

KIC 002573056

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})
002573056-01	OBS	2648.01	1.263577	132.543929	142.6	1.352	14.7	19.1	1.52	6414	2.13	5749.72
002573056-02	OBS	No	1.263580	131.908711	83.6	1.337	10.5	11.7	1.52	6414	1.64	5749.70

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002573056-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET
002573056-02	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 002573056-01

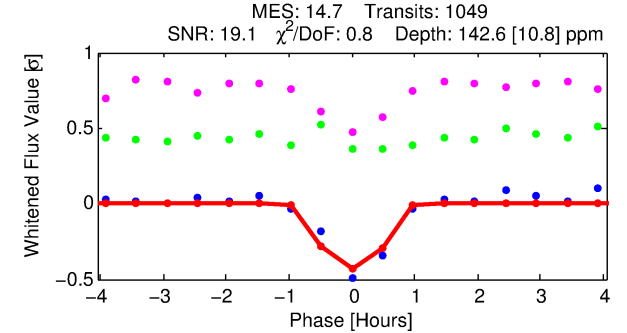
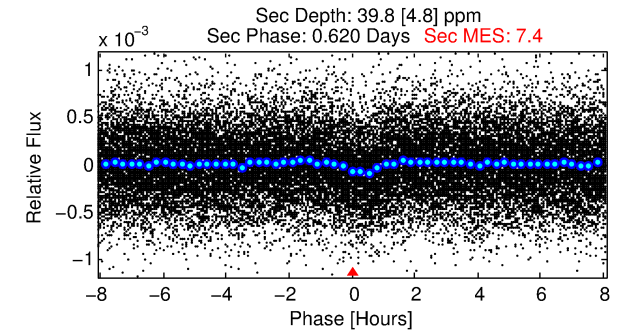
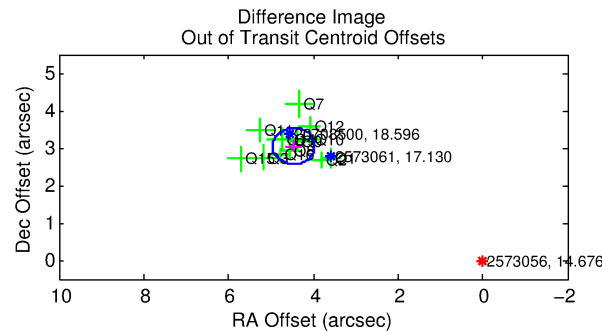
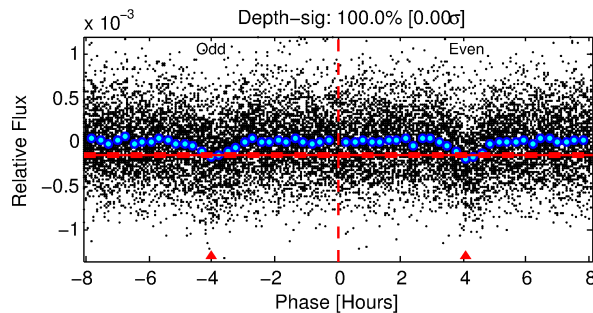
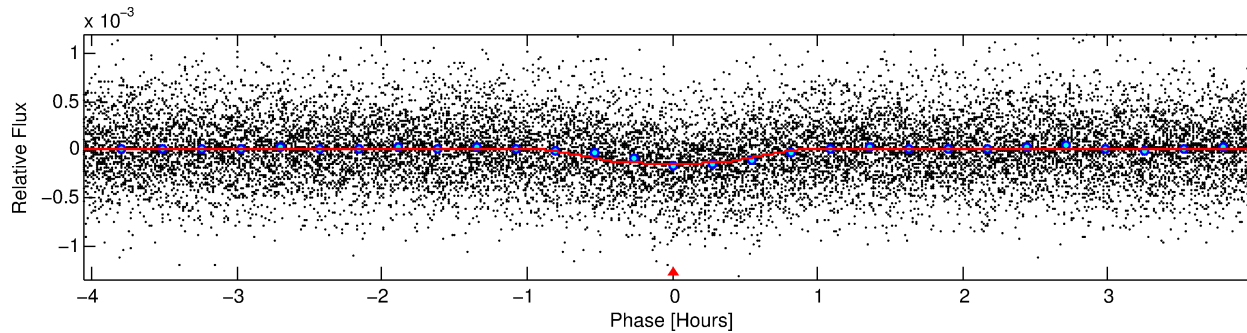
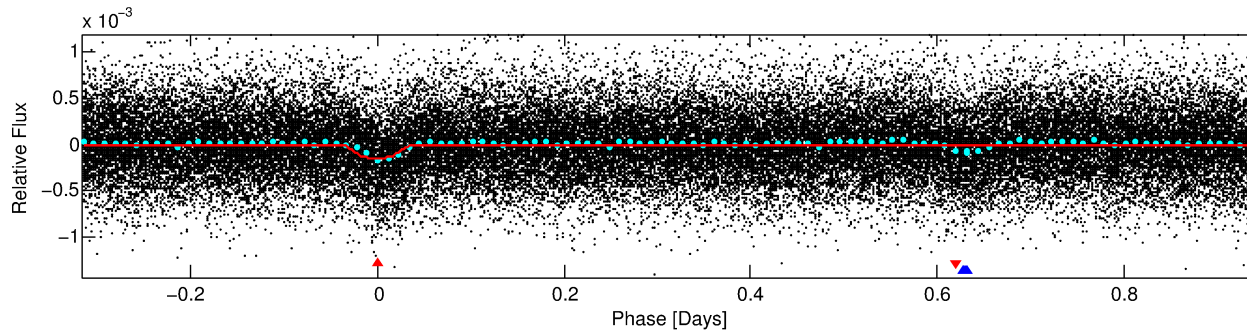
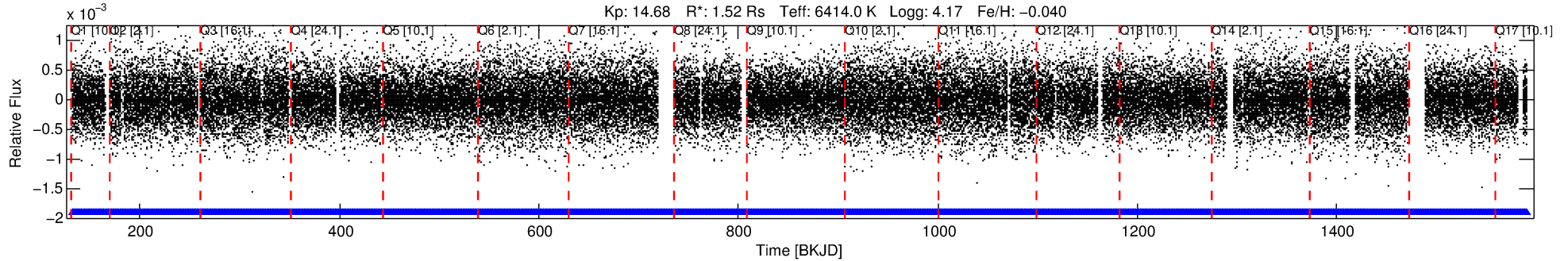
No Significant Match Found

DV One-Page Summary

KIC: 2573056 Candidate: 1 of 2 Period: 1.264 d

KOI: K02648 Corr: No Ephemeris Match

Kp: 14.68 R*: 1.52 Rs Teff: 6414.0 K Logg: 4.17 Fe/H: -0.040



DV Fit Results:

Period = 1.26358 [0.00001] d
Epoch = 132.5439 [0.0012] BKJD
Rp/R* = 0.0129 [0.0039]
a/R* = 3.45 [5.34]
b = 0.90 [0.36]
Seff = 5749.72 [1464.85]
Teq = 2220 [141] K
Rp = 2.13 [0.75] Re
a = 0.0247 [0.0040] AU
Ag = 2.93 [1.95] [0.99σ]
Teffp = 4492 [697] K [3.20σ]

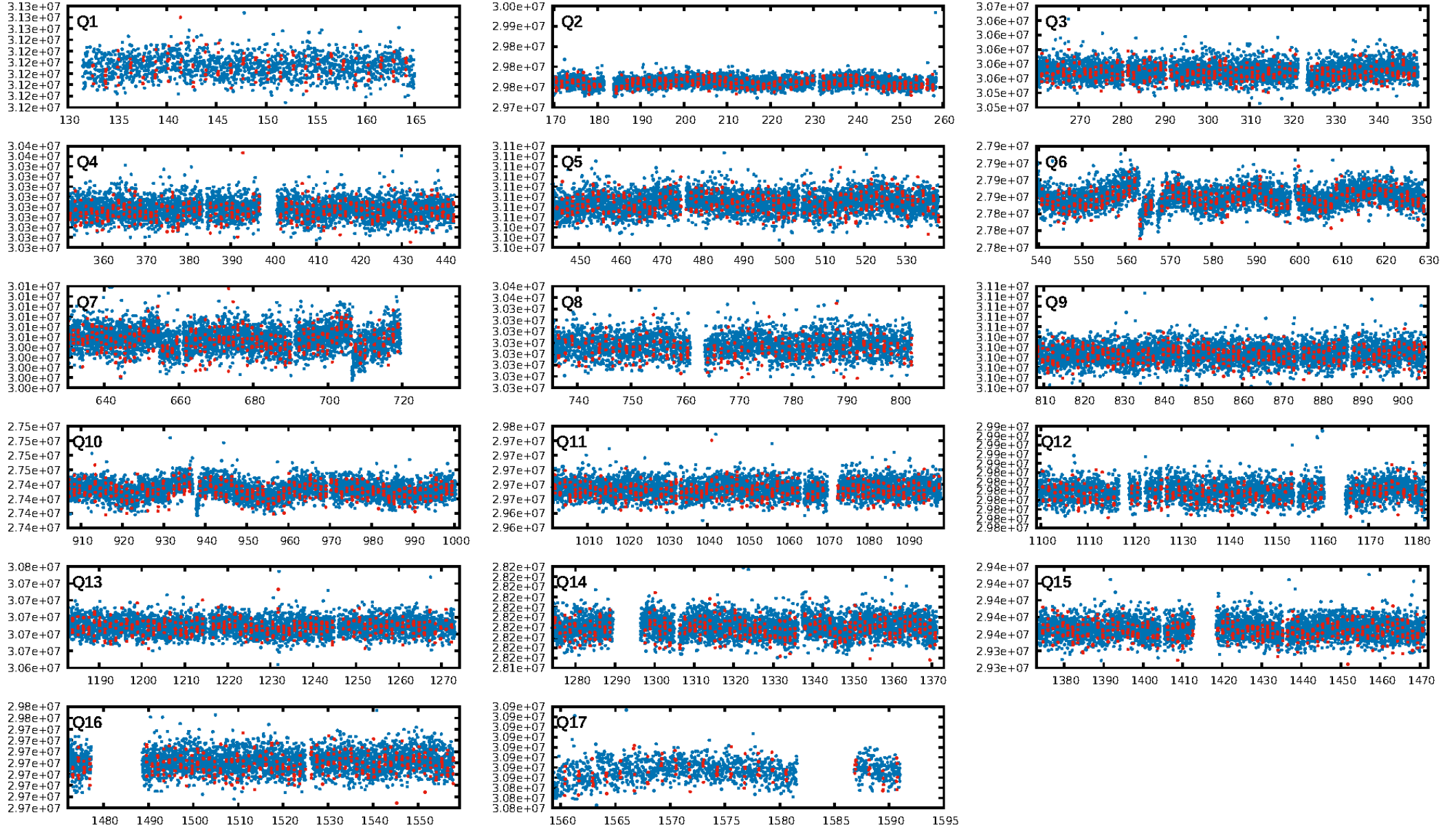
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.47e-50
RollingBand-fgt: 1.00 [1002/1002]
GhostDiagnostic-chr: 0.3054
Centroid-sig: 0.0%
Centroid-so: 10.084 arcsec [15.37σ]
OotOffset-rm: 5.404 arcsec [33.24σ]
KicOffset-rm: 5.376 arcsec [32.61σ]
OotOffset-st: 3/4/4/2 [13]
KicOffset-st: 3/4/4/2 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [17/17]

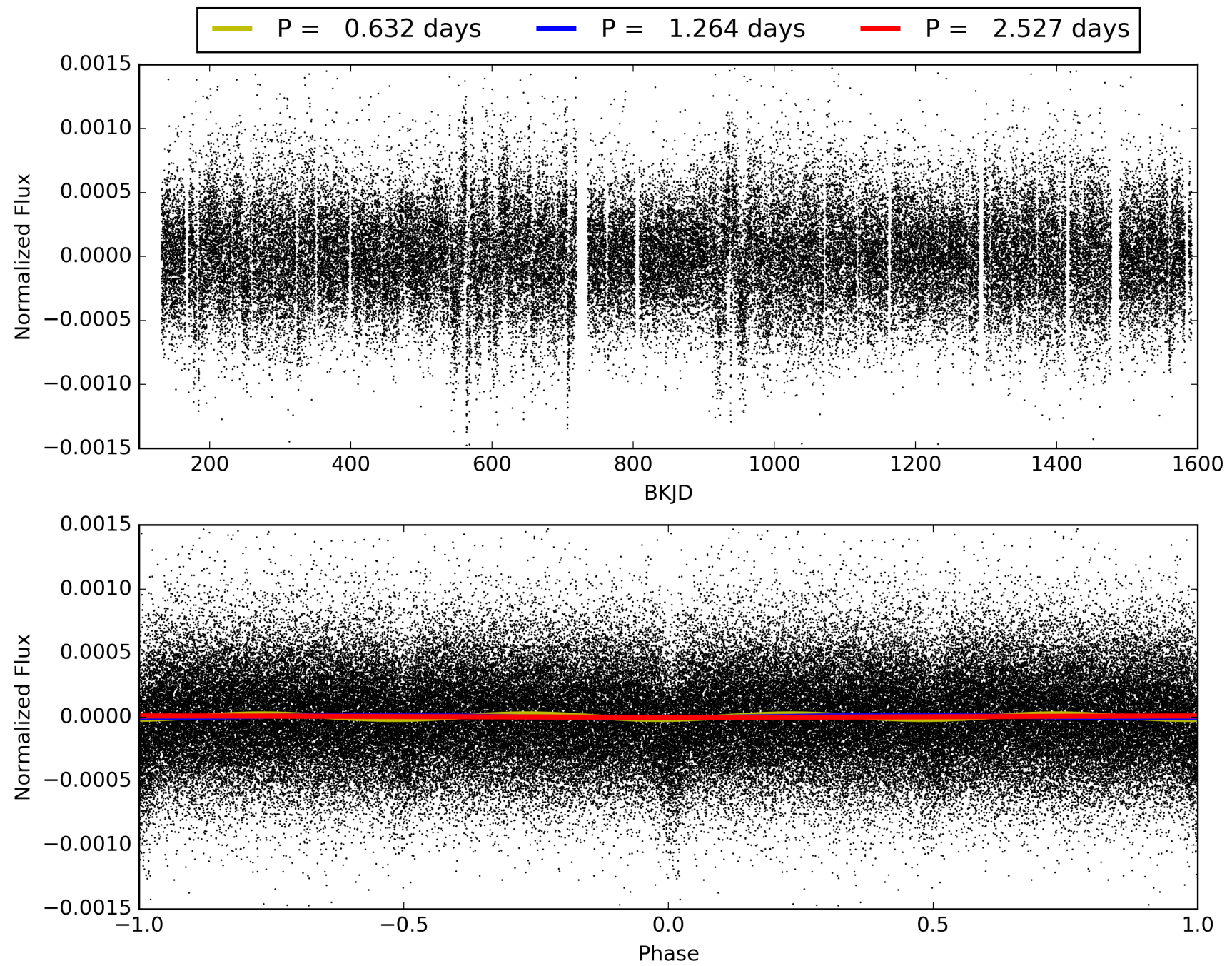
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:14:31 Z

