

KIC 004738155

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})
004738155-01	OBS	No	0.836071	132.167221	2.4	5.840	7.6	2.2	1.59	6782	0.25	15697.92
004738155-02	OBS	No	19.947640	139.503616	109.1	2.480	12.1	10.3	1.59	6782	1.96	228.55
004738155-03	OBS	No	24.260767	131.541777	104.2	4.936	9.6	10.7	1.59	6782	1.85	176.05
004738155-04	OBS	No	64.589909	187.744216	121.2	4.046	11.3	9.2	1.59	6782	2.04	47.71
004738155-05	OBS	No	55.890541	158.379329	177.1	2.724	10.2	9.6	1.59	6782	2.14	57.86
004738155-06	OBS	No	49.987307	142.769267	101.4	6.306	10.9	7.6	1.59	6782	1.82	67.15
004738155-07	OBS	No	29.072639	145.715139	123.1	3.041	8.6	10.8	1.59	6782	1.95	138.31
004738155-08	OBS	No	30.533304	132.268869	129.5	1.889	9.2	8.1	1.59	6782	2.10	129.56
004738155-09	OBS	No	97.804825	192.042078	119.8	2.769	9.5	10.7	1.59	6782	2.02	27.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004738155-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004738155-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST
004738155-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

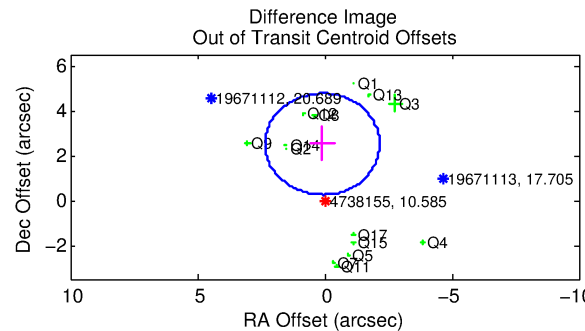
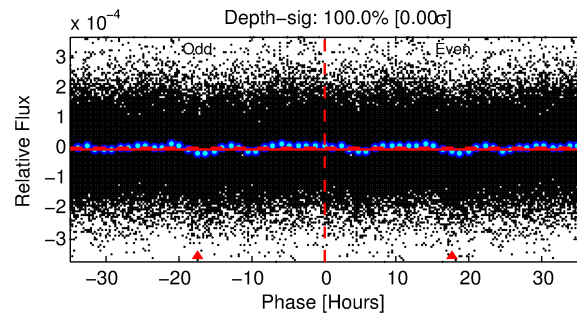
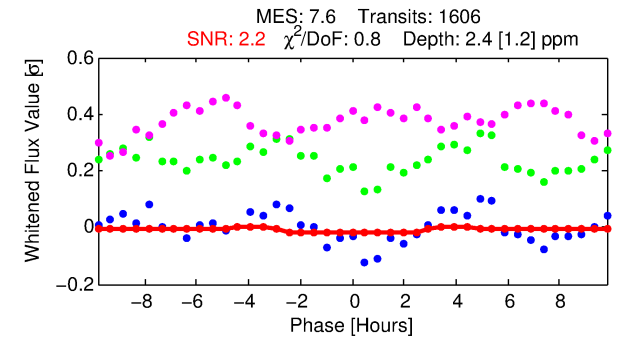
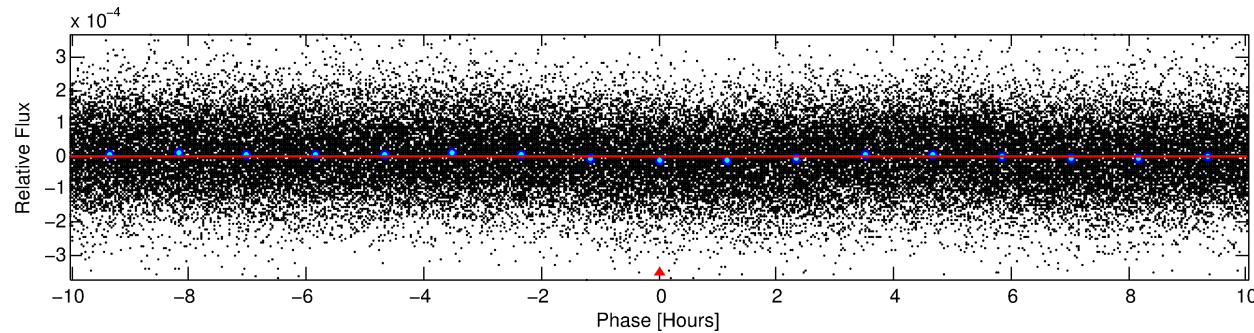
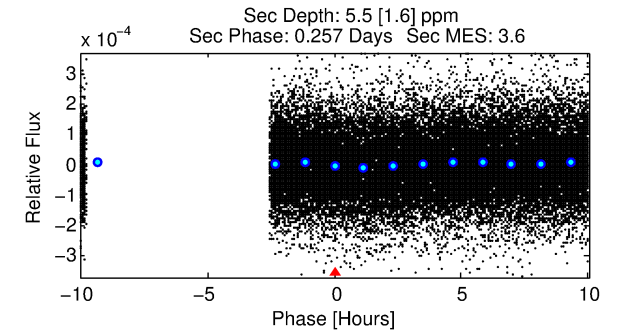
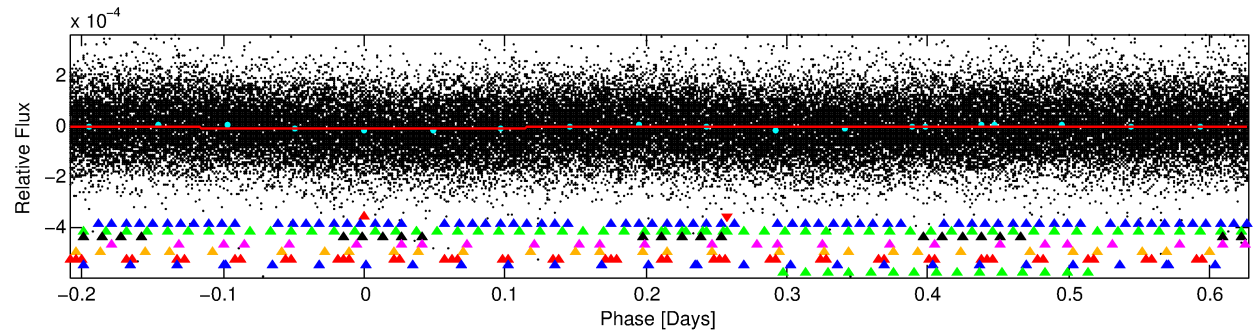
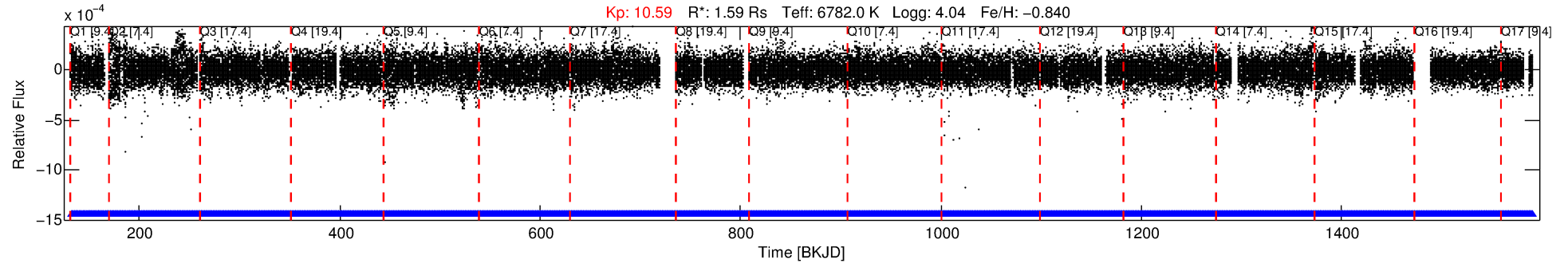
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004738155-01

No Significant Match Found

DV One-Page Summary

KIC: 4738155 Candidate: 1 of 9 Period: 0.836 d



DV Fit Results:

Period = 0.83607 [0.00006] d
Epoch = 132.1672 [0.0161] BKJD
Rp/R* = 0.0015 [0.0023]
a/R* = 1.24 [3.92]
b = 0.30 [27.24]
Seff = 15697.92 [9536.83]
Teq = 2854 [433] K
Rp = 0.25 [0.41] Re
a = 0.0175 [0.0063] AU
Ag = 14.52 [47.13] [0.29σ]
Teffp = 8614 [6883] K [0.84σ]

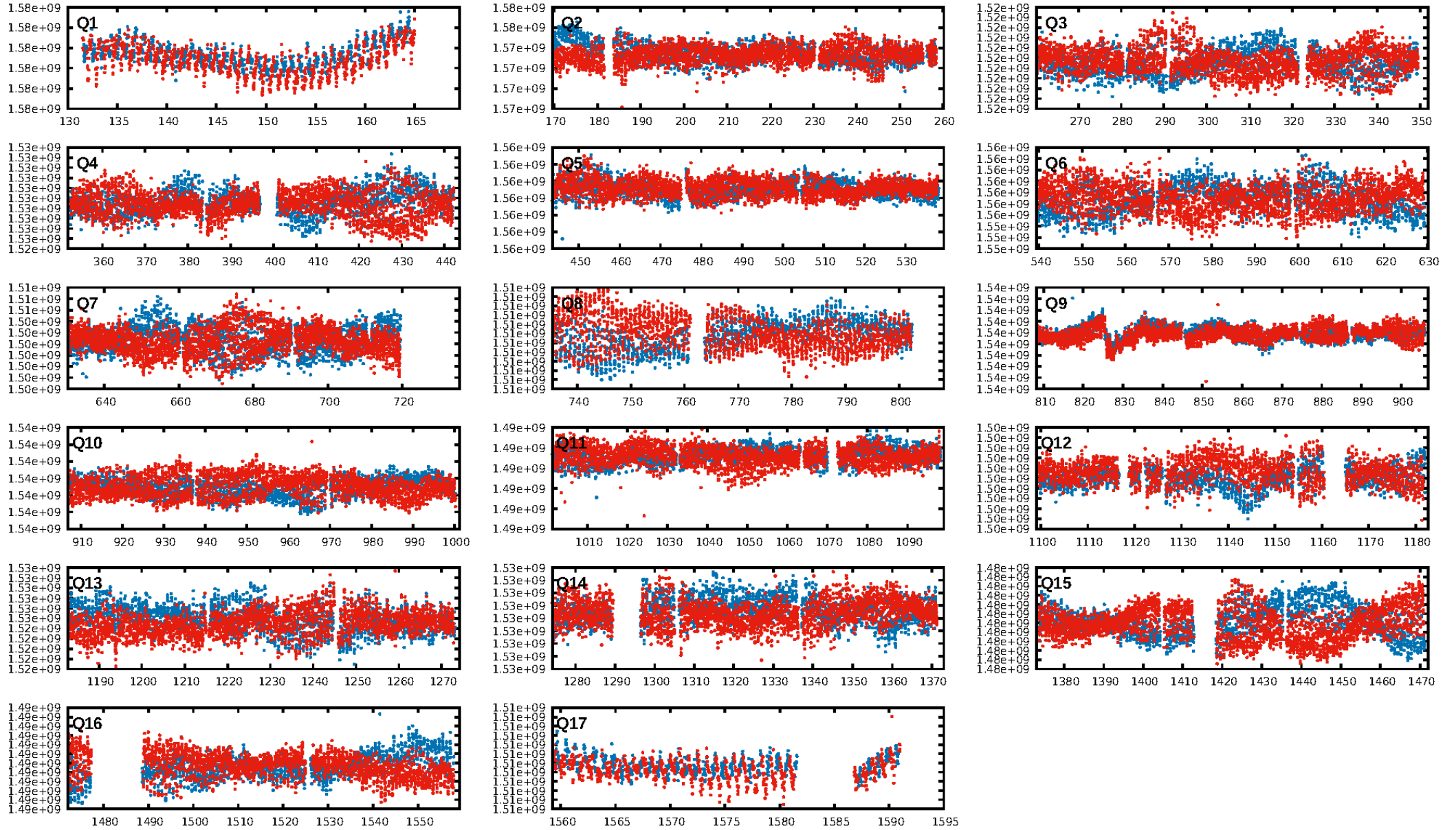
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [72.29σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.12e-07
RollingBand-fgt: 1.00 [1533/1533]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 2.506 arcsec [3.33σ]
KicOffset-rm: 1.964 arcsec [2.42σ]
OotOffset-st: 2/4/3/5 [14]
KicOffset-st: 2/4/3/5 [14]
DiffImageQuality-fgm: 0.36 [5/14]
DiffImageOverlap-fno: 1.00 [17/17]

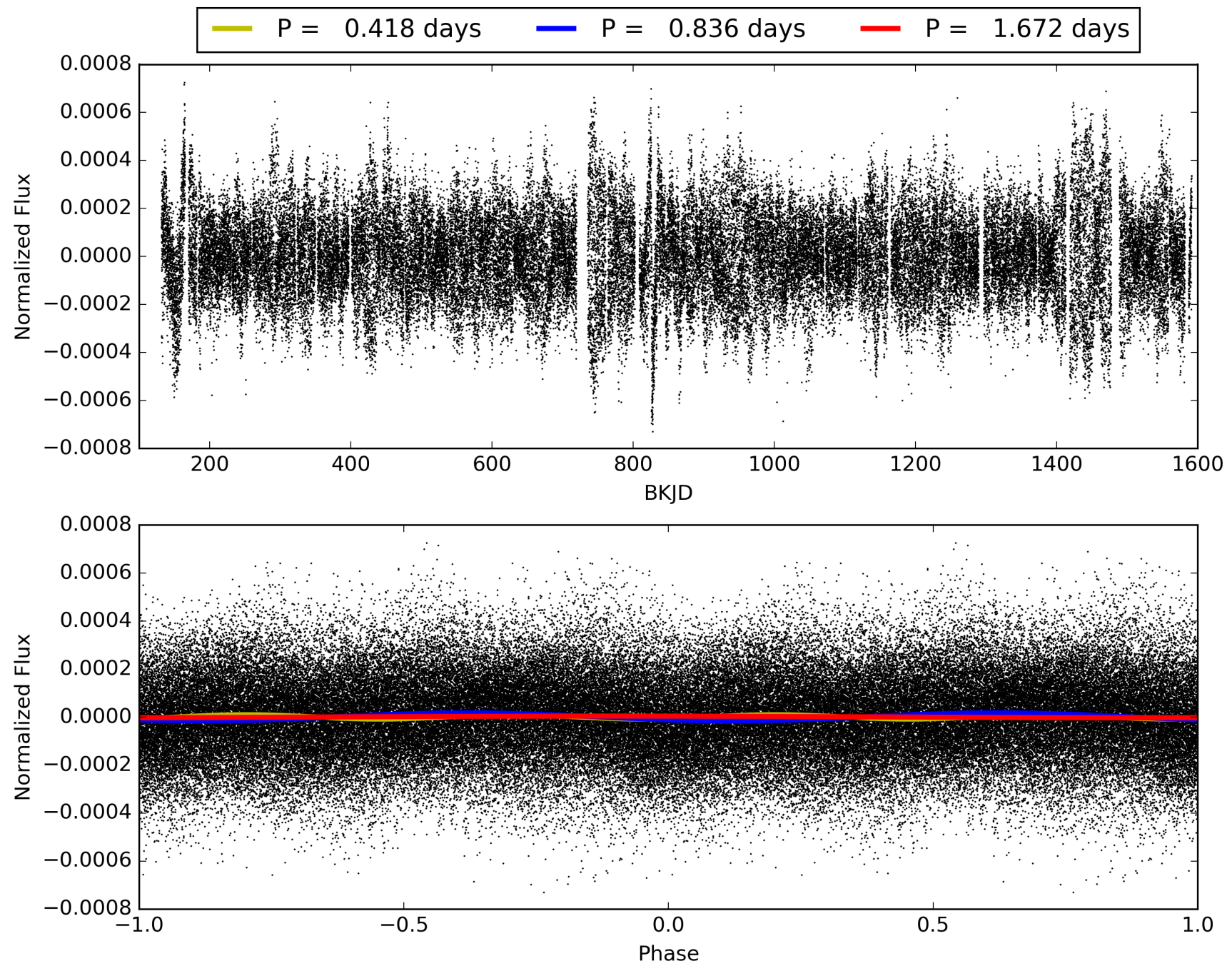
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004738155-01, PDC Light Curves

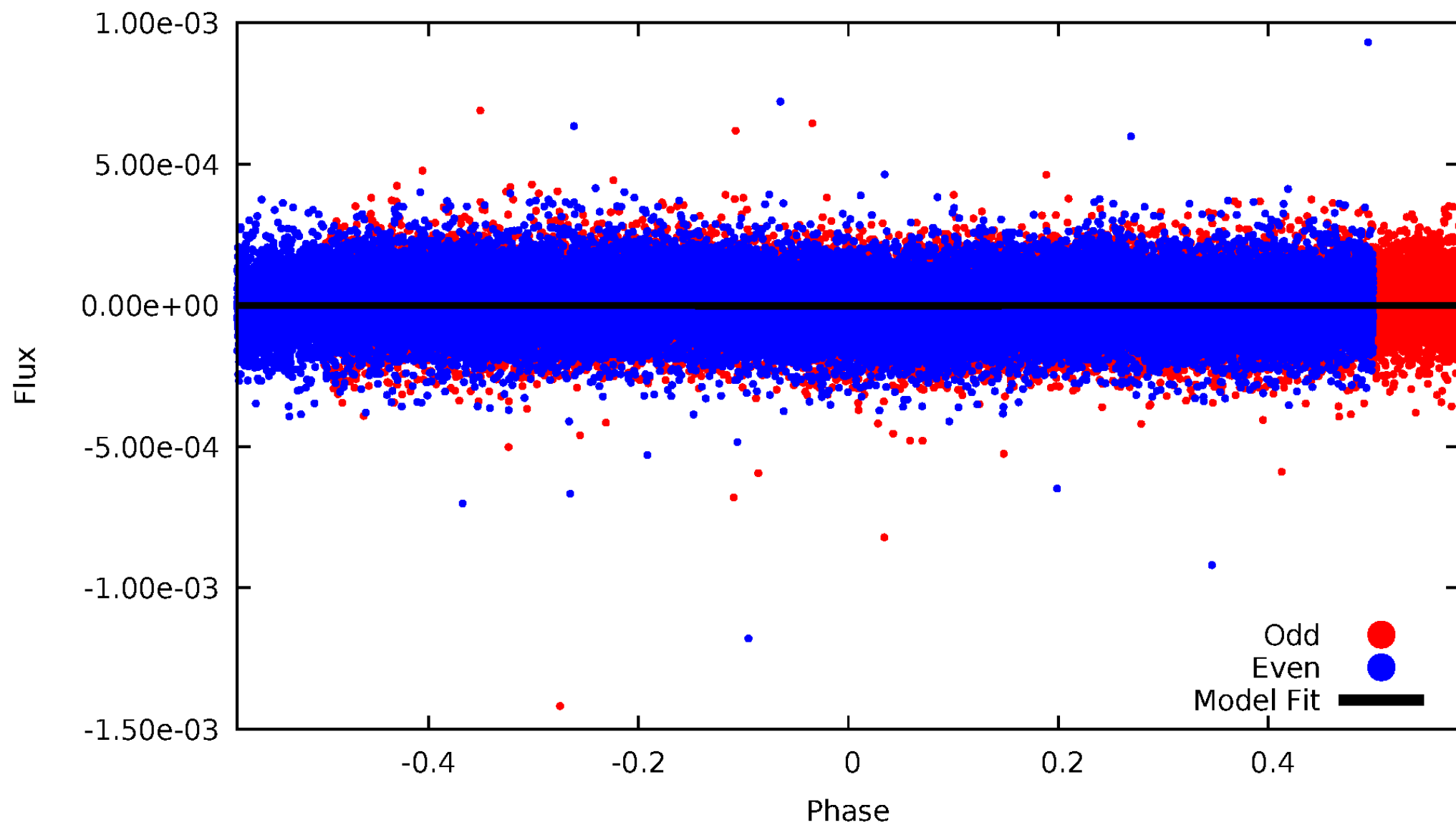


TCE 004738155-01



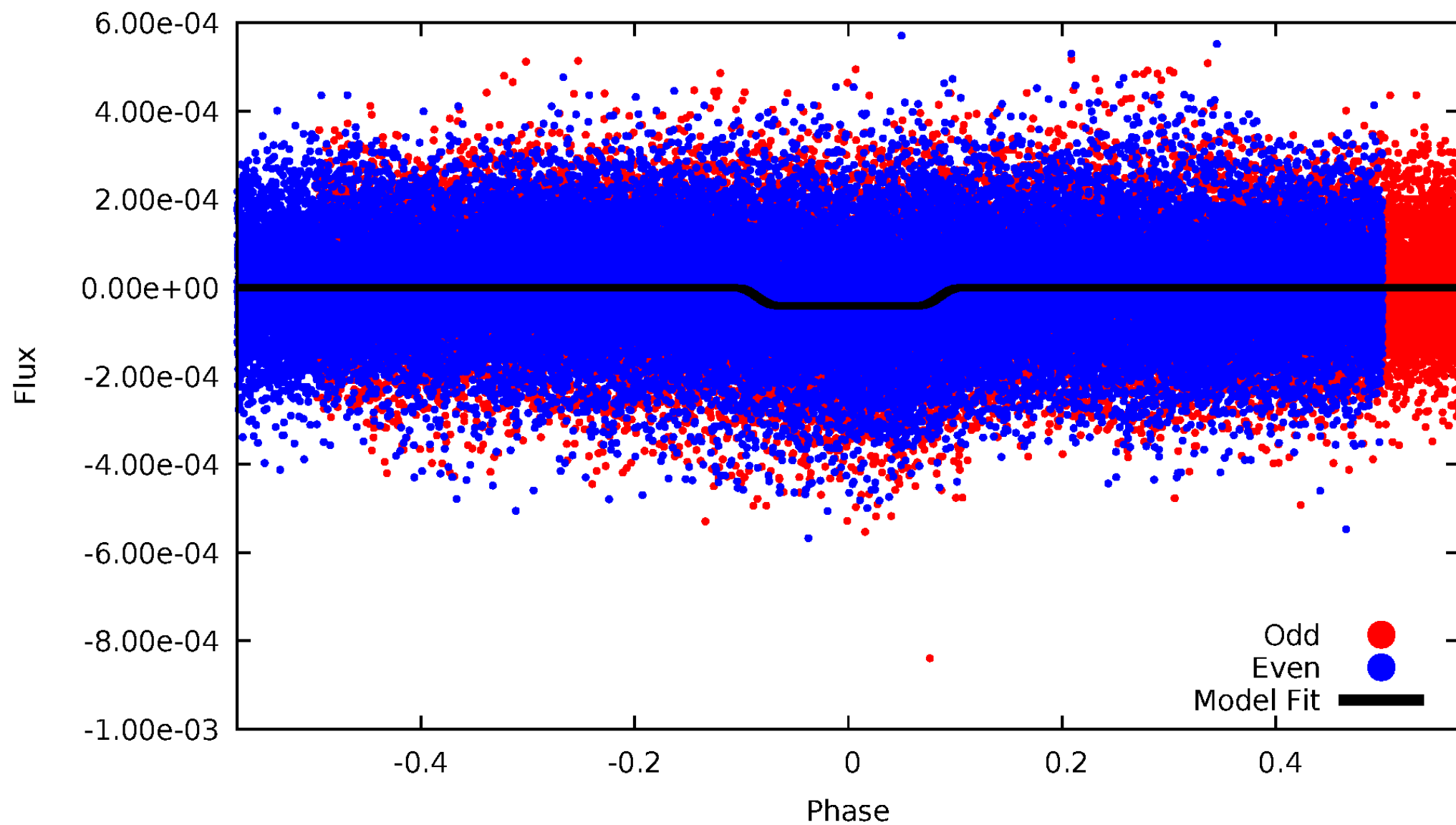
DV Odd/Even

TCE 004738155-01



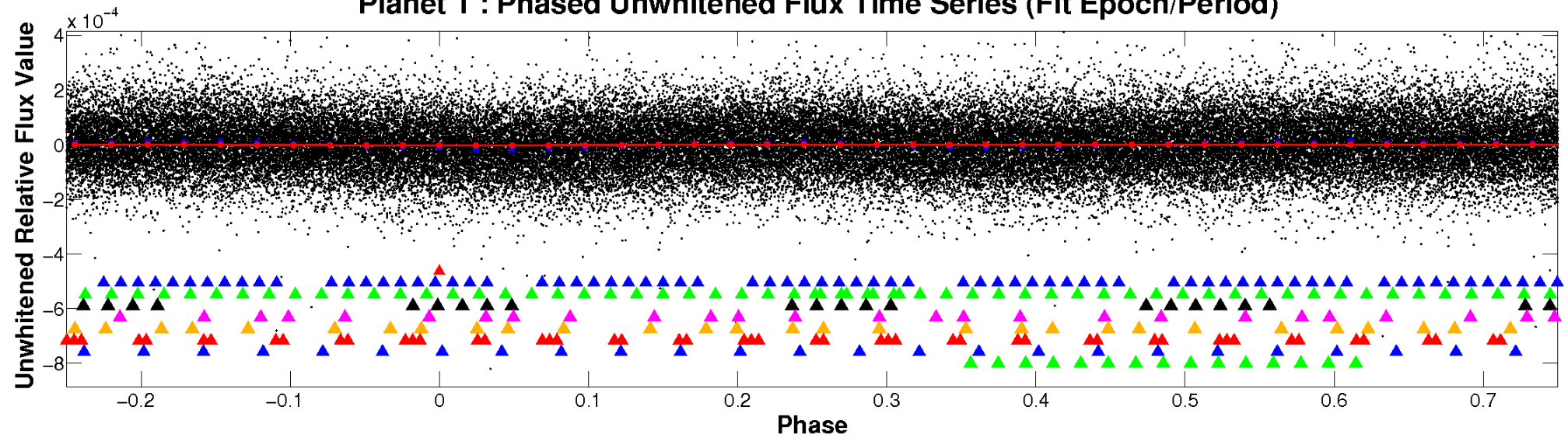
ALT Odd/Even

TCE 004738155-01

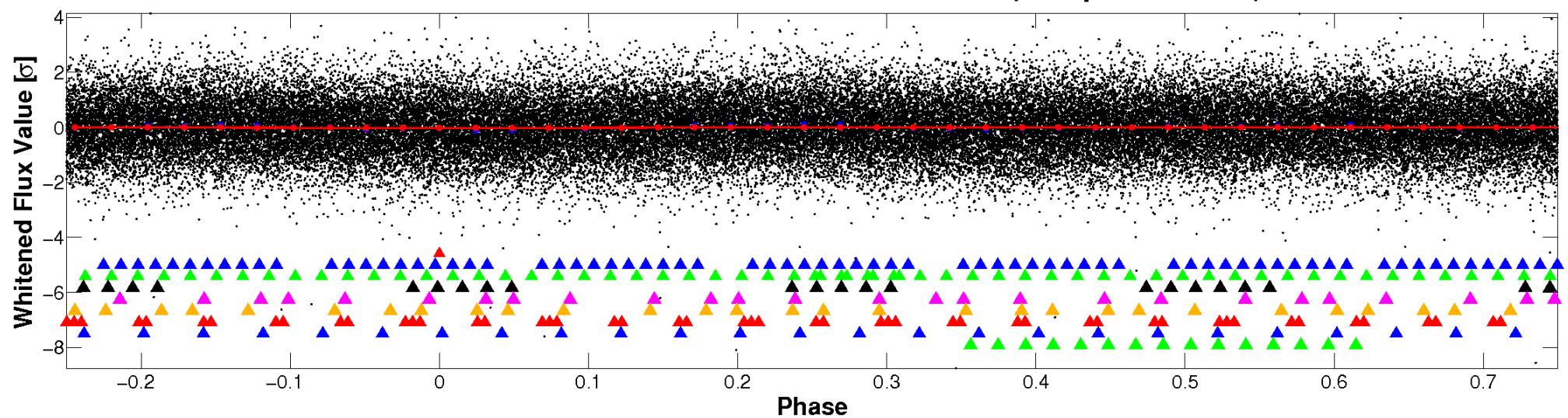


Non-Whitened Vs. Whitened Light Curve

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

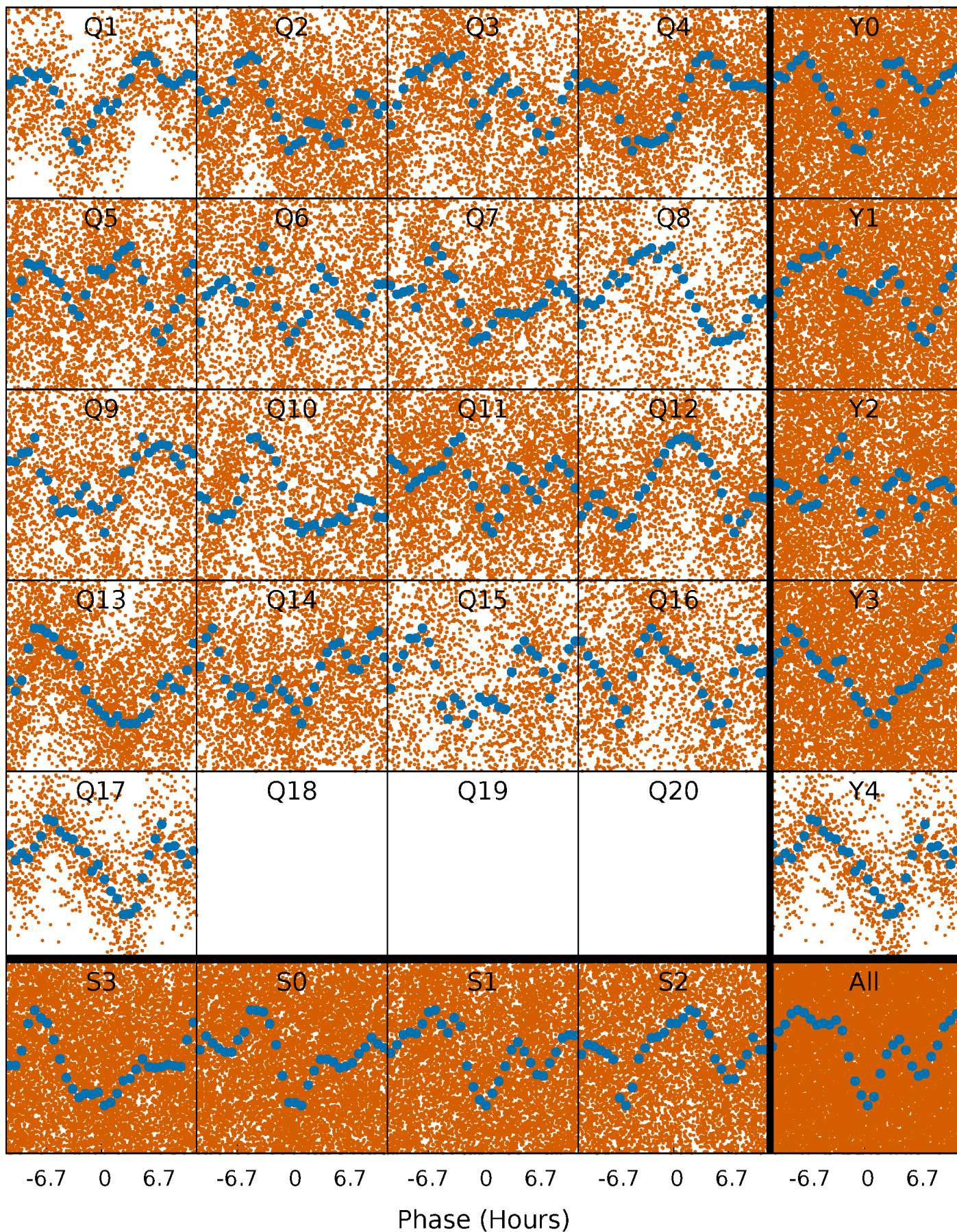


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



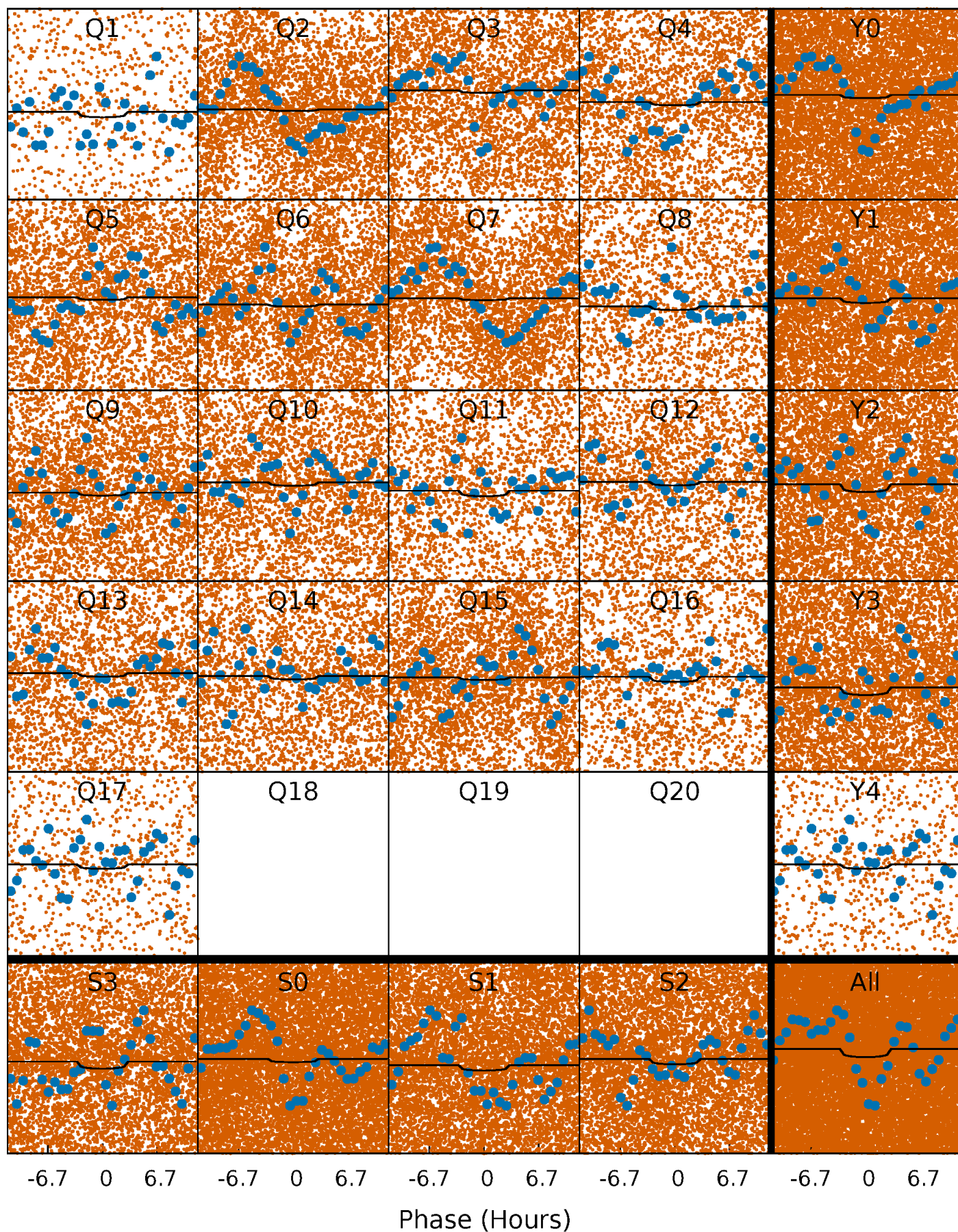
PDC Quarter-Phased Transit Curves

TCE 004738155-01 P= 0.836071 Days $T_0=132.167222$ (BKJD)



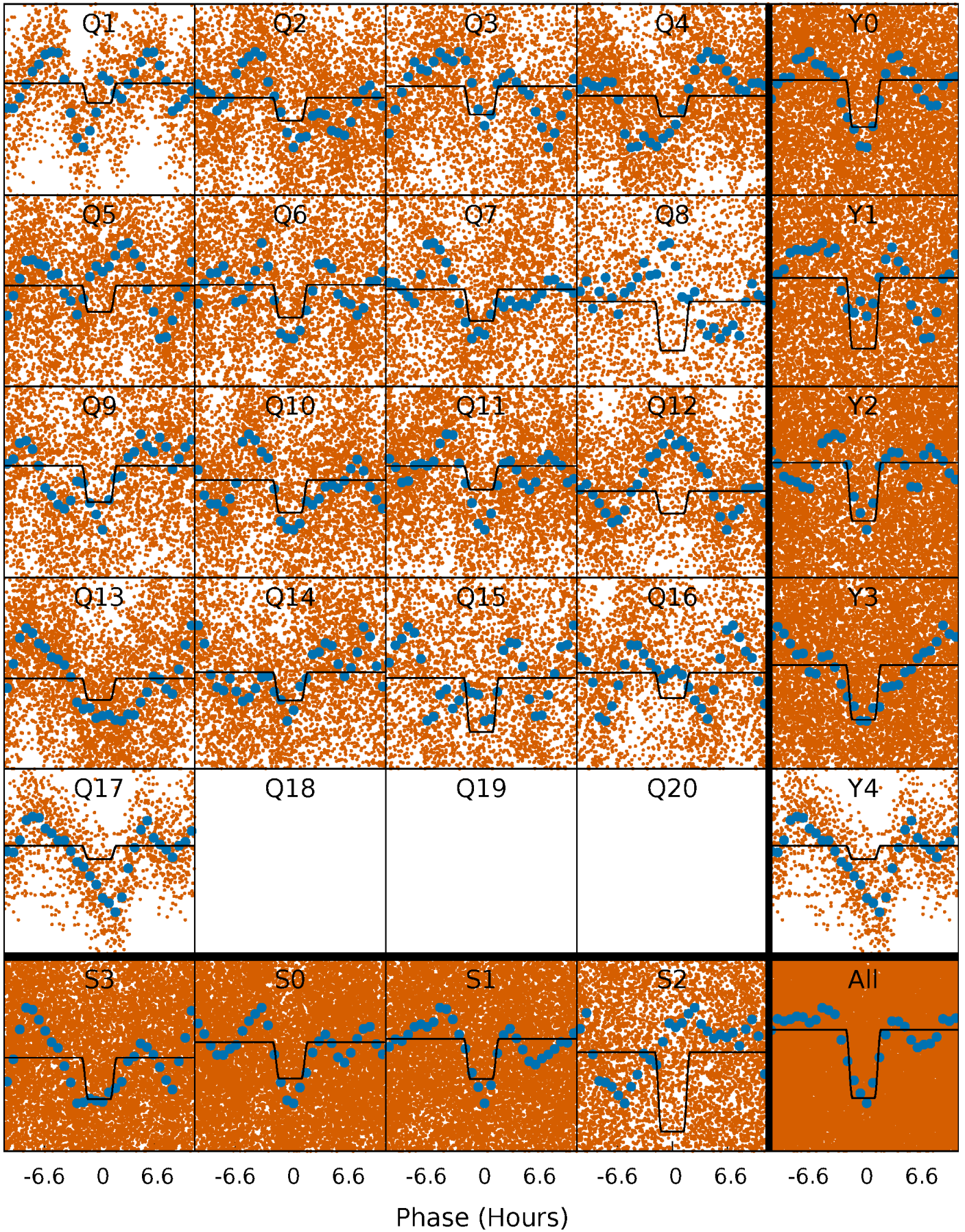
DV Quarter-Phased Transit Curves

TCE 004738155-01 P= 0.836071 Days $T_0=132.167222$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

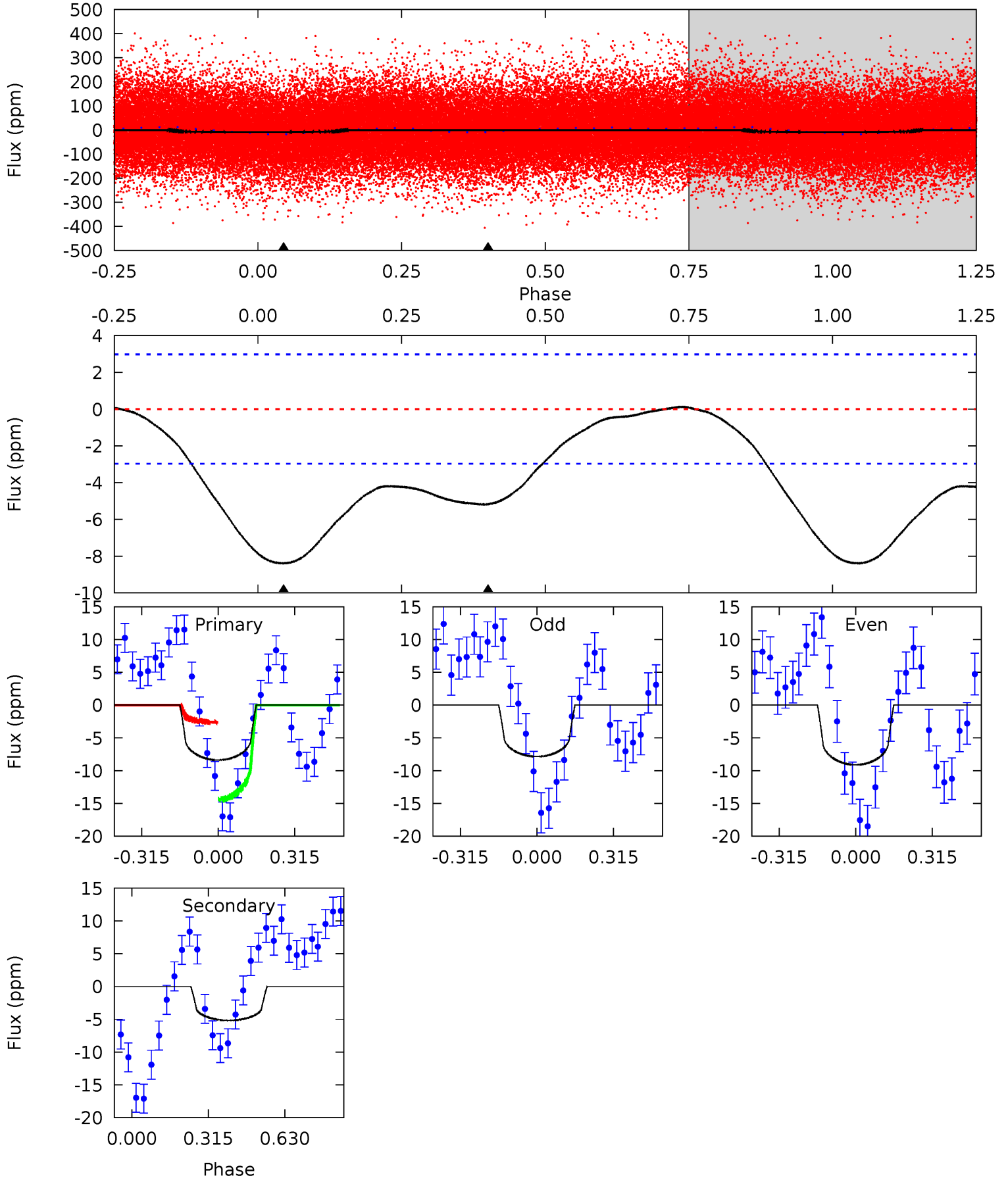
TCE 004738155-01 P= 0.836135 Days $T_0=132.127945$ (BKJD)



DV Model-Shift Uniqueness Test

004738155-01, P = 0.836071 Days, E = 131.331151 Days

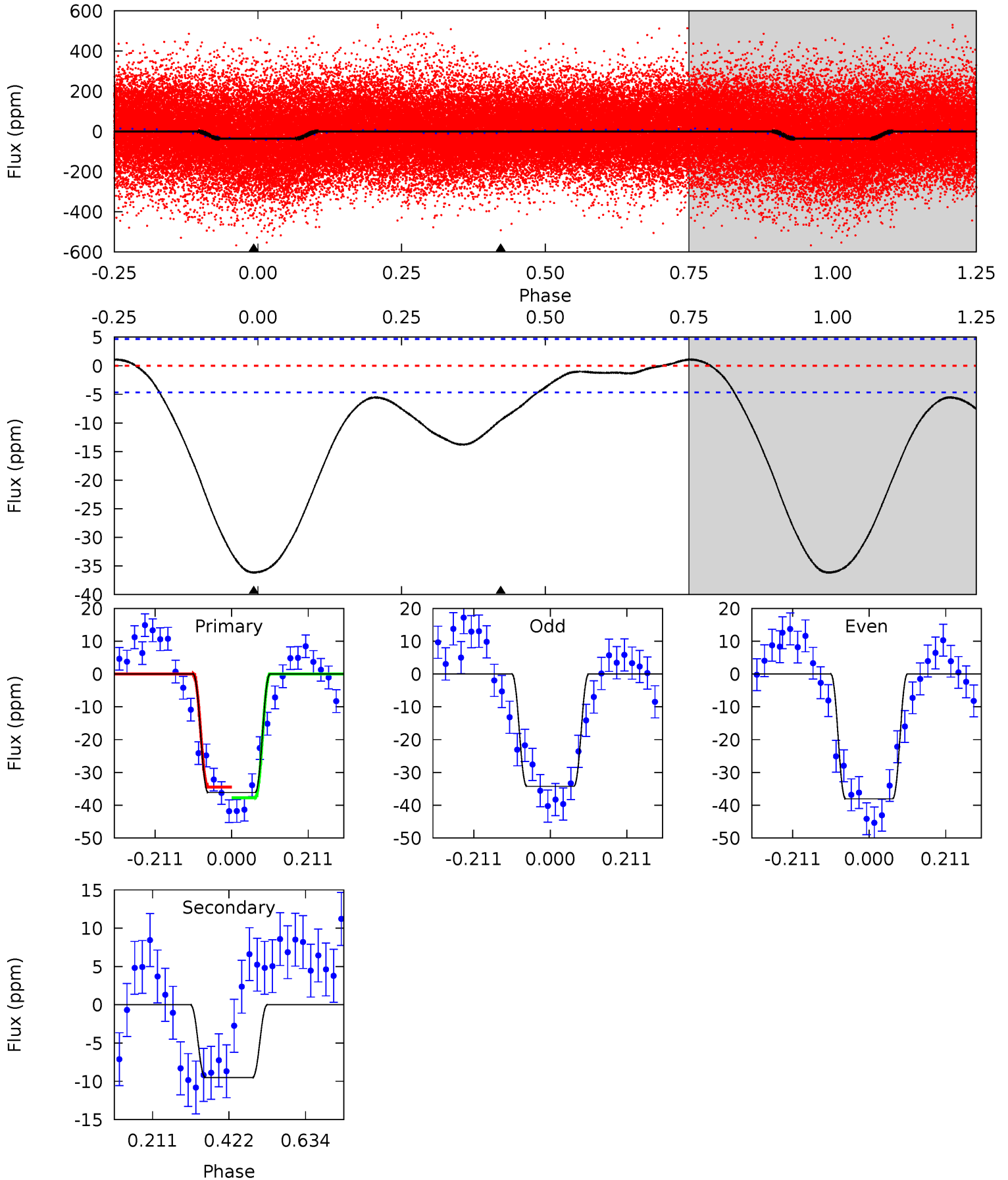
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	7.52	0	0	4.32	1.00	0.13	12.2	12.2	7.52	7.52	0.92	1.12	0.01	8.70



Alt Model-Shift Uniqueness Test

004738155-01, P = 0.836135 Days, E = 131.291810 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.1	8.98	0	0	4.41	1.25	1.34	34.1	34.1	8.98	8.98	1.80	0.94	0.03	1.50



Stellar Parameters For KIC 004738155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6782^{+215}_{-263}	$4.044^{+0.350}_{-0.150}$	$-0.840^{+0.300}_{-0.300}$	$1.595^{+0.379}_{-0.568}$	$1.026^{+0.127}_{-0.115}$	$0.356^{+0.883}_{-0.148}$
	+3%/-4%	+9%/-4%	+36%/-36%	+24%/-36%	+12%/-11%	+248%/-42%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004738155-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-5 ± 1	$0.38^{+0.33}_{-0.25}$	3912^{+325}_{-387}	6675^{+7629}_{-1892}	$6.177^{+46.474}_{-4.437}$
Alt.	-10 ± 1	$1.05^{+0.48}_{-0.42}$	3932^{+294}_{-391}	4599^{+1260}_{-782}	$1.505^{+2.358}_{-0.825}$

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 $A_{obs} \gg 1.0$

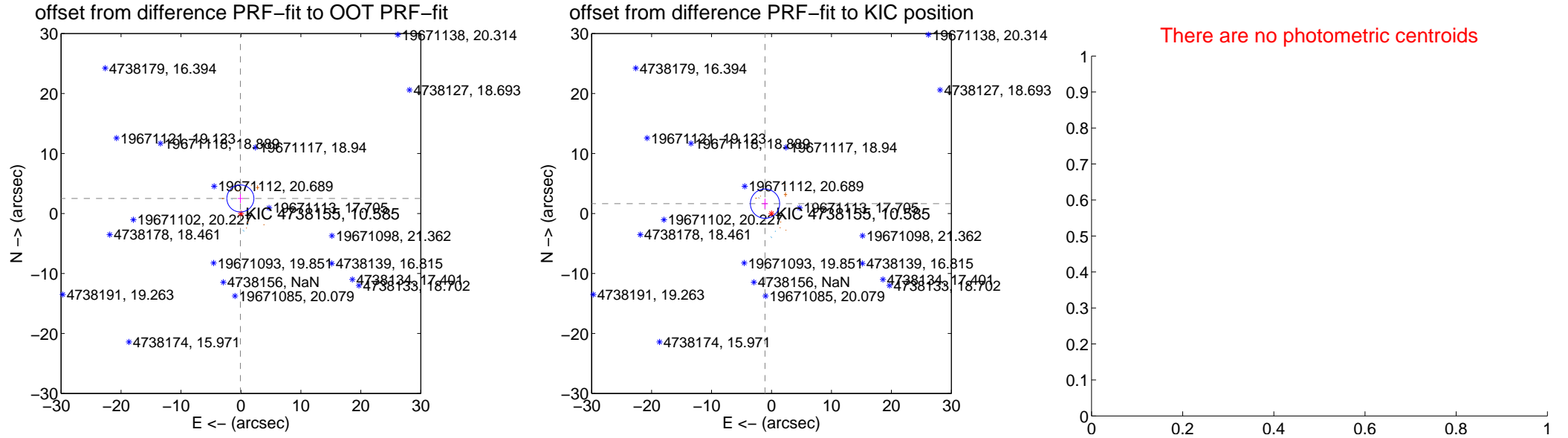
DV Centroid Data

Supplemental centroid analysis for 004738155-01. **Kepler magnitude: 10.59.** Transit SNR 2.22

There are 5 quarters with good PRF difference image offsets

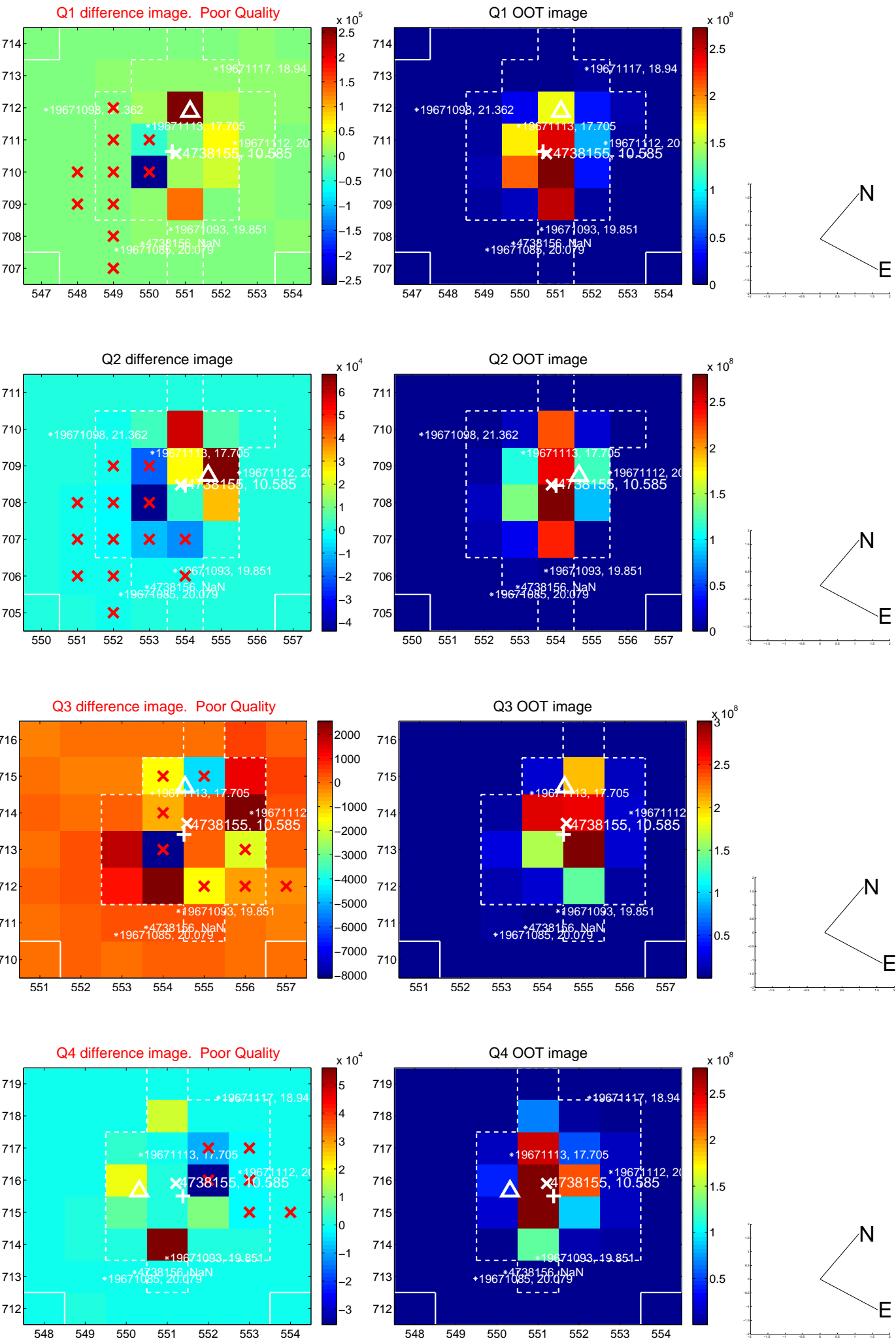
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.506 ± 0.752	3.33	0.091 ± 0.459	2.504 ± 0.746
PRF-fit source offset from KIC position	1.964 ± 0.813	2.42	1.083 ± 0.476	1.639 ± 0.842
photometric centroid source offset	—	—	—	—

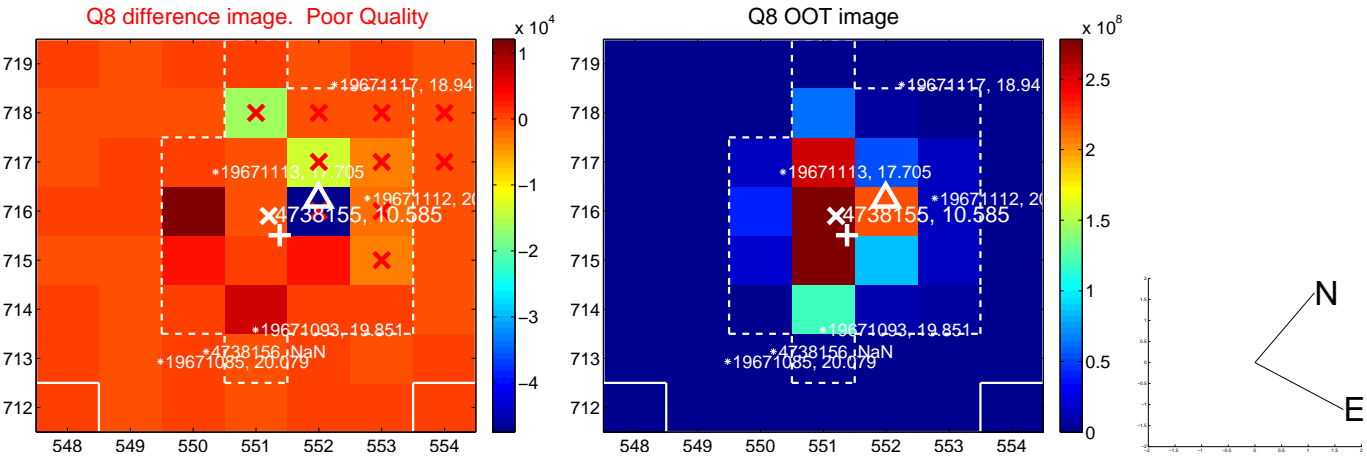
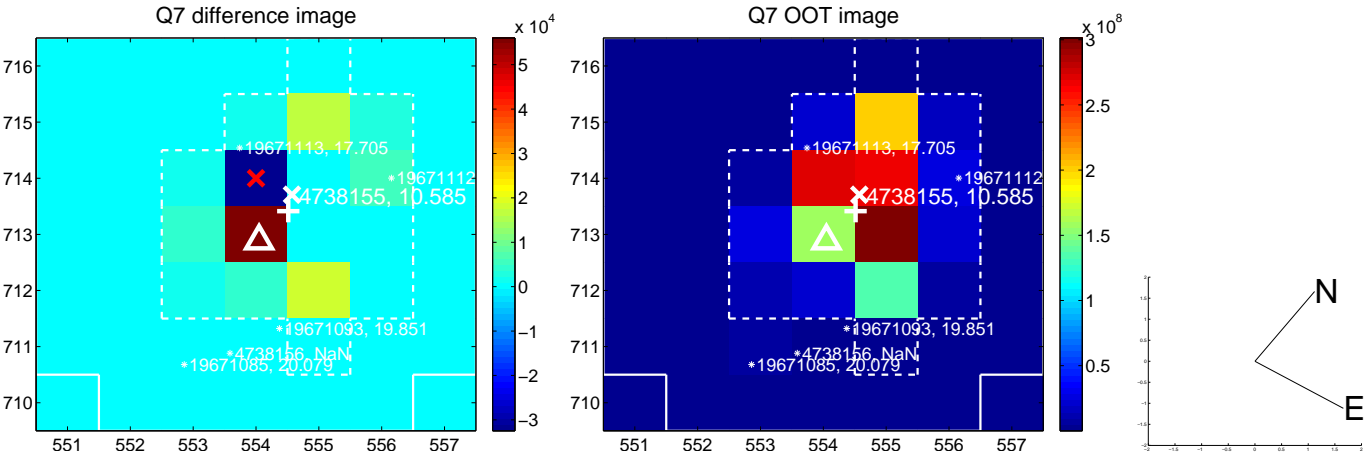
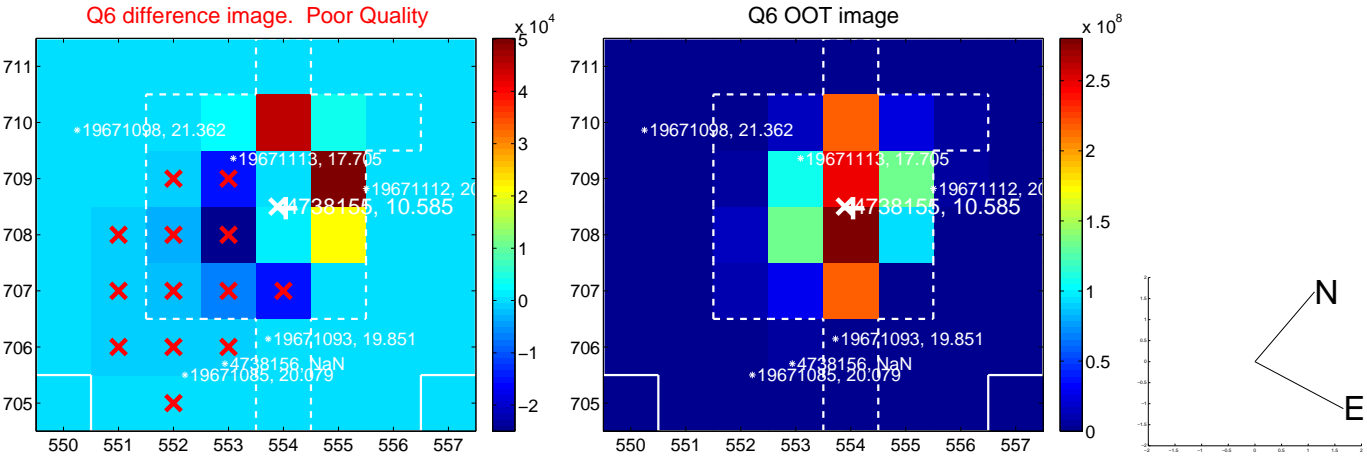
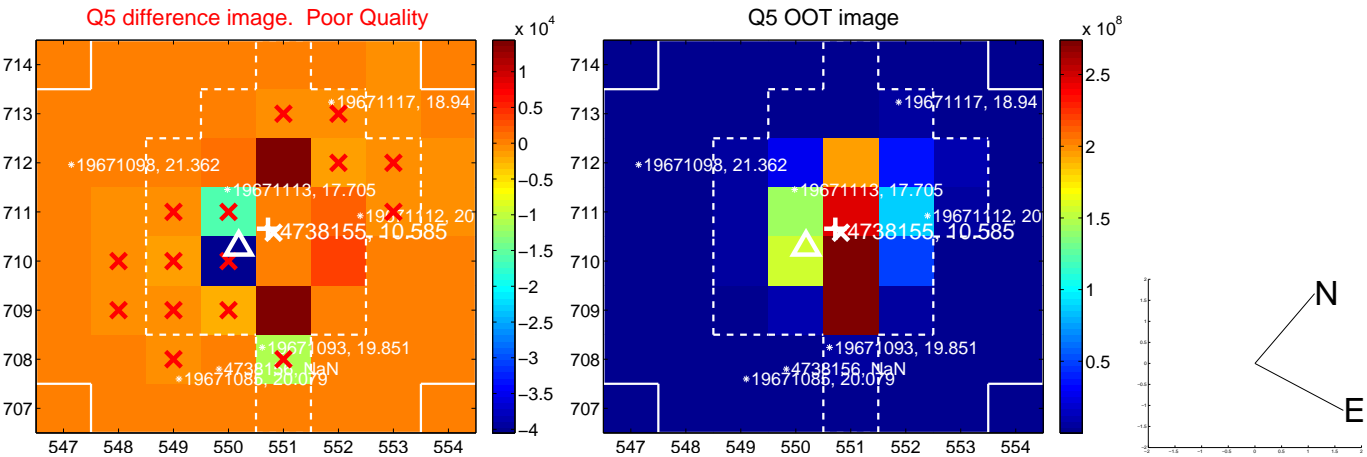


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

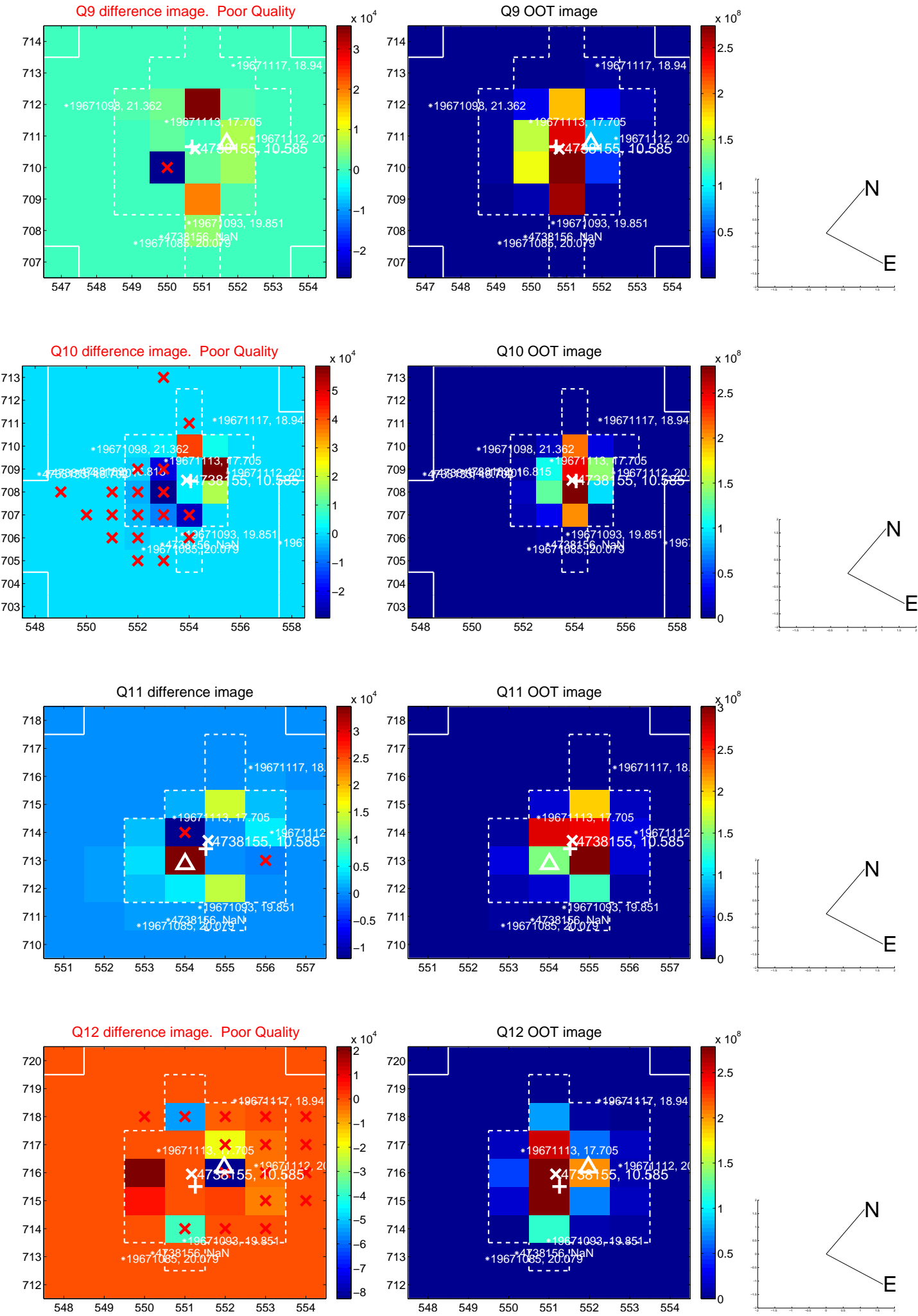
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



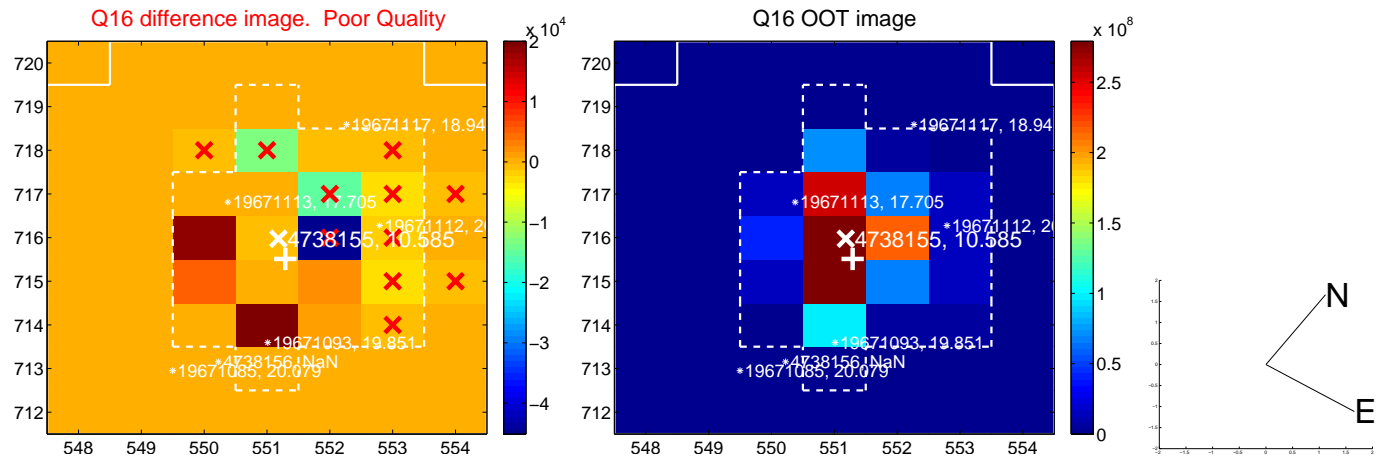
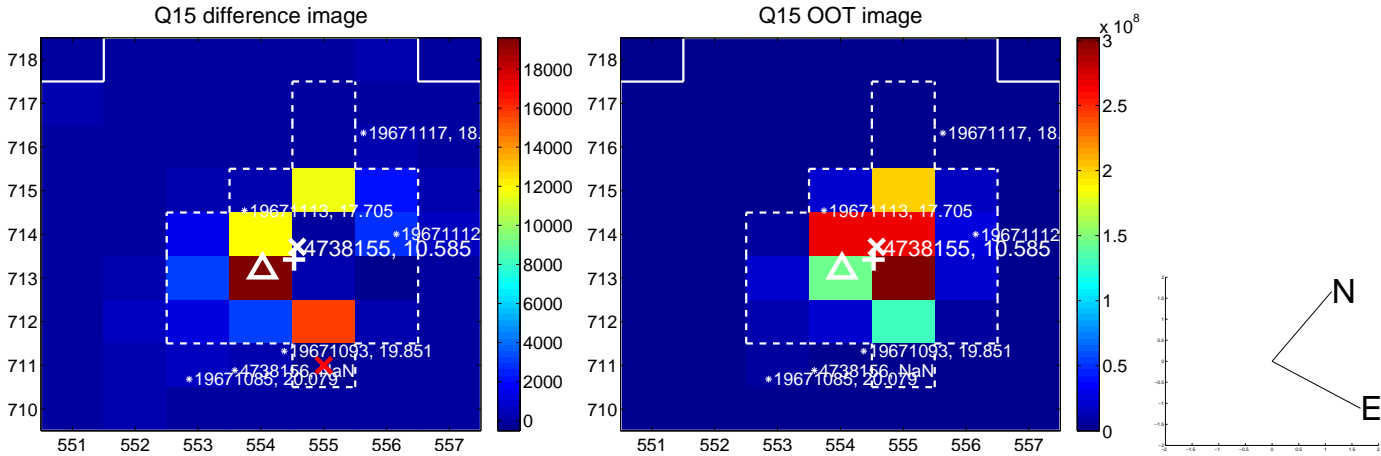
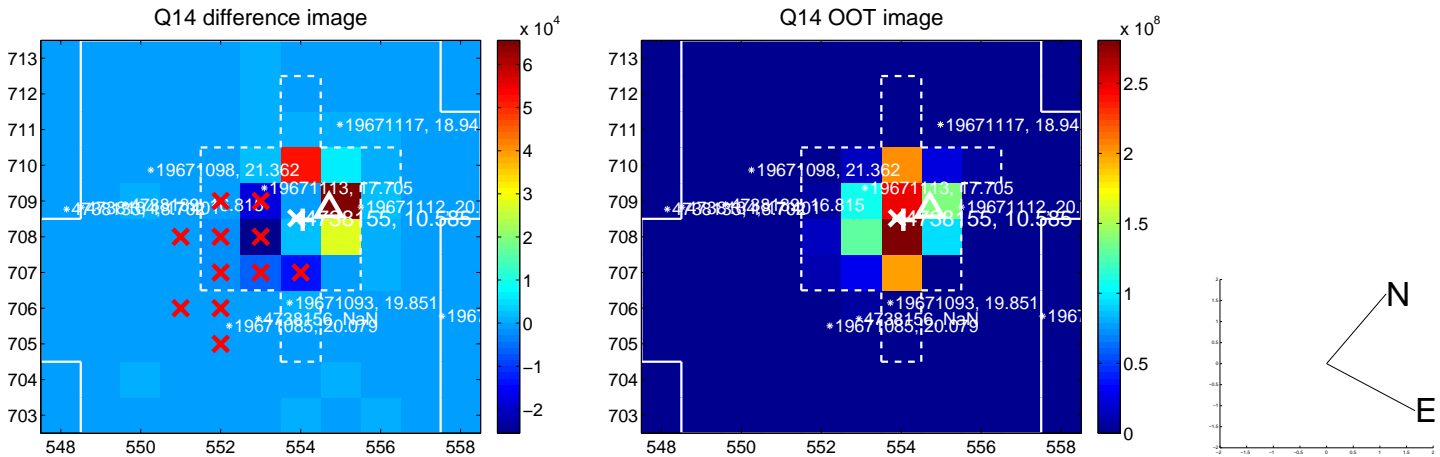
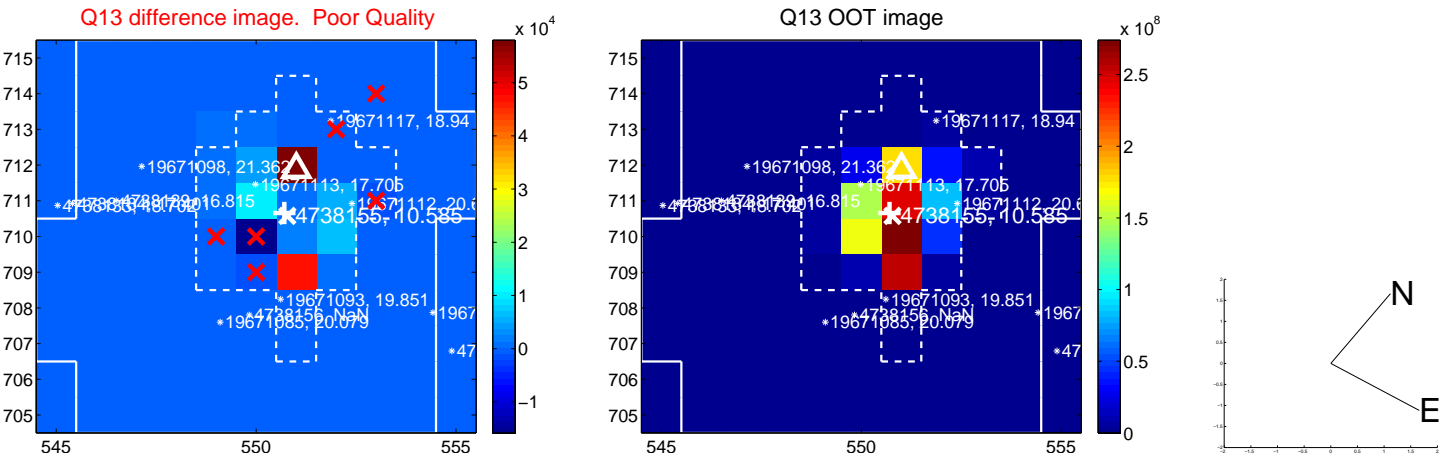
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



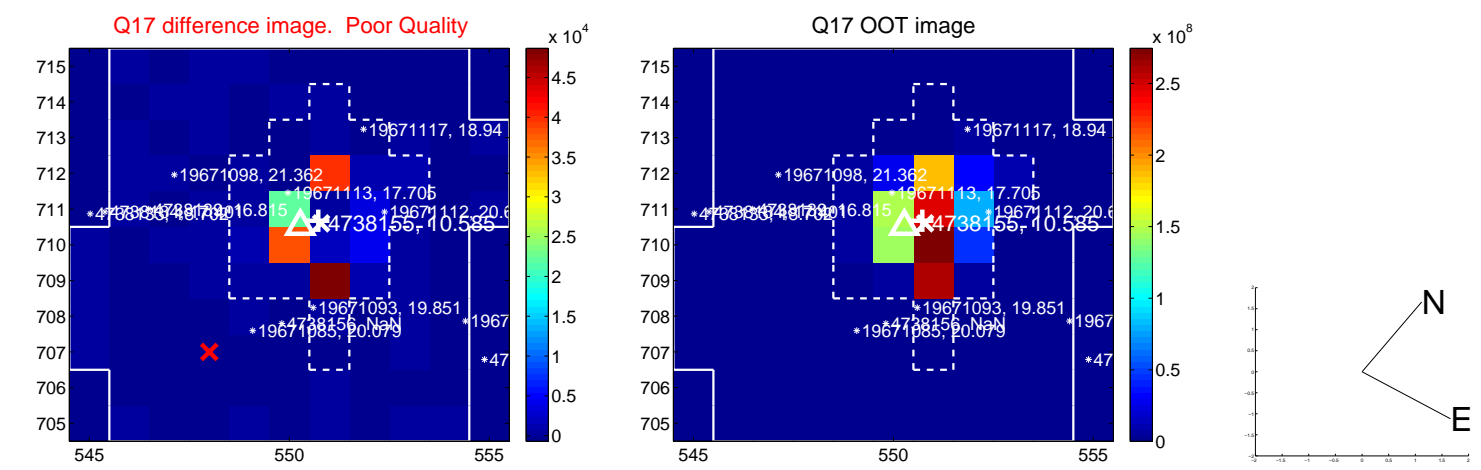
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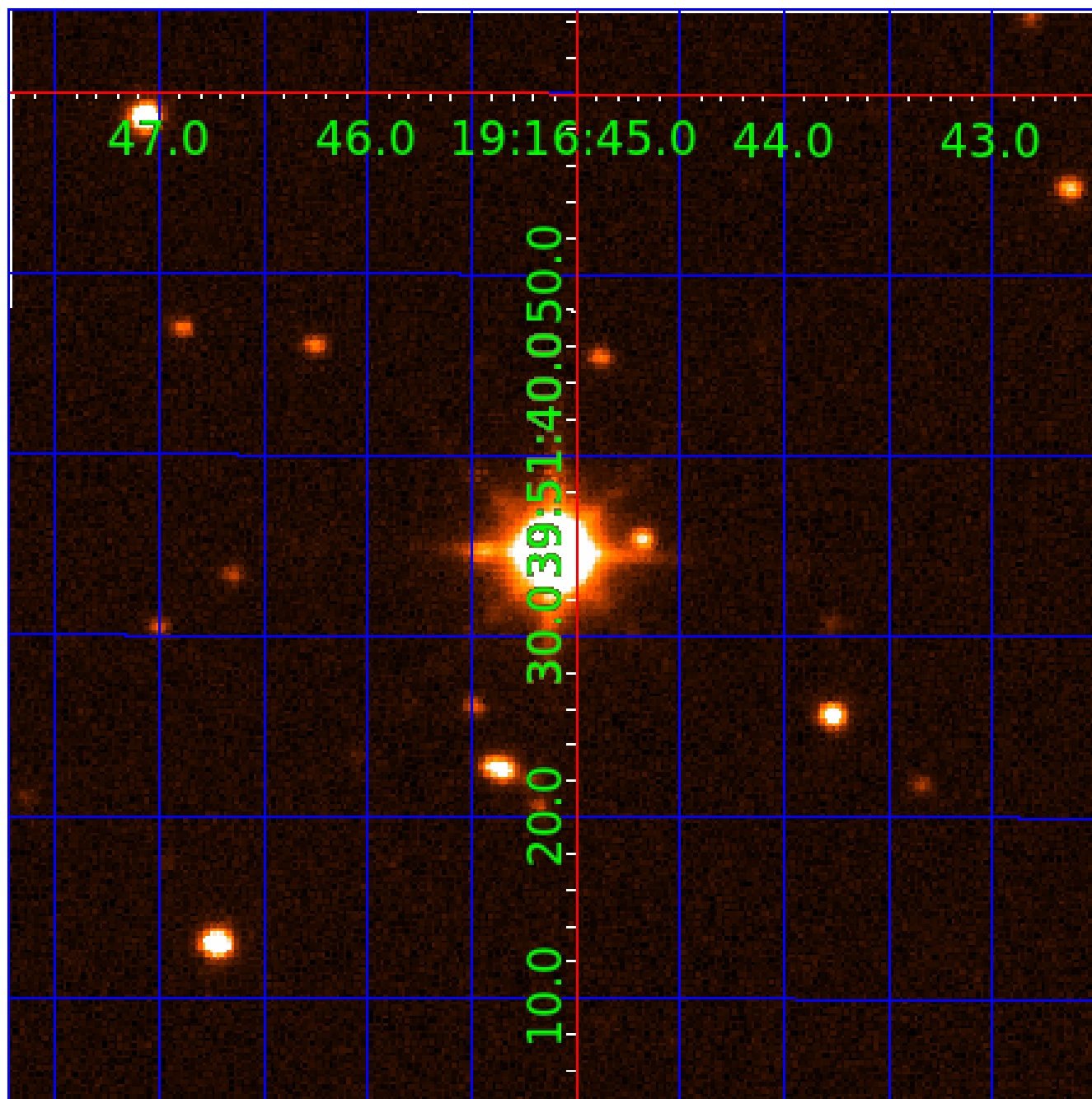
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 004738155

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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Robovetter Results

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004738155-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST
004738155-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

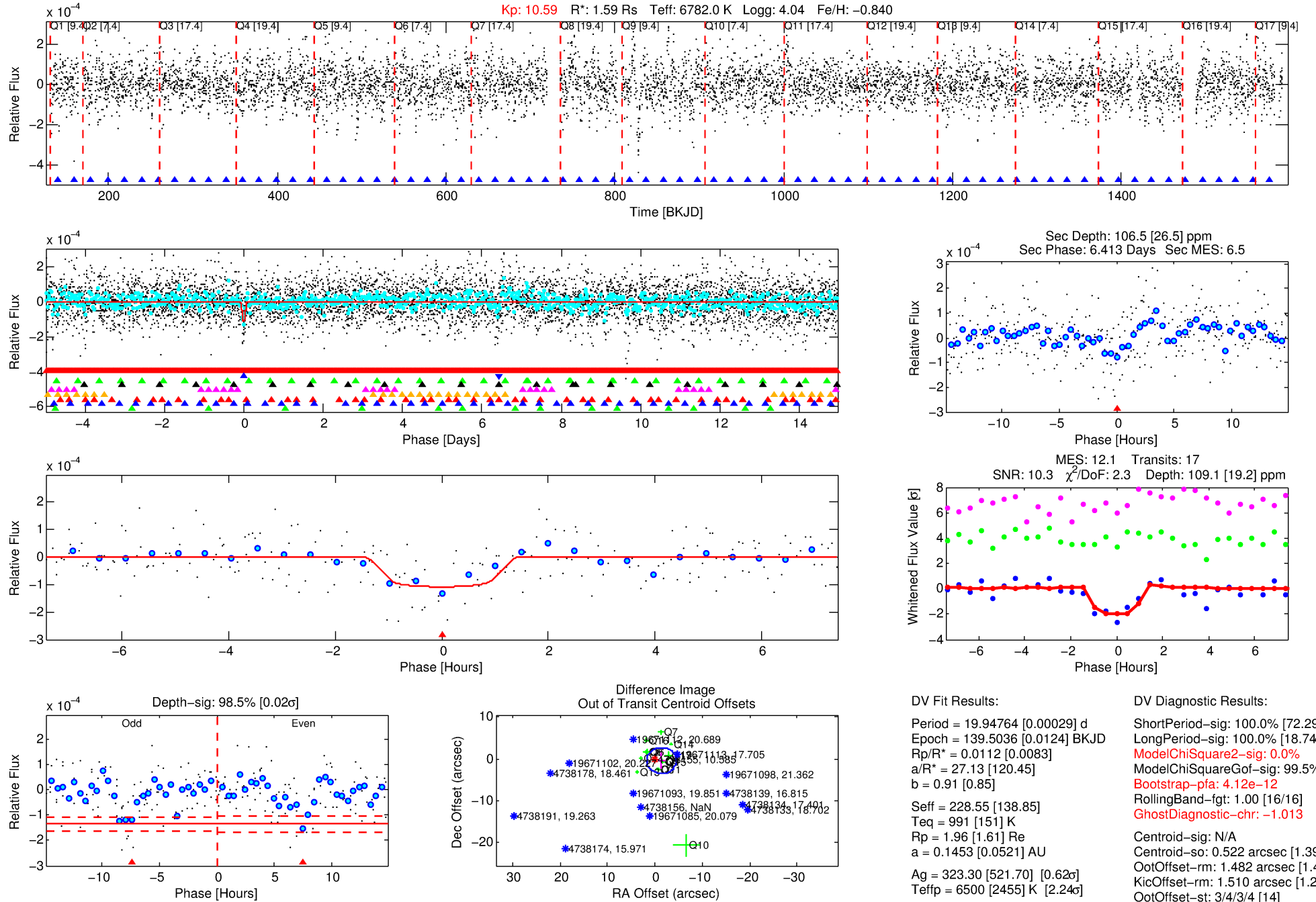
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004738155-02

No Significant Match Found

DV One-Page Summary

KIC: 4738155 Candidate: 2 of 9 Period: 19.948 d



DV Fit Results:

Period = 19.94764 [0.00029] d
Epoch = 139.5036 [0.0124] BKJD
Rp/R* = 0.0112 [0.0083]
a/R* = 27.13 [120.45]
b = 0.91 [0.85]
Seff = 228.55 [138.85]
Teq = 991 [151] K
Rp = 1.96 [1.61] Re
a = 0.1453 [0.0521] AU
Ag = 323.30 [521.70] [0.62σ]
Teffp = 6500 [2455] K [2.24σ]

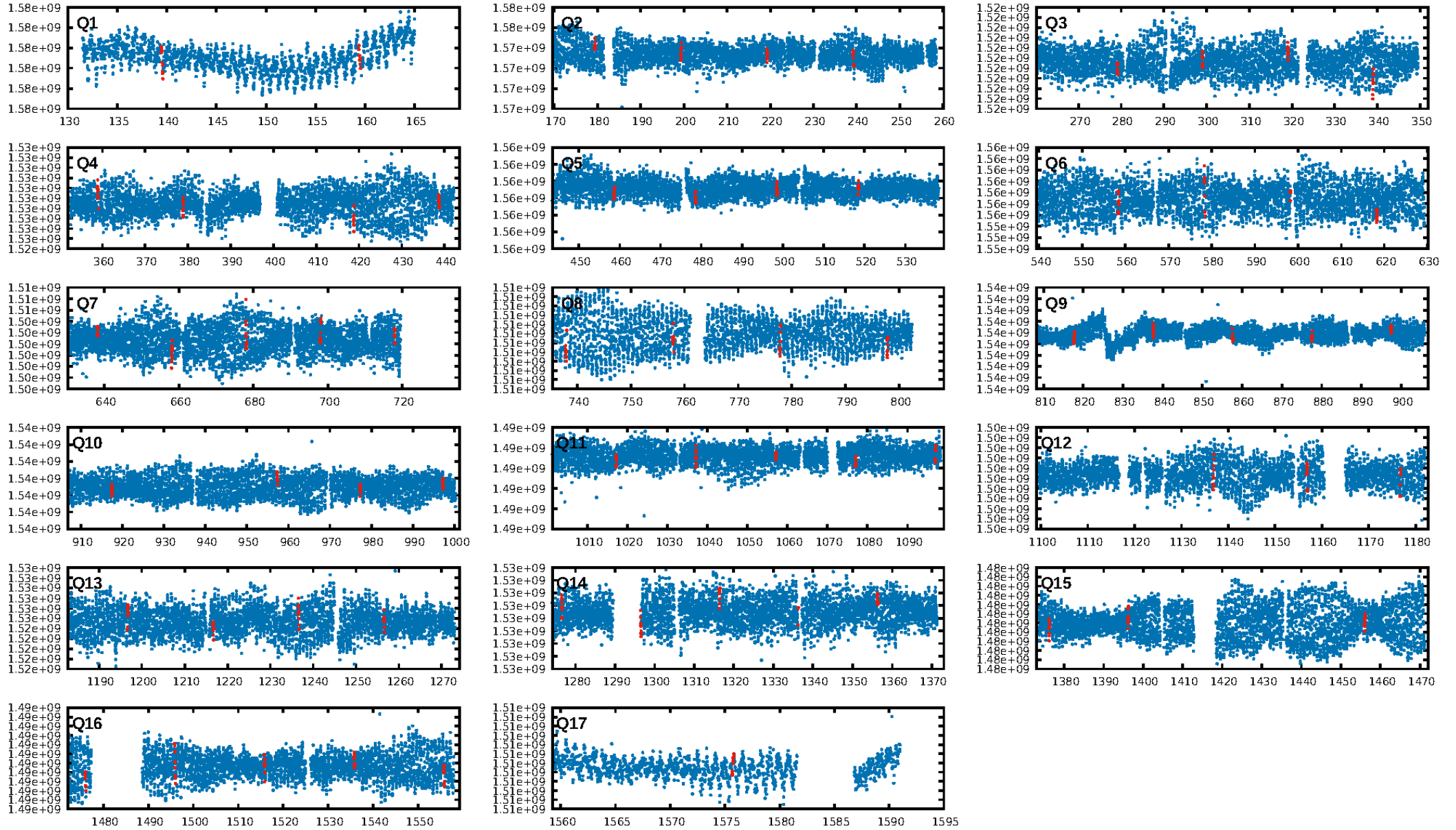
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [72.29σ]
LongPeriod-sig: 100.0% [18.74σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 99.5%
Bootstrap-pfa: 4.12e-12
RollingBand-fgt: 1.00 [16/16]
GhostDiagnostic-chr: -1.013
Centroid-sig: N/A
Centroid-so: 0.522 arcsec [1.39σ]
OotOffset-rm: 1.482 arcsec [1.43σ]
KicOffset-rm: 1.510 arcsec [1.21σ]
OotOffset-st: 3/4/3/4 [14]
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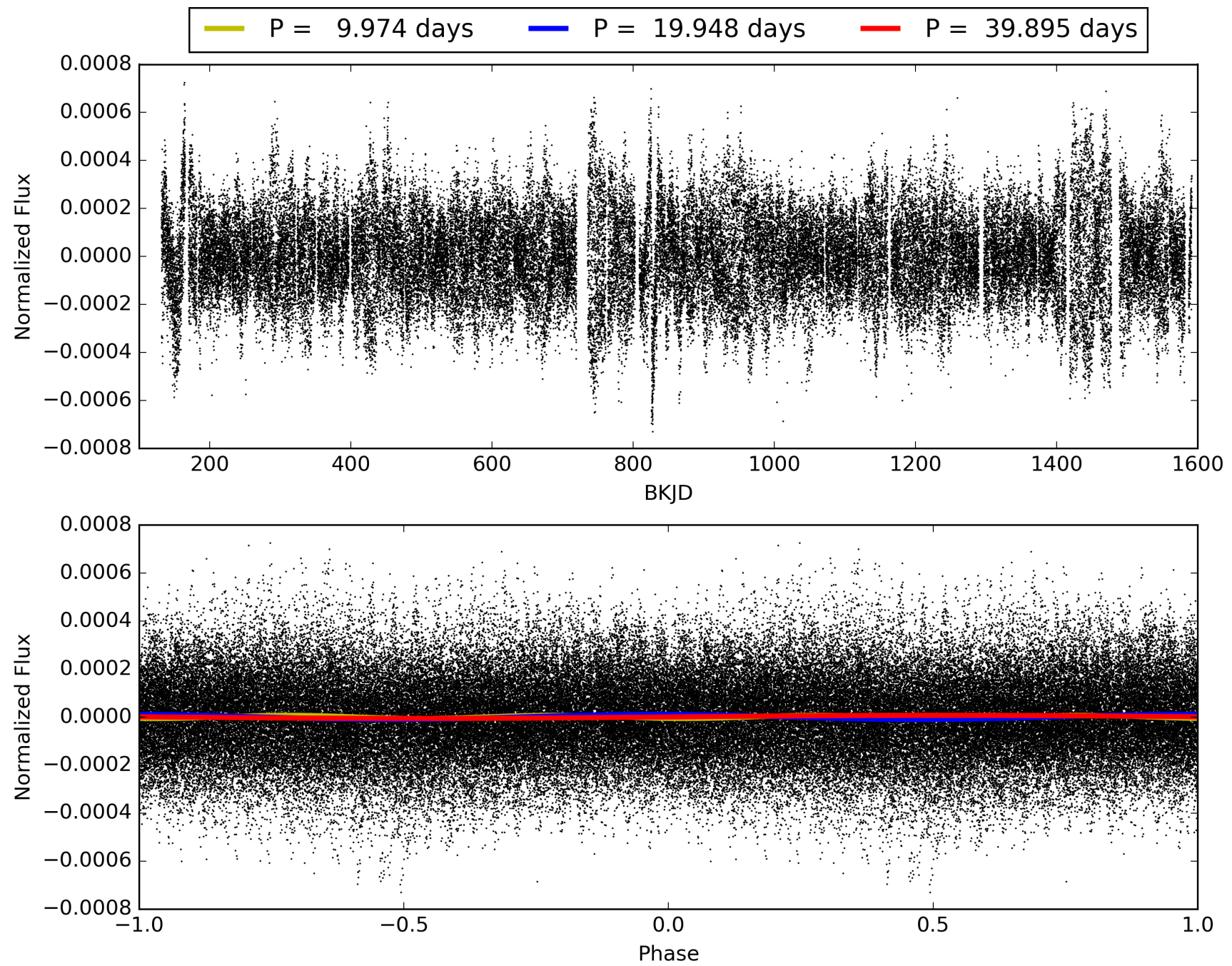
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:17 Z

