

KIC 005372048

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})
005372048-01	OBS	No	0.665211	132.074553	8.2	4.467	10.6	1.7	0.50	4342	0.15	570.40
005372048-02	OBS	No	48.876668	159.677701	2170.0	2.074	11.5	7.5	0.50	4342	2.73	1.85
005372048-03	OBS	No	37.225748	141.726372	2362.3	1.714	11.3	6.1	0.50	4342	2.41	2.67
005372048-04	OBS	No	50.625582	142.391923	2668.6	2.224	12.4	8.0	0.50	4342	2.70	1.77
005372048-05	OBS	No	112.866907	215.535484	3603.9	3.590	10.3	8.3	0.50	4342	3.25	0.61
005372048-06	OBS	No	48.464273	165.785812	2763.5	2.245	9.6	8.0	0.50	4342	2.72	1.88

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005372048-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
005372048-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
005372048-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—CENT_KIC_POS
005372048-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT
005372048-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES
005372048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_ALT—CENT_KIC_POS

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

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

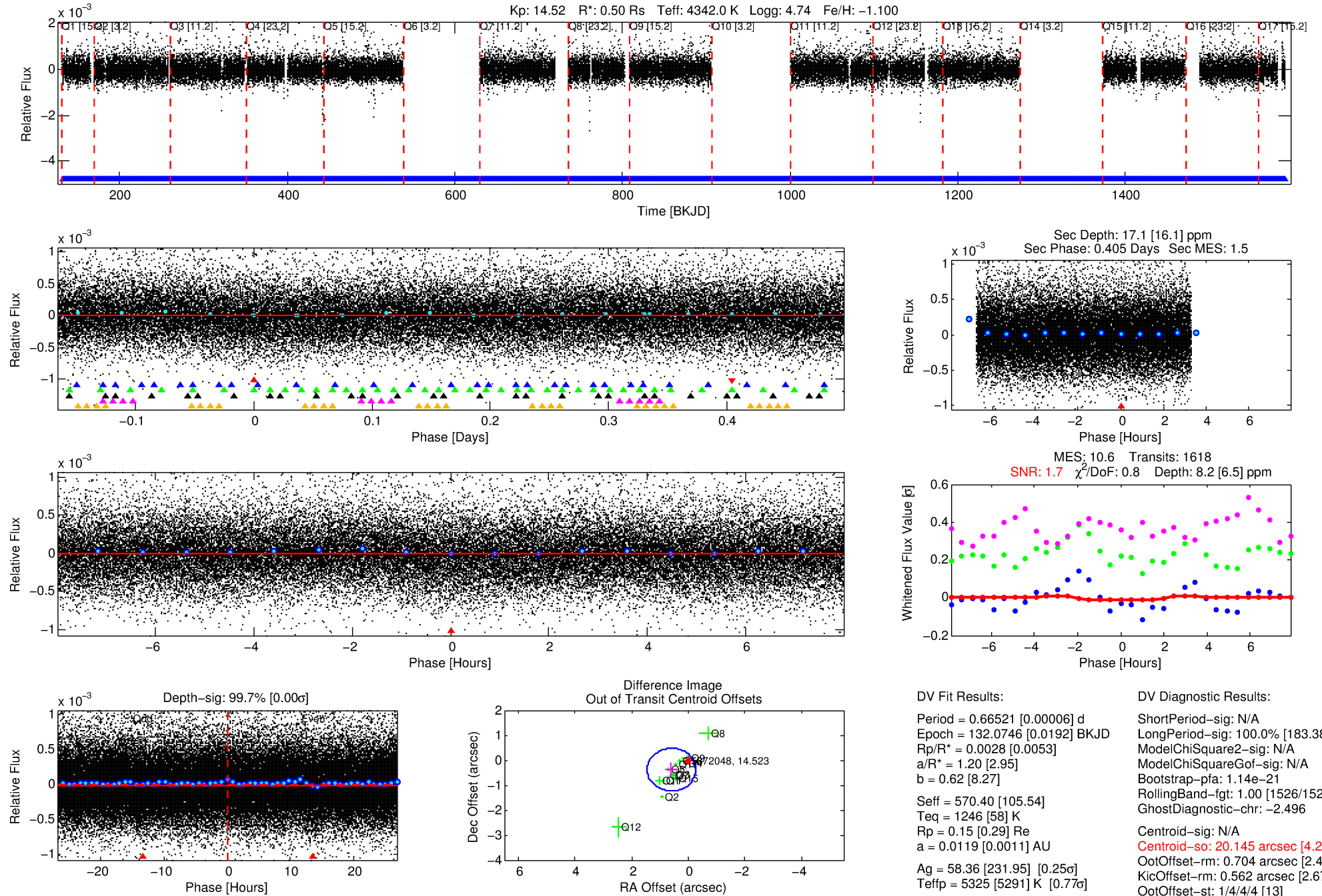
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005372048-01

No Significant Match Found

DV One-Page Summary

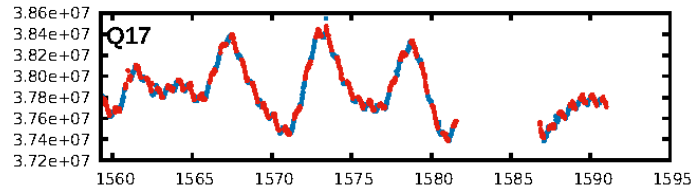
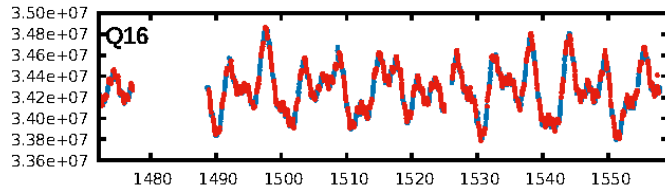
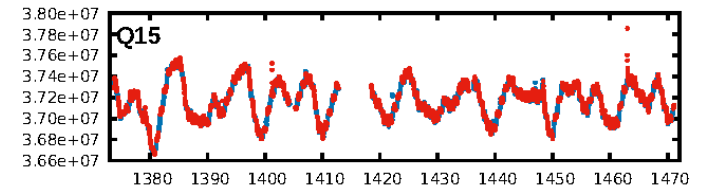
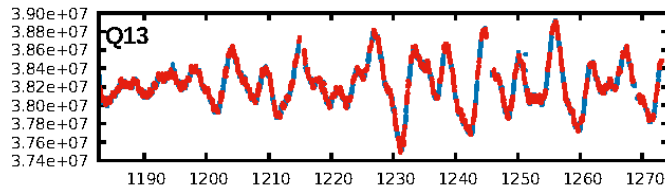
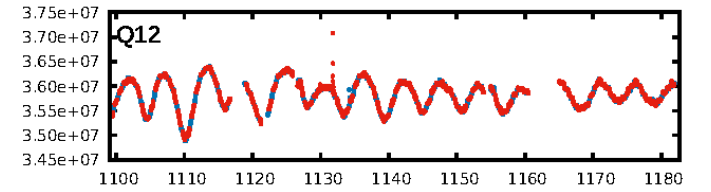
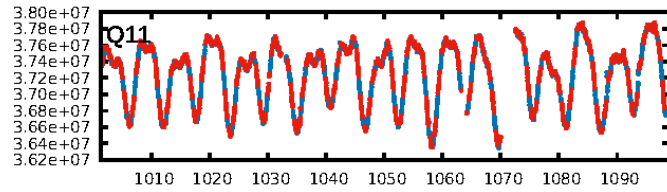
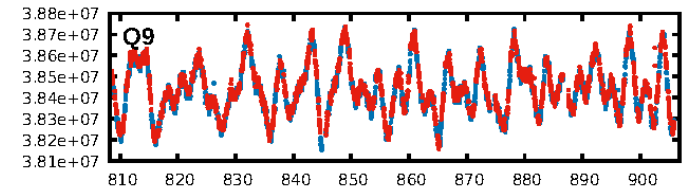
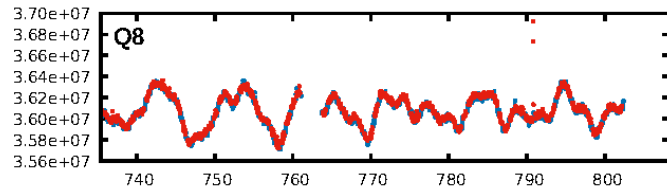
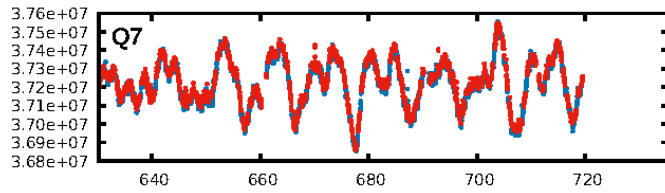
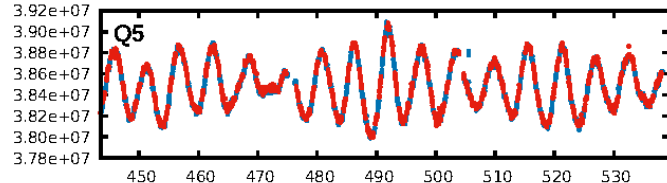
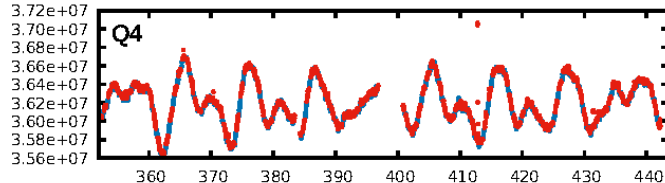
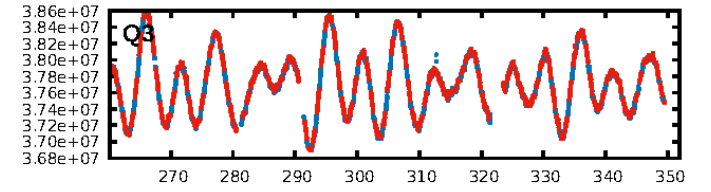
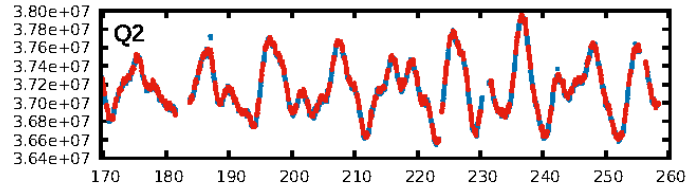
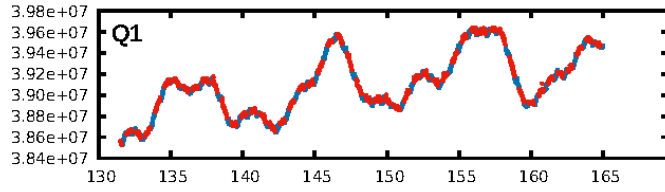
KIC: 5372048 Candidate: 1 of 6 Period: 0.665 d



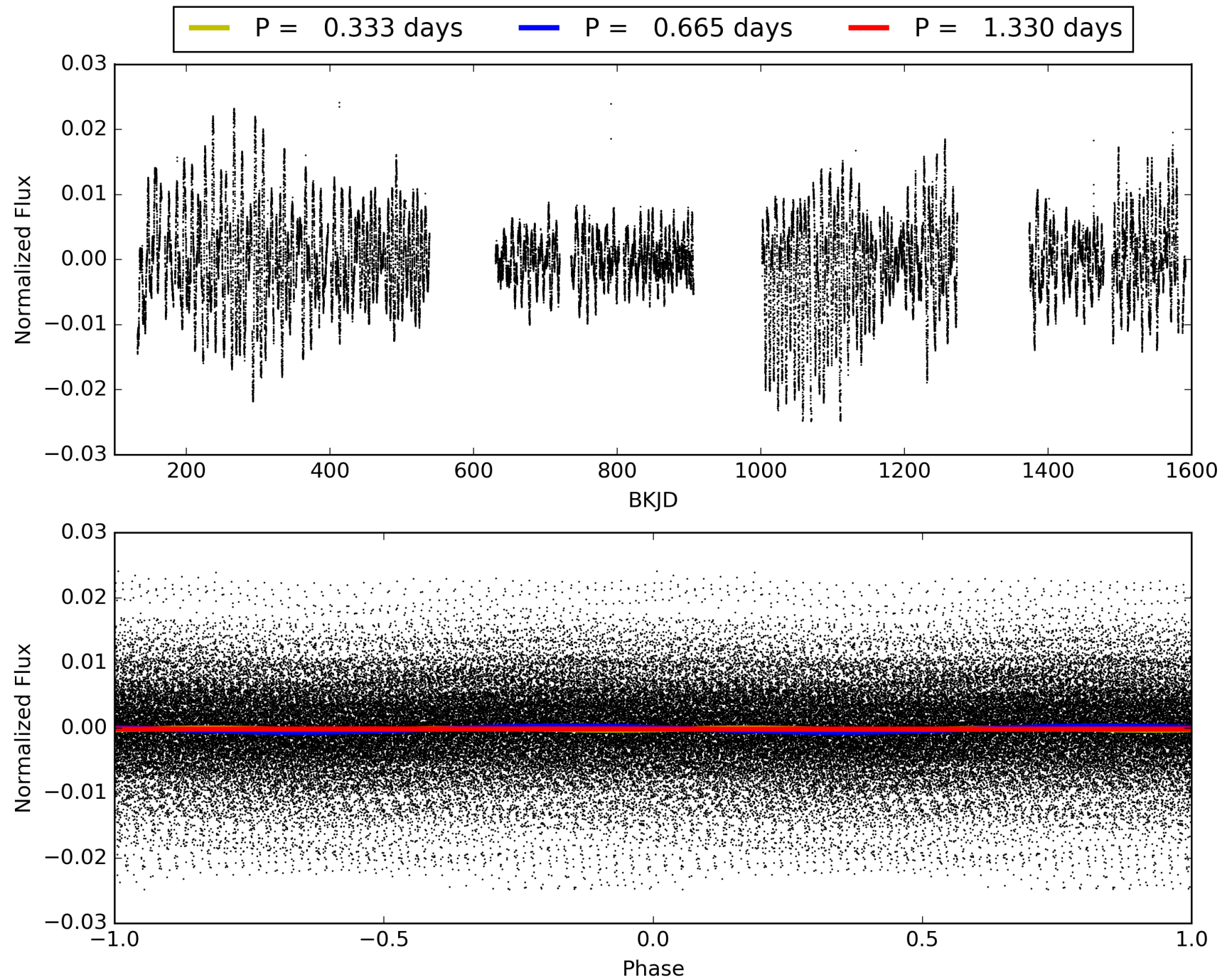
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005372048-01, PDC Light Curves

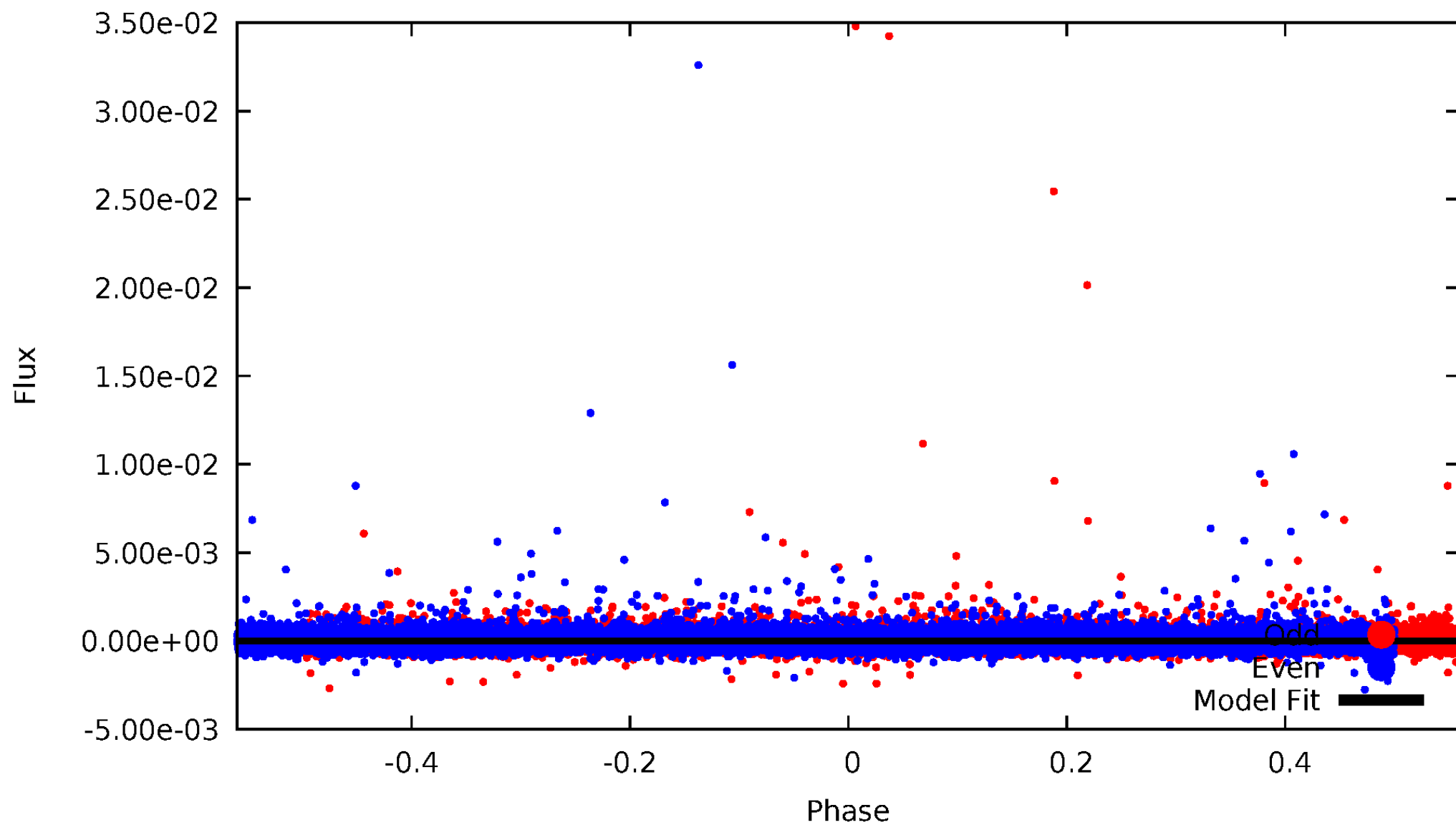


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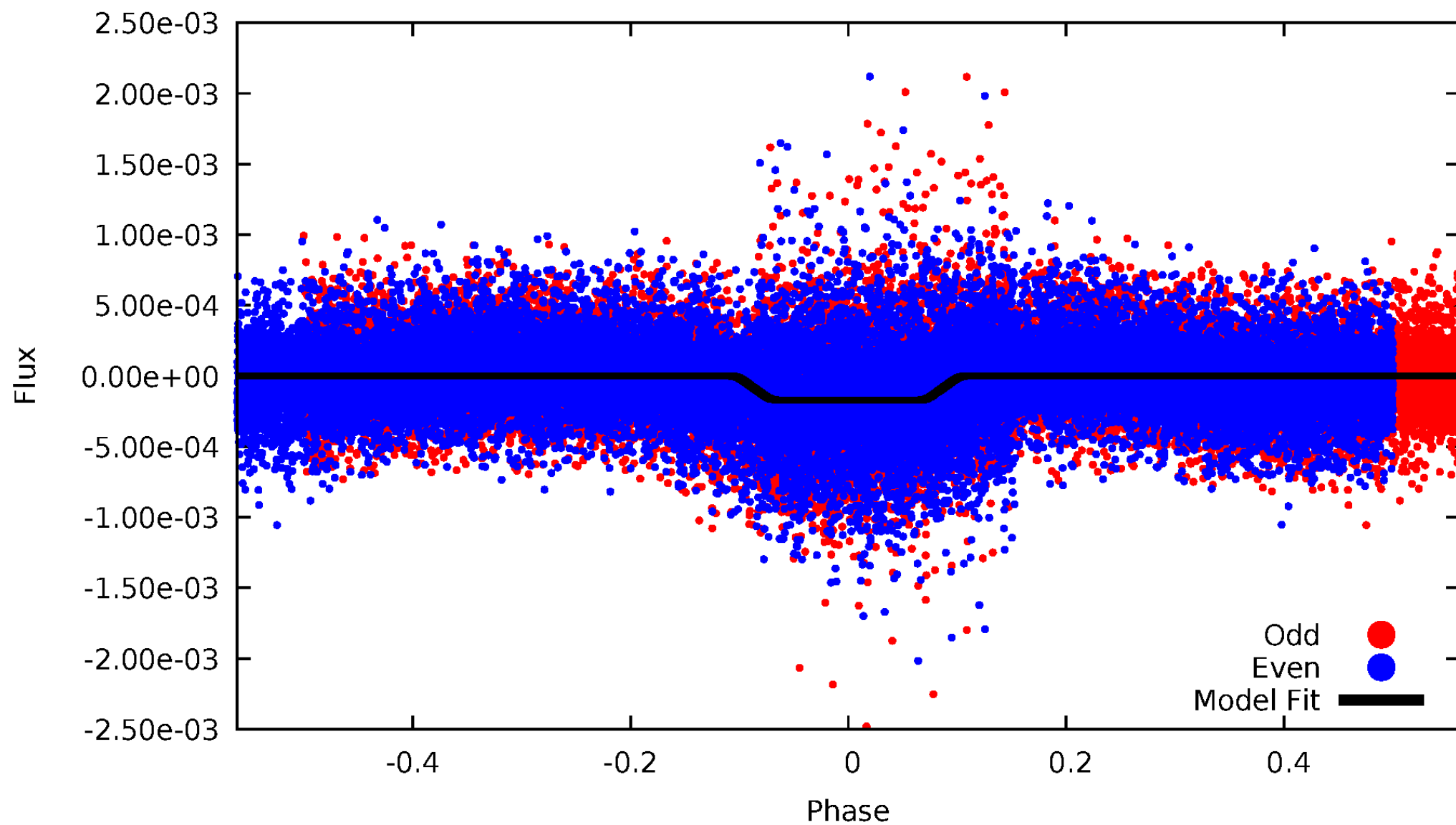
DV Odd/Even

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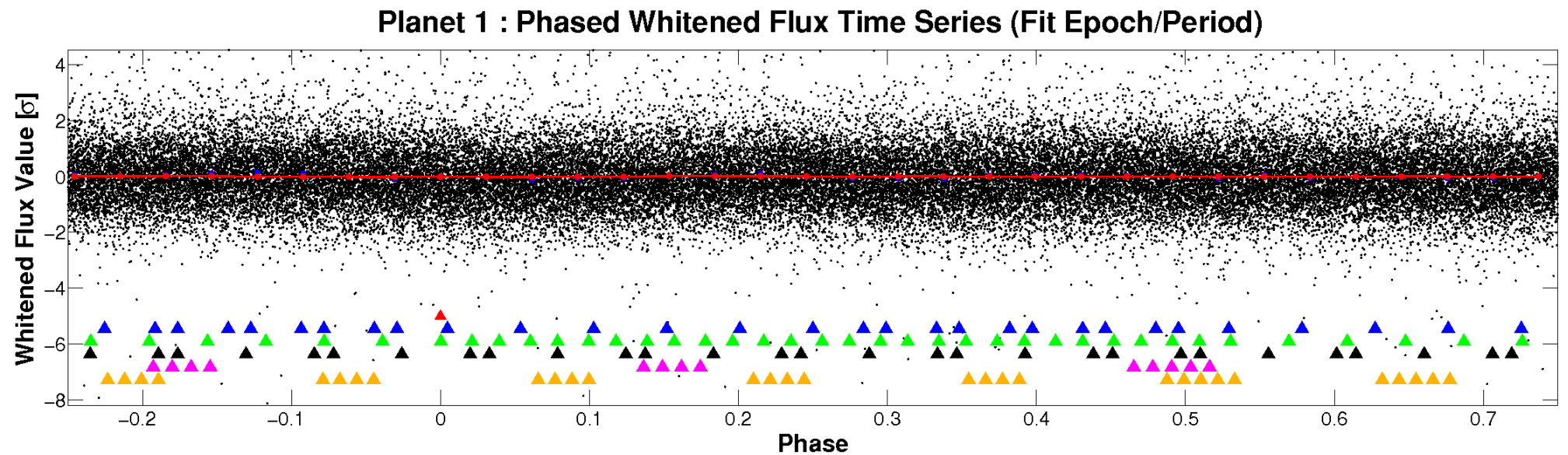
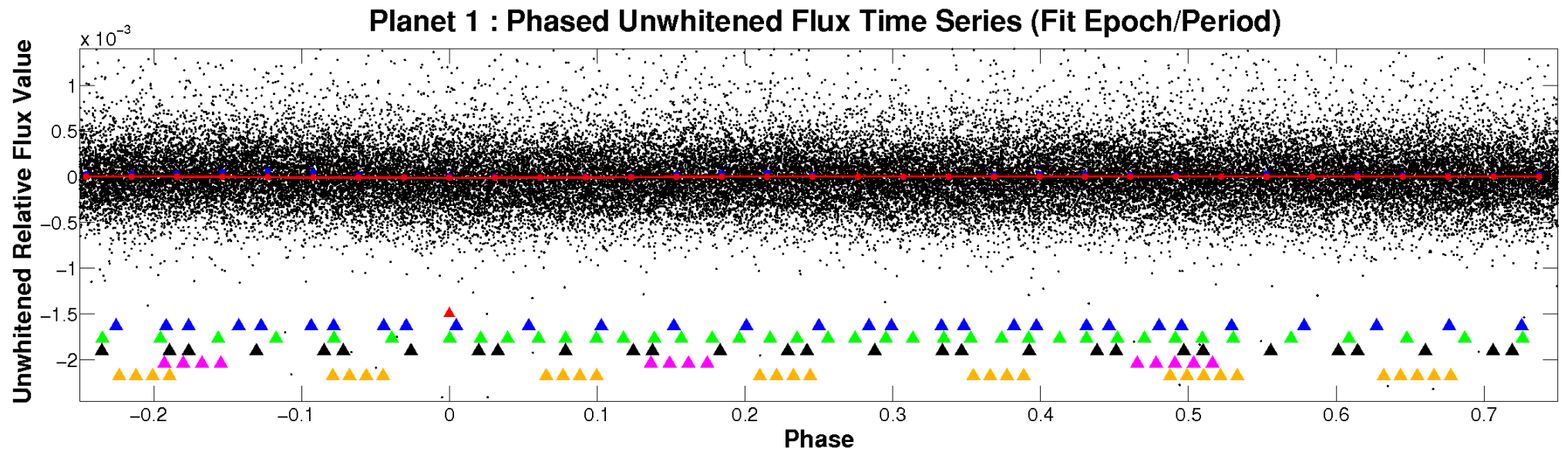


ALT Odd/Even

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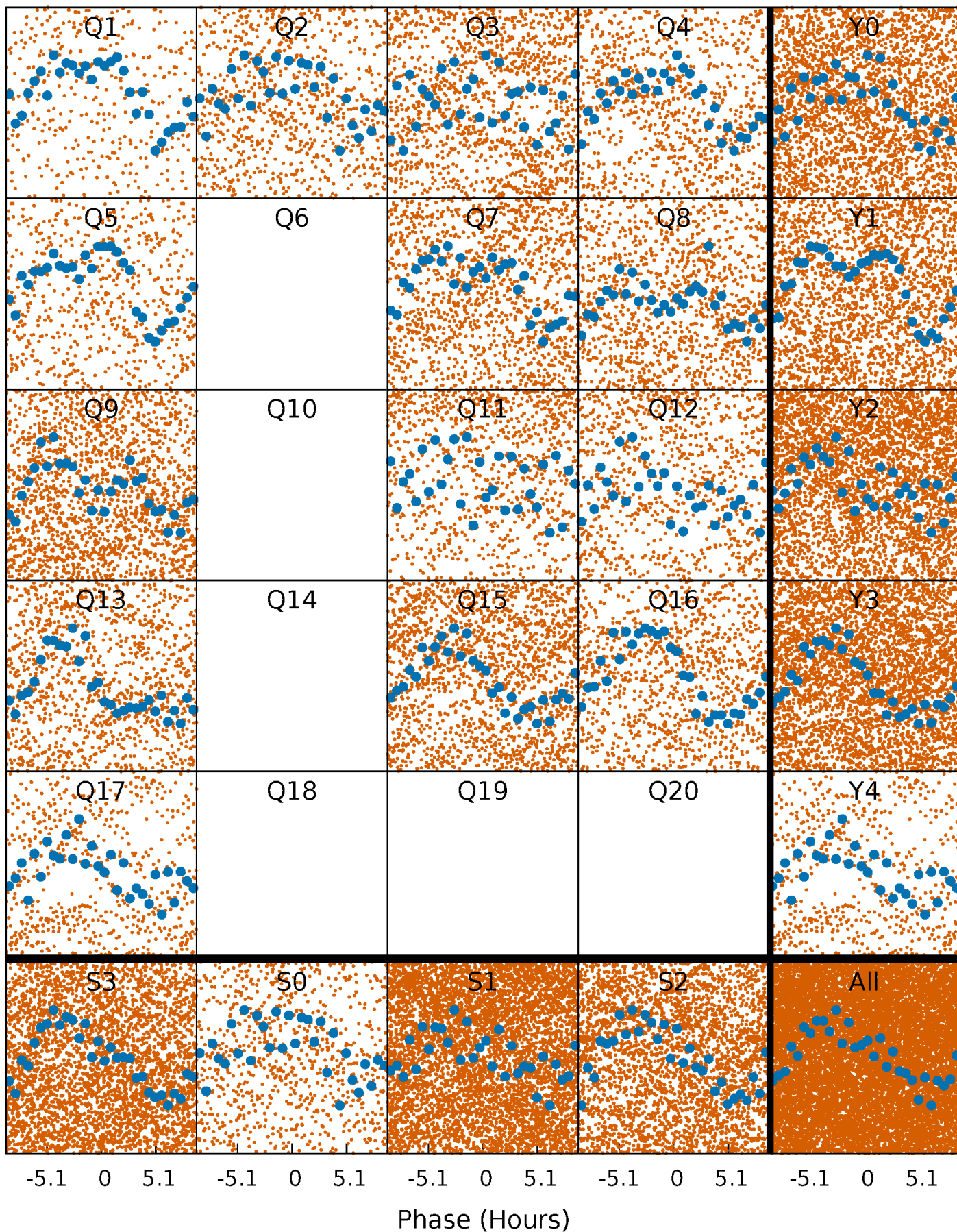


Non-Whitened Vs. Whitened Light Curve



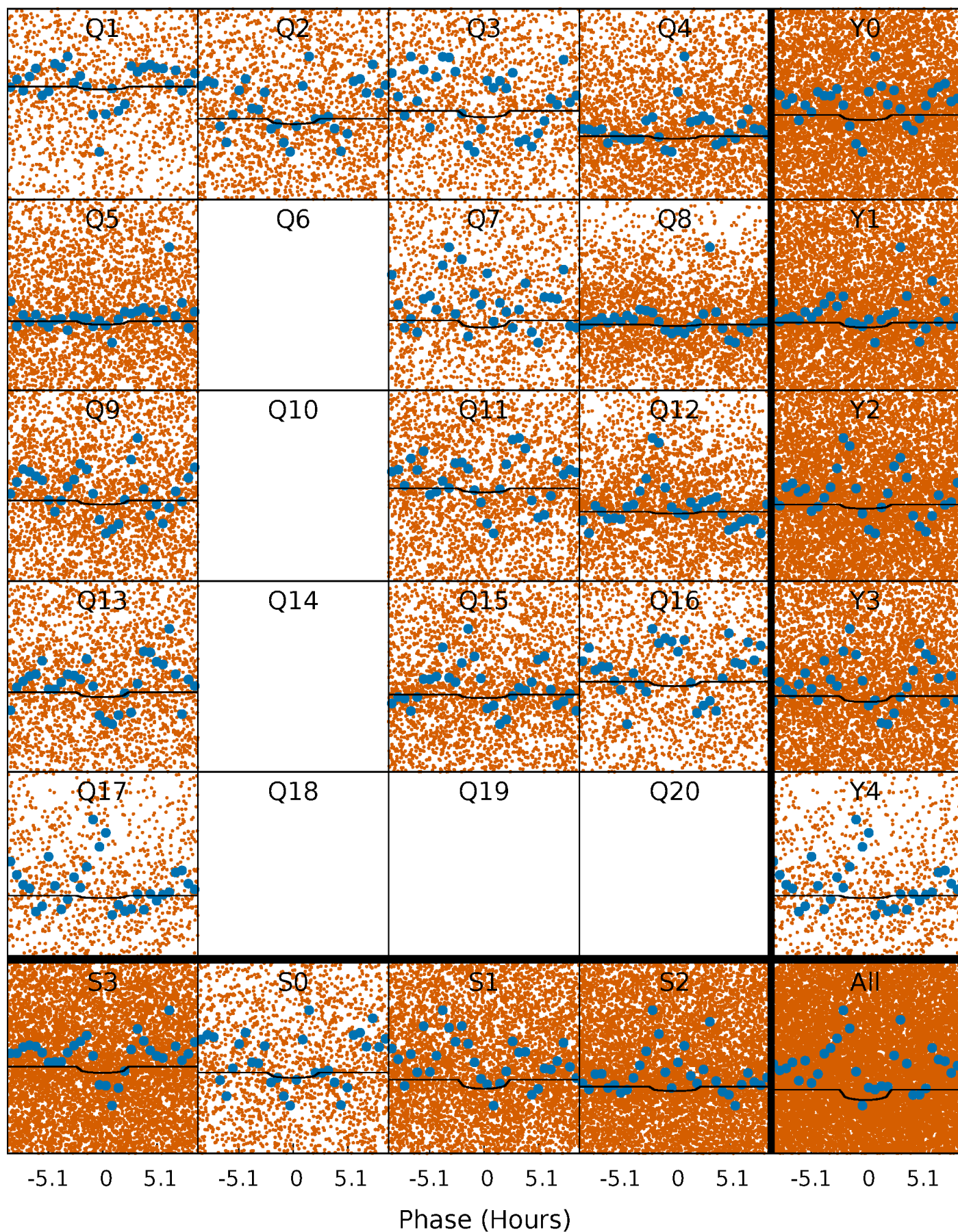
PDC Quarter-Phased Transit Curves

TCE 005372048-01 P= 0.665211 Days $T_0=132.074553$ (BKJD)



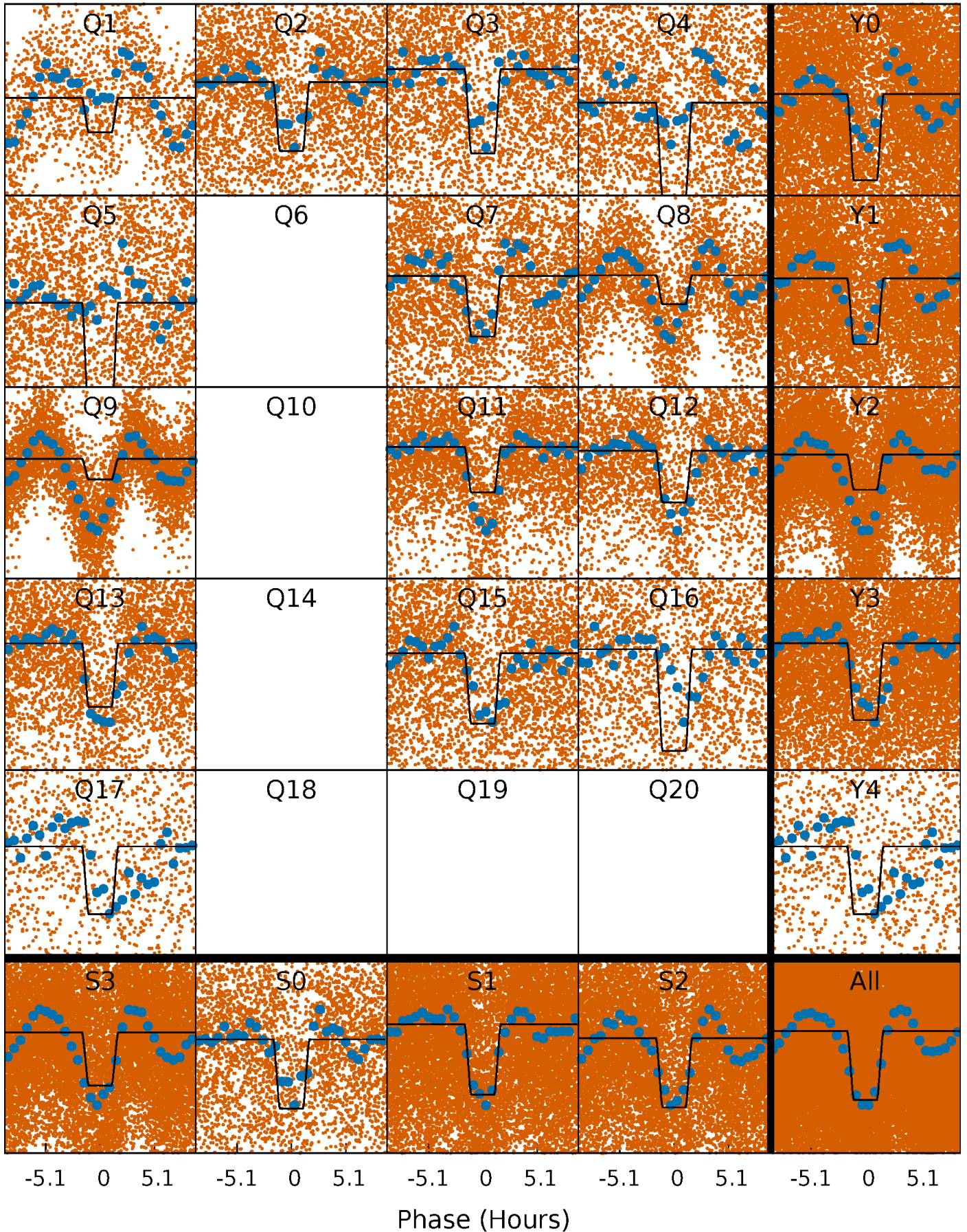
DV Quarter-Phased Transit Curves

TCE 005372048-01 P= 0.665211 Days $T_0=132.074553$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

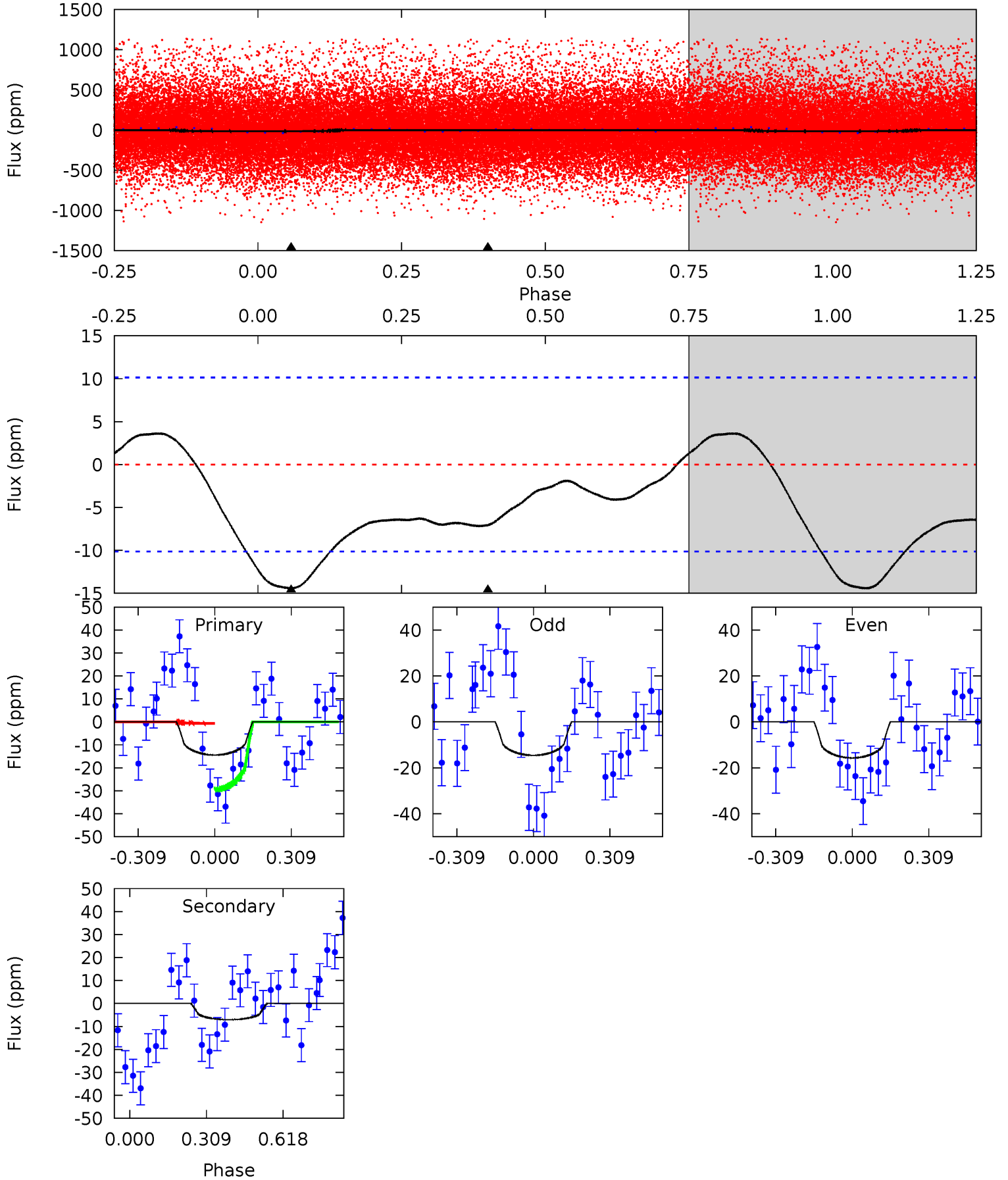
TCE 005372048-01 P= 0.665261 Days $T_0=132.020592$ (BKJD)



DV Model-Shift Uniqueness Test

005372048-01, P = 0.665211 Days, E = 131.409342 Days

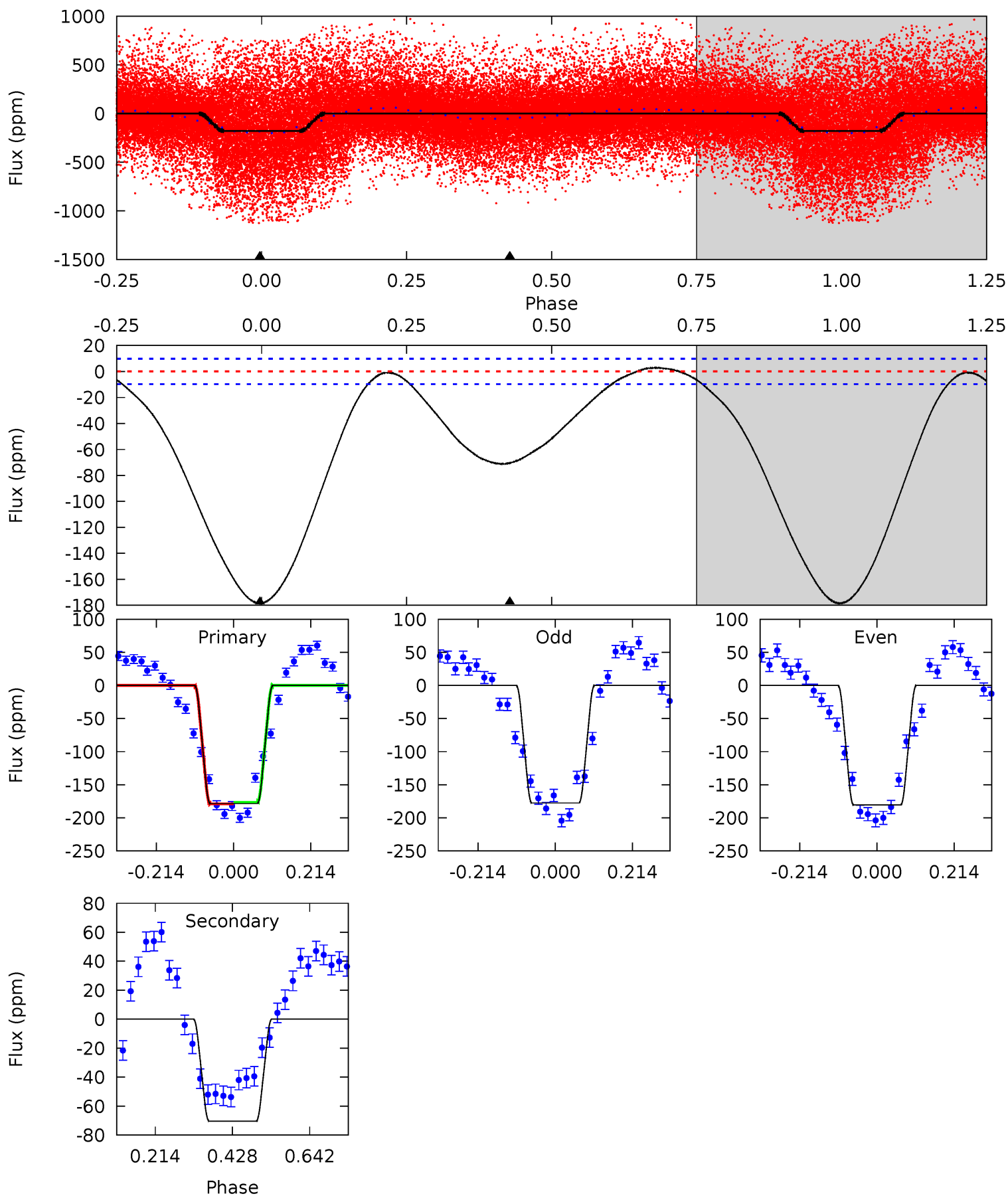
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.15	3.01	0	0	4.32	1.02	0.72	6.15	6.15	3.01	3.01	0.24	-2.05	0.20	6.16



Alt Model-Shift Uniqueness Test

005372048-01, P = 0.665261 Days, E = 131.355331 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
80.6	31.8	0	0	4.40	1.24	2.73	80.6	80.6	31.8	31.8	0.70	1.03	0.02	0.52



Stellar Parameters For KIC 005372048

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4342^{+117}_{-143}	$4.738^{+0.070}_{-0.030}$	$-1.100^{+0.300}_{-0.350}$	$0.502^{+0.035}_{-0.055}$	$0.502^{+0.037}_{-0.037}$	$5.603^{+1.741}_{-0.761}$
	+3%/-3%	+1%/-1%	+27%/-32%	+7%/-11%	+7%/-7%	+31%/-14%
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 005372048-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-7 ± 2	$0.25^{+0.25}_{-0.17}$	1725^{+59}_{-68}	3514^{+2027}_{-711}	$8.525^{+84.475}_{-6.504}$
Alt.	-70 ± 2	$0.71^{+0.28}_{-0.27}$	1728^{+53}_{-72}	3680^{+731}_{-402}	11^{+19}_{-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 $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

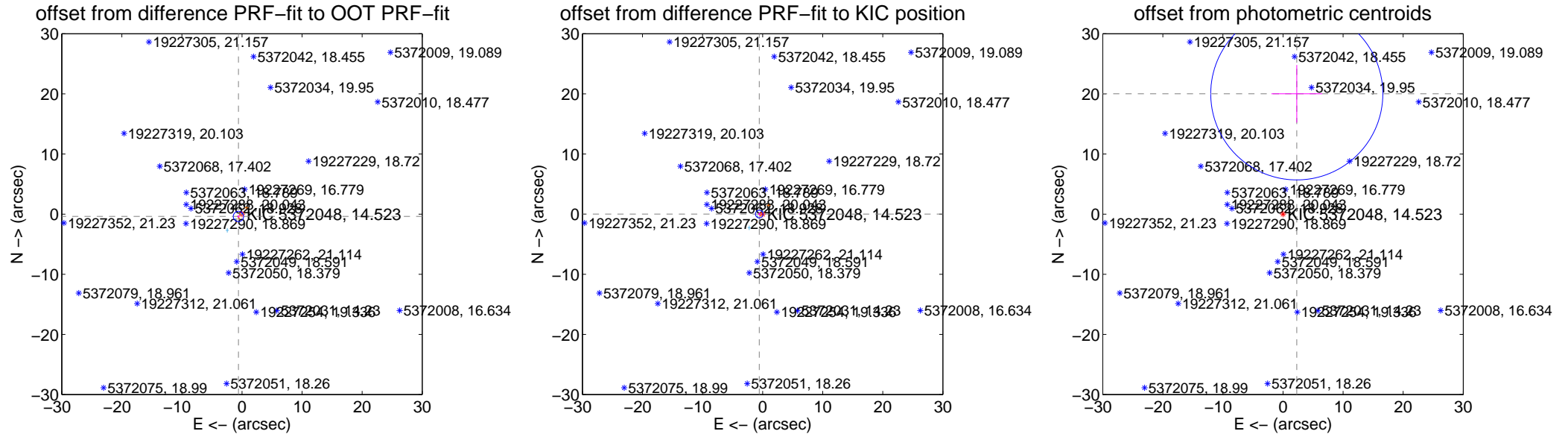
DV Centroid Data

Supplemental centroid analysis for 005372048-01. Kepler magnitude: 14.52. Transit SNR 1.65

There are 3 quarters with good PRF difference image offsets

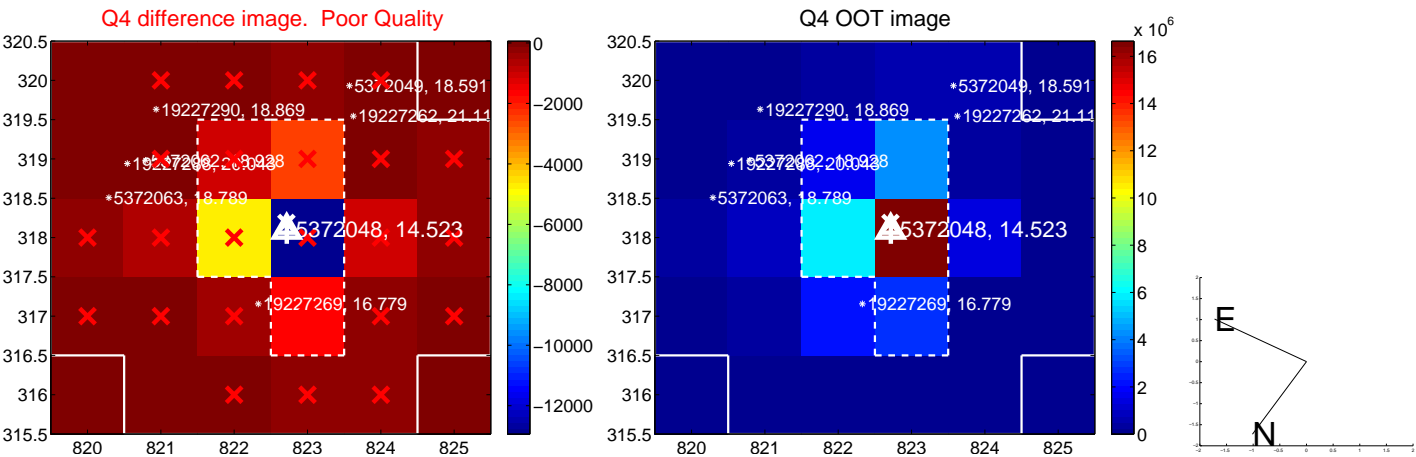
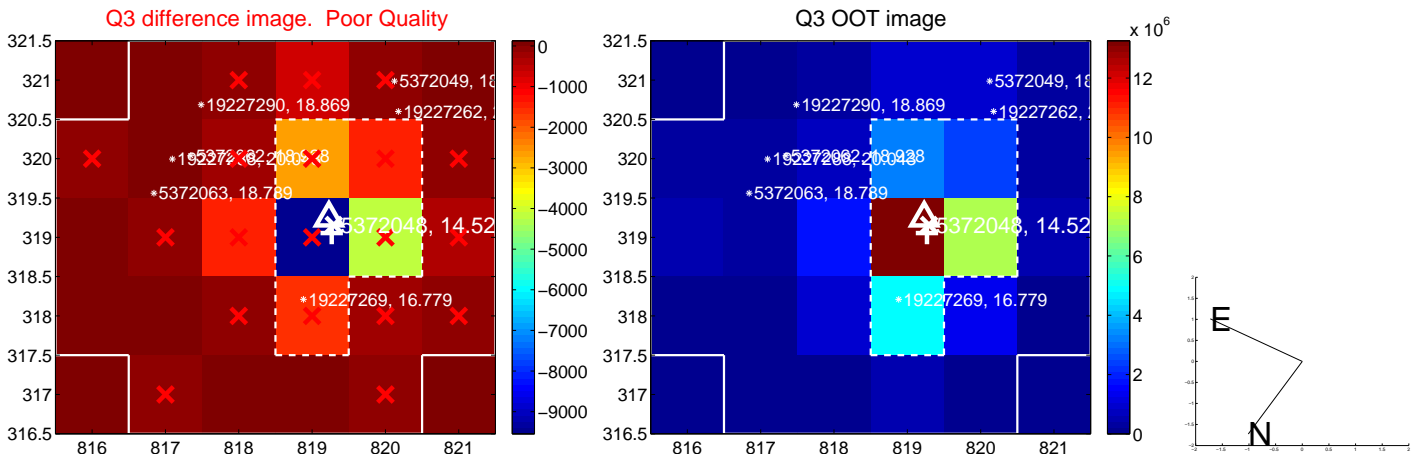
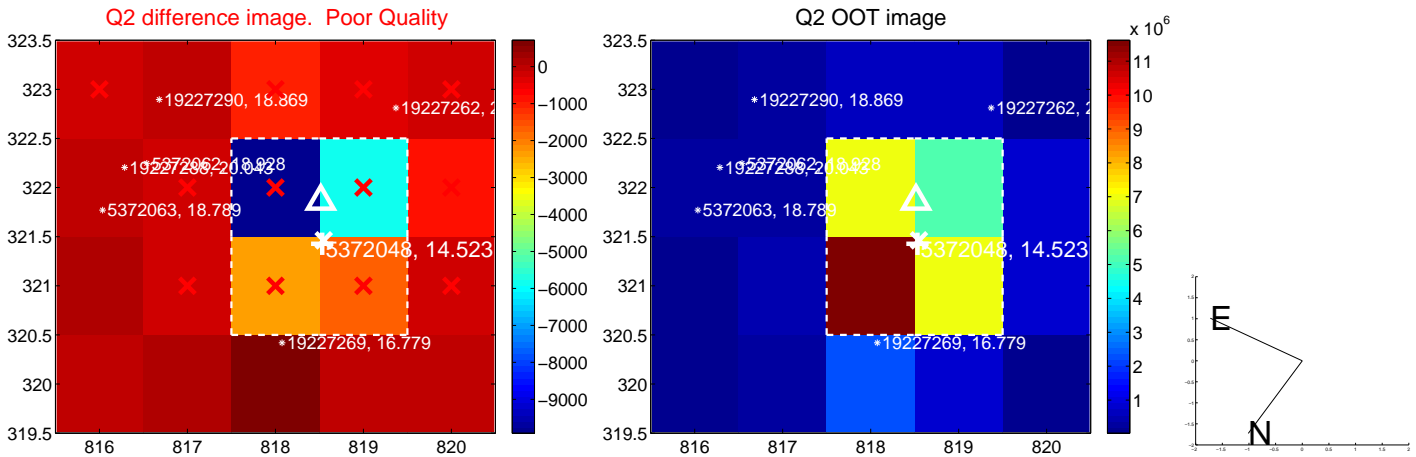
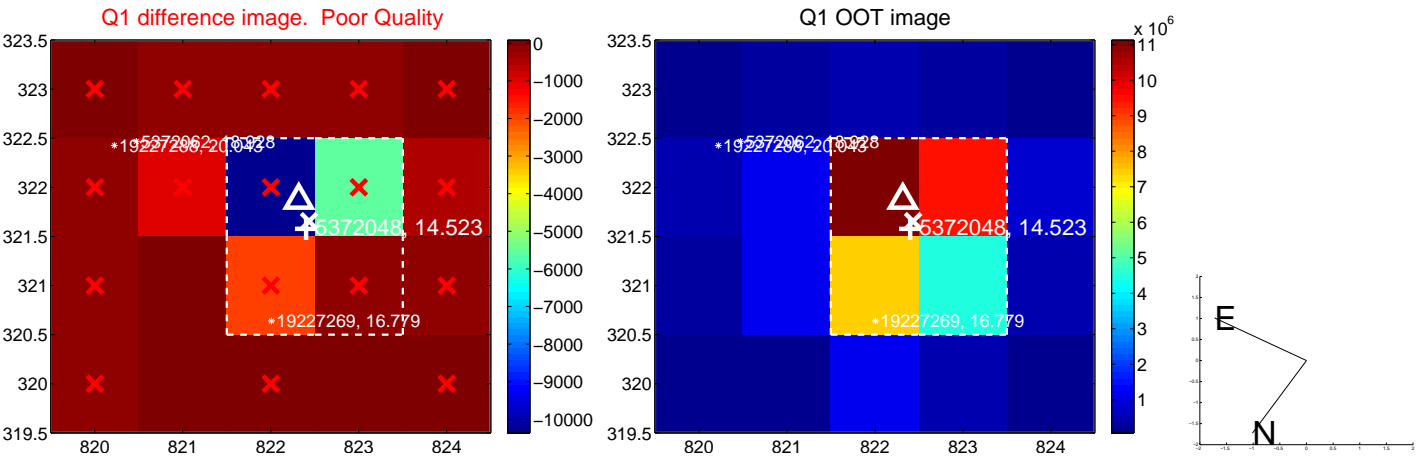
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.704 ± 0.286	2.46	0.591 ± 0.200	-0.381 ± 0.235
PRF-fit source offset from KIC position	0.562 ± 0.211	2.67	0.562 ± 0.213	0.007 ± 0.250
photometric centroid source offset	20.15 ± 4.77	4.22	-2.29 ± 4.22	20.01 ± 4.78

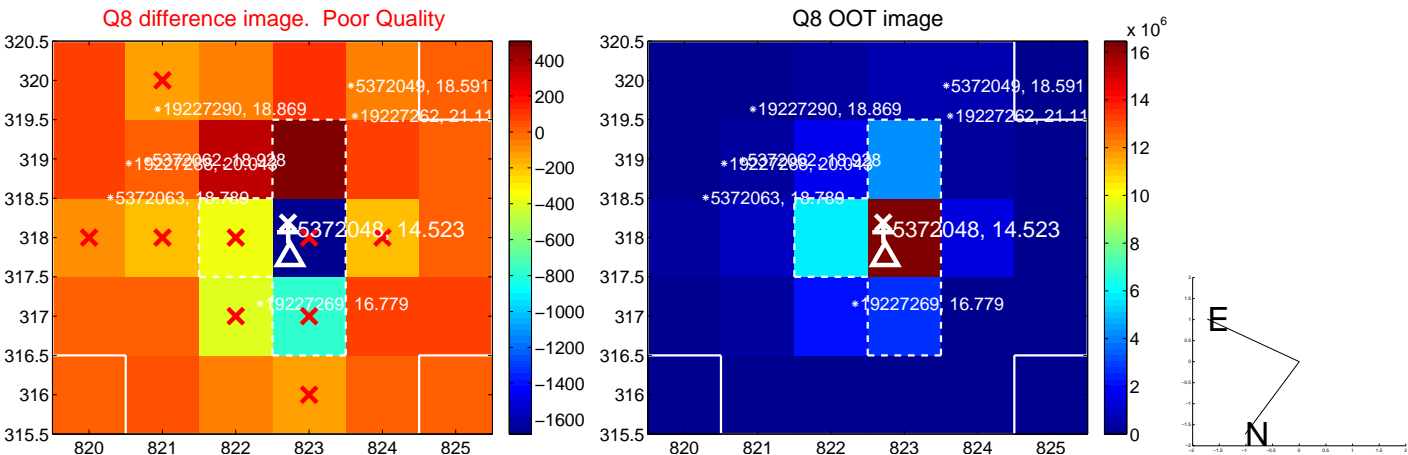
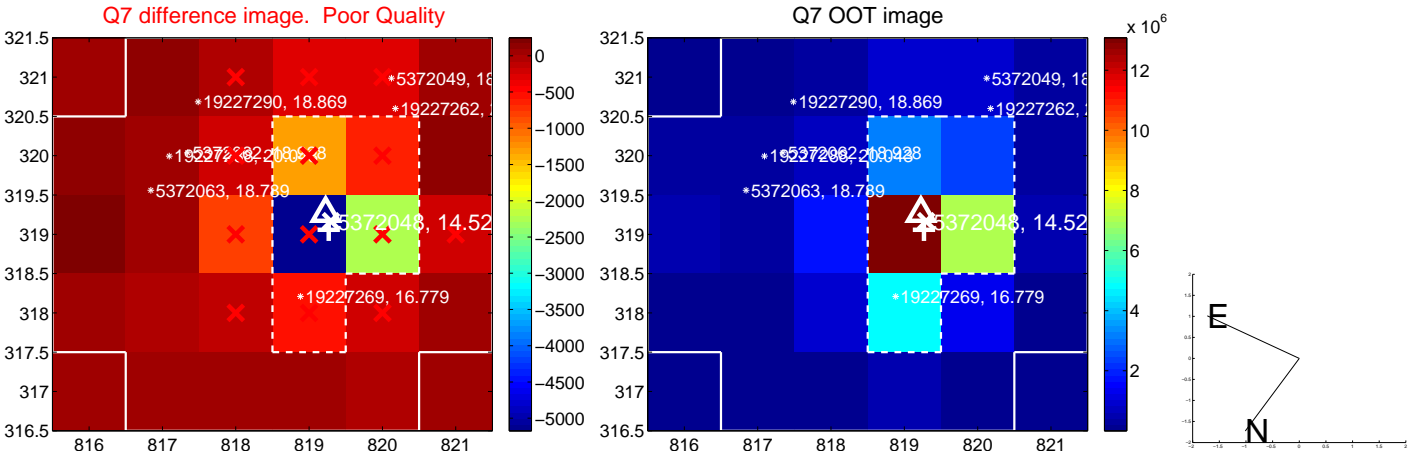
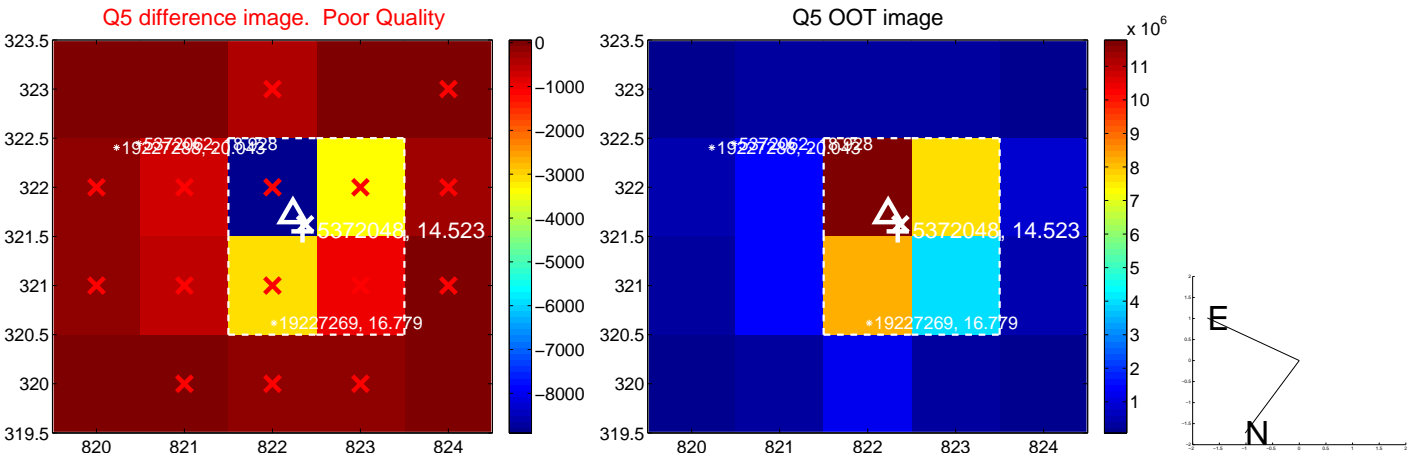


