

KIC 005458428

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})
005458428-01	OBS	No	3.200651	132.084844	75.7	13.138	9.7	10.5	5.89	7059	6.53	23504.78
005458428-02	OBS	No	1.552378	132.735072	95.6	6.107	12.6	12.7	5.89	7059	7.80	61679.90
005458428-03	OBS	No	192.642735	275.519386	859.2	9.619	11.8	12.7	5.89	7059	25.56	99.65
005458428-04	OBS	No	69.381211	145.158500	466.6	8.103	10.3	9.1	5.89	7059	24.33	388.88
005458428-05	OBS	No	79.646495	159.557679	187.9	12.243	10.1	4.4	5.89	7059	8.65	323.53
005458428-06	OBS	No	349.011885	405.827424	479.6	10.909	9.7	8.3	5.89	7059	13.90	45.12
005458428-07	OBS	No	123.393120	150.298424	623.0	6.194	9.5	9.8	5.89	7059	27.82	180.48
005458428-08	OBS	No	53.481893	134.251969	293.6	11.976	9.5	7.7	5.89	7059	11.10	550.21
005458428-09	OBS	No	40.566928	167.259507	178.9	9.000	10.0	-1.0	5.89	7059	7.95	795.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005458428-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
005458428-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005458428-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005458428-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
005458428-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

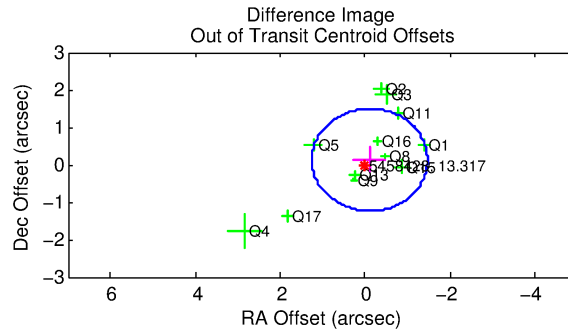
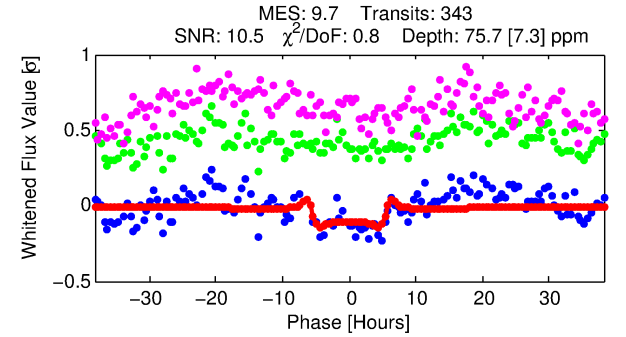
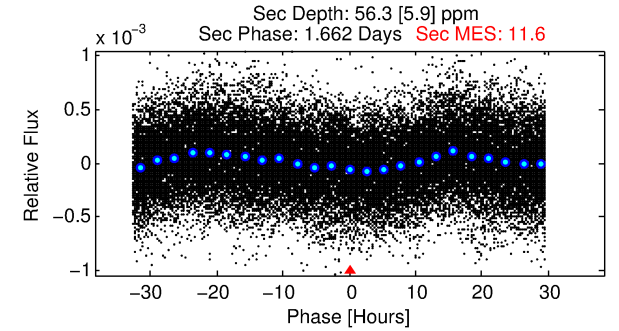
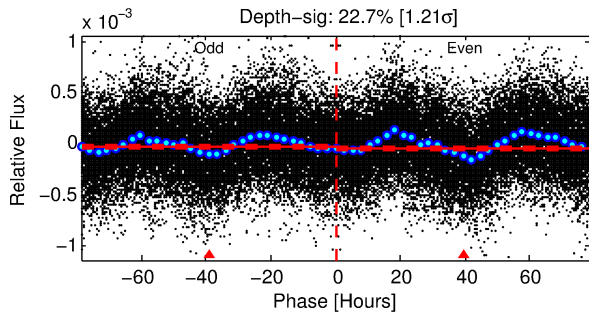
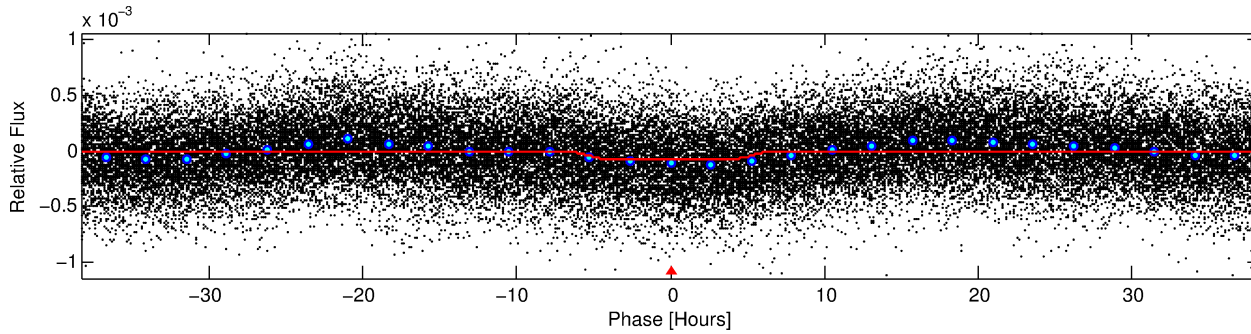
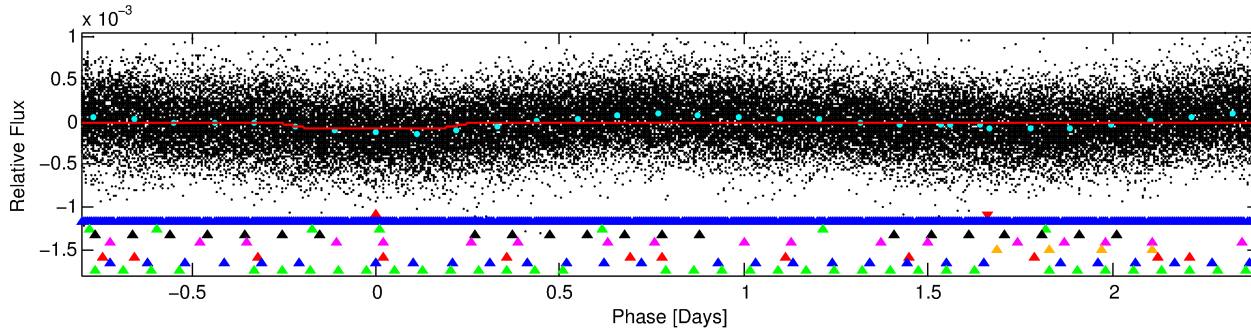
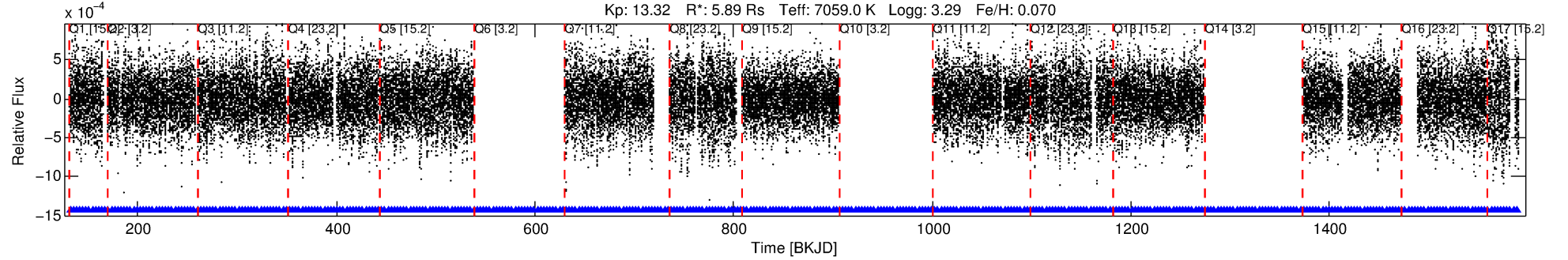
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005458428-01

No Significant Match Found

DV One-Page Summary

KIC: 5458428 Candidate: 1 of 9 Period: 3.201 d



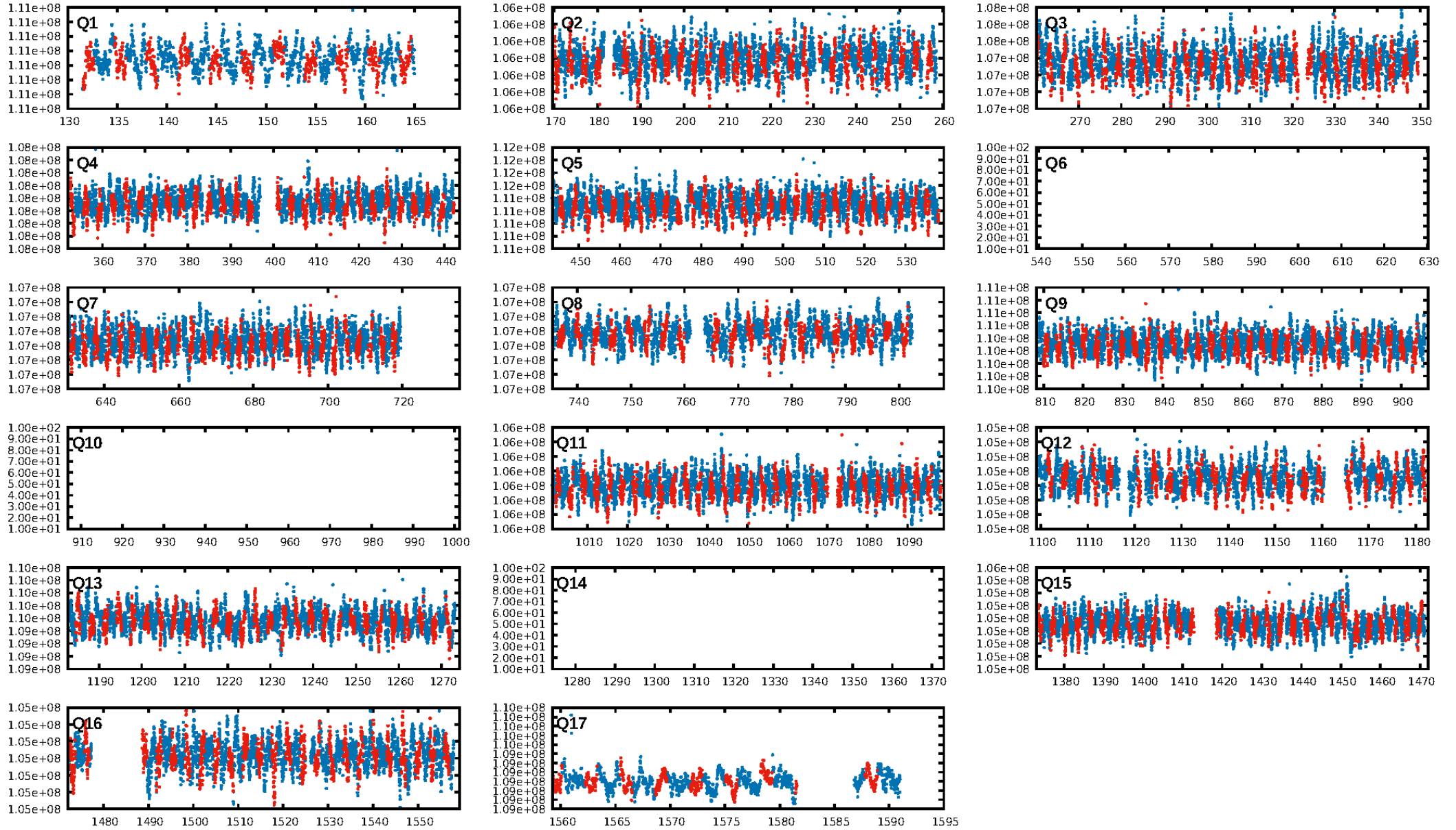
DV Fit Results:

Period = 3.20065 [0.00005] d
Epoch = 132.0848 [0.0111] BKJD
Rp/R* = 0.0102 [0.0005]
a/R* = 1.11 [0.03]
b = 0.97 [0.01]
Seff = 23504.77 [17720.52]
Teq = 3157 [595] K
Rp = 6.53 [3.15] Re
a = 0.0573 [0.0265] AU
Ag = 2.39 [1.81] [0.77 σ]
Teffp = 6070 [314] K [4.33 σ]

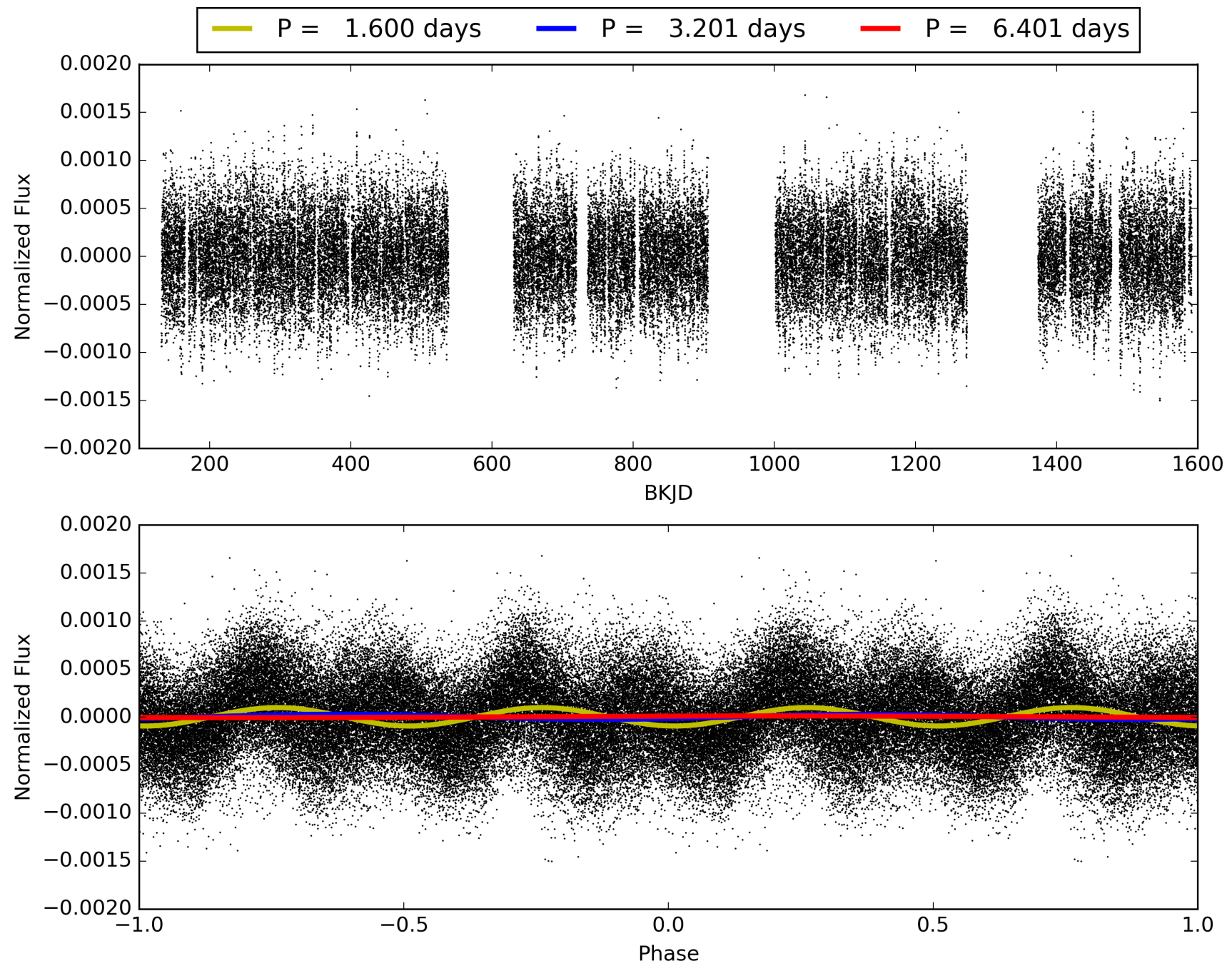
DV Diagnostic Results:

ShortPeriod-sig: 99.4% [2.73 σ]
LongPeriod-sig: 100.0% [56.31 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [324/324]
GhostDiagnostic-chr: 2.84
Centroid-sig: 18.0%
Centroid-so: 0.280 arcsec [0.78 σ]
OotOffset-rm: 0.169 arcsec [0.37 σ]
KicOffset-rm: 0.224 arcsec [0.54 σ]
OotOffset-st: 1/3/3/5 [12]
KicOffset-st: 1/3/3/5 [12]
DiffImageQuality-fgm: 0.92 [11/12]
DiffImageOverlap-fno: 0.00 [0/14]

TCE 005458428-01, PDC Light Curves

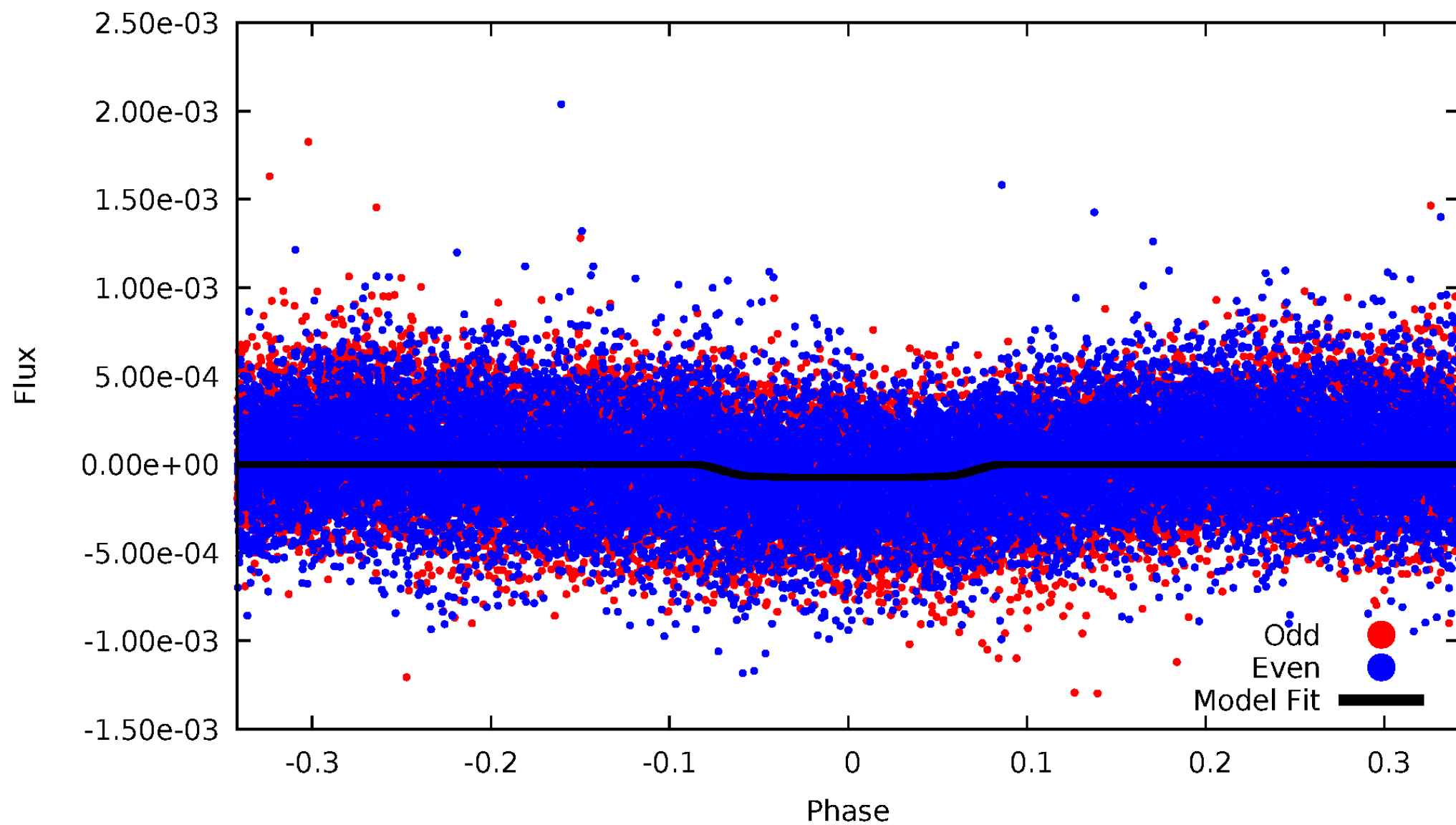


TCE 005458428-01



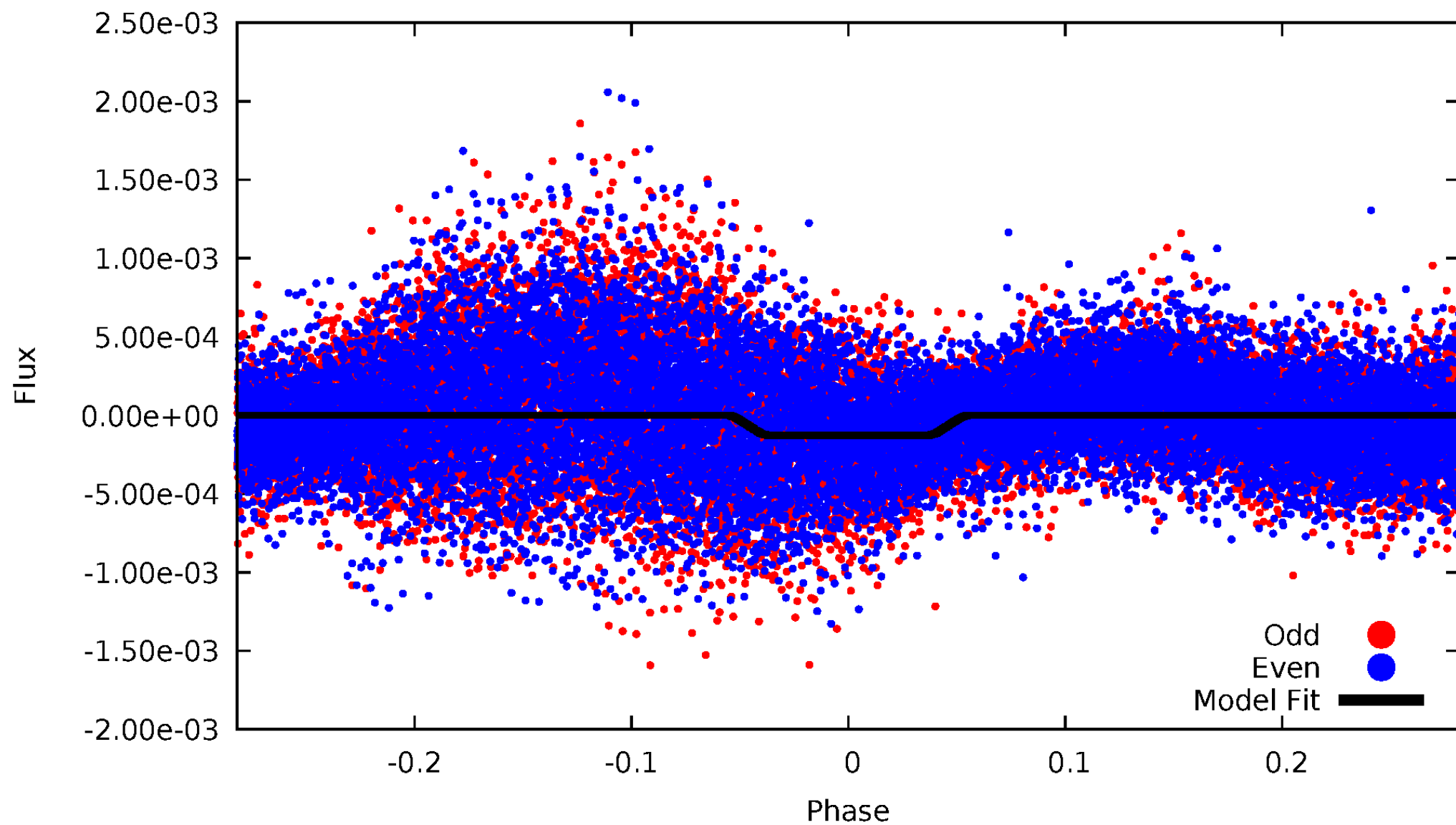
DV Odd/Even

TCE 005458428-01

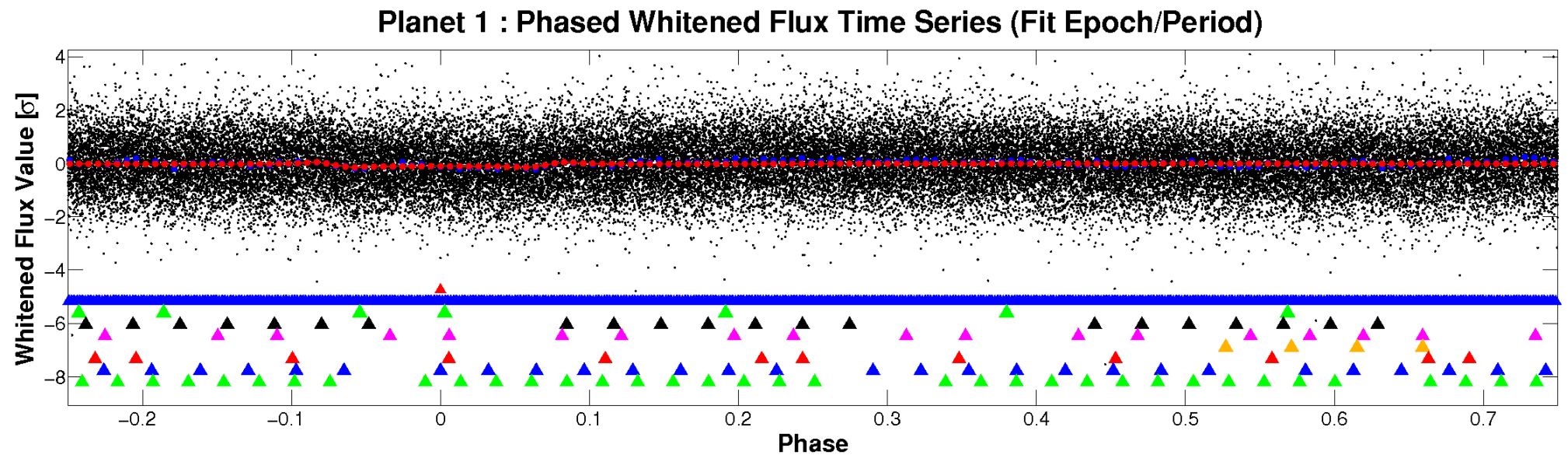
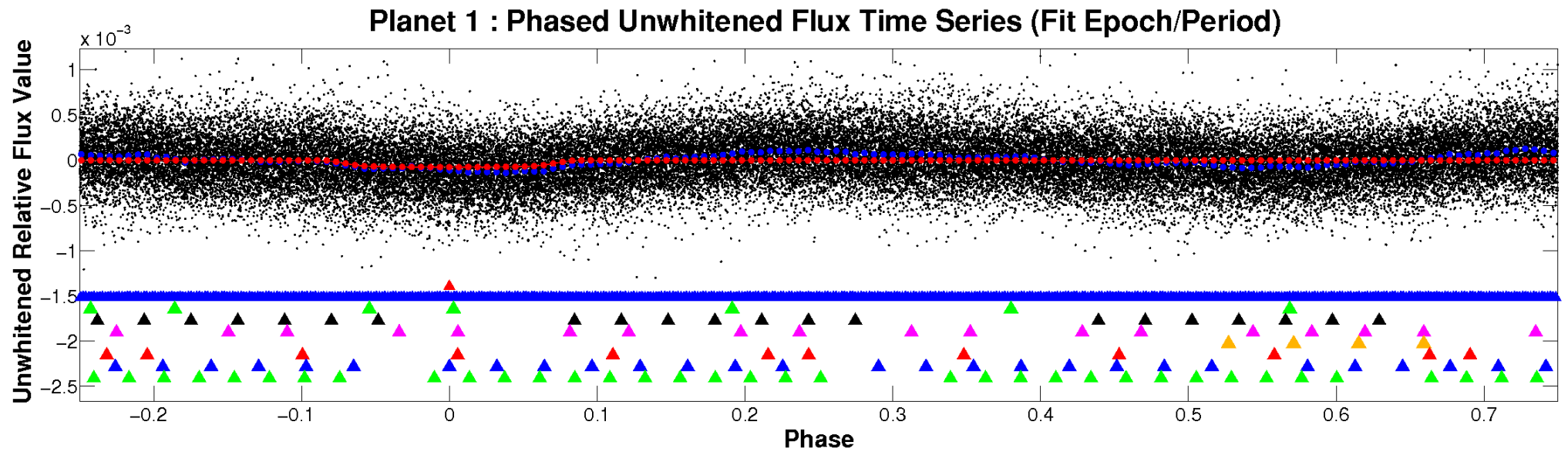


ALT Odd/Even

TCE 005458428-01

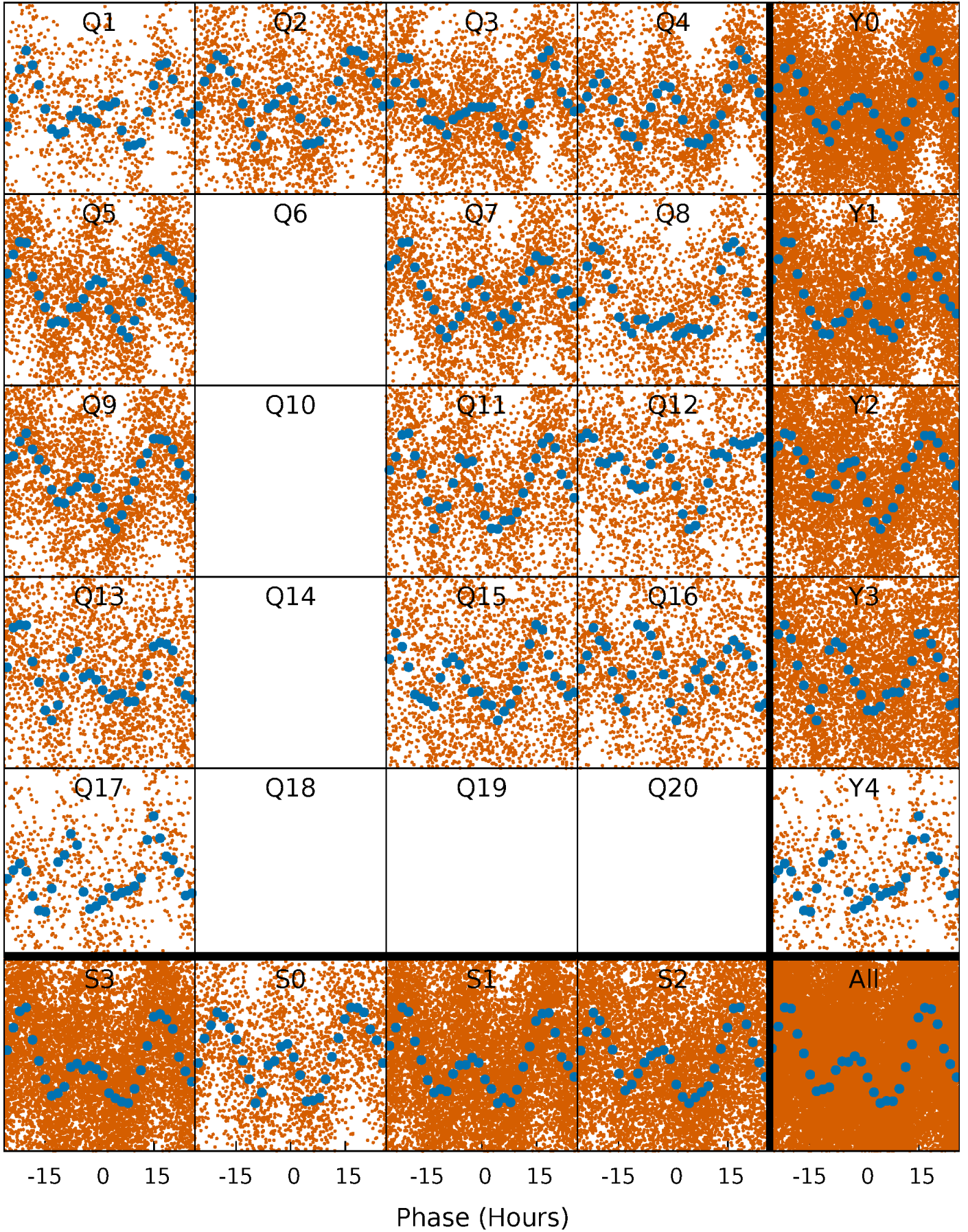


Non-Whitened Vs. Whitened Light Curve



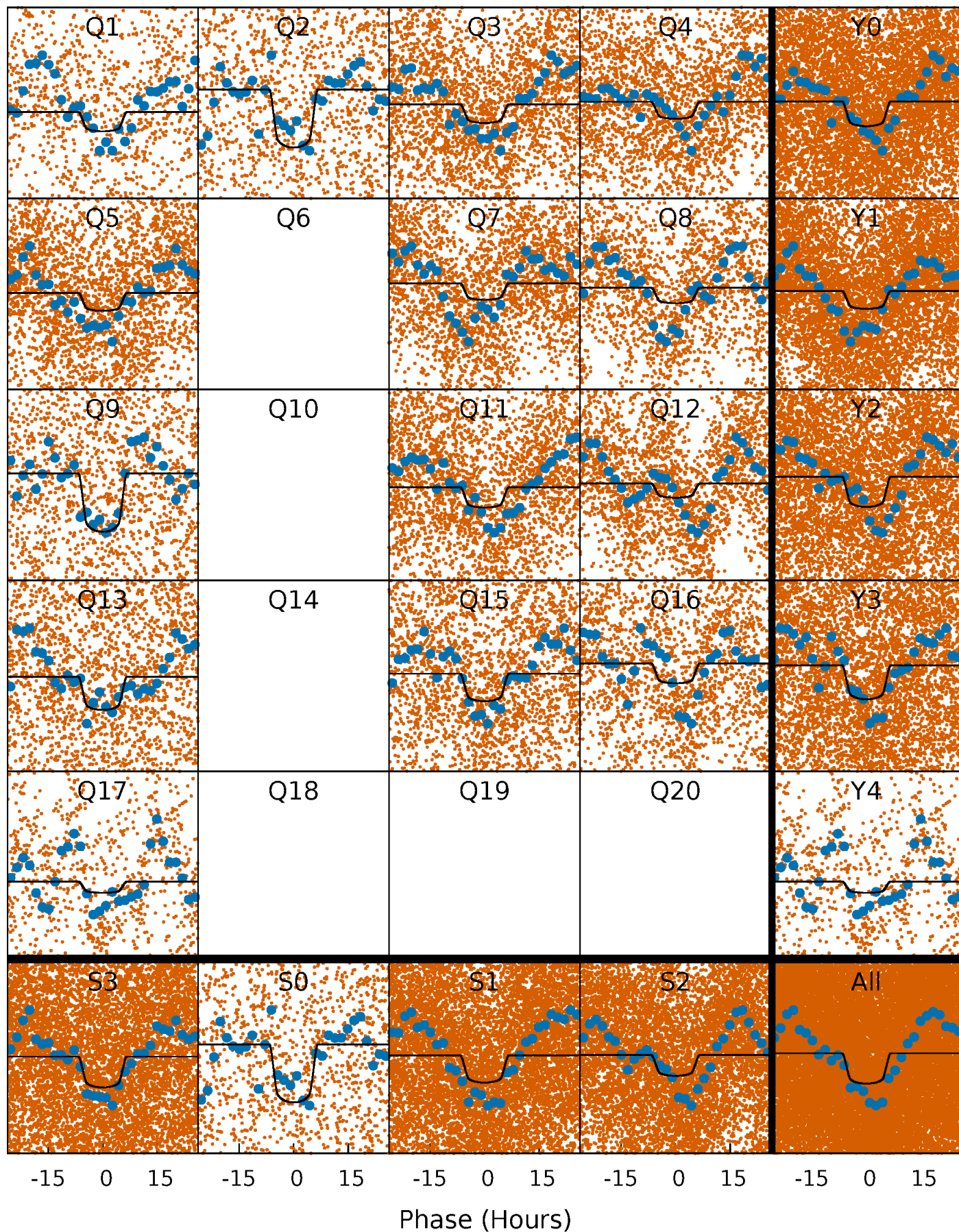
PDC Quarter-Phased Transit Curves

TCE 005458428-01 P= 3.200651 Days $T_0=132.084844$ (BKJD)



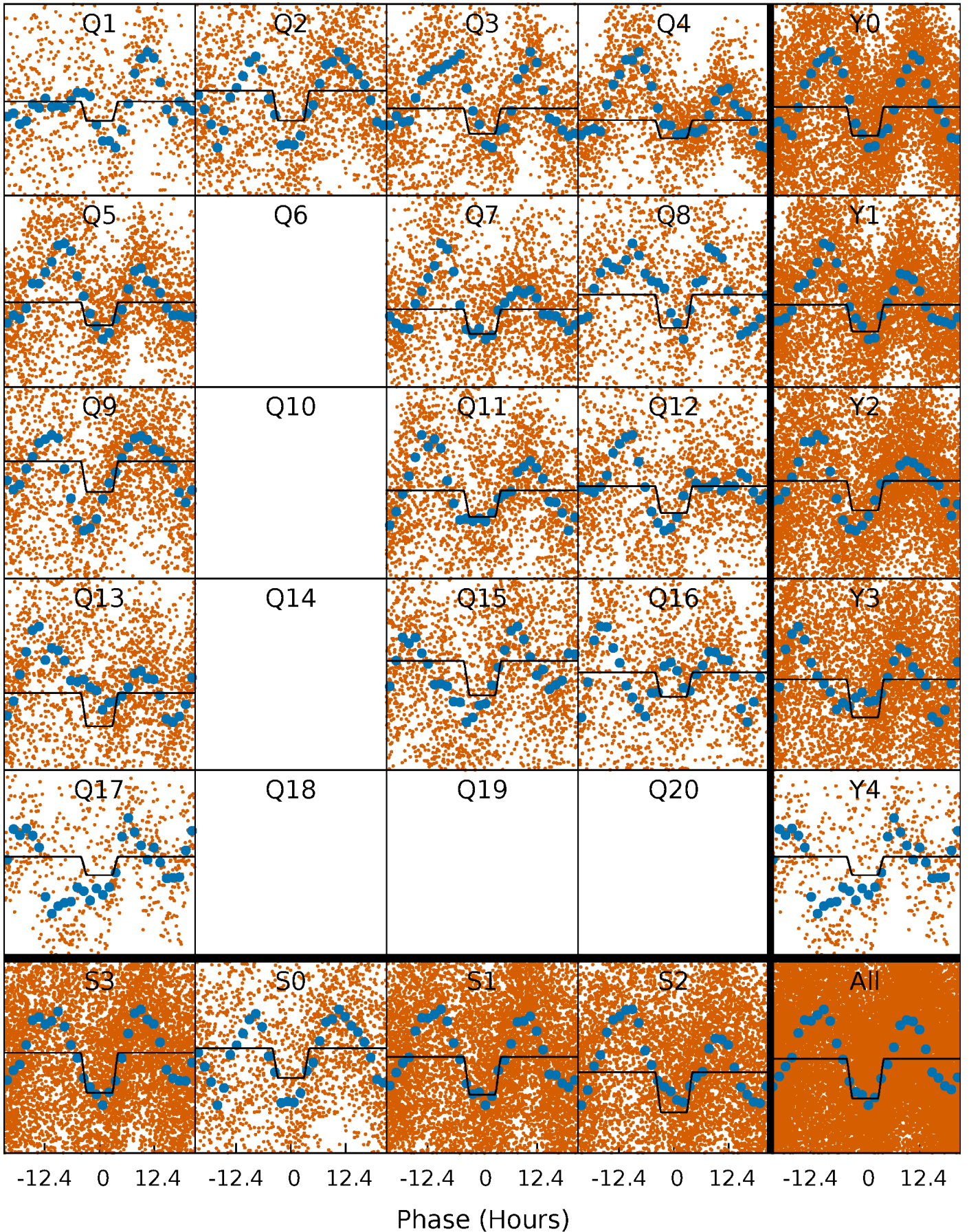
DV Quarter-Phased Transit Curves

TCE 005458428-01 P= 3.200651 Days $T_0=132.084844$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

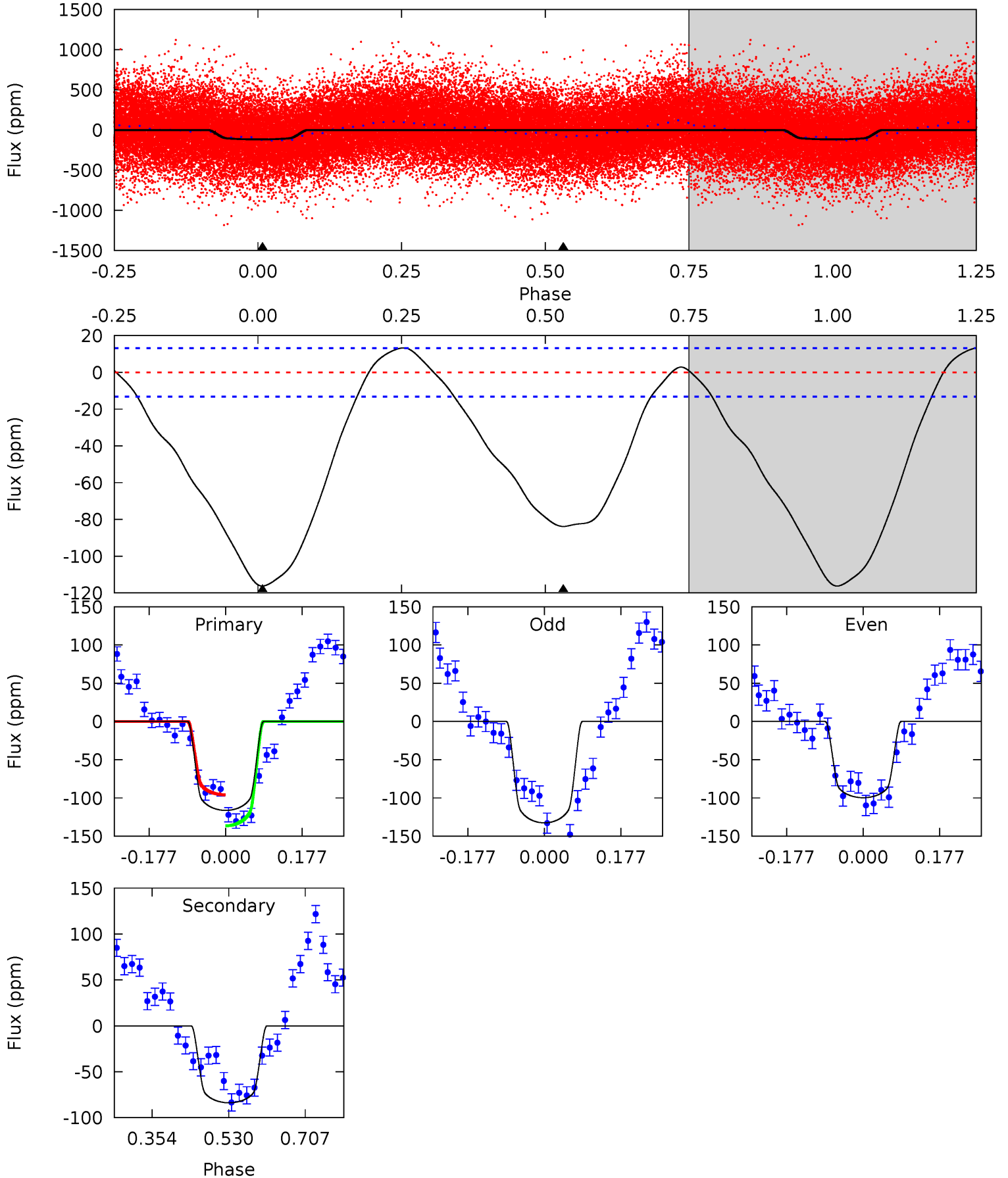
TCE 005458428-01 P= 3.200759 Days $T_0=132.373926$ (BKJD)



DV Model-Shift Uniqueness Test

005458428-01, P = 3.200651 Days, E = 128.884193 Days

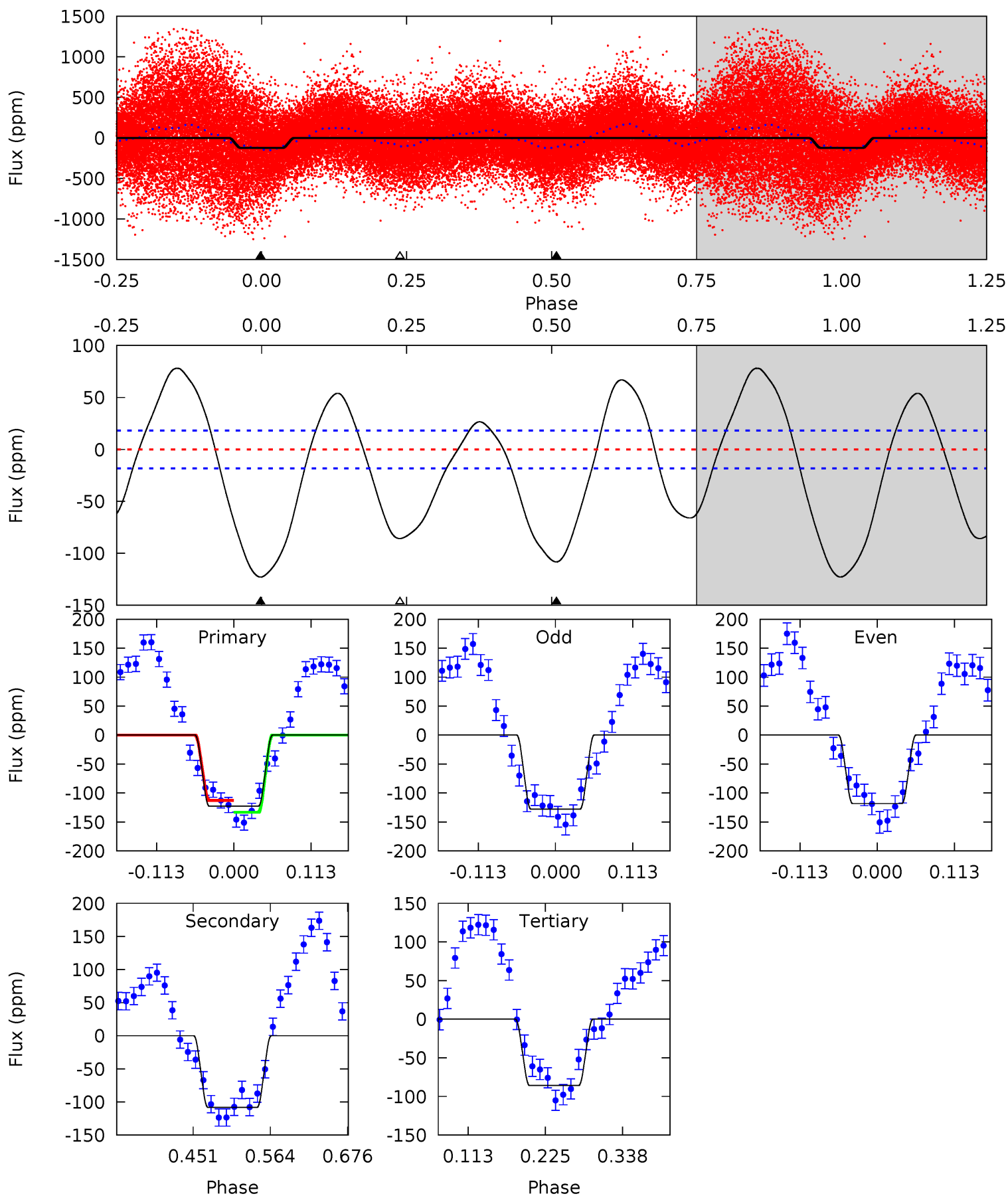
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.1	28.2	0	0	4.44	1.35	4.05	39.1	39.1	28.2	28.2	5.53	0.99	0.10	6.85



Alt Model-Shift Uniqueness Test

005458428-01, P = 3.200759 Days, E = 129.173167 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.7	27.0	21.4	0	4.54	1.59	12.6	9.25	30.7	5.59	27.0	1.19	1.07	0.39	2.52



Stellar Parameters For KIC 005458428

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7059^{+168}_{-252}	$3.287^{+0.435}_{-0.145}$	$0.070^{+0.200}_{-0.300}$	$5.894^{+1.521}_{-2.825}$	$2.453^{+0.165}_{-0.662}$	$0.017^{+0.077}_{-0.008}$
	+2%/-4%	+13%/-4%	+286%/-429%	+26%/-48%	+7%/-27%	+456%/-45%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005458428-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-84 ± 3	$6.19^{+1.13}_{-1.54}$	4302^{+384}_{-529}	6488^{+284}_{-256}	$3.832^{+2.587}_{-1.052}$
Alt.	-108 ± 4	$6.95^{+1.16}_{-1.66}$	4304^{+344}_{-494}	6566^{+270}_{-274}	$3.960^{+2.465}_{-1.084}$

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

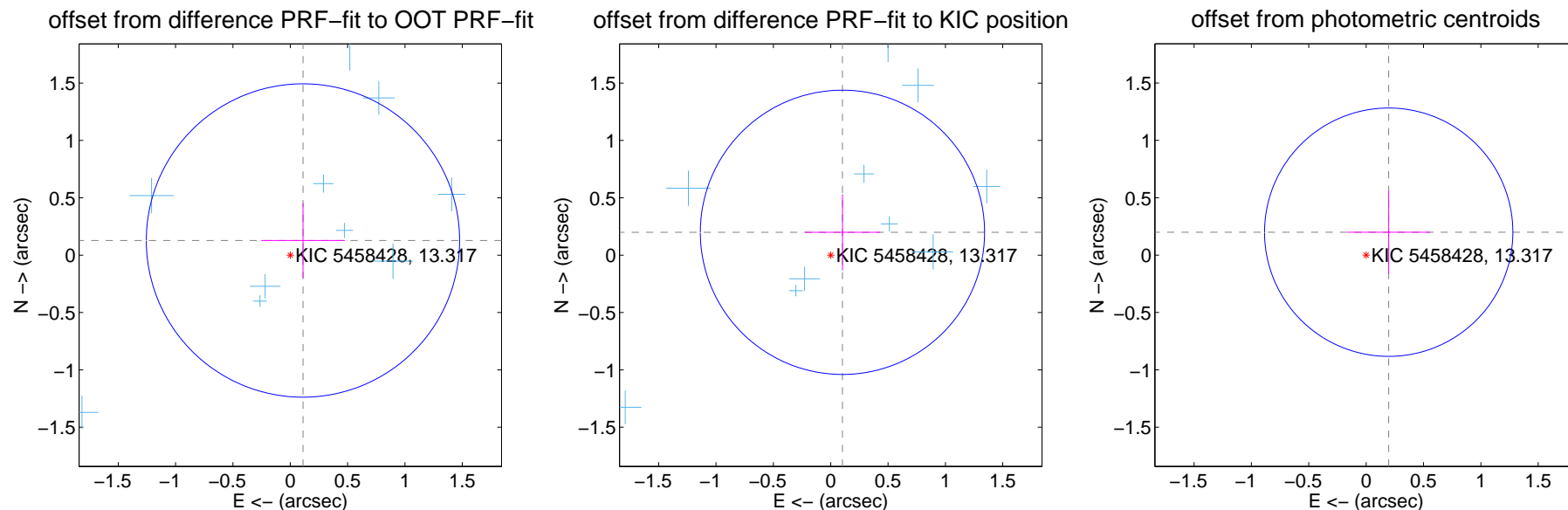
DV Centroid Data

Supplemental centroid analysis for 005458428-01. Kepler magnitude: 13.32. Transit SNR 10.55

There are 11 quarters with good PRF difference image offsets

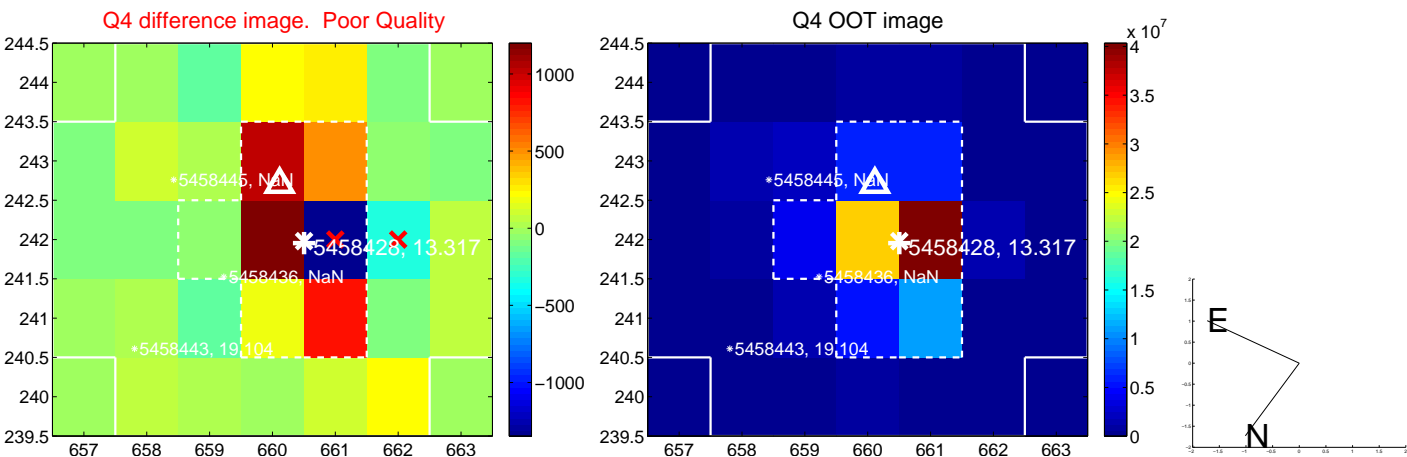
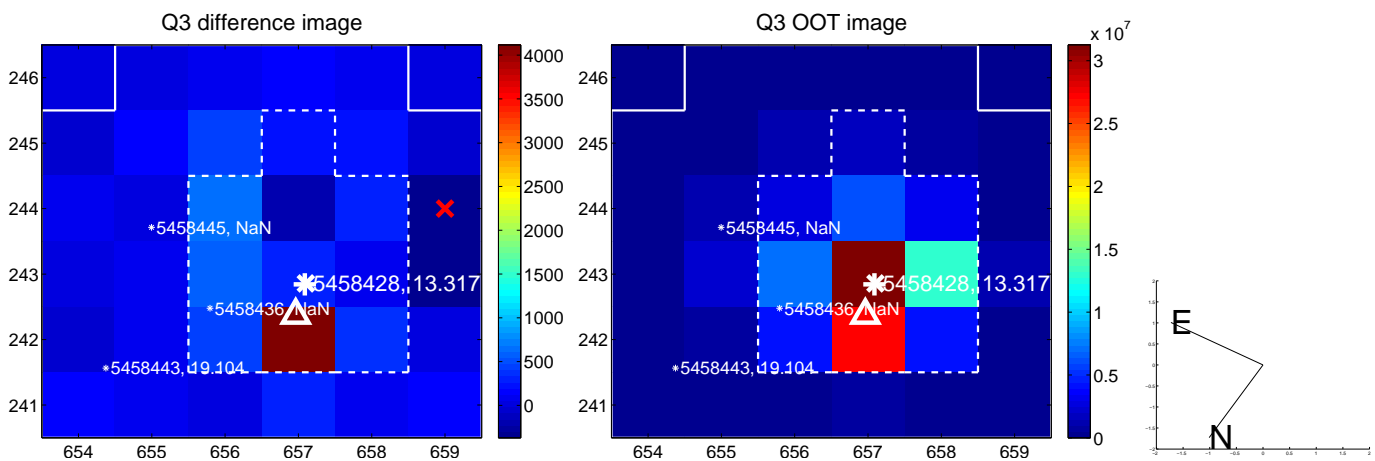
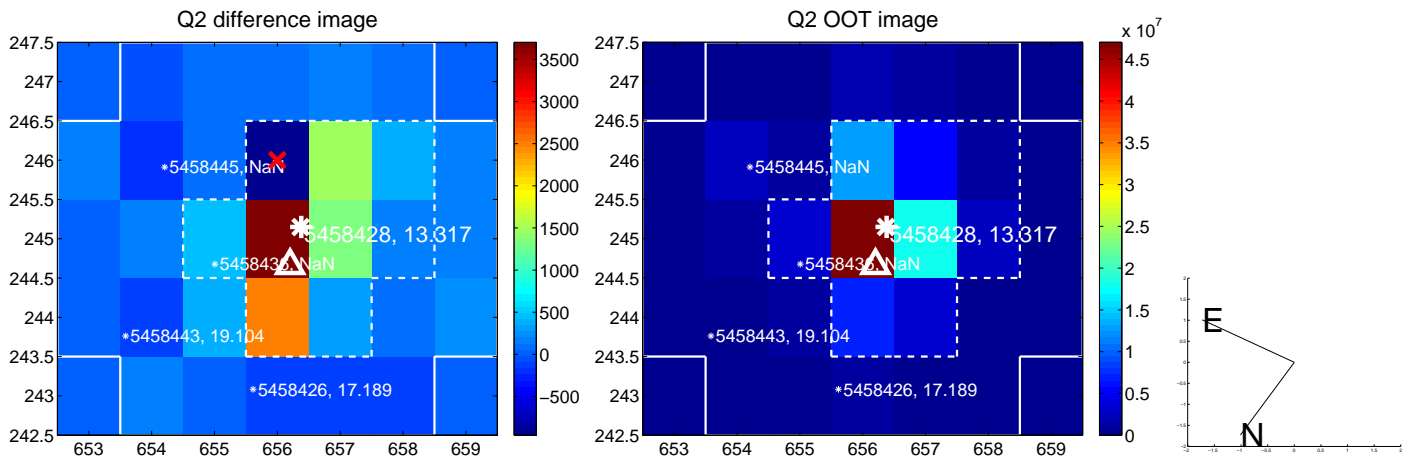
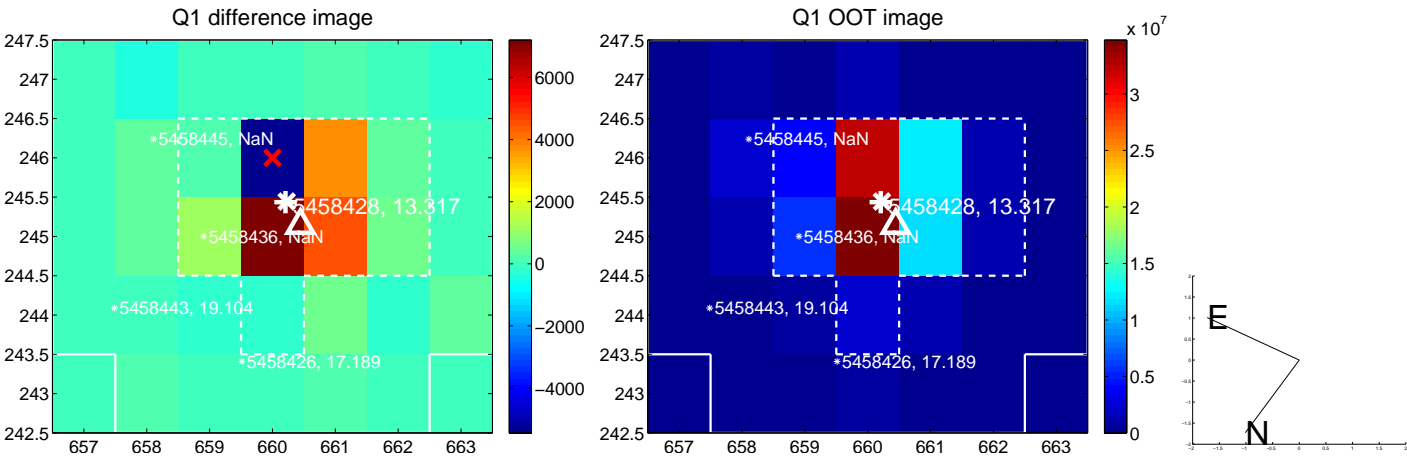
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.169 ± 0.455	0.37	-0.111 ± 0.365	0.128 ± 0.326
PRF-fit source offset from KIC position	0.224 ± 0.413	0.54	-0.102 ± 0.328	0.199 ± 0.332
photometric centroid source offset	0.28 ± 0.36	0.78	-0.20 ± 0.36	0.20 ± 0.36

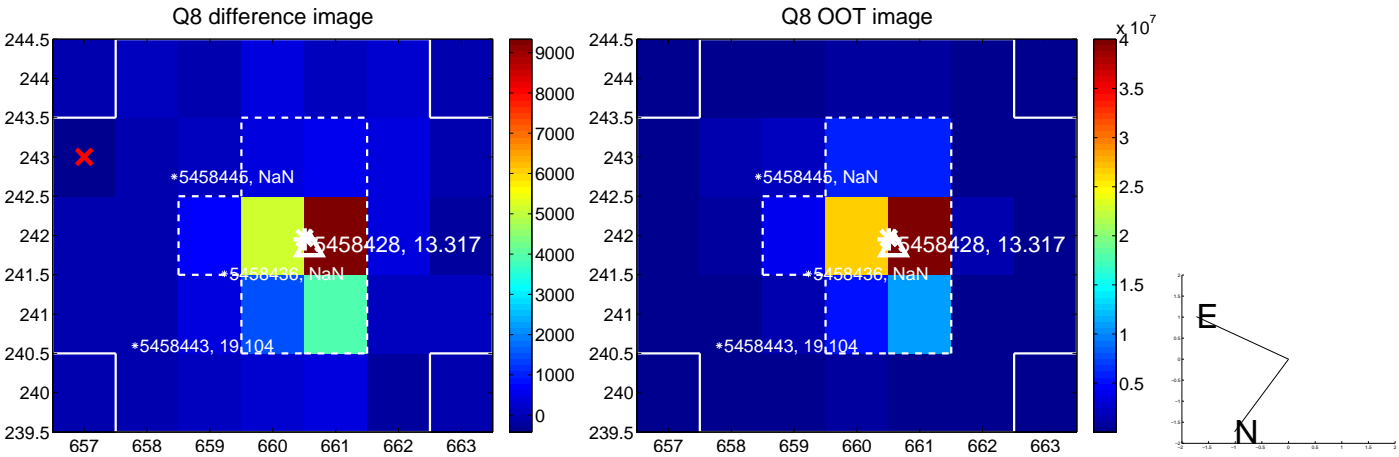
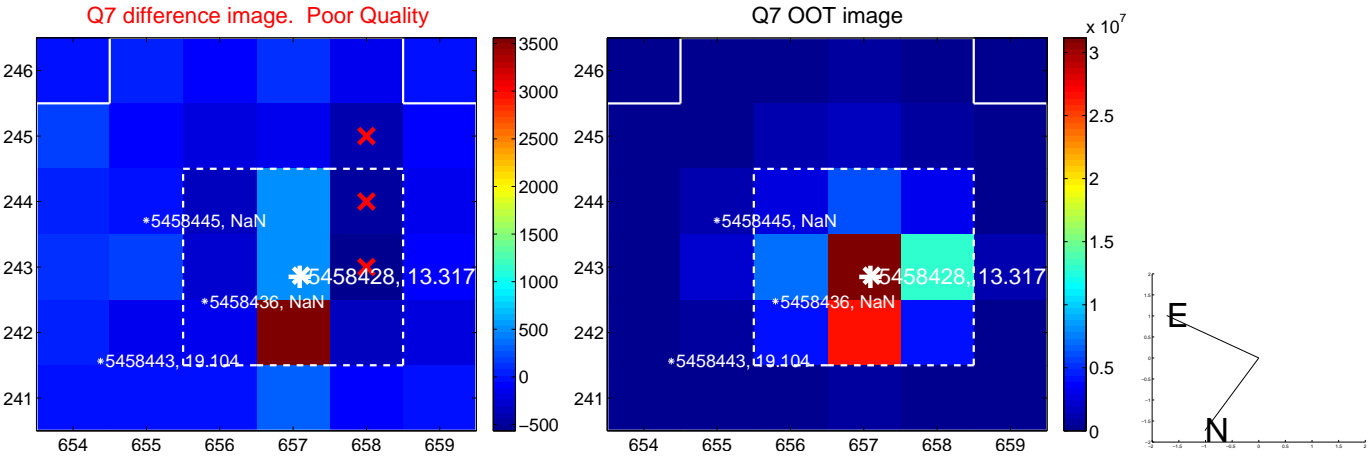
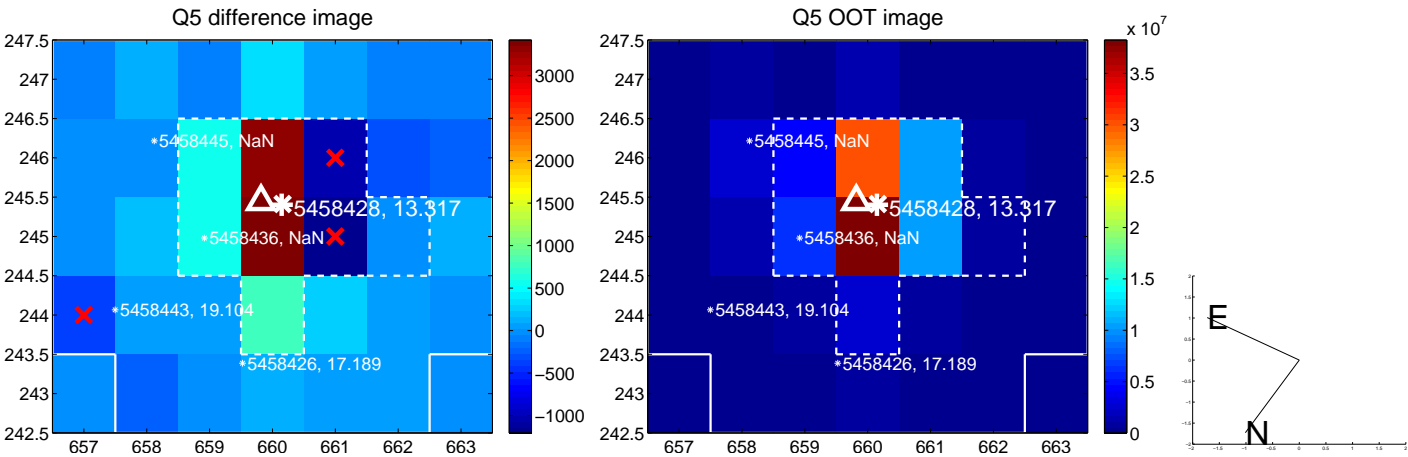


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

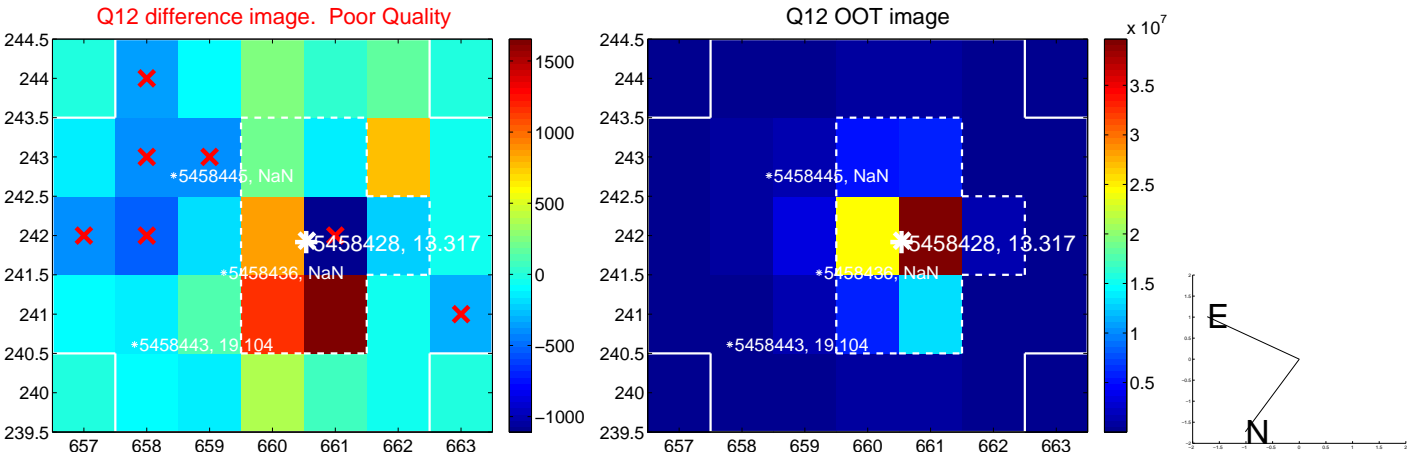
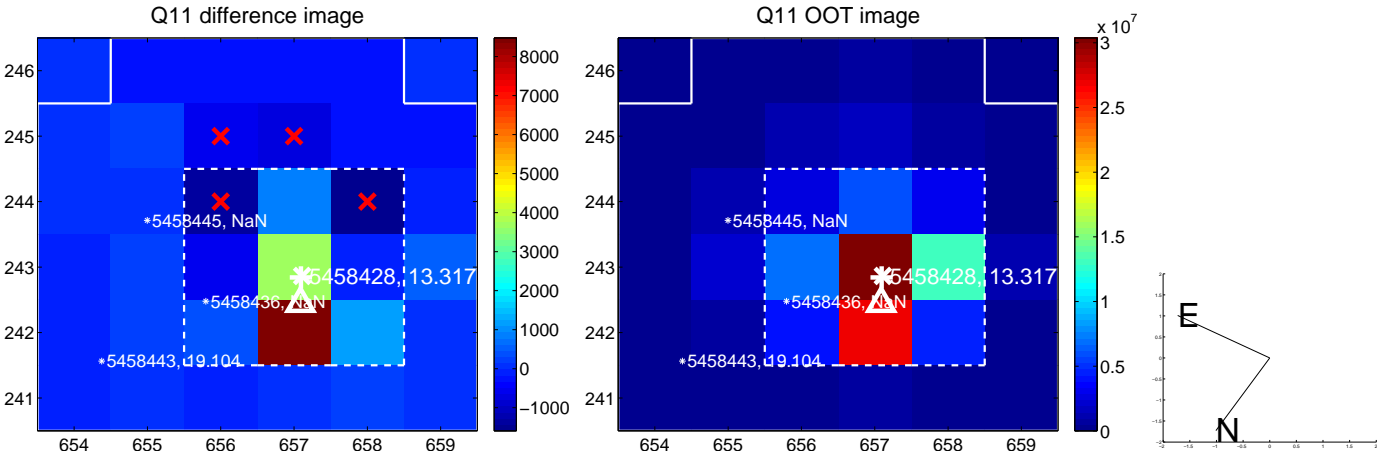
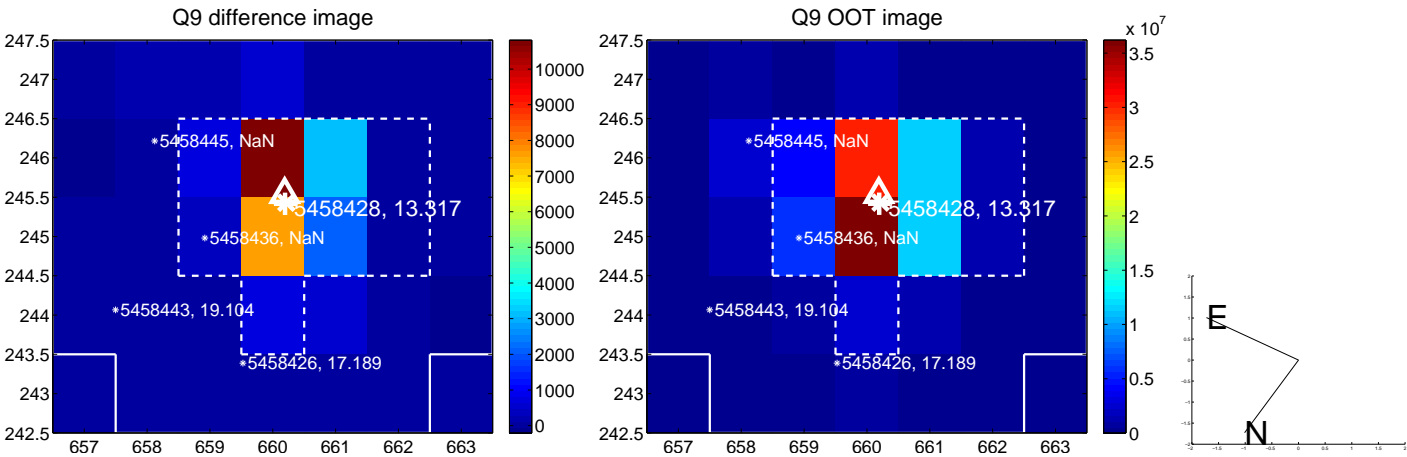
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



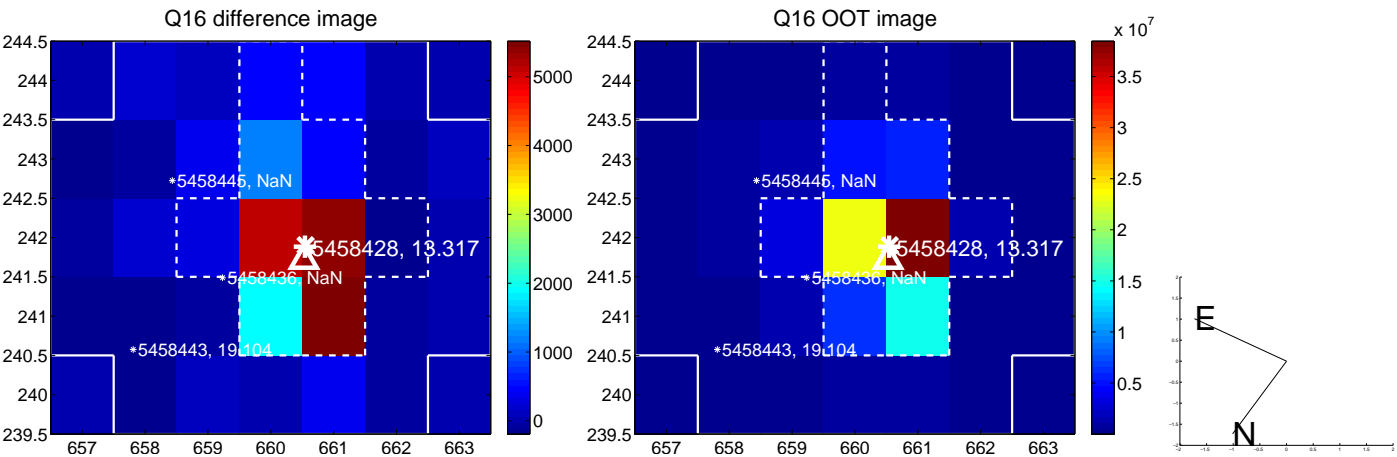
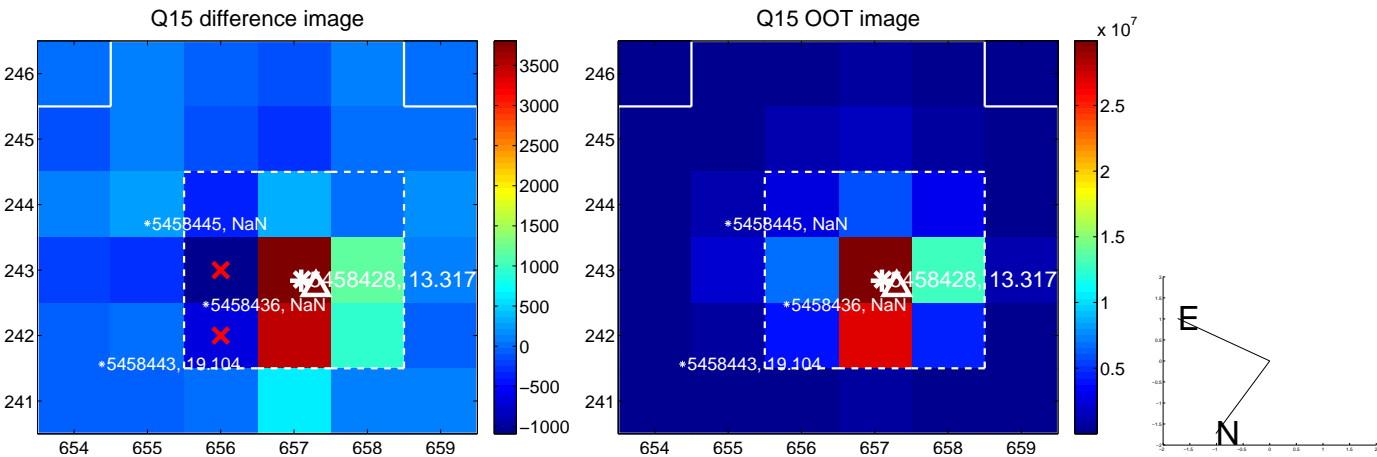
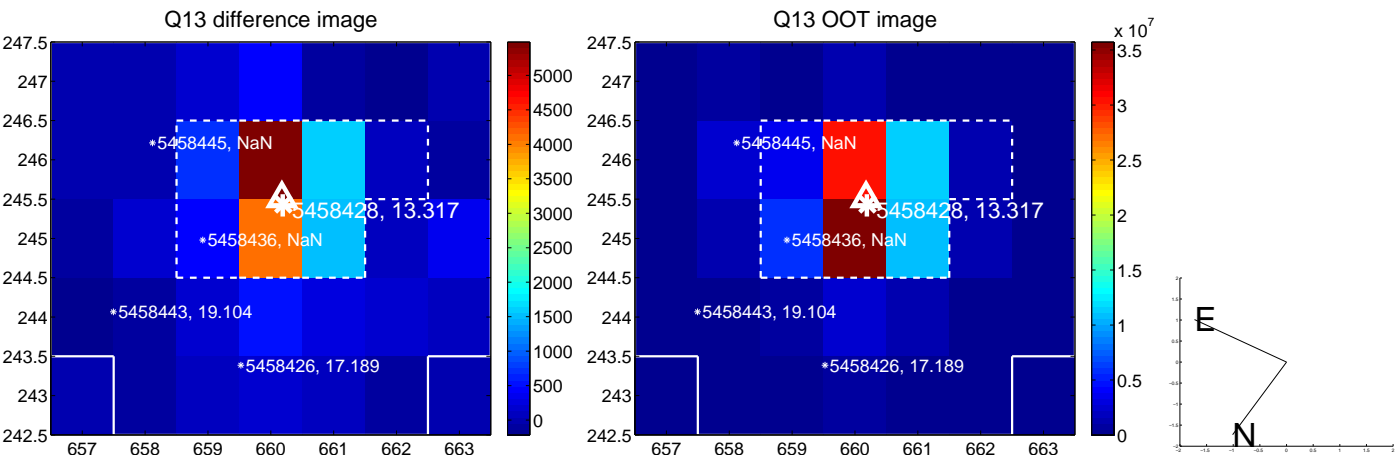
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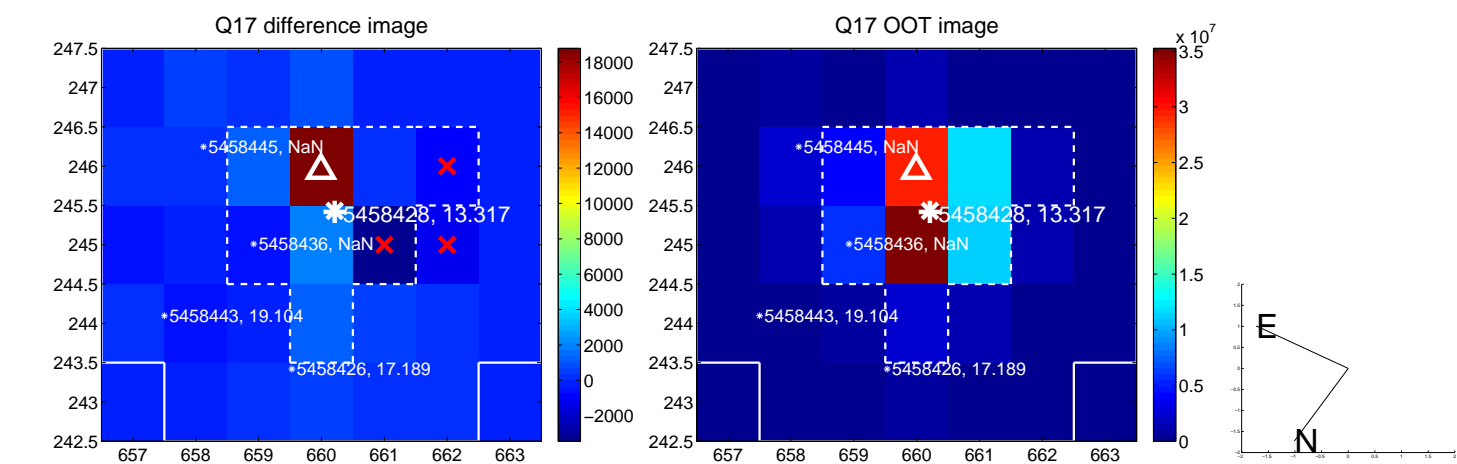
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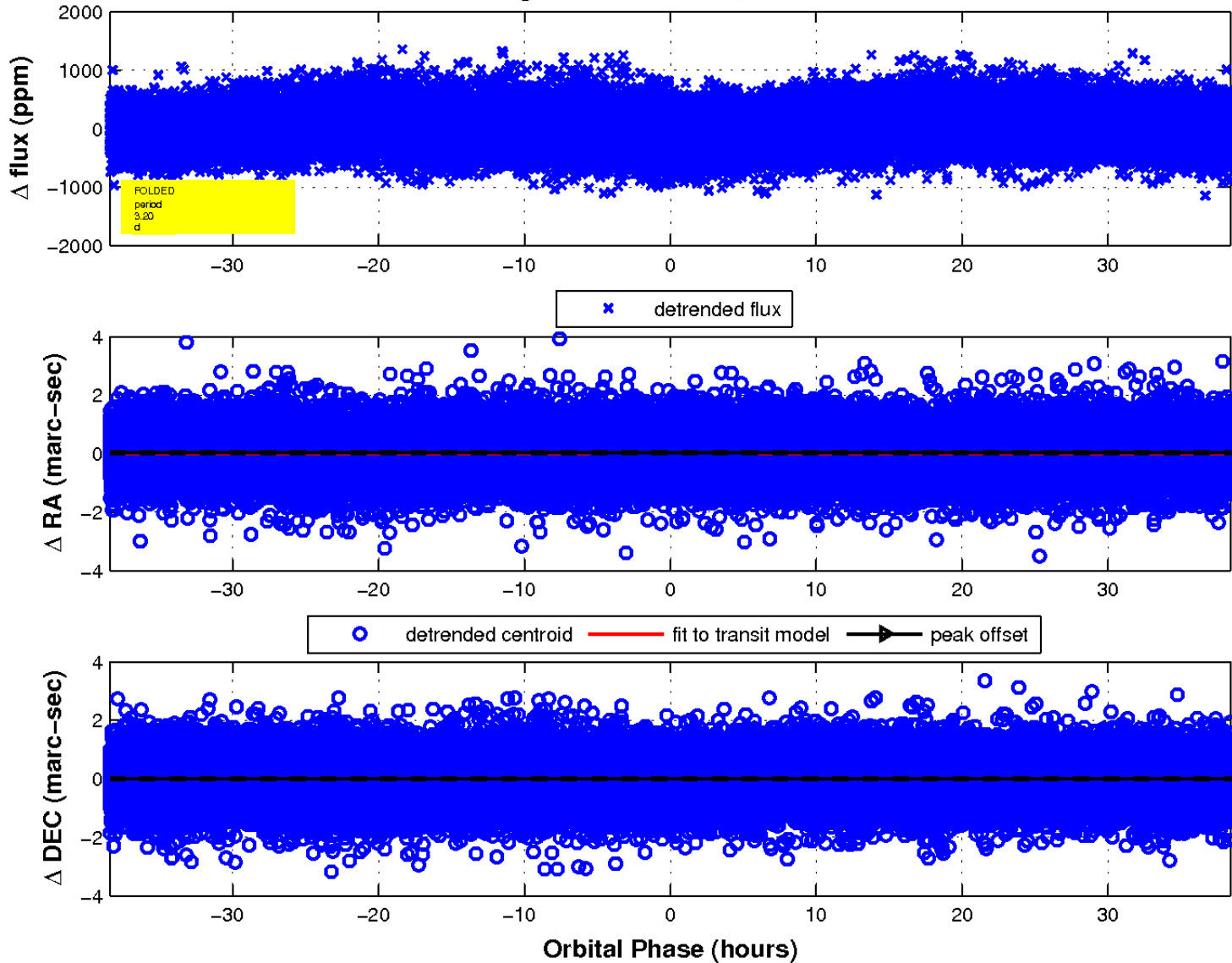
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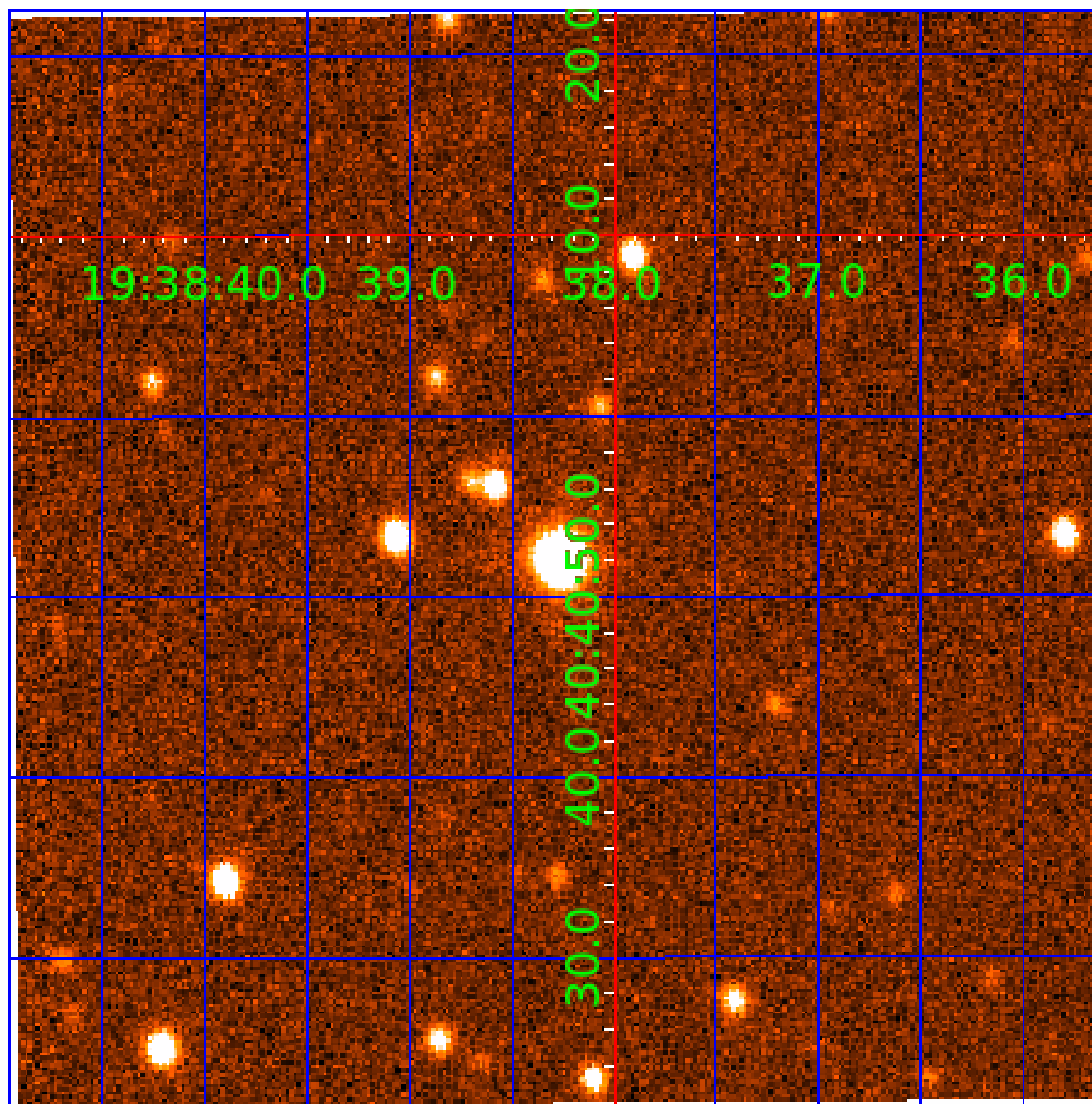


fluxWeightedCentroids, Planet 1 of 9



UKIRT Image

Declination



KIC 005458428

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005458428-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005458428-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005458428-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
005458428-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
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N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

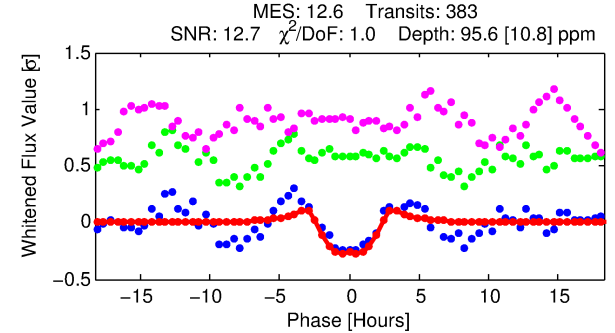
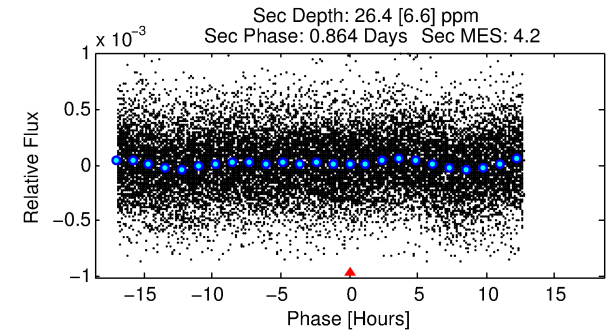
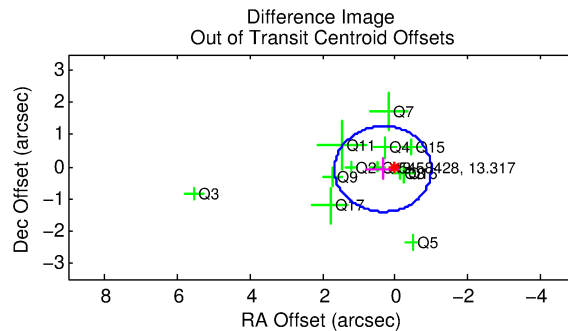
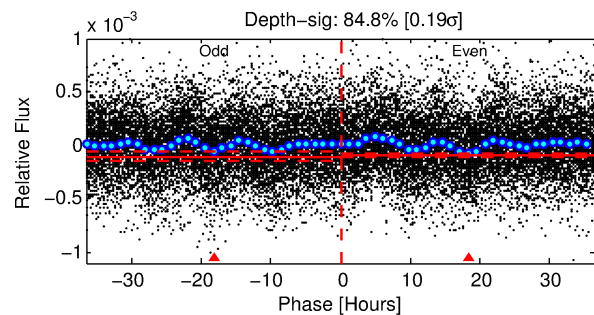
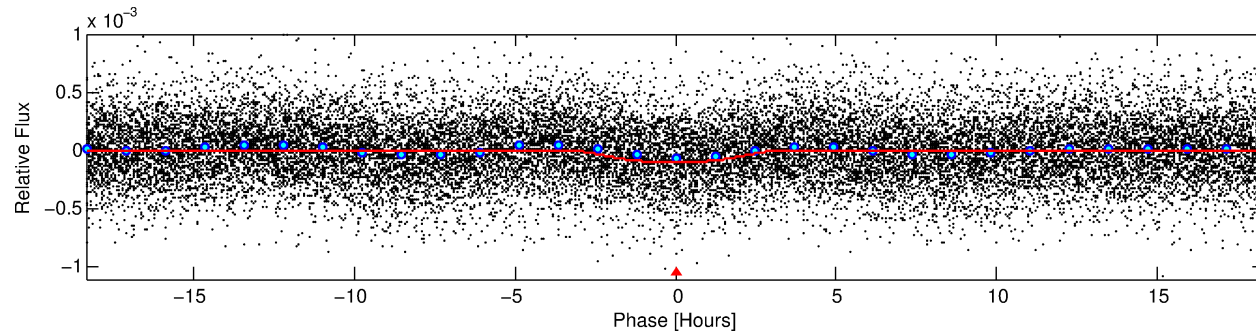
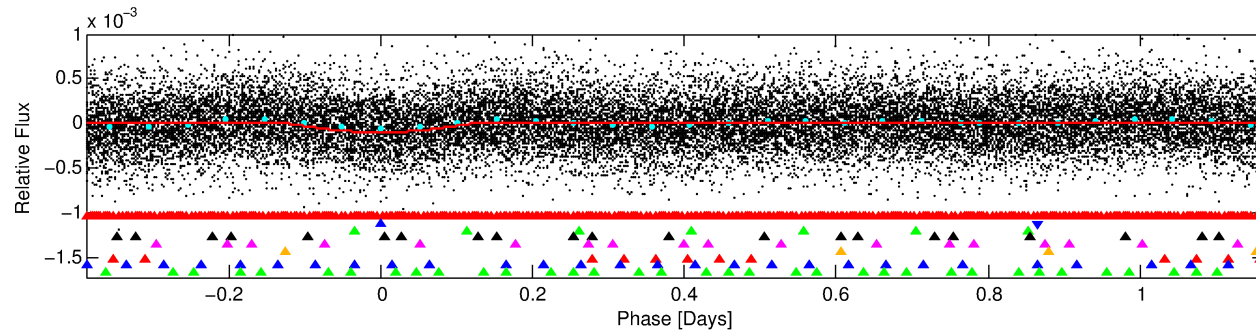
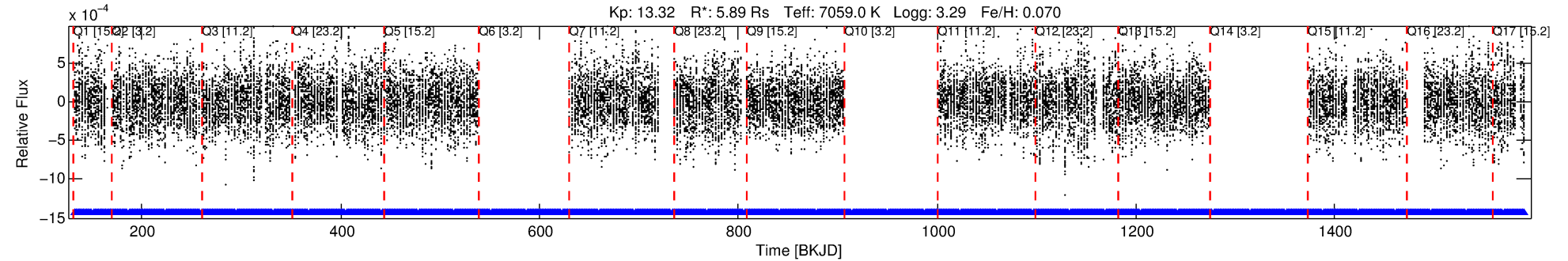
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005458428-02

