

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})
004375408-01	OBS	No	1.183133	132.215637	11.3	7.303	9.1	4.0	1.89	6416	0.67	10369.43
004375408-02	OBS	No	106.298491	188.988020	339.5	5.435	11.0	10.3	1.89	6416	4.03	25.77
004375408-03	OBS	No	69.296632	156.360628	334.4	2.169	10.6	9.5	1.89	6416	4.02	45.59
004375408-04	OBS	No	14.842189	138.398480	154.1	3.376	10.2	10.6	1.89	6416	2.70	355.74
004375408-05	OBS	No	53.084762	138.448490	238.0	5.466	9.7	9.4	1.89	6416	3.28	65.04
004375408-06	OBS	No	64.546702	187.689827	258.0	4.142	9.4	8.7	1.89	6416	3.51	50.12
004375408-07	OBS	No	68.662063	188.964621	257.7	1.884	9.1	8.9	1.89	6416	3.58	46.15
004375408-08	OBS	No	154.922917	193.248880	220.0	7.033	8.9	8.0	1.89	6416	2.90	15.60
004375408-09	OBS	No	47.218486	147.679425	263.0	2.735	9.2	8.9	1.89	6416	3.58	76.03
004375408-10	OBS	No	29.333870	132.422001	232.7	2.287	9.1	10.2	1.89	6416	3.33	143.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004375408-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004375408-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004375408-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
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004375408-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

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

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

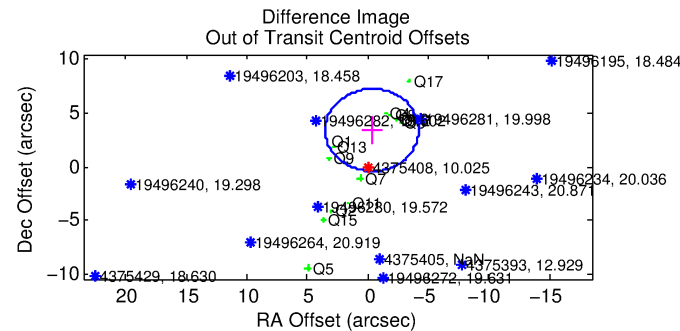
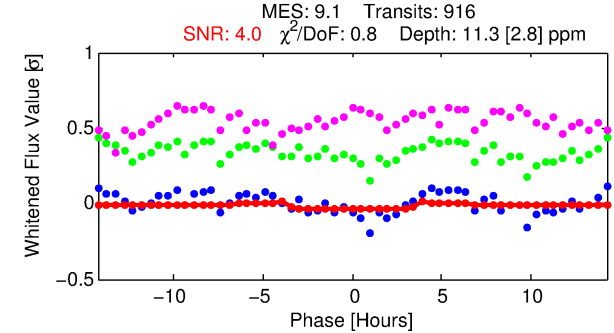
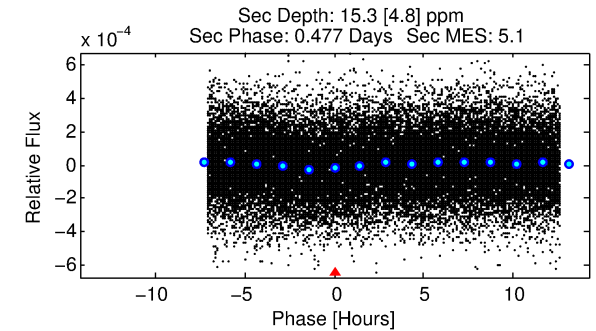
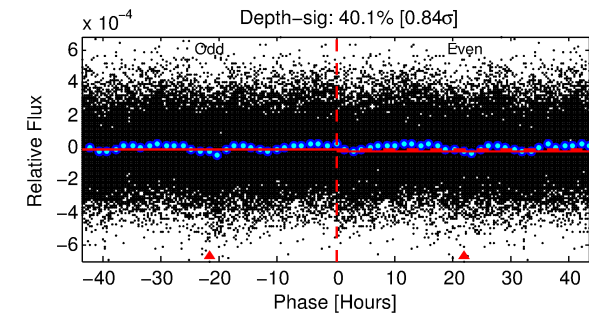
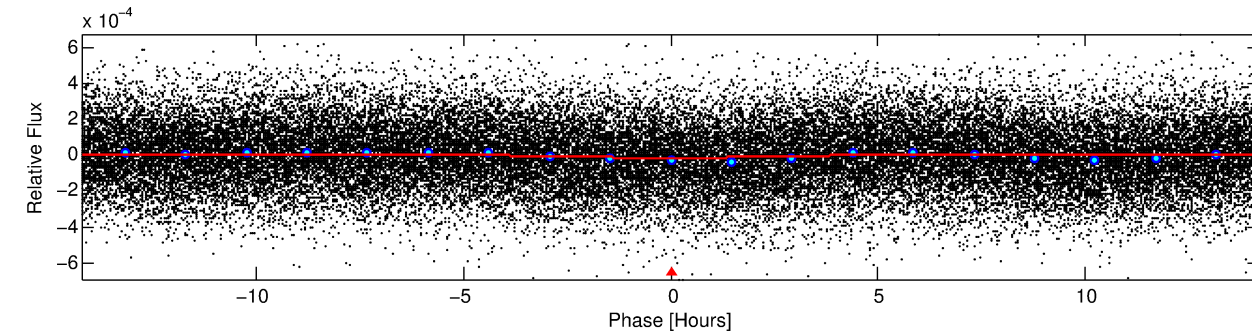
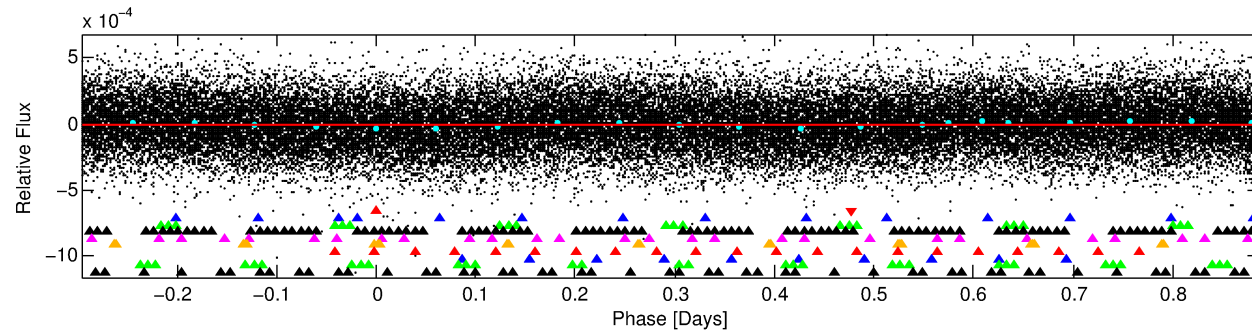
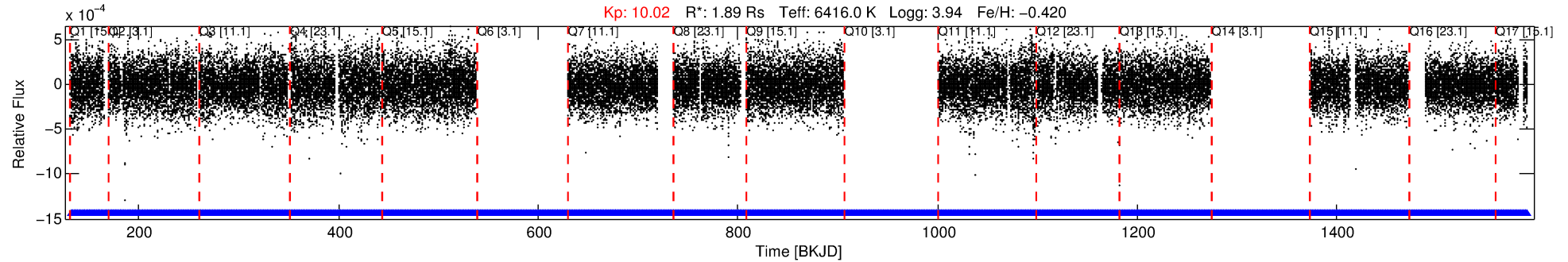
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004375408-01

No Significant Match Found

DV One-Page Summary

KIC: 4375408 Candidate: 1 of 10 Period: 1.183 d



DV Fit Results:

Period = 1.18313 [0.00004] d
Epoch = 132.2156 [0.0086] BKJD
Rp/R* = 0.0033 [0.0021]
a/R* = 1.24 [1.48]
b = 0.66 [2.97]
Seff = 10369.43 [7299.79]
Teq = 2573 [453] K
Rp = 0.67 [0.51] Re
a = 0.0228 [0.0095] AU
Ag = 9.73 [14.40] [0.61 σ]
Teffp = 7026 [2314] K [1.89 σ]

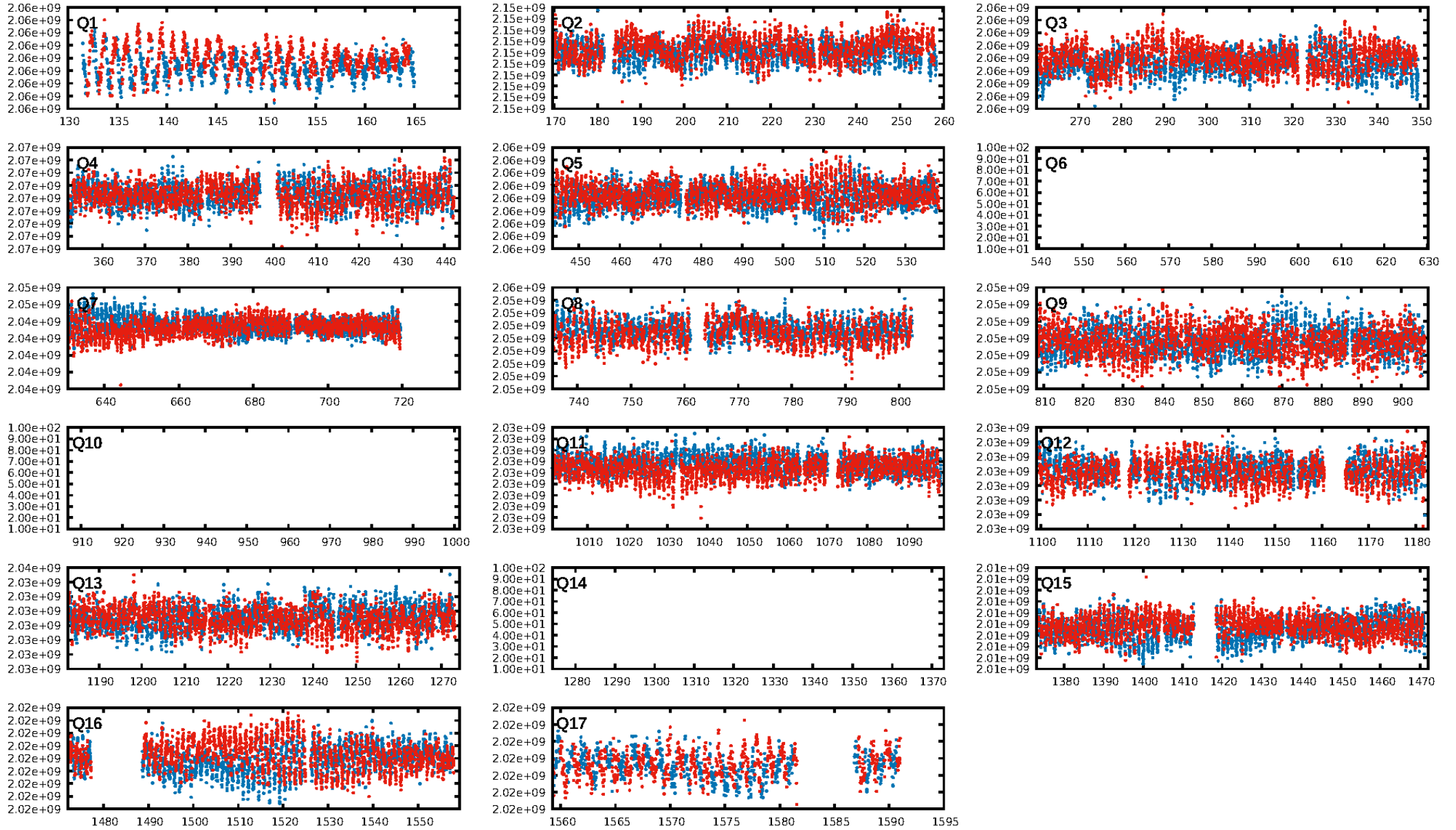
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [40.75 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [865/865]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 2.852 arcsec [2.35 σ]
OotOffset-rm: 3.433 arcsec [2.67 σ]
KicOffset-rm: 3.793 arcsec [2.78 σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.07 [1/14]
DiffImageOverlap-fno: 1.00 [14/14]

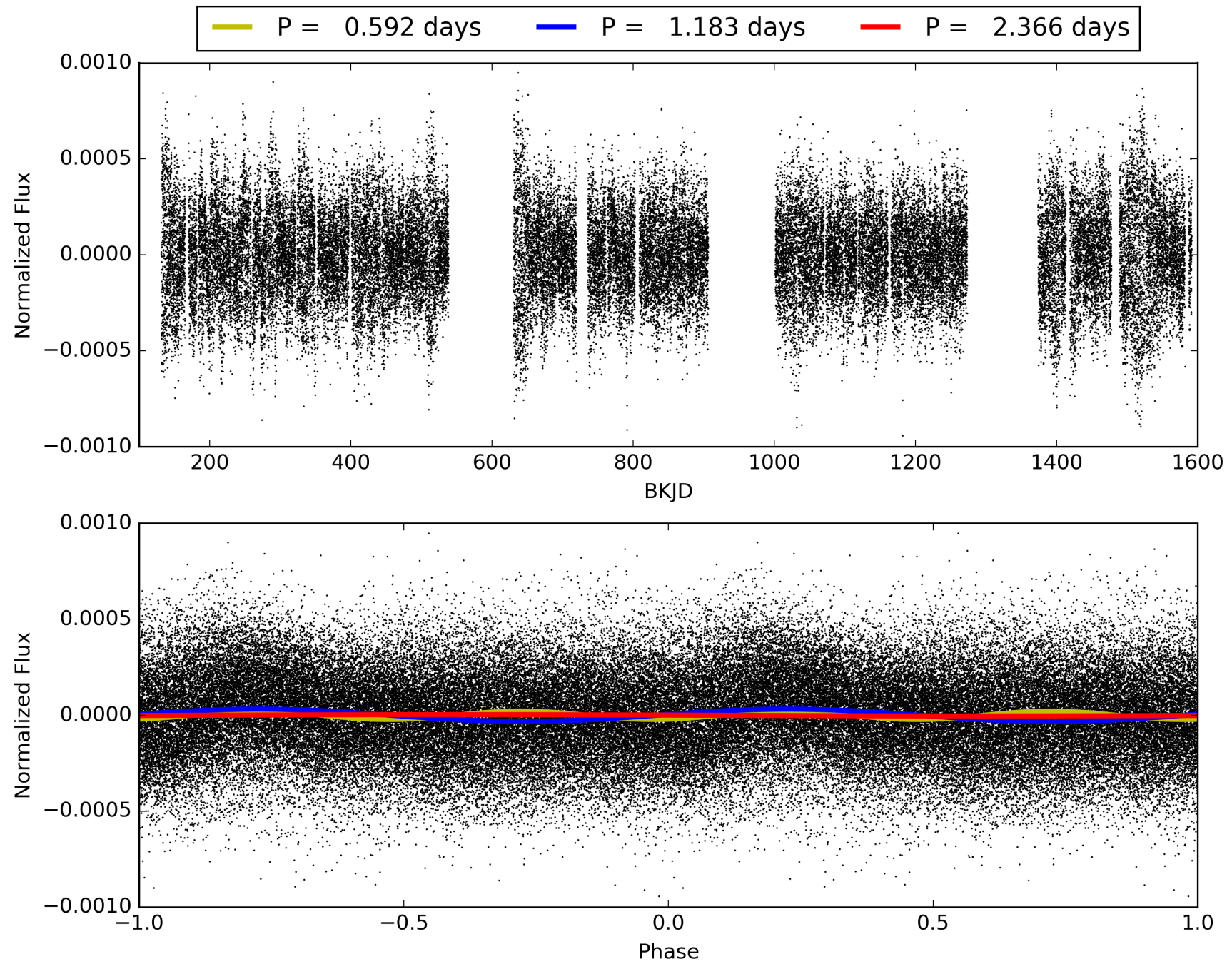
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:58:34 Z

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

TCE 004375408-01, PDC Light Curves

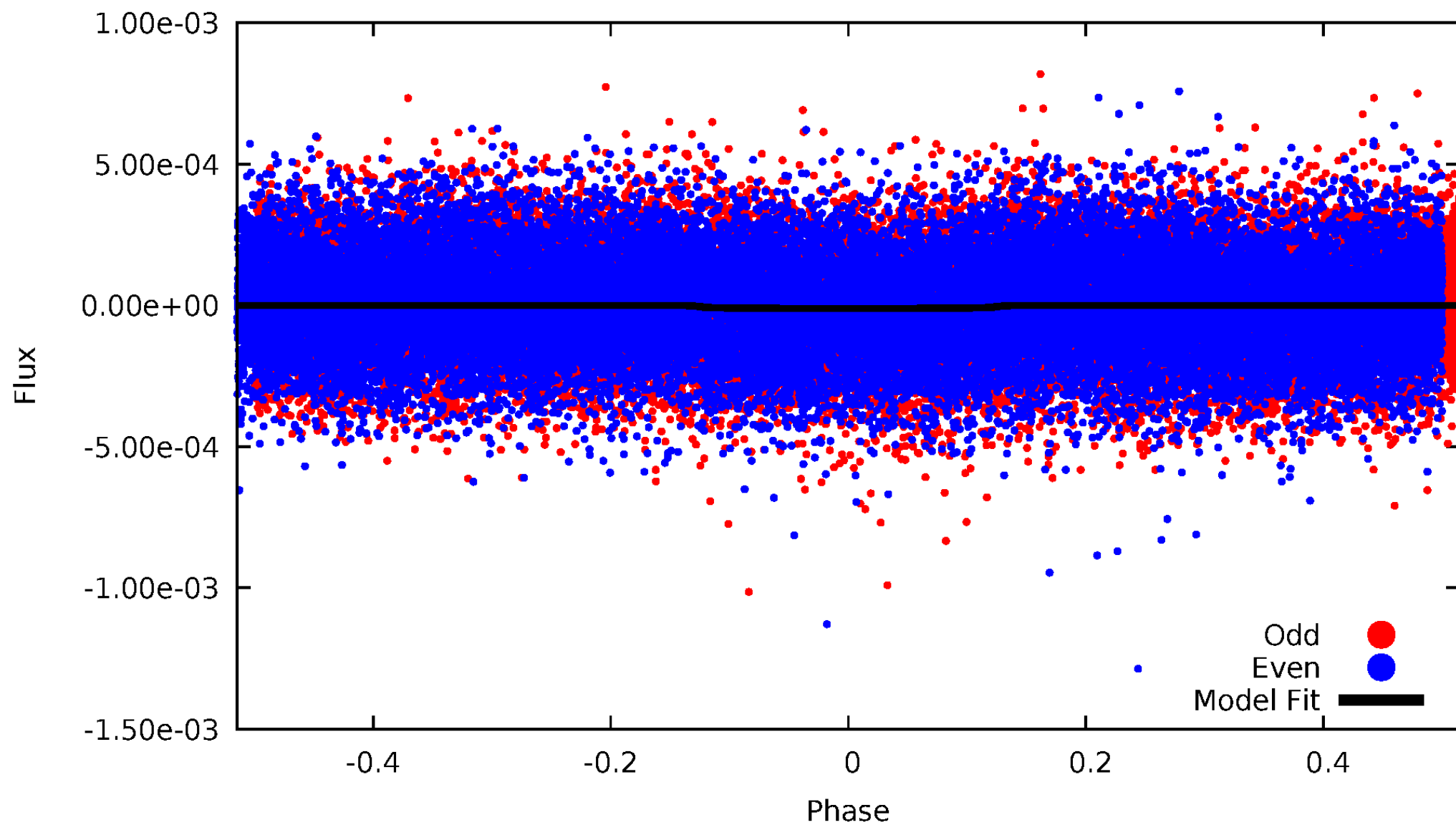


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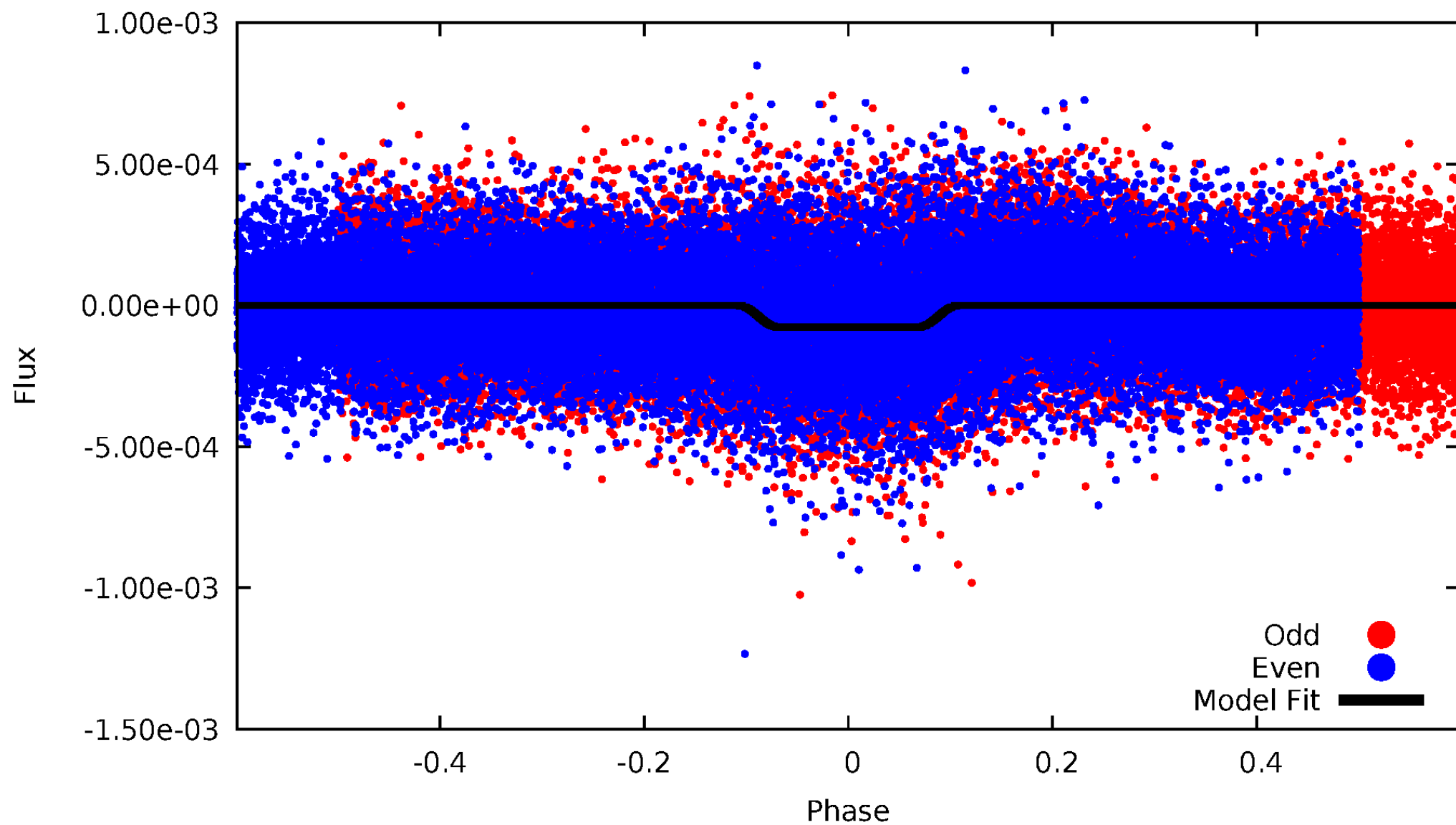
DV Odd/Even

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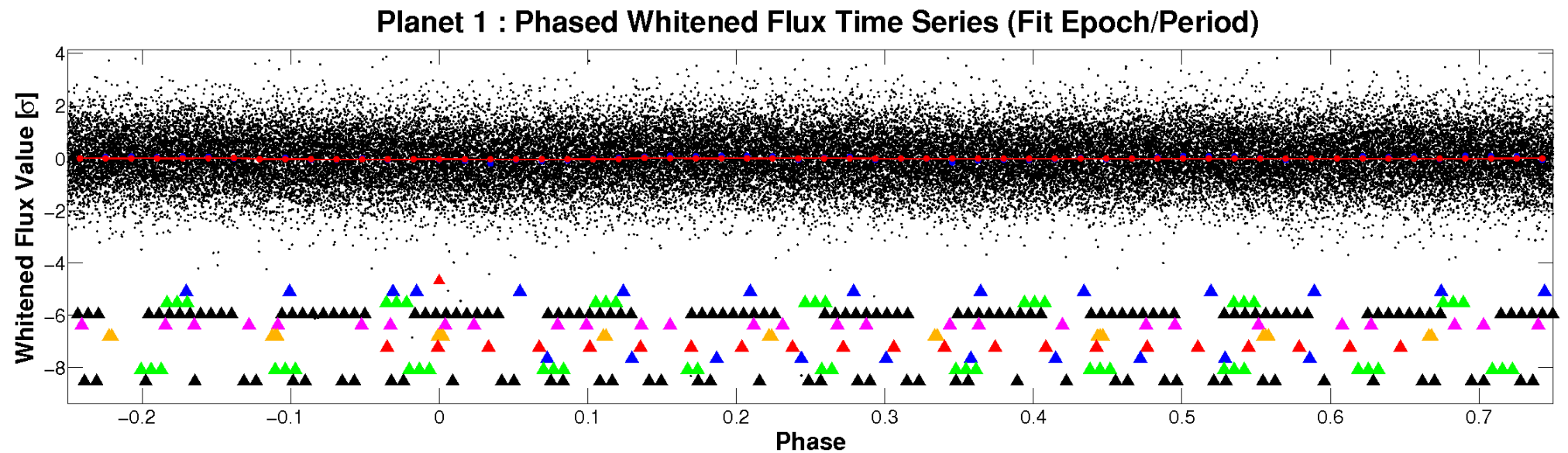
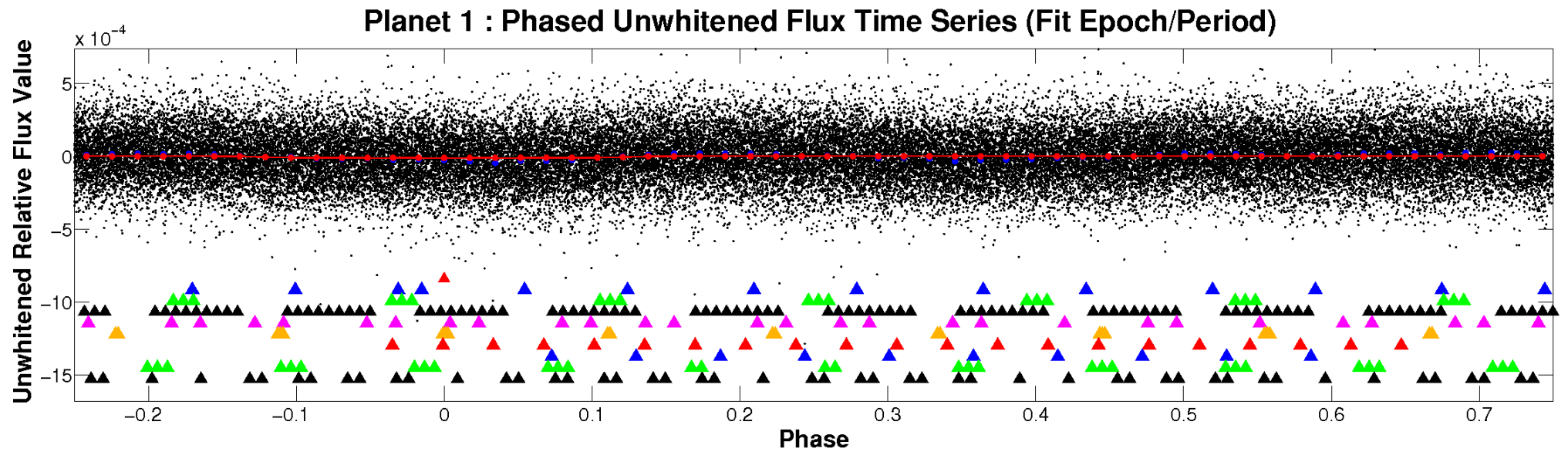


ALT Odd/Even

TCE 004375408-01

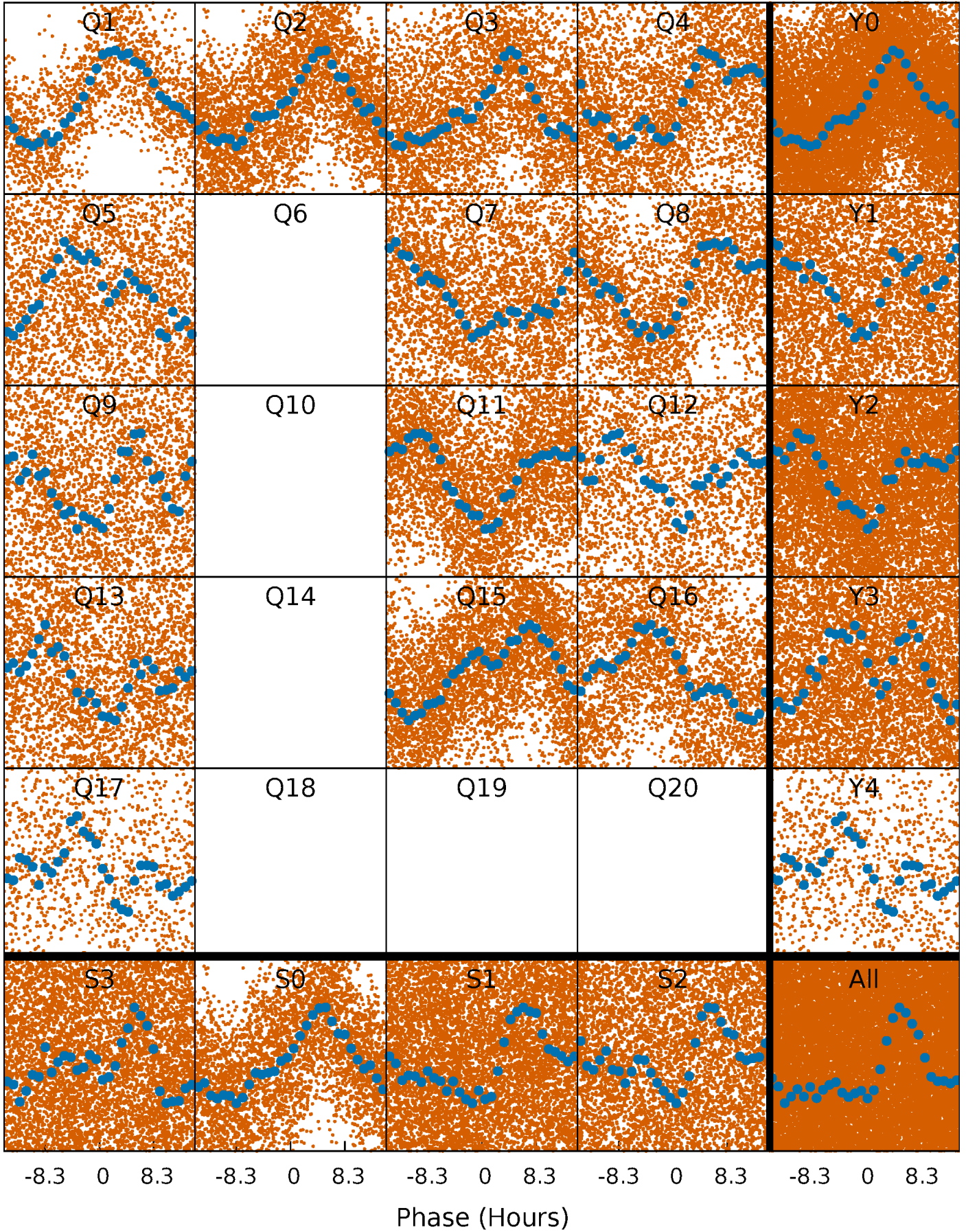


Non-Whitened Vs. Whitened Light Curve



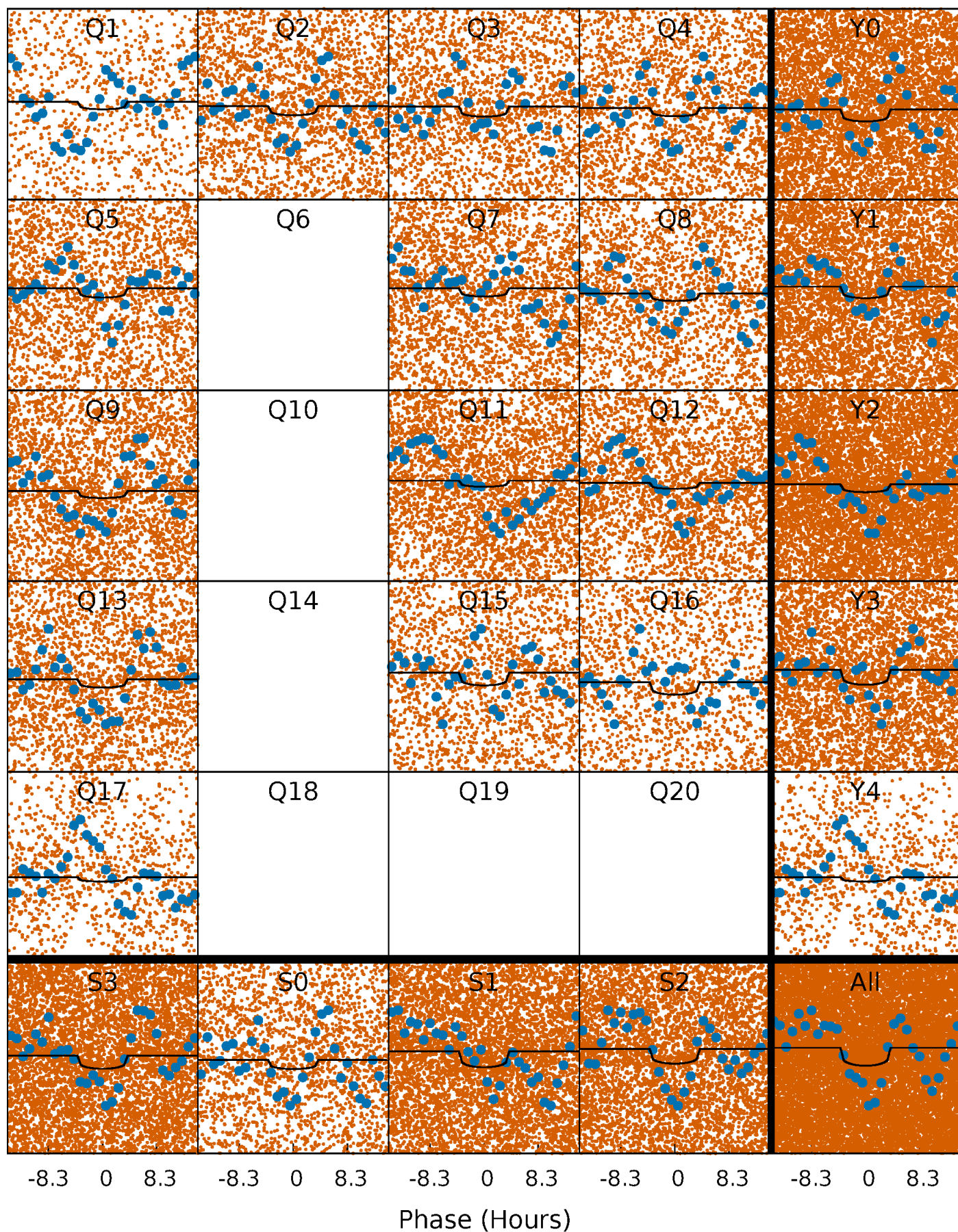
PDC Quarter-Phased Transit Curves

TCE 004375408-01 P= 1.183133 Days $T_0=132.215637$ (BKJD)



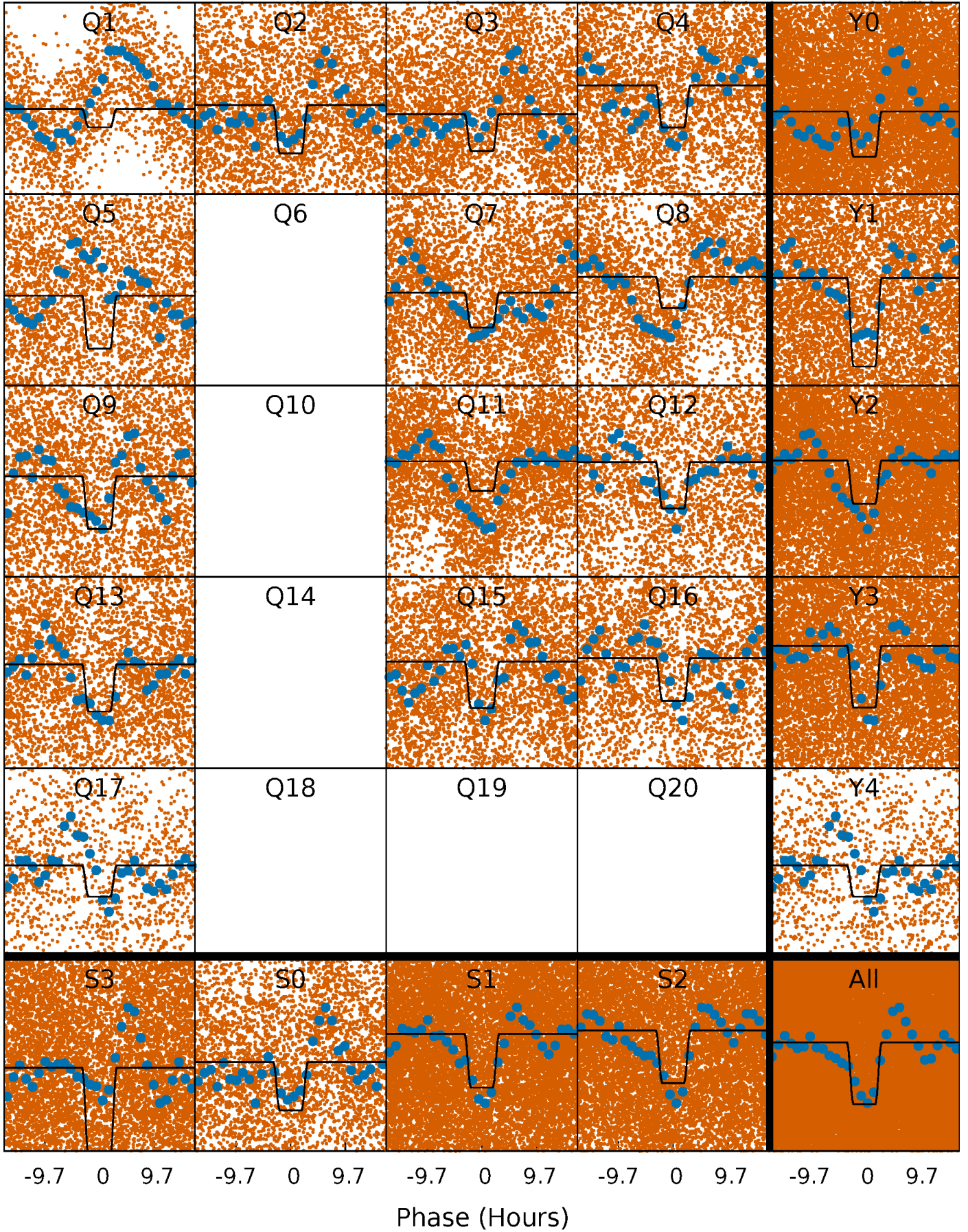
DV Quarter-Phased Transit Curves

TCE 004375408-01 P= 1.183133 Days $T_0=132.215637$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

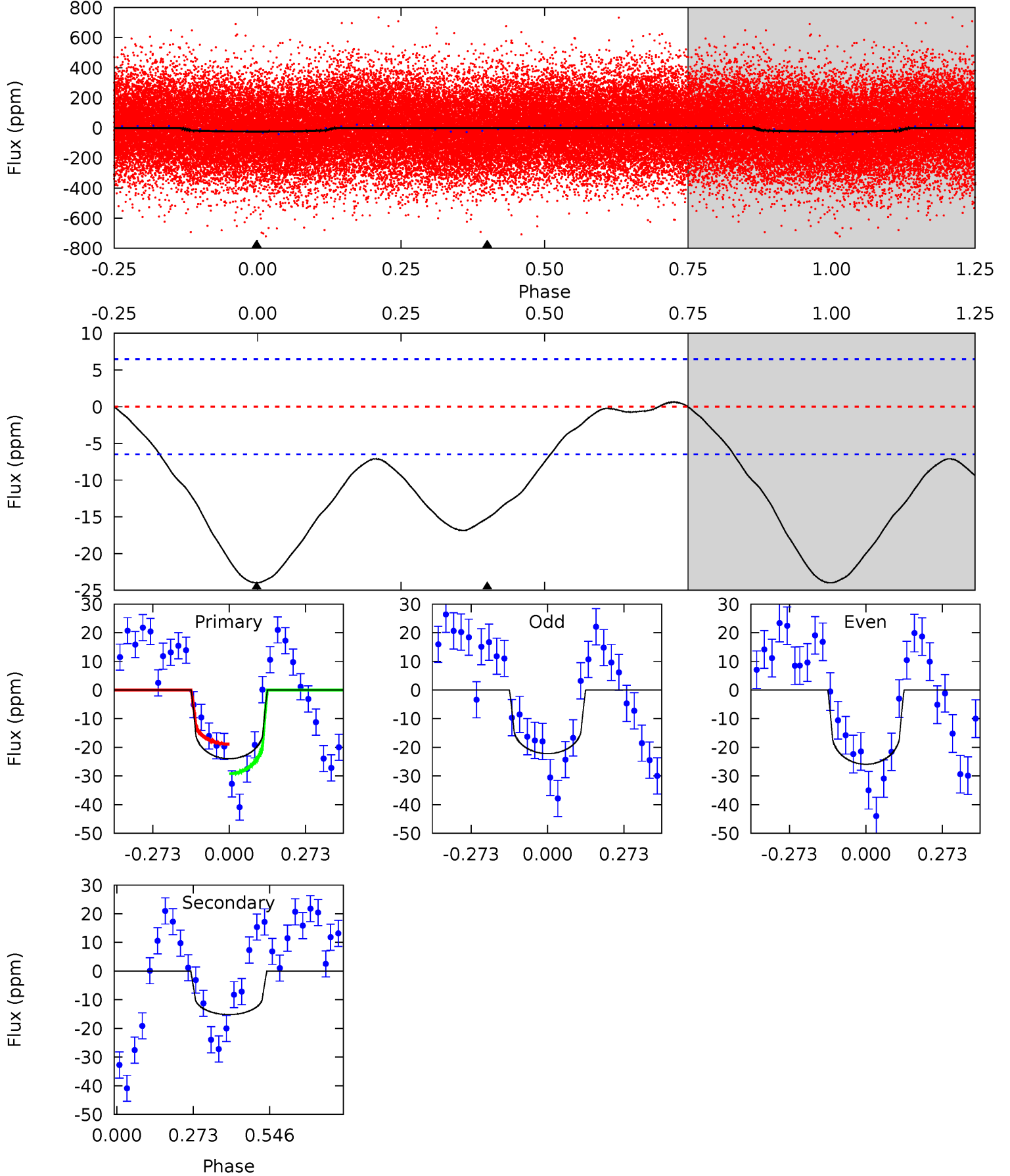
TCE 004375408-01 P= 1.183246 Days $T_0=132.149537$ (BKJD)



DV Model-Shift Uniqueness Test

004375408-01, P = 1.183133 Days, E = 131.032504 Days

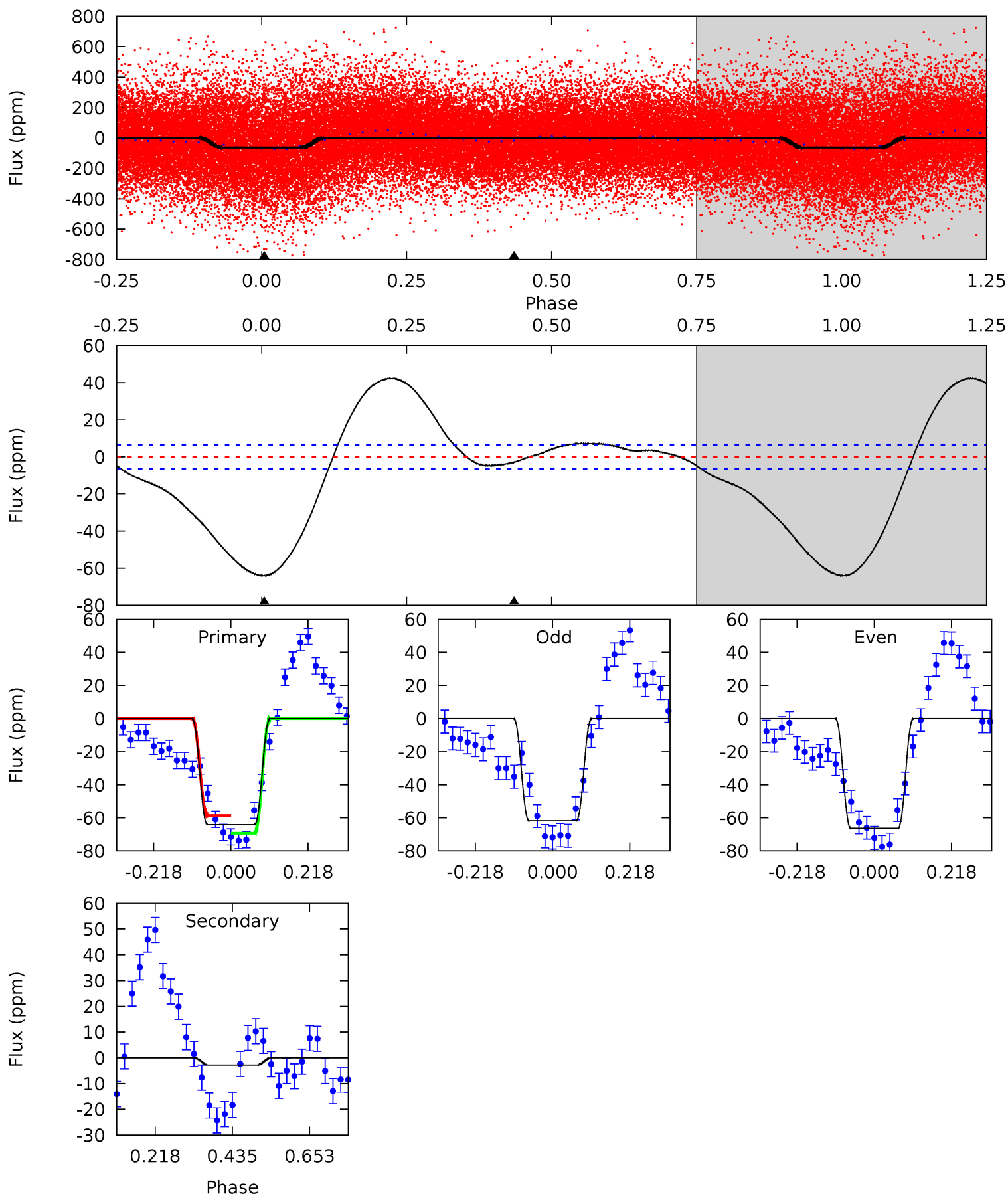
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.1	10.2	0	0	4.35	1.10	0.34	16.1	16.1	10.2	10.2	1.24	1.02	0.03	3.45



Alt Model-Shift Uniqueness Test

004375408-01, P = 1.183246 Days, E = 130.966291 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.8	1.89	0	0	4.40	1.23	3.24	42.8	42.8	1.89	1.89	1.54	0.96	0.40	3.43



Stellar Parameters For KIC 004375408

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6416^{+181}_{-227}	$3.941^{+0.413}_{-0.138}$	$-0.420^{+0.300}_{-0.300}$	$1.887^{+0.448}_{-0.768}$	$1.133^{+0.169}_{-0.188}$	$0.237^{+0.824}_{-0.092}$
	+3%/-4%	+10%/-4%	+71%/-71%	+24%/-41%	+15%/-17%	+347%/-39%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004375408-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-15 ± 1	$0.63^{+0.45}_{-0.35}$	3518^{+278}_{-382}	6861^{+4855}_{-1546}	11^{+46}_{-7}
Alt.	-3 ± 1	$1.70^{+0.54}_{-0.50}$	3528^{+289}_{-402}	-2482^{+5781}_{-804}	$0.267^{+0.346}_{-0.170}$

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 $A_{obs} \gg 1.0$

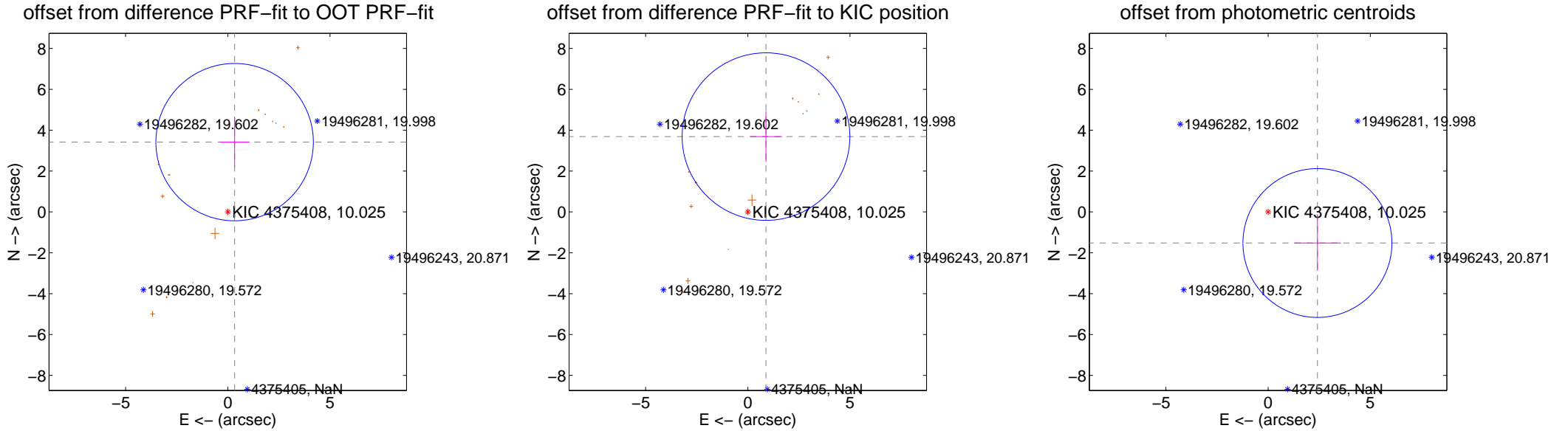
DV Centroid Data

Supplemental centroid analysis for 004375408-01. **Kepler magnitude: 10.03.** Transit SNR 4.04

There are 1 quarters with good PRF difference image offsets

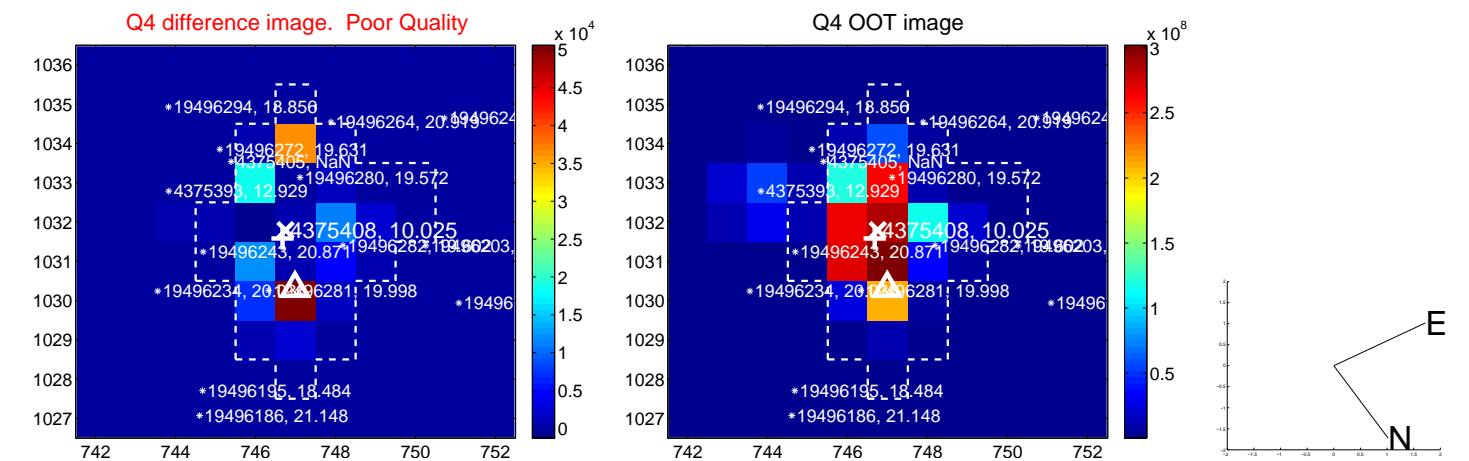
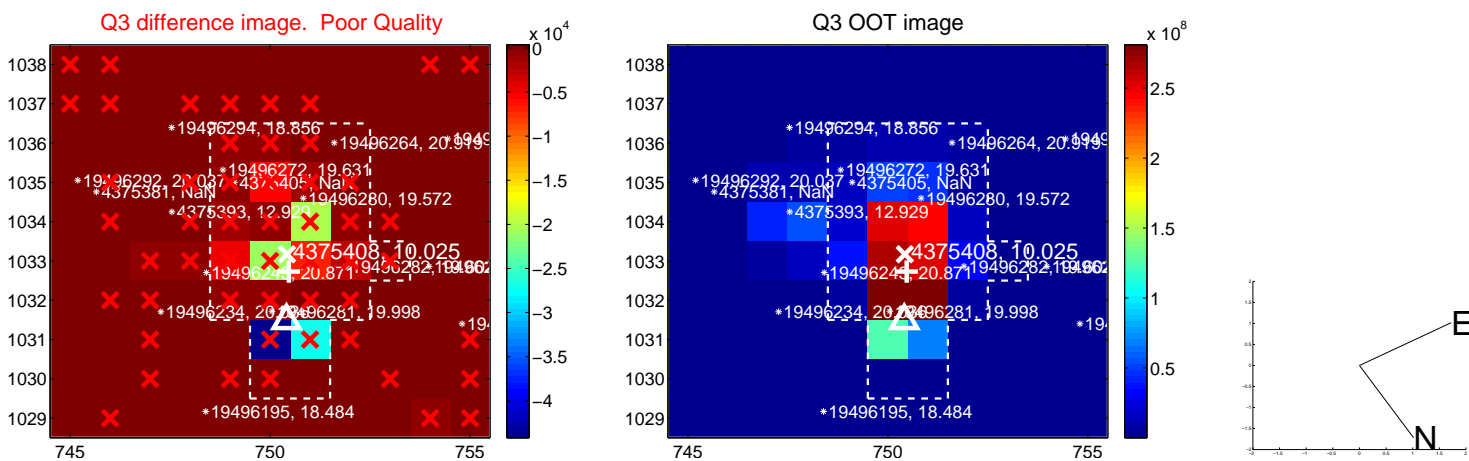
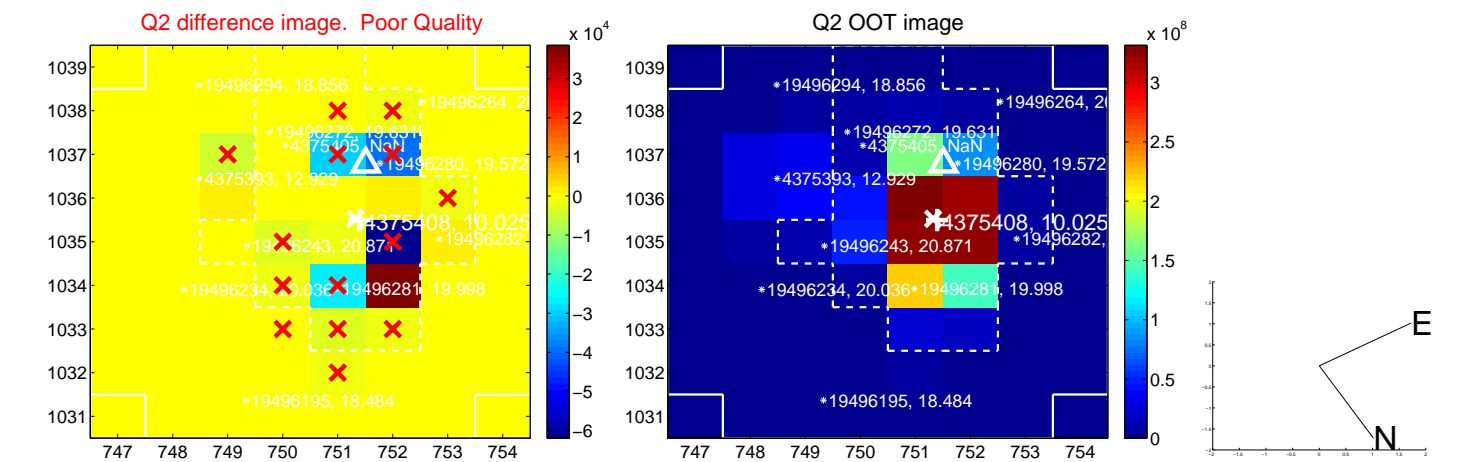
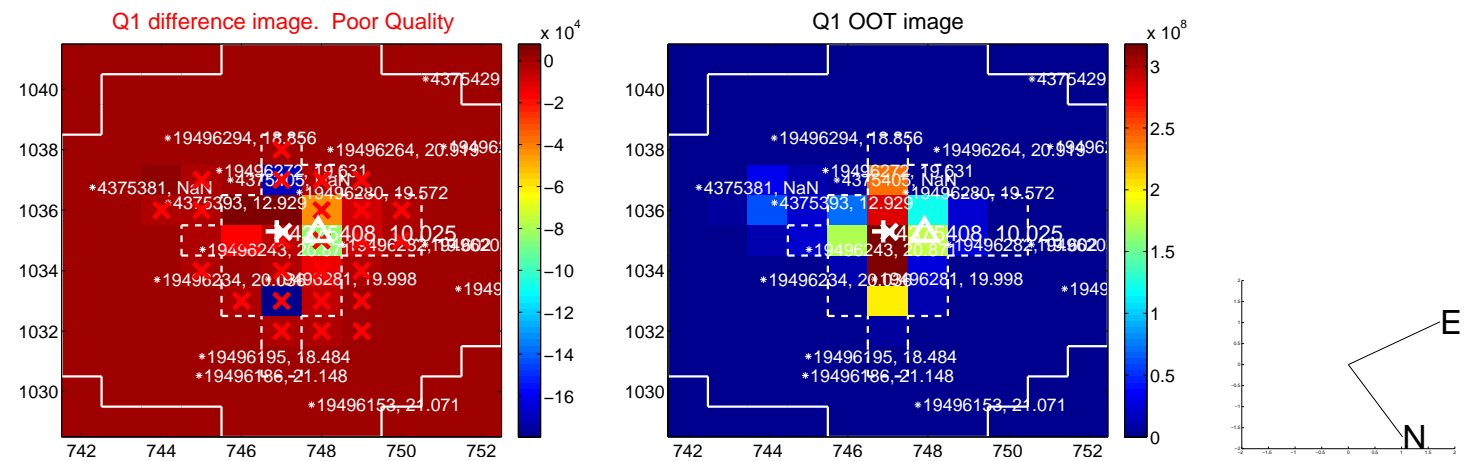
The direct PRF centroid is offset from the target star catalog position by about 0.69 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.433 ± 1.283	2.67	-0.333 ± 0.735	3.416 ± 1.230
PRF-fit source offset from KIC position	3.793 ± 1.367	2.78	-0.889 ± 0.787	3.687 ± 1.236
photometric centroid source offset	2.85 ± 1.21	2.35	-2.41 ± 1.15	-1.52 ± 1.36

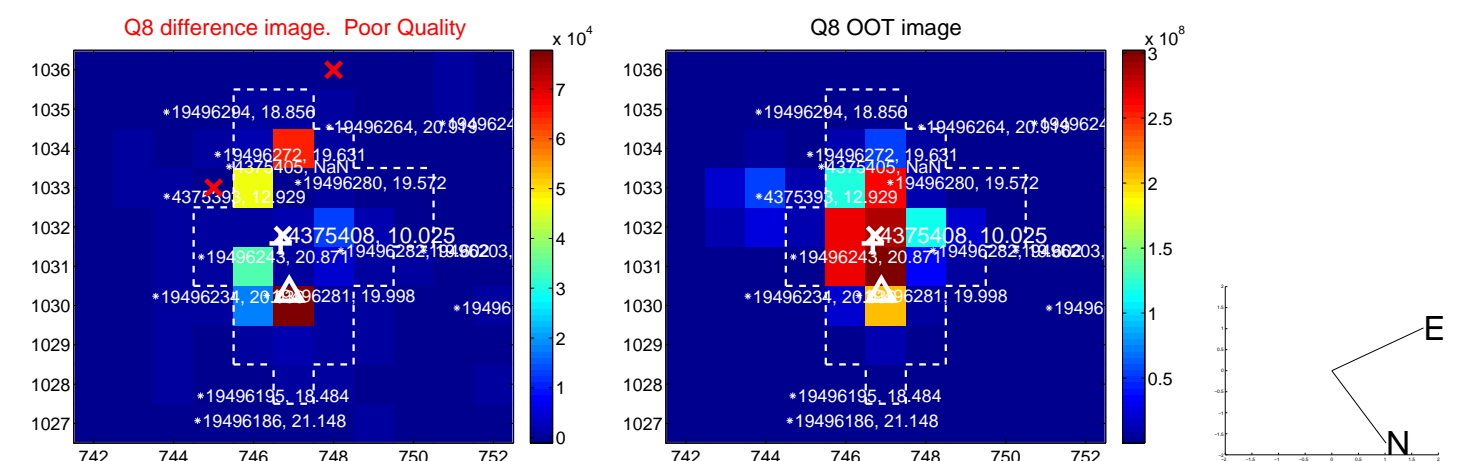
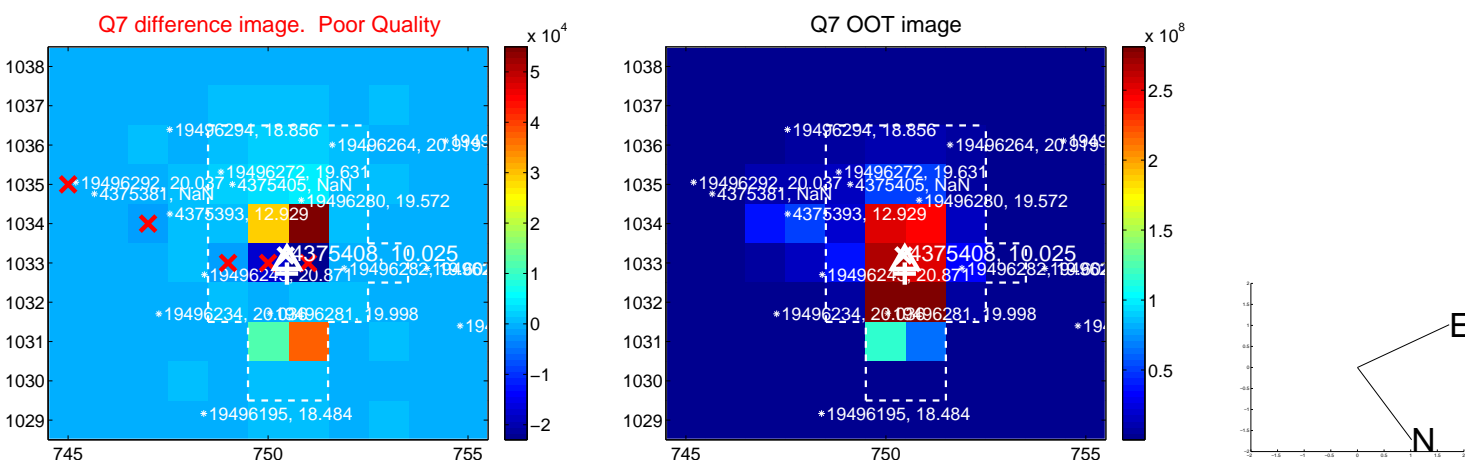
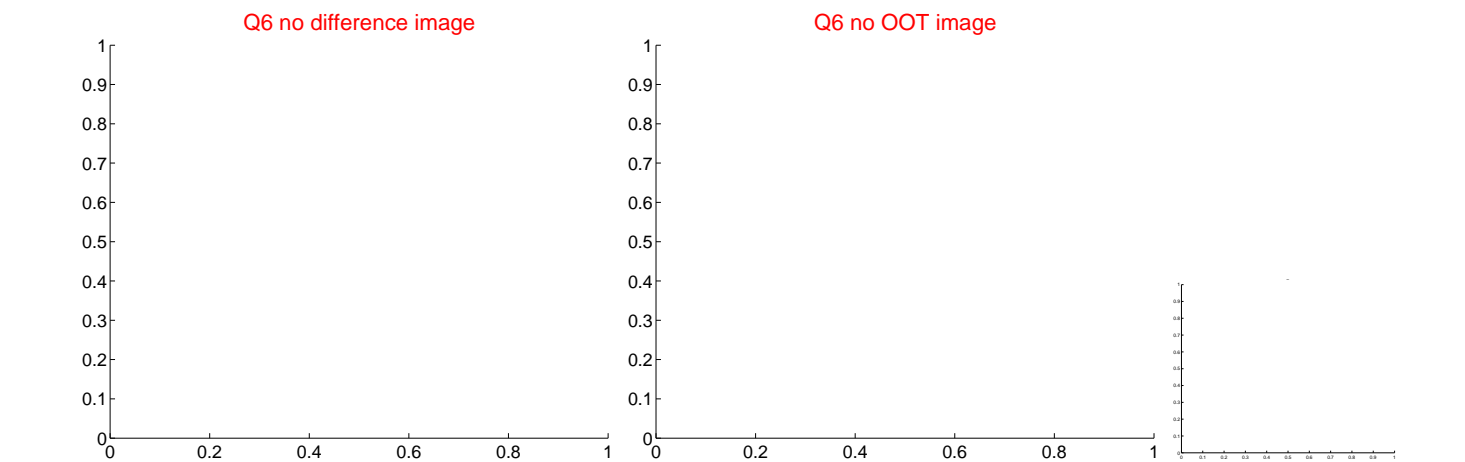
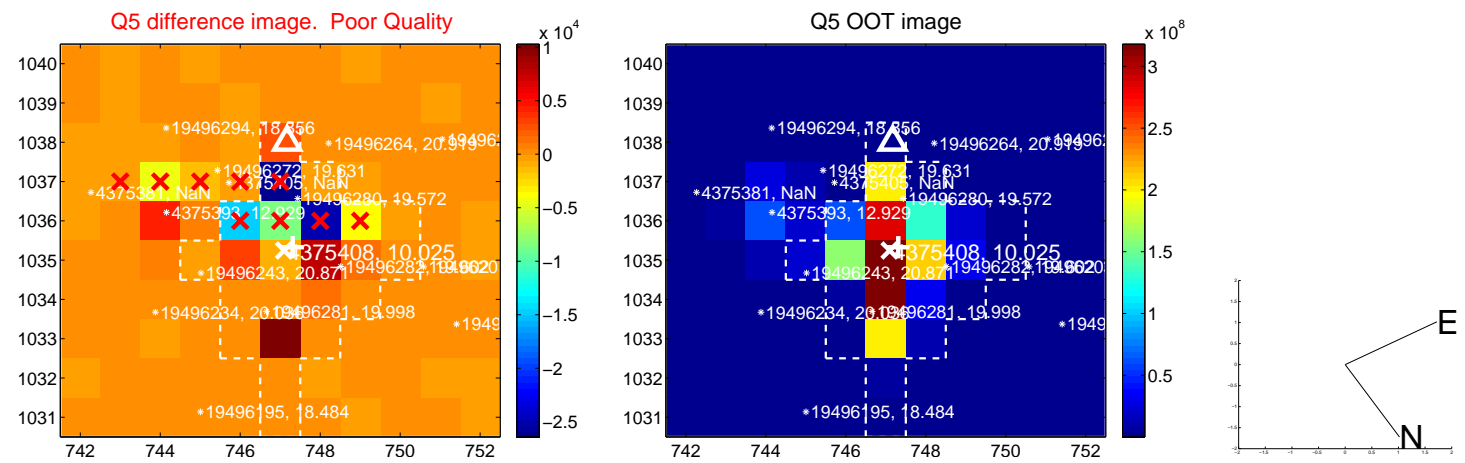