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

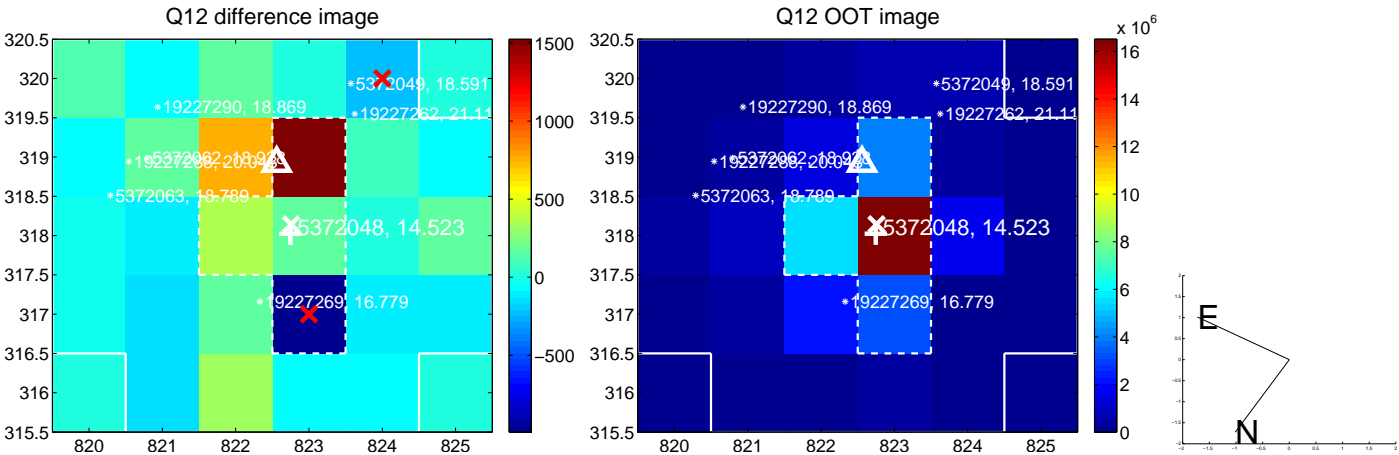
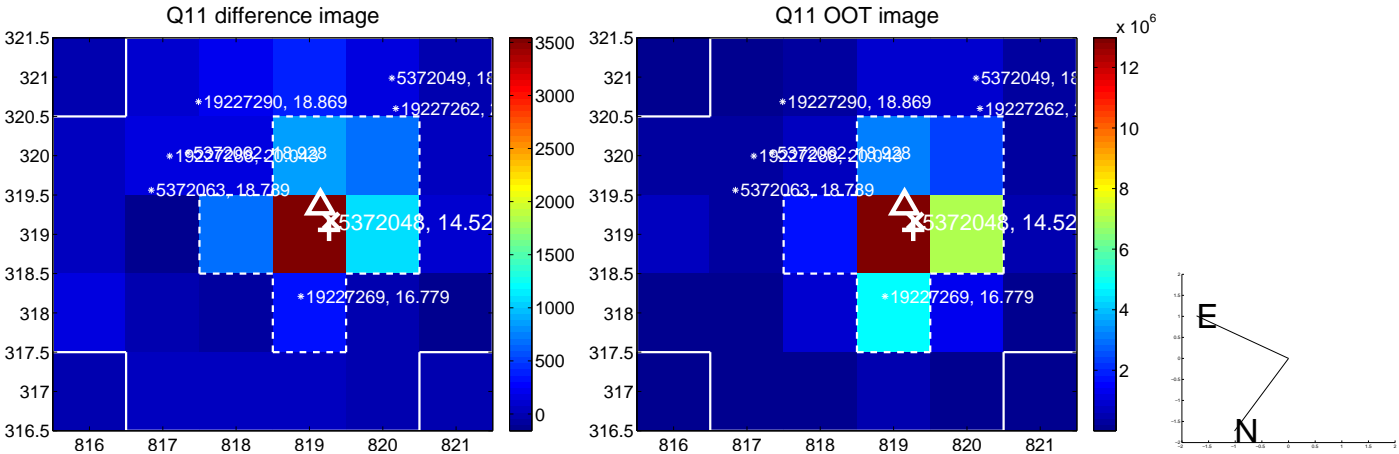
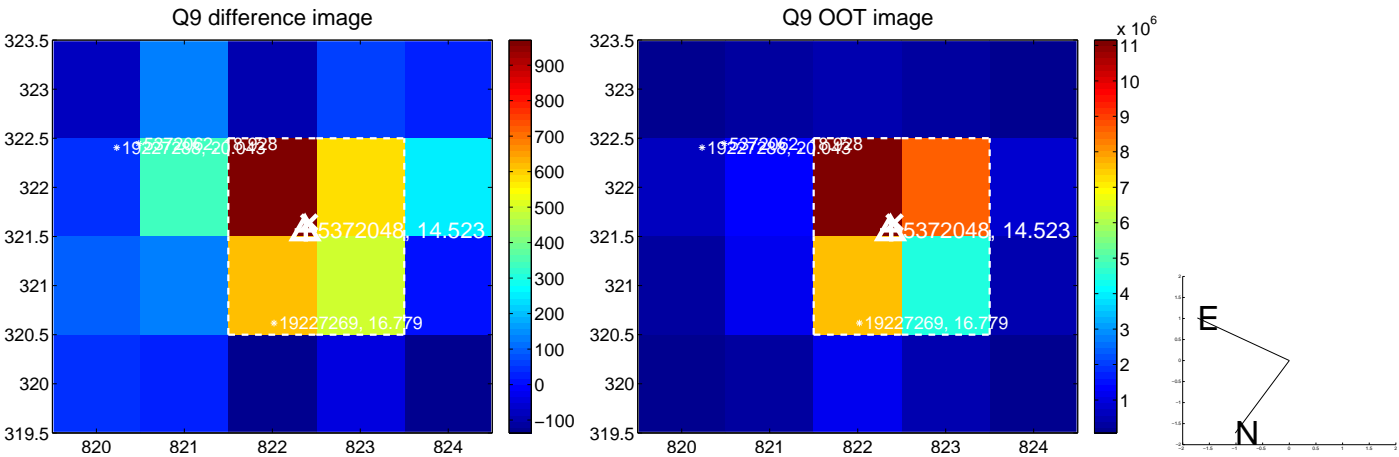
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



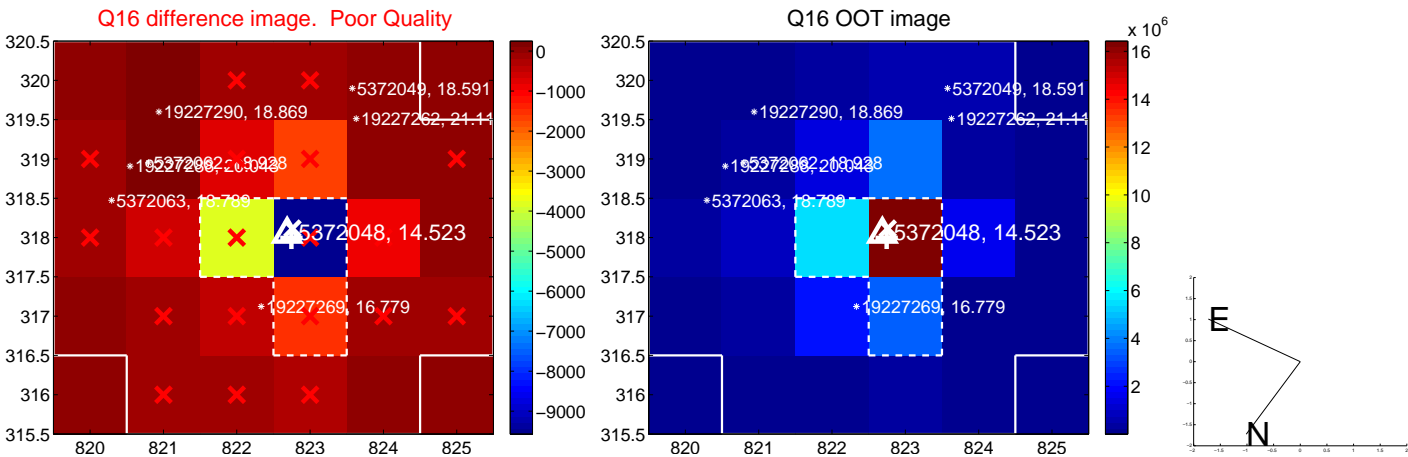
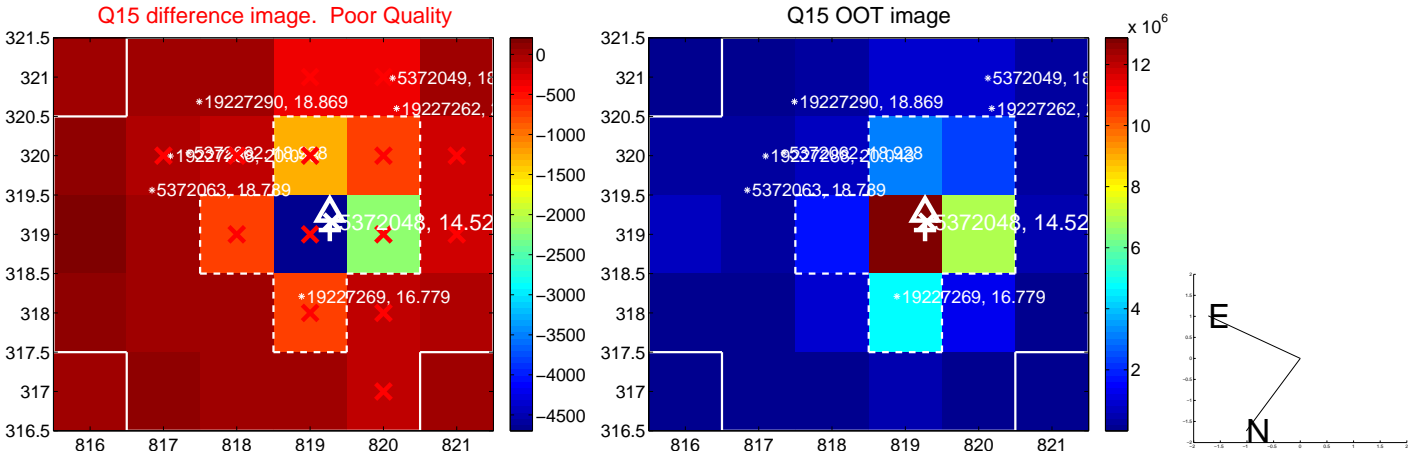
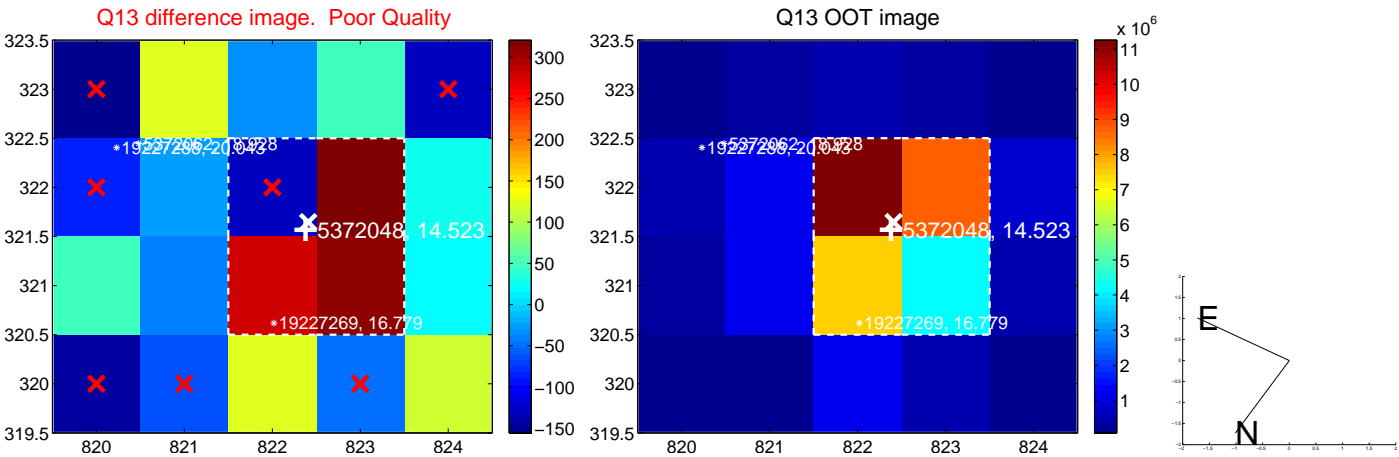
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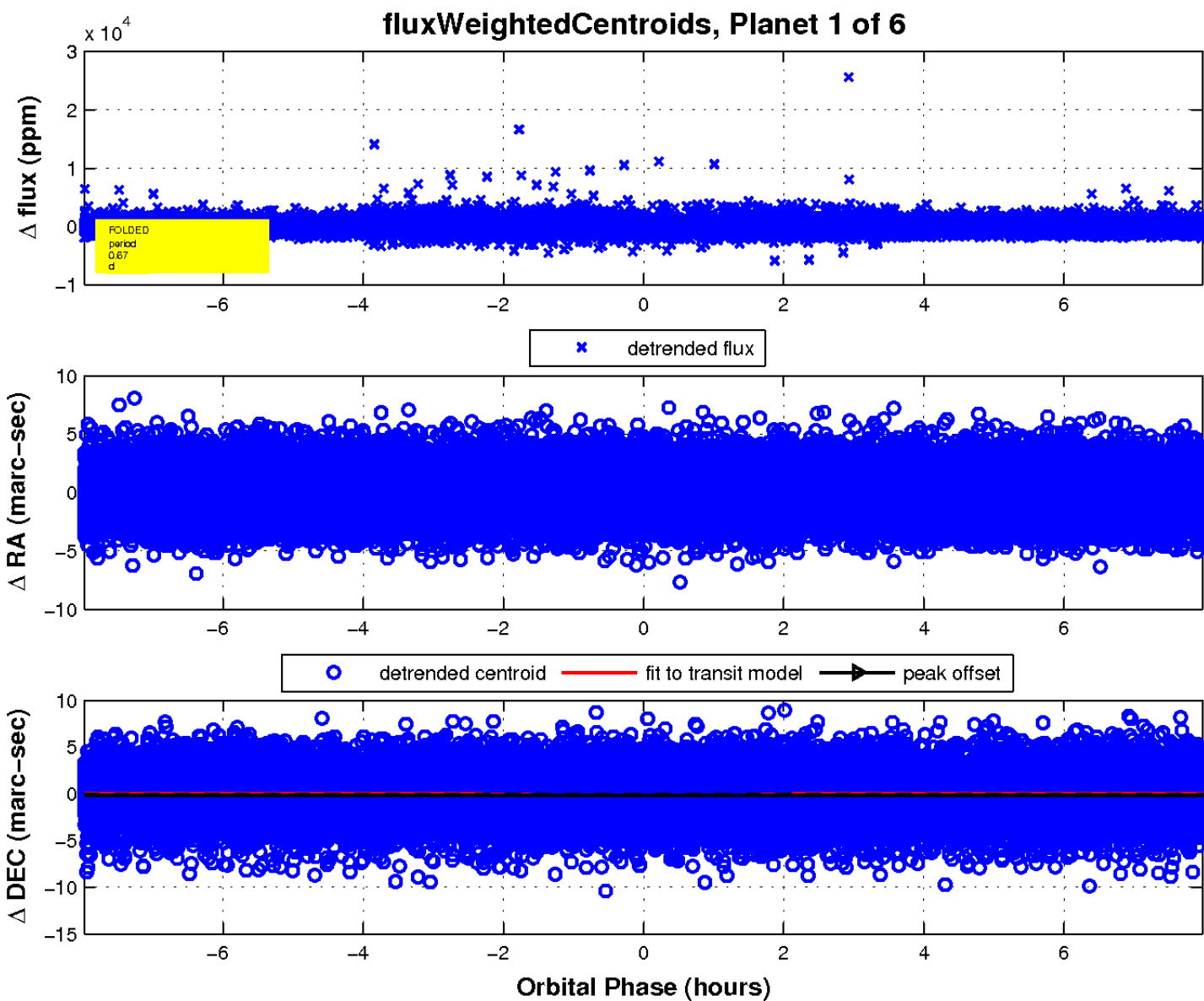
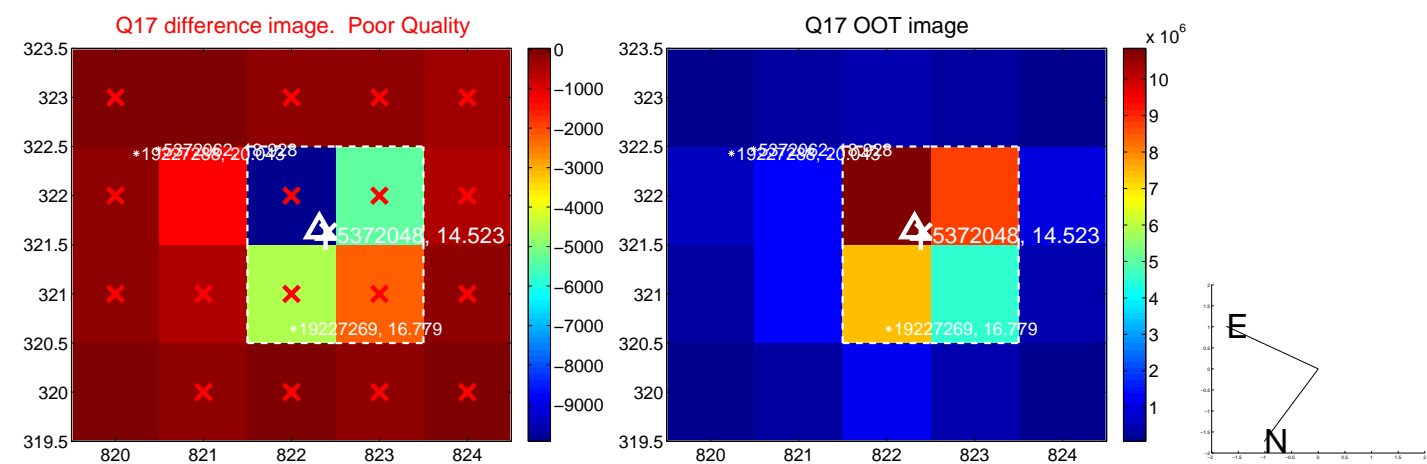
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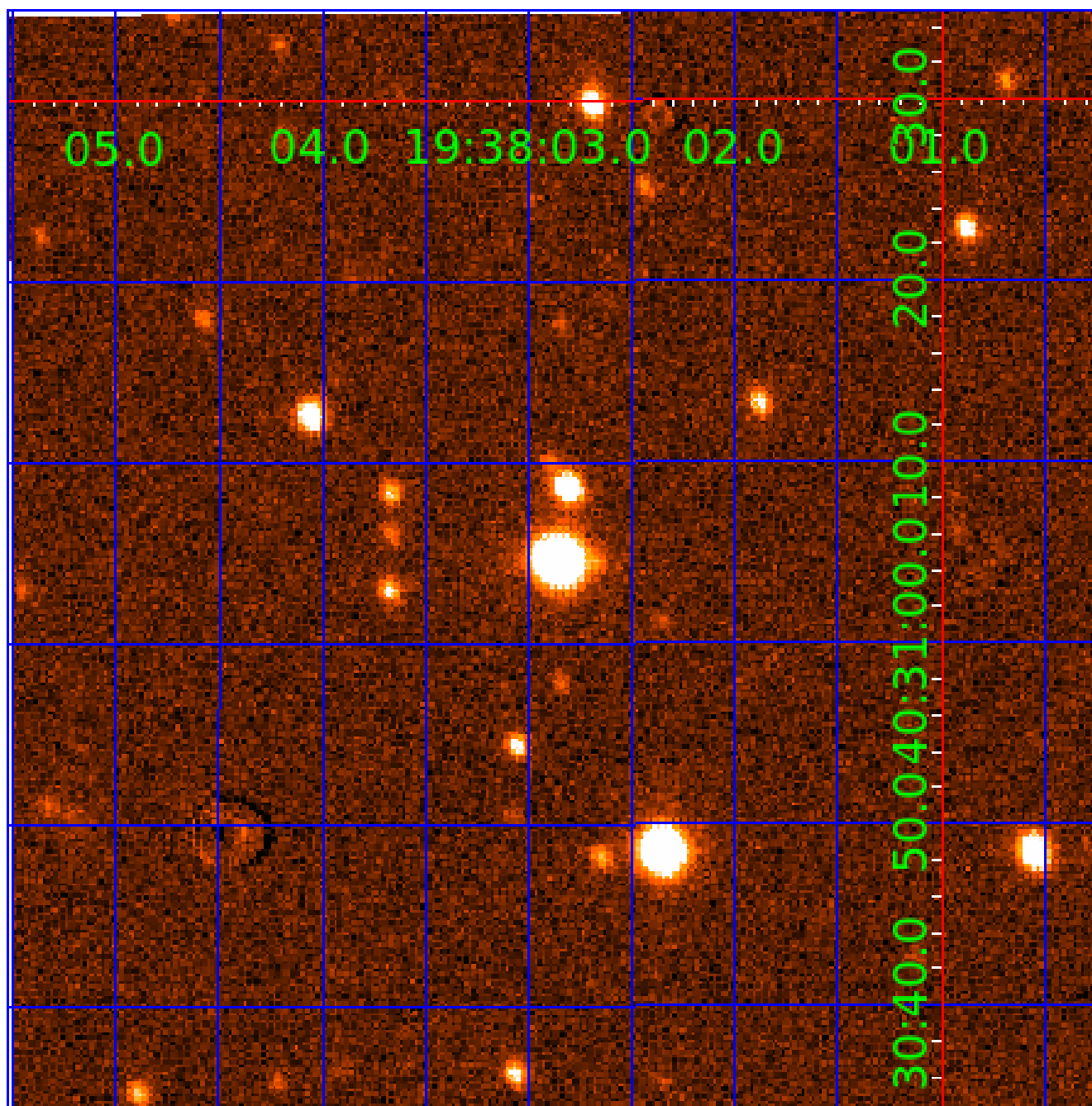


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UKIRT Image

Declination



KIC 005372048

Q1-17 DR25 TCE Parameters

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005372048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_ALT—CENT_KIC_POS

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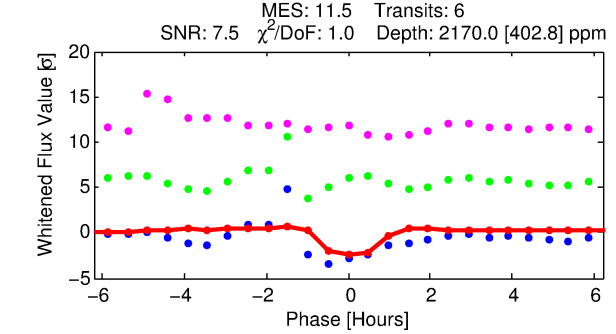
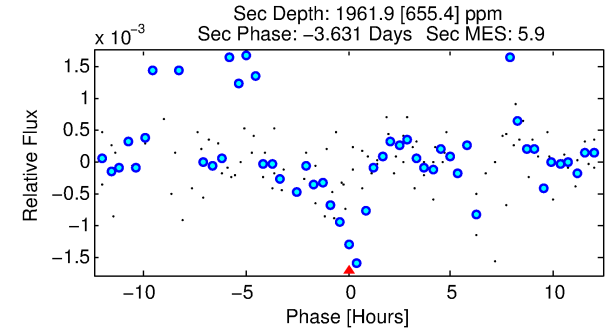
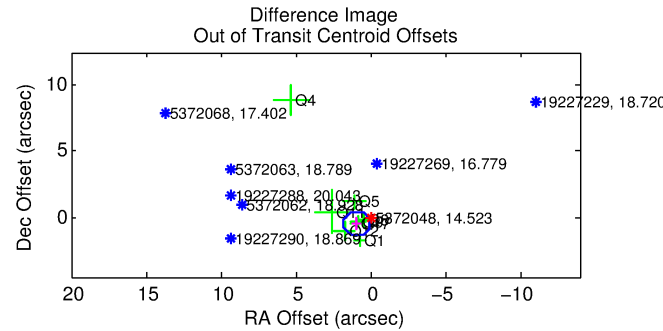
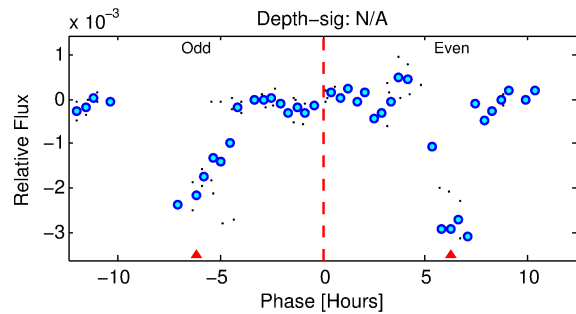
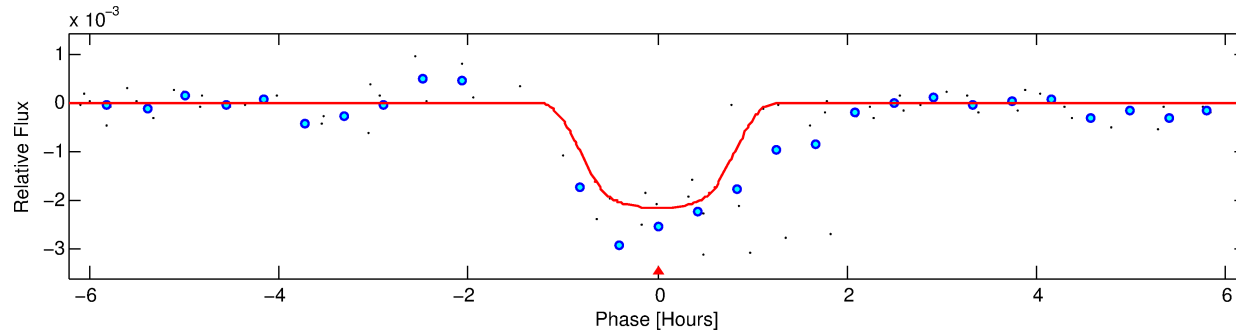
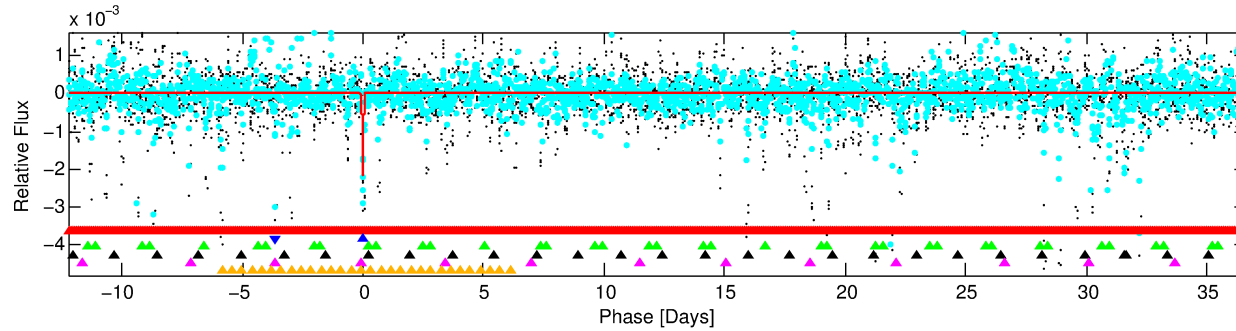
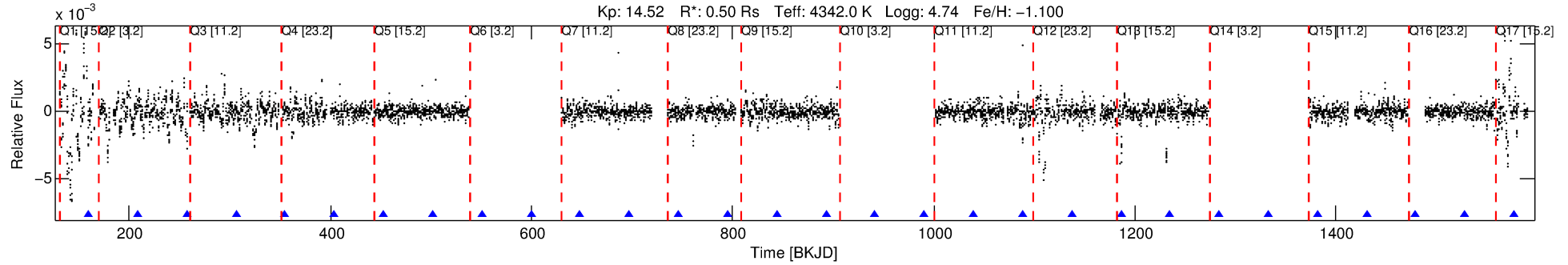
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005372048-02

No Significant Match Found

DV One-Page Summary

KIC: 5372048 Candidate: 2 of 6 Period: 48.877 d



DV Fit Results:

Period = 48.87667 [0.00047] d
Epoch = 159.6777 [0.0063] BKJD
Rp/R* = 0.0499 [0.0237]
a/R* = 104.78 [201.23]
b = 0.87 [0.53]
Seff = 1.85 [0.34]
Teq = 298 [14] K
Rp = 2.73 [1.33] Re
a = 0.2081 [0.0189] AU
Ag = 6259.19 [6361.90] [0.98σ]
Teff = 4092 [1040] K [3.65σ]

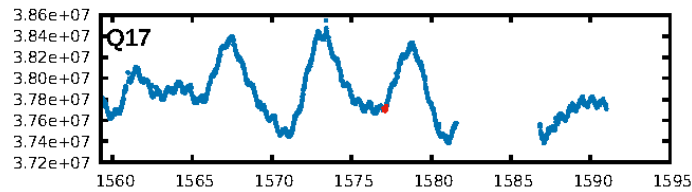
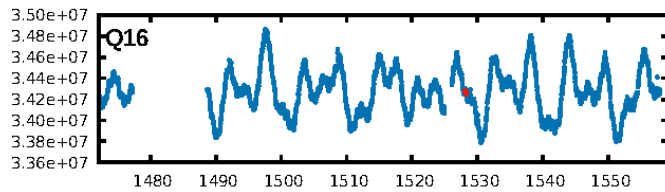
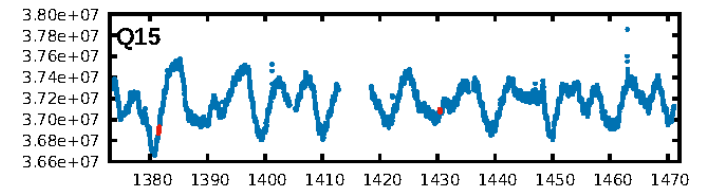
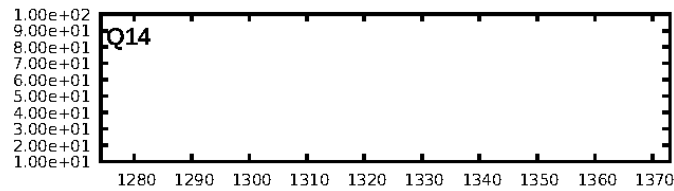
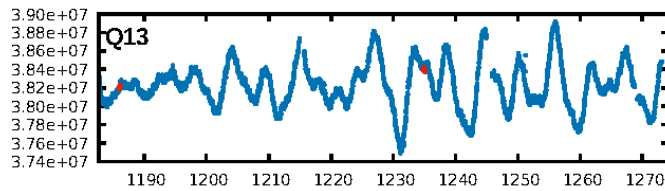
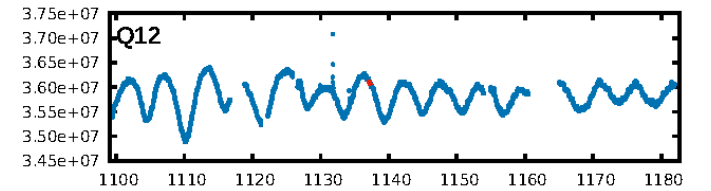
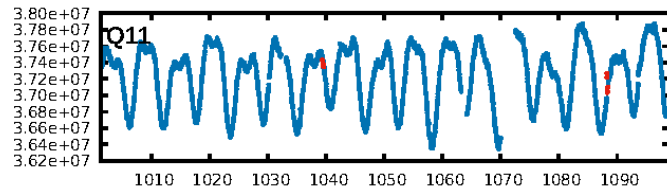
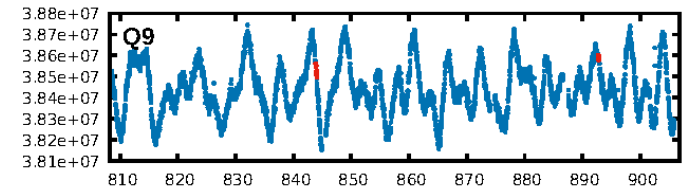
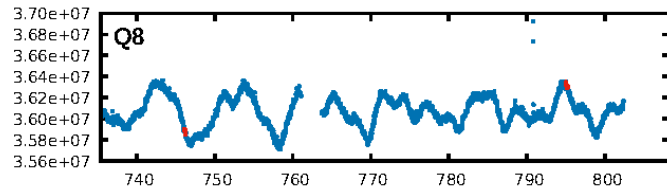
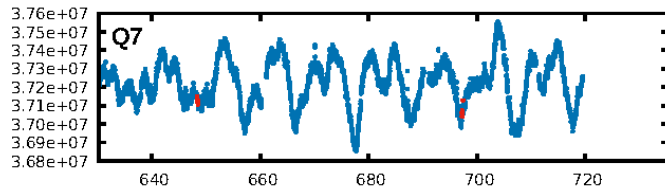
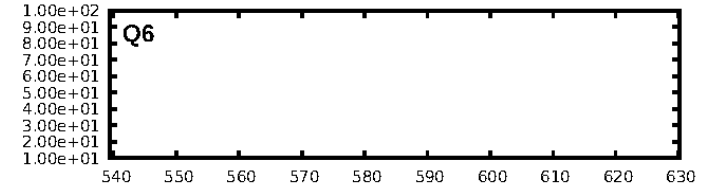
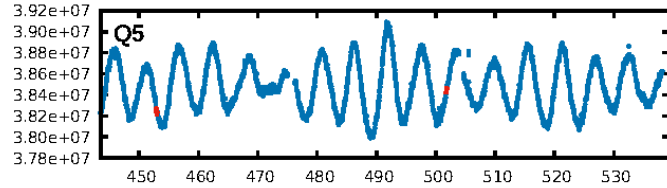
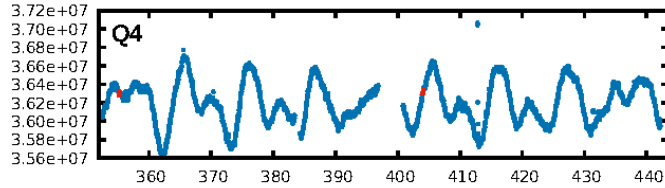
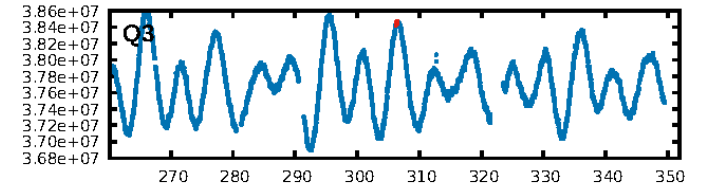
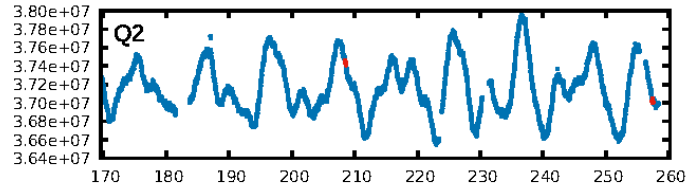
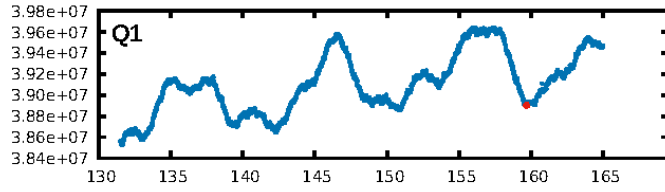
DV Diagnostic Results:

ShortPeriod-sig: 99.9% [3.24σ]
LongPeriod-sig: 100.0% [13.80σ]
ModelChiSquare2-sig: 4.0%
ModelChiSquareGof-sig: 99.1%
Bootstrap-pfa: 1.32e-23
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -8.095
Centroid-sig: N/A
Centroid-so: 0.492 arcsec [2.23σ]
OotOffset-rm: 1.032 arcsec [3.39σ]
KicOffset-rm: 0.837 arcsec [2.50σ]
OotOffset-st: 0/1/3/4 [8]
KicOffset-st: 0/1/3/4 [8]
DiffImageQuality-fgm: 0.62 [5/8]
DiffImageOverlap-fno: 0.00 [0/14]

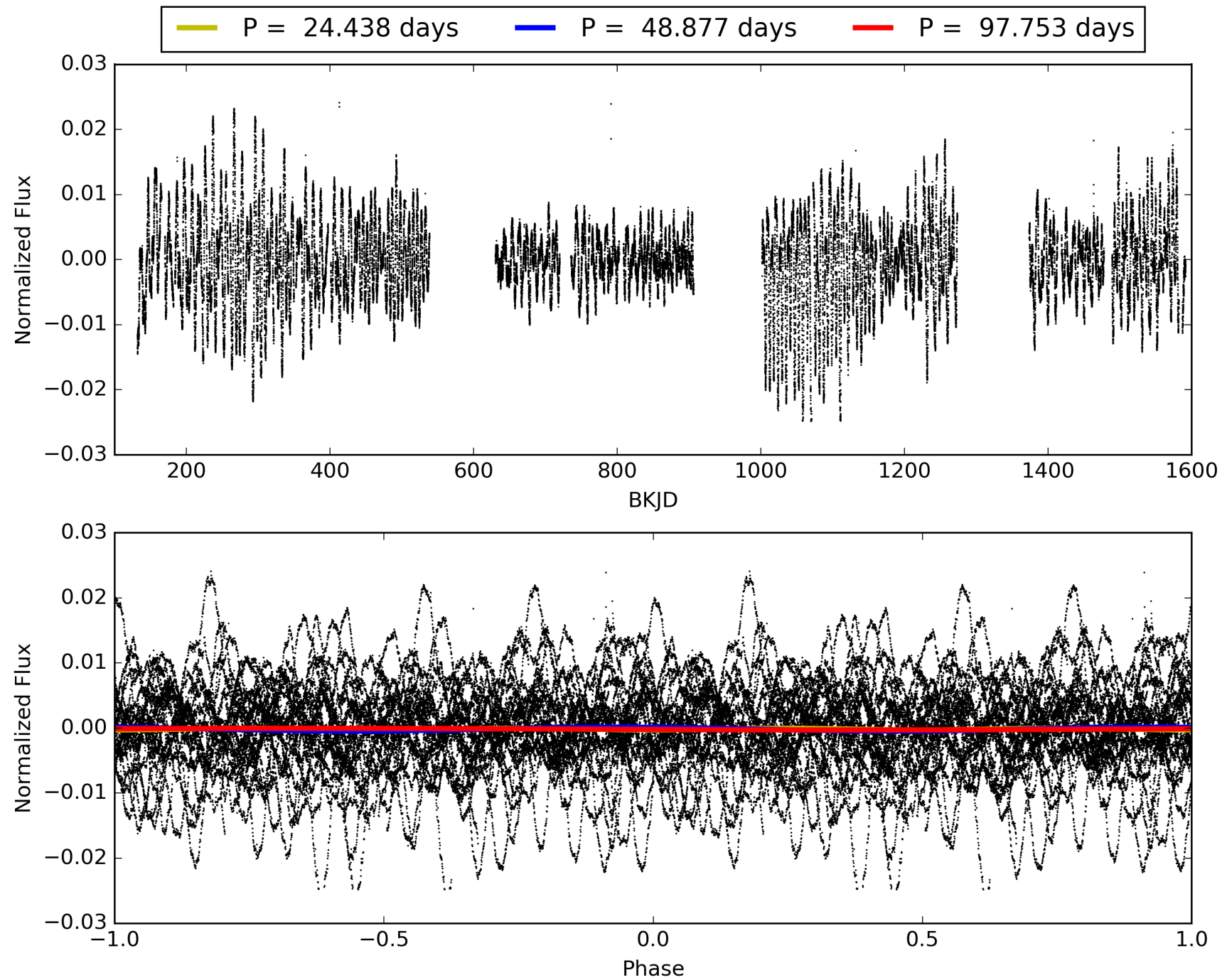
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:28:33 Z

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

TCE 005372048-02, PDC Light Curves

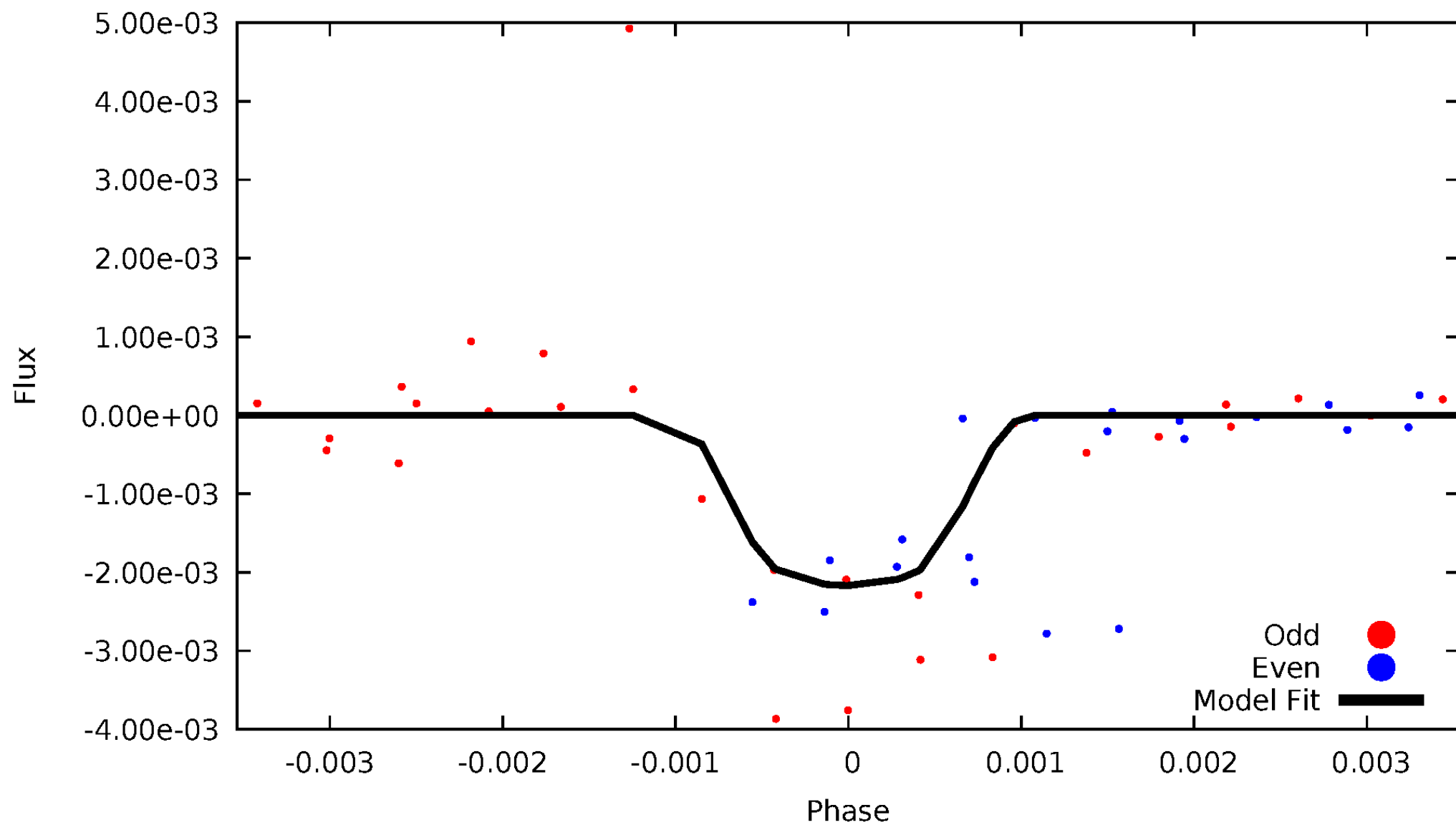


TCE 005372048-02



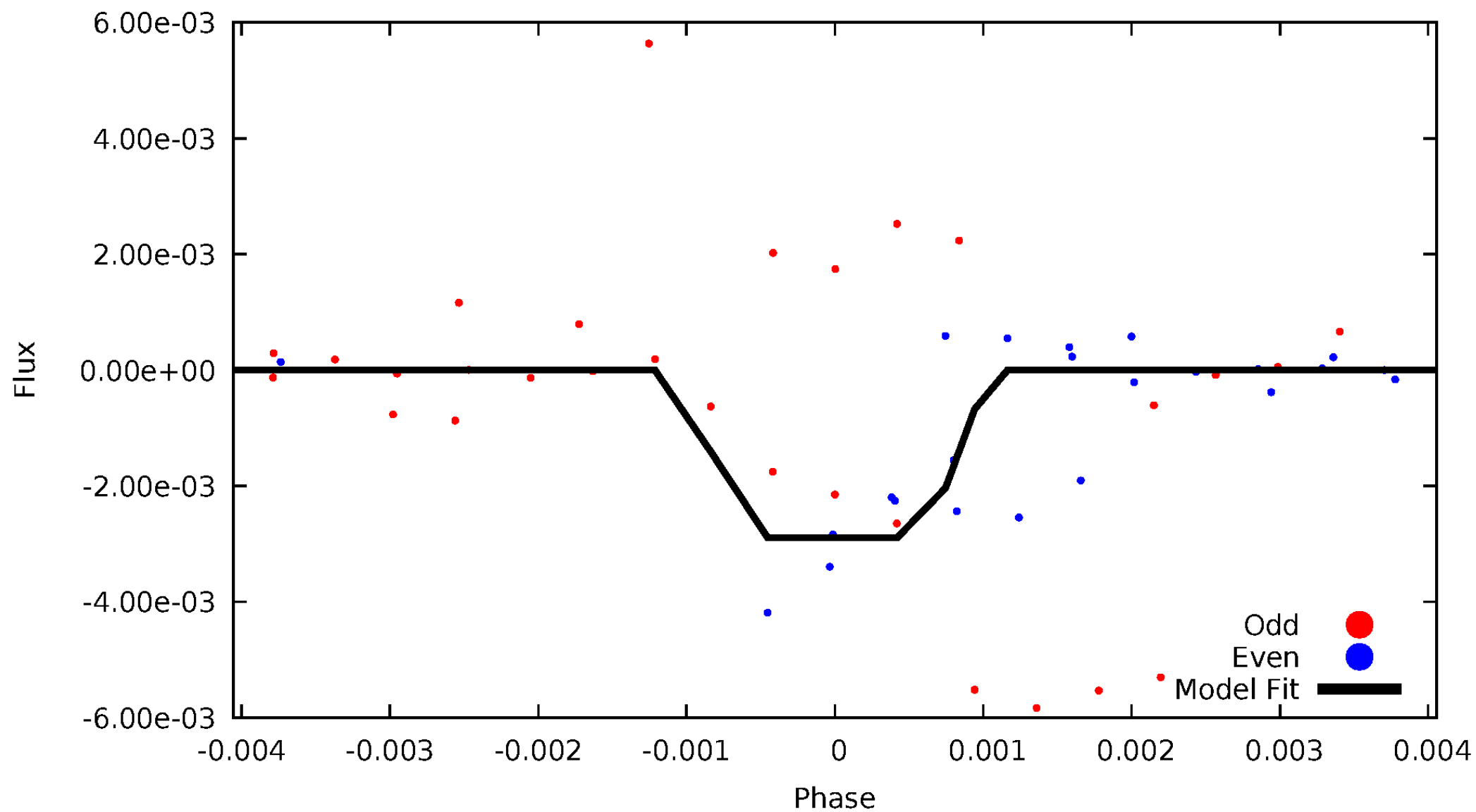
DV Odd/Even

TCE 005372048-02



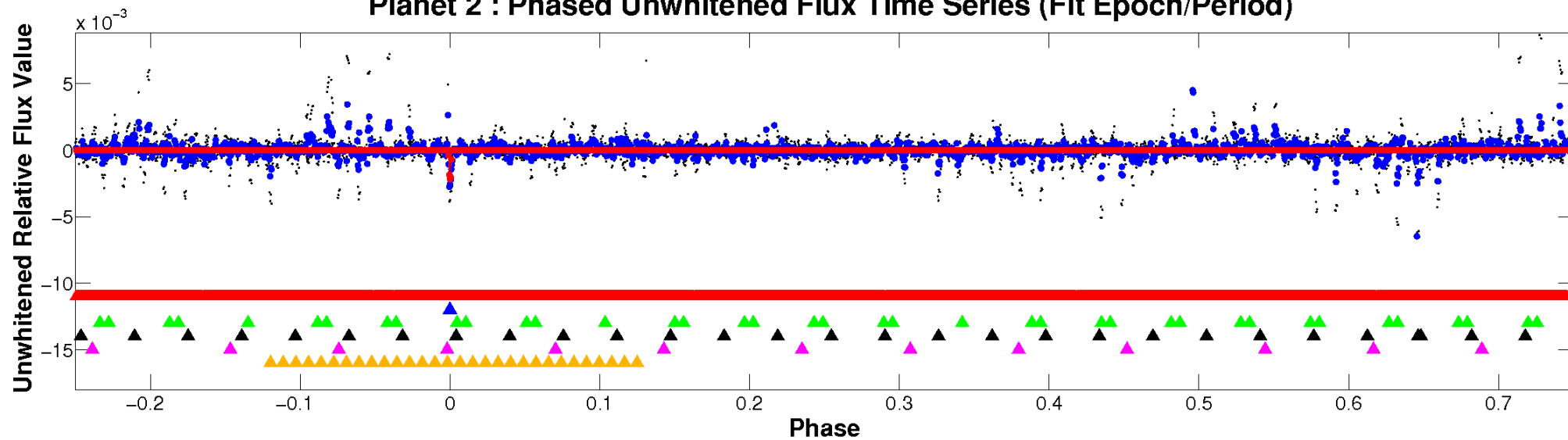
ALT Odd/Even

TCE 005372048-02

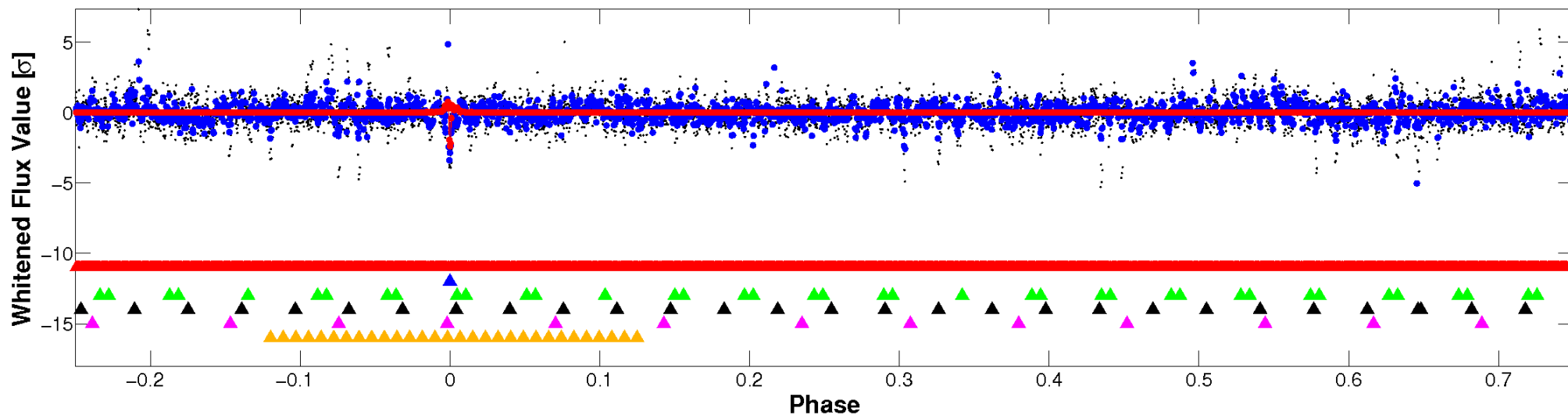


Non-Whitened Vs. Whitened Light Curve

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

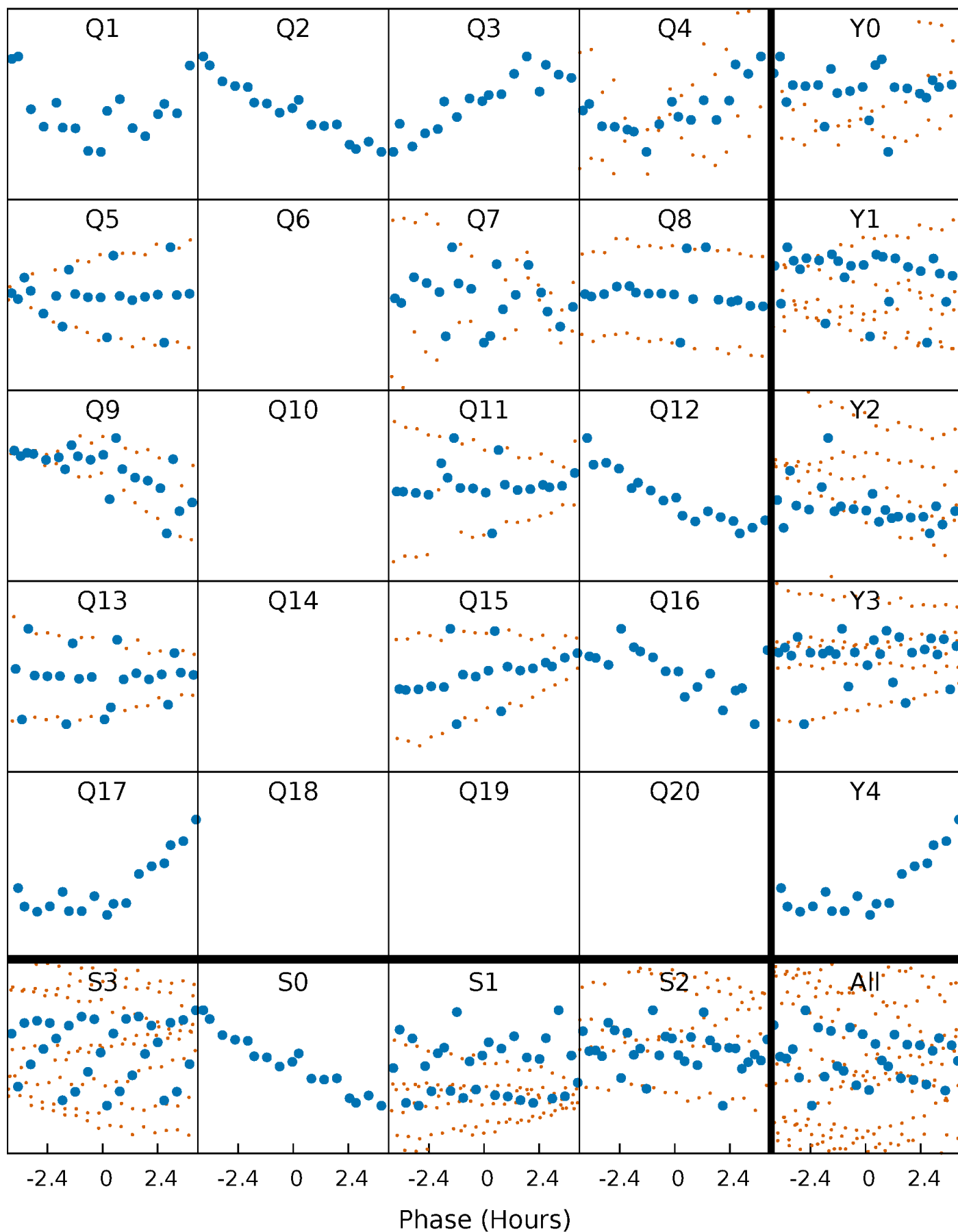


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



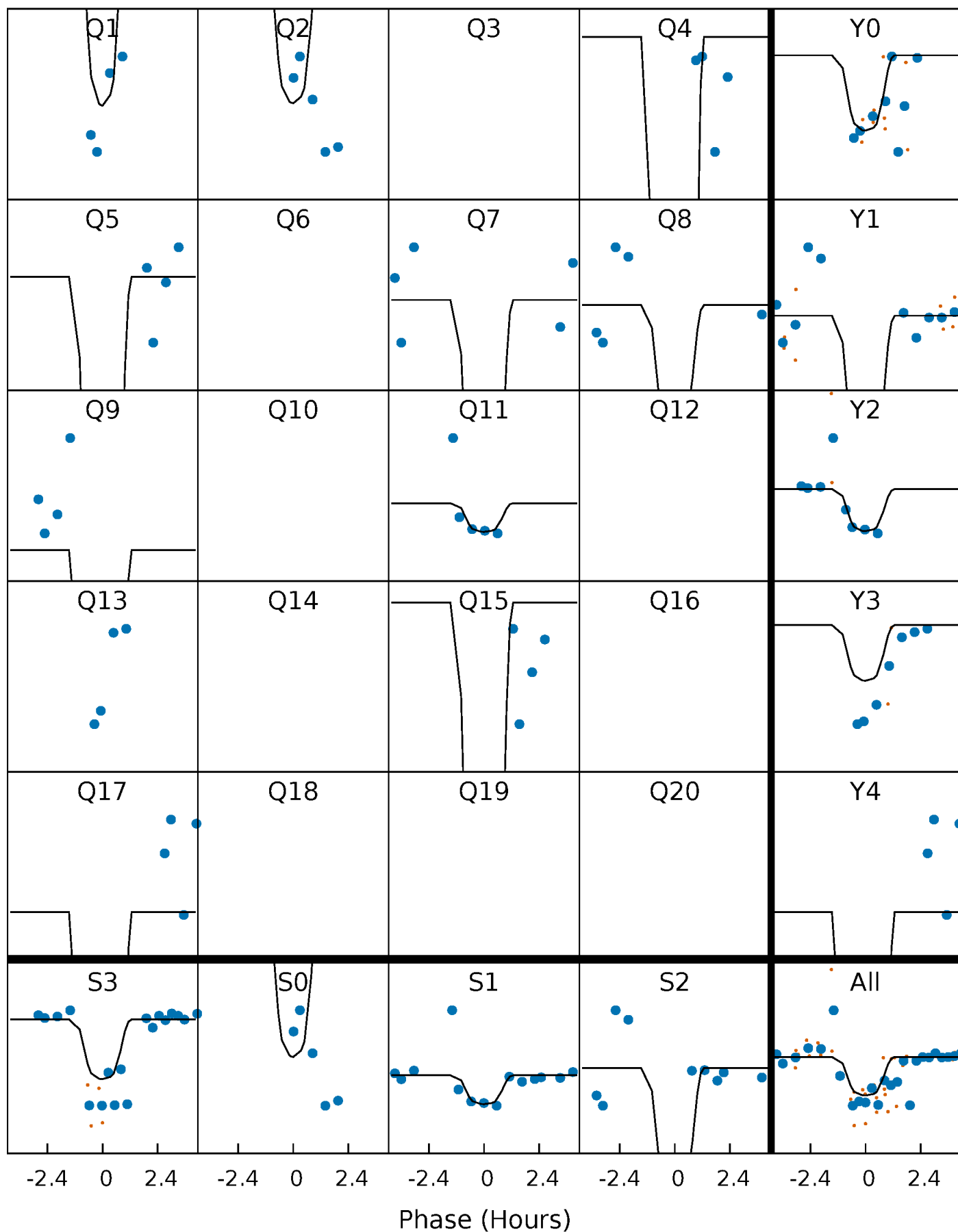
PDC Quarter-Phased Transit Curves

TCE 005372048-02 P= 48.876668 Days $T_0=159.677701$ (BKJD)



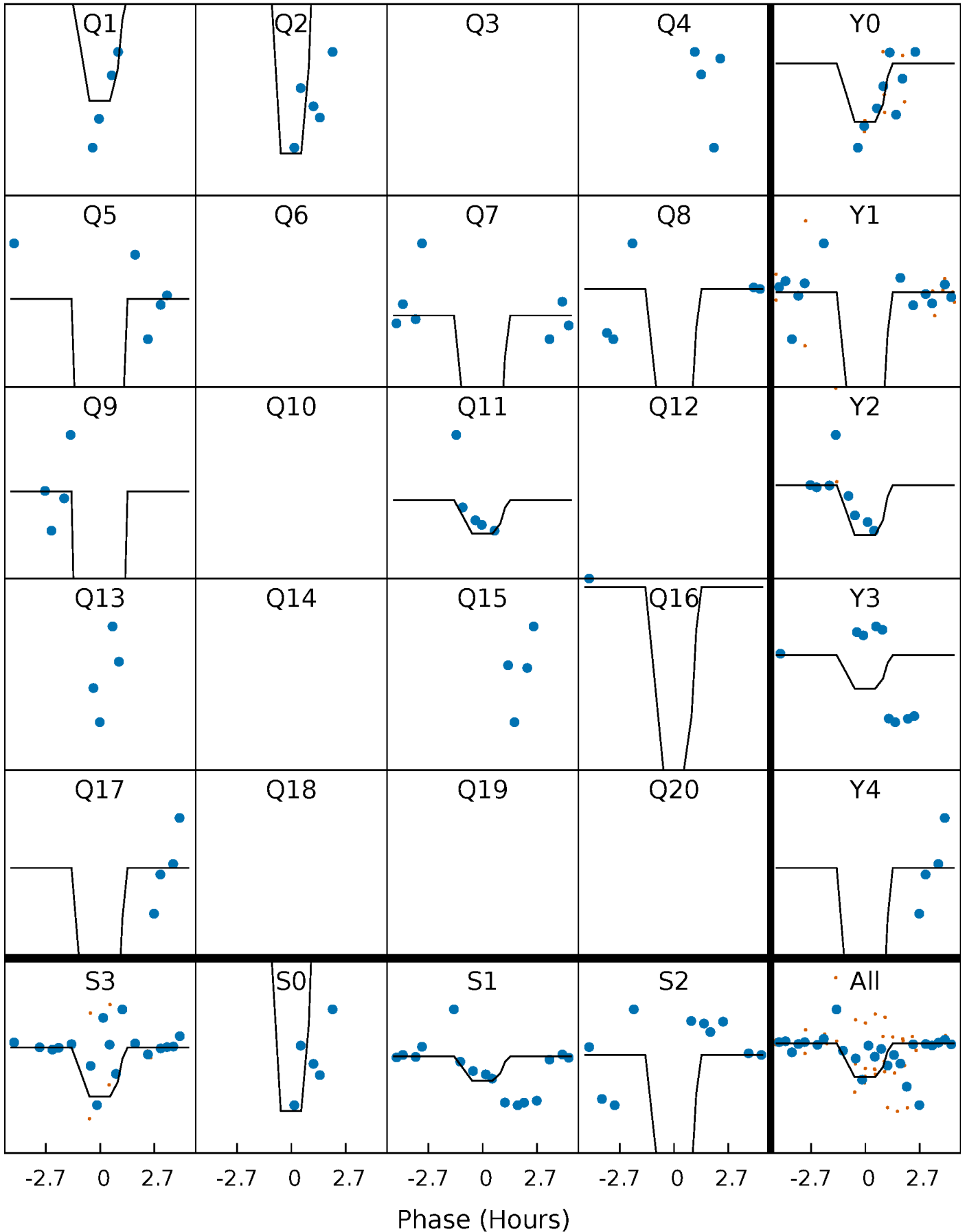
DV Quarter-Phased Transit Curves

TCE 005372048-02 $P = 48.876668$ Days $T_0 = 159.677701$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

