

KIC 012554510

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})
012554510-01	OBS	No	0.684474	131.897259	11.9	4.247	9.7	4.5	1.64	6864	0.61	18556.08
012554510-02	OBS	No	124.197161	247.962983	407.4	9.009	8.6	6.2	1.64	6864	3.82	18.06

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012554510-01	OBS	FP	0.00	1	0	1	1	LPP_DV—HALO_GHOST—EPHEM_MATCH
012554510-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS

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.

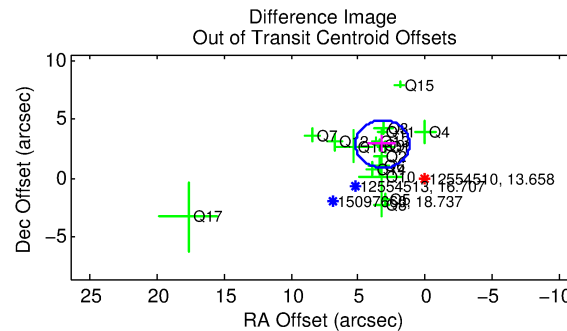
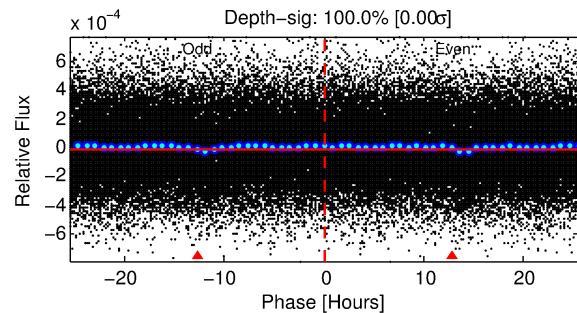
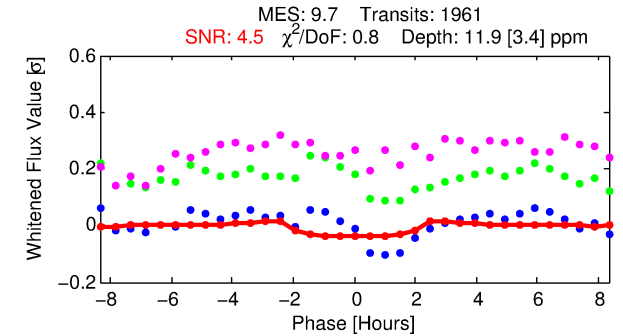
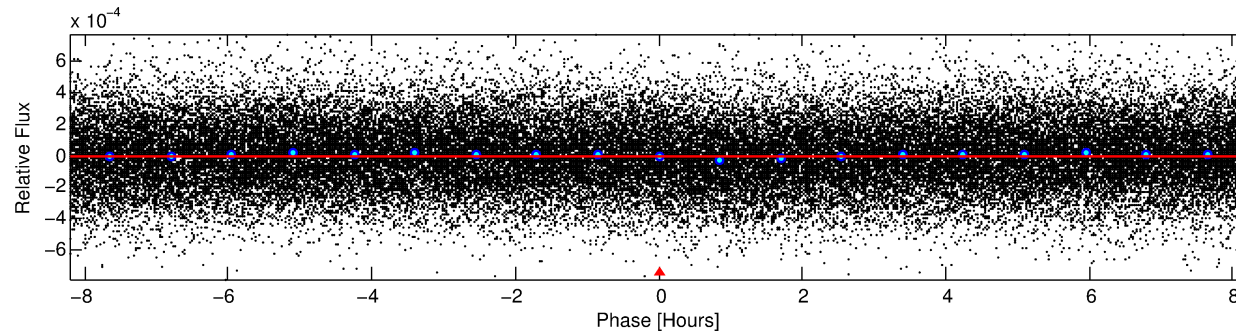
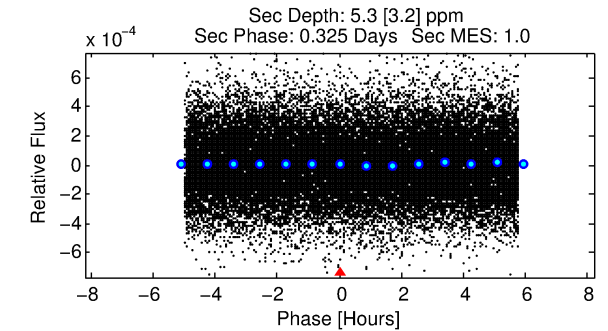
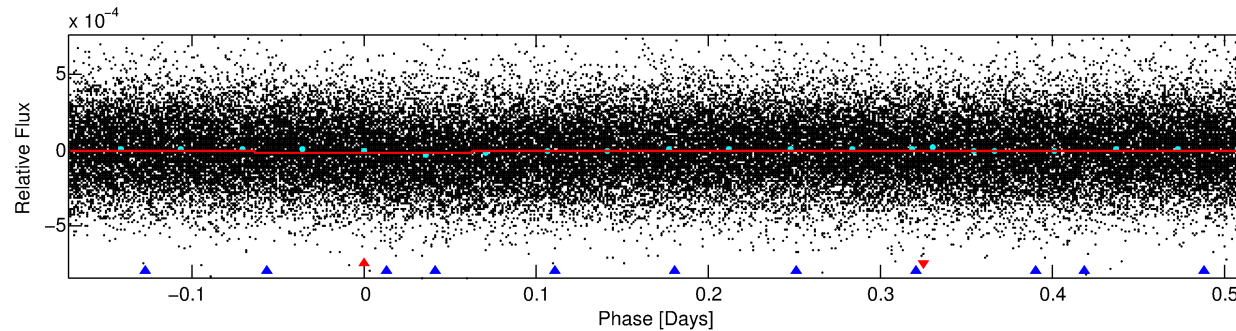
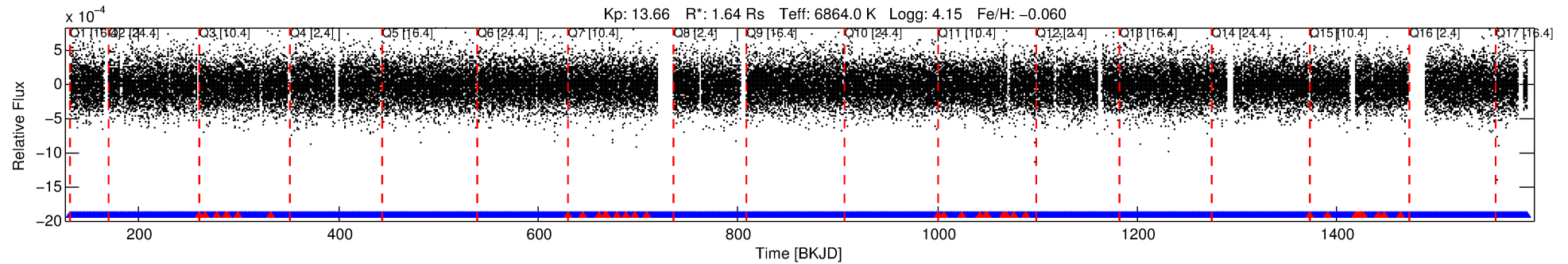
Ephemeris Match Information For 012554510-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	ΔRow	ΔCol	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
012554510-01	12554510	012554536-pri	12554536	1:1	45.3	-6	9	12.82	13.66	27892.00	Direct-PRF	0	3.42	1.58

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 12554510 Candidate: 1 of 2 Period: 0.684 d



DV Fit Results:

Period = 0.68447 [0.00002] d
Epoch = 131.8973 [0.0072] BKJD
Rp/R* = 0.0034 [0.0018]
a/R* = 1.21 [1.17]
b = 0.70 [2.23]
Seff = 18556.08 [7142.84]
Teq = 2976 [286] K
Rp = 0.61 [0.38] Re
a = 0.0170 [0.0043] AU
Ag = 2.30 [2.95] [0.44σ]
Teffp = 5668 [1756] K [1.51σ]

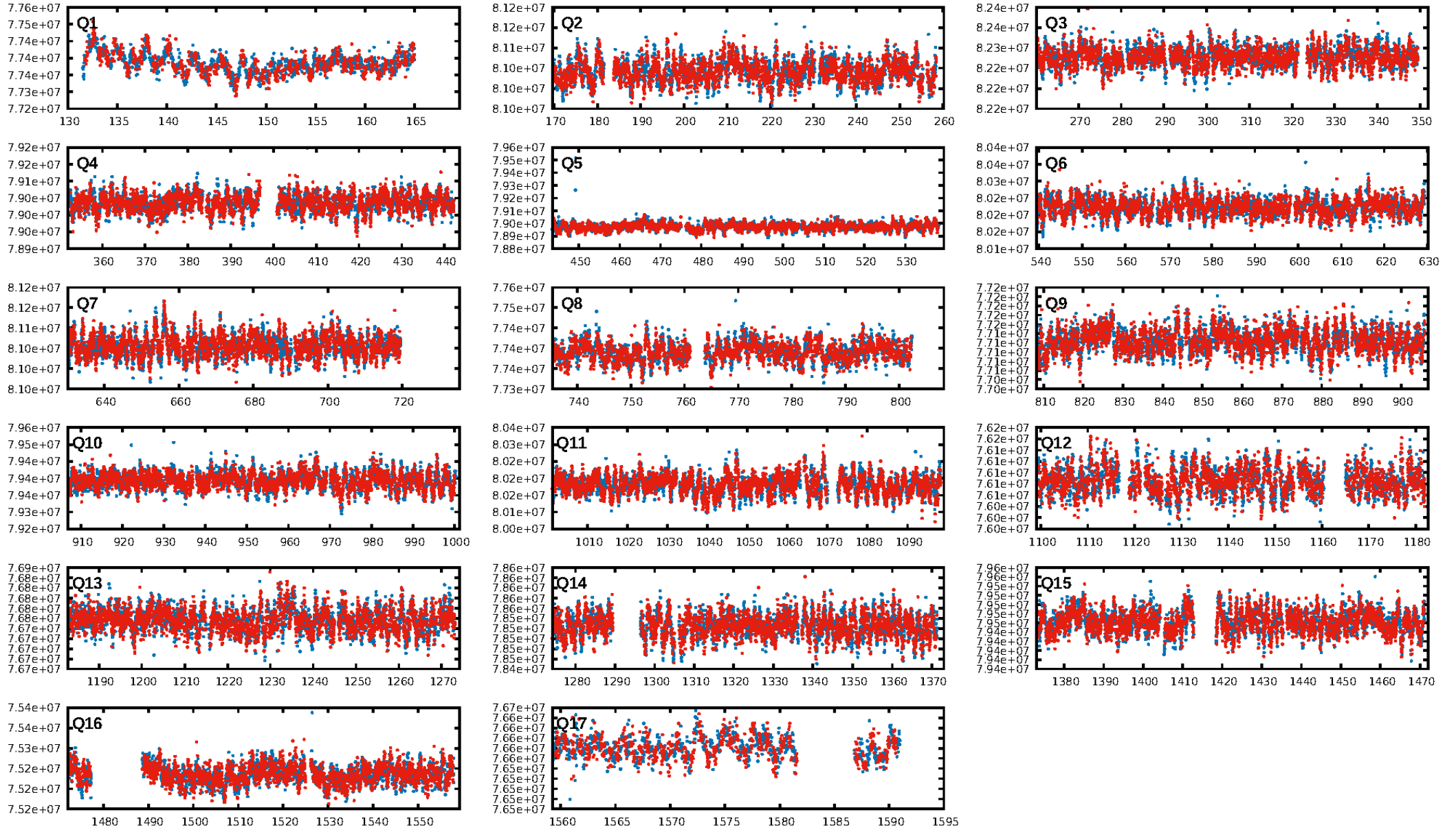
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [297.62σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.48e-18
RollingBand-fgt: 0.98 [1836/1873]
GhostDiagnostic-chr: 0.1632
Centroid-sig: 41.7%
Centroid-so: 2.295 arcsec [1.14σ]
OotOffset-rm: 4.322 arcsec [6.42σ]
KicOffset-rm: 4.348 arcsec [6.71σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 1.00 [17/17]

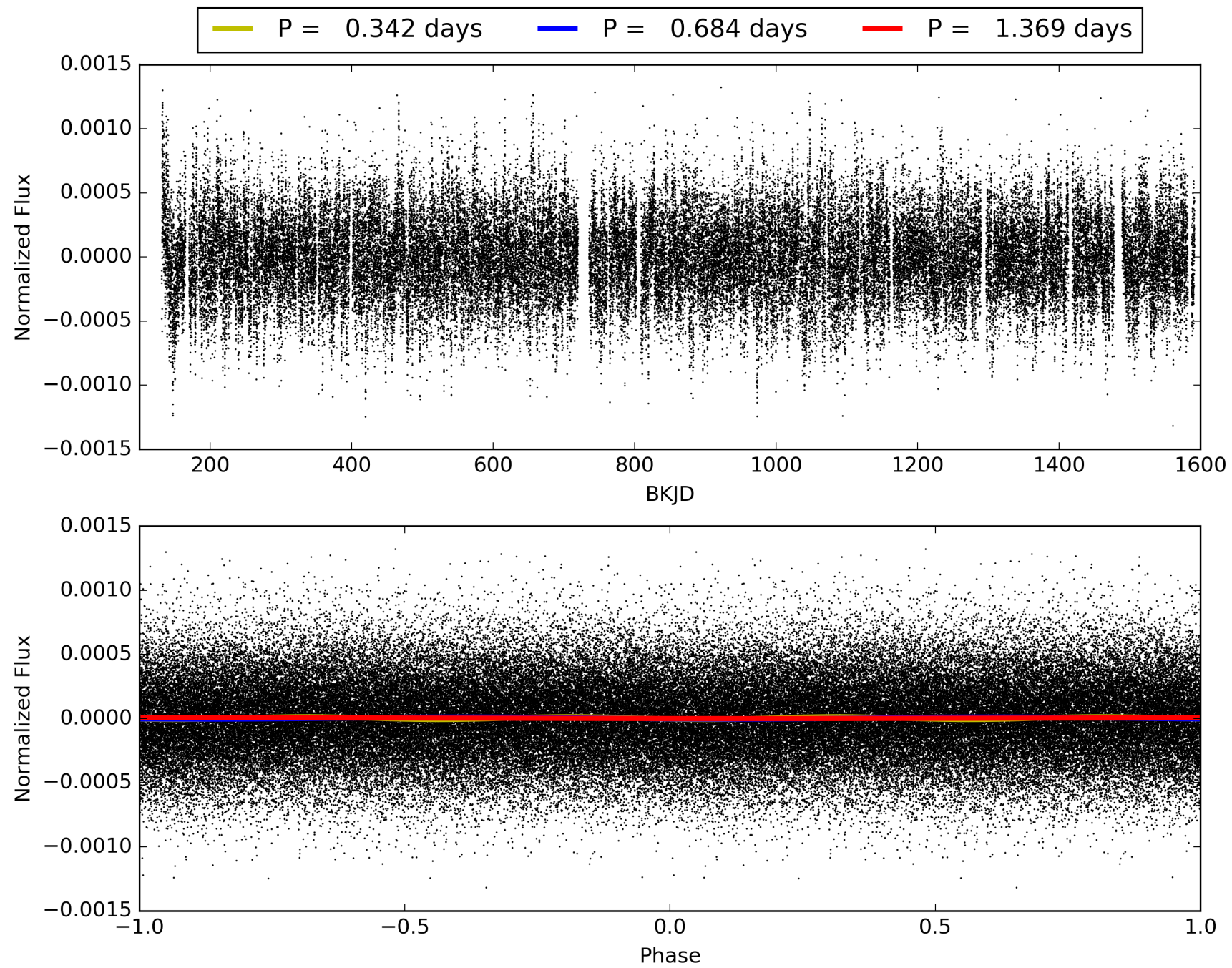
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:37:41 Z