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

TCE 004738155-02, PDC Light Curves

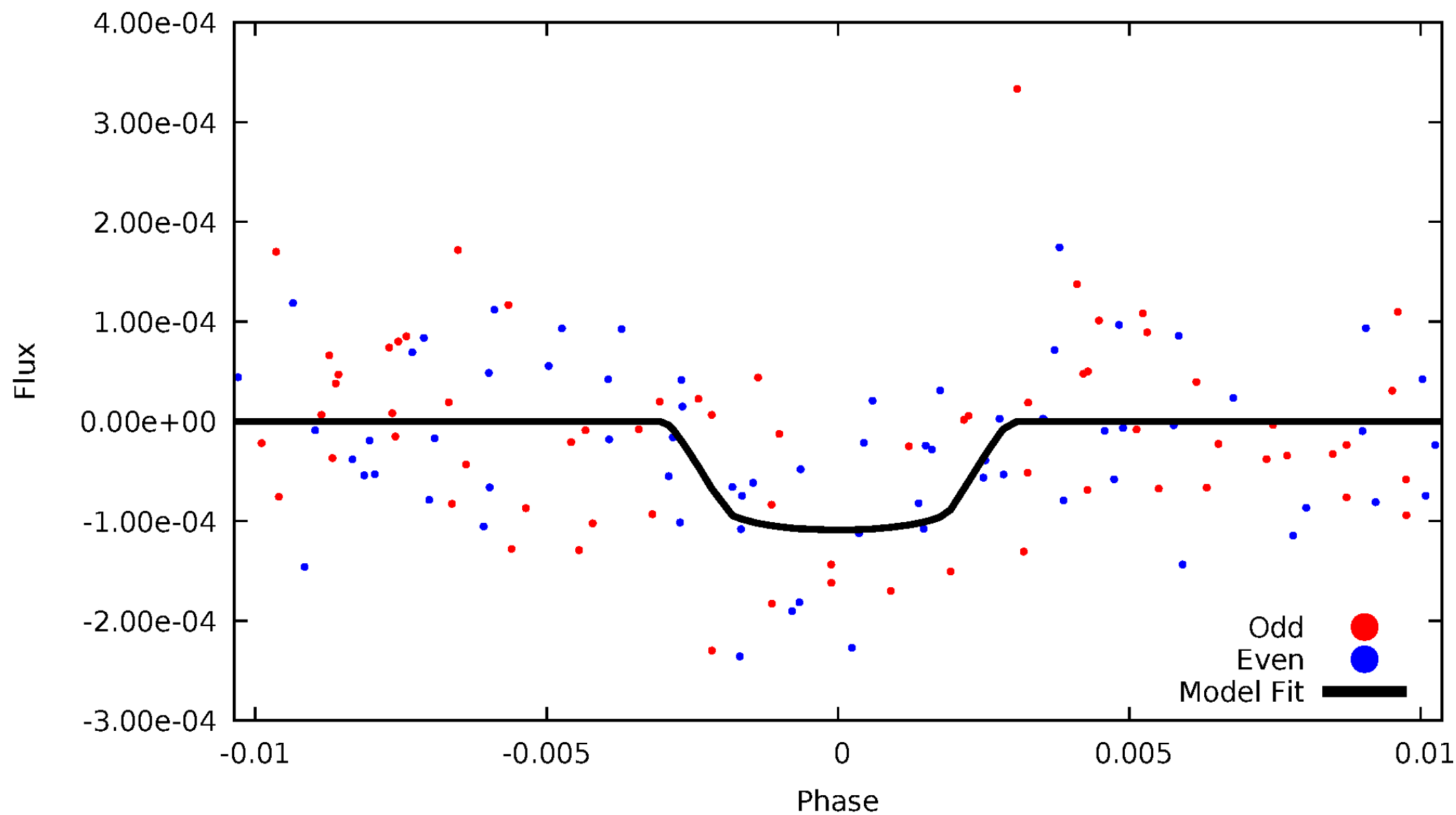


TCE 004738155-02



DV Odd/Even

TCE 004738155-02

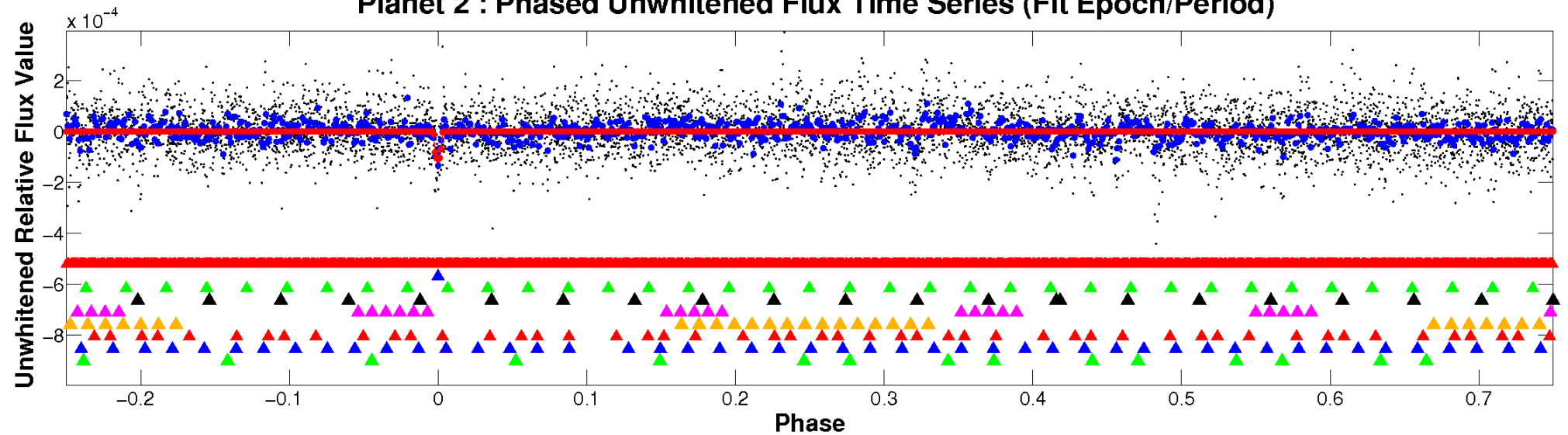


ALT Odd/Even

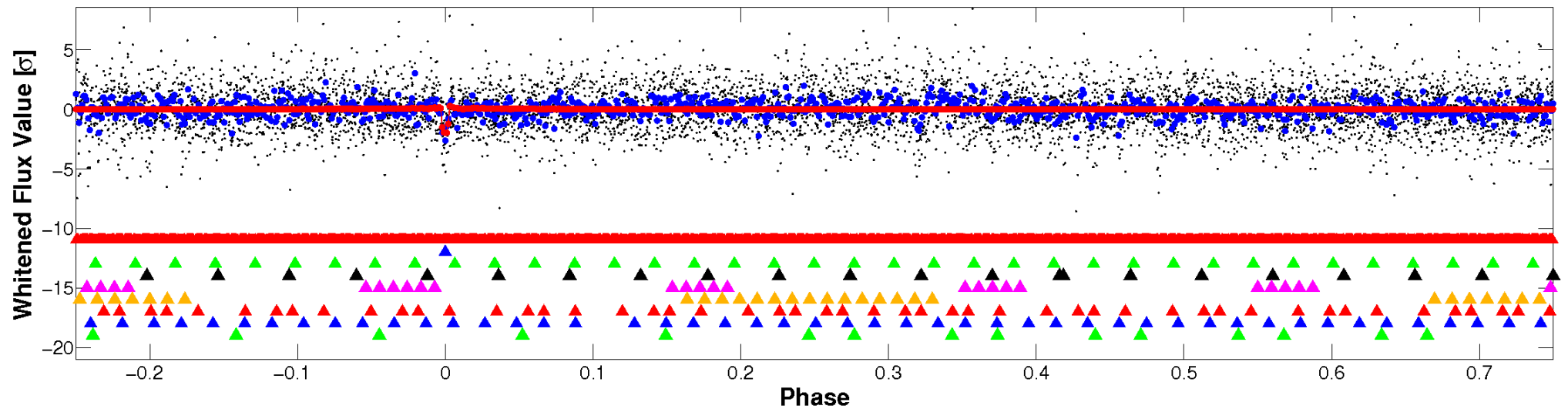
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

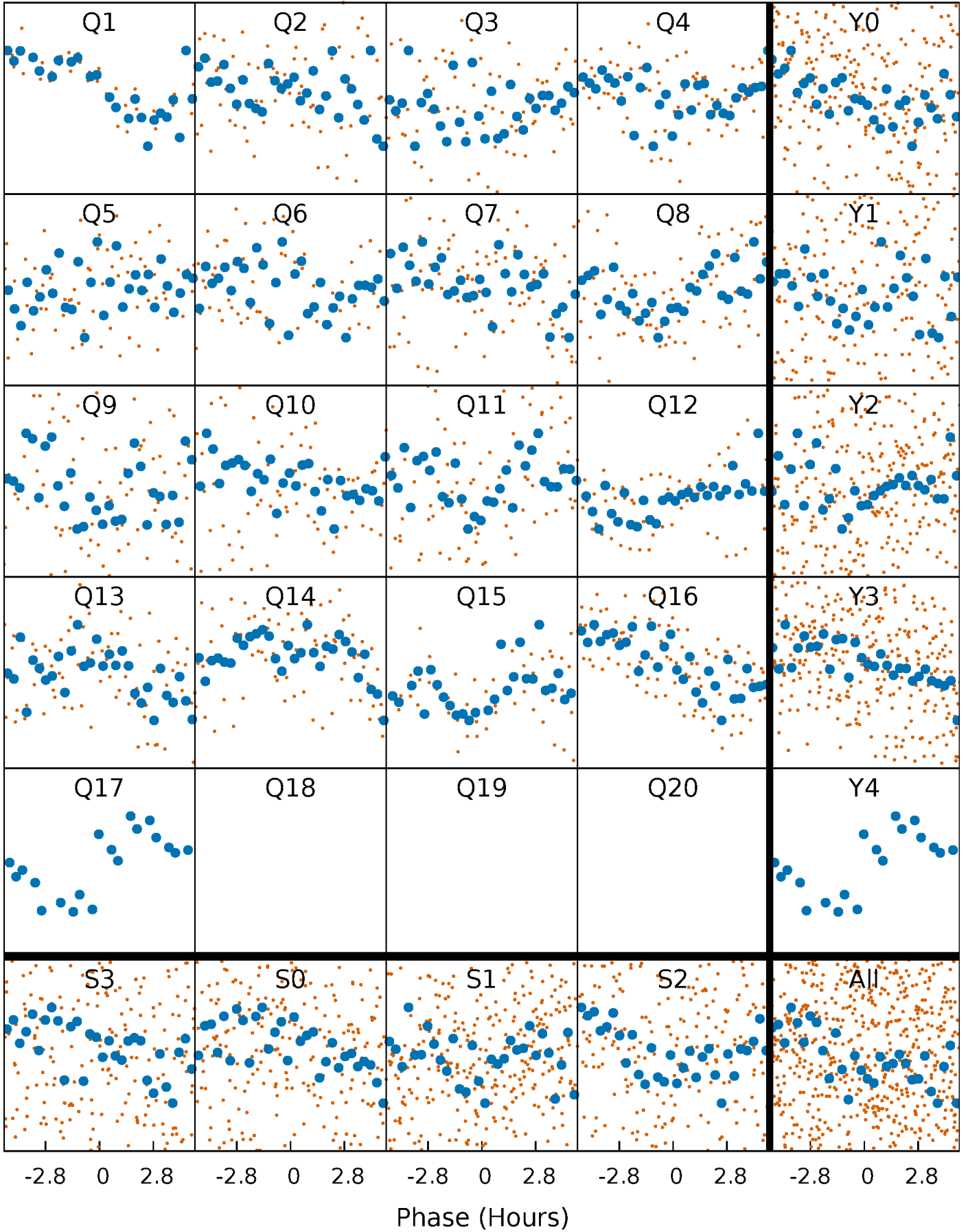


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



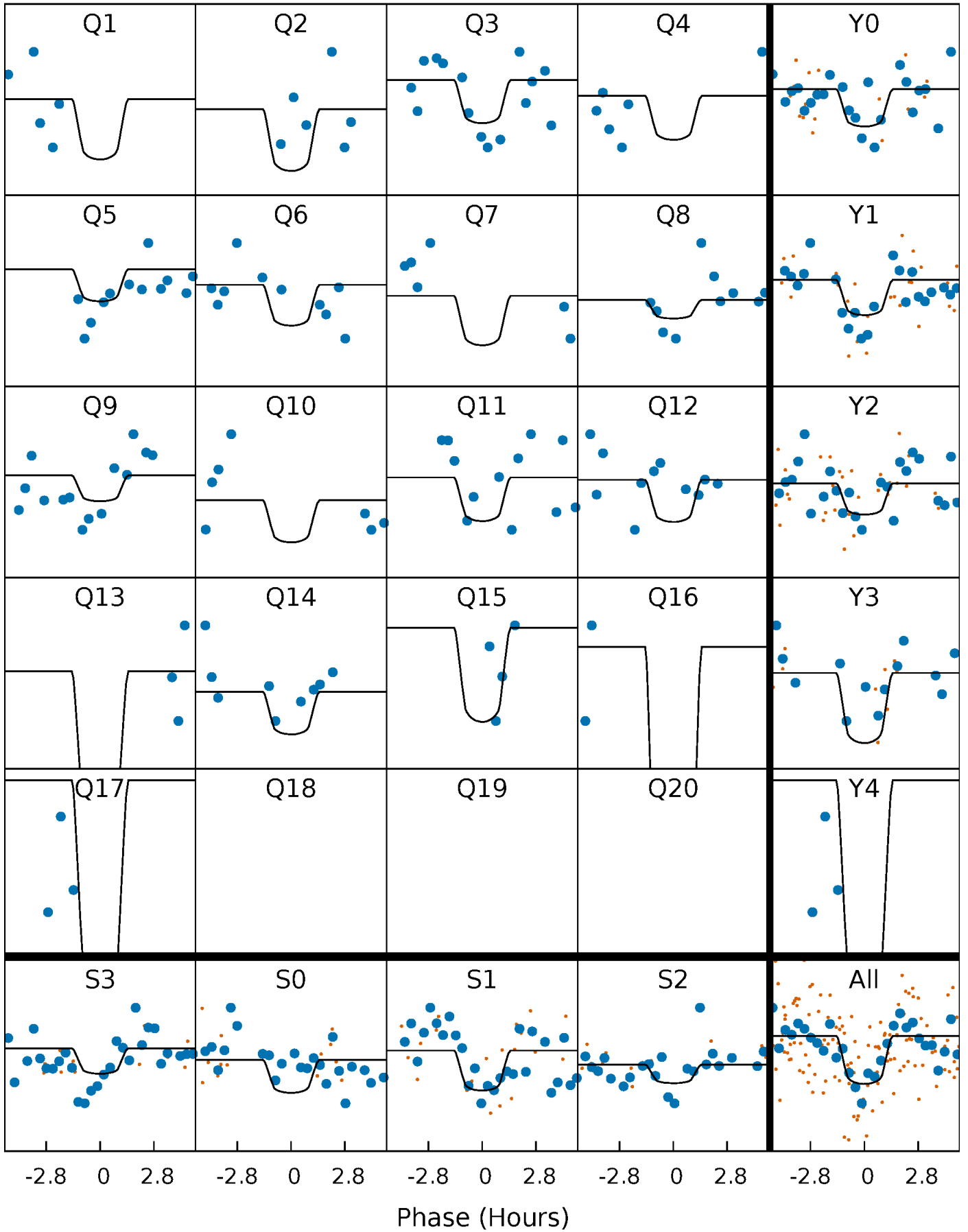
PDC Quarter-Phased Transit Curves

TCE 004738155-02 P= 19.947640 Days $T_0=139.503616$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 004738155-02 P= 19.947640 Days $T_0=139.503616$ (BKJD)

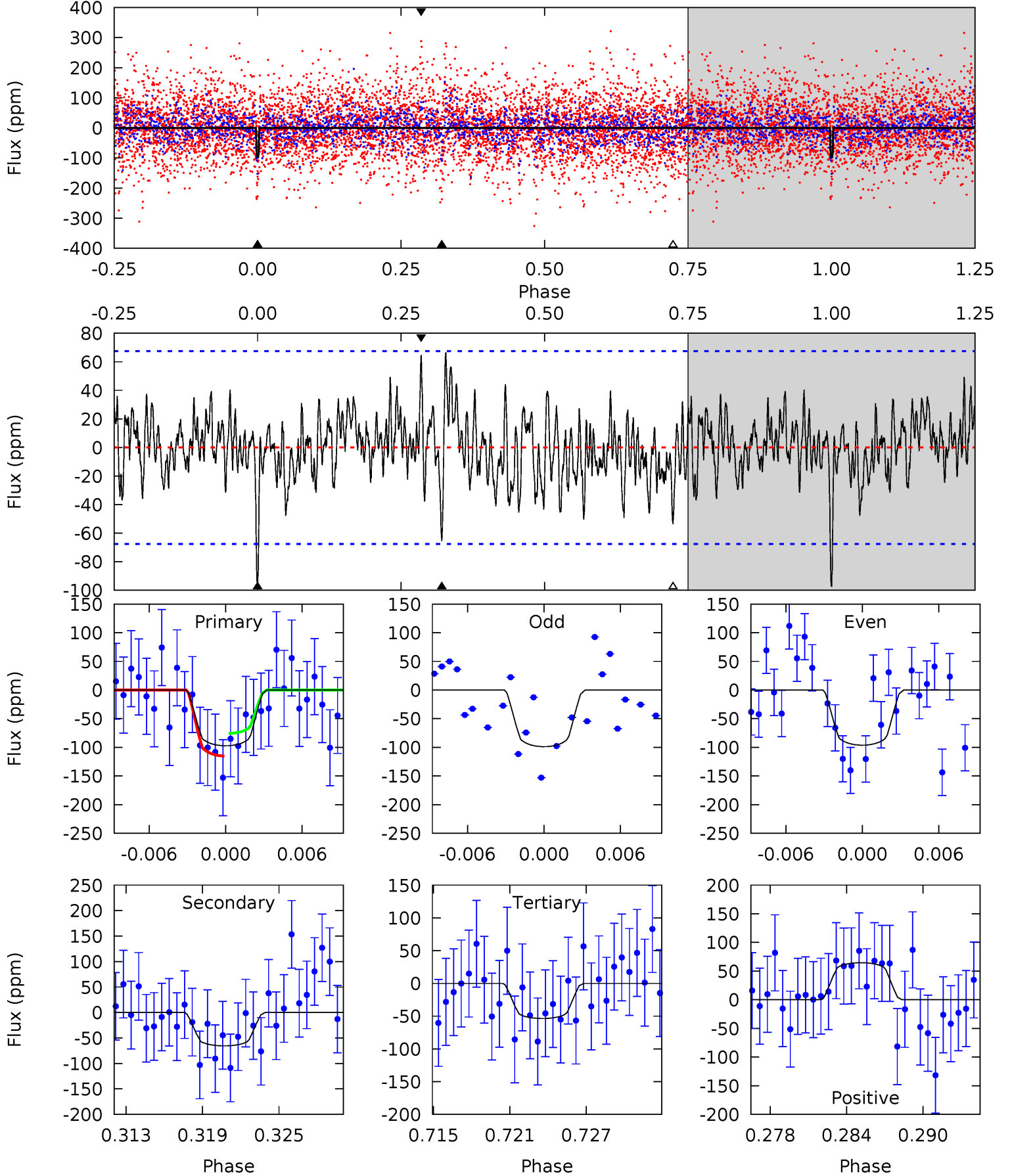


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

004738155-02, $P = 19.947640$ Days, $E = 119.555976$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.39	4.97	4.07	4.91	5.13	2.75	1.43	3.32	2.48	0.90	0.06	0.10	1.01	0.41	1.50



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 004738155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6782^{+215}_{-263}	$4.044^{+0.350}_{-0.150}$	$-0.840^{+0.300}_{-0.300}$	$1.595^{+0.379}_{-0.568}$	$1.026^{+0.127}_{-0.115}$	$0.356^{+0.883}_{-0.148}$
	+3%/-4%	+9%/-4%	+36%/-36%	+24%/-36%	+12%/-11%	+248%/-42%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004738155-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-65 ± 13	$2.00^{+1.39}_{-1.22}$	1365^{+112}_{-149}	5527^{+3743}_{-1078}	189^{+1147}_{-123}
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 $A_{obs} \gg 1.0$

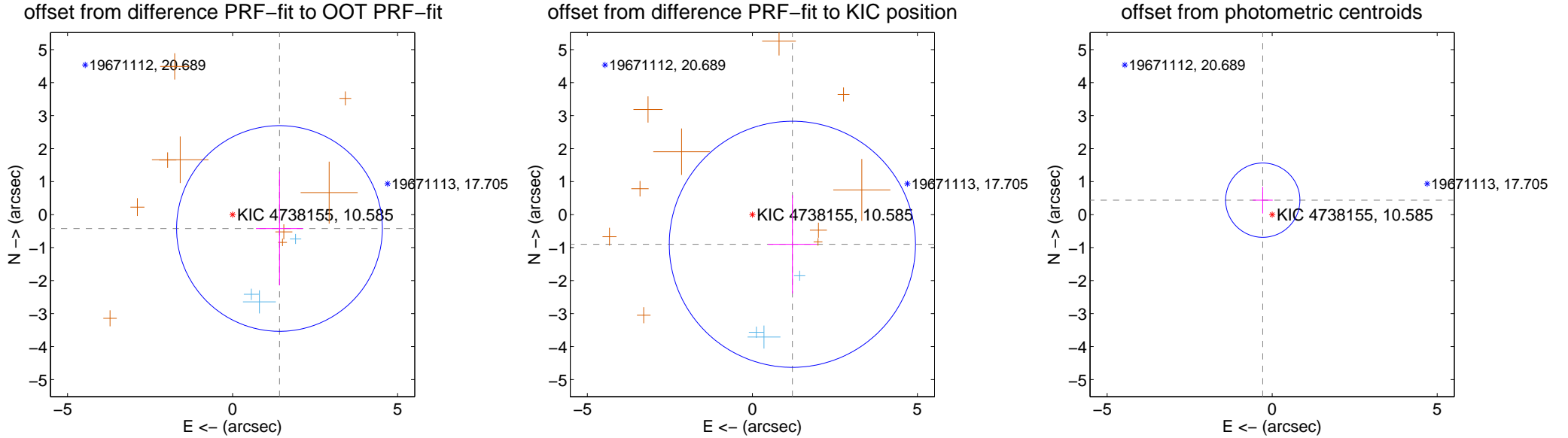
DV Centroid Data

Supplemental centroid analysis for 004738155-02. **Kepler magnitude: 10.59.** Transit SNR 10.25

There are 3 quarters with good PRF difference image offsets

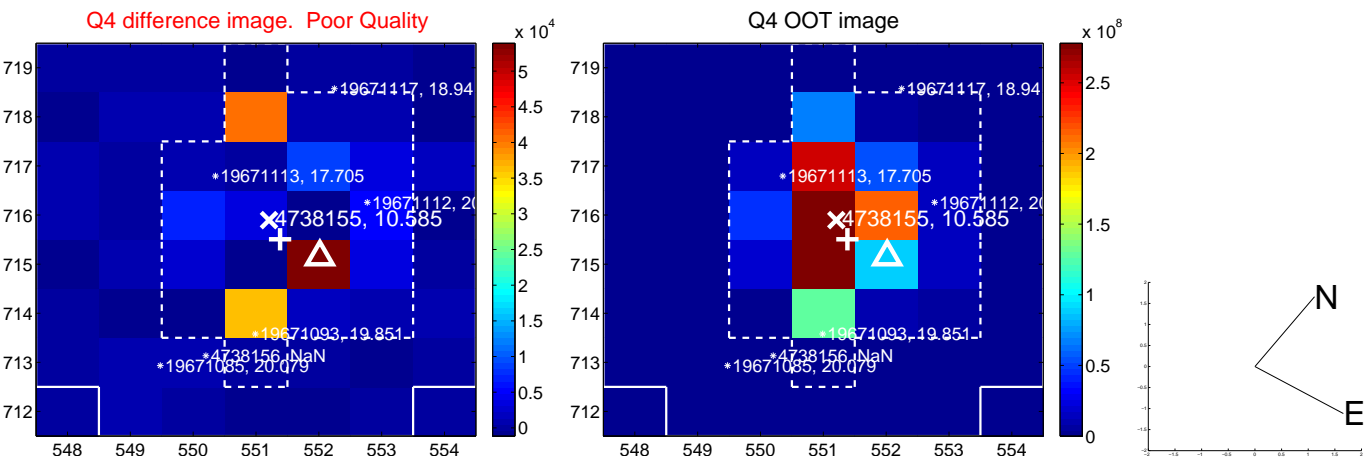
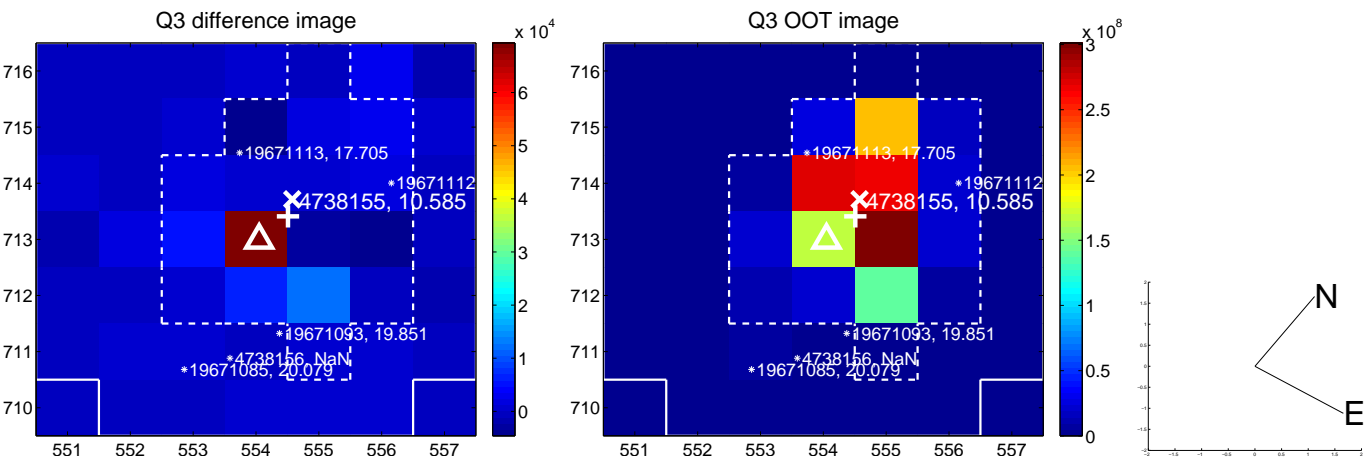
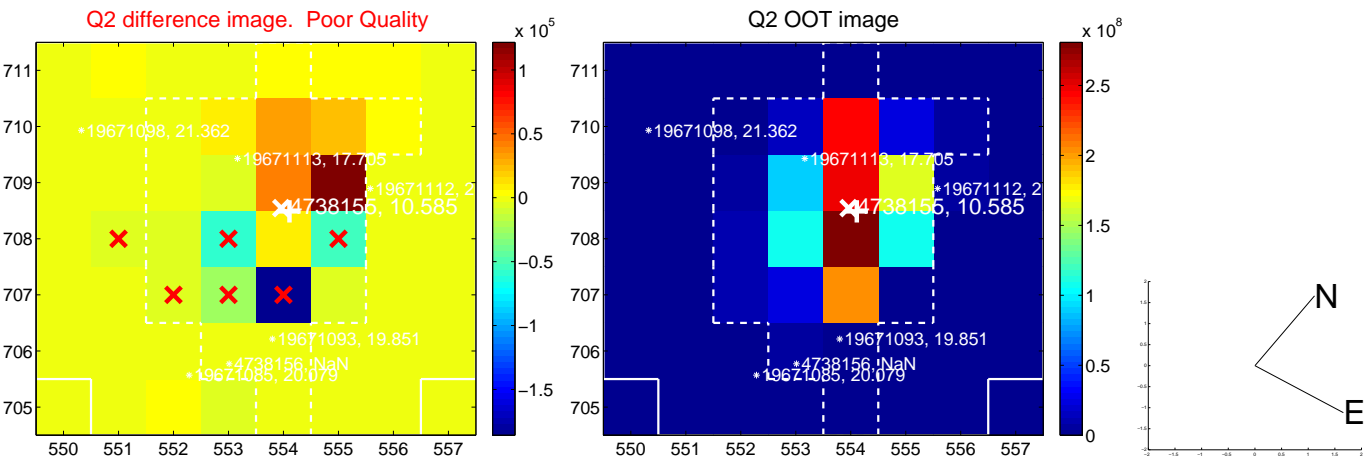
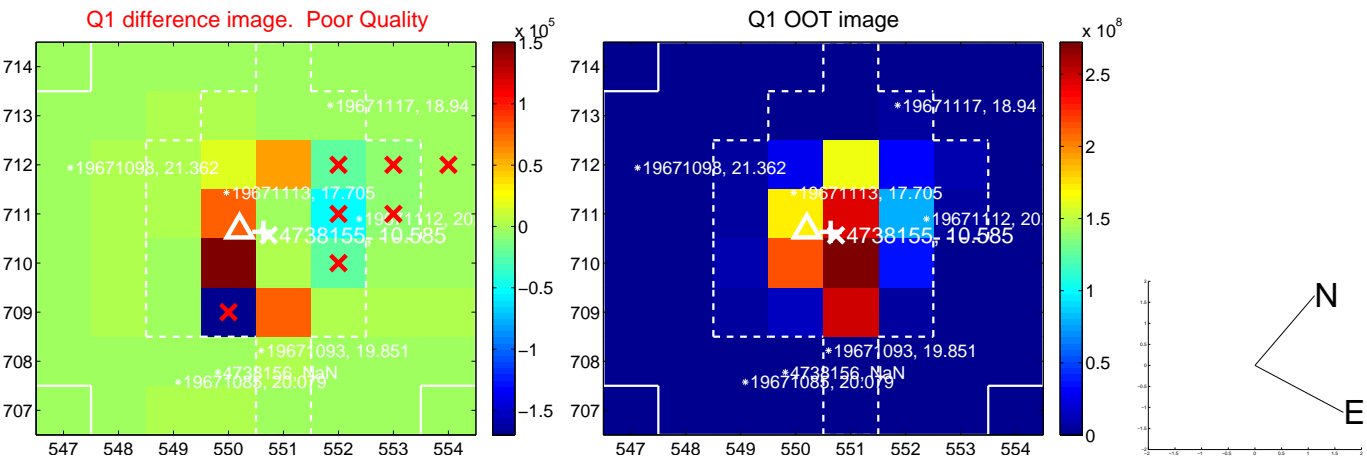
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.482 ± 1.039	1.43	-1.421 ± 0.713	-0.421 ± 1.726
PRF-fit source offset from KIC position	1.510 ± 1.243	1.21	-1.212 ± 0.737	-0.900 ± 1.489
photometric centroid source offset	0.52 ± 0.38	1.39	0.28 ± 0.30	0.44 ± 0.40

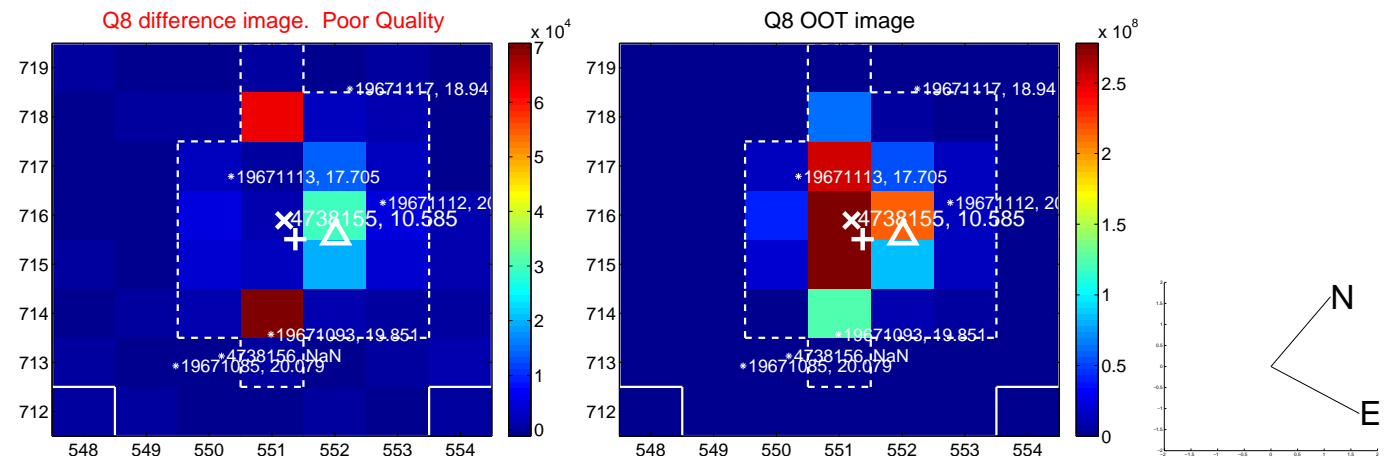
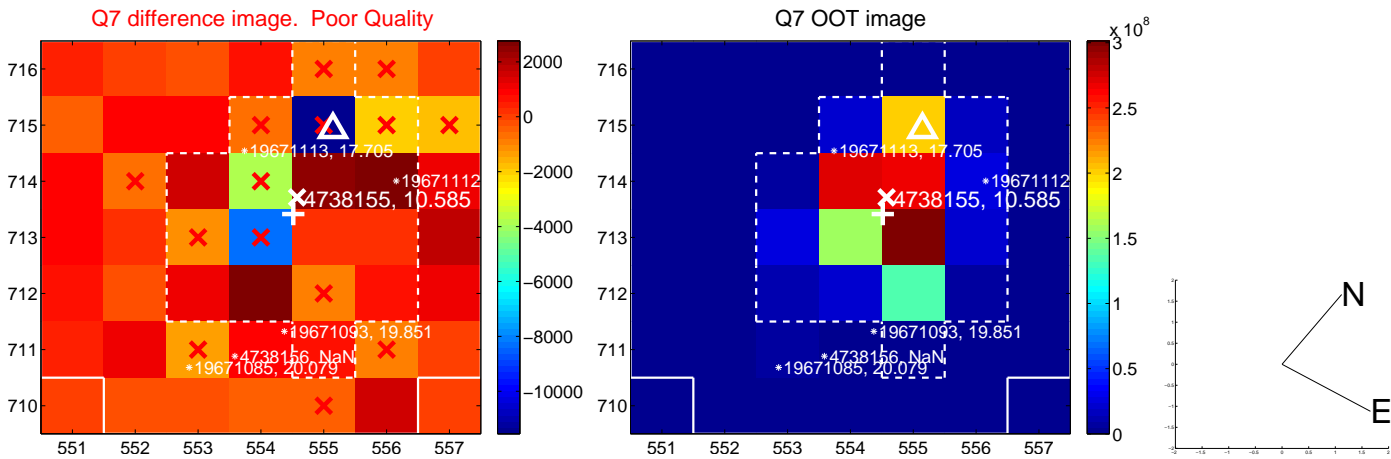
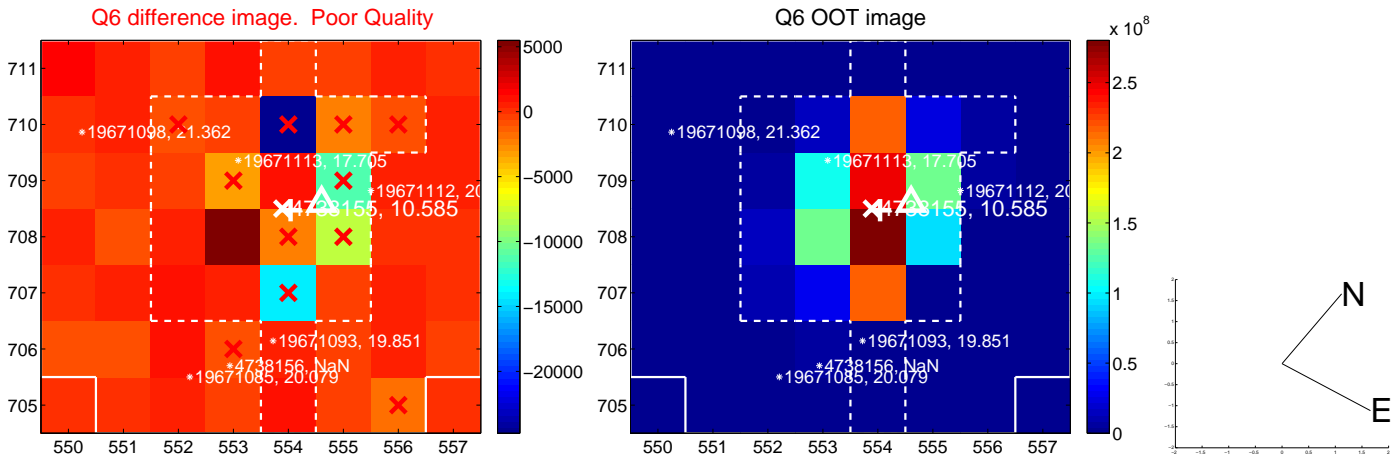
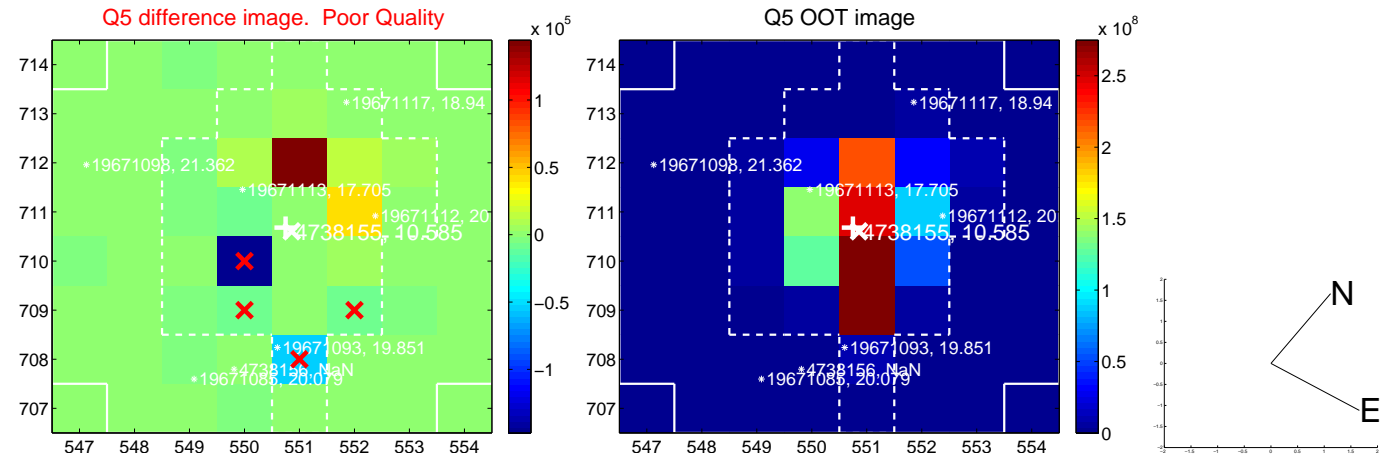


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

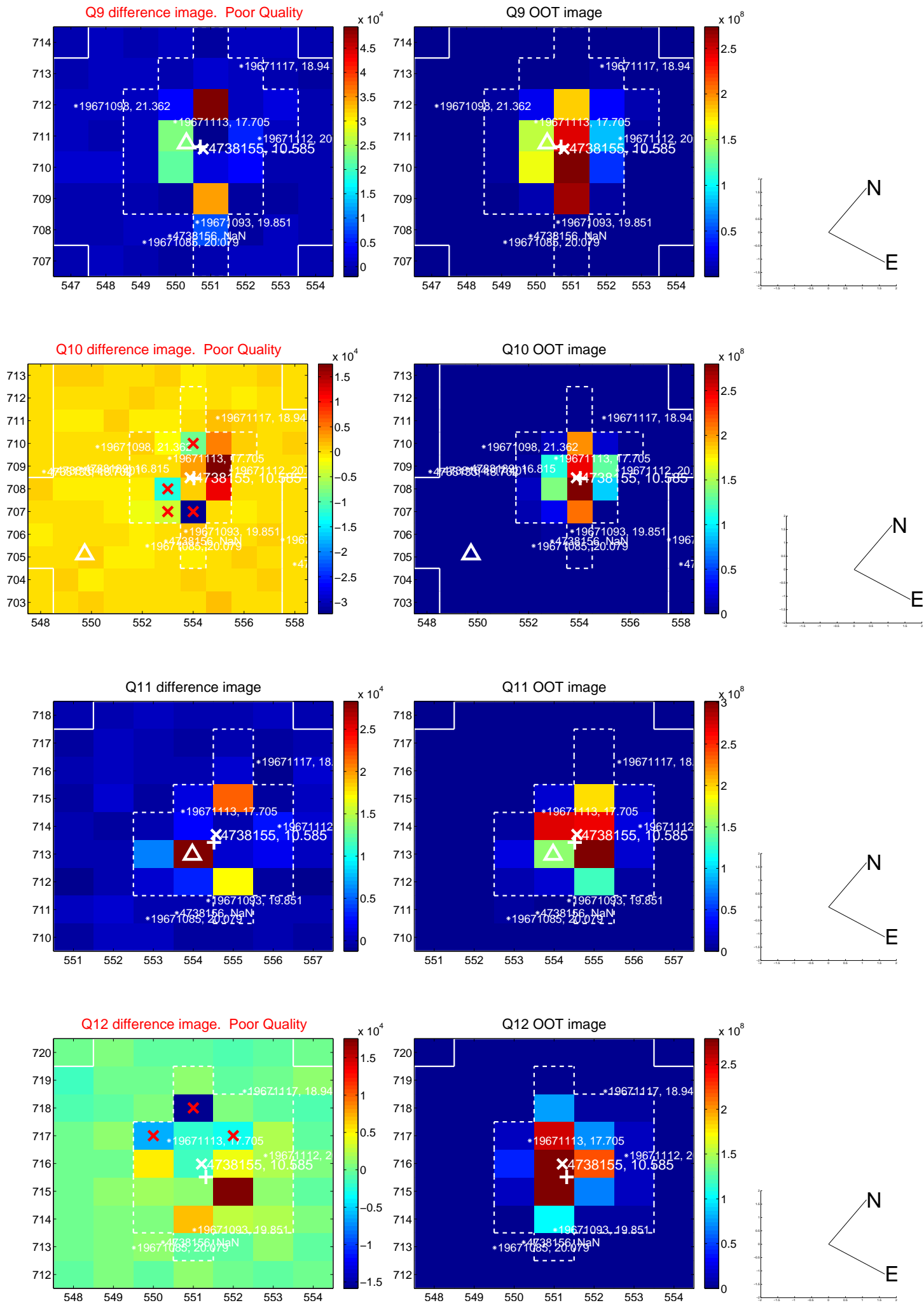
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



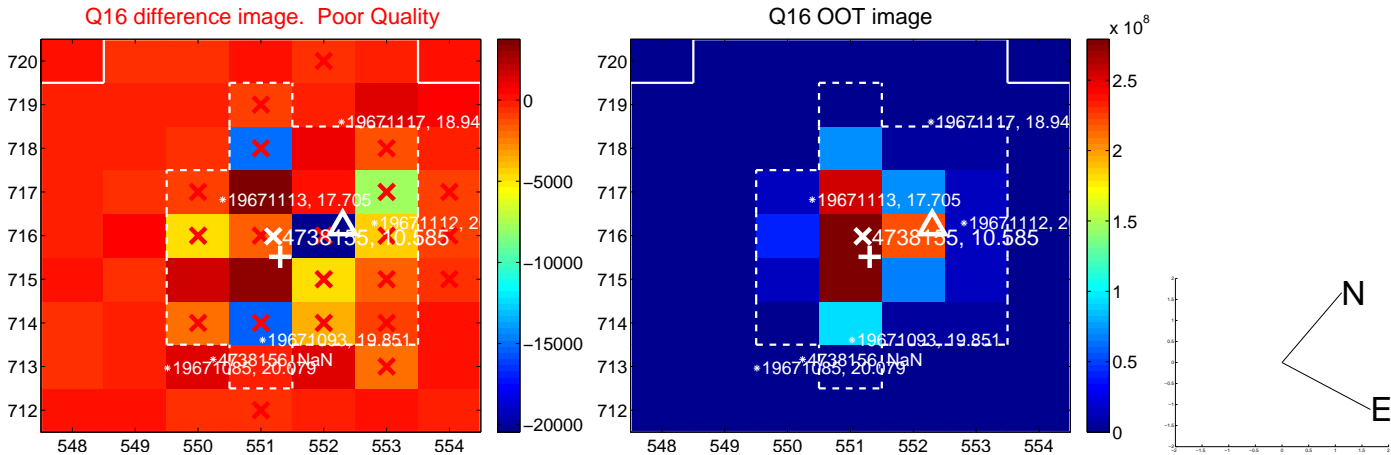
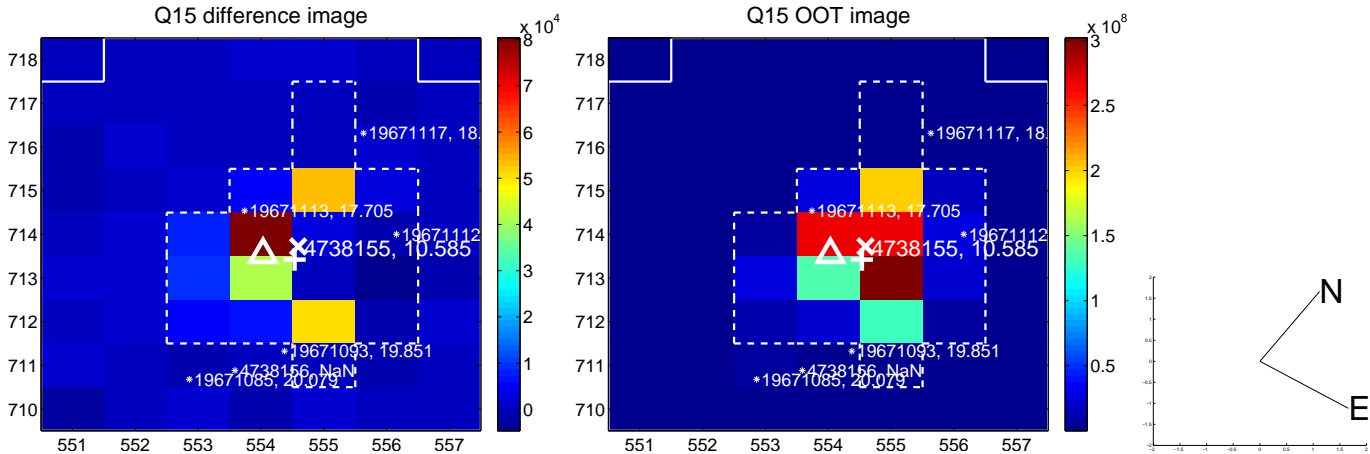
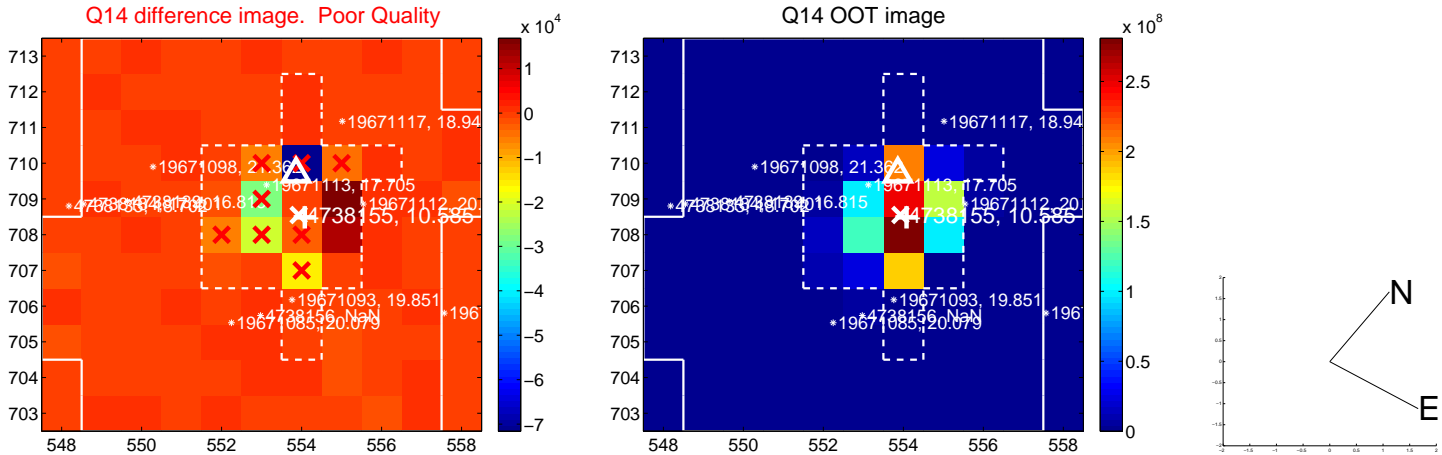
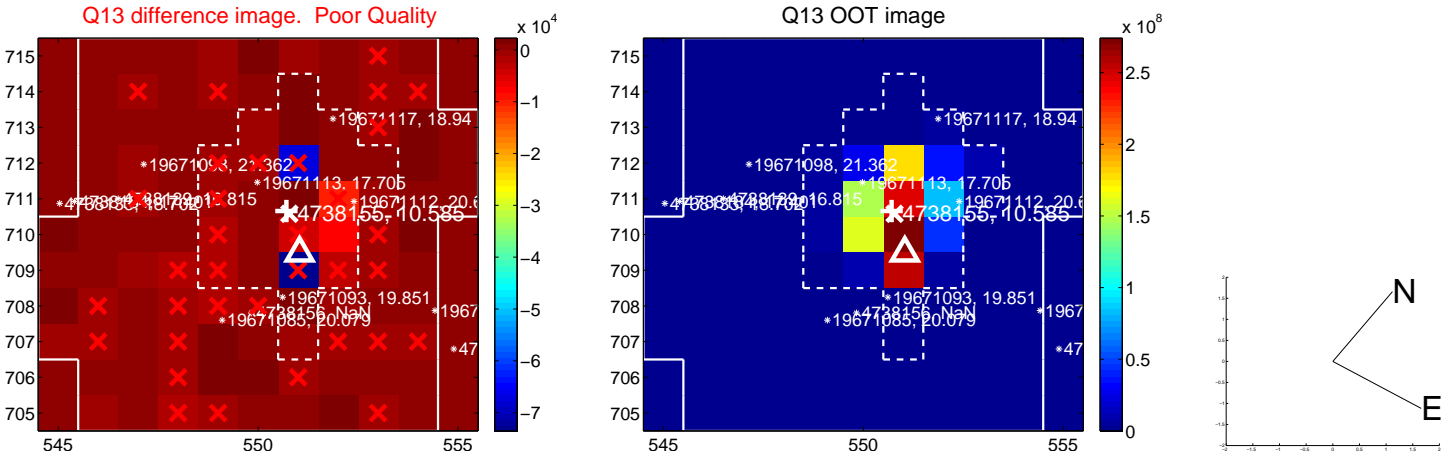
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



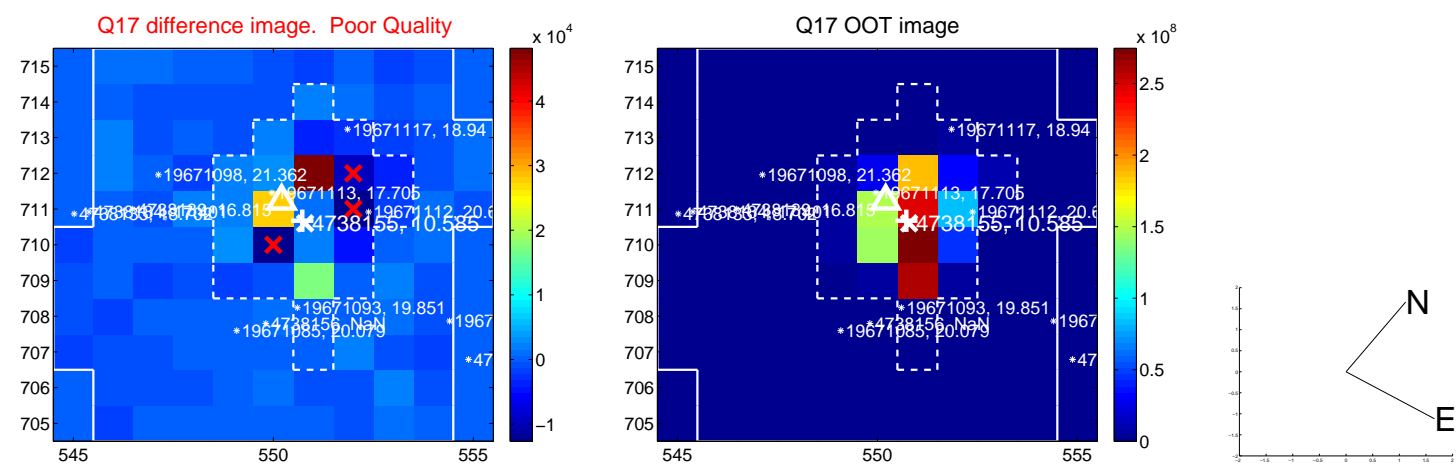
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



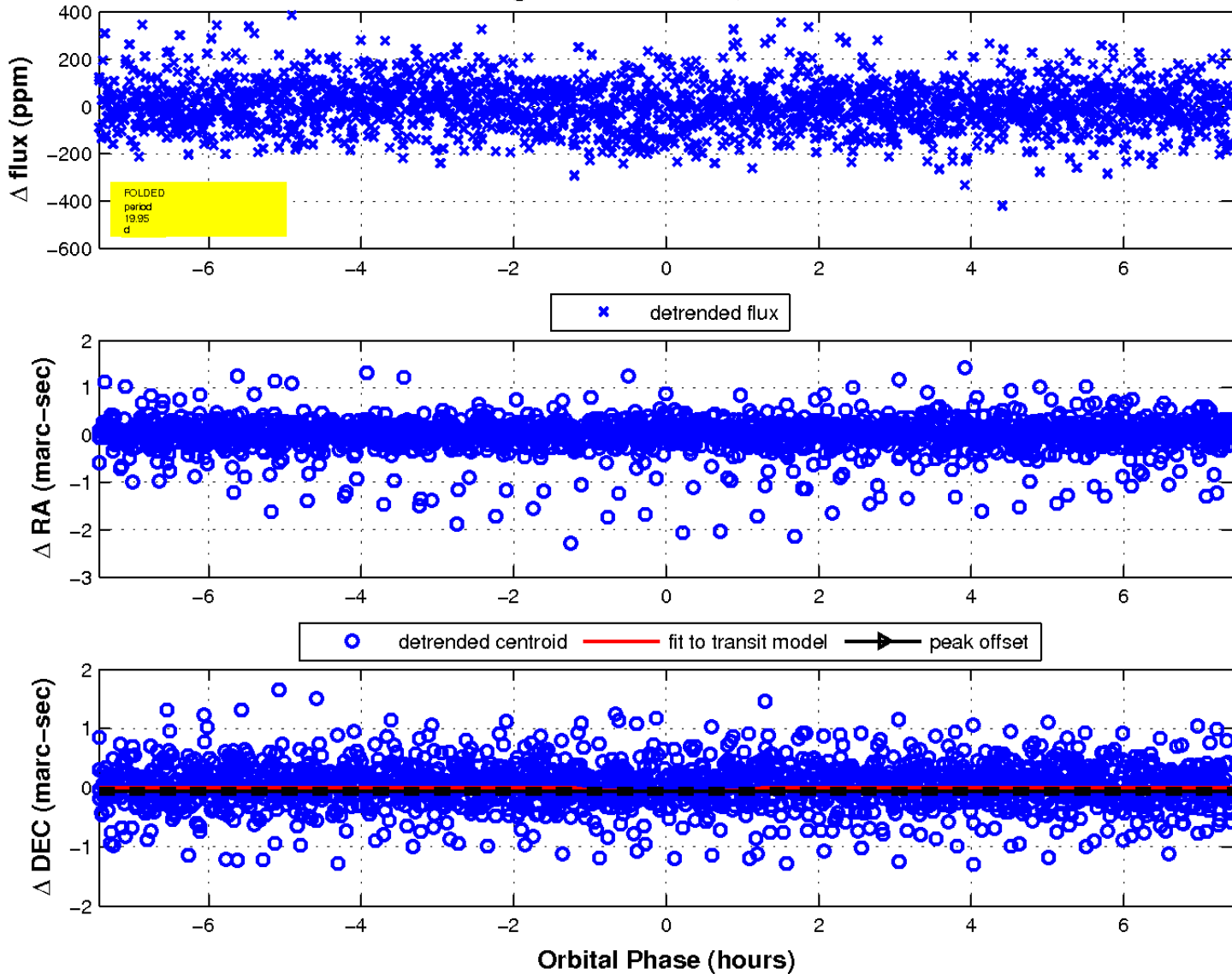
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

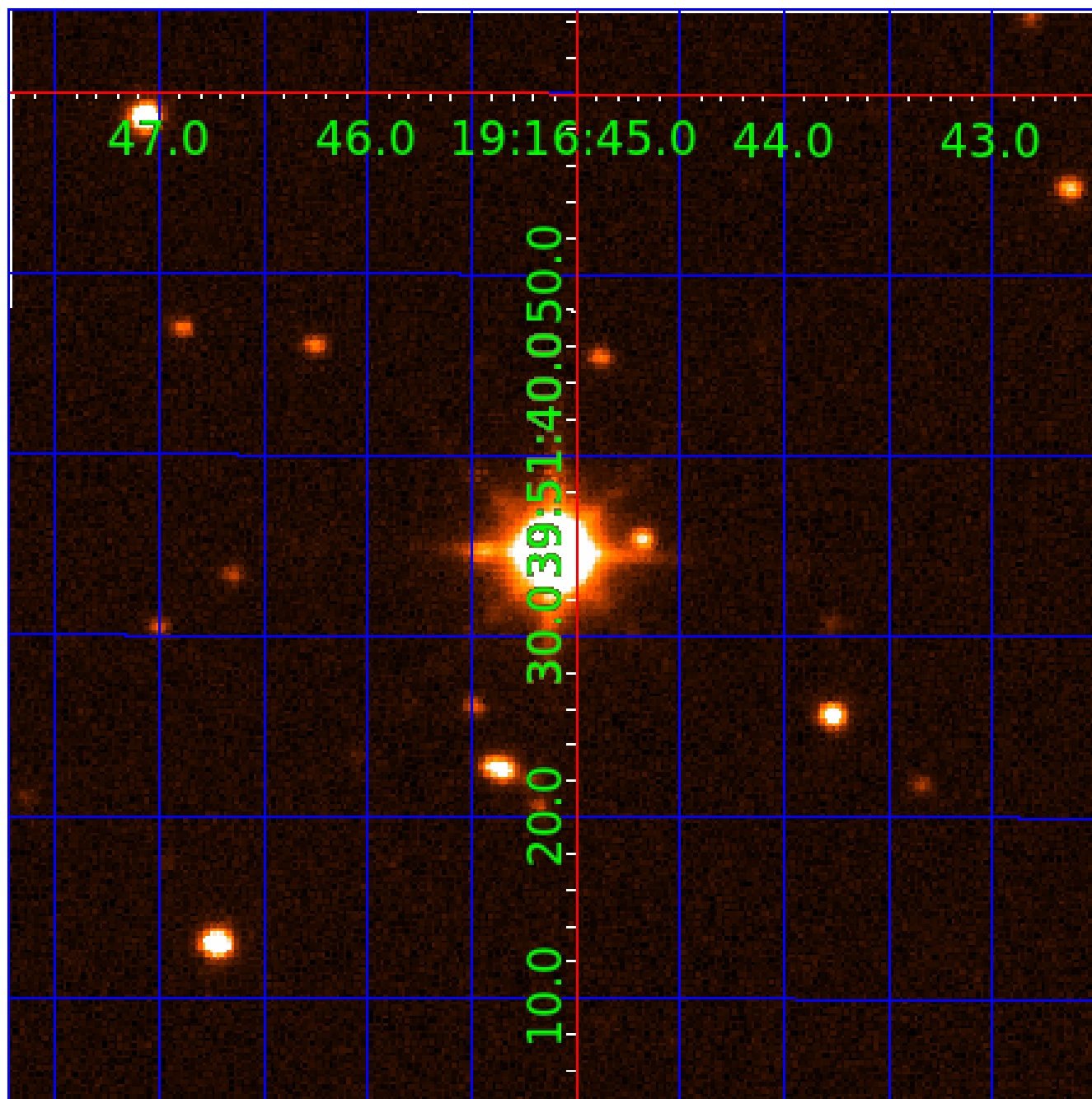


fluxWeightedCentroids, Planet 2 of 9



UKIRT Image

Declination



KIC 004738155

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})
004738155-01	OBS	No	0.836071	132.167221	2.4	5.840	7.6	2.2	1.59	6782	0.25	15697.92
004738155-02	OBS	No	19.947640	139.503616	109.1	2.480	12.1	10.3	1.59	6782	1.96	228.55
004738155-03	OBS	No	24.260767	131.541777	104.2	4.936	9.6	10.7	1.59	6782	1.85	176.05
004738155-04	OBS	No	64.589909	187.744216	121.2	4.046	11.3	9.2	1.59	6782	2.04	47.71
004738155-05	OBS	No	55.890541	158.379329	177.1	2.724	10.2	9.6	1.59	6782	2.14	57.86
004738155-06	OBS	No	49.987307	142.769267	101.4	6.306	10.9	7.6	1.59	6782	1.82	67.15
004738155-07	OBS	No	29.072639	145.715139	123.1	3.041	8.6	10.8	1.59	6782	1.95	138.31
004738155-08	OBS	No	30.533304	132.268869	129.5	1.889	9.2	8.1	1.59	6782	2.10	129.56
004738155-09	OBS	No	97.804825	192.042078	119.8	2.769	9.5	10.7	1.59	6782	2.02	27.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004738155-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004738155-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST
004738155-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

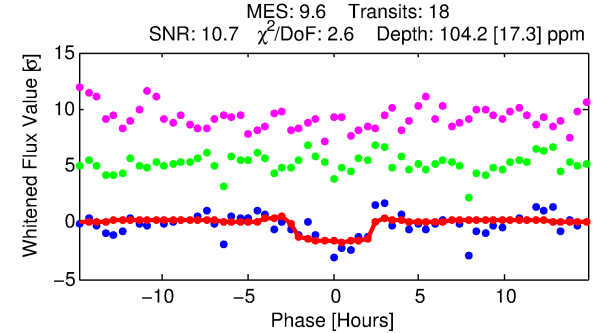
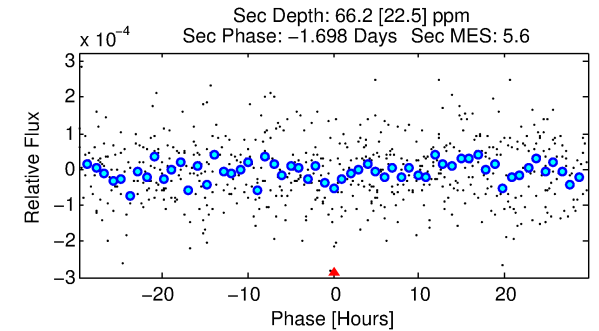
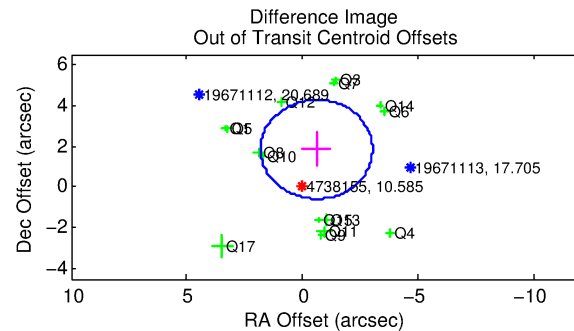
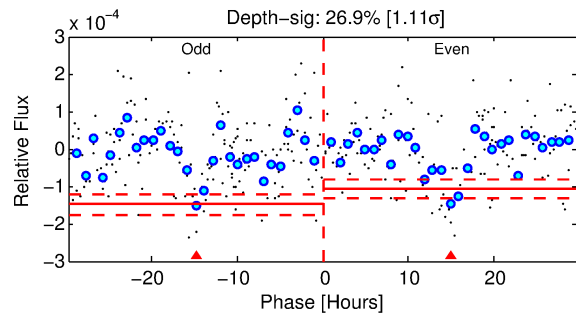
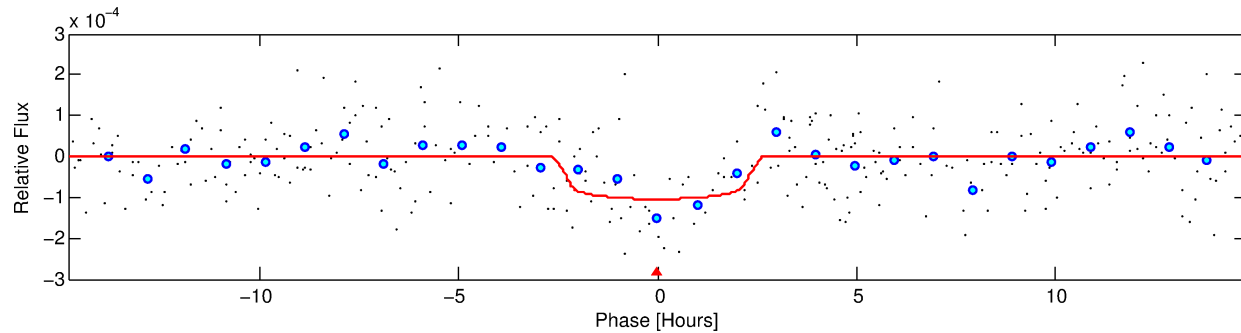
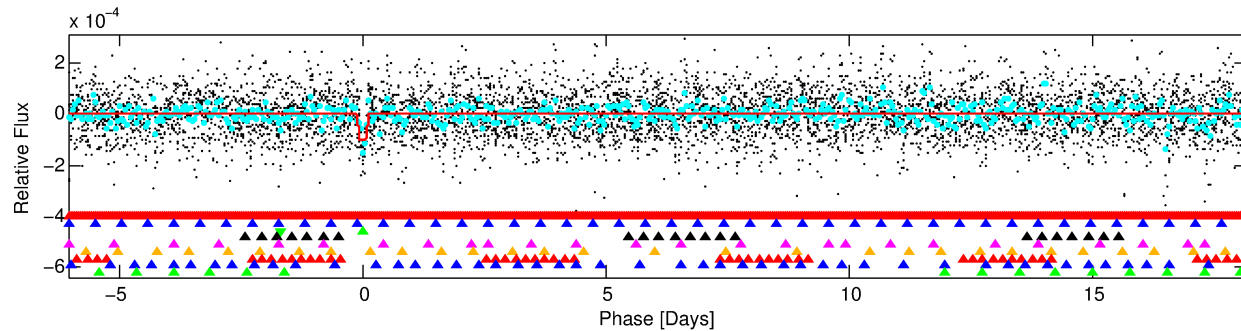
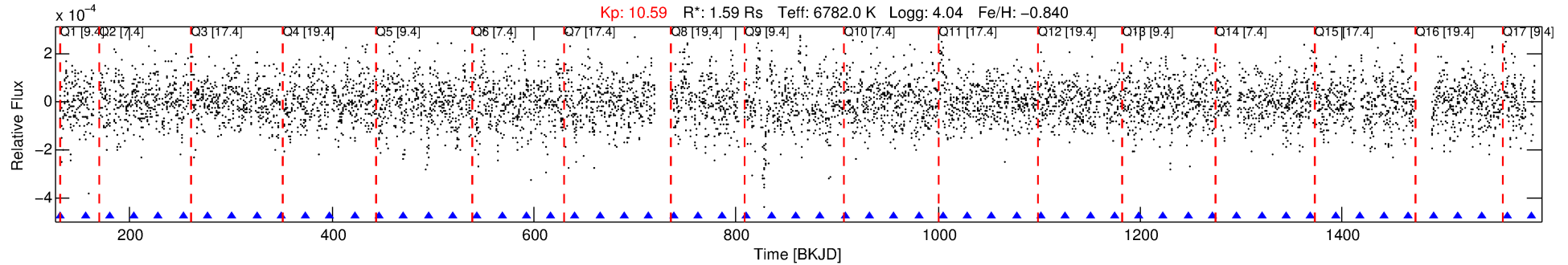
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004738155-03

No Significant Match Found

DV One-Page Summary

KIC: 4738155 Candidate: 3 of 9 Period: 24.261 d



DV Fit Results:

Period = 24.26077 [0.00166] d
Epoch = 131.5418 [0.0243] BKJD
Rp/R* = 0.0106 [0.0063]
a/R* = 19.56 [69.44]
b = 0.87 [1.02]
Seff = 176.05 [106.95]
Teq = 929 [141] K
Rp = 1.85 [1.28] Re
a = 0.1655 [0.0593] AU
Ag = 290.73 [397.42] [0.73 σ]
Teffp = 5930 [1844] K [2.70 σ]

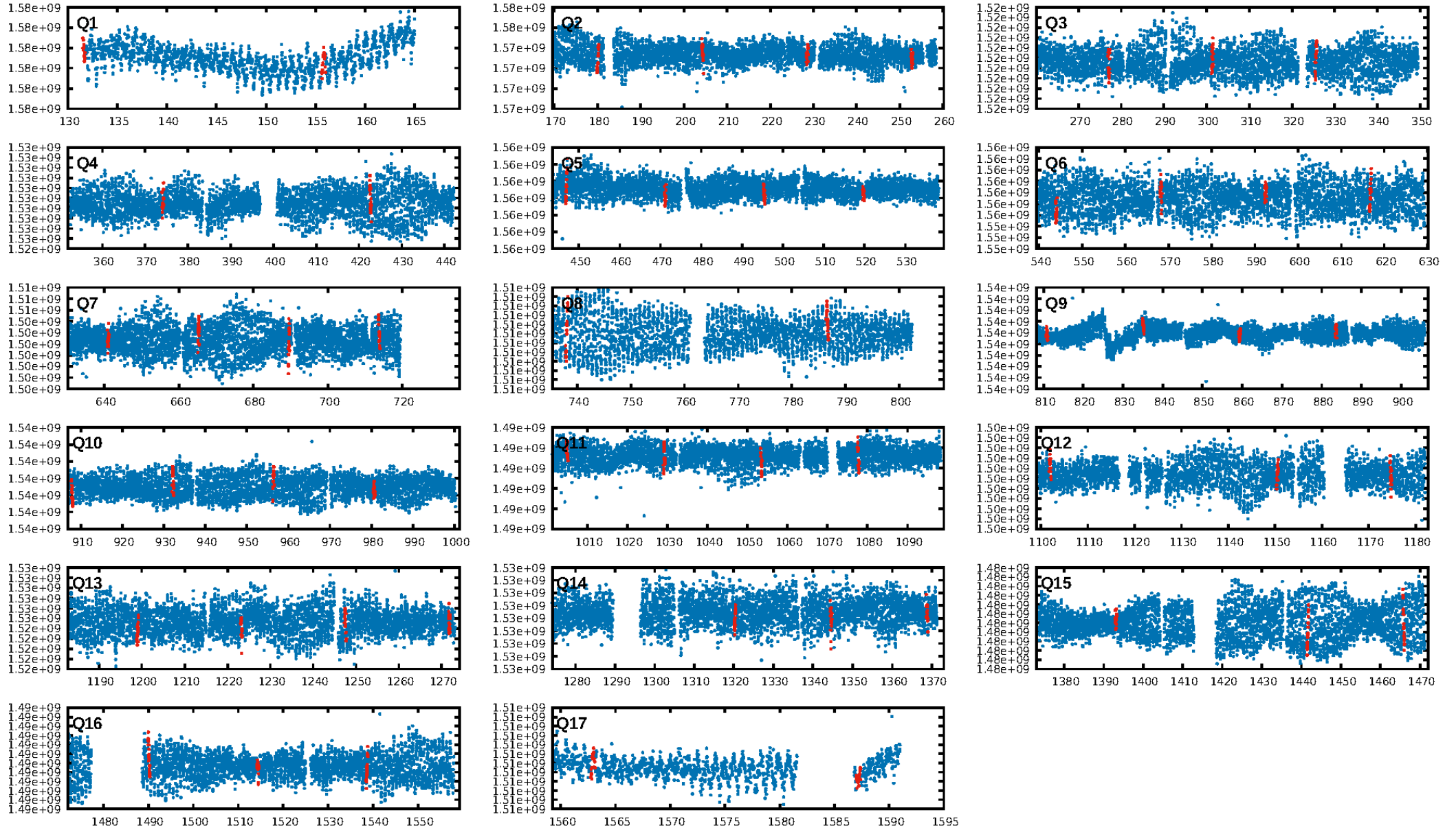
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [18.74 σ]
LongPeriod-sig: 100.0% [19.92 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.84e-09
RollingBand-fgt: 1.00 [18/18]
GhostDiagnostic-chr: 0.2754
Centroid-sig: N/A
Centroid-so: 0.794 arcsec [2.61 σ]
OotOffset-rm: 1.945 arcsec [2.41 σ]
KicOffset-rm: 1.509 arcsec [1.90 σ]
OotOffset-st: 3/4/3/5 [15]
KicOffset-st: 3/4/3/5 [15]
DiffImageQuality-fgm: 0.13 [2/15]
DiffImageOverlap-fno: 0.00 [0/17]

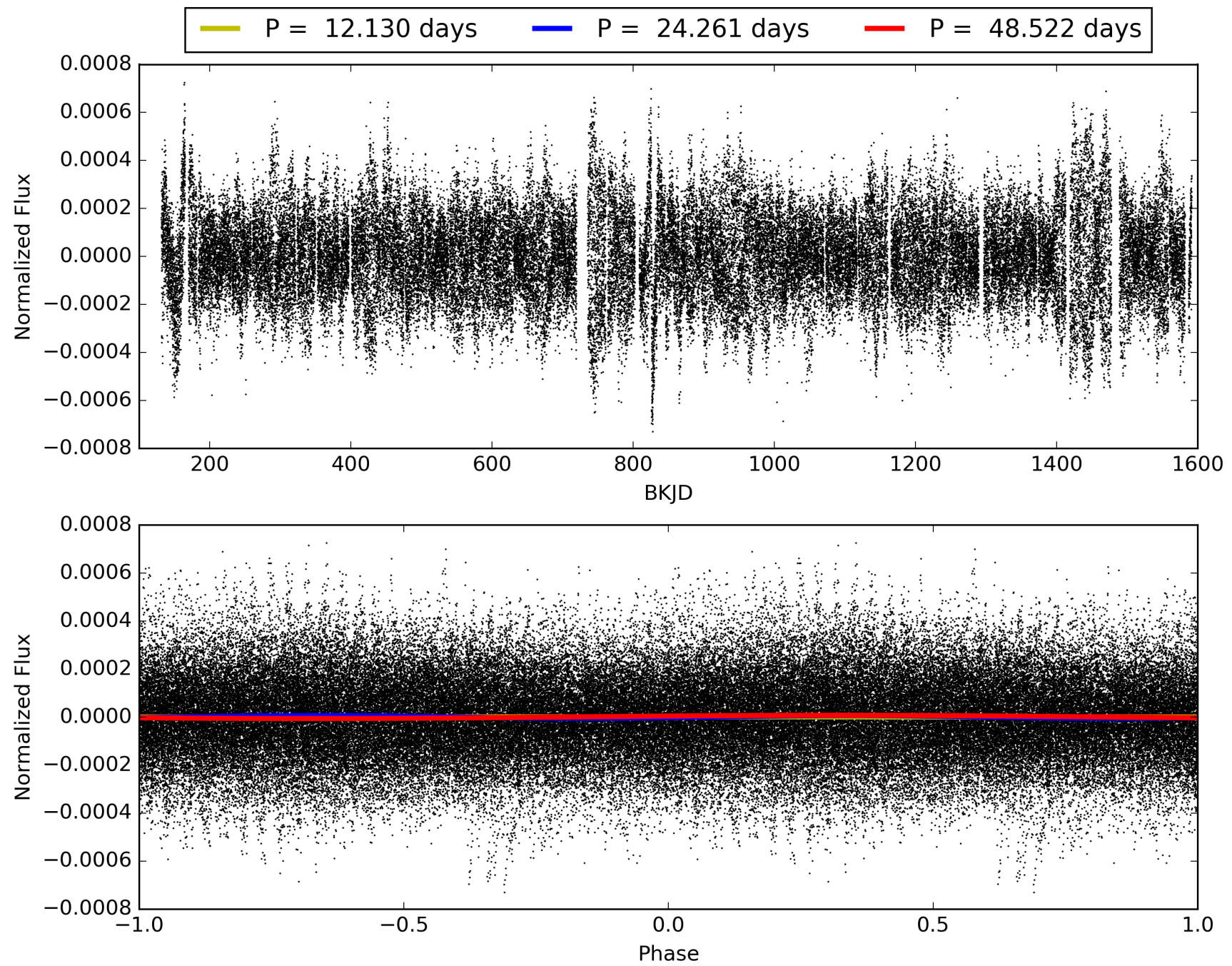
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:21 Z

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TCE 004738155-03, PDC Light Curves

