

KIC 009153554

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})
009153554-01	OBS	3044.01	0.747370	131.963017	243.3	0.724	12.2	17.9	0.91	5970	1.70	3615.22
009153554-02	OBS	No	0.747361	131.596351	242.3	0.728	11.3	18.2	0.91	5970	1.70	3615.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009153554-01	OBS	FP	0.02	0	0	1	0	MOD_SEC_DV—MOD_SEC_ALT—PLANET_PERIOD_IS_HALF_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET
009153554-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

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.

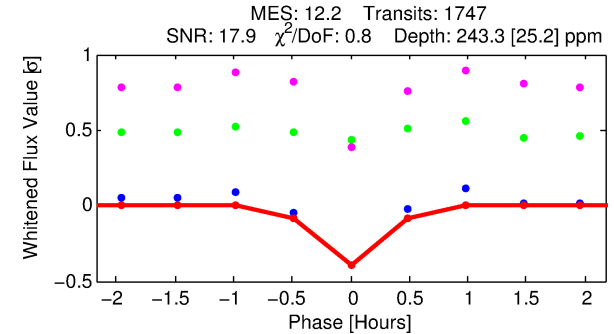
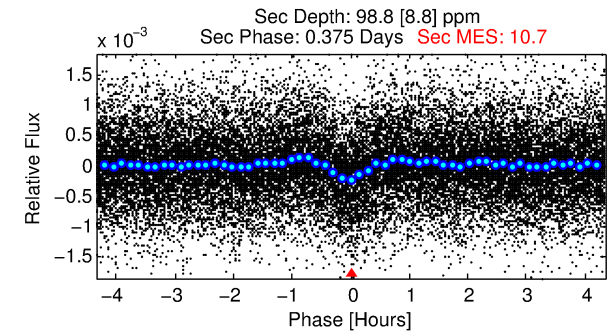
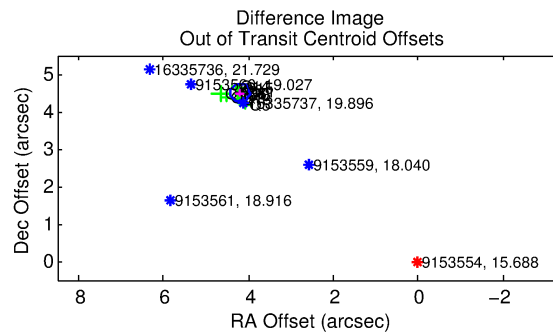
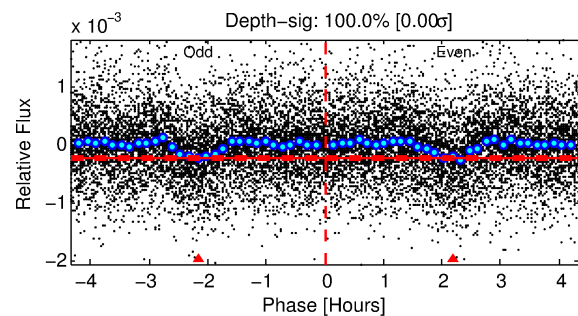
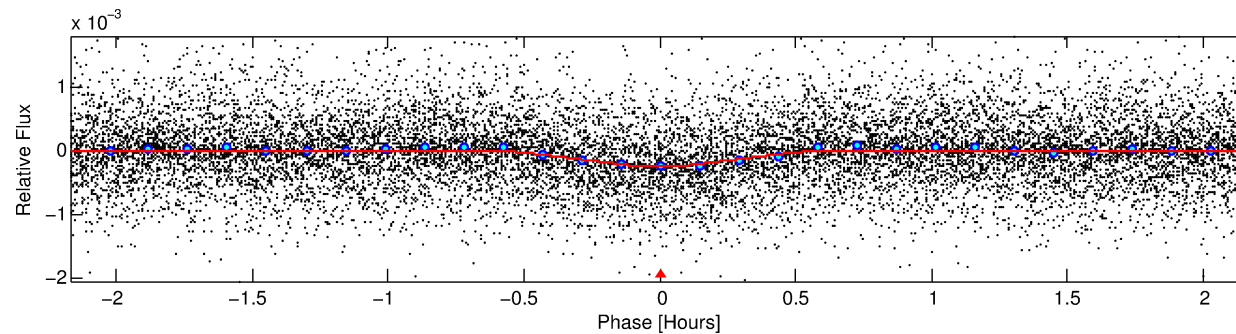
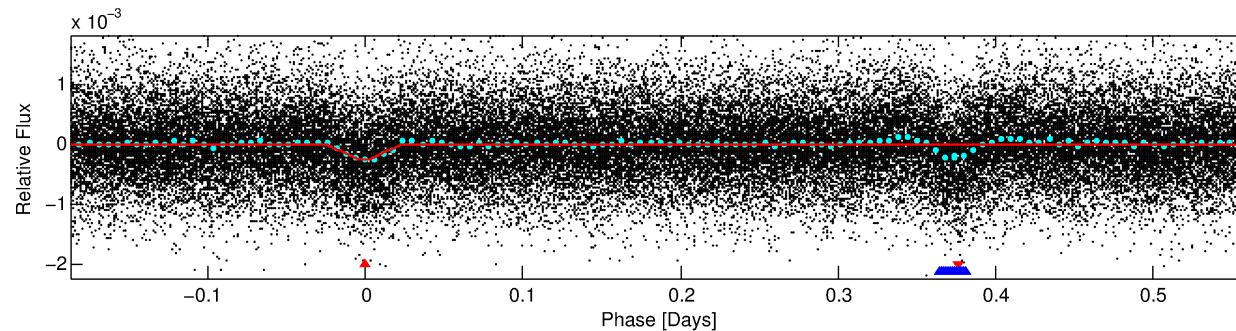
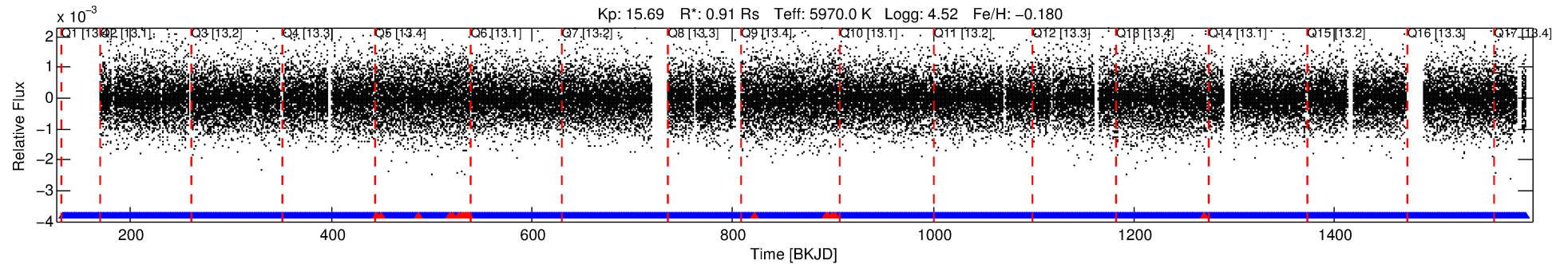
Ephemeris Match Information For 009153554-01

No Significant Match Found

DV One-Page Summary

KIC: 9153554 Candidate: 1 of 2 Period: 0.747 d
KOI: K03044 Corr: No Ephemeris Match

Kp: 15.69 R*: 0.91 Rs Teff: 5970.0 K Logg: 4.52 Fe/H: -0.180



DV Fit Results:

Period = 0.74737 [0.00001] d
Epoch = 131.9630 [0.0008] BKJD
Rp/R* = 0.0172 [0.0063]
a/R* = 3.88 [6.60]
b = 0.90 [0.40]
Seff = 3615.22 [1521.98]
Teq = 1977 [208] K
Rp = 1.70 [0.83] Re
a = 0.0161 [0.0044] AU
Ag = 4.87 [4.07] [0.95σ]
Teff = 4541 [846] K [2.94σ]

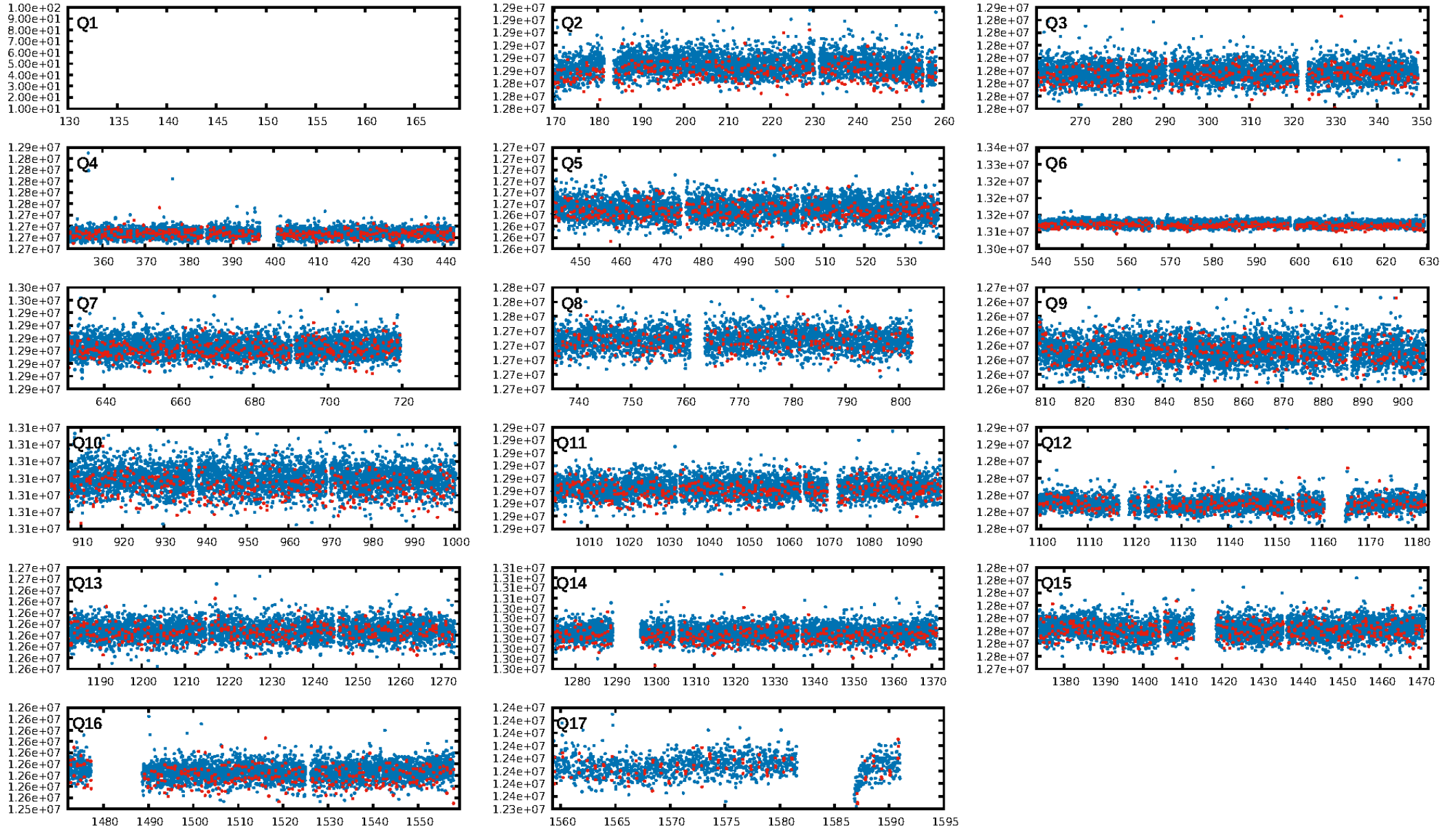
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.98e-36
RollingBand-fgt: 0.99 [1686/1711]
GhostDiagnostic-chr: -0.3016
Centroid-sig: 0.0%
Centroid-so: 8.138 arcsec [10.58σ]
OotOffset-rm: 6.148 arcsec [76.65σ]
KicOffset-rm: 5.988 arcsec [78.03σ]
OotOffset-st: 4/4/0/4 [12]
KicOffset-st: 4/4/0/4 [12]
DiffImageQuality-fgm: 1.00 [12/12]
DiffImageOverlap-fno: 1.00 [16/16]

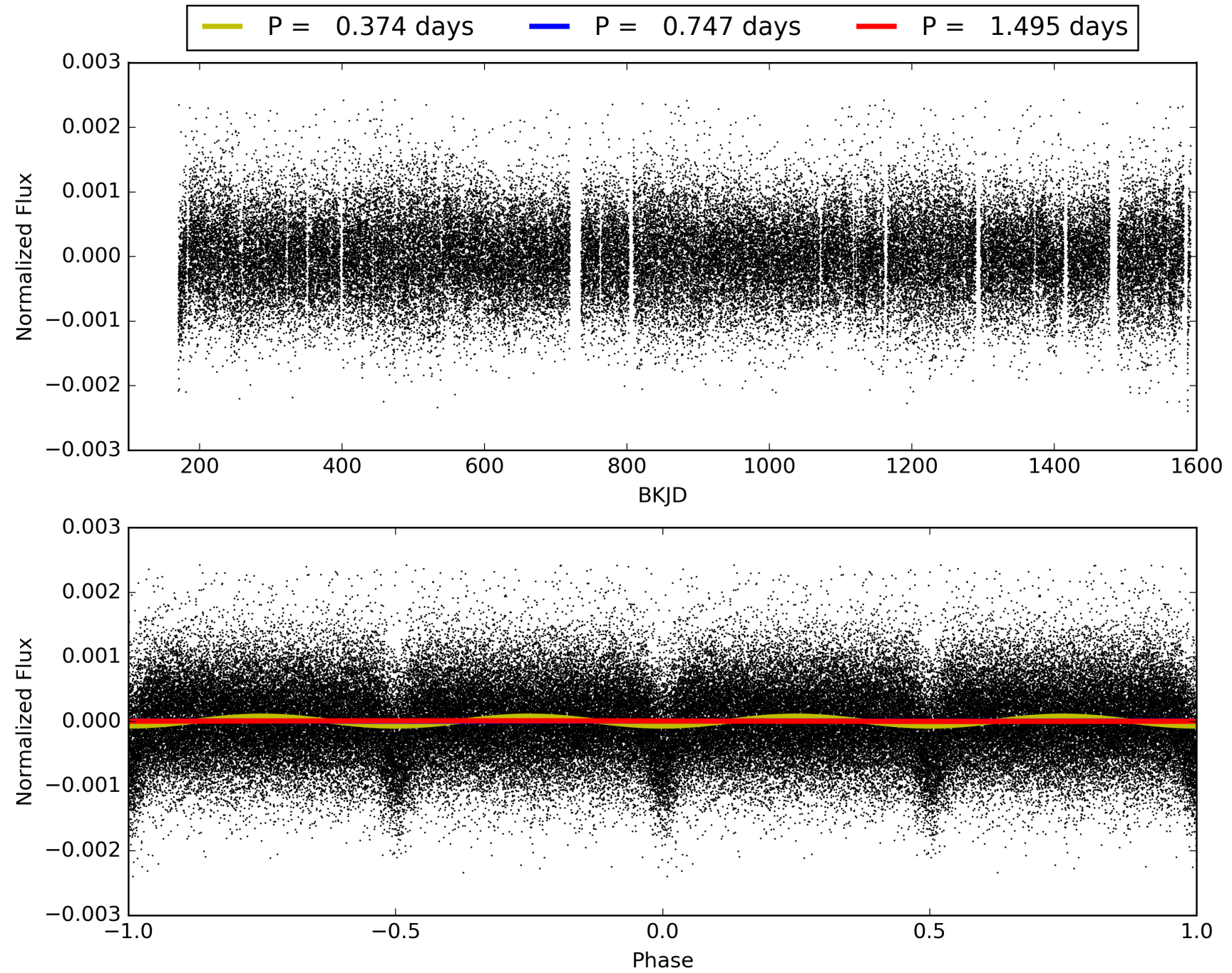
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:29:40 Z