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

TCE 012554510-01, PDC Light Curves

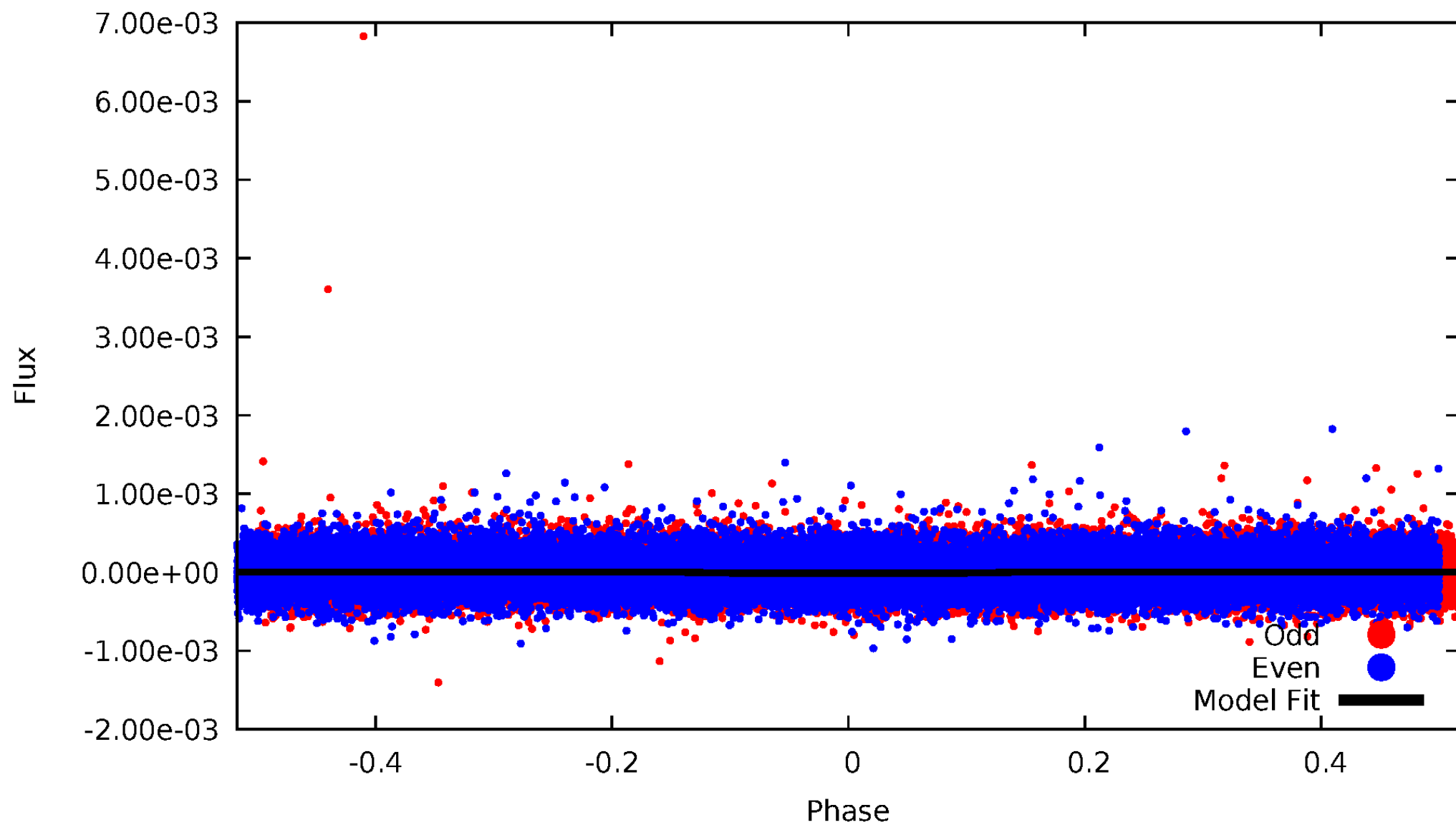


TCE 012554510-01



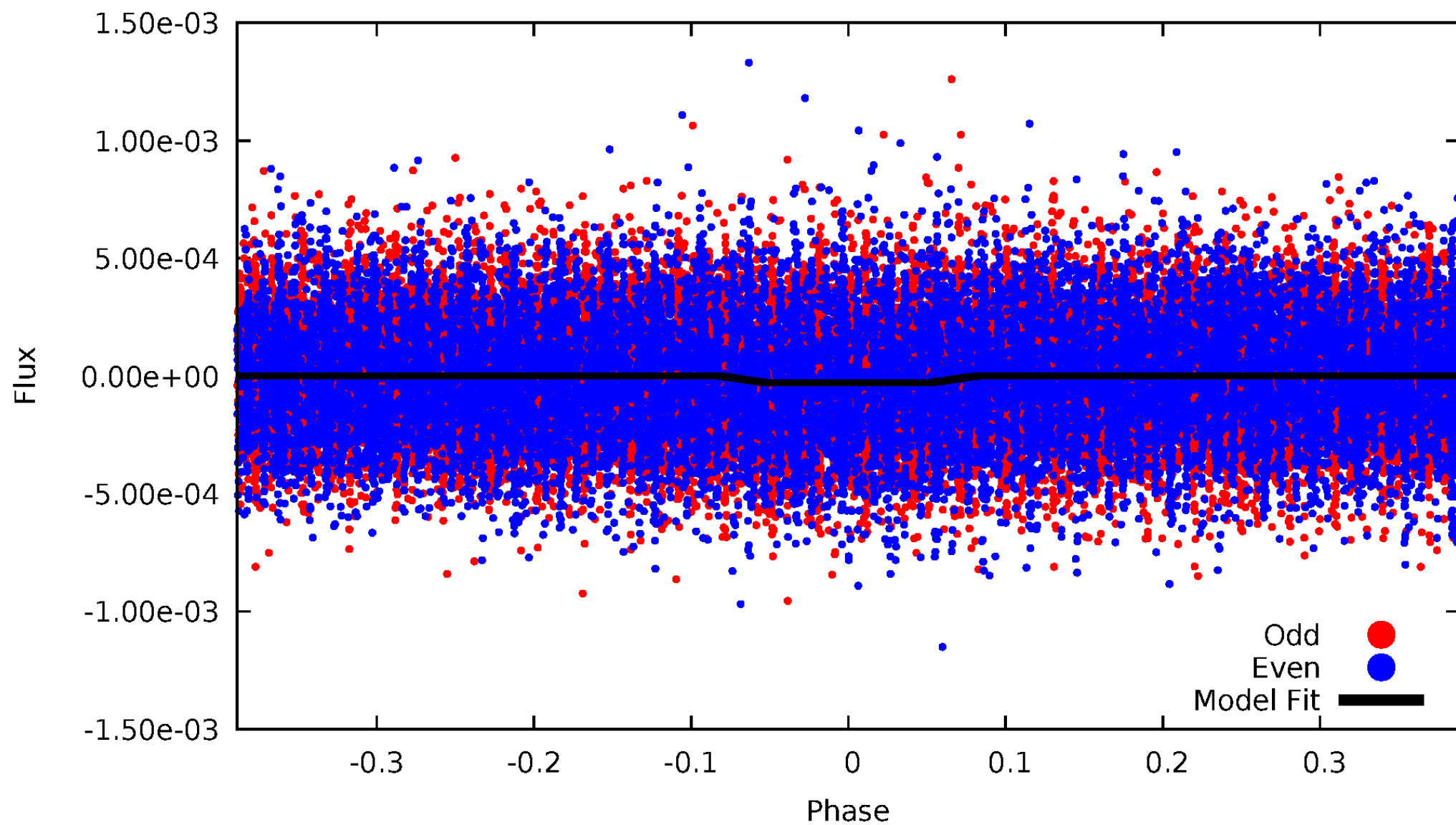
DV Odd/Even

TCE 012554510-01

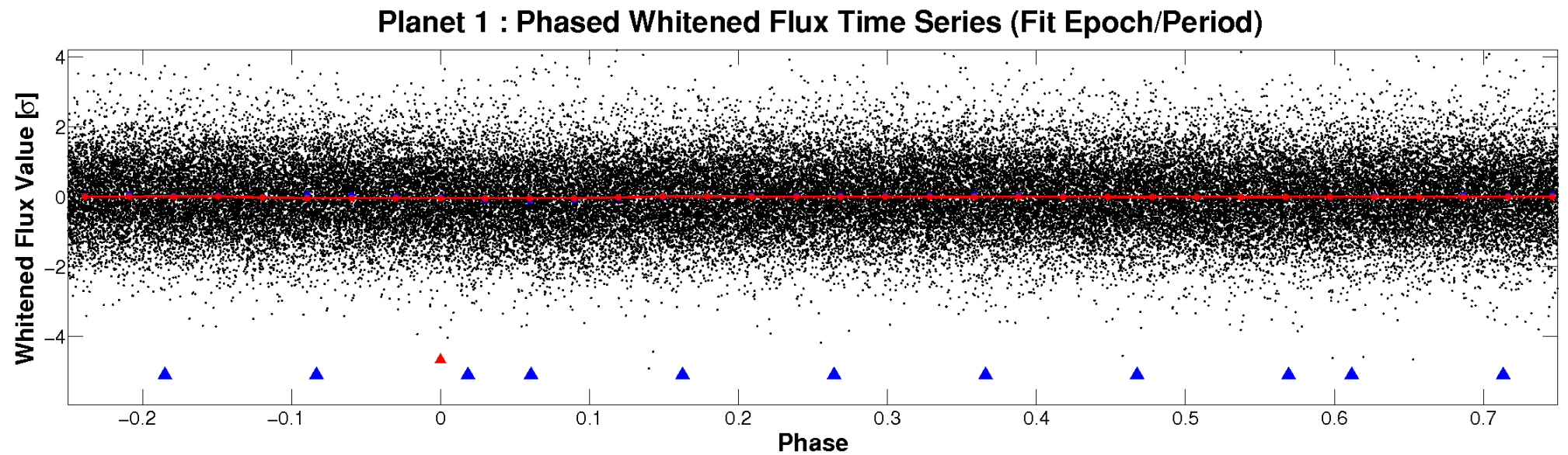
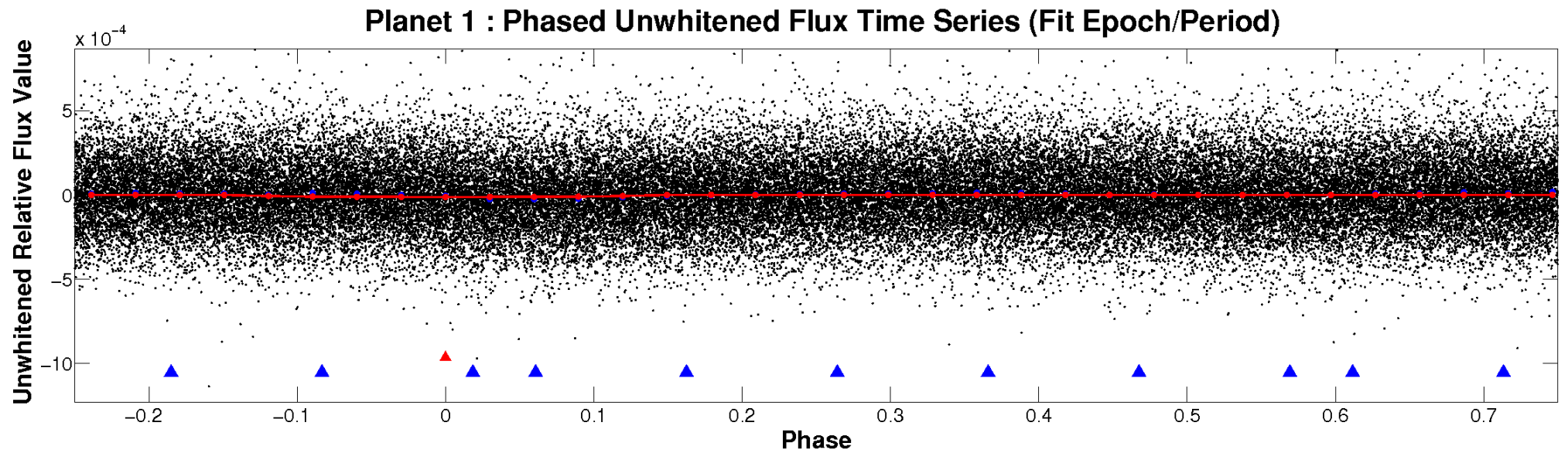


ALT Odd/Even

TCE 012554510-01

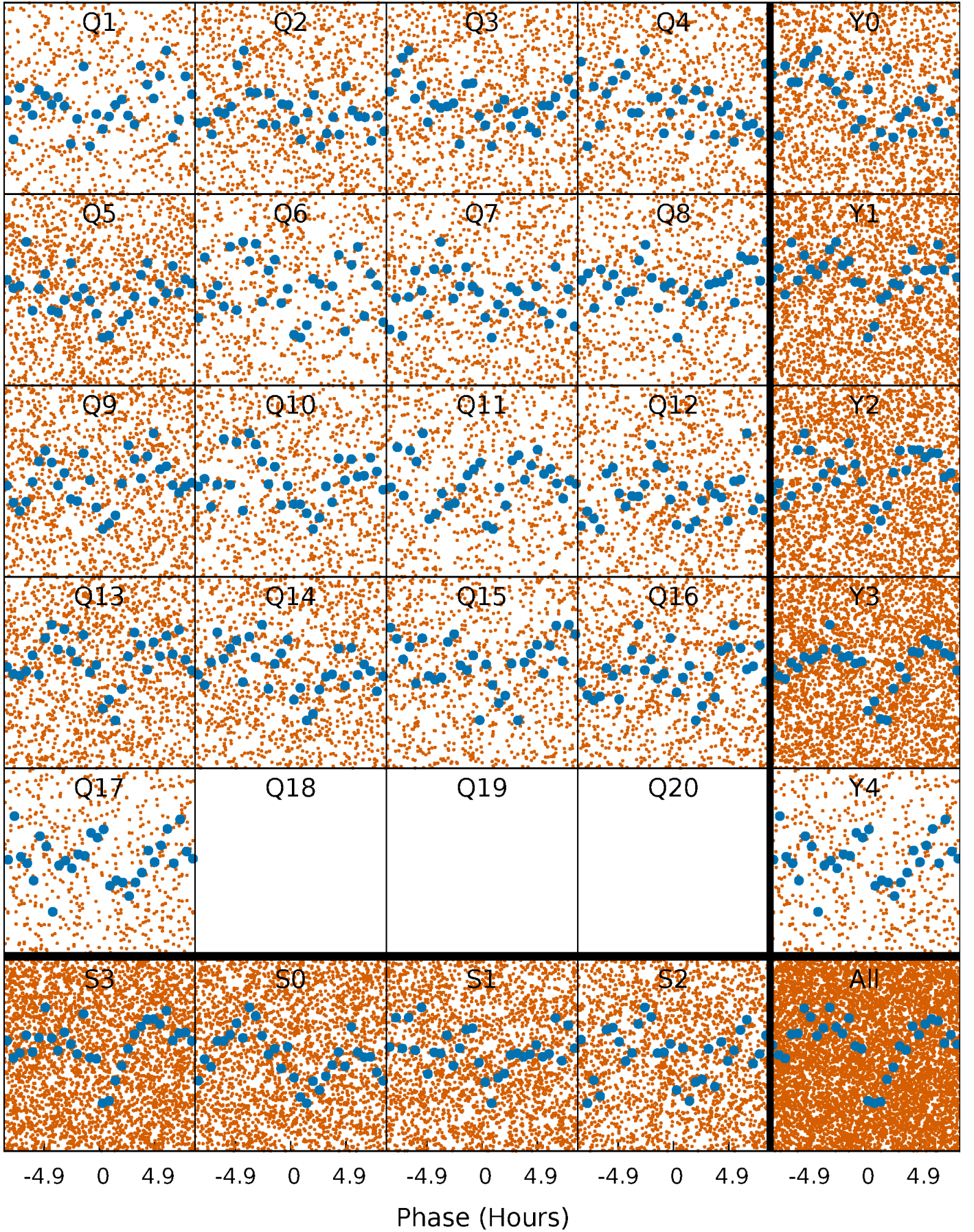


Non-Whitened Vs. Whitened Light Curve



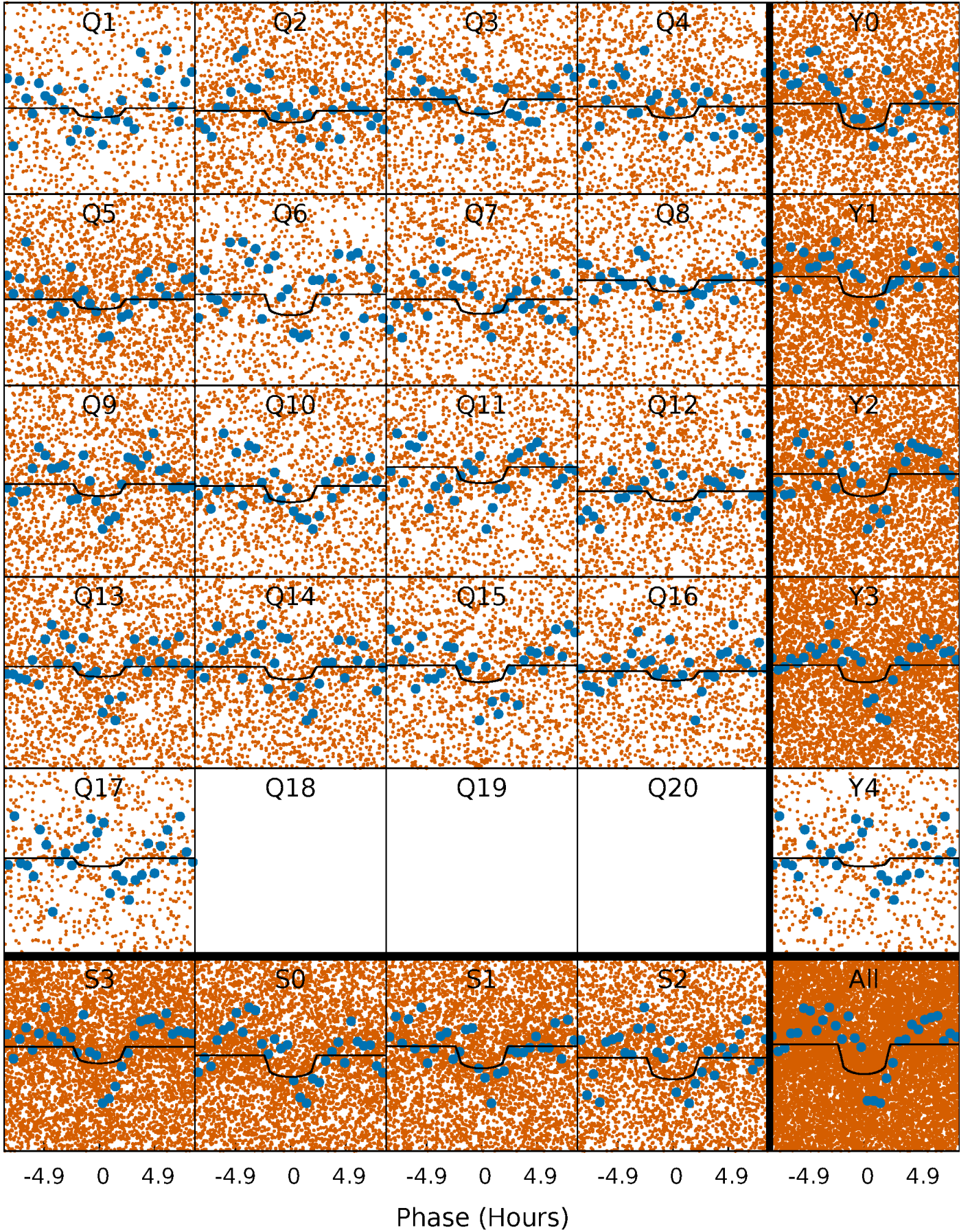
PDC Quarter-Phased Transit Curves

TCE 012554510-01 P= 0.684474 Days $T_0=131.897259$ (BKJD)



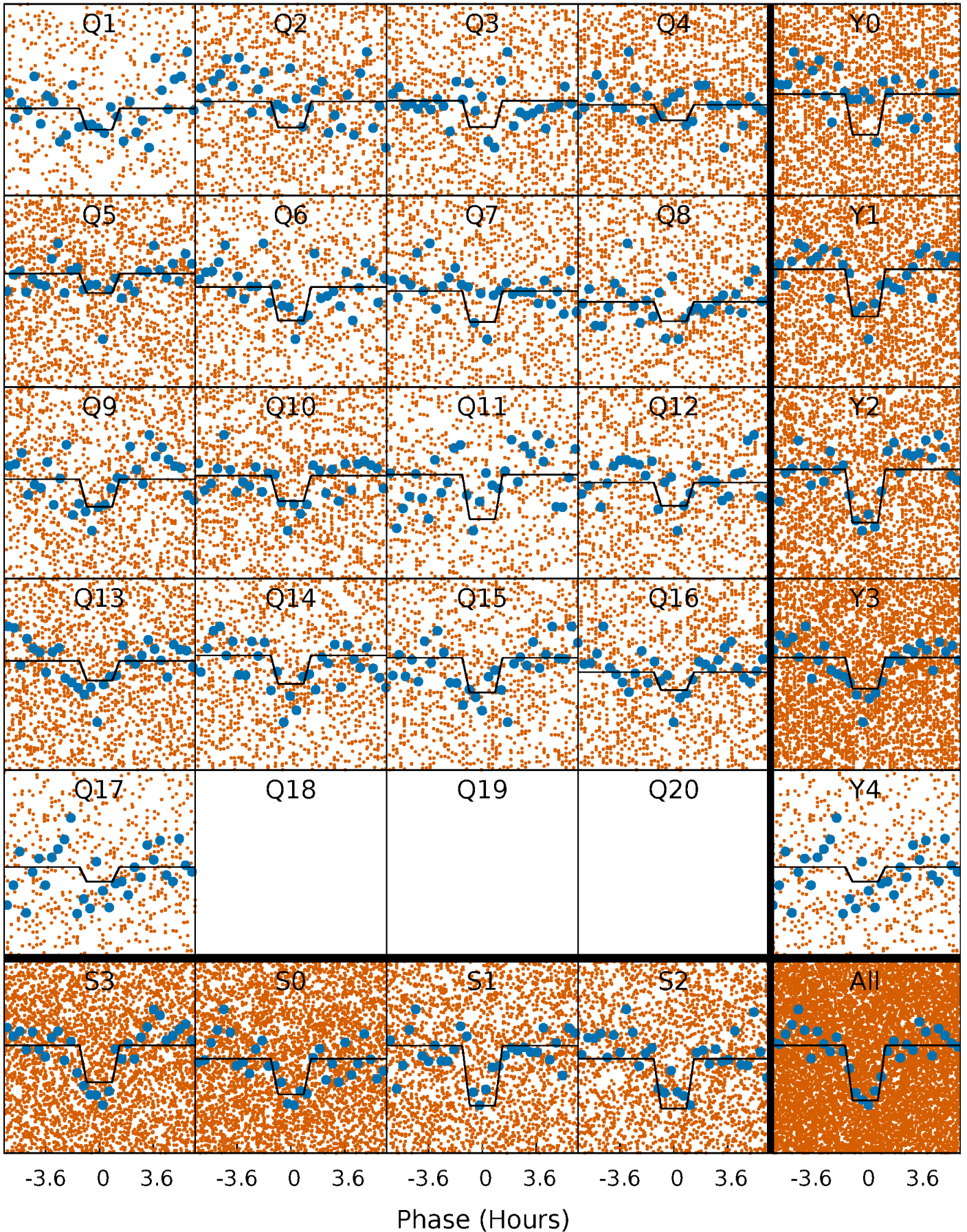
DV Quarter-Phased Transit Curves

TCE 012554510-01 P= 0.684474 Days $T_0=131.897259$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

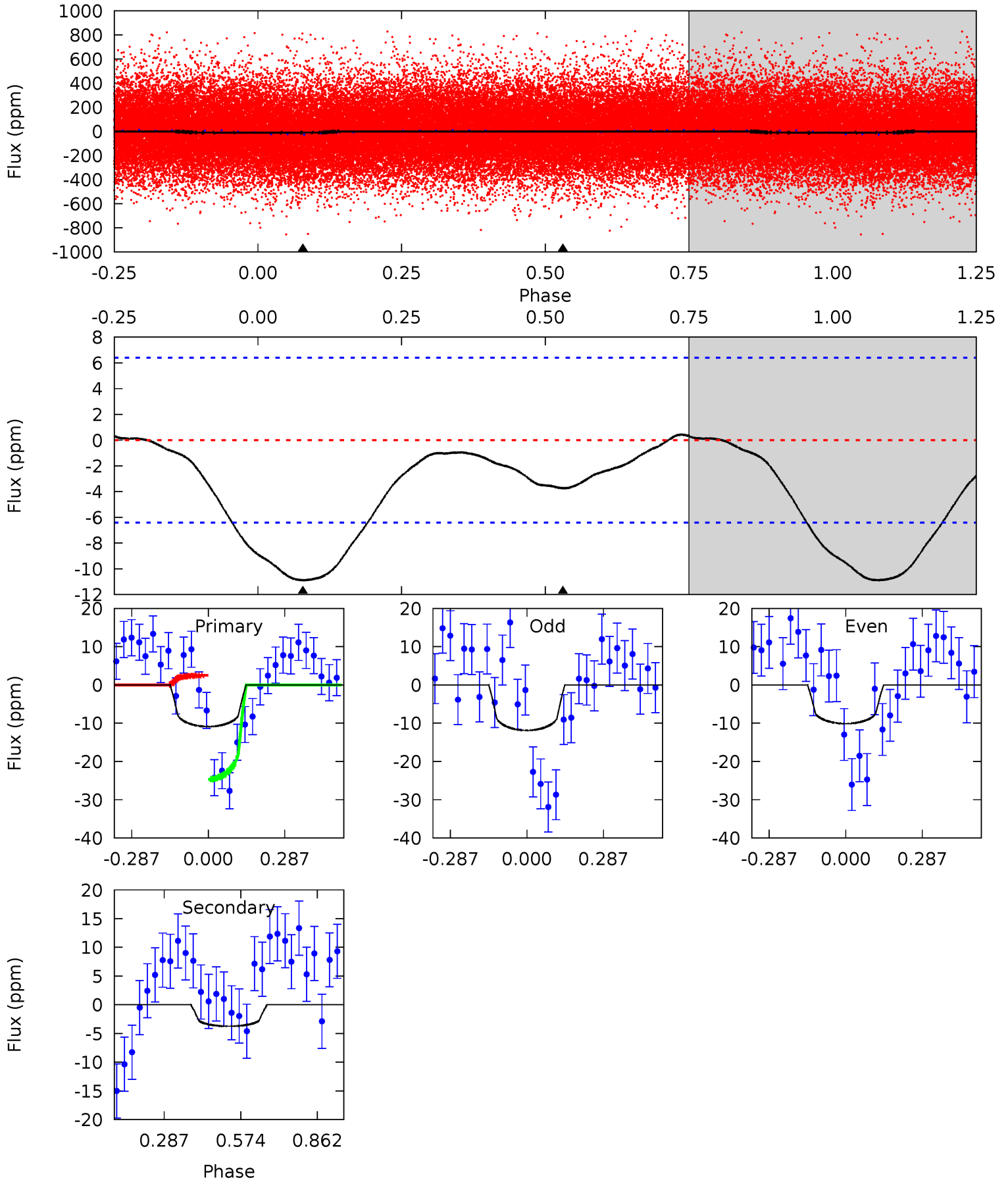
TCE 012554510-01 P= 0.684513 Days $T_0=131.895932$ (BKJD)