No Significant Match Found

DV One-Page Summary

KIC: 5458428 Candidate: 2 of 9 Period: 1.552 d



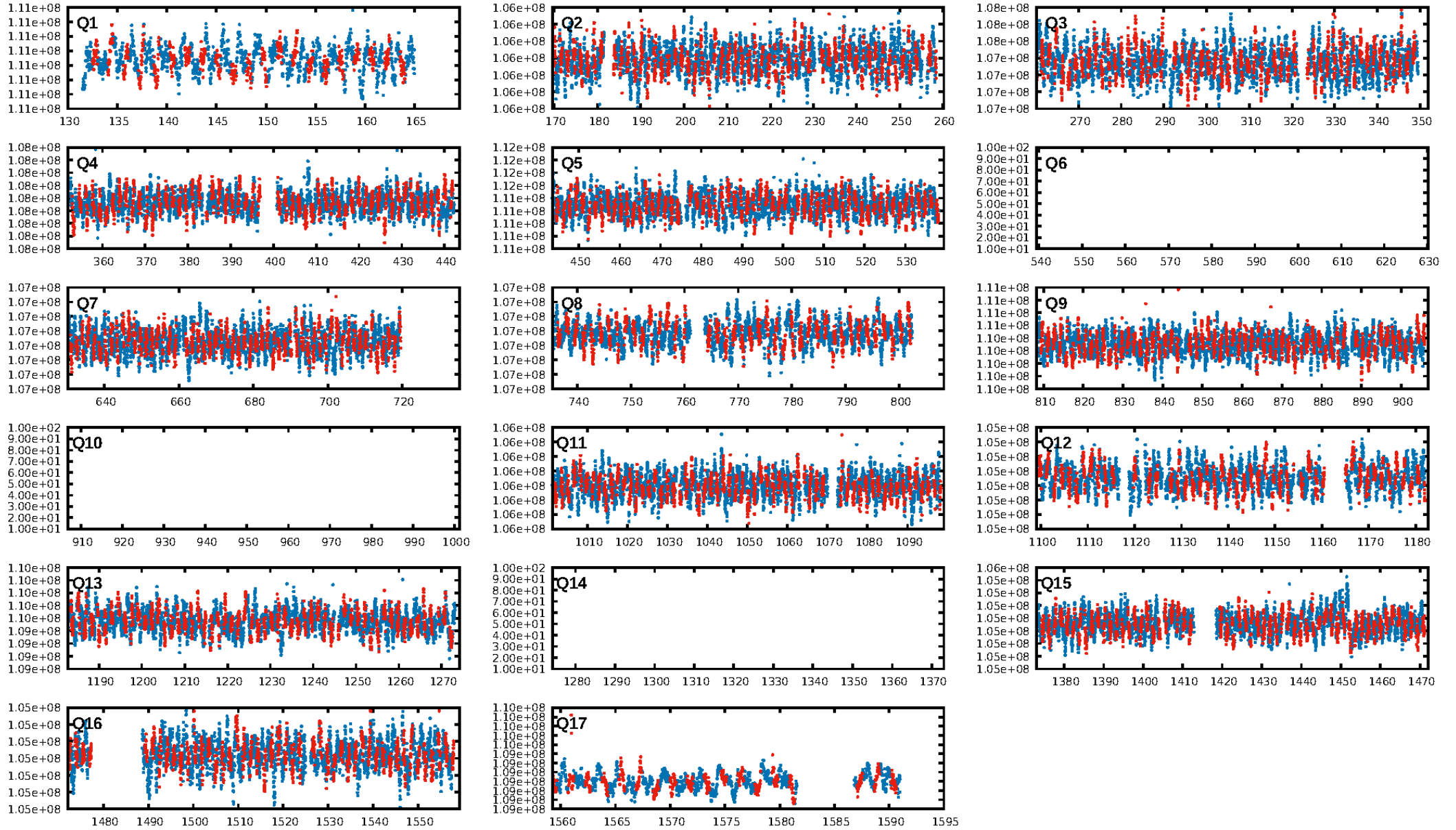
DV Fit Results:

Period = 1.55238 [0.00002] d
Epoch = 132.7351 [0.0056] BKJD
Rp/R* = 0.0121 [0.0008]
a/R* = 1.09 [0.02]
b = 0.99 [0.00]
Seff = 61679.90 [46501.18]
Teff = 4018 [757] K
Rp = 7.80 [3.77] Re
a = 0.0354 [0.0164] AU
Ag = 0.30 [0.24] [-2.96 σ]
Teffp = 4593 [364] K [0.68 σ]

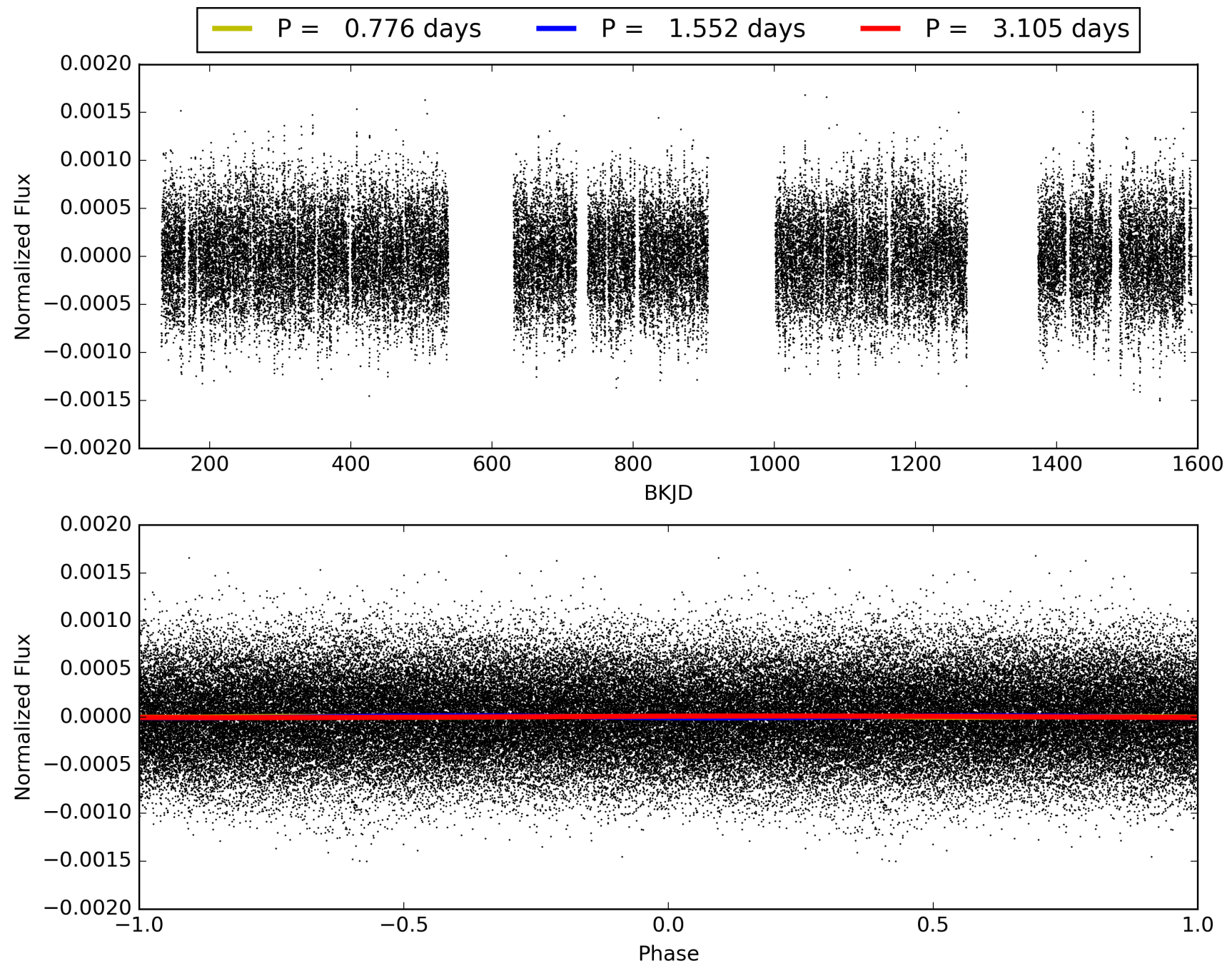
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 99.4% [2.73 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [362/362]
GhostDiagnostic-chr: 8.884
Centroid-sig: 82.8%
Centroid-so: 0.388 arcsec [1.28 σ]
OotOffset-rm: 0.348 arcsec [0.78 σ]
KicOffset-rm: 0.333 arcsec [0.70 σ]
OotOffset-st: 1/4/3/4 [12]
KicOffset-st: 1/4/3/4 [12]
DiffImageQuality-fgm: 0.58 [7/12]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 005458428-02, PDC Light Curves

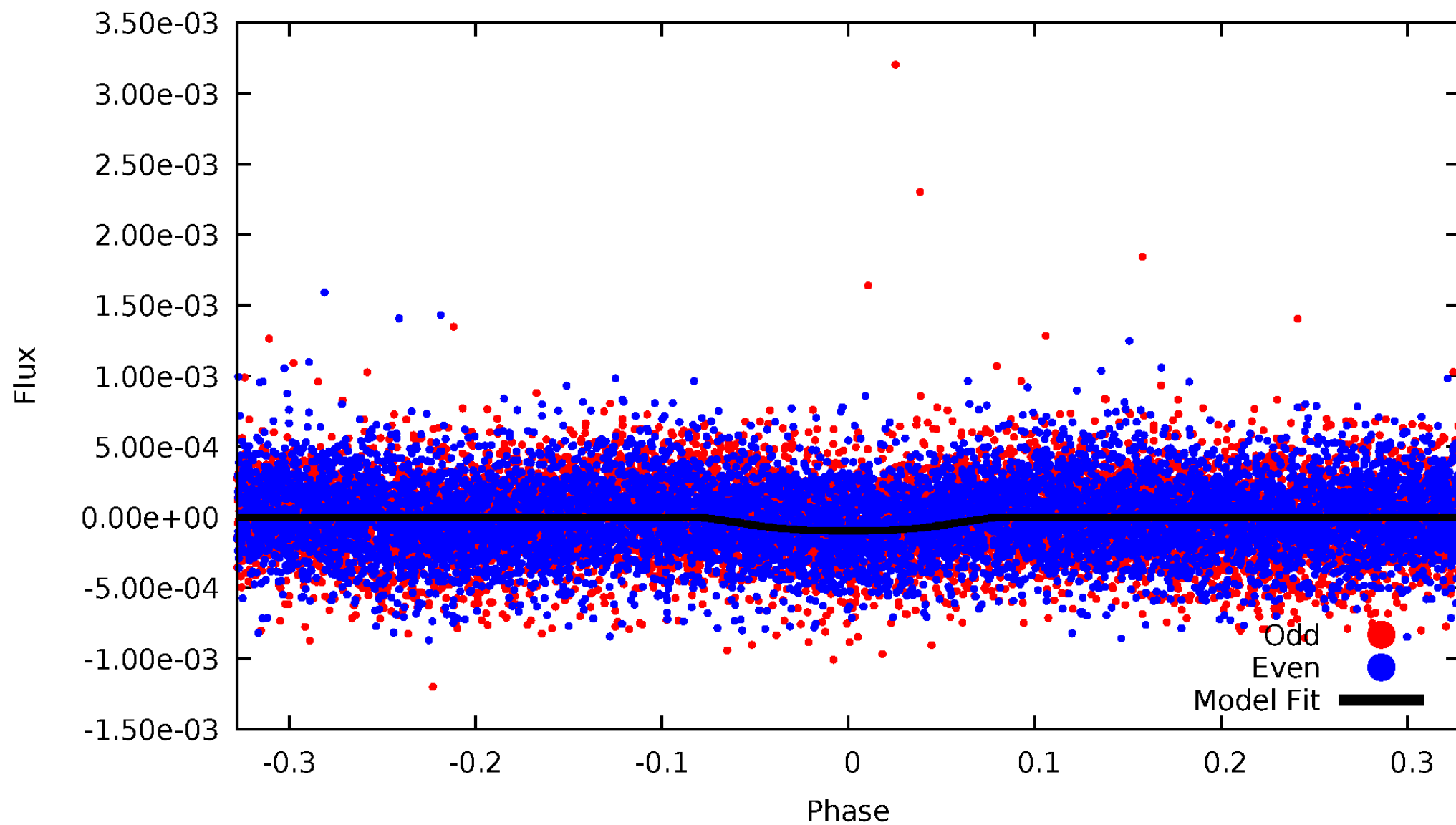


TCE 005458428-02



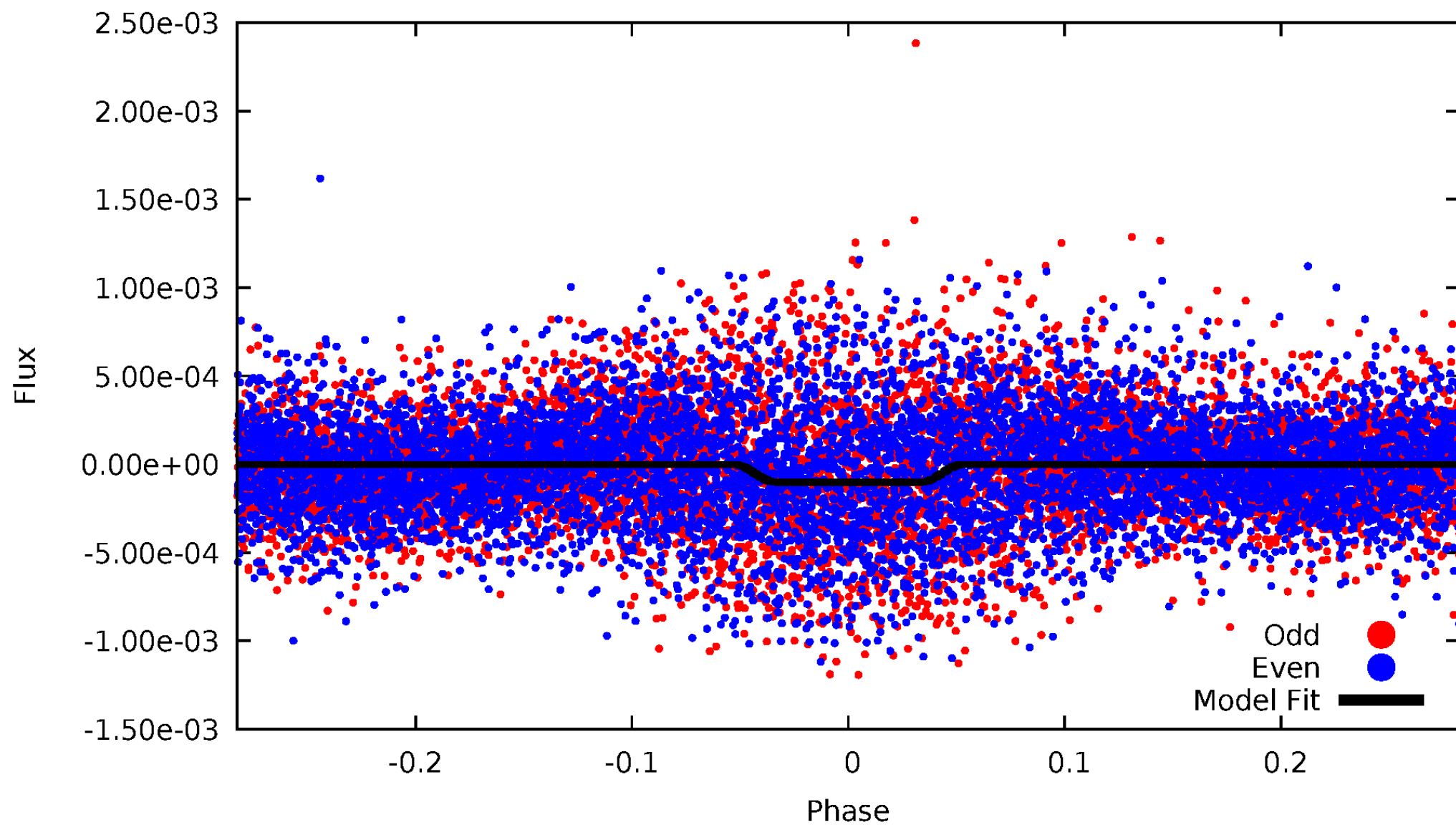
DV Odd/Even

TCE 005458428-02



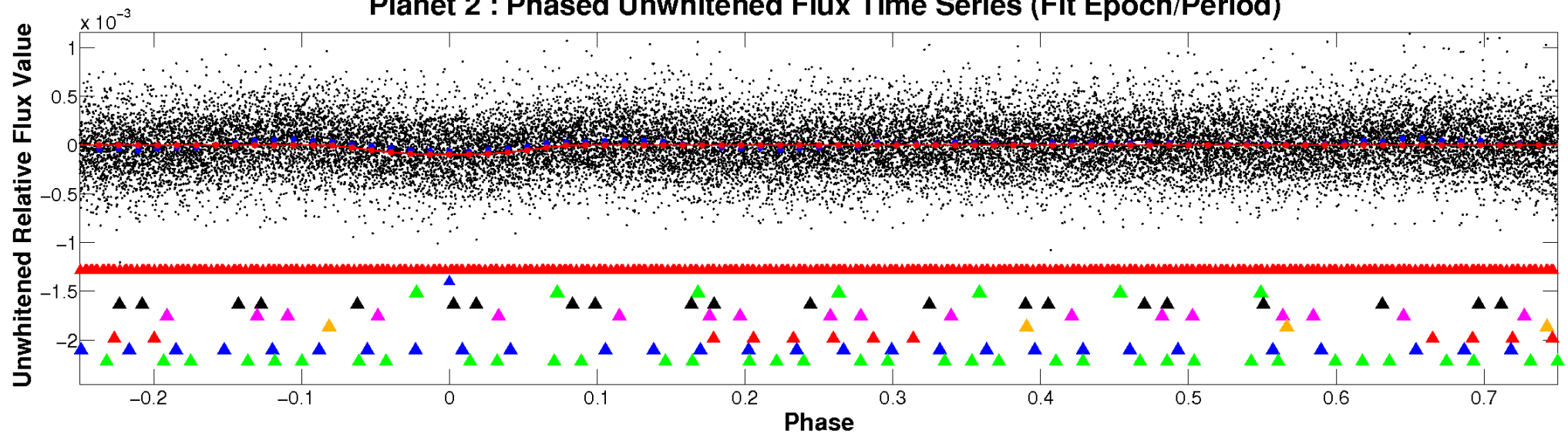
ALT Odd/Even

TCE 005458428-02

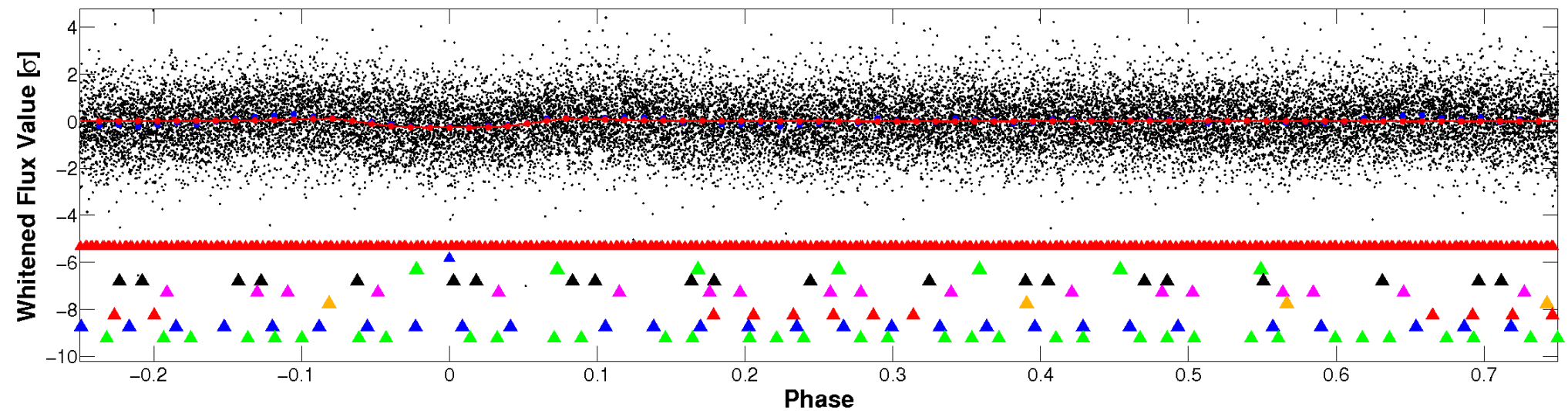


Non-Whitened Vs. Whitened Light Curve

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

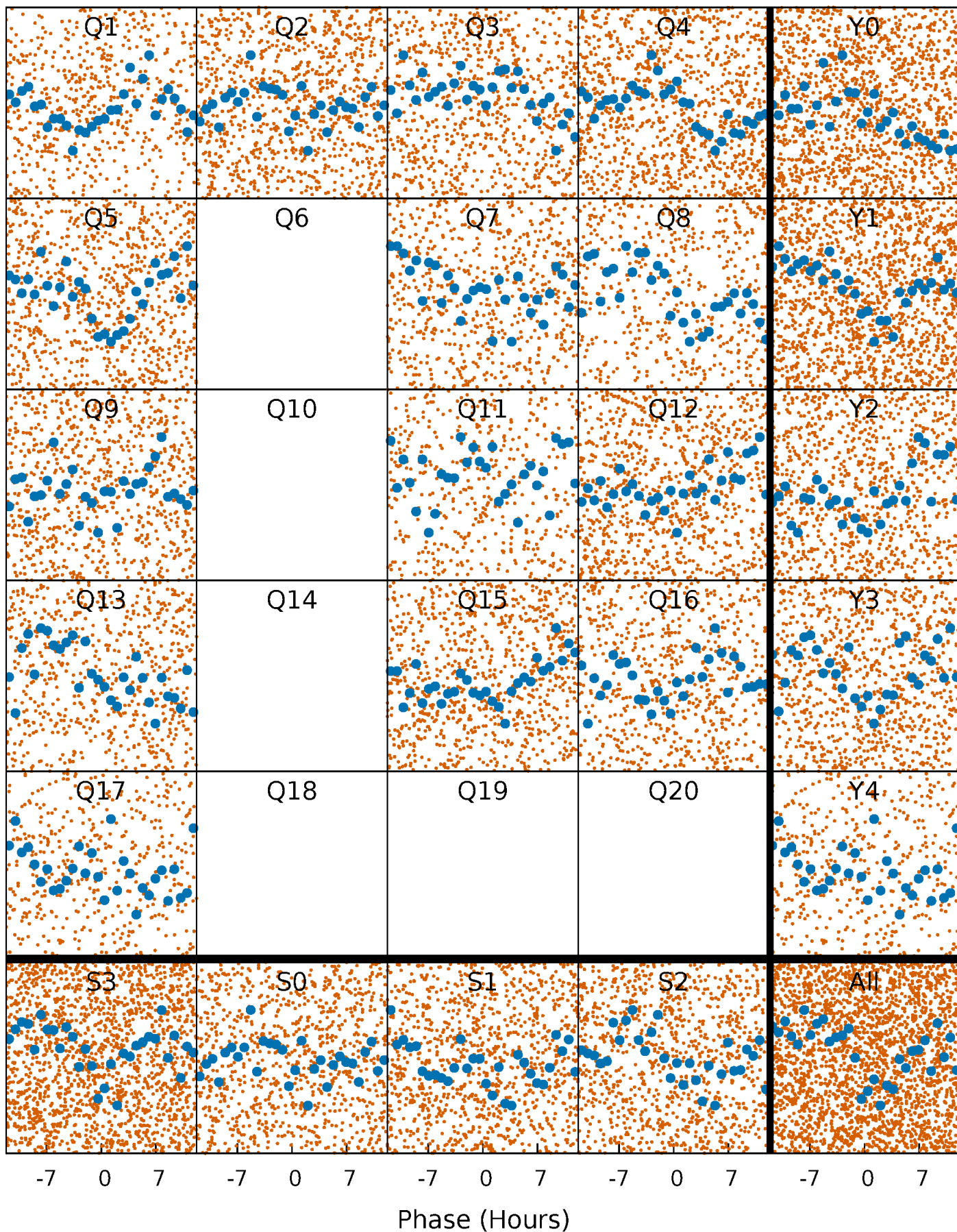


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



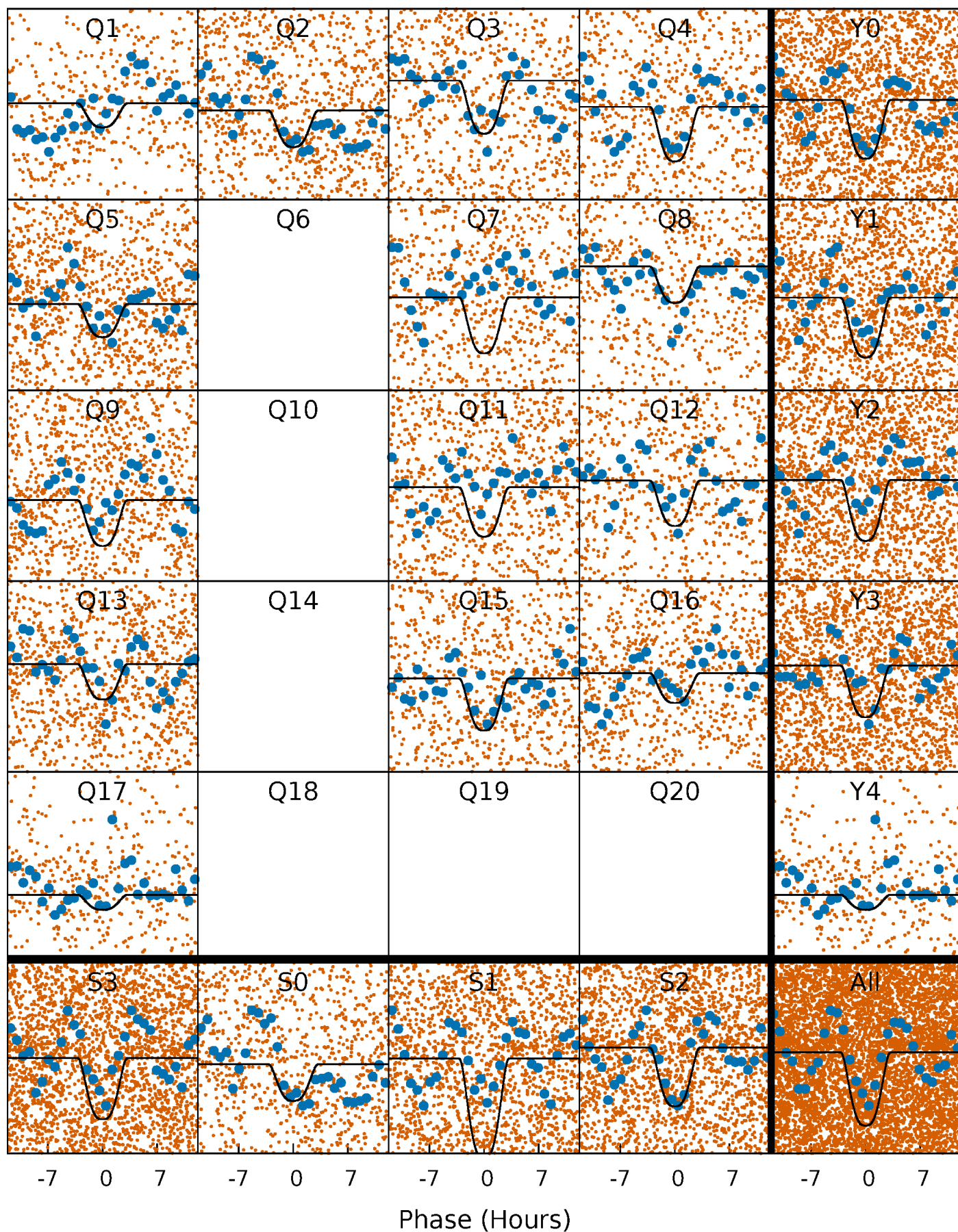
PDC Quarter-Phased Transit Curves

TCE 005458428-02 P= 1.552378 Days $T_0=132.735072$ (BKJD)



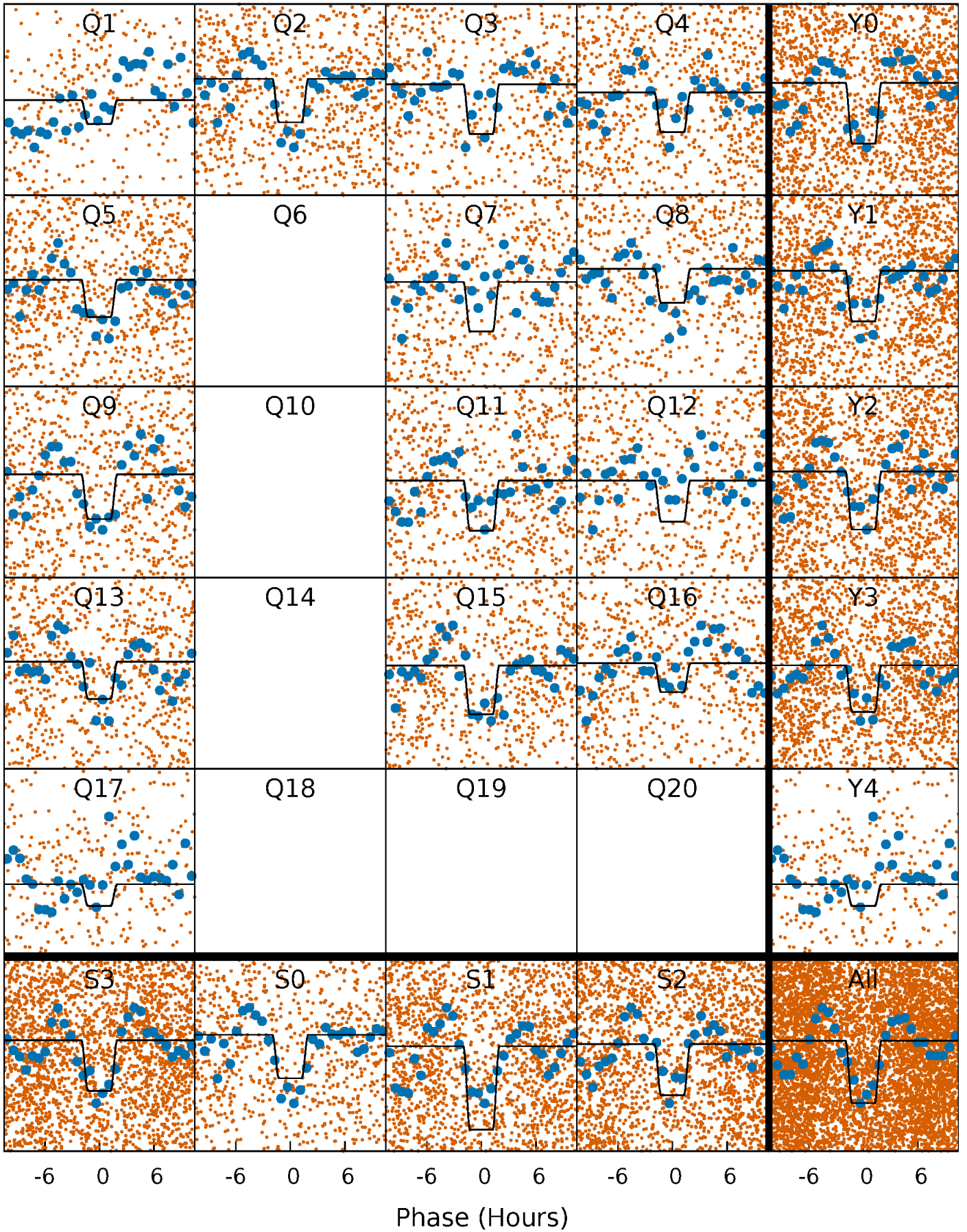
DV Quarter-Phased Transit Curves

TCE 005458428-02 P= 1.552378 Days $T_0=132.735072$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

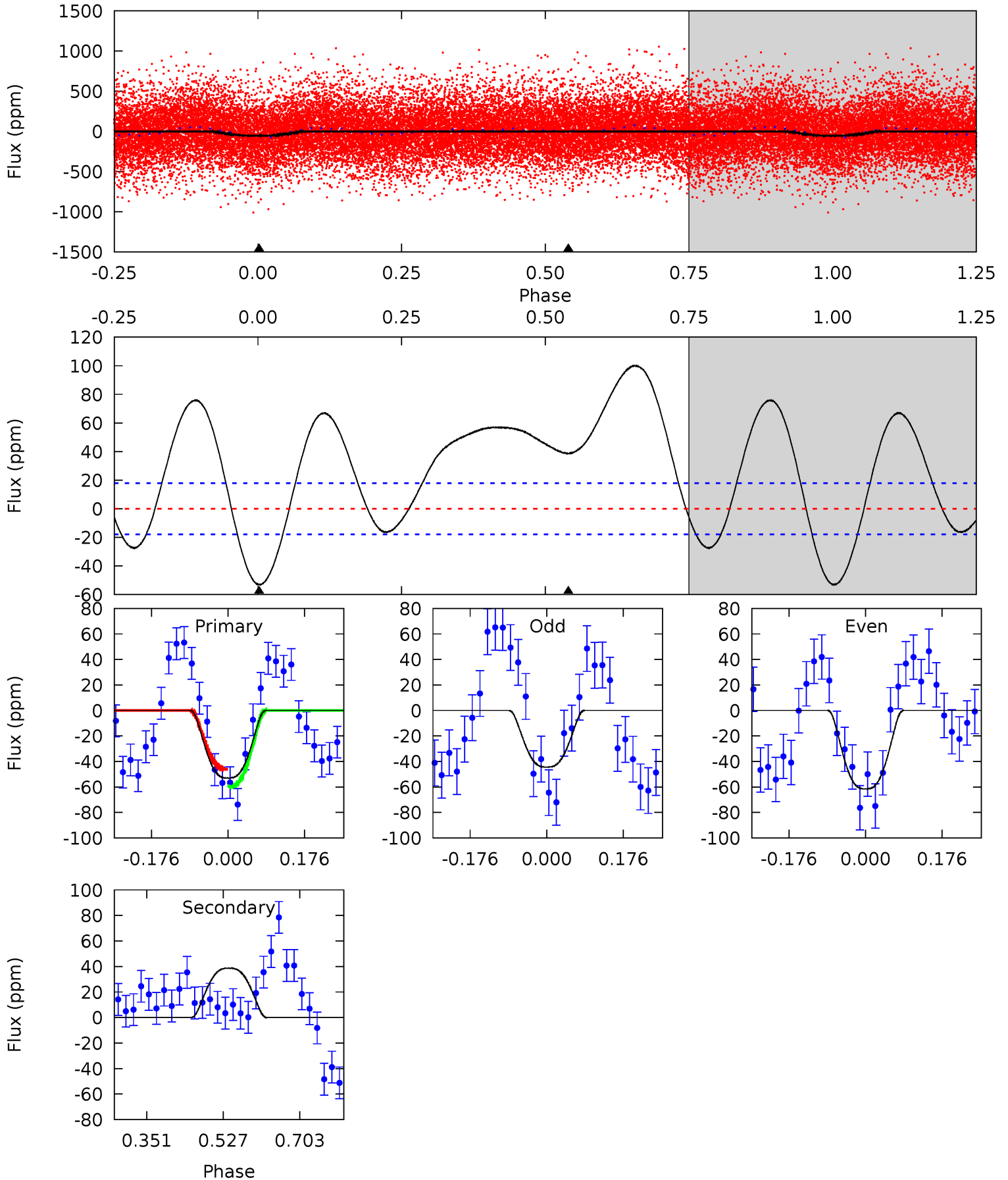
TCE 005458428-02 P= 1.552386 Days $T_0=132.739917$ (BKJD)



DV Model-Shift Uniqueness Test

005458428-02, P = 1.552378 Days, E = 132.735072 Days

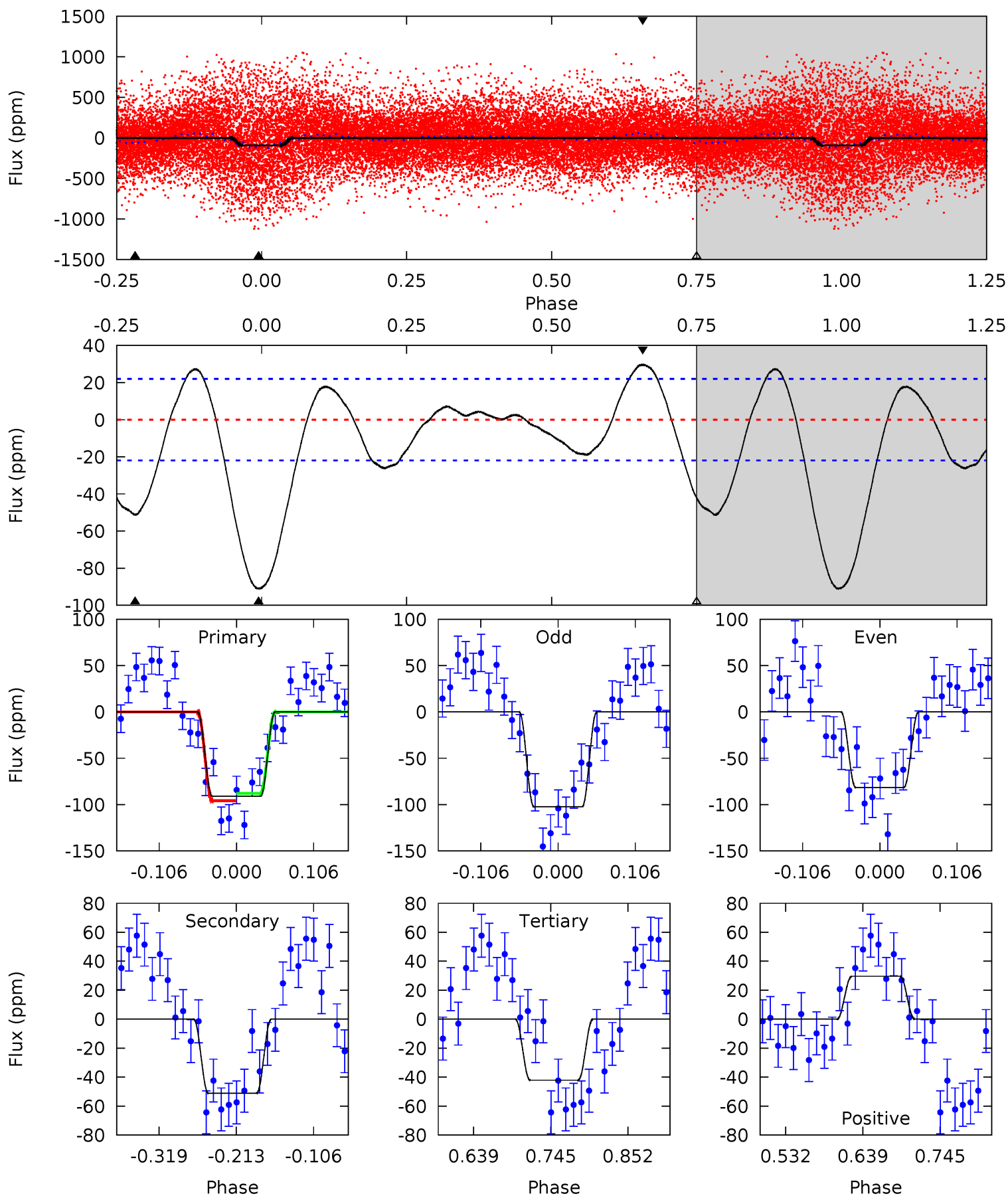
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	-9.64	0	0	4.45	1.35	6.11	13.2	13.2	-9.64	-9.64	2.14	0.76	0.65	1.75



Alt Model-Shift Uniqueness Test

005458428-02, P = 1.552386 Days, E = 132.739917 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.9	10.6	8.72	6.14	4.55	1.61	3.13	10.2	12.7	1.89	4.47	2.15	0.67	0.25	0.83



Stellar Parameters For KIC 005458428

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7059^{+168}_{-252}	$3.287^{+0.435}_{-0.145}$	$0.070^{+0.200}_{-0.300}$	$5.894^{+1.521}_{-2.825}$	$2.453^{+0.165}_{-0.662}$	$0.017^{+0.077}_{-0.008}$
	+2%/-4%	+13%/-4%	+286%/-429%	+26%/-48%	+7%/-27%	+456%/-45%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005458428-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	39 ± 4	$7.39^{+1.47}_{-1.62}$	5501^{+440}_{-597}	-5685^{+299}_{-250}	$-0.475^{+0.146}_{-0.269}$
Alt.	-51 ± 5	$6.18^{+1.09}_{-1.61}$	5490^{+459}_{-649}	5349^{+406}_{-436}	$0.904^{+0.576}_{-0.270}$

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 $A_{obs} \gg 1.0$

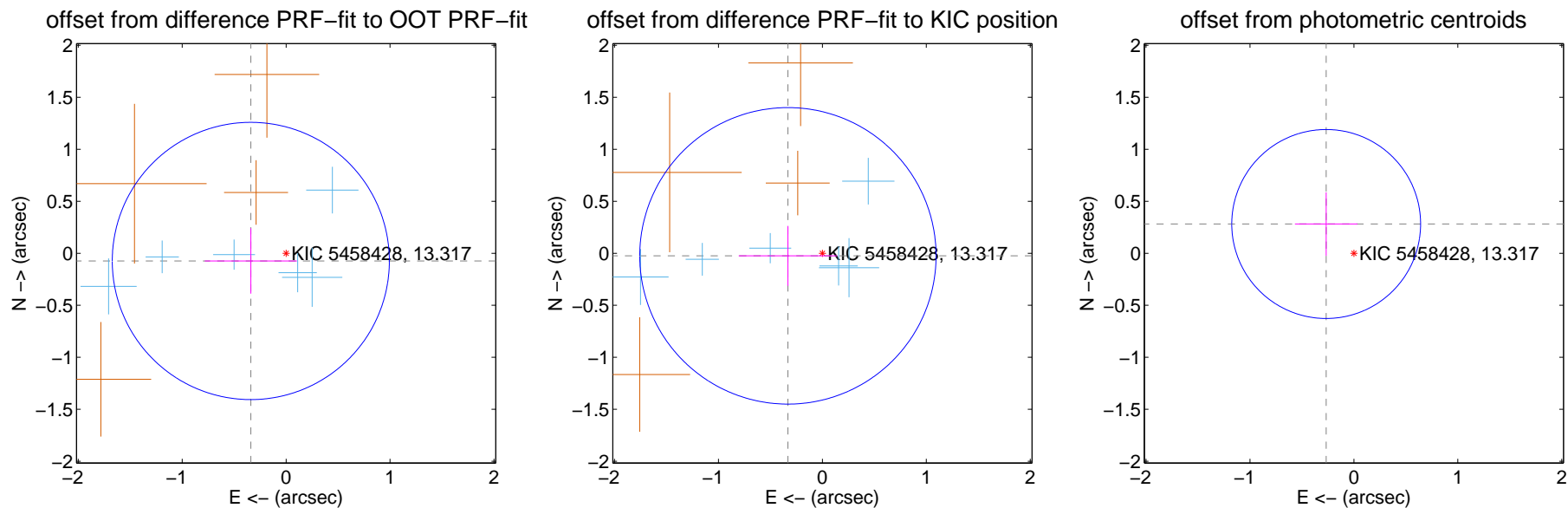
DV Centroid Data

Supplemental centroid analysis for 005458428-02. Kepler magnitude: 13.32. Transit SNR 12.72

There are 7 quarters with good PRF difference image offsets

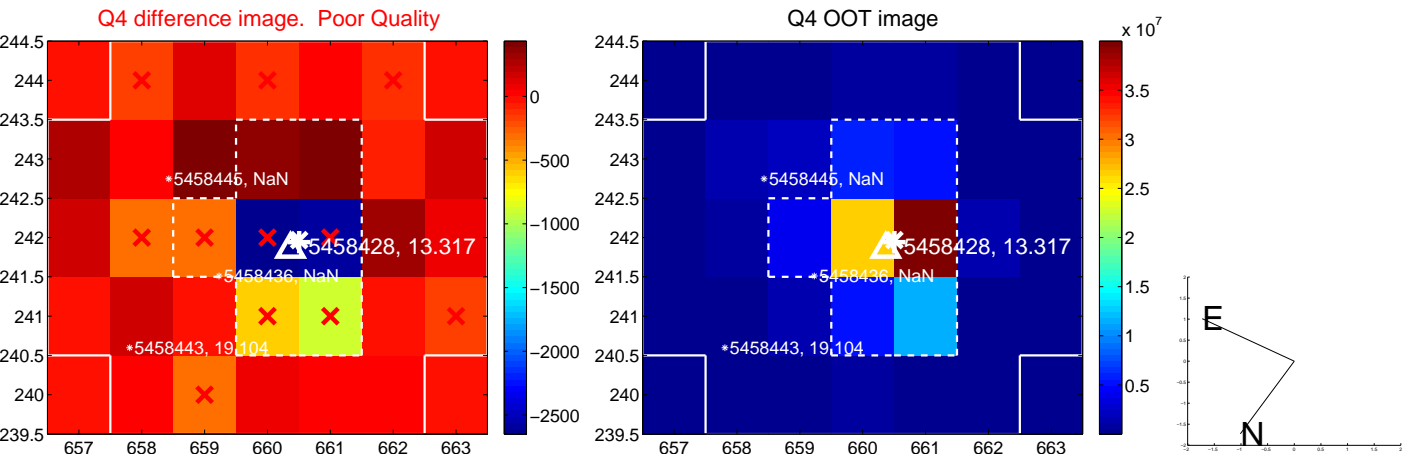
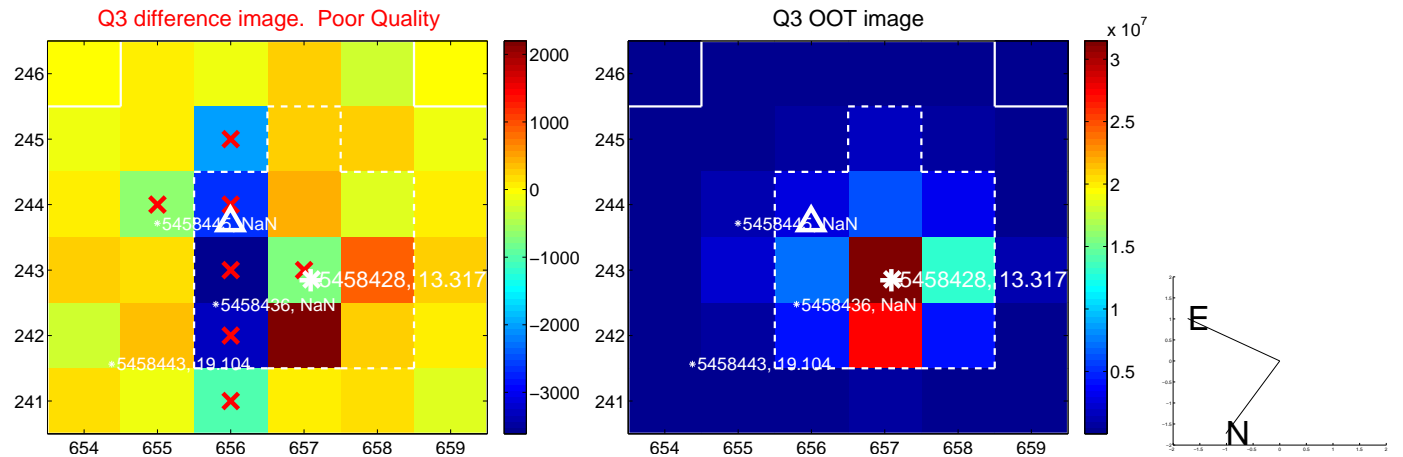
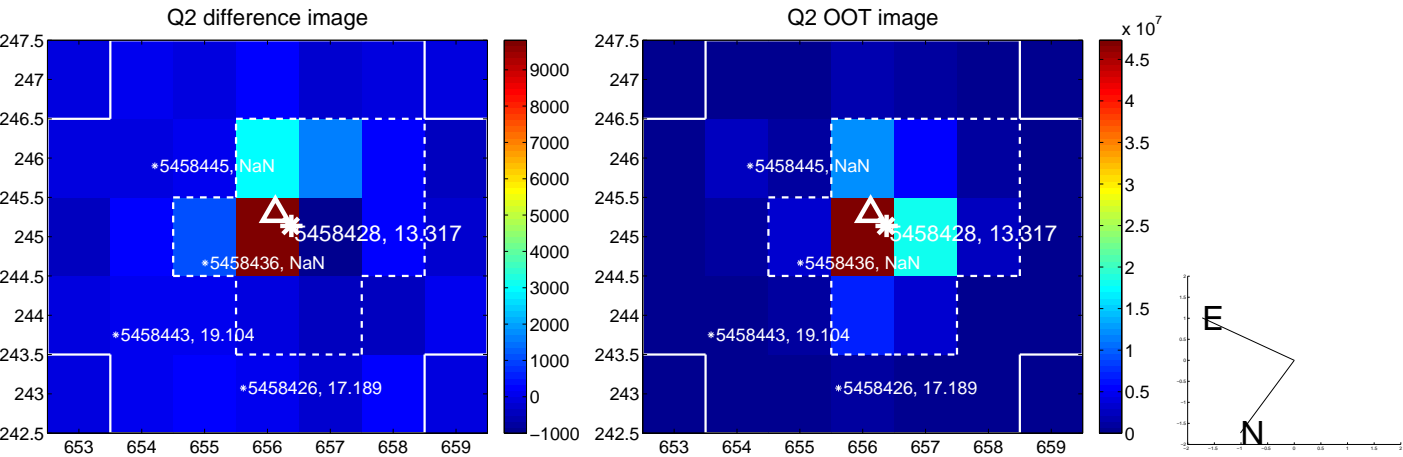
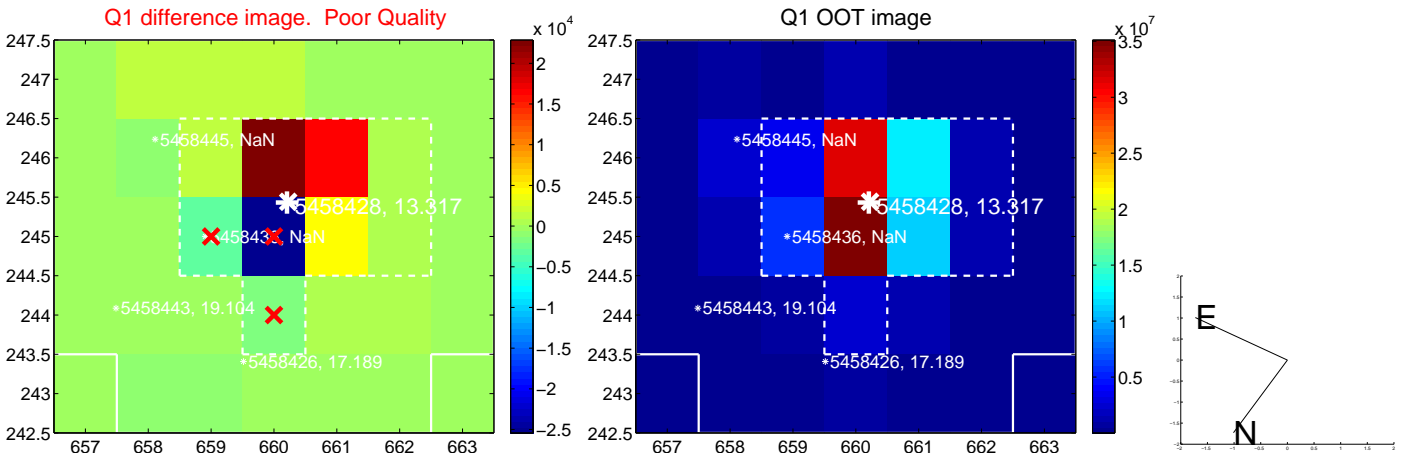
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.348 ± 0.444	0.78	0.340 ± 0.443	-0.074 ± 0.314
PRF-fit source offset from KIC position	0.333 ± 0.475	0.70	0.332 ± 0.473	-0.025 ± 0.288
photometric centroid source offset	0.39 ± 0.30	1.28	0.27 ± 0.30	0.28 ± 0.30

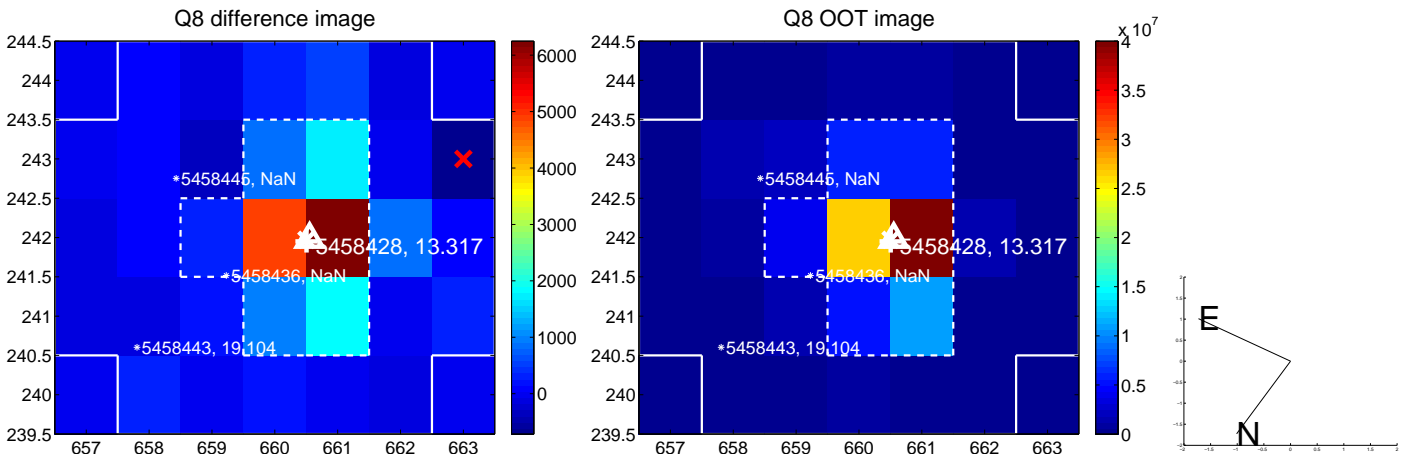
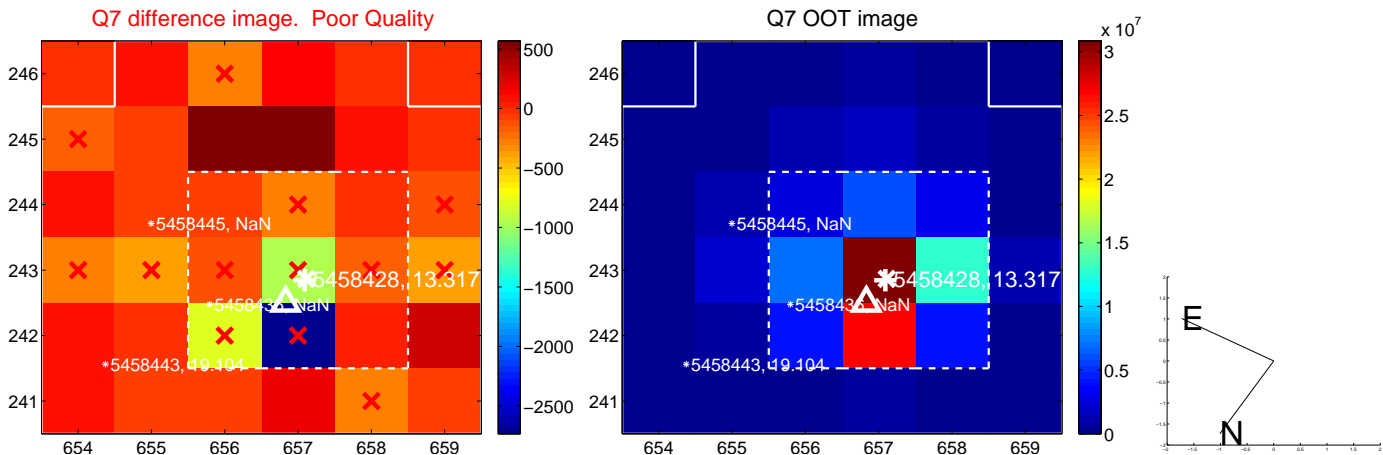
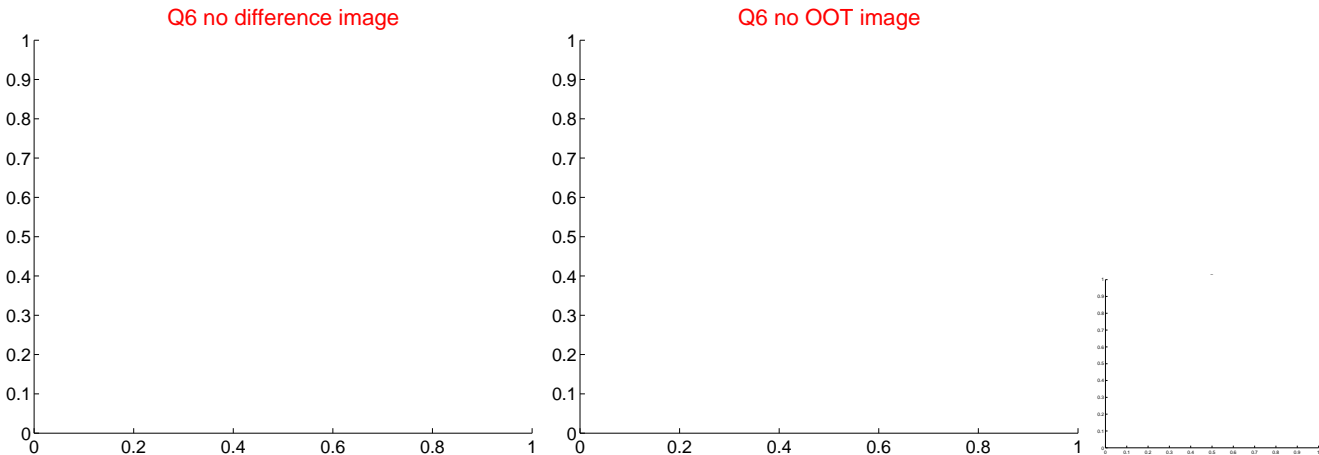
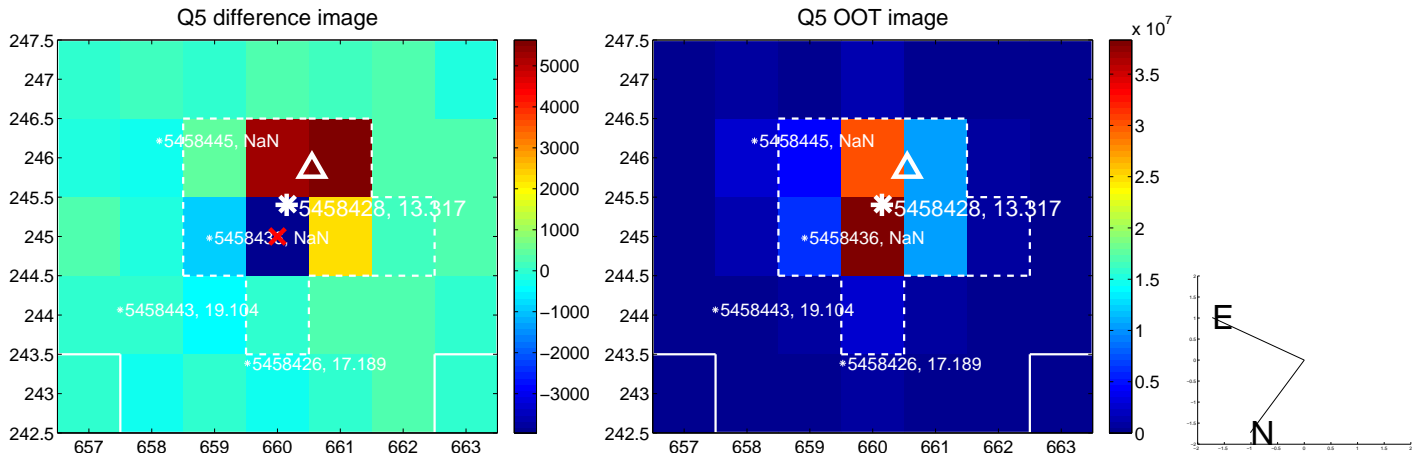


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

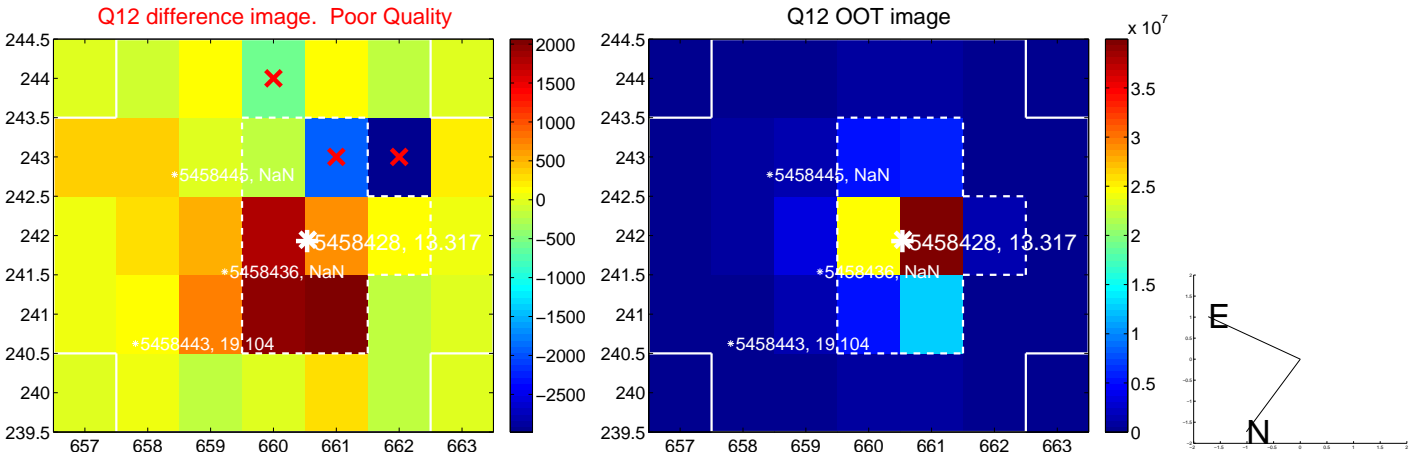
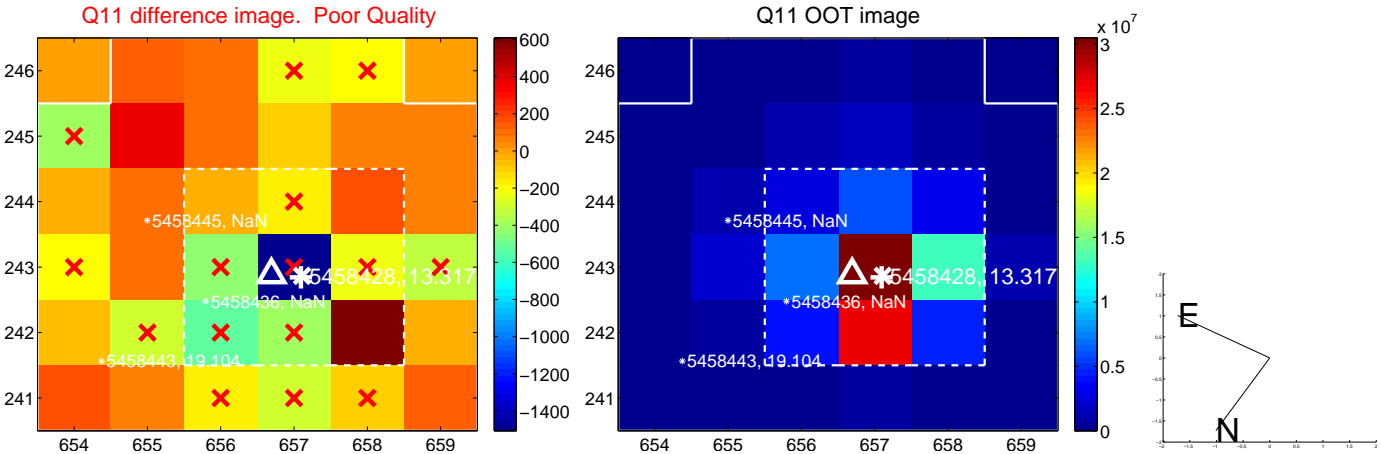
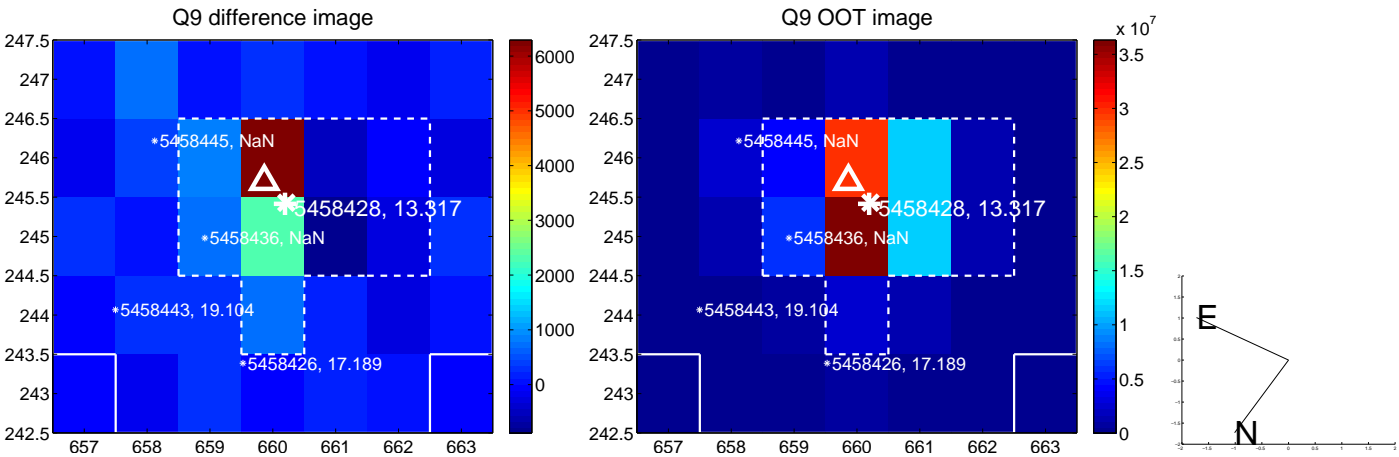
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



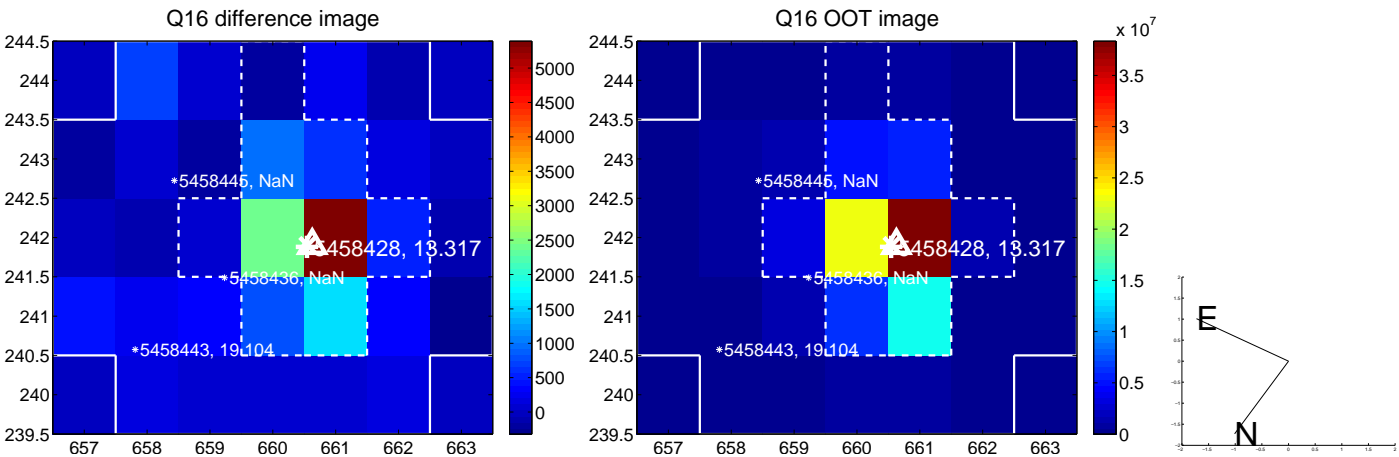
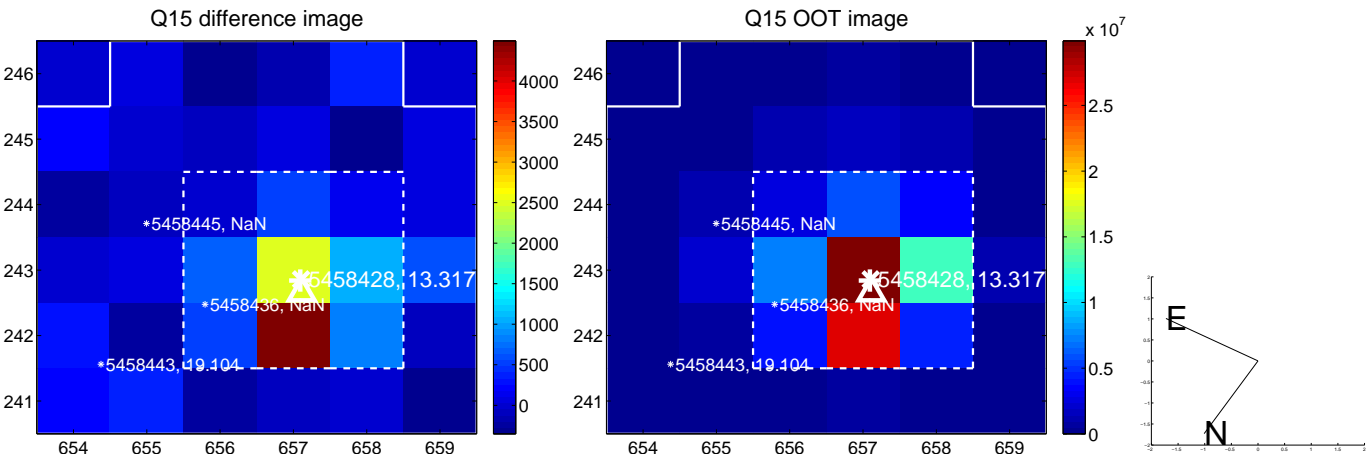
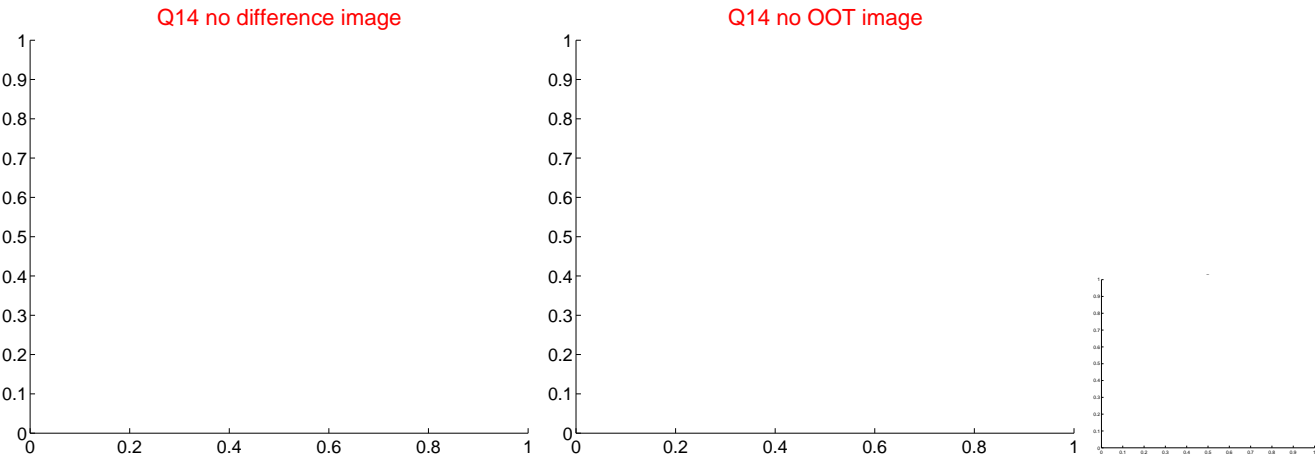
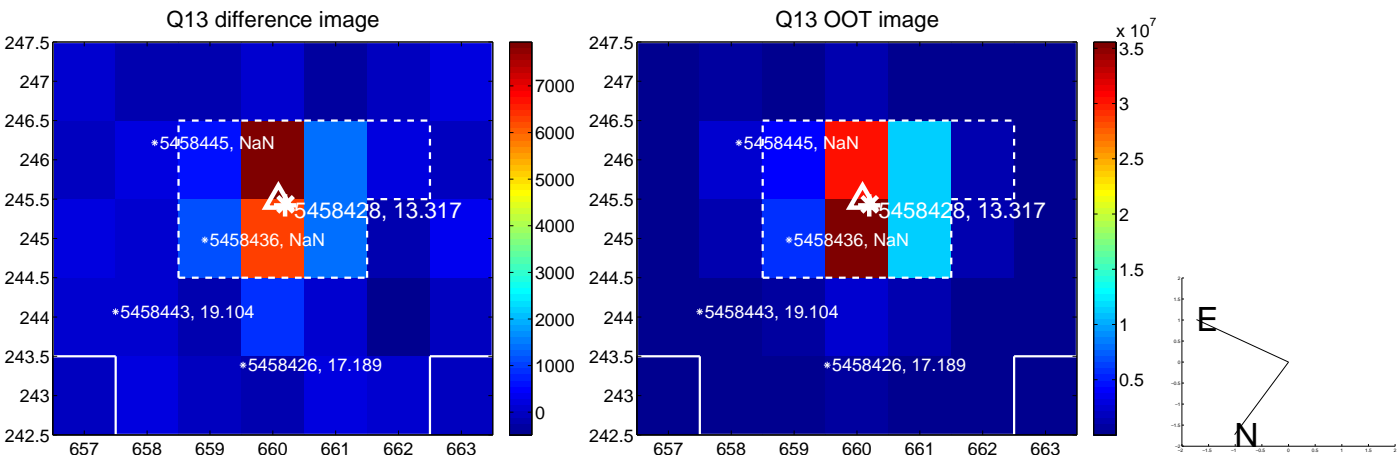
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



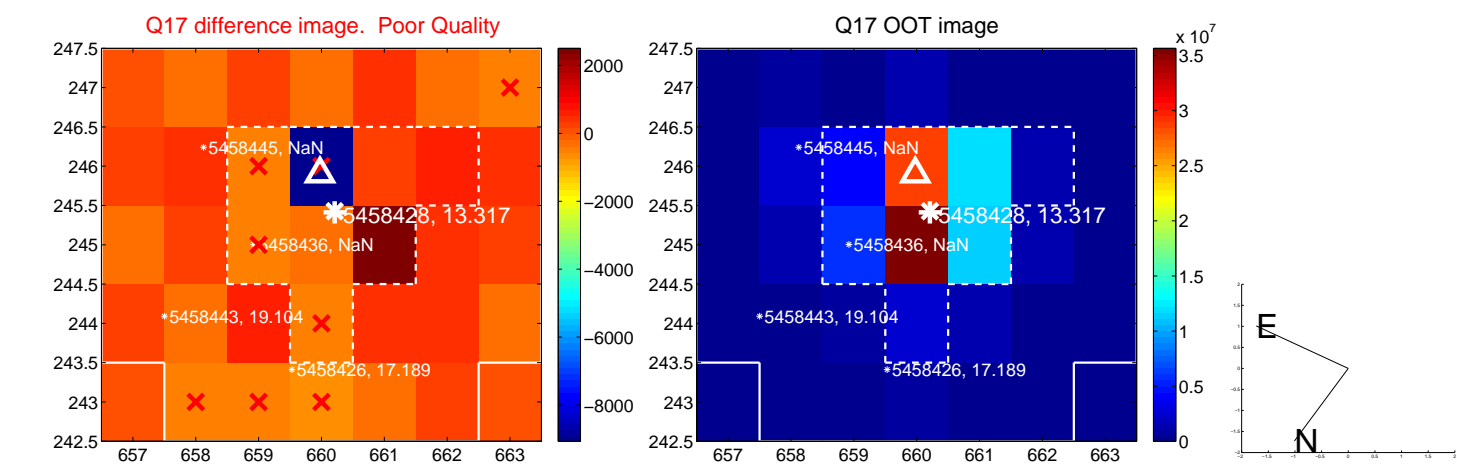
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



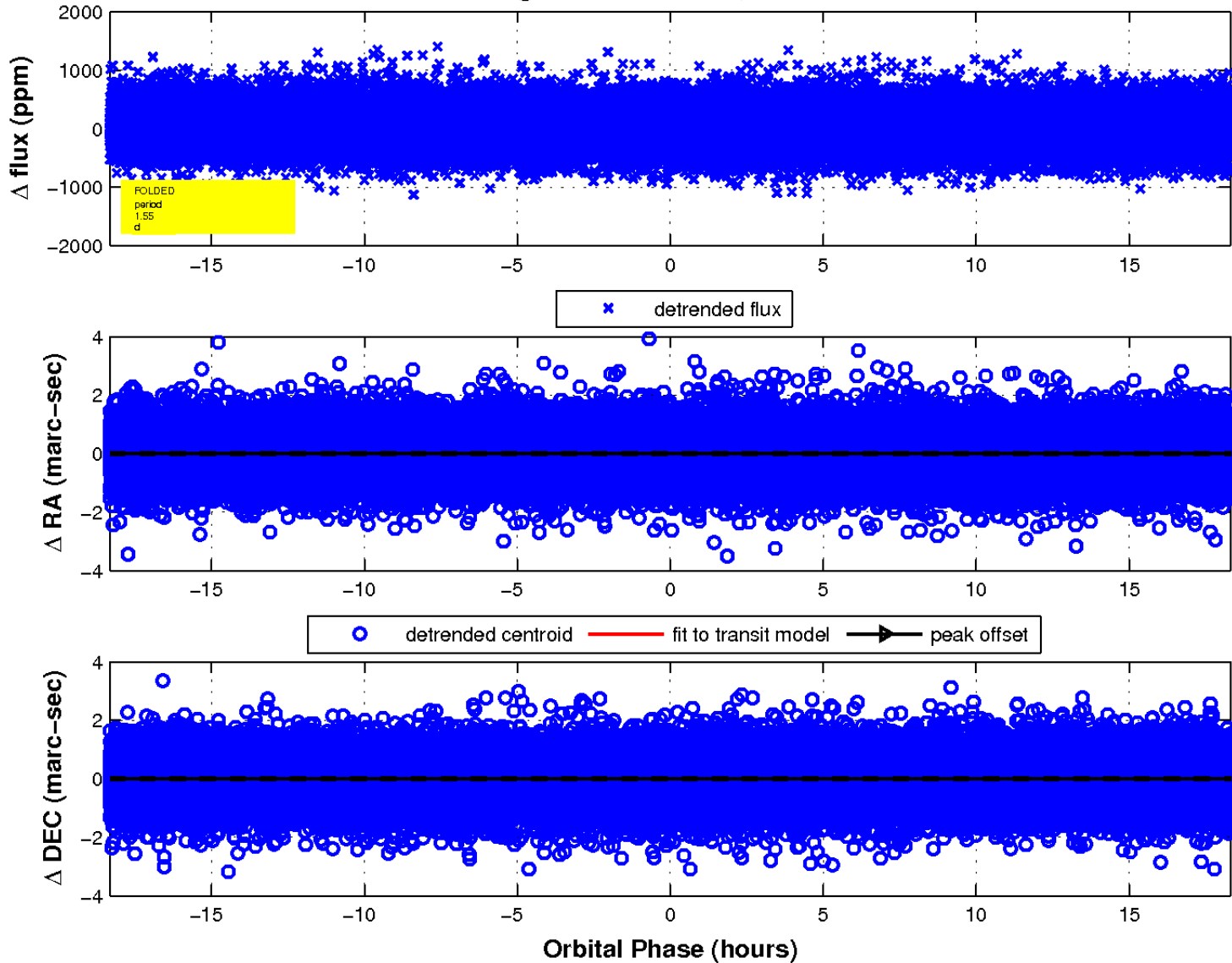
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

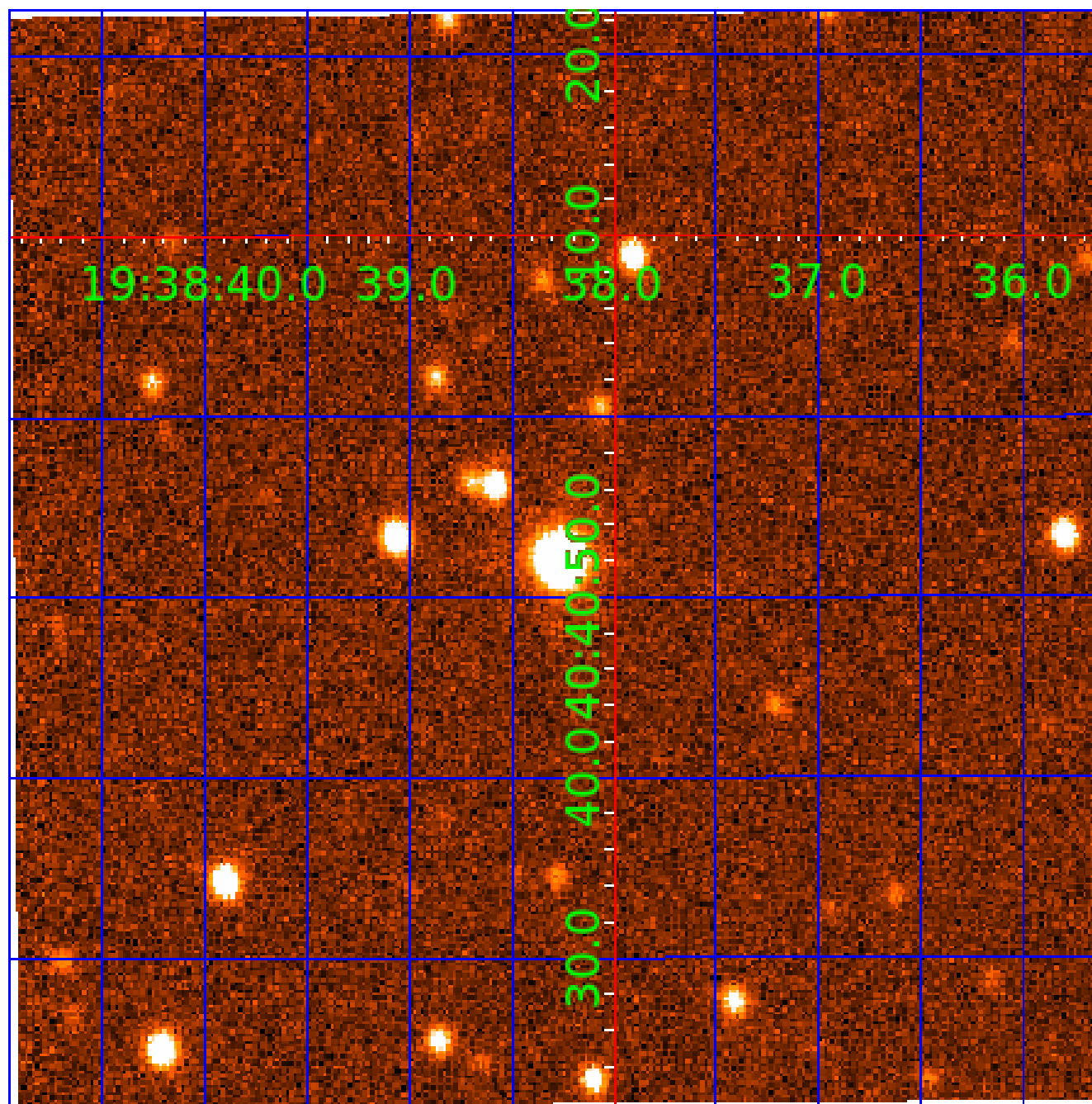


fluxWeightedCentroids, Planet 2 of 9



UKIRT Image

Declination



KIC 005458428

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})
005458428-01	OBS	No	3.200651	132.084844	75.7	13.138	9.7	10.5	5.89	7059	6.53	23504.78
005458428-02	OBS	No	1.552378	132.735072	95.6	6.107	12.6	12.7	5.89	7059	7.80	61679.90
005458428-03	OBS	No	192.642735	275.519386	859.2	9.619	11.8	12.7	5.89	7059	25.56	99.65
005458428-04	OBS	No	69.381211	145.158500	466.6	8.103	10.3	9.1	5.89	7059	24.33	388.88
005458428-05	OBS	No	79.646495	159.557679	187.9	12.243	10.1	4.4	5.89	7059	8.65	323.53
005458428-06	OBS	No	349.011885	405.827424	479.6	10.909	9.7	8.3	5.89	7059	13.90	45.12
005458428-07	OBS	No	123.393120	150.298424	623.0	6.194	9.5	9.8	5.89	7059	27.82	180.48
005458428-08	OBS	No	53.481893	134.251969	293.6	11.976	9.5	7.7	5.89	7059	11.10	550.21
005458428-09	OBS	No	40.566928	167.259507	178.9	9.000	10.0	-1.0	5.89	7059	7.95	795.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005458428-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
005458428-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005458428-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005458428-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
005458428-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

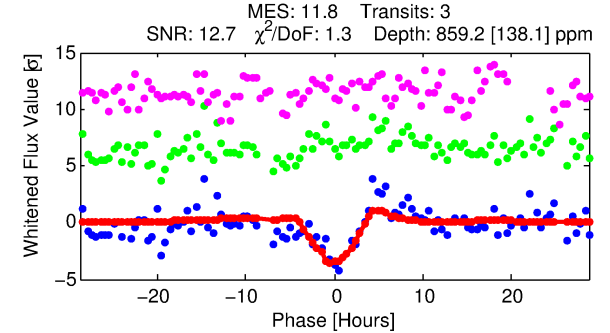
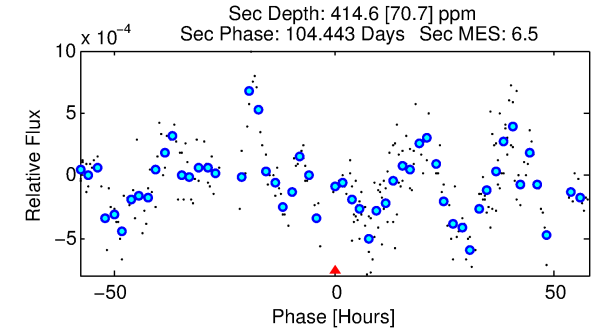
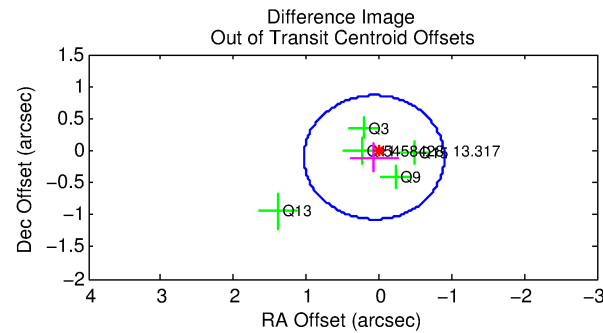
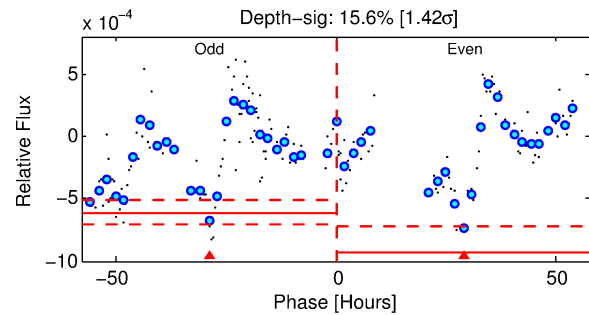
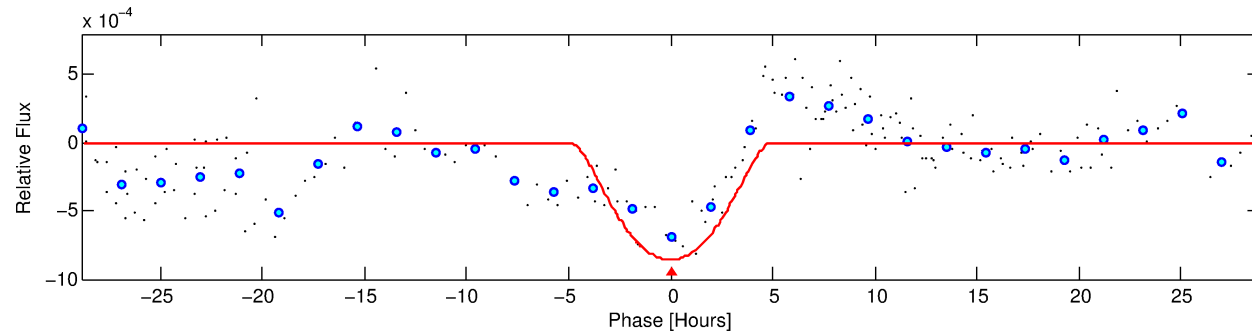
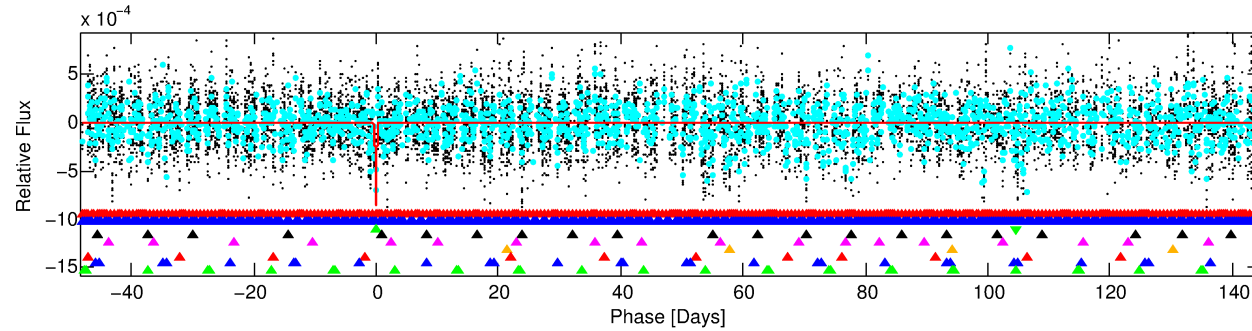
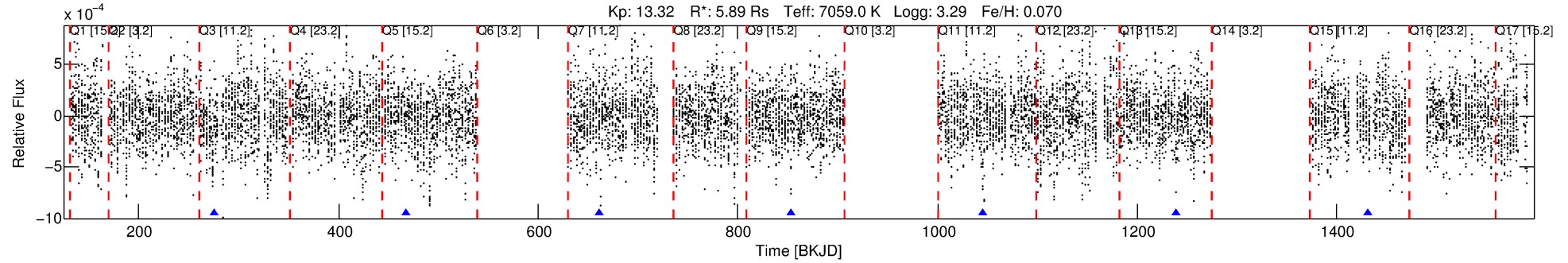
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005458428-03