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

TCE 009153554-01, PDC Light Curves

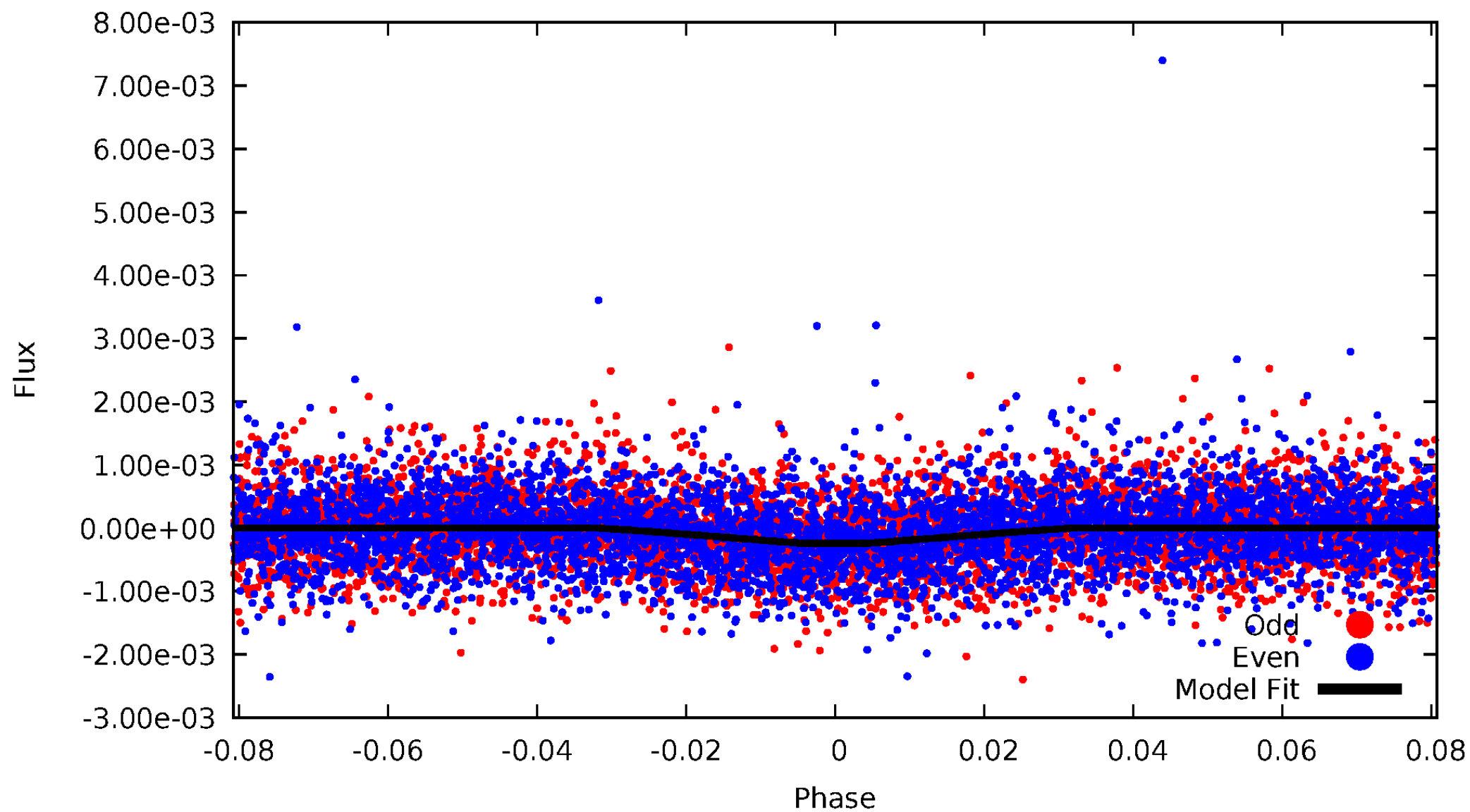


TCE 009153554-01



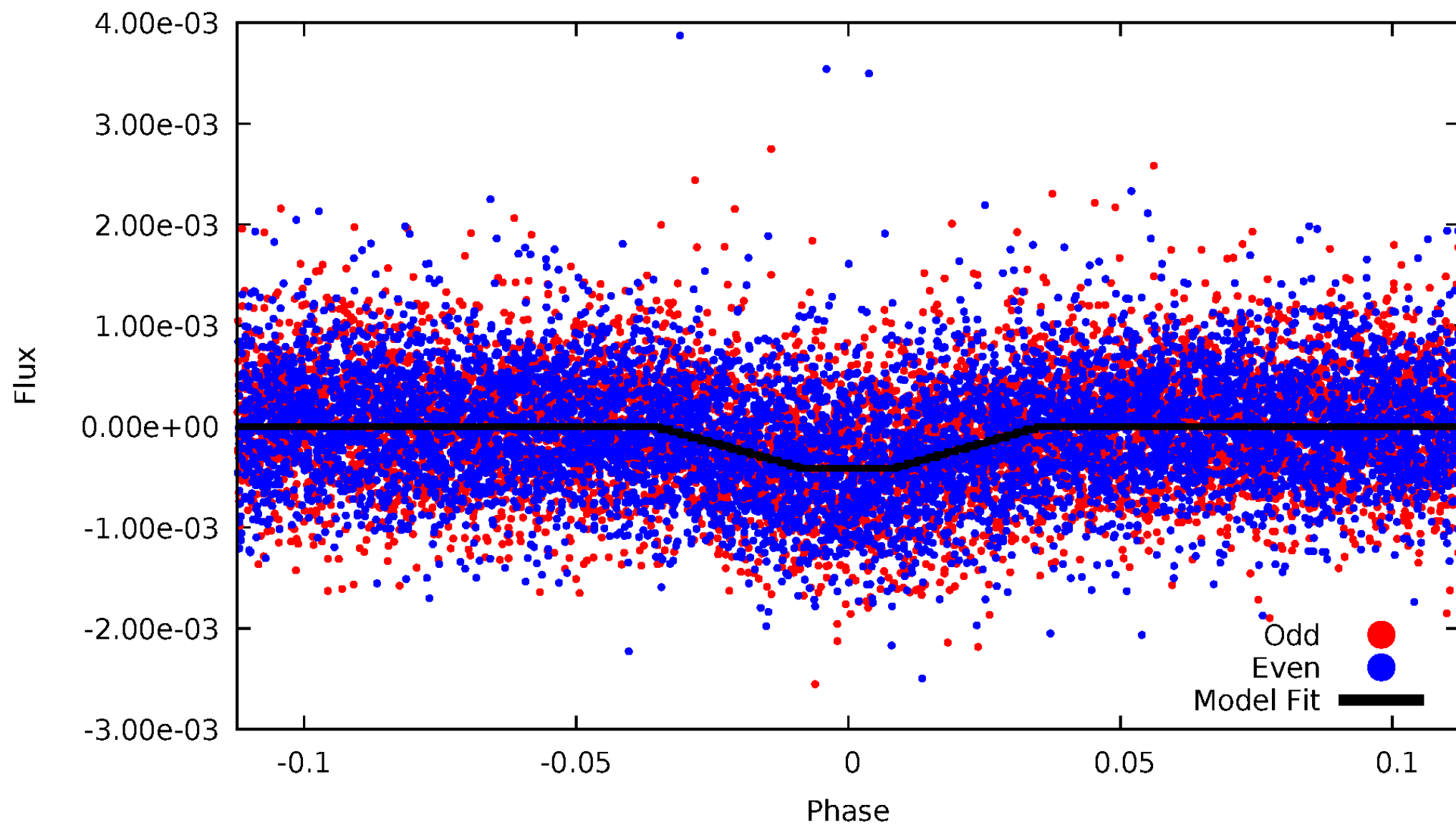
DV Odd/Even

TCE 009153554-01



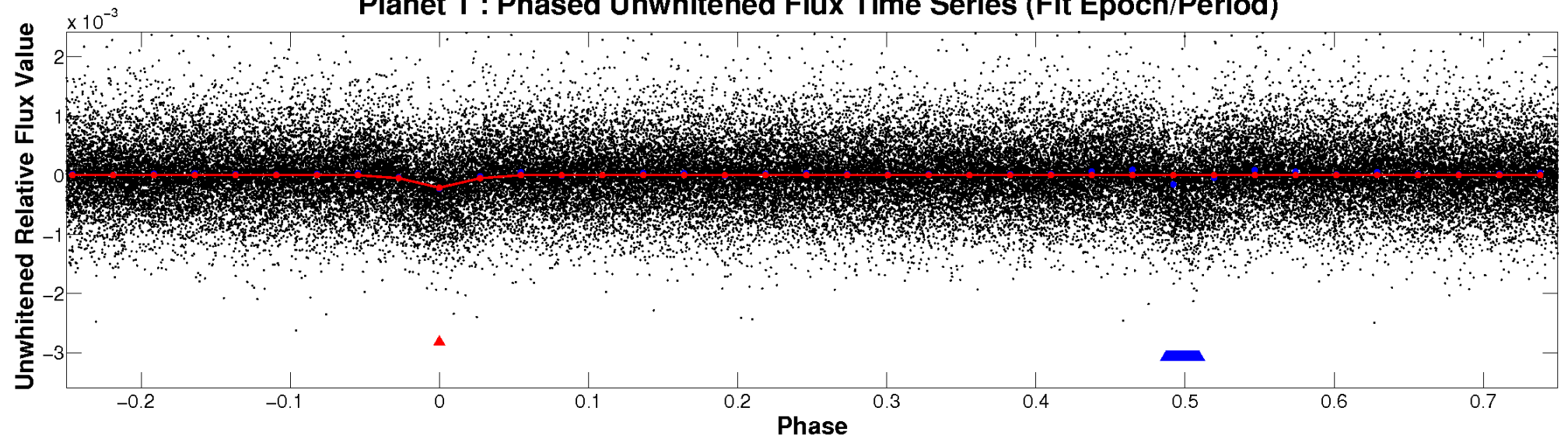
ALT Odd/Even

TCE 009153554-01

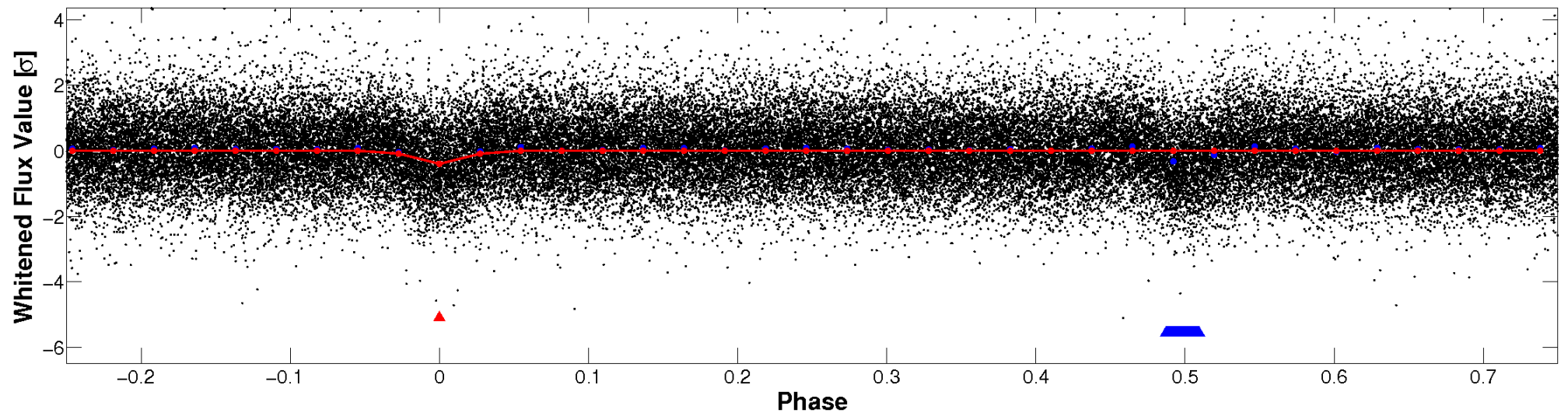


Non-Whitened Vs. Whitened Light Curve

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

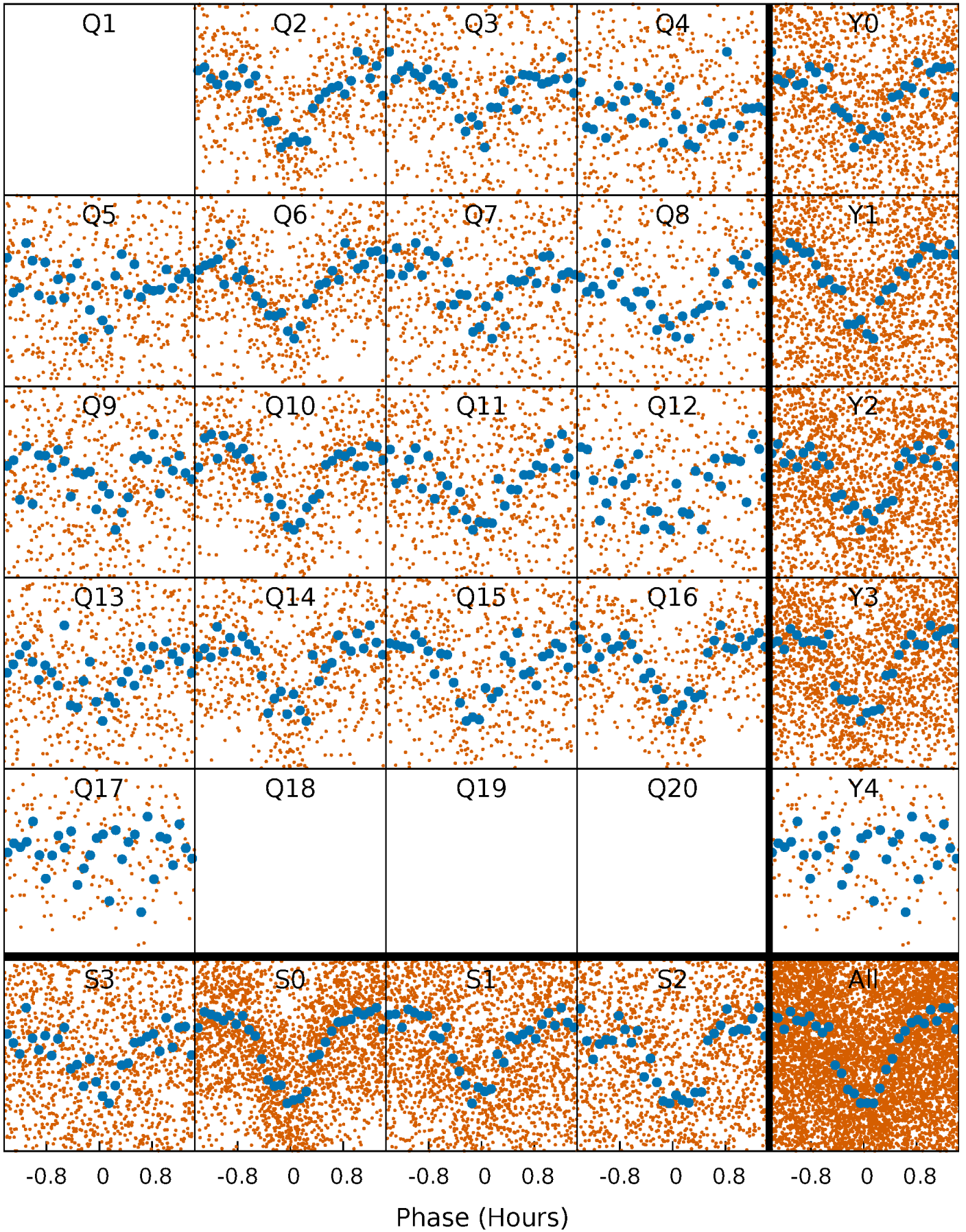


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



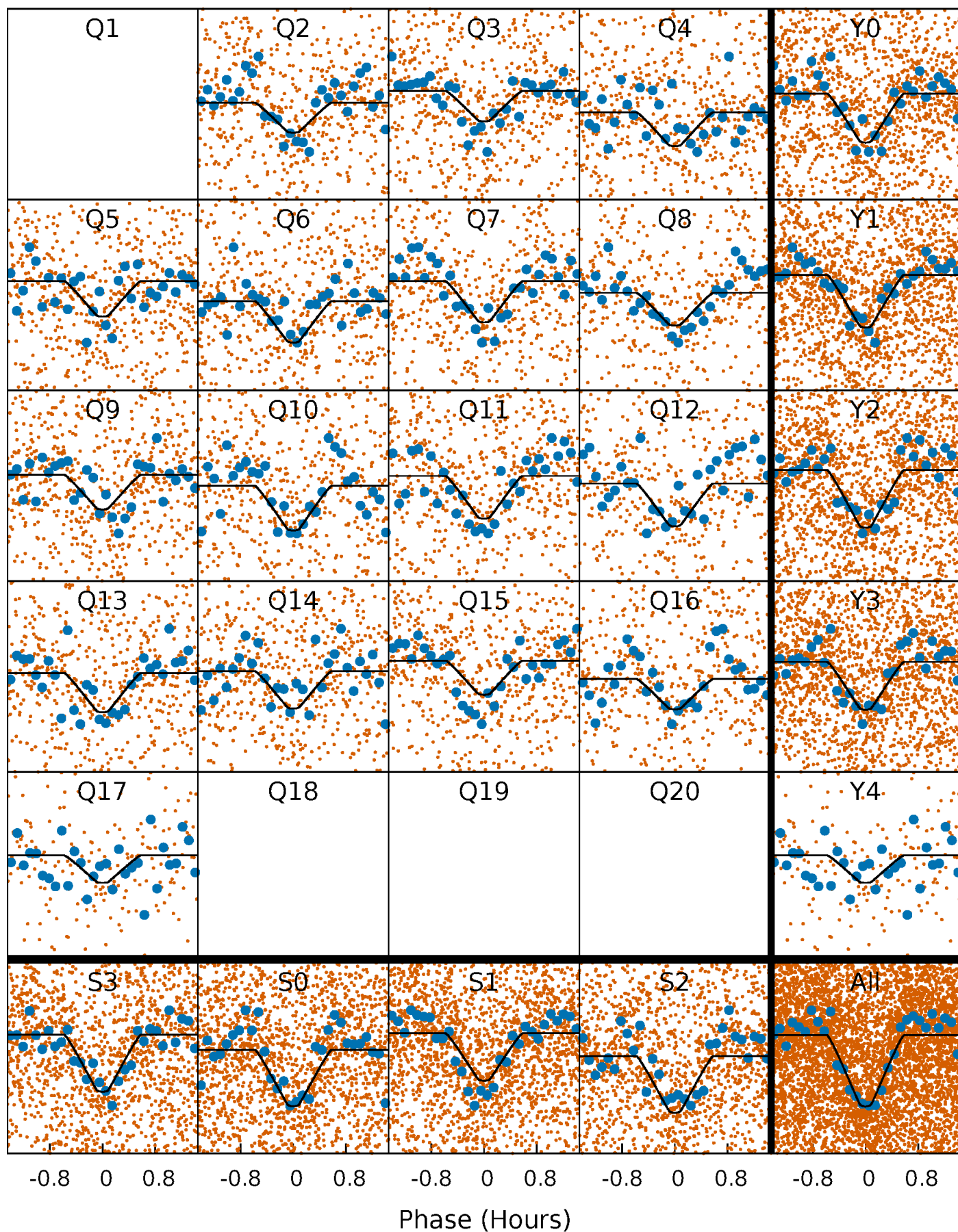
PDC Quarter-Phased Transit Curves

TCE 009153554-01 P= 0.747370 Days $T_0=131.963017$ (BKJD)



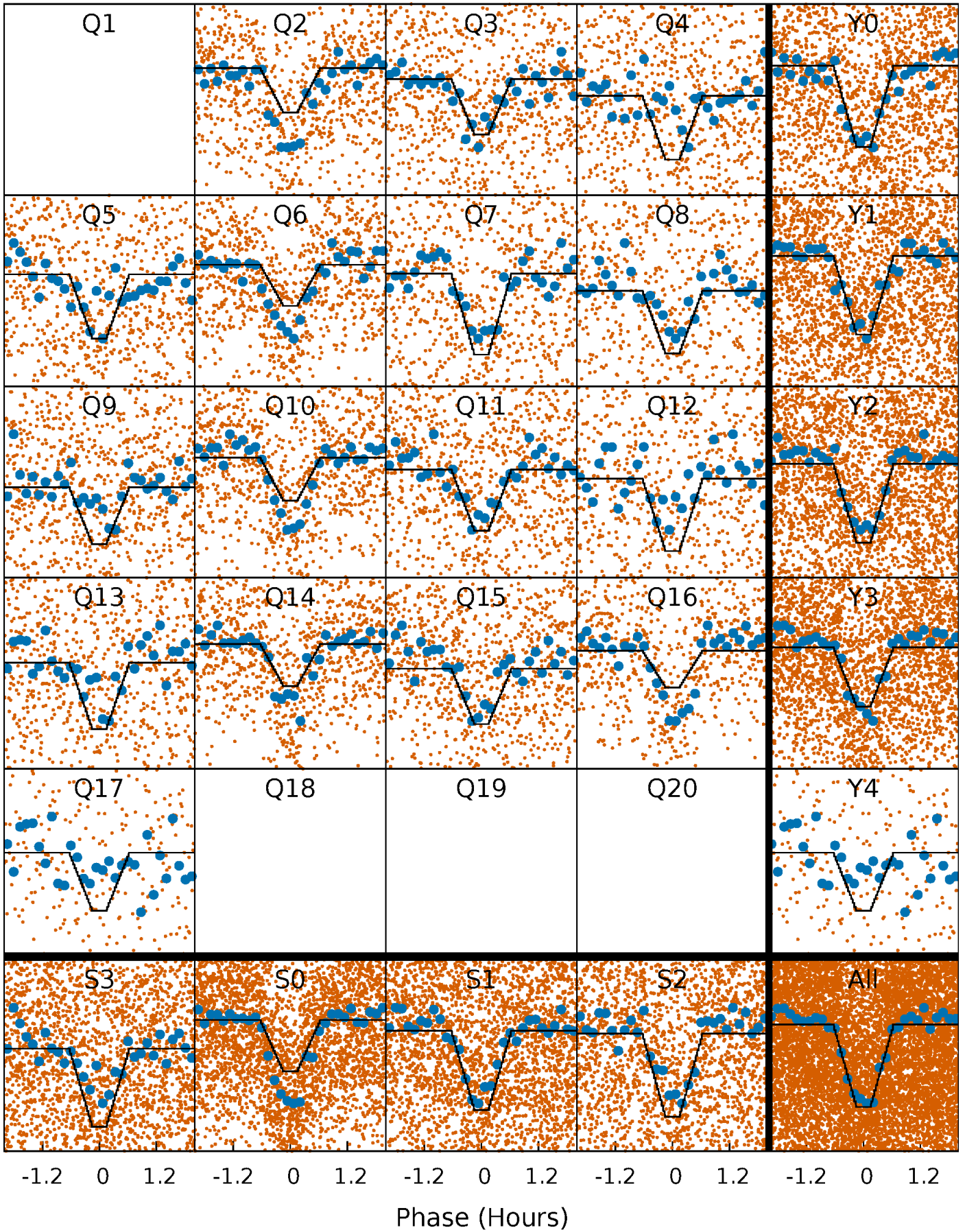
DV Quarter-Phased Transit Curves

TCE 009153554-01 P= 0.747370 Days $T_0=131.963017$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