DV Model-Shift Uniqueness Test

012554510-01, P = 0.684474 Days, E = 131.212785 Days

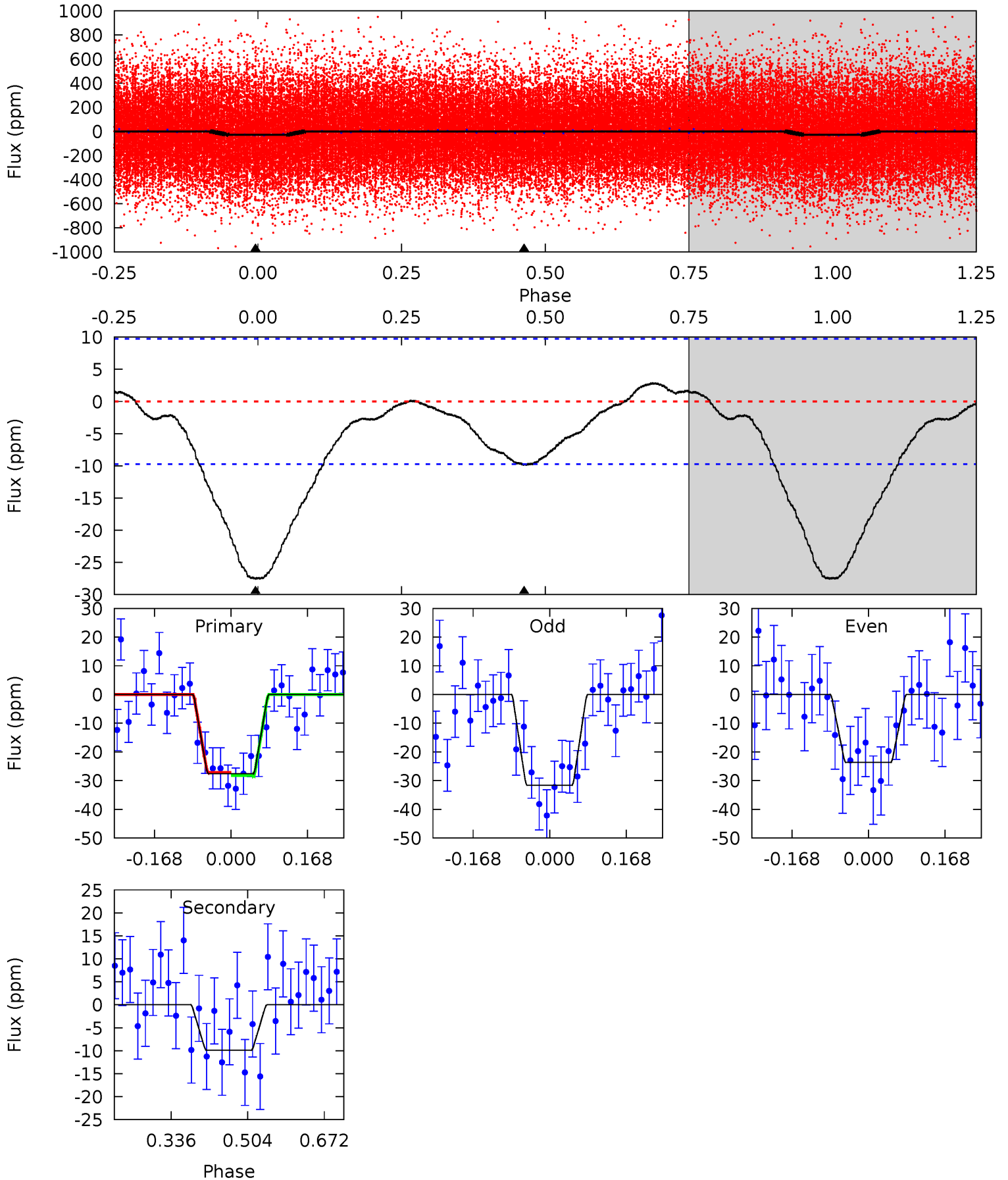
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.38	2.53	0	0	4.34	1.06	0.26	7.38	7.38	2.53	2.53	0.60	0.91	0.04	7.45



Alt Model-Shift Uniqueness Test

012554510-01, P = 0.684513 Days, E = 131.211419 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	4.51	0	0	4.45	1.38	0.84	12.6	12.6	4.51	4.51	1.83	0.94	0.09	0.25



Stellar Parameters For KIC 012554510

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6864^{+165}_{-259}	$4.153^{+0.136}_{-0.187}$	$-0.060^{+0.250}_{-0.350}$	$1.643^{+0.511}_{-0.341}$	$1.408^{+0.196}_{-0.239}$	$0.447^{+0.336}_{-0.220}$
	+2%/-4%	+3%/-5%	+417%/-583%	+31%/-21%	+14%/-17%	+75%/-49%
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 012554510-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-4 ± 1	$0.64^{+0.31}_{-0.35}$	4158^{+328}_{-262}	4798^{+2639}_{-1100}	$1.383^{+5.229}_{-0.818}$
Alt.	-10 ± 2	$0.97^{+0.40}_{-0.32}$	4176^{+327}_{-274}	4990^{+1183}_{-840}	$1.618^{+1.959}_{-0.849}$

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 $A_{obs} \gg 1.0$

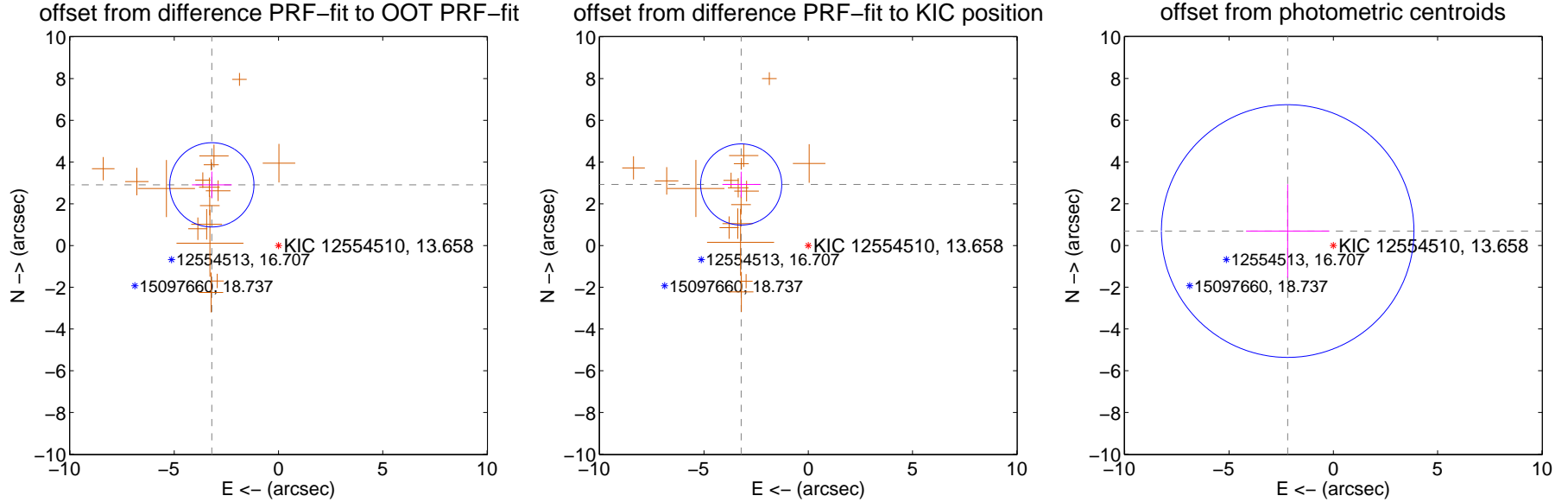
DV Centroid Data

Supplemental centroid analysis for 012554510-01. Kepler magnitude: 13.66. Transit SNR 4.47

There are 0 quarters with good PRF difference image offsets

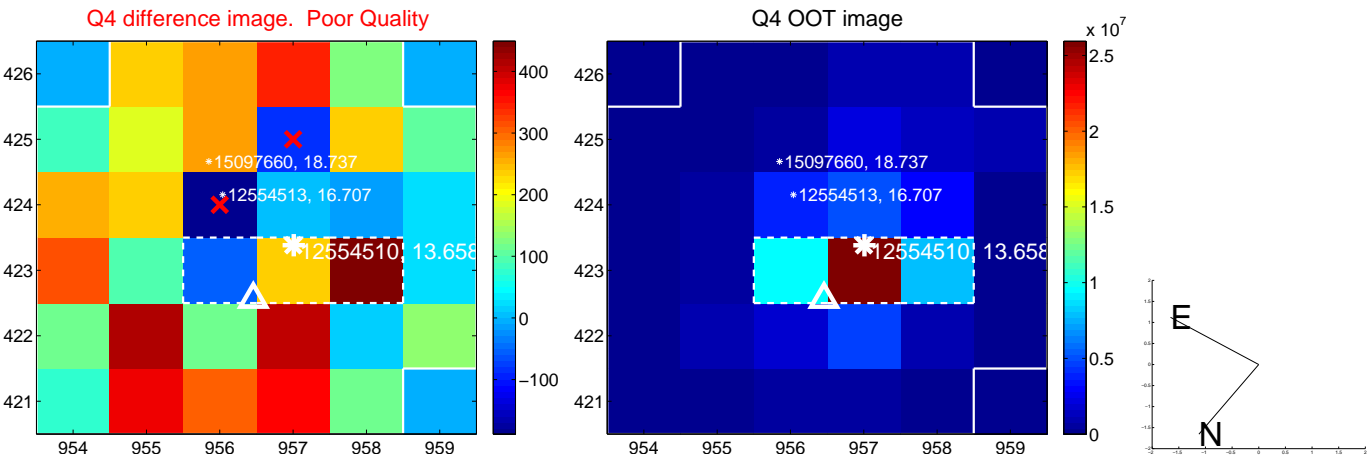
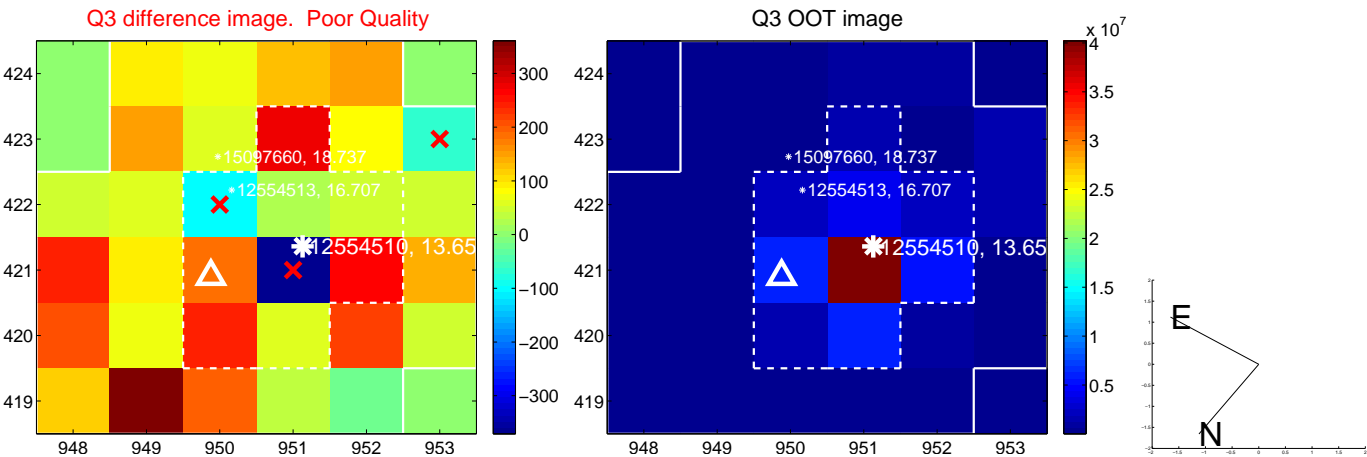
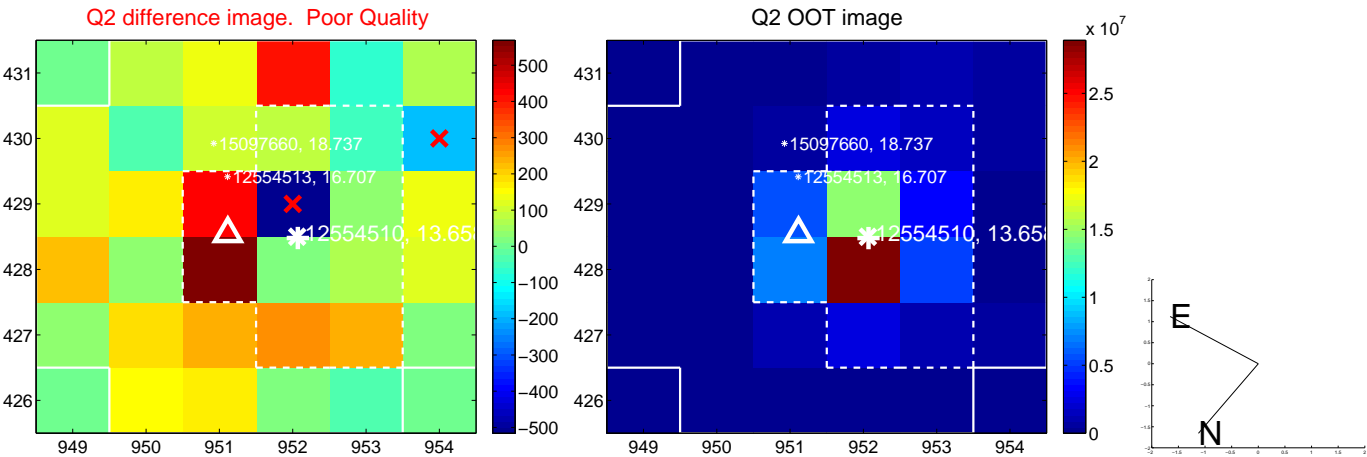
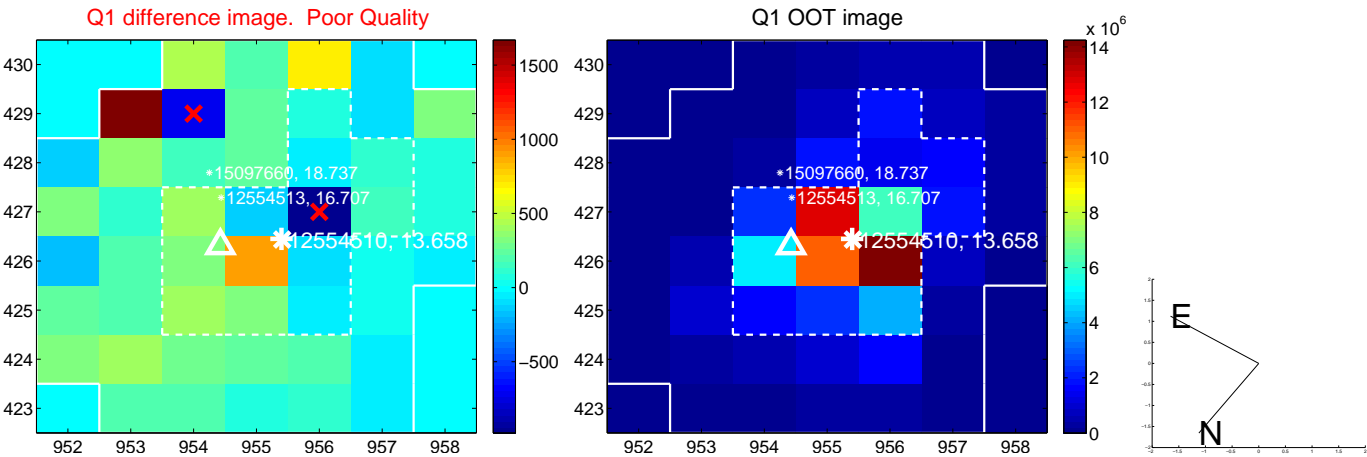
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.322 ± 0.673	6.42	3.196 ± 0.953	2.909 ± 0.637
PRF-fit source offset from KIC position	4.348 ± 0.648	6.71	3.216 ± 0.904	2.926 ± 0.613
photometric centroid source offset	2.29 ± 2.02	1.14	2.19 ± 1.99	0.69 ± 2.24

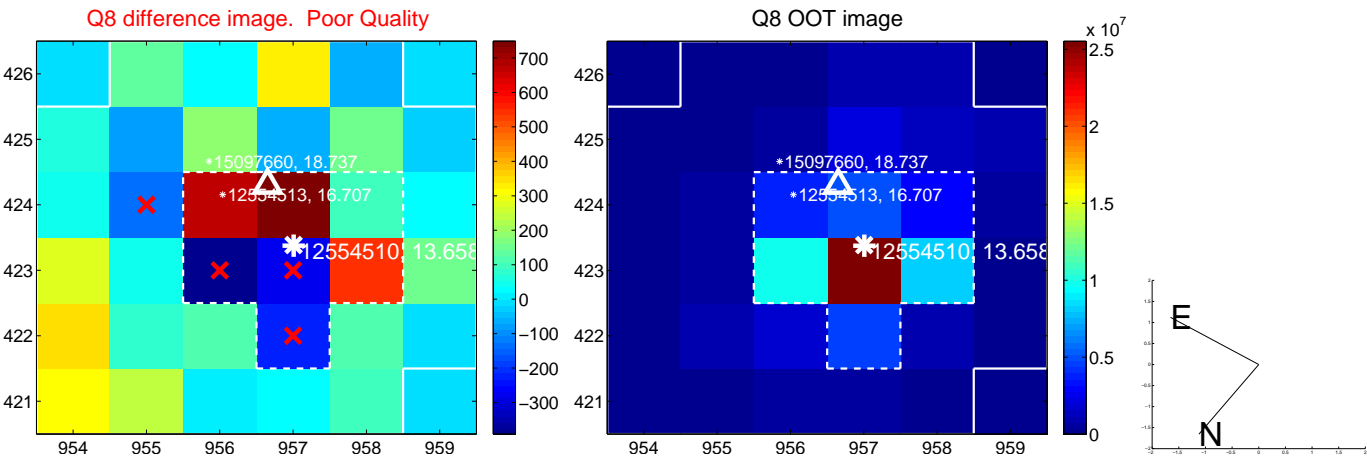
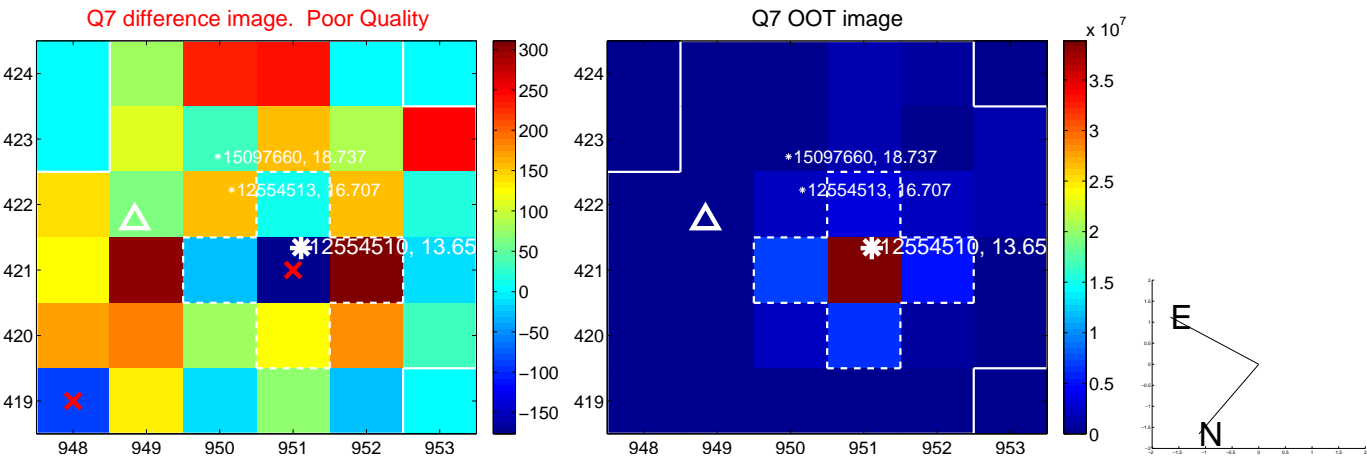
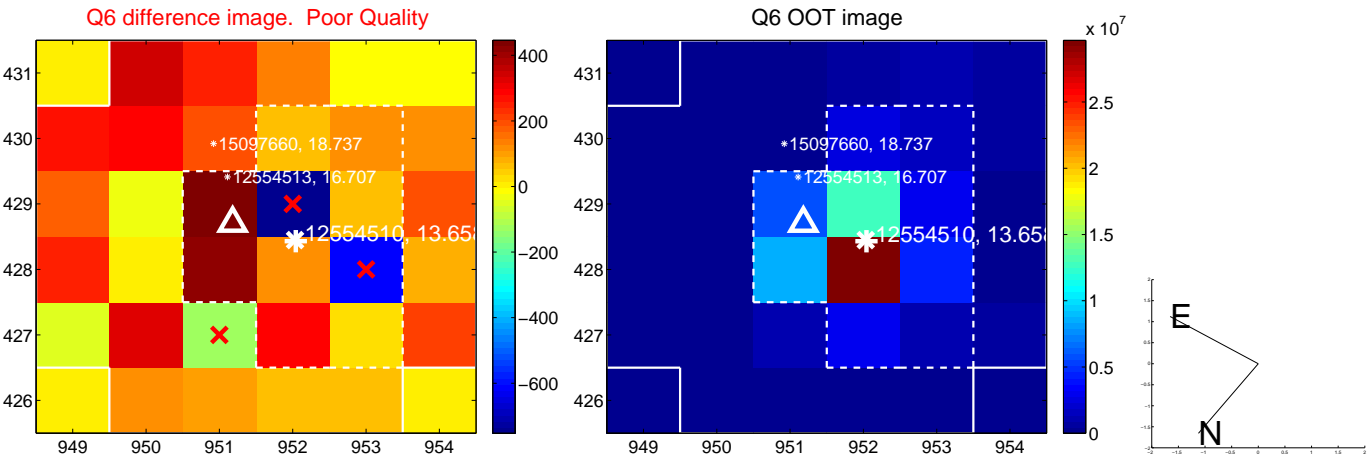
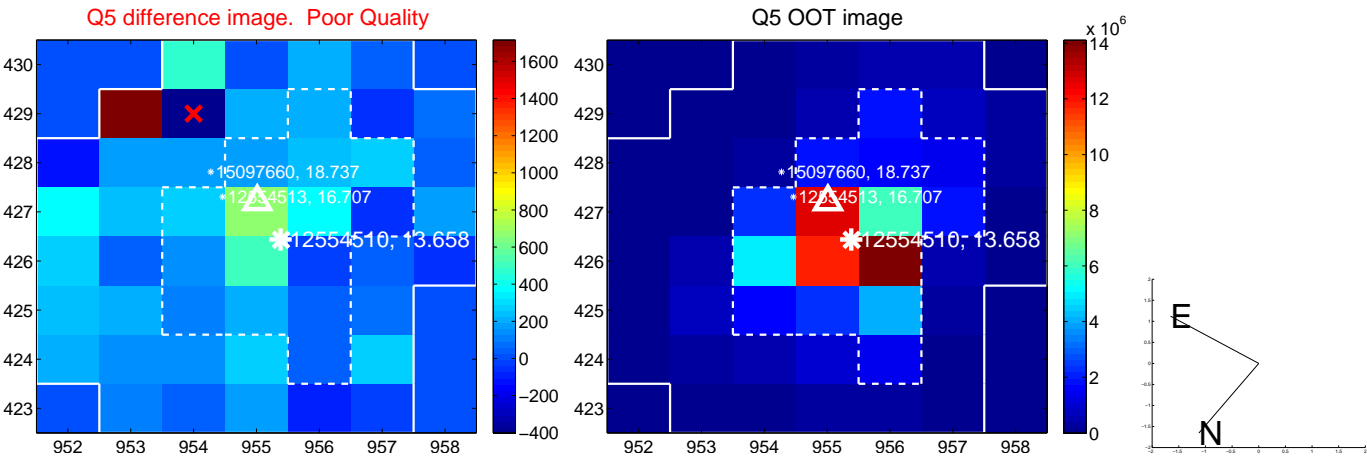