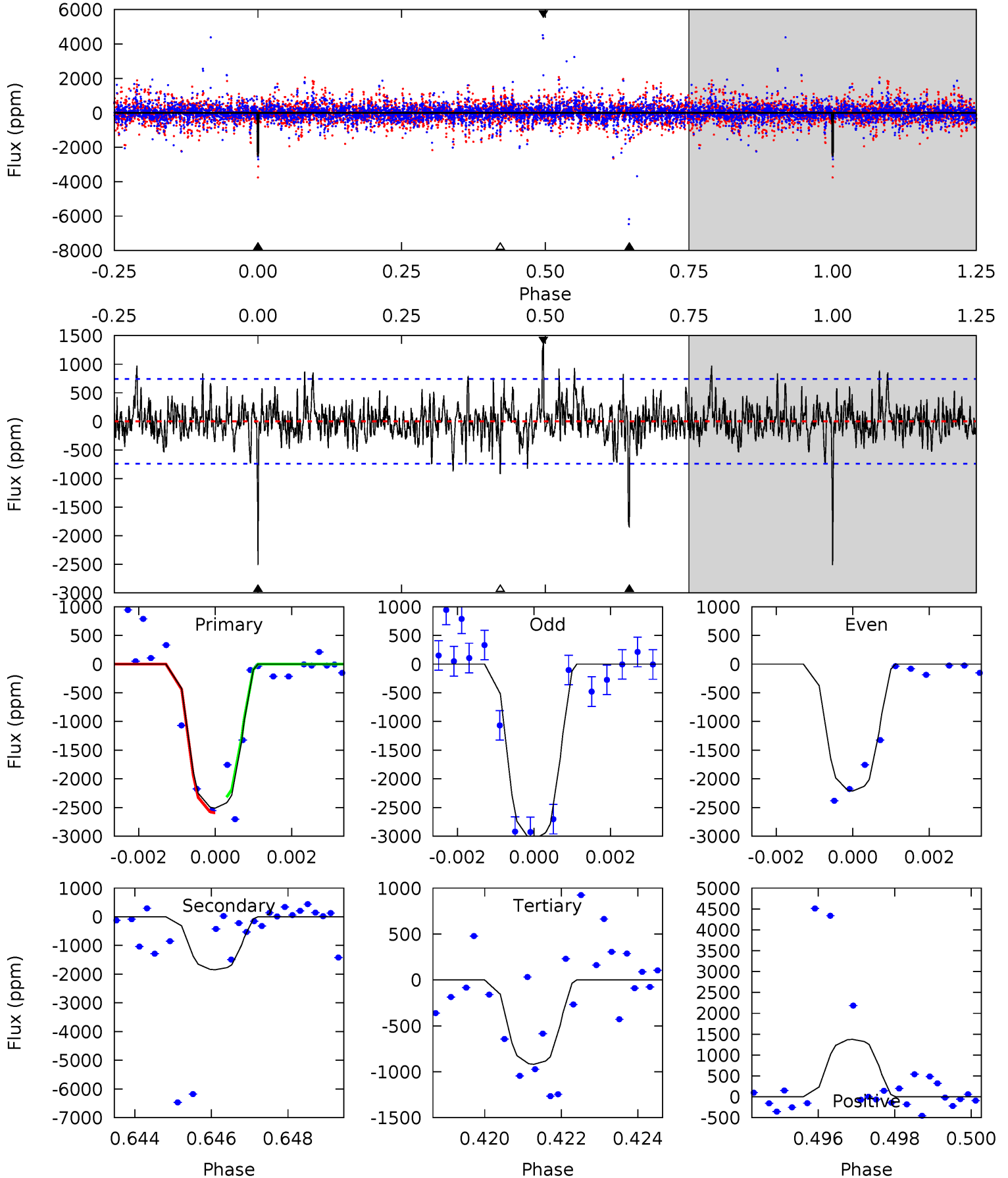
TCE 005372048-02 $P = 48.876900$ Days $T_0 = 159.672718$ (BKJD)



DV Model-Shift Uniqueness Test

005372048-02, P = 48.876668 Days, E = 110.801033 Days

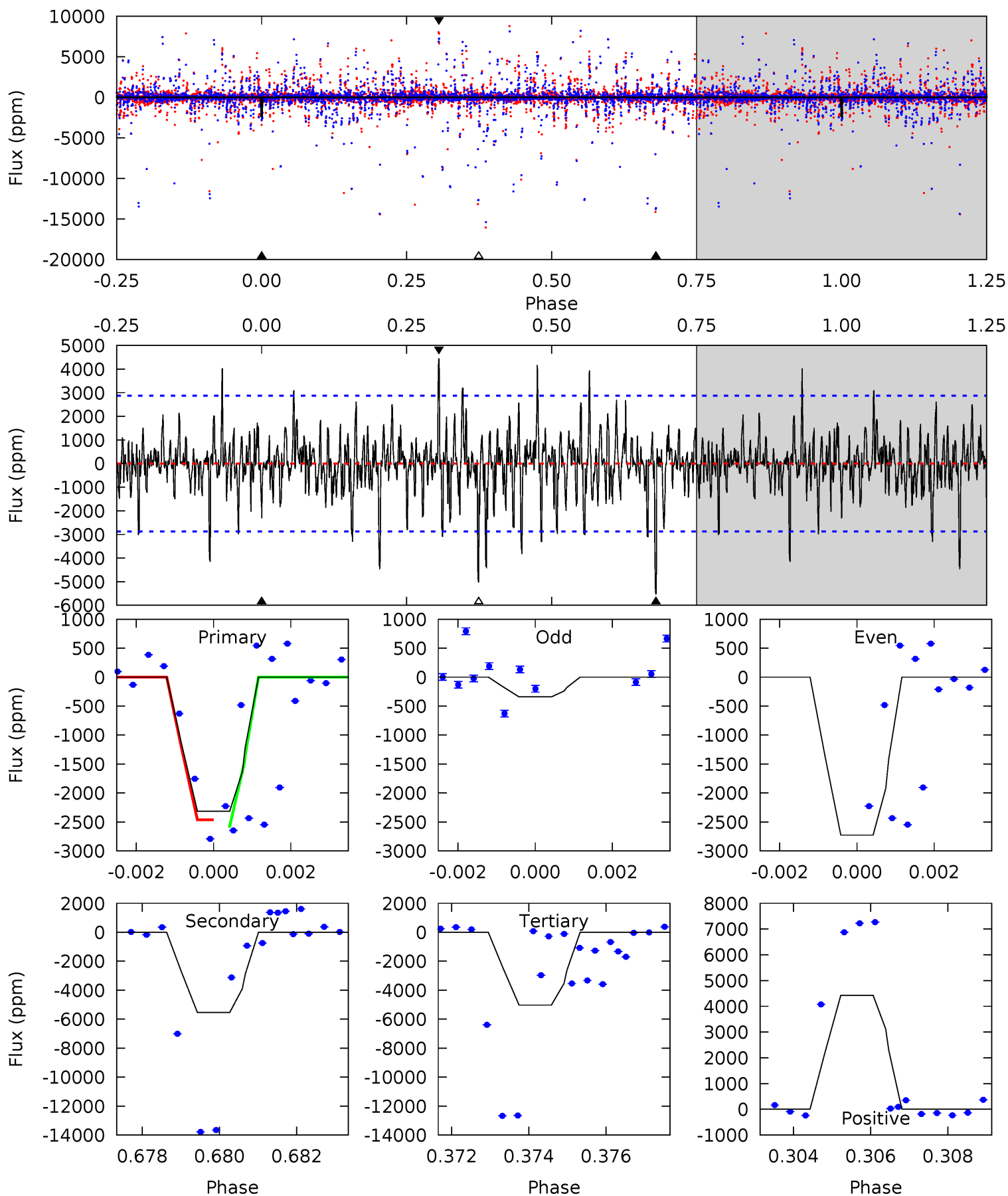
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.1	13.3	6.62	9.90	5.33	3.10	1.86	11.5	8.18	6.66	3.38	2.25	1.12	0.35	0.98



Alt Model-Shift Uniqueness Test

005372048-02, P = 48.876900 Days, E = 110.795818 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.29	10.3	9.31	8.21	5.33	3.09	1.76	-5.02	-3.92	0.95	2.05	1.84	0.59	0.44	0.10



Stellar Parameters For KIC 005372048

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4342^{+117}_{-143}	$4.738^{+0.070}_{-0.030}$	$-1.100^{+0.300}_{-0.350}$	$0.502^{+0.035}_{-0.055}$	$0.502^{+0.037}_{-0.037}$	$5.603^{+1.741}_{-0.761}$
	+3%/-3%	+1%/-1%	+27%/-32%	+7%/-11%	+7%/-7%	+31%/-14%
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 005372048-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1844 ± 139	$2.70^{+1.25}_{-1.21}$	412^{+14}_{-17}	4116^{+1064}_{-537}	6222^{+14020}_{-3451}
Alt.	-5537 ± 540	$2.96^{+1.24}_{-1.32}$	412^{+14}_{-16}	4863^{+1654}_{-631}	15080^{+33756}_{-7636}

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

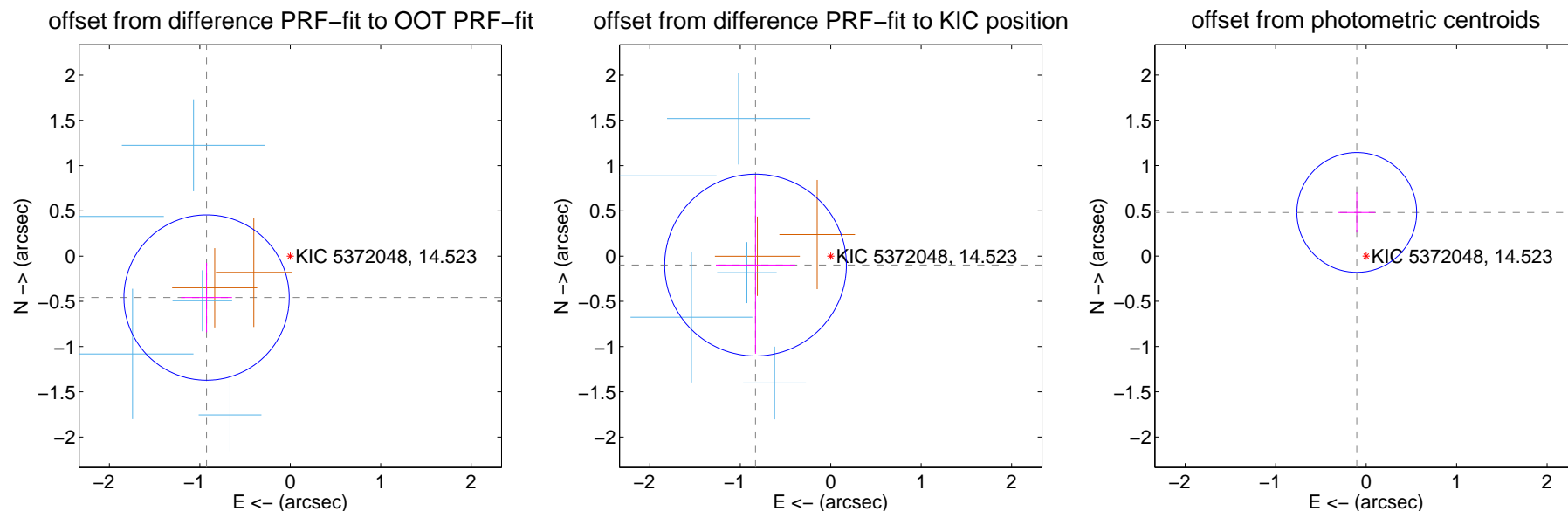
DV Centroid Data

Supplemental centroid analysis for 005372048-02. Kepler magnitude: 14.52. Transit SNR 7.49

There are 5 quarters with good PRF difference image offsets

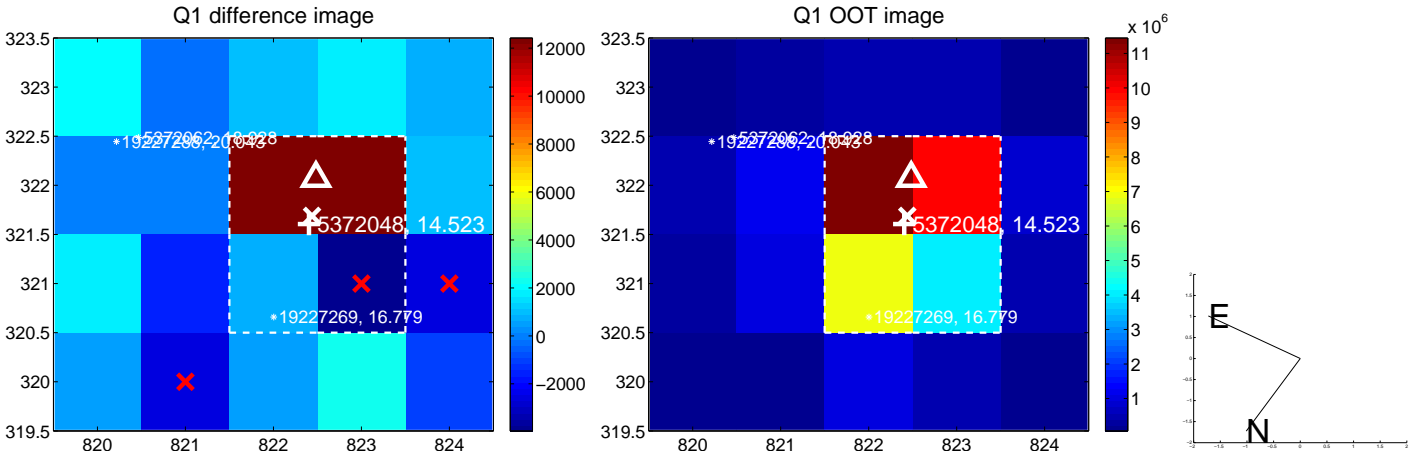
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.032 ± 0.304	3.39	0.925 ± 0.282	-0.458 ± 0.383
PRF-fit source offset from KIC position	0.837 ± 0.335	2.50	0.831 ± 0.438	-0.099 ± 0.981
photometric centroid source offset	0.49 ± 0.22	2.23	0.10 ± 0.20	0.48 ± 0.22

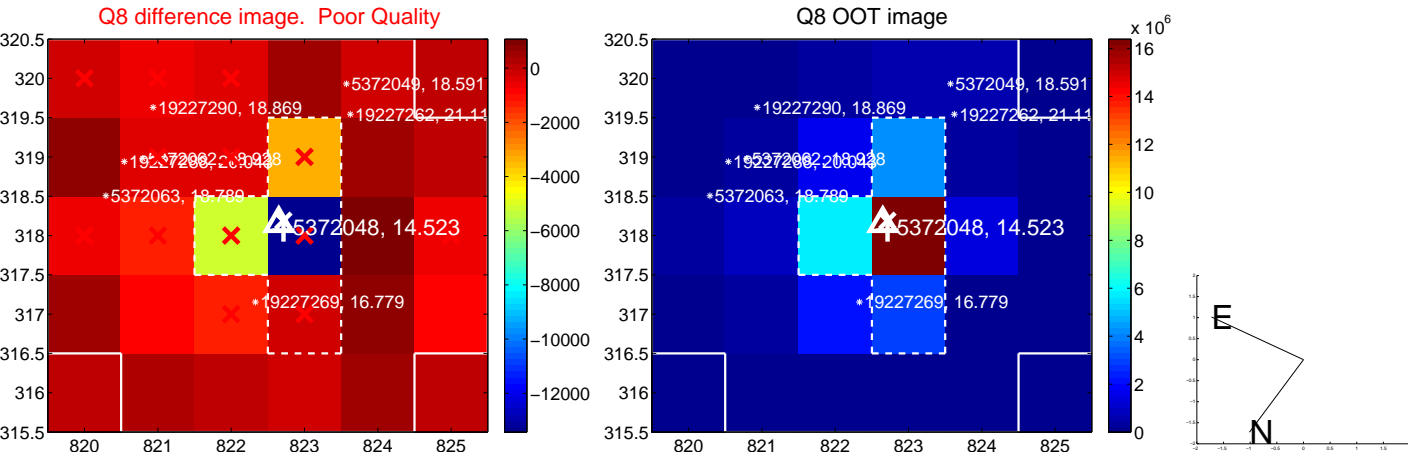
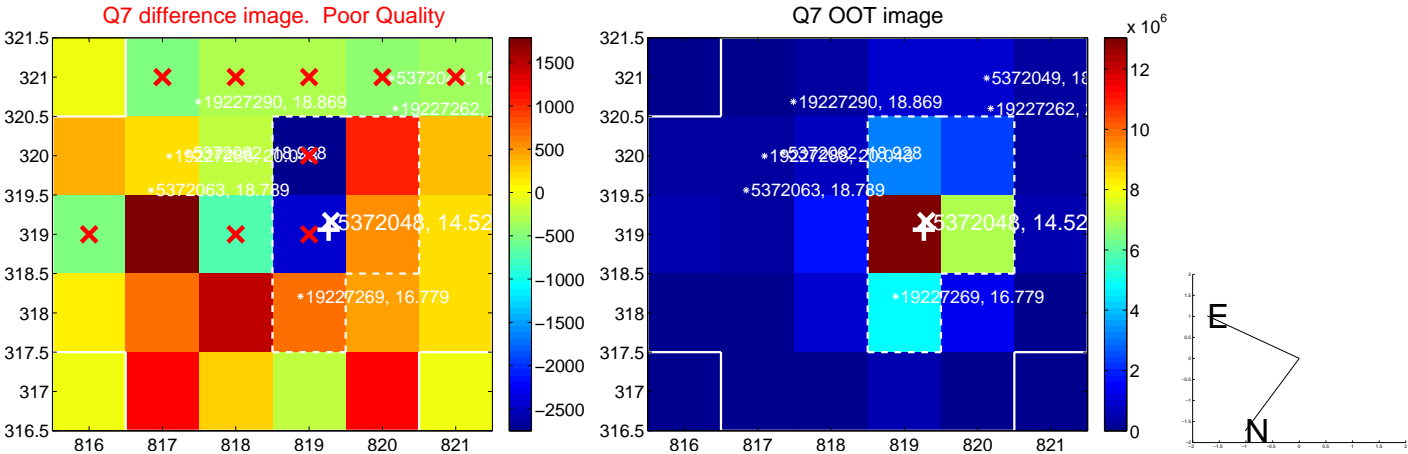
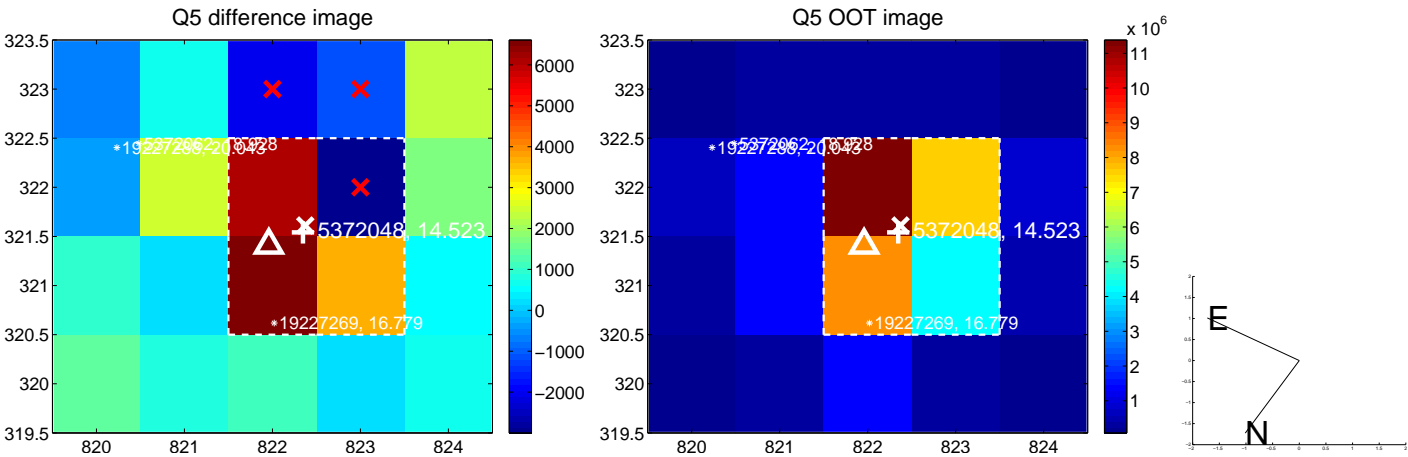


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

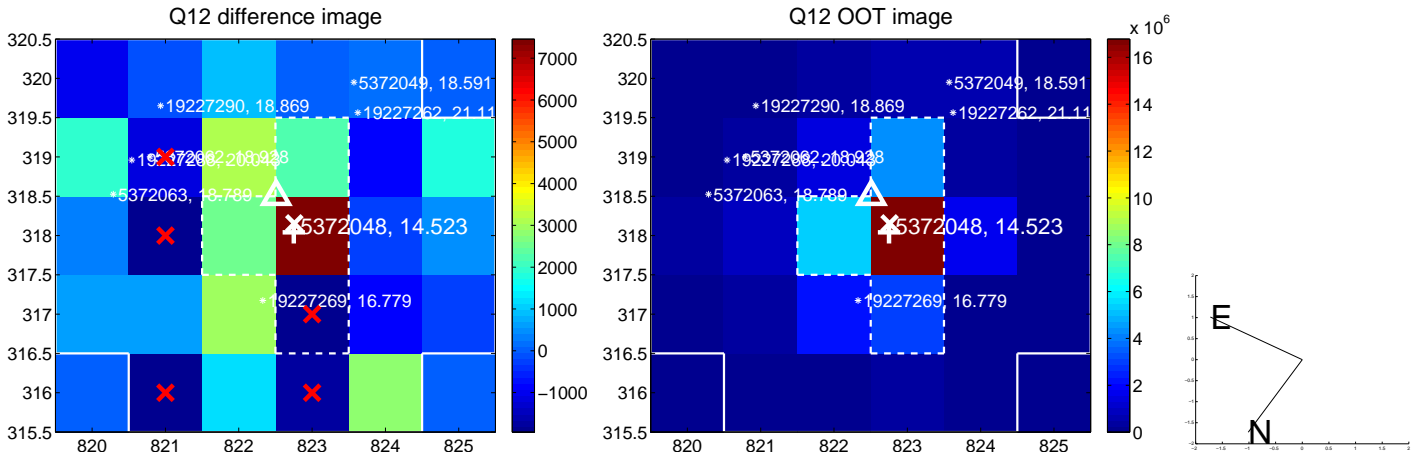
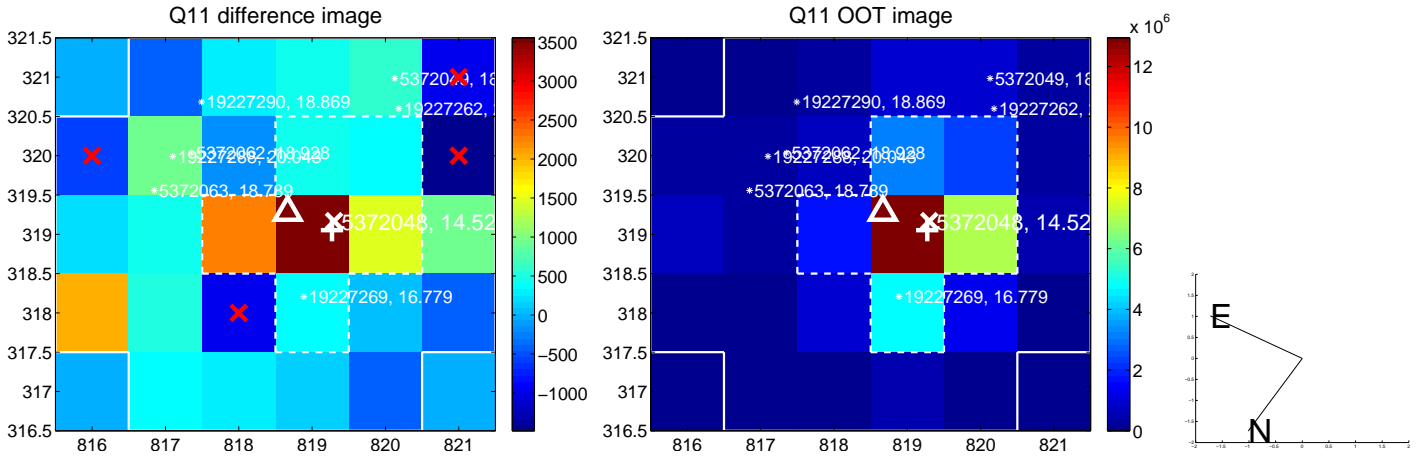
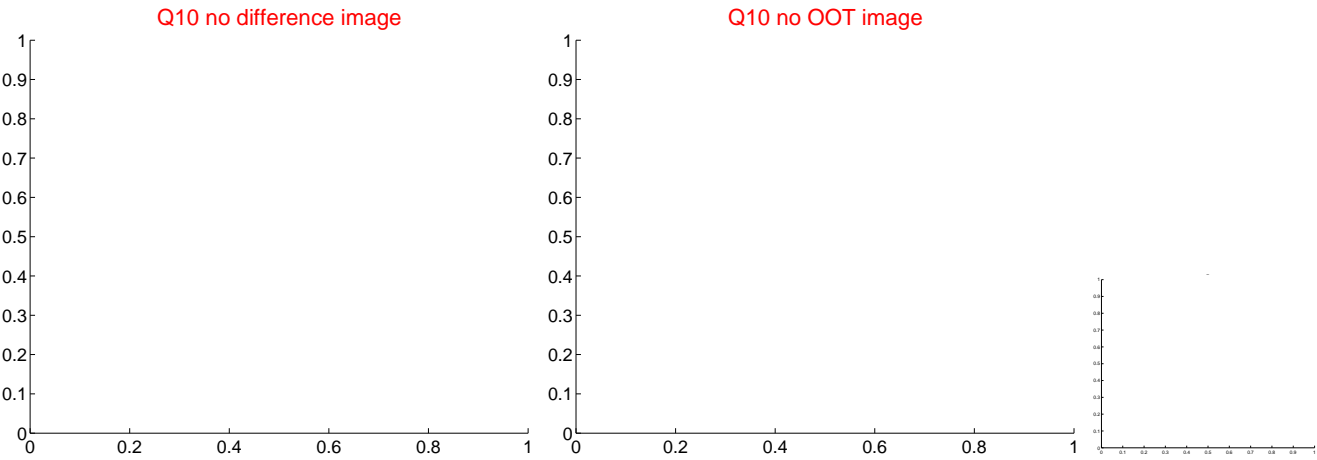
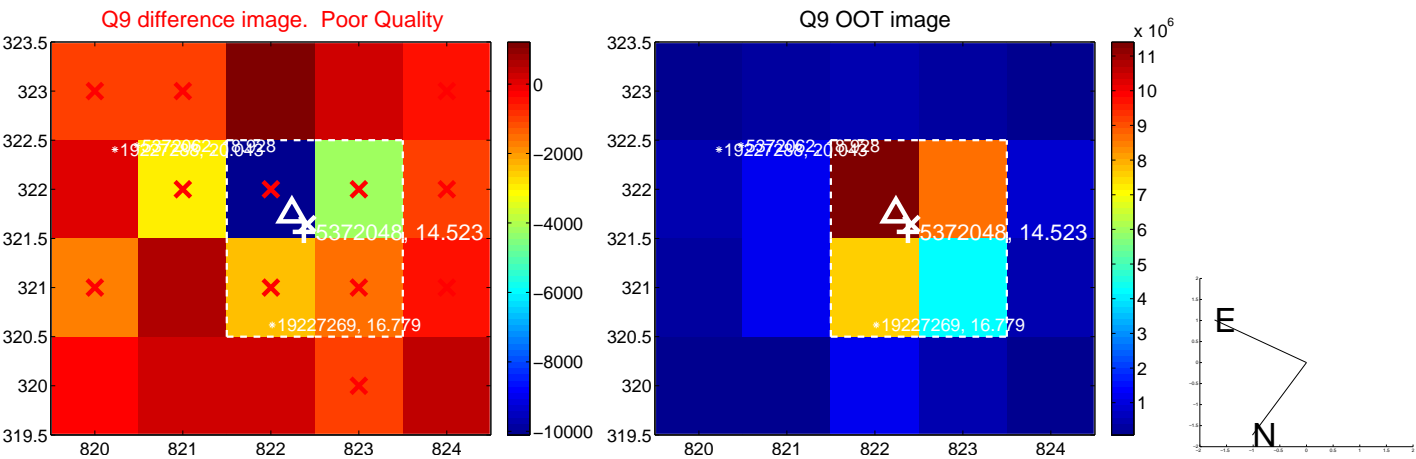
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



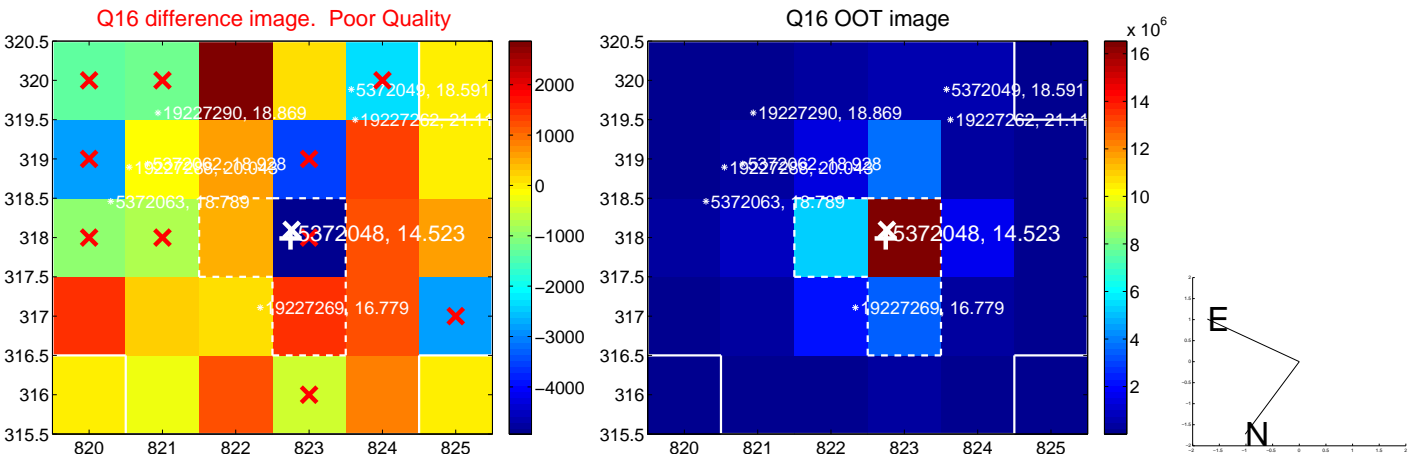
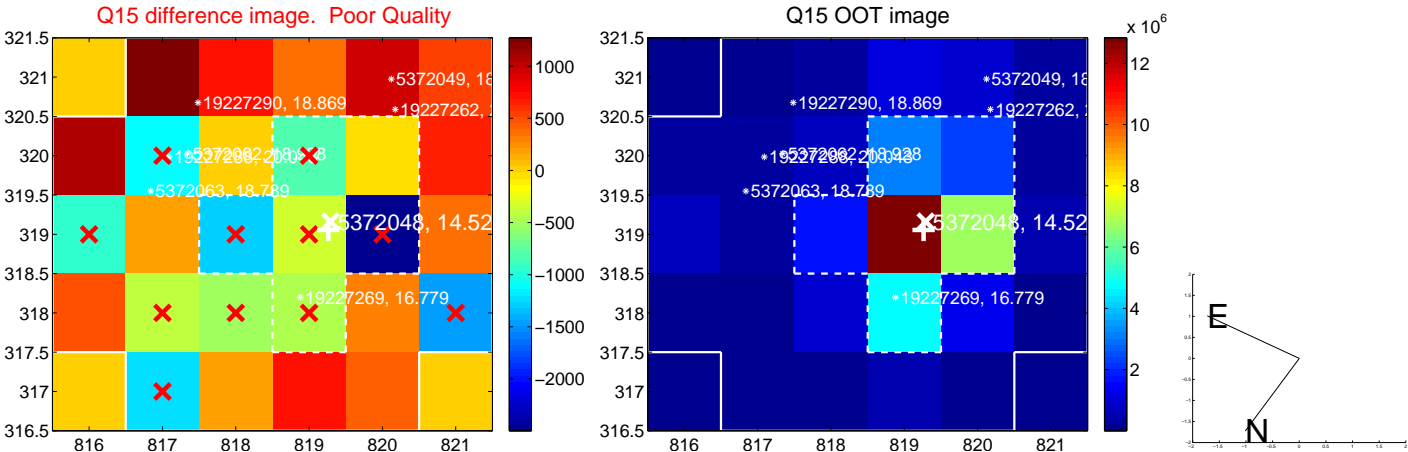
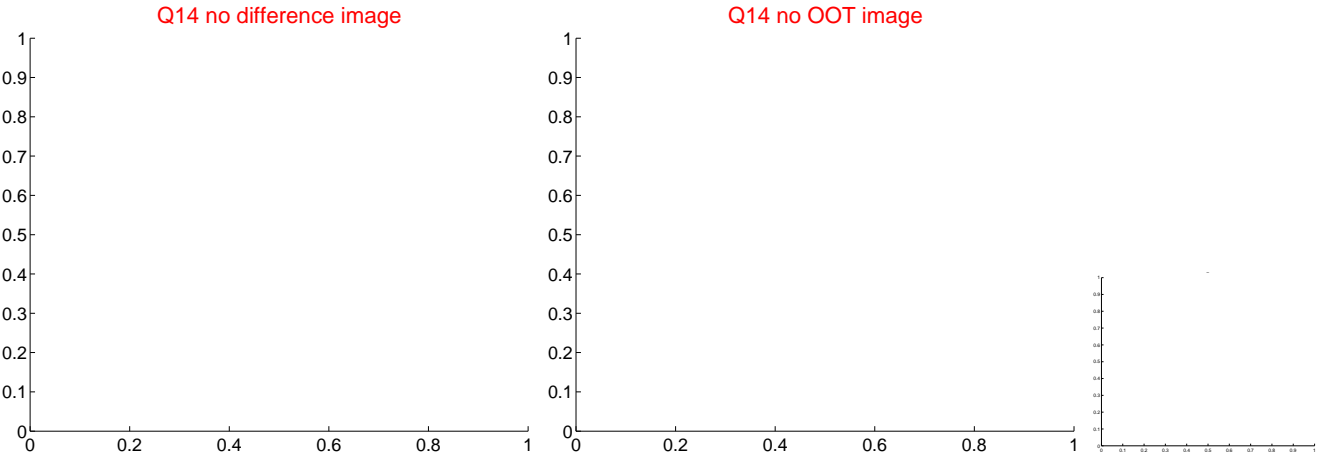
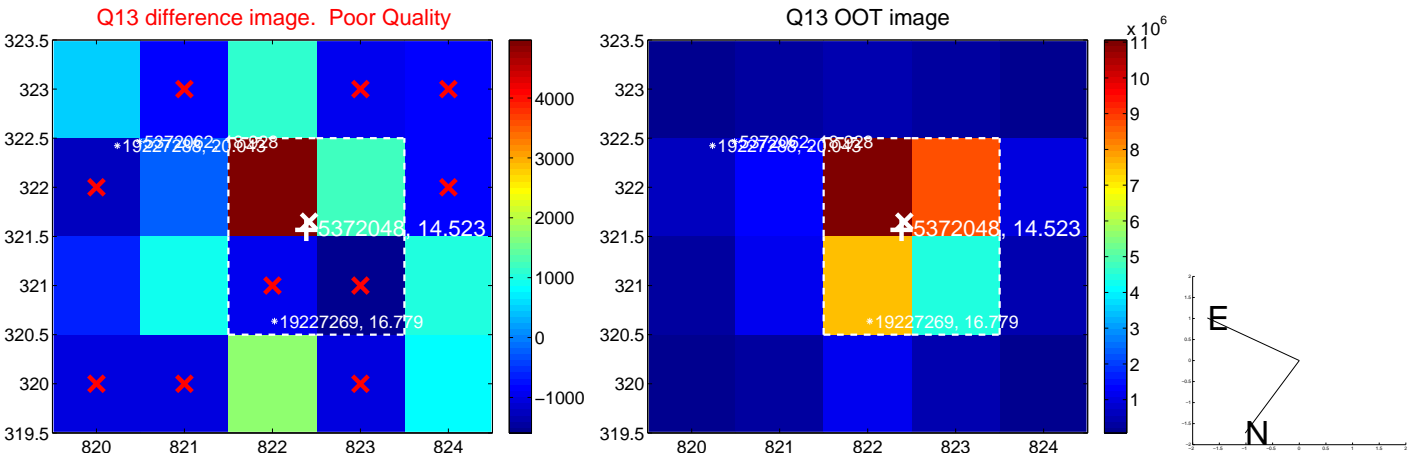
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



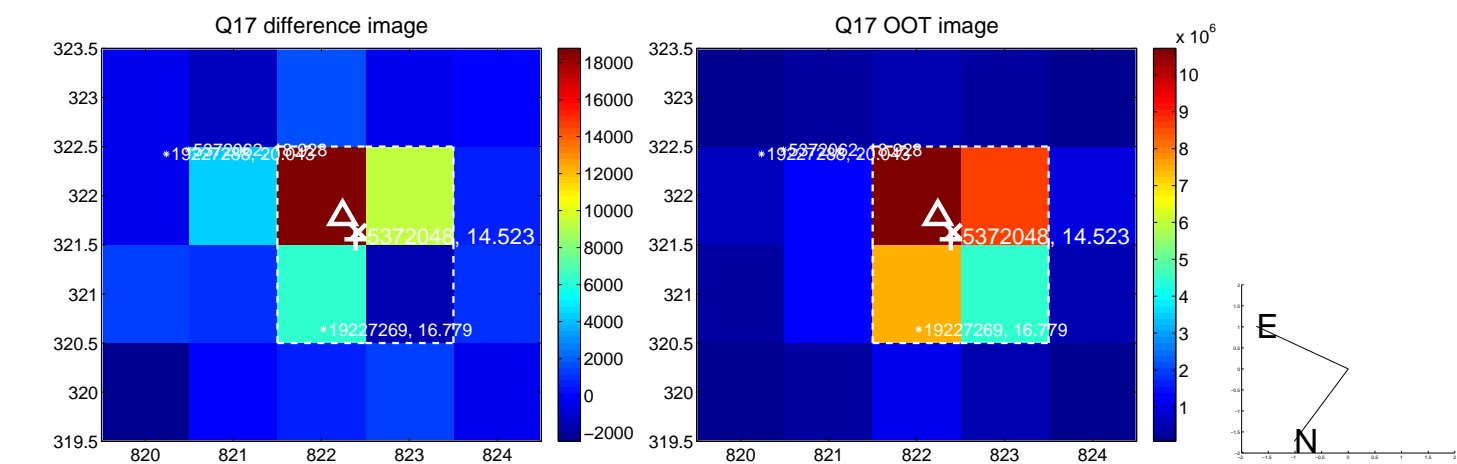
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



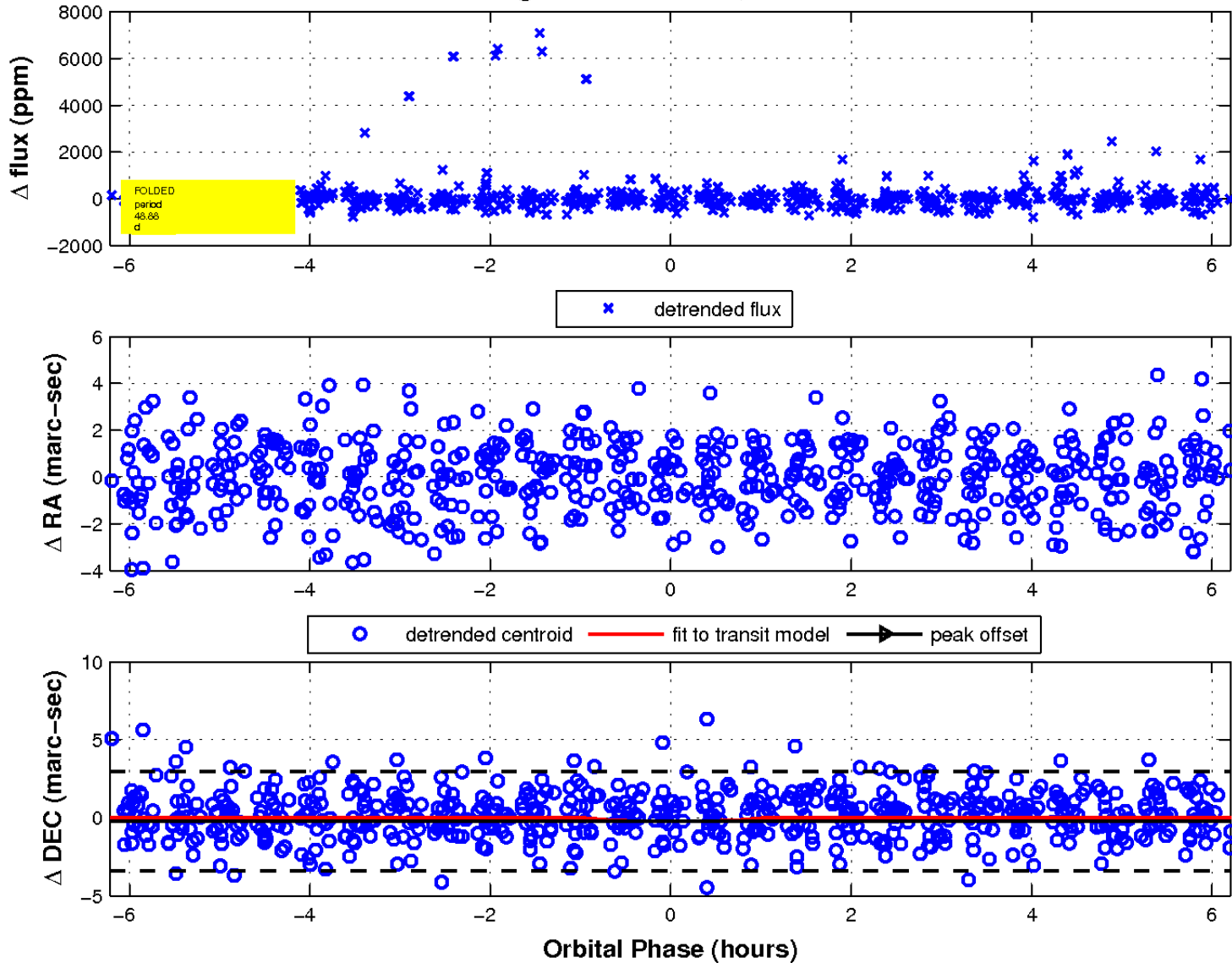
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

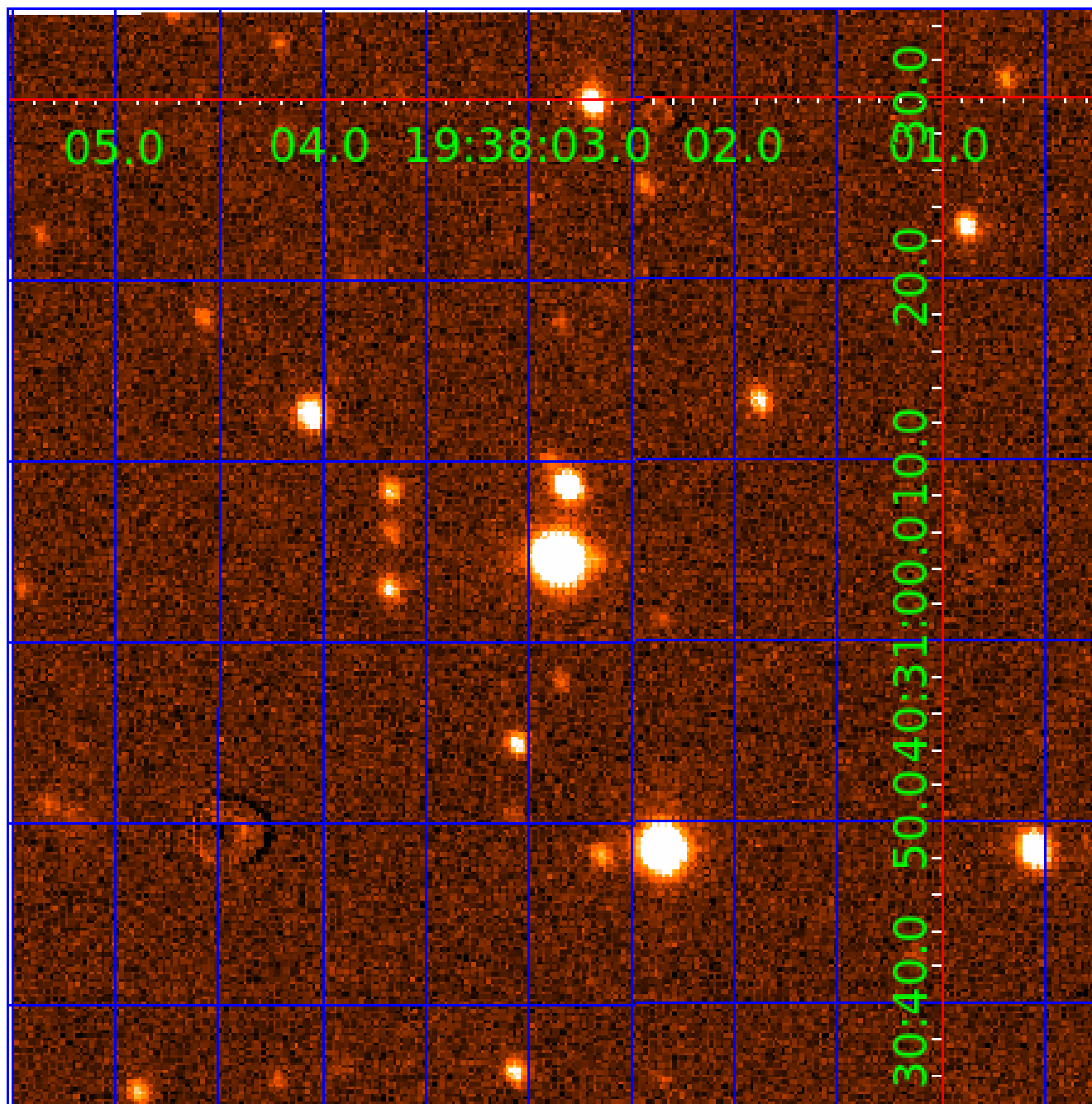


fluxWeightedCentroids, Planet 2 of 6



UKIRT Image

Declination



KIC 005372048

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})
005372048-01	OBS	No	0.665211	132.074553	8.2	4.467	10.6	1.7	0.50	4342	0.15	570.40
005372048-02	OBS	No	48.876668	159.677701	2170.0	2.074	11.5	7.5	0.50	4342	2.73	1.85
005372048-03	OBS	No	37.225748	141.726372	2362.3	1.714	11.3	6.1	0.50	4342	2.41	2.67
005372048-04	OBS	No	50.625582	142.391923	2668.6	2.224	12.4	8.0	0.50	4342	2.70	1.77
005372048-05	OBS	No	112.866907	215.535484	3603.9	3.590	10.3	8.3	0.50	4342	3.25	0.61
005372048-06	OBS	No	48.464273	165.785812	2763.5	2.245	9.6	8.0	0.50	4342	2.72	1.88

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005372048-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
005372048-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
005372048-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—CENT_KIC_POS
005372048-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT
005372048-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES
005372048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_ALT—CENT_KIC_POS

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

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

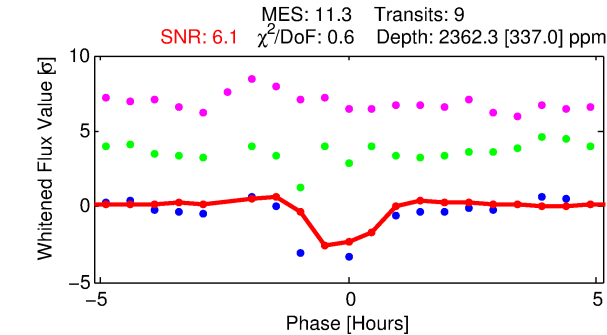
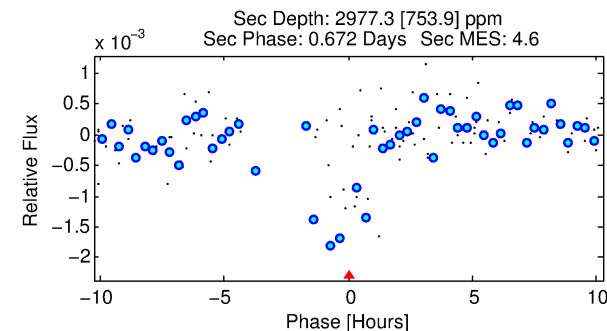
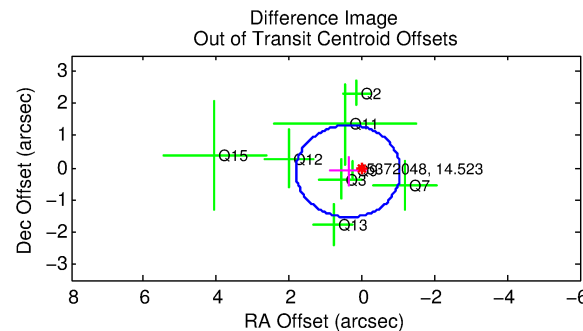
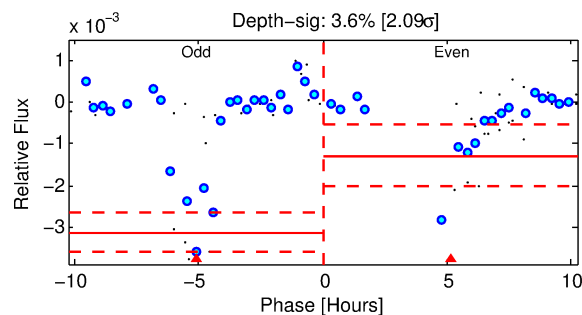
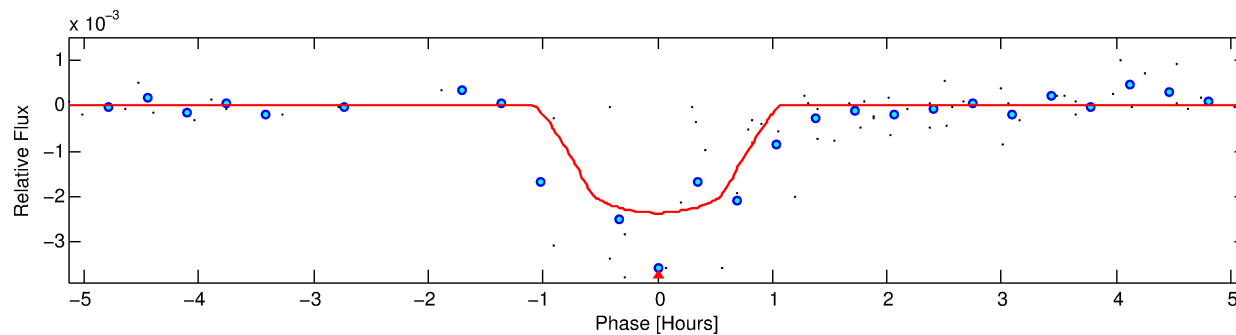
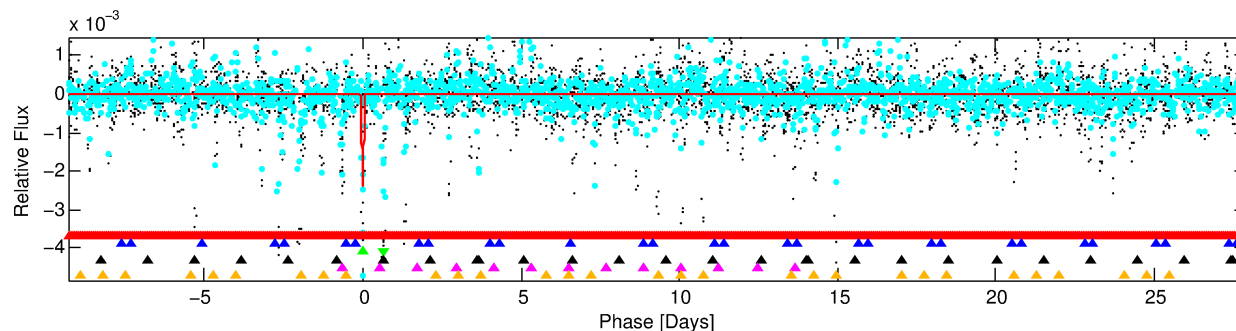
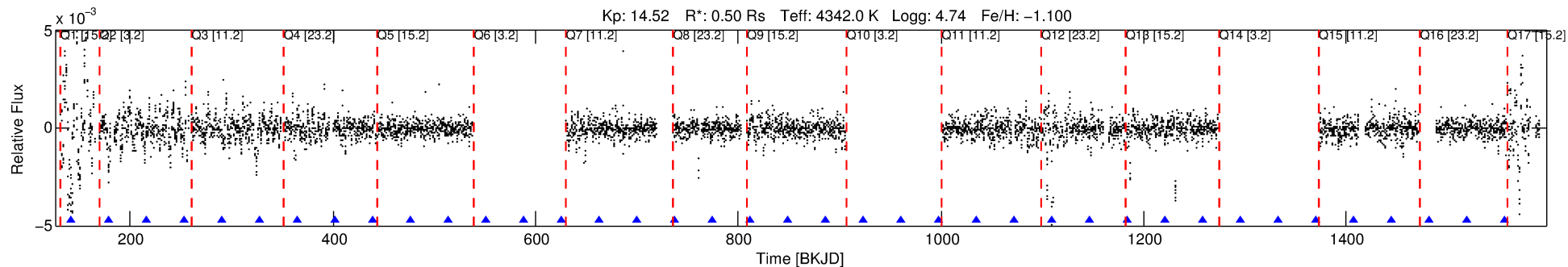
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005372048-03

No Significant Match Found

DV One-Page Summary

KIC: 5372048 Candidate: 3 of 6 Period: 37.226 d



DV Fit Results:

Period = 37.22575 [0.00019] d
Epoch = 141.7264 [0.0040] BKJD
Rp/R* = 0.0440 [0.1416]
a/R* = 173.22 [2210.22]
b = 0.00 [3672.72]
Seff = 2.66 [0.49]
Teq = 326 [15] K
Rp = 2.41 [7.76] Re
a = 0.1735 [0.0157] AU
Ag = 8481.13 [54594.20] [0.16 σ]
Teffp = 4834 [7779] K [0.58 σ]

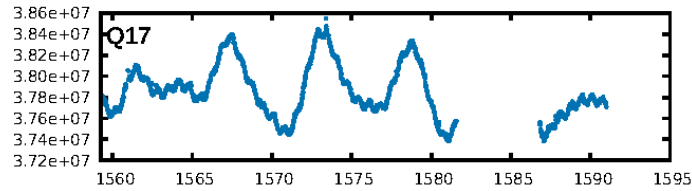
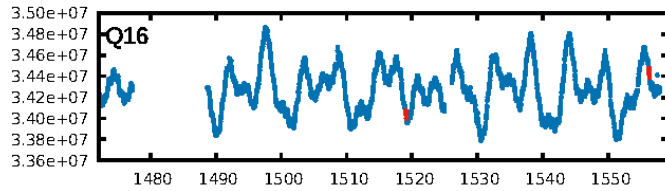
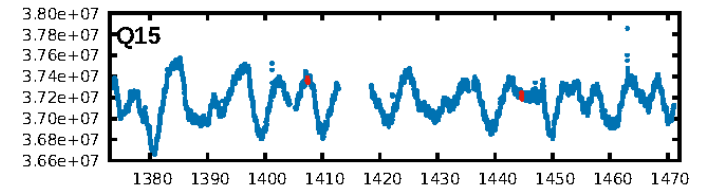
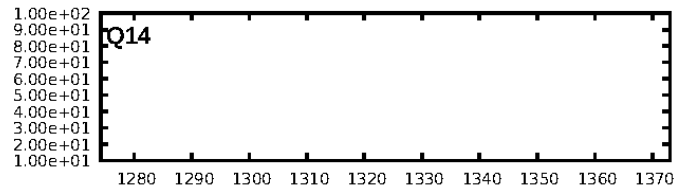
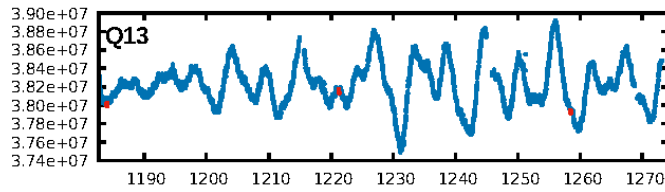
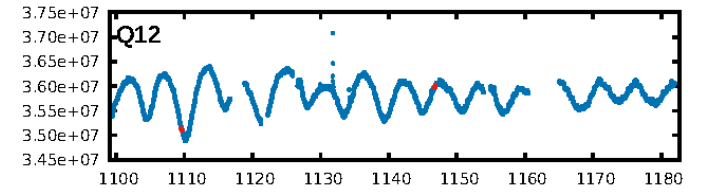
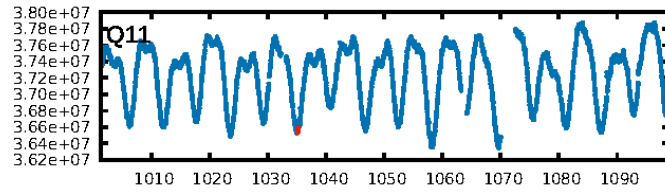
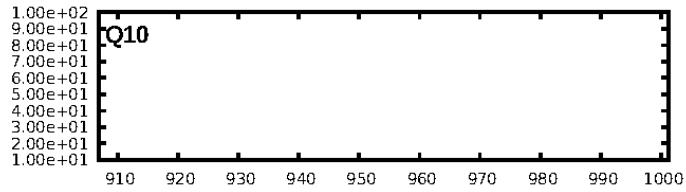
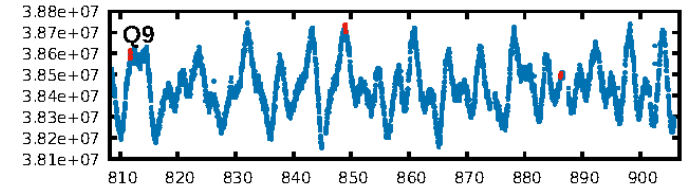
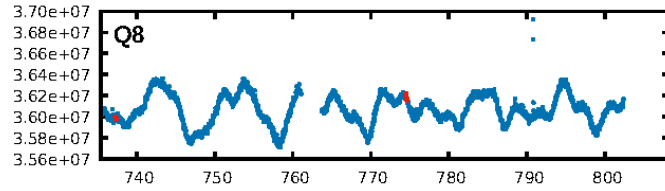
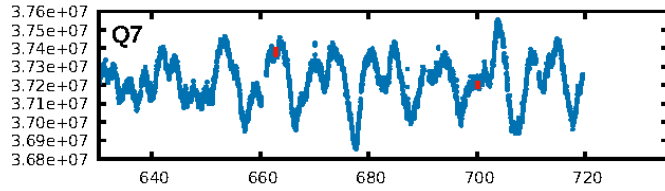
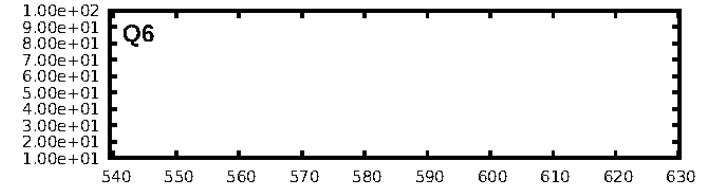
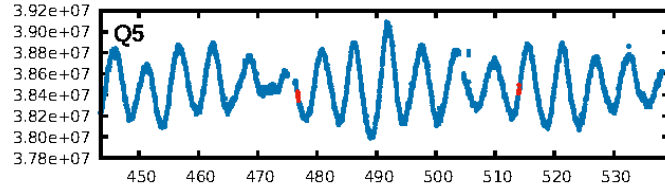
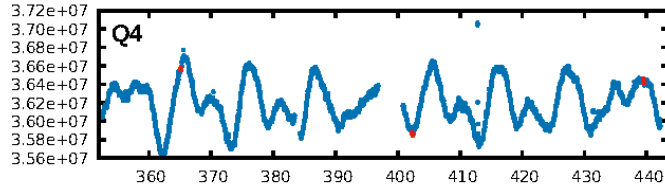
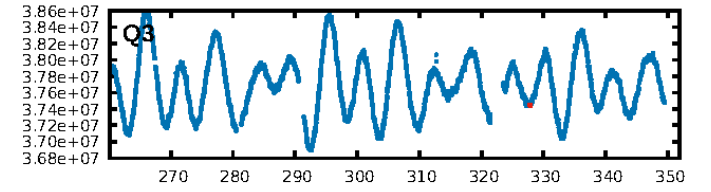
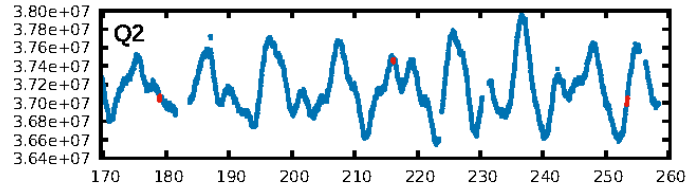
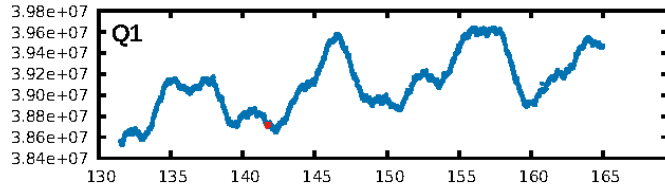
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [183.38 σ]
LongPeriod-sig: 100.0% [95.50 σ]
ModelChiSquare2-sig: 19.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.90e-24
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: -1.074
Centroid-sig: N/A
Centroid-so: 0.400 arcsec [2.14 σ]
OotOffset-rm: 0.396 arcsec [0.83 σ]
KicOffset-rm: 0.428 arcsec [0.84 σ]
OotOffset-st: 1/4/1/2 [8]
KicOffset-st: 1/4/1/2 [8]
DiffImageQuality-fgm: 0.50 [4/8]
DiffImageOverlap-fno: 0.00 [0/13]

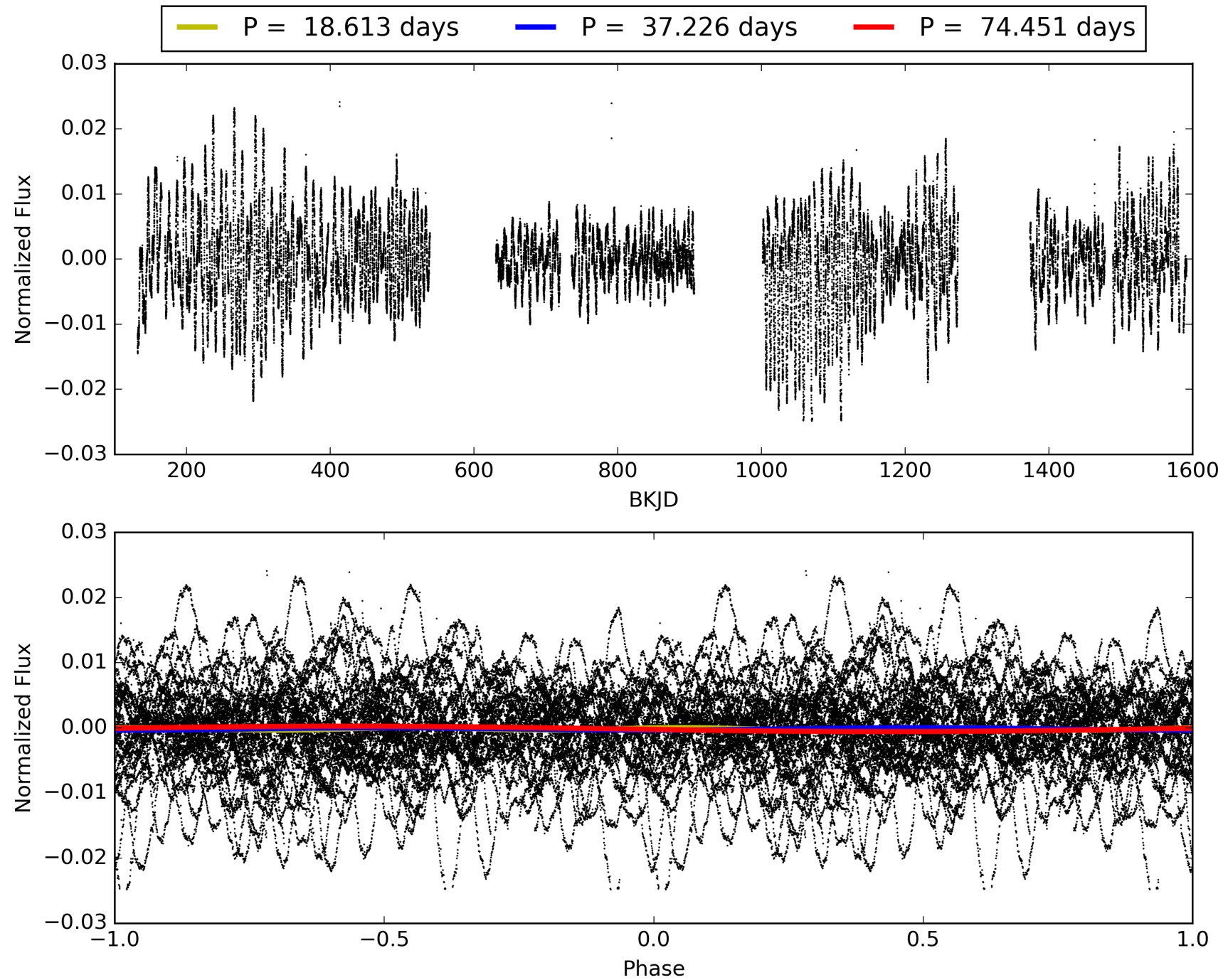
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:28:36 Z