No Significant Match Found

DV One-Page Summary

KIC: 5458428 Candidate: 3 of 9 Period: 192.643 d



DV Fit Results:

Period = 192.64274 [0.01703] d
Epoch = 275.5194 [0.0673] BKJD
Rp/R* = 0.0397 [0.0331]
a/R* = 52.32 [18.89]
b = 0.98 [0.06]
Seff = 99.65 [75.13]
Teq = 806 [152] K
Rp = 25.56 [24.57] Re
a = 0.8807 [0.4070] AU
Ag = 270.72 [495.85] [0.54 σ]
Teffp = 5053 [2124] K [1.99 σ]

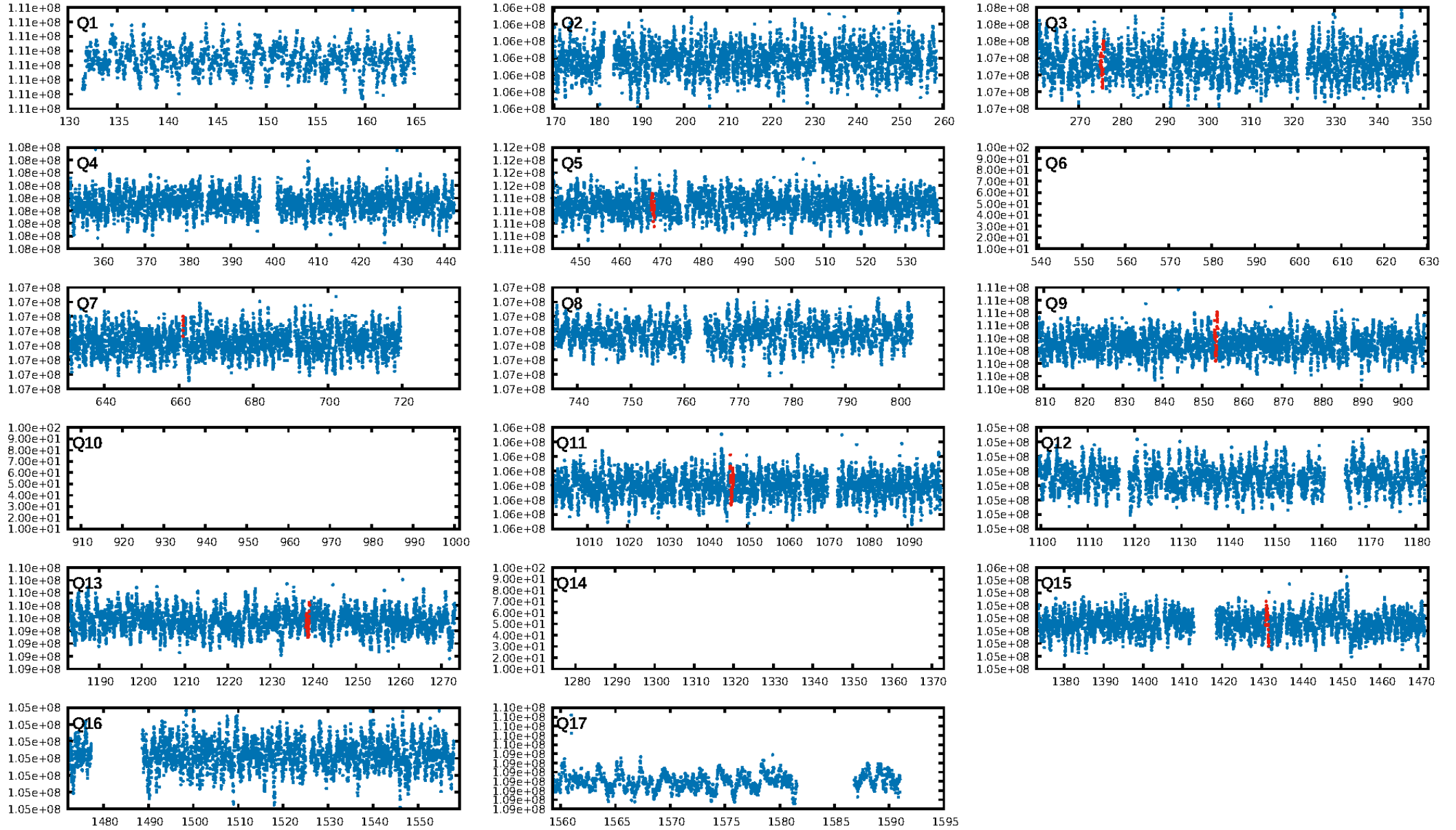
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [145.27 σ]
LongPeriod-sig: 100.0% [258.04 σ]
ModelChiSquare2-sig: 36.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.722
Centroid-sig: 4.5%
Centroid-so: 1.026 arcsec [3.09 σ]
OotOffset-rm: 0.124 arcsec [0.39 σ]
KicOffset-rm: 0.083 arcsec [0.24 σ]
OotOffset-st: 0/3/0/2 [5]
KicOffset-st: 0/3/0/2 [5]
DiffImageQuality-fgm: 0.80 [4/5]
DiffImageOverlap-fno: 0.00 [0/6]

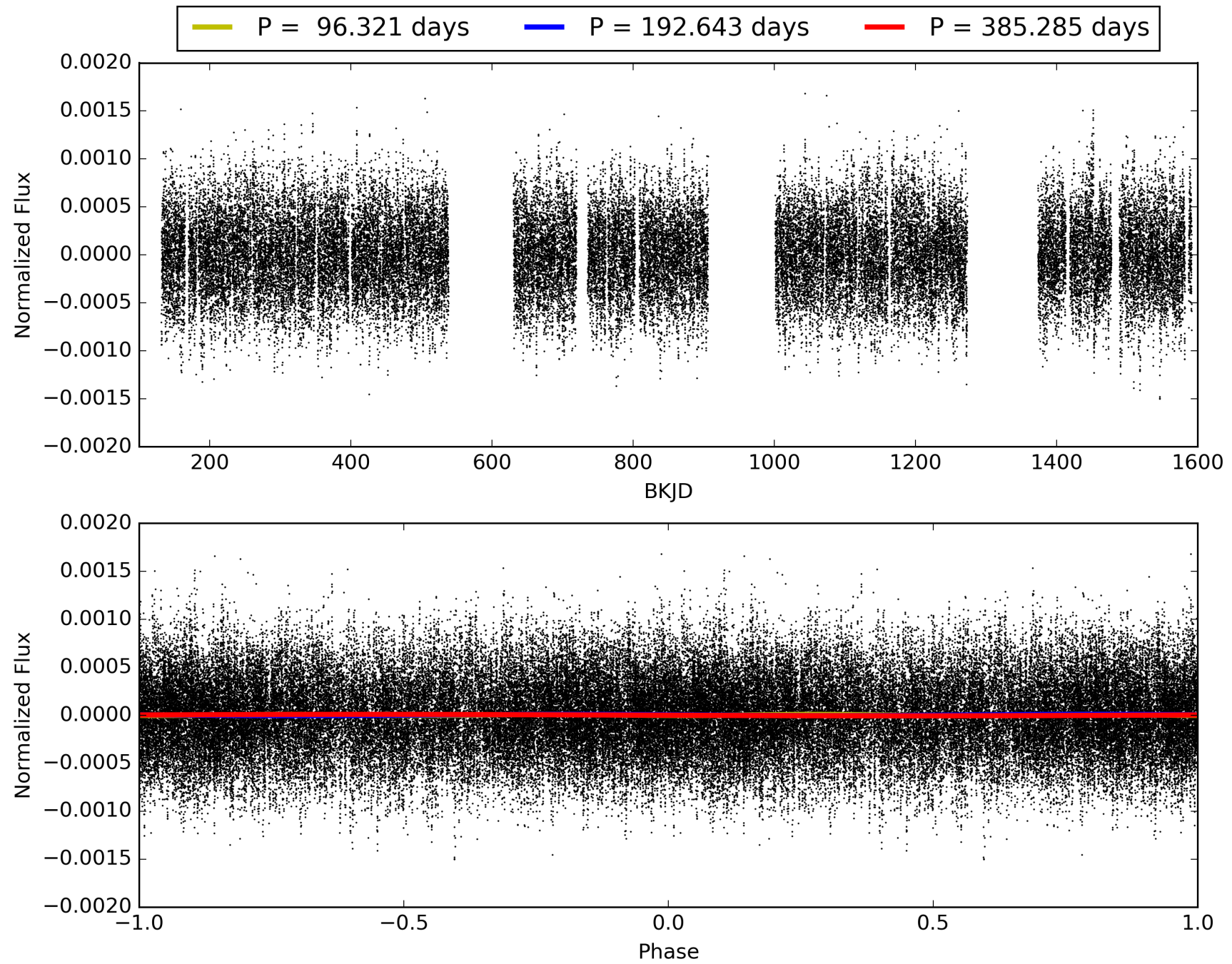
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:10:37 Z

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

TCE 005458428-03, PDC Light Curves

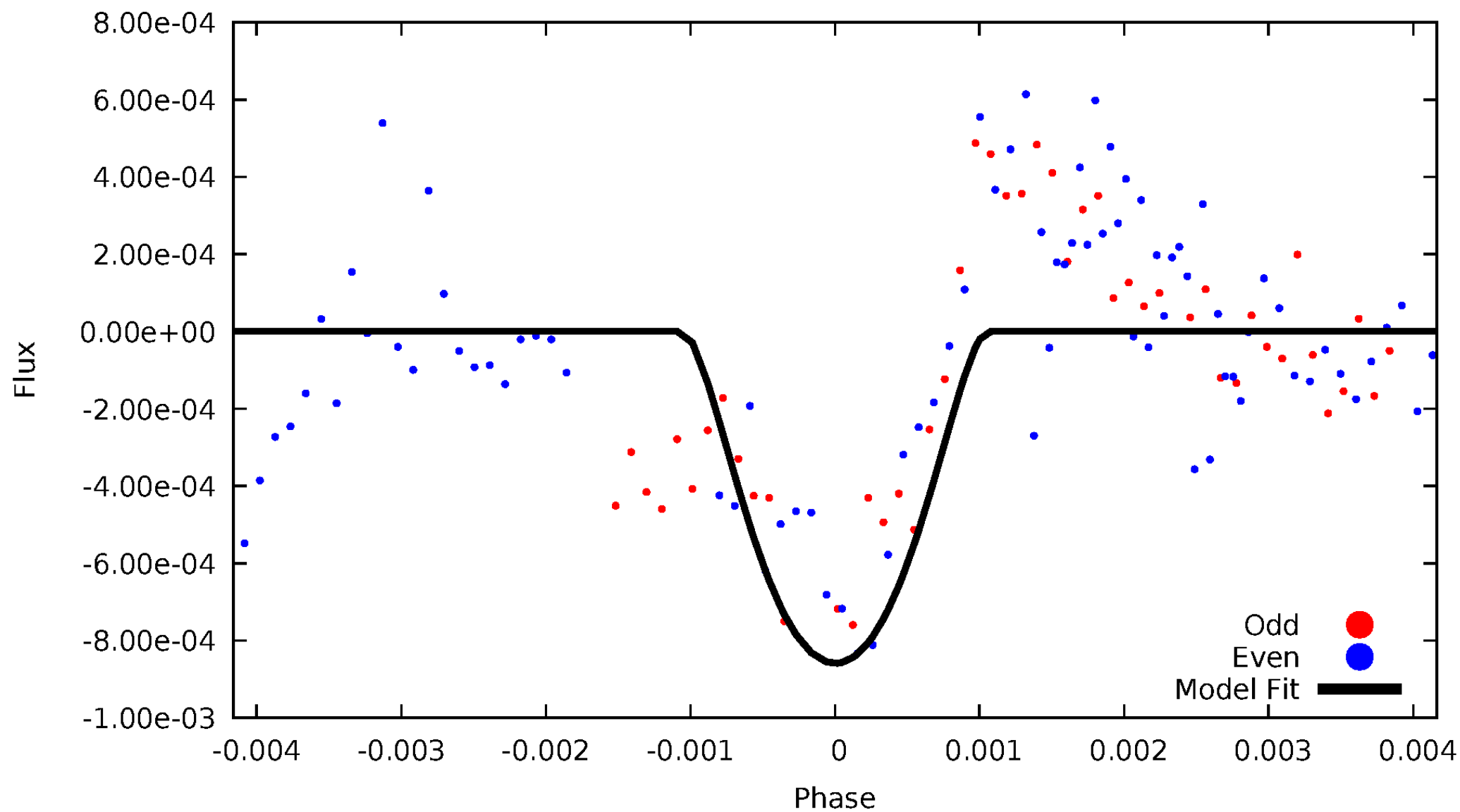


TCE 005458428-03



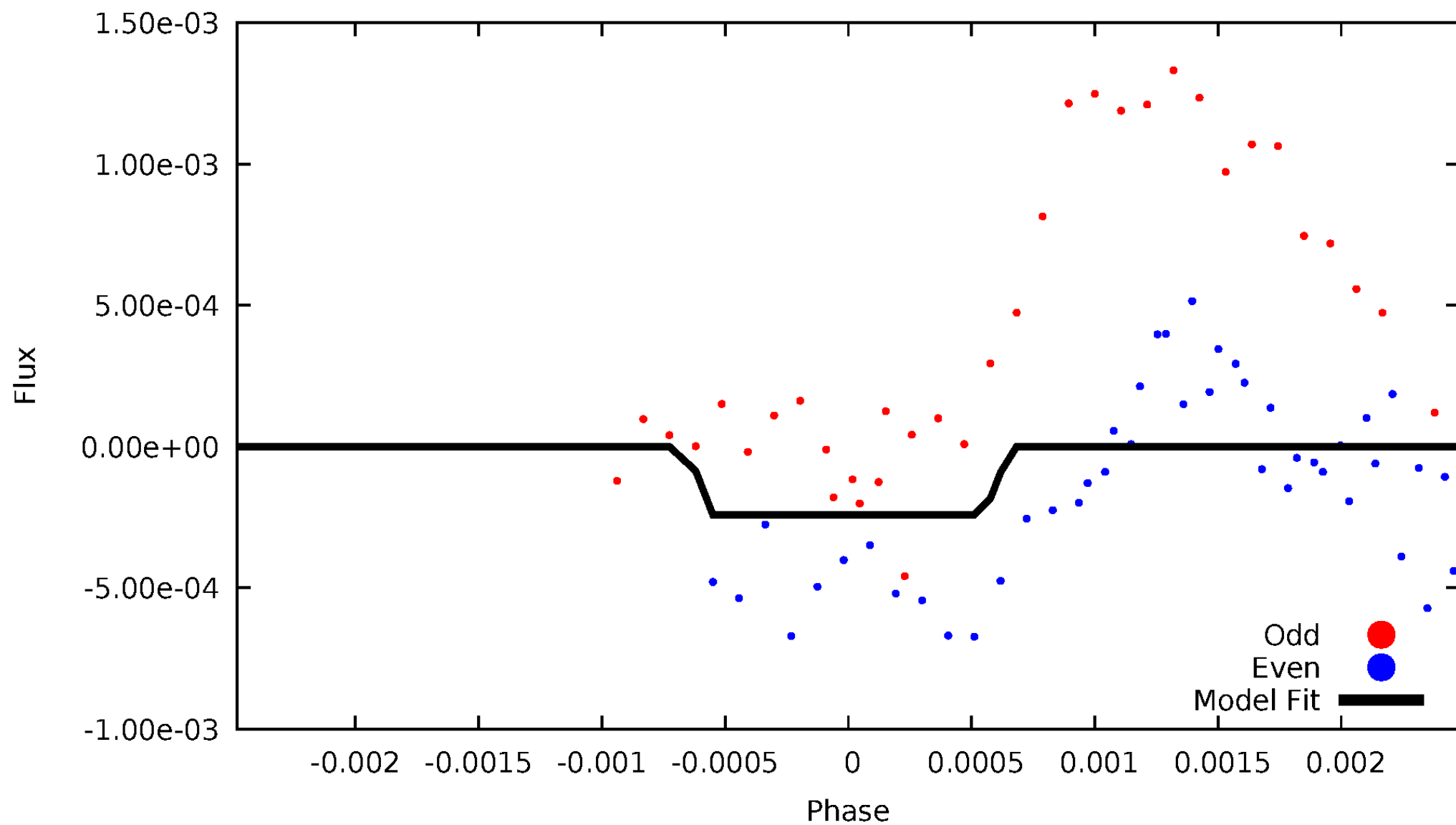
DV Odd/Even

TCE 005458428-03



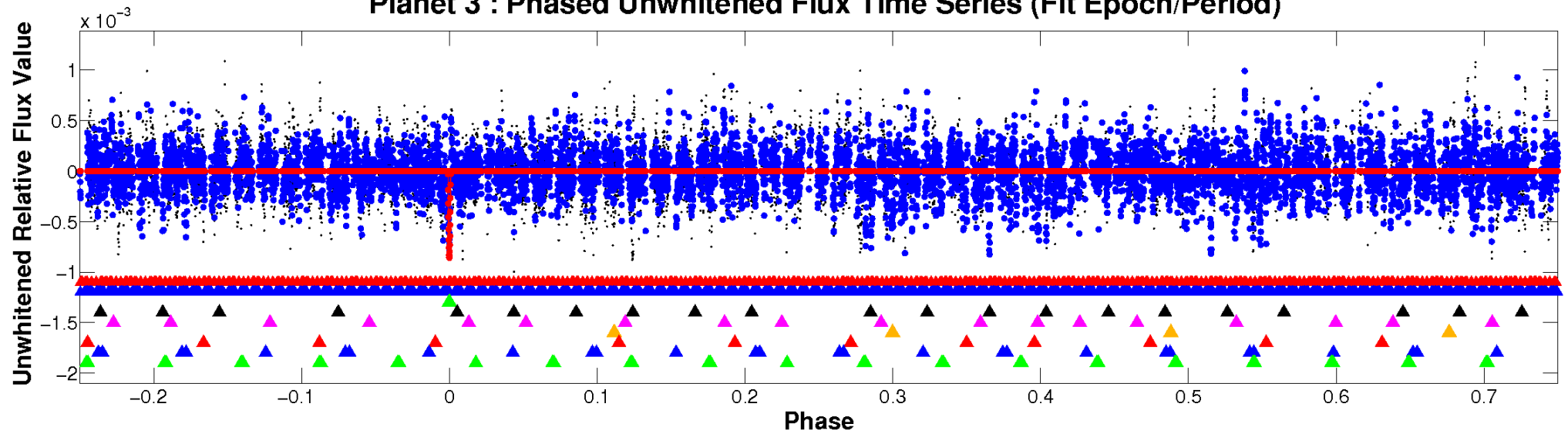
ALT Odd/Even

TCE 005458428-03

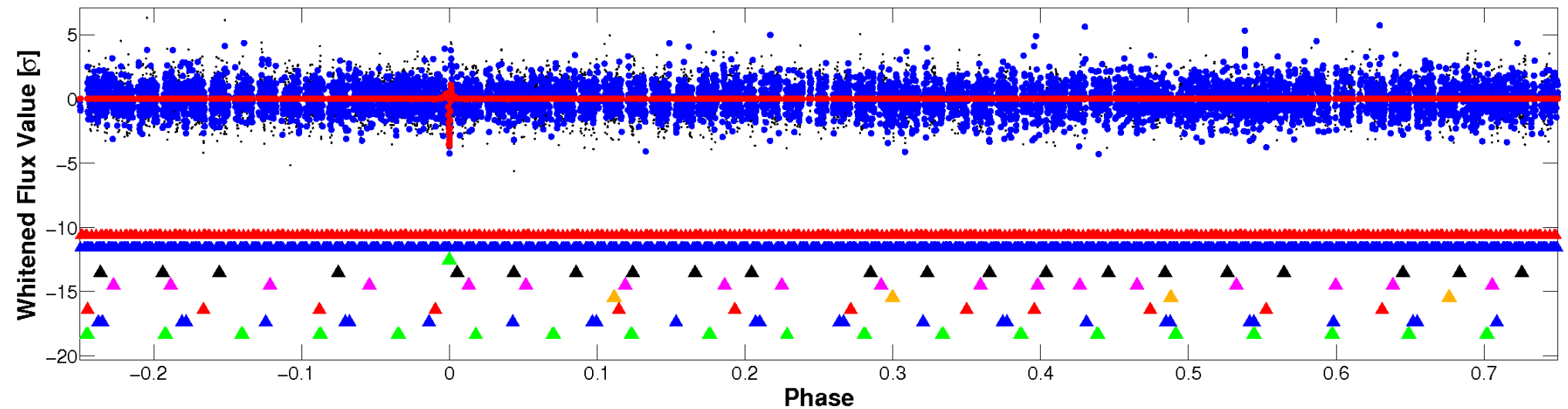


Non-Whitened Vs. Whitened Light Curve

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



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



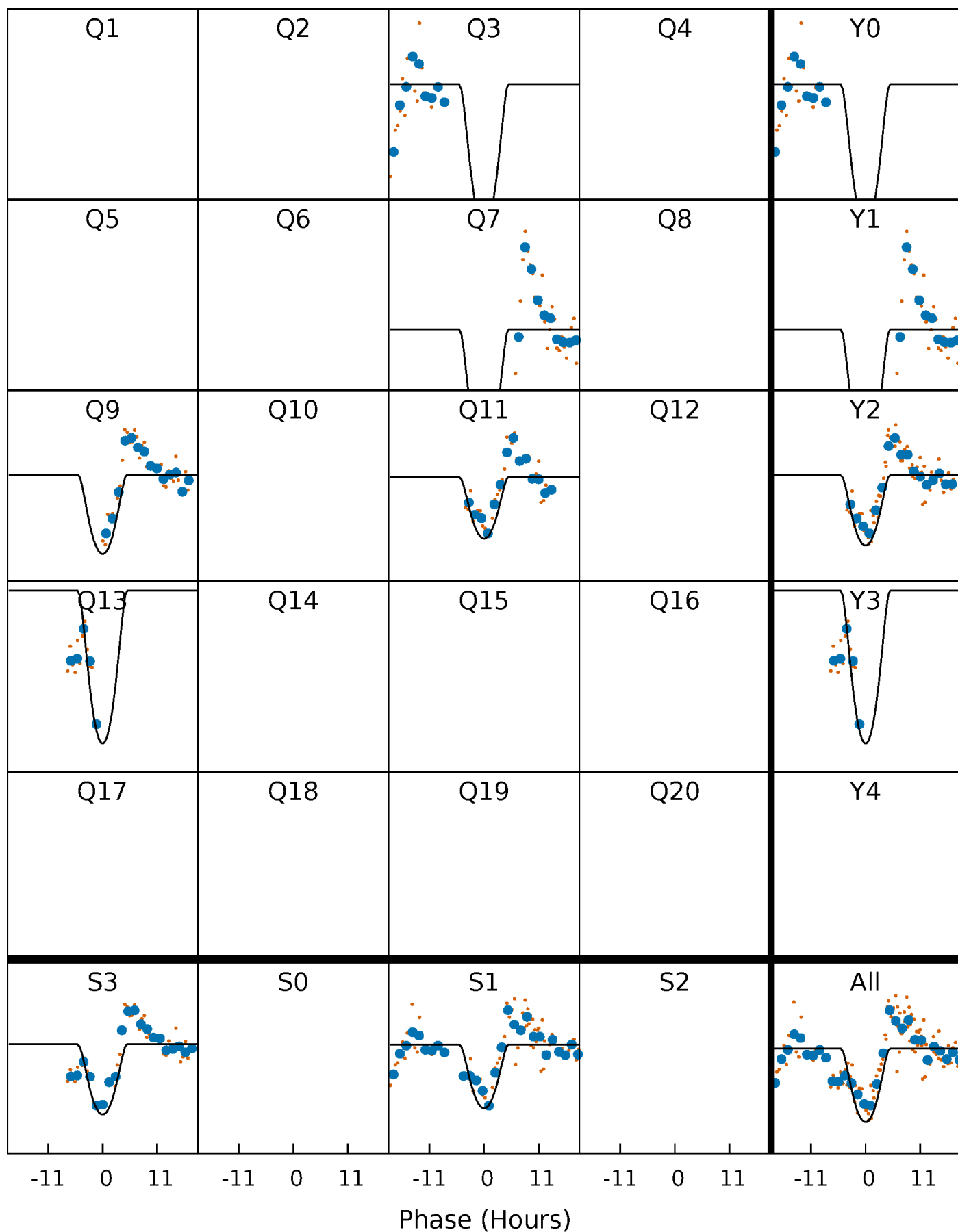
PDC Quarter-Phased Transit Curves

TCE 005458428-03 $P=192.642735$ Days $T_0=275.519386$ (BKJD)



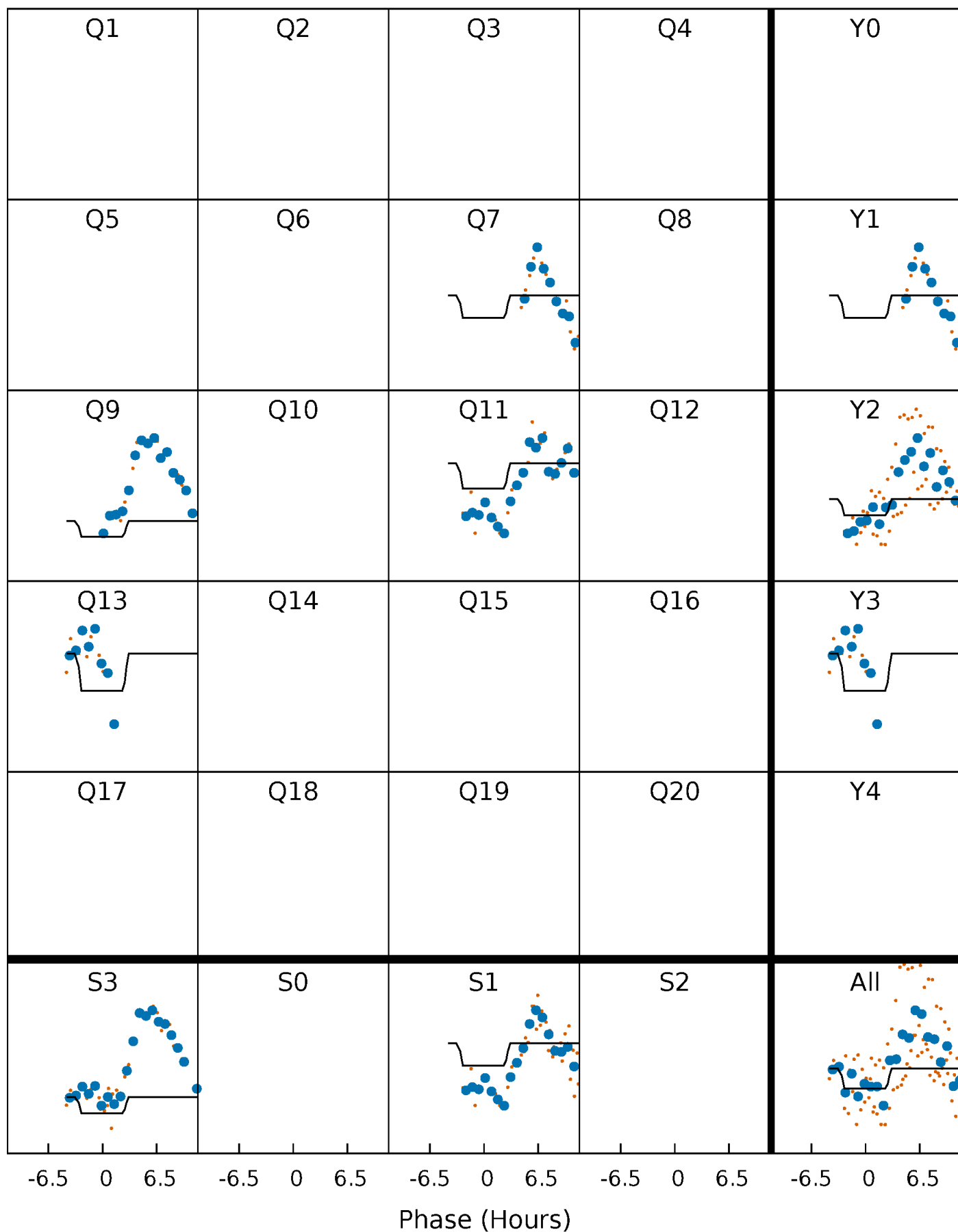
DV Quarter-Phased Transit Curves

TCE 005458428-03 P=192.642735 Days $T_0=275.519386$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

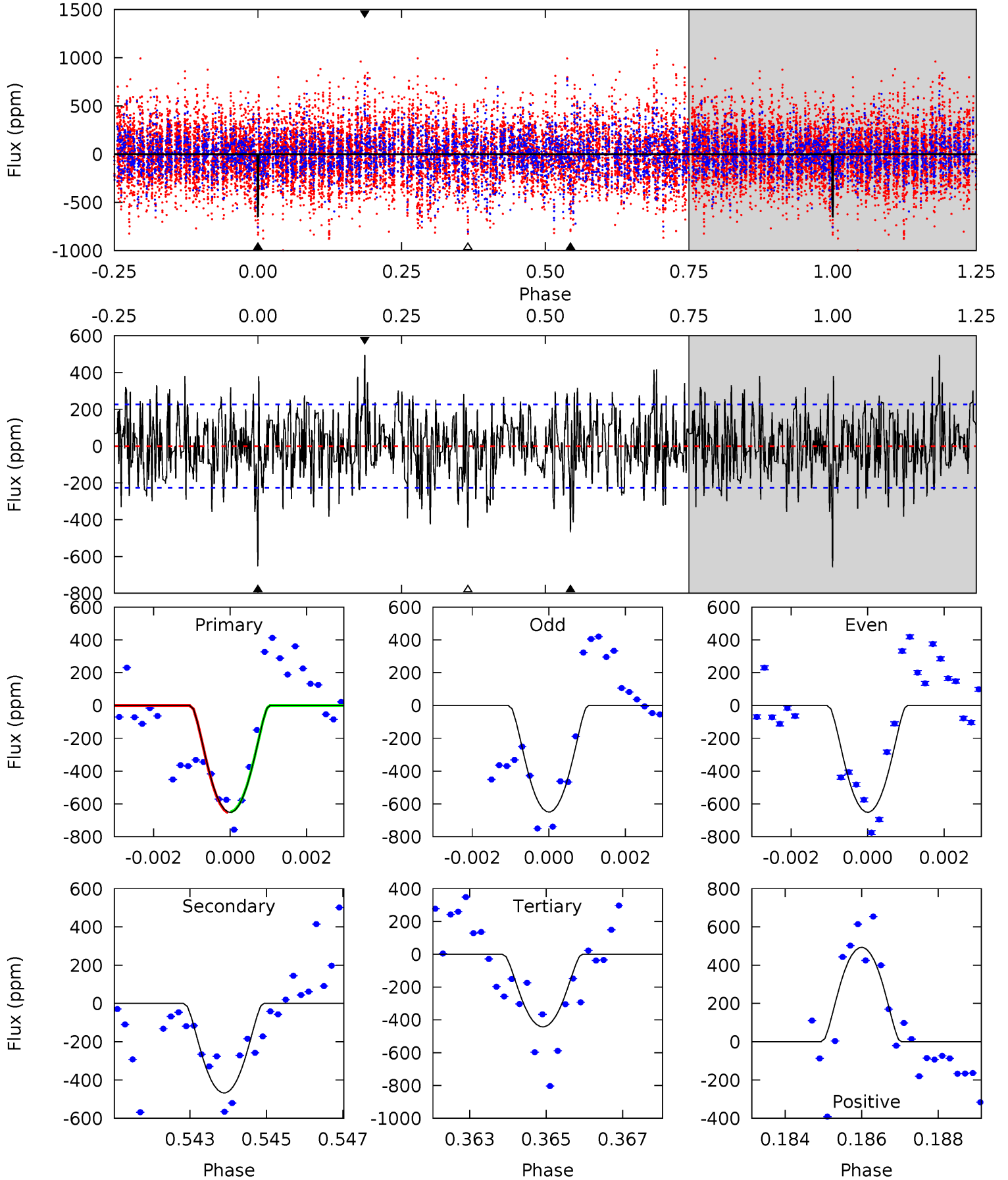
TCE 005458428-03 P=192.579558 Days $T_0=275.723731$ (BKJD)



DV Model-Shift Uniqueness Test

005458428-03, P = 192.642735 Days, E = 82.876651 Days

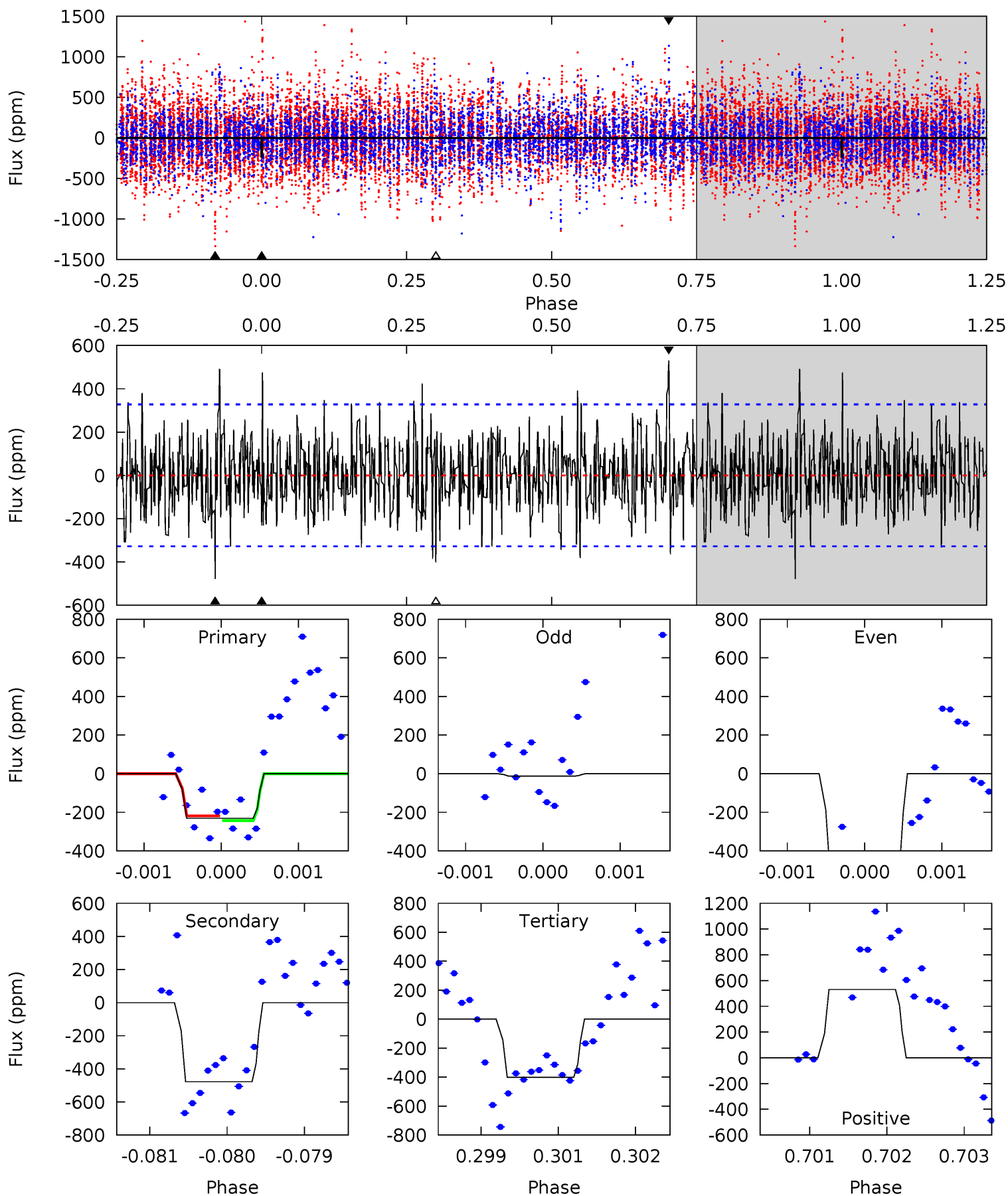
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.3	11.0	10.4	11.6	5.32	3.08	3.21	4.90	3.71	0.59	-0.60	0.02	1.02	0.43	0.07



Alt Model-Shift Uniqueness Test

005458428-03, P = 192.579558 Days, E = 83.144173 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.82	7.89	6.64	8.77	5.41	3.23	2.05	-2.82	-4.95	1.25	-0.88	4.26	4.79	0.53	0.20



Stellar Parameters For KIC 005458428

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7059^{+168}_{-252}	$3.287^{+0.435}_{-0.145}$	$0.070^{+0.200}_{-0.300}$	$5.894^{+1.521}_{-2.825}$	$2.453^{+0.165}_{-0.662}$	$0.017^{+0.077}_{-0.008}$
	+2%/-4%	+13%/-4%	+286%/-429%	+26%/-48%	+7%/-27%	+456%/-45%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005458428-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-468 ± 43	$25.55^{+21.41}_{-16.63}$	1105^{+91}_{-134}	5015^{+3419}_{-1031}	285^{+1890}_{-200}
Alt.	-477 ± 61	$15.84^{+18.11}_{-10.79}$	1095^{+90}_{-125}	6122^{+8378}_{-1603}	759^{+7183}_{-588}

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 $A_{obs} \gg 1.0$

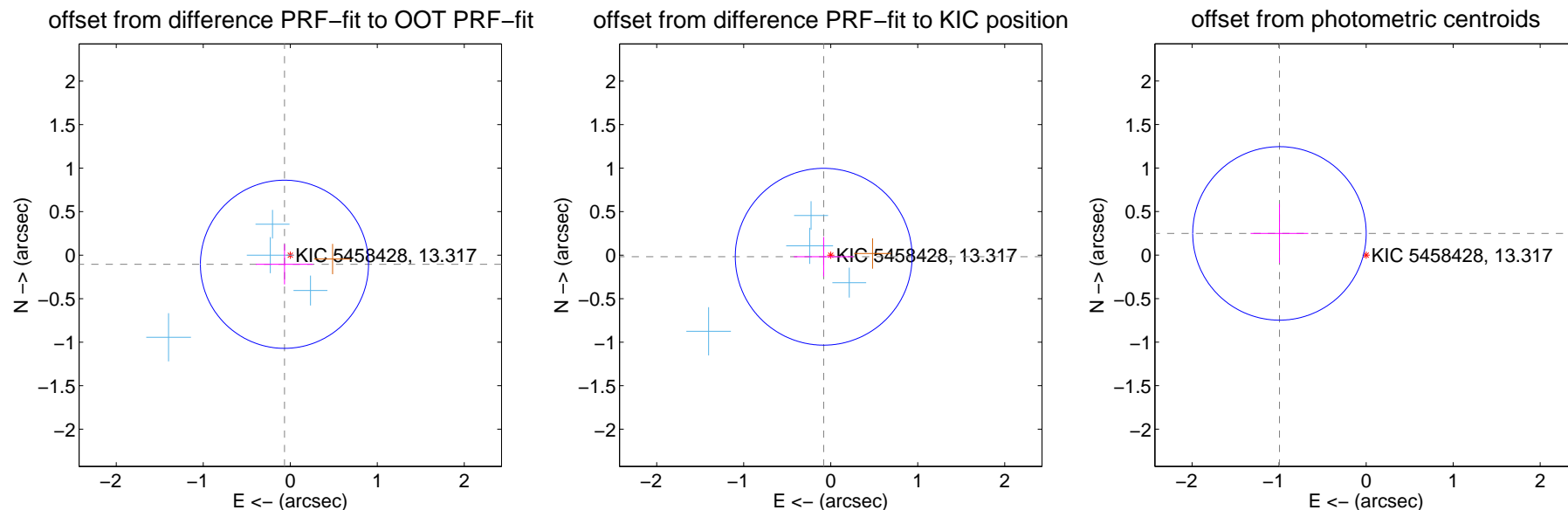
DV Centroid Data

Supplemental centroid analysis for 005458428-03. Kepler magnitude: 13.32. Transit SNR 12.73

There are 4 quarters with good PRF difference image offsets

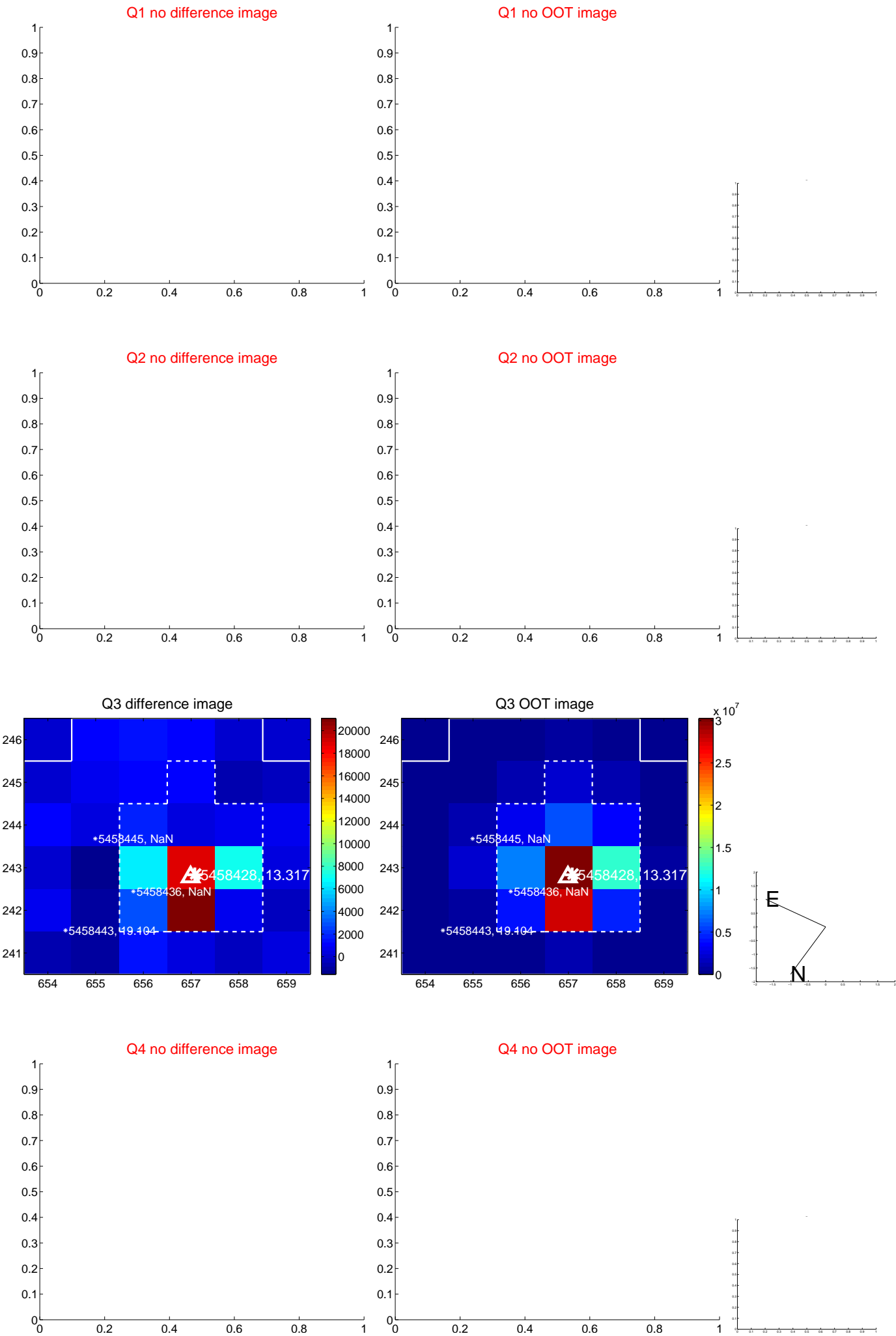
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.124 ± 0.322	0.39	0.066 ± 0.328	-0.105 ± 0.231
PRF-fit source offset from KIC position	0.083 ± 0.339	0.24	0.081 ± 0.343	-0.018 ± 0.226
photometric centroid source offset	1.03 ± 0.33	3.09	1.00 ± 0.33	0.25 ± 0.34

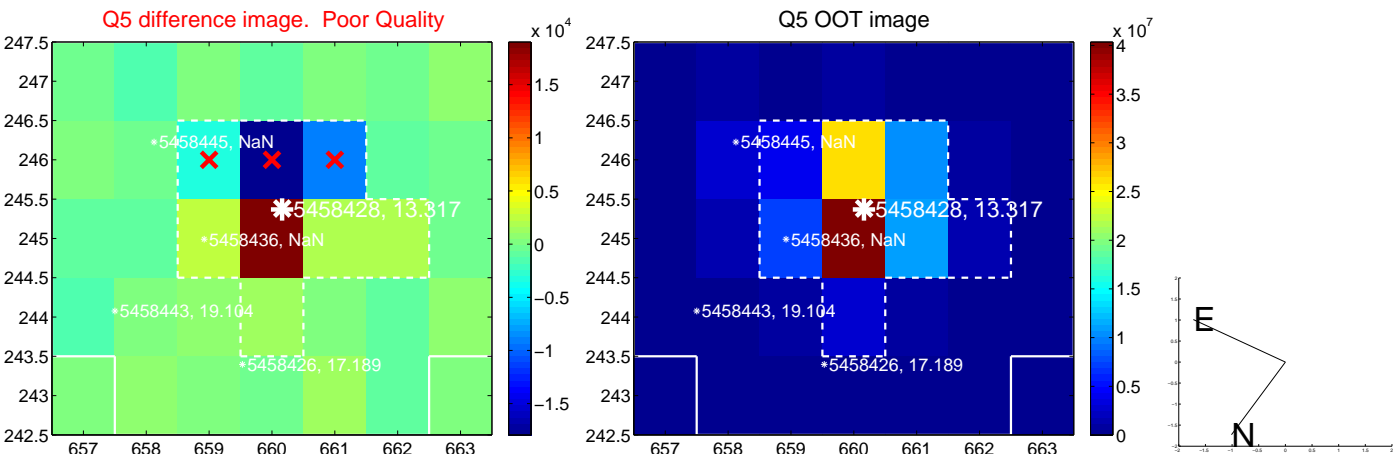


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

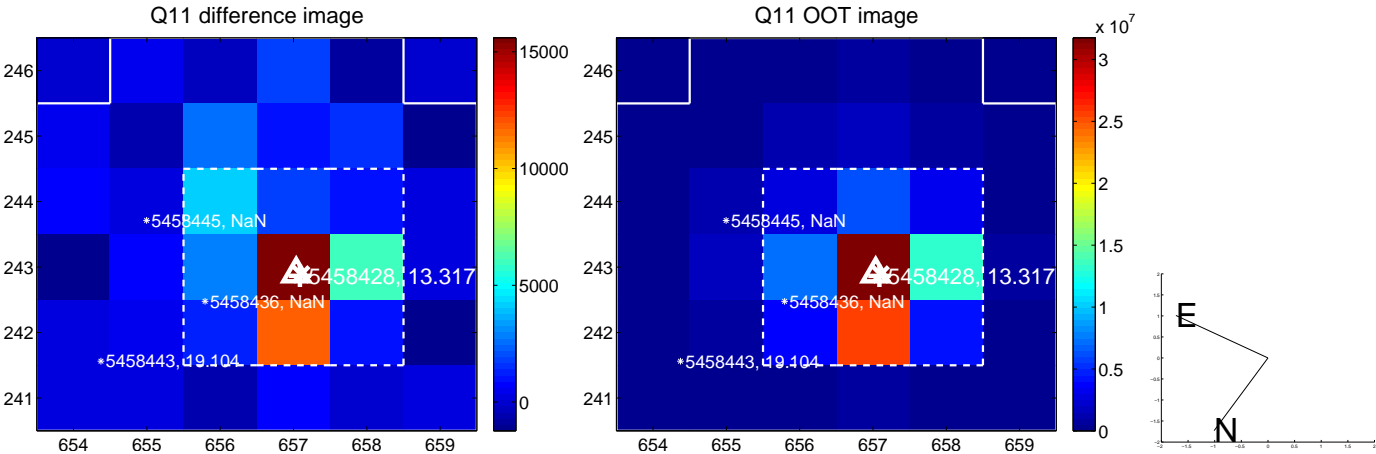
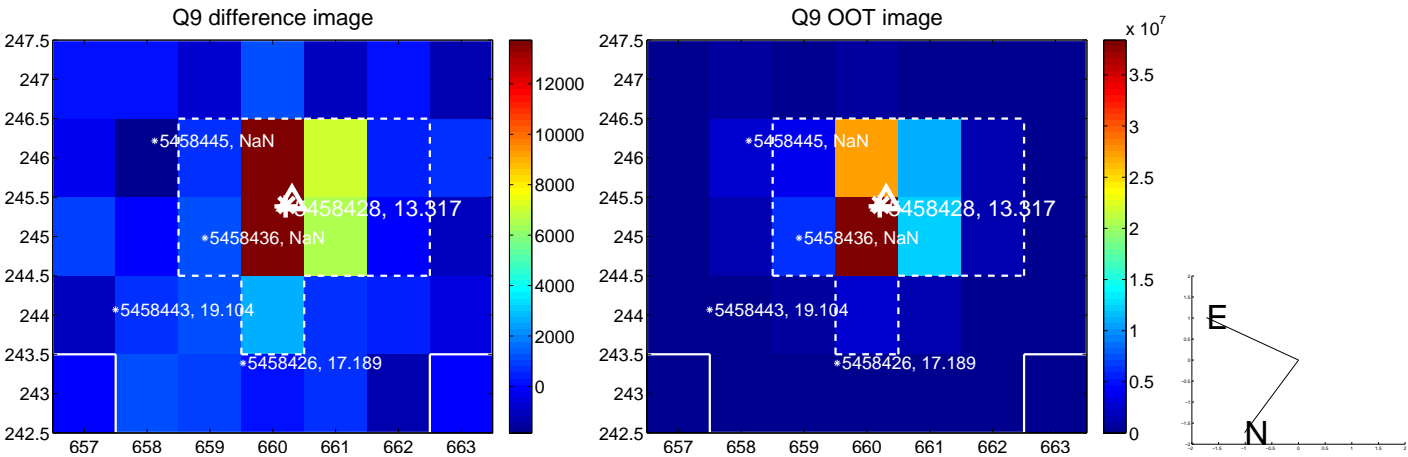
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



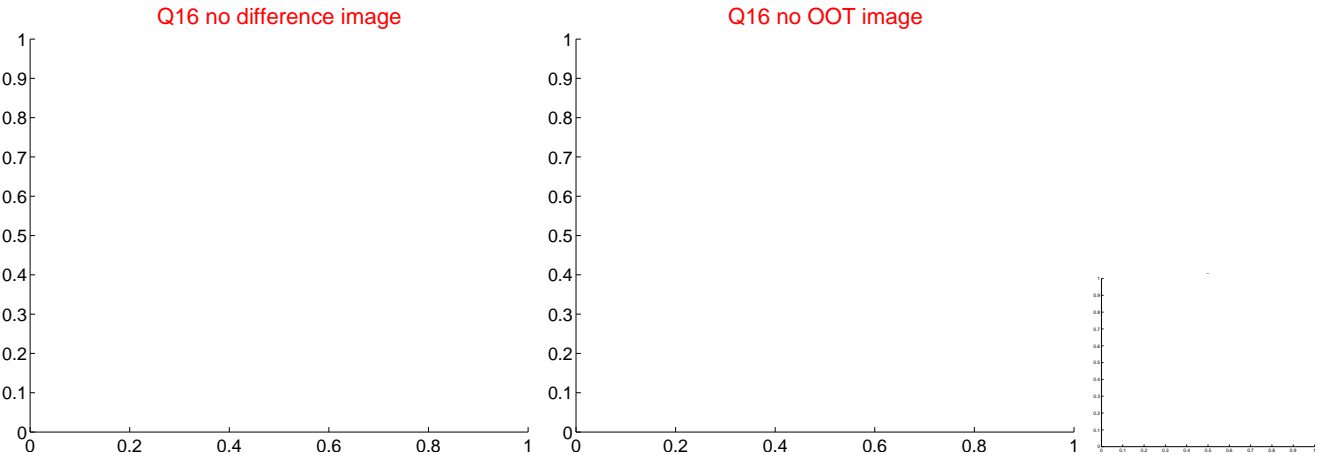
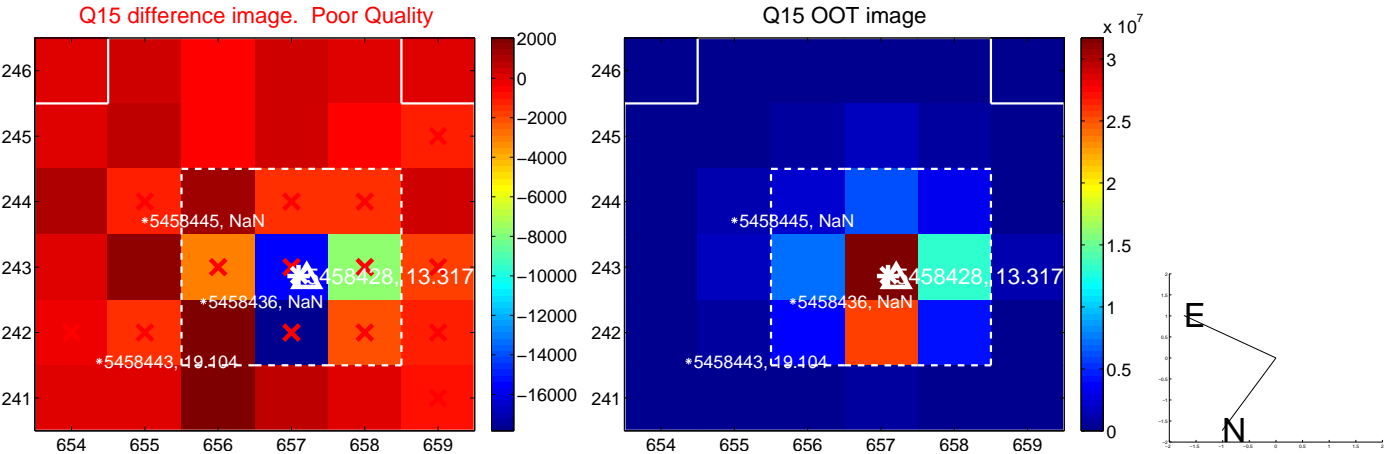
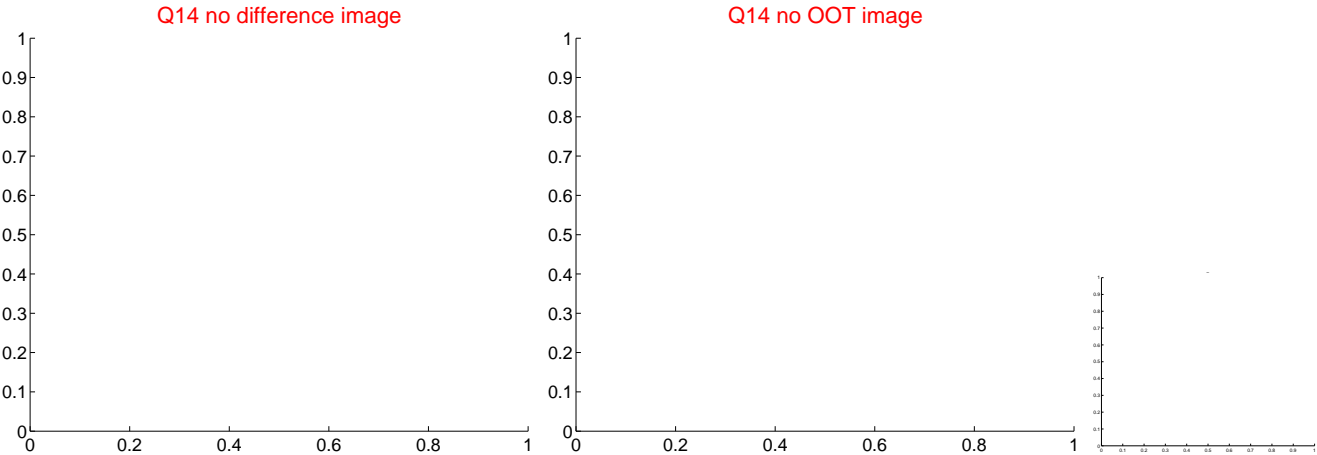
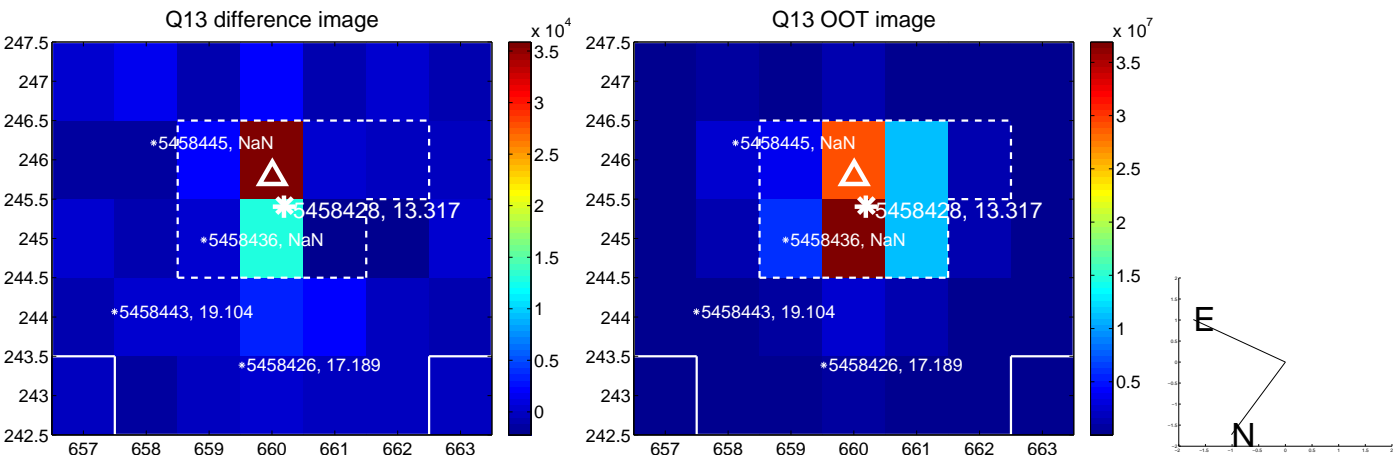
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



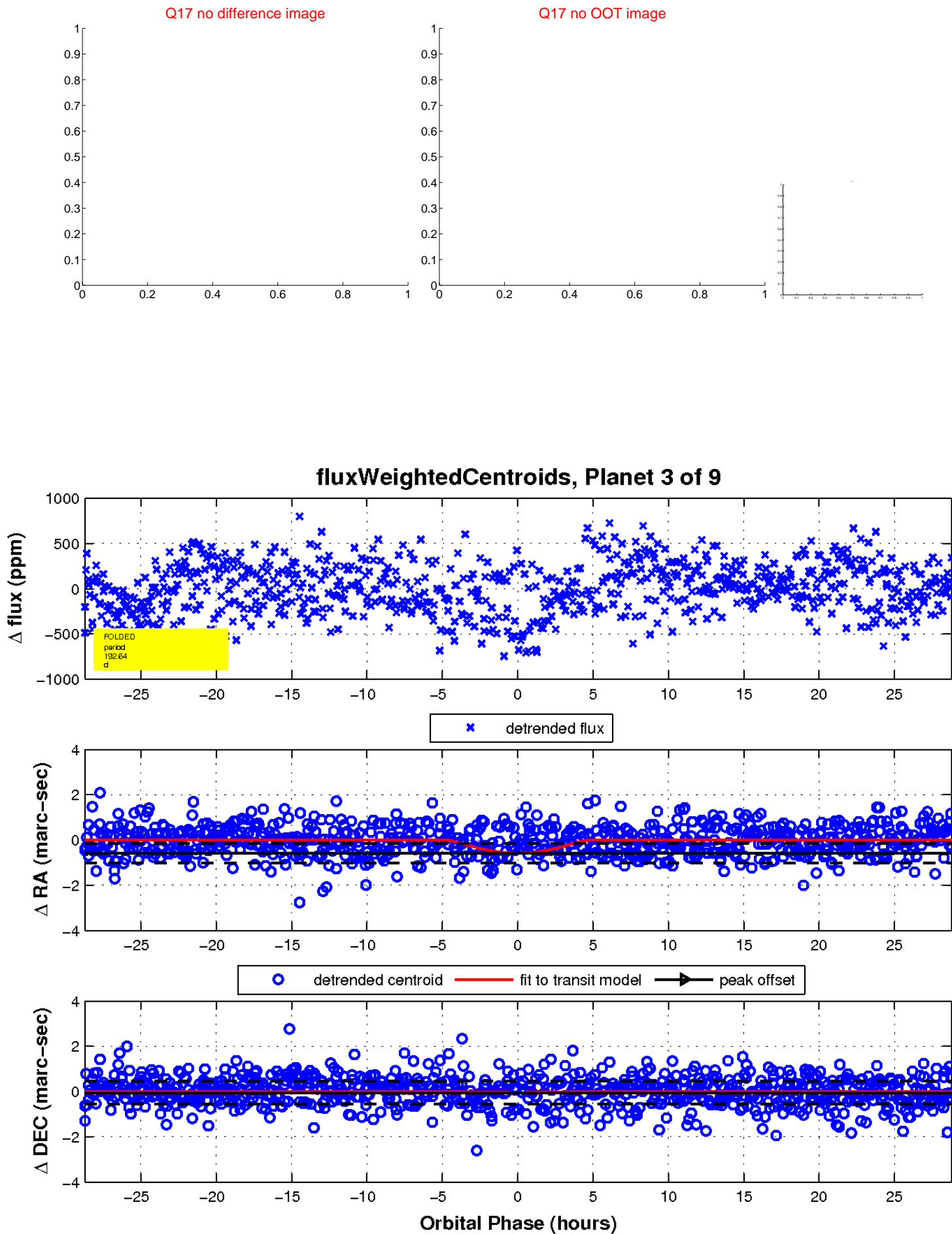
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

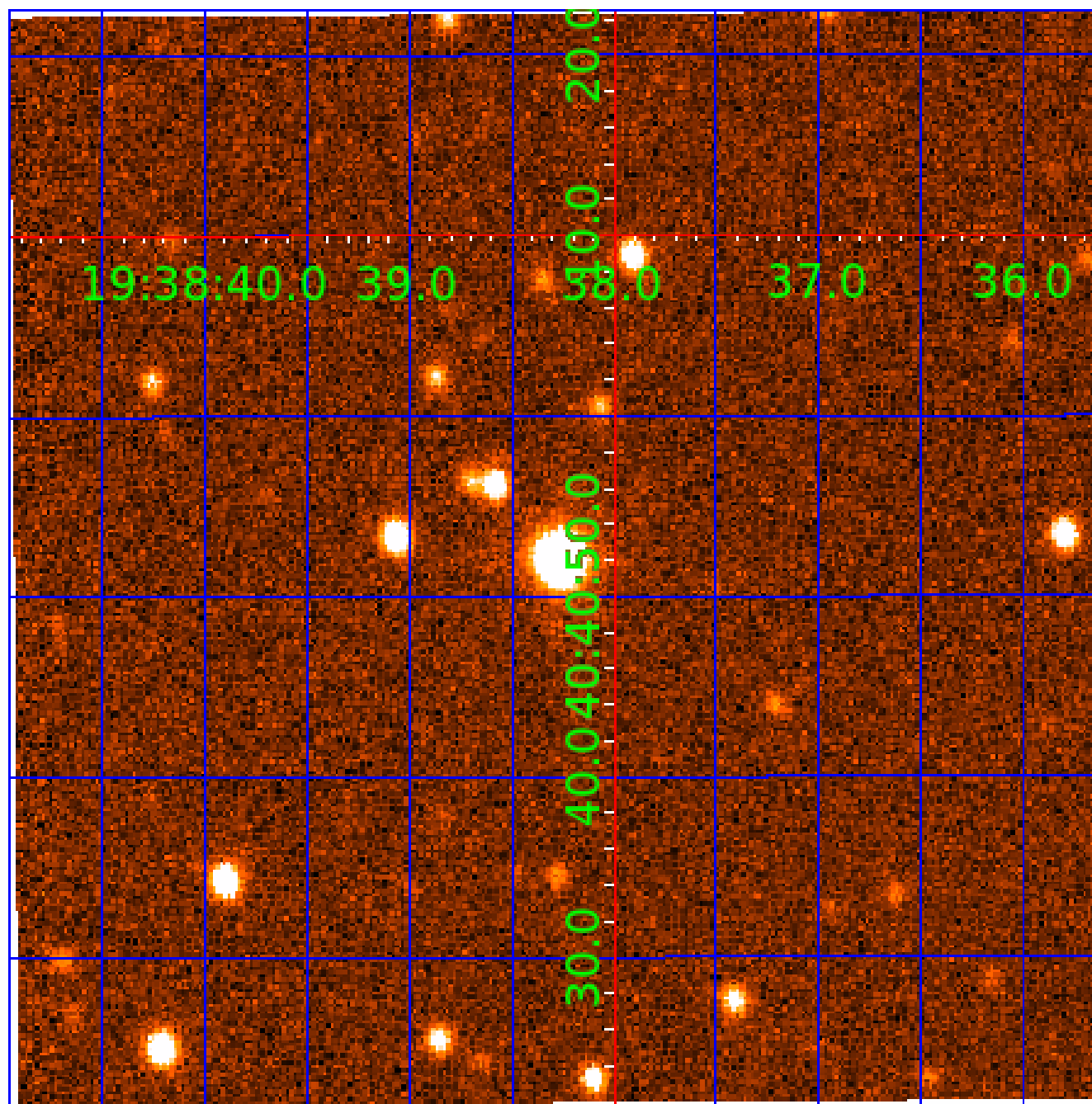


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005458428

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})
005458428-01	OBS	No	3.200651	132.084844	75.7	13.138	9.7	10.5	5.89	7059	6.53	23504.78
005458428-02	OBS	No	1.552378	132.735072	95.6	6.107	12.6	12.7	5.89	7059	7.80	61679.90
005458428-03	OBS	No	192.642735	275.519386	859.2	9.619	11.8	12.7	5.89	7059	25.56	99.65
005458428-04	OBS	No	69.381211	145.158500	466.6	8.103	10.3	9.1	5.89	7059	24.33	388.88
005458428-05	OBS	No	79.646495	159.557679	187.9	12.243	10.1	4.4	5.89	7059	8.65	323.53
005458428-06	OBS	No	349.011885	405.827424	479.6	10.909	9.7	8.3	5.89	7059	13.90	45.12
005458428-07	OBS	No	123.393120	150.298424	623.0	6.194	9.5	9.8	5.89	7059	27.82	180.48
005458428-08	OBS	No	53.481893	134.251969	293.6	11.976	9.5	7.7	5.89	7059	11.10	550.21
005458428-09	OBS	No	40.566928	167.259507	178.9	9.000	10.0	-1.0	5.89	7059	7.95	795.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005458428-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
005458428-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005458428-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005458428-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
005458428-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

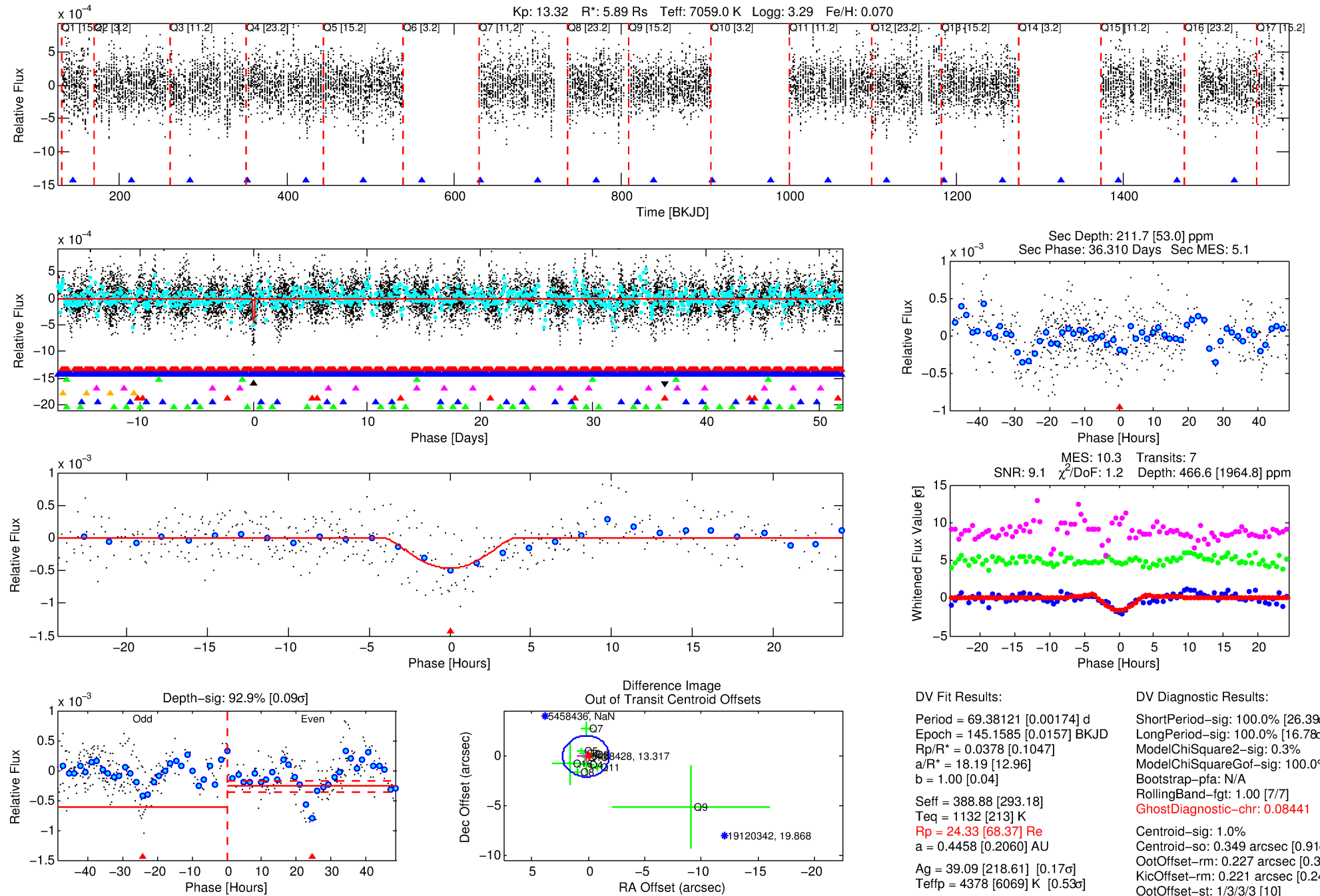
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005458428-04

No Significant Match Found

DV One-Page Summary

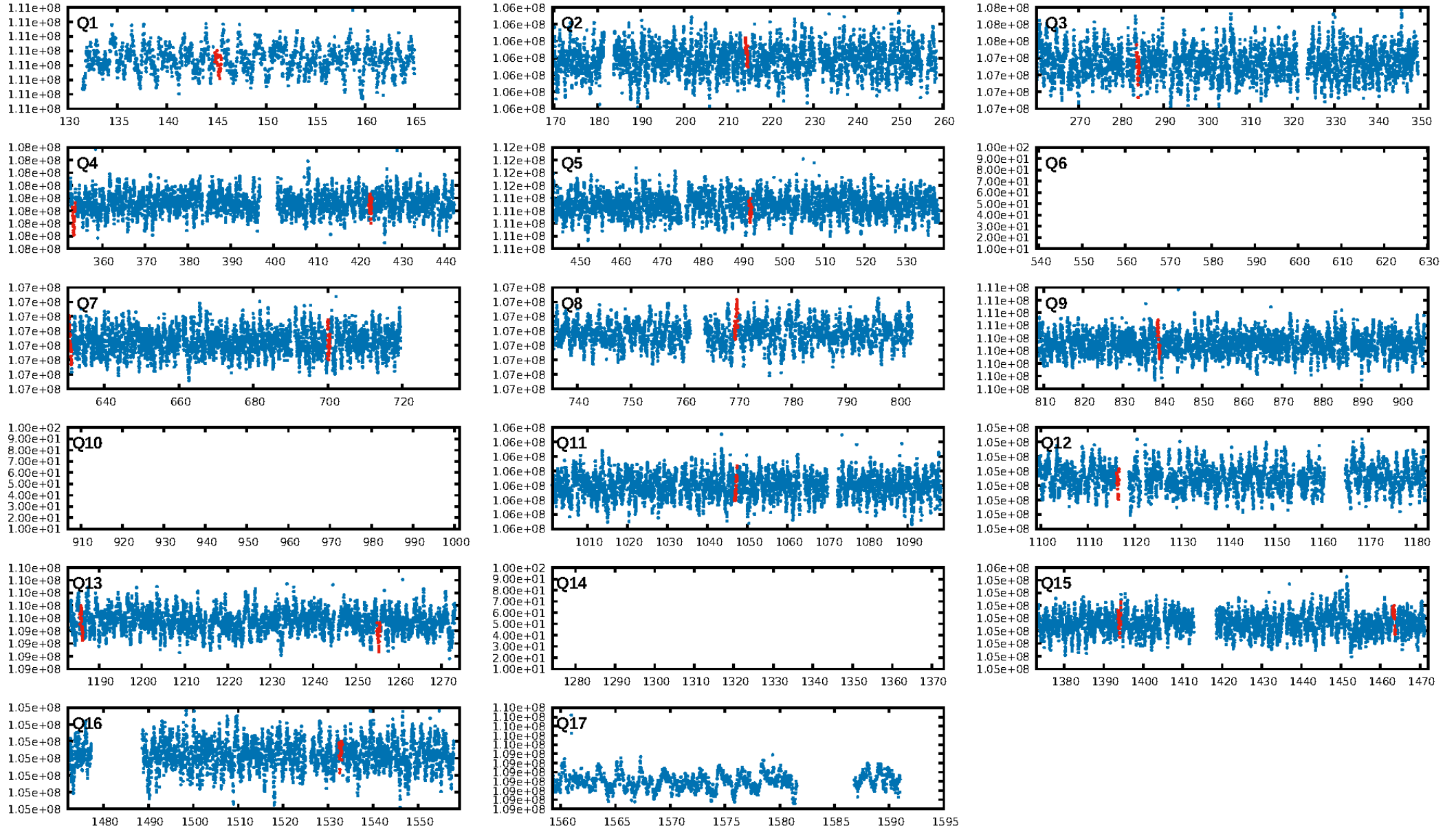
KIC: 5458428 Candidate: 4 of 9 Period: 69.381 d



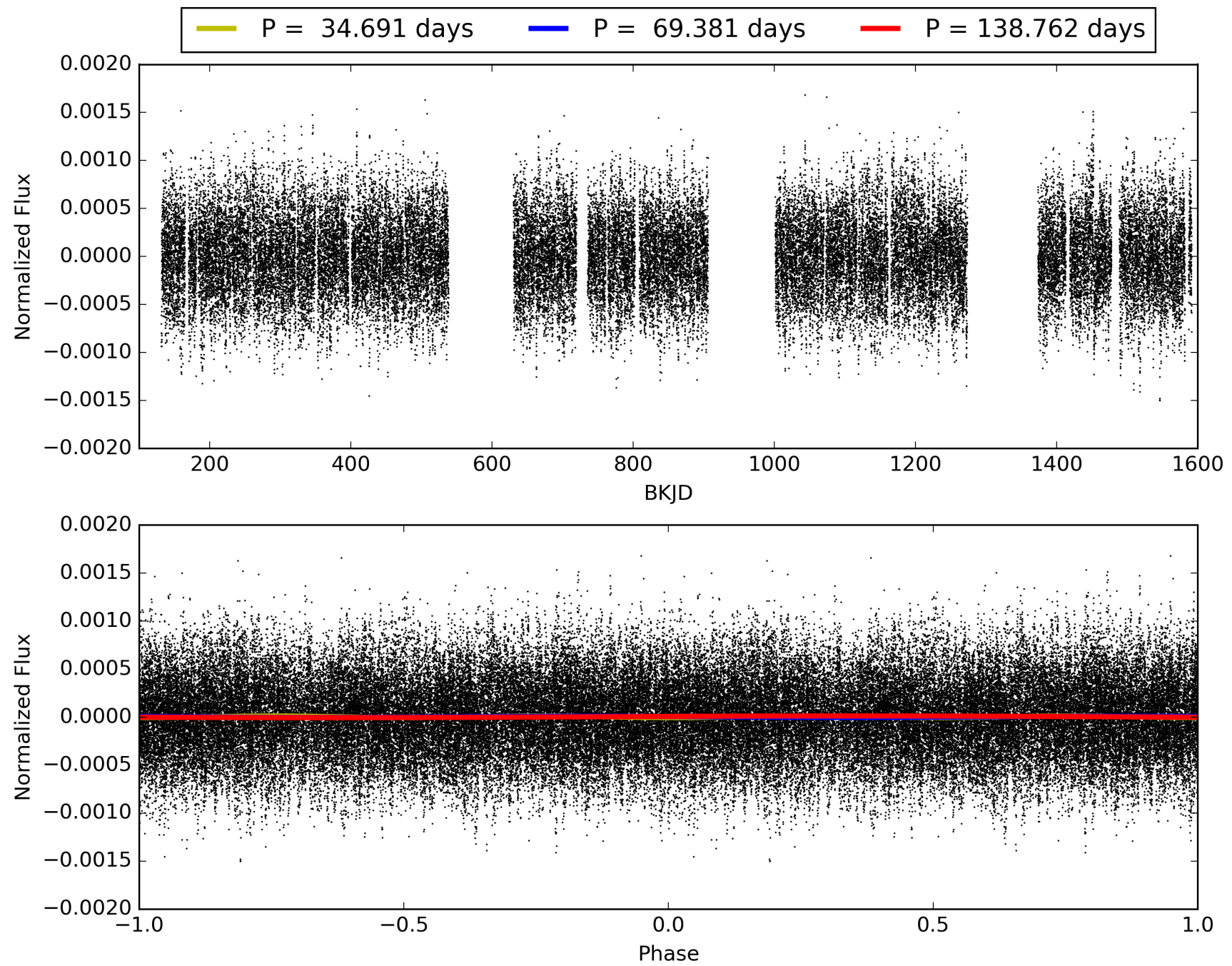
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:10:40 Z

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

TCE 005458428-04, PDC Light Curves

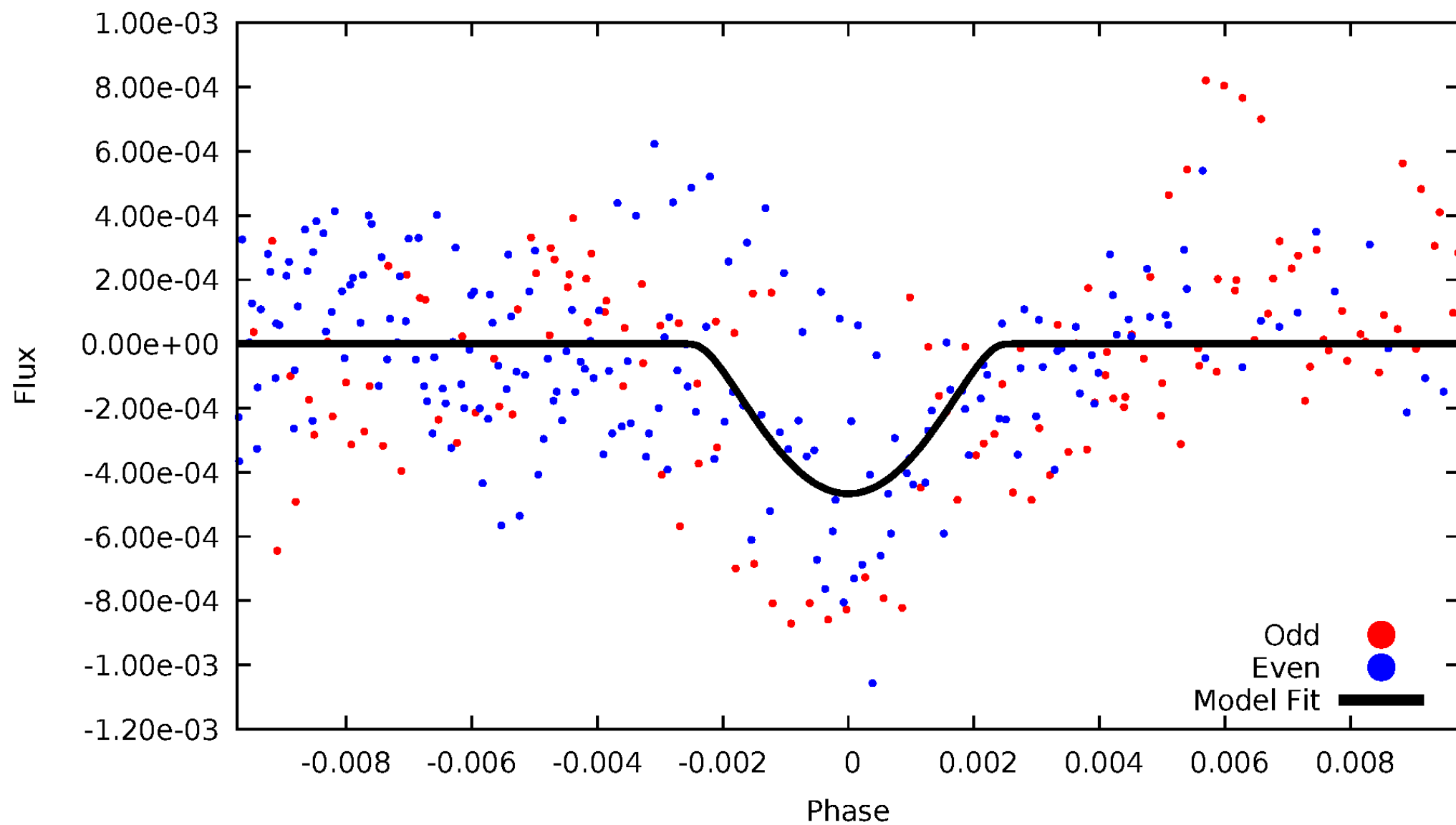


TCE 005458428-04



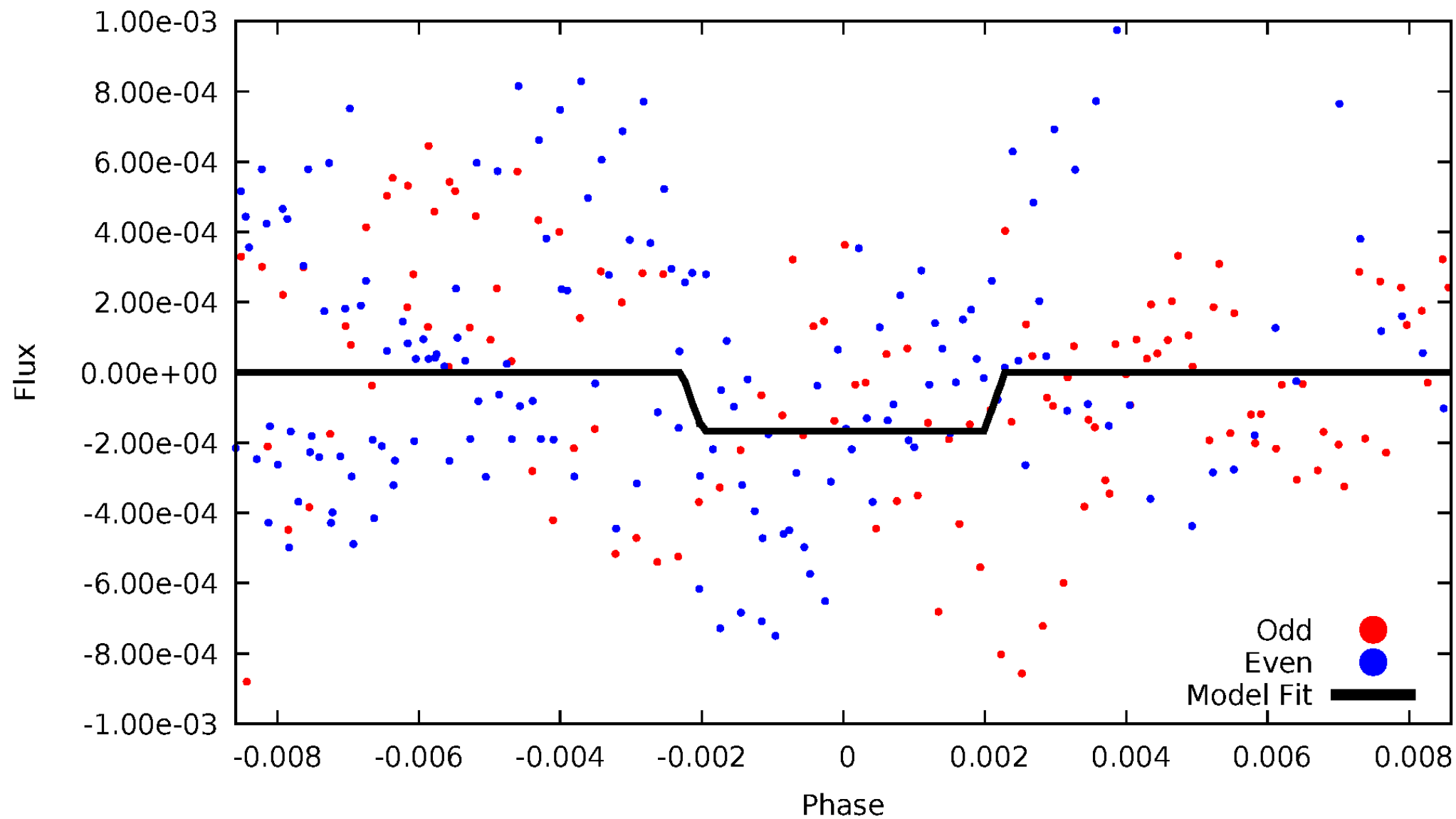
DV Odd/Even

TCE 005458428-04



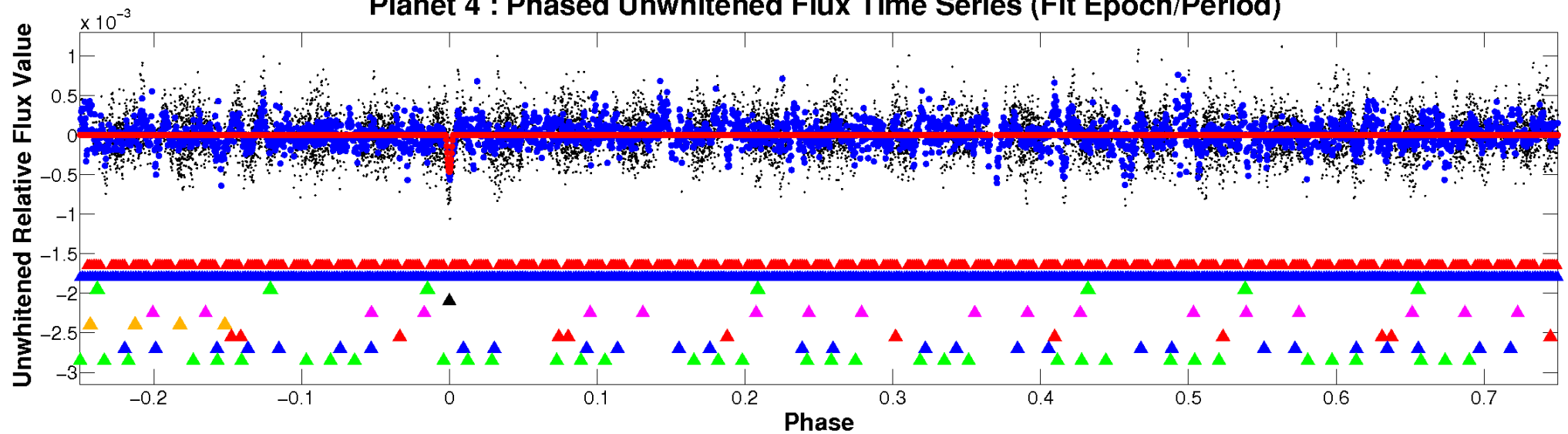
ALT Odd/Even

TCE 005458428-04

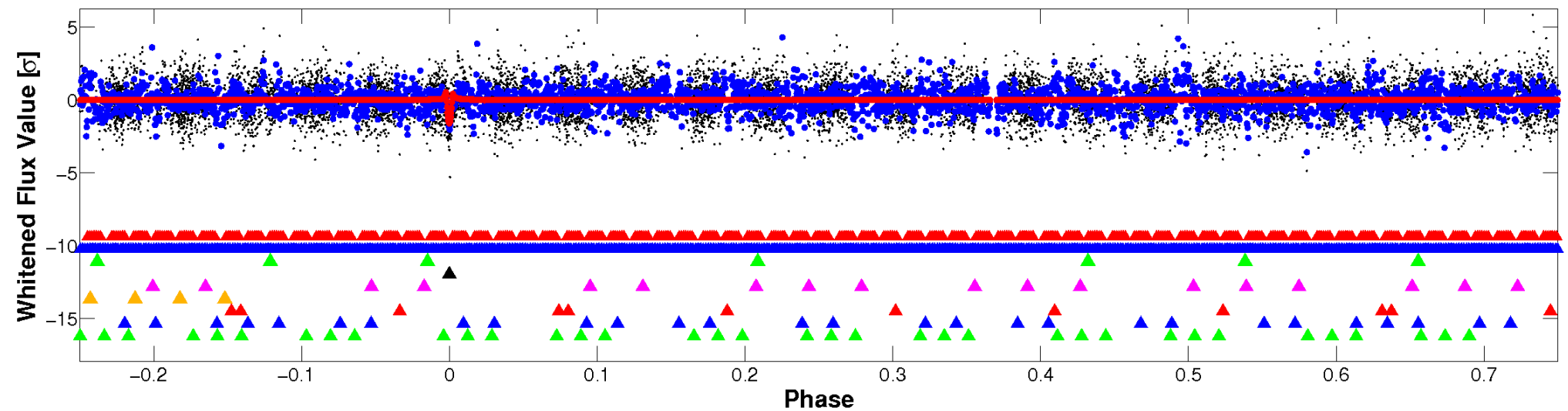


Non-Whitened Vs. Whitened Light Curve

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

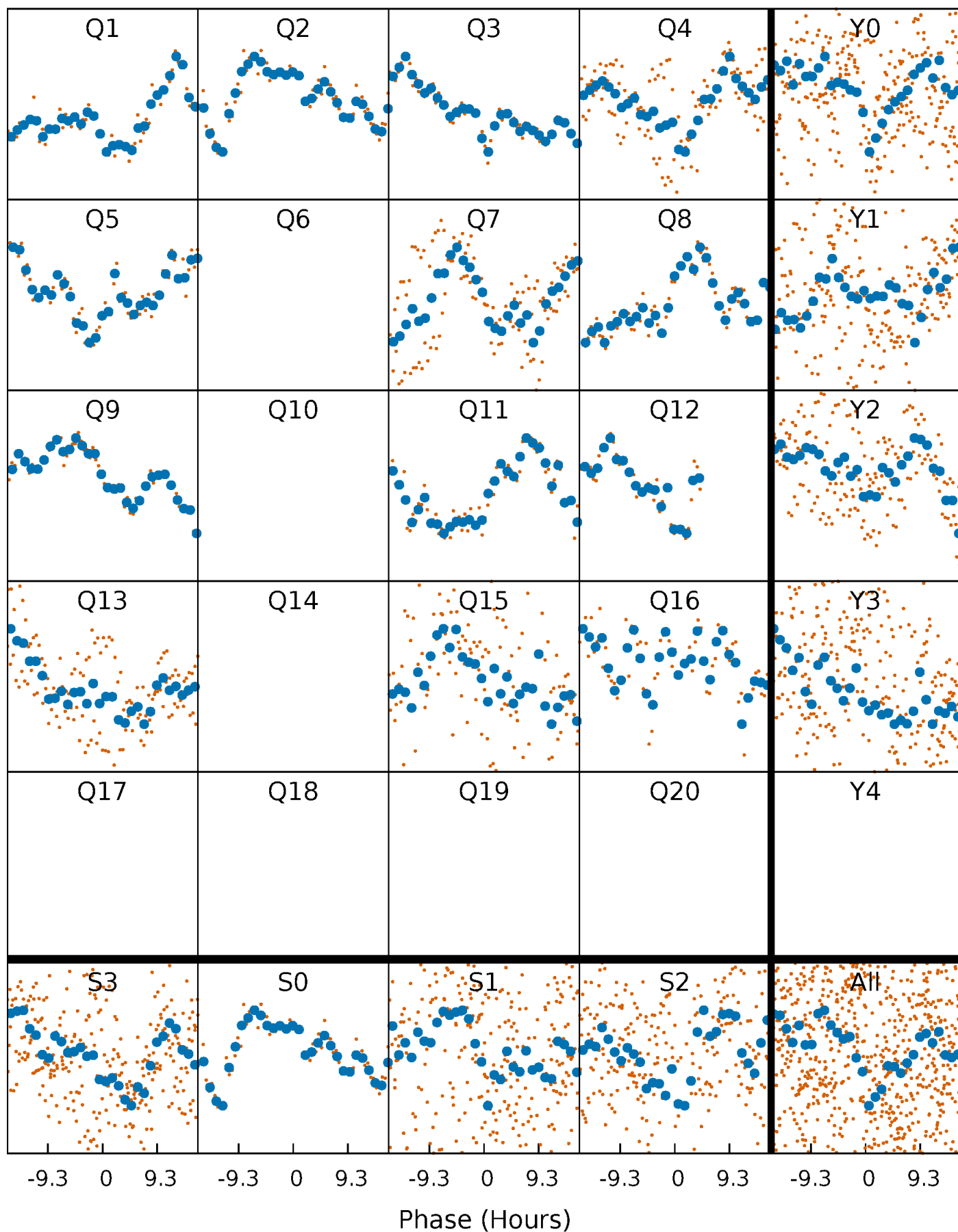


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



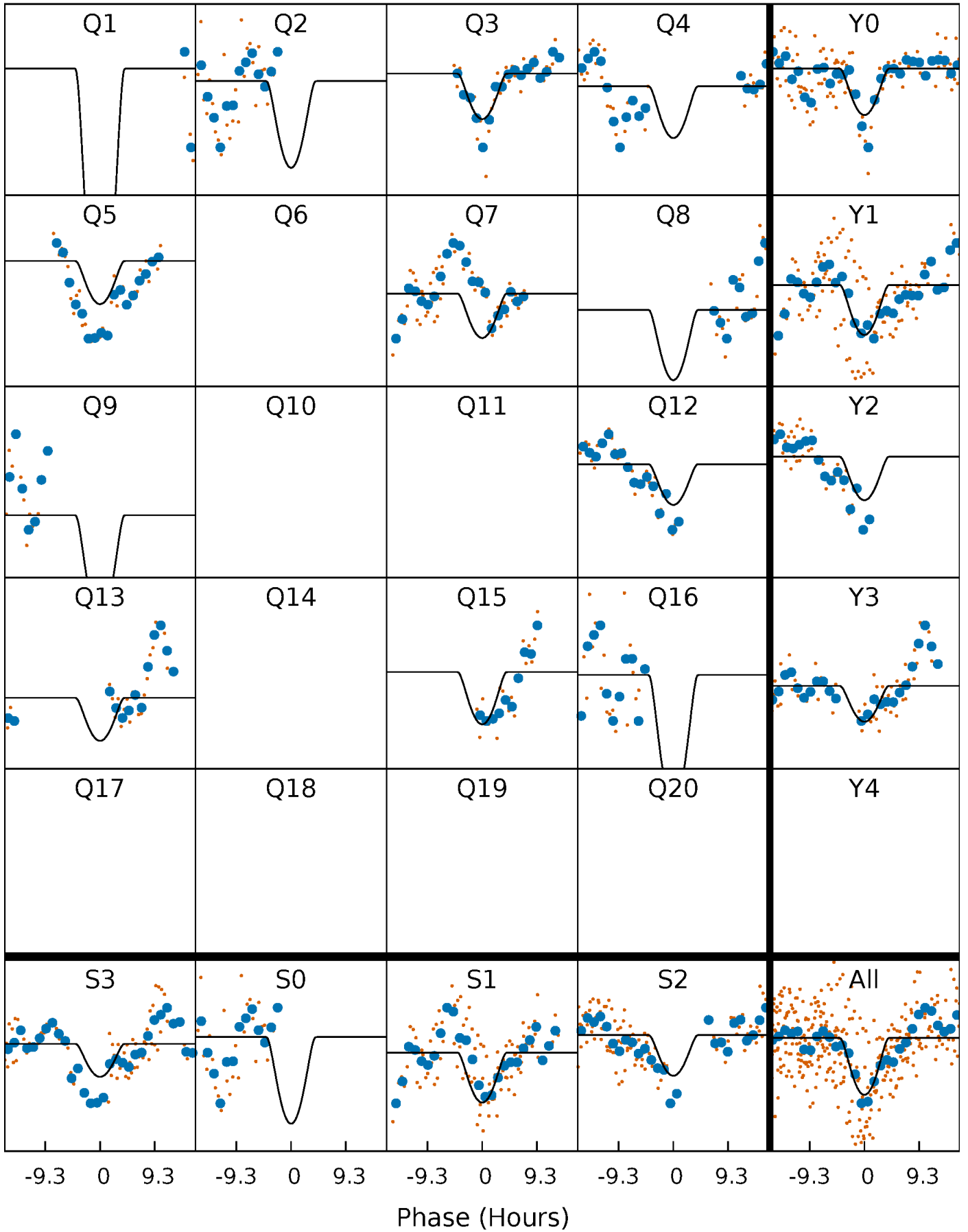
PDC Quarter-Phased Transit Curves

TCE 005458428-04 P= 69.381211 Days $T_0=145.158500$ (BKJD)