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

TCE 002573056-01, PDC Light Curves

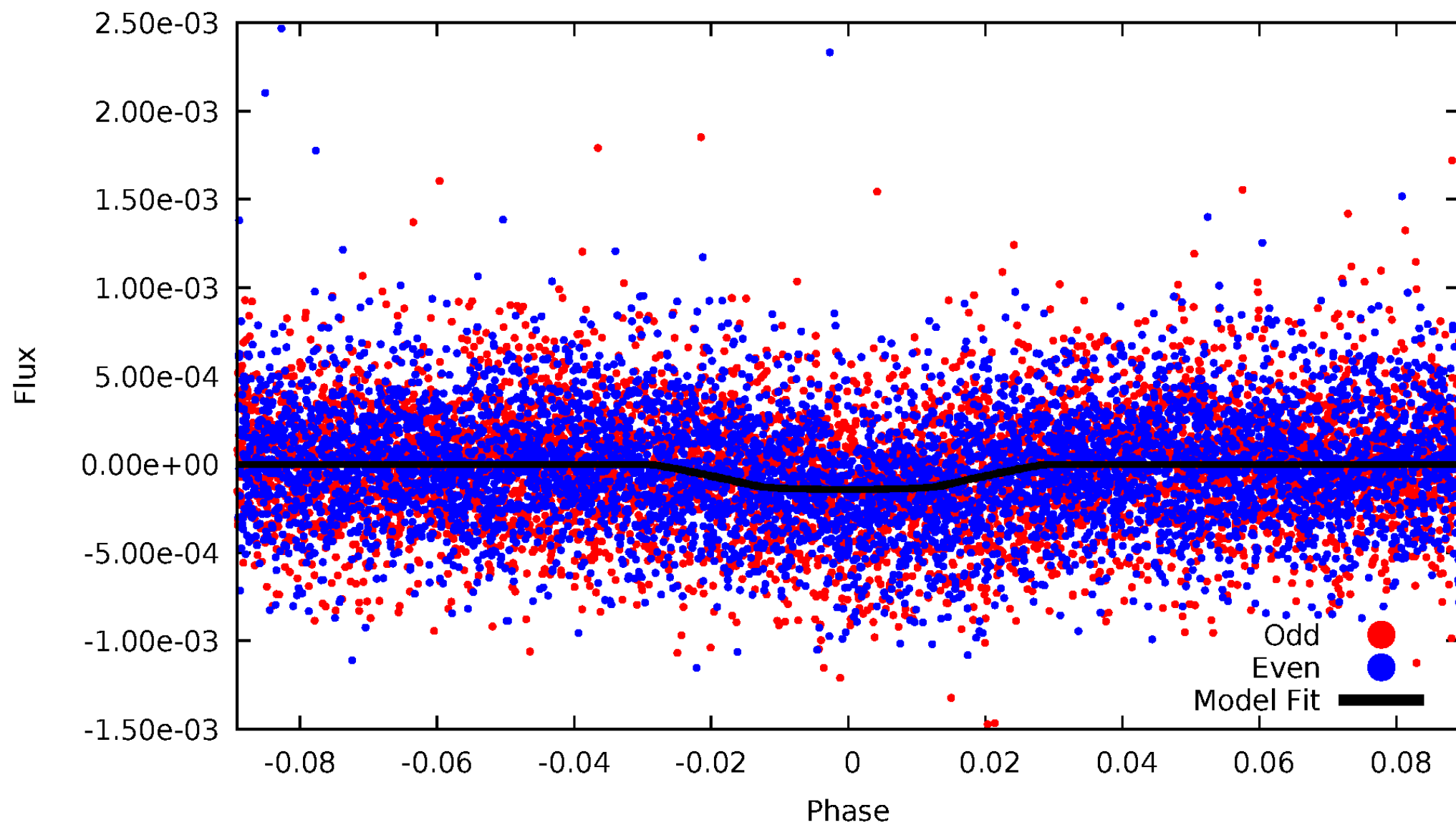


TCE 002573056-01



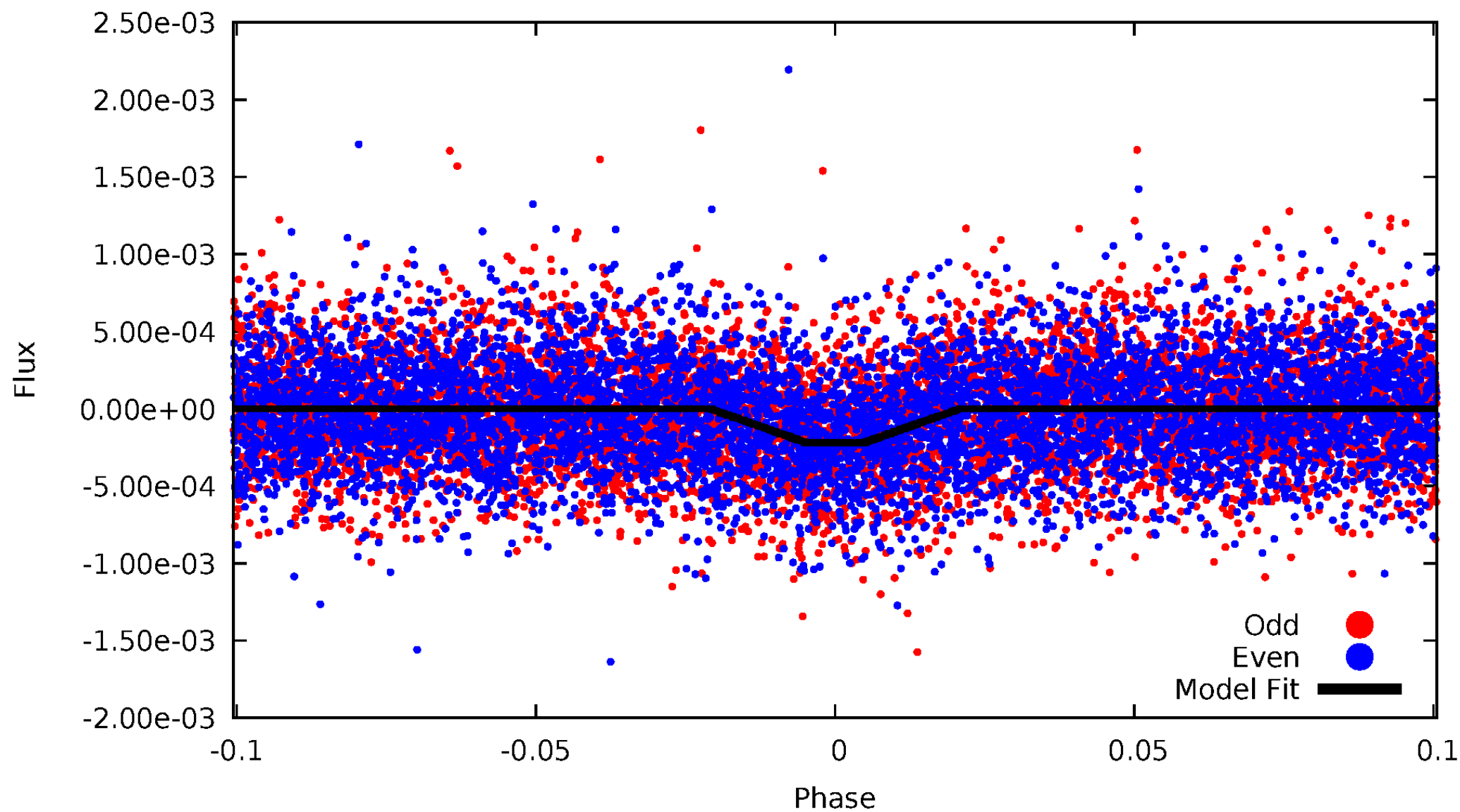
DV Odd/Even

TCE 002573056-01

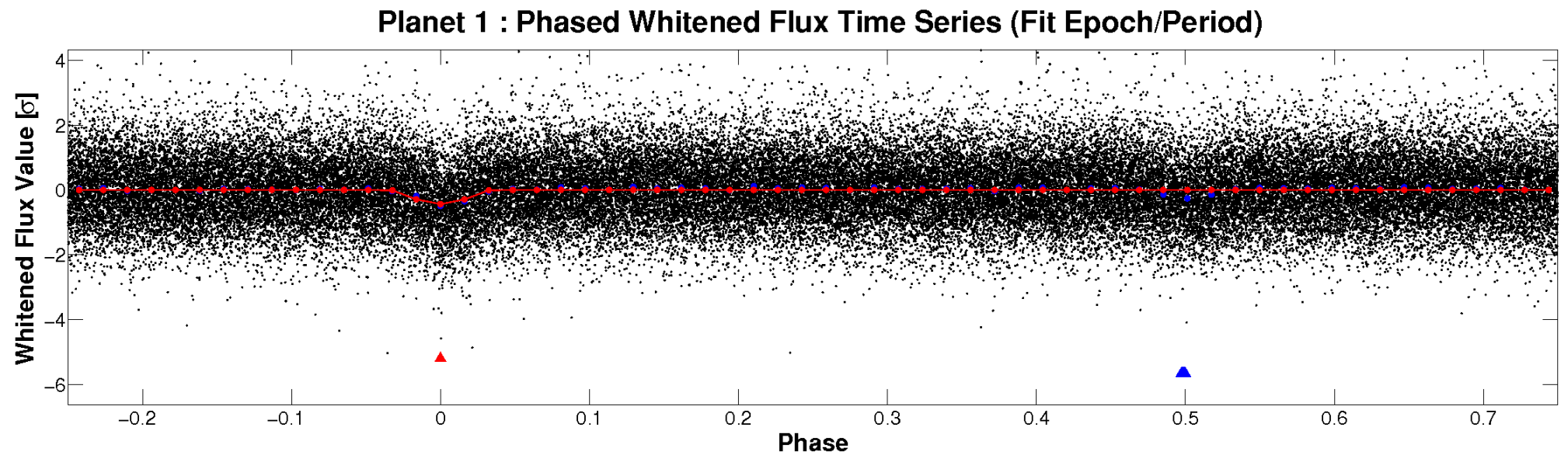
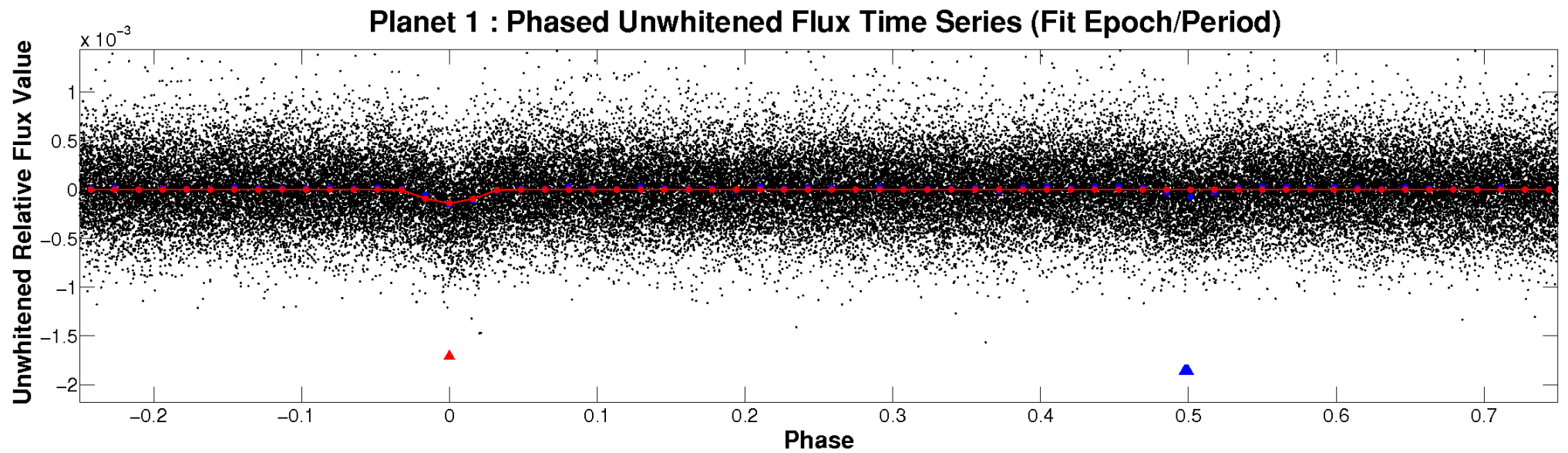


ALT Odd/Even

TCE 002573056-01

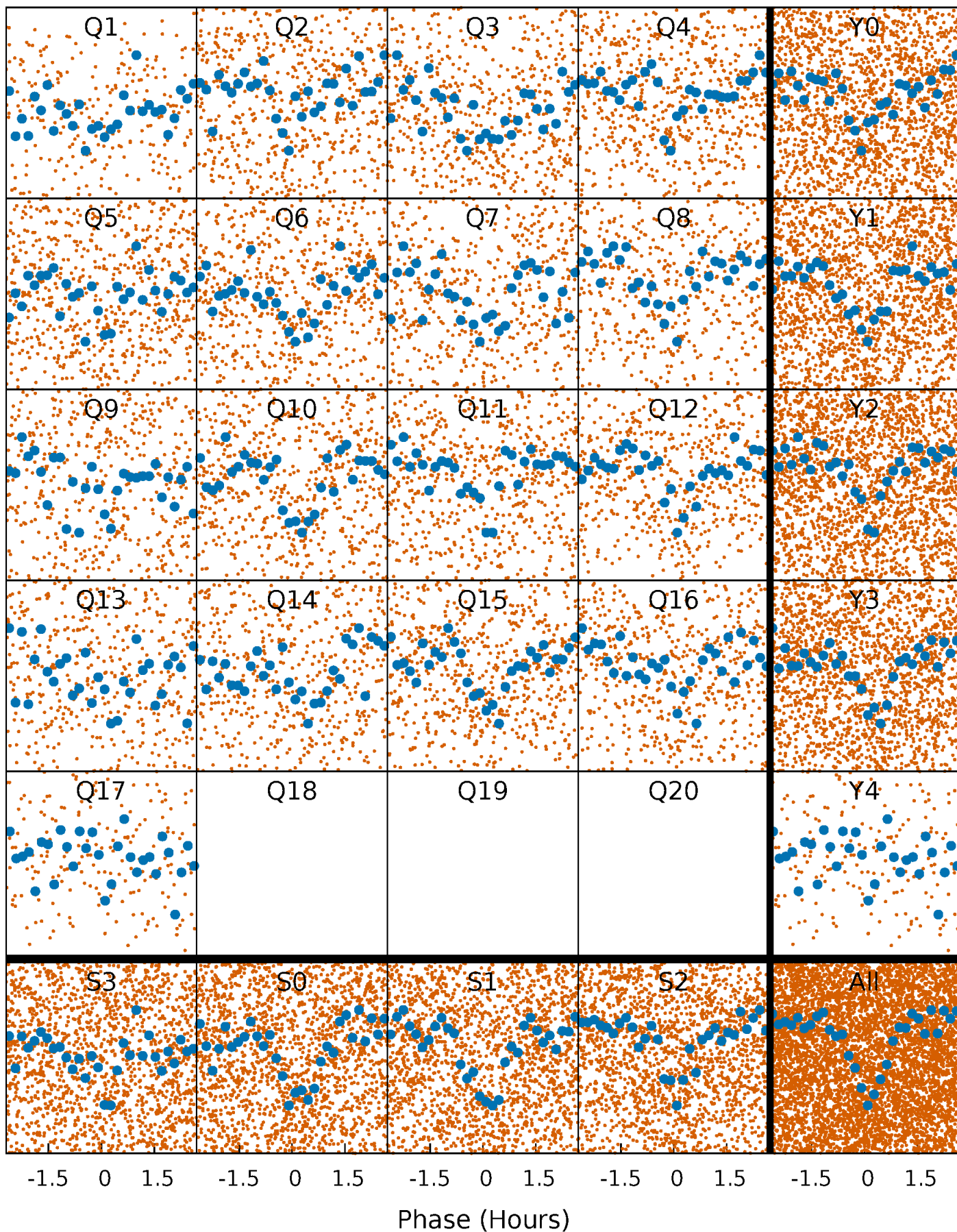


Non-Whitened Vs. Whitened Light Curve



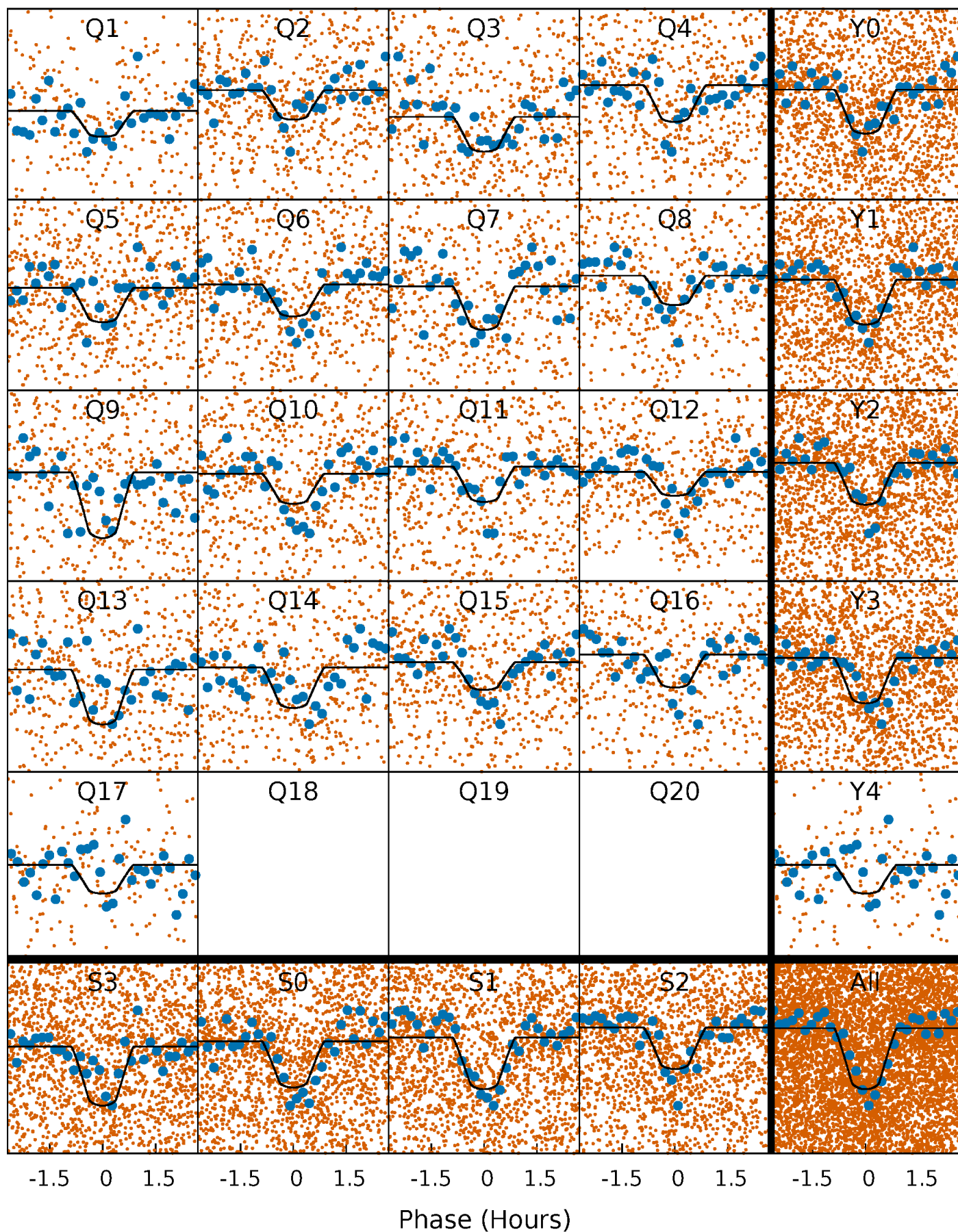
PDC Quarter-Phased Transit Curves

TCE 002573056-01 P= 1.263577 Days $T_0=132.543929$ (BKJD)



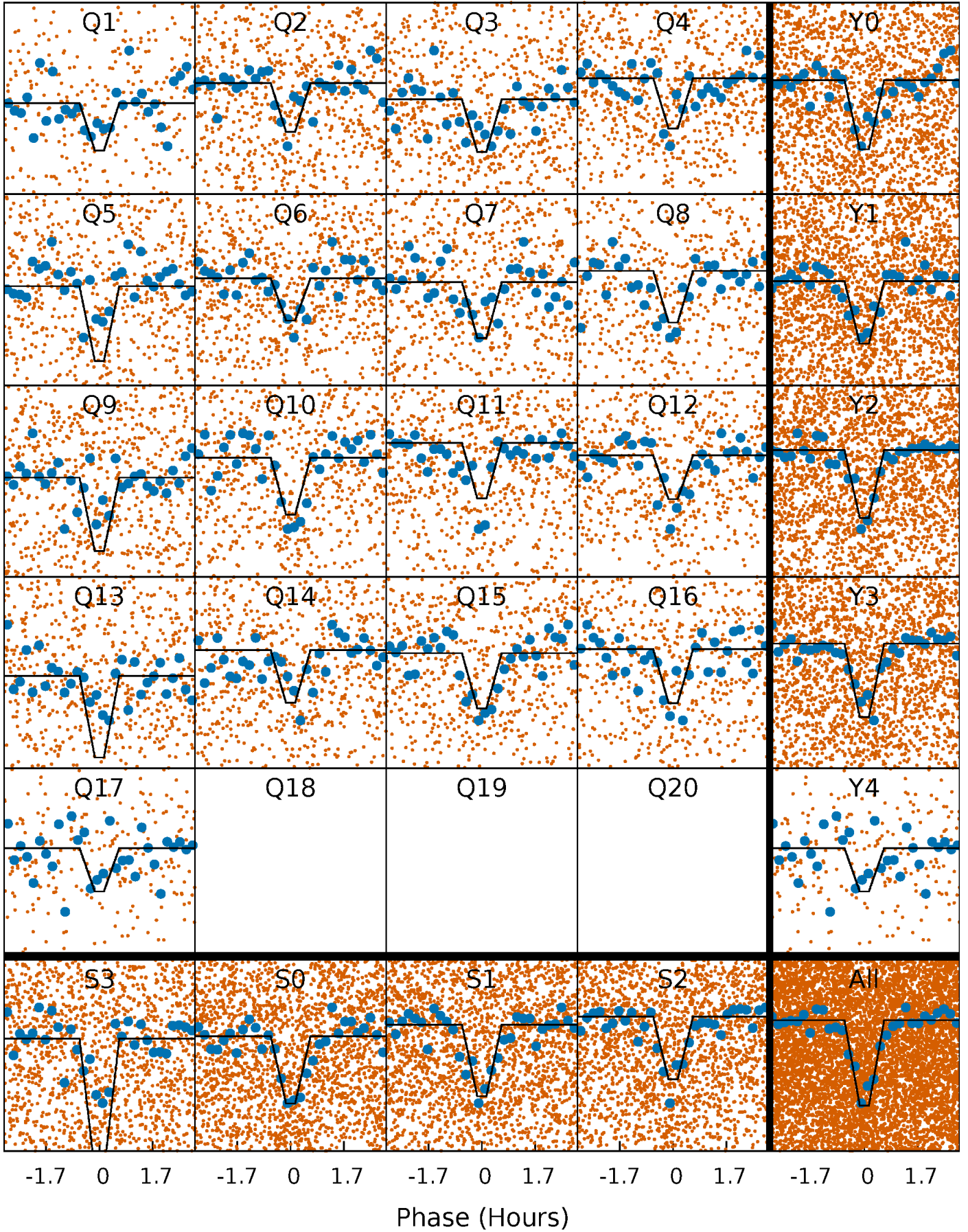
DV Quarter-Phased Transit Curves

TCE 002573056-01 P= 1.263577 Days $T_0=132.543929$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

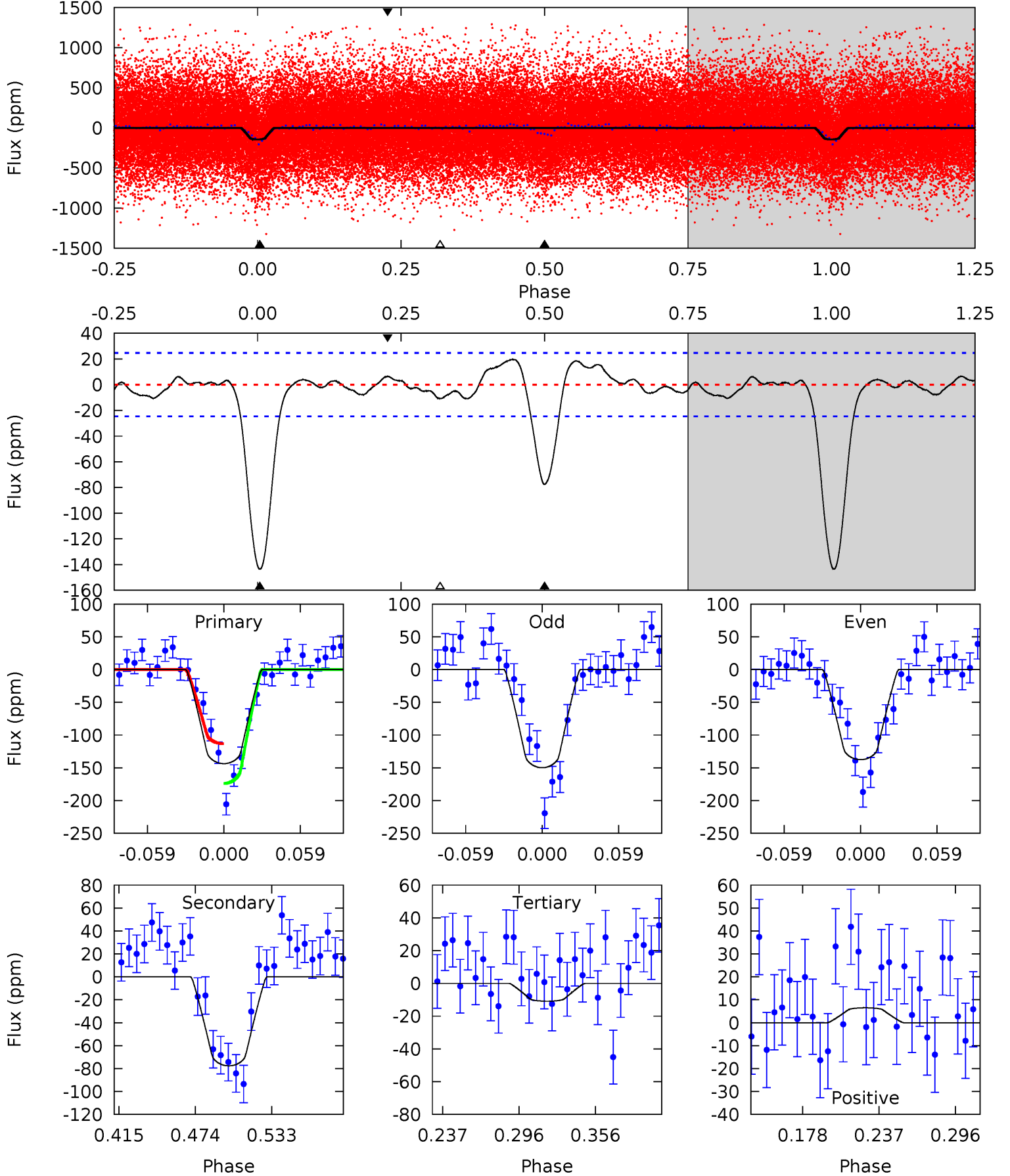
TCE 002573056-01 P= 1.263587 Days $T_0=132.543006$ (BKJD)