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

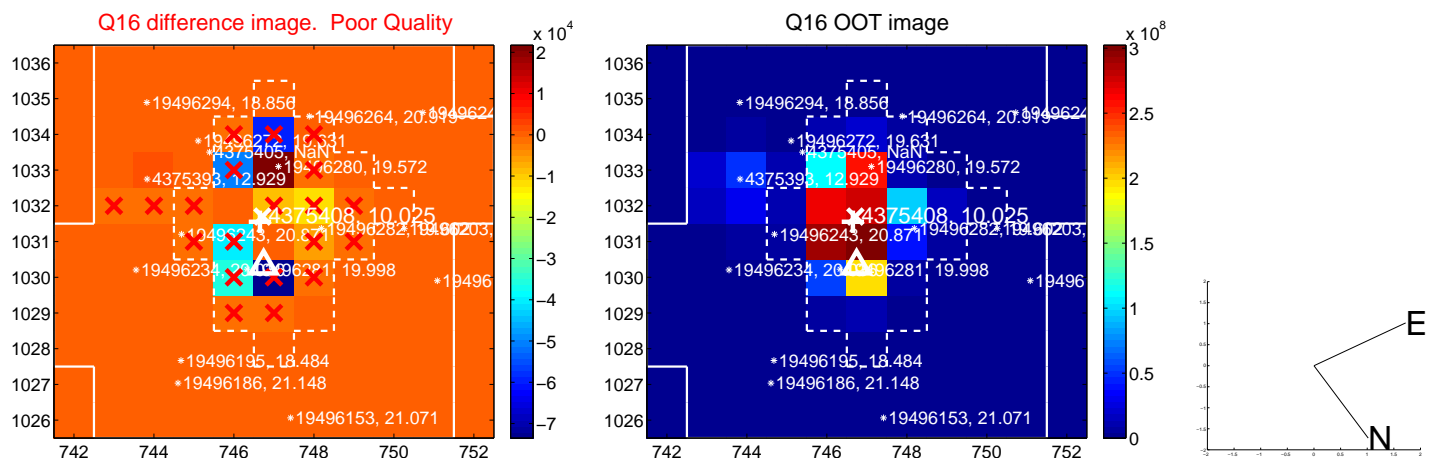
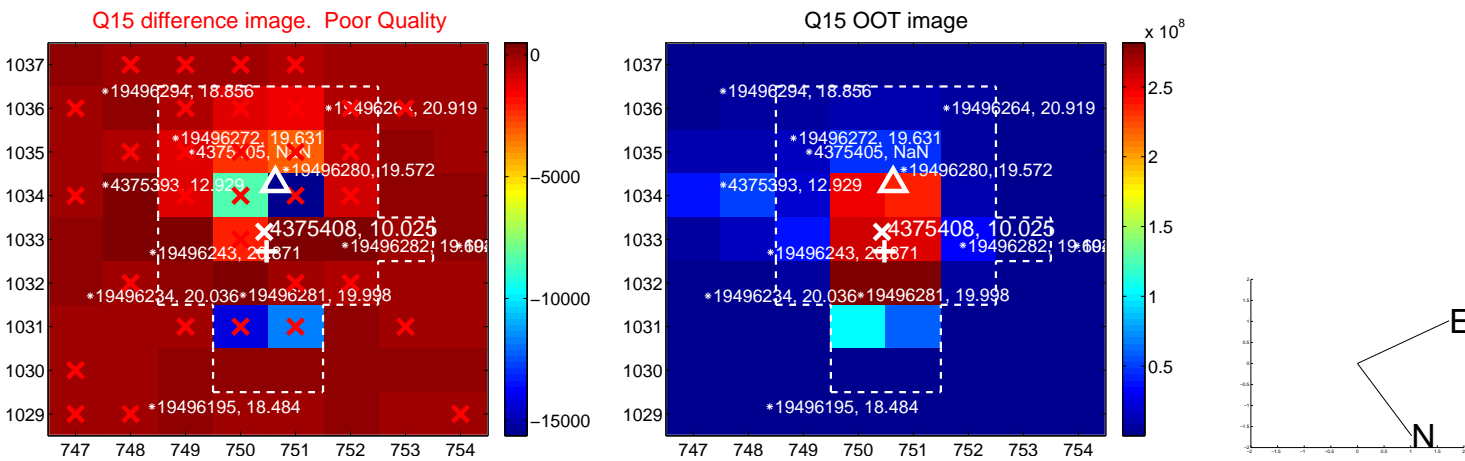
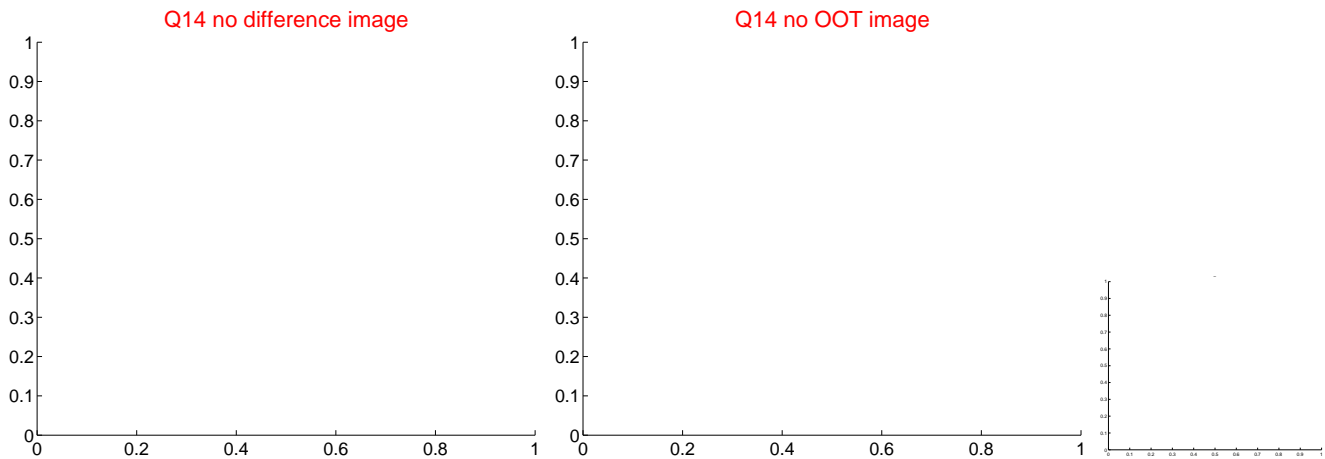
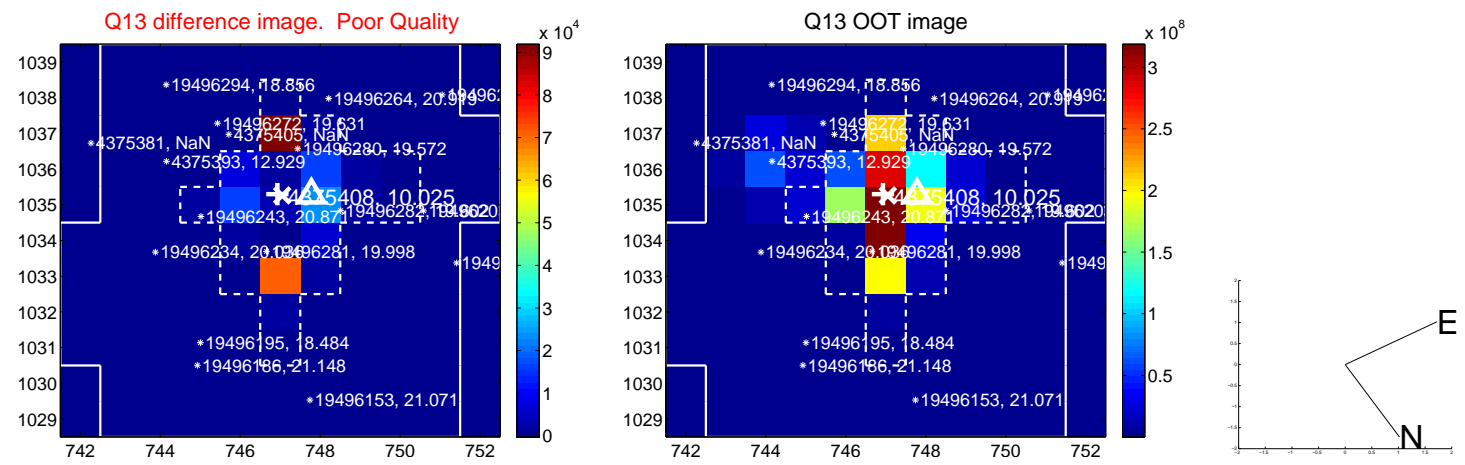
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



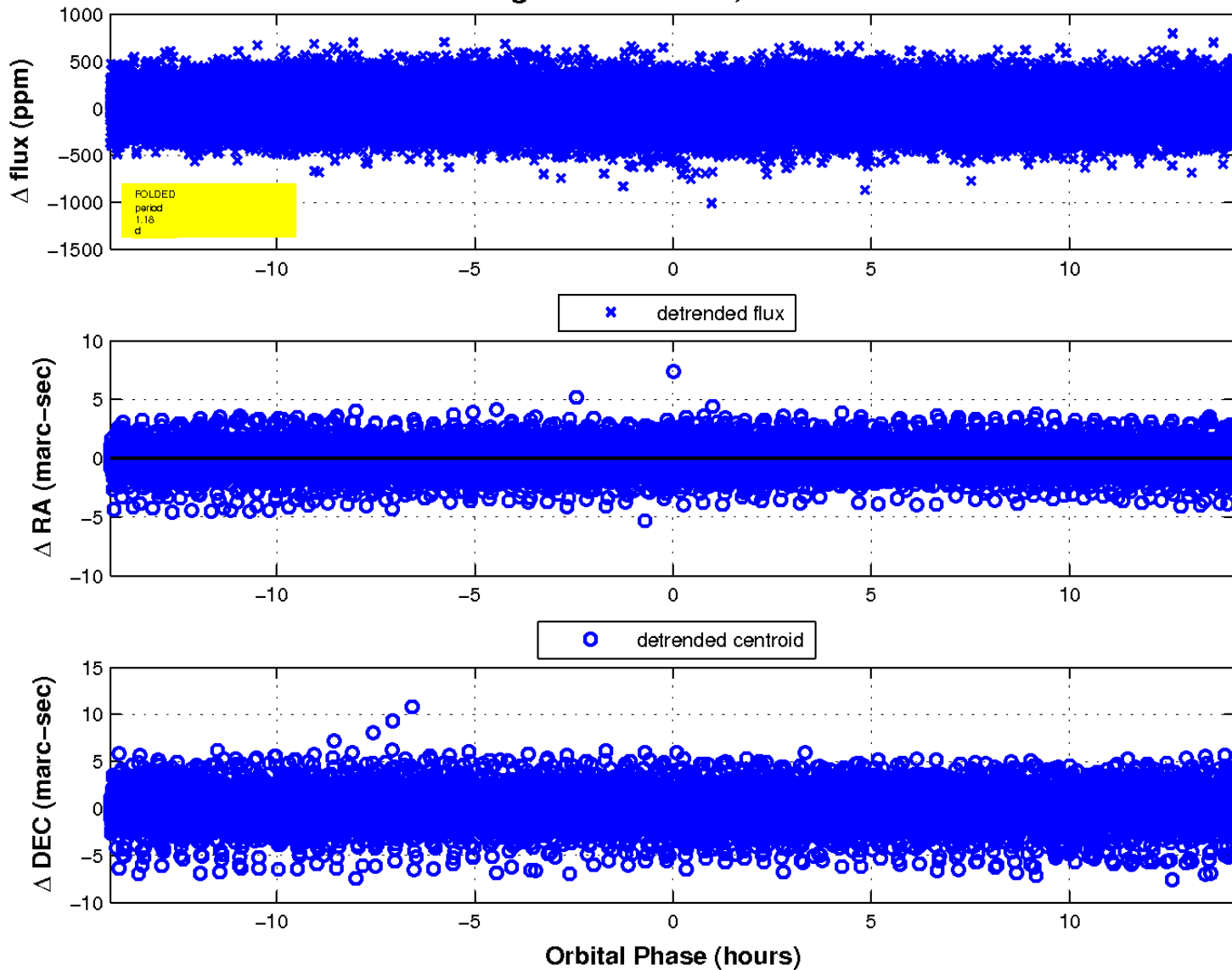
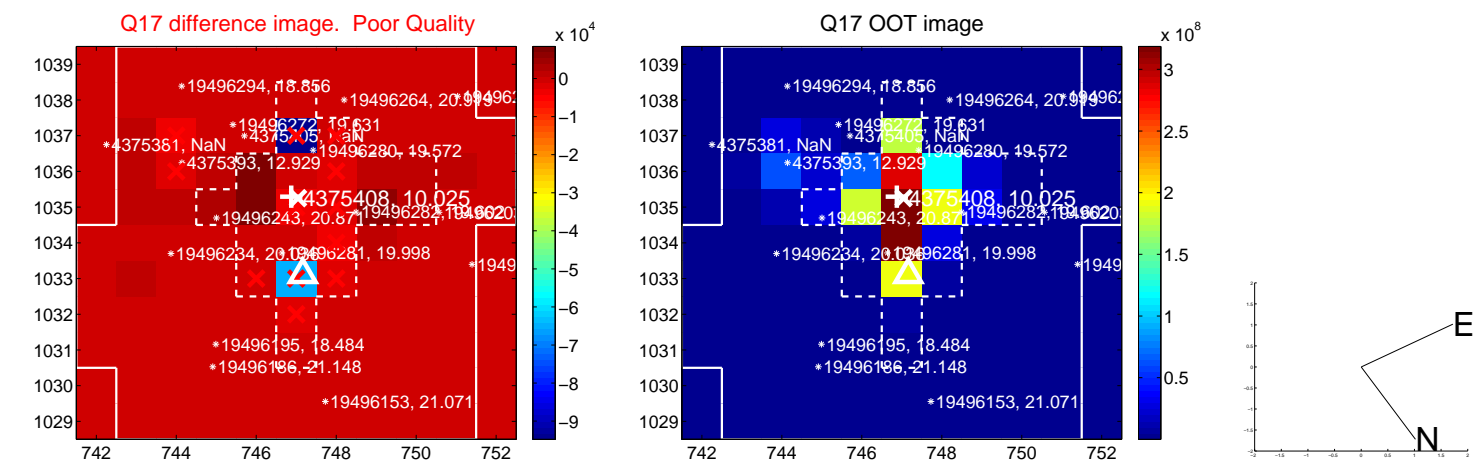
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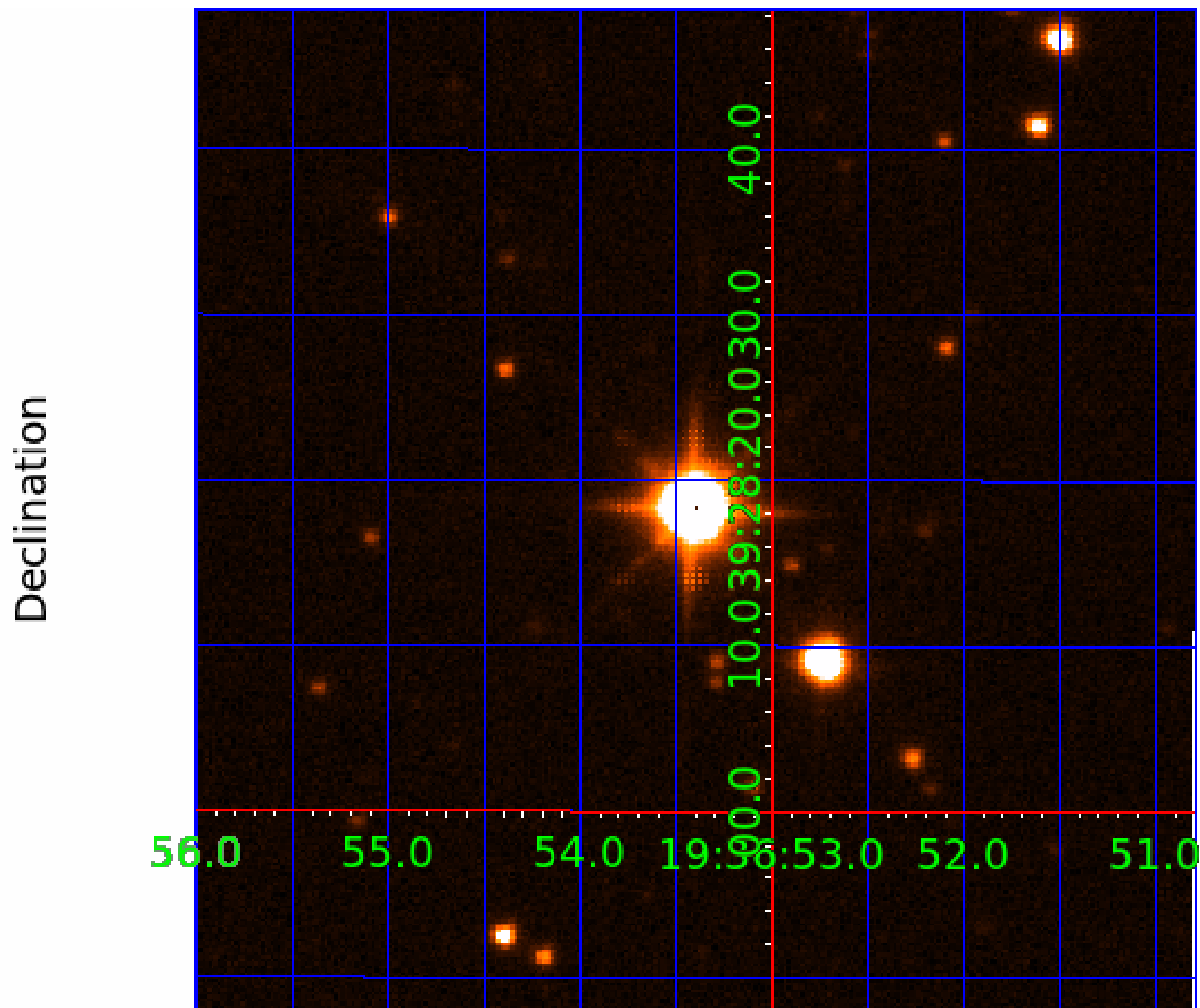
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UKIRT Image



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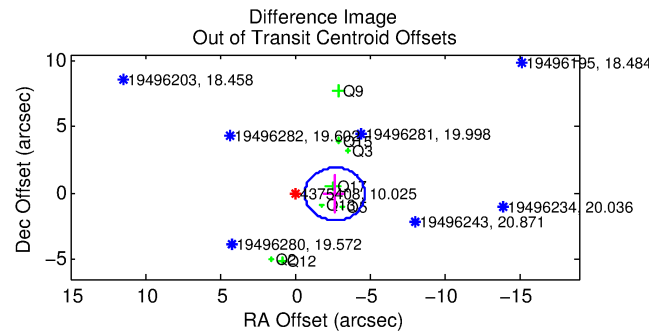
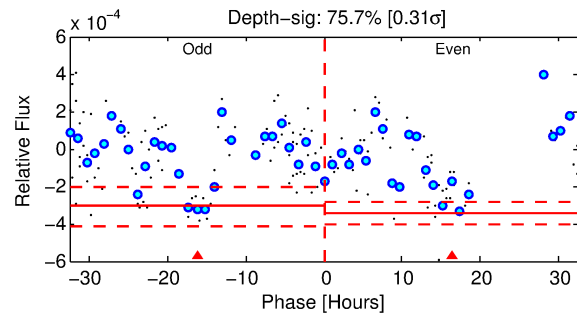
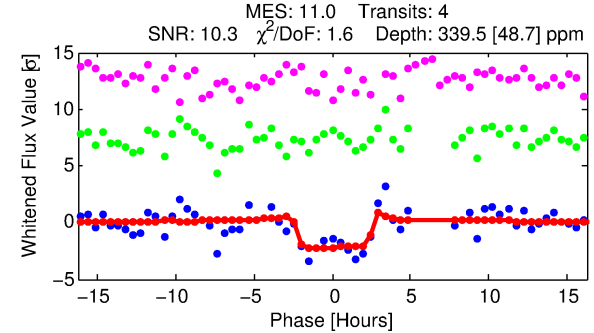
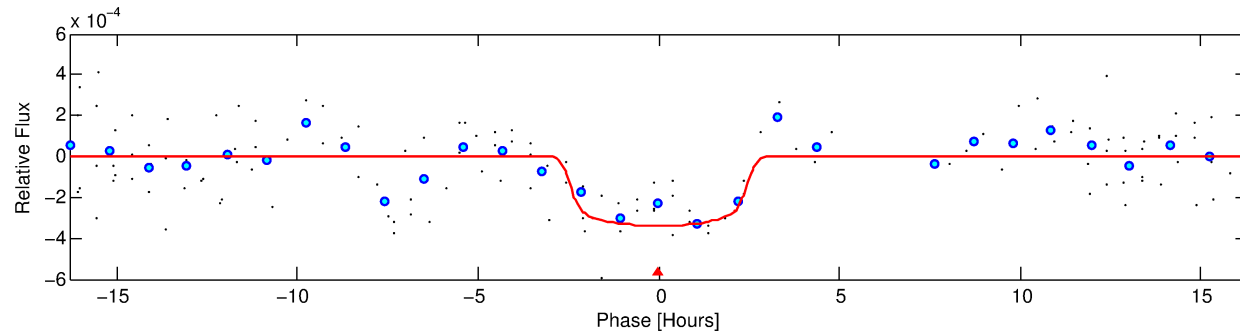
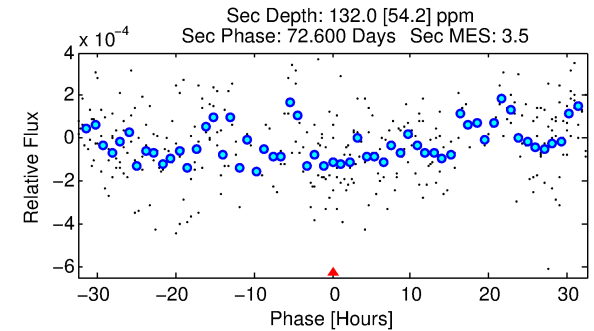
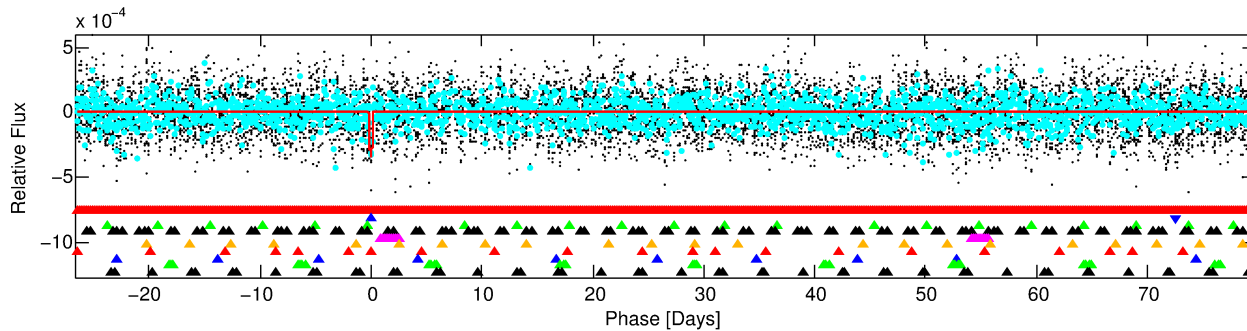
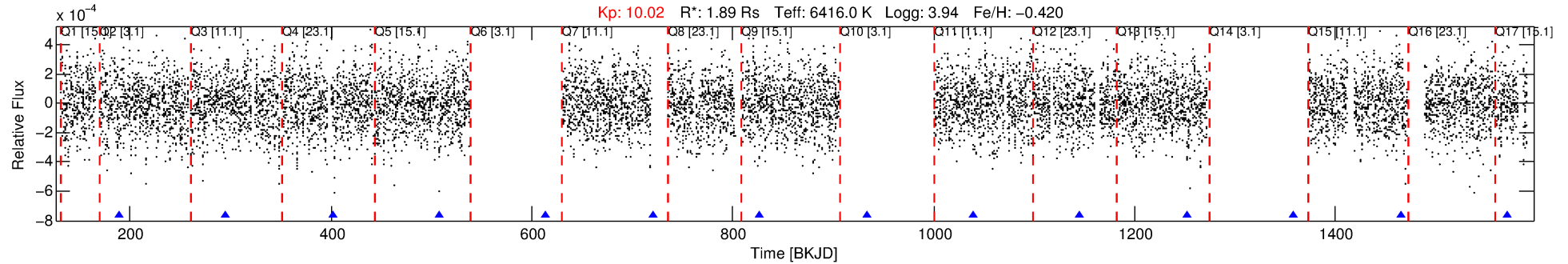
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004375408-02

No Significant Match Found

DV One-Page Summary

KIC: 4375408 Candidate: 2 of 10 Period: 106.298 d



DV Fit Results:

Period = 106.29849 [0.00173] d
Epoch = 188.9880 [0.0128] BKJD
Rp/R* = 0.0195 [0.0058]
a/R* = 74.92 [116.23]
b = 0.89 [0.37]
Seff = 25.77 [18.14]
Teq = 575 [101] K
Rp = 4.02 [2.02] Re
a = 0.4580 [0.1911] AU
Ag = 940.85 [937.42] [1.00σ]
Teffp = 4920 [901] K [4.79σ]

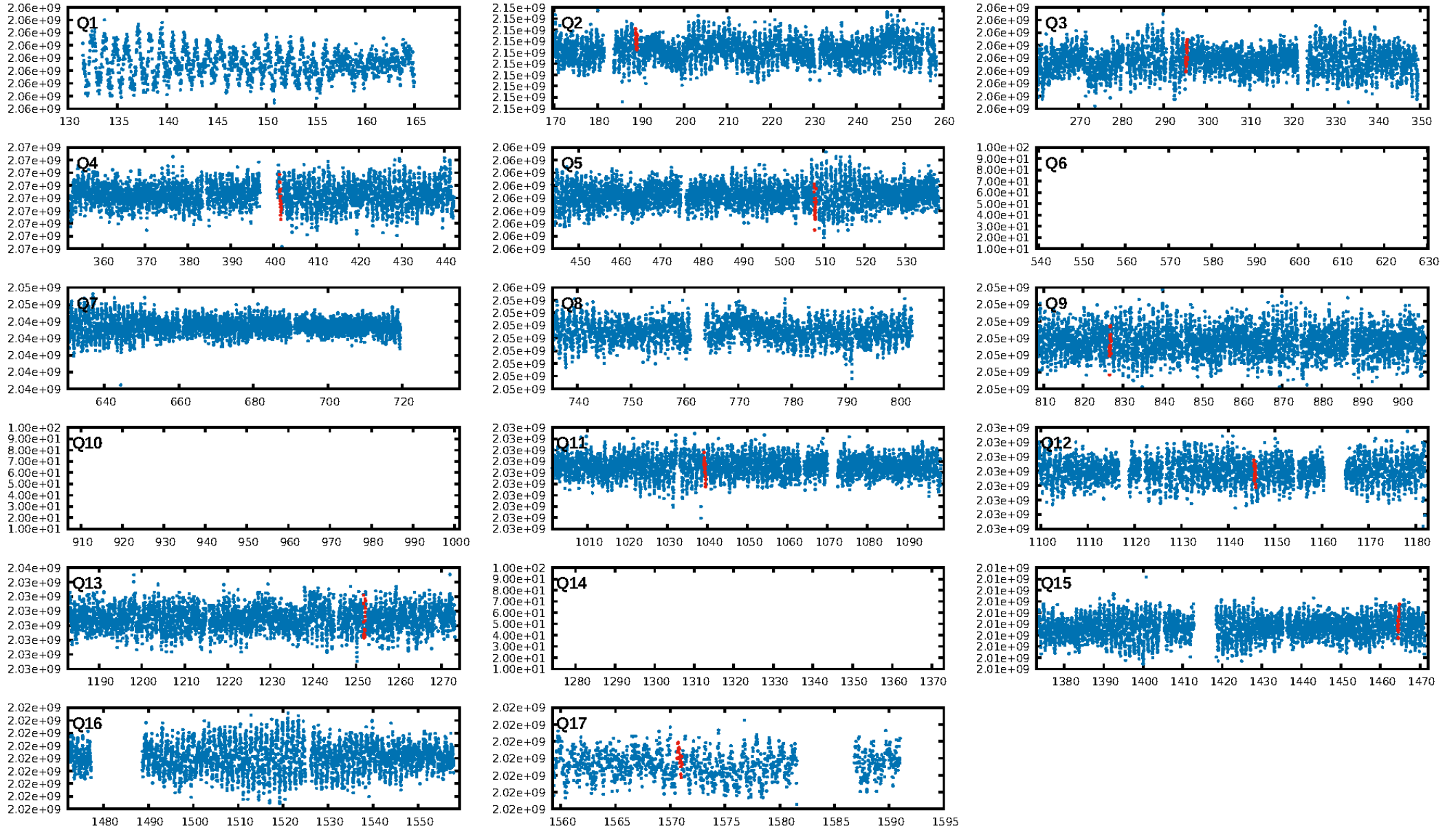
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [151.75σ]
LongPeriod-sig: 100.0% [131.29σ]
ModelChiSquare2-sig: 6.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 0.832 arcsec [2.00σ]
OotOffset-rm: 2.681 arcsec [4.02σ]
KicOffset-rm: 2.675 arcsec [3.30σ]
OotOffset-st: 1/2/1/4 [8]
KicOffset-st: 1/2/1/4 [8]
DiffImageQuality-fgm: 0.12 [1/8]
DiffImageOverlap-fno: 0.00 [0/9]

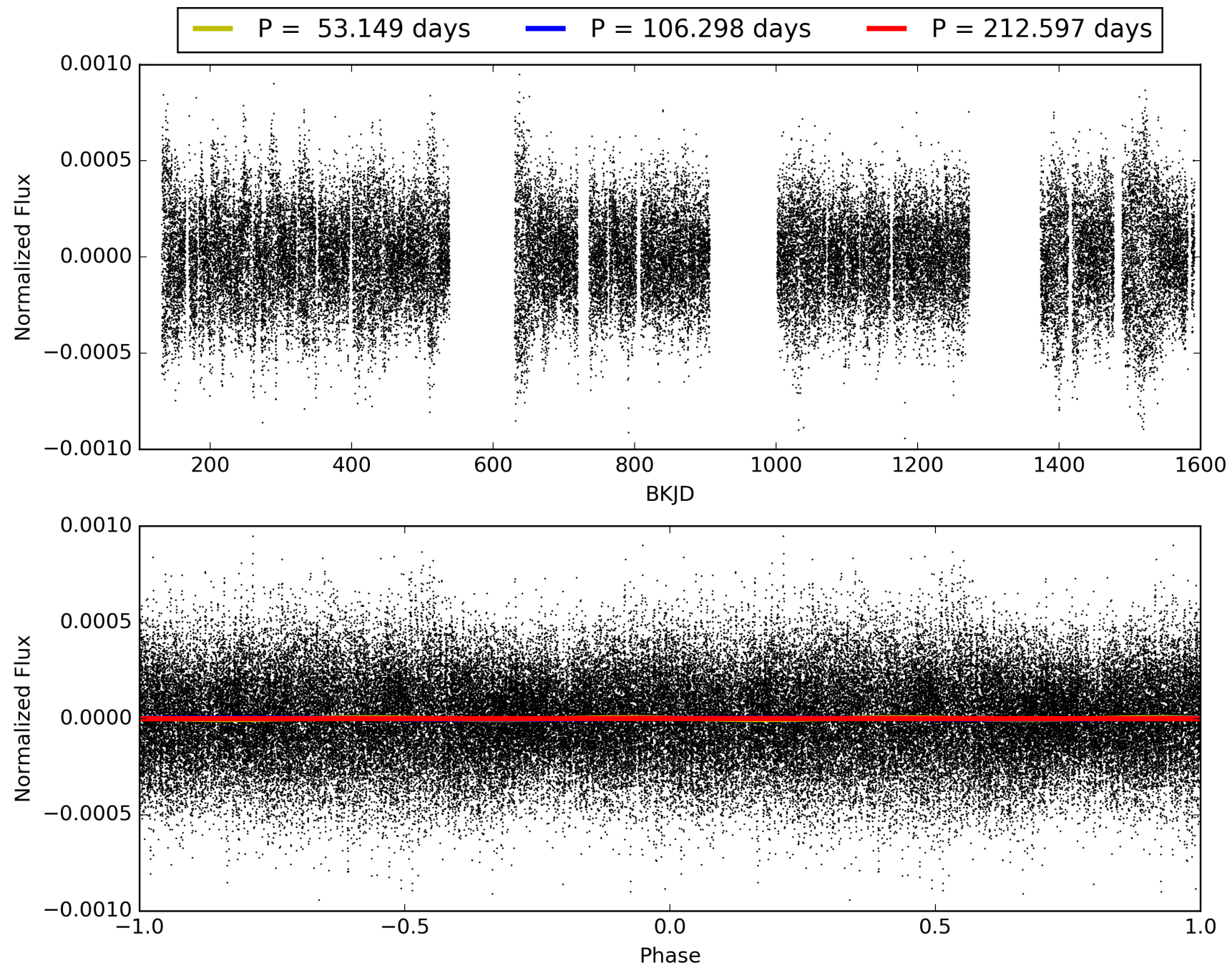
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:58:44 Z

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

TCE 004375408-02, PDC Light Curves

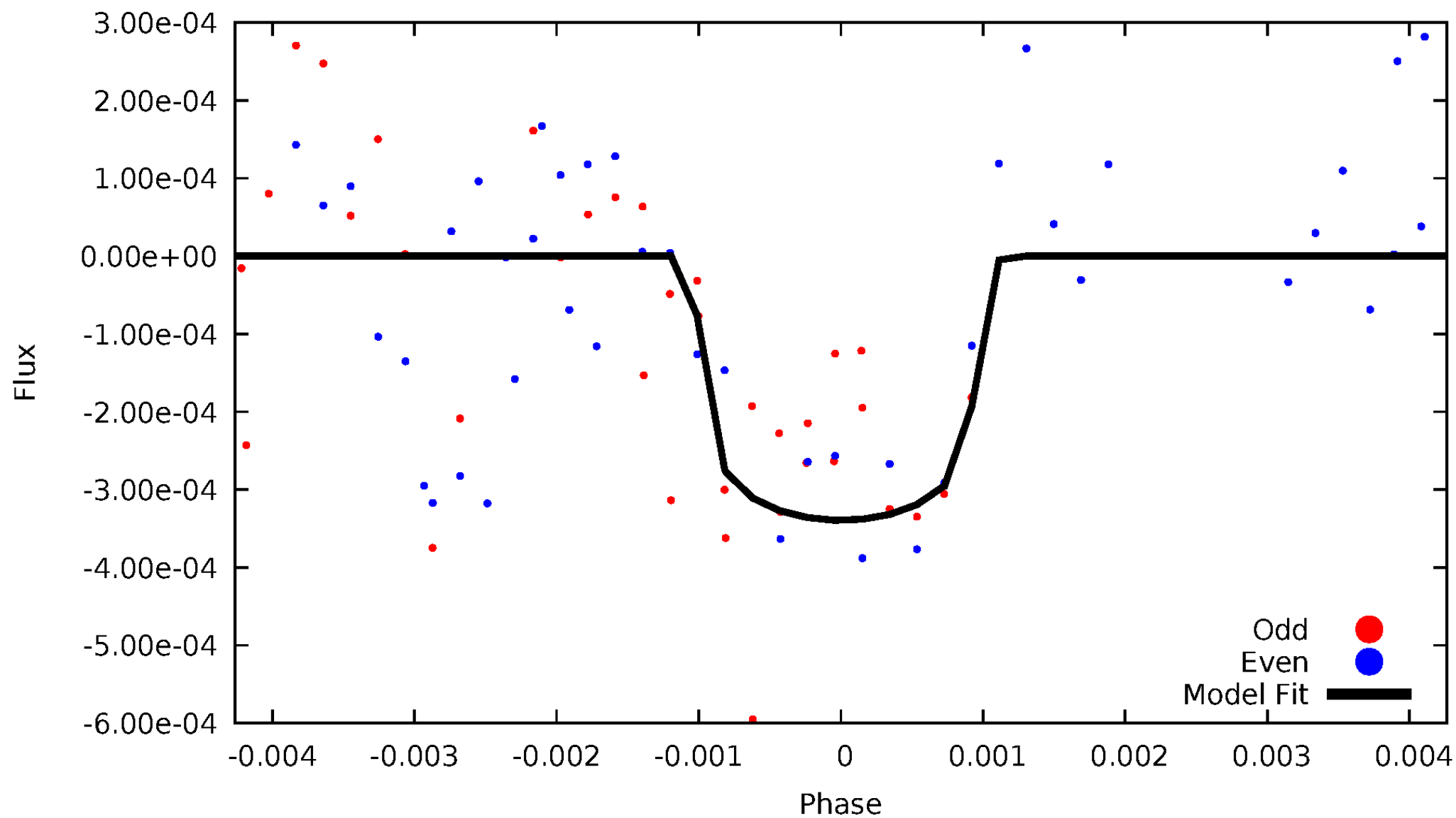


TCE 004375408-02



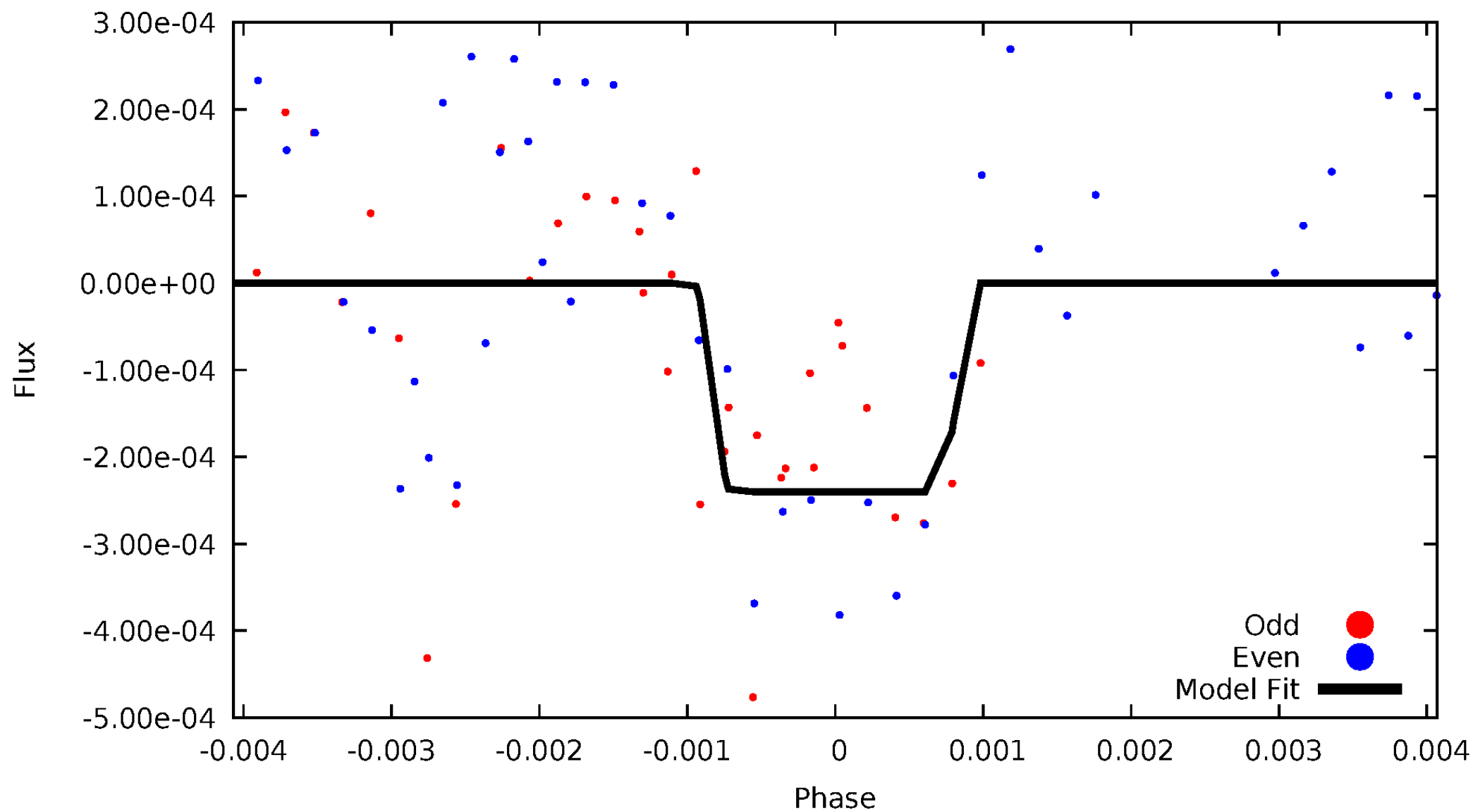
DV Odd/Even

TCE 004375408-02



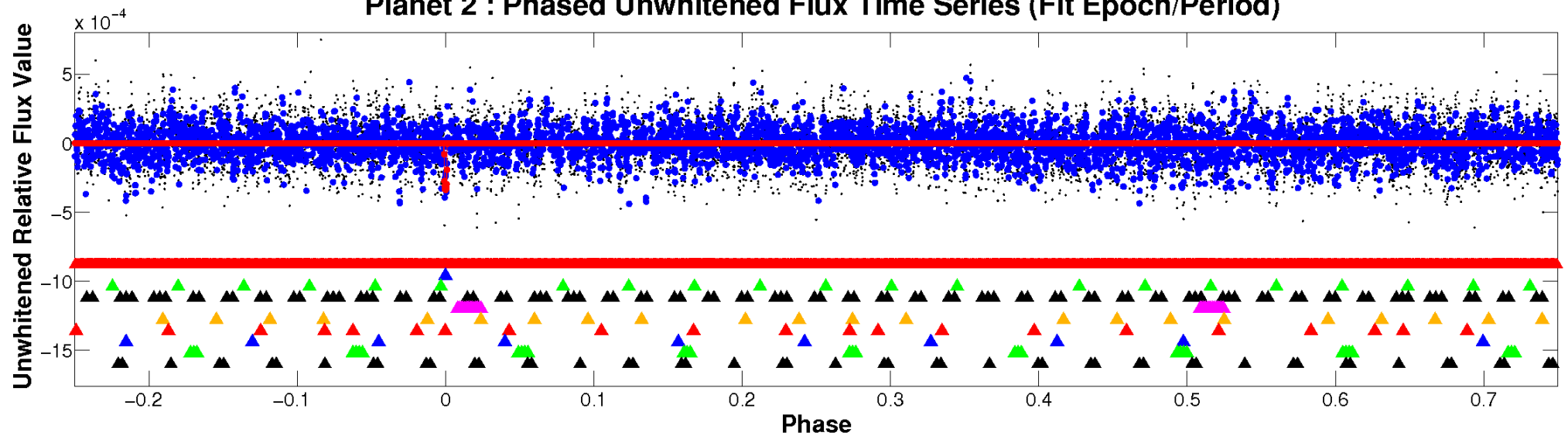
ALT Odd/Even

TCE 004375408-02

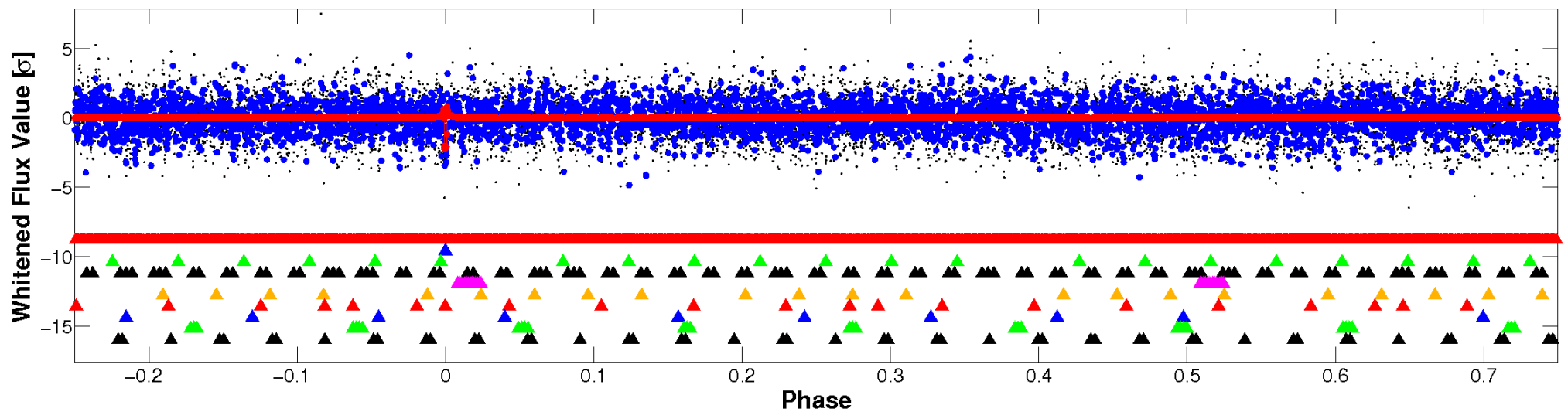


Non-Whitened Vs. Whitened Light Curve

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

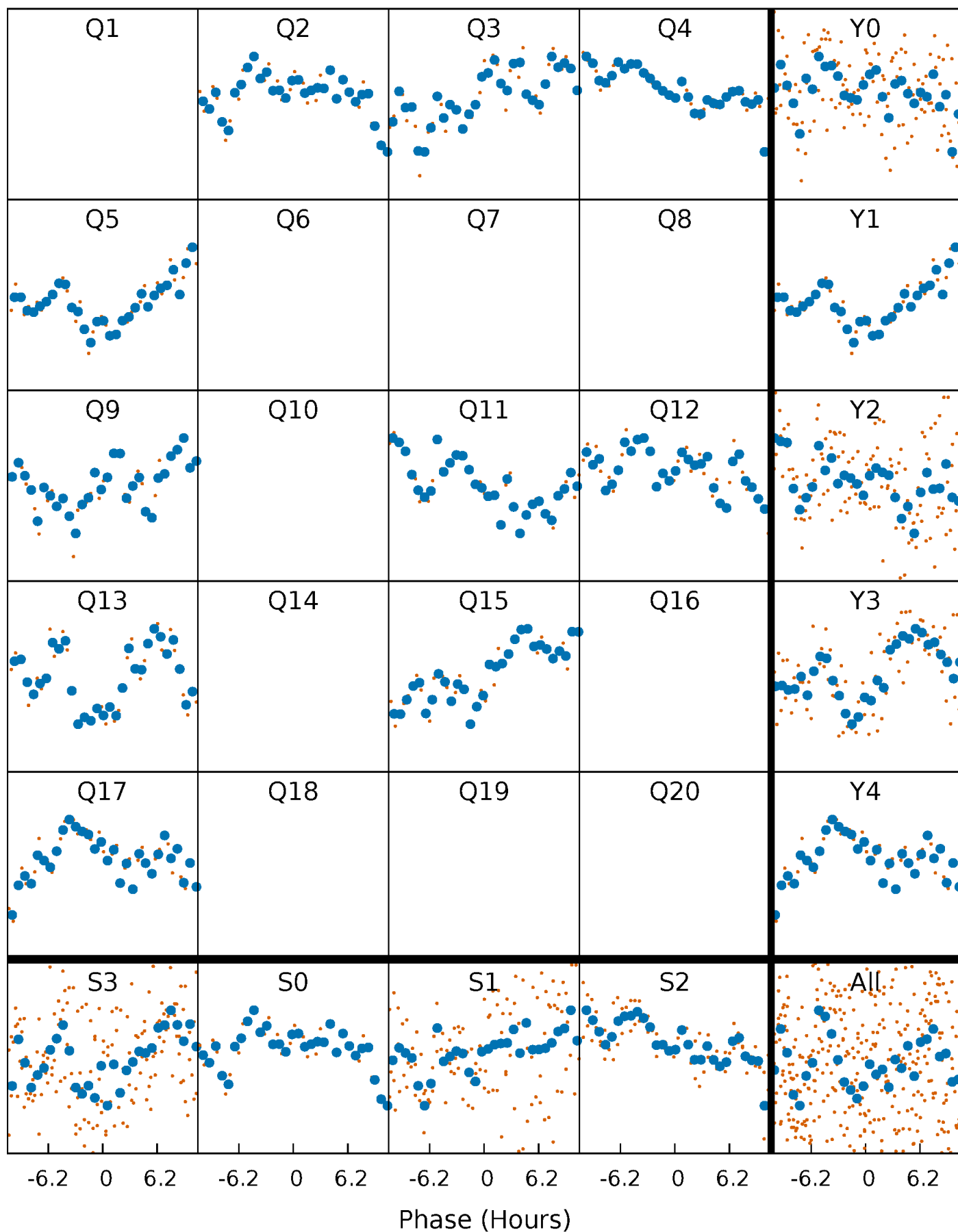


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



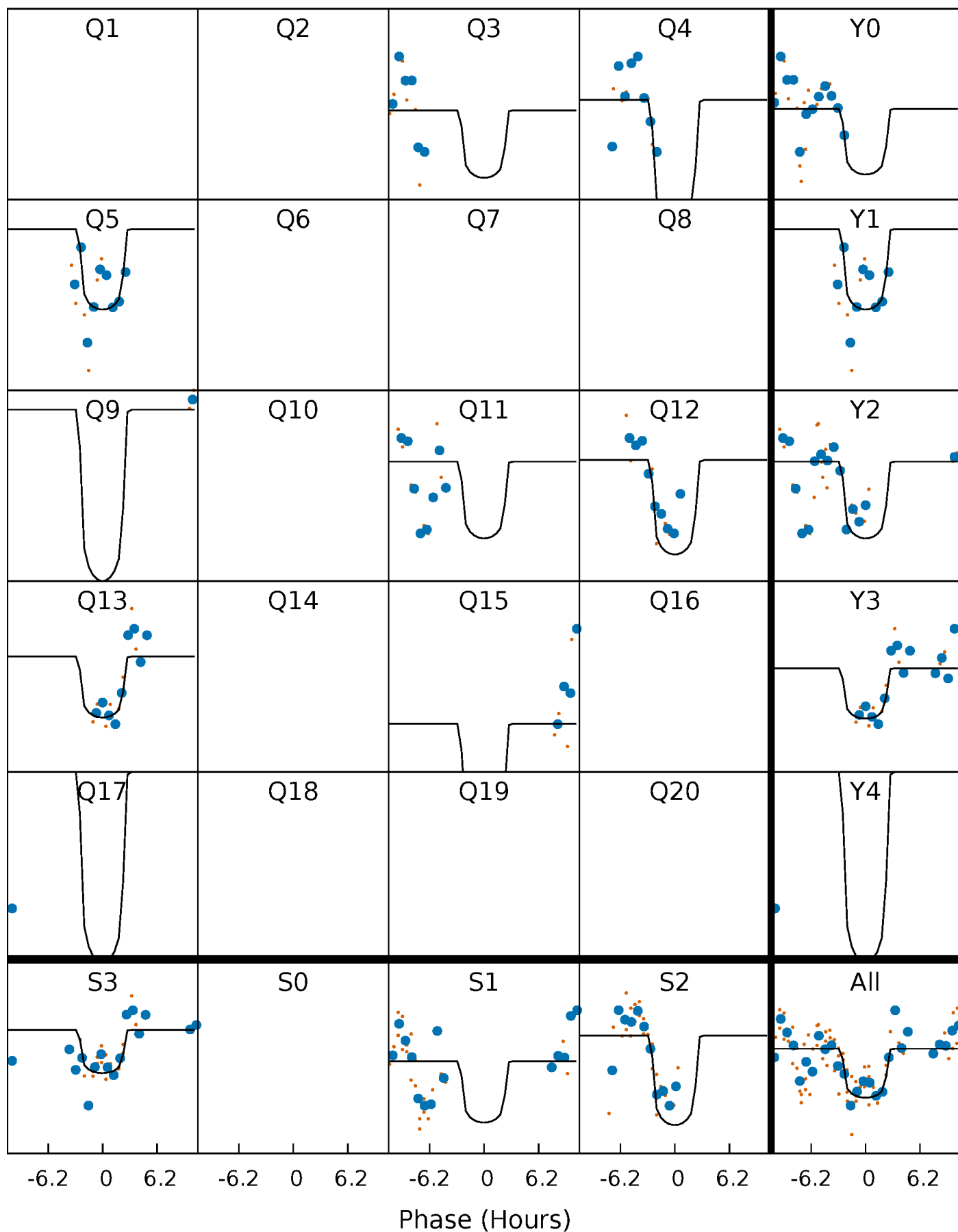
PDC Quarter-Phased Transit Curves

TCE 004375408-02 P=106.298491 Days $T_0=188.988020$ (BKJD)



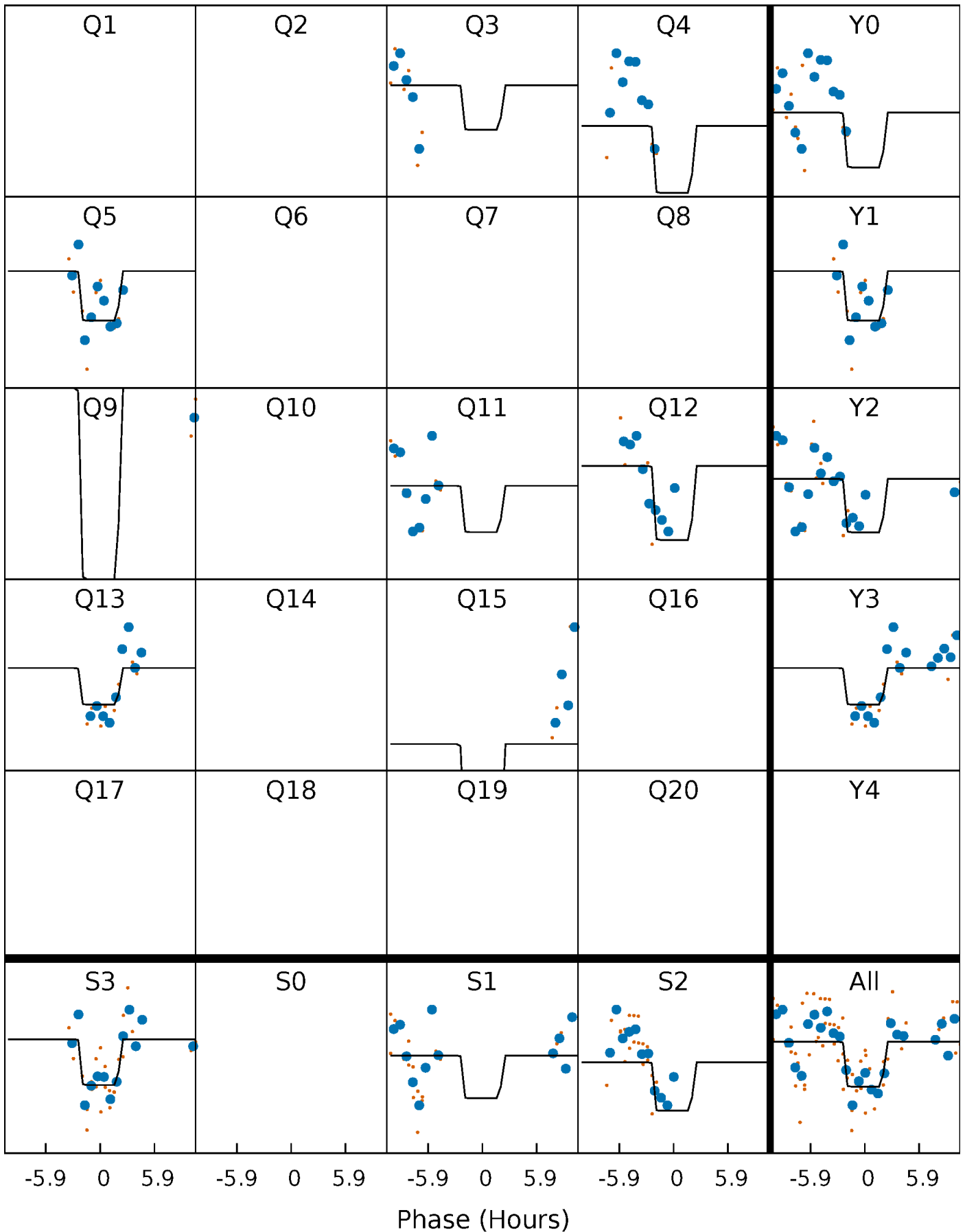
DV Quarter-Phased Transit Curves

TCE 004375408-02 $P=106.298491$ Days $T_0=188.988020$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

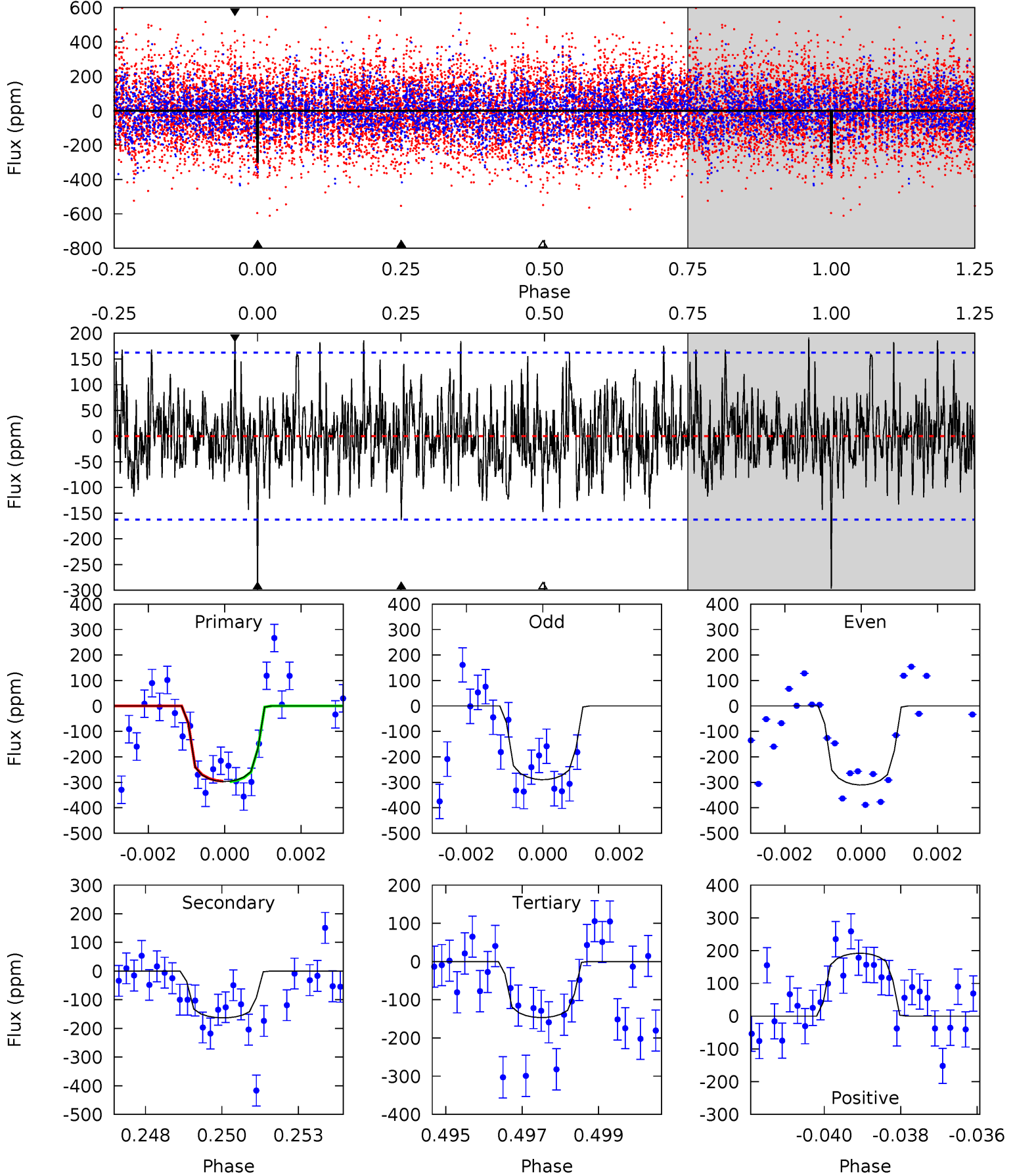
TCE 004375408-02 P=106.301287 Days $T_0=188.972965$ (BKJD)



DV Model-Shift Uniqueness Test

004375408-02, P = 106.298491 Days, E = 82.689529 Days

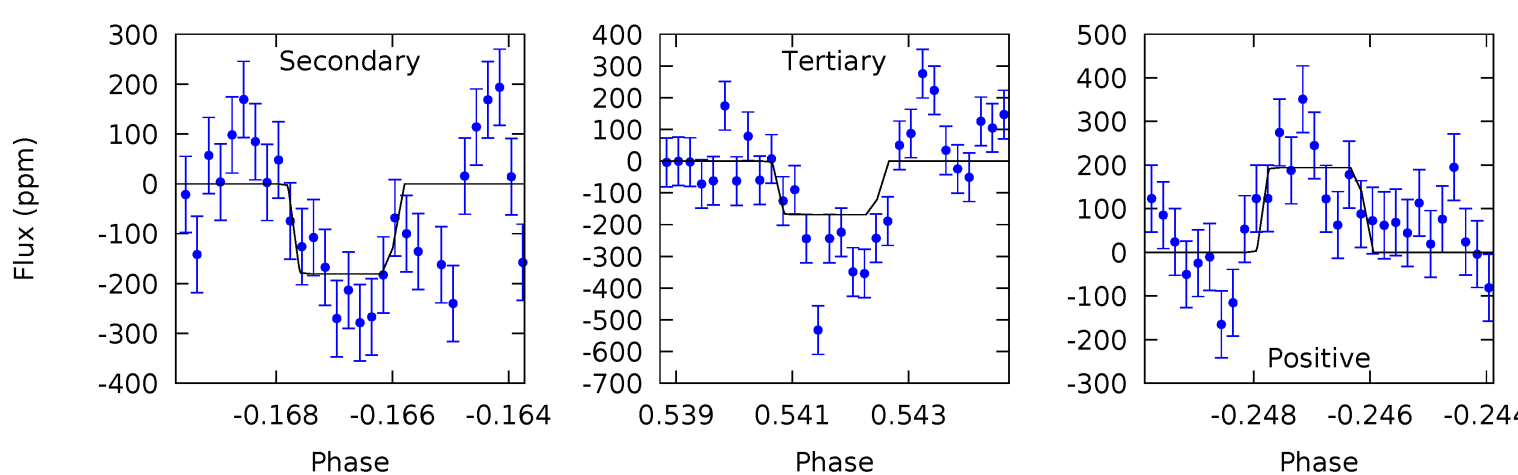
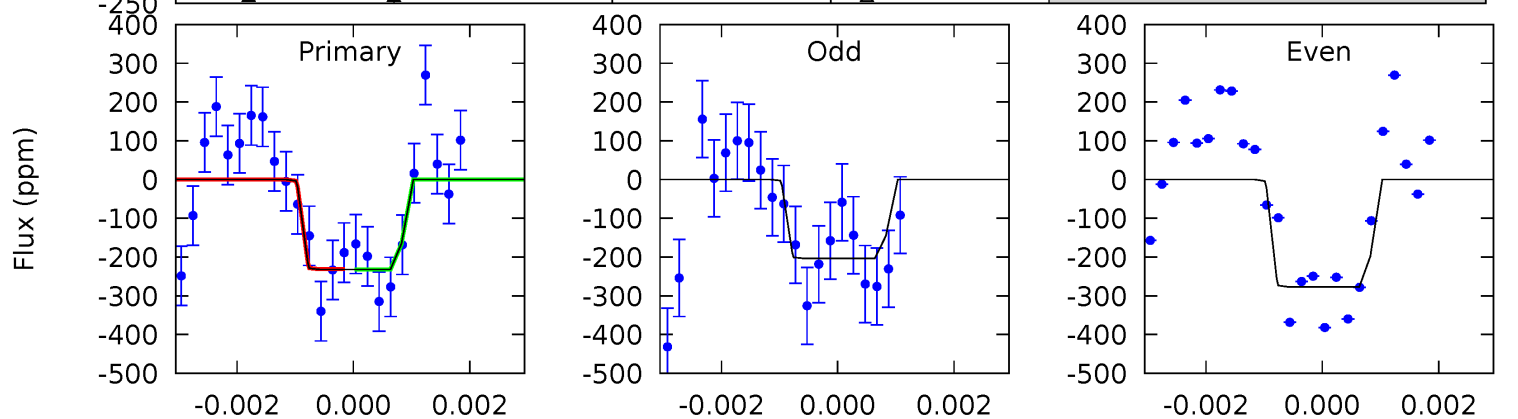
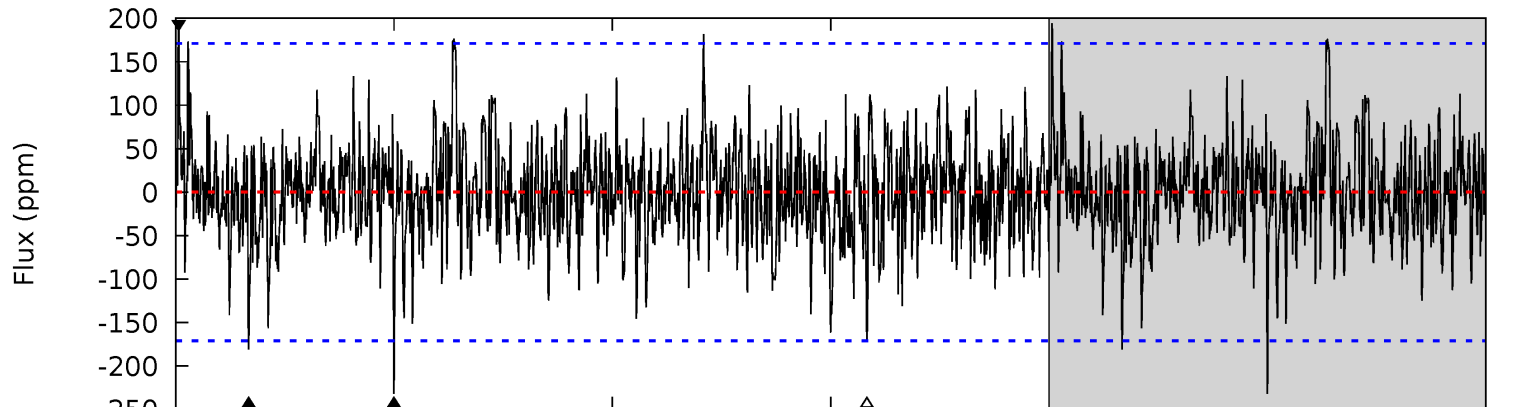
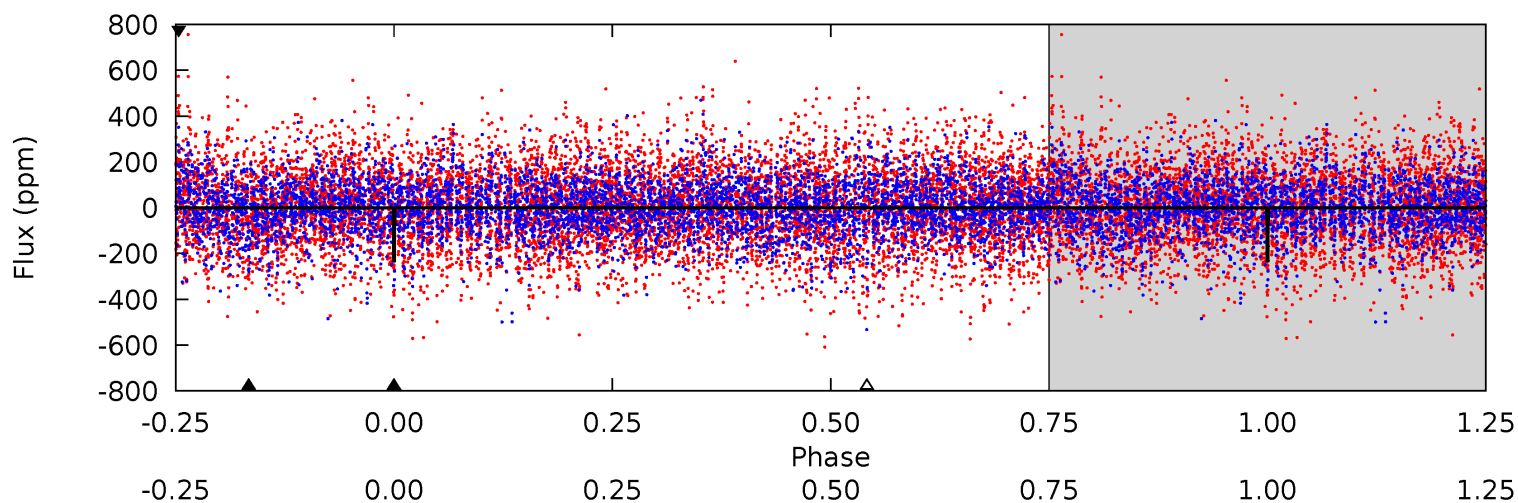
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.72	5.34	4.80	6.29	5.32	3.07	1.78	4.92	3.43	0.54	-0.94	0.32	0.98	0.39	0.04



Alt Model-Shift Uniqueness Test

004375408-02, $P = 106.301287$ Days, $E = 82.671678$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.23	5.64	5.26	6.06	5.34	3.10	1.46	1.97	1.17	0.37	-0.42	1.11	1.01	0.46	0.02



Stellar Parameters For KIC 004375408

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6416^{+181}_{-227}	$3.941^{+0.413}_{-0.138}$	$-0.420^{+0.300}_{-0.300}$	$1.887^{+0.448}_{-0.768}$	$1.133^{+0.169}_{-0.188}$	$0.237^{+0.824}_{-0.092}$
	+3%/-4%	+10%/-4%	+71%/-71%	+24%/-41%	+15%/-17%	+347%/-39%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004375408-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-163 ± 31	$3.76^{+1.37}_{-1.31}$	790^{+58}_{-94}	5241^{+925}_{-566}	1333^{+1692}_{-638}
Alt.	-181 ± 32	$3.06^{+1.39}_{-1.23}$	789^{+57}_{-83}	5855^{+1717}_{-800}	2176^{+4067}_{-1153}

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

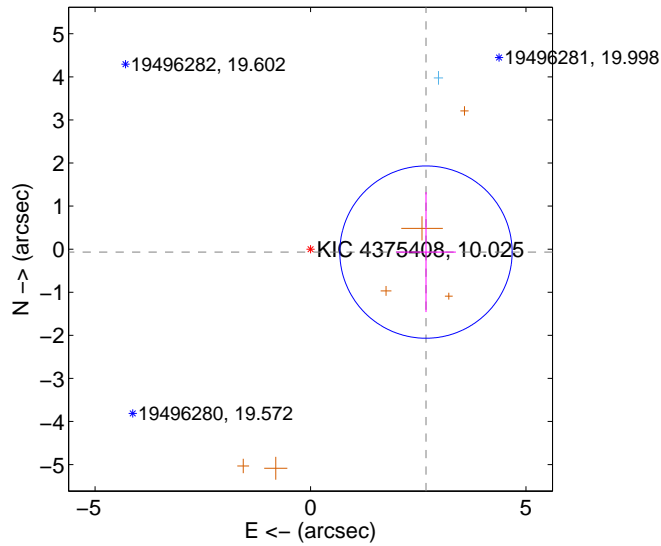
Supplemental centroid analysis for 004375408-02. **Kepler magnitude: 10.03.** Transit SNR 10.34

There are 1 quarters with good PRF difference image offsets

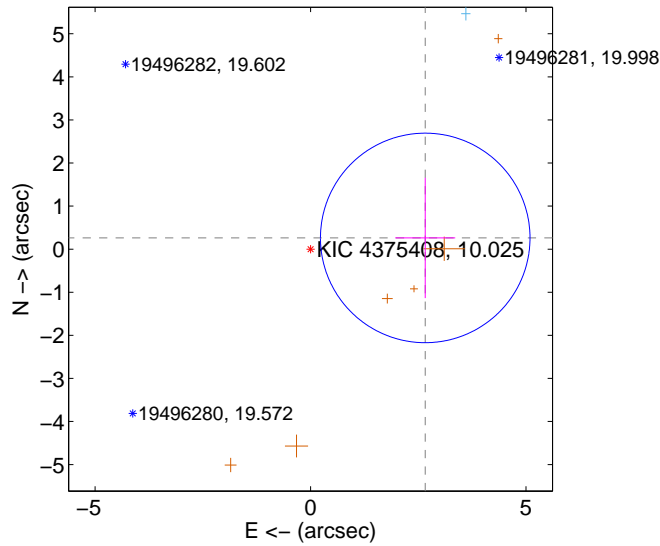
The direct PRF centroid is offset from the target star catalog position by about 0.70 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.681 ± 0.667	4.02	-2.680 ± 0.694	-0.068 ± 1.392
PRF-fit source offset from KIC position	2.675 ± 0.811	3.30	-2.662 ± 0.696	0.261 ± 1.397
photometric centroid source offset	0.83 ± 0.41	2.00	-0.67 ± 0.39	0.49 ± 0.46

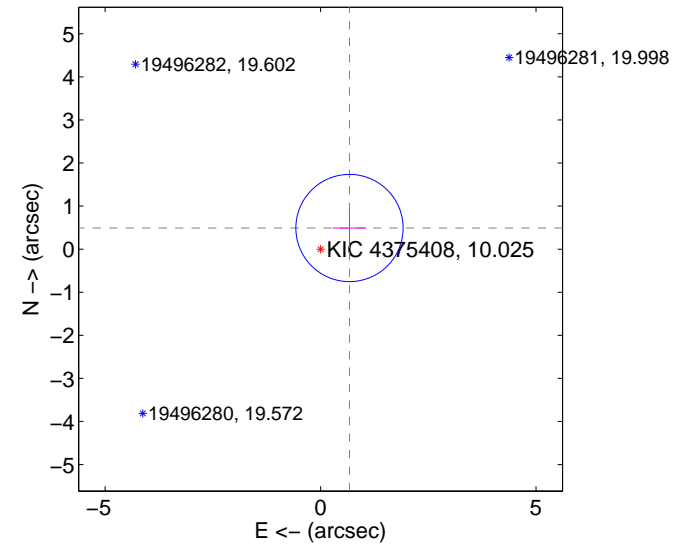
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