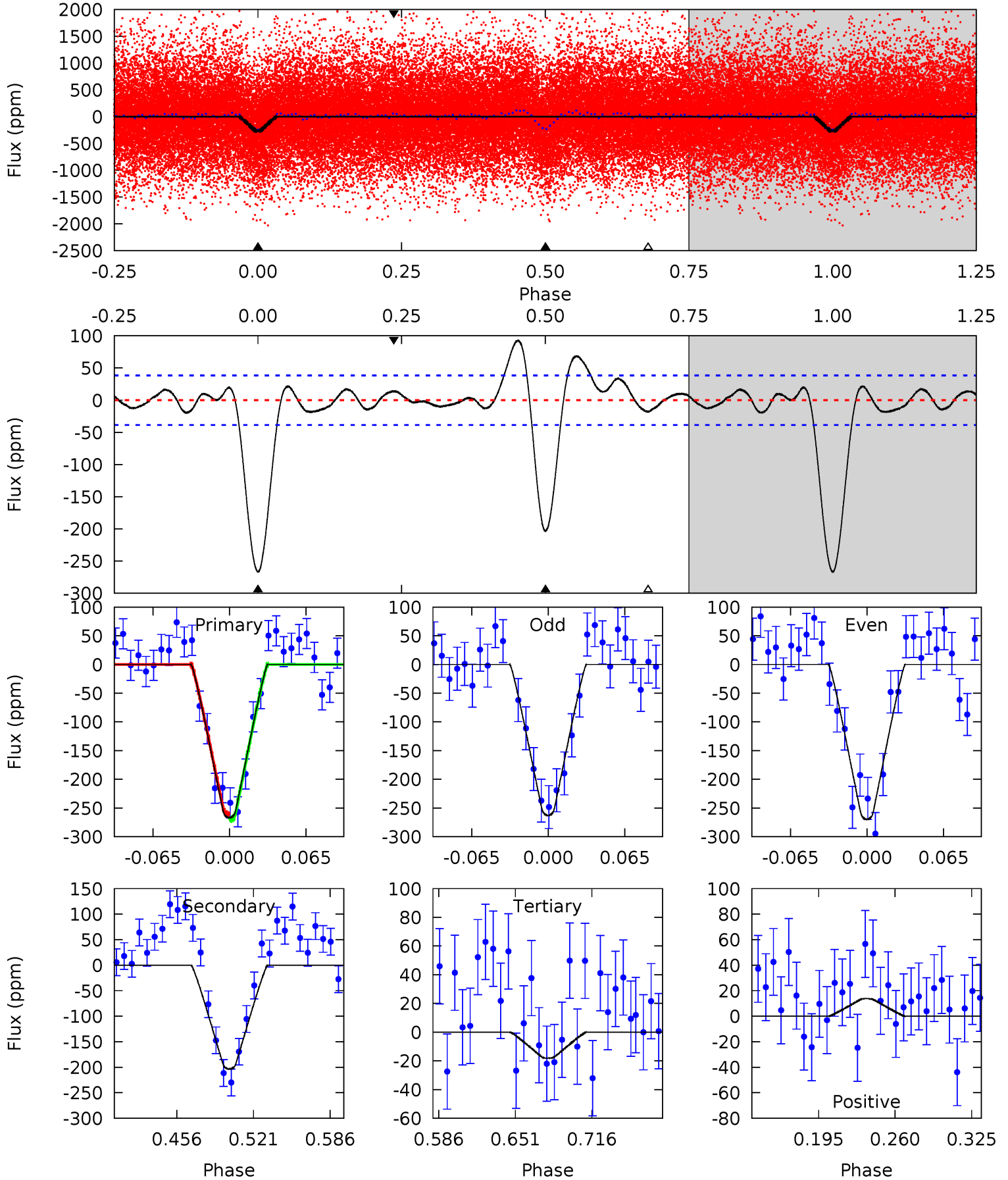
TCE 009153554-01 P= 0.747368 Days $T_0=131.964755$ (BKJD)



DV Model-Shift Uniqueness Test

009153554-01, P = 0.747370 Days, E = 131.963017 Days

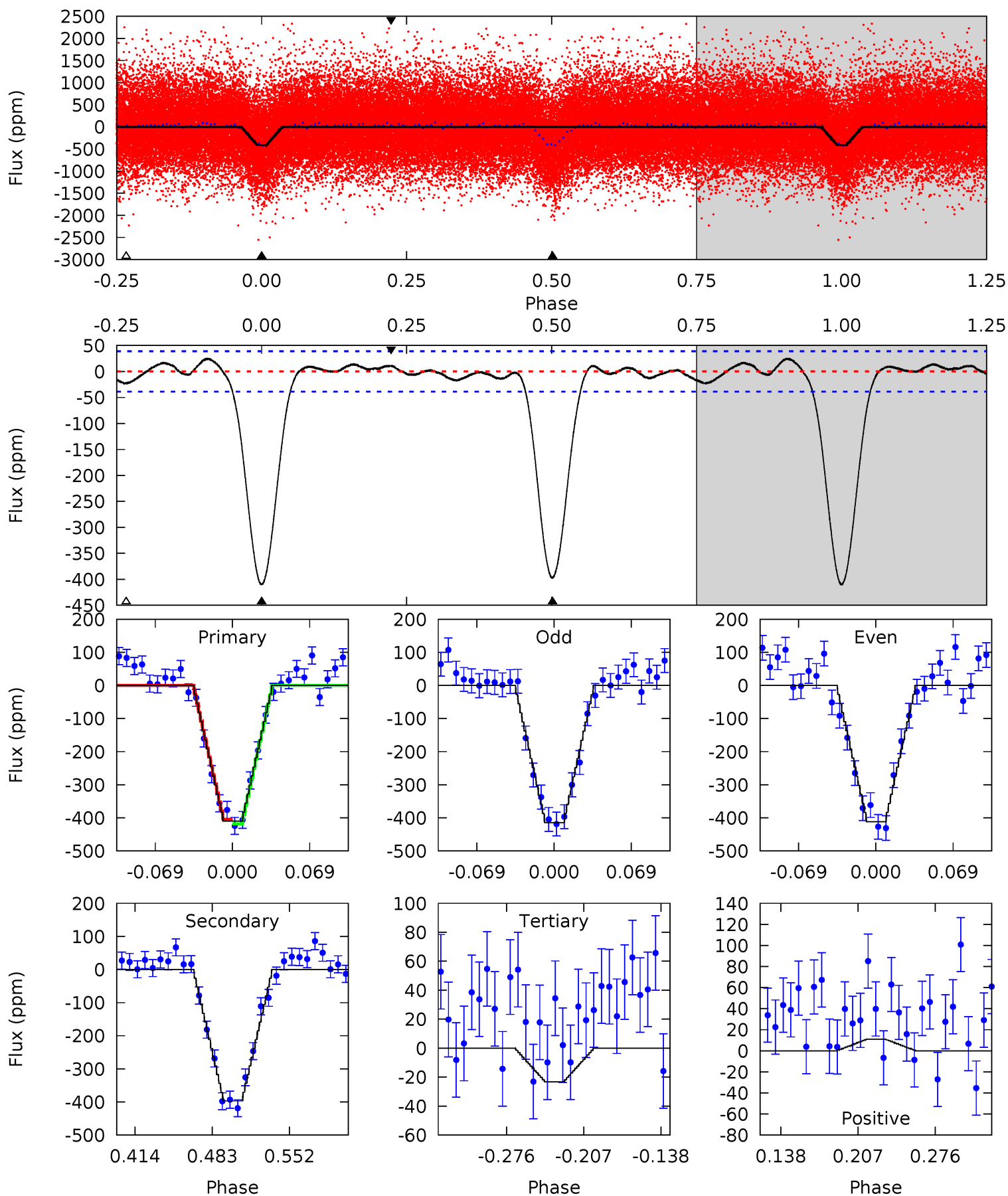
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.3	24.6	2.19	1.67	4.65	1.84	1.76	30.1	30.6	22.4	22.9	0.42	1.01	0.26	0.54



Alt Model-Shift Uniqueness Test

009153554-01, P = 0.747368 Days, E = 131.964755 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
49.0	47.5	2.79	1.32	4.64	1.82	1.16	46.3	47.7	44.7	46.2	0.17	0.97	0.06	0.77



Stellar Parameters For KIC 009153554

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5970^{+167}_{-188}	$4.521^{+0.039}_{-0.221}$	$-0.180^{+0.300}_{-0.300}$	$0.908^{+0.293}_{-0.098}$	$0.996^{+0.131}_{-0.131}$	$1.877^{+0.404}_{-0.968}$
	+3%/-3%	+1%/-5%	+167%/-167%	+32%/-11%	+13%/-13%	+22%/-52%
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 009153554-01 / KOI 3044.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-203 ± 8	$1.88^{+0.72}_{-0.73}$	2849^{+214}_{-154}	5339^{+1381}_{-682}	$7.983^{+12.698}_{-3.776}$
Alt.	-397 ± 8	$2.15^{+0.76}_{-0.65}$	2836^{+202}_{-133}	5837^{+1255}_{-682}	12^{+13}_{-5}

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

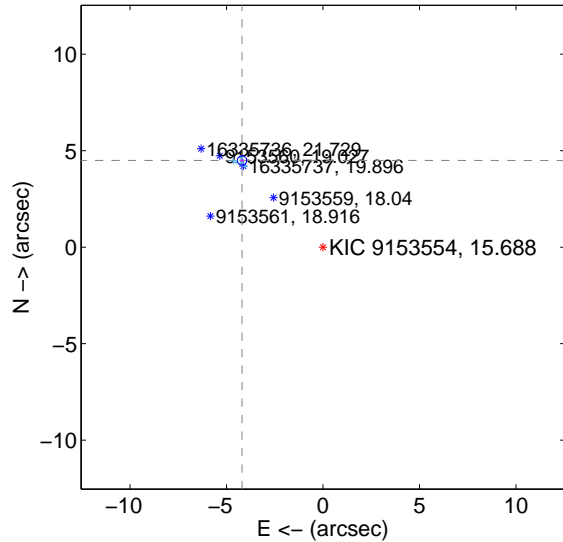
Supplemental centroid analysis for 009153554-01. Kepler magnitude: 15.69. Transit SNR 17.94

There are 12 quarters with good PRF difference image offsets

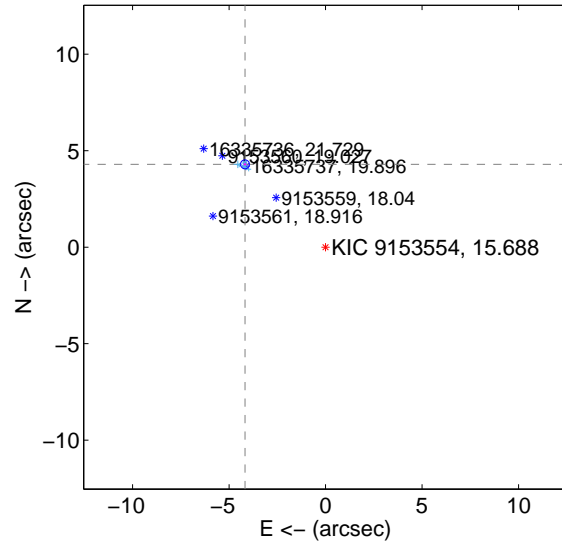
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.148 \pm 0.080	76.65	4.196 \pm 0.082	4.494 \pm 0.076
PRF-fit source offset from KIC position	5.988 \pm 0.077	78.03	4.176 \pm 0.077	4.292 \pm 0.074
photometric centroid source offset	8.14 \pm 0.77	10.58	7.39 \pm 0.78	3.41 \pm 0.74

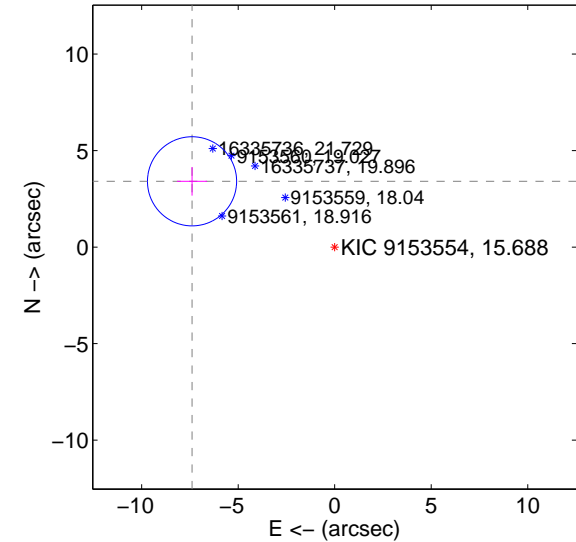
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

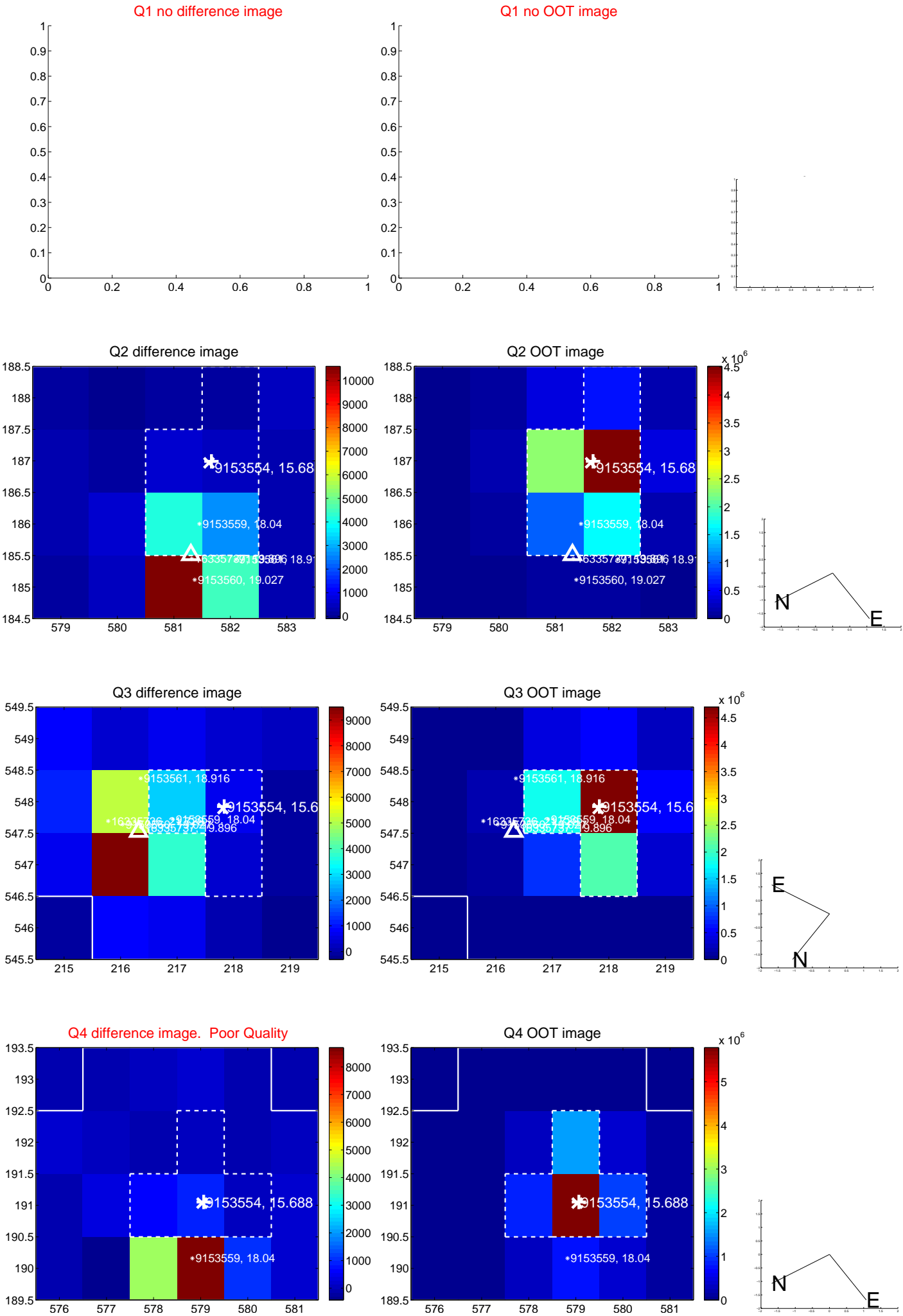


offset from photometric centroids

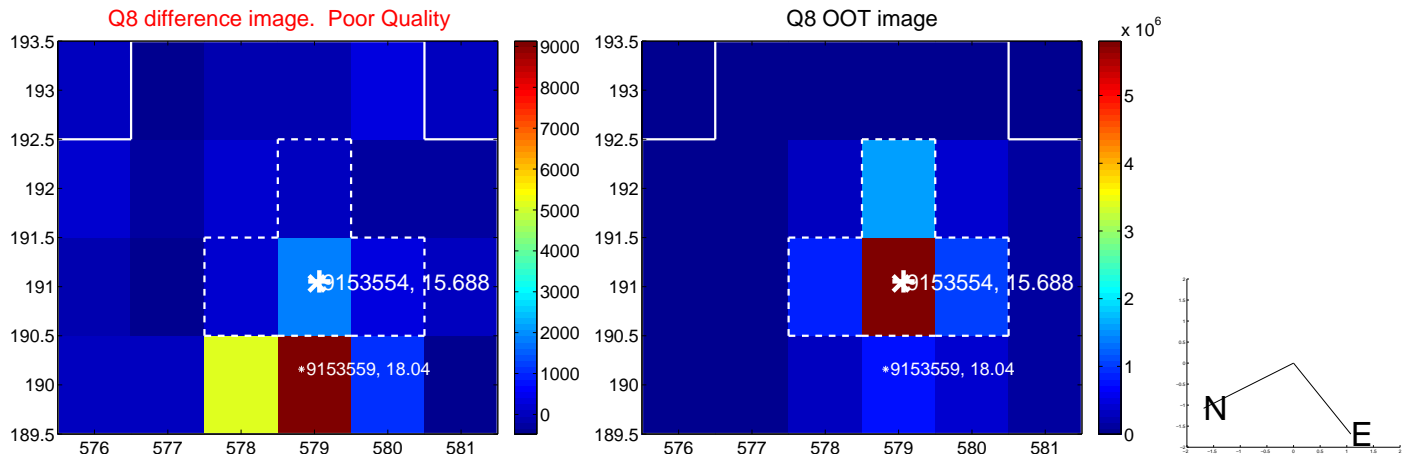
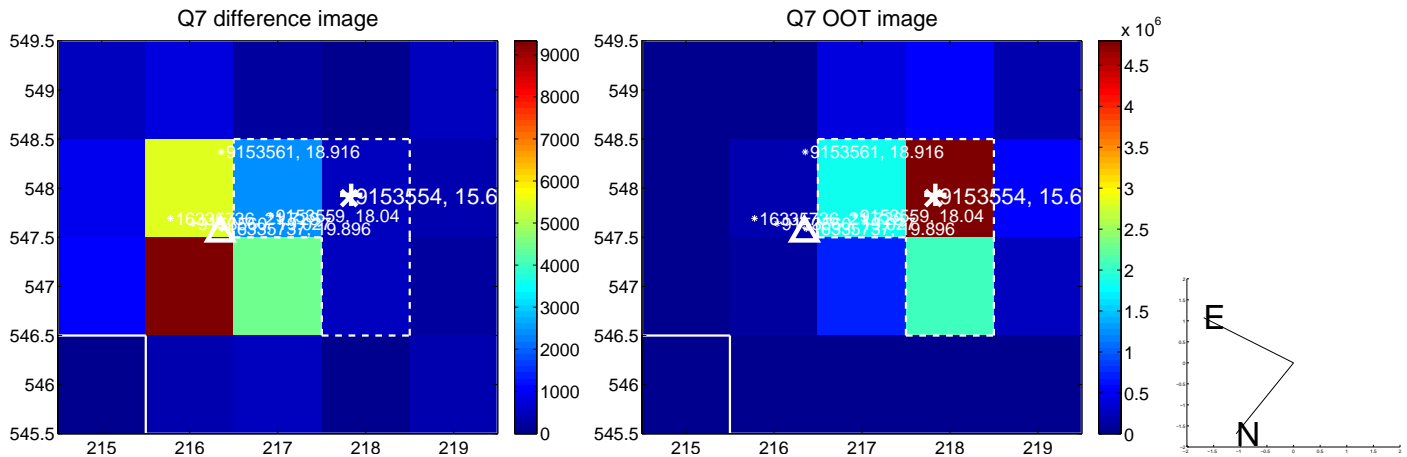
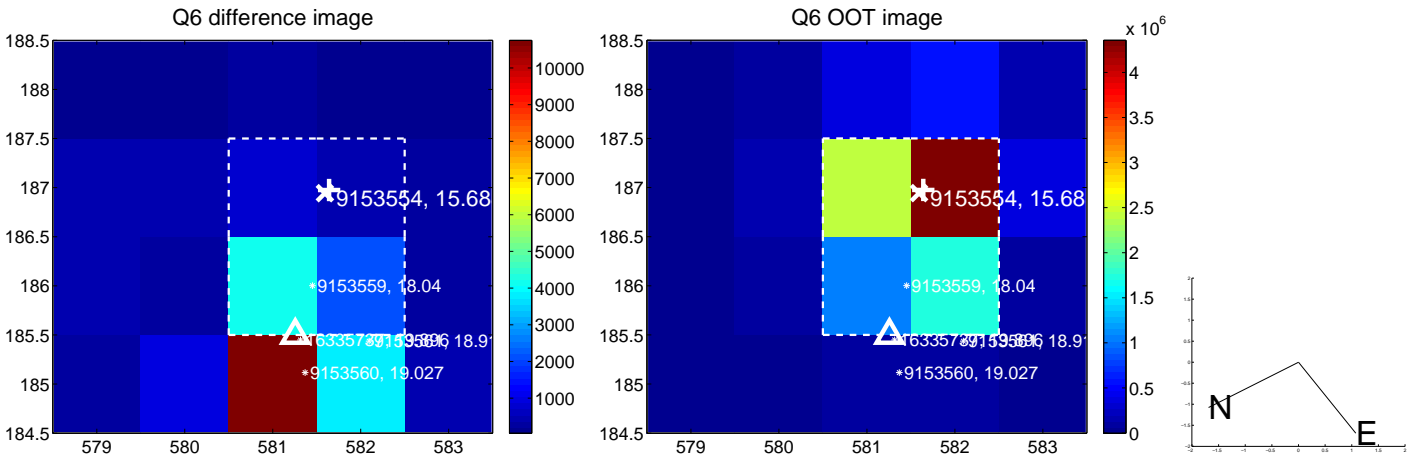
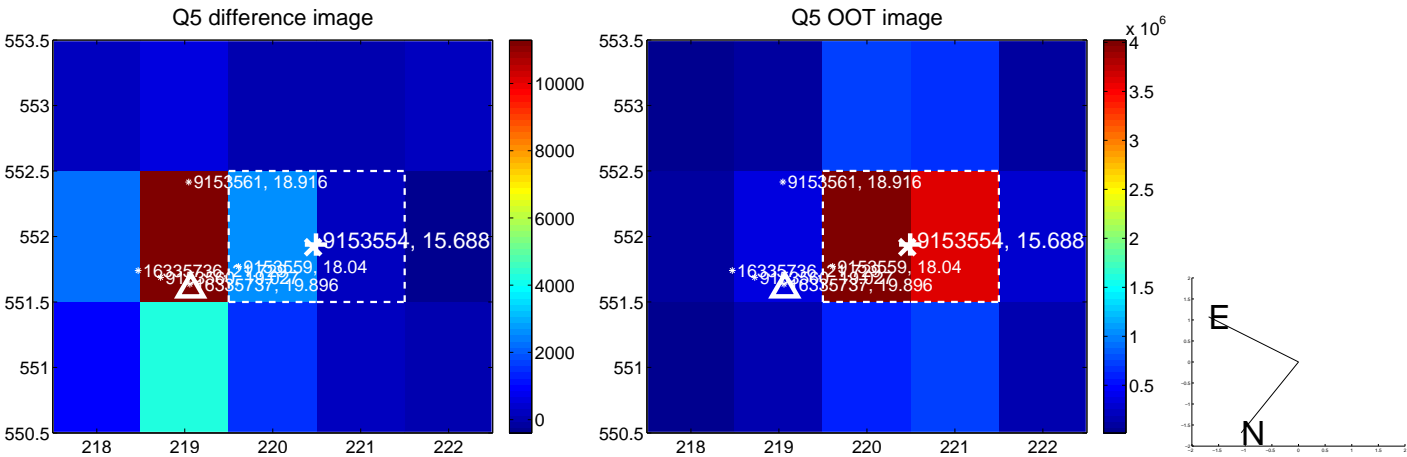