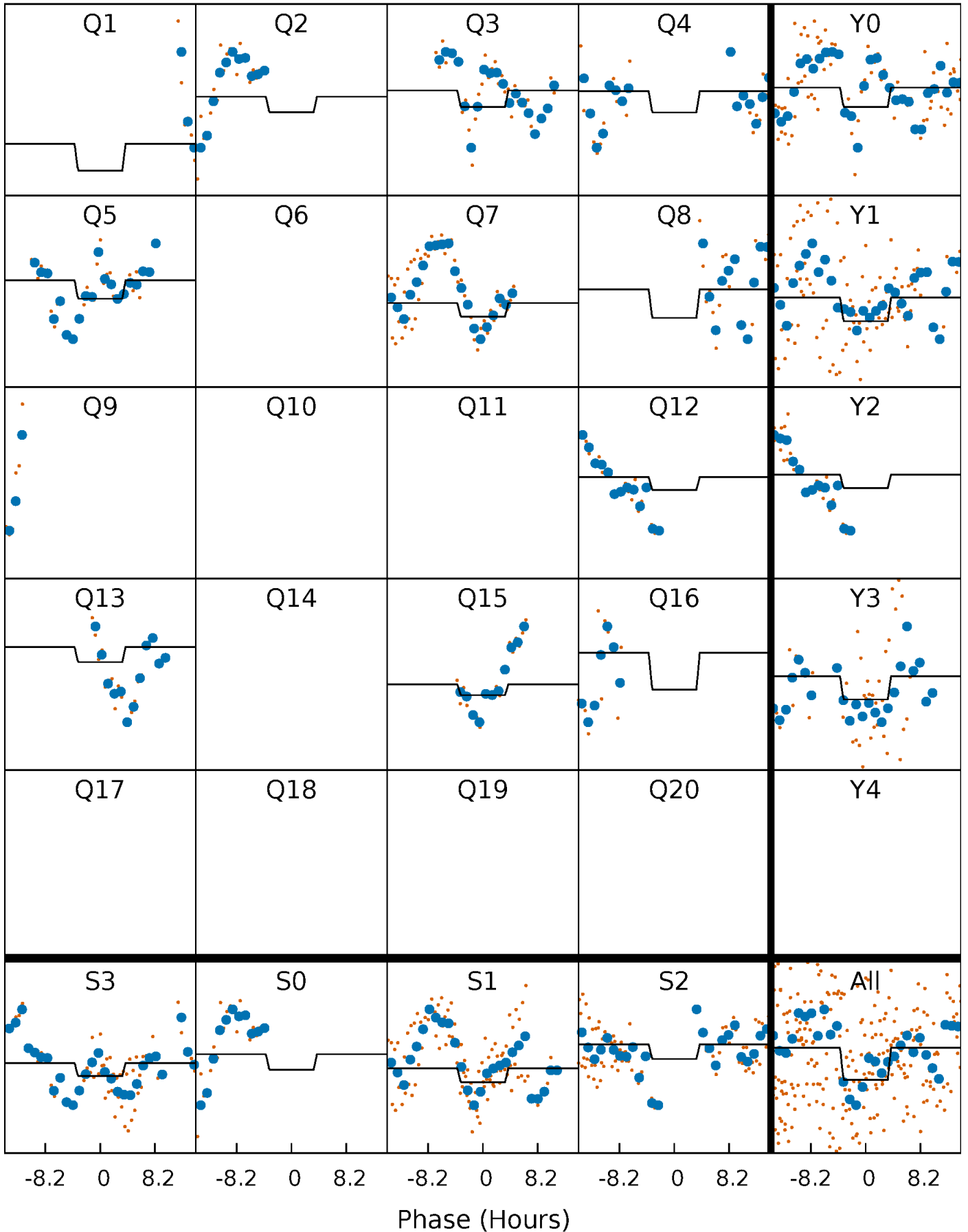
DV Quarter-Phased Transit Curves

TCE 005458428-04 $P = 69.381211$ Days $T_0 = 145.158500$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

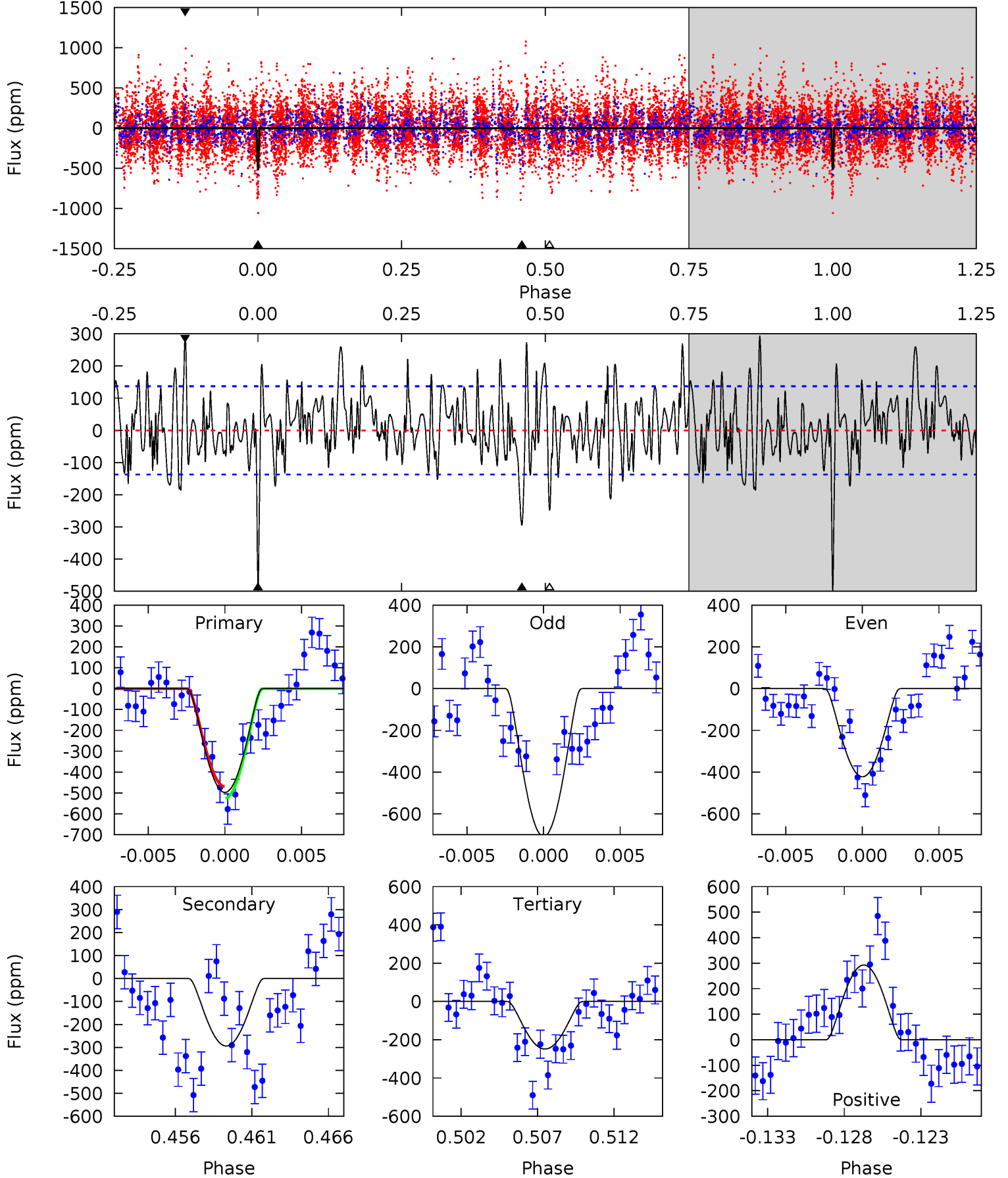
TCE 005458428-04 P= 69.383084 Days $T_0=145.248041$ (BKJD)



DV Model-Shift Uniqueness Test

005458428-04, P = 69.381211 Days, E = 75.777289 Days

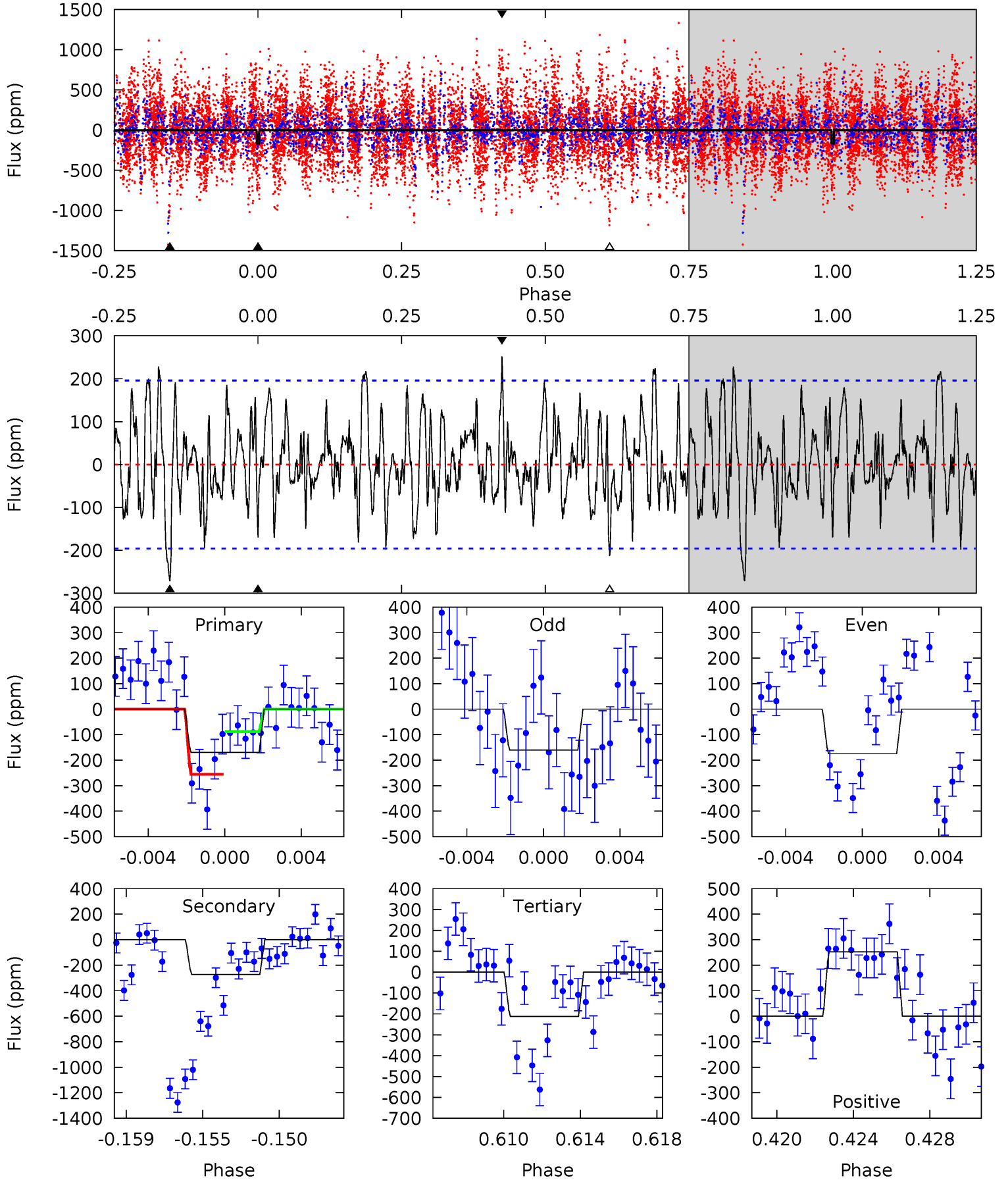
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.7	11.1	9.35	11.0	5.15	2.80	3.17	9.37	7.70	1.71	0.04	5.11	0.72	0.37	1.06



Alt Model-Shift Uniqueness Test

005458428-04, P = 69.383084 Days, E = 75.864957 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.50	7.19	5.63	6.66	5.18	2.85	2.21	-1.13	-2.17	1.56	0.52	0.18	1.34	0.48	2.22



Stellar Parameters For KIC 005458428

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7059^{+168}_{-252}	$3.287^{+0.435}_{-0.145}$	$0.070^{+0.200}_{-0.300}$	$5.894^{+1.521}_{-2.825}$	$2.453^{+0.165}_{-0.662}$	$0.017^{+0.077}_{-0.008}$
	+2%/-4%	+13%/-4%	+286%/-429%	+26%/-48%	+7%/-27%	+456%/-45%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005458428-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-294 ± 27	$51.21^{+52.57}_{-35.22}$	1549^{+122}_{-190}	3549^{+2046}_{-687}	12^{+111}_{-9}
Alt.	-272 ± 38	$44.59^{+49.99}_{-31.37}$	1547^{+123}_{-179}	3669^{+2319}_{-731}	14^{+152}_{-11}

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

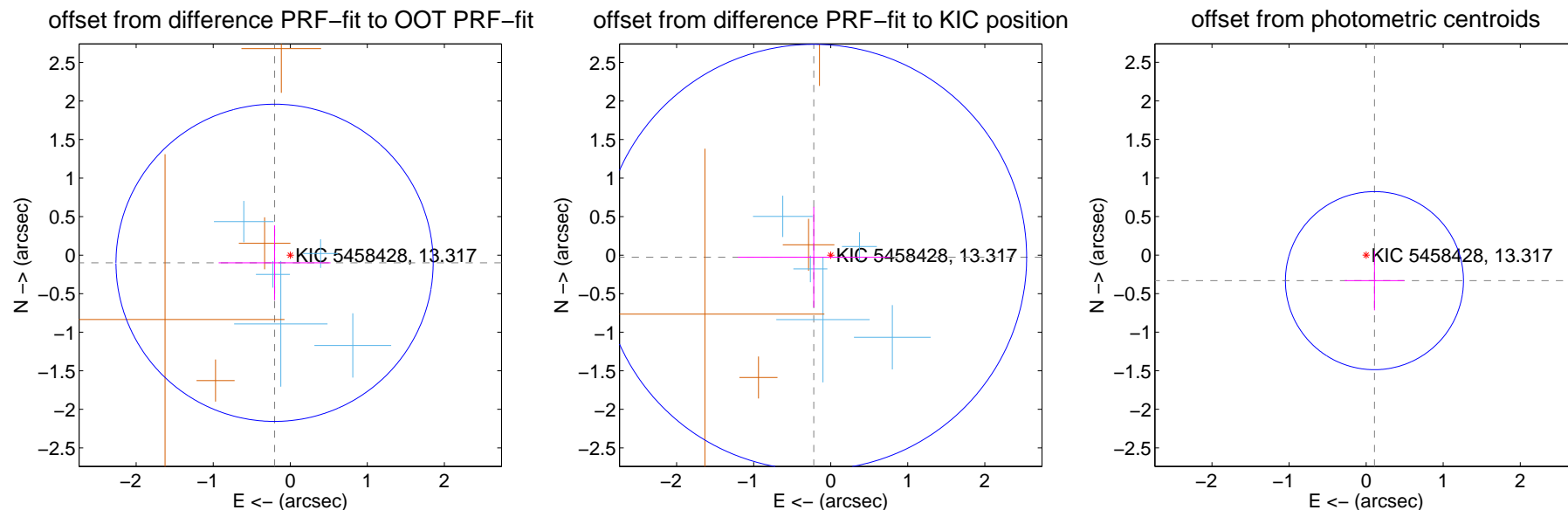
DV Centroid Data

Supplemental centroid analysis for 005458428-04. Kepler magnitude: 13.32. Transit SNR 9.10

There are 5 quarters with good PRF difference image offsets

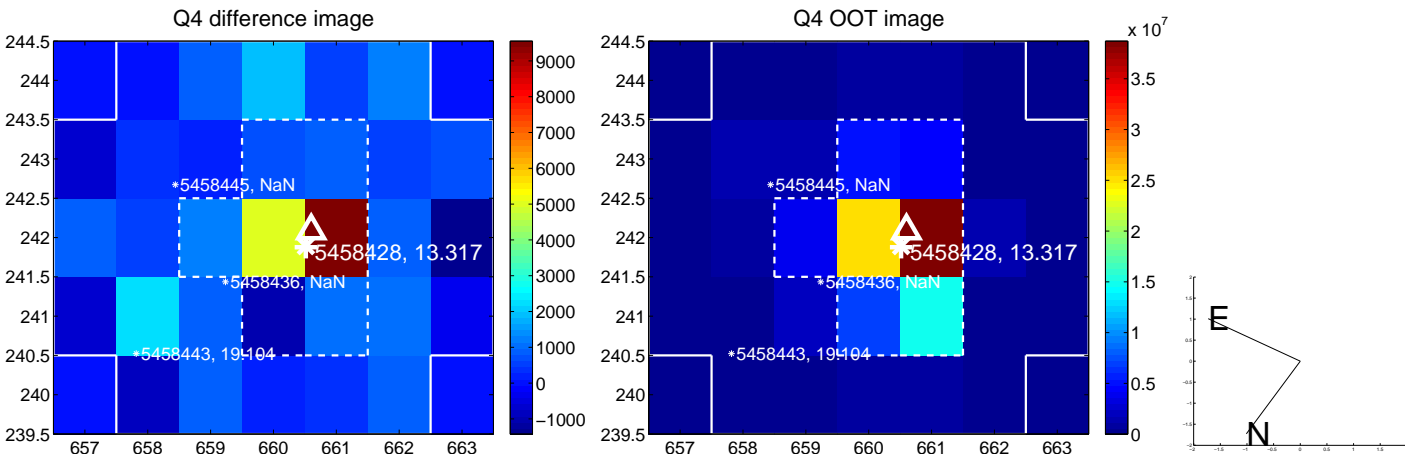
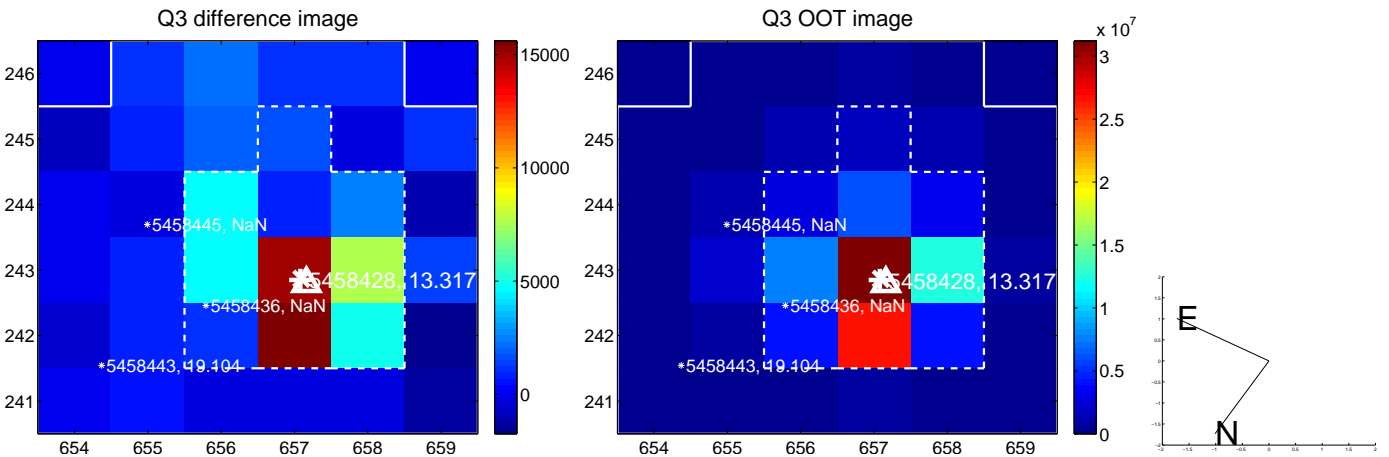
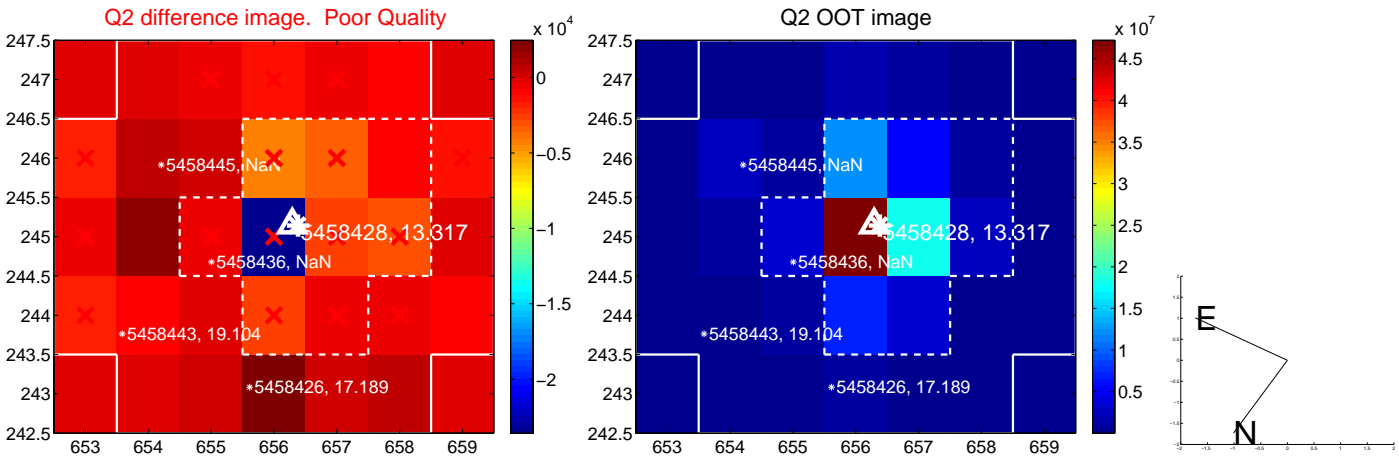
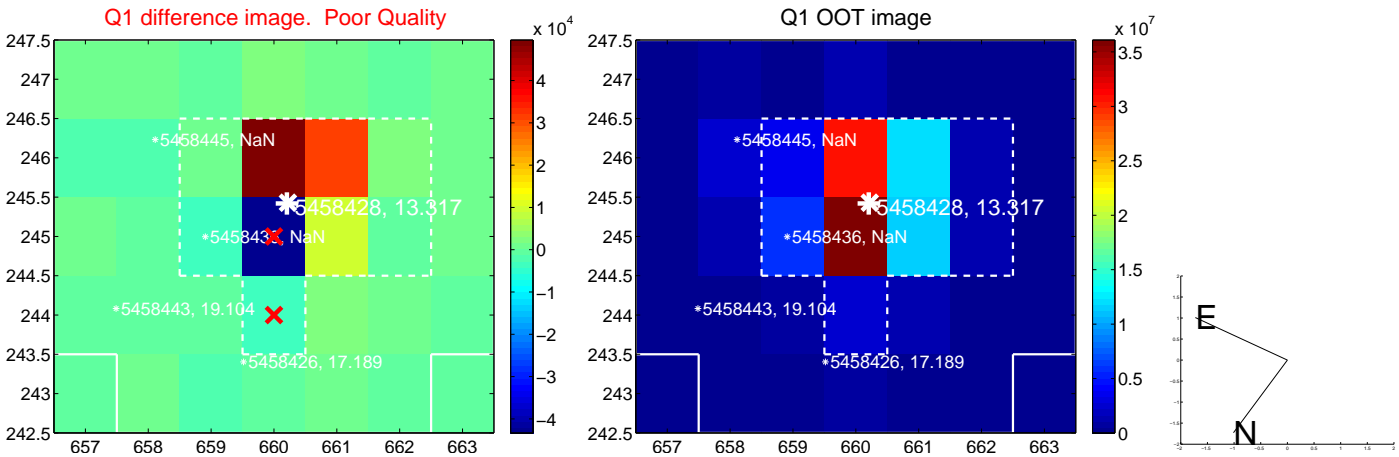
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.227 ± 0.686	0.33	0.204 ± 0.725	-0.099 ± 0.485
PRF-fit source offset from KIC position	0.221 ± 0.921	0.24	0.219 ± 0.986	-0.026 ± 0.653
photometric centroid source offset	0.35 ± 0.38	0.91	-0.11 ± 0.39	-0.33 ± 0.38

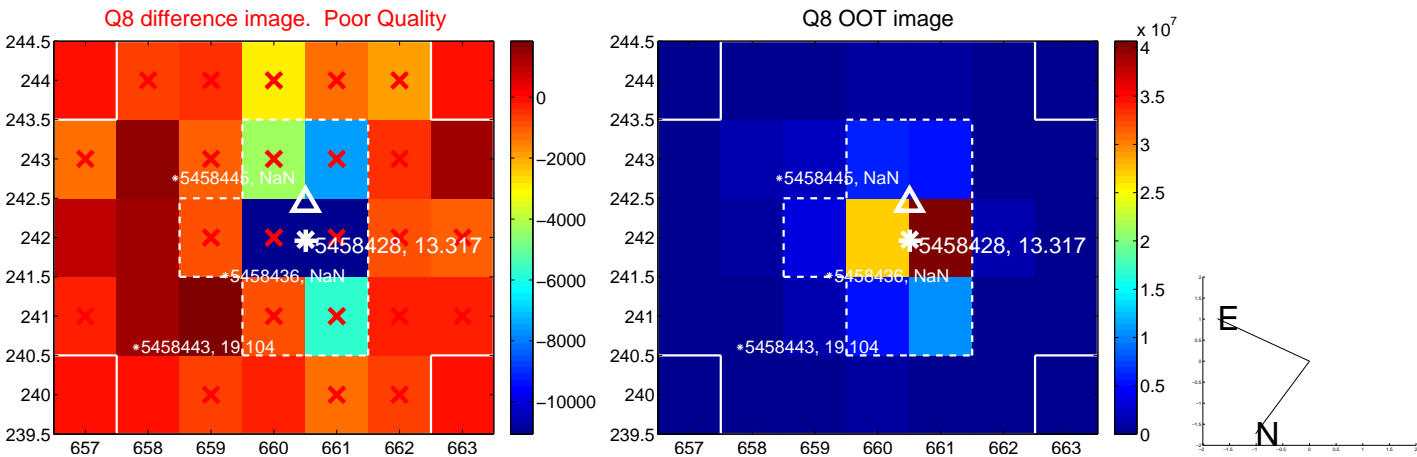
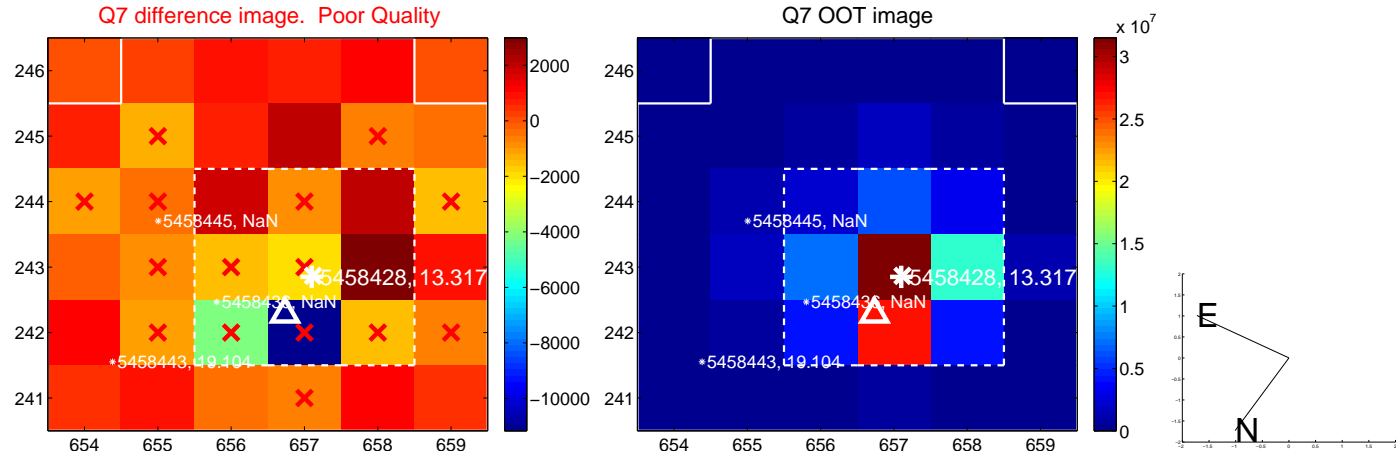
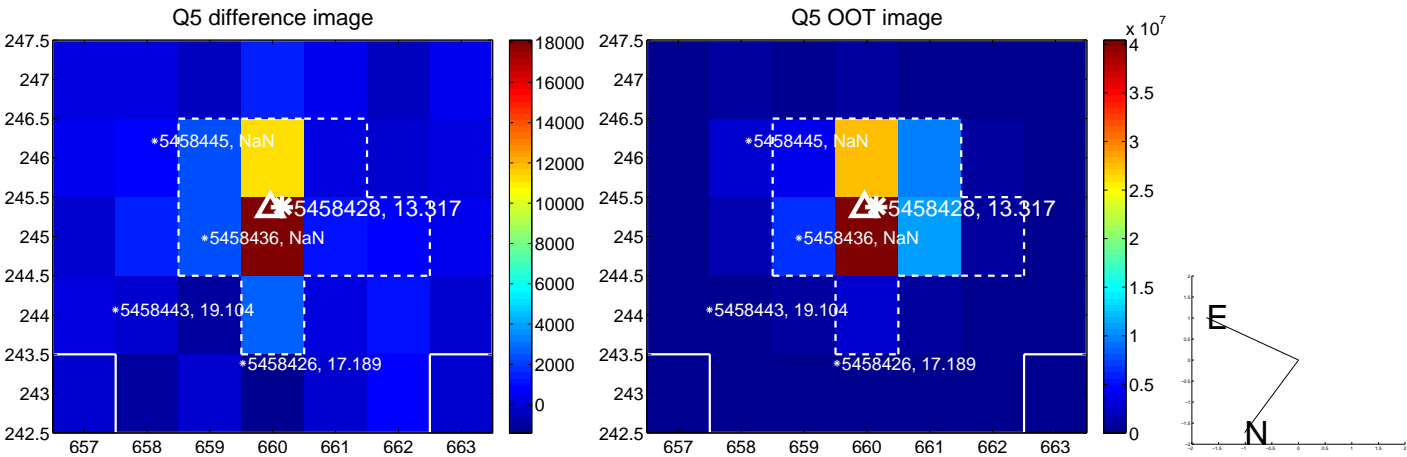


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

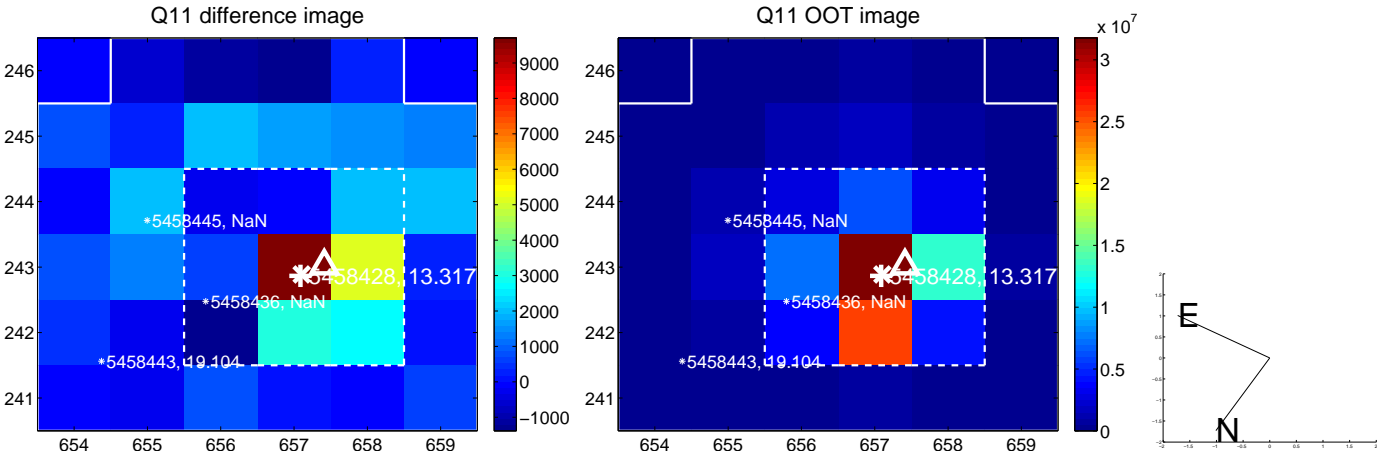
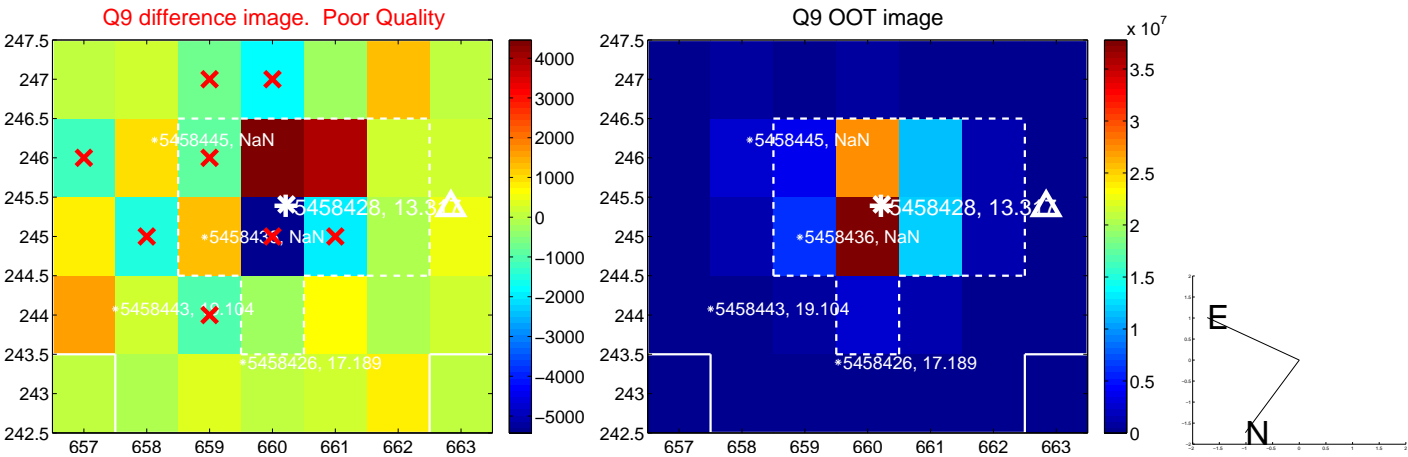
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



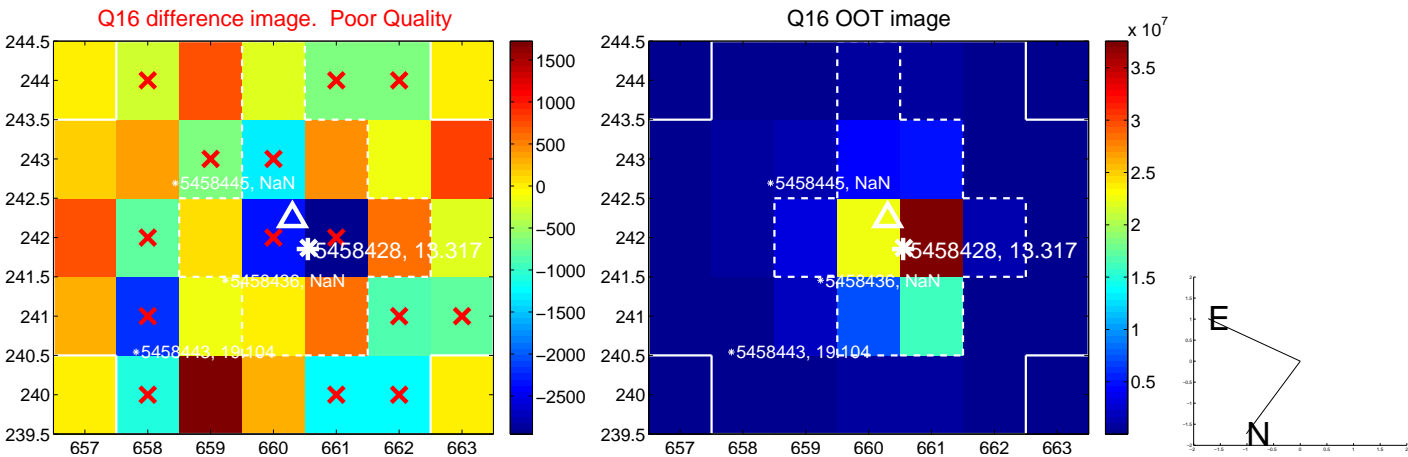
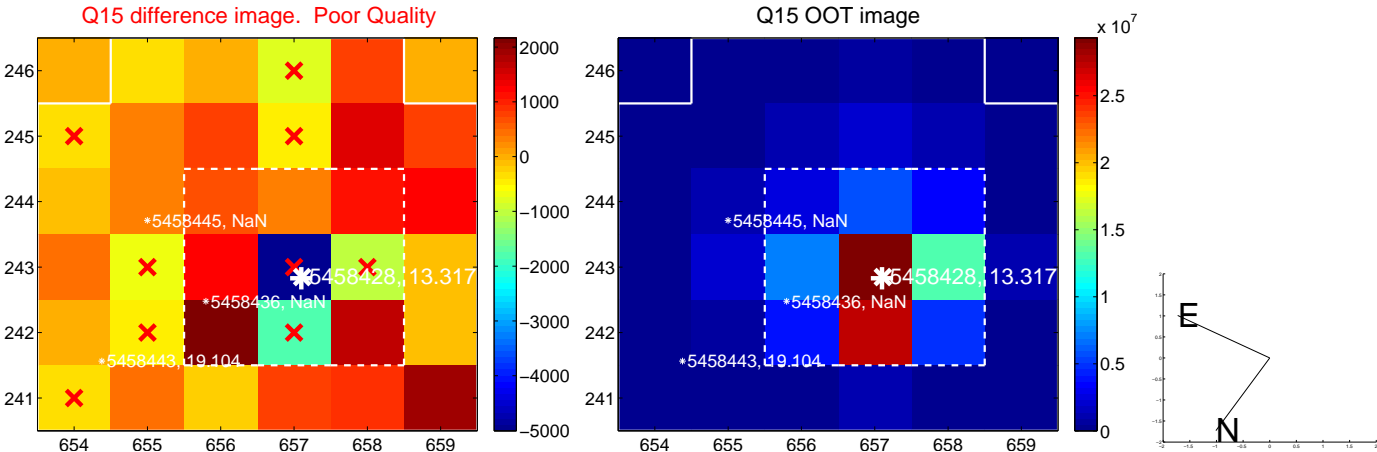
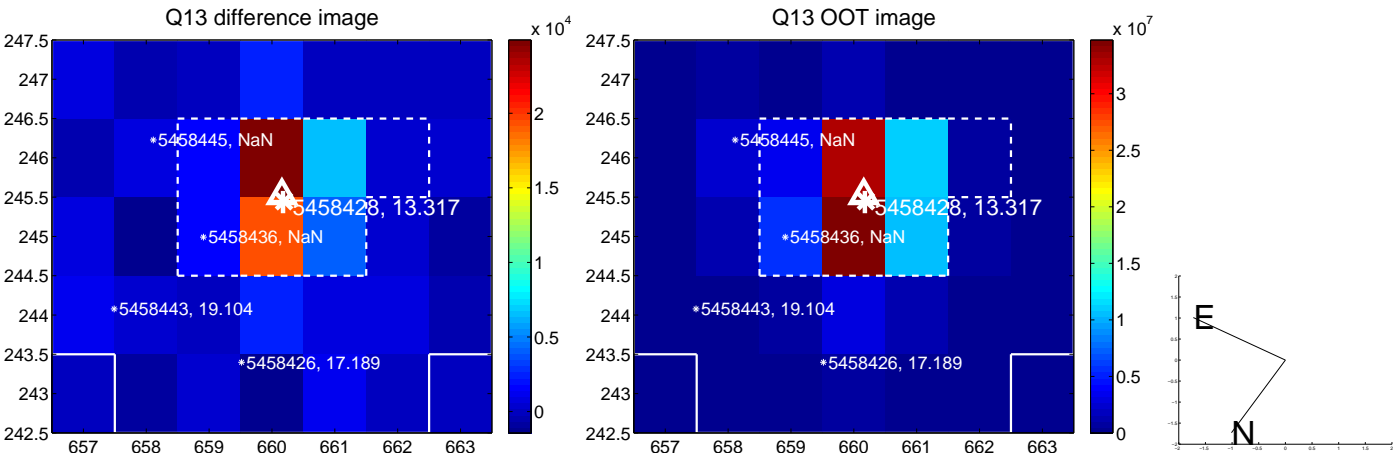
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



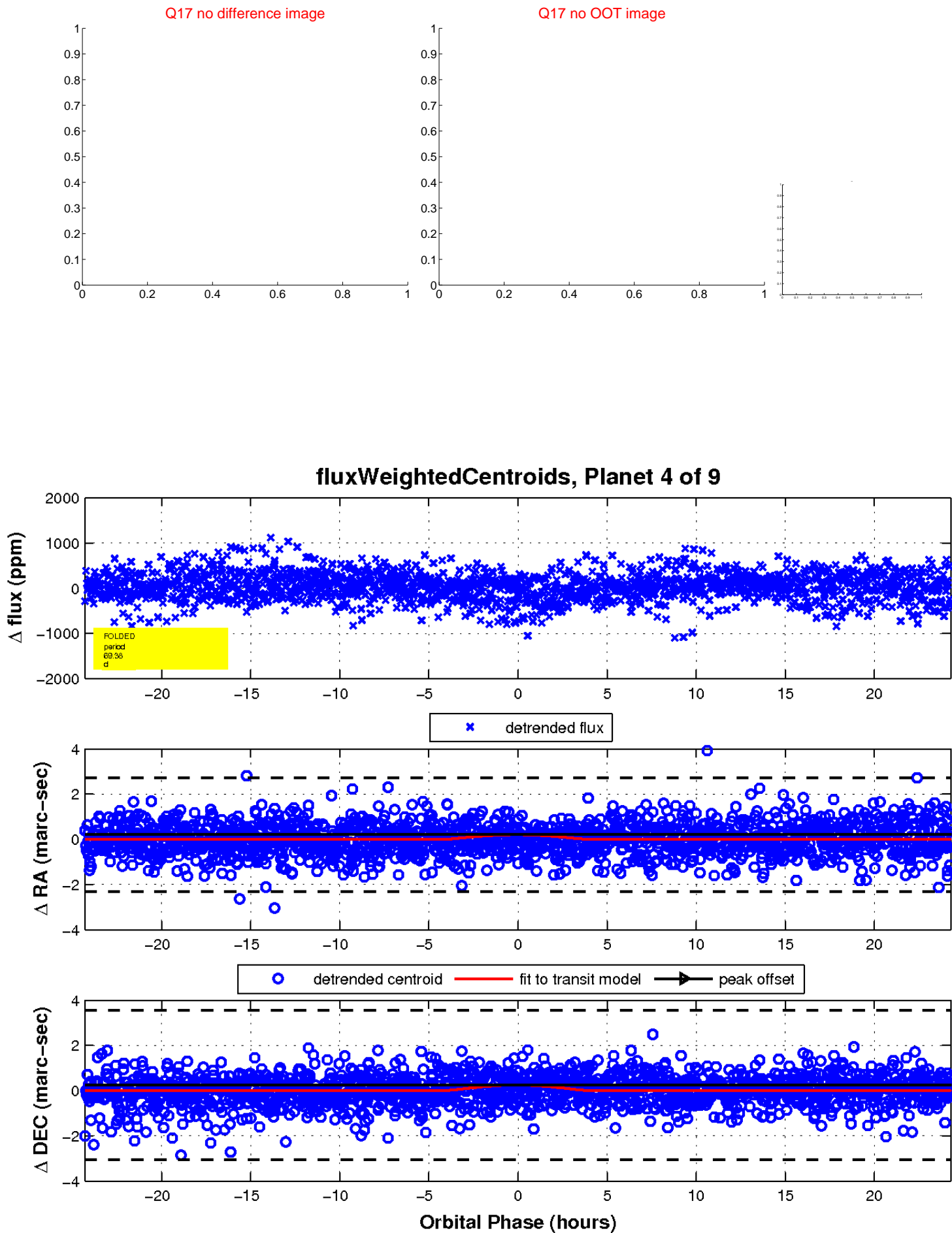
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

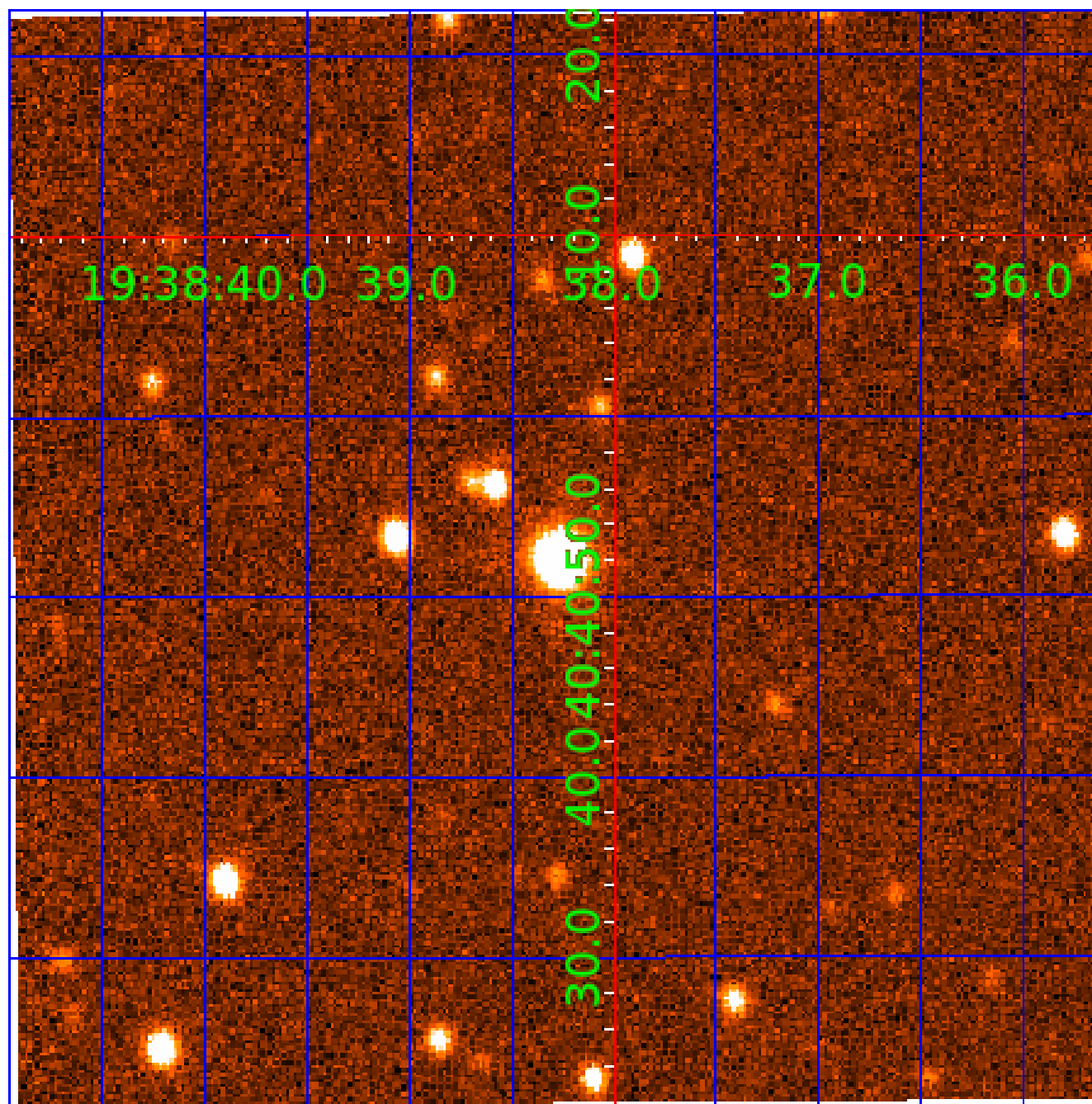


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005458428

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})
005458428-01	OBS	No	3.200651	132.084844	75.7	13.138	9.7	10.5	5.89	7059	6.53	23504.78
005458428-02	OBS	No	1.552378	132.735072	95.6	6.107	12.6	12.7	5.89	7059	7.80	61679.90
005458428-03	OBS	No	192.642735	275.519386	859.2	9.619	11.8	12.7	5.89	7059	25.56	99.65
005458428-04	OBS	No	69.381211	145.158500	466.6	8.103	10.3	9.1	5.89	7059	24.33	388.88
005458428-05	OBS	No	79.646495	159.557679	187.9	12.243	10.1	4.4	5.89	7059	8.65	323.53
005458428-06	OBS	No	349.011885	405.827424	479.6	10.909	9.7	8.3	5.89	7059	13.90	45.12
005458428-07	OBS	No	123.393120	150.298424	623.0	6.194	9.5	9.8	5.89	7059	27.82	180.48
005458428-08	OBS	No	53.481893	134.251969	293.6	11.976	9.5	7.7	5.89	7059	11.10	550.21
005458428-09	OBS	No	40.566928	167.259507	178.9	9.000	10.0	-1.0	5.89	7059	7.95	795.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005458428-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
005458428-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005458428-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005458428-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
005458428-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

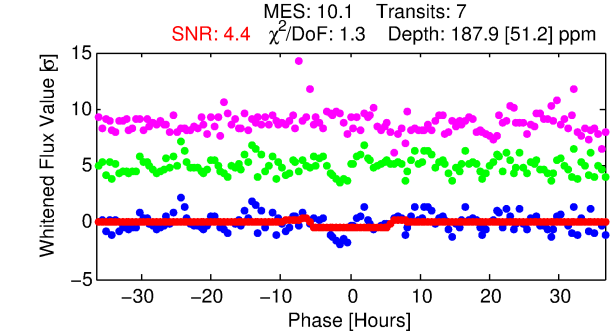
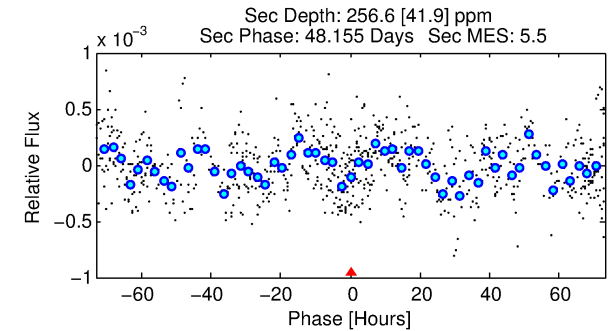
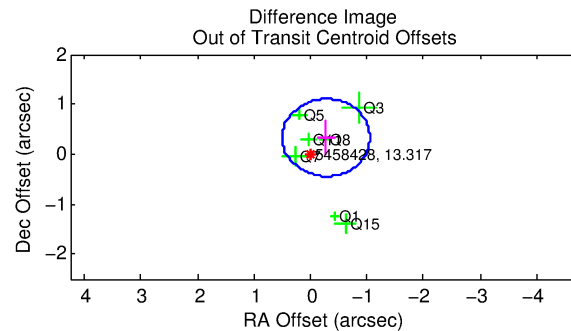
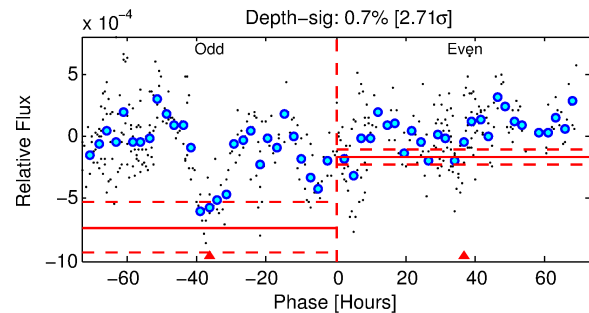
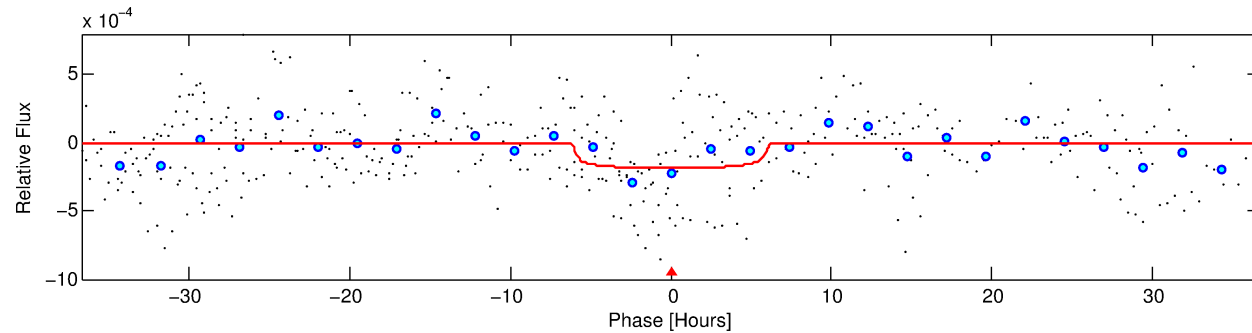
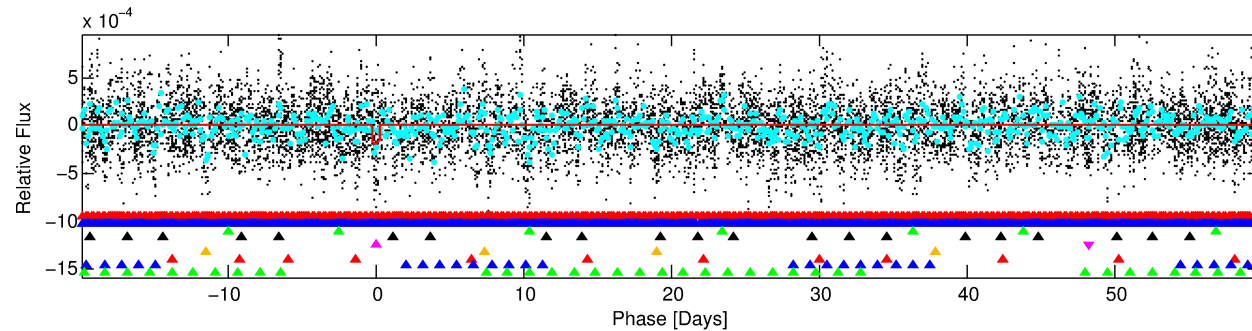
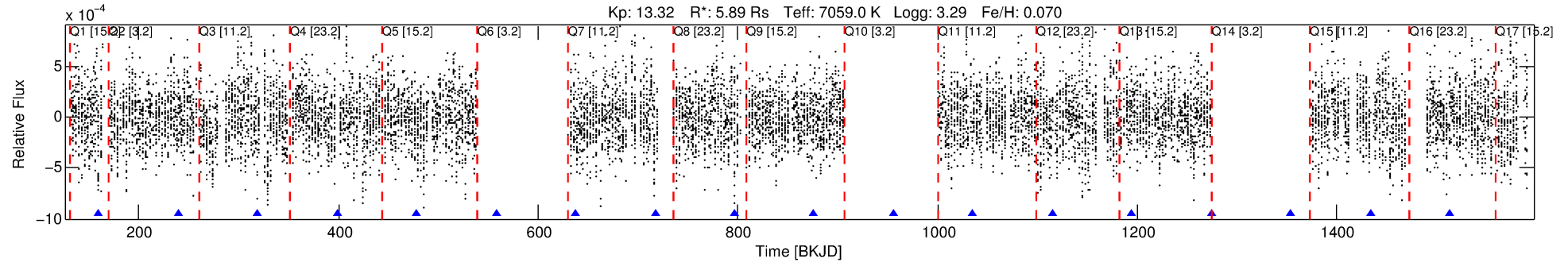
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005458428-05

No Significant Match Found

DV One-Page Summary

KIC: 5458428 Candidate: 5 of 9 Period: 79.646 d



DV Fit Results:

Period = 79.64650 [0.00214] d
Epoch = 159.5577 [0.0189] BKJD
Rp/R* = 0.0134 [0.0083]
a/R* = 36.54 [126.32]
b = 0.70 [2.55]
Seff = 323.53 [243.92]
Teq = 1081 [204] K
Rp = 8.65 [6.78] Re
a = 0.4887 [0.2259] AU
Ag = 450.76 [655.74] [0.69 σ]
Teffp = 7704 [2428] K [2.72 σ]

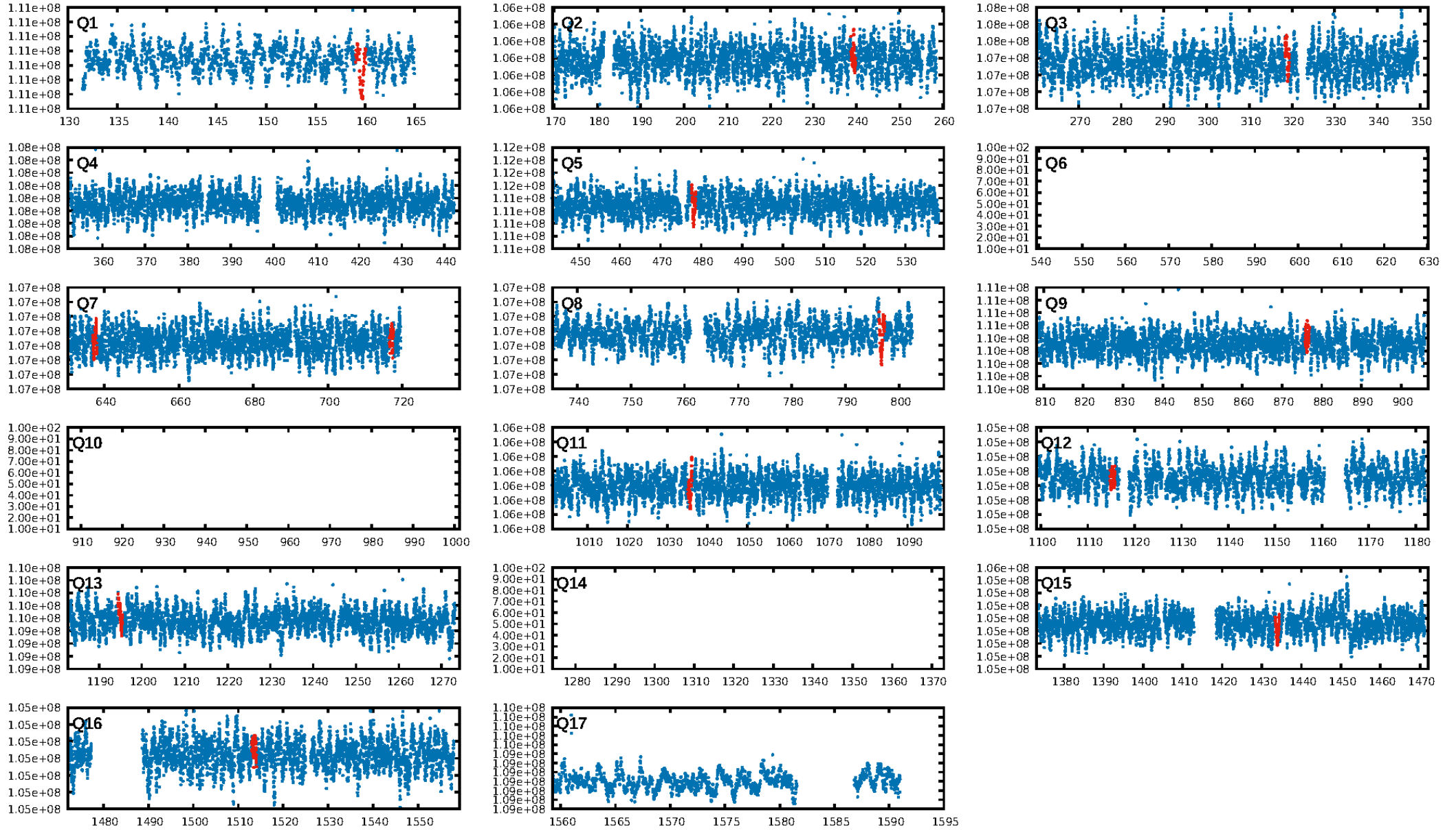
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [16.78 σ]
LongPeriod-sig: 100.0% [76.52 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 3.116
Centroid-sig: 2.4%
Centroid-so: 1.457 arcsec [2.01 σ]
OotOffset-rm: 0.431 arcsec [1.67 σ]
KicOffset-rm: 0.488 arcsec [1.91 σ]
OotOffset-st: 0/4/1/2 [7]
KicOffset-st: 0/4/1/2 [7]
DiffImageQuality-fgm: 0.71 [5/7]
DiffImageOverlap-fno: 0.00 [0/11]

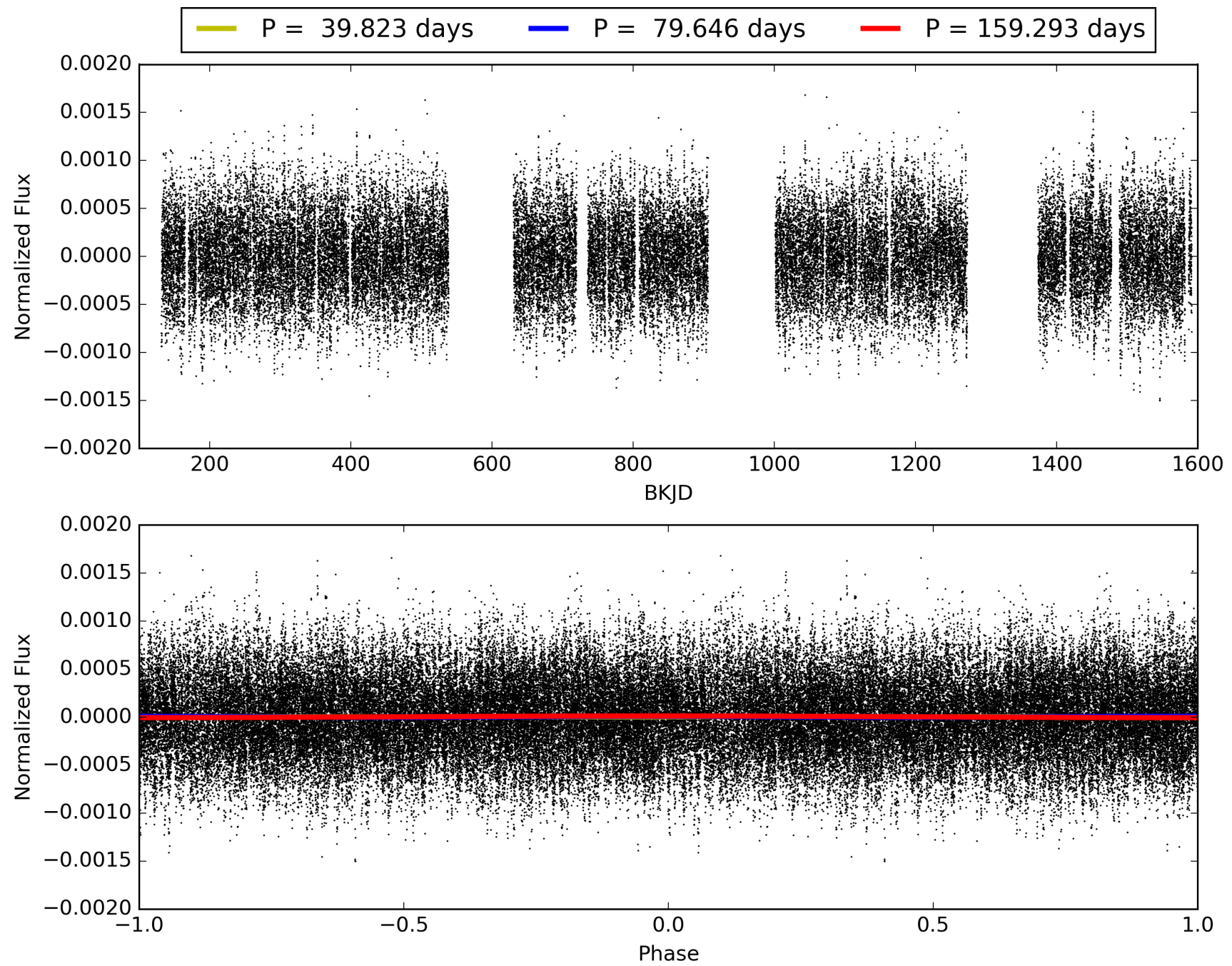
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:10:44 Z

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

TCE 005458428-05, PDC Light Curves

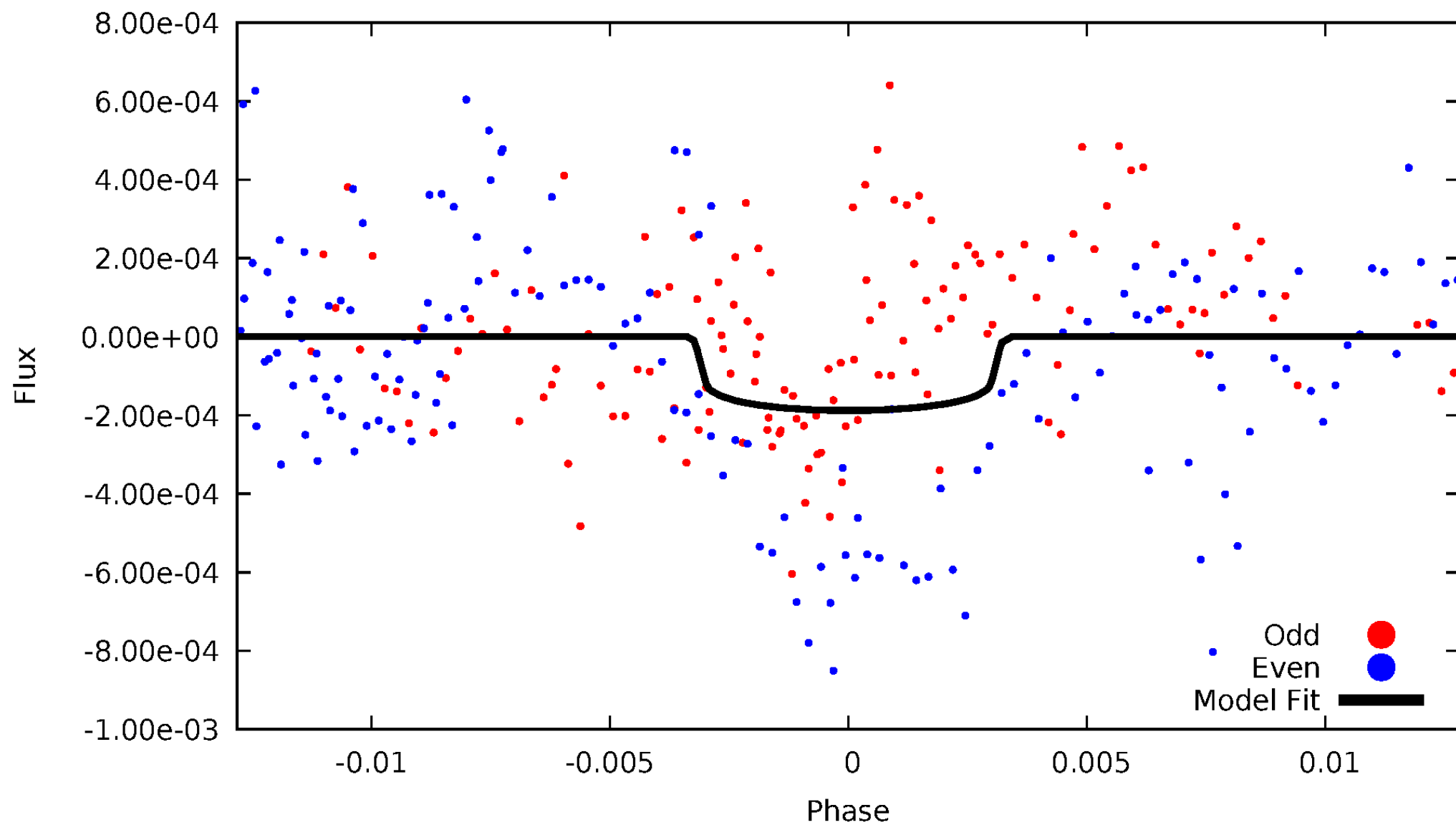


TCE 005458428-05



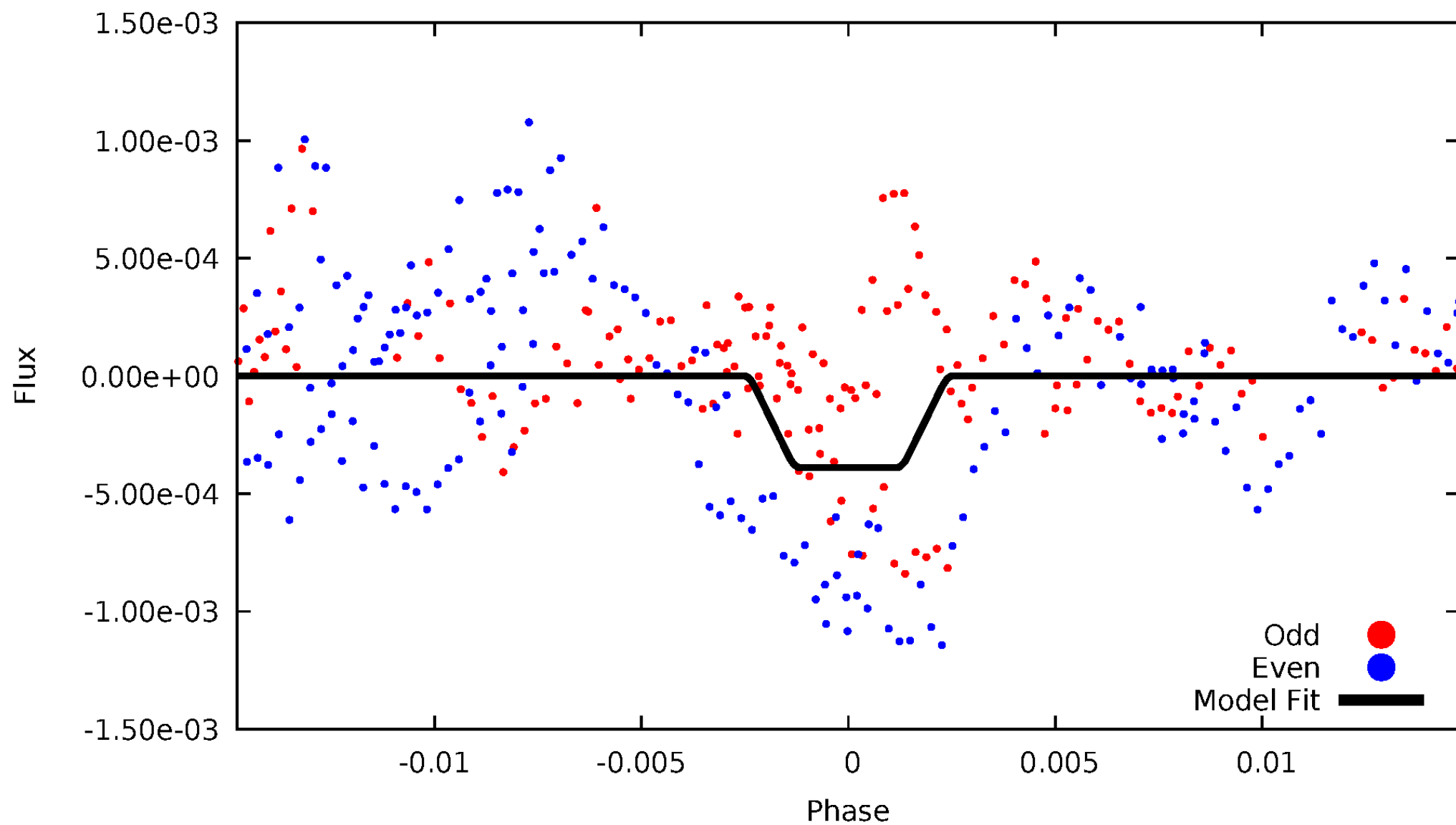
DV Odd/Even

TCE 005458428-05



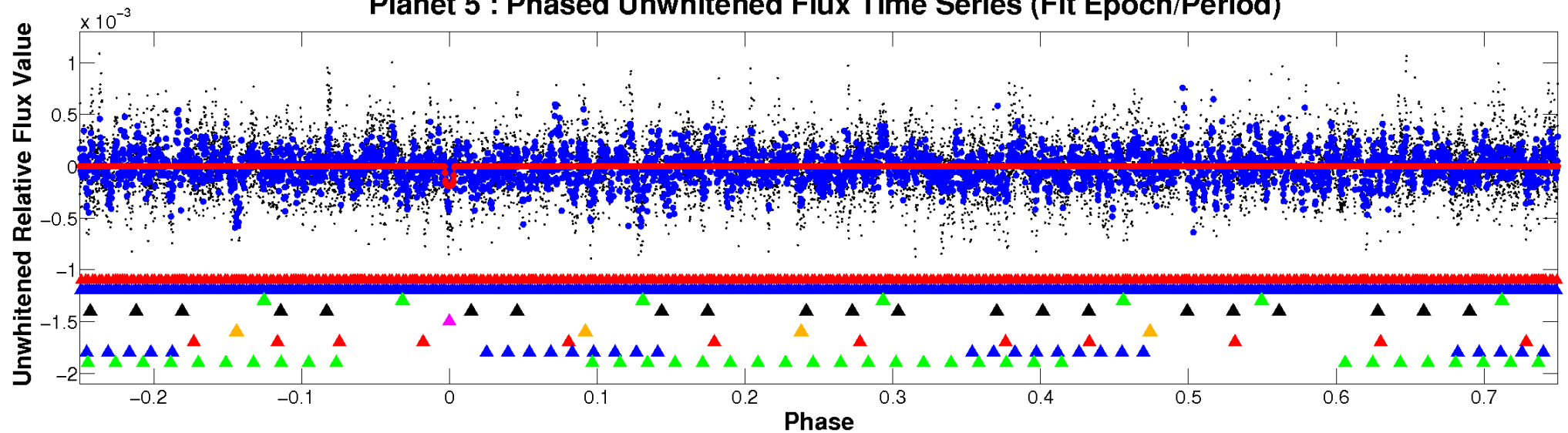
ALT Odd/Even

TCE 005458428-05

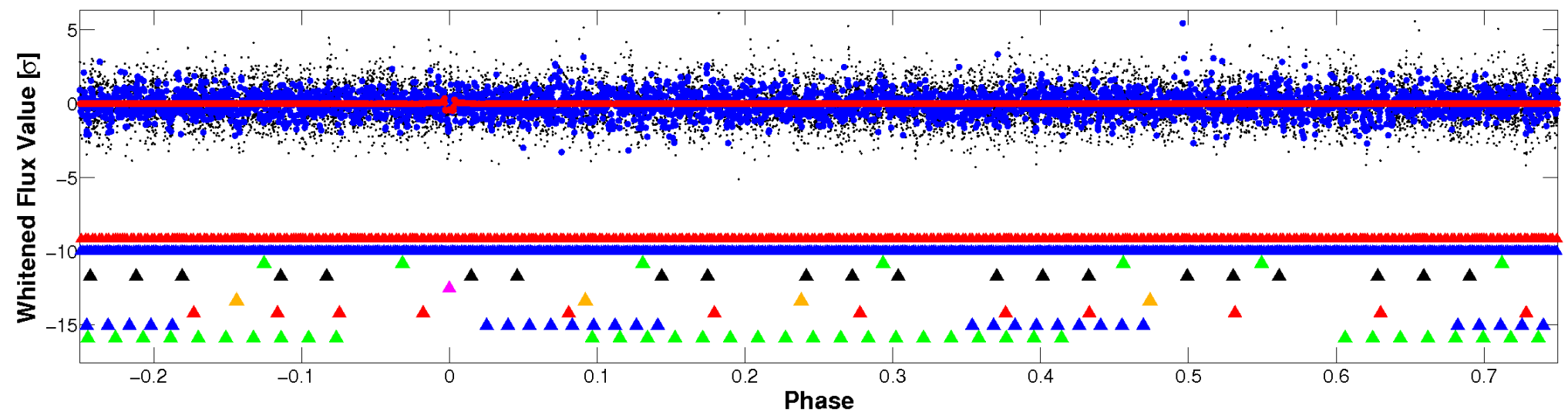


Non-Whitened Vs. Whitened Light Curve

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



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



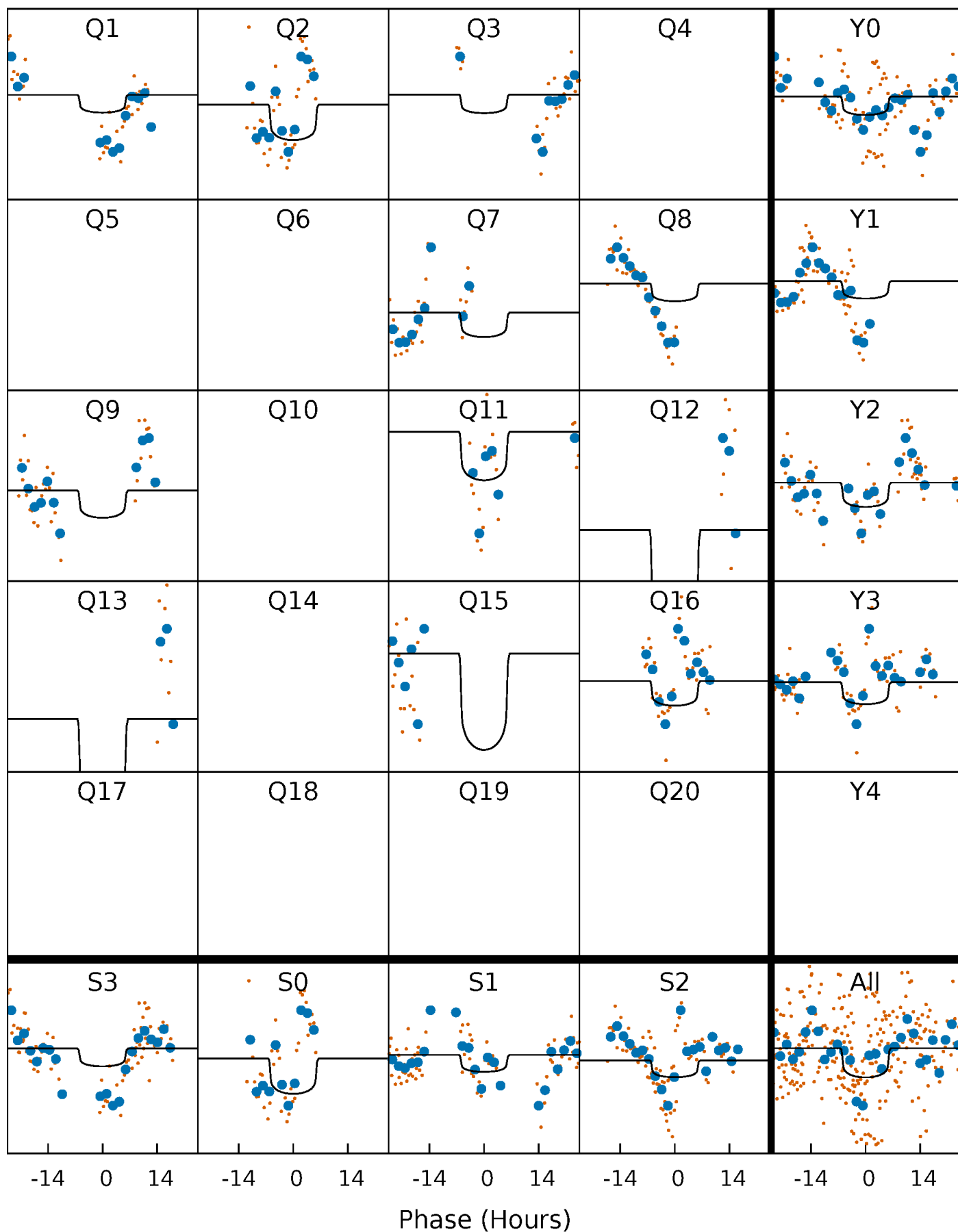
PDC Quarter-Phased Transit Curves

TCE 005458428-05 $P = 79.646495$ Days $T_0 = 159.557679$ (BKJD)



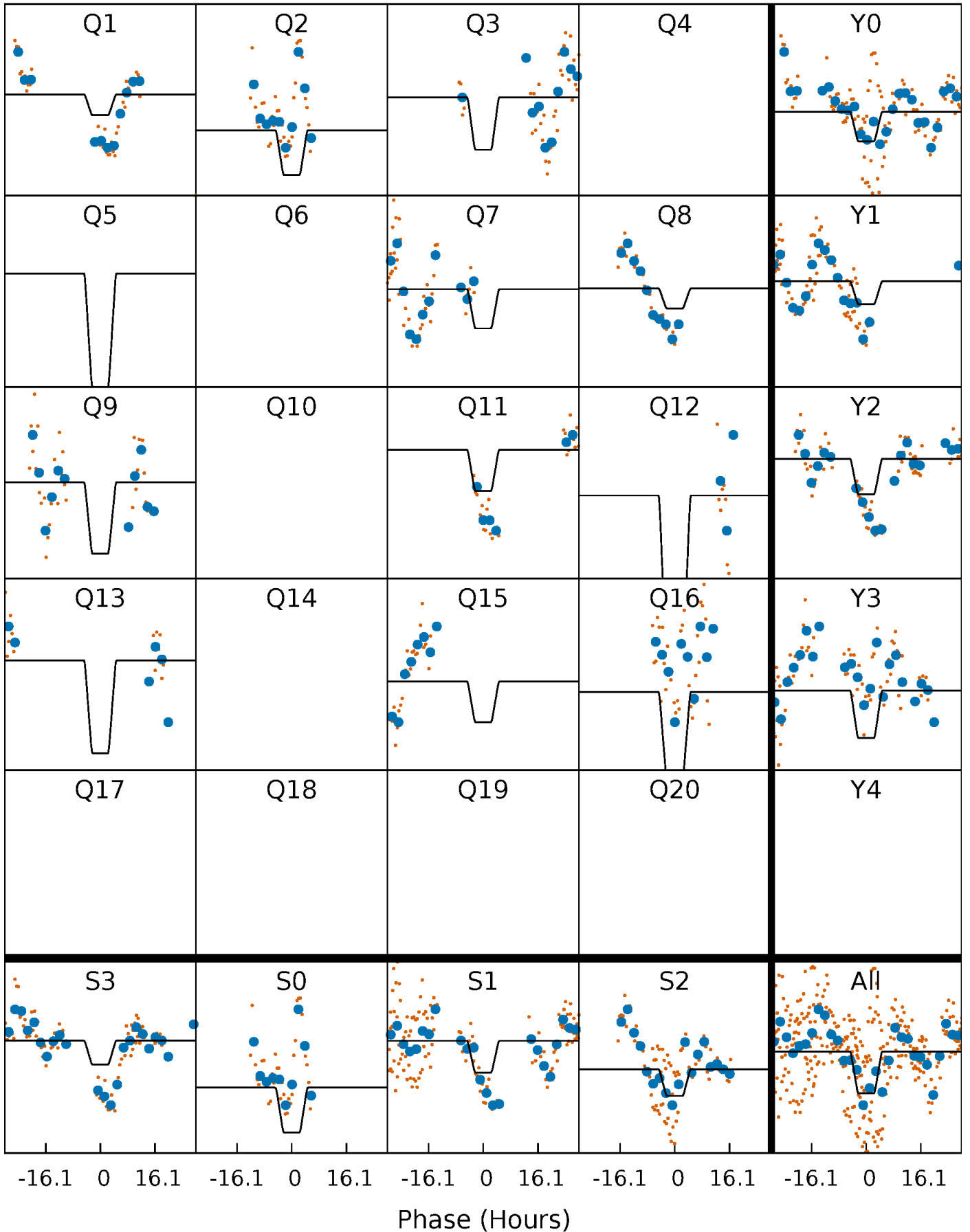
DV Quarter-Phased Transit Curves

TCE 005458428-05 P= 79.646495 Days $T_0=159.557679$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