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

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

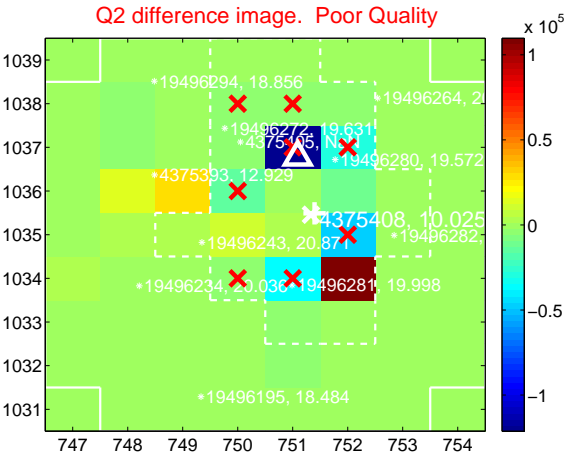
Q1 no difference image



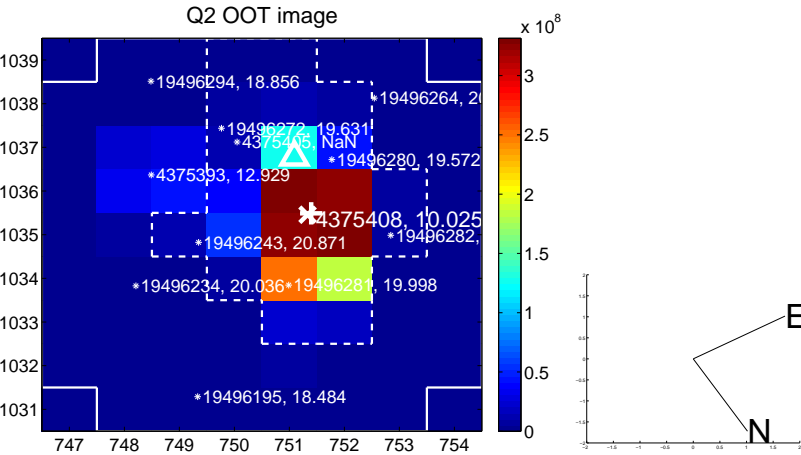
Q1 no OOT image



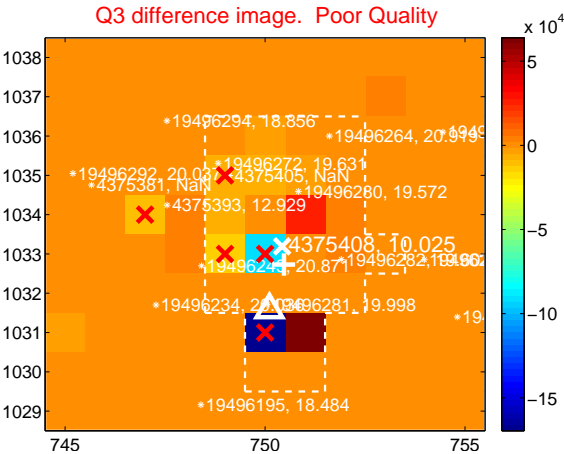
Q2 difference image. Poor Quality



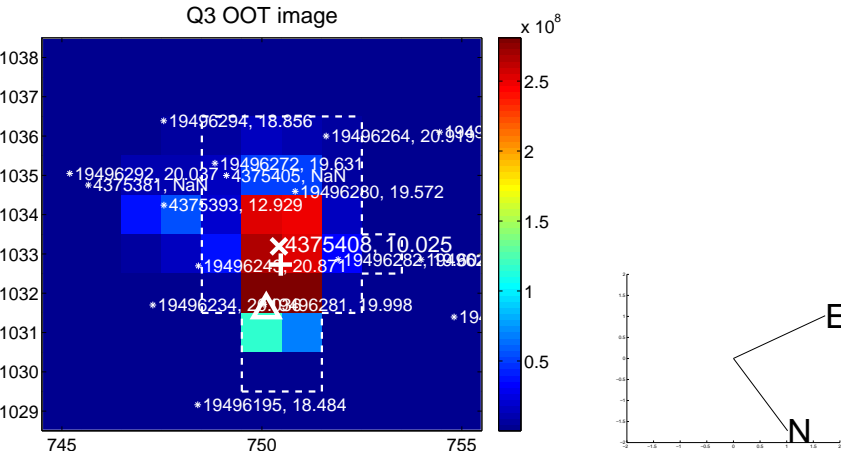
Q2 OOT image



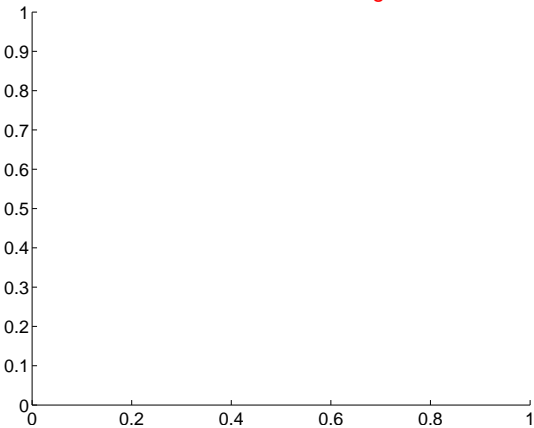
Q3 difference image. Poor Quality



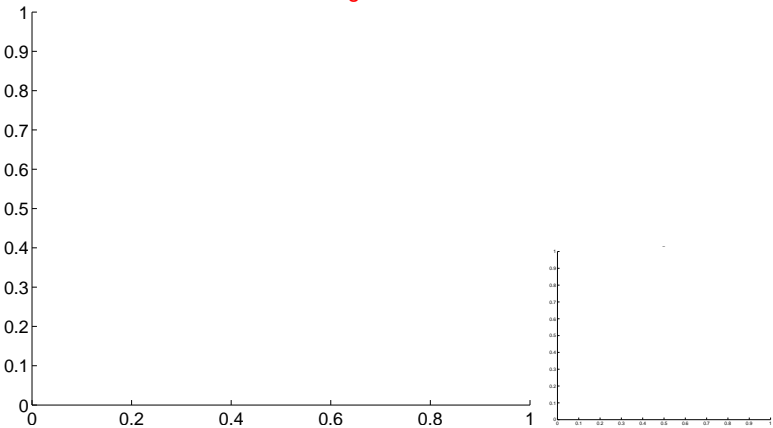
Q3 OOT image



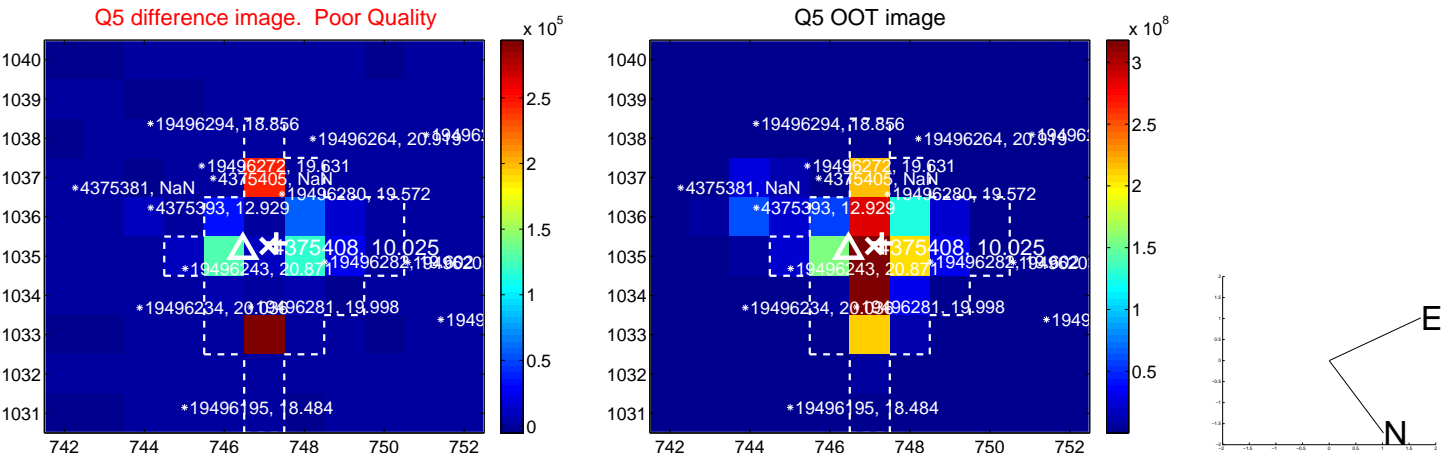
Q4 no difference image



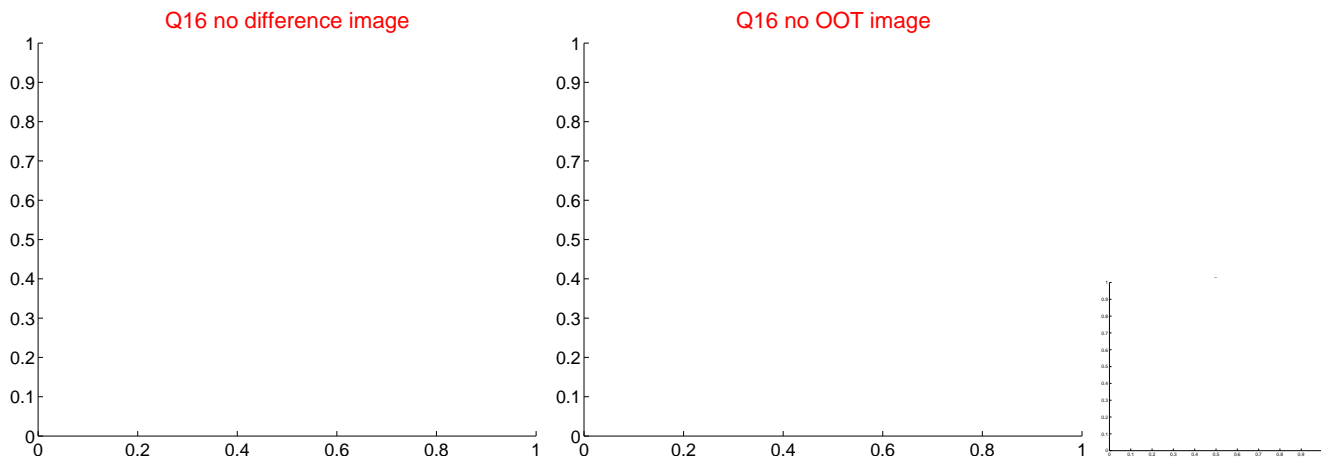
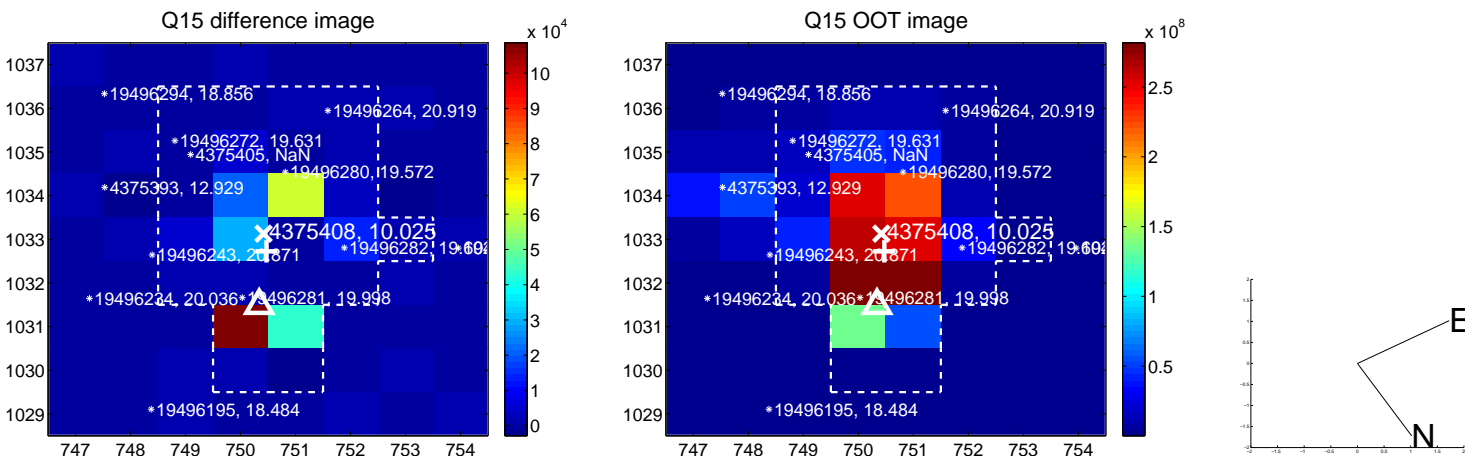
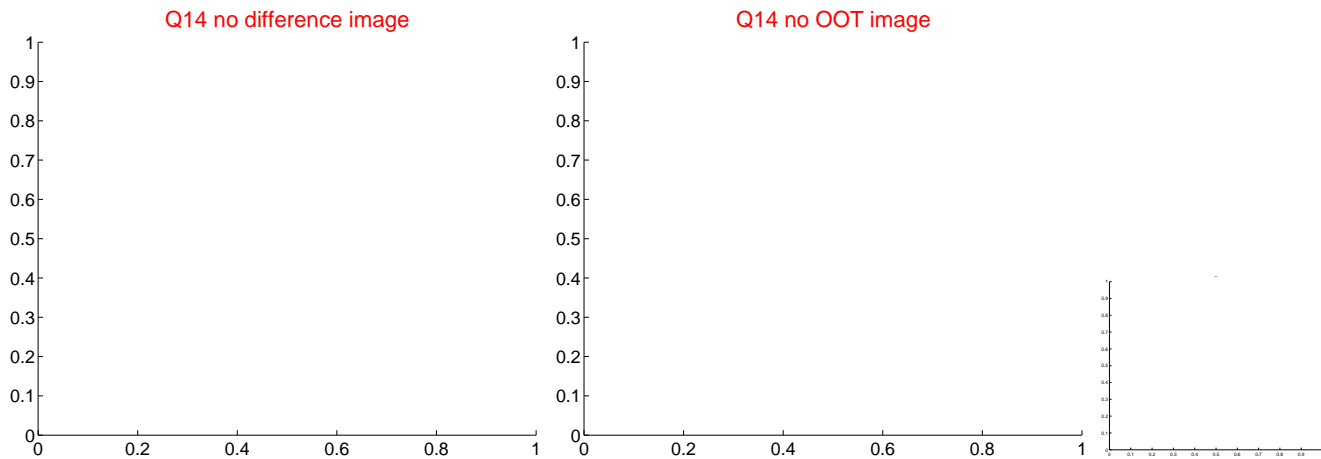
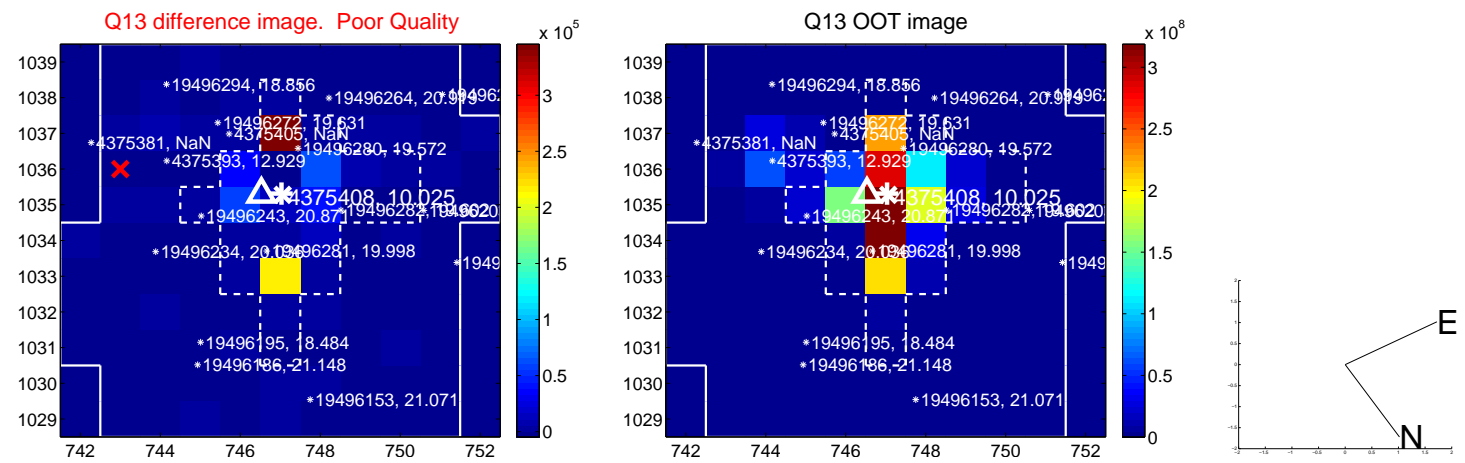
Q4 no OOT image



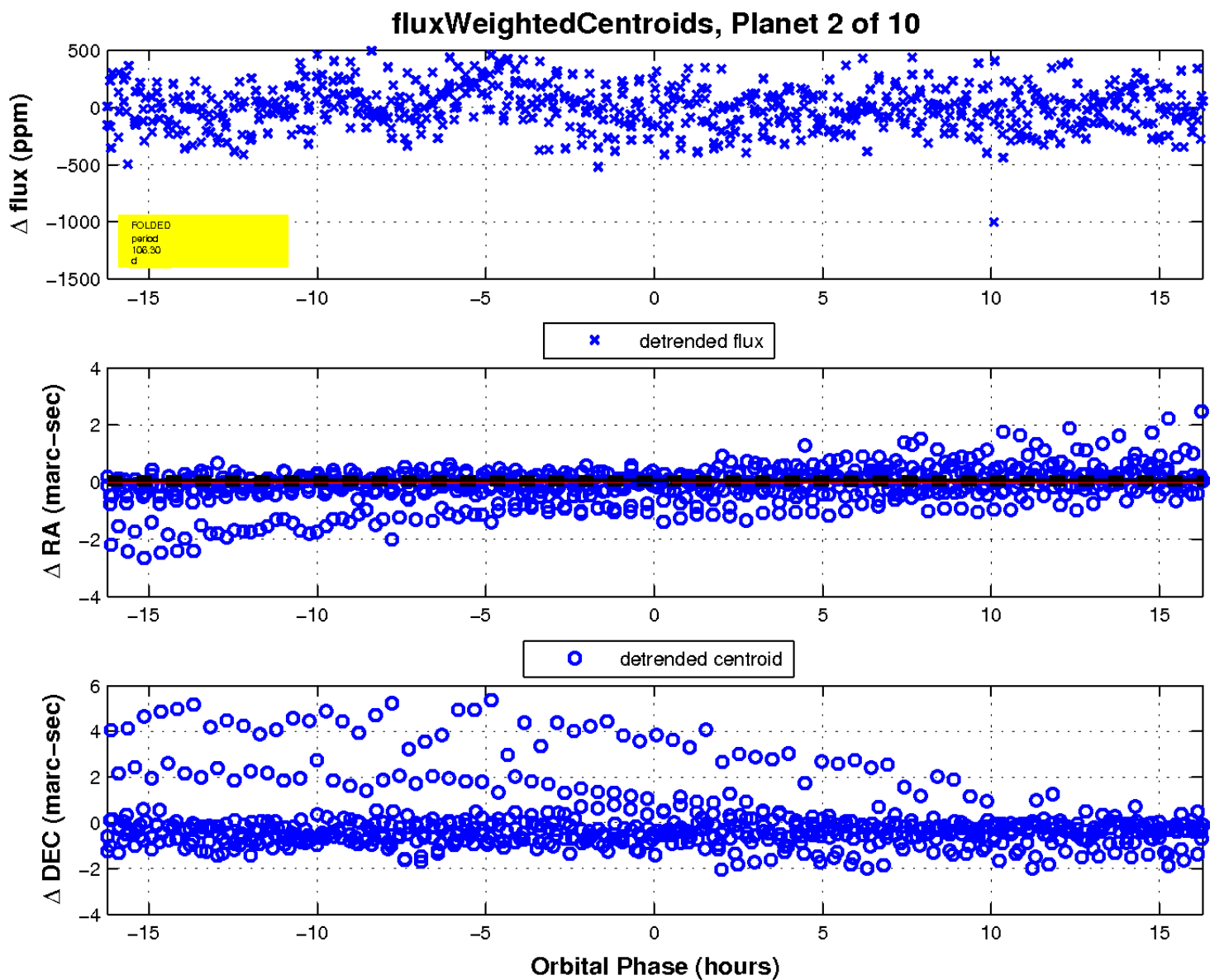
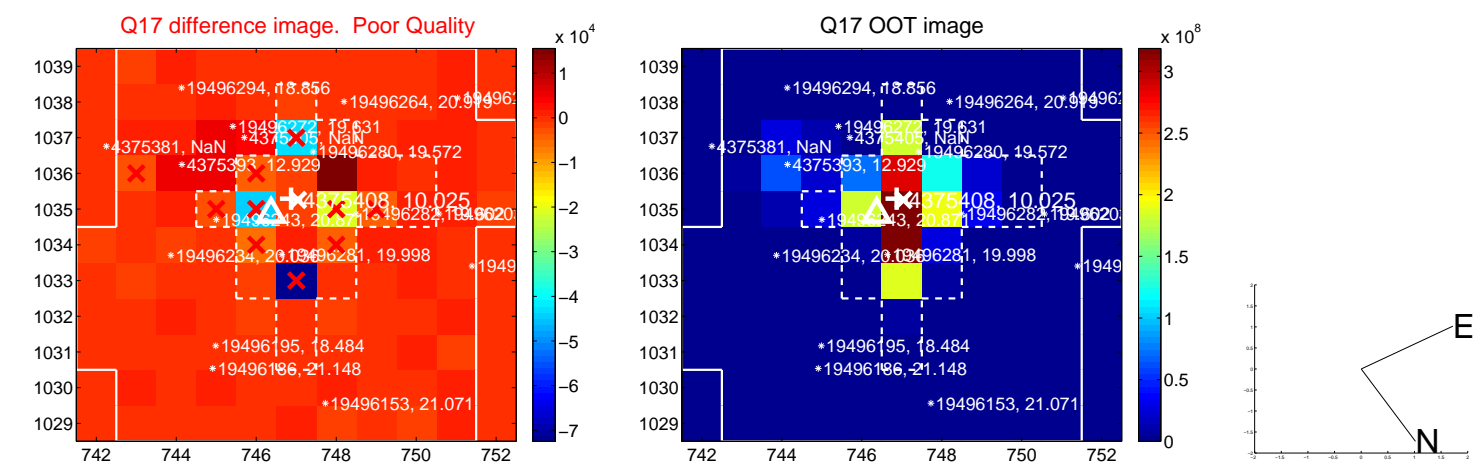
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



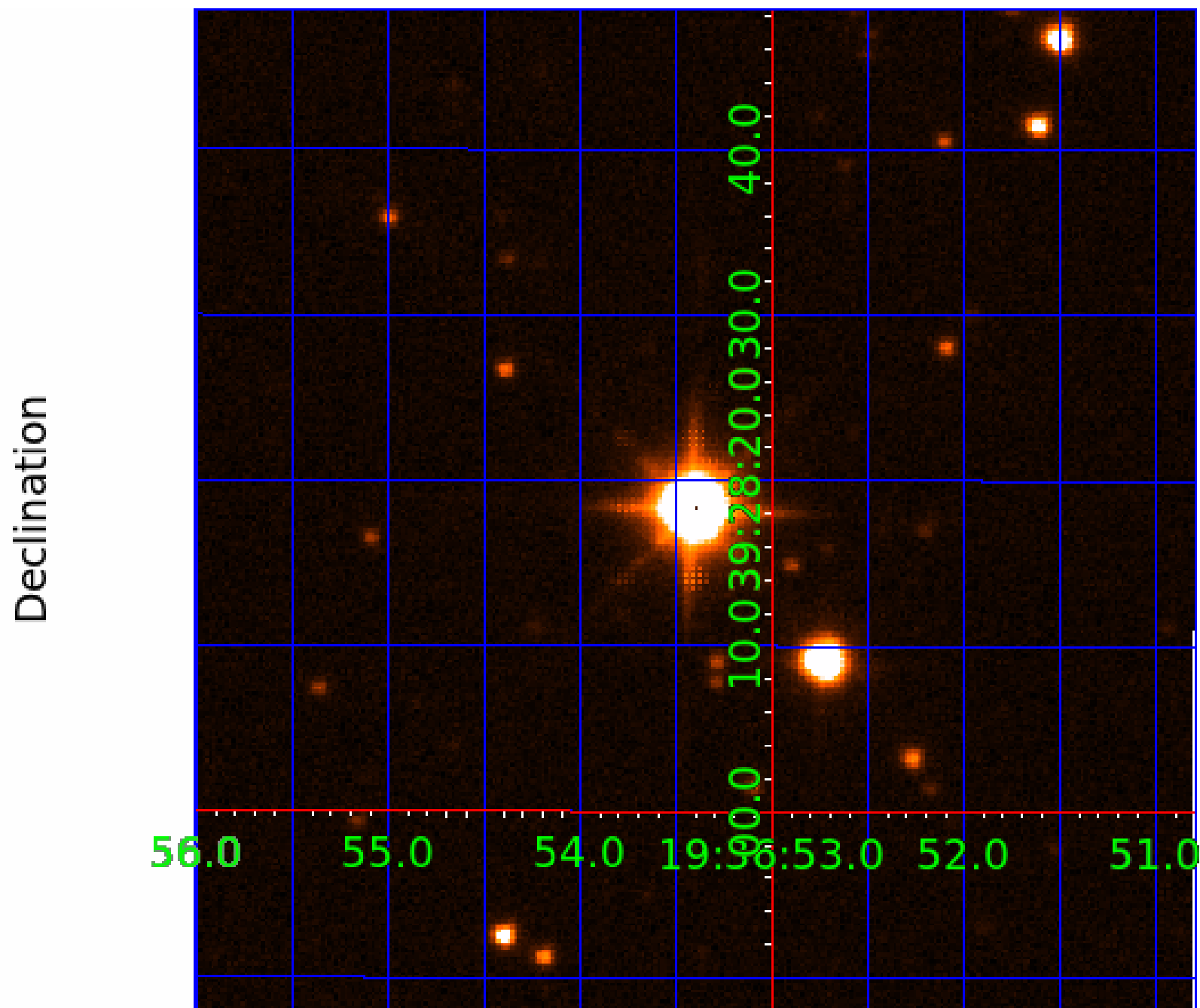
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



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})
004375408-01	OBS	No	1.183133	132.215637	11.3	7.303	9.1	4.0	1.89	6416	0.67	10369.43
004375408-02	OBS	No	106.298491	188.988020	339.5	5.435	11.0	10.3	1.89	6416	4.03	25.77
004375408-03	OBS	No	69.296632	156.360628	334.4	2.169	10.6	9.5	1.89	6416	4.02	45.59
004375408-04	OBS	No	14.842189	138.398480	154.1	3.376	10.2	10.6	1.89	6416	2.70	355.74
004375408-05	OBS	No	53.084762	138.448490	238.0	5.466	9.7	9.4	1.89	6416	3.28	65.04
004375408-06	OBS	No	64.546702	187.689827	258.0	4.142	9.4	8.7	1.89	6416	3.51	50.12
004375408-07	OBS	No	68.662063	188.964621	257.7	1.884	9.1	8.9	1.89	6416	3.58	46.15
004375408-08	OBS	No	154.922917	193.248880	220.0	7.033	8.9	8.0	1.89	6416	2.90	15.60
004375408-09	OBS	No	47.218486	147.679425	263.0	2.735	9.2	8.9	1.89	6416	3.58	76.03
004375408-10	OBS	No	29.333870	132.422001	232.7	2.287	9.1	10.2	1.89	6416	3.33	143.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004375408-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004375408-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004375408-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

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

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

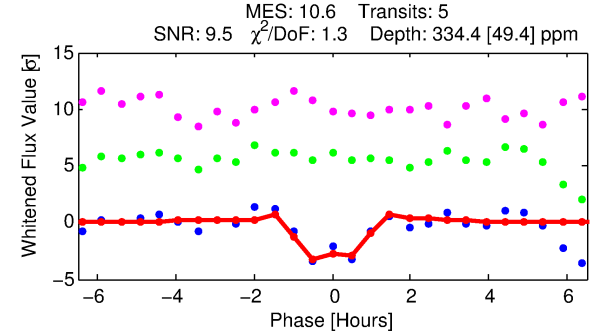
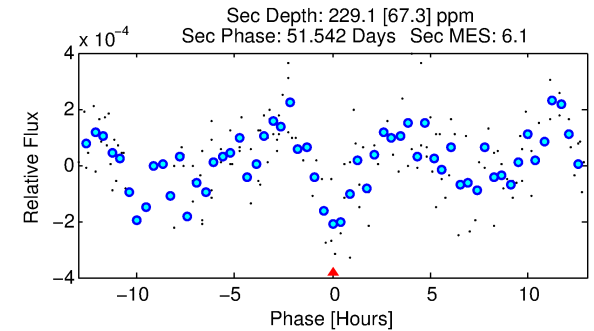
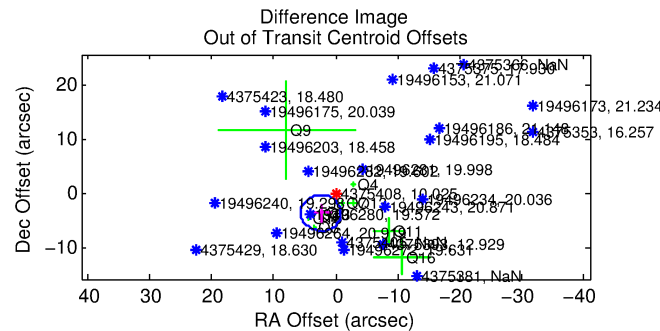
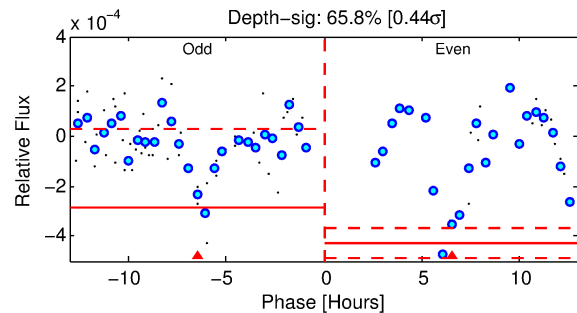
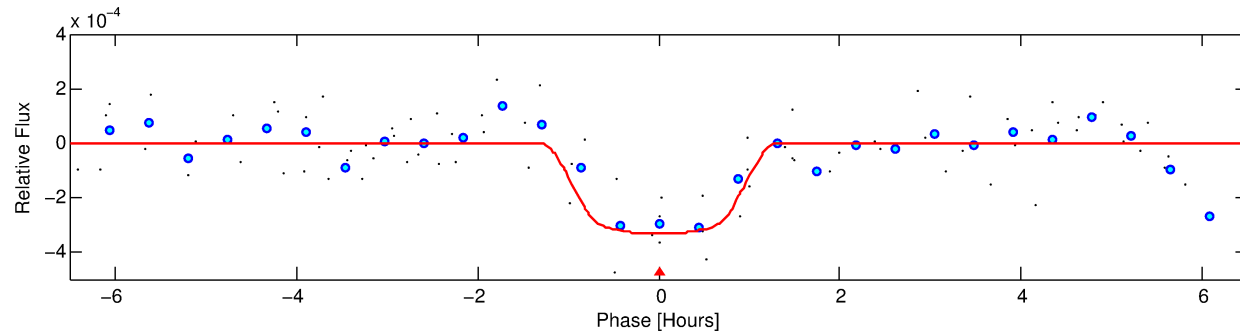
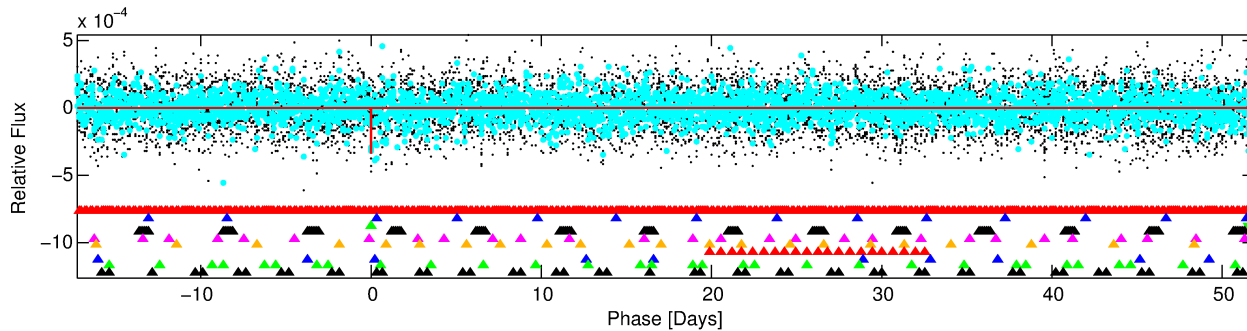
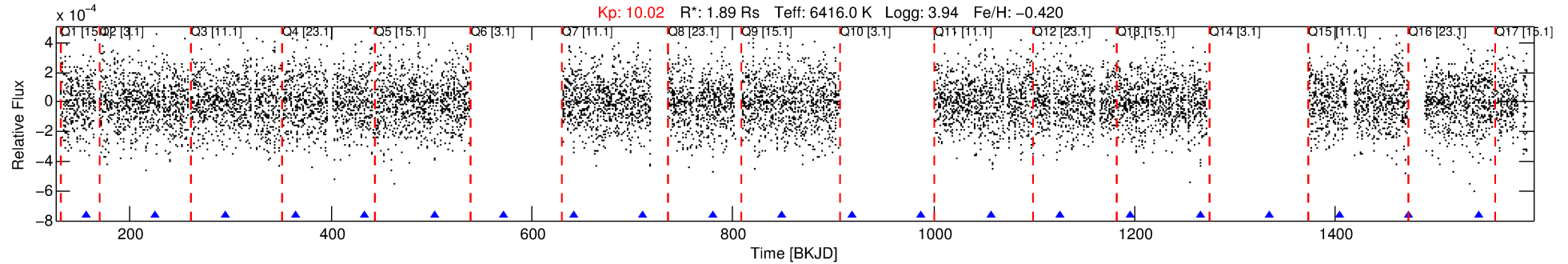
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004375408-03

No Significant Match Found

DV One-Page Summary

KIC: 4375408 Candidate: 3 of 10 Period: 69.297 d



DV Fit Results:

Period = 69.29663 [0.00050] d
Epoch = 156.3606 [0.0049] BKJD
 R_p/R^* = 0.0195 [0.0238]
 a/R^* = 118.86 [834.72]
 b = 0.90 [1.56]
 Seff = 45.59 [32.09]
 T_{eq} = 663 [117] K
 R_p = 4.02 [5.17] R_e
 a = 0.3444 [0.1437] AU
 A_g = 922.78 [2352.18] [0.39 σ]
 T_{eff} = 5646 [3470] K [1.44 σ]

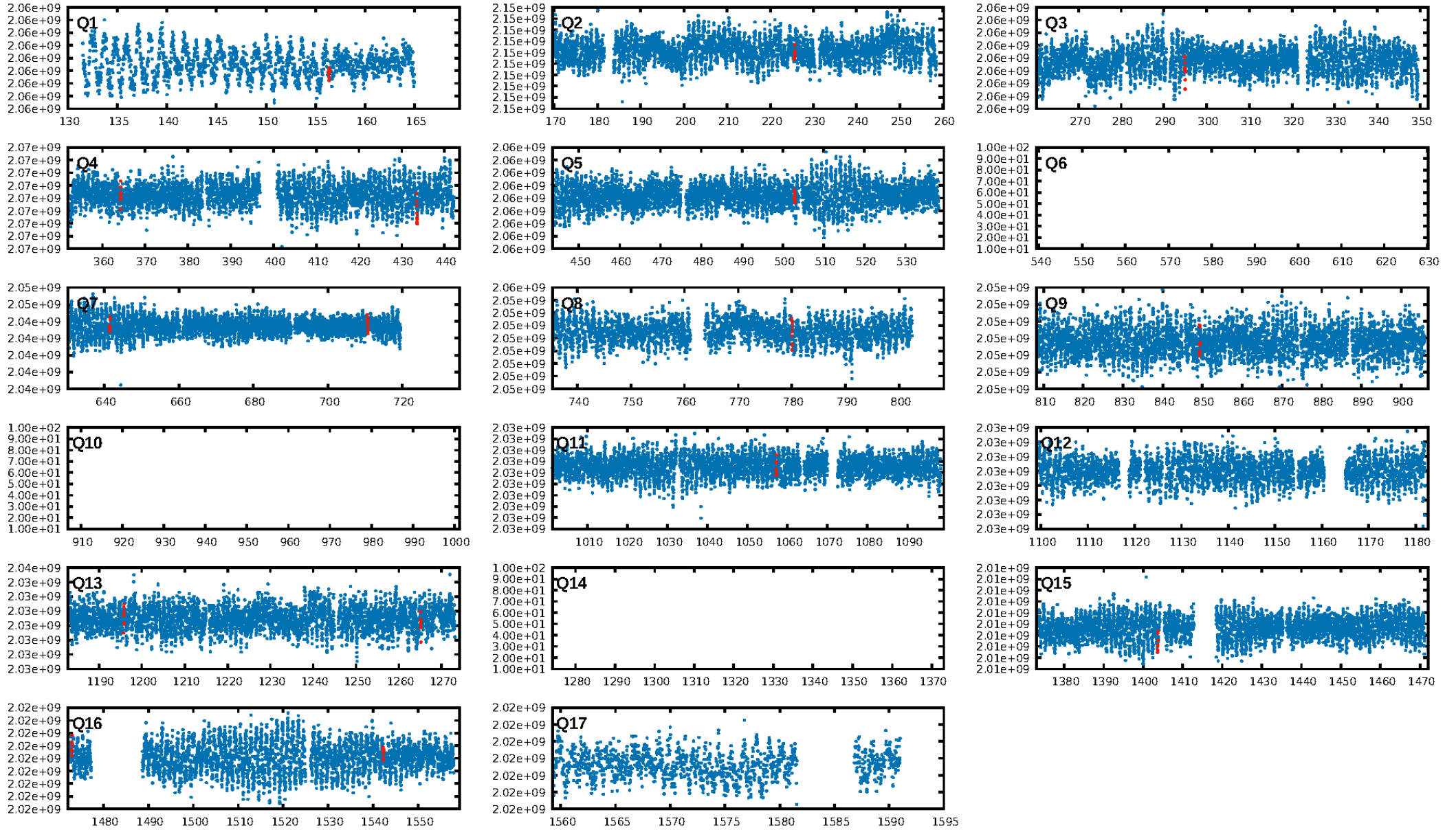
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.30 σ]
LongPeriod-sig: 100.0% [151.75 σ]
ModelChiSquare2-sig: 35.8%
ModelChiSquareGof-sig: 86.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 0.827 arcsec [1.96 σ]
OotOffset-rm: 4.206 arcsec [3.88 σ]
KicOffset-rm: 4.032 arcsec [3.50 σ]
OotOffset-st: 1/4/3/3 [11]
KicOffset-st: 1/4/3/3 [11]
DiffImageQuality-fgm: 0.09 [1/11]
DiffImageOverlap-fno: 0.33 [4/12]

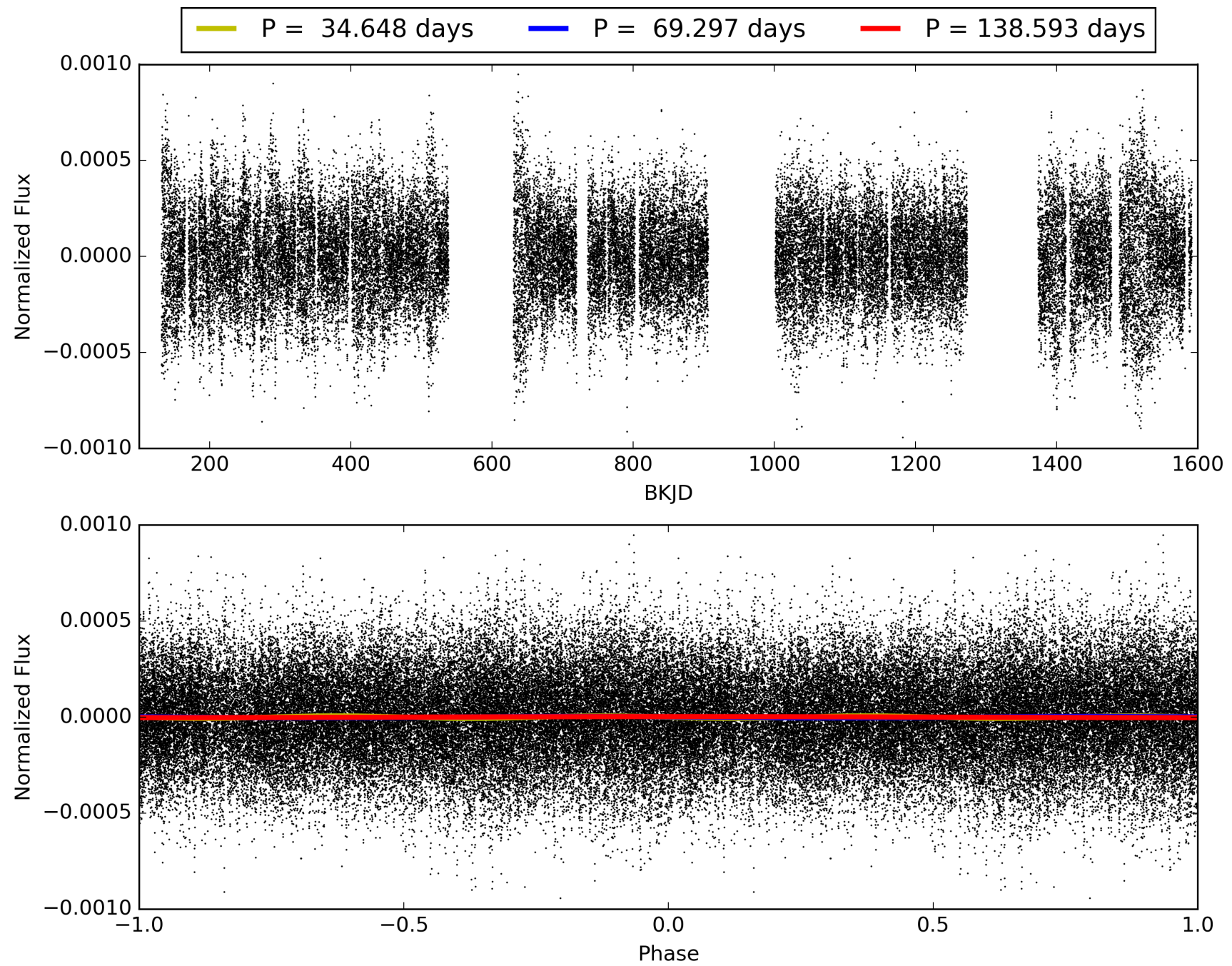
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:58:48 Z

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

TCE 004375408-03, PDC Light Curves

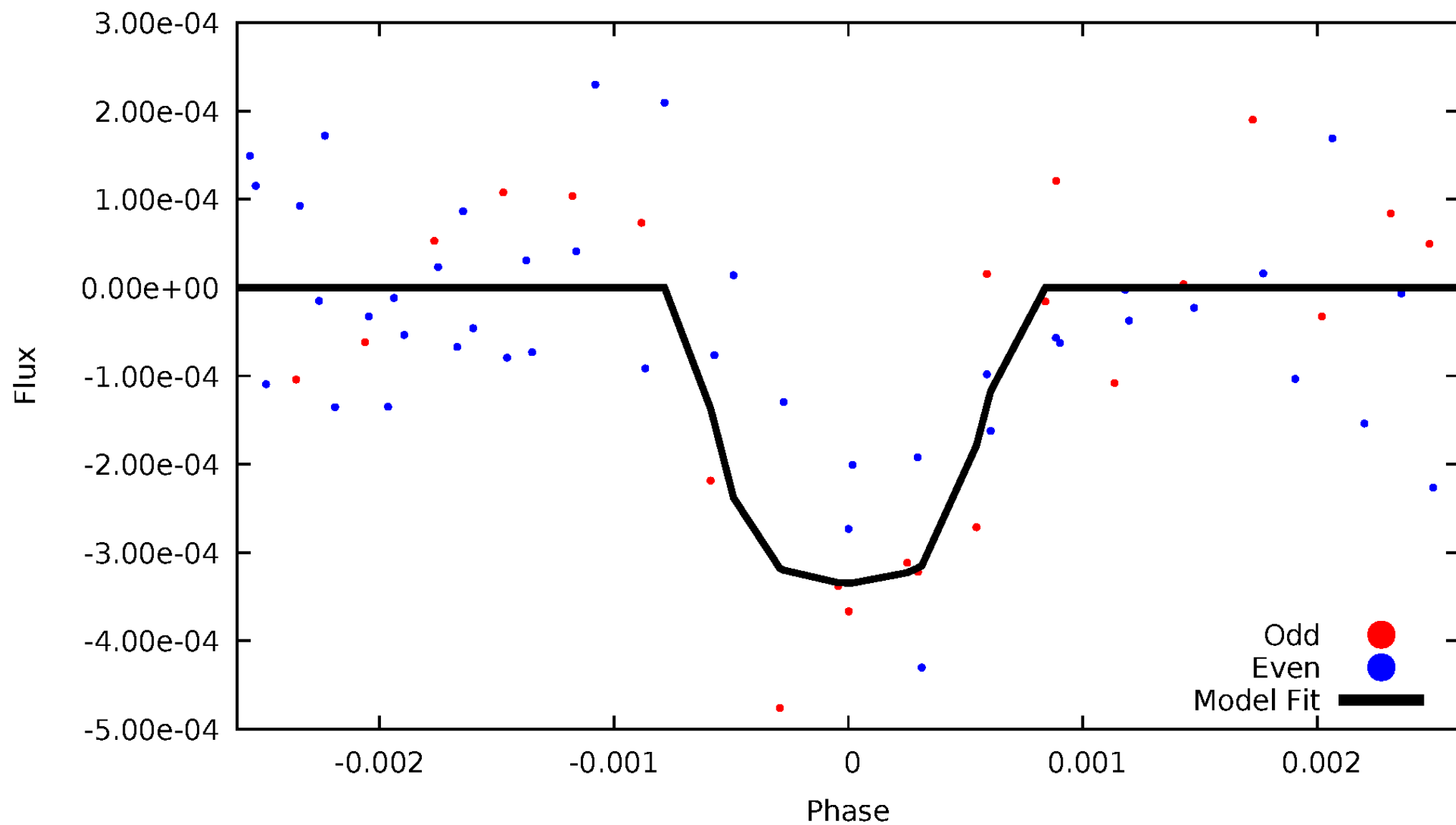


TCE 004375408-03



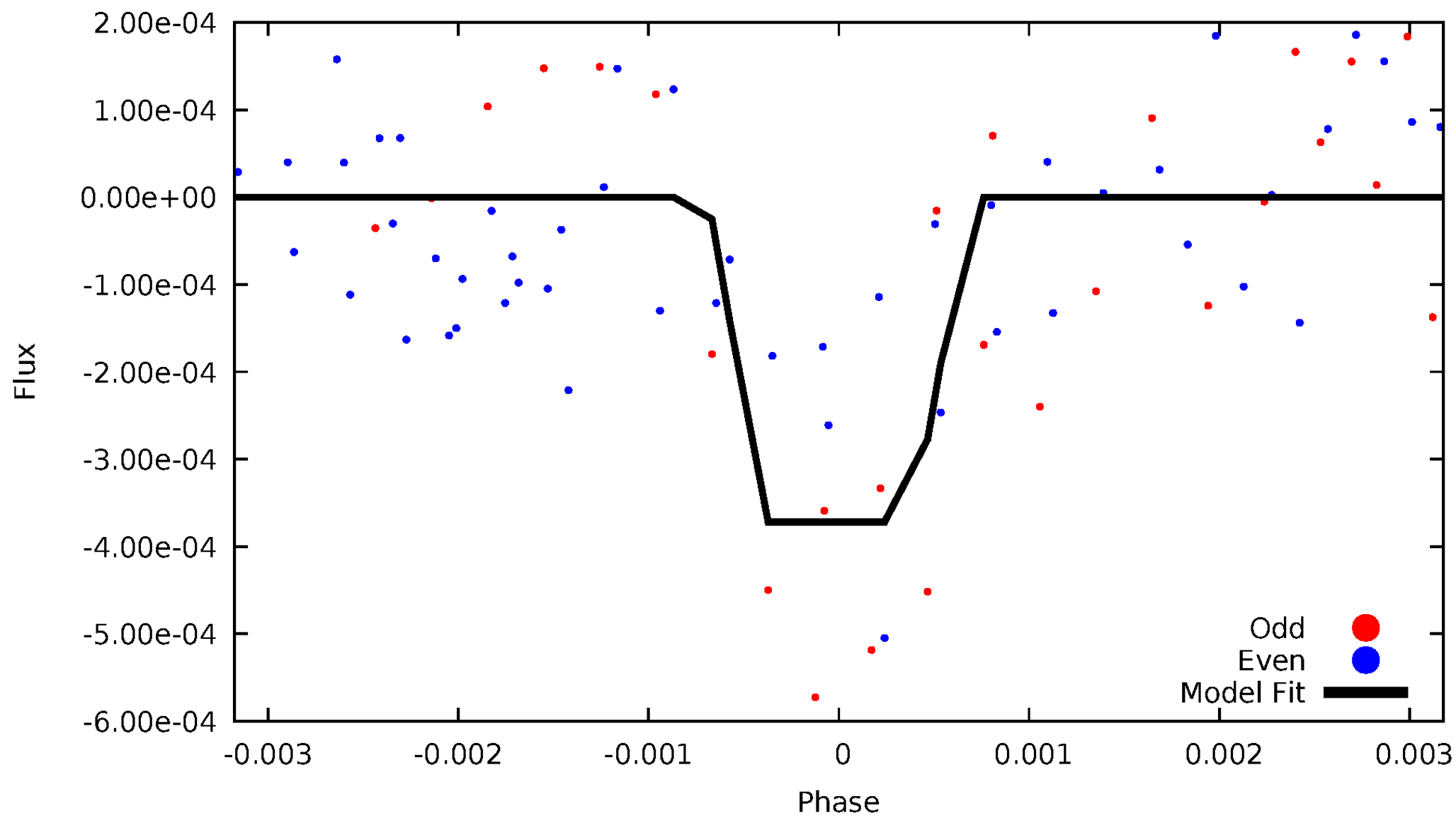
DV Odd/Even

TCE 004375408-03



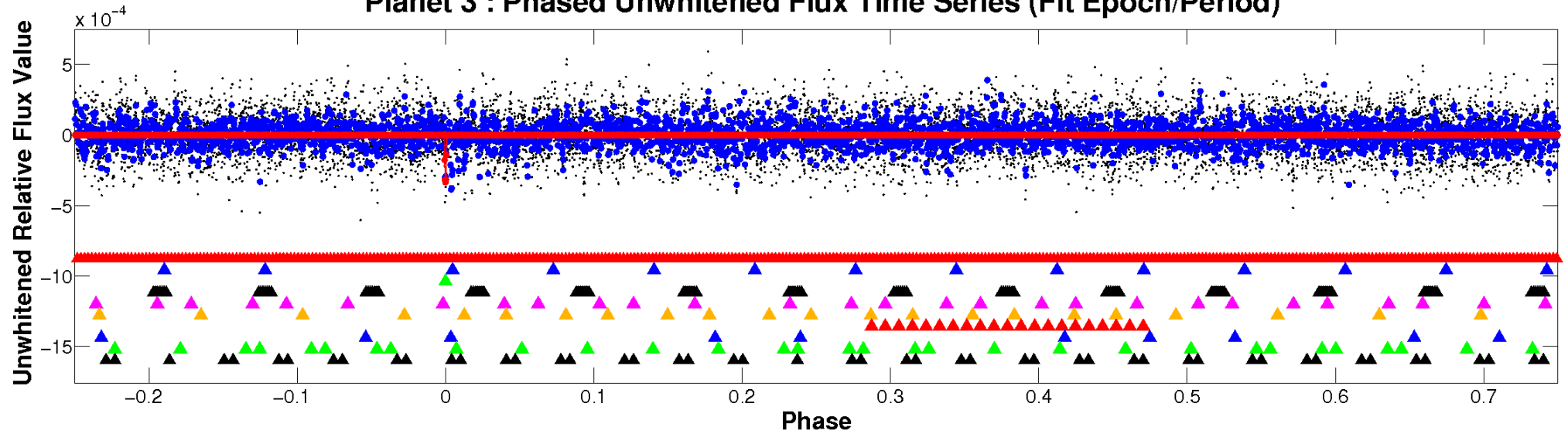
ALT Odd/Even

TCE 004375408-03

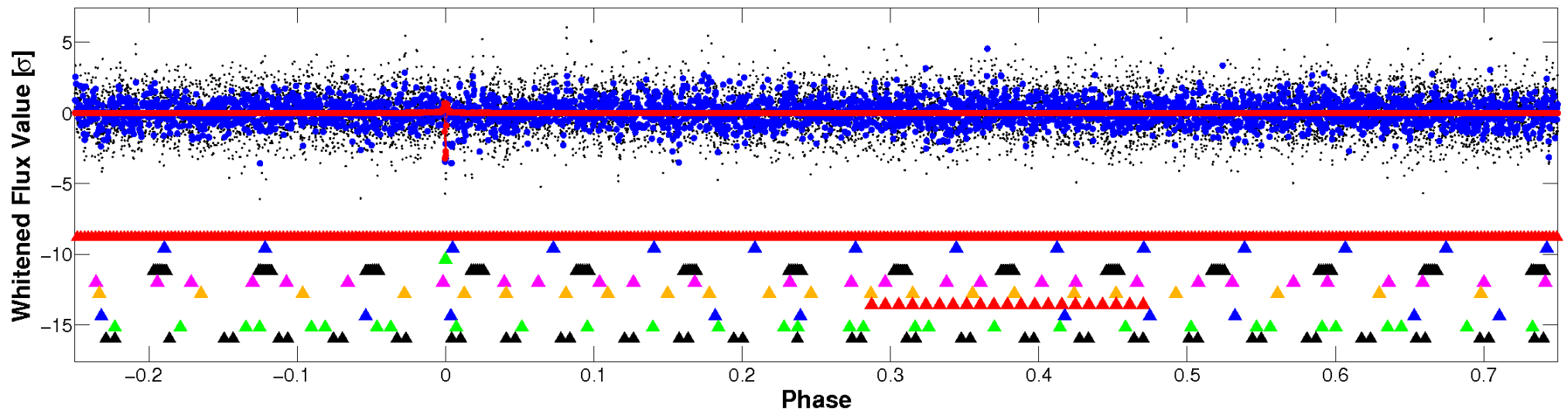


Non-Whitened Vs. Whitened Light Curve

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

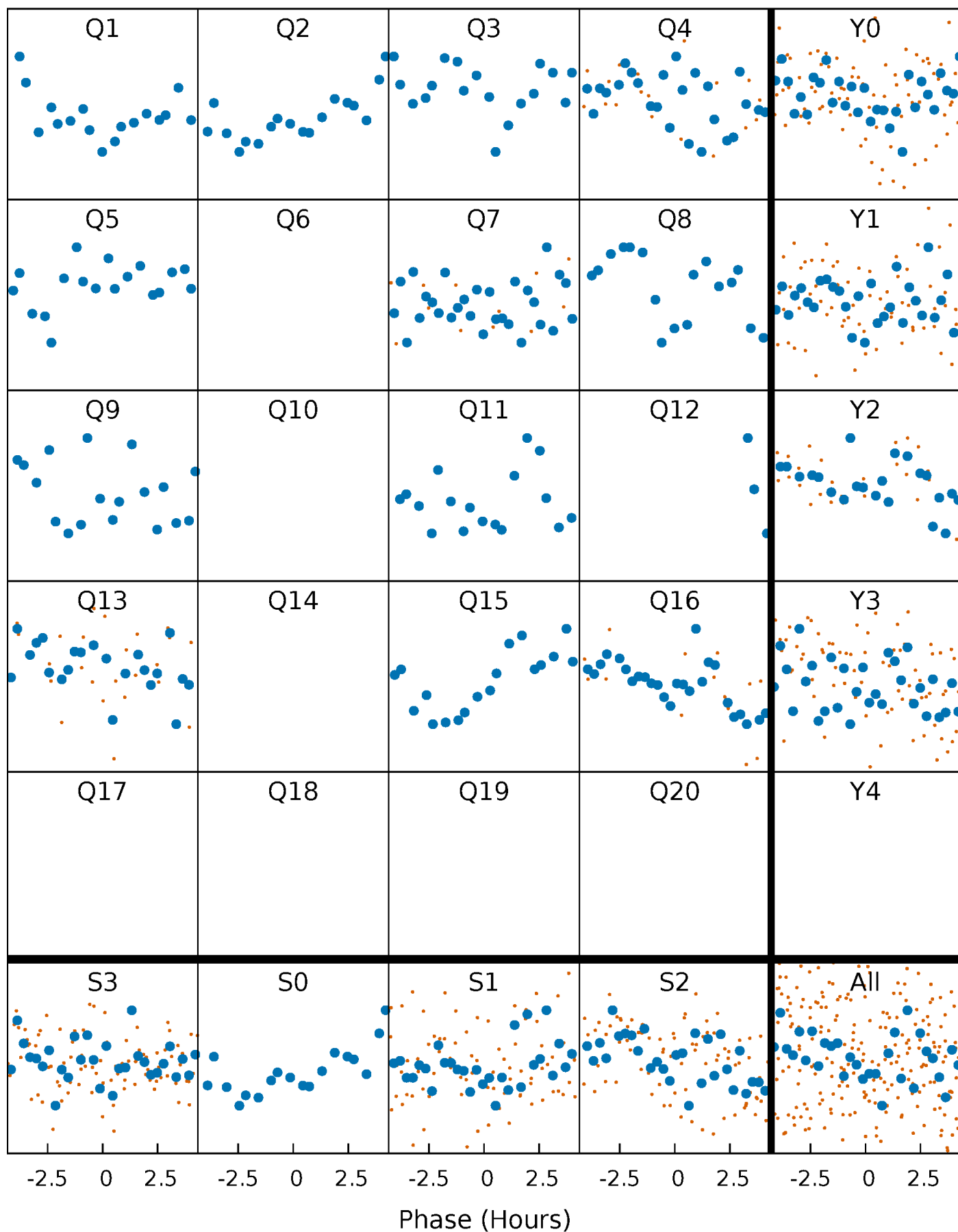


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



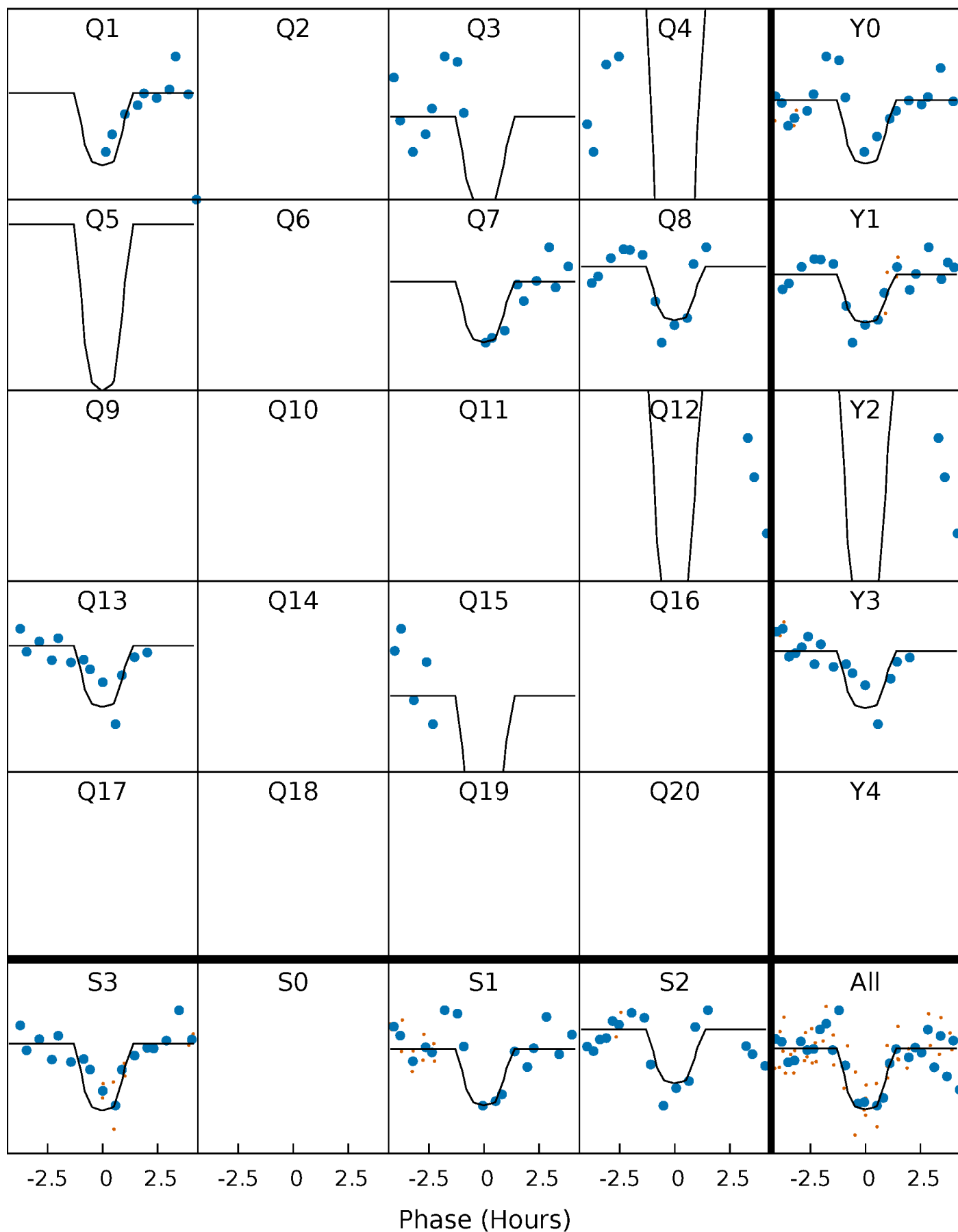
PDC Quarter-Phased Transit Curves

TCE 004375408-03 $P = 69.296632$ Days $T_0 = 156.360628$ (BKJD)



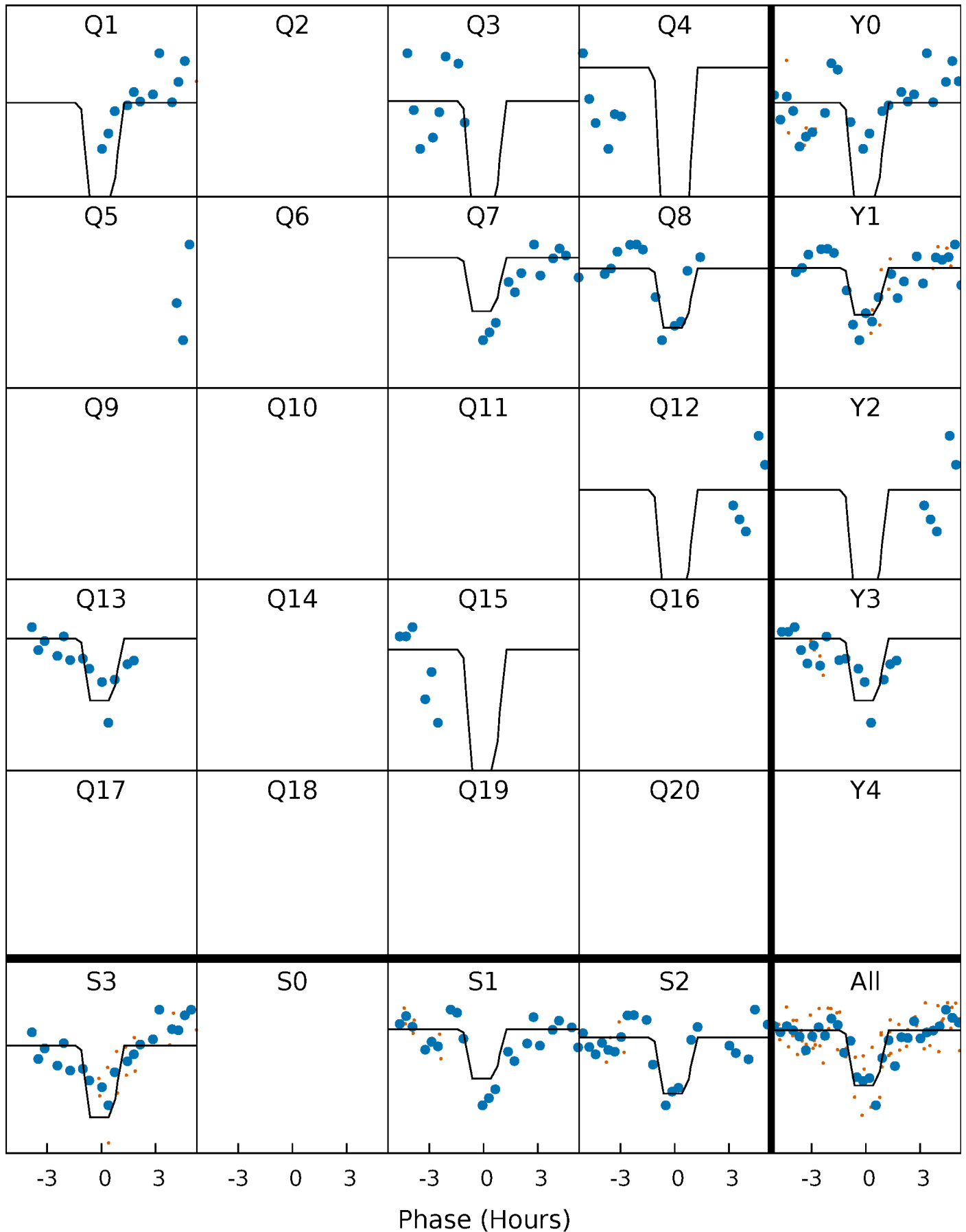
DV Quarter-Phased Transit Curves

TCE 004375408-03 P= 69.296632 Days $T_0=156.360628$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

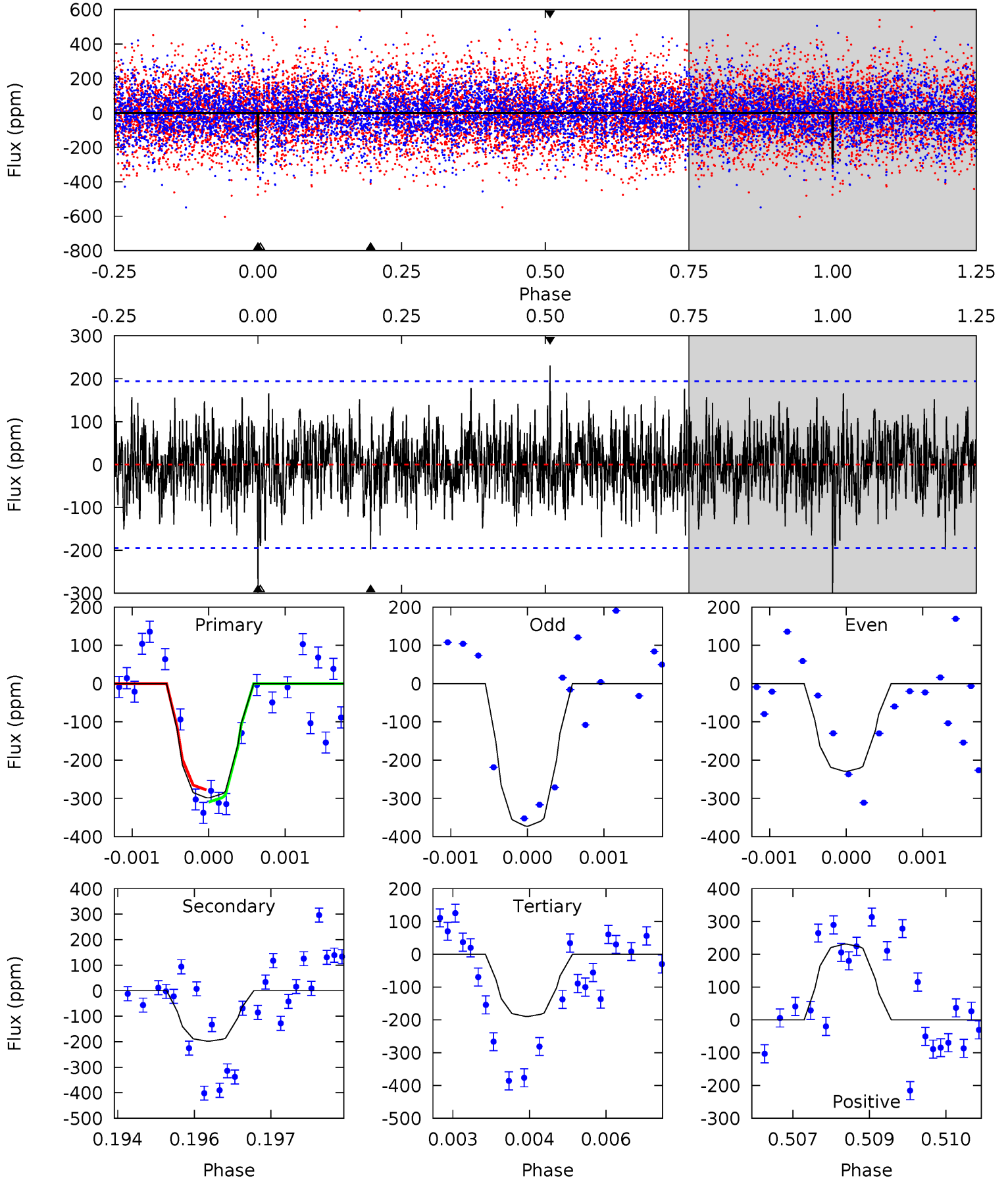
TCE 004375408-03 P= 69.296576 Days $T_0=156.366556$ (BKJD)



DV Model-Shift Uniqueness Test

004375408-03, P = 69.296632 Days, E = 87.063996 Days

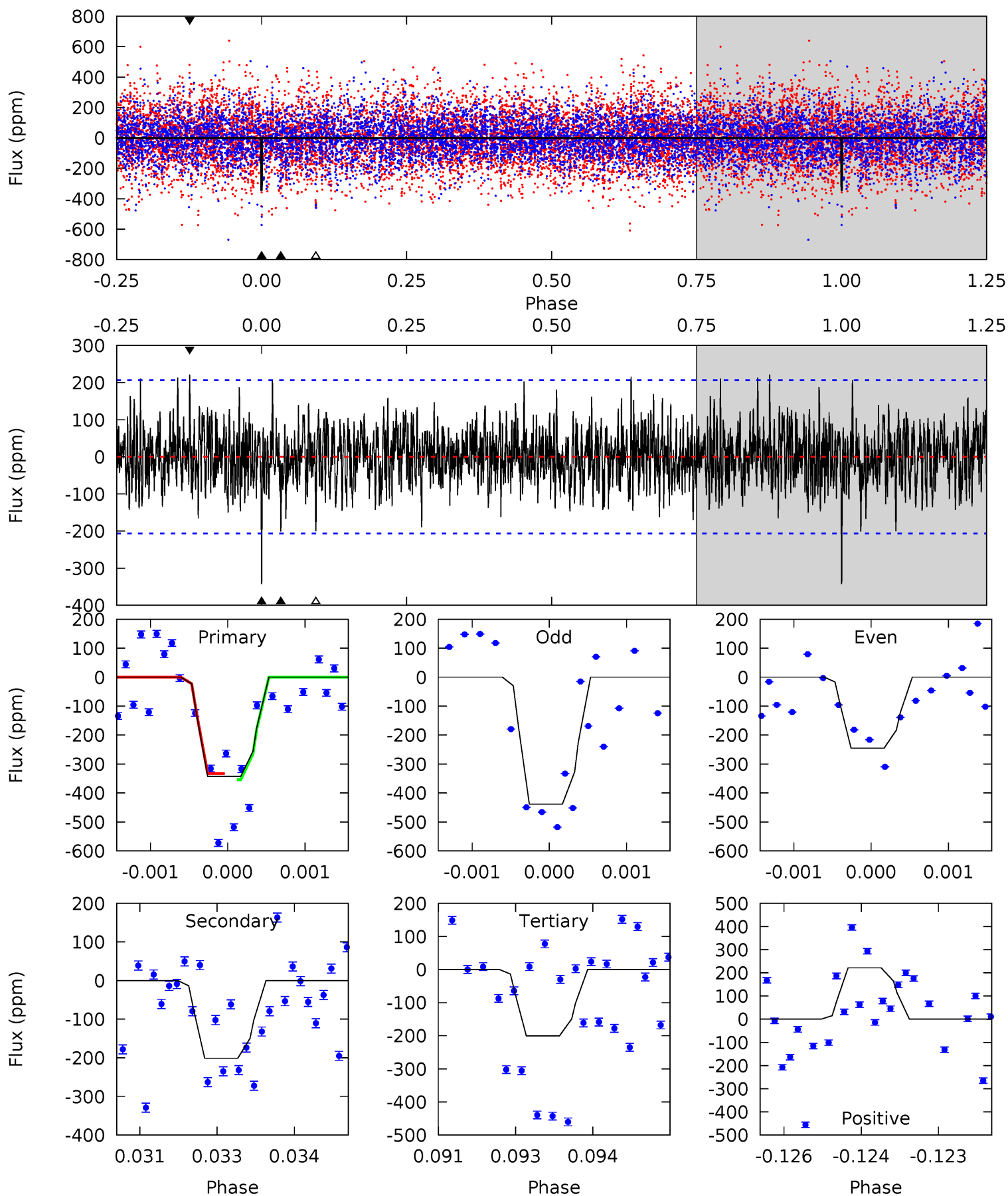
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.28	5.48	5.26	6.40	5.39	3.19	1.60	3.02	1.88	0.22	-0.92	1.97	0.93	0.44	0.40