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

TCE 005372048-03, PDC Light Curves

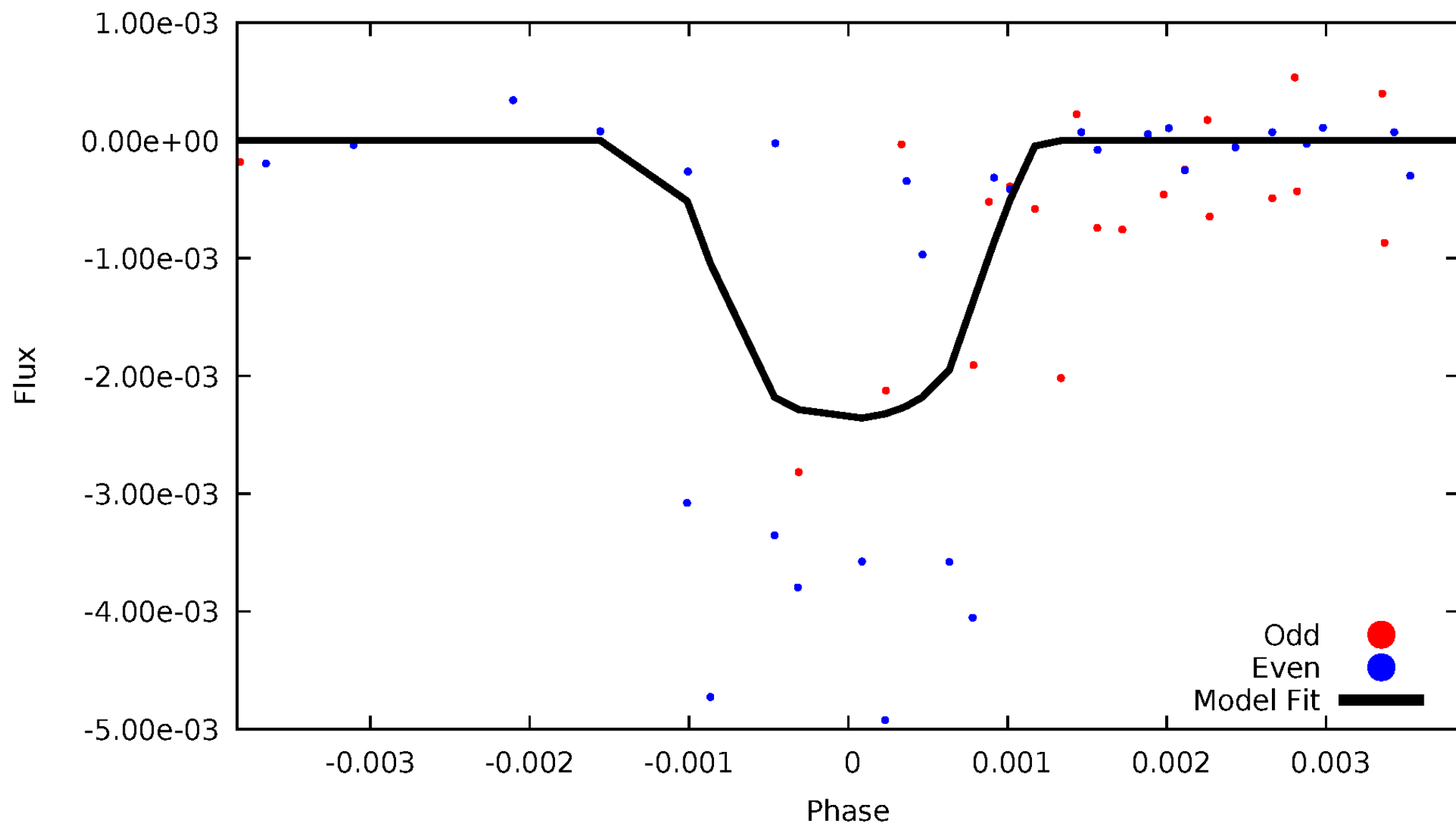


TCE 005372048-03



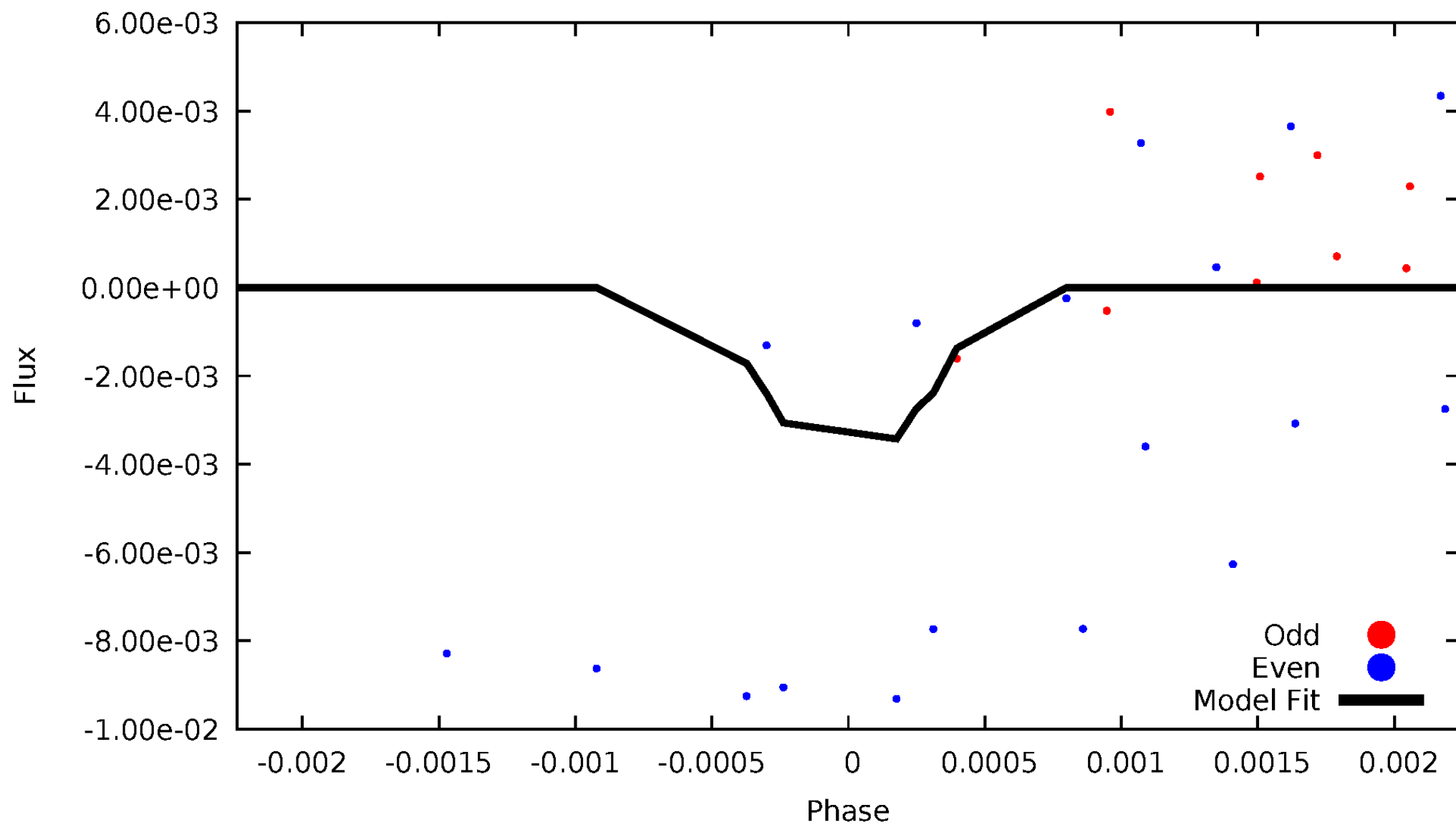
DV Odd/Even

TCE 005372048-03



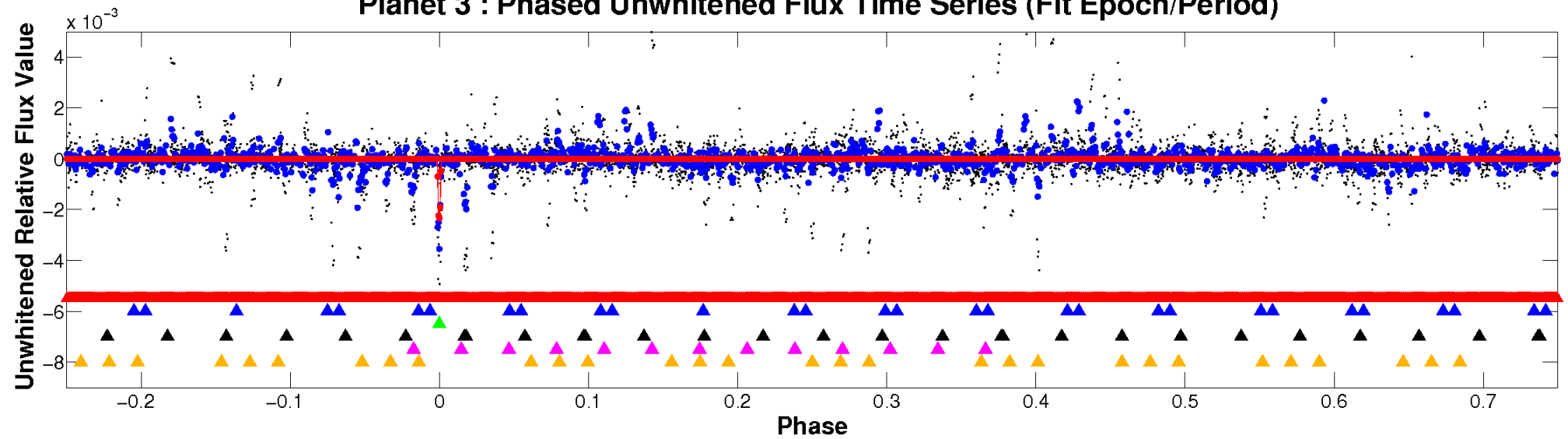
ALT Odd/Even

TCE 005372048-03

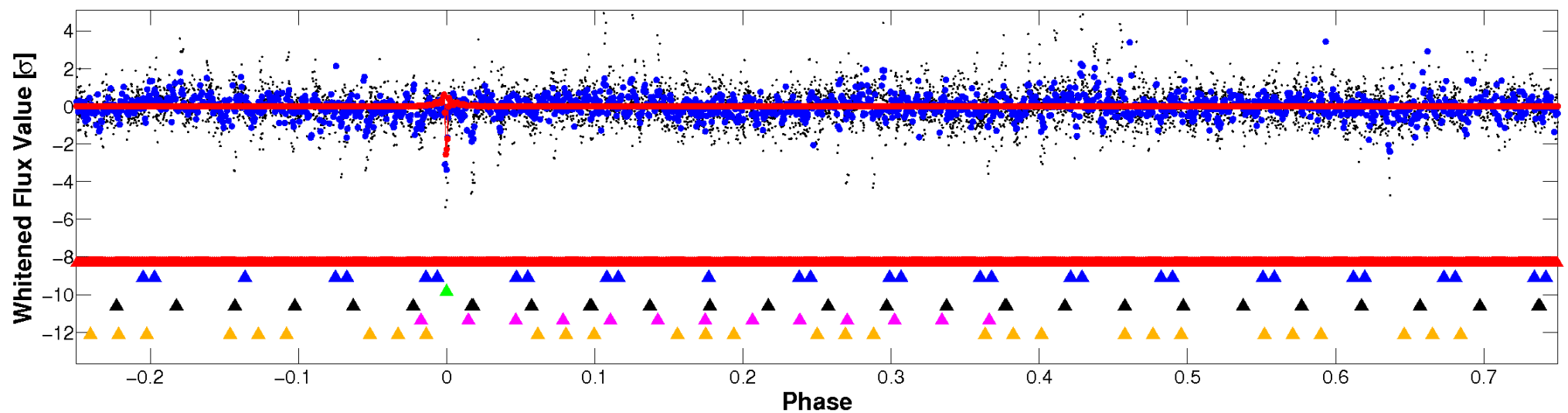


Non-Whitened Vs. Whitened Light Curve

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

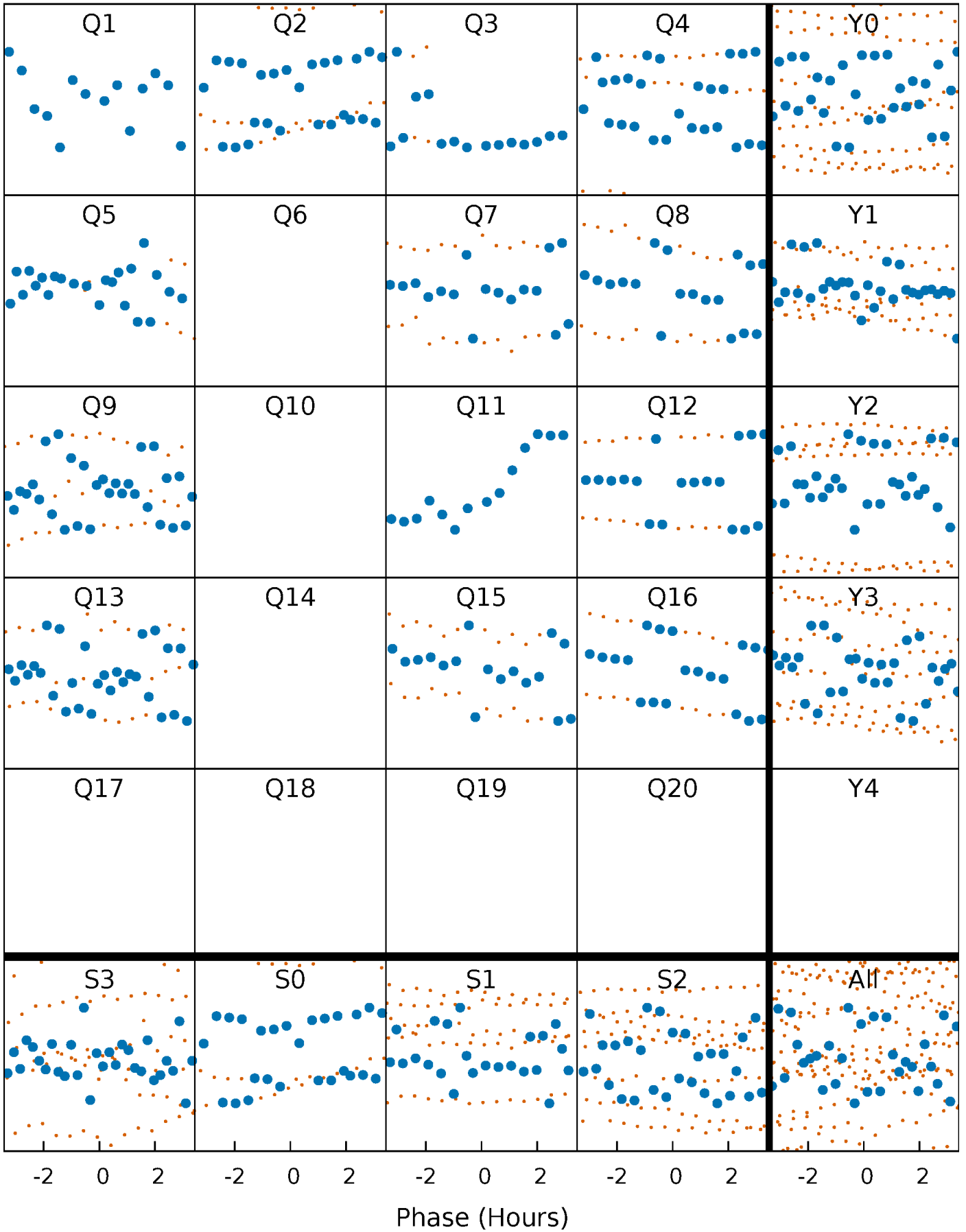


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



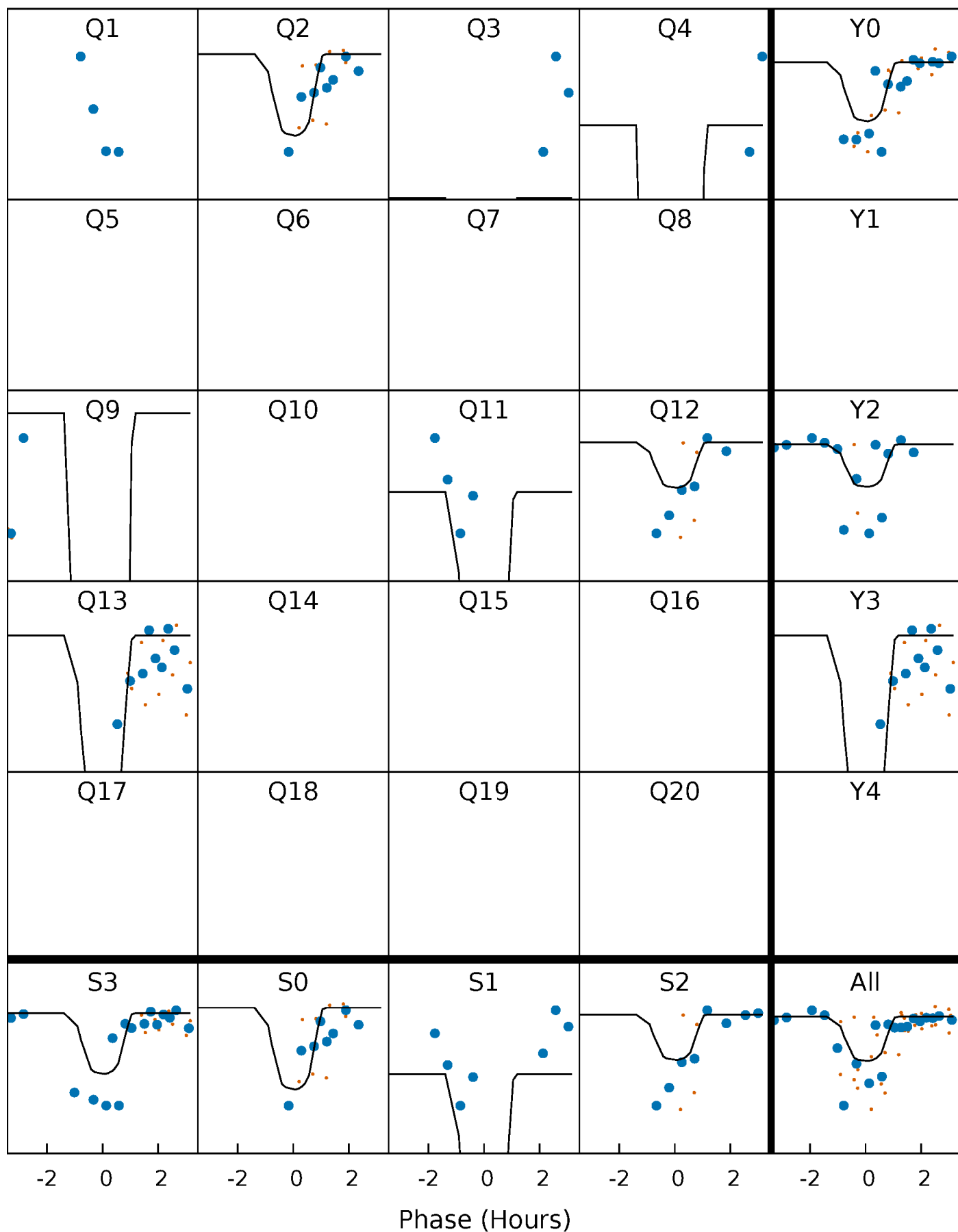
PDC Quarter-Phased Transit Curves

TCE 005372048-03 P= 37.225748 Days $T_0=141.726372$ (BKJD)



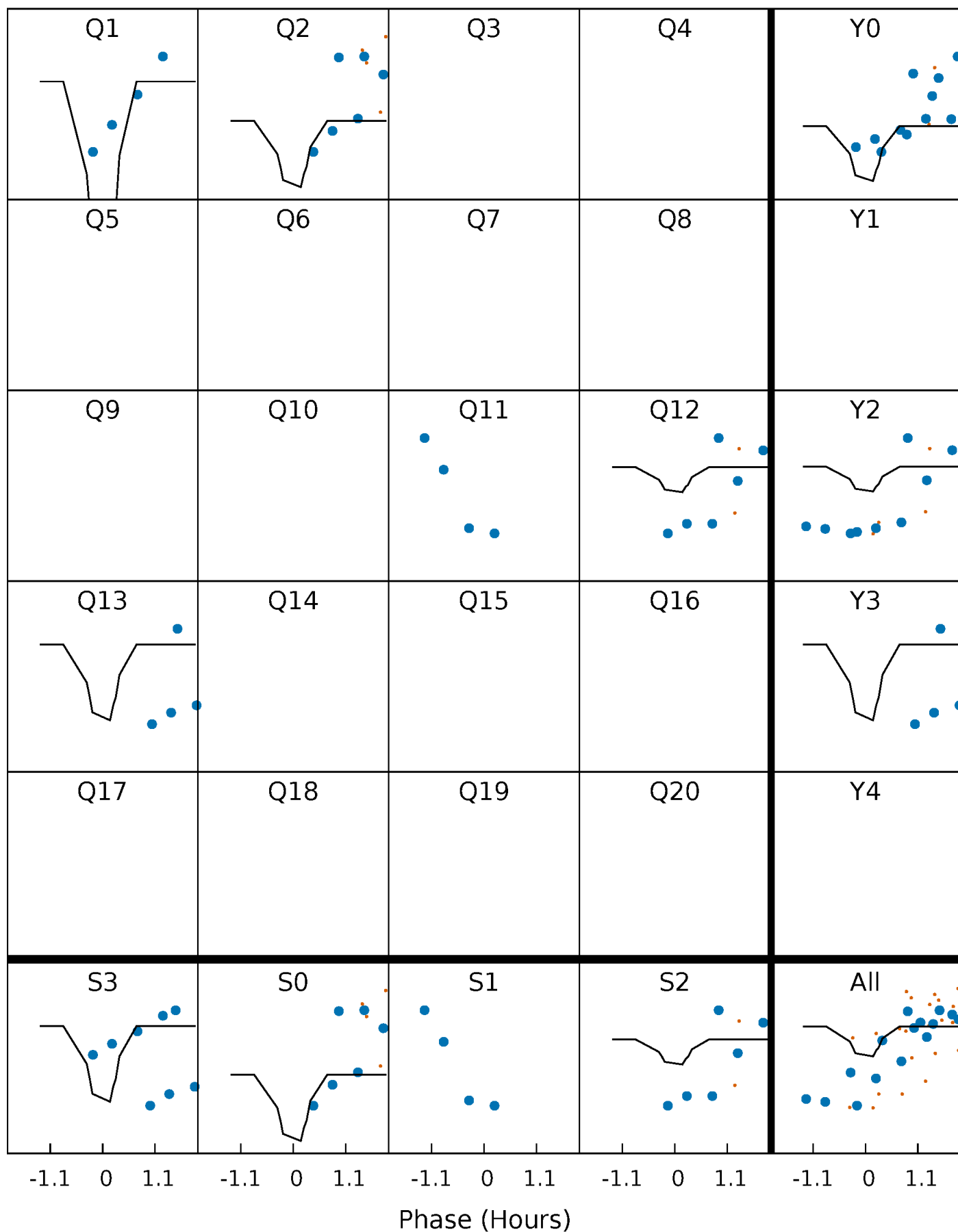
DV Quarter-Phased Transit Curves

TCE 005372048-03 P= 37.225748 Days $T_0=141.726372$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

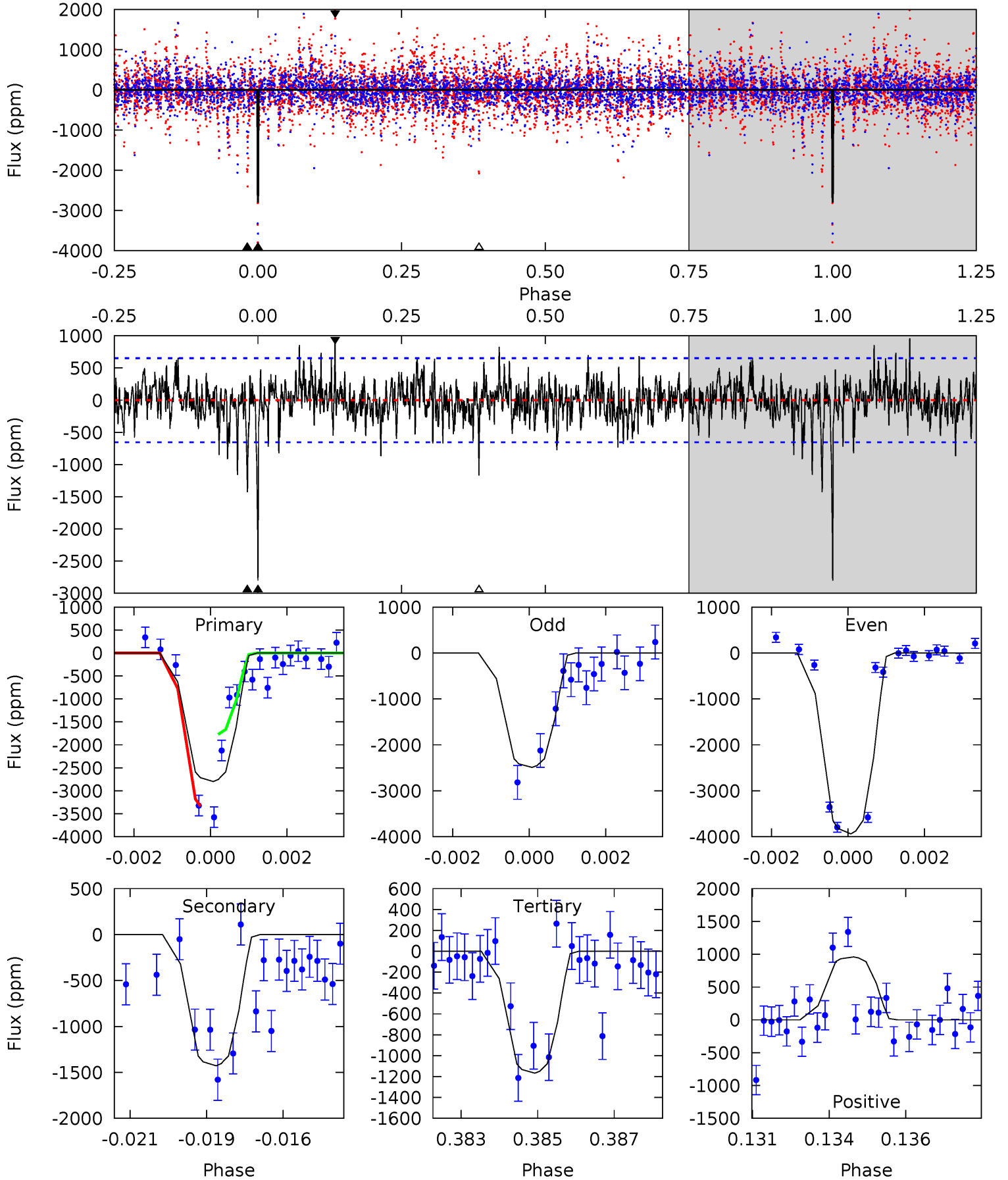
TCE 005372048-03 P= 37.225870 Days $T_0=141.699823$ (BKJD)



DV Model-Shift Uniqueness Test

005372048-03, P = 37.225748 Days, E = 104.500624 Days

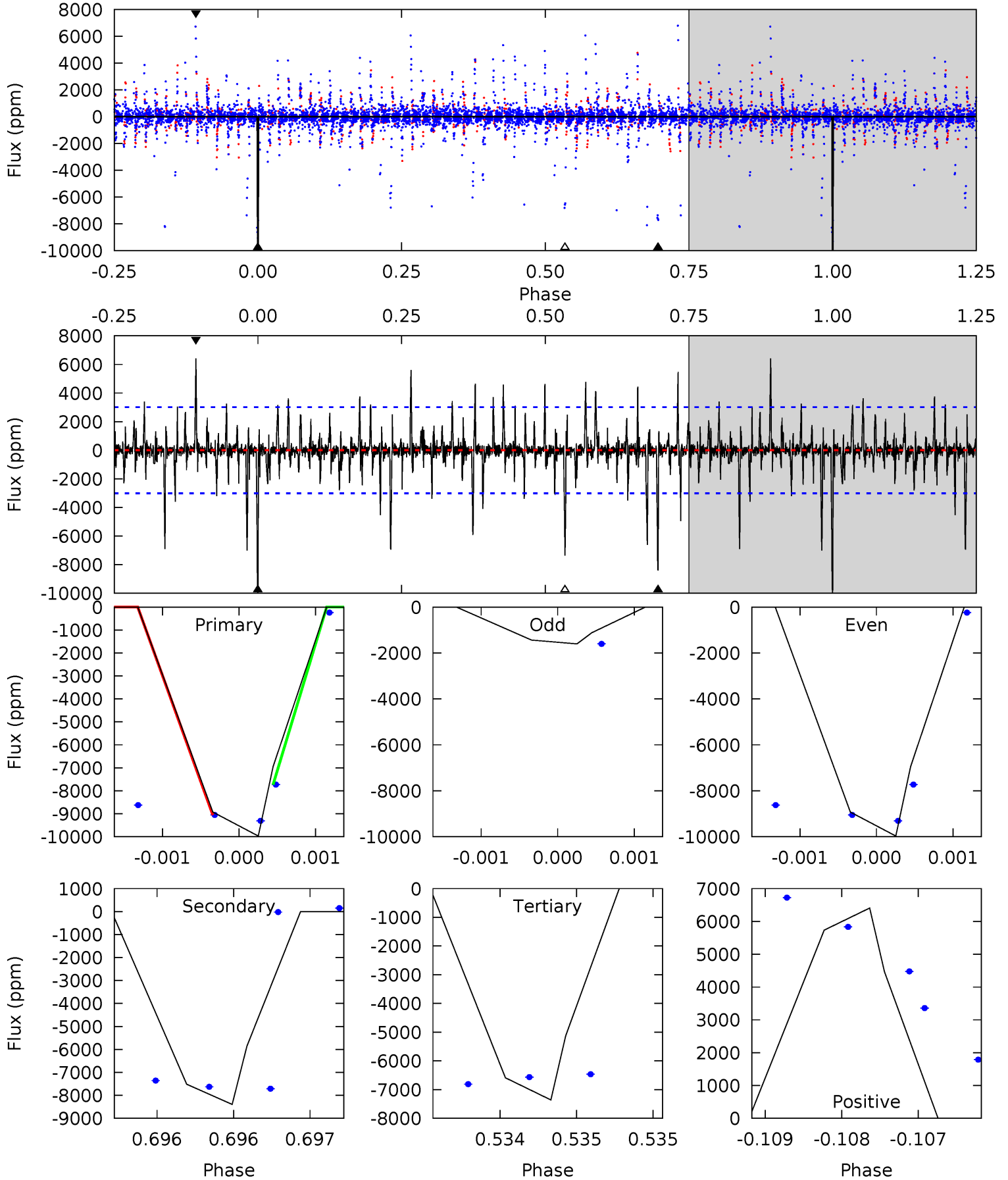
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.7	11.6	9.48	7.79	5.30	3.04	1.96	13.2	14.9	2.12	3.81	5.44	1.80	0.26	5.73



Alt Model-Shift Uniqueness Test

005372048-03, P = 37.225870 Days, E = 104.473953 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	15.4	13.5	11.7	5.52	3.39	1.51	4.78	6.52	1.90	3.64	7.18	0.73	0.39	0.99



Stellar Parameters For KIC 005372048

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4342^{+117}_{-143}	$4.738^{+0.070}_{-0.030}$	$-1.100^{+0.300}_{-0.350}$	$0.502^{+0.035}_{-0.055}$	$0.502^{+0.037}_{-0.037}$	$5.603^{+1.741}_{-0.761}$
	+3%/-3%	+1%/-1%	+27%/-32%	+7%/-11%	+7%/-7%	+31%/-14%
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 005372048-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1429 ± 123	$6.08^{+6.40}_{-4.06}$	452^{+14}_{-18}	3011^{+1369}_{-501}	622^{+4964}_{-468}
Alt.	-8397 ± 546	$7.04^{+5.87}_{-4.64}$	450^{+17}_{-19}	3797^{+2087}_{-657}	2787^{+21382}_{-1929}

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

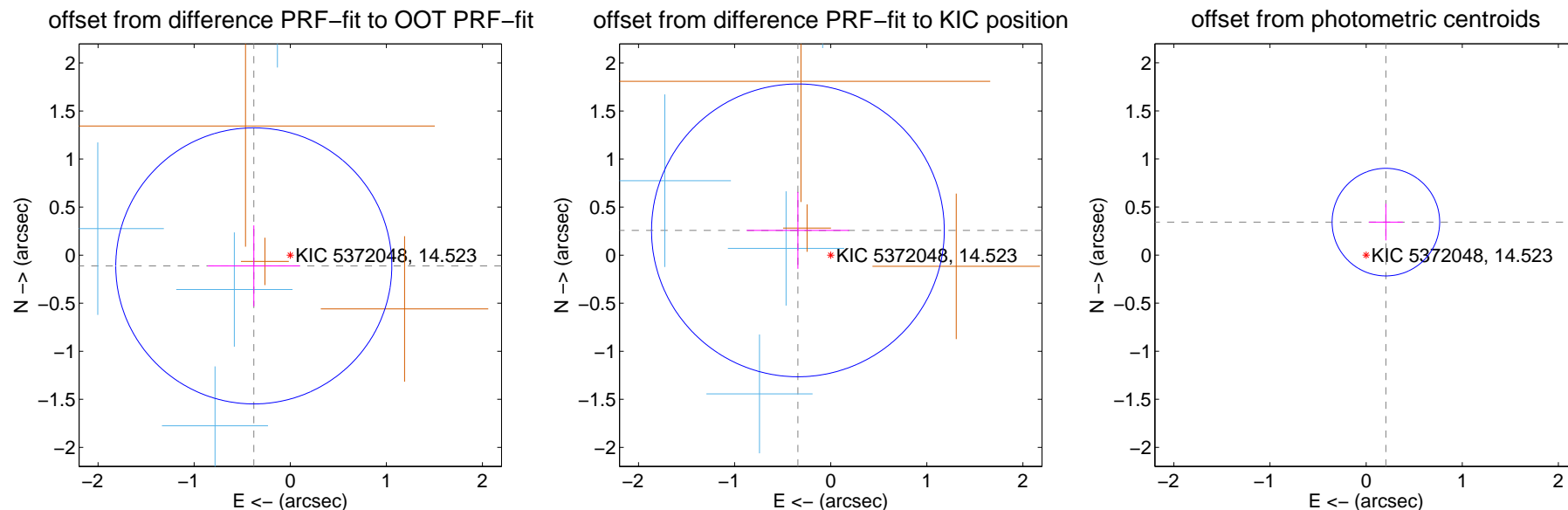
DV Centroid Data

Supplemental centroid analysis for 005372048-03. Kepler magnitude: 14.52. Transit SNR 6.12

There are 4 quarters with good PRF difference image offsets

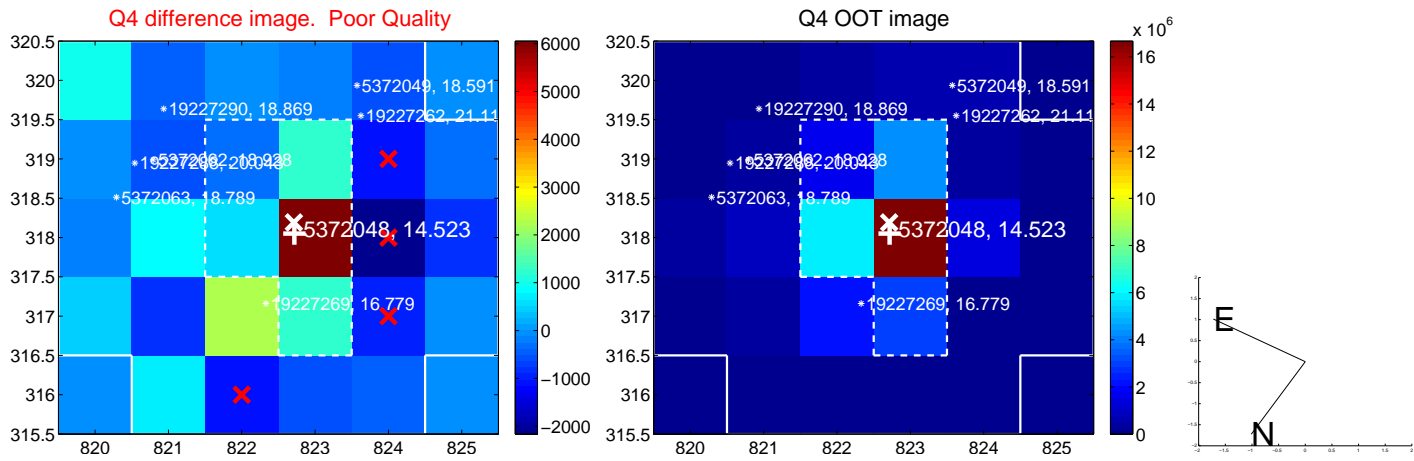
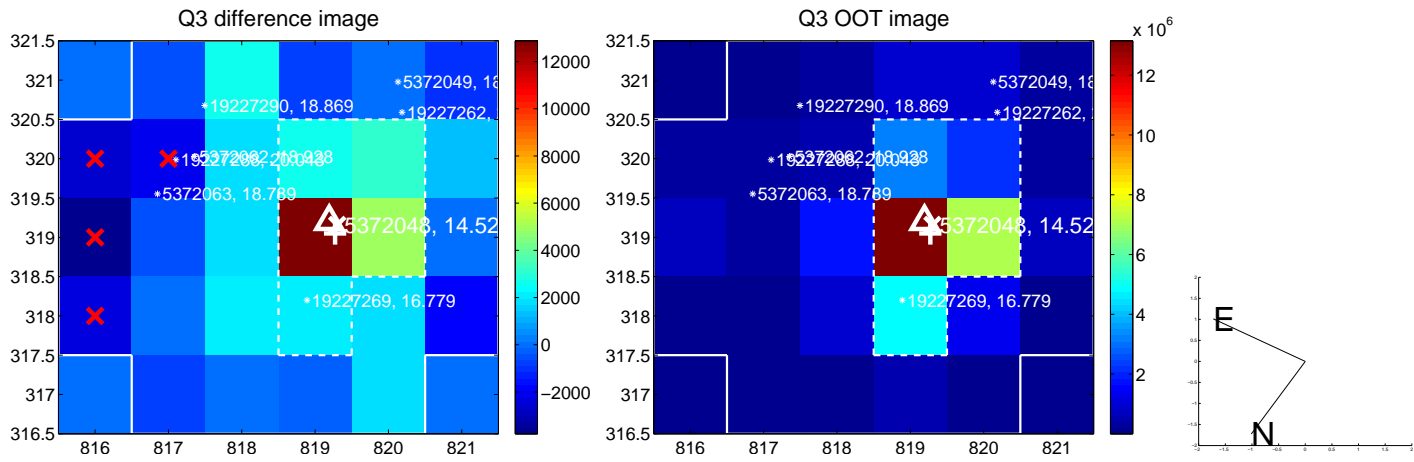
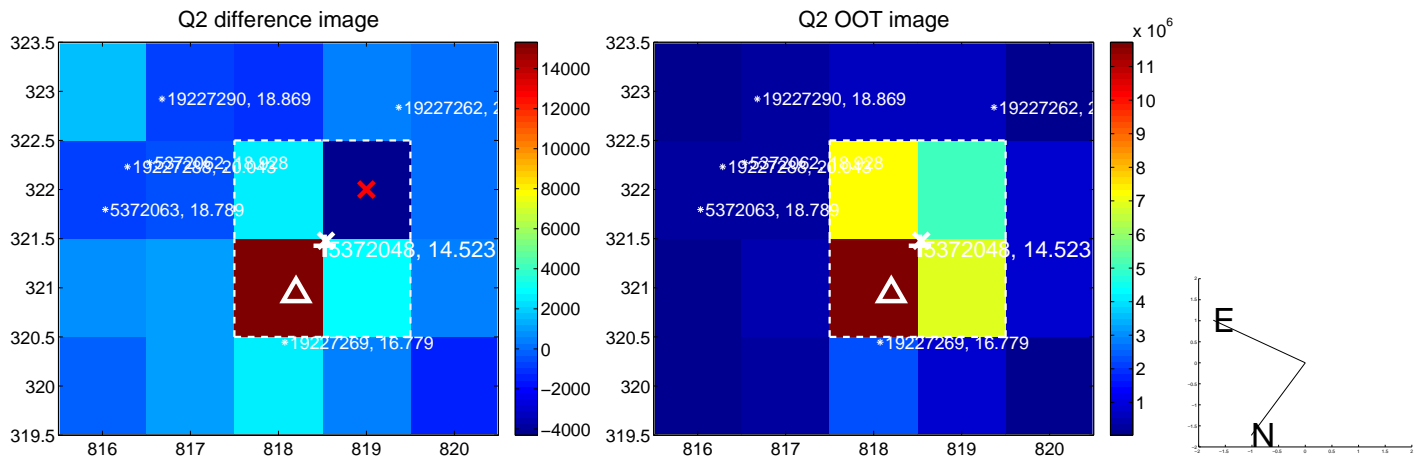
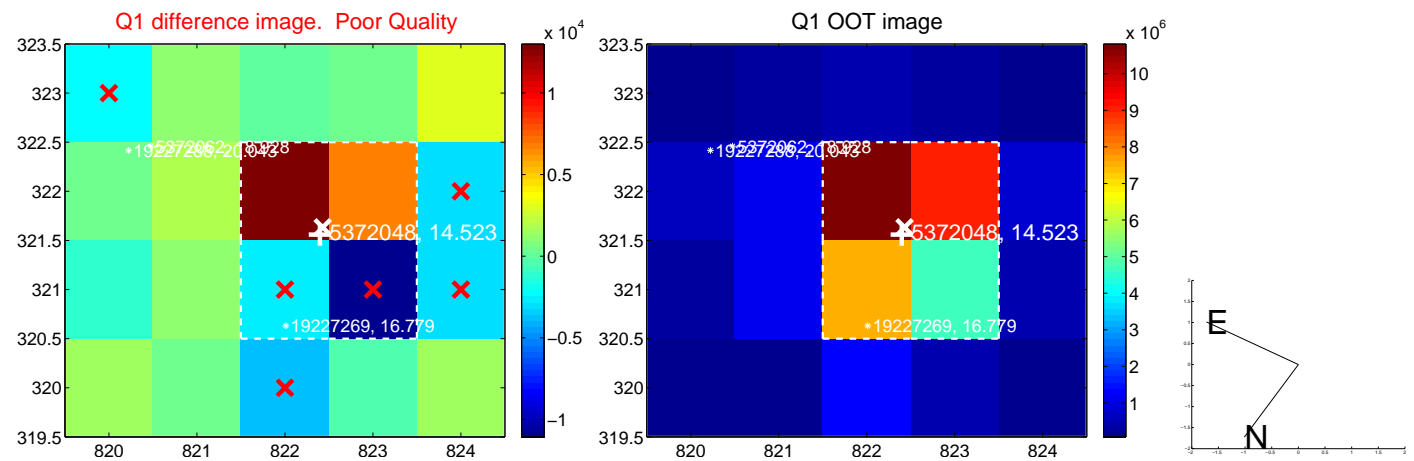
The direct PRF centroid is offset from the target star catalog position by about 0.46 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.396 ± 0.479	0.83	0.380 ± 0.479	-0.112 ± 0.421
PRF-fit source offset from KIC position	0.428 ± 0.508	0.84	0.341 ± 0.533	0.258 ± 0.400
photometric centroid source offset	0.40 ± 0.19	2.14	-0.21 ± 0.18	0.34 ± 0.19

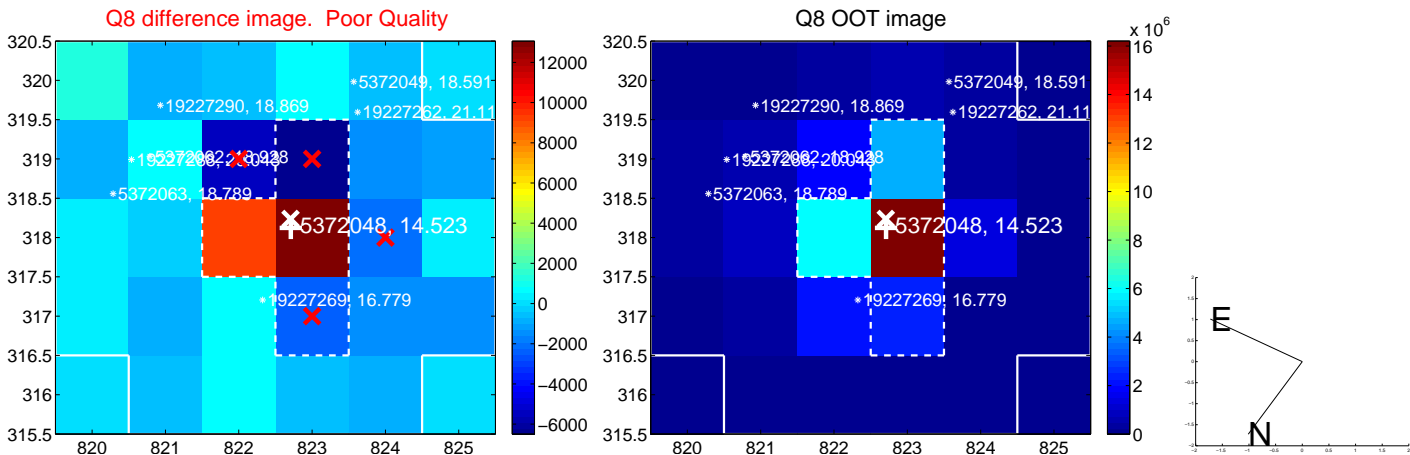
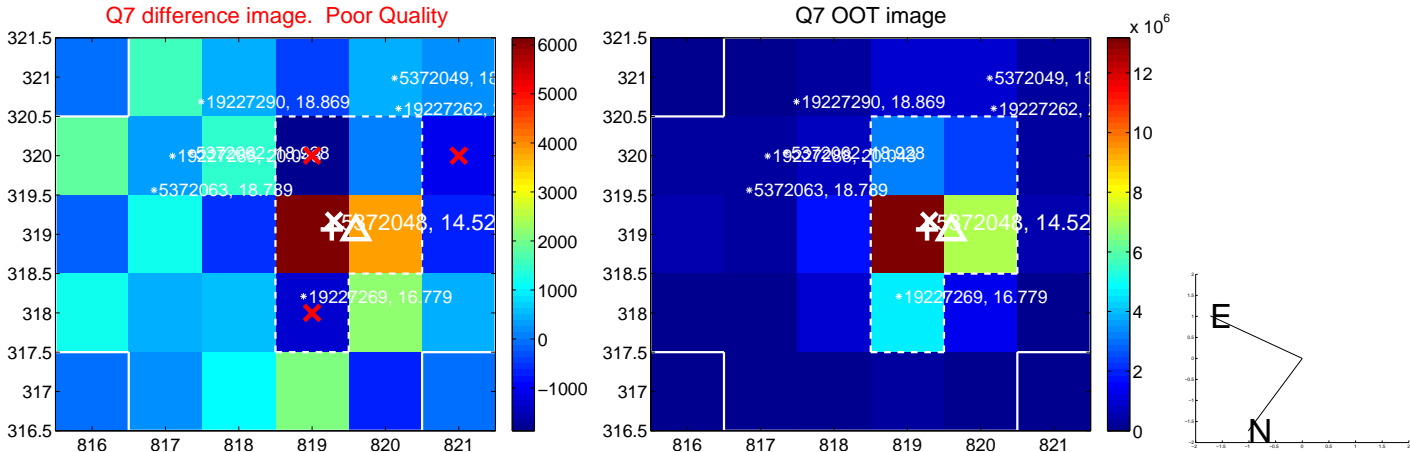
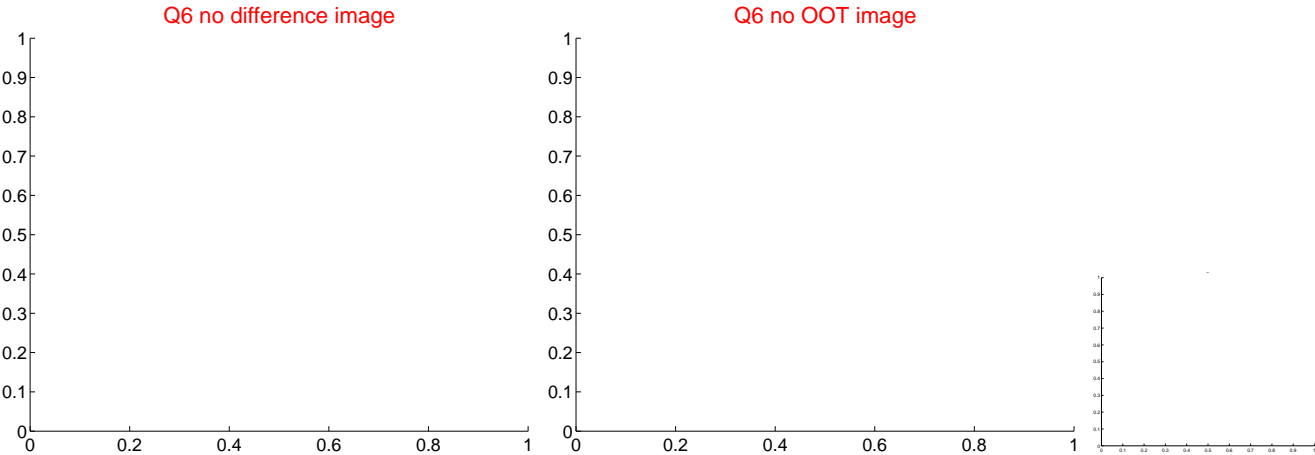
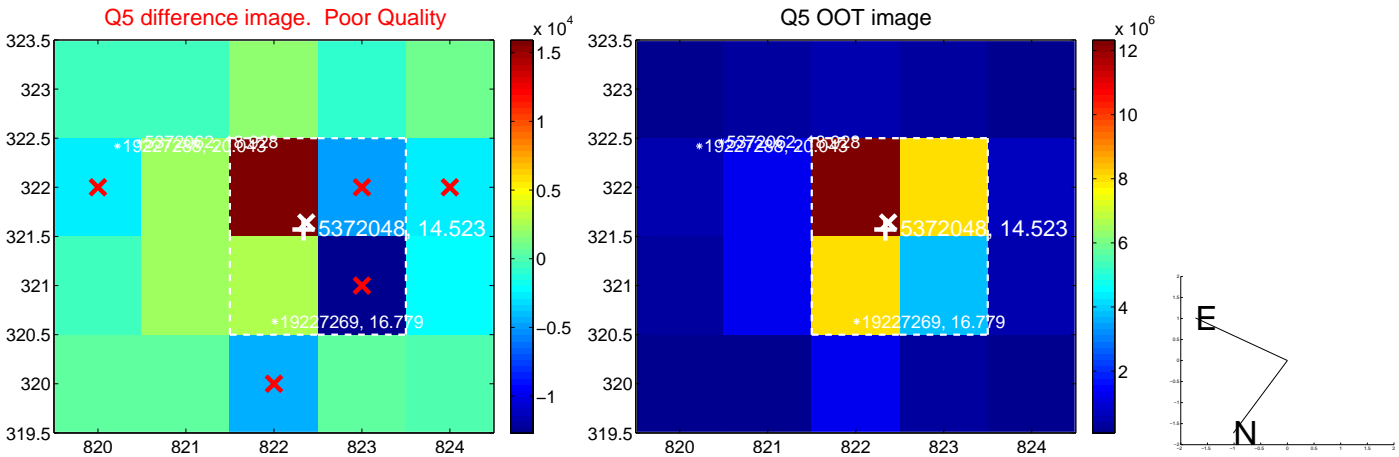


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

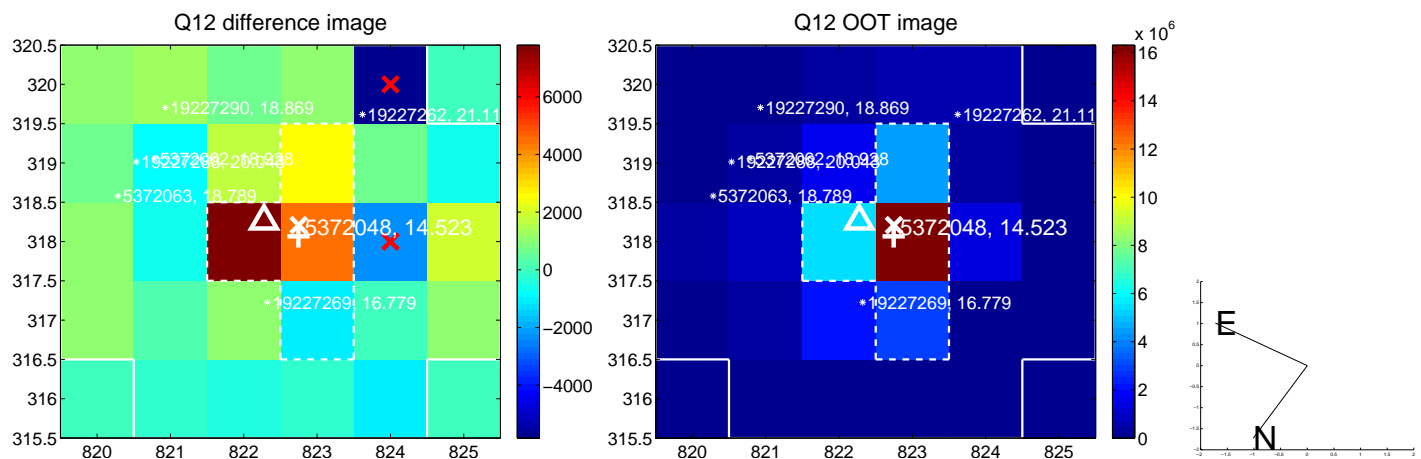
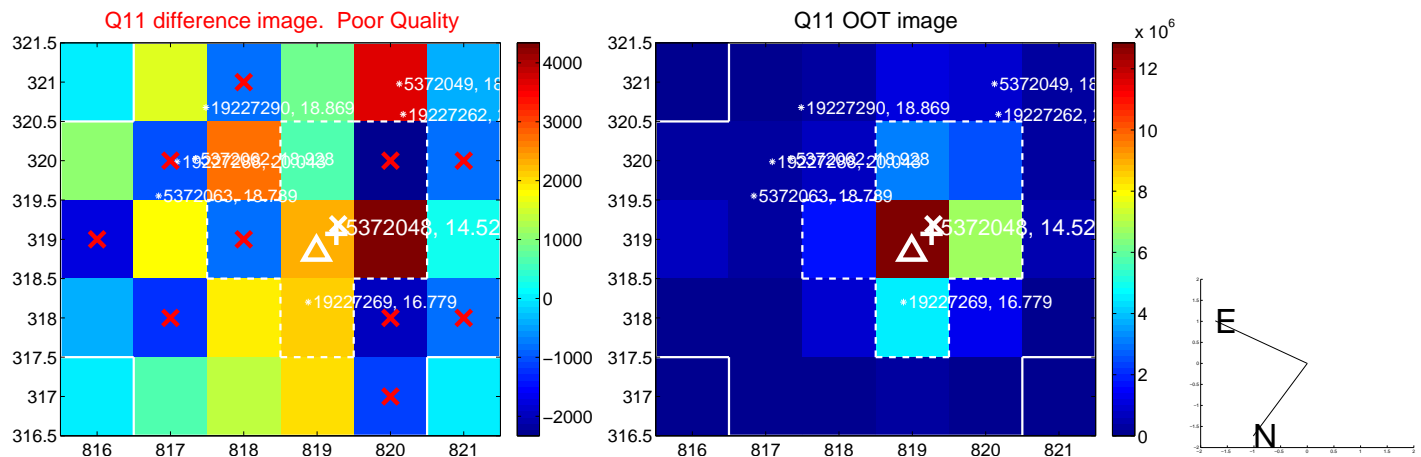
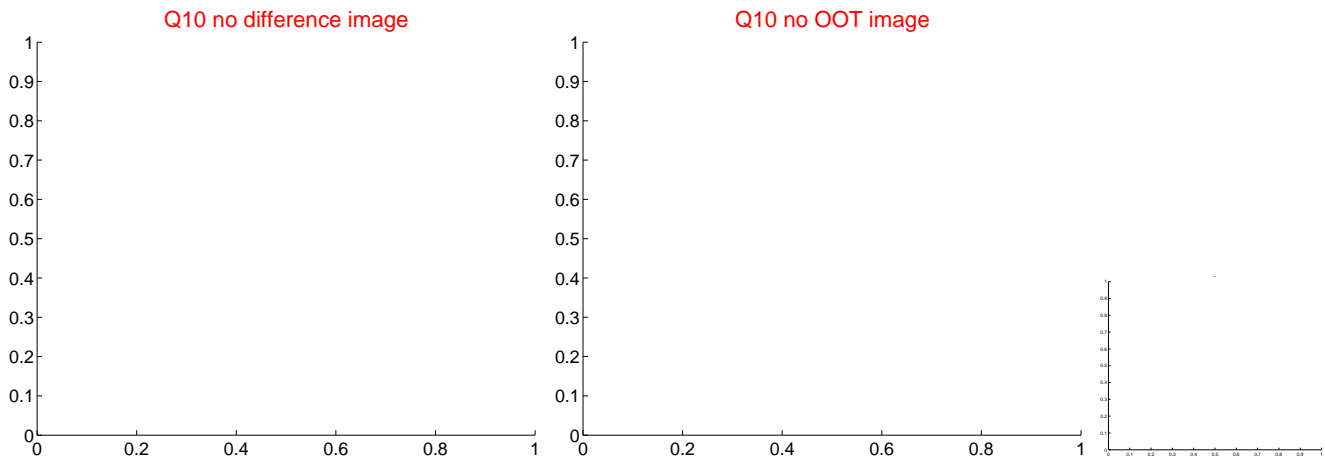
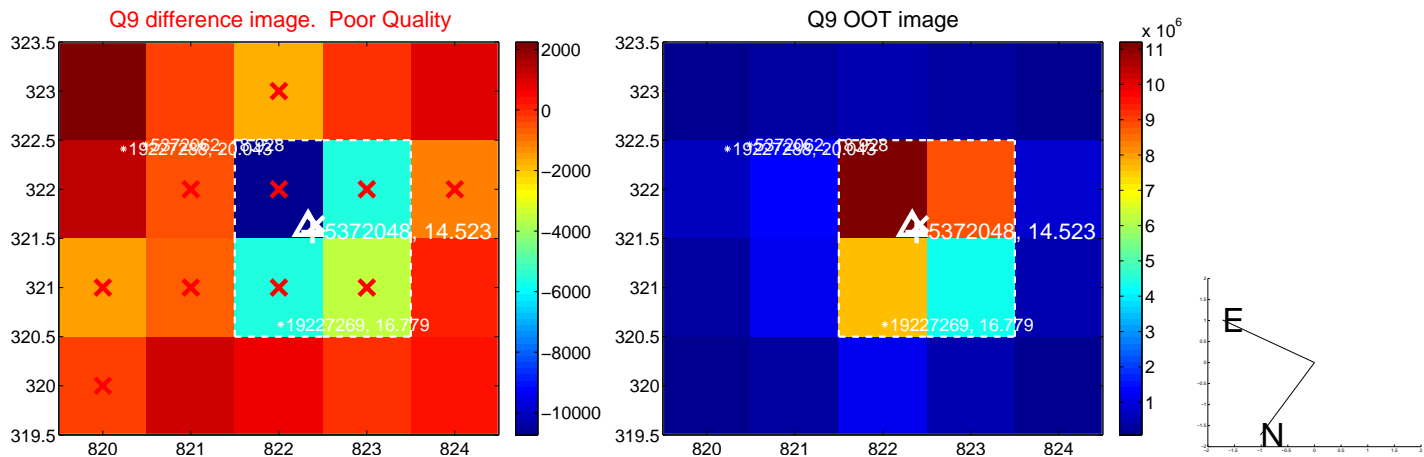
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



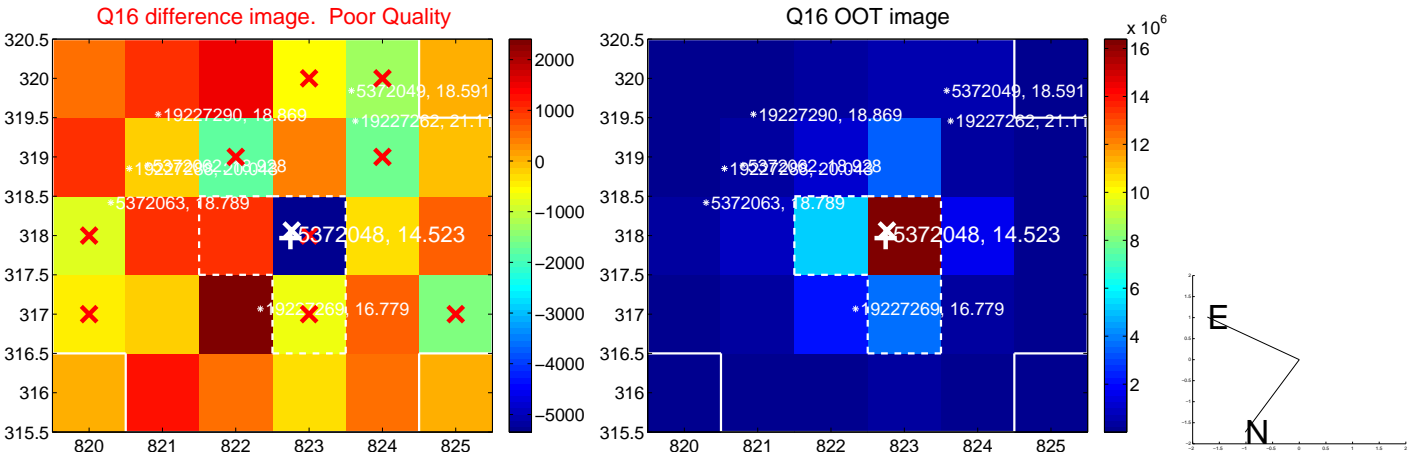
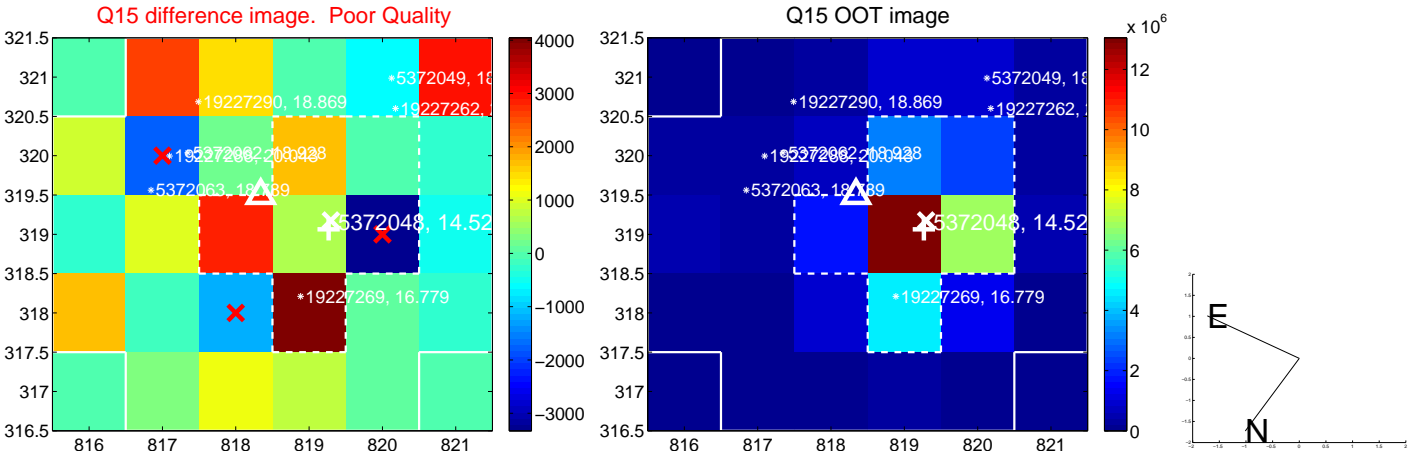
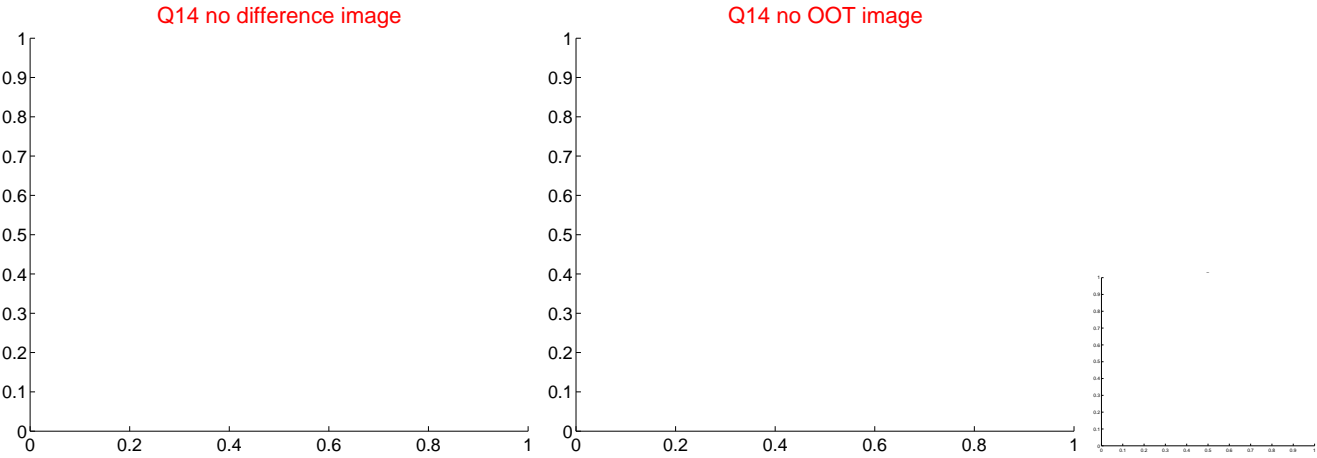
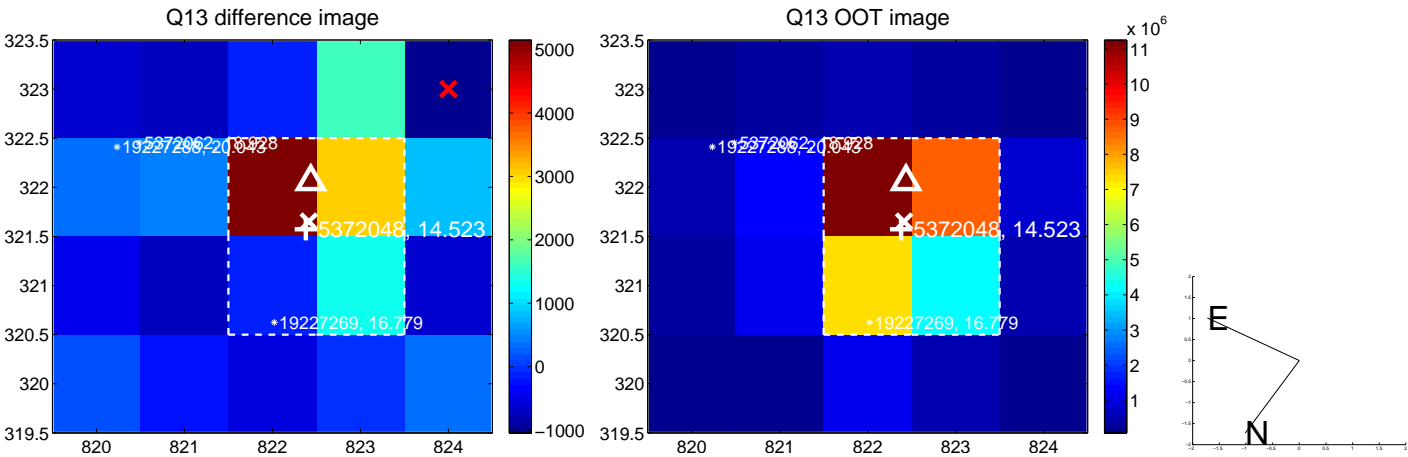
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