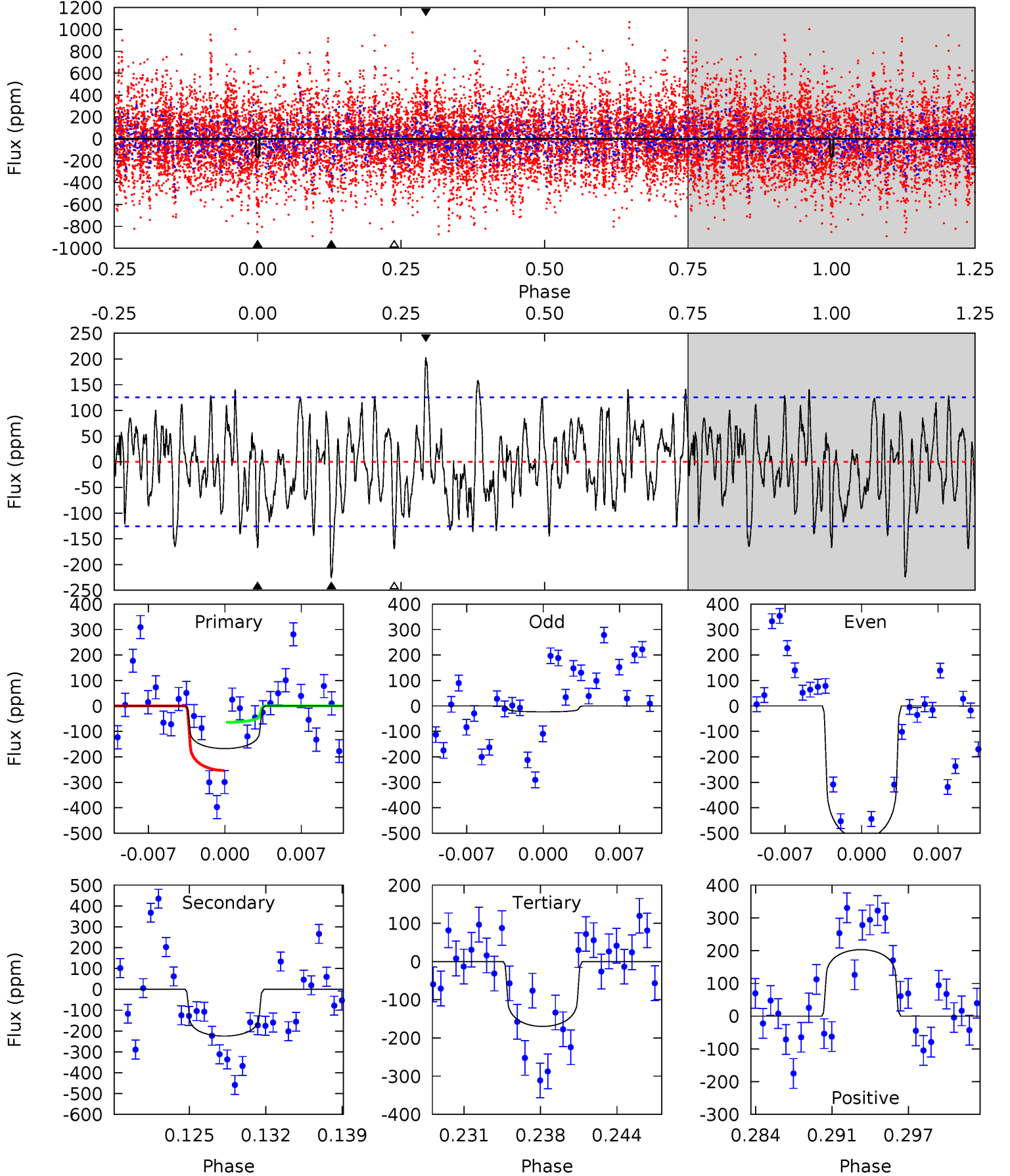
TCE 005458428-05 P= 79.641670 Days $T_0=159.572763$ (BKJD)



DV Model-Shift Uniqueness Test

005458428-05, P = 79.646495 Days, E = 79.911184 Days

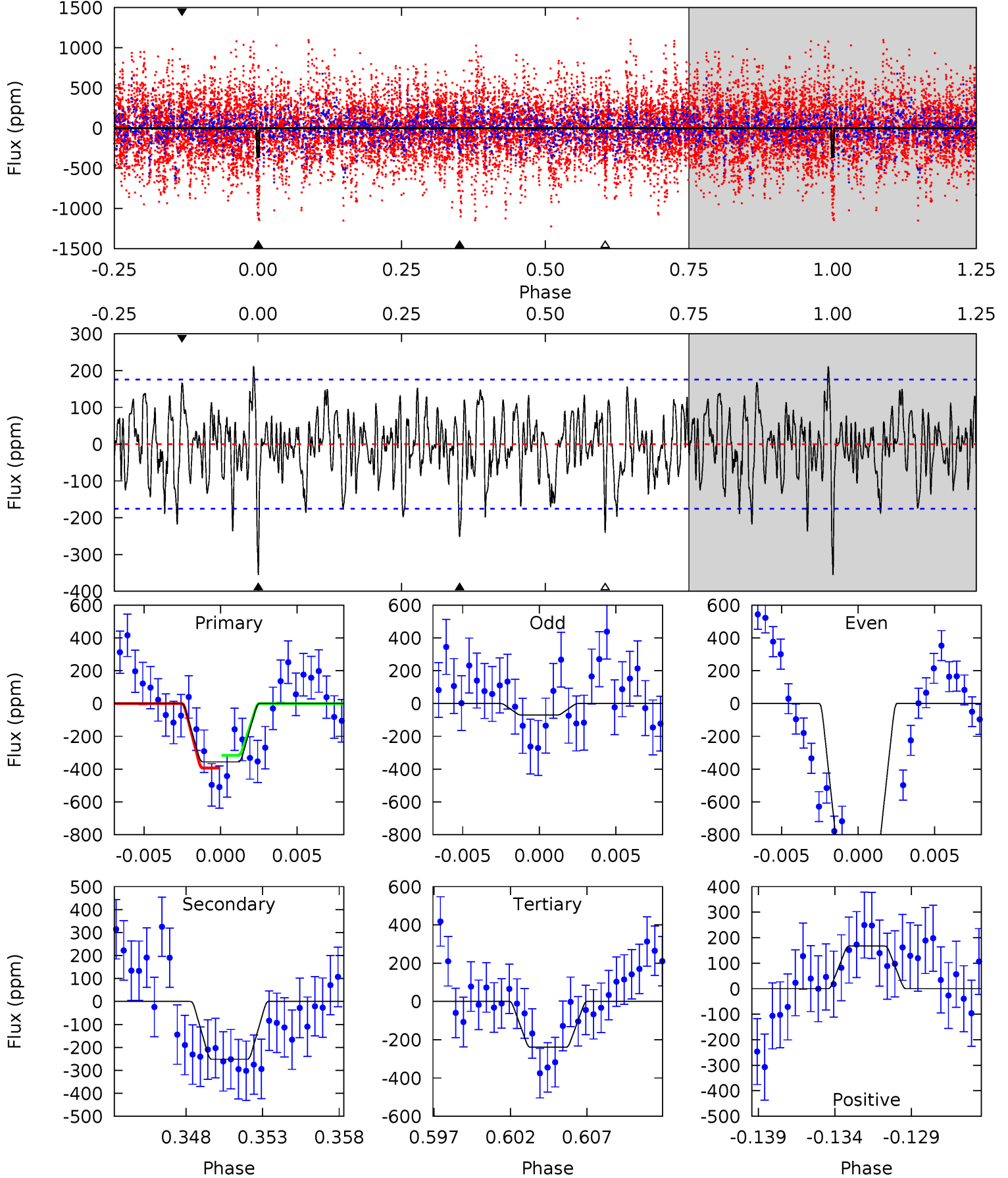
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.83	9.14	6.92	8.27	5.11	2.72	2.53	-0.09	-1.44	2.22	0.87	9.14	-4.68	0.47	3.85



Alt Model-Shift Uniqueness Test

005458428-05, P = 79.641670 Days, E = 79.931093 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	7.40	7.03	4.90	5.16	2.81	2.20	3.42	5.55	0.36	2.49	11.7	1.27	0.37	1.15



Stellar Parameters For KIC 005458428

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7059^{+168}_{-252}	$3.287^{+0.435}_{-0.145}$	$0.070^{+0.200}_{-0.300}$	$5.894^{+1.521}_{-2.825}$	$2.453^{+0.165}_{-0.662}$	$0.017^{+0.077}_{-0.008}$
	+2%/-4%	+13%/-4%	+286%/-429%	+26%/-48%	+7%/-27%	+456%/-45%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005458428-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-224 ± 25	$8.05^{+5.55}_{-4.53}$	1471^{+118}_{-191}	7207^{+4954}_{-1532}	430^{+1800}_{-281}
Alt.	-252 ± 34	$11.22^{+6.09}_{-5.11}$	1470^{+123}_{-202}	6230^{+2544}_{-1003}	258^{+597}_{-154}

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 $A_{obs} \gg 1.0$

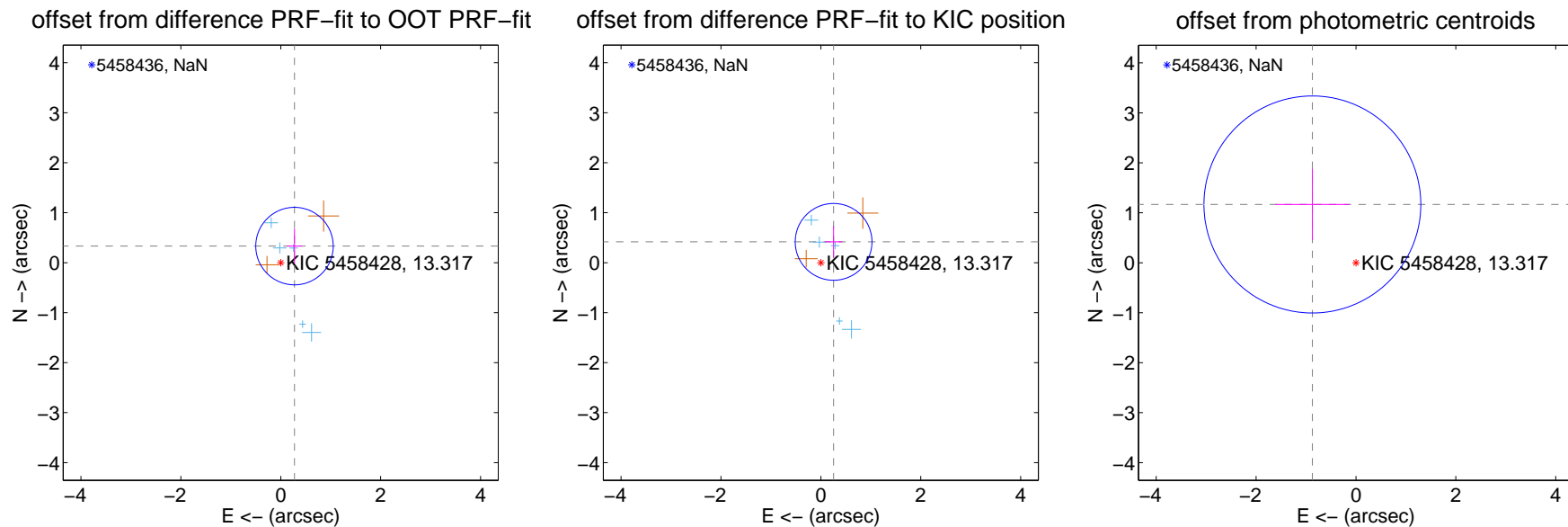
DV Centroid Data

Supplemental centroid analysis for 005458428-05. Kepler magnitude: 13.32. Transit SNR 4.41

There are 5 quarters with good PRF difference image offsets

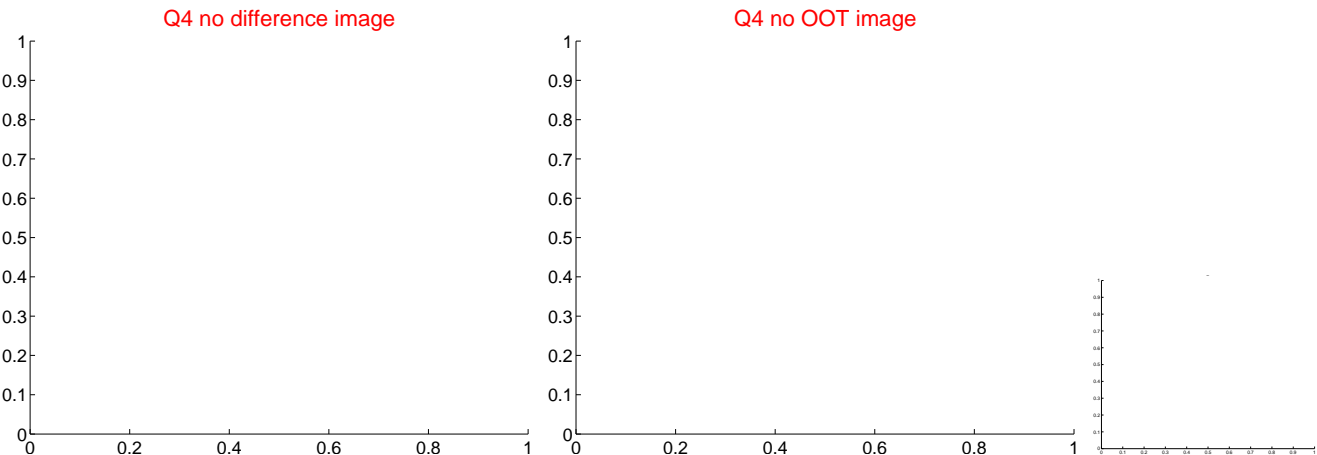
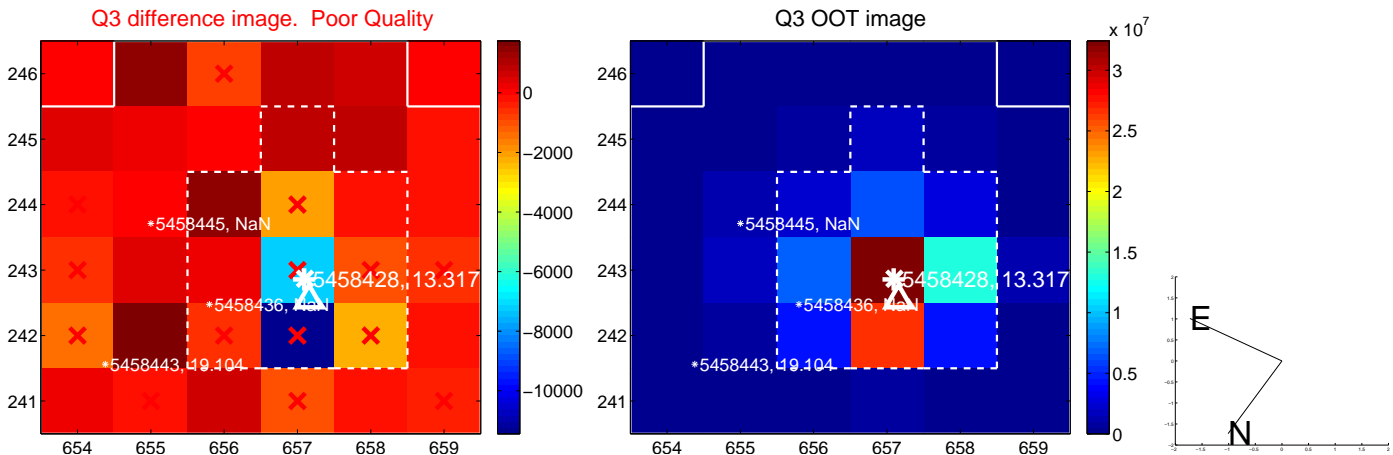
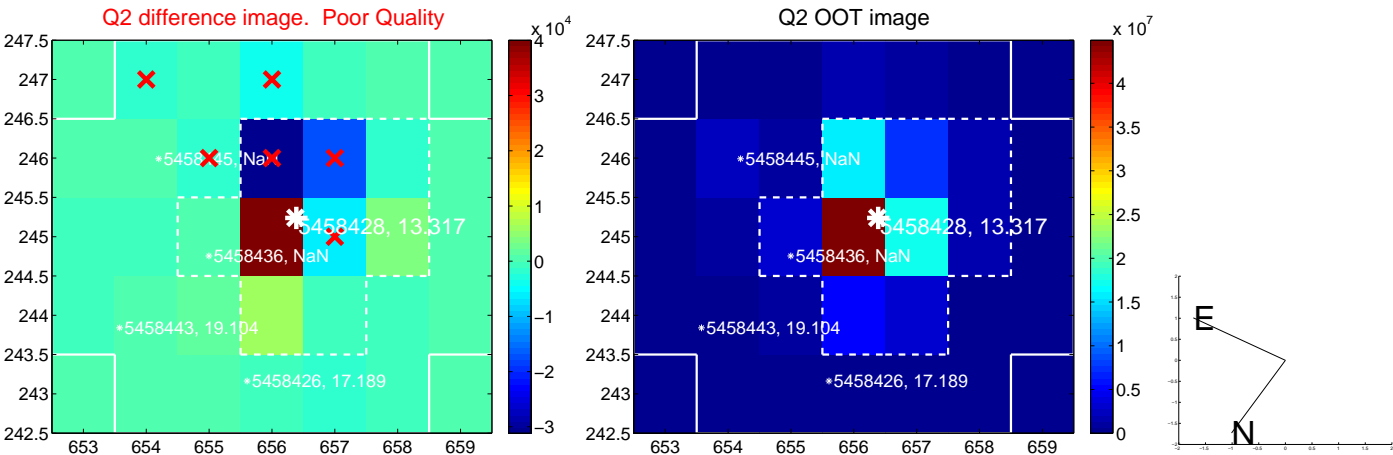
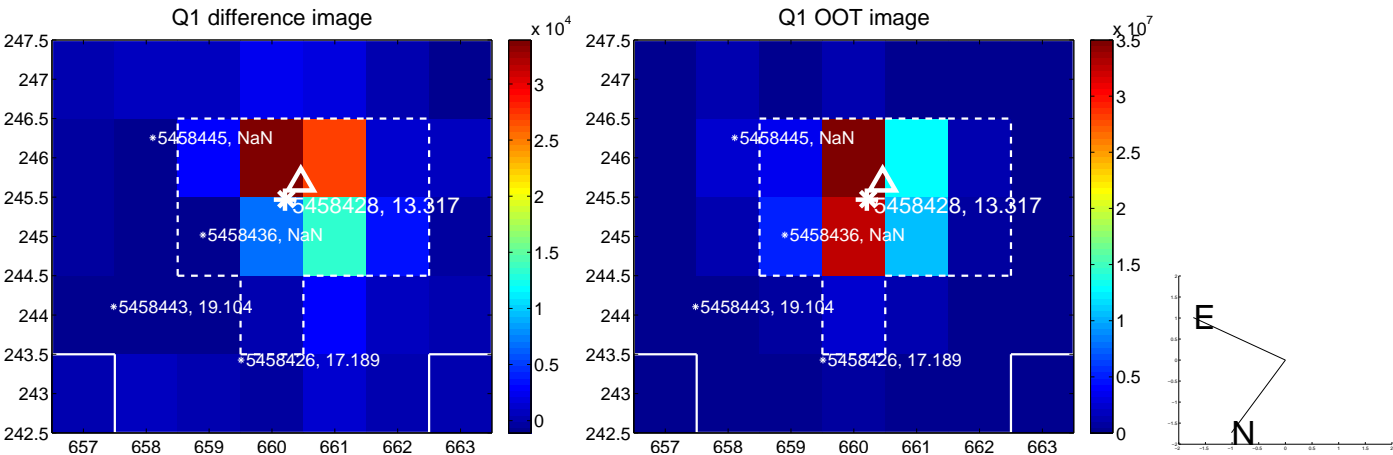
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.431 ± 0.258	1.67	-0.275 ± 0.153	0.332 ± 0.348
PRF-fit source offset from KIC position	0.488 ± 0.256	1.91	-0.255 ± 0.173	0.417 ± 0.313
photometric centroid source offset	1.46 ± 0.72	2.01	0.87 ± 0.74	1.17 ± 0.71

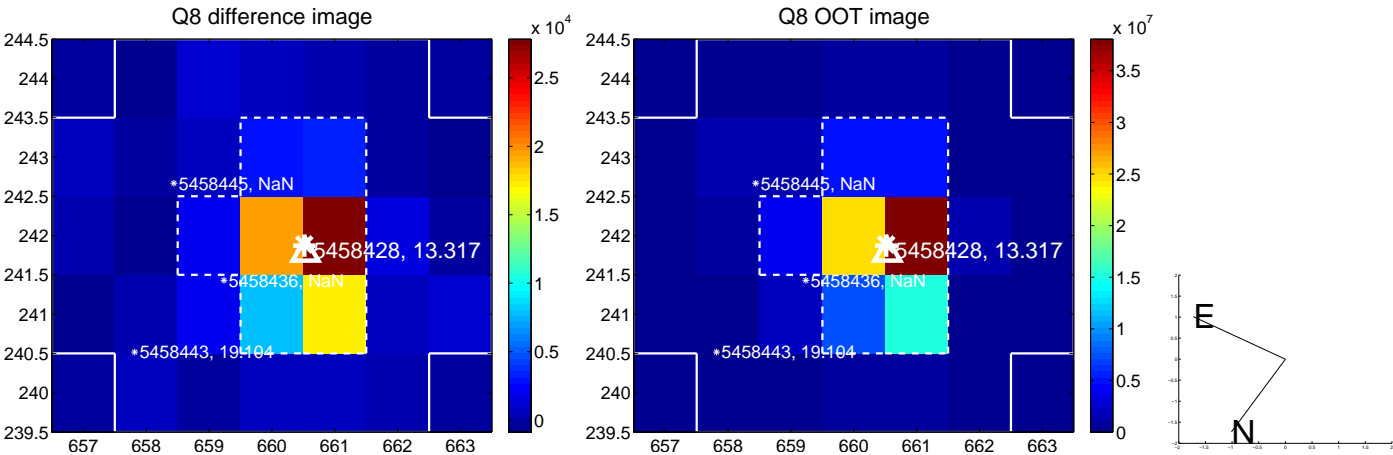
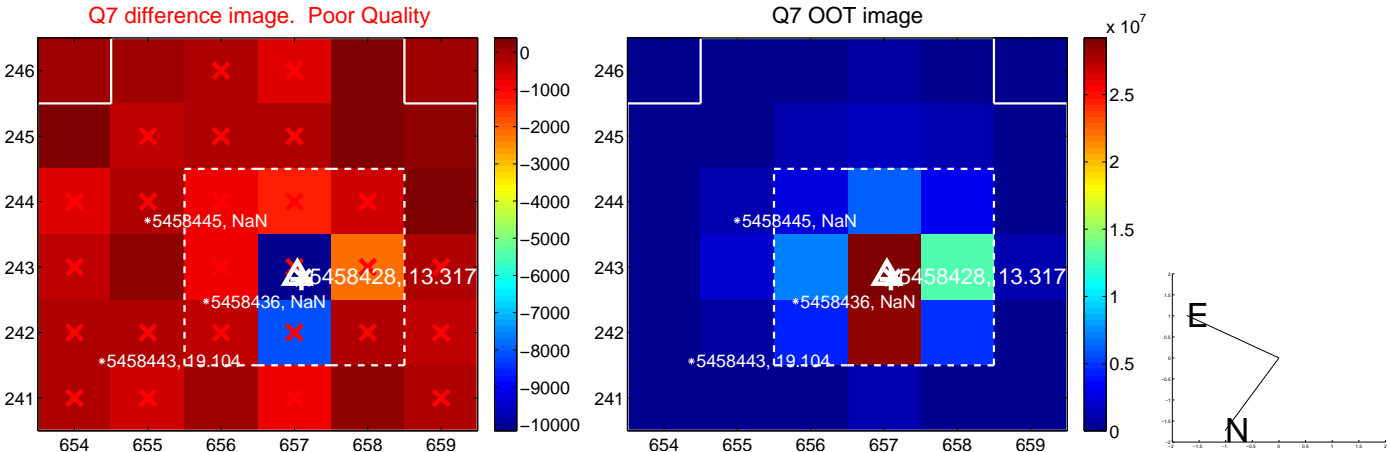
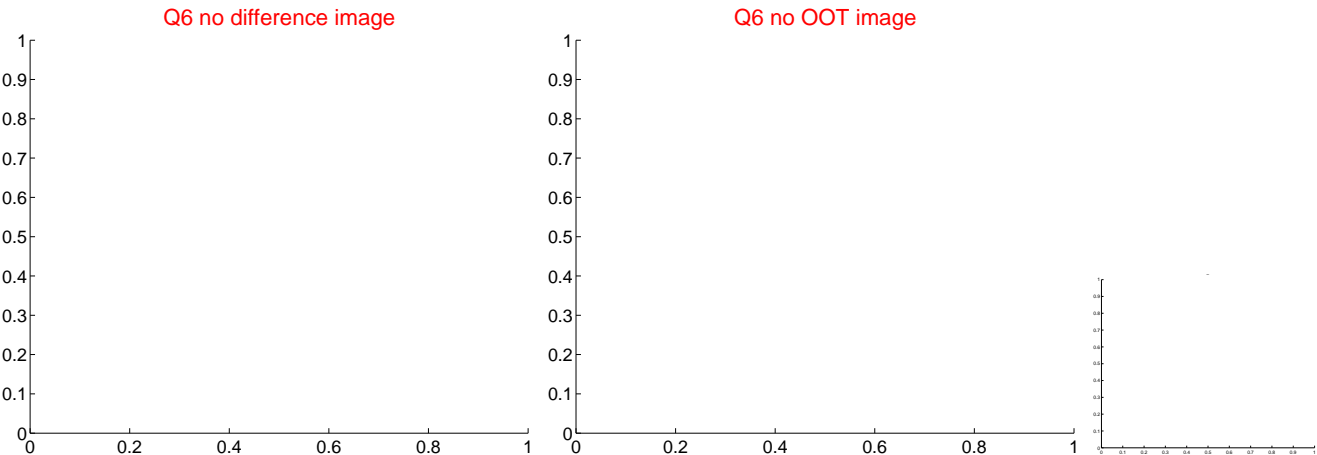
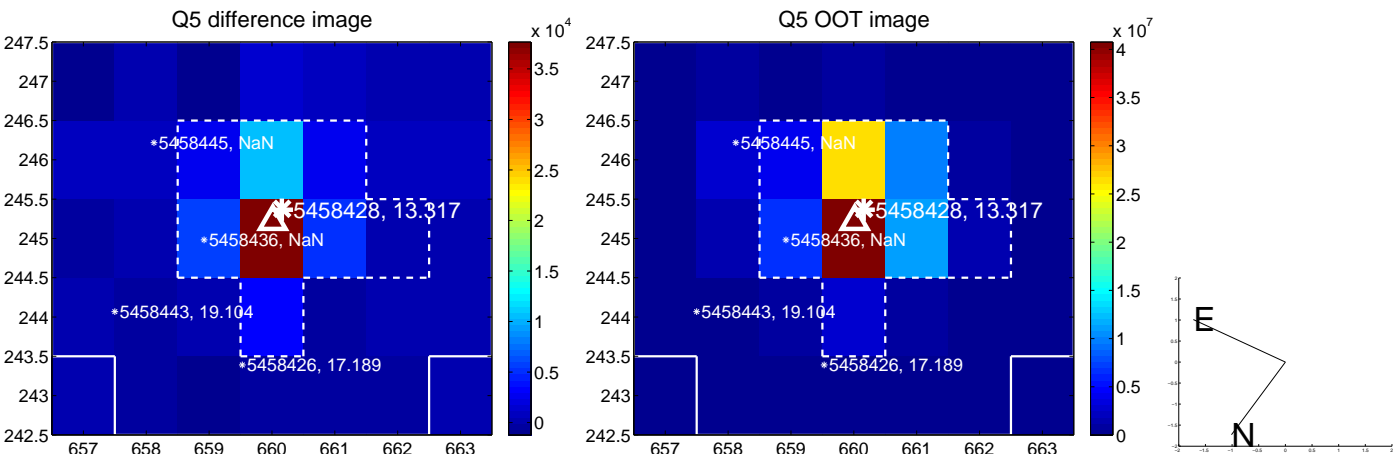


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

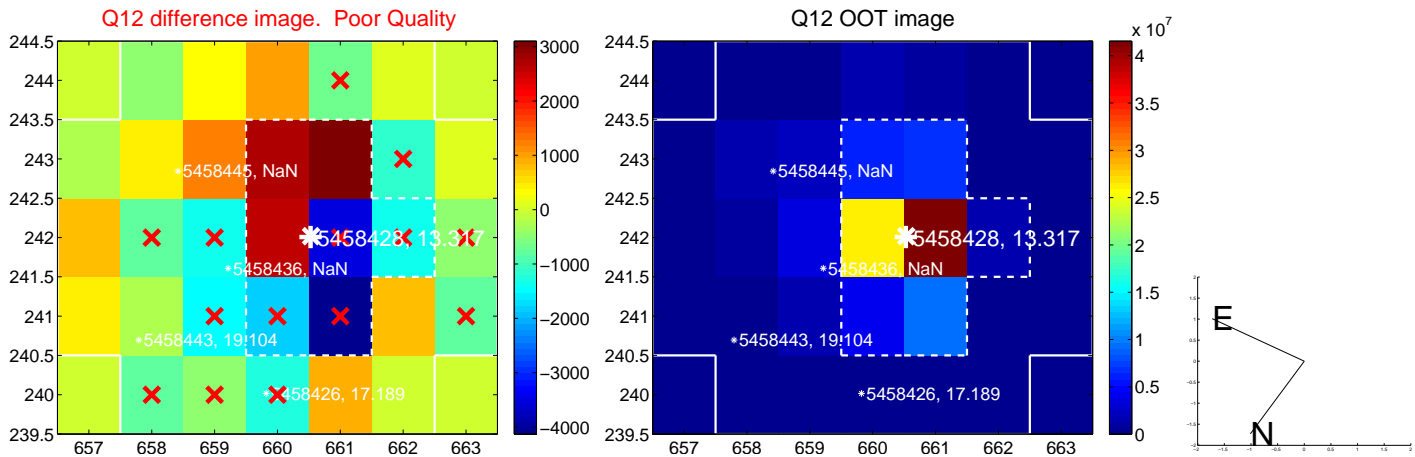
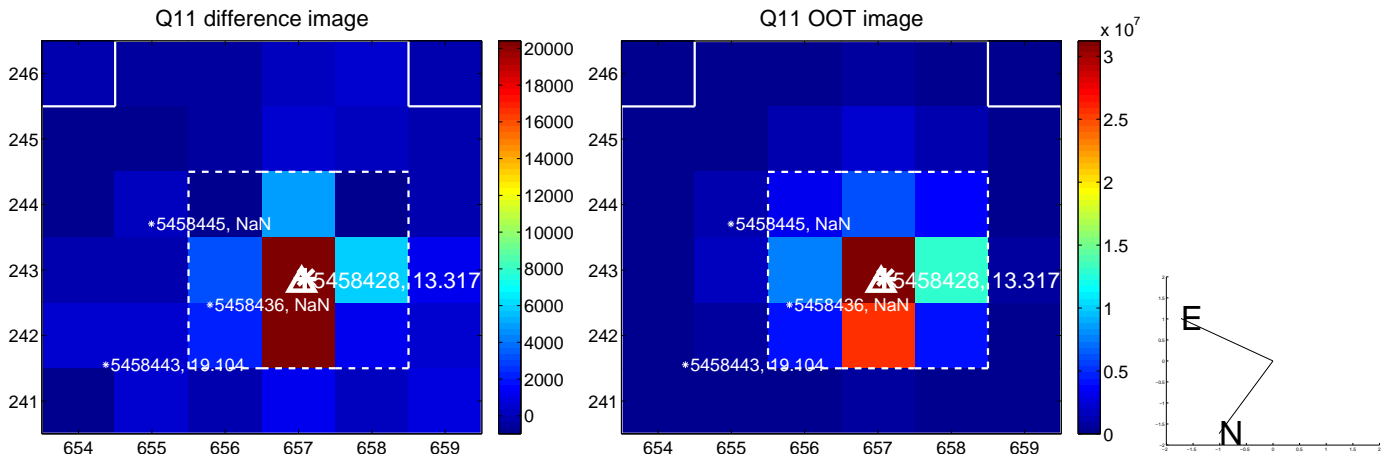
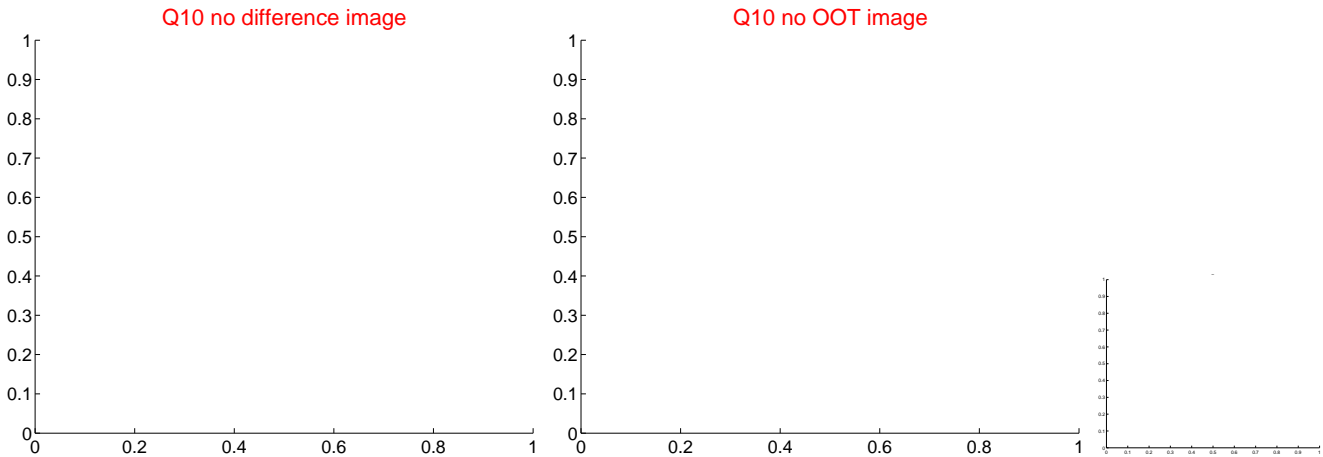
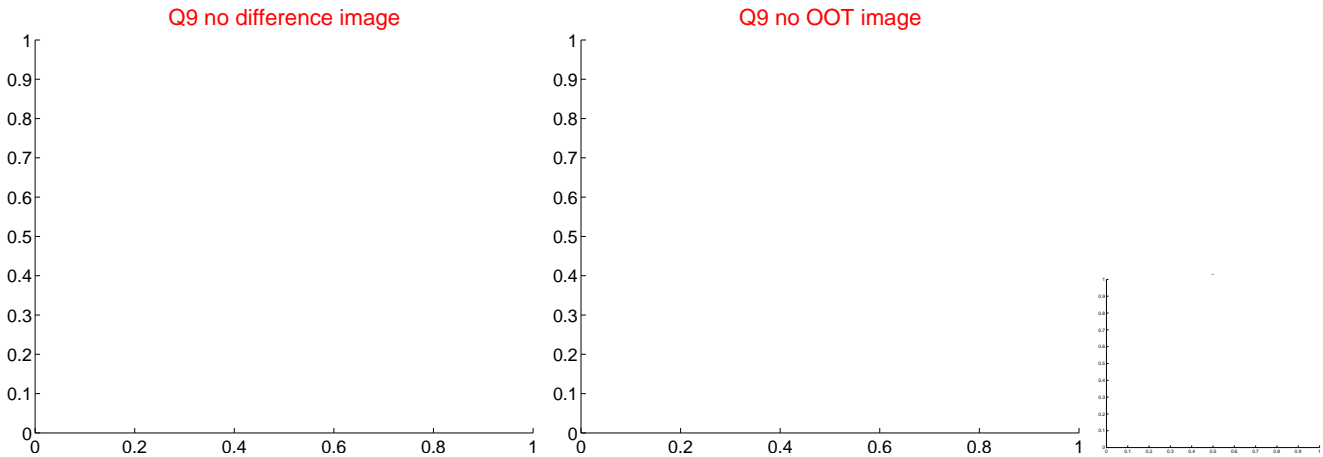
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



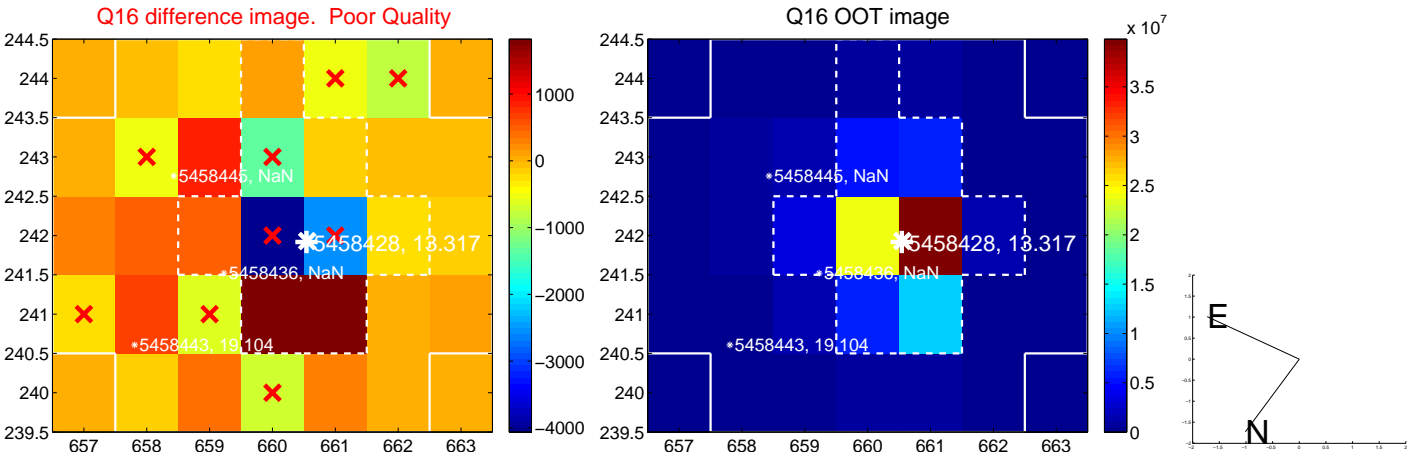
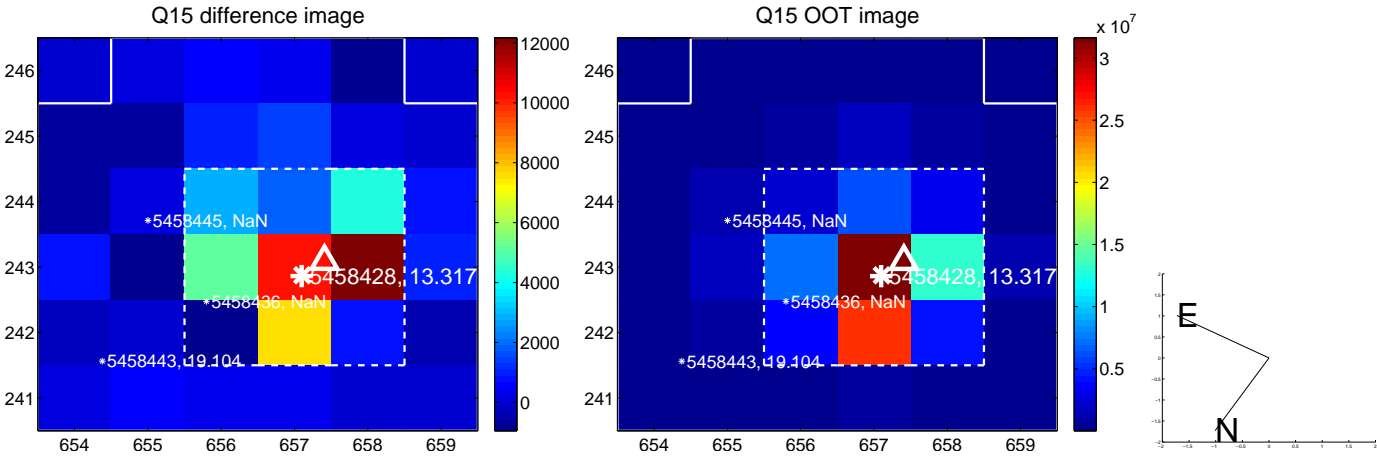
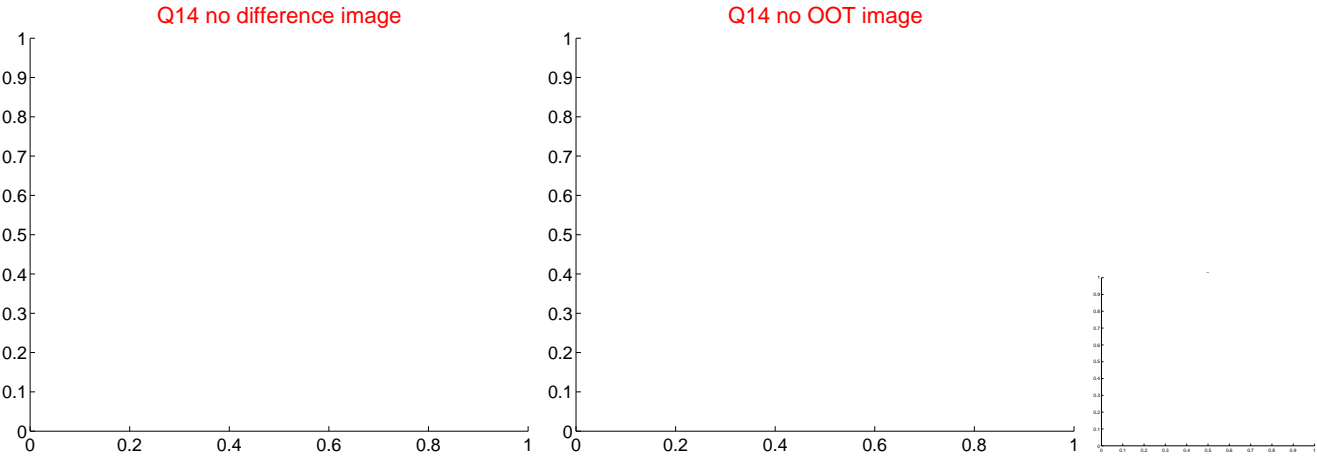
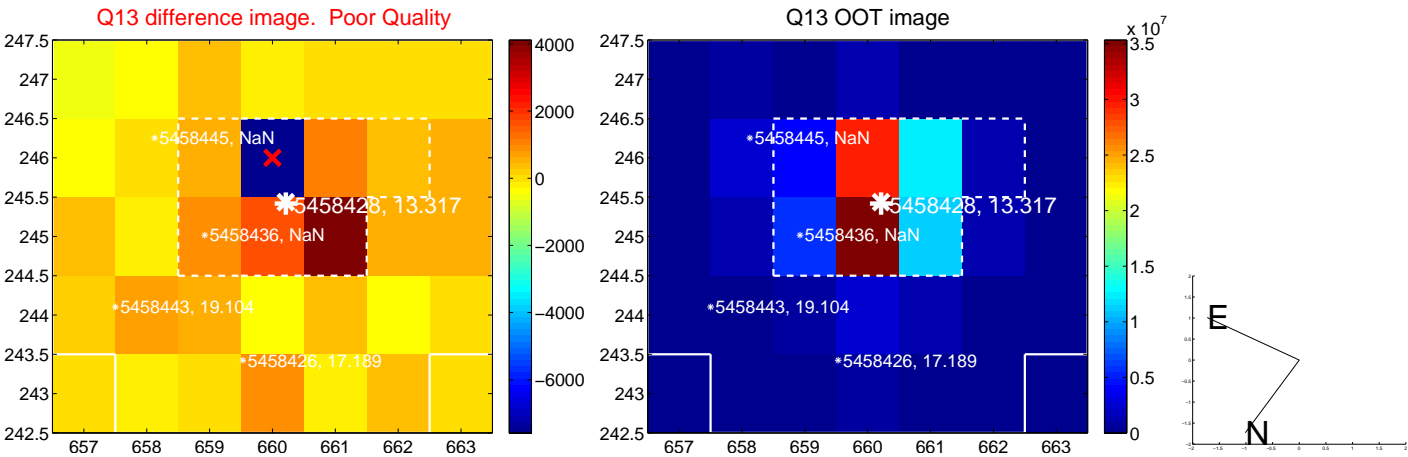
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



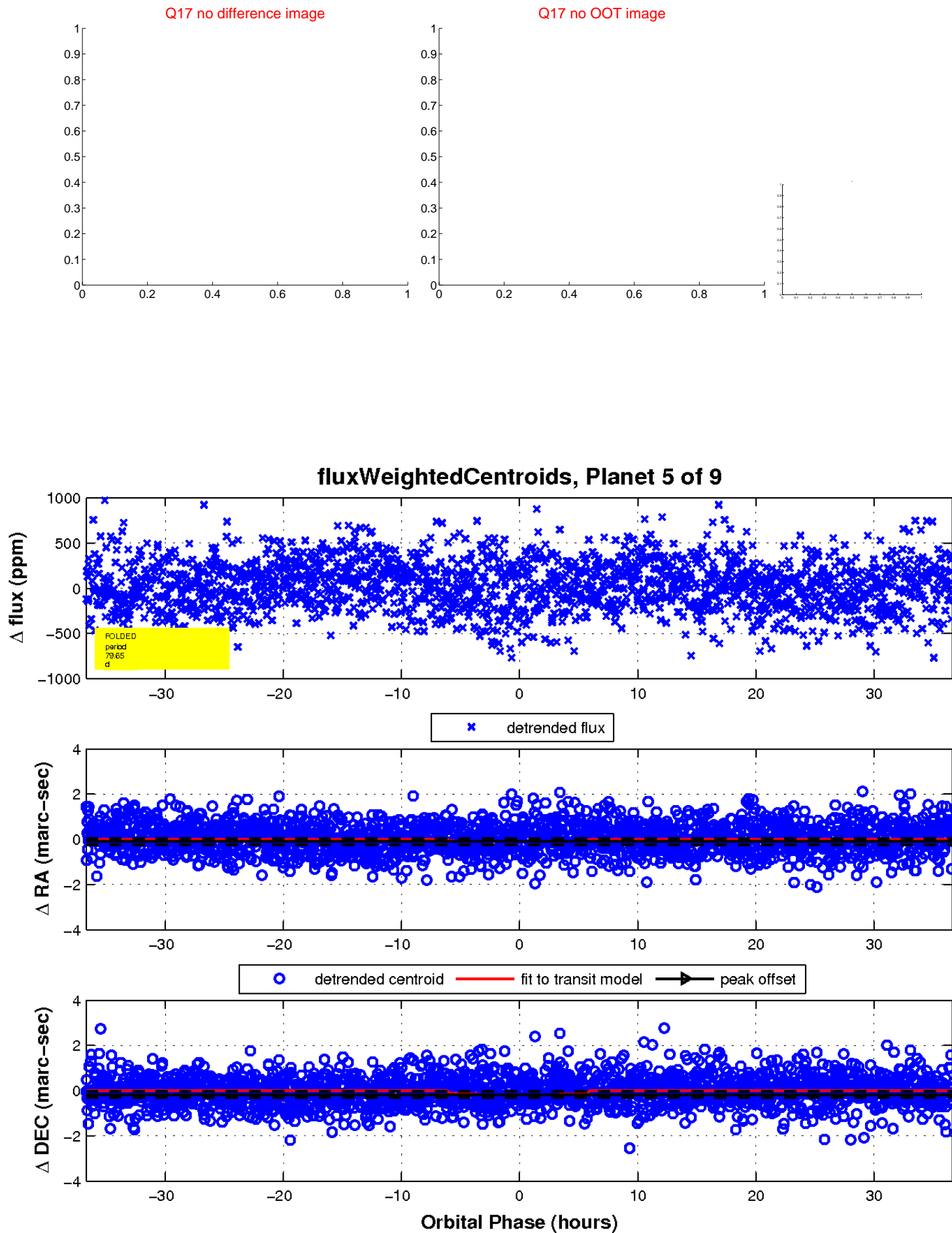
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

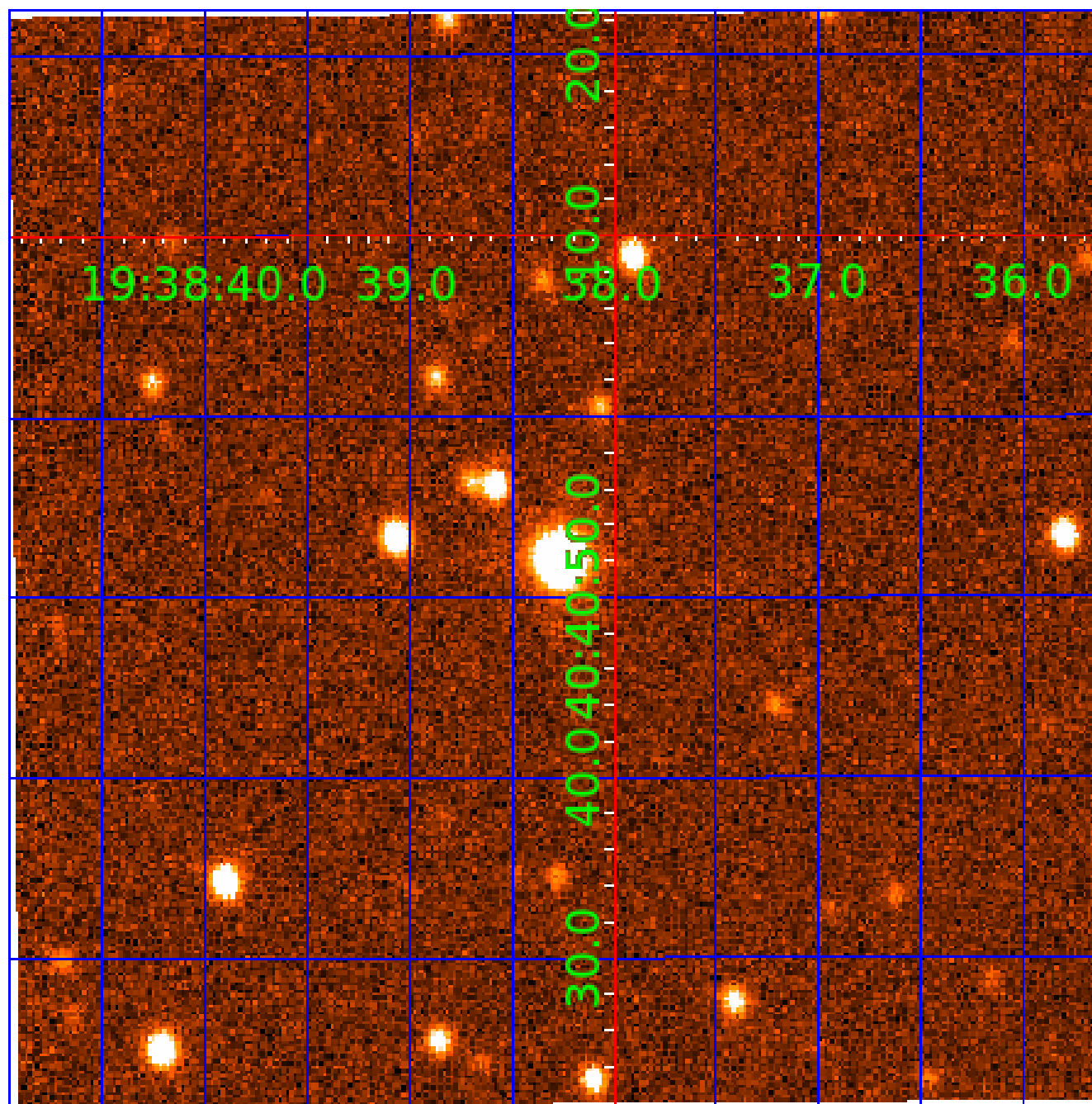


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005458428

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})
005458428-01	OBS	No	3.200651	132.084844	75.7	13.138	9.7	10.5	5.89	7059	6.53	23504.78
005458428-02	OBS	No	1.552378	132.735072	95.6	6.107	12.6	12.7	5.89	7059	7.80	61679.90
005458428-03	OBS	No	192.642735	275.519386	859.2	9.619	11.8	12.7	5.89	7059	25.56	99.65
005458428-04	OBS	No	69.381211	145.158500	466.6	8.103	10.3	9.1	5.89	7059	24.33	388.88
005458428-05	OBS	No	79.646495	159.557679	187.9	12.243	10.1	4.4	5.89	7059	8.65	323.53
005458428-06	OBS	No	349.011885	405.827424	479.6	10.909	9.7	8.3	5.89	7059	13.90	45.12
005458428-07	OBS	No	123.393120	150.298424	623.0	6.194	9.5	9.8	5.89	7059	27.82	180.48
005458428-08	OBS	No	53.481893	134.251969	293.6	11.976	9.5	7.7	5.89	7059	11.10	550.21
005458428-09	OBS	No	40.566928	167.259507	178.9	9.000	10.0	-1.0	5.89	7059	7.95	795.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005458428-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
005458428-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005458428-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005458428-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
005458428-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

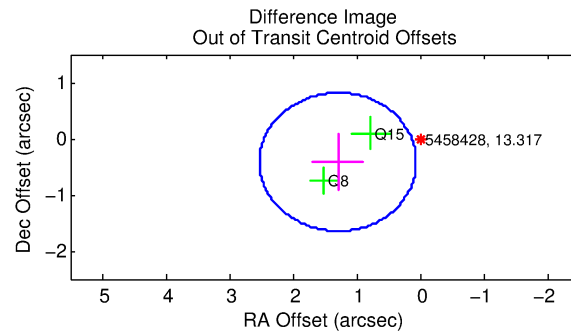
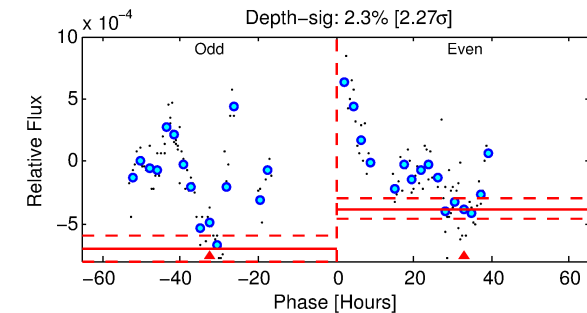
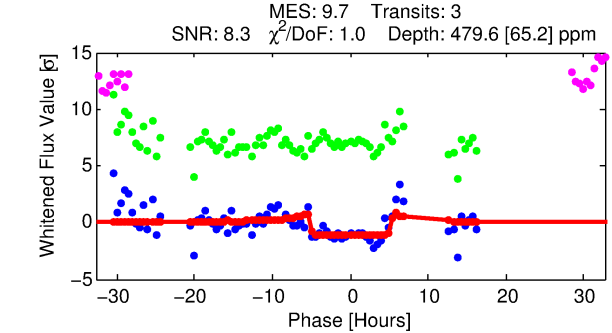
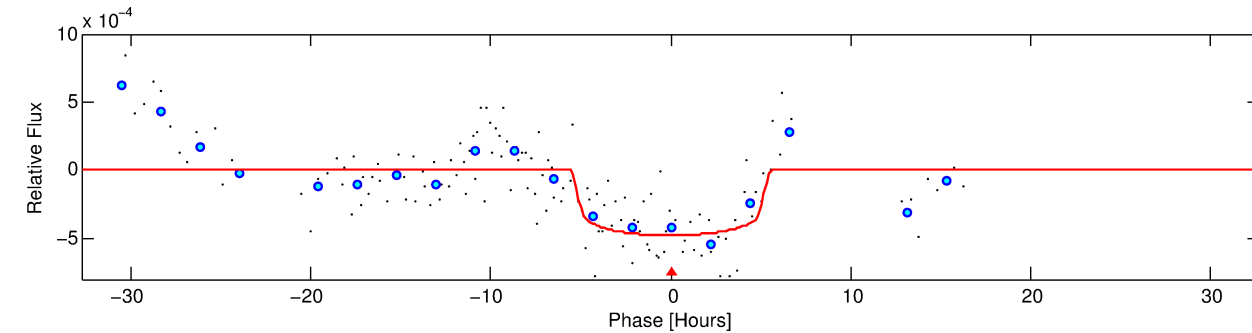
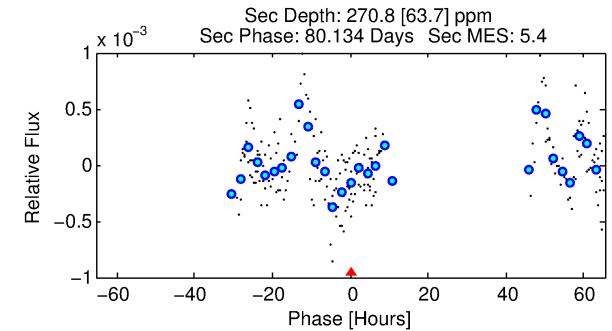
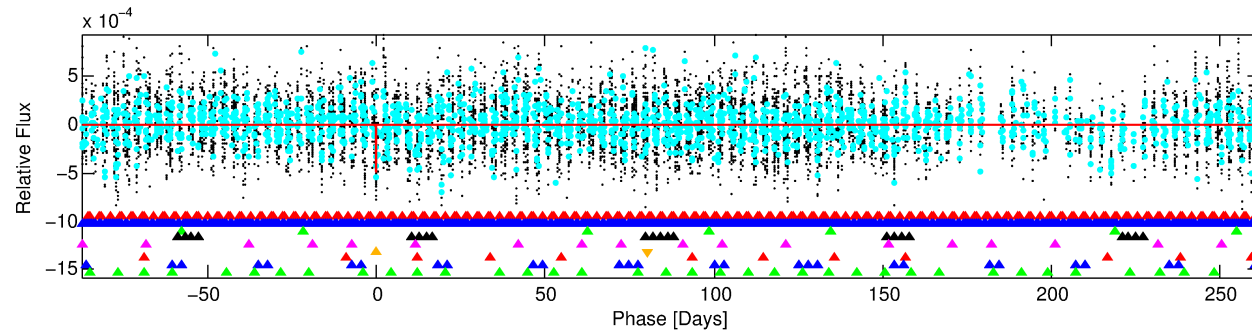
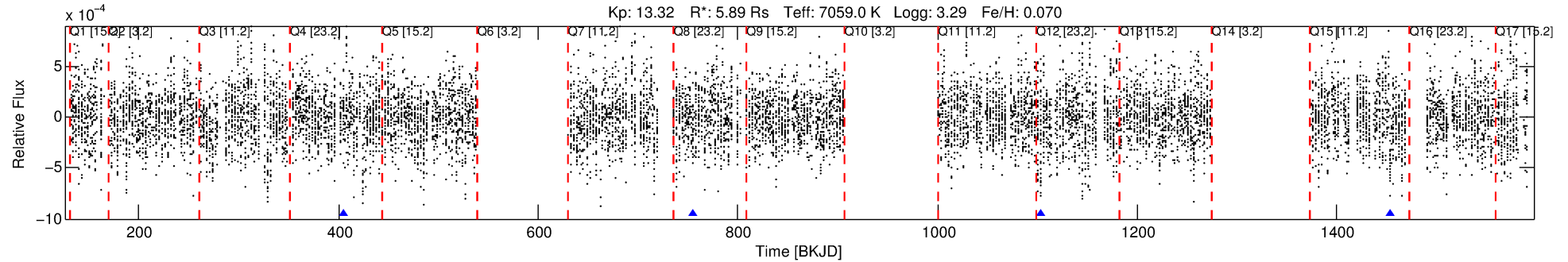
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005458428-06

No Significant Match Found

DV One-Page Summary

KIC: 5458428 Candidate: 6 of 9 Period: 349.012 d



DV Fit Results:

Period = 349.01188 [0.01352] d
Epoch = 405.8274 [0.0294] BKJD
Rp/R* = 0.0216 [0.0062]
a/R* = 176.73 [285.48]
b = 0.72 [1.08]
Seff = 45.12 [34.02]
Teq = 661 [125] K
Rp = 13.90 [7.78] Re
a = 1.3088 [0.6048] AU
Ag = 1320.13 [1277.01] [1.03 σ]
Teffp = 6159 [984] K [5.54 σ]

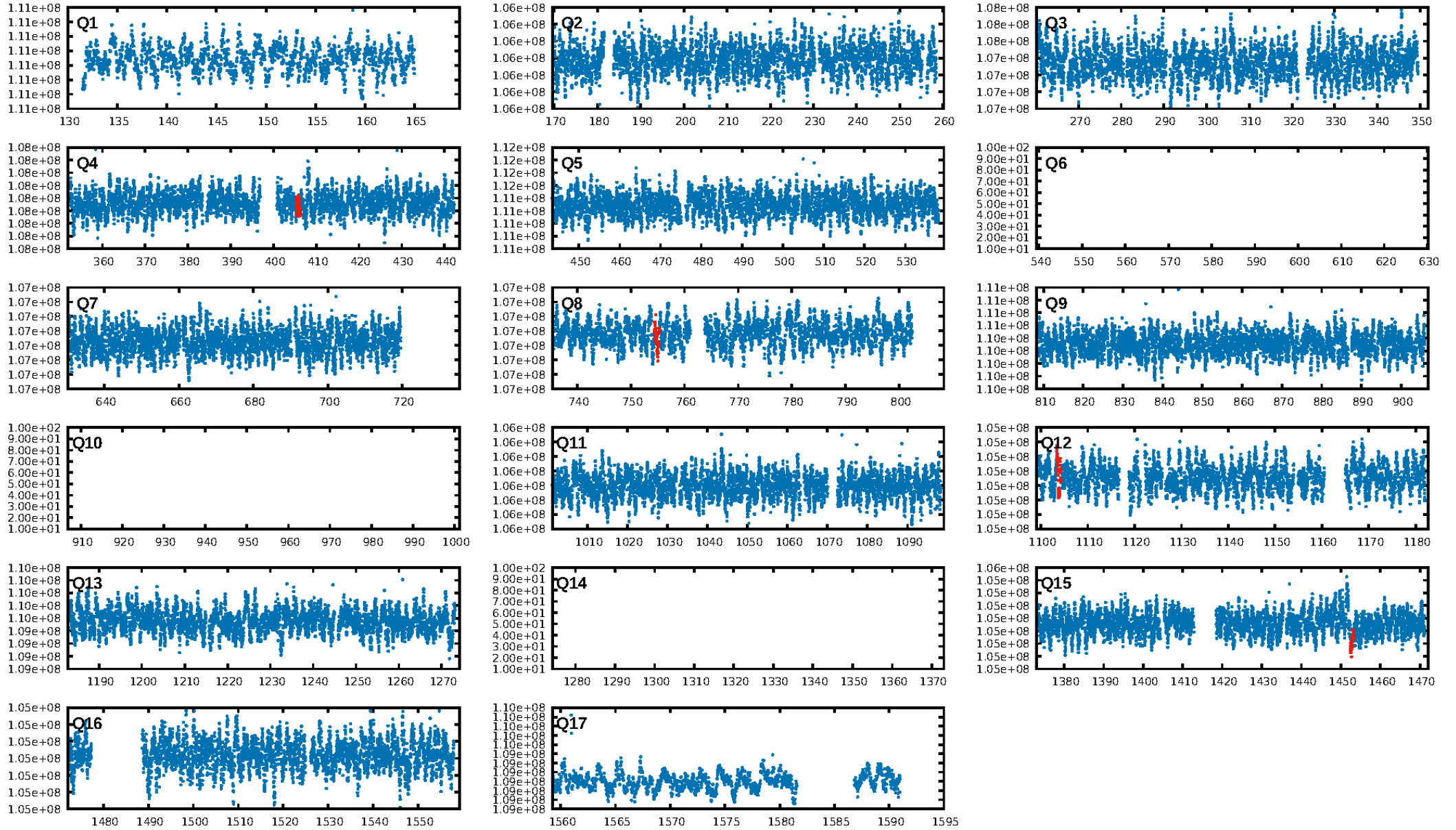
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [258.04 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 66.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -6.122
Centroid-sig: 41.5%
Centroid-so: 0.624 arcsec [1.20 σ]
OotOffset-rm: 1.359 arcsec [3.31 σ]
KicOffset-rm: 1.318 arcsec [2.95 σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/3]

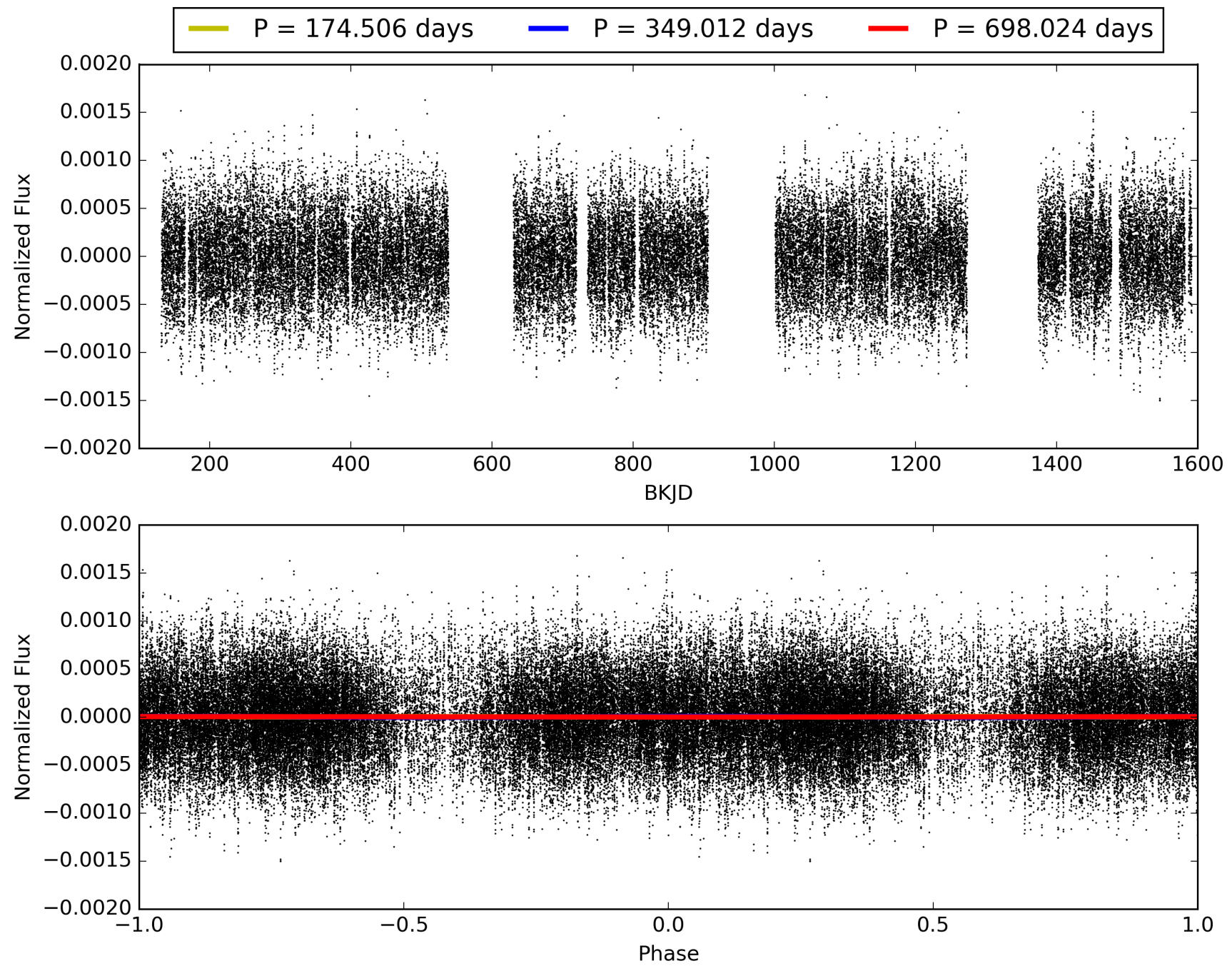
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005458428-06, PDC Light Curves

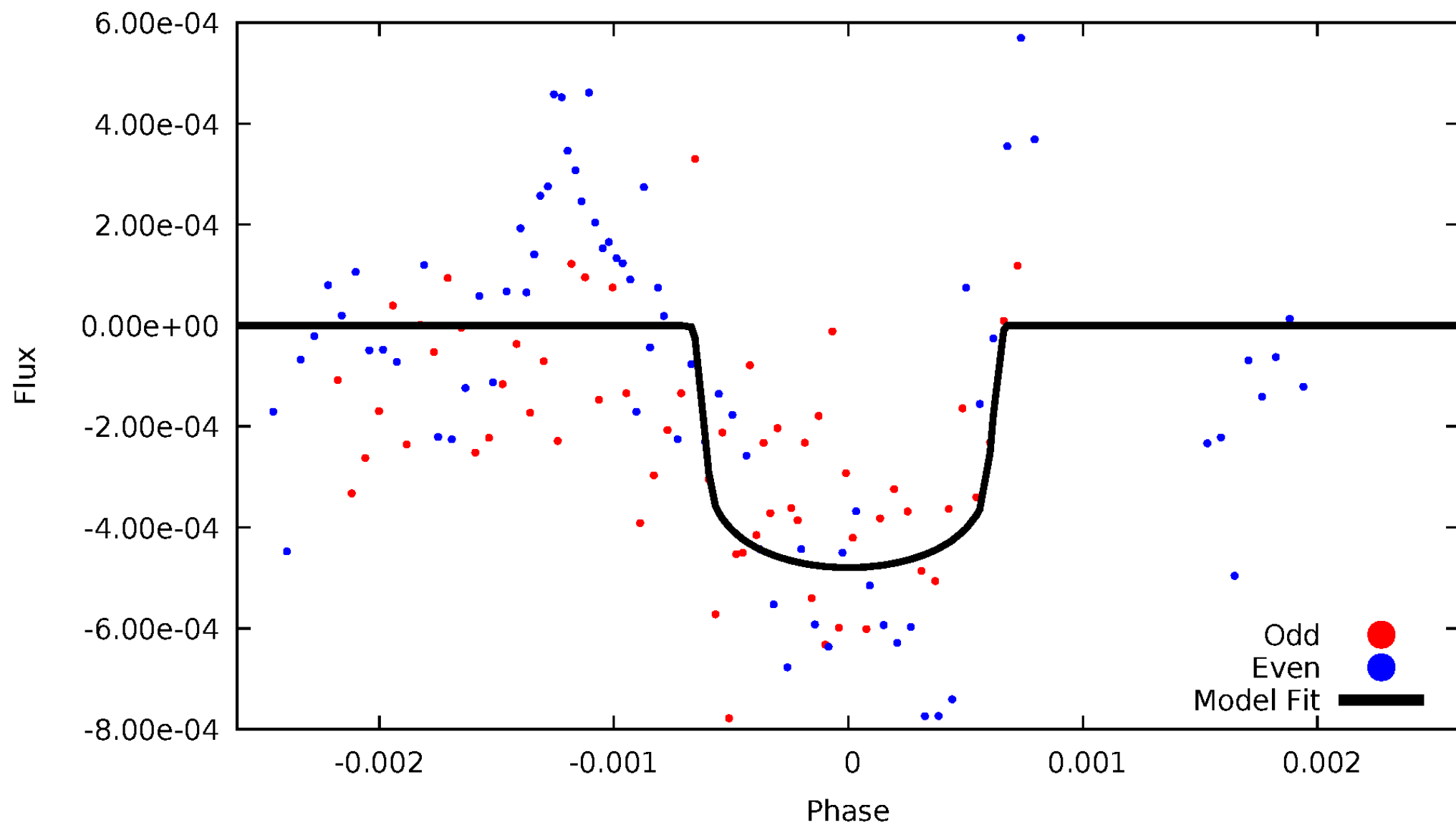


TCE 005458428-06



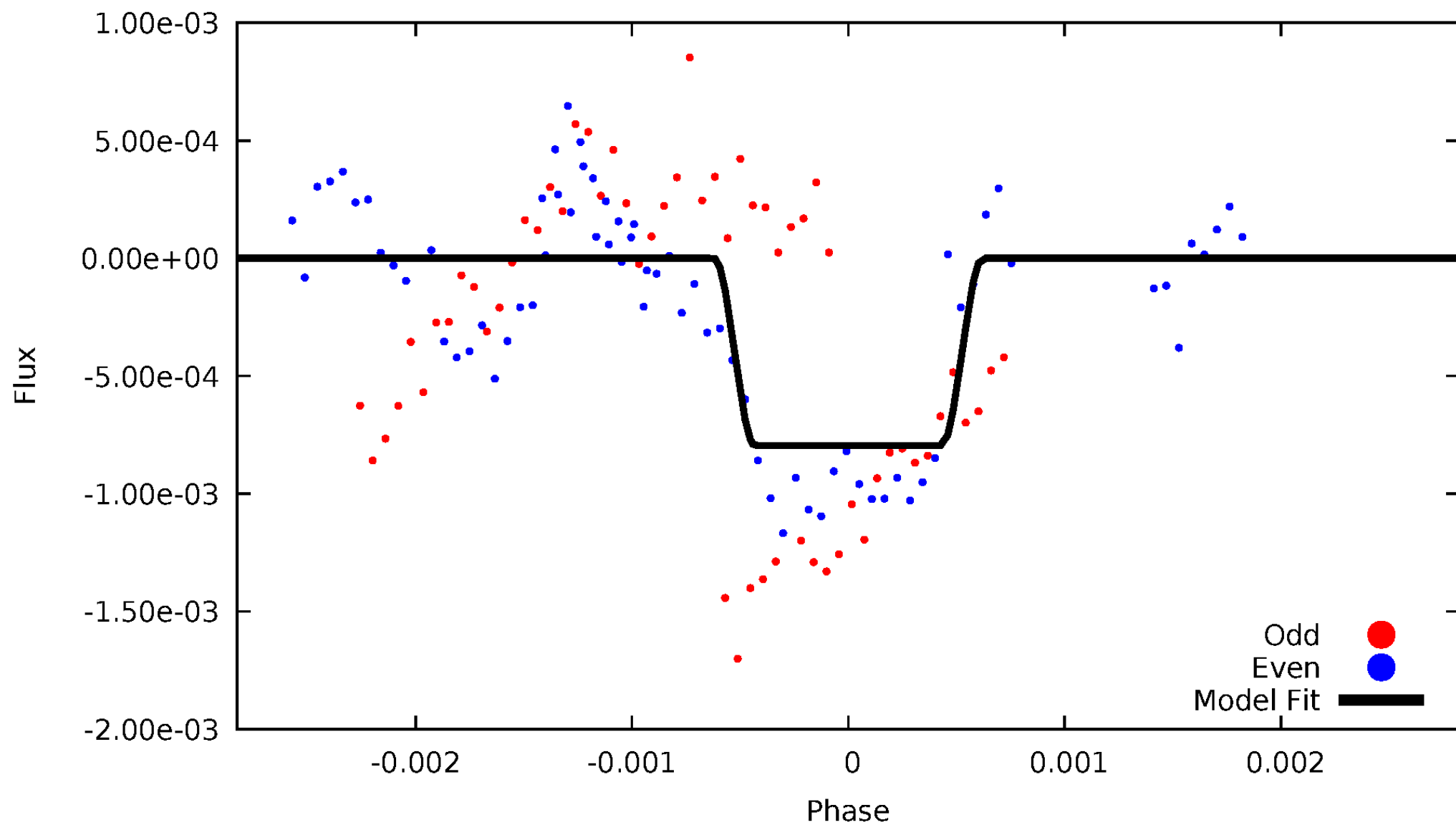
DV Odd/Even

TCE 005458428-06



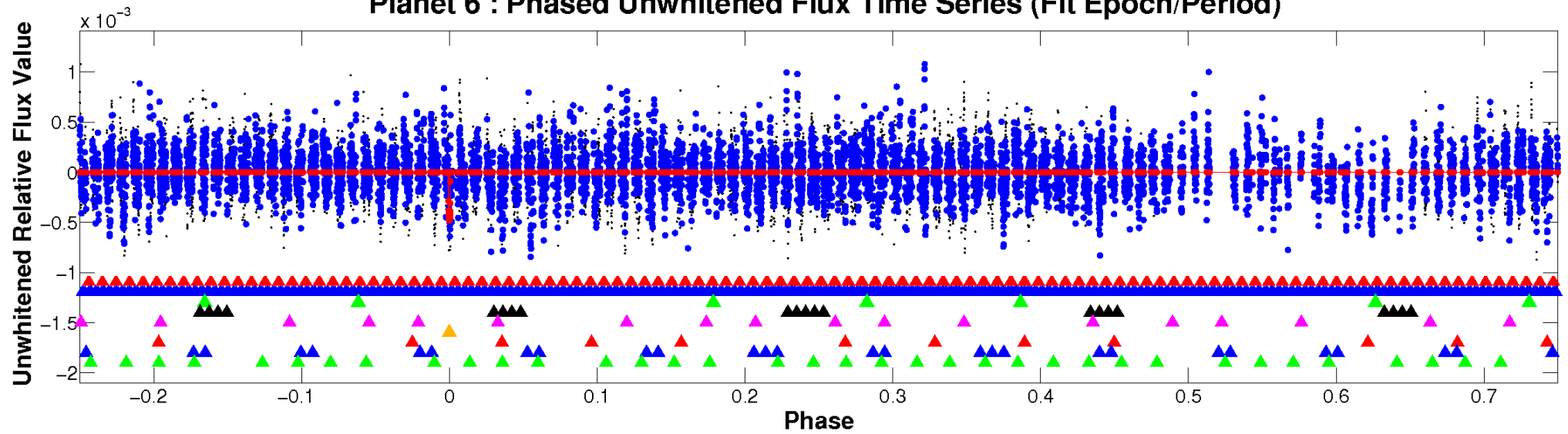
ALT Odd/Even

TCE 005458428-06

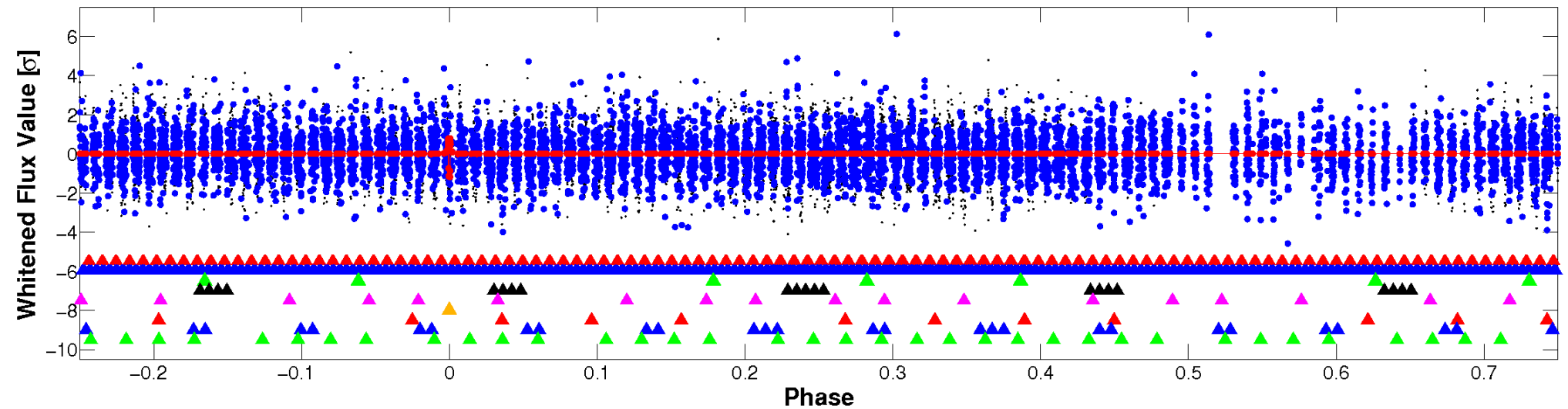


Non-Whitened Vs. Whitened Light Curve

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



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



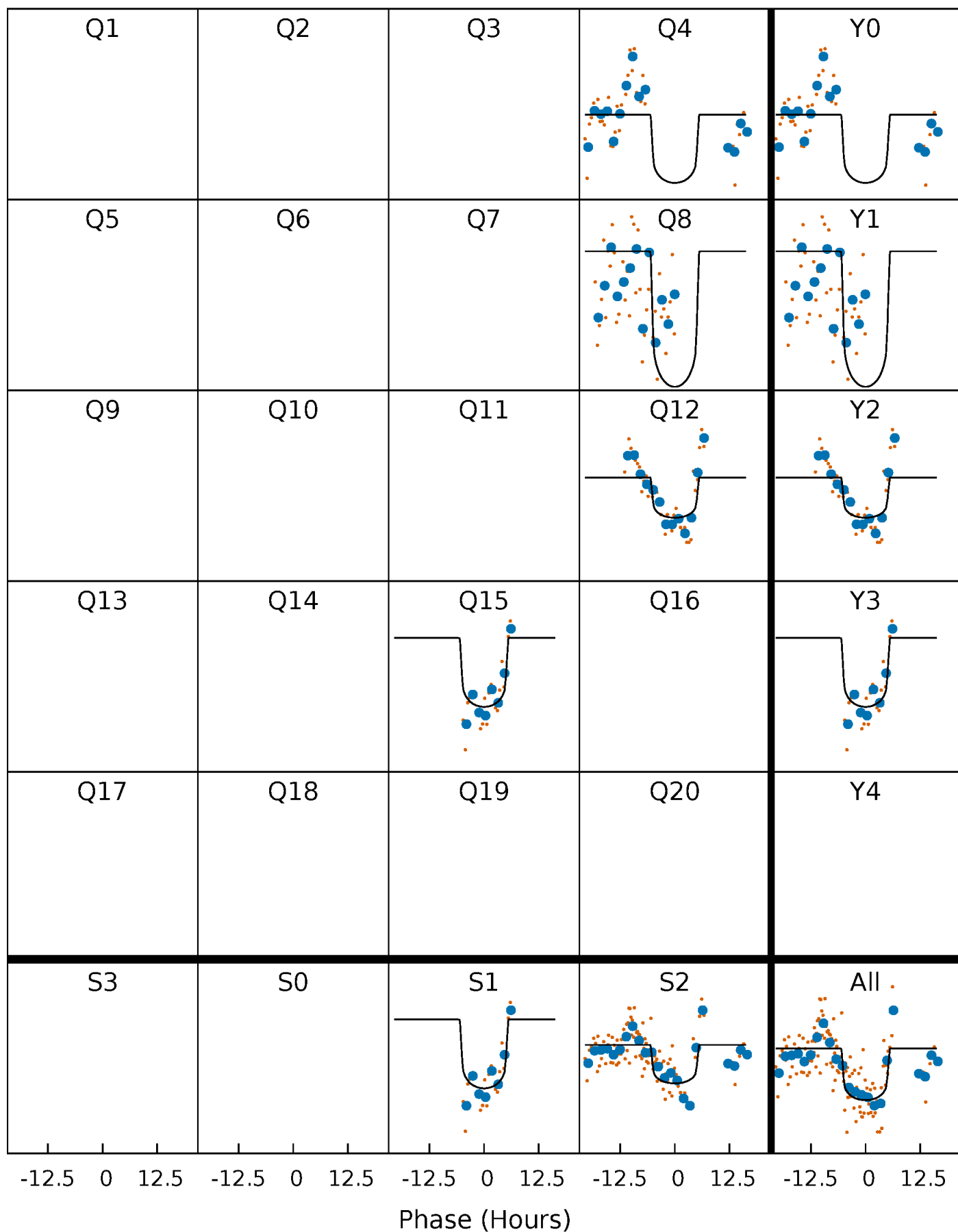
PDC Quarter-Phased Transit Curves

TCE 005458428-06 $P=349.011885$ Days $T_0=405.827424$ (BKJD)



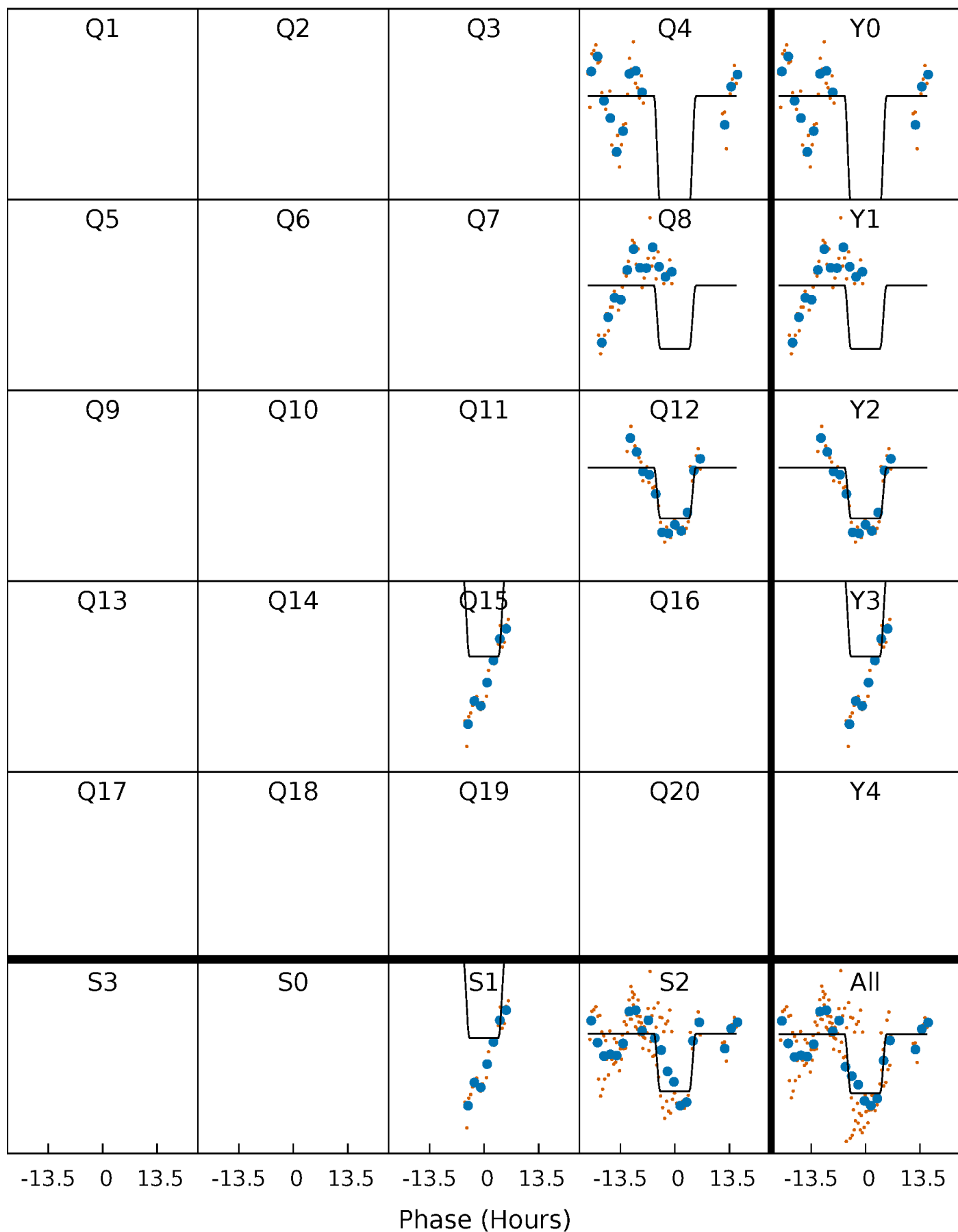
DV Quarter-Phased Transit Curves

TCE 005458428-06 P=349.011885 Days $T_0=405.827424$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

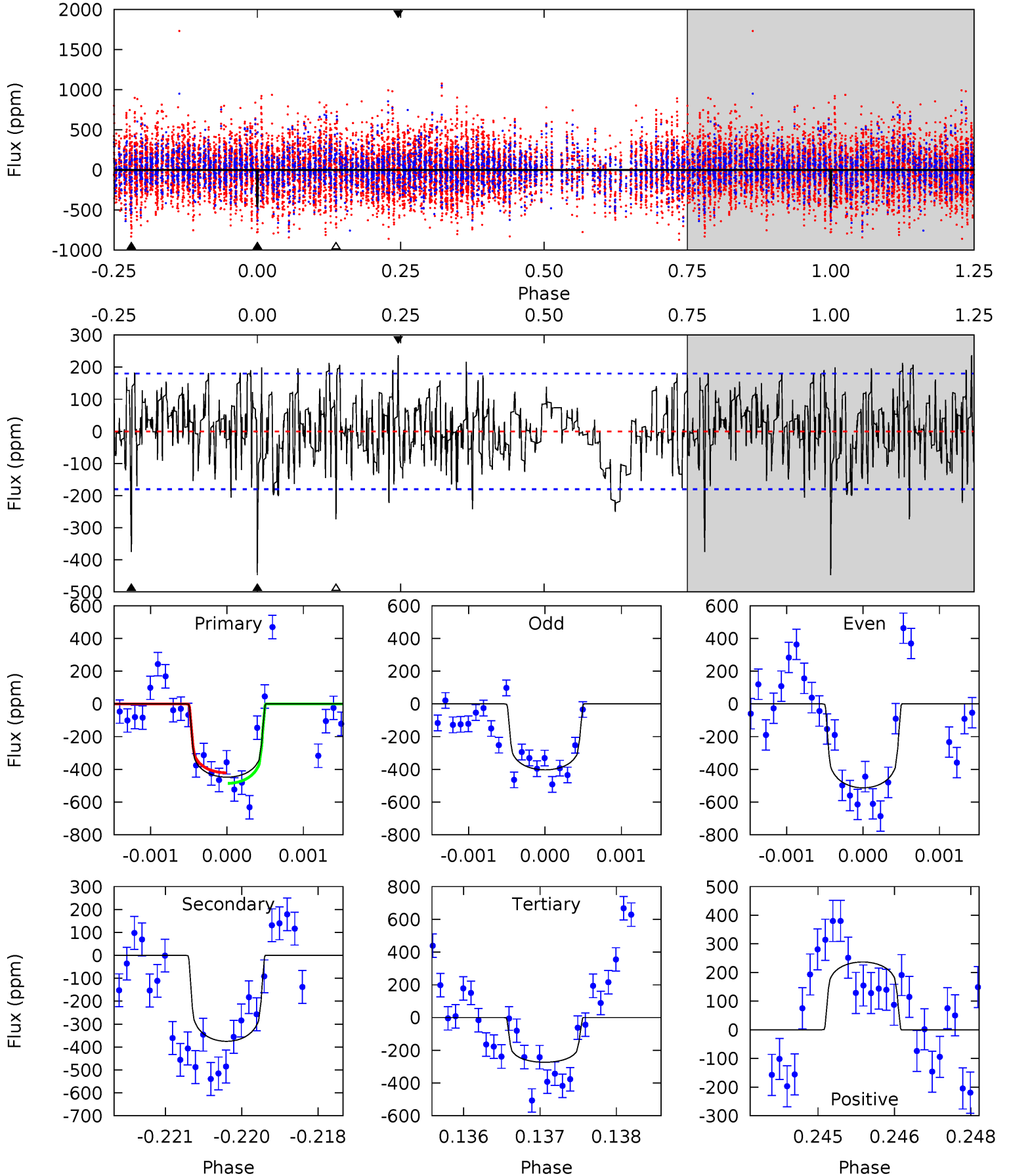
TCE 005458428-06 P=348.998394 Days $T_0=405.868915$ (BKJD)



