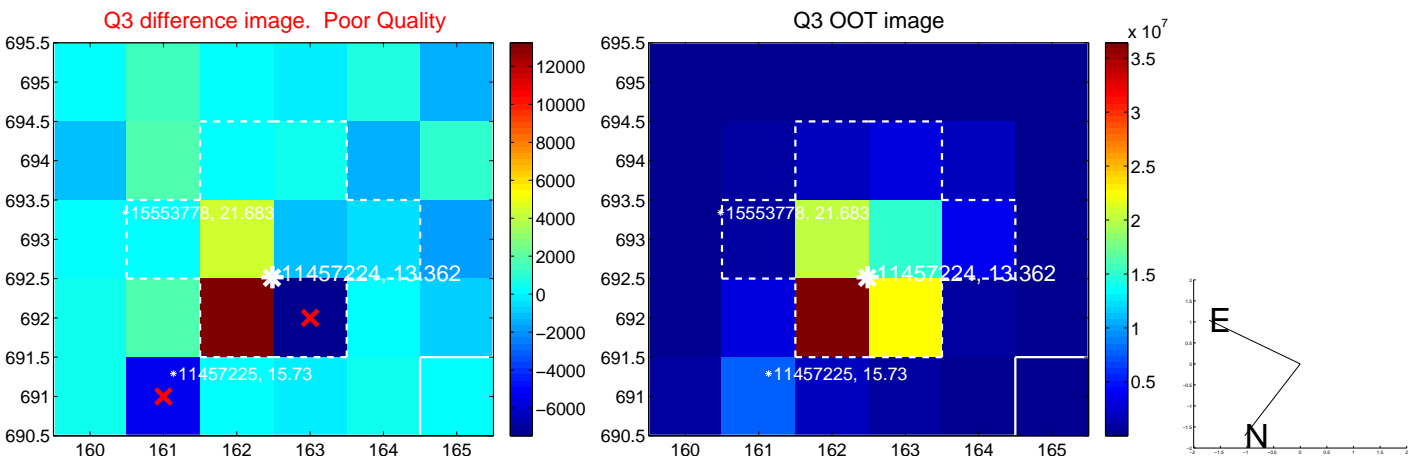
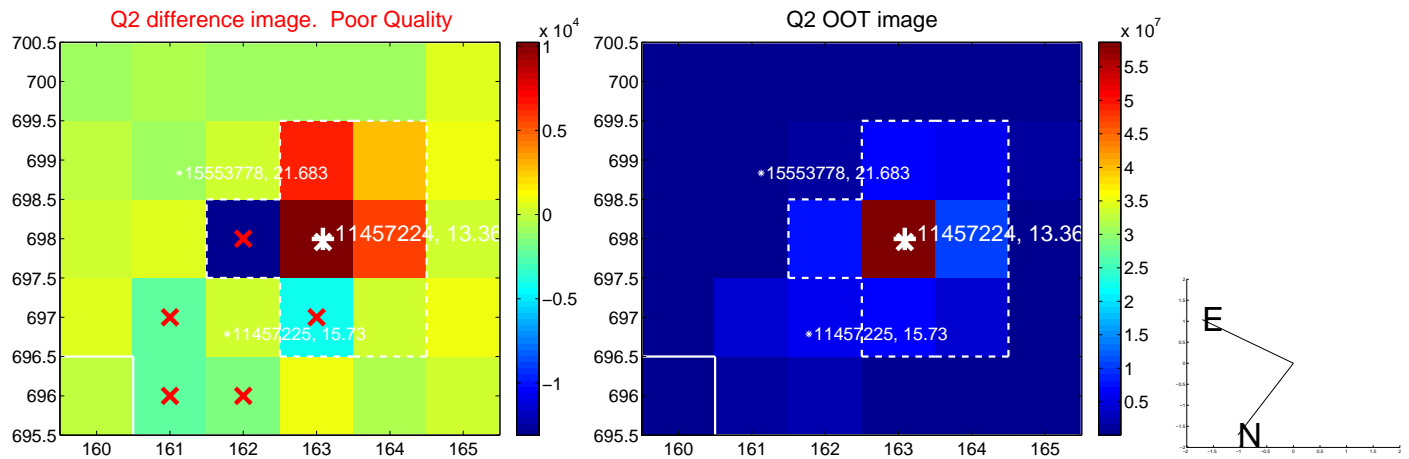
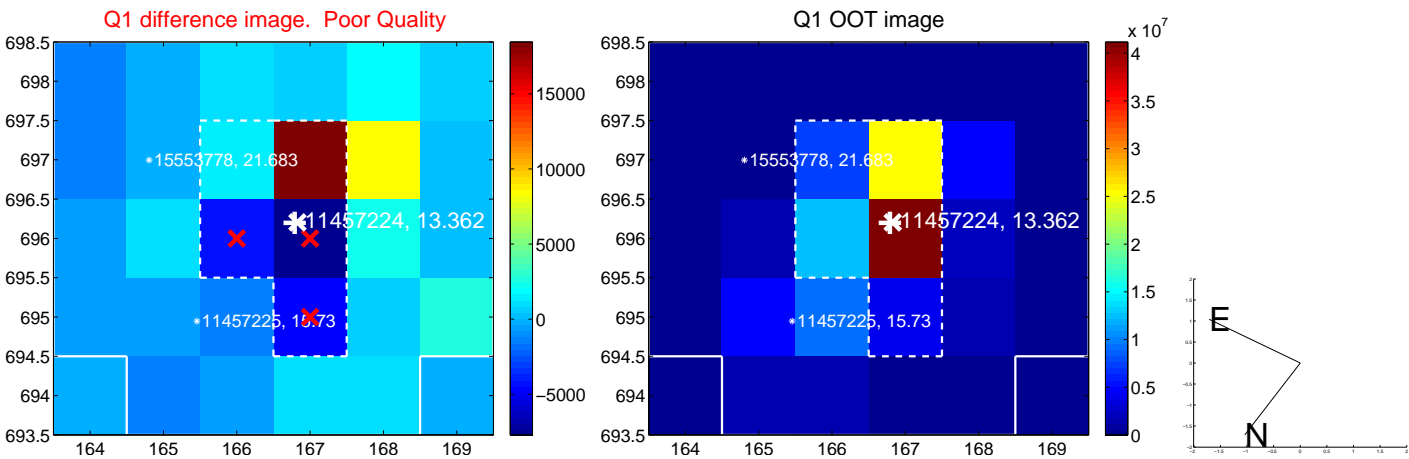
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.853 ± 1.166	0.73	-0.754 ± 1.107	-0.398 ± 0.616
PRF-fit source offset from KIC position	0.873 ± 1.166	0.75	-0.734 ± 1.141	-0.473 ± 0.605
photometric centroid source offset	0.28 ± 0.40	0.70	-0.03 ± 0.36	-0.28 ± 0.40

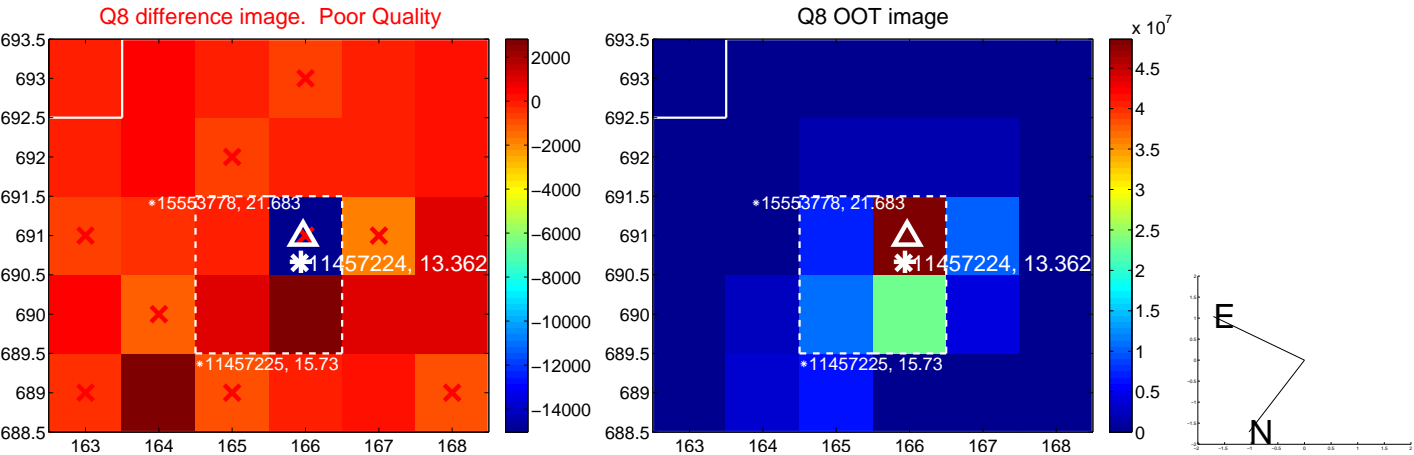
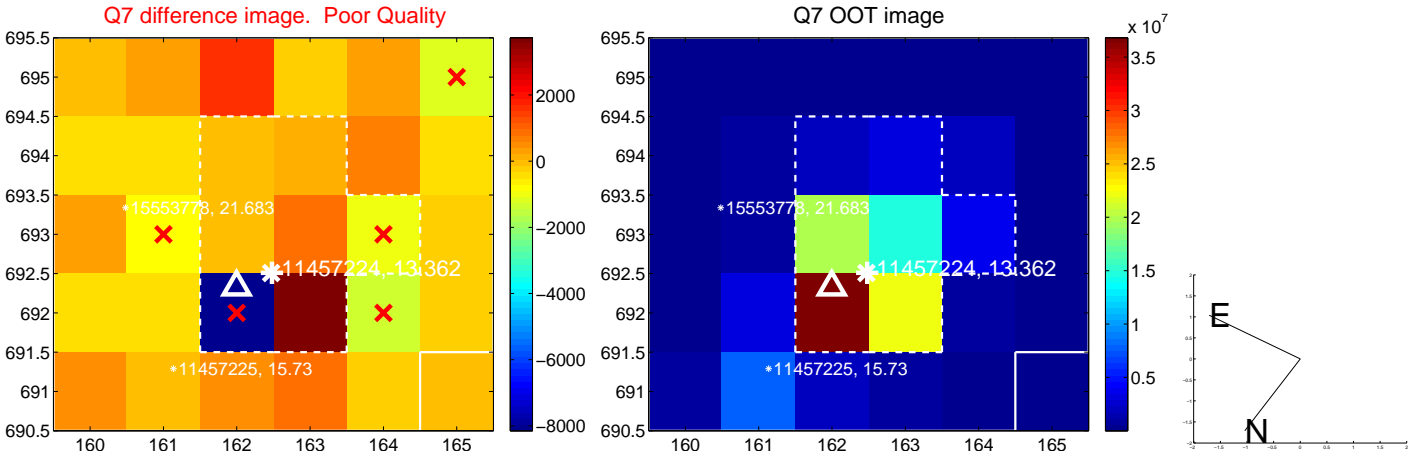
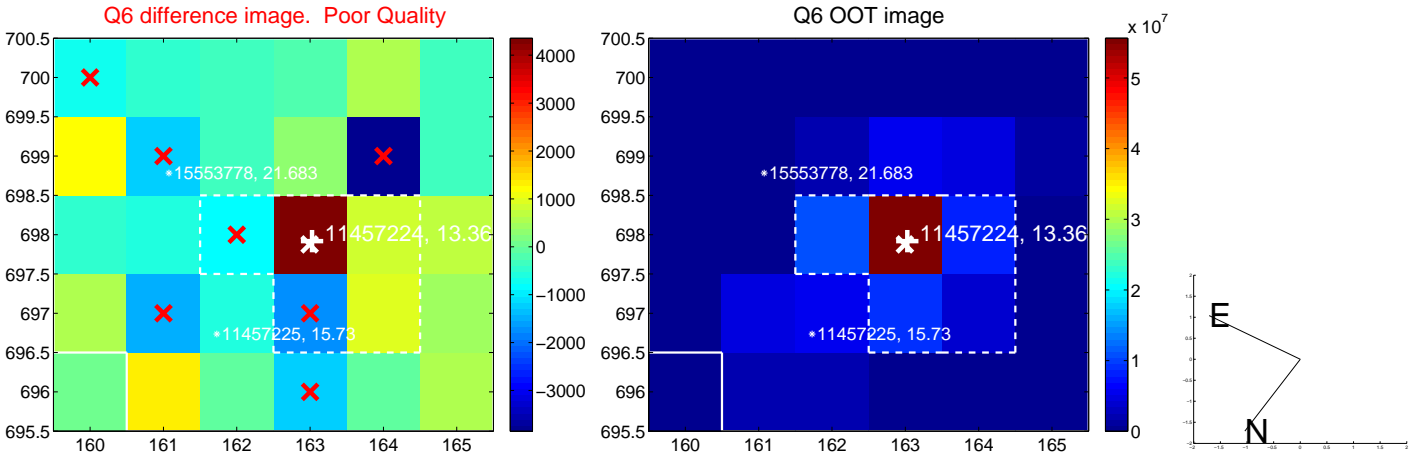
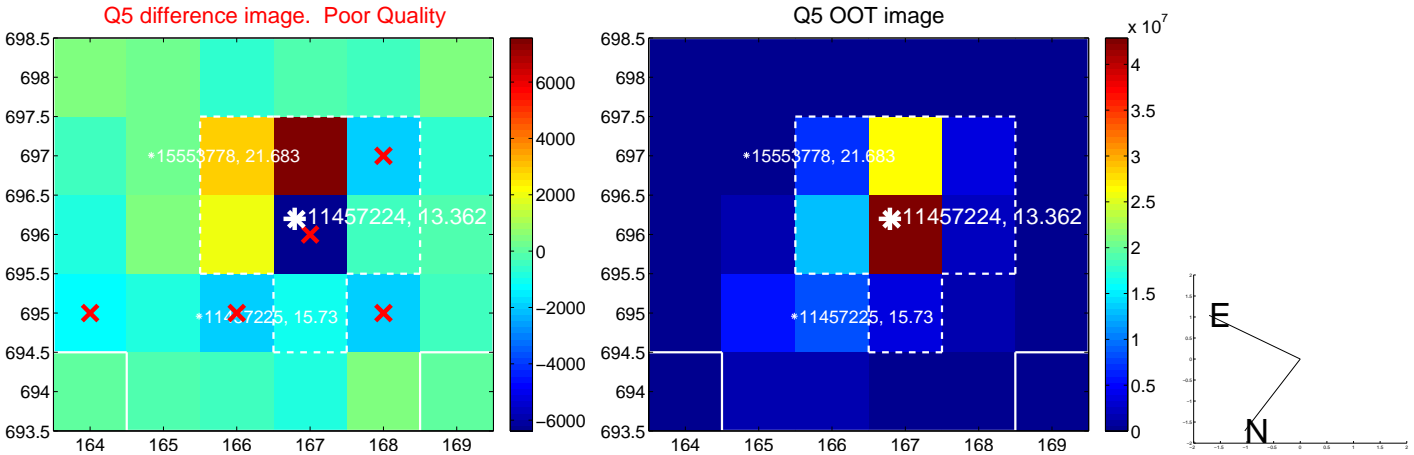


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

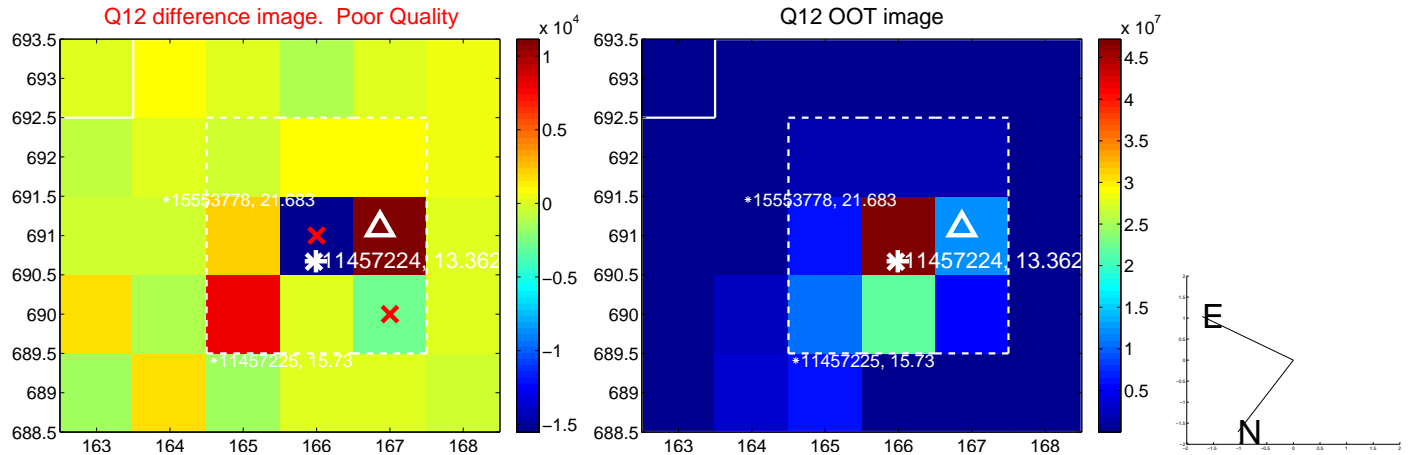
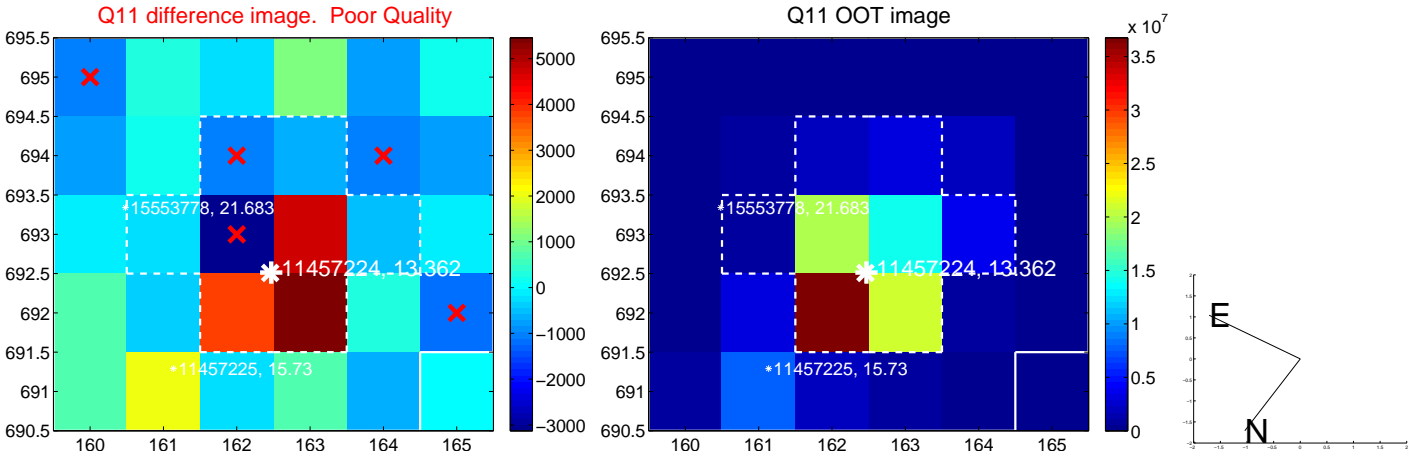
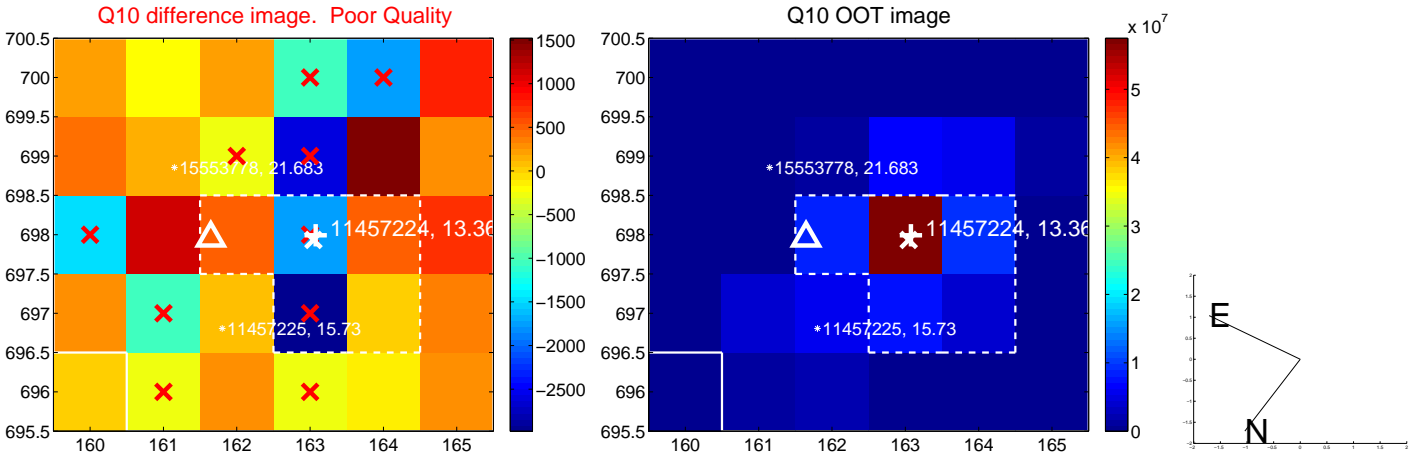
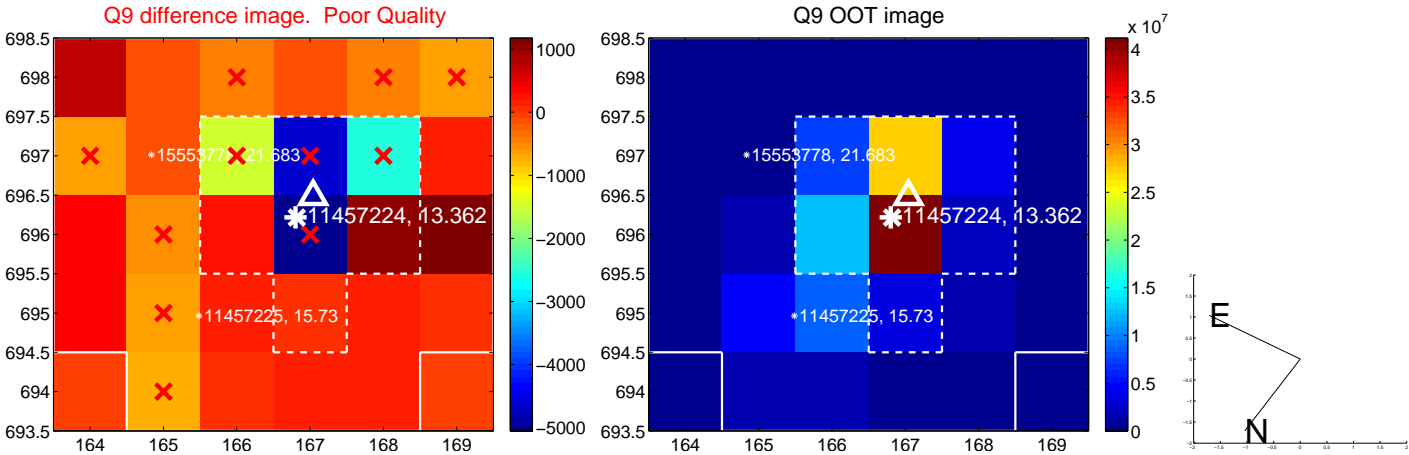
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



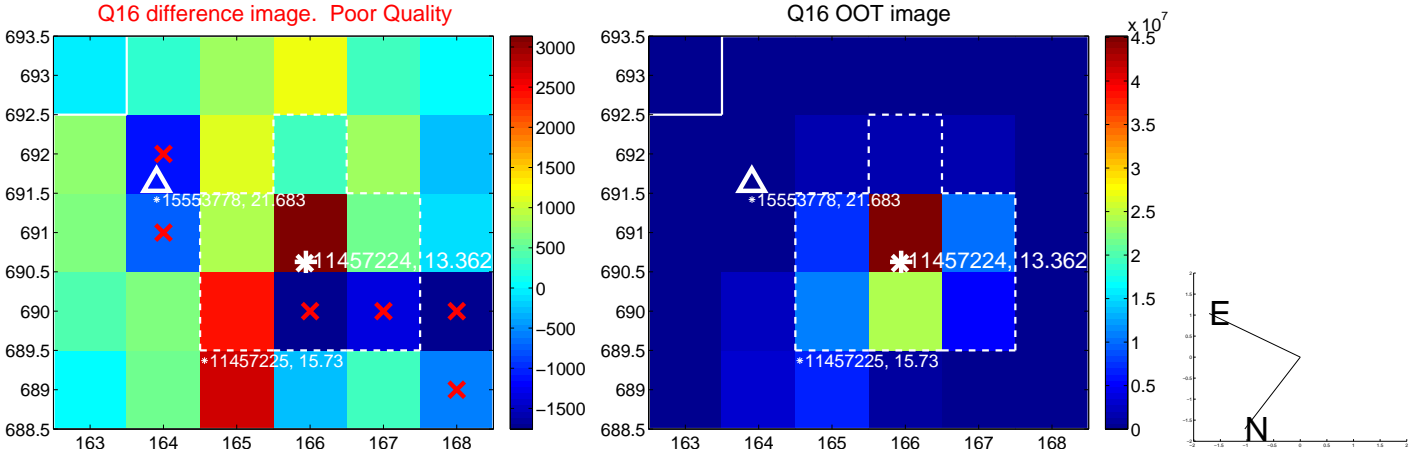
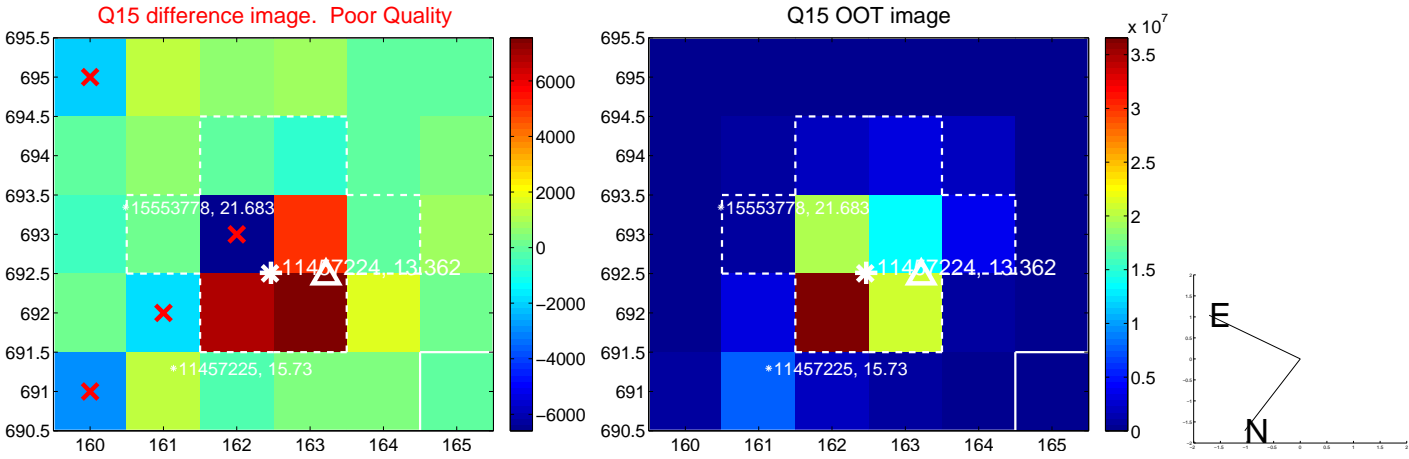
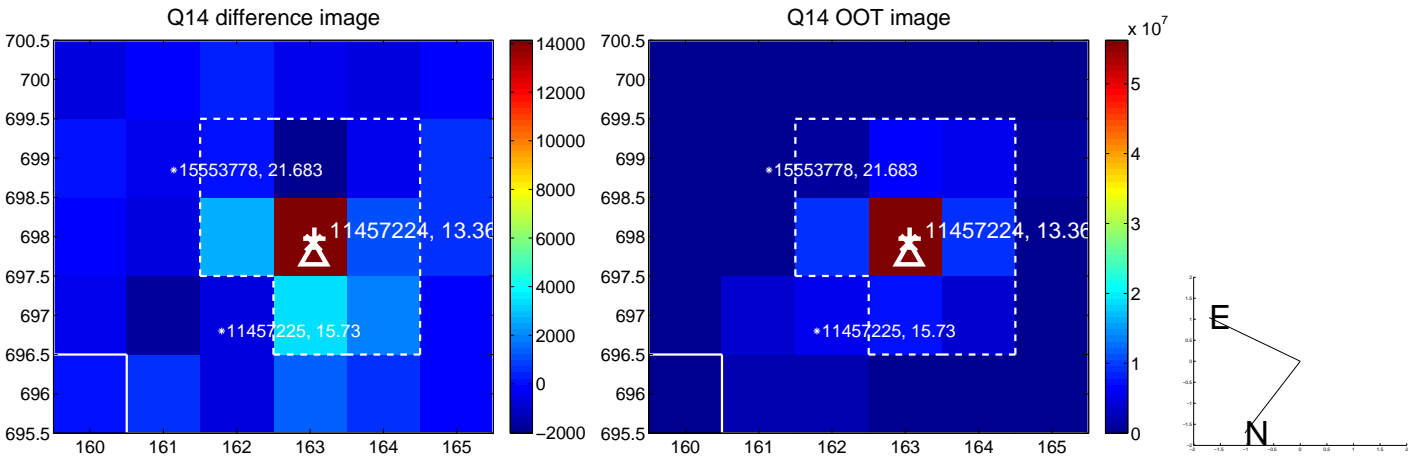
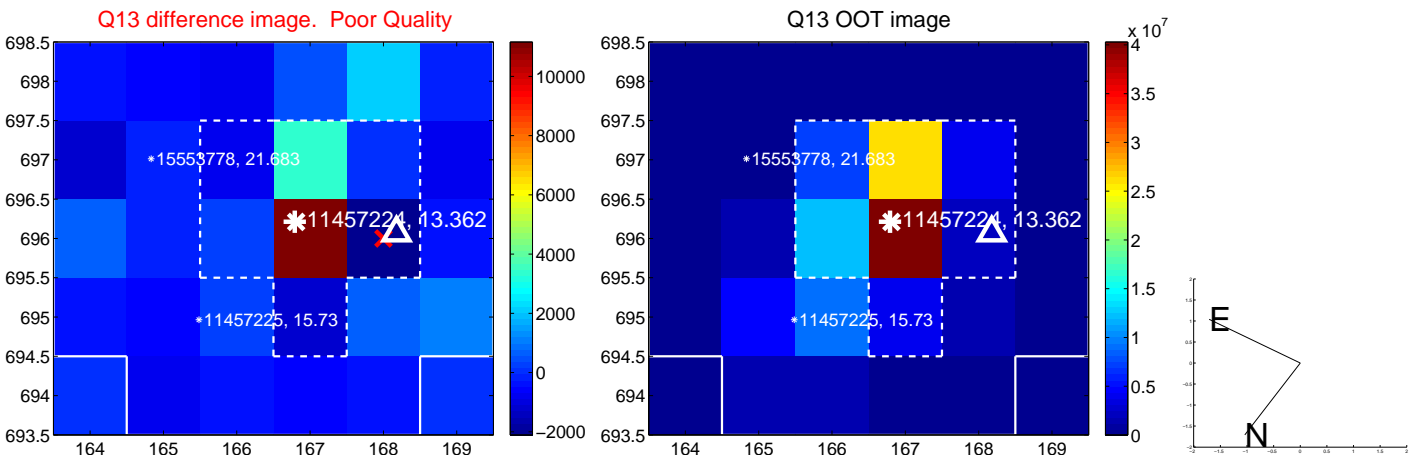
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



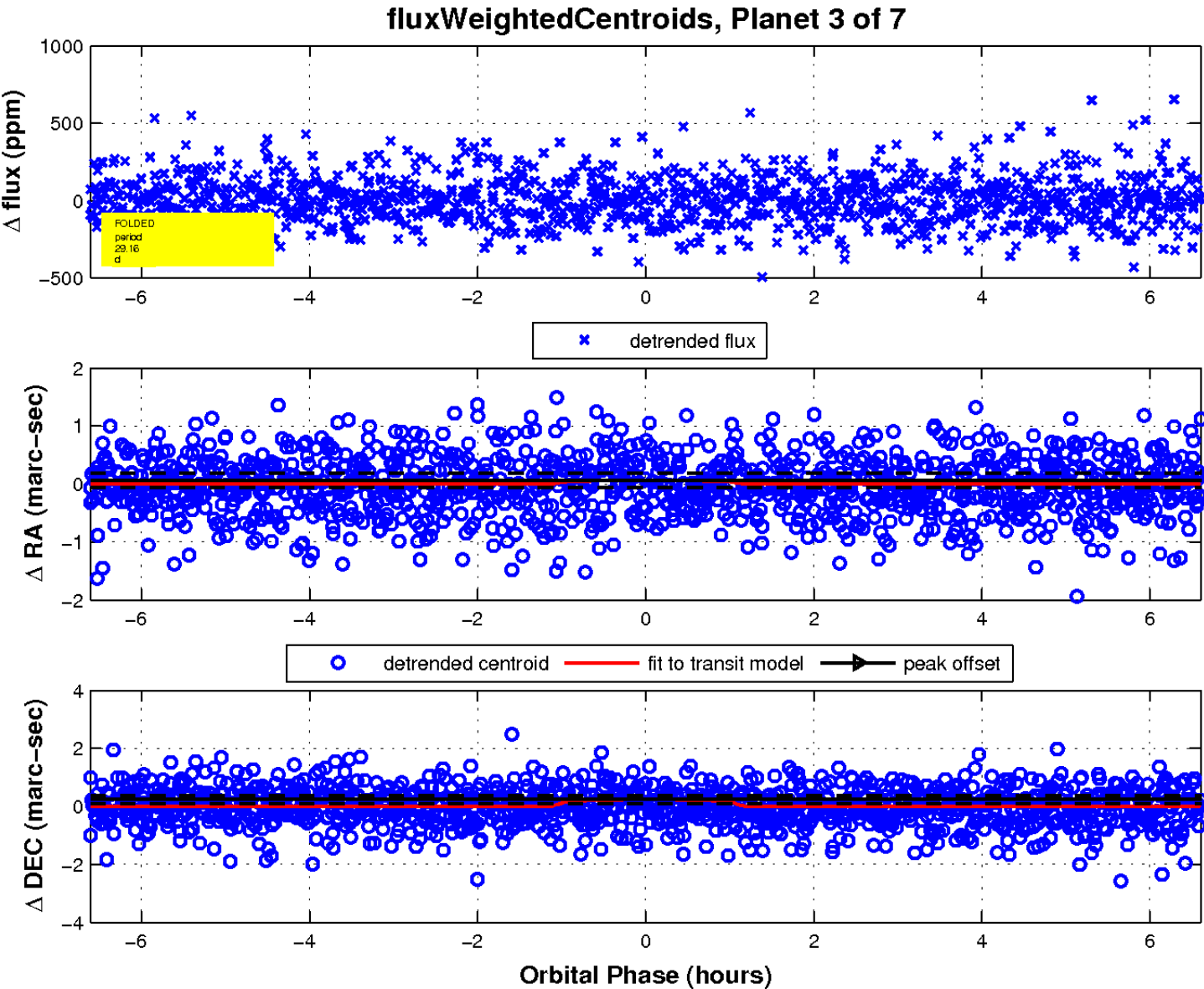
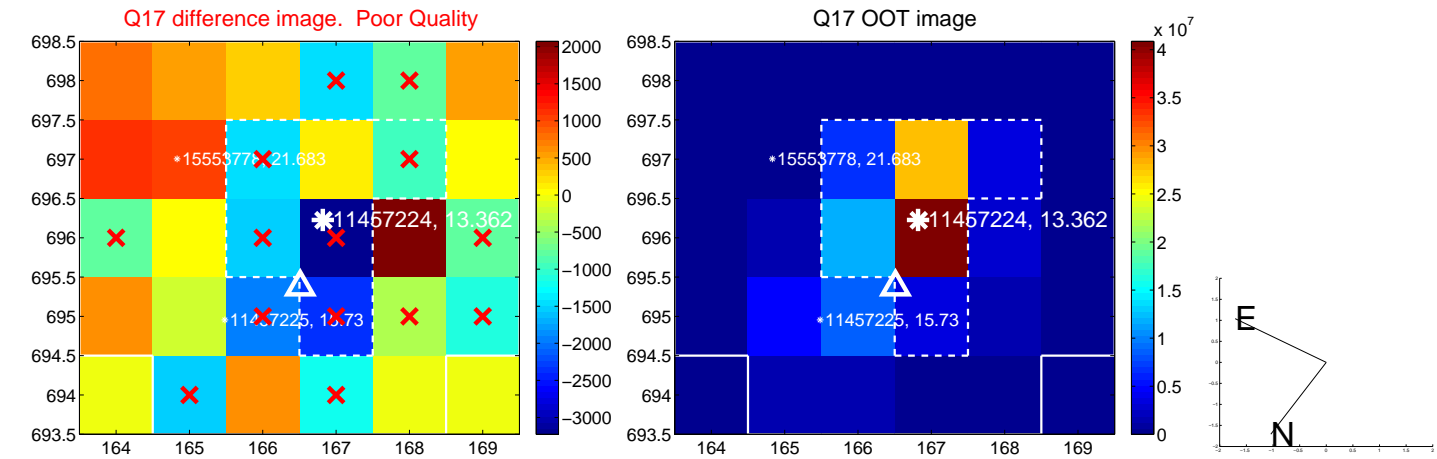
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

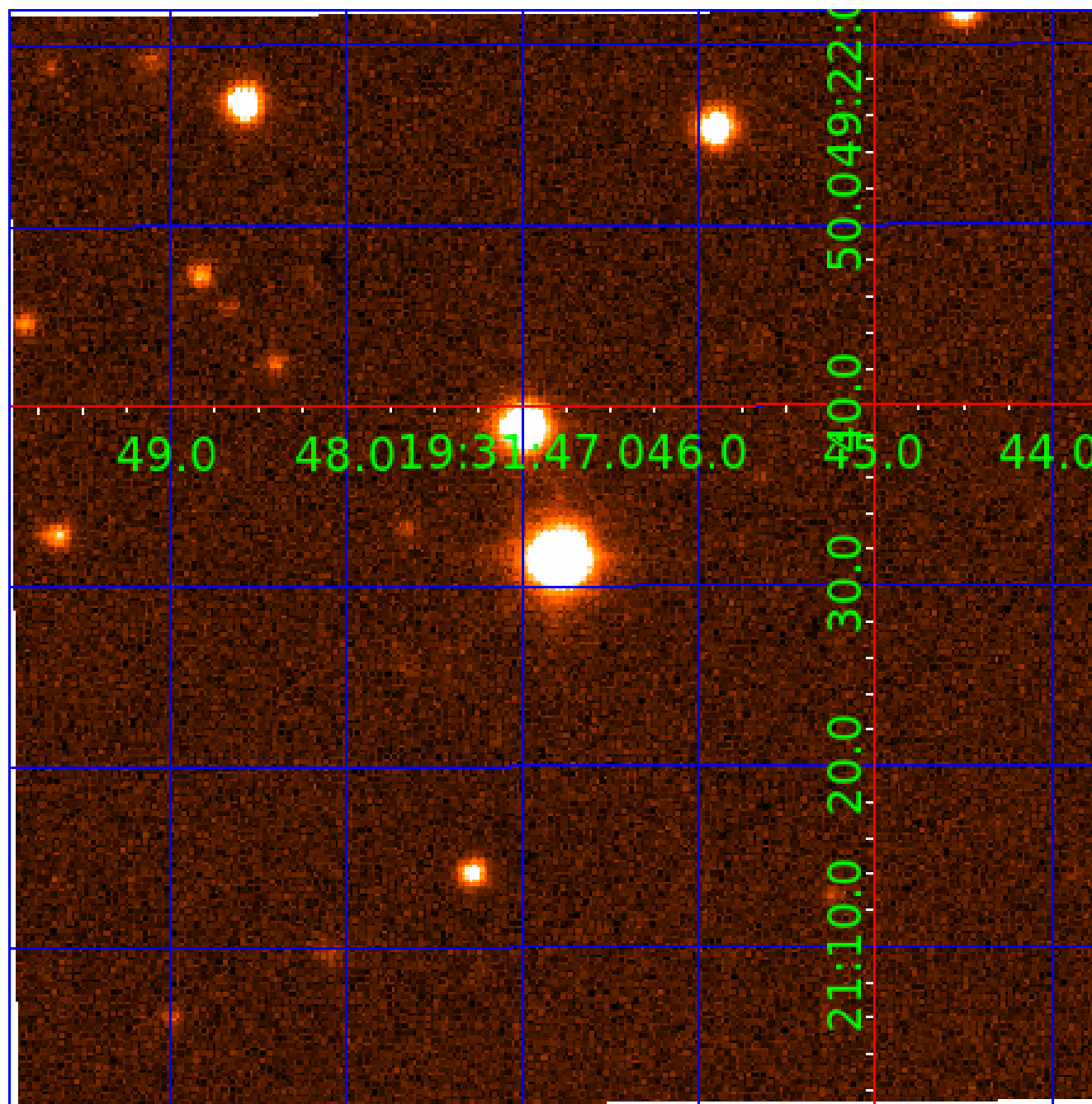


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011457224

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})
011457224-01	OBS	No	0.633973	132.084866	7.9	4.457	8.8	4.6	0.92	5375	0.25	3308.09
011457224-02	OBS	No	31.685499	155.249415	421.4	1.818	13.2	8.2	0.92	5375	1.91	17.97
011457224-03	OBS	No	29.156067	159.683864	322.6	2.204	12.7	9.6	0.92	5375	1.75	20.08
011457224-04	OBS	No	31.067348	157.130239	216.3	2.945	10.4	6.6	0.92	5375	2.11	18.45
011457224-05	OBS	No	46.259487	147.022600	519.3	2.482	11.1	10.4	0.92	5375	2.19	10.85
011457224-06	OBS	No	9.818013	131.783275	184.3	1.786	9.9	8.6	0.92	5375	1.50	85.70
011457224-07	OBS	No	46.300127	146.318034	552.2	2.206	9.7	8.6	0.92	5375	3.93	10.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011457224-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_DIFFS
011457224-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011457224-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS—HALO_GHOST
011457224-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011457224-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011457224-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011457224-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

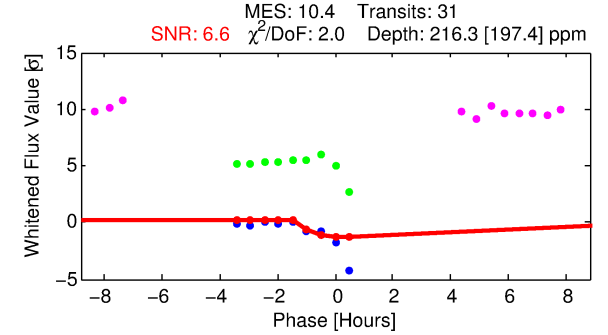
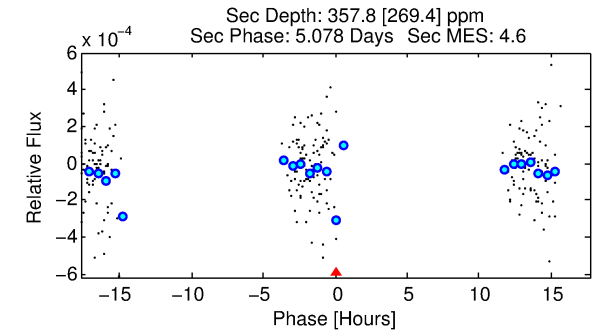
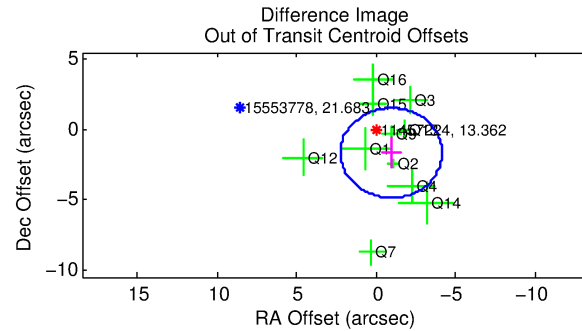
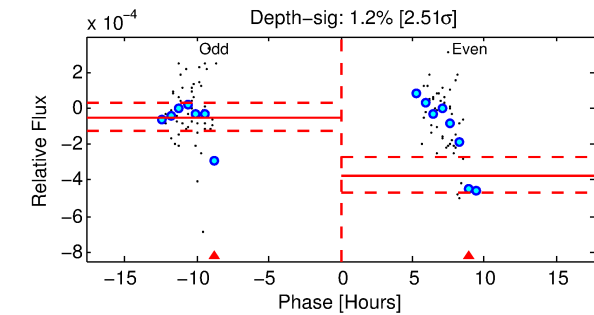
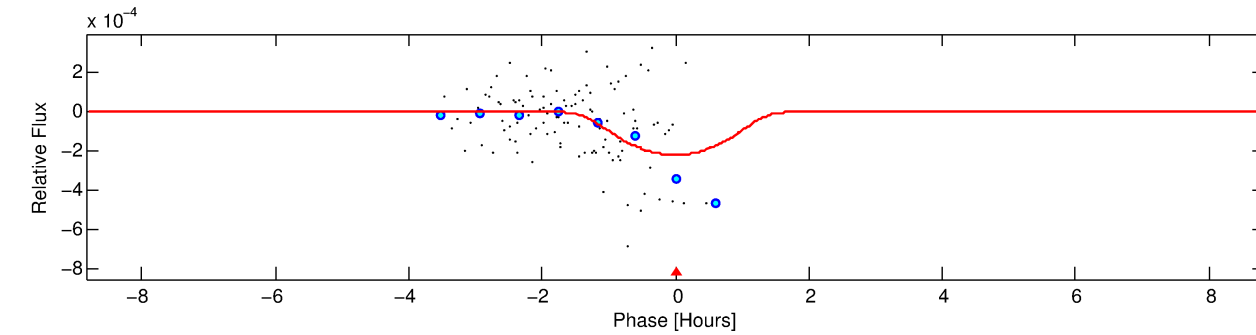
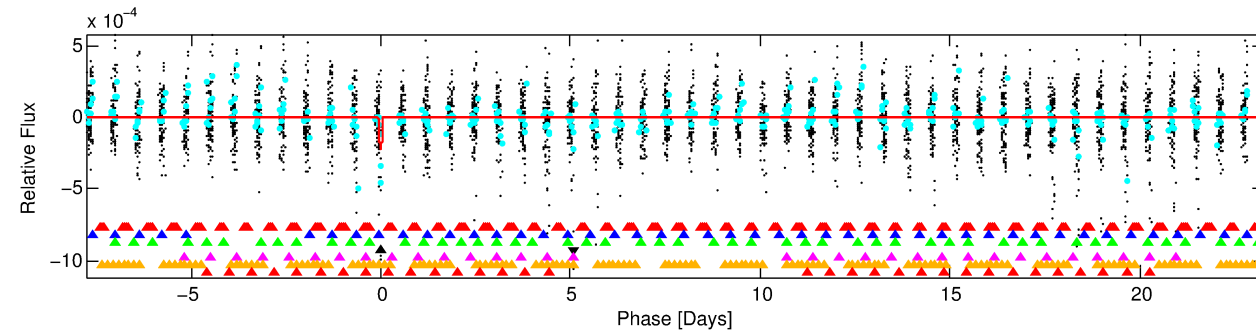
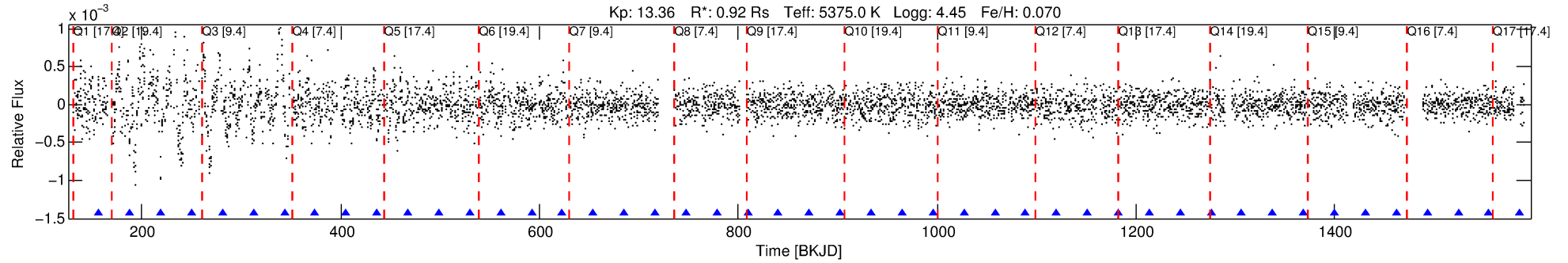
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011457224-04