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

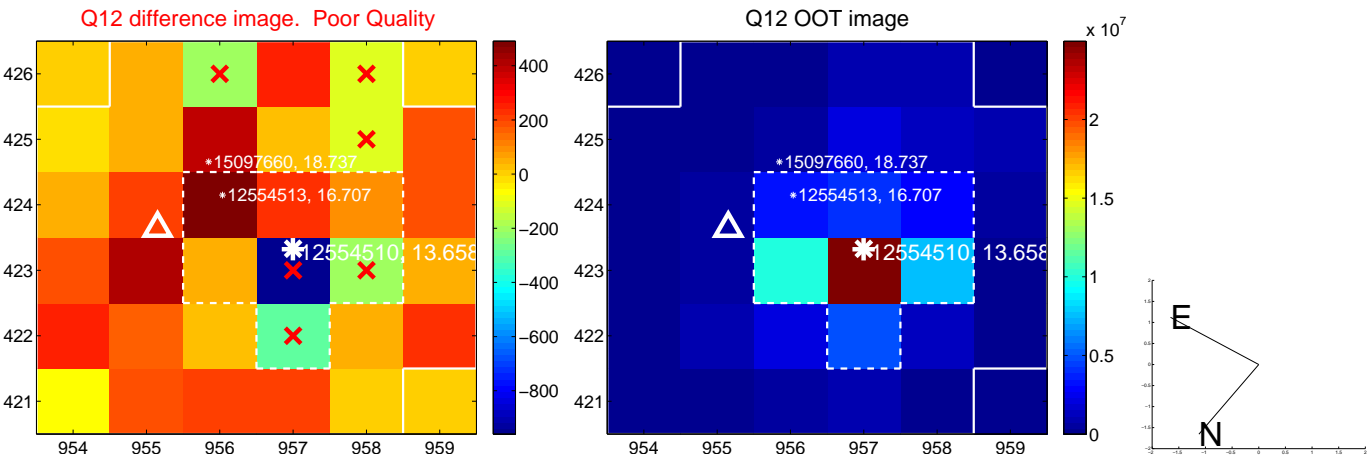
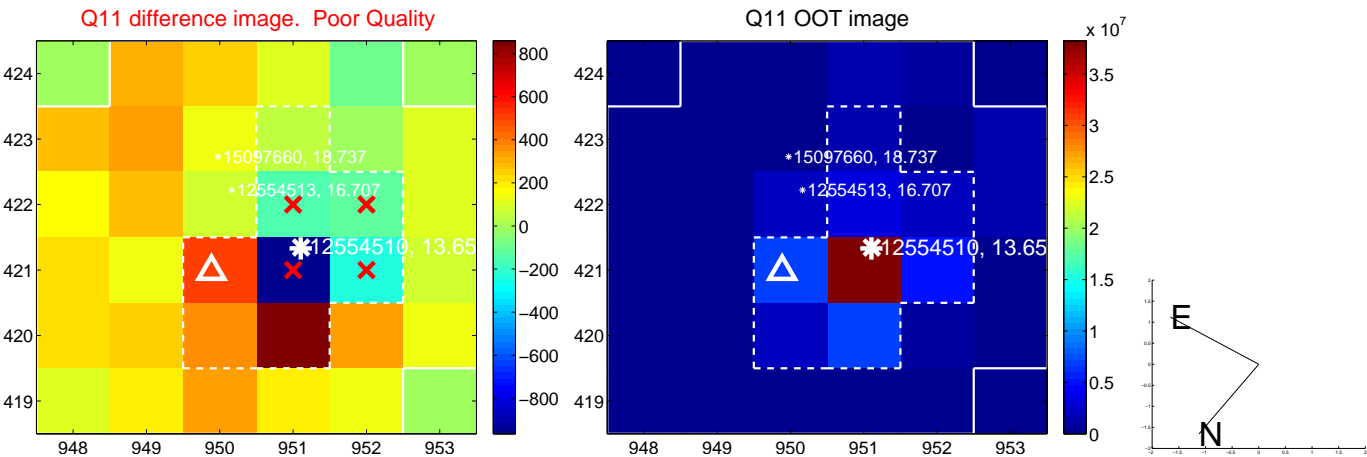
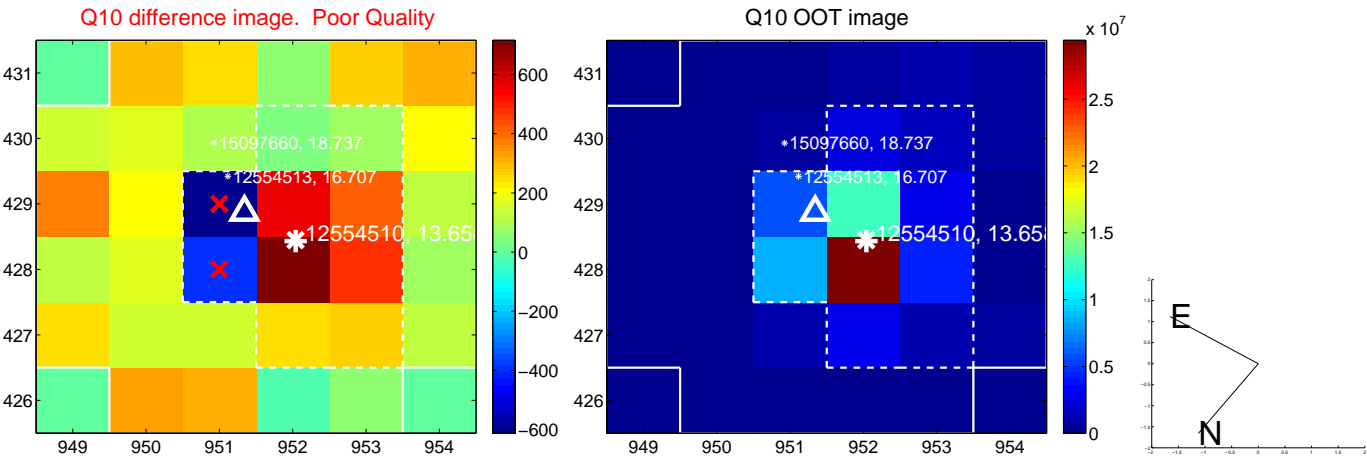
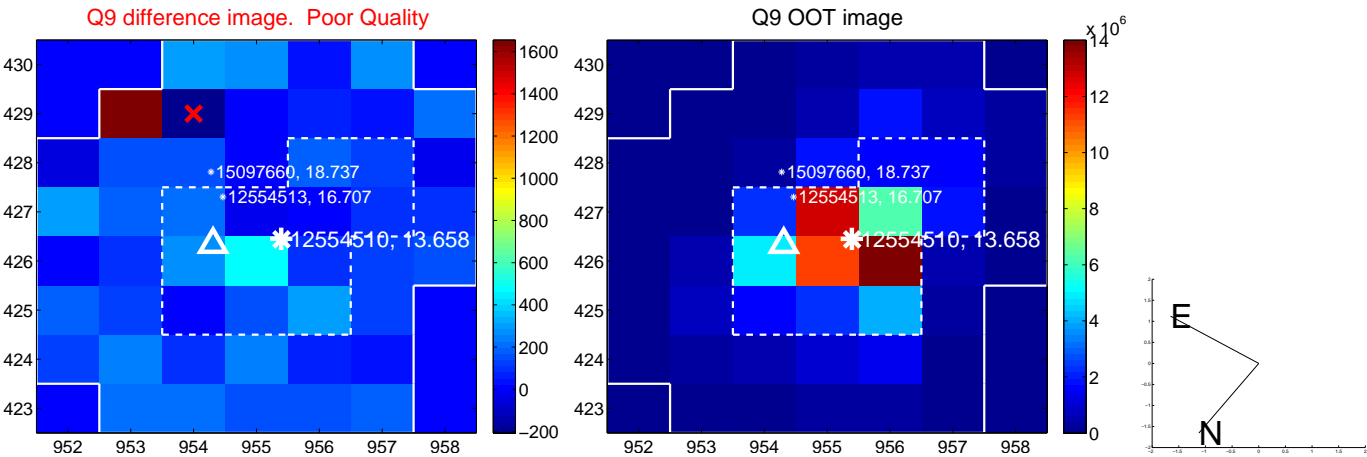
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



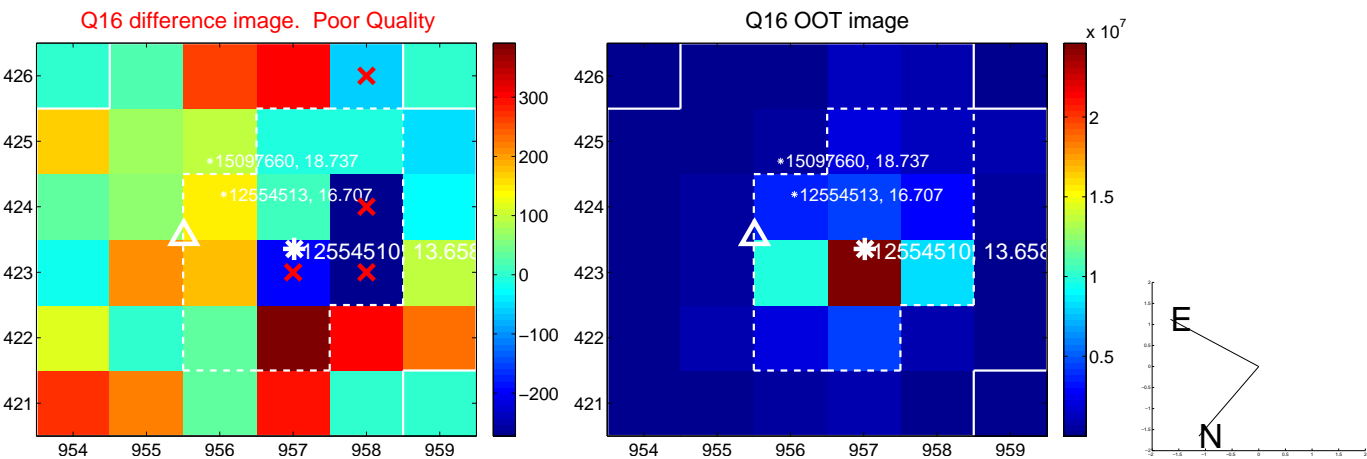
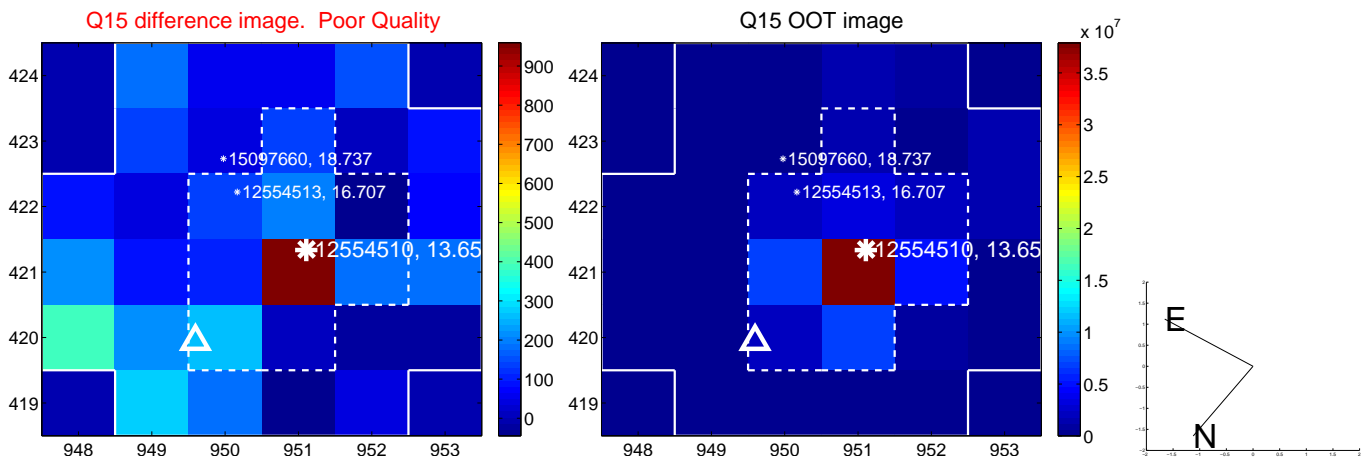
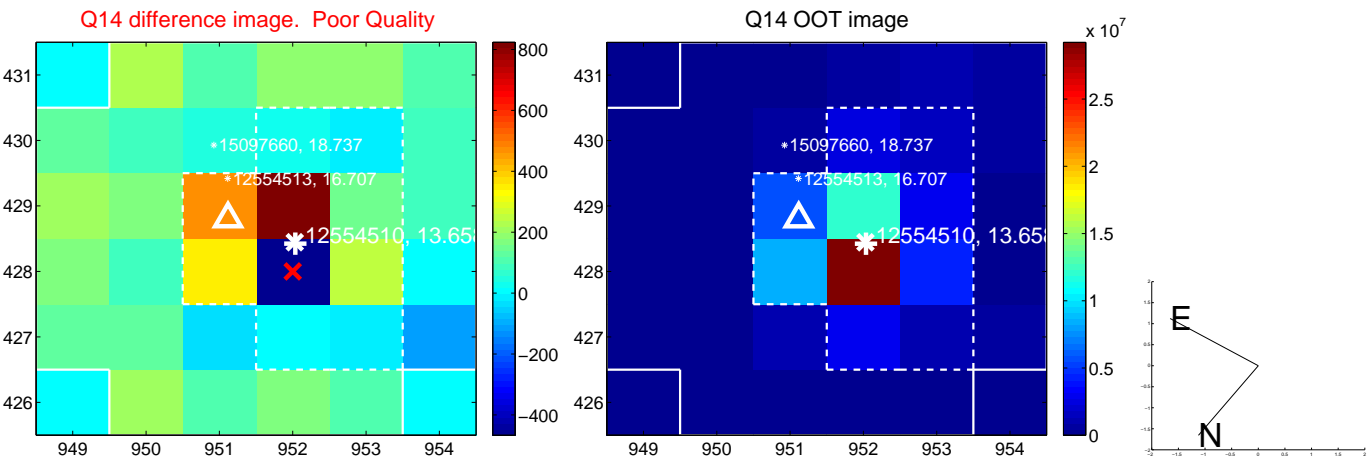
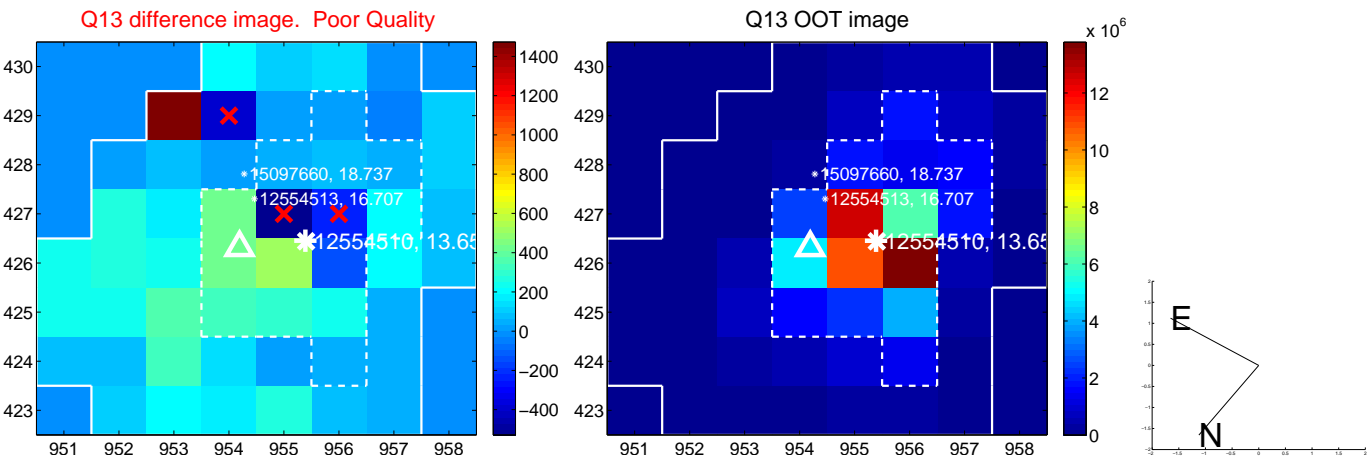
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