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

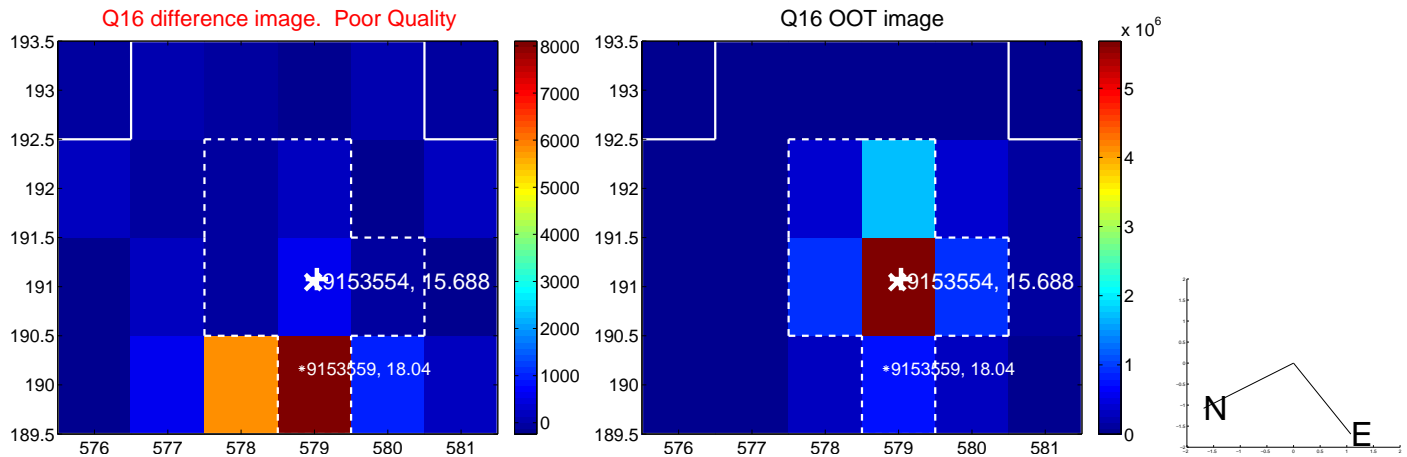
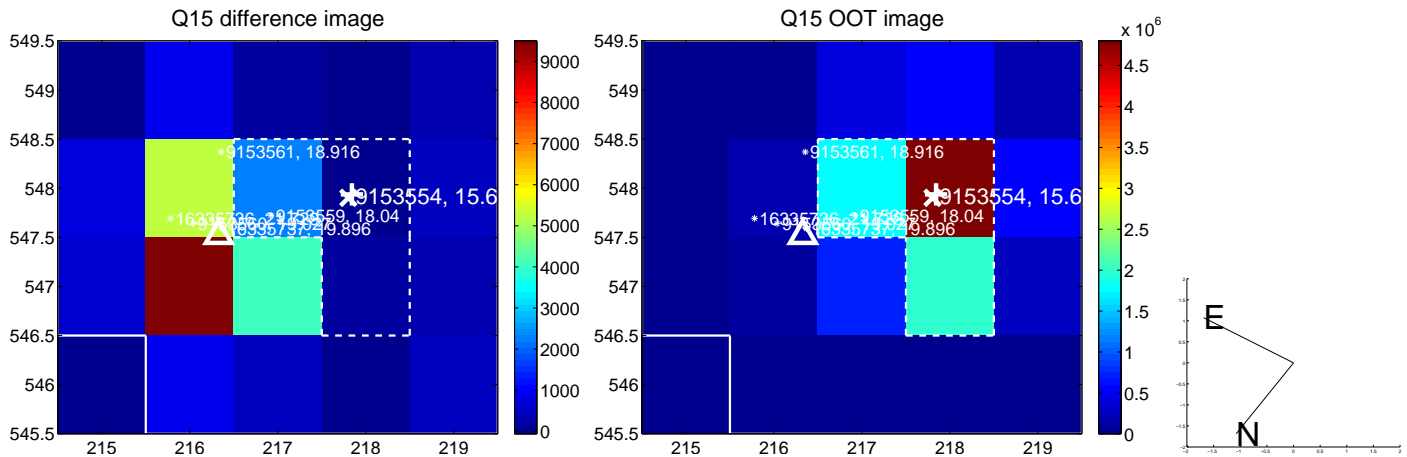
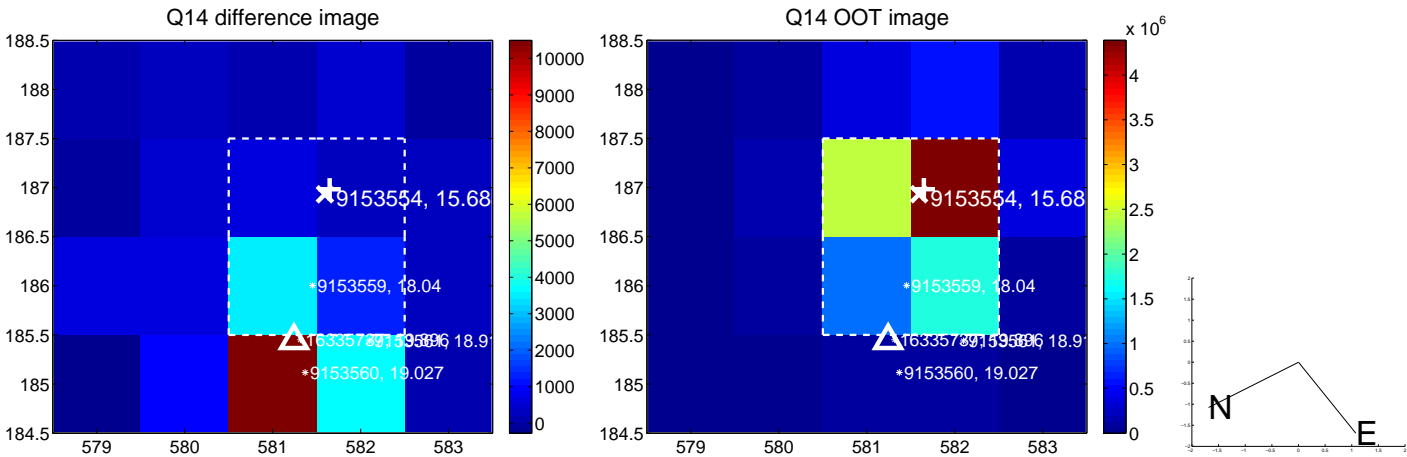
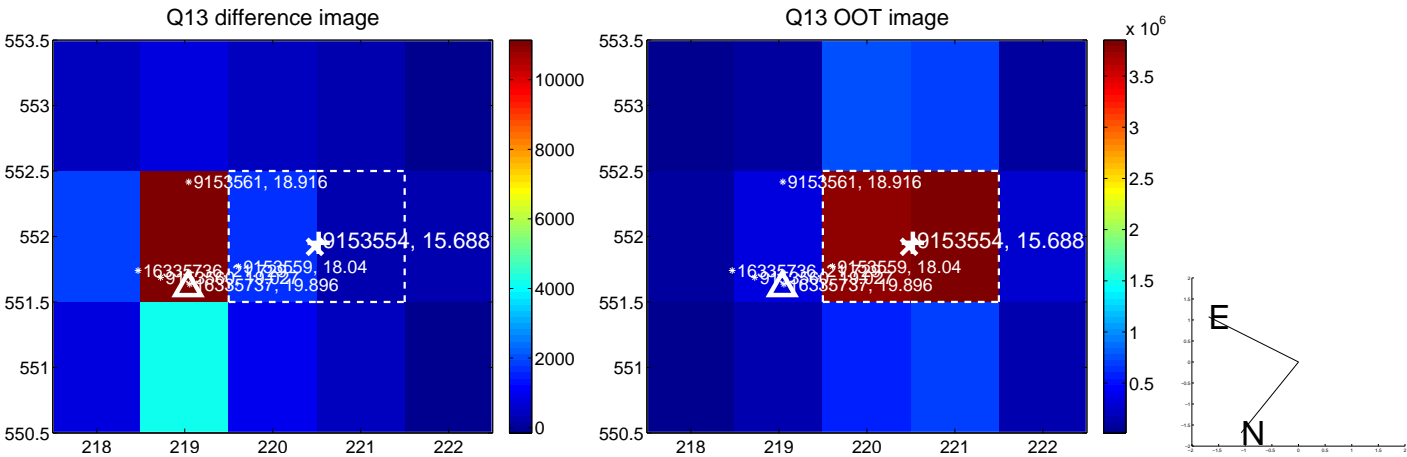
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

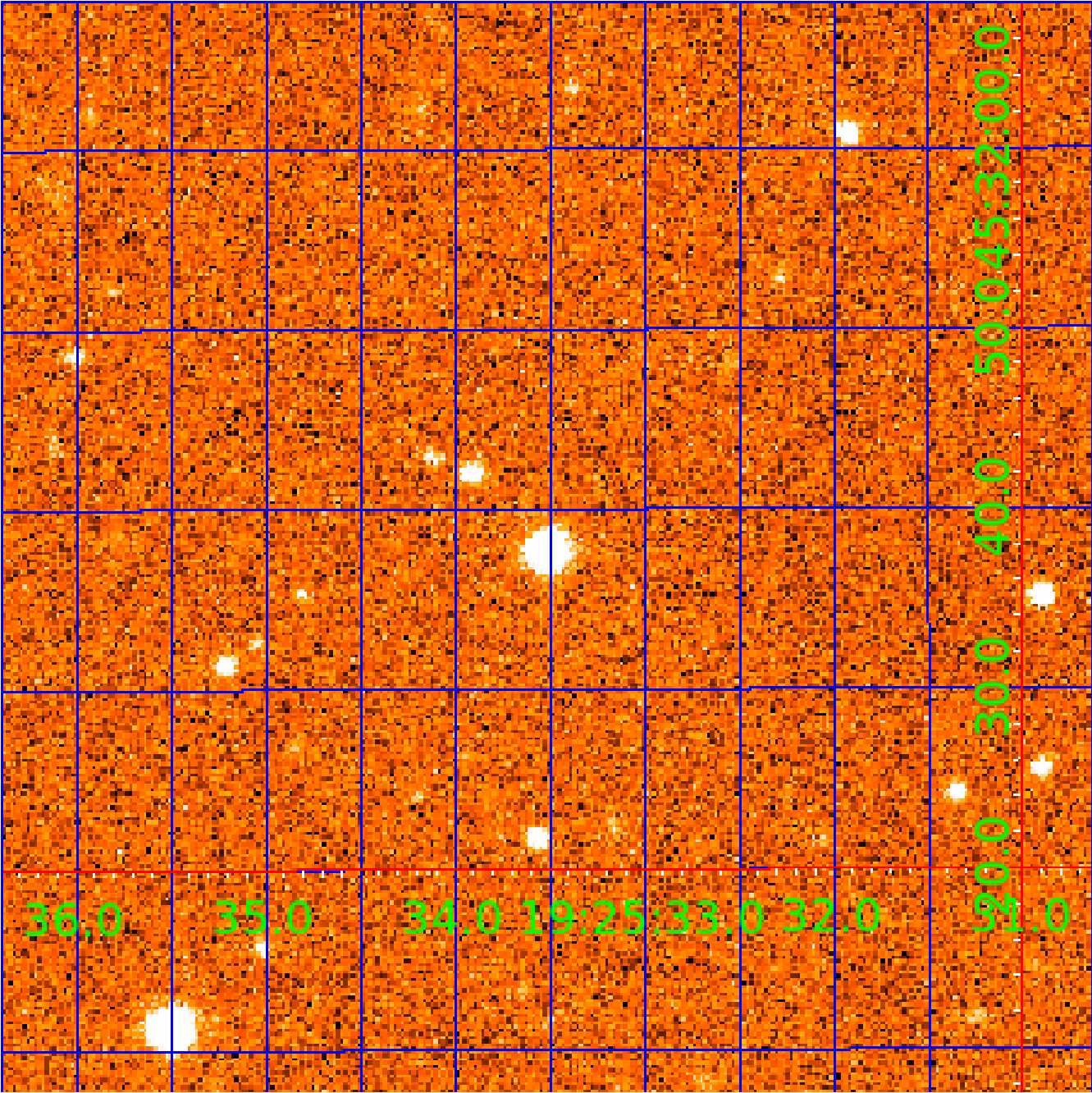


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009153554

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})
009153554-01	OBS	3044.01	0.747370	131.963017	243.3	0.724	12.2	17.9	0.91	5970	1.70	3615.22
009153554-02	OBS	No	0.747361	131.596351	242.3	0.728	11.3	18.2	0.91	5970	1.70	3615.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009153554-01	OBS	FP	0.02	0	0	1	0	MOD_SEC_DV—MOD_SEC_ALT—PLANET_PERIOD_IS_HALF_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET
009153554-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

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.

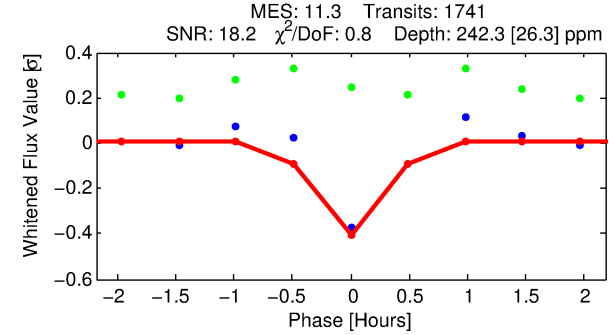
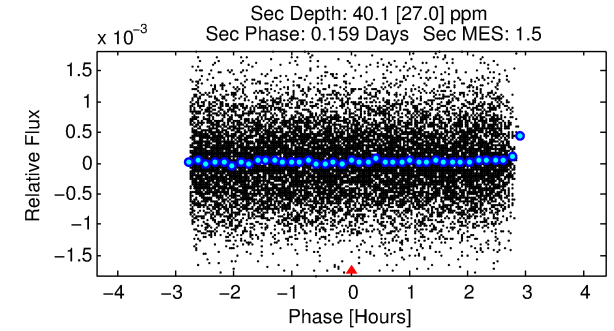
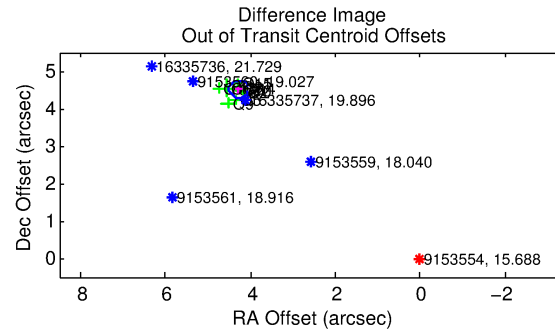
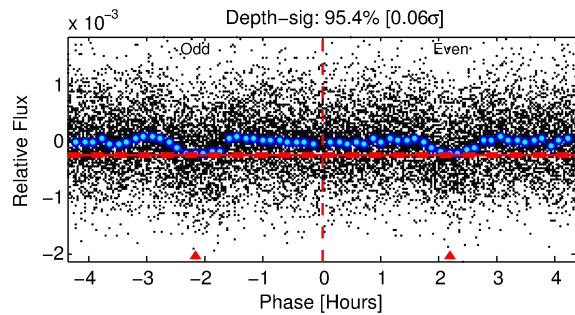
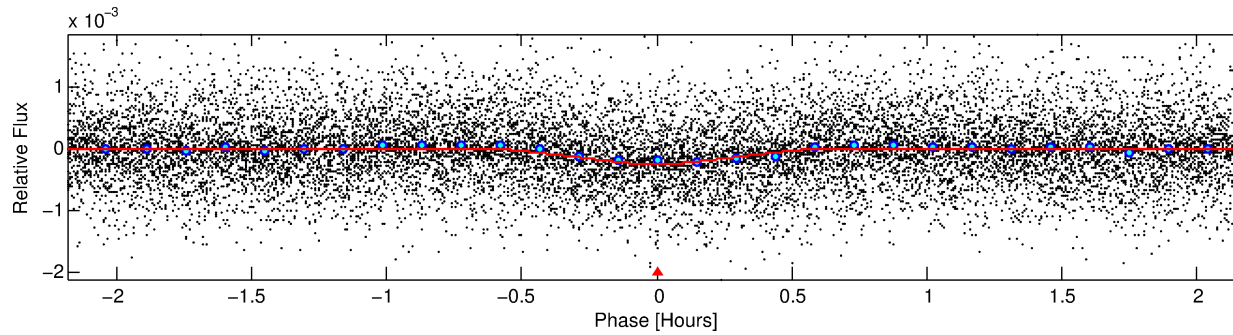
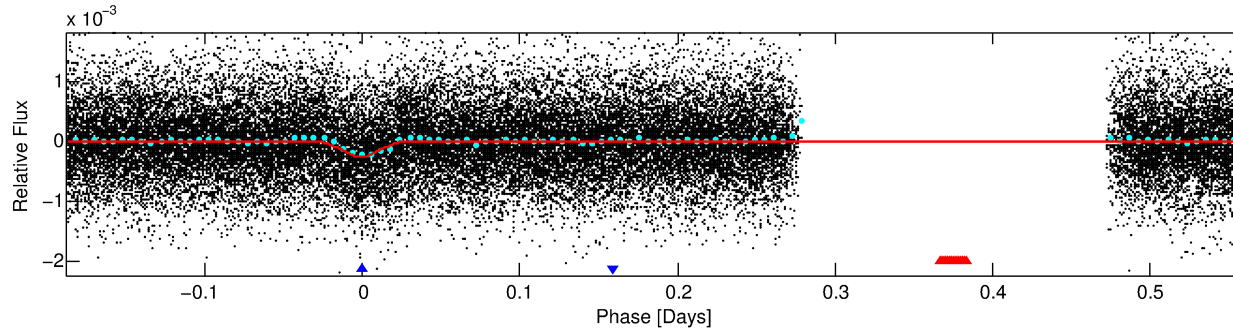
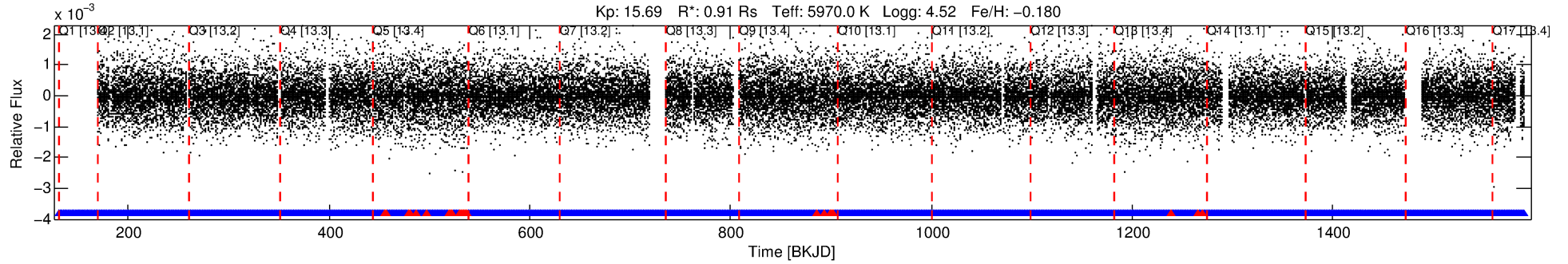
Ephemeris Match Information For 009153554-02