Alt Model-Shift Uniqueness Test

004375408-03, P = 69.296576 Days, E = 87.069980 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.94	5.25	5.23	5.77	5.39	3.19	1.62	3.72	3.17	0.02	-0.53	2.52	1.01	0.39	0.28



Stellar Parameters For KIC 004375408

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6416^{+181}_{-227}	$3.941^{+0.413}_{-0.138}$	$-0.420^{+0.300}_{-0.300}$	$1.887^{+0.448}_{-0.768}$	$1.133^{+0.169}_{-0.188}$	$0.237^{+0.824}_{-0.092}$
	+3%/-4%	+10%/-4%	+71%/-71%	+24%/-41%	+15%/-17%	+347%/-39%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004375408-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-198 ± 36	$4.99^{+4.19}_{-3.14}$	906^{+69}_{-98}	4851^{+3076}_{-1006}	522^{+3363}_{-373}
Alt.	-201 ± 38	$5.00^{+4.22}_{-3.24}$	909^{+73}_{-97}	4822^{+3412}_{-975}	521^{+3806}_{-367}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

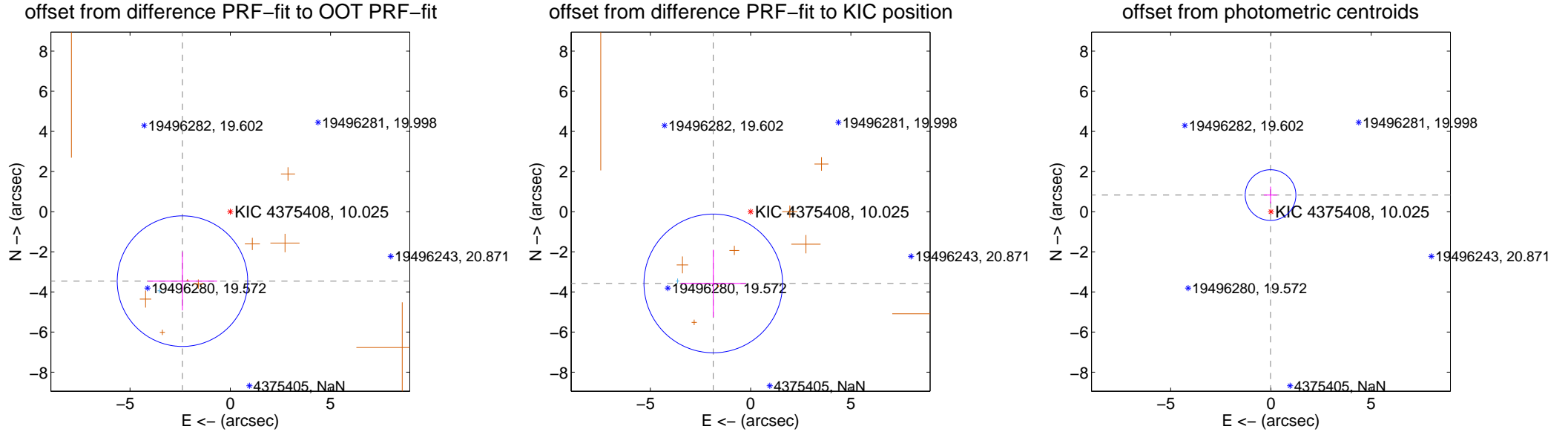
DV Centroid Data

Supplemental centroid analysis for 004375408-03. **Kepler magnitude: 10.03.** Transit SNR 9.51

There are 1 quarters with good PRF difference image offsets

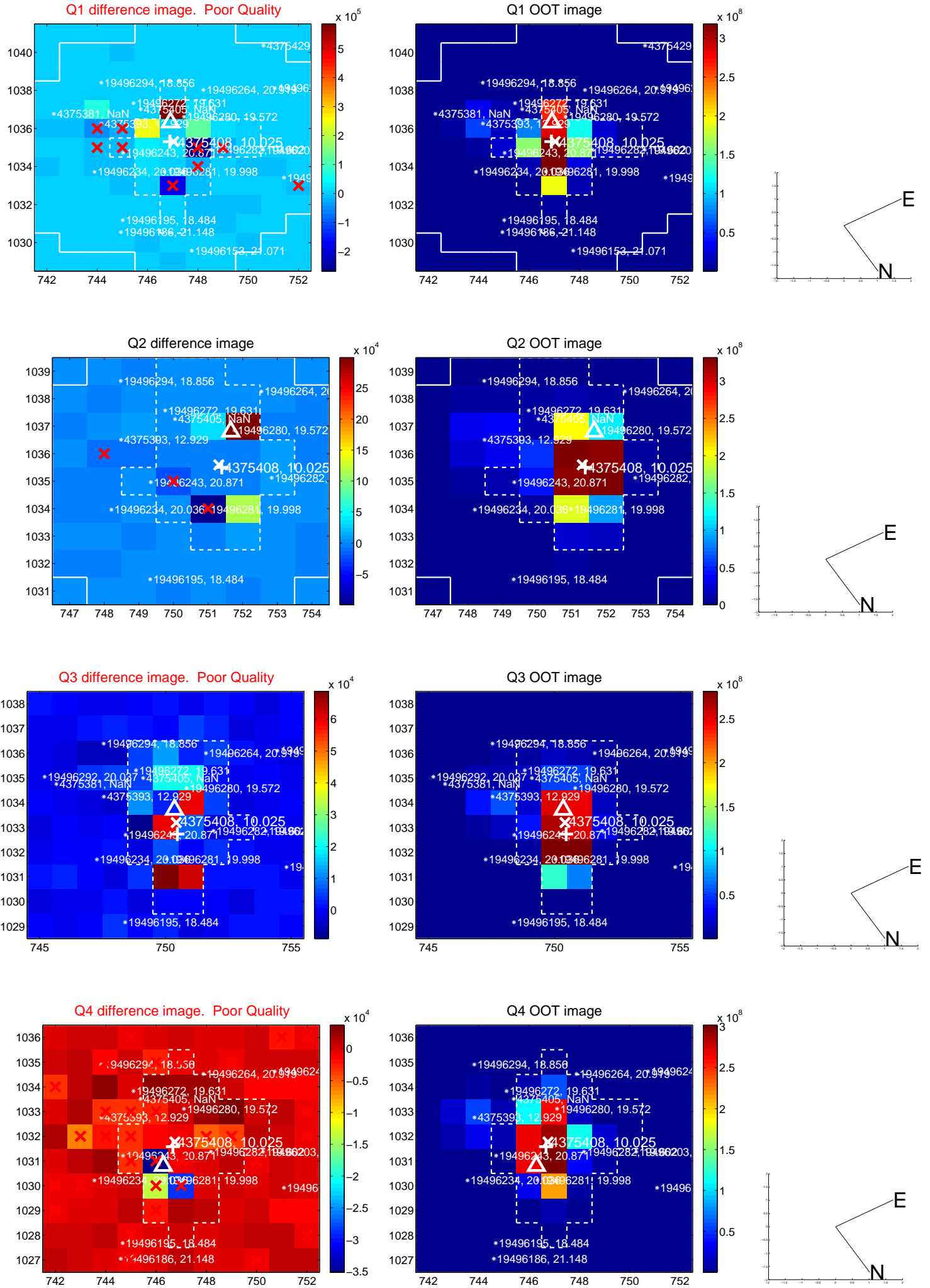
The direct PRF centroid is offset from the target star catalog position by about 0.44 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.206 ± 1.085	3.88	2.386 ± 1.728	-3.463 ± 1.456
PRF-fit source offset from KIC position	4.032 ± 1.152	3.50	1.862 ± 1.625	-3.577 ± 1.678
photometric centroid source offset	0.83 ± 0.42	1.96	0.02 ± 0.33	0.83 ± 0.42

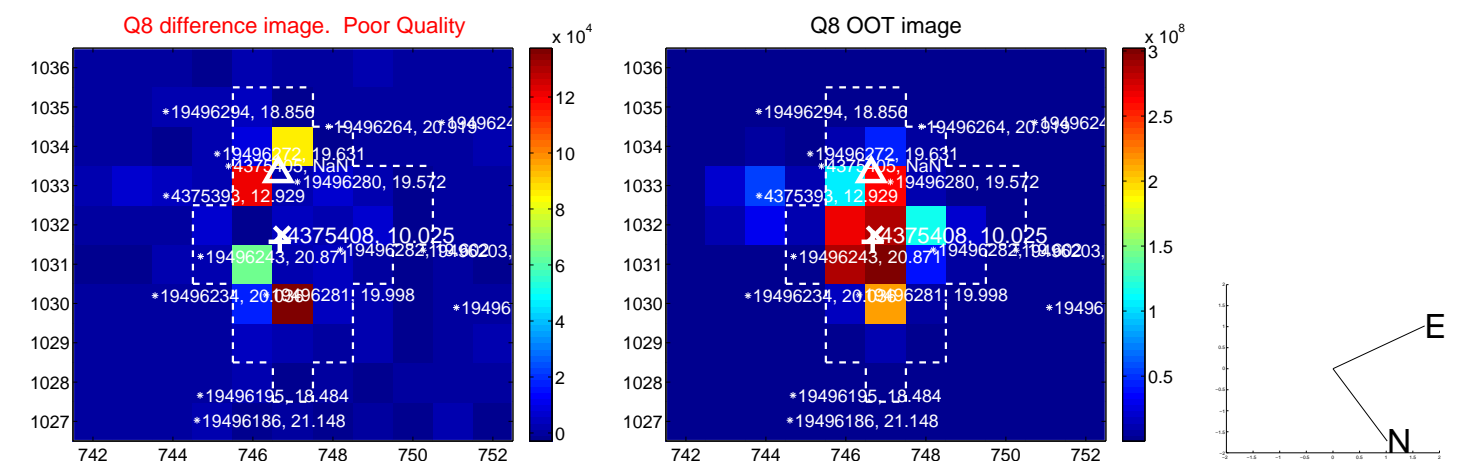
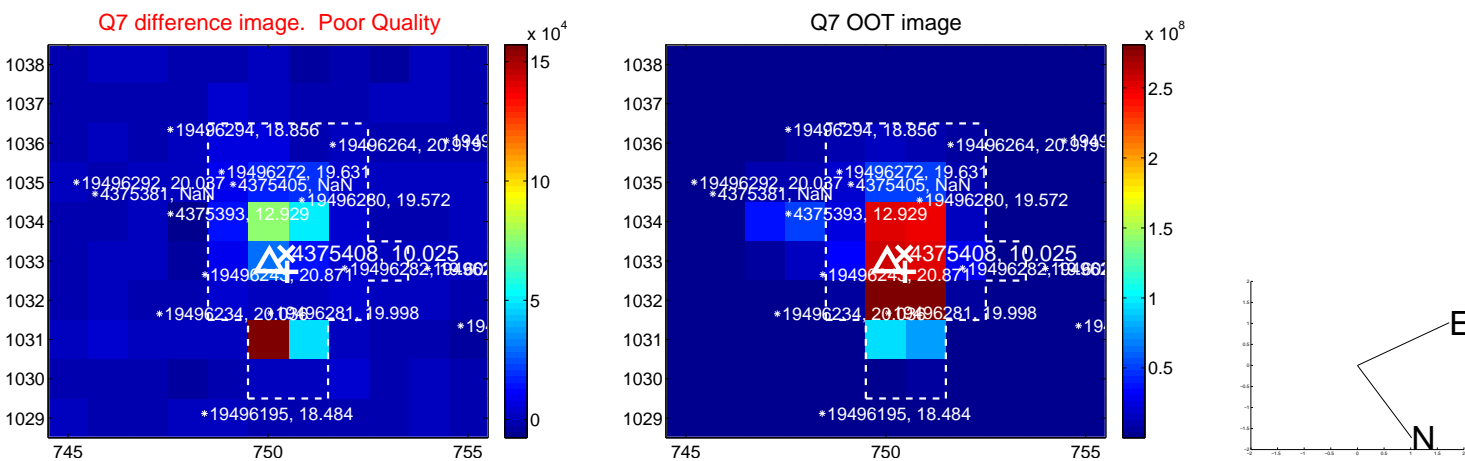
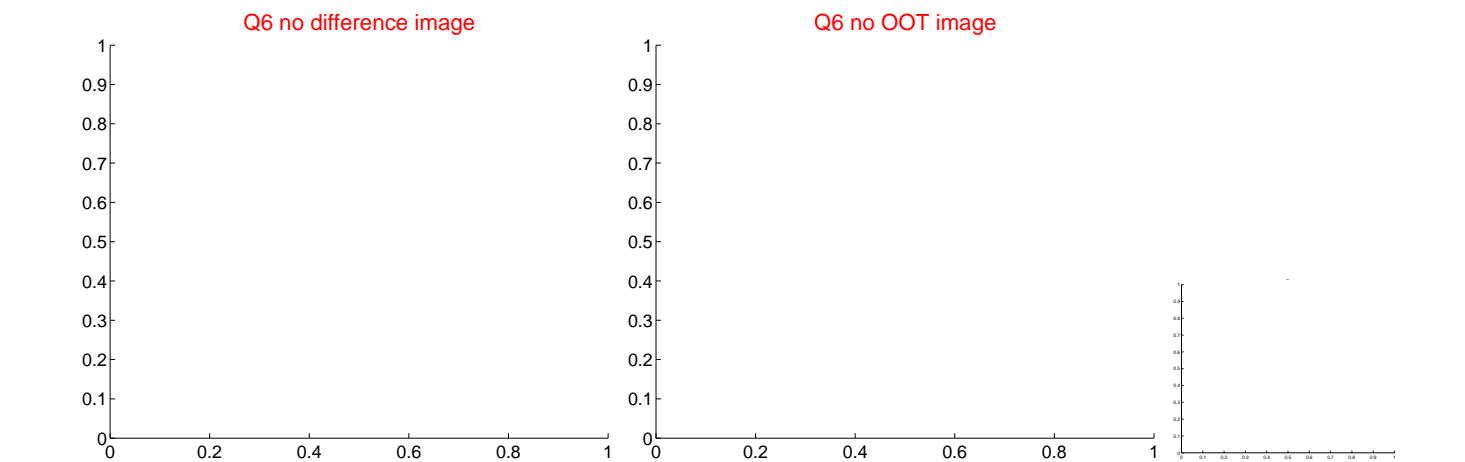
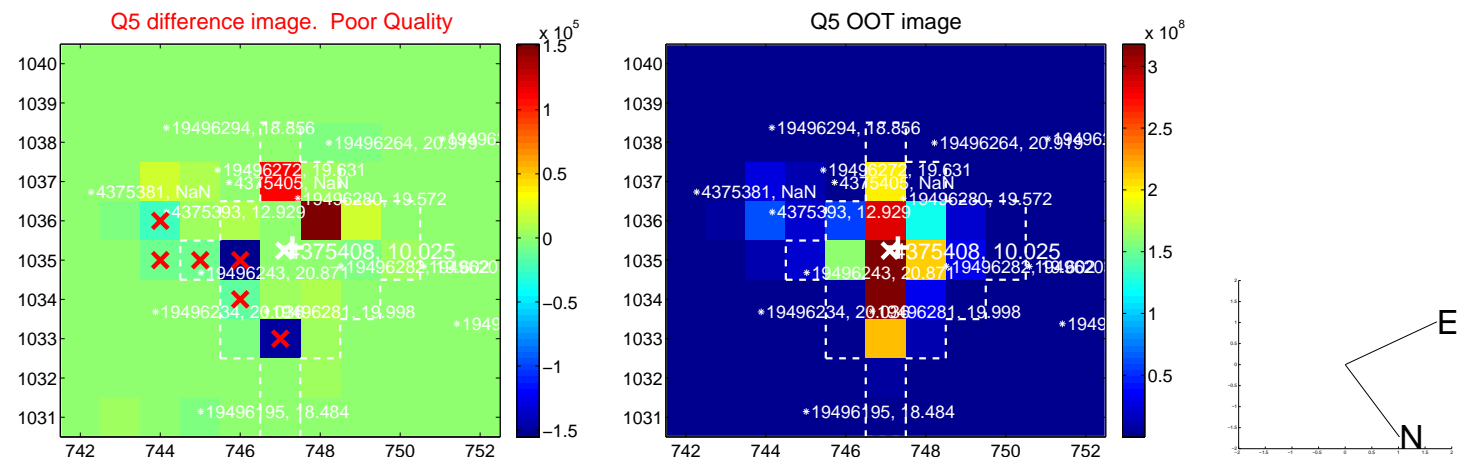


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

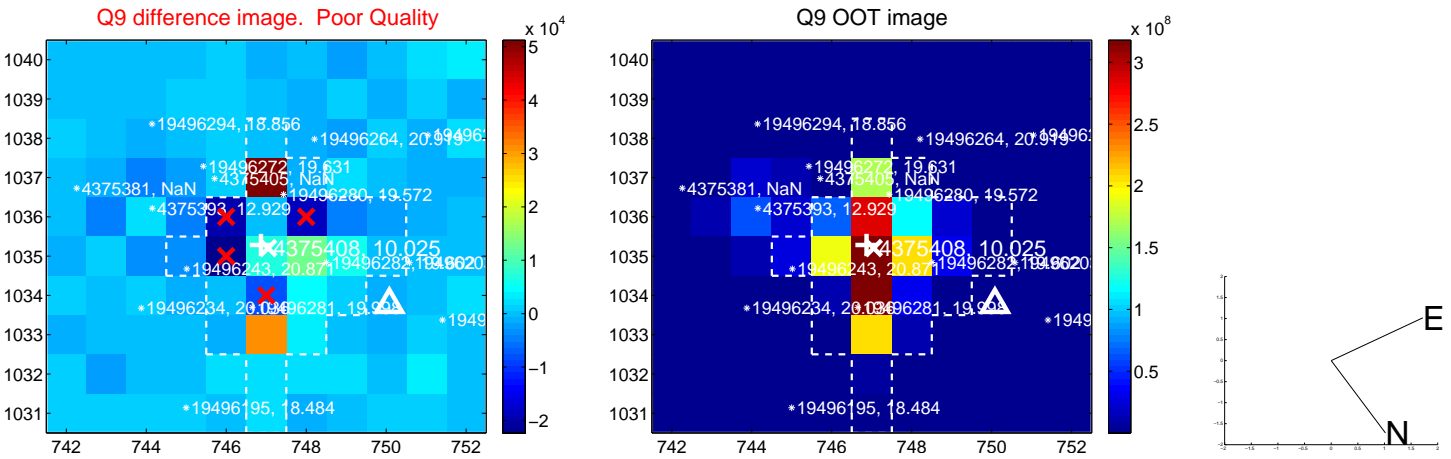
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



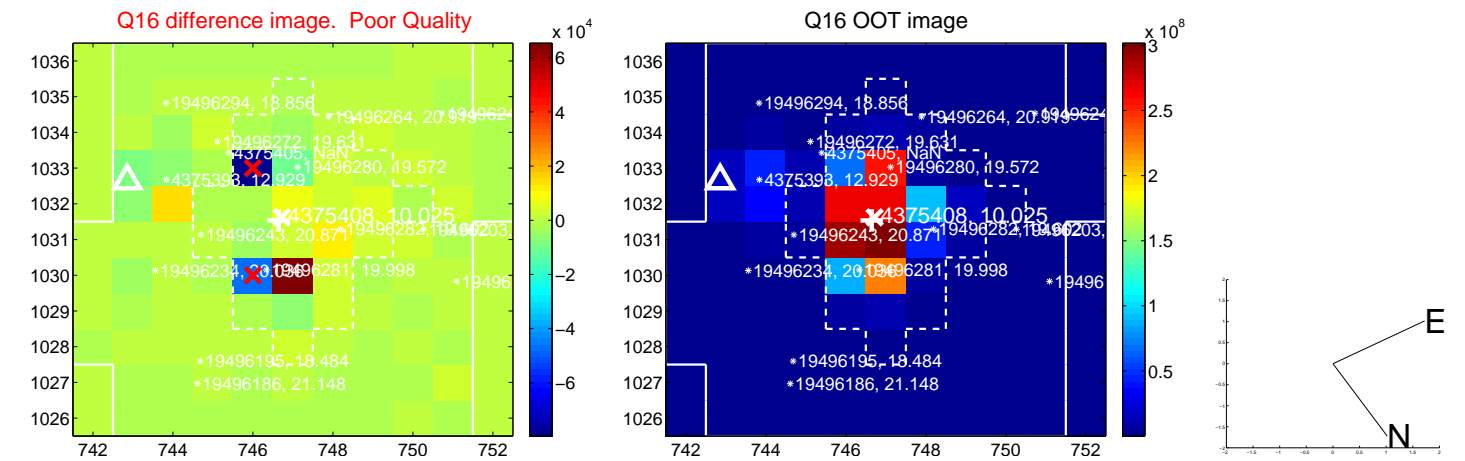
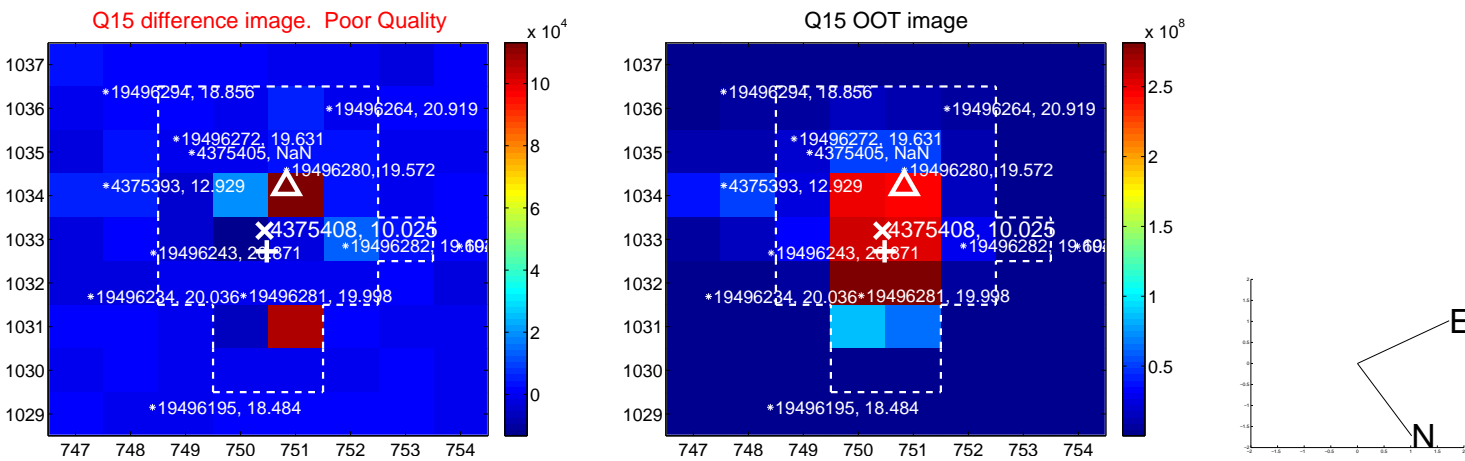
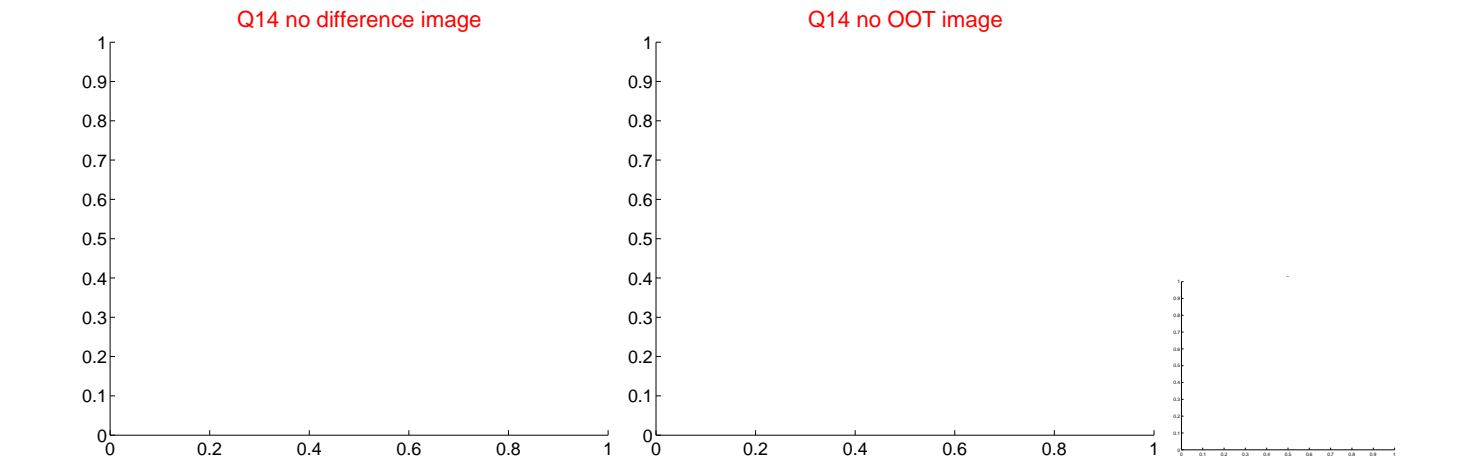
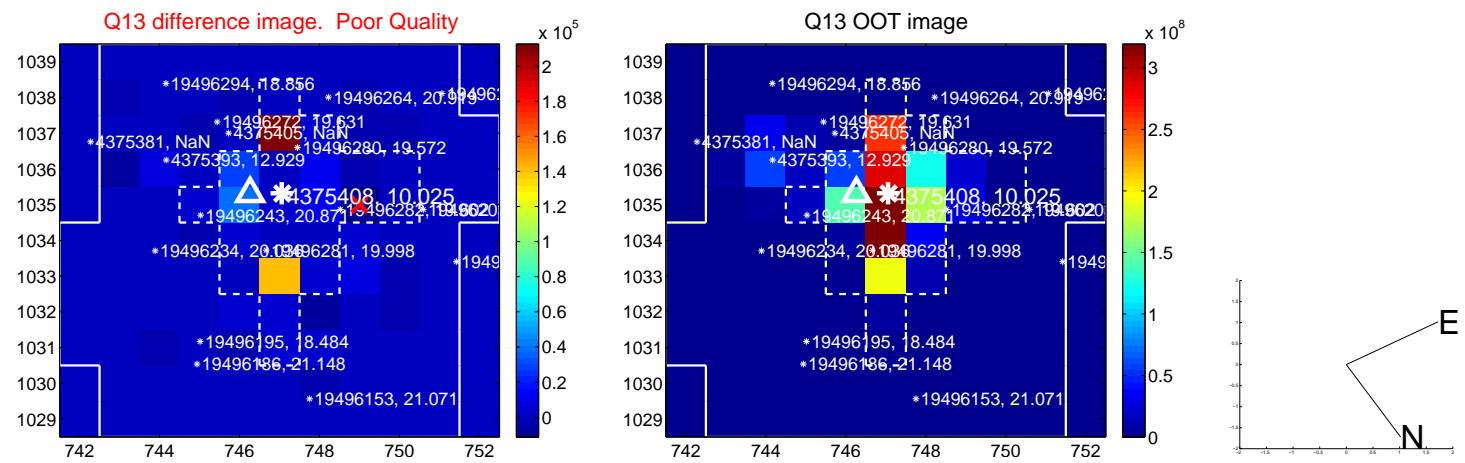
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



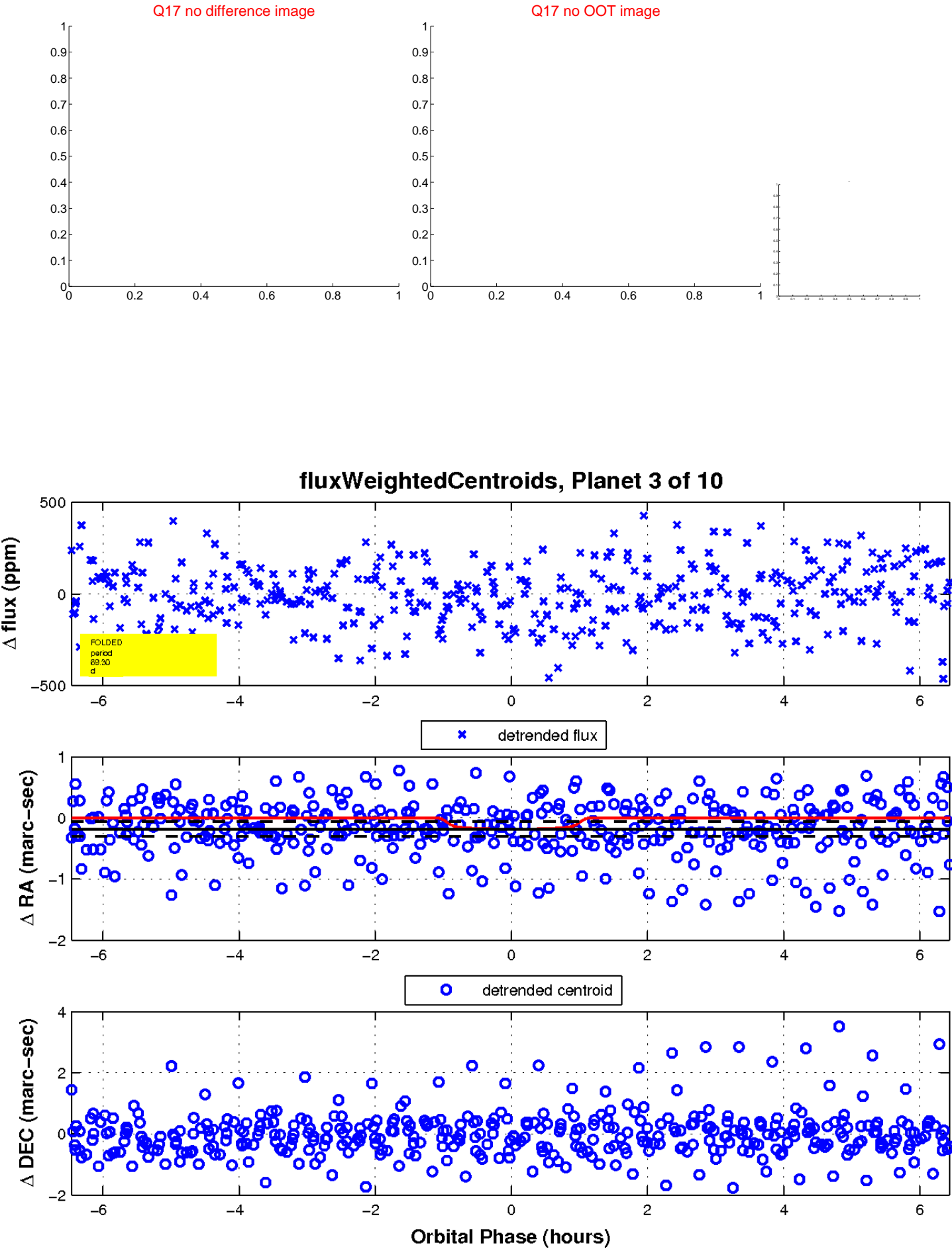
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



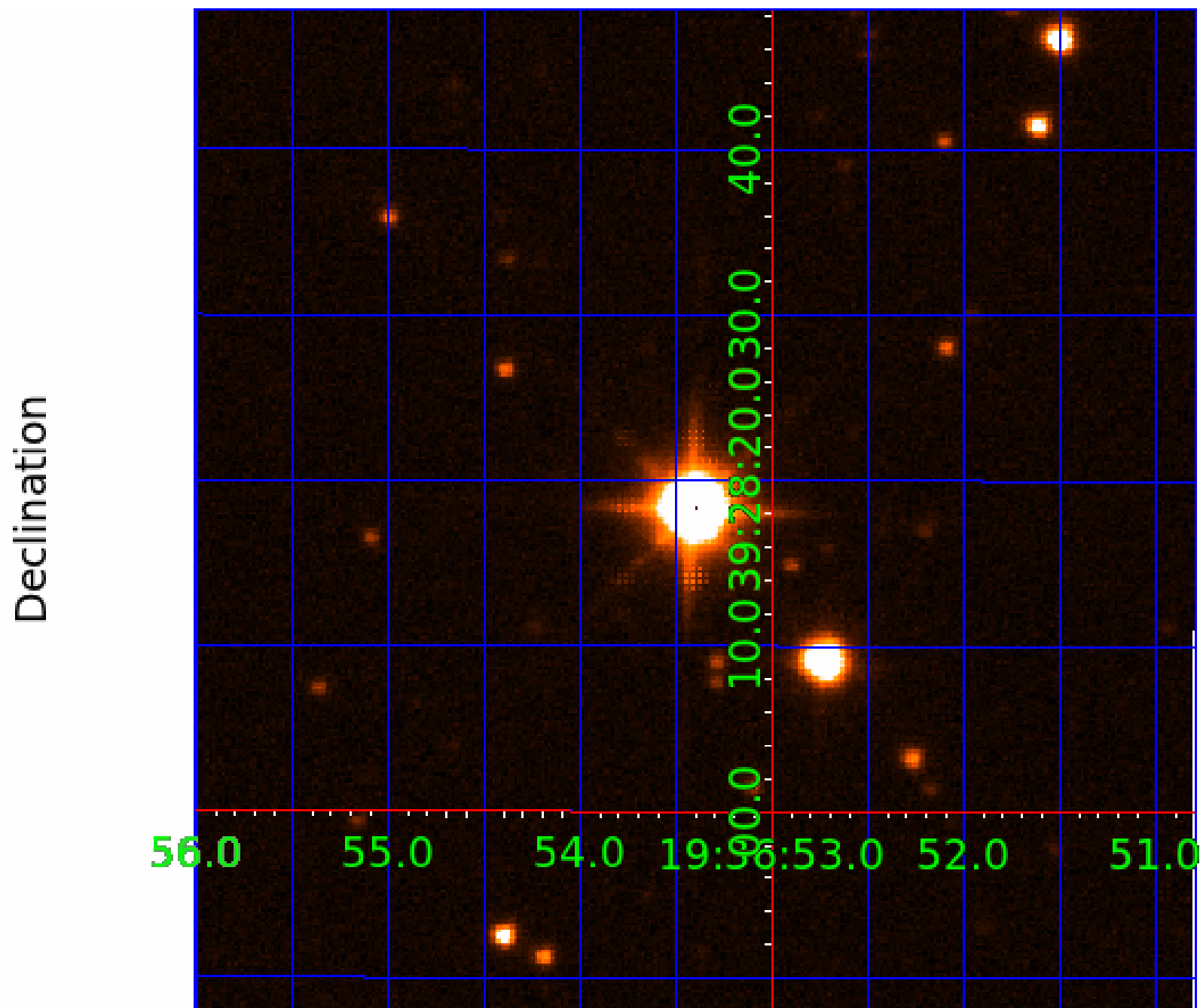
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



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})
004375408-01	OBS	No	1.183133	132.215637	11.3	7.303	9.1	4.0	1.89	6416	0.67	10369.43
004375408-02	OBS	No	106.298491	188.988020	339.5	5.435	11.0	10.3	1.89	6416	4.03	25.77
004375408-03	OBS	No	69.296632	156.360628	334.4	2.169	10.6	9.5	1.89	6416	4.02	45.59
004375408-04	OBS	No	14.842189	138.398480	154.1	3.376	10.2	10.6	1.89	6416	2.70	355.74
004375408-05	OBS	No	53.084762	138.448490	238.0	5.466	9.7	9.4	1.89	6416	3.28	65.04
004375408-06	OBS	No	64.546702	187.689827	258.0	4.142	9.4	8.7	1.89	6416	3.51	50.12
004375408-07	OBS	No	68.662063	188.964621	257.7	1.884	9.1	8.9	1.89	6416	3.58	46.15
004375408-08	OBS	No	154.922917	193.248880	220.0	7.033	8.9	8.0	1.89	6416	2.90	15.60
004375408-09	OBS	No	47.218486	147.679425	263.0	2.735	9.2	8.9	1.89	6416	3.58	76.03
004375408-10	OBS	No	29.333870	132.422001	232.7	2.287	9.1	10.2	1.89	6416	3.33	143.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004375408-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004375408-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004375408-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

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

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

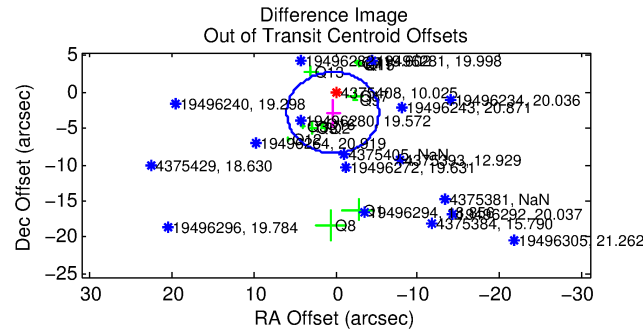
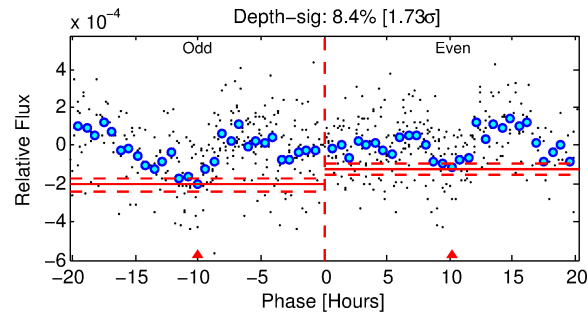
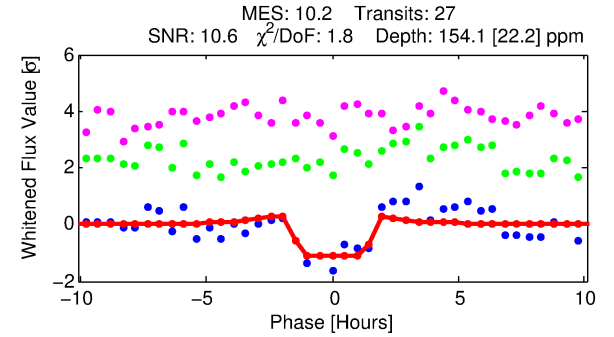
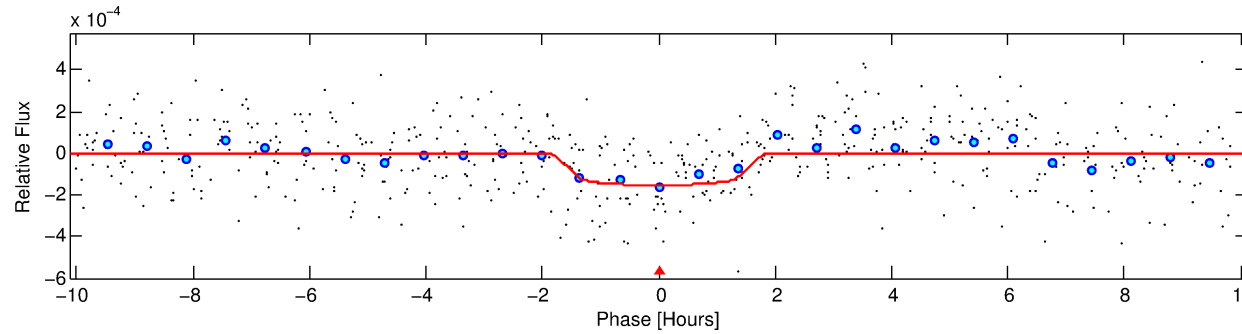
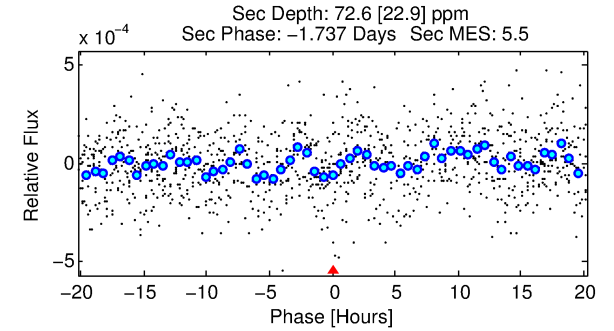
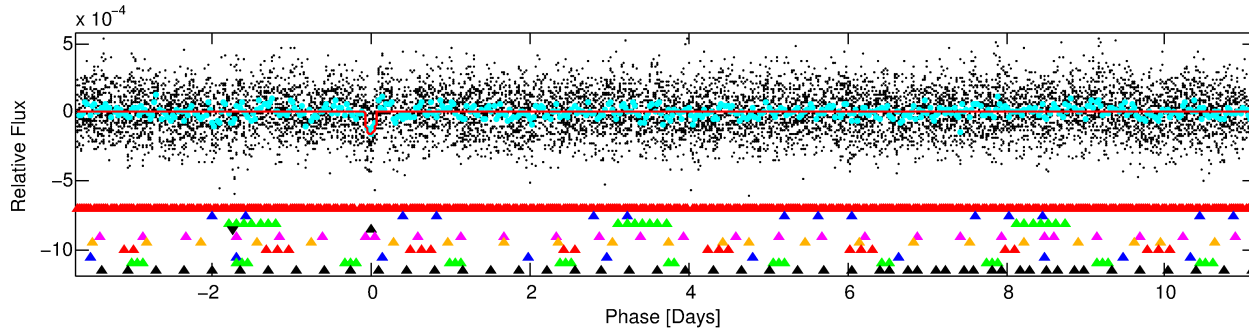
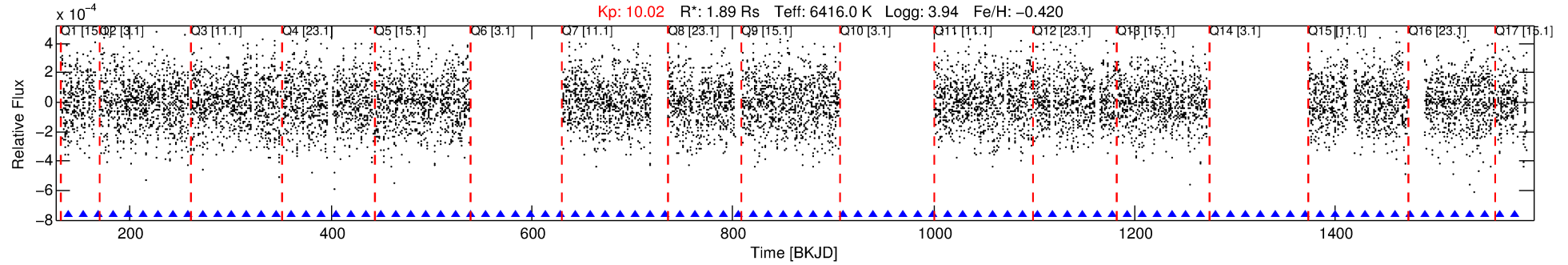
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004375408-04

No Significant Match Found

DV One-Page Summary

KIC: 4375408 Candidate: 4 of 10 Period: 14.842 d



DV Fit Results:

Period = 14.84219 [0.00015] d
Epoch = 138.3985 [0.0087] BKJD
Rp/R* = 0.0131 [0.0070]
a/R* = 16.81 [49.86]
b = 0.88 [0.76]
Seff = 355.74 [250.43]
Teq = 1107 [195] K
Rp = 2.70 [1.80] Re
a = 0.1233 [0.0514] AU
Ag = 83.21 [108.46] [0.76σ]
Teffp = 5171 [1442] K [2.79σ]

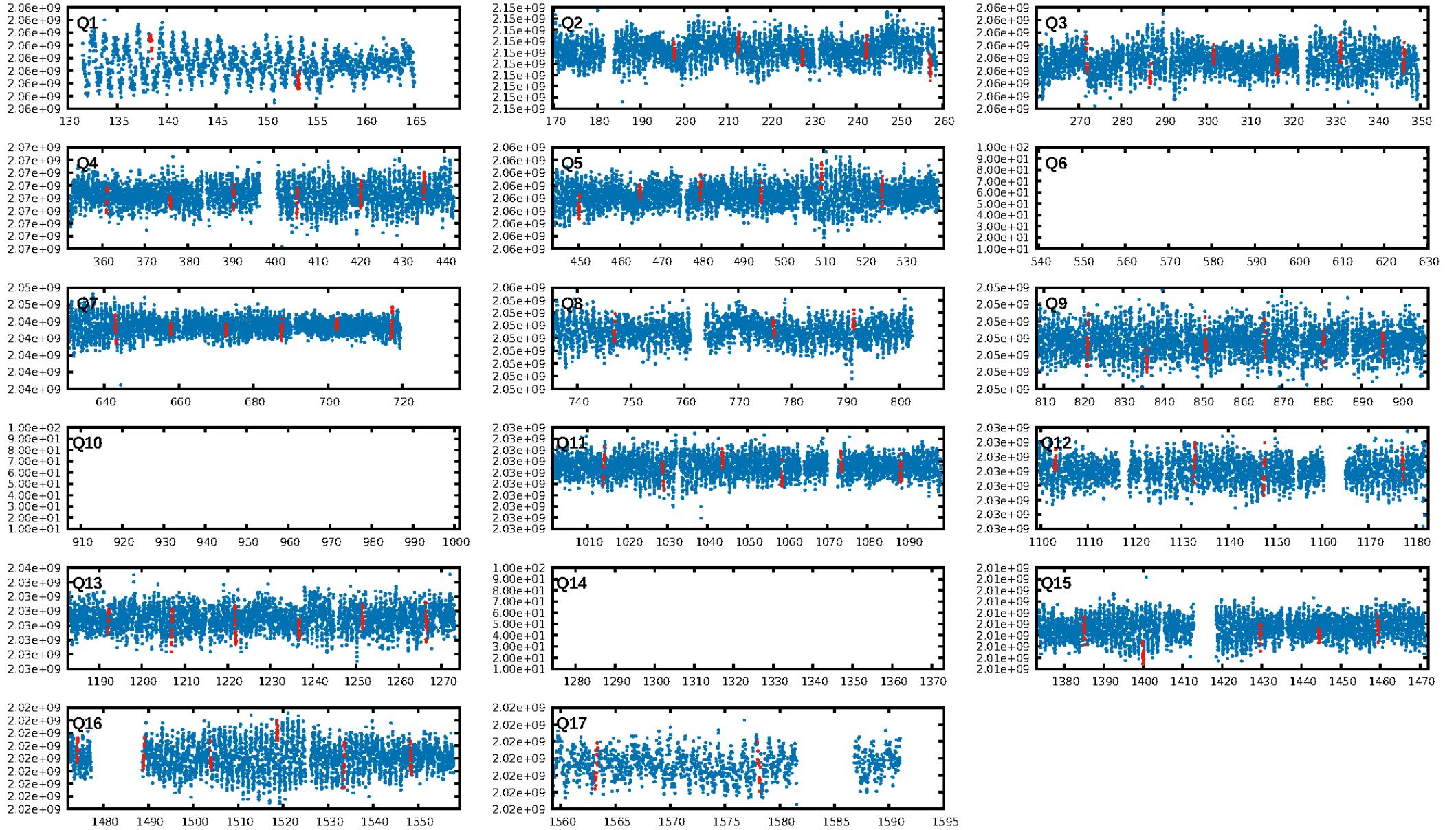
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [40.75σ]
LongPeriod-sig: 100.0% [85.29σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [26/26]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 0.840 arcsec [2.23σ]
OotOffset-rm: 2.840 arcsec [1.52σ]
KicOffset-rm: 2.884 arcsec [1.55σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.14 [2/14]
DiffImageOverlap-fno: 0.64 [9/14]

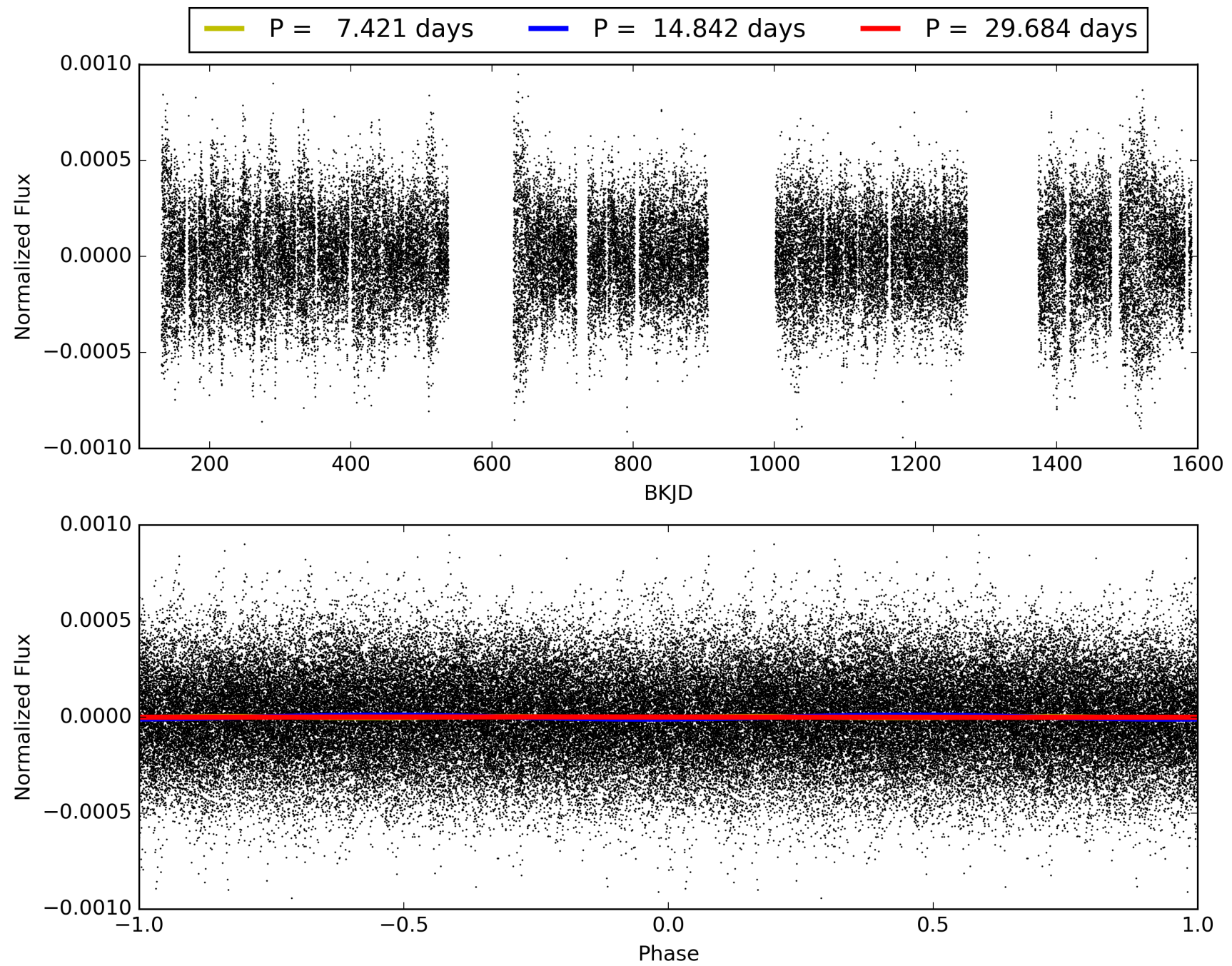
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:58:52 Z

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

TCE 004375408-04, PDC Light Curves

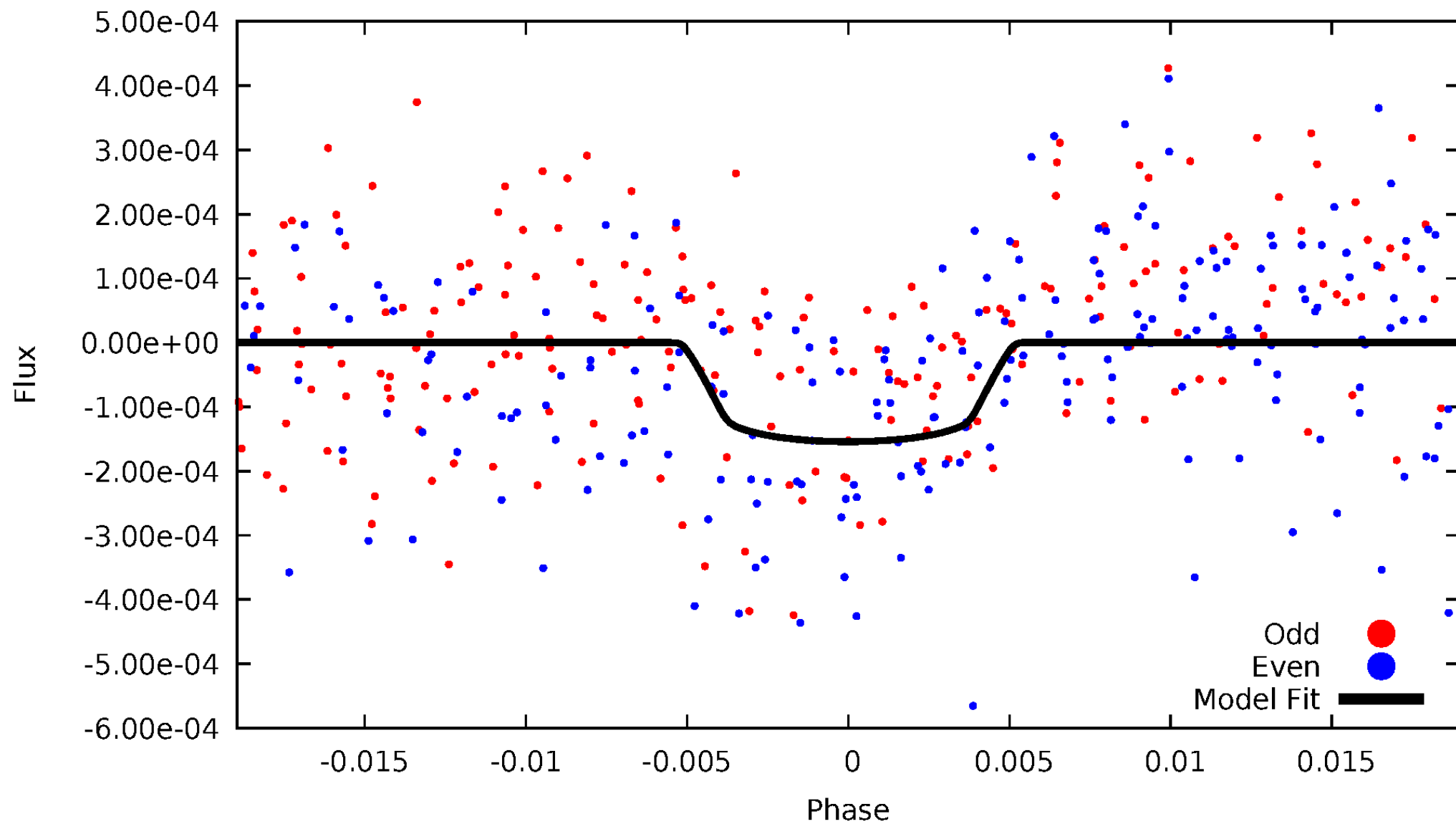


TCE 004375408-04



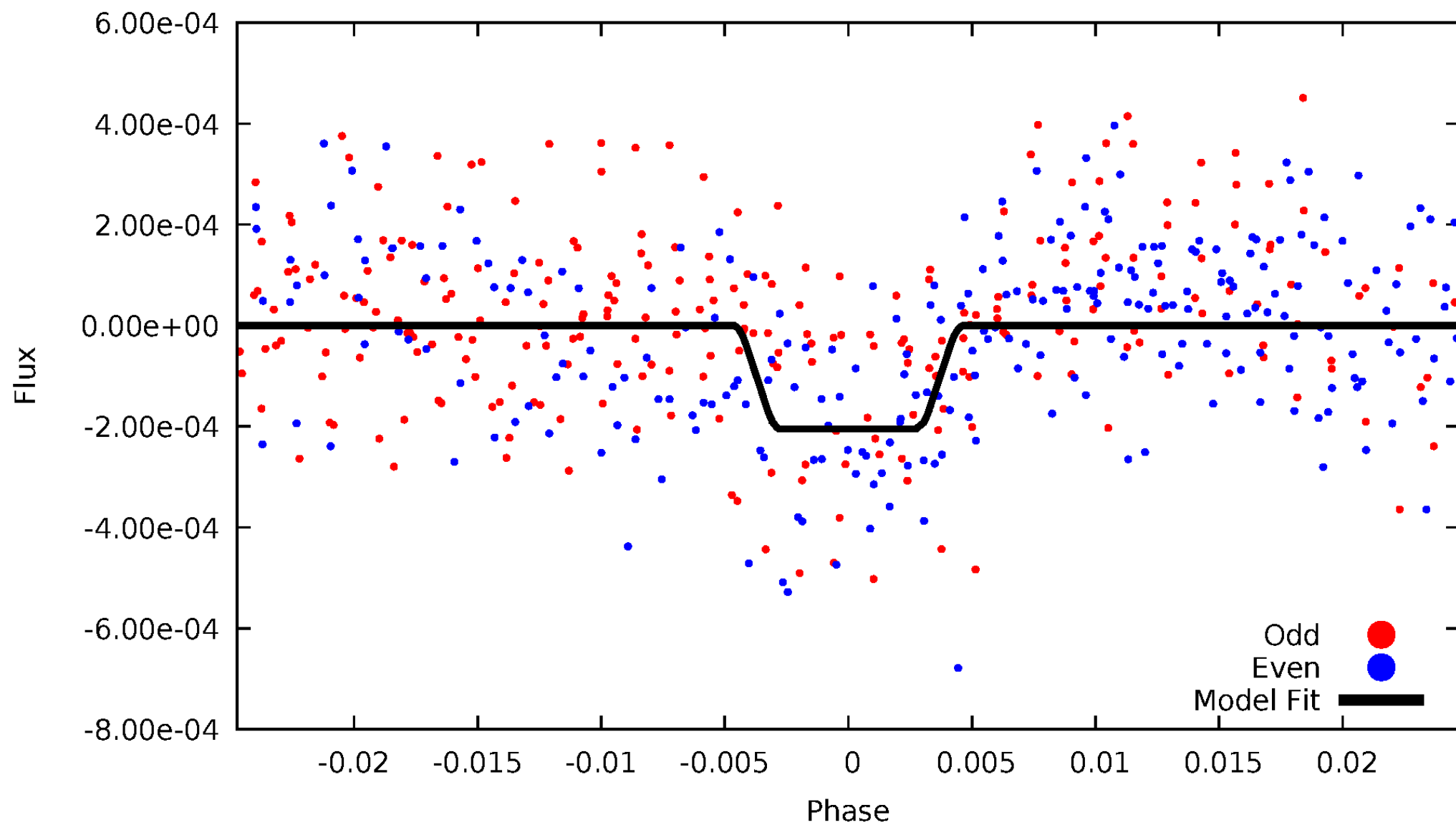
DV Odd/Even

TCE 004375408-04



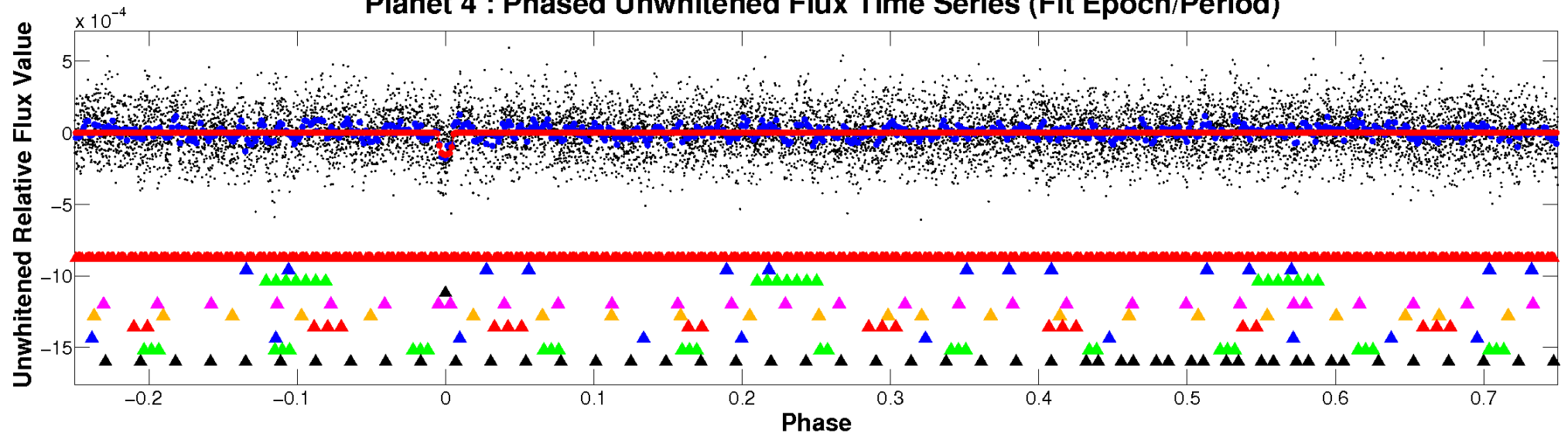
ALT Odd/Even

TCE 004375408-04

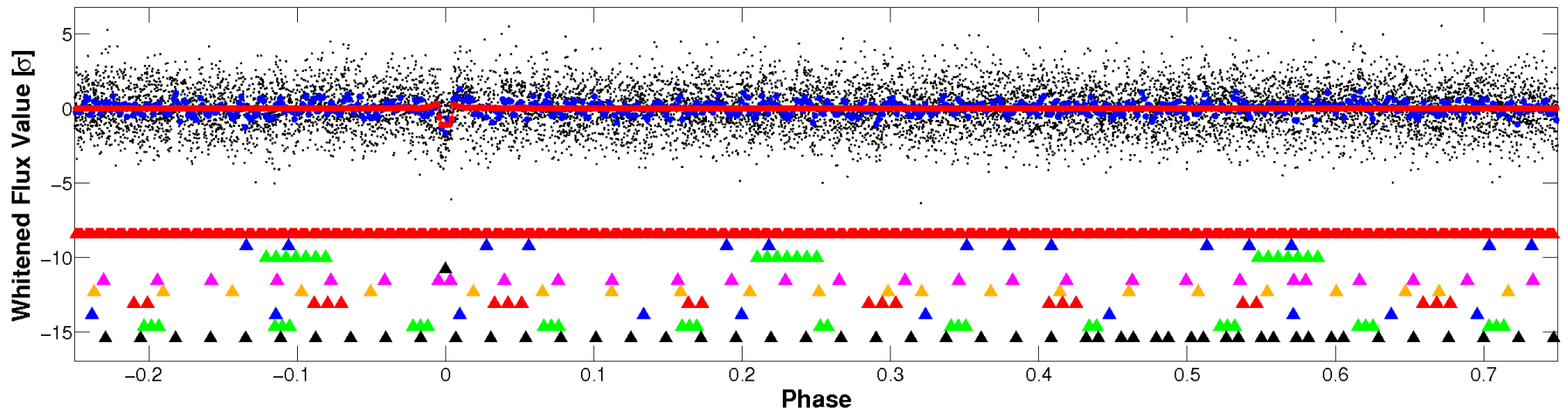


Non-Whitened Vs. Whitened Light Curve

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

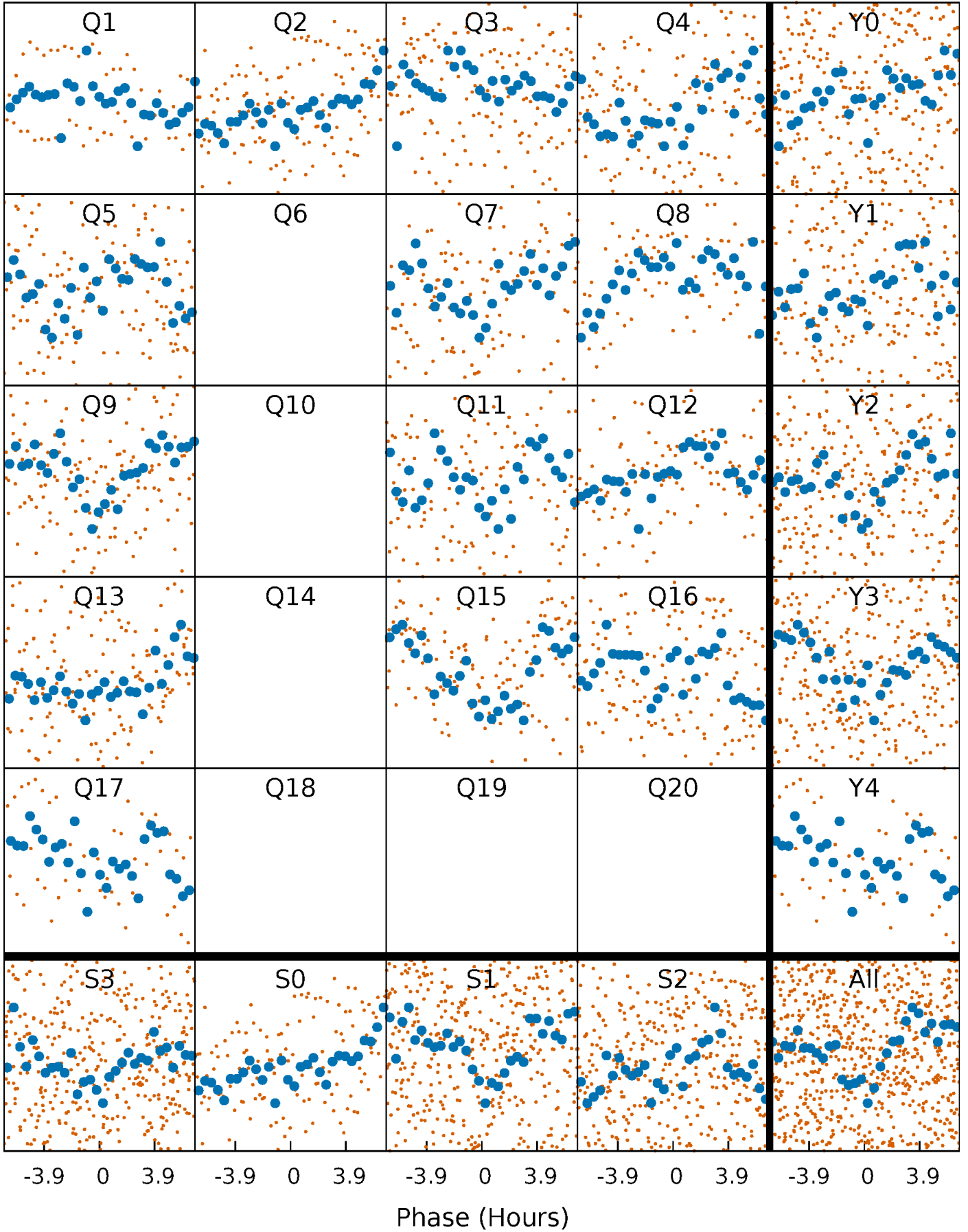


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



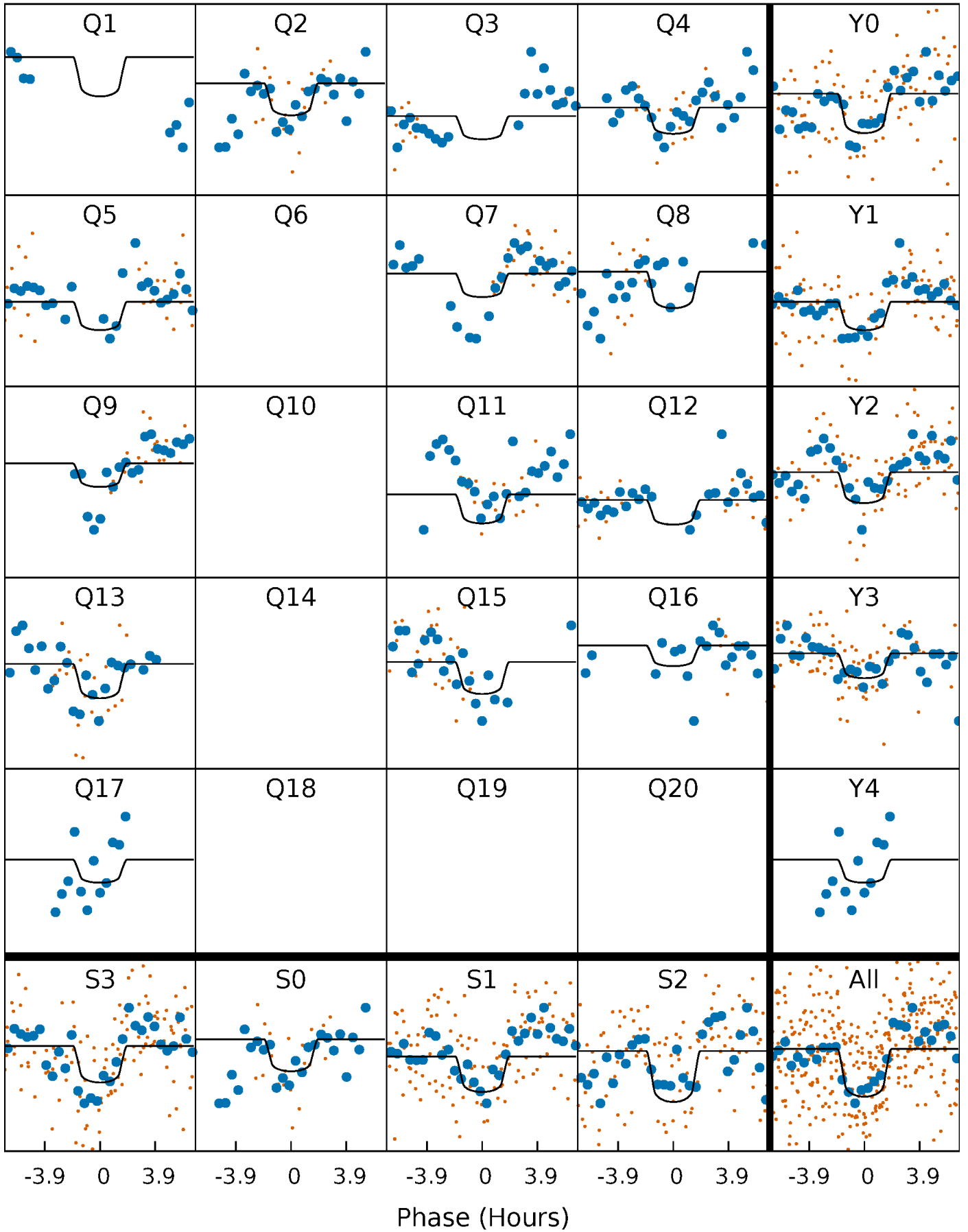
PDC Quarter-Phased Transit Curves

TCE 004375408-04 P= 14.842189 Days $T_0=138.398480$ (BKJD)