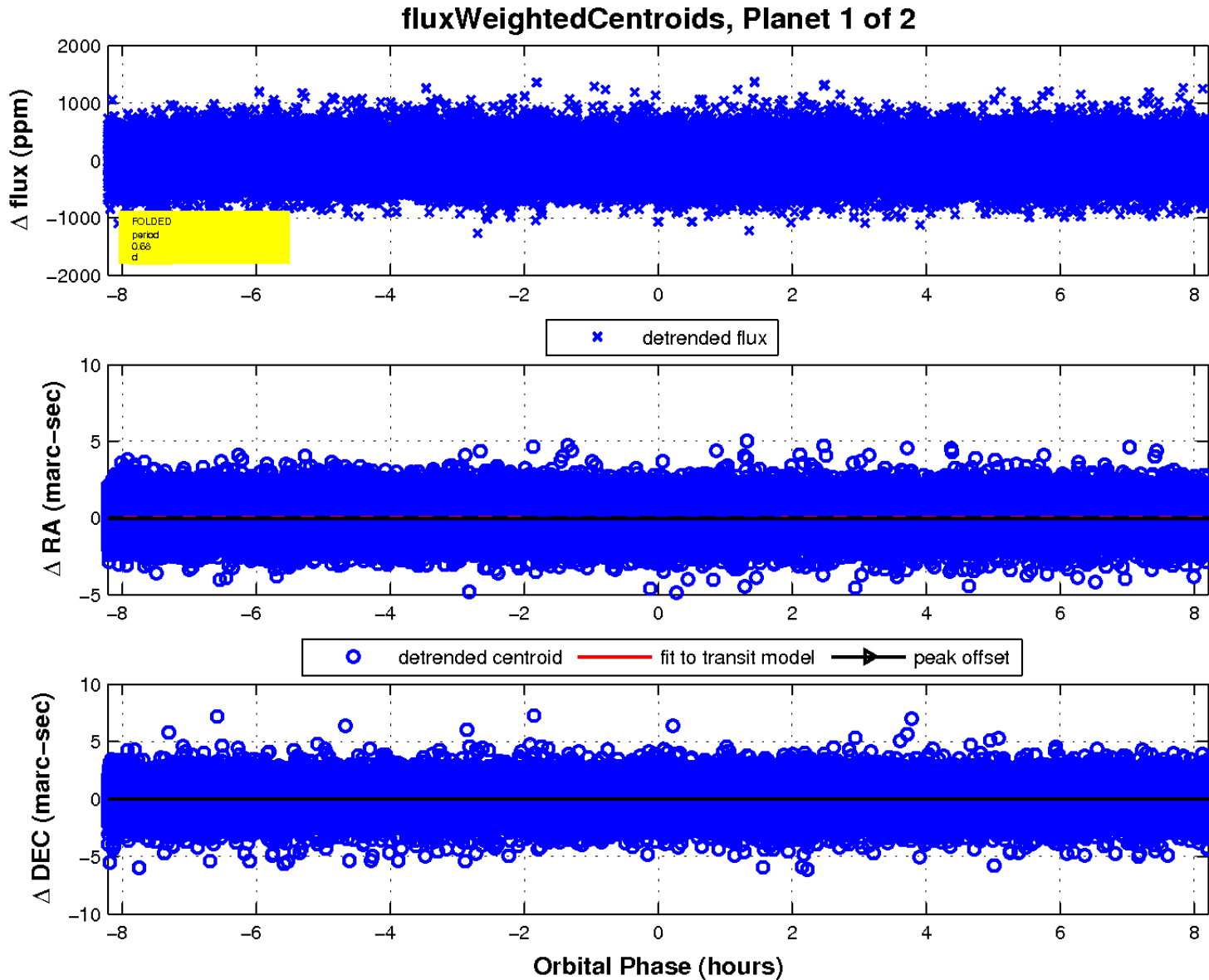
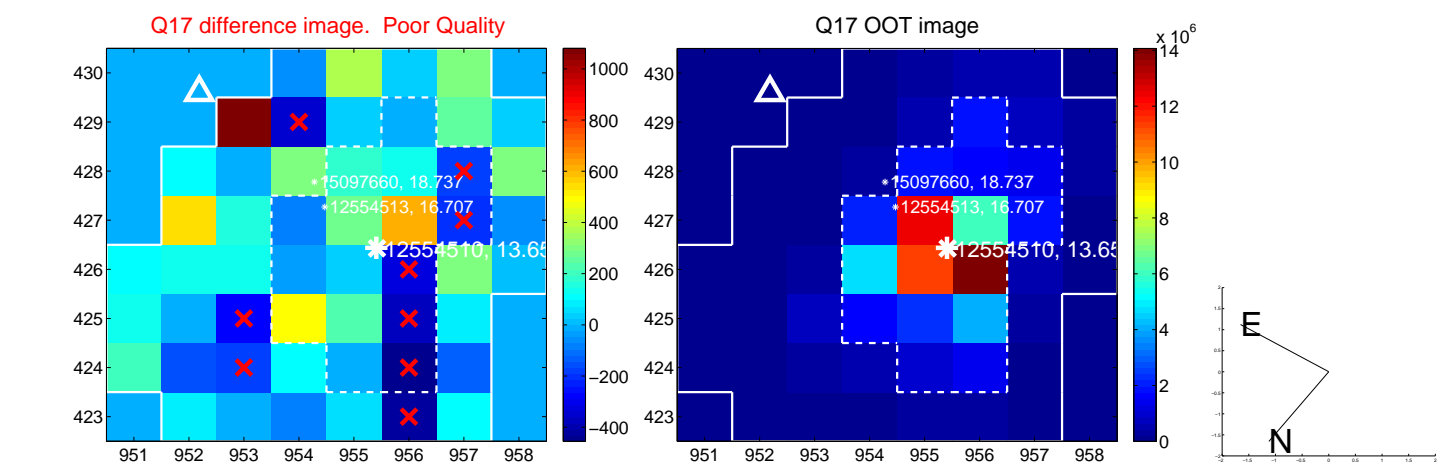
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

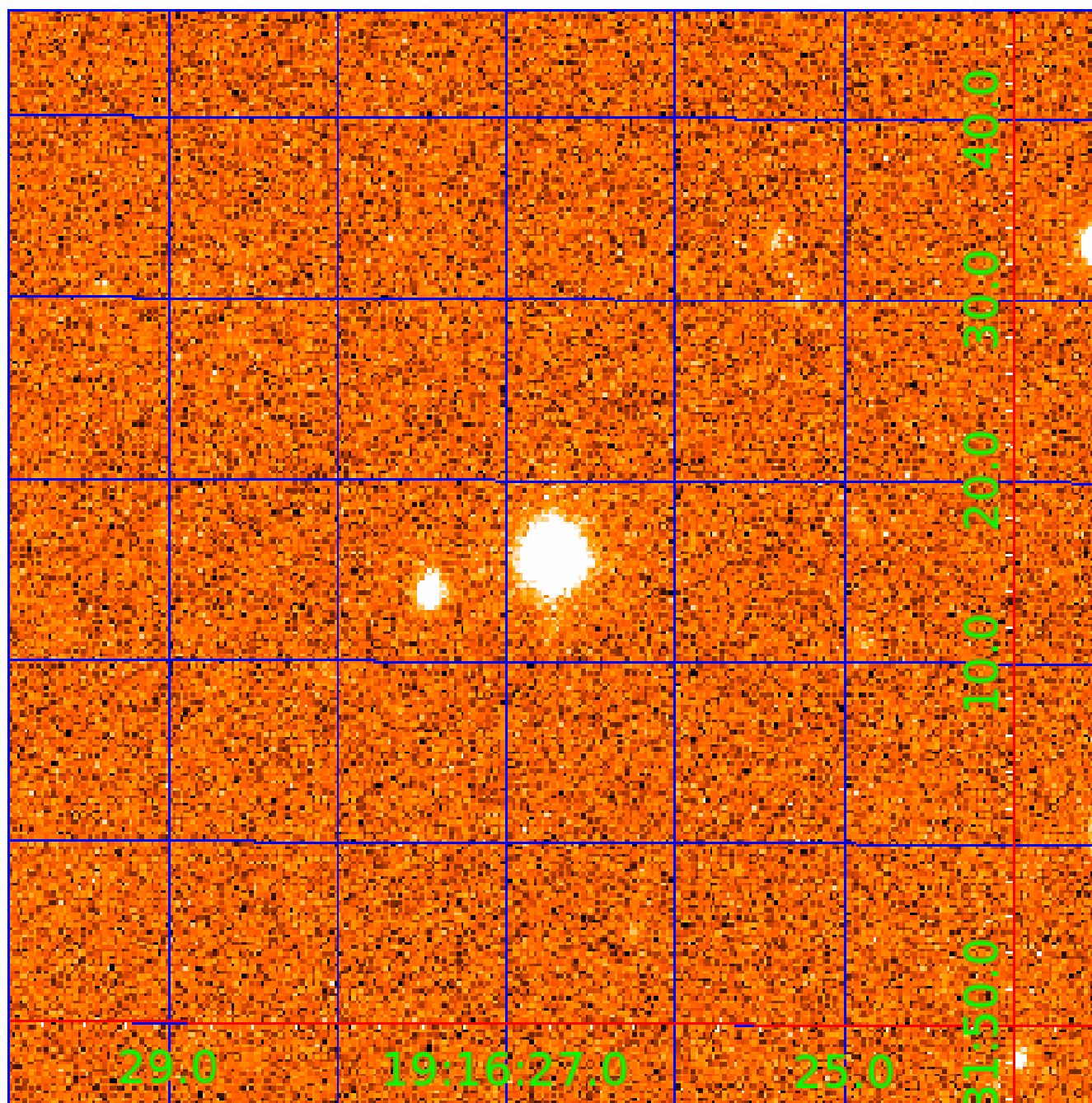


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012554510

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})
012554510-01	OBS	No	0.684474	131.897259	11.9	4.247	9.7	4.5	1.64	6864	0.61	18556.08
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012554510-01	OBS	FP	0.00	1	0	1	1	LPP_DV—HALO_GHOST—EPHEM_MATCH
012554510-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS

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

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

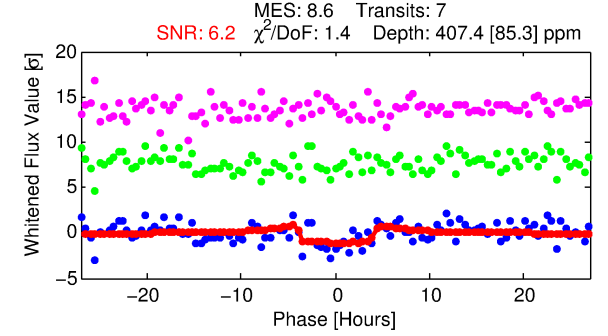
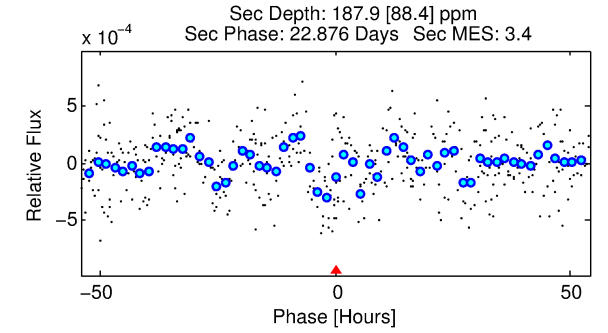
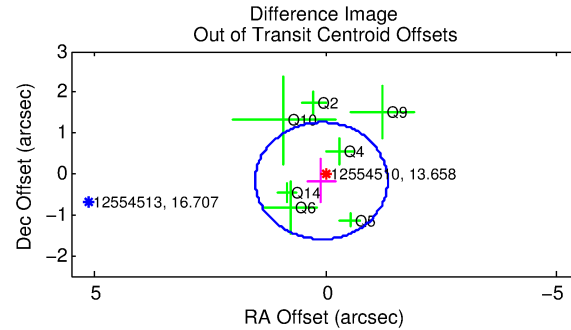
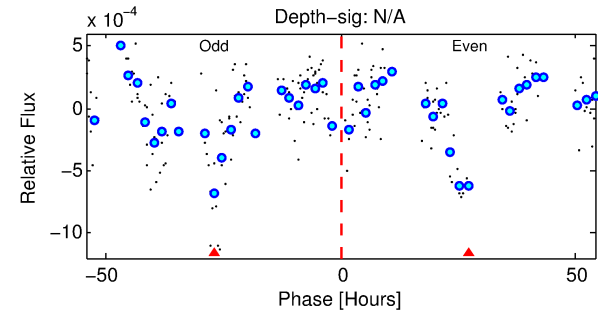
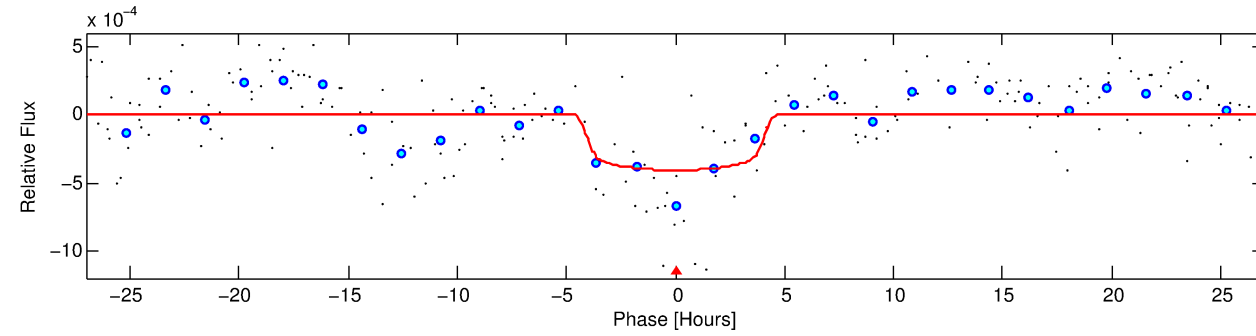
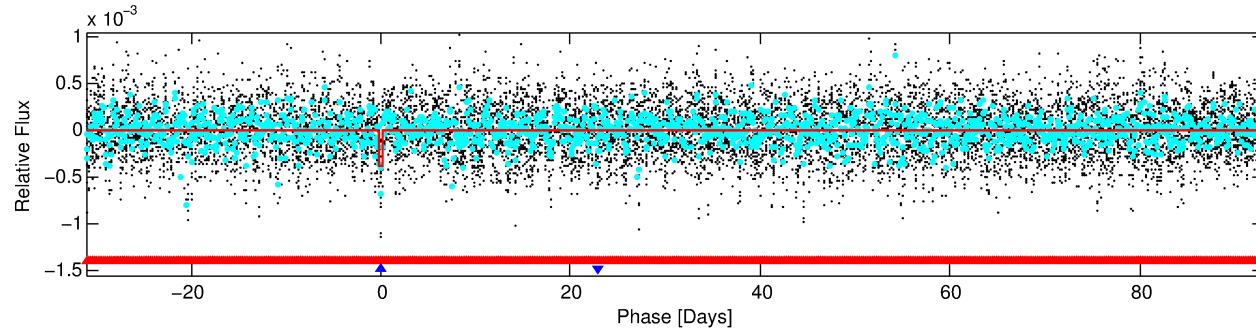
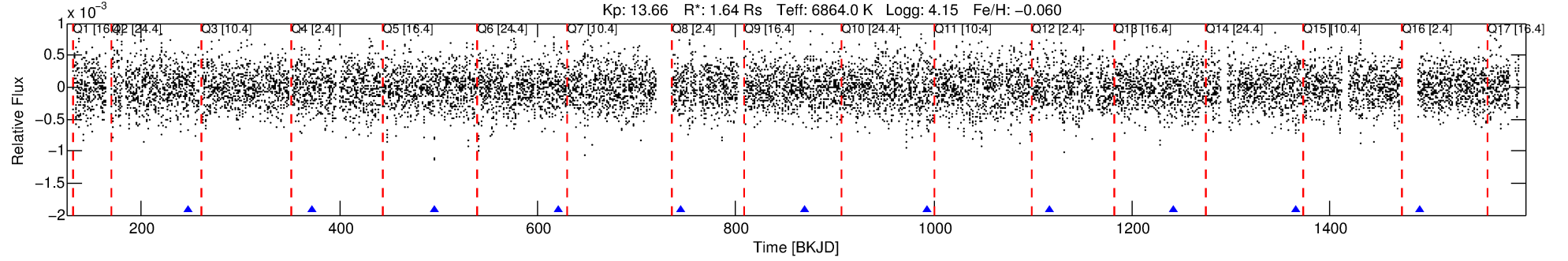
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012554510-02

No Significant Match Found

DV One-Page Summary

KIC: 12554510 Candidate: 2 of 2 Period: 124.197 d



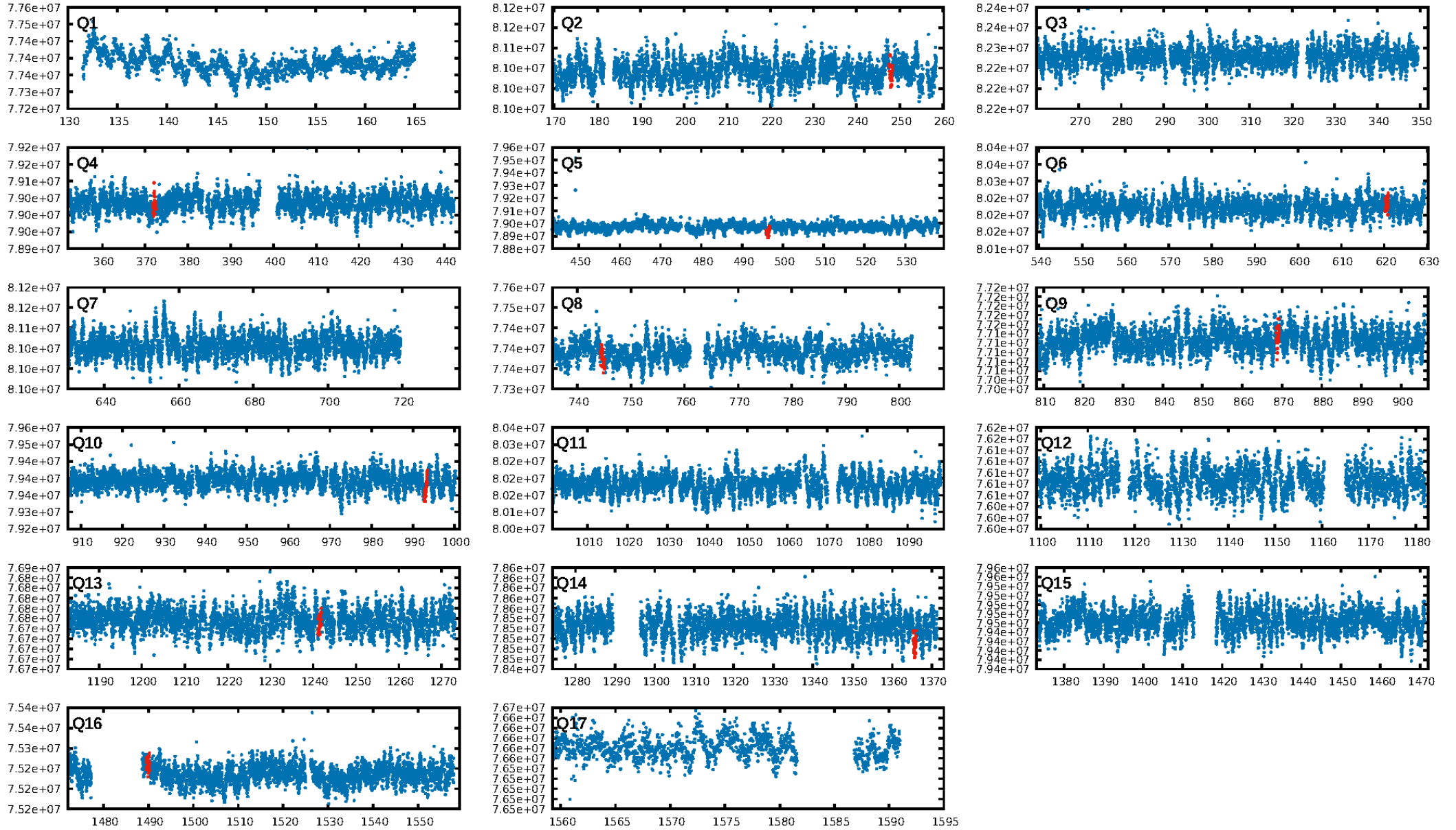
DV Fit Results:

Period = 124.19716 [0.00902] d
Epoch = 247.9630 [0.0539] BKJD
Rp/R* = 0.0213 [0.0047]
a/R* = 53.39 [55.31]
b = 0.89 [0.25]
Seff = 18.06 [6.95]
Teff = 526 [51] K
Rp = 3.82 [1.46] Re
a = 0.5452 [0.1375] AU
Ag = 2103.27 [1546.32] [1.36σ]
Teffp = 5504 [911] K [5.46σ]

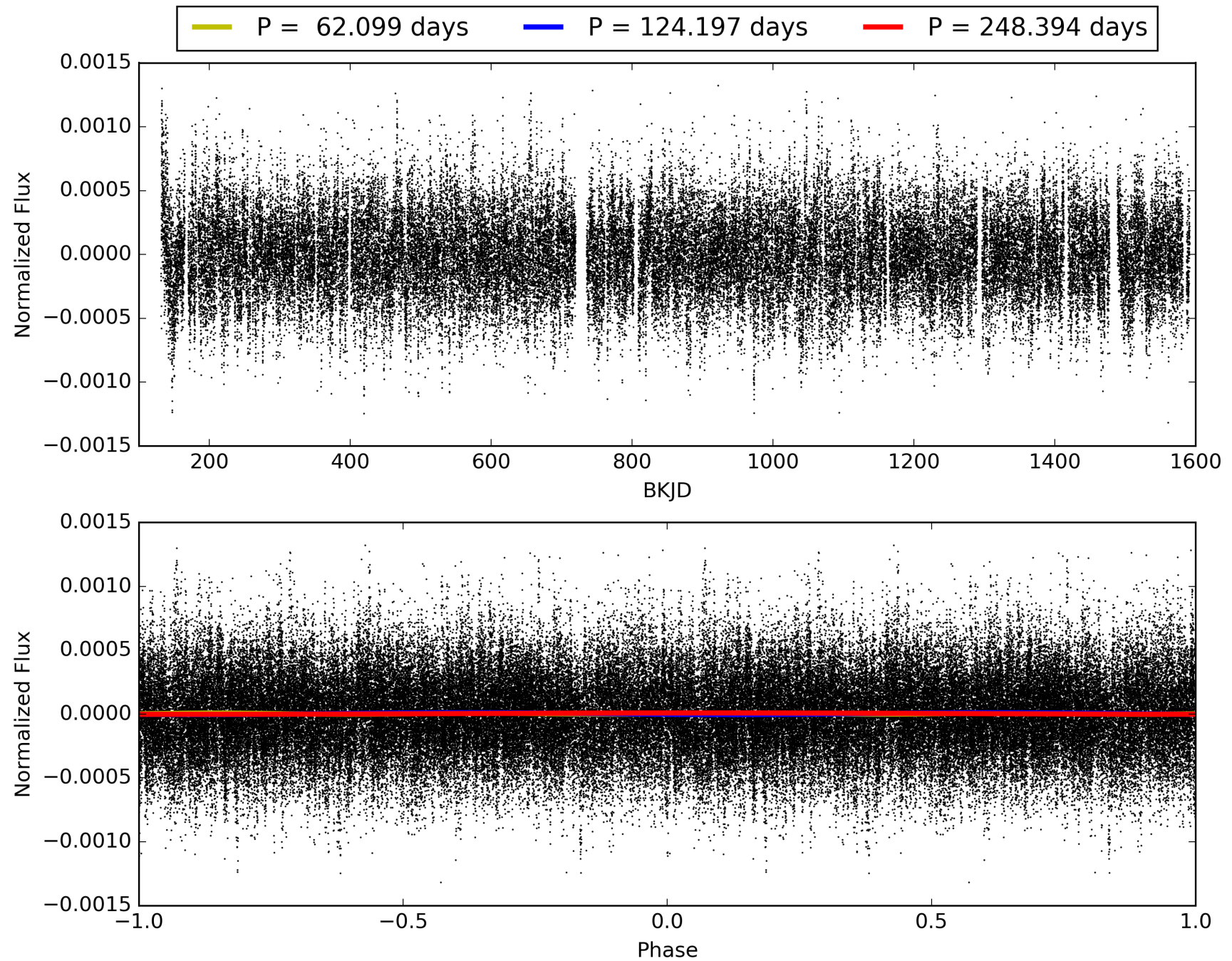
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [297.62σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 11.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.07e-11
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 77.41
Centroid-sig: 12.4%
Centroid-so: 0.439 arcsec [0.68σ]
OotOffset-rm: 0.191 arcsec [0.40σ]
KicOffset-rm: 0.195 arcsec [0.38σ]
OotOffset-st: 4/0/1/2 [7]
KicOffset-st: 4/0/1/2 [7]
DiffImageQuality-fgm: 0.57 [4/7]
DiffImageOverlap-fno: 0.00 [0/8]