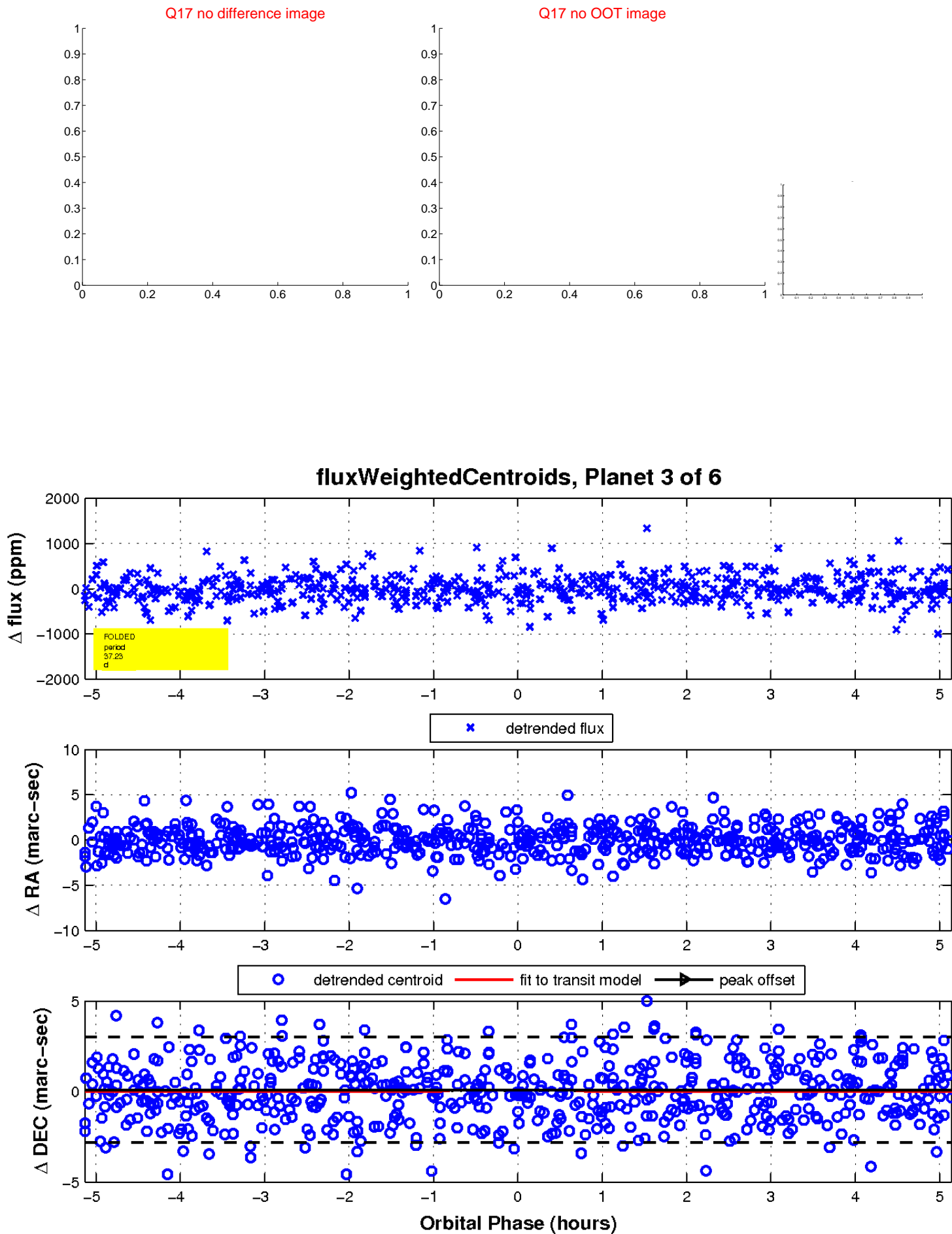
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

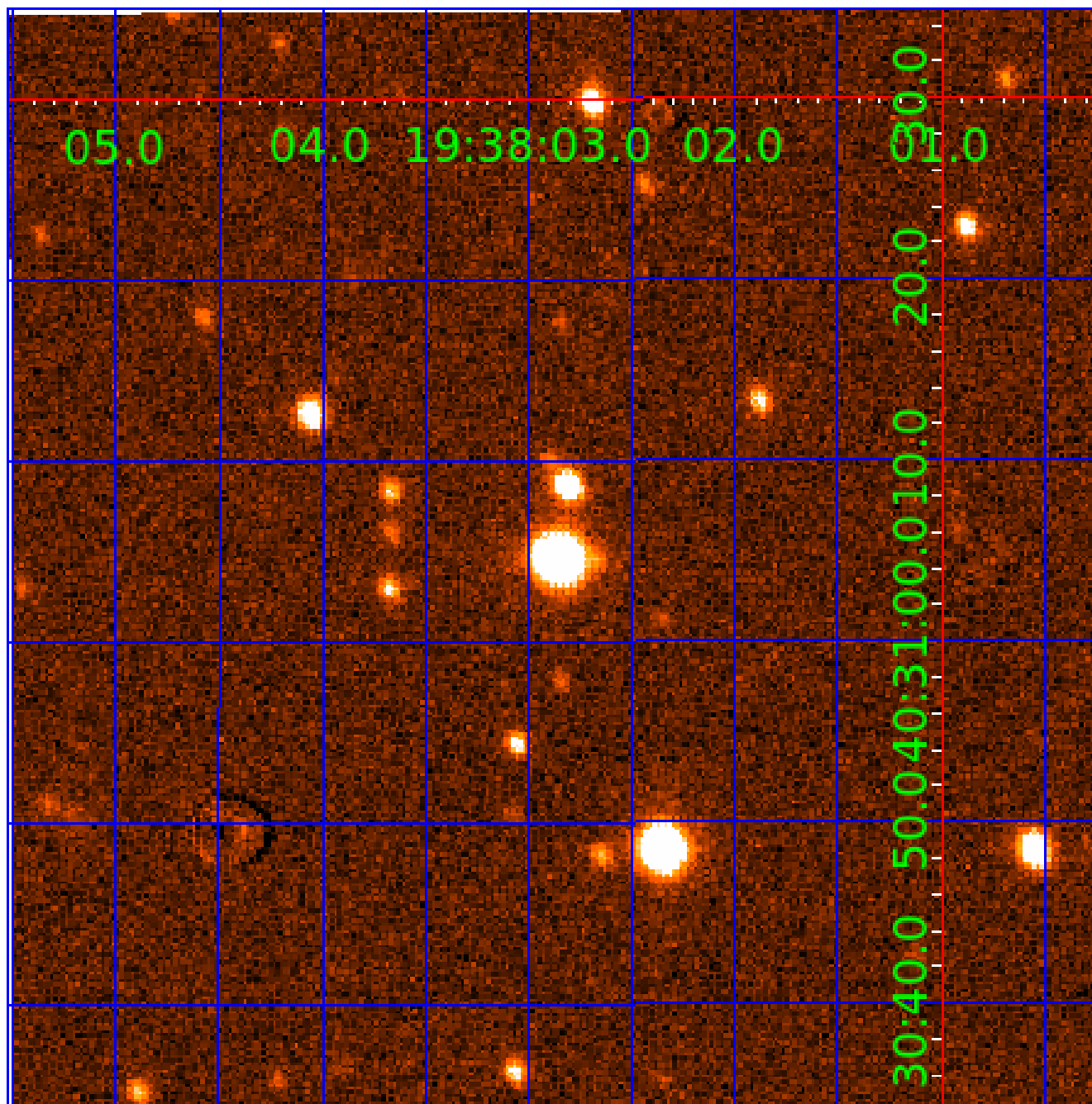


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005372048

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})
005372048-01	OBS	No	0.665211	132.074553	8.2	4.467	10.6	1.7	0.50	4342	0.15	570.40
005372048-02	OBS	No	48.876668	159.677701	2170.0	2.074	11.5	7.5	0.50	4342	2.73	1.85
005372048-03	OBS	No	37.225748	141.726372	2362.3	1.714	11.3	6.1	0.50	4342	2.41	2.67
005372048-04	OBS	No	50.625582	142.391923	2668.6	2.224	12.4	8.0	0.50	4342	2.70	1.77
005372048-05	OBS	No	112.866907	215.535484	3603.9	3.590	10.3	8.3	0.50	4342	3.25	0.61
005372048-06	OBS	No	48.464273	165.785812	2763.5	2.245	9.6	8.0	0.50	4342	2.72	1.88

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005372048-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
005372048-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
005372048-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—CENT_KIC_POS
005372048-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT
005372048-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES
005372048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_ALT—CENT_KIC_POS

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

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

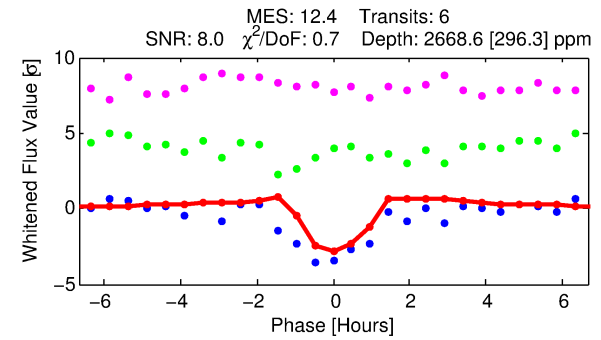
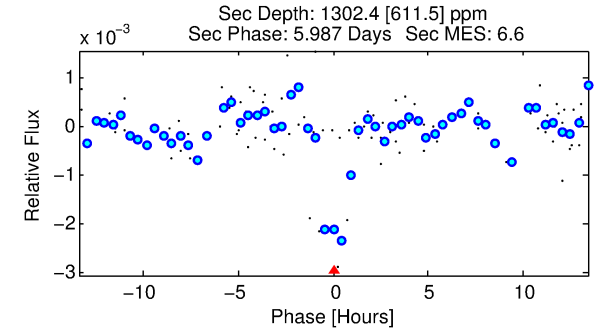
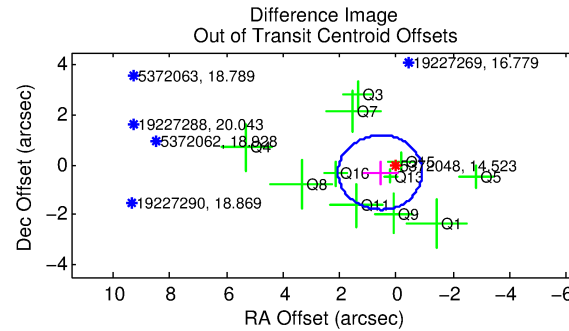
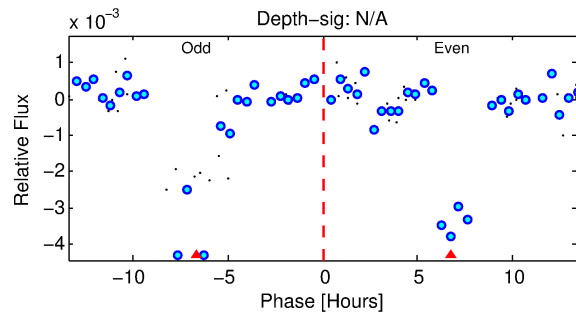
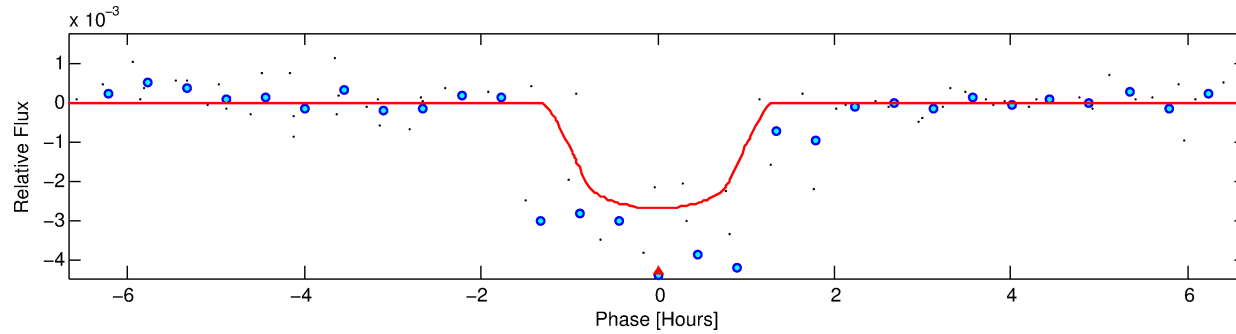
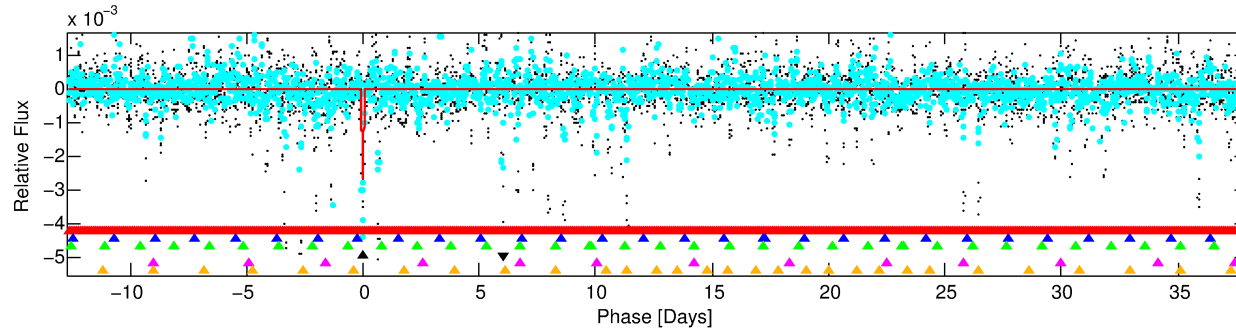
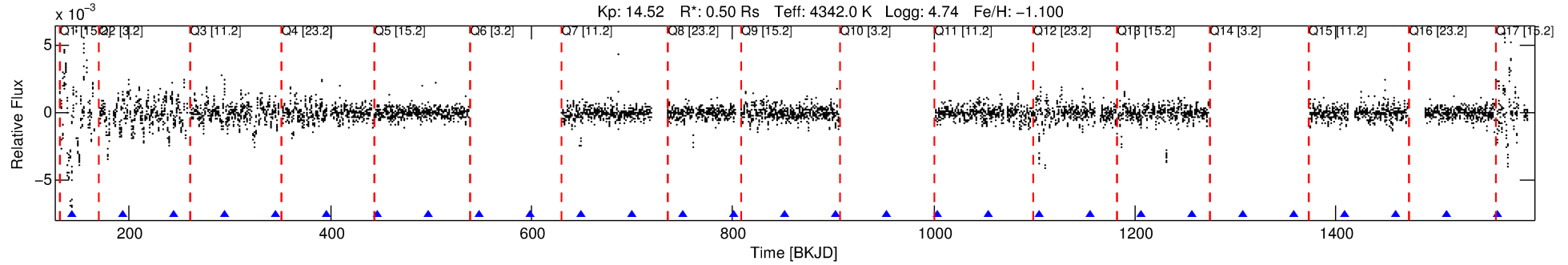
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005372048-04

No Significant Match Found

DV One-Page Summary

KIC: 5372048 Candidate: 4 of 6 Period: 50.626 d



DV Fit Results:

Period = 50.62558 [0.00044] d
Epoch = 142.3919 [0.0062] BKJD
Rp/R* = 0.0493 [0.0483]
a/R* = 150.06 [604.52]
b = 0.60 [4.38]
Seff = 1.77 [0.33]
Teq = 294 [14] K
Rp = 2.70 [2.66] Re
a = 0.2130 [0.0193] AU
Ag = 4453.98 [8981.84] [0.50σ]
Teffp = 3714 [1873] K [1.83σ]

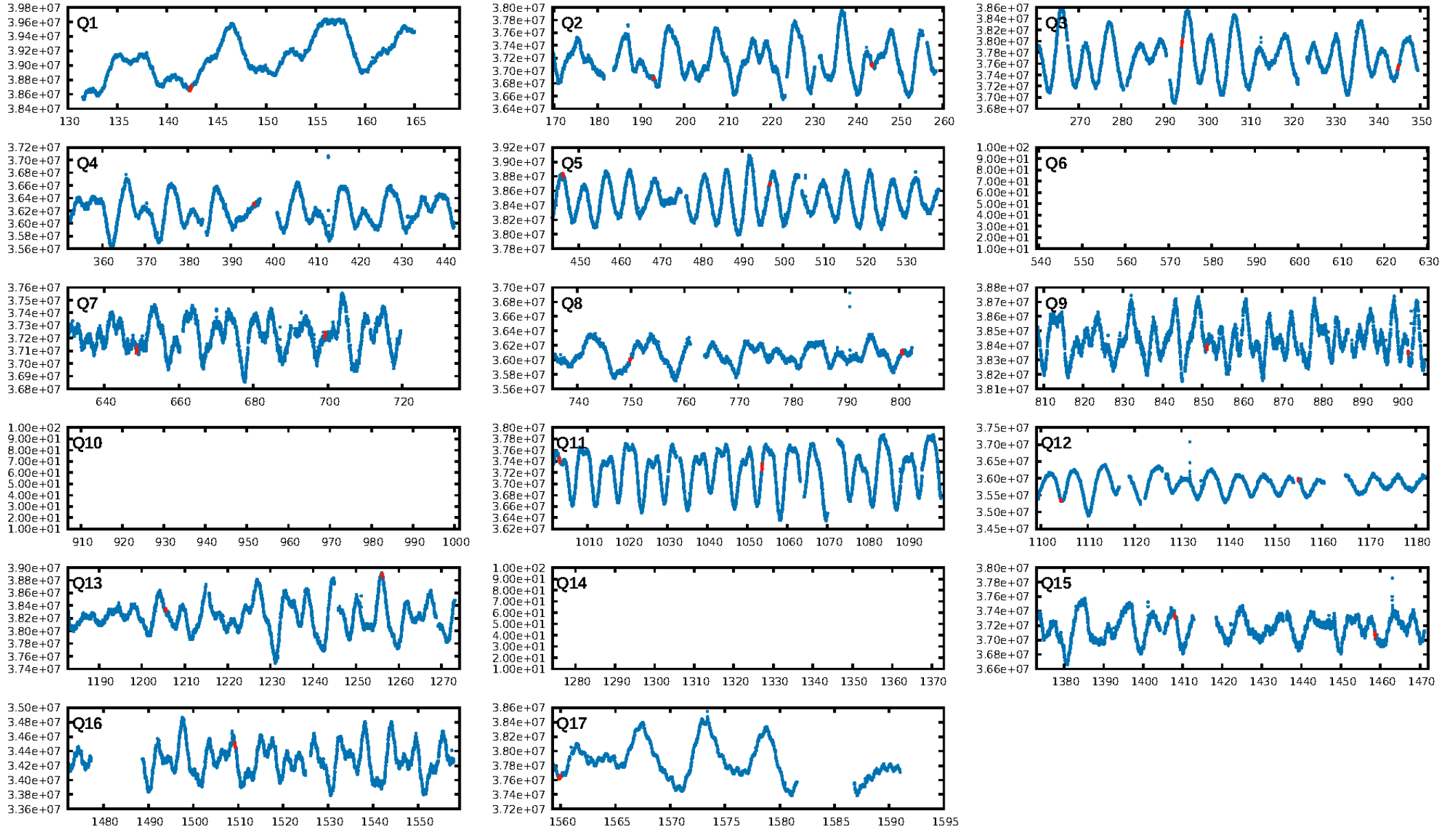
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [13.80σ]
LongPeriod-sig: 100.0% [353.75σ]
ModelChiSquare2-sig: 12.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.36e-18
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.6184
Centroid-sig: N/A
Centroid-so: 0.347 arcsec [2.10σ]
OotOffset-rm: 0.651 arcsec [1.31σ]
KicOffset-rm: 0.497 arcsec [0.86σ]
OotOffset-st: 0/4/3/4 [11]
KicOffset-st: 0/4/3/4 [11]
DiffImageQuality-fgm: 0.36 [4/11]
DiffImageOverlap-fno: 0.00 [0/12]

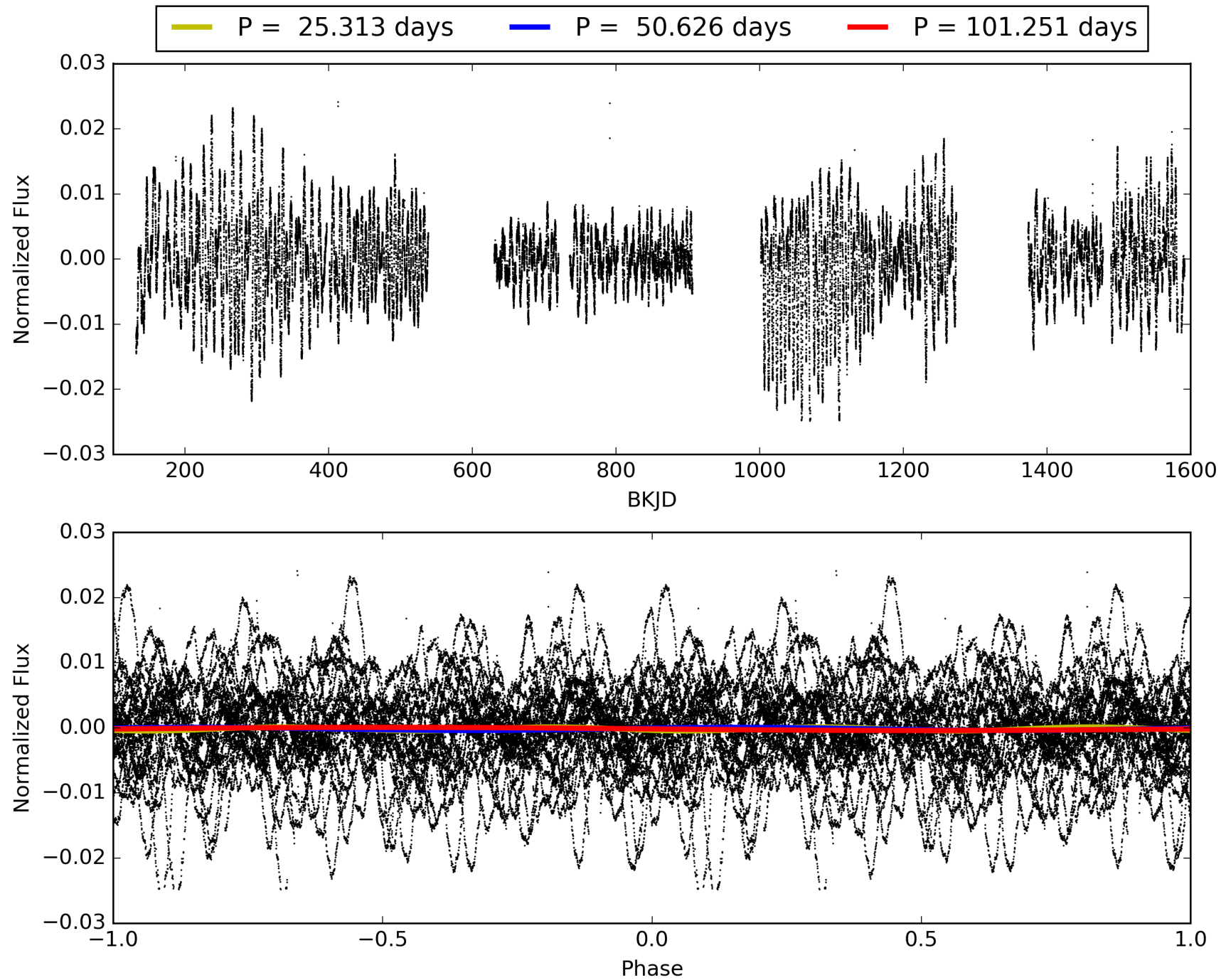
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:28:39 Z

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

TCE 005372048-04, PDC Light Curves

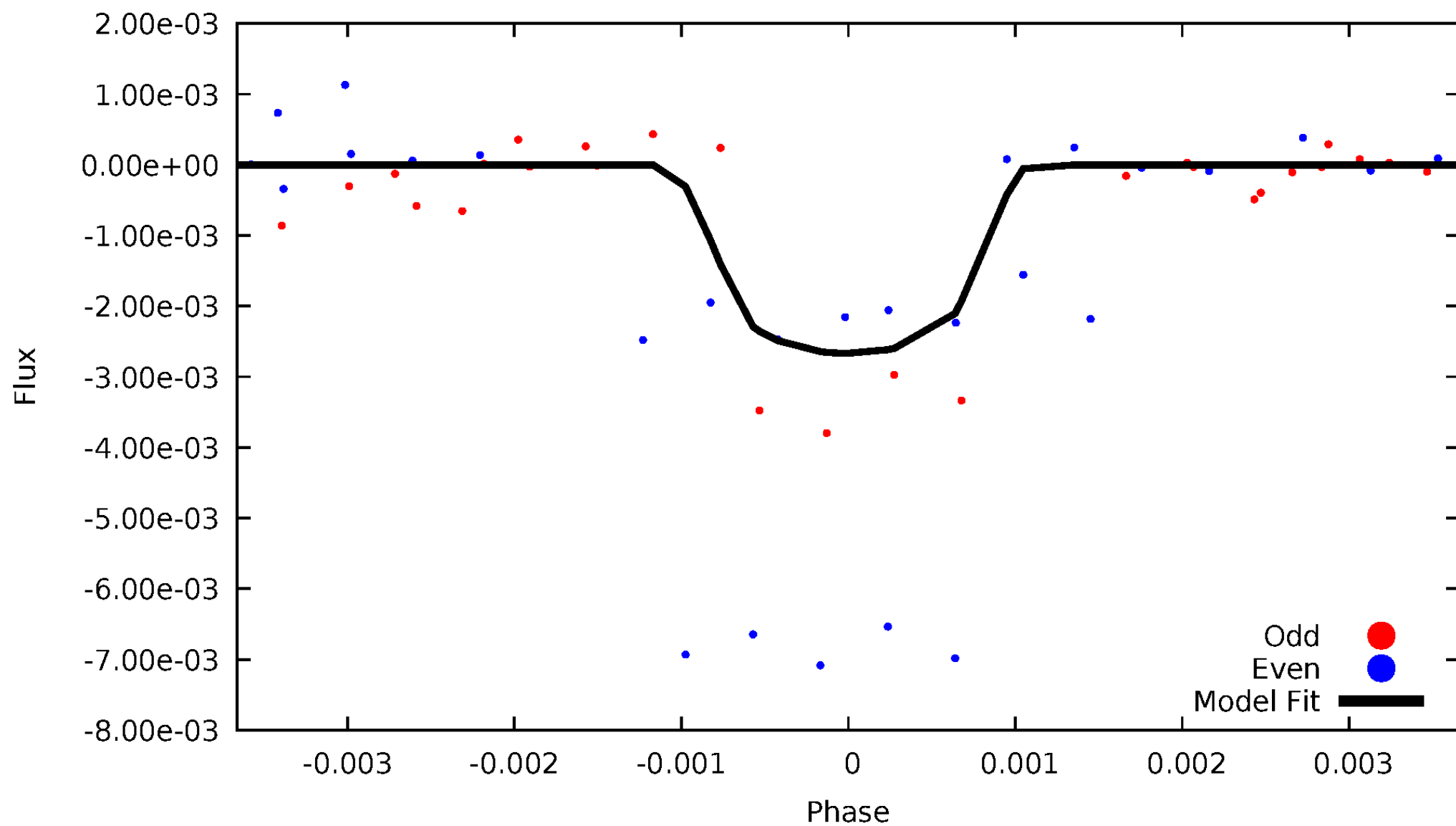


TCE 005372048-04



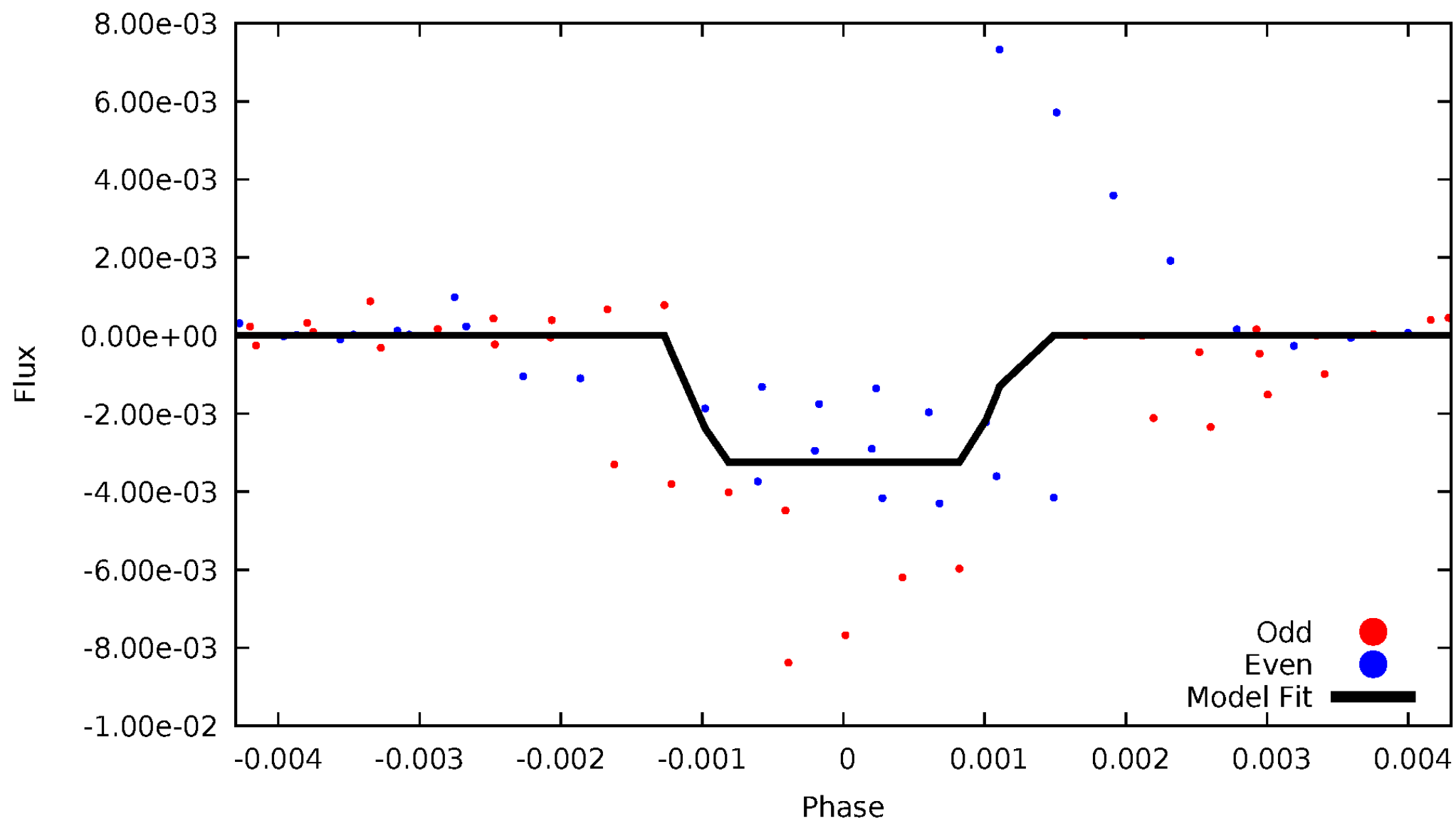
DV Odd/Even

TCE 005372048-04



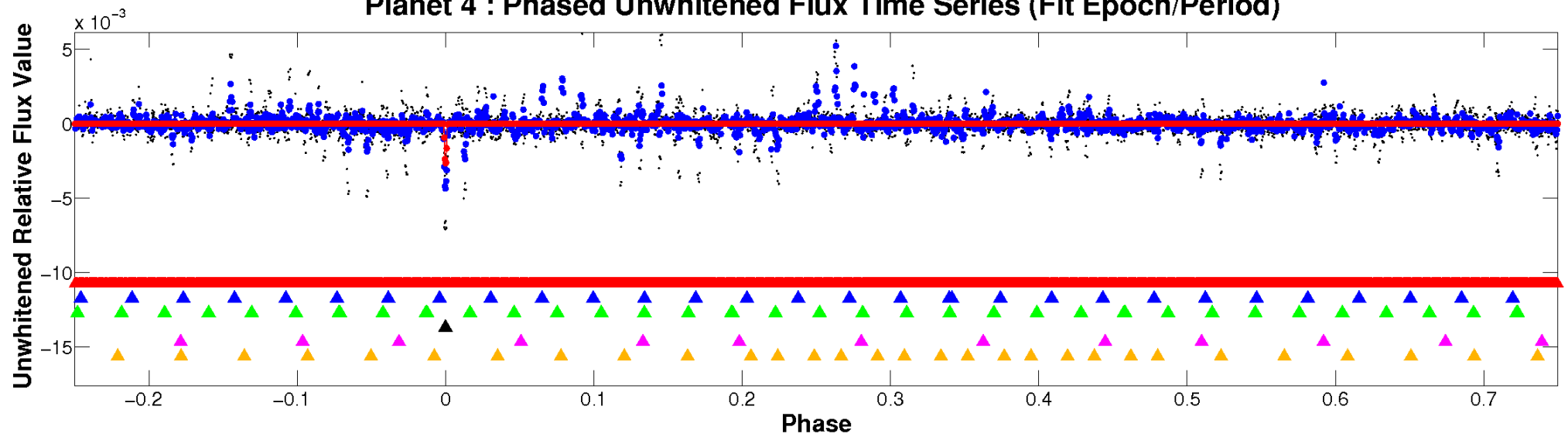
ALT Odd/Even

TCE 005372048-04

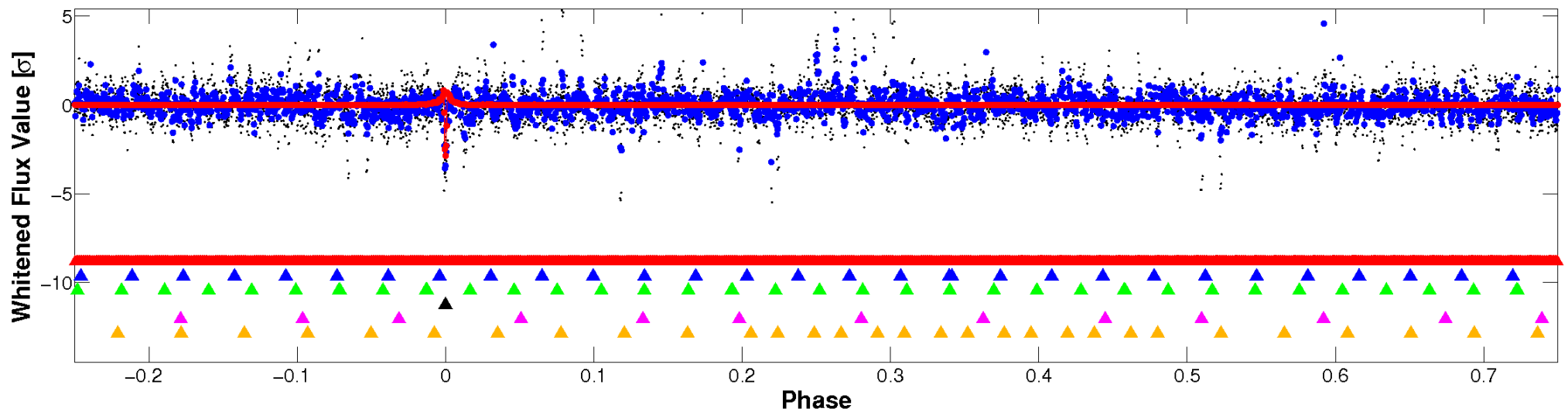


Non-Whitened Vs. Whitened Light Curve

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

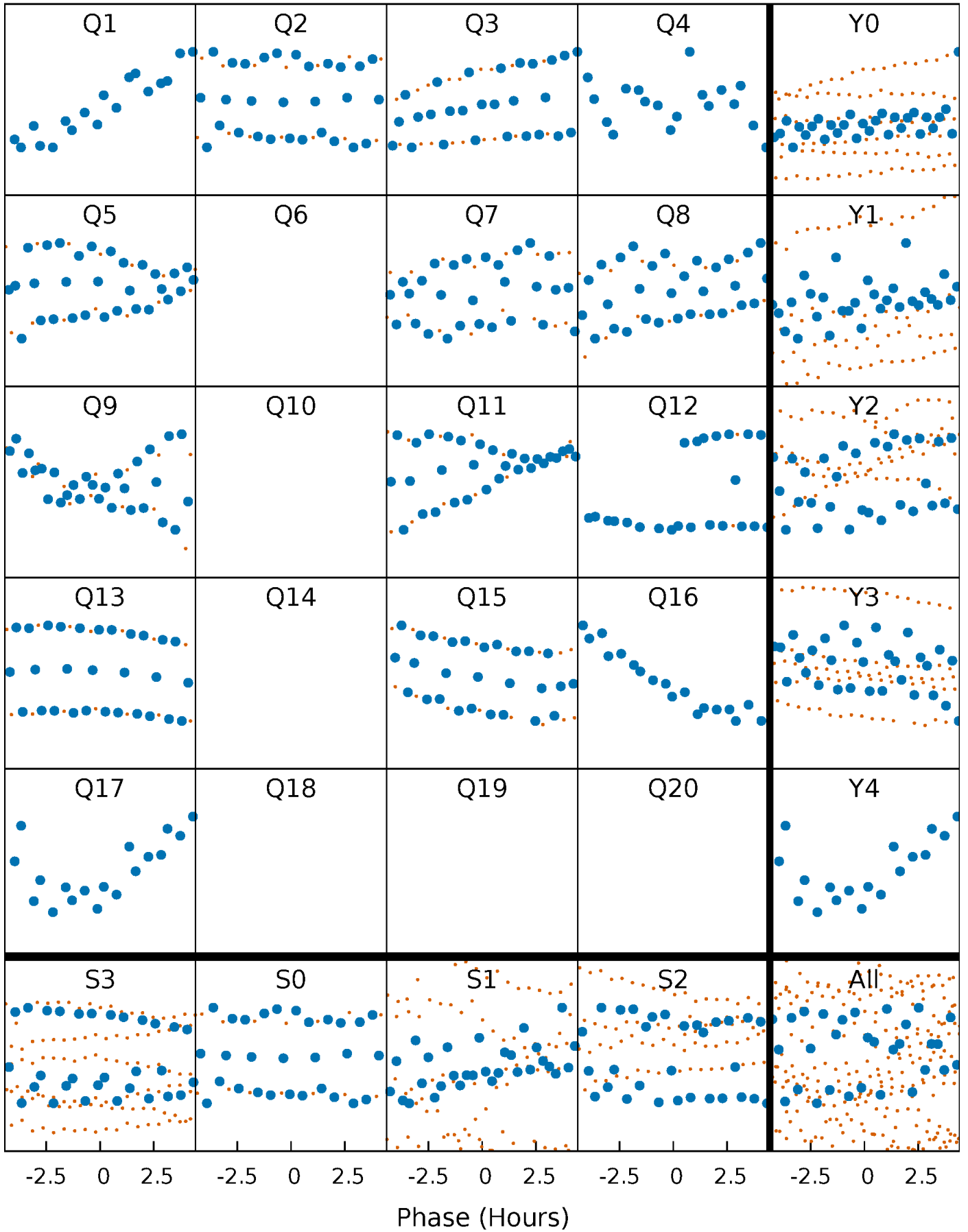


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



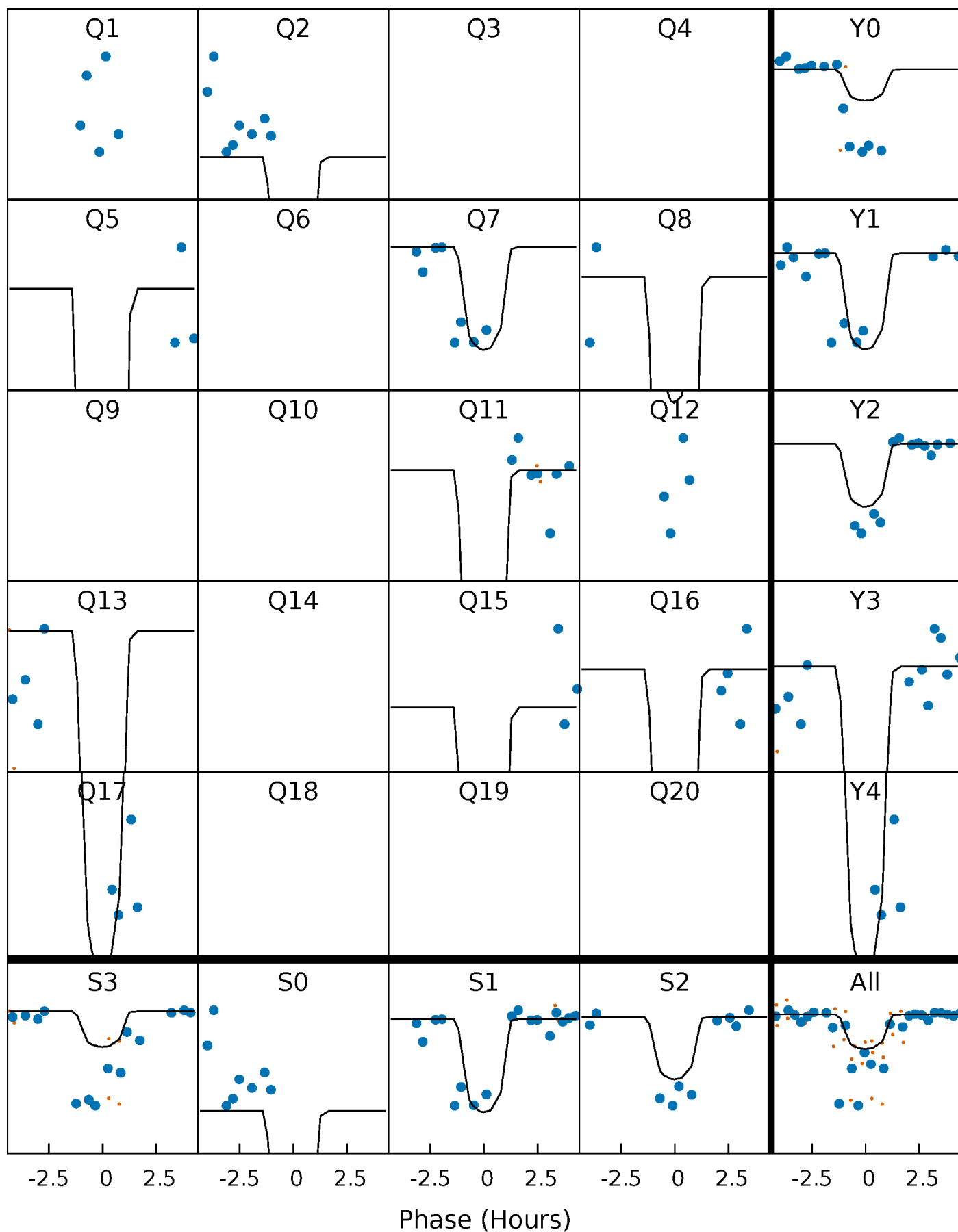
PDC Quarter-Phased Transit Curves

TCE 005372048-04 P= 50.625582 Days $T_0=142.391923$ (BKJD)



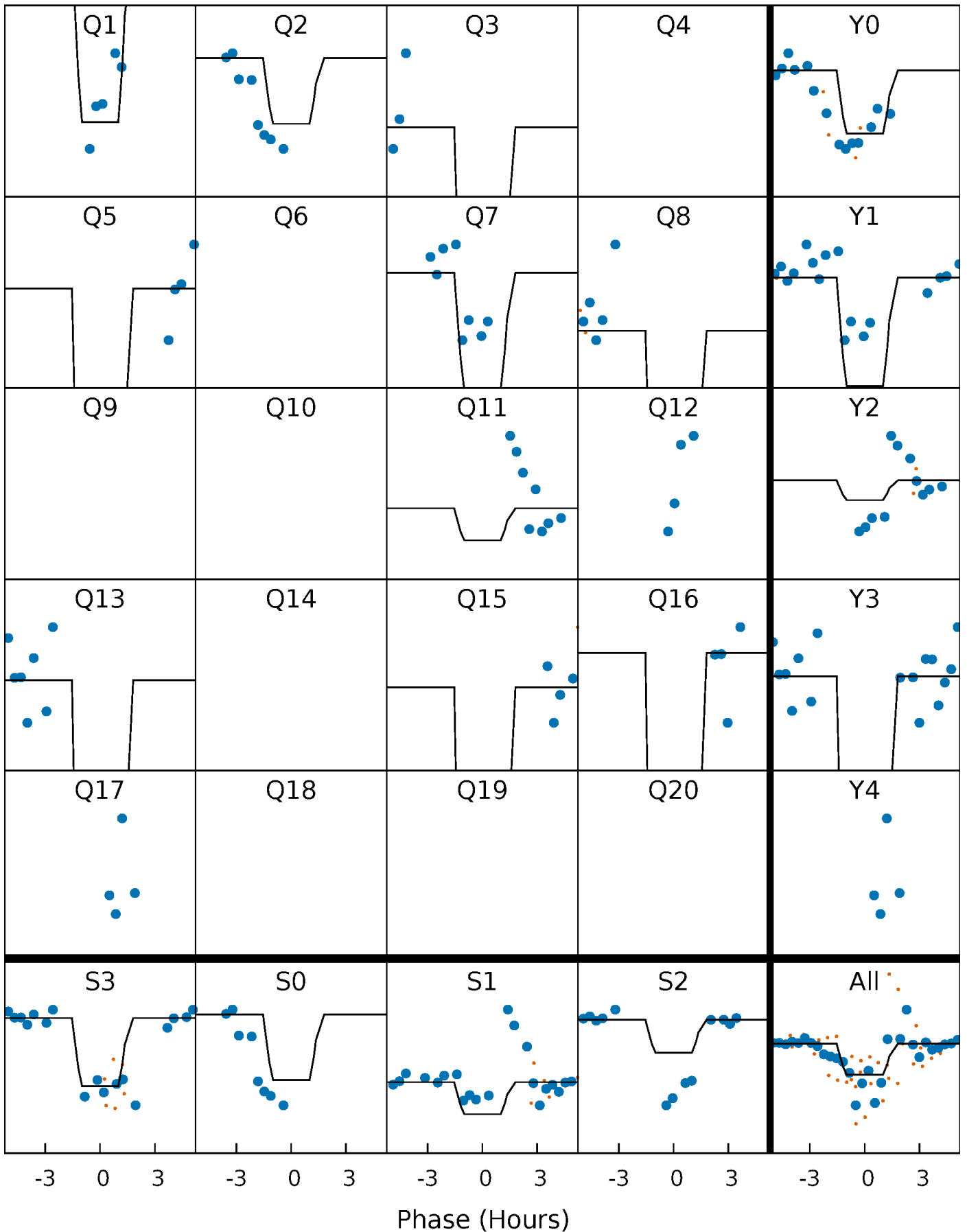
DV Quarter-Phased Transit Curves

TCE 005372048-04 P= 50.625582 Days $T_0=142.391923$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

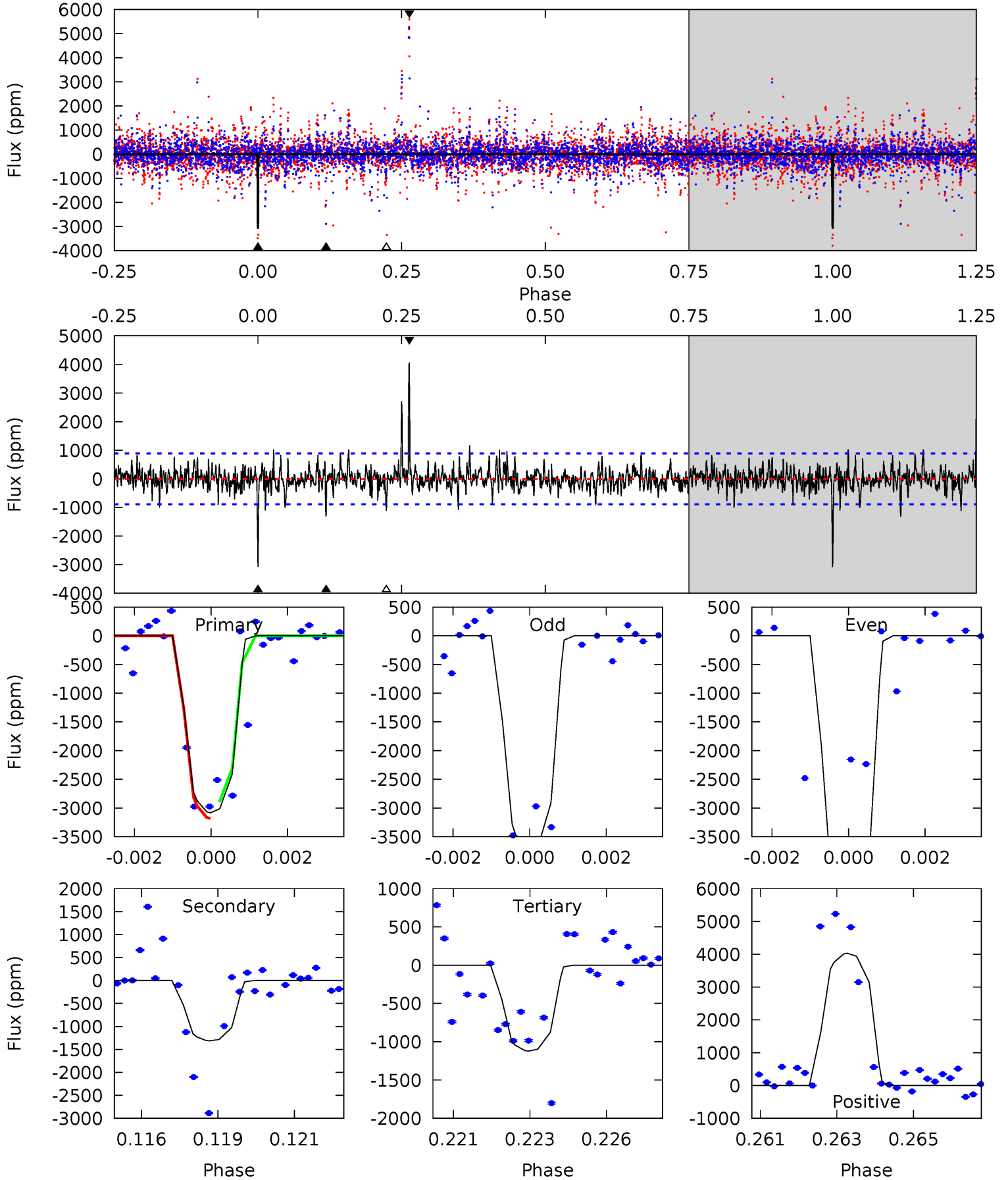
TCE 005372048-04 P= 50.626183 Days $T_0=142.373231$ (BKJD)



DV Model-Shift Uniqueness Test

005372048-04, P = 50.625582 Days, E = 91.766341 Days

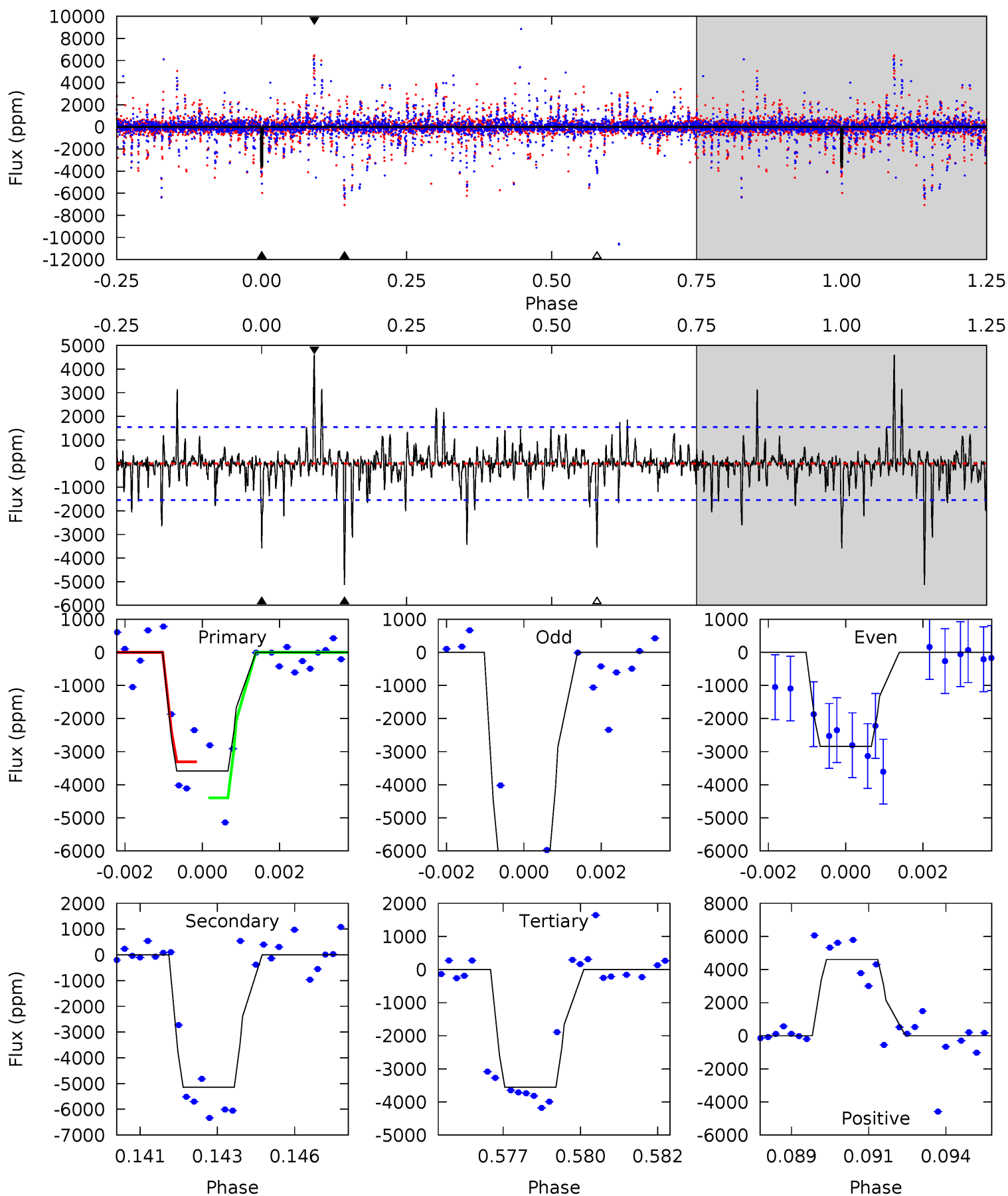
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.4	7.83	6.69	24.0	5.30	3.04	1.90	11.7	-5.63	1.15	-16.2	2.52	1.30	0.57	0.82



Alt Model-Shift Uniqueness Test

005372048-04, P = 50.626183 Days, E = 91.747048 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.3	17.6	12.2	15.8	5.29	3.03	1.94	0.12	-3.49	5.43	1.82	3.61	0.93	0.47	1.85



Stellar Parameters For KIC 005372048

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4342^{+117}_{-143}	$4.738^{+0.070}_{-0.030}$	$-1.100^{+0.300}_{-0.350}$	$0.502^{+0.035}_{-0.055}$	$0.502^{+0.037}_{-0.037}$	$5.603^{+1.741}_{-0.761}$
	+3%/-3%	+1%/-1%	+27%/-32%	+7%/-11%	+7%/-7%	+31%/-14%
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 005372048-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1314 ± 168	$3.10^{+2.44}_{-1.83}$	407^{+14}_{-17}	3692^{+1532}_{-636}	3470^{+17635}_{-2404}
Alt.	-5141 ± 292	$3.53^{+2.57}_{-2.10}$	408^{+15}_{-15}	4548^{+2265}_{-838}	10676^{+53179}_{-7082}

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

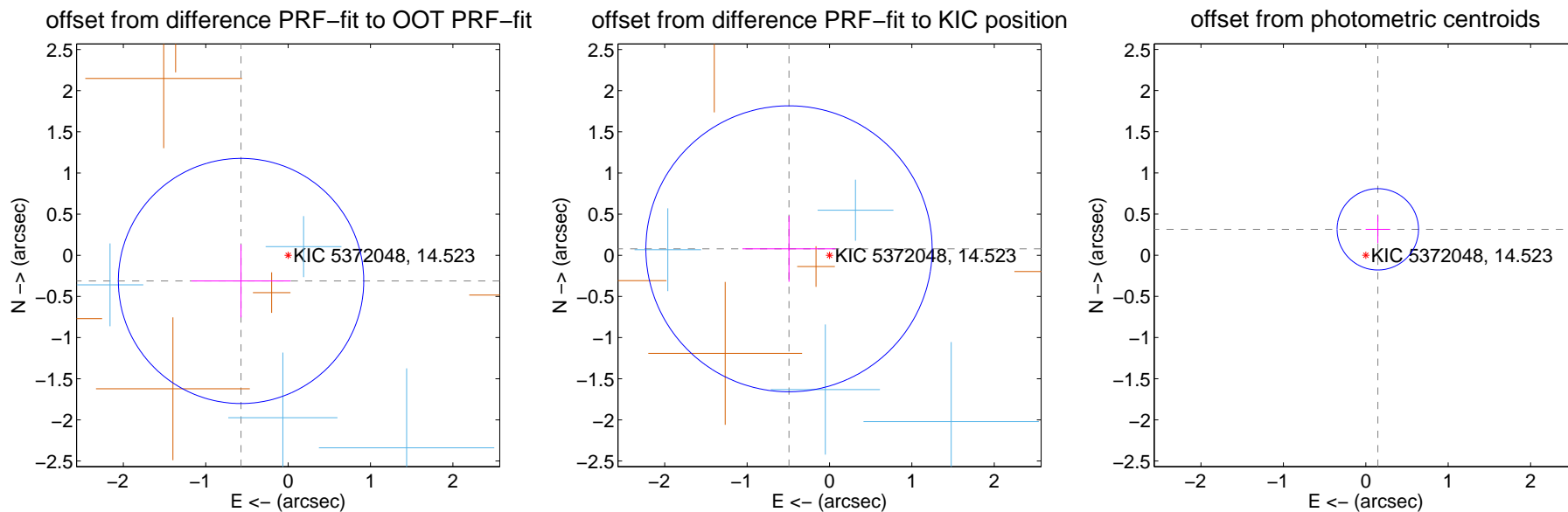
DV Centroid Data

Supplemental centroid analysis for 005372048-04. Kepler magnitude: 14.52. Transit SNR 8.02