No Significant Match Found

DV One-Page Summary

KIC: 11457224 Candidate: 4 of 7 Period: 31.067 d



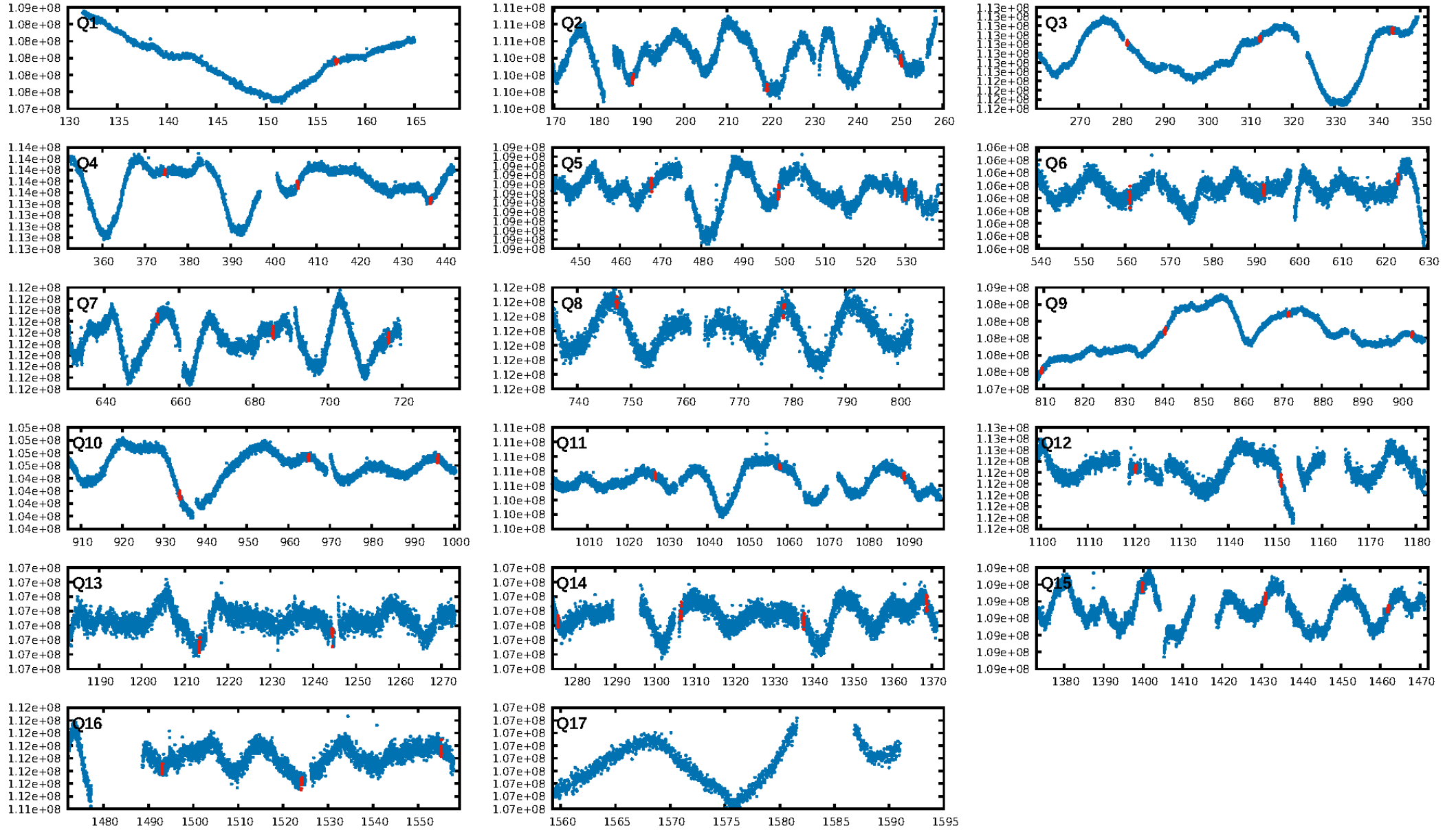
DV Fit Results:

Period = 31.06735 [0.00095] d
Epoch = 157.1302 [0.0212] BKJD
Rp/R* = 0.0211 [0.0367]
a/R* = 21.17 [18.67]
b = 0.99 [0.08]
Seff = 18.45 [5.48]
Teff = 528 [39] K
Rp = 2.11 [3.70] Re
a = 0.1844 [0.0341] AU
Ag = 1509.50 [5400.00] [0.28 σ]
Teffp = 5093 [4544] K [1.00 σ]

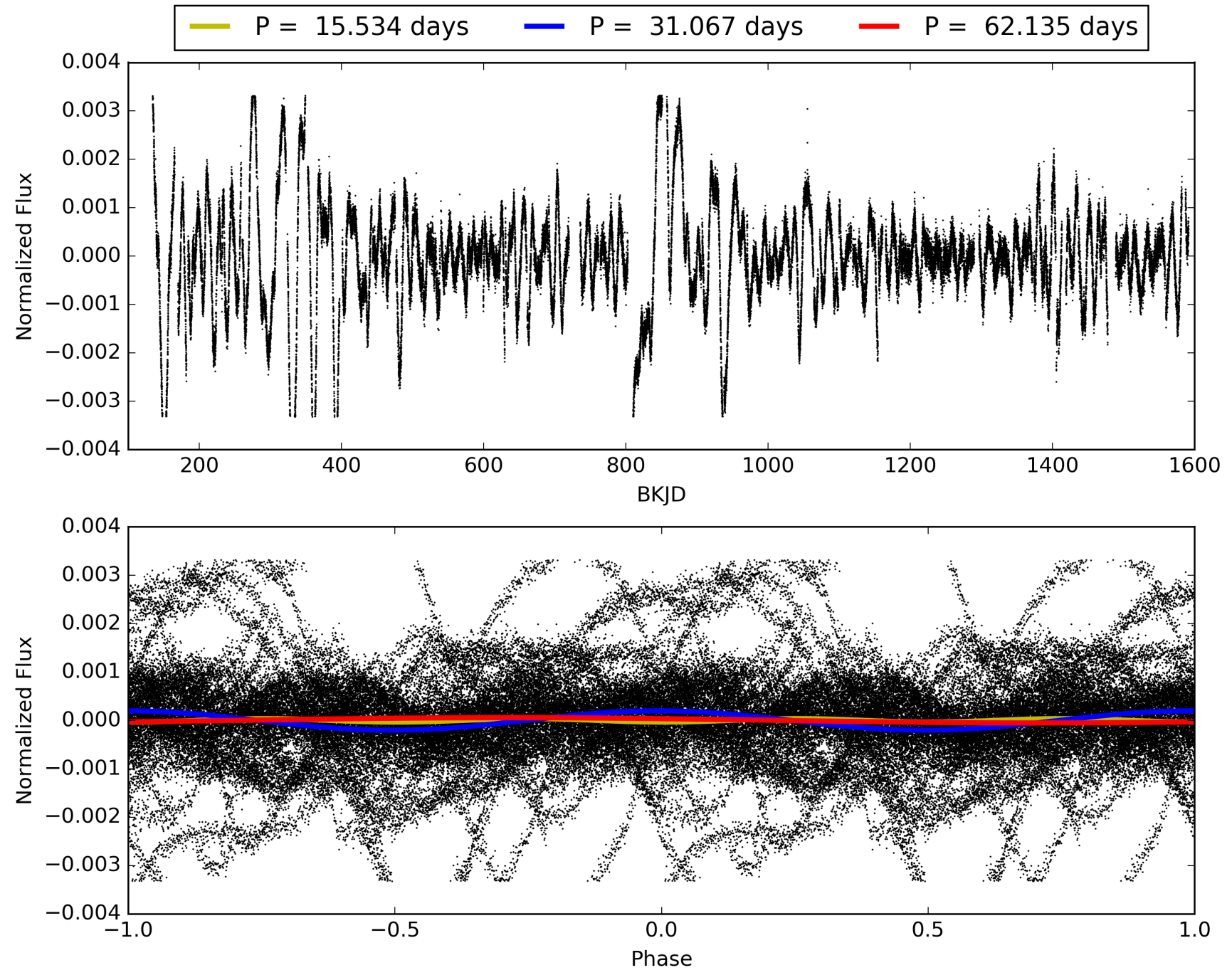
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [12.47 σ]
LongPeriod-sig: 100.0% [4.29 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [30/30]
GhostDiagnostic-chr: -1.01
Centroid-sig: 26.3%
Centroid-so: 1.063 arcsec [1.74 σ]
OotOffset-rm: 1.919 arcsec [1.80 σ]
OotOffset-st: 2/3/3/3 [11]
KicOffset-rm: 1.994 arcsec [2.01 σ]
KicOffset-st: 2/3/3/3 [11]
DiffImageQuality-fgm: 0.36 [4/11]
DiffImageOverlap-fno: 0.00 [0/16]

TCE 011457224-04, PDC Light Curves

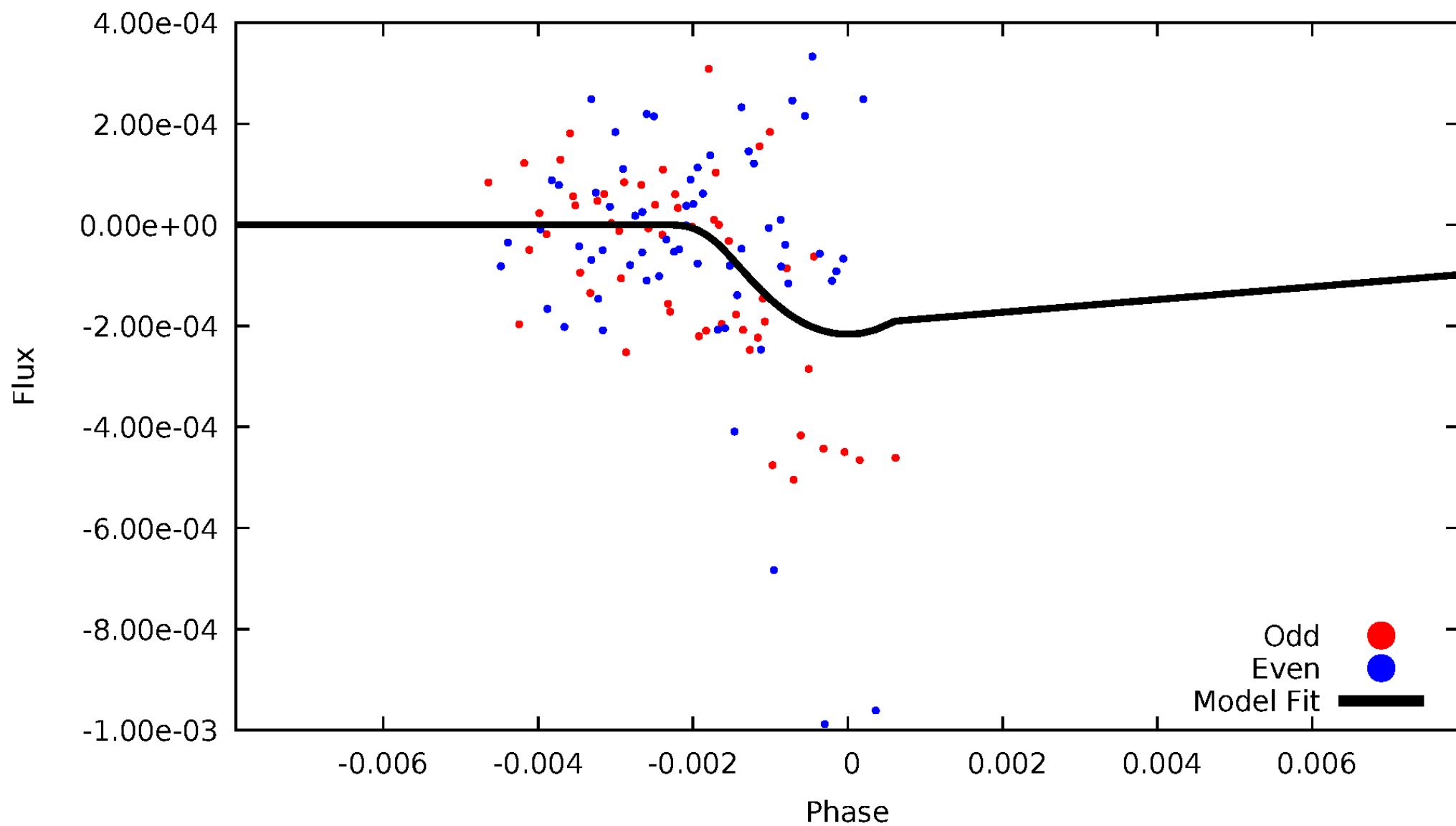


TCE 011457224-04



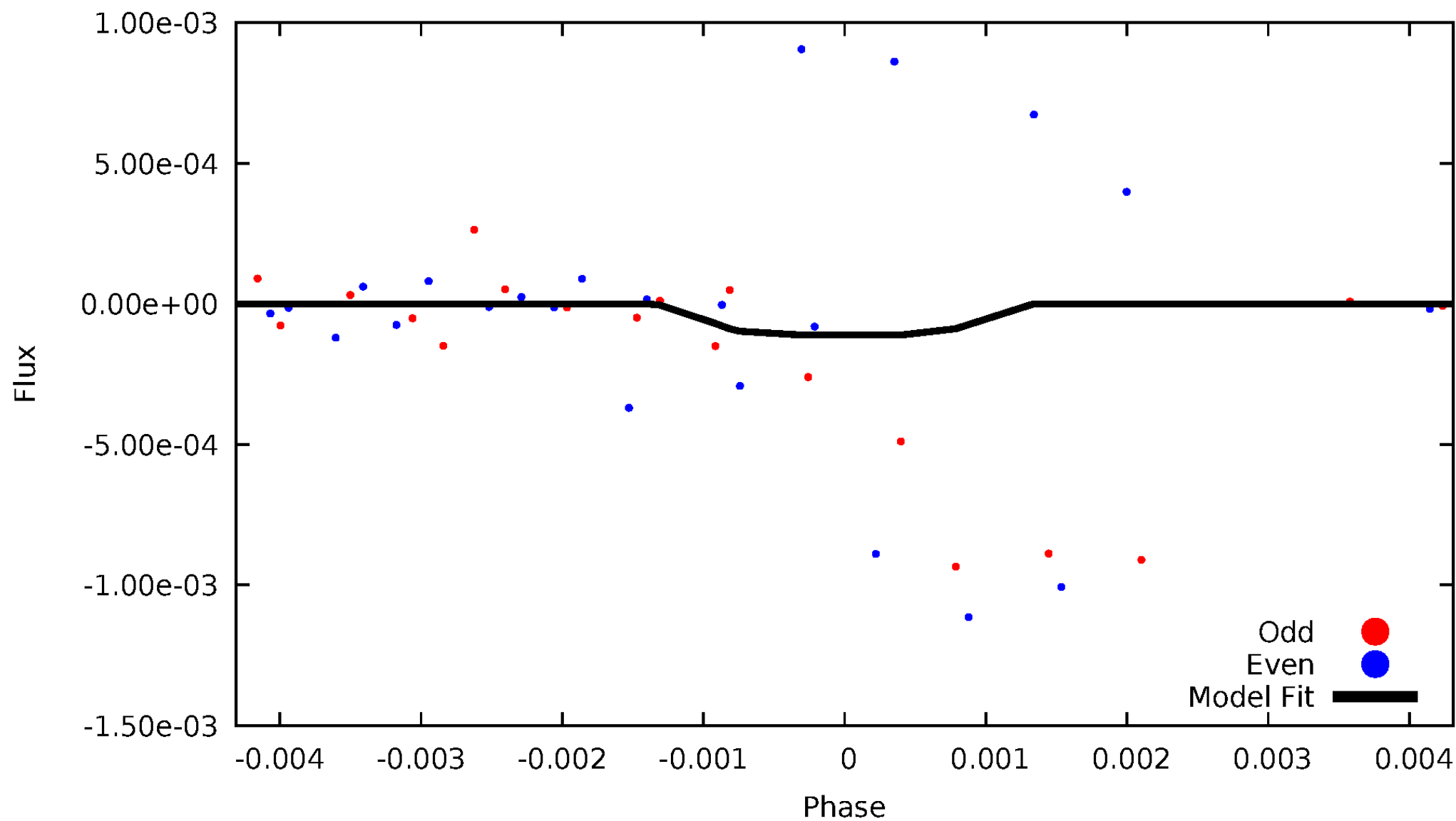
DV Odd/Even

TCE 011457224-04



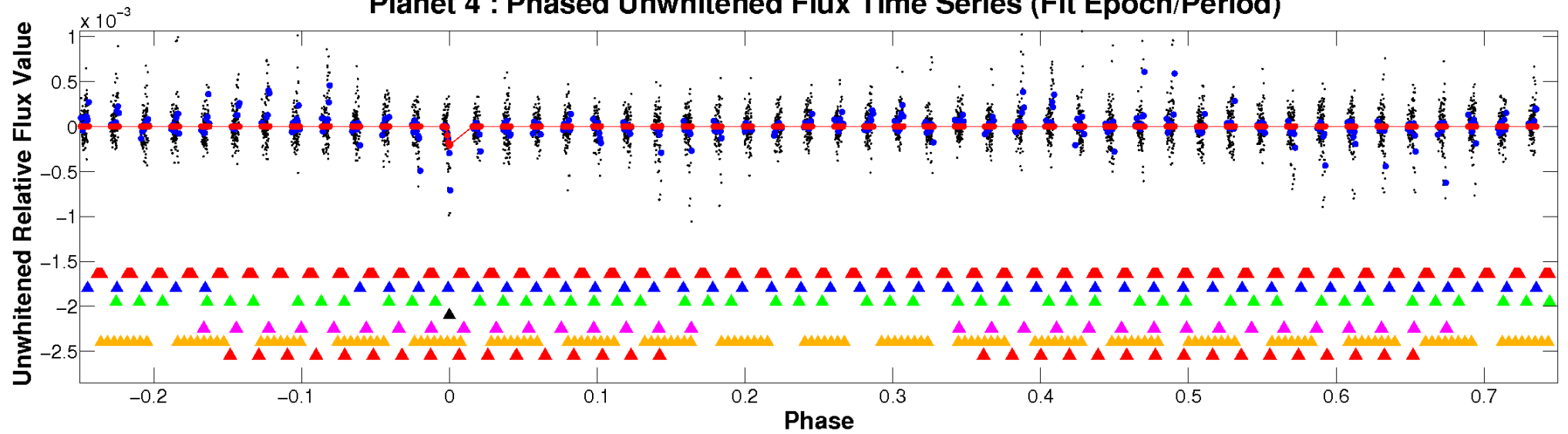
ALT Odd/Even

TCE 011457224-04

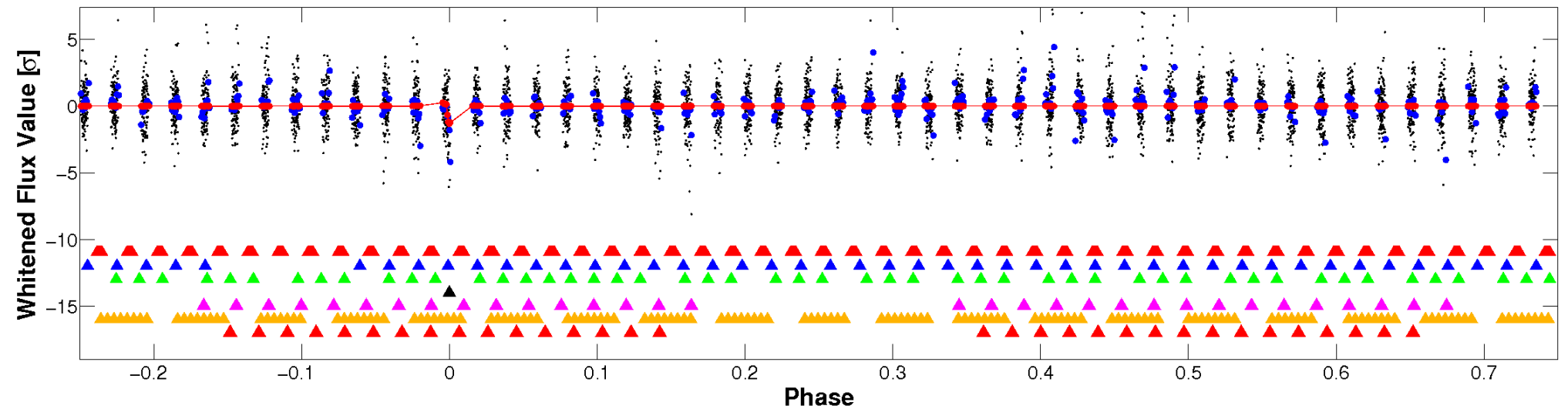


Non-Whitened Vs. Whitened Light Curve

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

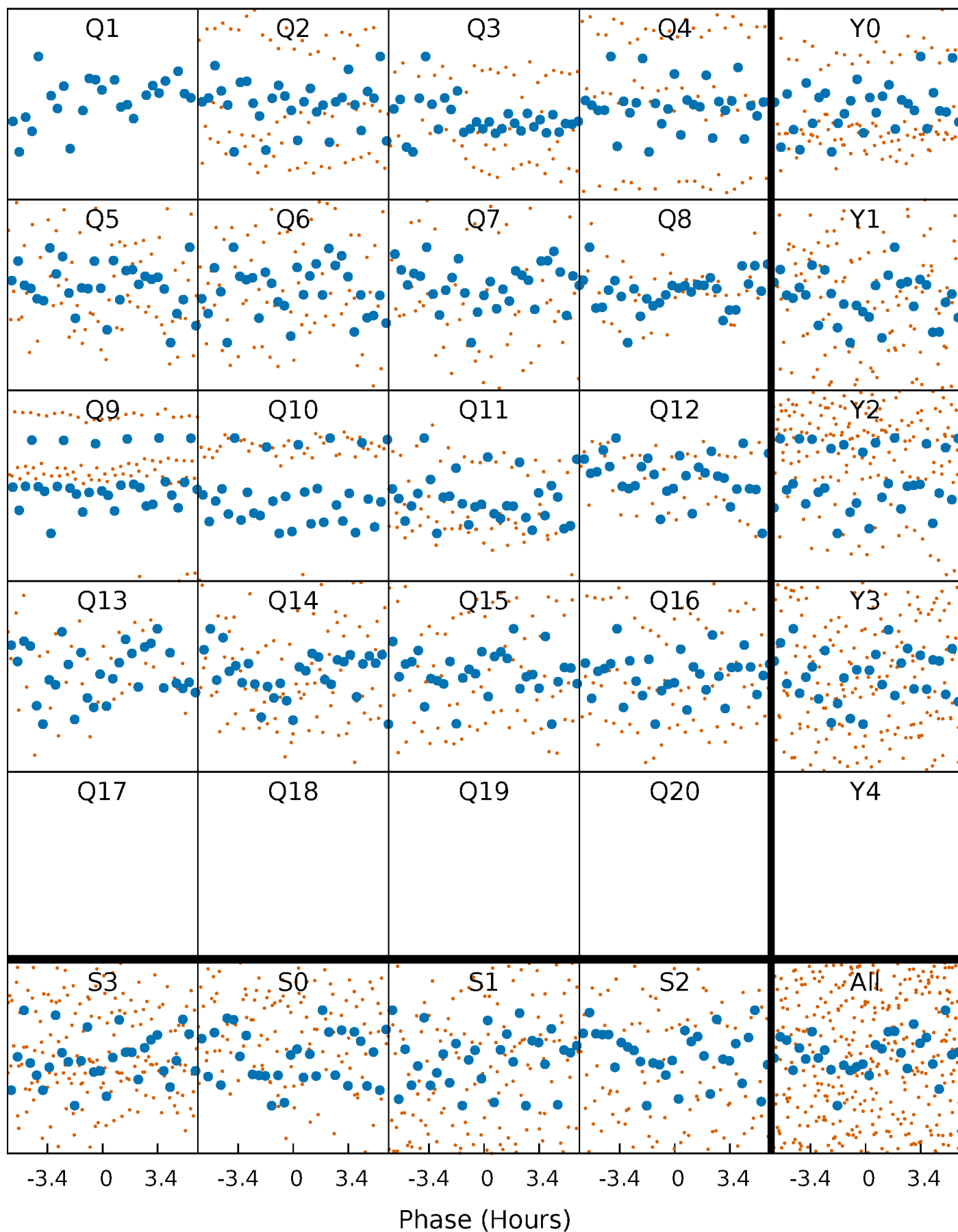


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



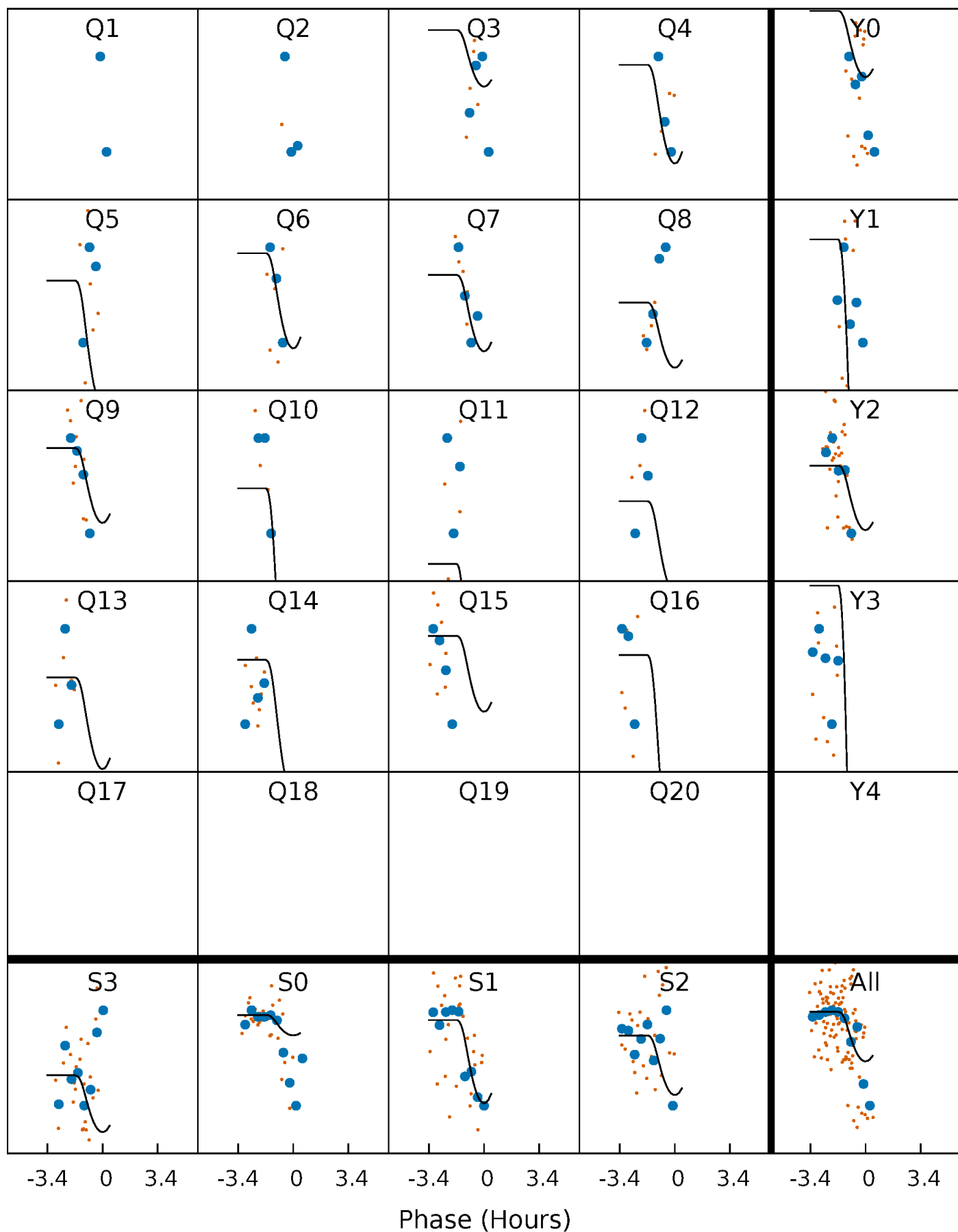
PDC Quarter-Phased Transit Curves

TCE 011457224-04 P= 31.067348 Days $T_0=157.130239$ (BKJD)



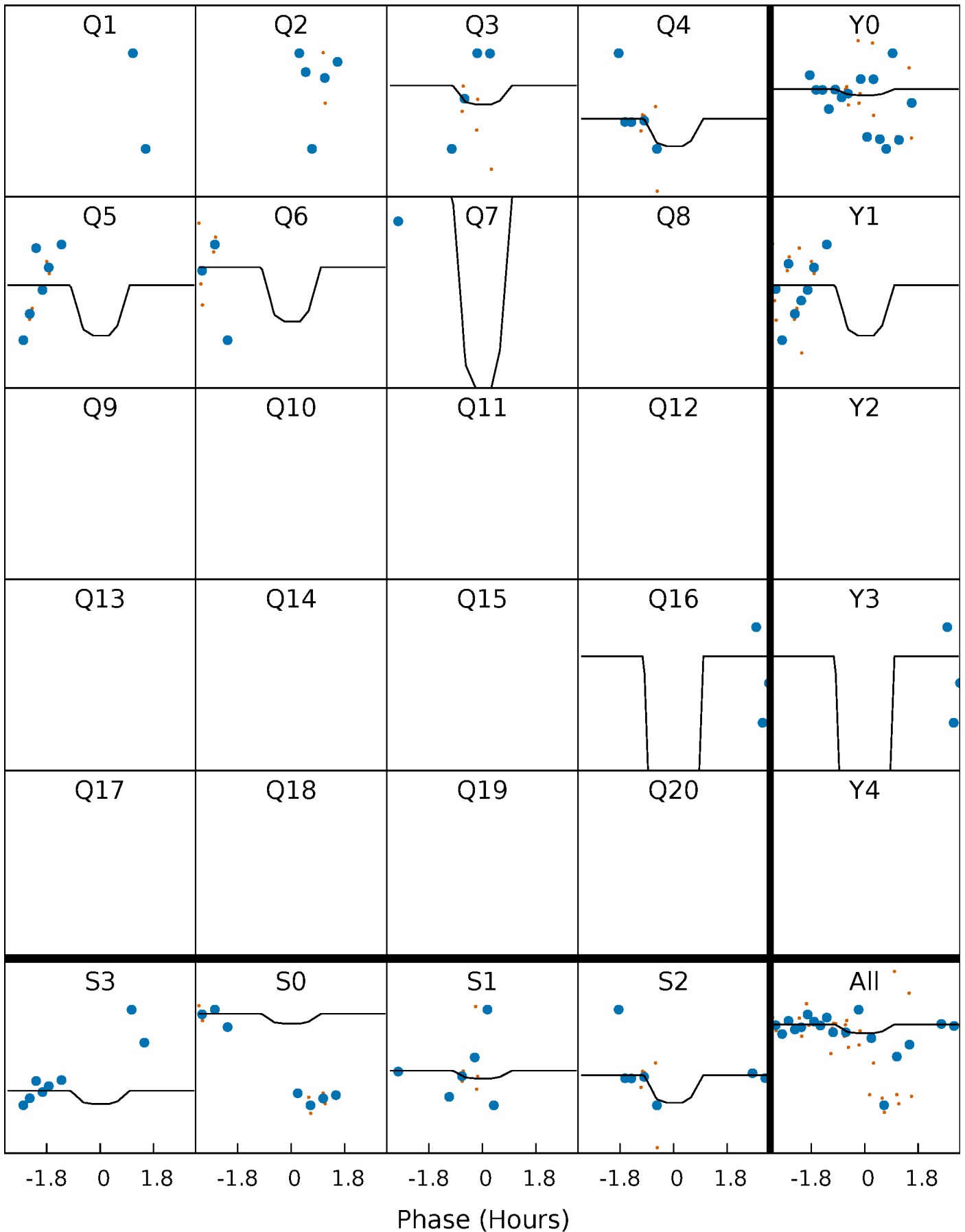
DV Quarter-Phased Transit Curves

TCE 011457224-04 P= 31.067348 Days $T_0=157.130239$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

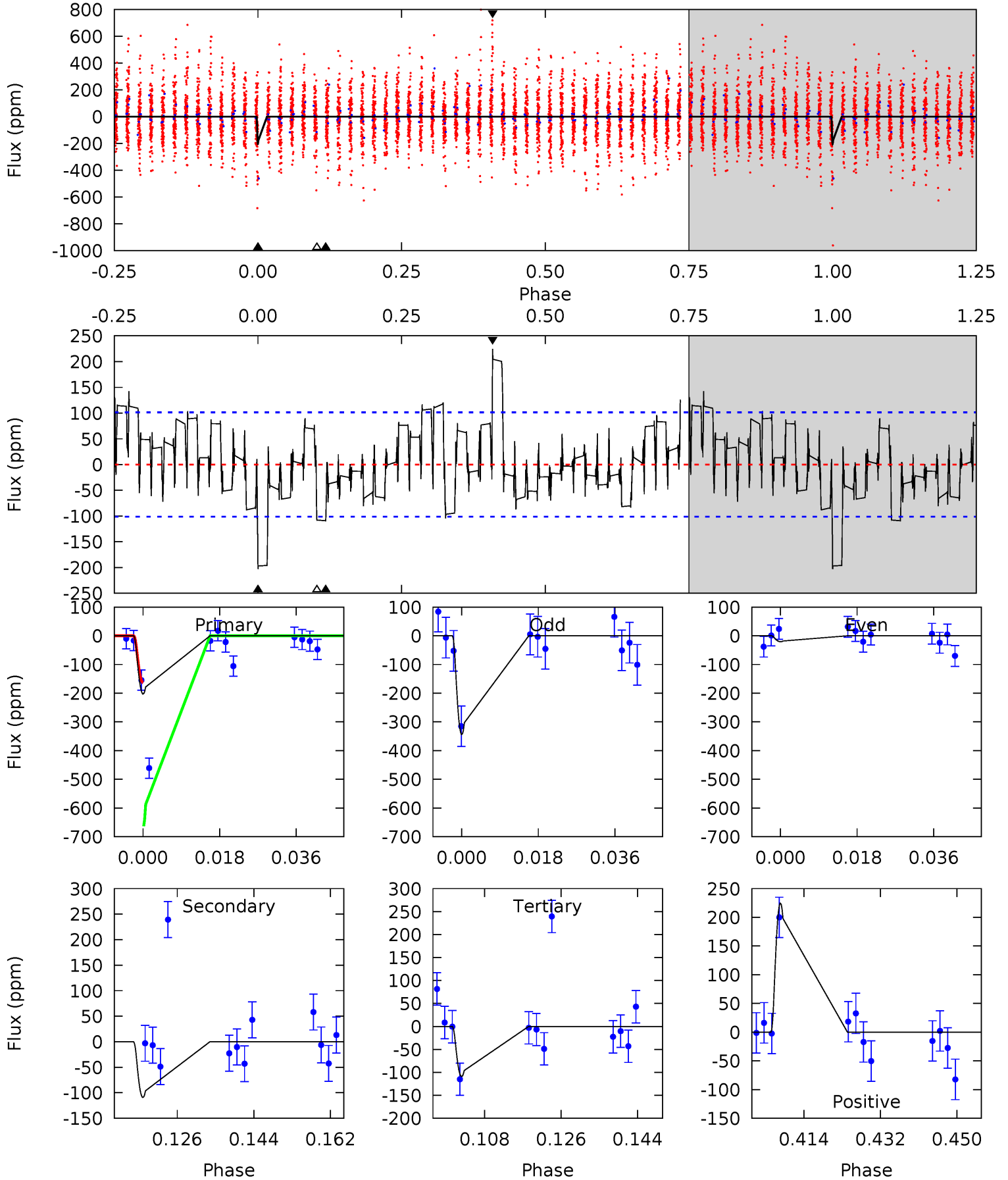
TCE 011457224-04 P= 31.076989 Days $T_0=157.074421$ (BKJD)



DV Model-Shift Uniqueness Test

011457224-04, P = 31.067348 Days, E = 126.062891 Days

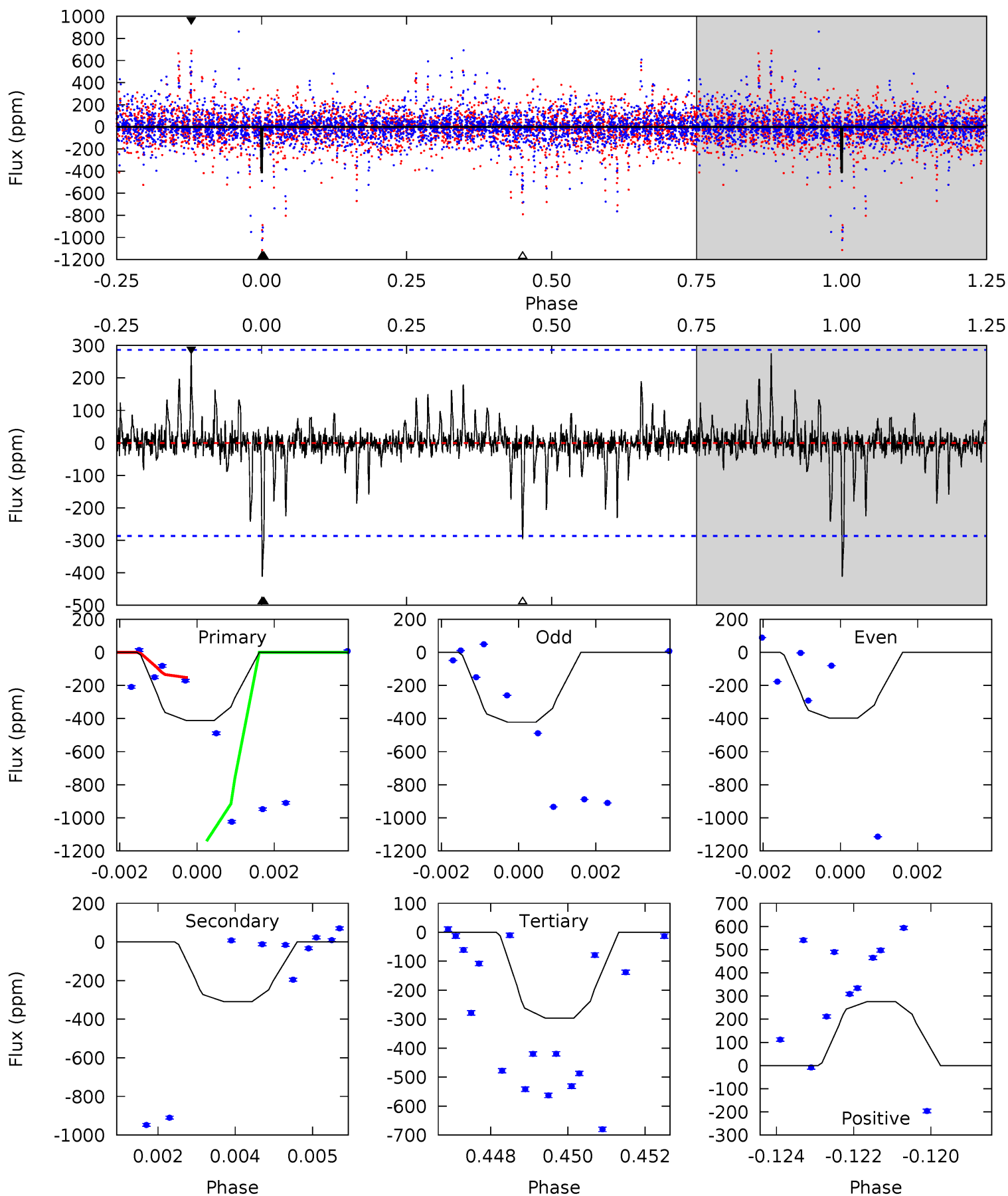
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.82	5.29	5.28	10.9	4.91	2.37	2.02	4.54	-1.06	0.01	-5.59	7.83	1.37	0.53	5.42



Alt Model-Shift Uniqueness Test

011457224-04, P = 31.076989 Days, E = 125.997432 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.69	5.77	5.54	5.15	5.35	3.12	0.76	2.15	2.53	0.23	0.62	0.21	0.80	0.40	8.84



Stellar Parameters For KIC 011457224

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5375^{+160}_{-144}	$4.452^{+0.100}_{-0.150}$	$0.070^{+0.250}_{-0.300}$	$0.916^{+0.199}_{-0.107}$	$0.866^{+0.097}_{-0.073}$	$1.587^{+0.688}_{-0.663}$
	+3%/-3%	+2%/-3%	+357%/-429%	+22%/-12%	+11%/-8%	+43%/-42%
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 011457224-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-109 ± 21	$3.73^{+2.97}_{-2.40}$	742^{+48}_{-34}	3359^{+1450}_{-523}	148^{+942}_{-104}
Alt.	-309 ± 54	$3.04^{+2.75}_{-2.03}$	742^{+46}_{-36}	4302^{+2779}_{-863}	605^{+5234}_{-439}

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 $A_{obs} \gg 1.0$

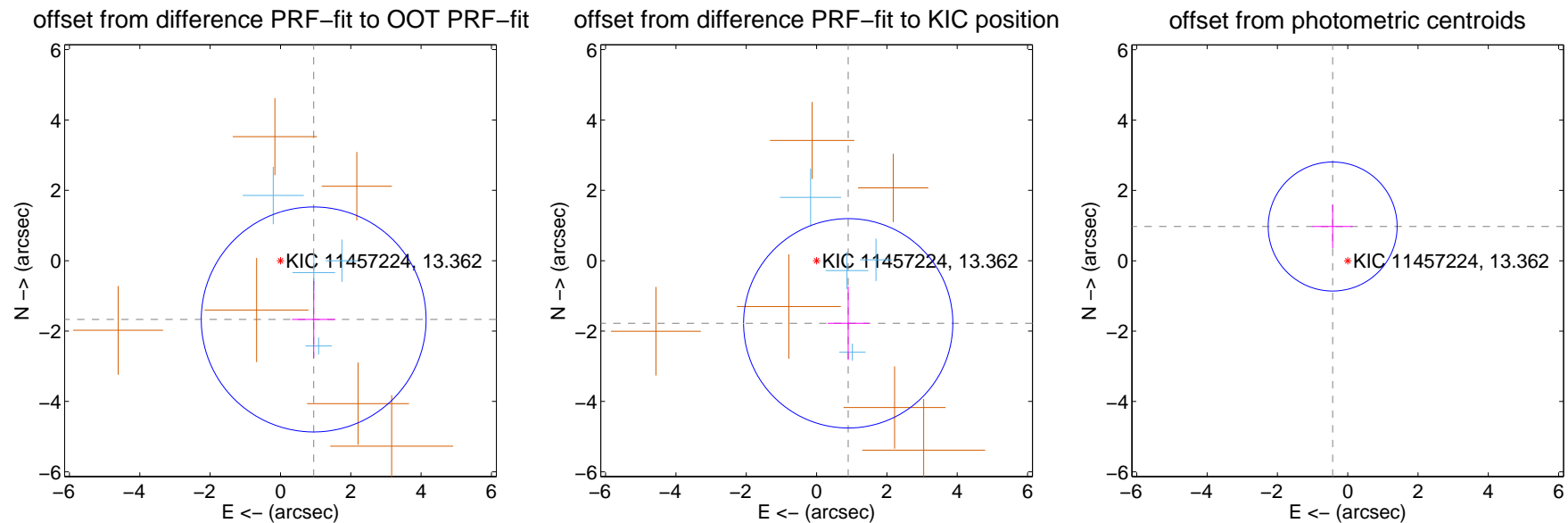
DV Centroid Data

Supplemental centroid analysis for 011457224-04. Kepler magnitude: 13.36. Transit SNR 6.59

There are 4 quarters with good PRF difference image offsets

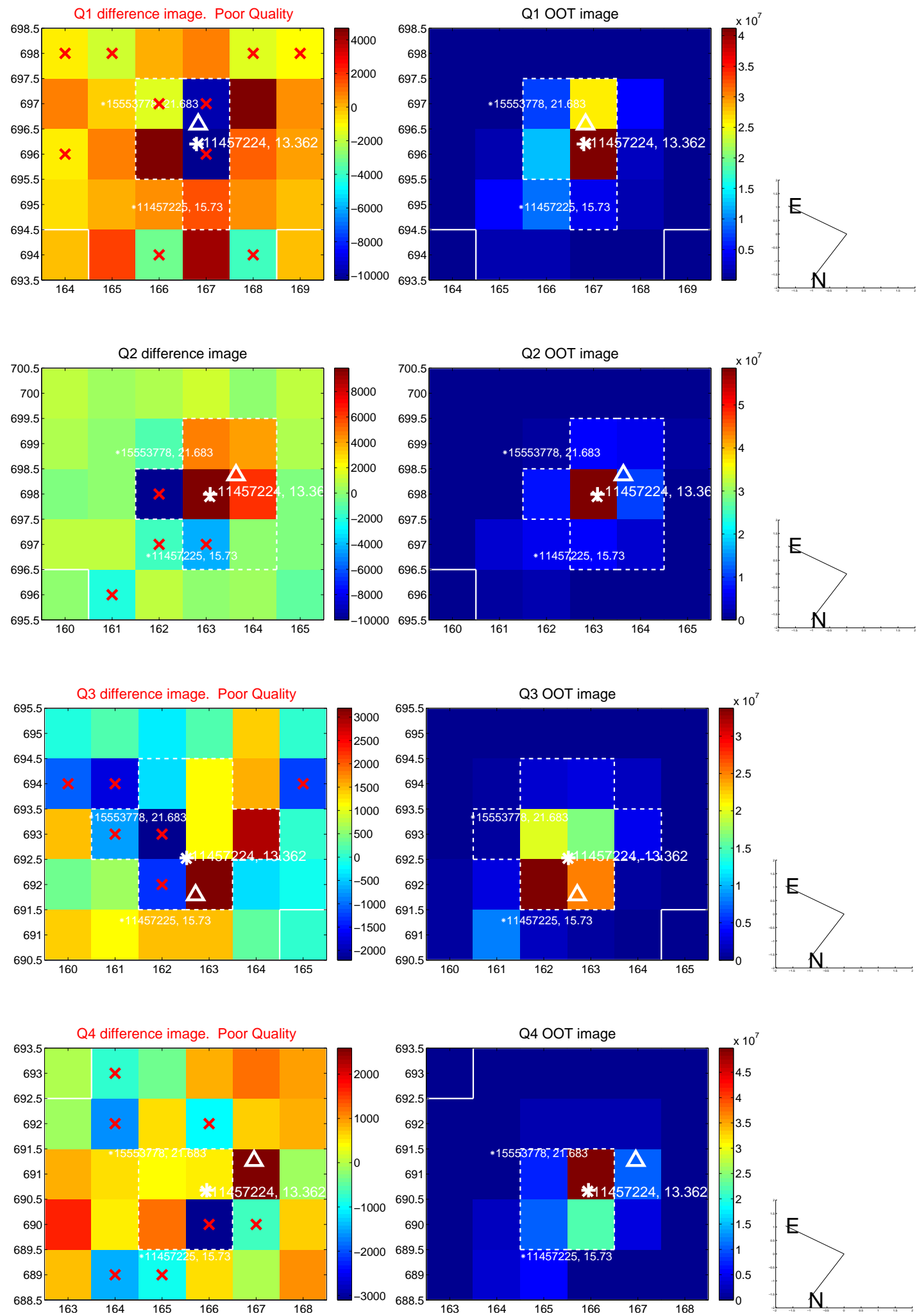
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.919 ± 1.066	1.80	-0.944 ± 0.619	-1.670 ± 1.089
PRF-fit source offset from KIC position	1.994 ± 0.992	2.01	-0.900 ± 0.584	-1.780 ± 1.043
photometric centroid source offset	1.06 ± 0.61	1.74	0.43 ± 0.57	0.97 ± 0.62