TCE 012554510-02, PDC Light Curves

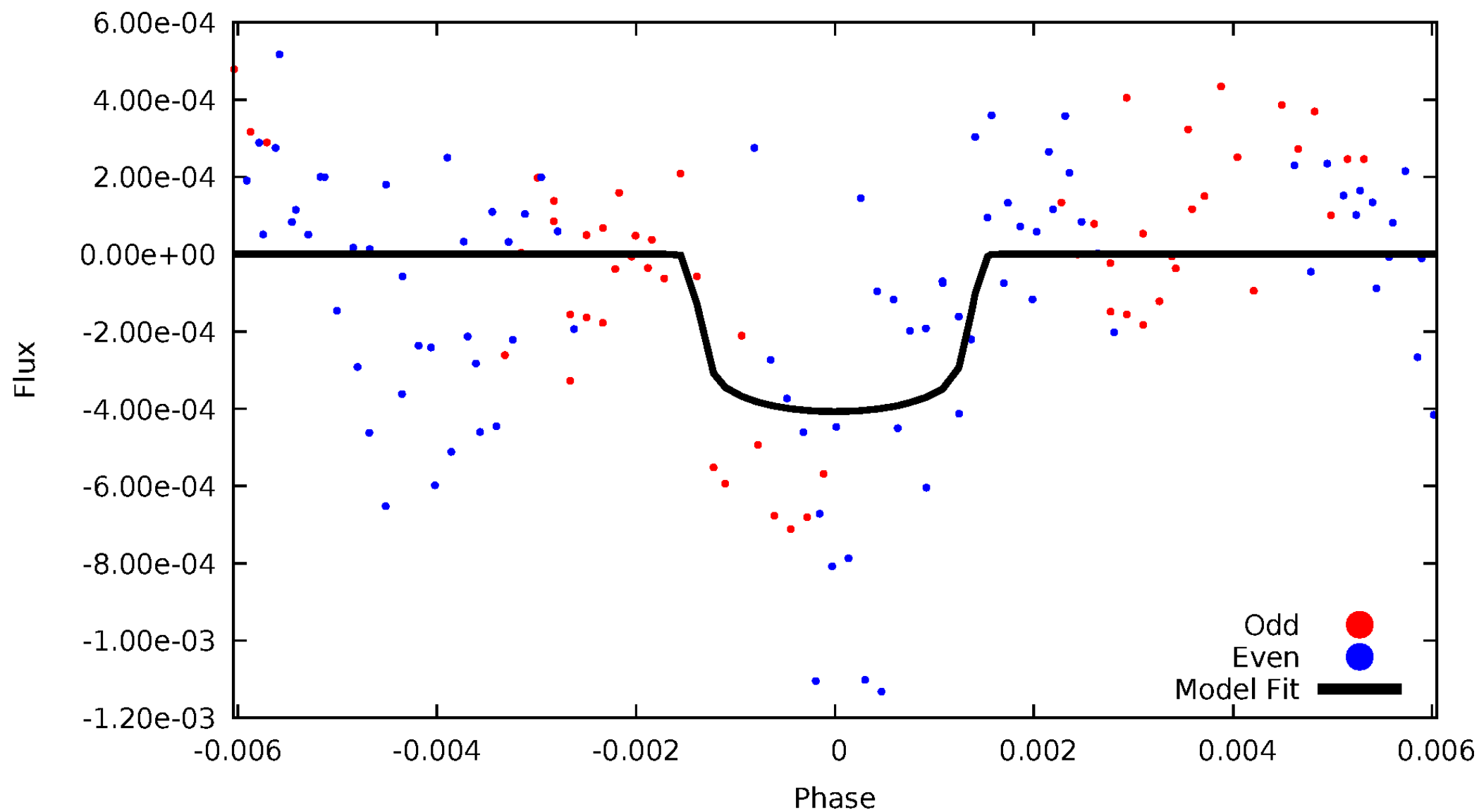


TCE 012554510-02



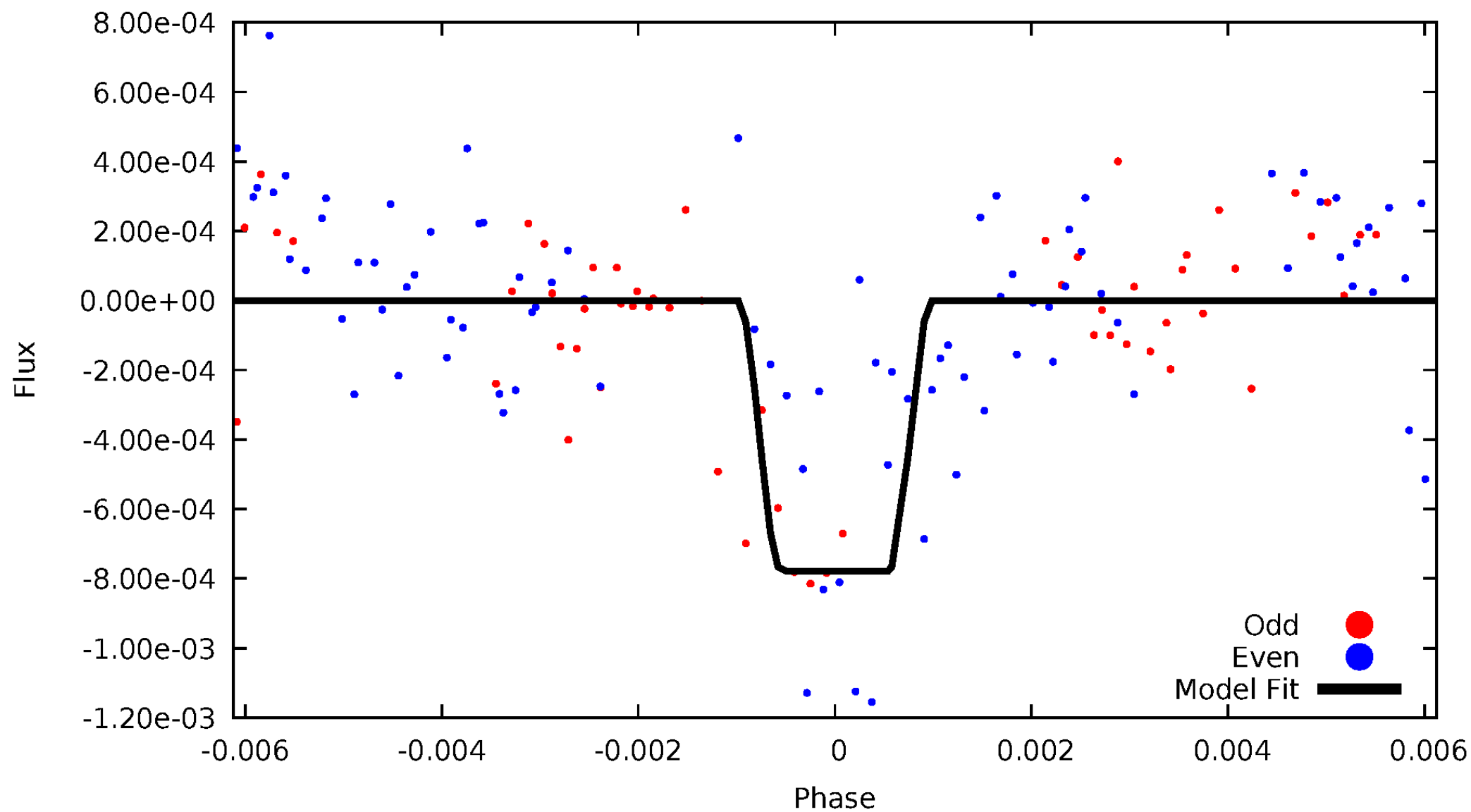
DV Odd/Even

TCE 012554510-02



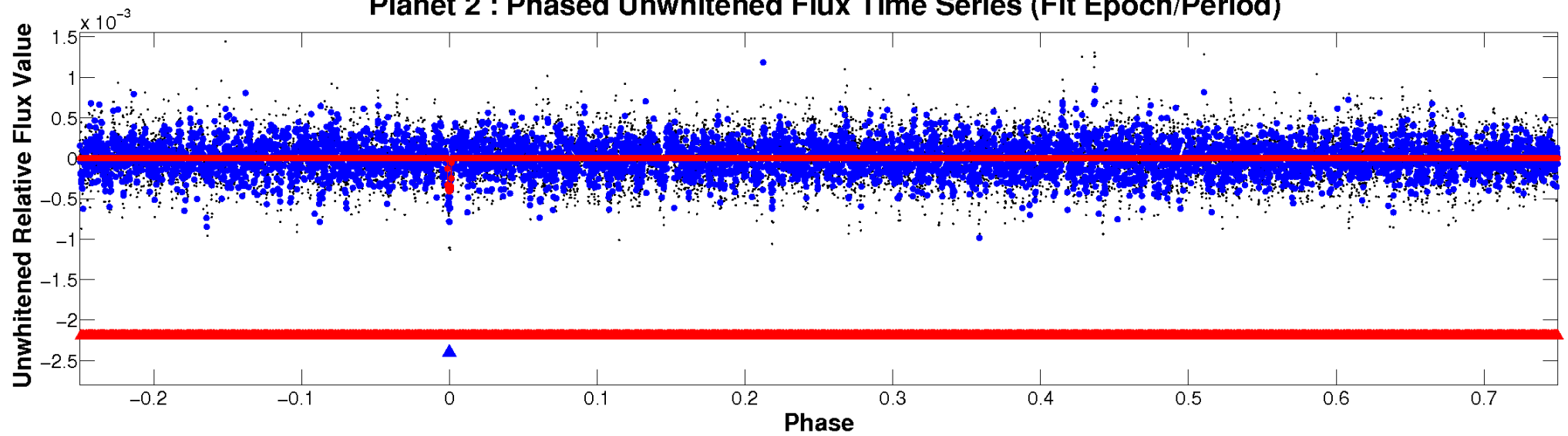
ALT Odd/Even

TCE 012554510-02

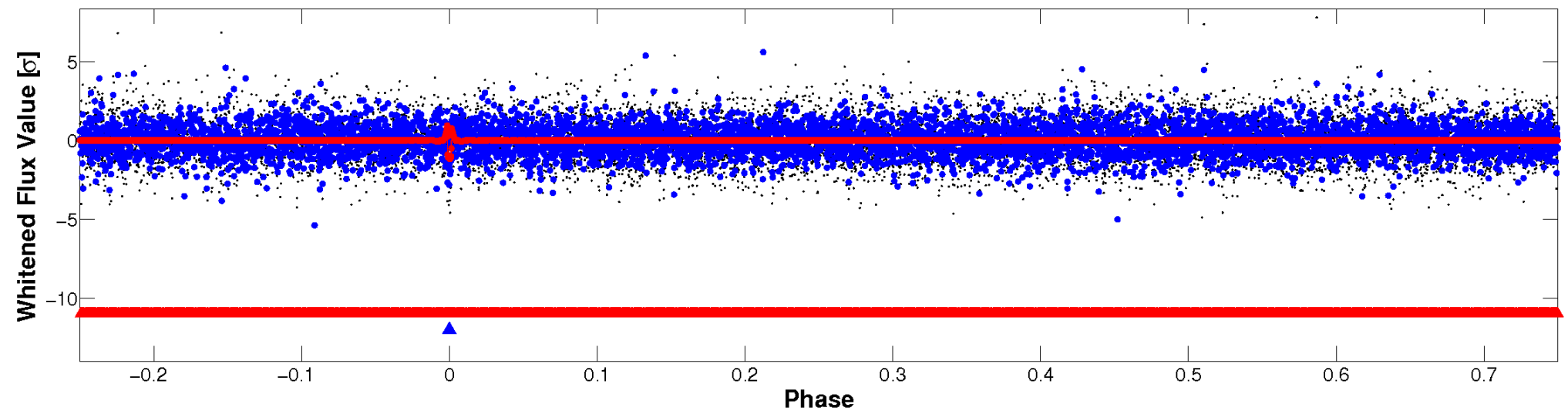


Non-Whitened Vs. Whitened Light Curve

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

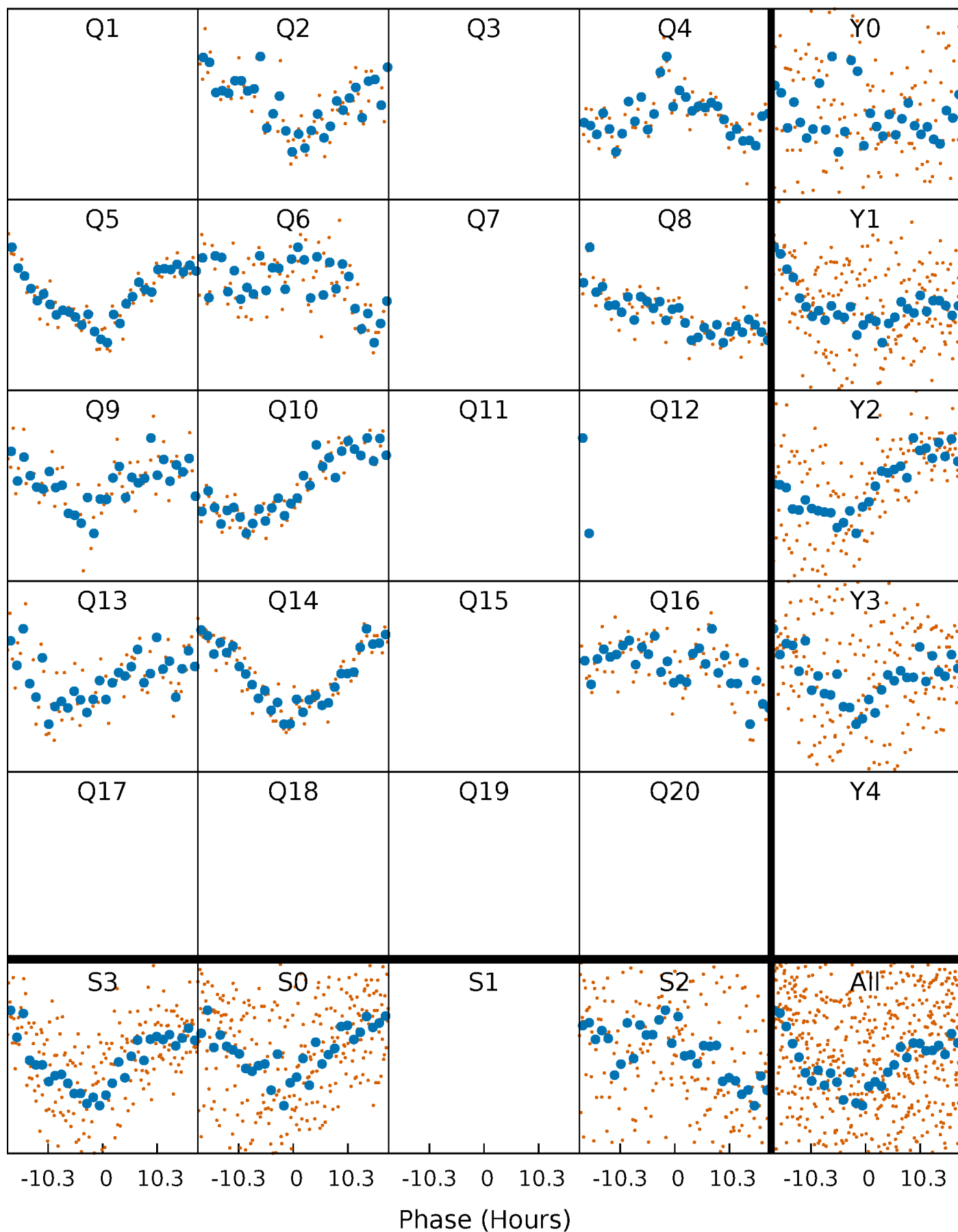


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



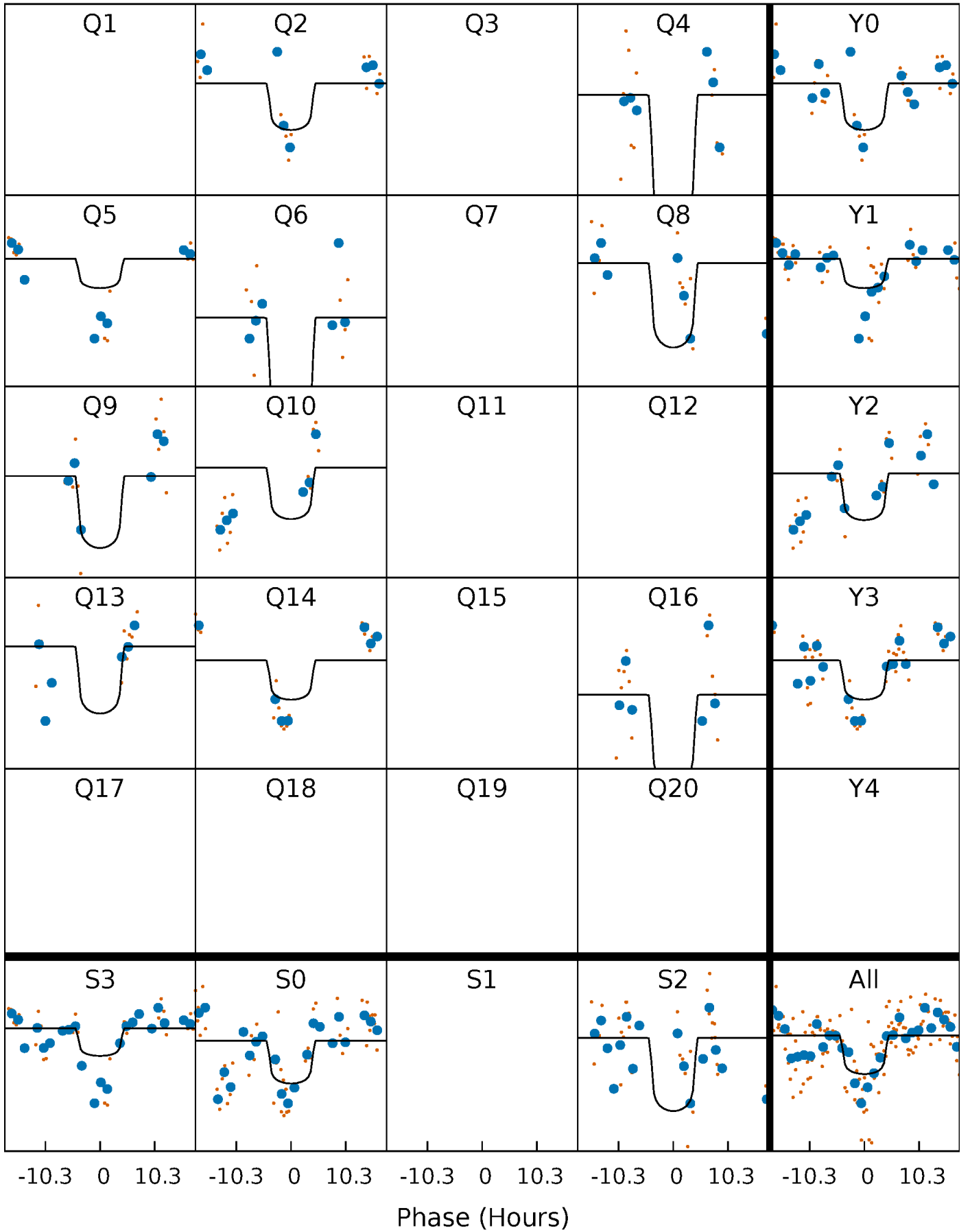
PDC Quarter-Phased Transit Curves

TCE 012554510-02 P=124.197161 Days $T_0=247.962983$ (BKJD)