DV Model-Shift Uniqueness Test

002573056-01, P = 1.263577 Days, E = 131.280352 Days

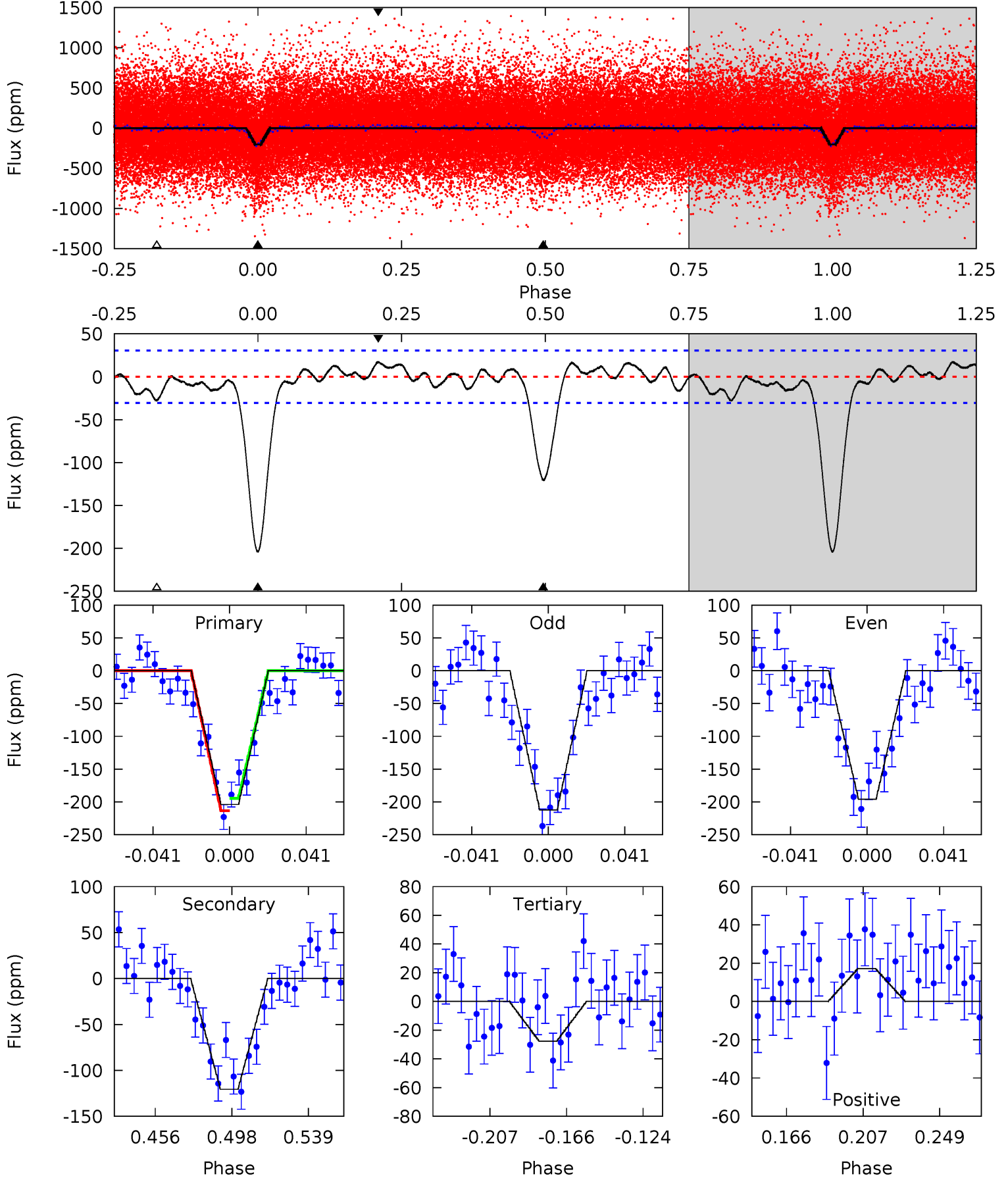
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.2	14.7	2.07	1.23	4.67	1.89	1.32	25.2	26.0	12.7	13.5	1.16	1.01	0.12	5.75



Alt Model-Shift Uniqueness Test

002573056-01, P = 1.263587 Days, E = 131.279419 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.8	18.8	4.32	2.67	4.75	2.04	1.47	27.5	29.1	14.5	16.1	1.27	1.05	0.08	1.47



Stellar Parameters For KIC 002573056

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6414^{+70}_{-83}	$4.173^{+0.143}_{-0.117}$	$-0.040^{+0.150}_{-0.150}$	$1.519^{+0.270}_{-0.270}$	$1.256^{+0.092}_{-0.127}$	$0.505^{+0.359}_{-0.180}$
	+1%/-1%	+3%/-3%	+375%/-375%	+18%/-18%	+7%/-10%	+71%/-36%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 002573056-01 / KOI 2648.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-78 ± 5	$2.09^{+0.77}_{-0.62}$	3090^{+155}_{-138}	5306^{+1024}_{-671}	$5.874^{+6.285}_{-2.706}$
Alt.	-121 ± 6	$2.43^{+0.74}_{-0.65}$	3098^{+149}_{-158}	5480^{+880}_{-617}	$6.707^{+5.938}_{-2.655}$

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 $A_{obs} \gg 1.0$

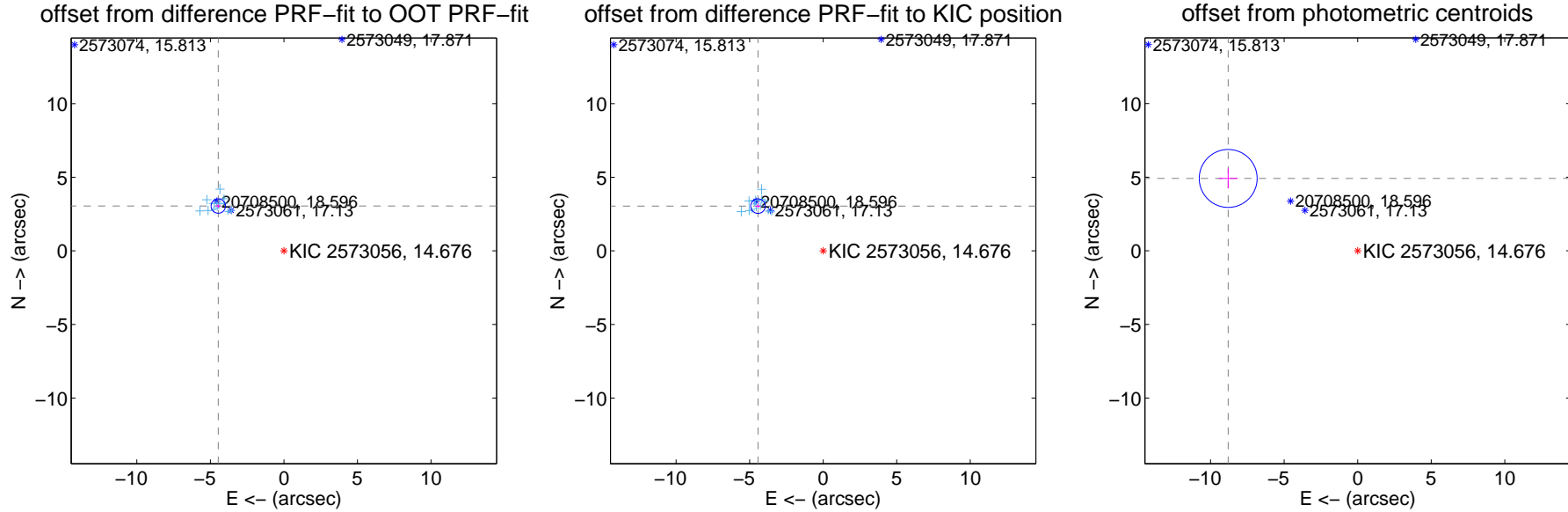
DV Centroid Data

Supplemental centroid analysis for 002573056-01. Kepler magnitude: 14.68. Transit SNR 19.08

There are 13 quarters with good PRF difference image offsets

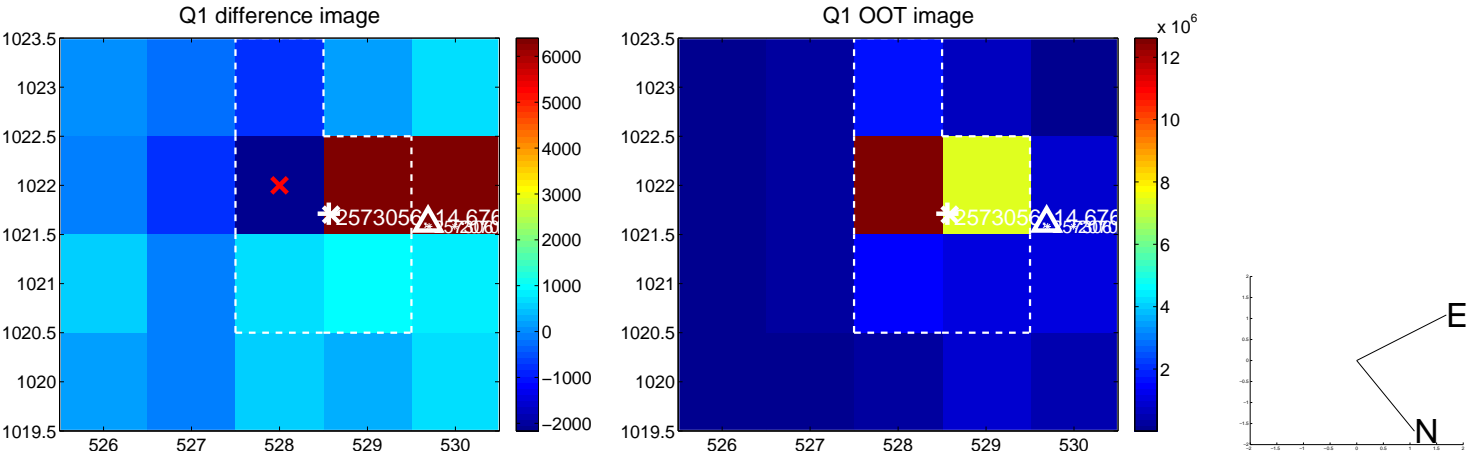
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.404 ± 0.163	33.24	4.464 ± 0.183	3.046 ± 0.126
PRF-fit source offset from KIC position	5.376 ± 0.165	32.61	4.433 ± 0.191	3.041 ± 0.131
photometric centroid source offset	10.08 ± 0.66	15.37	8.80 ± 0.65	4.92 ± 0.68

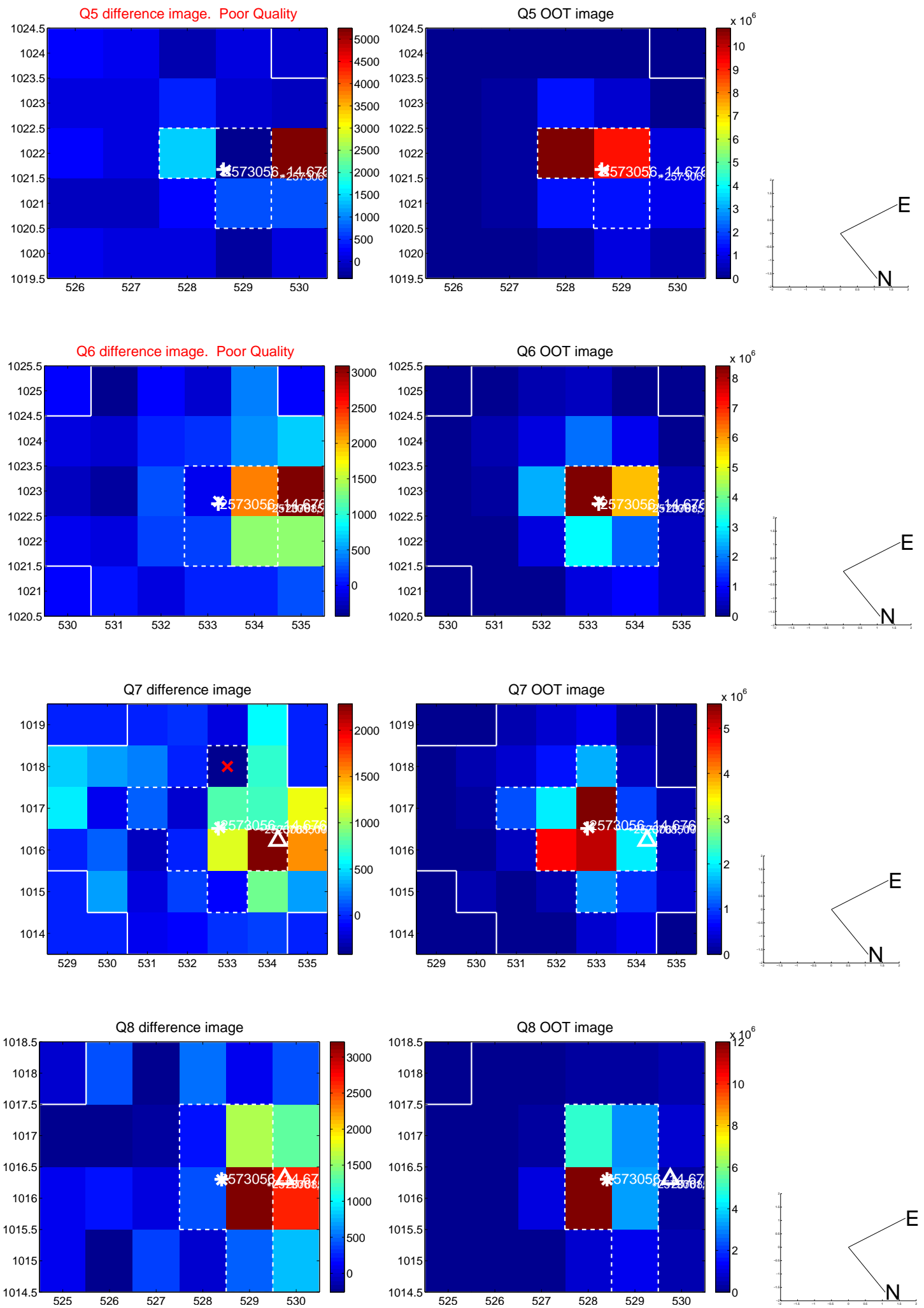


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

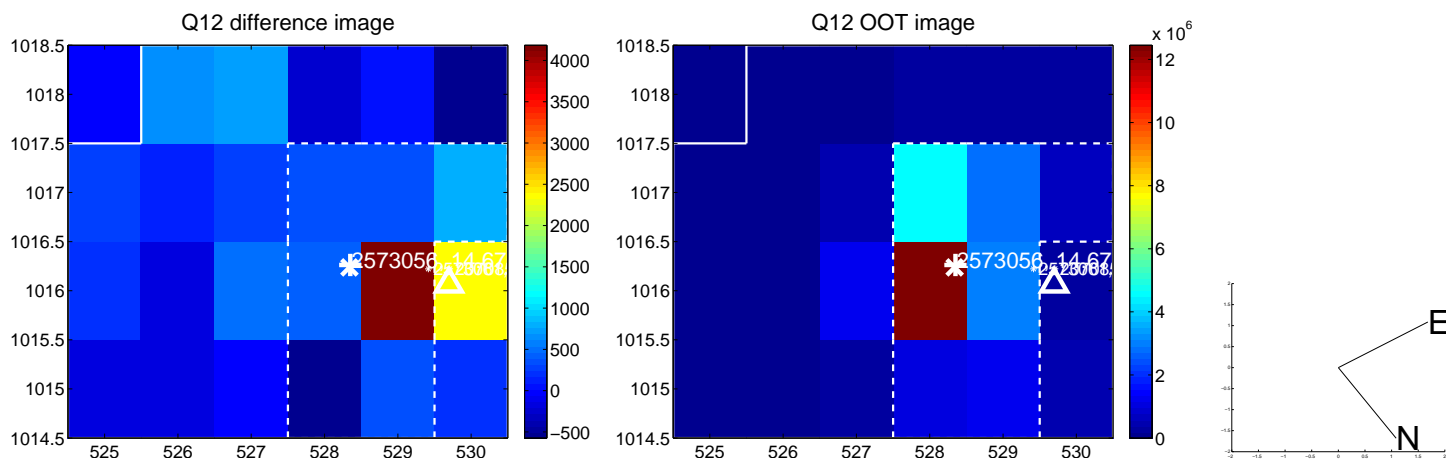
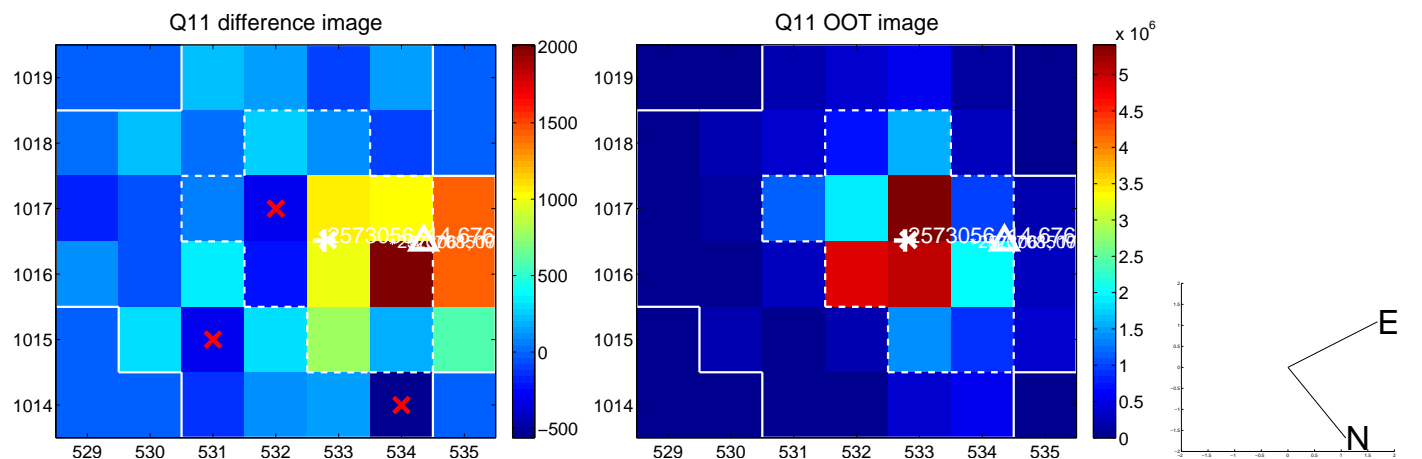
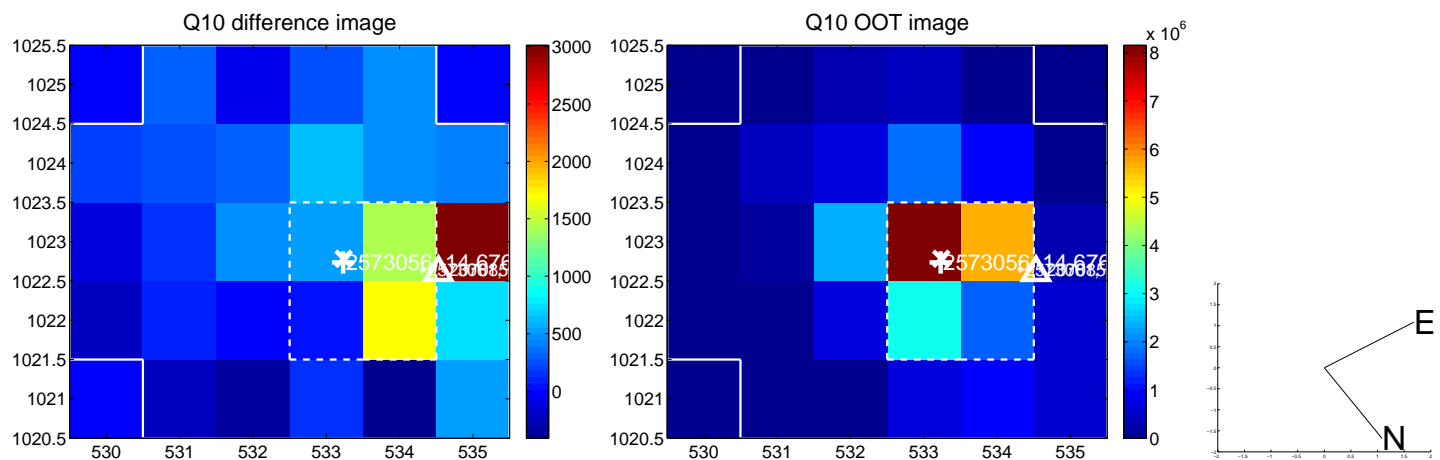
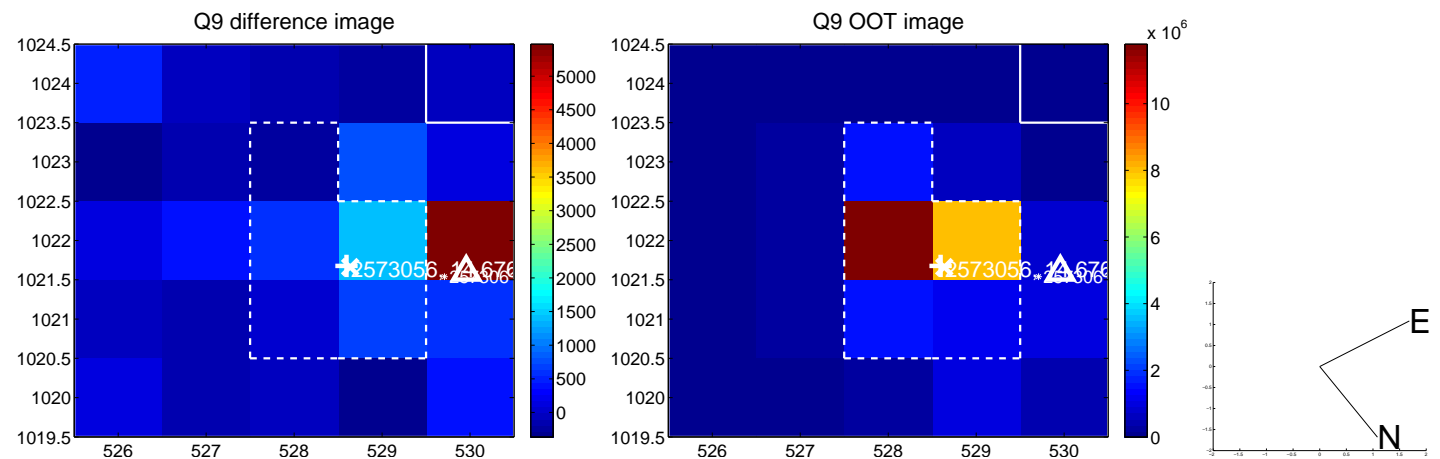
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