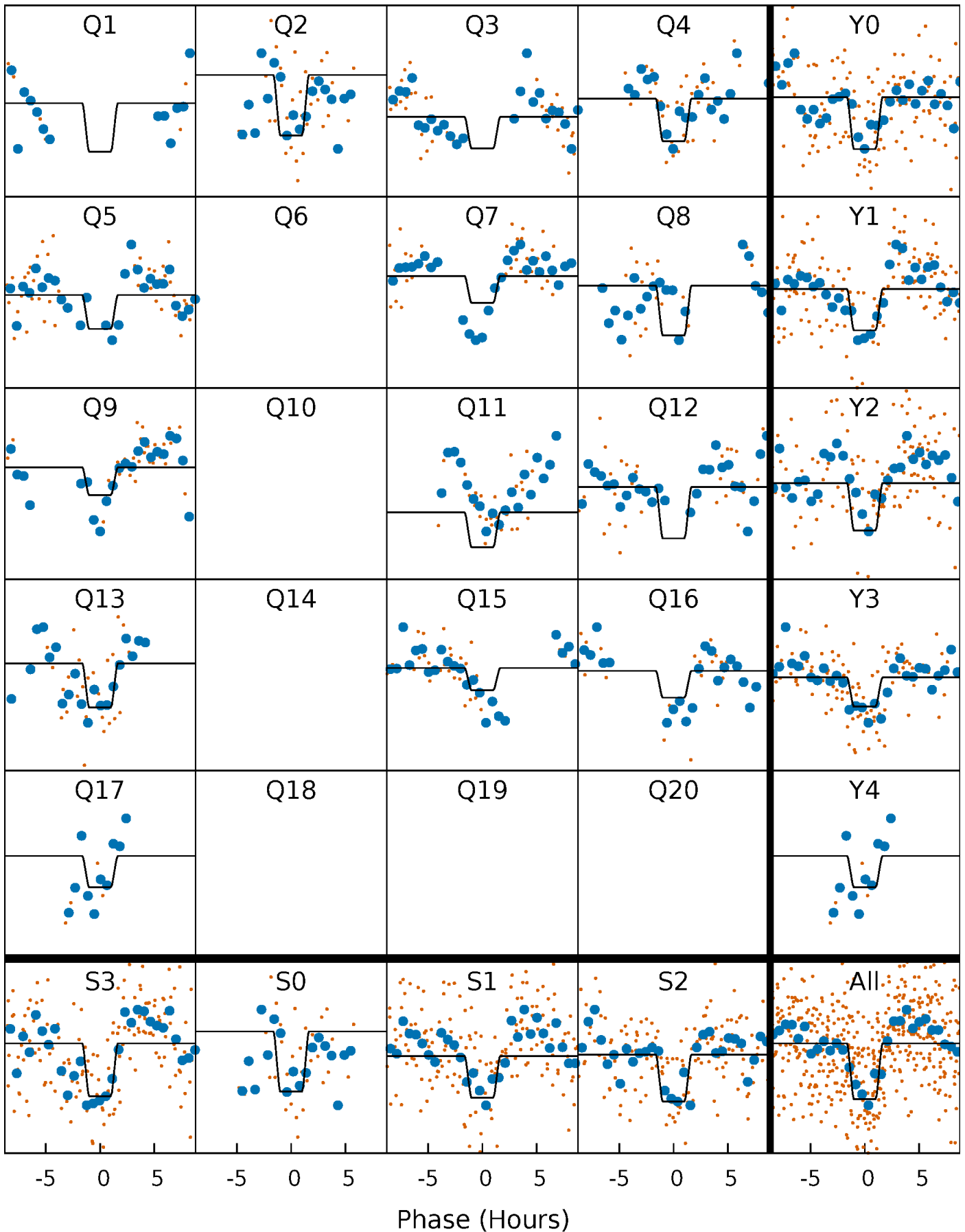
DV Quarter-Phased Transit Curves

TCE 004375408-04 P= 14.842189 Days $T_0=138.398480$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

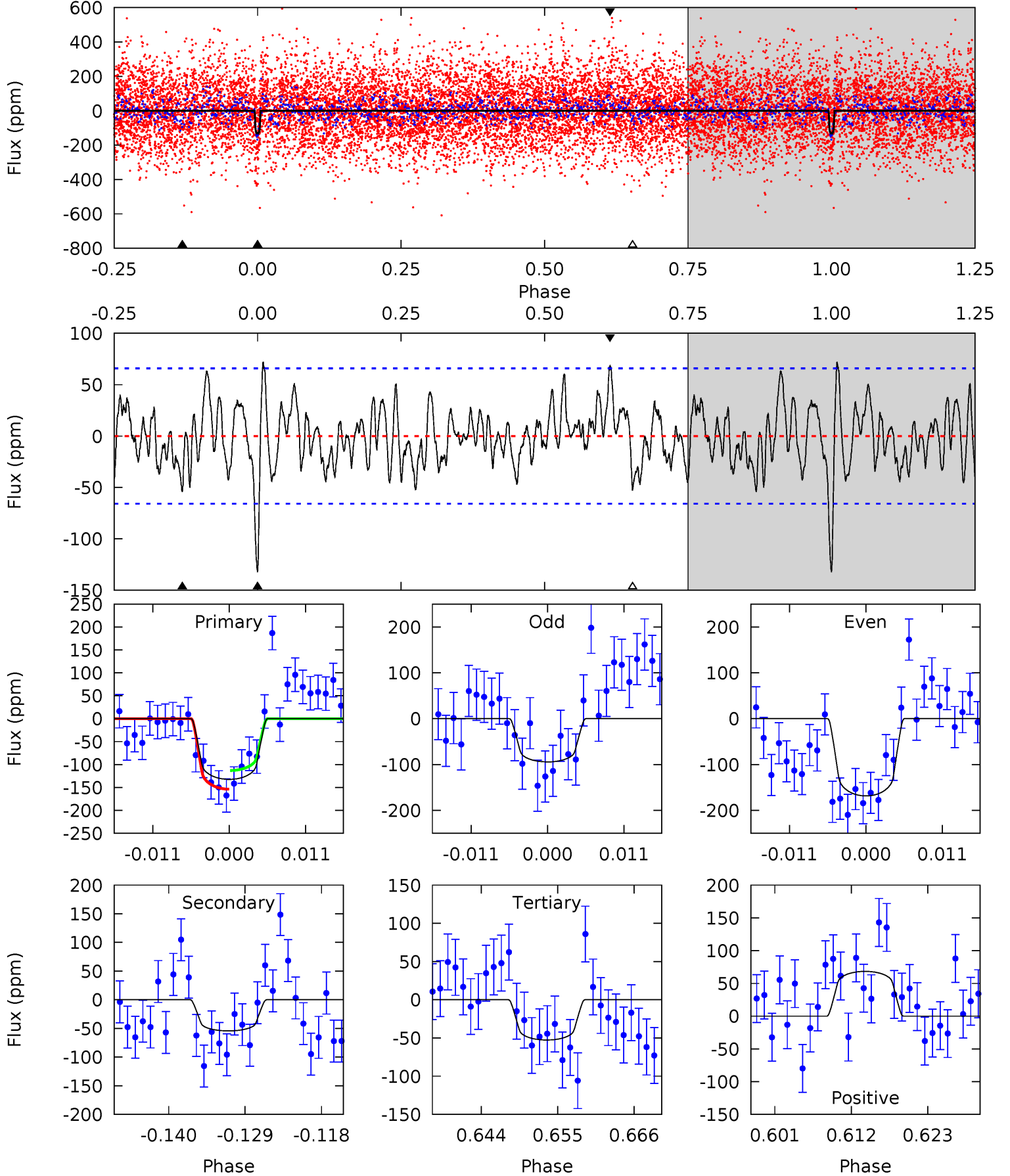
TCE 004375408-04 P= 14.842336 Days $T_0=138.376281$ (BKJD)



DV Model-Shift Uniqueness Test

004375408-04, P = 14.842189 Days, E = 123.556291 Days

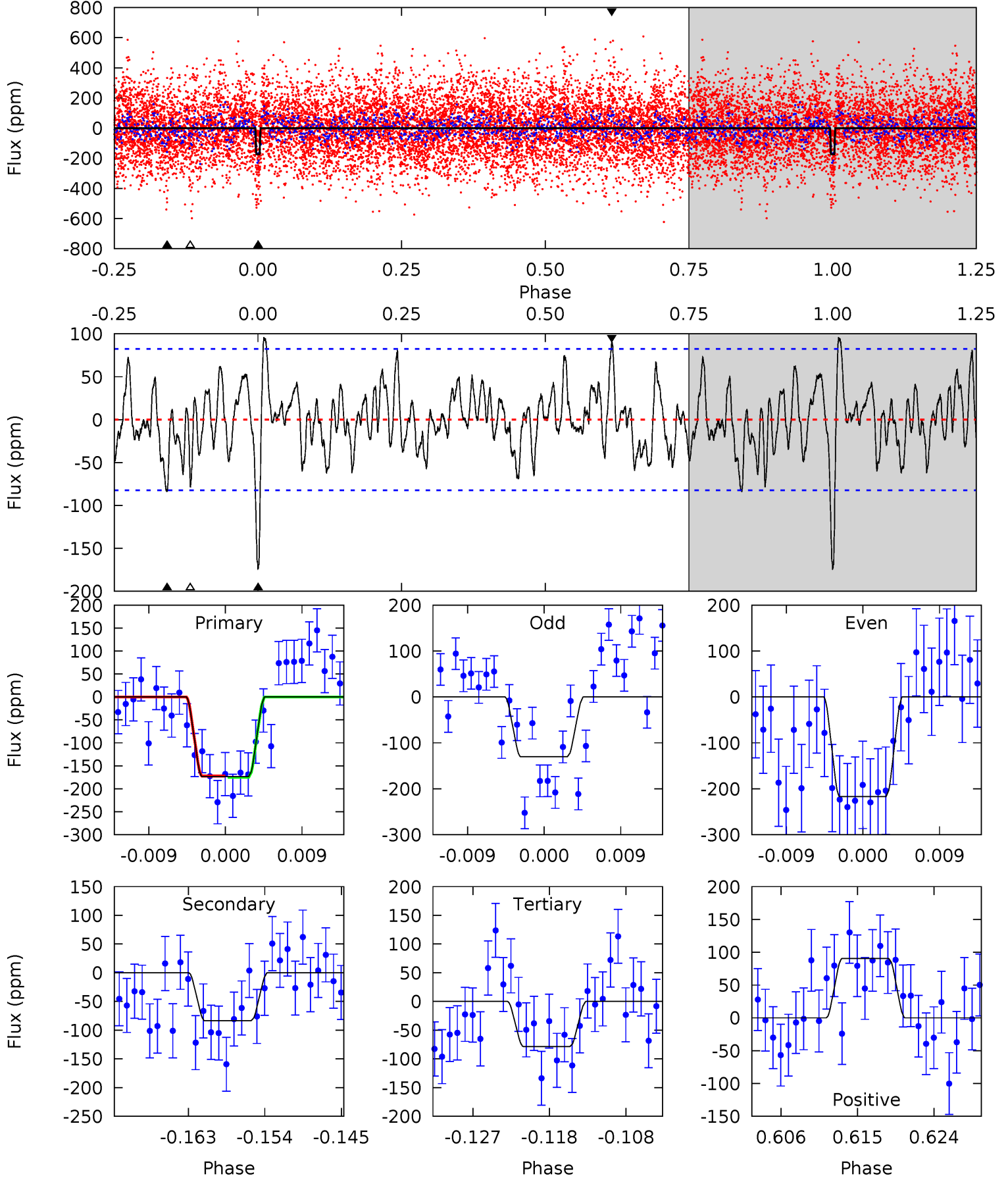
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	4.14	4.01	5.21	5.01	2.55	1.80	6.08	4.89	0.12	-1.07	2.84	1.01	0.35	1.55



Alt Model-Shift Uniqueness Test

004375408-04, P = 14.842336 Days, E = 123.533945 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	5.12	4.81	5.54	5.05	2.61	1.91	5.82	5.09	0.31	-0.42	2.66	1.04	0.36	0.08



Stellar Parameters For KIC 004375408

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6416^{+181}_{-227}	$3.941^{+0.413}_{-0.138}$	$-0.420^{+0.300}_{-0.300}$	$1.887^{+0.448}_{-0.768}$	$1.133^{+0.169}_{-0.188}$	$0.237^{+0.824}_{-0.092}$
	+3%/-4%	+10%/-4%	+71%/-71%	+24%/-41%	+15%/-17%	+347%/-39%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004375408-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-54 ± 13	$2.53^{+1.64}_{-1.25}$	1517^{+115}_{-171}	4856^{+1832}_{-750}	72^{+224}_{-46}
Alt.	-84 ± 16	$2.76^{+1.55}_{-1.28}$	1514^{+112}_{-150}	5106^{+1830}_{-767}	87^{+237}_{-50}

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 $A_{obs} \gg 1.0$

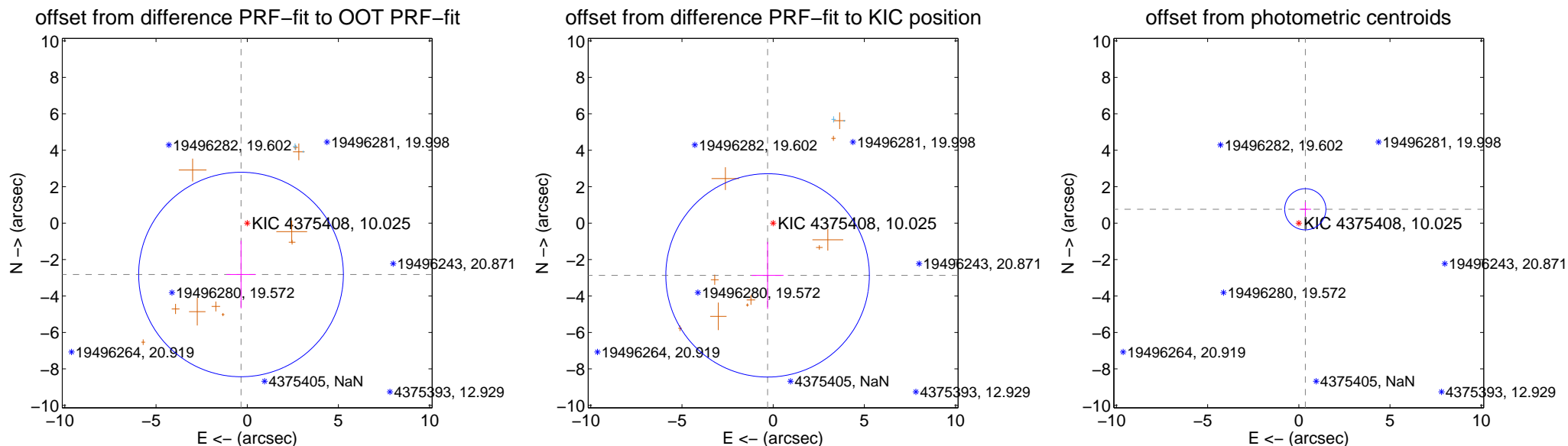
DV Centroid Data

Supplemental centroid analysis for 004375408-04. **Kepler magnitude: 10.03.** Transit SNR 10.62

There are 2 quarters with good PRF difference image offsets

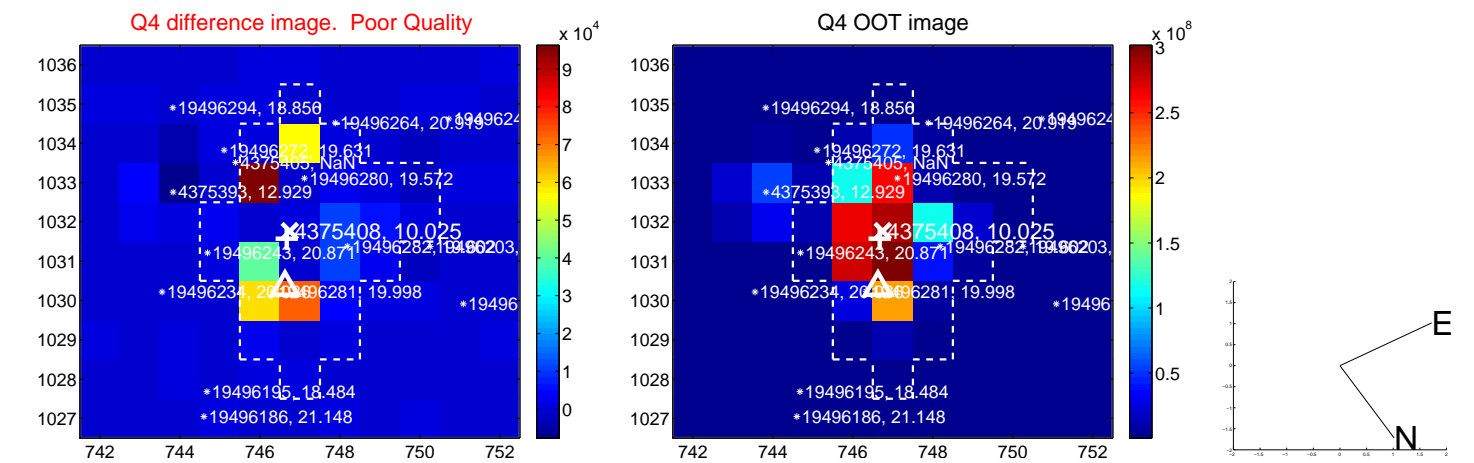
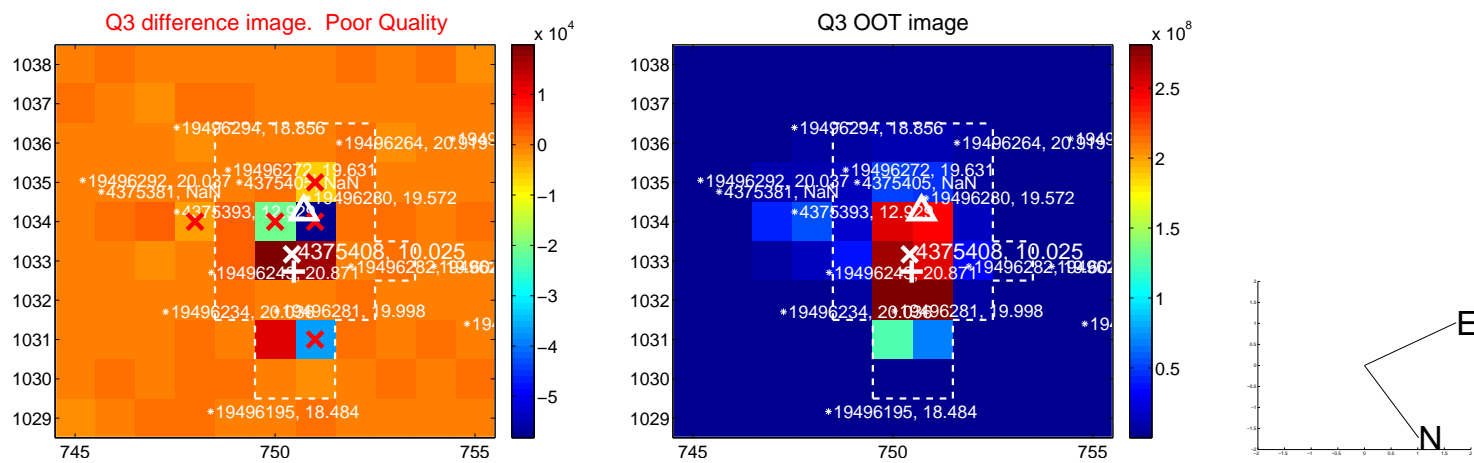
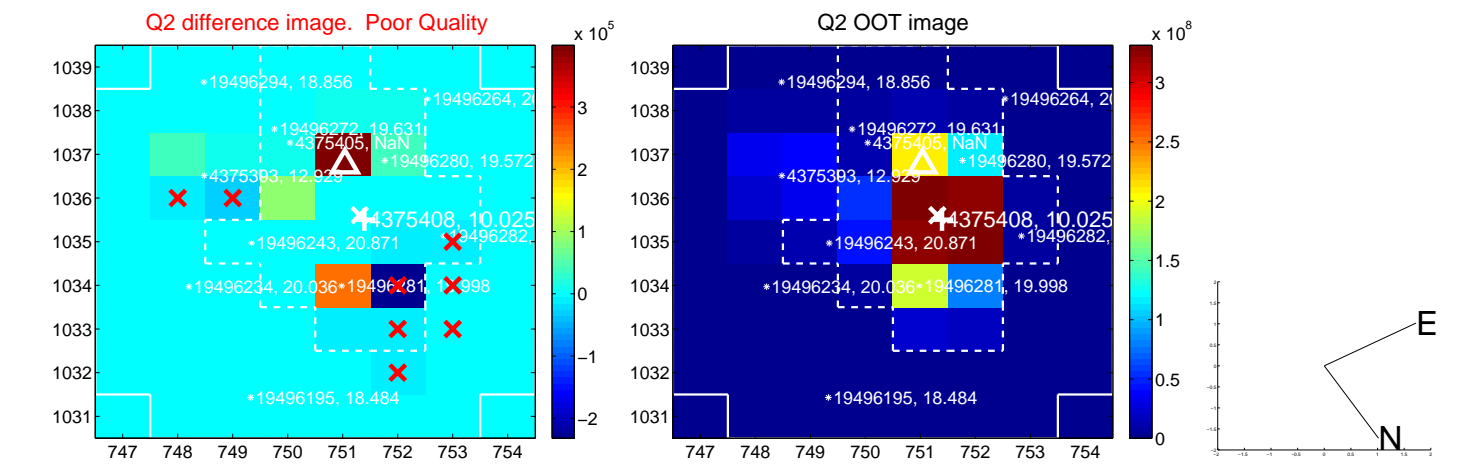
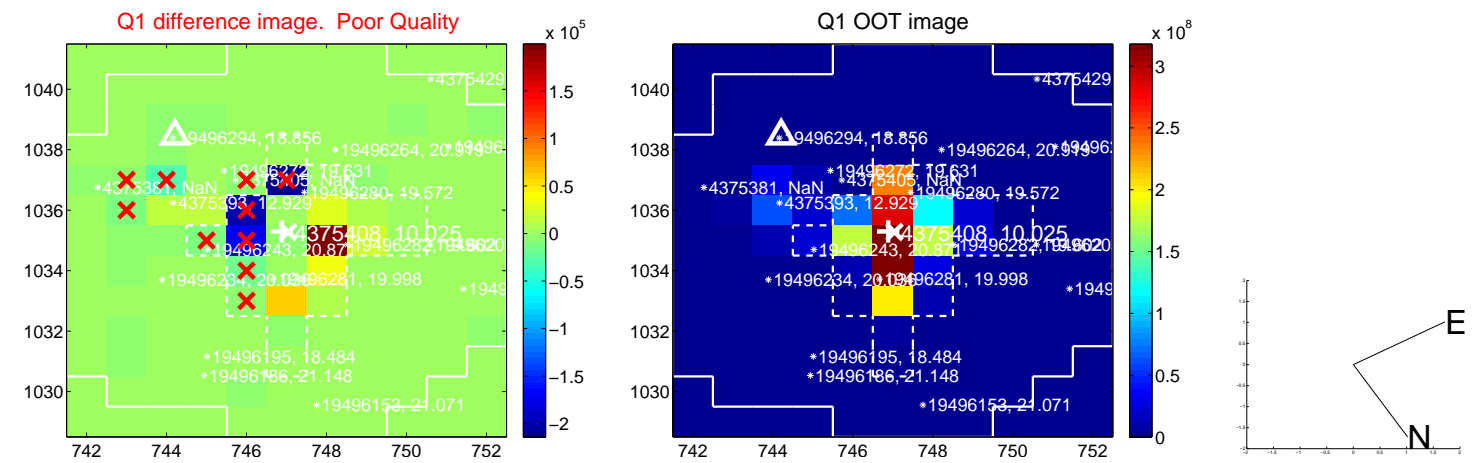
The direct PRF centroid is offset from the target star catalog position by about 0.71 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.840 ± 1.871	1.52	0.340 ± 0.796	-2.820 ± 1.856
PRF-fit source offset from KIC position	2.884 ± 1.860	1.55	0.305 ± 0.874	-2.868 ± 1.837
photometric centroid source offset	0.84 ± 0.38	2.23	-0.36 ± 0.32	0.76 ± 0.39

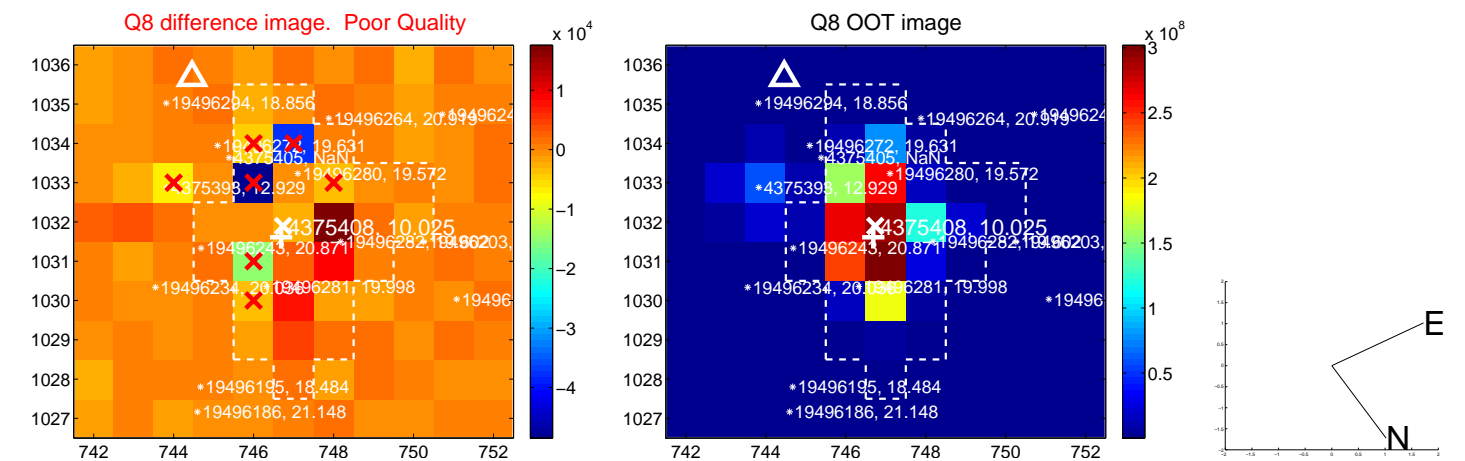
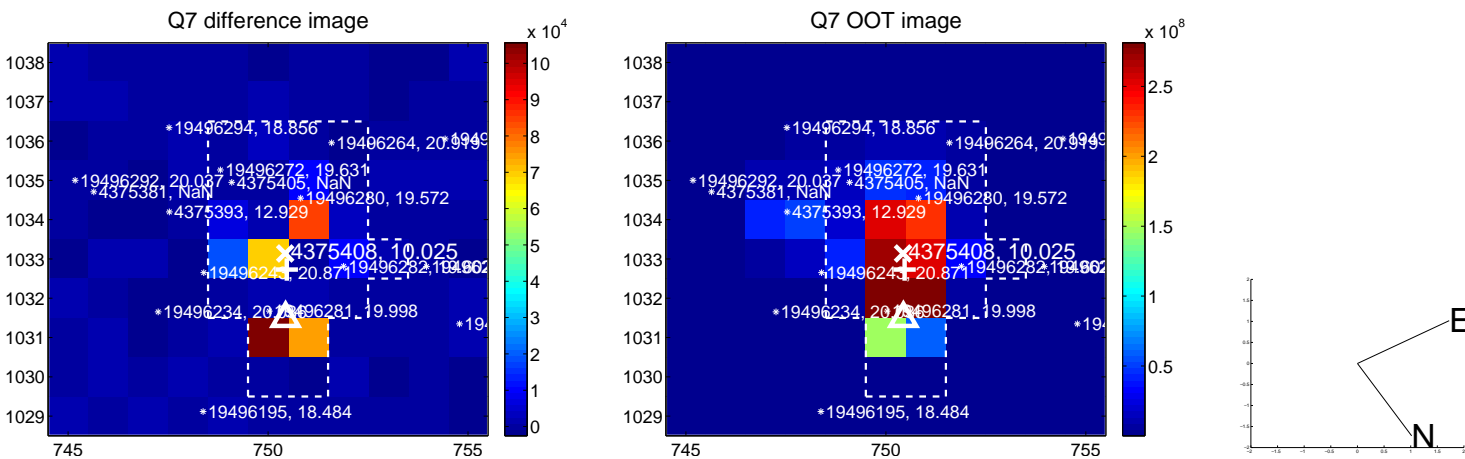
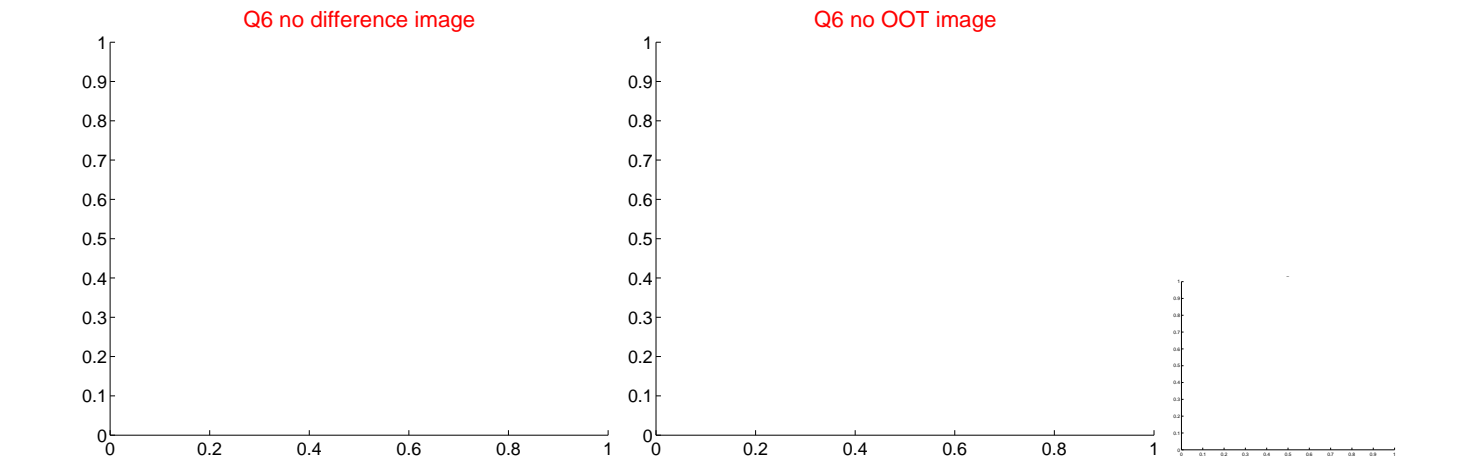
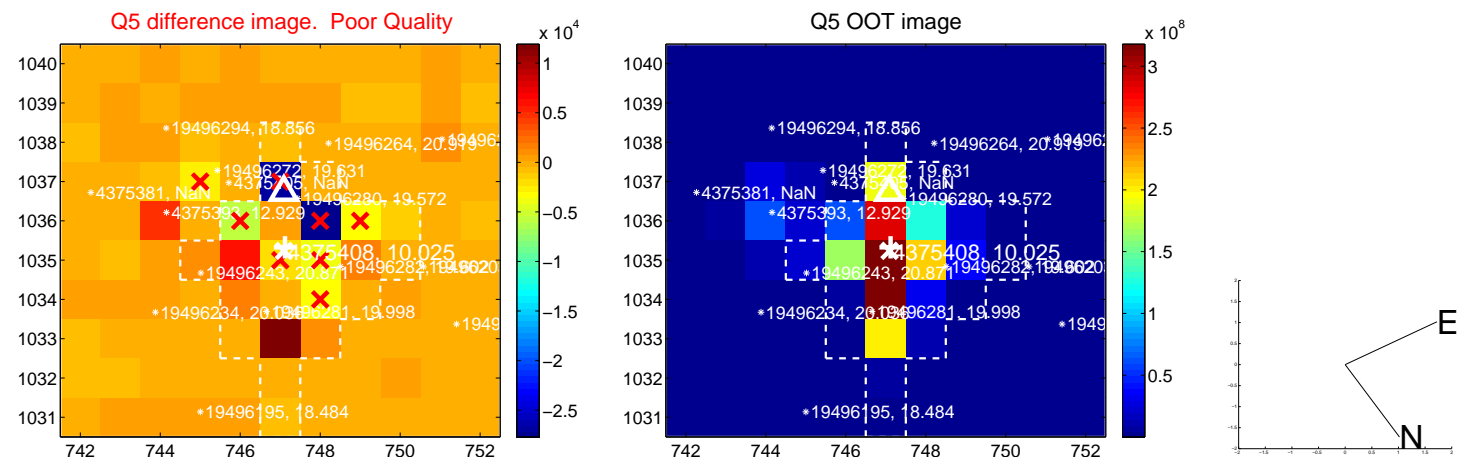


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

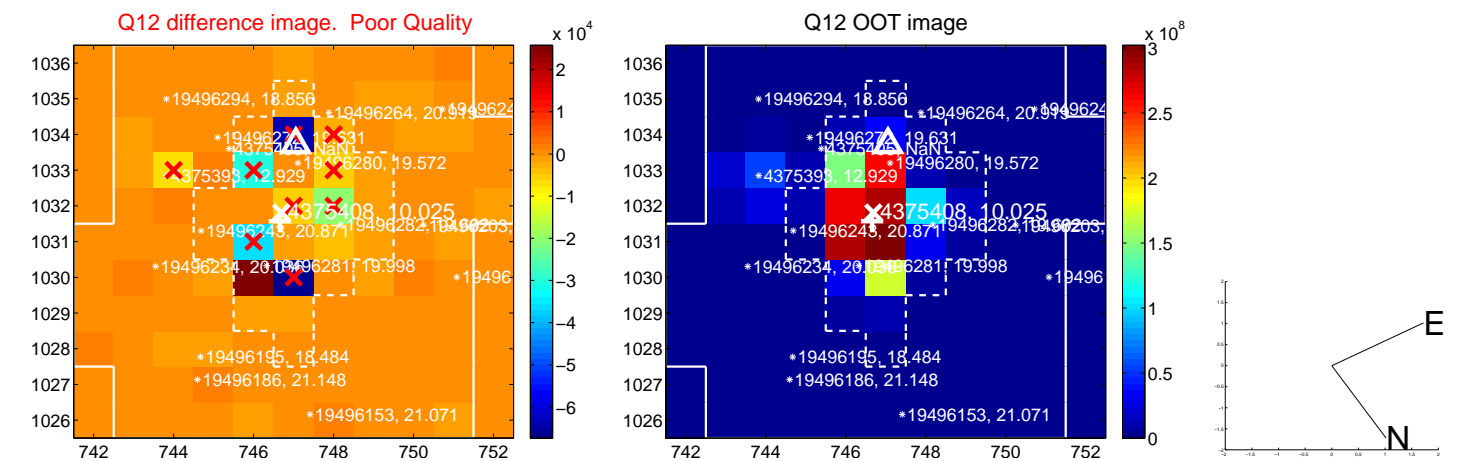
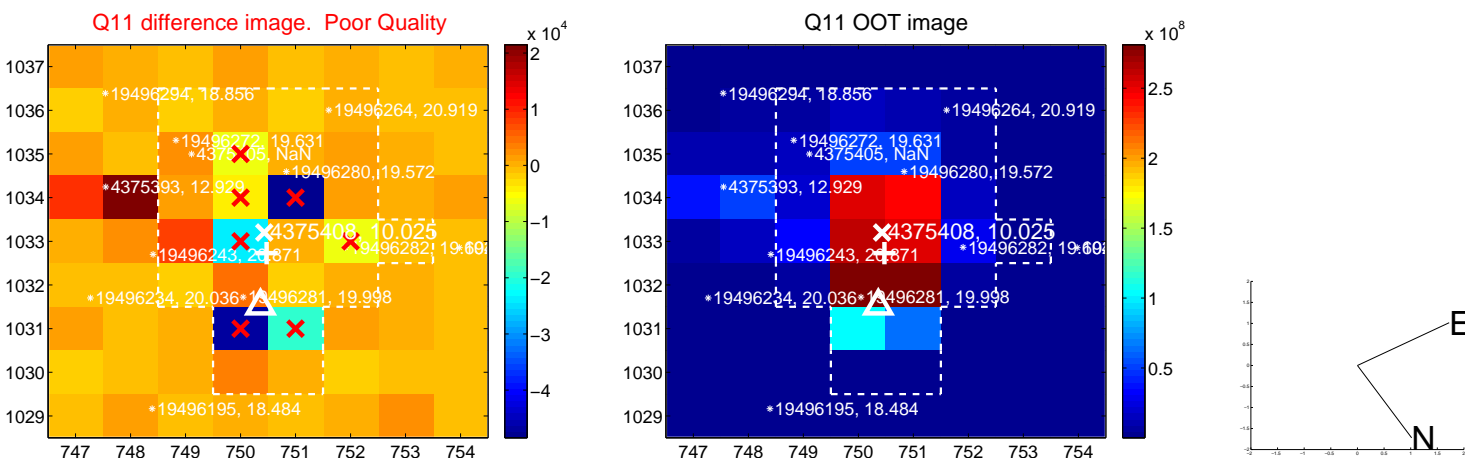
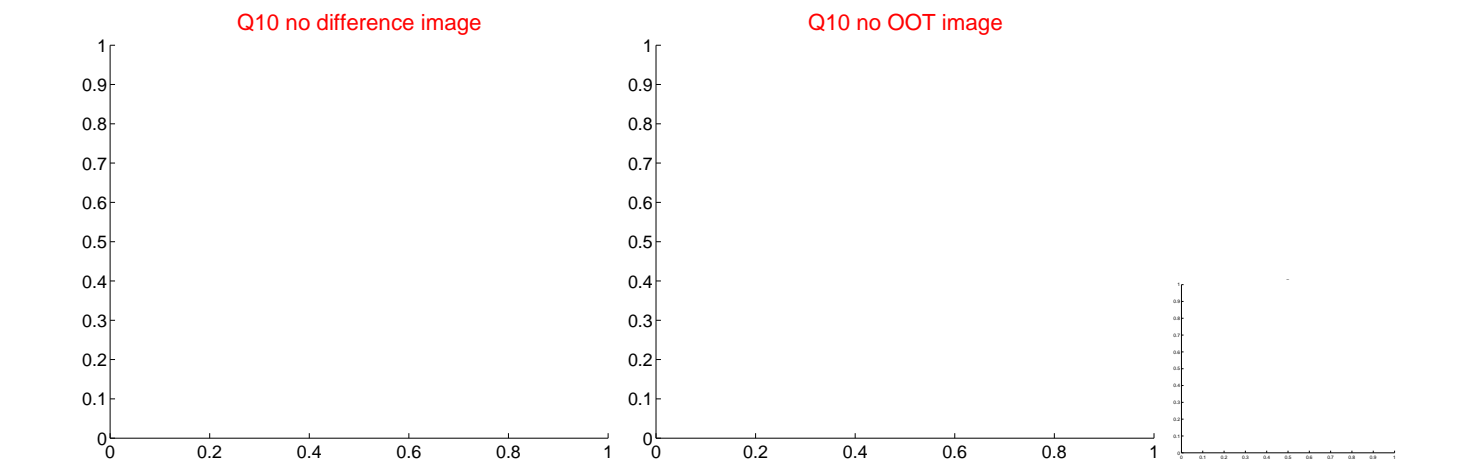
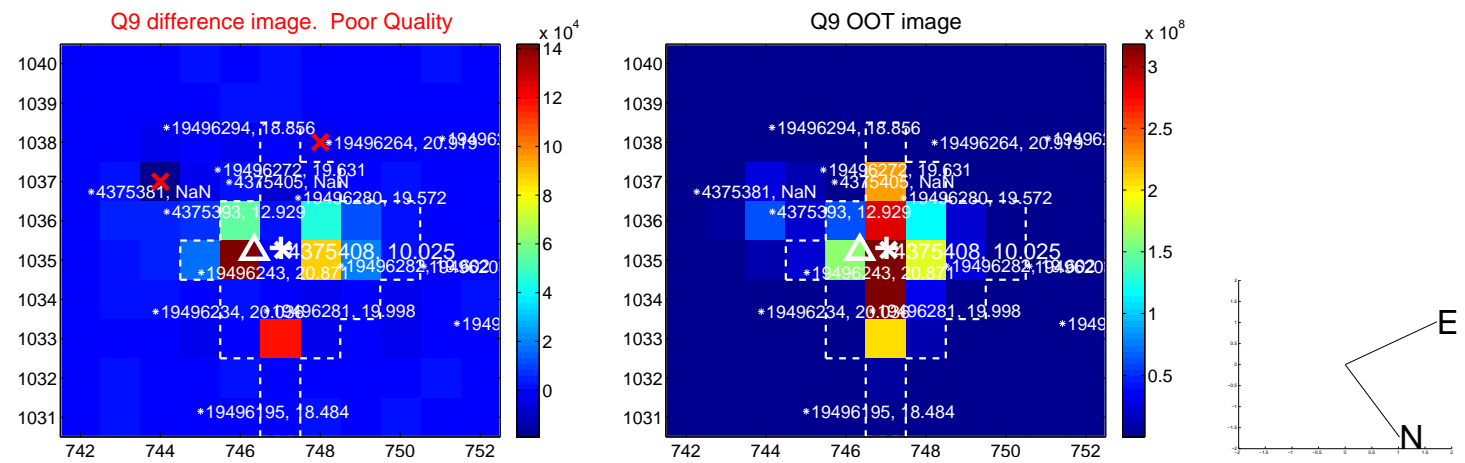
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



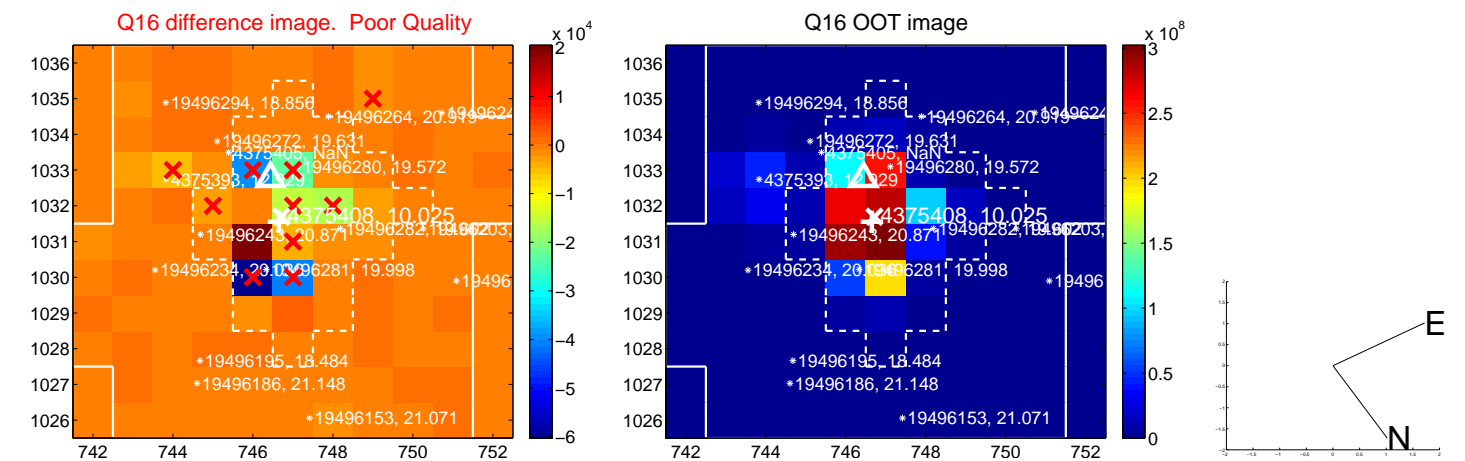
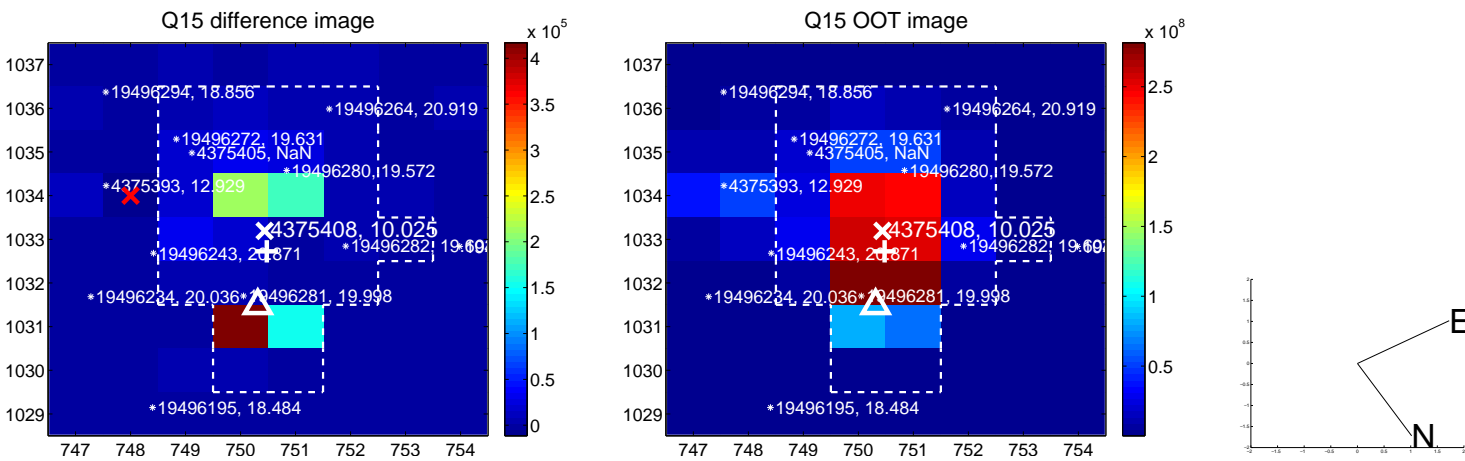
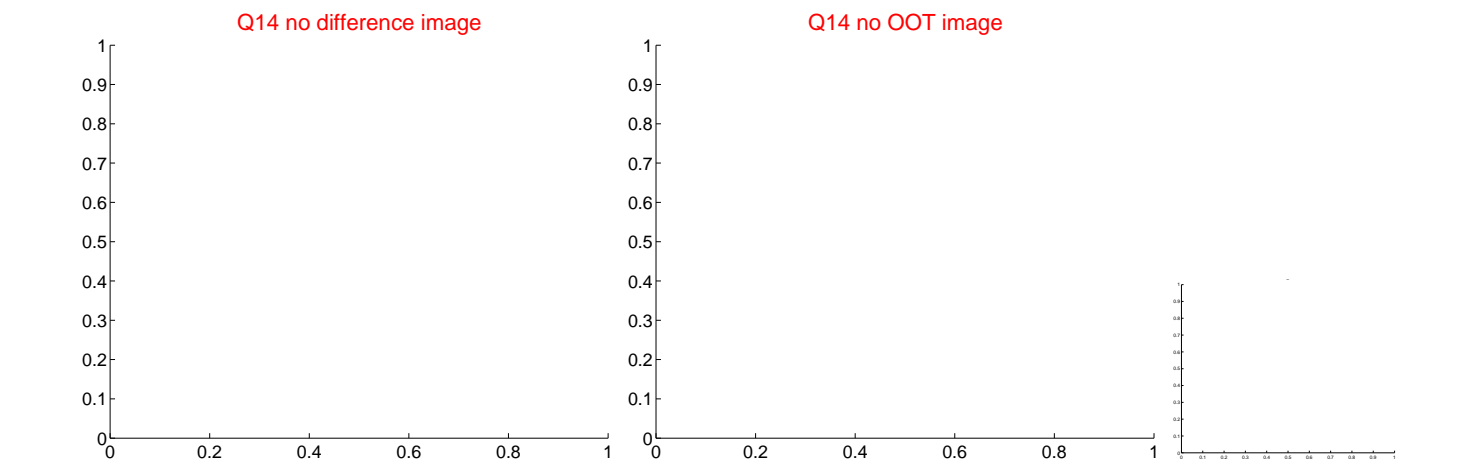
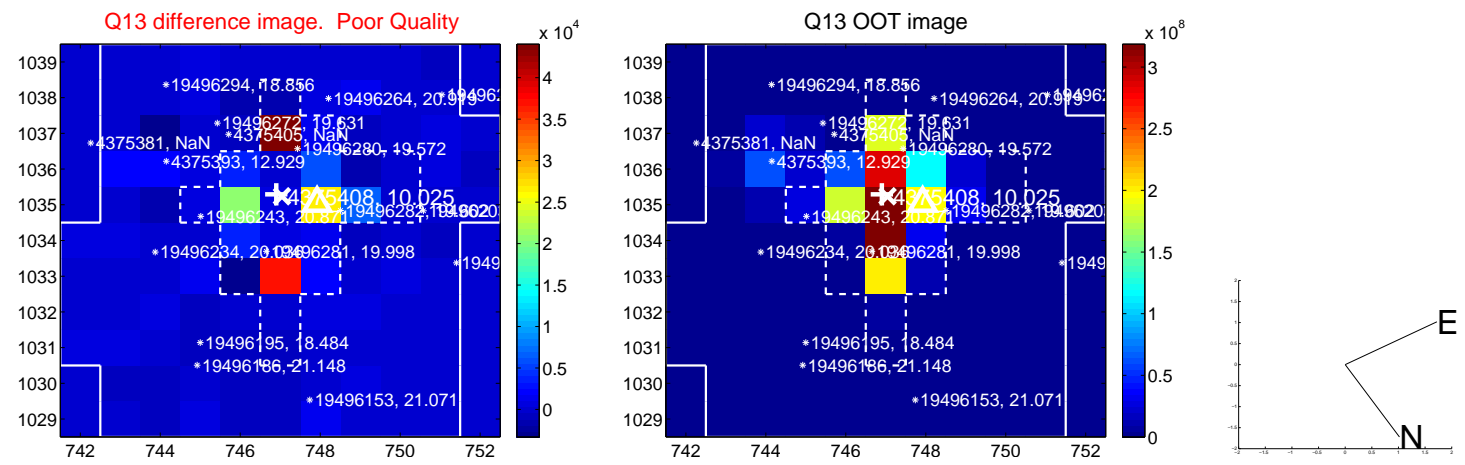
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



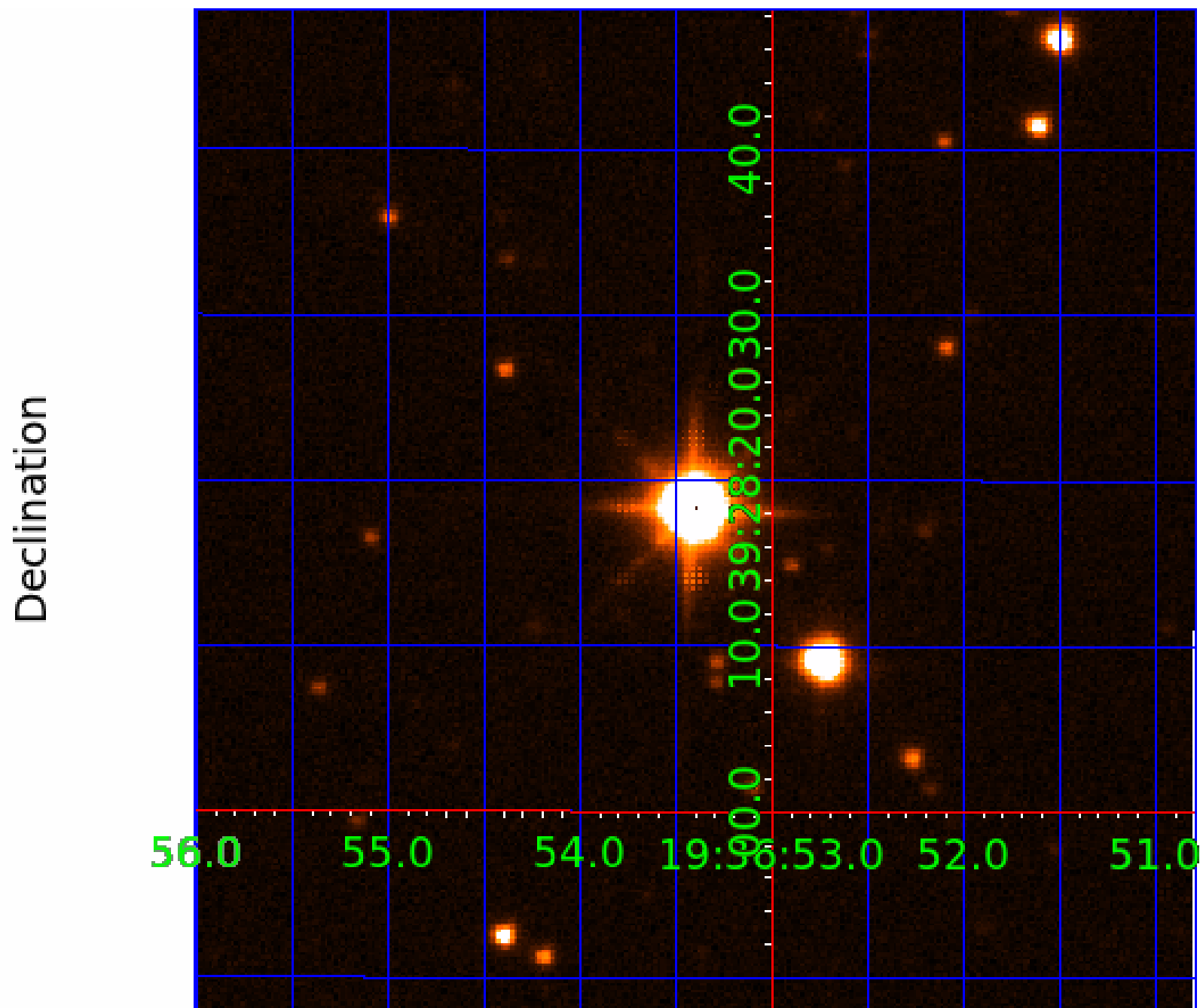
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



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})
004375408-01	OBS	No	1.183133	132.215637	11.3	7.303	9.1	4.0	1.89	6416	0.67	10369.43
004375408-02	OBS	No	106.298491	188.988020	339.5	5.435	11.0	10.3	1.89	6416	4.03	25.77
004375408-03	OBS	No	69.296632	156.360628	334.4	2.169	10.6	9.5	1.89	6416	4.02	45.59
004375408-04	OBS	No	14.842189	138.398480	154.1	3.376	10.2	10.6	1.89	6416	2.70	355.74
004375408-05	OBS	No	53.084762	138.448490	238.0	5.466	9.7	9.4	1.89	6416	3.28	65.04
004375408-06	OBS	No	64.546702	187.689827	258.0	4.142	9.4	8.7	1.89	6416	3.51	50.12
004375408-07	OBS	No	68.662063	188.964621	257.7	1.884	9.1	8.9	1.89	6416	3.58	46.15
004375408-08	OBS	No	154.922917	193.248880	220.0	7.033	8.9	8.0	1.89	6416	2.90	15.60
004375408-09	OBS	No	47.218486	147.679425	263.0	2.735	9.2	8.9	1.89	6416	3.58	76.03
004375408-10	OBS	No	29.333870	132.422001	232.7	2.287	9.1	10.2	1.89	6416	3.33	143.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004375408-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004375408-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004375408-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

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

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

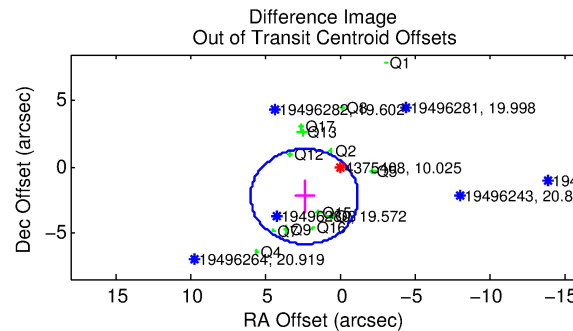
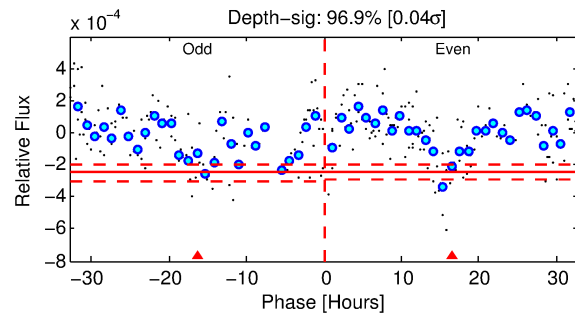
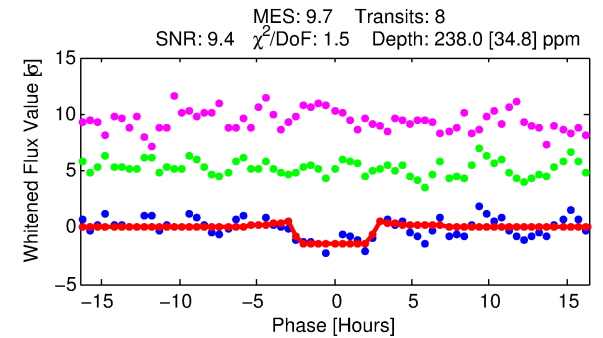
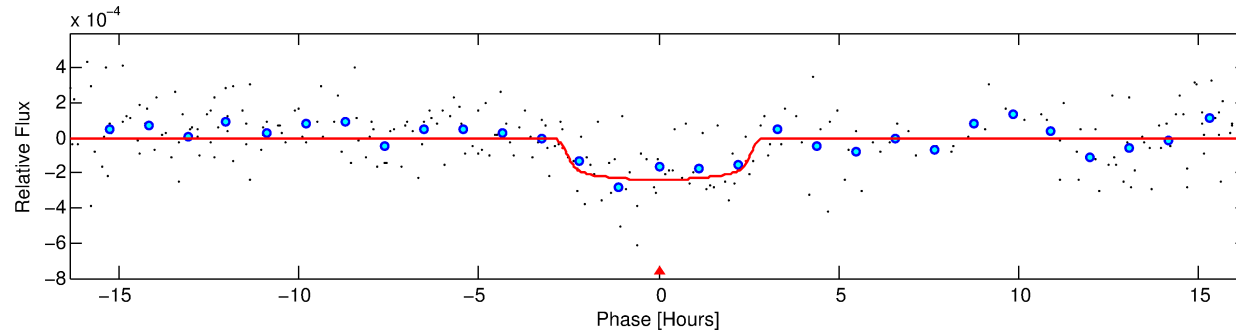
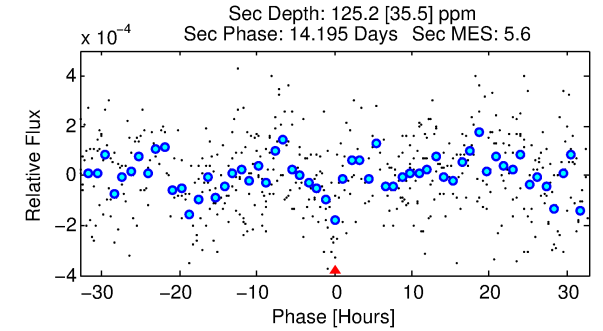
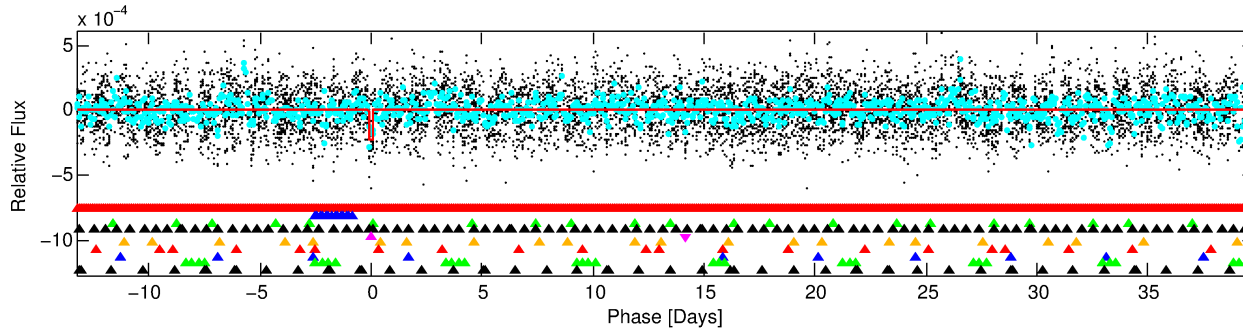
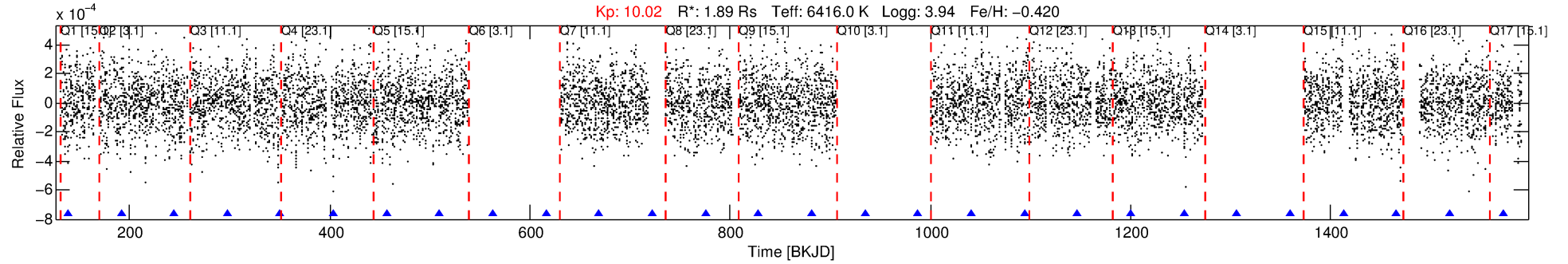
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004375408-05

No Significant Match Found

DV One-Page Summary

KIC: 4375408 Candidate: 5 of 10 Period: 53.085 d



DV Fit Results:

Period = 53.08476 [0.00093] d
Epoch = 138.4485 [0.0134] BKJD
 R_p/R^* = 0.0159 [0.0060]
 a/R^* = 42.11 [85.89]
 b = 0.84 [0.71]
 Seff = 65.04 [45.79]
 T_{eq} = 724 [127] K
 R_p = 3.28 [1.82] R_e
 a = 0.2883 [0.1203] AU
 A_g = 532.77 [566.93] [0.94σ]
 T_{eff} = 5379 [1106] K [4.18σ]

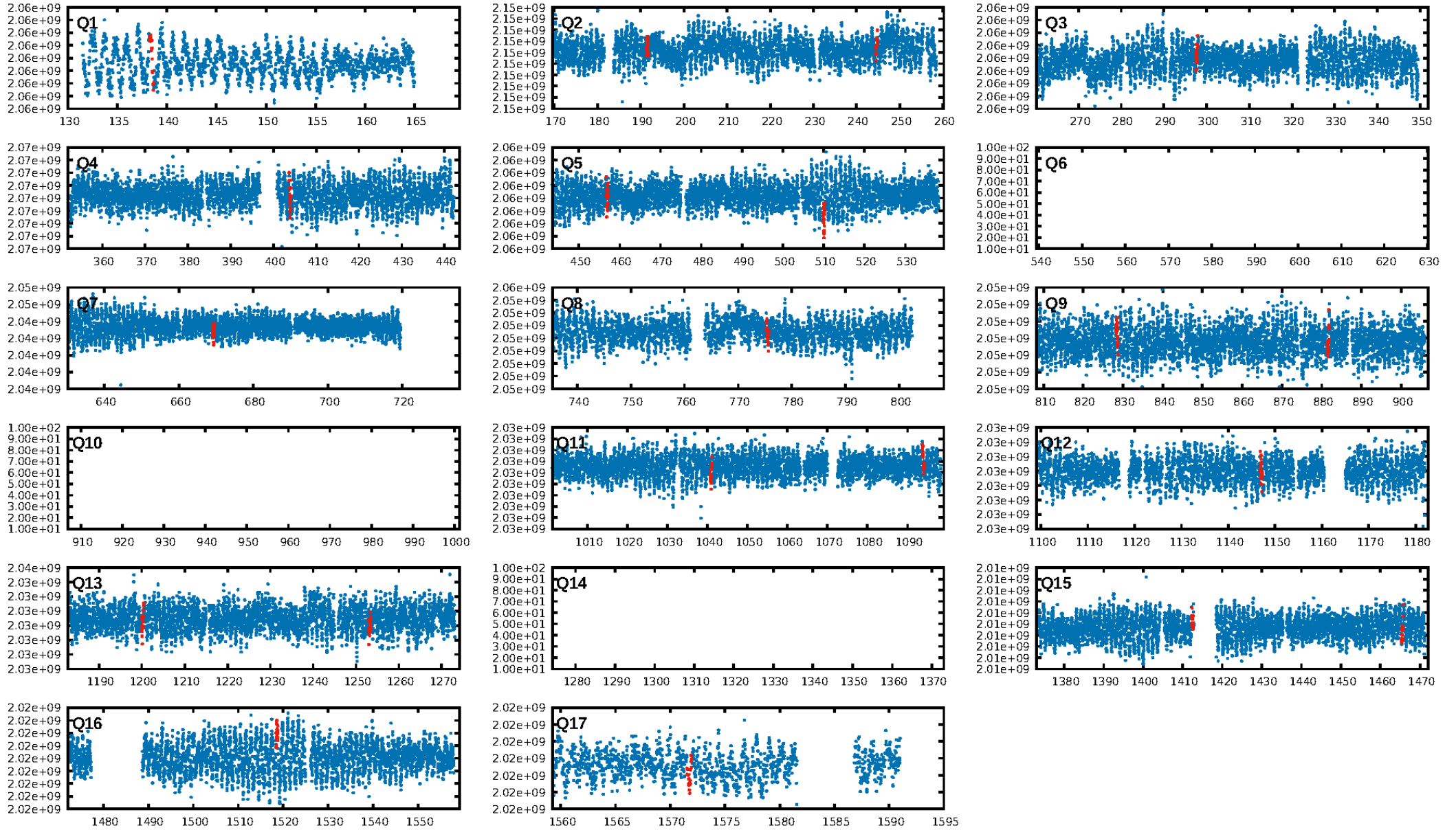
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [23.03σ]
LongPeriod-sig: 100.0% [40.11σ]
ModelChiSquare2-sig: 0.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 0.906 arcsec [2.24σ]
OotOffset-rm: 3.257 arcsec [2.72σ]
KicOffset-rm: 2.499 arcsec [2.51σ]
OotOffset-st: 1/3/4/5 [13]
KicOffset-st: 1/3/4/5 [13]
DiffImageQuality-fgm: 0.15 [2/13]
DiffImageOverlap-fno: 0.00 [0/13]

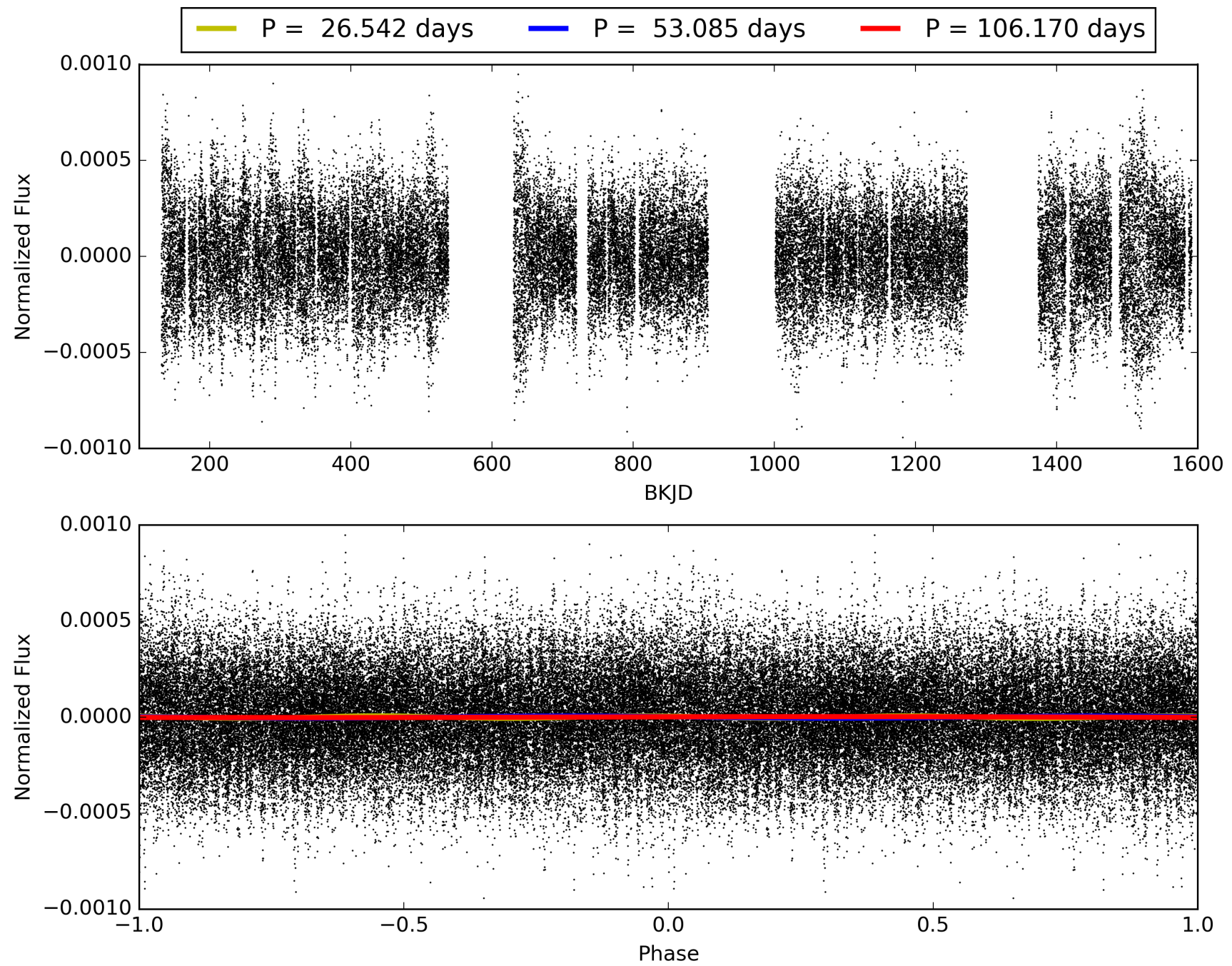
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:58:55 Z