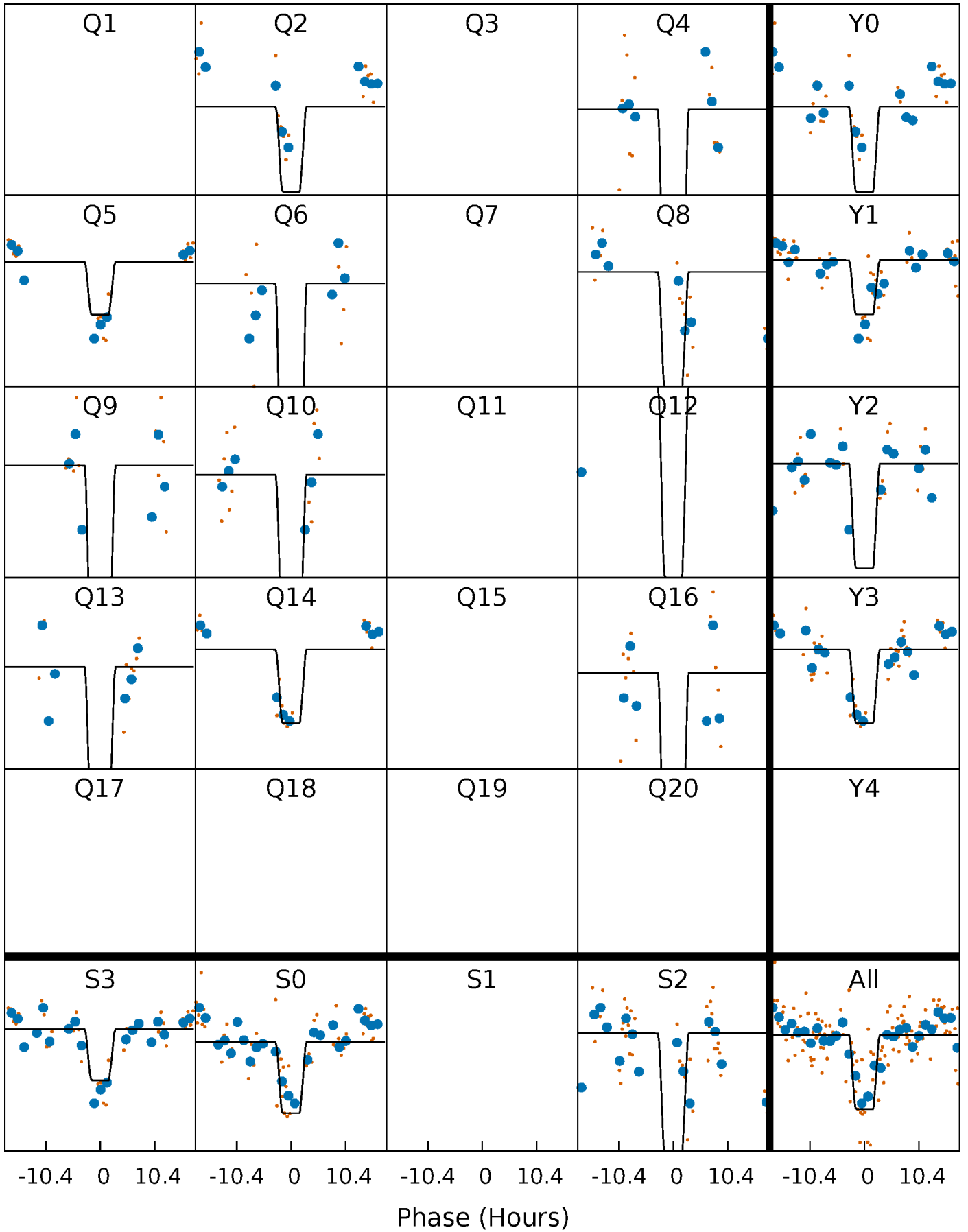
DV Quarter-Phased Transit Curves

TCE 012554510-02 P=124.197161 Days $T_0=247.962983$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

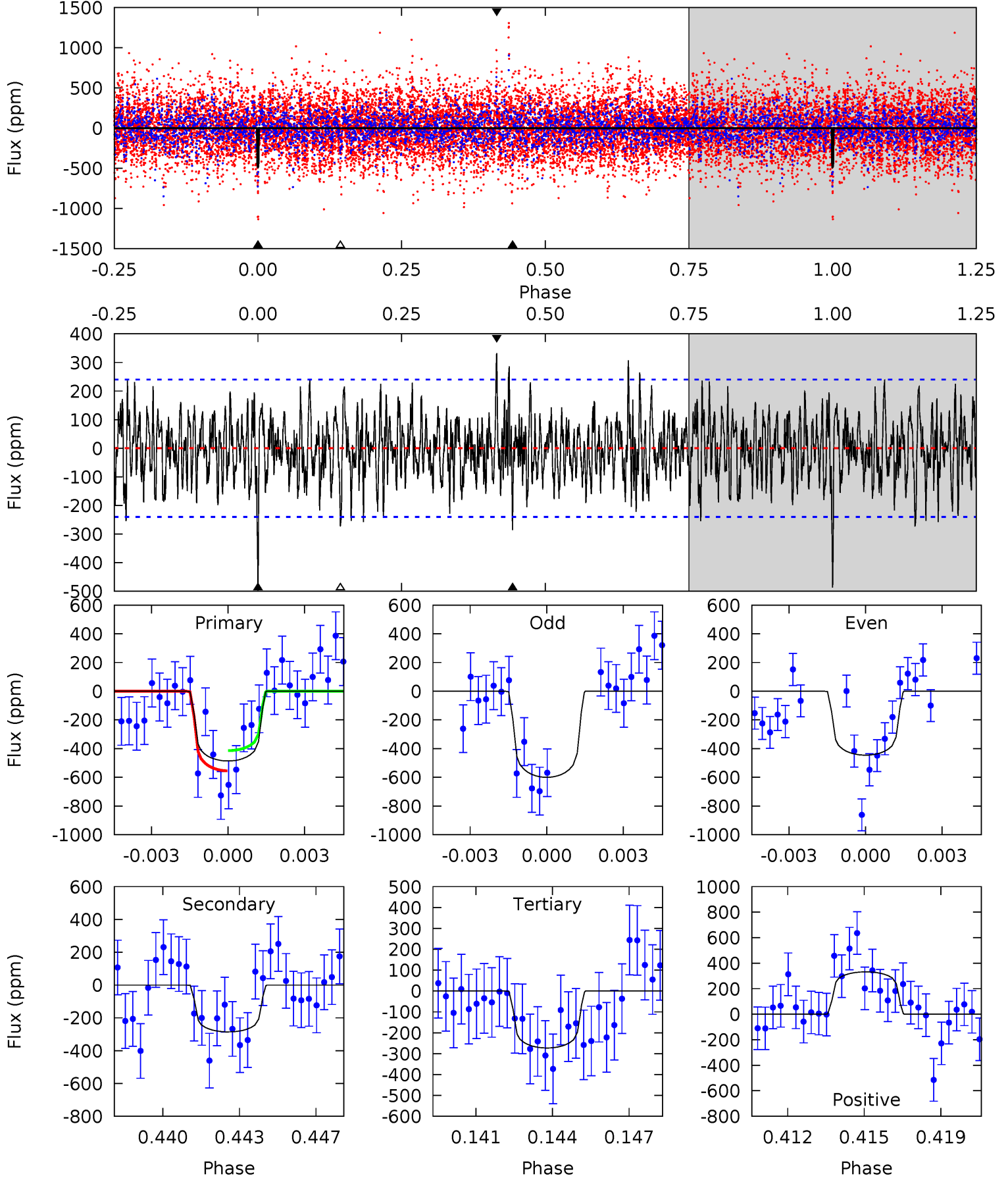
TCE 012554510-02 P=124.192089 Days $T_0=247.984377$ (BKJD)



DV Model-Shift Uniqueness Test

012554510-02, P = 124.197161 Days, E = 123.765822 Days

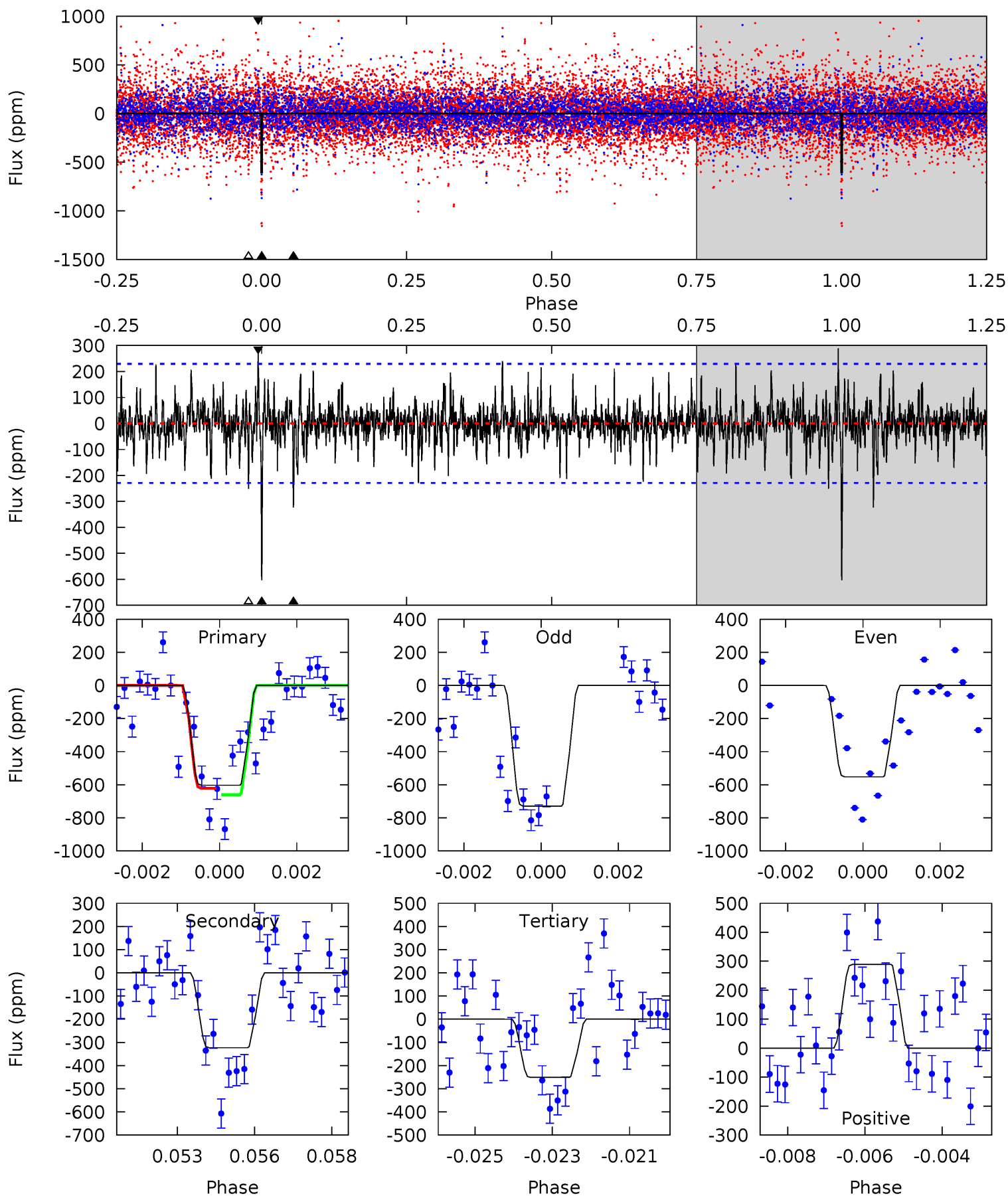
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	6.24	5.96	7.25	5.25	2.96	1.98	4.66	3.37	0.28	-1.01	1.50	0.85	0.41	1.54



Alt Model-Shift Uniqueness Test

012554510-02, P = 124.192089 Days, E = 123.792288 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	7.51	5.84	6.72	5.32	3.08	1.40	8.18	7.31	1.67	0.80	1.93	1.02	0.32	0.43



Stellar Parameters For KIC 012554510

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6864^{+165}_{-259}	$4.153^{+0.136}_{-0.187}$	$-0.060^{+0.250}_{-0.350}$	$1.643^{+0.511}_{-0.341}$	$1.408^{+0.196}_{-0.239}$	$0.447^{+0.336}_{-0.220}$
	+2%/-4%	+3%/-5%	+417%/-583%	+31%/-21%	+14%/-17%	+75%/-49%
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 012554510-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-286 ± 46	$3.91^{+1.04}_{-0.96}$	739^{+51}_{-48}	6010^{+847}_{-566}	2989^{+2229}_{-1130}
Alt.	-323 ± 43	$5.01^{+1.21}_{-1.07}$	736^{+57}_{-45}	5504^{+574}_{-443}	2064^{+1242}_{-724}

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 $A_{obs} \gg 1.0$

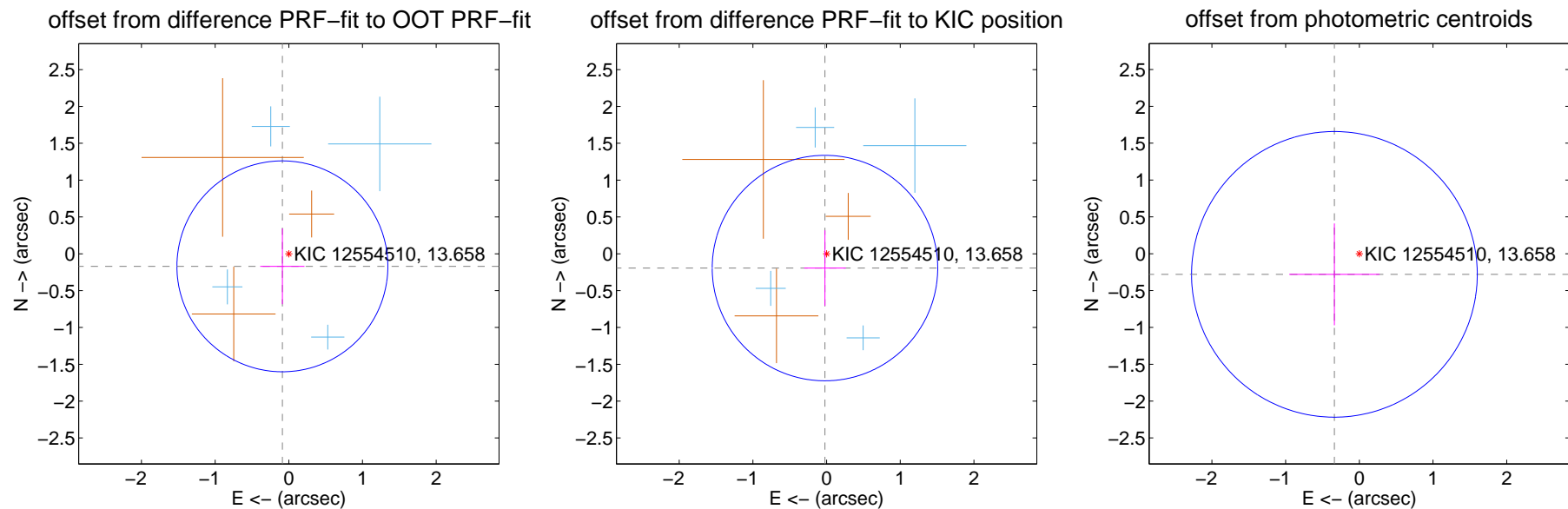
DV Centroid Data

Supplemental centroid analysis for 012554510-02. Kepler magnitude: 13.66. Transit SNR 6.22

There are 4 quarters with good PRF difference image offsets

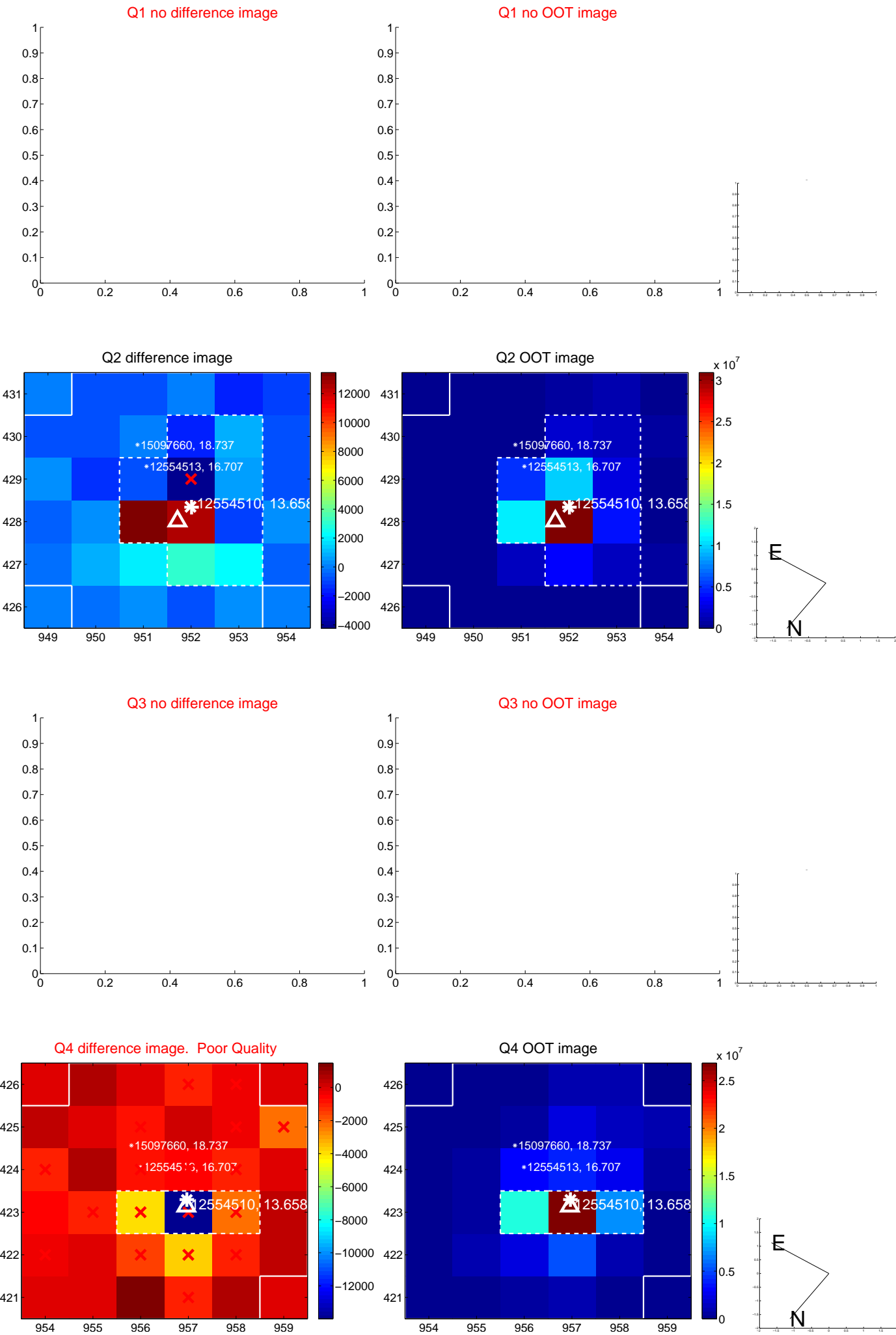
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.191 ± 0.477	0.40	0.087 ± 0.300	-0.170 ± 0.514
PRF-fit source offset from KIC position	0.195 ± 0.510	0.38	0.022 ± 0.283	-0.194 ± 0.512
photometric centroid source offset	0.44 ± 0.65	0.68	0.34 ± 0.61	-0.28 ± 0.69