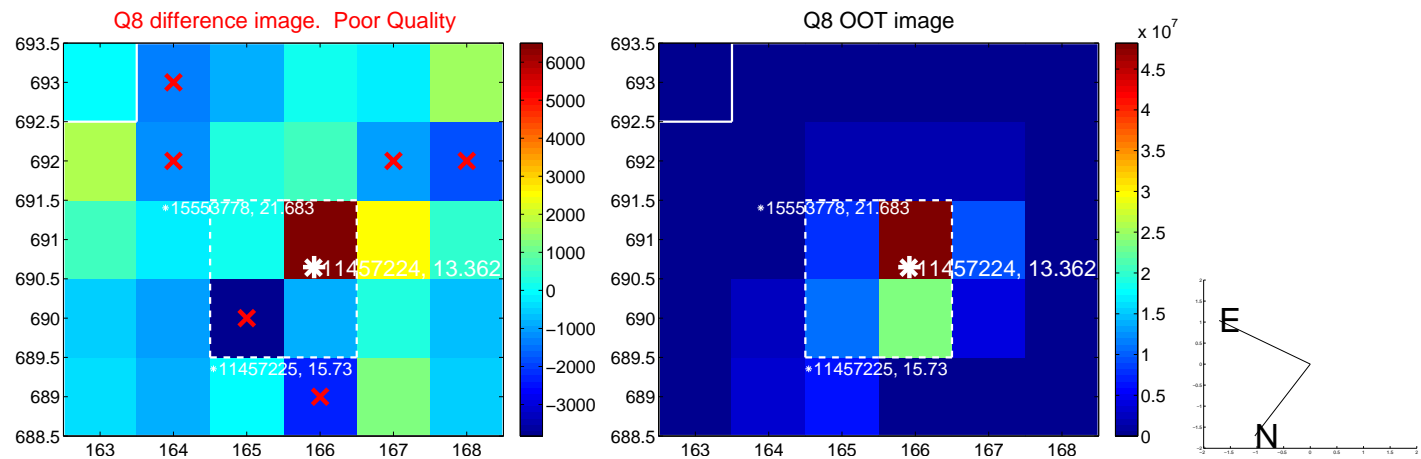
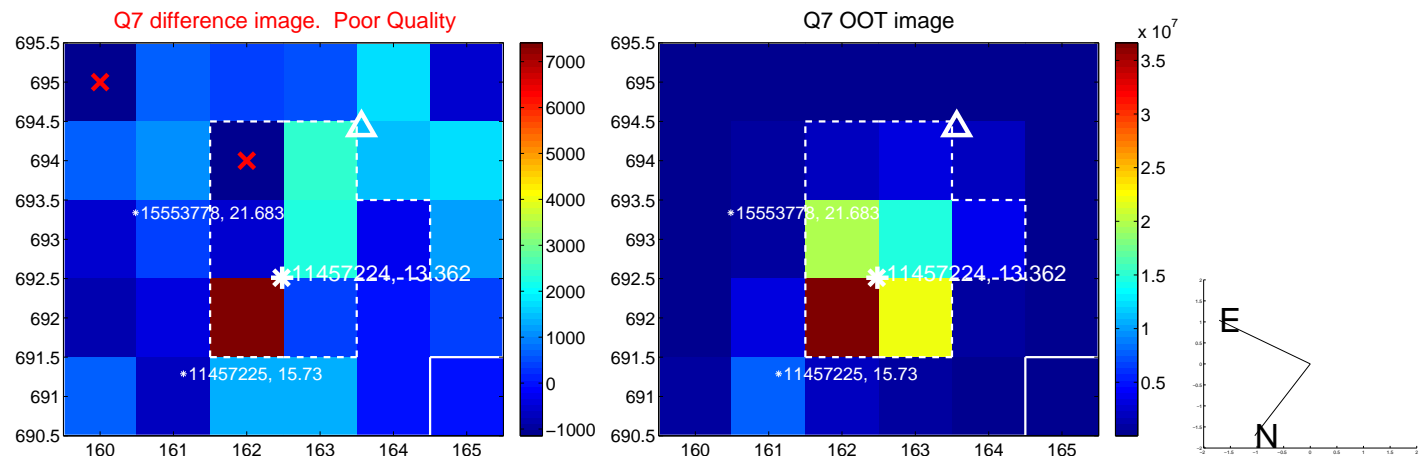
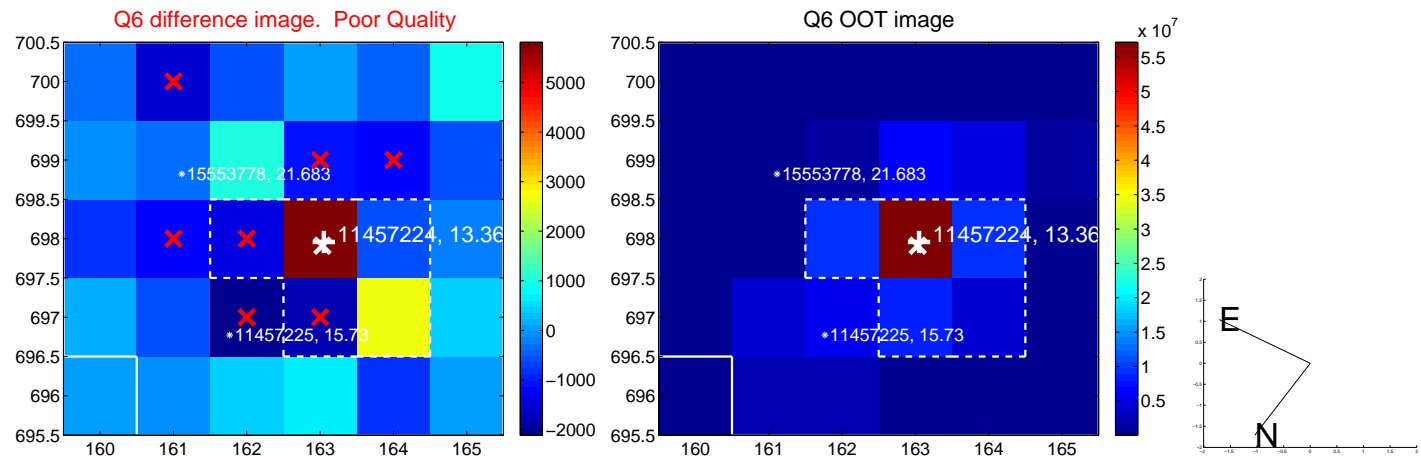
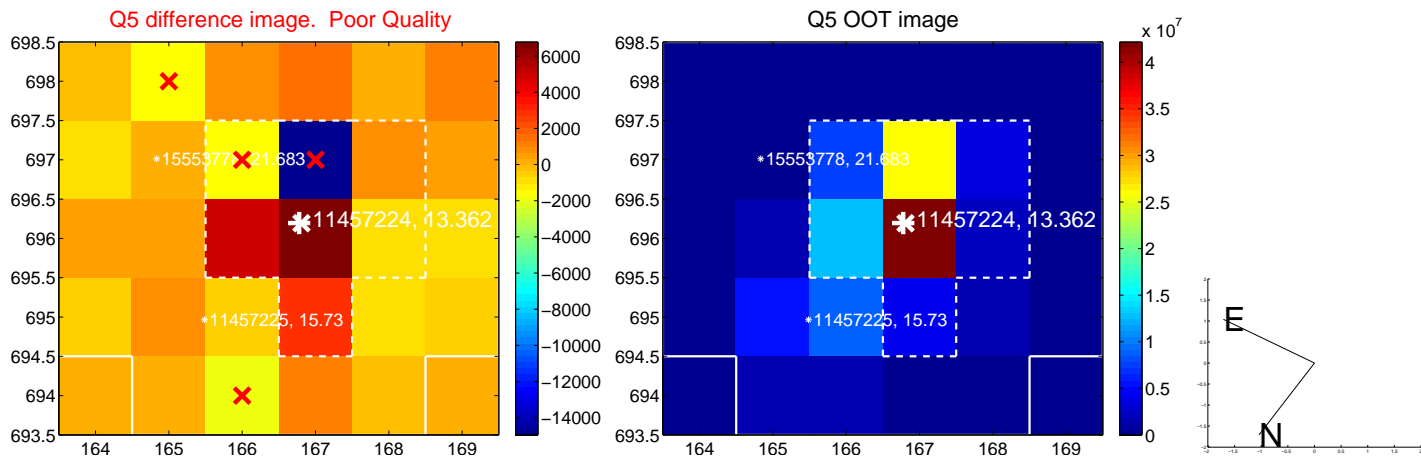


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

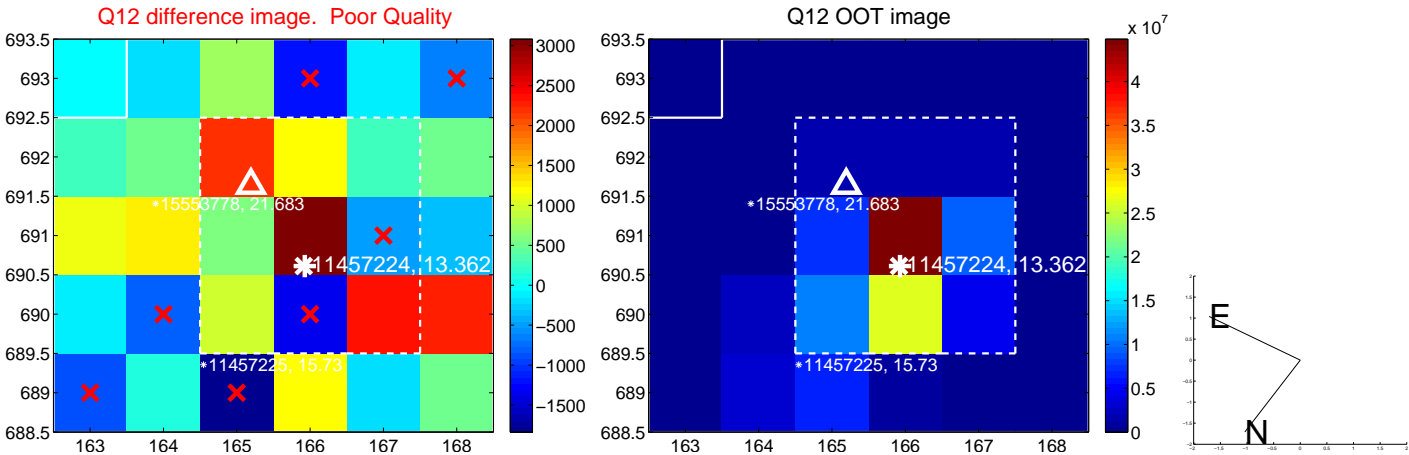
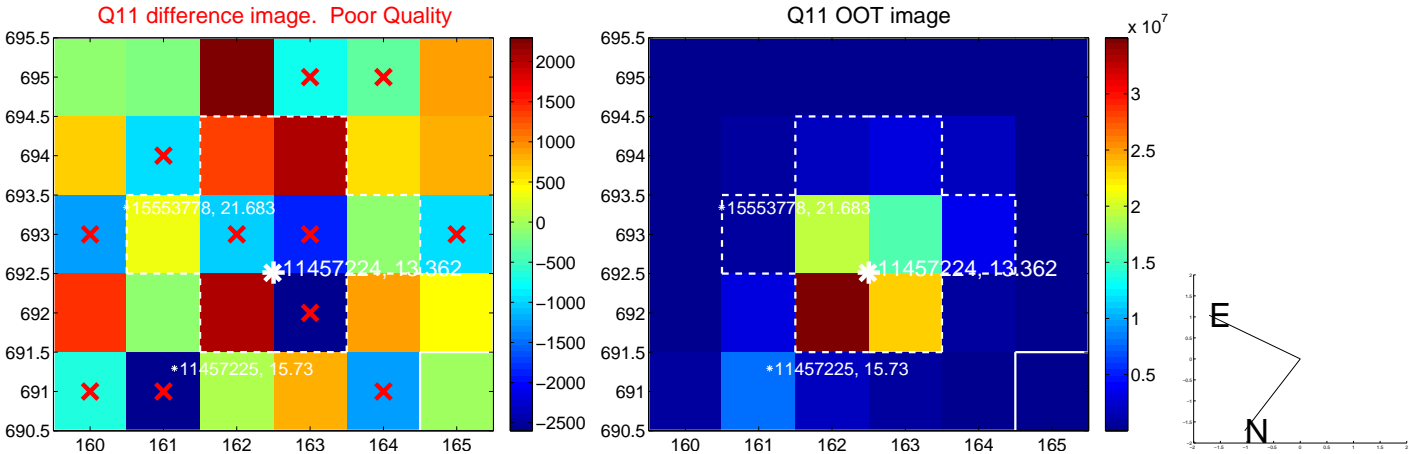
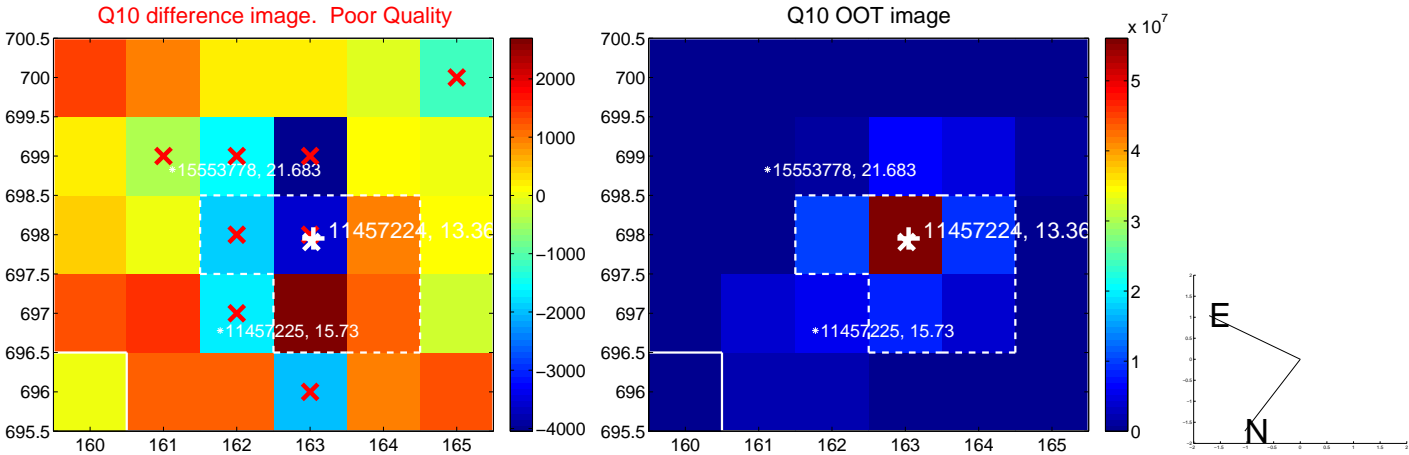
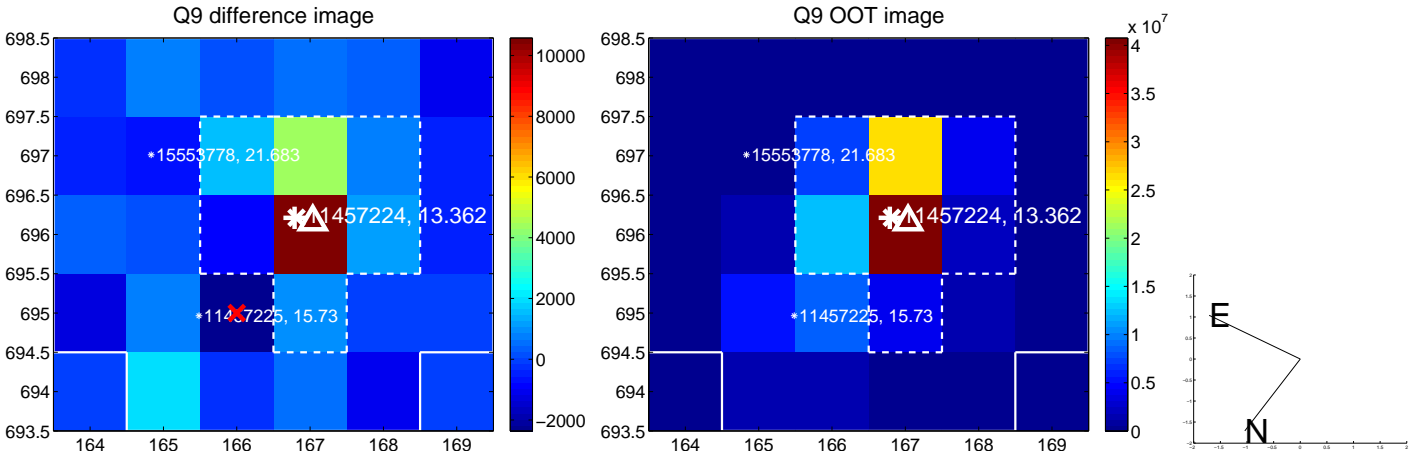
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



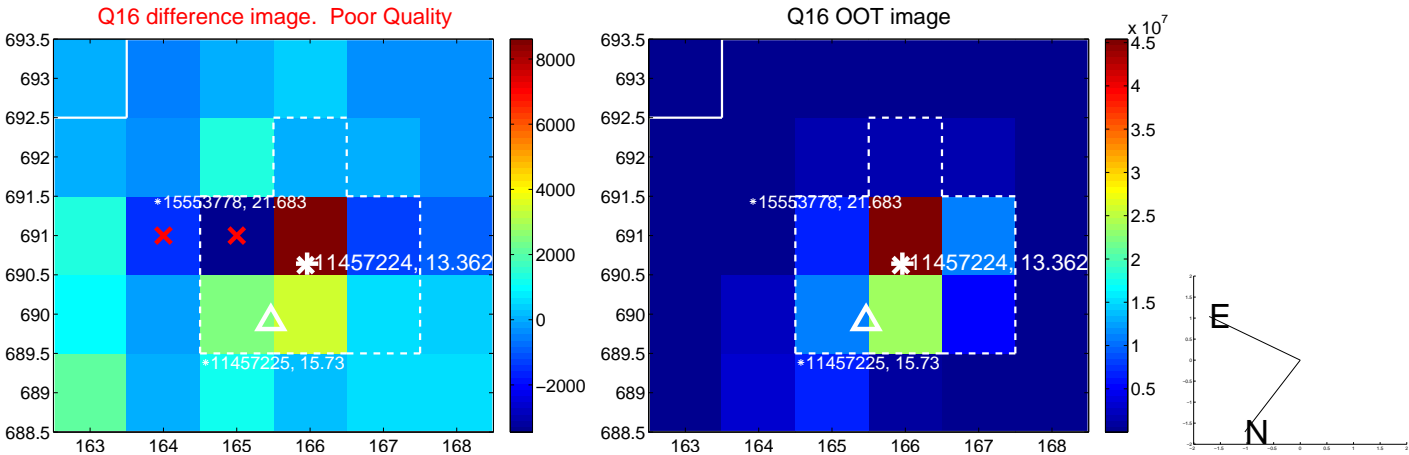
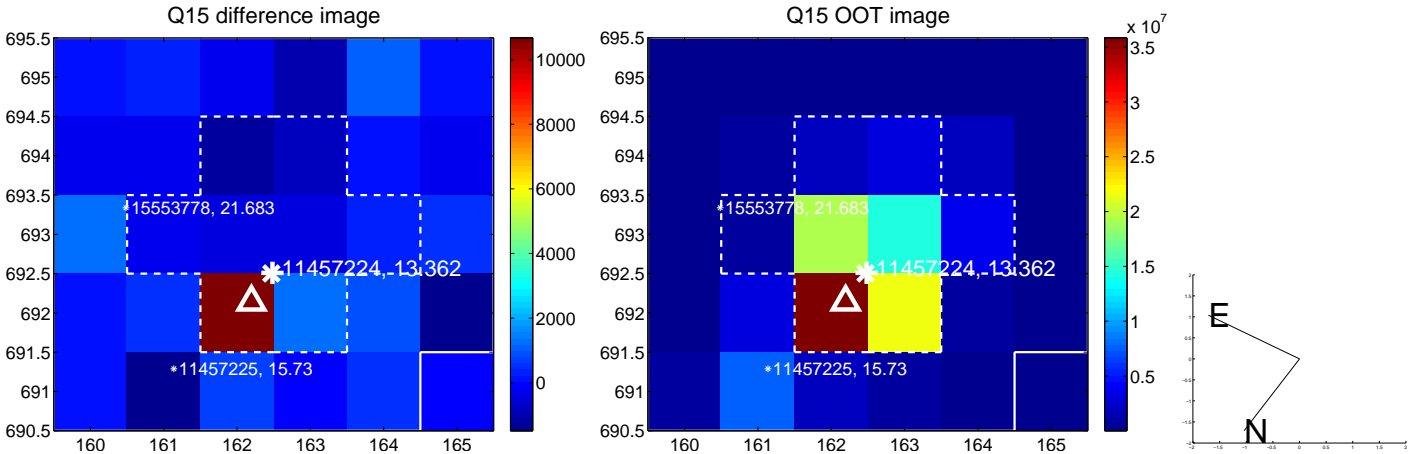
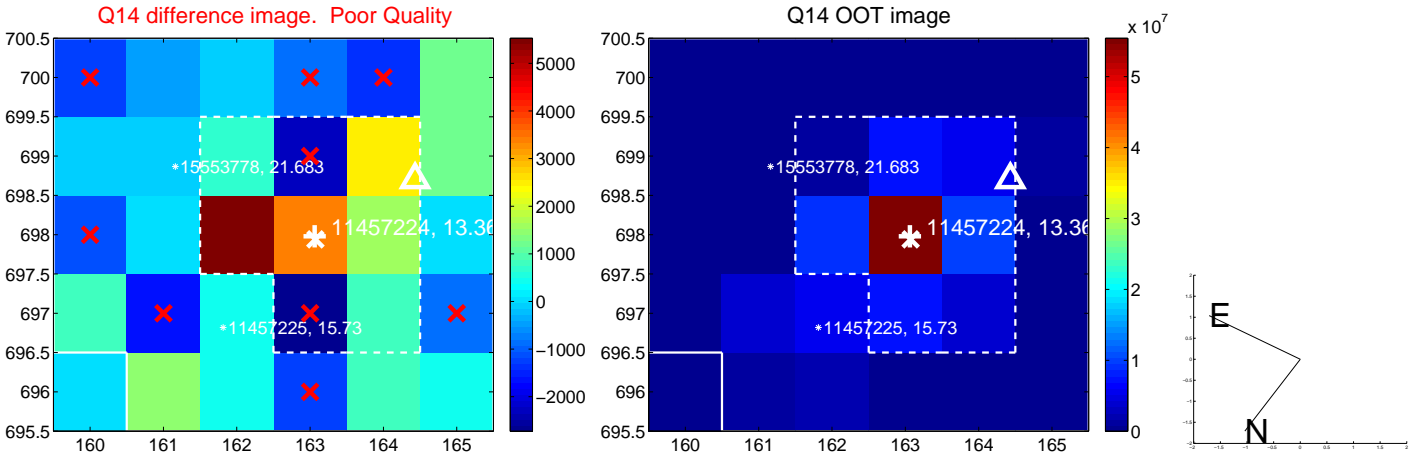
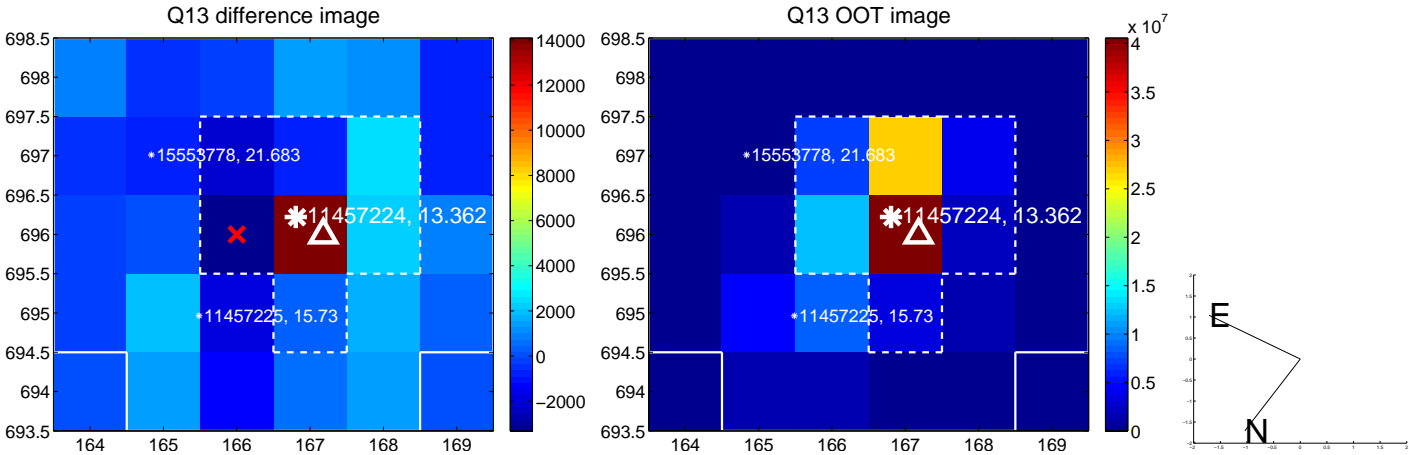
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



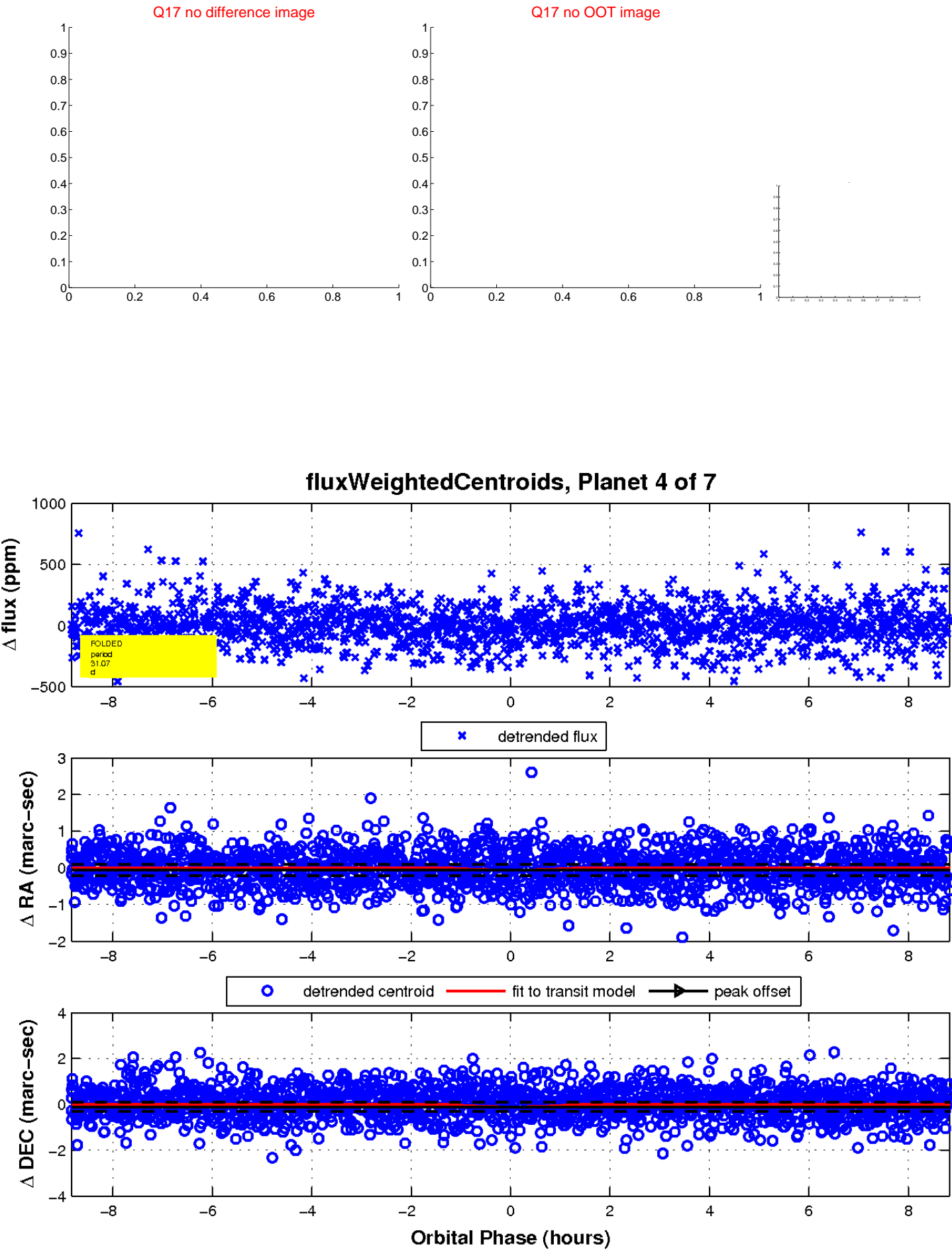
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

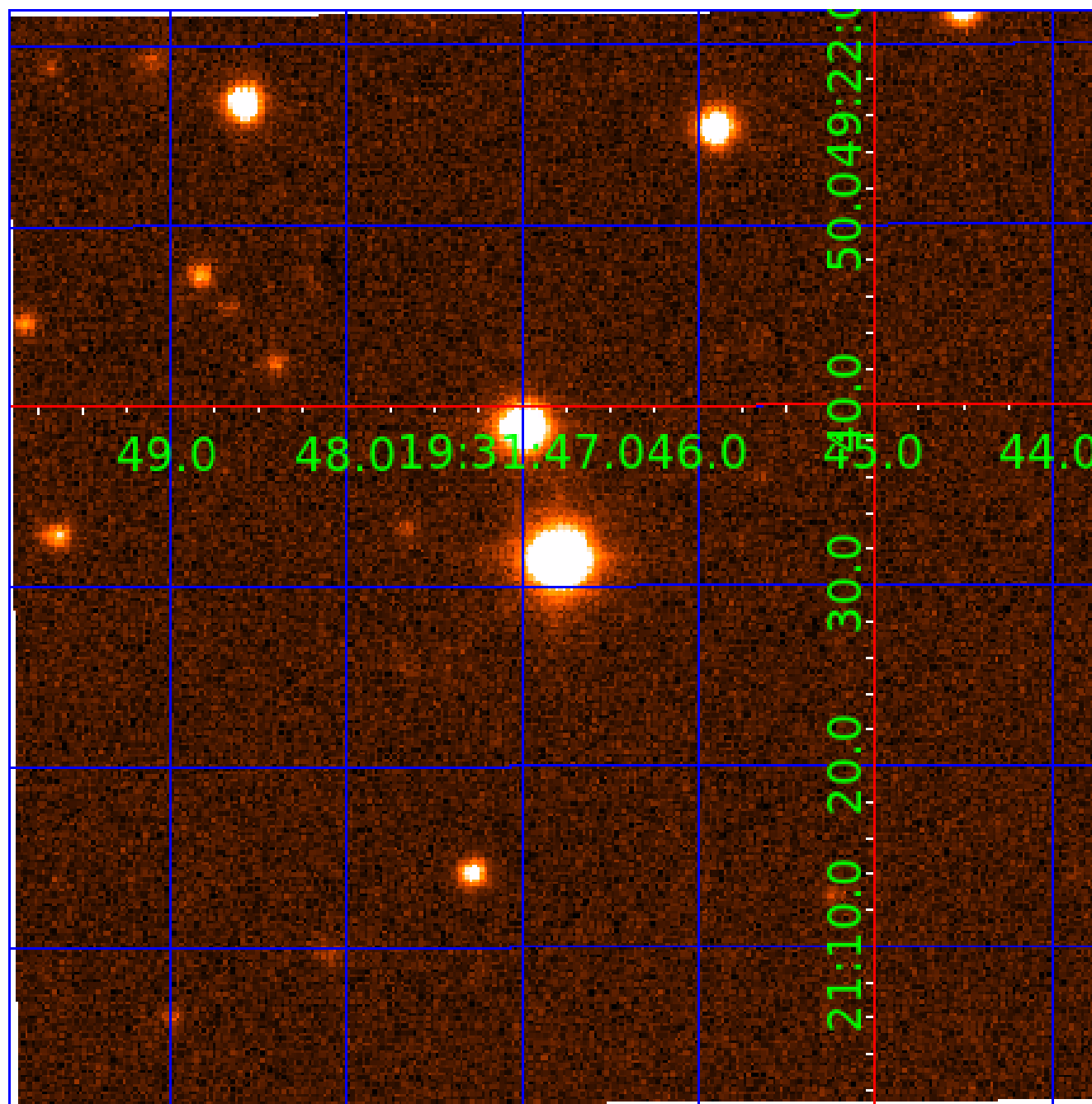


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011457224

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})
011457224-01	OBS	No	0.633973	132.084866	7.9	4.457	8.8	4.6	0.92	5375	0.25	3308.09
011457224-02	OBS	No	31.685499	155.249415	421.4	1.818	13.2	8.2	0.92	5375	1.91	17.97
011457224-03	OBS	No	29.156067	159.683864	322.6	2.204	12.7	9.6	0.92	5375	1.75	20.08
011457224-04	OBS	No	31.067348	157.130239	216.3	2.945	10.4	6.6	0.92	5375	2.11	18.45
011457224-05	OBS	No	46.259487	147.022600	519.3	2.482	11.1	10.4	0.92	5375	2.19	10.85
011457224-06	OBS	No	9.818013	131.783275	184.3	1.786	9.9	8.6	0.92	5375	1.50	85.70
011457224-07	OBS	No	46.300127	146.318034	552.2	2.206	9.7	8.6	0.92	5375	3.93	10.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011457224-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_DIFFS
011457224-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011457224-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS—HALO_GHOST
011457224-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011457224-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011457224-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011457224-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

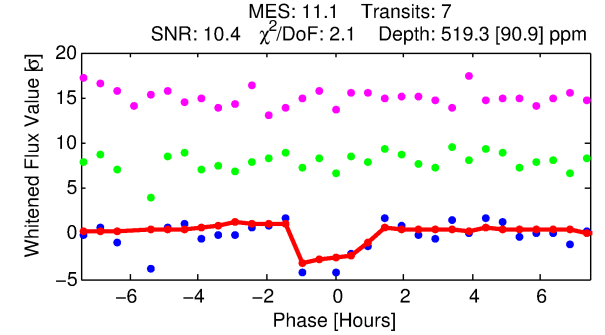
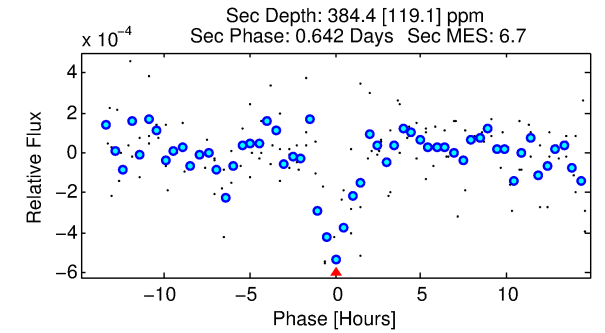
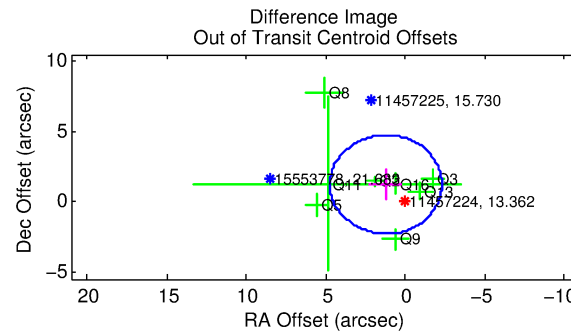
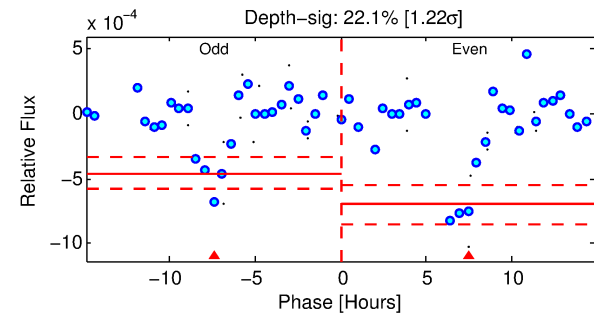
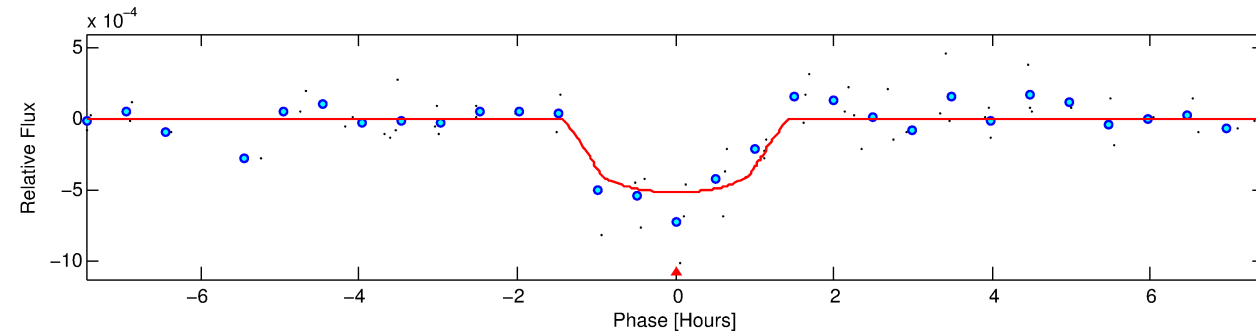
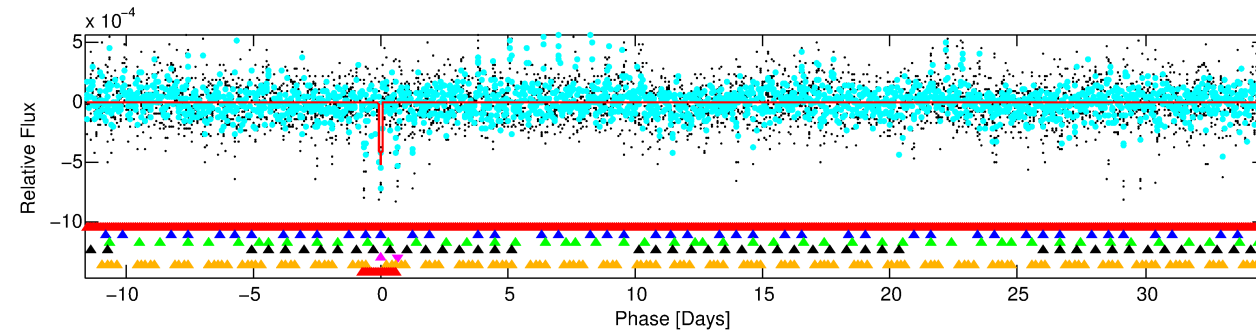
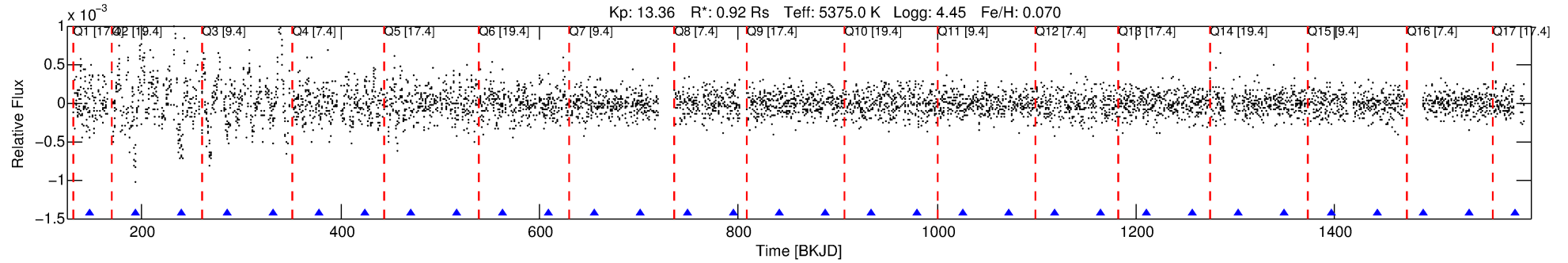
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011457224-05

No Significant Match Found

DV One-Page Summary

KIC: 11457224 Candidate: 5 of 7 Period: 46.259 d



DV Fit Results:

Period = 46.25949 [0.00035] d
Epoch = 147.0226 [0.0050] BKJD
Rp/R* = 0.0220 [0.0381]
a/R* = 112.28 [730.07]
b = 0.65 [5.92]
Seff = 10.85 [3.22]
Teq = 463 [34] K
Rp = 2.19 [3.84] Re
a = 0.2405 [0.0445] AU
Ag = 2540.62 [8890.81] [0.29 σ]
Teffp = 5080 [4433] K [1.04 σ]

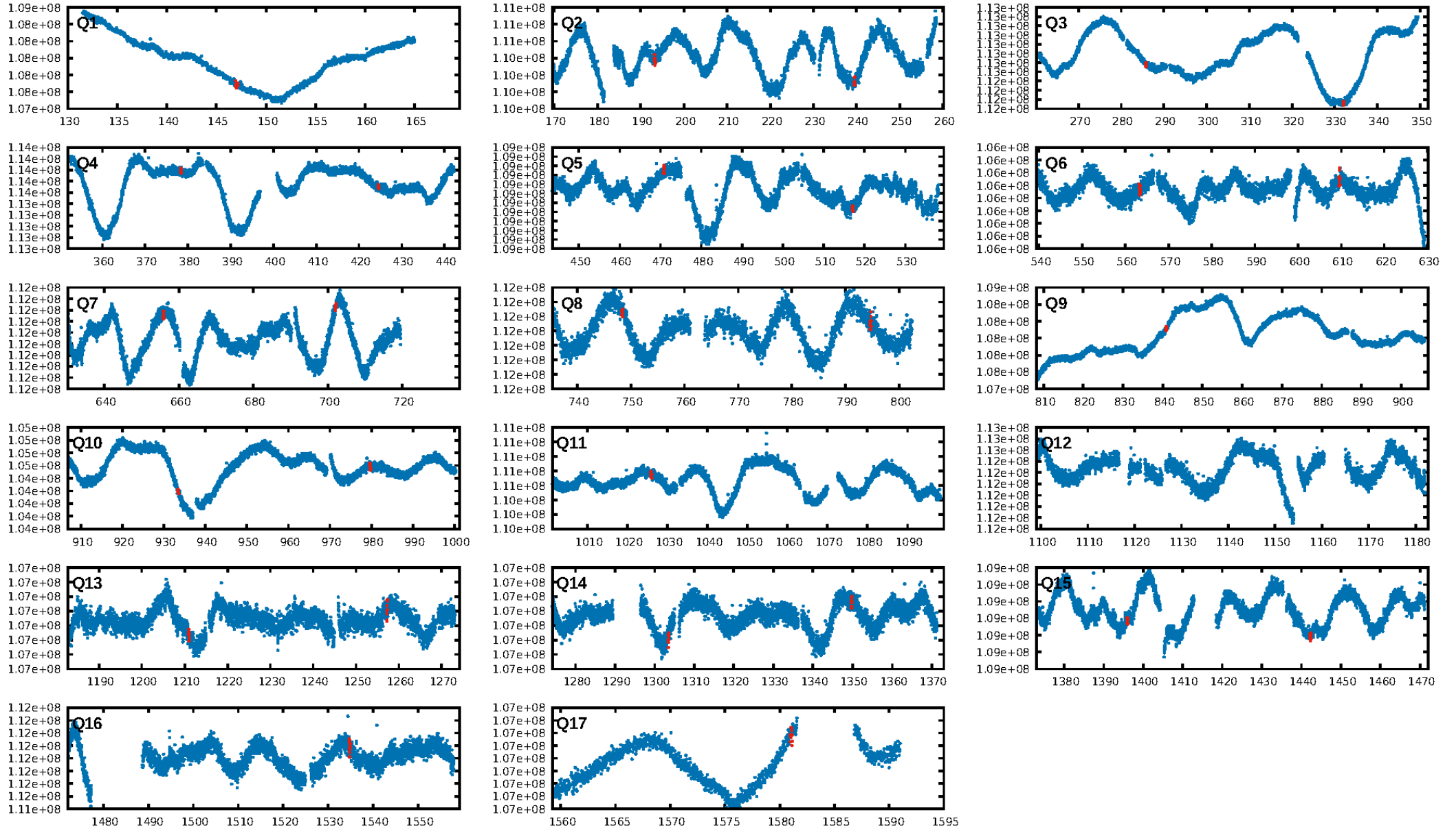
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [113.69 σ]
LongPeriod-sig: 23.1% [0.29 σ]
ModelChiSquare2-sig: 21.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -1.116
Centroid-sig: 21.7%
Centroid-so: 0.781 arcsec [2.65 σ]
OotOffset-rm: 1.716 arcsec [1.46 σ]
KicOffset-rm: 1.682 arcsec [1.72 σ]
OotOffset-st: 1/2/2/3 [8]
KicOffset-st: 1/2/2/3 [8]
DiffImageQuality-fgm: 0.25 [2/8]
DiffImageOverlap-fno: 0.00 [0/16]

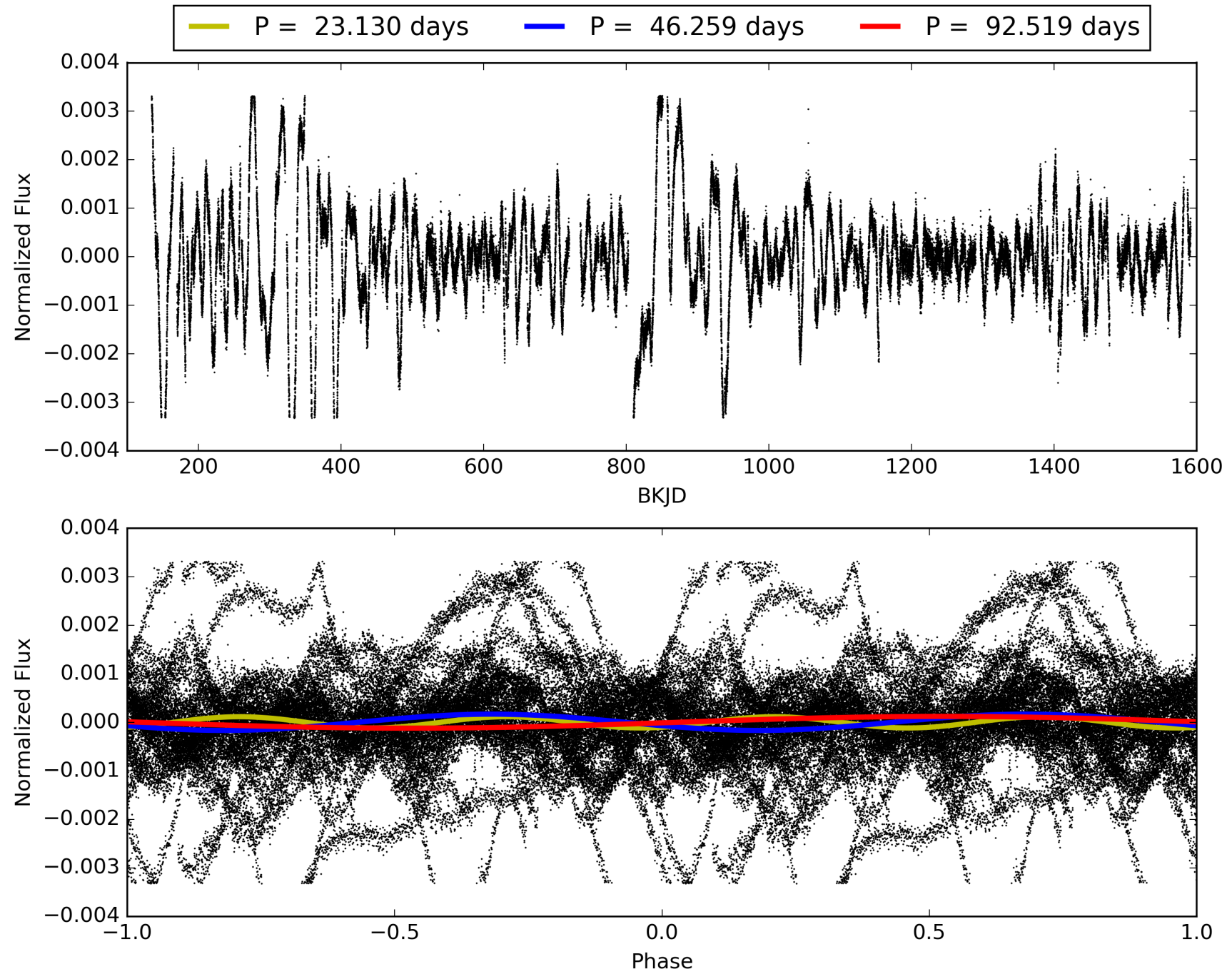
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:09:02 Z