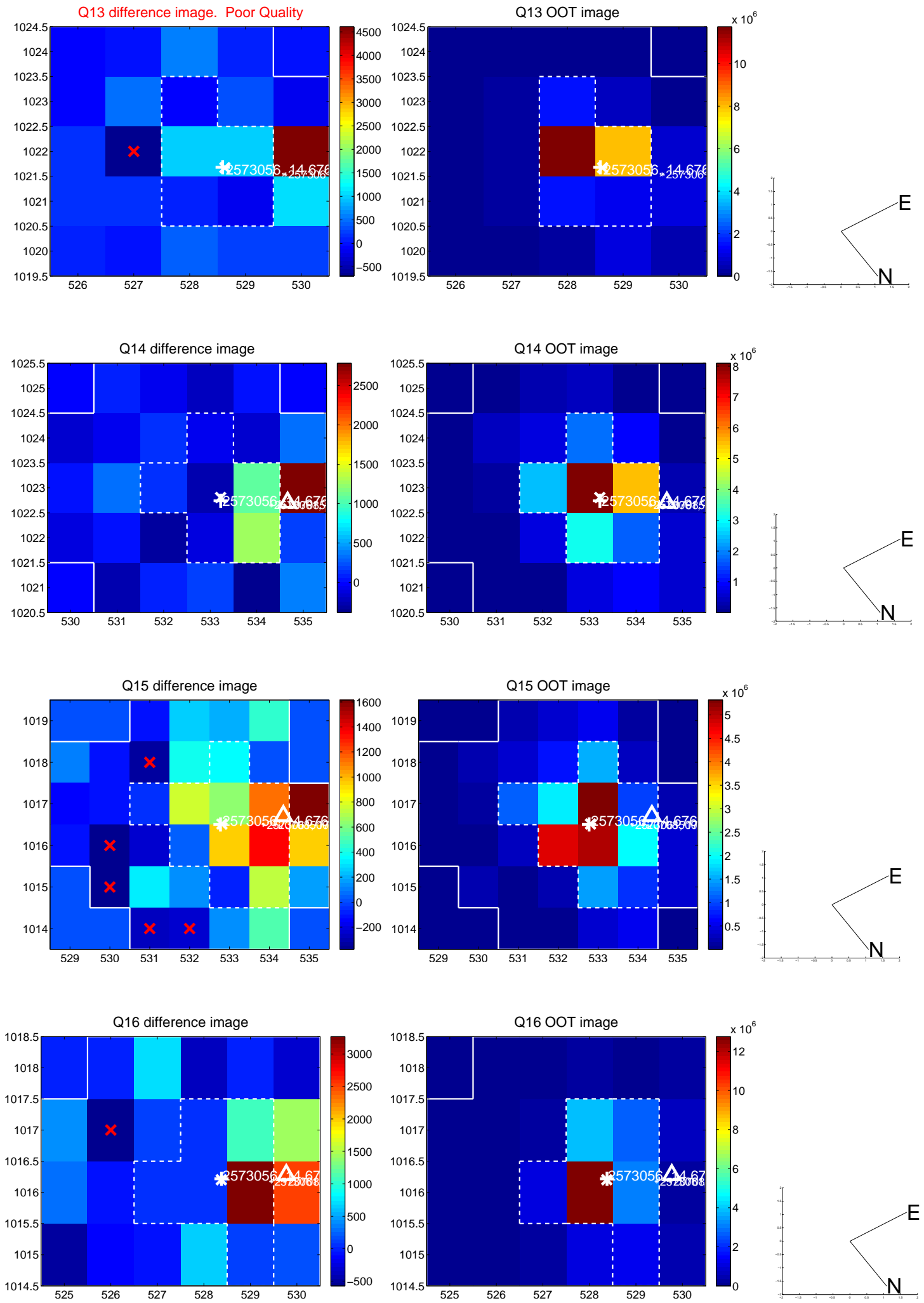
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



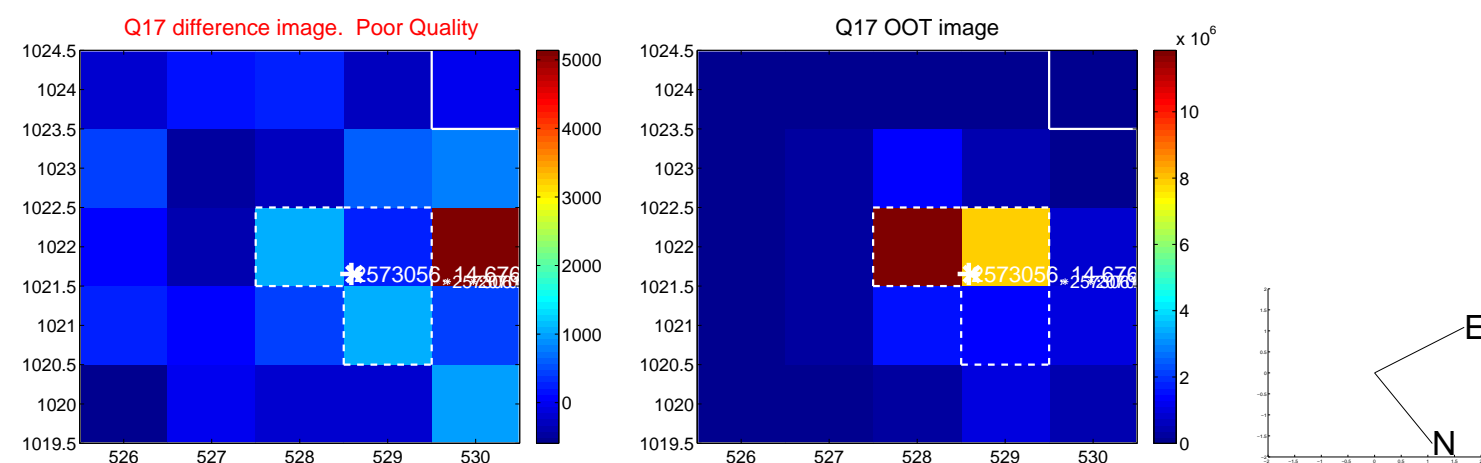
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



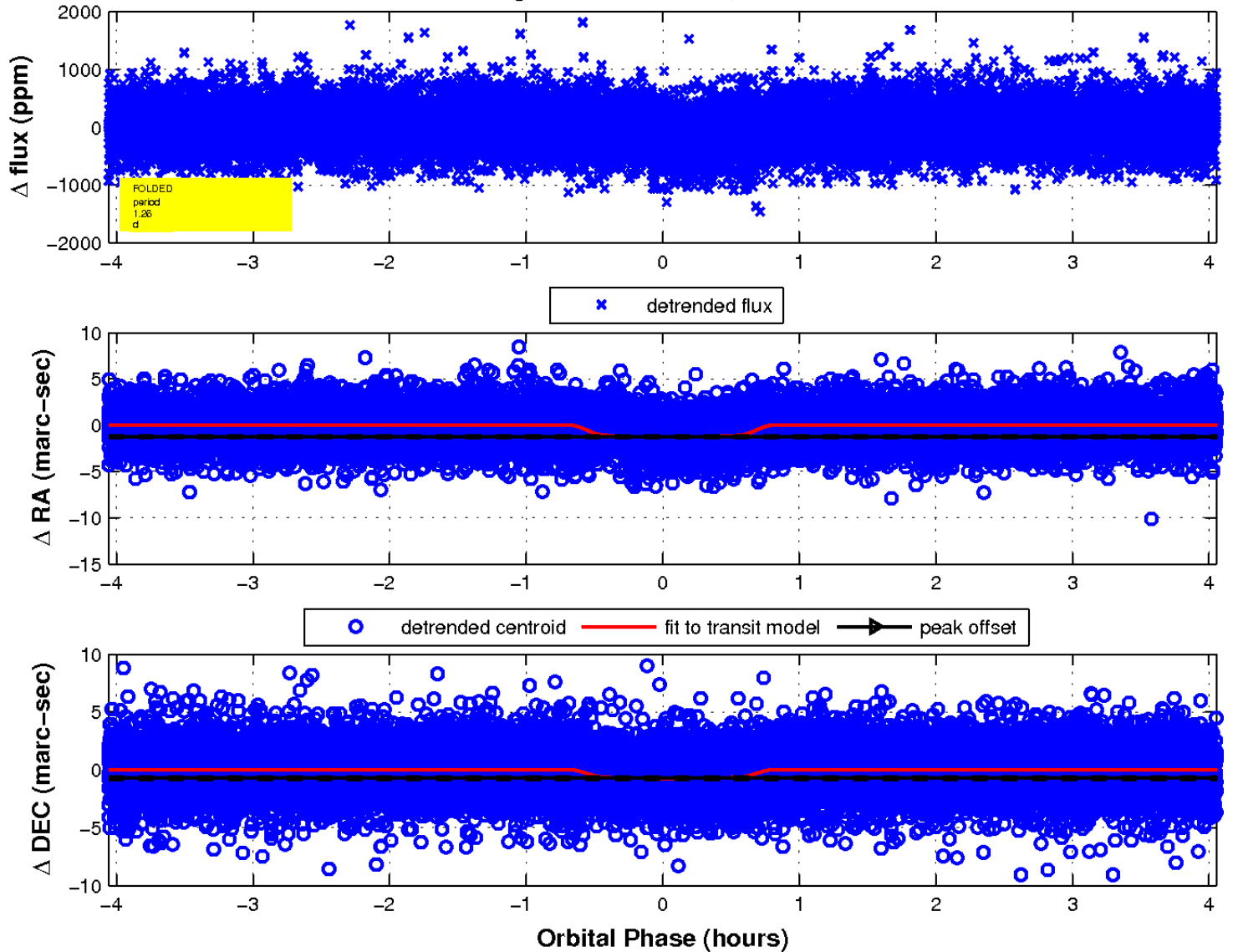
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

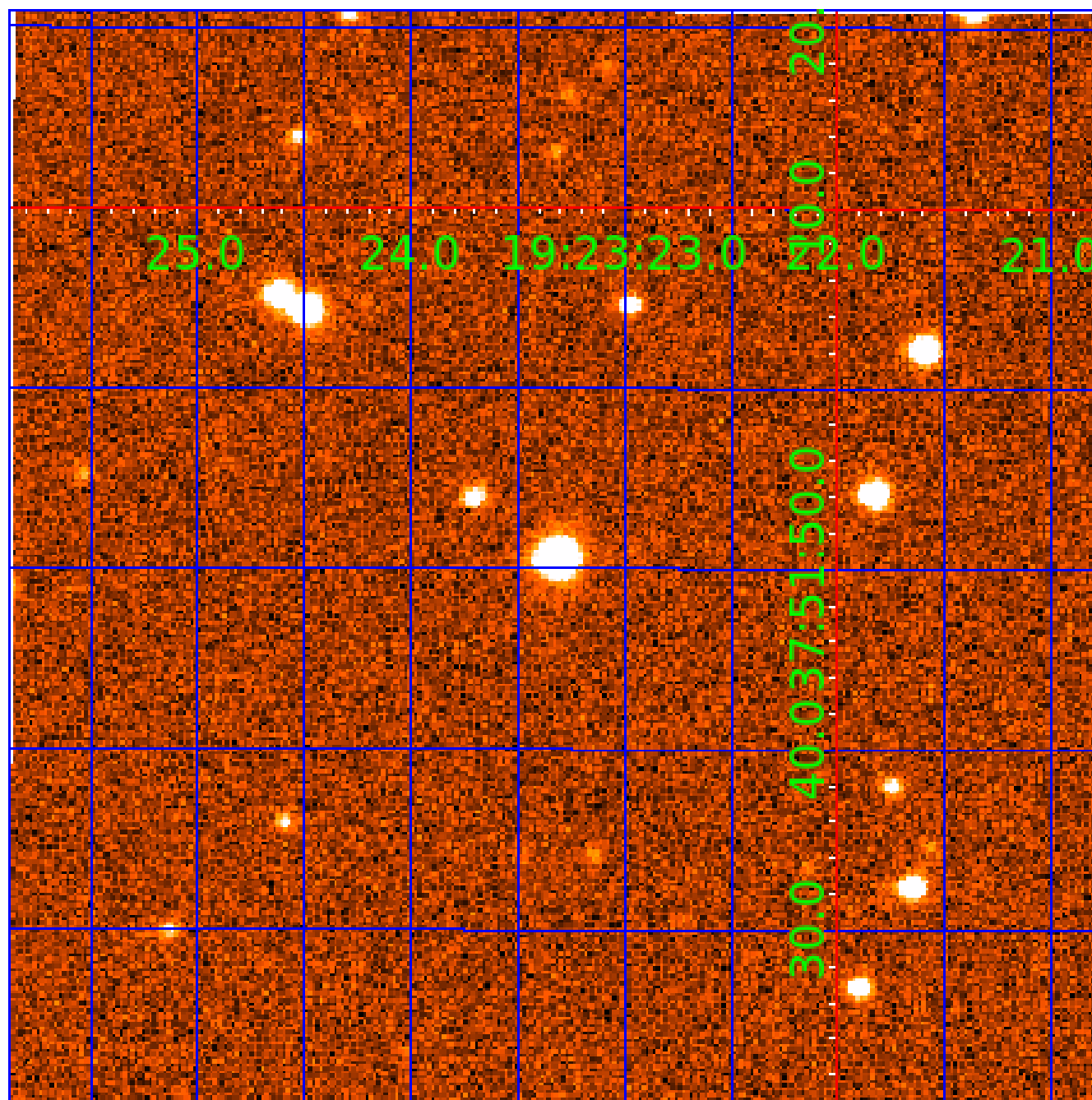


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 002573056

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})
002573056-01	OBS	2648.01	1.263577	132.543929	142.6	1.352	14.7	19.1	1.52	6414	2.13	5749.72
002573056-02	OBS	No	1.263580	131.908711	83.6	1.337	10.5	11.7	1.52	6414	1.64	5749.70

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002573056-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET
002573056-02	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 002573056-02