No Significant Match Found

DV One-Page Summary

KIC: 9153554 Candidate: 2 of 2 Period: 0.747 d
KOI: K03044 Corr: No Ephemeris Match

Kp: 15.69 R*: 0.91 Rs Teff: 5970.0 K Logg: 4.52 Fe/H: -0.180



DV Fit Results:

Period = 0.74736 [0.00001] d
Epoch = 131.5964 [0.0008] BKJD
Rp/R* = 0.0172 [0.0069]
a/R* = 3.81 [7.17]
b = 0.90 [0.43]
Seff = 3615.27 [1522.00]
Teq = 1977 [208] K
Rp = 1.70 [0.88] Re
a = 0.0161 [0.0044] AU
Ag = 1.97 [2.22] [0.44σ]
Teff = 3622 [959] K [1.68σ]

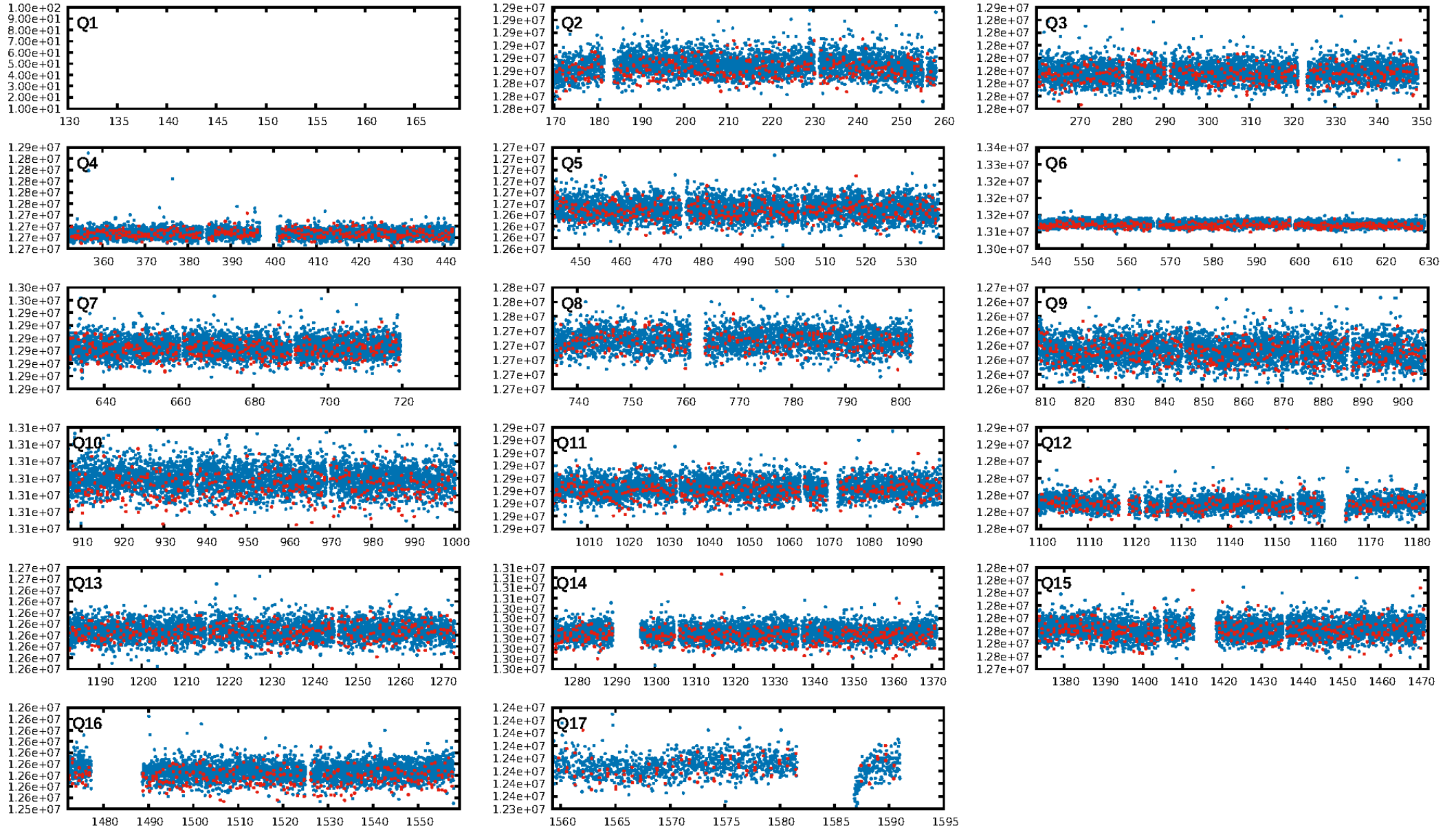
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: 8.97e-32
RollingBand-fgt: 0.98 [1677/1706]
GhostDiagnostic-chr: -0.7575
Centroid-sig: 0.0%
Centroid-so: 5.776 arcsec [7.74σ]
OotOffset-rm: 6.214 arcsec [80.11σ]
KicOffset-rm: 6.055 arcsec [78.24σ]
OotOffset-st: 4/4/0/4 [12]
KicOffset-st: 4/4/0/4 [12]
DiffImageQuality-fgm: 1.00 [12/12]
DiffImageOverlap-fno: 1.00 [16/16]

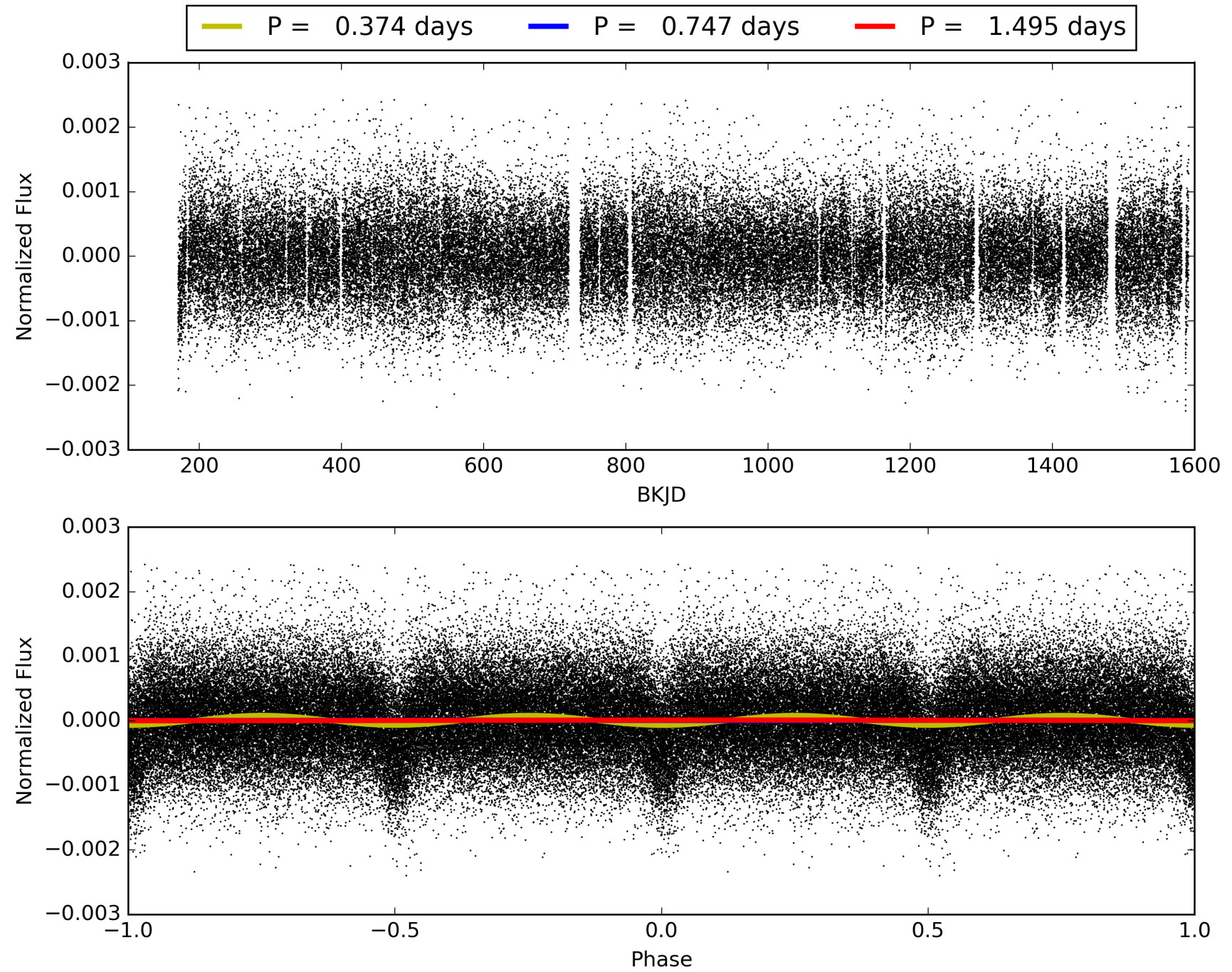
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:29:49 Z