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

TCE 011457224-05, PDC Light Curves

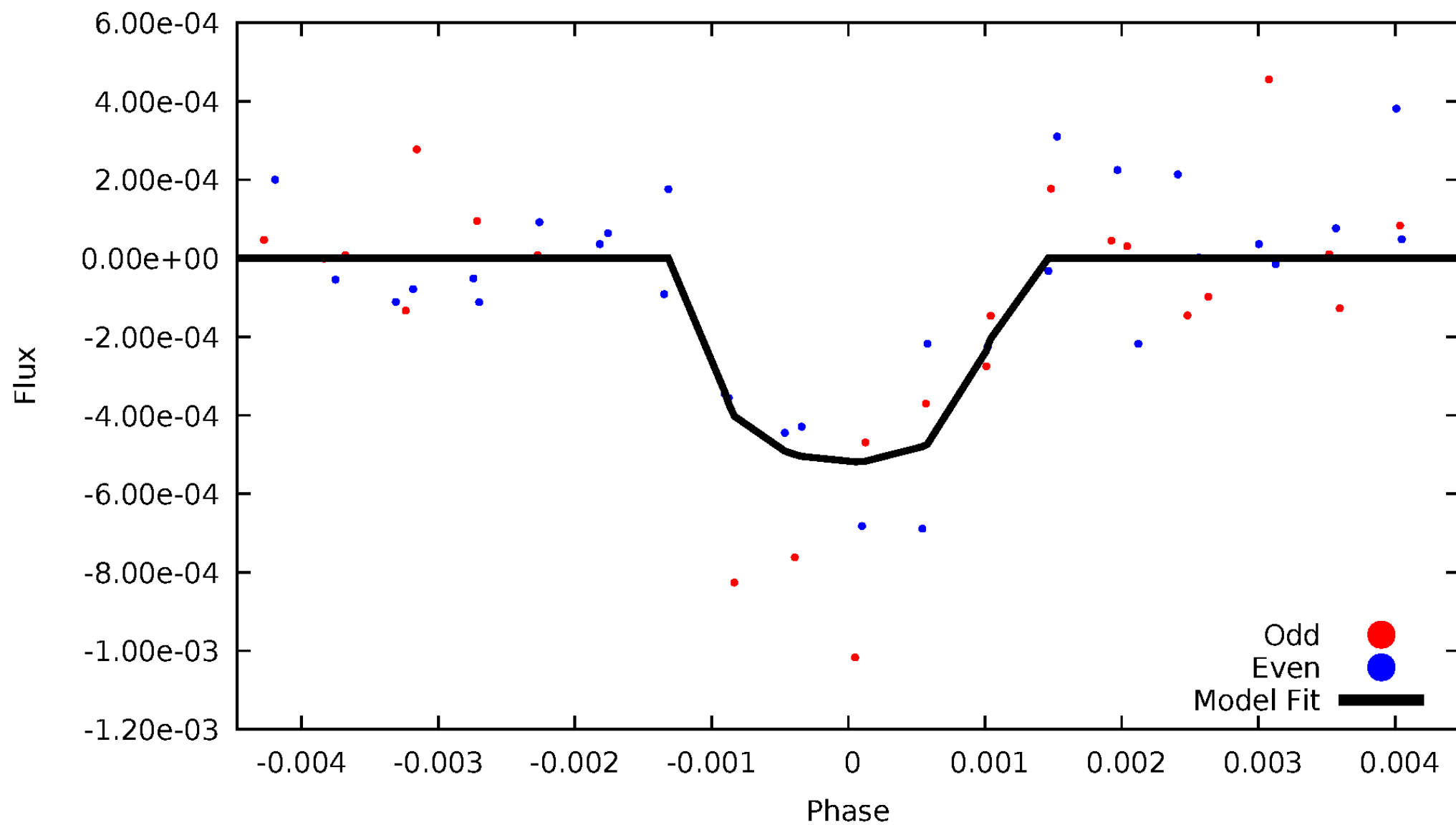


TCE 011457224-05



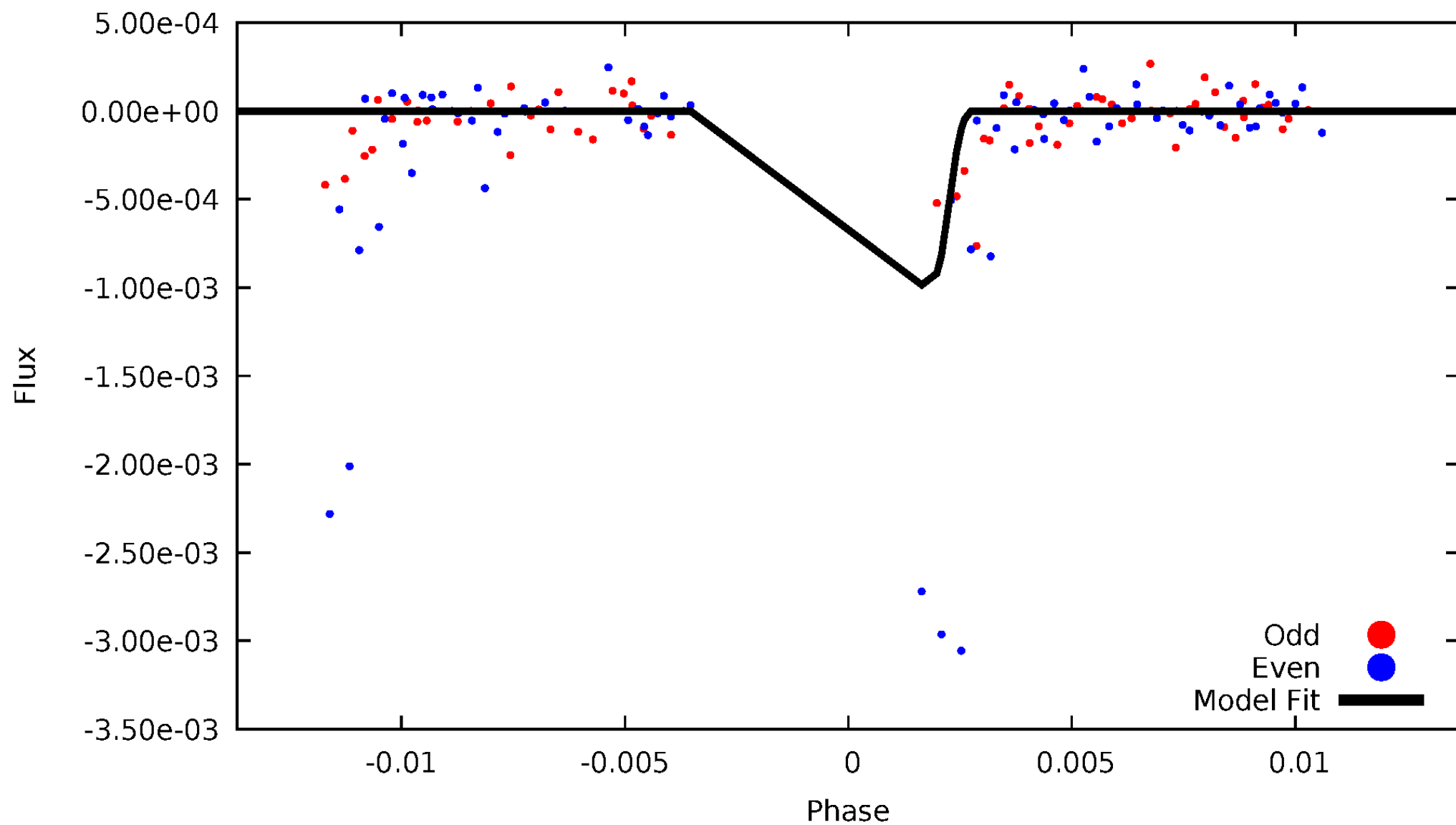
DV Odd/Even

TCE 011457224-05



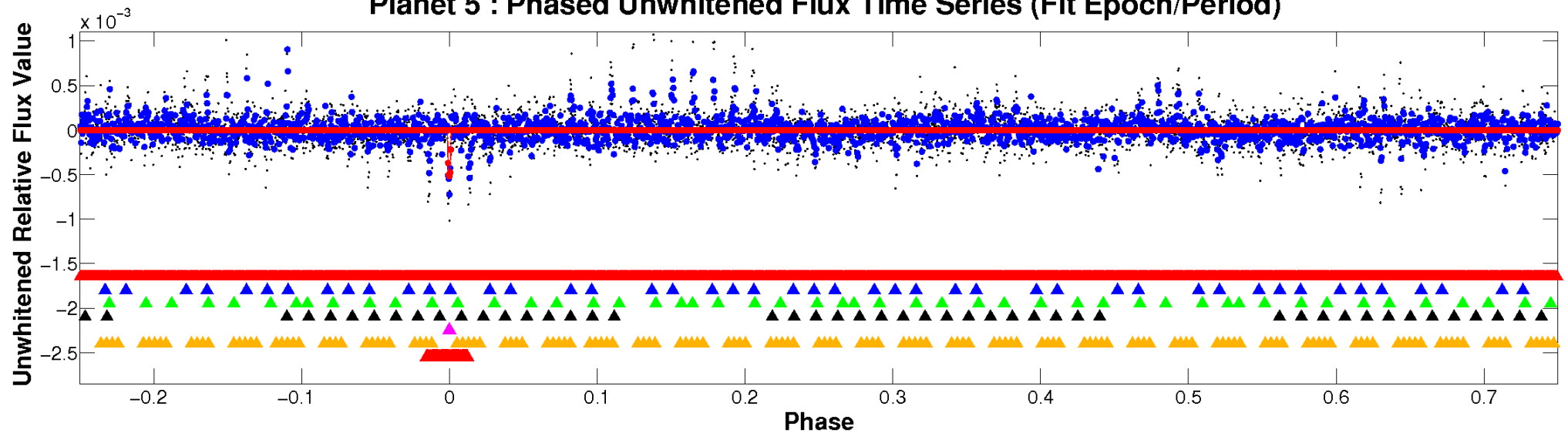
ALT Odd/Even

TCE 011457224-05

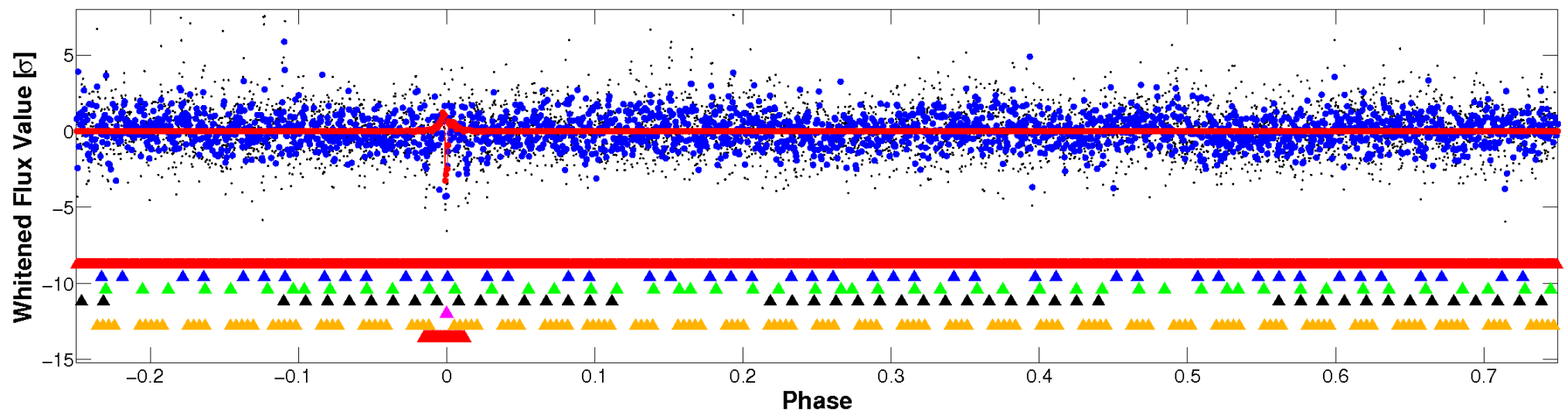


Non-Whitened Vs. Whitened Light Curve

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

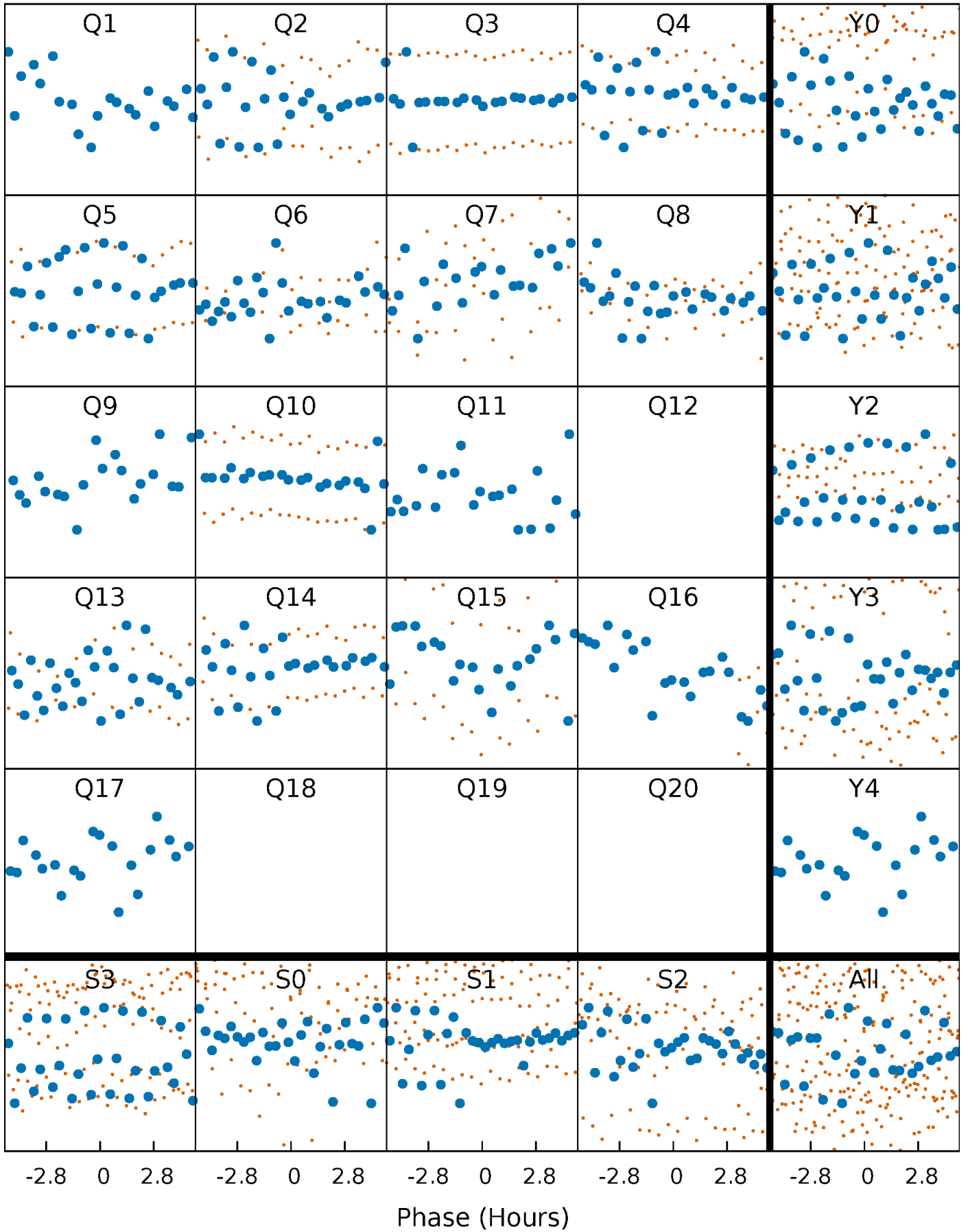


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



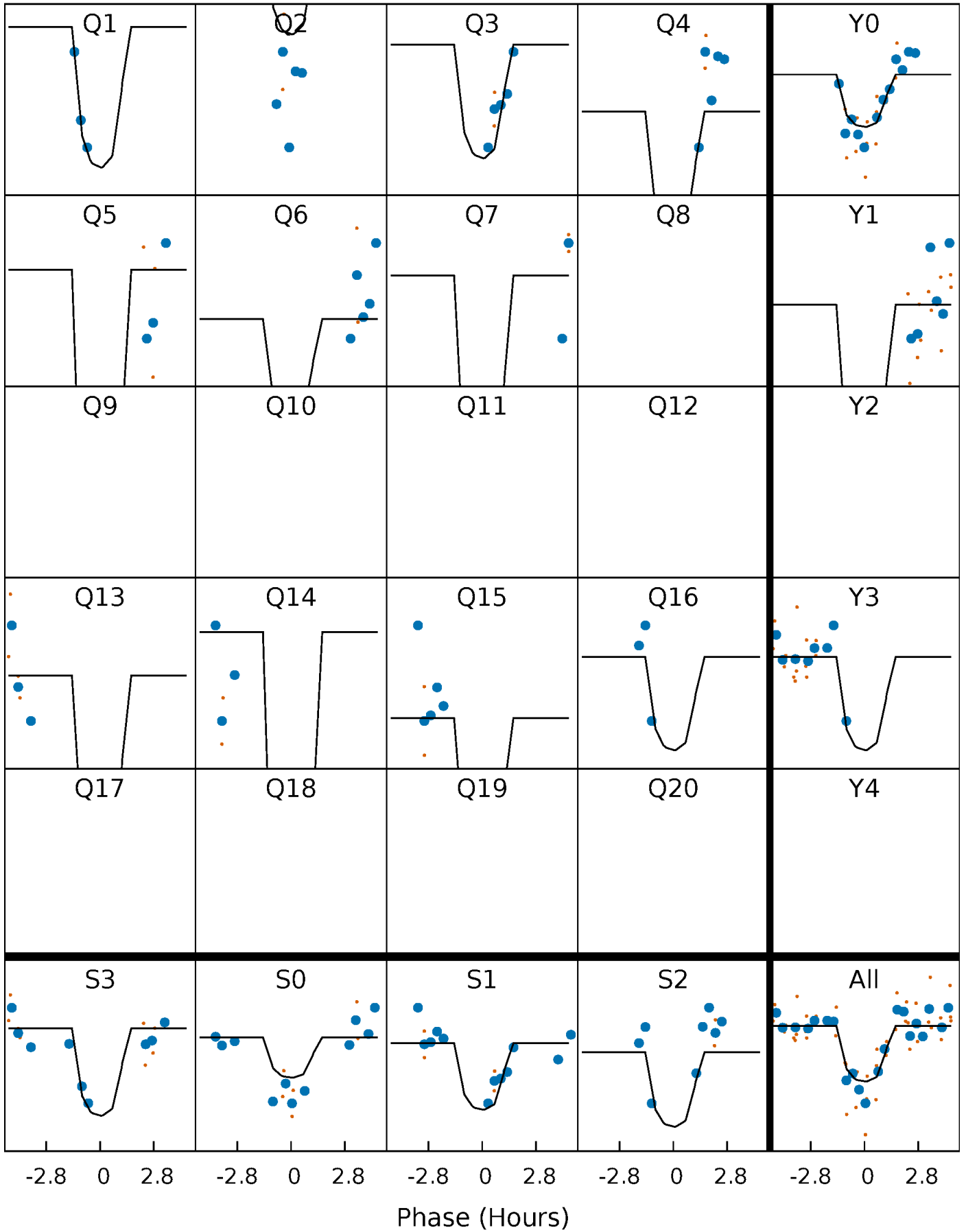
PDC Quarter-Phased Transit Curves

TCE 011457224-05 $P = 46.259487$ Days $T_0 = 147.022600$ (BKJD)



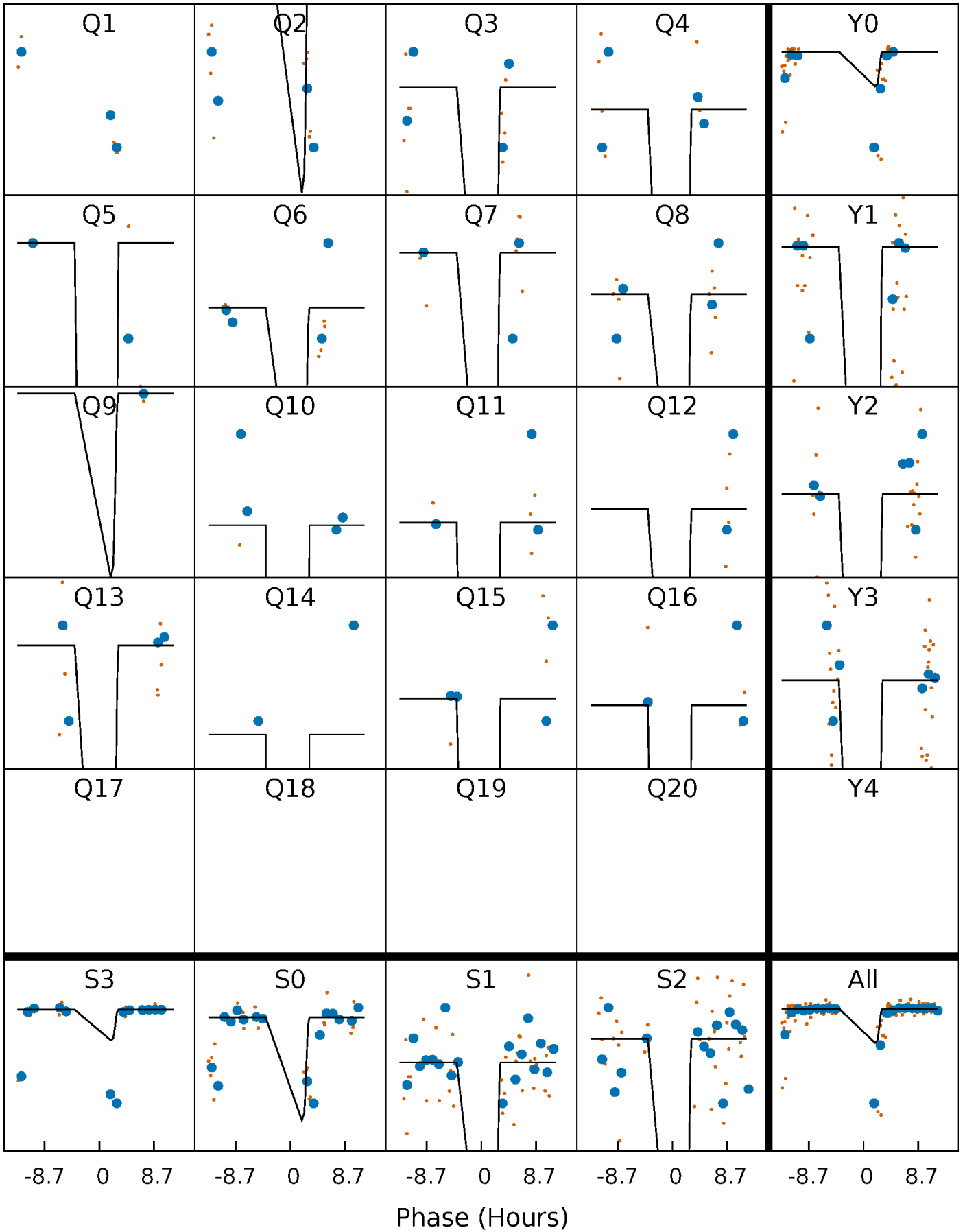
DV Quarter-Phased Transit Curves

TCE 011457224-05 $P = 46.259487$ Days $T_0 = 147.022600$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

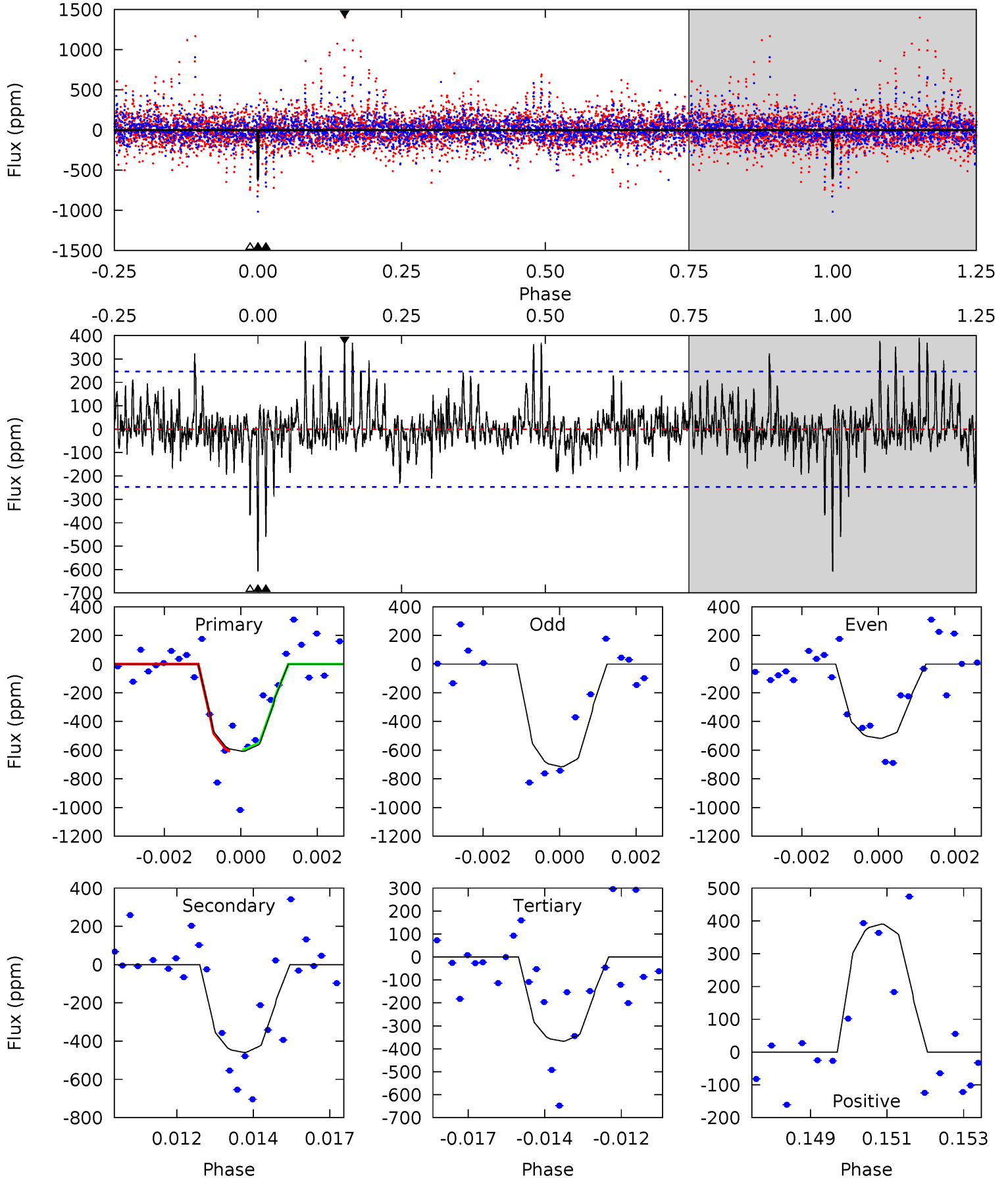
TCE 011457224-05 P= 46.267515 Days $T_0=146.884229$ (BKJD)



DV Model-Shift Uniqueness Test

011457224-05, P = 46.259487 Days, E = 100.763113 Days

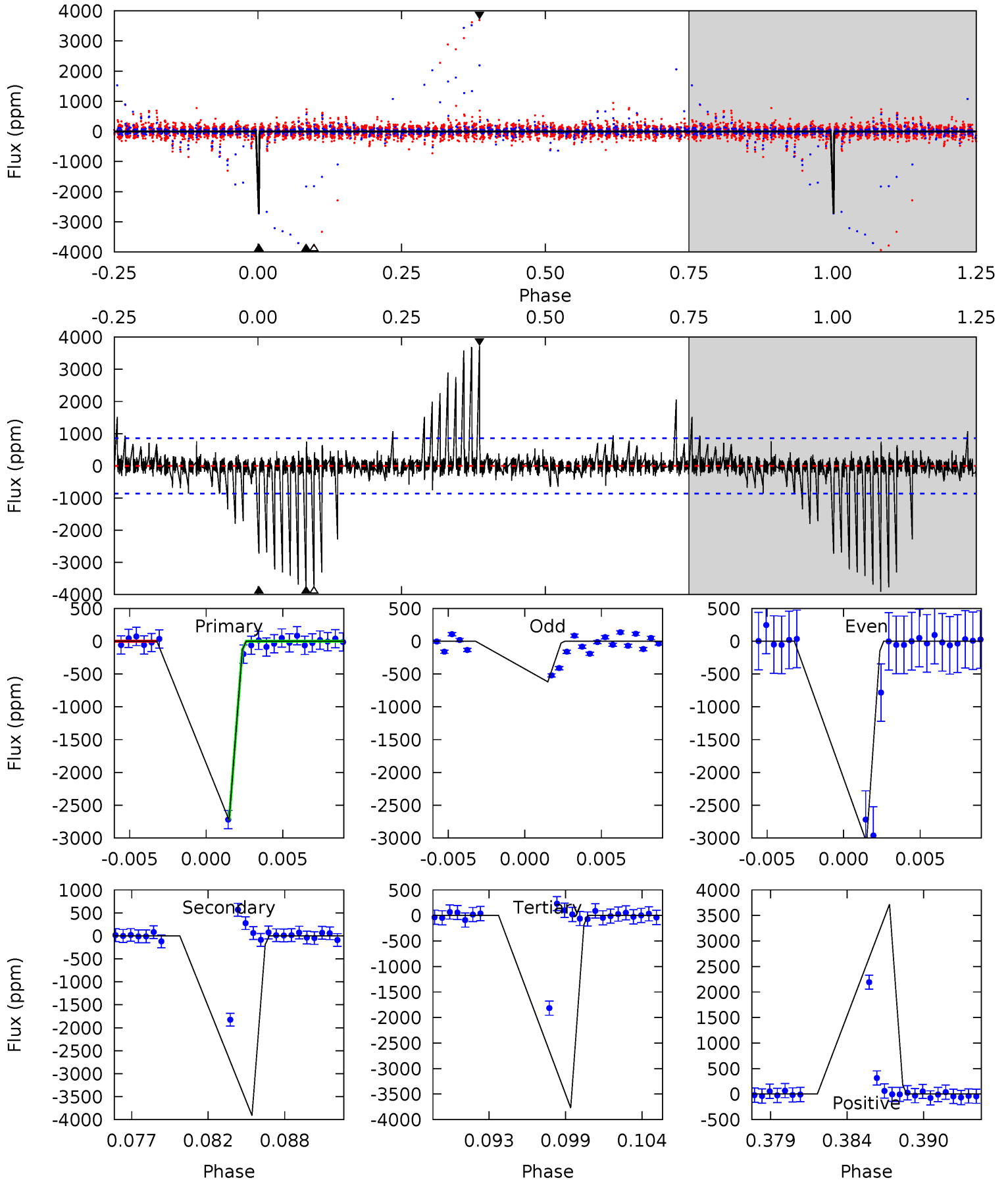
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	9.86	7.88	8.39	5.30	3.04	1.70	5.18	4.68	1.98	1.48	2.01	1.11	0.39	0.12



Alt Model-Shift Uniqueness Test

011457224-05, P = 46.267515 Days, E = 100.616714 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.3	23.4	22.5	22.2	5.14	2.78	1.42	-6.21	-5.91	0.85	1.15	7.78	1.00	0.49	0



Stellar Parameters For KIC 011457224

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5375^{+160}_{-144}	$4.452^{+0.100}_{-0.150}$	$0.070^{+0.250}_{-0.300}$	$0.916^{+0.199}_{-0.107}$	$0.866^{+0.097}_{-0.073}$	$1.587^{+0.688}_{-0.663}$
	+3%/-3%	+2%/-3%	+357%/-429%	+22%/-12%	+11%/-8%	+43%/-42%
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 011457224-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-459 ± 47	$3.82^{+3.30}_{-2.59}$	650^{+39}_{-32}	4271^{+2743}_{-785}	1013^{+8392}_{-716}
Alt.	-3912 ± 167	$4.14^{+3.47}_{-2.60}$	650^{+33}_{-32}	6647^{+6161}_{-1637}	7475^{+45181}_{-5288}

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 $A_{obs} \gg 1.0$

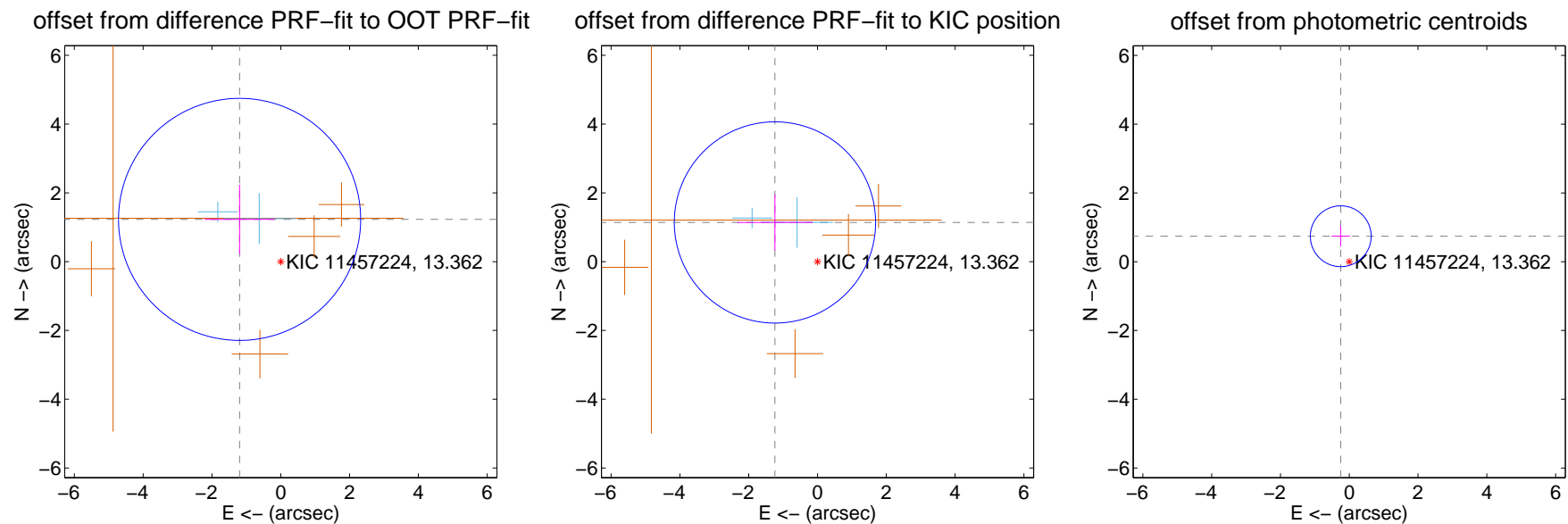
DV Centroid Data

Supplemental centroid analysis for 011457224-05. Kepler magnitude: 13.36. Transit SNR 10.43

There are 2 quarters with good PRF difference image offsets

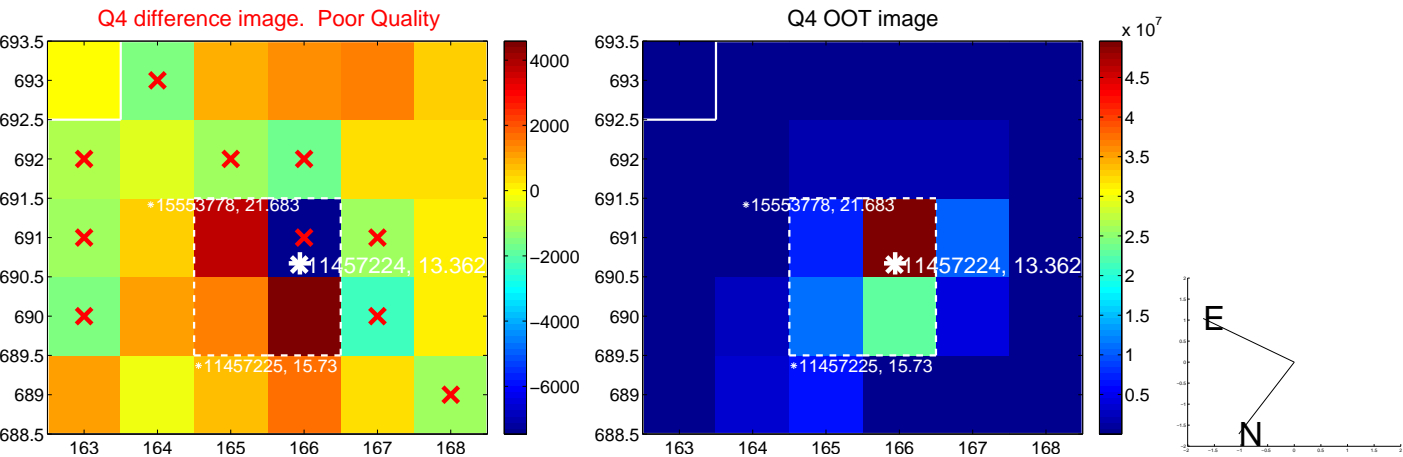
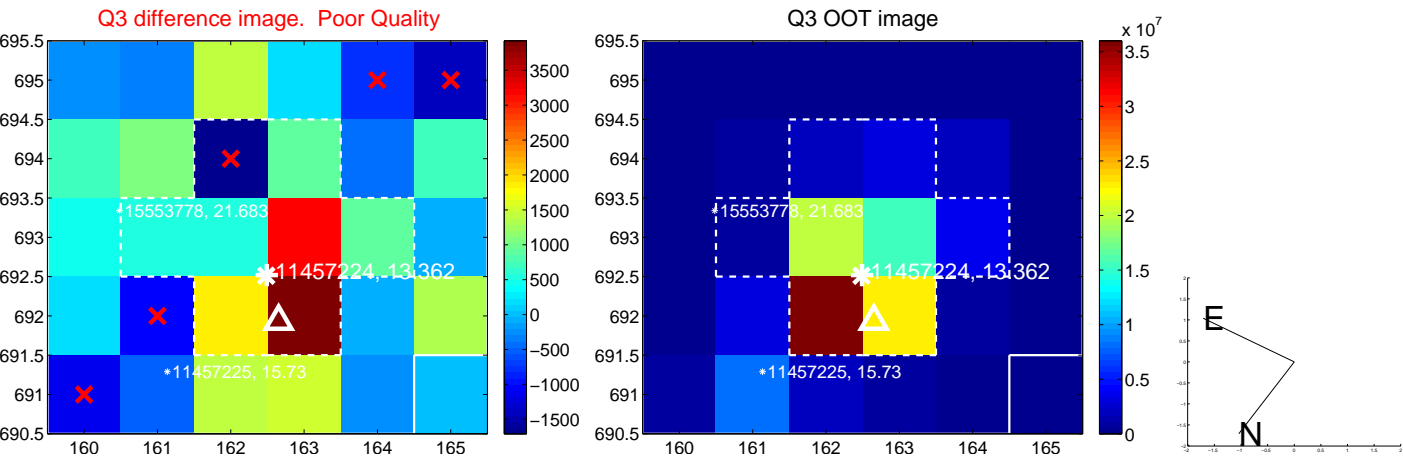
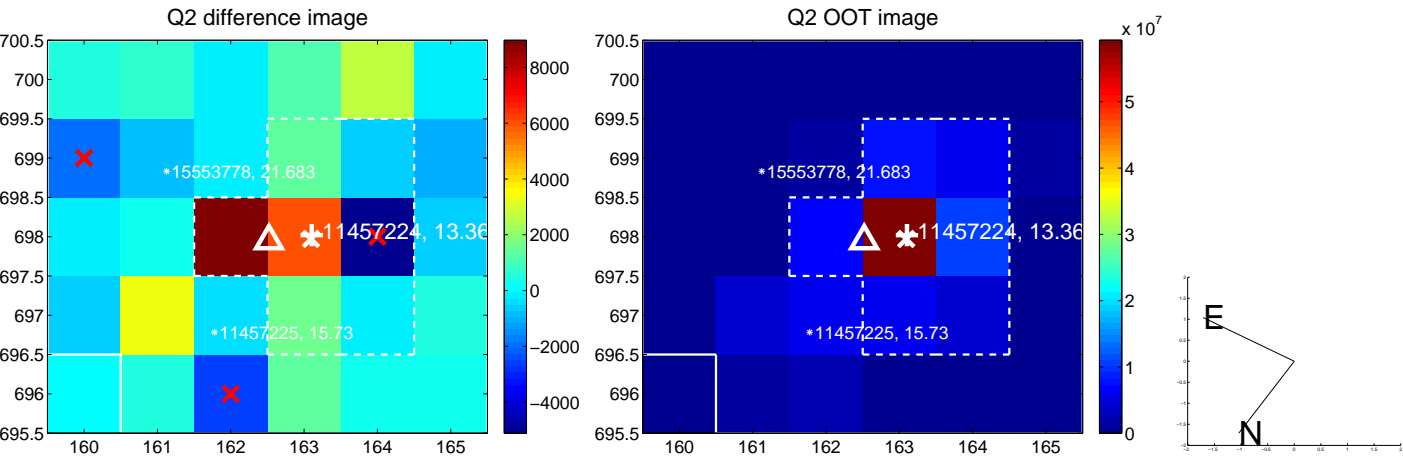
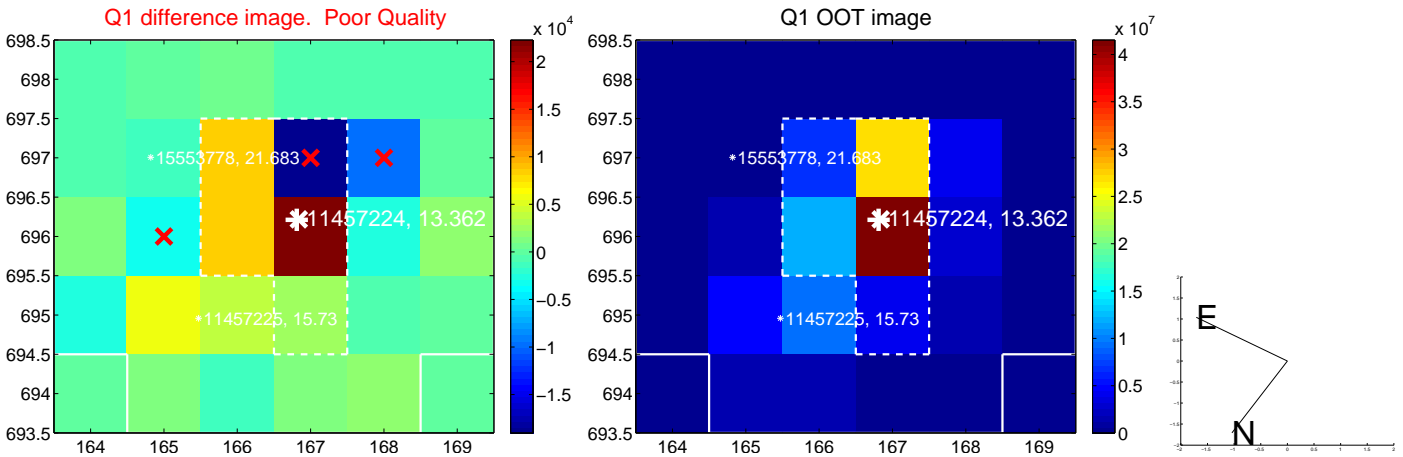
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.716 ± 1.173	1.46	1.197 ± 1.015	1.229 ± 1.009
PRF-fit source offset from KIC position	1.682 ± 0.975	1.72	1.237 ± 1.093	1.140 ± 0.815
photometric centroid source offset	0.78 ± 0.29	2.65	0.25 ± 0.27	0.74 ± 0.30

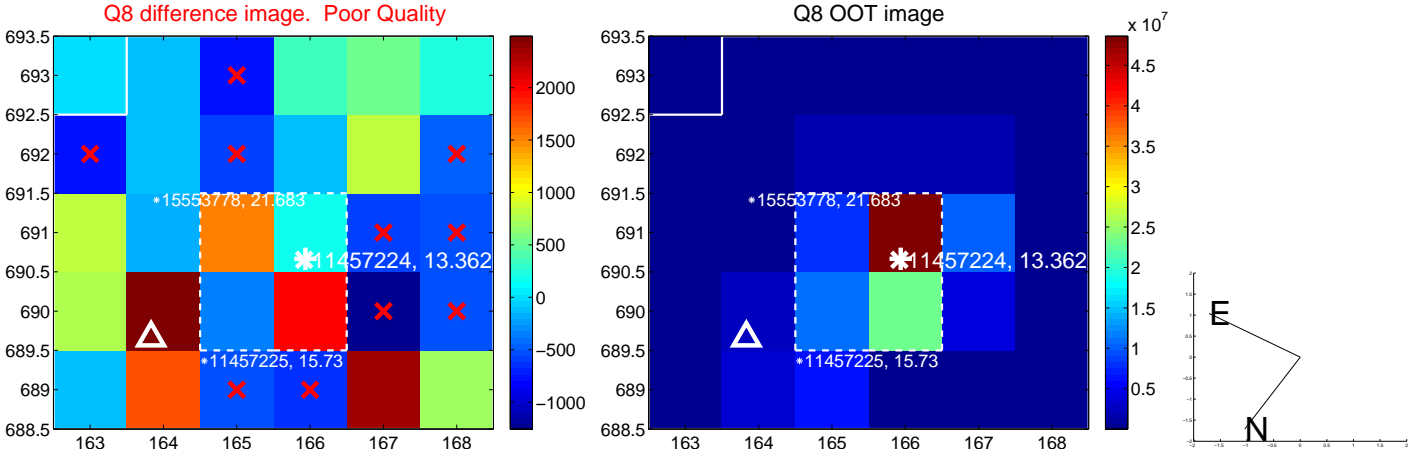
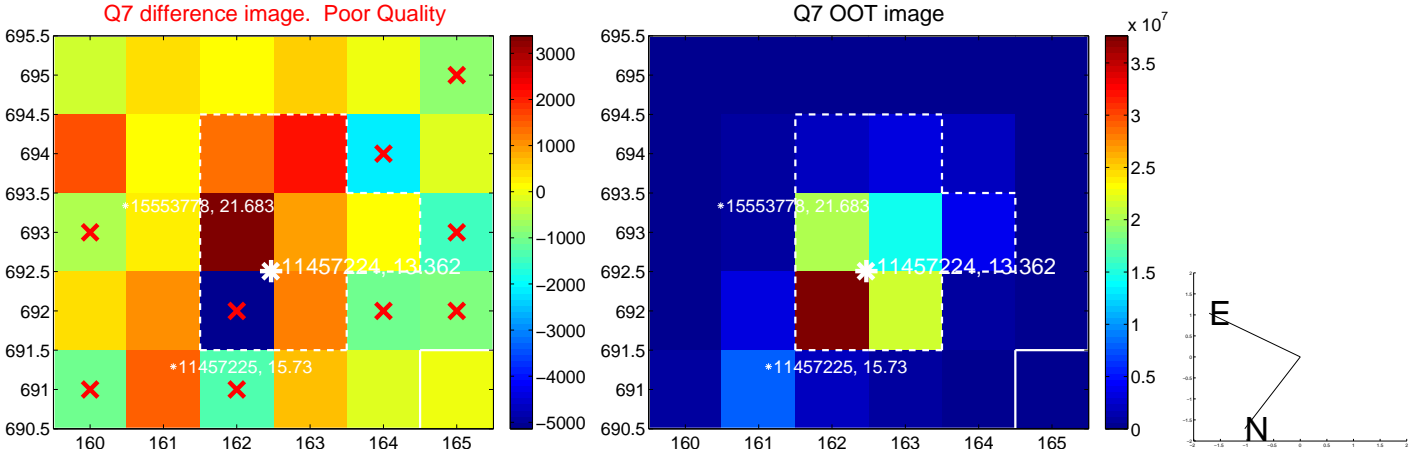
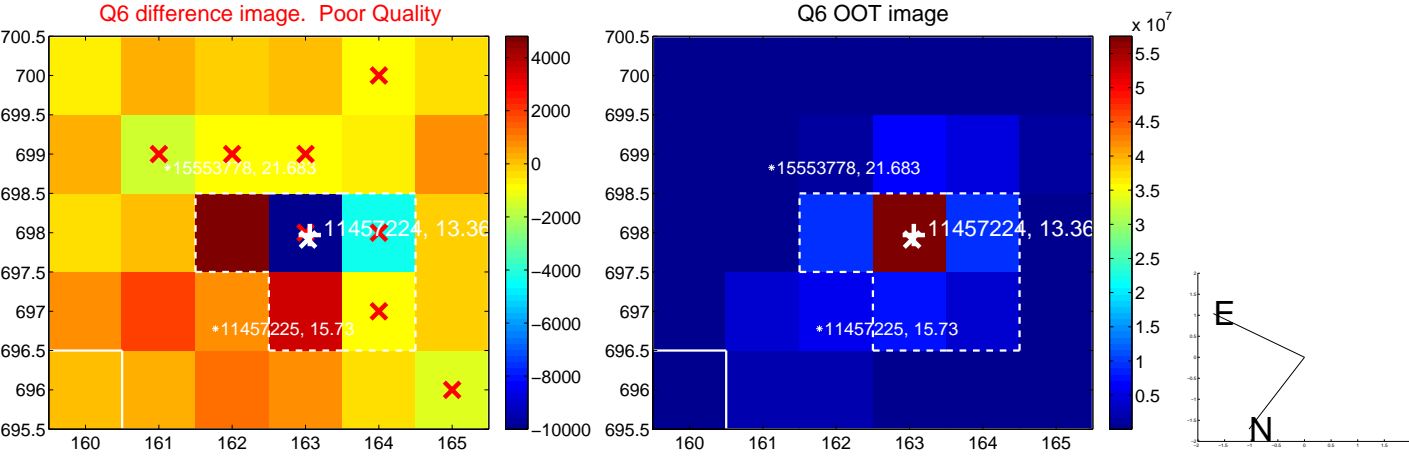
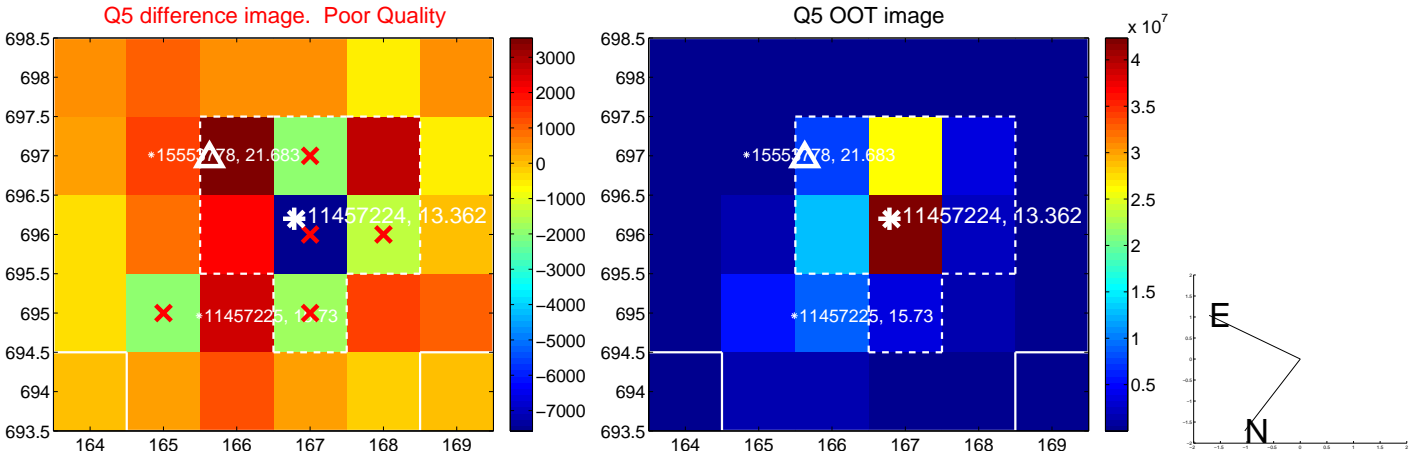