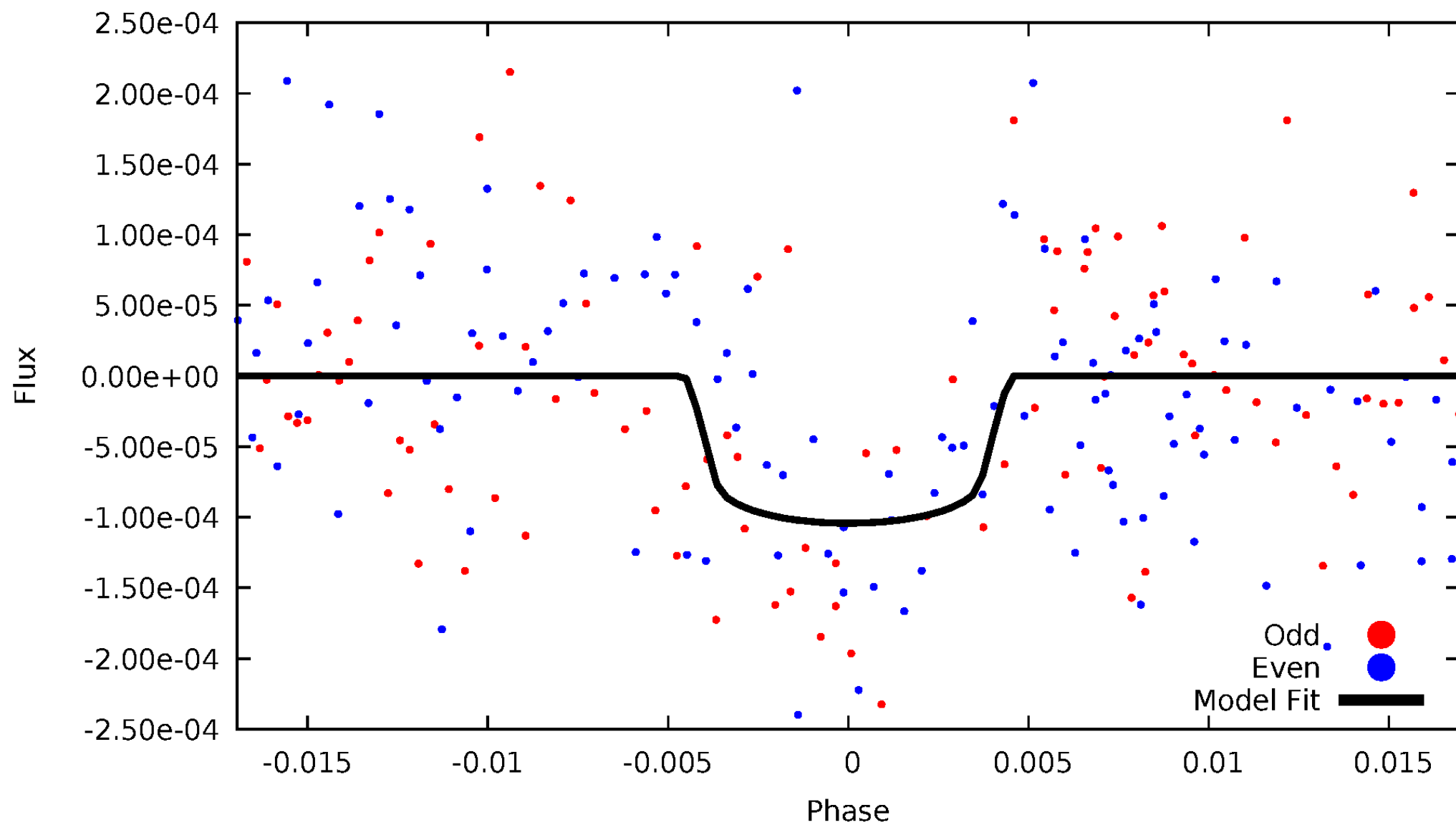


TCE 004738155-03



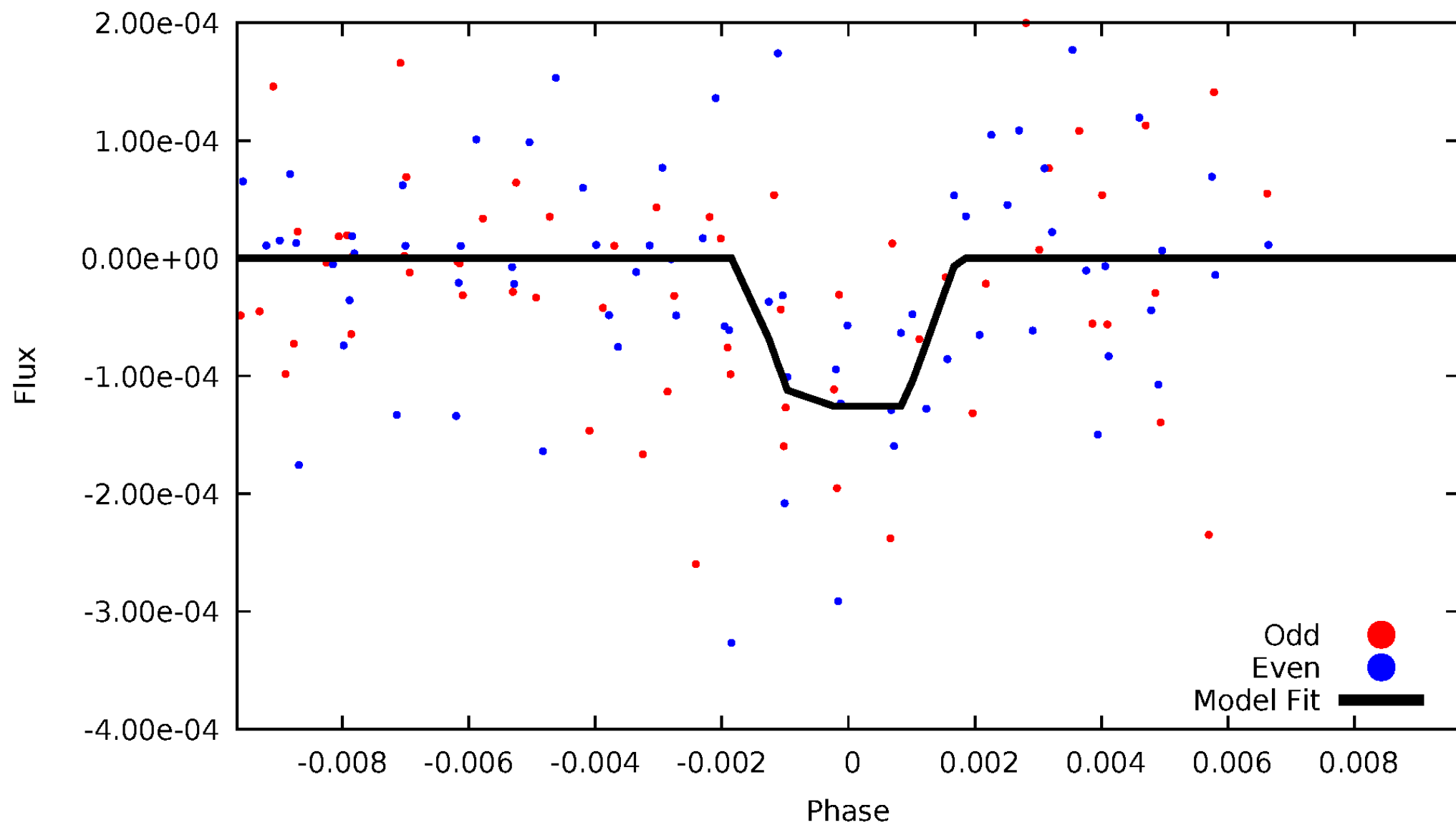
DV Odd/Even

TCE 004738155-03



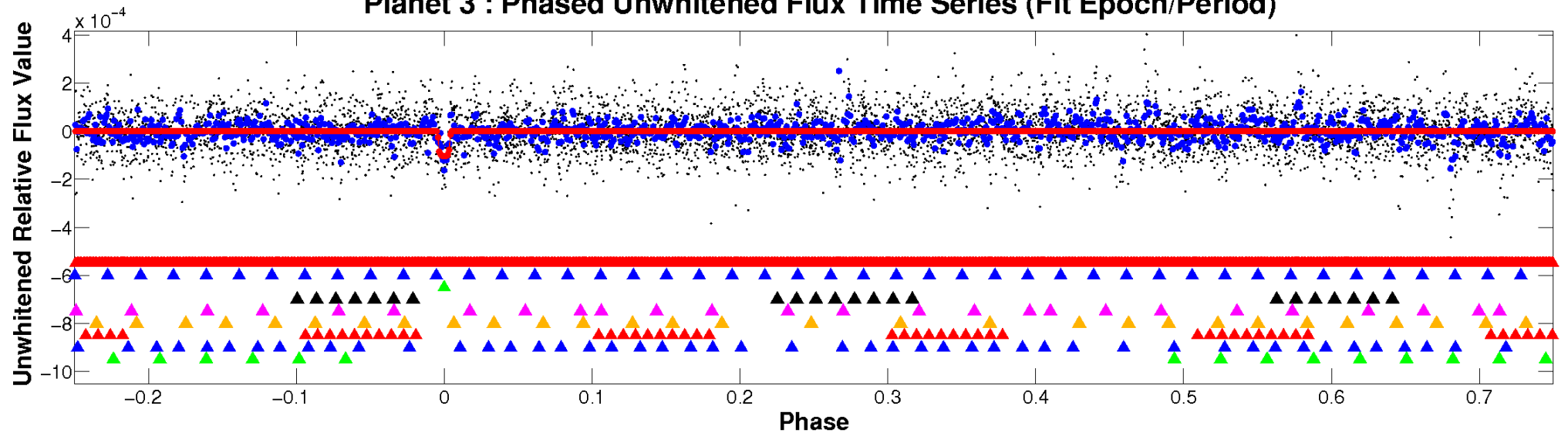
ALT Odd/Even

TCE 004738155-03

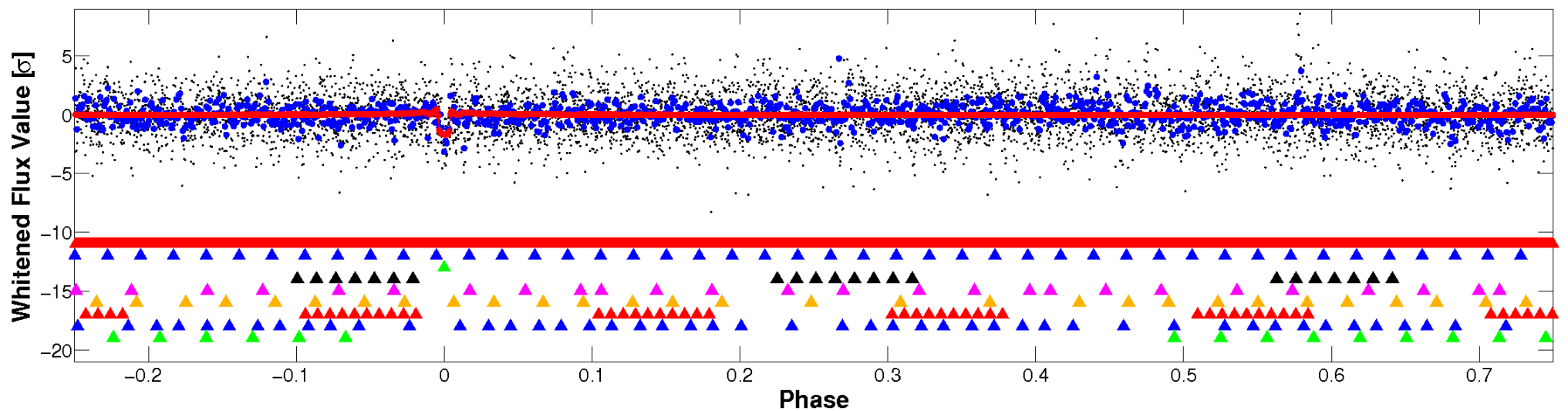


Non-Whitened Vs. Whitened Light Curve

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

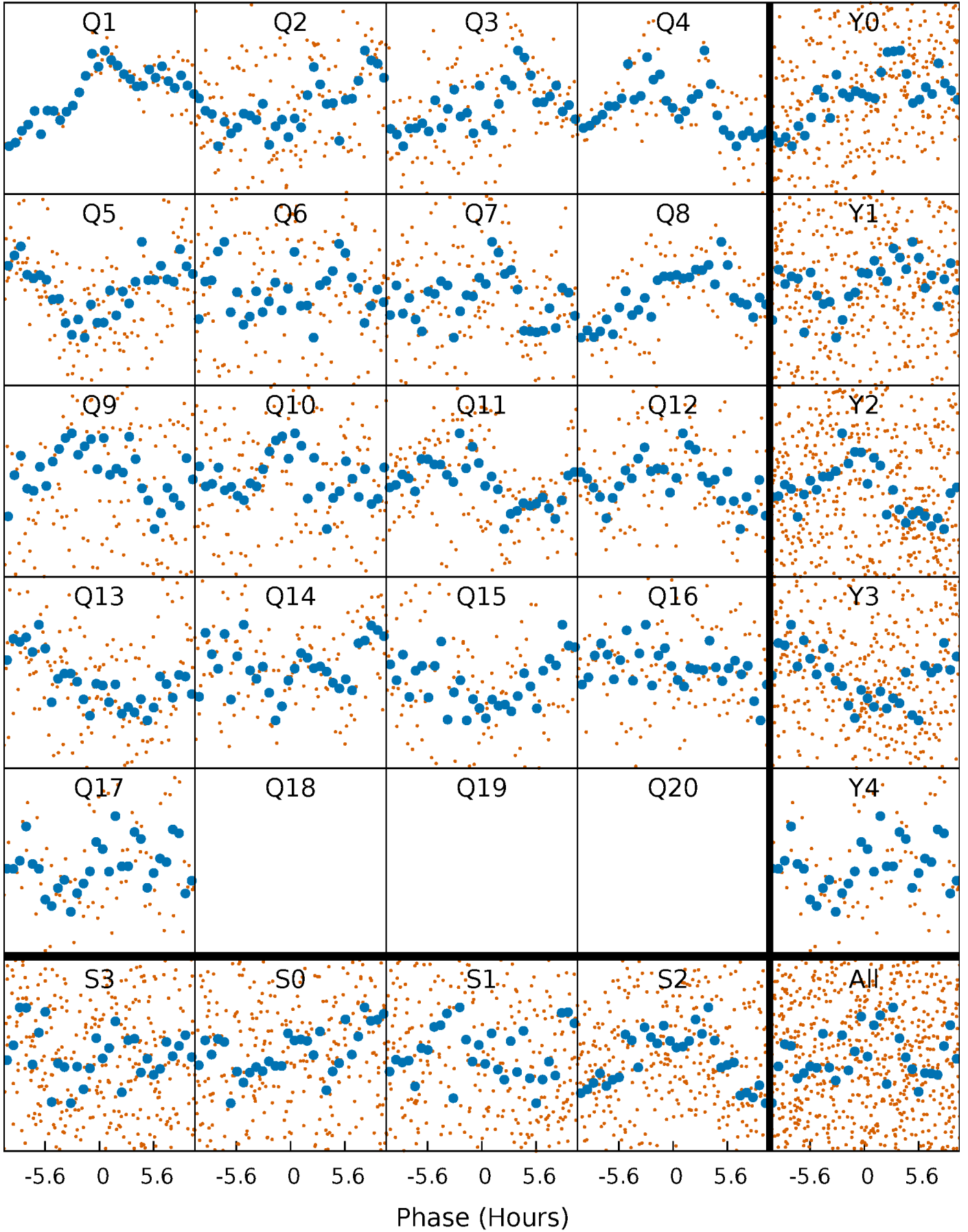


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



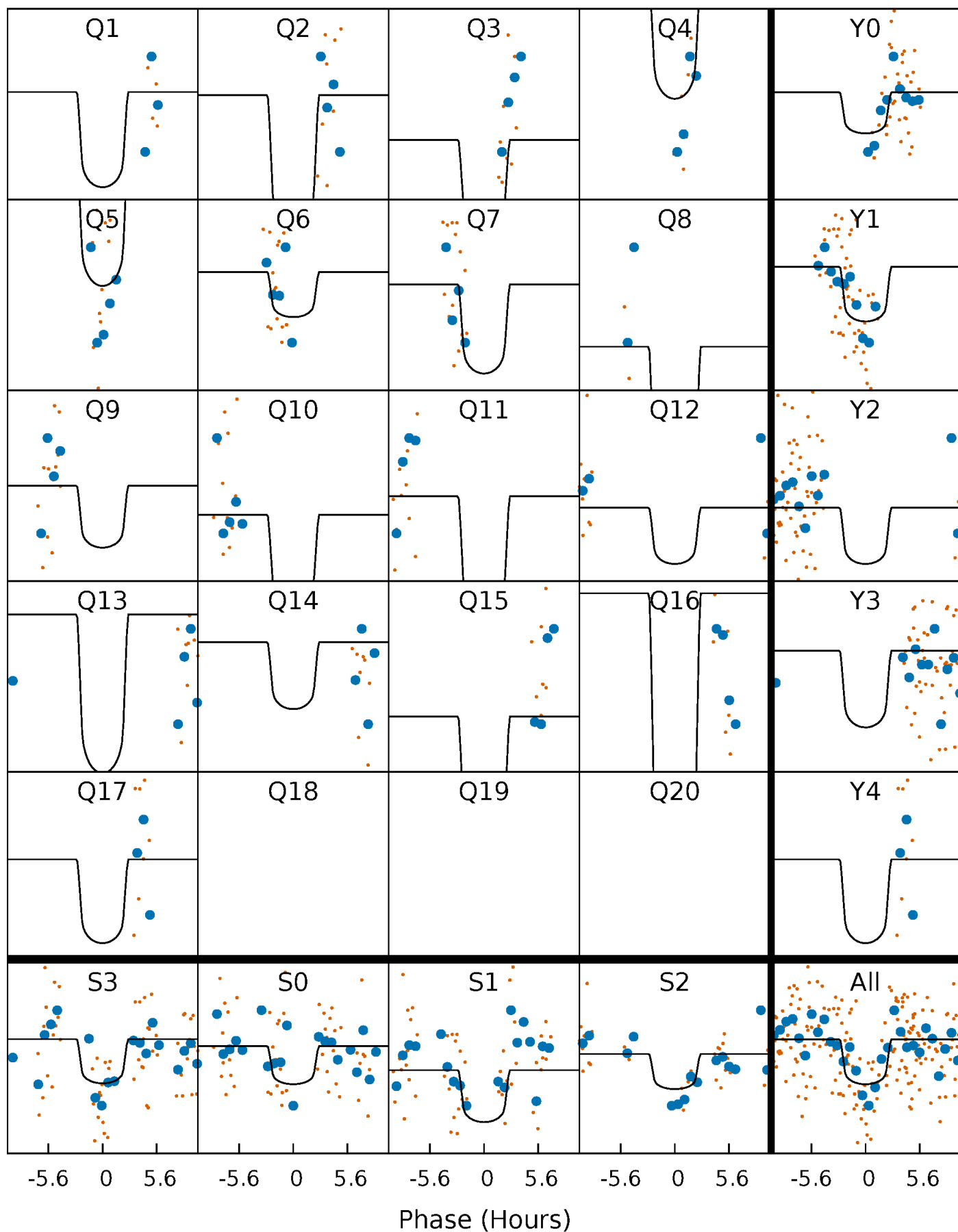
PDC Quarter-Phased Transit Curves

TCE 004738155-03 P= 24.260767 Days $T_0=131.541777$ (BKJD)



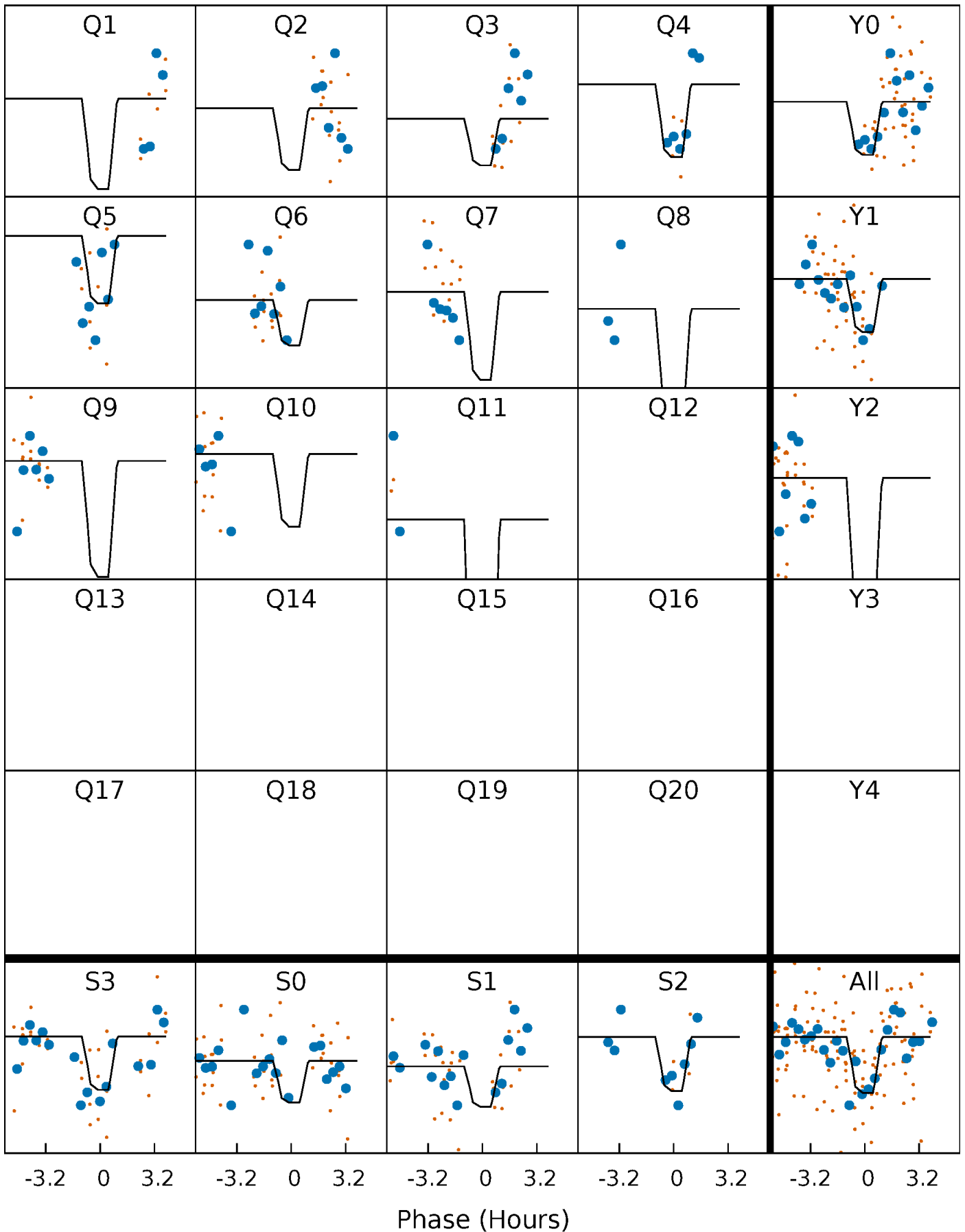
DV Quarter-Phased Transit Curves

TCE 004738155-03 P= 24.260767 Days $T_0=131.541777$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

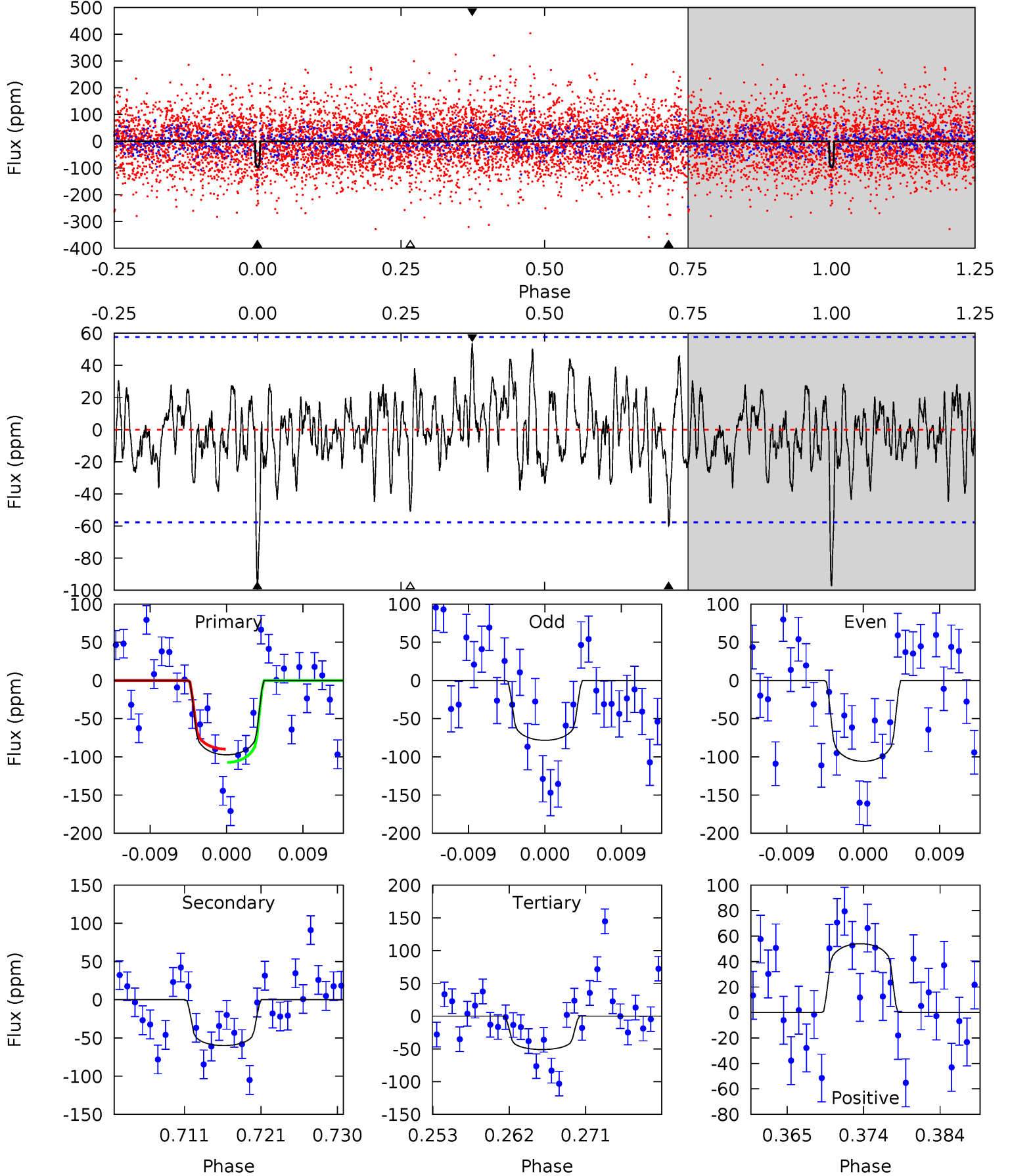
TCE 004738155-03 P= 24.256157 Days $T_0=131.617196$ (BKJD)



DV Model-Shift Uniqueness Test

004738155-03, $P = 24.260767$ Days, $E = 131.541777$ Days

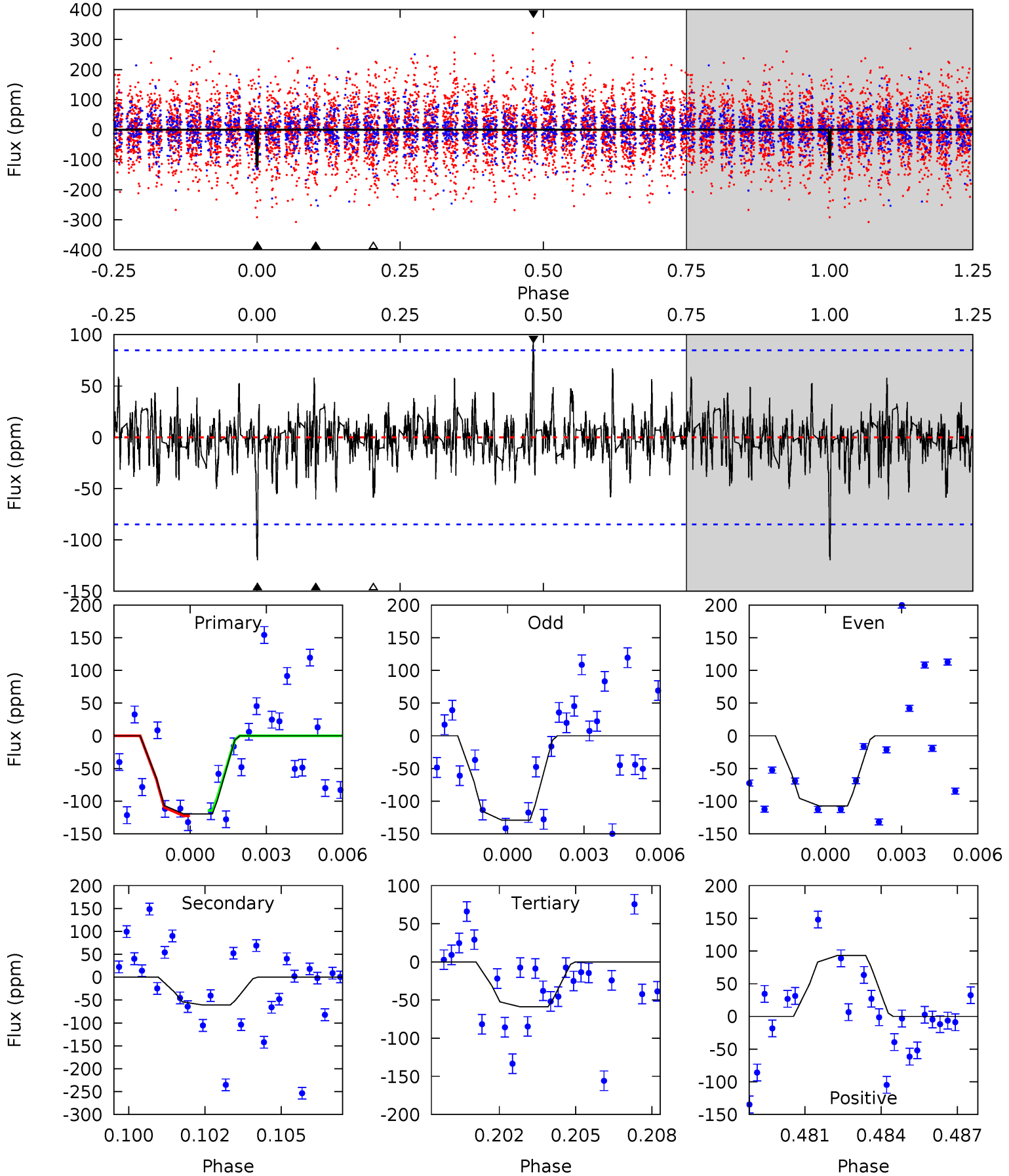
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.51	5.24	4.45	4.72	5.04	2.60	1.54	4.05	3.79	0.79	0.52	1.20	1.14	0.36	0.76



Alt Model-Shift Uniqueness Test

004738155-03, P = 24.256157 Days, E = 131.617196 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.42	3.76	3.65	5.78	5.26	2.98	1.15	3.78	1.64	0.11	-2.02	0.67	1.31	0.44	0.25



Stellar Parameters For KIC 004738155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6782^{+215}_{-263}	$4.044^{+0.350}_{-0.150}$	$-0.840^{+0.300}_{-0.300}$	$1.595^{+0.379}_{-0.568}$	$1.026^{+0.127}_{-0.115}$	$0.356^{+0.883}_{-0.148}$
	+3%/-4%	+9%/-4%	+36%/-36%	+24%/-36%	+12%/-11%	+248%/-42%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004738155-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-60 ± 11	$1.83^{+1.08}_{-1.05}$	1289^{+99}_{-140}	5731^{+3200}_{-1082}	278^{+1279}_{-176}
Alt.	-61 ± 16	$1.91^{+1.19}_{-1.01}$	1283^{+100}_{-128}	5567^{+2586}_{-1055}	247^{+868}_{-158}

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 $A_{obs} \gg 1.0$

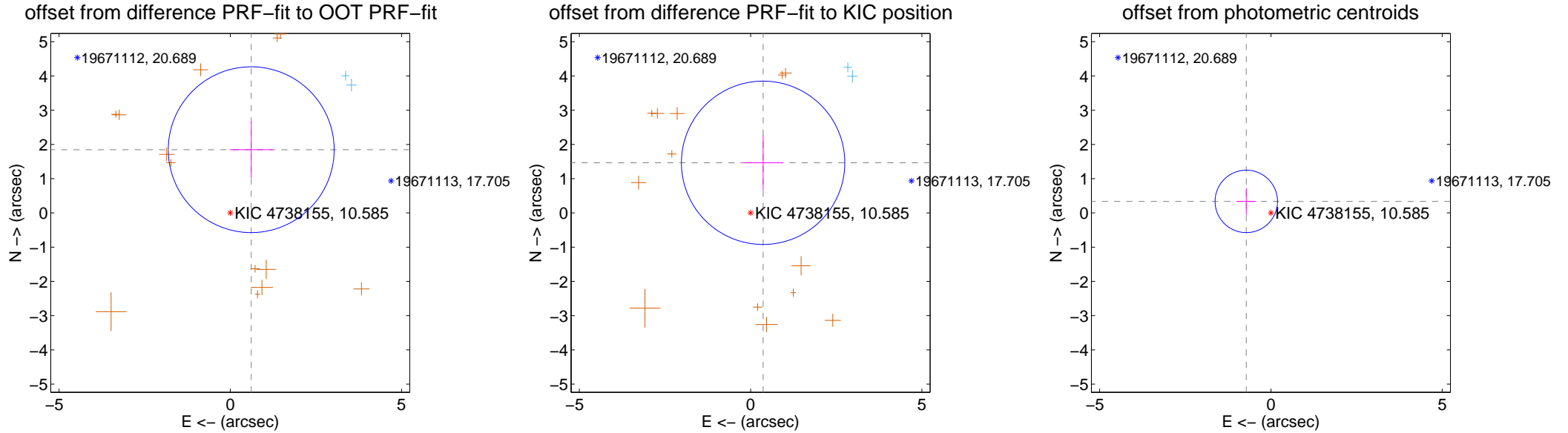
DV Centroid Data

Supplemental centroid analysis for 004738155-03. **Kepler magnitude: 10.59.** Transit SNR 10.65

There are 2 quarters with good PRF difference image offsets

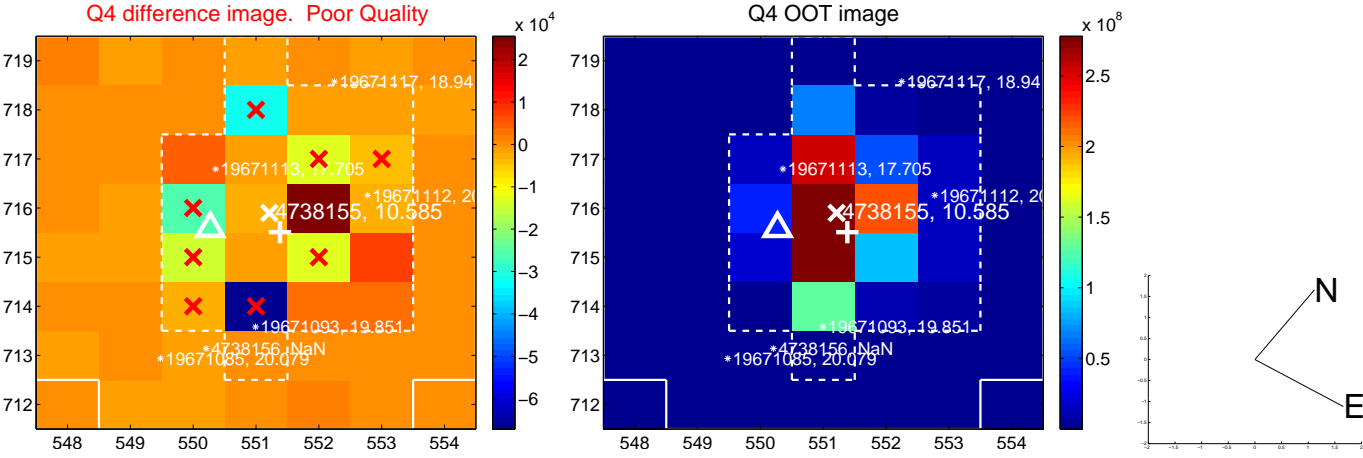
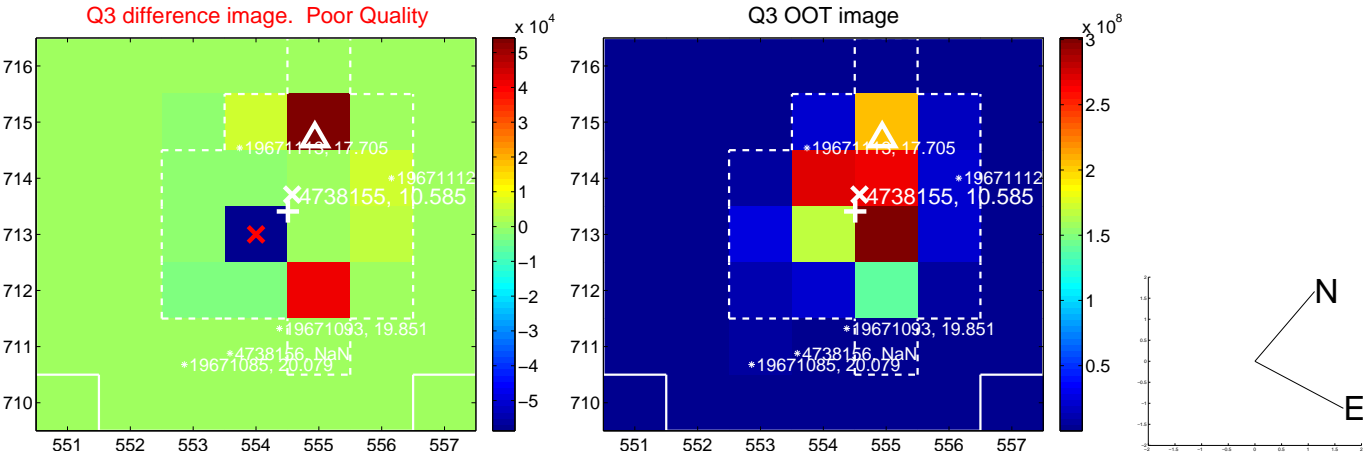
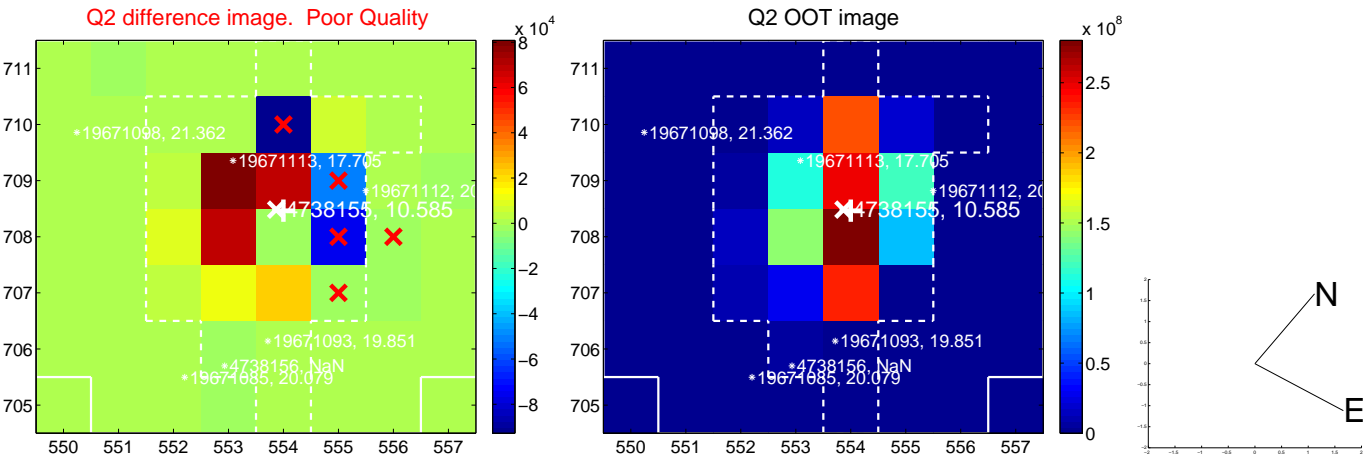
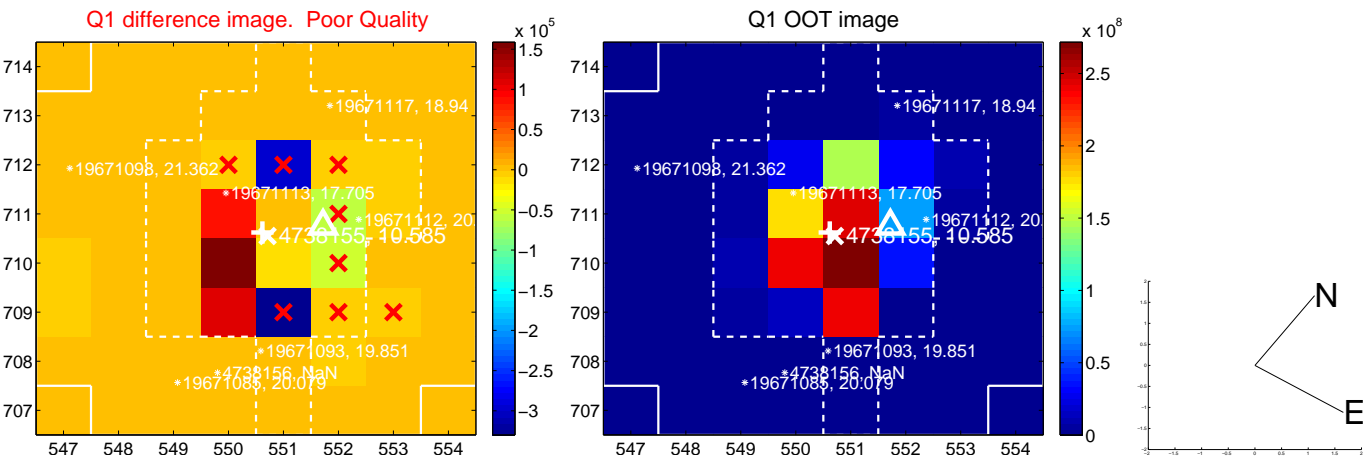
The direct PRF centroid is offset from the target star catalog position by about 0.41 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.945 ± 0.807	2.41	-0.611 ± 0.631	1.847 ± 0.824
PRF-fit source offset from KIC position	1.509 ± 0.795	1.90	-0.365 ± 0.590	1.464 ± 0.806
photometric centroid source offset	0.79 ± 0.30	2.61	0.72 ± 0.28	0.34 ± 0.39

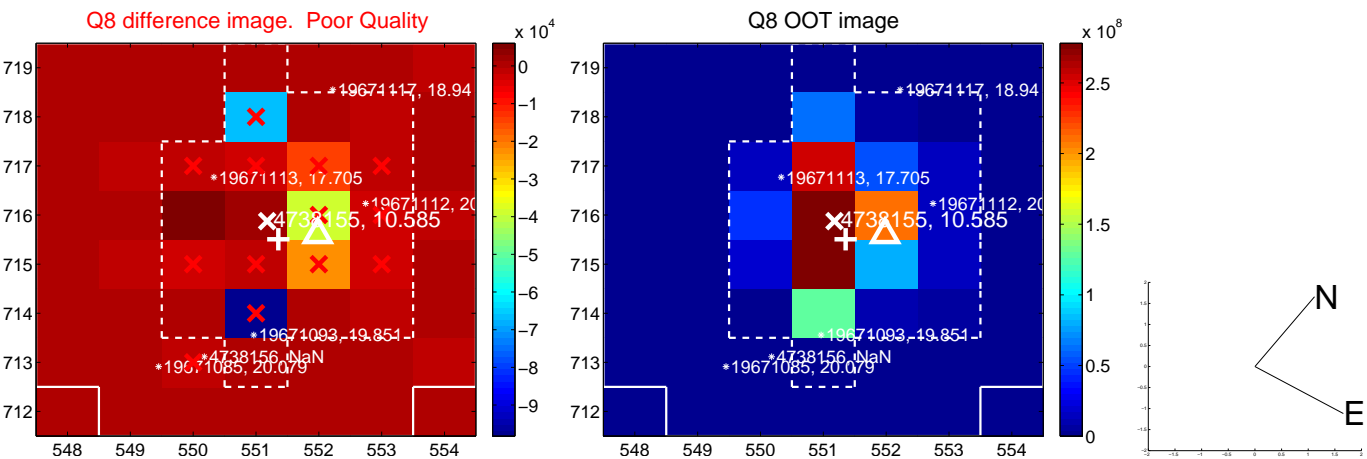
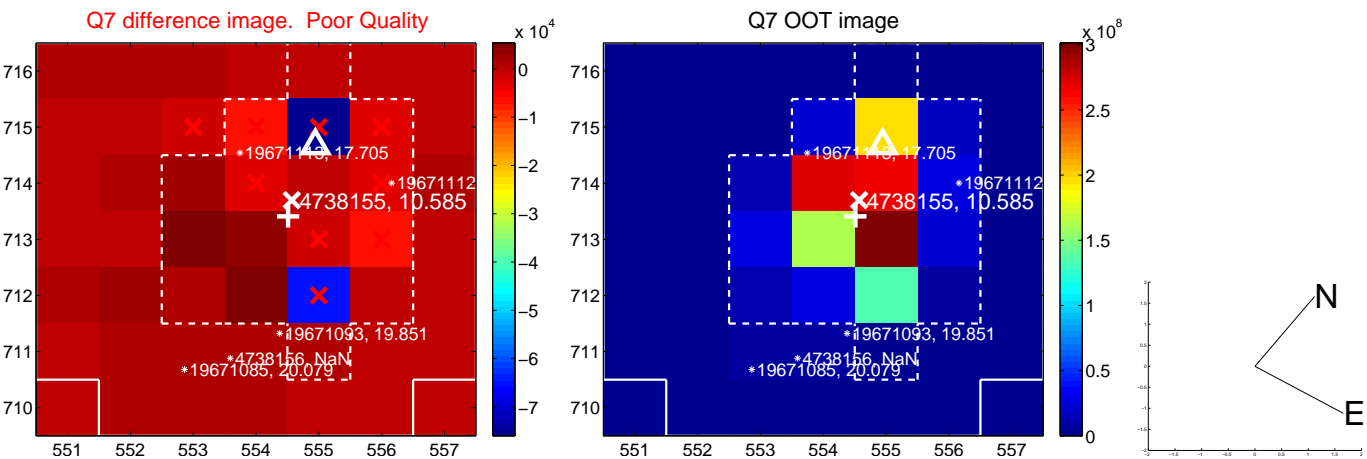
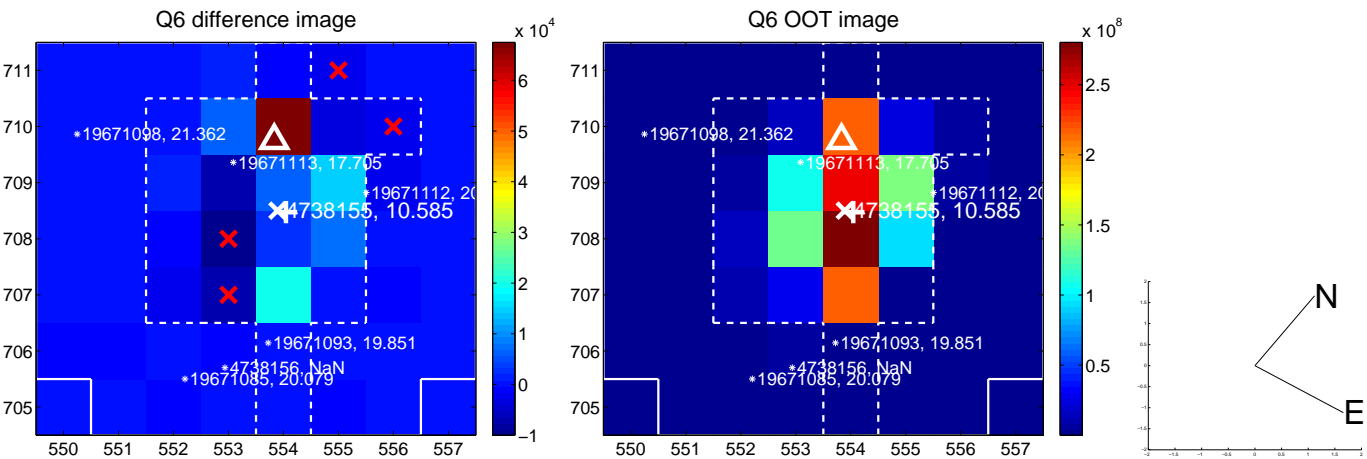
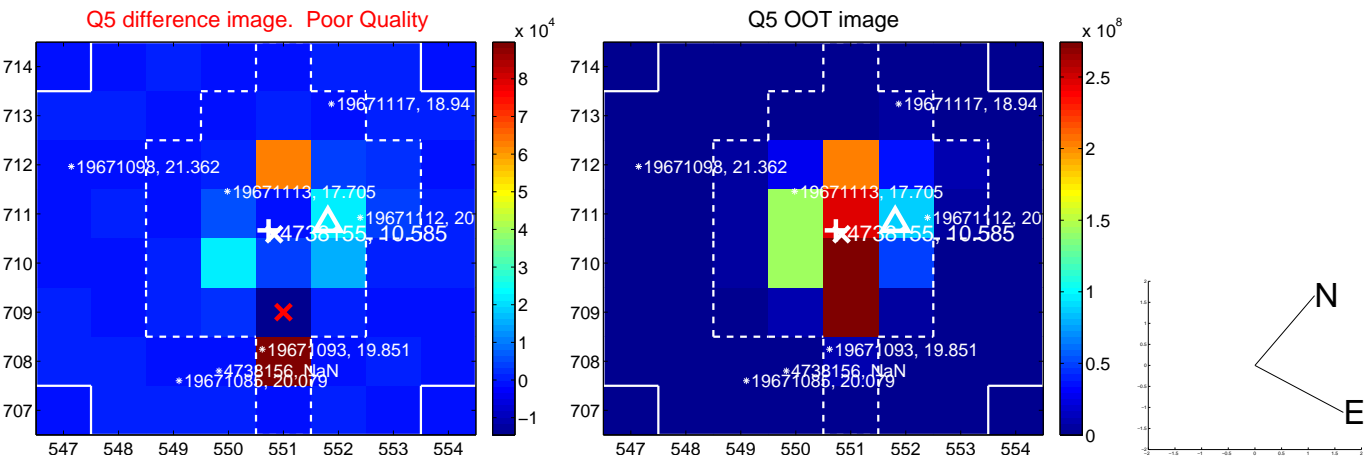


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

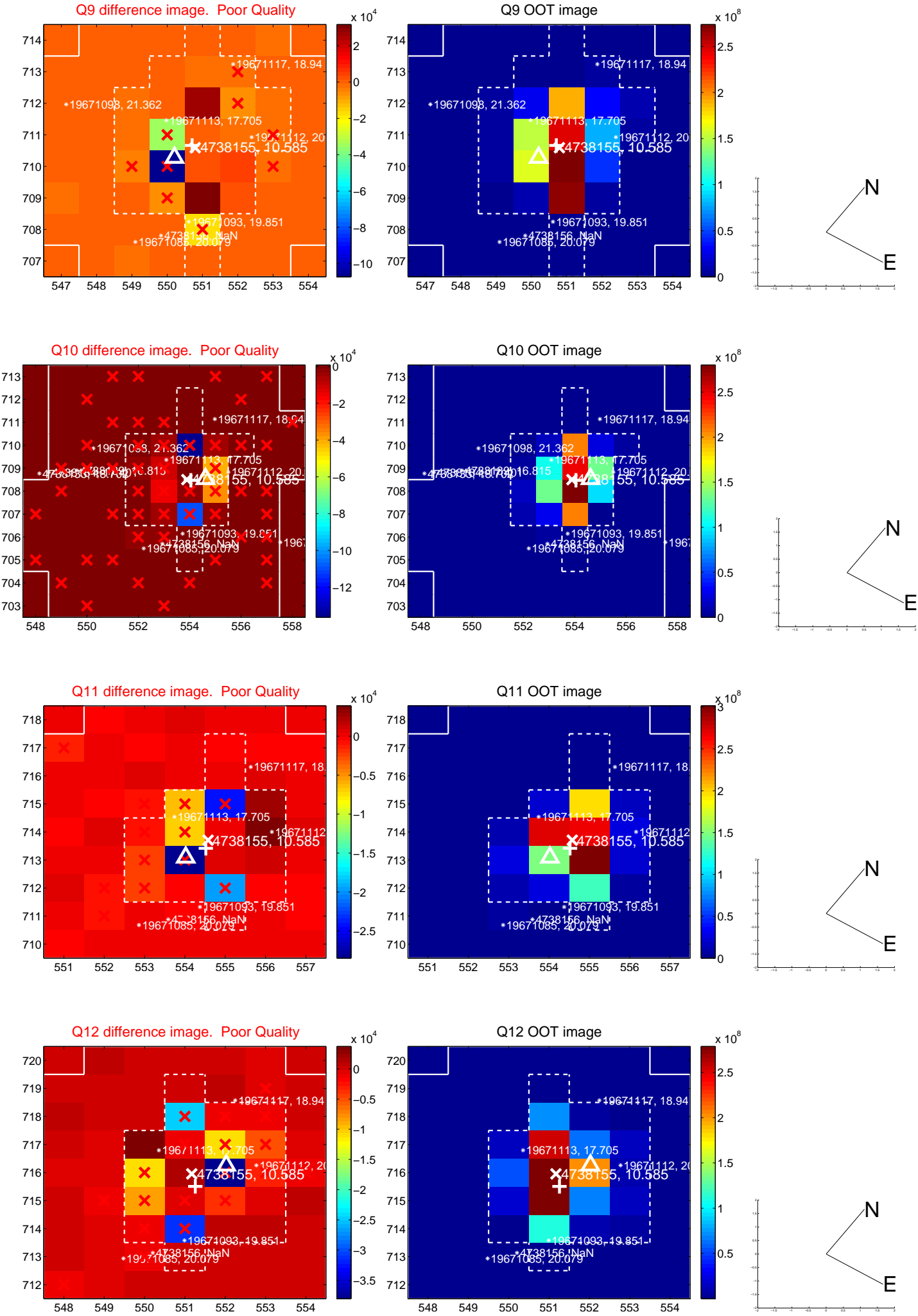
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



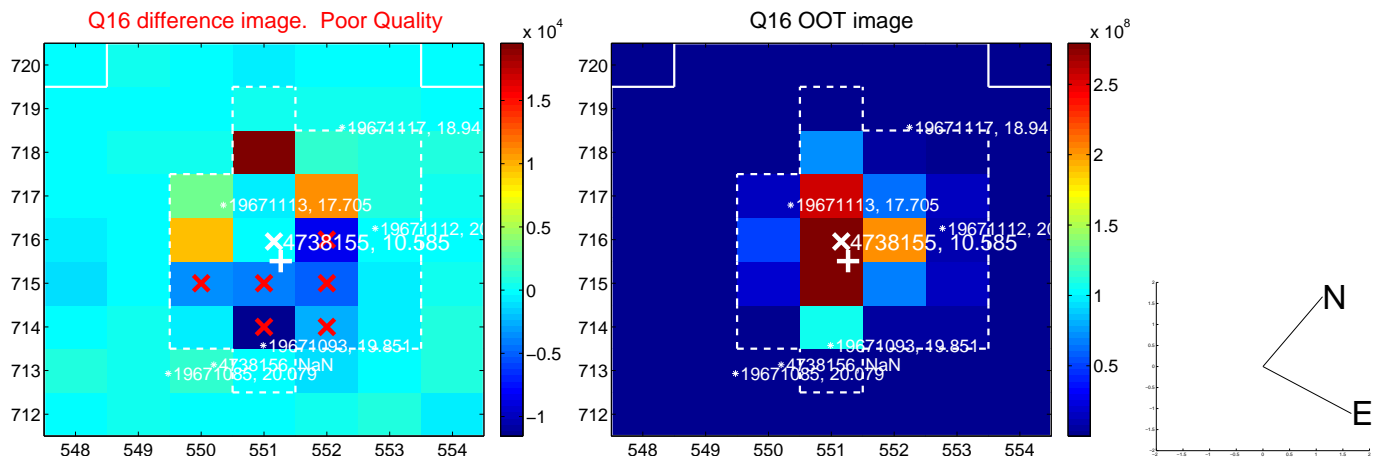
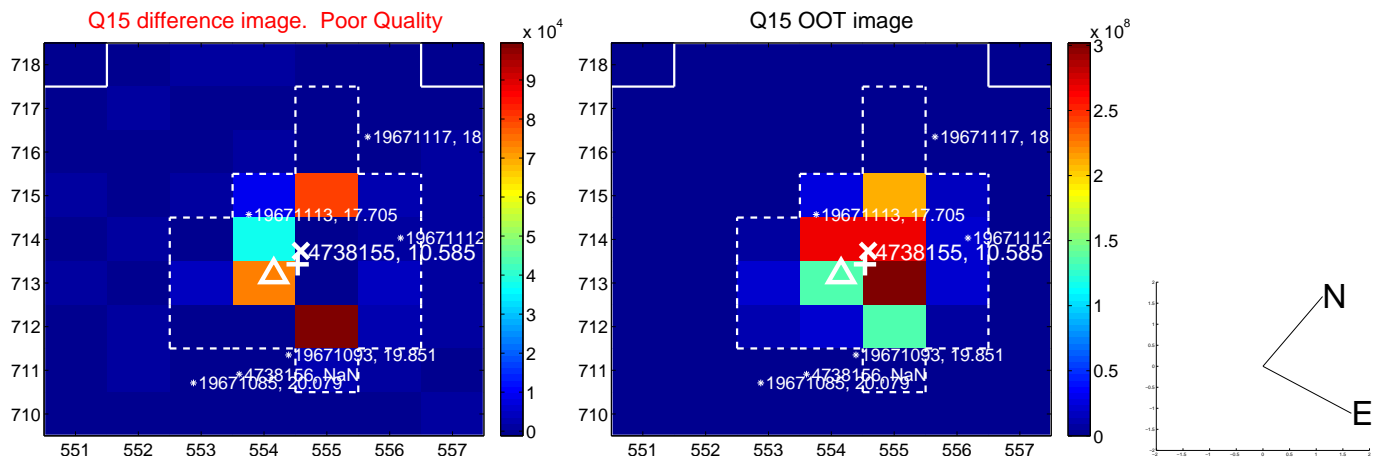
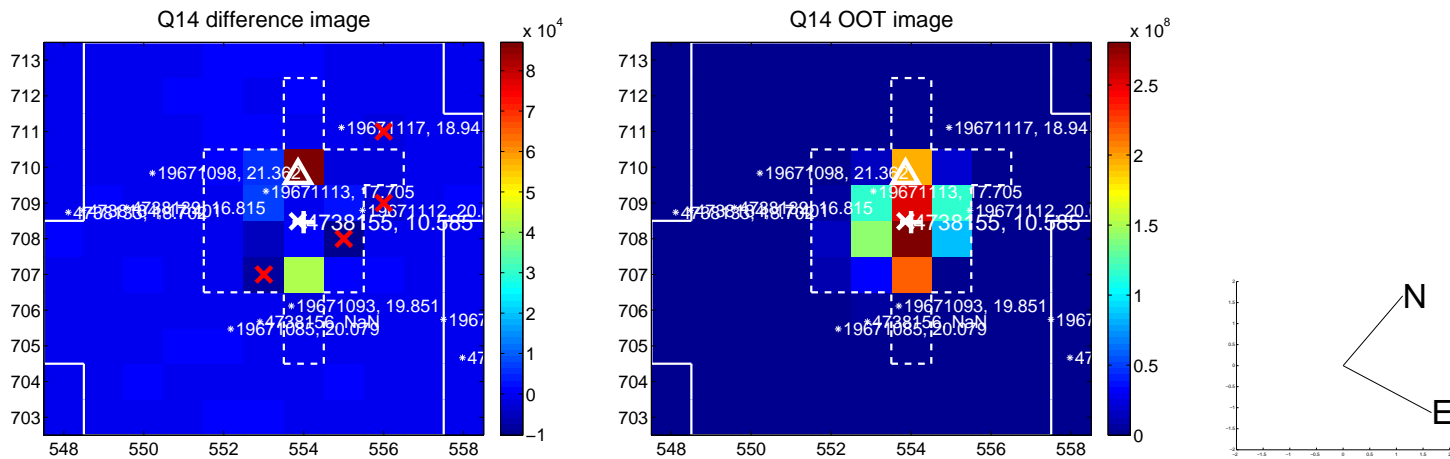
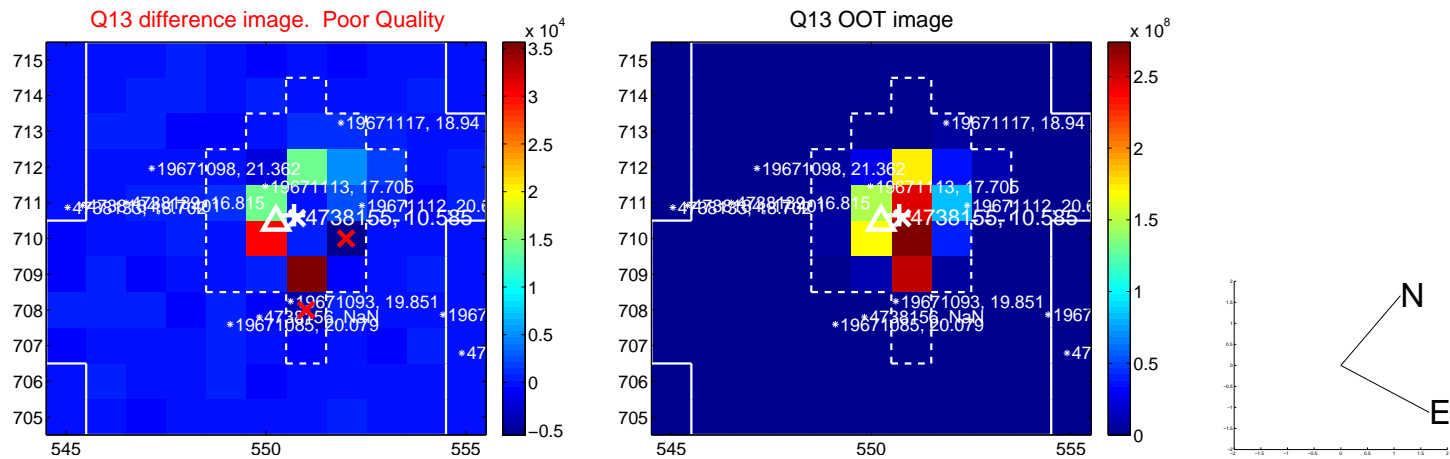
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



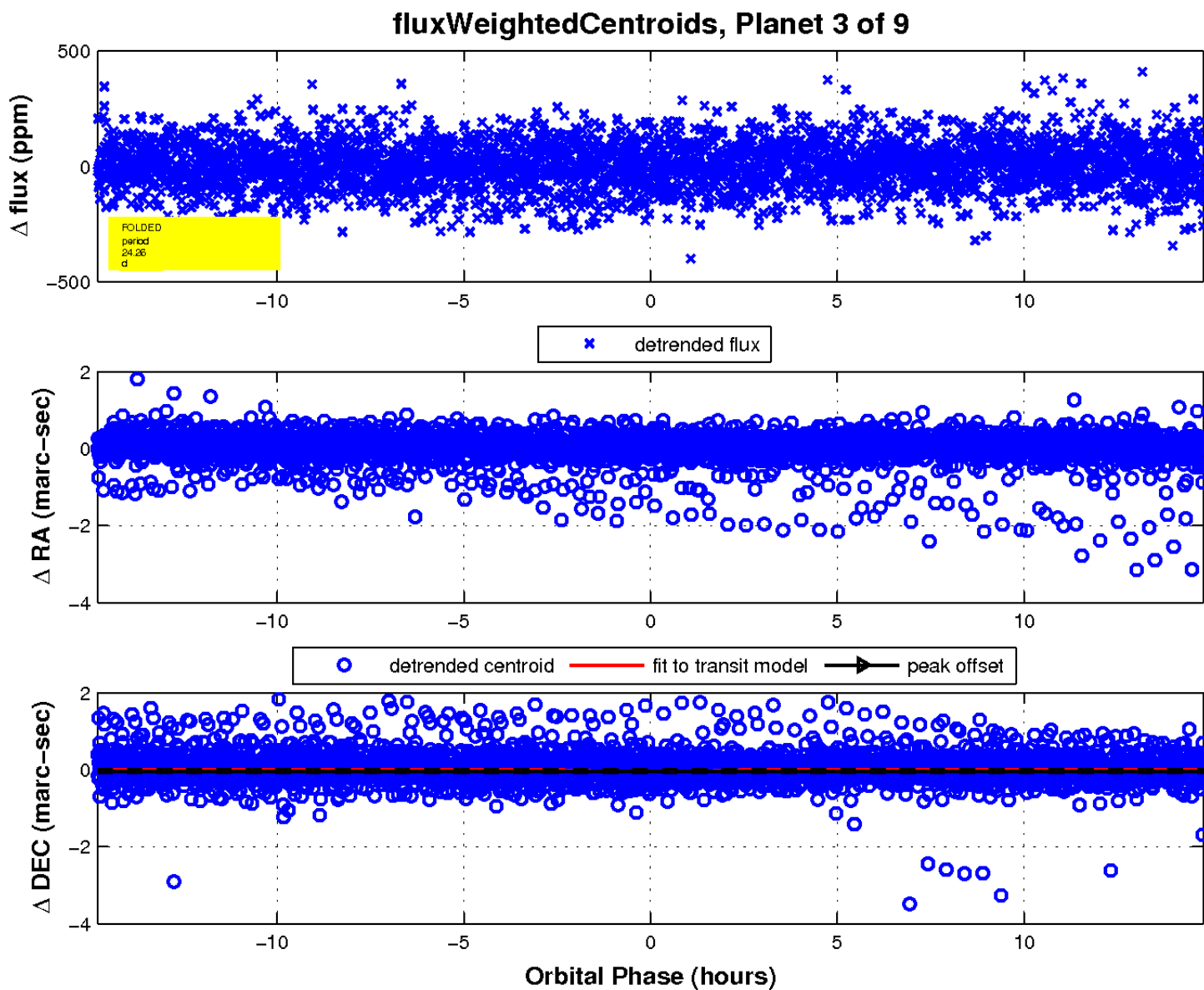
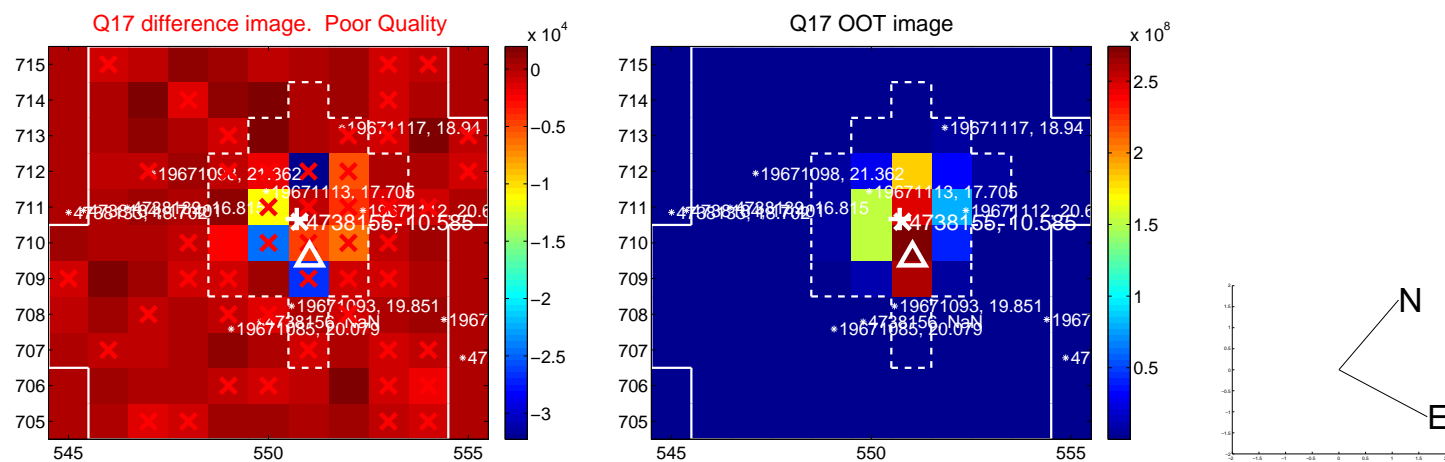
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

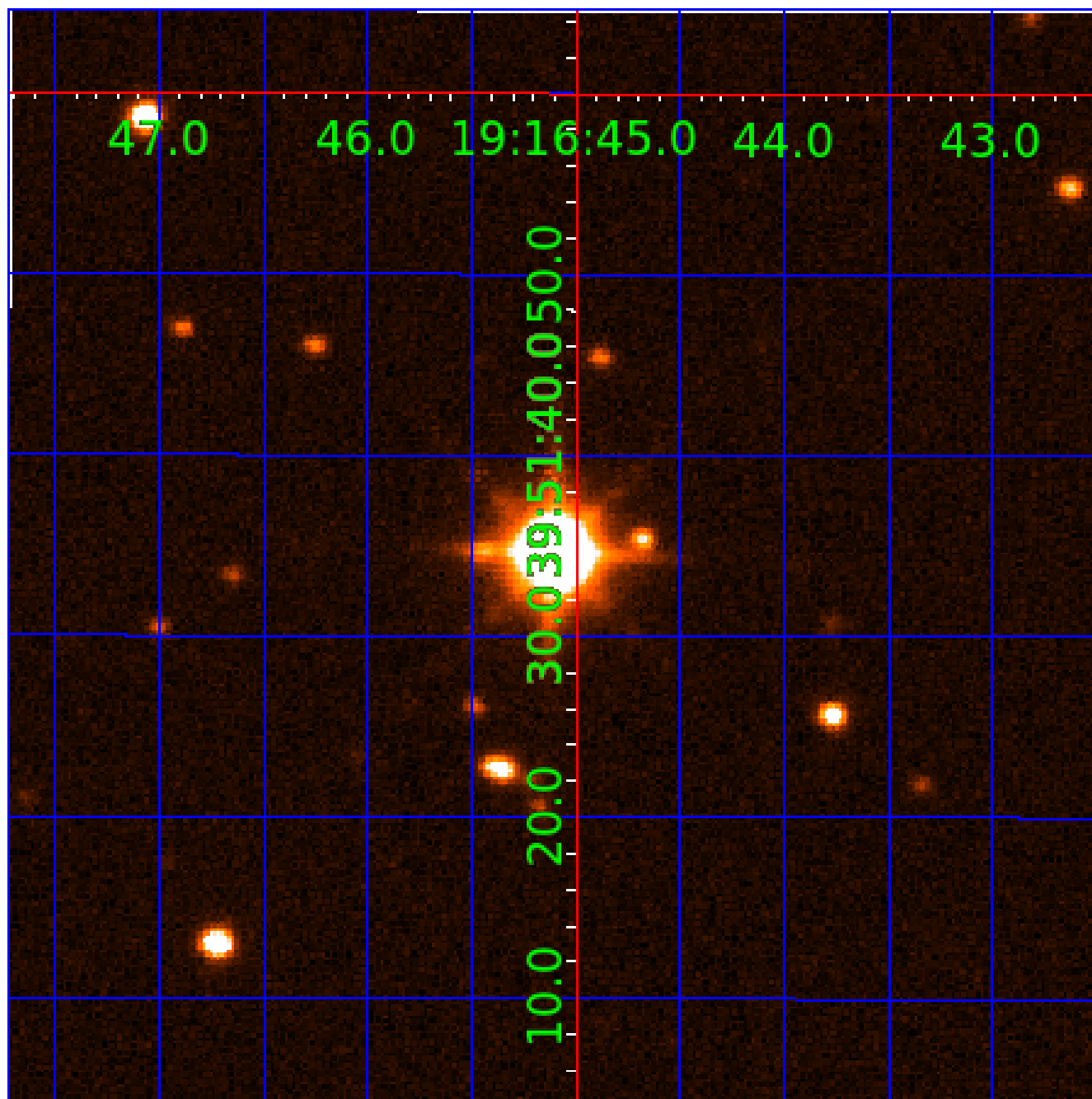


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004738155

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})
004738155-01	OBS	No	0.836071	132.167221	2.4	5.840	7.6	2.2	1.59	6782	0.25	15697.92
004738155-02	OBS	No	19.947640	139.503616	109.1	2.480	12.1	10.3	1.59	6782	1.96	228.55
004738155-03	OBS	No	24.260767	131.541777	104.2	4.936	9.6	10.7	1.59	6782	1.85	176.05
004738155-04	OBS	No	64.589909	187.744216	121.2	4.046	11.3	9.2	1.59	6782	2.04	47.71
004738155-05	OBS	No	55.890541	158.379329	177.1	2.724	10.2	9.6	1.59	6782	2.14	57.86
004738155-06	OBS	No	49.987307	142.769267	101.4	6.306	10.9	7.6	1.59	6782	1.82	67.15
004738155-07	OBS	No	29.072639	145.715139	123.1	3.041	8.6	10.8	1.59	6782	1.95	138.31
004738155-08	OBS	No	30.533304	132.268869	129.5	1.889	9.2	8.1	1.59	6782	2.10	129.56
004738155-09	OBS	No	97.804825	192.042078	119.8	2.769	9.5	10.7	1.59	6782	2.02	27.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004738155-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004738155-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST
004738155-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

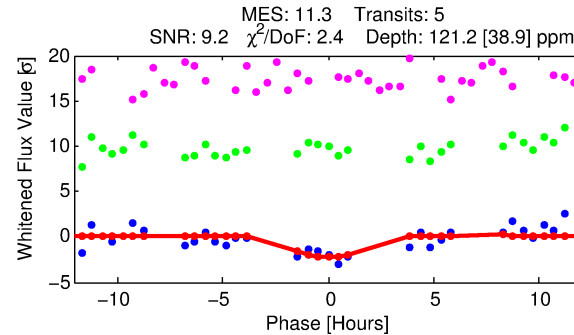
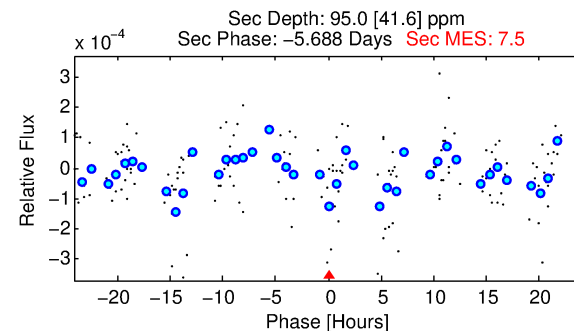
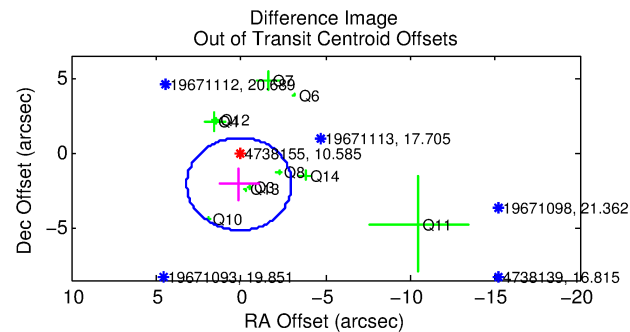
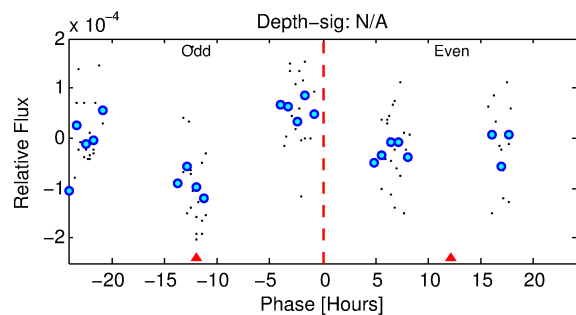
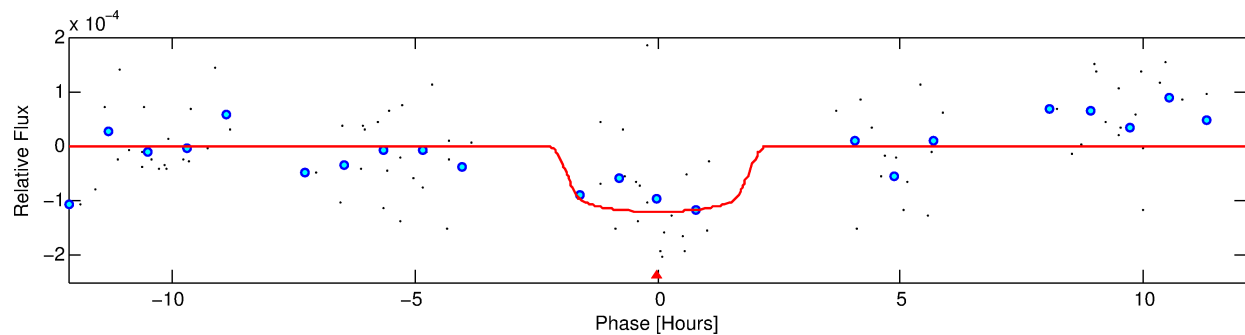
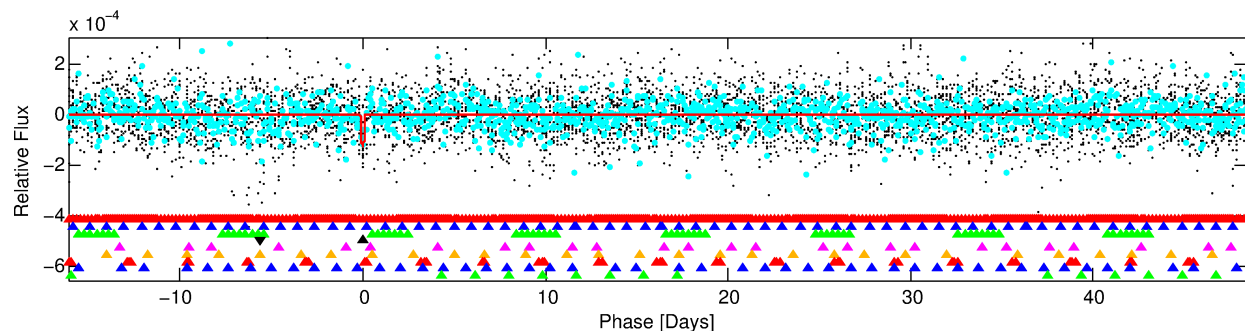
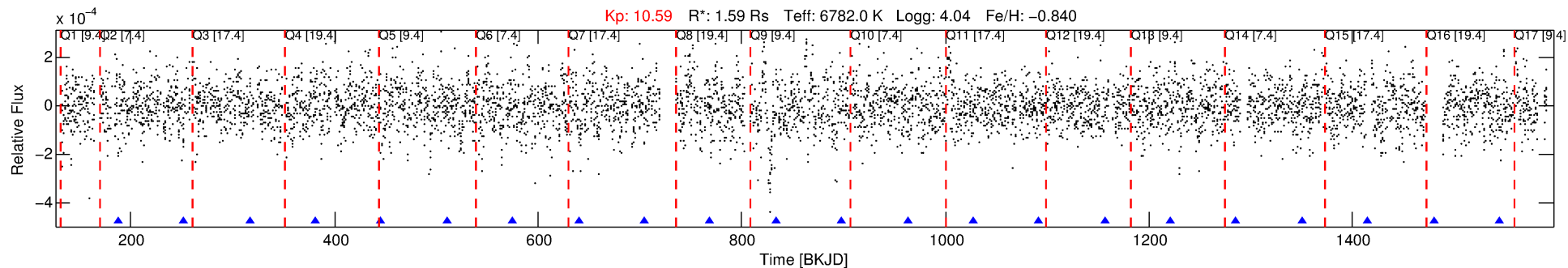
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004738155-04

No Significant Match Found

DV One-Page Summary

KIC: 4738155 Candidate: 4 of 9 Period: 64.590 d



DV Fit Results:

Period = 64.58991 [0.00932] d
Epoch = 187.7442 [0.1023] BKJD
Rp/R* = 0.0117 [0.0399]
a/R* = 56.36 [1185.54]
b = 0.90 [4.42]
Seff = 47.71 [28.99]
Teq = 670 [102] K
Rp = 2.04 [6.98] Re
a = 0.3179 [0.1140] AU
Ag = 1266.12 [8652.07] [0.15σ]
Teffp = 6181 [10523] K [0.52σ]

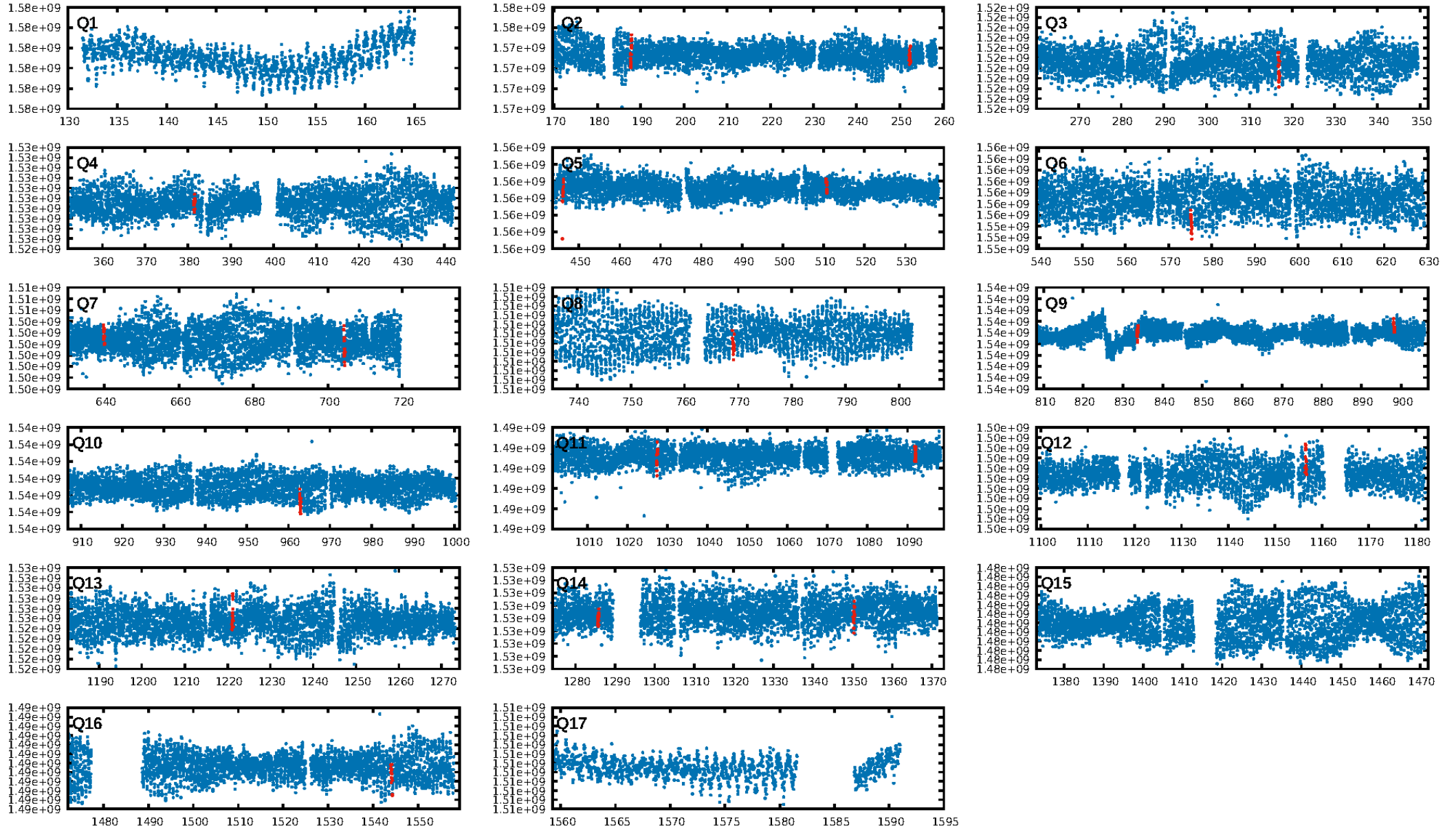
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [42.80σ]
LongPeriod-sig: 100.0% [162.59σ]
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 97.8%
Bootstrap-pfa: 8.25e-11
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.301
Centroid-sig: N/A
Centroid-so: 0.780 arcsec [1.82σ]
OotOffset-rm: 2.097 arcsec [2.04σ]
KicOffset-rm: 2.771 arcsec [3.01σ]
OotOffset-st: 3/3/3/1 [10]
KicOffset-st: 3/3/3/1 [10]
DiffImageQuality-fgm: 0.30 [3/10]
DiffImageOverlap-fno: 0.00 [0/14]

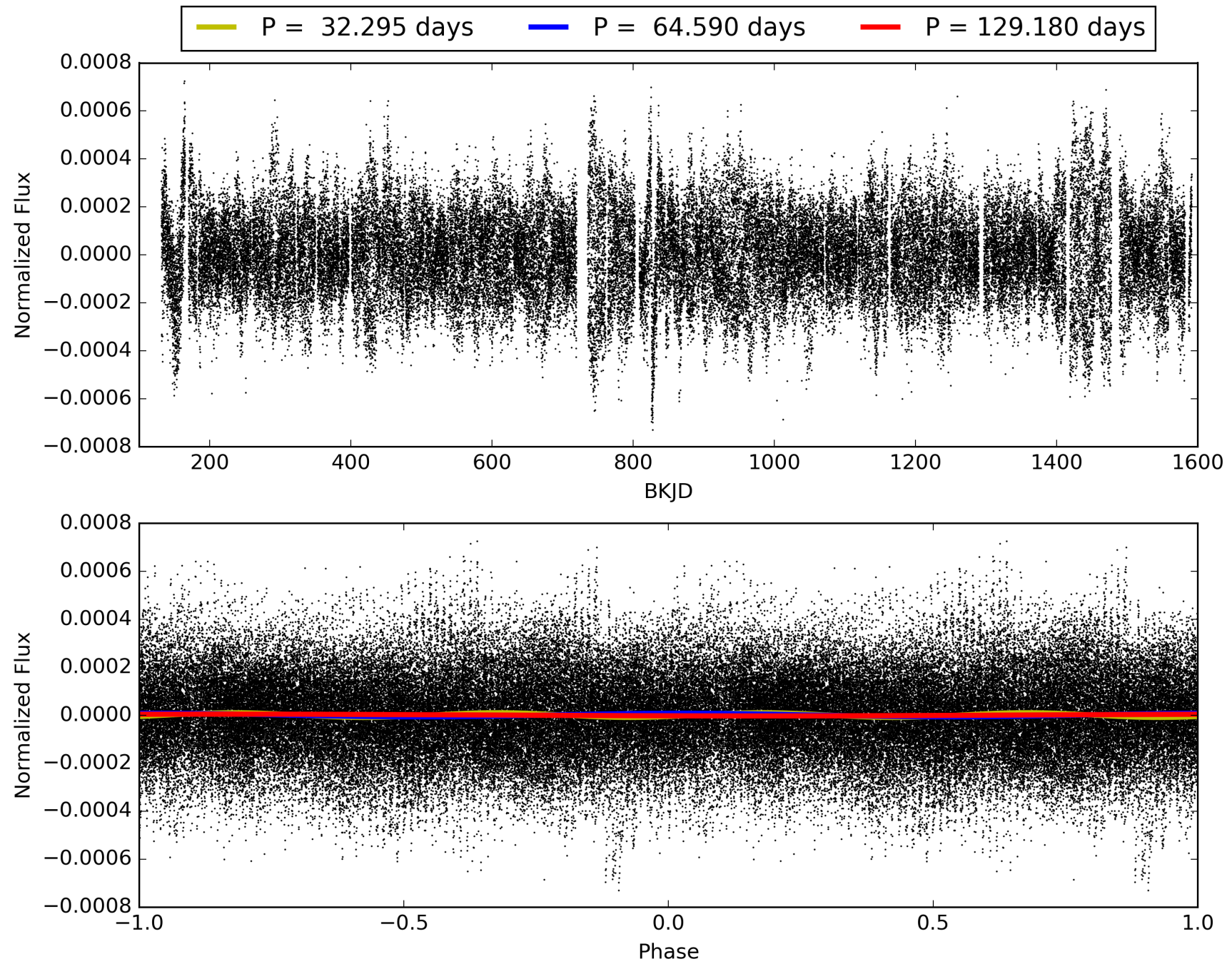
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:24 Z