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

TCE 009153554-02, PDC Light Curves

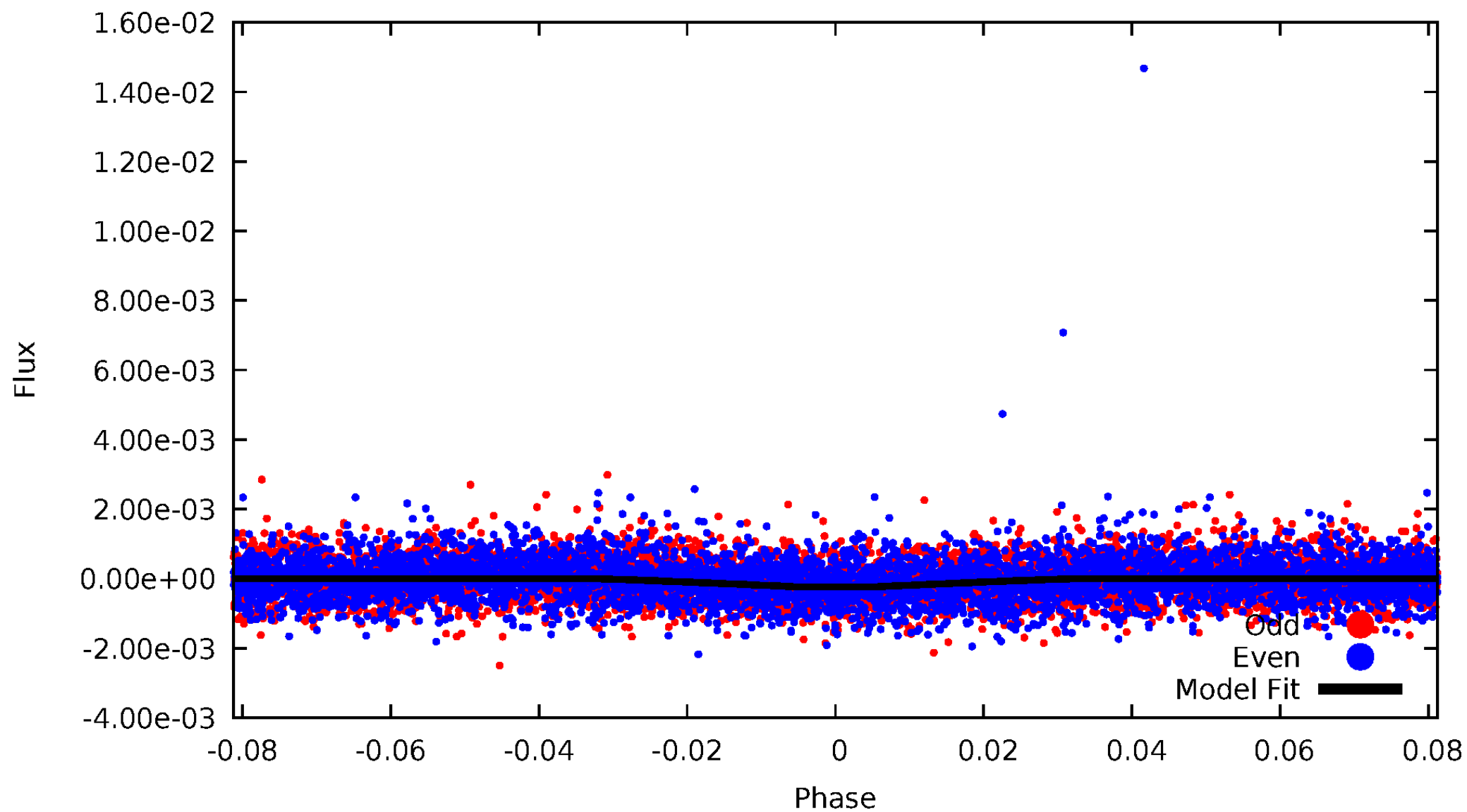


TCE 009153554-02



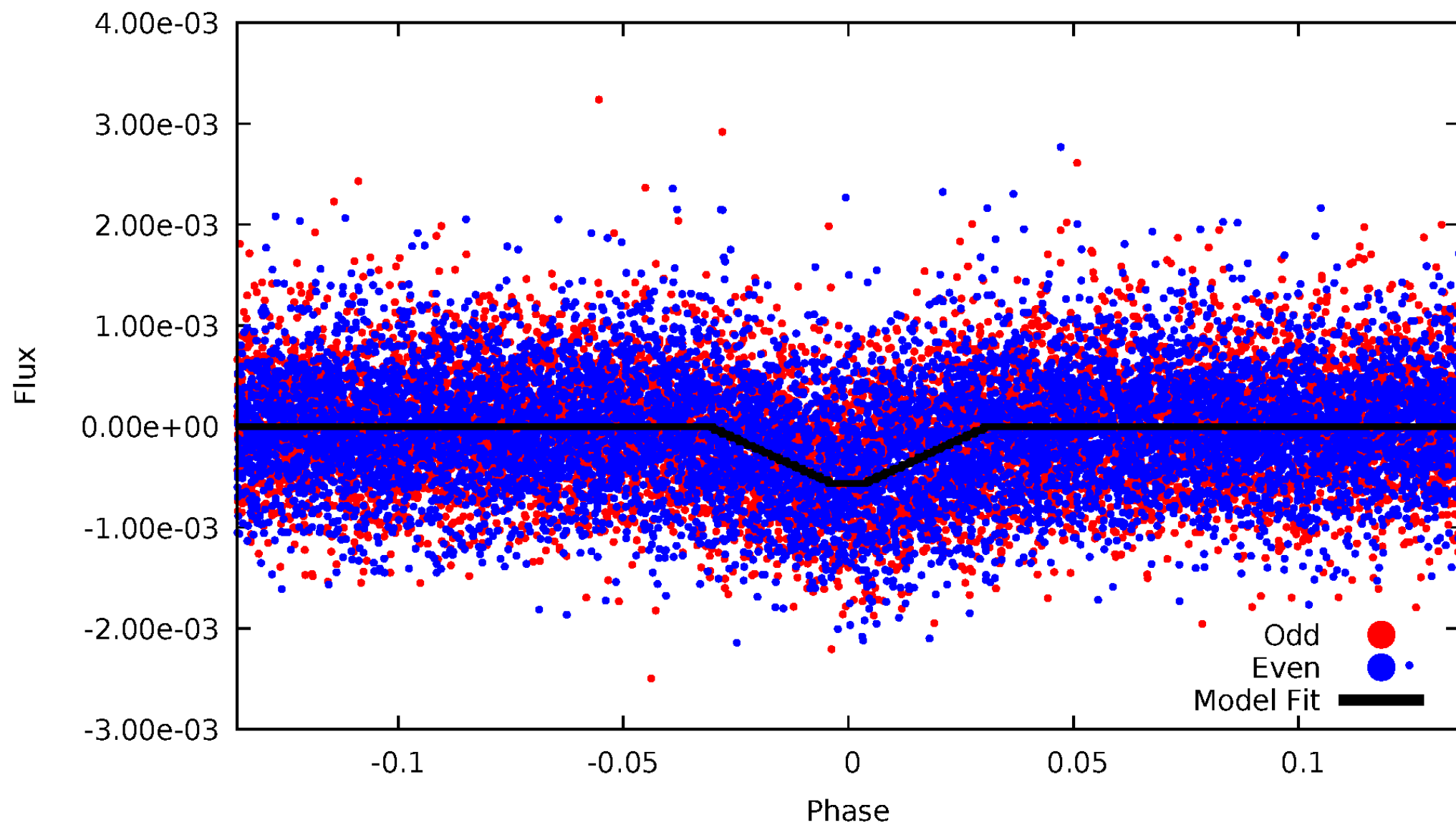
DV Odd/Even

TCE 009153554-02



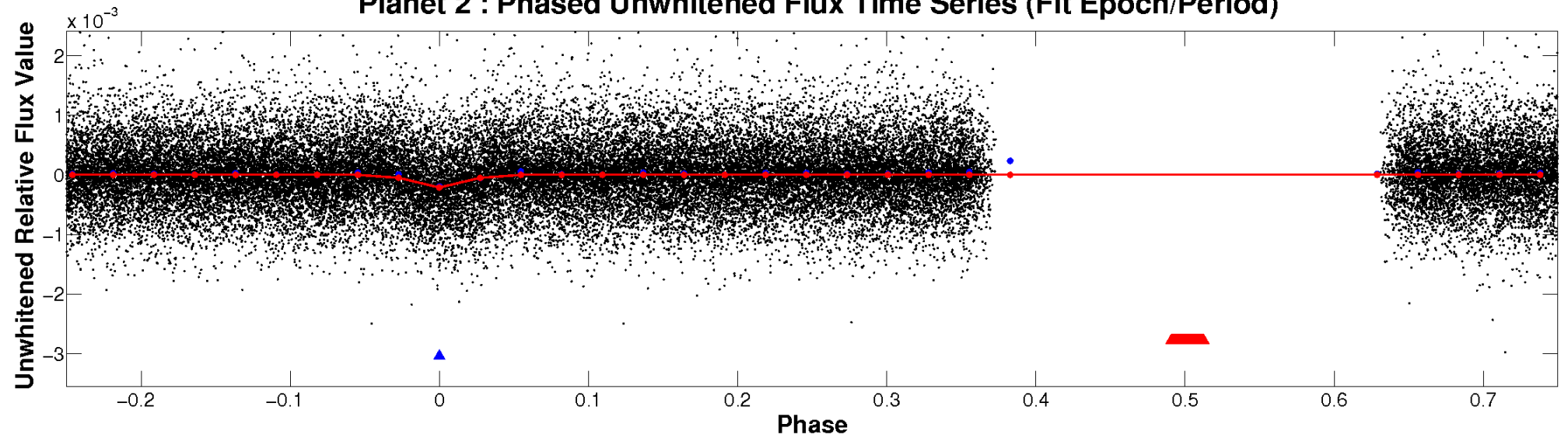
ALT Odd/Even

TCE 009153554-02

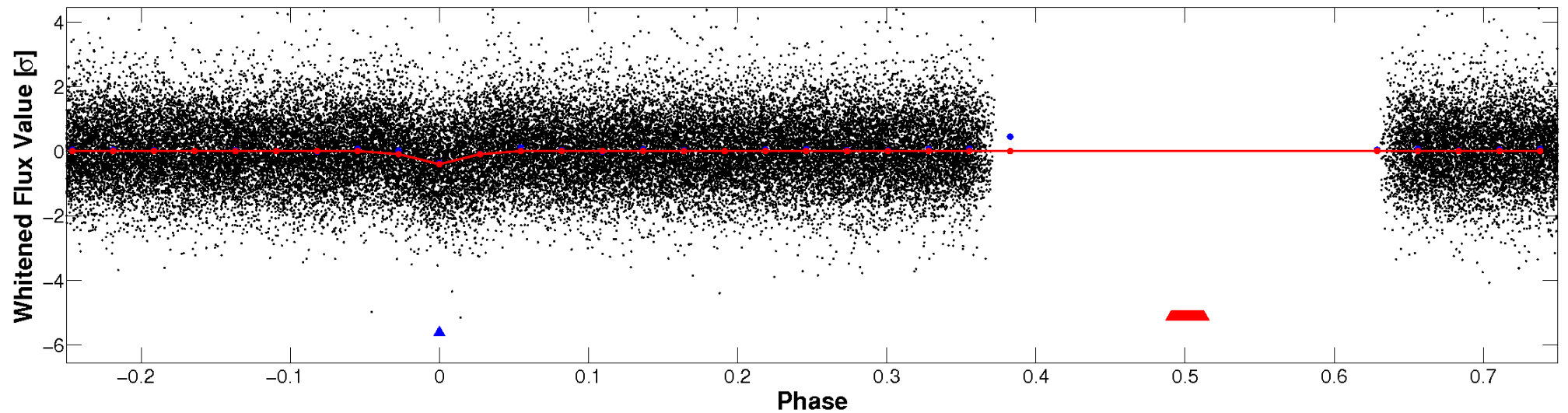


Non-Whitened Vs. Whitened Light Curve

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

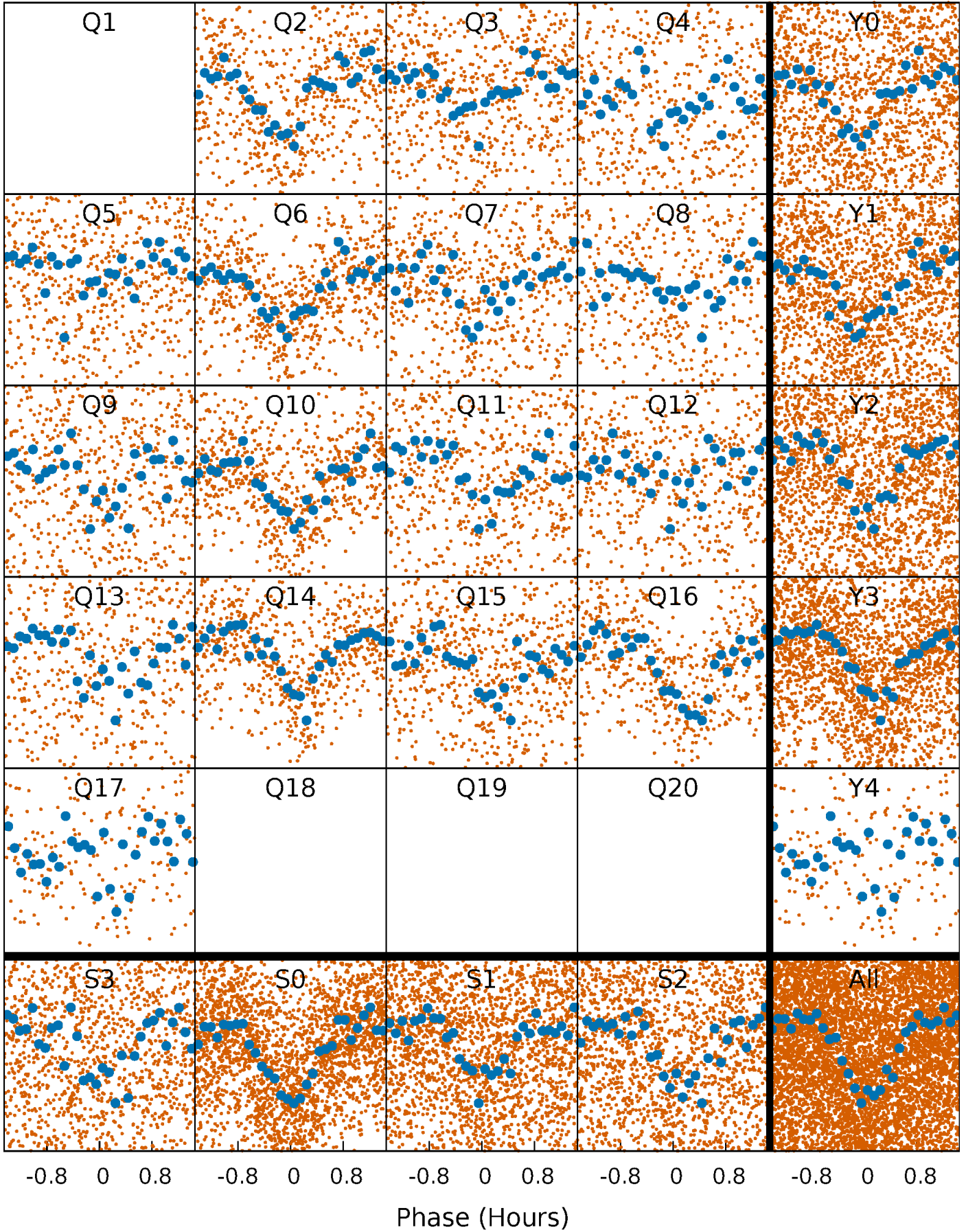


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



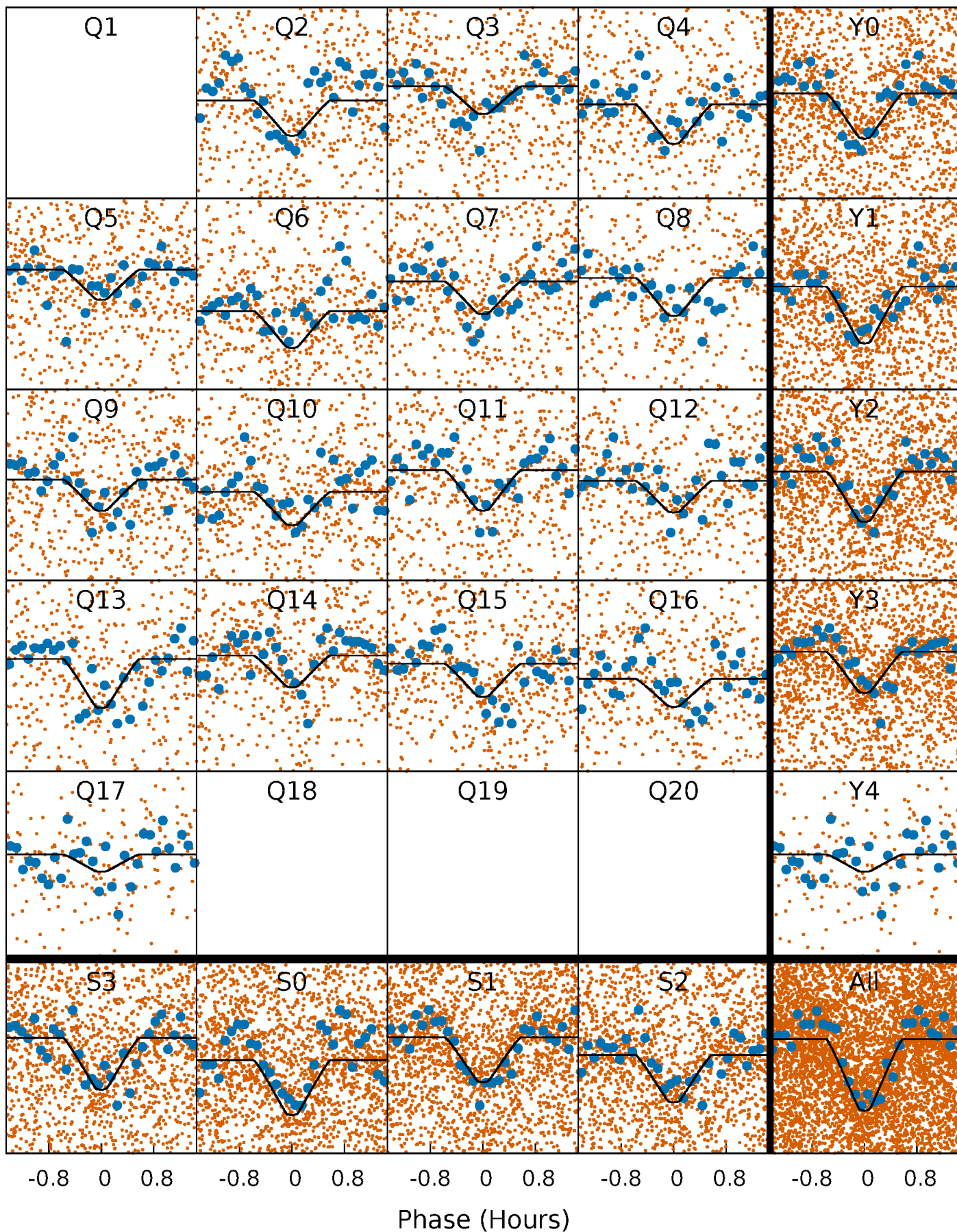
PDC Quarter-Phased Transit Curves

TCE 009153554-02 P= 0.747361 Days $T_0=131.596351$ (BKJD)



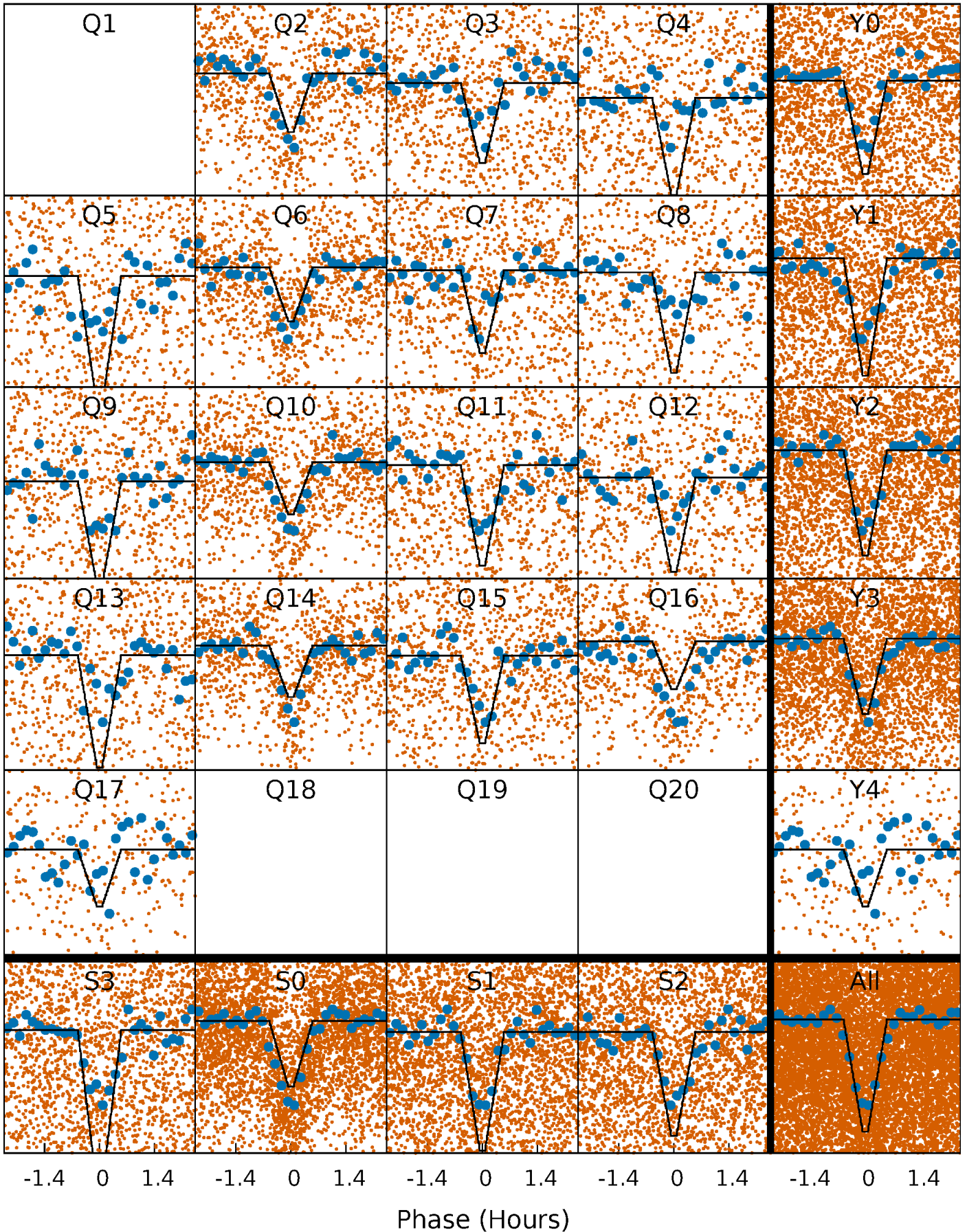
DV Quarter-Phased Transit Curves

TCE 009153554-02 P= 0.747361 Days $T_0=131.596351$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

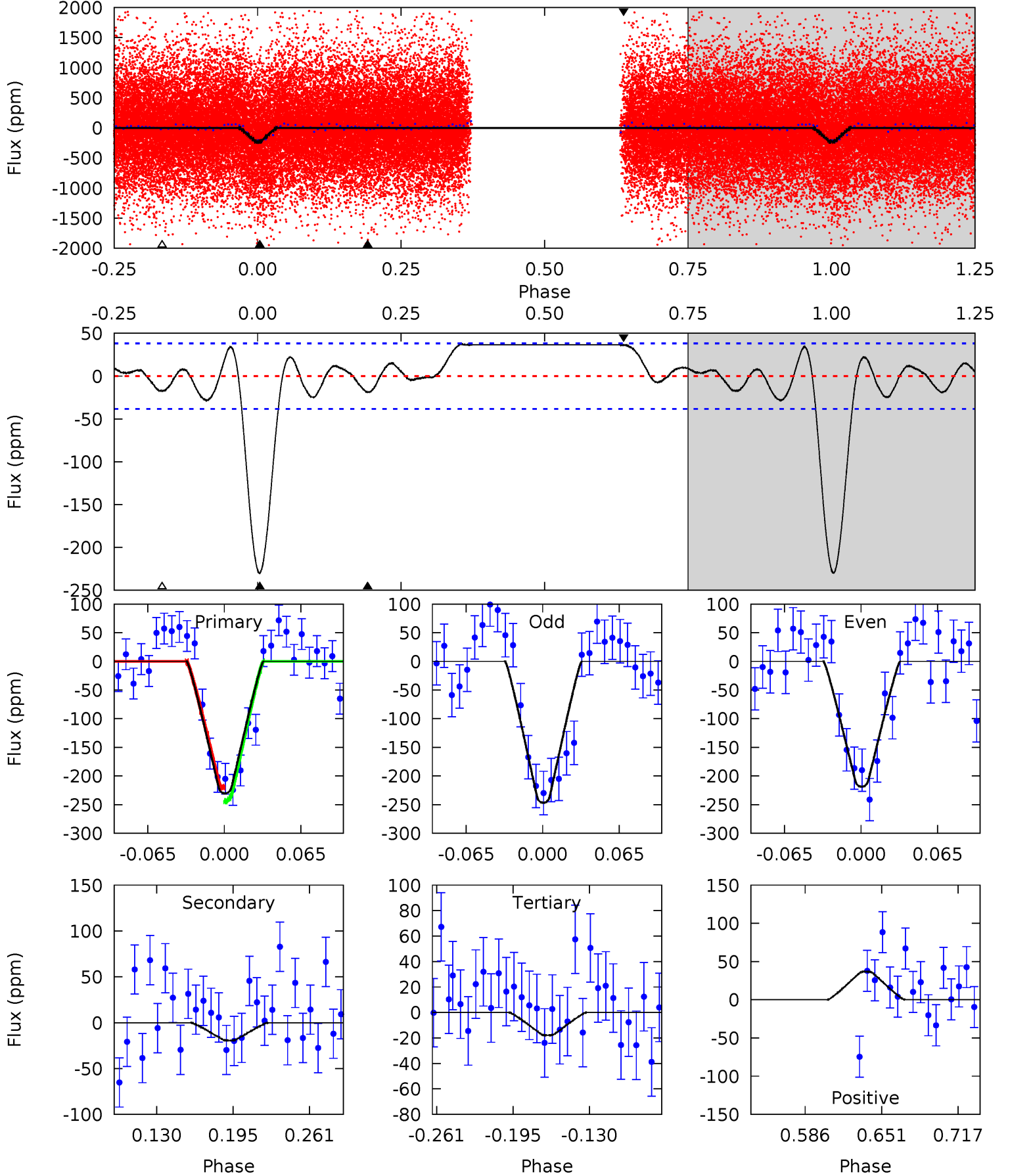
TCE 009153554-02 P= 0.747368 Days $T_0=131.591921$ (BKJD)



DV Model-Shift Uniqueness Test

009153554-02, P = 0.747361 Days, E = 131.596351 Days

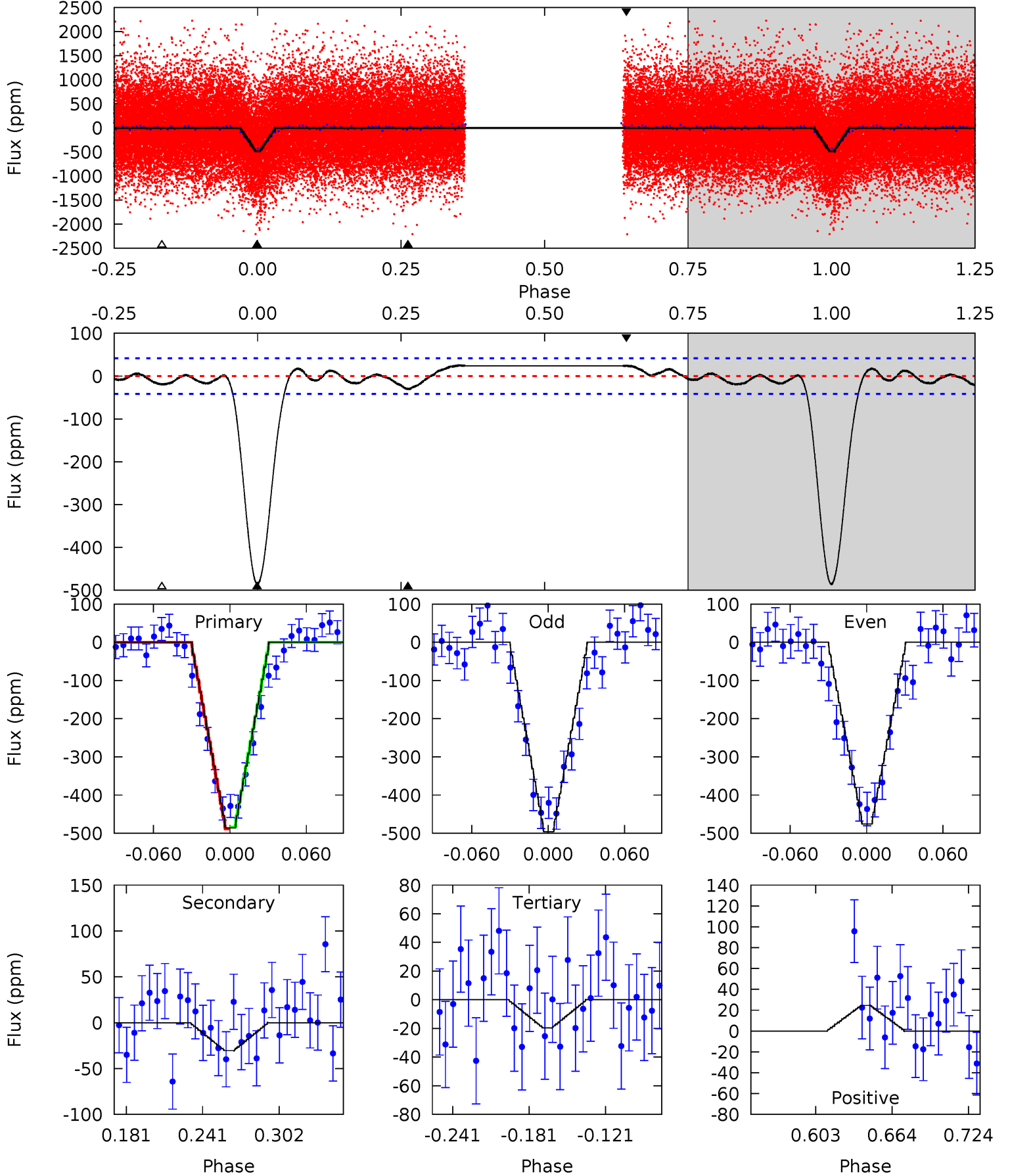
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.0	2.36	2.18	4.49	4.65	1.84	1.87	25.8	23.5	0.18	-2.12	1.71	0.94	0.14	1.45