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

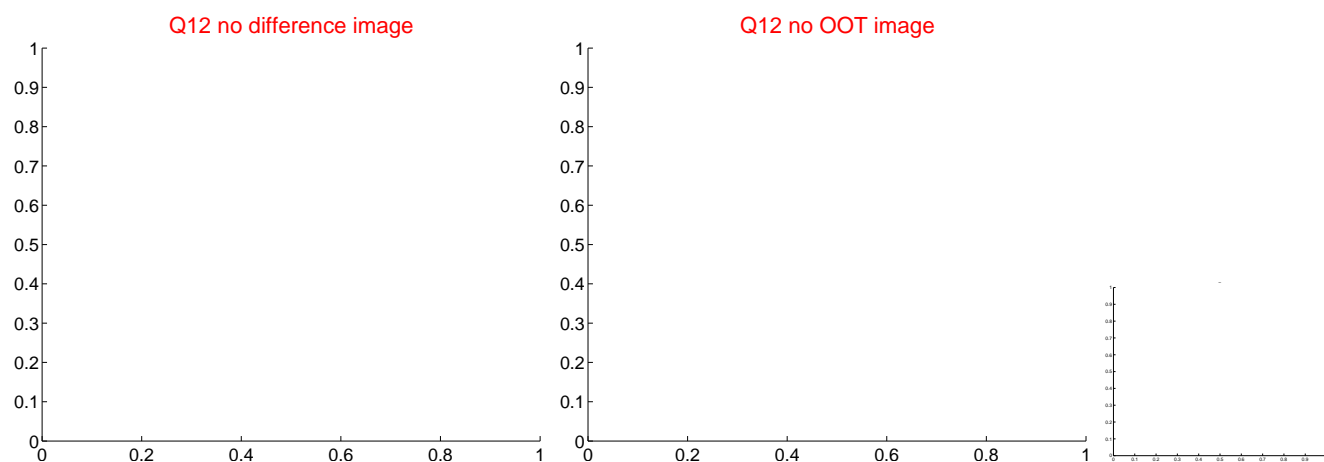
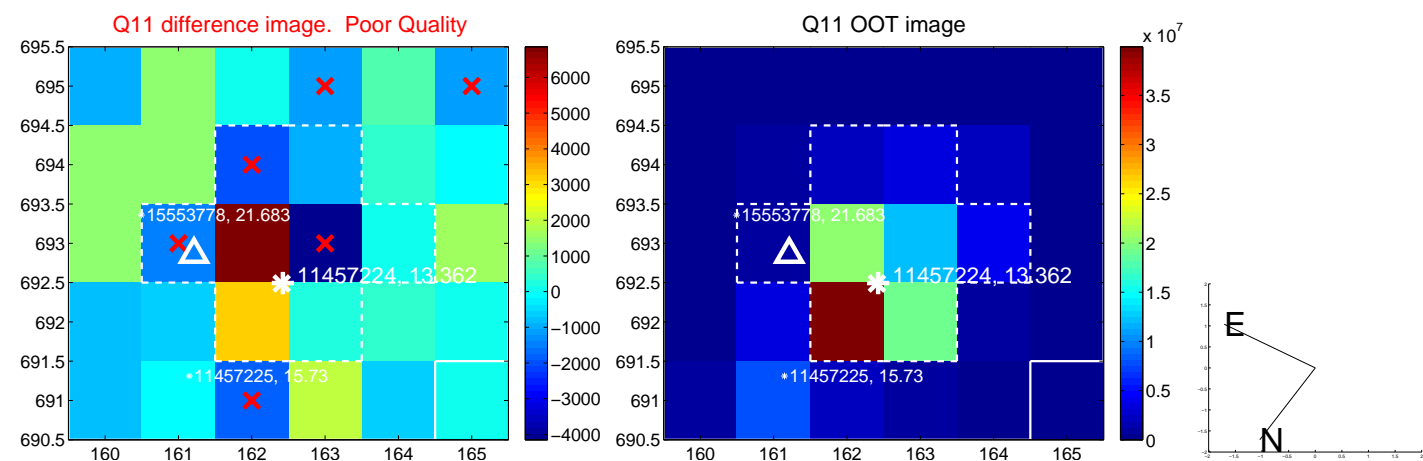
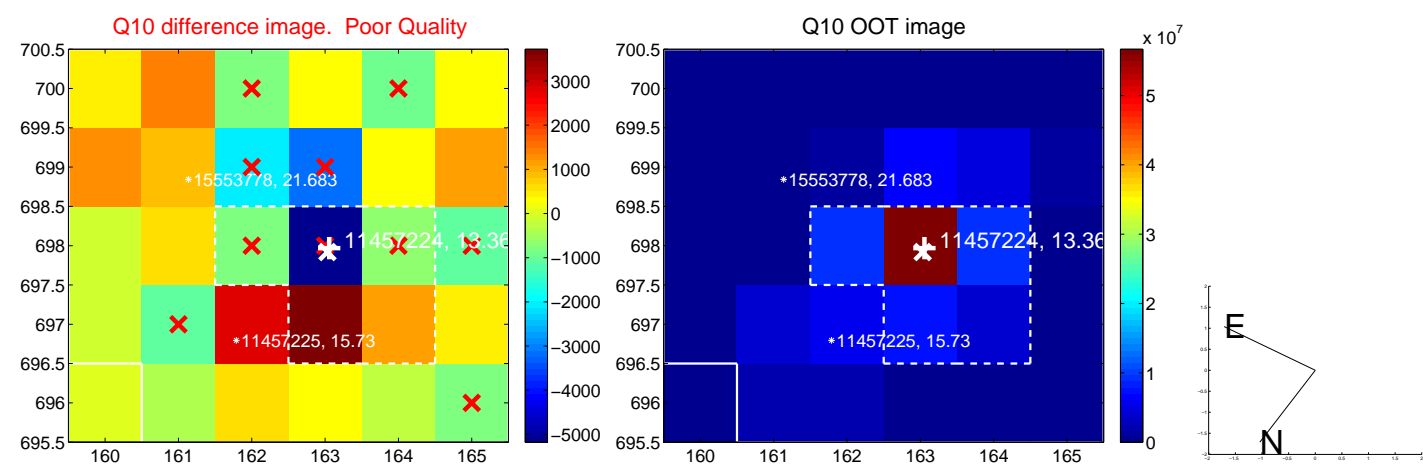
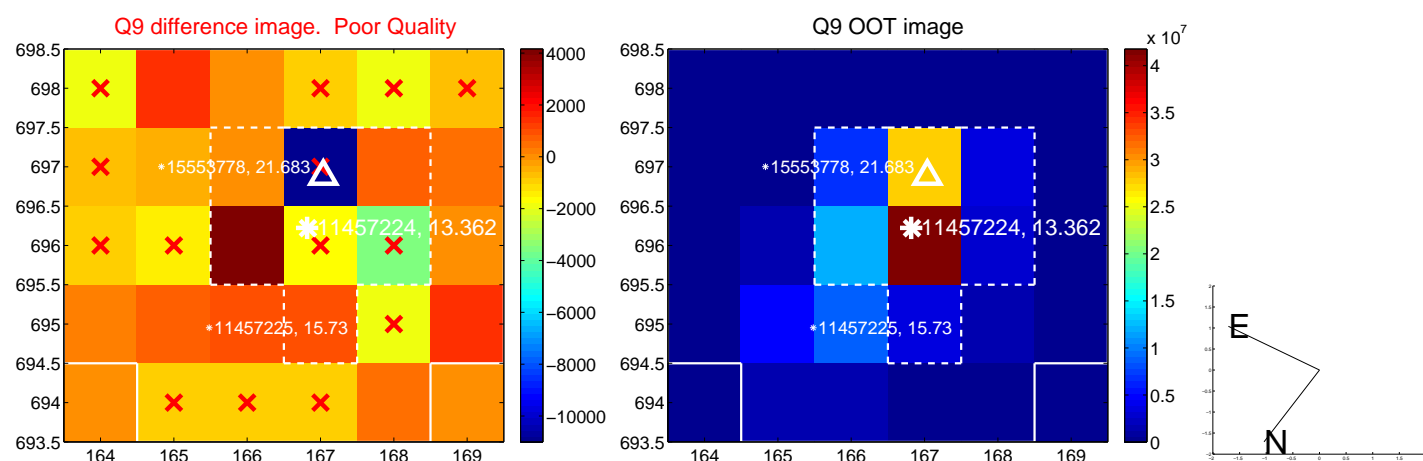
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



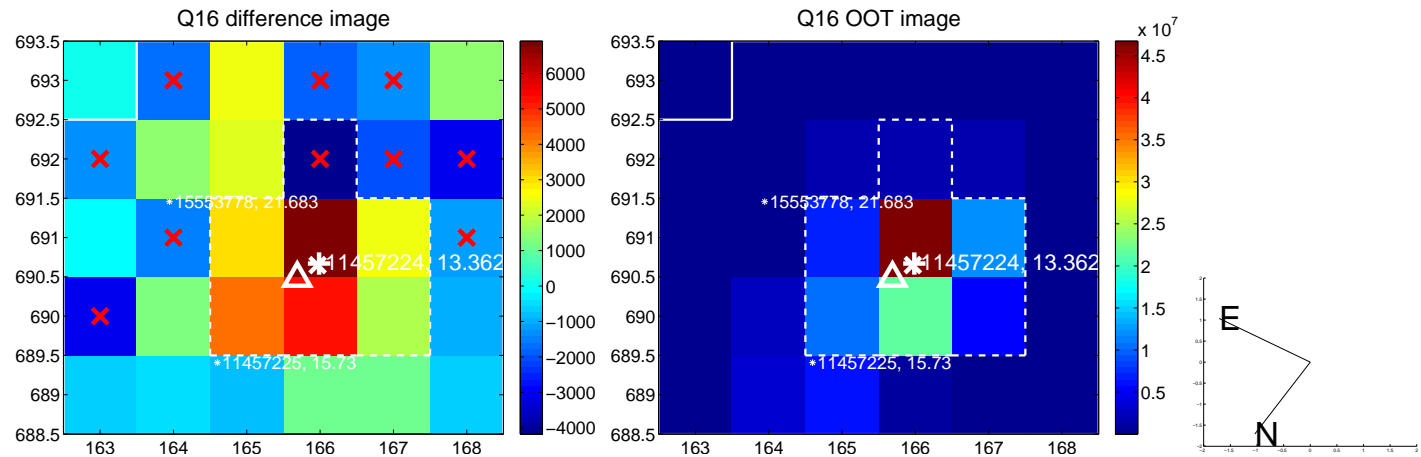
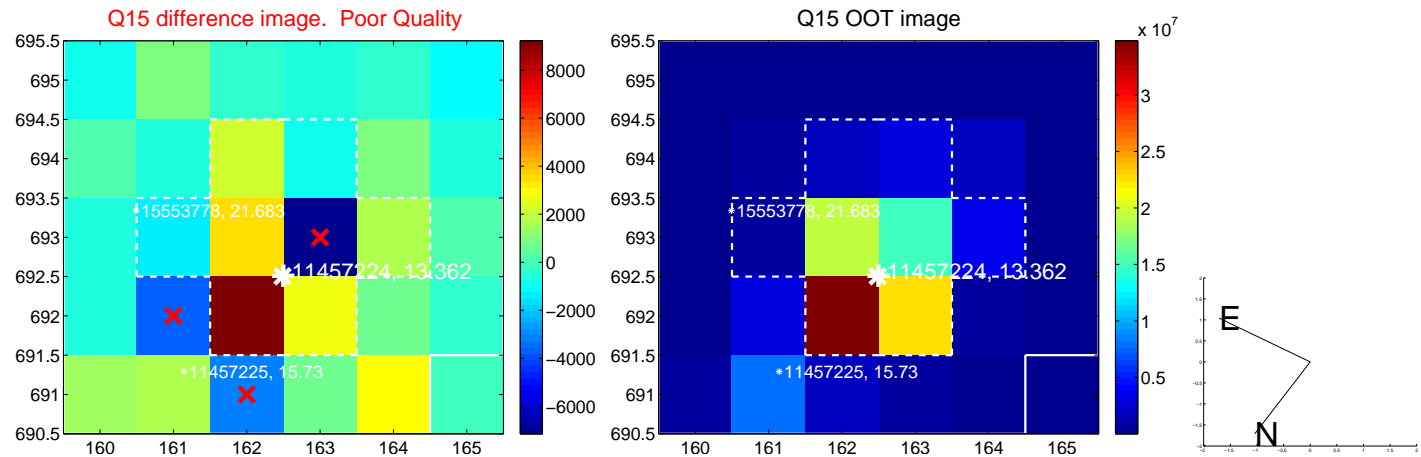
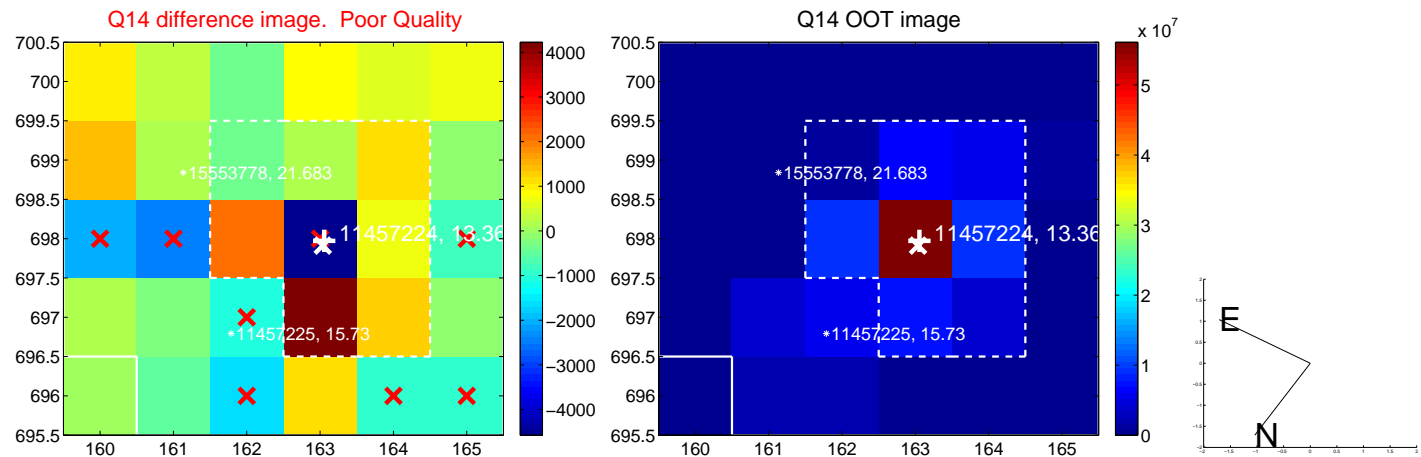
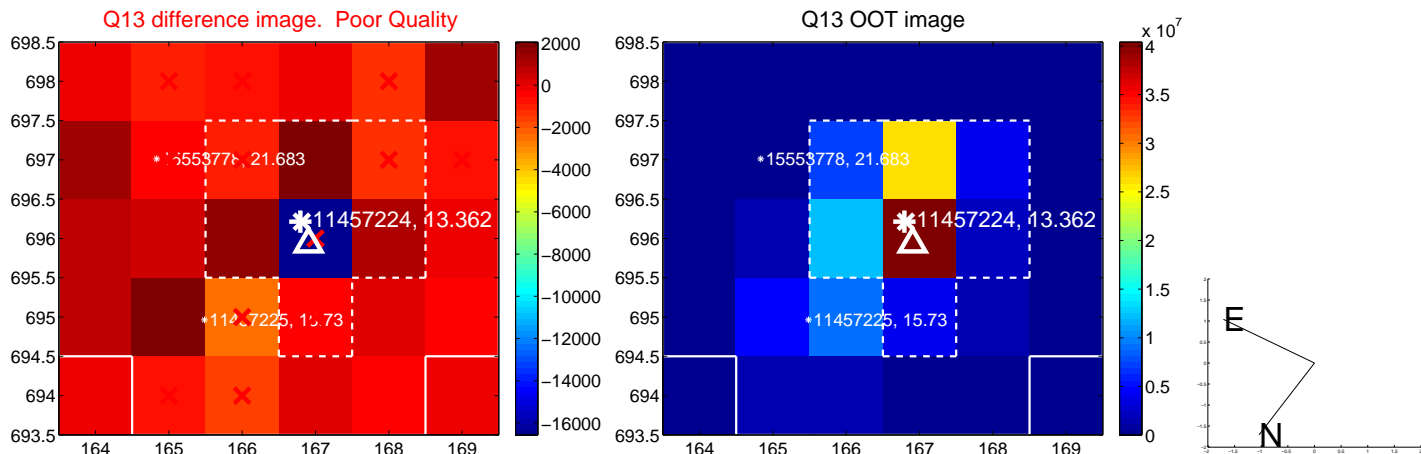
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

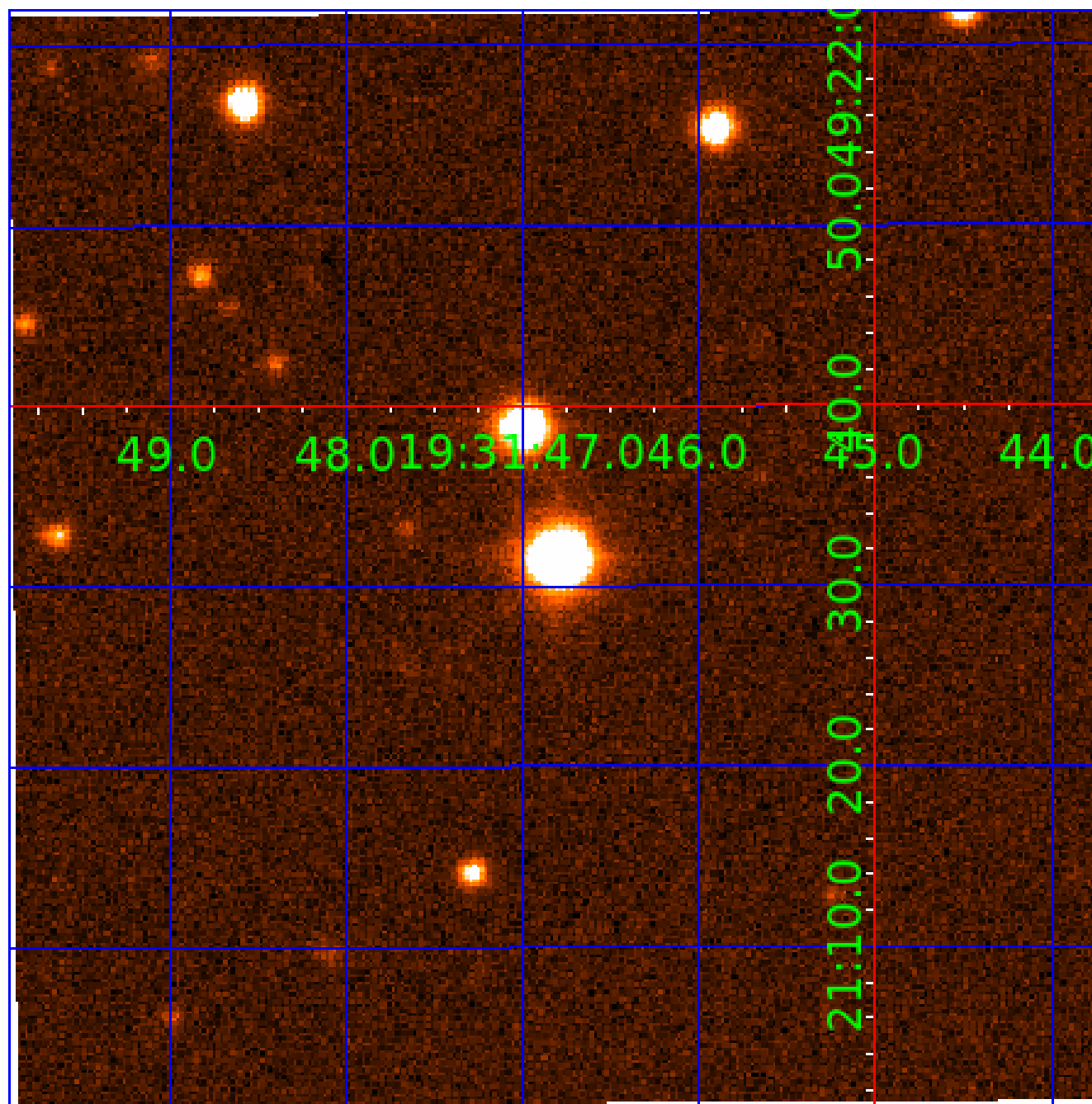


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011457224

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})
011457224-01	OBS	No	0.633973	132.084866	7.9	4.457	8.8	4.6	0.92	5375	0.25	3308.09
011457224-02	OBS	No	31.685499	155.249415	421.4	1.818	13.2	8.2	0.92	5375	1.91	17.97
011457224-03	OBS	No	29.156067	159.683864	322.6	2.204	12.7	9.6	0.92	5375	1.75	20.08
011457224-04	OBS	No	31.067348	157.130239	216.3	2.945	10.4	6.6	0.92	5375	2.11	18.45
011457224-05	OBS	No	46.259487	147.022600	519.3	2.482	11.1	10.4	0.92	5375	2.19	10.85
011457224-06	OBS	No	9.818013	131.783275	184.3	1.786	9.9	8.6	0.92	5375	1.50	85.70
011457224-07	OBS	No	46.300127	146.318034	552.2	2.206	9.7	8.6	0.92	5375	3.93	10.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011457224-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_DIFFS
011457224-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011457224-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS—HALO_GHOST
011457224-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011457224-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011457224-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011457224-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

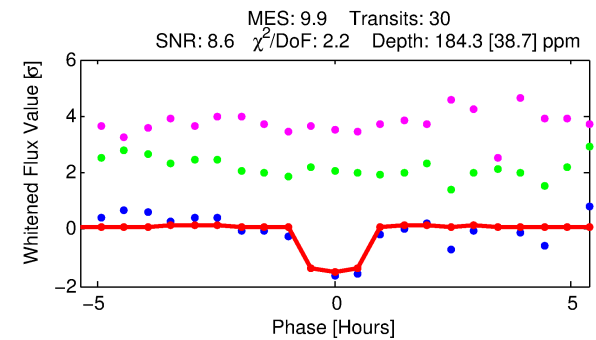
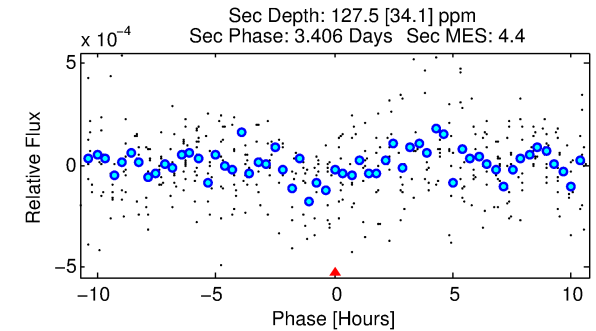
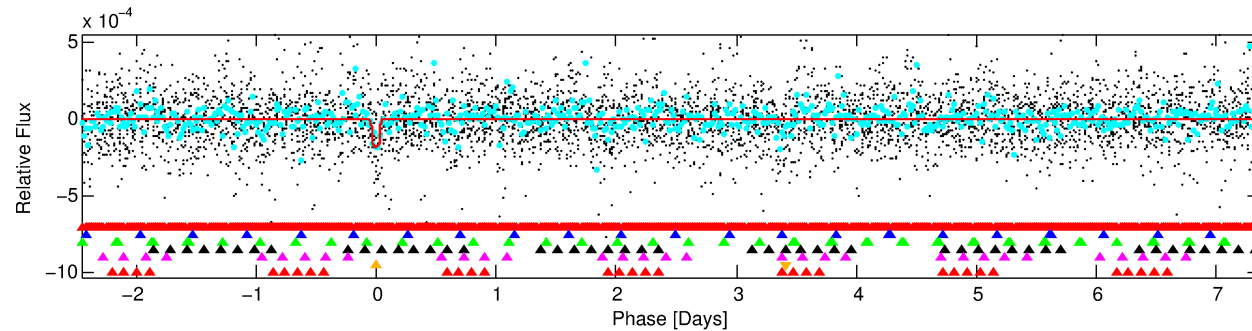
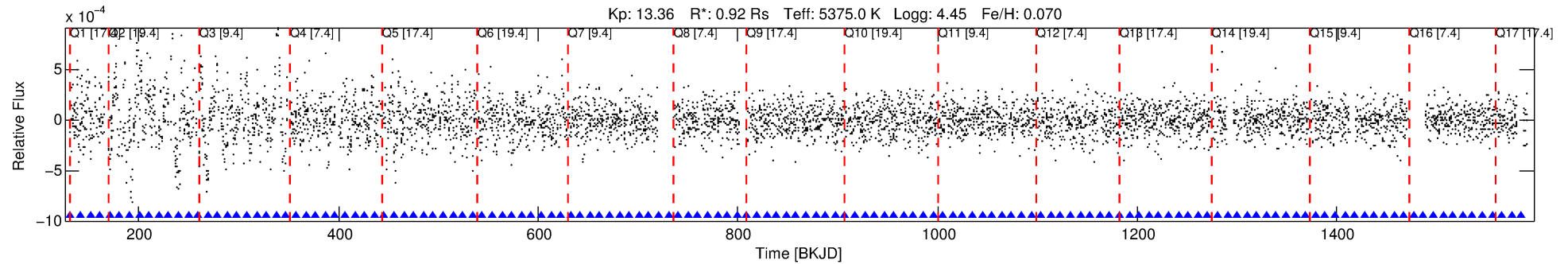
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011457224-06

No Significant Match Found

DV One-Page Summary

KIC: 11457224 Candidate: 6 of 7 Period: 9.818 d

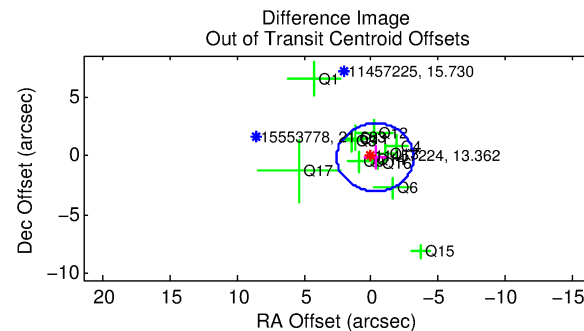
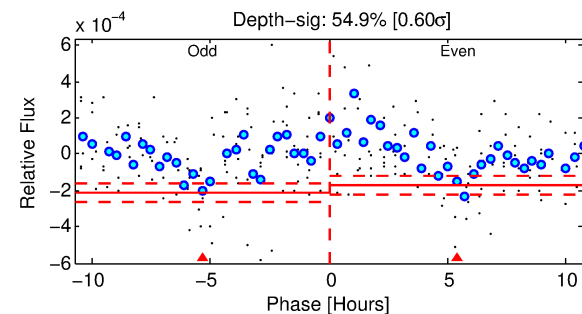
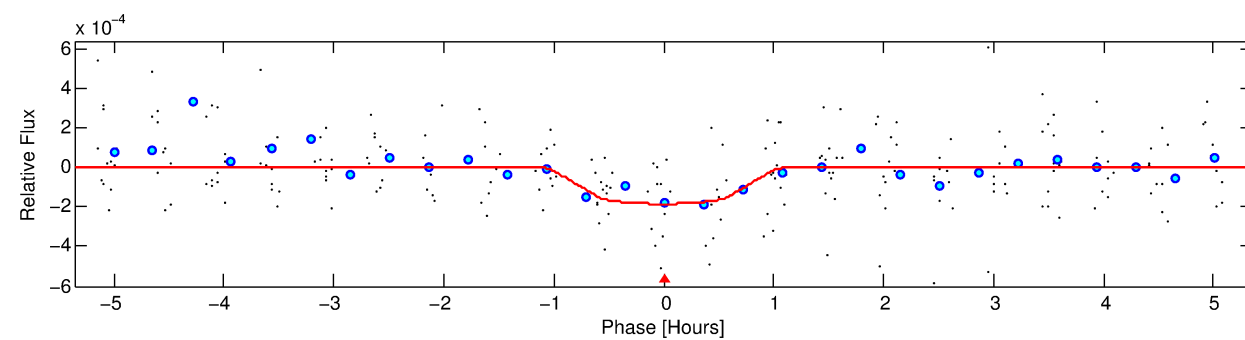


DV Fit Results:

Period = 9.81801 [0.00008] d
Epoch = 131.7833 [0.0070] BKJD
Rp/R* = 0.0150 [0.0168]
a/R* = 19.83 [94.53]
b = 0.90 [1.05]
Seff = 85.70 [25.45]
Teff = 776 [58] K
Rp = 1.50 [1.71] Re
a = 0.0856 [0.0158] AU
Ag = 228.29 [518.00] [0.44σ]
Teffp = 4663 [2629] K [1.48σ]

DV Diagnostic Results:

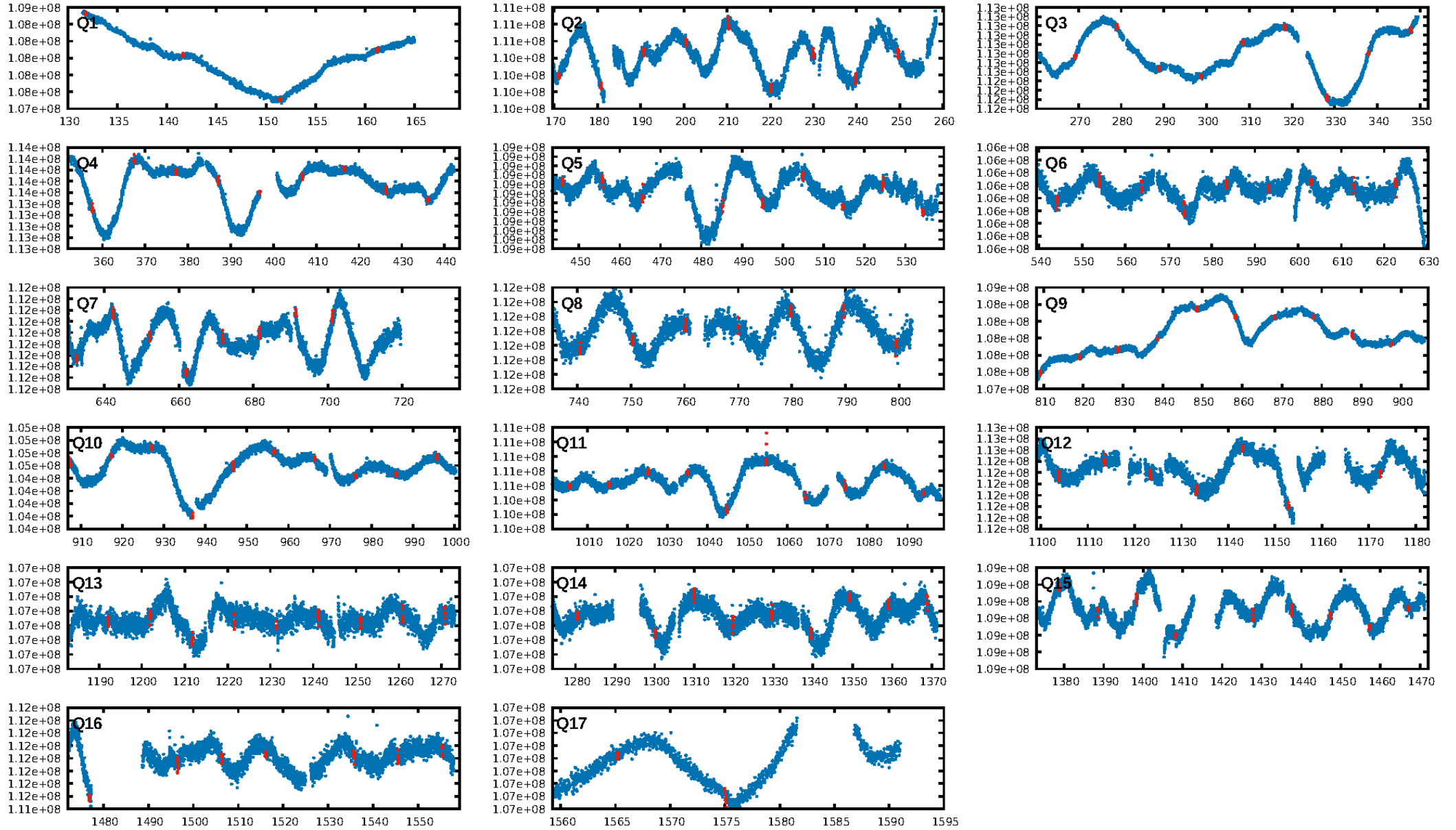
ShortPeriod-sig: 100.0% [45.91σ]
LongPeriod-sig: 100.0% [163.62σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [27/27]
GhostDiagnostic-chr: 1.679
Centroid-sig: 0.0%
Centroid-so: 1.259 arcsec [3.12σ]
OotOffset-rm: 0.334 arcsec [0.35σ]
KicOffset-rm: 0.380 arcsec [0.40σ]
OotOffset-st: 2/3/3/4 [12]
KicOffset-st: 2/3/3/4 [12]
DiffImageQuality-fgm: 0.42 [5/12]
DiffImageOverlap-fno: 0.00 [0/17]



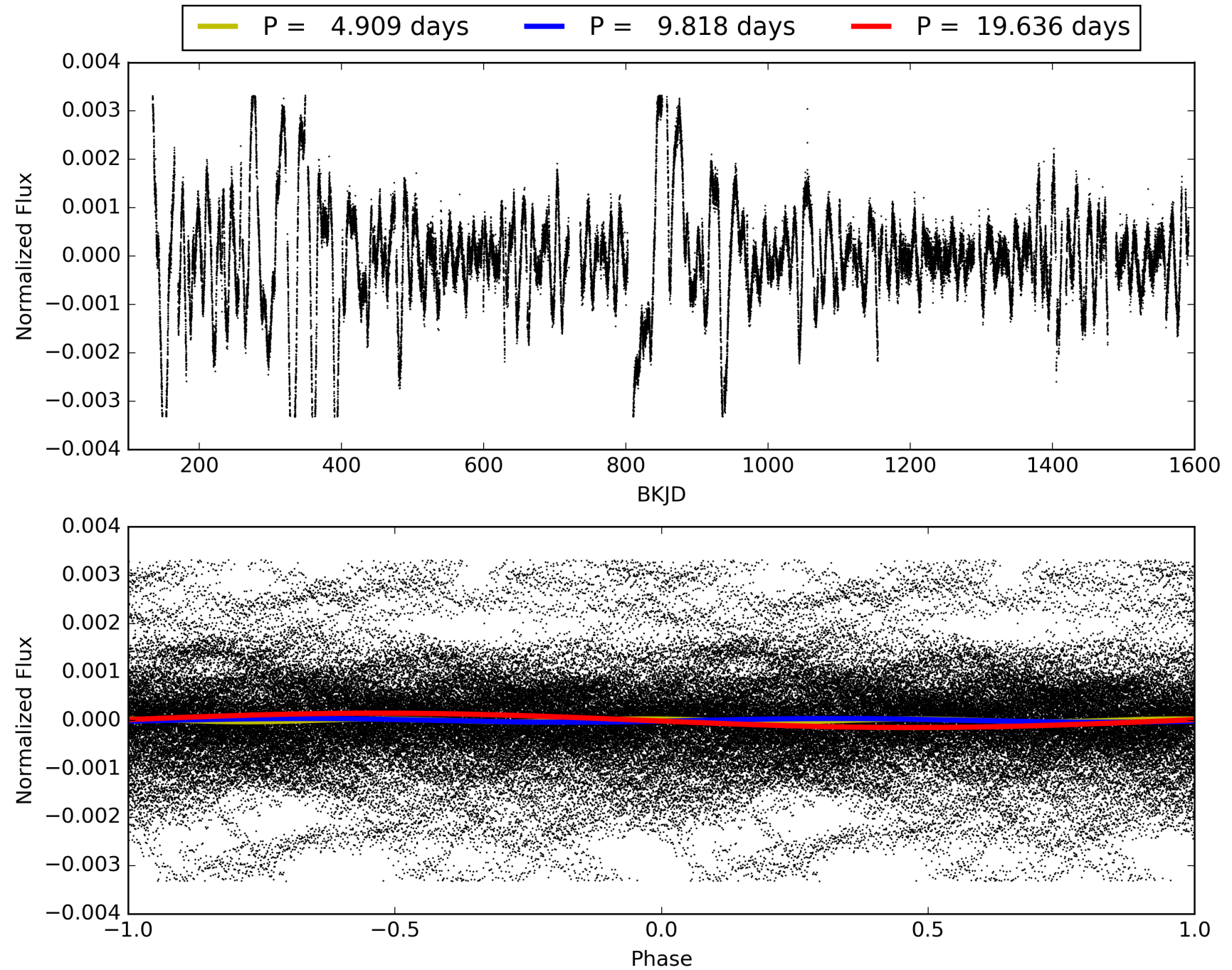
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:09:05 Z

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

TCE 011457224-06, PDC Light Curves

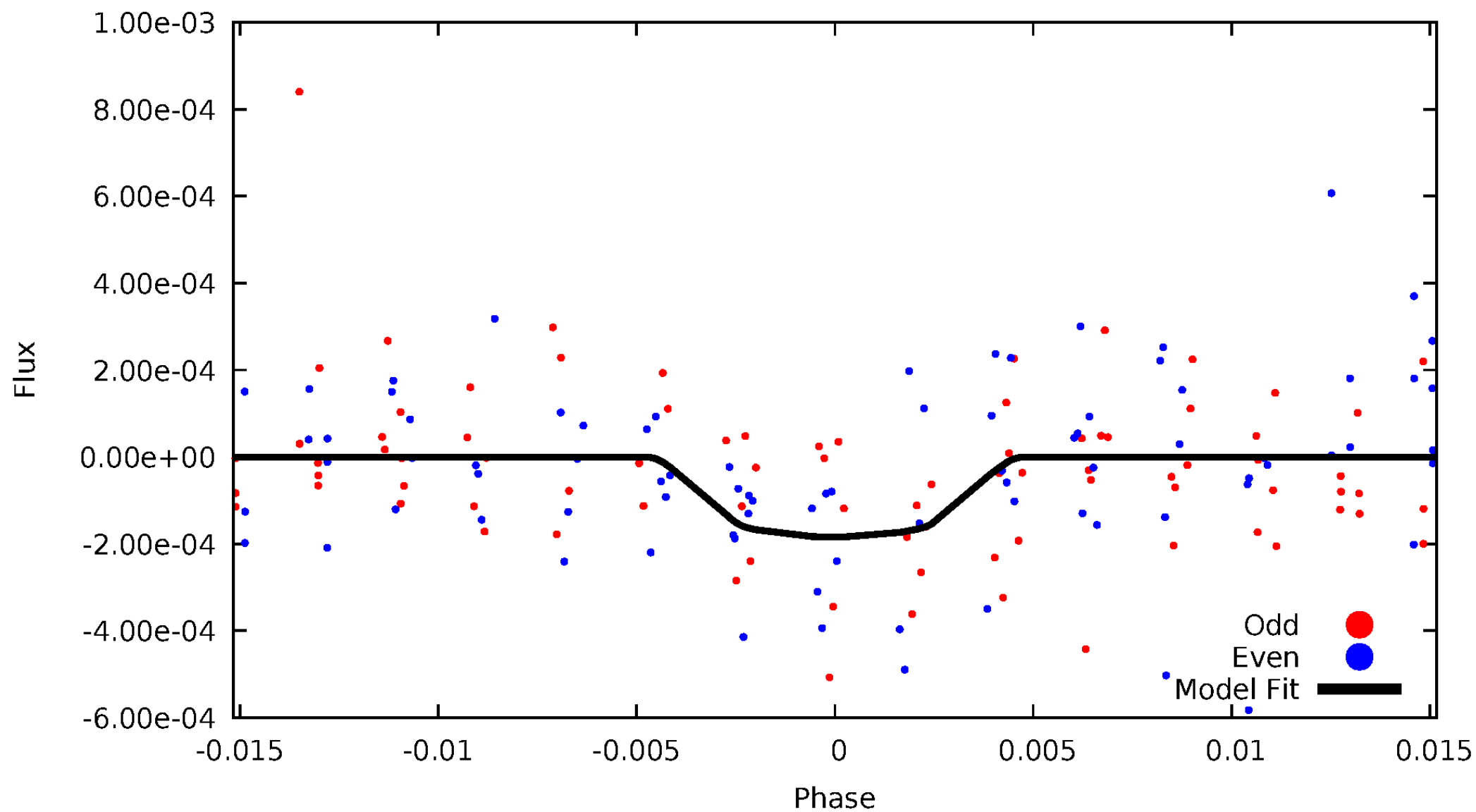


TCE 011457224-06



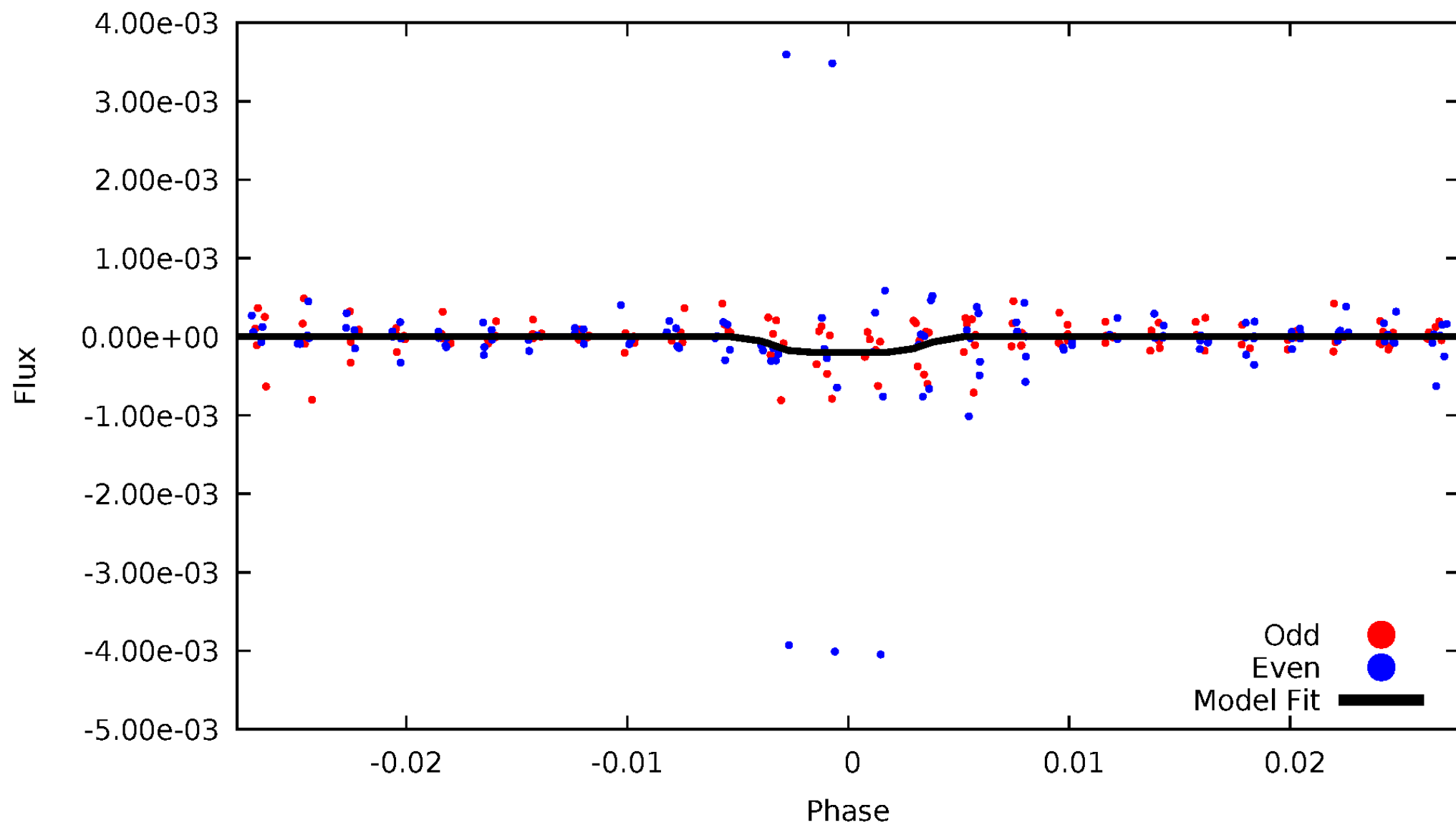
DV Odd/Even

TCE 011457224-06



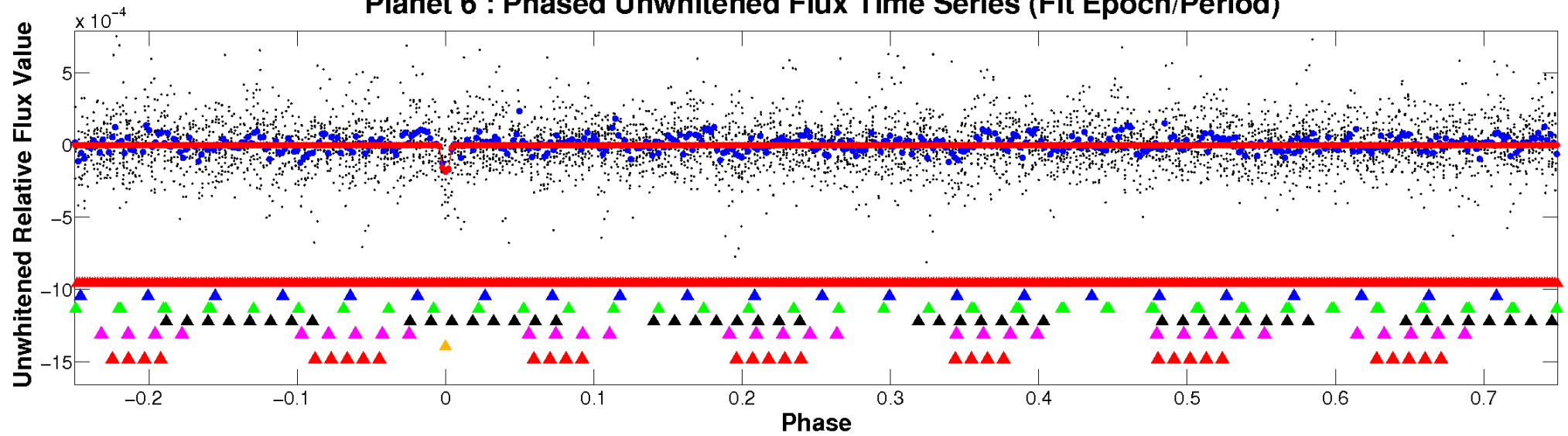
ALT Odd/Even

TCE 011457224-06

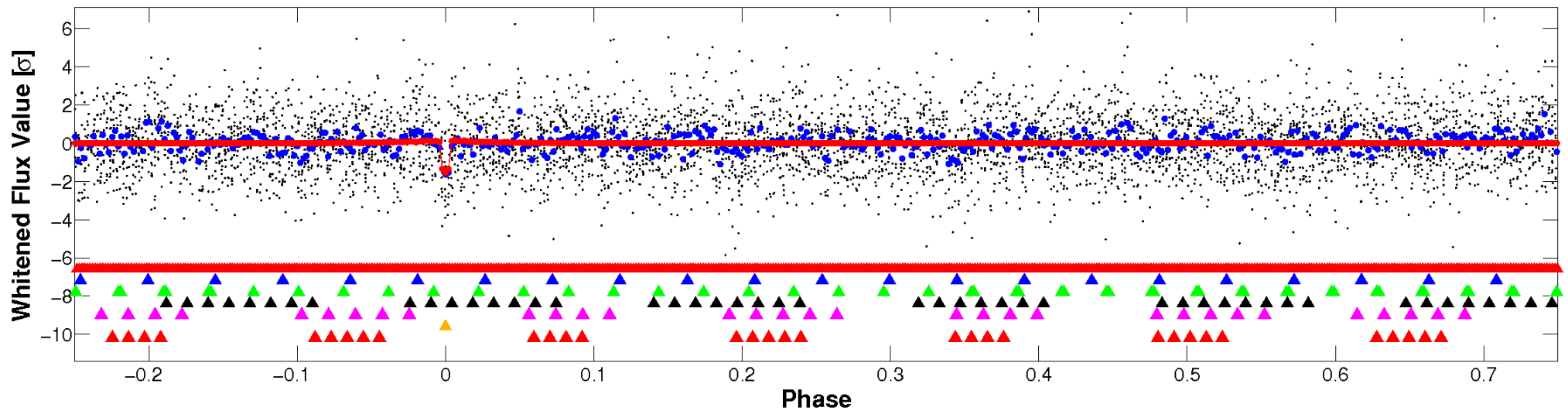


Non-Whitened Vs. Whitened Light Curve

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

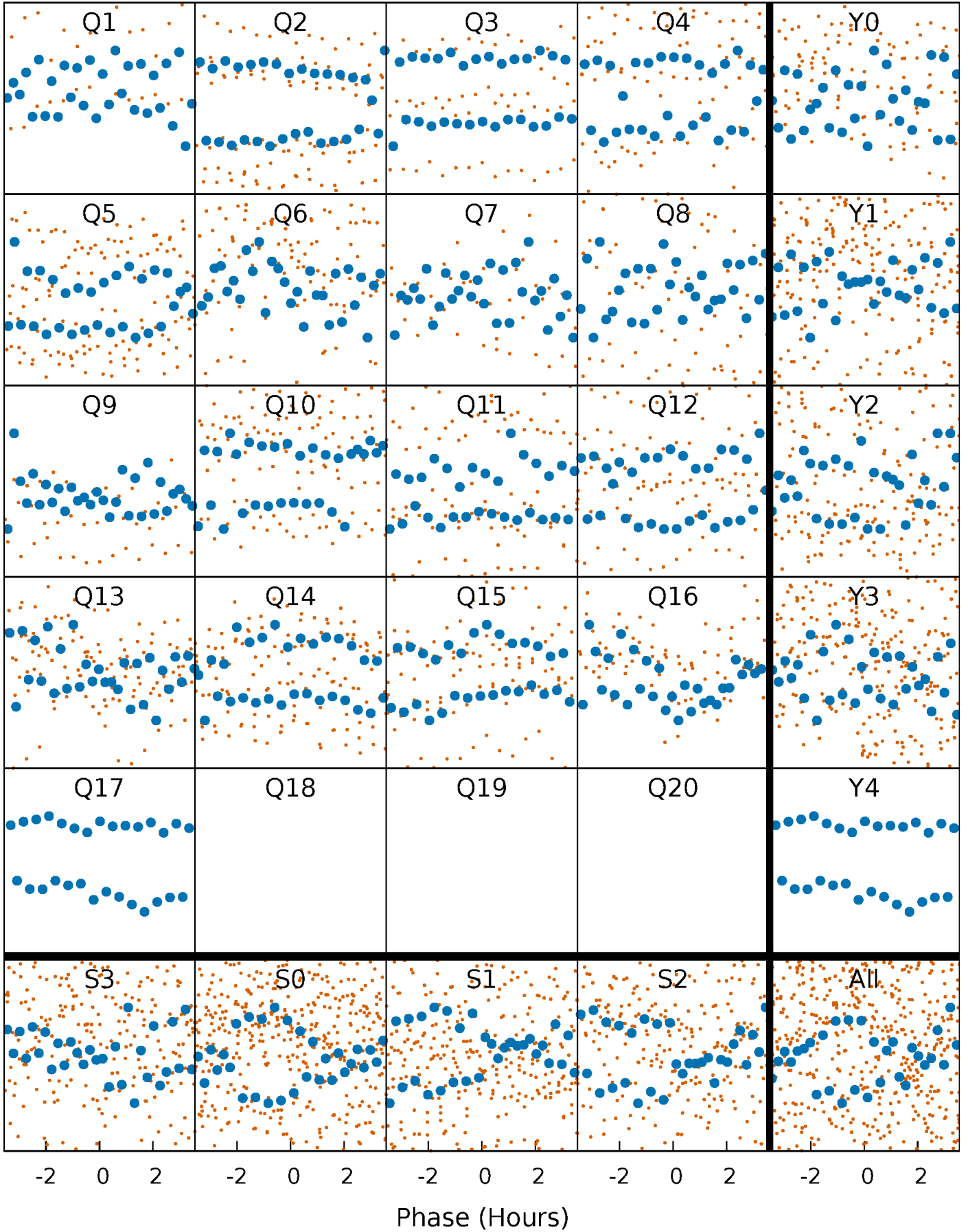


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



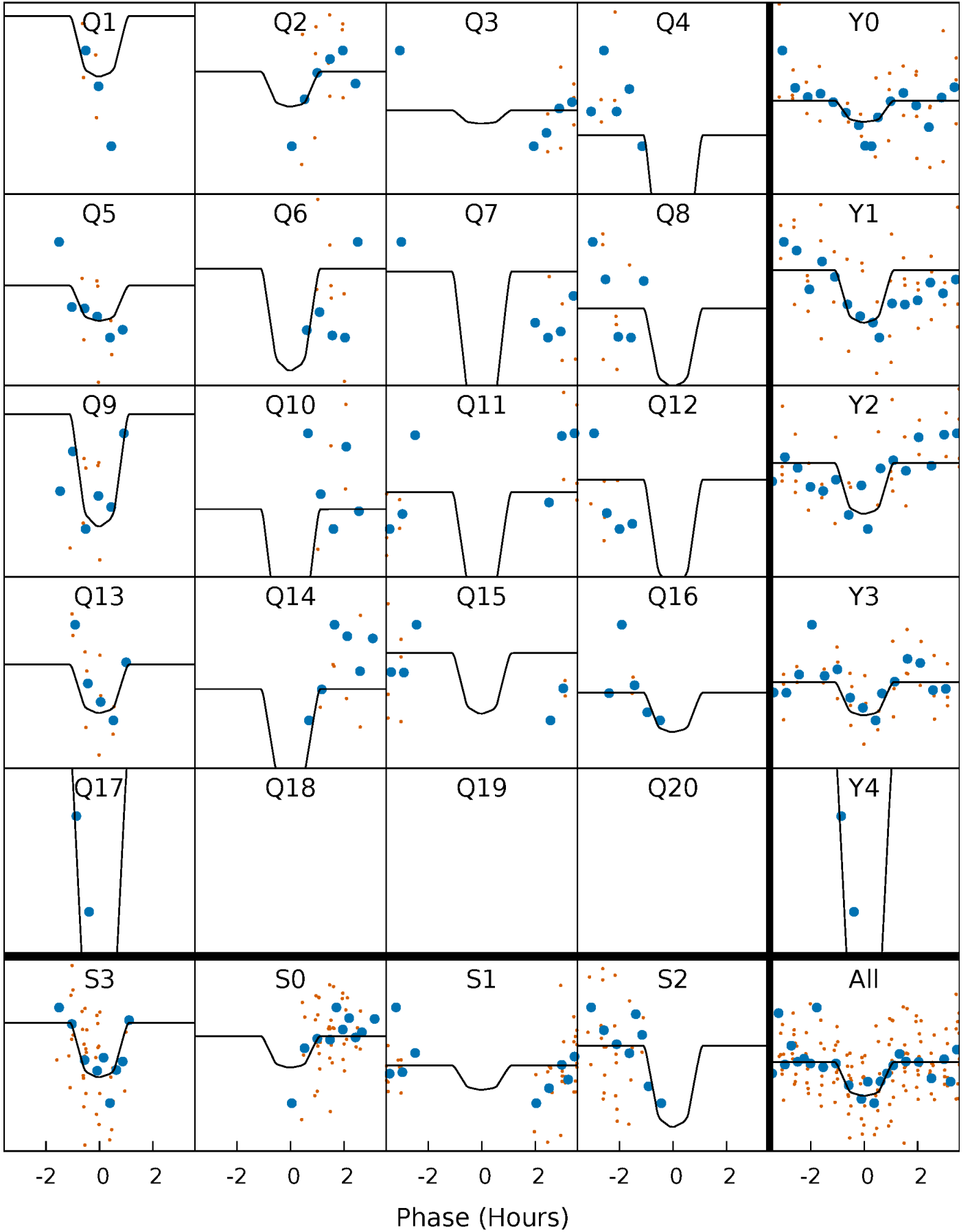
PDC Quarter-Phased Transit Curves

TCE 011457224-06 P= 9.818013 Days $T_0=131.783275$ (BKJD)