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

TCE 004738155-04, PDC Light Curves

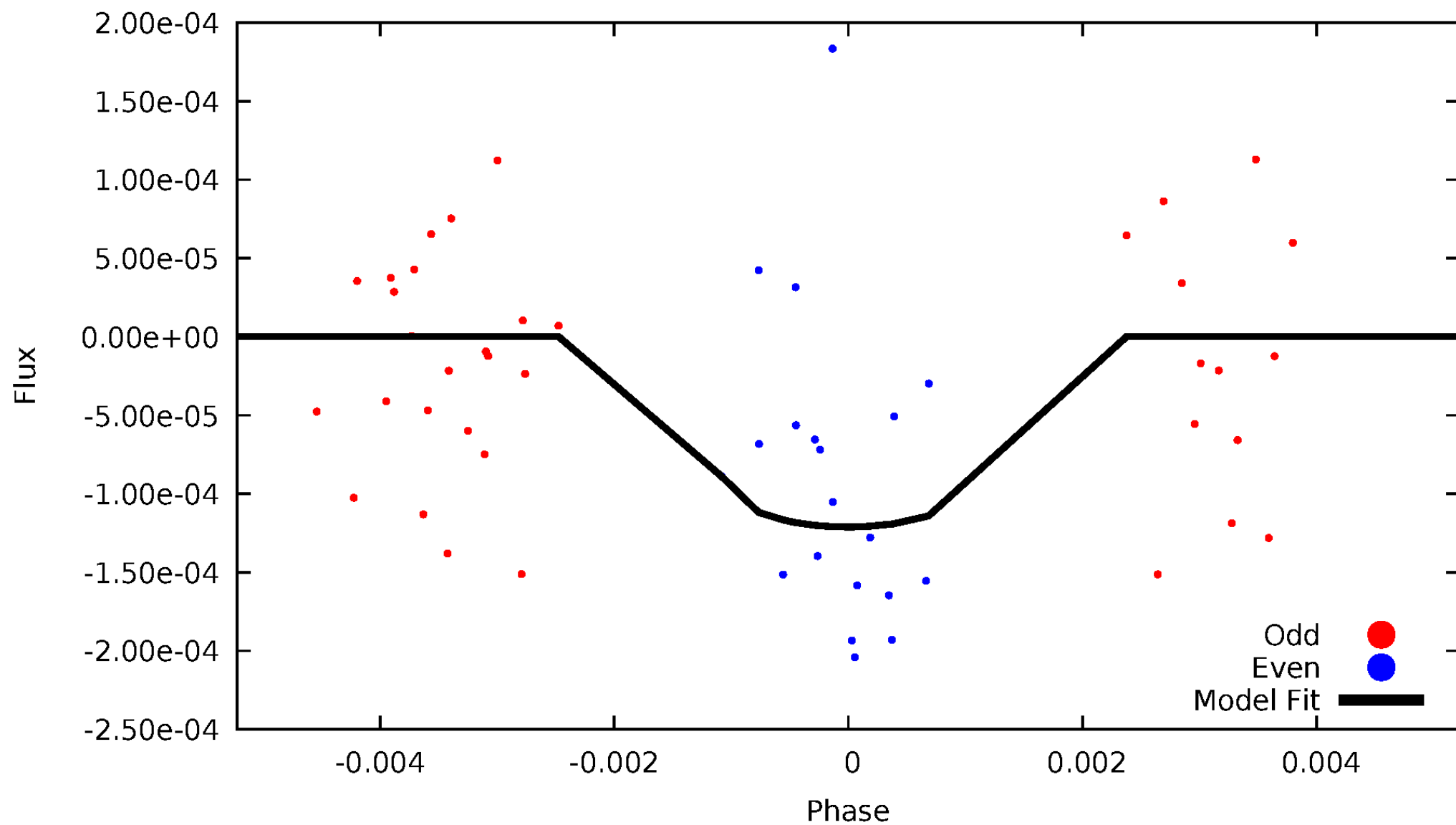


TCE 004738155-04



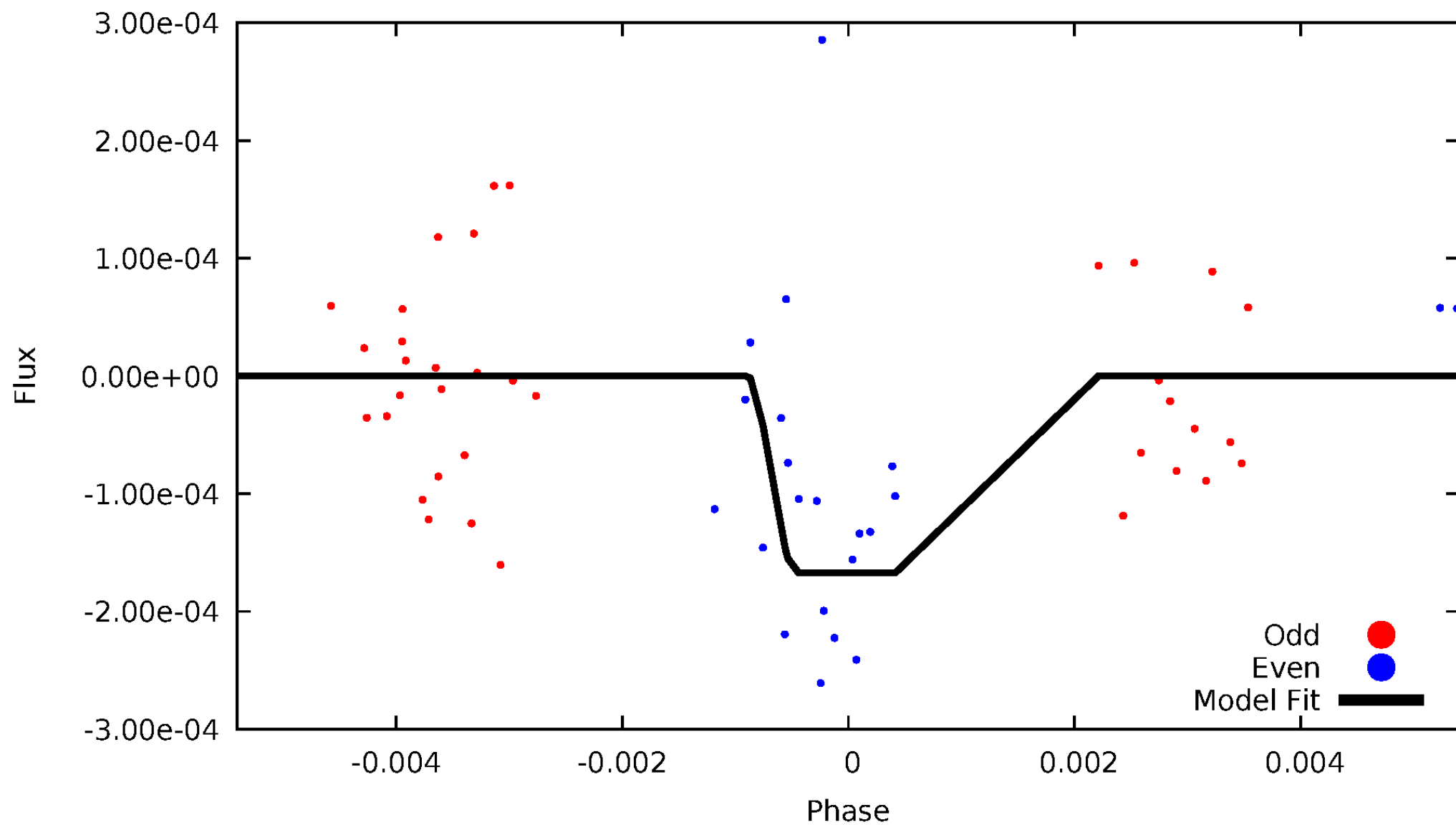
DV Odd/Even

TCE 004738155-04



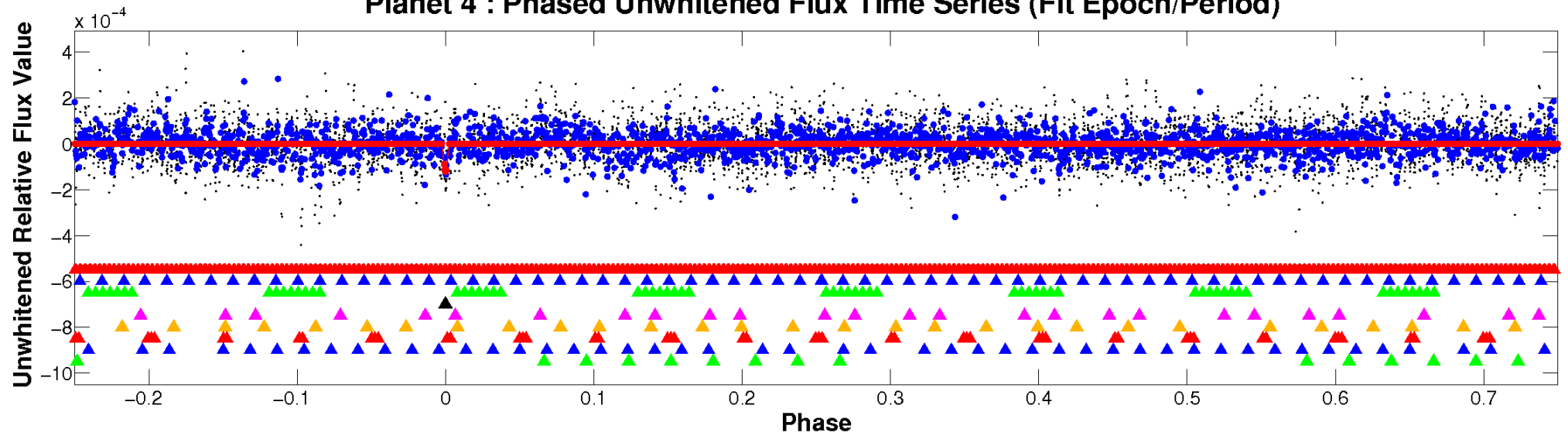
ALT Odd/Even

TCE 004738155-04

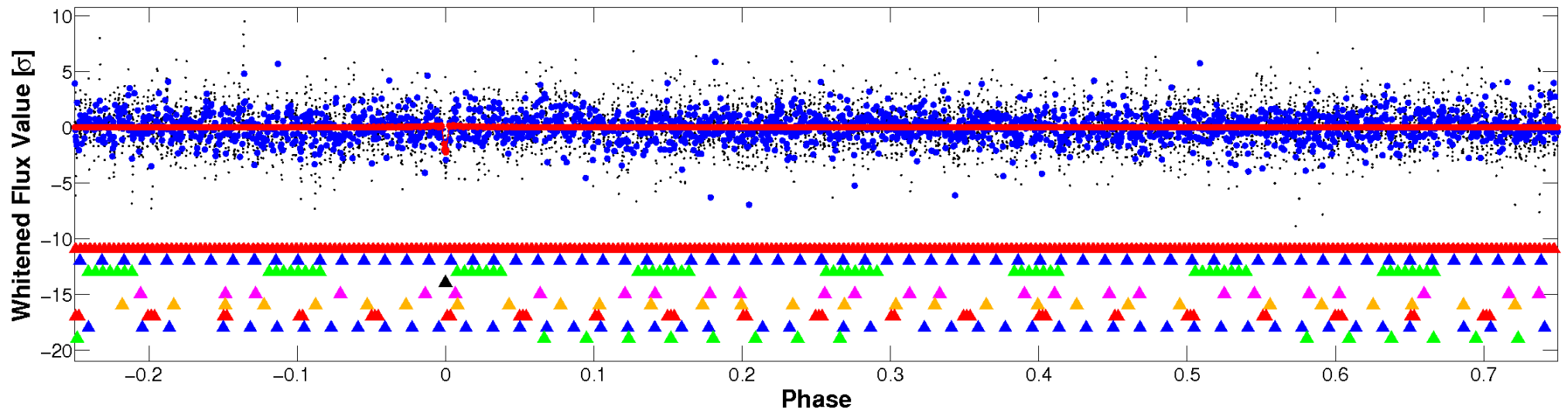


Non-Whitened Vs. Whitened Light Curve

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

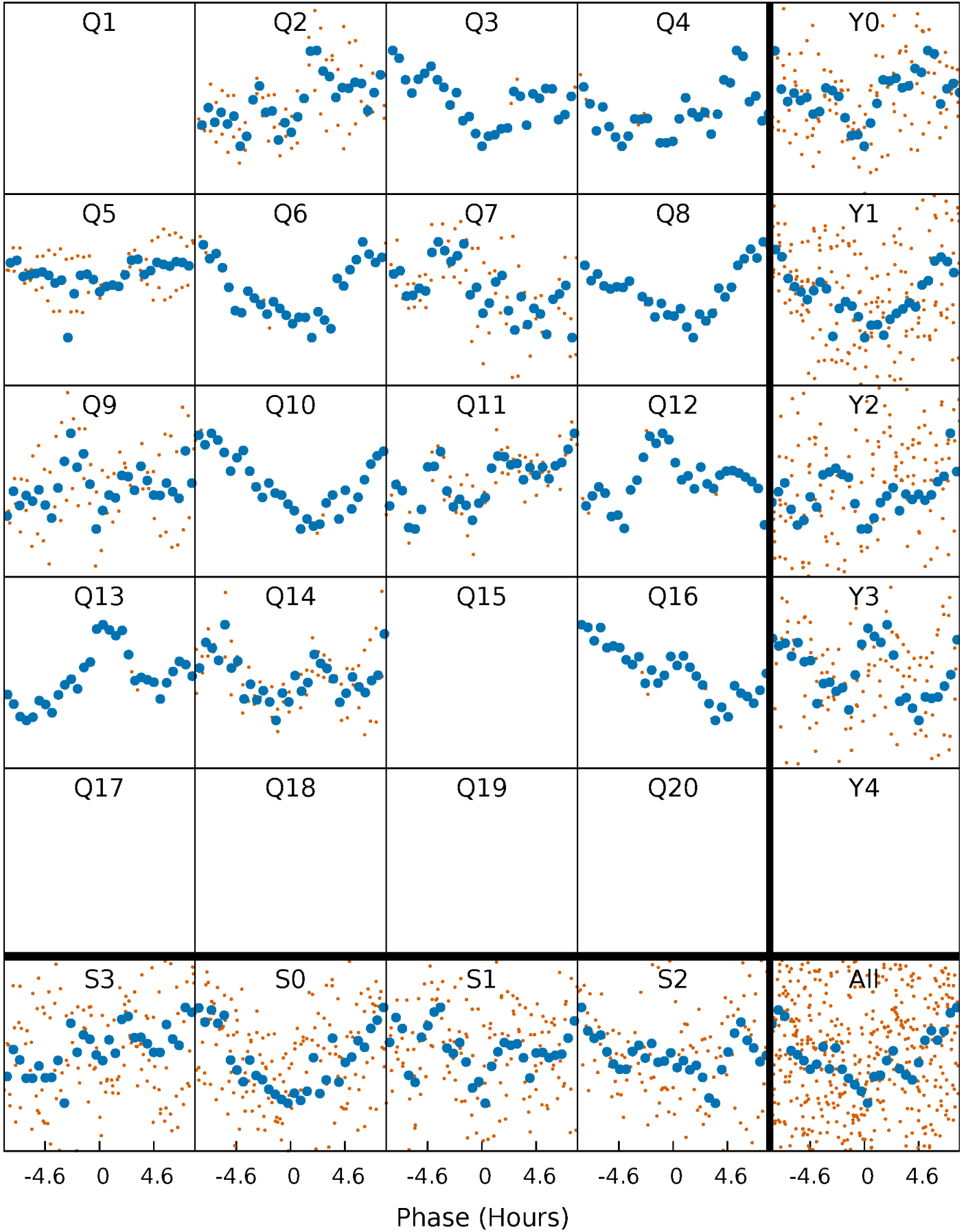


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



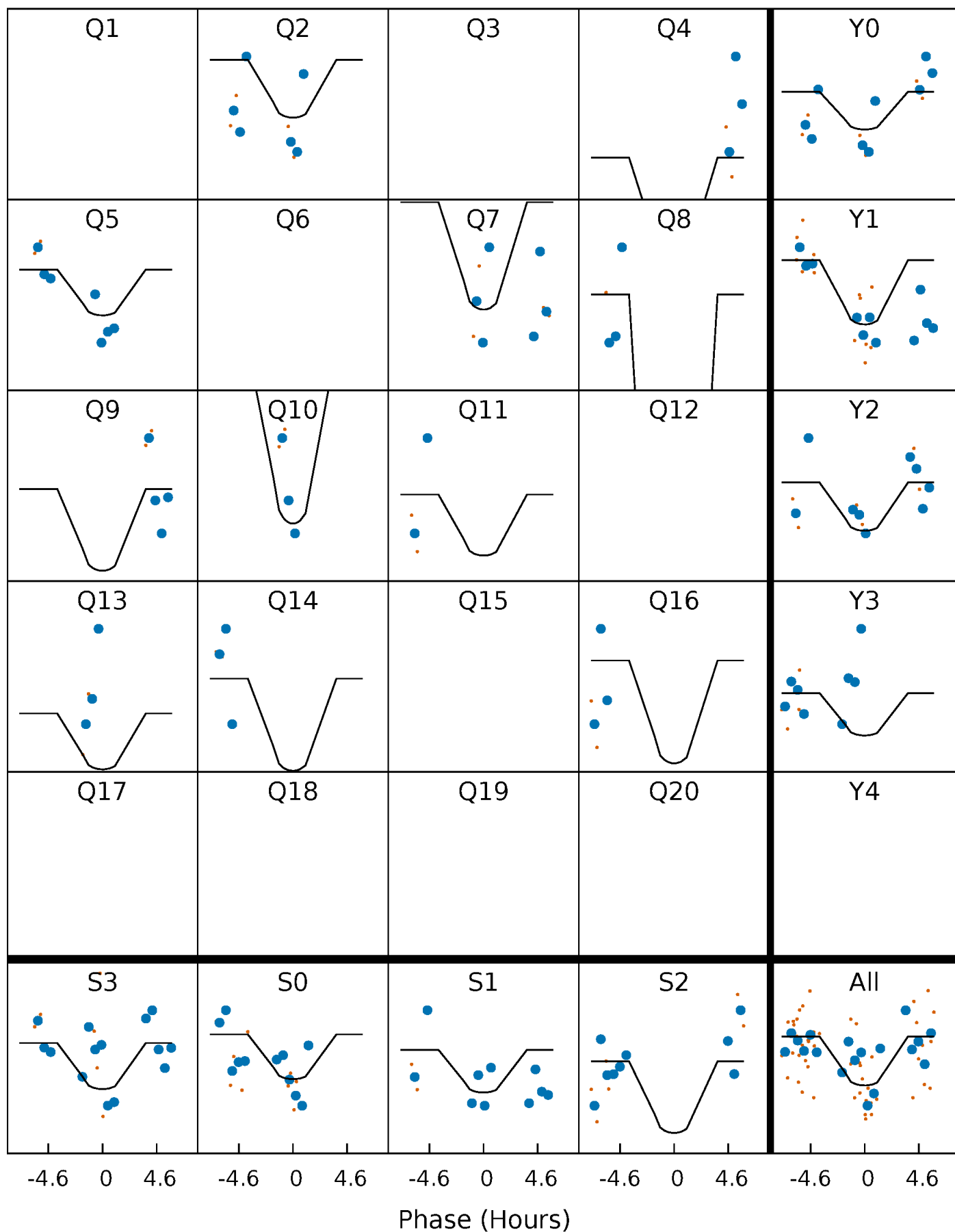
PDC Quarter-Phased Transit Curves

TCE 004738155-04 P= 64.589909 Days $T_0=187.744216$ (BKJD)



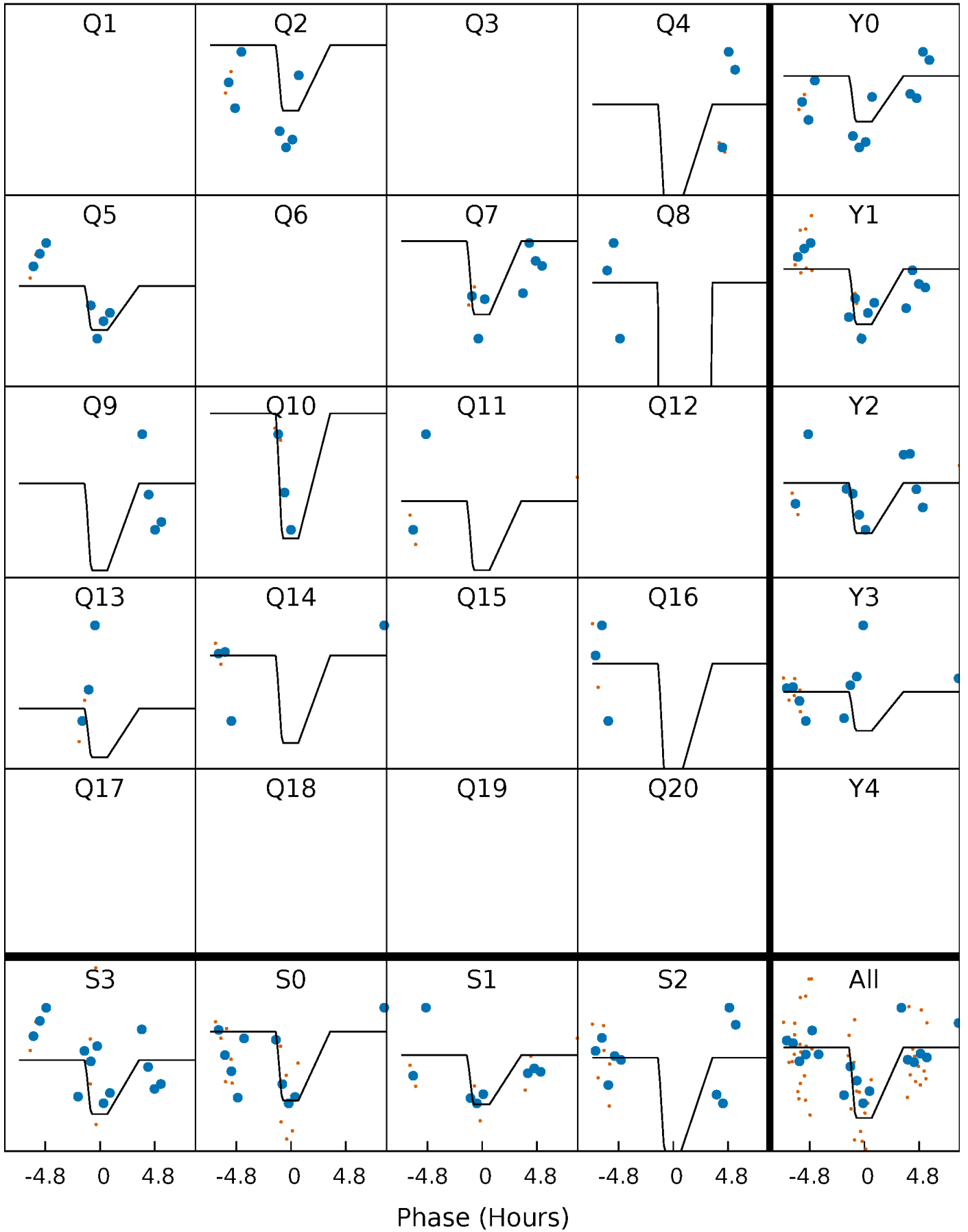
DV Quarter-Phased Transit Curves

TCE 004738155-04 P= 64.589909 Days $T_0=187.744216$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

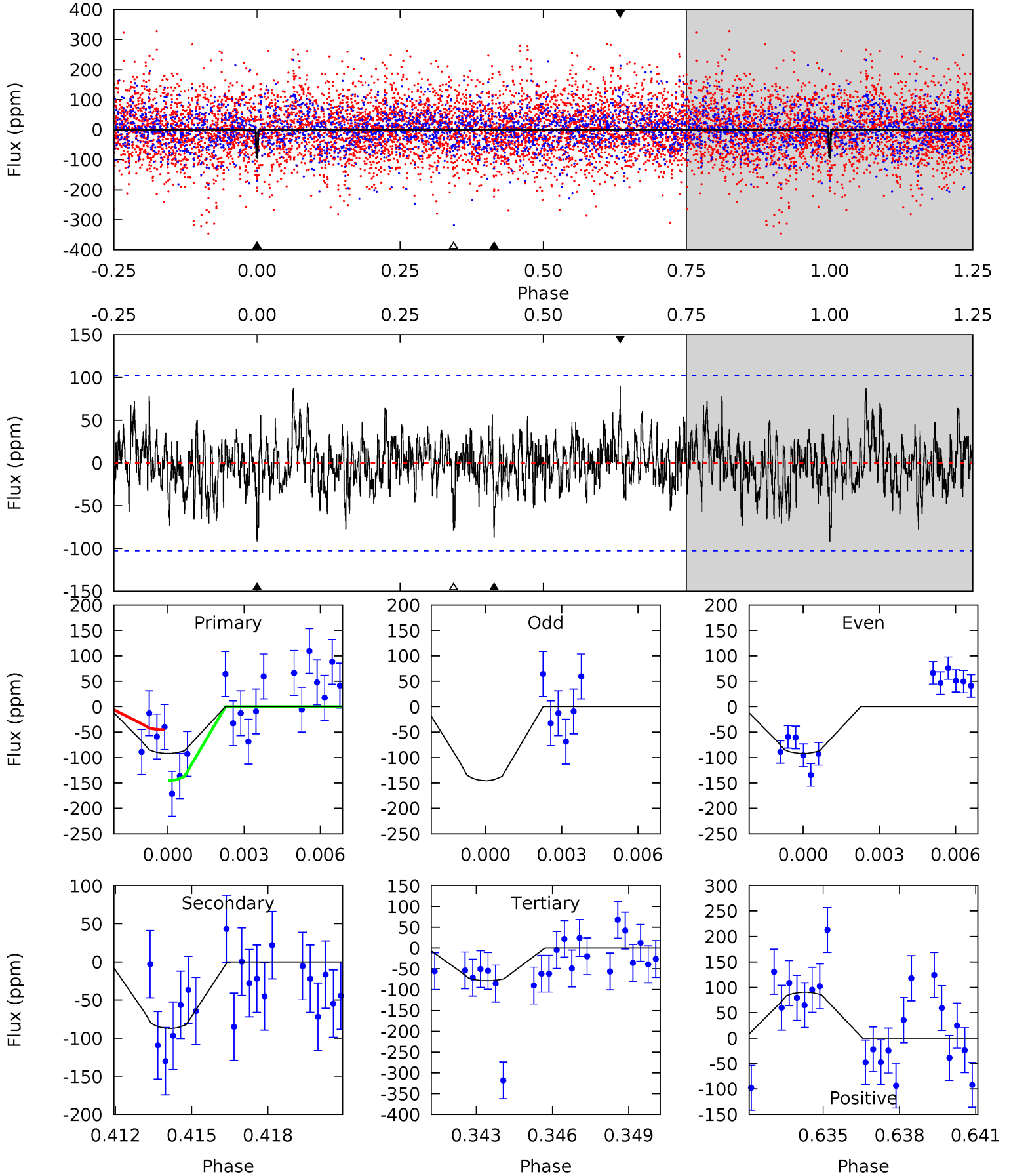
TCE 004738155-04 P= 64.589098 Days $T_0=187.763563$ (BKJD)



DV Model-Shift Uniqueness Test

004738155-04, P = 64.589909 Days, E = 123.154307 Days

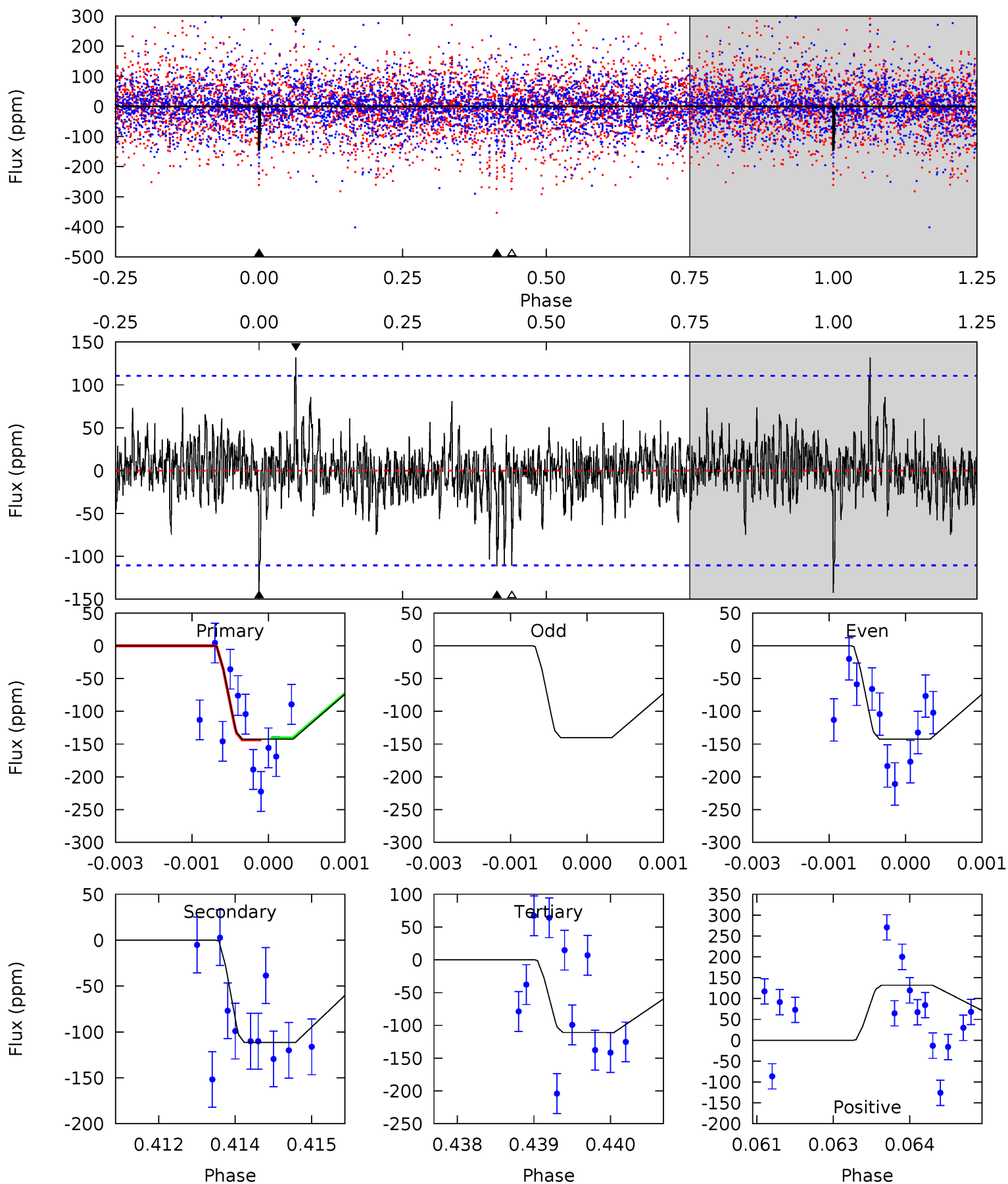
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.71	4.47	4.03	4.63	5.24	2.95	1.25	0.68	0.08	0.44	-0.16	1.59	0.80	0.50	2.57



Alt Model-Shift Uniqueness Test

004738155-04, P = 64.589098 Days, E = 123.174465 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.96	5.46	5.43	6.46	5.41	3.22	1.17	1.54	0.51	0.03	-1.00	0.05	0.64	0.48	0.08



Stellar Parameters For KIC 004738155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6782^{+215}_{-263}	$4.044^{+0.350}_{-0.150}$	$-0.840^{+0.300}_{-0.300}$	$1.595^{+0.379}_{-0.568}$	$1.026^{+0.127}_{-0.115}$	$0.356^{+0.883}_{-0.148}$
	+3%/-4%	+9%/-4%	+36%/-36%	+24%/-36%	+12%/-11%	+248%/-42%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004738155-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-87 ± 20	$5.14^{+5.38}_{-3.55}$	922^{+71}_{-107}	3967^{+2568}_{-792}	182^{+1681}_{-139}
Alt.	-112 ± 20	$5.09^{+5.37}_{-3.52}$	920^{+75}_{-88}	4174^{+3089}_{-870}	236^{+2182}_{-180}

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

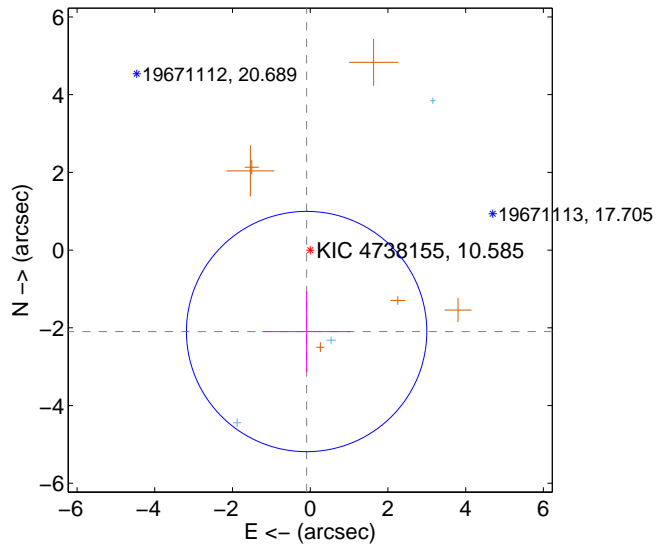
Supplemental centroid analysis for 004738155-04. **Kepler magnitude: 10.59.** Transit SNR 9.24

There are 3 quarters with good PRF difference image offsets

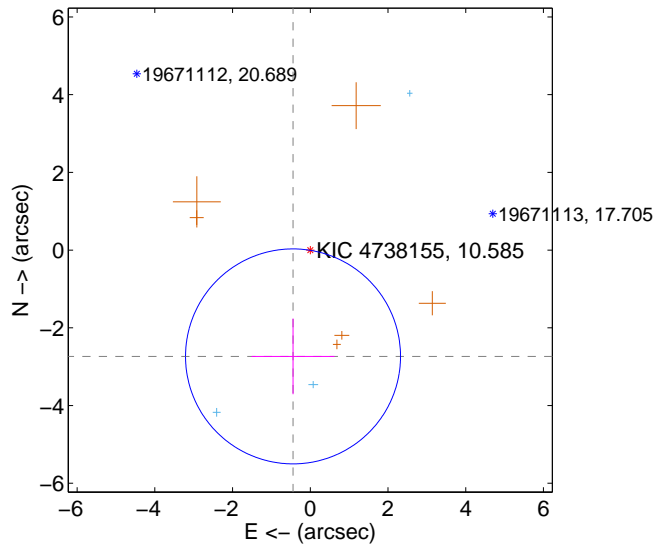
The direct PRF centroid is offset from the target star catalog position by about 0.68 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.097 ± 1.031	2.04	0.093 ± 1.142	-2.095 ± 1.043
PRF-fit source offset from KIC position	2.771 ± 0.922	3.01	0.444 ± 1.066	-2.735 ± 0.974
photometric centroid source offset	0.78 ± 0.43	1.82	0.76 ± 0.42	0.16 ± 0.58

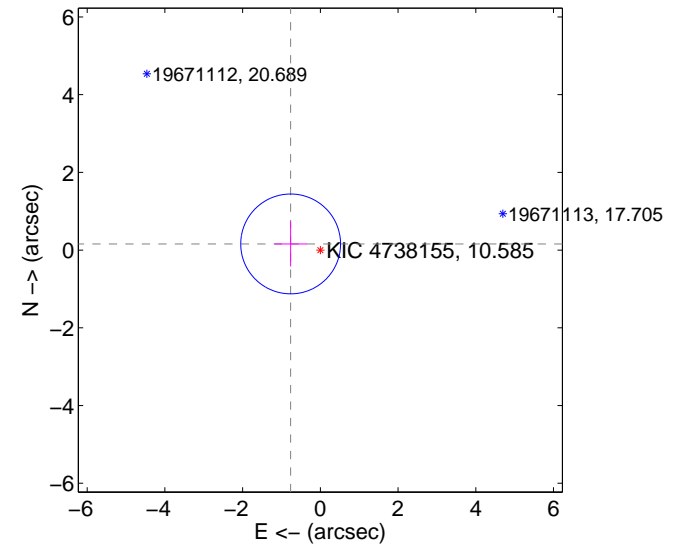
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

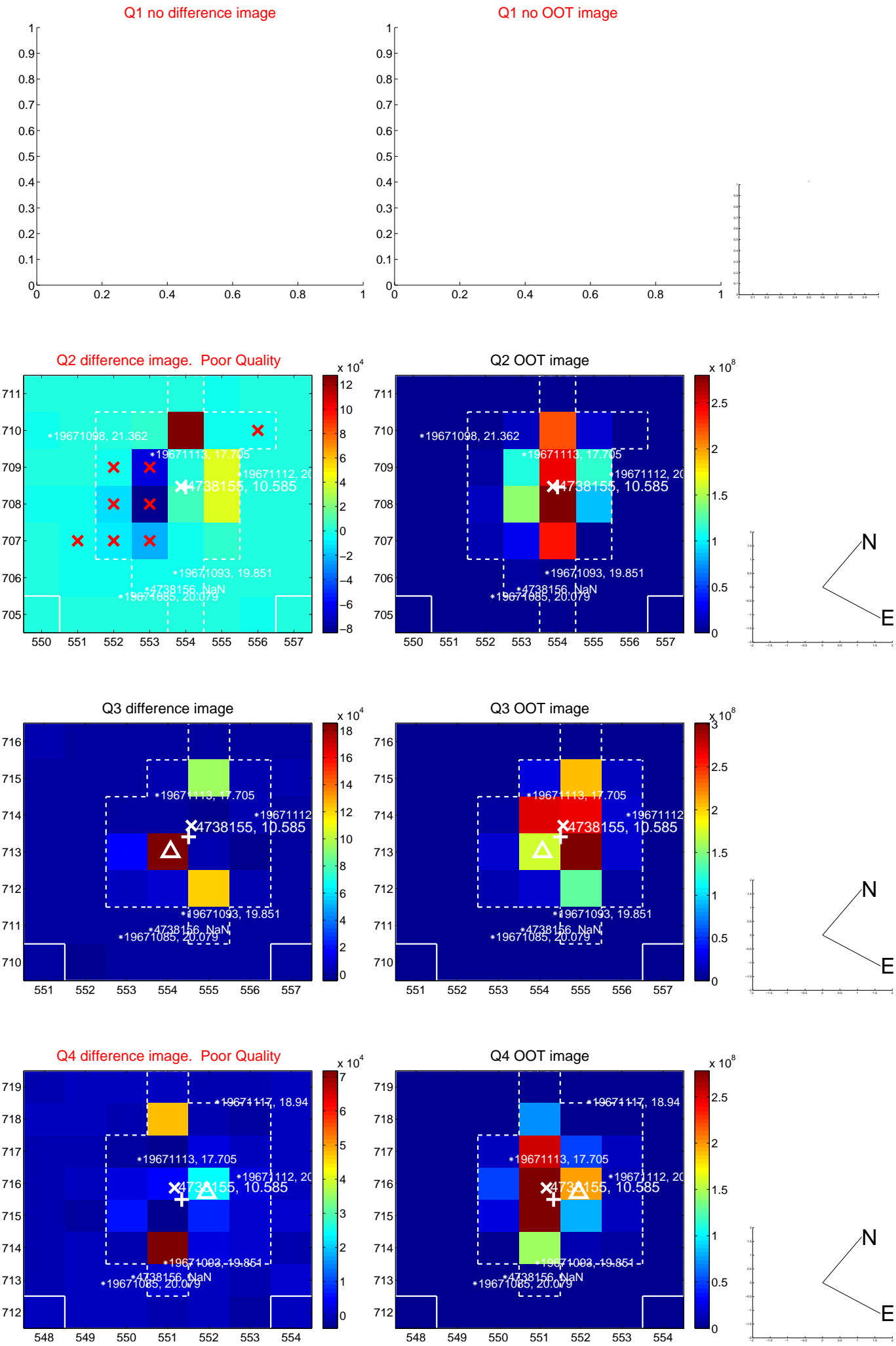


offset from photometric centroids

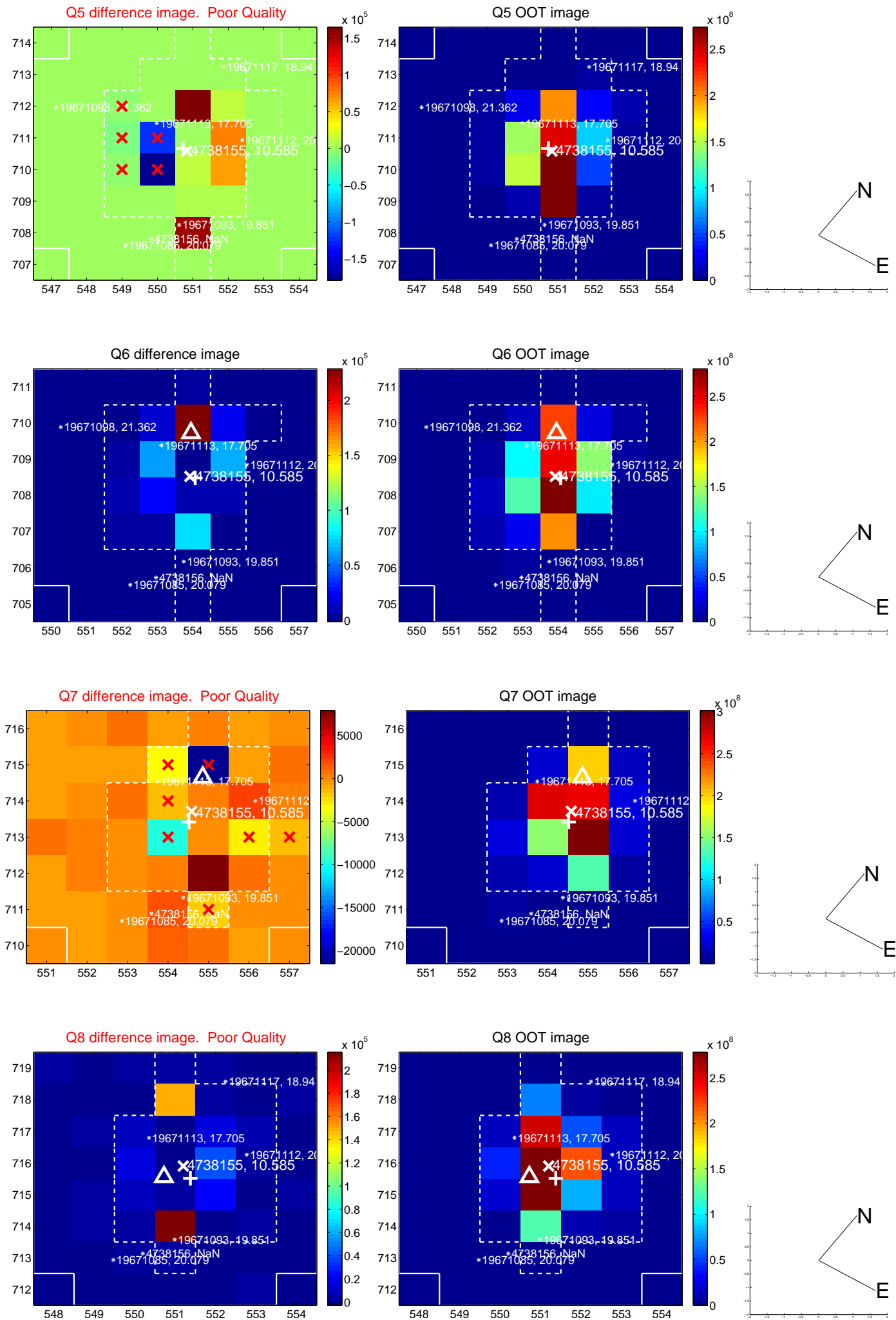


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

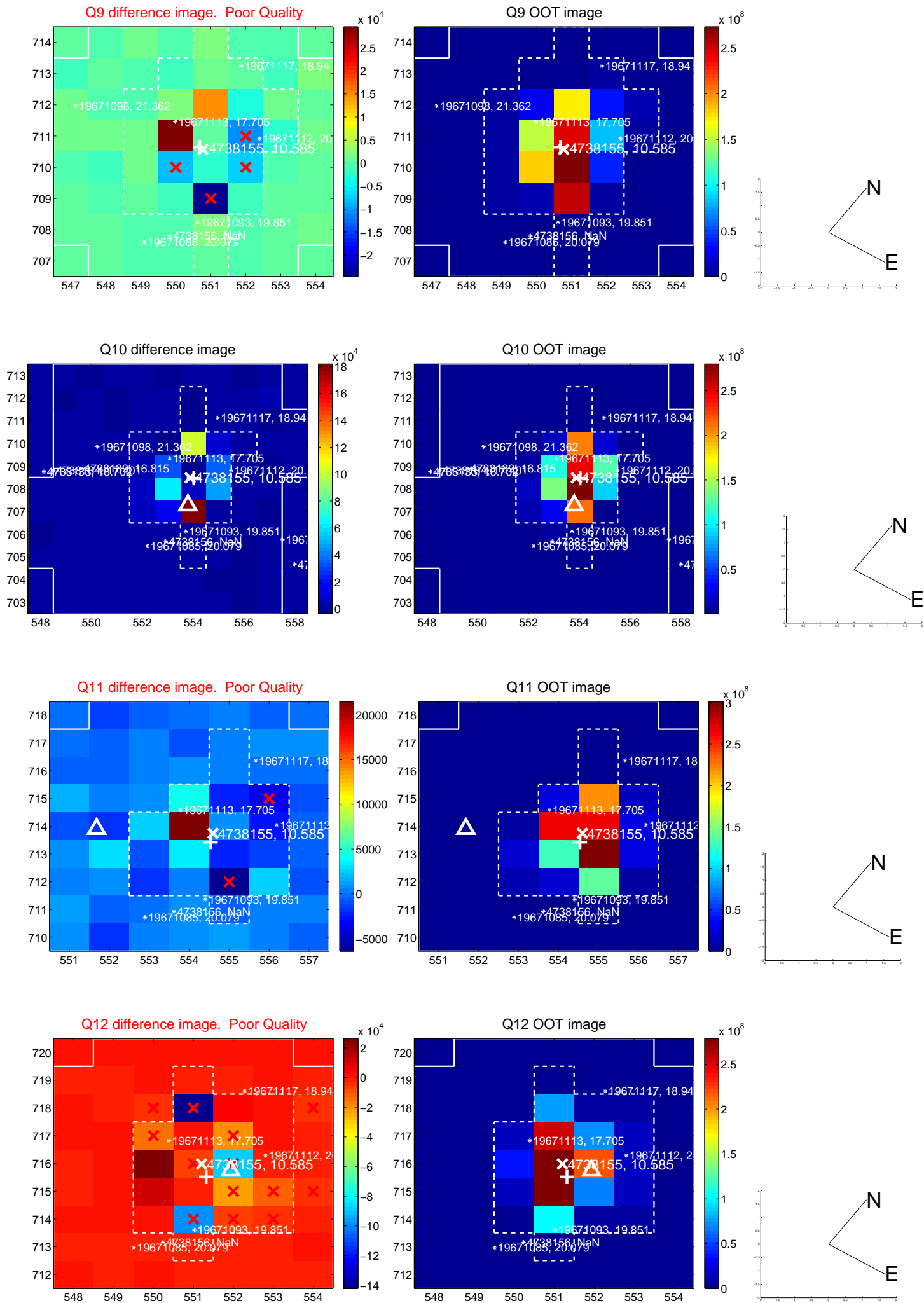
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



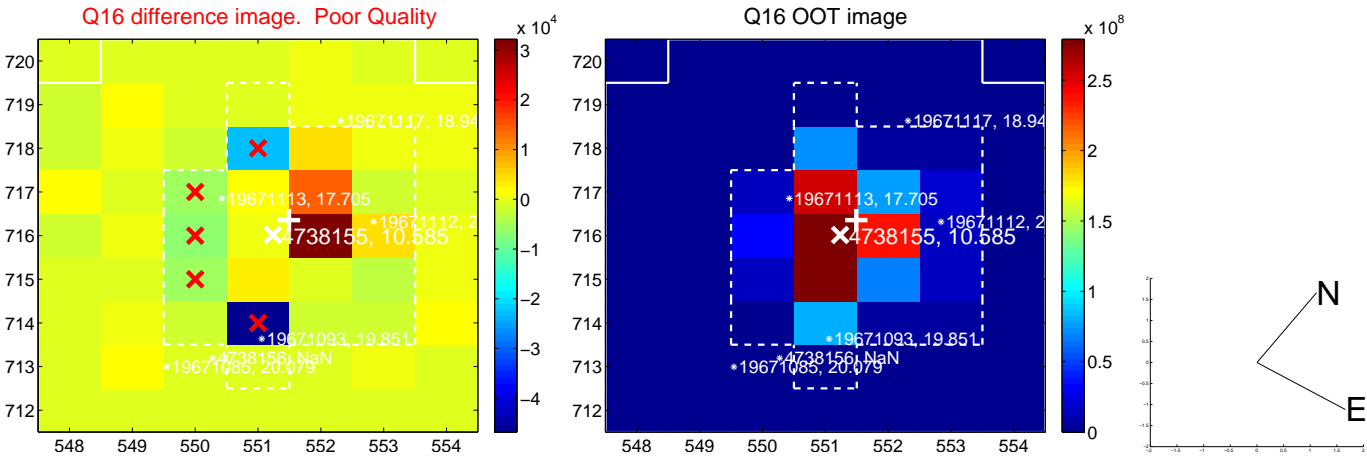
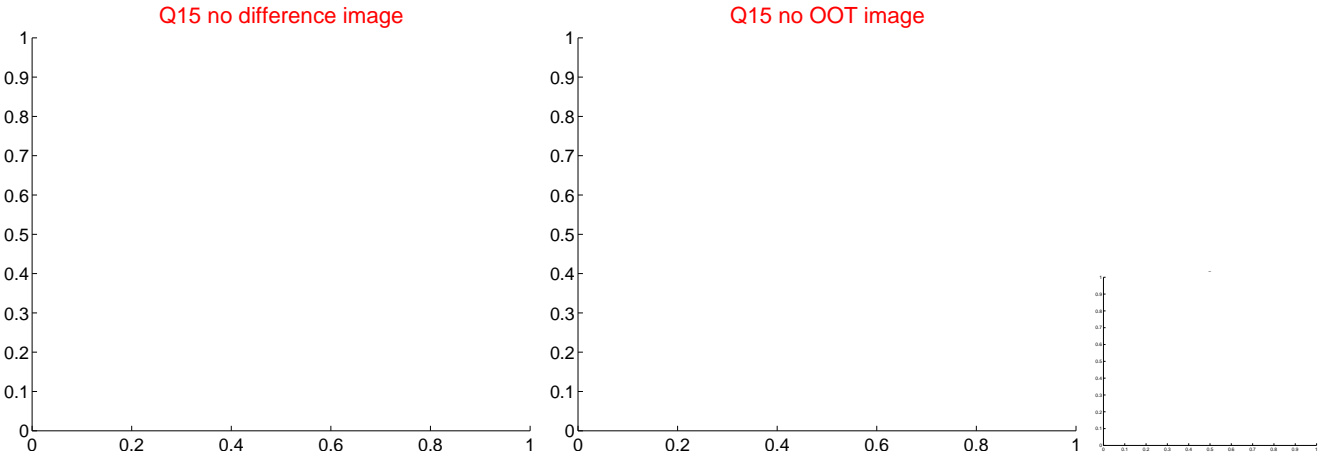
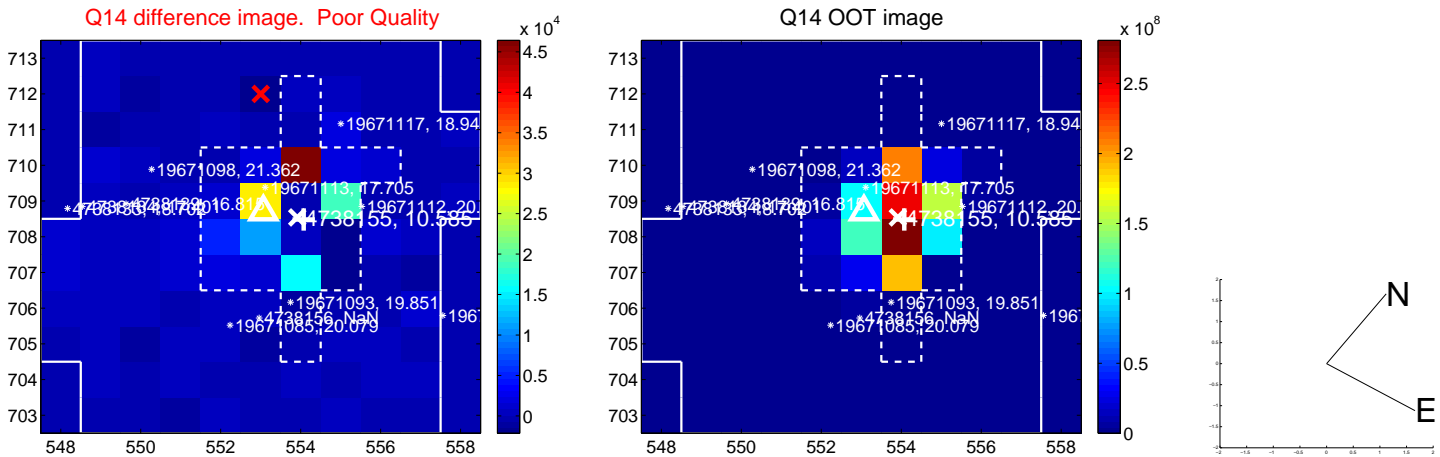
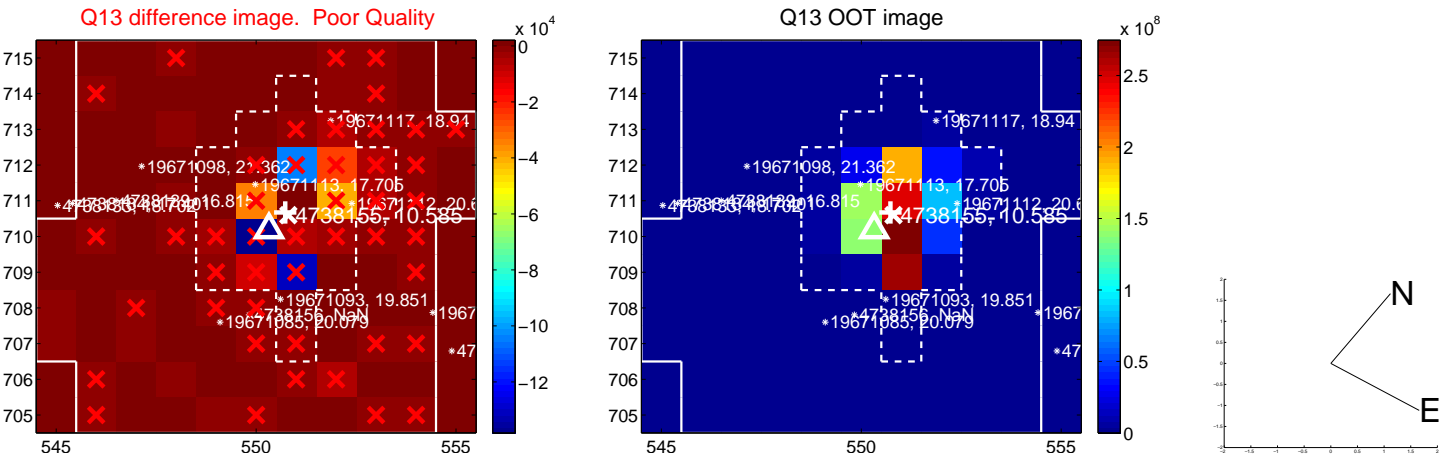
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



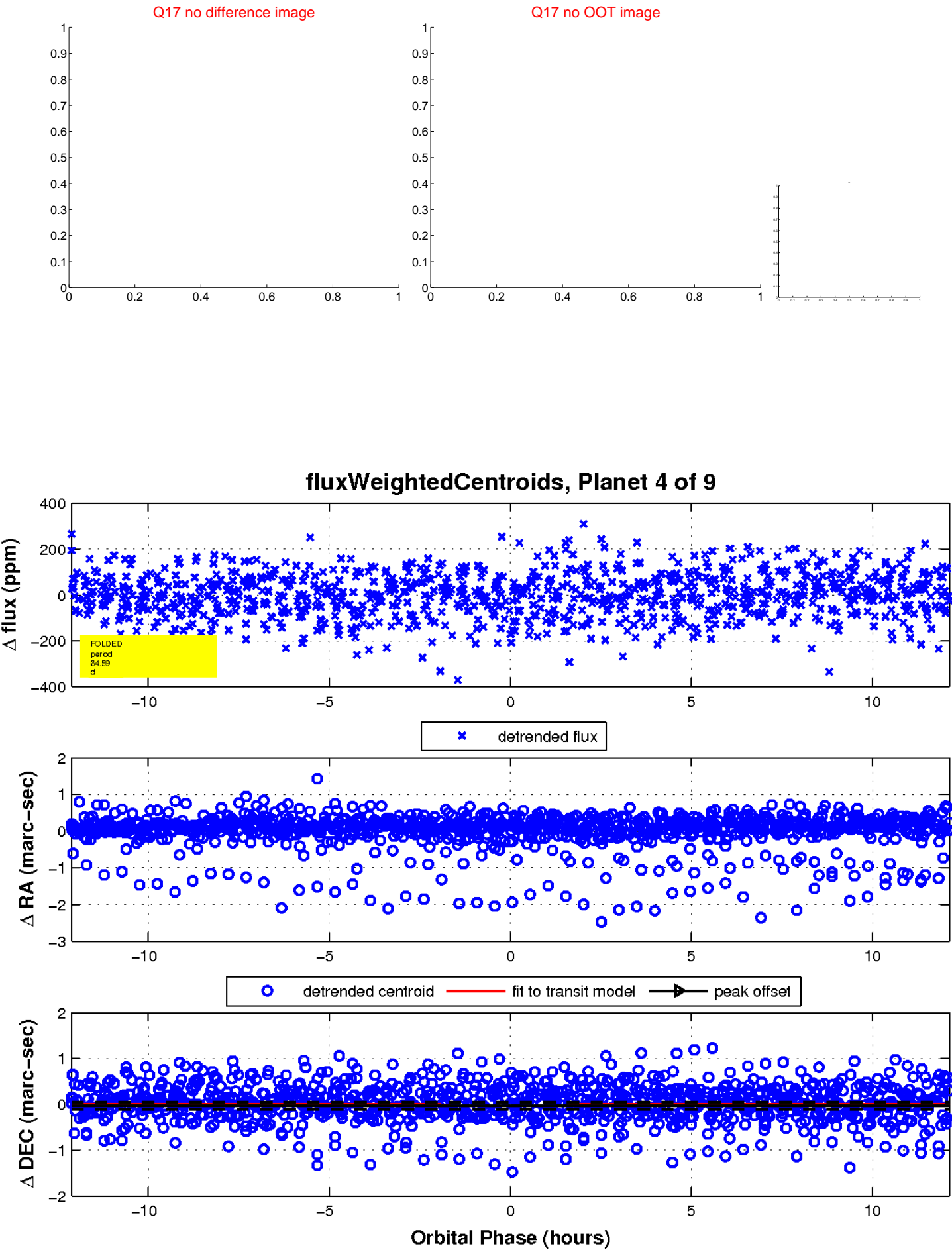
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

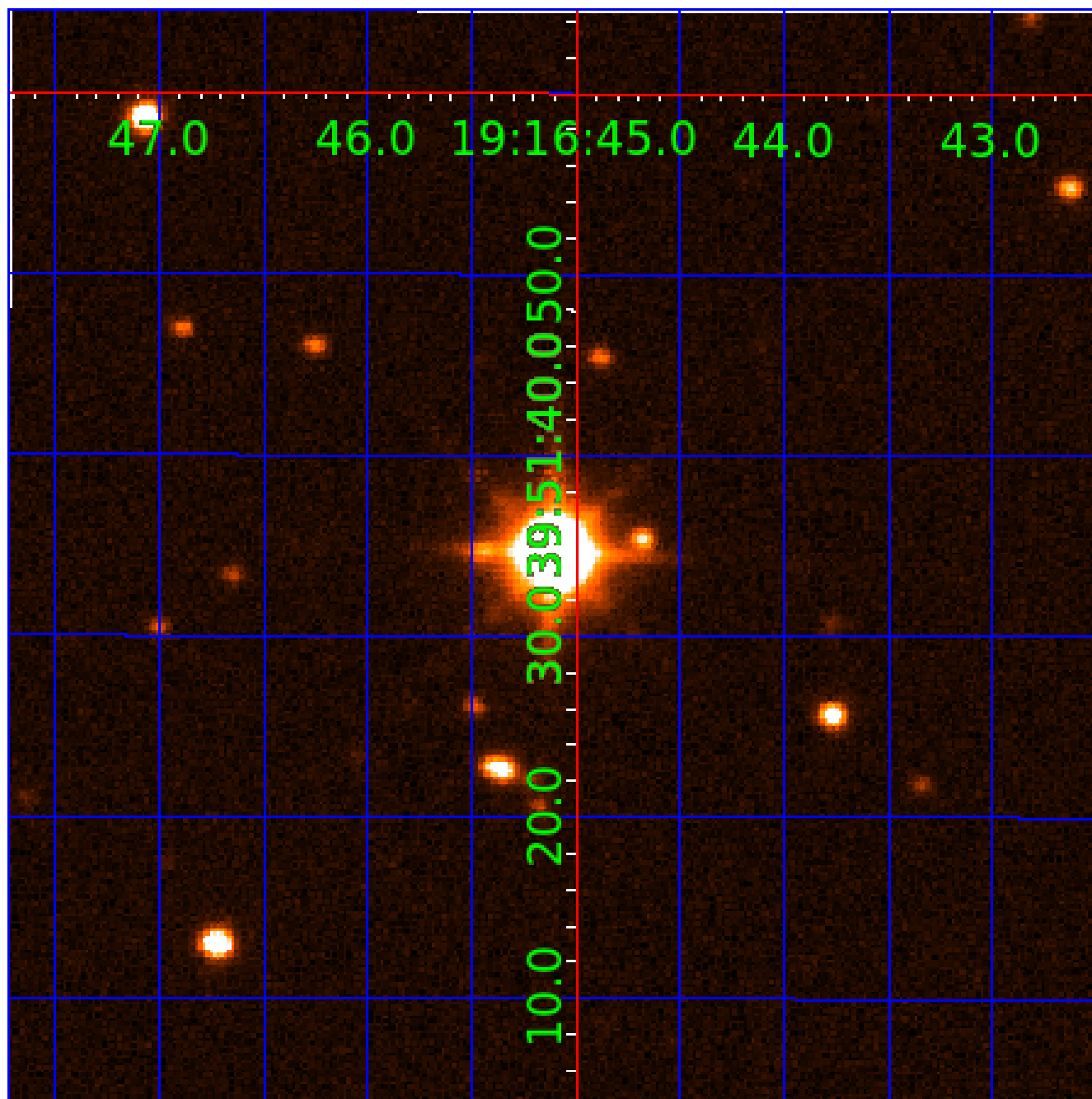


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004738155

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})
004738155-01	OBS	No	0.836071	132.167221	2.4	5.840	7.6	2.2	1.59	6782	0.25	15697.92
004738155-02	OBS	No	19.947640	139.503616	109.1	2.480	12.1	10.3	1.59	6782	1.96	228.55
004738155-03	OBS	No	24.260767	131.541777	104.2	4.936	9.6	10.7	1.59	6782	1.85	176.05
004738155-04	OBS	No	64.589909	187.744216	121.2	4.046	11.3	9.2	1.59	6782	2.04	47.71
004738155-05	OBS	No	55.890541	158.379329	177.1	2.724	10.2	9.6	1.59	6782	2.14	57.86
004738155-06	OBS	No	49.987307	142.769267	101.4	6.306	10.9	7.6	1.59	6782	1.82	67.15
004738155-07	OBS	No	29.072639	145.715139	123.1	3.041	8.6	10.8	1.59	6782	1.95	138.31
004738155-08	OBS	No	30.533304	132.268869	129.5	1.889	9.2	8.1	1.59	6782	2.10	129.56
004738155-09	OBS	No	97.804825	192.042078	119.8	2.769	9.5	10.7	1.59	6782	2.02	27.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004738155-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004738155-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST
004738155-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

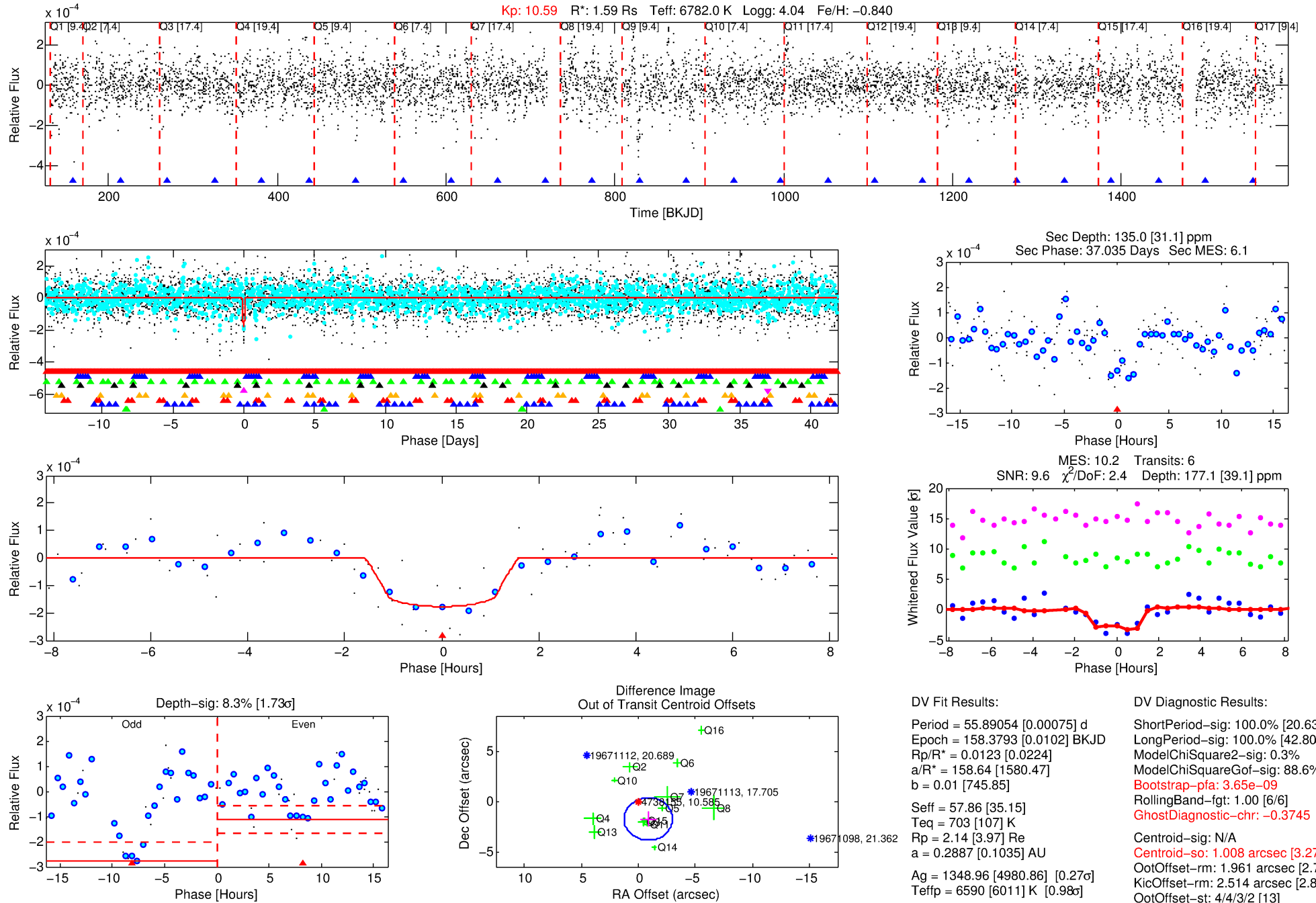
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004738155-05

No Significant Match Found

DV One-Page Summary

KIC: 4738155 Candidate: 5 of 9 Period: 55.891 d



DV Fit Results:

Period = 55.89054 [0.00075] d
 Epoch = 158.3793 [0.0102] BKJD
 Rp/R* = 0.0123 [0.0224]
 a/R* = 158.64 [1580.47]
 b = 0.01 [745.85]
 Seff = 57.86 [35.15]
 Teq = 703 [107] K
 Rp = 2.14 [3.97] Re
 a = 0.2887 [0.1035] AU
 Ag = 1348.96 [4980.86] [0.27σ]
 Tefp = 6590 [6011] K [0.98σ]

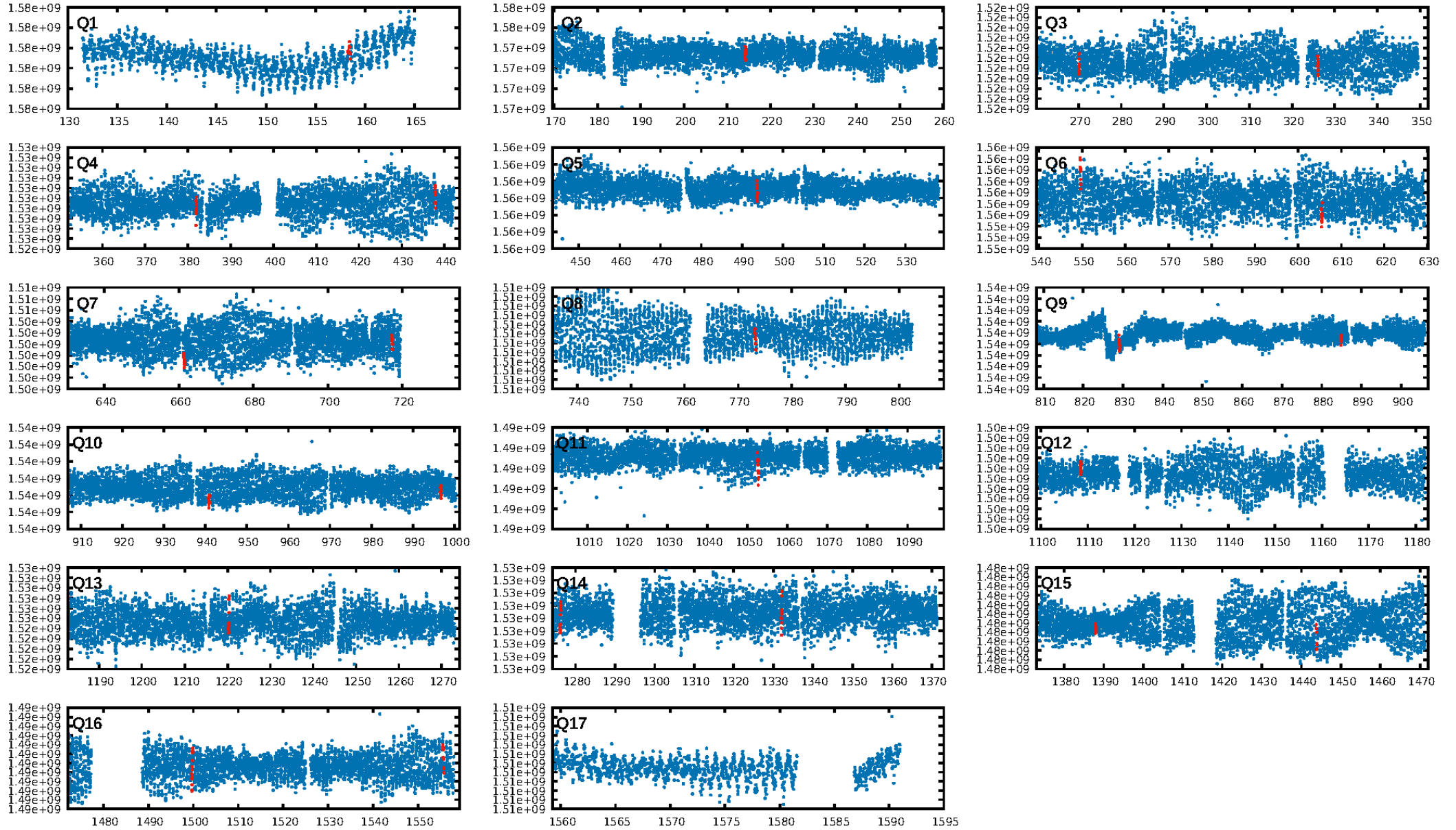
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [20.63σ]
 LongPeriod-sig: 100.0% [42.80σ]
 ModelChiSquare2-sig: 0.3%
 ModelChiSquareGof-sig: 88.6%
 Bootstrap-pfa: 3.65e-09
 RollingBand-fgt: 1.00 [6/6]
 GhostDiagnostic-chr: -0.3745
 Centroid-sig: N/A
 Centroid-so: 1.008 arcsec [3.27σ]
 OutOffset-rm: 1.961 arcsec [2.79σ]
 KicOffset-rm: 2.514 arcsec [2.86σ]
 OutOffset-st: 4/4/3/2 [13]
 KicOffset-st: 4/4/3/2 [13]
 DiffImageQuality-fgm: 0.31 [4/13]
 DiffImageOverlap-fno: 0.00 [0/16]

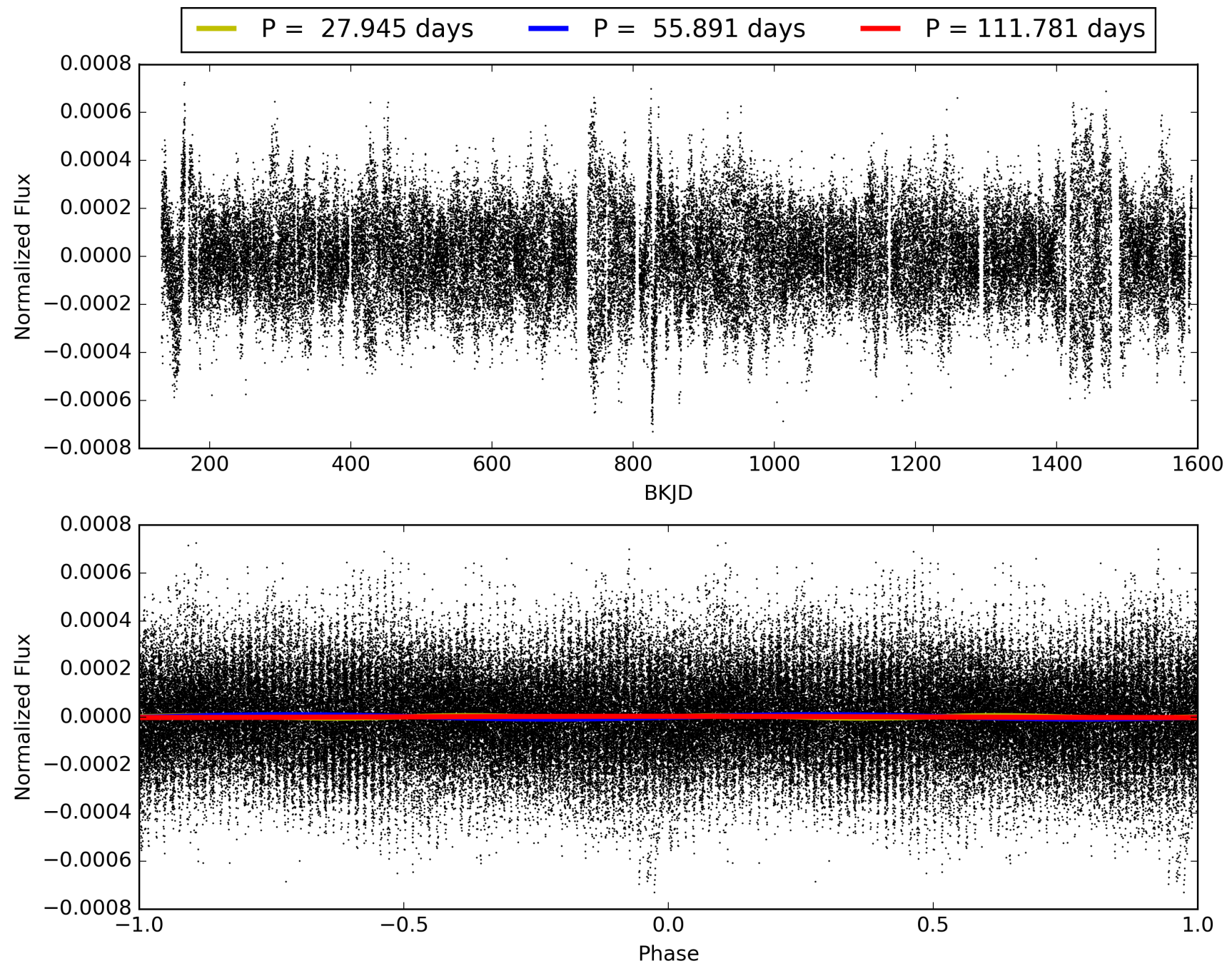
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:27 Z

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

TCE 004738155-05, PDC Light Curves

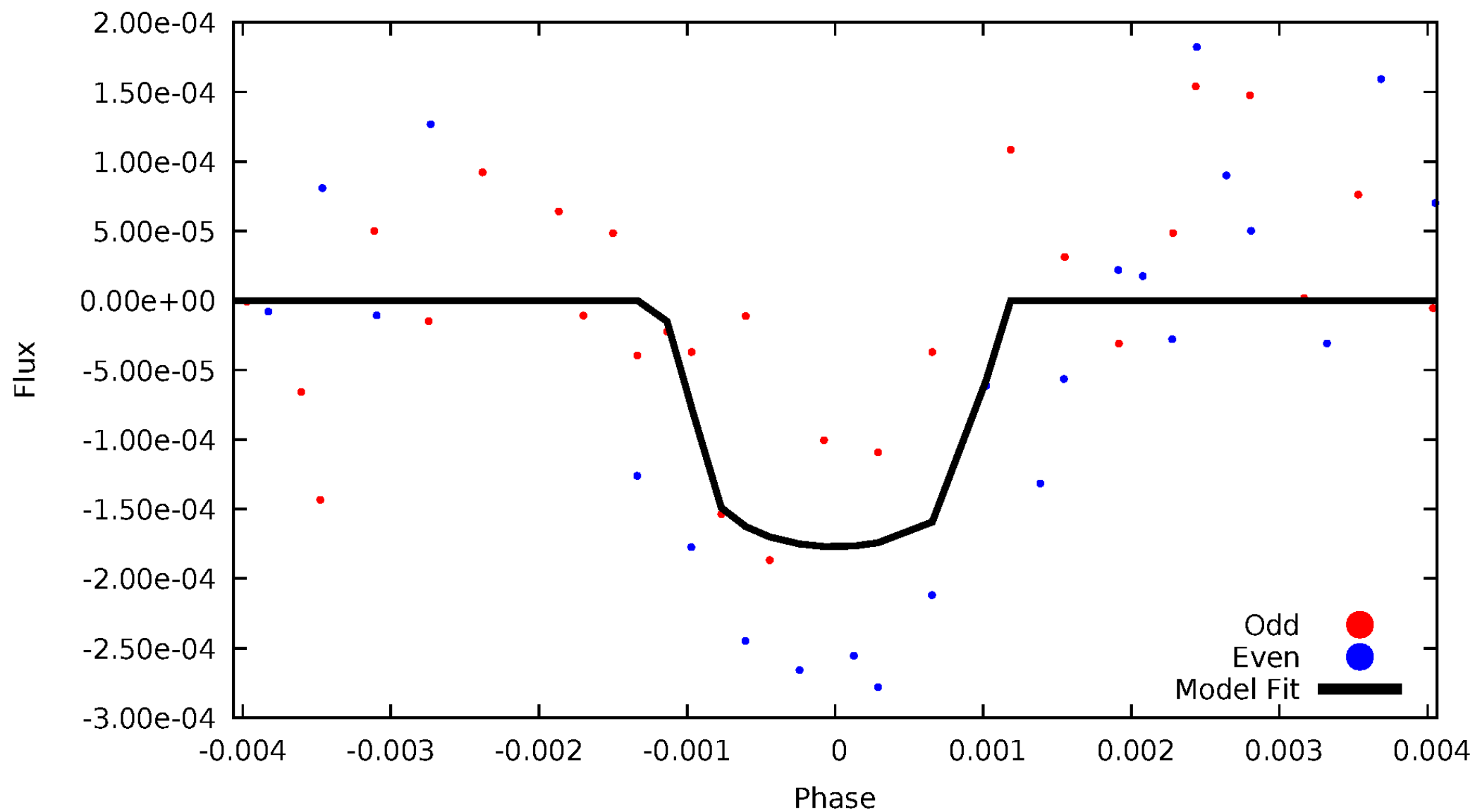


TCE 004738155-05



DV Odd/Even

TCE 004738155-05

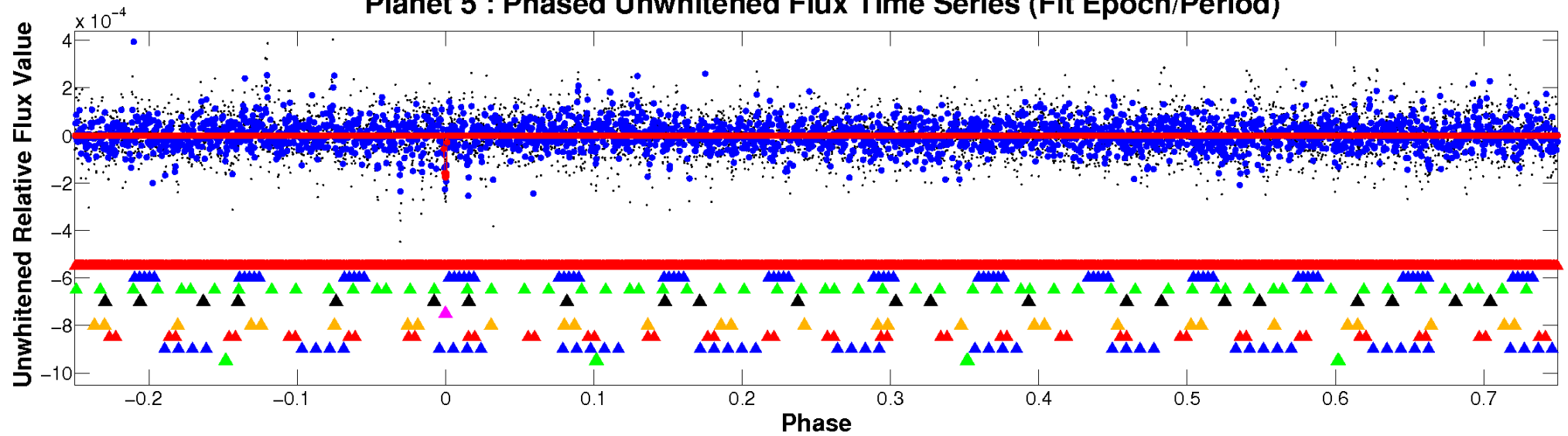


ALT Odd/Even

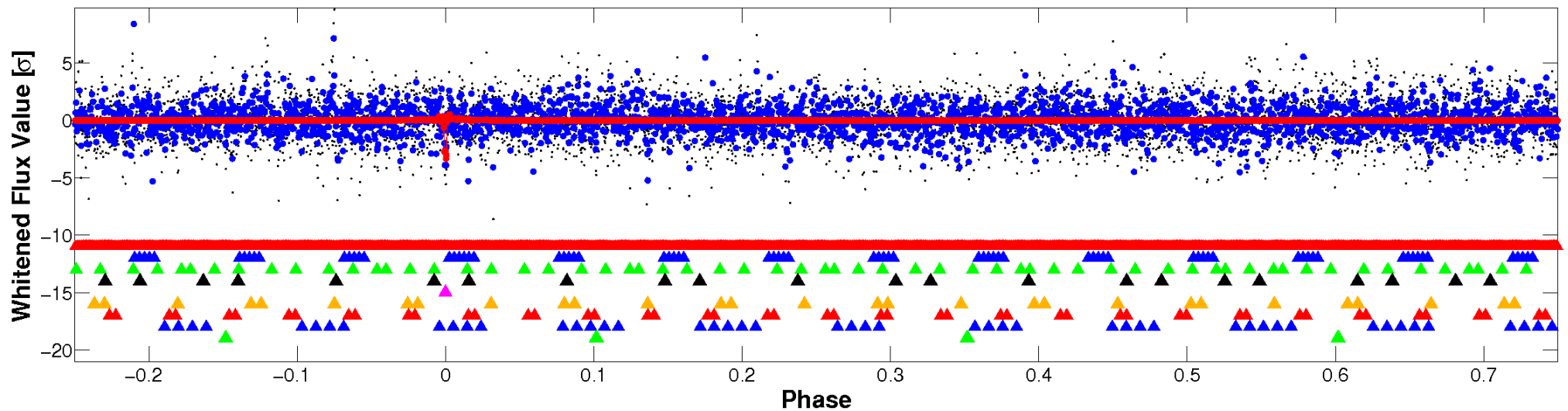
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

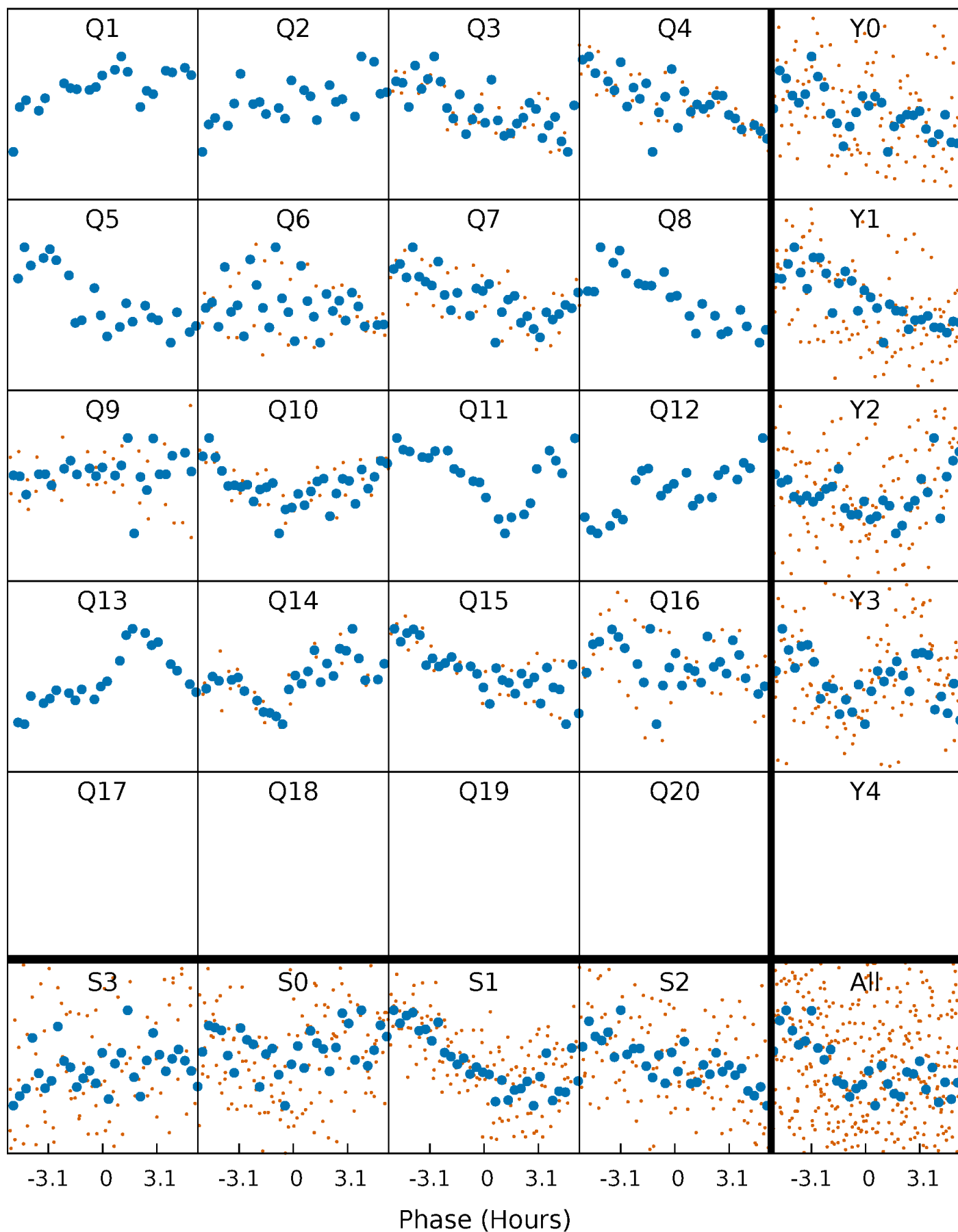


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



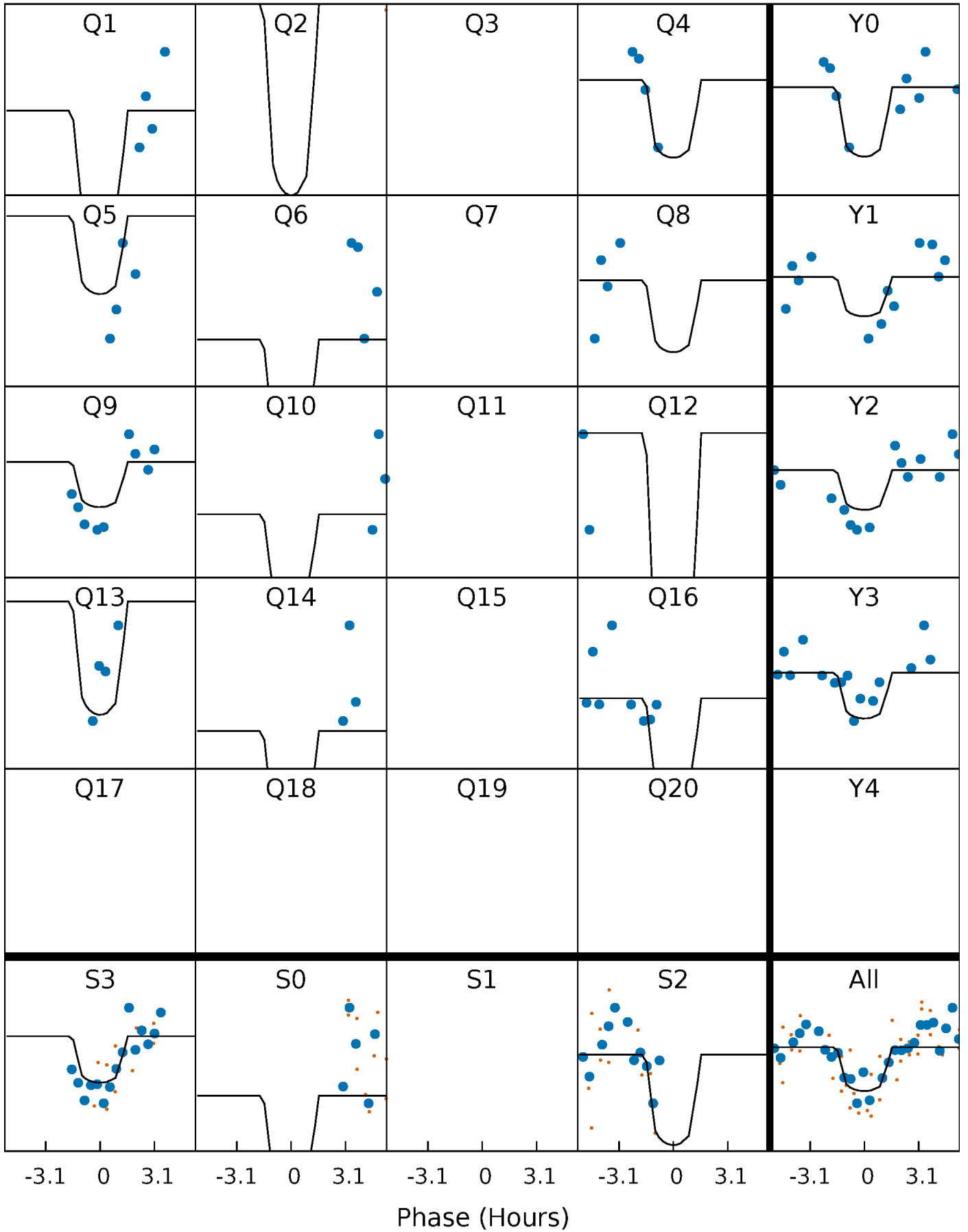
PDC Quarter-Phased Transit Curves

TCE 004738155-05 P= 55.890541 Days $T_0=158.379329$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 004738155-05 P= 55.890541 Days $T_0=158.379329$ (BKJD)

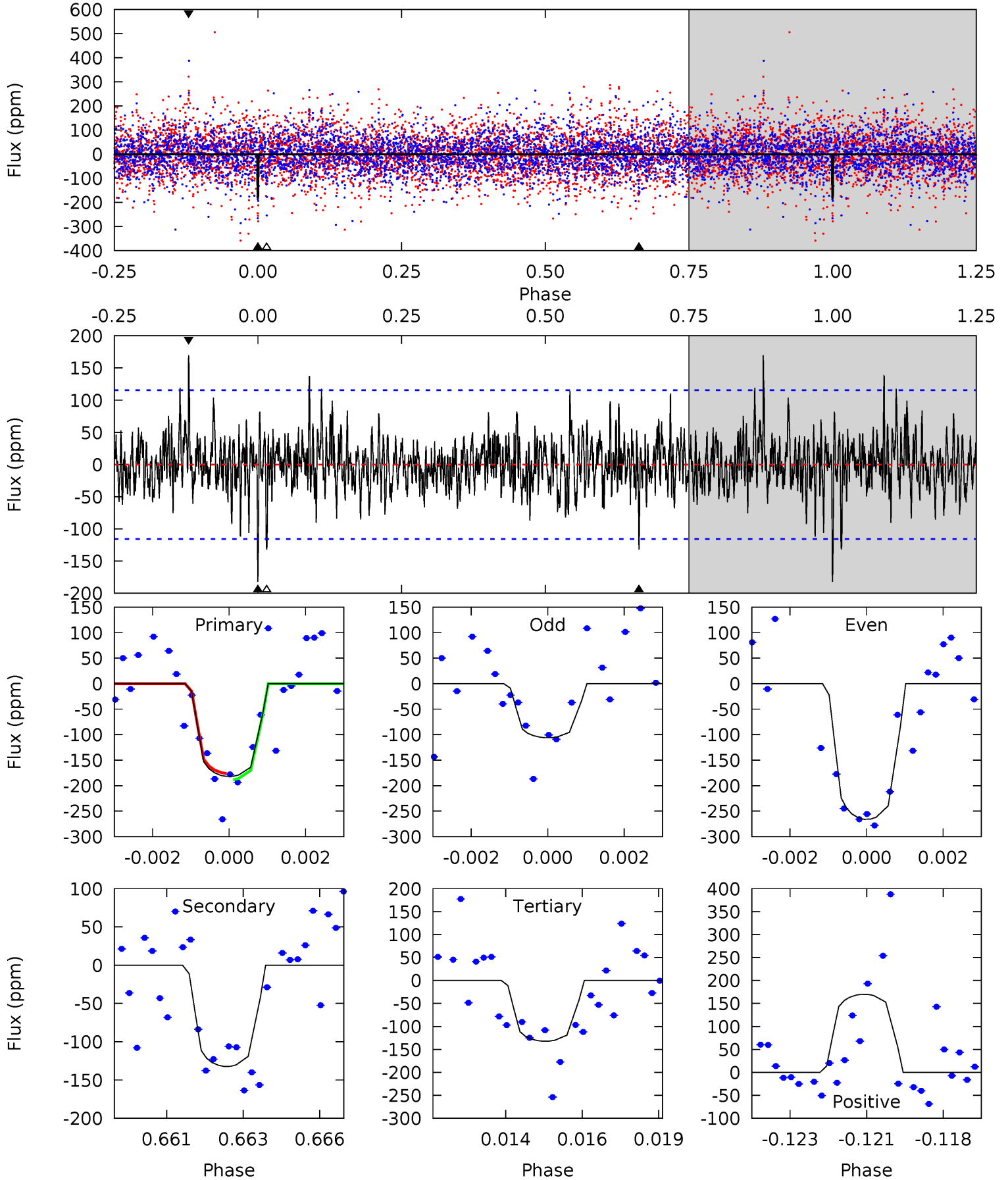


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

004738155-05, P = 55.890541 Days, E = 102.488788 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.34	6.06	6.06	7.79	5.30	3.05	1.52	2.28	0.55	0.00	-1.73	3.63	0.93	0.48	0.28



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 004738155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6782^{+215}_{-263}	$4.044^{+0.350}_{-0.150}$	$-0.840^{+0.300}_{-0.300}$	$1.595^{+0.379}_{-0.568}$	$1.026^{+0.127}_{-0.115}$	$0.356^{+0.883}_{-0.148}$
	+3%/-4%	+9%/-4%	+36%/-36%	+24%/-36%	+12%/-11%	+248%/-42%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004738155-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-132 ± 22	$3.14^{+3.27}_{-2.17}$	962^{+77}_{-102}	5195^{+5003}_{-1211}	595^{+6174}_{-442}
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 $A_{obs} \gg 1.0$

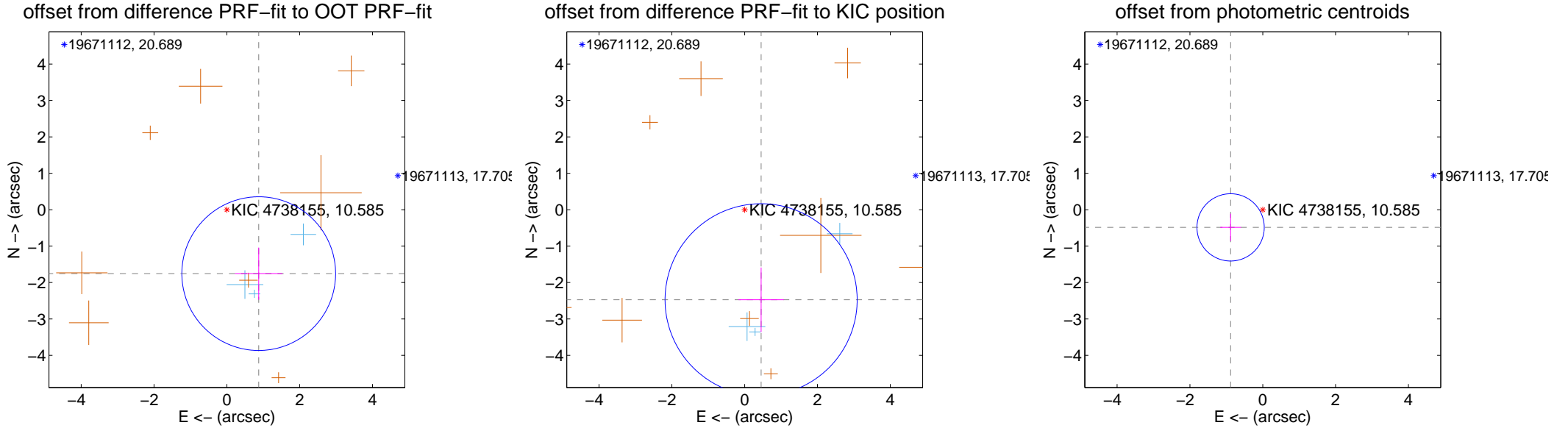
DV Centroid Data

Supplemental centroid analysis for 004738155-05. **Kepler magnitude: 10.59.** Transit SNR 9.61