There are 4 quarters with good PRF difference image offsets

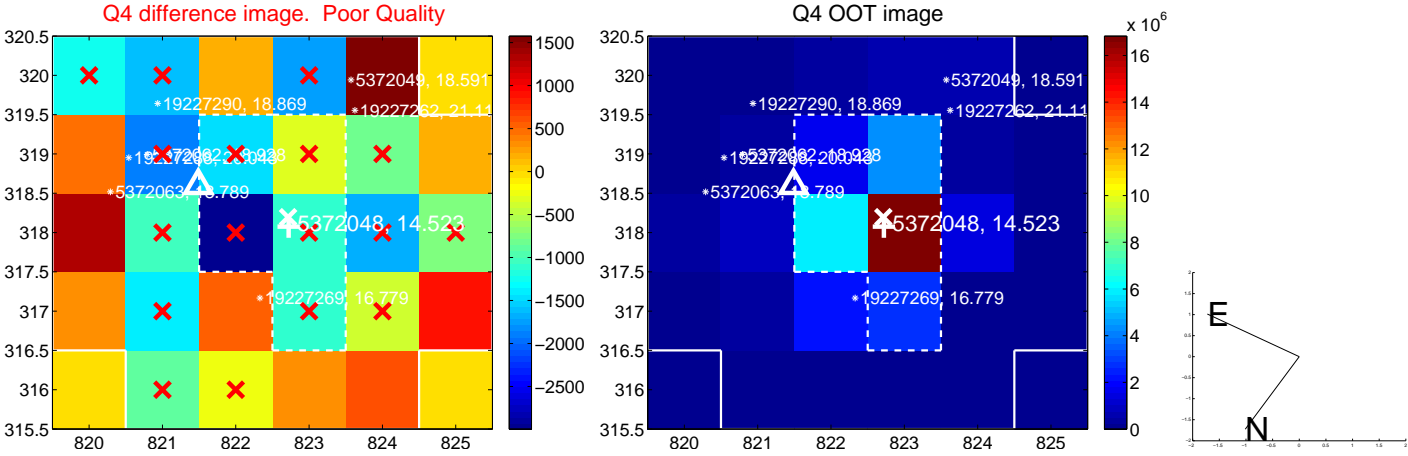
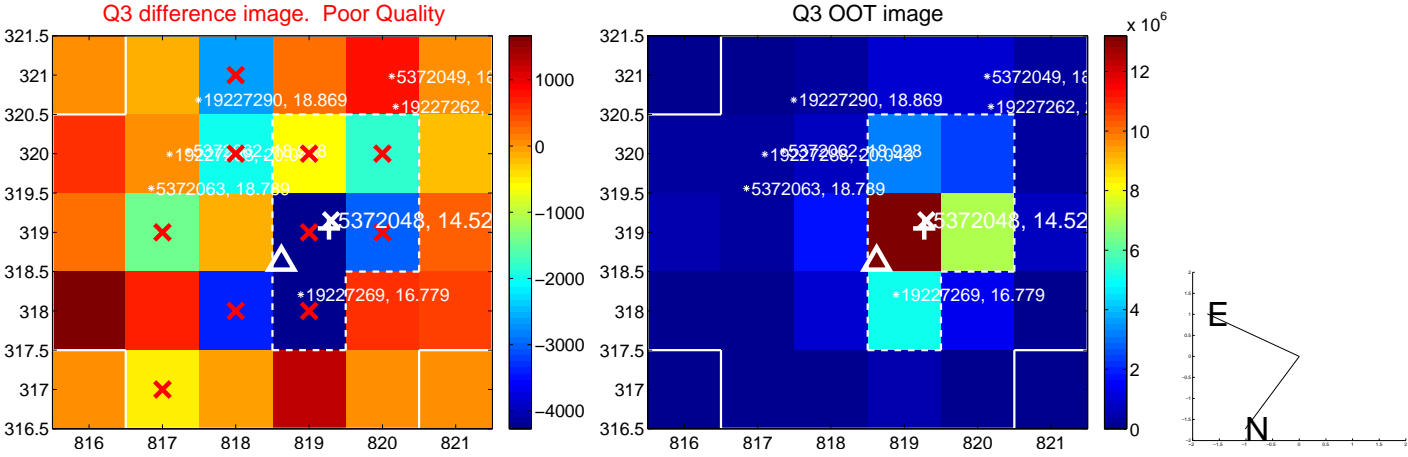
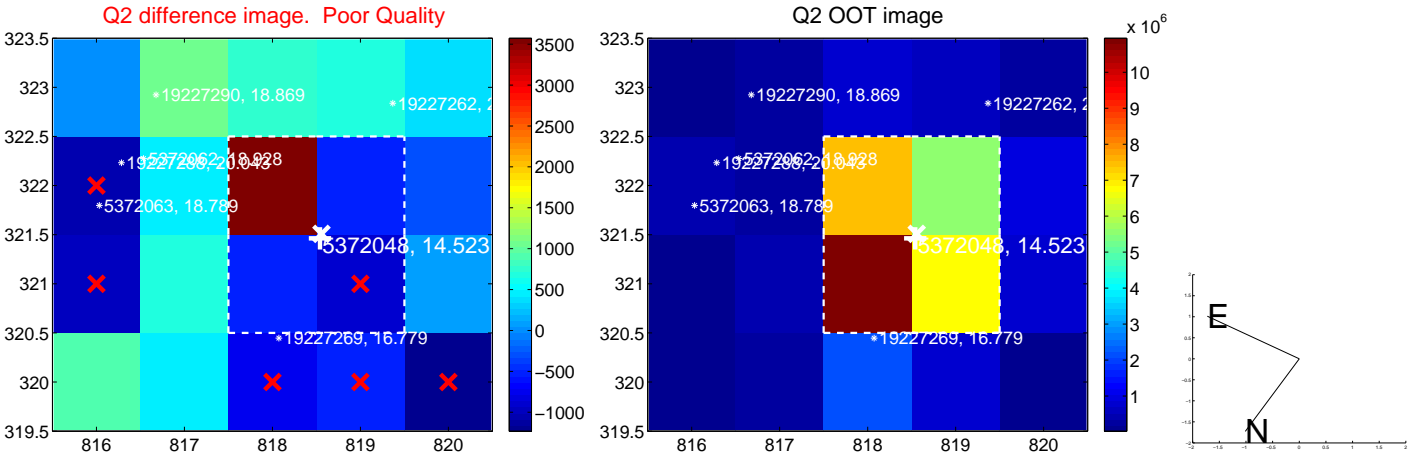
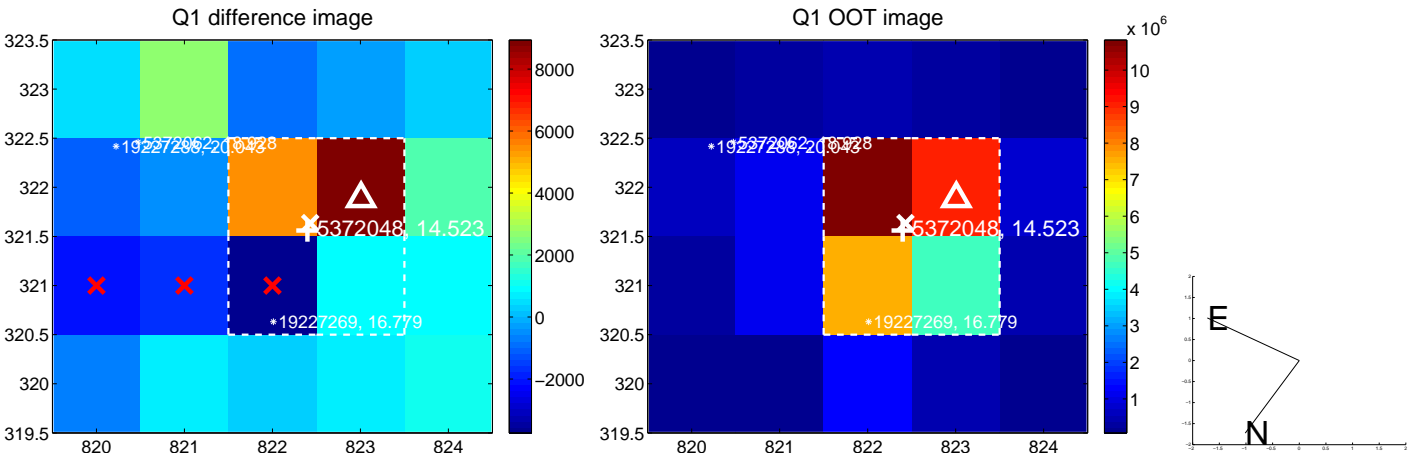
The direct PRF centroid is offset from the target star catalog position by about 0.47 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.651 ± 0.496	1.31	0.571 ± 0.602	-0.312 ± 0.442
PRF-fit source offset from KIC position	0.497 ± 0.579	0.86	0.491 ± 0.566	0.079 ± 0.400
photometric centroid source offset	0.35 ± 0.16	2.10	-0.15 ± 0.15	0.31 ± 0.17

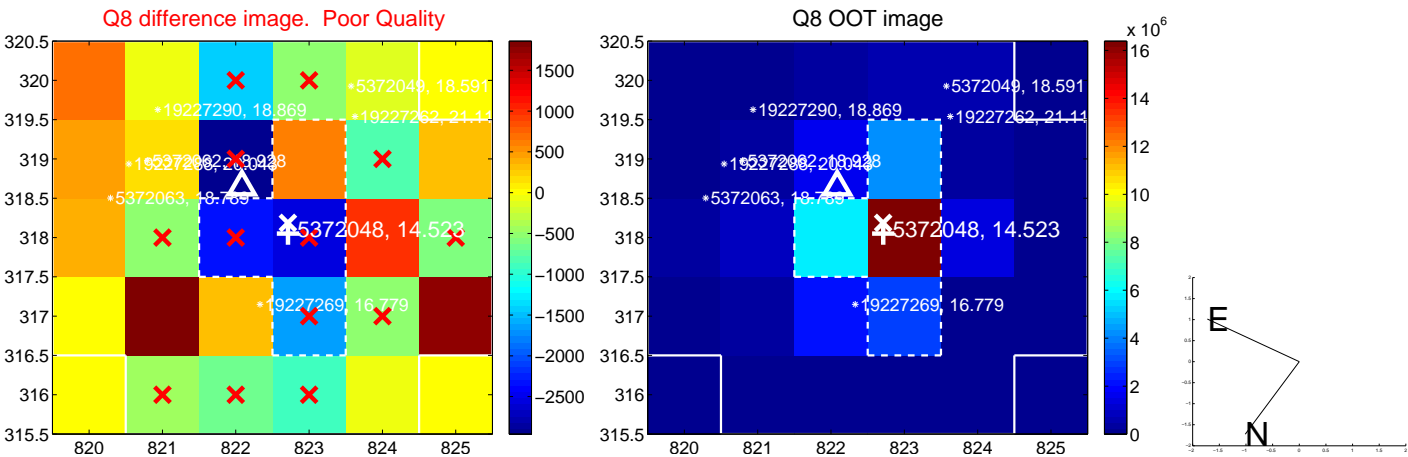
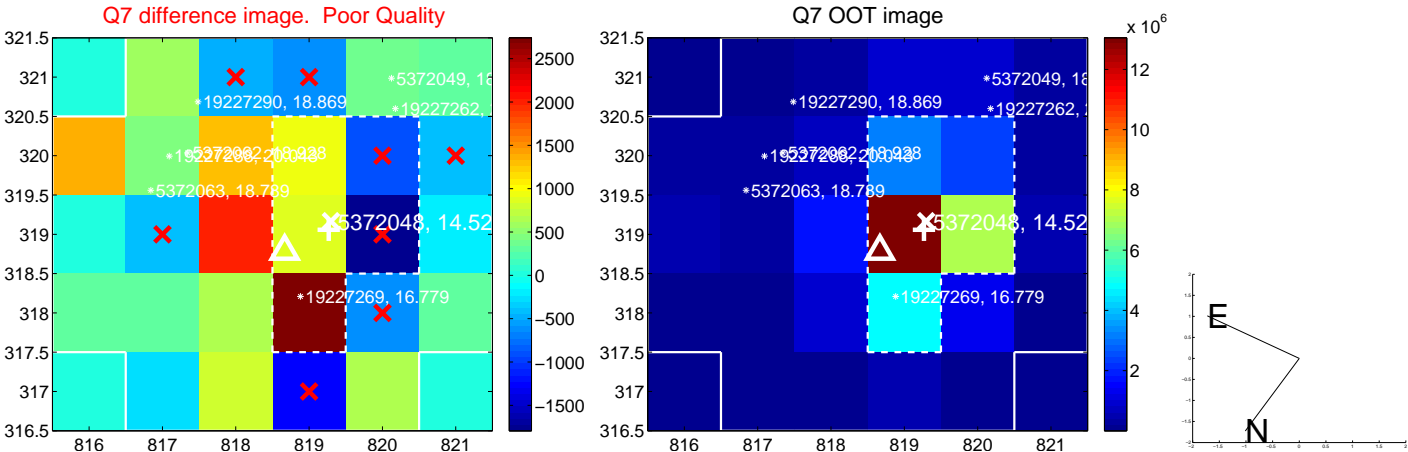
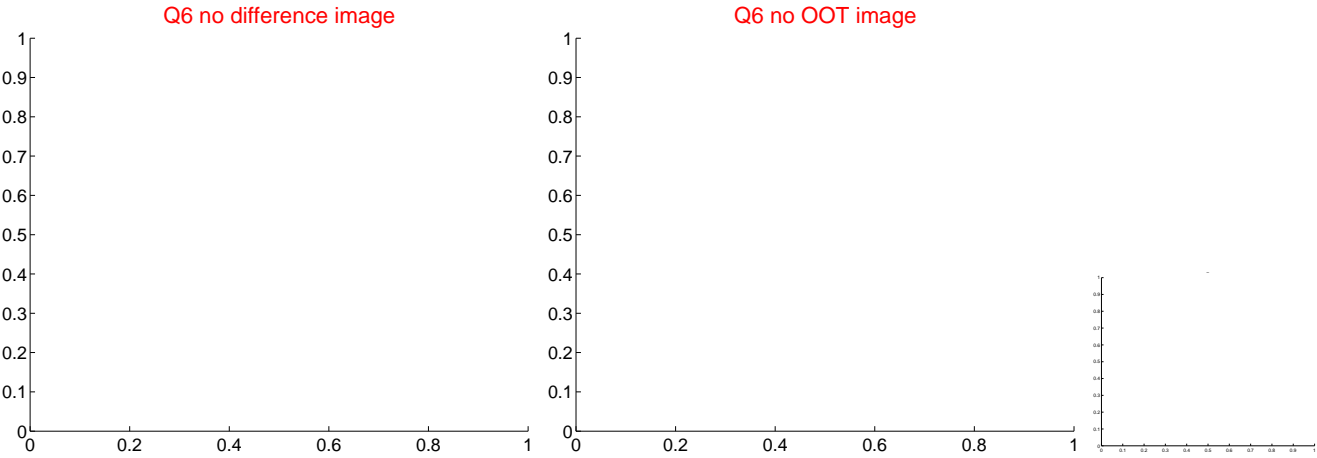
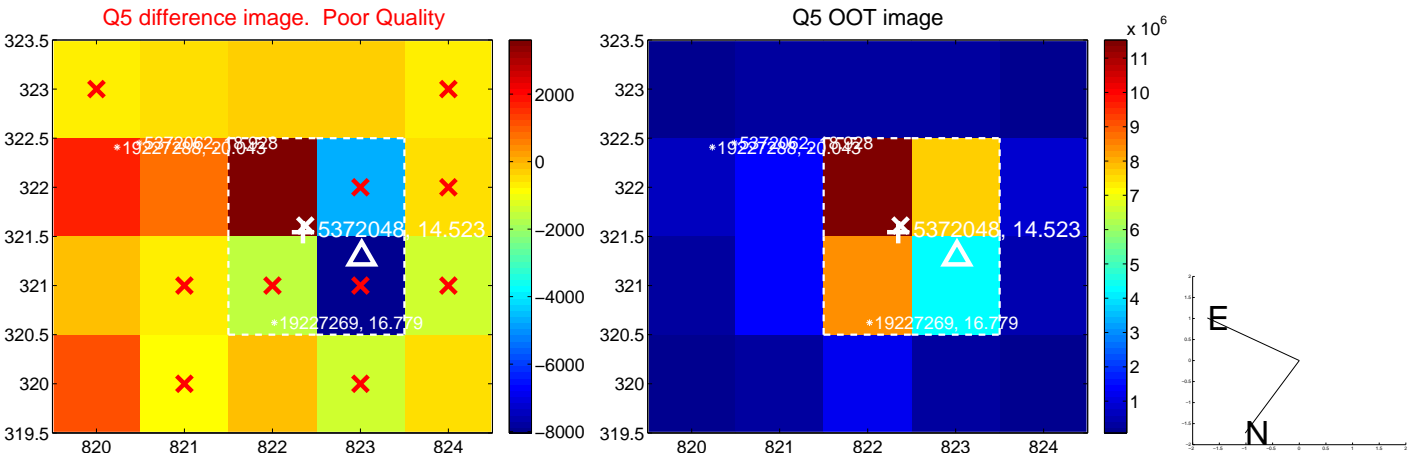


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

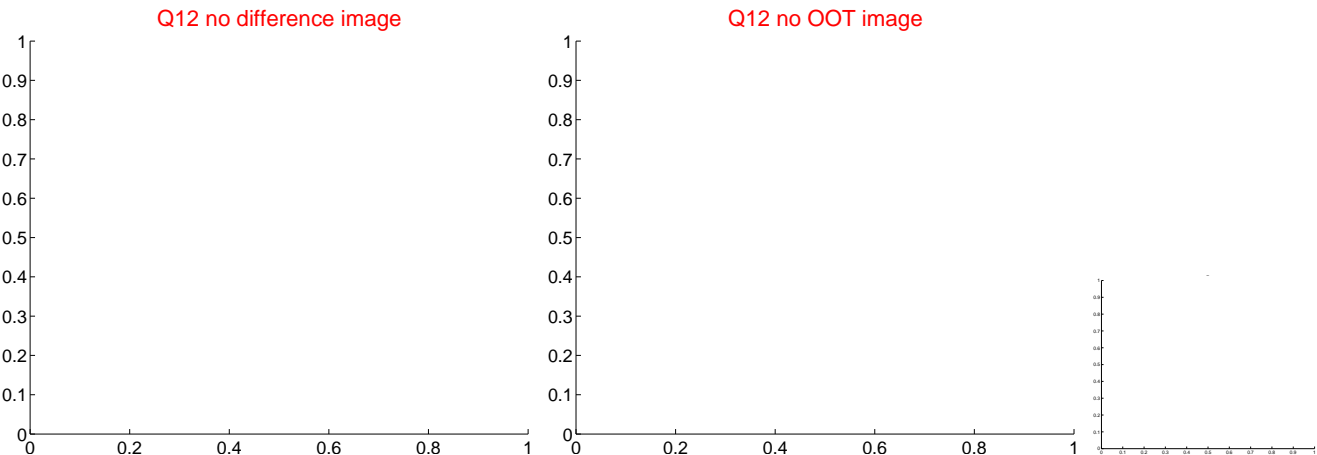
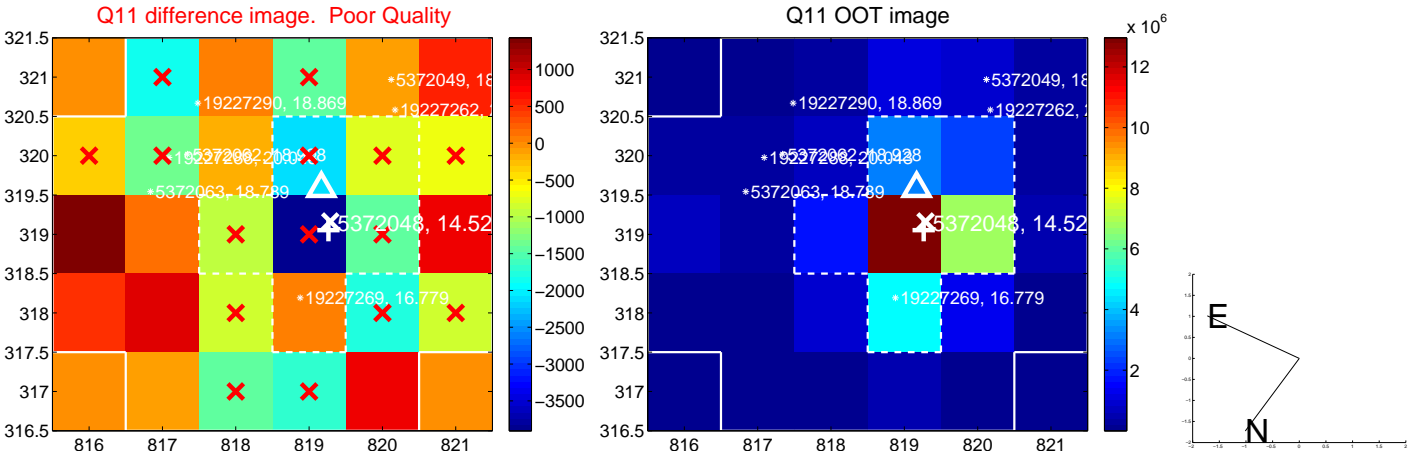
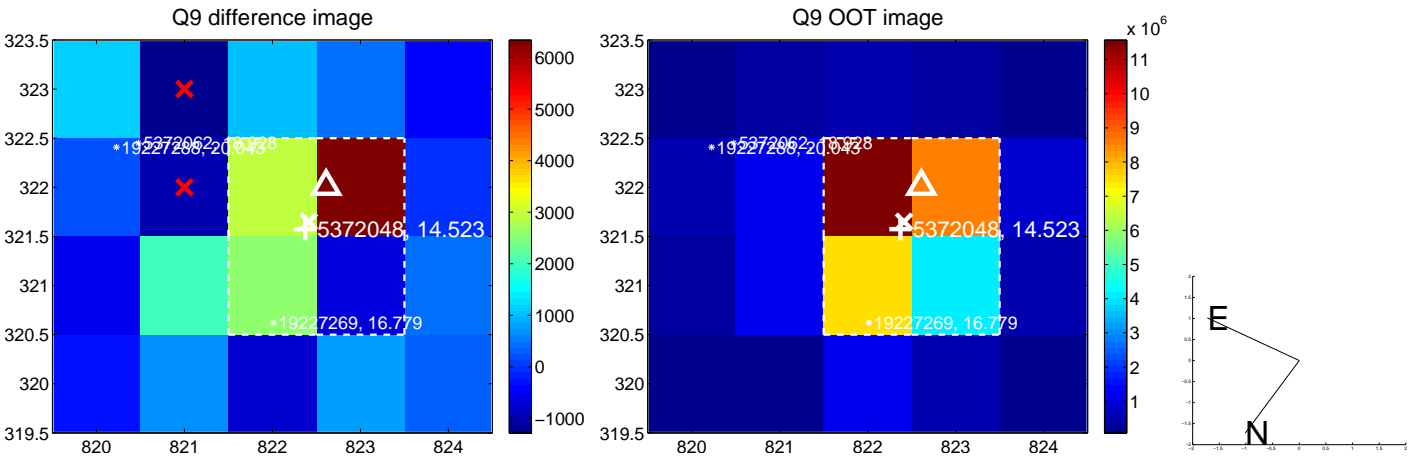
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



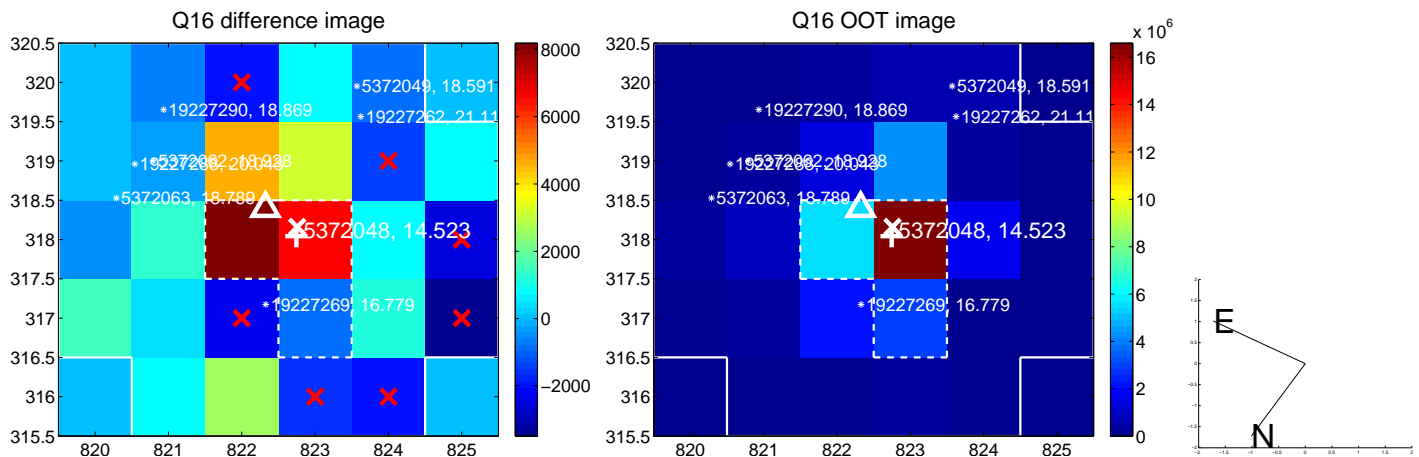
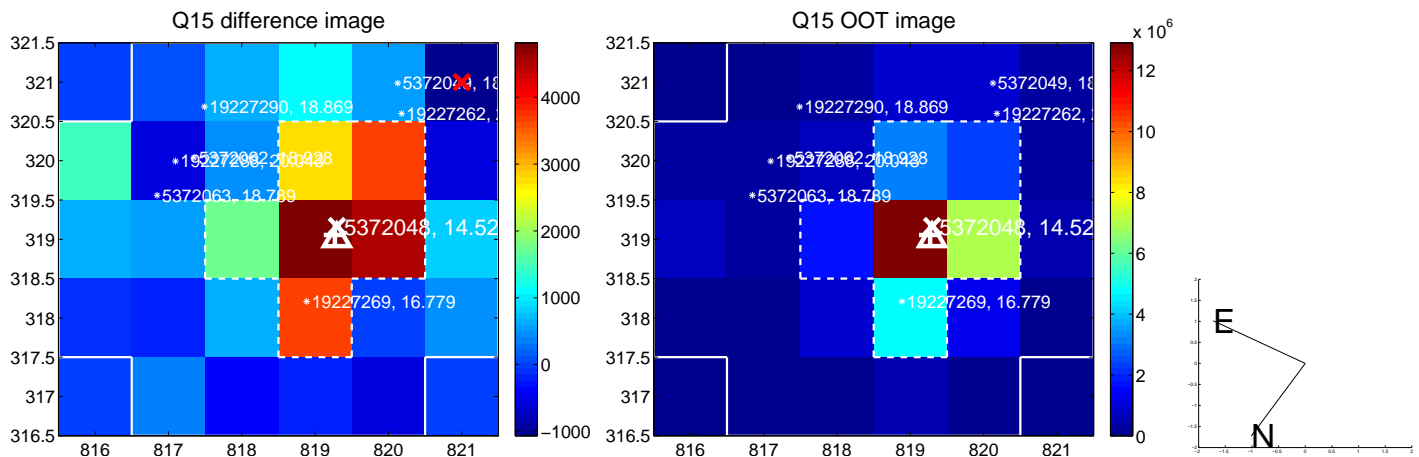
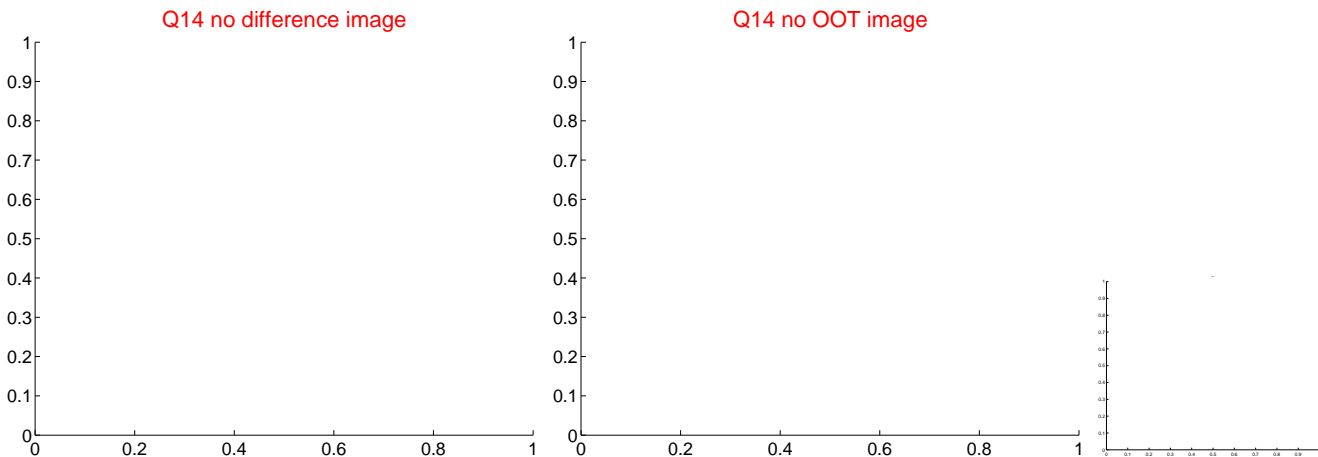
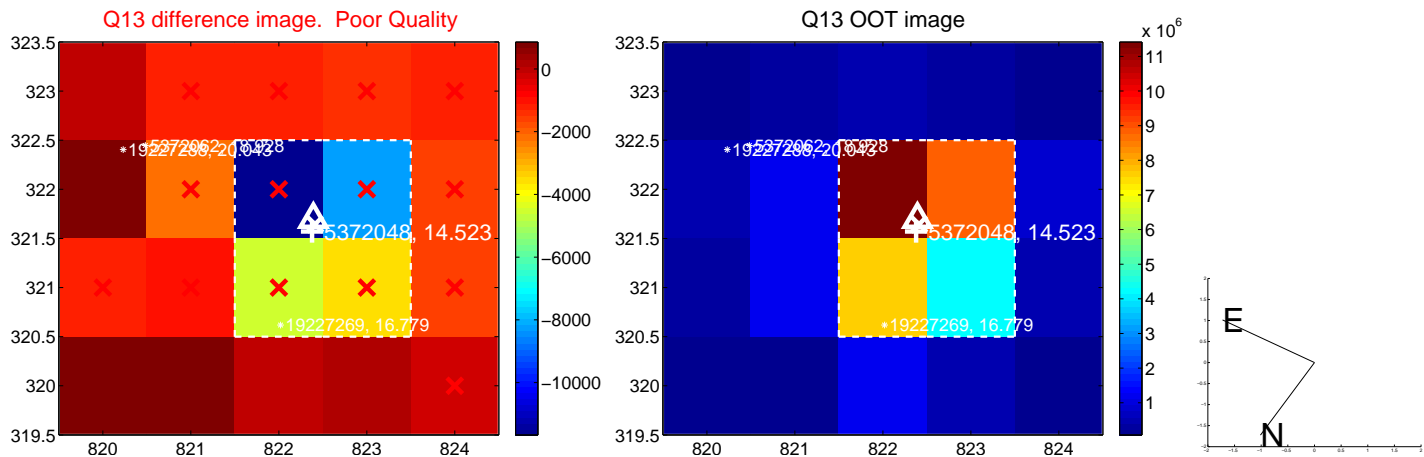
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



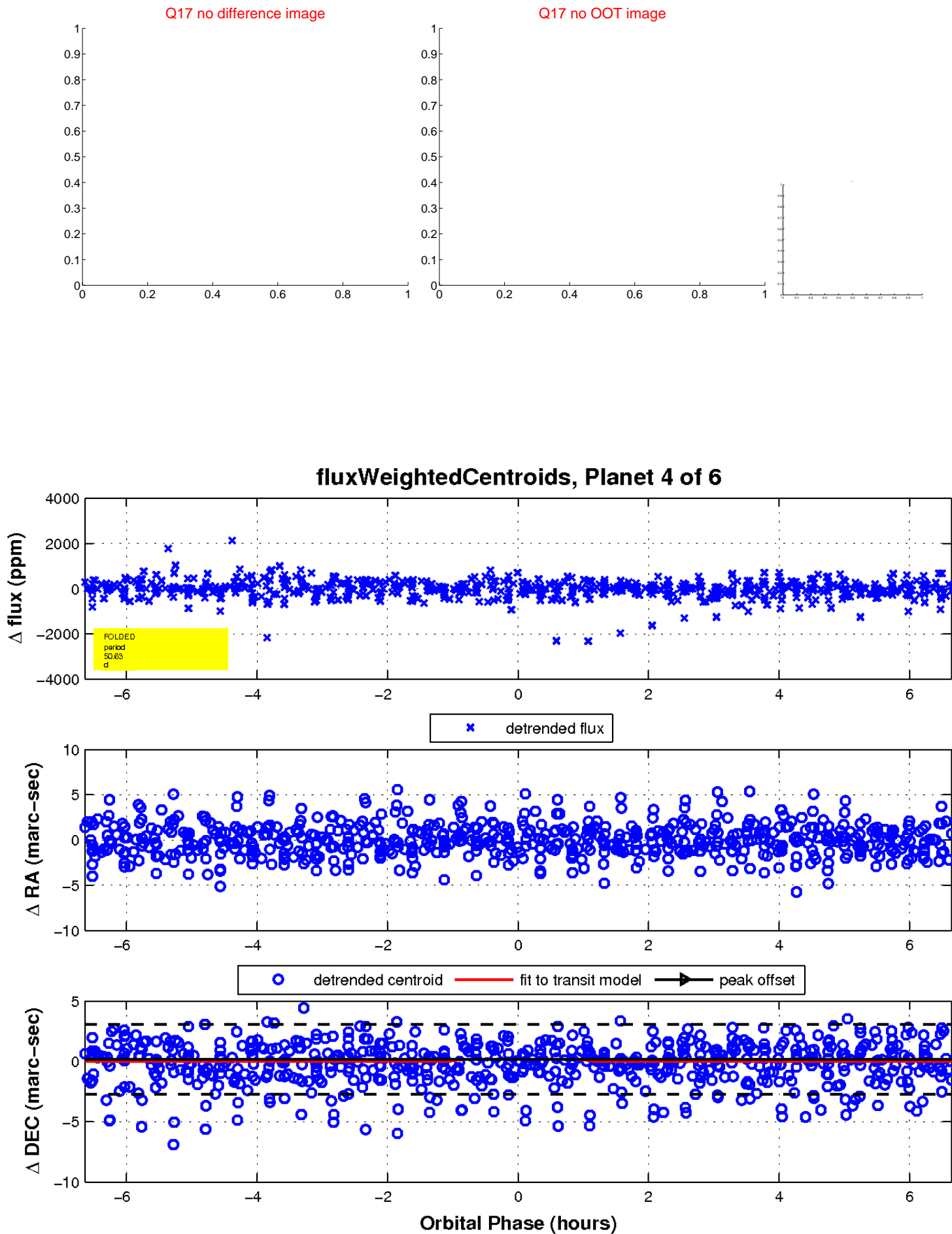
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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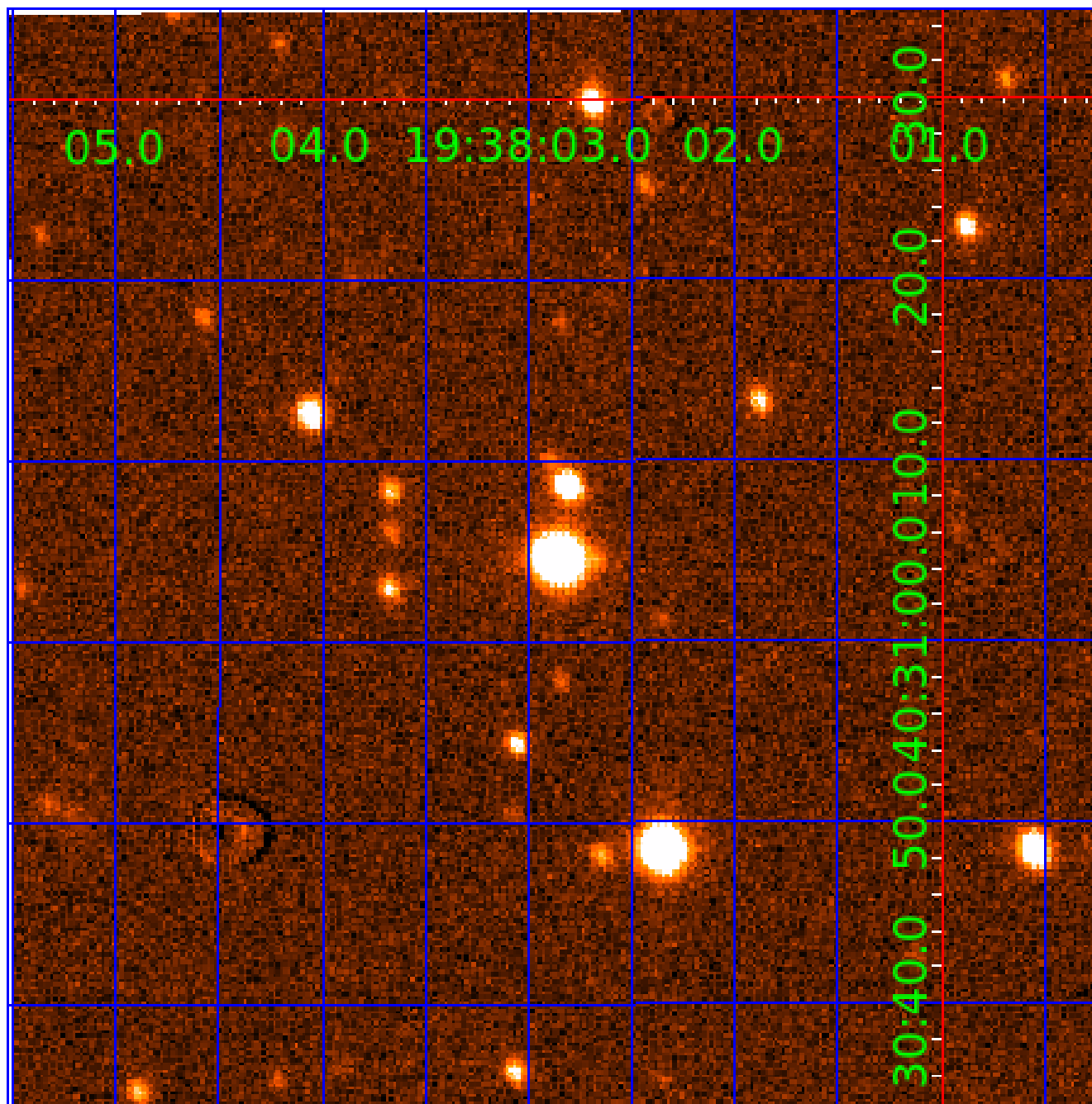


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005372048

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})
005372048-01	OBS	No	0.665211	132.074553	8.2	4.467	10.6	1.7	0.50	4342	0.15	570.40
005372048-02	OBS	No	48.876668	159.677701	2170.0	2.074	11.5	7.5	0.50	4342	2.73	1.85
005372048-03	OBS	No	37.225748	141.726372	2362.3	1.714	11.3	6.1	0.50	4342	2.41	2.67
005372048-04	OBS	No	50.625582	142.391923	2668.6	2.224	12.4	8.0	0.50	4342	2.70	1.77
005372048-05	OBS	No	112.866907	215.535484	3603.9	3.590	10.3	8.3	0.50	4342	3.25	0.61
005372048-06	OBS	No	48.464273	165.785812	2763.5	2.245	9.6	8.0	0.50	4342	2.72	1.88

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005372048-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
005372048-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
005372048-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—CENT_KIC_POS
005372048-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT
005372048-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES
005372048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_ALT—CENT_KIC_POS

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

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

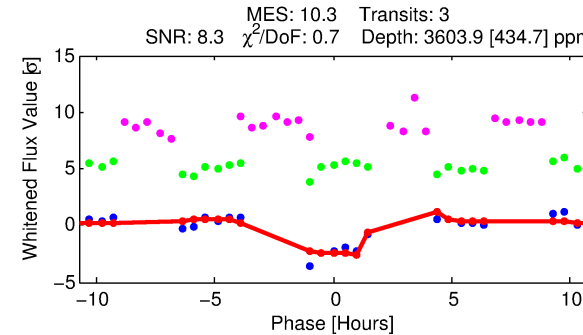
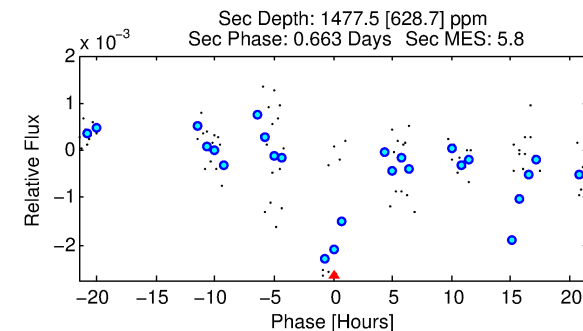
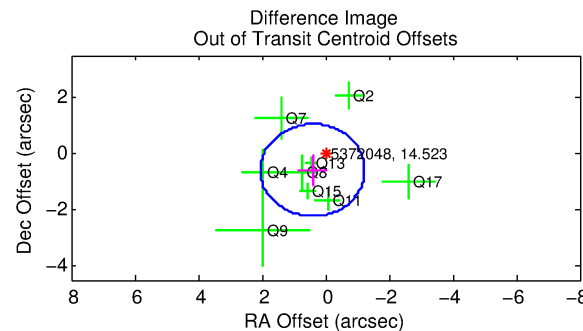
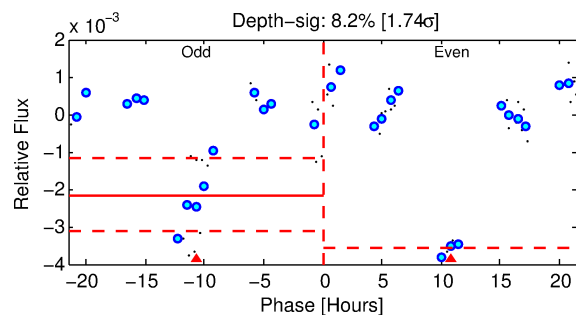
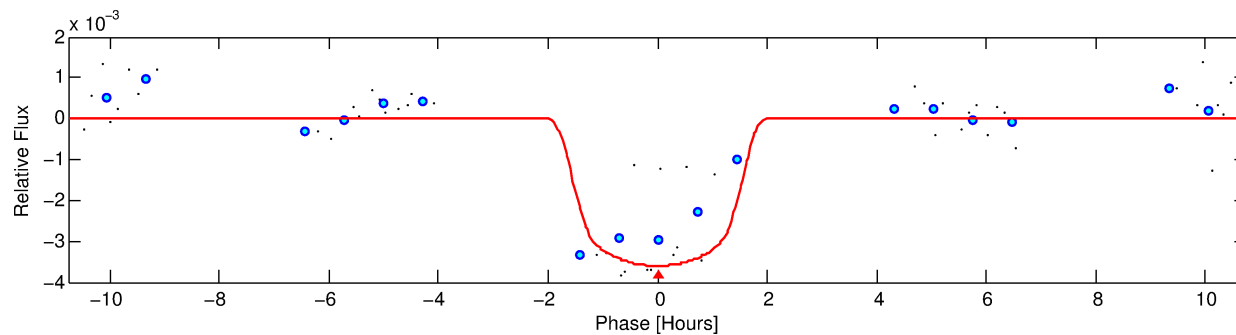
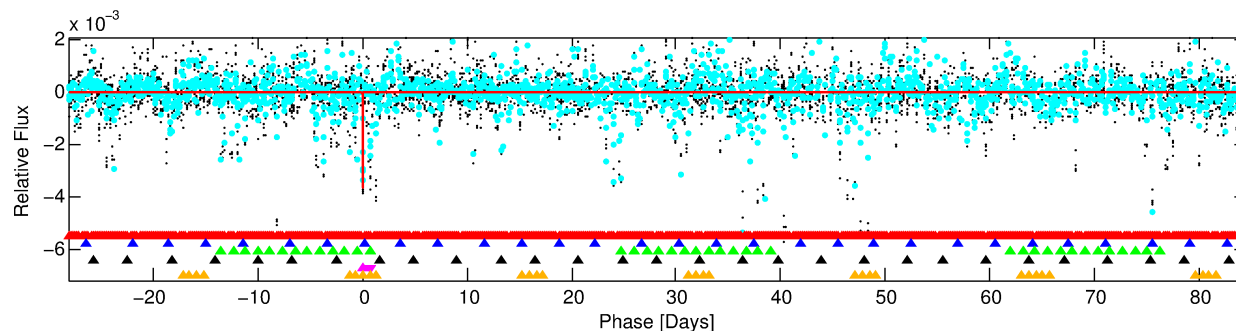
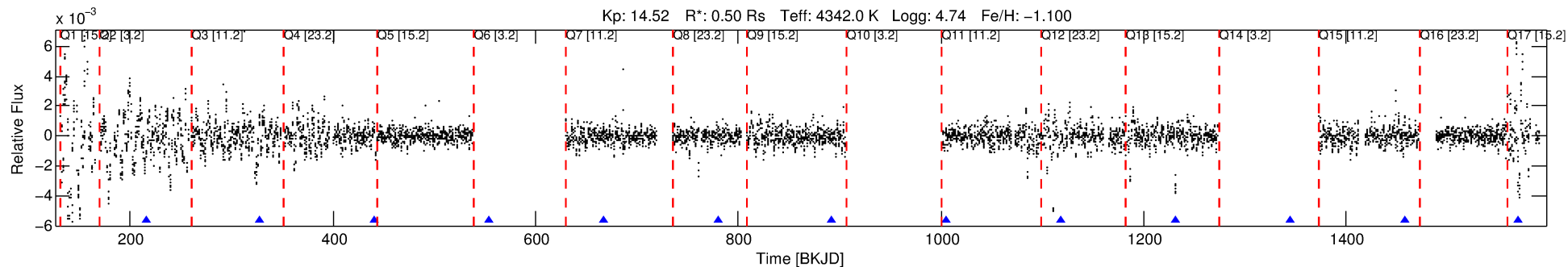
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005372048-05

No Significant Match Found

DV One-Page Summary

KIC: 5372048 Candidate: 5 of 6 Period: 112.867 d



DV Fit Results:

Period = 112.86691 [0.00339] d
Epoch = 215.5355 [0.0164] BKJD
Rp/R* = 0.0593 [0.2829]
a/R* = 186.31 [3789.91]
b = 0.72 [13.77]
Seff = 0.61 [0.11]
Teq = 225 [10] K
Rp = 3.25 [15.50] Re
a = 0.3635 [0.0330] AU
Ag = 10188.43 [97366.61] [0.10 σ]
Teffp = 3497 [8354] K [0.39 σ]

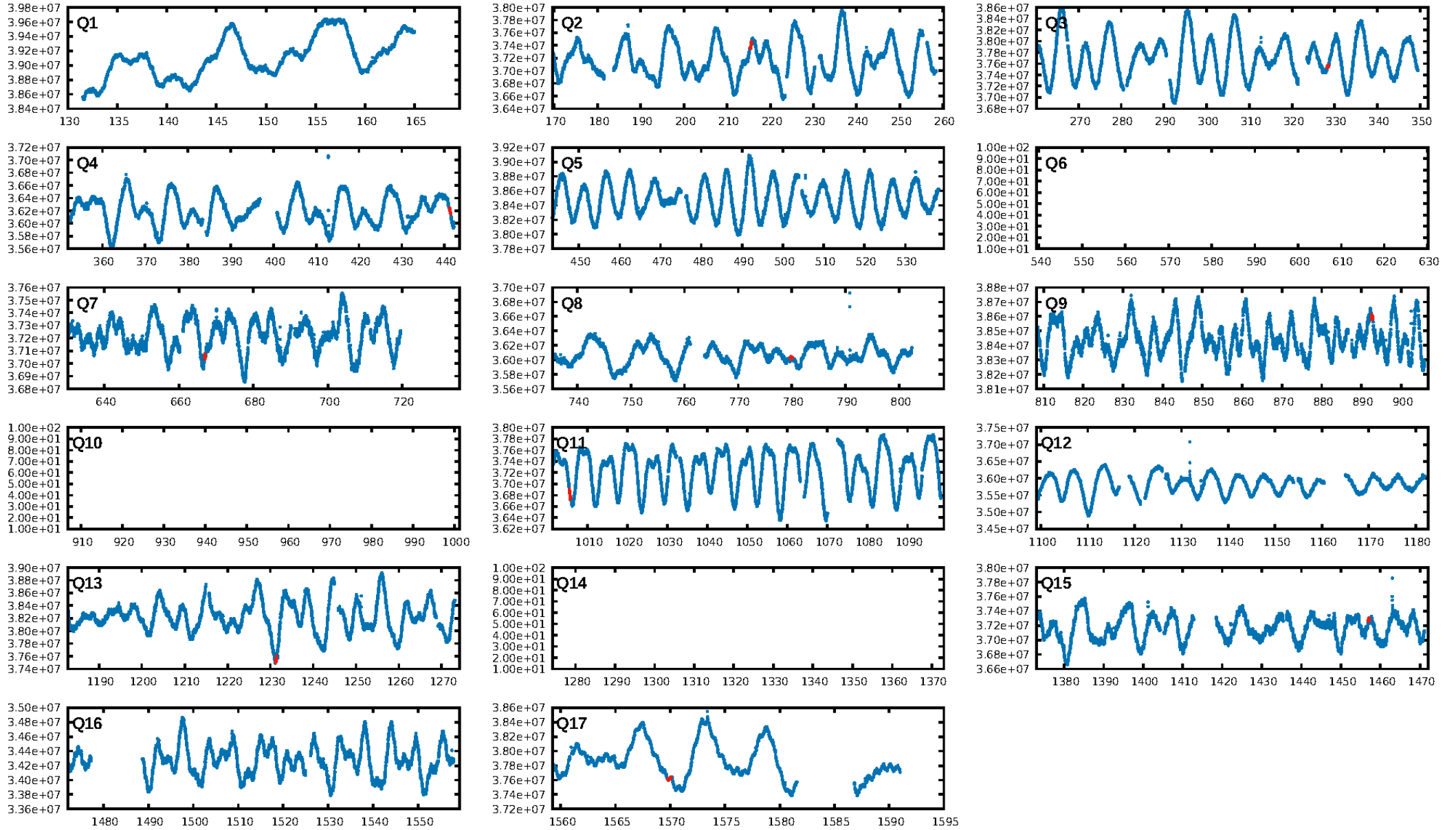
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [353.75 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 1.0%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 5.24e-19
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 1.237
Centroid-sig: N/A
Centroid-so: 0.547 arcsec [3.28 σ]
OotOffset-rm: 0.719 arcsec [1.31 σ]
KicOffset-rm: 0.407 arcsec [0.95 σ]
OotOffset-st: 1/3/2/3 [9]
KicOffset-st: 1/3/2/3 [9]
DiffImageQuality-fgm: 0.44 [4/9]
DiffImageOverlap-fno: 0.00 [0/10]

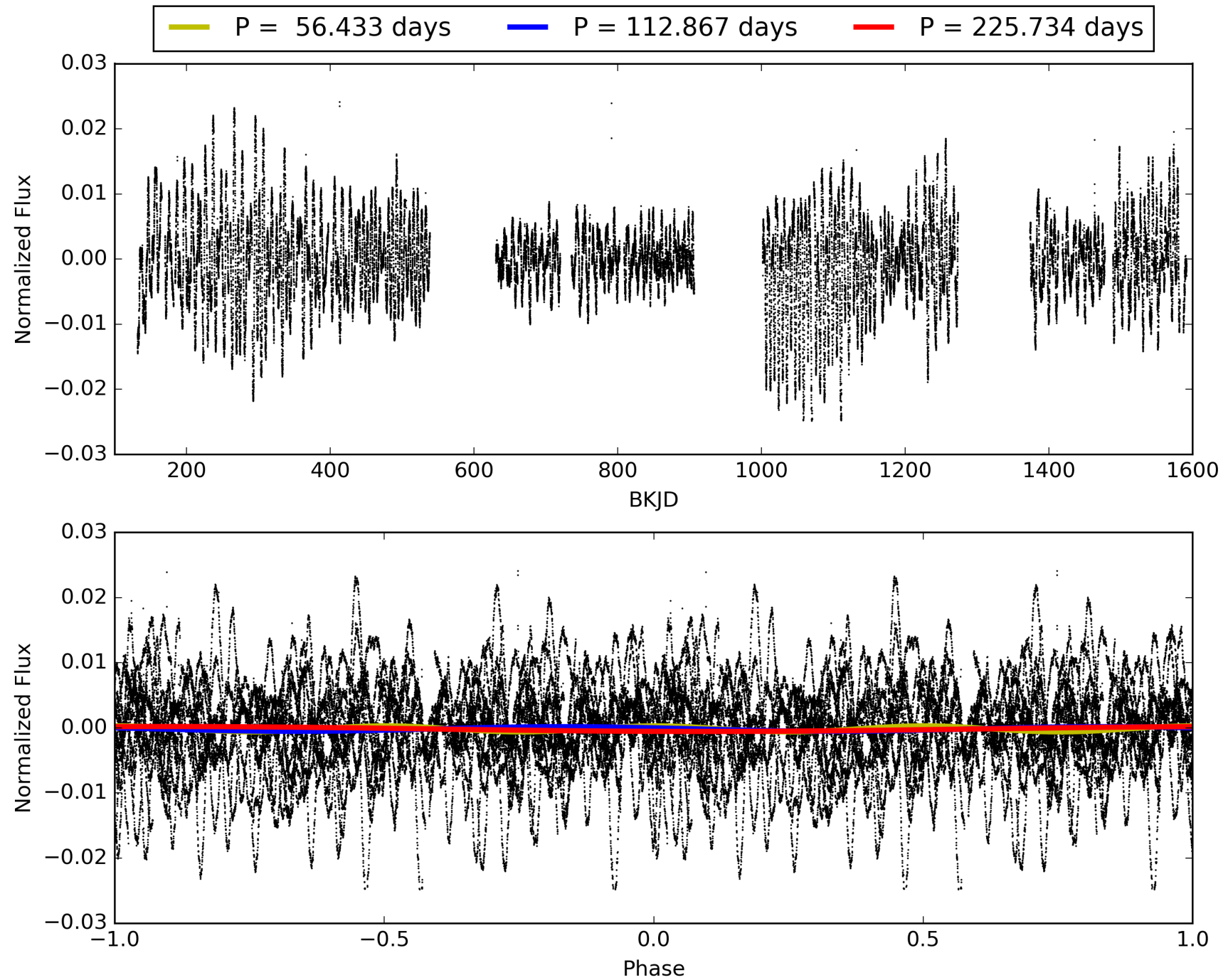
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:28:42 Z

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

TCE 005372048-05, PDC Light Curves

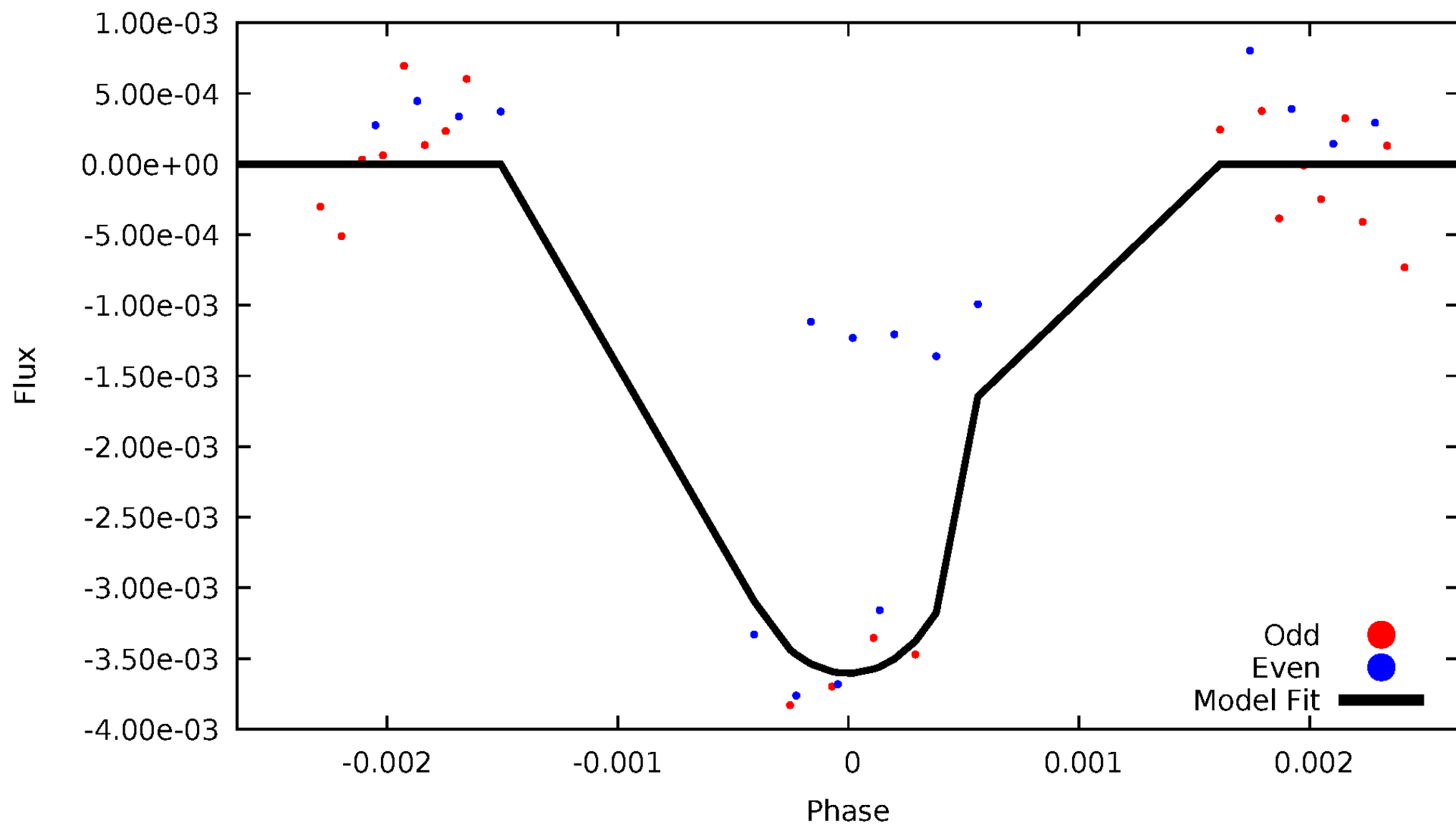


TCE 005372048-05



DV Odd/Even

TCE 005372048-05

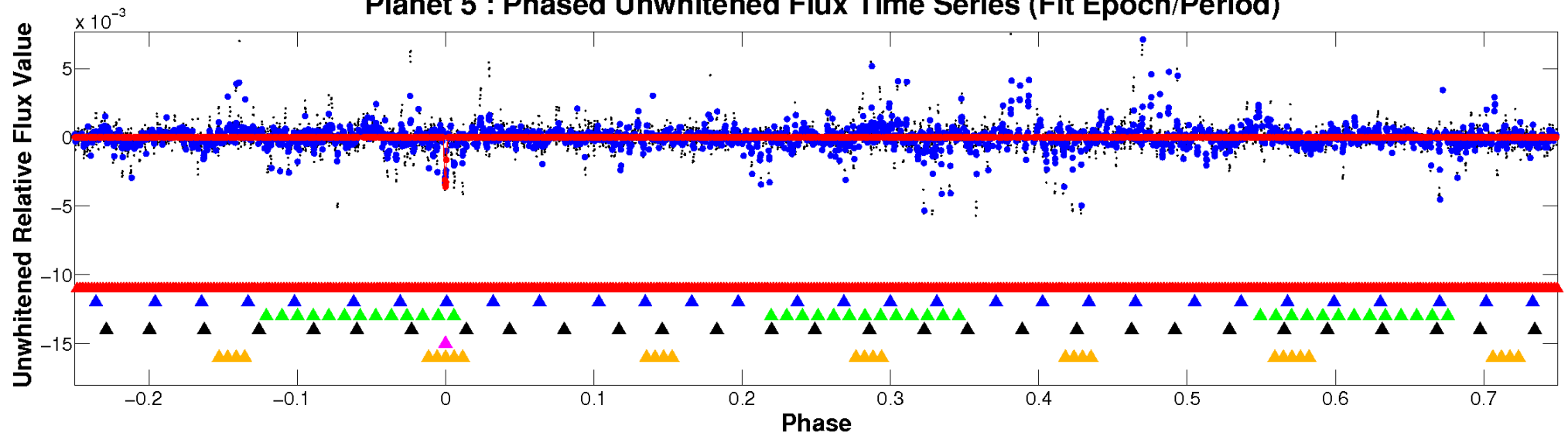


ALT Odd/Even

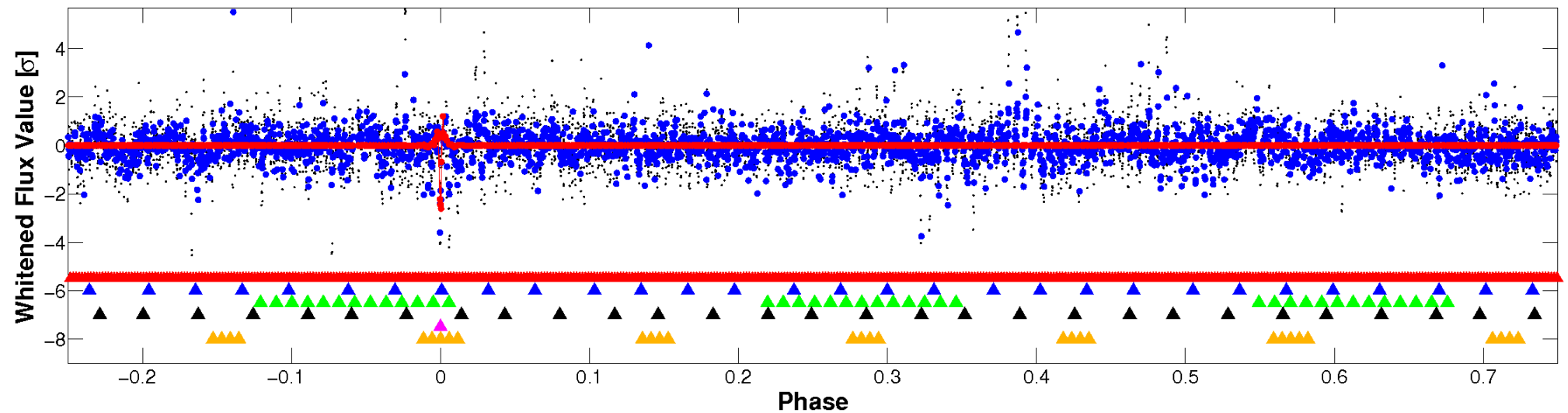
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

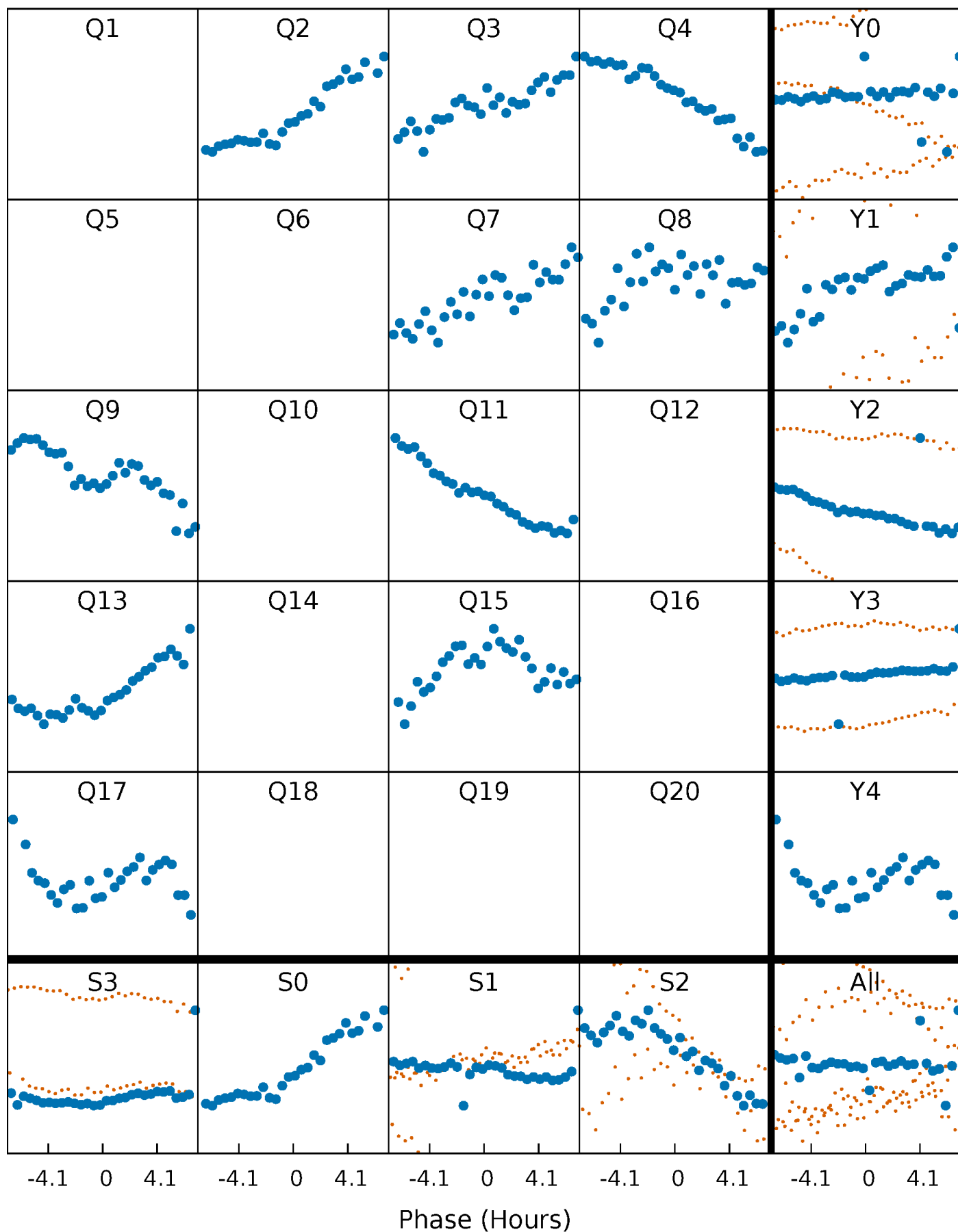


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



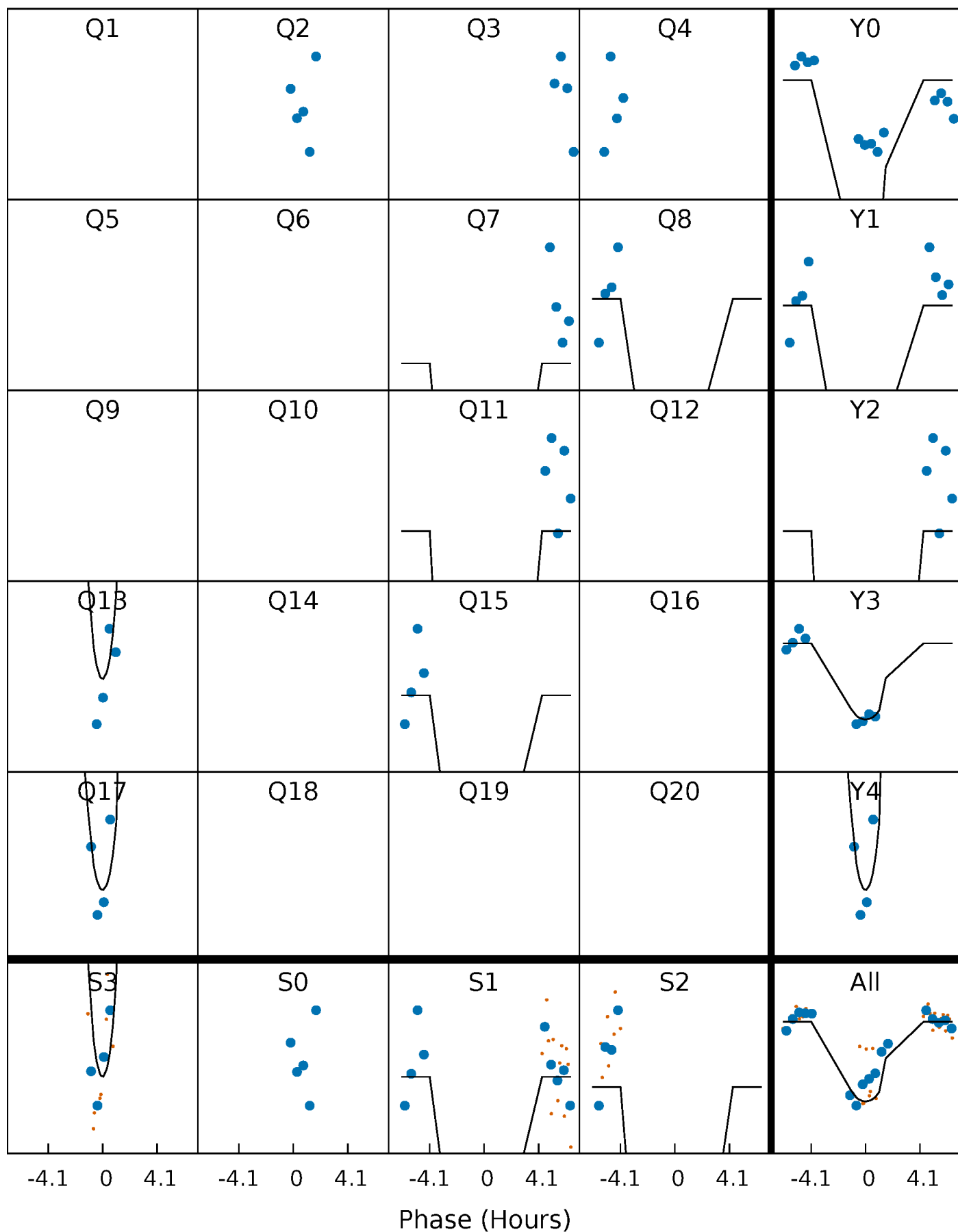
PDC Quarter-Phased Transit Curves

TCE 005372048-05 P=112.866907 Days $T_0=215.535484$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 005372048-05 P=112.866907 Days $T_0=215.535484$ (BKJD)