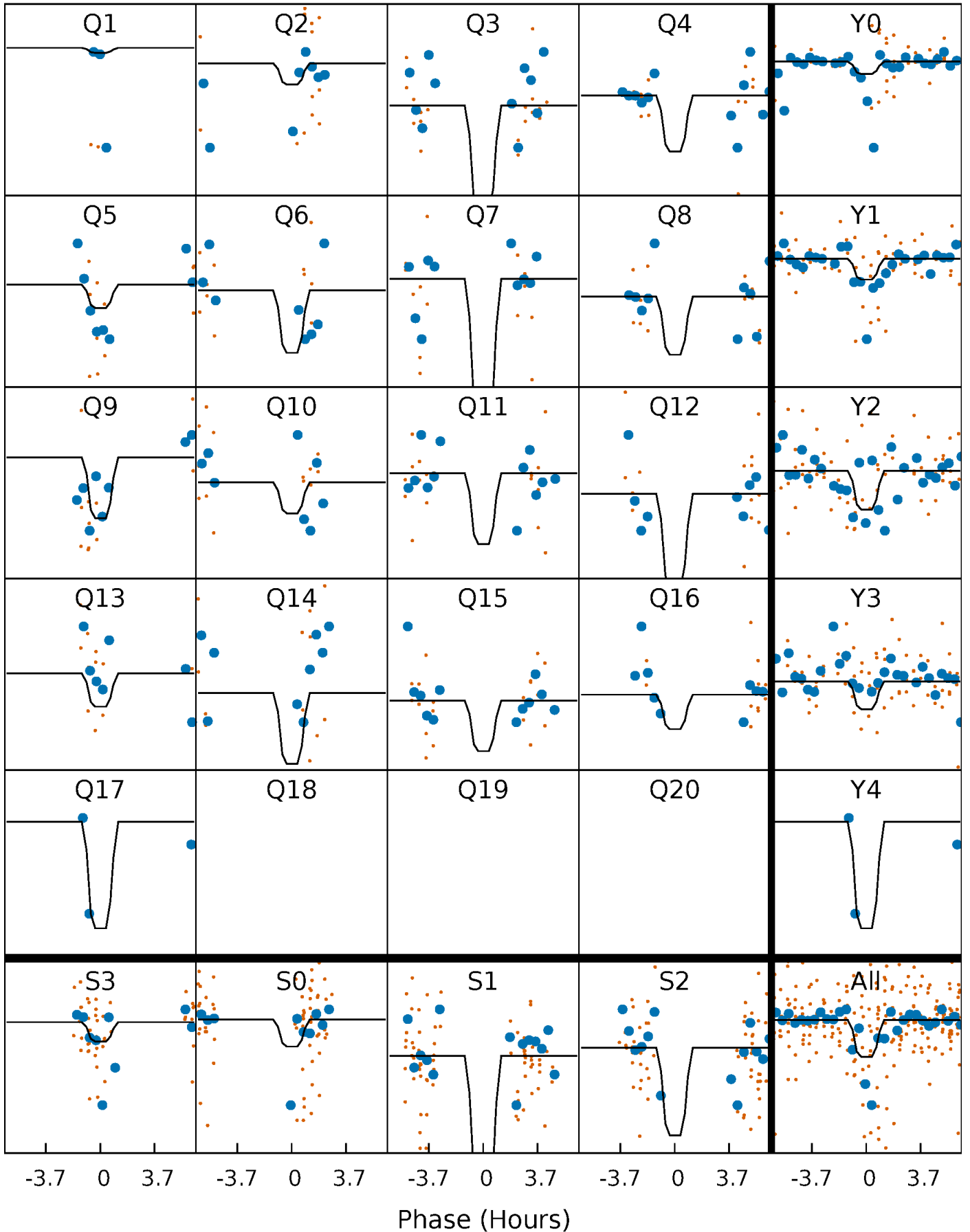
DV Quarter-Phased Transit Curves

TCE 011457224-06 P= 9.818013 Days $T_0=131.783275$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

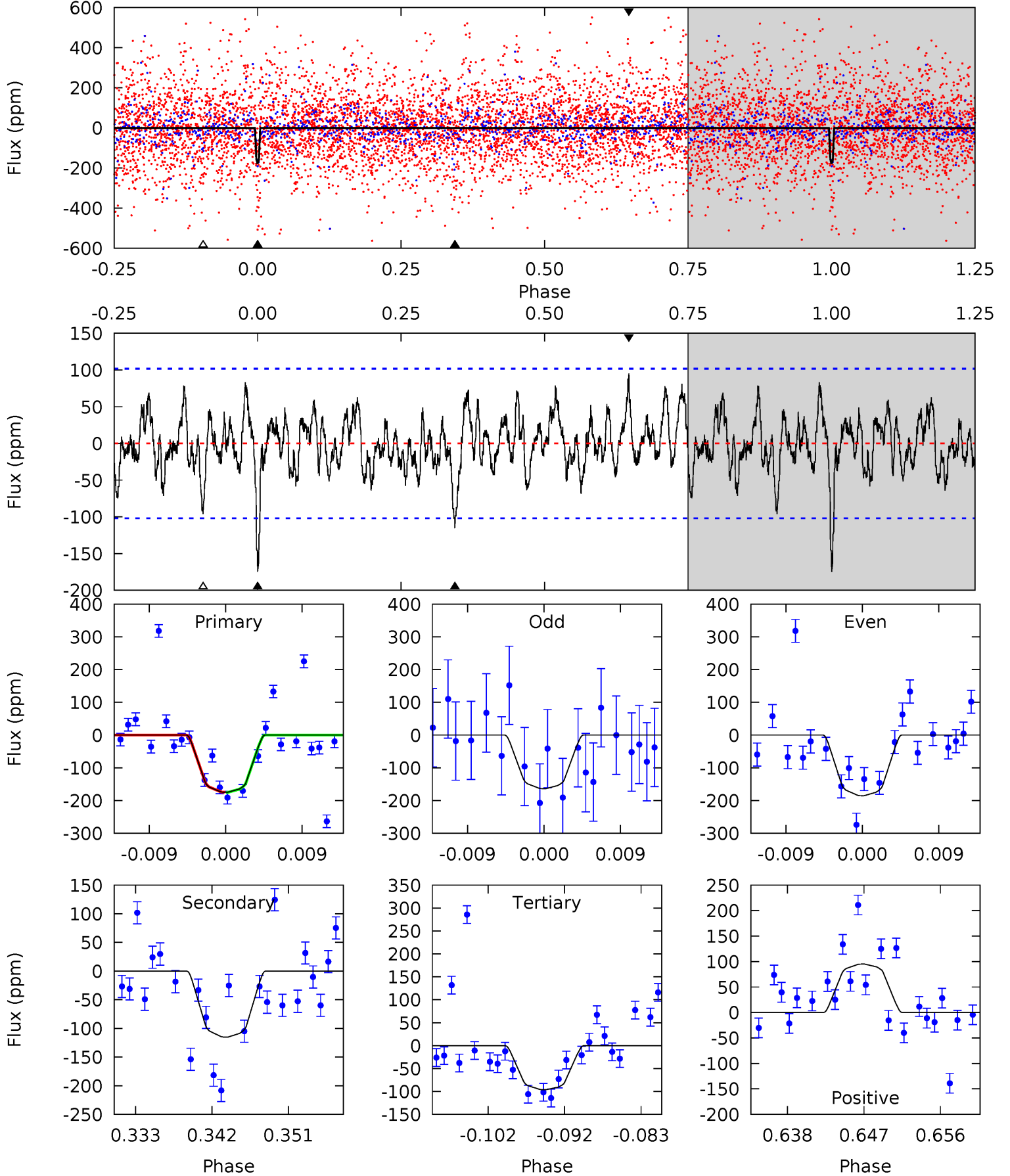
TCE 011457224-06 P= 9.818124 Days $T_0=131.784699$ (BKJD)



DV Model-Shift Uniqueness Test

011457224-06, P = 9.818013 Days, E = 121.965262 Days

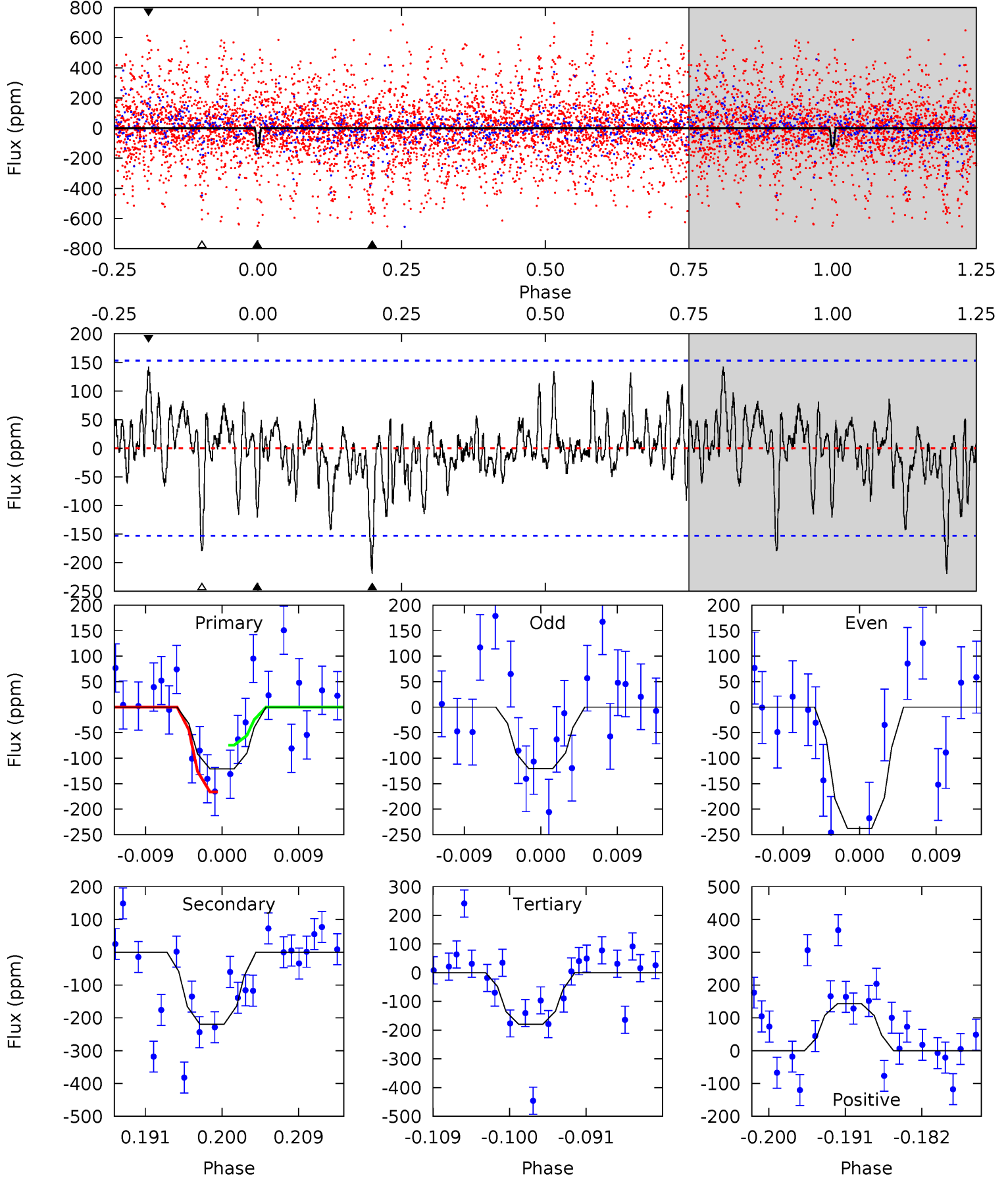
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.65	5.70	4.76	4.71	5.04	2.60	1.53	3.89	3.94	0.94	0.99	0.54	1.16	0.35	0.02



Alt Model-Shift Uniqueness Test

011457224-06, P = 9.818124 Days, E = 121.966575 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.98	7.22	5.91	4.70	5.04	2.61	1.43	-1.93	-0.73	1.31	2.51	1.88	1.86	0.39	1.54



Stellar Parameters For KIC 011457224

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5375^{+160}_{-144}	$4.452^{+0.100}_{-0.150}$	$0.070^{+0.250}_{-0.300}$	$0.916^{+0.199}_{-0.107}$	$0.866^{+0.097}_{-0.073}$	$1.587^{+0.688}_{-0.663}$
	+3%/-3%	+2%/-3%	+357%/-429%	+22%/-12%	+11%/-8%	+43%/-42%
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 011457224-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-115 ± 20	$1.88^{+1.53}_{-1.15}$	1091^{+62}_{-54}	4268^{+2175}_{-762}	133^{+773}_{-94}
Alt.	-219 ± 30	$1.96^{+1.41}_{-1.35}$	1090^{+62}_{-48}	4816^{+3753}_{-921}	230^{+2035}_{-151}

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 $A_{obs} \gg 1.0$

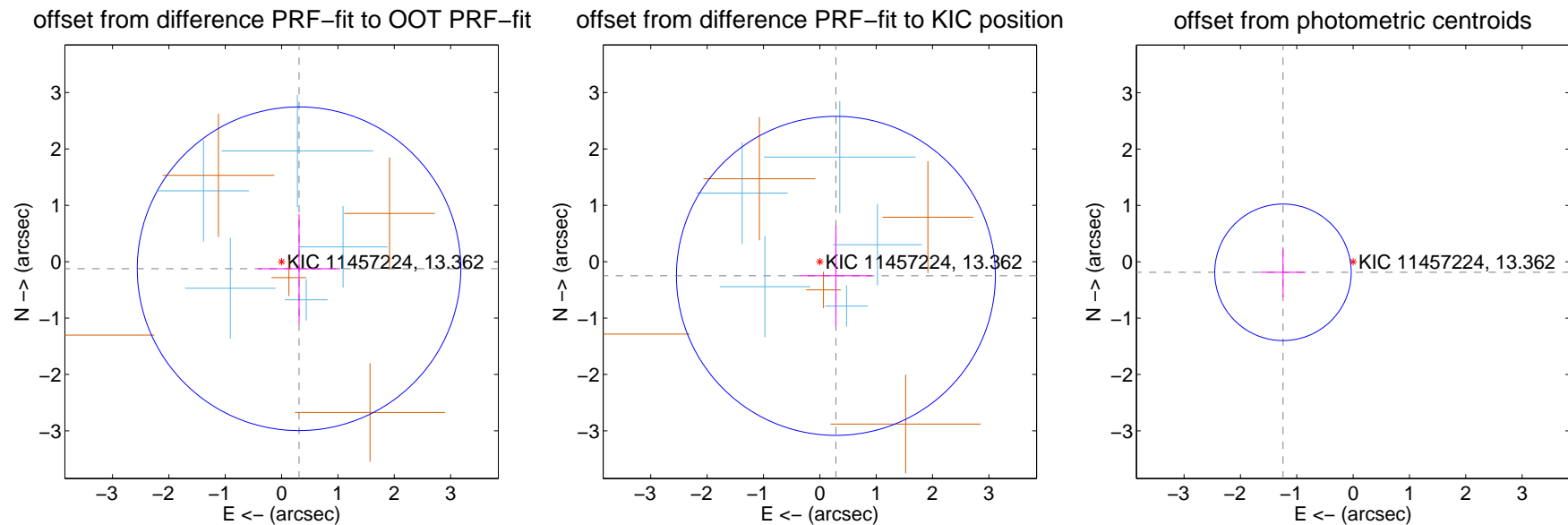
DV Centroid Data

Supplemental centroid analysis for 011457224-06. Kepler magnitude: 13.36. Transit SNR 8.58

There are 5 quarters with good PRF difference image offsets

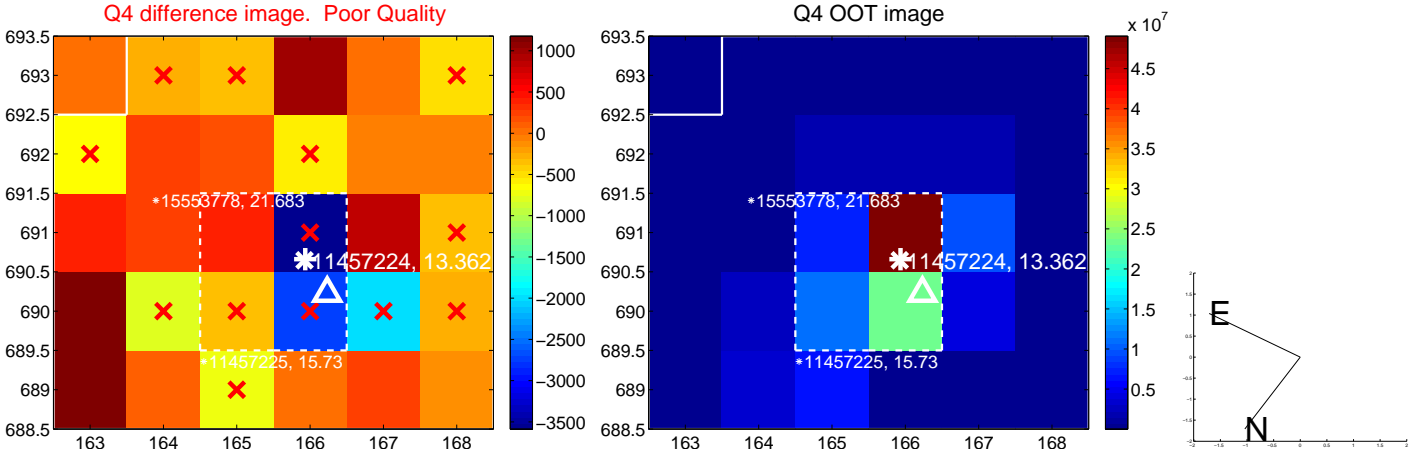
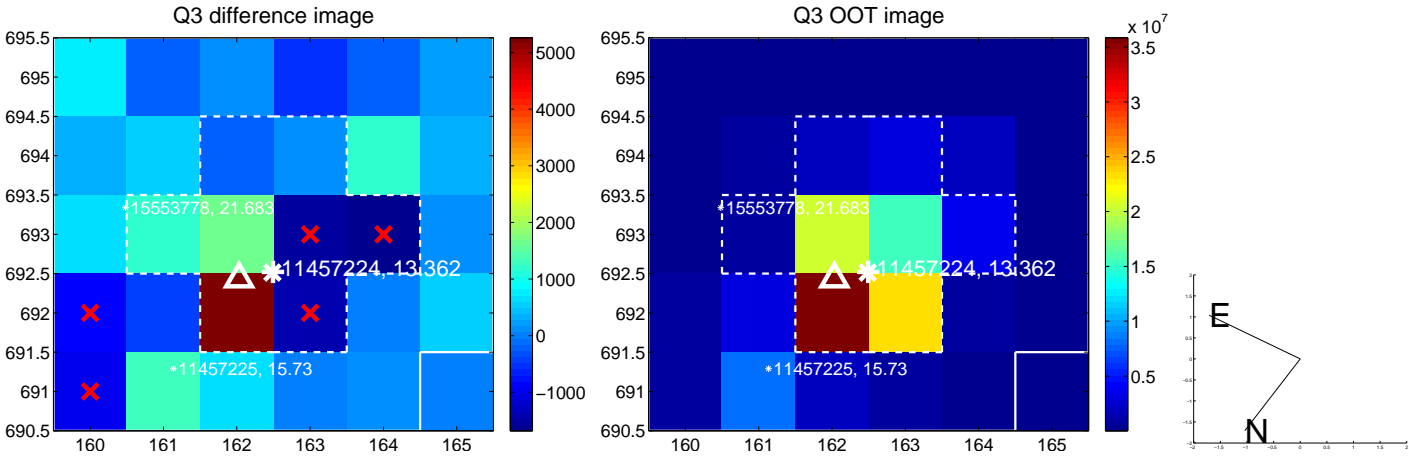
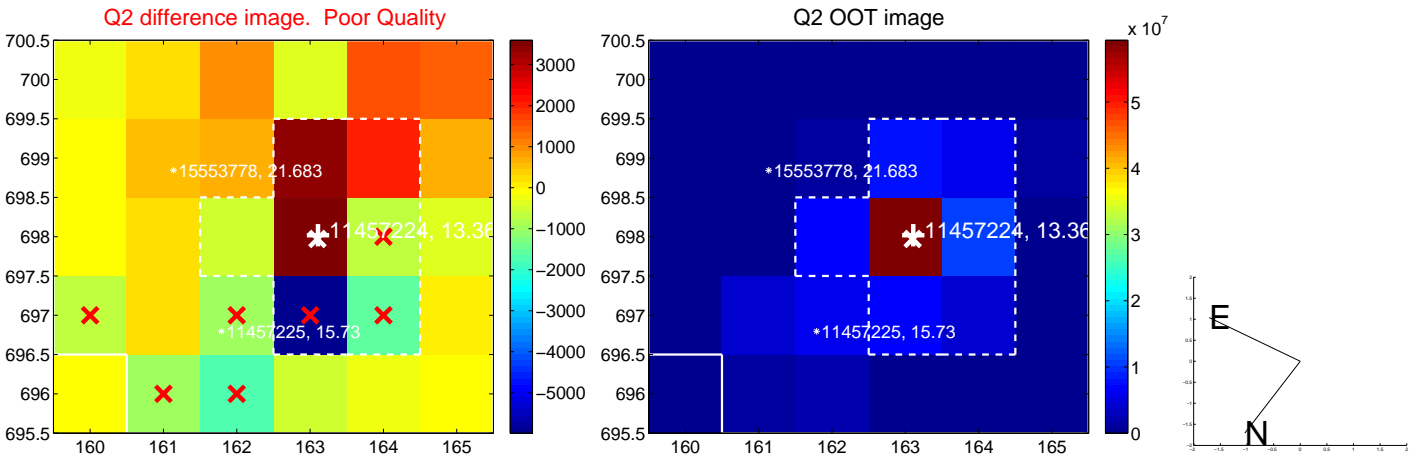
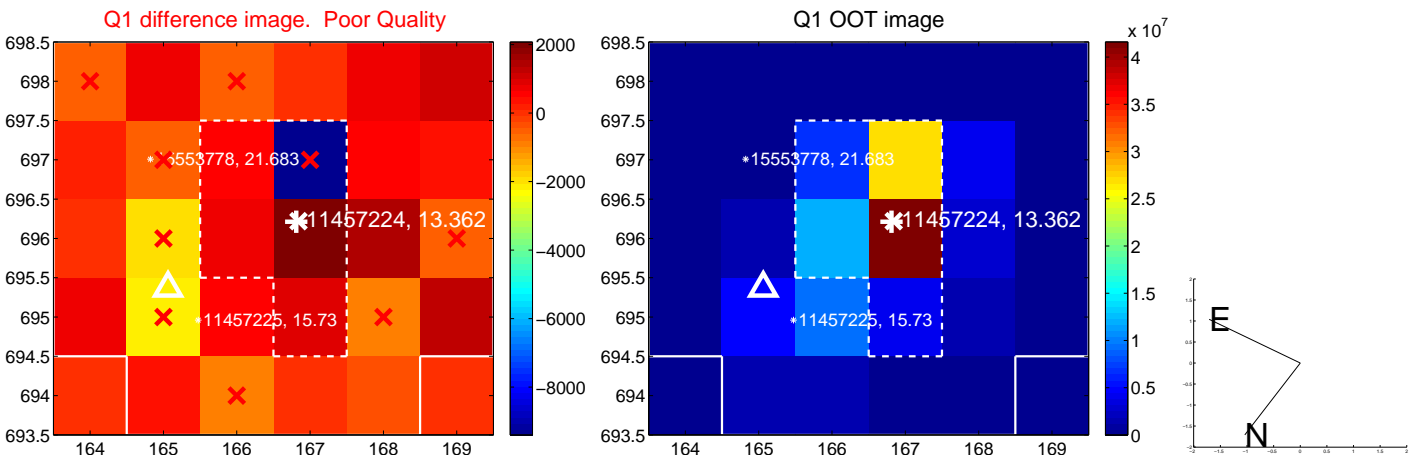
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.334 ± 0.957	0.35	-0.310 ± 0.732	-0.125 ± 0.972
PRF-fit source offset from KIC position	0.380 ± 0.943	0.40	-0.285 ± 0.640	-0.251 ± 0.889
photometric centroid source offset	1.26 ± 0.40	3.12	1.24 ± 0.40	-0.19 ± 0.44

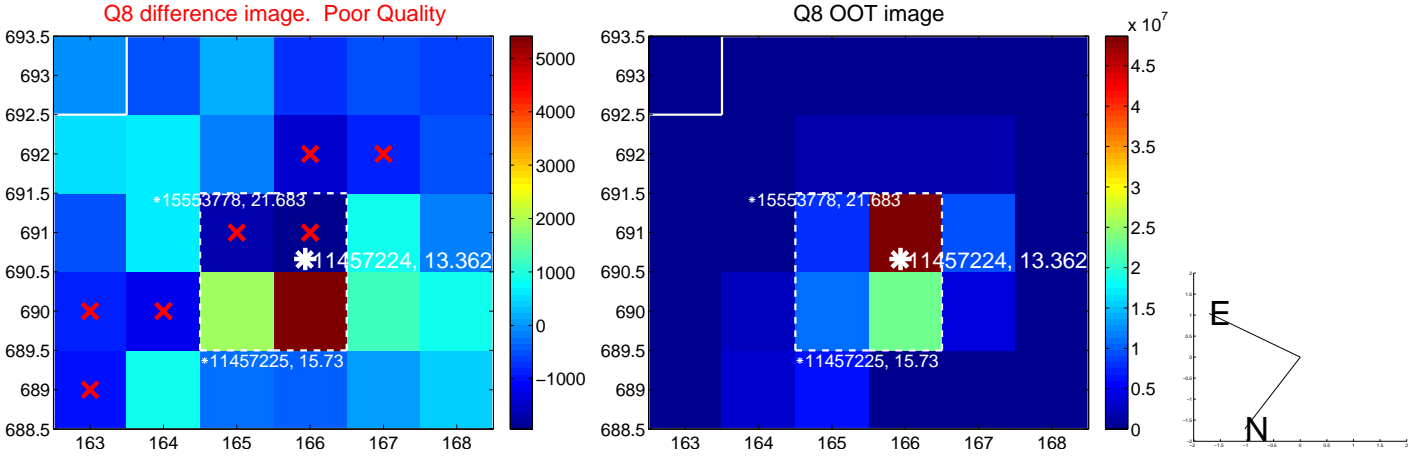
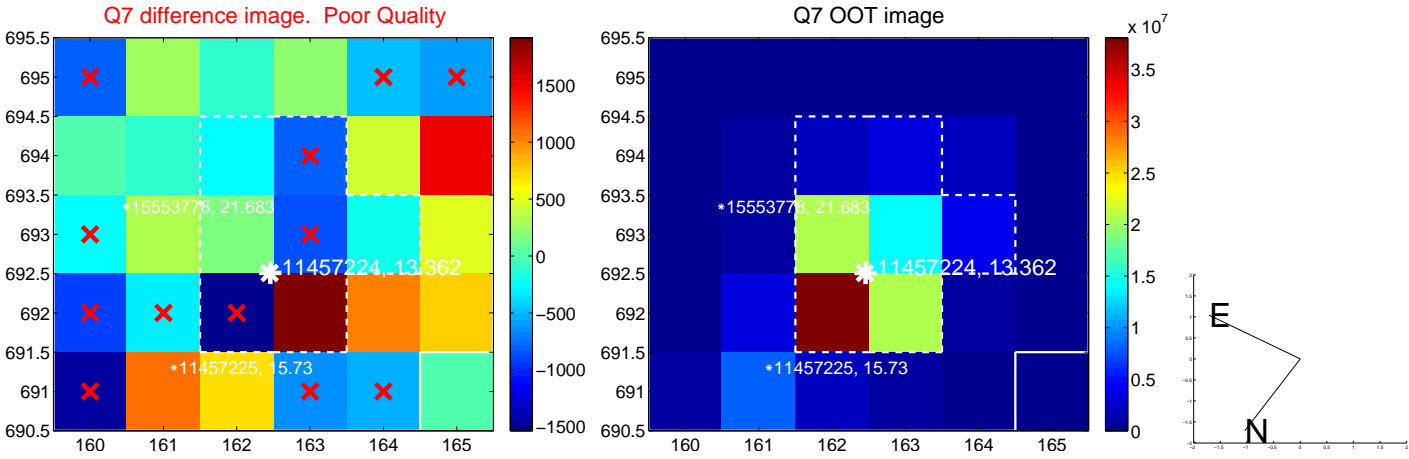
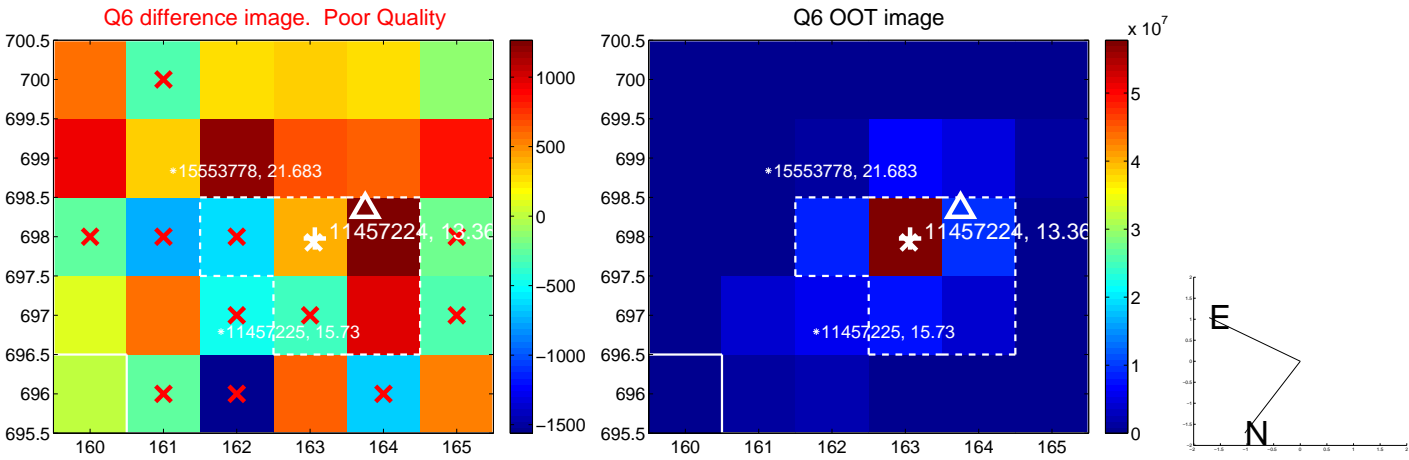
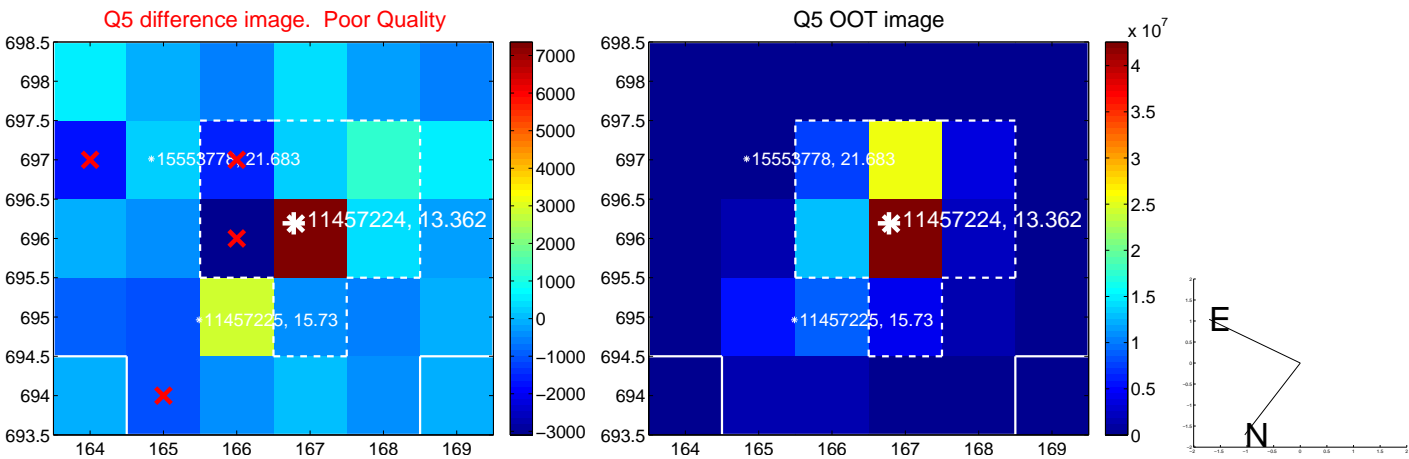


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

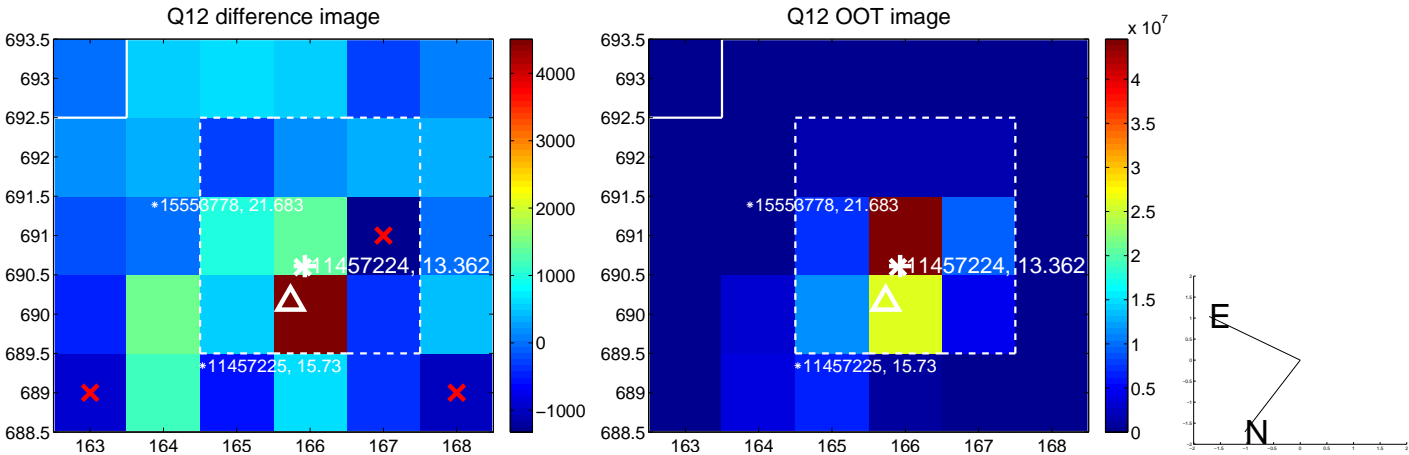
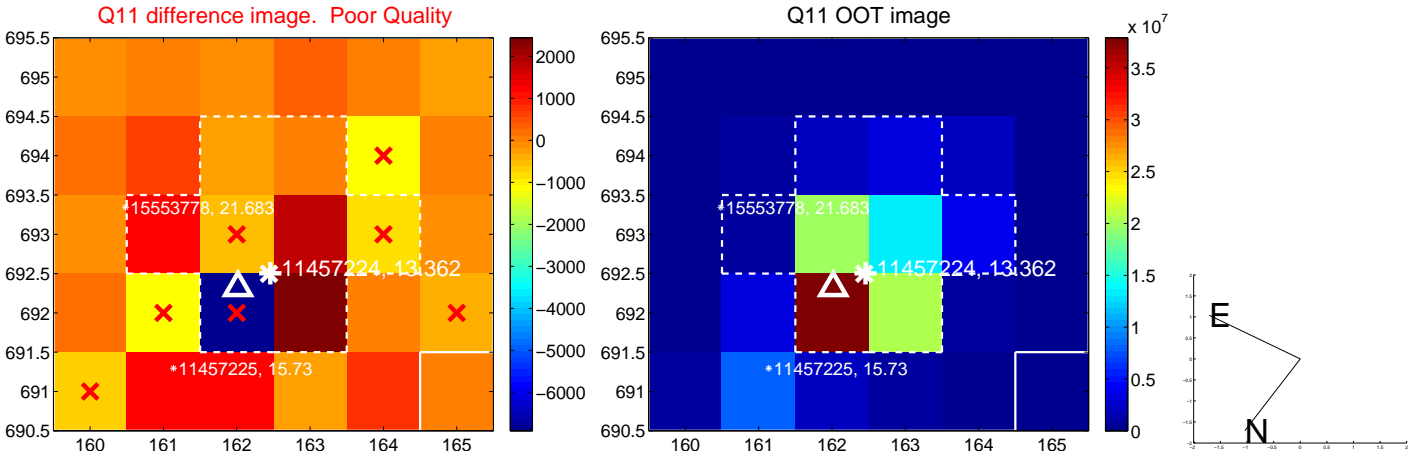
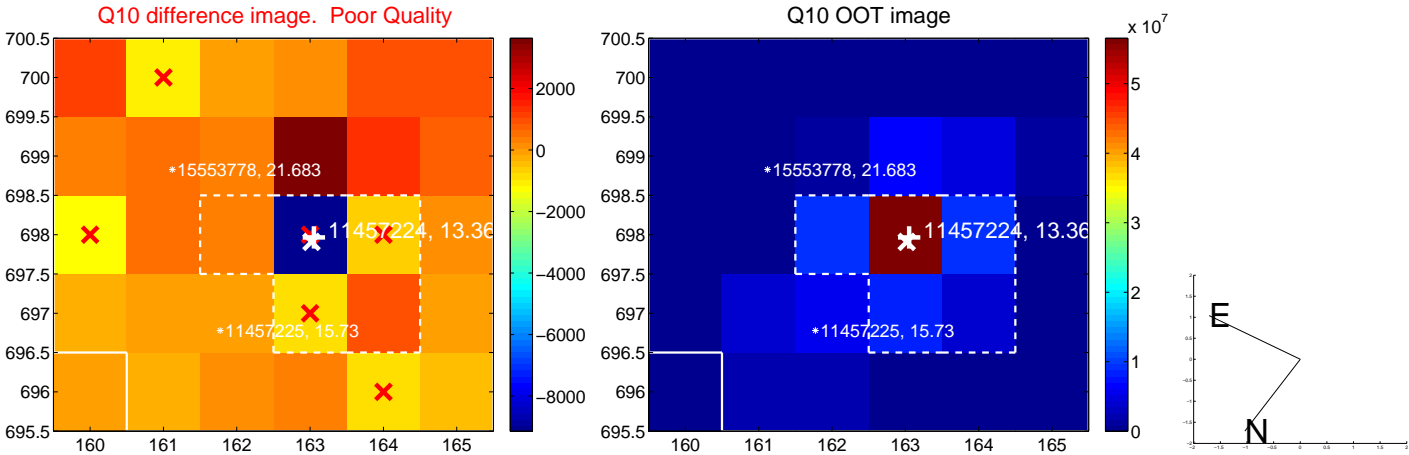
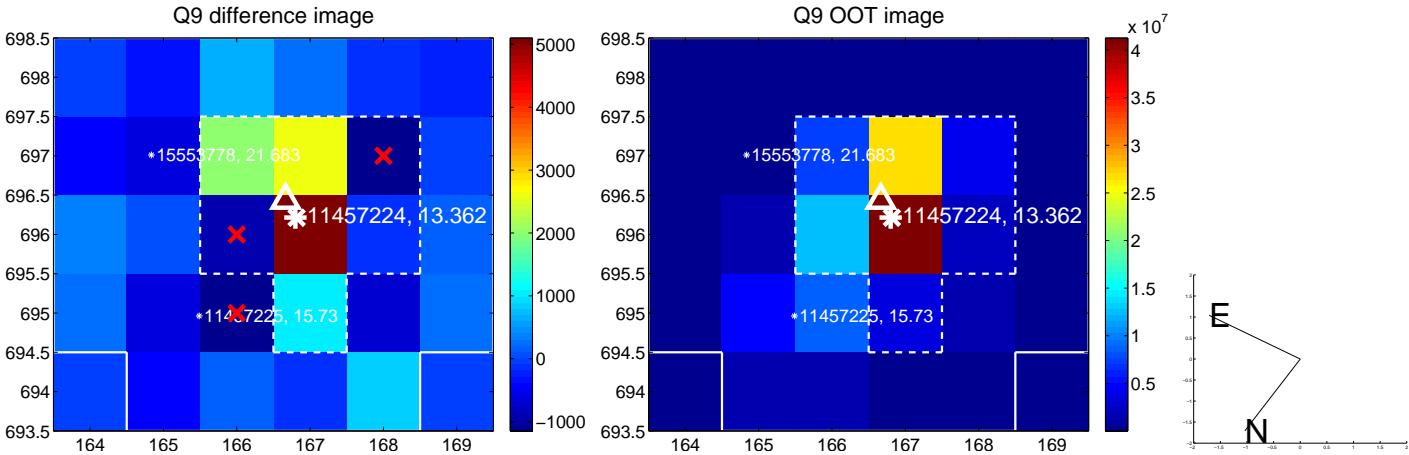
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