DV Model-Shift Uniqueness Test

005458428-06, $P = 349.011885$ Days, $E = 56.815539$ Days

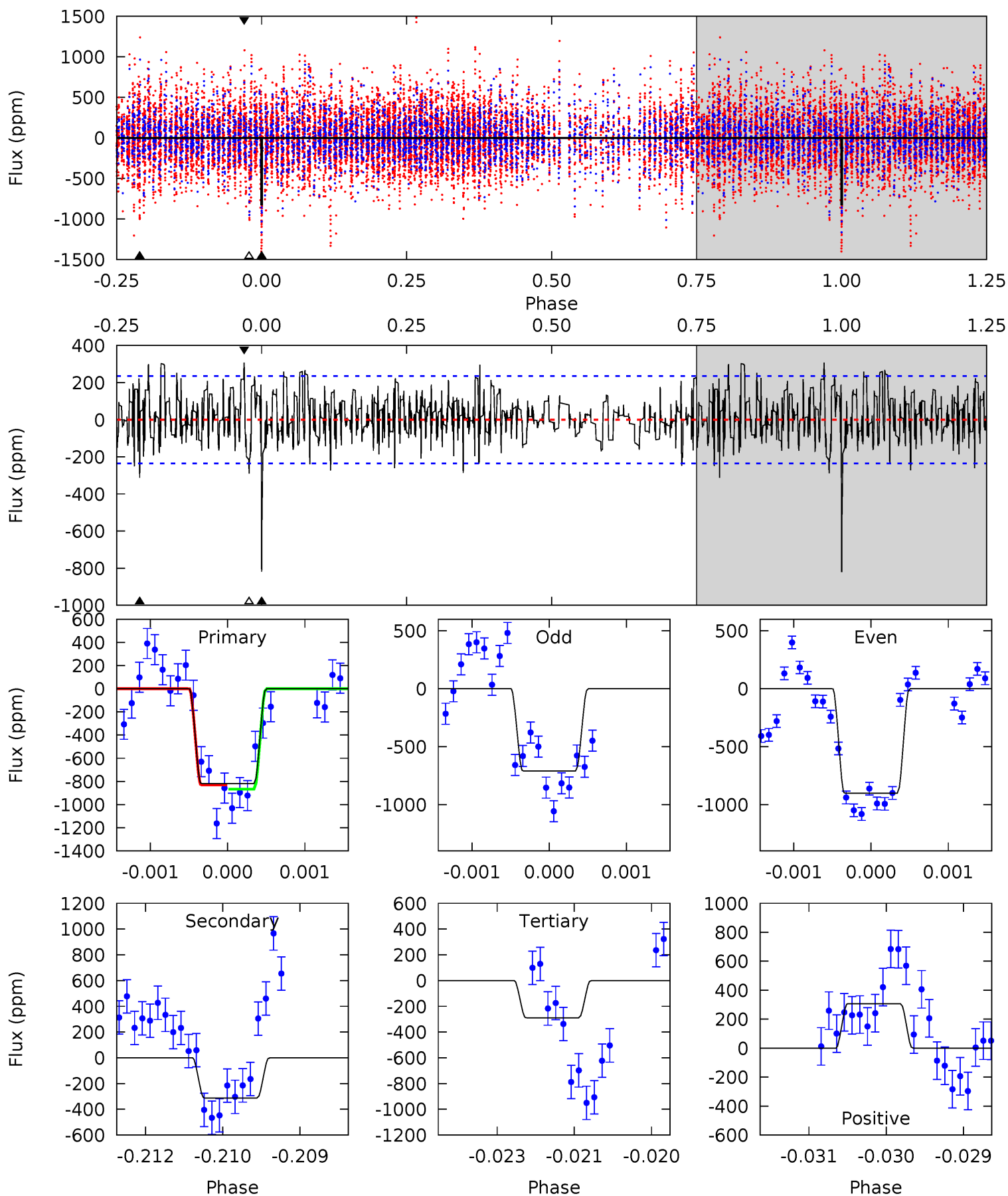
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	11.2	8.19	7.10	5.40	3.21	2.41	5.23	6.32	3.06	4.15	1.64	0.85	0.35	0.96



Alt Model-Shift Uniqueness Test

005458428-06, P = 348.998394 Days, E = 56.870521 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.8	7.17	6.63	7.05	5.41	3.23	2.13	12.2	11.8	0.54	0.12	2.28	0.68	0.27	0.40



Stellar Parameters For KIC 005458428

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7059^{+168}_{-252}	$3.287^{+0.435}_{-0.145}$	$0.070^{+0.200}_{-0.300}$	$5.894^{+1.521}_{-2.825}$	$2.453^{+0.165}_{-0.662}$	$0.017^{+0.077}_{-0.008}$
	+2%/-4%	+13%/-4%	+286%/-429%	+26%/-48%	+7%/-27%	+456%/-45%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005458428-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-375 ± 33	$12.23^{+5.11}_{-4.35}$	900^{+74}_{-110}	6704^{+1532}_{-841}	2246^{+3279}_{-1076}
Alt.	-312 ± 44	$16.74^{+5.51}_{-5.08}$	904^{+70}_{-109}	5516^{+699}_{-483}	1004^{+1127}_{-443}

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 $A_{obs} \gg 1.0$

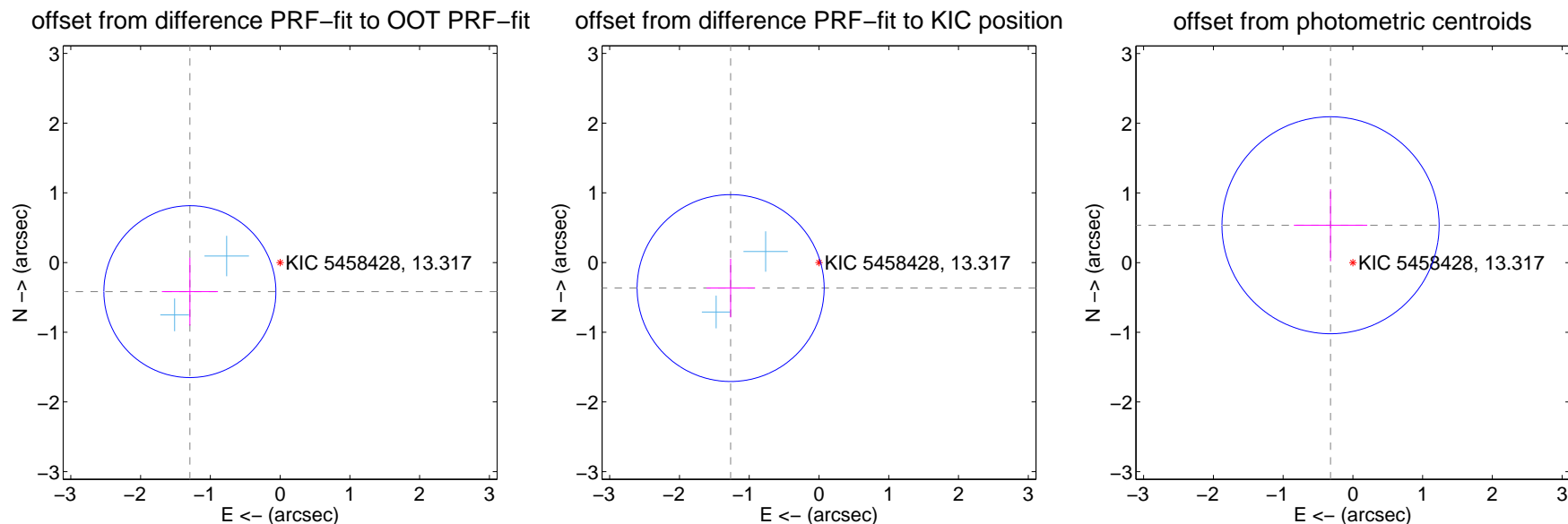
DV Centroid Data

Supplemental centroid analysis for 005458428-06. Kepler magnitude: 13.32. Transit SNR 8.30

There are 2 quarters with good PRF difference image offsets

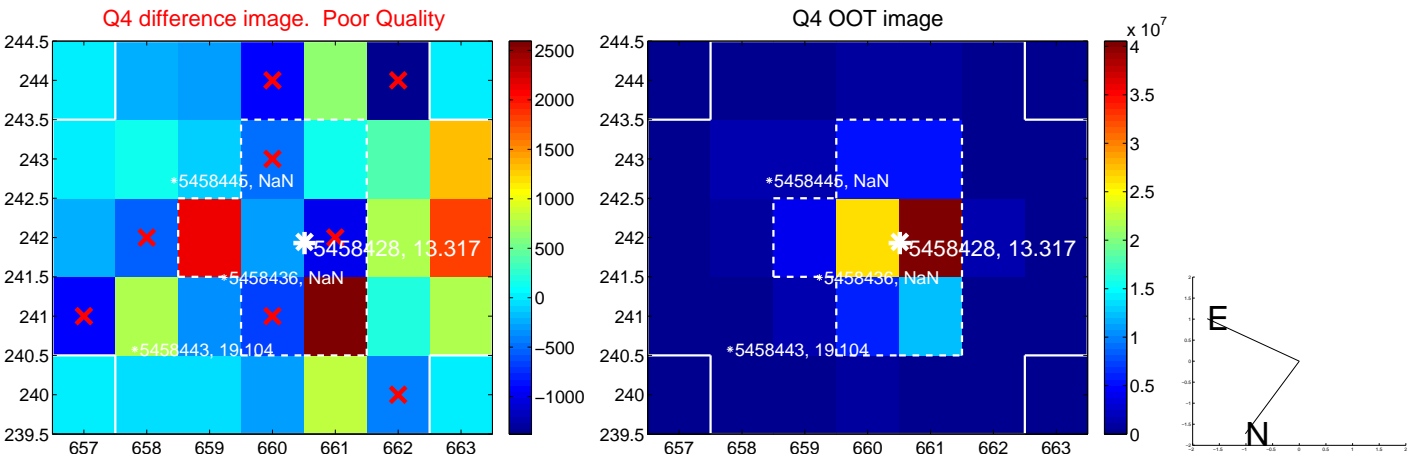
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.359 \pm 0.411	3.31	1.293 \pm 0.402	-0.417 \pm 0.487
PRF-fit source offset from KIC position	1.318 \pm 0.447	2.95	1.266 \pm 0.346	-0.366 \pm 0.421
photometric centroid source offset	0.62 \pm 0.52	1.20	0.32 \pm 0.53	0.54 \pm 0.52



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

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



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

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



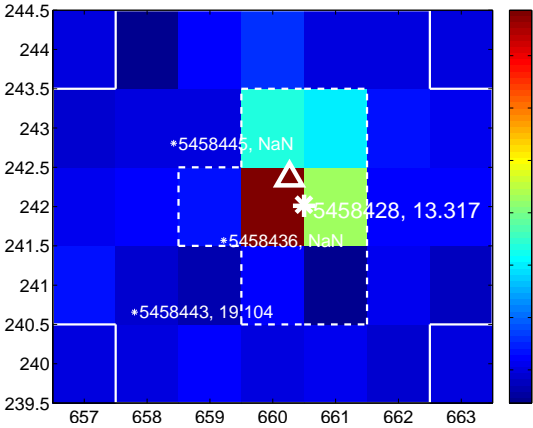
Q7 no difference image



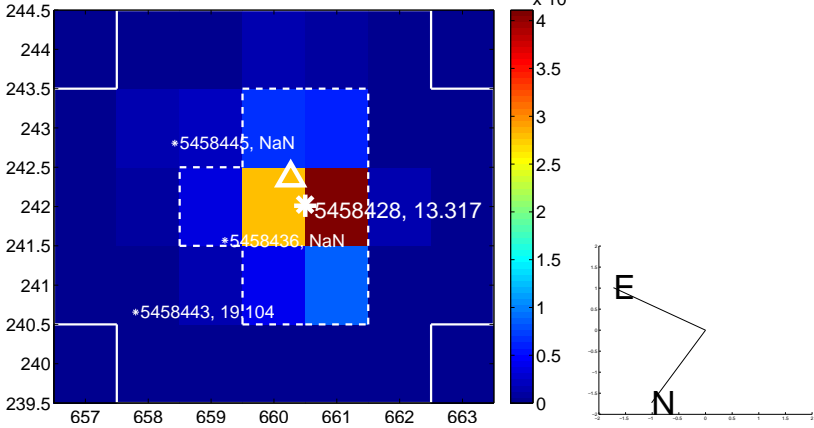
Q7 no OOT image



Q8 difference image



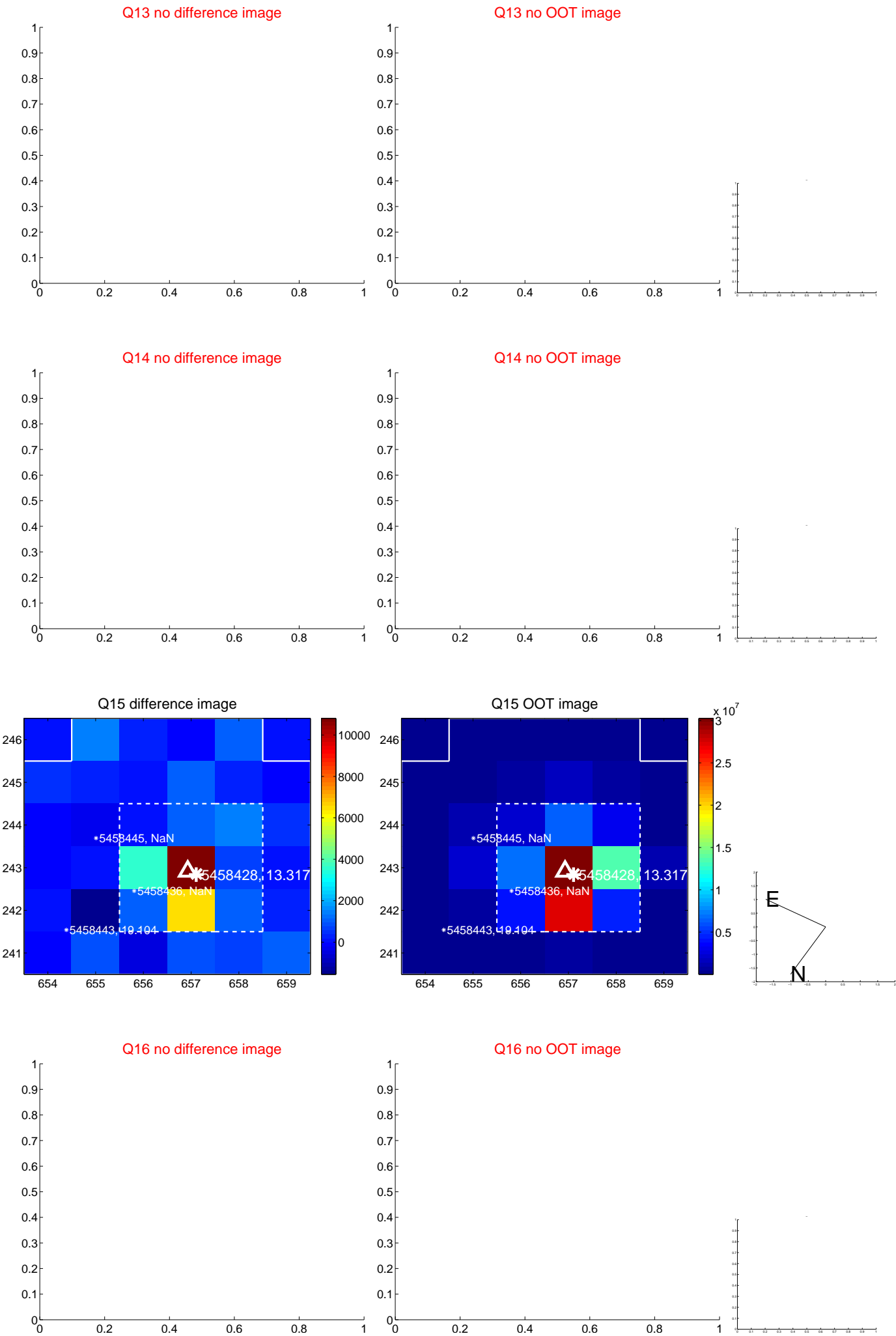
Q8 OOT image



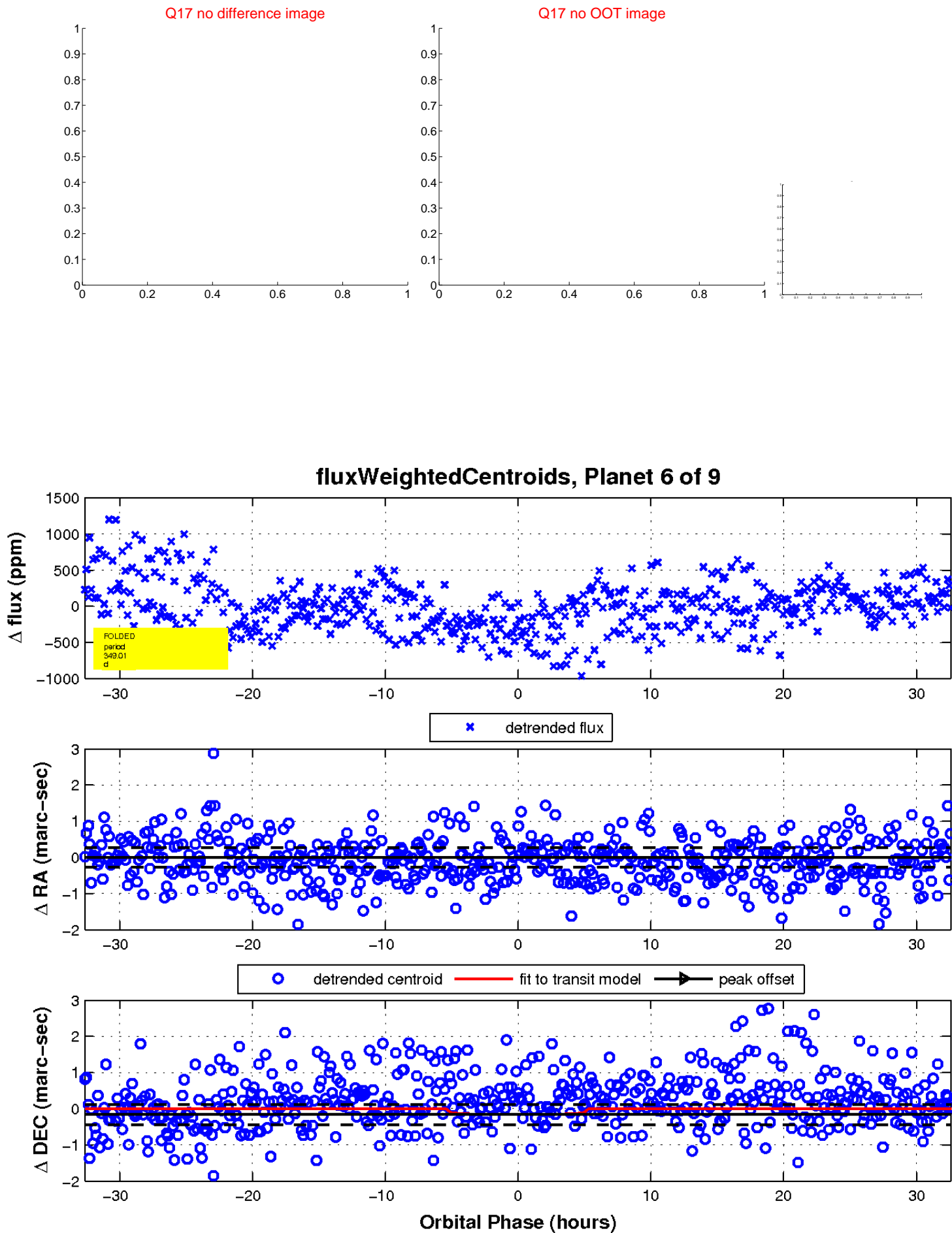
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

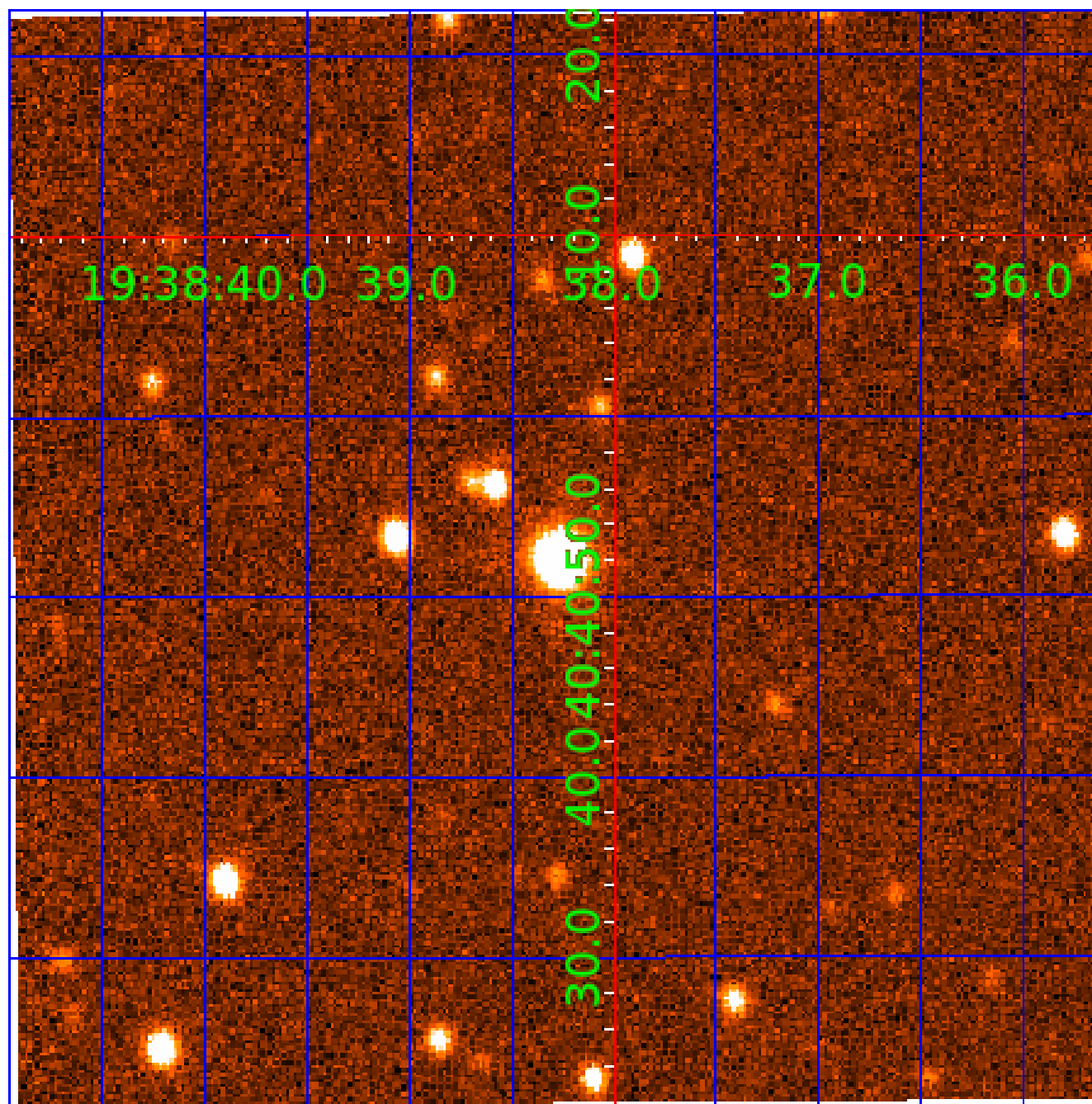


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005458428

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})
005458428-01	OBS	No	3.200651	132.084844	75.7	13.138	9.7	10.5	5.89	7059	6.53	23504.78
005458428-02	OBS	No	1.552378	132.735072	95.6	6.107	12.6	12.7	5.89	7059	7.80	61679.90
005458428-03	OBS	No	192.642735	275.519386	859.2	9.619	11.8	12.7	5.89	7059	25.56	99.65
005458428-04	OBS	No	69.381211	145.158500	466.6	8.103	10.3	9.1	5.89	7059	24.33	388.88
005458428-05	OBS	No	79.646495	159.557679	187.9	12.243	10.1	4.4	5.89	7059	8.65	323.53
005458428-06	OBS	No	349.011885	405.827424	479.6	10.909	9.7	8.3	5.89	7059	13.90	45.12
005458428-07	OBS	No	123.393120	150.298424	623.0	6.194	9.5	9.8	5.89	7059	27.82	180.48
005458428-08	OBS	No	53.481893	134.251969	293.6	11.976	9.5	7.7	5.89	7059	11.10	550.21
005458428-09	OBS	No	40.566928	167.259507	178.9	9.000	10.0	-1.0	5.89	7059	7.95	795.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005458428-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
005458428-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005458428-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005458428-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
005458428-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

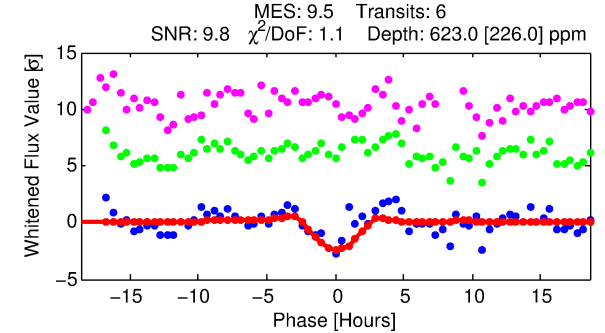
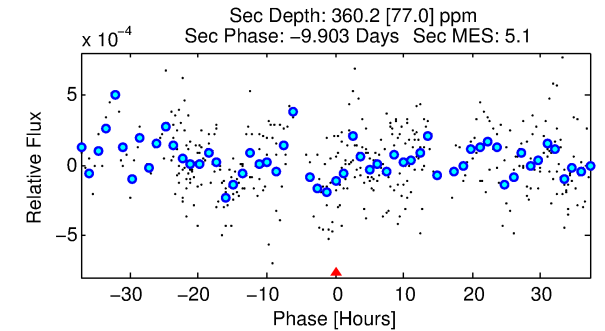
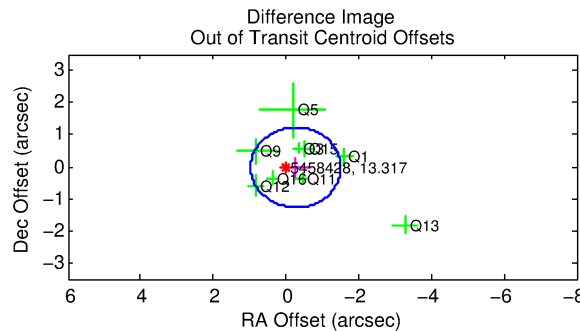
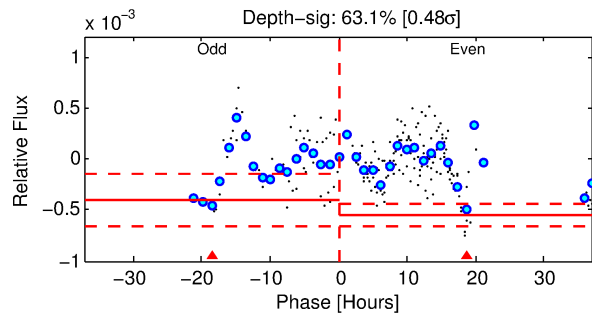
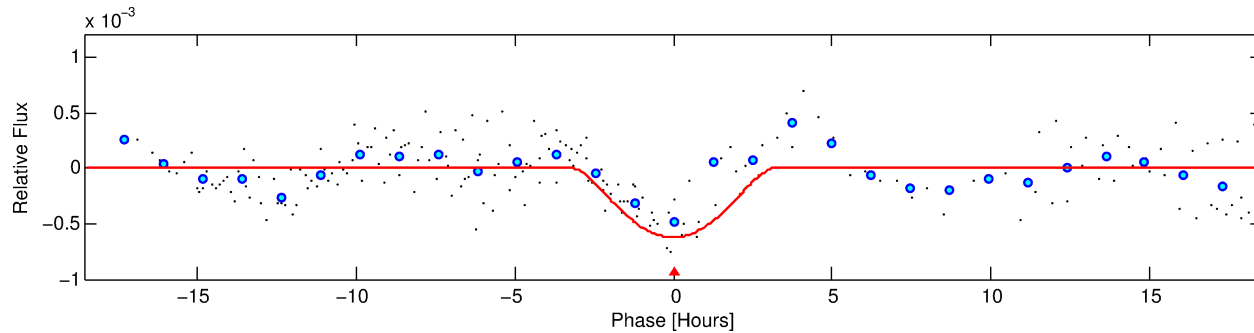
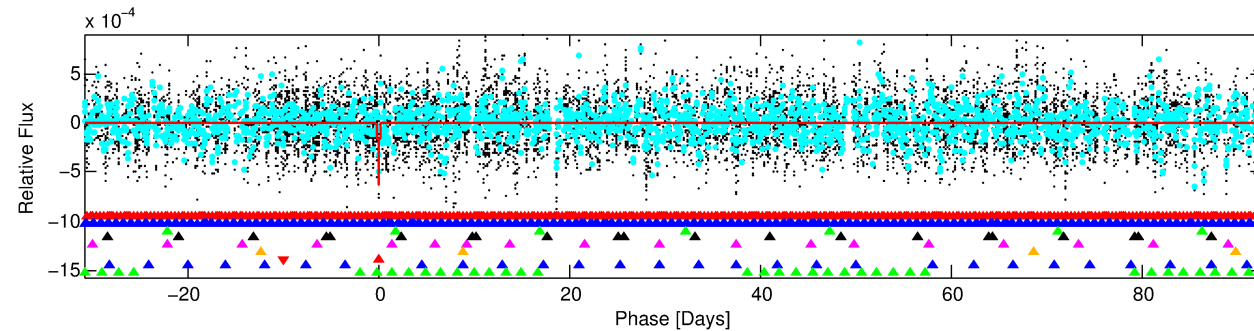
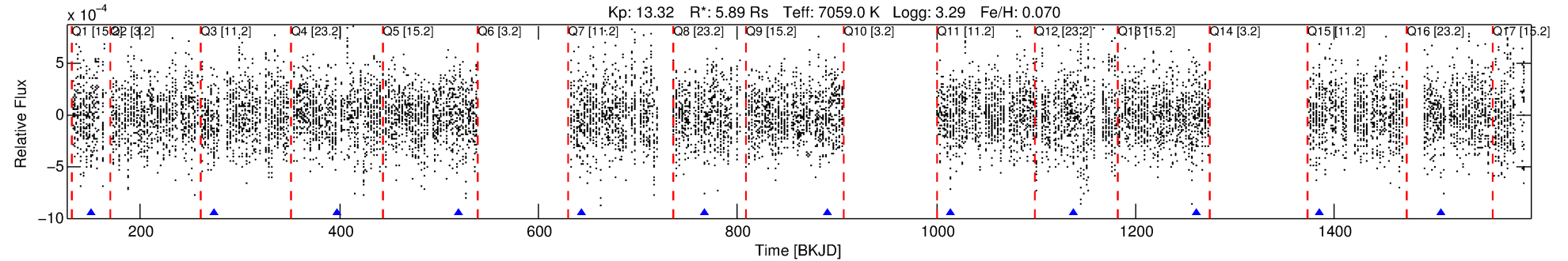
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005458428-07

No Significant Match Found

DV One-Page Summary

KIC: 5458428 Candidate: 7 of 9 Period: 123.393 d



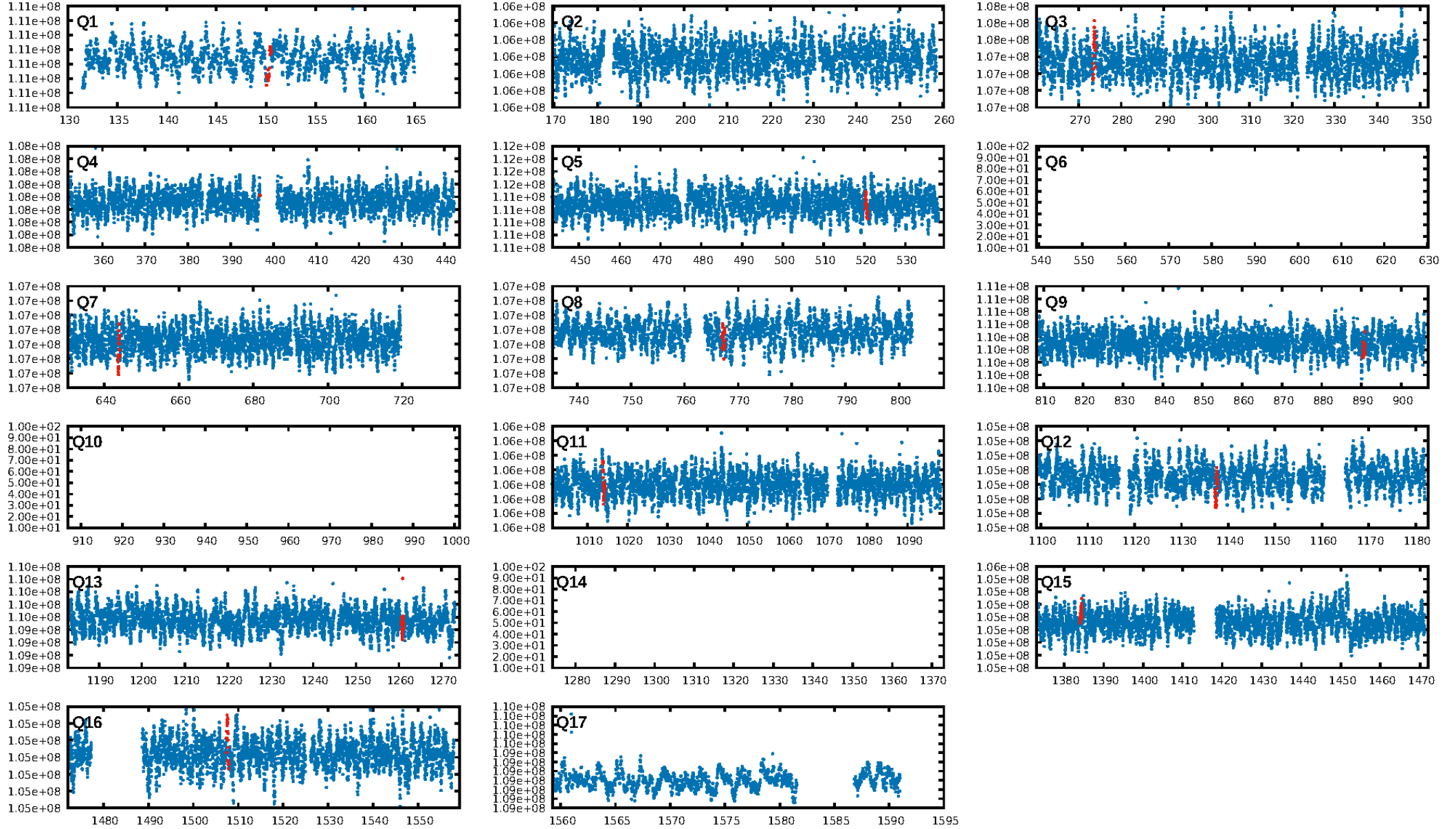
DV Fit Results:

Period = 123.39312 [0.00243] d
Epoch = 150.2984 [0.0155] BKJD
Rp/R* = 0.0433 [0.1311]
a/R* = 45.36 [35.87]
b = 1.00 [0.20]
Seff = 180.48 [136.06]
Teq = 935 [176] K
Rp = 27.82 [85.39] Re
a = 0.6544 [0.3024] AU
Ag = 109.64 [670.19] [0.16 σ]
Teffp = 4676 [7095] K [0.53 σ]

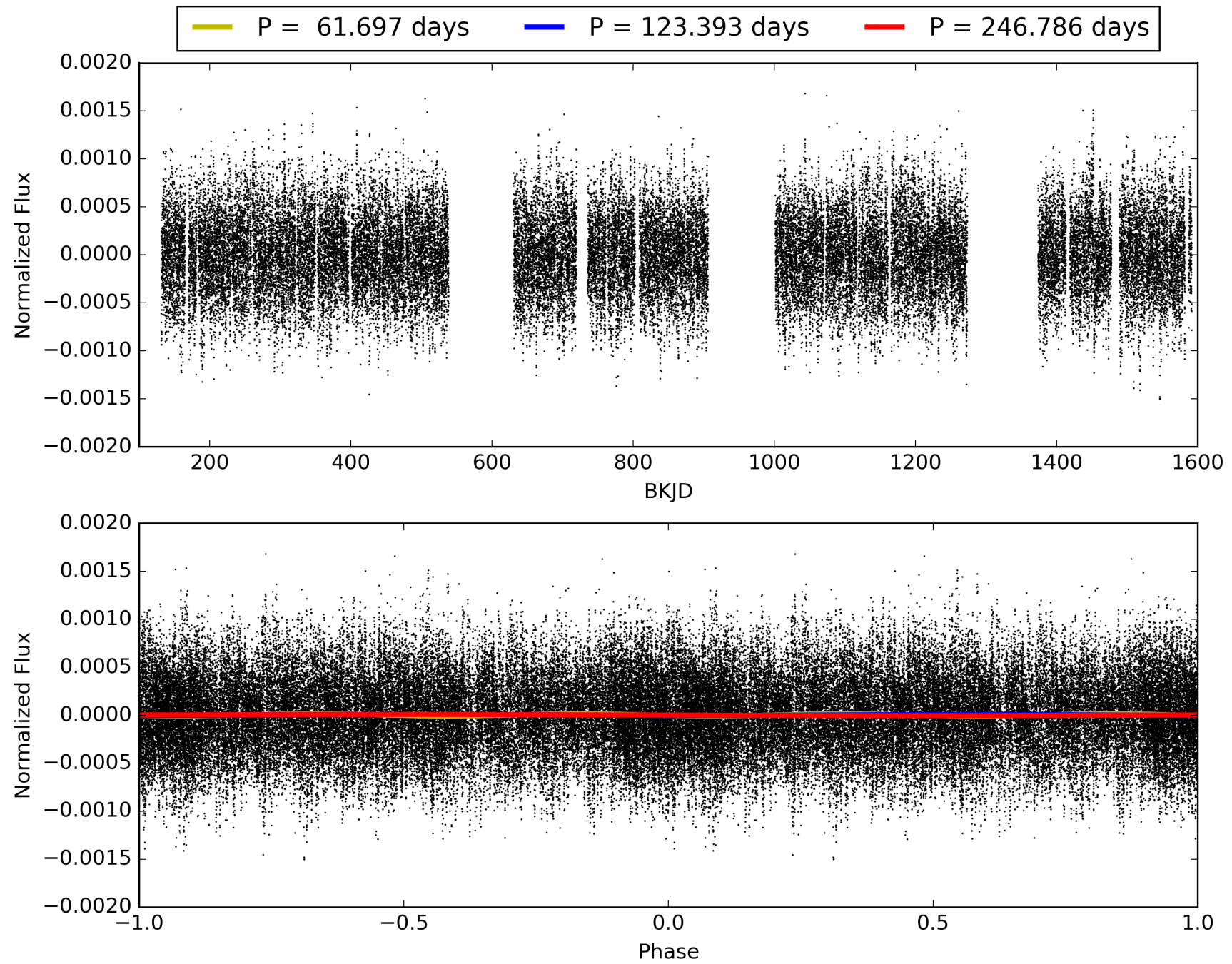
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [76.52 σ]
LongPeriod-sig: 100.0% [145.27 σ]
ModelChiSquare2-sig: 99.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.8318
Centroid-sig: 30.2%
Centroid-so: 0.447 arcsec [1.15 σ]
OotOffset-rm: 0.261 arcsec [0.63 σ]
KicOffset-rm: 0.278 arcsec [0.72 σ]
OotOffset-st: 0/3/2/4 [9]
KicOffset-st: 0/3/2/4 [9]
DiffImageQuality-fgm: 0.56 [5/9]
DiffImageOverlap-fno: 0.00 [0/10]

TCE 005458428-07, PDC Light Curves

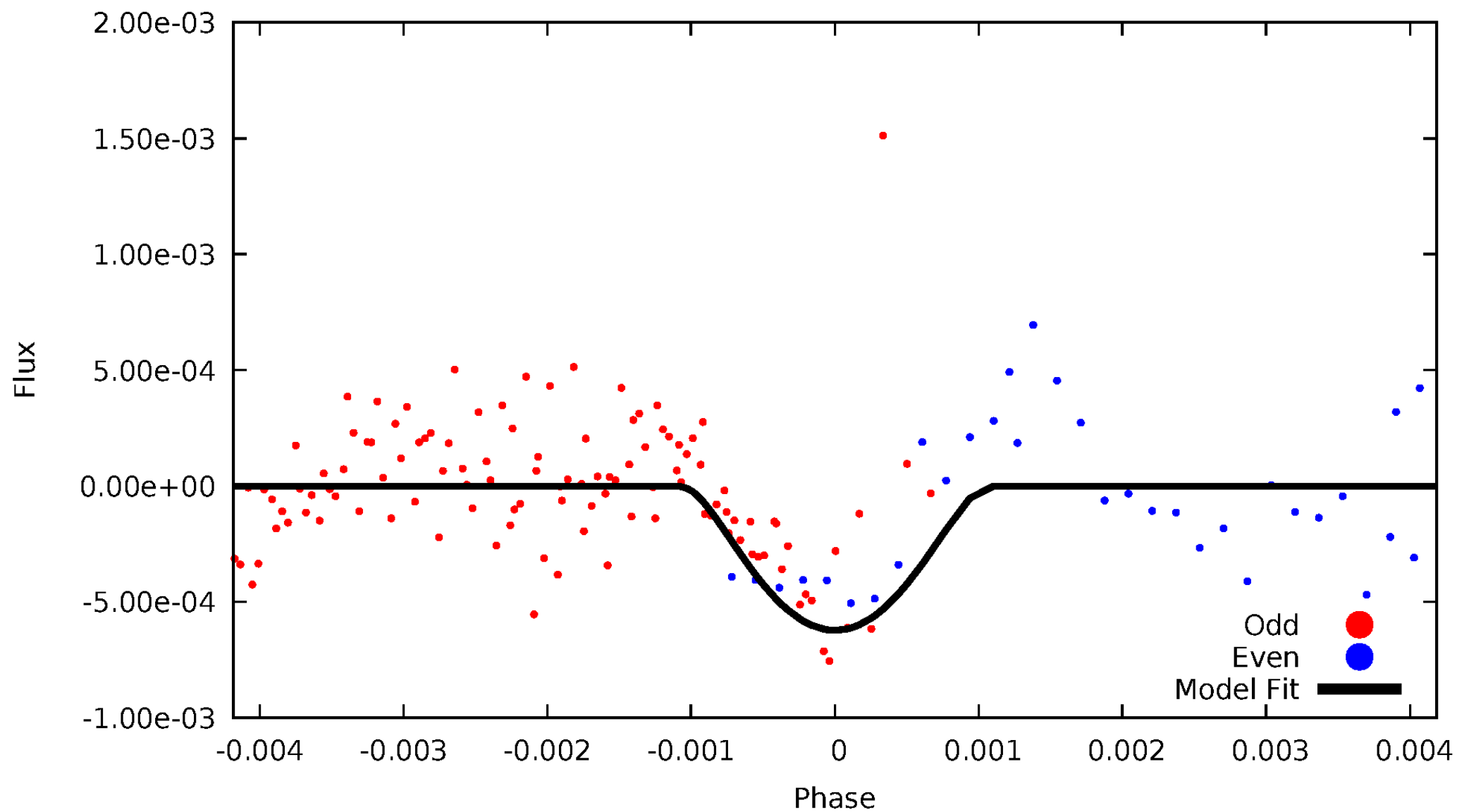


TCE 005458428-07



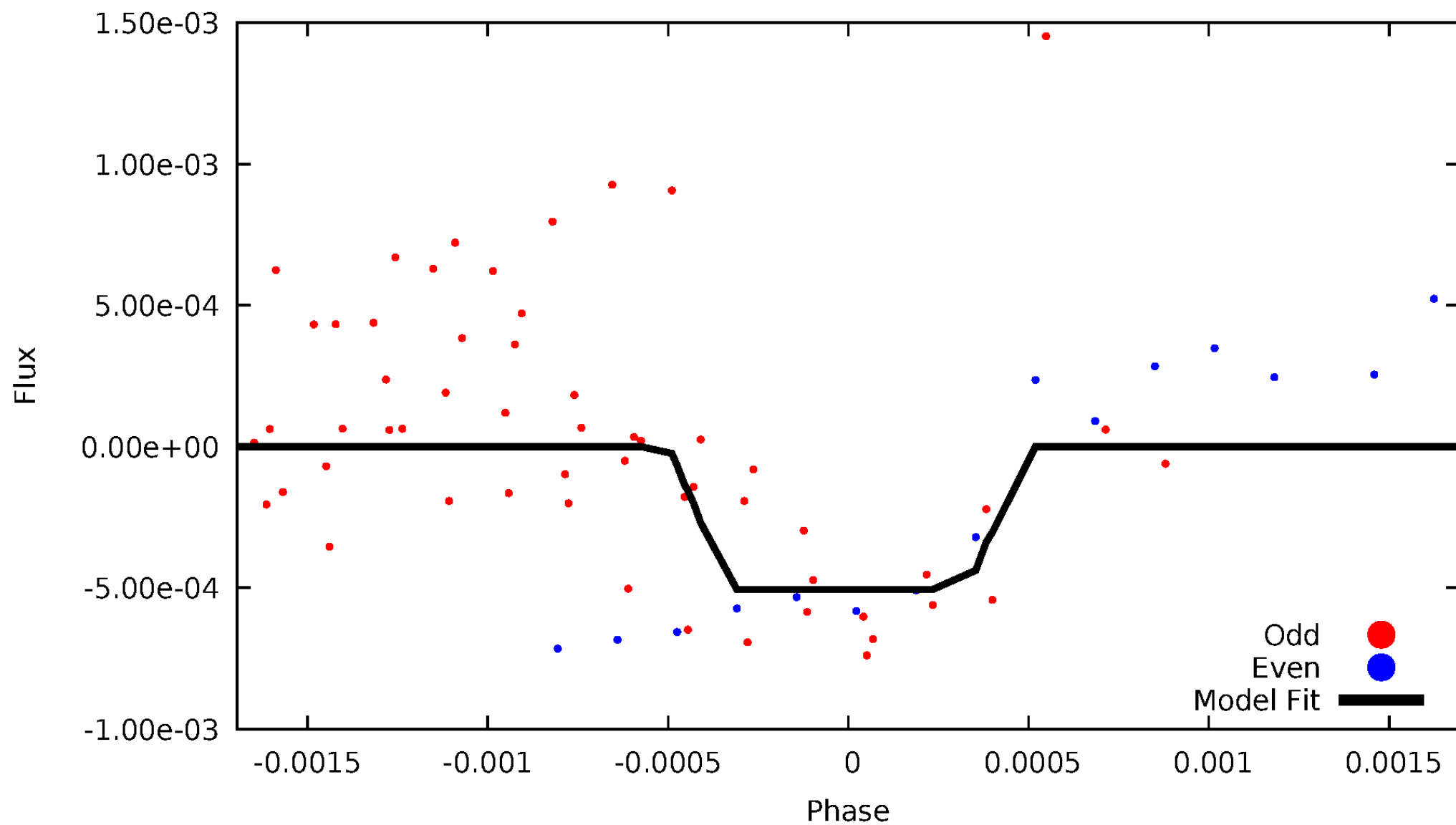
DV Odd/Even

TCE 005458428-07

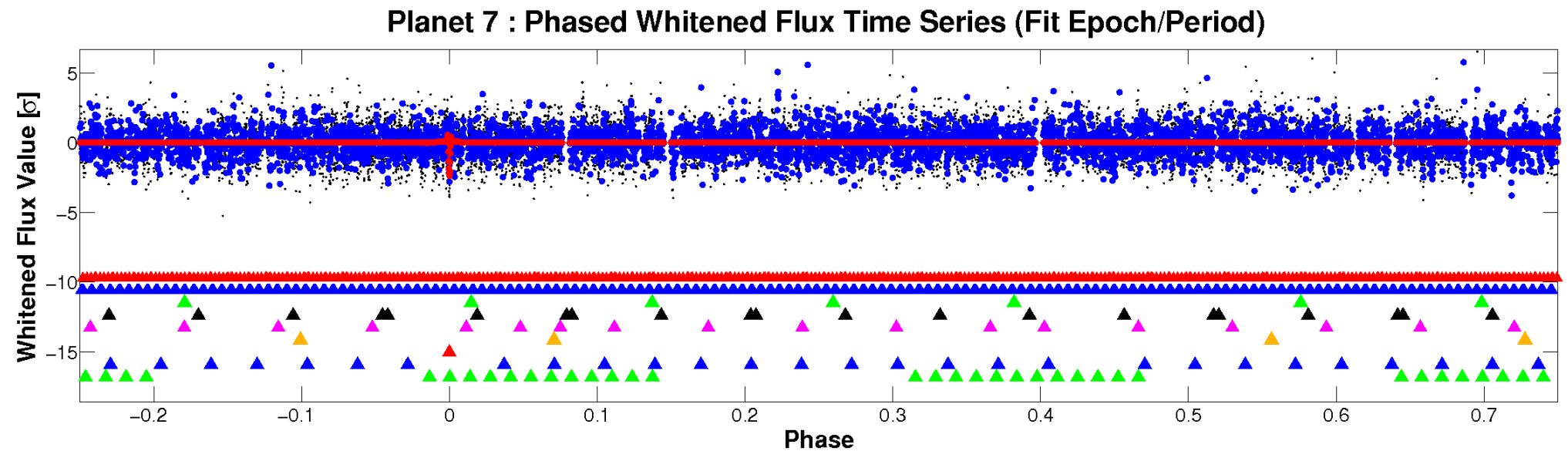
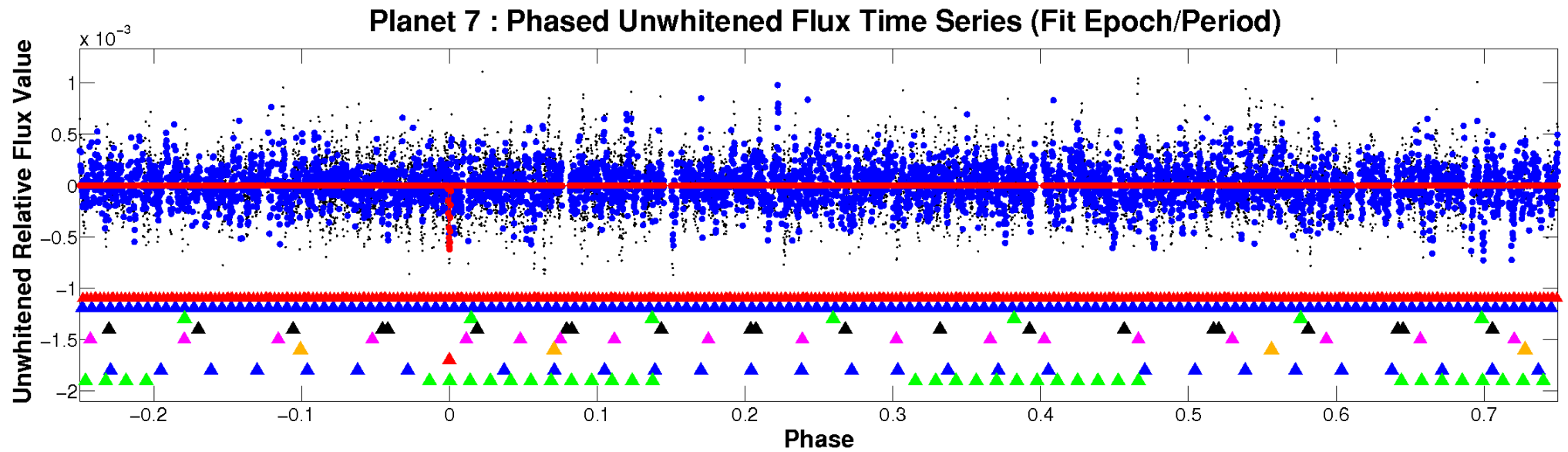


ALT Odd/Even

TCE 005458428-07

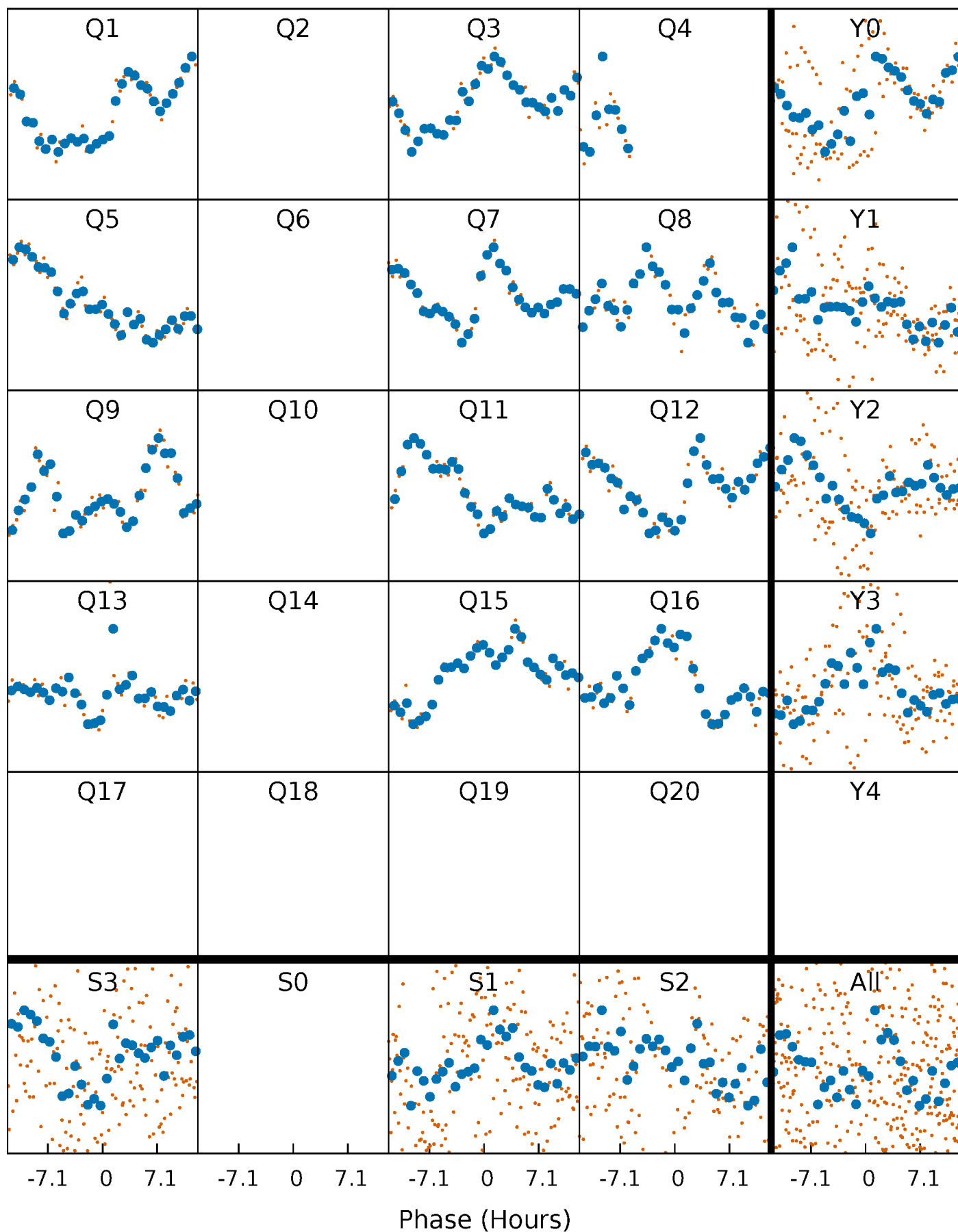


Non-Whitened Vs. Whitened Light Curve



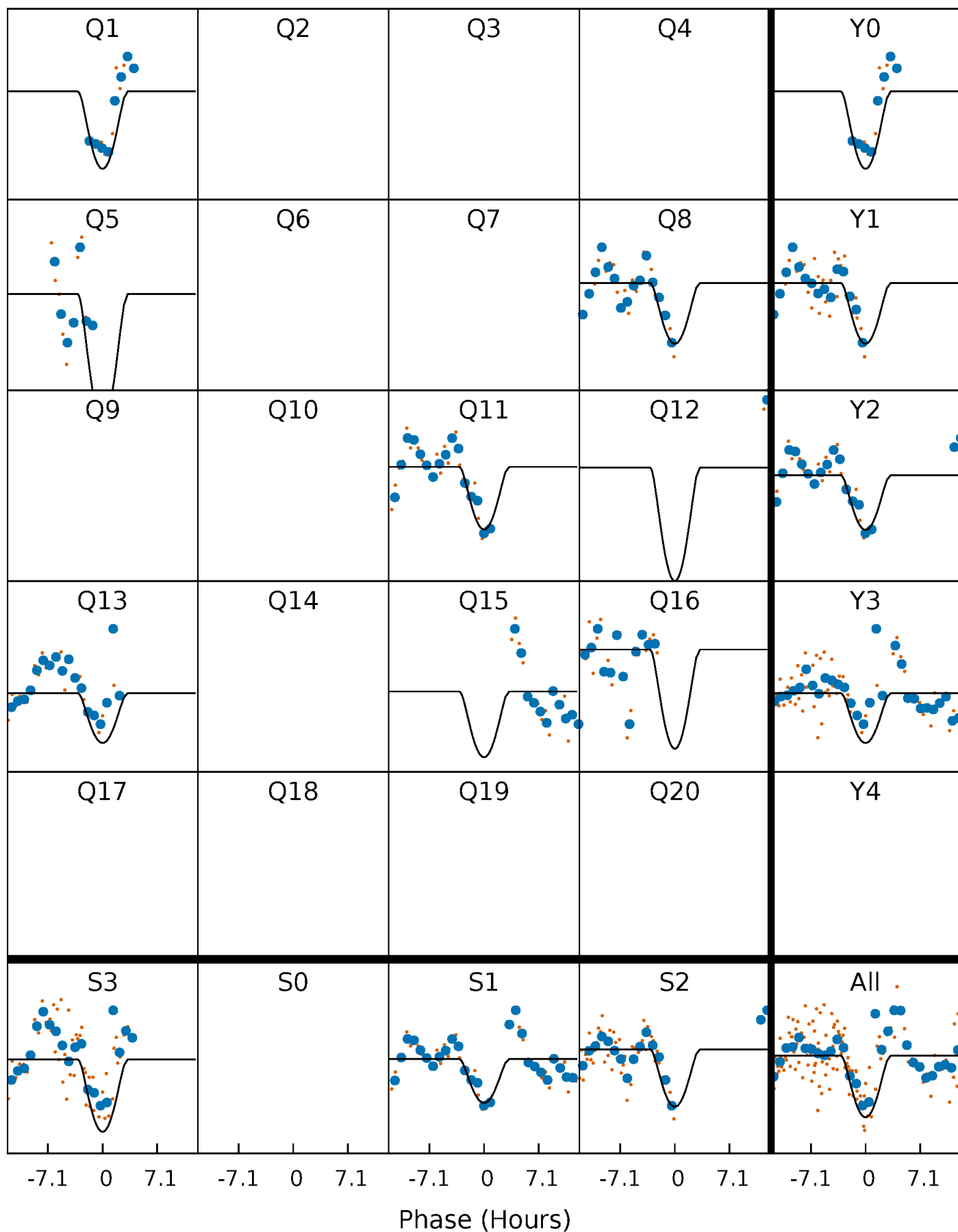
PDC Quarter-Phased Transit Curves

TCE 005458428-07 $P=123.393120$ Days $T_0=150.298424$ (BKJD)



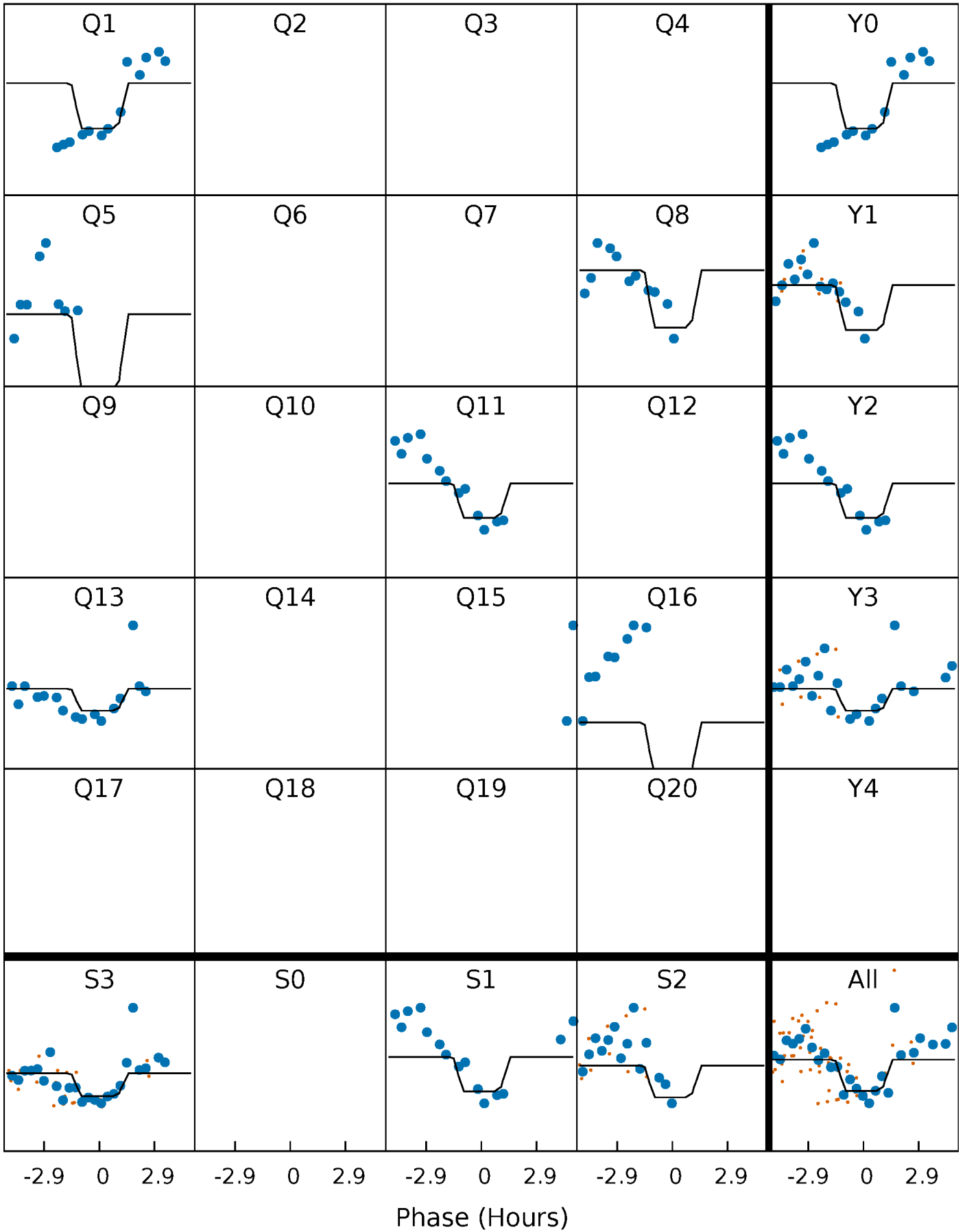
DV Quarter-Phased Transit Curves

TCE 005458428-07 $P=123.393120$ Days $T_0=150.298424$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

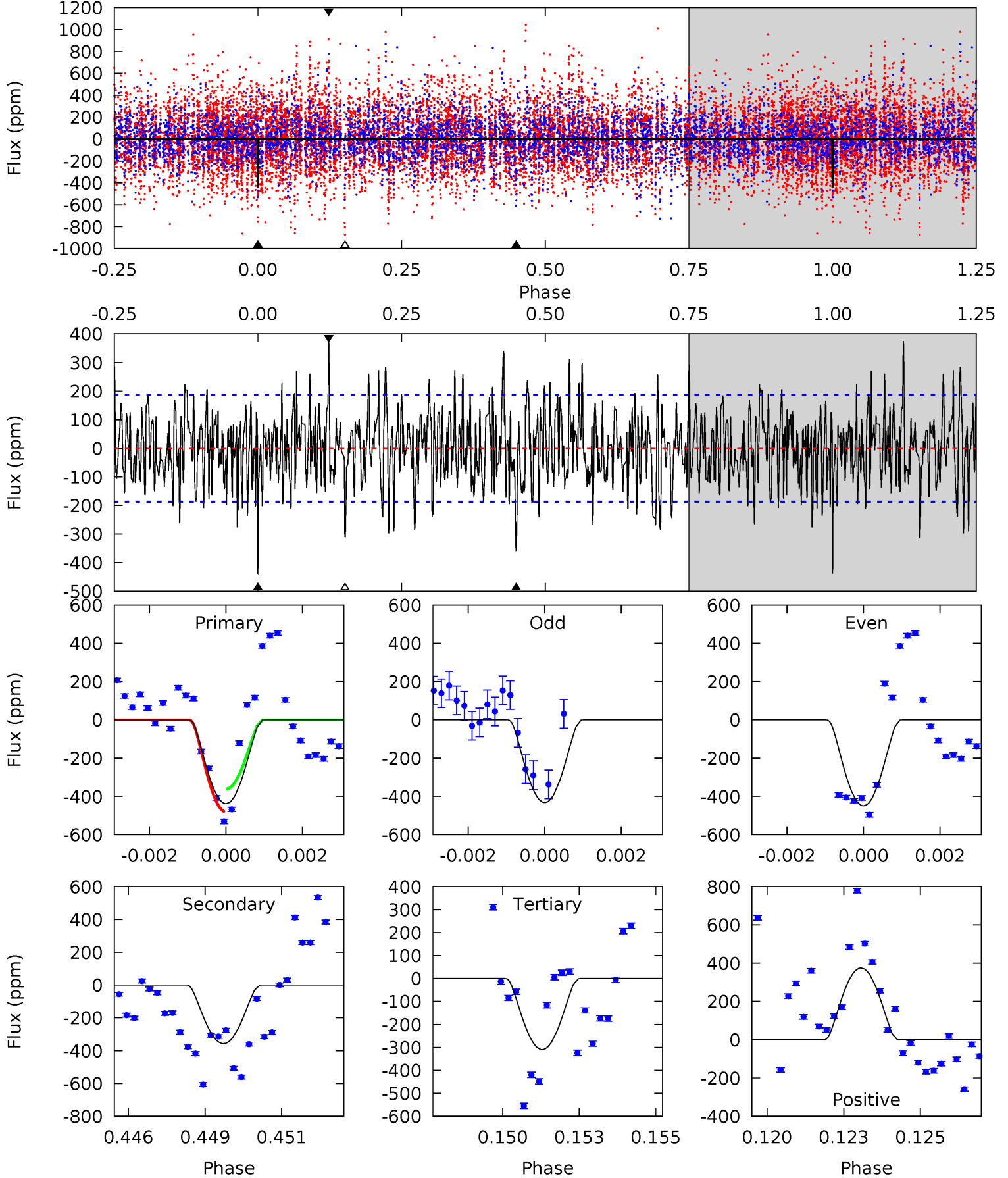
TCE 005458428-07 P=123.389000 Days $T_0=150.309276$ (BKJD)



DV Model-Shift Uniqueness Test

005458428-07, P = 123.393120 Days, E = 26.905304 Days

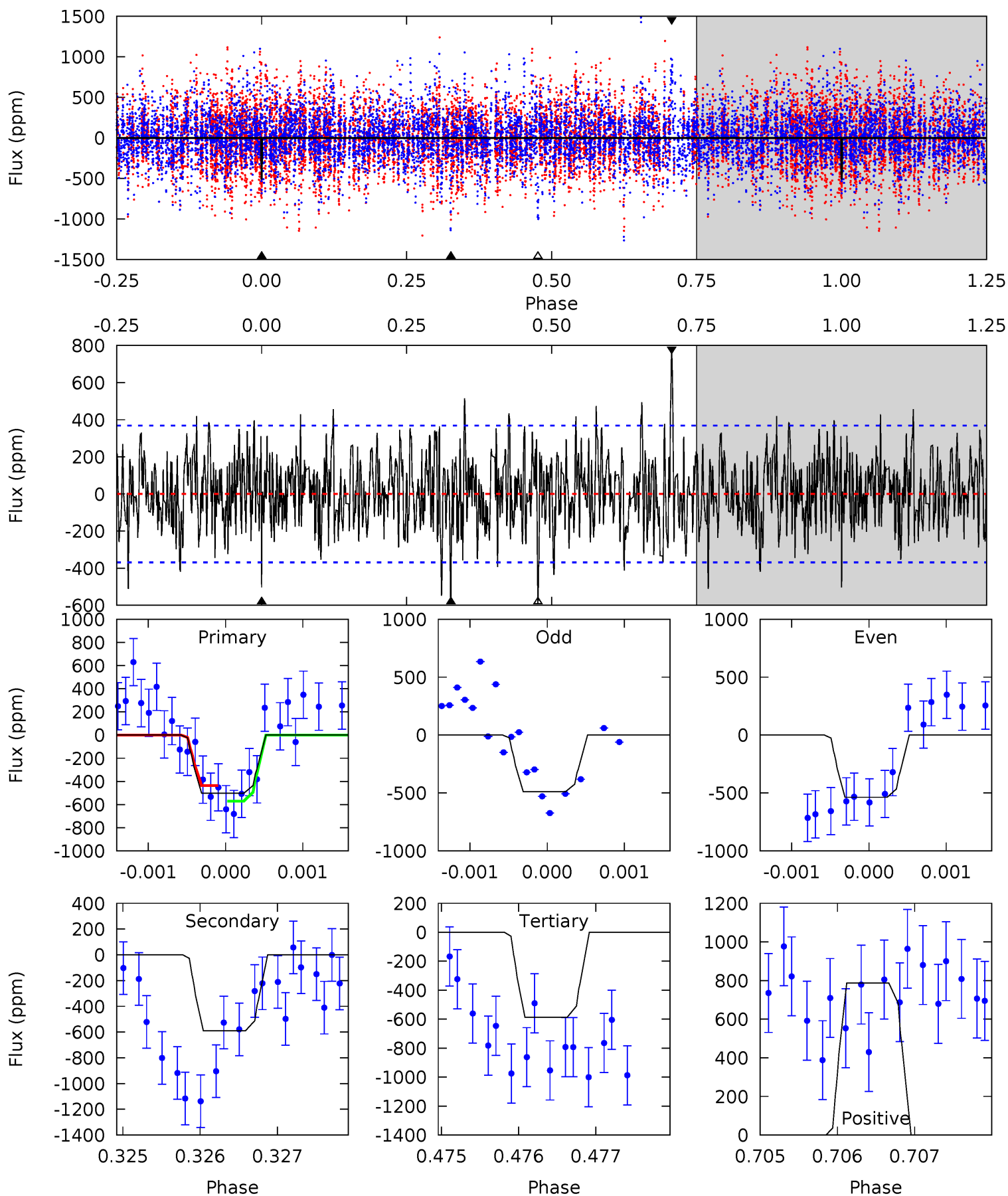
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	10.1	8.77	10.6	5.30	3.05	2.97	3.64	1.79	1.34	-0.51	0.21	0.91	0.46	1.51



Alt Model-Shift Uniqueness Test

005458428-07, P = 123.389000 Days, E = 26.920276 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.43	8.73	8.69	11.6	5.45	3.29	2.25	-1.25	-4.21	0.04	-2.92	0.30	0.99	0.57	0.99



Stellar Parameters For KIC 005458428

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7059^{+168}_{-252}	$3.287^{+0.435}_{-0.145}$	$0.070^{+0.200}_{-0.300}$	$5.894^{+1.521}_{-2.825}$	$2.453^{+0.165}_{-0.662}$	$0.017^{+0.077}_{-0.008}$
	+2%/-4%	+13%/-4%	+286%/-429%	+26%/-48%	+7%/-27%	+456%/-45%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005458428-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-357 ± 35	$62.06^{+58.14}_{-42.52}$	1271^{+111}_{-150}	3452^{+1695}_{-611}	21^{+203}_{-16}
Alt.	-590 ± 68	$59.69^{+63.33}_{-42.80}$	1271^{+102}_{-165}	3720^{+2562}_{-698}	37^{+431}_{-29}

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 $A_{obs} \gg 1.0$

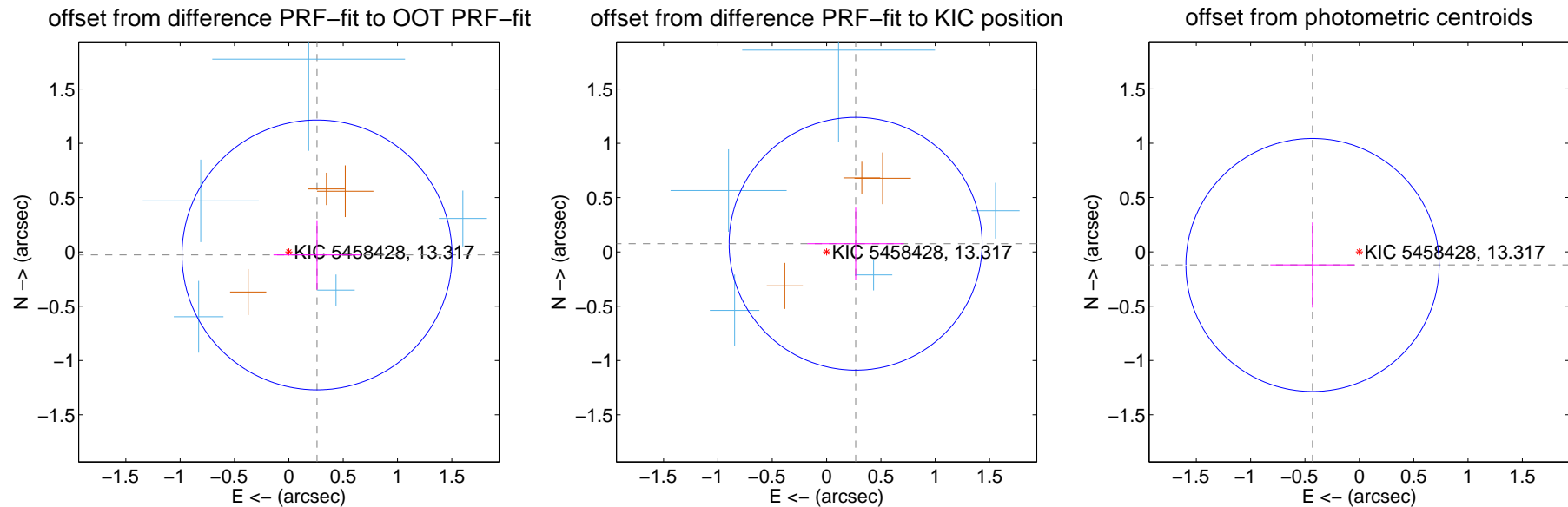
DV Centroid Data

Supplemental centroid analysis for 005458428-07. Kepler magnitude: 13.32. Transit SNR 9.78

There are 5 quarters with good PRF difference image offsets

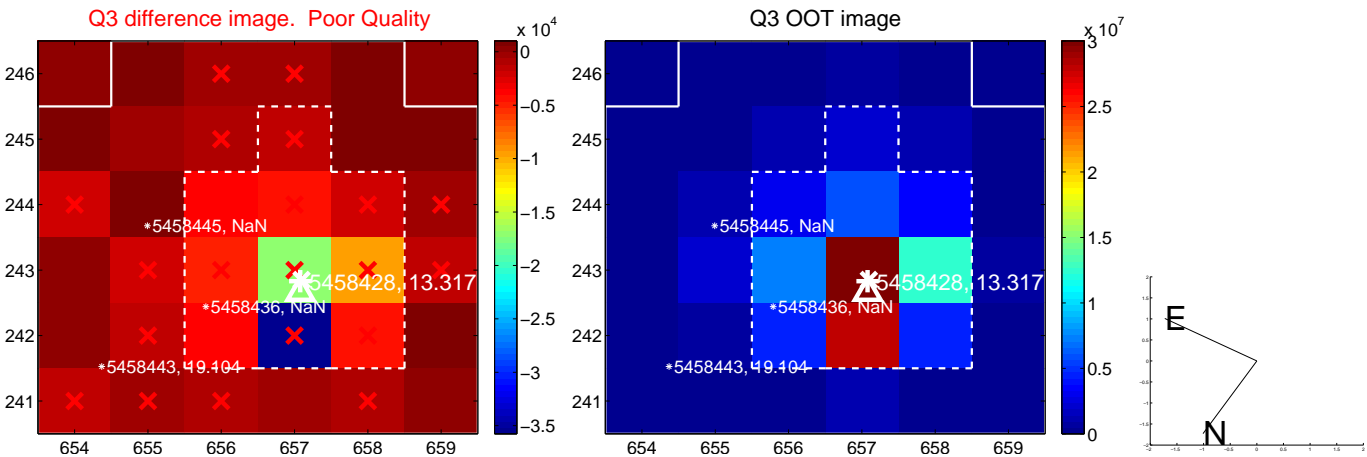
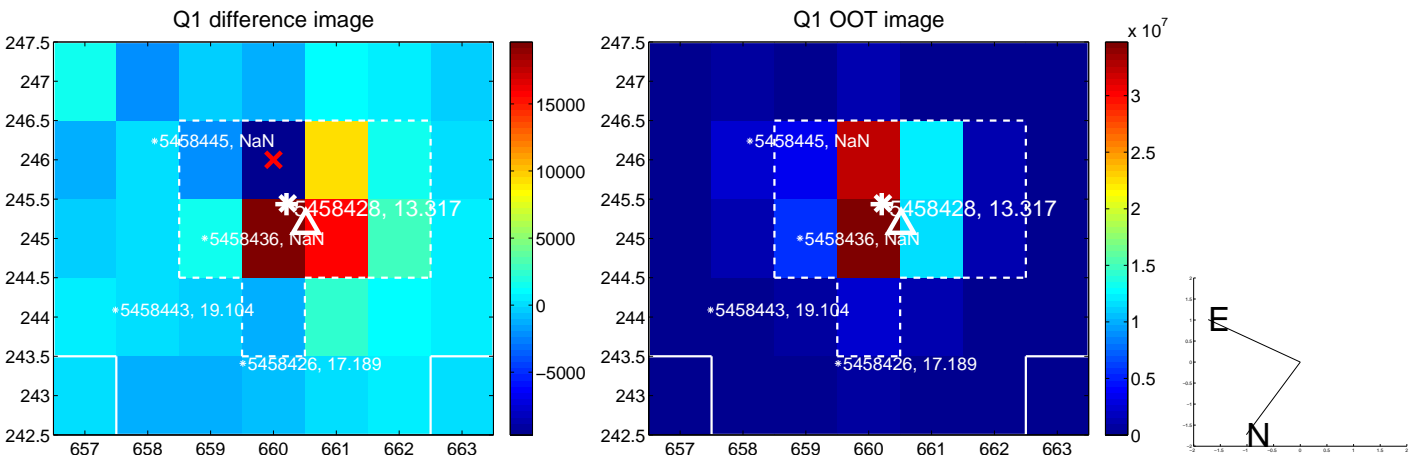
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.261 ± 0.414	0.63	-0.259 ± 0.400	-0.028 ± 0.319
PRF-fit source offset from KIC position	0.278 ± 0.388	0.72	-0.267 ± 0.443	0.075 ± 0.333
photometric centroid source offset	0.45 ± 0.39	1.15	0.43 ± 0.39	-0.12 ± 0.39

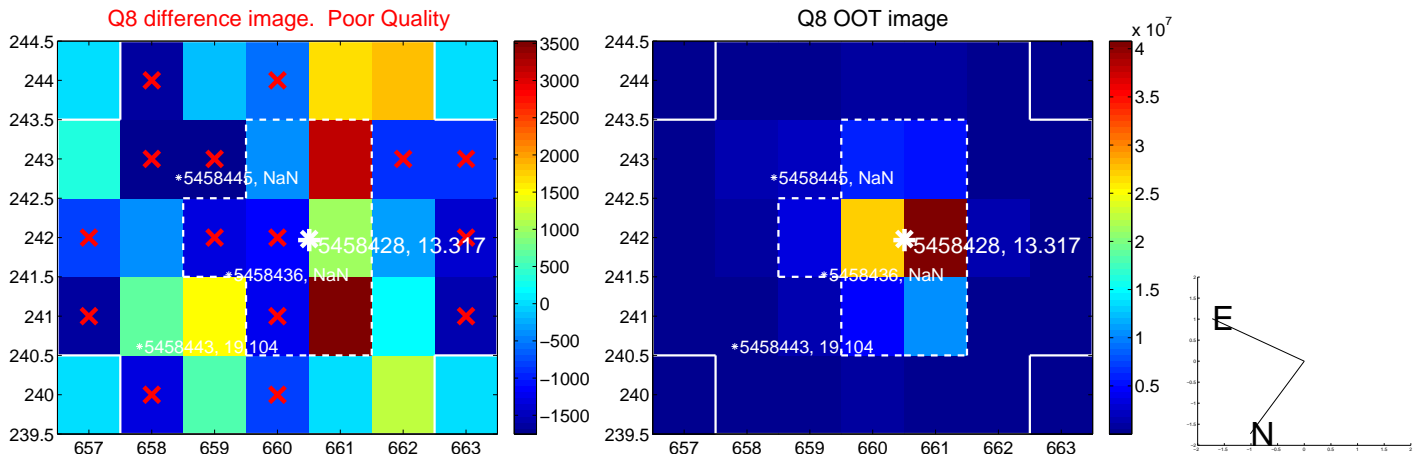
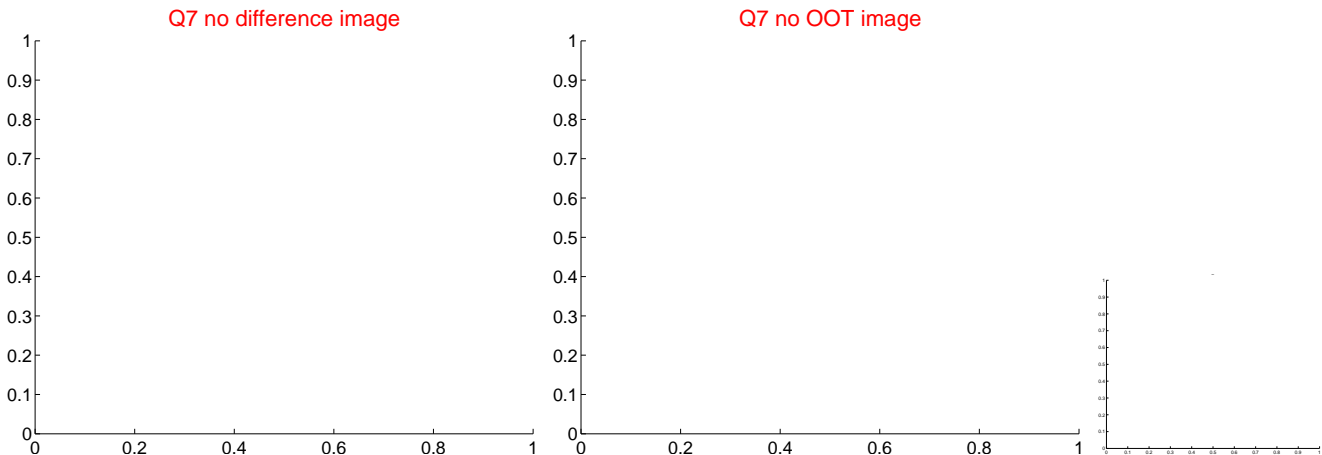
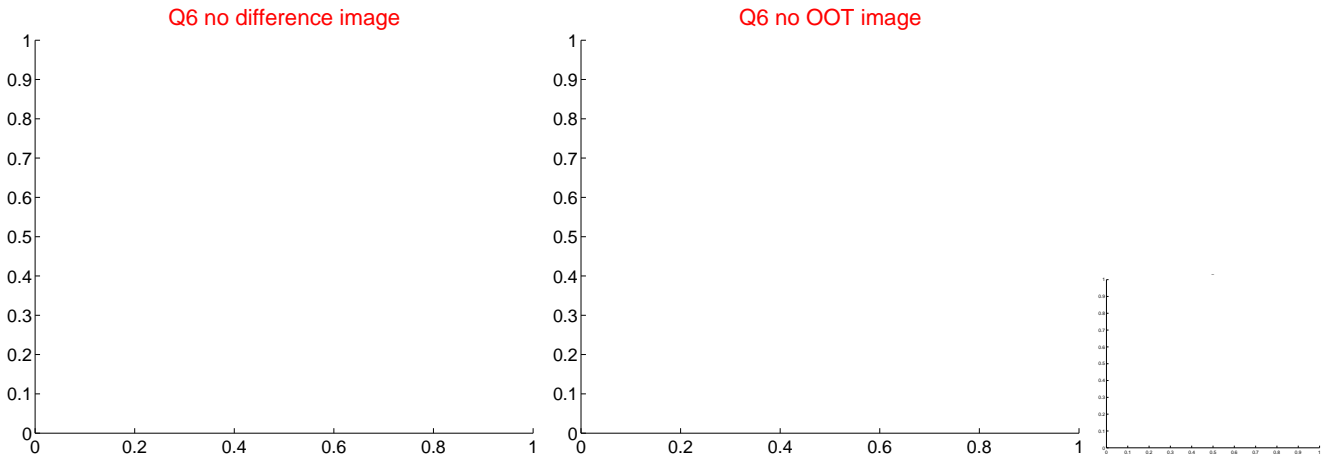
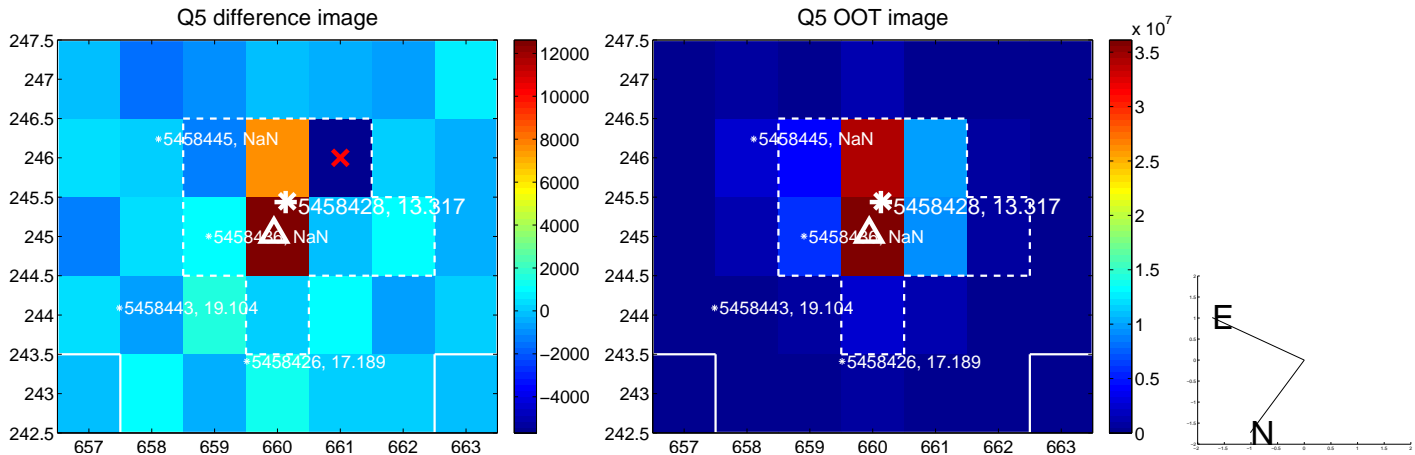


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

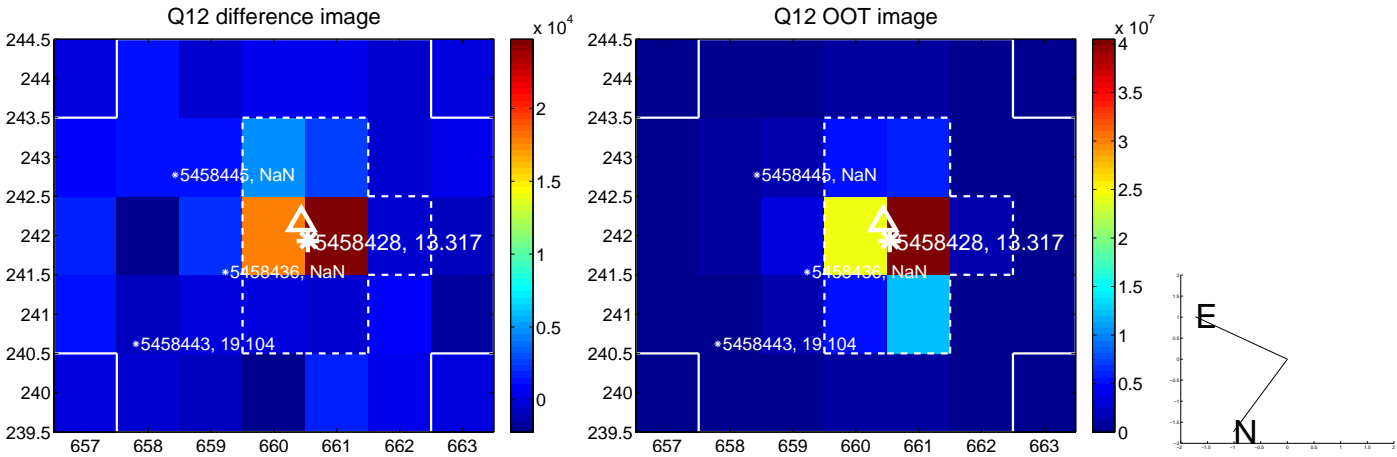
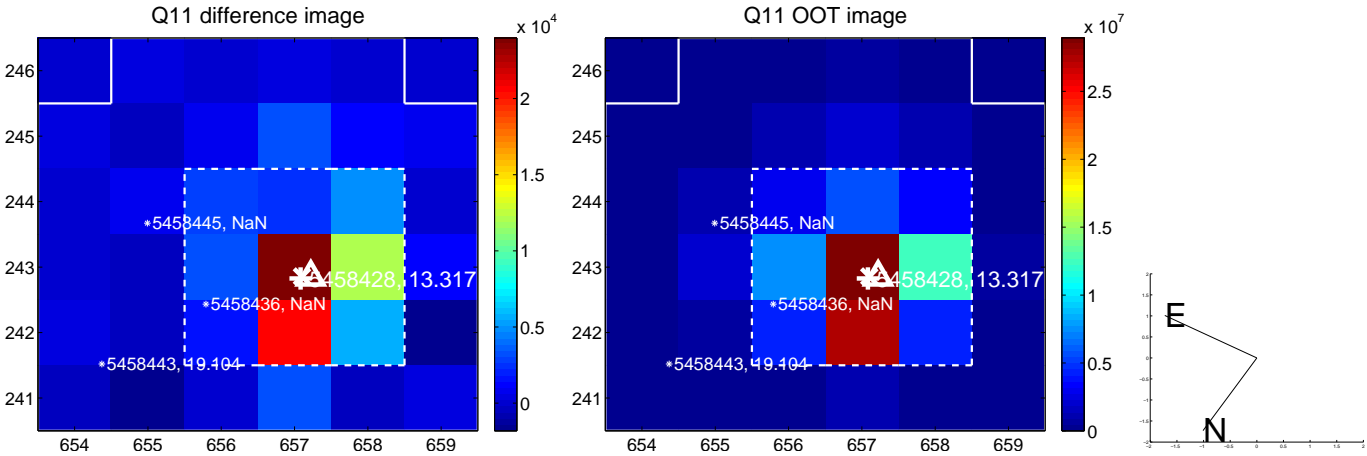
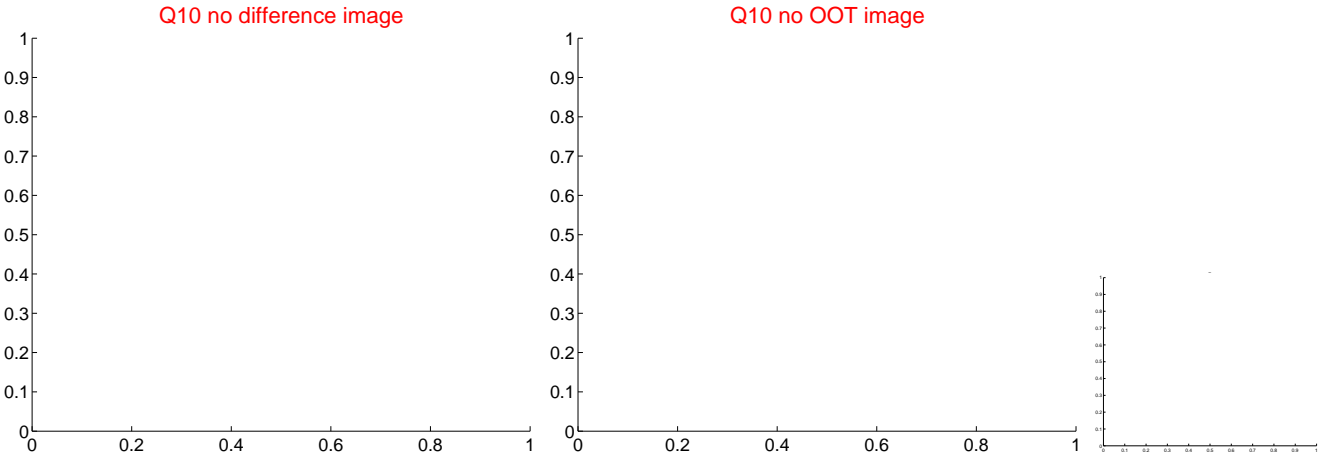
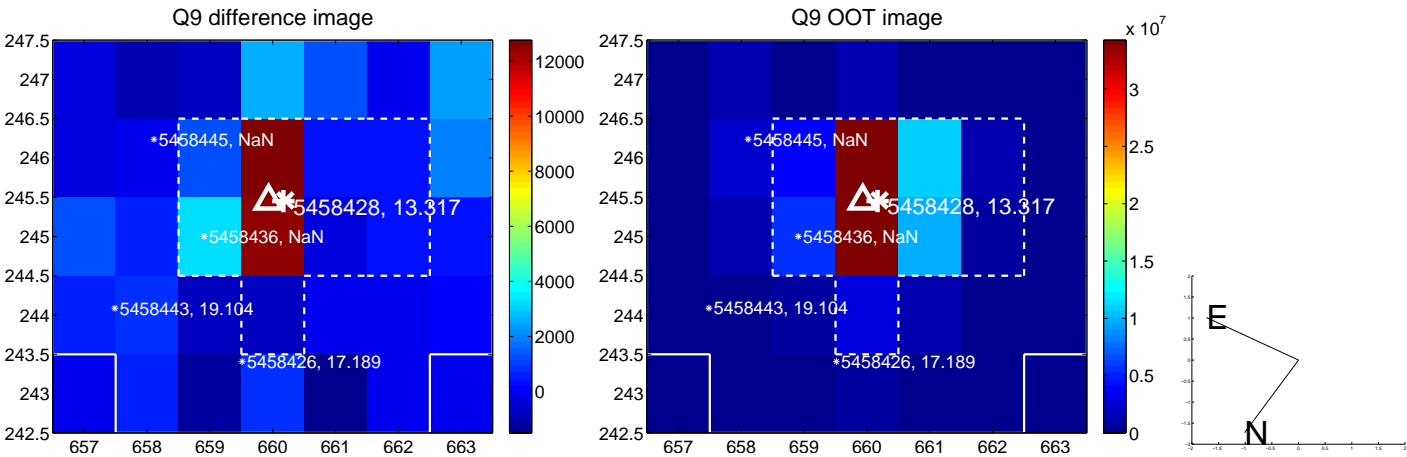
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