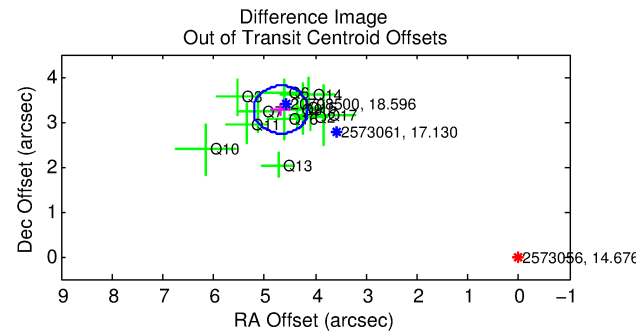
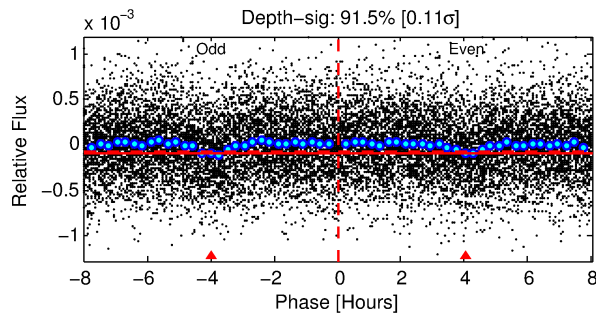
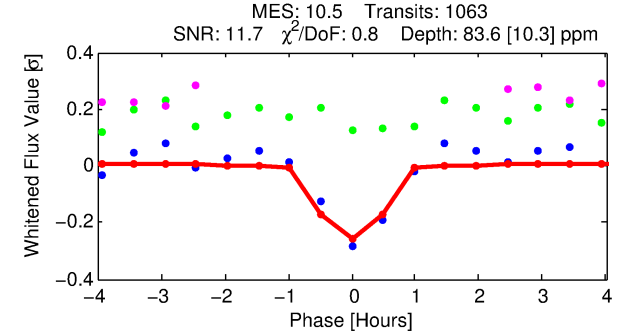
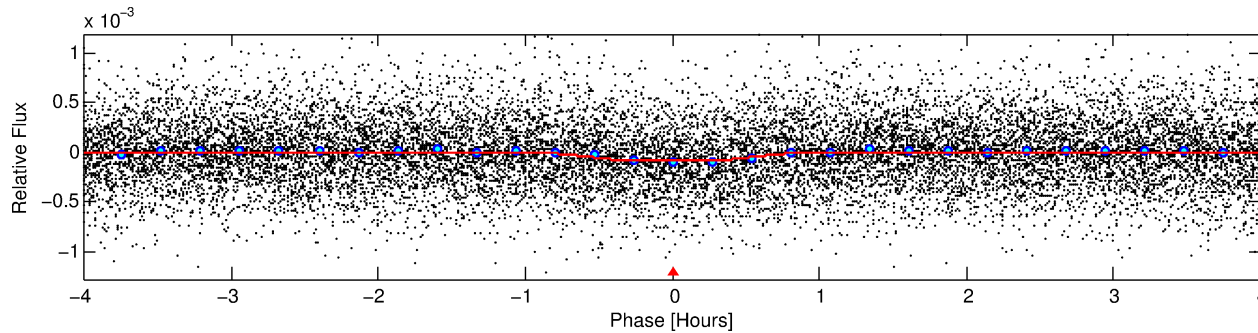
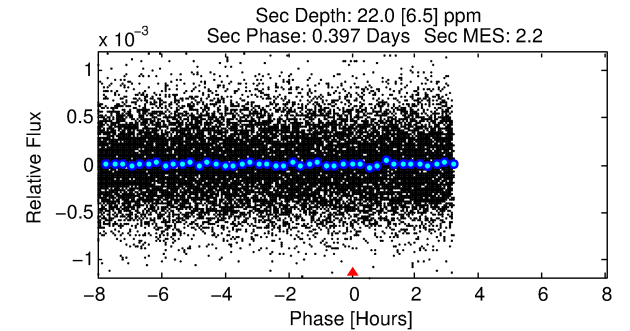
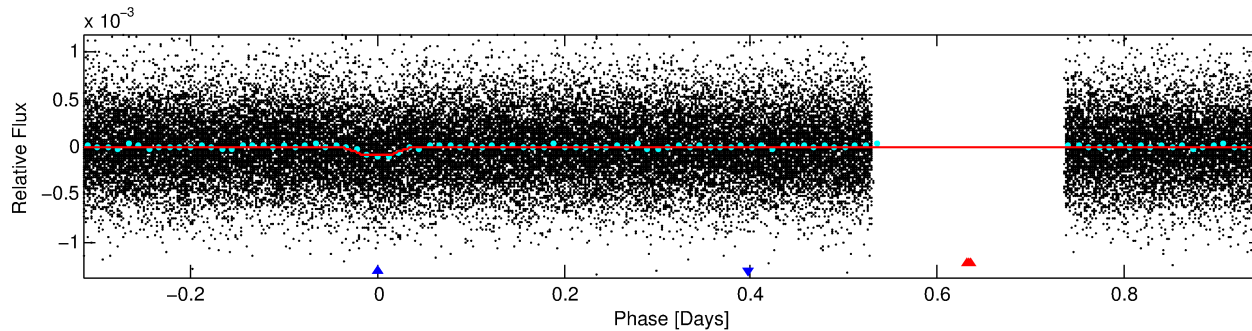
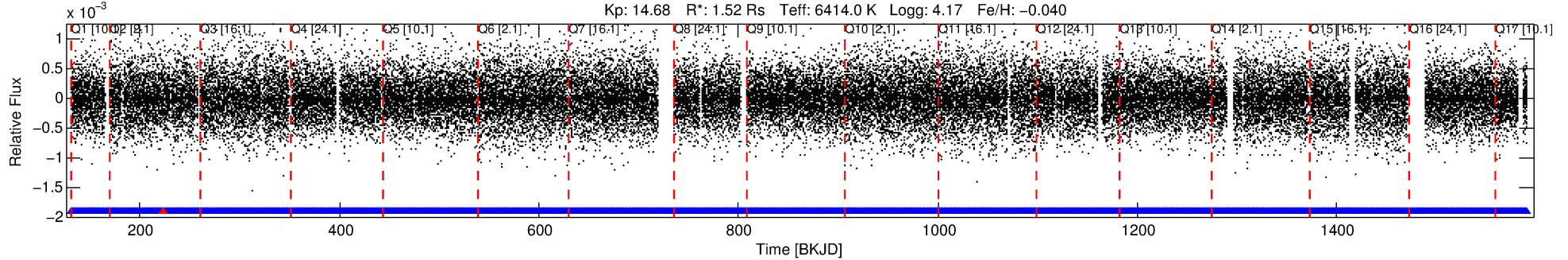
No Significant Match Found

DV One-Page Summary

KIC: 2573056 Candidate: 2 of 2 Period: 1.264 d

KOI: K02648 Corr: No Ephemeris Match

Kp: 14.68 R*: 1.52 Rs Teff: 6414.0 K Logg: 4.17 Fe/H: -0.040



DV Fit Results:

Period = 1.26358 [0.00001] d
Epoch = 131.9087 [0.0019] BKJD
Rp/R* = 0.0099 [0.0058]
a/R* = 3.41 [10.22]
b = 0.90 [0.69]
Seff = 5749.70 [1464.85]
Teq = 2220 [141] K
Rp = 1.64 [1.00] Re
a = 0.0247 [0.0040] AU
Ag = 2.76 [3.40] [0.52σ]
Teffp = 4423 [1336] K [1.64σ]

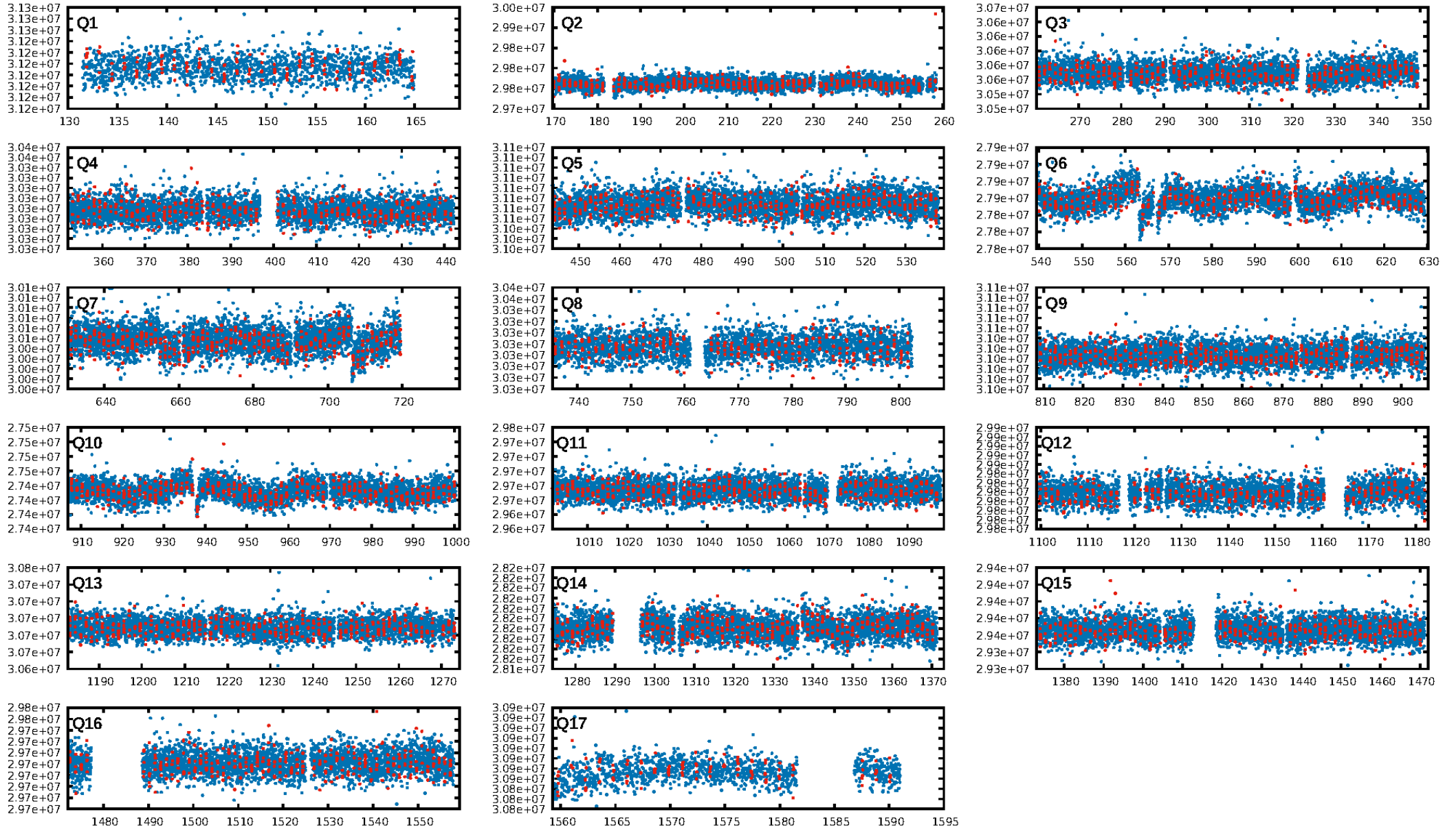
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.28e-26
RollingBand-fgt: 1.00 [1014/1015]
GhostDiagnostic-chr: 0.3228
Centroid-sig: 0.0%
Centroid-so: 12.707 arcsec [11.52σ]
OotOffset-rm: 5.707 arcsec [32.16σ]
KicOffset-rm: 5.627 arcsec [31.83σ]
OotOffset-st: 4/4/1/3 [12]
KicOffset-st: 4/4/1/3 [12]
DiffImageQuality-fgm: 0.92 [11/12]
DiffImageOverlap-fno: 1.00 [17/17]

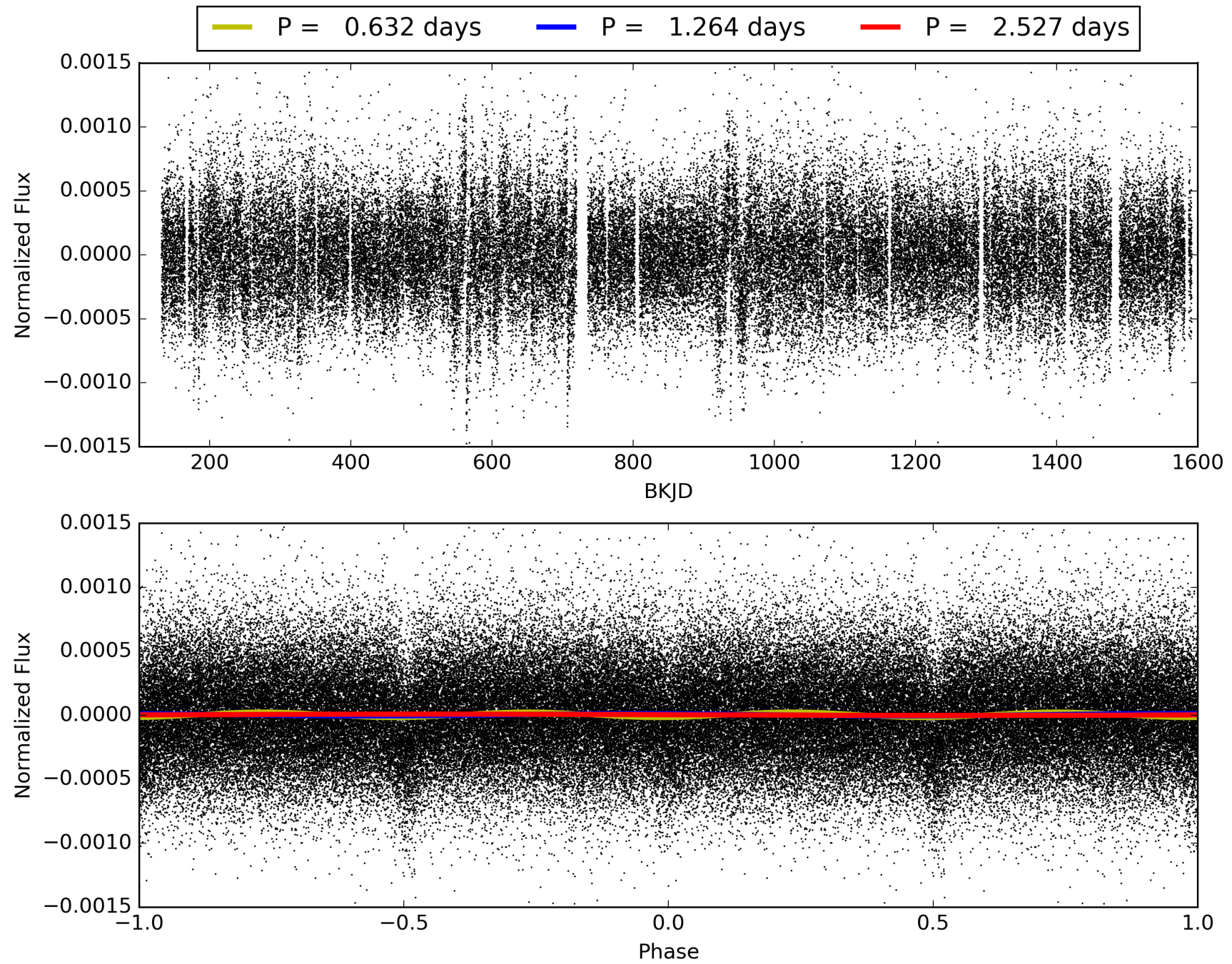
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 002573056-02, PDC Light Curves