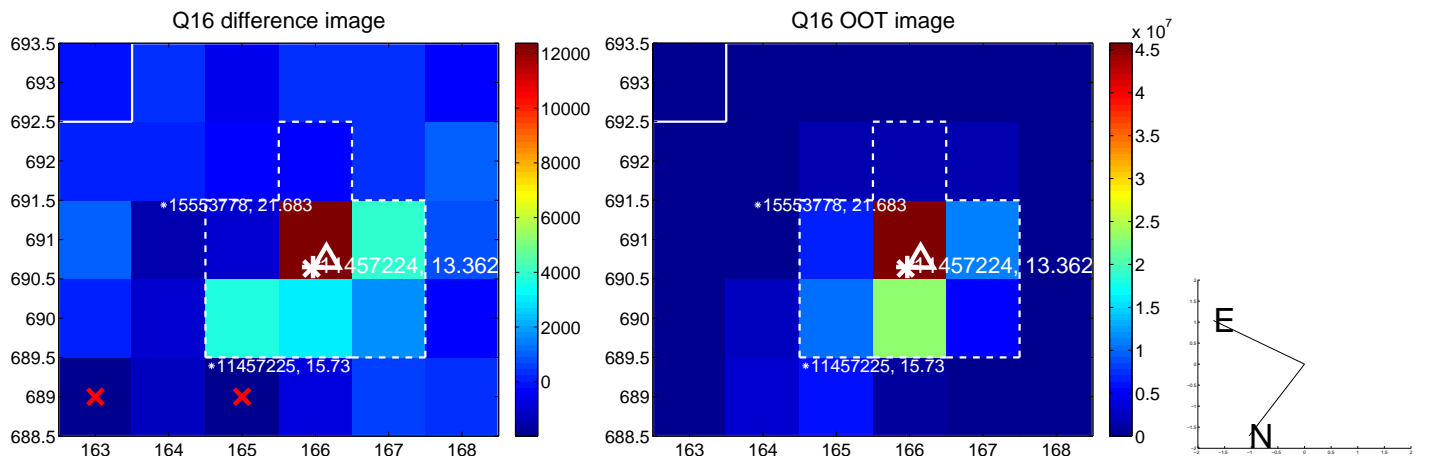
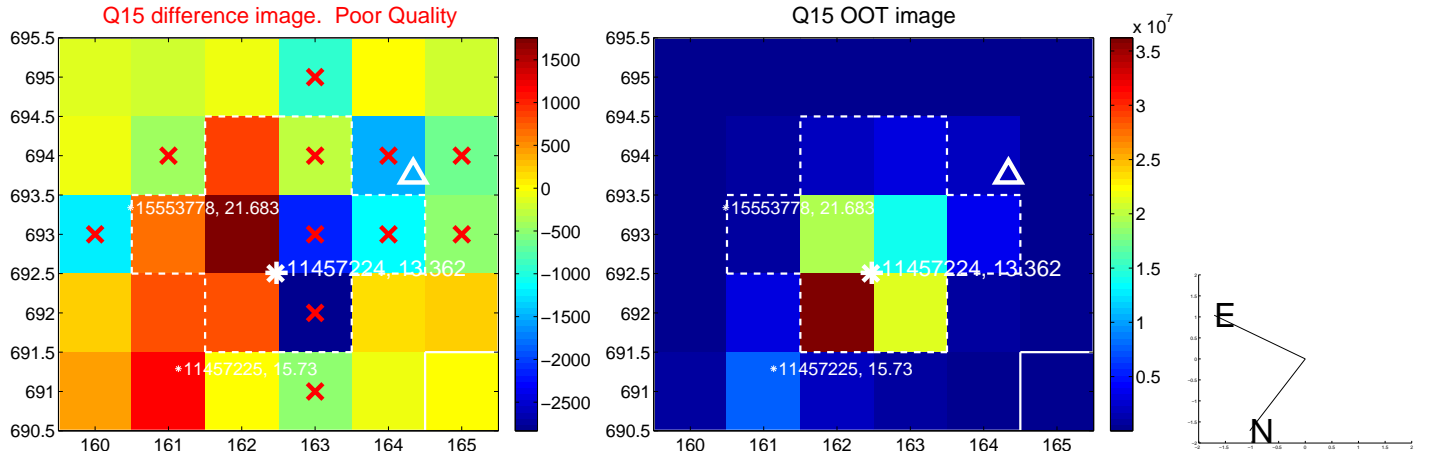
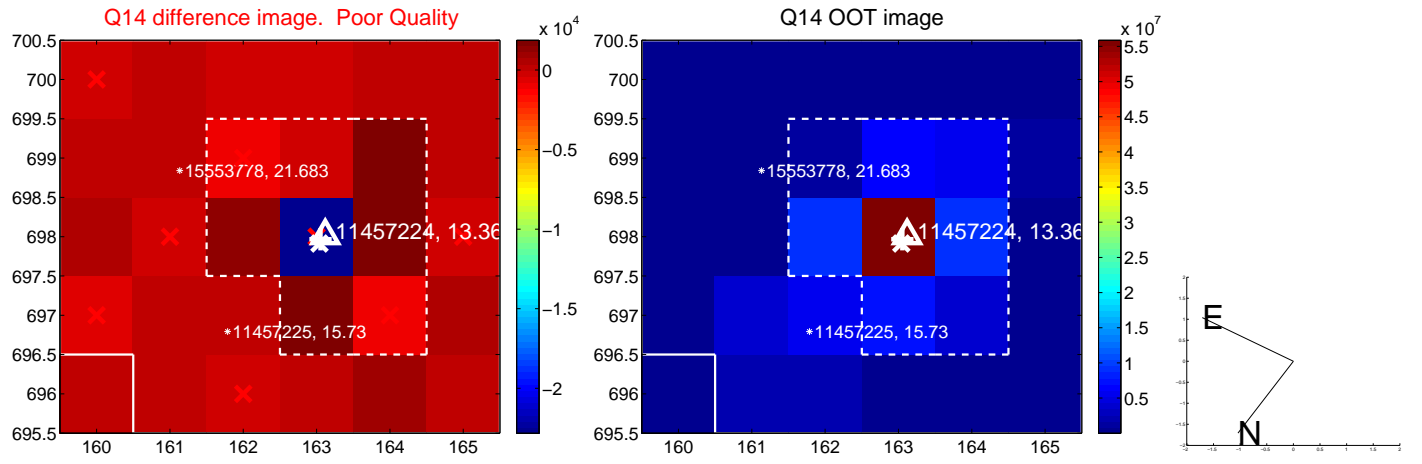
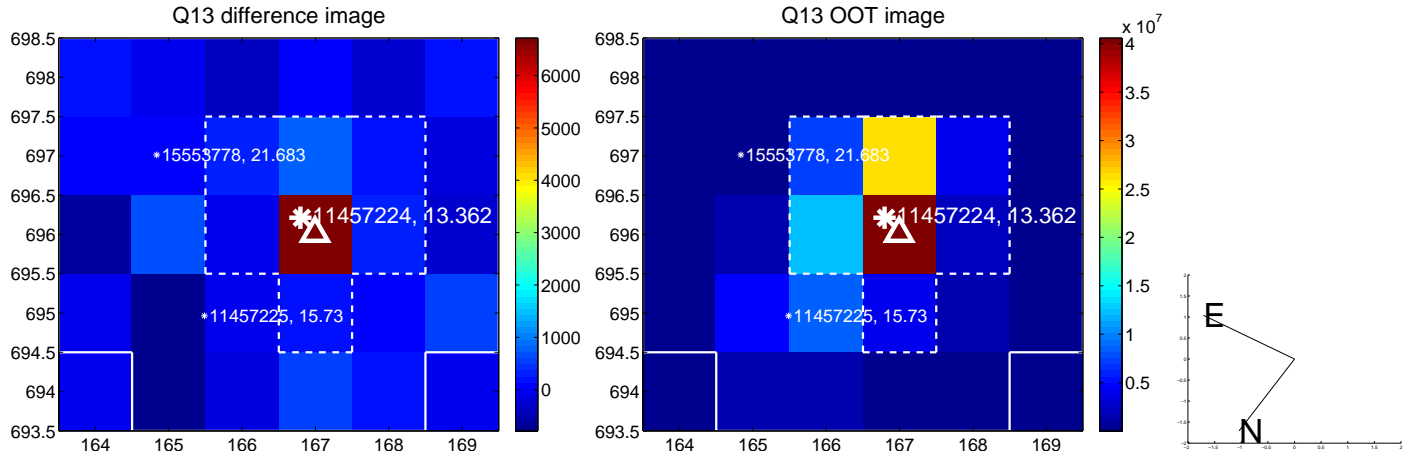
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



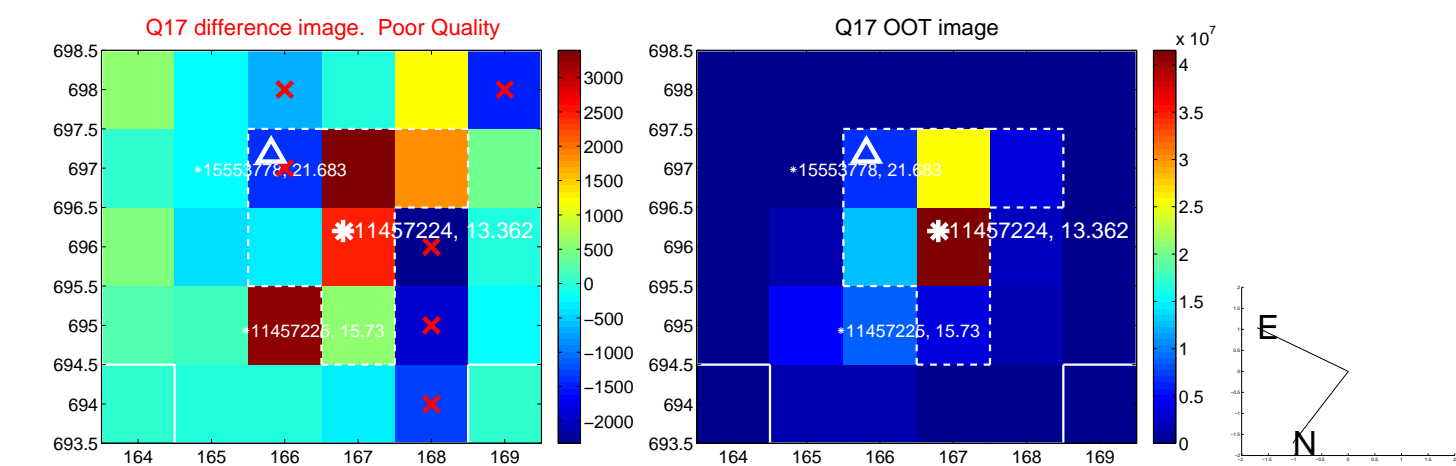
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



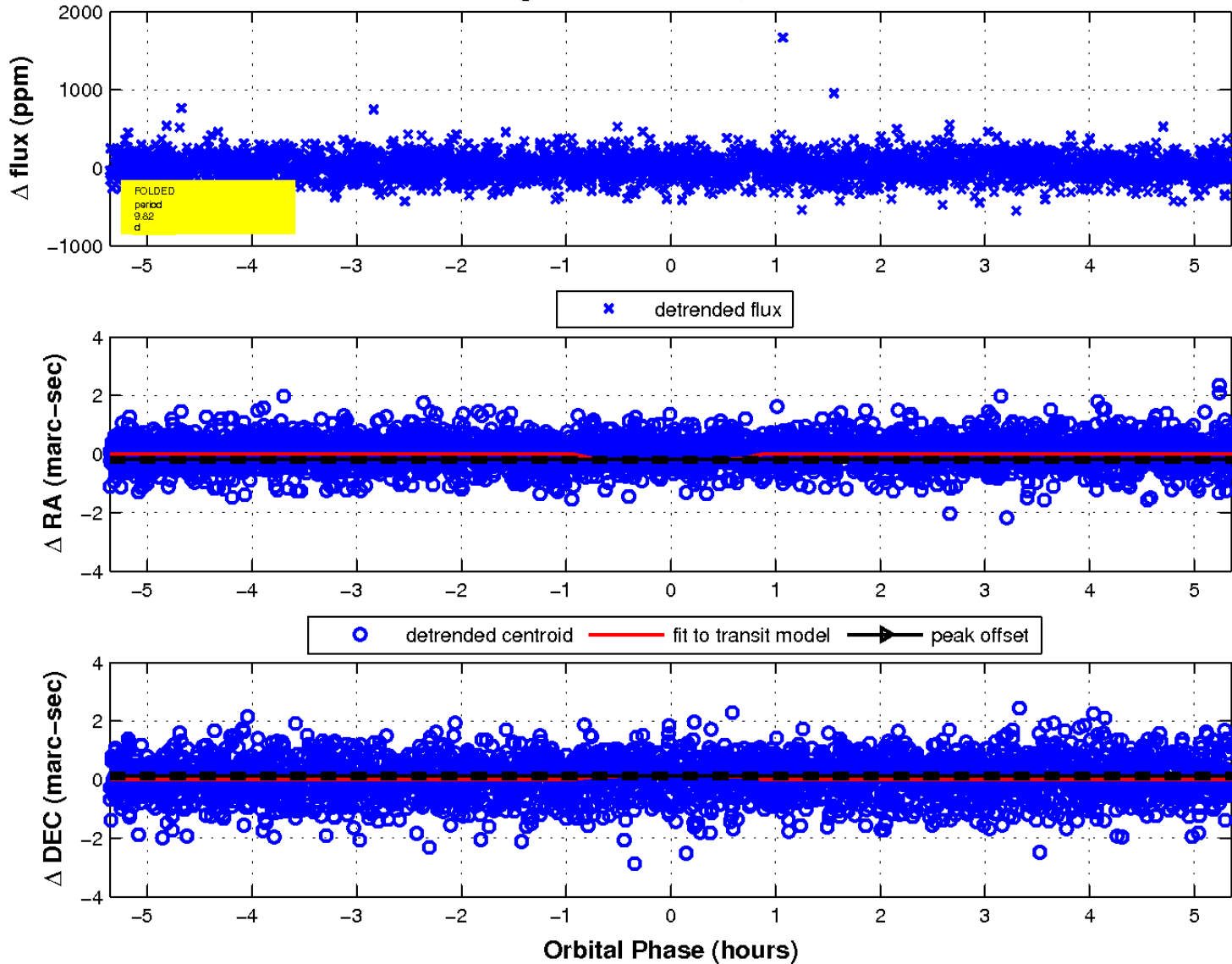
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

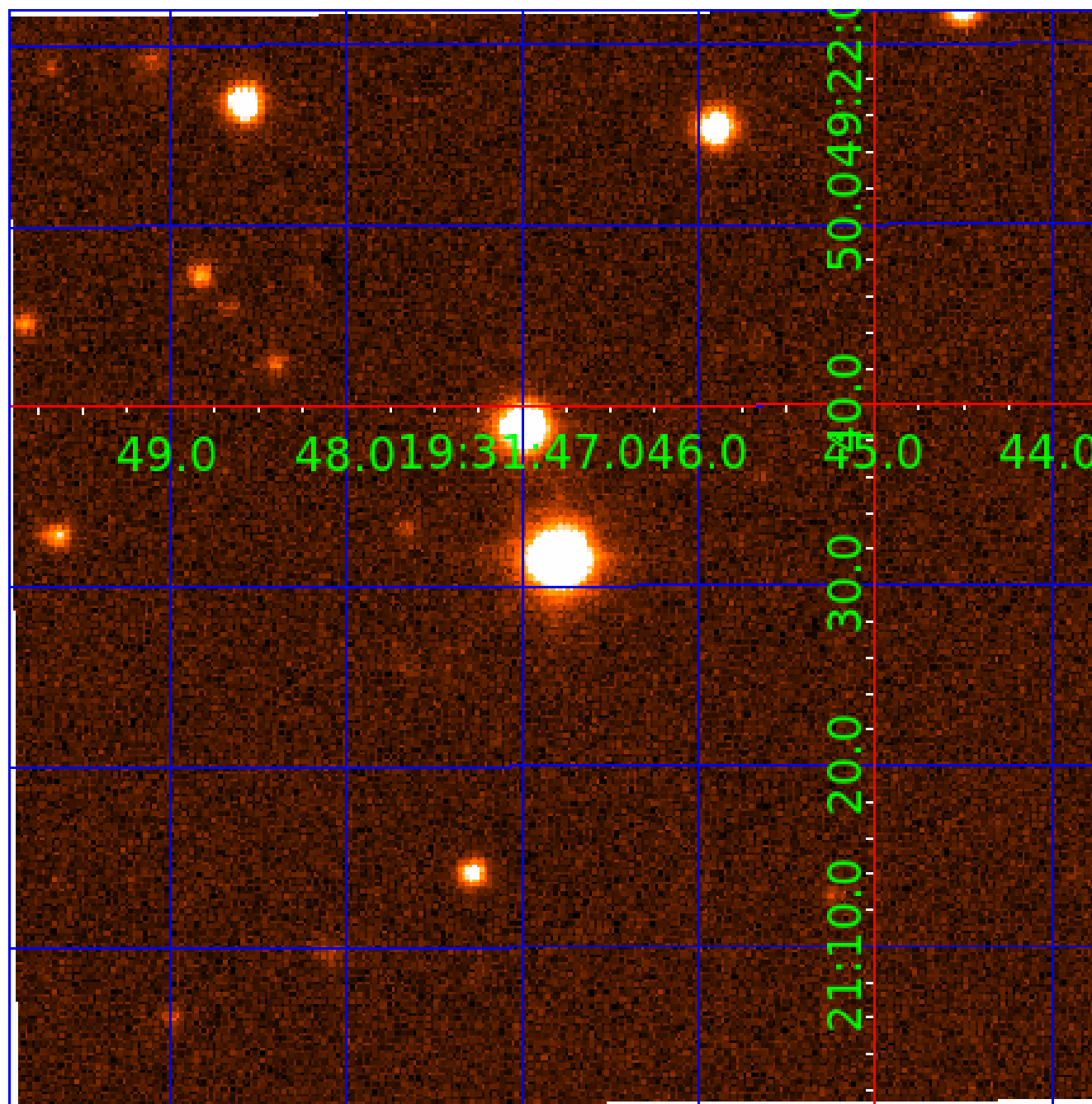


fluxWeightedCentroids, Planet 6 of 7



UKIRT Image

Declination



KIC 011457224

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})
011457224-01	OBS	No	0.633973	132.084866	7.9	4.457	8.8	4.6	0.92	5375	0.25	3308.09
011457224-02	OBS	No	31.685499	155.249415	421.4	1.818	13.2	8.2	0.92	5375	1.91	17.97
011457224-03	OBS	No	29.156067	159.683864	322.6	2.204	12.7	9.6	0.92	5375	1.75	20.08
011457224-04	OBS	No	31.067348	157.130239	216.3	2.945	10.4	6.6	0.92	5375	2.11	18.45
011457224-05	OBS	No	46.259487	147.022600	519.3	2.482	11.1	10.4	0.92	5375	2.19	10.85
011457224-06	OBS	No	9.818013	131.783275	184.3	1.786	9.9	8.6	0.92	5375	1.50	85.70
011457224-07	OBS	No	46.300127	146.318034	552.2	2.206	9.7	8.6	0.92	5375	3.93	10.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011457224-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_DIFFS
011457224-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011457224-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS—HALO_GHOST
011457224-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011457224-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011457224-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011457224-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

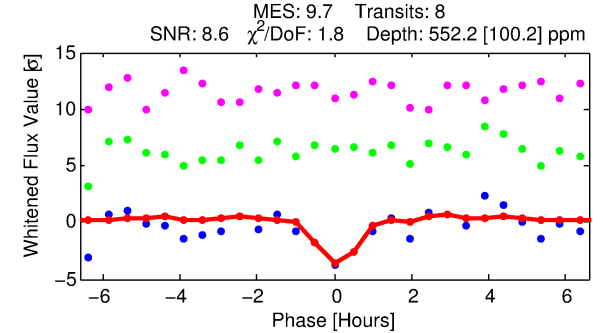
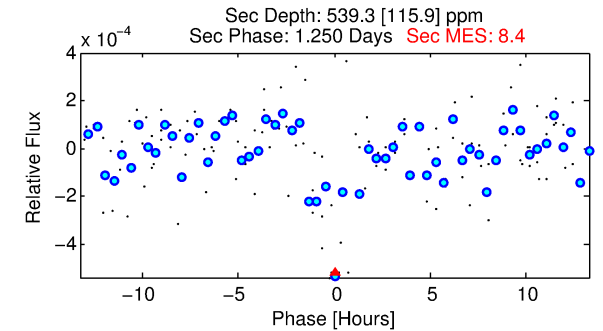
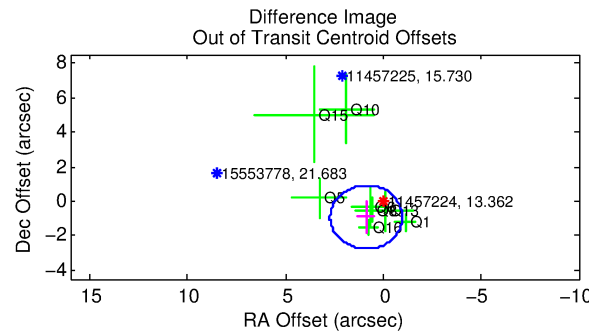
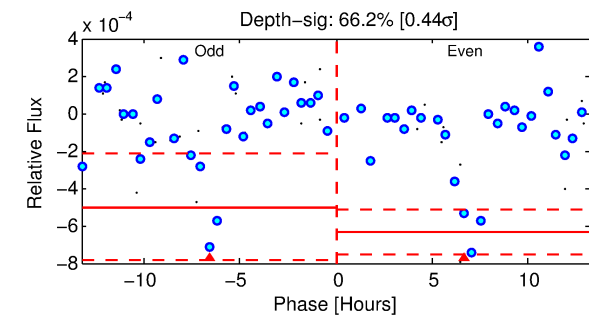
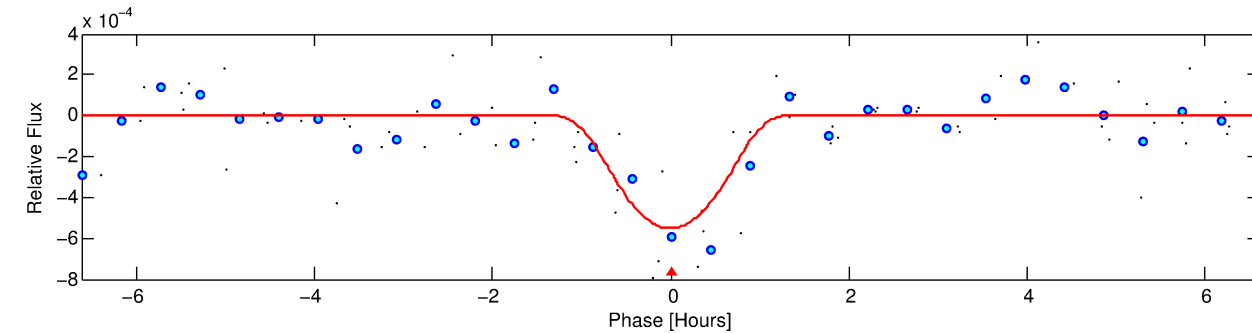
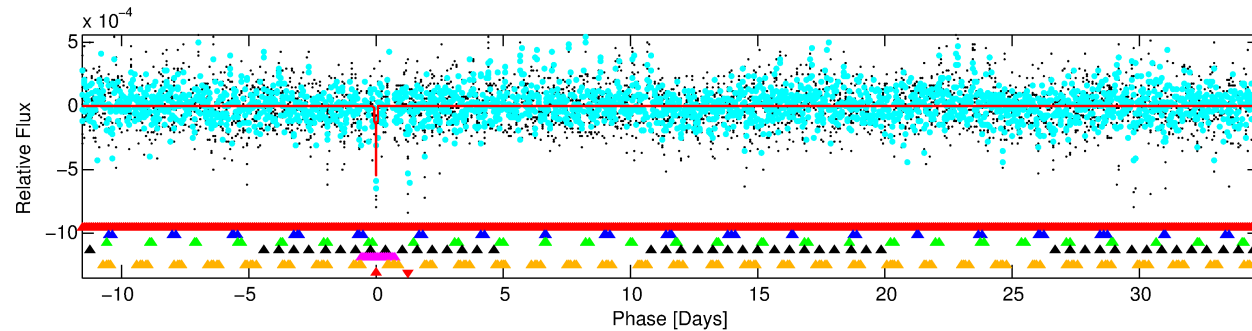
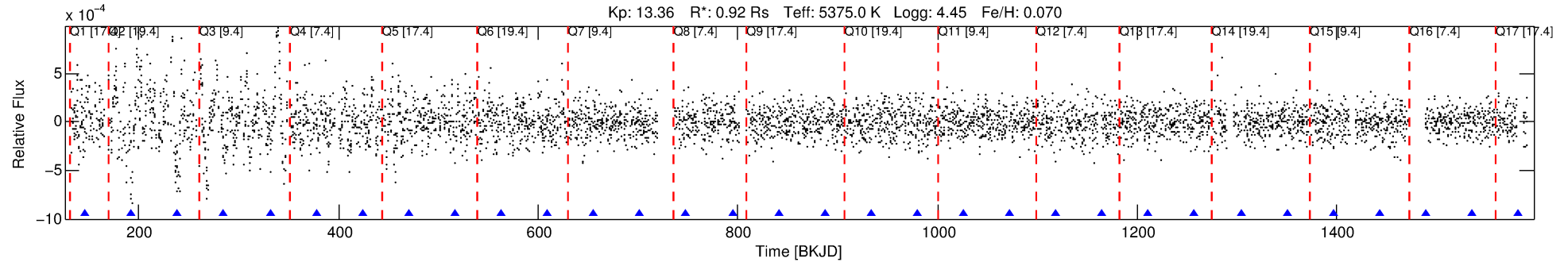
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011457224-07

No Significant Match Found

DV One-Page Summary

KIC: 11457224 Candidate: 7 of 7 Period: 46.300 d



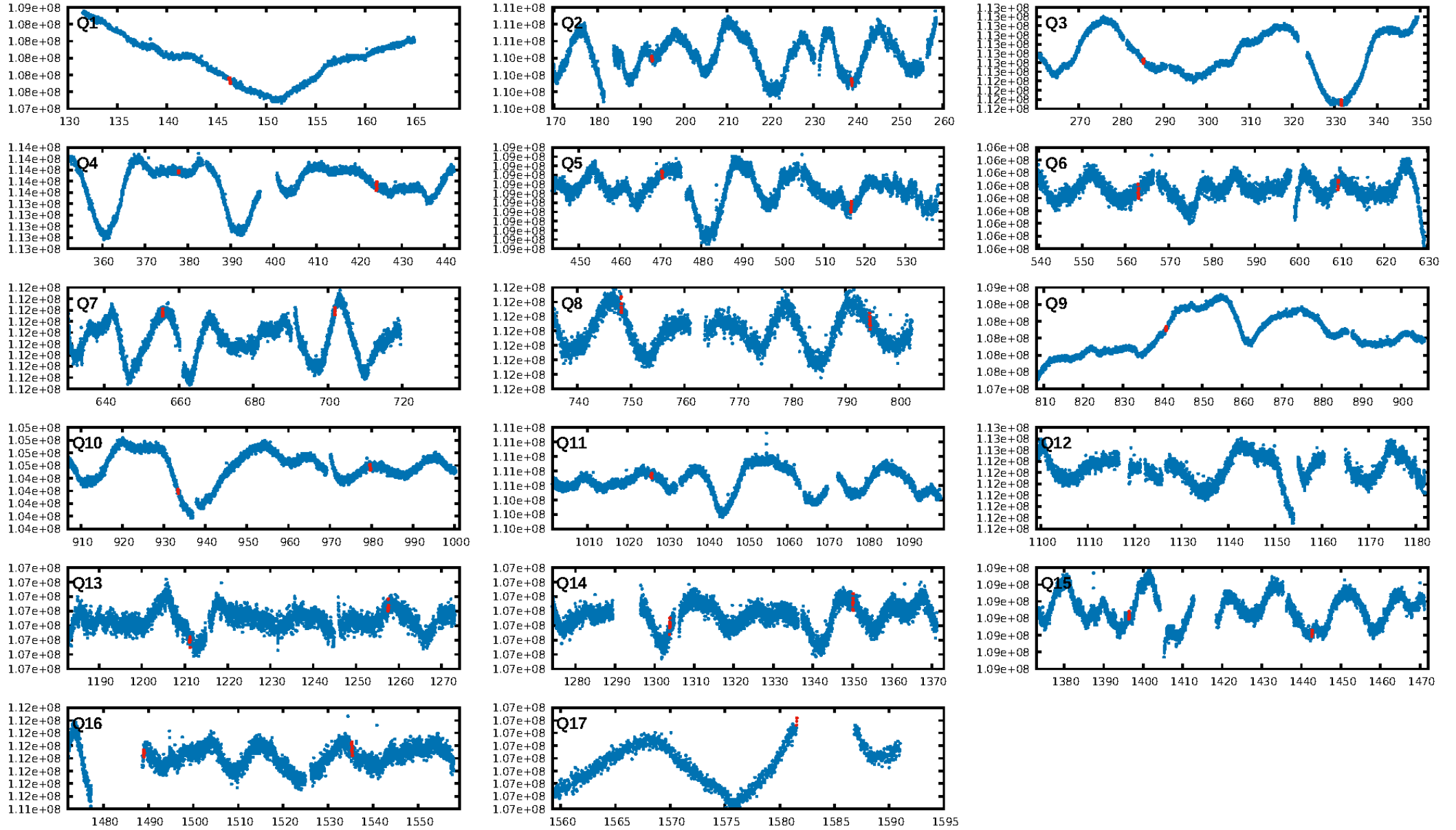
DV Fit Results:

Period = 46.30013 [0.00036] d
Epoch = 146.3180 [0.0045] BKJD
Rp/R* = 0.0393 [0.2505]
a/R* = 49.65 [96.75]
b = 0.99 [0.41]
Seff = 10.84 [3.22]
Teff = 463 [34] K
Rp = 3.93 [25.05] Re
a = 0.2406 [0.0445] AU
Ag = 1112.81 [14185.72] [0.08 σ]
Teffp = 4131 [13164] K [0.28 σ]

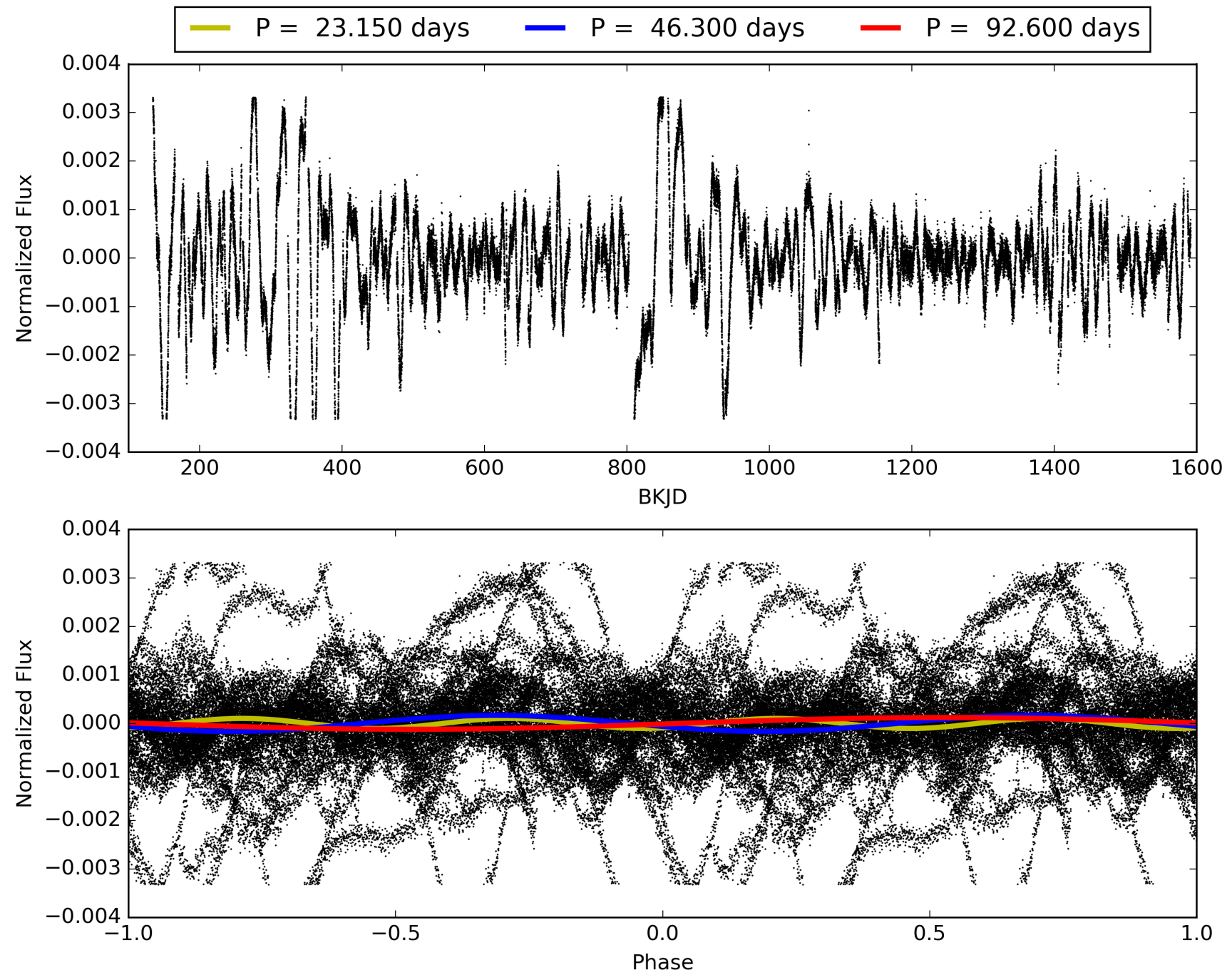
DV Diagnostic Results:

ShortPeriod-sig: 23.1% [0.29 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 26.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -0.2364
Centroid-sig: 12.0%
Centroid-so: 0.927 arcsec [2.53 σ]
OotOffset-rm: 1.278 arcsec [2.09 σ]
OotOffset-st: 2/1/2/3 [8]
KicOffset-rm: 1.302 arcsec [2.52 σ]
KicOffset-st: 2/1/2/3 [8]
DiffImageQuality-fgm: 0.25 [2/8]
DiffImageOverlap-fno: 0.00 [0/15]

TCE 011457224-07, PDC Light Curves

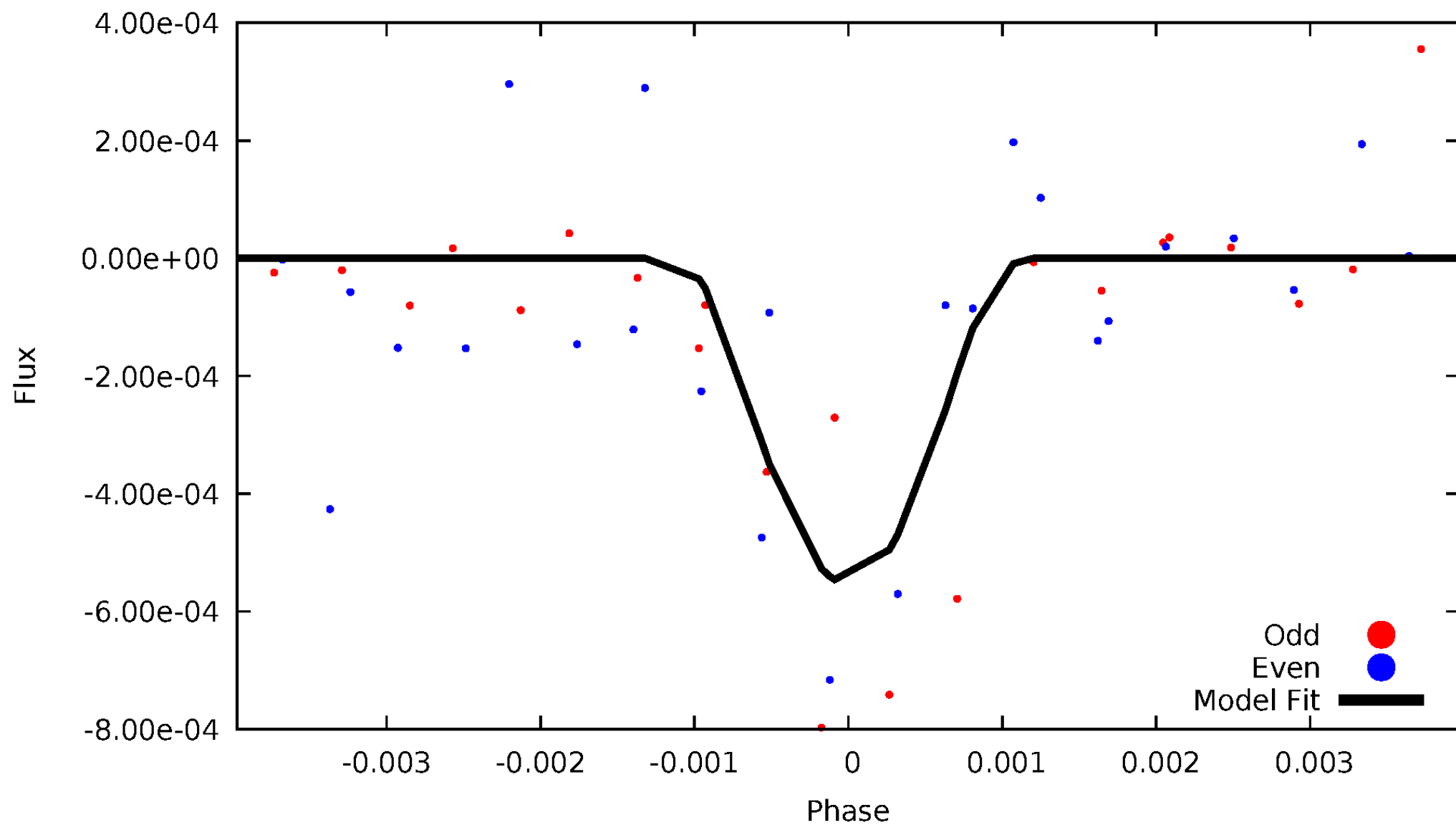


TCE 011457224-07



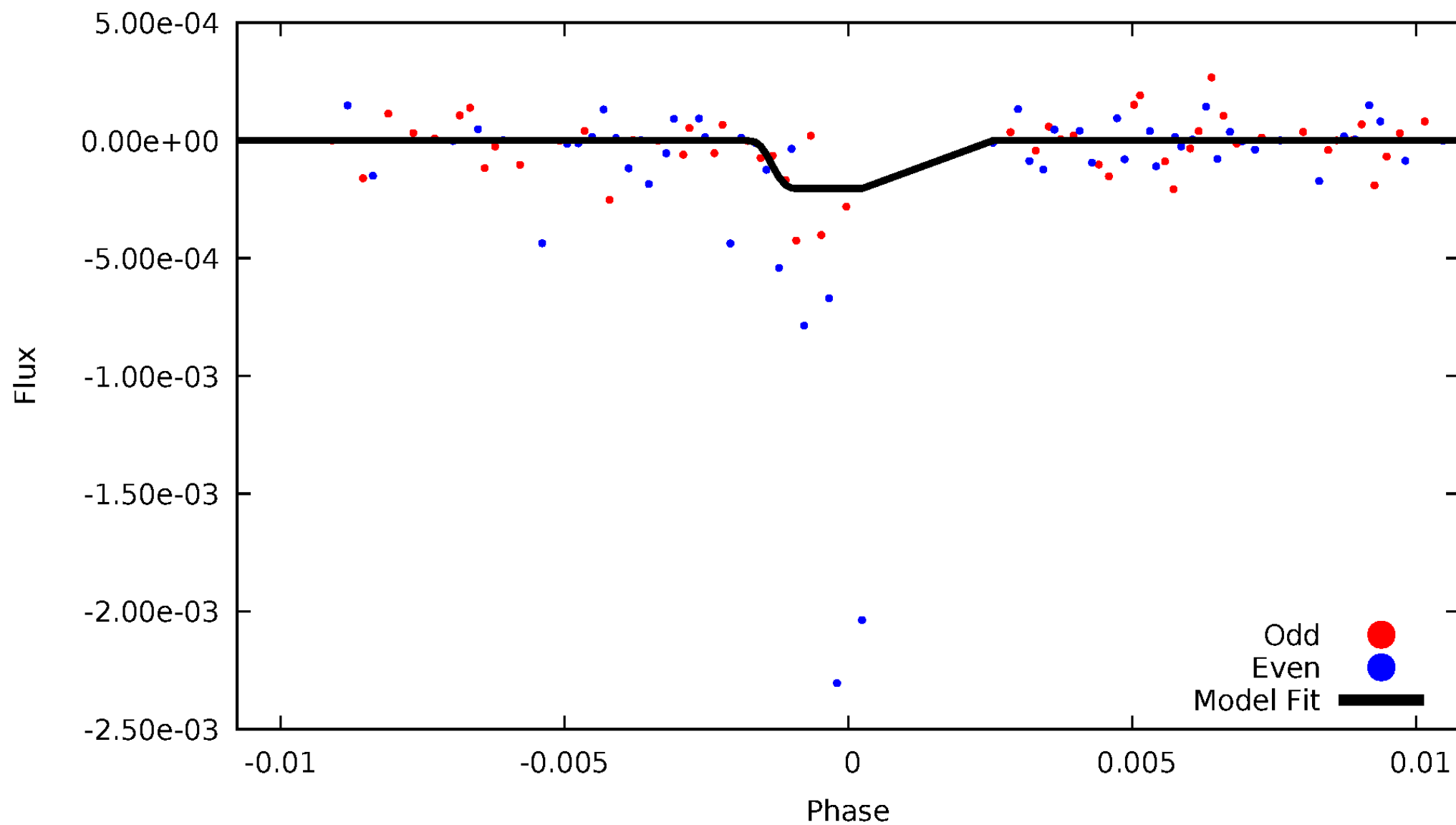
DV Odd/Even

TCE 011457224-07



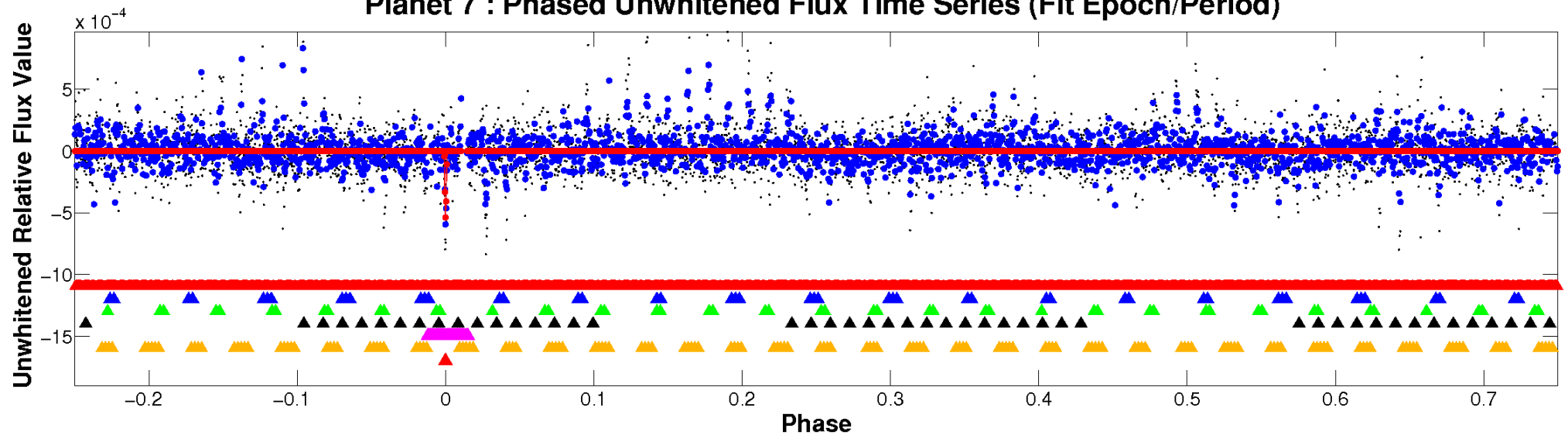
ALT Odd/Even

TCE 011457224-07

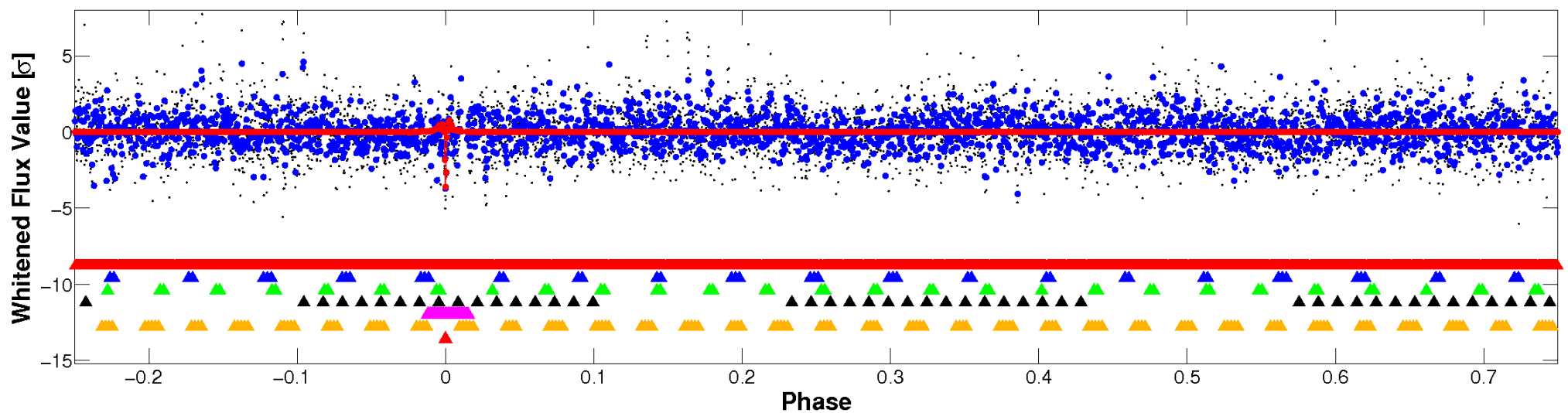


Non-Whitened Vs. Whitened Light Curve

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

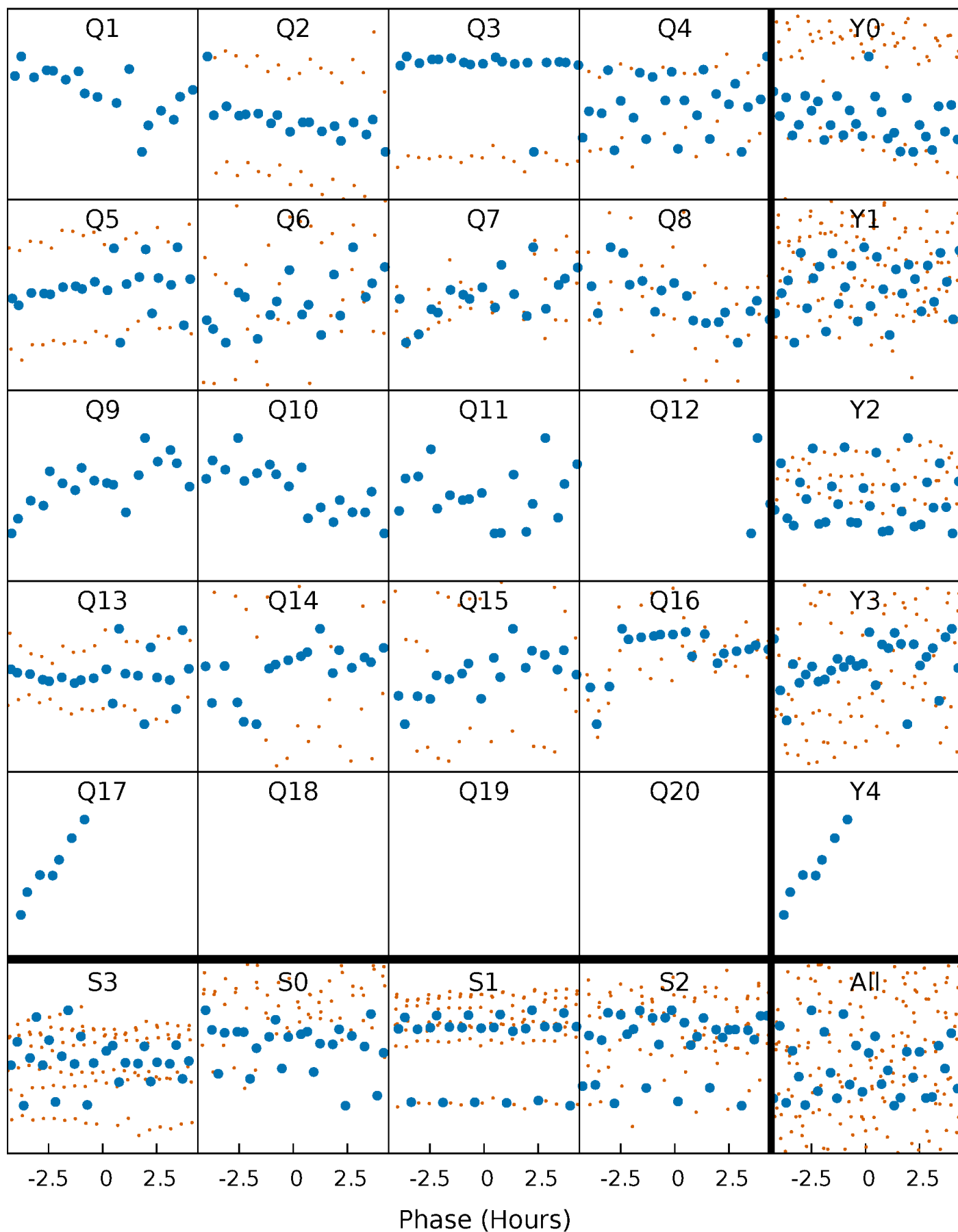


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



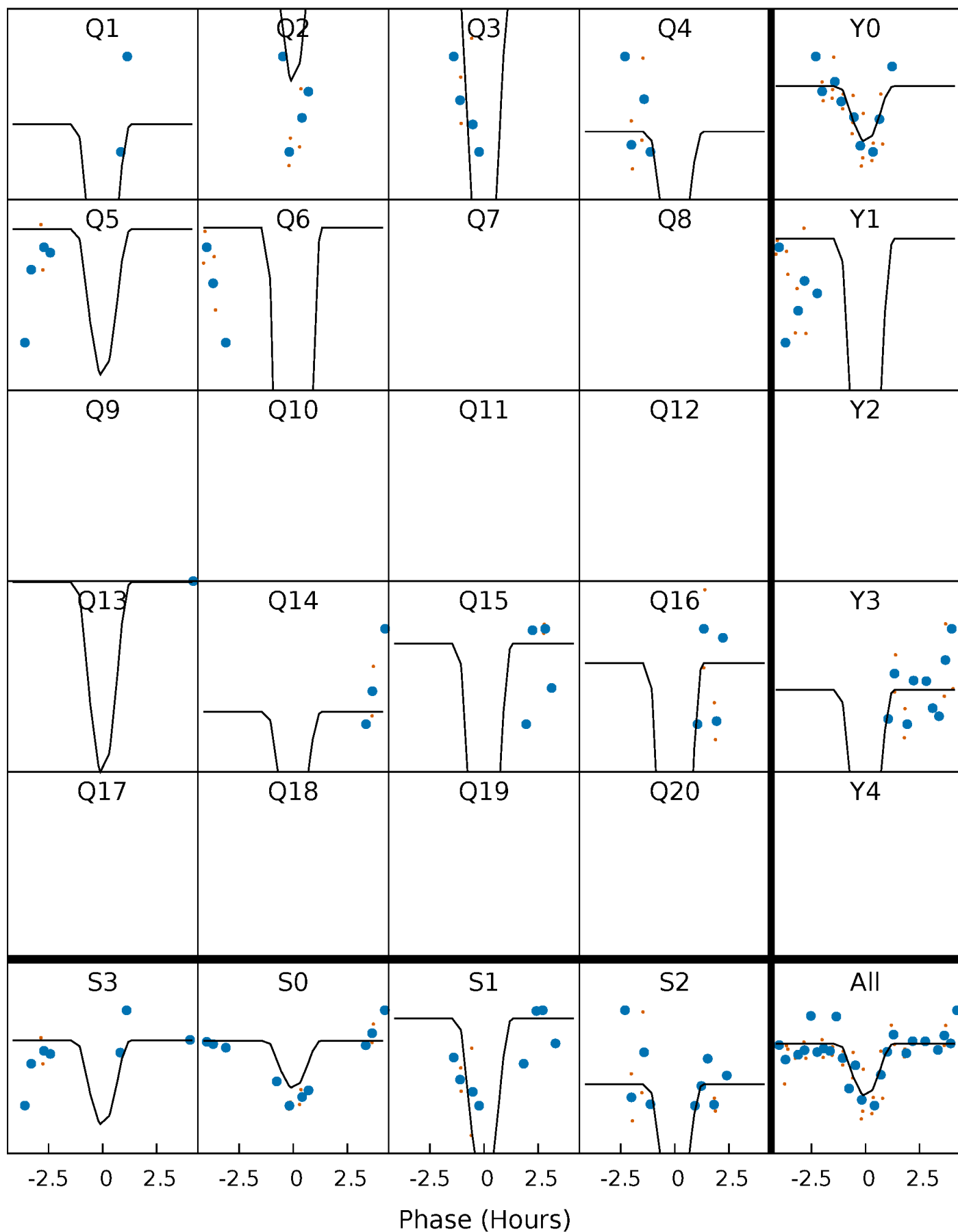
PDC Quarter-Phased Transit Curves

TCE 011457224-07 P= 46.300127 Days $T_0=146.318034$ (BKJD)