There are 4 quarters with good PRF difference image offsets

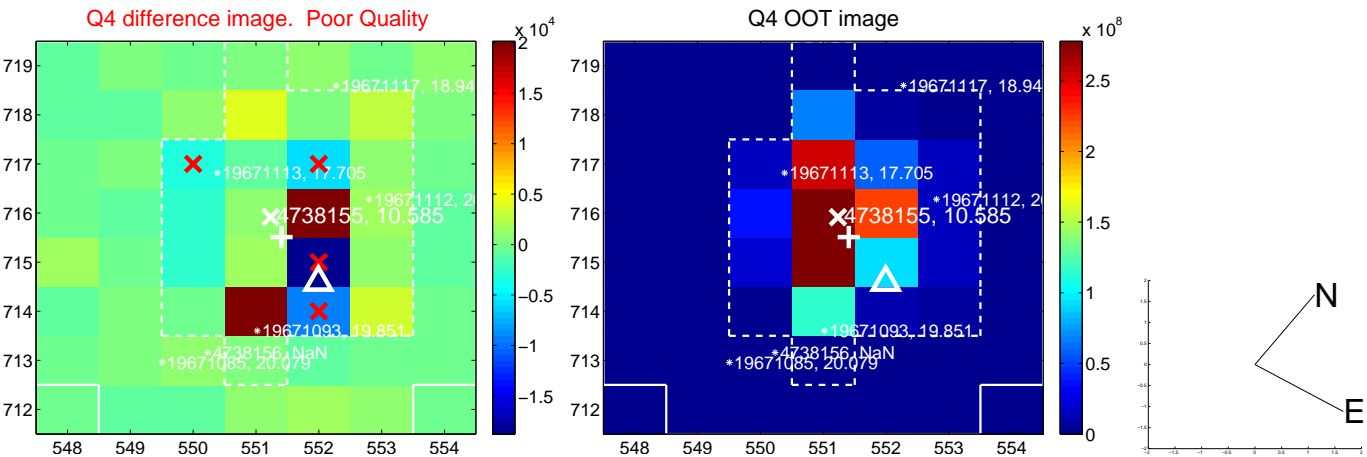
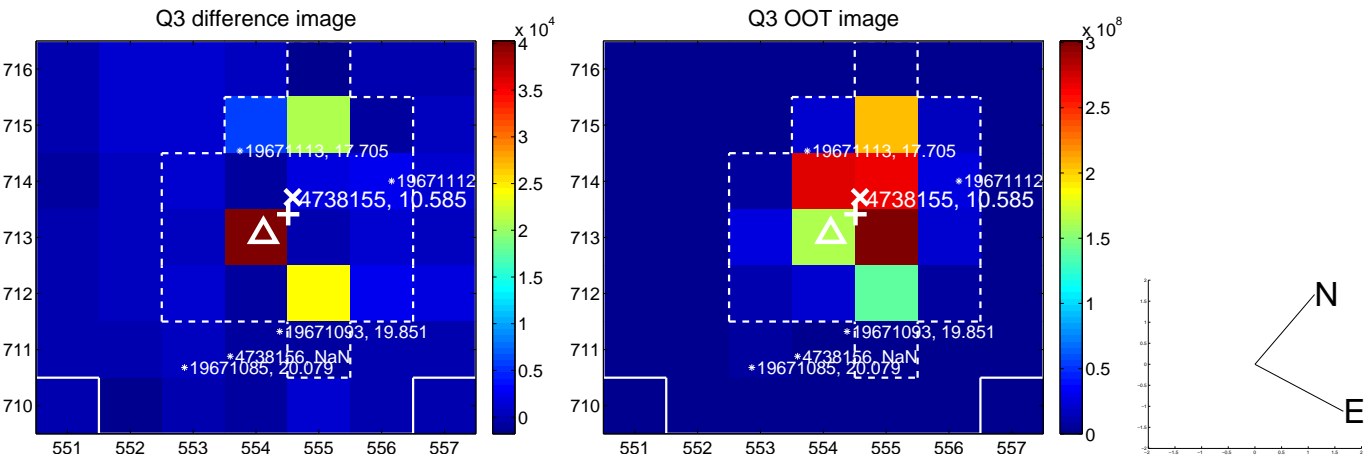
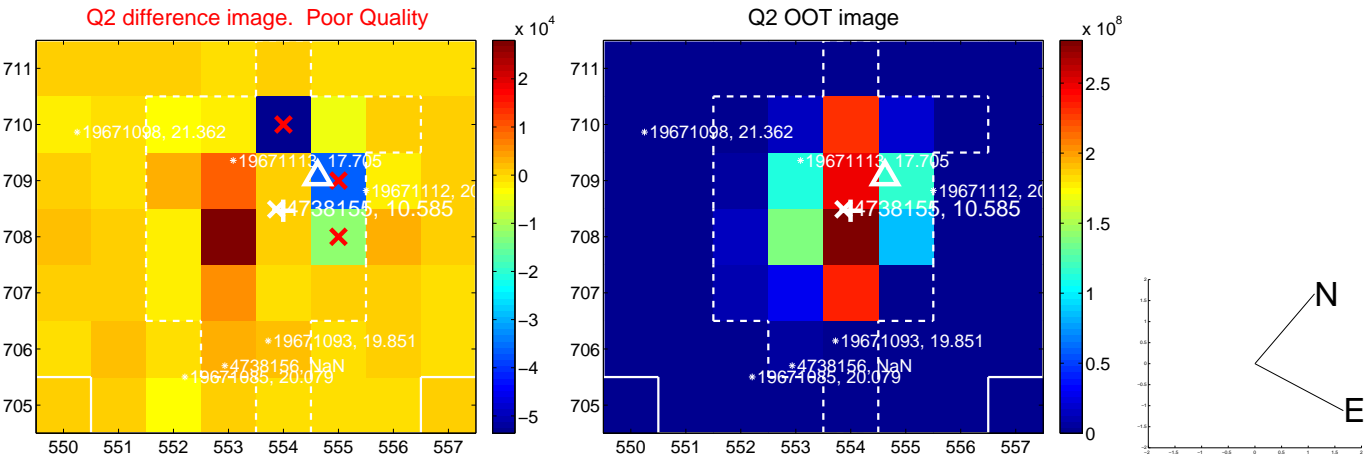
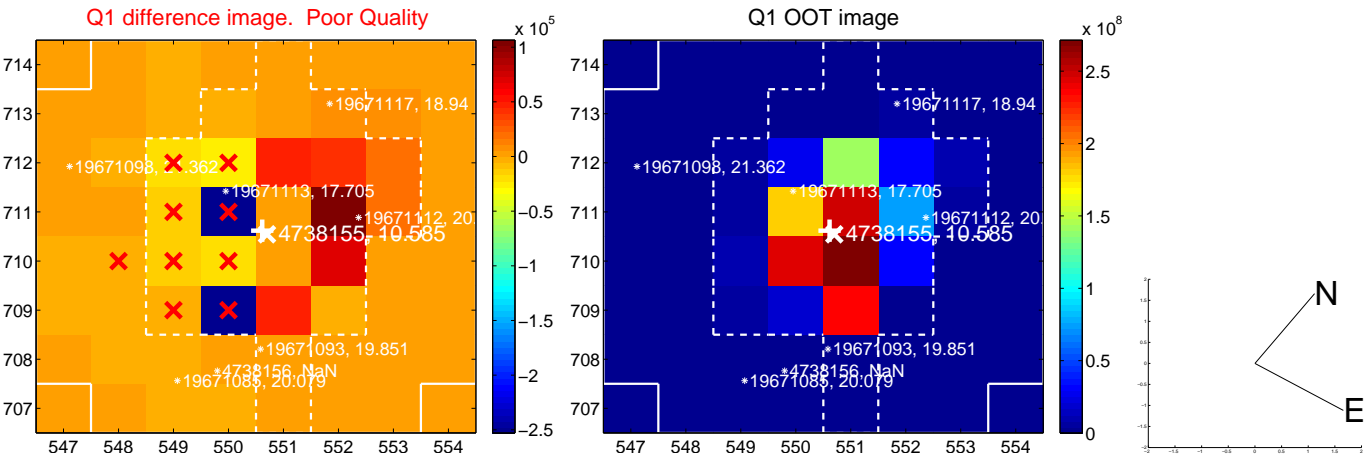
The direct PRF centroid is offset from the target star catalog position by about 1.91 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.961 ± 0.704	2.79	-0.875 ± 0.653	-1.755 ± 0.716
PRF-fit source offset from KIC position	2.514 ± 0.879	2.86	-0.452 ± 0.622	-2.473 ± 0.886
photometric centroid source offset	1.01 ± 0.31	3.27	0.88 ± 0.28	-0.49 ± 0.37

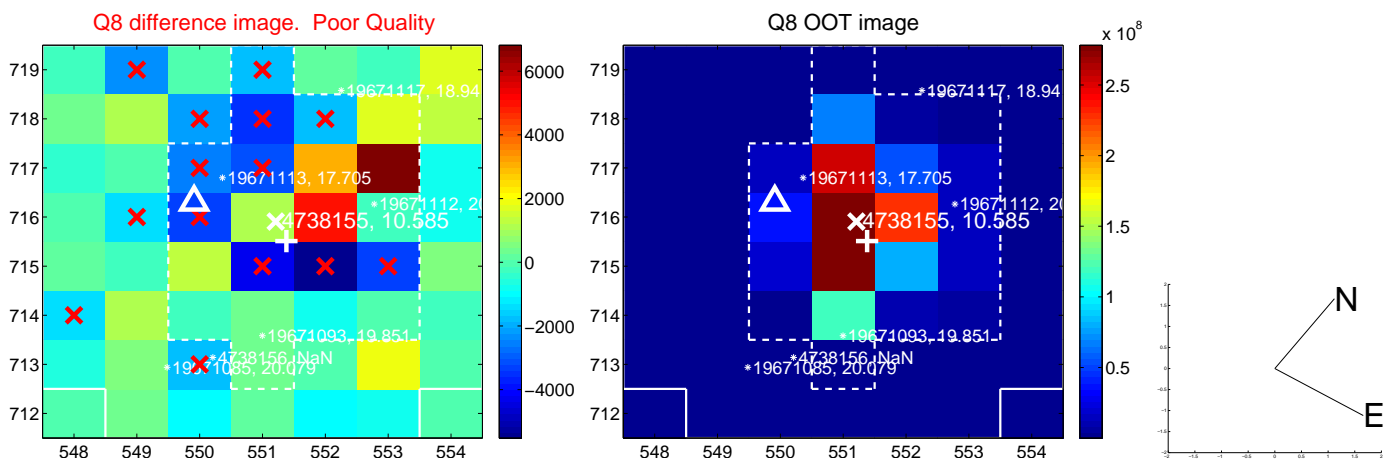
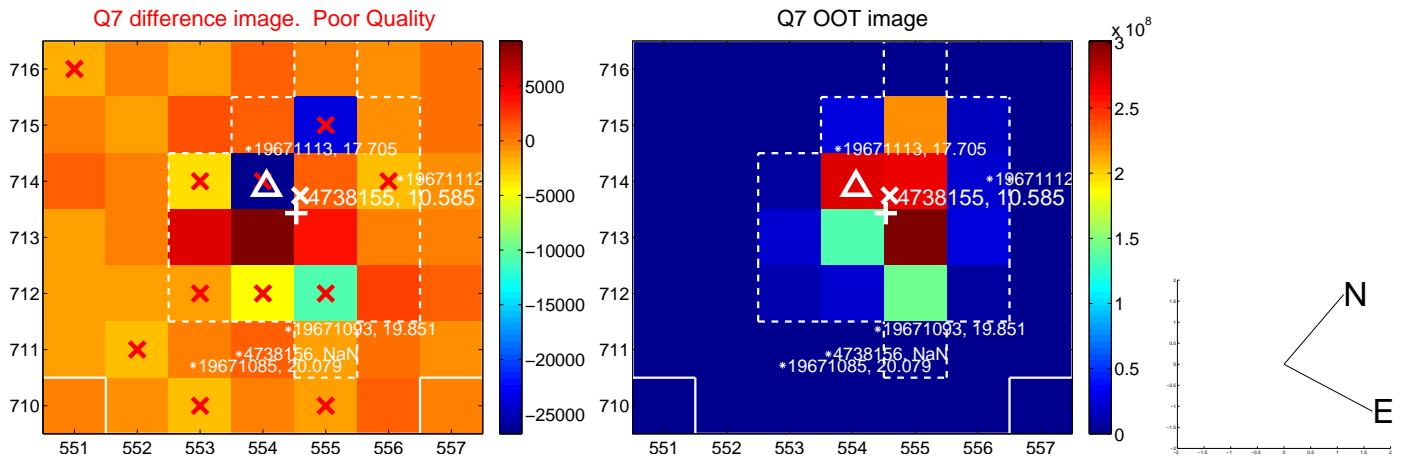
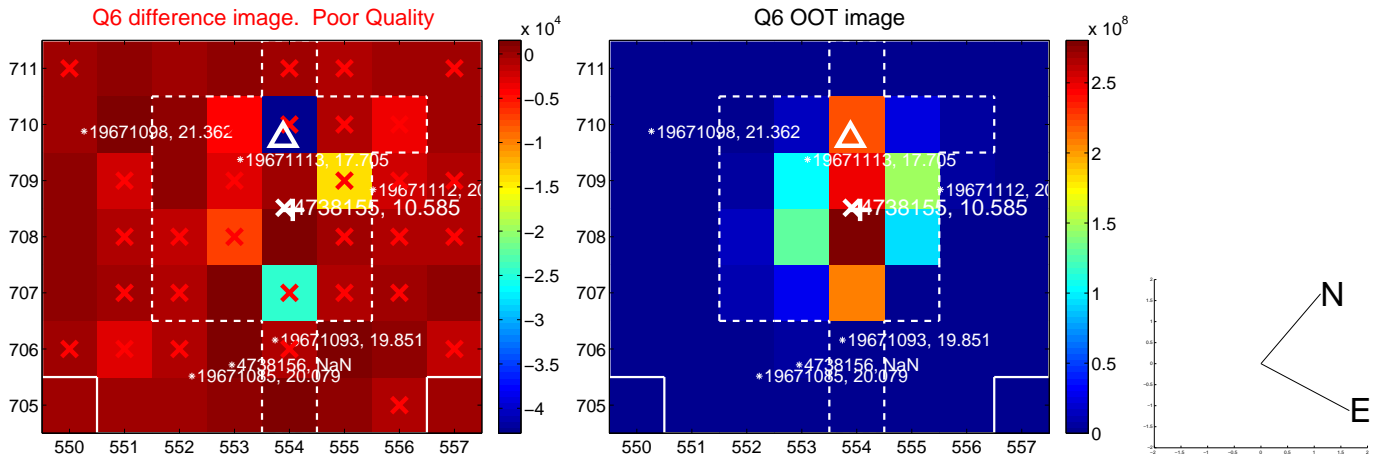
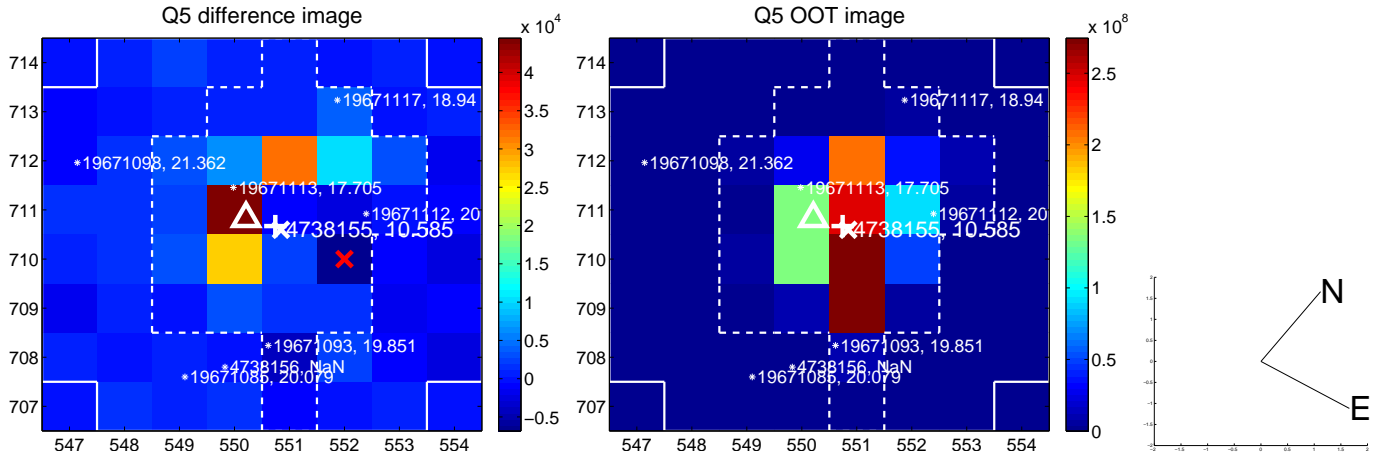


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

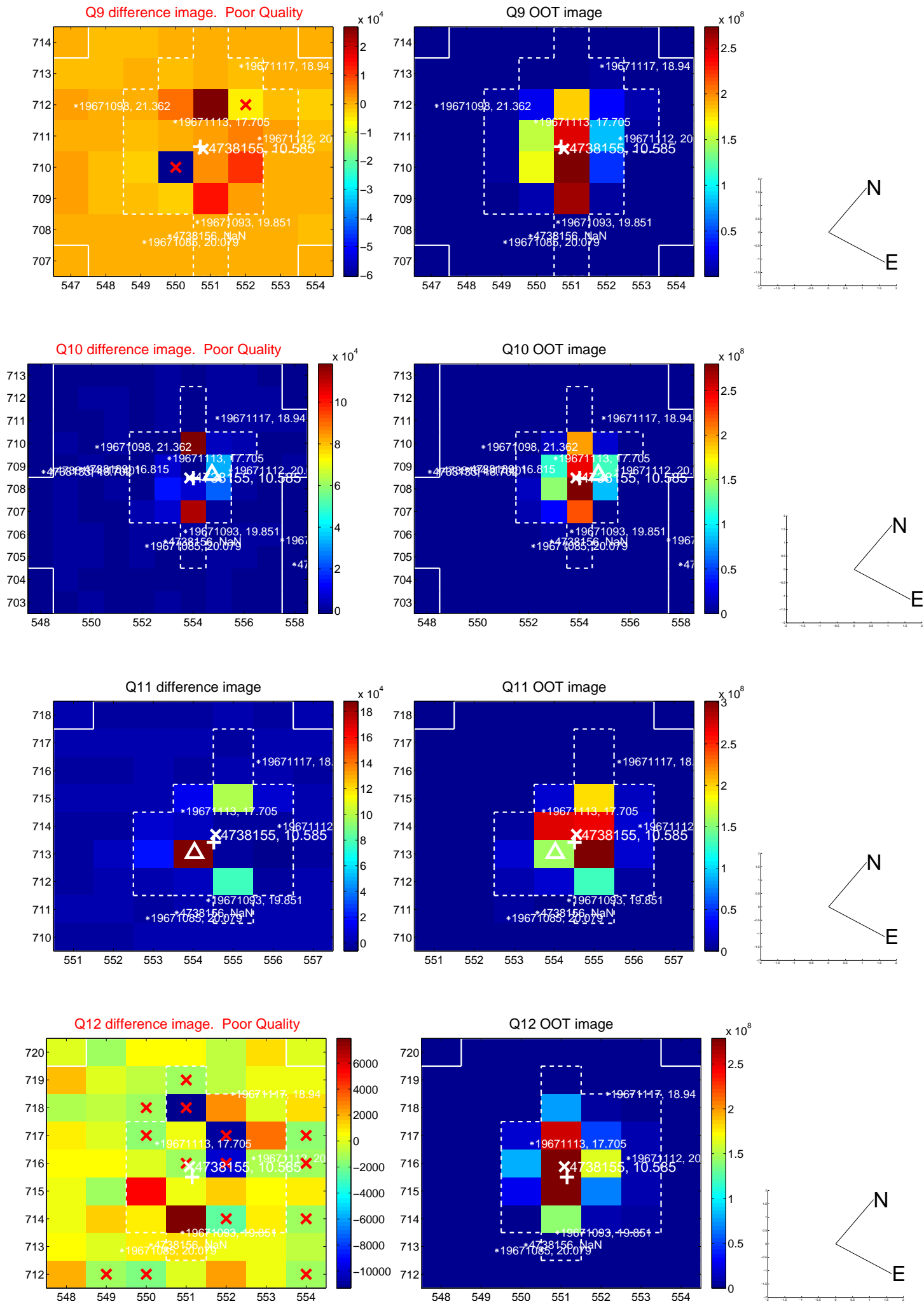
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



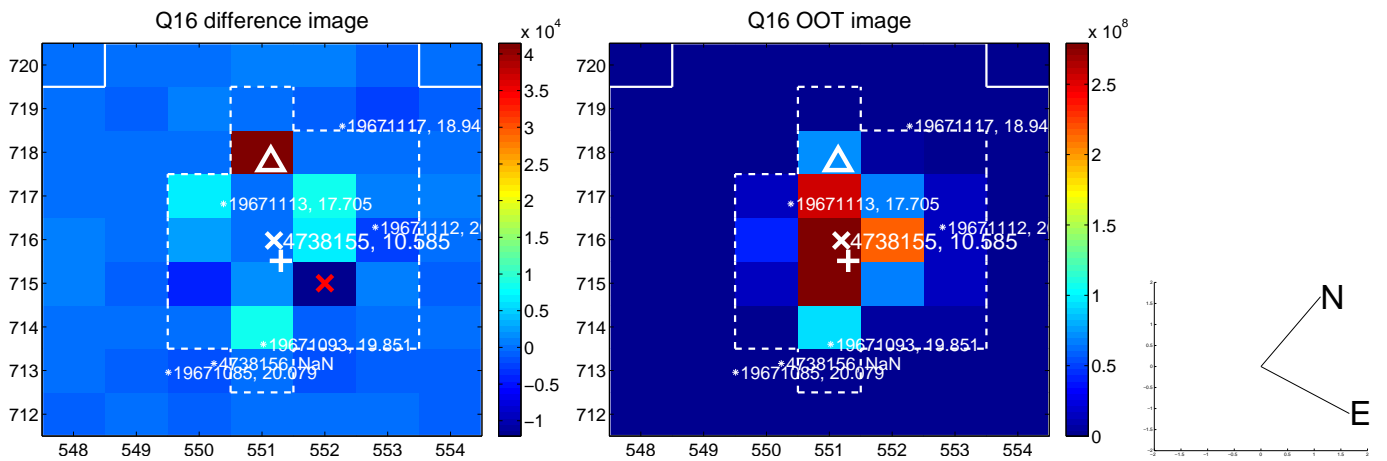
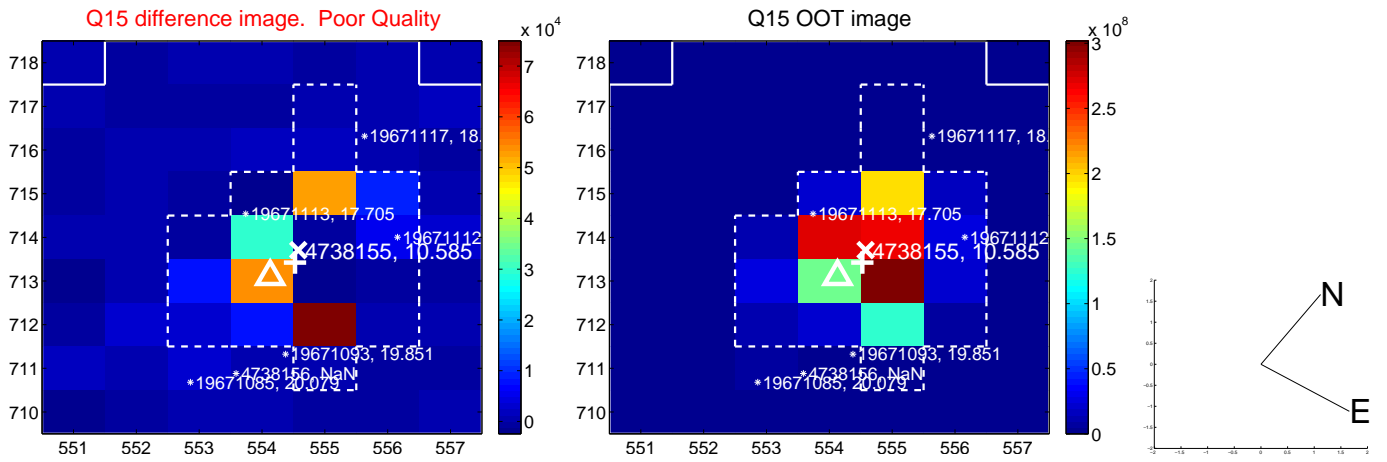
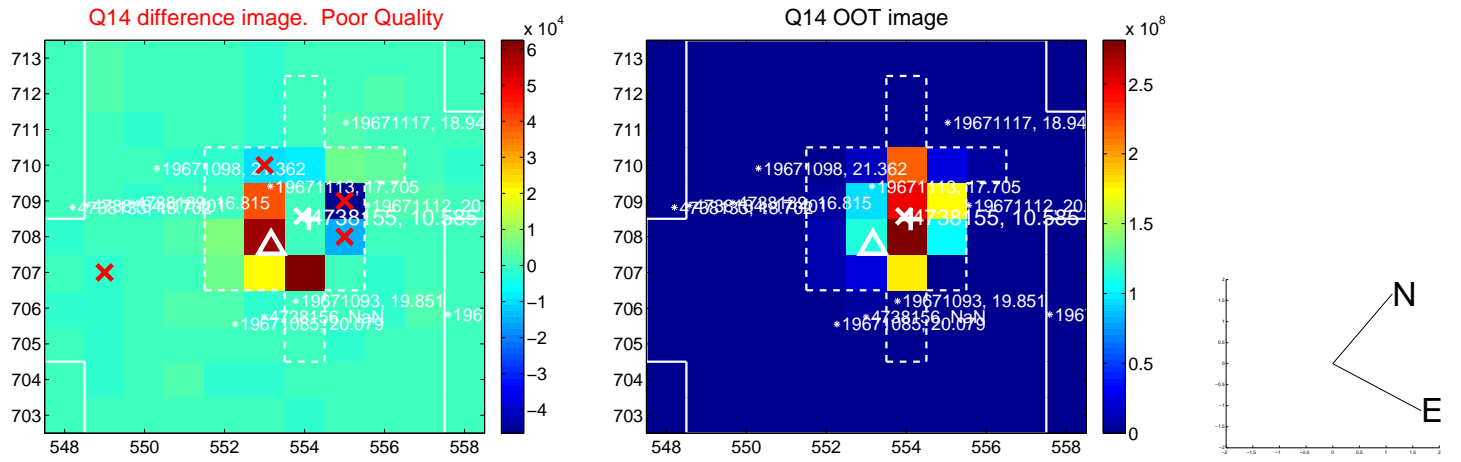
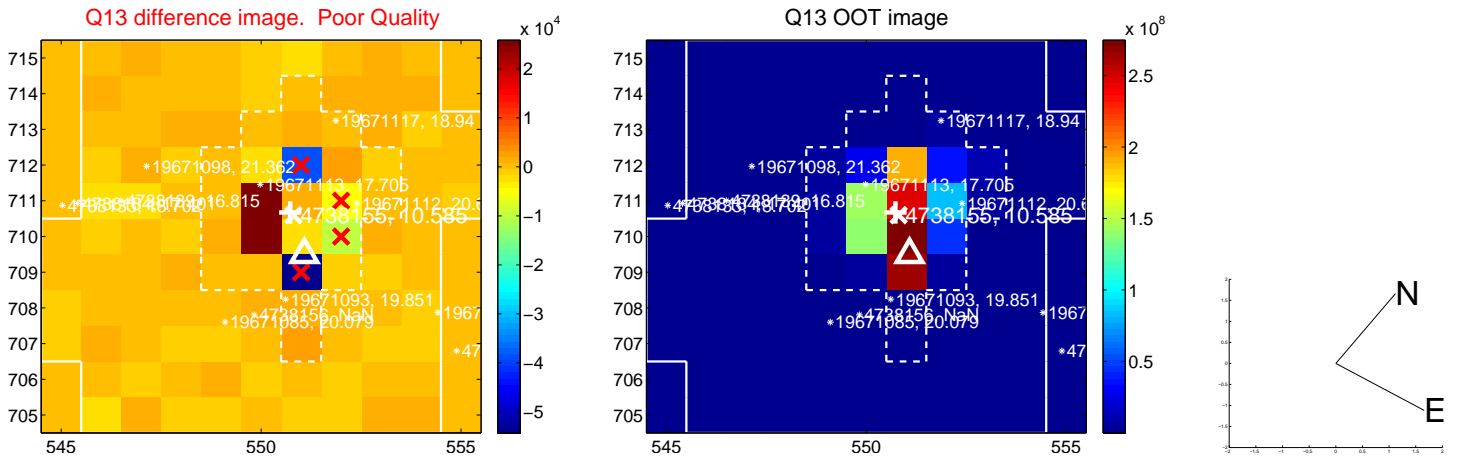
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



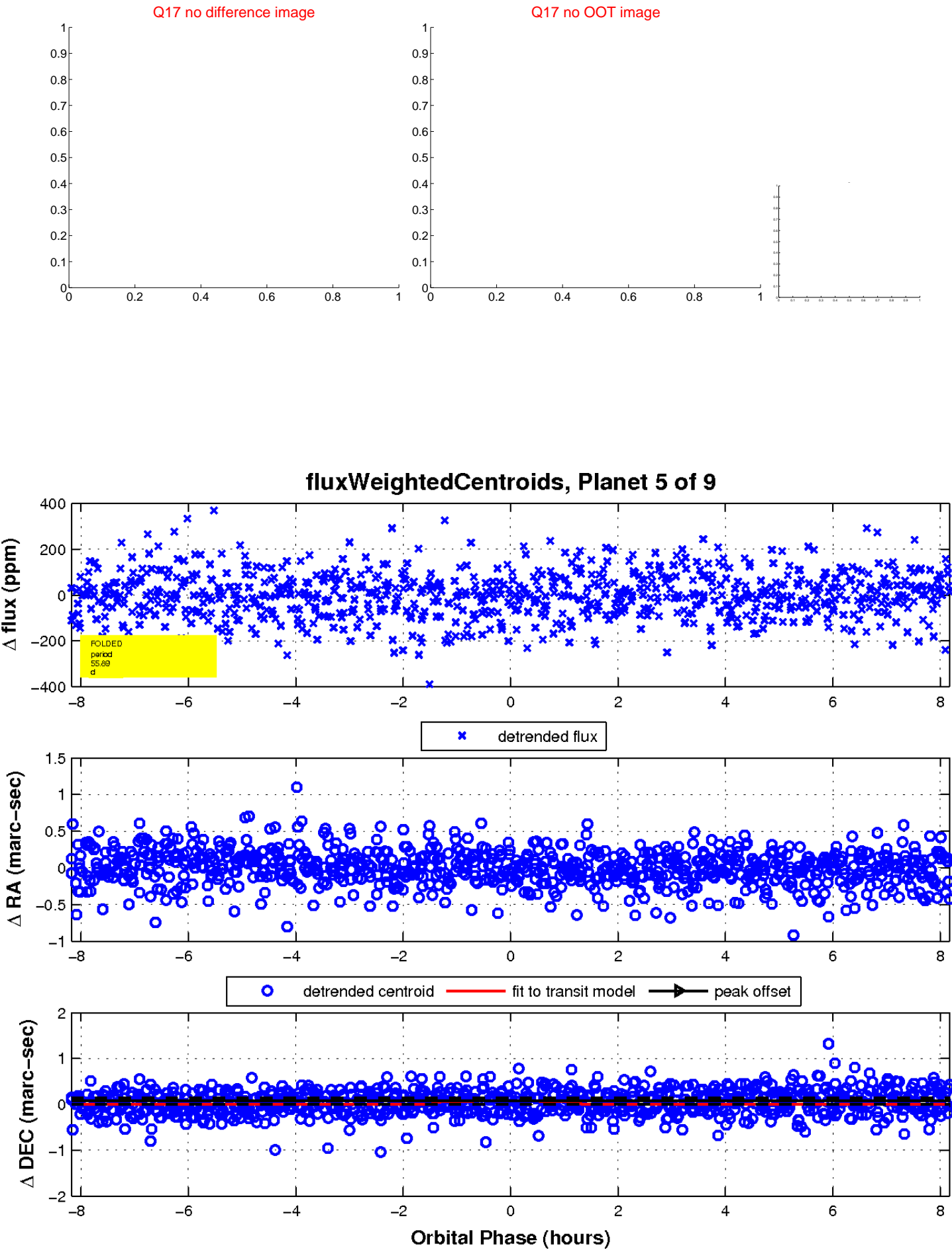
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

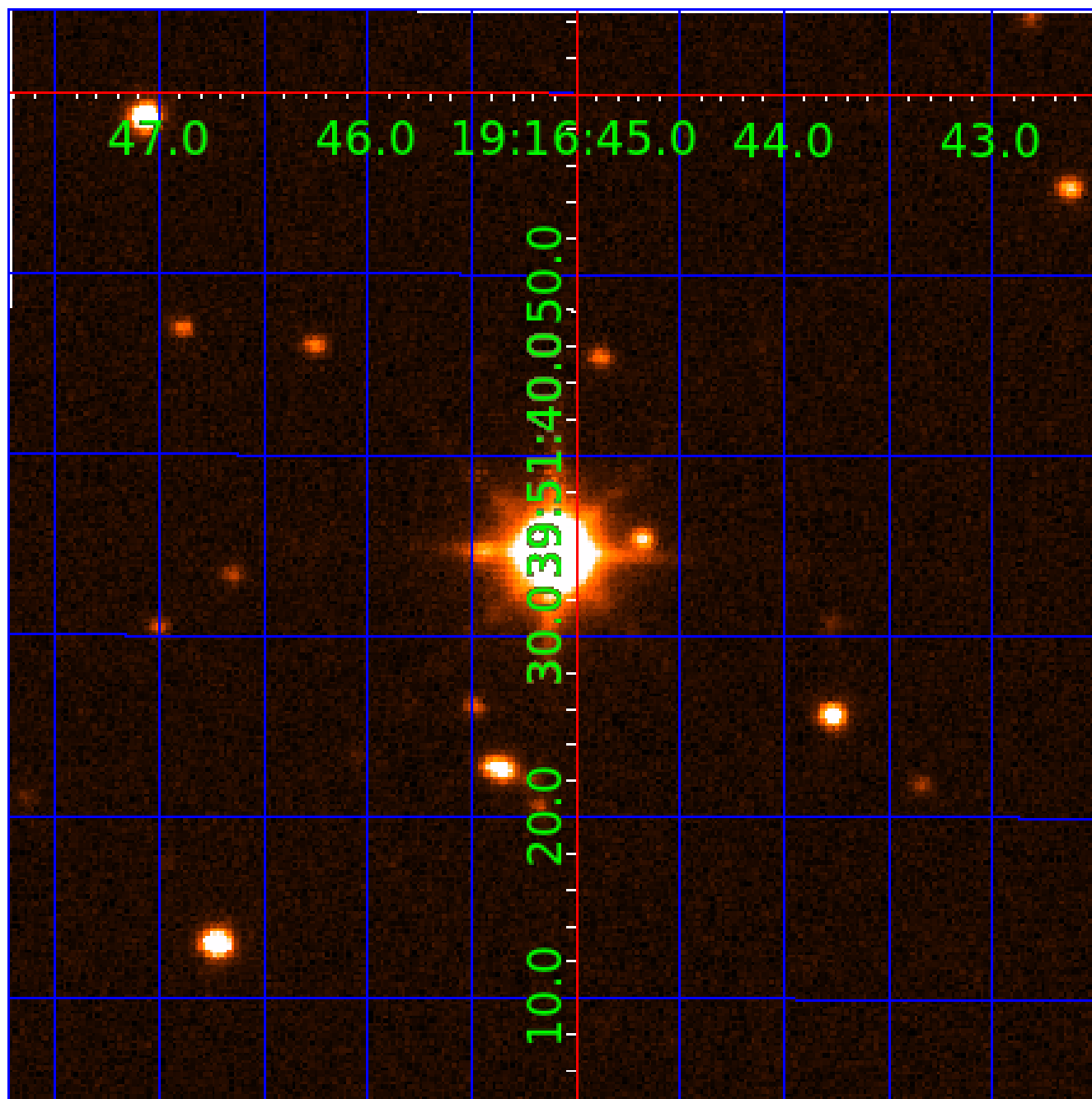


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004738155

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})
004738155-01	OBS	No	0.836071	132.167221	2.4	5.840	7.6	2.2	1.59	6782	0.25	15697.92
004738155-02	OBS	No	19.947640	139.503616	109.1	2.480	12.1	10.3	1.59	6782	1.96	228.55
004738155-03	OBS	No	24.260767	131.541777	104.2	4.936	9.6	10.7	1.59	6782	1.85	176.05
004738155-04	OBS	No	64.589909	187.744216	121.2	4.046	11.3	9.2	1.59	6782	2.04	47.71
004738155-05	OBS	No	55.890541	158.379329	177.1	2.724	10.2	9.6	1.59	6782	2.14	57.86
004738155-06	OBS	No	49.987307	142.769267	101.4	6.306	10.9	7.6	1.59	6782	1.82	67.15
004738155-07	OBS	No	29.072639	145.715139	123.1	3.041	8.6	10.8	1.59	6782	1.95	138.31
004738155-08	OBS	No	30.533304	132.268869	129.5	1.889	9.2	8.1	1.59	6782	2.10	129.56
004738155-09	OBS	No	97.804825	192.042078	119.8	2.769	9.5	10.7	1.59	6782	2.02	27.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004738155-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004738155-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST
004738155-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

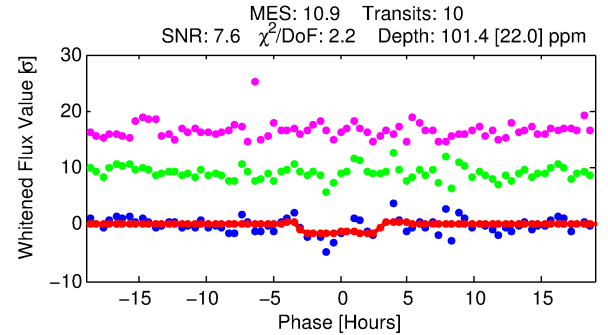
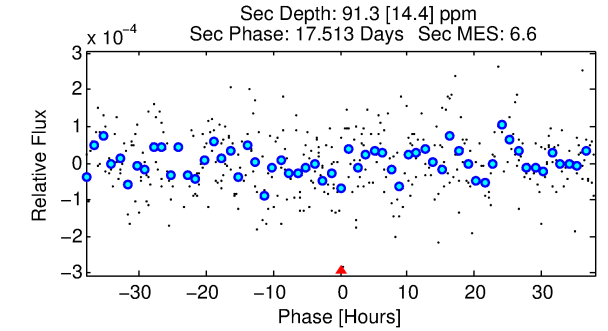
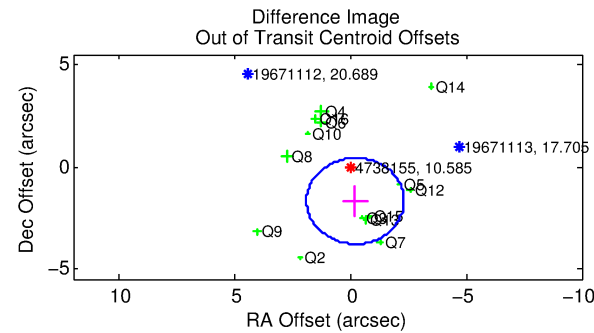
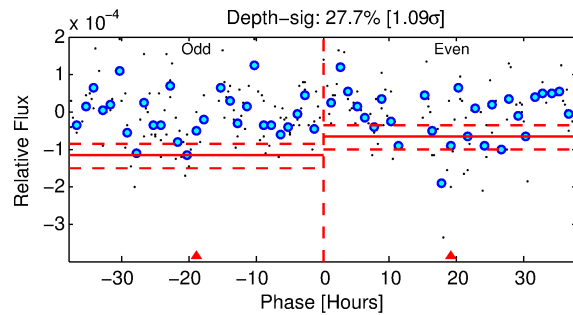
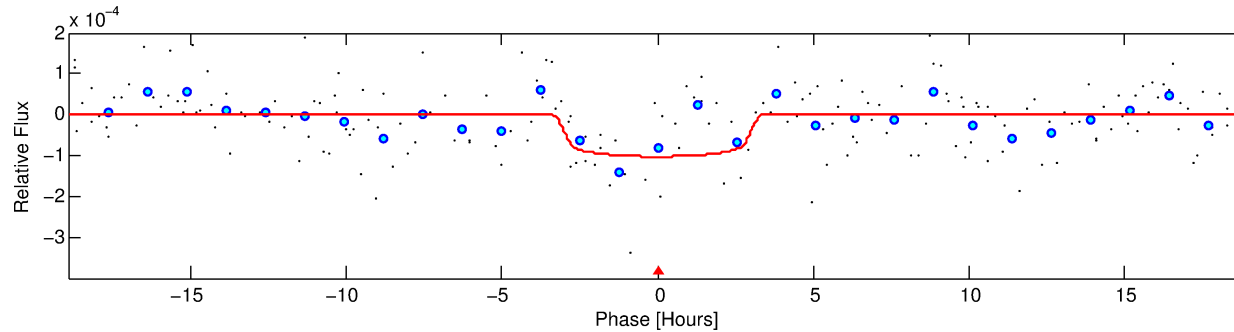
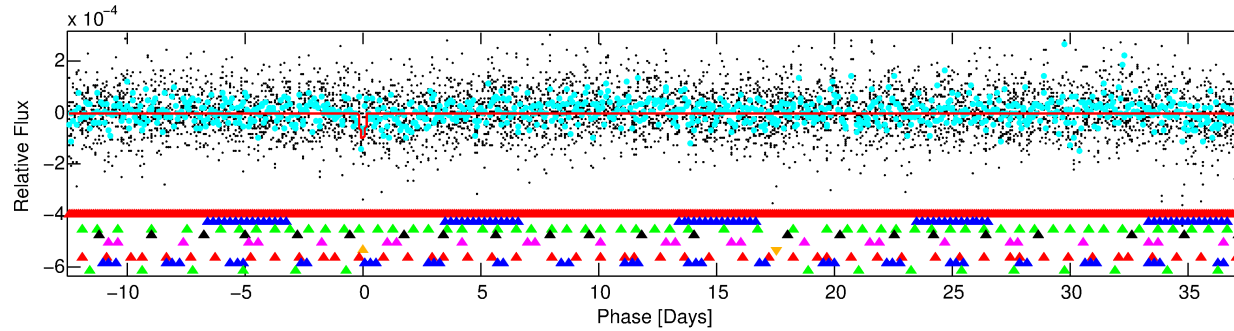
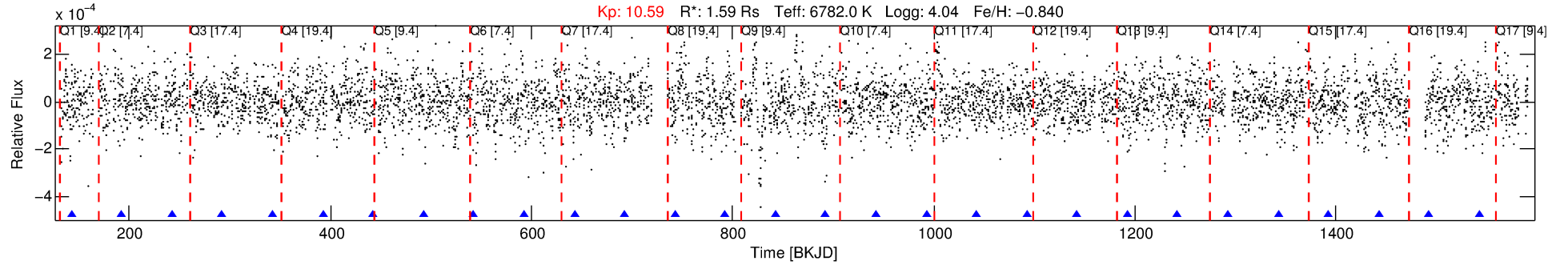
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004738155-06

No Significant Match Found

DV One-Page Summary

KIC: 4738155 Candidate: 6 of 9 Period: 49.987 d



DV Fit Results:

Period = 49.98731 [0.00095] d
Epoch = 142.7693 [0.0172] BKJD
Rp/R* = 0.0105 [0.0082]
a/R* = 31.80 [148.59]
b = 0.86 [1.38]
Seff = 67.15 [40.79]
Teq = 730 [111] K
Rp = 1.82 [1.56] Re
a = 0.2680 [0.0961] AU
Ag = 1084.46 [1813.79] [0.60 σ]
Teffp = 6476 [2548] K [2.25 σ]

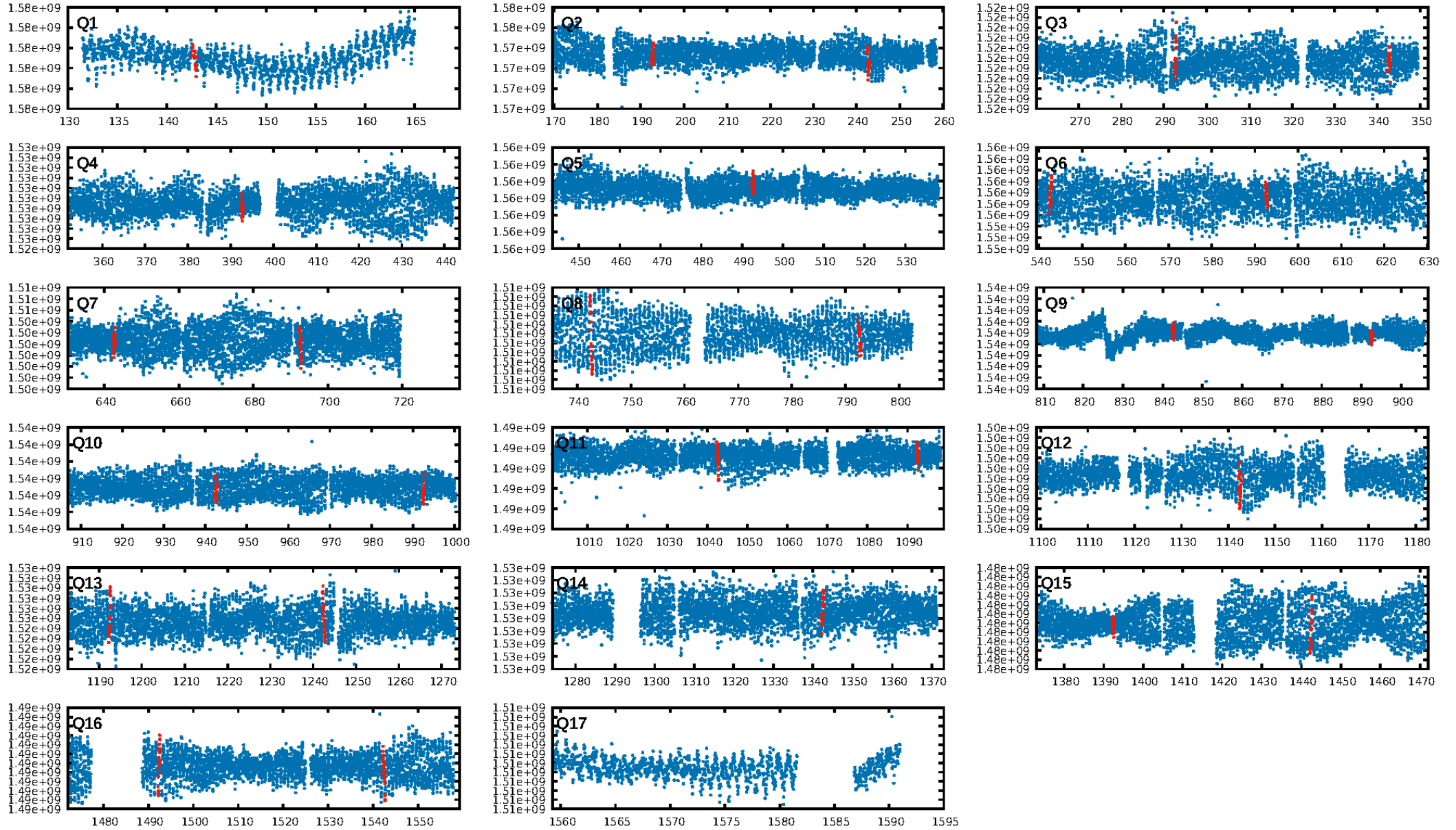
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [70.93 σ]
LongPeriod-sig: 100.0% [20.63 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.45e-10
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: 1.276
Centroid-sig: N/A
Centroid-so: 0.555 arcsec [1.30 σ]
OotOffset-rm: 1.696 arcsec [2.42 σ]
KicOffset-rm: 2.241 arcsec [2.94 σ]
OotOffset-st: 4/3/4/3 [14]
KicOffset-st: 4/3/4/3 [14]
DiffImageQuality-fgm: 0.29 [4/14]
DiffImageOverlap-fno: 0.00 [0/16]

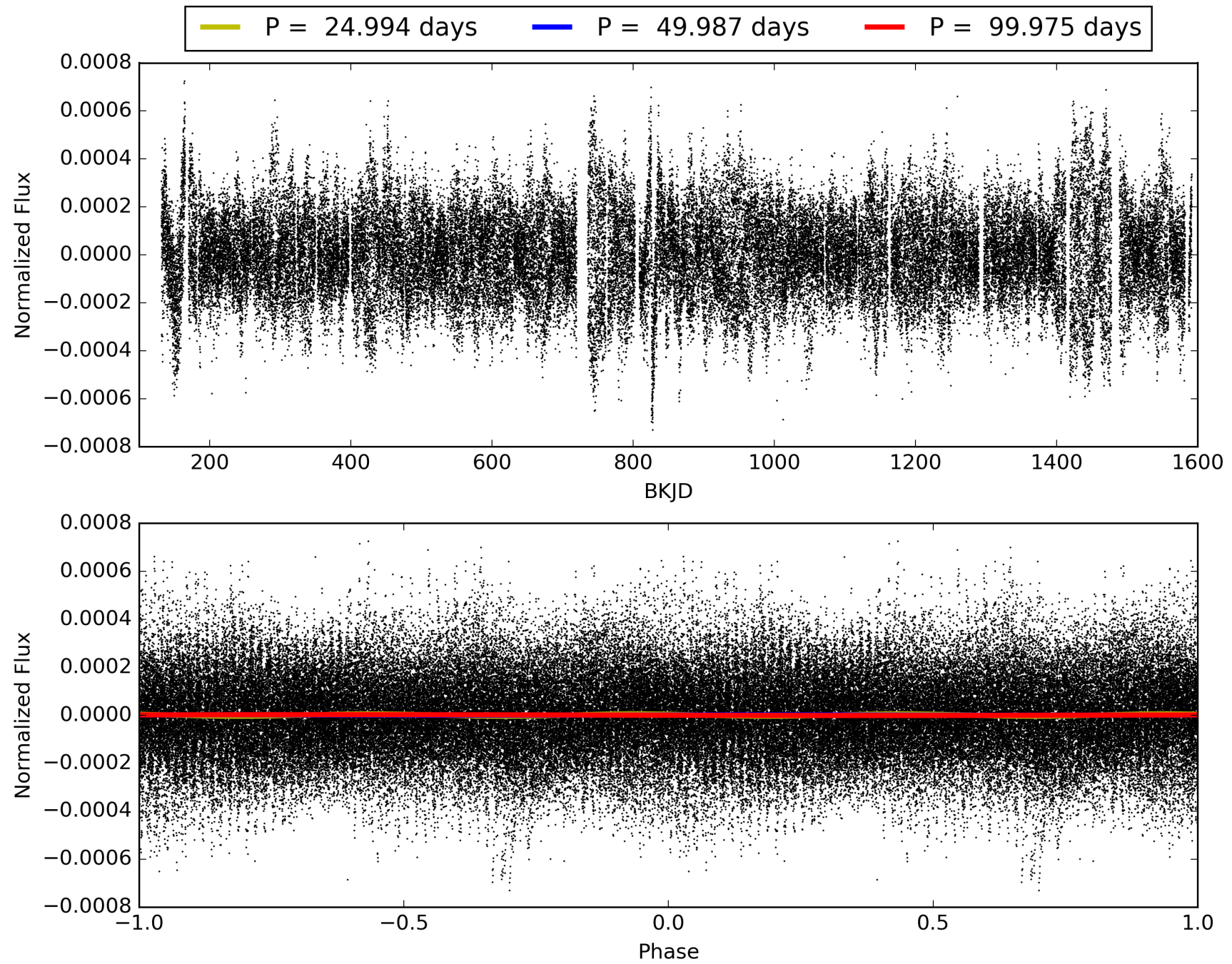
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:31 Z

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

TCE 004738155-06, PDC Light Curves

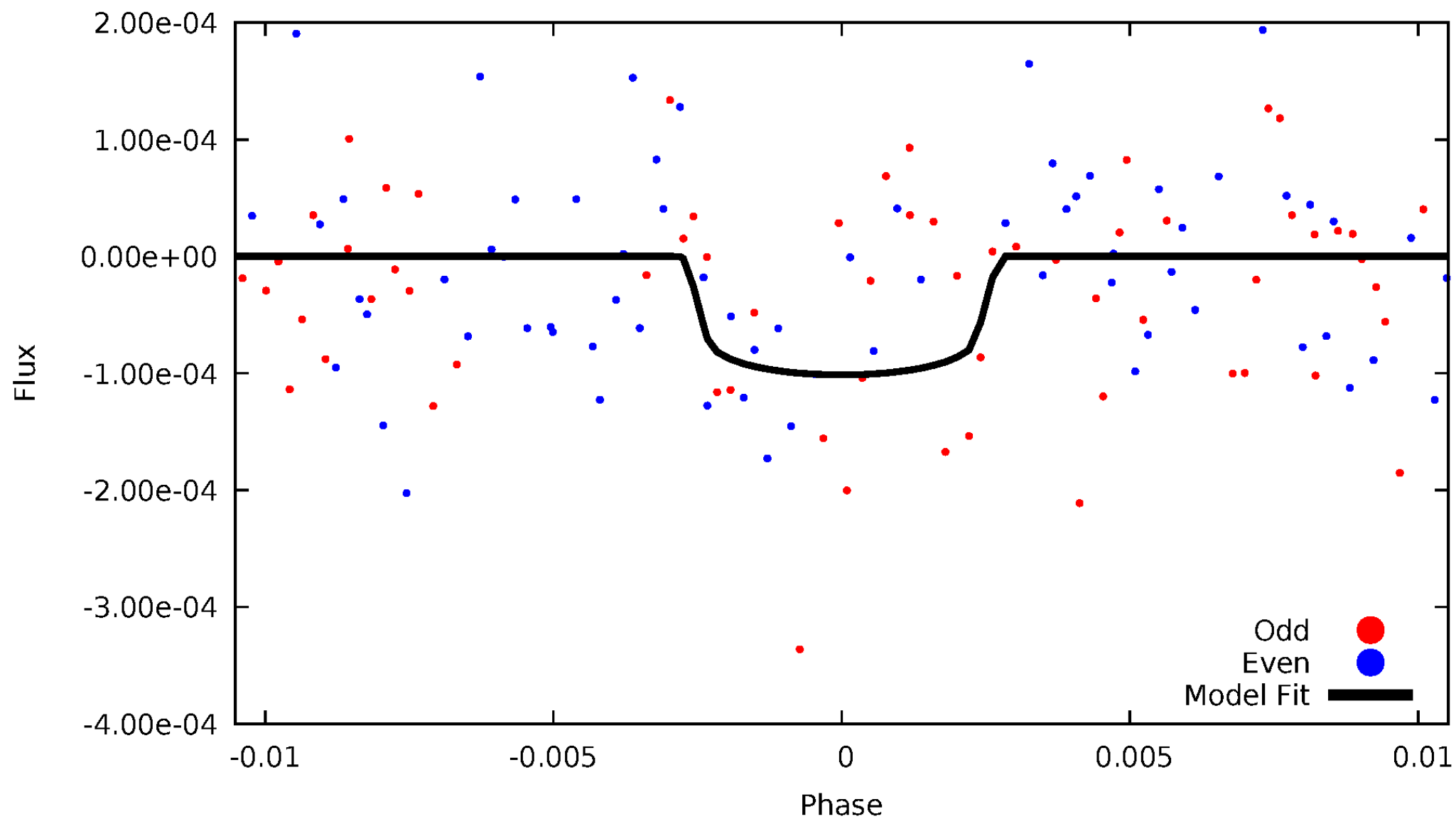


TCE 004738155-06



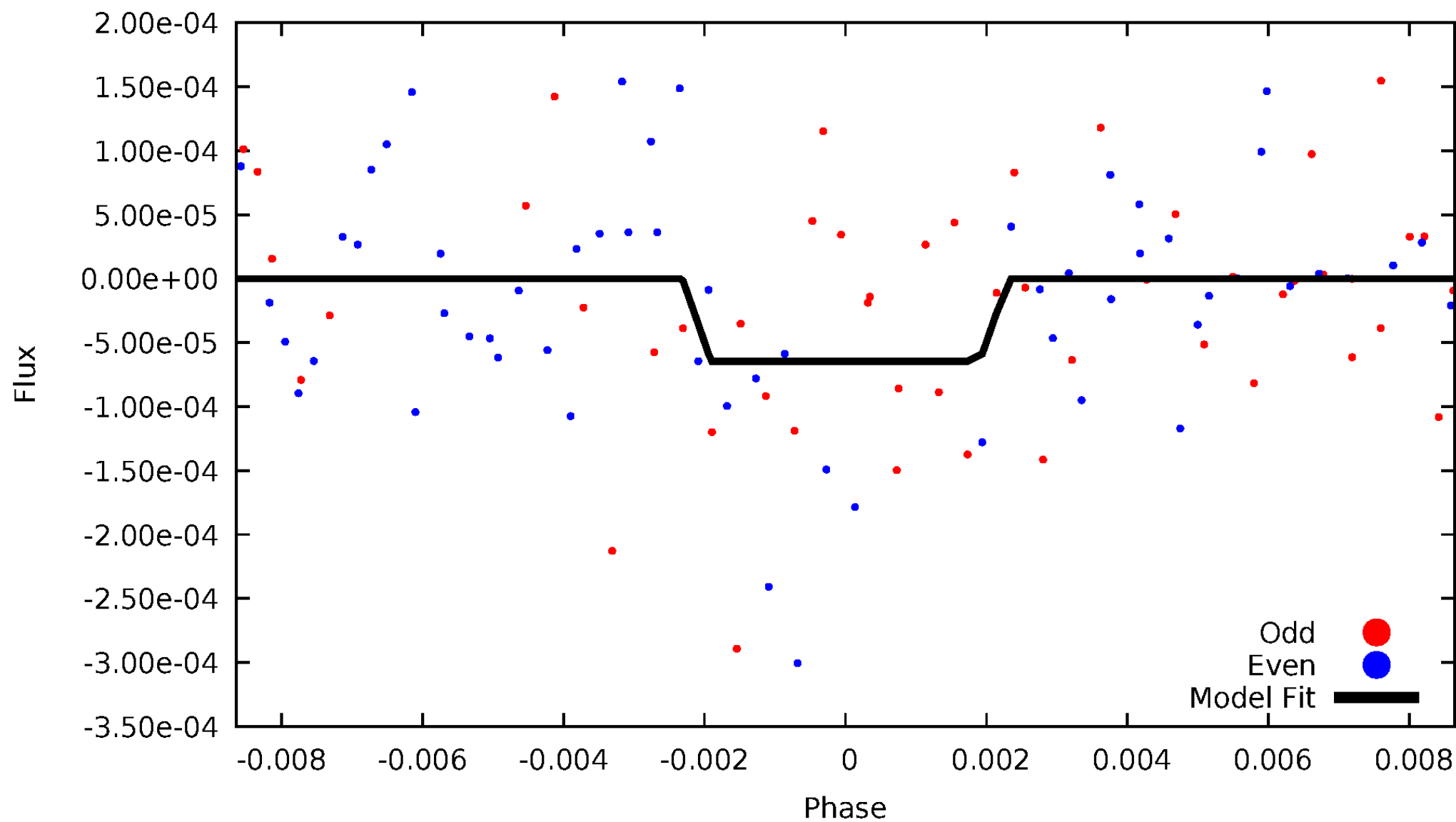
DV Odd/Even

TCE 004738155-06



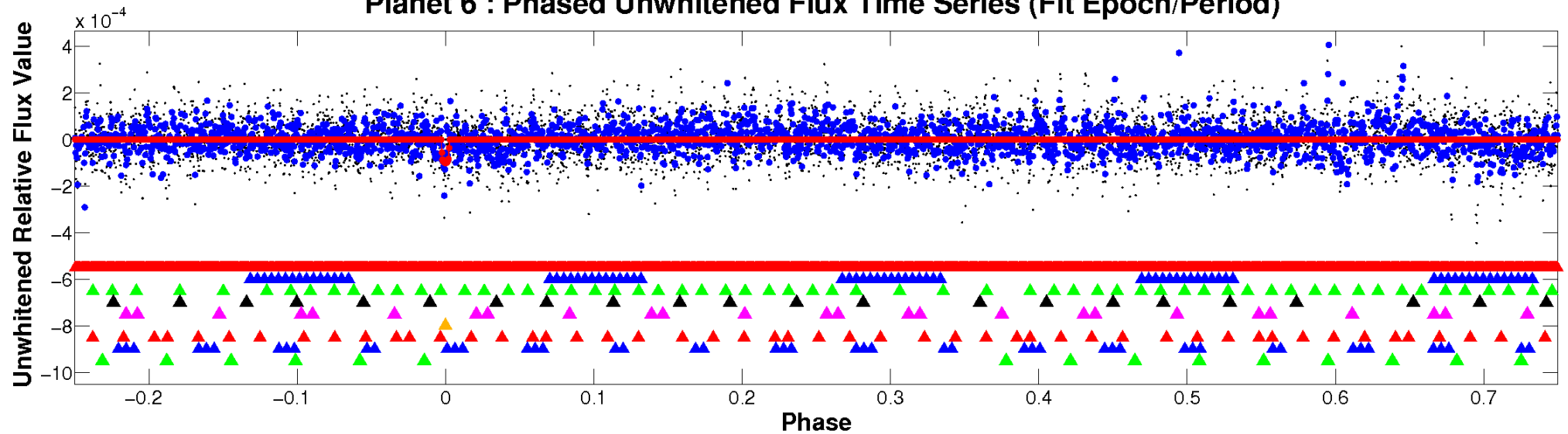
ALT Odd/Even

TCE 004738155-06

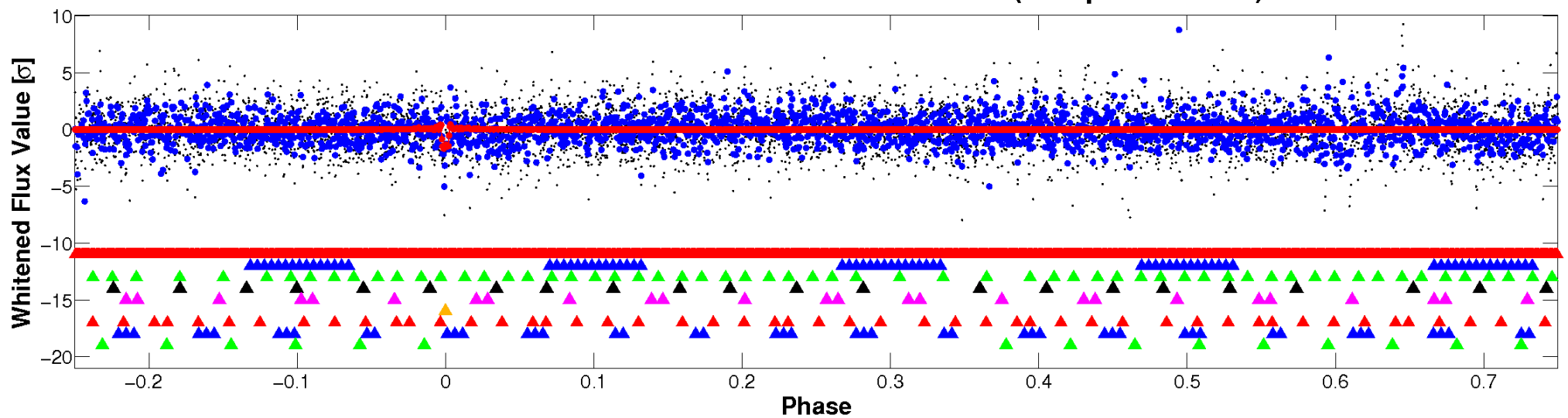


Non-Whitened Vs. Whitened Light Curve

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

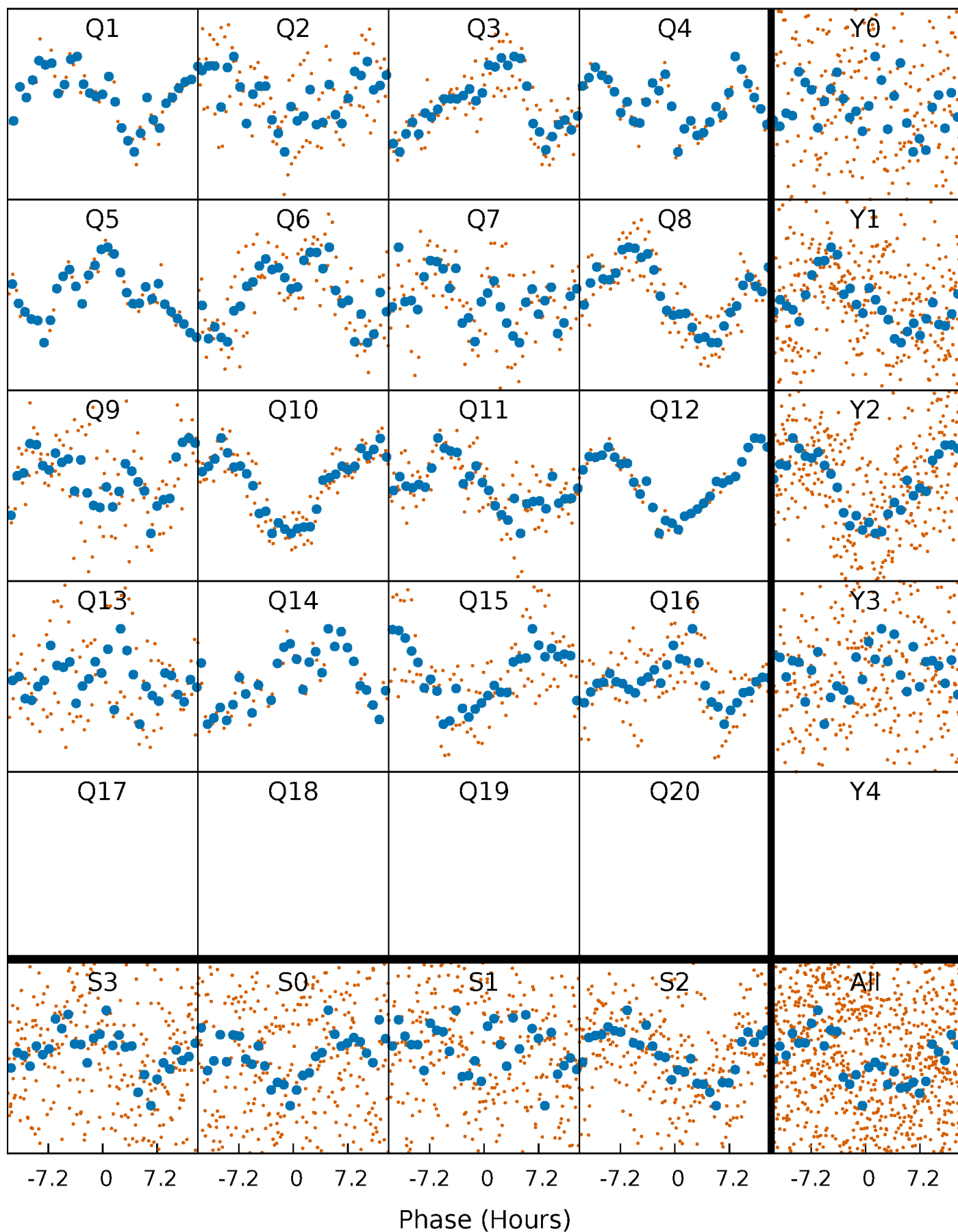


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



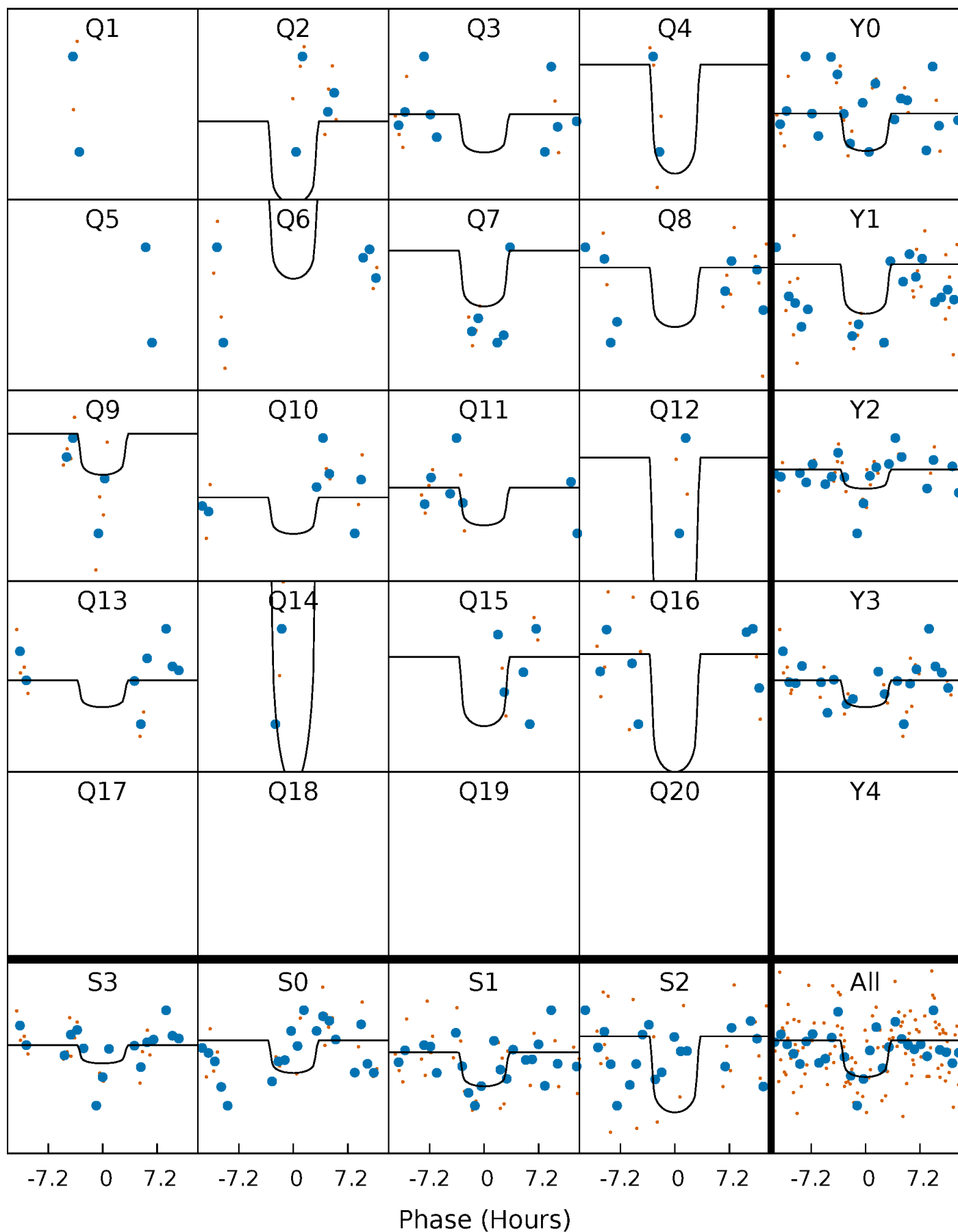
PDC Quarter-Phased Transit Curves

TCE 004738155-06 P= 49.987307 Days $T_0=142.769267$ (BKJD)



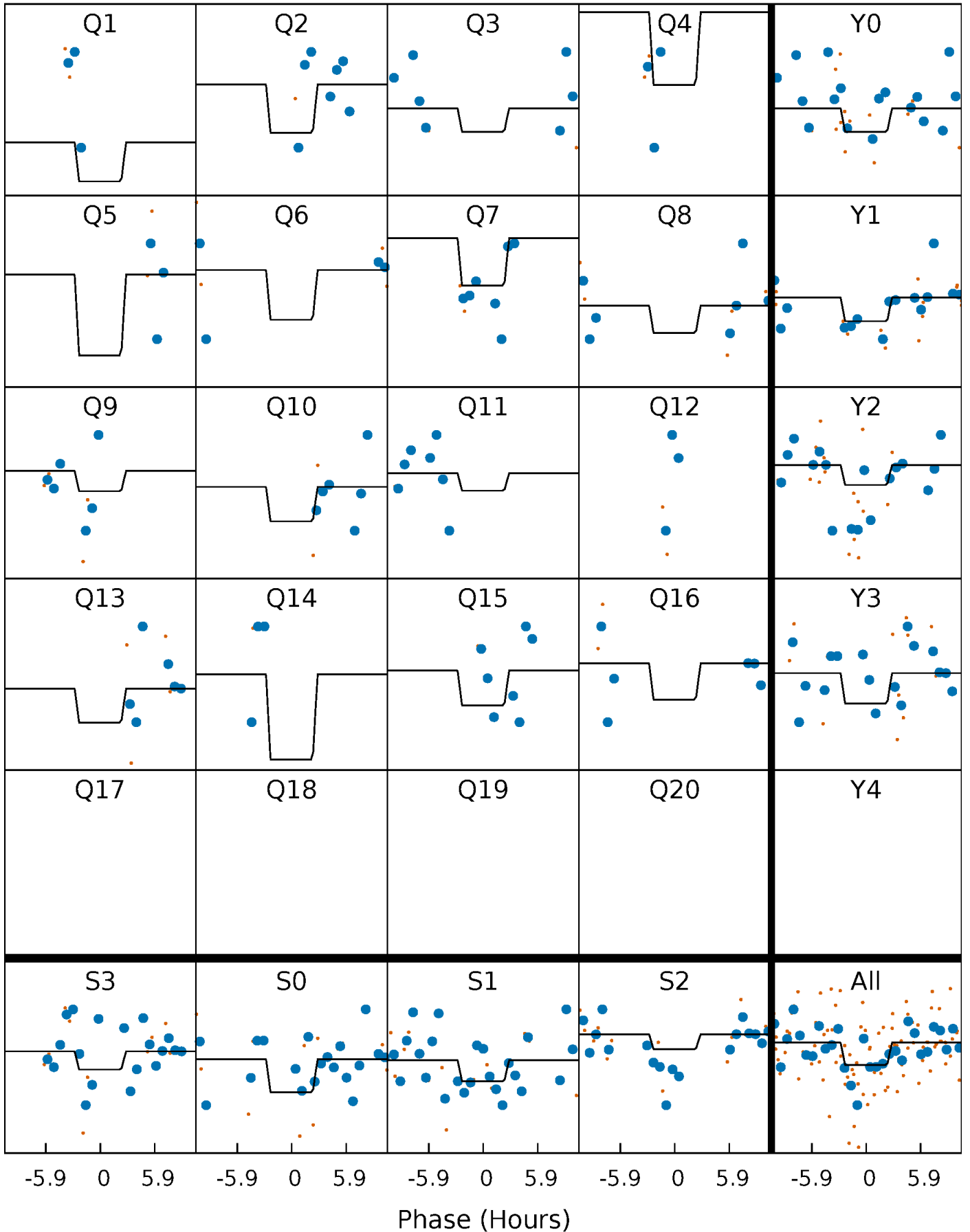
DV Quarter-Phased Transit Curves

TCE 004738155-06 P= 49.987307 Days $T_0=142.769267$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

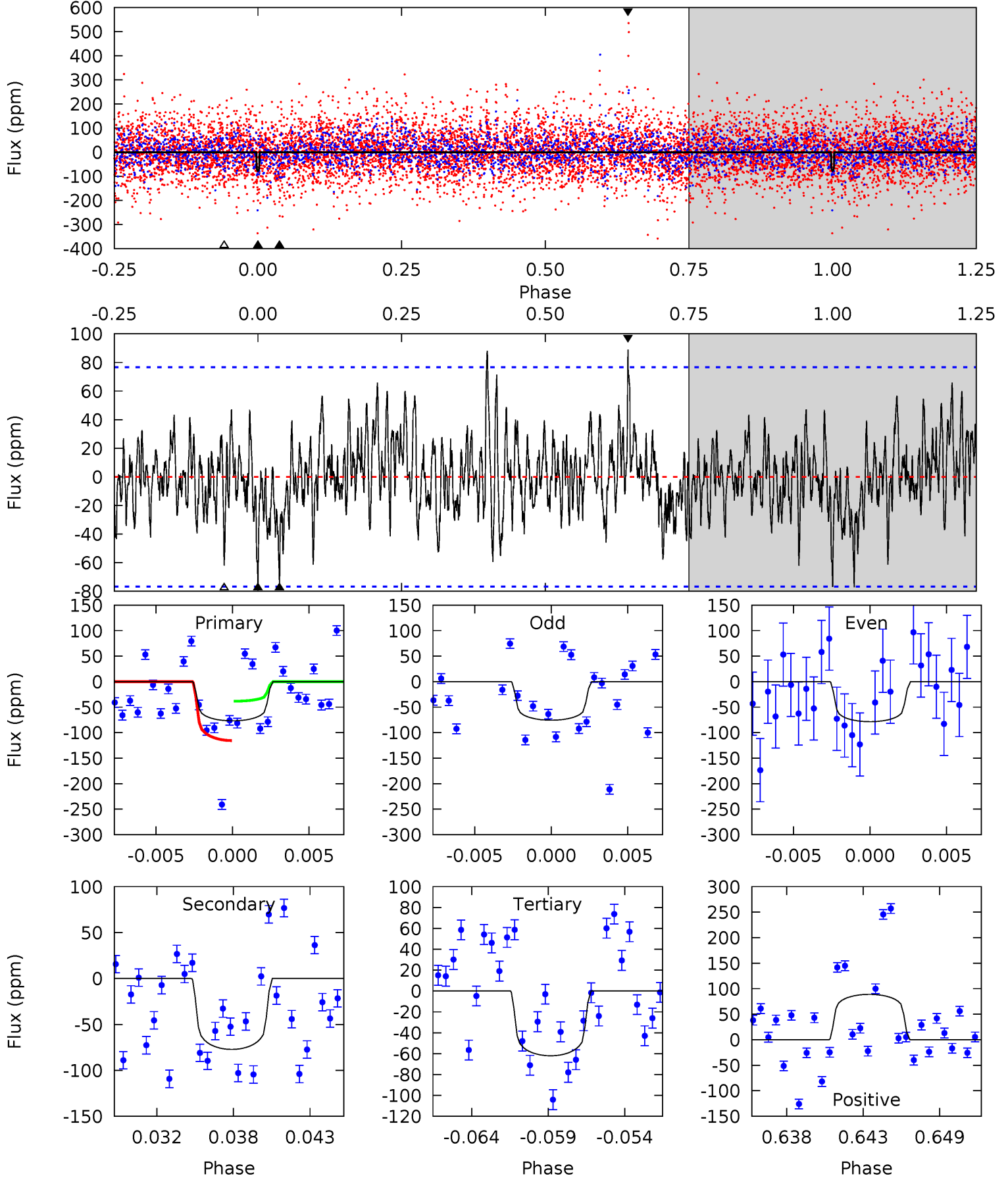
TCE 004738155-06 P= 49.991523 Days $T_0=142.746575$ (BKJD)



DV Model-Shift Uniqueness Test

004738155-06, P = 49.987307 Days, E = 92.781960 Days

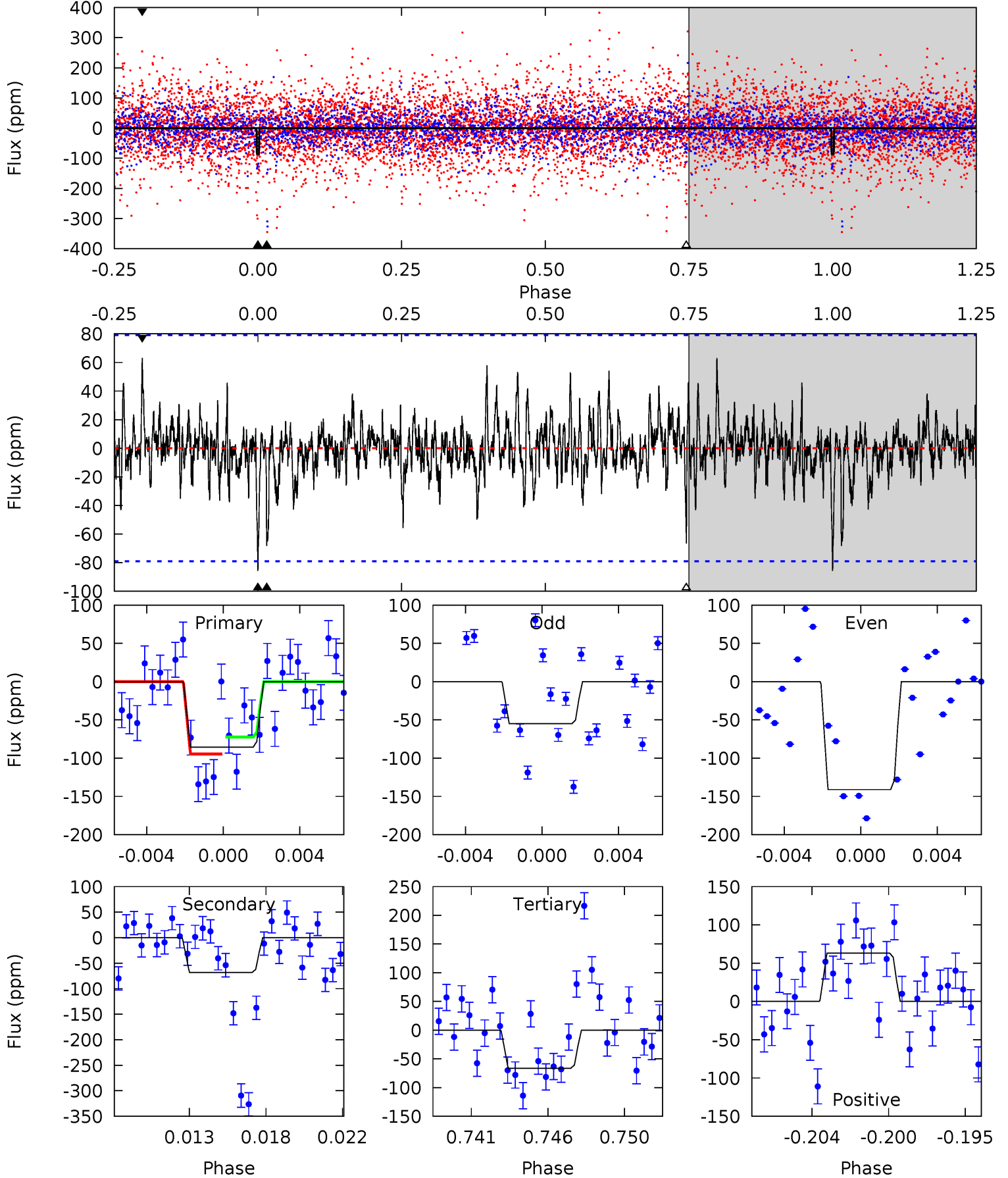
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.15	5.17	4.16	5.96	5.14	2.78	1.53	0.99	-0.81	1.02	-0.79	0.09	1.03	0.54	2.57



Alt Model-Shift Uniqueness Test

004738155-06, P = 49.991523 Days, E = 92.755052 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.62	4.47	4.35	4.14	5.18	2.85	1.03	1.27	1.48	0.11	0.32	2.56	1.06	0.42	0.73



Stellar Parameters For KIC 004738155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6782^{+215}_{-263}	$4.044^{+0.350}_{-0.150}$	$-0.840^{+0.300}_{-0.300}$	$1.595^{+0.379}_{-0.568}$	$1.026^{+0.127}_{-0.115}$	$0.356^{+0.883}_{-0.148}$
	+3%/-4%	+9%/-4%	+36%/-36%	+24%/-36%	+12%/-11%	+248%/-42%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004738155-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-77 ± 15	$1.88^{+1.28}_{-1.06}$	1006^{+80}_{-97}	6000^{+3871}_{-1297}	882^{+3854}_{-585}
Alt.	-68 ± 15	$1.58^{+1.36}_{-0.99}$	1005^{+81}_{-100}	6151^{+5702}_{-1360}	1062^{+6525}_{-756}

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

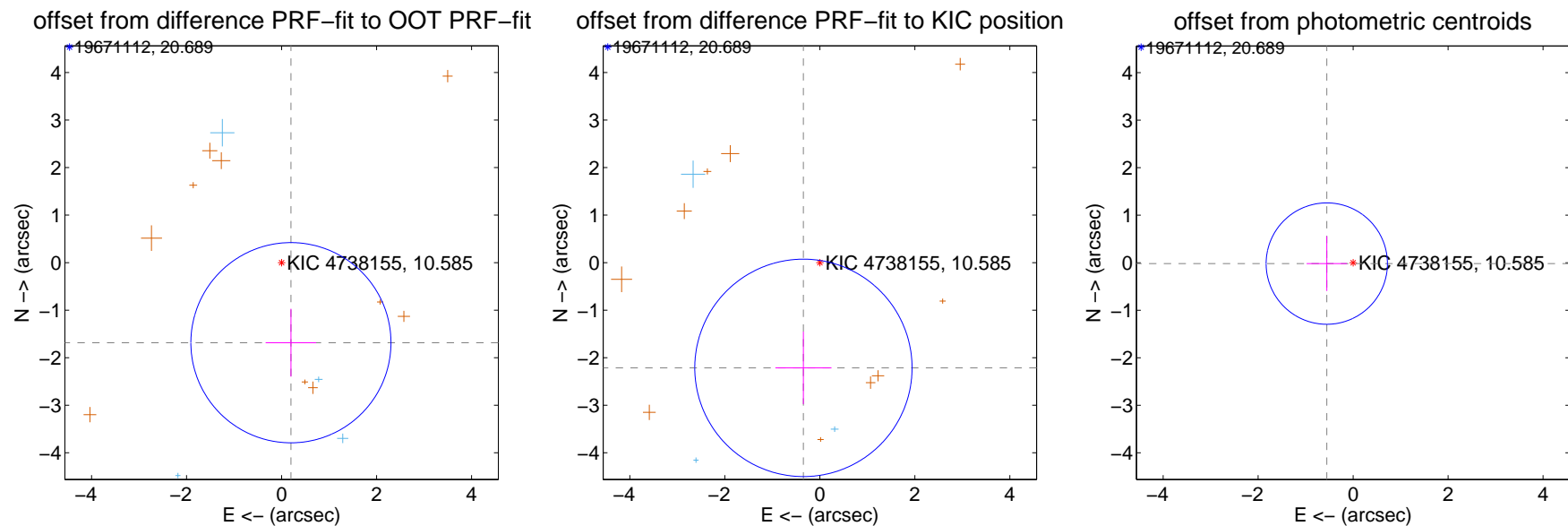
DV Centroid Data

Supplemental centroid analysis for 004738155-06. **Kepler magnitude: 10.59.** Transit SNR 7.59