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

TCE 004375408-05, PDC Light Curves

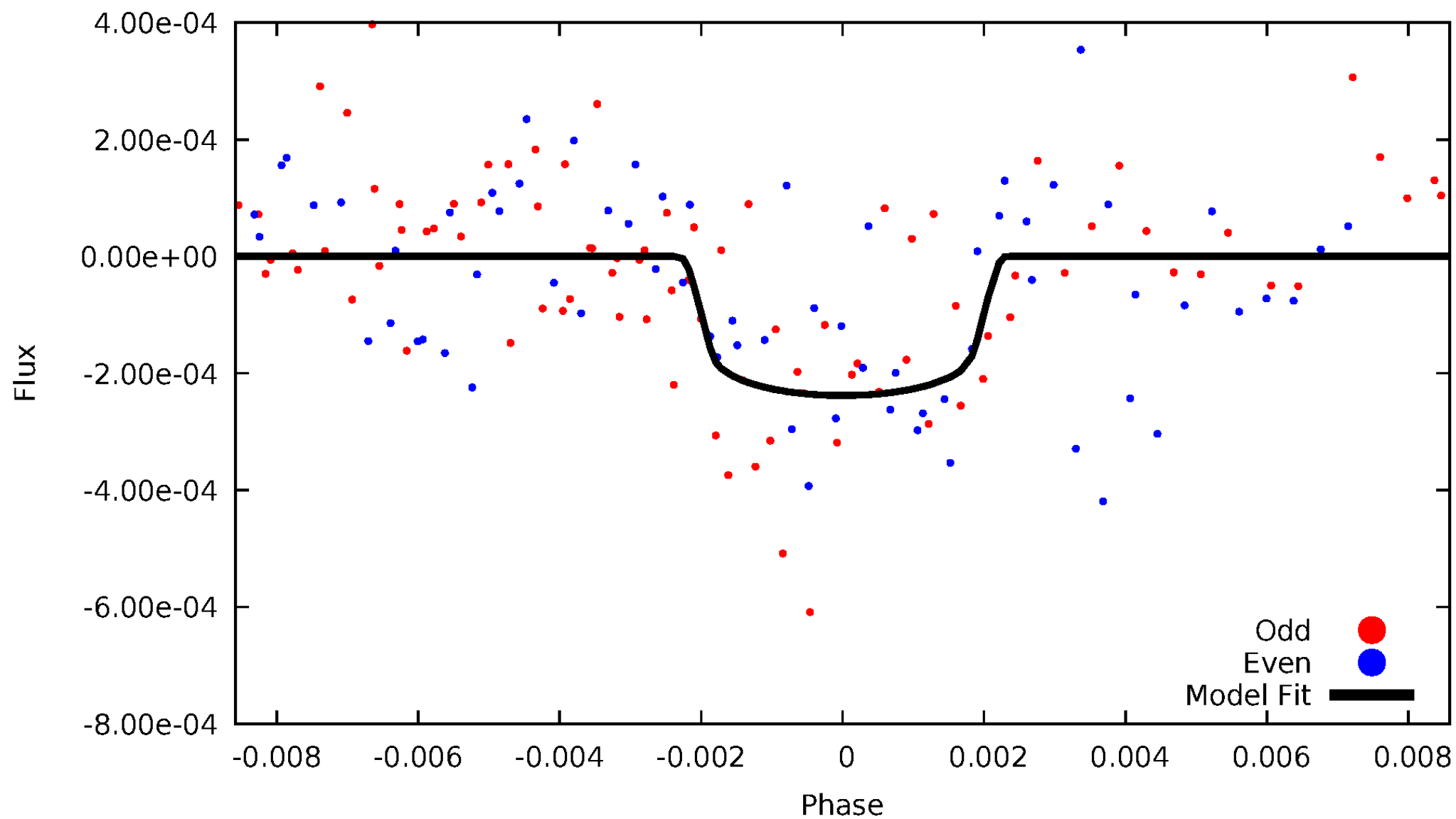


TCE 004375408-05



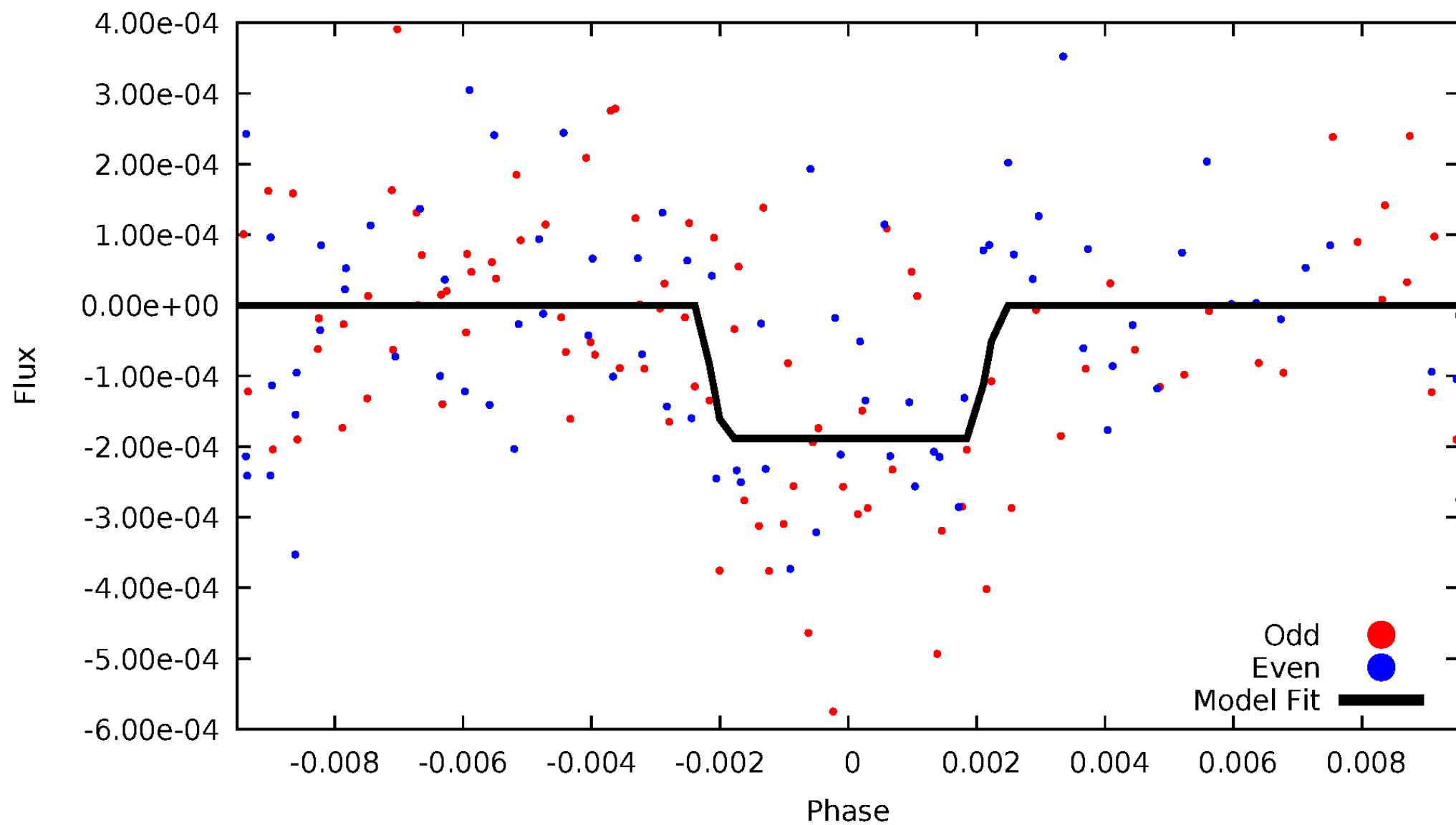
DV Odd/Even

TCE 004375408-05



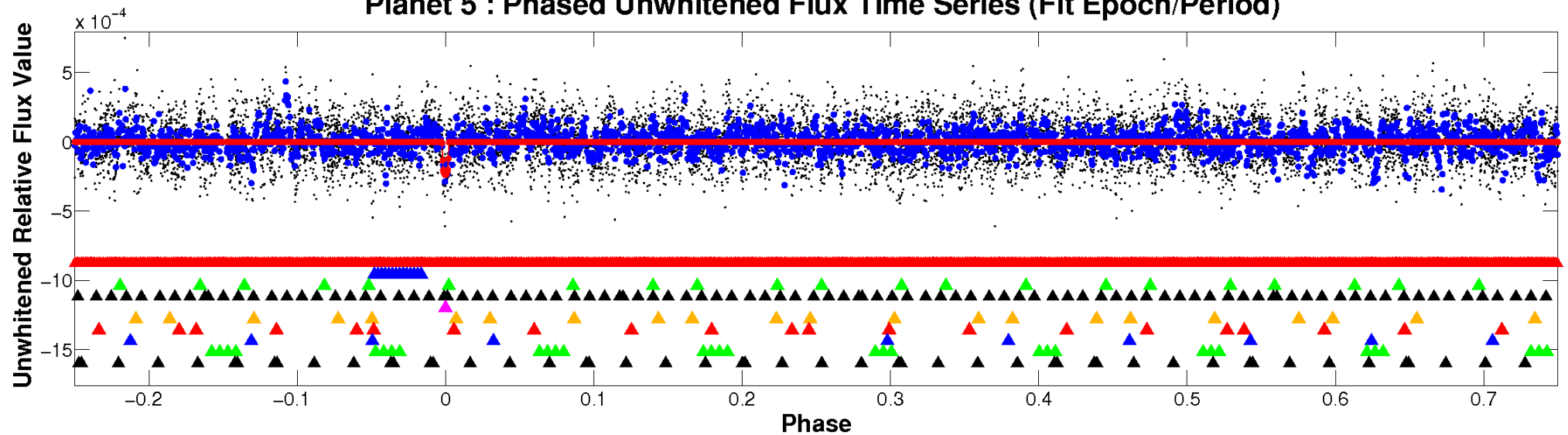
ALT Odd/Even

TCE 004375408-05

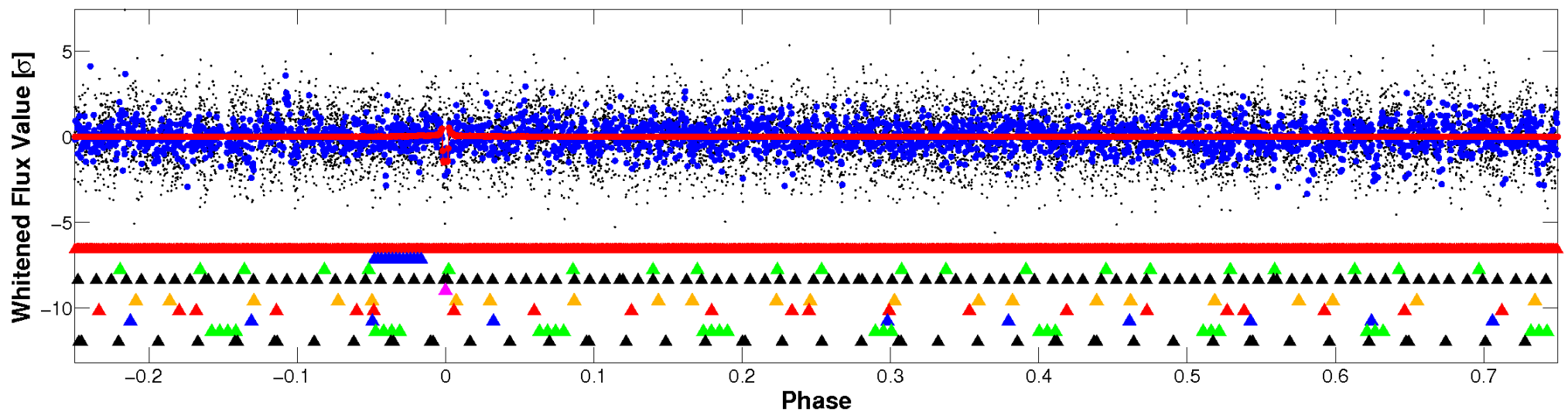


Non-Whitened Vs. Whitened Light Curve

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

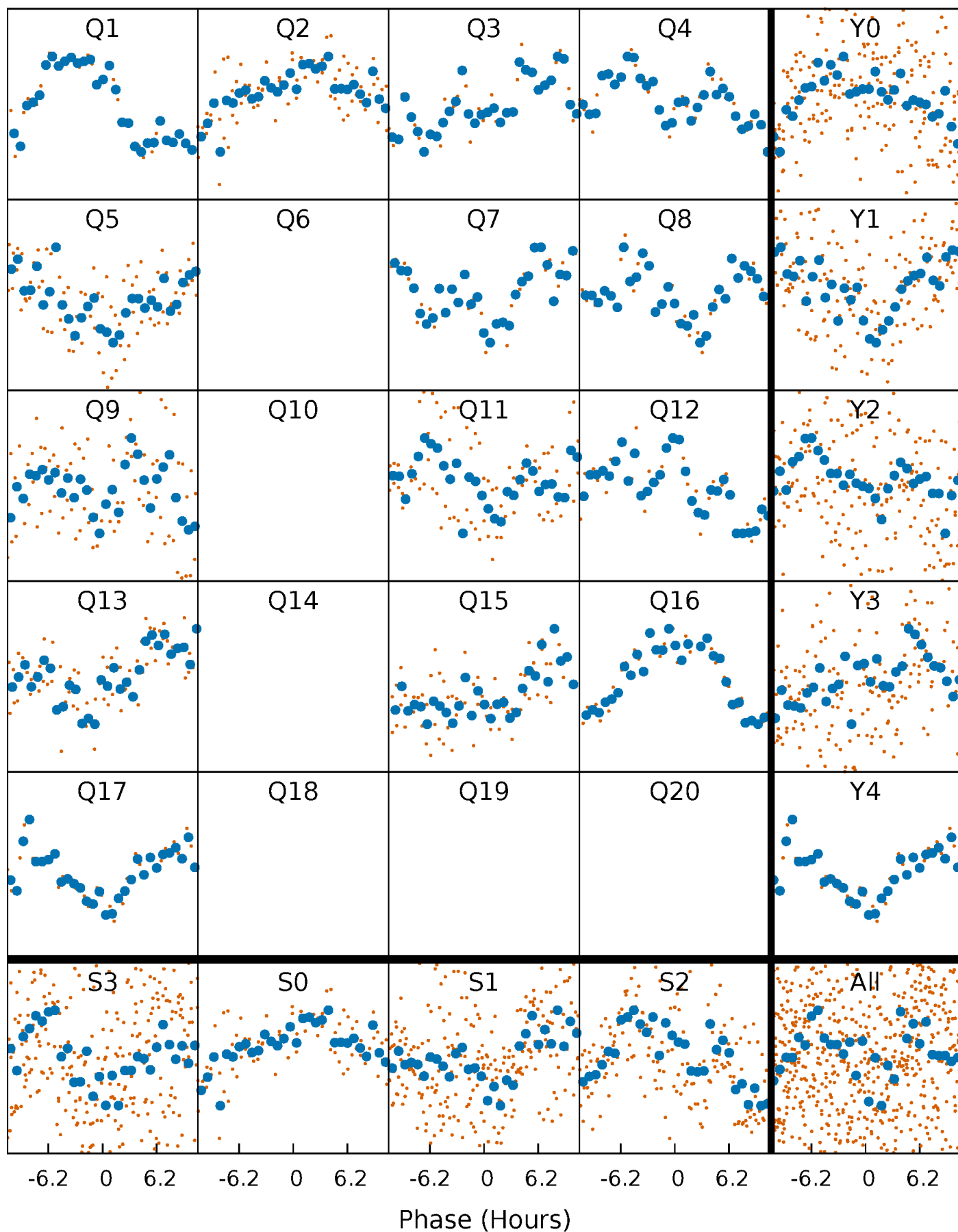


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



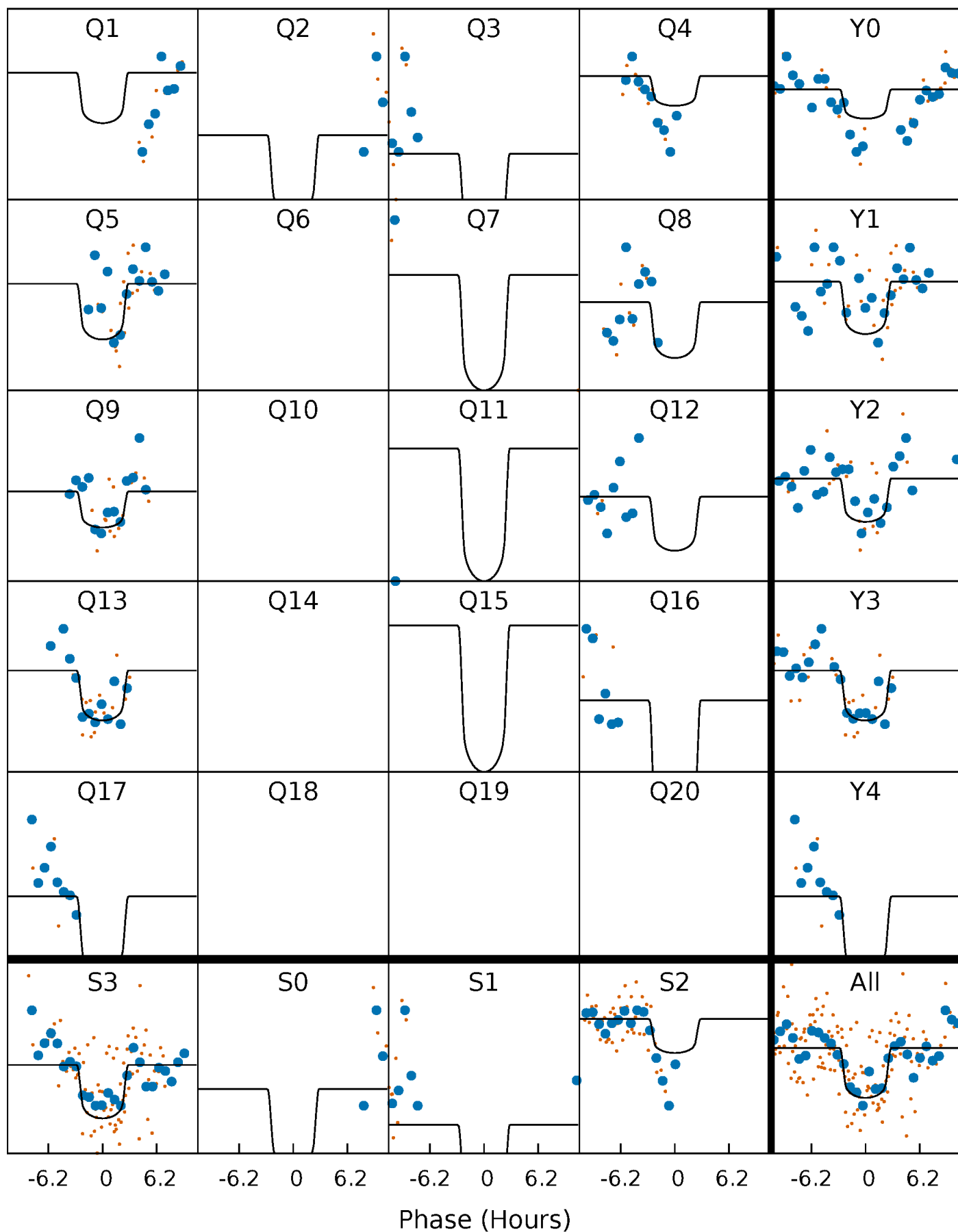
PDC Quarter-Phased Transit Curves

TCE 004375408-05 $P = 53.084762$ Days $T_0 = 138.448490$ (BKJD)



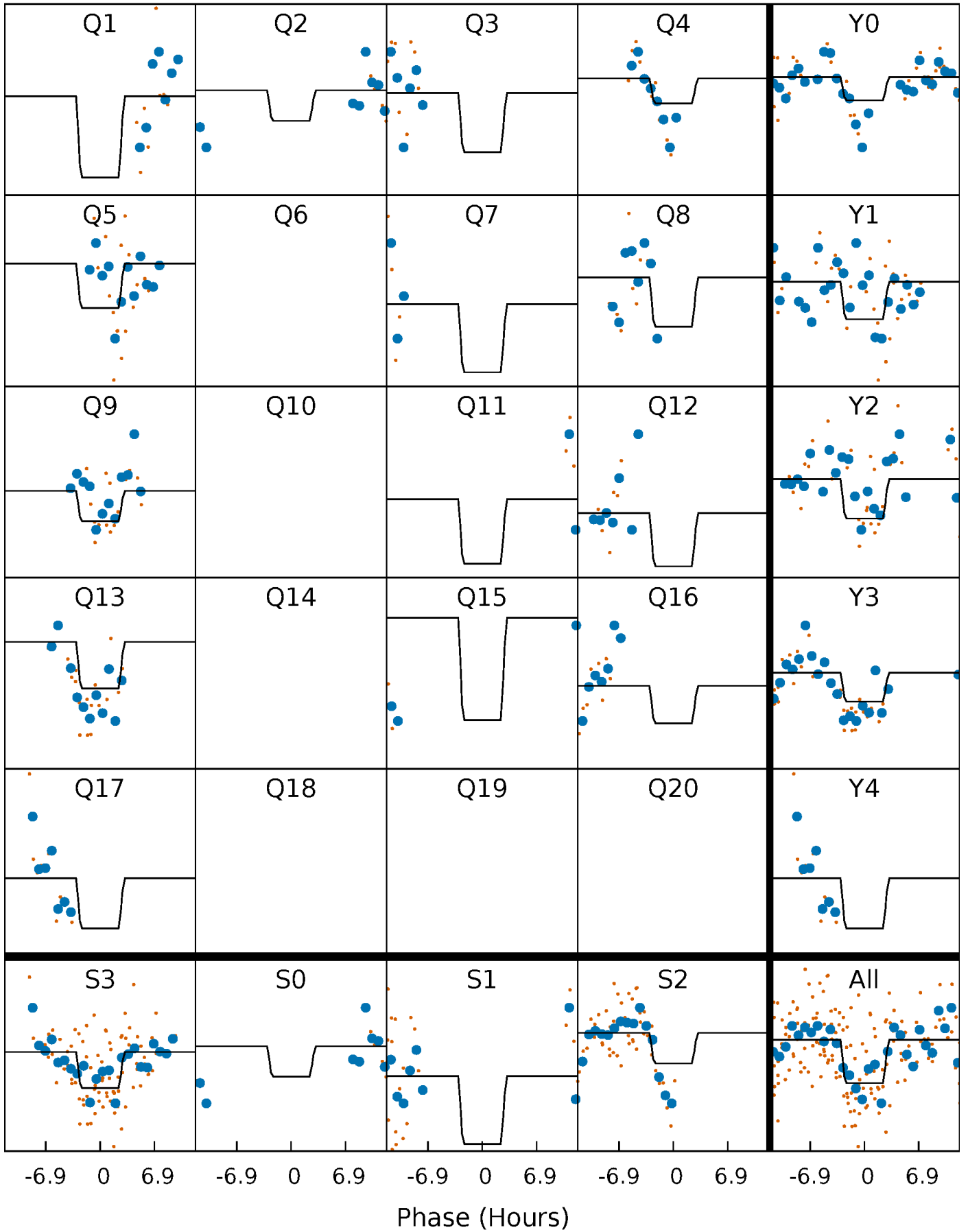
DV Quarter-Phased Transit Curves

TCE 004375408-05 $P = 53.084762$ Days $T_0 = 138.448490$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

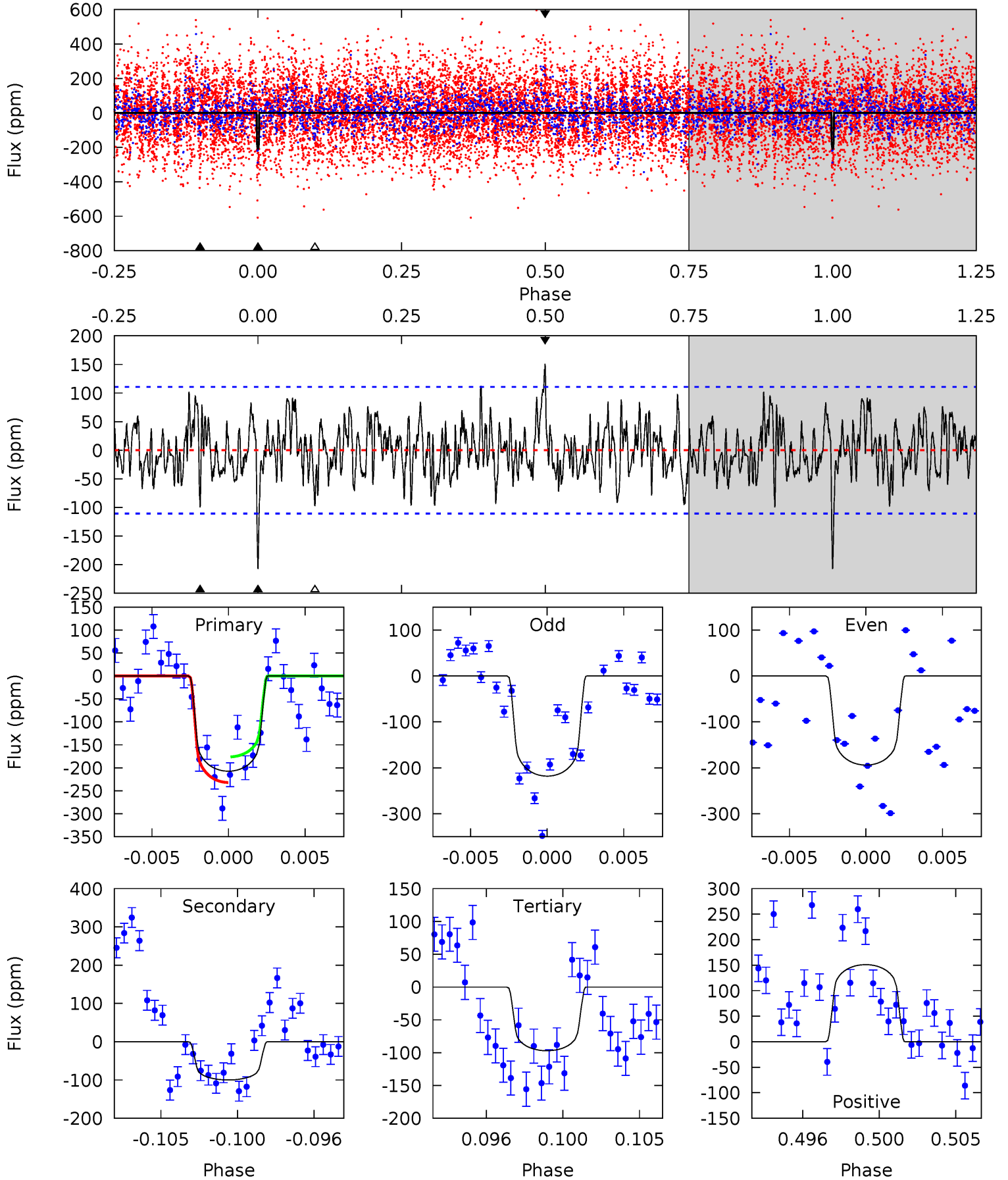
TCE 004375408-05 $P = 53.086212$ Days $T_0 = 138.429361$ (BKJD)



DV Model-Shift Uniqueness Test

004375408-05, P = 53.084762 Days, E = 85.363728 Days

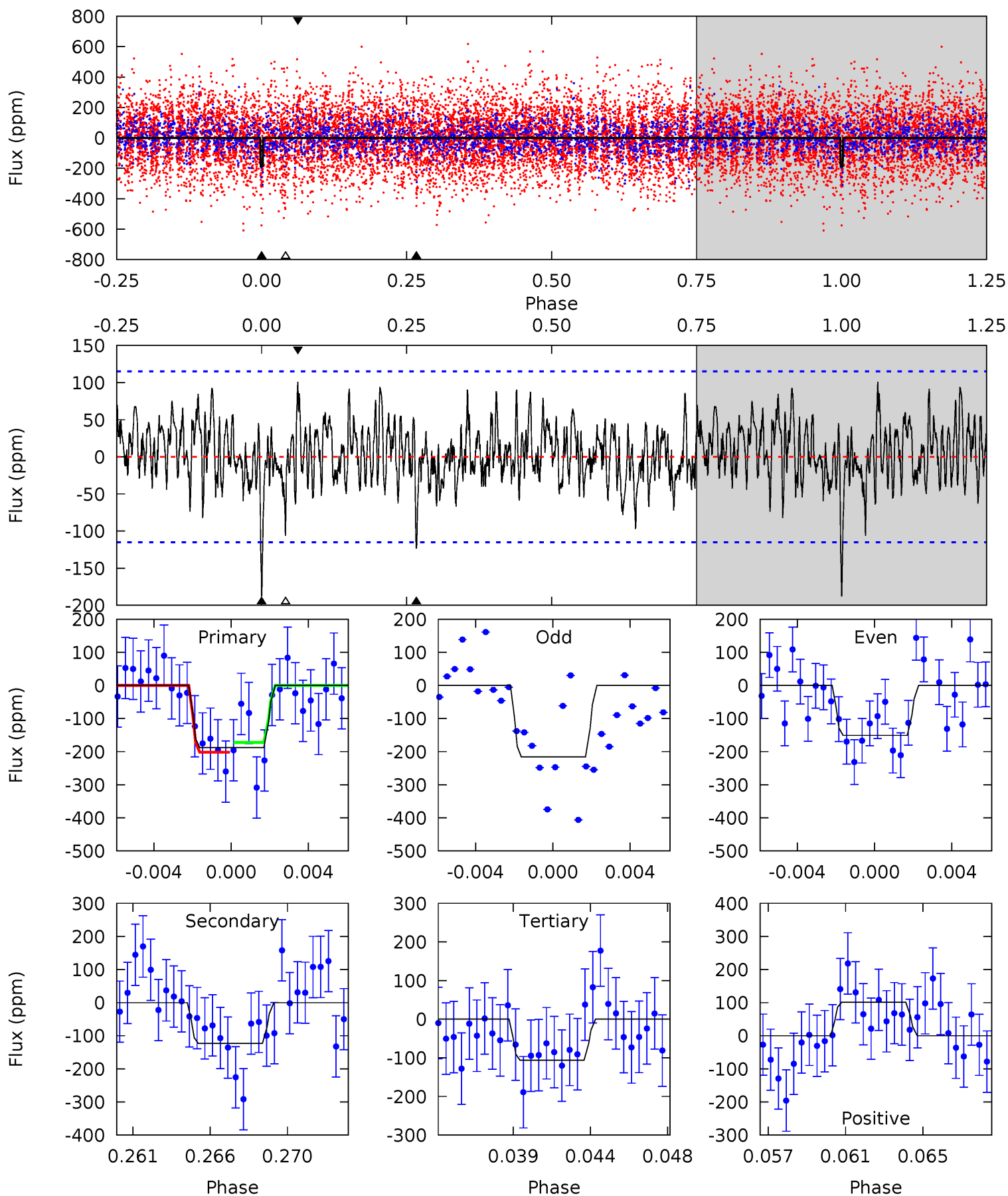
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.69	4.67	4.54	7.06	5.18	2.84	1.82	5.16	2.63	0.13	-2.40	0.56	1.05	0.42	1.29



Alt Model-Shift Uniqueness Test

004375408-05, P = 53.086212 Days, E = 85.343149 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.46	5.55	4.77	4.55	5.18	2.85	1.45	3.68	3.91	0.78	1.01	1.45	0.95	0.35	0.66



Stellar Parameters For KIC 004375408

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6416^{+181}_{-227}	$3.941^{+0.413}_{-0.138}$	$-0.420^{+0.300}_{-0.300}$	$1.887^{+0.448}_{-0.768}$	$1.133^{+0.169}_{-0.188}$	$0.237^{+0.824}_{-0.092}$
	+3%/-4%	+10%/-4%	+71%/-71%	+24%/-41%	+15%/-17%	+347%/-39%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004375408-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-100 ± 21	$3.11^{+1.26}_{-1.28}$	992^{+78}_{-111}	5091^{+1257}_{-609}	470^{+929}_{-238}
Alt.	-123 ± 22	$2.66^{+1.34}_{-1.29}$	985^{+85}_{-102}	5704^{+2286}_{-901}	789^{+2163}_{-434}

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 $A_{obs} \gg 1.0$

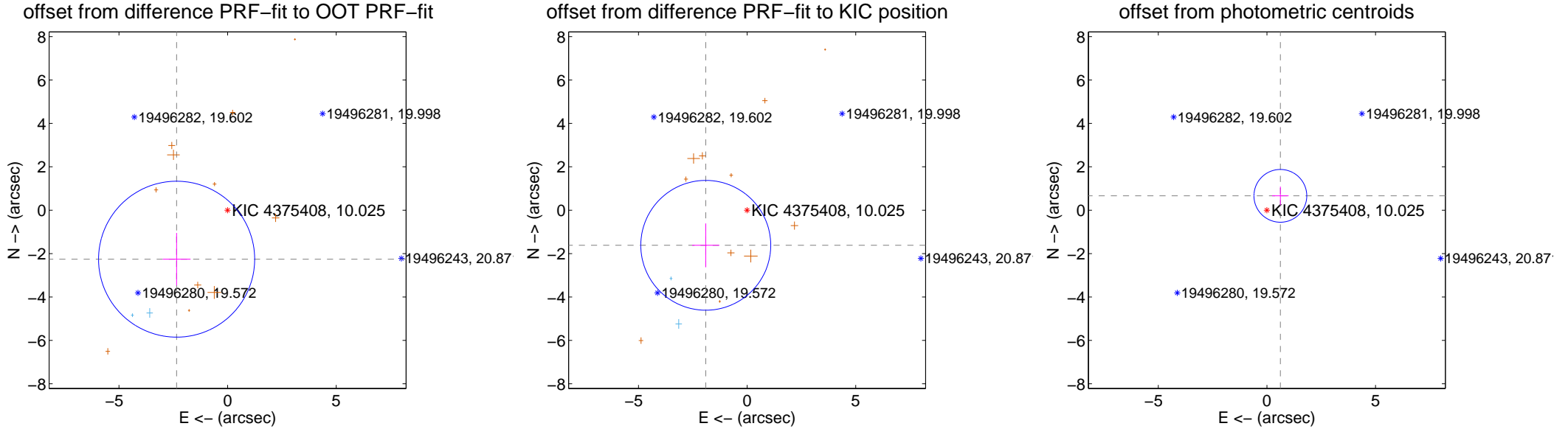
DV Centroid Data

Supplemental centroid analysis for 004375408-05. **Kepler magnitude: 10.03.** Transit SNR 9.43

There are 2 quarters with good PRF difference image offsets

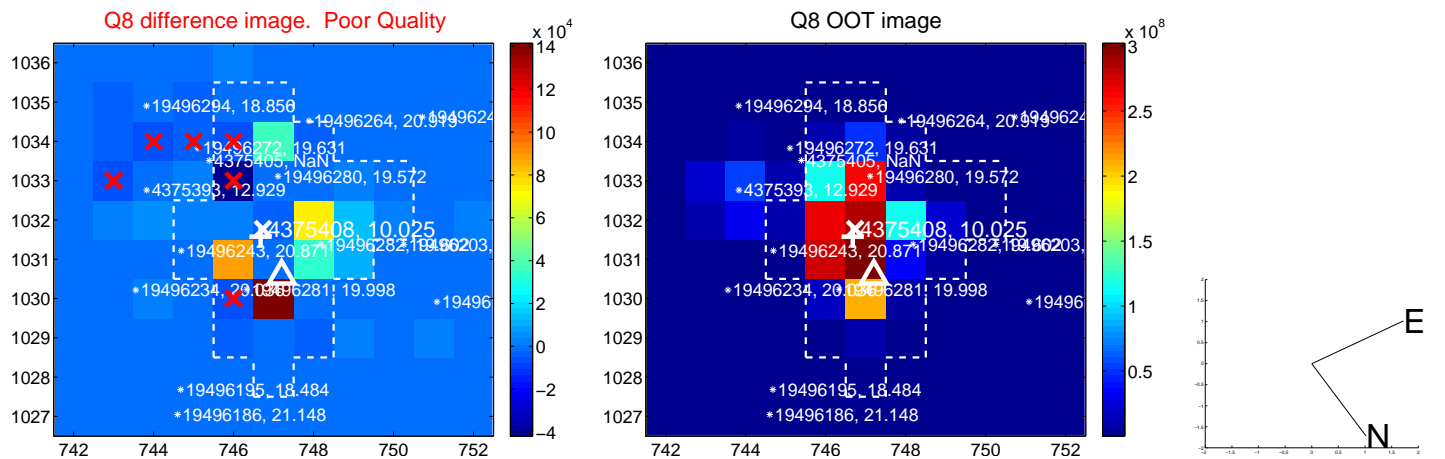
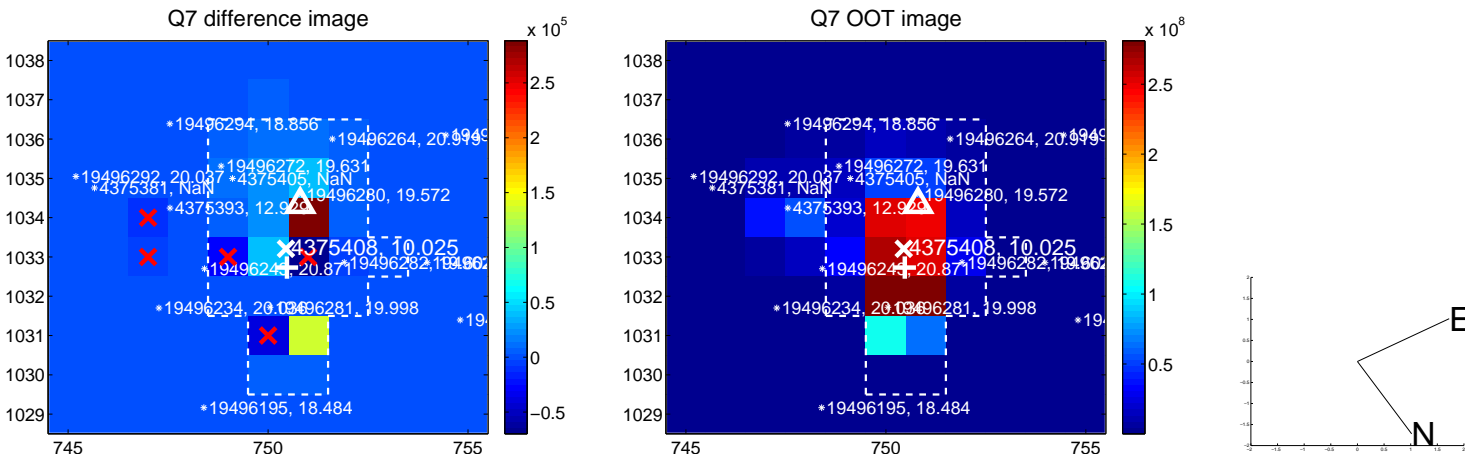
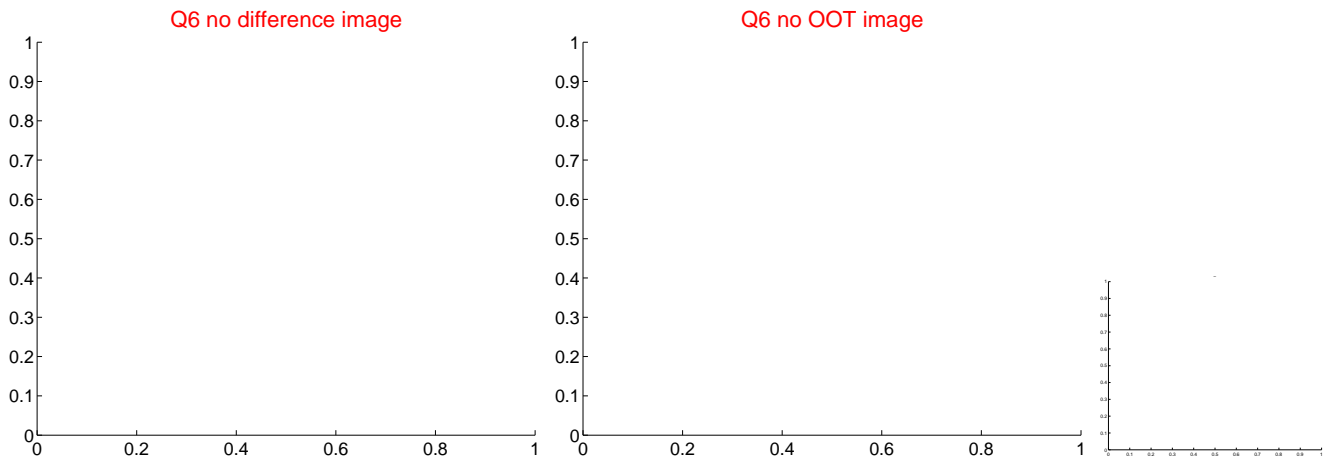
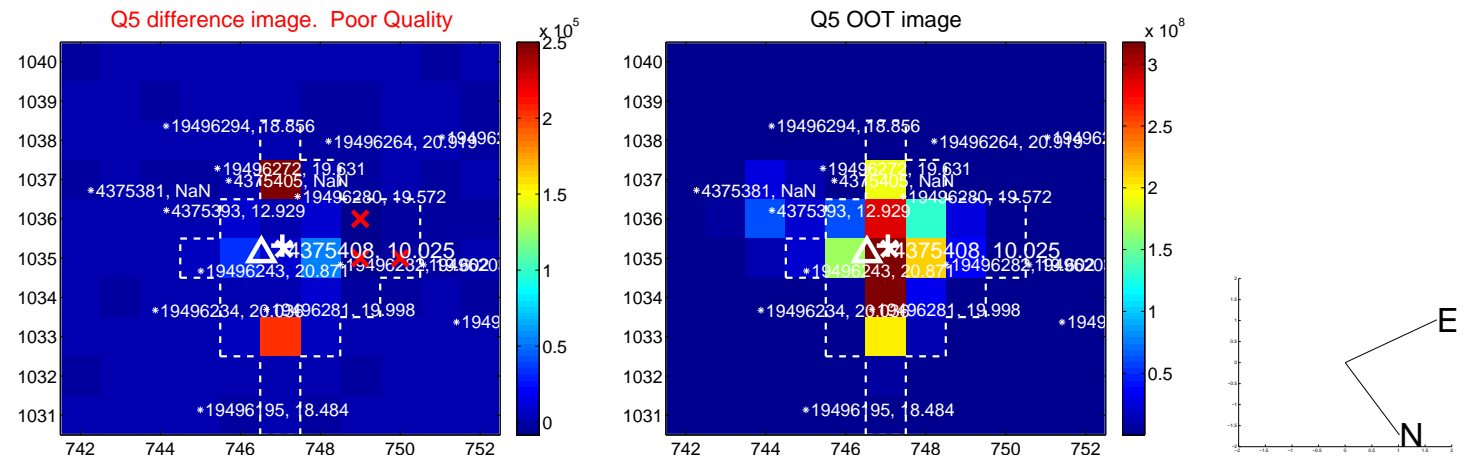
The direct PRF centroid is offset from the target star catalog position by about 0.70 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.257 ± 1.198	2.72	2.348 ± 0.640	-2.258 ± 1.210
PRF-fit source offset from KIC position	2.499 ± 0.997	2.51	1.905 ± 0.626	-1.618 ± 1.010
photometric centroid source offset	0.91 ± 0.41	2.24	-0.62 ± 0.38	0.66 ± 0.43

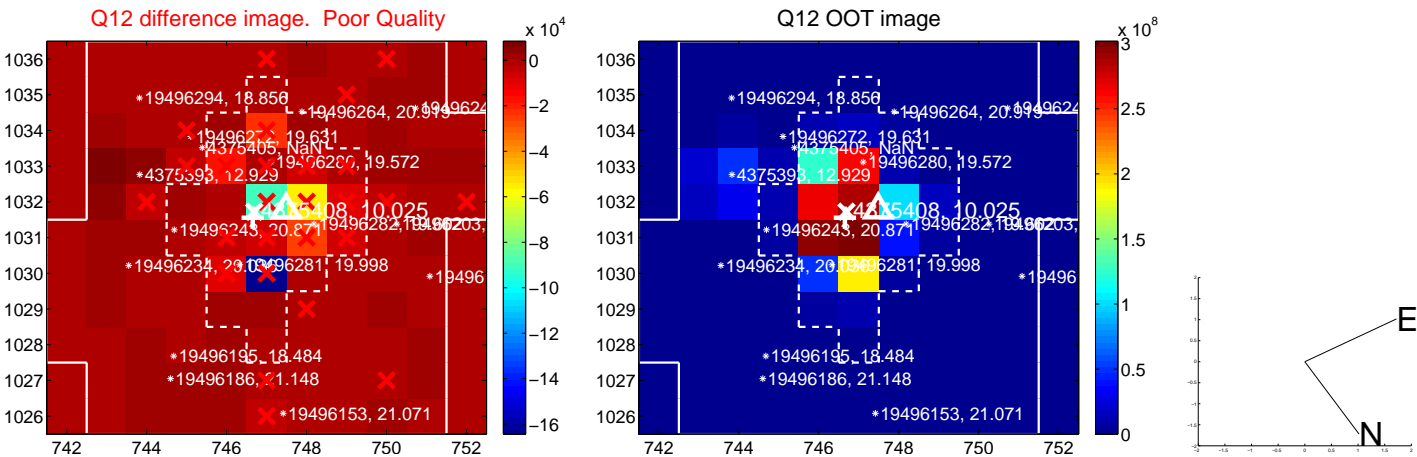
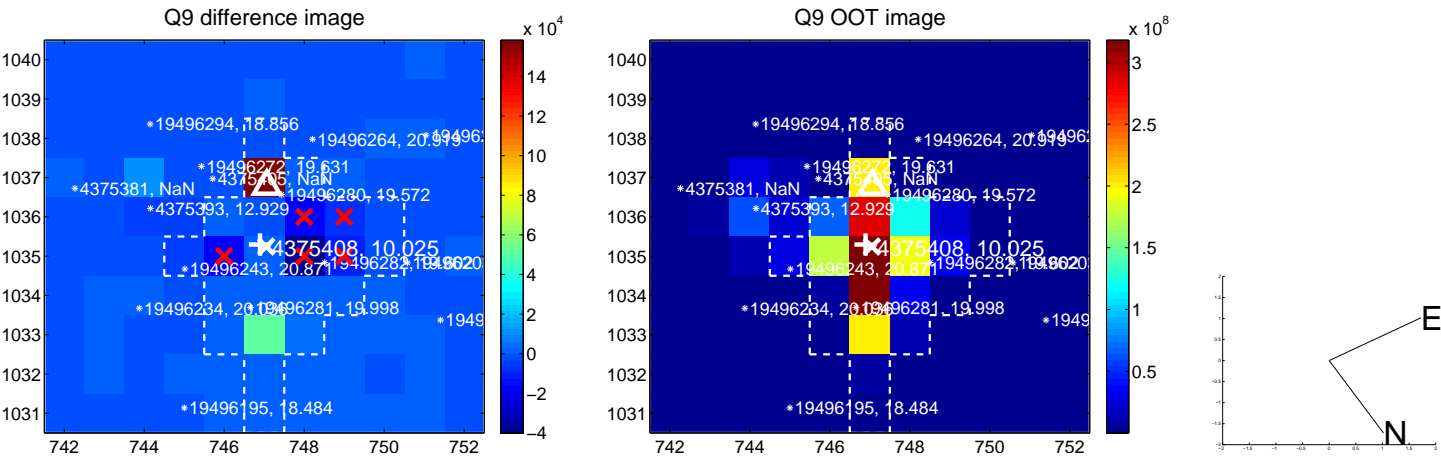


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

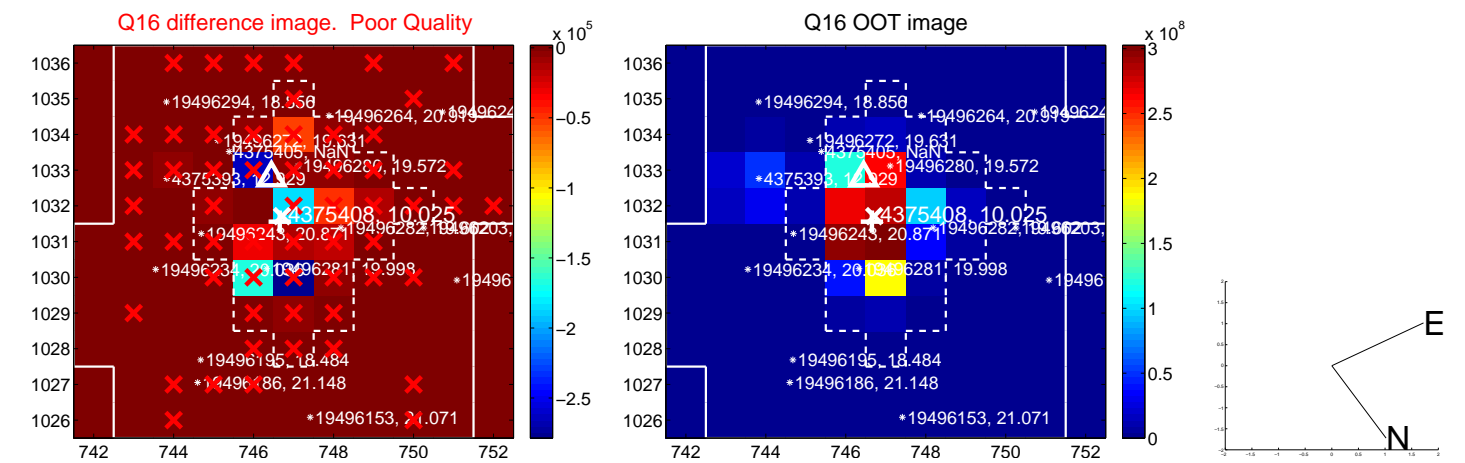
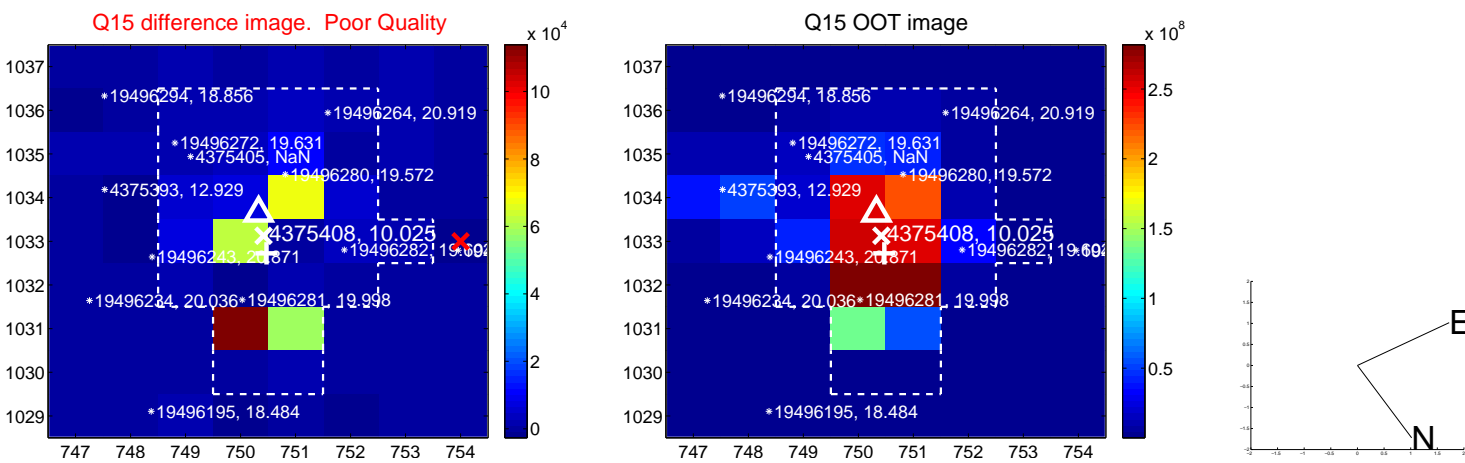
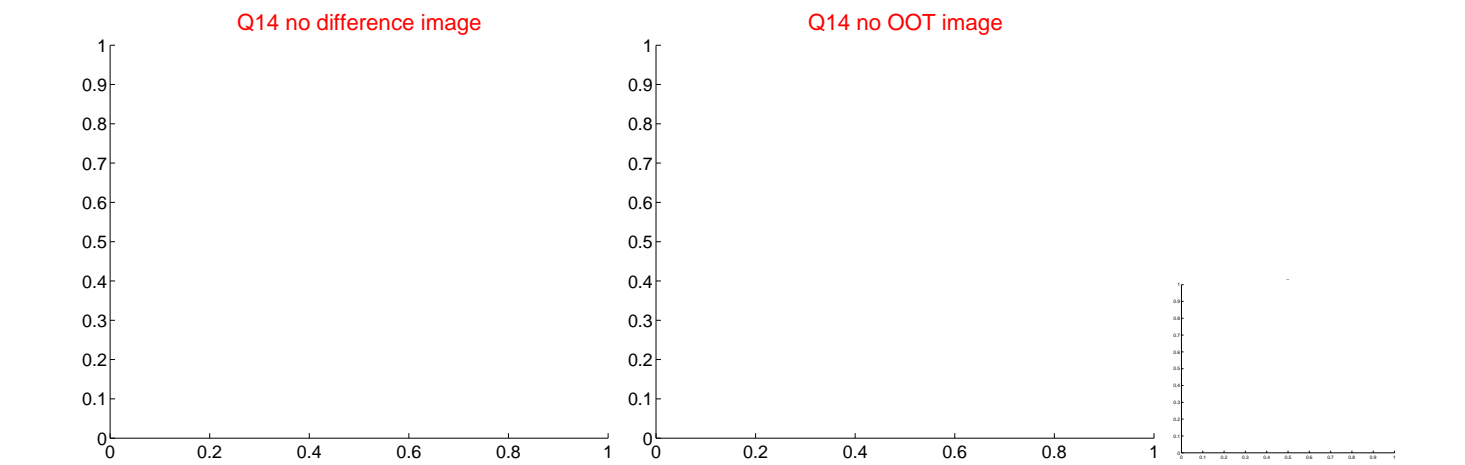
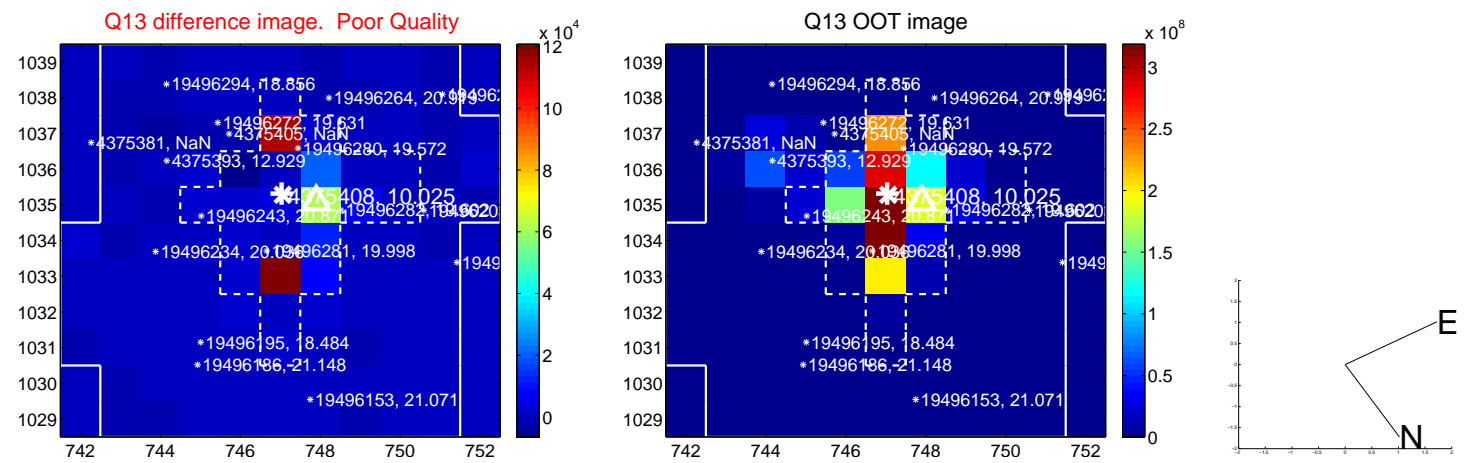
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



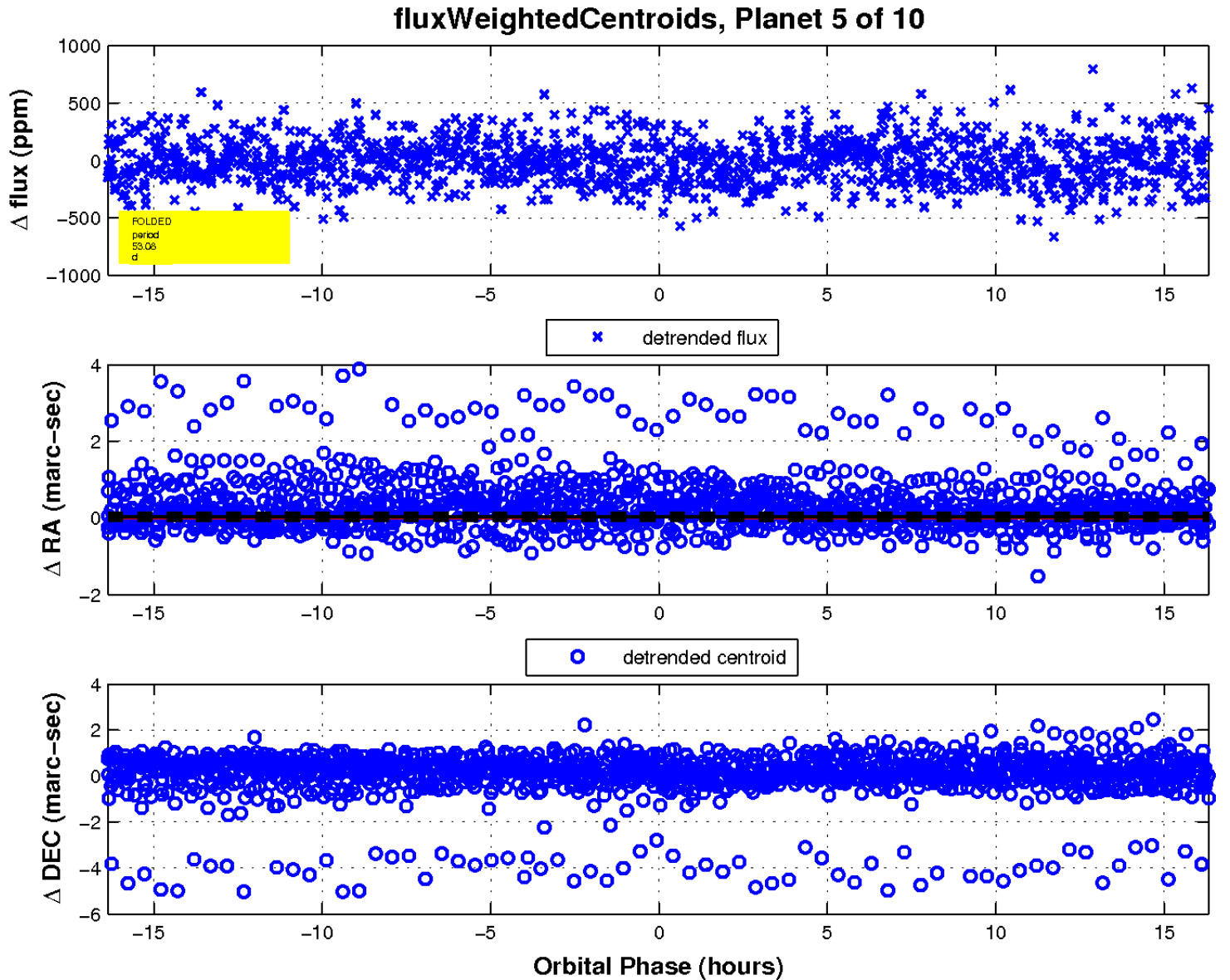
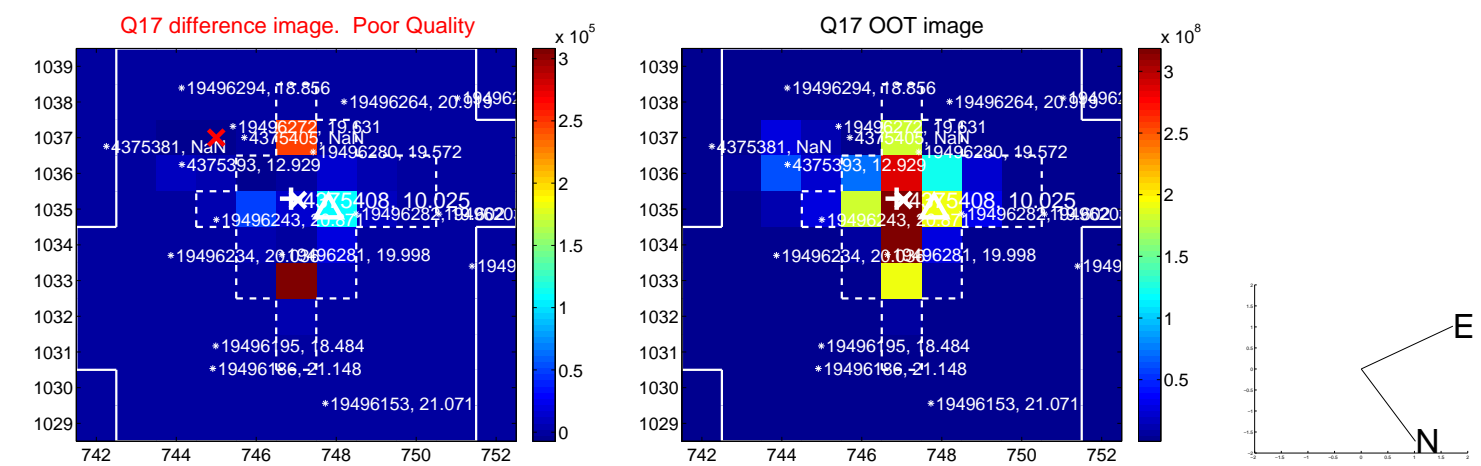
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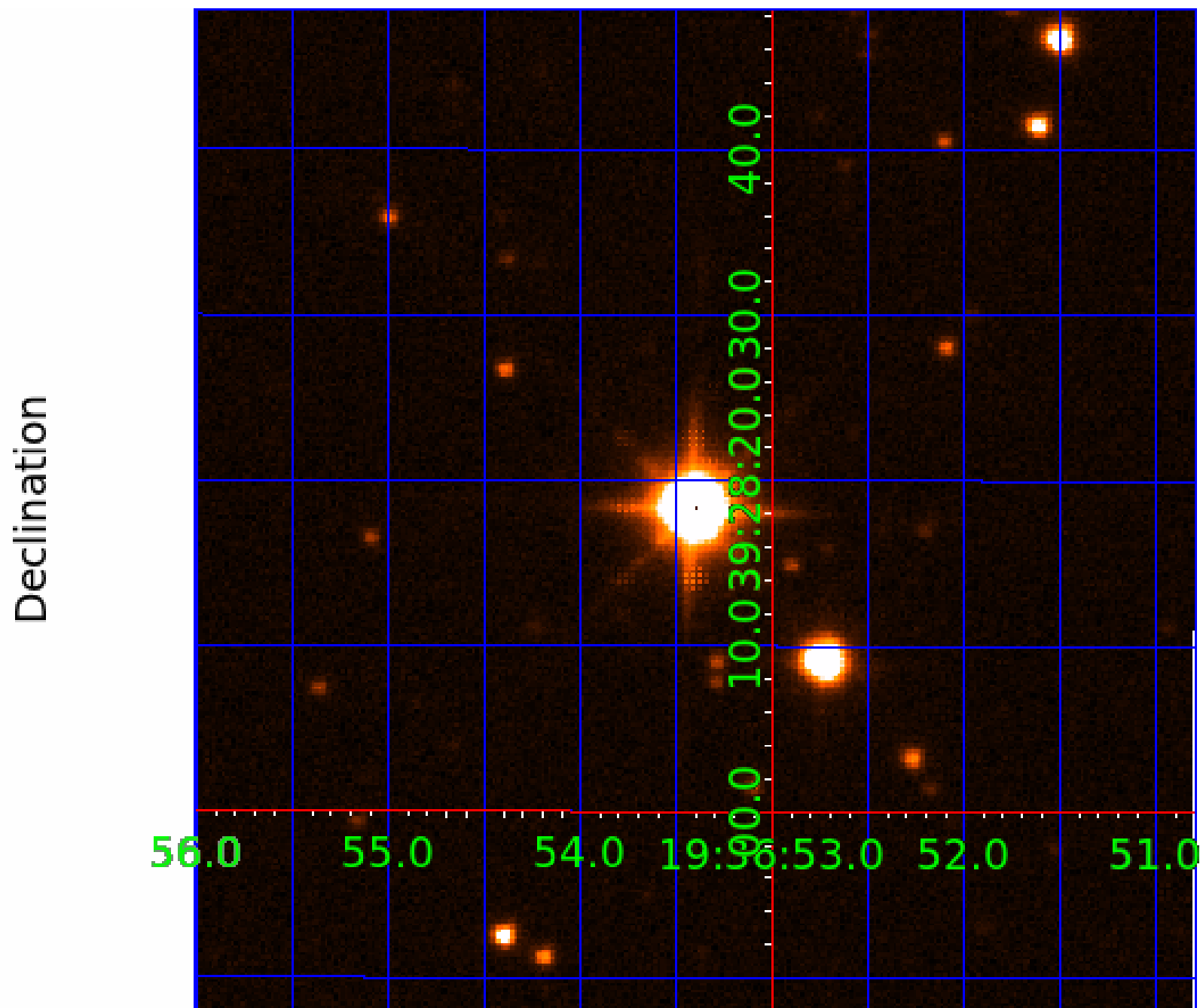
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image



Q1-17 DR25 TCE Parameters

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004375408-06	OBS	No	64.546702	187.689827	258.0	4.142	9.4	8.7	1.89	6416	3.51	50.12
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004375408-09	OBS	No	47.218486	147.679425	263.0	2.735	9.2	8.9	1.89	6416	3.58	76.03
004375408-10	OBS	No	29.333870	132.422001	232.7	2.287	9.1	10.2	1.89	6416	3.33	143.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004375408-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004375408-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004375408-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

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

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

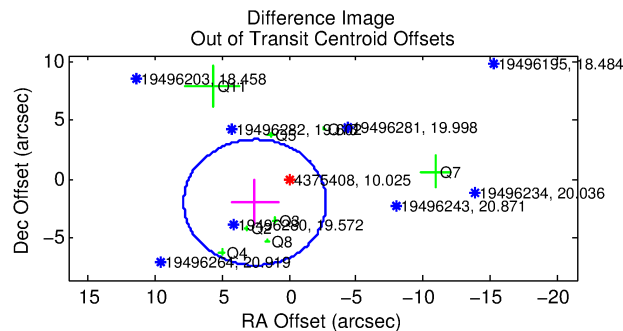
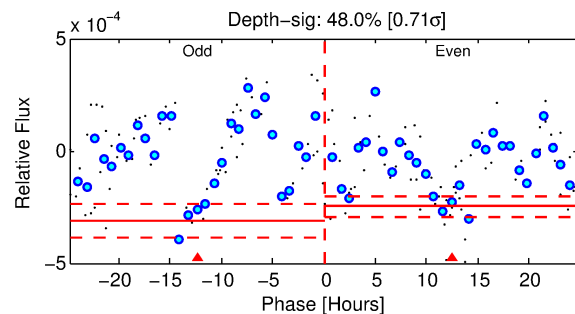
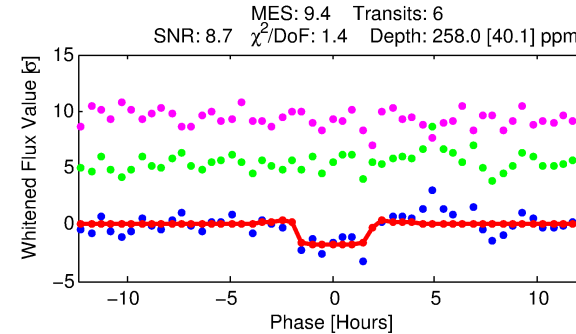
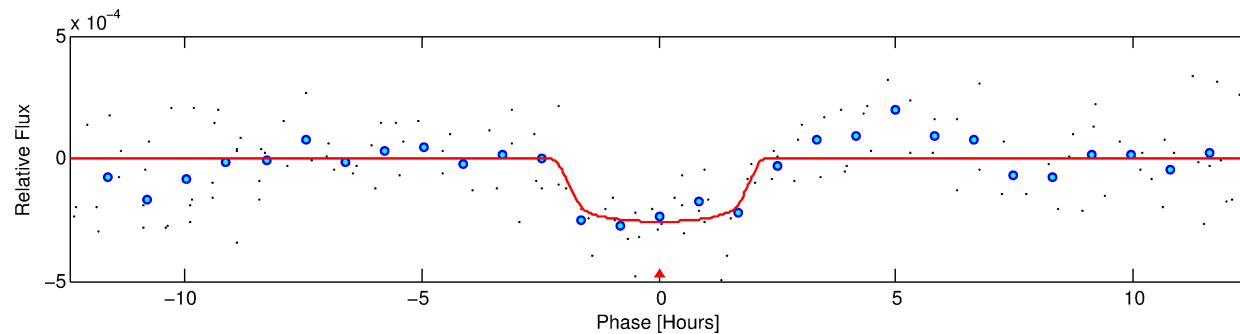
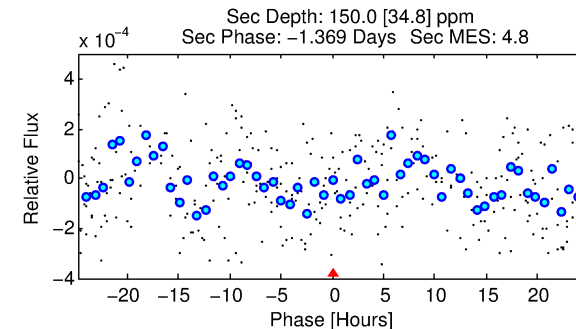
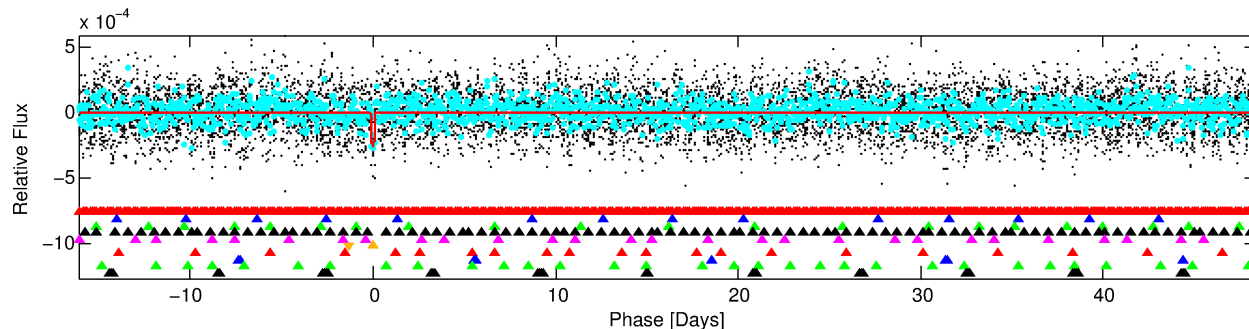
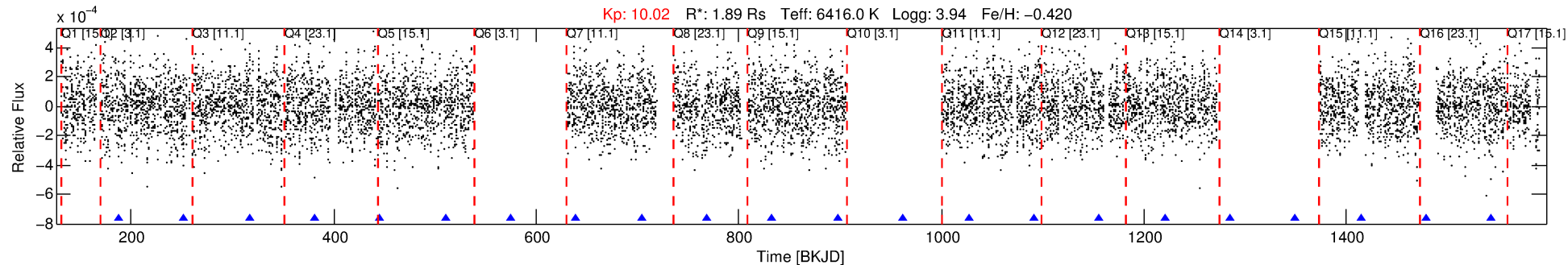
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004375408-06

No Significant Match Found

DV One-Page Summary

KIC: 4375408 Candidate: 6 of 10 Period: 64.547 d



DV Fit Results:

Period = 64.54670 [0.00110] d
Epoch = 187.6898 [0.0111] BKJD
Rp/R* = 0.0171 [0.0083]
a/R* = 58.87 [158.65]
b = 0.89 [0.65]
Seff = 50.11 [35.28]
Teq = 678 [119] K
Rp = 3.51 [2.23] Re
a = 0.3284 [0.1370] AU
Ag = 721.89 [877.55] [0.82σ]
Teffp = 5437 [1374] K [3.45σ]

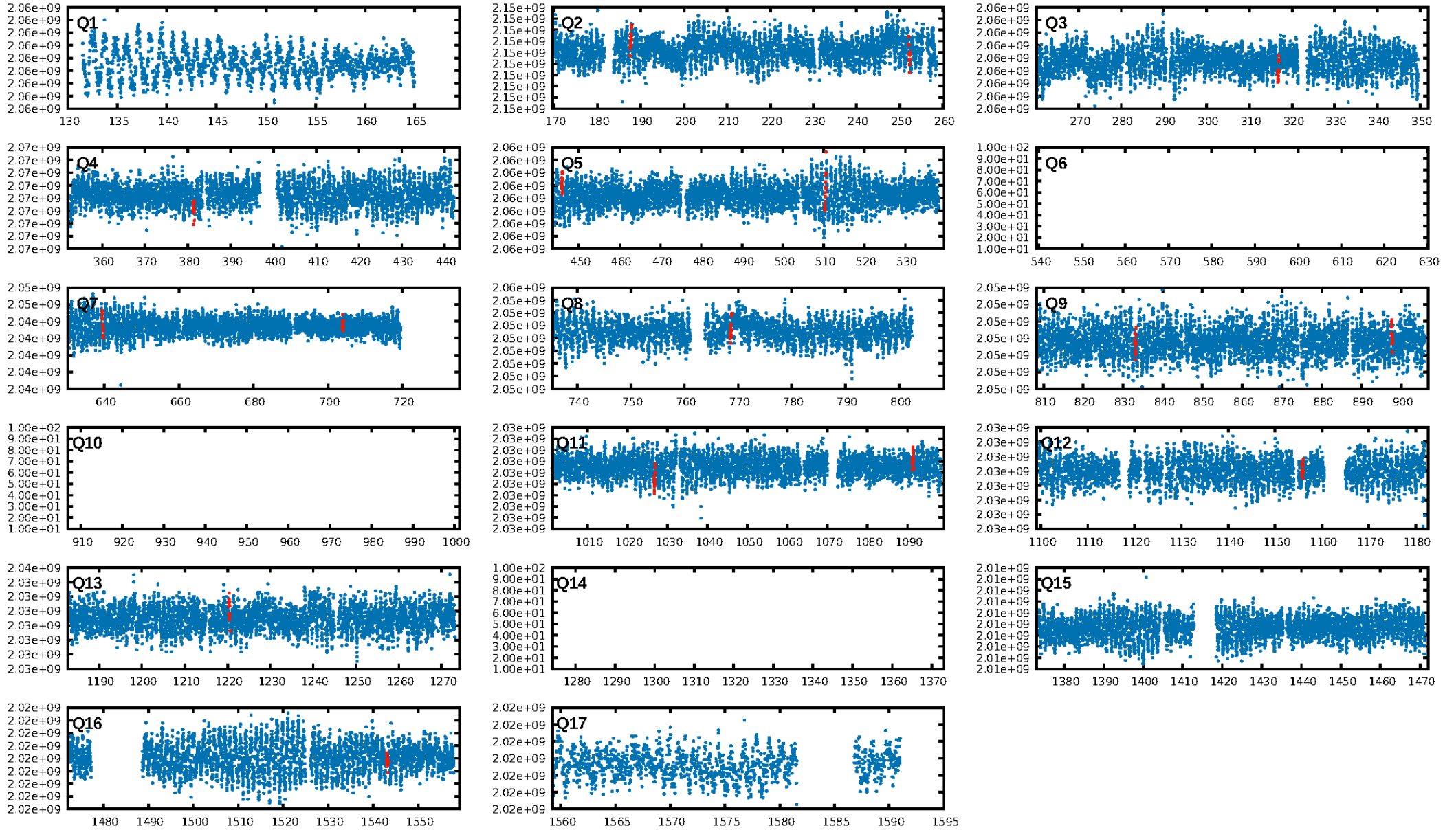
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [40.11σ]
LongPeriod-sig: 100.0% [21.70σ]
ModelChiSquare2-sig: 66.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 1.001 arcsec [2.32σ]
OotOffset-rm: 3.209 arcsec [1.81σ]
KicOffset-rm: 2.425 arcsec [1.26σ]
OotOffset-st: 1/3/3/1 [8]
KicOffset-st: 1/3/3/1 [8]
DiffImageQuality-fgm: 0.38 [3/8]
DiffImageOverlap-fno: 0.00 [0/9]