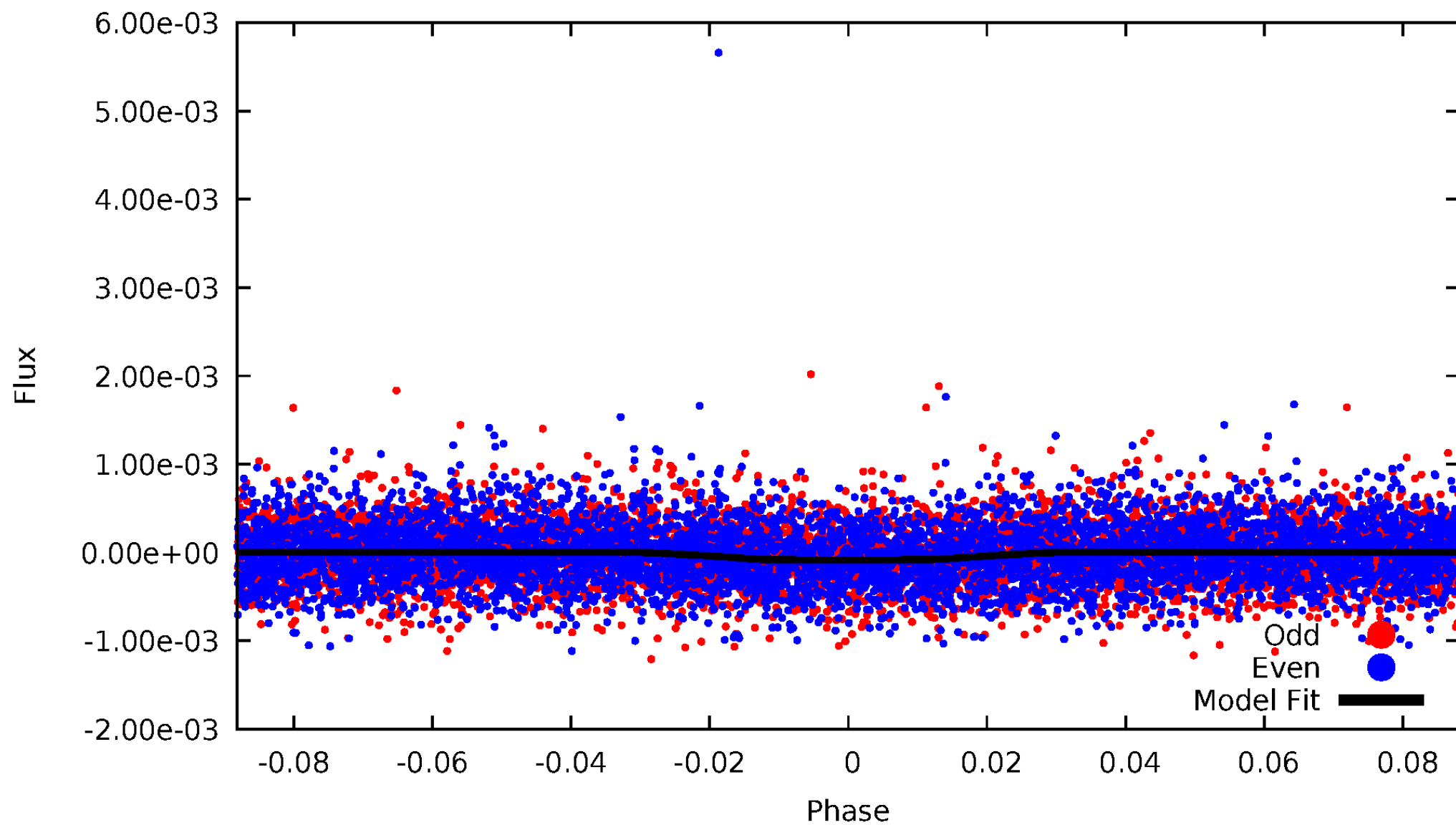


TCE 002573056-02



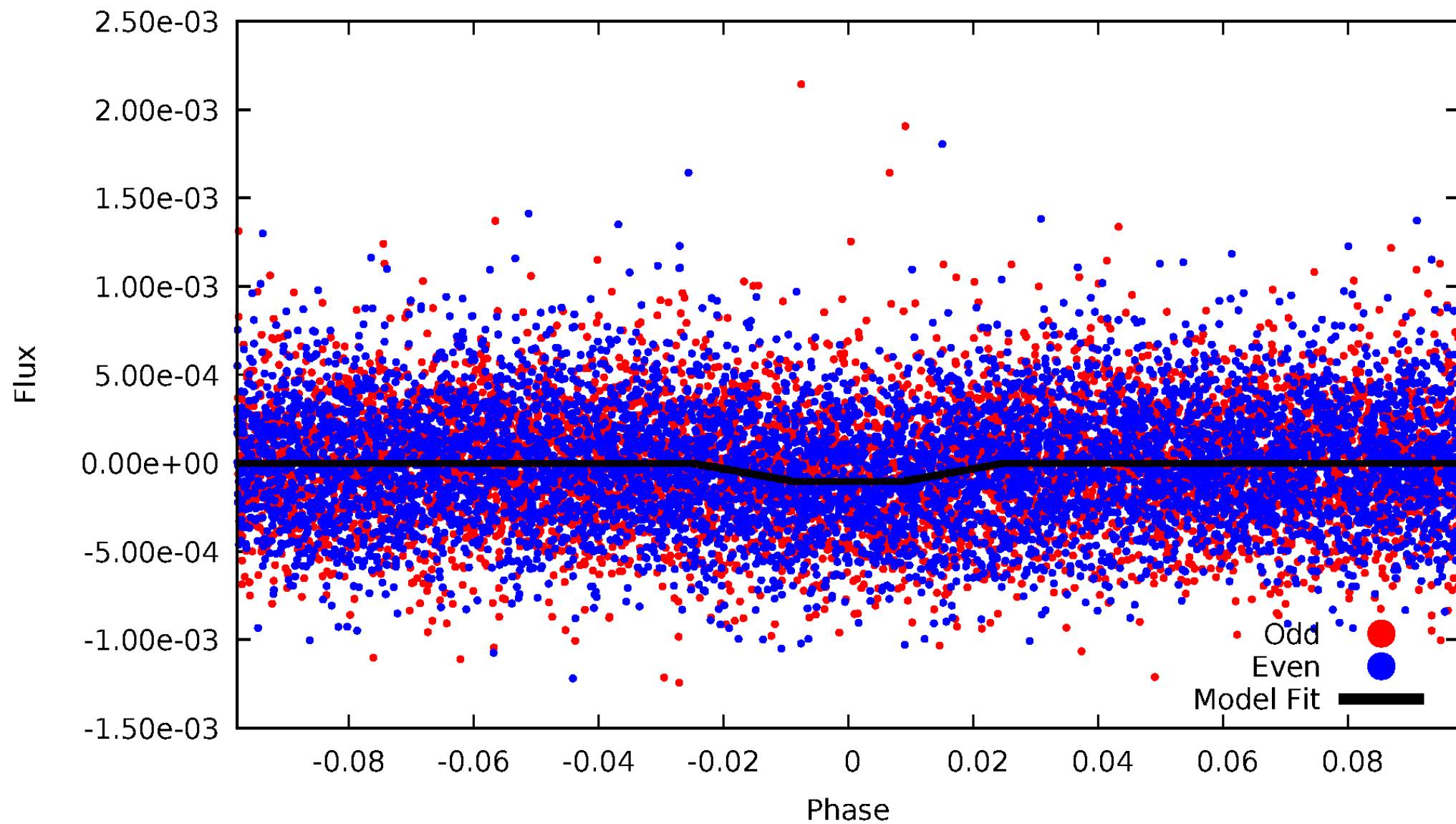
DV Odd/Even

TCE 002573056-02



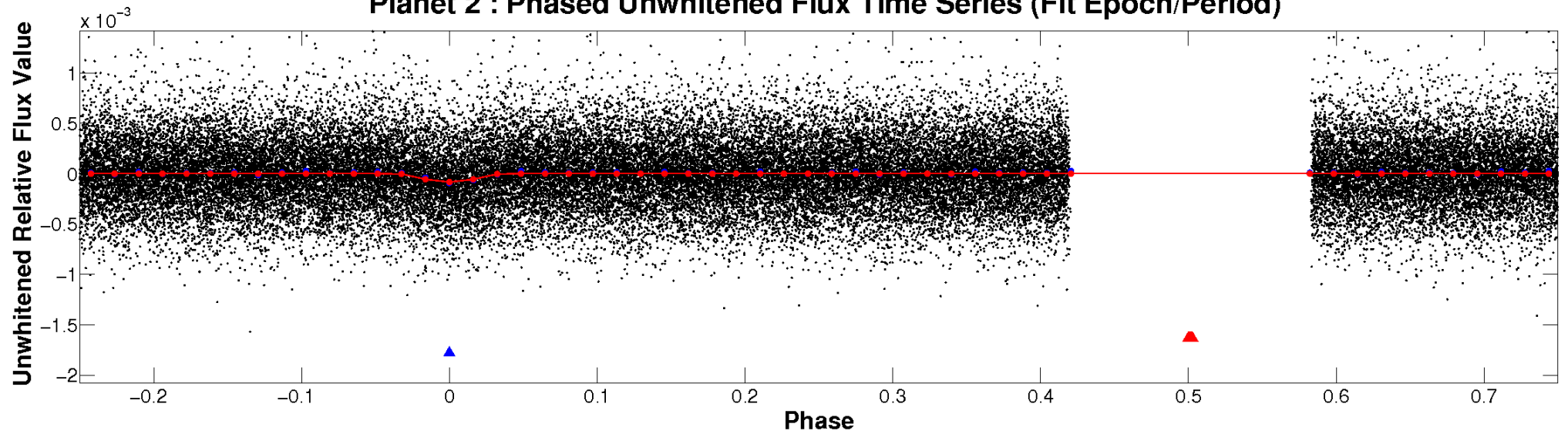
ALT Odd/Even

TCE 002573056-02

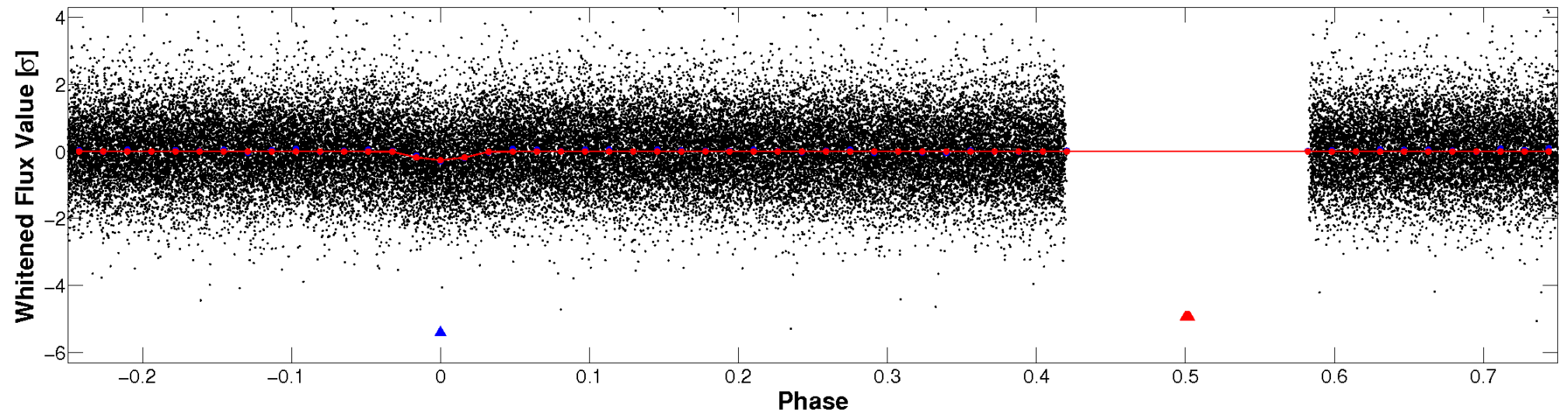


Non-Whitened Vs. Whitened Light Curve

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

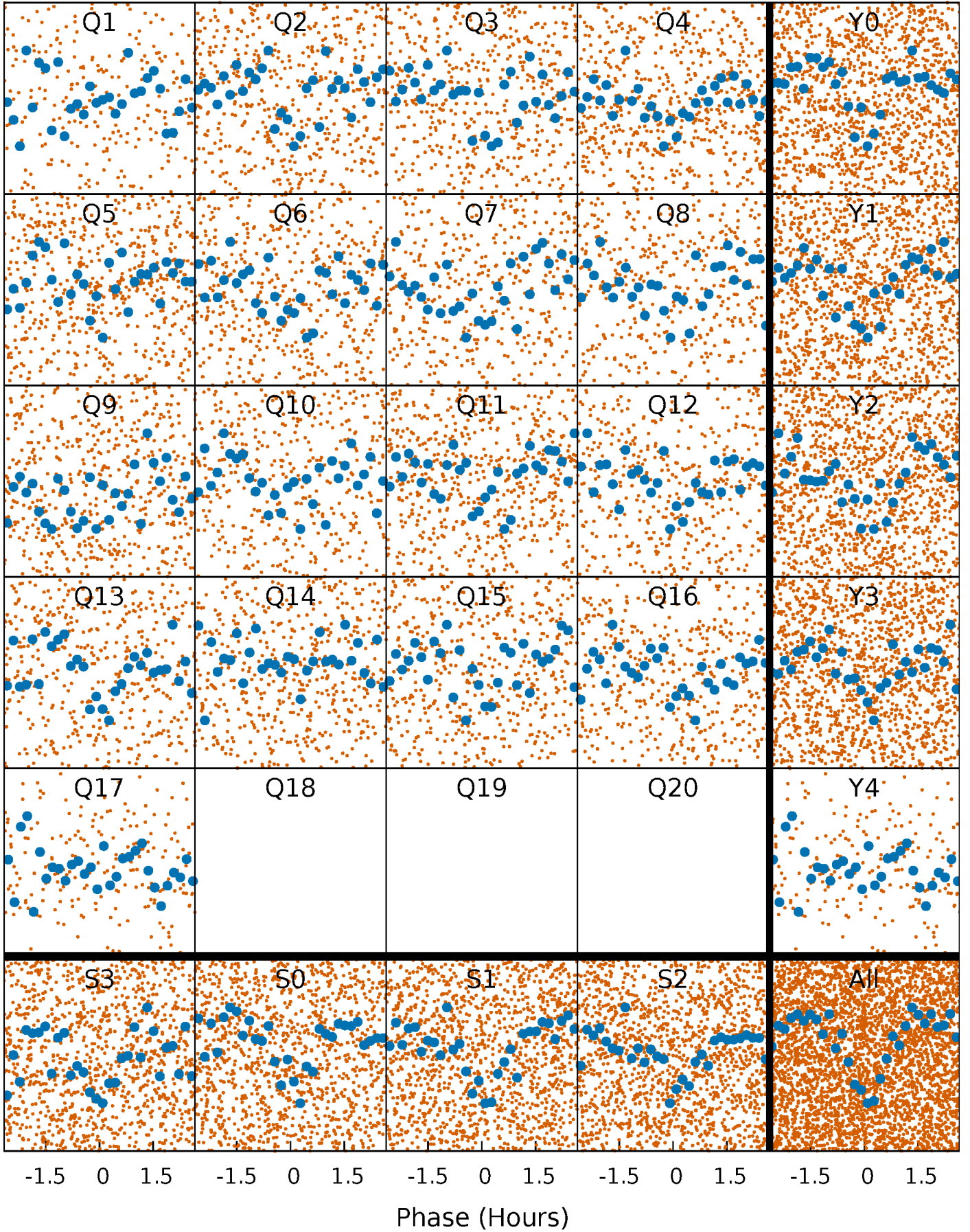


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



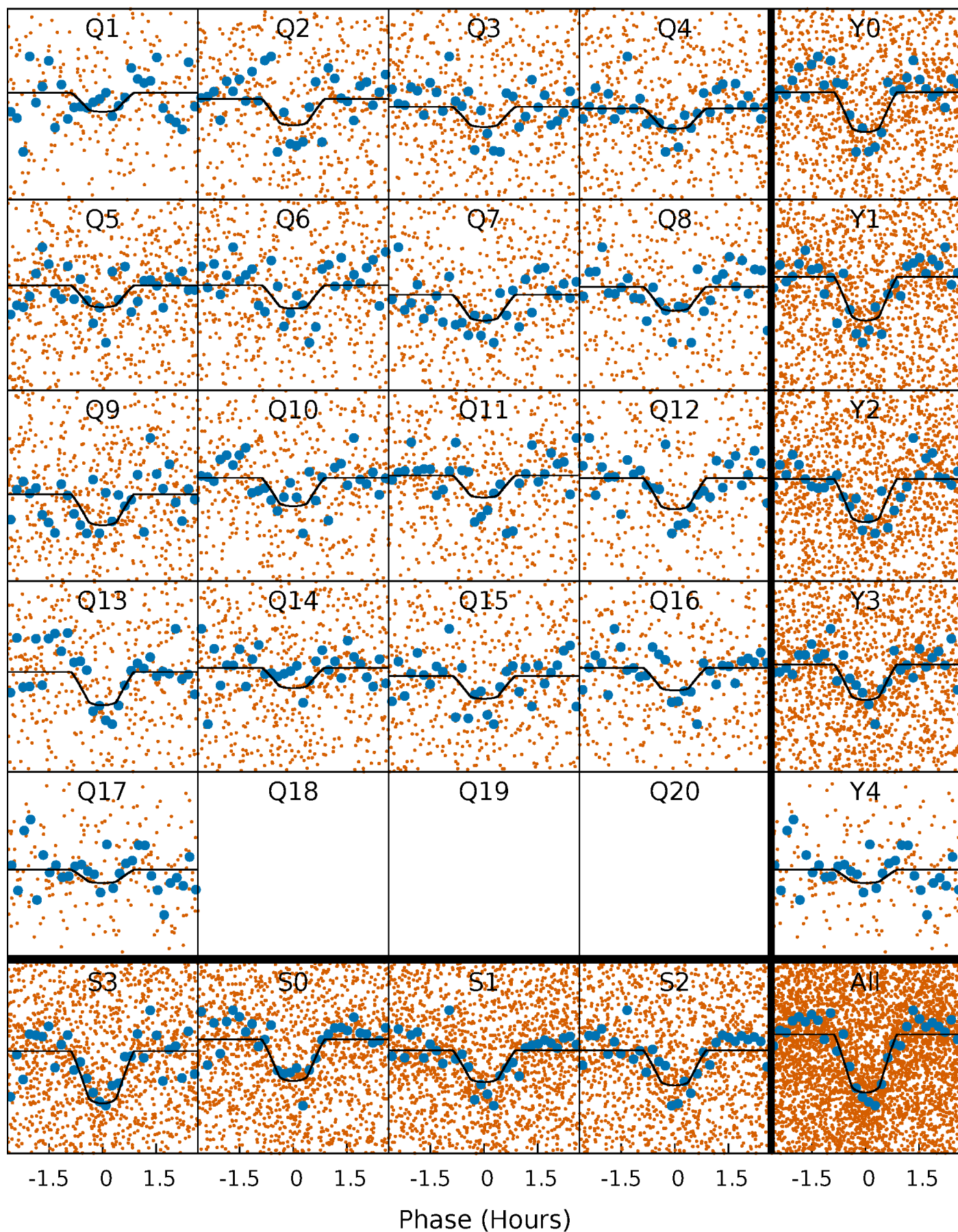
PDC Quarter-Phased Transit Curves

TCE 002573056-02 P= 1.263580 Days $T_0=131.908711$ (BKJD)



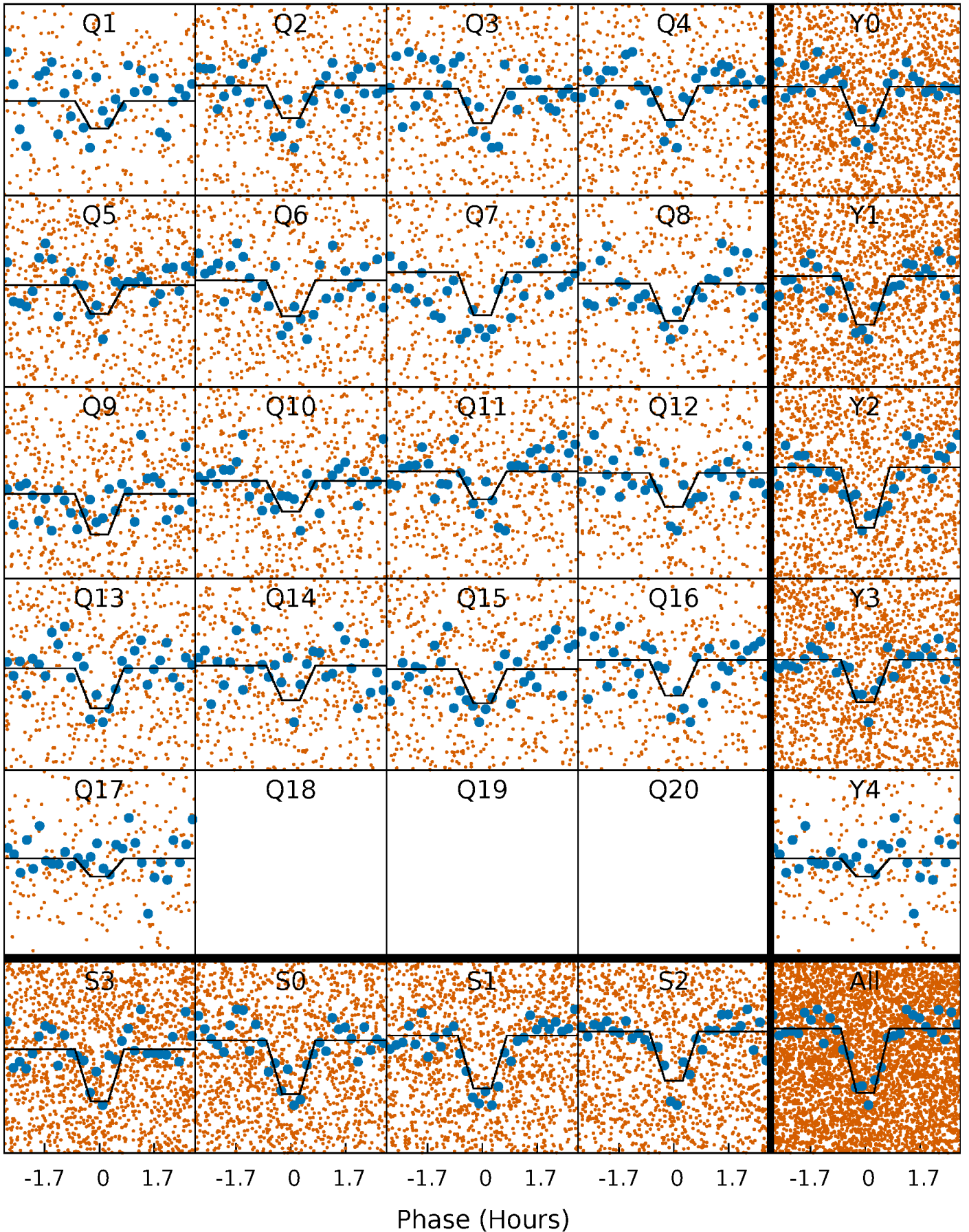
DV Quarter-Phased Transit Curves

TCE 002573056-02 P= 1.263580 Days $T_0=131.908711$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

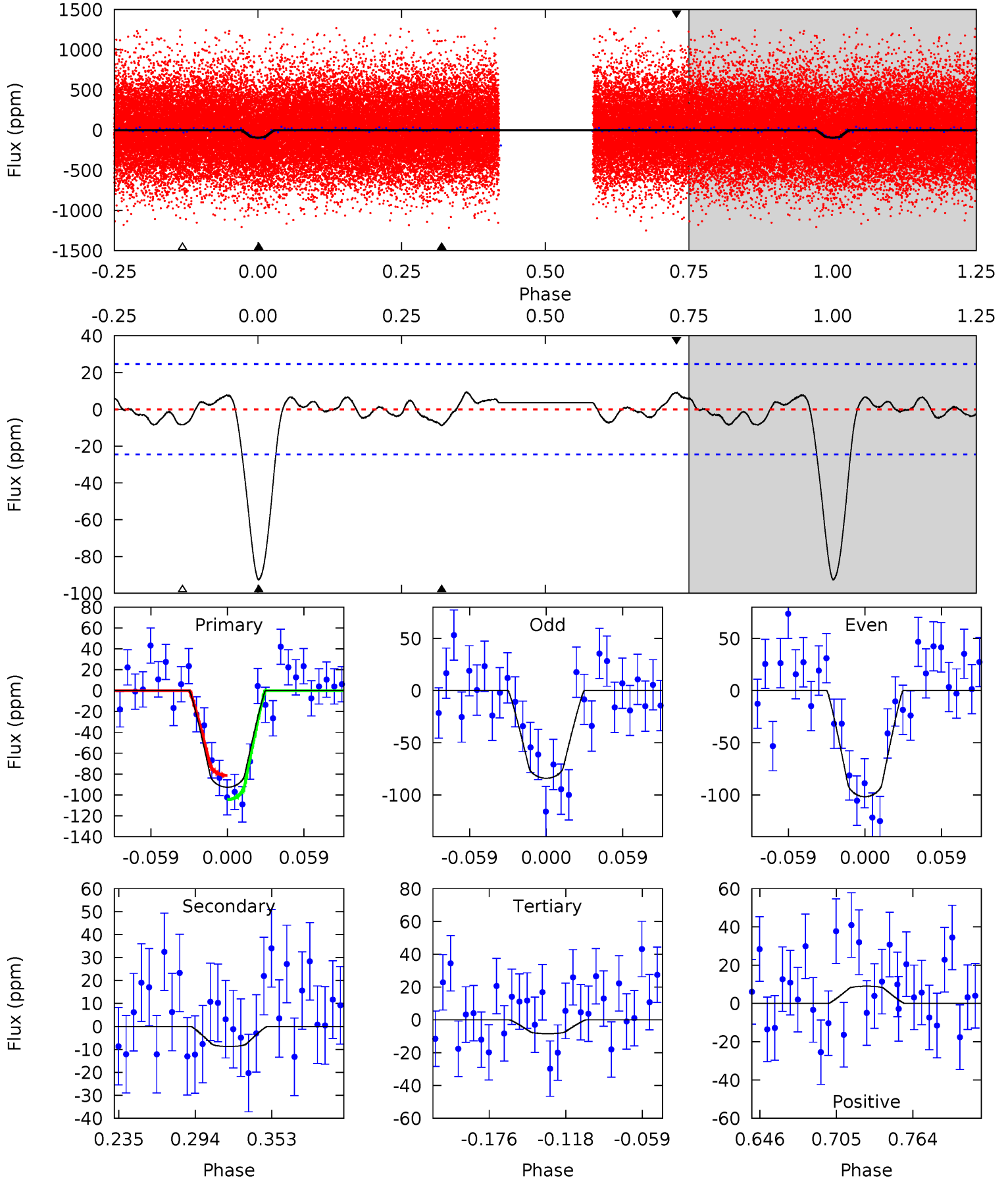
TCE 002573056-02 $P = 1.263586$ Days $T_0 = 131.907286$ (BKJD)