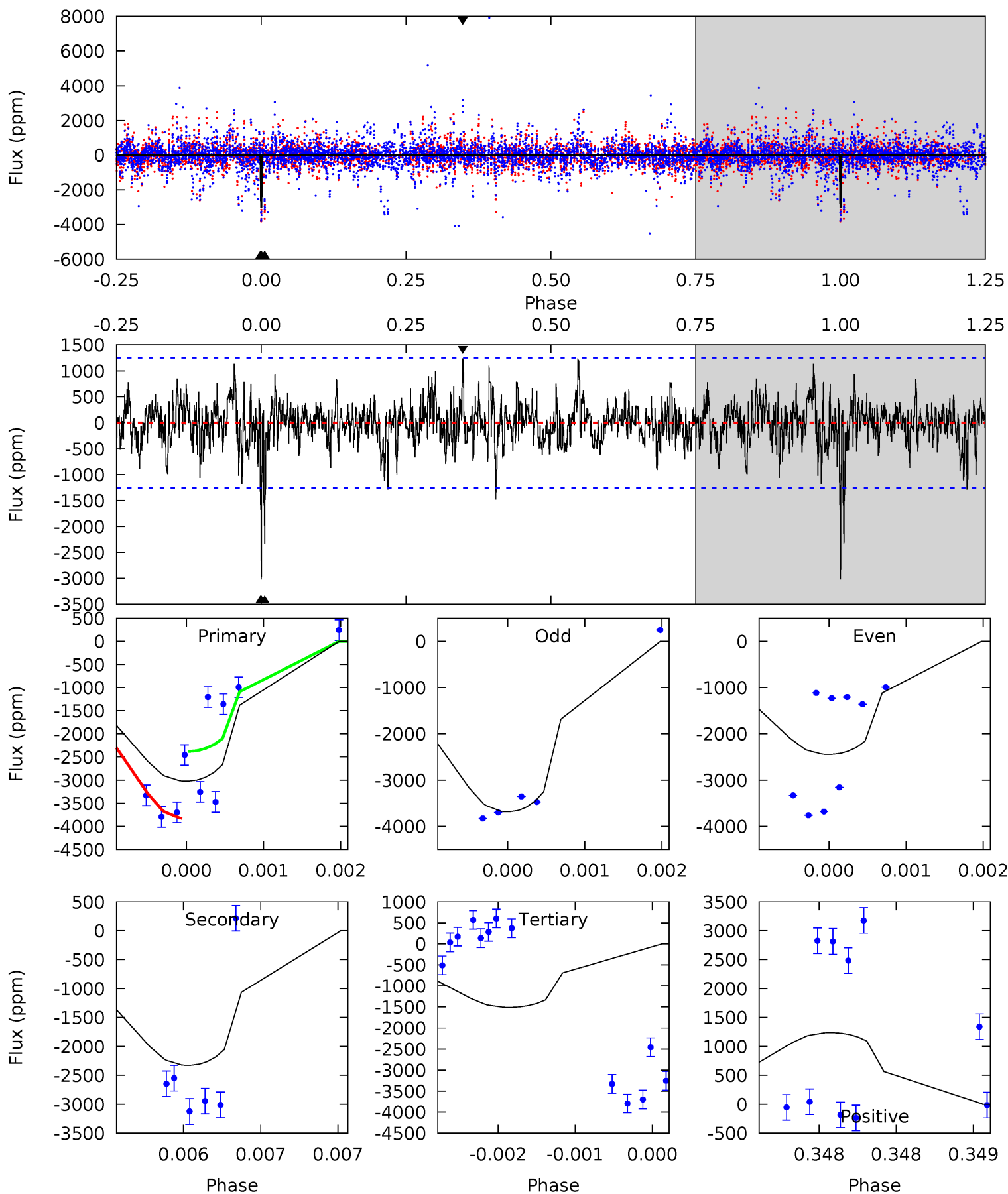


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

005372048-05, P = 112.866907 Days, E = 102.668577 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	10.2	6.61	5.42	5.49	3.35	1.42	6.62	7.81	3.58	4.77	2.09	0.79	0.29	3.01



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 005372048

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4342^{+117}_{-143}	$4.738^{+0.070}_{-0.030}$	$-1.100^{+0.300}_{-0.350}$	$0.502^{+0.035}_{-0.055}$	$0.502^{+0.037}_{-0.037}$	$5.603^{+1.741}_{-0.761}$
	+3%/-3%	+1%/-1%	+27%/-32%	+7%/-11%	+7%/-7%	+31%/-14%
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 005372048-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2328 ± 229	$11.64^{+11.12}_{-8.56}$	311^{+11}_{-10}	2724^{+1294}_{-426}	1231^{+15980}_{-908}
Alt.	N/A	N/A	N/A	N/A	N/A

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 $A_{obs} \gg 1.0$

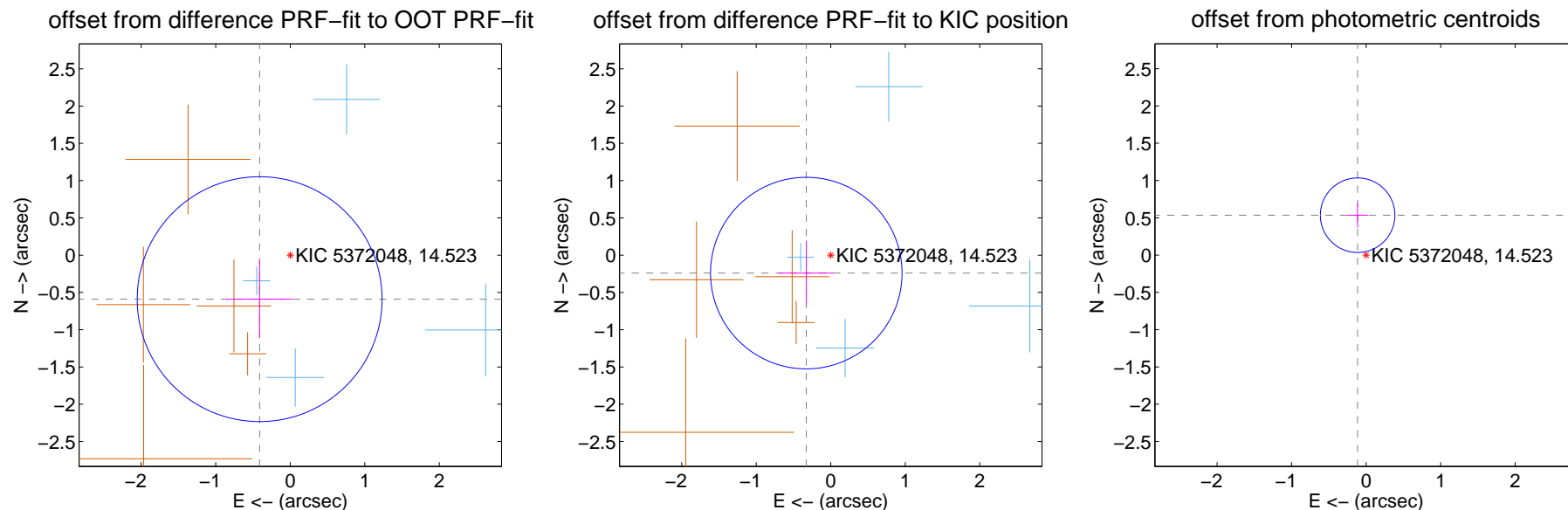
DV Centroid Data

Supplemental centroid analysis for 005372048-05. Kepler magnitude: 14.52. Transit SNR 8.33

There are 4 quarters with good PRF difference image offsets

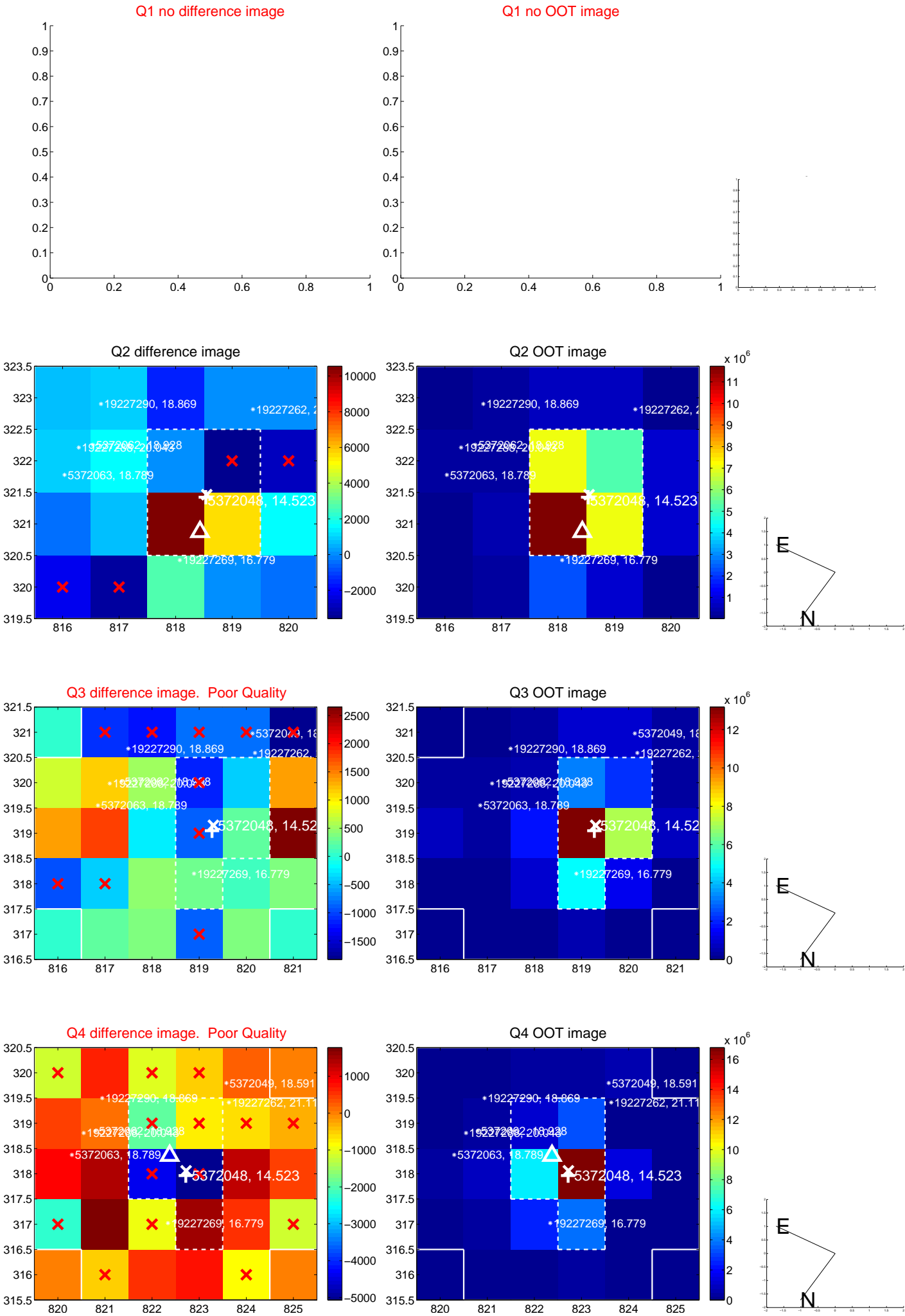
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.719 ± 0.548	1.31	0.411 ± 0.445	-0.590 ± 0.525
PRF-fit source offset from KIC position	0.407 ± 0.428	0.95	0.328 ± 0.370	-0.241 ± 0.438
photometric centroid source offset	0.55 ± 0.17	3.28	0.11 ± 0.14	0.53 ± 0.17

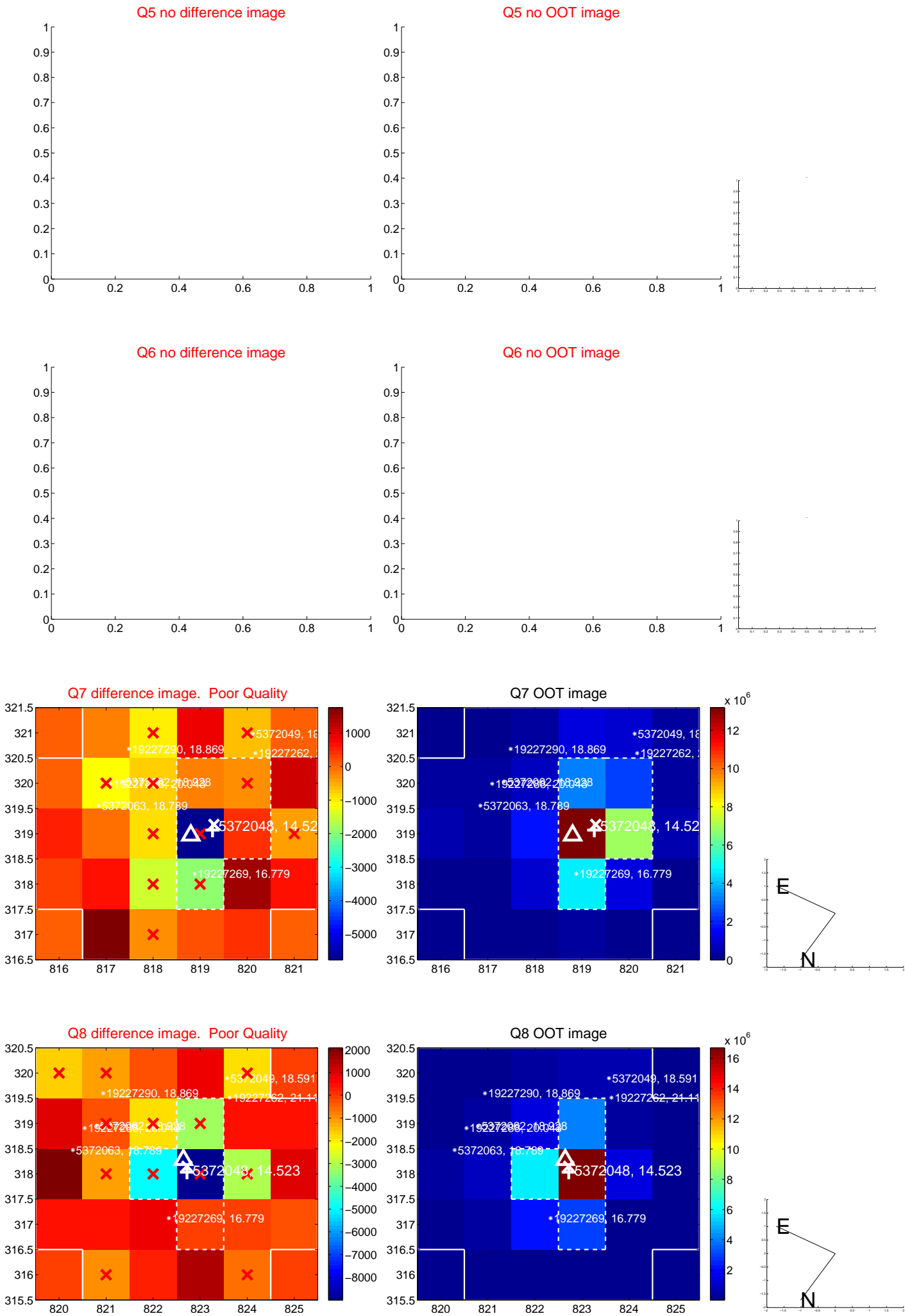


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

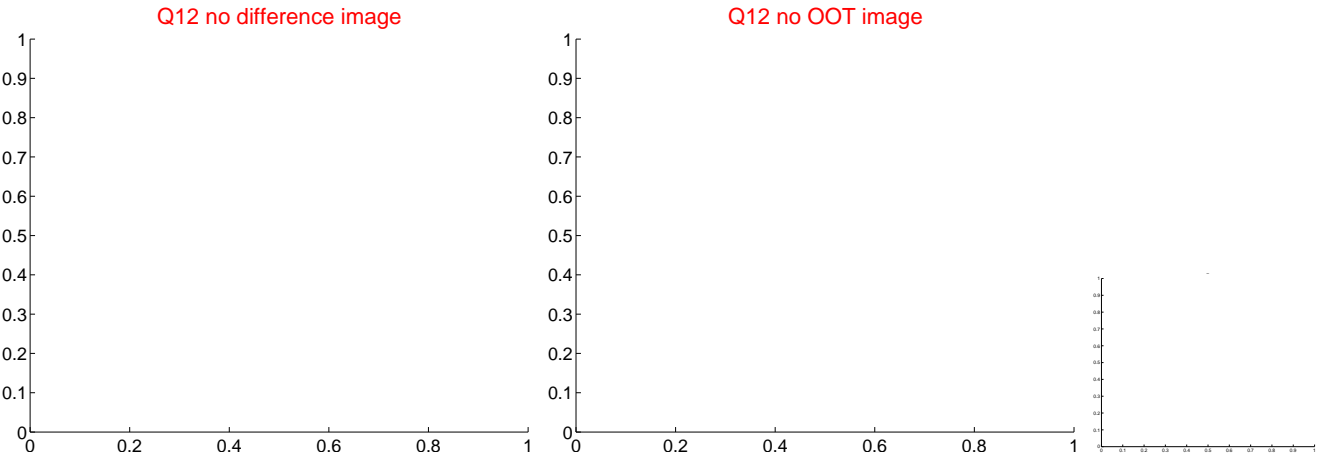
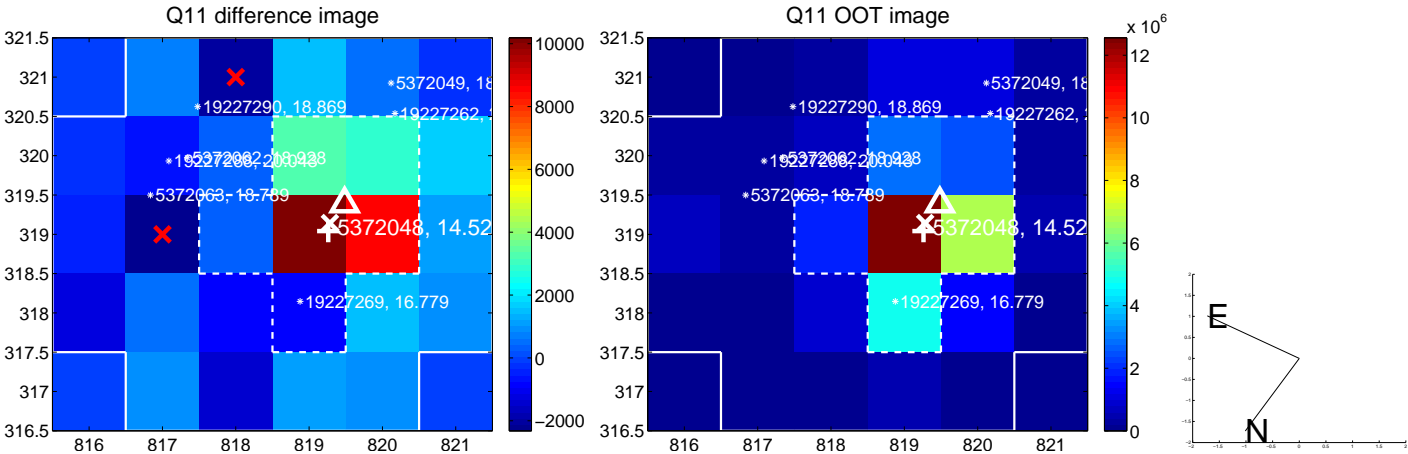
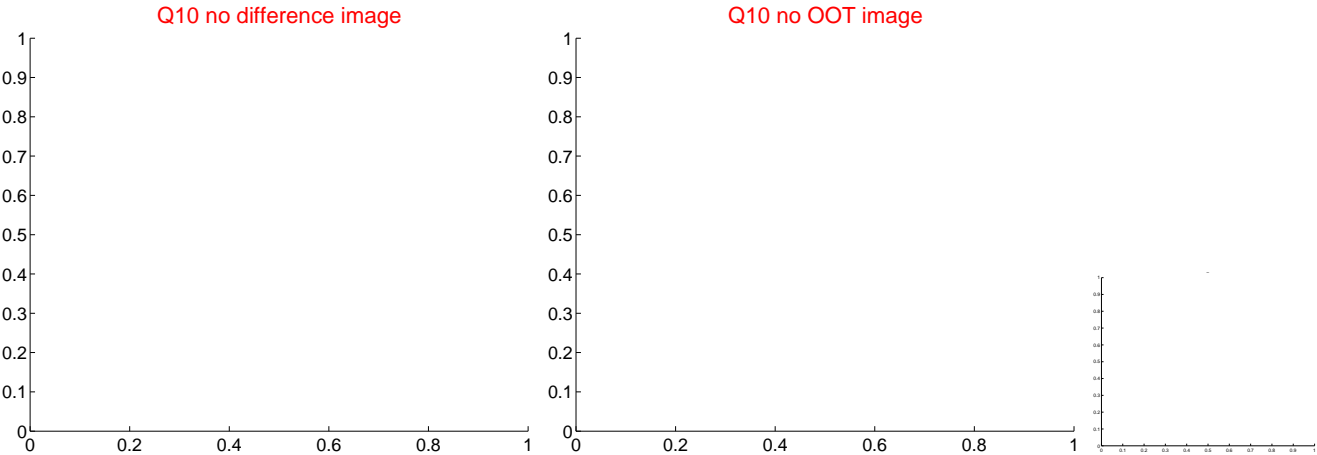
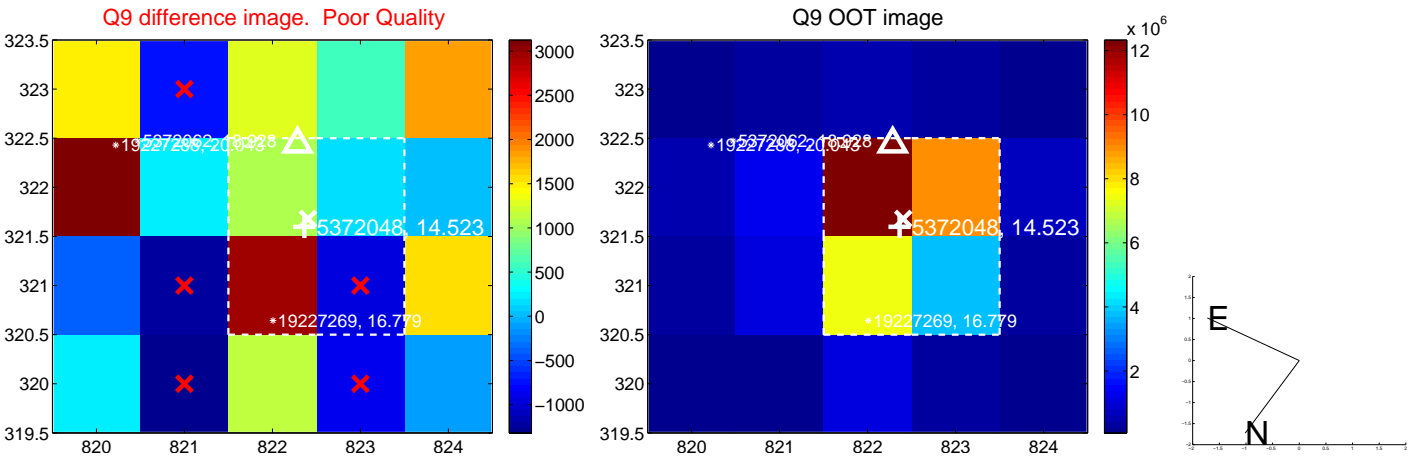
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



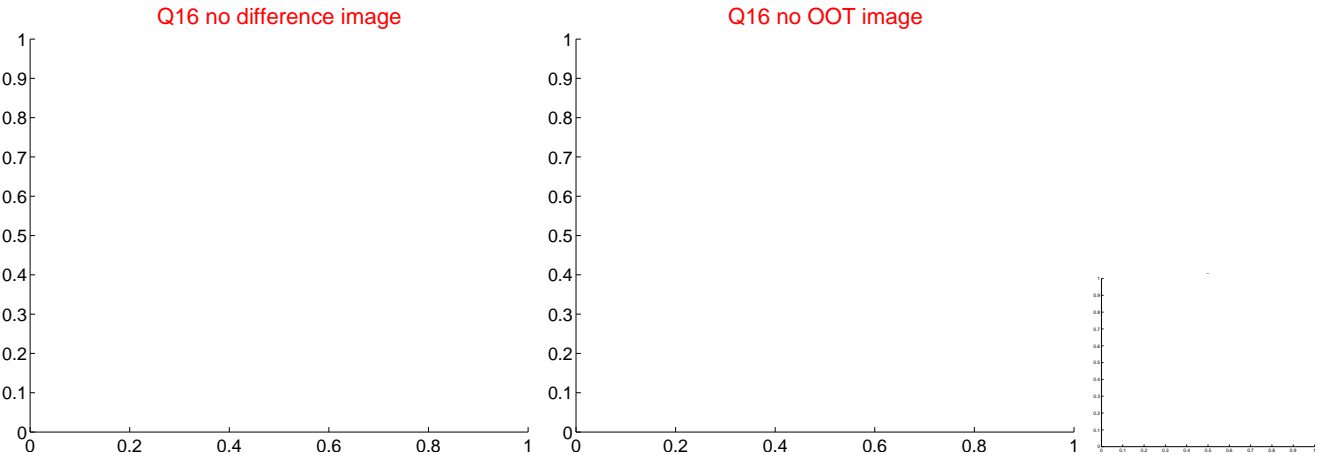
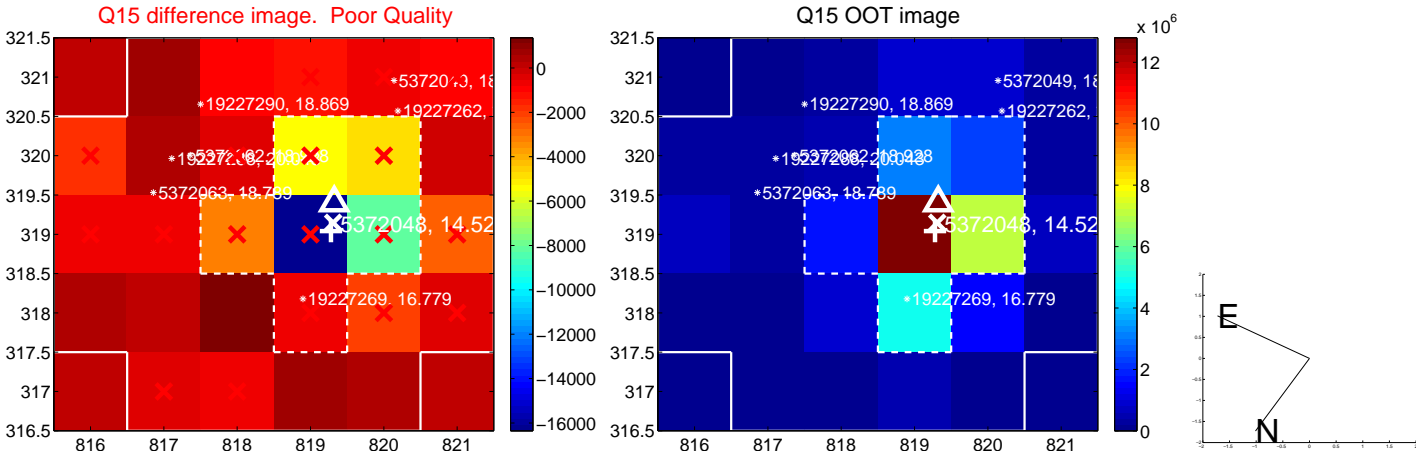
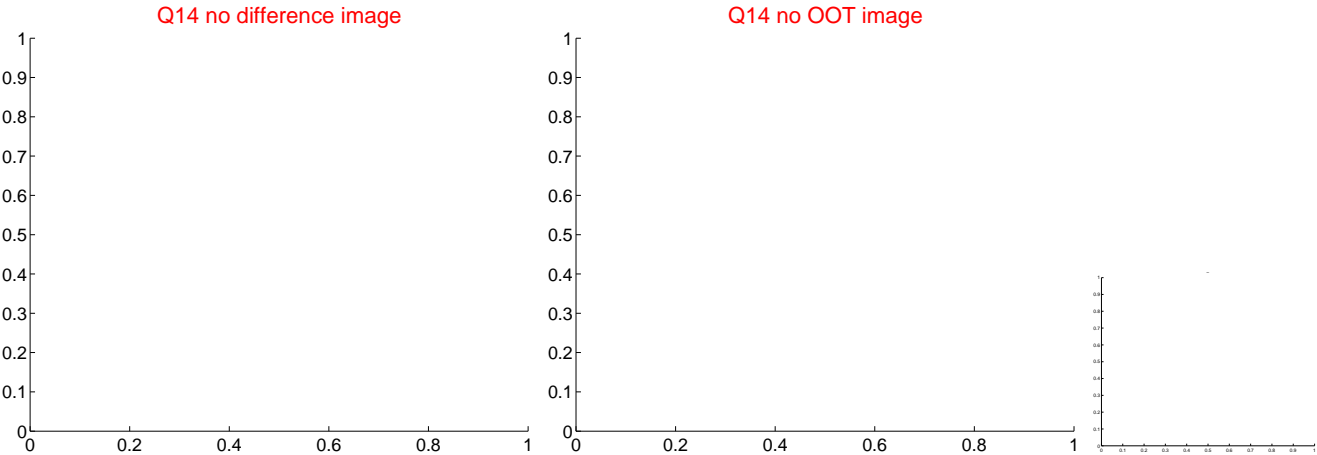
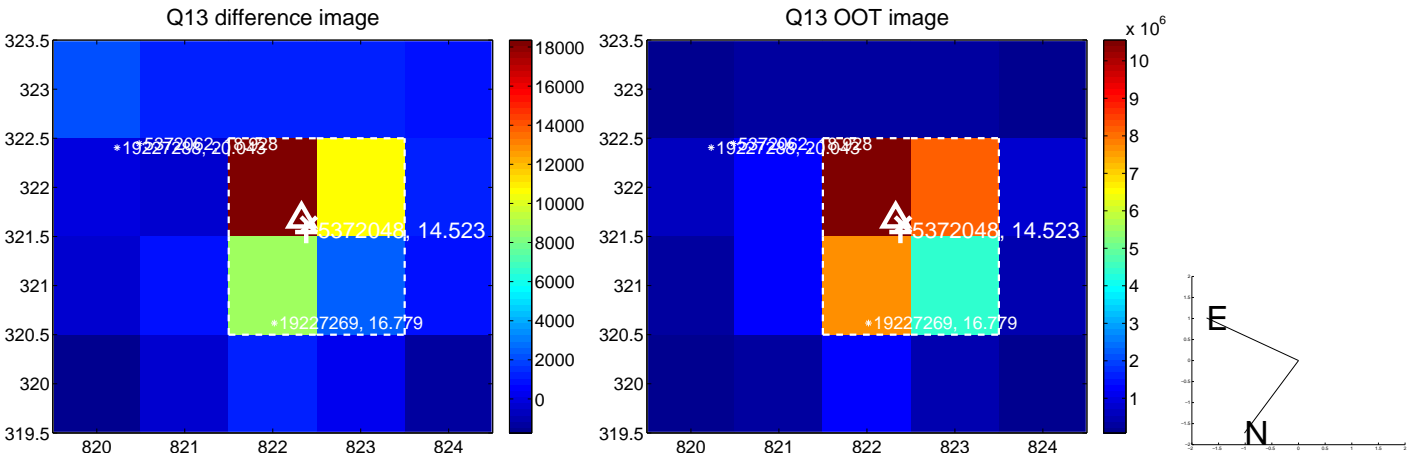
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



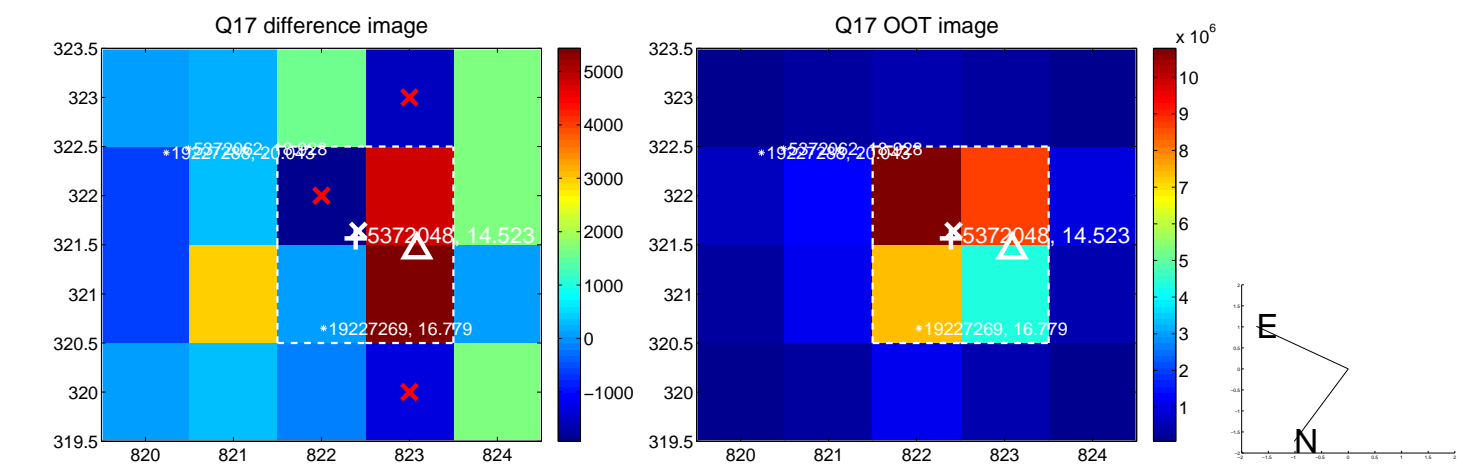
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



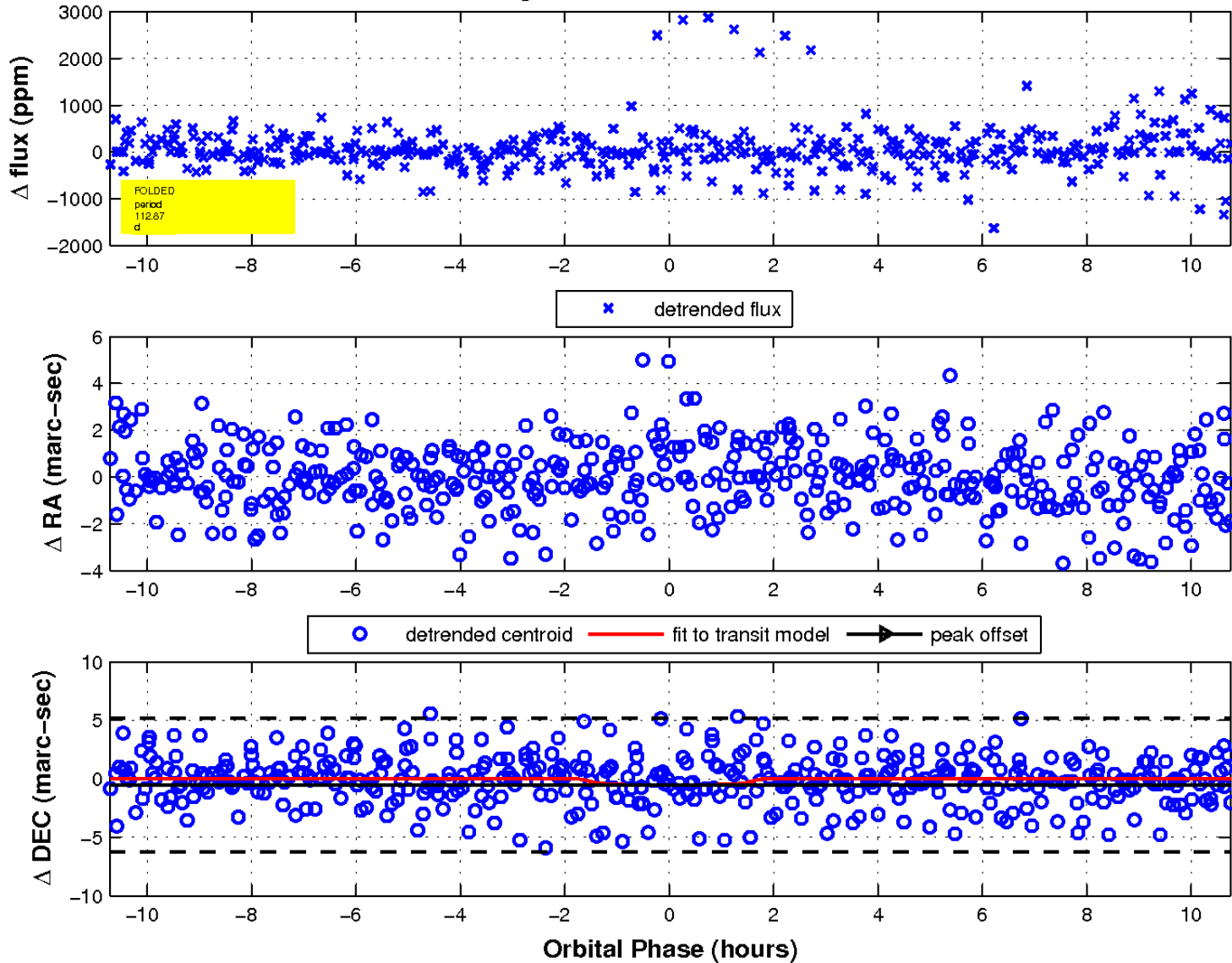
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

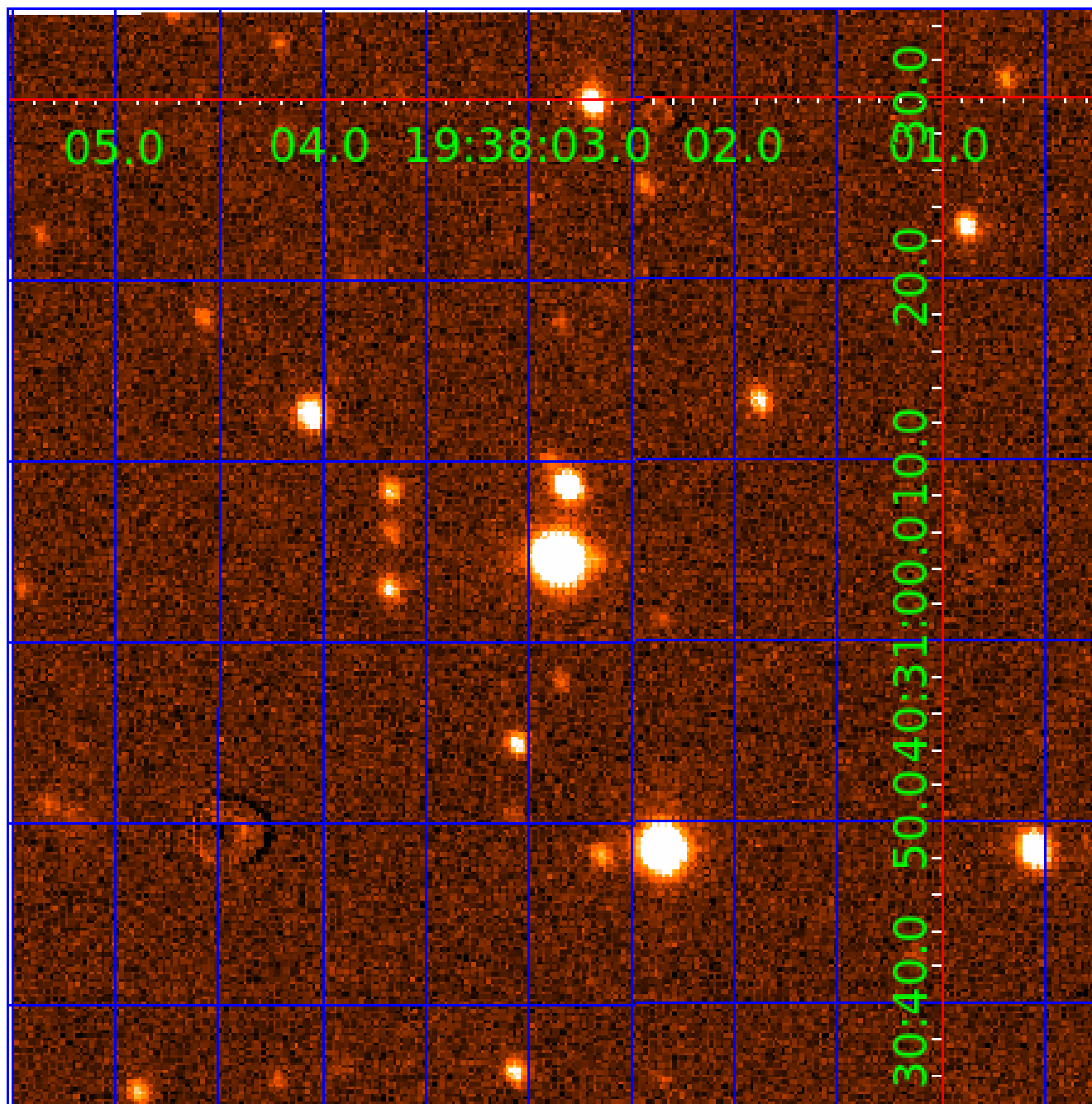


fluxWeightedCentroids, Planet 5 of 6



UKIRT Image

Declination



KIC 005372048

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})
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005372048-02	OBS	No	48.876668	159.677701	2170.0	2.074	11.5	7.5	0.50	4342	2.73	1.85
005372048-03	OBS	No	37.225748	141.726372	2362.3	1.714	11.3	6.1	0.50	4342	2.41	2.67
005372048-04	OBS	No	50.625582	142.391923	2668.6	2.224	12.4	8.0	0.50	4342	2.70	1.77
005372048-05	OBS	No	112.866907	215.535484	3603.9	3.590	10.3	8.3	0.50	4342	3.25	0.61
005372048-06	OBS	No	48.464273	165.785812	2763.5	2.245	9.6	8.0	0.50	4342	2.72	1.88

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005372048-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
005372048-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
005372048-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—CENT_KIC_POS
005372048-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT
005372048-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES
005372048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_ALT—CENT_KIC_POS

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

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

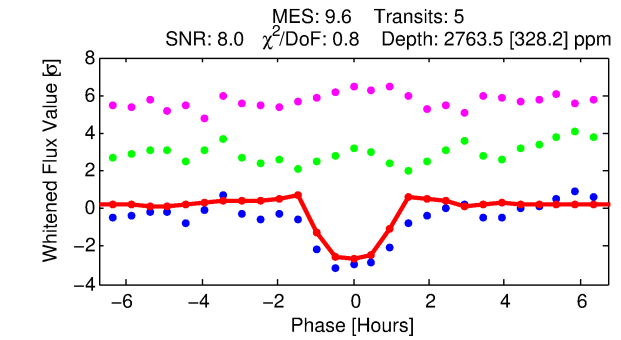
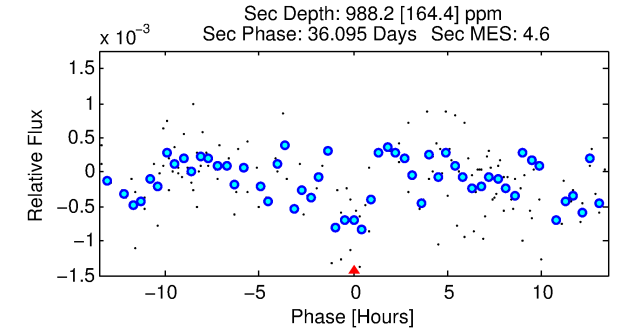
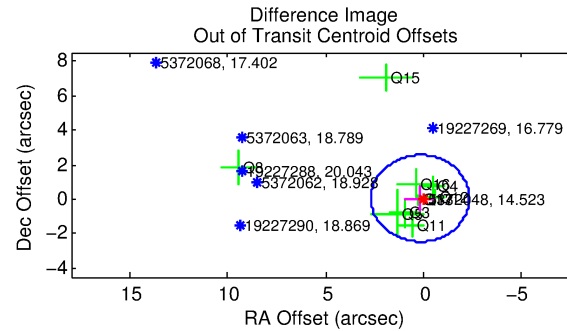
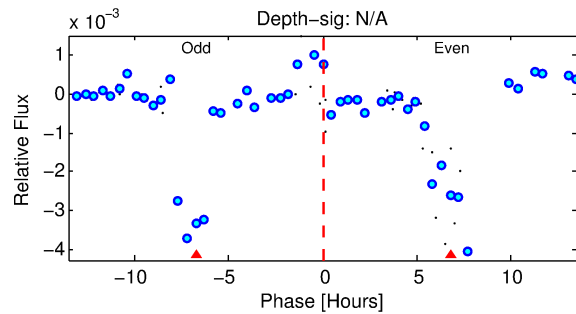
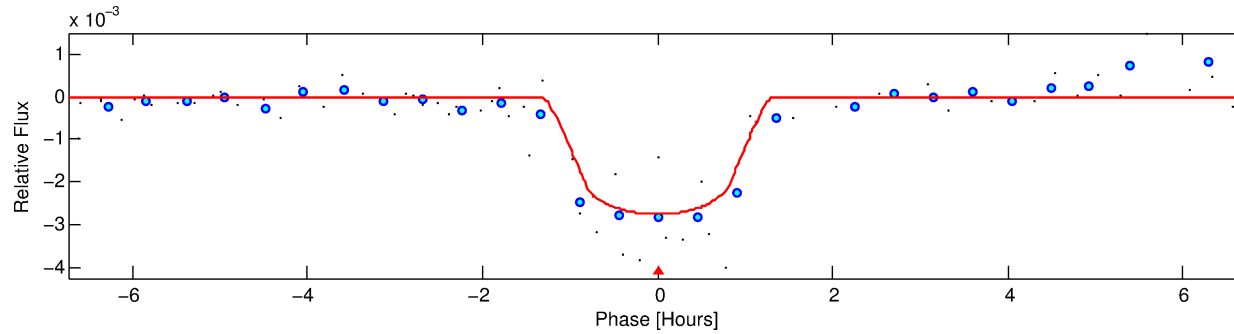
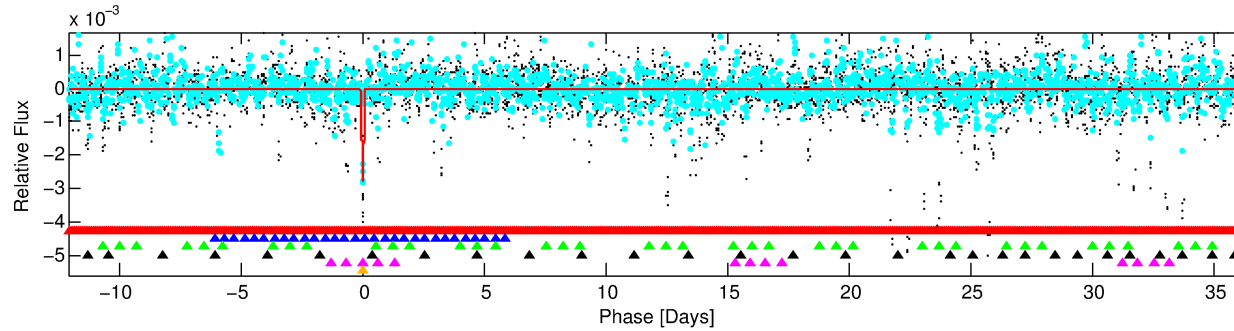
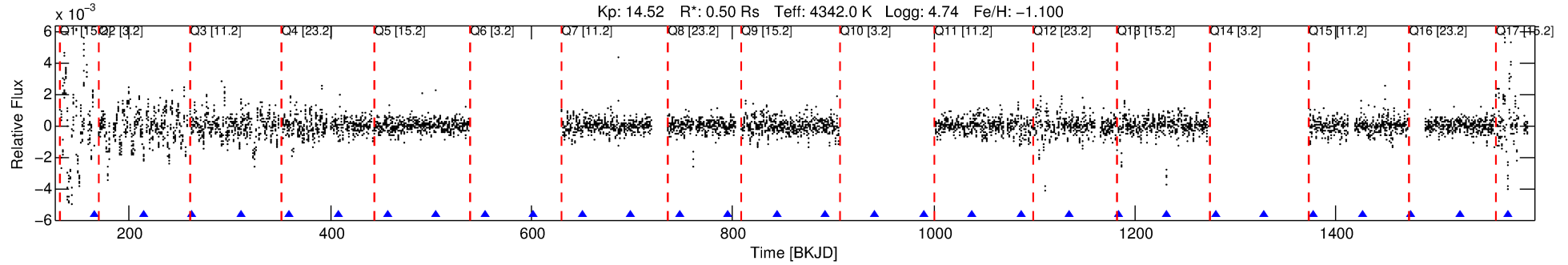
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005372048-06

No Significant Match Found

DV One-Page Summary

KIC: 5372048 Candidate: 6 of 6 Period: 48.464 d



DV Fit Results:

Period = 48.46427 [0.00036] d
Epoch = 165.7858 [0.0044] BKJD
Rp/R* = 0.0497 [0.0800]
a/R* = 147.91 [975.72]
b = 0.55 [8.64]
Seff = 1.87 [0.35]
Teq = 298 [14] K
Rp = 2.72 [4.39] Re
a = 0.2069 [0.0188] AU
Ag = 3144.89 [10158.27] [0.31σ]
Teffp = 3455 [2790] K [1.13σ]

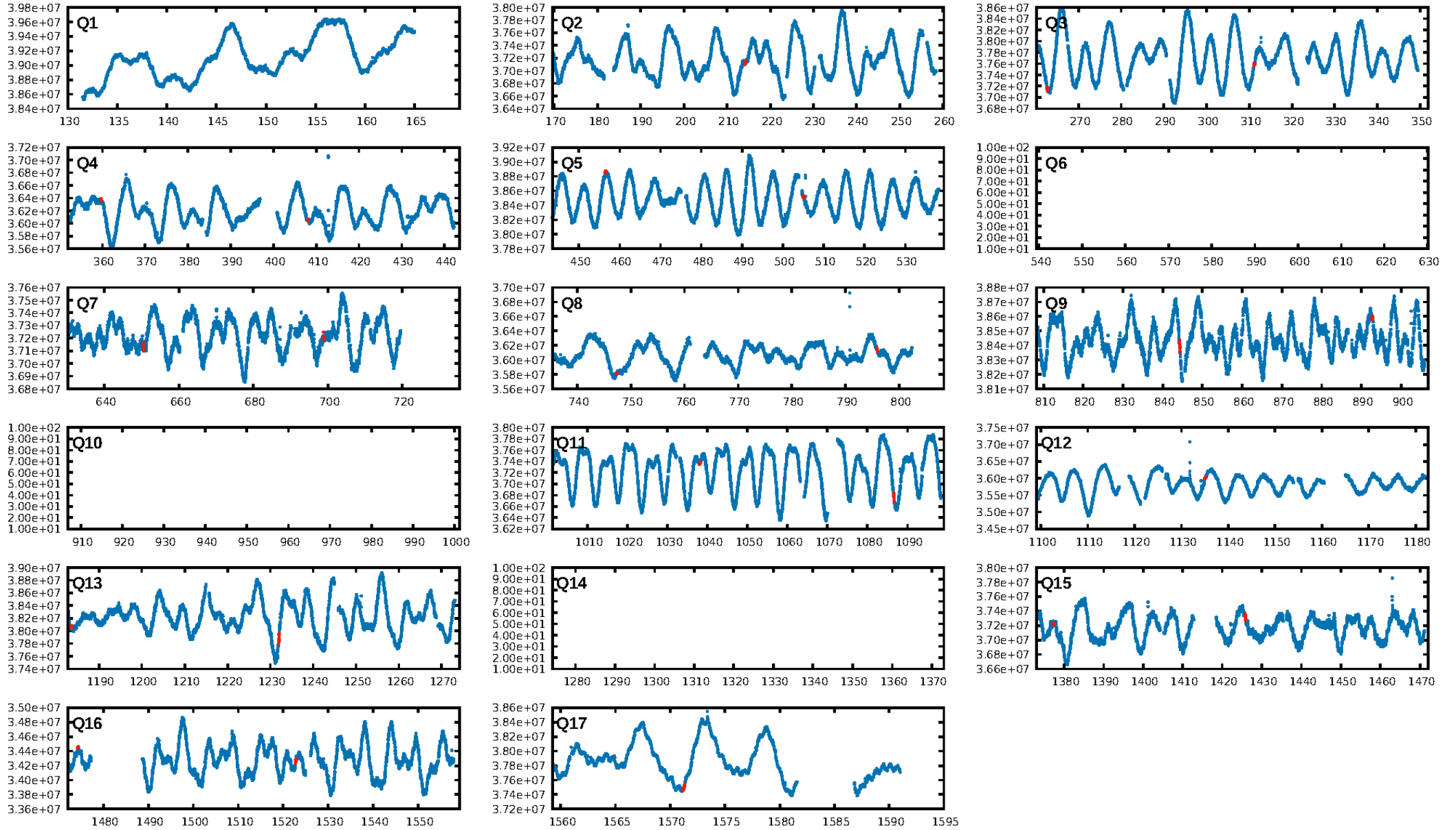
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [95.50σ]
LongPeriod-sig: 99.9% [3.24σ]
ModelChiSquare2-sig: 8.8%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 1.35e-17
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -3.231
Centroid-sig: N/A
Centroid-so: 0.490 arcsec [2.96σ]
OotOffset-rm: 0.179 arcsec [0.21σ]
KicOffset-rm: 0.404 arcsec [0.52σ]
OotOffset-st: 0/3/4/3 [10]
KicOffset-st: 0/3/4/3 [10]
DiffImageQuality-fgm: 0.40 [4/10]
DiffImageOverlap-fno: 0.00 [0/13]

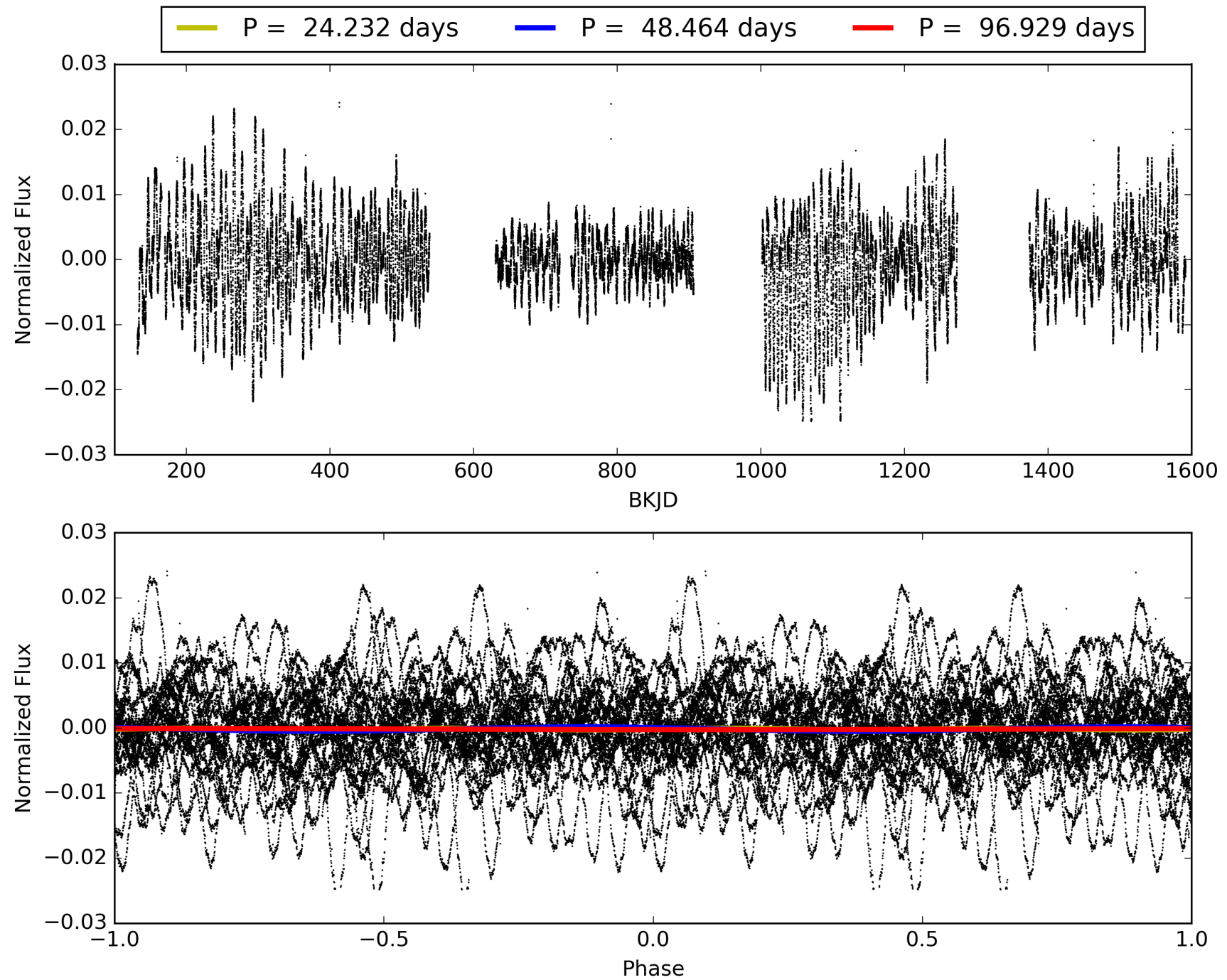
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:28:45 Z