There are 4 quarters with good PRF difference image offsets

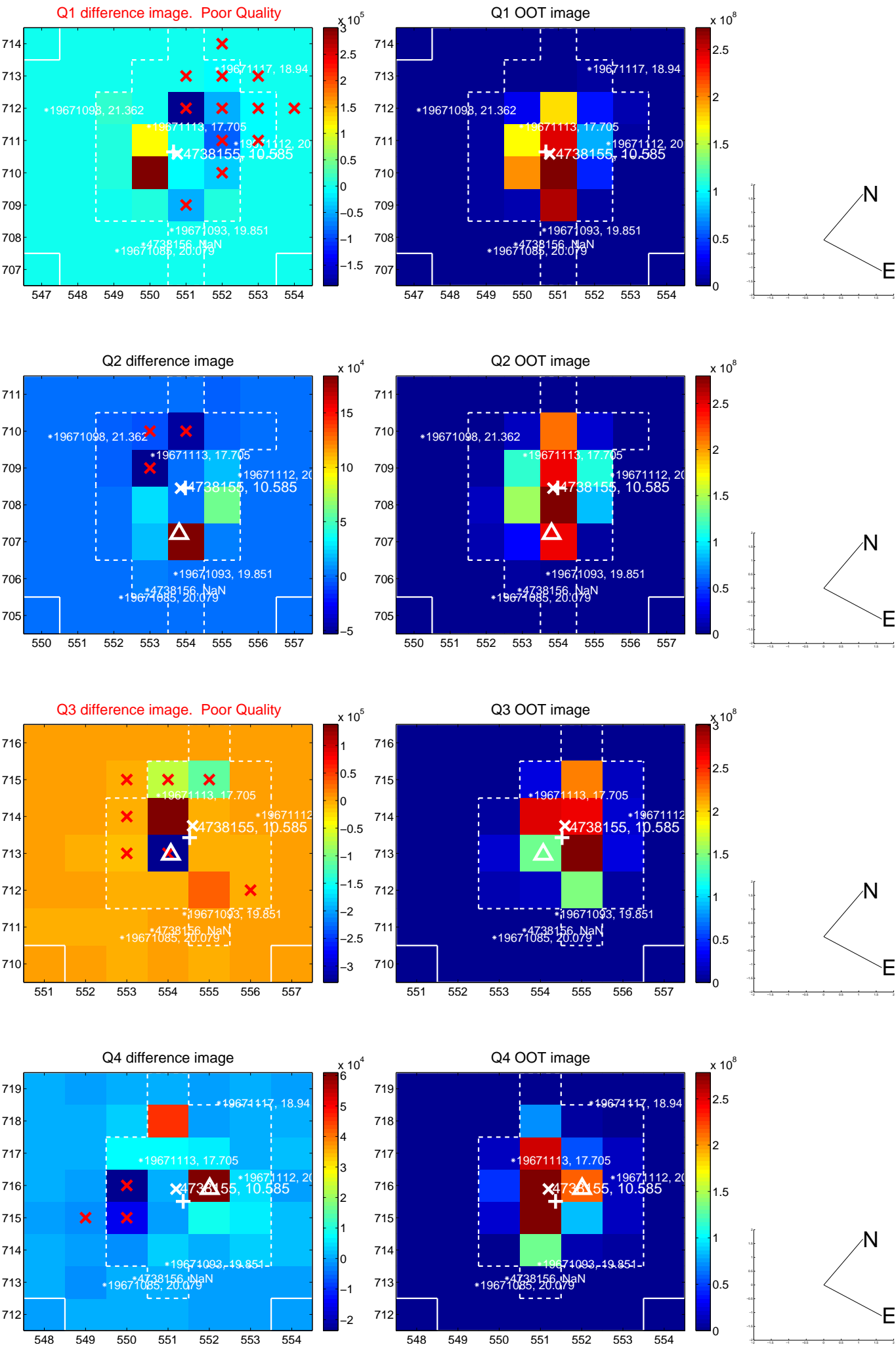
The direct PRF centroid is offset from the target star catalog position by about 1.85 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.696 ± 0.702	2.42	-0.197 ± 0.533	-1.685 ± 0.714
PRF-fit source offset from KIC position	2.241 ± 0.762	2.94	0.346 ± 0.591	-2.214 ± 0.762
photometric centroid source offset	0.55 ± 0.43	1.30	0.55 ± 0.43	-0.02 ± 0.58

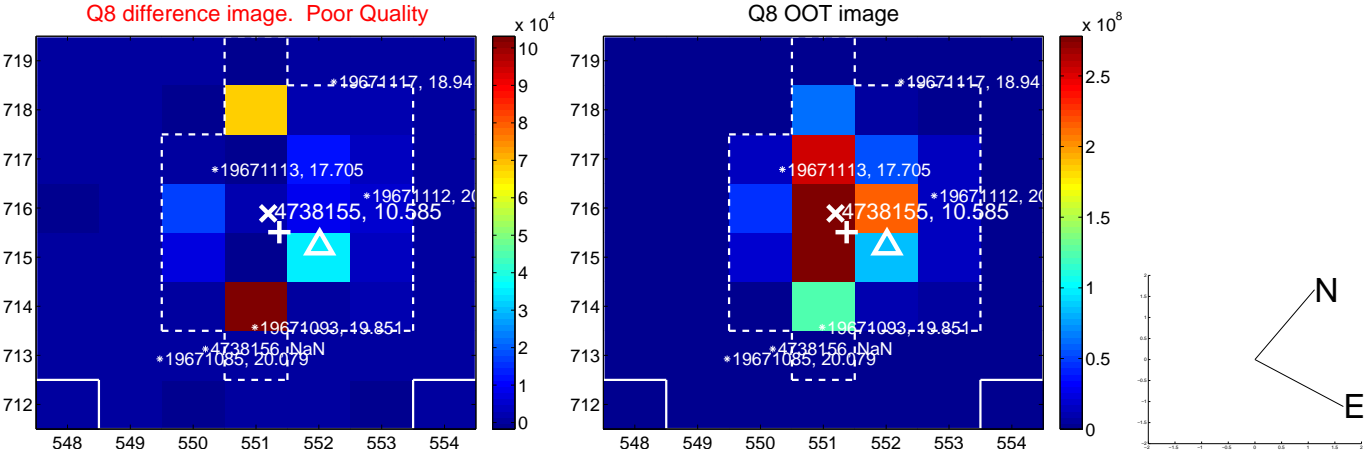
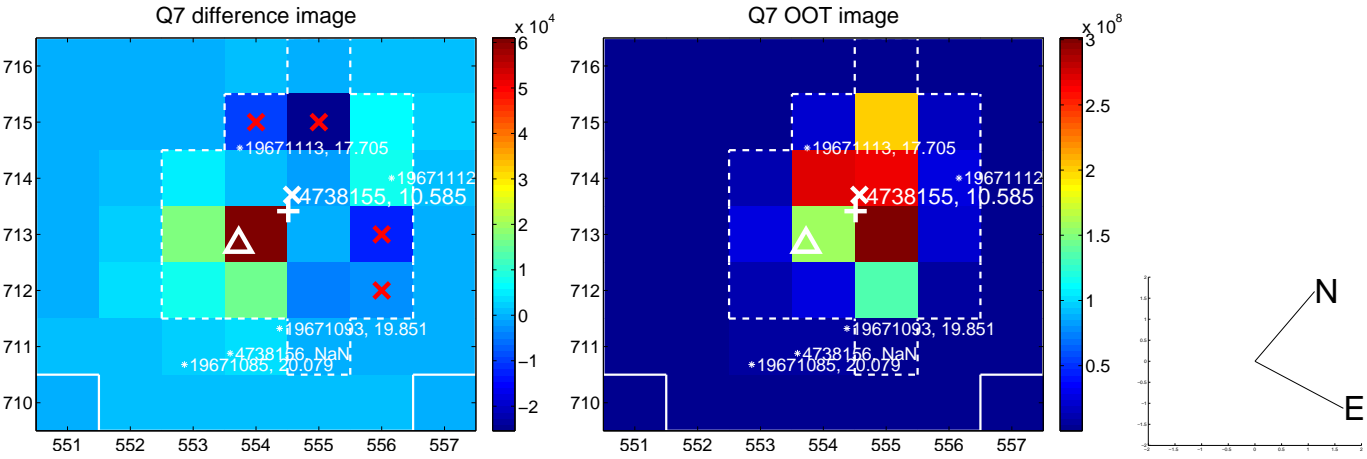
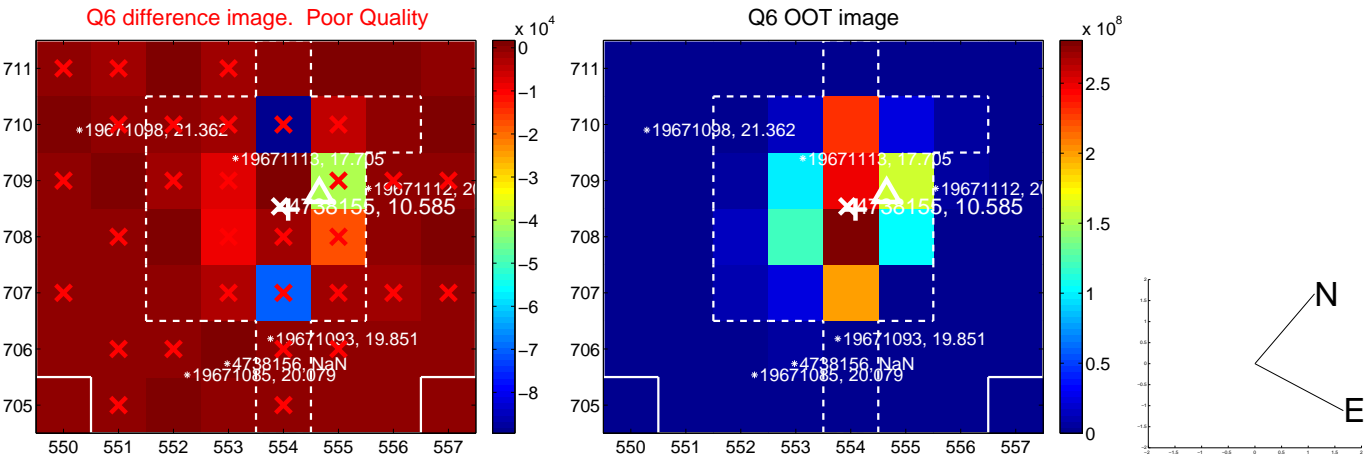
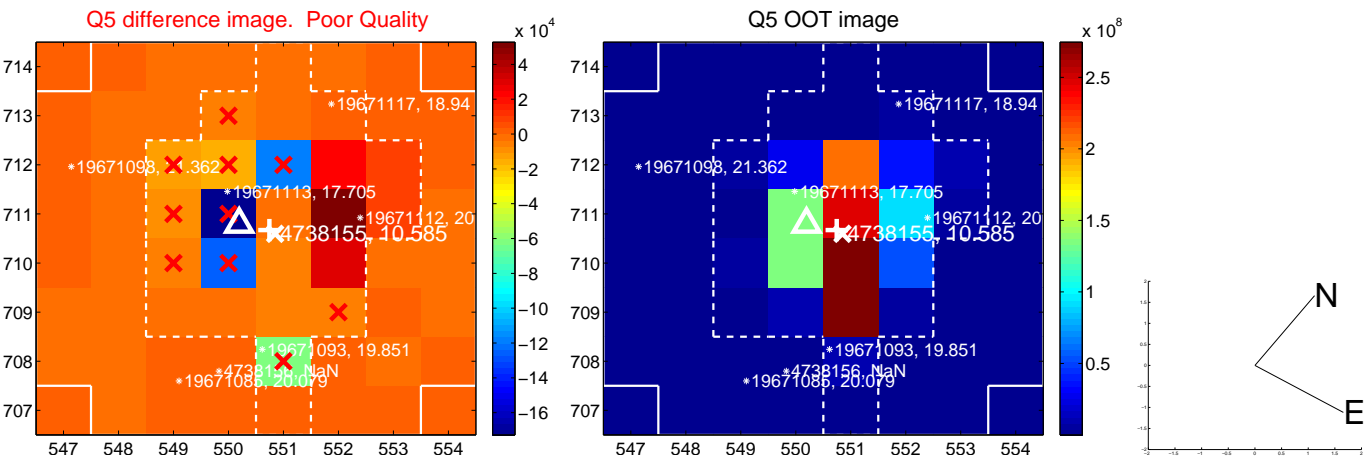


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

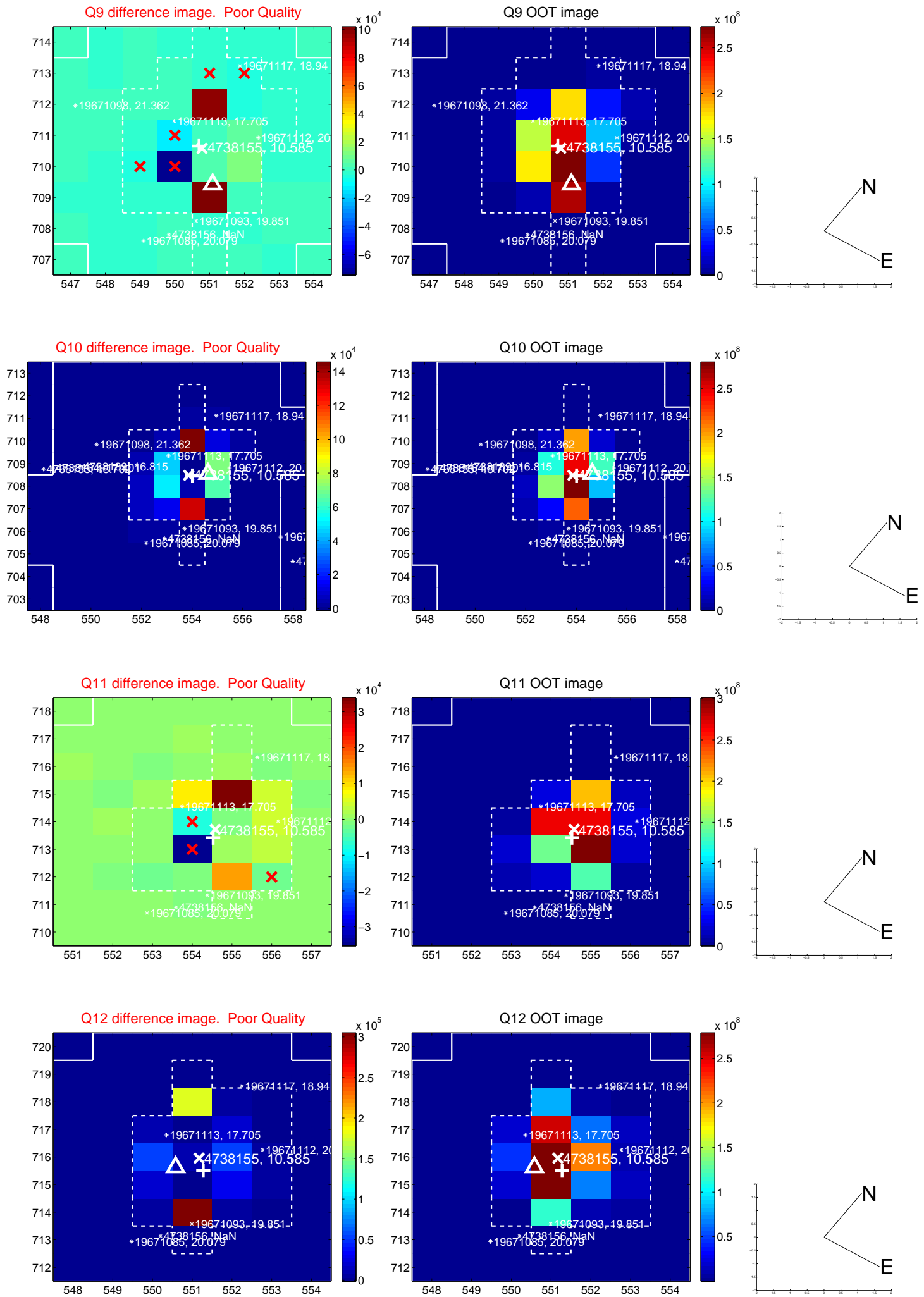
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



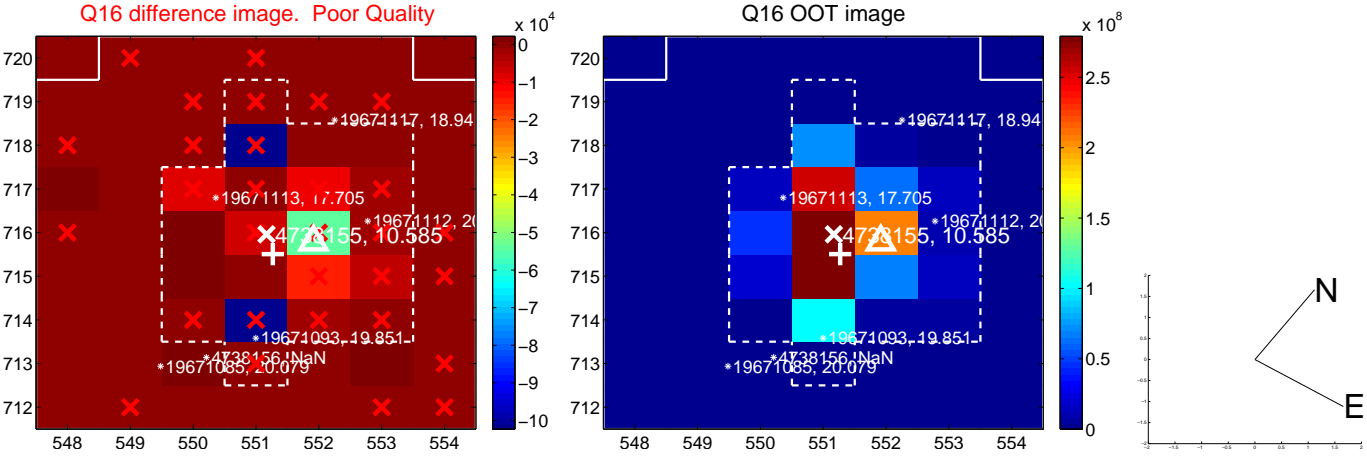
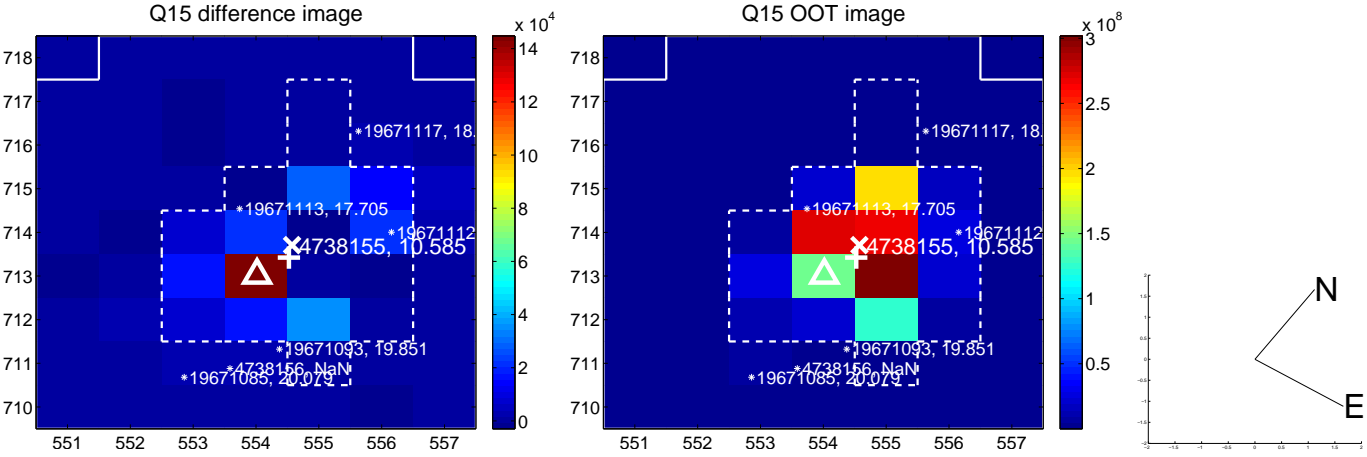
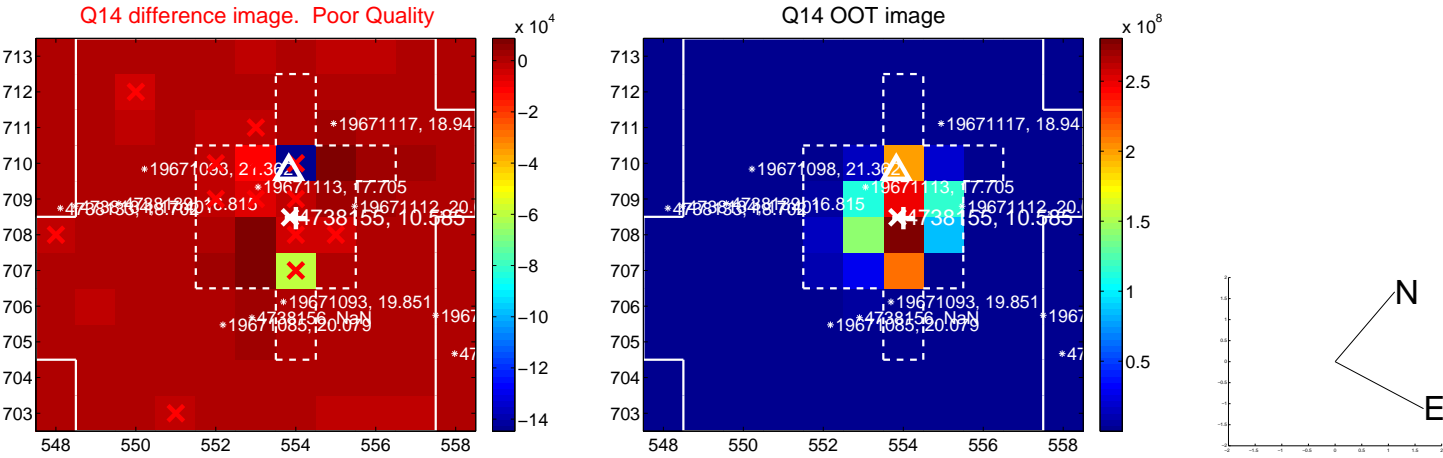
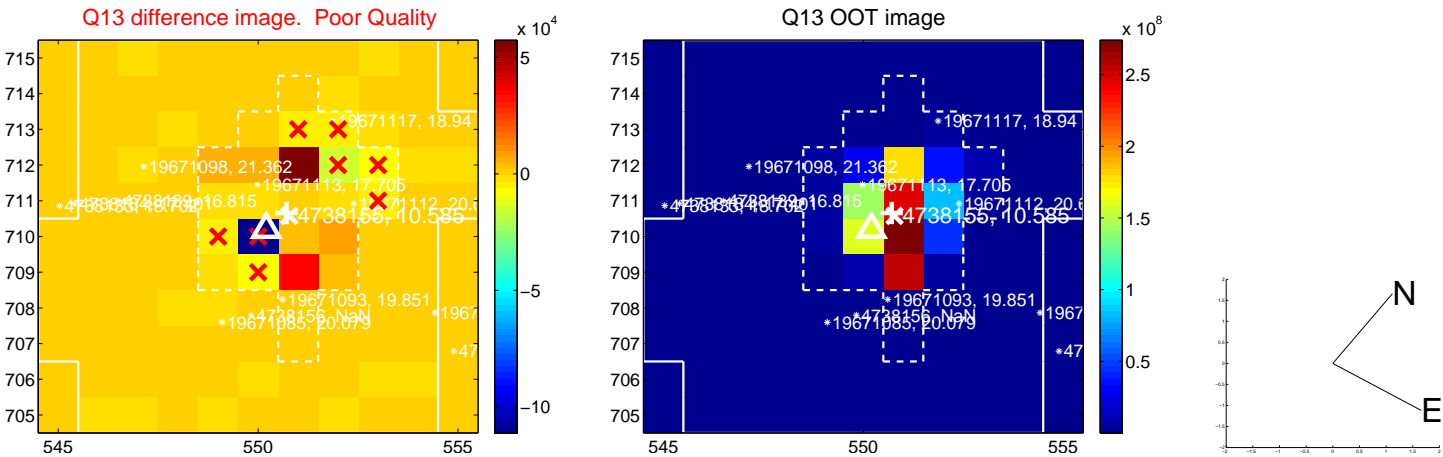
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



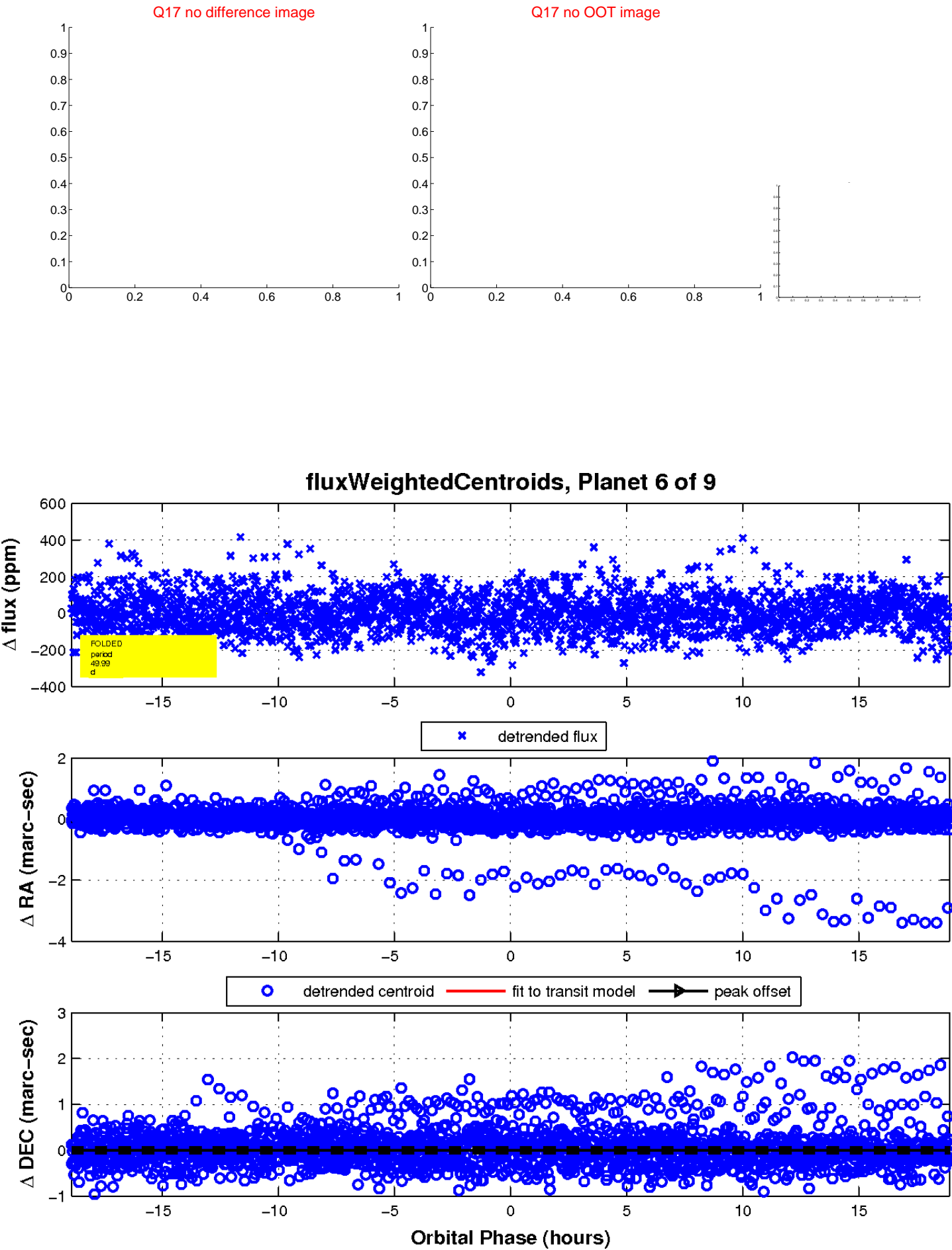
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

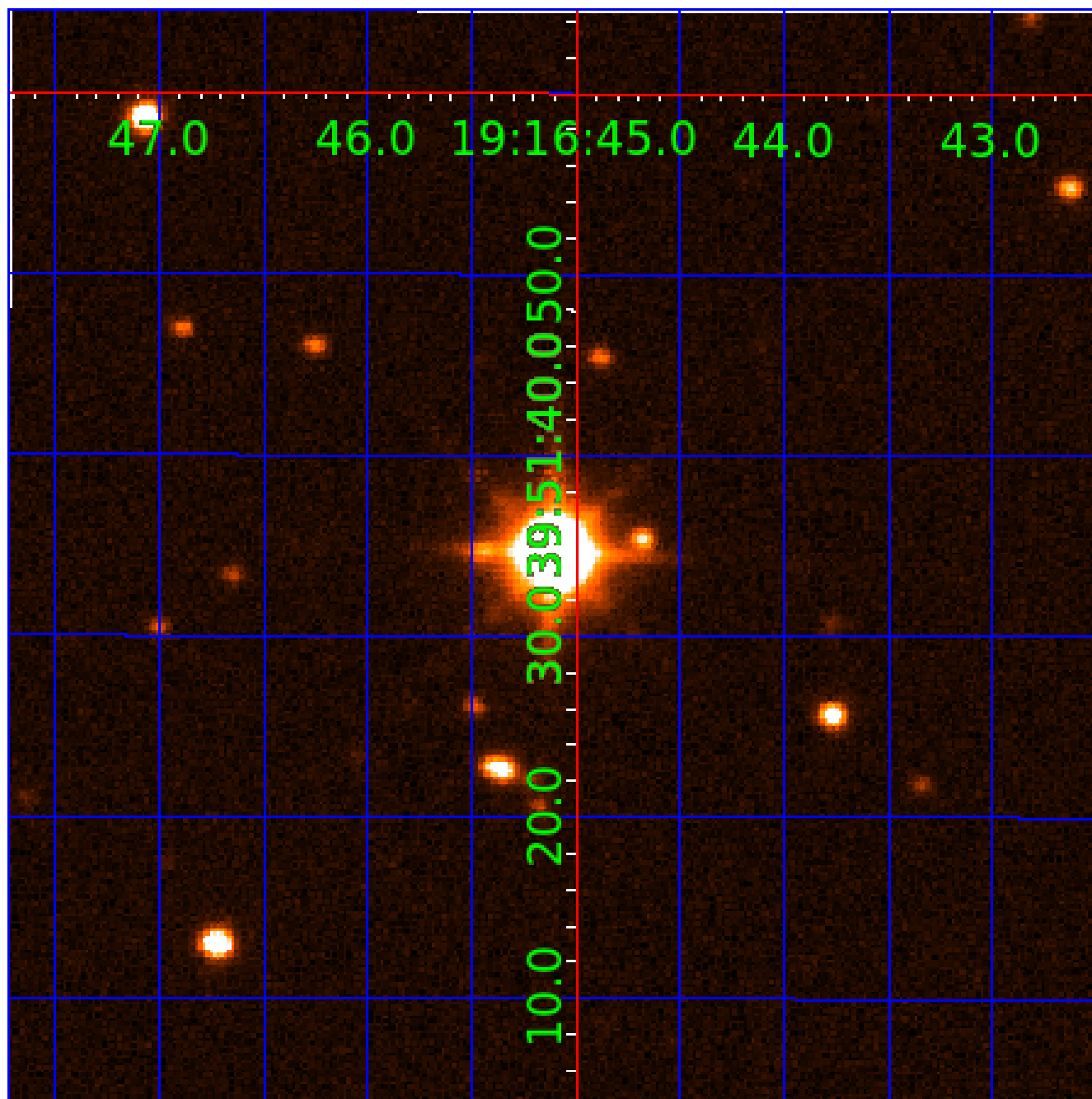


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004738155

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})
004738155-01	OBS	No	0.836071	132.167221	2.4	5.840	7.6	2.2	1.59	6782	0.25	15697.92
004738155-02	OBS	No	19.947640	139.503616	109.1	2.480	12.1	10.3	1.59	6782	1.96	228.55
004738155-03	OBS	No	24.260767	131.541777	104.2	4.936	9.6	10.7	1.59	6782	1.85	176.05
004738155-04	OBS	No	64.589909	187.744216	121.2	4.046	11.3	9.2	1.59	6782	2.04	47.71
004738155-05	OBS	No	55.890541	158.379329	177.1	2.724	10.2	9.6	1.59	6782	2.14	57.86
004738155-06	OBS	No	49.987307	142.769267	101.4	6.306	10.9	7.6	1.59	6782	1.82	67.15
004738155-07	OBS	No	29.072639	145.715139	123.1	3.041	8.6	10.8	1.59	6782	1.95	138.31
004738155-08	OBS	No	30.533304	132.268869	129.5	1.889	9.2	8.1	1.59	6782	2.10	129.56
004738155-09	OBS	No	97.804825	192.042078	119.8	2.769	9.5	10.7	1.59	6782	2.02	27.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004738155-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004738155-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST
004738155-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

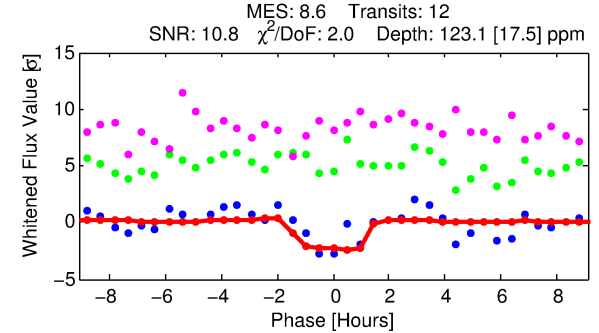
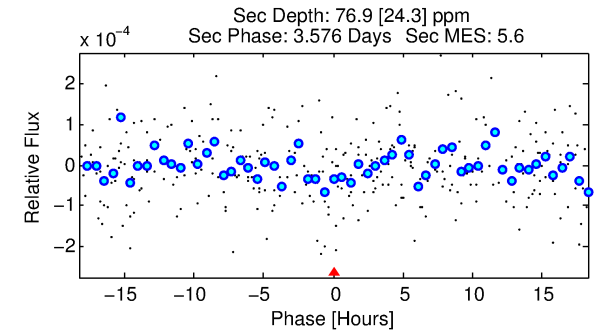
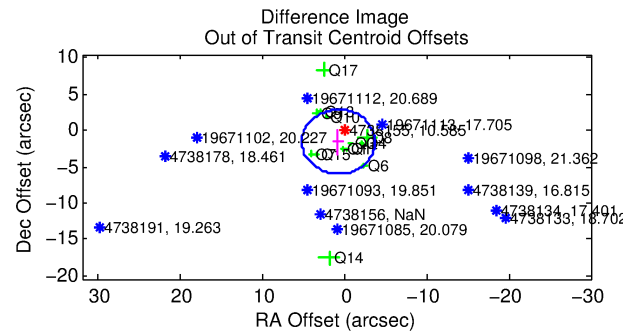
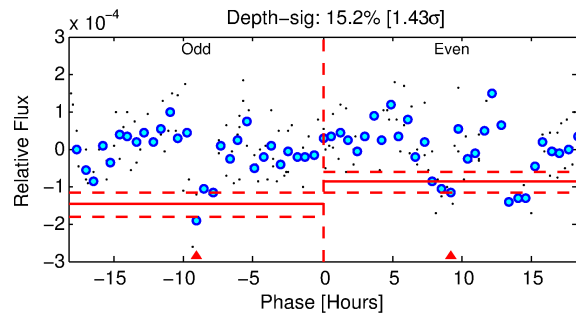
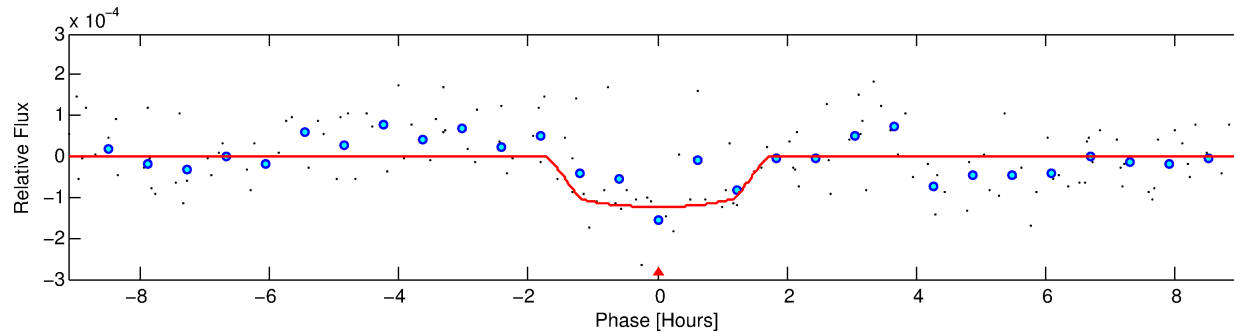
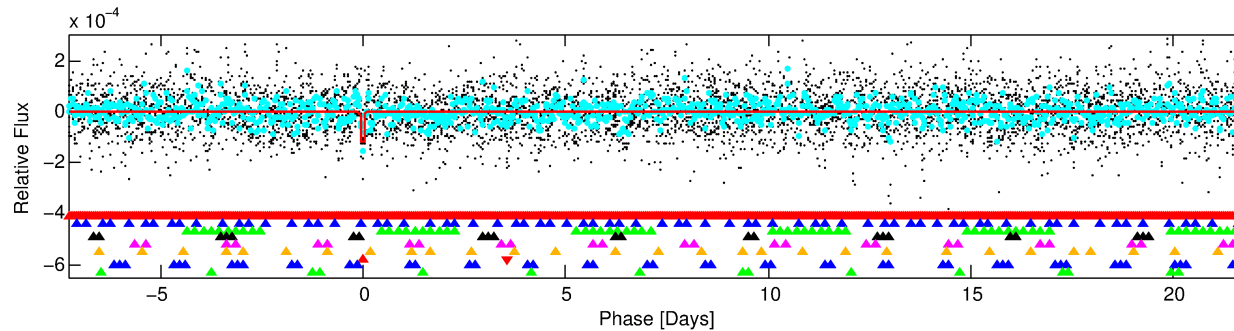
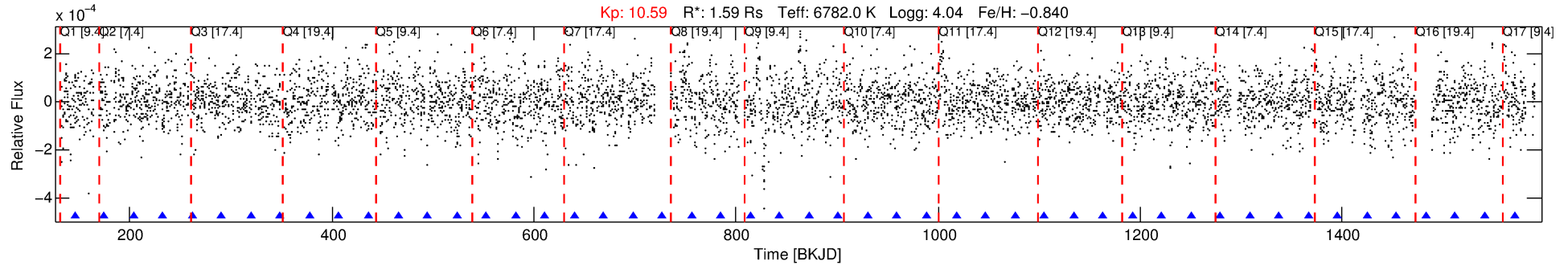
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004738155-07

No Significant Match Found

DV One-Page Summary

KIC: 4738155 Candidate: 7 of 9 Period: 29.073 d



DV Fit Results:

Period = 29.07264 [0.00036] d
Epoch = 145.7151 [0.0108] BKJD
Rp/R* = 0.0112 [0.0059]
a/R* = 45.09 [139.85]
b = 0.80 [1.40]
Seff = 138.31 [84.03]
Teq = 874 [133] K
Rp = 1.95 [1.25] Re
a = 0.1867 [0.0669] AU
Ag = 386.31 [483.73] [0.80 σ]
Teffp = 5994 [1673] K [3.05 σ]

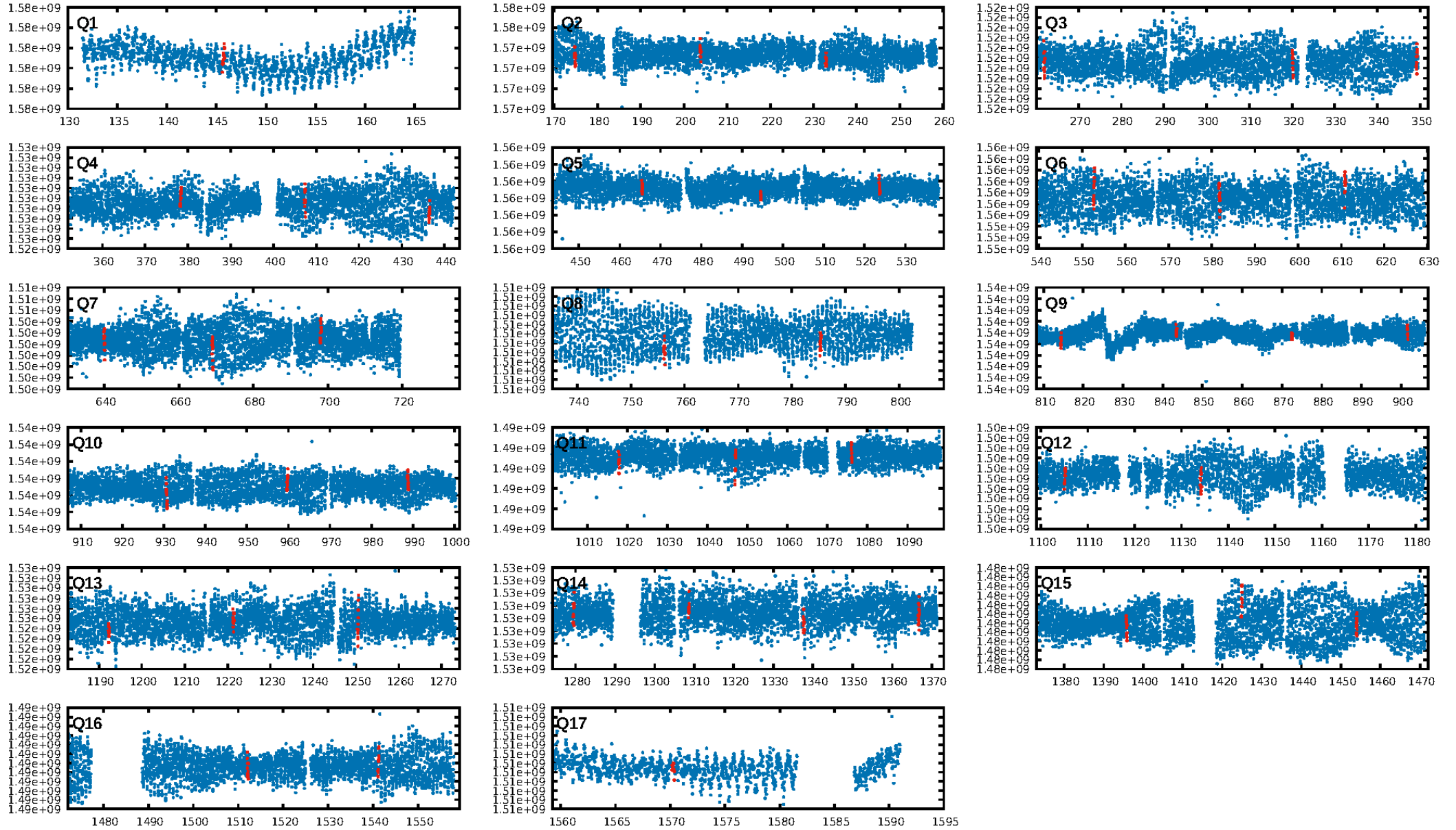
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [19.92 σ]
LongPeriod-sig: 100.0% [9.79 σ]
ModelChiSquare2-sig: 1.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.04e-07
RollingBand-fgt: 1.00 [12/12]
GhostDiagnostic-chr: 3.587
Centroid-sig: N/A
Centroid-so: 0.103 arcsec [0.35 σ]
OotOffset-rm: 1.754 arcsec [1.18 σ]
KicOffset-rm: 2.115 arcsec [1.69 σ]
OotOffset-st: 3/4/2/4 [13]
KicOffset-st: 3/4/2/4 [13]
DiffImageQuality-fgm: 0.08 [1/13]
DiffImageOverlap-fno: 0.00 [0/17]

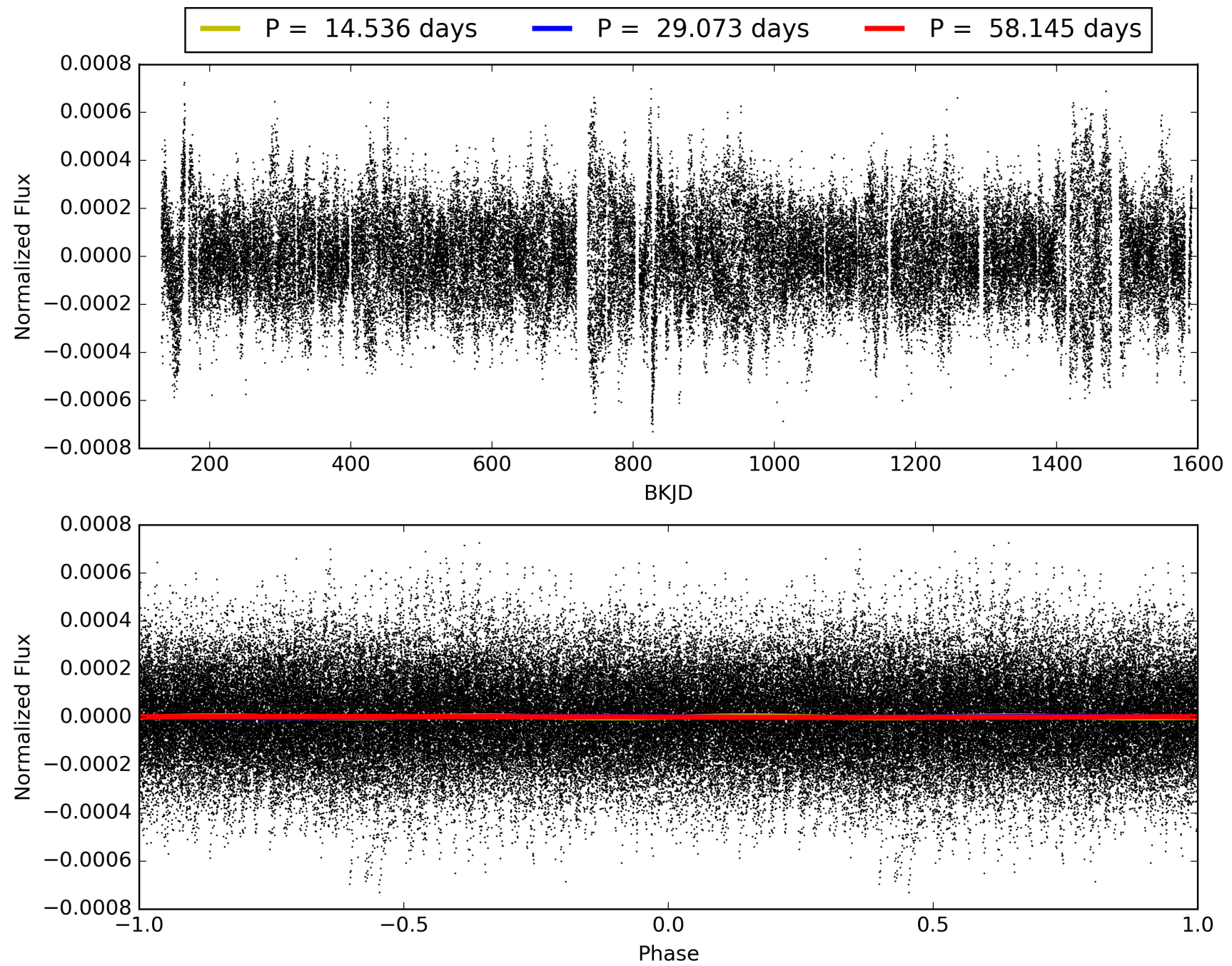
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:34 Z

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

TCE 004738155-07, PDC Light Curves

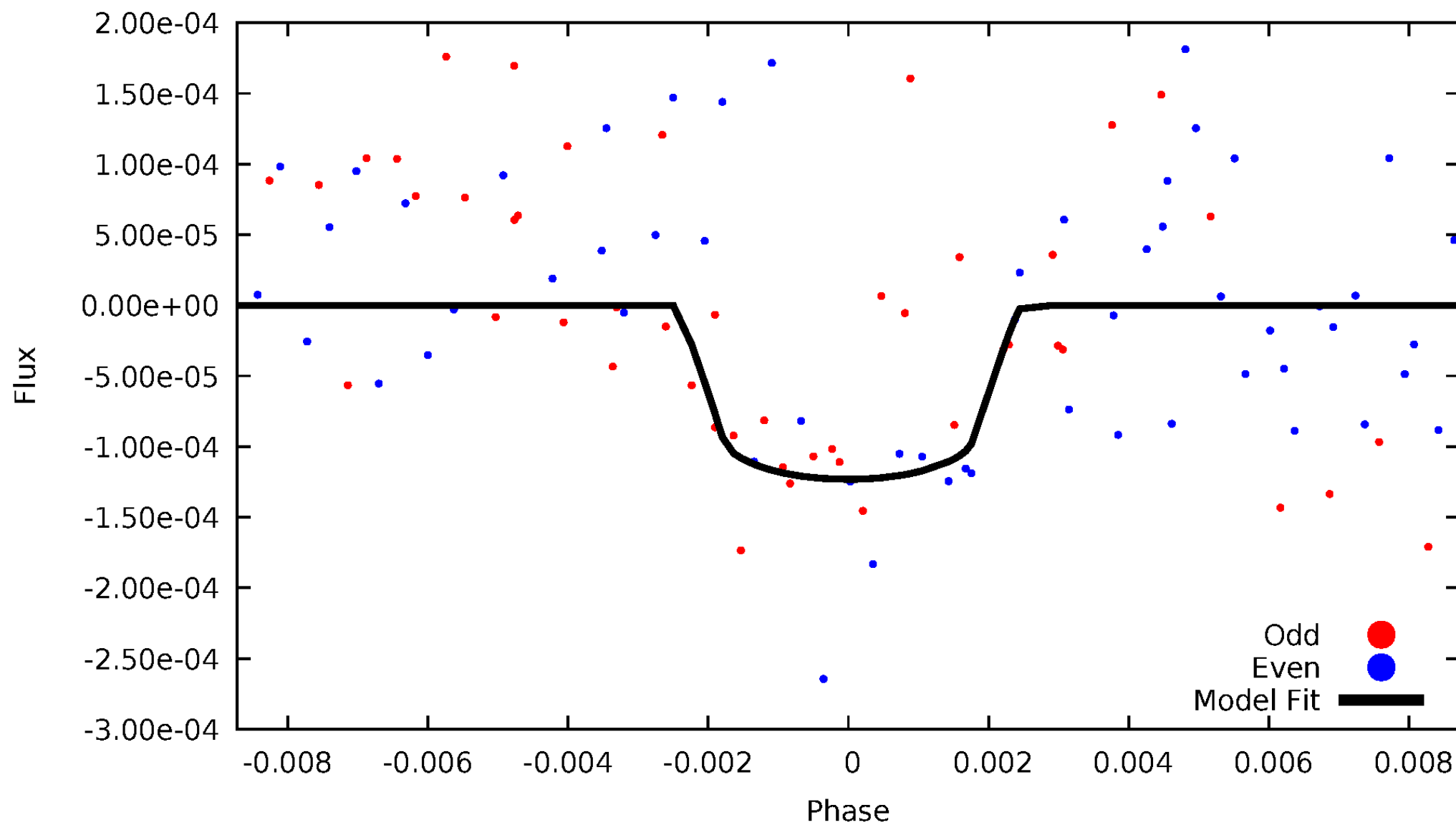


TCE 004738155-07



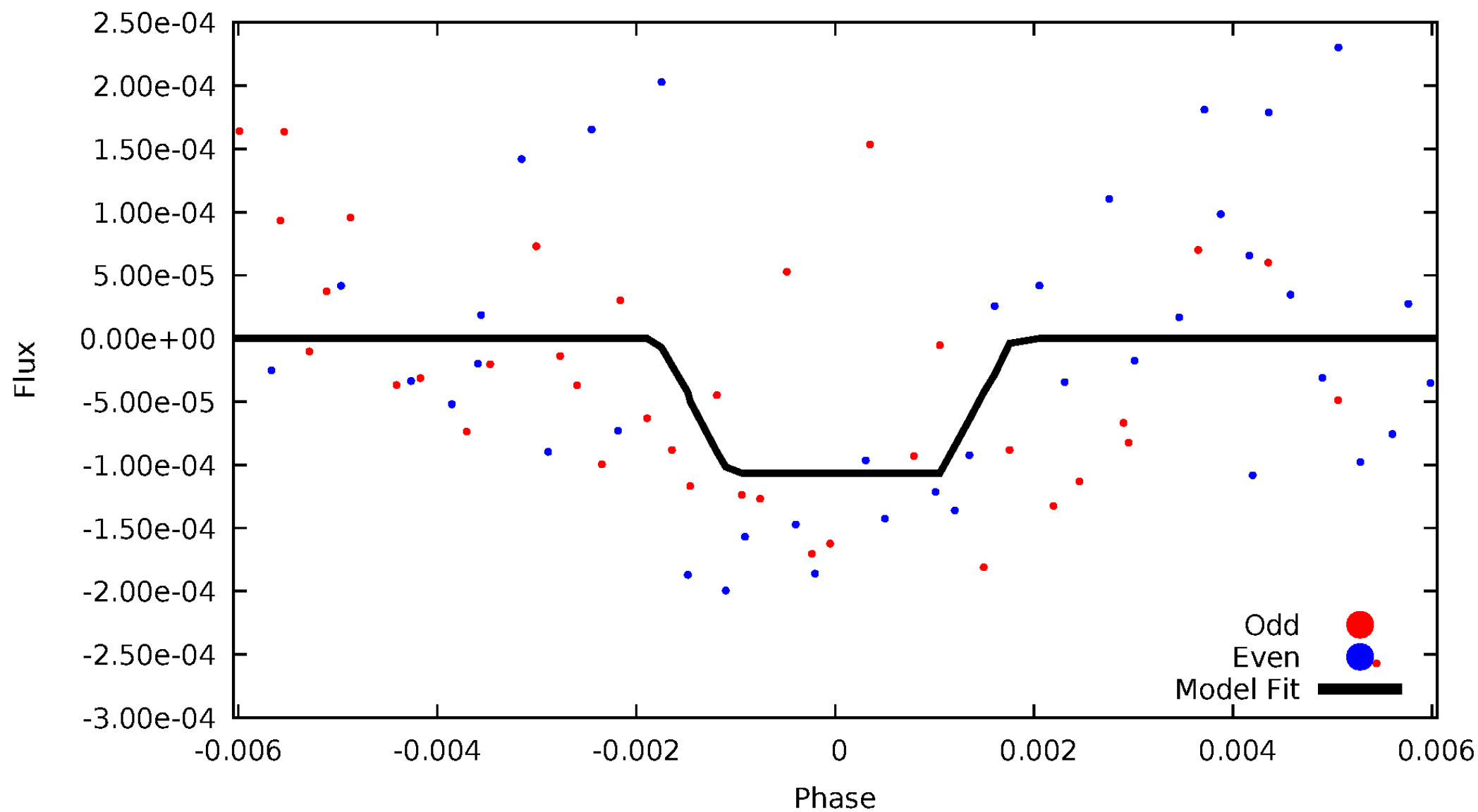
DV Odd/Even

TCE 004738155-07



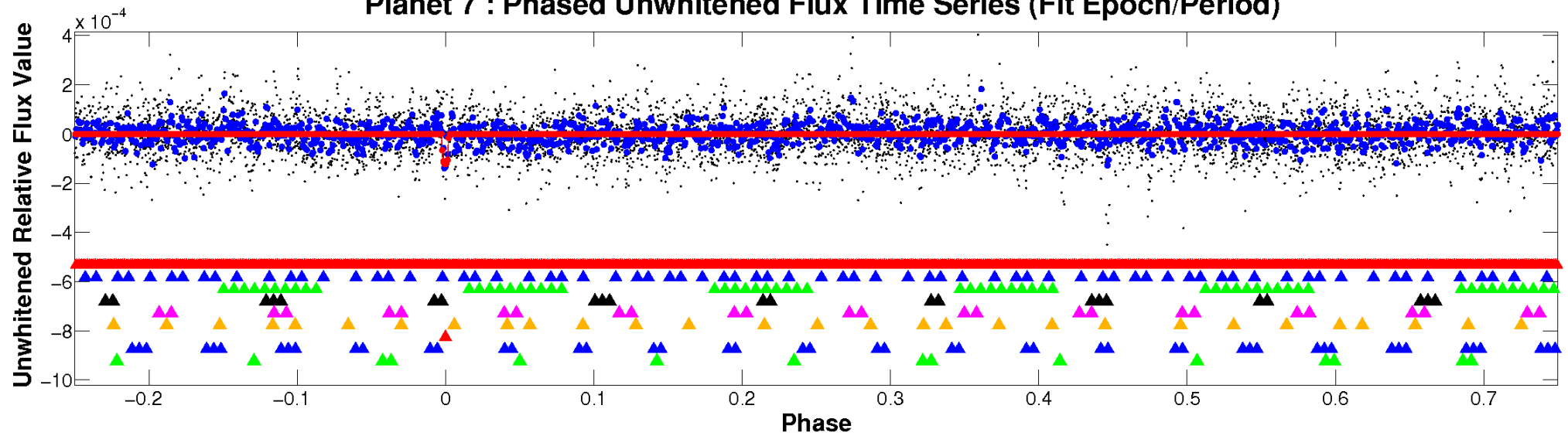
ALT Odd/Even

TCE 004738155-07

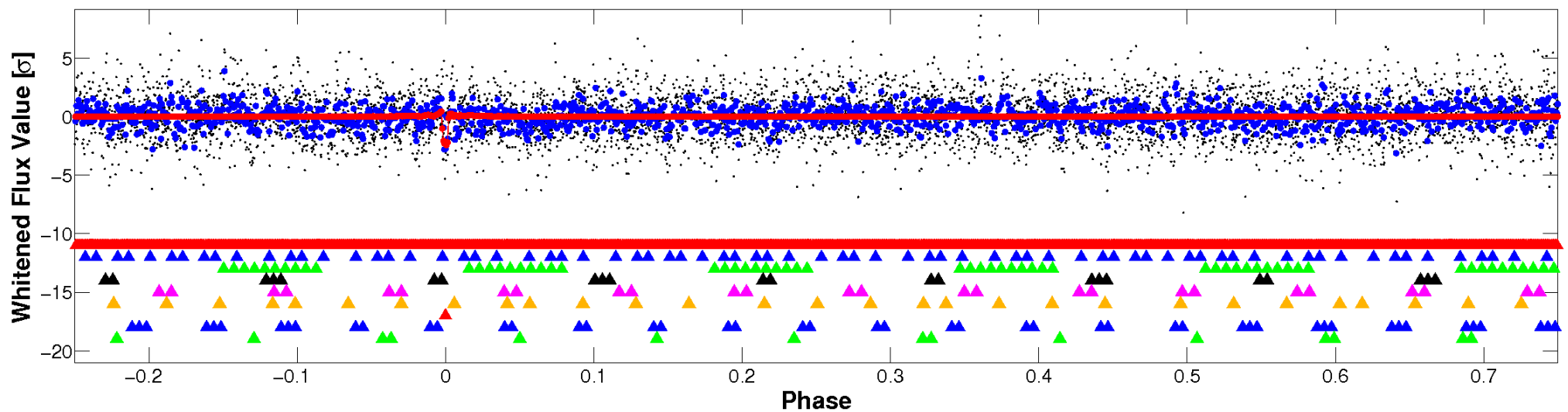


Non-Whitened Vs. Whitened Light Curve

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

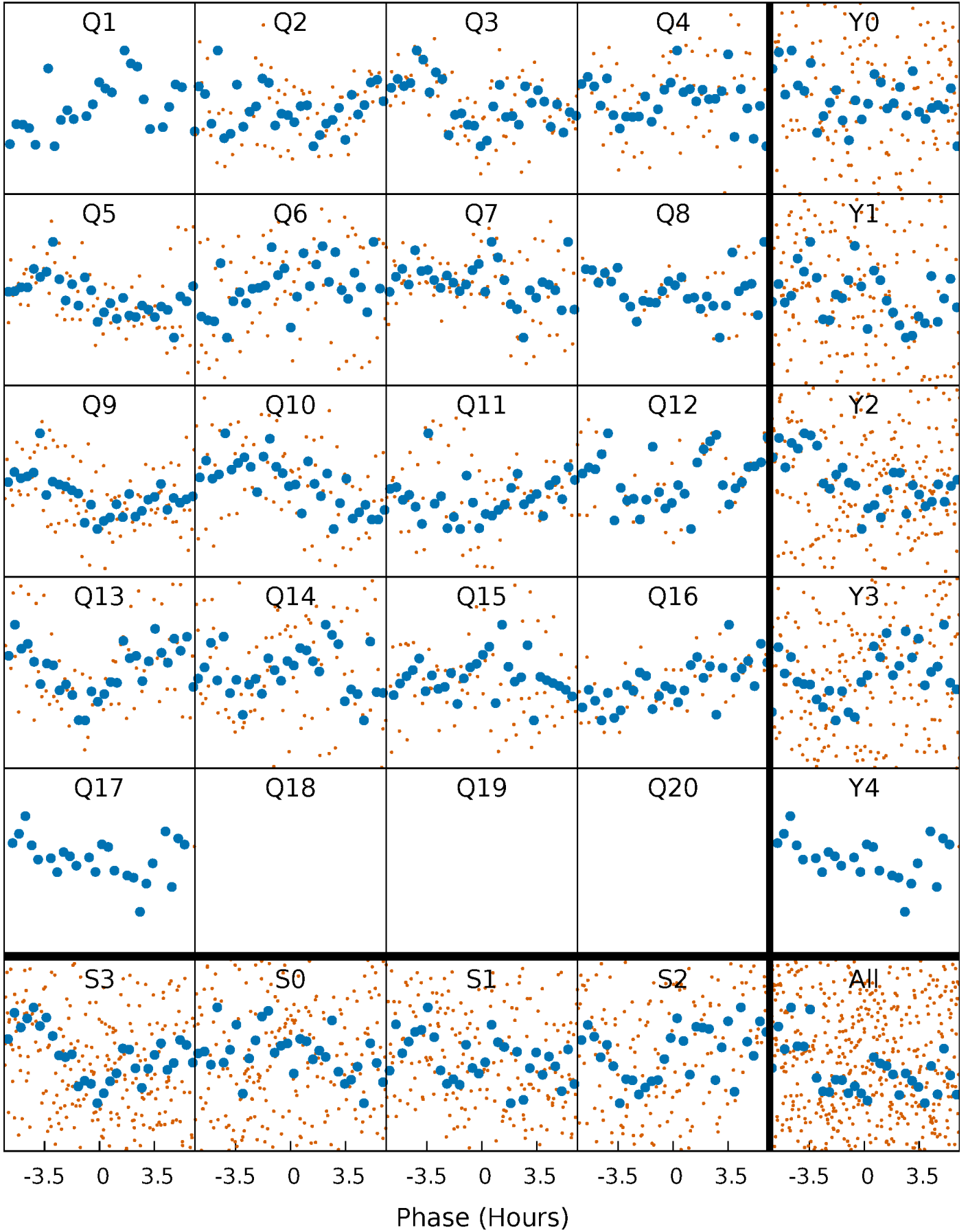


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



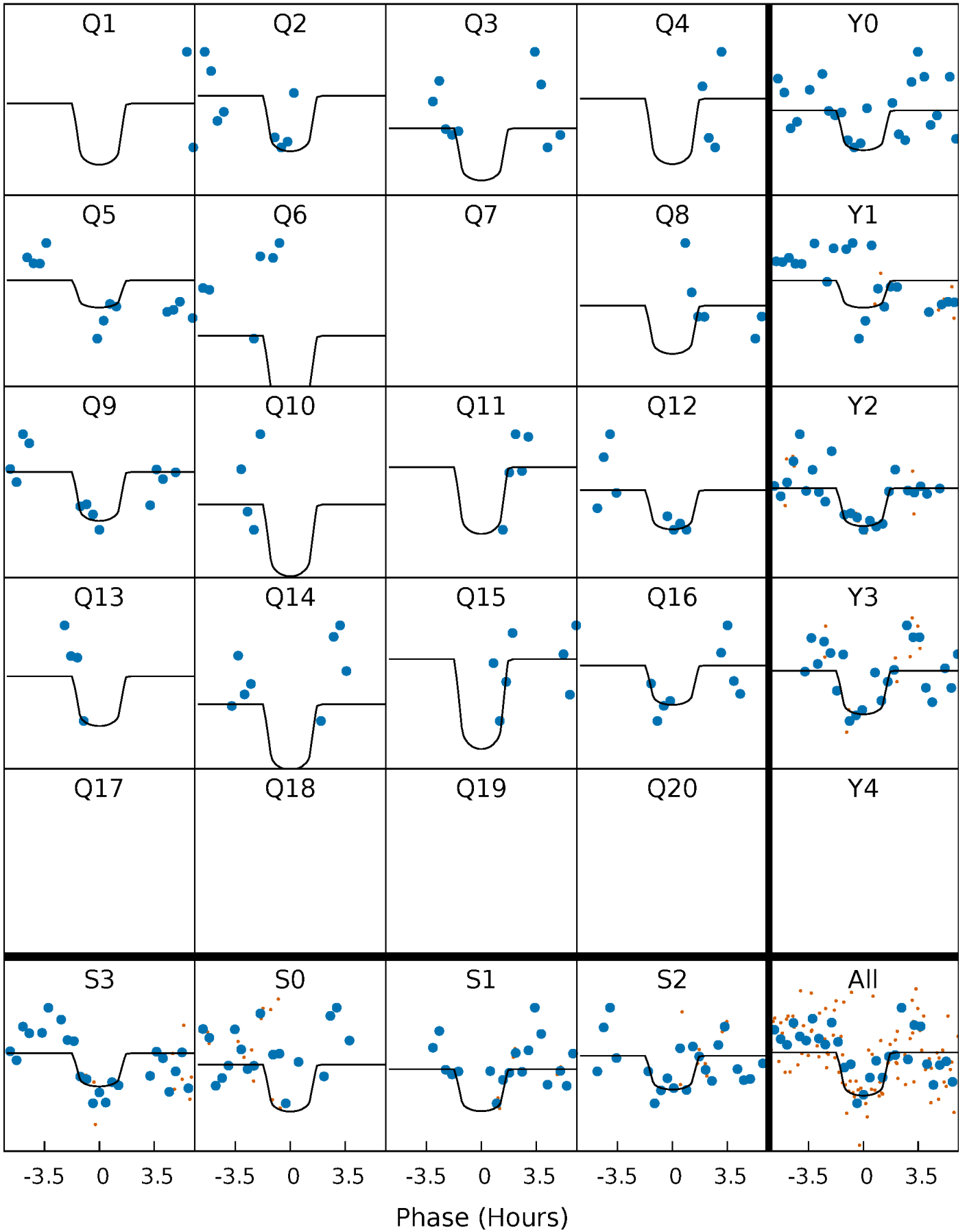
PDC Quarter-Phased Transit Curves

TCE 004738155-07 P= 29.072639 Days $T_0=145.715139$ (BKJD)



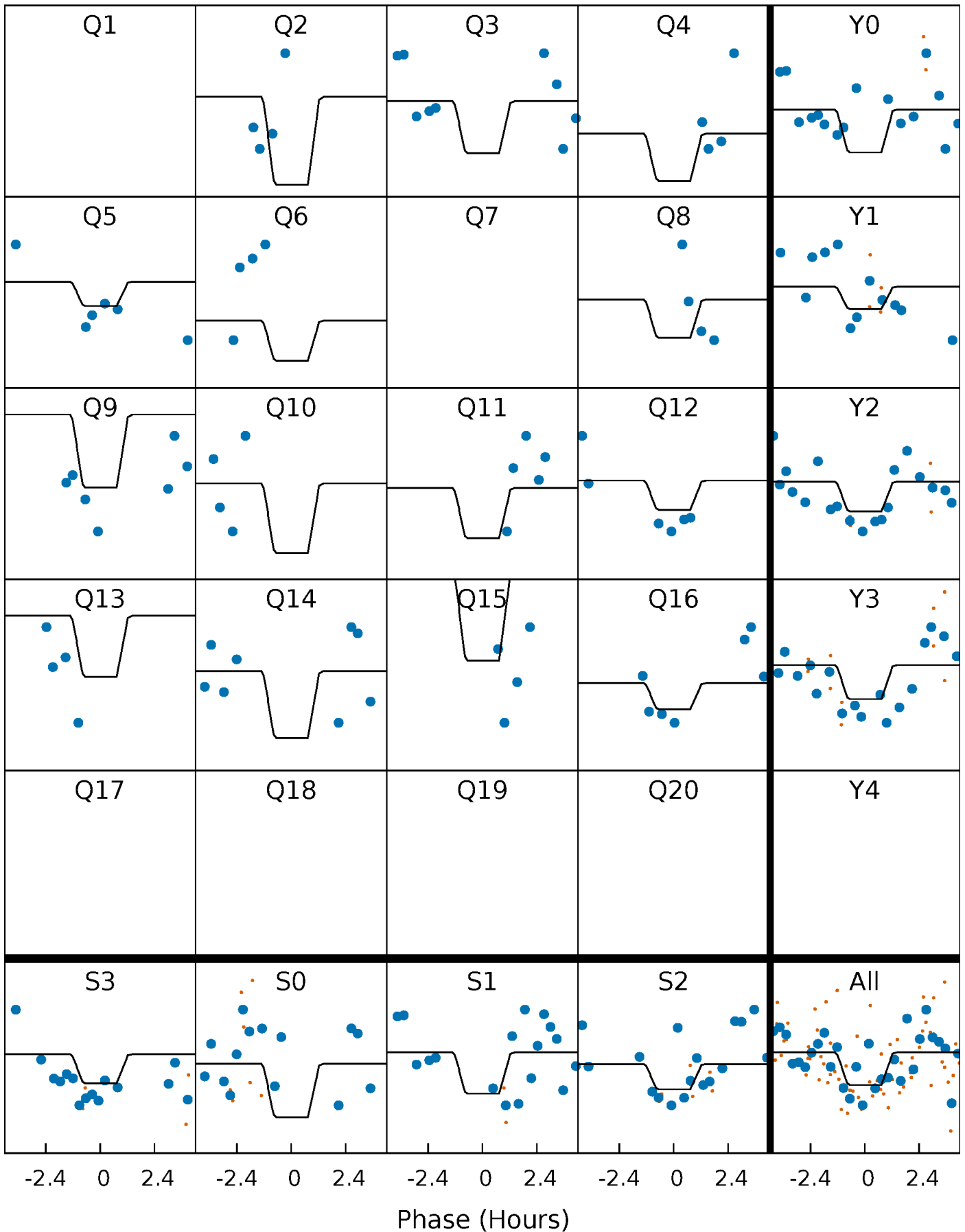
DV Quarter-Phased Transit Curves

TCE 004738155-07 P= 29.072639 Days $T_0=145.715139$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

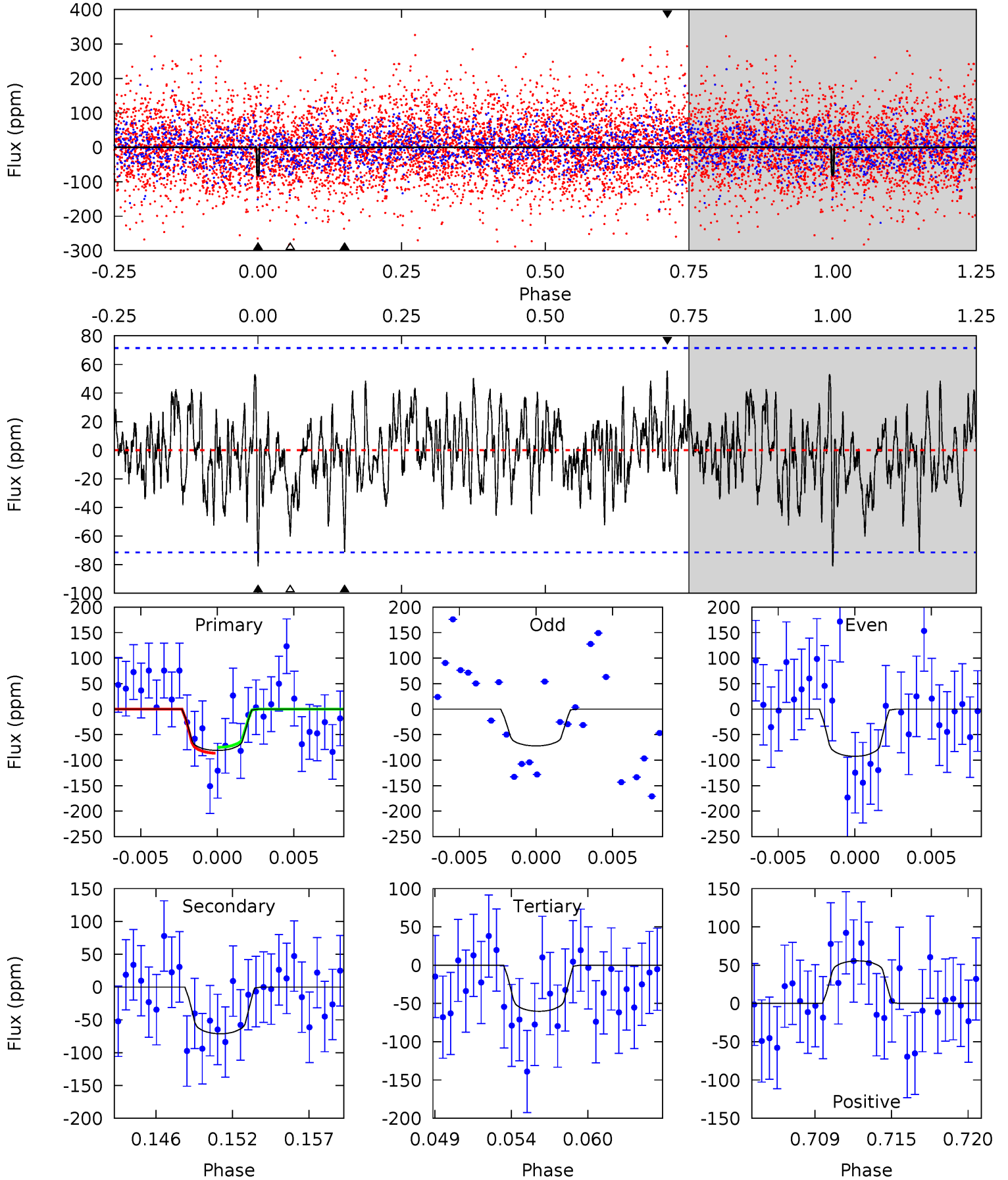
TCE 004738155-07 P= 29.071956 Days $T_0=145.745064$ (BKJD)



DV Model-Shift Uniqueness Test

004738155-07, P = 29.072639 Days, E = 116.642500 Days

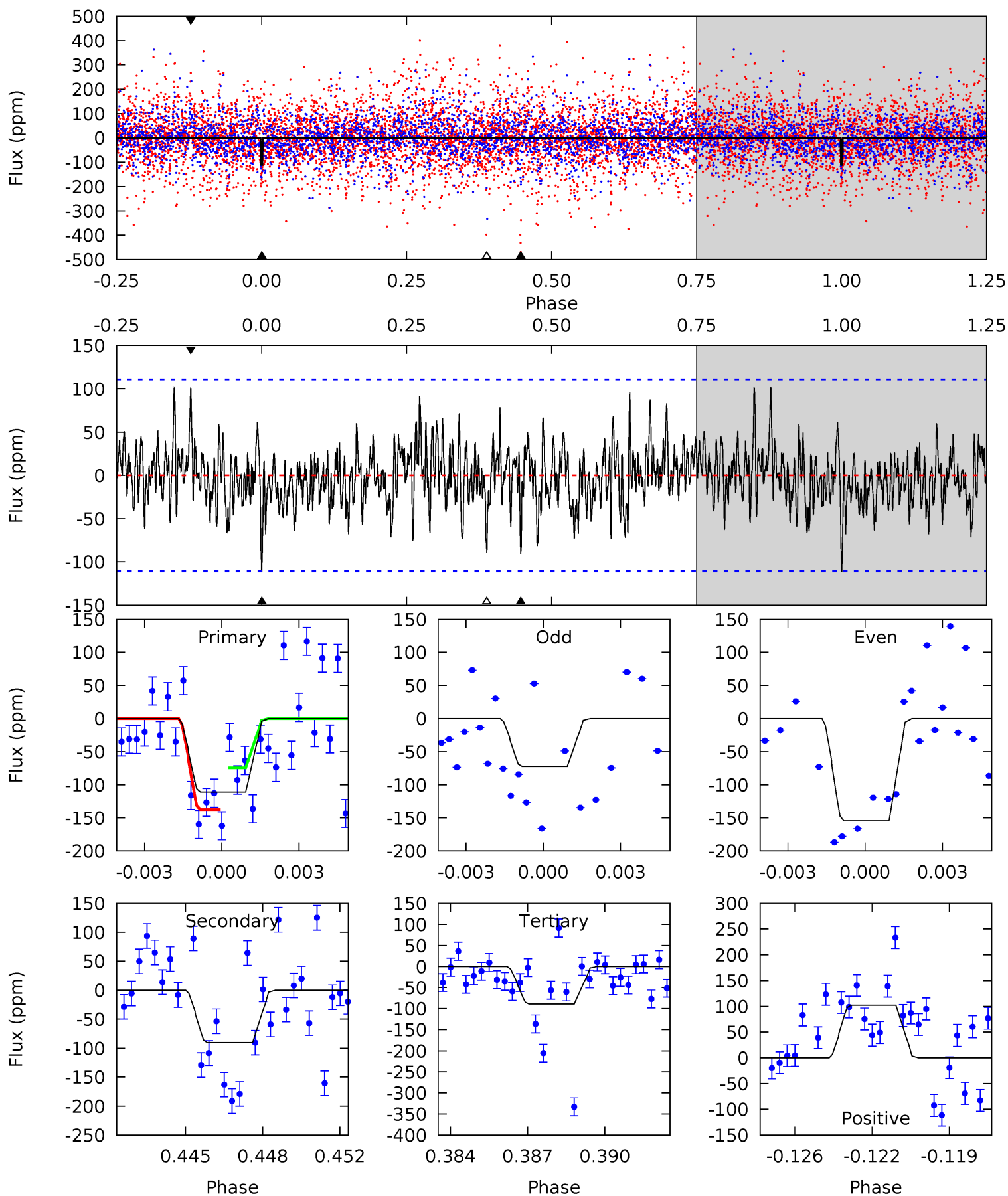
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.83	5.12	4.34	4.00	5.14	2.78	1.44	1.49	1.83	0.79	1.12	0.74	0.64	0.41	0.41



Alt Model-Shift Uniqueness Test

004738155-07, P = 29.071956 Days, E = 116.673108 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.24	4.26	4.20	4.80	5.23	2.93	1.37	1.05	0.44	0.06	-0.55	1.88	0.68	0.48	1.49



Stellar Parameters For KIC 004738155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6782^{+215}_{-263}	$4.044^{+0.350}_{-0.150}$	$-0.840^{+0.300}_{-0.300}$	$1.595^{+0.379}_{-0.568}$	$1.026^{+0.127}_{-0.115}$	$0.356^{+0.883}_{-0.148}$
	+3%/-4%	+9%/-4%	+36%/-36%	+24%/-36%	+12%/-11%	+248%/-42%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004738155-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-71 ± 14	$1.89^{+1.04}_{-0.94}$	1205^{+89}_{-121}	5746^{+2537}_{-943}	374^{+1050}_{-220}
Alt.	-90 ± 21	$1.72^{+1.09}_{-0.85}$	1203^{+94}_{-128}	6302^{+2917}_{-1213}	574^{+1774}_{-367}

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

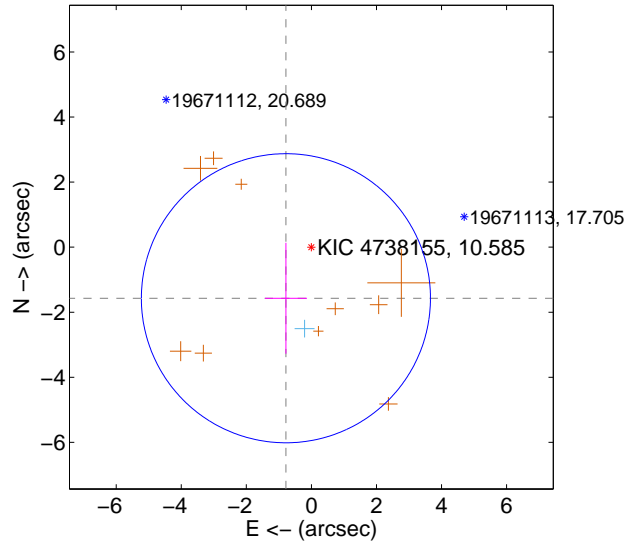
Supplemental centroid analysis for 004738155-07. **Kepler magnitude: 10.59.** Transit SNR 10.78

There are 1 quarters with good PRF difference image offsets

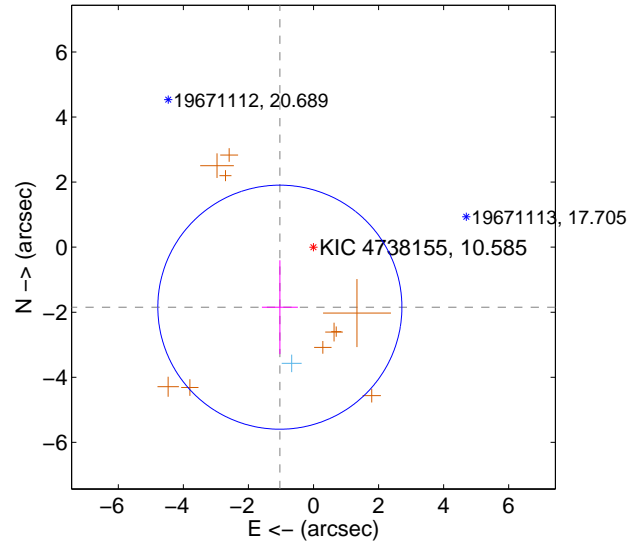
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.754 ± 1.481	1.18	0.783 ± 0.646	-1.570 ± 1.706
PRF-fit source offset from KIC position	2.115 ± 1.250	1.69	1.034 ± 0.552	-1.845 ± 1.441
photometric centroid source offset	0.10 ± 0.30	0.35	0.10 ± 0.29	-0.03 ± 0.38

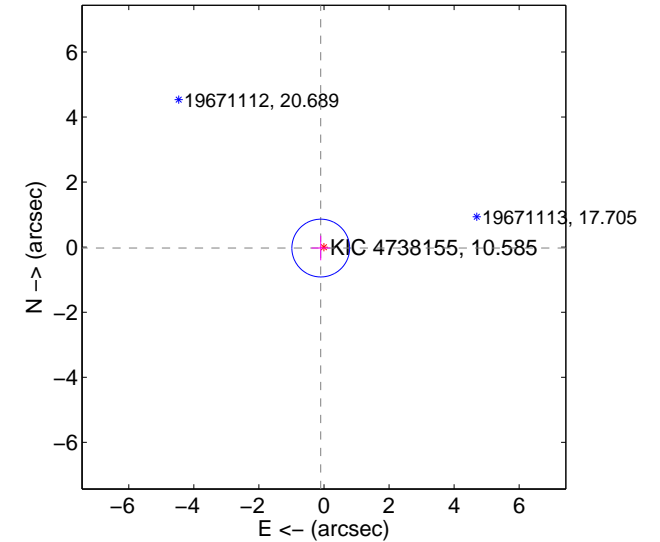
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