DV Model-Shift Uniqueness Test

002573056-02, P = 1.263580 Days, E = 130.645131 Days

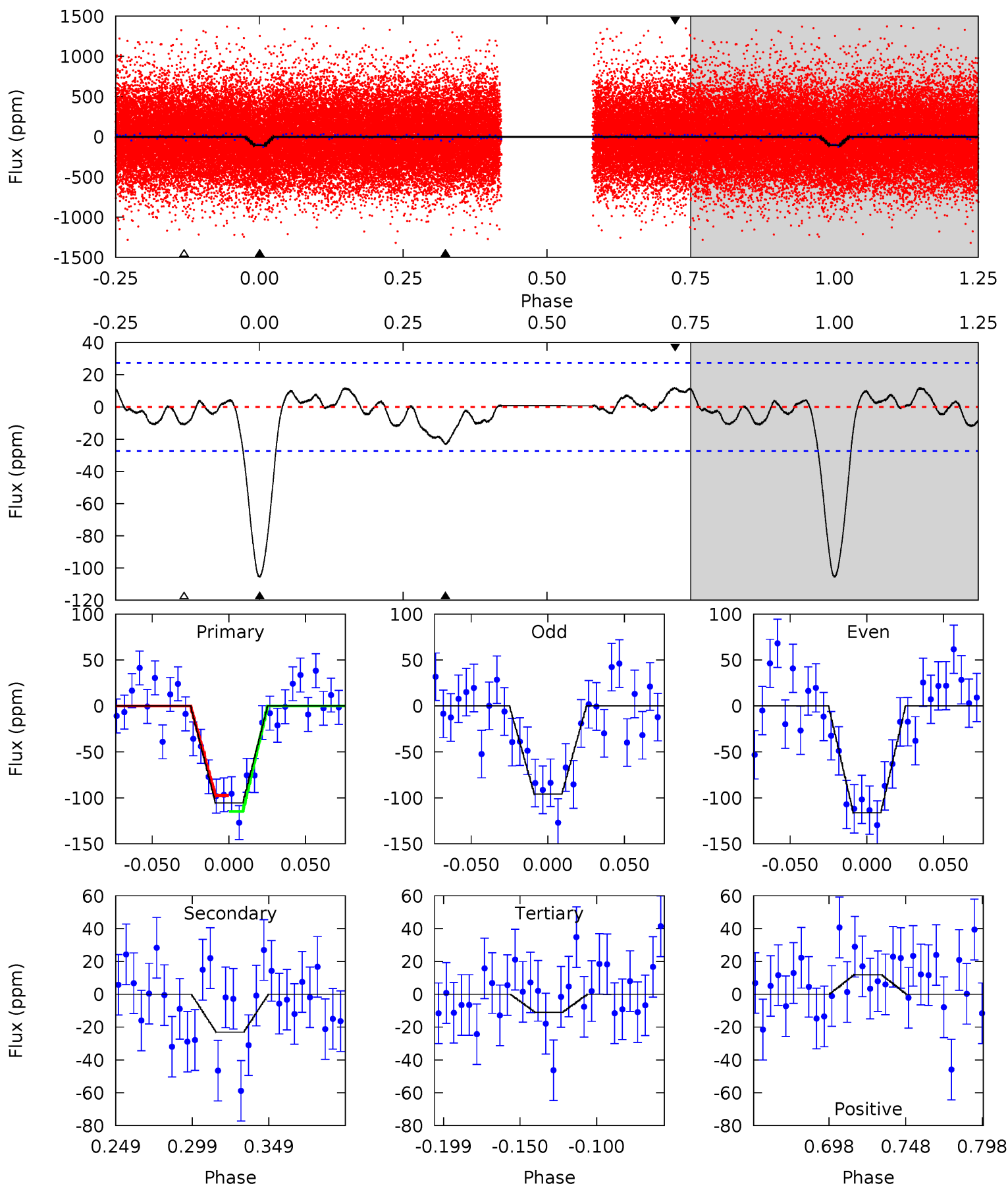
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.6	1.67	1.61	1.72	4.68	1.89	0.80	16.0	15.9	0.06	-0.05	1.69	0.98	0.09	2.20



Alt Model-Shift Uniqueness Test

002573056-02, P = 1.263586 Days, E = 130.643700 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.2	3.98	1.89	2.03	4.71	1.96	1.04	16.3	16.1	2.10	1.95	1.77	0.96	0.10	1.49



Stellar Parameters For KIC 002573056

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6414^{+70}_{-83}	$4.173^{+0.143}_{-0.117}$	$-0.040^{+0.150}_{-0.150}$	$1.519^{+0.270}_{-0.270}$	$1.256^{+0.092}_{-0.127}$	$0.505^{+0.359}_{-0.180}$
	+1%/-1%	+3%/-3%	+375%/-375%	+18%/-18%	+7%/-10%	+71%/-36%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 002573056-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-9 ± 5	$1.65^{+0.92}_{-0.84}$	3104^{+150}_{-152}	3557^{+1293}_{-6186}	$0.969^{+3.276}_{-0.742}$
Alt.	-23 ± 6	$1.74^{+0.94}_{-0.91}$	3092^{+145}_{-131}	4393^{+1671}_{-753}	$2.609^{+8.083}_{-1.585}$

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 $A_{obs} \gg 1.0$

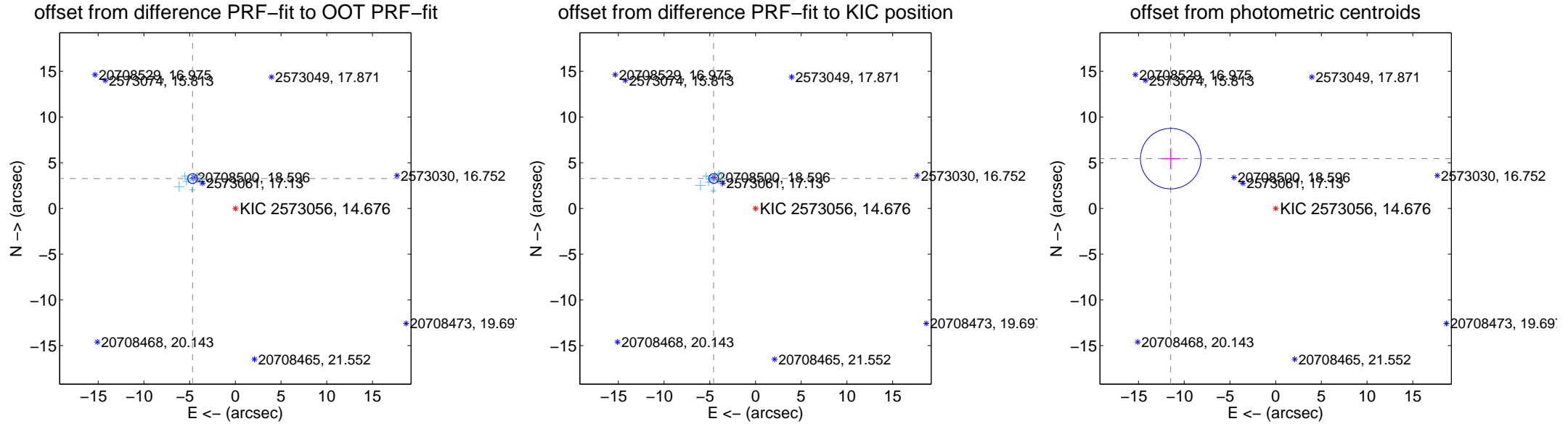
DV Centroid Data

Supplemental centroid analysis for 002573056-02. Kepler magnitude: 14.68. Transit SNR 11.69

There are 11 quarters with good PRF difference image offsets

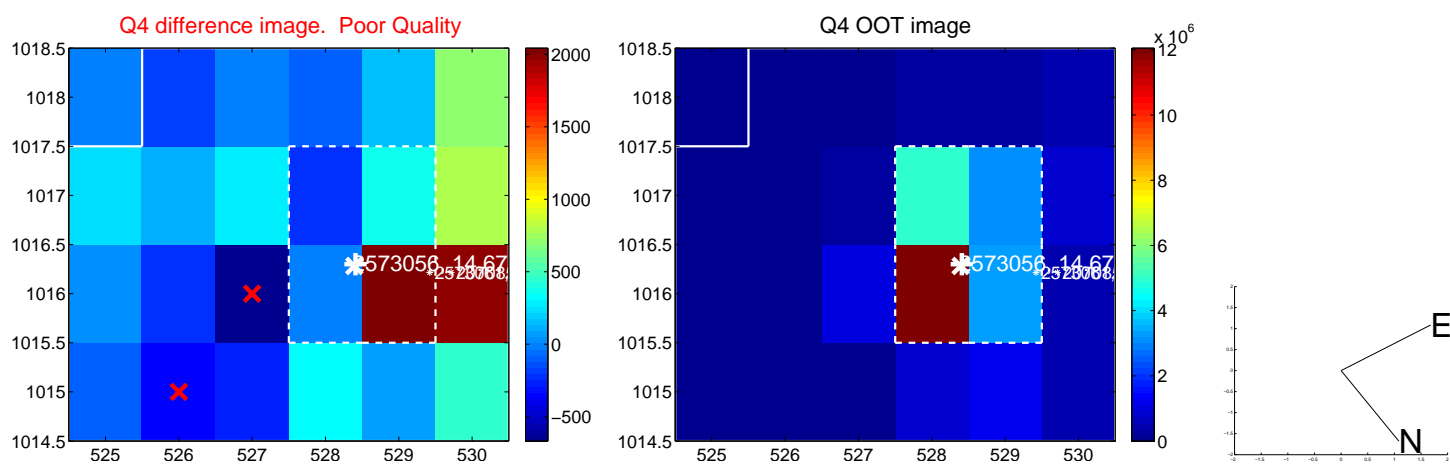
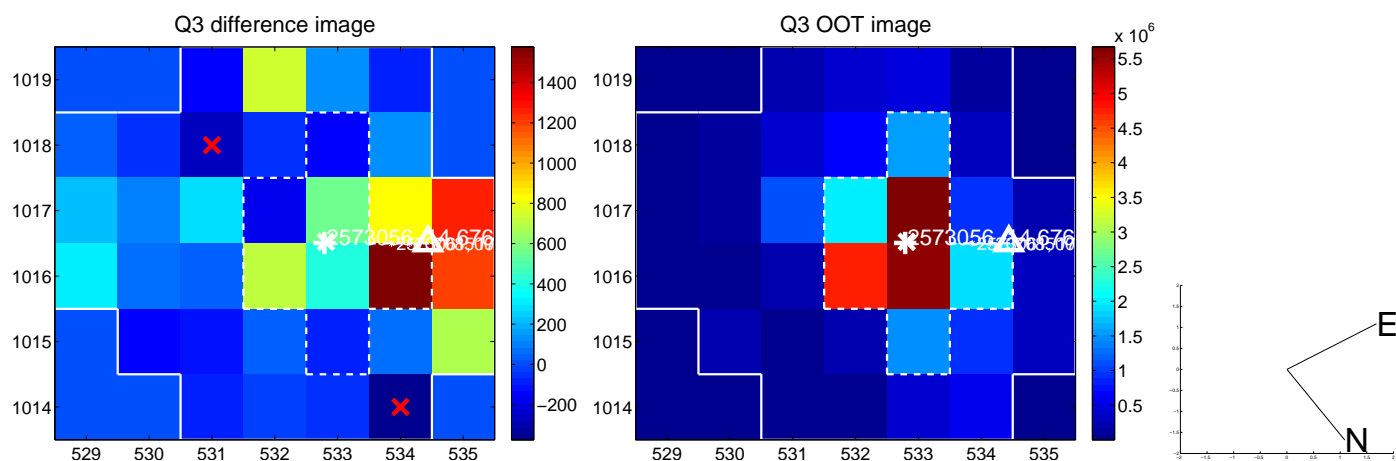
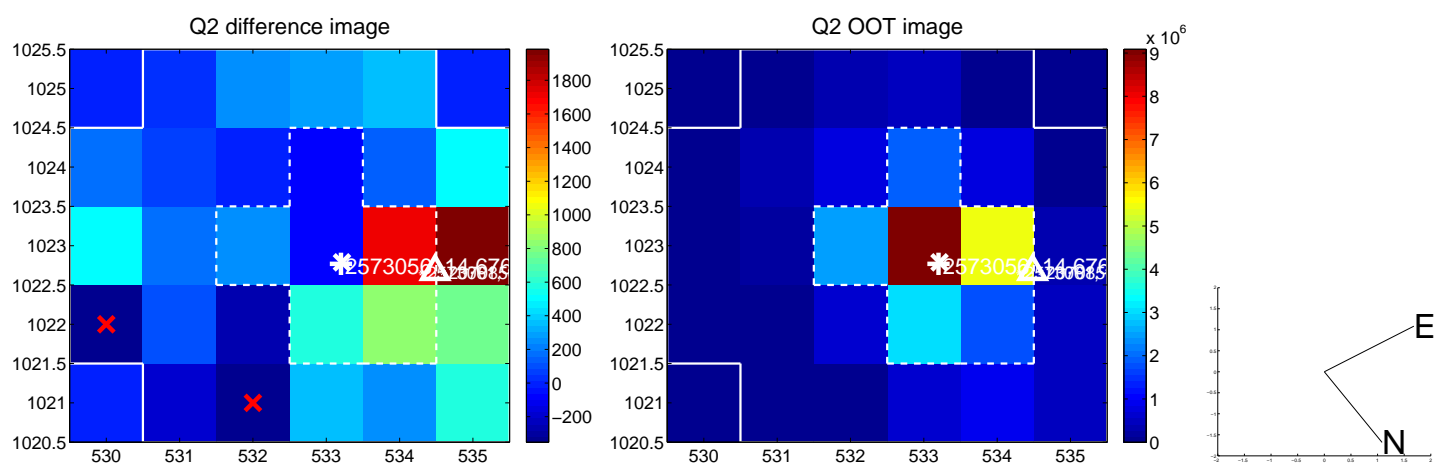
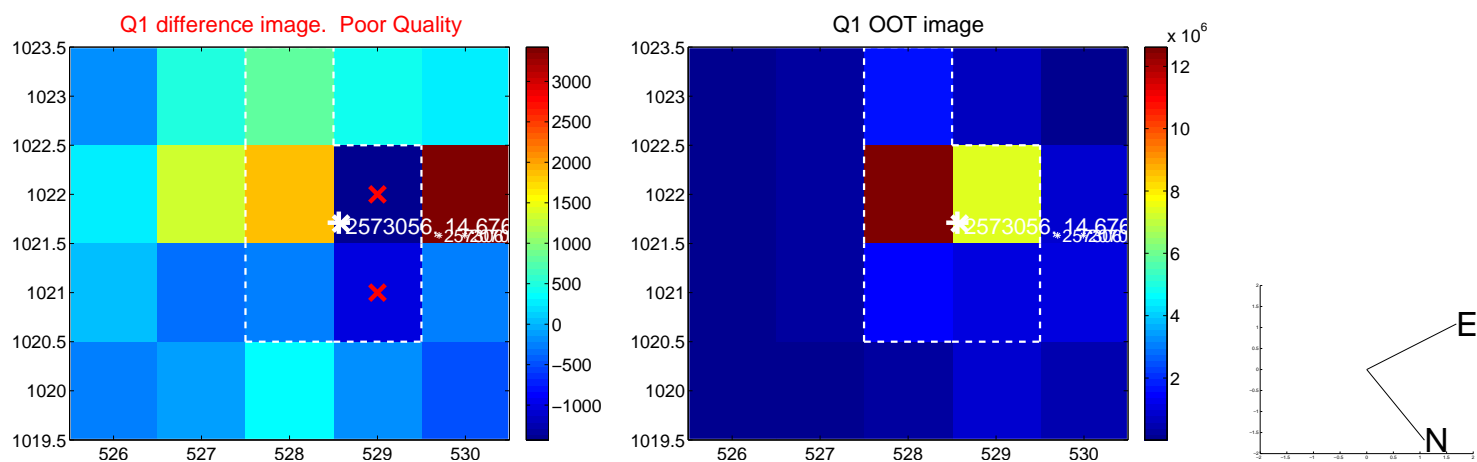
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.707 ± 0.177	32.16	4.679 ± 0.198	3.268 ± 0.124
PRF-fit source offset from KIC position	5.627 ± 0.177	31.83	4.575 ± 0.192	3.277 ± 0.142
photometric centroid source offset	12.71 ± 1.10	11.52	11.48 ± 1.09	5.45 ± 1.15