Alt Model-Shift Uniqueness Test

009153554-02, P = 0.747368 Days, E = 131.591921 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
54.5	3.41	2.20	2.75	4.67	1.88	1.40	52.3	51.7	1.21	0.65	1.11	0.97	0.05	0.24



Stellar Parameters For KIC 009153554

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5970^{+167}_{-188}	$4.521^{+0.039}_{-0.221}$	$-0.180^{+0.300}_{-0.300}$	$0.908^{+0.293}_{-0.098}$	$0.996^{+0.131}_{-0.131}$	$1.877^{+0.404}_{-0.968}$
	+3%/-3%	+1%/-5%	+167%/-167%	+32%/-11%	+13%/-13%	+22%/-52%
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 009153554-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-19 ± 8	$1.84^{+0.78}_{-0.74}$	2836^{+205}_{-139}	3209^{+821}_{-1133}	$0.782^{+1.412}_{-0.470}$
Alt.	-30 ± 9	$2.48^{+0.79}_{-0.77}$	2854^{+207}_{-143}	3127^{+552}_{-789}	$0.686^{+0.782}_{-0.345}$

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 $A_{obs} \gg 1.0$

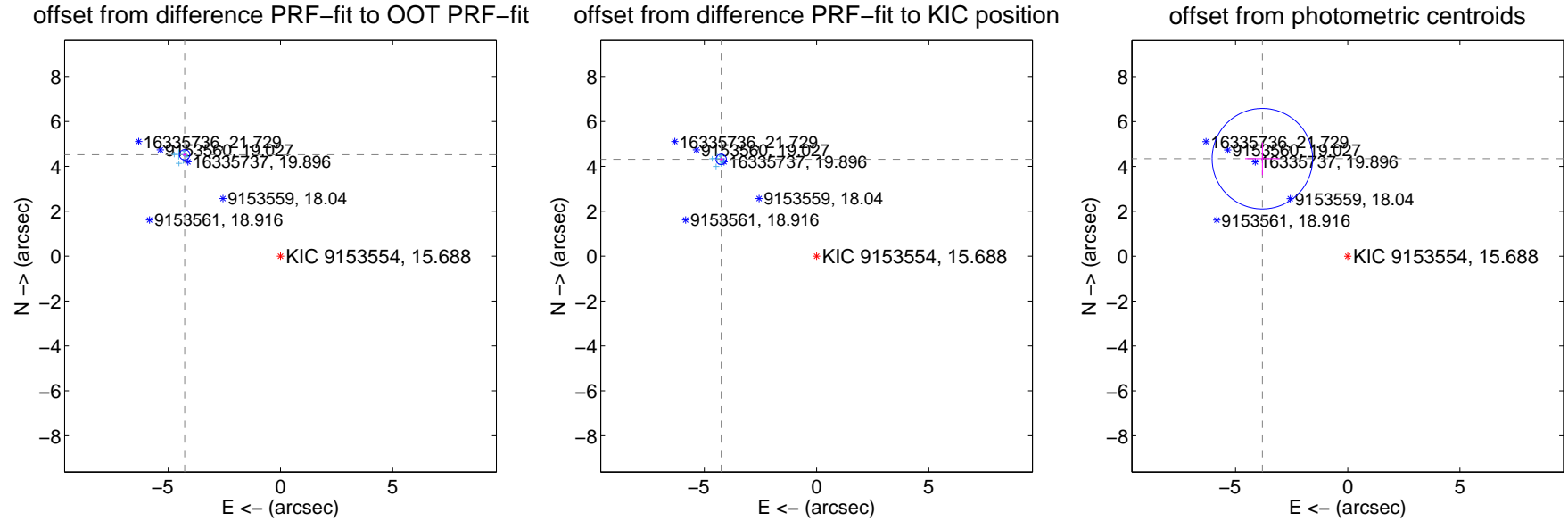
DV Centroid Data

Supplemental centroid analysis for 009153554-02. Kepler magnitude: 15.69. Transit SNR 18.23

There are 12 quarters with good PRF difference image offsets

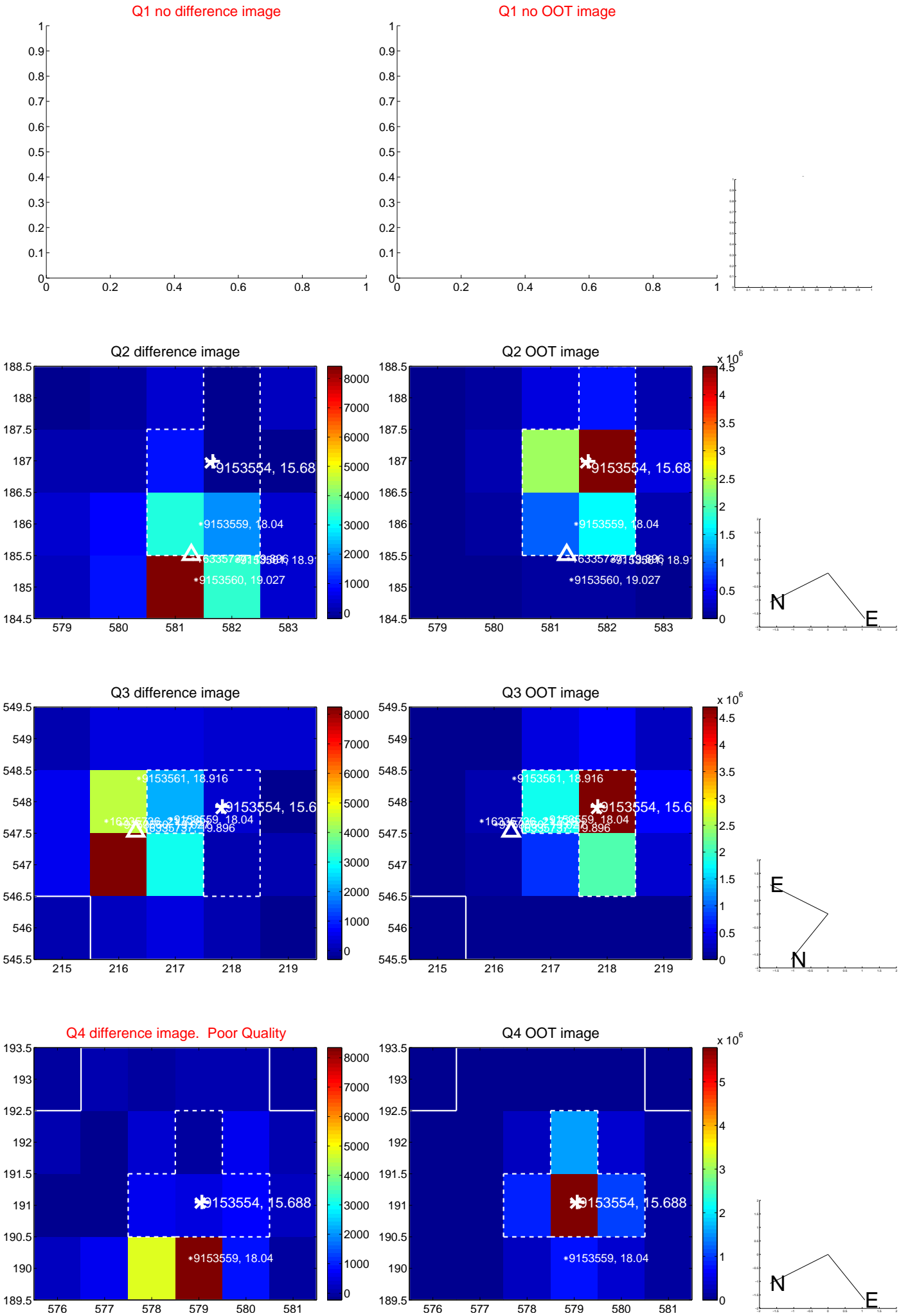
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.214 \pm 0.078	80.11	4.269 \pm 0.079	4.516 \pm 0.080
PRF-fit source offset from KIC position	6.055 \pm 0.077	78.24	4.251 \pm 0.077	4.312 \pm 0.079
photometric centroid source offset	5.78 \pm 0.75	7.74	3.81 \pm 0.77	4.35 \pm 0.73

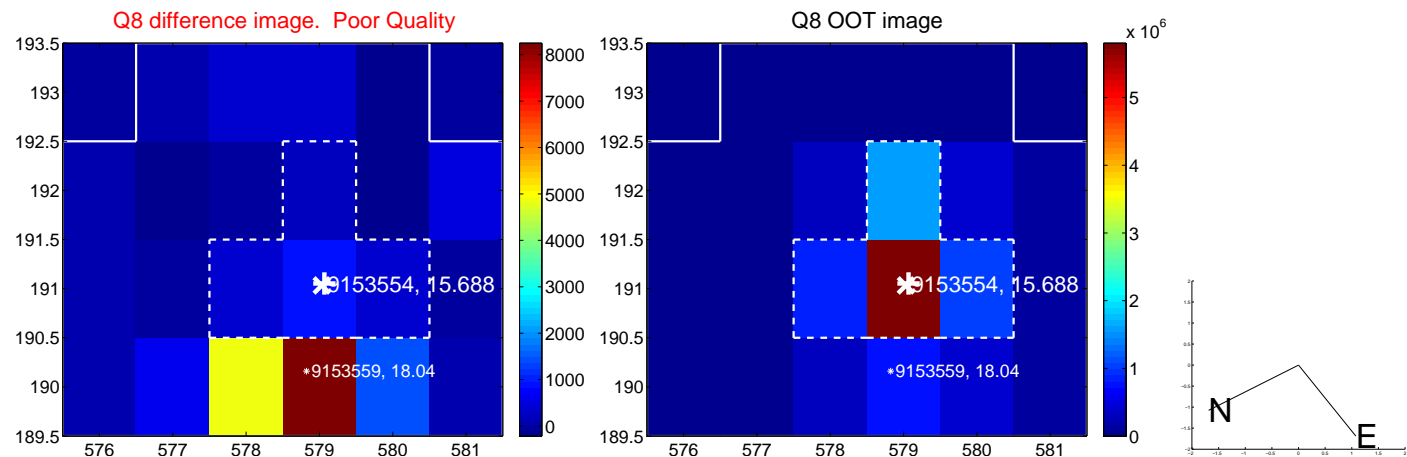
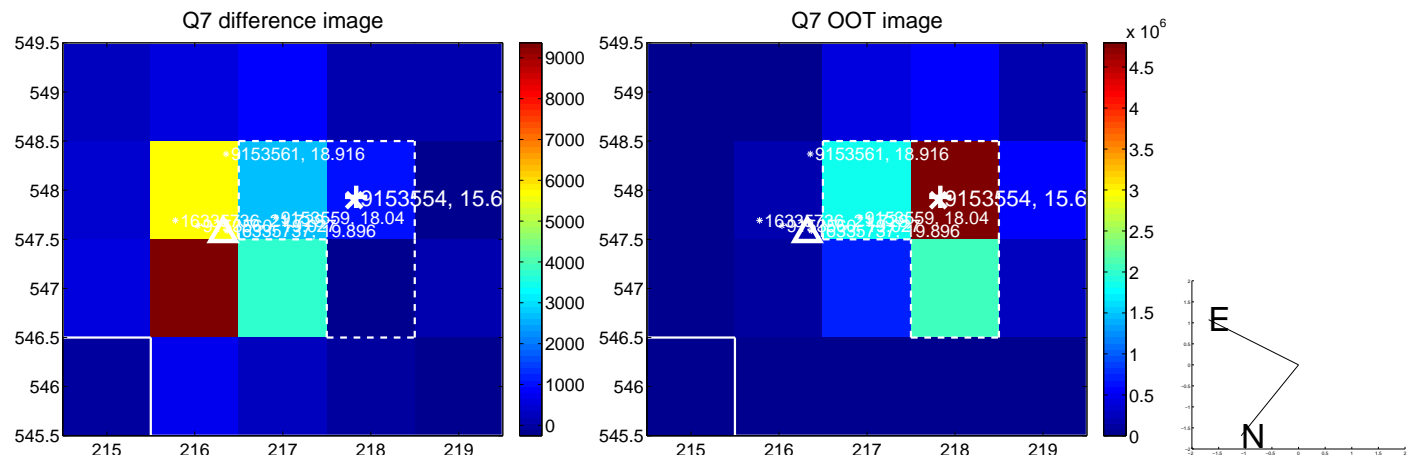
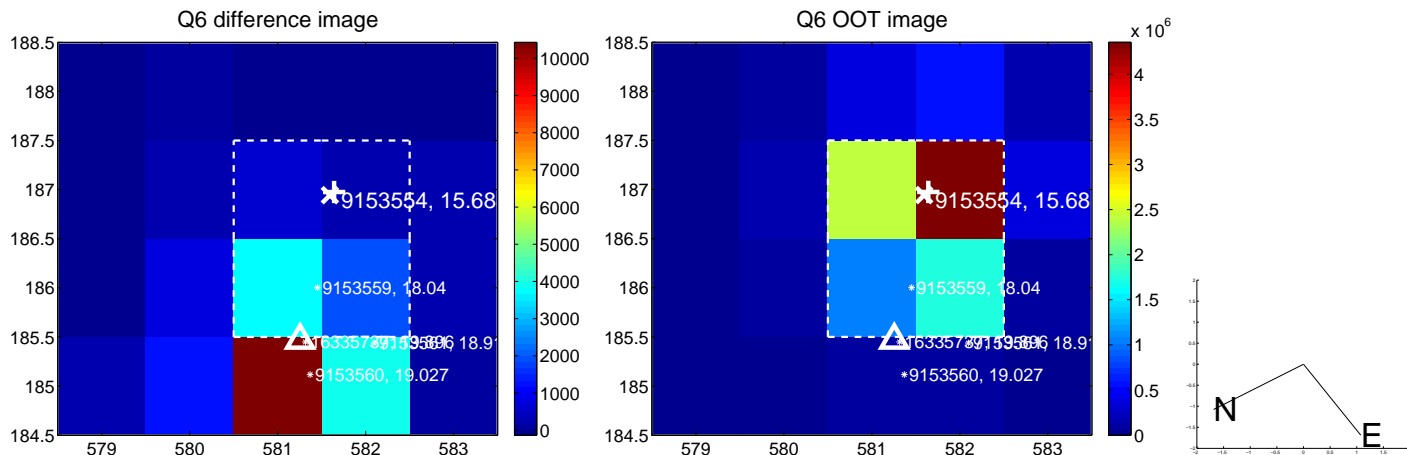
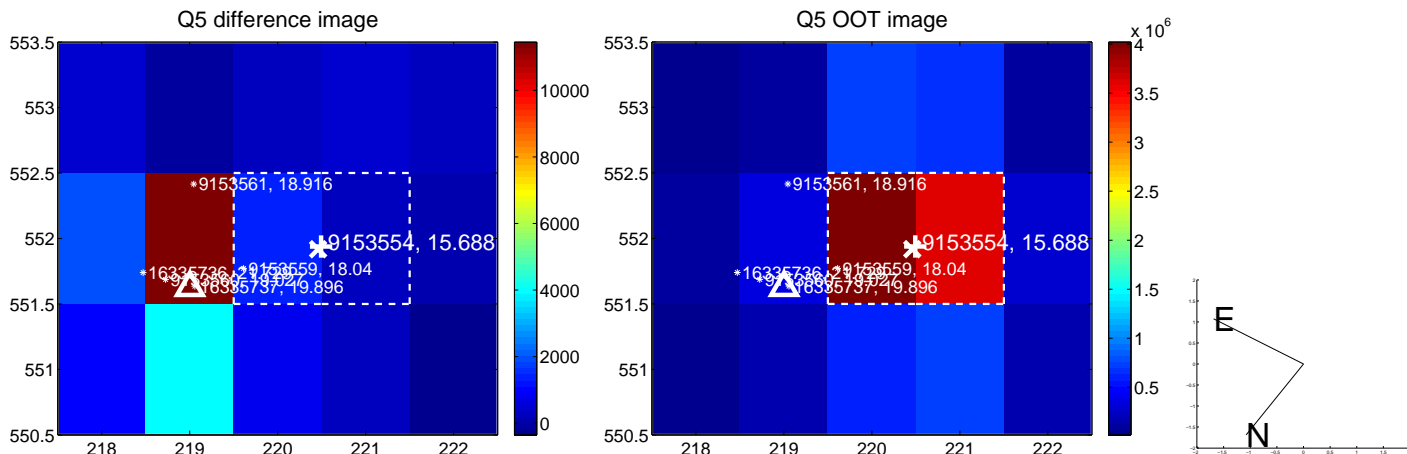