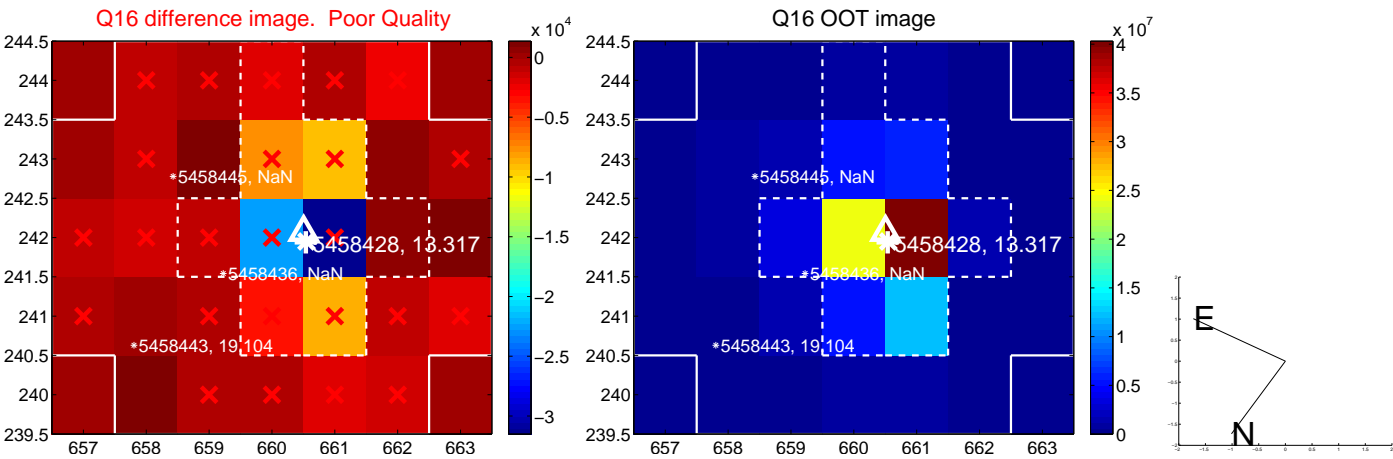
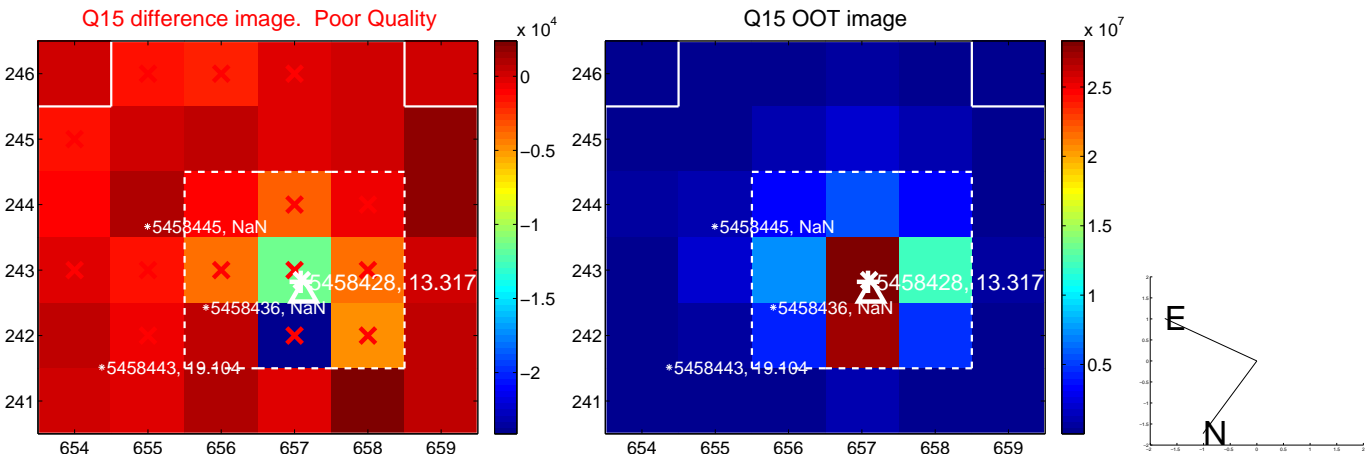
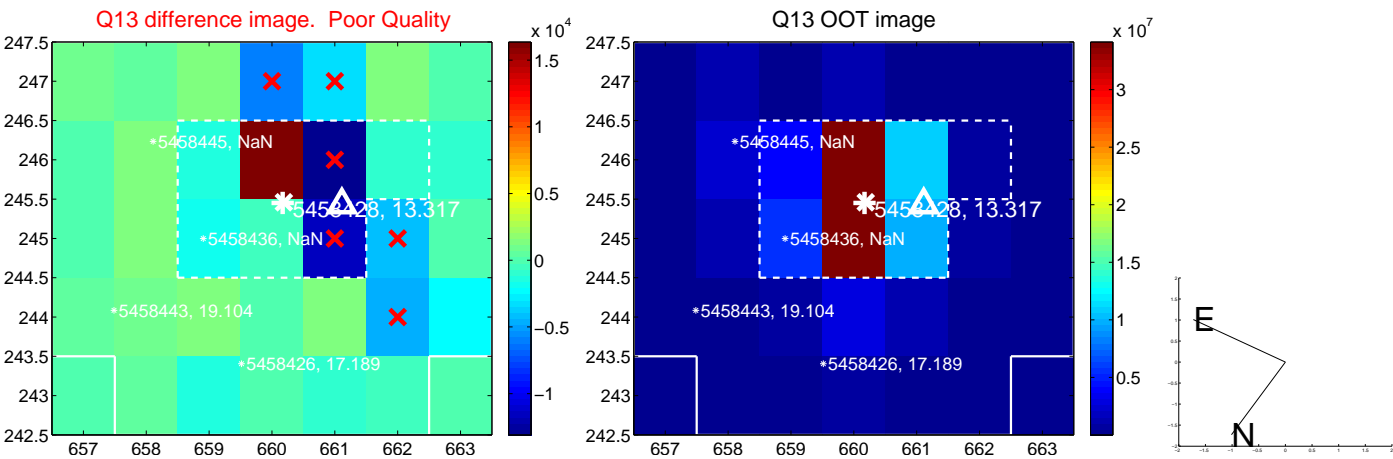
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



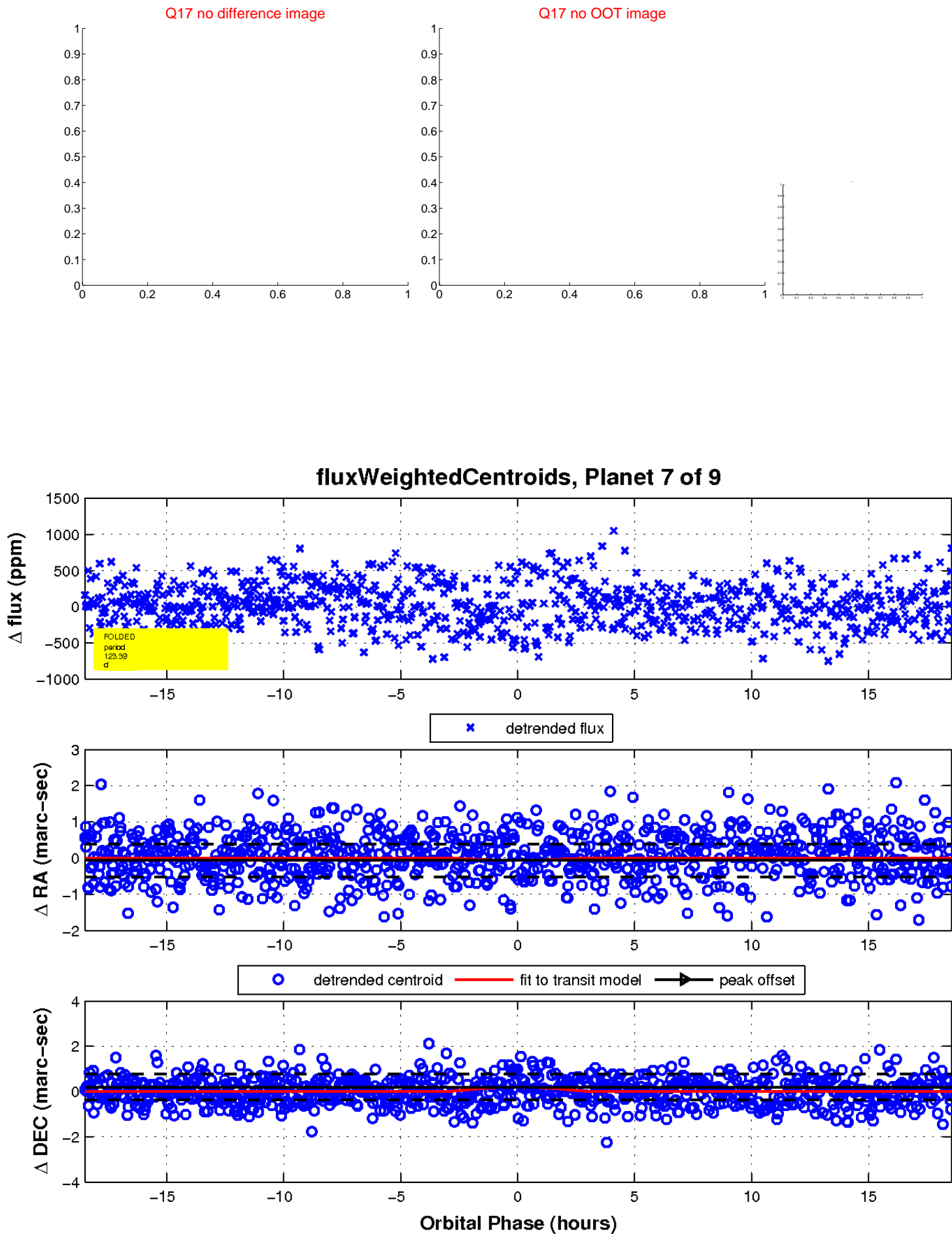
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

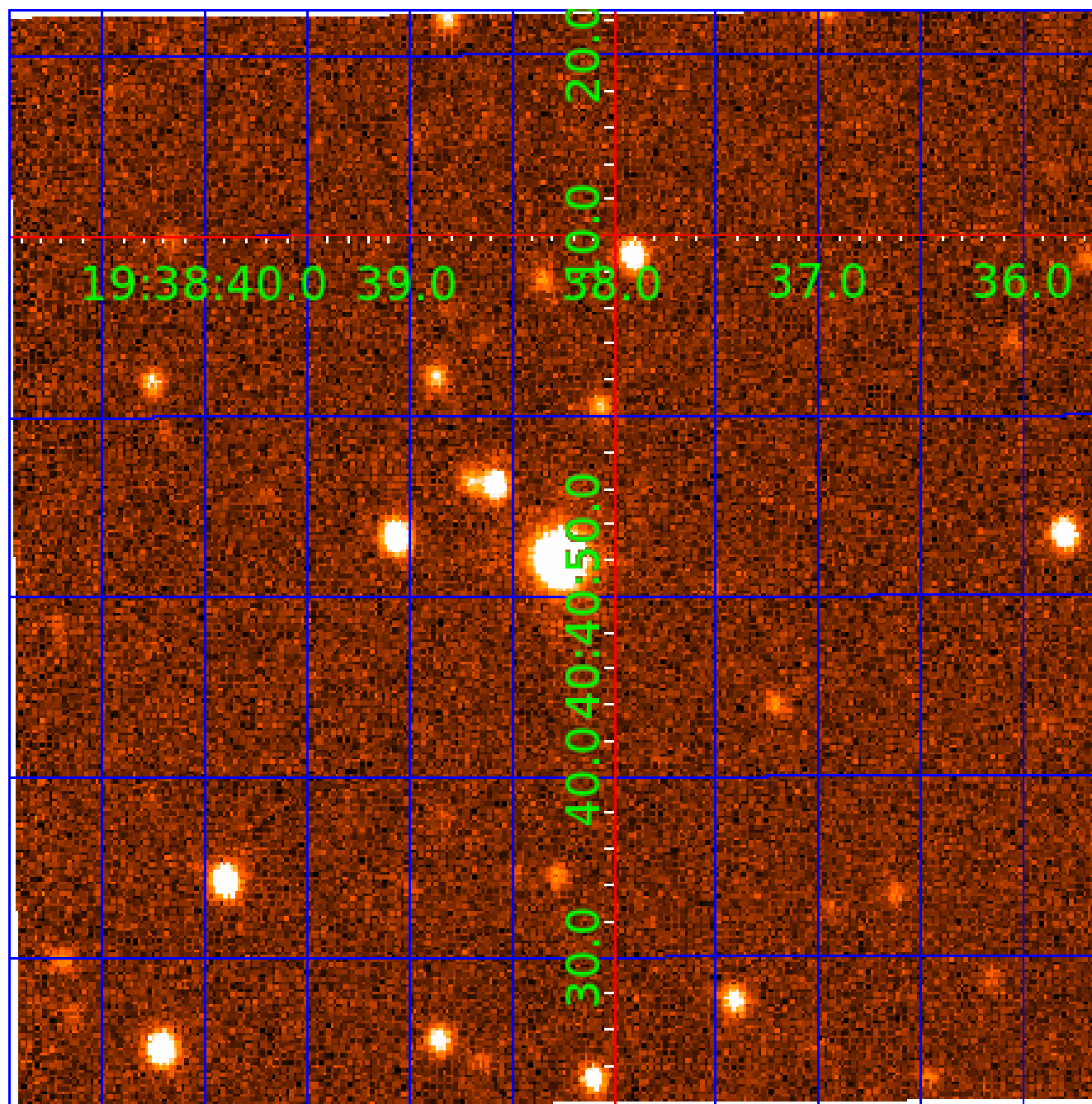


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005458428

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})
005458428-01	OBS	No	3.200651	132.084844	75.7	13.138	9.7	10.5	5.89	7059	6.53	23504.78
005458428-02	OBS	No	1.552378	132.735072	95.6	6.107	12.6	12.7	5.89	7059	7.80	61679.90
005458428-03	OBS	No	192.642735	275.519386	859.2	9.619	11.8	12.7	5.89	7059	25.56	99.65
005458428-04	OBS	No	69.381211	145.158500	466.6	8.103	10.3	9.1	5.89	7059	24.33	388.88
005458428-05	OBS	No	79.646495	159.557679	187.9	12.243	10.1	4.4	5.89	7059	8.65	323.53
005458428-06	OBS	No	349.011885	405.827424	479.6	10.909	9.7	8.3	5.89	7059	13.90	45.12
005458428-07	OBS	No	123.393120	150.298424	623.0	6.194	9.5	9.8	5.89	7059	27.82	180.48
005458428-08	OBS	No	53.481893	134.251969	293.6	11.976	9.5	7.7	5.89	7059	11.10	550.21
005458428-09	OBS	No	40.566928	167.259507	178.9	9.000	10.0	-1.0	5.89	7059	7.95	795.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005458428-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
005458428-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005458428-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005458428-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
005458428-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

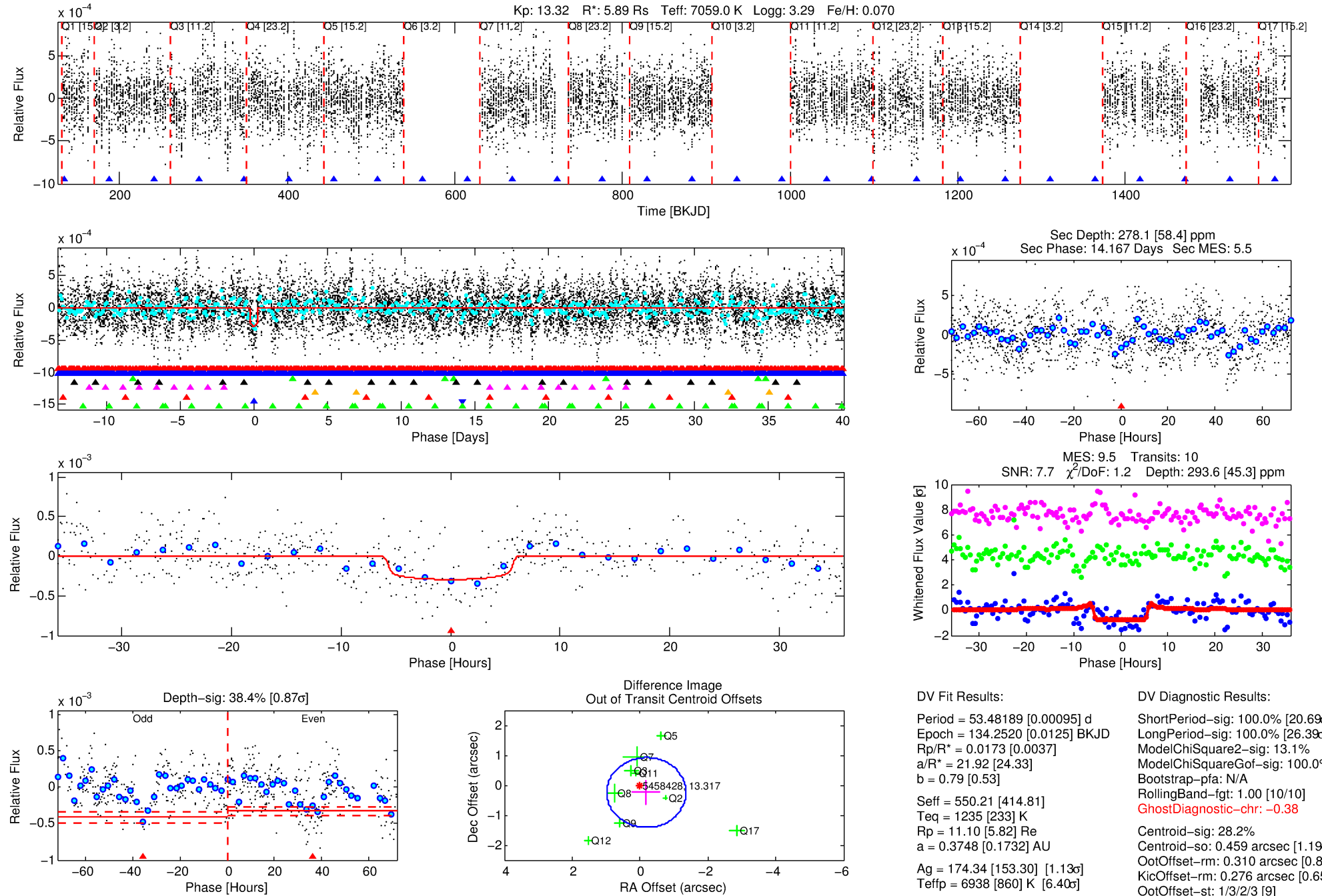
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005458428-08

No Significant Match Found

DV One-Page Summary

KIC: 5458428 Candidate: 8 of 9 Period: 53.482 d



DV Fit Results:

Period = 53.48189 [0.00095] d
Epoch = 134.2520 [0.0125] BKJD
Rp/R* = 0.0173 [0.0037]
a/R* = 21.92 [24.33]
b = 0.79 [0.53]
Seff = 550.21 [414.81]
Teq = 1235 [233] K
Rp = 11.10 [5.82] Re
a = 0.3748 [0.1732] AU
Ag = 174.34 [153.30] [1.13 σ]
Teff = 6938 [860] K [6.40 σ]

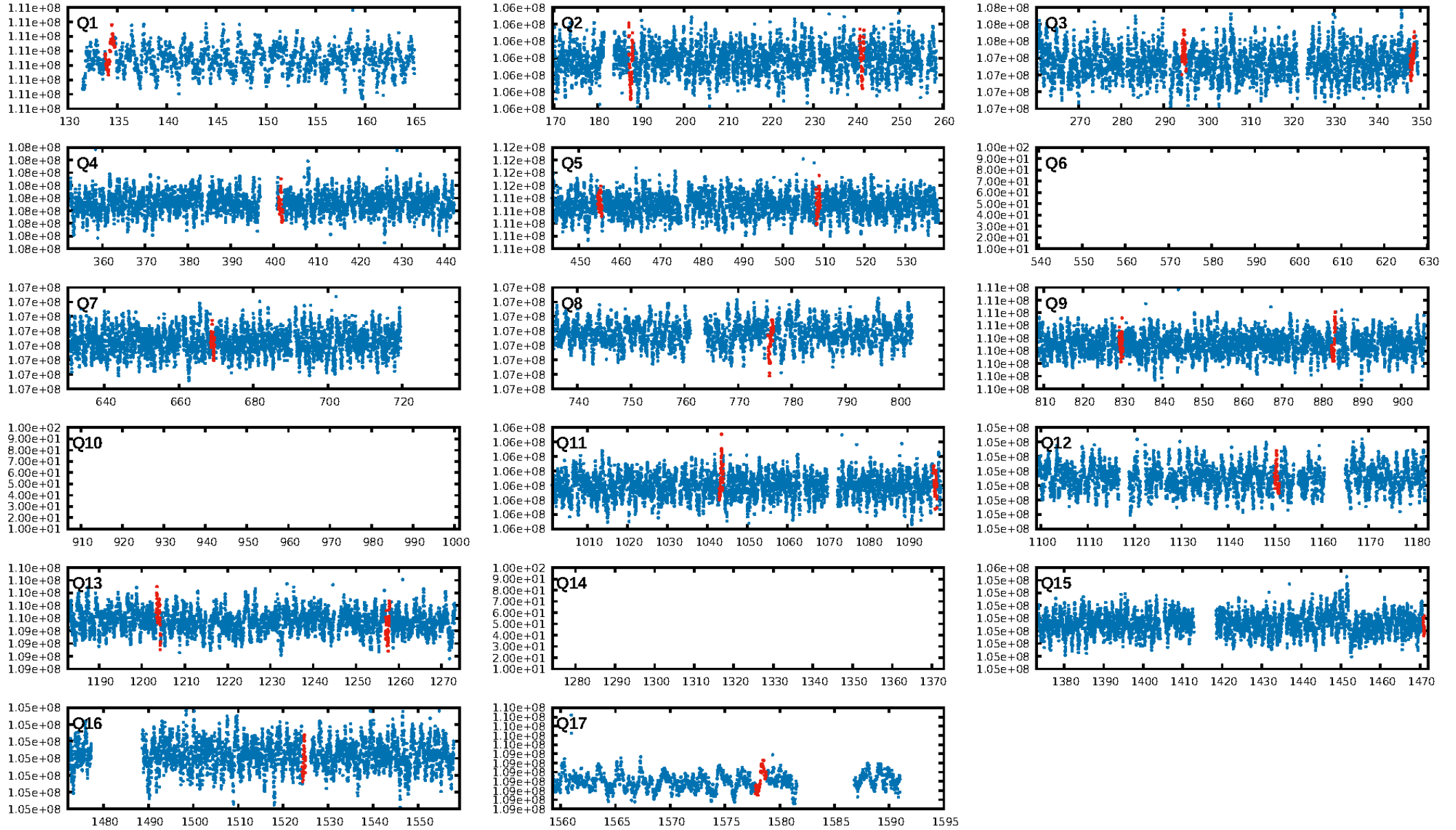
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [20.69 σ]
LongPeriod-sig: 100.0% [26.39 σ]
ModelChiSquare2-sig: 13.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: -0.38
Centroid-sig: 28.2%
Centroid-so: 0.459 arcsec [1.19 σ]
OotOffset-rm: 0.310 arcsec [0.80 σ]
KicOffset-rm: 0.276 arcsec [0.65 σ]
OotOffset-st: 1/3/2/3 [9]
KicOffset-st: 1/3/2/3 [9]
DiffImageQuality-fgm: 0.33 [3/9]
DiffImageOverlap-fno: 0.00 [0/11]

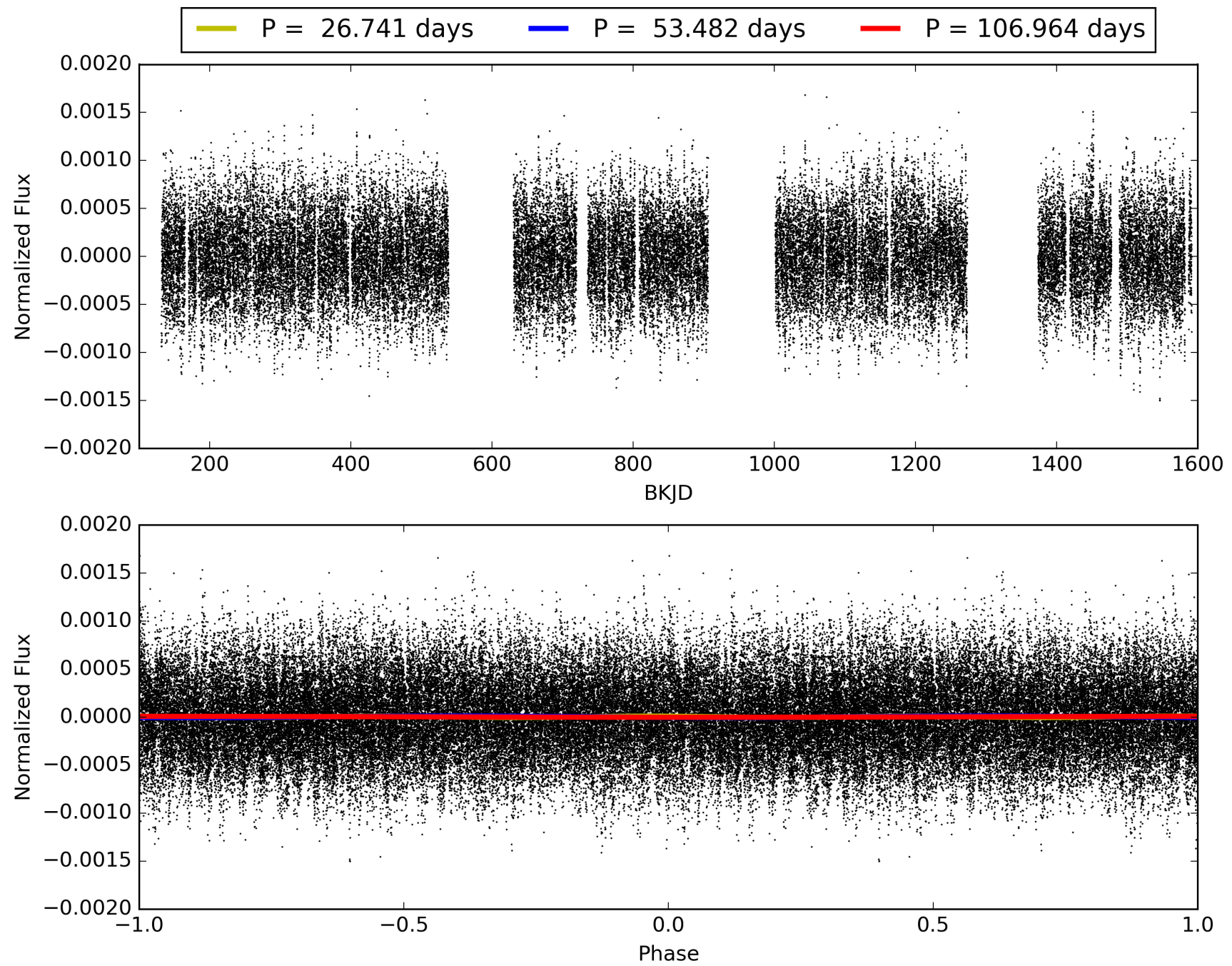
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:10:56 Z

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

TCE 005458428-08, PDC Light Curves

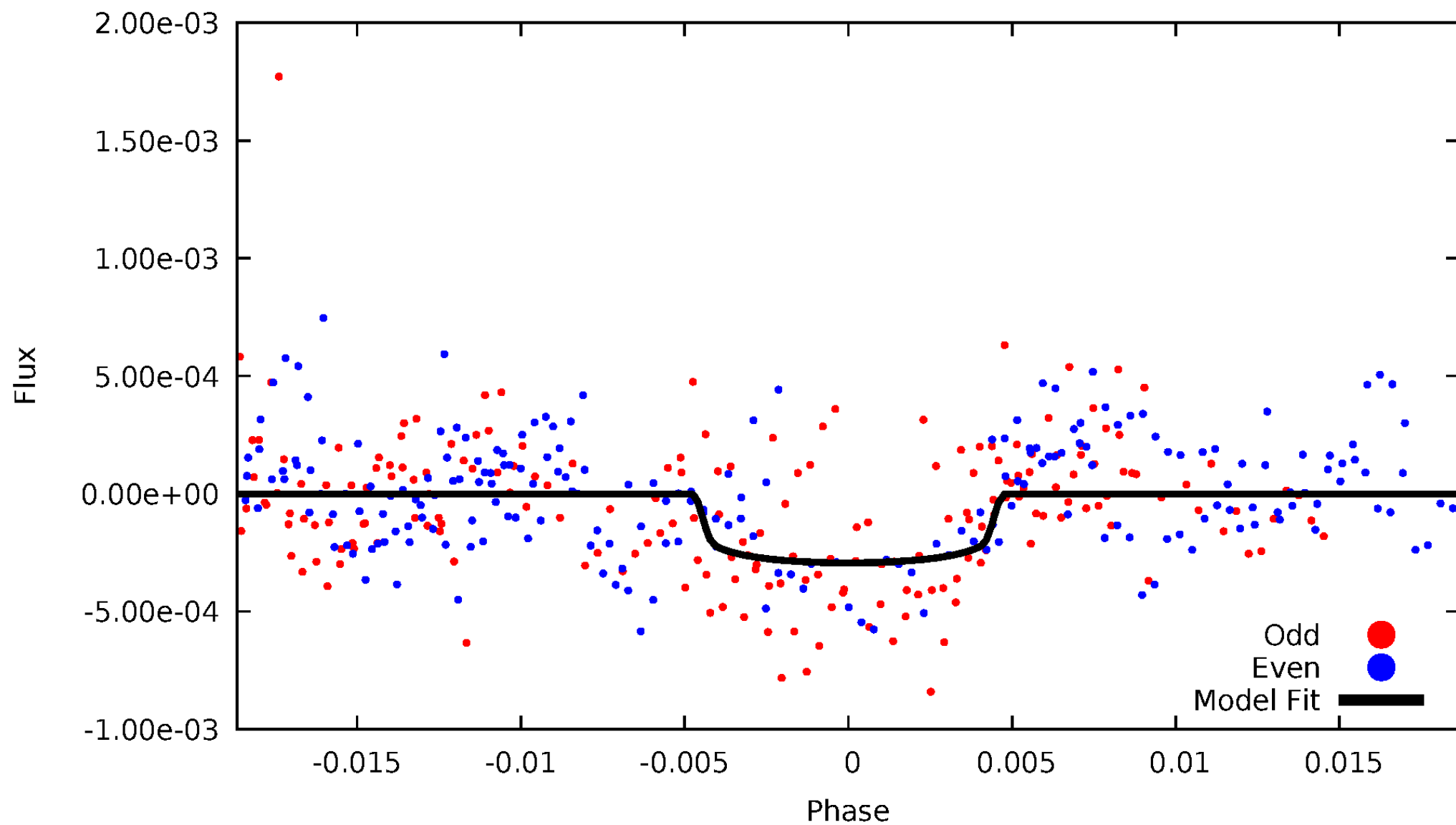


TCE 005458428-08



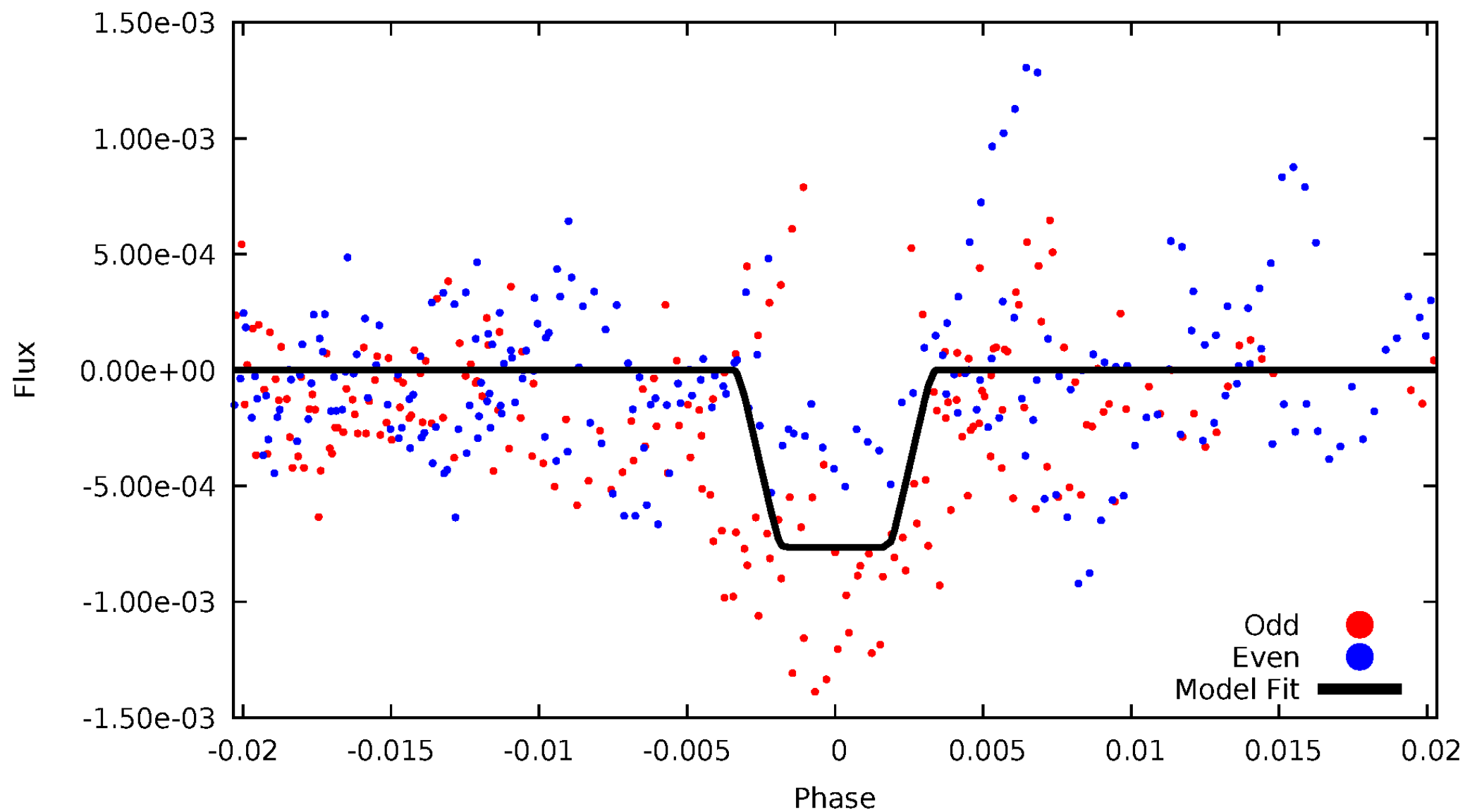
DV Odd/Even

TCE 005458428-08



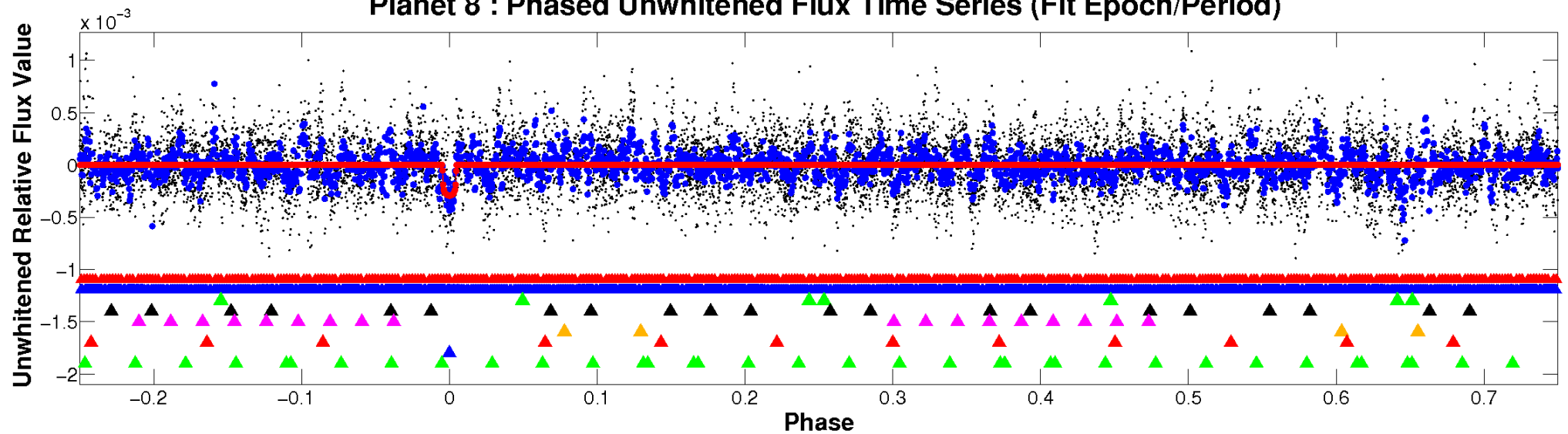
ALT Odd/Even

TCE 005458428-08

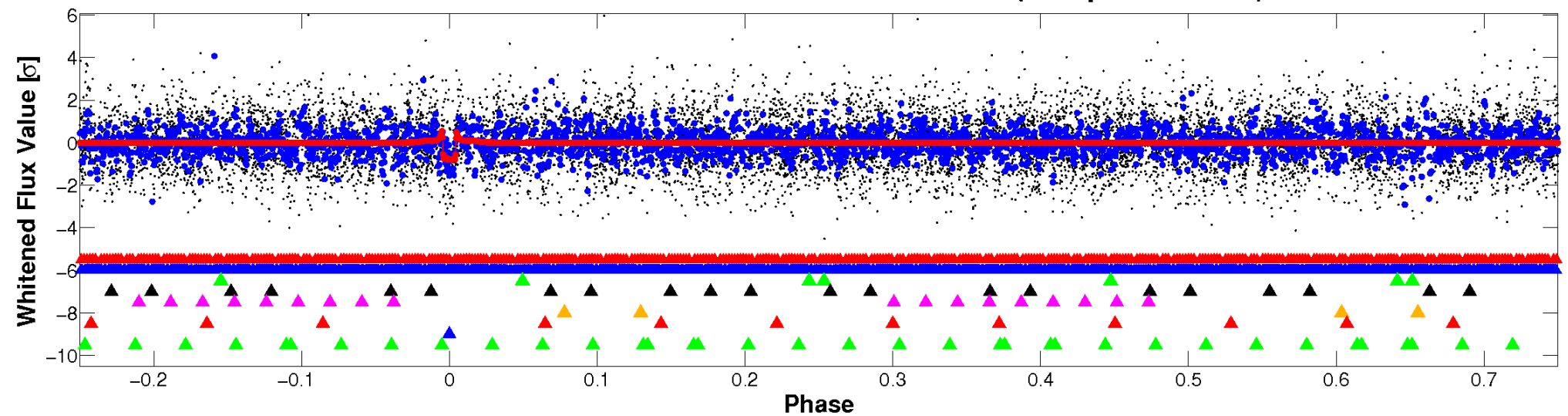


Non-Whitened Vs. Whitened Light Curve

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

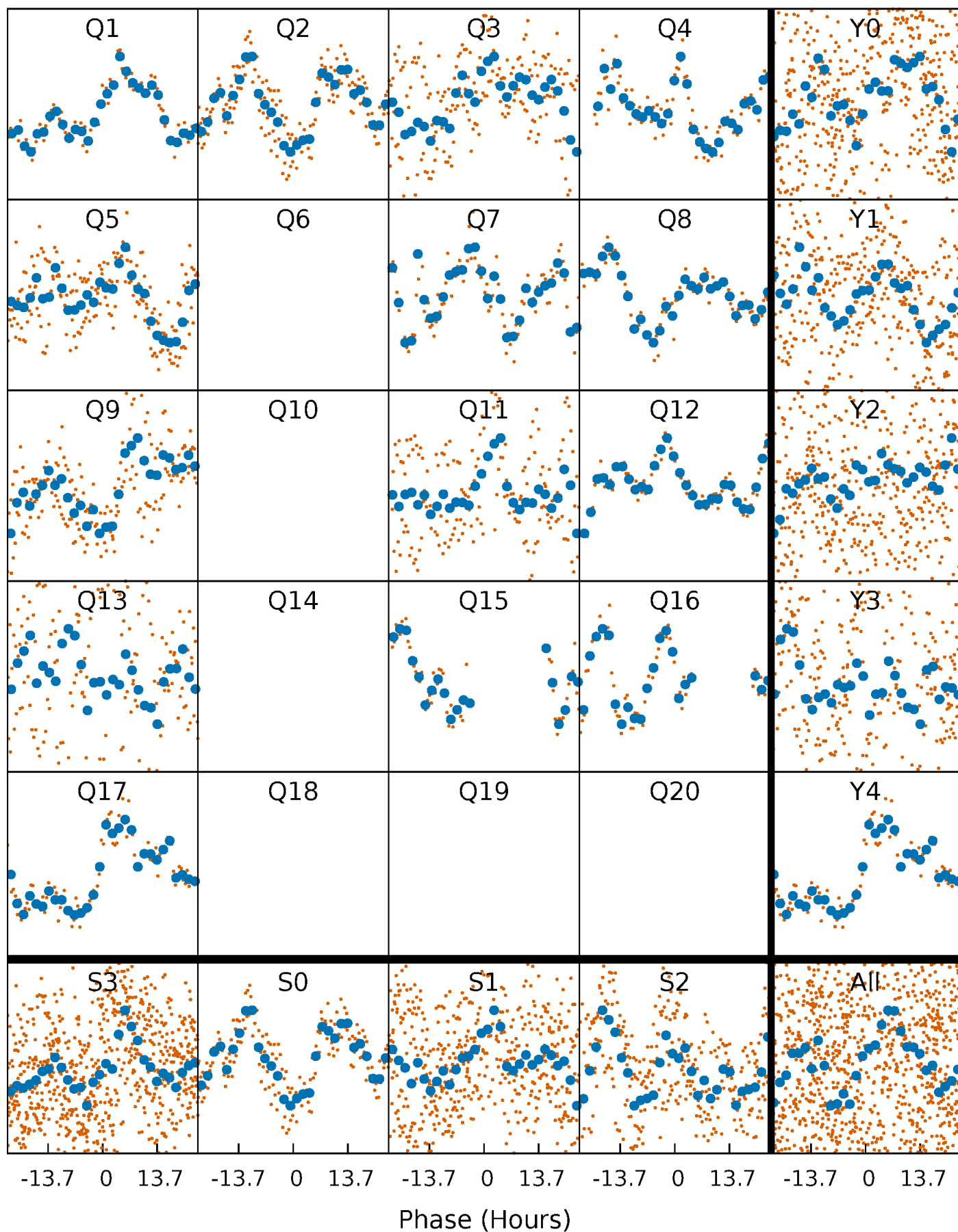


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



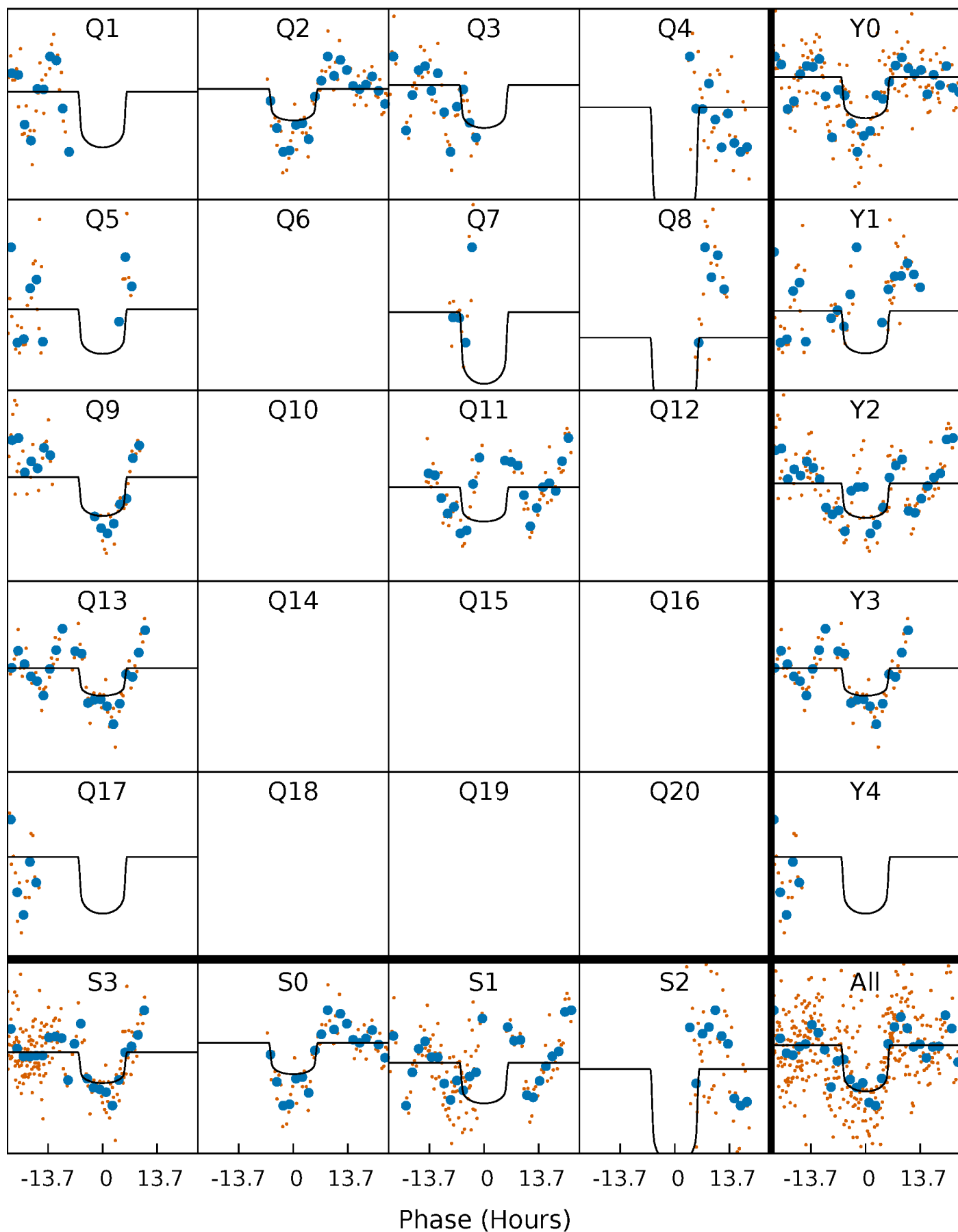
PDC Quarter-Phased Transit Curves

TCE 005458428-08 P= 53.481893 Days $T_0=134.251969$ (BKJD)



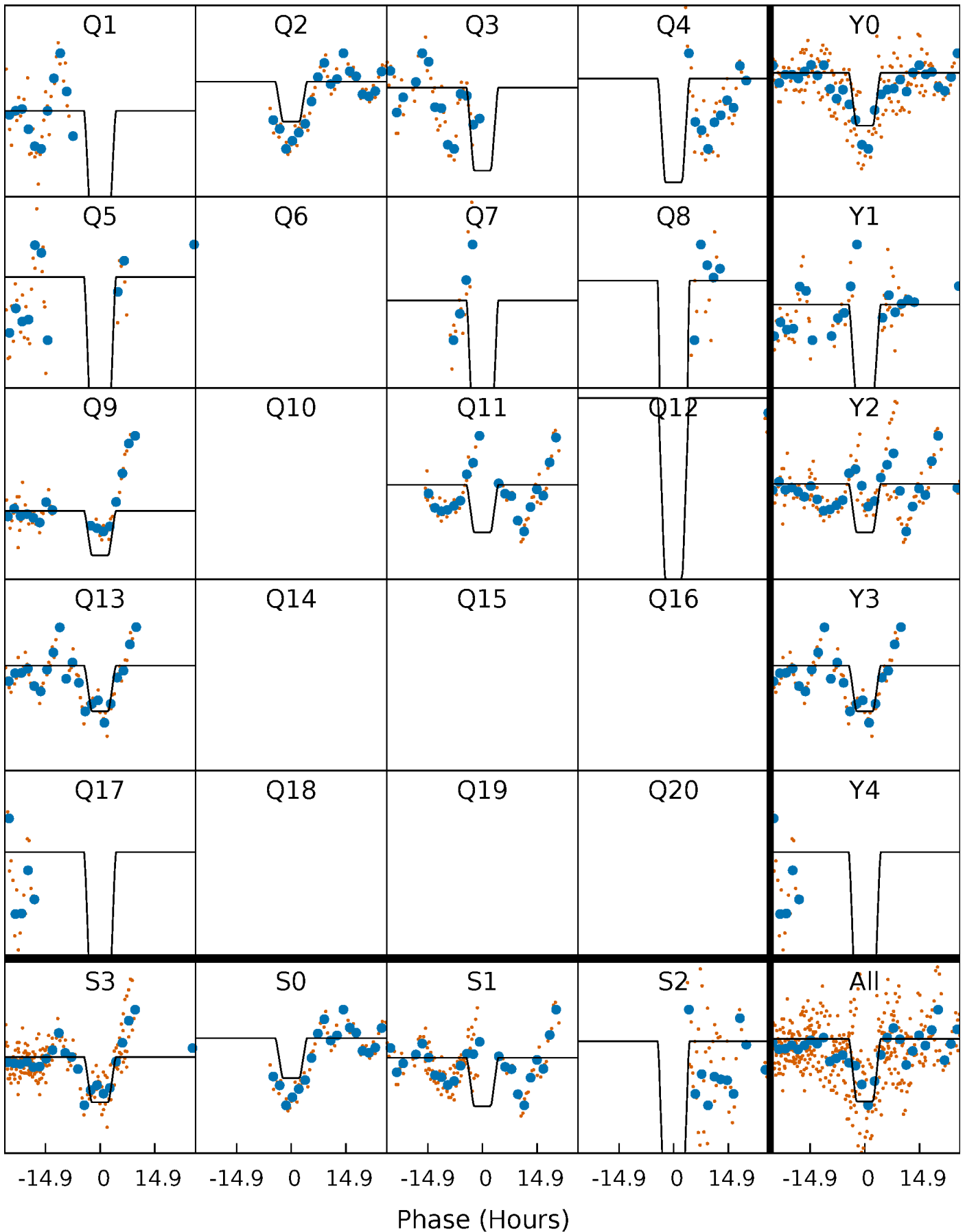
DV Quarter-Phased Transit Curves

TCE 005458428-08 $P = 53.481893$ Days $T_0 = 134.251969$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

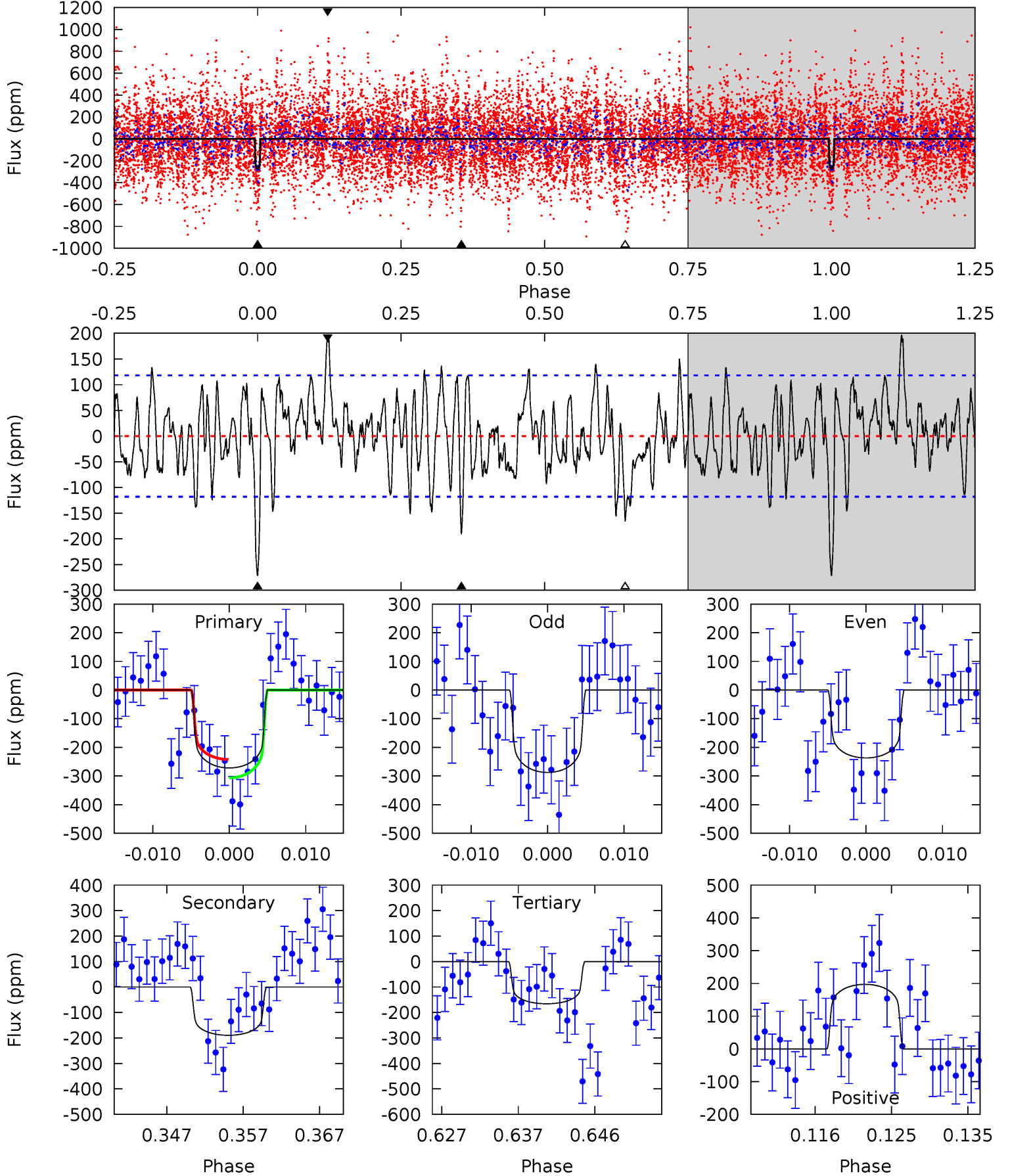
TCE 005458428-08 P= 53.486138 Days $T_0=134.215795$ (BKJD)



DV Model-Shift Uniqueness Test

005458428-08, P = 53.481893 Days, E = 80.770076 Days

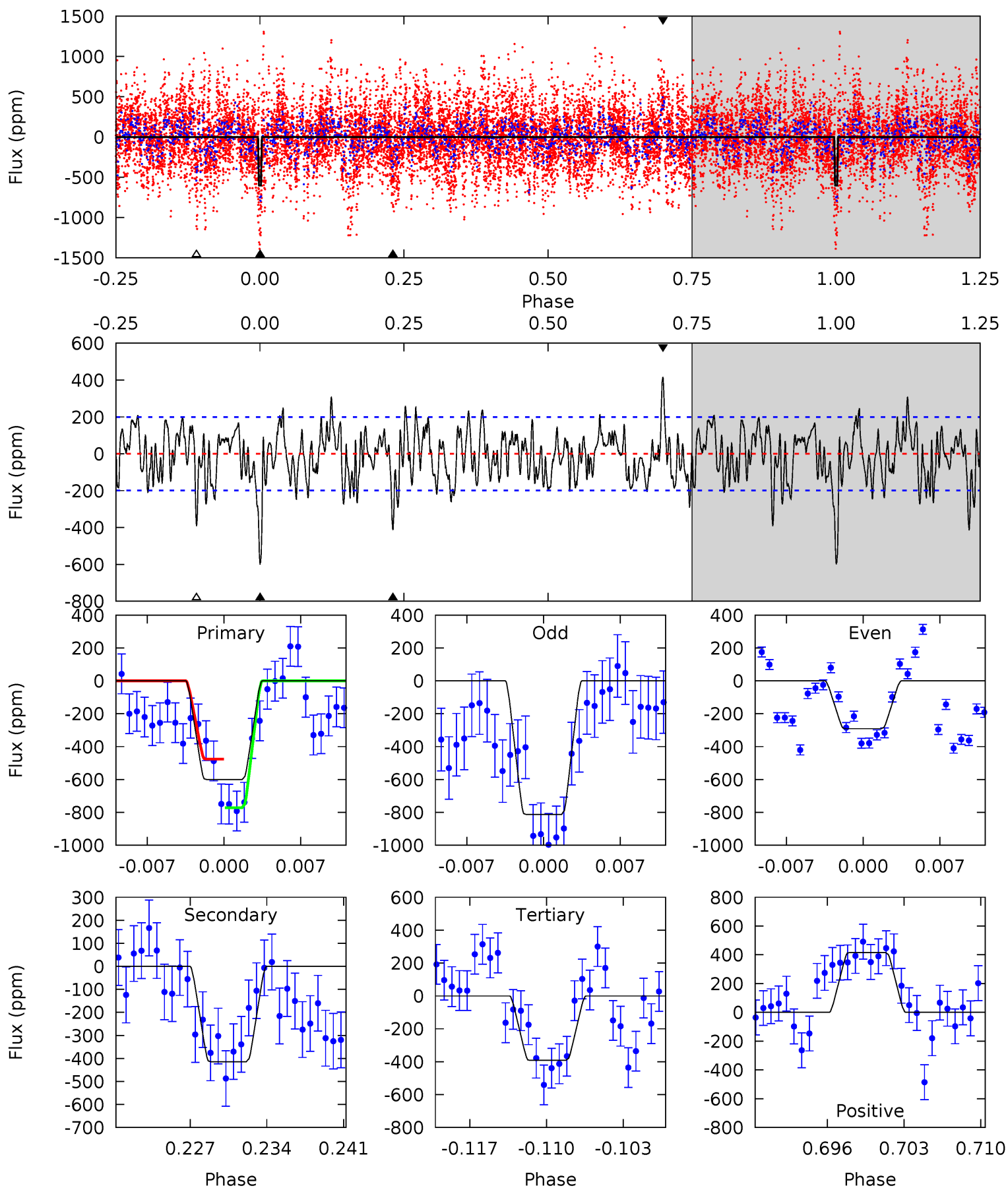
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	8.08	7.06	8.40	5.03	2.59	2.59	4.52	3.19	1.01	-0.32	1.03	0.81	0.42	1.37



Alt Model-Shift Uniqueness Test

005458428-08, P = 53.486138 Days, E = 80.729657 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.4	10.6	10.0	10.7	5.10	2.70	2.95	5.34	4.72	0.57	-0.05	6.36	0.21	0.41	3.76



Stellar Parameters For KIC 005458428

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7059^{+168}_{-252}	$3.287^{+0.435}_{-0.145}$	$0.070^{+0.200}_{-0.300}$	$5.894^{+1.521}_{-2.825}$	$2.453^{+0.165}_{-0.662}$	$0.017^{+0.077}_{-0.008}$
	+2%/-4%	+13%/-4%	+286%/-429%	+26%/-48%	+7%/-27%	+456%/-45%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005458428-08 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-190 ± 23	$10.22^{+3.16}_{-2.83}$	1686^{+131}_{-191}	6203^{+849}_{-596}	134^{+121}_{-55}
Alt.	-414 ± 39	$16.52^{+3.93}_{-4.40}$	1684^{+131}_{-199}	6018^{+502}_{-427}	117^{+77}_{-42}

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 $A_{obs} \gg 1.0$

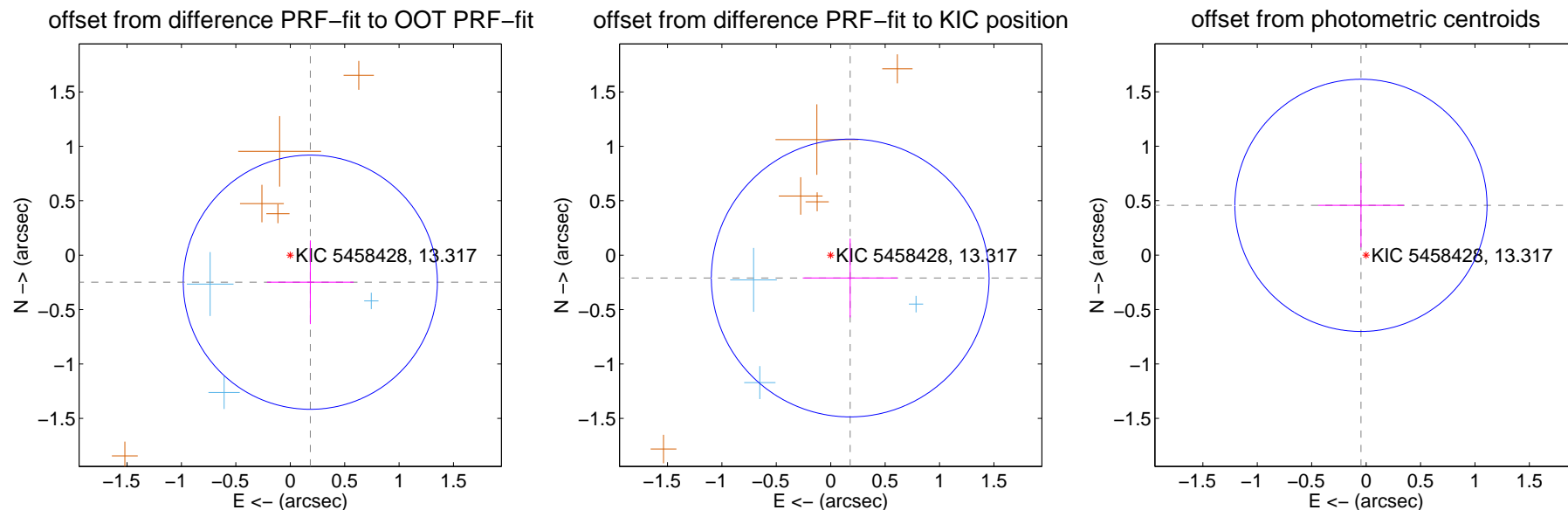
DV Centroid Data

Supplemental centroid analysis for 005458428-08. Kepler magnitude: 13.32. Transit SNR 7.66

There are 3 quarters with good PRF difference image offsets

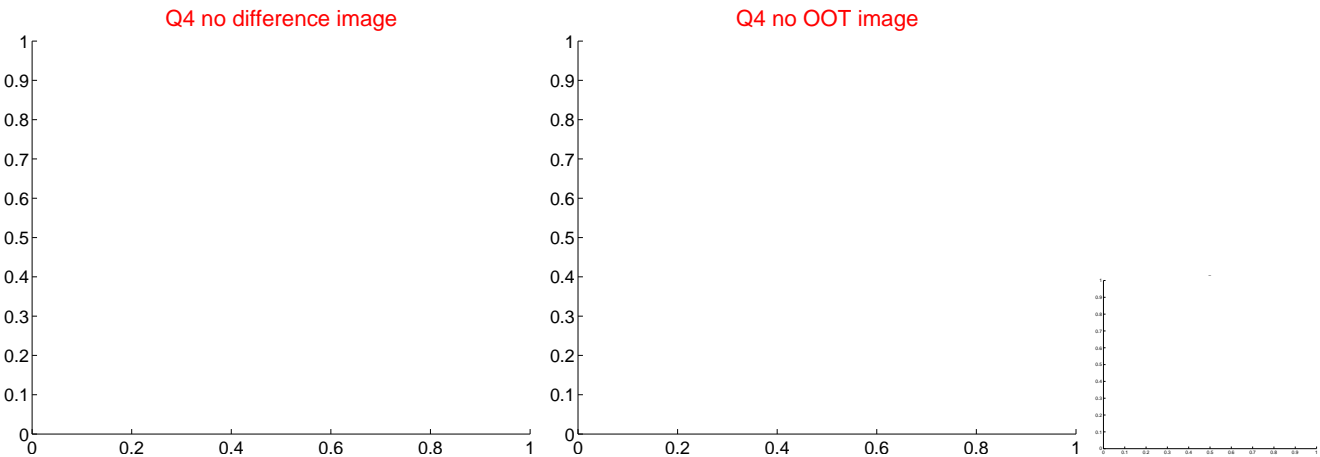
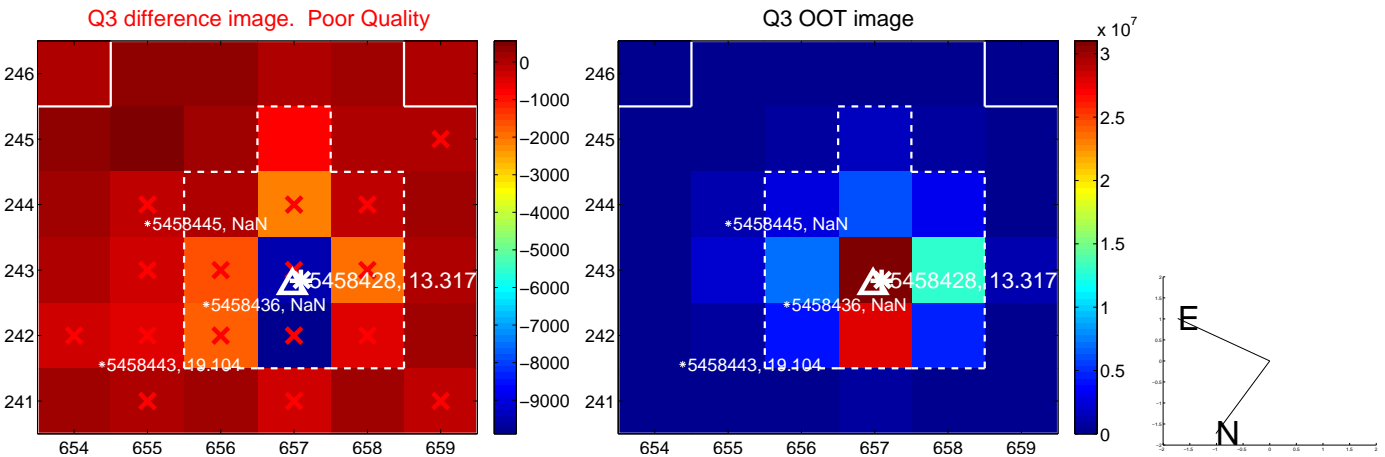
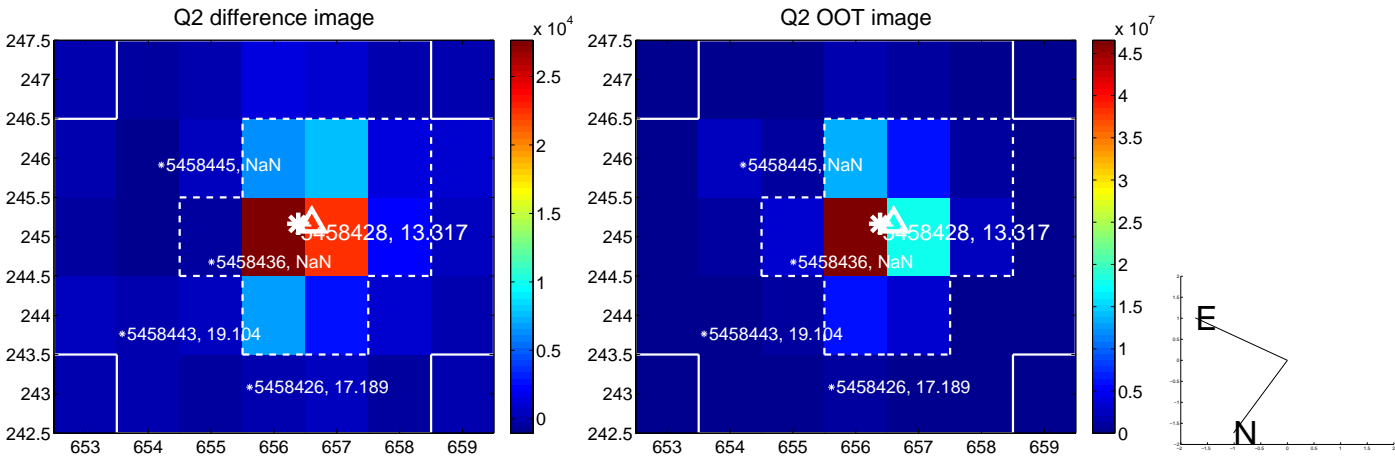
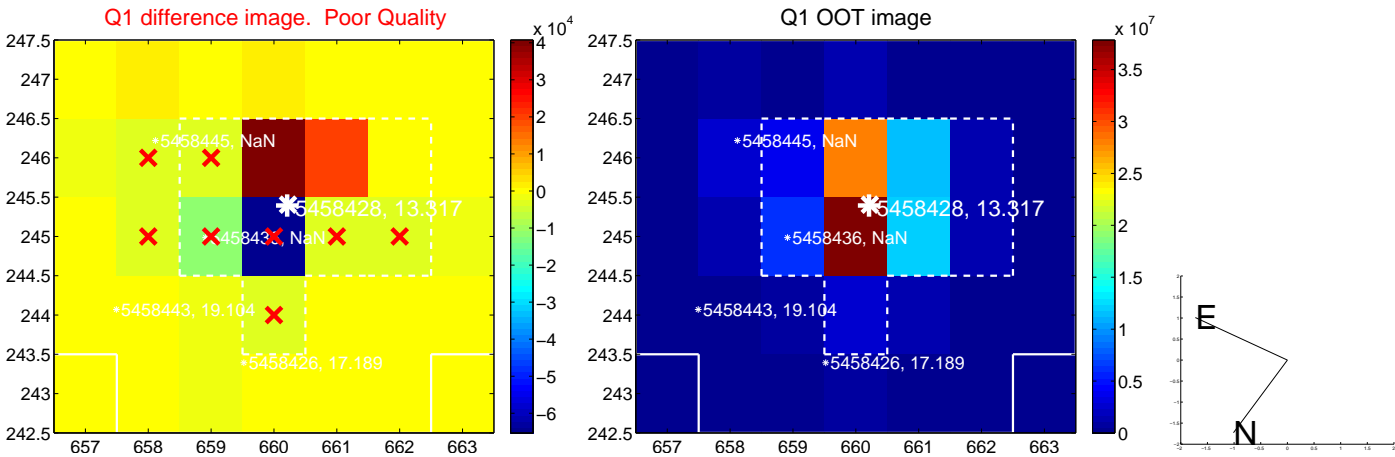
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.310 ± 0.389	0.80	-0.185 ± 0.398	-0.249 ± 0.384
PRF-fit source offset from KIC position	0.276 ± 0.425	0.65	-0.179 ± 0.436	-0.210 ± 0.362
photometric centroid source offset	0.46 ± 0.39	1.19	0.05 ± 0.39	0.46 ± 0.39

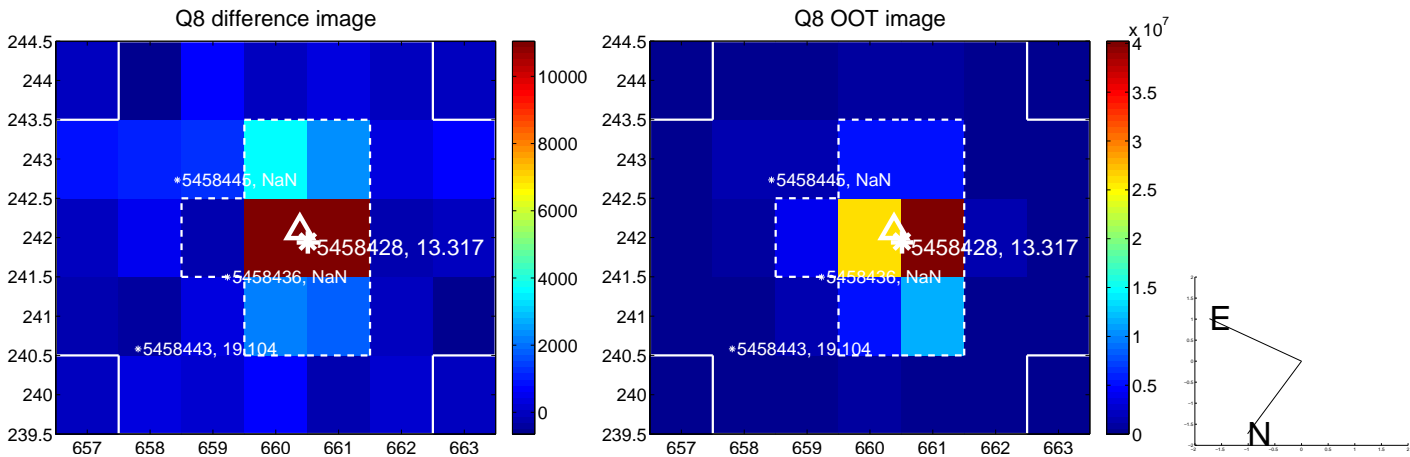
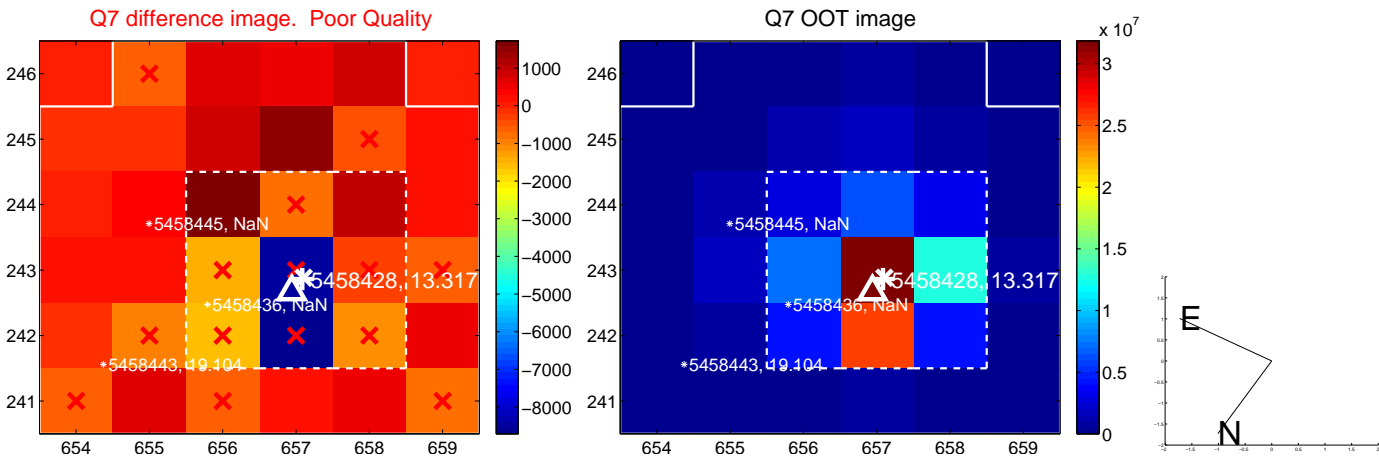
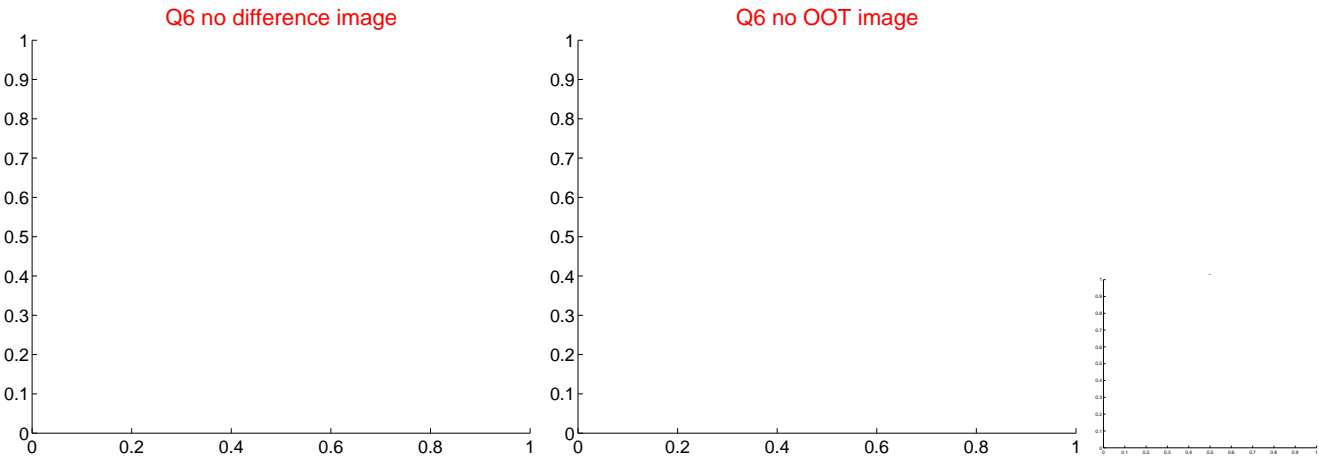
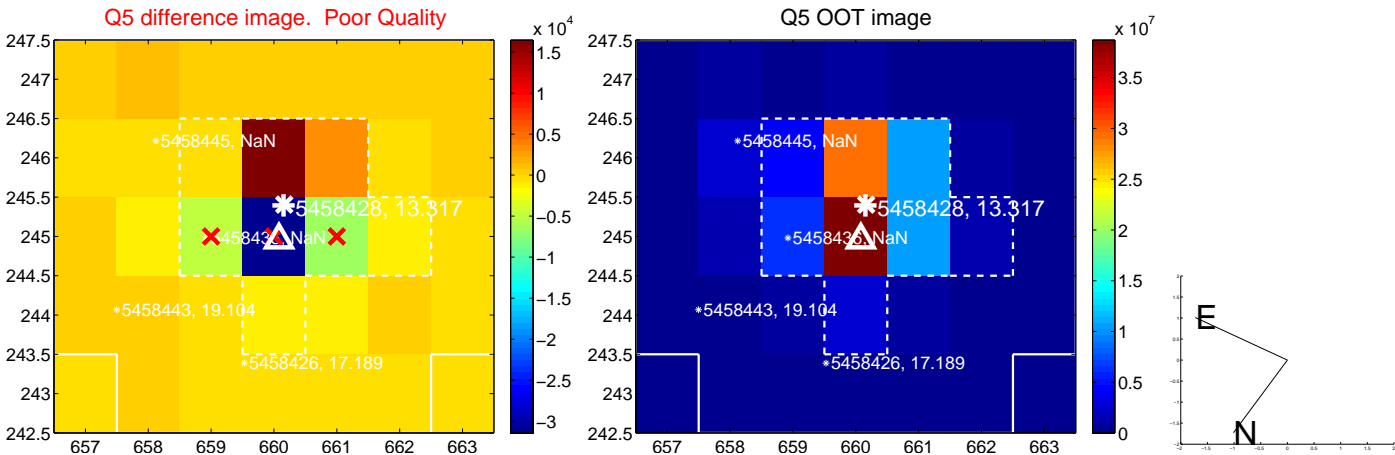


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

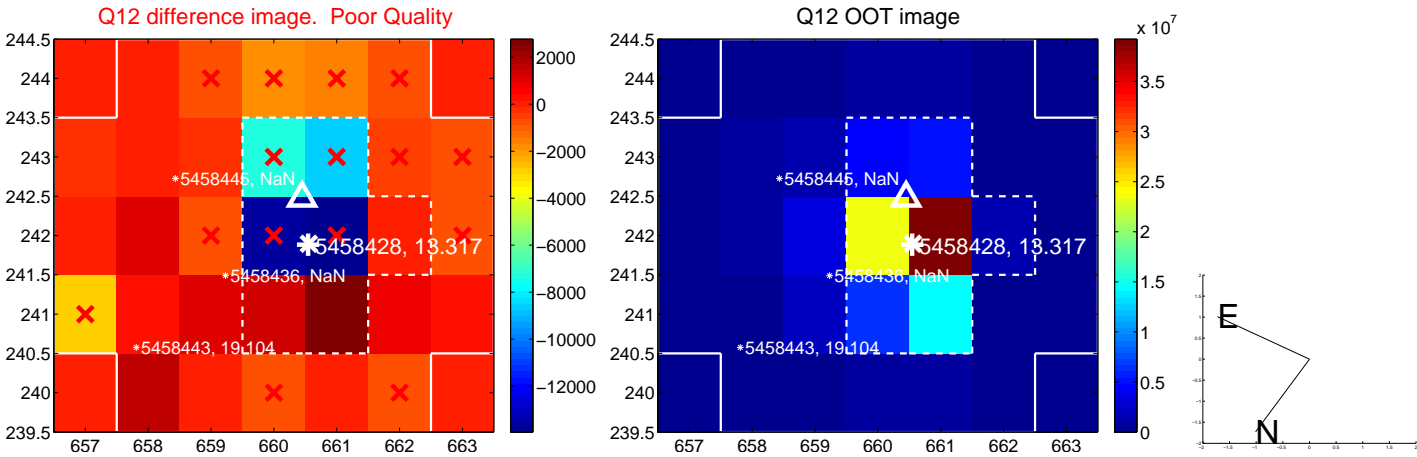
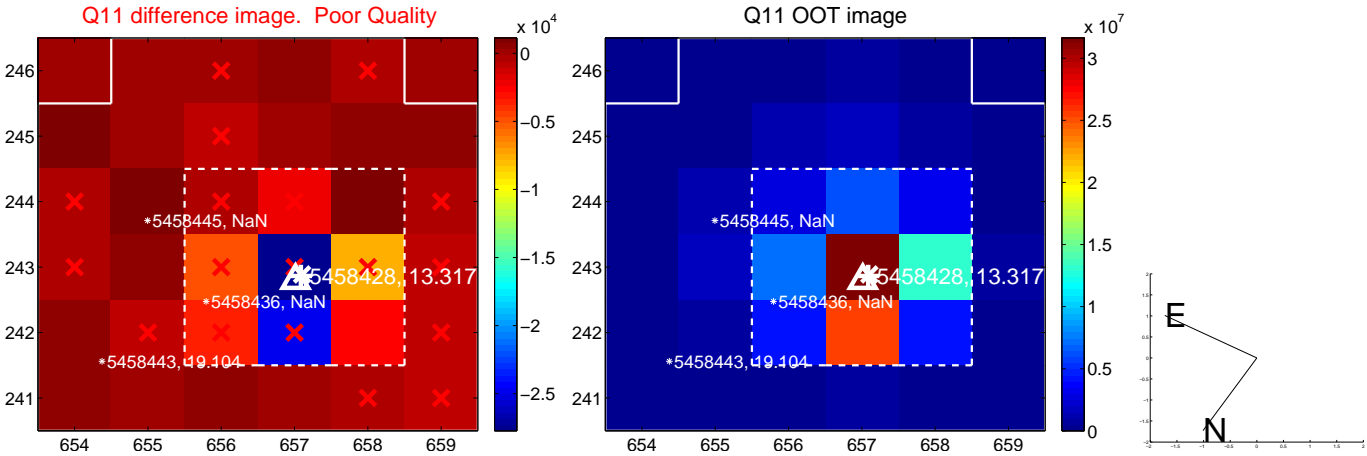
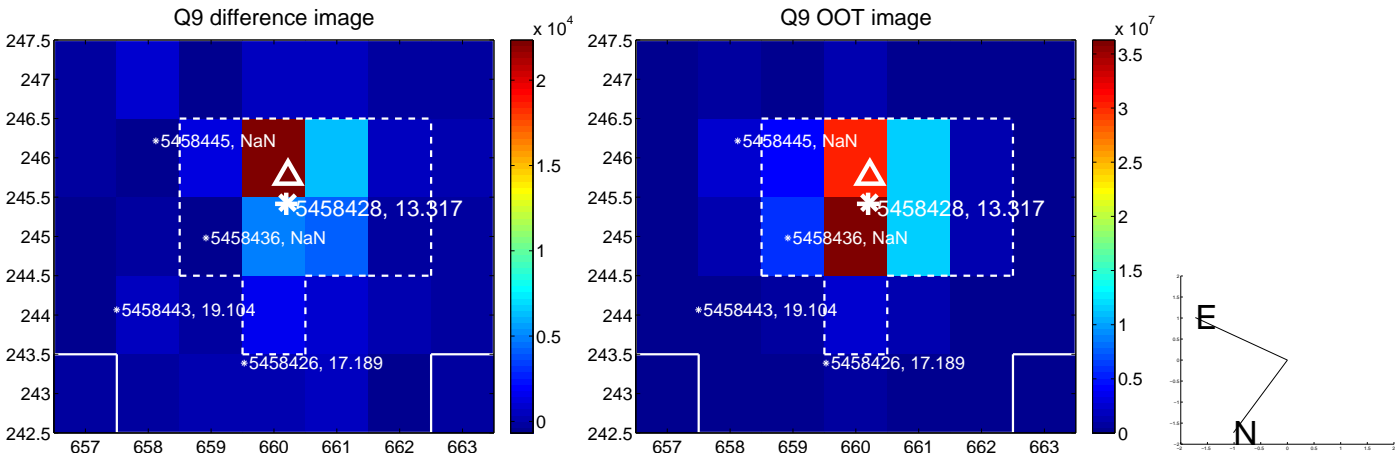
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



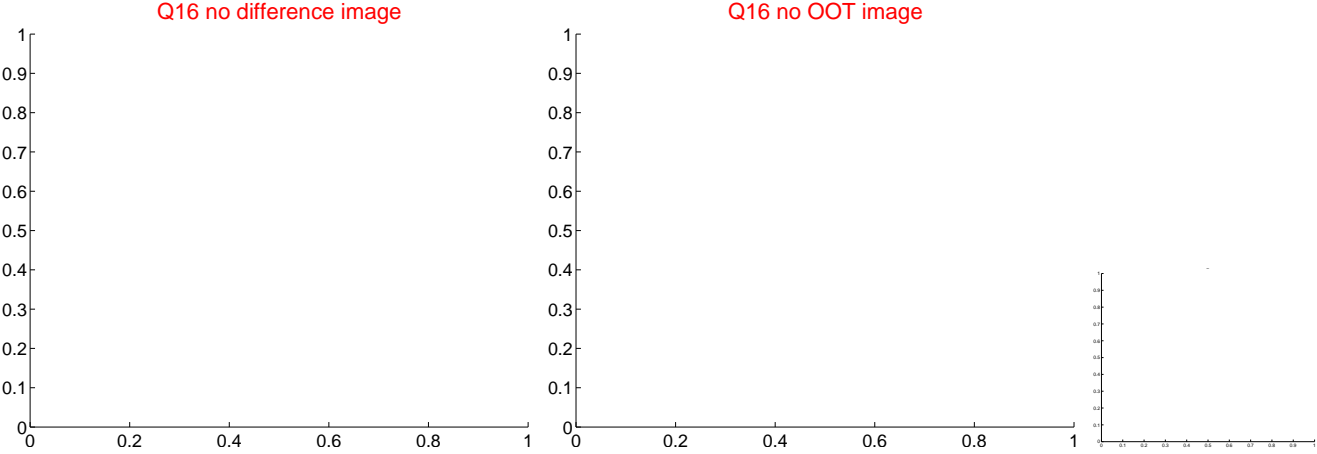
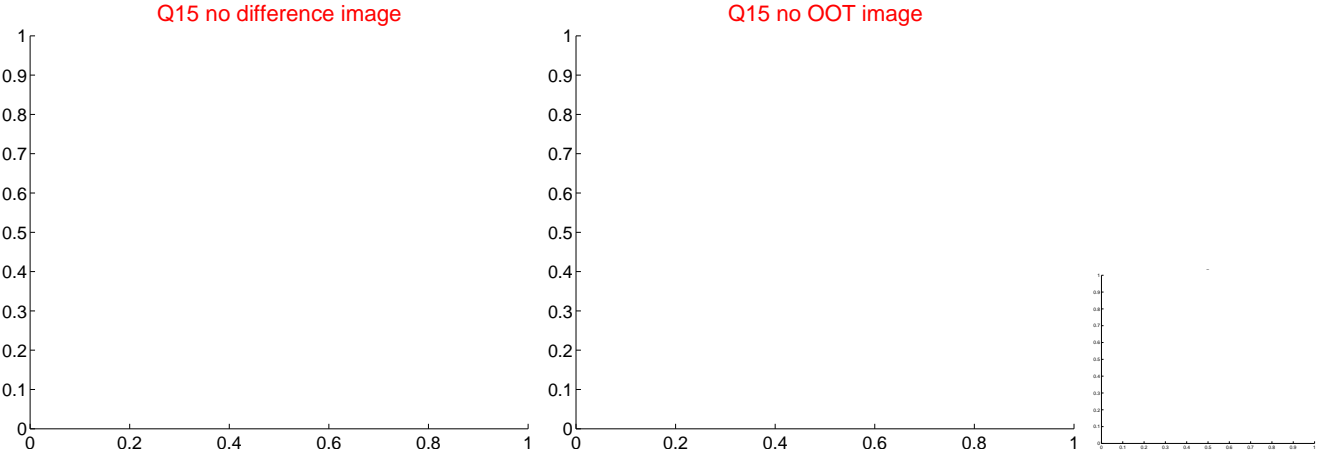
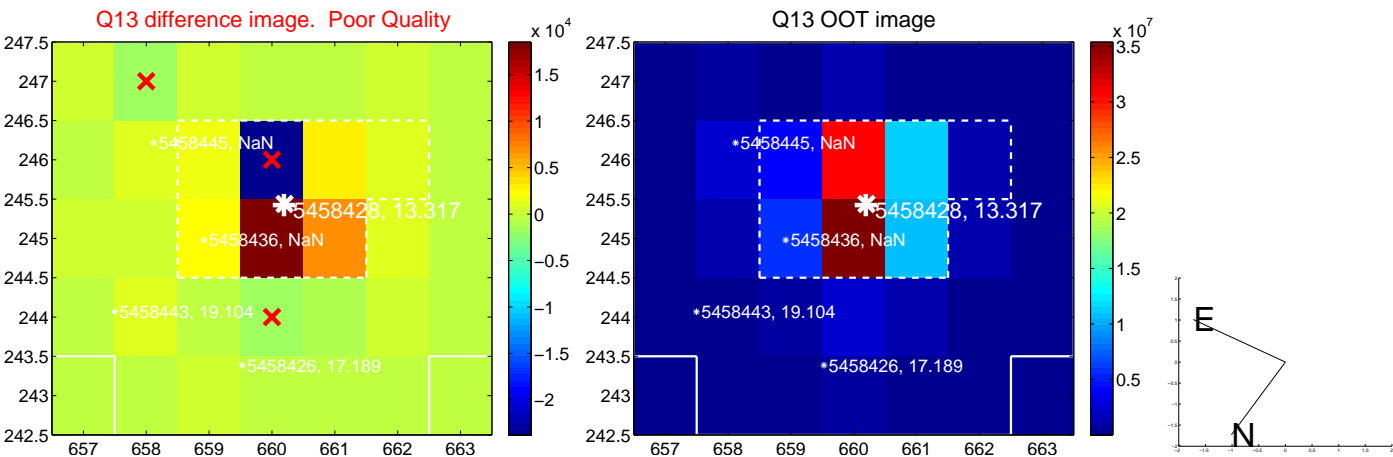
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