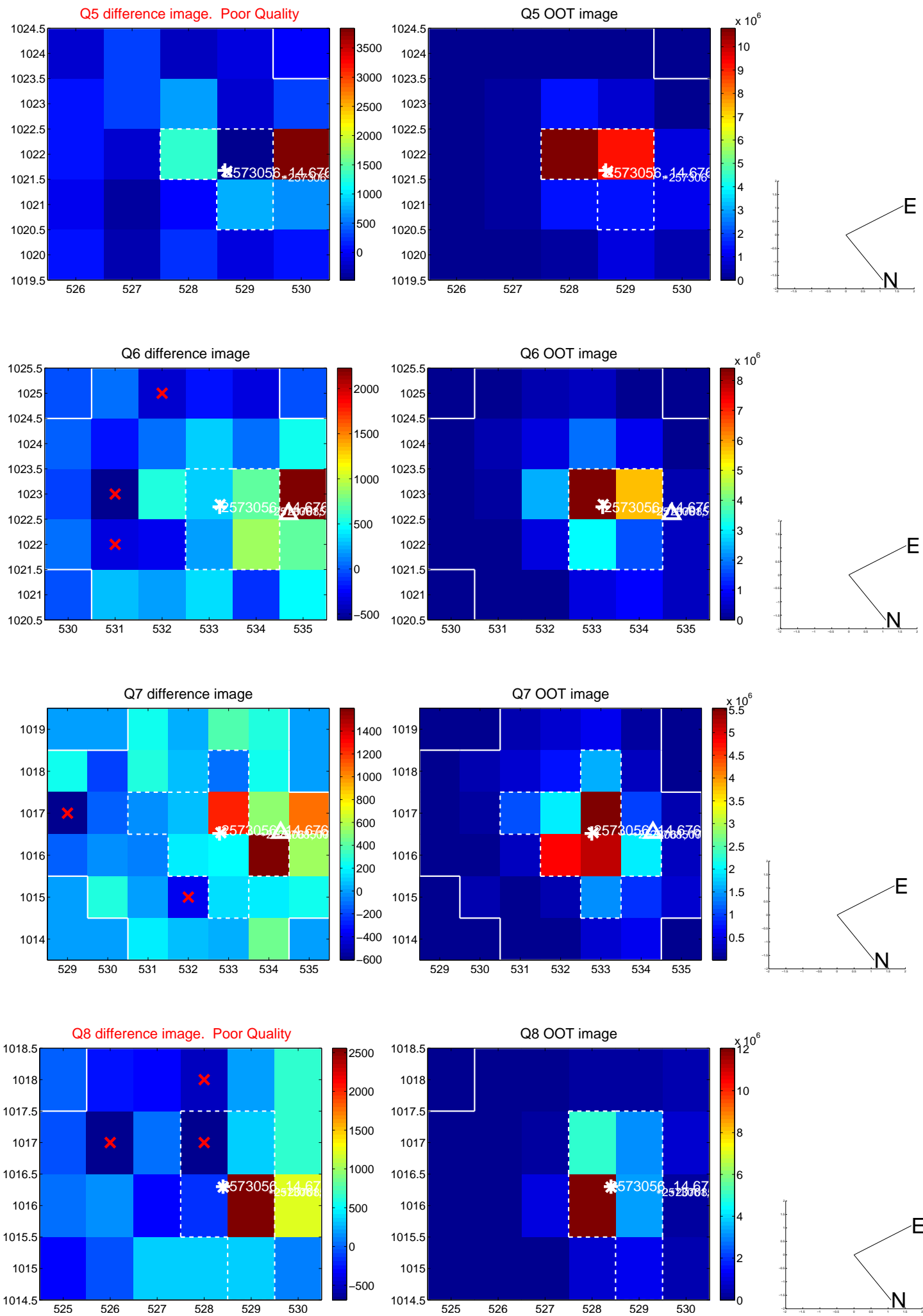


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

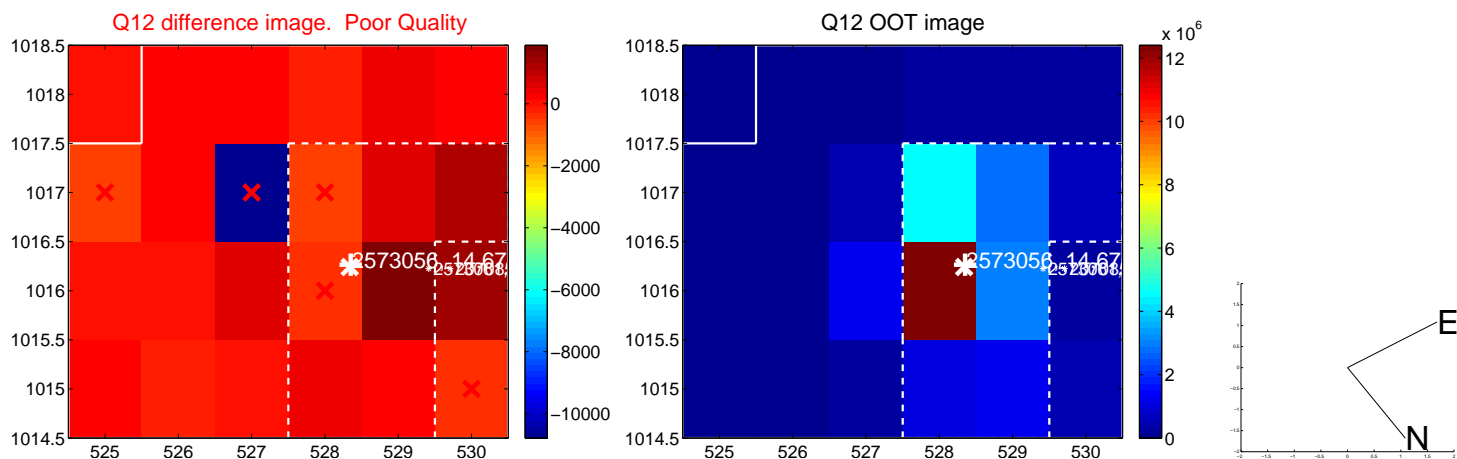
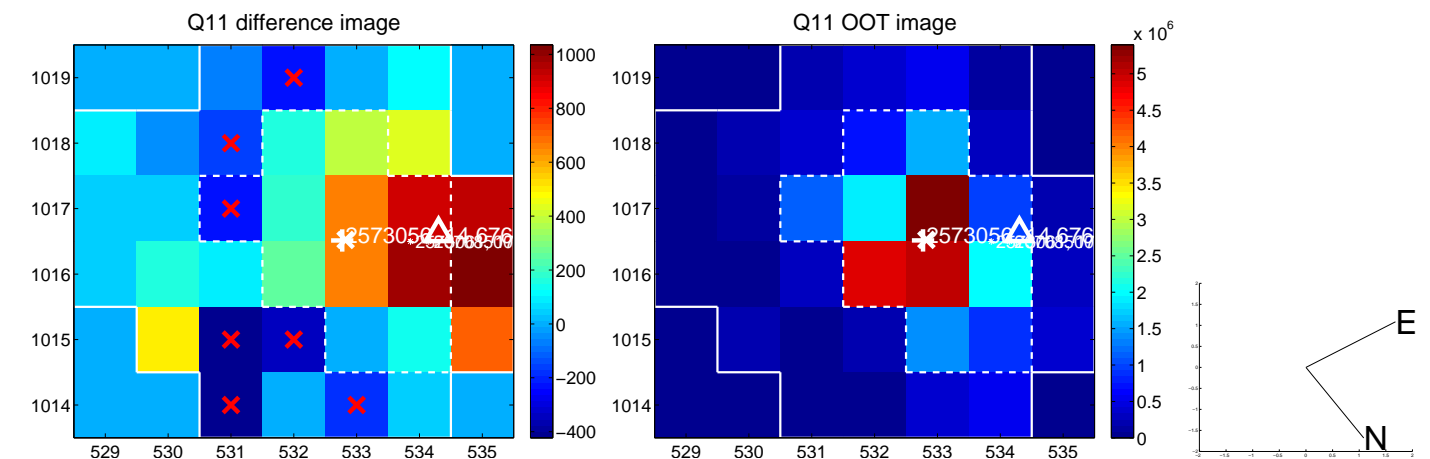
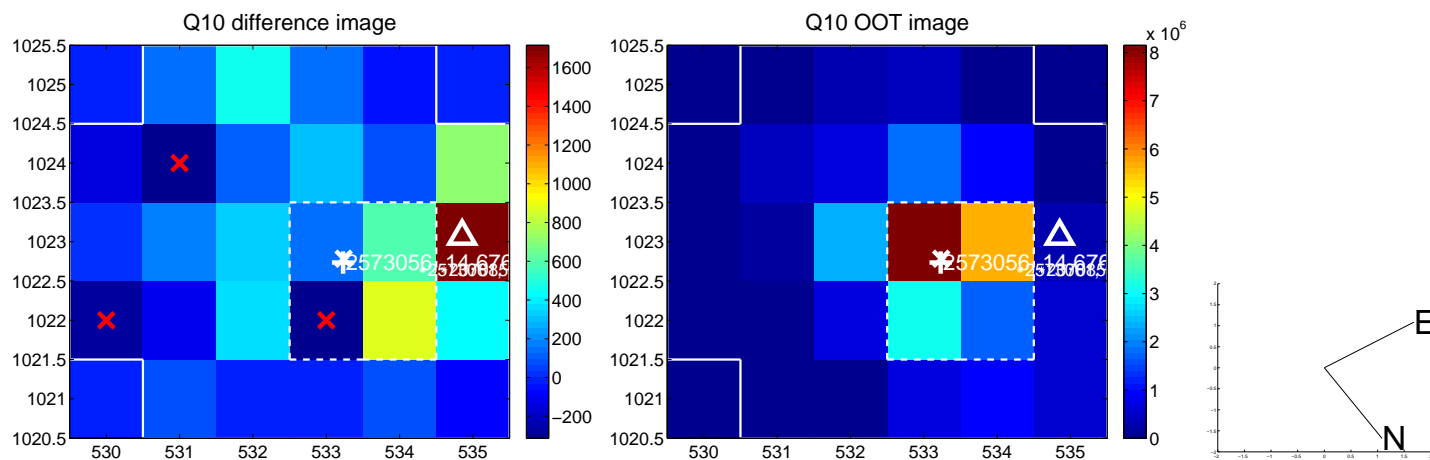
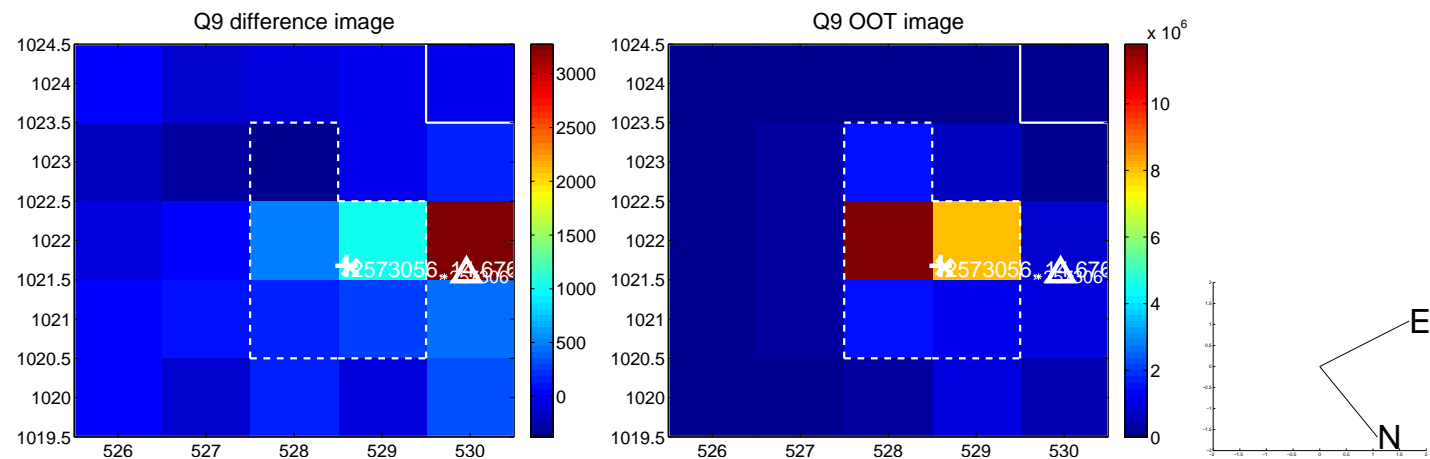
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



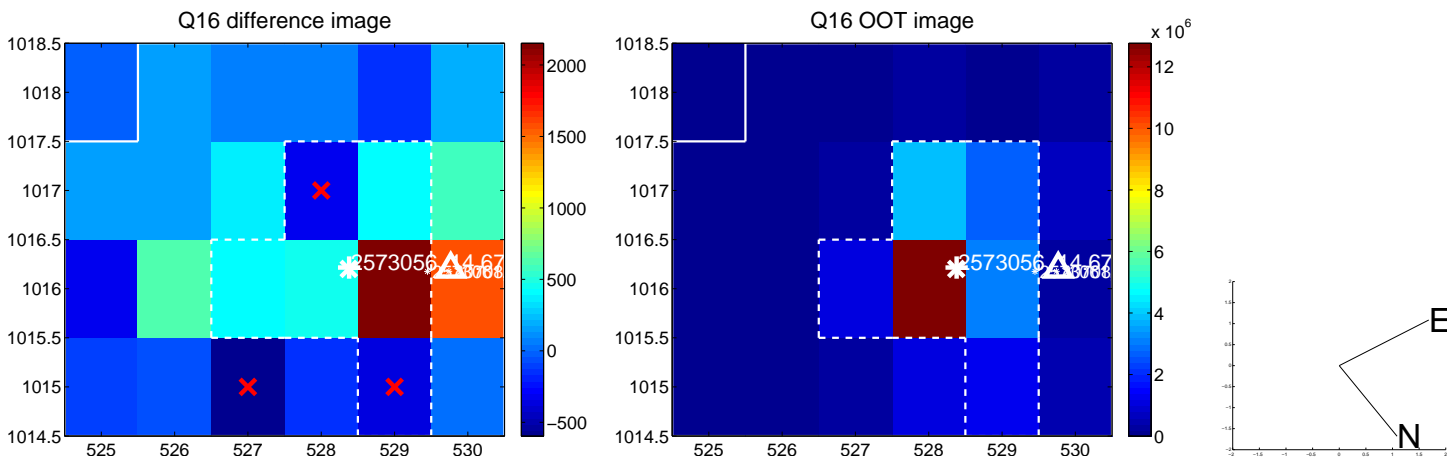
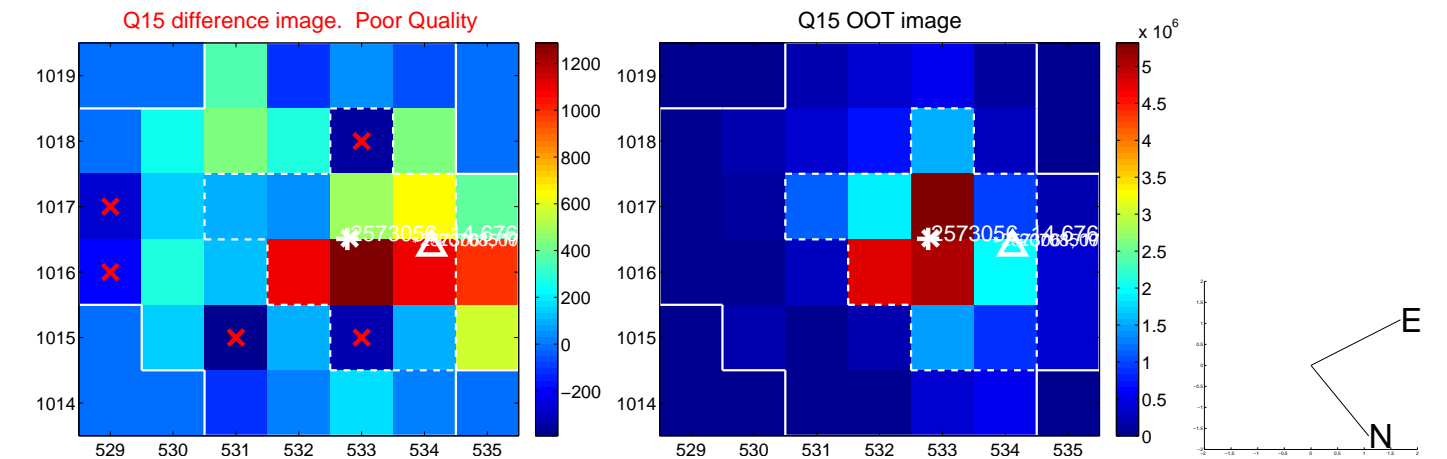
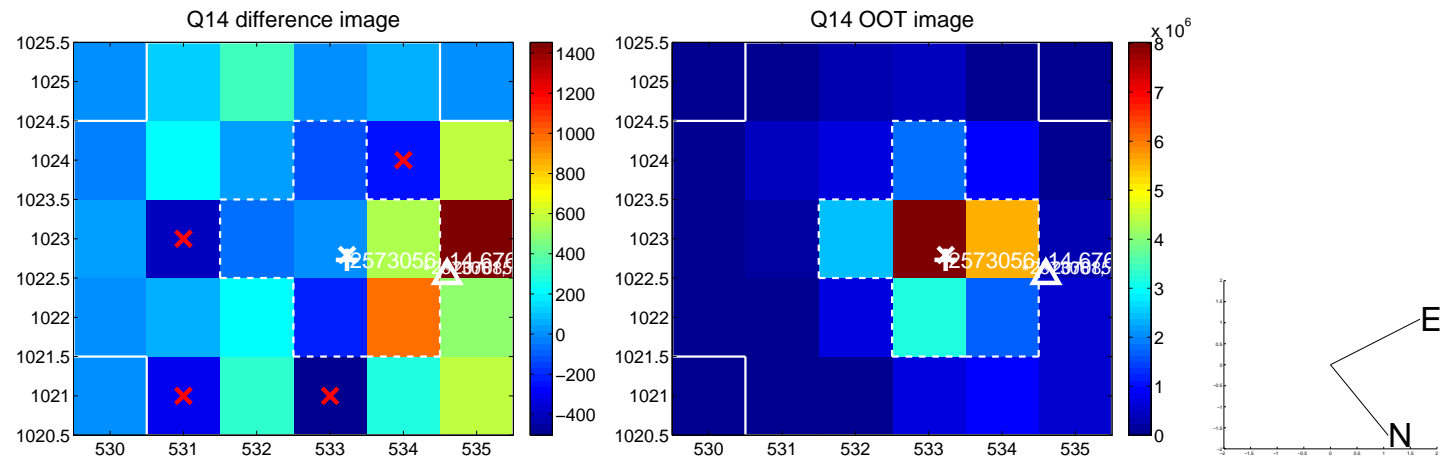
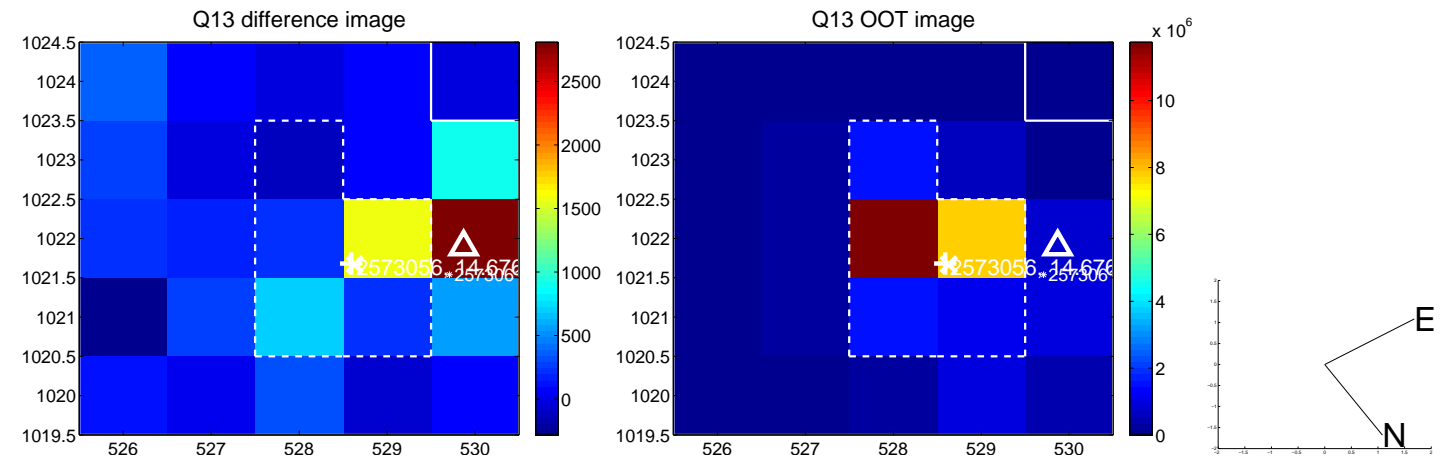
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



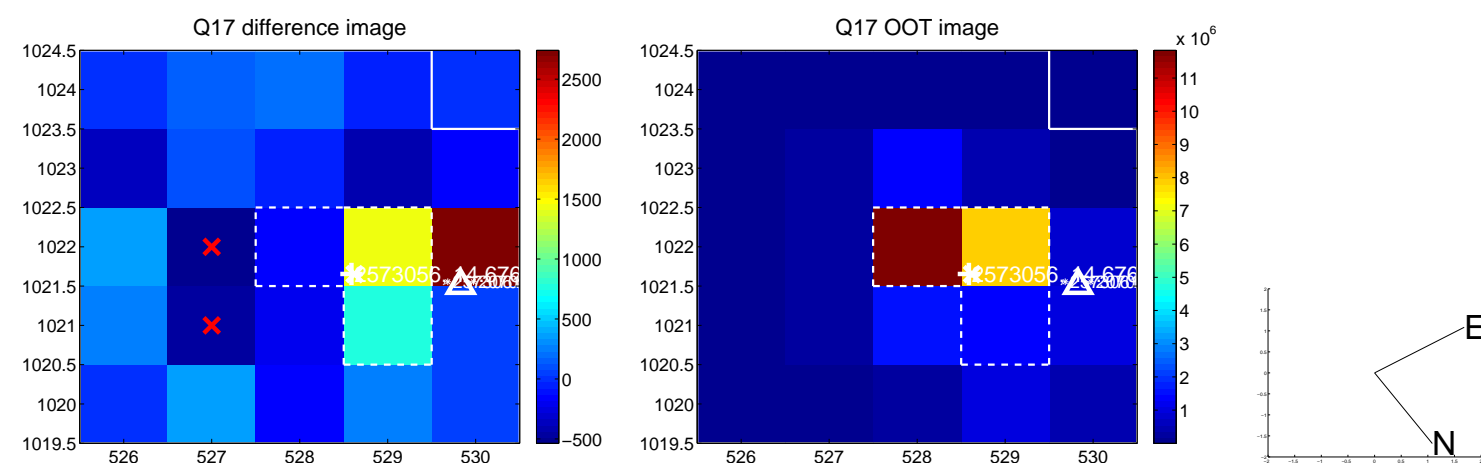
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



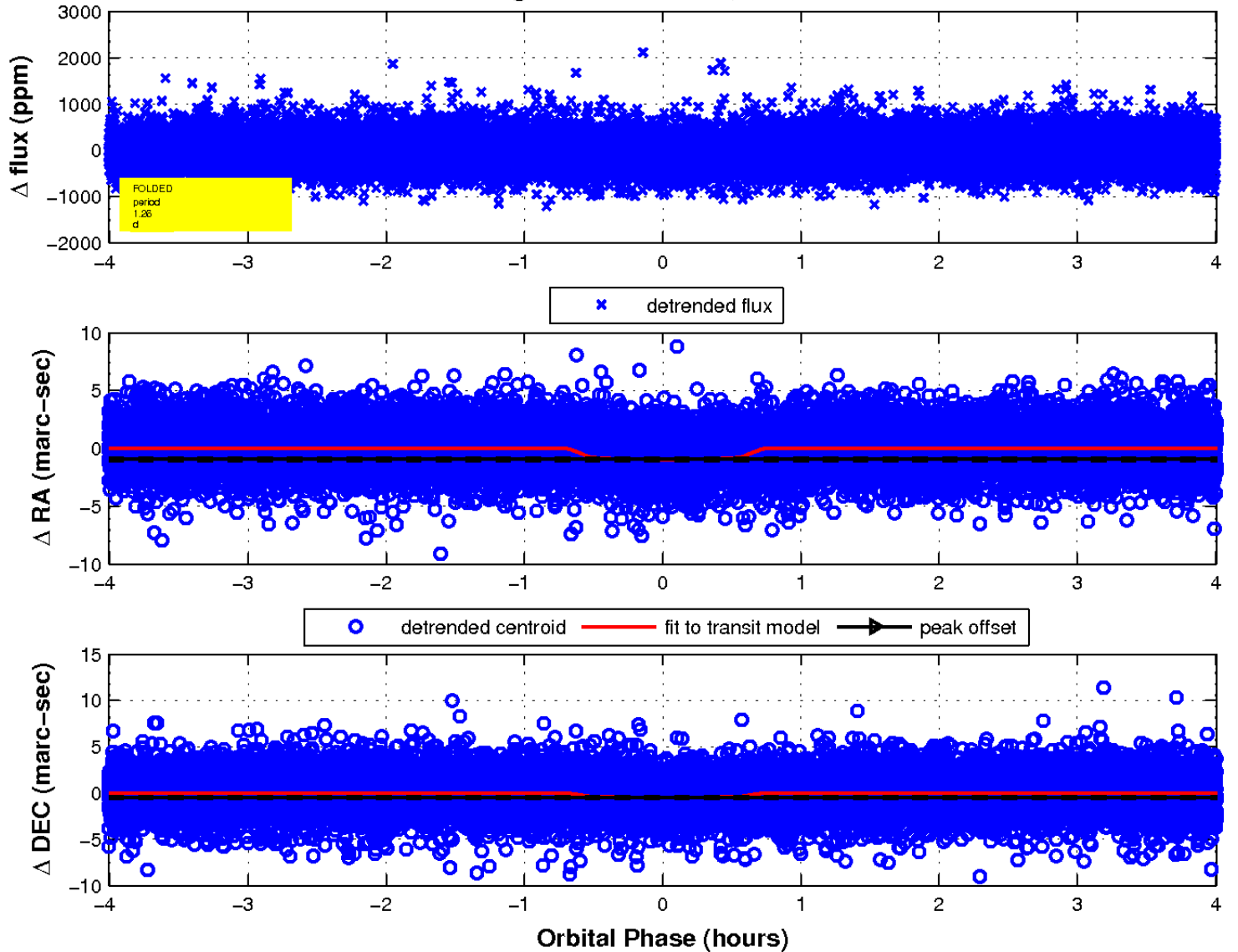
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