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

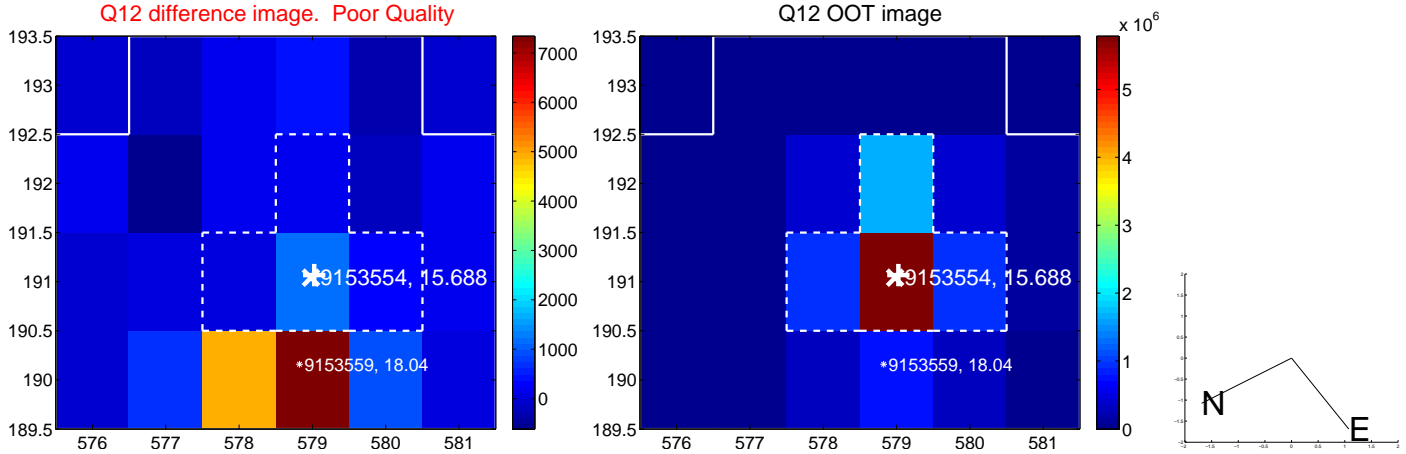
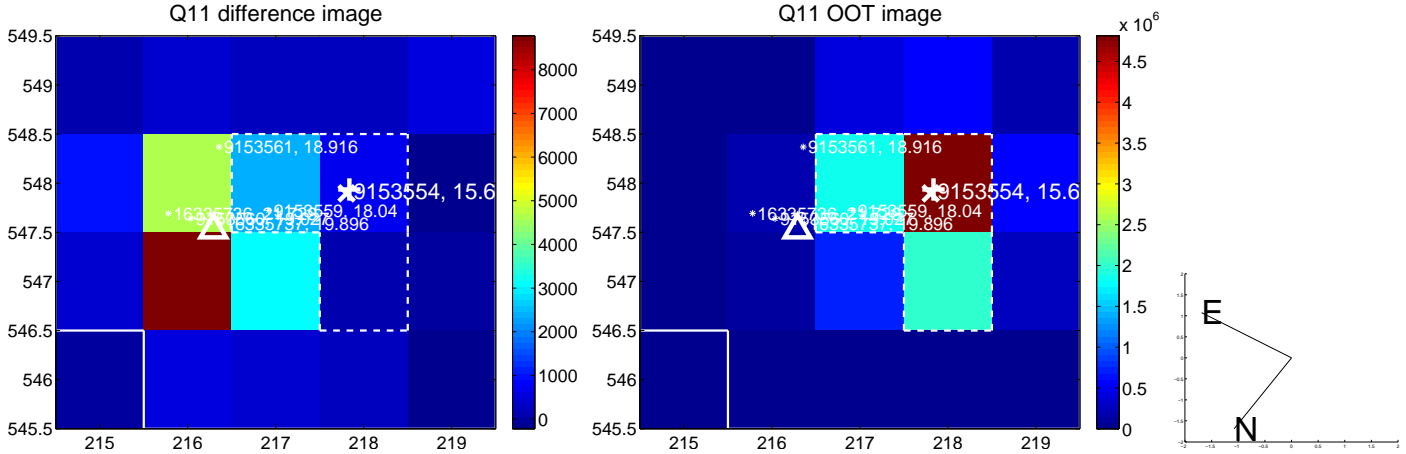
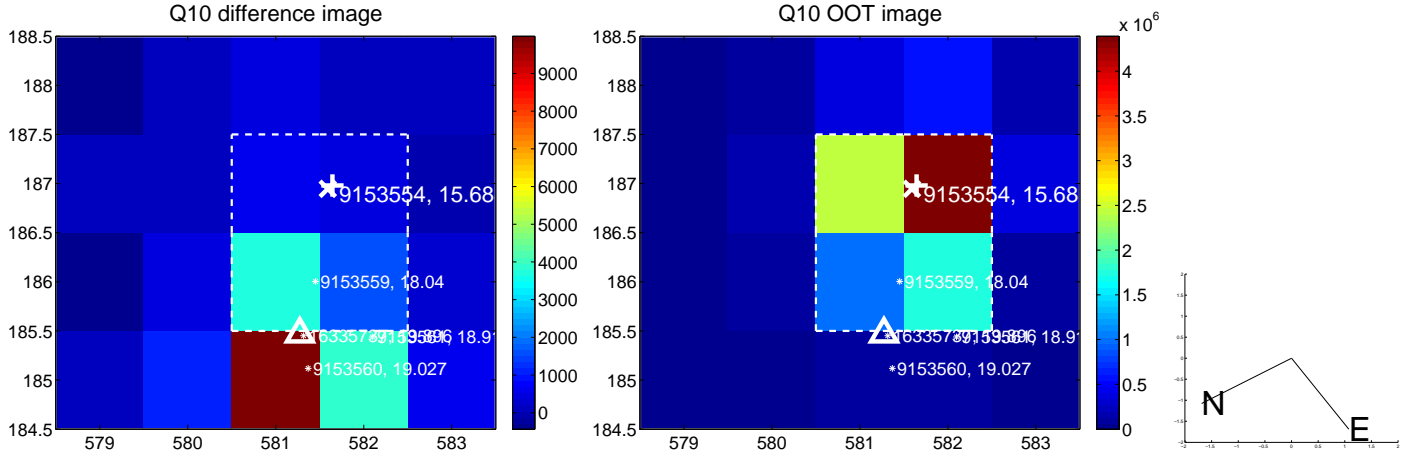
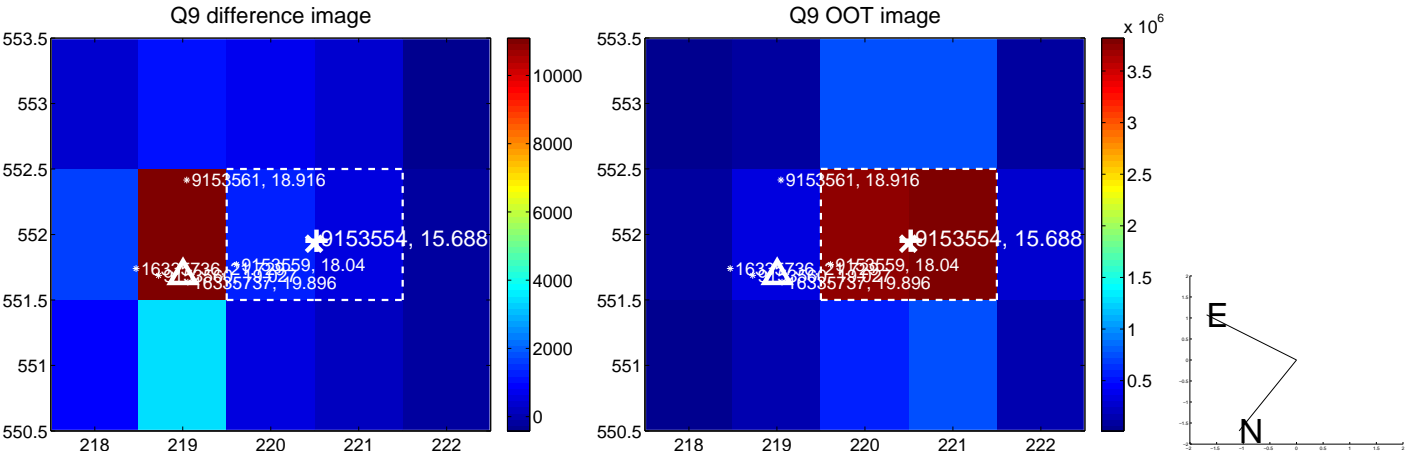
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



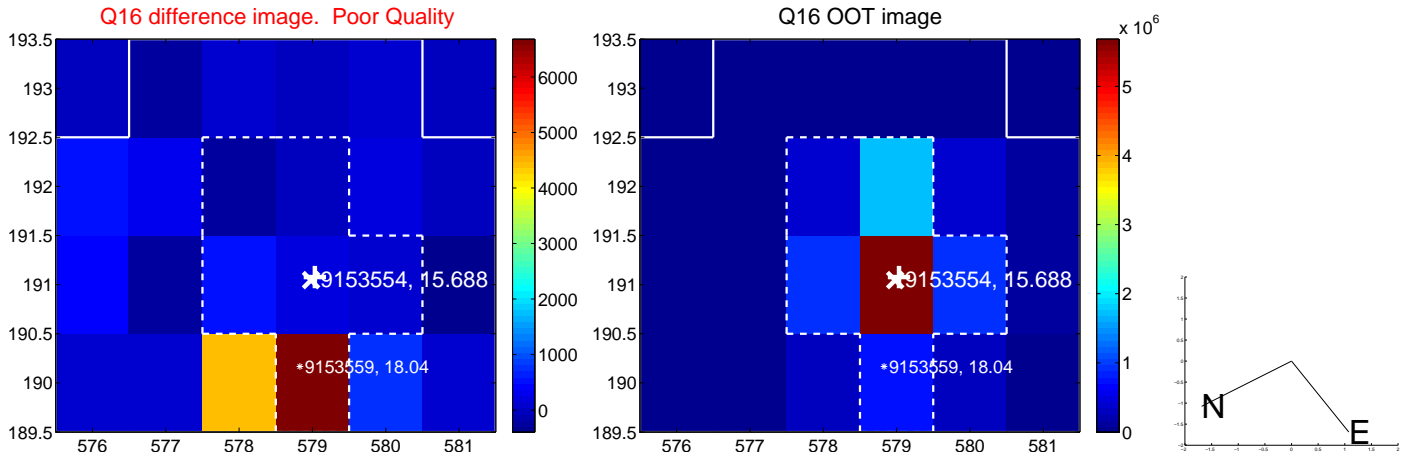
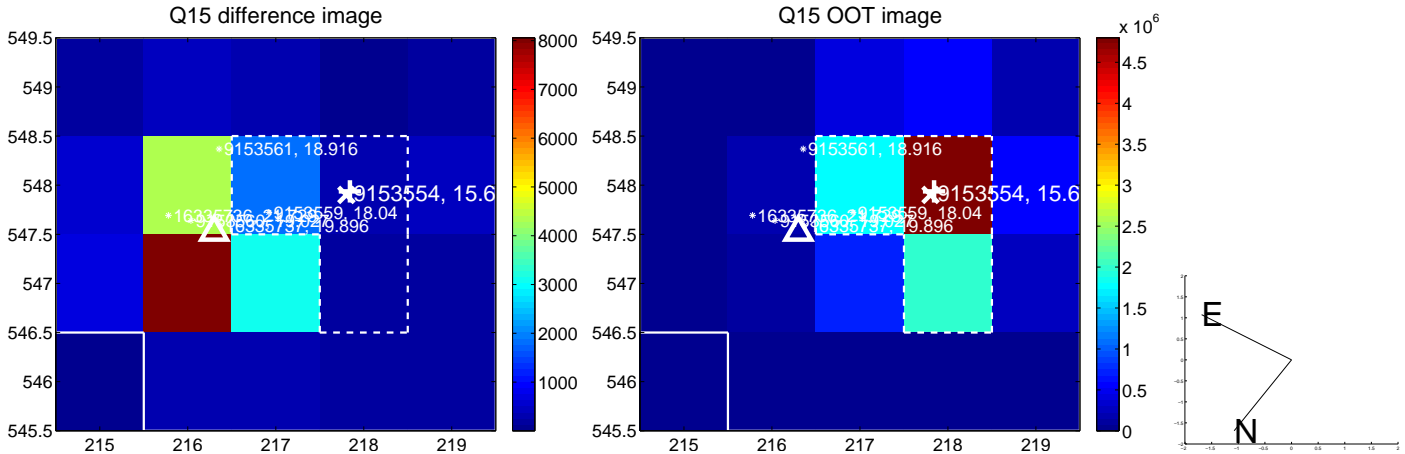
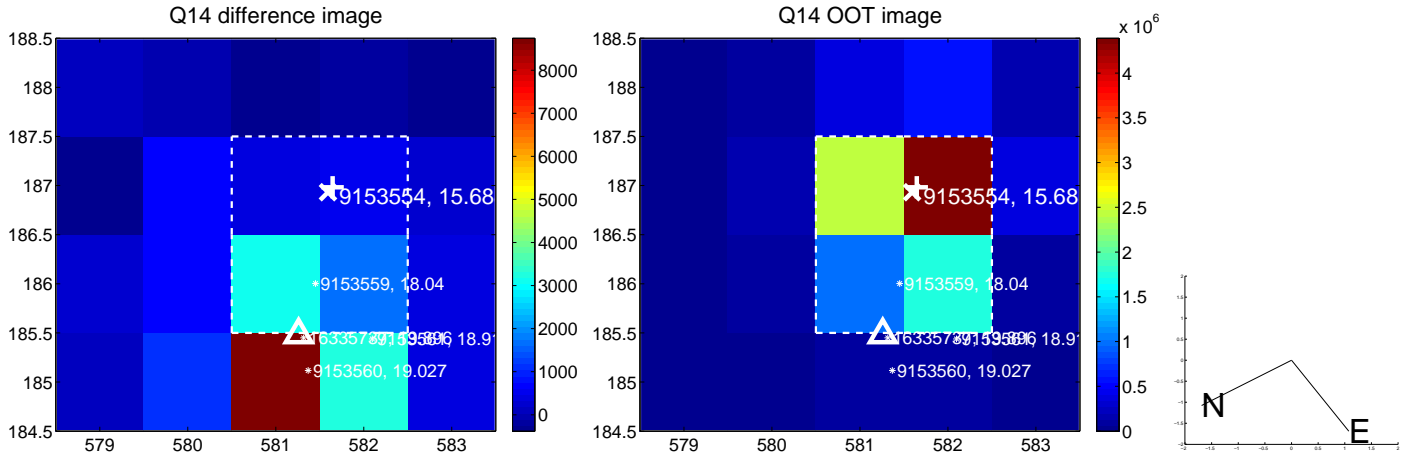
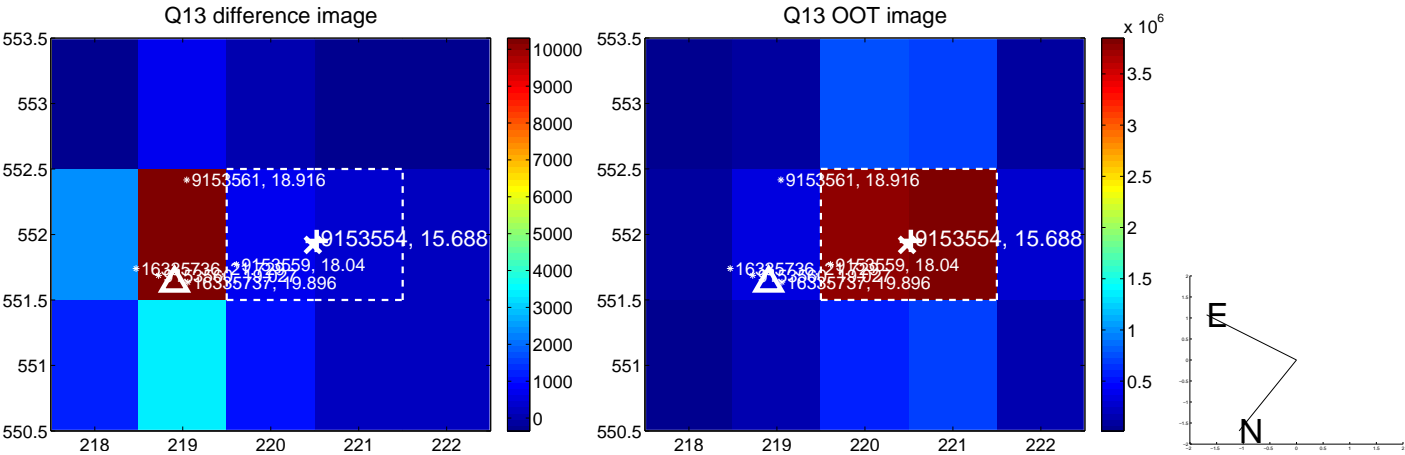
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



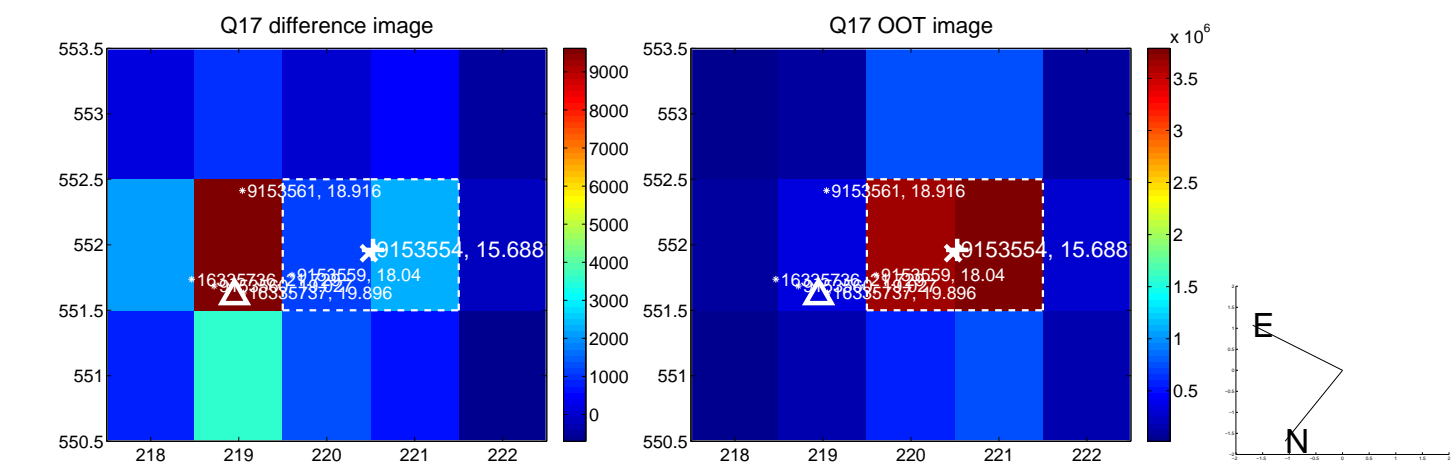
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



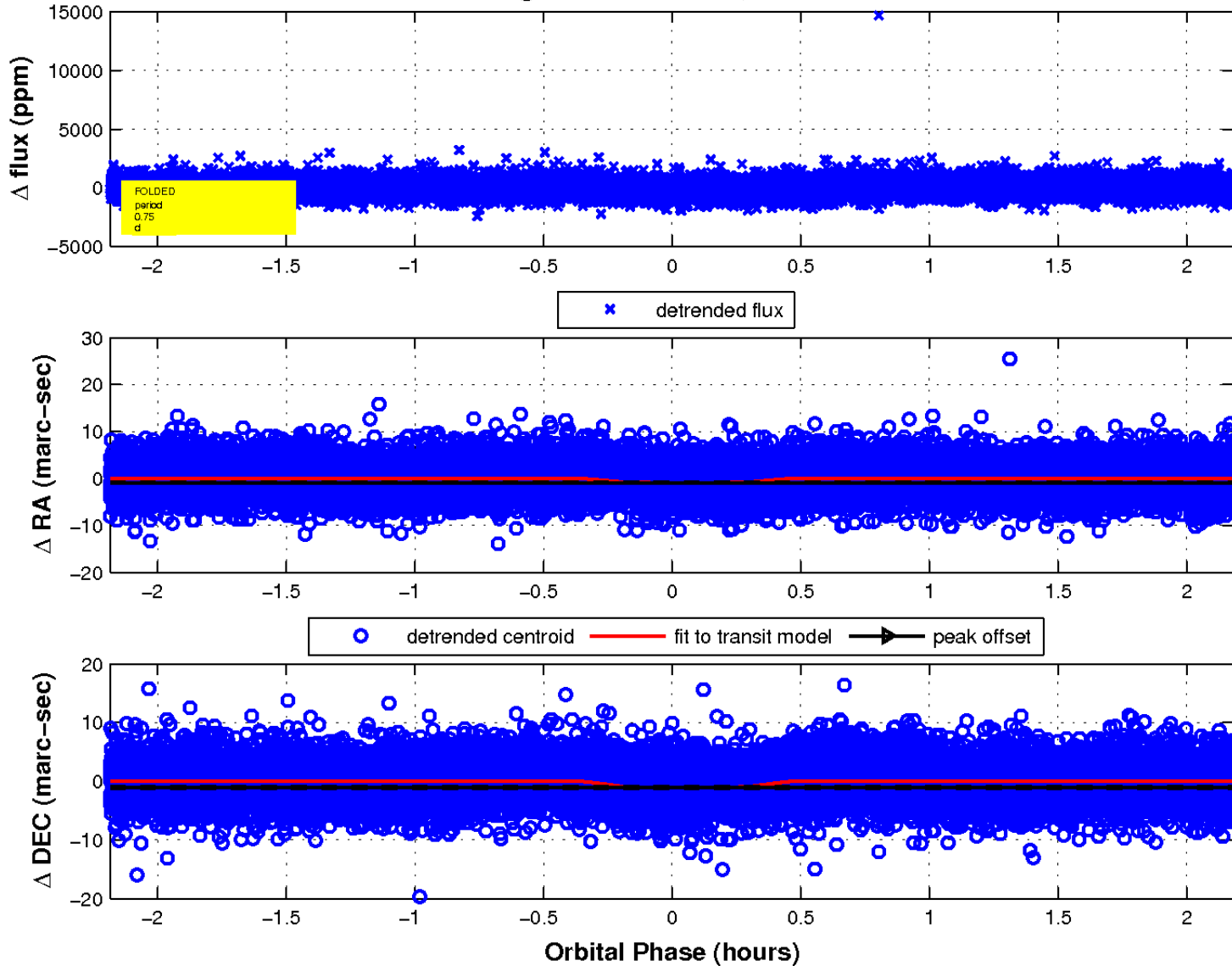
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