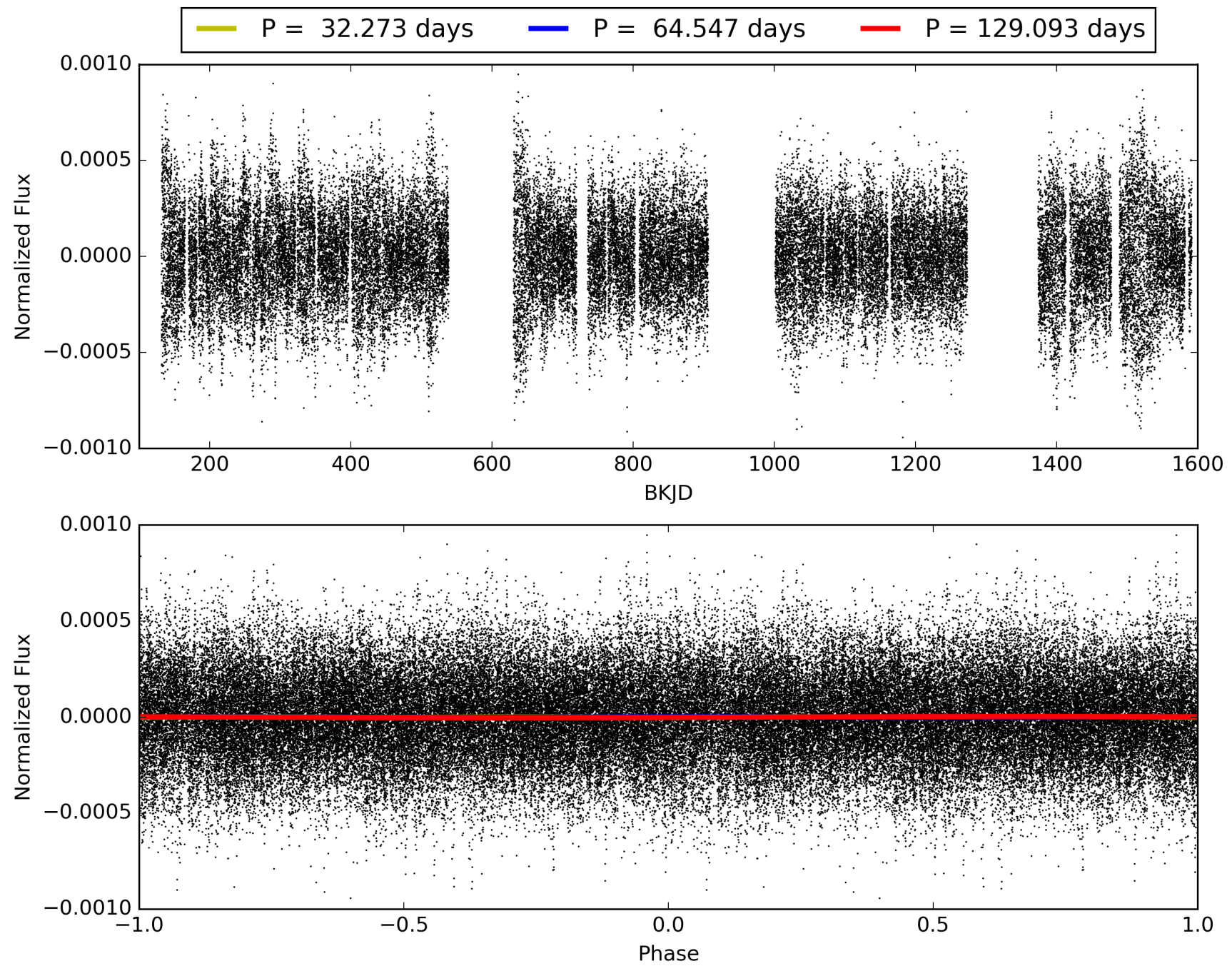
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:58:59 Z

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

TCE 004375408-06, PDC Light Curves

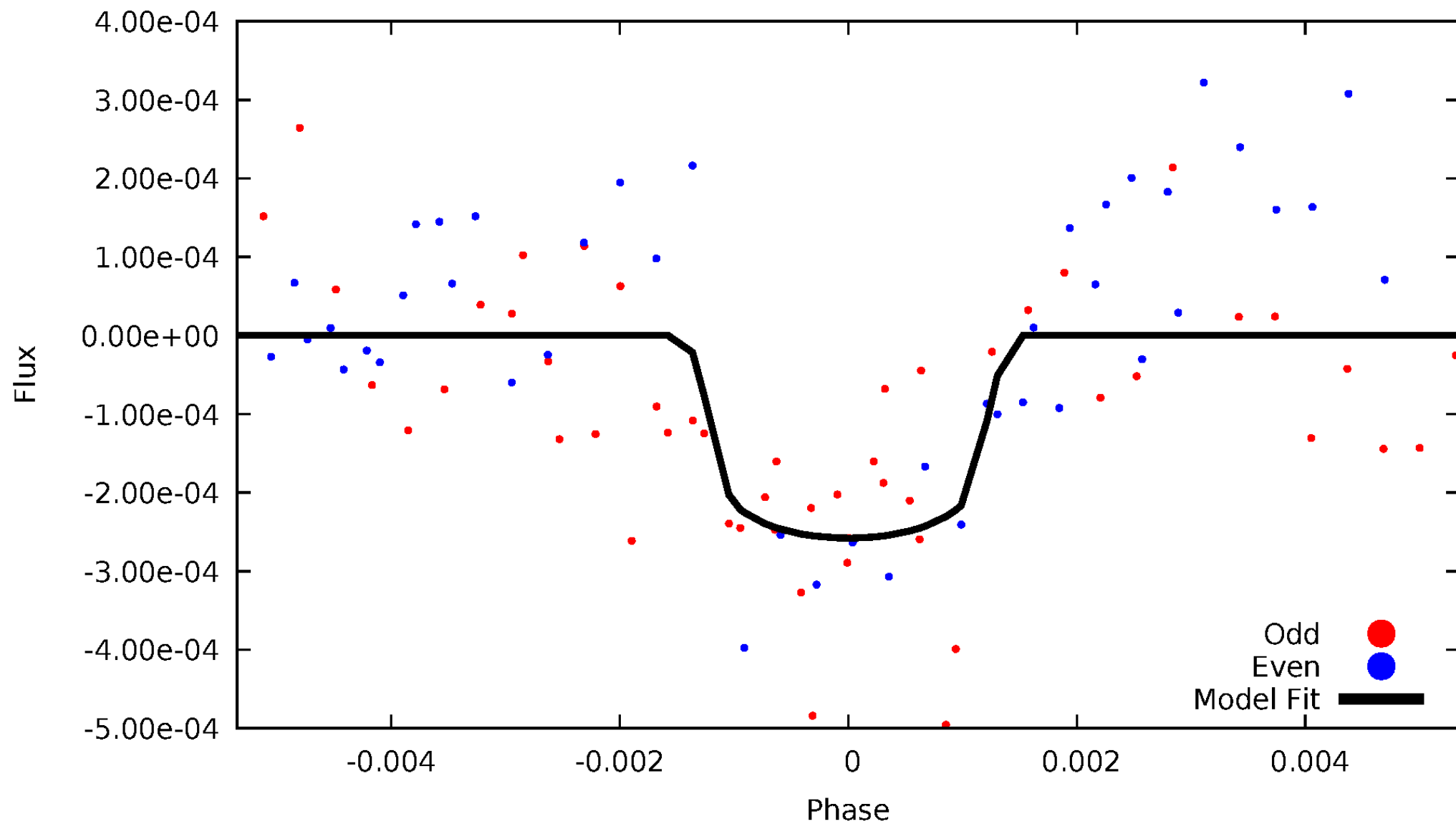


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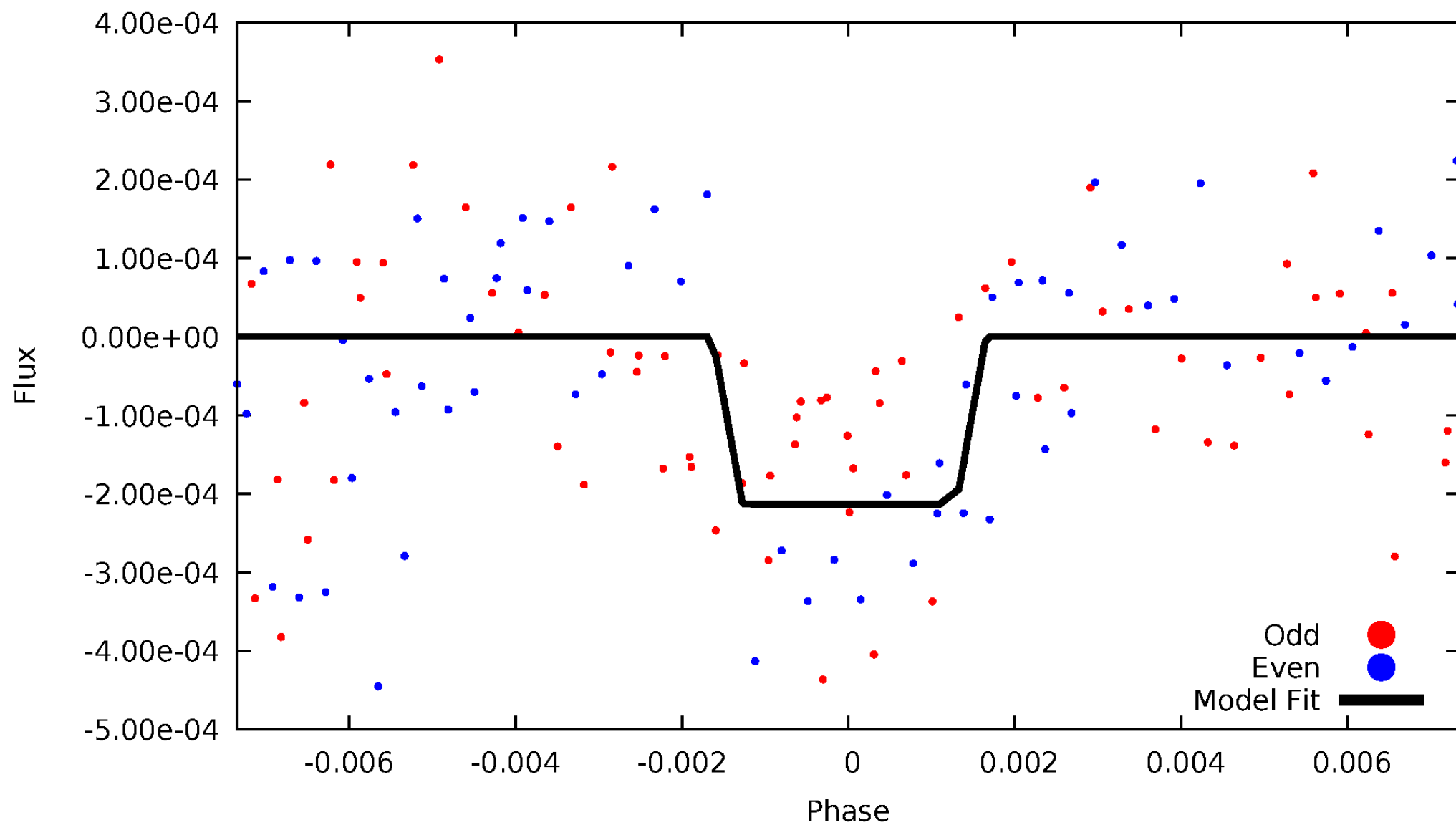
DV Odd/Even

TCE 004375408-06



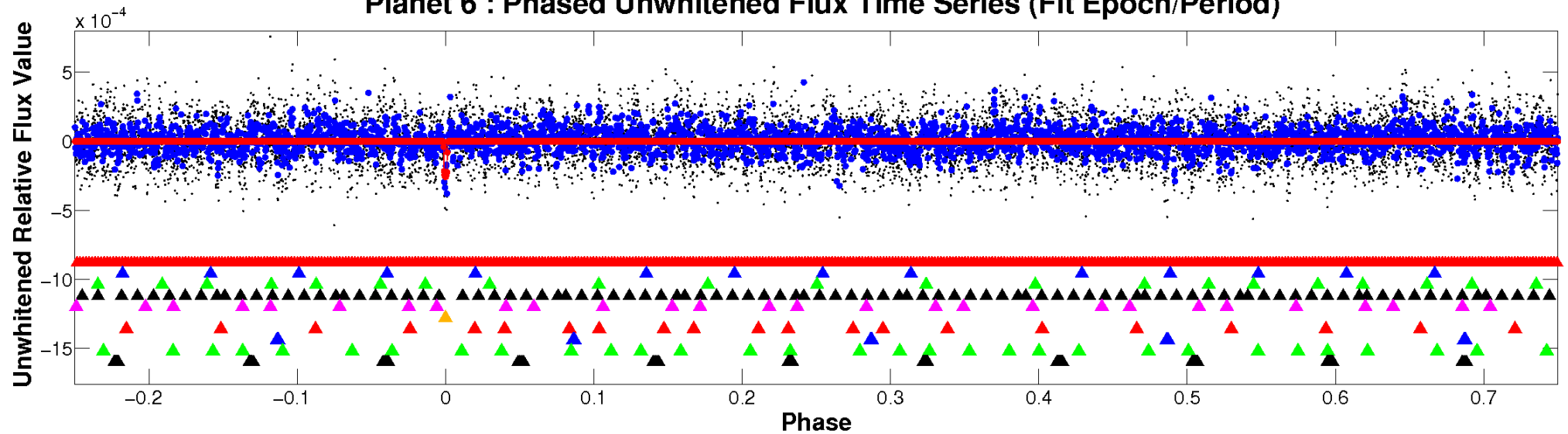
ALT Odd/Even

TCE 004375408-06

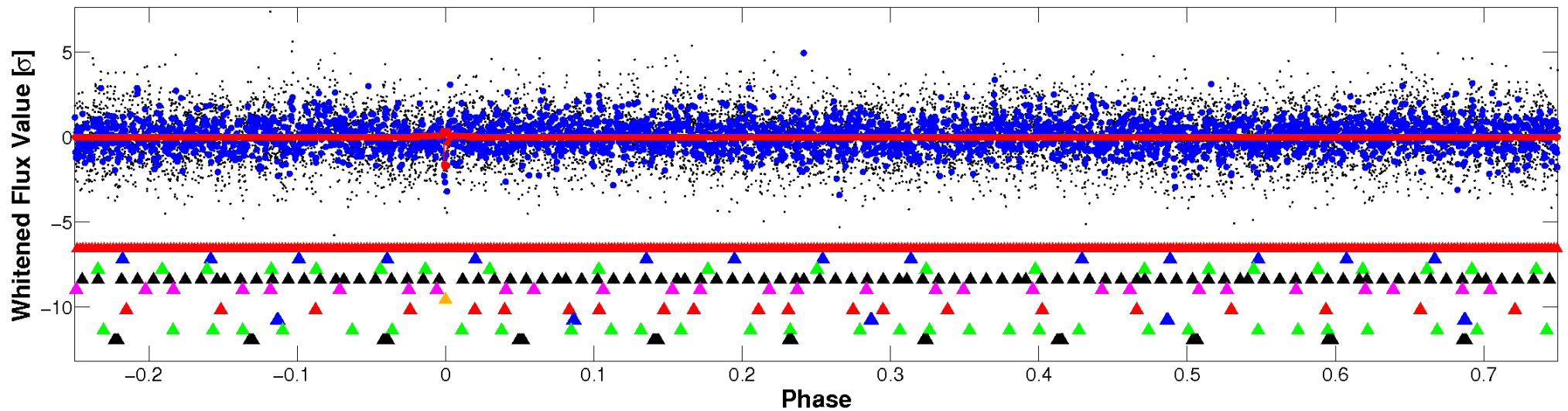


Non-Whitened Vs. Whitened Light Curve

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

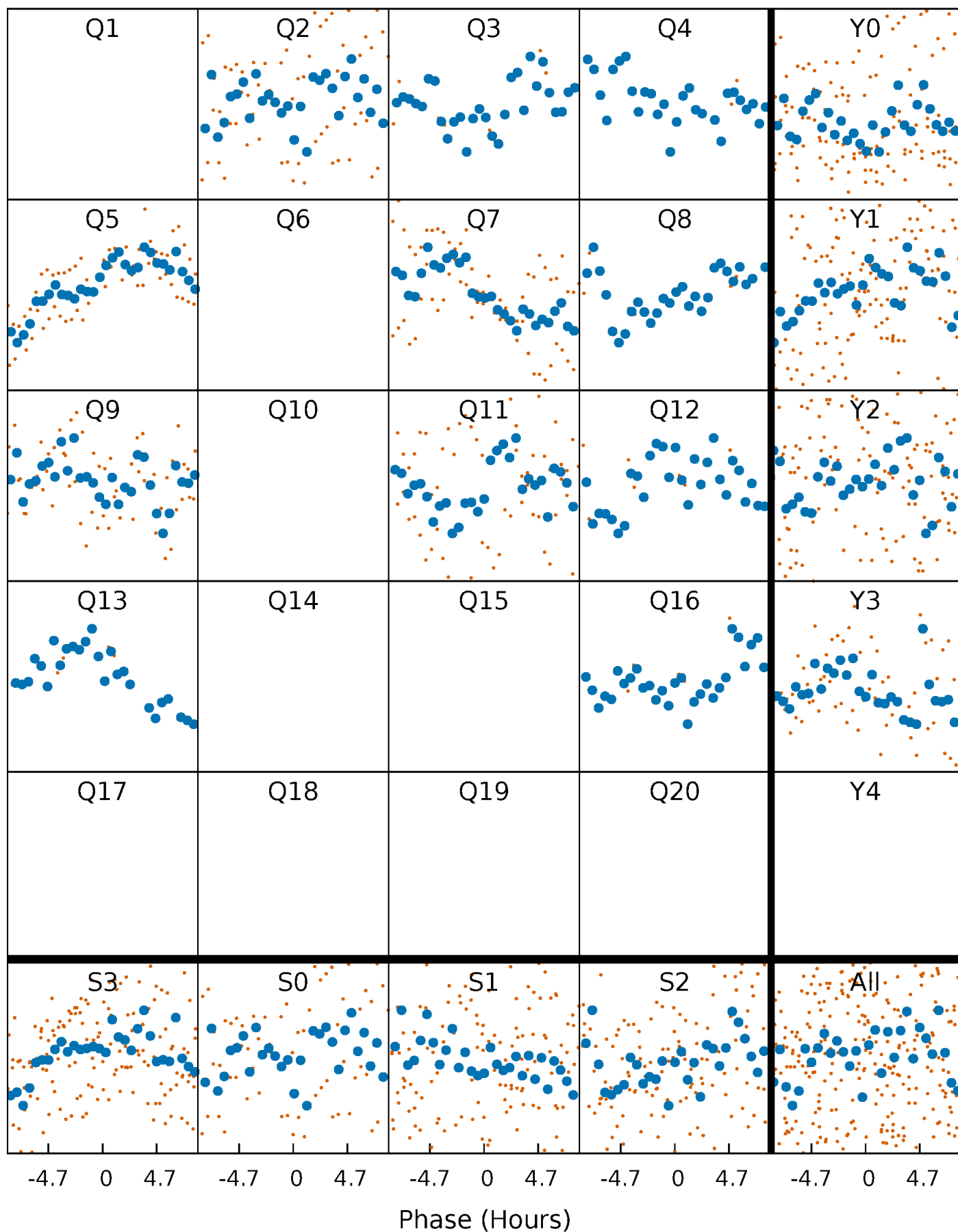


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



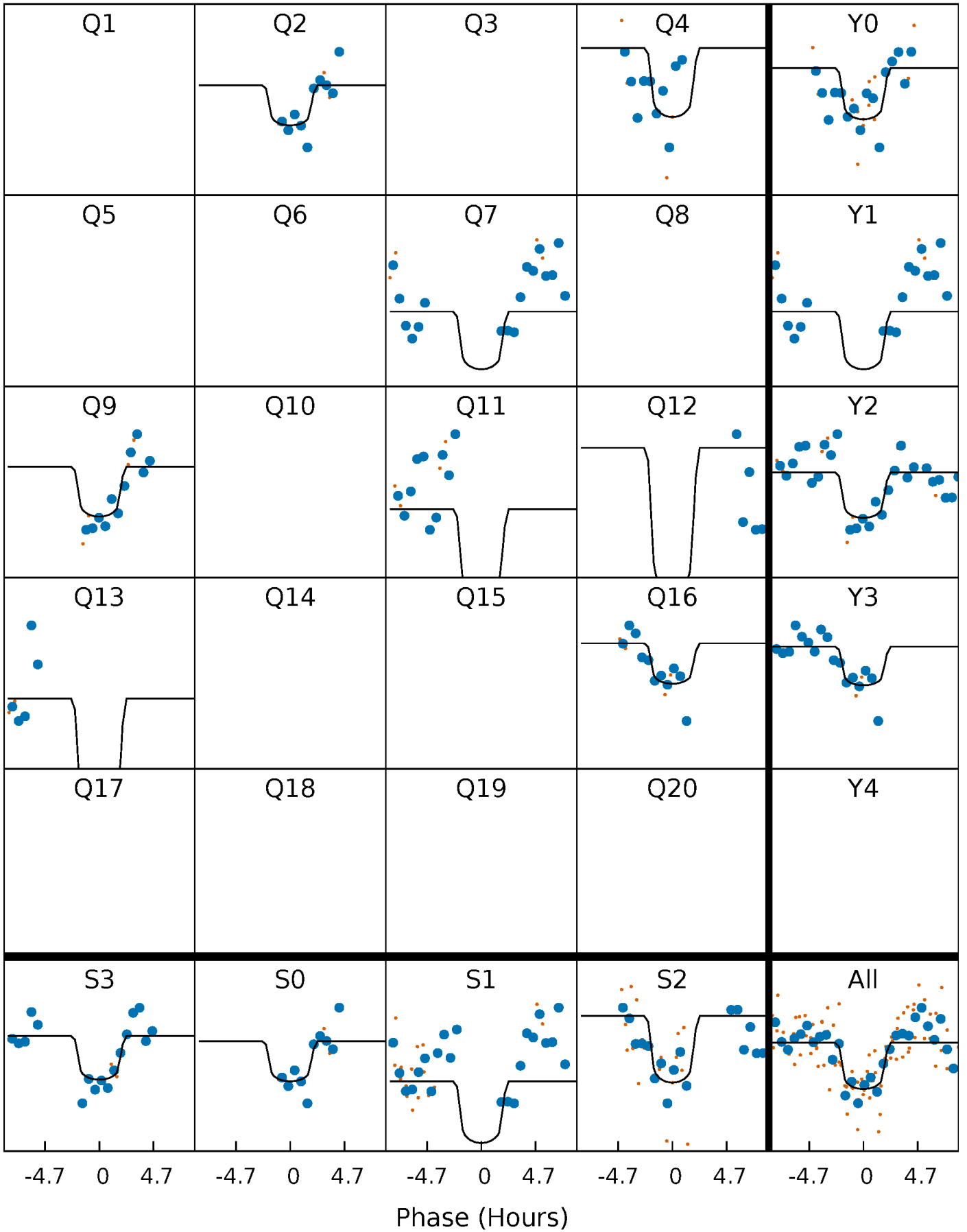
PDC Quarter-Phased Transit Curves

TCE 004375408-06 P= 64.546702 Days $T_0=187.689827$ (BKJD)



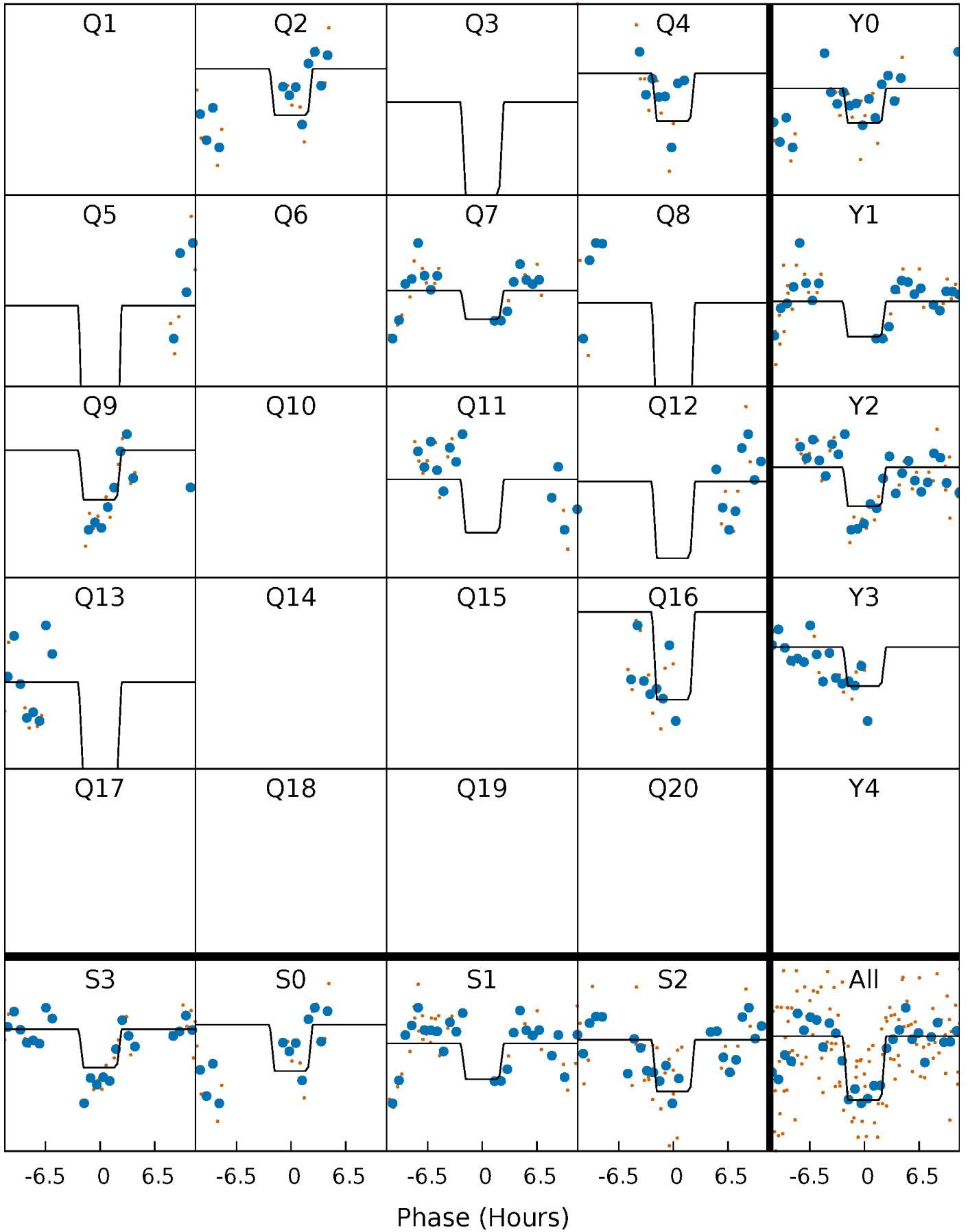
DV Quarter-Phased Transit Curves

TCE 004375408-06 $P = 64.546702$ Days $T_0 = 187.689827$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

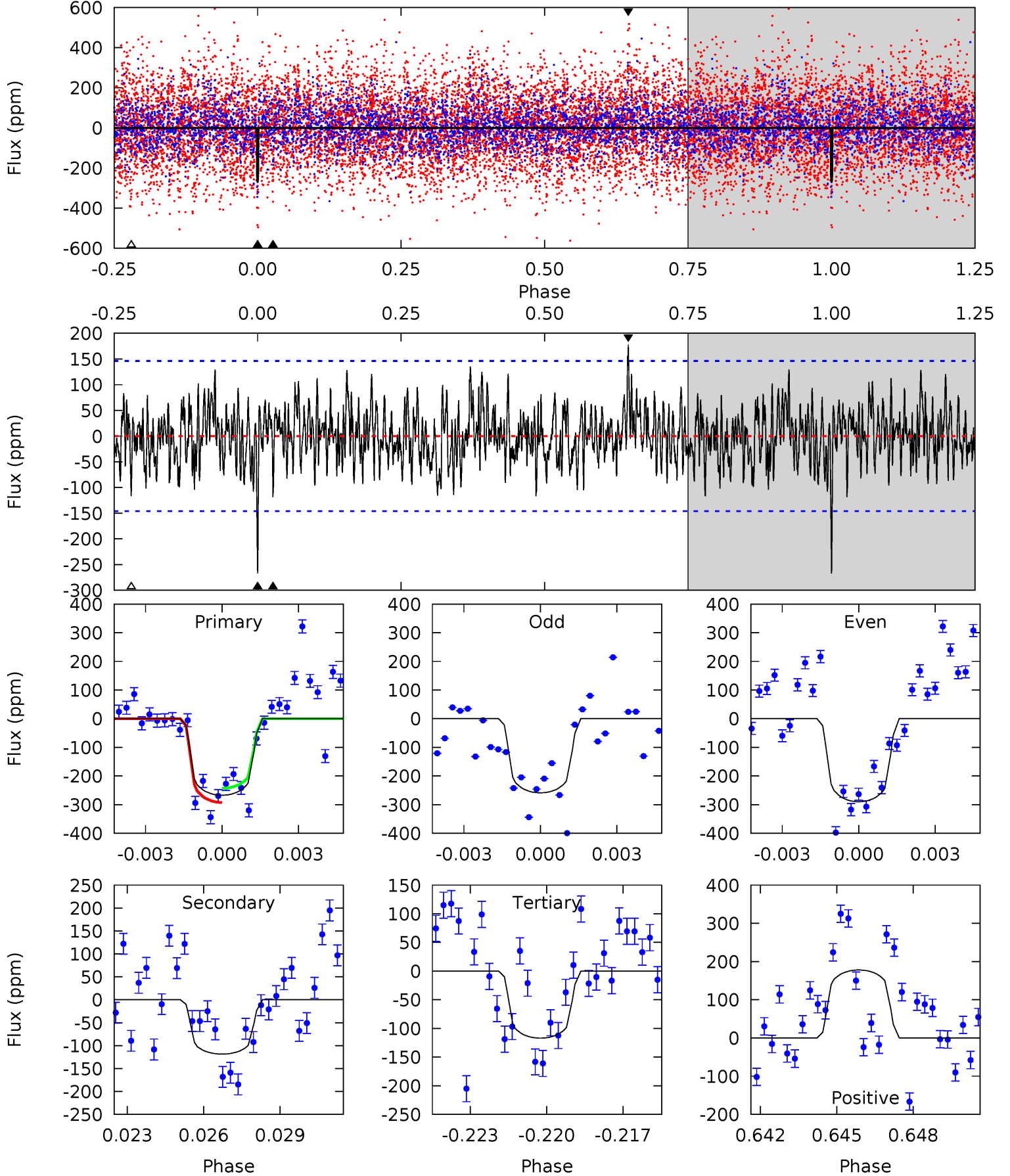
TCE 004375408-06 P= 64.548696 Days $T_0=187.683245$ (BKJD)



DV Model-Shift Uniqueness Test

004375408-06, P = 64.546702 Days, E = 123.143125 Days

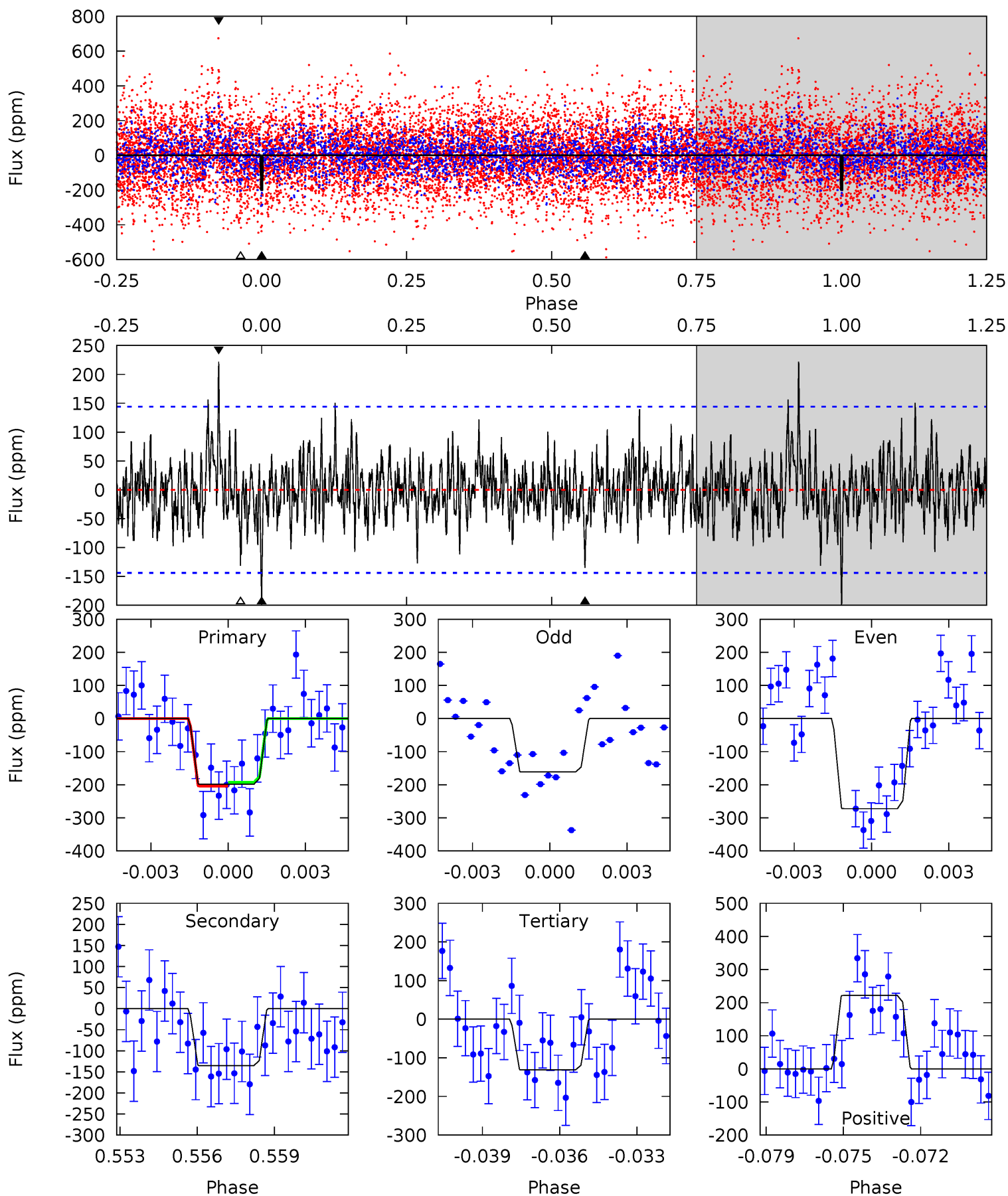
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.61	4.26	4.21	6.40	5.26	2.98	1.65	5.40	3.21	0.05	-2.14	0.51	0.97	0.40	0.89



Alt Model-Shift Uniqueness Test

004375408-06, P = 64.548696 Days, E = 123.134549 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.23	4.92	4.77	8.07	5.24	2.94	1.52	2.45	-0.85	0.15	-3.15	1.94	0.98	0.53	0.20



Stellar Parameters For KIC 004375408

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6416^{+181}_{-227}	$3.941^{+0.413}_{-0.138}$	$-0.420^{+0.300}_{-0.300}$	$1.887^{+0.448}_{-0.768}$	$1.133^{+0.169}_{-0.188}$	$0.237^{+0.824}_{-0.092}$
	+3%/-4%	+10%/-4%	+71%/-71%	+24%/-41%	+15%/-17%	+347%/-39%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004375408-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-118 ± 28	$3.30^{+1.72}_{-1.54}$	924^{+78}_{-107}	5122^{+1810}_{-758}	646^{+1803}_{-371}
Alt.	-135 ± 27	$2.82^{+1.89}_{-1.47}$	927^{+71}_{-116}	5601^{+2671}_{-990}	1013^{+3570}_{-678}

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

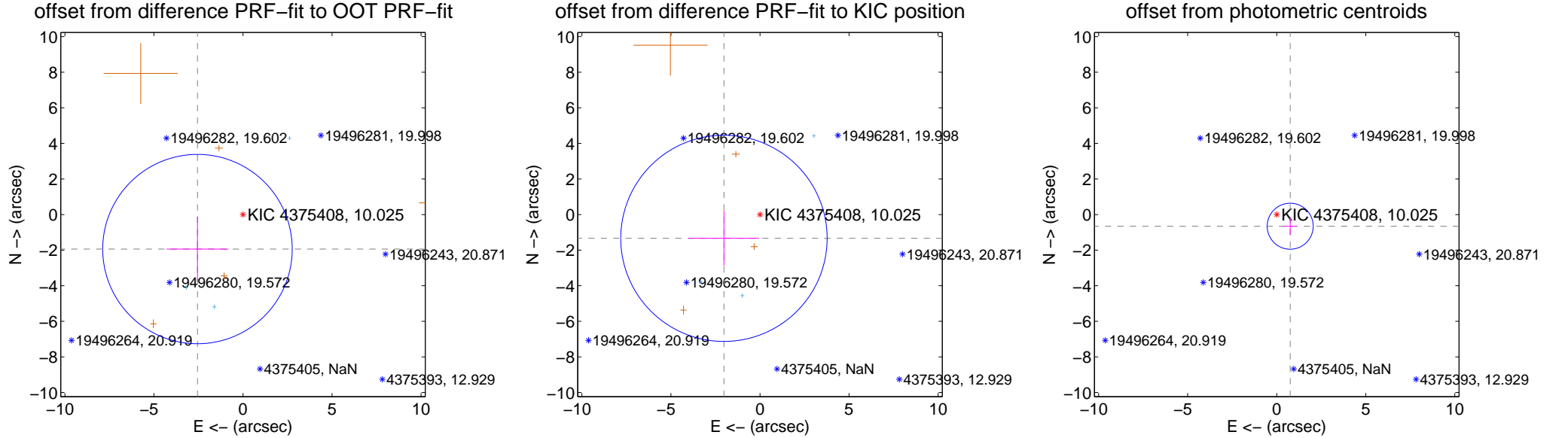
DV Centroid Data

Supplemental centroid analysis for 004375408-06. **Kepler magnitude: 10.03.** Transit SNR 8.68

There are 3 quarters with good PRF difference image offsets

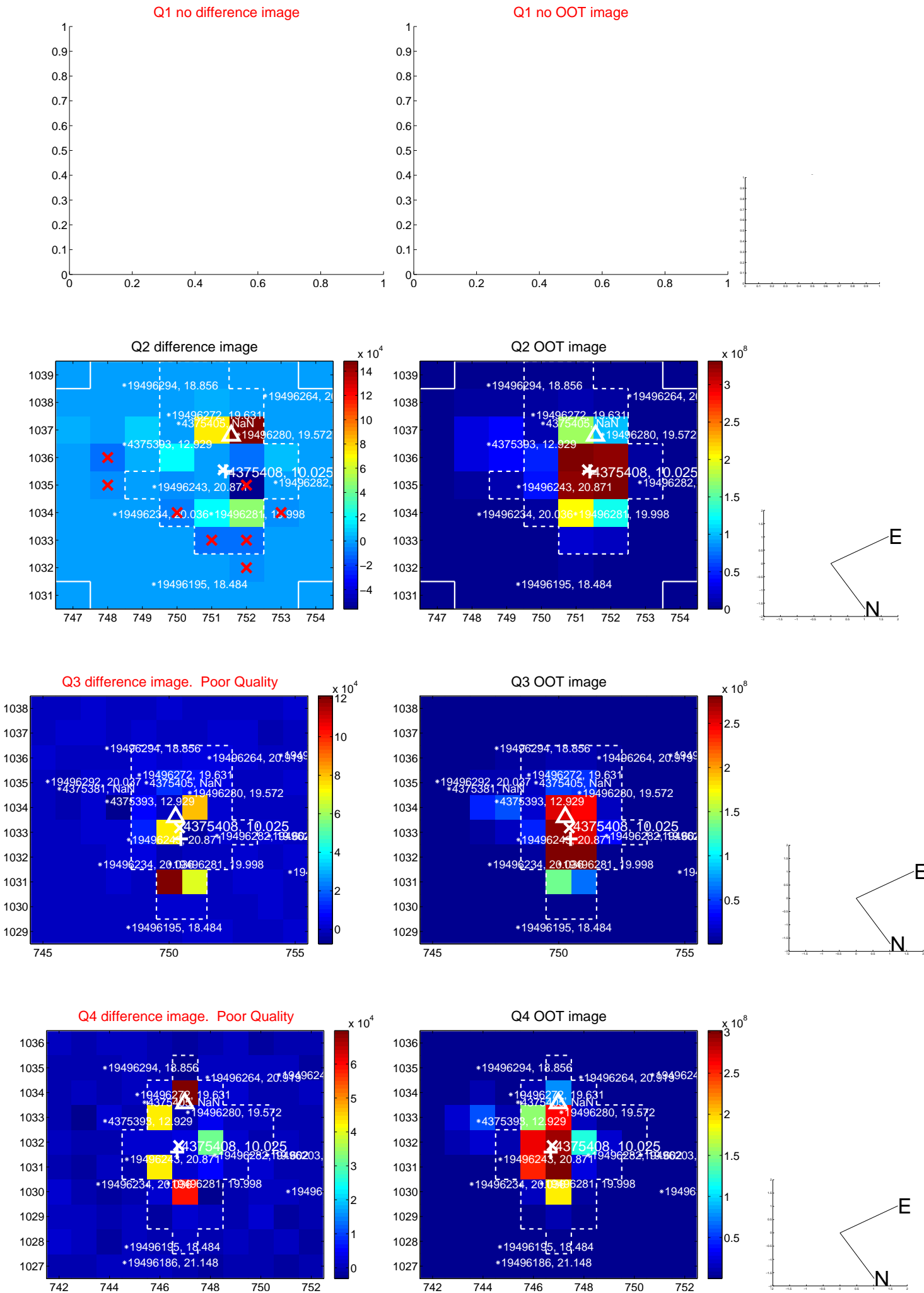
The direct PRF centroid is offset from the target star catalog position by about 0.44 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.209 ± 1.774	1.81	2.556 ± 1.728	-1.940 ± 1.836
PRF-fit source offset from KIC position	2.425 ± 1.932	1.26	2.024 ± 1.989	-1.335 ± 1.546
photometric centroid source offset	1.00 ± 0.43	2.32	-0.76 ± 0.39	-0.66 ± 0.48

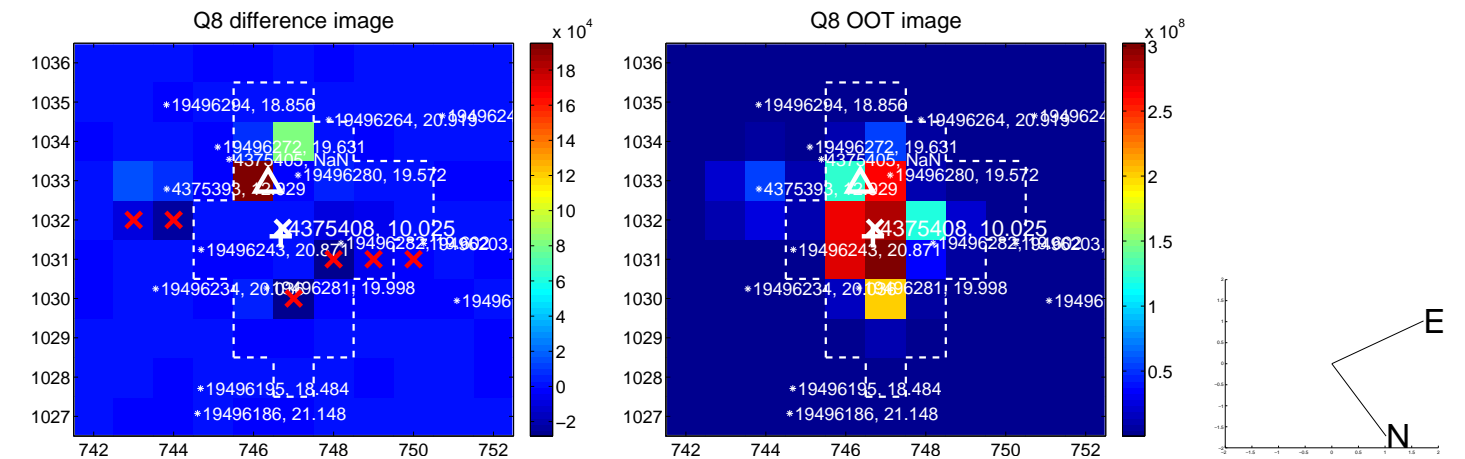
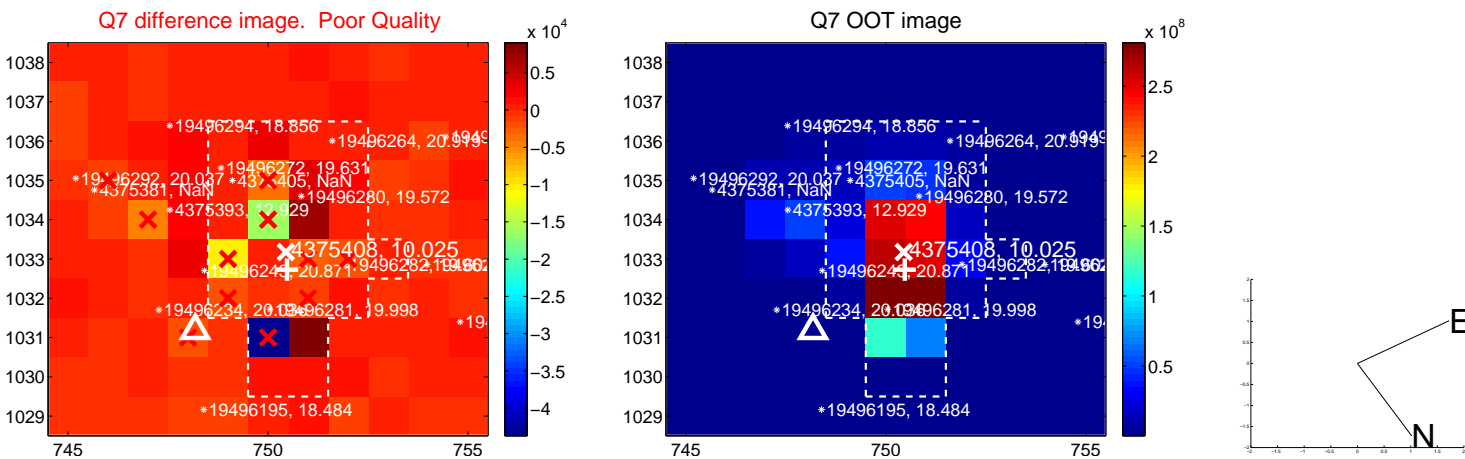
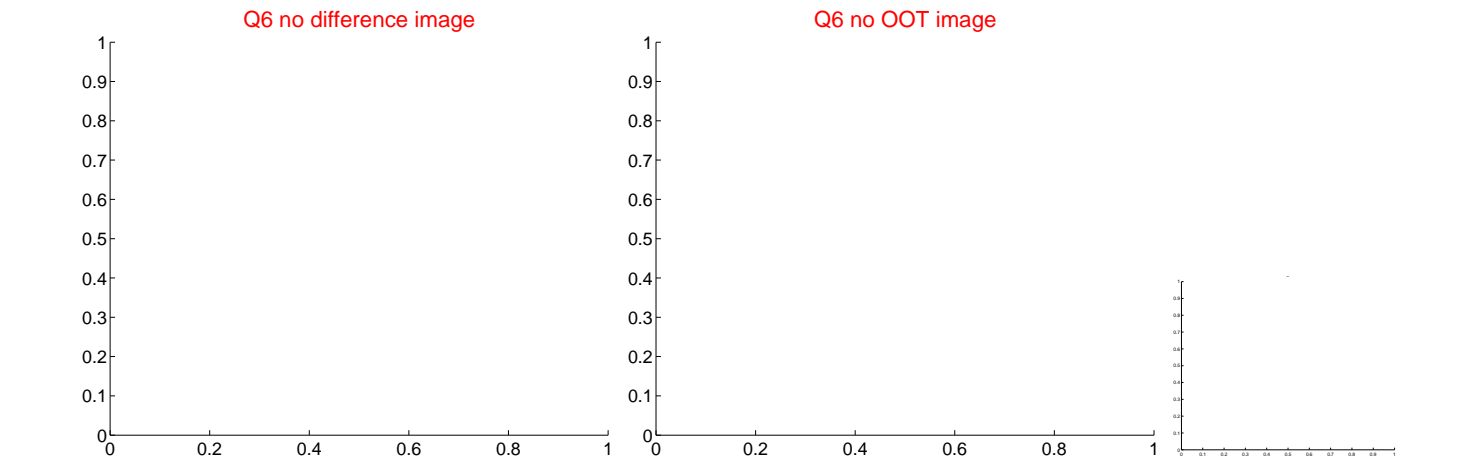
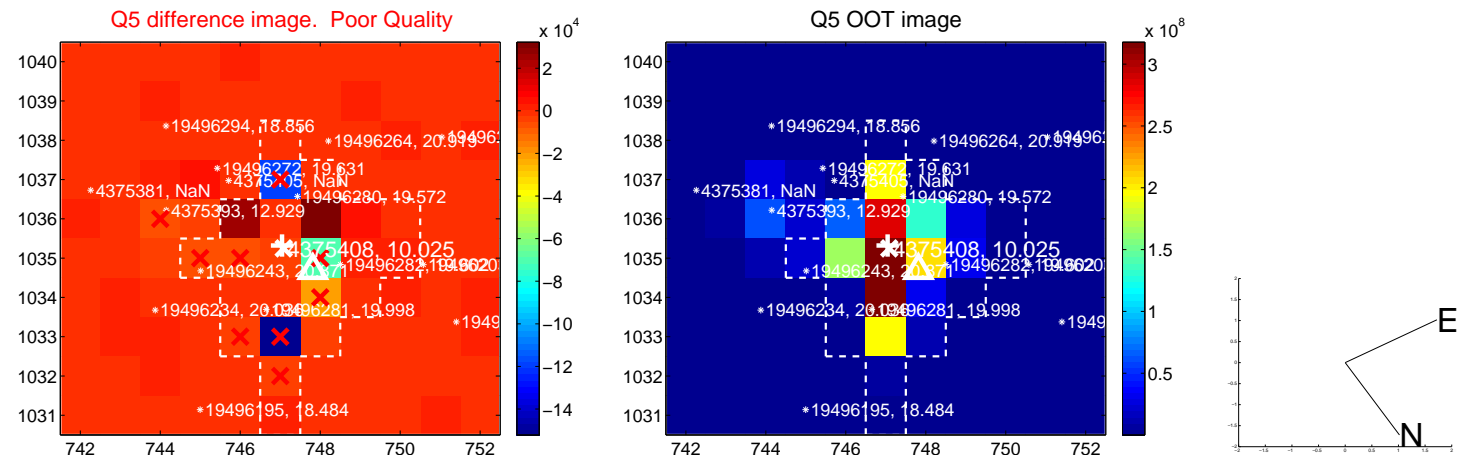


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

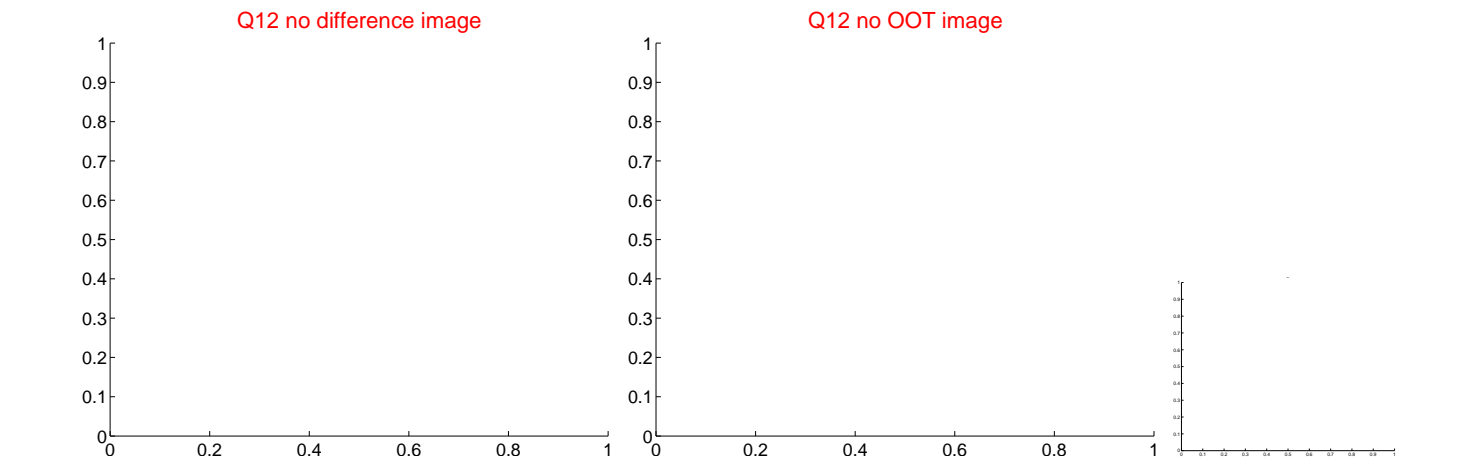
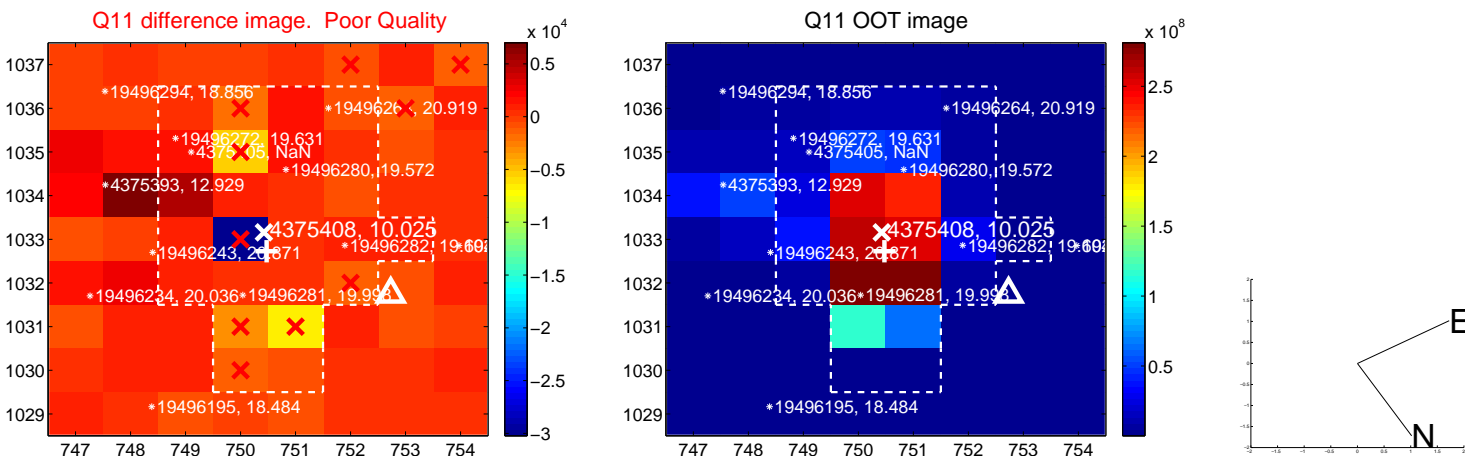
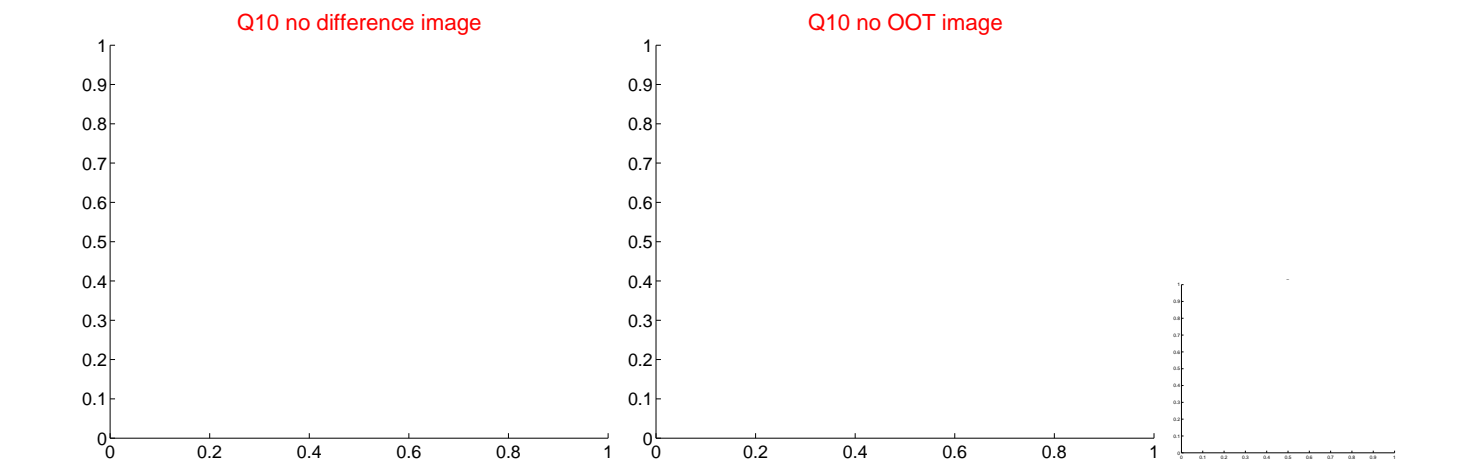
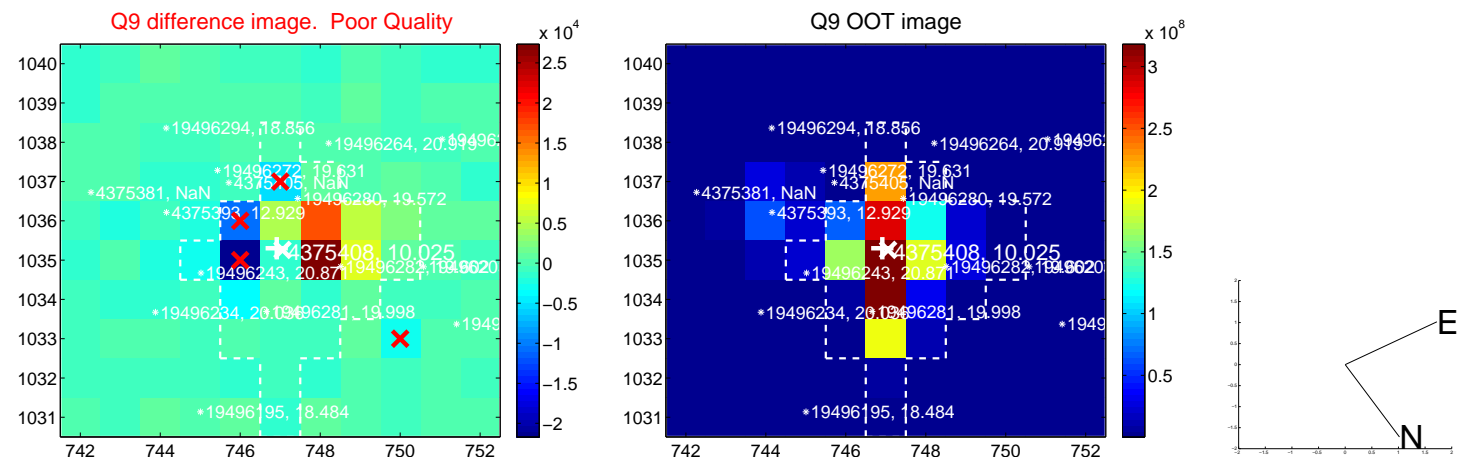
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

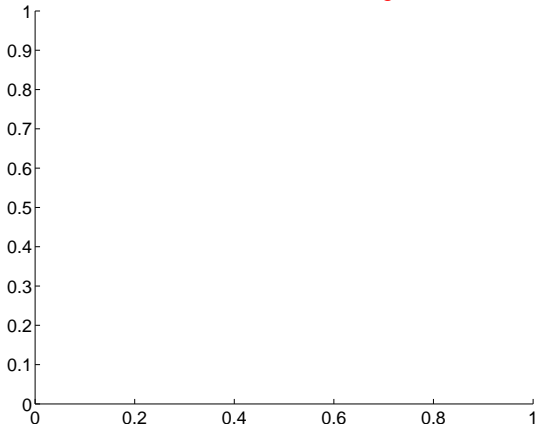


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

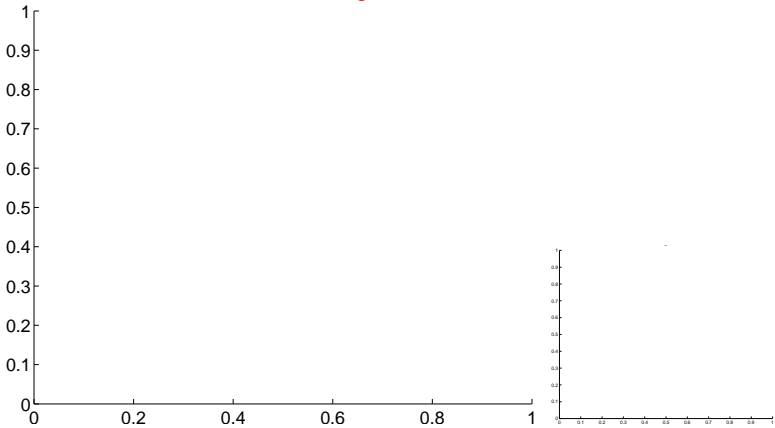


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

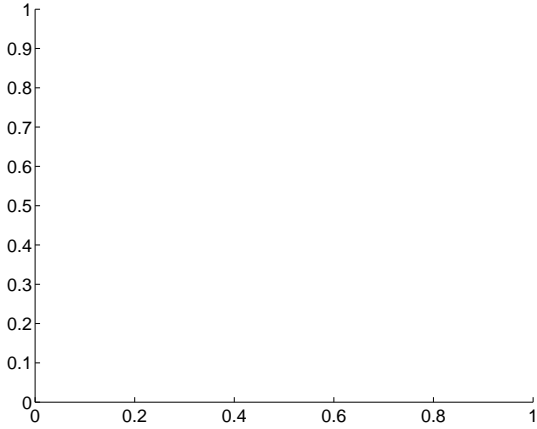
Q13 no difference image



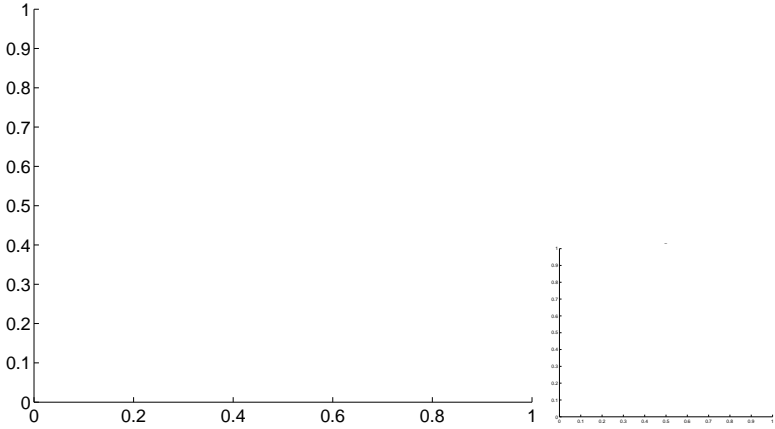
Q13 no OOT image



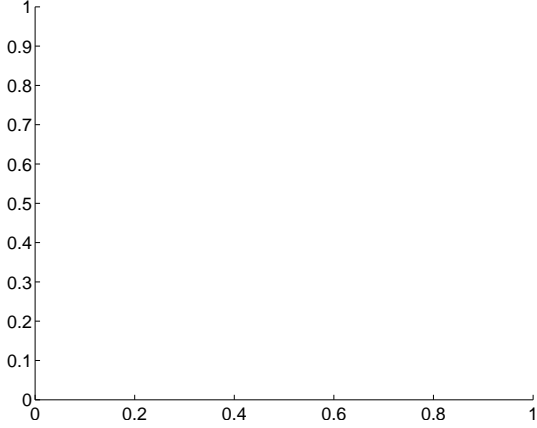
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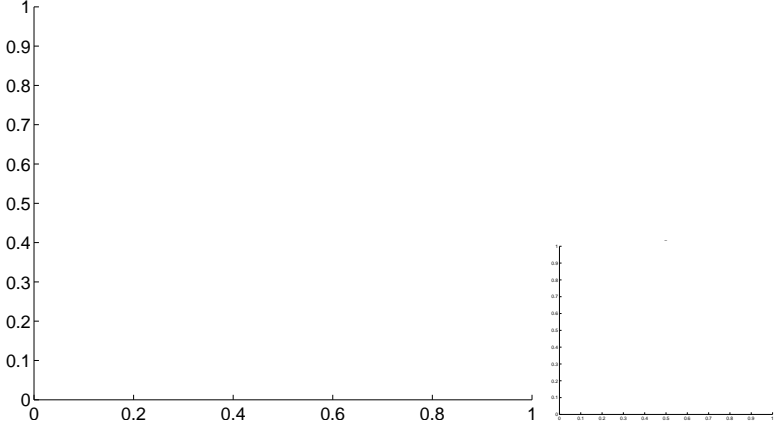
Q14 no OOT image



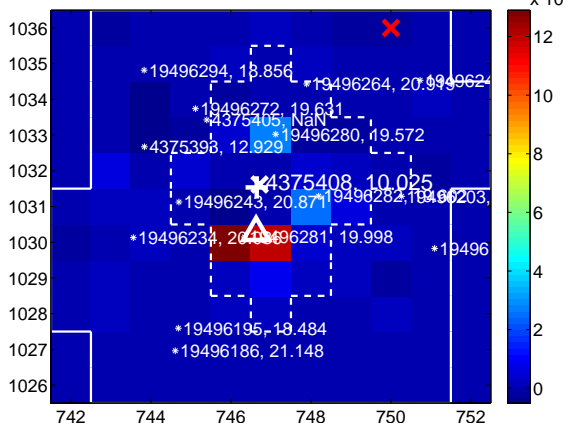
Q15 no difference image



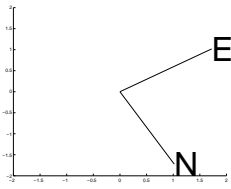
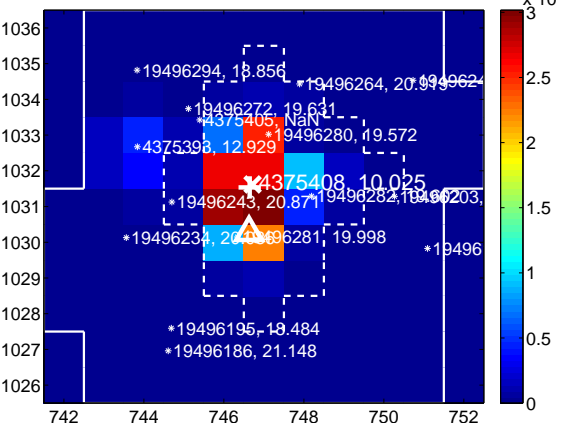
Q15 no OOT image