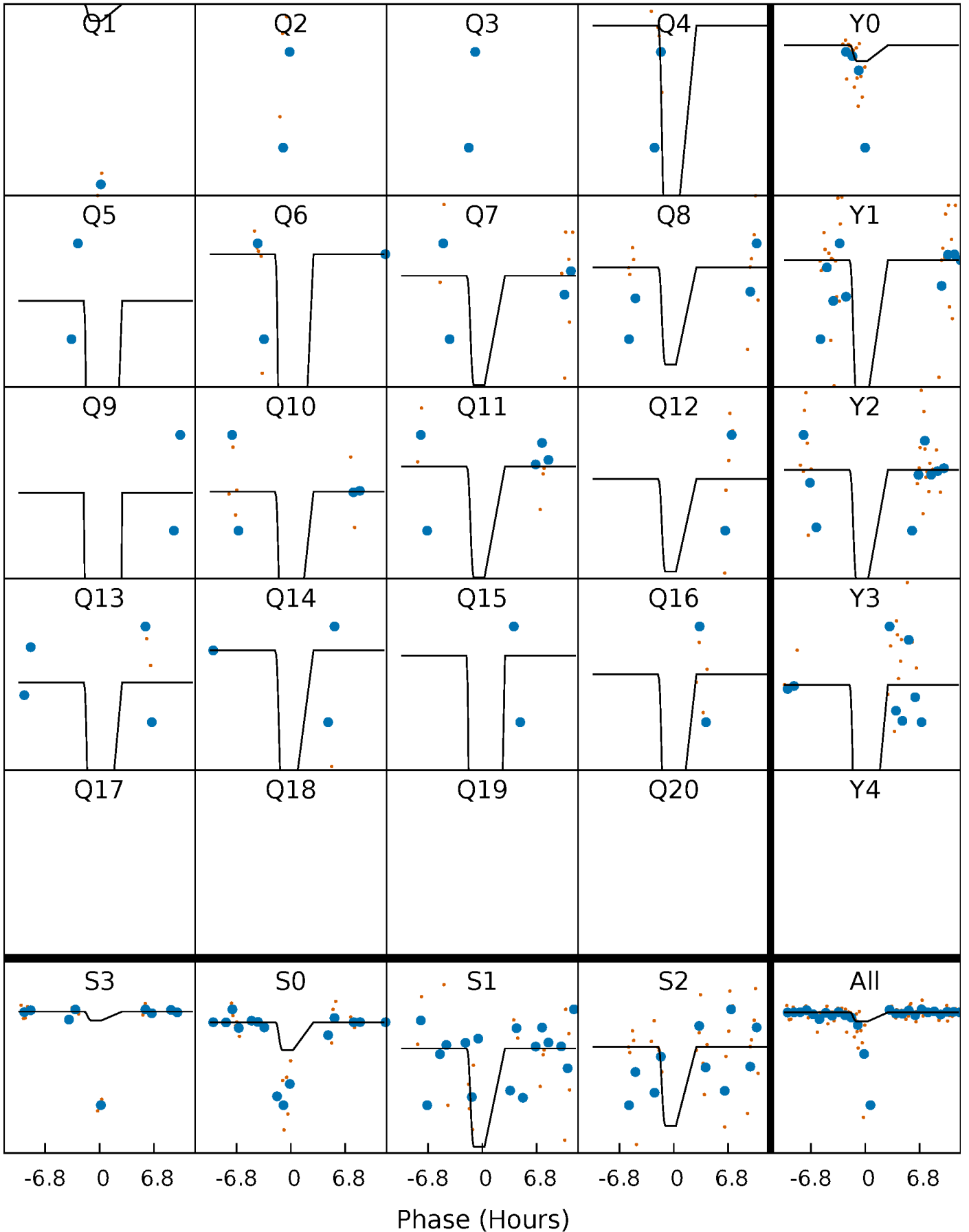
DV Quarter-Phased Transit Curves

TCE 011457224-07 P= 46.300127 Days $T_0=146.318034$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

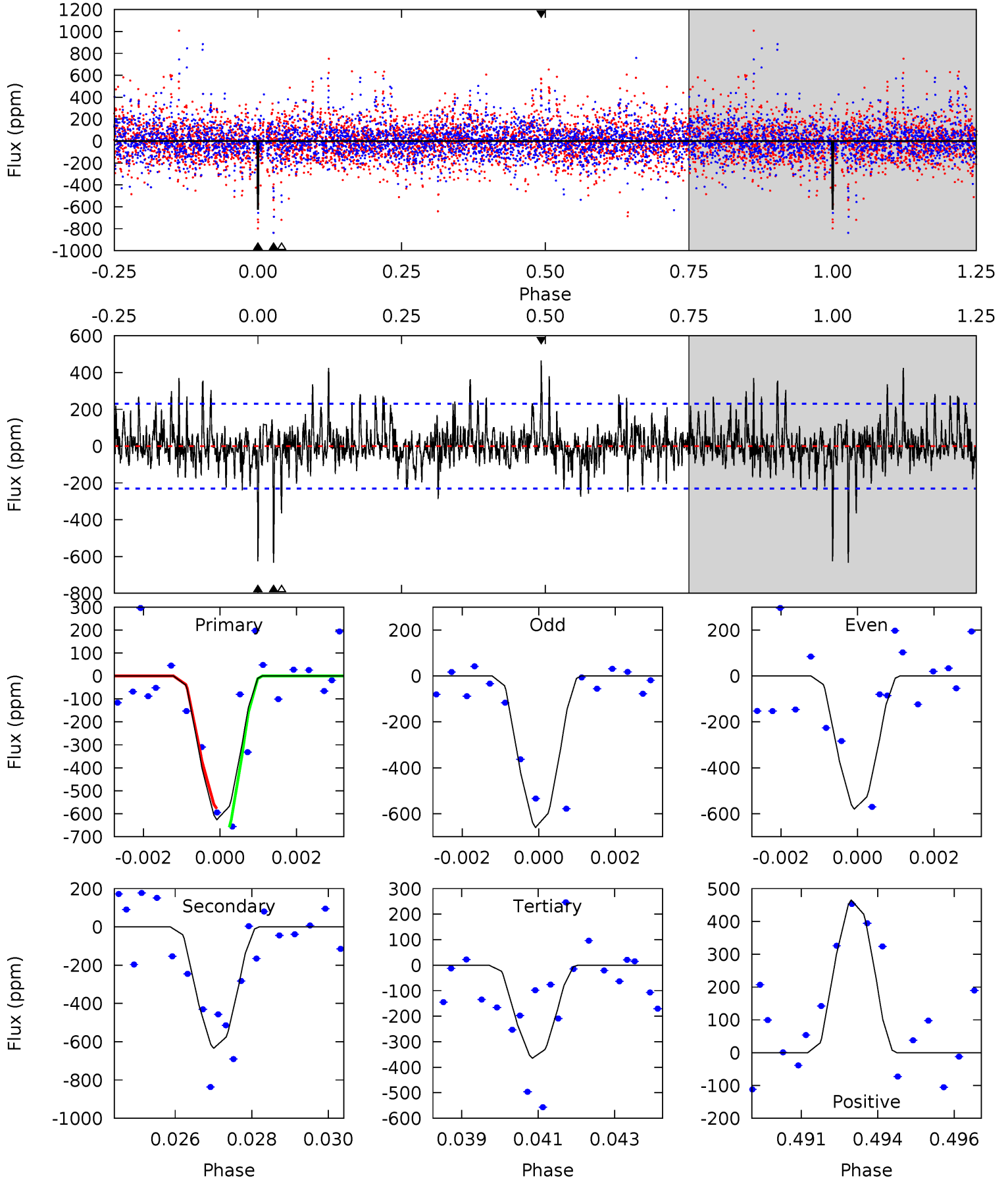
TCE 011457224-07 $P = 46.296161$ Days $T_0 = 146.356488$ (BKJD)



DV Model-Shift Uniqueness Test

011457224-07, P = 46.300127 Days, E = 100.017907 Days

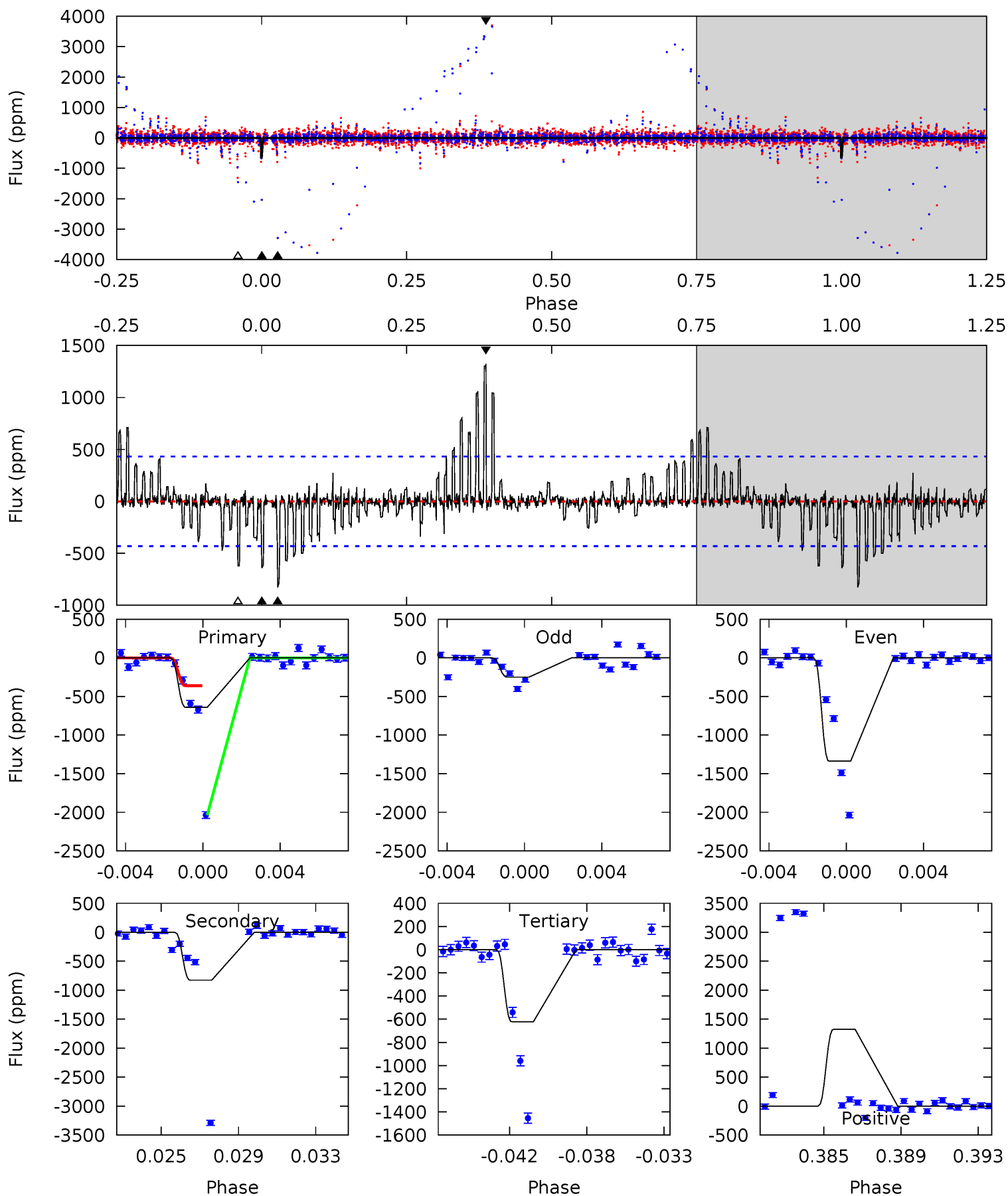
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.4	14.6	8.39	10.7	5.31	3.07	2.04	6.02	3.70	6.21	3.89	0.85	1.26	0.42	0.93



Alt Model-Shift Uniqueness Test

011457224-07, P = 46.296161 Days, E = 100.060327 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.70	9.93	7.47	15.9	5.19	2.86	1.51	0.23	-8.23	2.46	-5.99	5.54	1.84	0.62	5.05



Stellar Parameters For KIC 011457224

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5375^{+160}_{-144}	$4.452^{+0.100}_{-0.150}$	$0.070^{+0.250}_{-0.300}$	$0.916^{+0.199}_{-0.107}$	$0.866^{+0.097}_{-0.073}$	$1.587^{+0.688}_{-0.663}$
	+3%/-3%	+2%/-3%	+357%/-429%	+22%/-12%	+11%/-8%	+43%/-42%
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 011457224-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-634 ± 43	$18.78^{+20.21}_{-13.36}$	651^{+37}_{-31}	2735^{+1263}_{-451}	58^{+632}_{-45}
Alt.	-826 ± 83	$18.06^{+19.62}_{-12.61}$	652^{+39}_{-32}	2881^{+1292}_{-495}	80^{+816}_{-61}

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

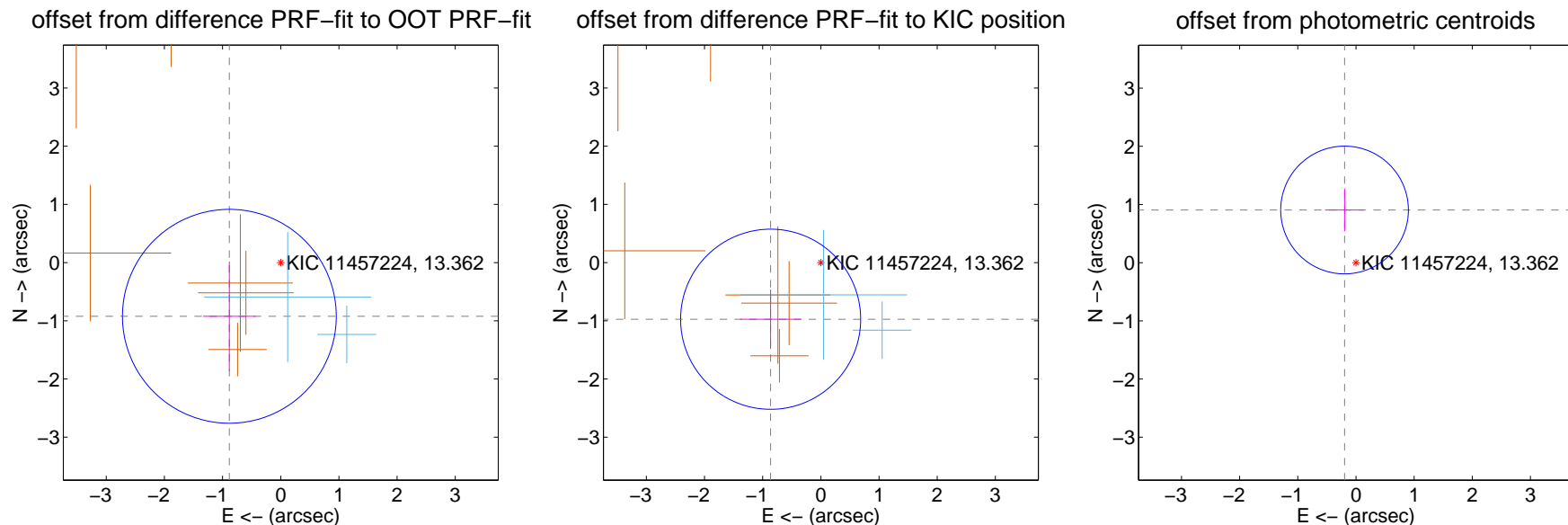
DV Centroid Data

Supplemental centroid analysis for 011457224-07. Kepler magnitude: 13.36. Transit SNR 8.59

There are 2 quarters with good PRF difference image offsets

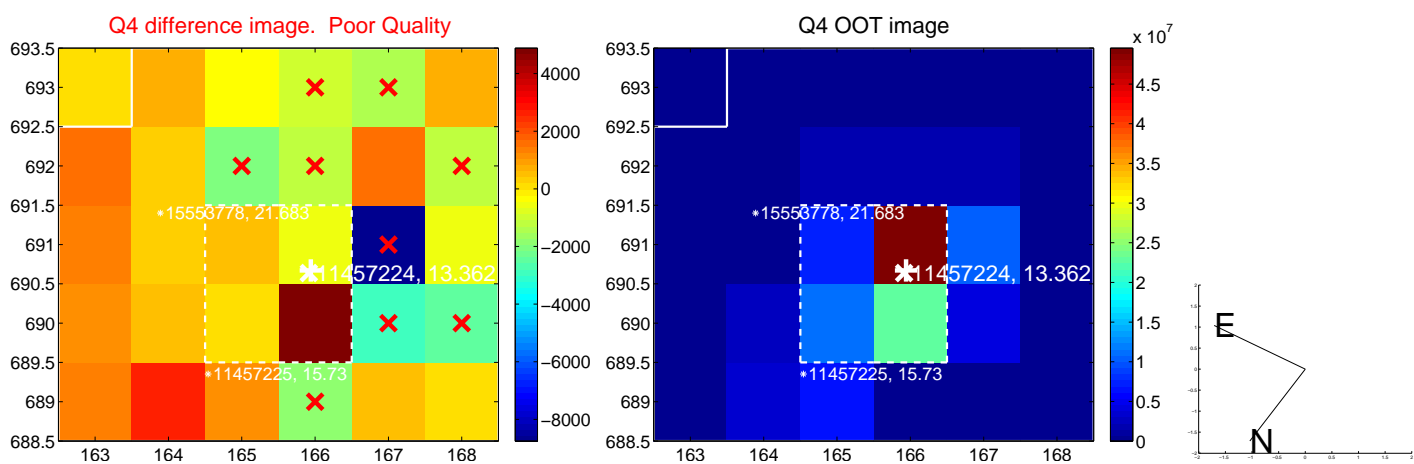
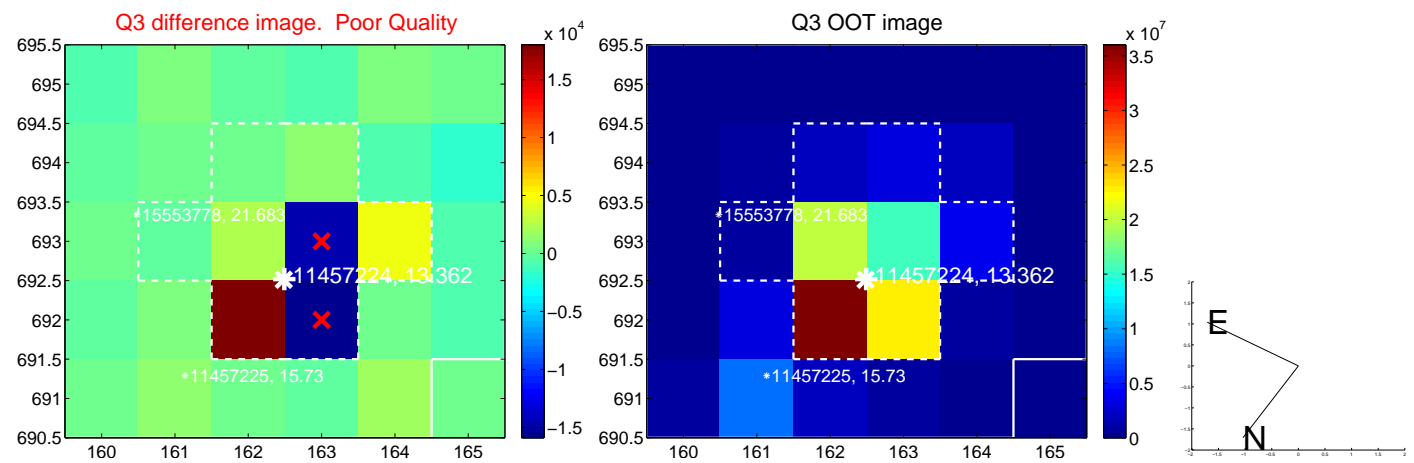
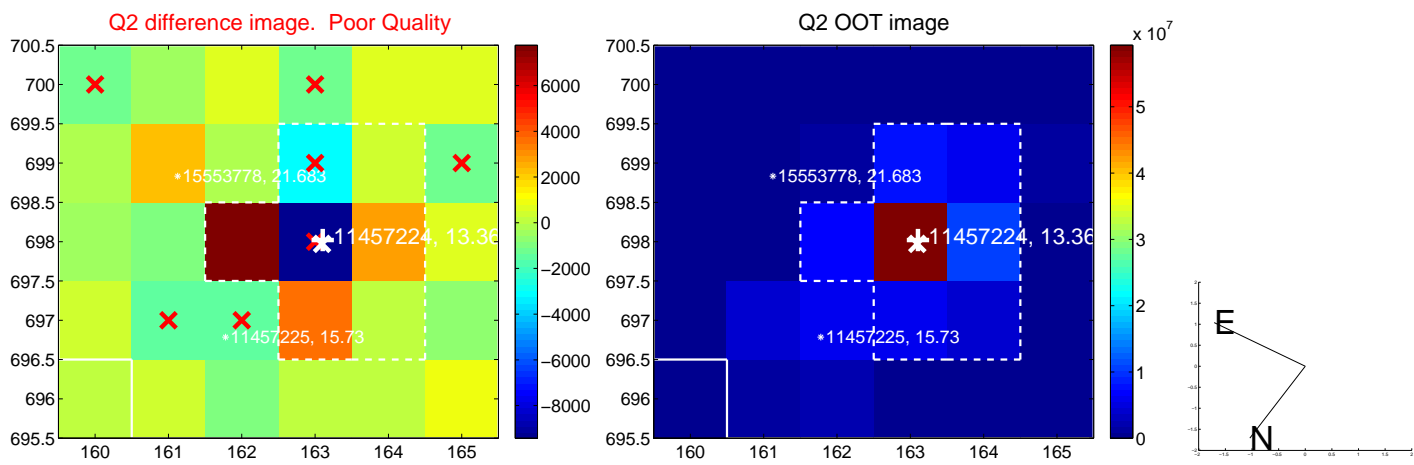
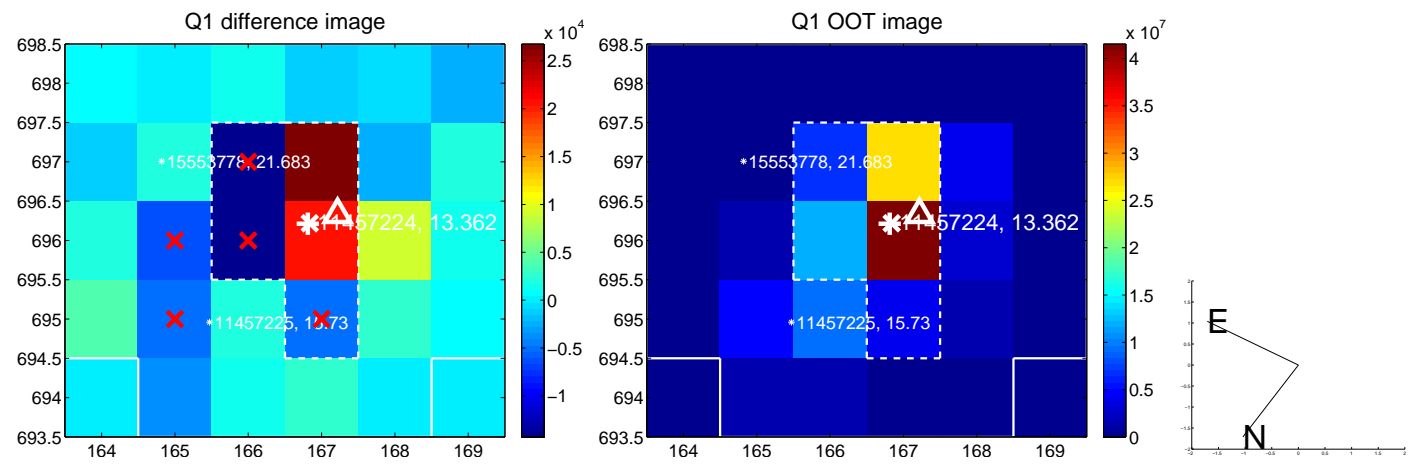
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.278 ± 0.613	2.09	0.884 ± 0.451	-0.923 ± 0.940
PRF-fit source offset from KIC position	1.302 ± 0.516	2.52	0.864 ± 0.524	-0.974 ± 0.510
photometric centroid source offset	0.93 ± 0.37	2.53	0.20 ± 0.33	0.91 ± 0.37

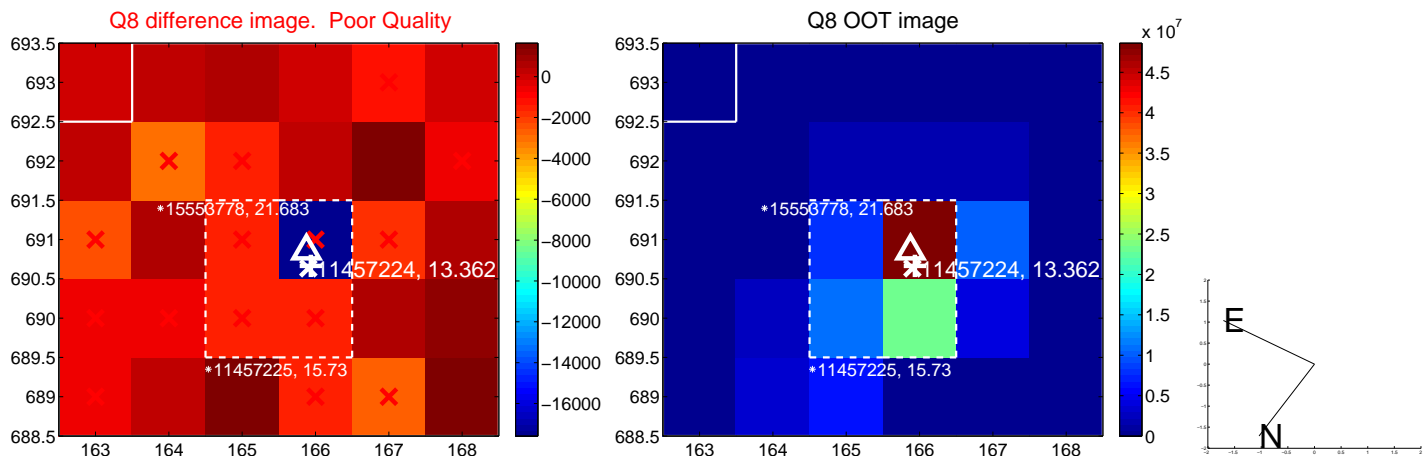
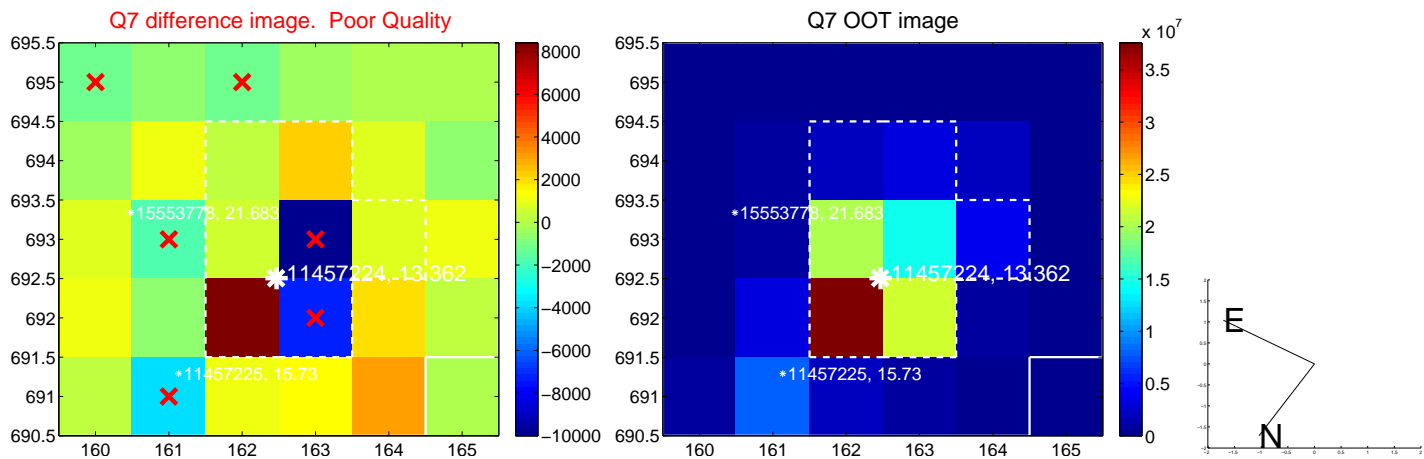
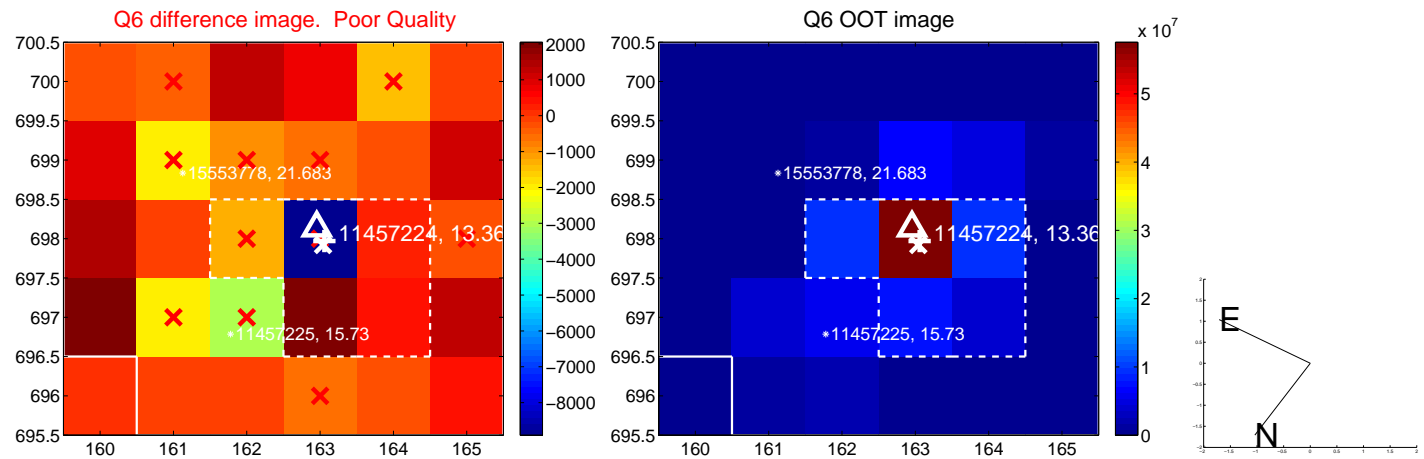
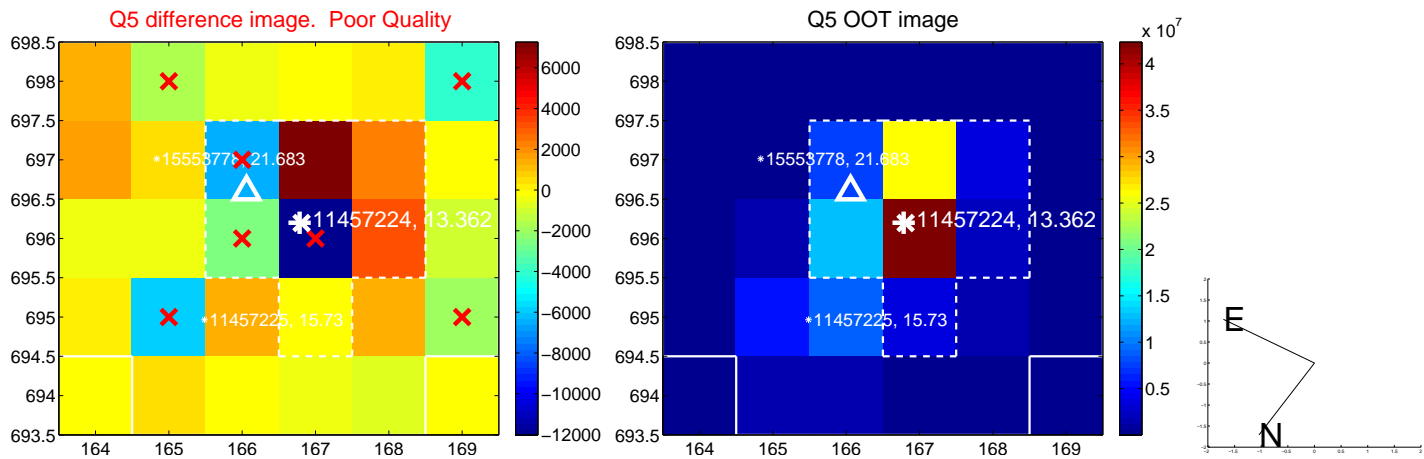


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

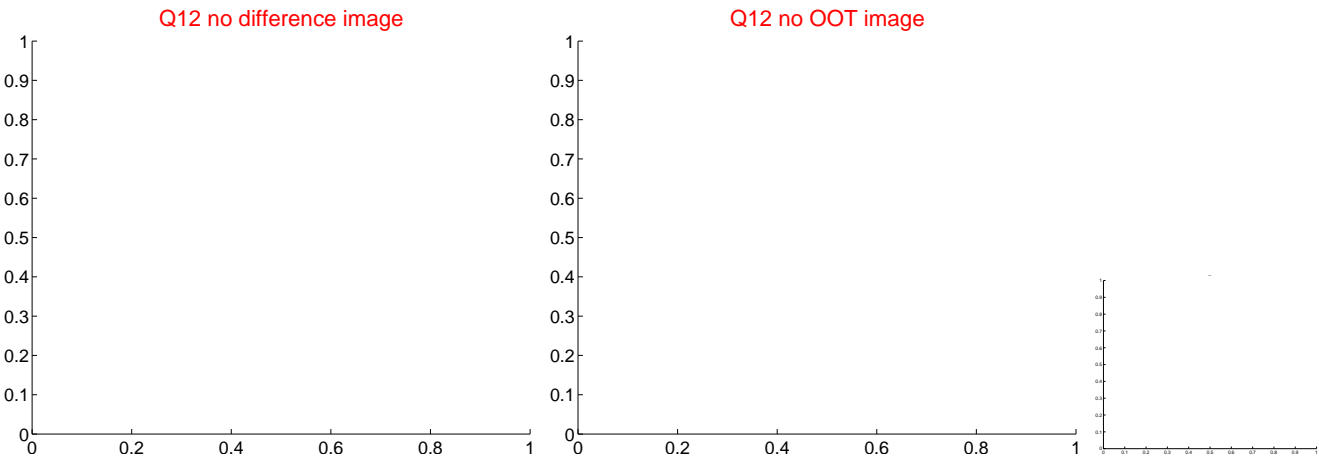
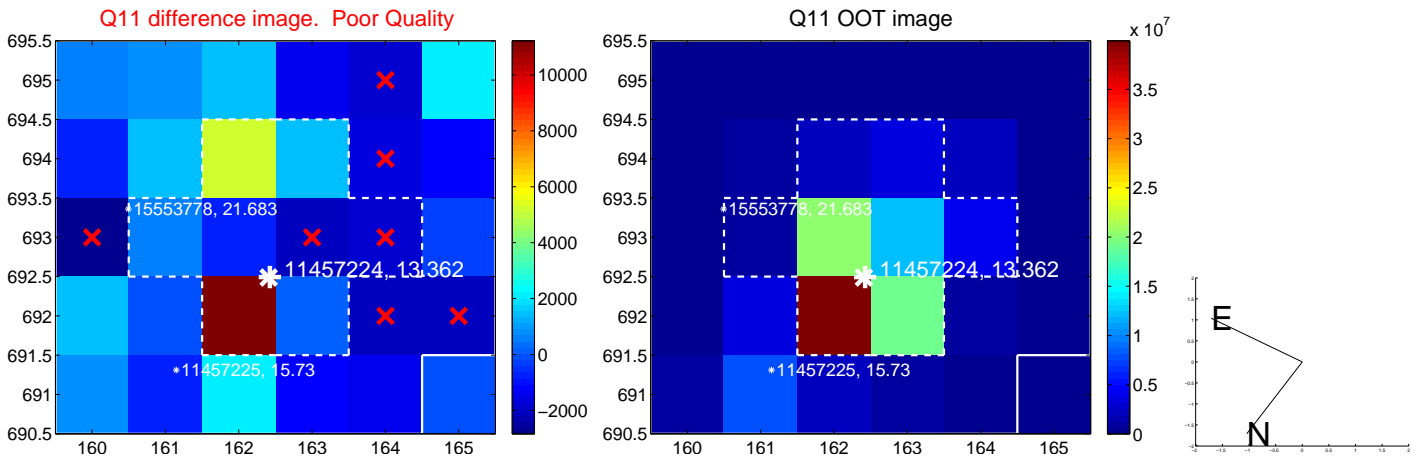
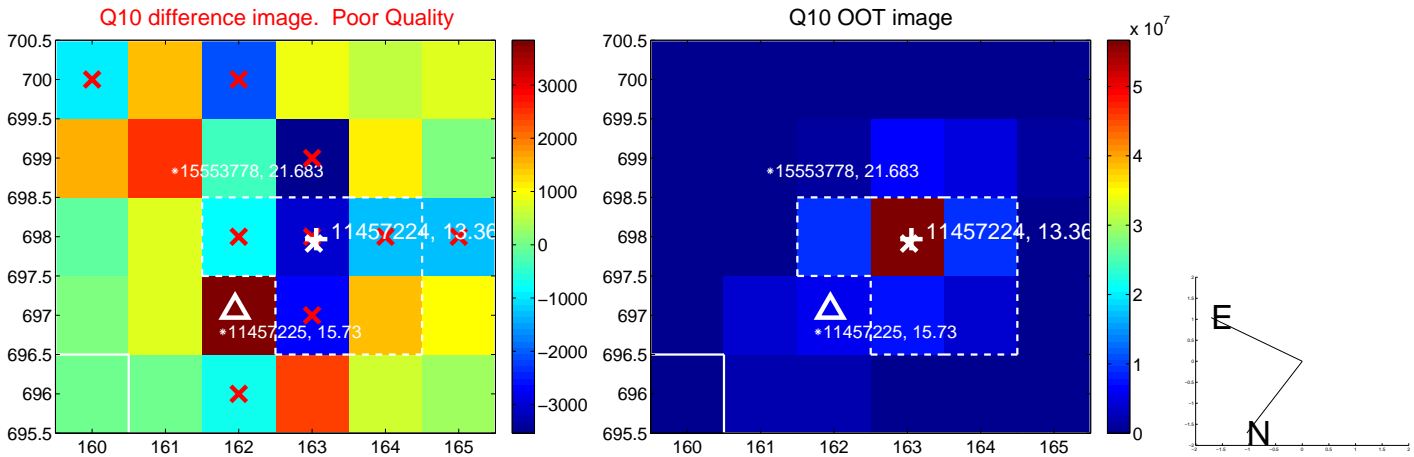
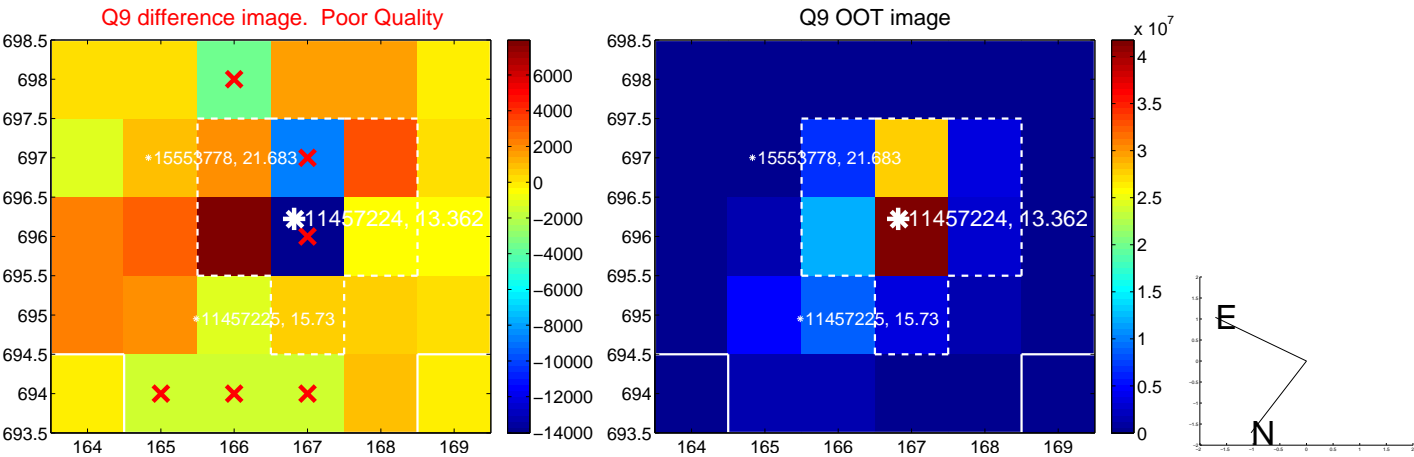
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



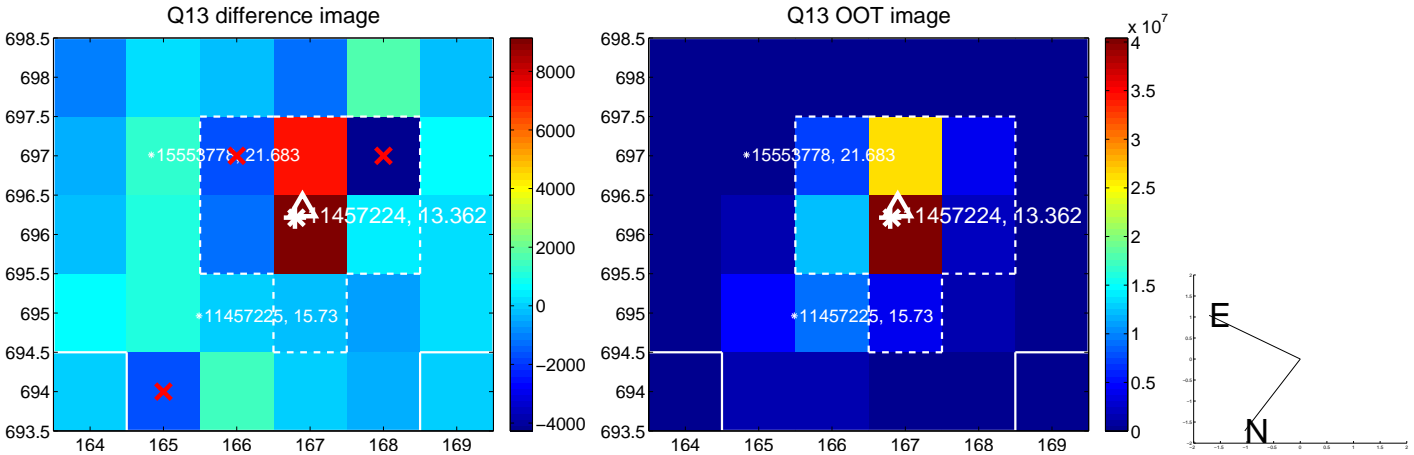
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



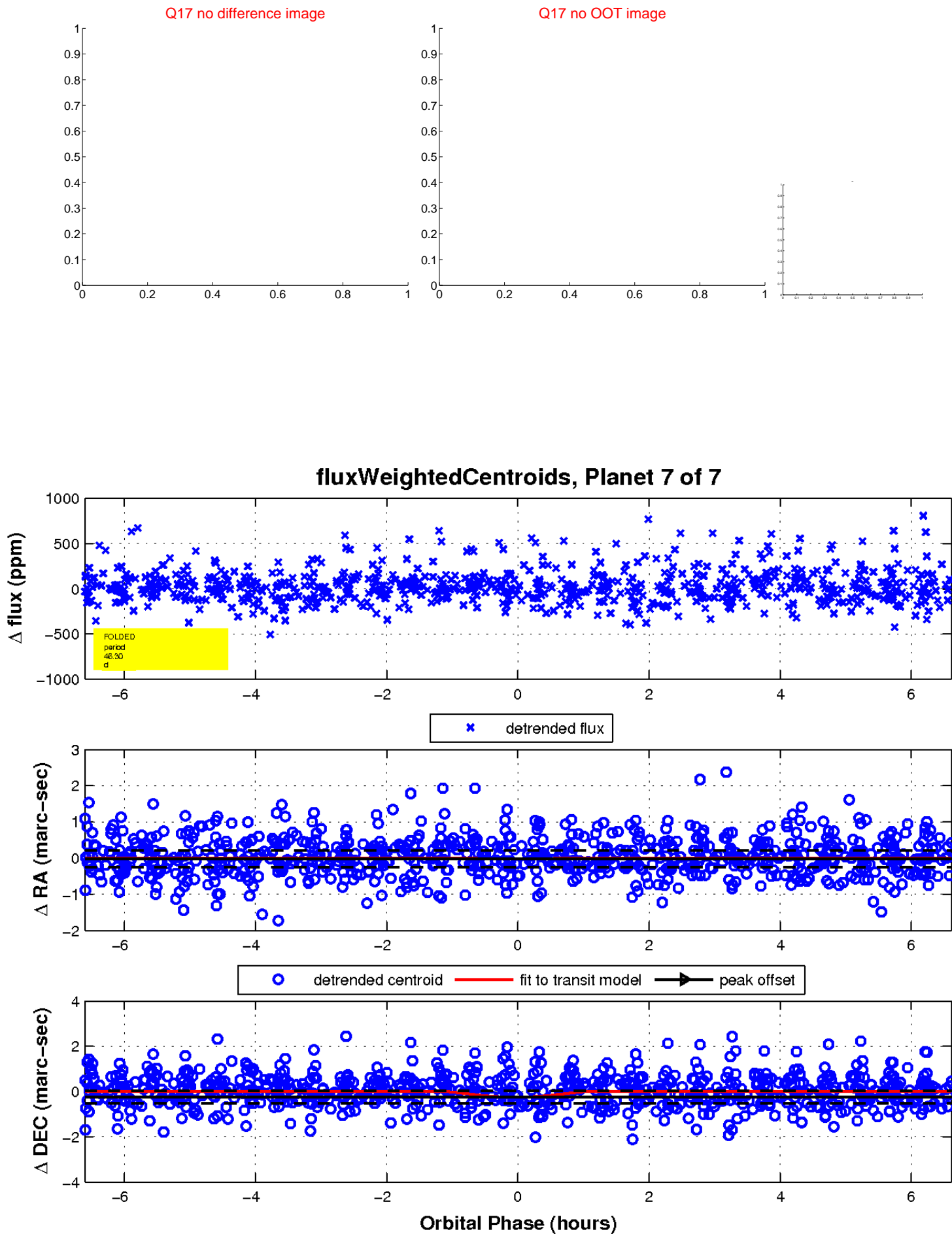
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