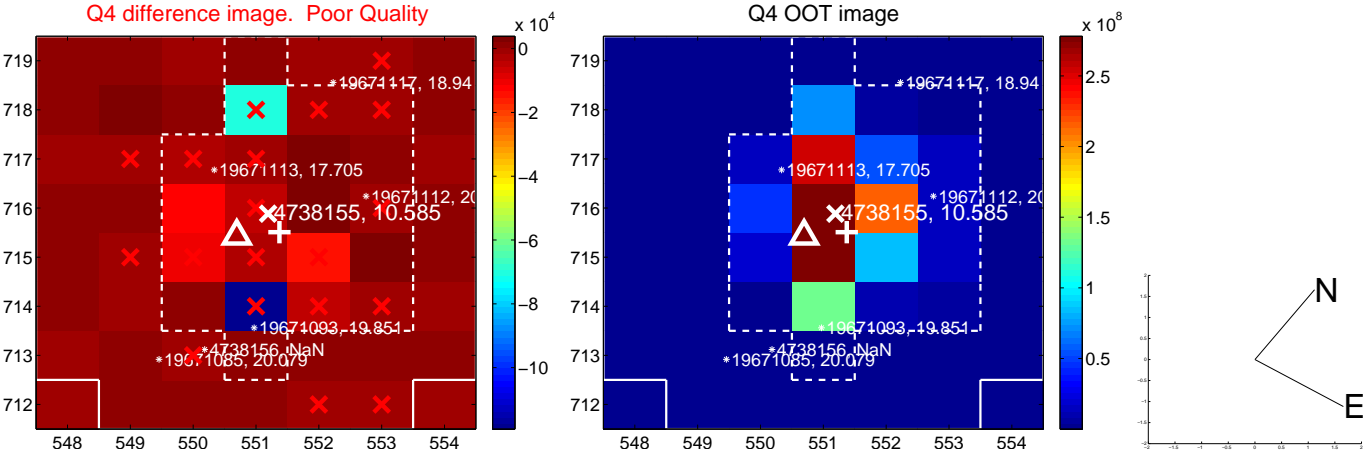
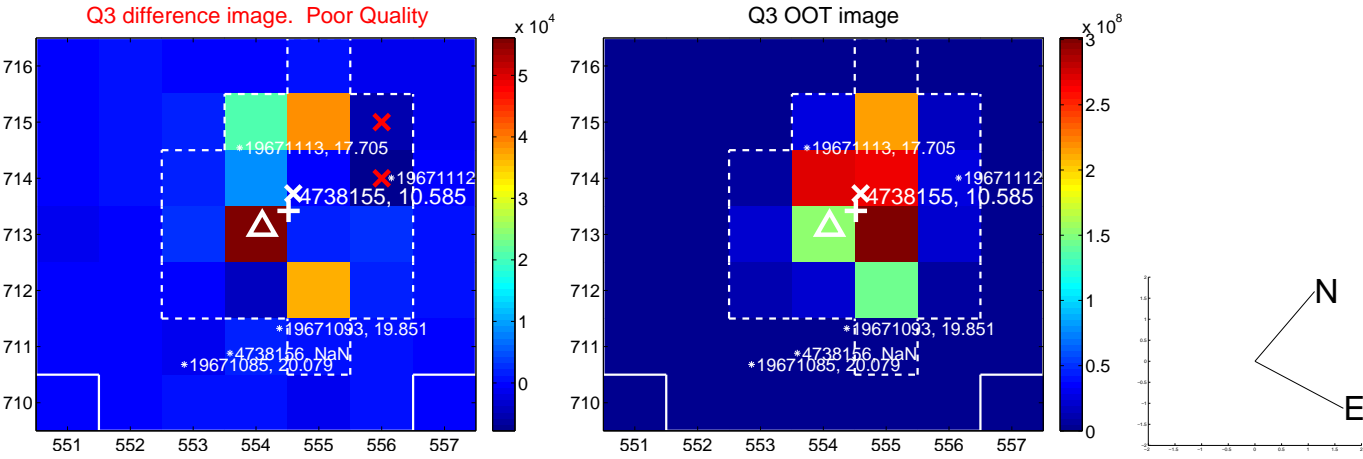
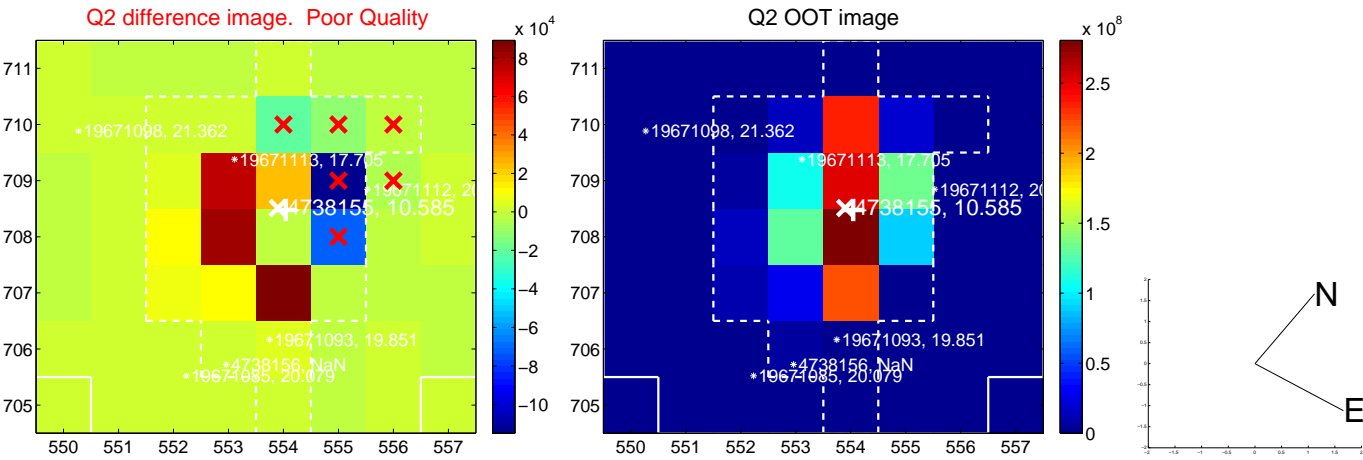
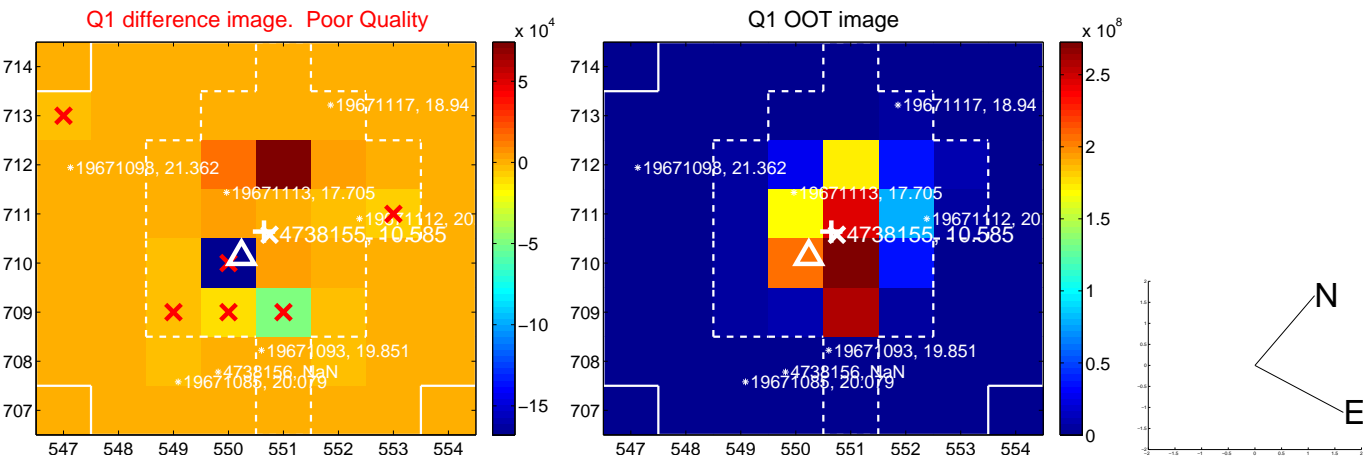


offset from photometric centroids

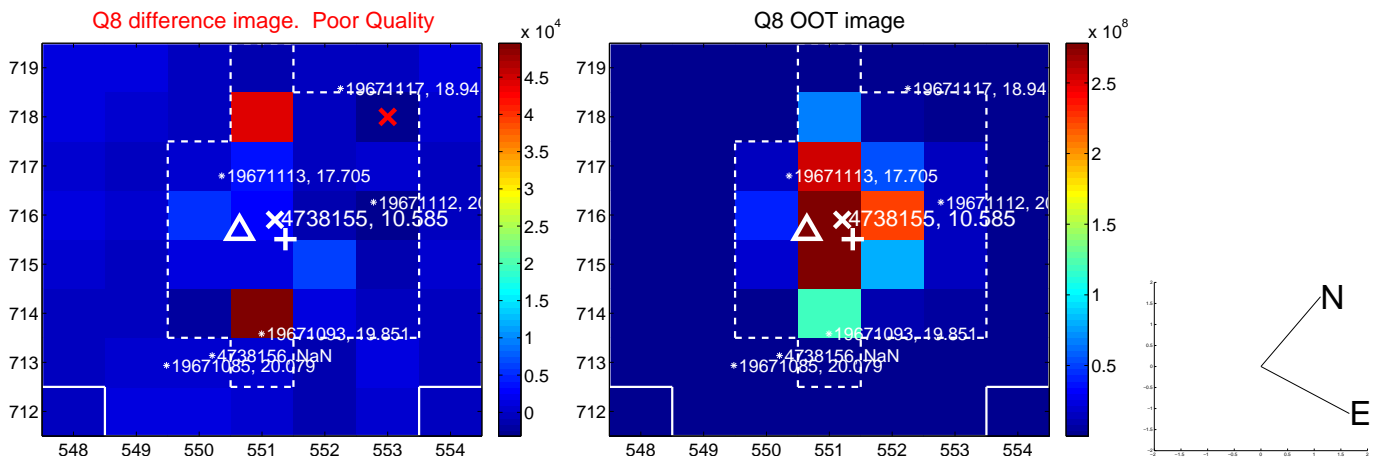
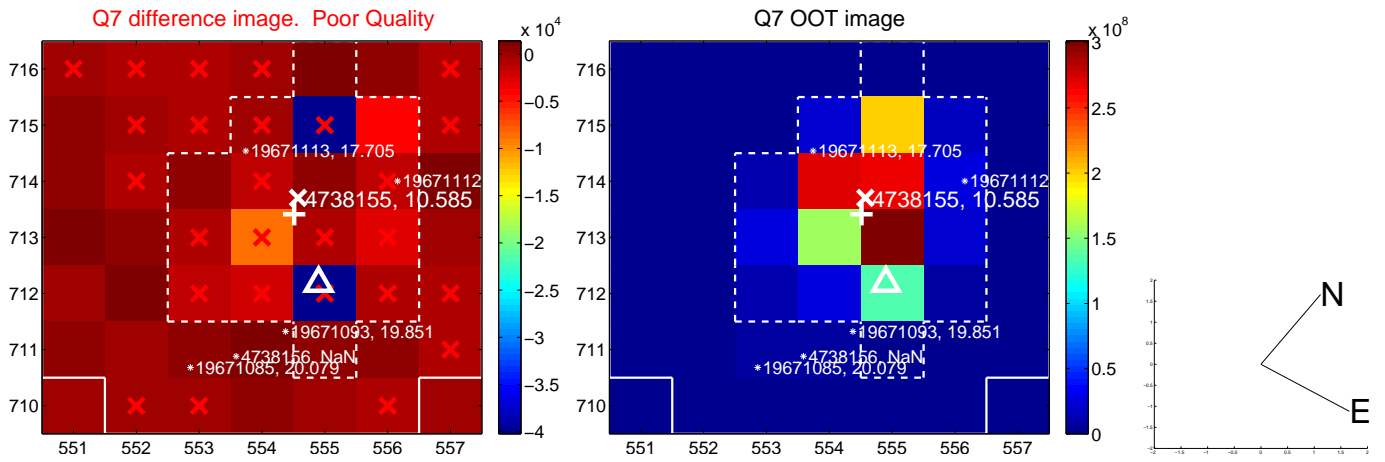
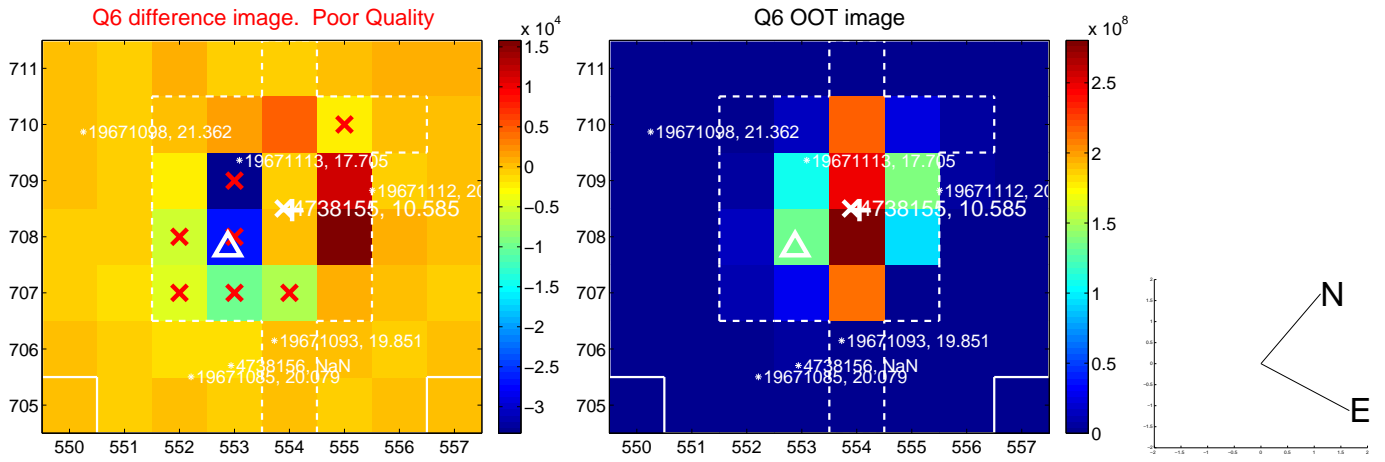
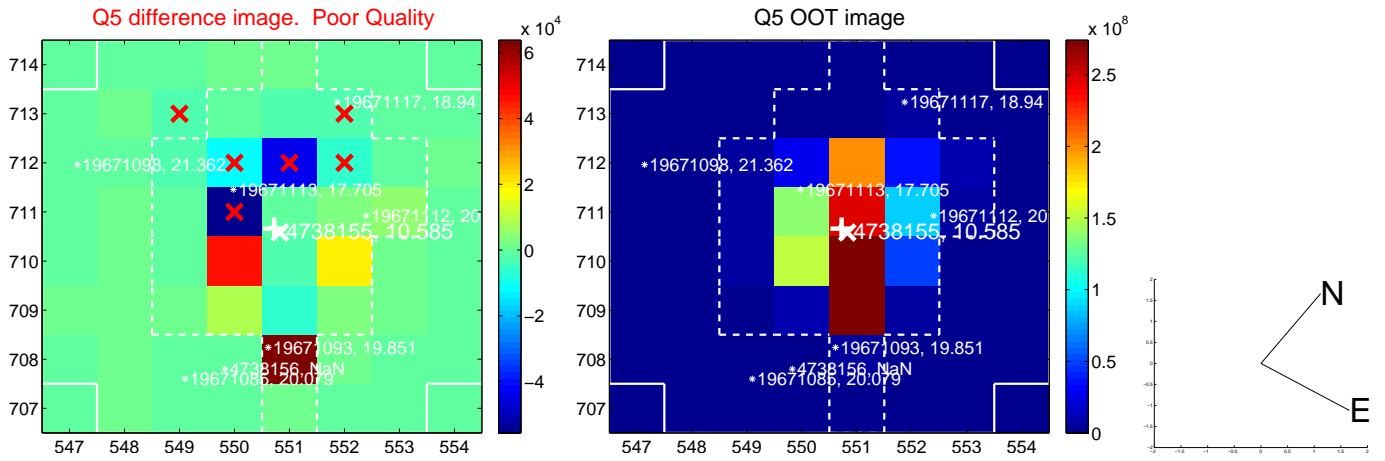


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

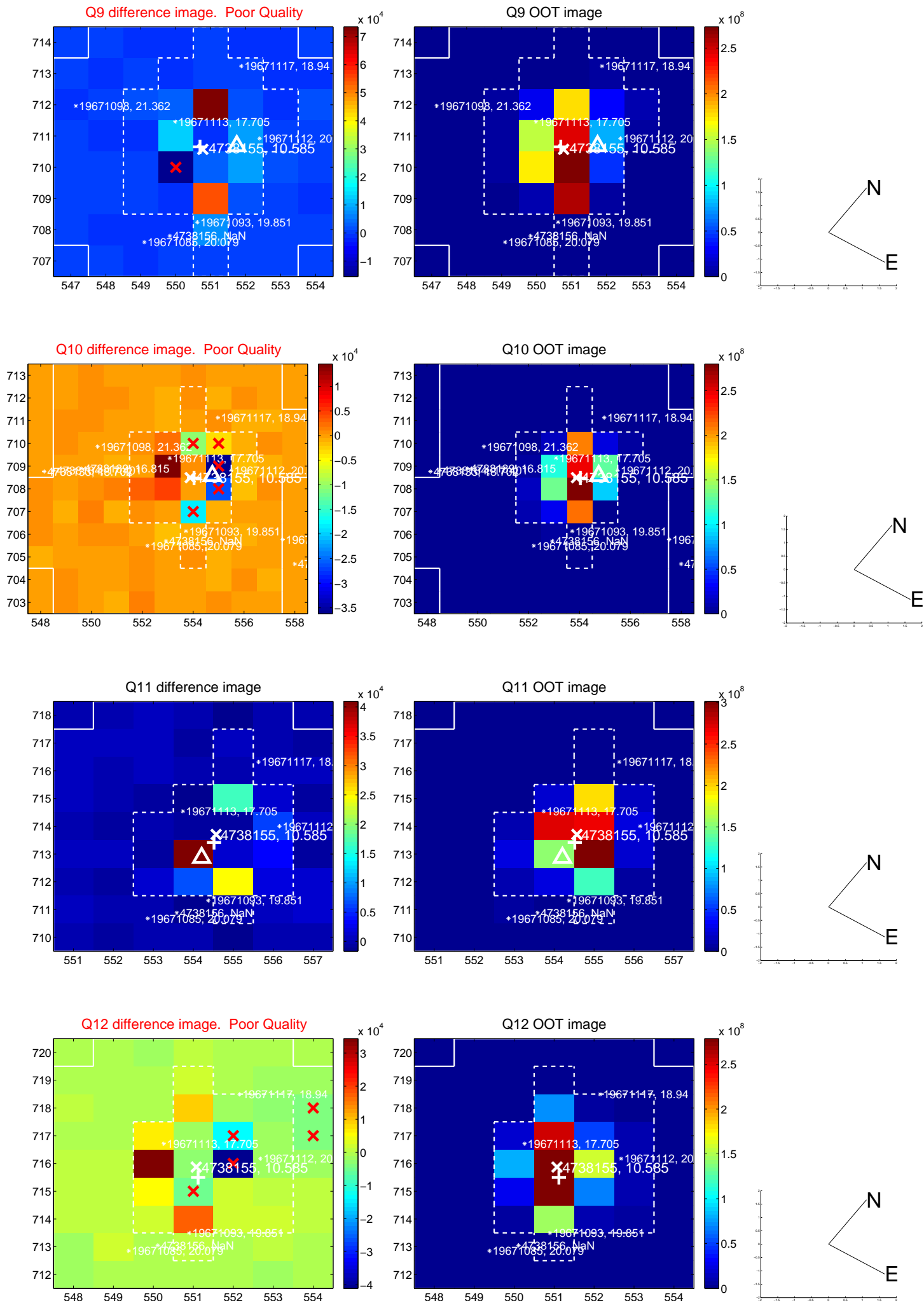
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



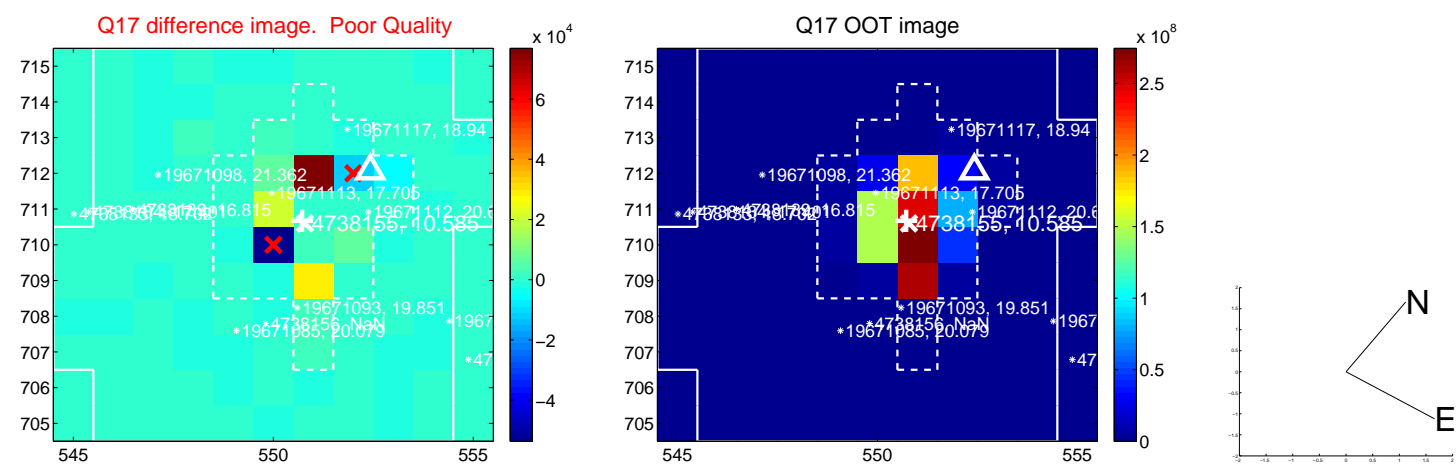
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



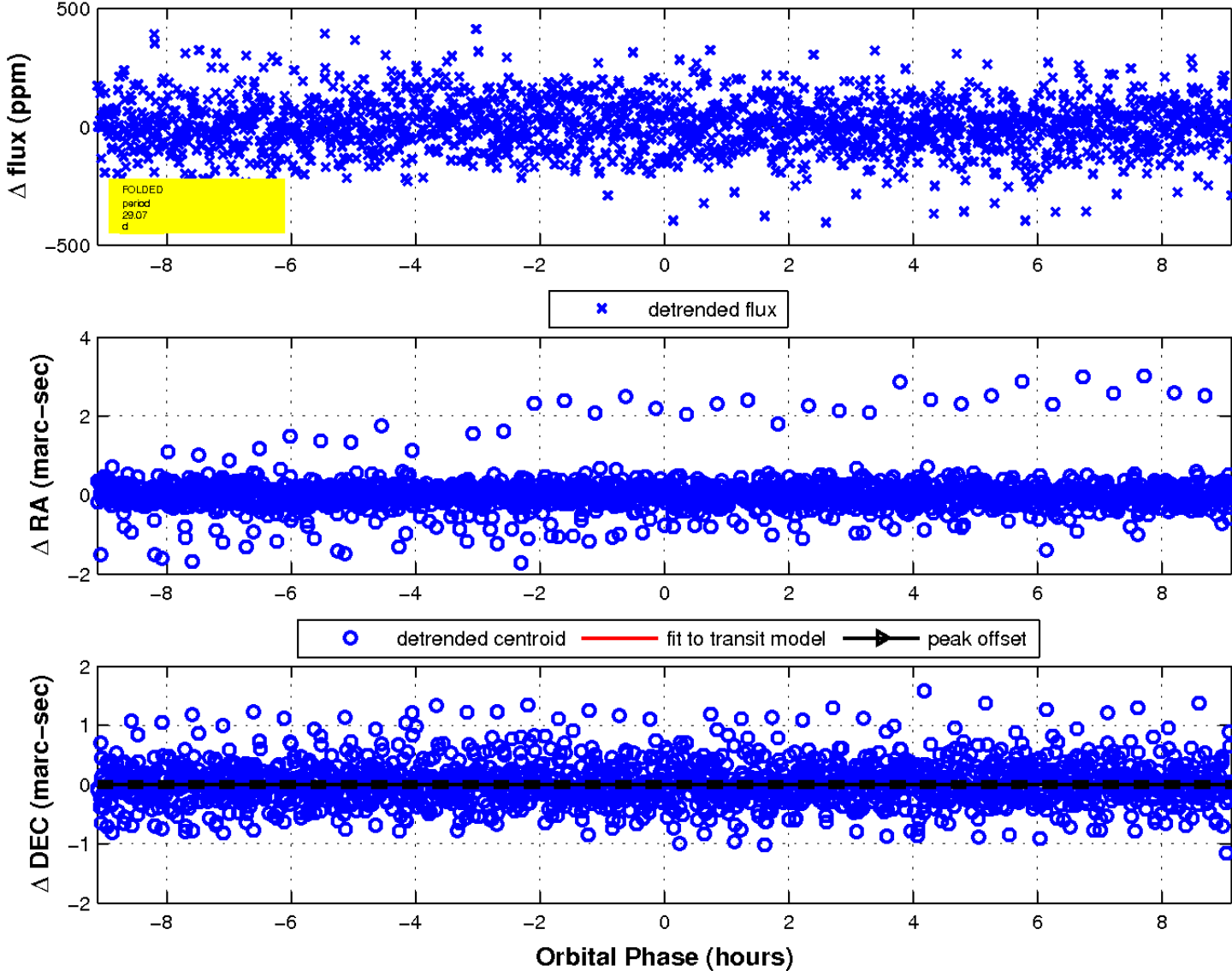
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

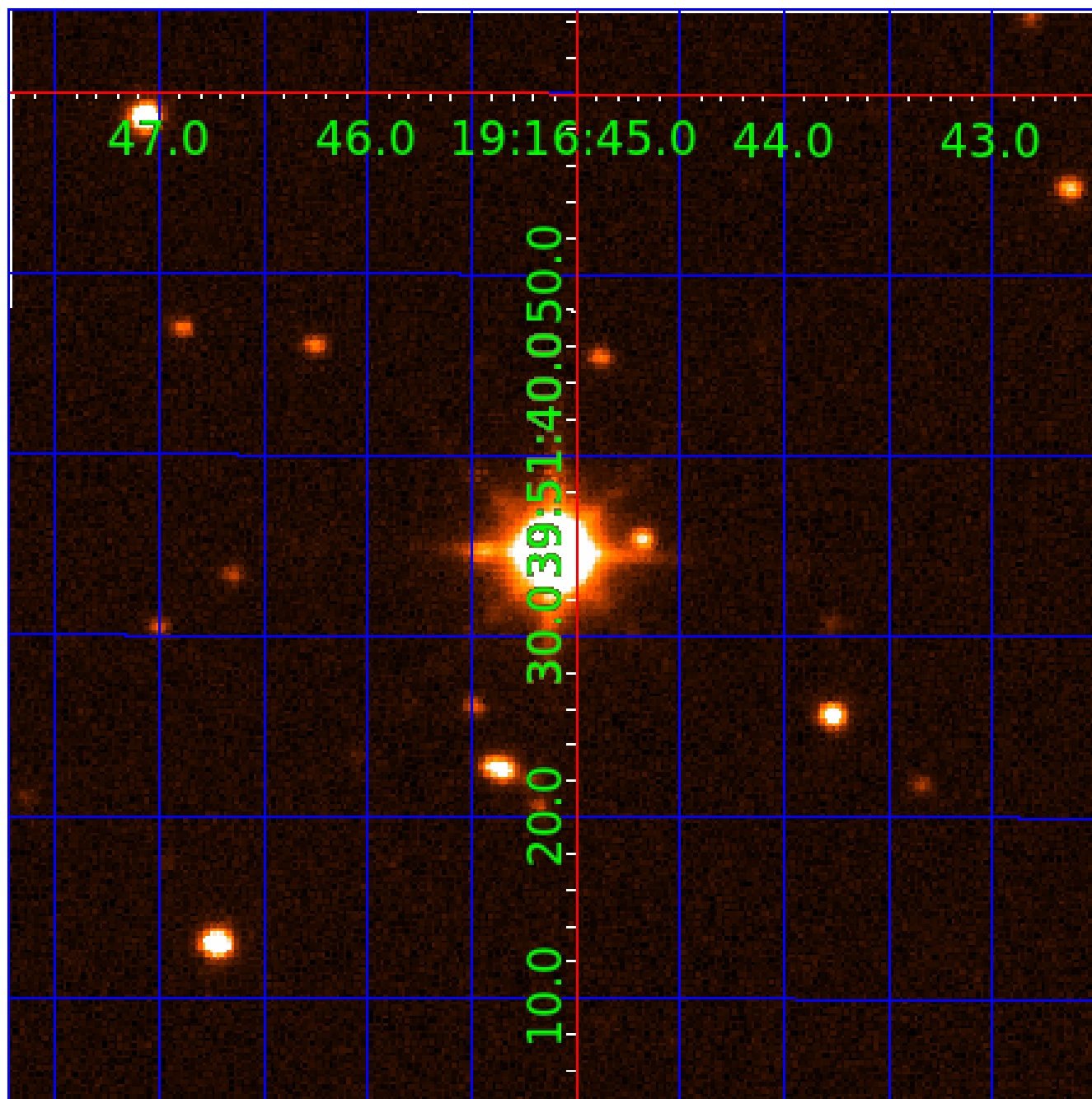


fluxWeightedCentroids, Planet 7 of 9



UKIRT Image

Declination



KIC 004738155

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})
004738155-01	OBS	No	0.836071	132.167221	2.4	5.840	7.6	2.2	1.59	6782	0.25	15697.92
004738155-02	OBS	No	19.947640	139.503616	109.1	2.480	12.1	10.3	1.59	6782	1.96	228.55
004738155-03	OBS	No	24.260767	131.541777	104.2	4.936	9.6	10.7	1.59	6782	1.85	176.05
004738155-04	OBS	No	64.589909	187.744216	121.2	4.046	11.3	9.2	1.59	6782	2.04	47.71
004738155-05	OBS	No	55.890541	158.379329	177.1	2.724	10.2	9.6	1.59	6782	2.14	57.86
004738155-06	OBS	No	49.987307	142.769267	101.4	6.306	10.9	7.6	1.59	6782	1.82	67.15
004738155-07	OBS	No	29.072639	145.715139	123.1	3.041	8.6	10.8	1.59	6782	1.95	138.31
004738155-08	OBS	No	30.533304	132.268869	129.5	1.889	9.2	8.1	1.59	6782	2.10	129.56
004738155-09	OBS	No	97.804825	192.042078	119.8	2.769	9.5	10.7	1.59	6782	2.02	27.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004738155-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004738155-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST
004738155-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

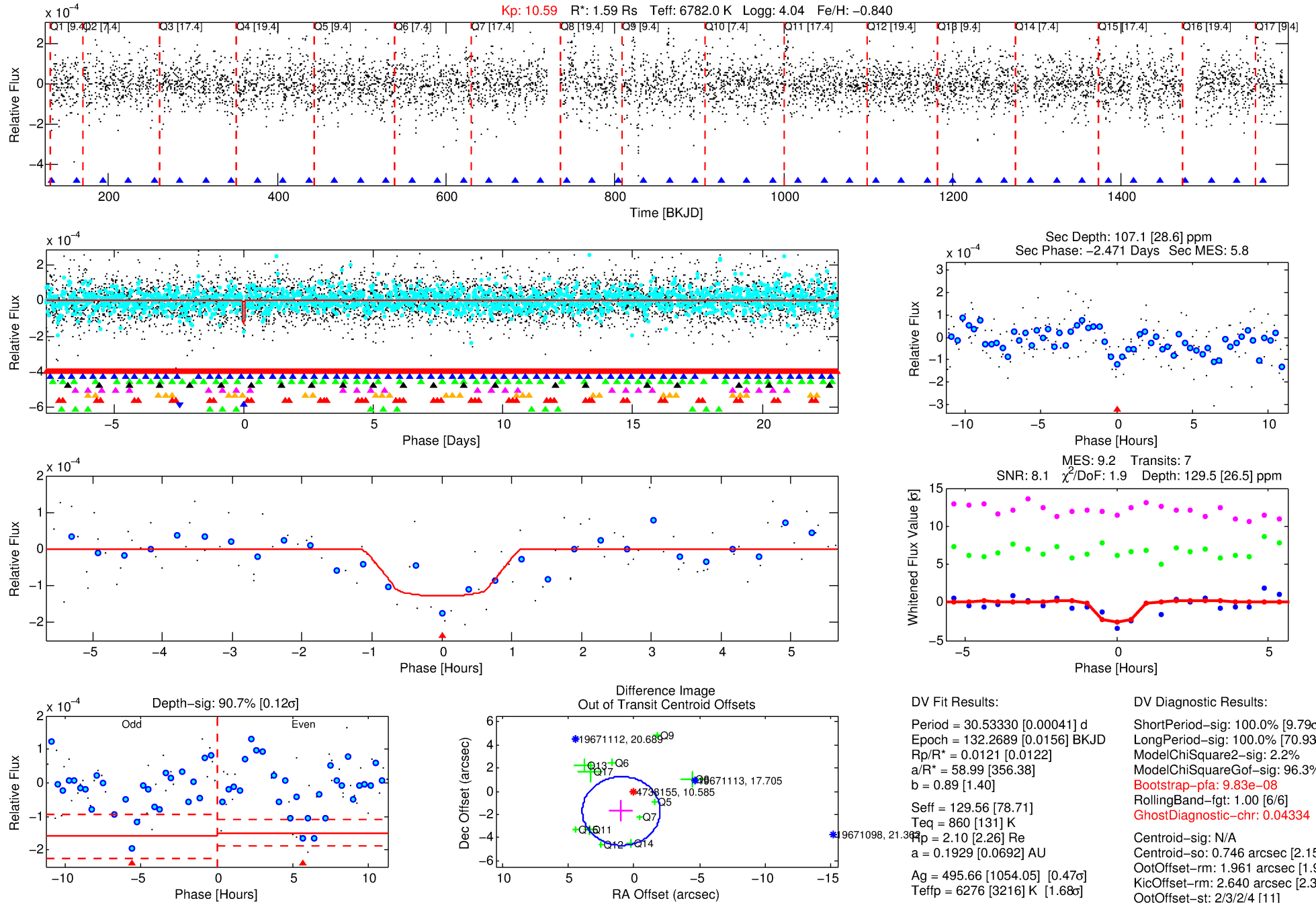
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004738155-08

No Significant Match Found

DV One-Page Summary

KIC: 4738155 Candidate: 8 of 9 Period: 30.533 d



DV Fit Results:

Period = 30.53330 [0.00041] d
Epoch = 132.2689 [0.0156] BKJD
Rp/R* = 0.0121 [0.0122]
a/R* = 58.99 [356.38]
b = 0.89 [1.40]
Seff = 129.56 [78.71]
Teq = 860 [131] K
Rp = 2.10 [2.26] Re
a = 0.1929 [0.0692] AU
Ag = 495.66 [1054.05] [0.47] σ
Teffp = 6276 [3216] K [1.68] σ

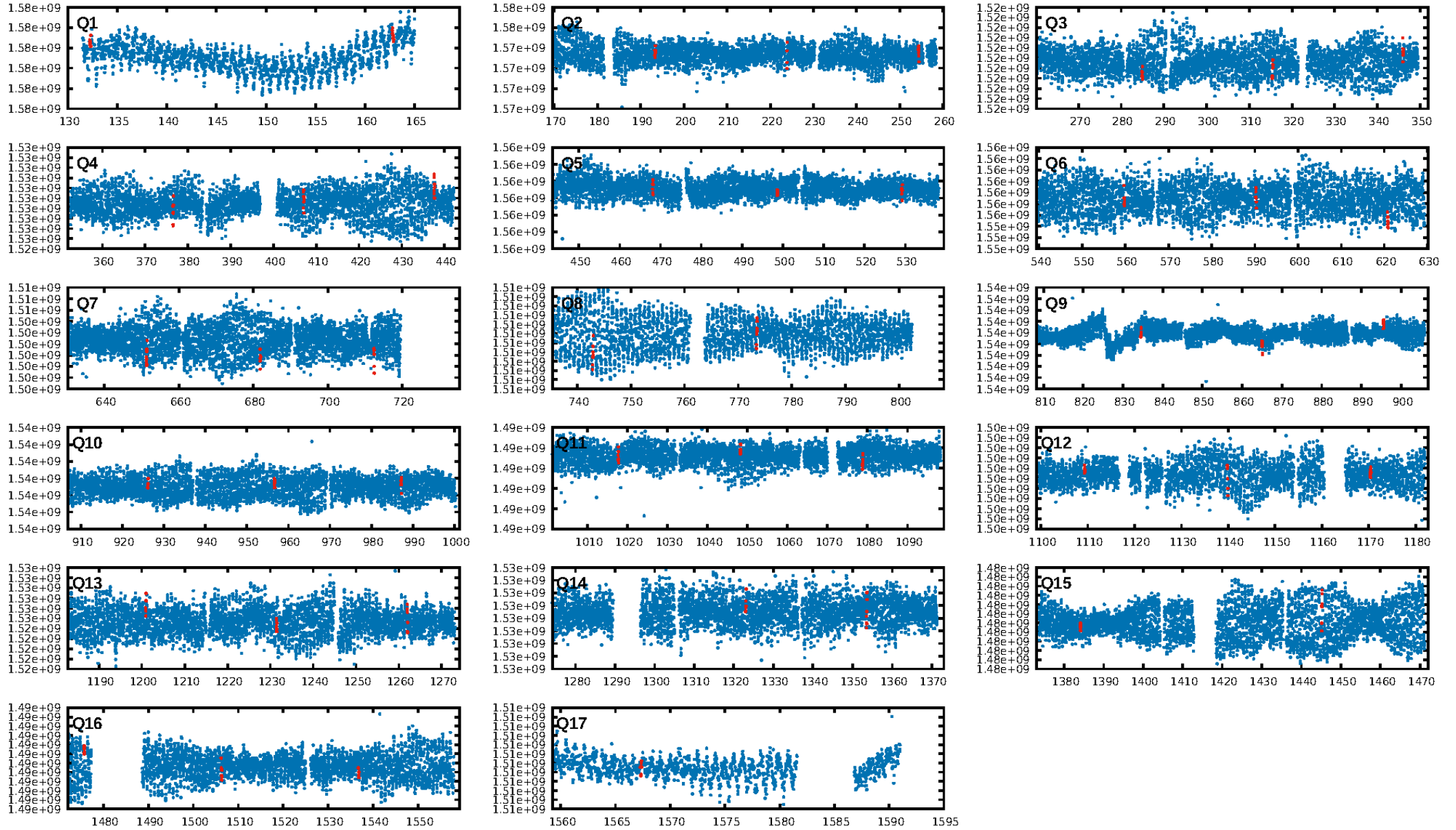
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [9.79] σ
LongPeriod-sig: 100.0% [70.93] σ
ModelChiSquare2-sig: 2.2%
ModelChiSquareGof-sig: 96.3%
Bootstrap-pfa: 9.83e-08
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 0.04334
Centroid-sig: N/A
Centroid-so: 0.746 arcsec [2.15] σ
OotOffset-rm: 1.961 arcsec [1.99] σ
KicOffset-rm: 2.640 arcsec [2.38] σ
OotOffset-st: 2/3/2/4 [11]
KicOffset-st: 2/3/2/4 [11]
DiffImageQuality-fgm: 0.27 [3/11]
DiffImageOverlap-fno: 0.18 [3/17]

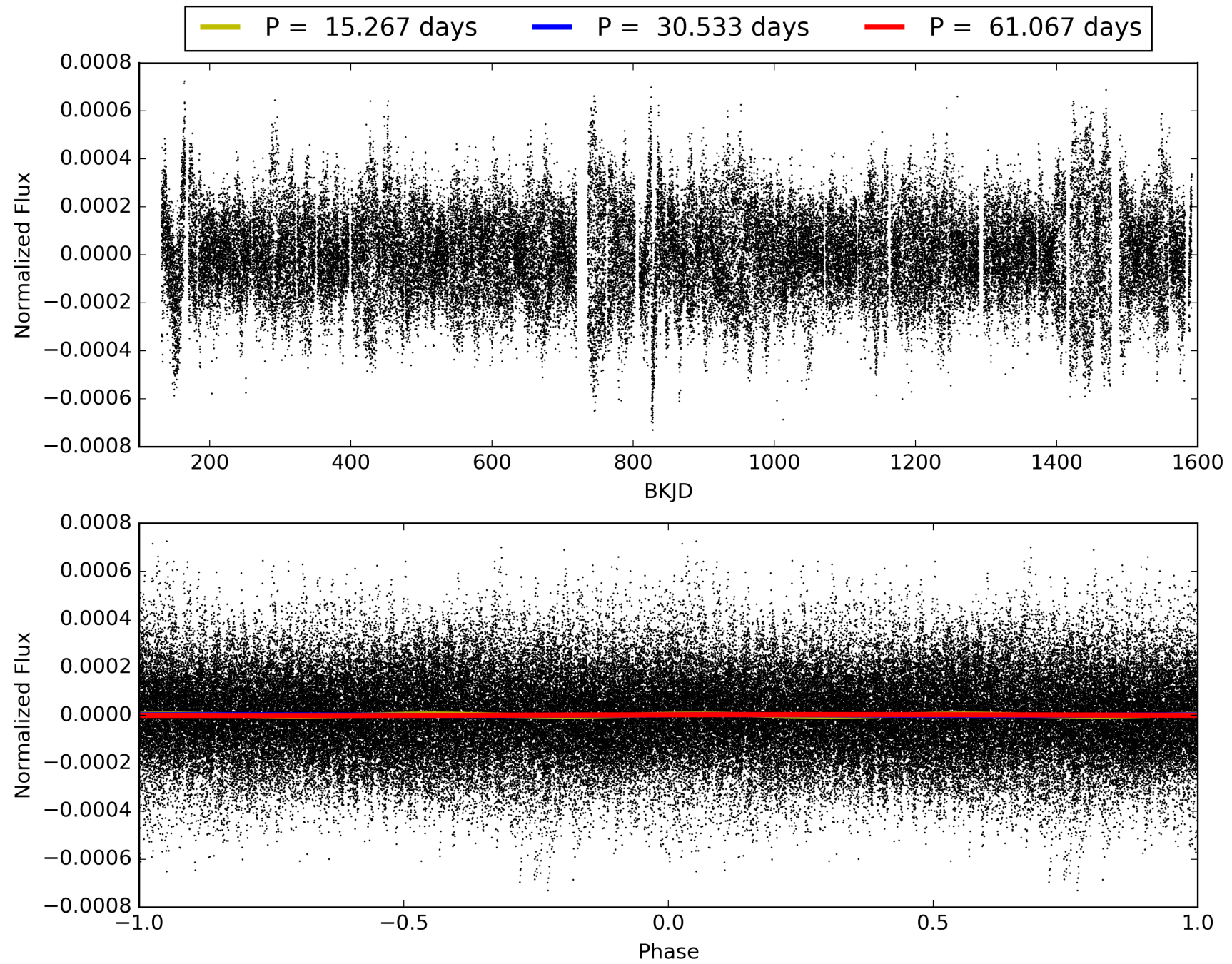
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:38 Z

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

TCE 004738155-08, PDC Light Curves

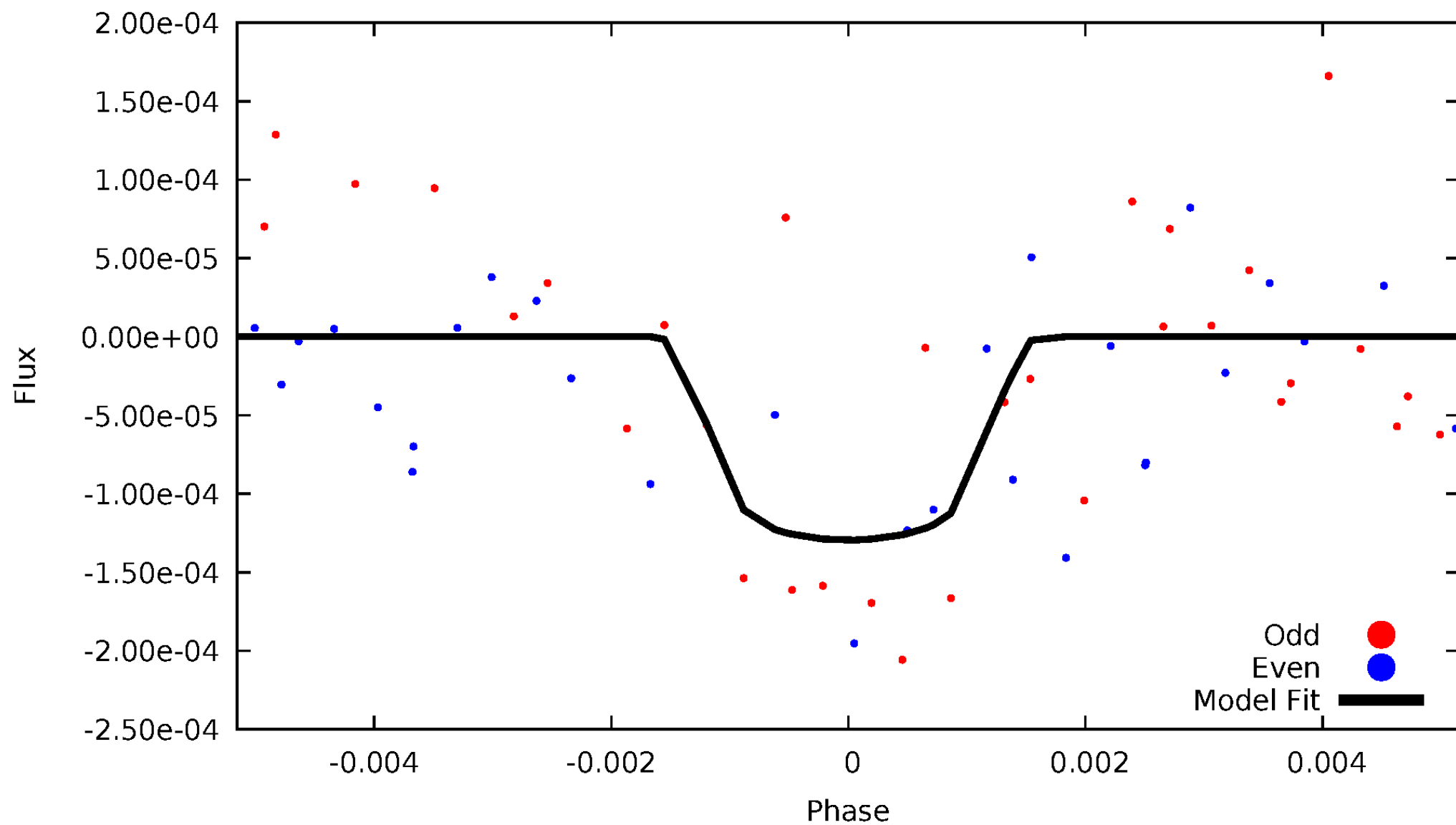


TCE 004738155-08



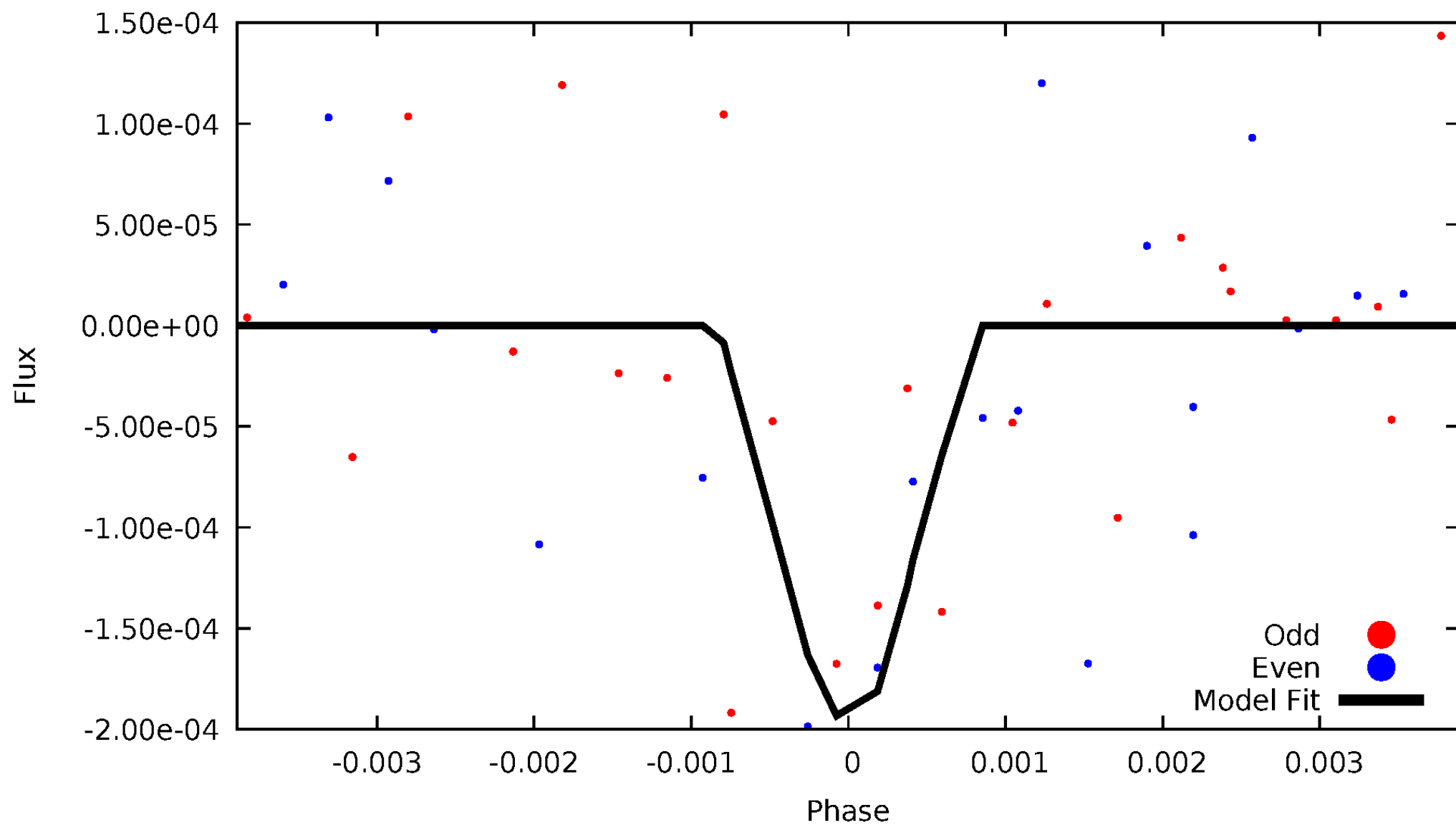
DV Odd/Even

TCE 004738155-08



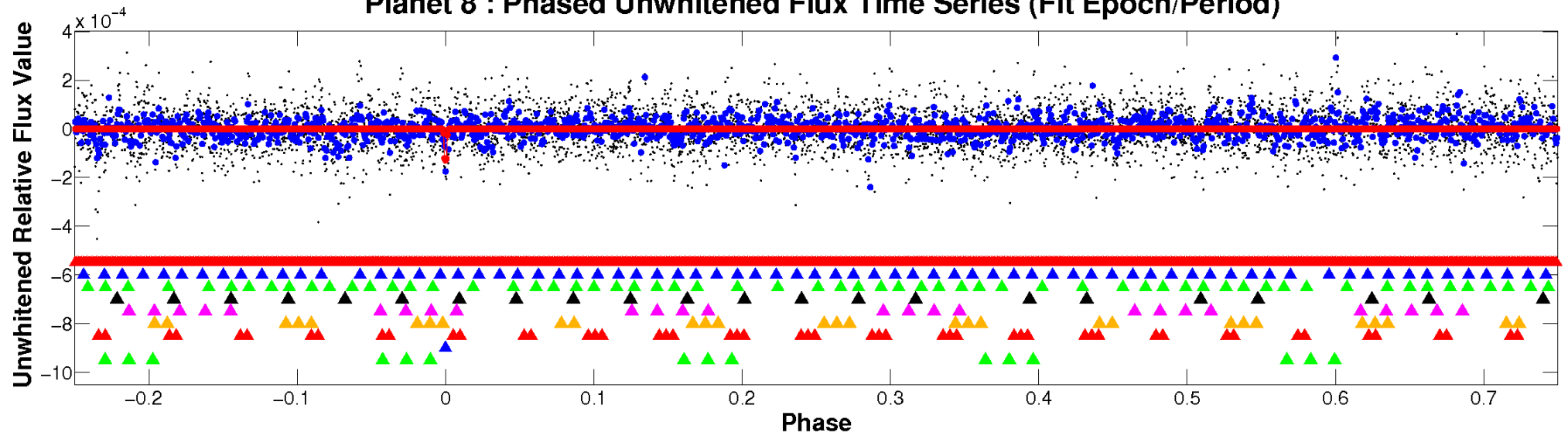
ALT Odd/Even

TCE 004738155-08

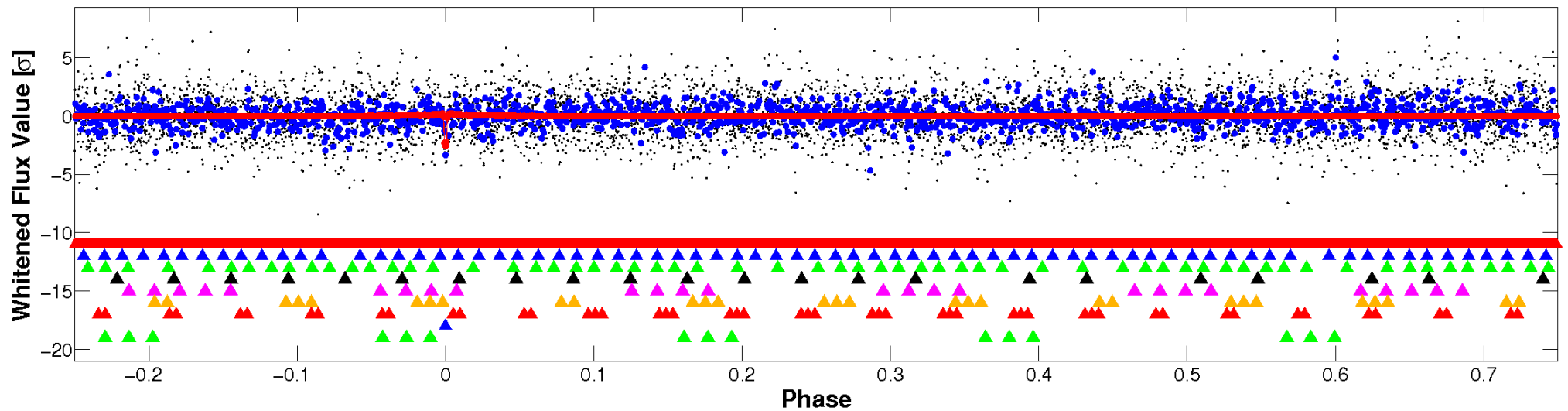


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

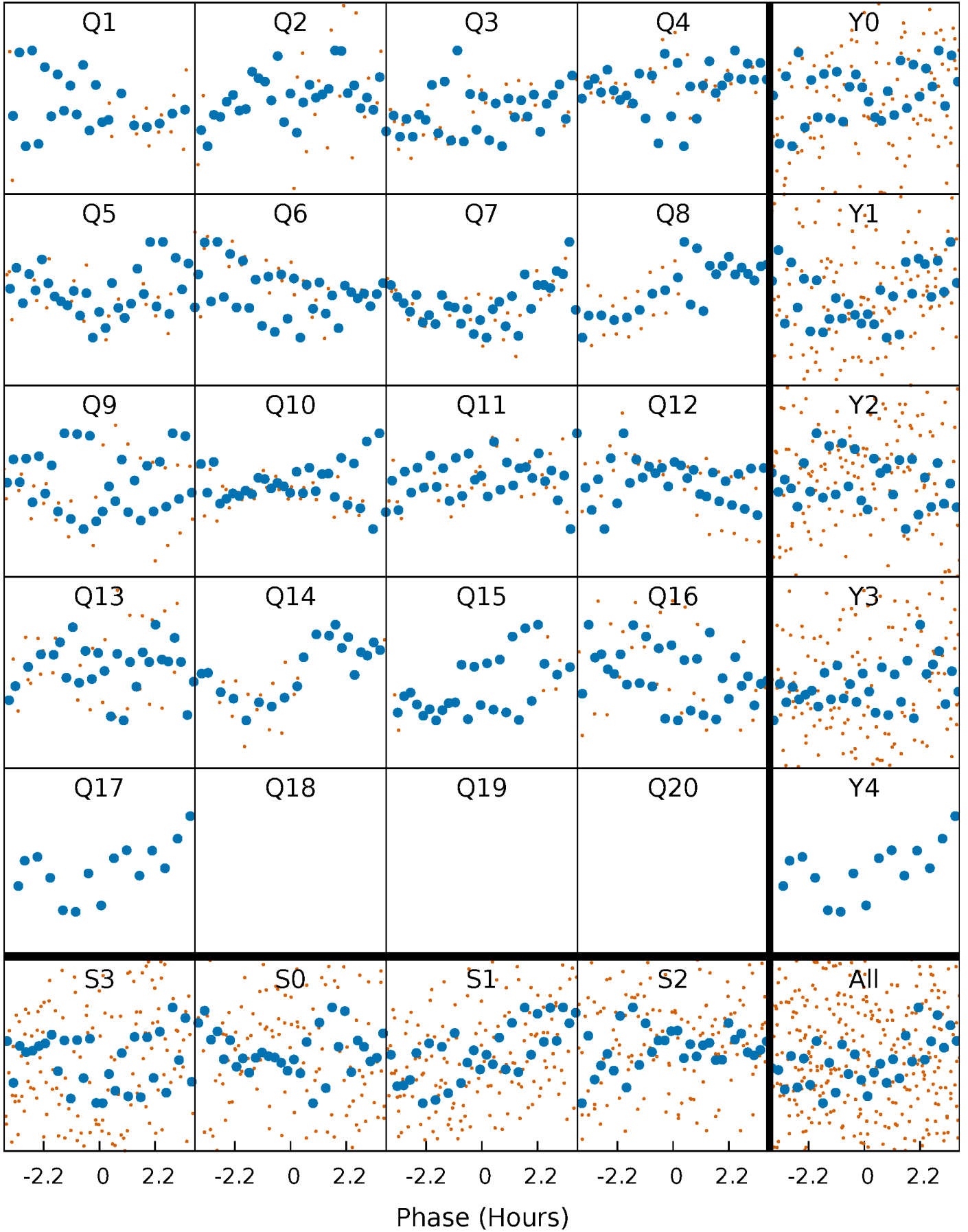


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



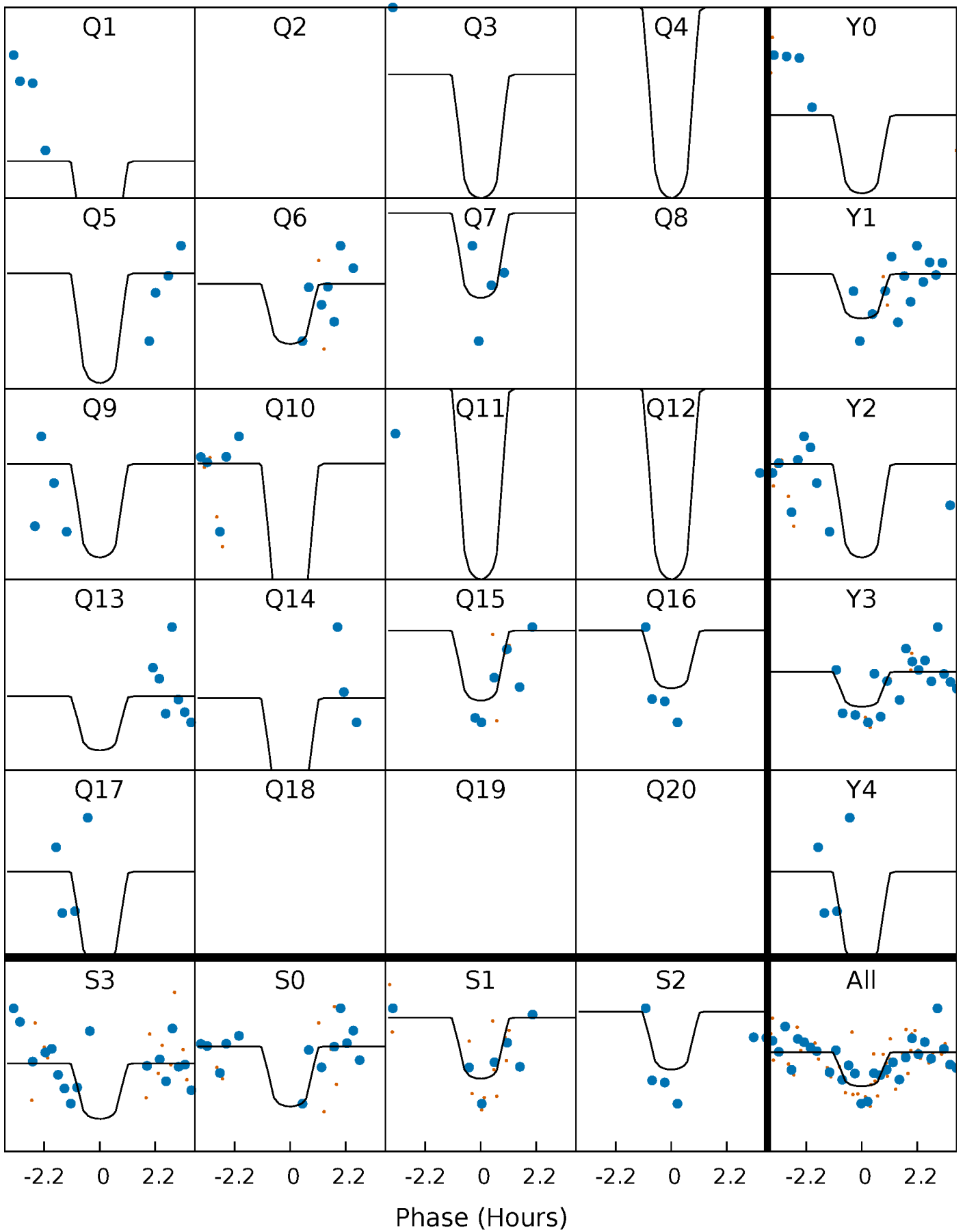
PDC Quarter-Phased Transit Curves

TCE 004738155-08 P= 30.533304 Days $T_0=132.268869$ (BKJD)



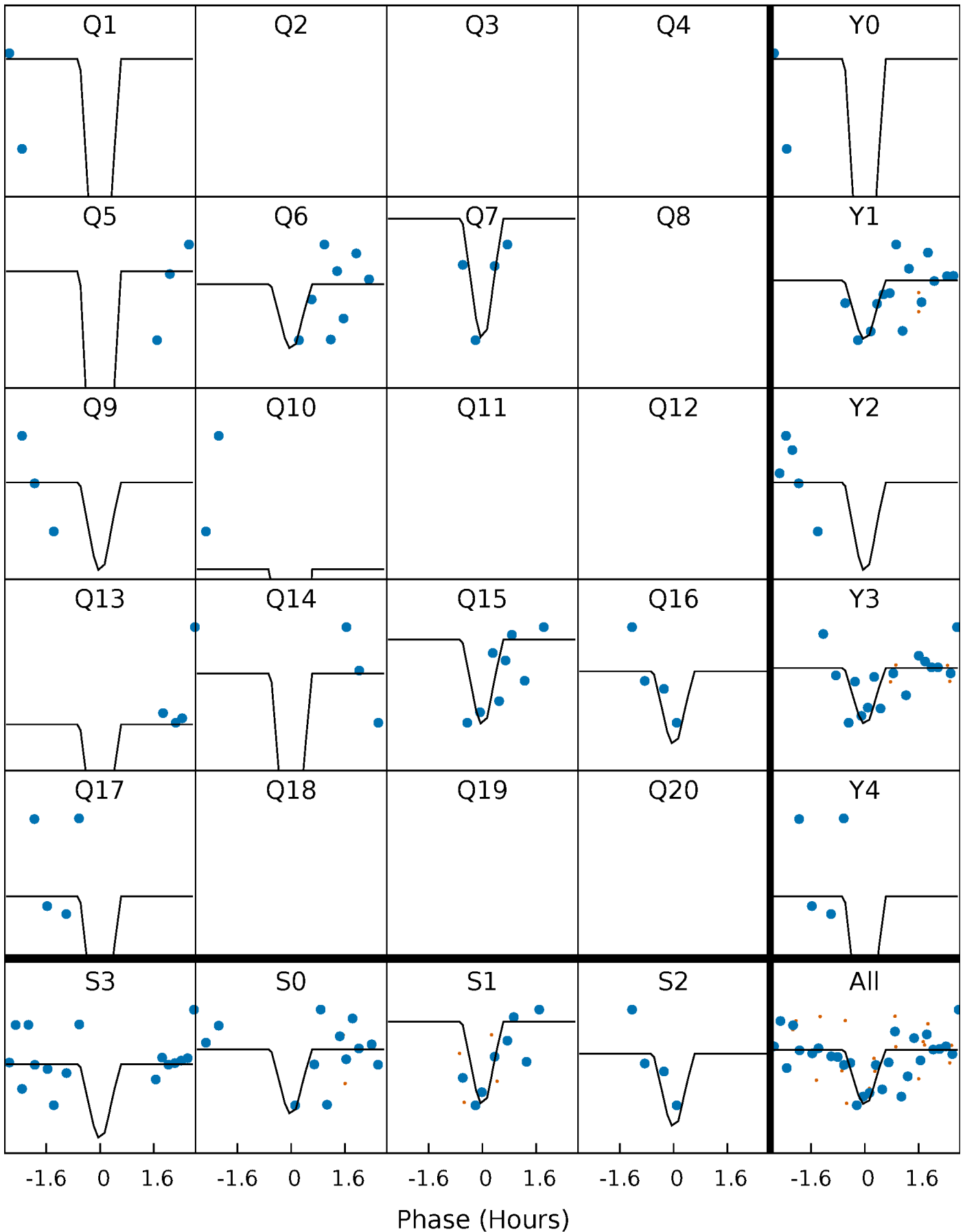
DV Quarter-Phased Transit Curves

TCE 004738155-08 P= 30.533304 Days $T_0=132.268869$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

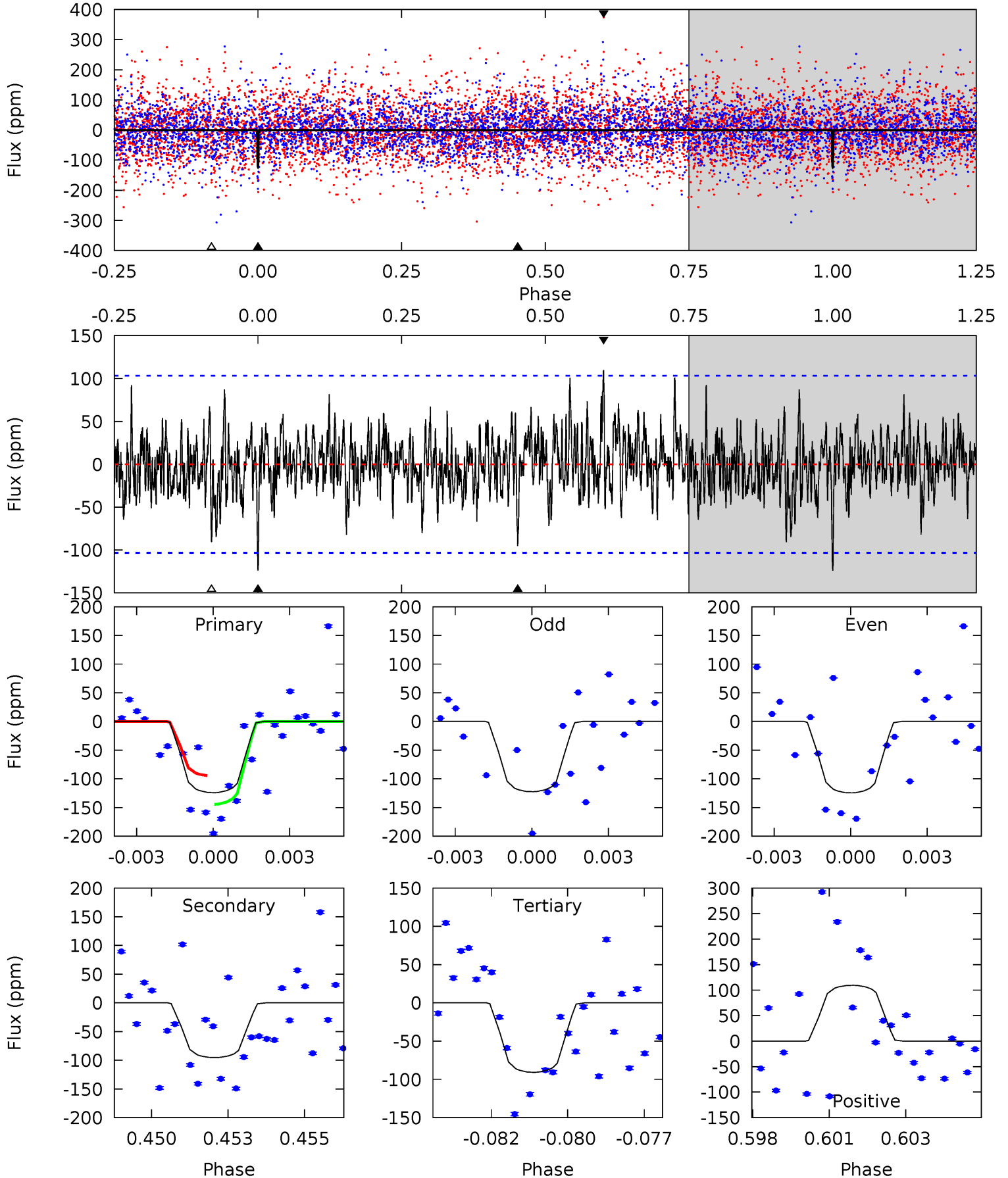
TCE 004738155-08 P= 30.533259 Days $T_0=132.279091$ (BKJD)



DV Model-Shift Uniqueness Test

004738155-08, P = 30.533304 Days, E = 132.268869 Days

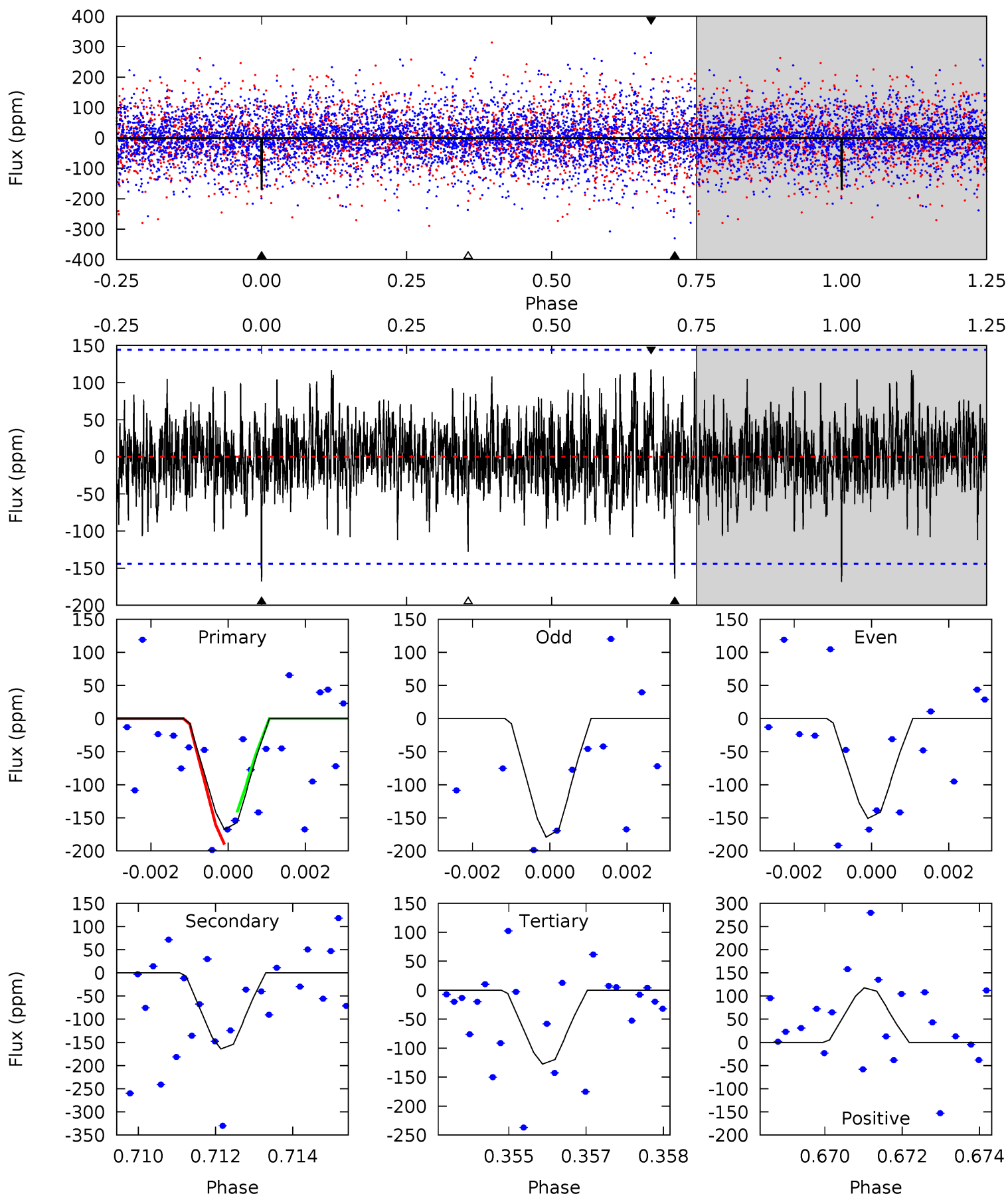
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.34	4.87	4.63	5.59	5.27	3.00	1.43	1.70	0.75	0.23	-0.72	0.05	0.80	0.47	1.18



Alt Model-Shift Uniqueness Test

004738155-08, P = 30.533259 Days, E = 132.279091 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.24	6.11	4.74	4.37	5.37	3.16	1.37	1.50	1.86	1.37	1.73	0.51	0.91	0.41	0.88



Stellar Parameters For KIC 004738155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6782^{+215}_{-263}	$4.044^{+0.350}_{-0.150}$	$-0.840^{+0.300}_{-0.300}$	$1.595^{+0.379}_{-0.568}$	$1.026^{+0.127}_{-0.115}$	$0.356^{+0.883}_{-0.148}$
	+3%/-4%	+9%/-4%	+36%/-36%	+24%/-36%	+12%/-11%	+248%/-42%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004738155-08 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-95 ± 20	$2.33^{+2.01}_{-1.48}$	1185^{+91}_{-123}	5619^{+4107}_{-1255}	371^{+2056}_{-269}
Alt.	-164 ± 27	$2.63^{+2.02}_{-1.62}$	1176^{+99}_{-111}	6009^{+4831}_{-1269}	483^{+2801}_{-328}

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

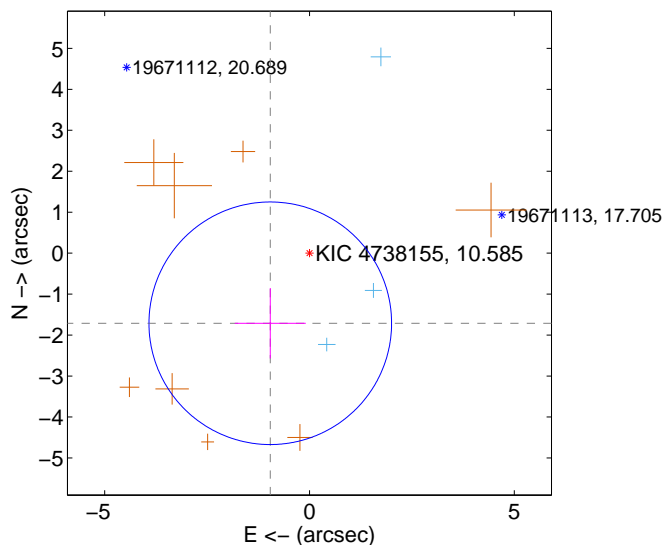
Supplemental centroid analysis for 004738155-08. **Kepler magnitude: 10.59.** Transit SNR 8.13

There are 3 quarters with good PRF difference image offsets

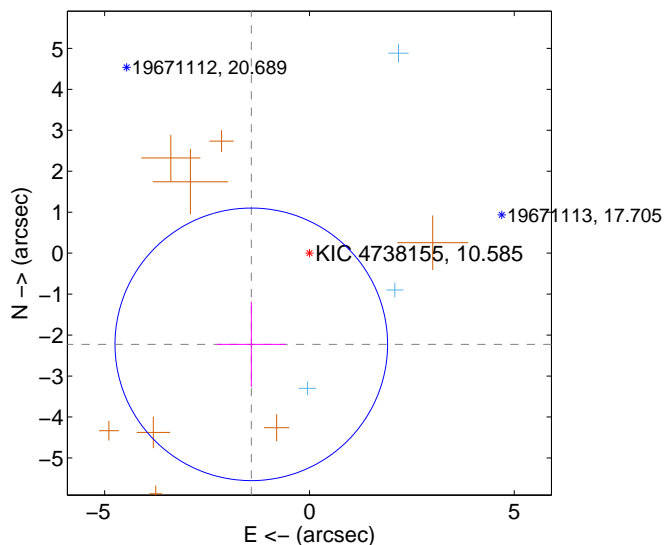
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.961 ± 0.987	1.99	0.957 ± 0.866	-1.711 ± 0.860
PRF-fit source offset from KIC position	2.640 ± 1.109	2.38	1.420 ± 0.840	-2.226 ± 1.041
photometric centroid source offset	0.75 ± 0.35	2.15	0.68 ± 0.33	0.30 ± 0.43

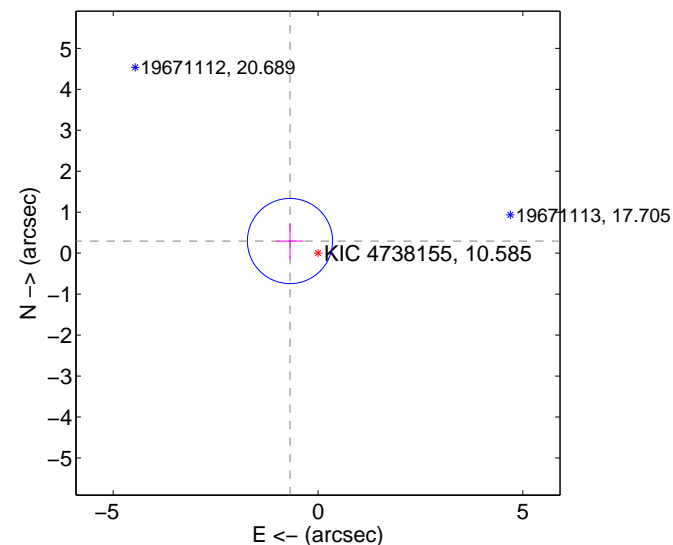
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

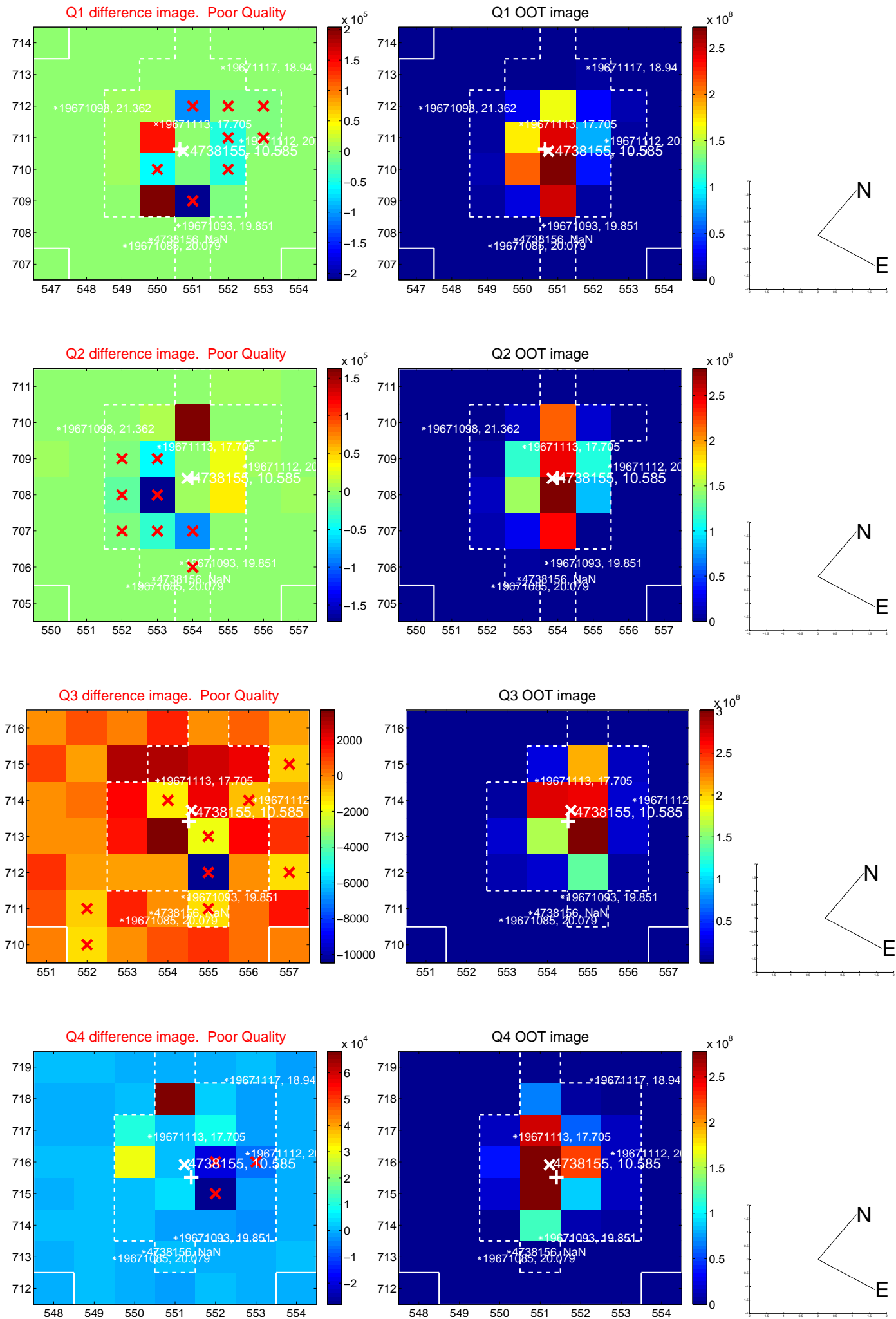


offset from photometric centroids

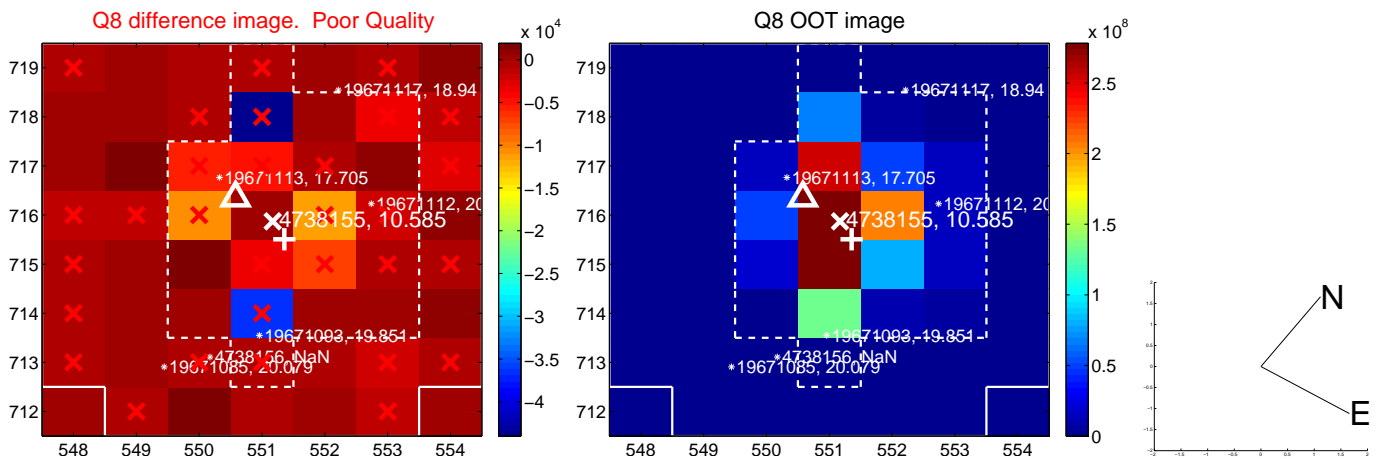
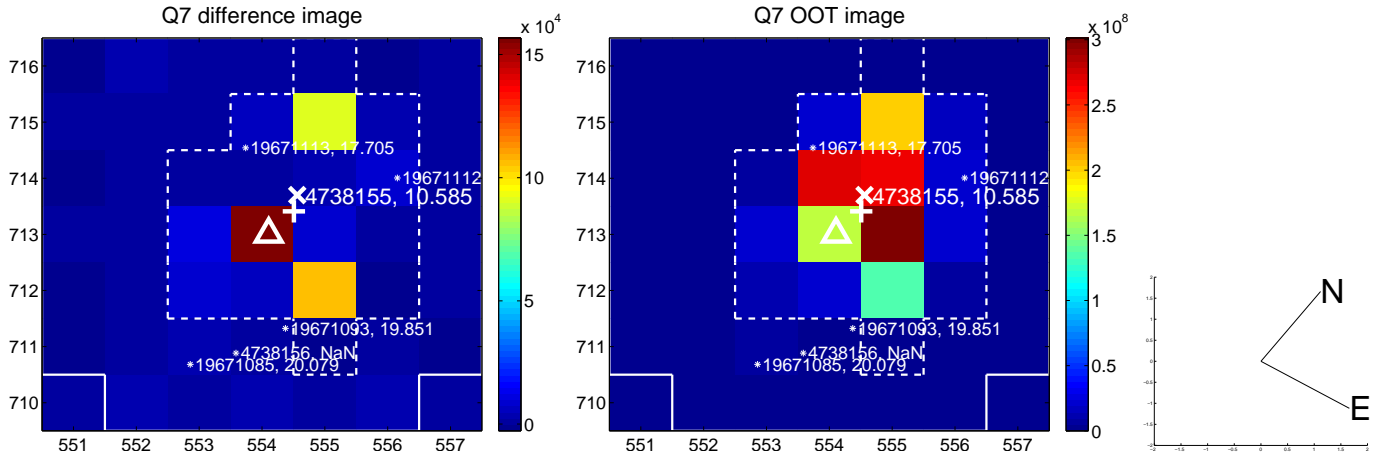
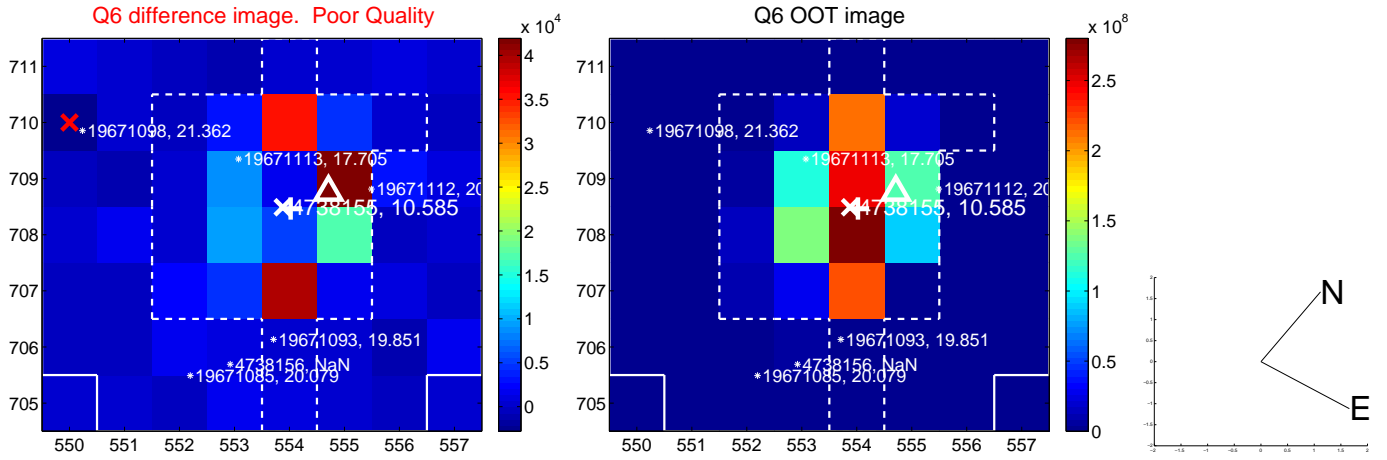
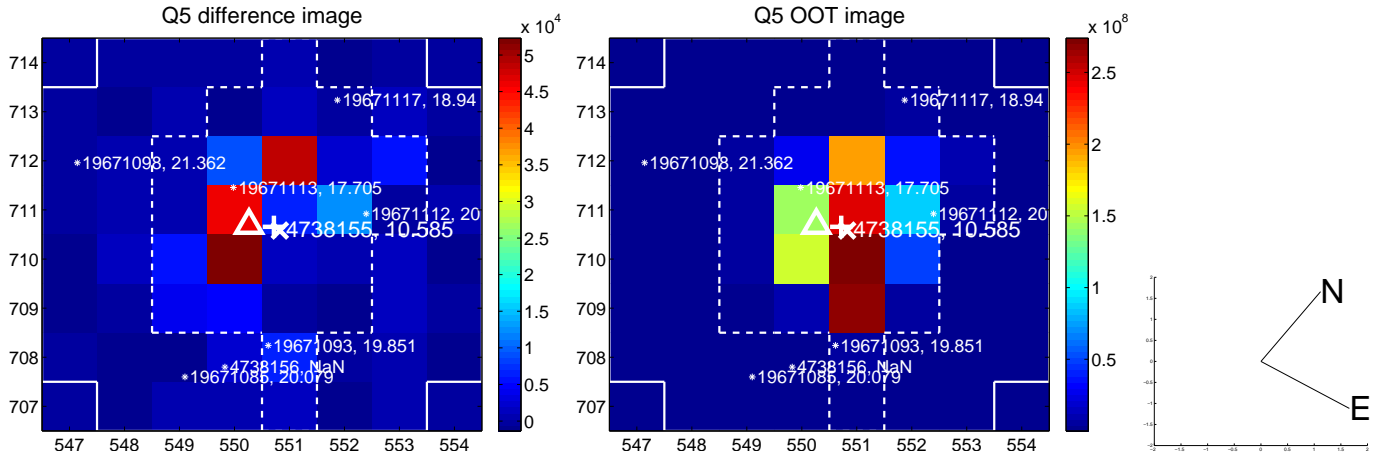


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

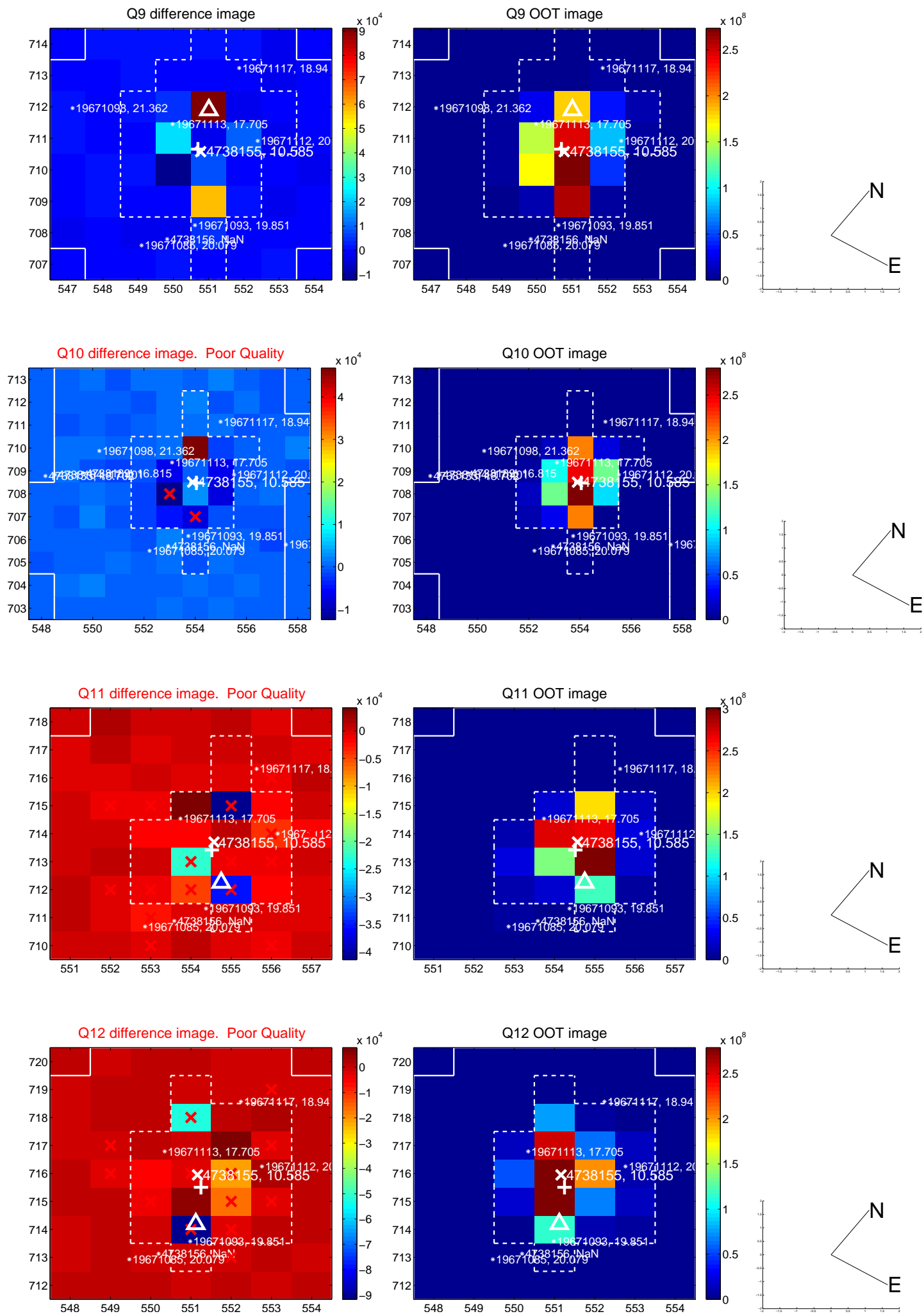
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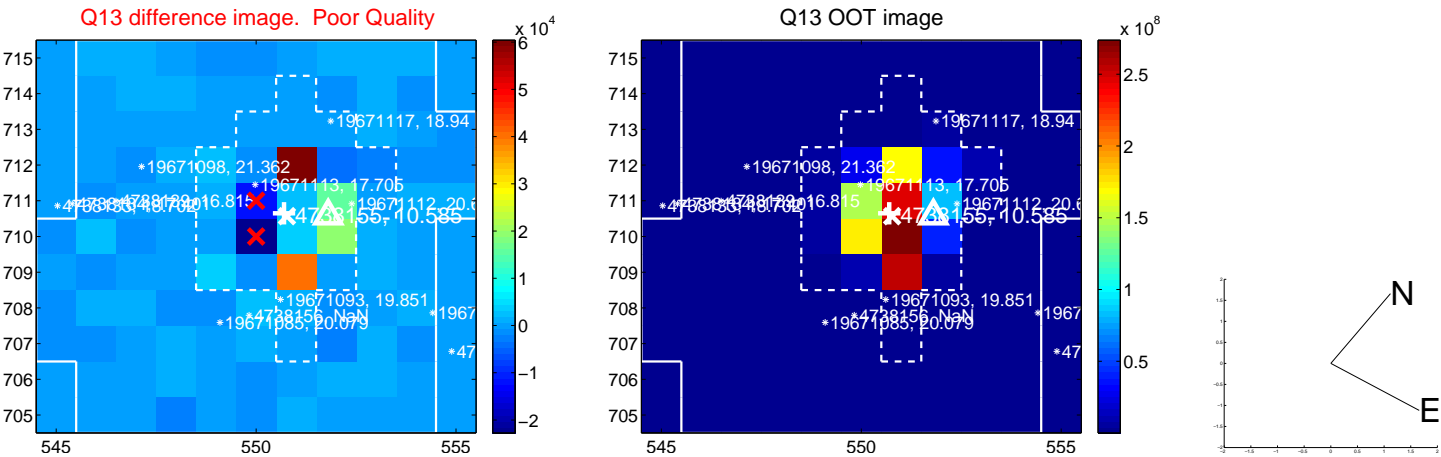
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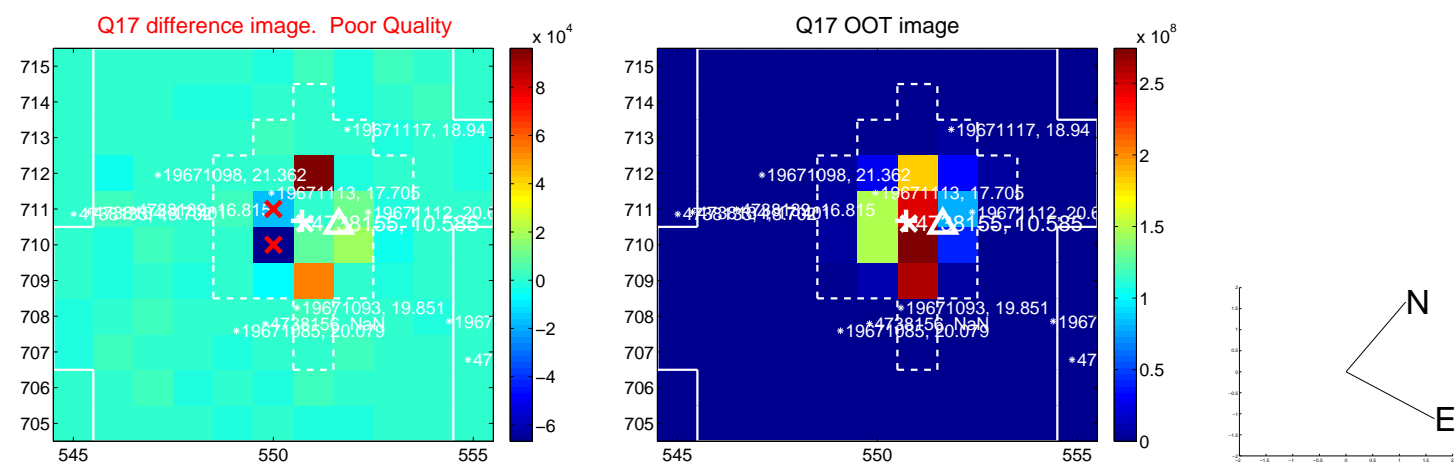
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