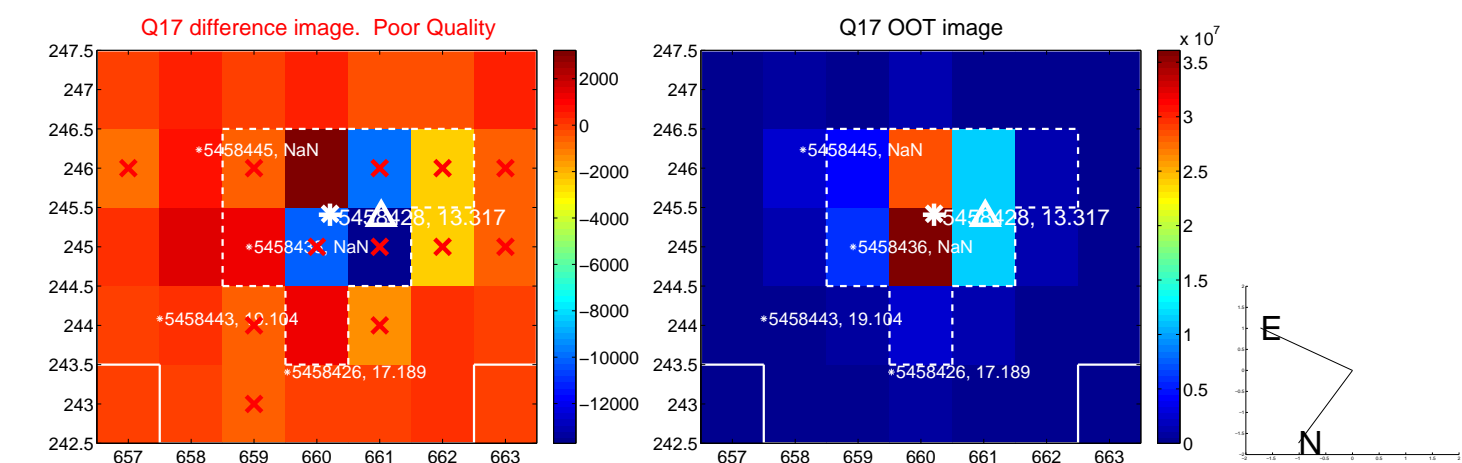
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



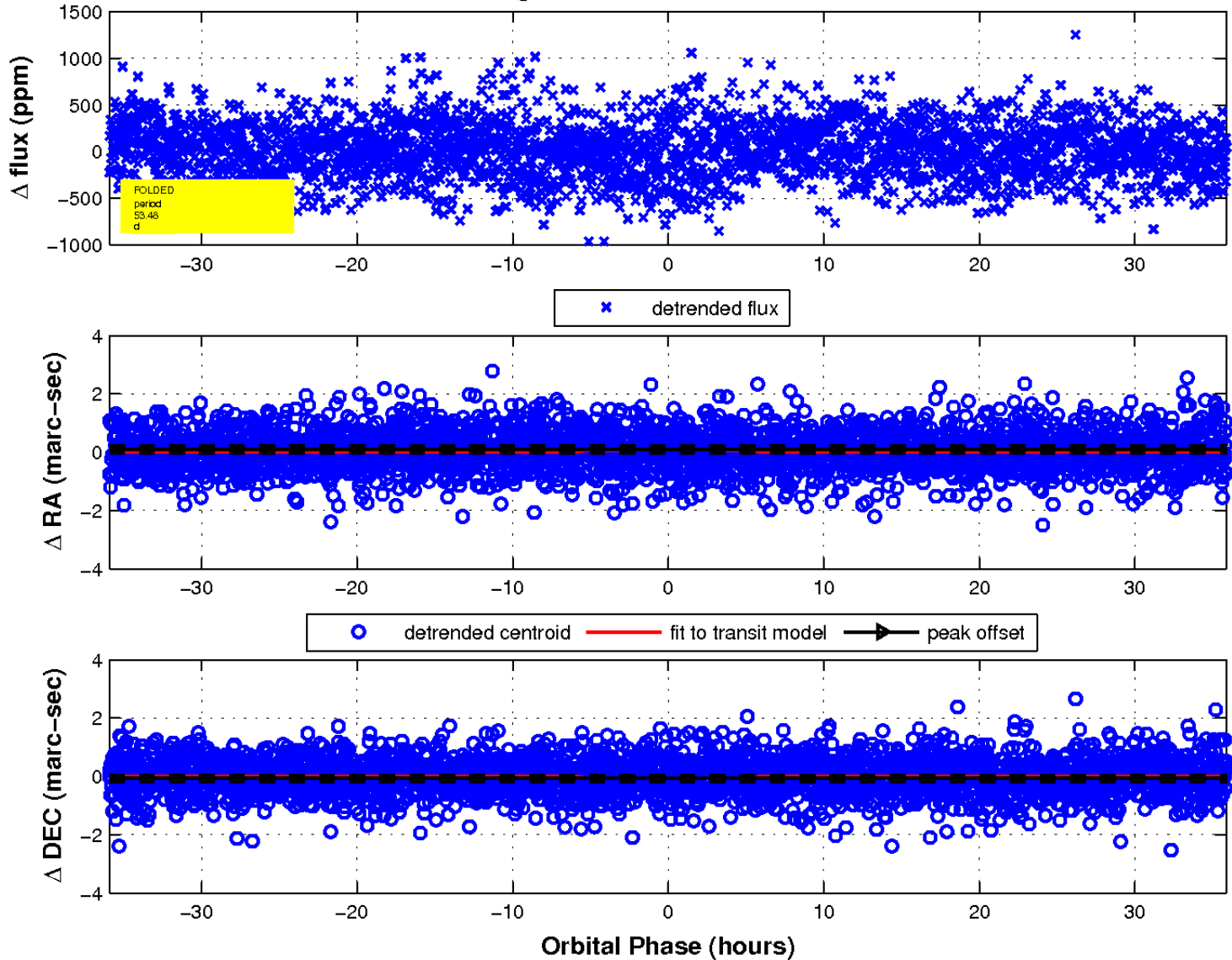
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

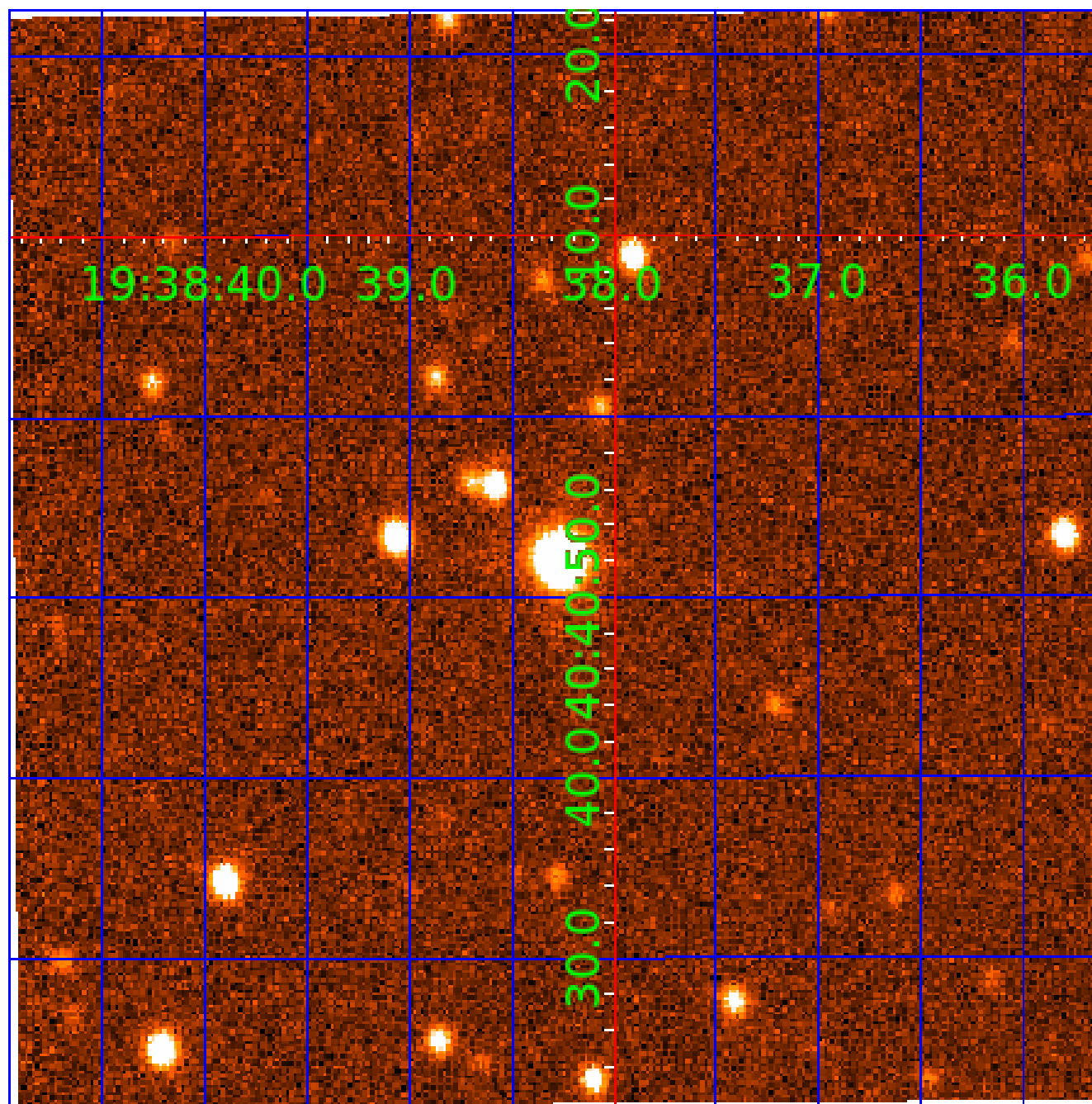


fluxWeightedCentroids, Planet 8 of 9



UKIRT Image

Declination



KIC 005458428

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})
005458428-01	OBS	No	3.200651	132.084844	75.7	13.138	9.7	10.5	5.89	7059	6.53	23504.78
005458428-02	OBS	No	1.552378	132.735072	95.6	6.107	12.6	12.7	5.89	7059	7.80	61679.90
005458428-03	OBS	No	192.642735	275.519386	859.2	9.619	11.8	12.7	5.89	7059	25.56	99.65
005458428-04	OBS	No	69.381211	145.158500	466.6	8.103	10.3	9.1	5.89	7059	24.33	388.88
005458428-05	OBS	No	79.646495	159.557679	187.9	12.243	10.1	4.4	5.89	7059	8.65	323.53
005458428-06	OBS	No	349.011885	405.827424	479.6	10.909	9.7	8.3	5.89	7059	13.90	45.12
005458428-07	OBS	No	123.393120	150.298424	623.0	6.194	9.5	9.8	5.89	7059	27.82	180.48
005458428-08	OBS	No	53.481893	134.251969	293.6	11.976	9.5	7.7	5.89	7059	11.10	550.21
005458428-09	OBS	No	40.566928	167.259507	178.9	9.000	10.0	-1.0	5.89	7059	7.95	795.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005458428-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
005458428-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005458428-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005458428-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
005458428-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005458428-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005458428-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

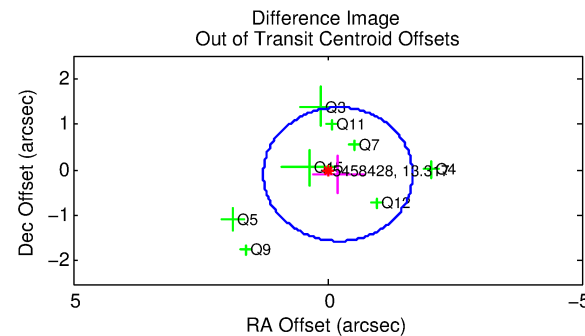
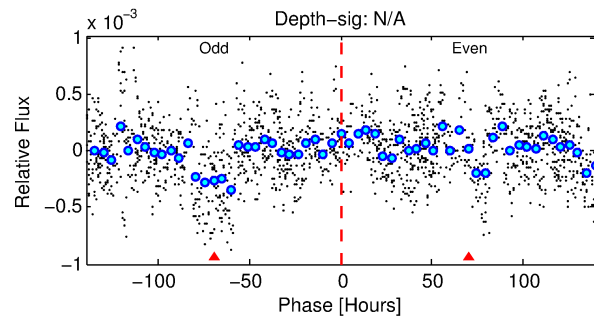
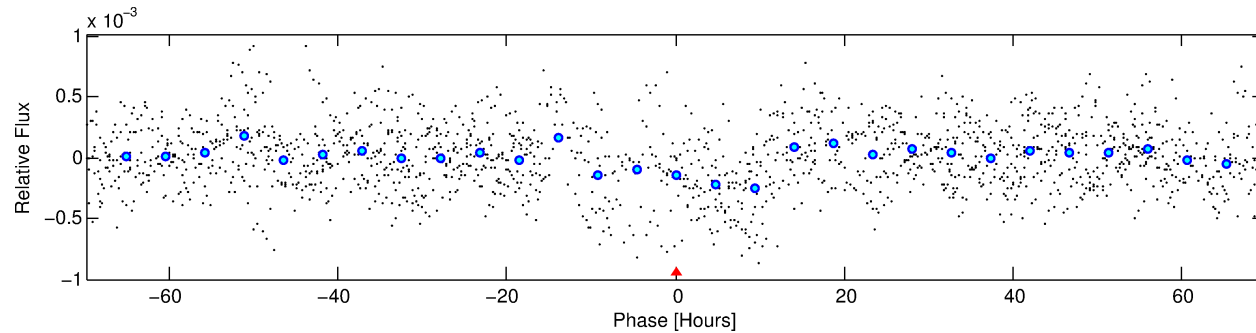
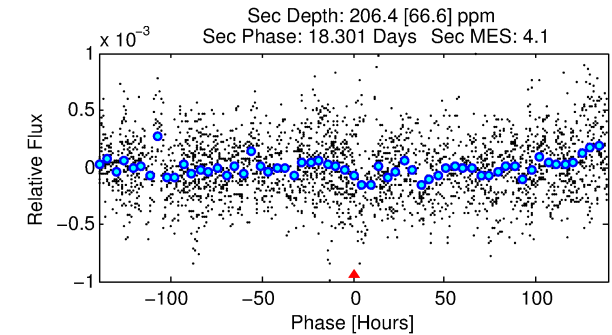
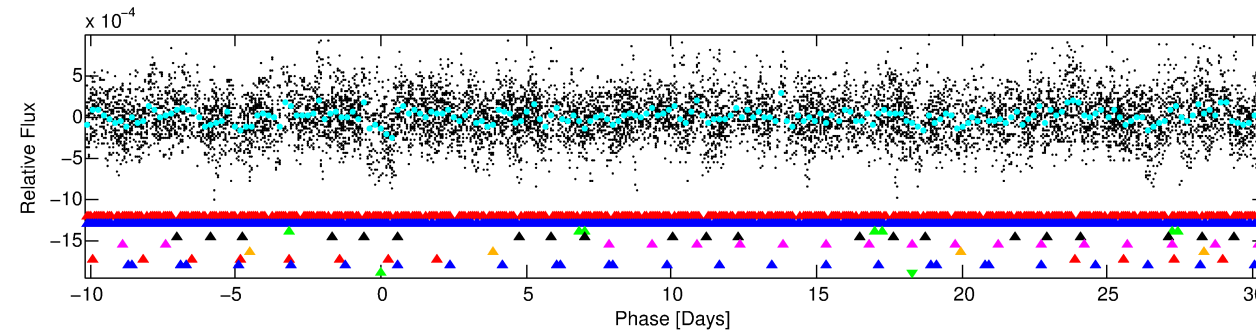
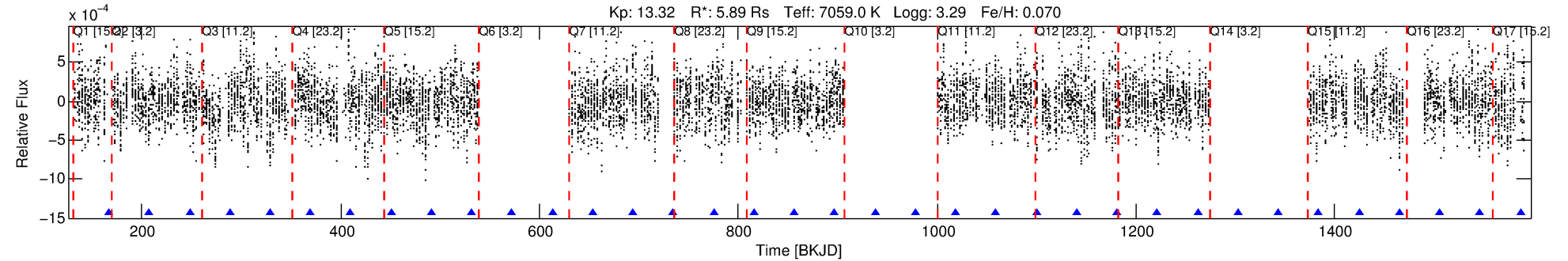
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005458428-09

No Significant Match Found

DV One-Page Summary

KIC: 5458428 Candidate: 9 of 9 Period: 40.567 d



TPS TCE Results:

Period = 40.56693 d
Epoch = 167.2595 BKJD

DV fit results are unavailable

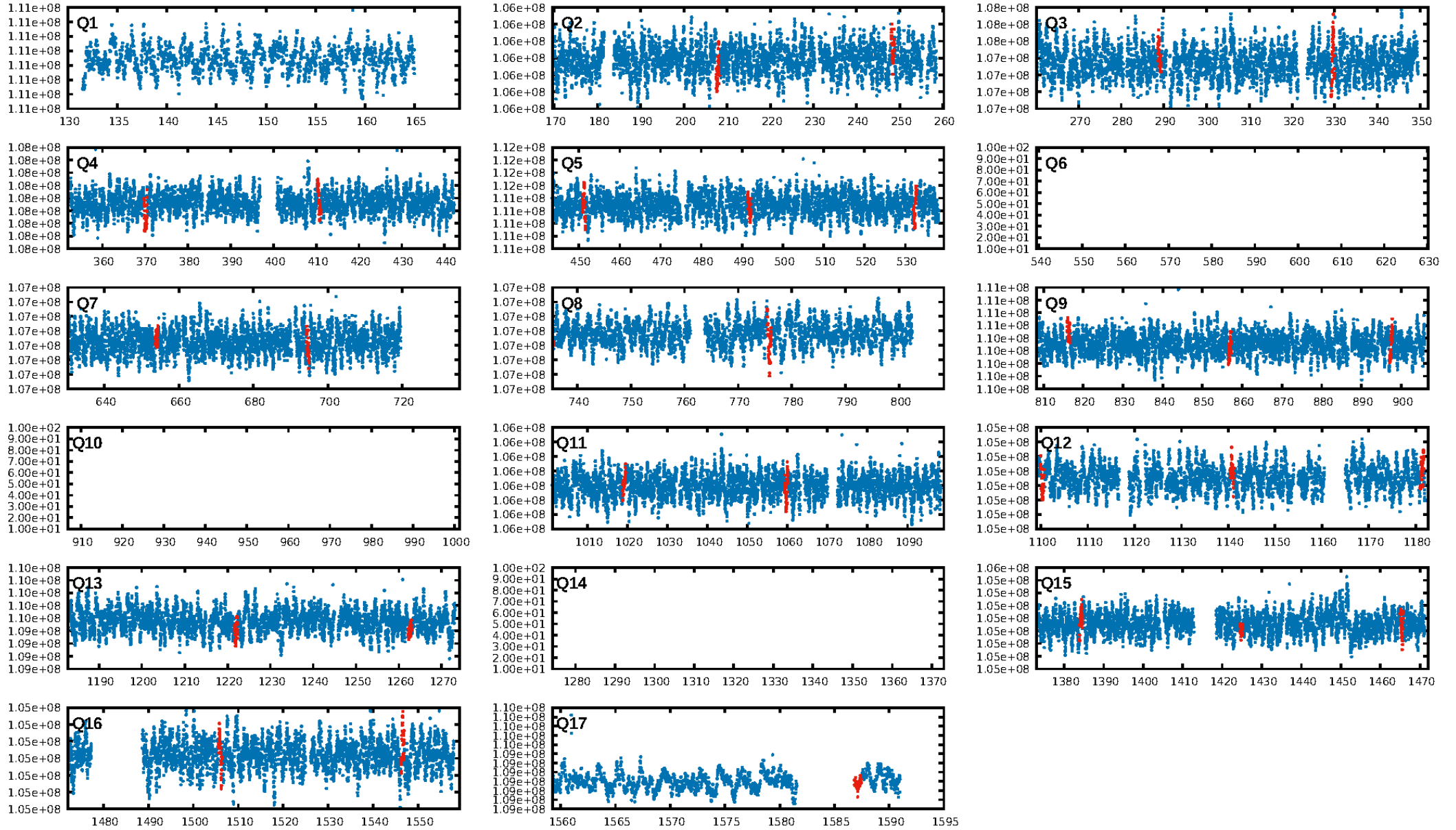
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [56.31 σ]
LongPeriod-sig: 100.0% [20.69 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [15/15]
GhostDiagnostic-chr: -1.113
Centroid-sig: 0.0%
Centroid-so: 0.371 arcsec [1.41 σ]
OotOffset-rm: 0.231 arcsec [0.47 σ]
KicOffset-rm: 0.353 arcsec [0.70 σ]
OotOffset-st: 0/4/2/2 [8]
KicOffset-st: 0/4/2/2 [8]
DiffImageQuality-fgm: 0.75 [6/8]
DiffImageOverlap-fno: 0.00 [0/11]

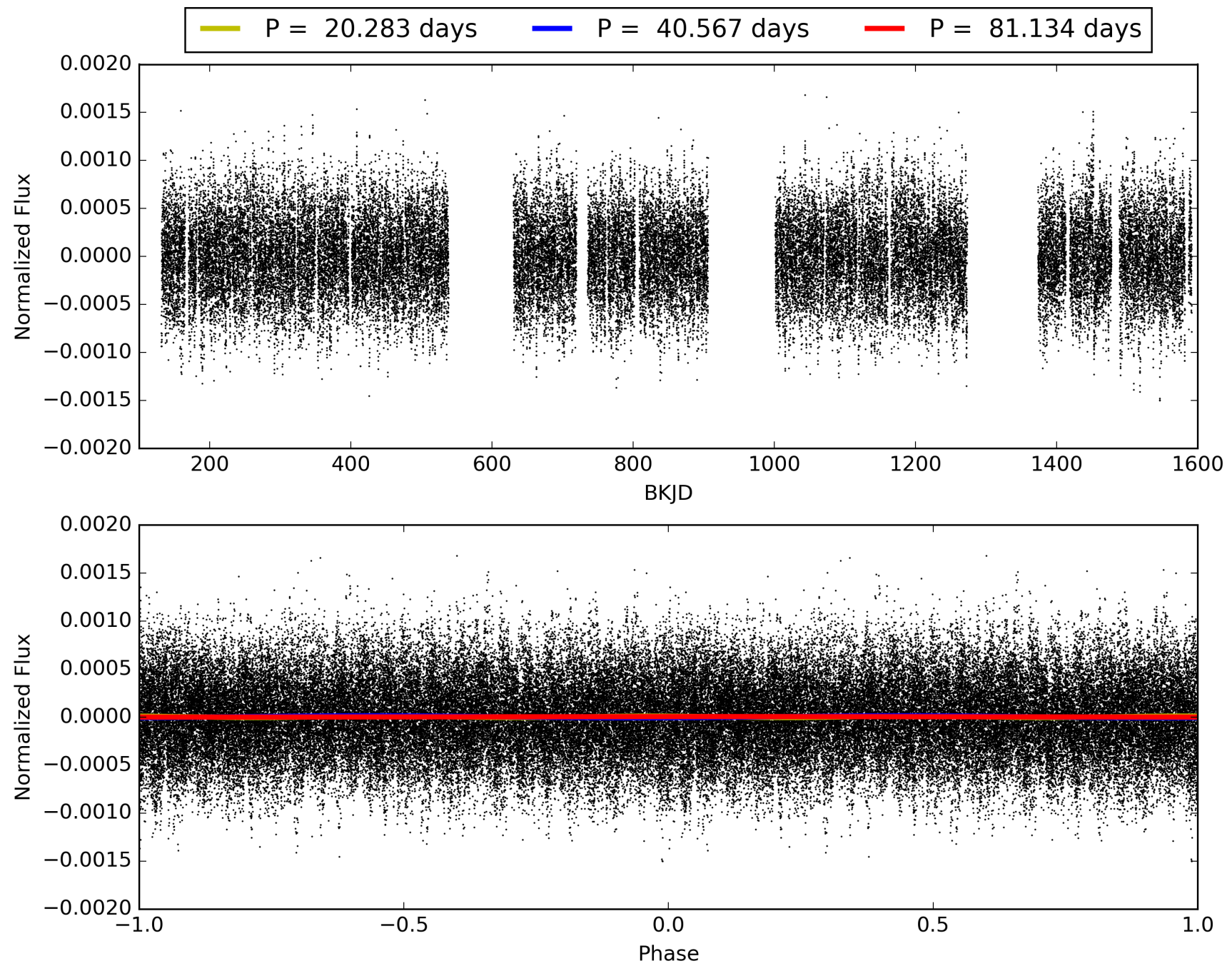
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:11:00 Z

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

TCE 005458428-09, PDC Light Curves

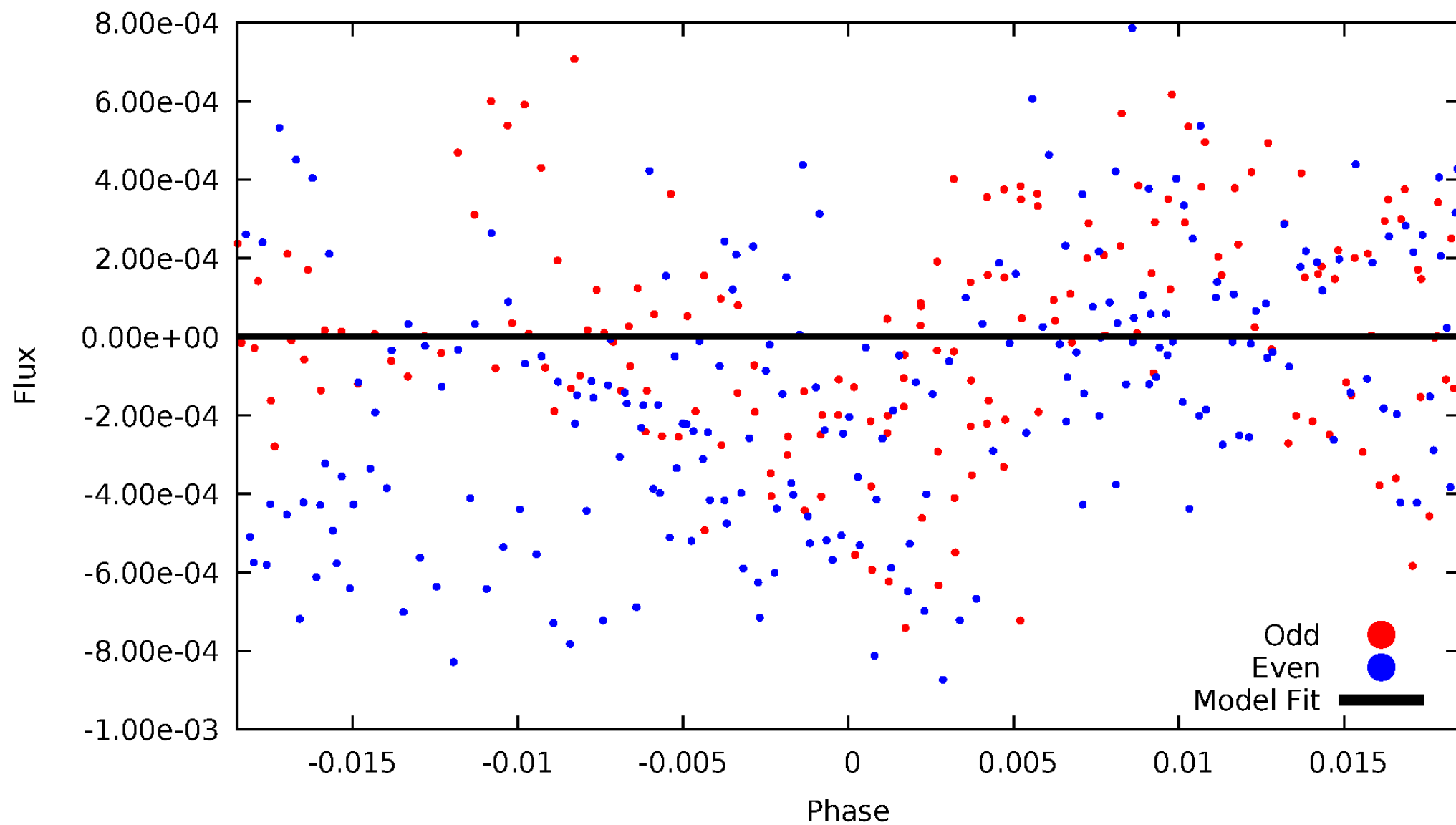


TCE 005458428-09



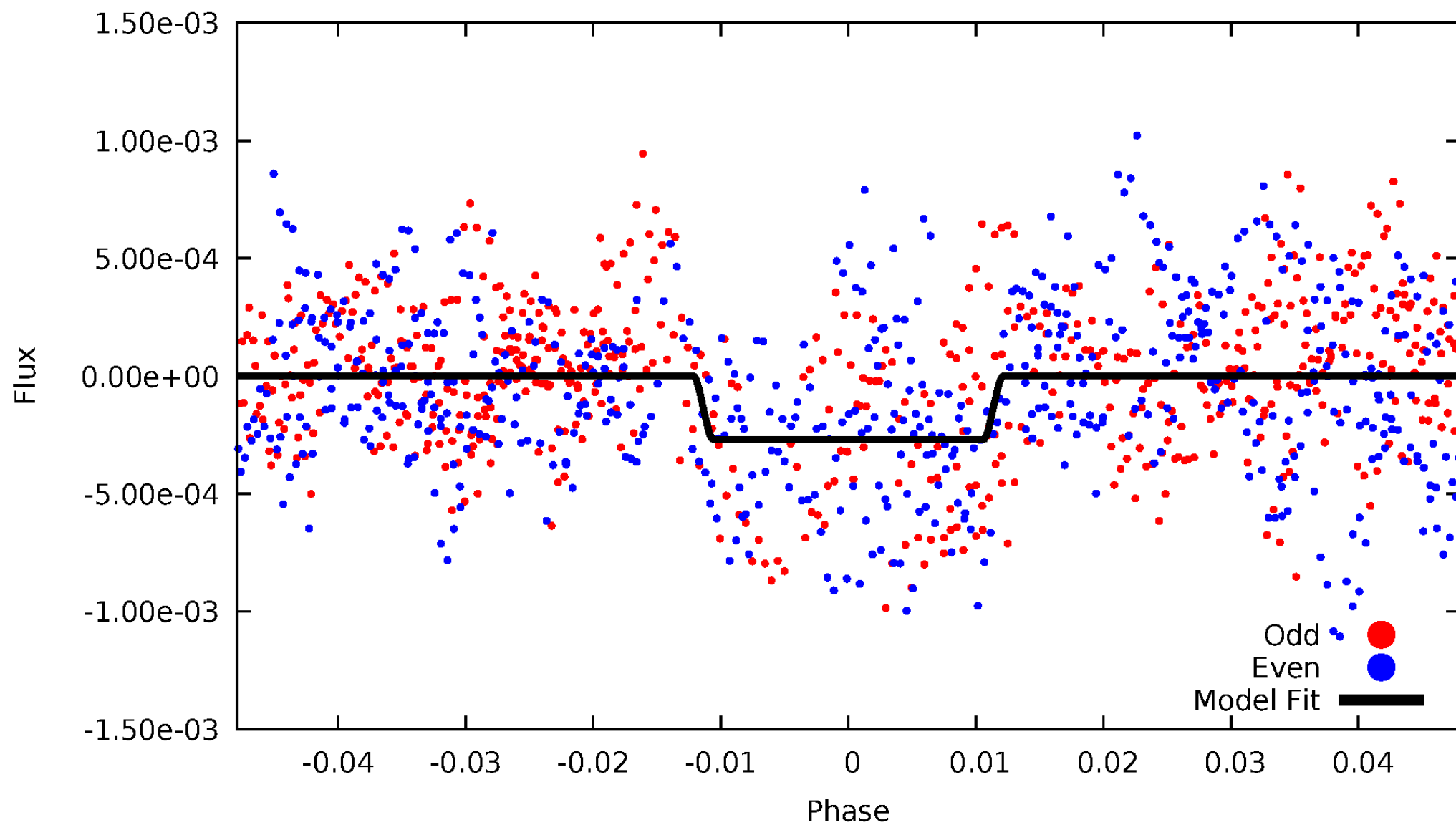
DV Odd/Even

TCE 005458428-09

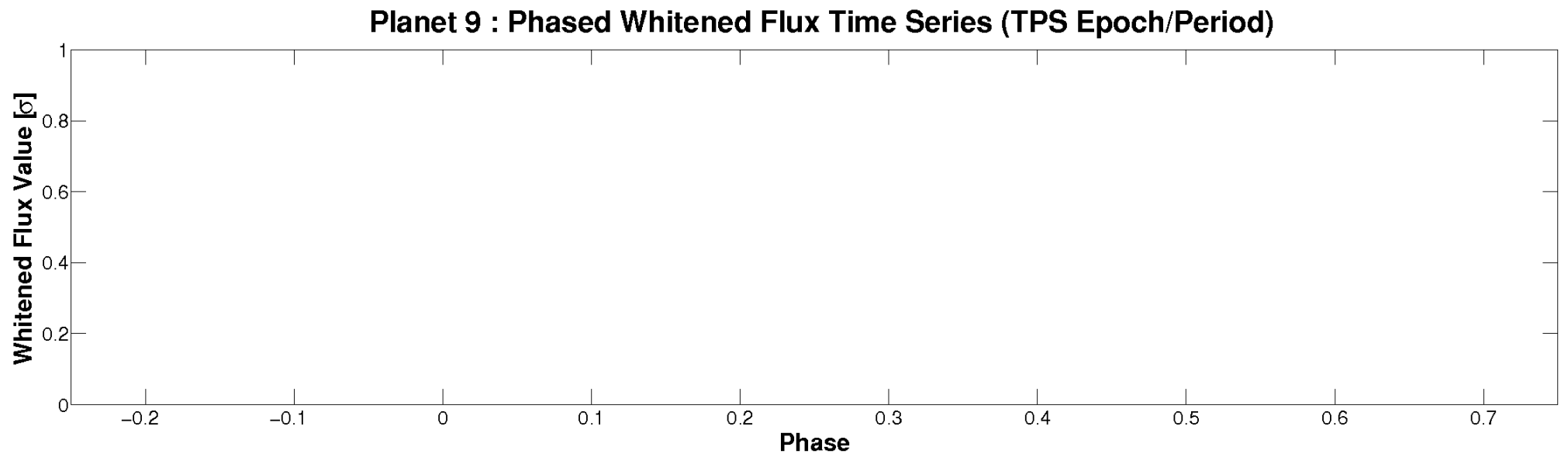
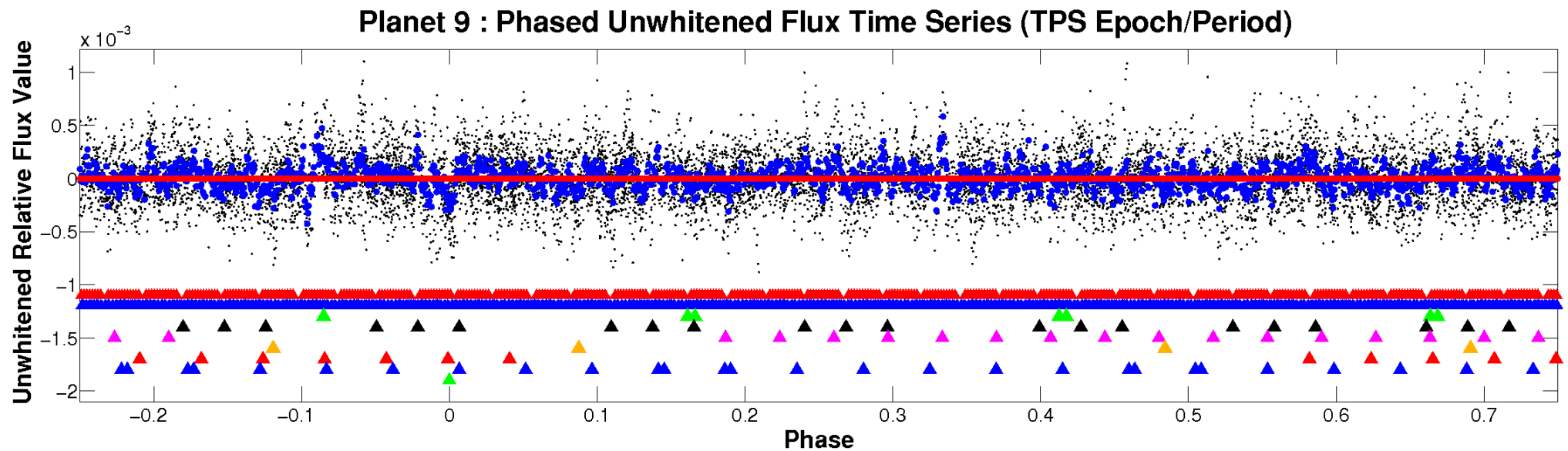


ALT Odd/Even

TCE 005458428-09

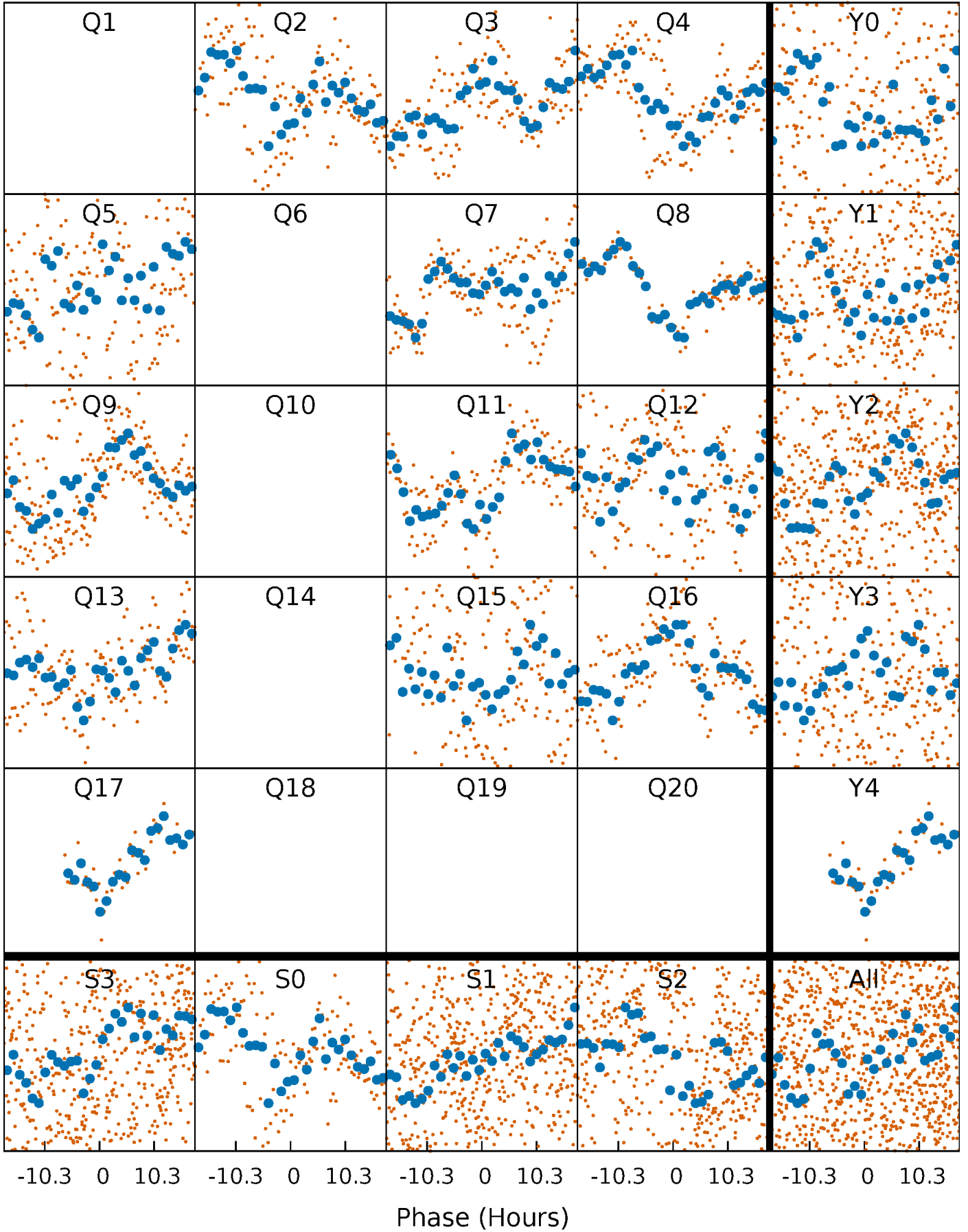


Non-Whitened Vs. Whitened Light Curve



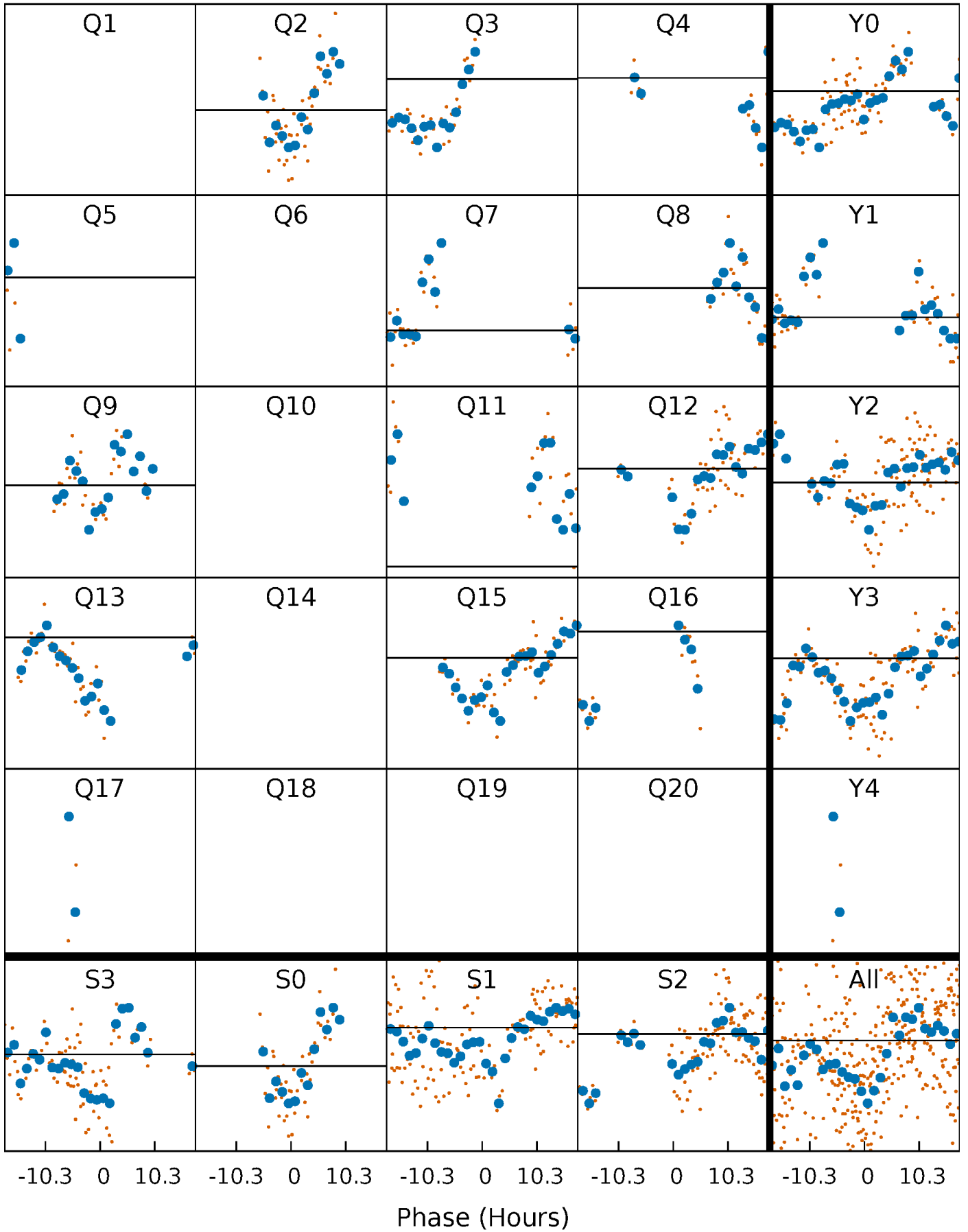
PDC Quarter-Phased Transit Curves

TCE 005458428-09 P= 40.566928 Days $T_0=167.259507$ (BKJD)



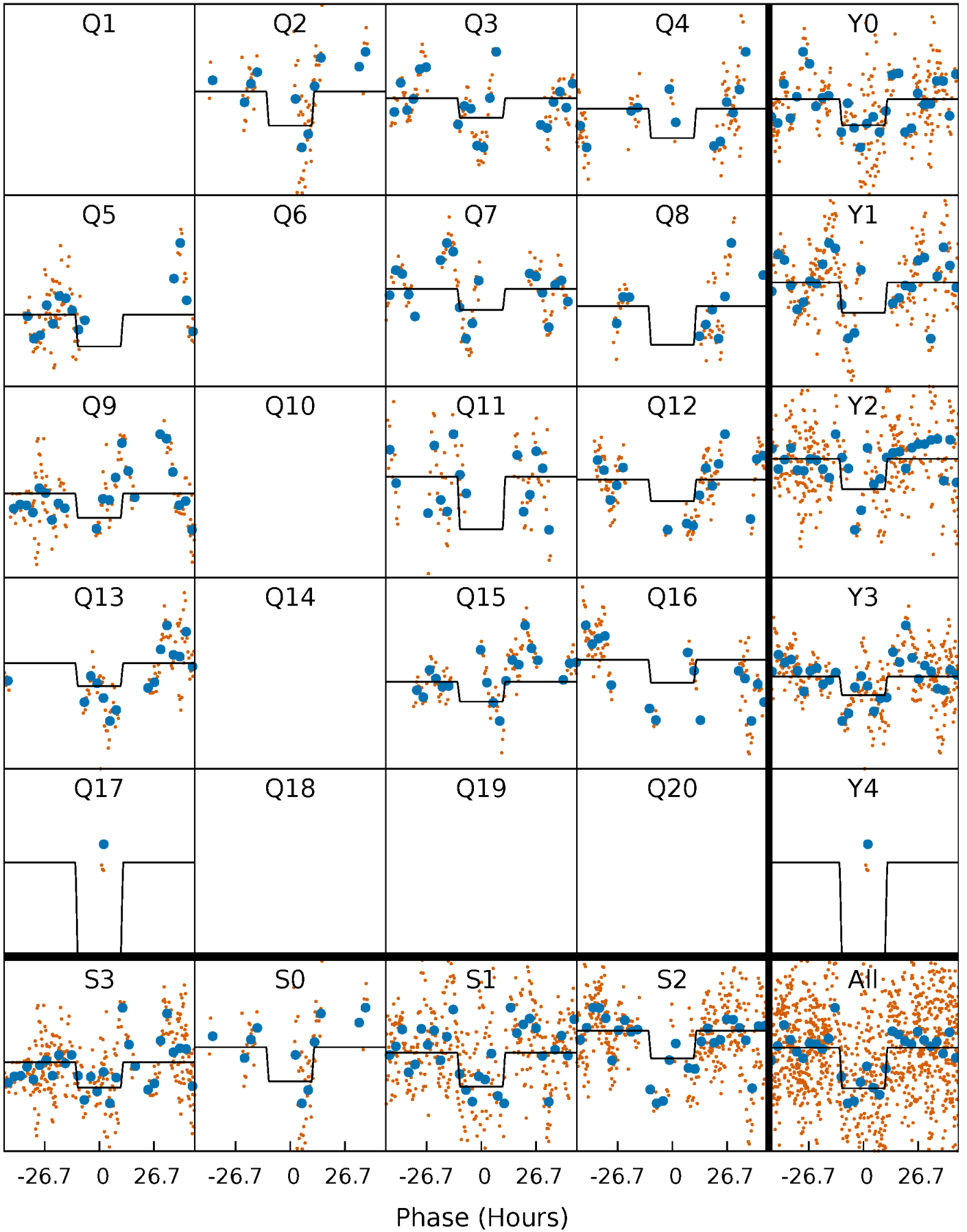
DV Quarter-Phased Transit Curves

TCE 005458428-09 $P = 40.566928$ Days $T_0 = 167.259507$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

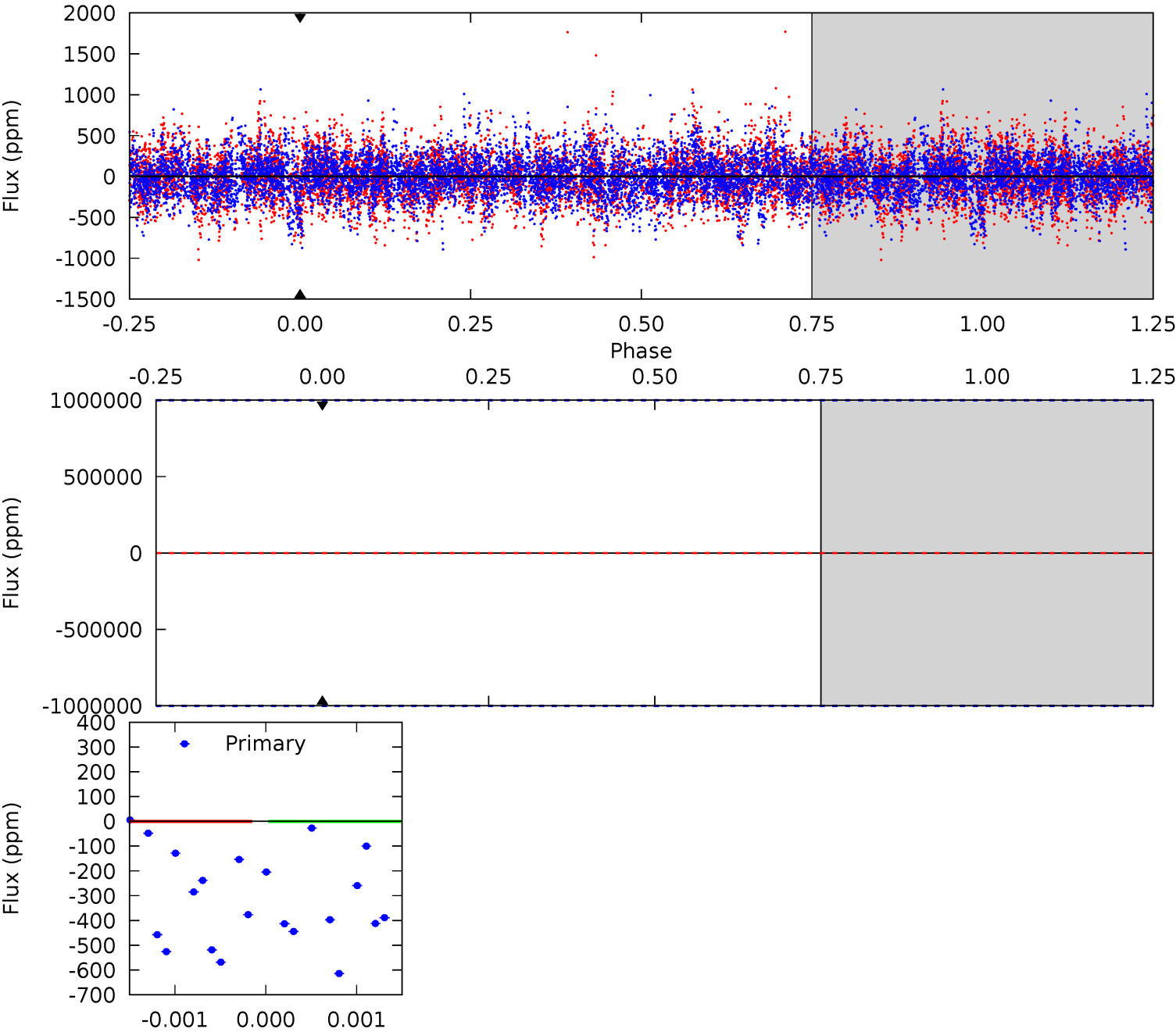
TCE 005458428-09 P= 40.566928 Days $T_0=166.963607$ (BKJD)



DV Model-Shift Uniqueness Test

005458428-09, P = 40.566928 Days, E = 126.692579 Days

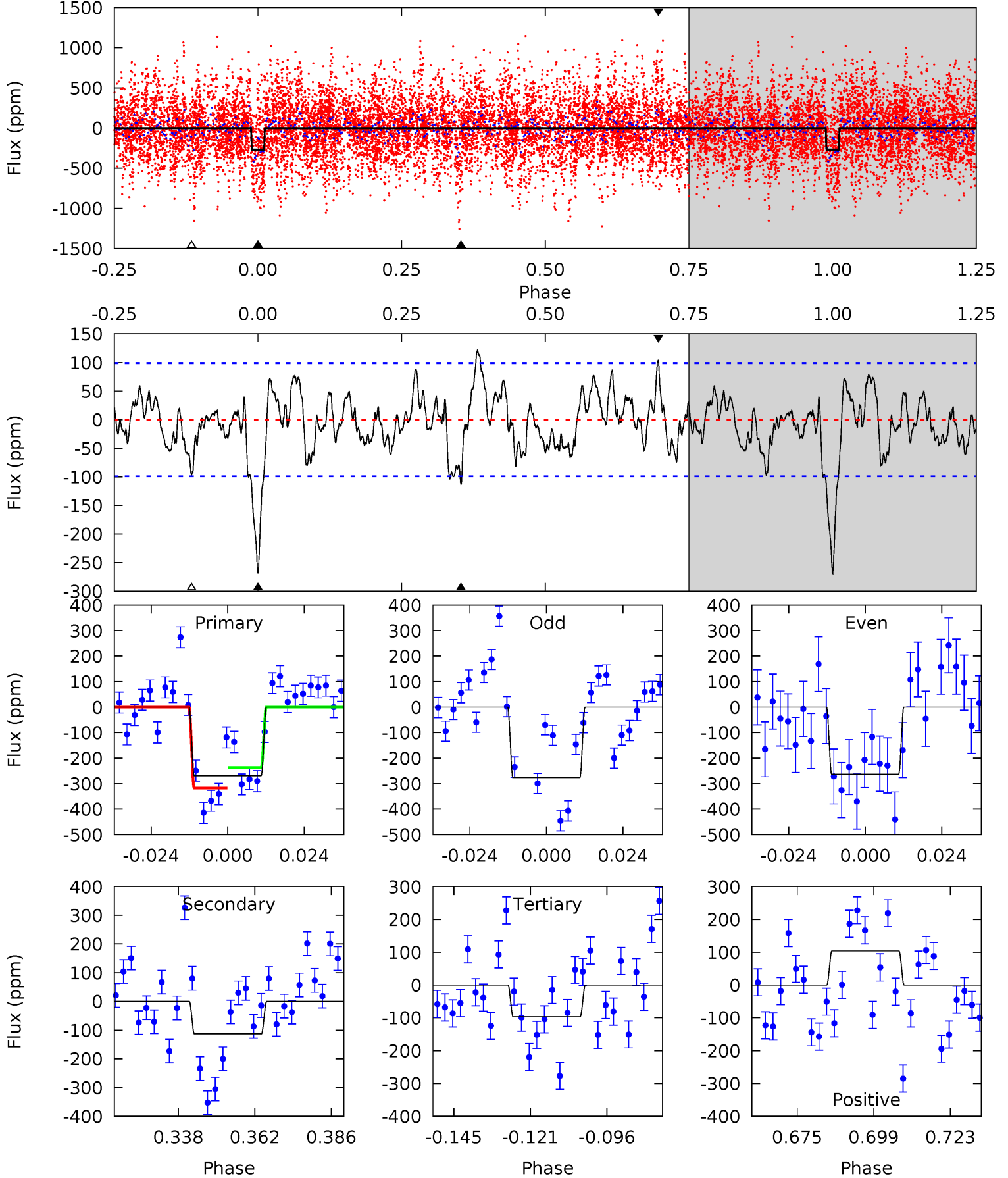
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

005458428-09, P = 40.566928 Days, E = 126.396679 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	5.54	4.75	5.12	4.85	2.26	1.86	8.44	8.07	0.79	0.42	0.30	1.67	0.31	1.92



Stellar Parameters For KIC 005458428

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7059^{+168}_{-252}	$3.287^{+0.435}_{-0.145}$	$0.070^{+0.200}_{-0.300}$	$5.894^{+1.521}_{-2.825}$	$2.453^{+0.165}_{-0.662}$	$0.017^{+0.077}_{-0.008}$
	+2%/-4%	+13%/-4%	+286%/-429%	+26%/-48%	+7%/-27%	+456%/-45%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005458428-09 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$40.67^{+48.47}_{-28.86}$	1850^{+149}_{-219}	5247^{+53365}_{-35746}	42^{+8840}_{-4532}
Alt.	-113 ± 20	$39.24^{+49.61}_{-26.53}$	1840^{+167}_{-235}	3243^{+1714}_{-763}	$3.633^{+34.979}_{-2.877}$

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 $A_{obs} \gg 1.0$

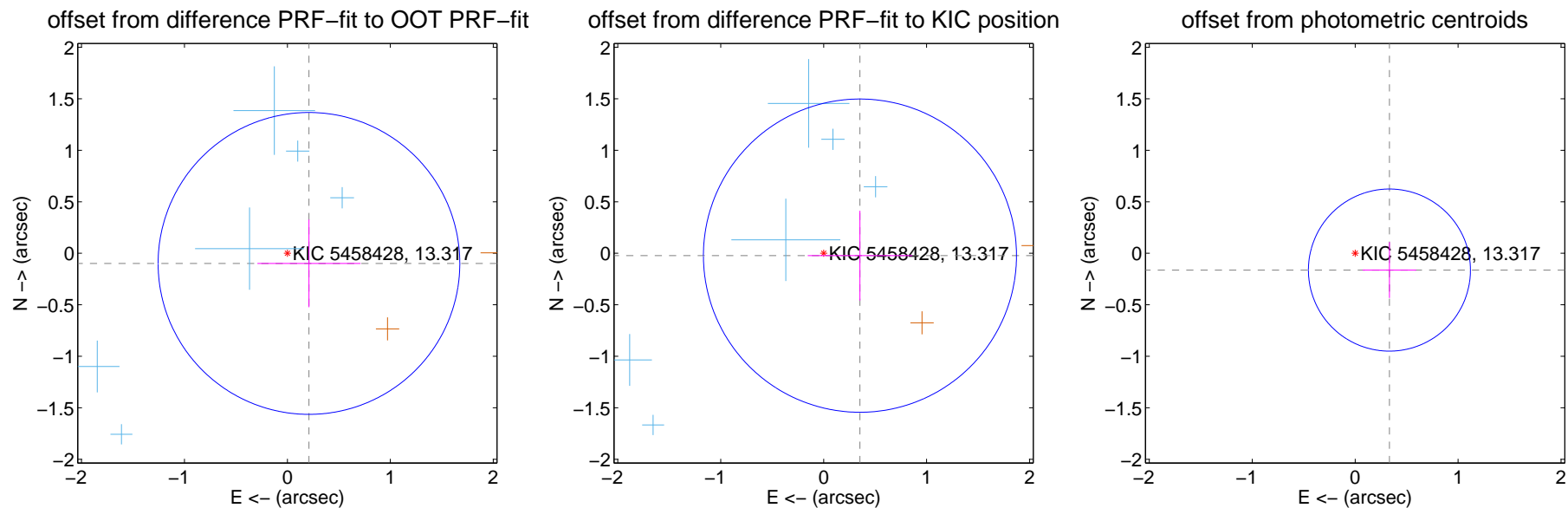
DV Centroid Data

Supplemental centroid analysis for 005458428-09. Kepler magnitude: 13.32. Transit SNR -1.00

There are 6 quarters with good PRF difference image offsets

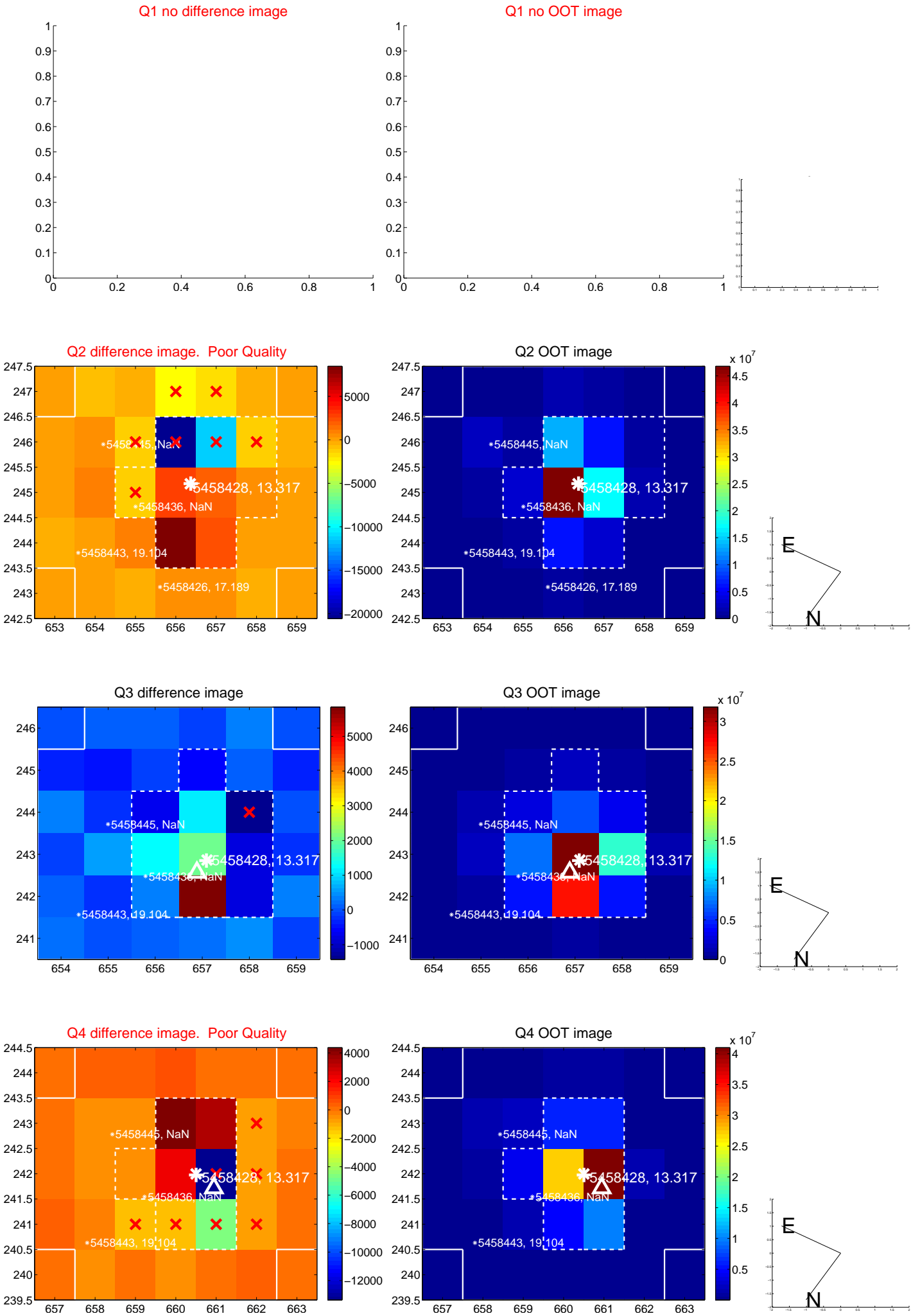
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.231 ± 0.488	0.47	-0.210 ± 0.501	-0.098 ± 0.426
PRF-fit source offset from KIC position	0.353 ± 0.507	0.70	-0.353 ± 0.507	-0.023 ± 0.436
photometric centroid source offset	0.37 ± 0.26	1.41	-0.33 ± 0.26	-0.16 ± 0.27

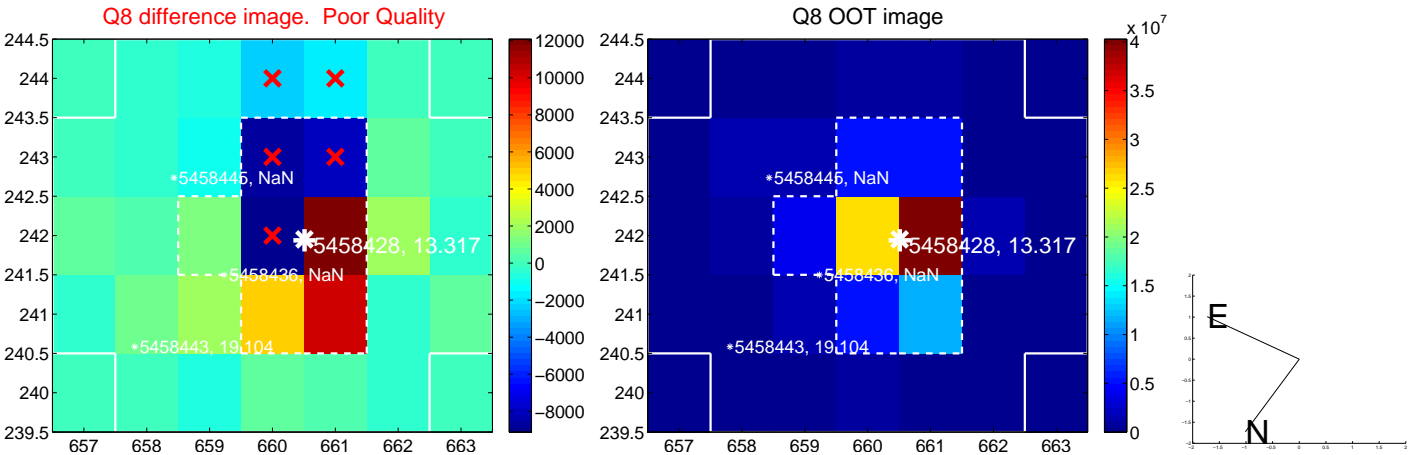
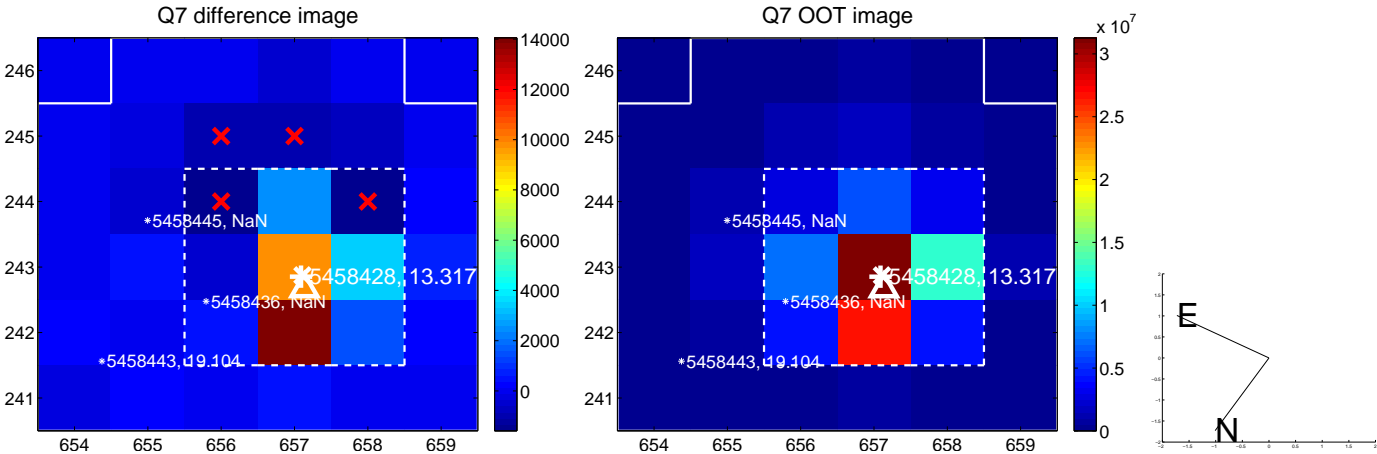
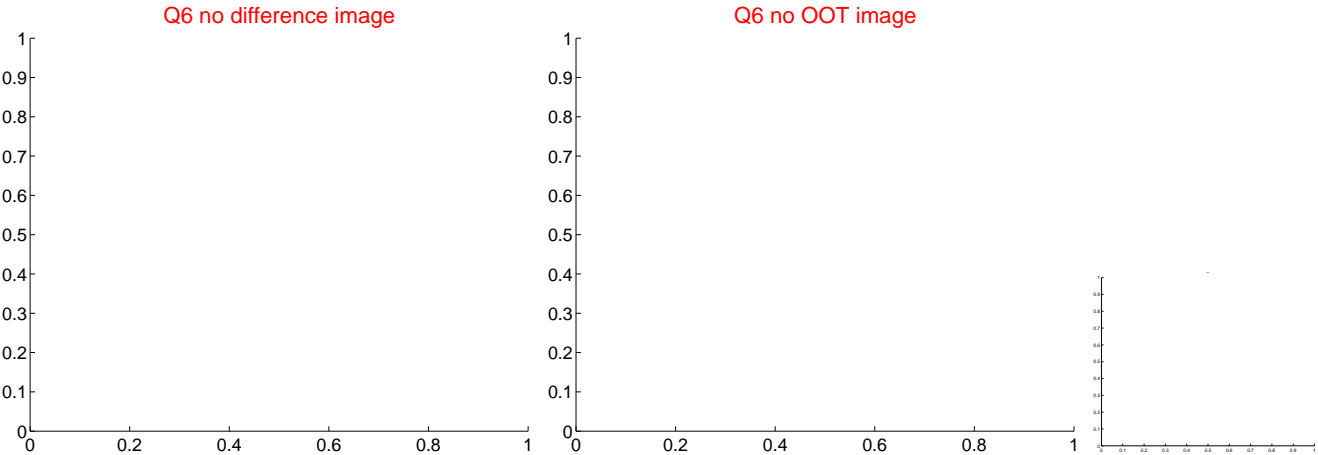
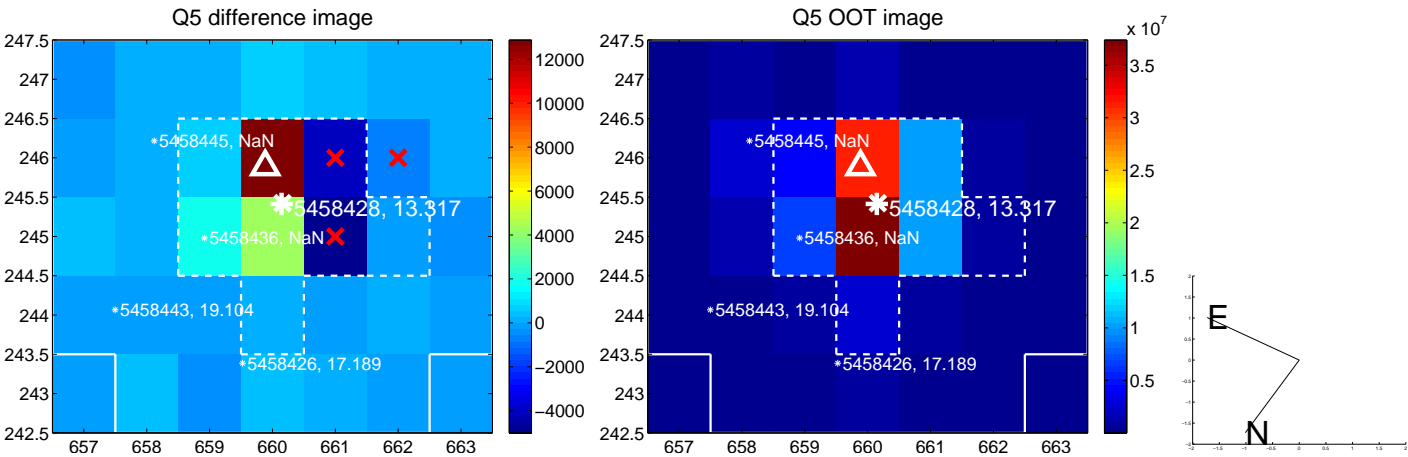


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

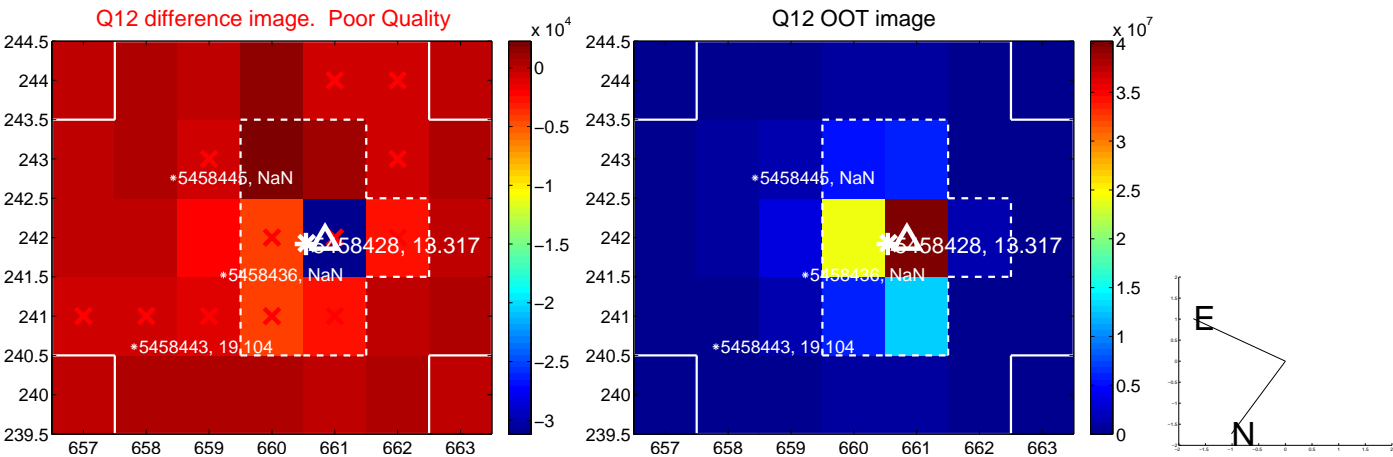
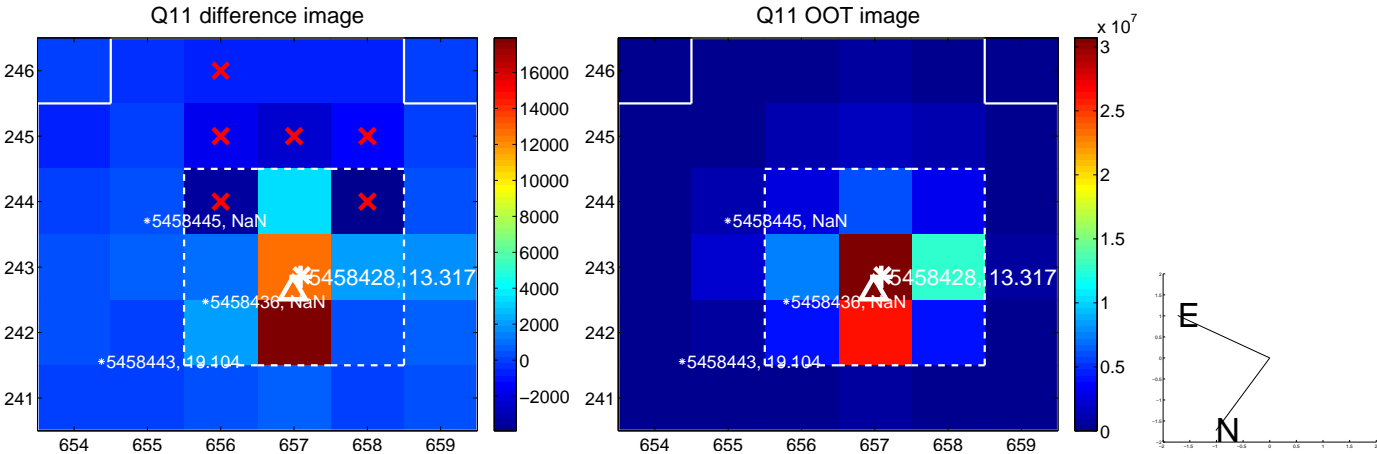
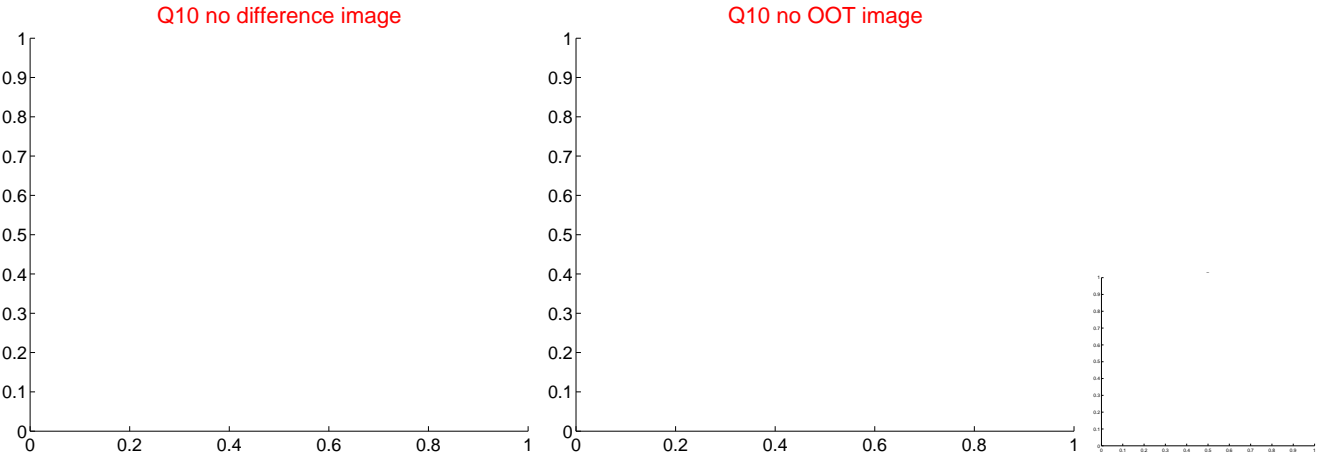
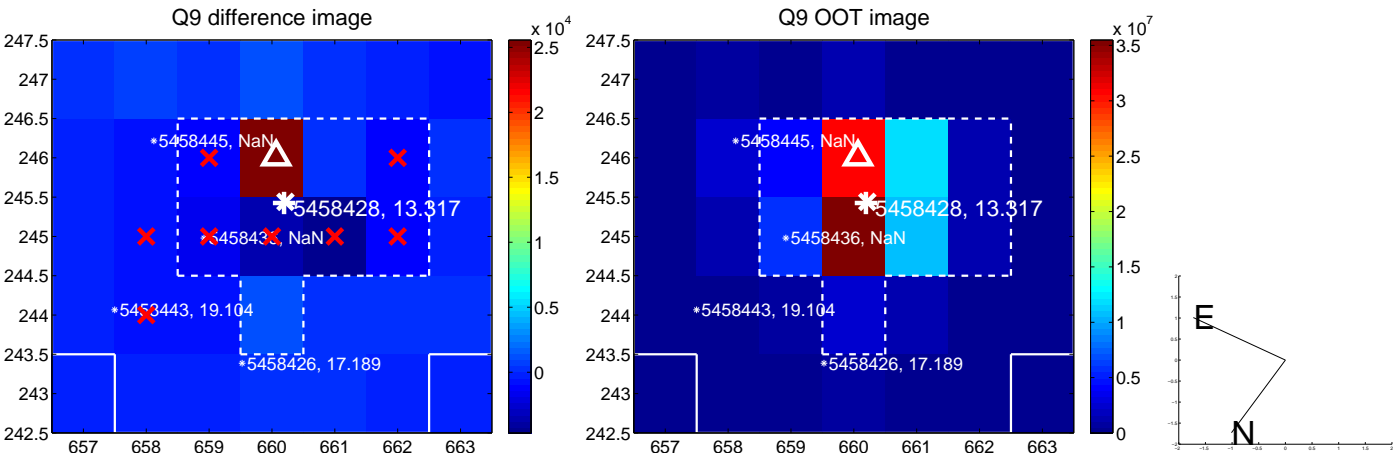
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



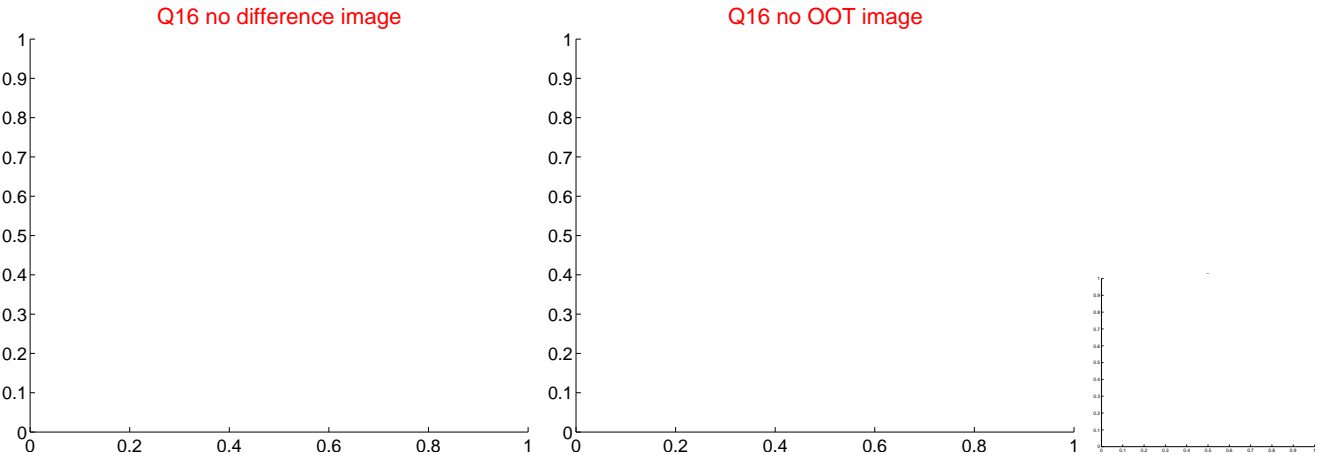
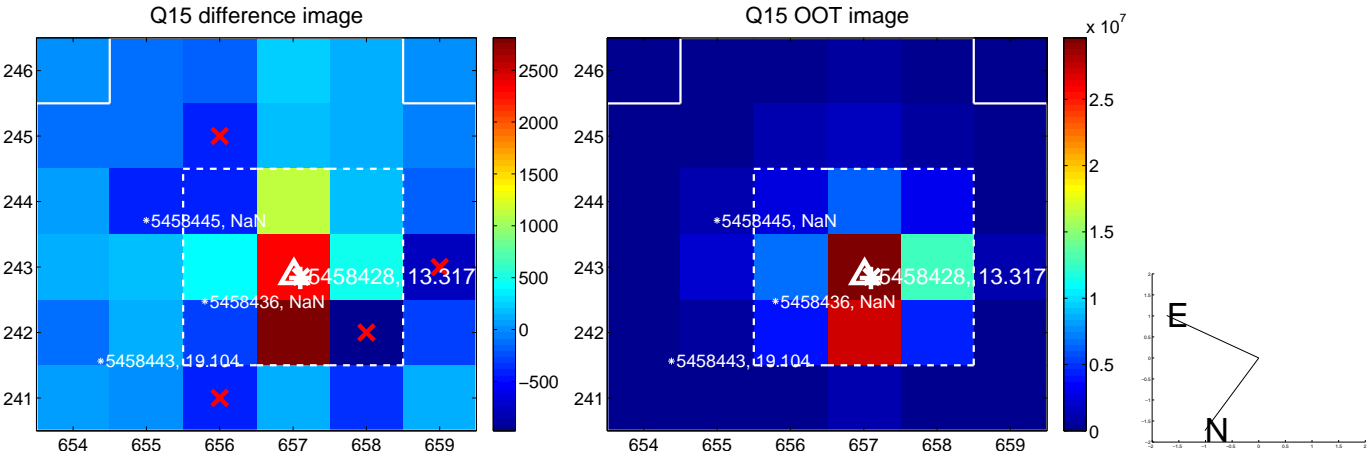
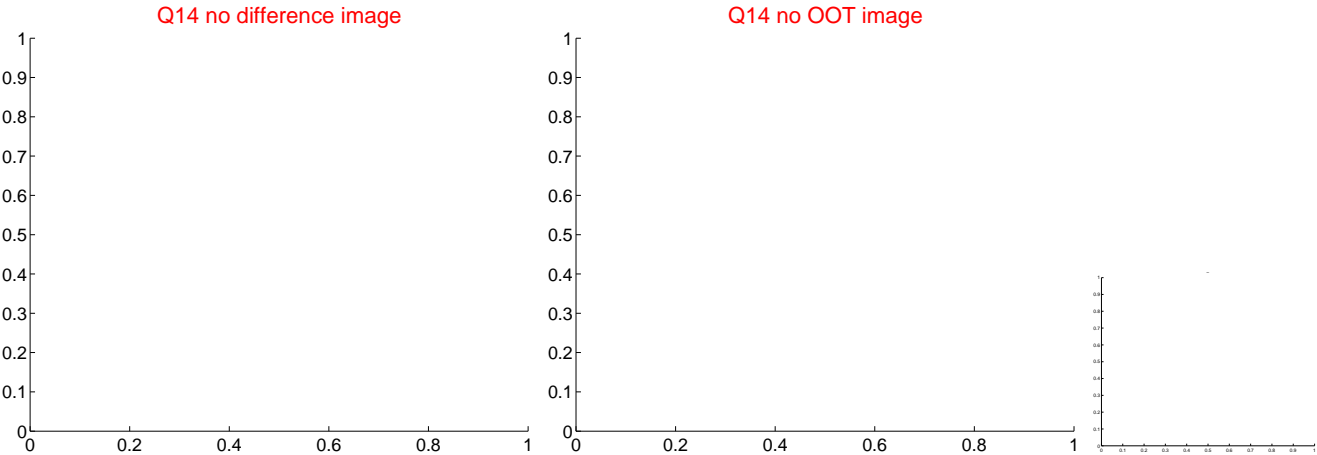
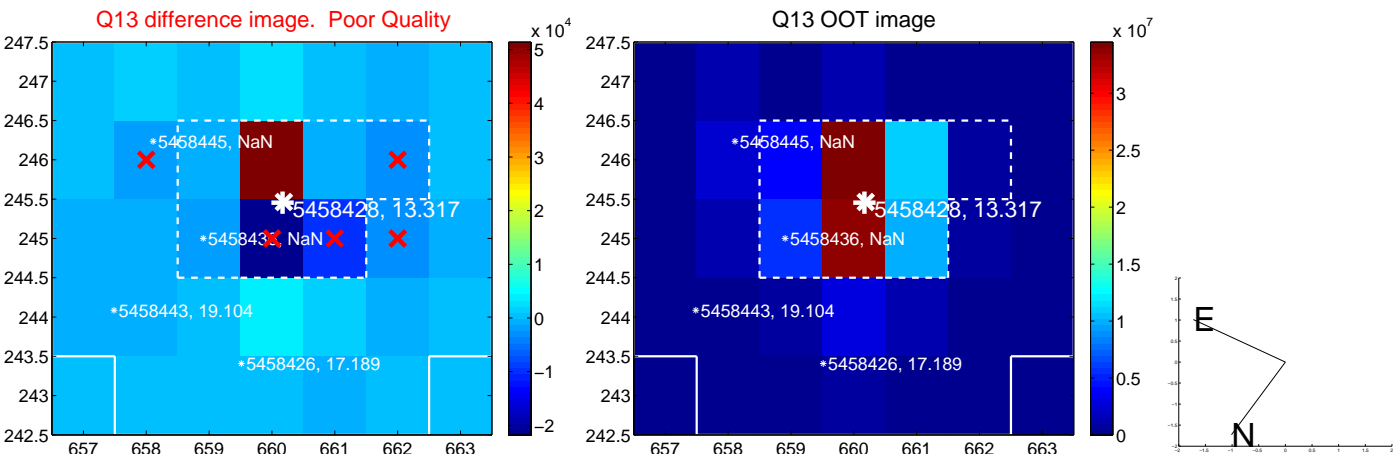
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



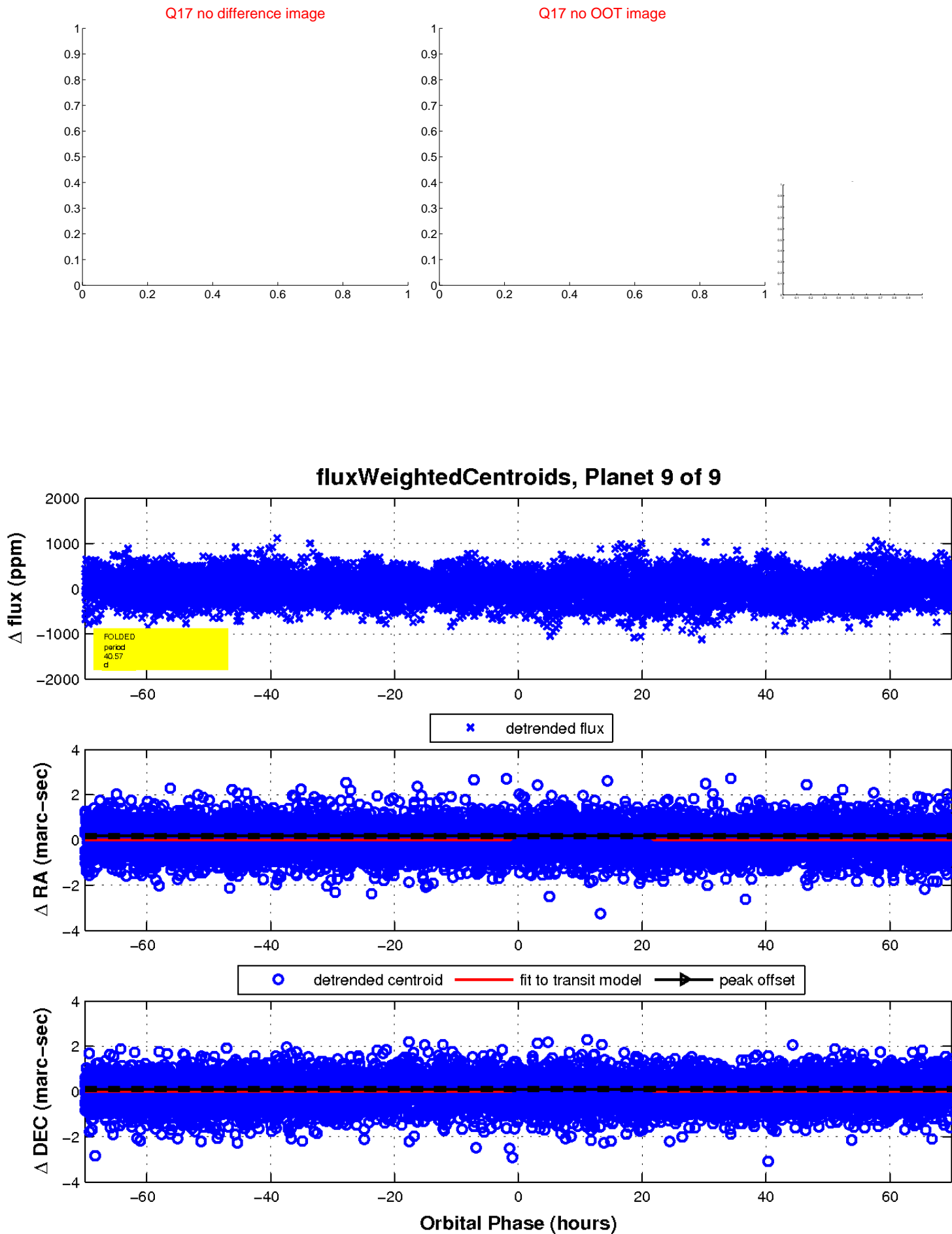
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