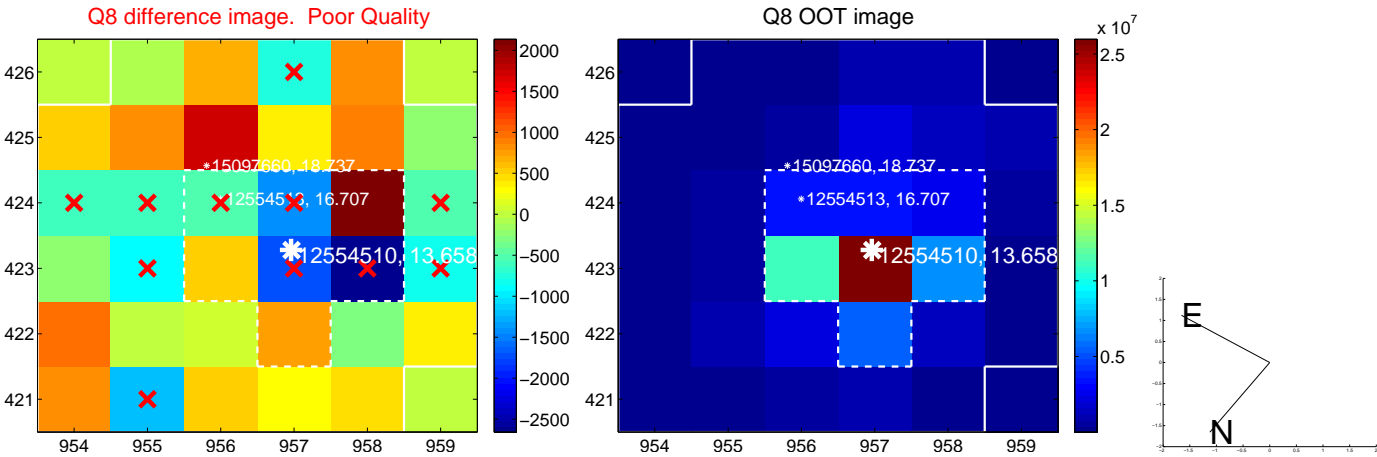
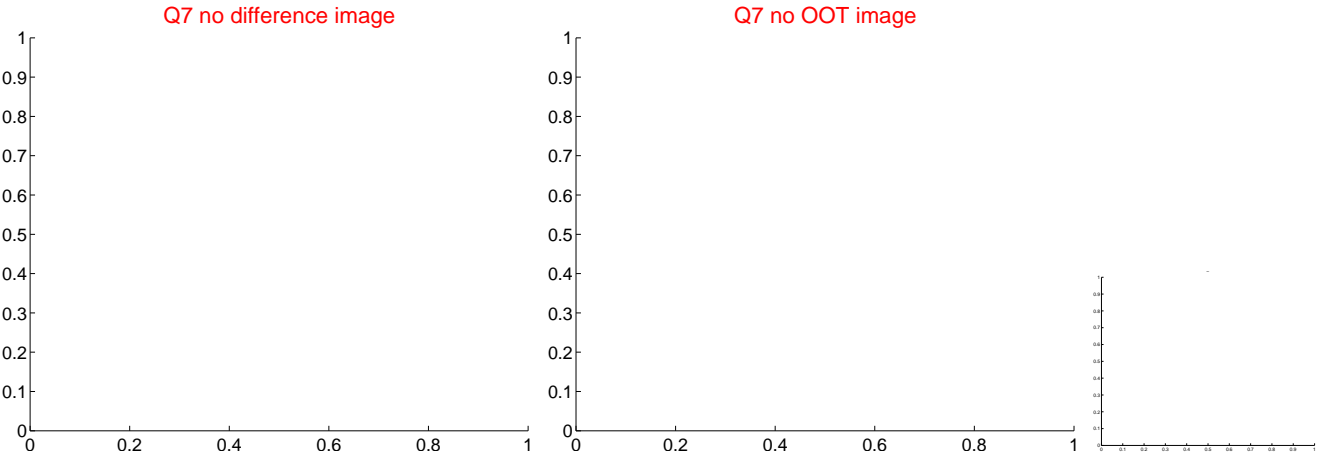
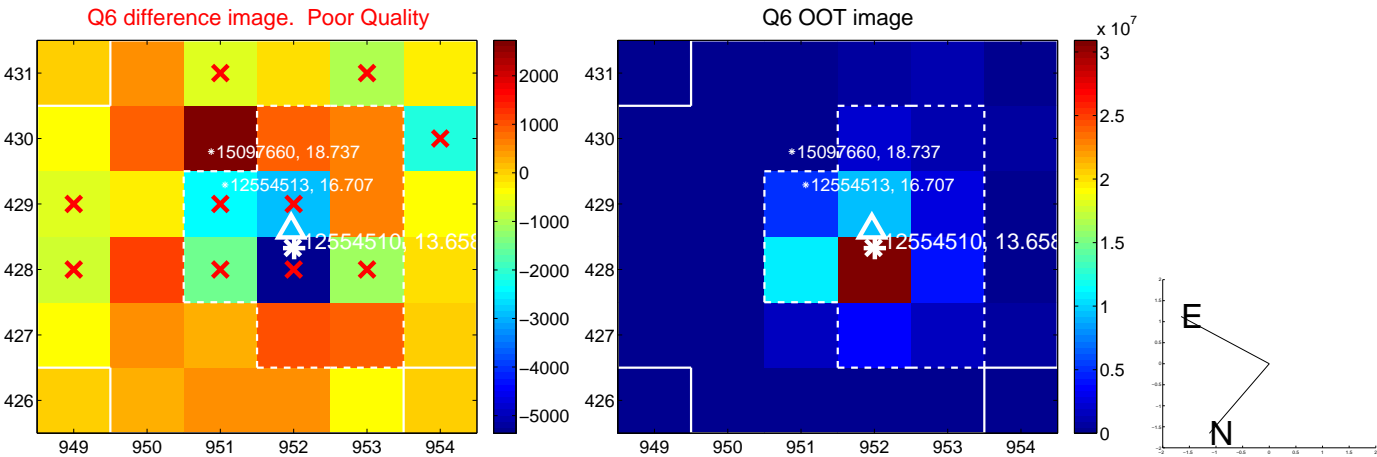
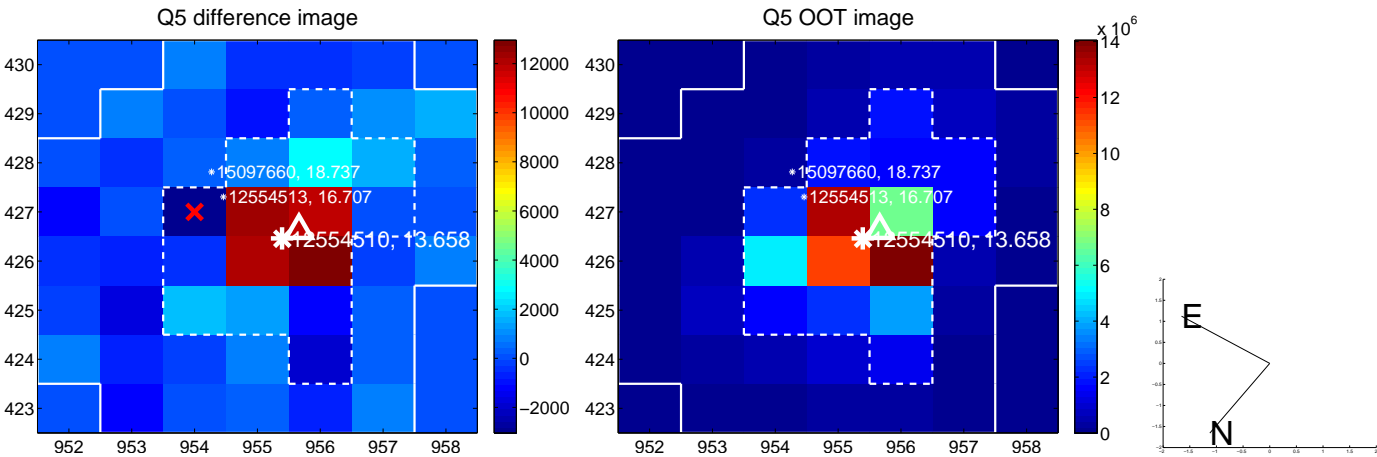


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

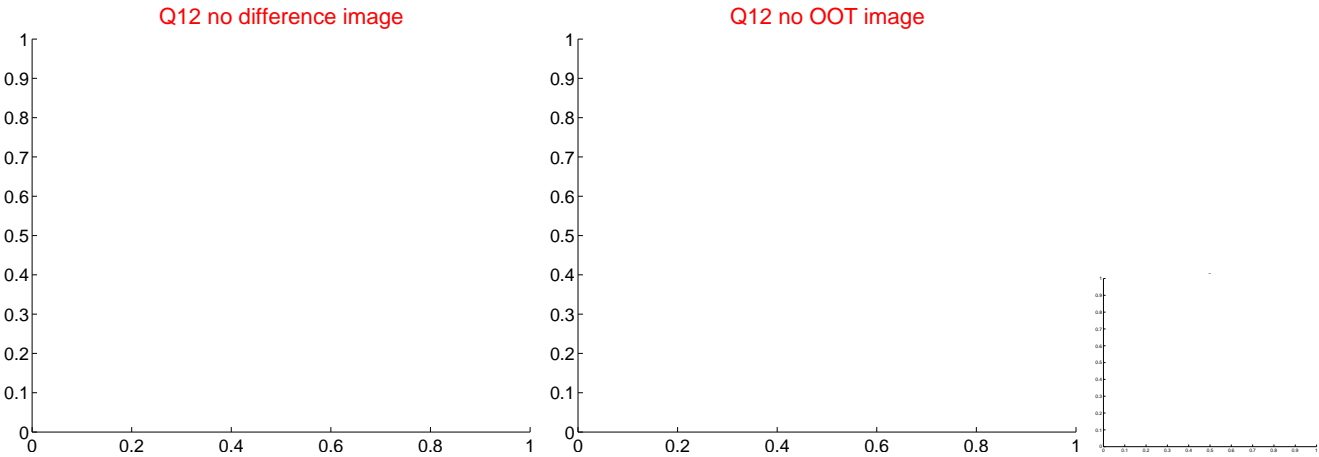
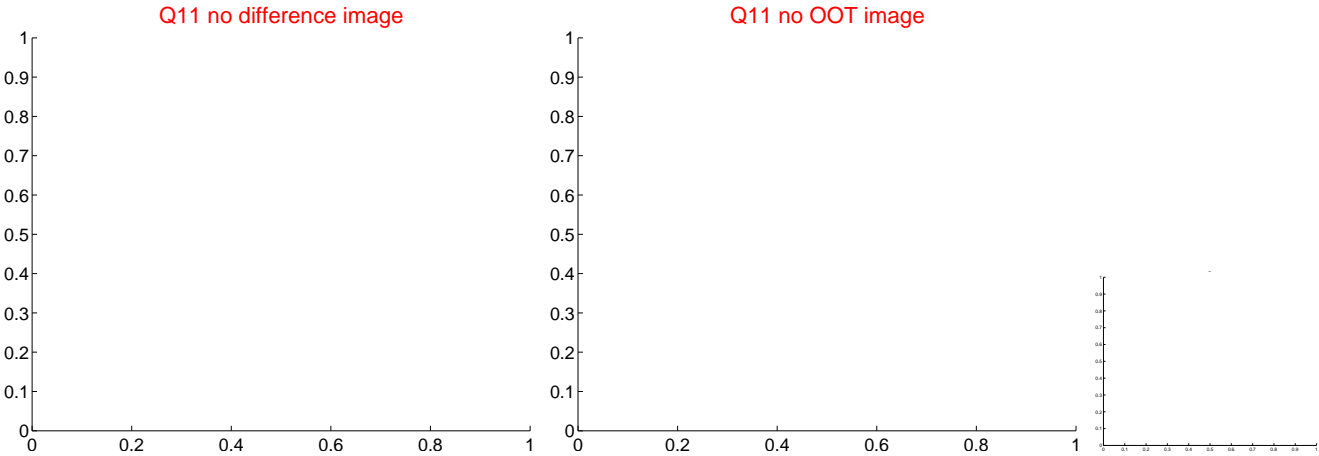
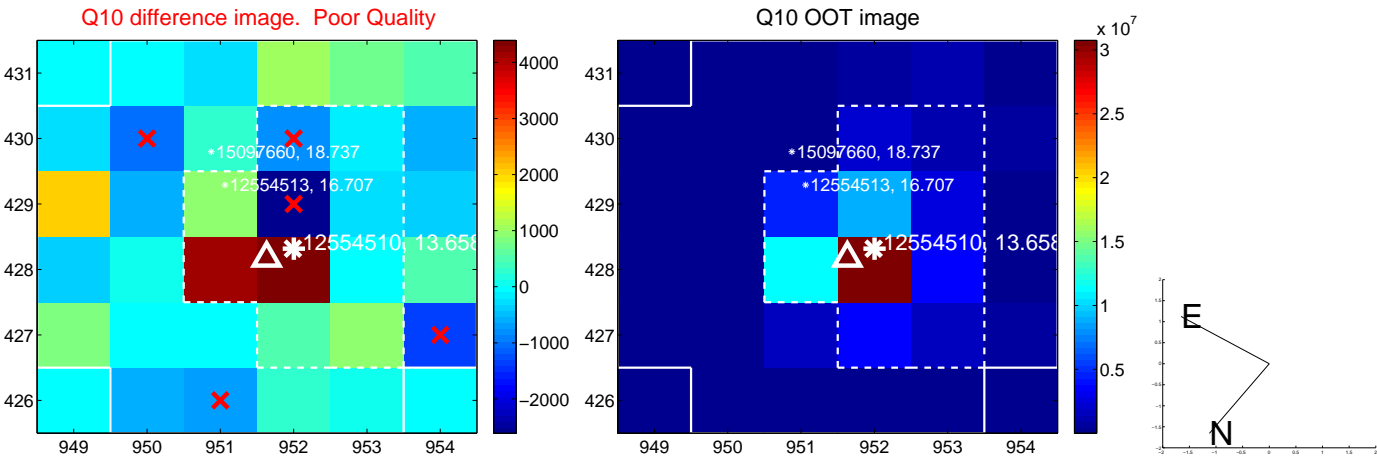
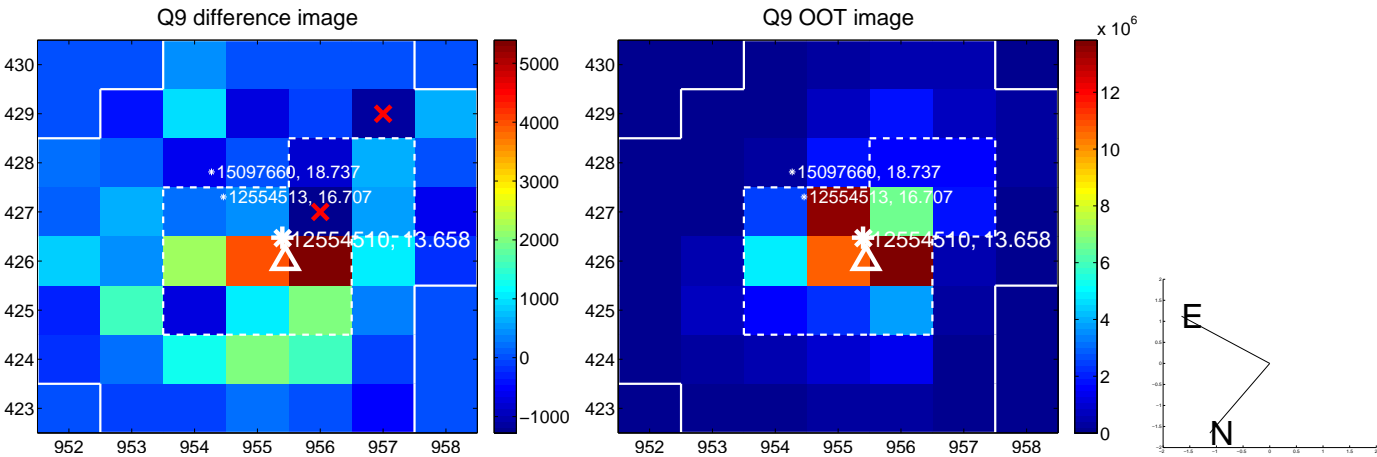
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



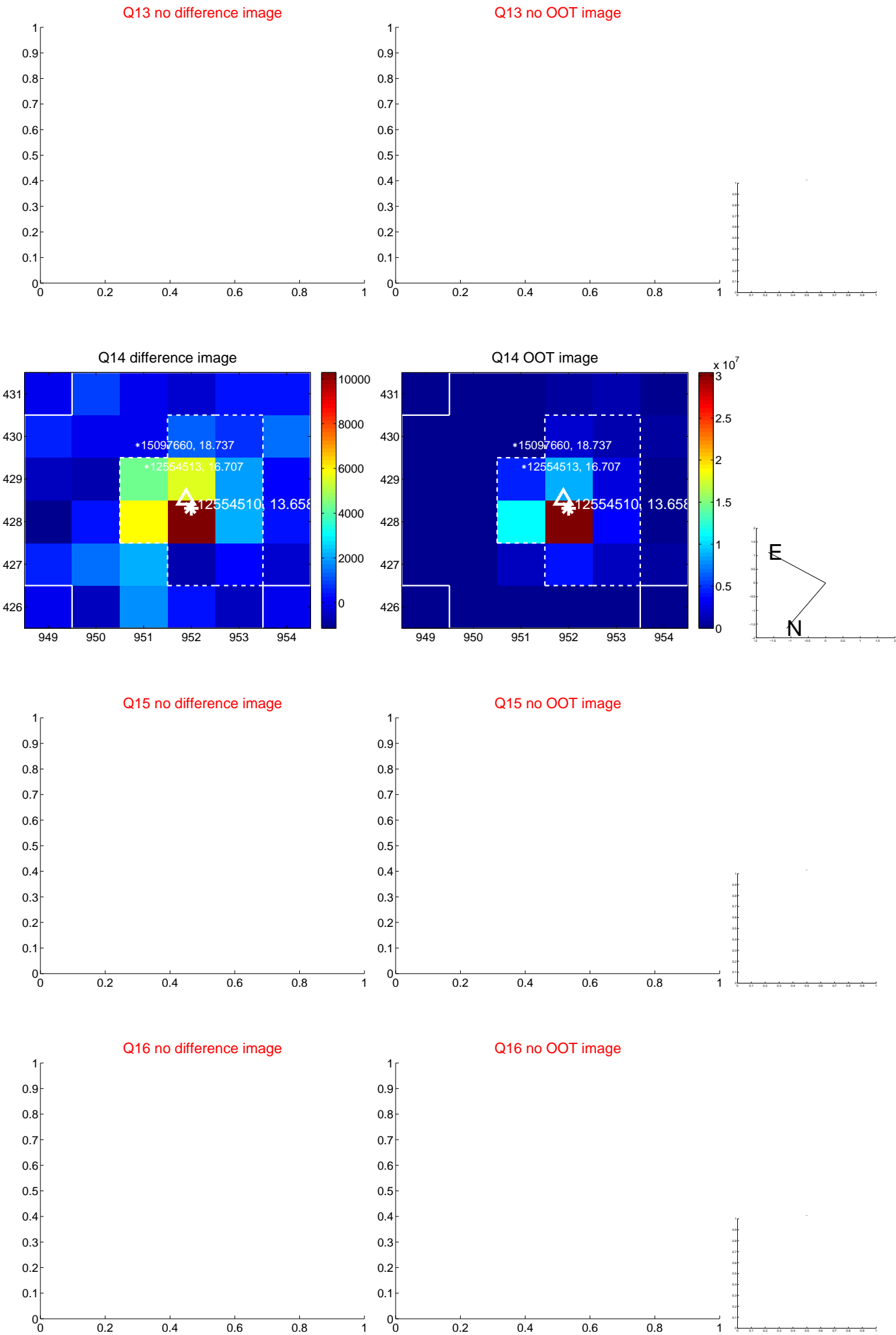
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



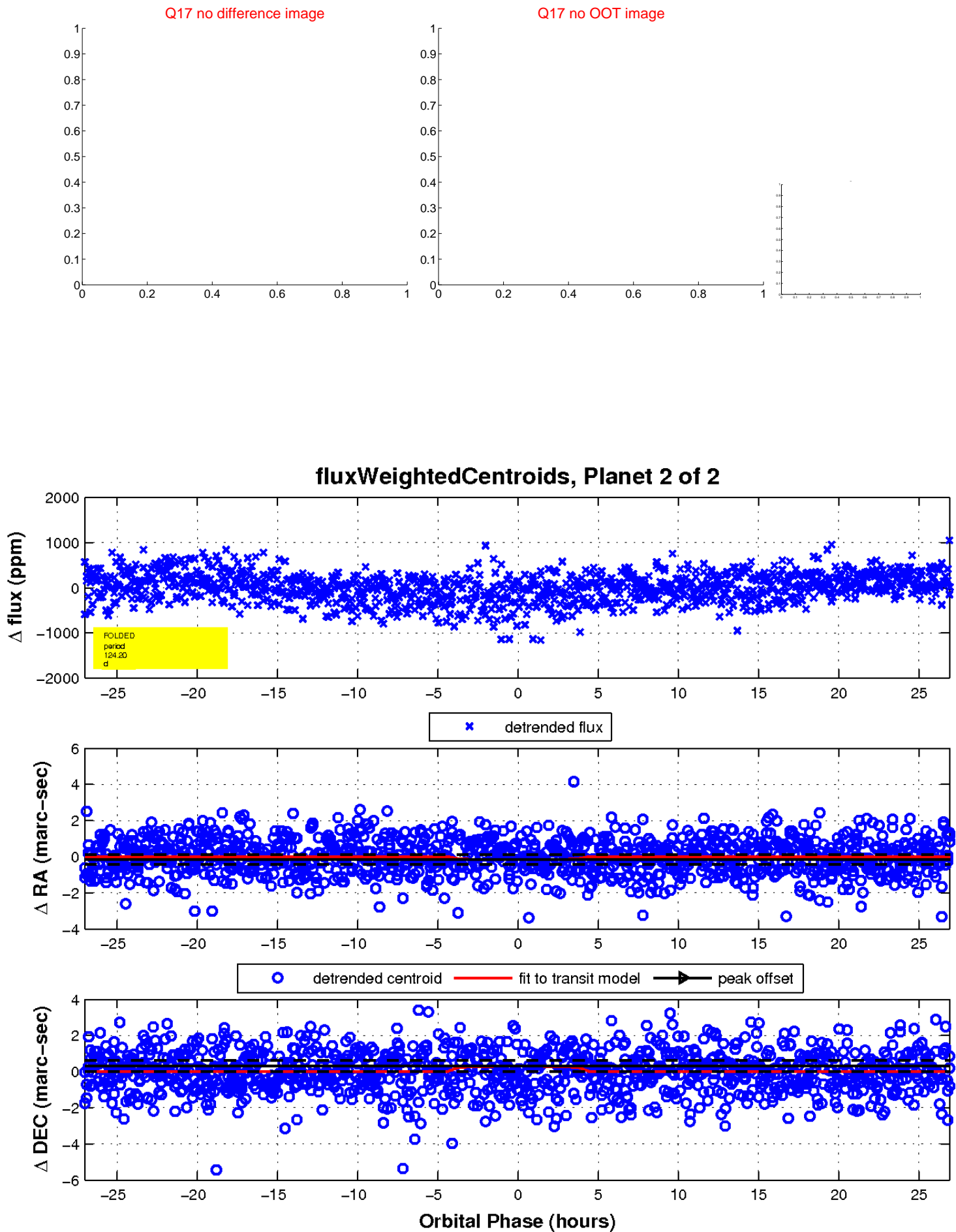
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