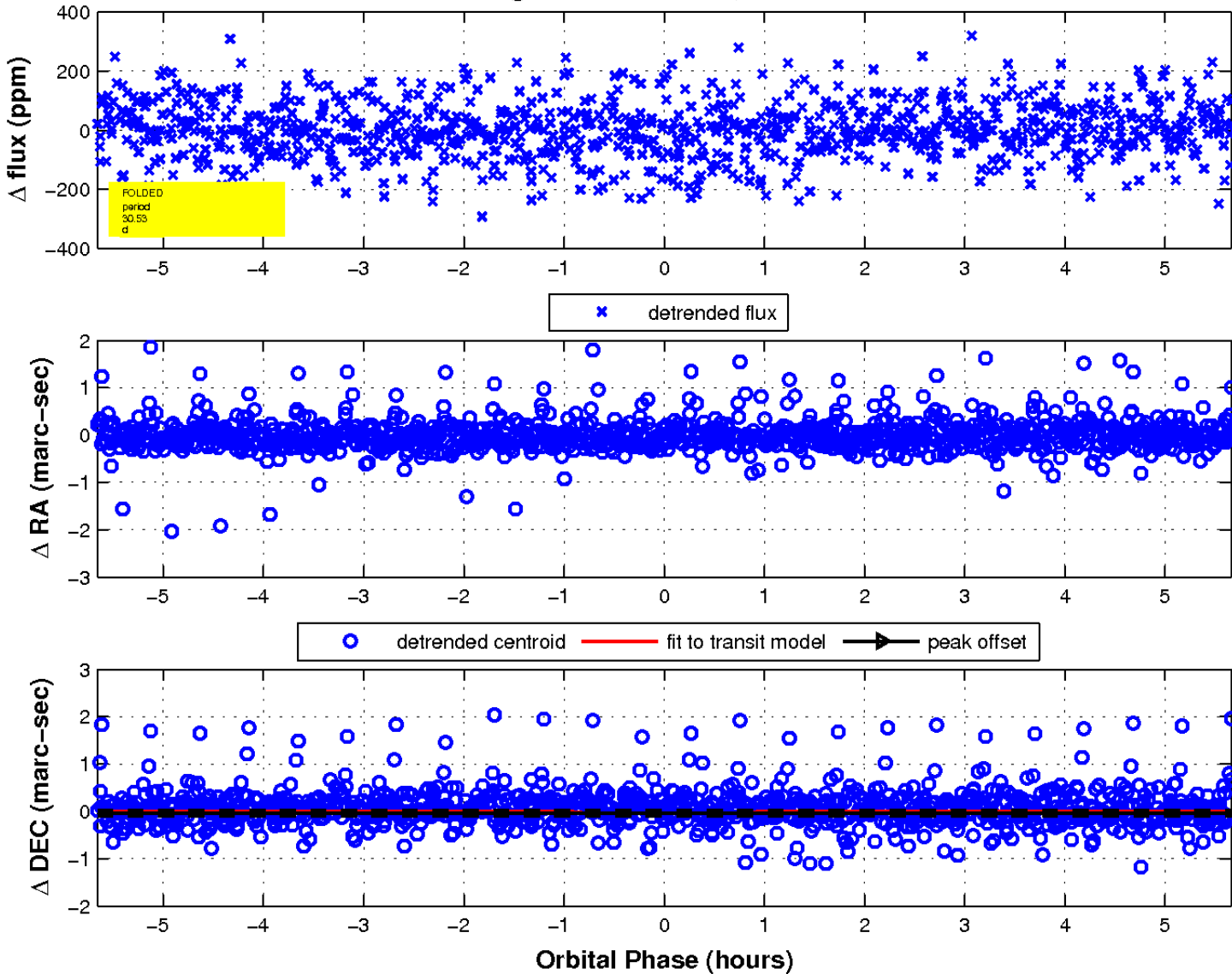
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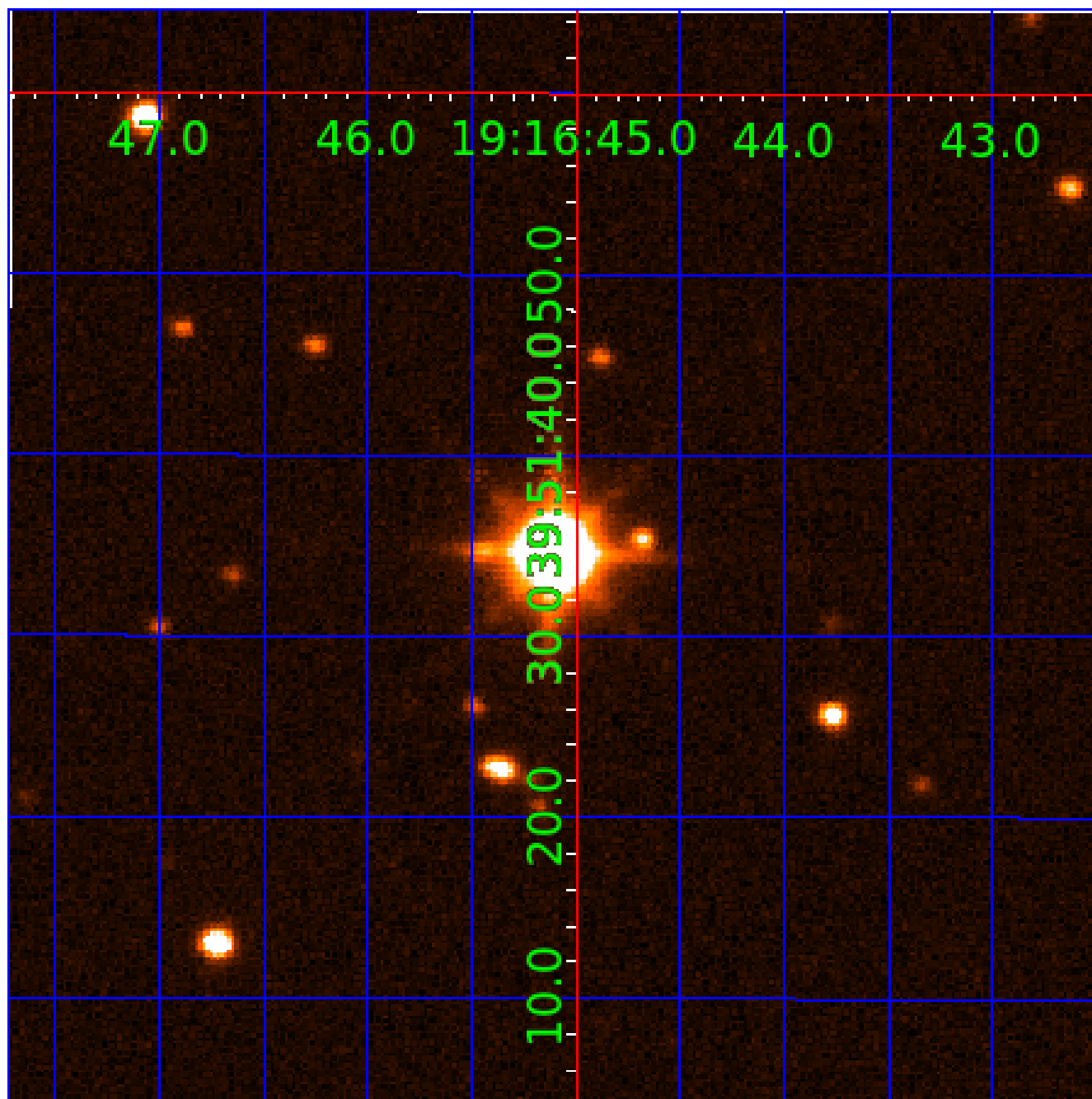


fluxWeightedCentroids, Planet 8 of 9



UKIRT Image

Declination



KIC 004738155

Q1-17 DR25 TCE Parameters

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Robovetter Results

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004738155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
004738155-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004738155-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST
004738155-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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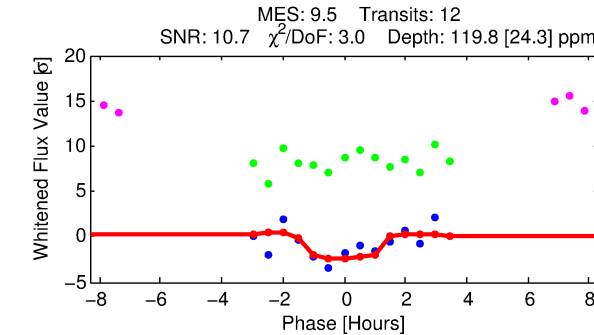
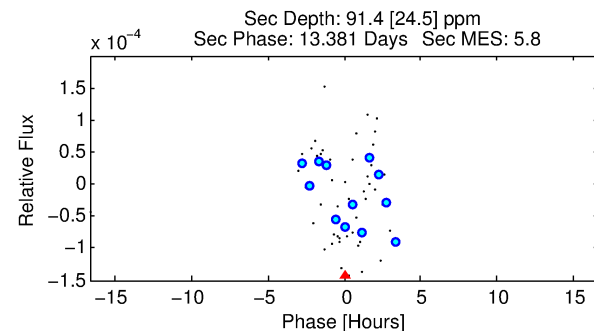
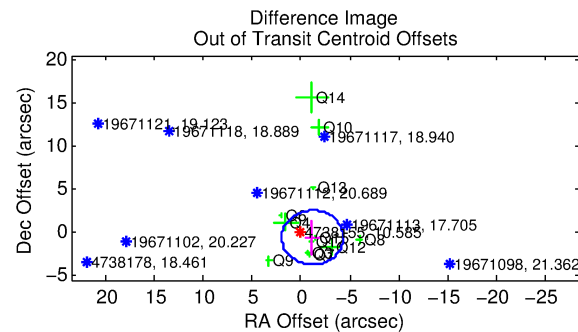
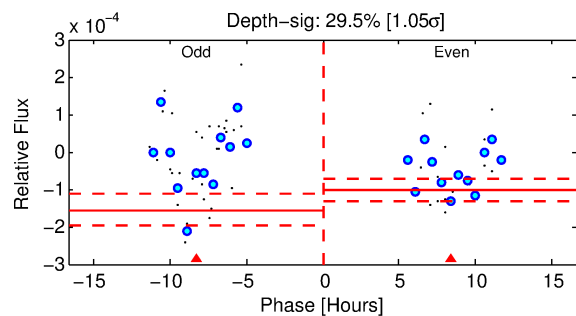
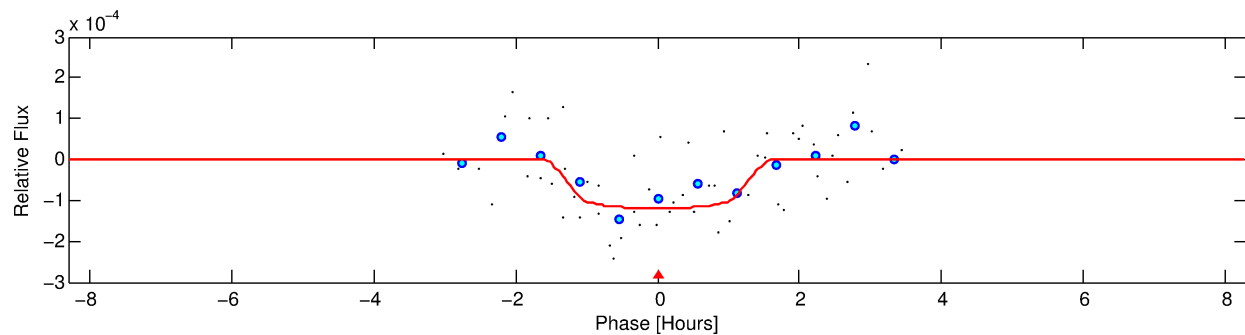
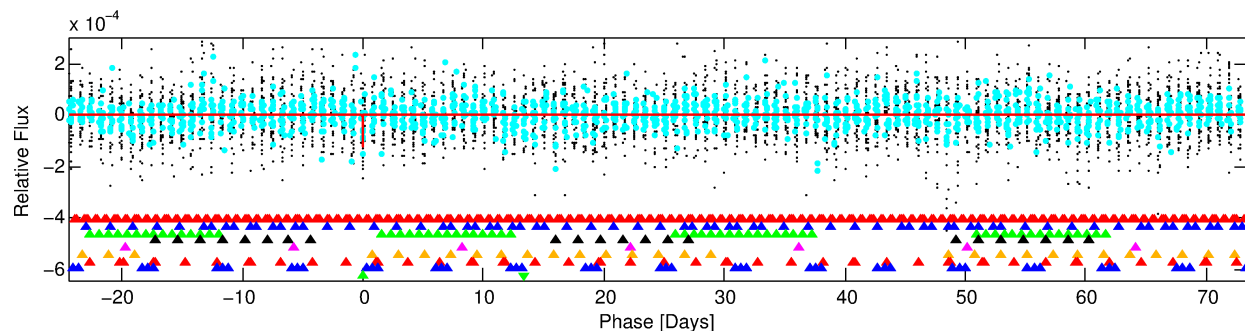
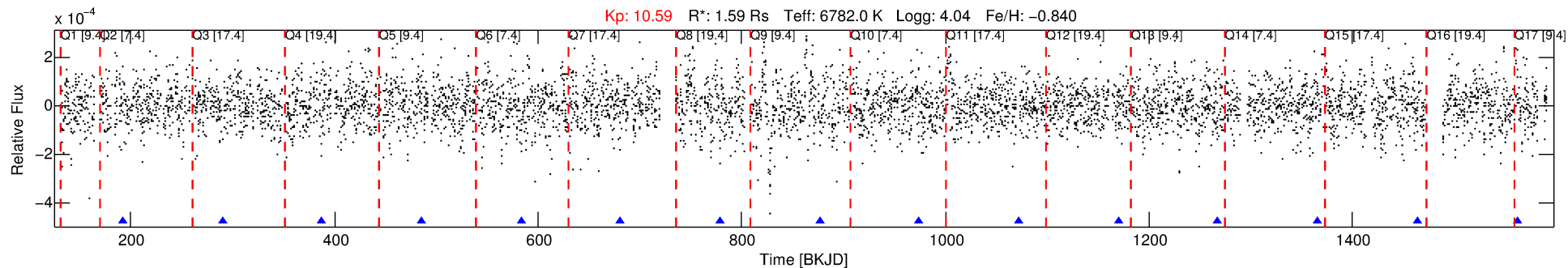
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004738155-09

No Significant Match Found

DV One-Page Summary

KIC: 4738155 Candidate: 9 of 9 Period: 97.805 d



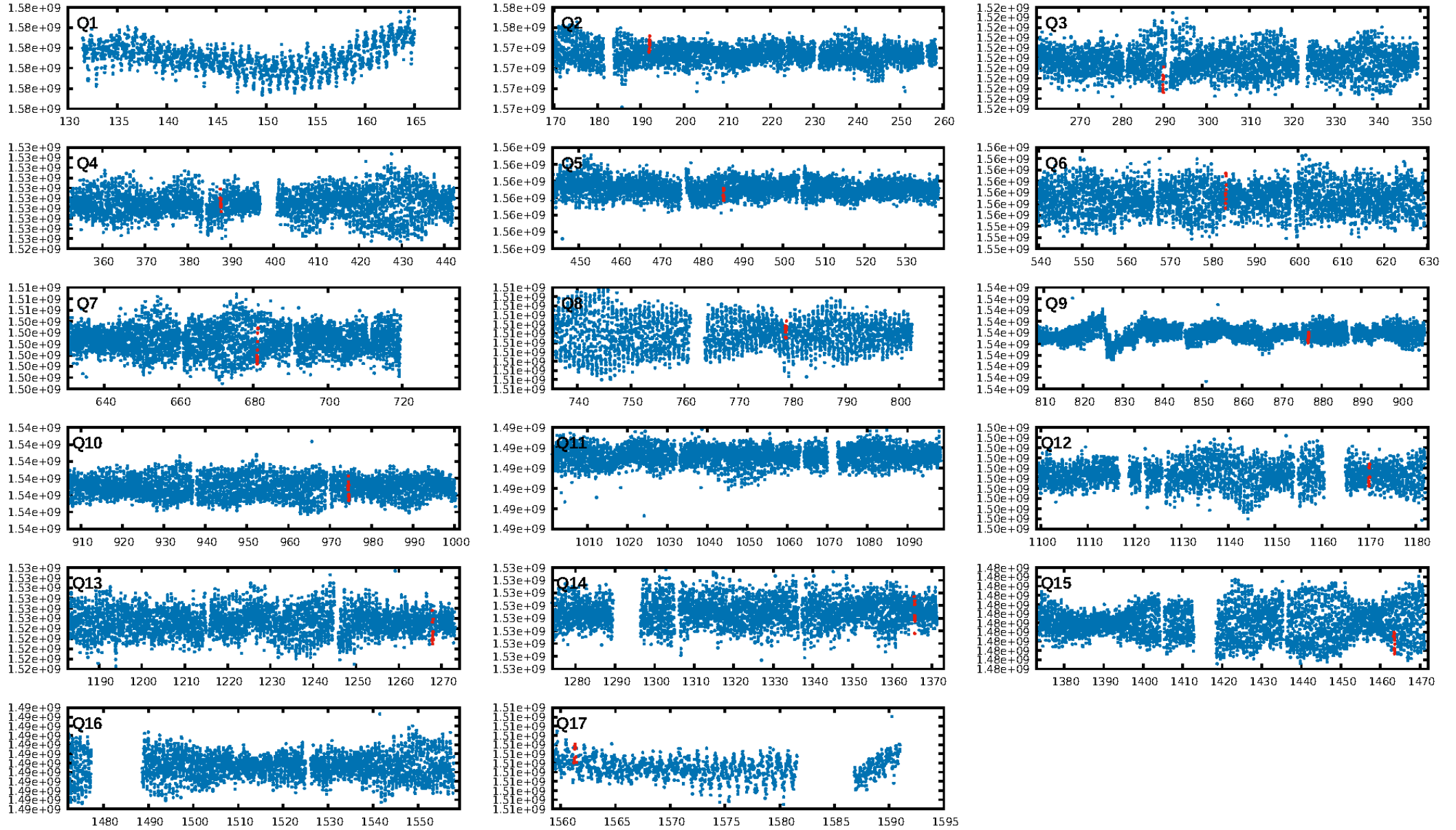
DV Fit Results:

Period = 97.80482 [0.00285] d
Epoch = 192.0421 [0.0191] BKJD
 $R_p/R^* = 0.0116$ [0.0098]
 $a/R^* = 130.36$ [656.11]
 $b = 0.89$ [1.21]
 $\text{Seff} = 27.44$ [16.67]
 $T_{\text{eq}} = 584$ [89] K
 $R_p = 2.02$ [1.85] R_{e}
 $a = 0.4192$ [0.1503] AU
 $A_g = 2173.73$ [3934.78] [0.55 σ]
 $T_{\text{eff}} = 6161$ [2648] K [2.11 σ]

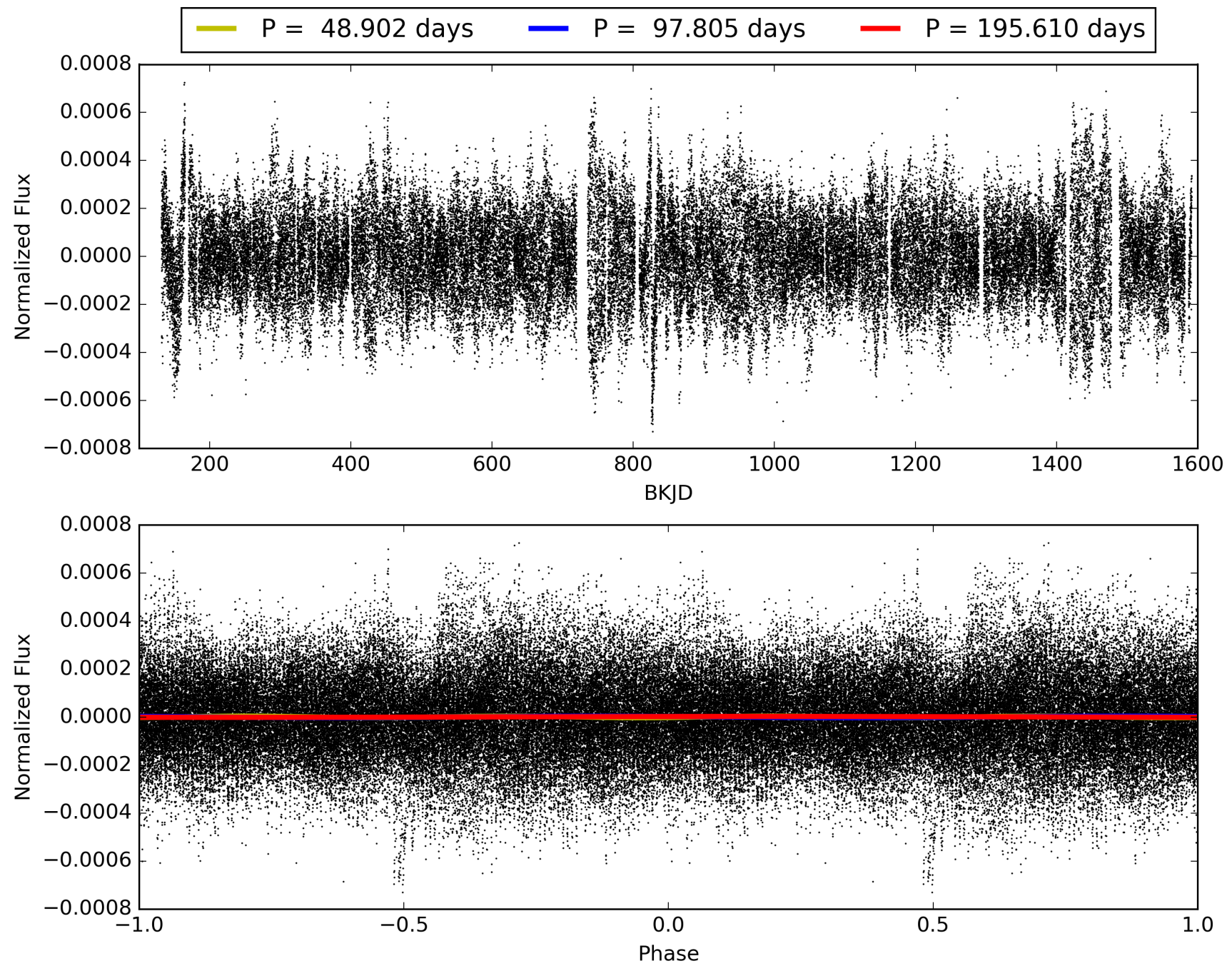
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [162.59 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 98.7%
Bootstrap-pfa: 4.61e-08
RollingBand-fgt: 1.00 [12/12]
GhostDiagnostic-chr: 0.3231
Centroid-sig: N/A
Centroid-so: 0.791 arcsec [1.48 σ]
OotOffset-rm: 1.295 arcsec [1.24 σ]
KicOffset-rm: 2.141 arcsec [1.36 σ]
OotOffset-st: 3/3/3/3 [12]
KicOffset-st: 3/3/3/3 [12]
DiffImageQuality-fgm: 0.08 [1/12]
DiffImageOverlap-fno: 0.00 [0/14]

TCE 004738155-09, PDC Light Curves

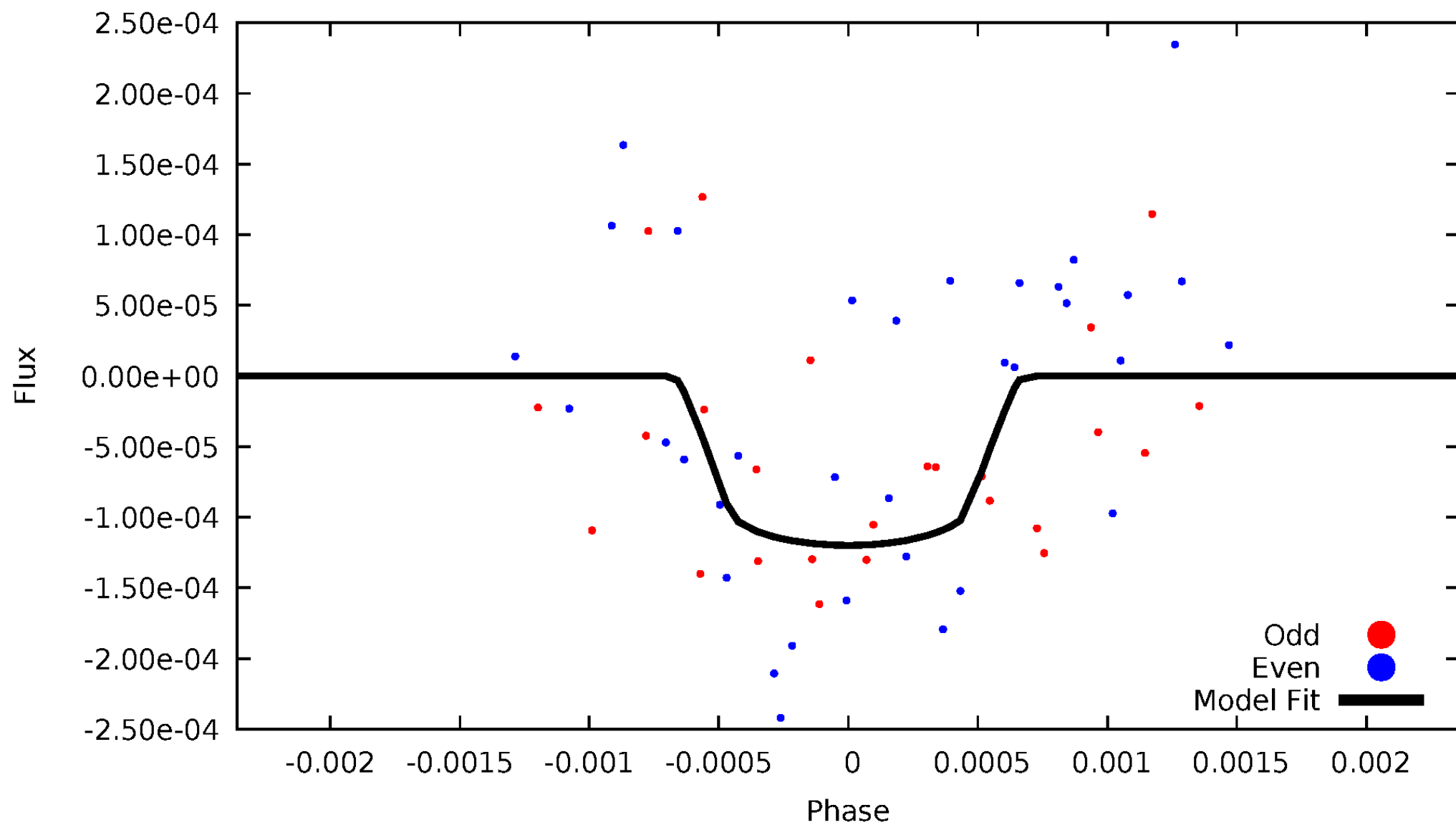


TCE 004738155-09



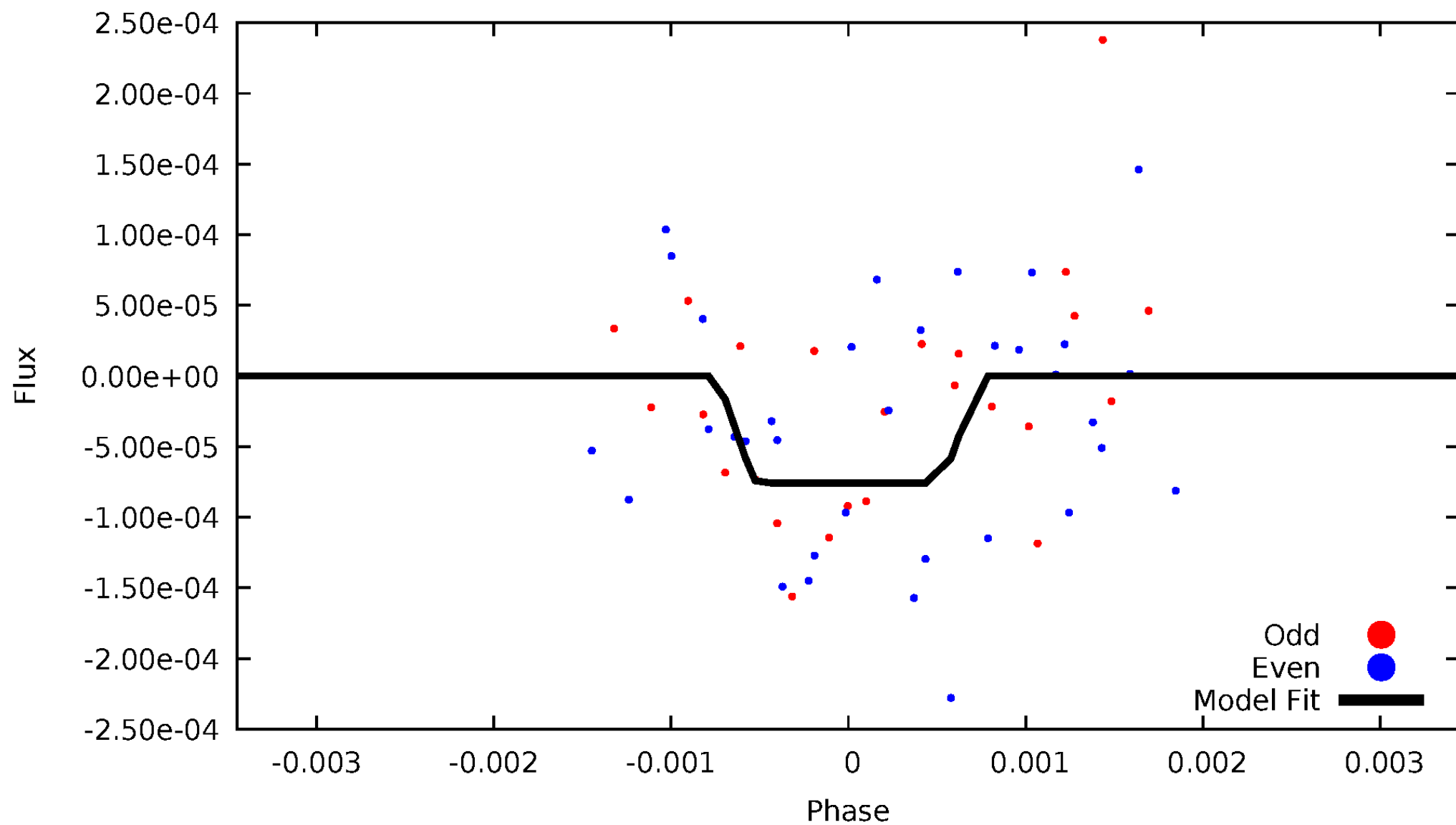
DV Odd/Even

TCE 004738155-09

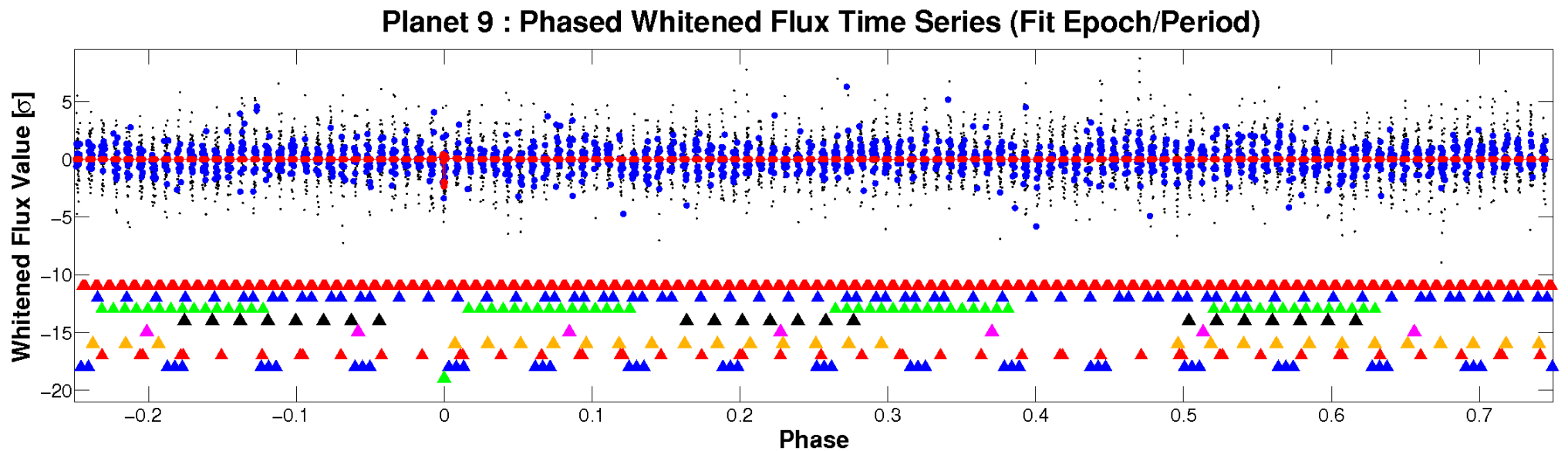
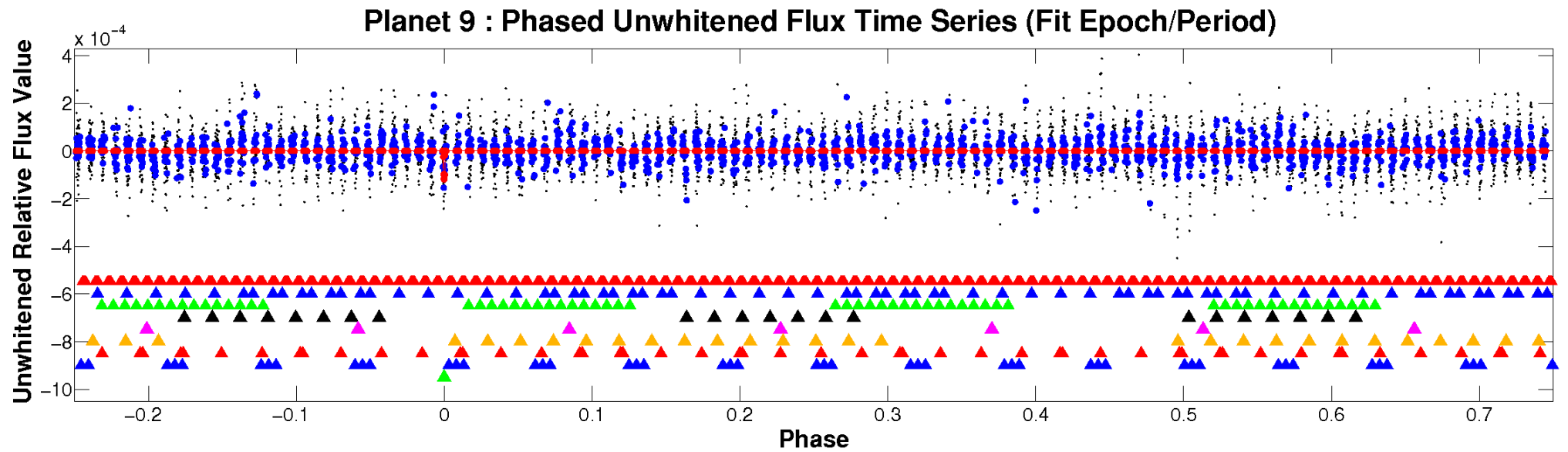


ALT Odd/Even

TCE 004738155-09

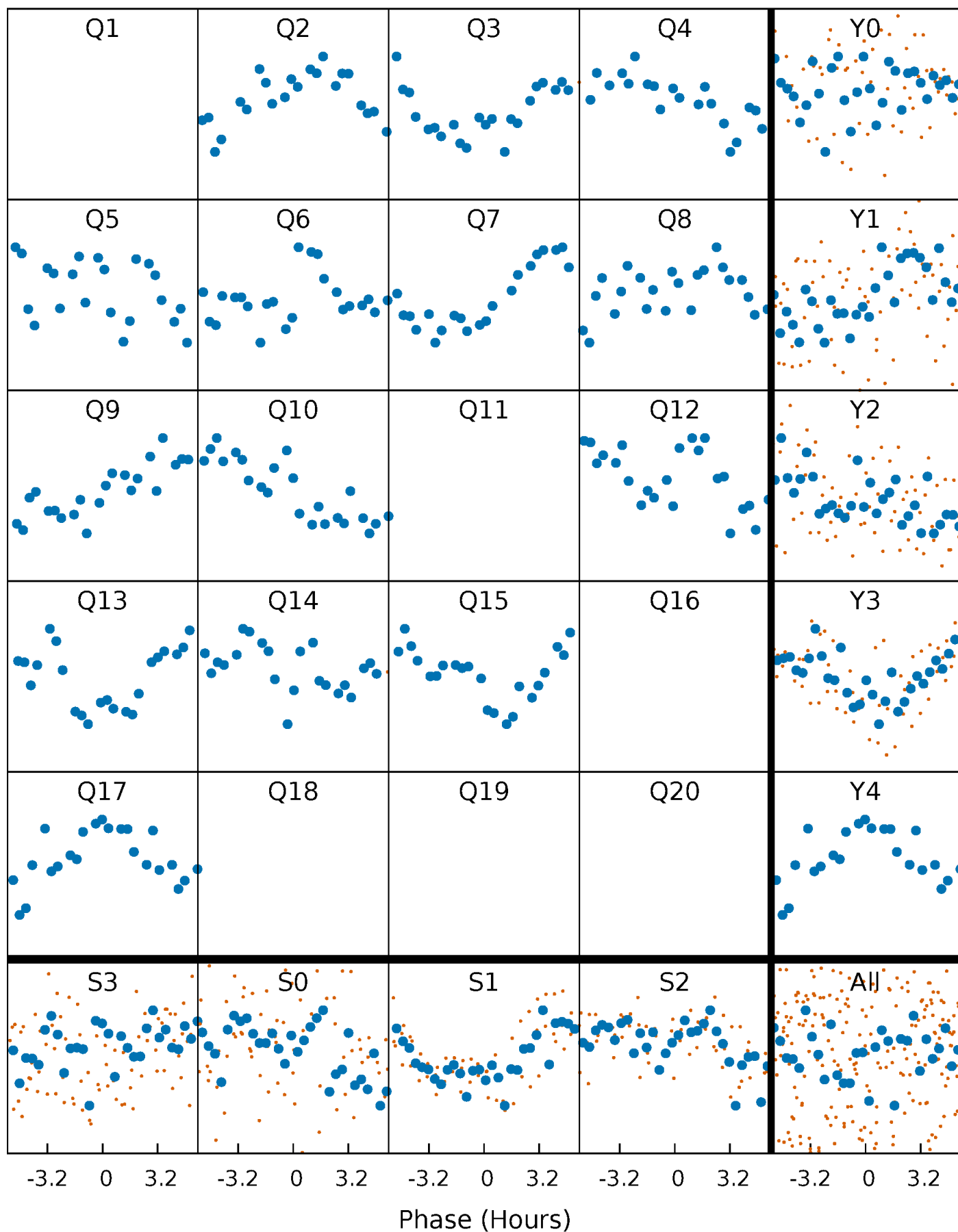


Non-Whitened Vs. Whitened Light Curve



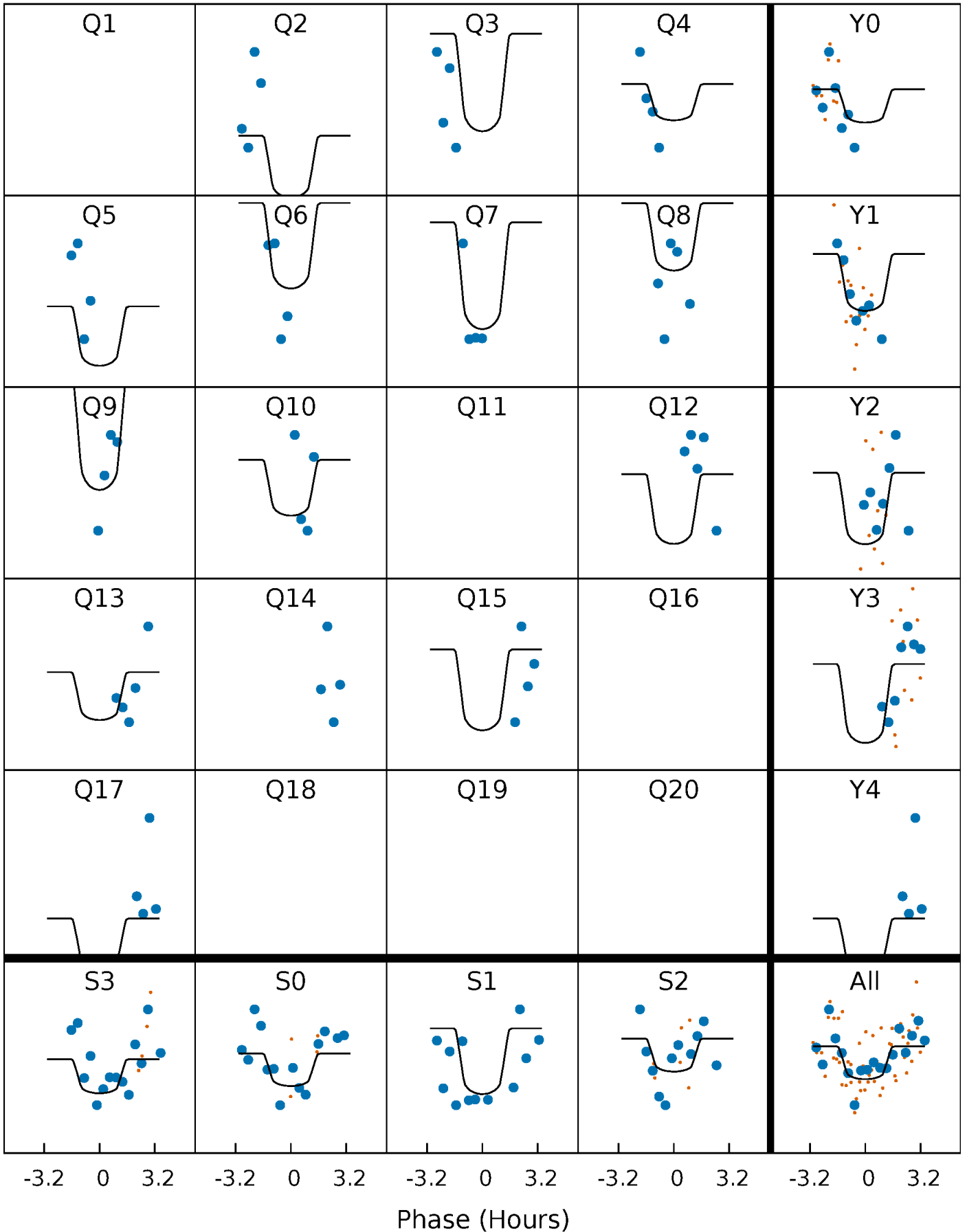
PDC Quarter-Phased Transit Curves

TCE 004738155-09 P= 97.804825 Days $T_0=192.042078$ (BKJD)



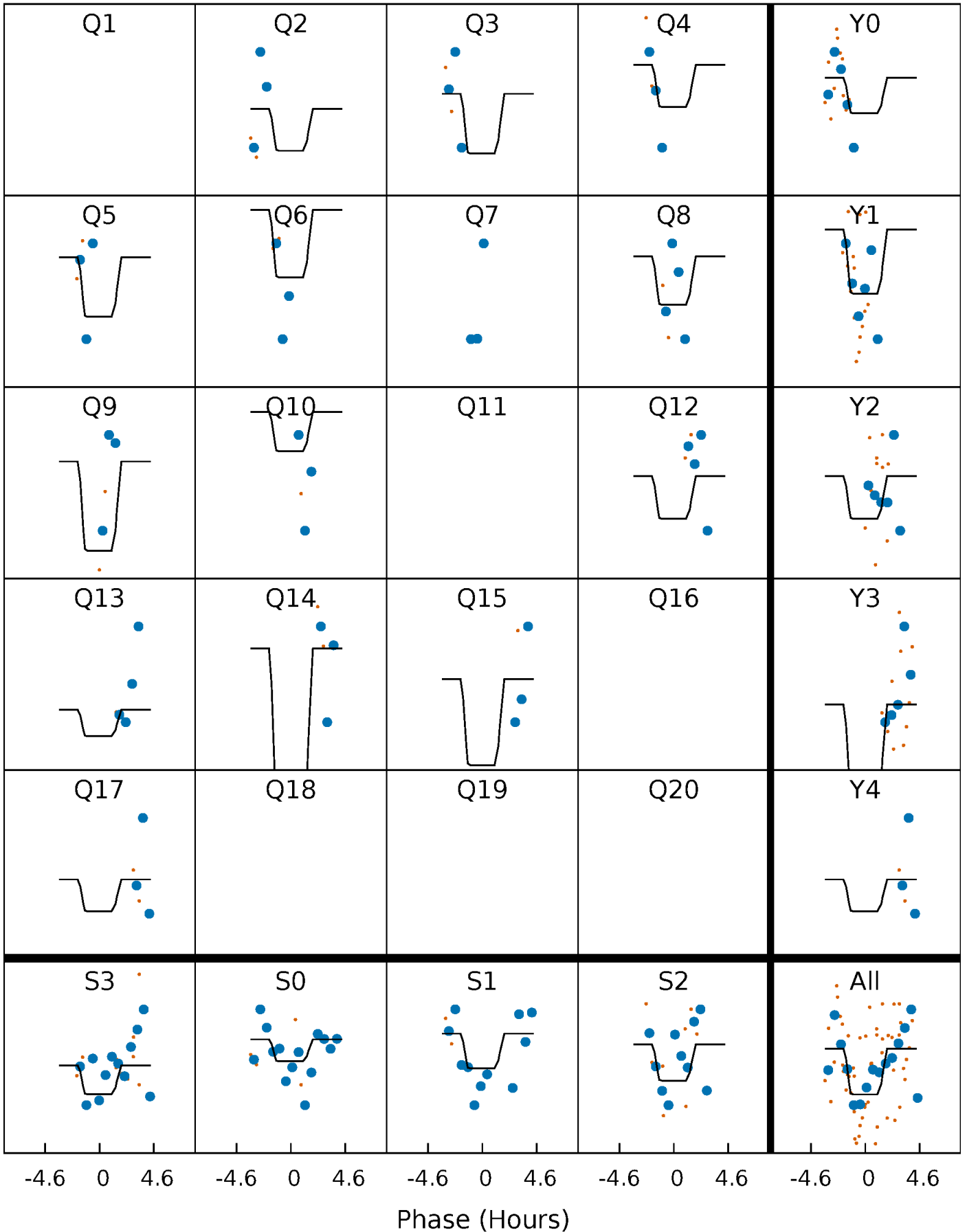
DV Quarter-Phased Transit Curves

TCE 004738155-09 P= 97.804825 Days $T_0=192.042078$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

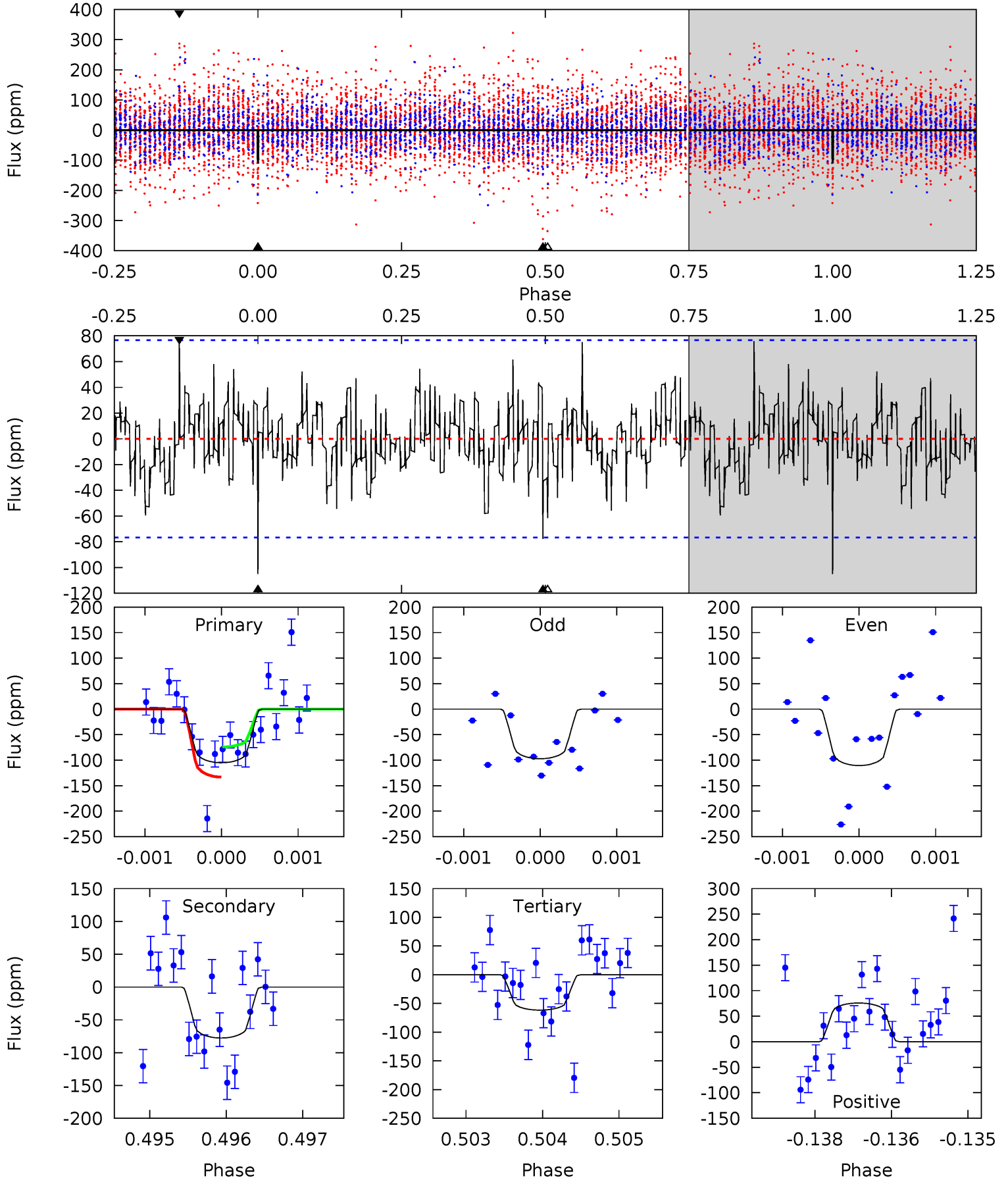
TCE 004738155-09 P= 97.801057 Days $T_0=192.057872$ (BKJD)



DV Model-Shift Uniqueness Test

004738155-09, P = 97.804825 Days, E = 94.237253 Days

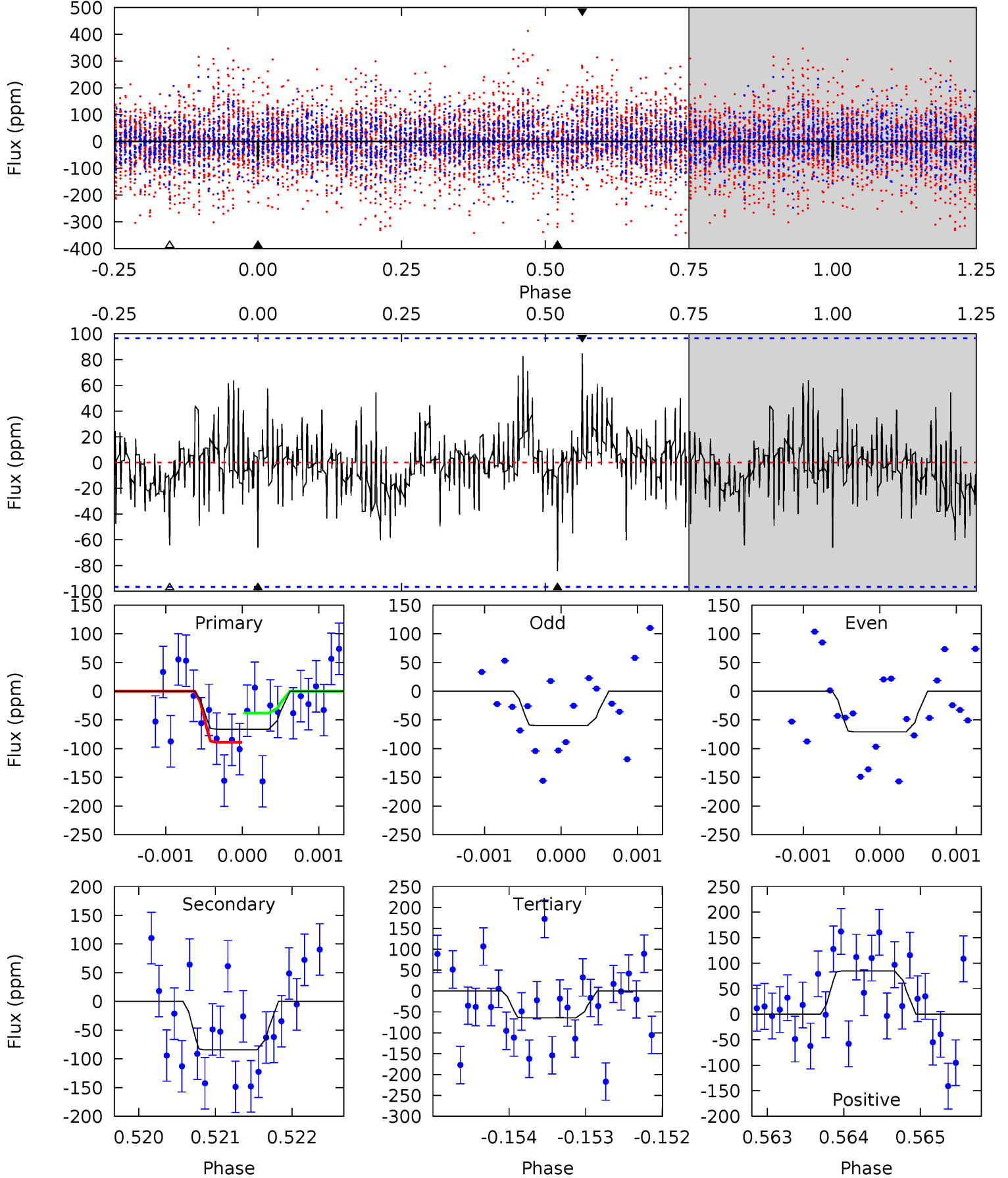
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.40	5.47	4.34	5.34	5.40	3.20	1.53	3.06	2.05	1.13	0.12	0.47	0.83	0.42	2.10



Alt Model-Shift Uniqueness Test

004738155-09, P = 97.801057 Days, E = 94.256815 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.71	4.73	3.60	4.75	5.41	3.22	1.24	0.11	-1.04	1.13	-0.02	0.29	0.79	0.50	1.44



Stellar Parameters For KIC 004738155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6782^{+215}_{-263}	$4.044^{+0.350}_{-0.150}$	$-0.840^{+0.300}_{-0.300}$	$1.595^{+0.379}_{-0.568}$	$1.026^{+0.127}_{-0.115}$	$0.356^{+0.883}_{-0.148}$
	+3%/-4%	+9%/-4%	+36%/-36%	+24%/-36%	+12%/-11%	+248%/-42%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004738155-09 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-78 ± 14	$2.18^{+1.54}_{-1.37}$	804^{+61}_{-74}	5540^{+3905}_{-1091}	1601^{+9053}_{-1078}
Alt.	-84 ± 18	$1.85^{+1.53}_{-1.15}$	800^{+64}_{-76}	6026^{+4717}_{-1360}	2330^{+13343}_{-1639}

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 $A_{obs} \gg 1.0$

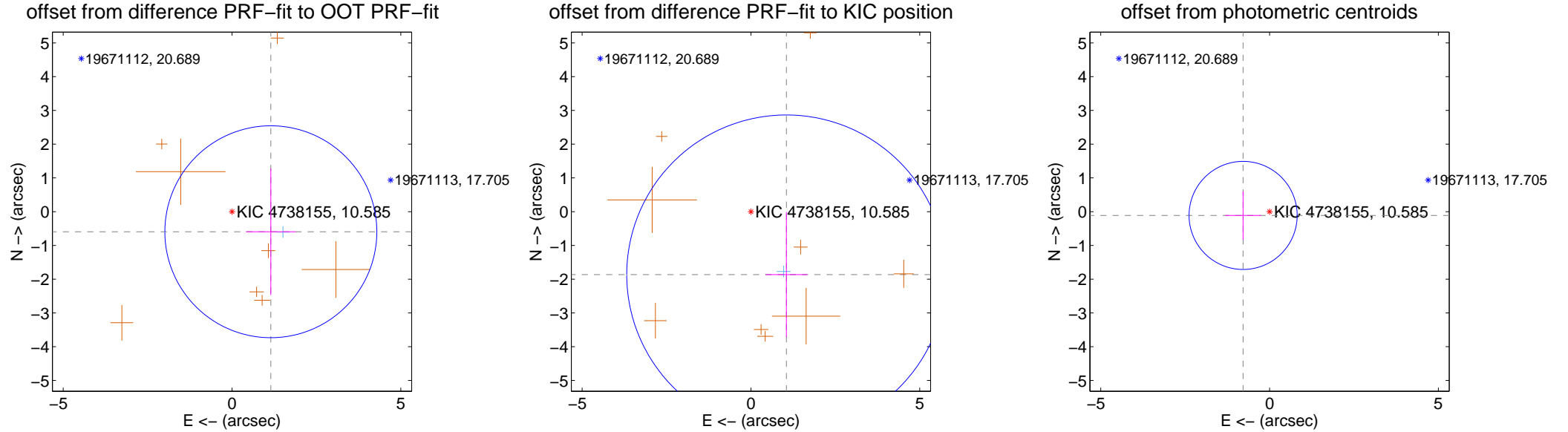
DV Centroid Data

Supplemental centroid analysis for 004738155-09. **Kepler magnitude: 10.59.** Transit SNR 10.71

There are 1 quarters with good PRF difference image offsets

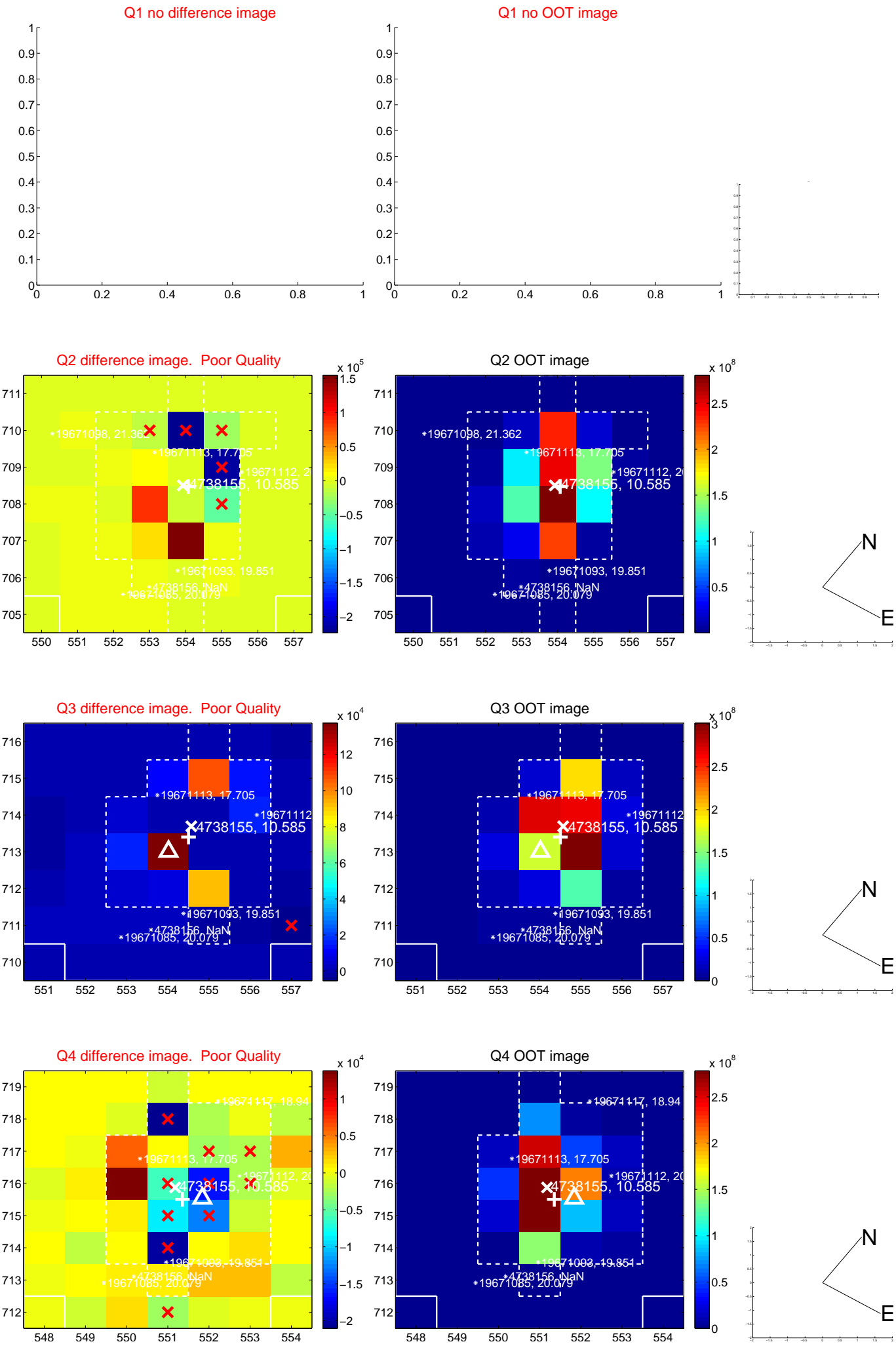
The direct PRF centroid is offset from the target star catalog position by about 0.41 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.295 ± 1.046	1.24	-1.150 ± 0.737	-0.595 ± 1.876
PRF-fit source offset from KIC position	2.141 ± 1.577	1.36	-1.051 ± 0.620	-1.865 ± 1.853
photometric centroid source offset	0.79 ± 0.53	1.48	0.78 ± 0.53	-0.11 ± 0.71

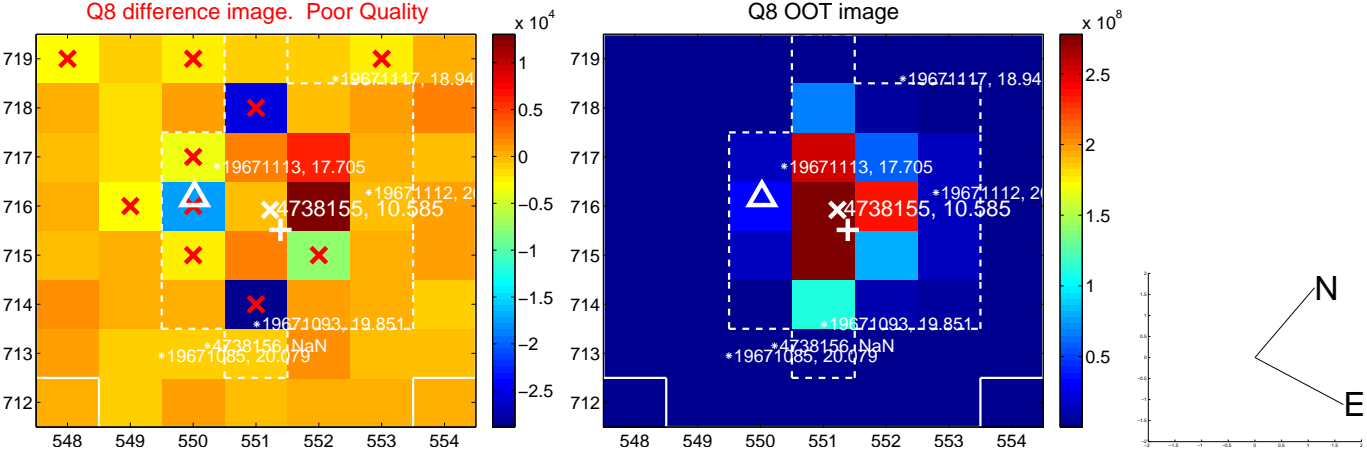
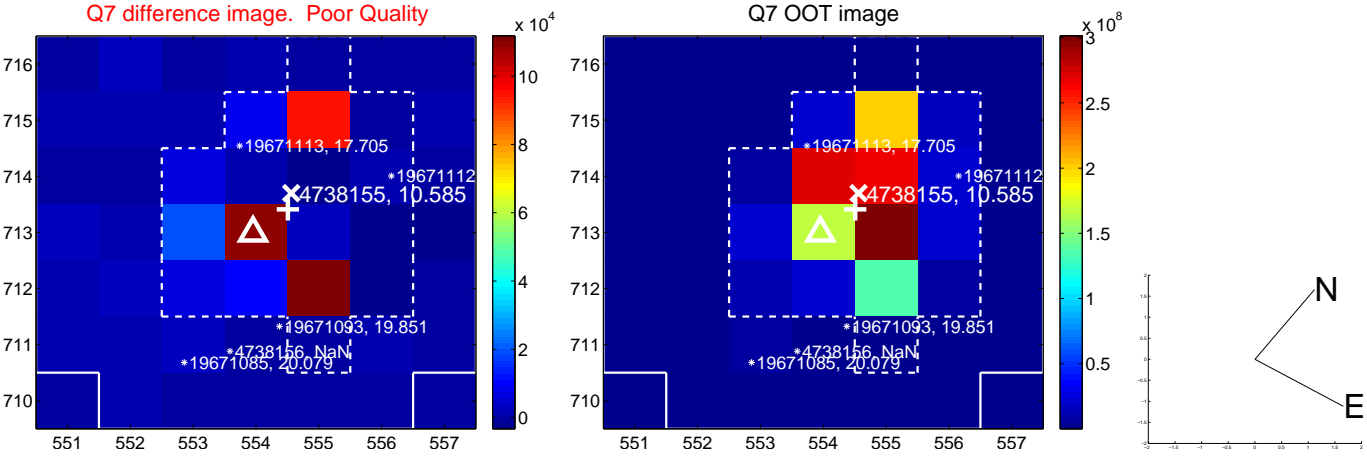
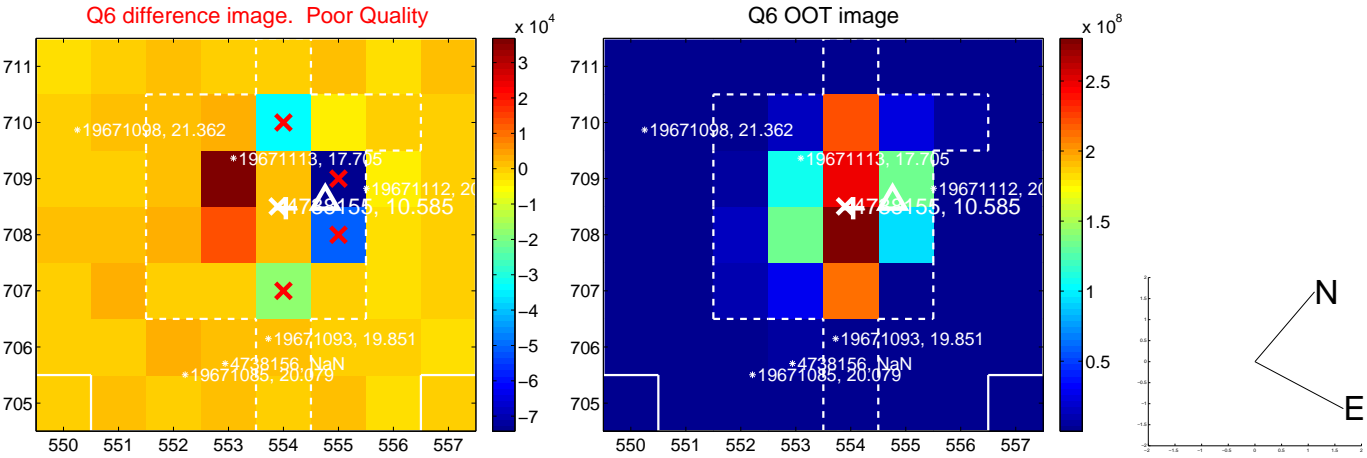
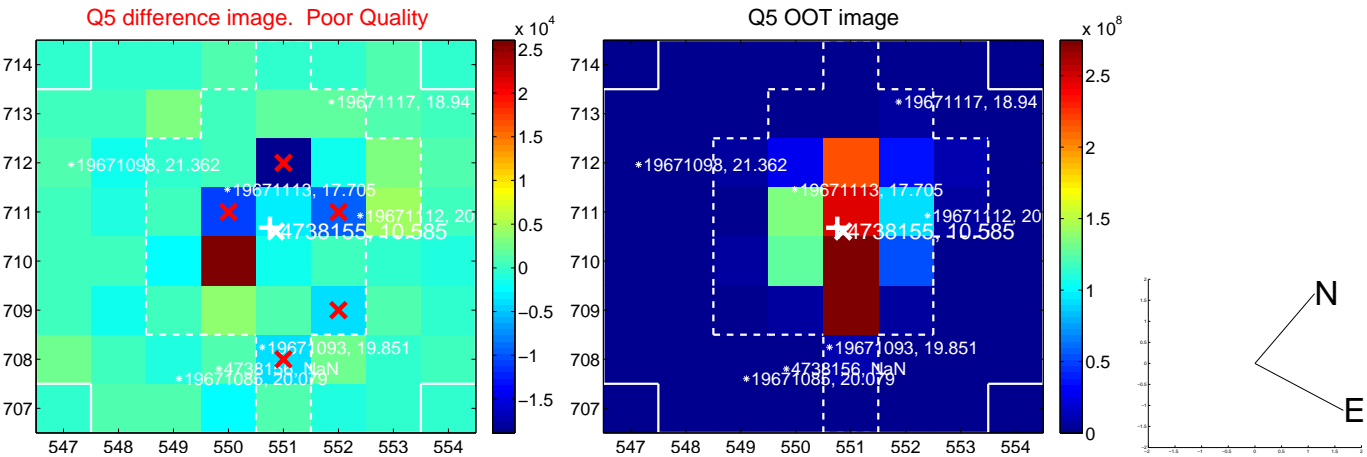


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

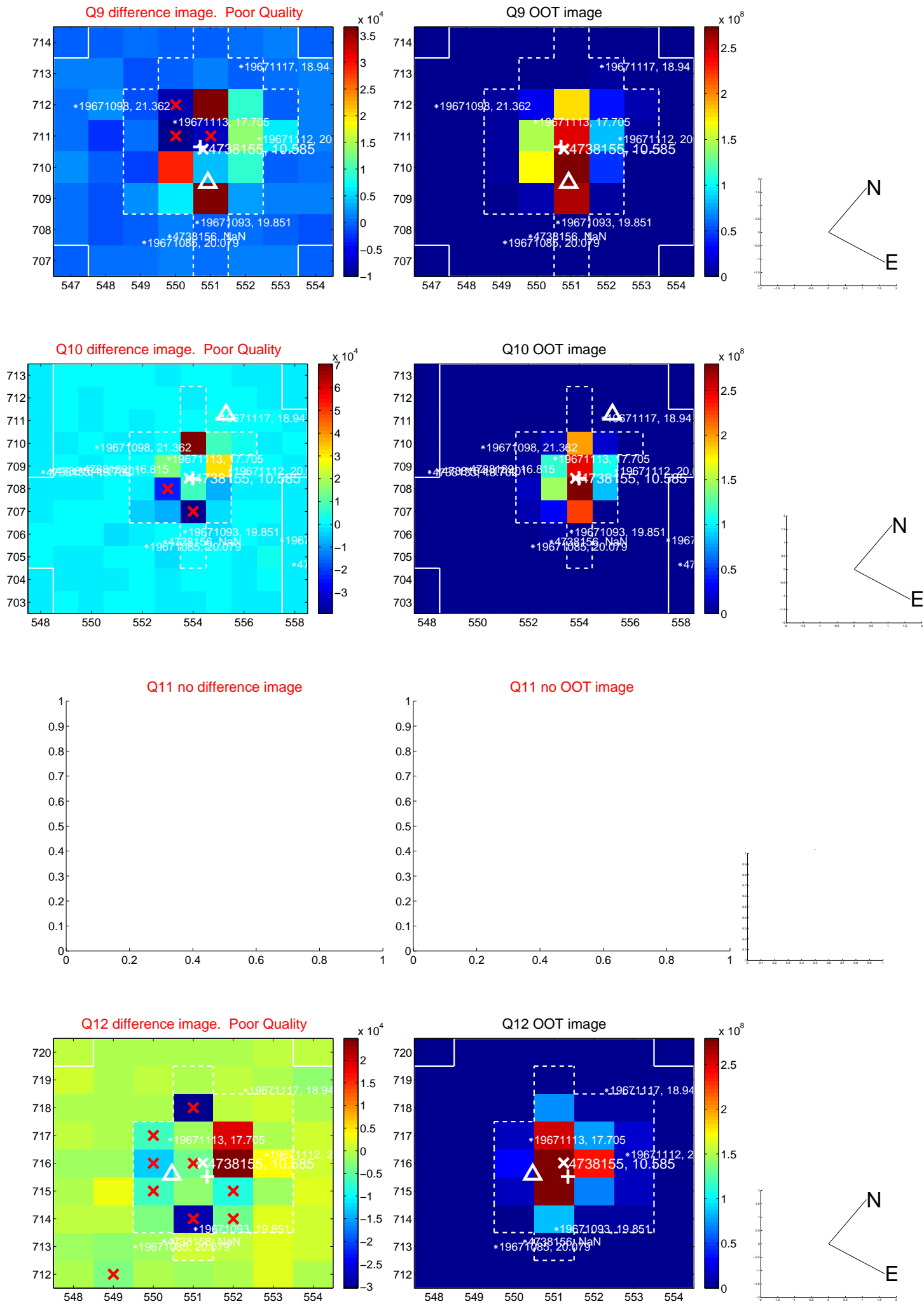
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



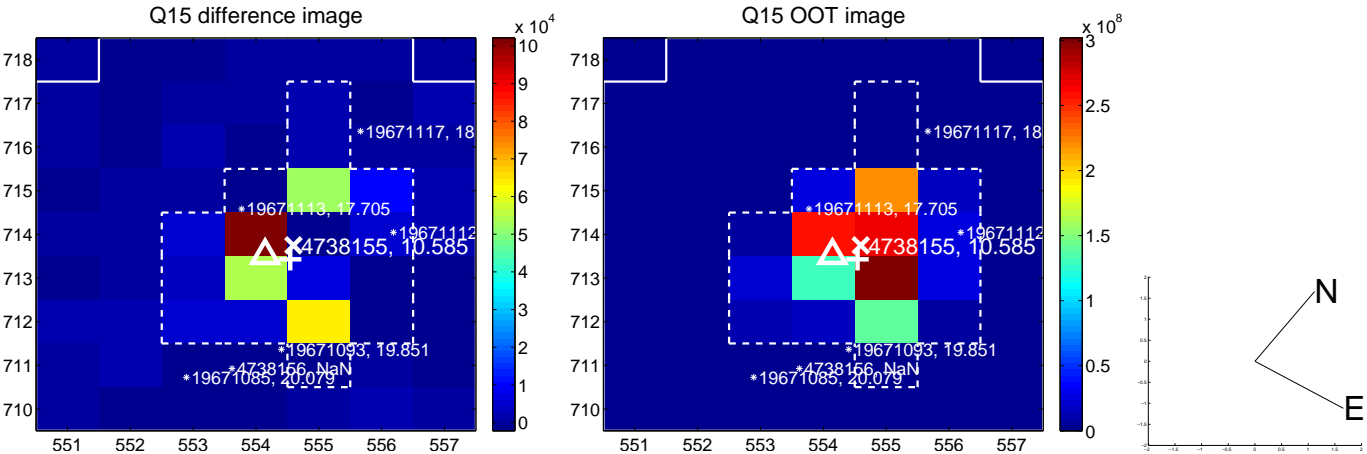
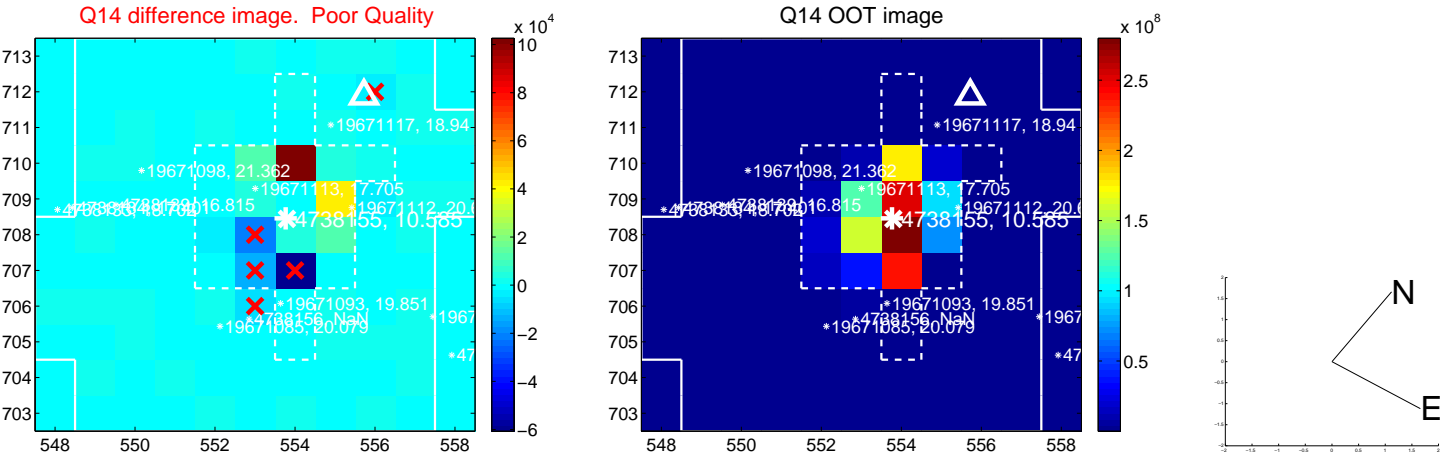
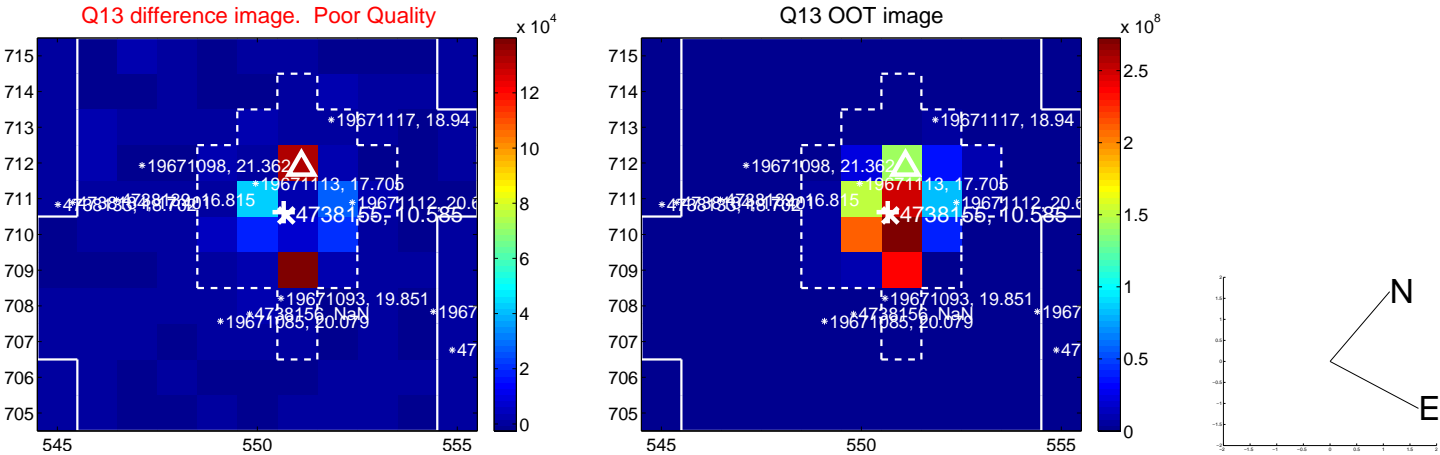
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



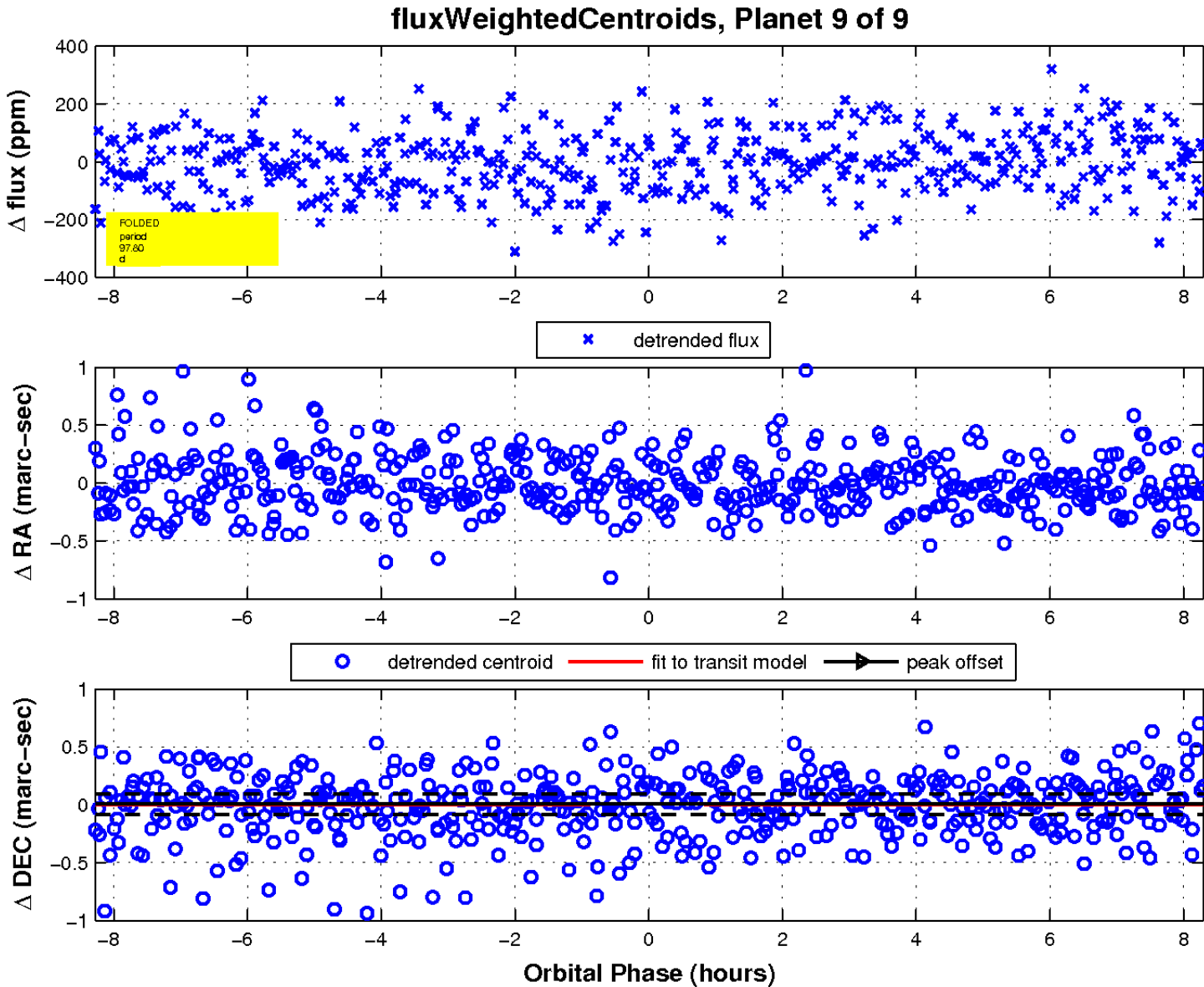
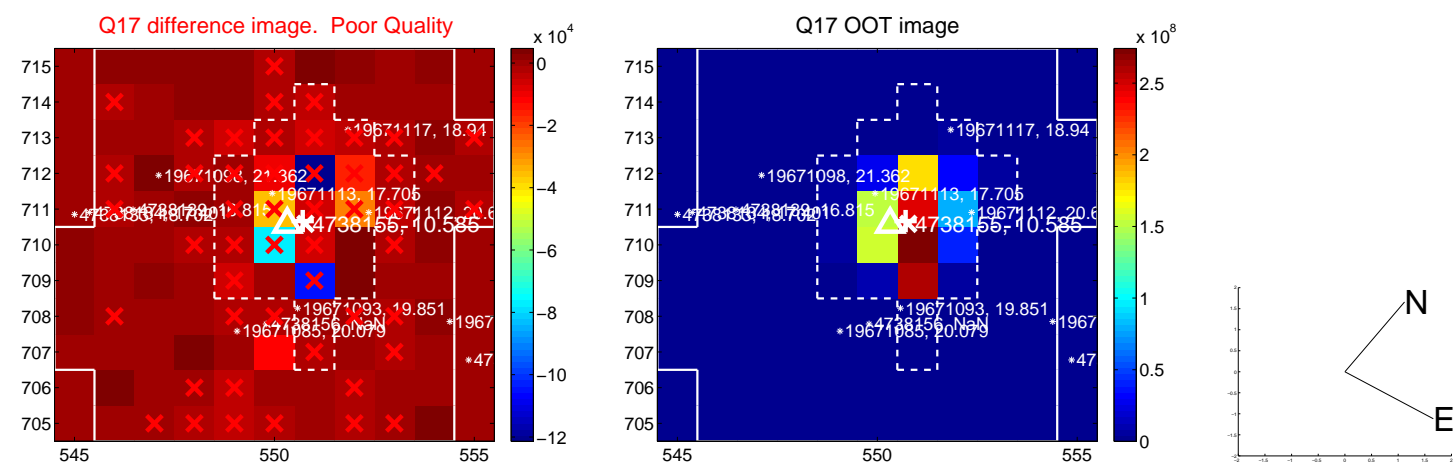
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