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

TCE 005372048-06, PDC Light Curves

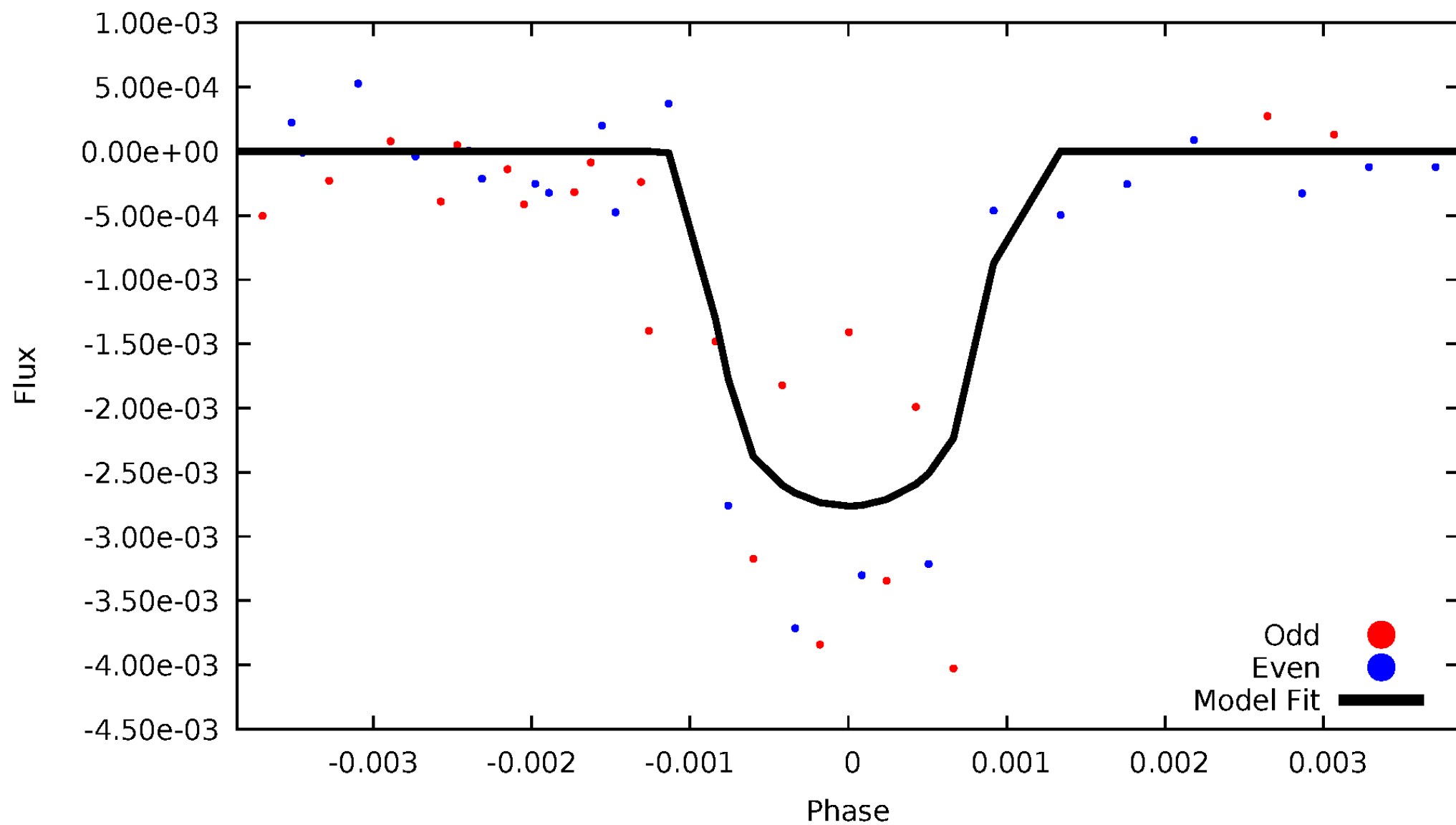


TCE 005372048-06



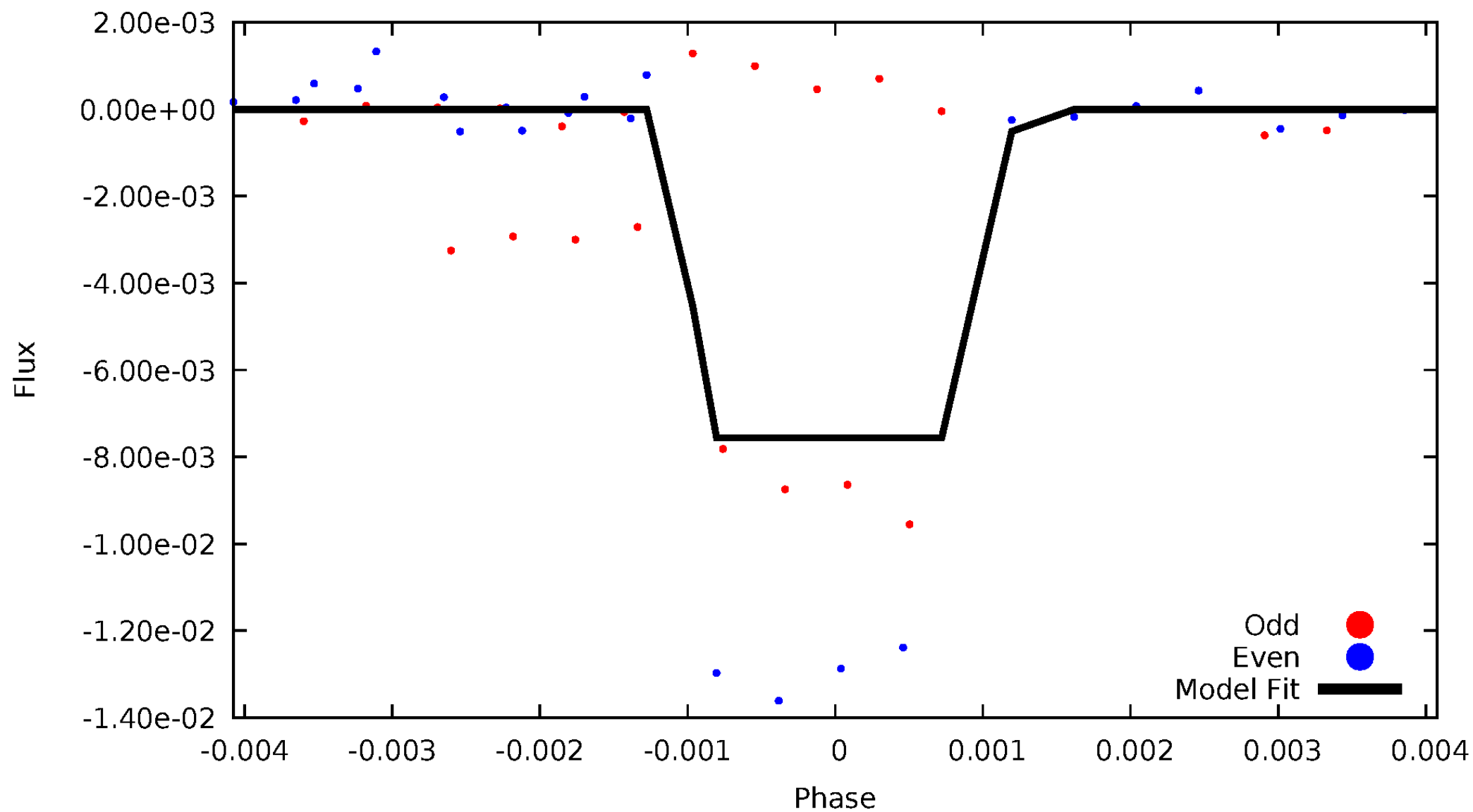
DV Odd/Even

TCE 005372048-06



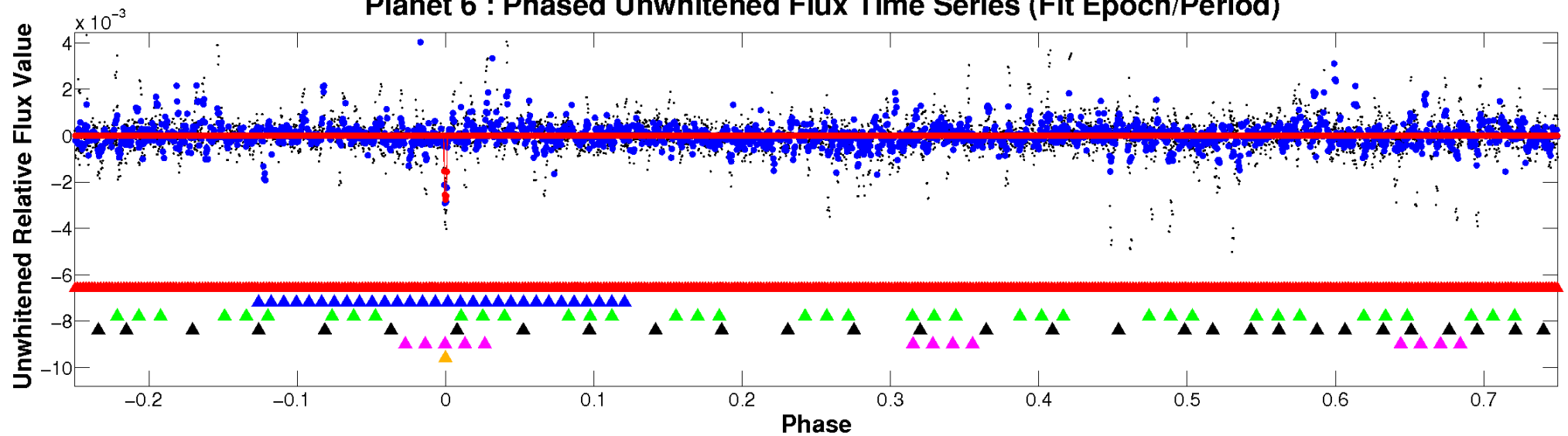
ALT Odd/Even

TCE 005372048-06

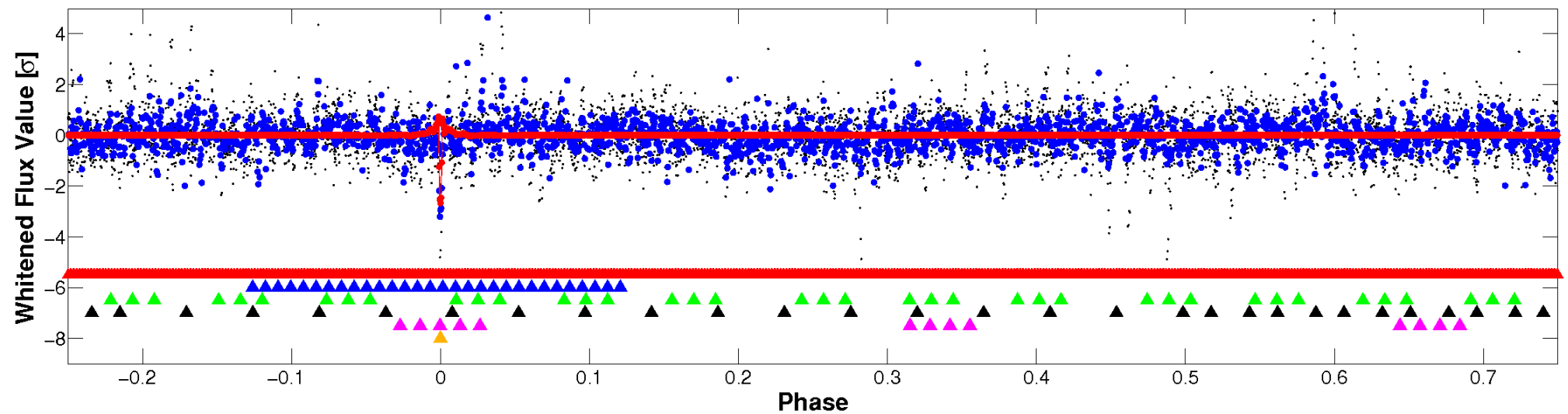


Non-Whitened Vs. Whitened Light Curve

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

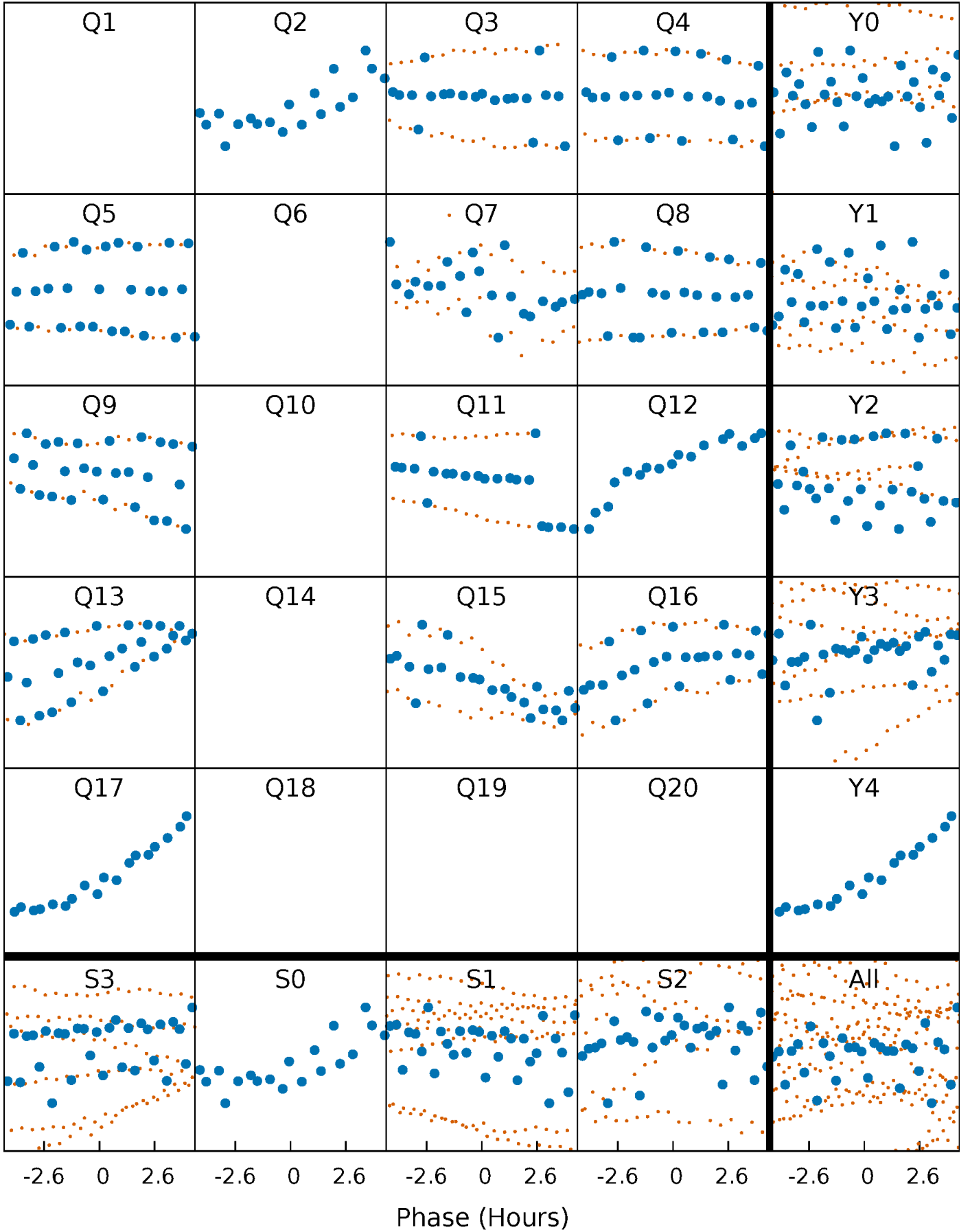


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



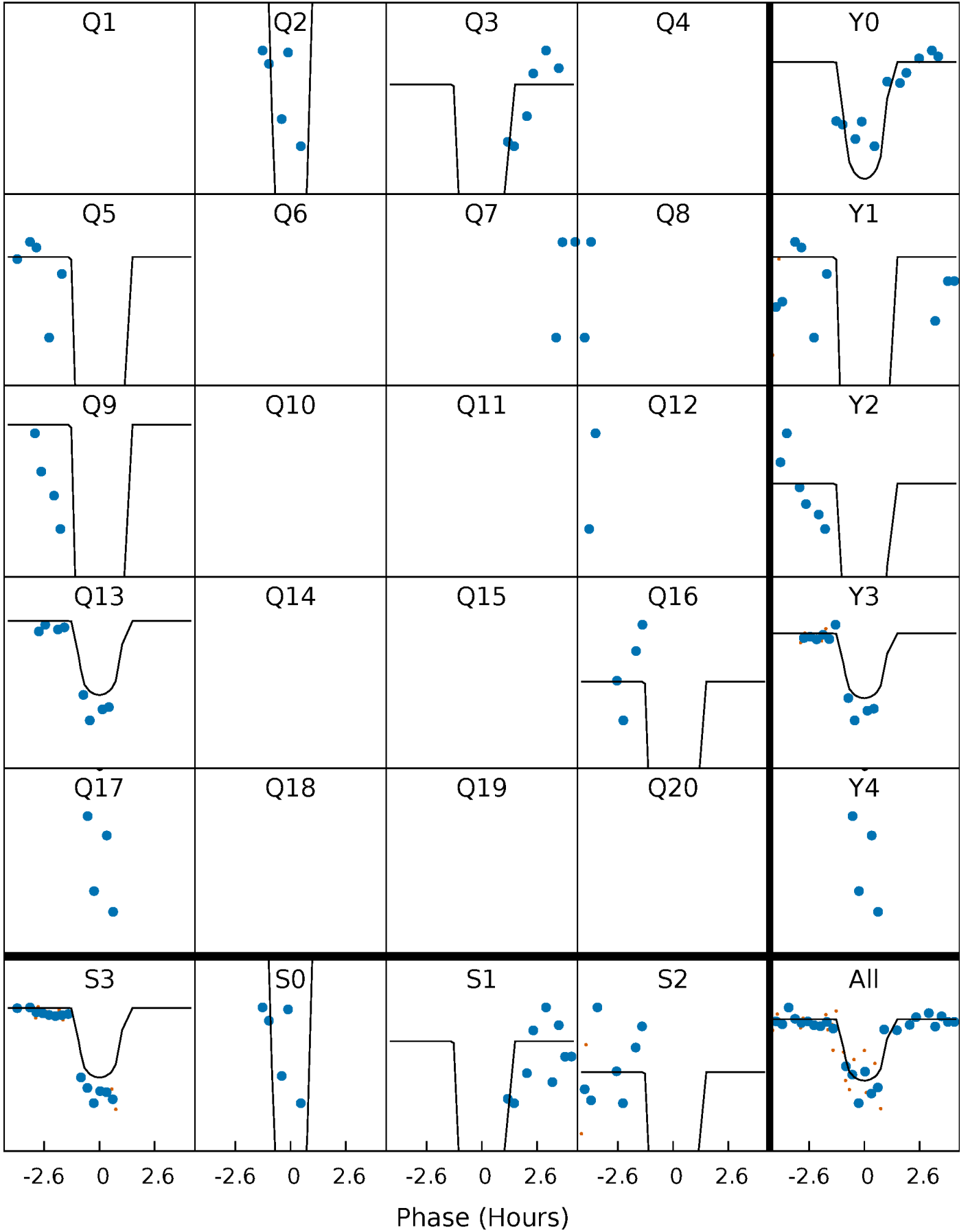
PDC Quarter-Phased Transit Curves

TCE 005372048-06 $P = 48.464273$ Days $T_0 = 165.785812$ (BKJD)



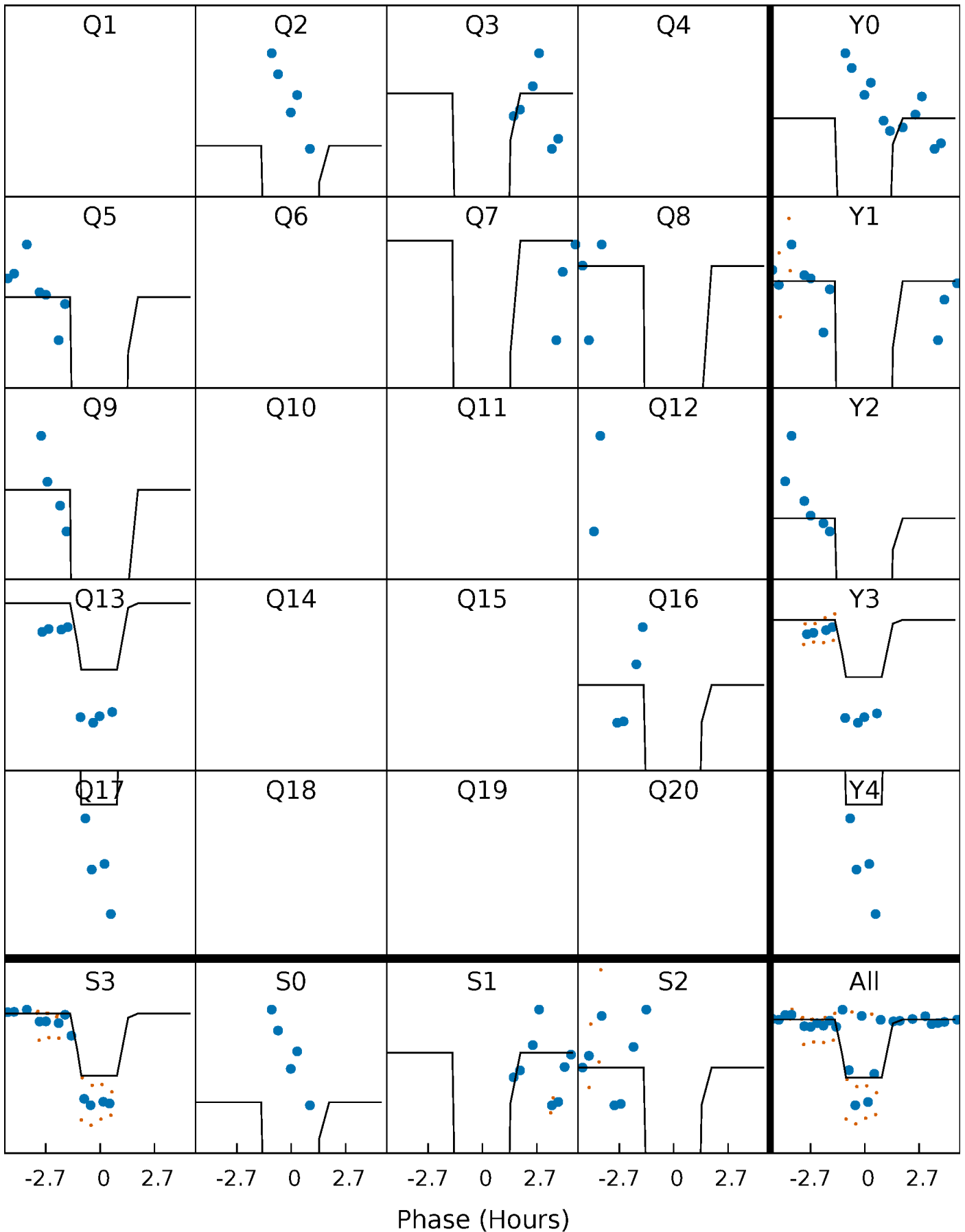
DV Quarter-Phased Transit Curves

TCE 005372048-06 P= 48.464273 Days $T_0=165.785812$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

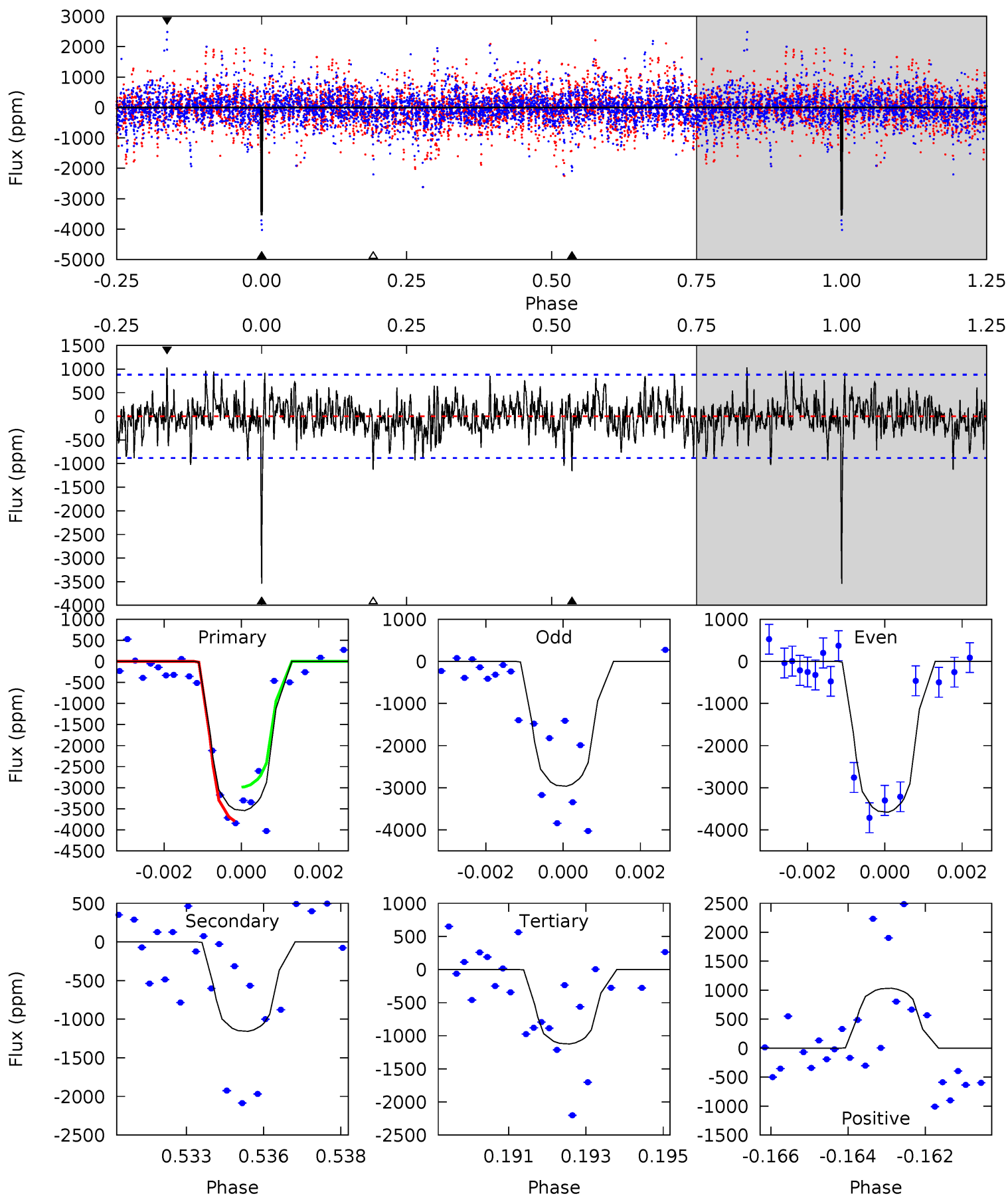
TCE 005372048-06 P= 48.465060 Days $T_0=165.770725$ (BKJD)



DV Model-Shift Uniqueness Test

005372048-06, $P = 48.464273$ Days, $E = 117.321539$ Days

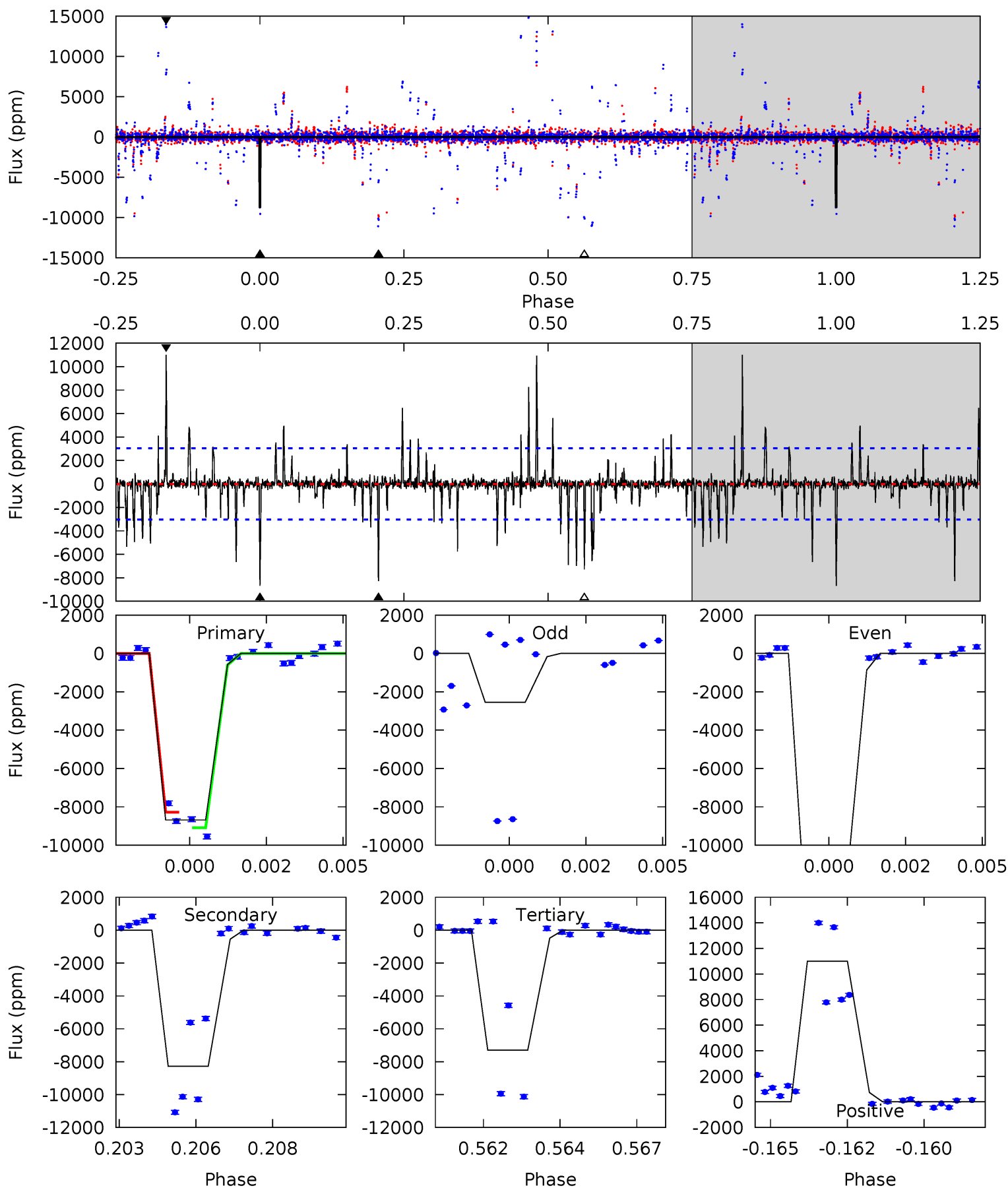
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.4	6.98	6.79	6.24	5.32	3.08	1.68	14.6	15.1	0.20	0.75	1.77	0.86	0.23	2.55



Alt Model-Shift Uniqueness Test

005372048-06, P = 48.465060 Days, E = 117.305665 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.1	14.4	12.7	19.1	5.29	3.03	1.56	2.41	-4.03	1.70	-4.73	9.02	0.81	0.56	0



Stellar Parameters For KIC 005372048

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4342^{+117}_{-143}	$4.738^{+0.070}_{-0.030}$	$-1.100^{+0.300}_{-0.350}$	$0.502^{+0.035}_{-0.055}$	$0.502^{+0.037}_{-0.037}$	$5.603^{+1.741}_{-0.761}$
	+3%/-3%	+1%/-1%	+27%/-32%	+7%/-11%	+7%/-7%	+31%/-14%
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 005372048-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1157 ± 166	$4.01^{+3.56}_{-2.65}$	414^{+13}_{-17}	3307^{+1564}_{-545}	1753^{+13378}_{-1285}
Alt.	-8274 ± 574	$5.71^{+4.07}_{-3.31}$	413^{+15}_{-16}	4114^{+1834}_{-686}	6019^{+29576}_{-3914}

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

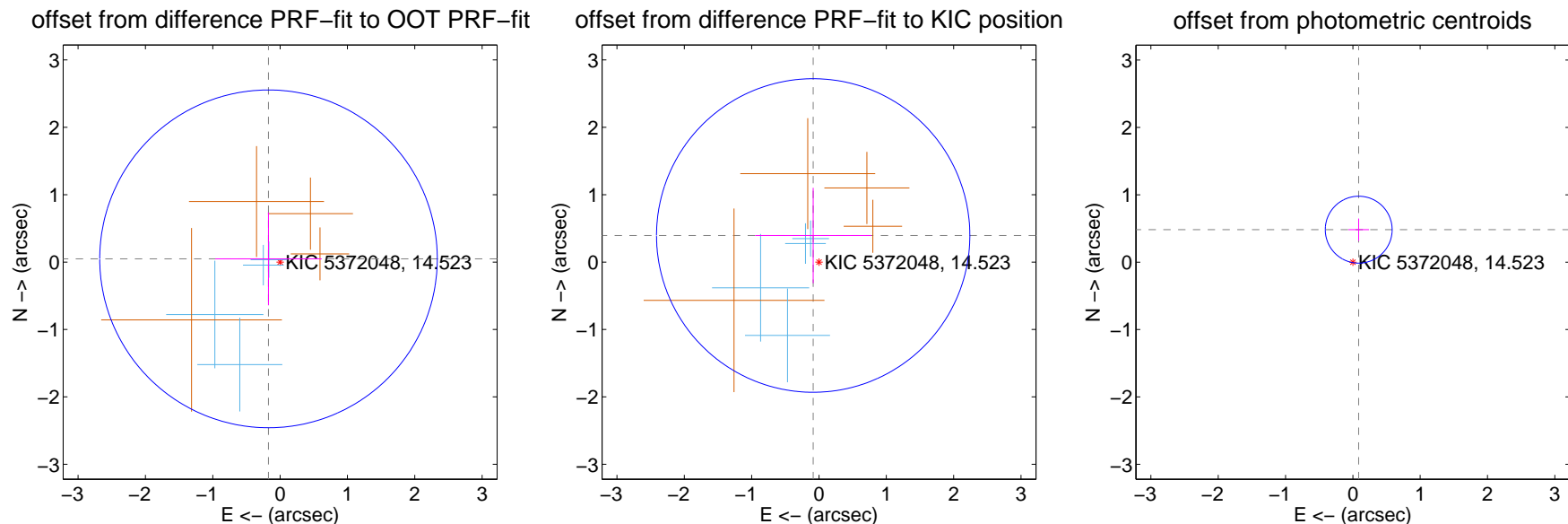
DV Centroid Data

Supplemental centroid analysis for 005372048-06. Kepler magnitude: 14.52. Transit SNR 8.04

There are 4 quarters with good PRF difference image offsets

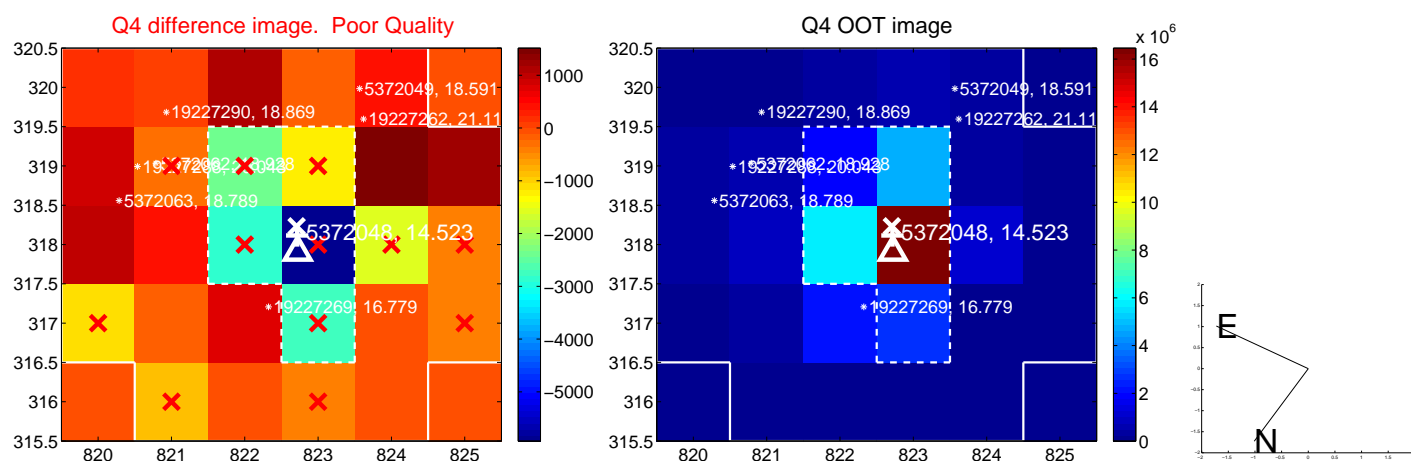
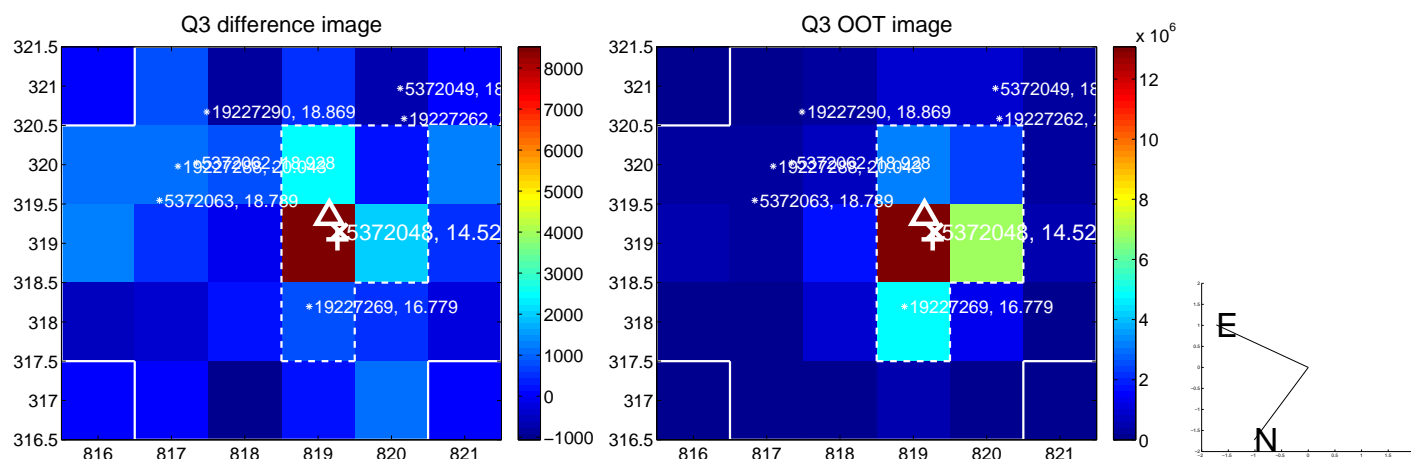
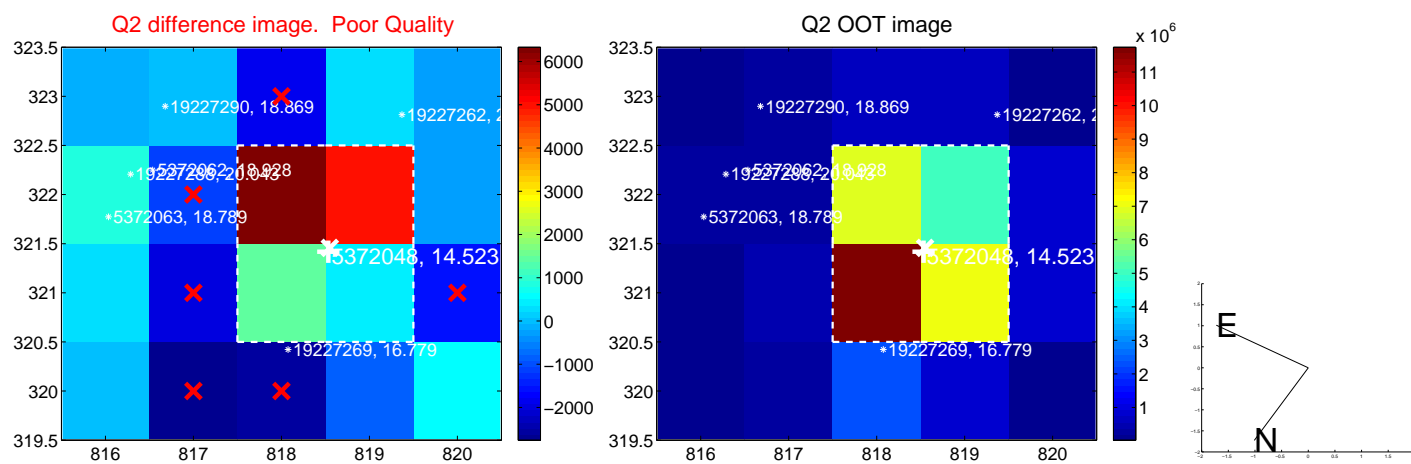
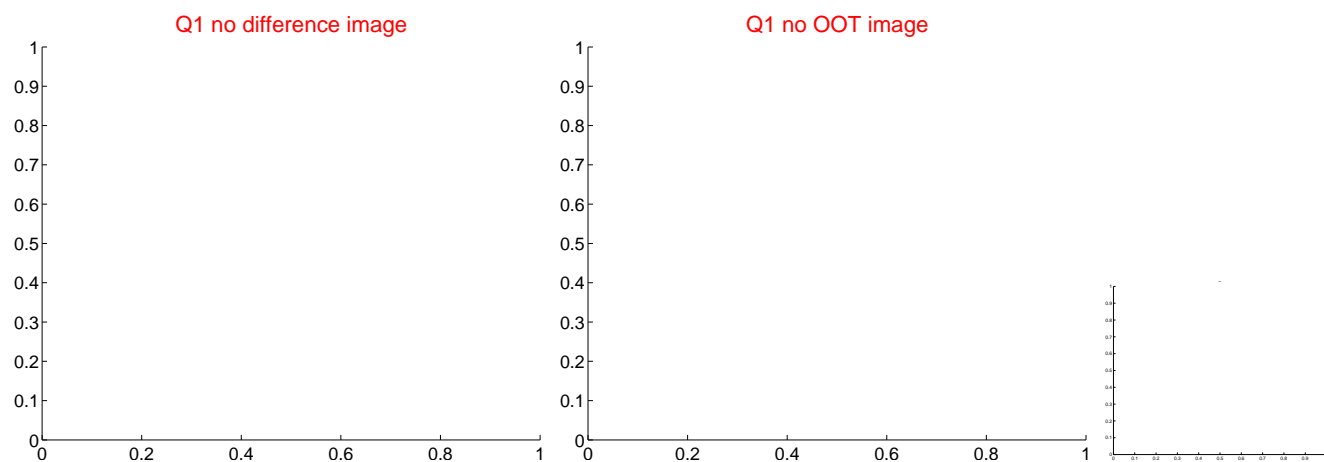
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.179 ± 0.835	0.21	0.172 ± 0.789	0.048 ± 0.689
PRF-fit source offset from KIC position	0.404 ± 0.775	0.52	0.086 ± 0.862	0.395 ± 0.707
photometric centroid source offset	0.49 ± 0.17	2.96	-0.09 ± 0.15	0.48 ± 0.17

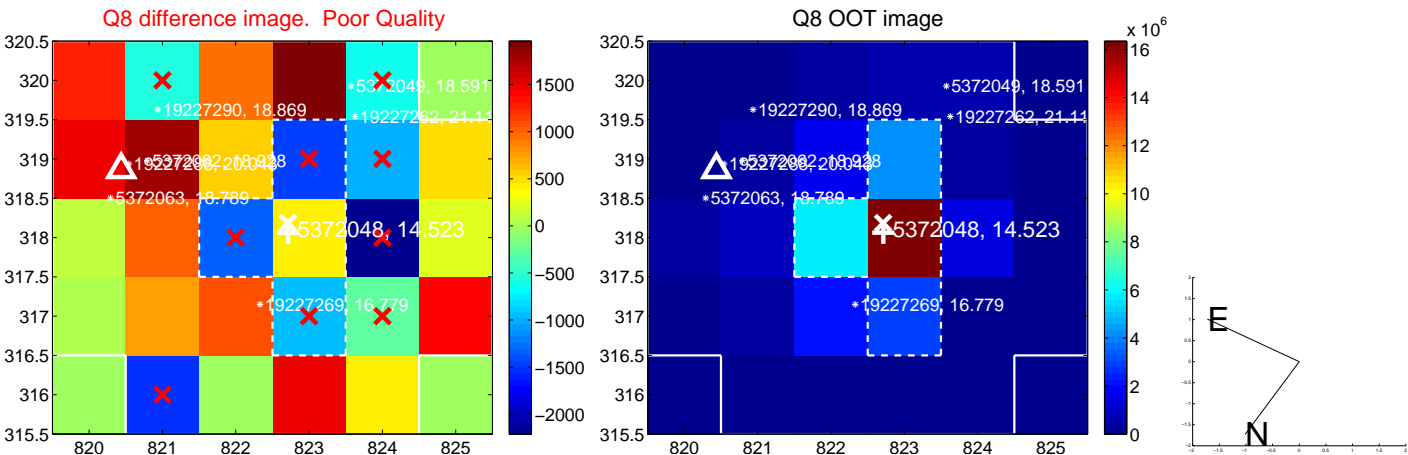
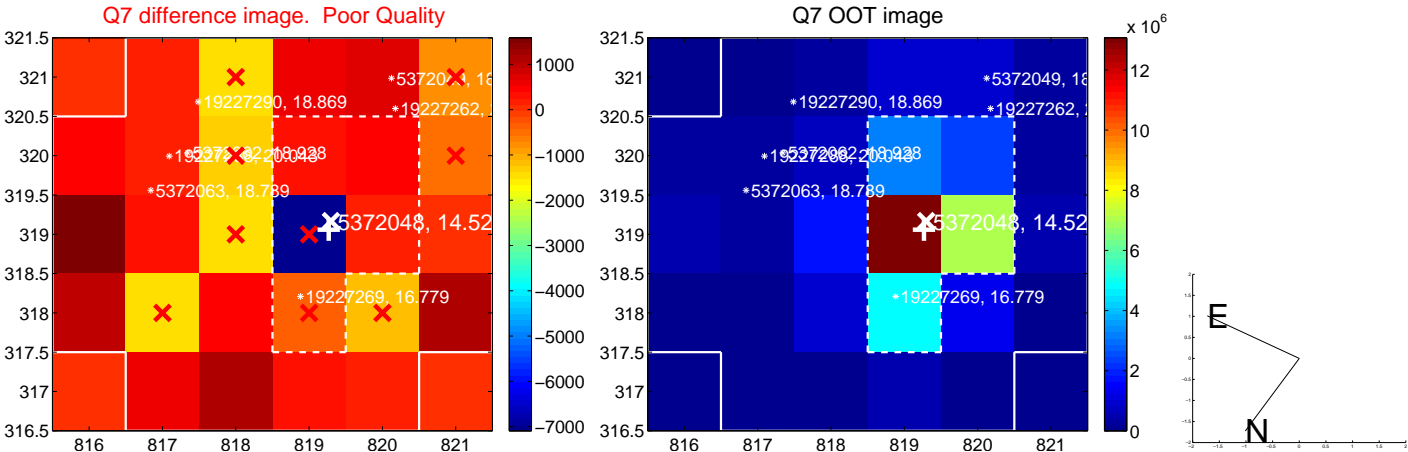
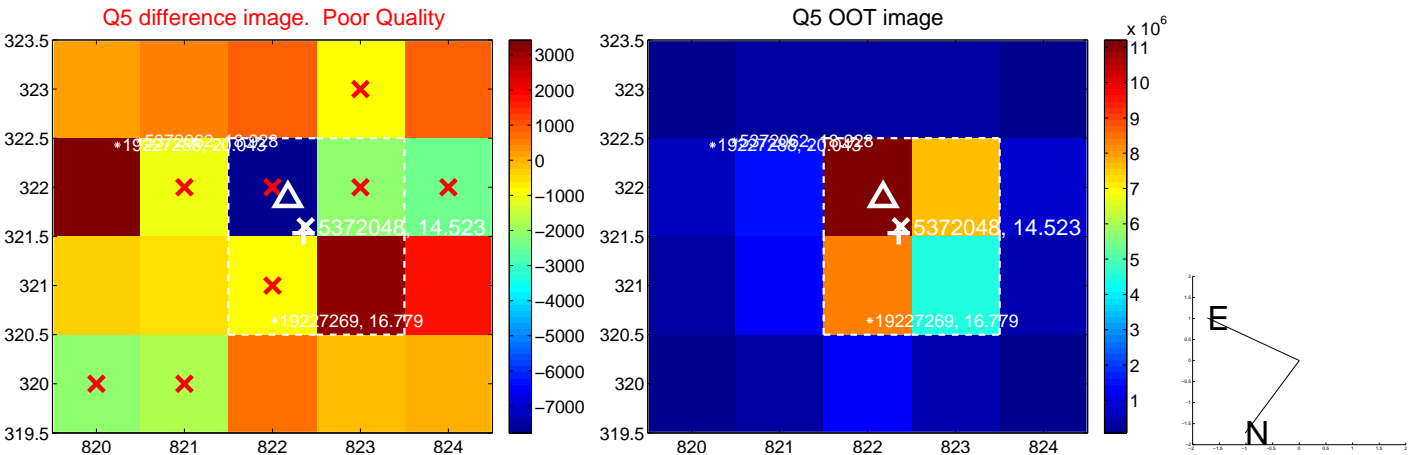


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

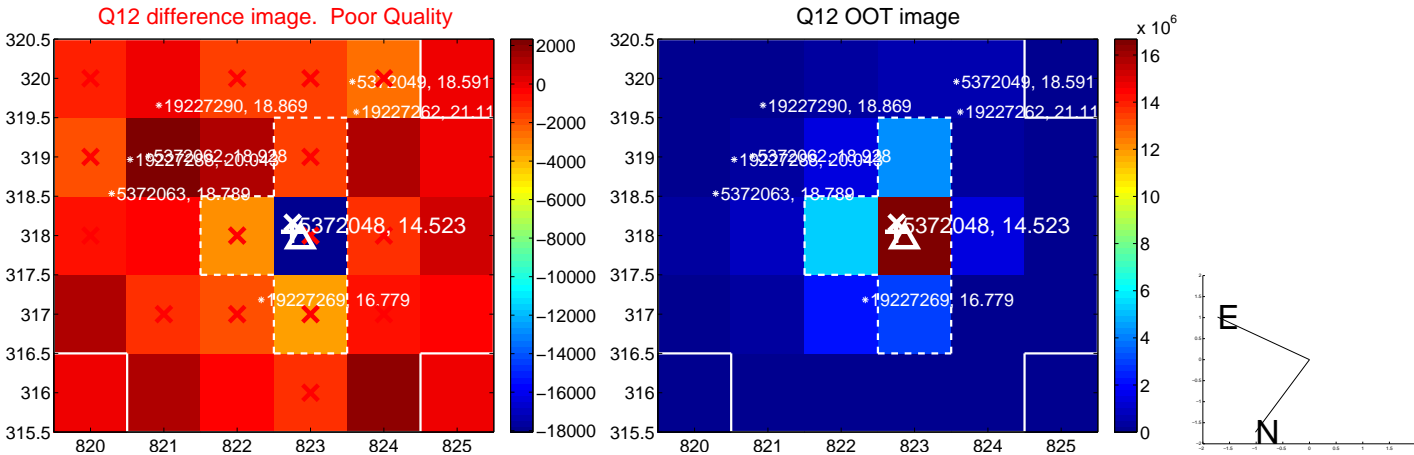
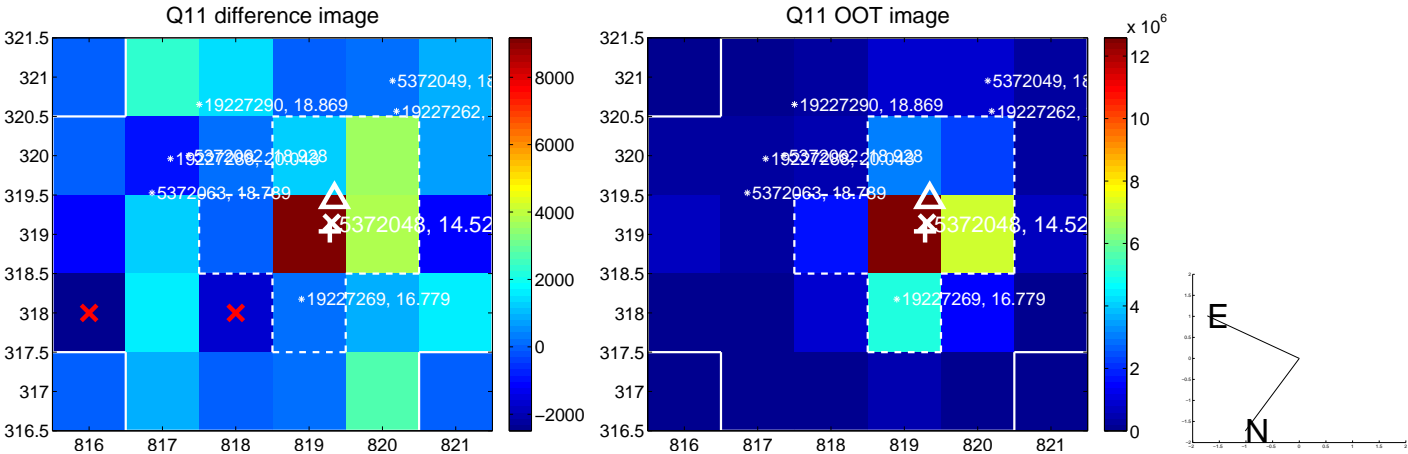
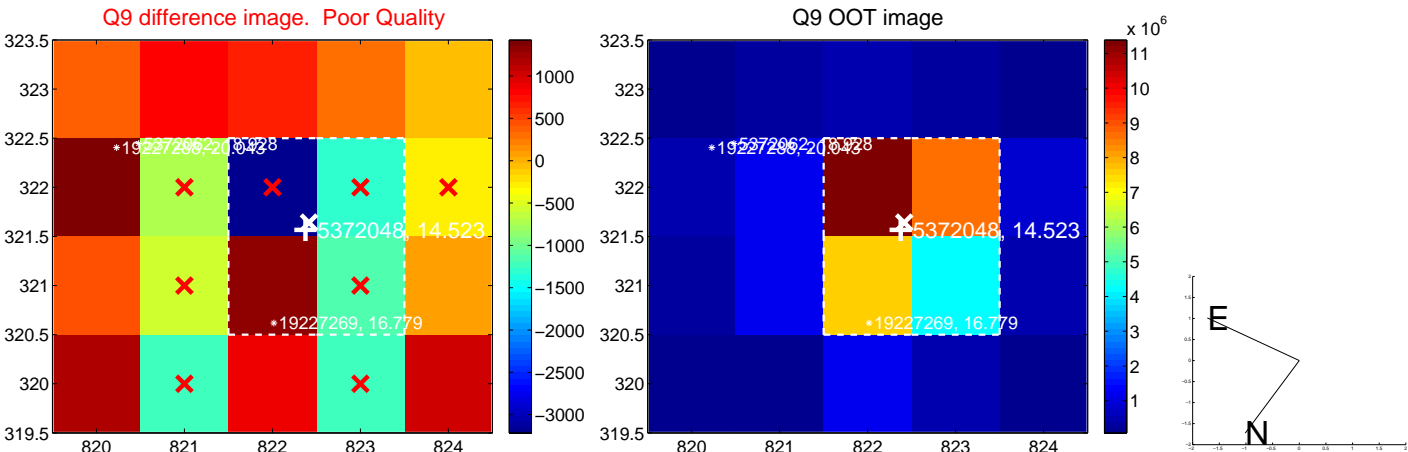
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



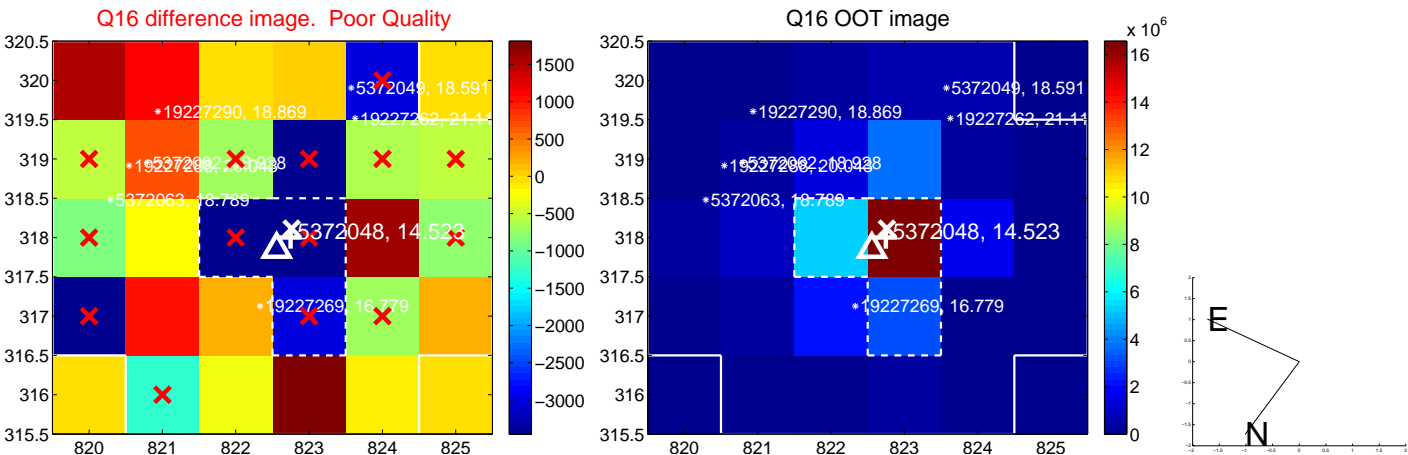
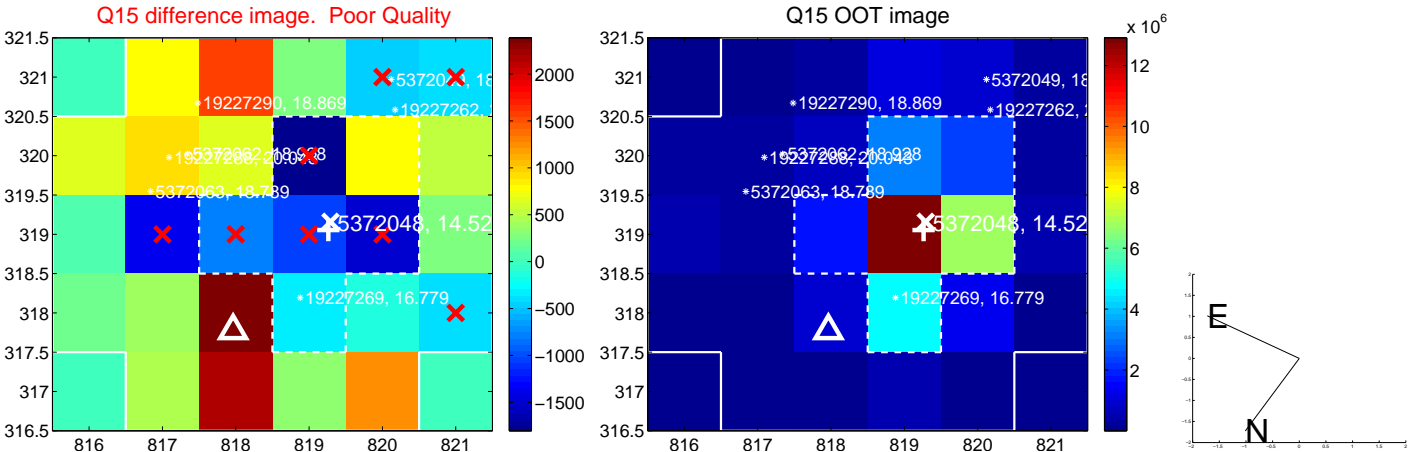
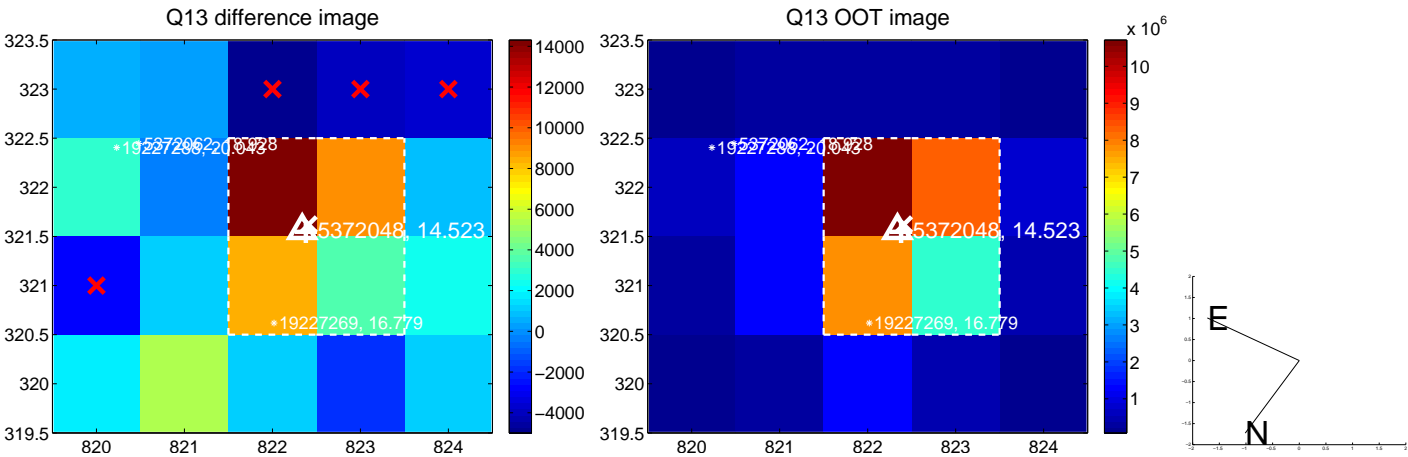
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



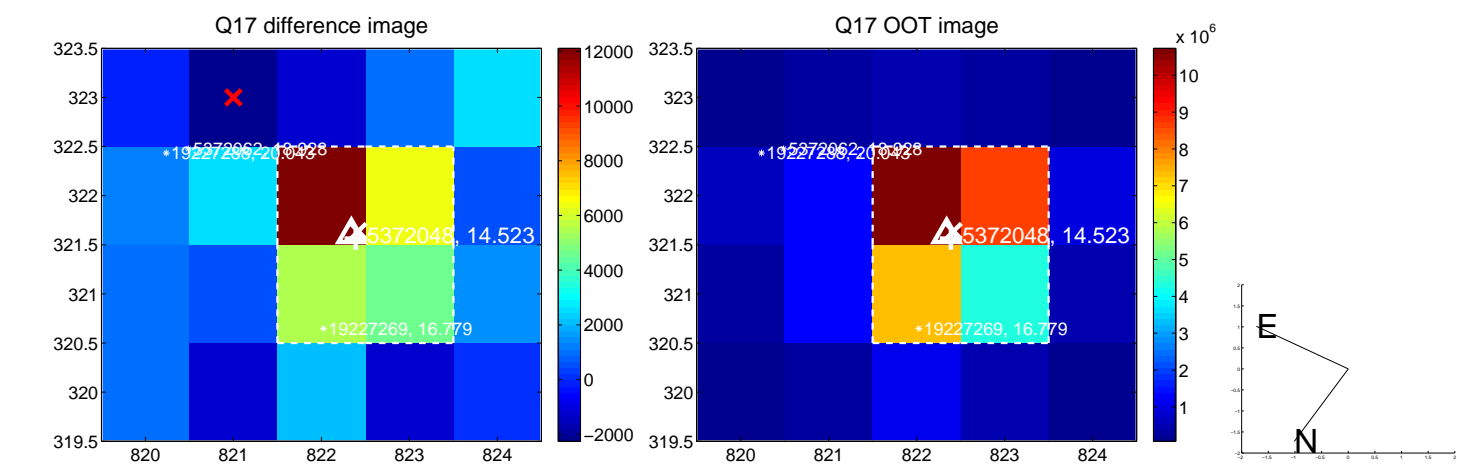
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



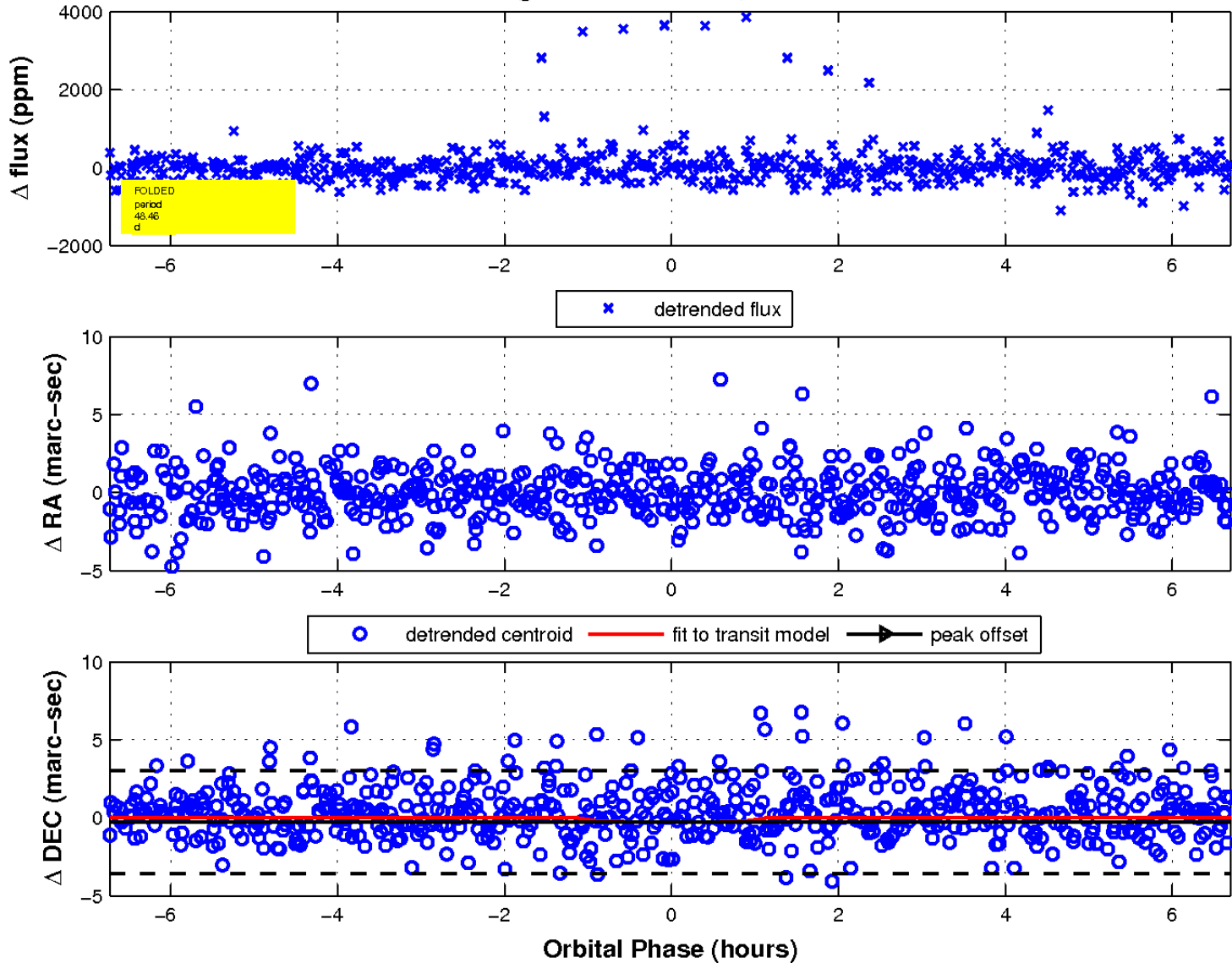
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 6 of 6



UKIRT Image

Declination