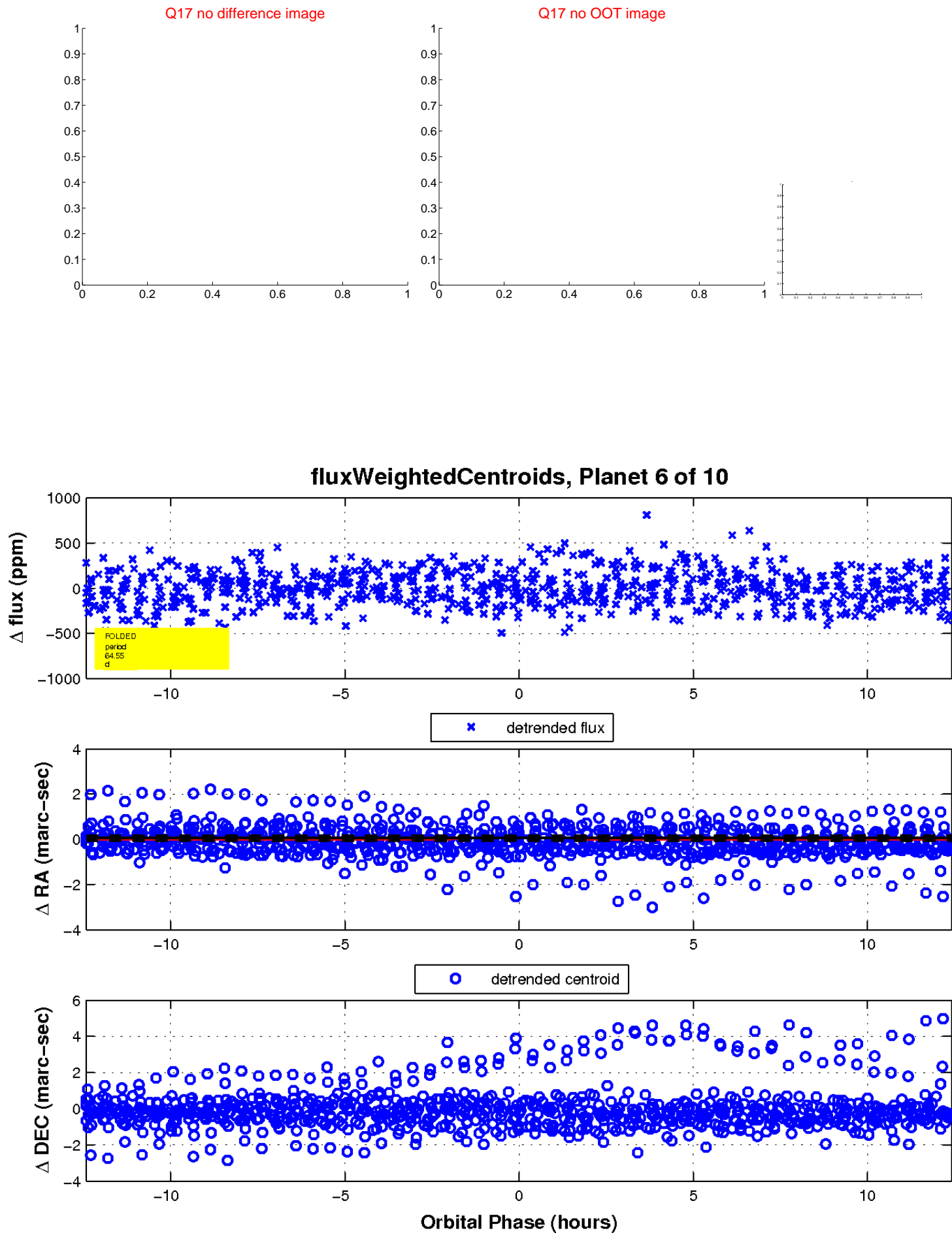
Q16 difference image



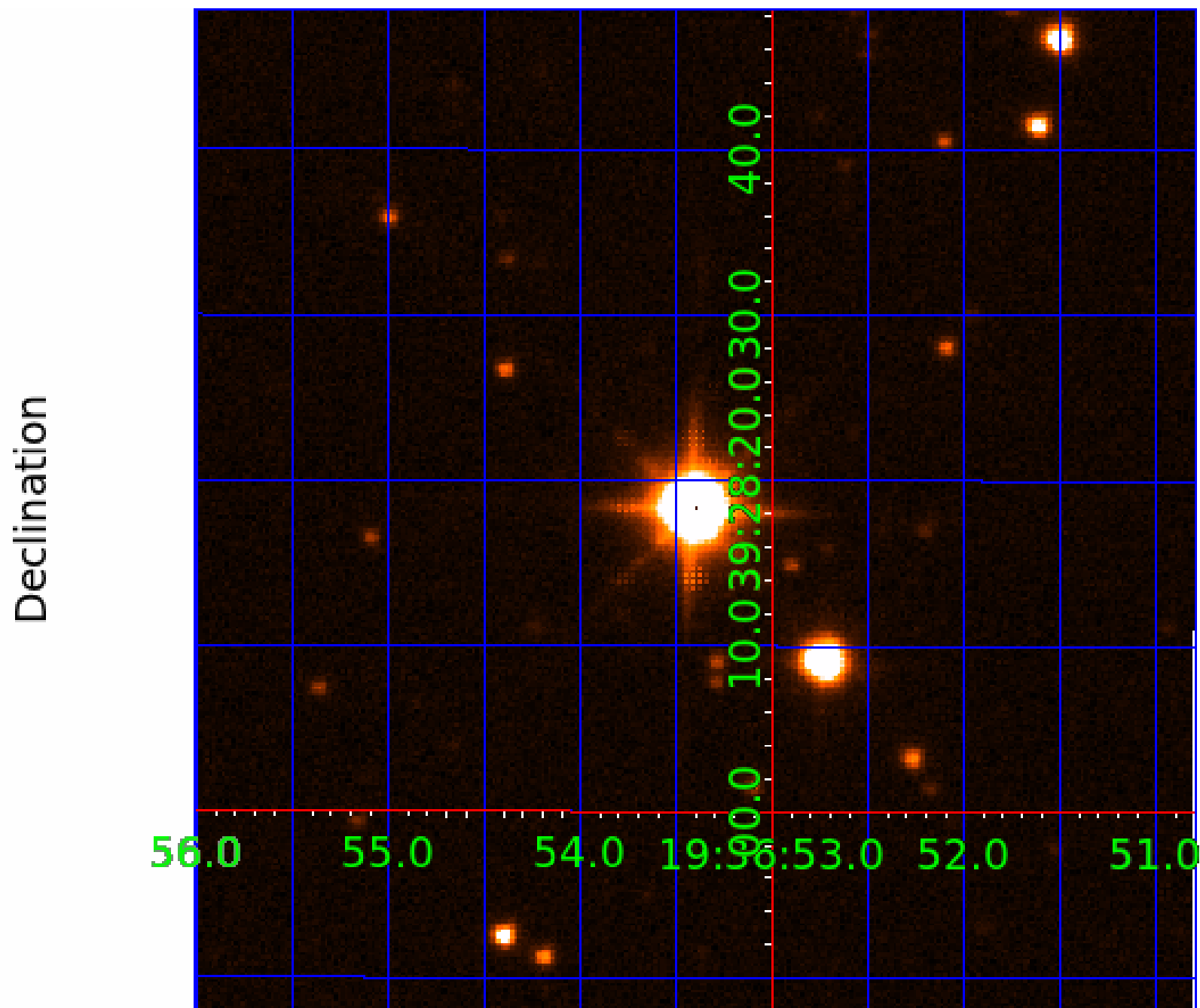
Q16 OOT image



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



UKIRT Image



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})
004375408-01	OBS	No	1.183133	132.215637	11.3	7.303	9.1	4.0	1.89	6416	0.67	10369.43
004375408-02	OBS	No	106.298491	188.988020	339.5	5.435	11.0	10.3	1.89	6416	4.03	25.77
004375408-03	OBS	No	69.296632	156.360628	334.4	2.169	10.6	9.5	1.89	6416	4.02	45.59
004375408-04	OBS	No	14.842189	138.398480	154.1	3.376	10.2	10.6	1.89	6416	2.70	355.74
004375408-05	OBS	No	53.084762	138.448490	238.0	5.466	9.7	9.4	1.89	6416	3.28	65.04
004375408-06	OBS	No	64.546702	187.689827	258.0	4.142	9.4	8.7	1.89	6416	3.51	50.12
004375408-07	OBS	No	68.662063	188.964621	257.7	1.884	9.1	8.9	1.89	6416	3.58	46.15
004375408-08	OBS	No	154.922917	193.248880	220.0	7.033	8.9	8.0	1.89	6416	2.90	15.60
004375408-09	OBS	No	47.218486	147.679425	263.0	2.735	9.2	8.9	1.89	6416	3.58	76.03
004375408-10	OBS	No	29.333870	132.422001	232.7	2.287	9.1	10.2	1.89	6416	3.33	143.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004375408-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004375408-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004375408-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

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

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

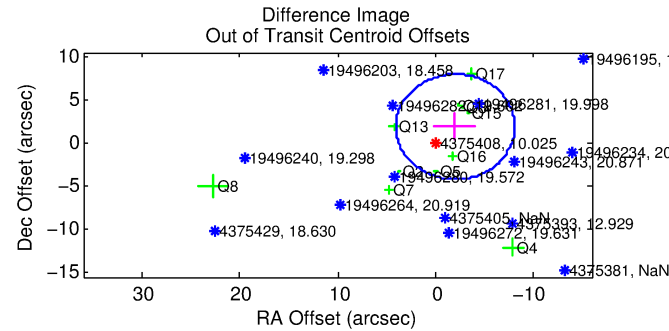
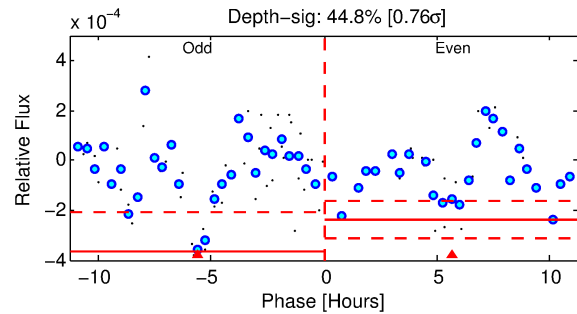
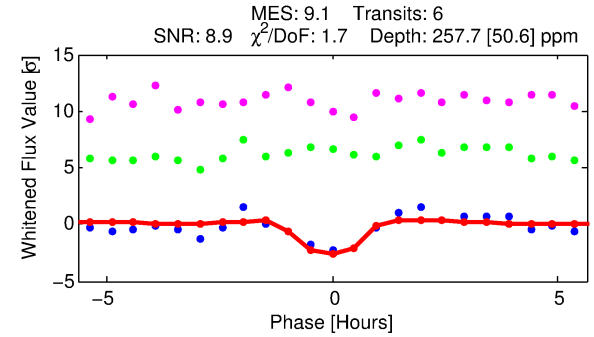
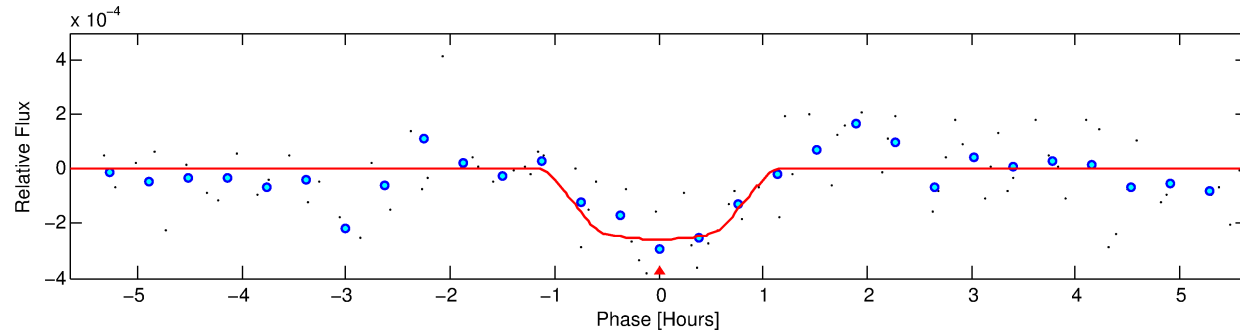
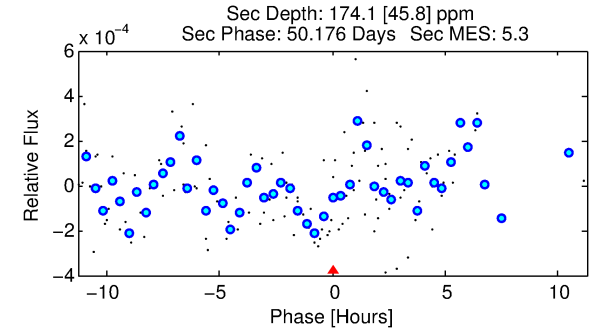
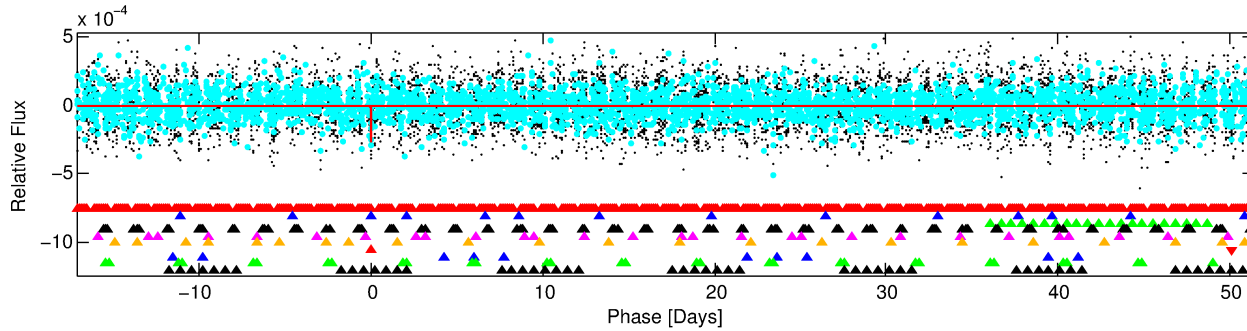
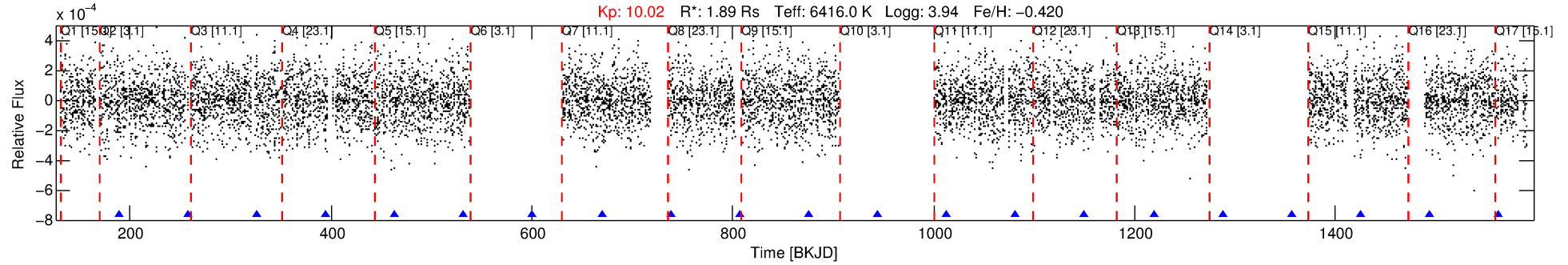
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004375408-07

No Significant Match Found

DV One-Page Summary

KIC: 4375408 Candidate: 7 of 10 Period: 68.662 d



DV Fit Results:

Period = 68.66206 [0.00216] d
Epoch = 188.9646 [0.0329] BKJD
Rp/R* = 0.0174 [0.0197]
a/R* = 125.86 [831.79]
b = 0.91 [1.24]
Seff = 46.15 [32.49]
Teq = 665 [117] K
Rp = 3.58 [4.30] Re
a = 0.3423 [0.1428] AU
Ag = 874.55 [2078.74] [0.42σ]
Teffp = 5588 [3184] K [1.55σ]

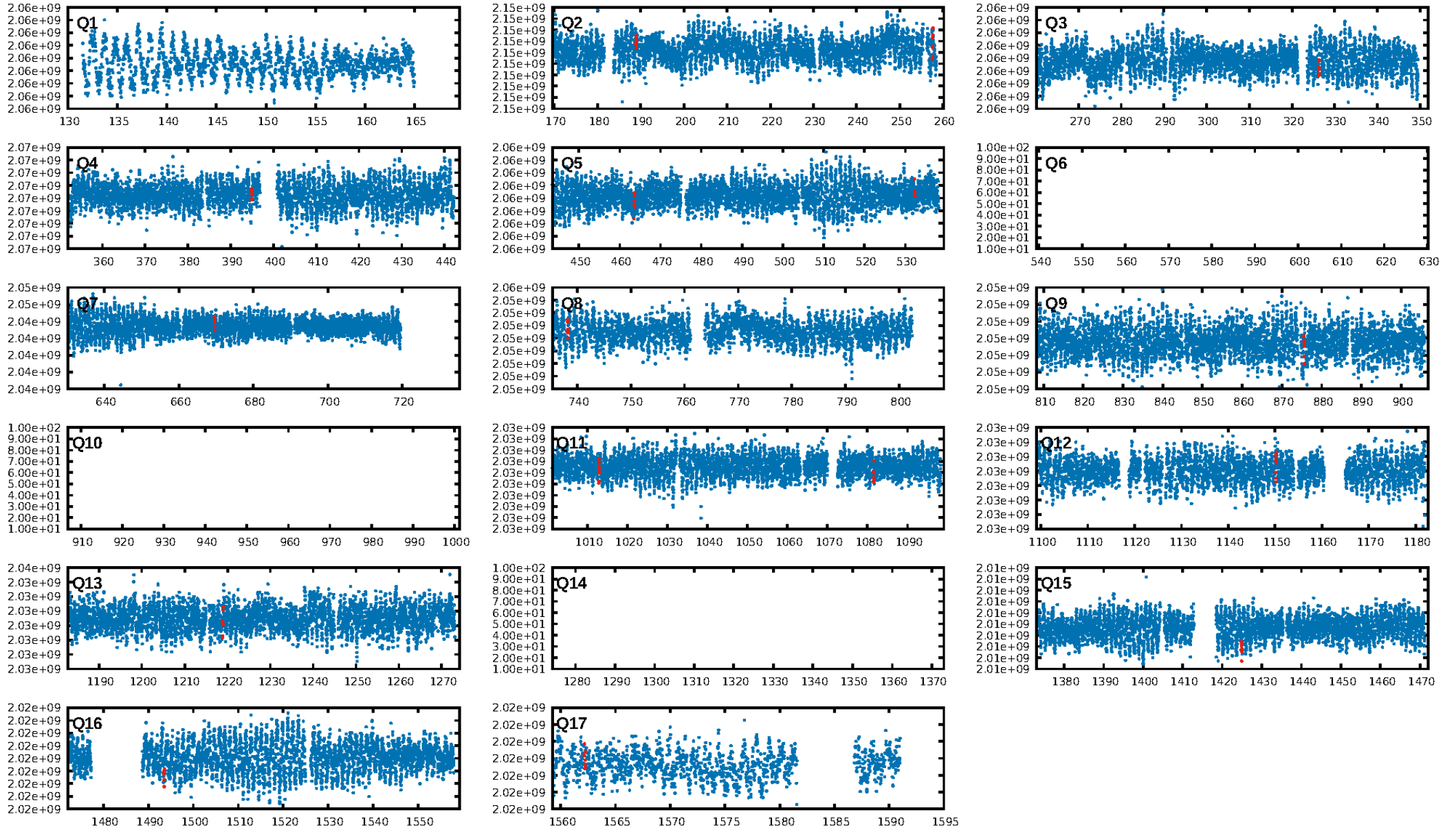
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [21.70σ]
LongPeriod-sig: 100.0% [5.30σ]
ModelChiSquare2-sig: 76.0%
ModelChiSquareGof-sig: 92.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 0.688 arcsec [1.41σ]
OotOffset-rm: 2.761 arcsec [1.36σ]
KicOffset-rm: 3.799 arcsec [1.68σ]
OotOffset-st: 1/3/4/3 [11]
KicOffset-st: 1/3/4/3 [11]
DiffImageQuality-fgm: 0.45 [5/11]
DiffImageOverlap-fno: 0.50 [6/12]

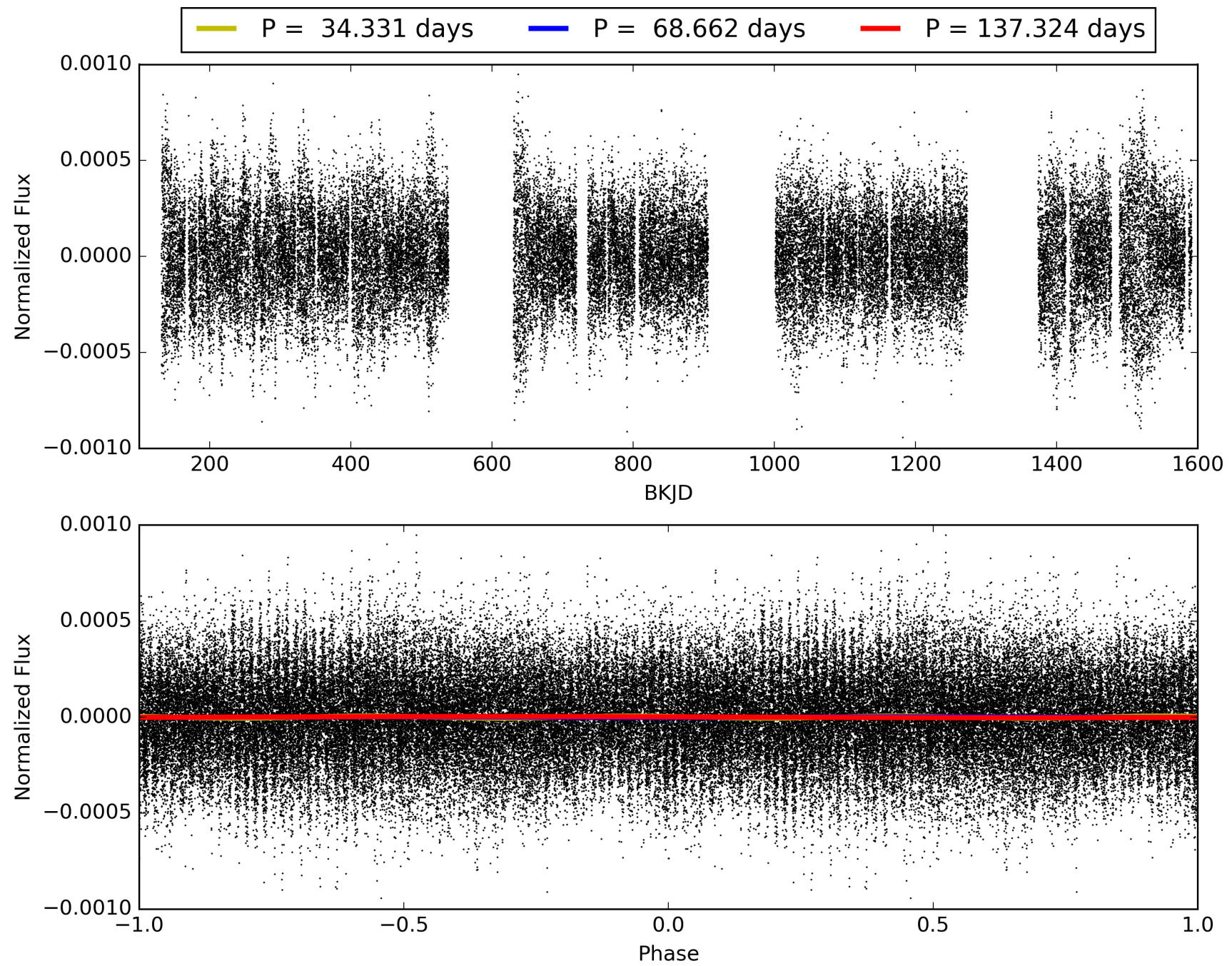
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:59:03 Z

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

TCE 004375408-07, PDC Light Curves

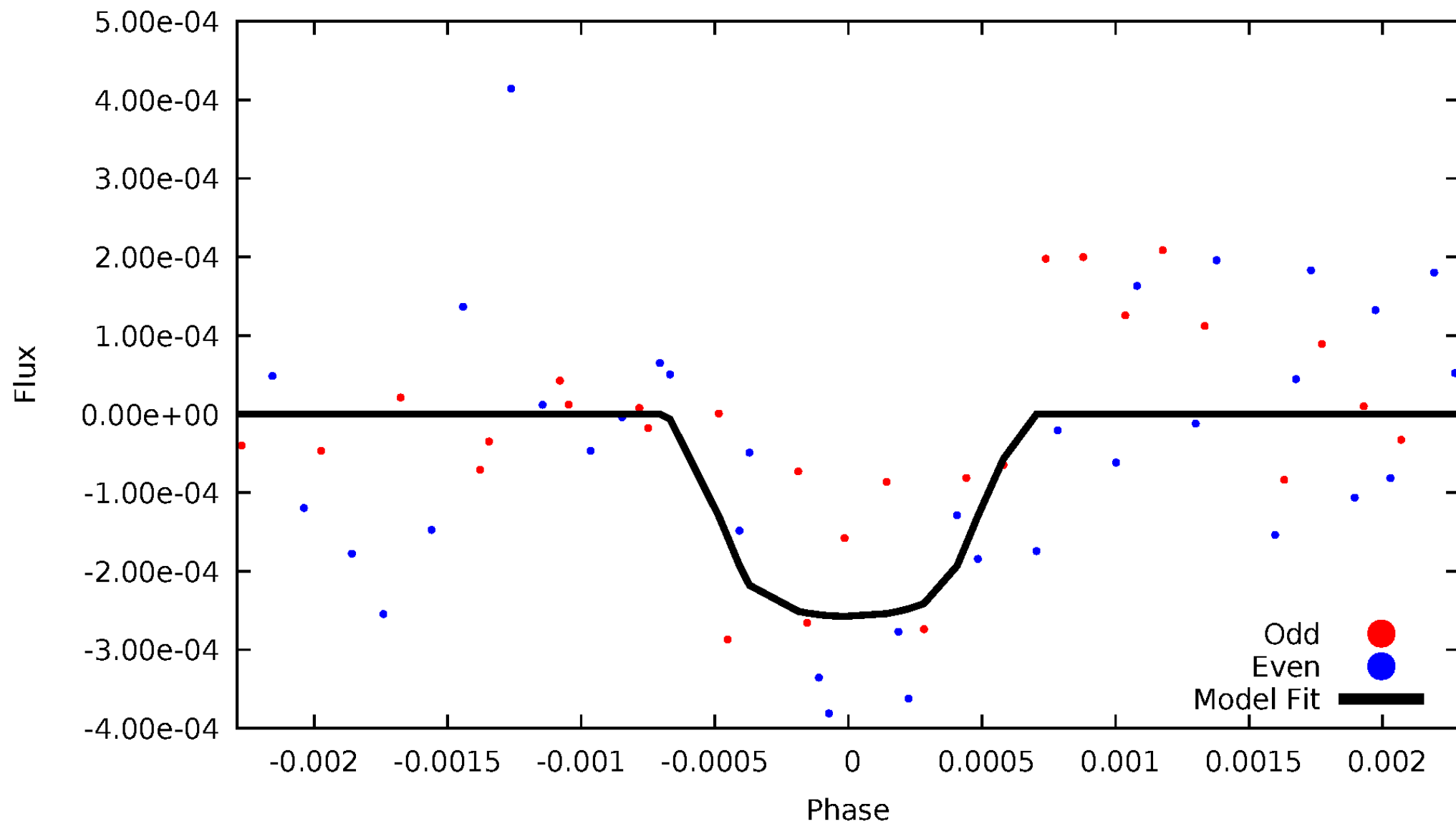


TCE 004375408-07



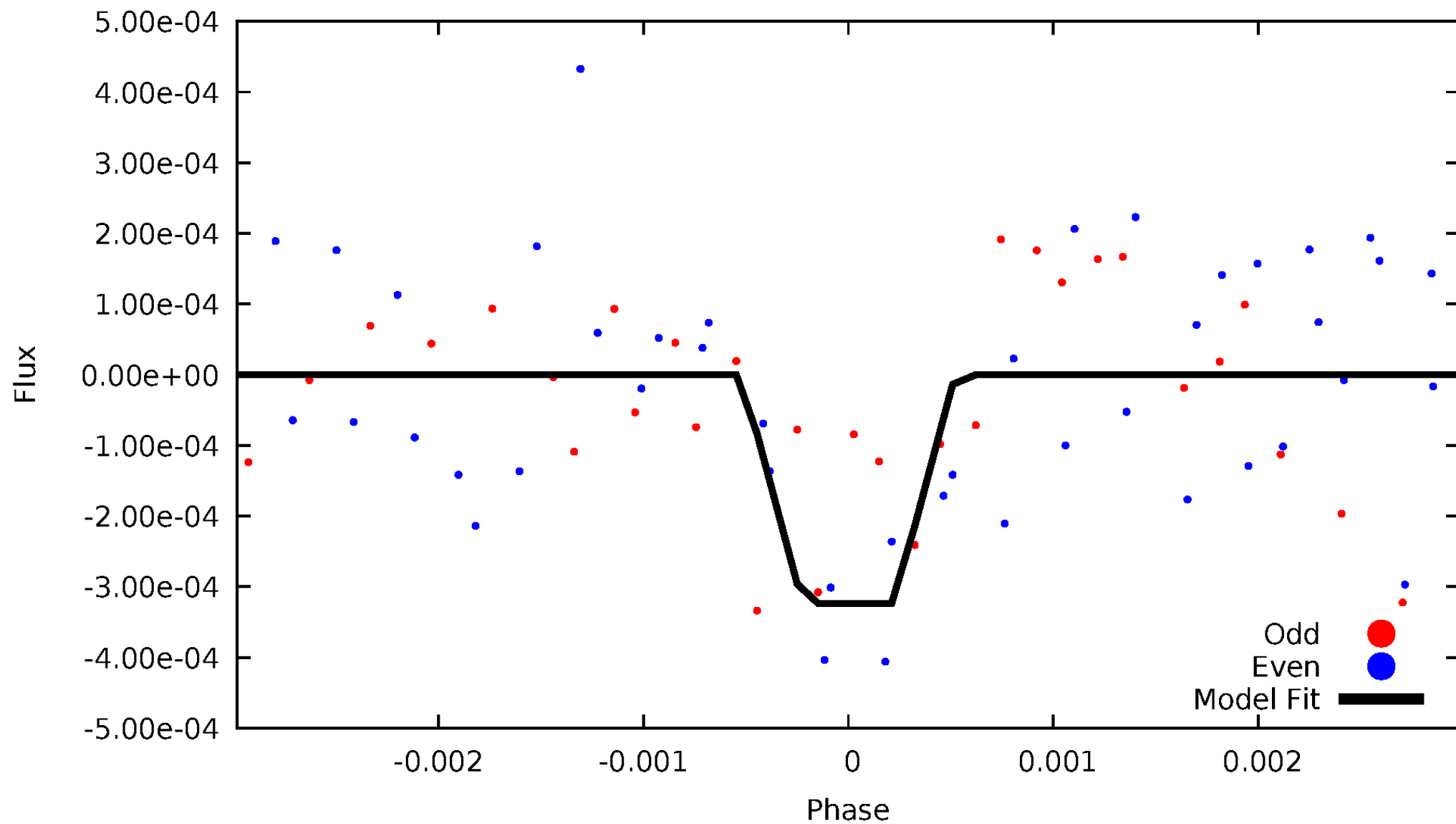
DV Odd/Even

TCE 004375408-07



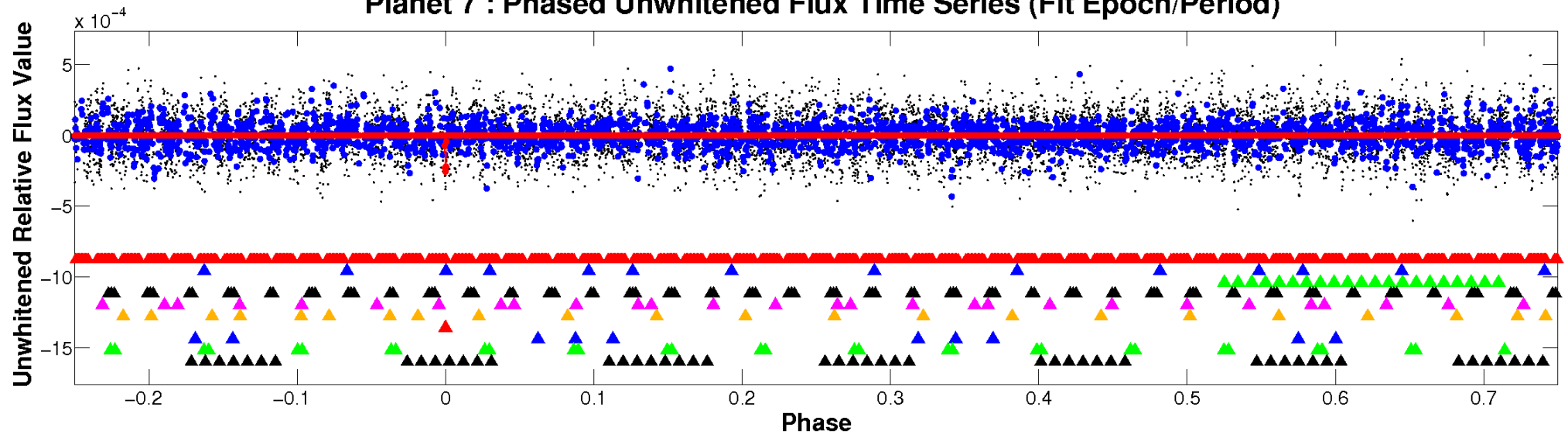
ALT Odd/Even

TCE 004375408-07

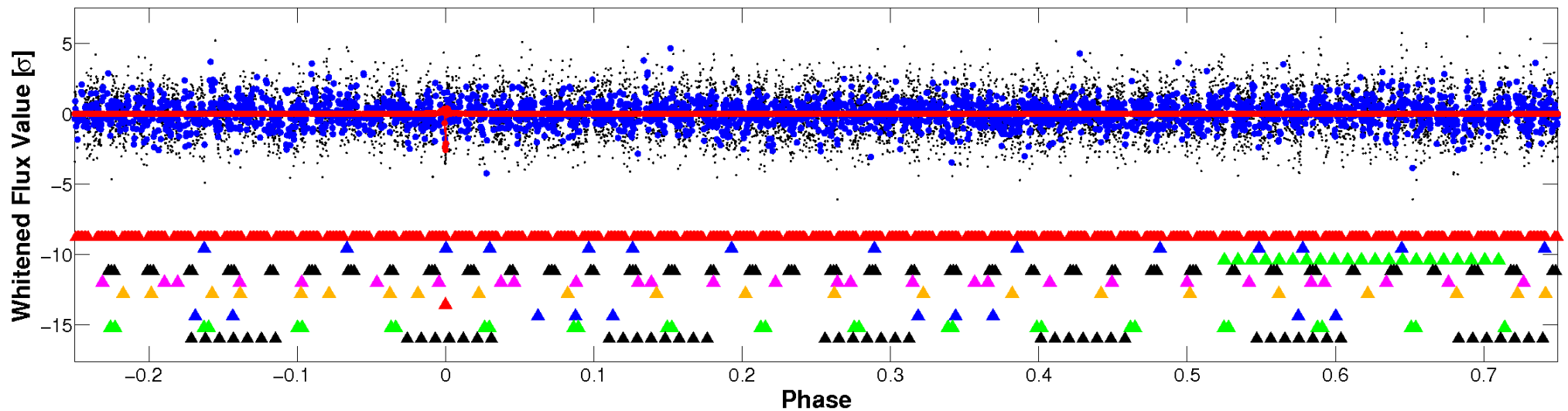


Non-Whitened Vs. Whitened Light Curve

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

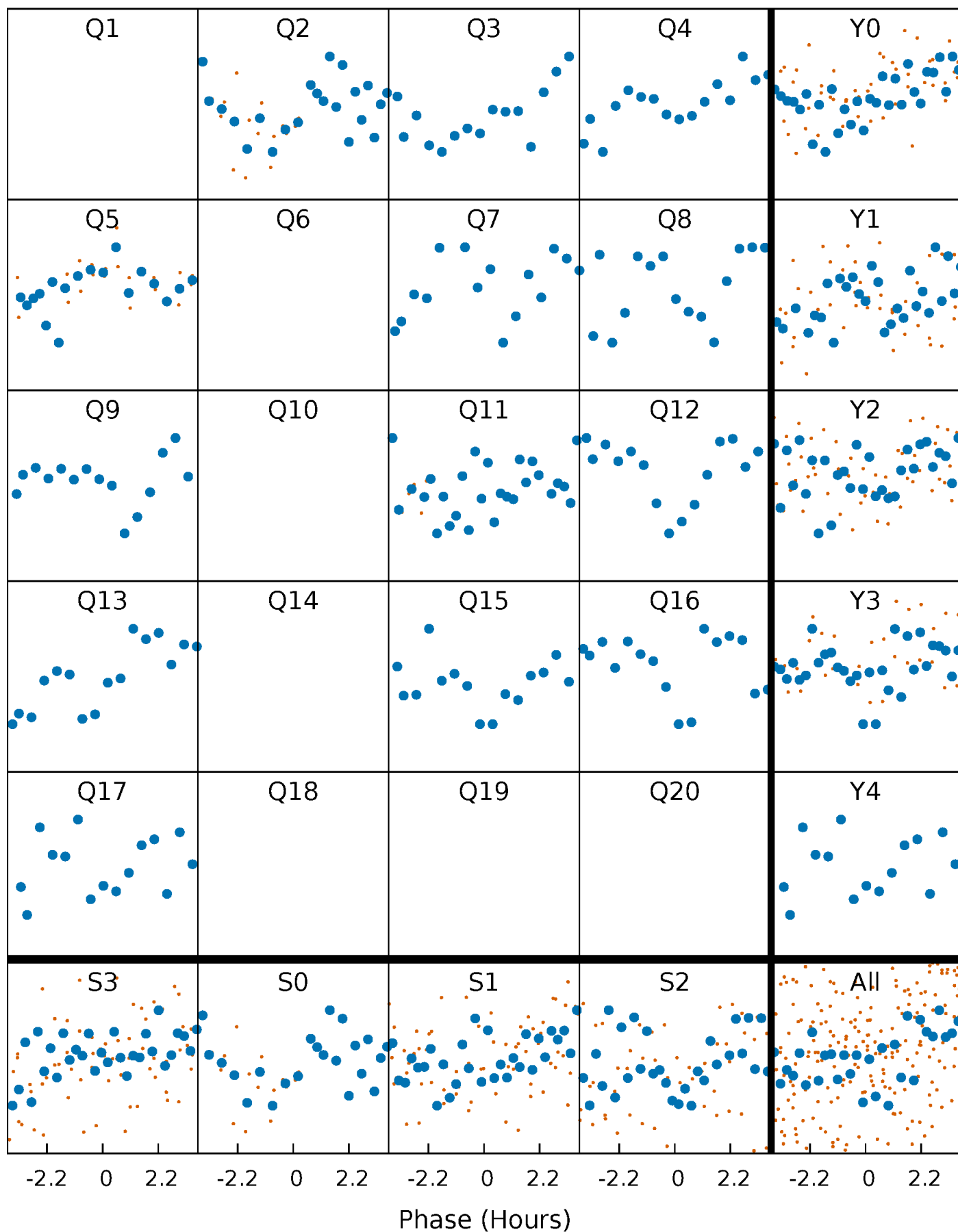


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



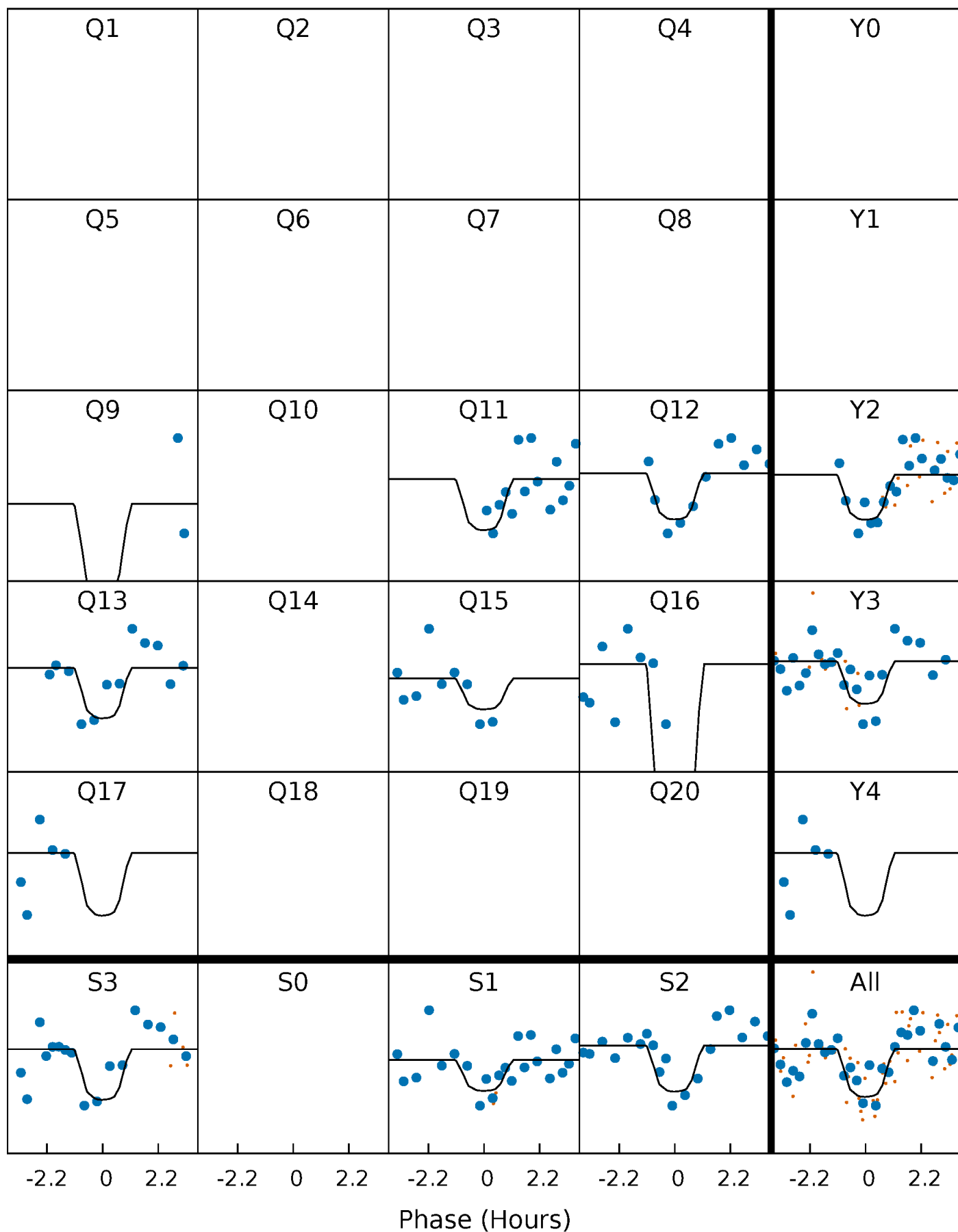
PDC Quarter-Phased Transit Curves

TCE 004375408-07 $P = 68.662063$ Days $T_0 = 188.964621$ (BKJD)



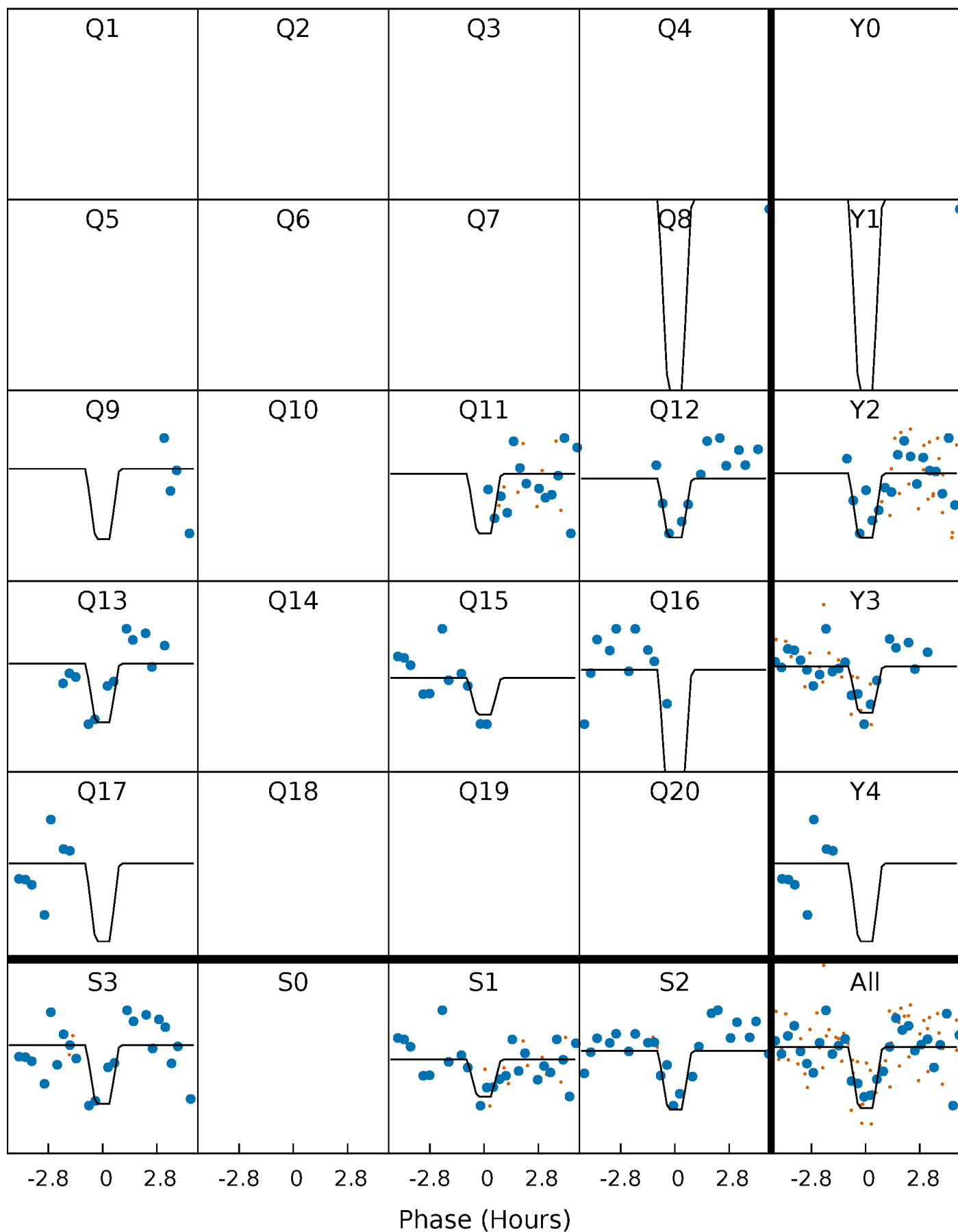
DV Quarter-Phased Transit Curves

TCE 004375408-07 P= 68.662063 Days $T_0=188.964621$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

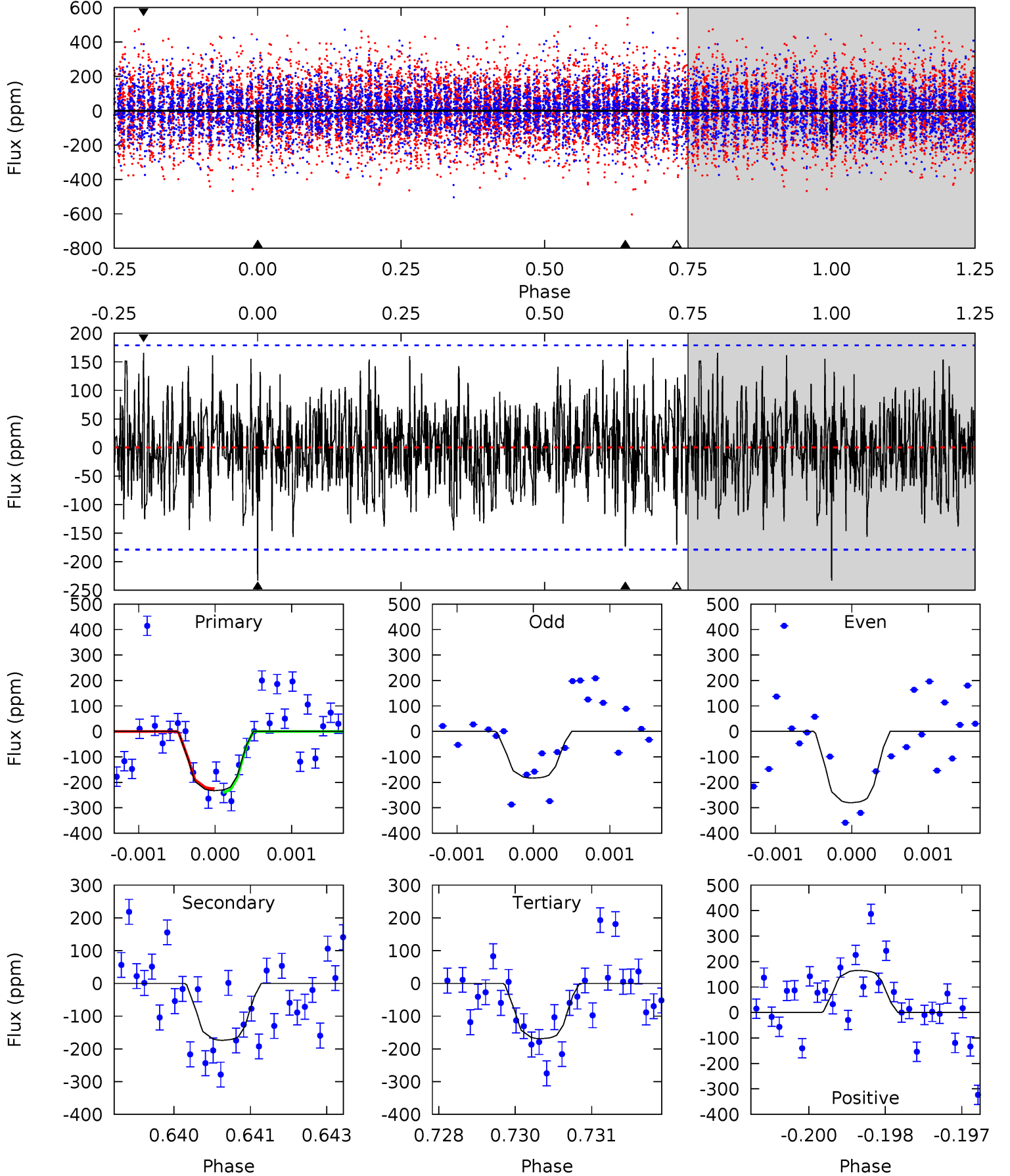
TCE 004375408-07 $P = 68.663243$ Days $T_0 = 188.946459$ (BKJD)



DV Model-Shift Uniqueness Test

004375408-07, P = 68.662063 Days, E = 120.302558 Days

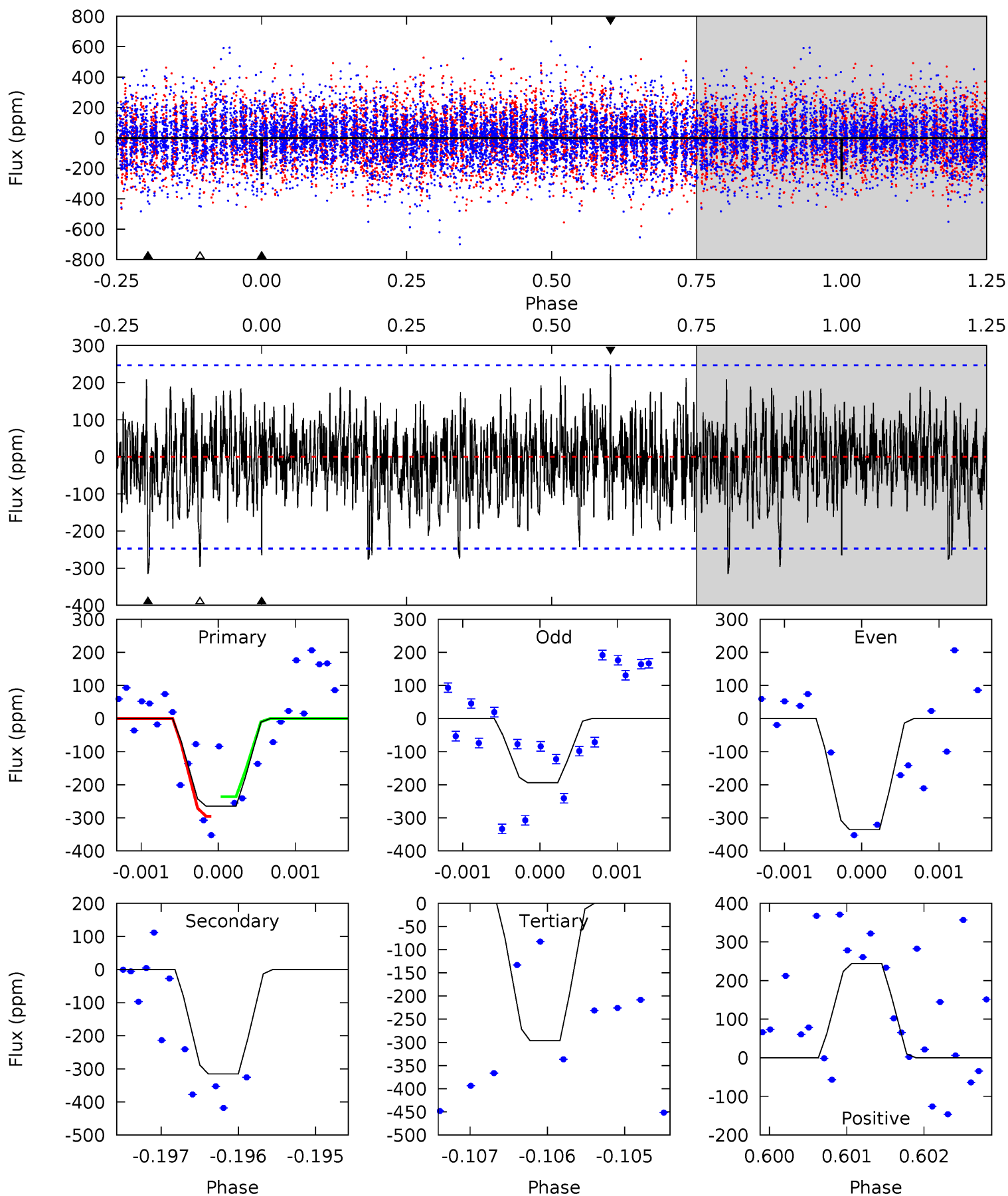
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.02	5.24	5.10	4.98	5.39	3.19	1.58	1.92	2.04	0.15	0.26	1.46	0.96	0.45	0.22



Alt Model-Shift Uniqueness Test

004375408-07, P = 68.663243 Days, E = 120.283216 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.86	6.98	6.55	5.40	5.47	3.31	1.60	-0.69	0.46	0.42	1.58	1.57	1.03	0.44	0.65



Stellar Parameters For KIC 004375408

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6416^{+181}_{-227}	$3.941^{+0.413}_{-0.138}$	$-0.420^{+0.300}_{-0.300}$	$1.887^{+0.448}_{-0.768}$	$1.133^{+0.169}_{-0.188}$	$0.237^{+0.824}_{-0.092}$
	+3%/-4%	+10%/-4%	+71%/-71%	+24%/-41%	+15%/-17%	+347%/-39%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004375408-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-174 ± 33	$4.19^{+3.84}_{-2.74}$	907^{+69}_{-100}	5006^{+3693}_{-1035}	643^{+4482}_{-468}
Alt.	-315 ± 45	$4.24^{+3.54}_{-2.71}$	908^{+68}_{-99}	5673^{+4770}_{-1265}	1107^{+7505}_{-769}

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

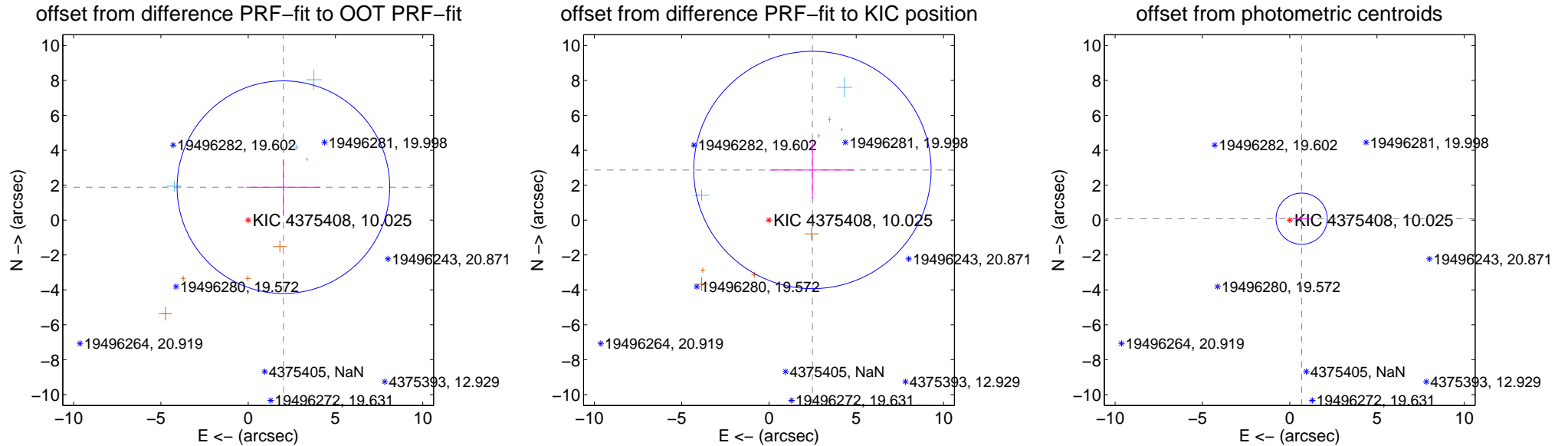
DV Centroid Data

Supplemental centroid analysis for 004375408-07. **Kepler magnitude: 10.03.** Transit SNR 8.87

There are 5 quarters with good PRF difference image offsets

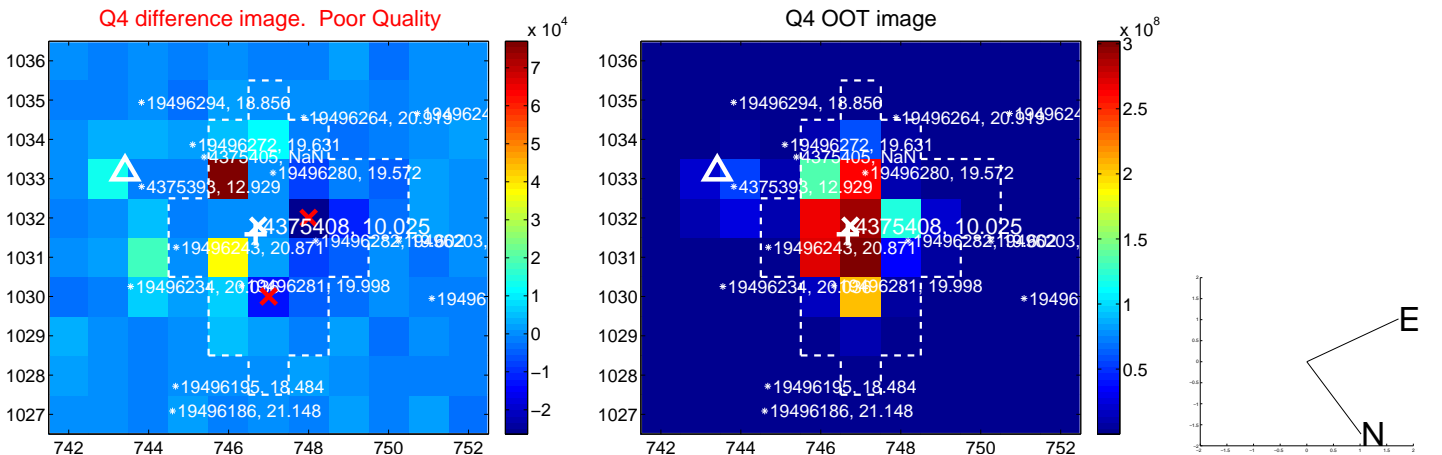
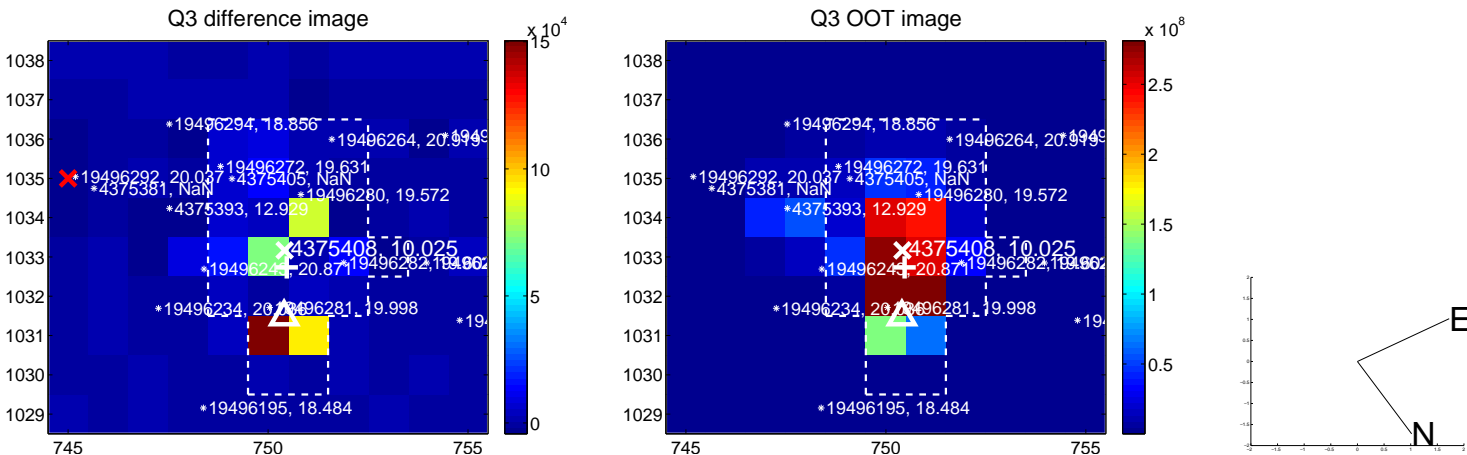
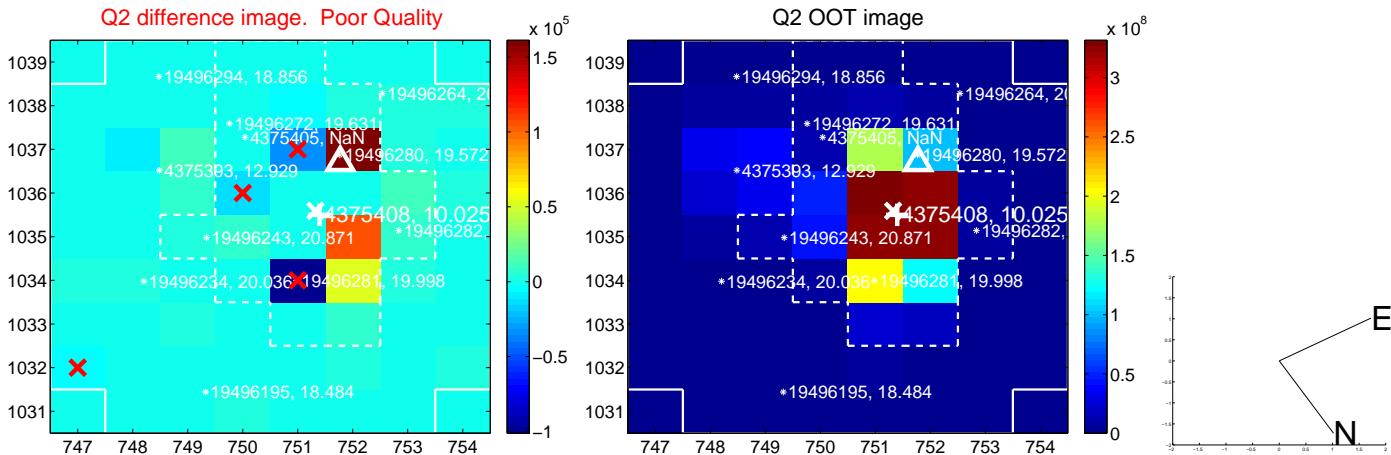
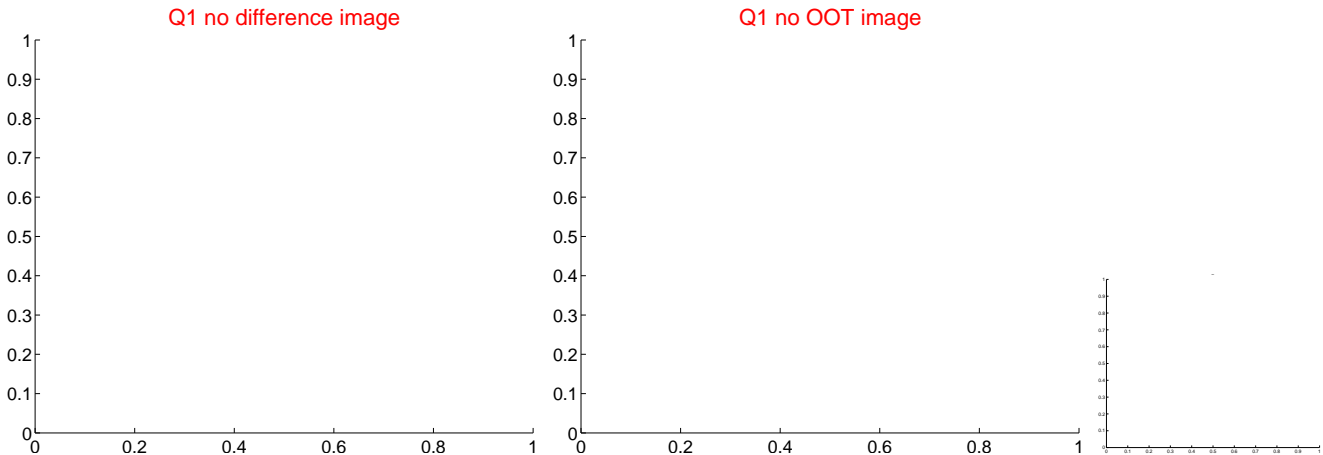
The direct PRF centroid is offset from the target star catalog position by about 0.71 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.761 ± 2.029	1.36	-2.018 ± 2.128	1.884 ± 1.557
PRF-fit source offset from KIC position	3.799 ± 2.265	1.68	-2.490 ± 2.430	2.869 ± 1.647
photometric centroid source offset	0.69 ± 0.49	1.41	-0.68 ± 0.49	0.08 ± 0.61

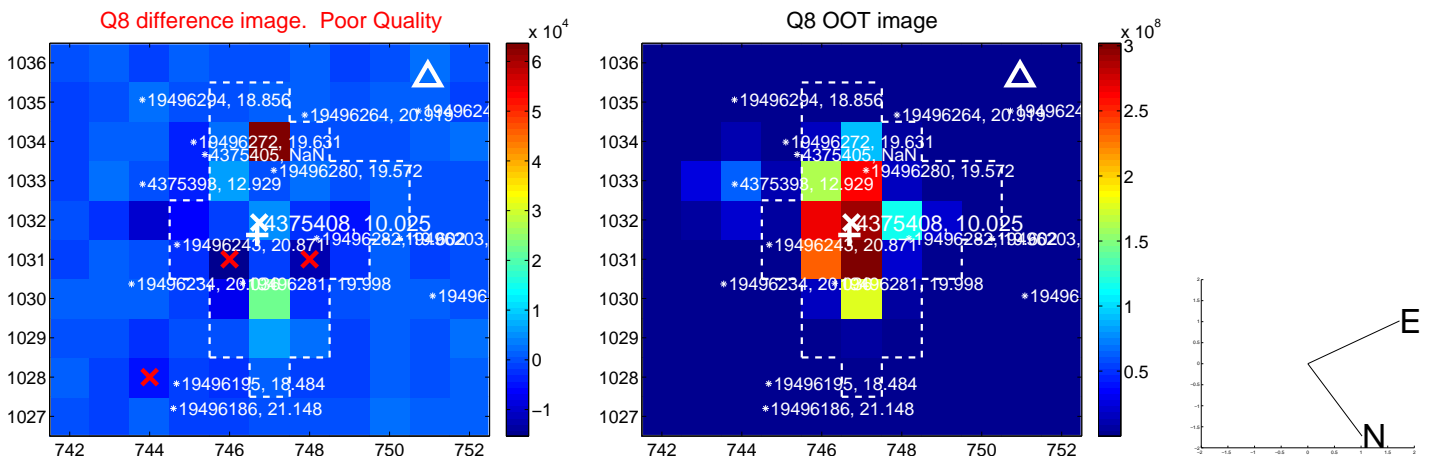
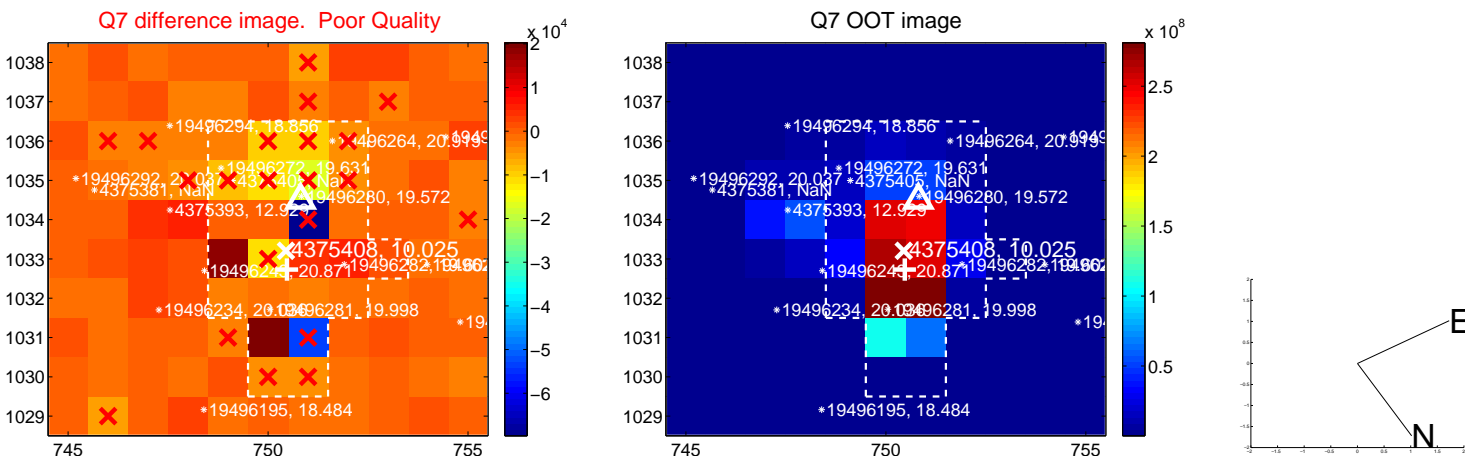
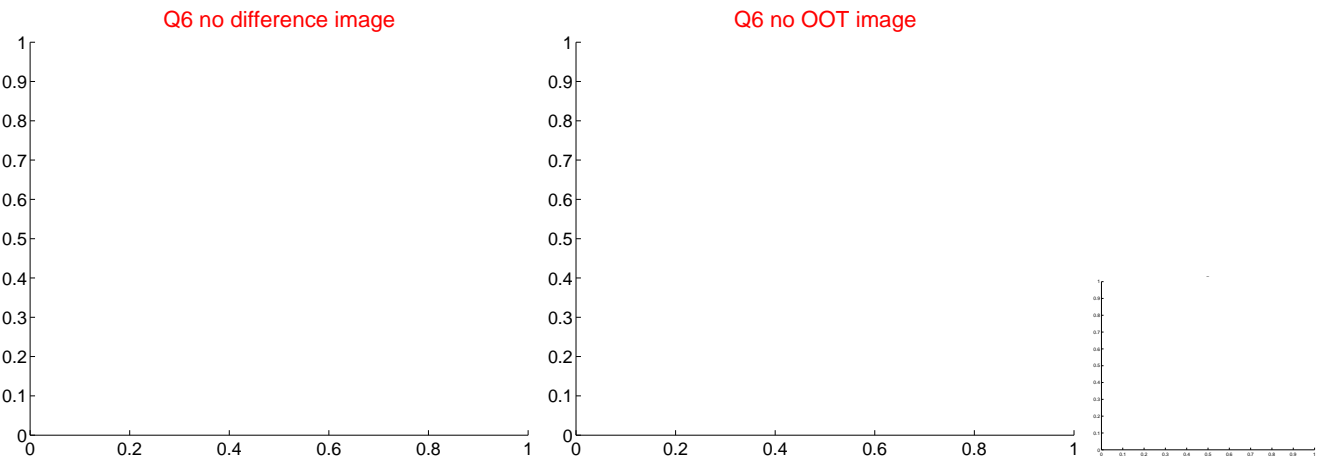
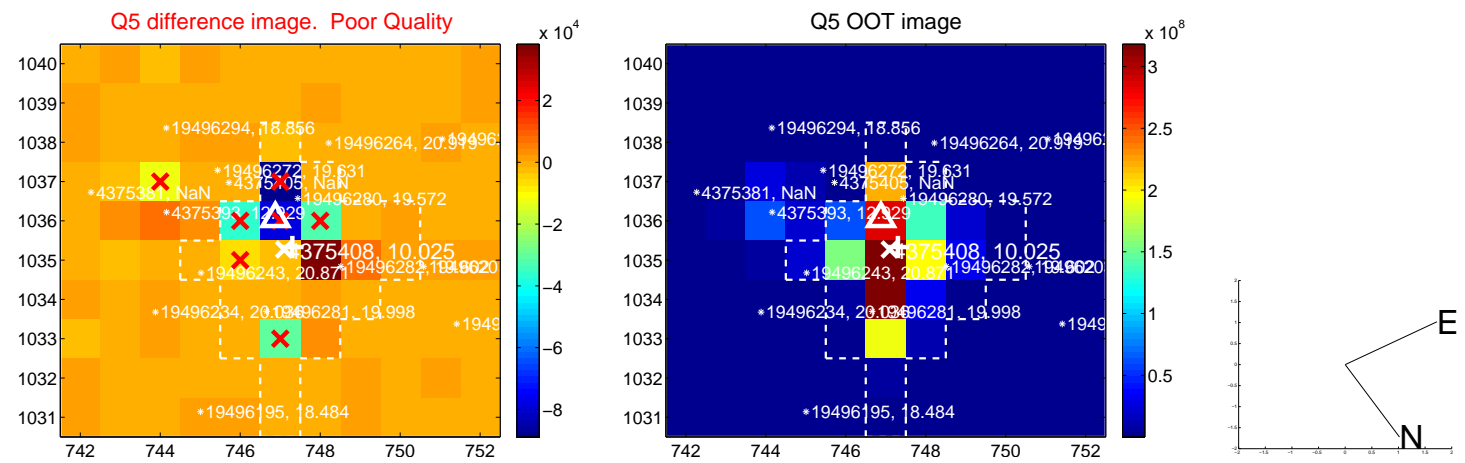


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

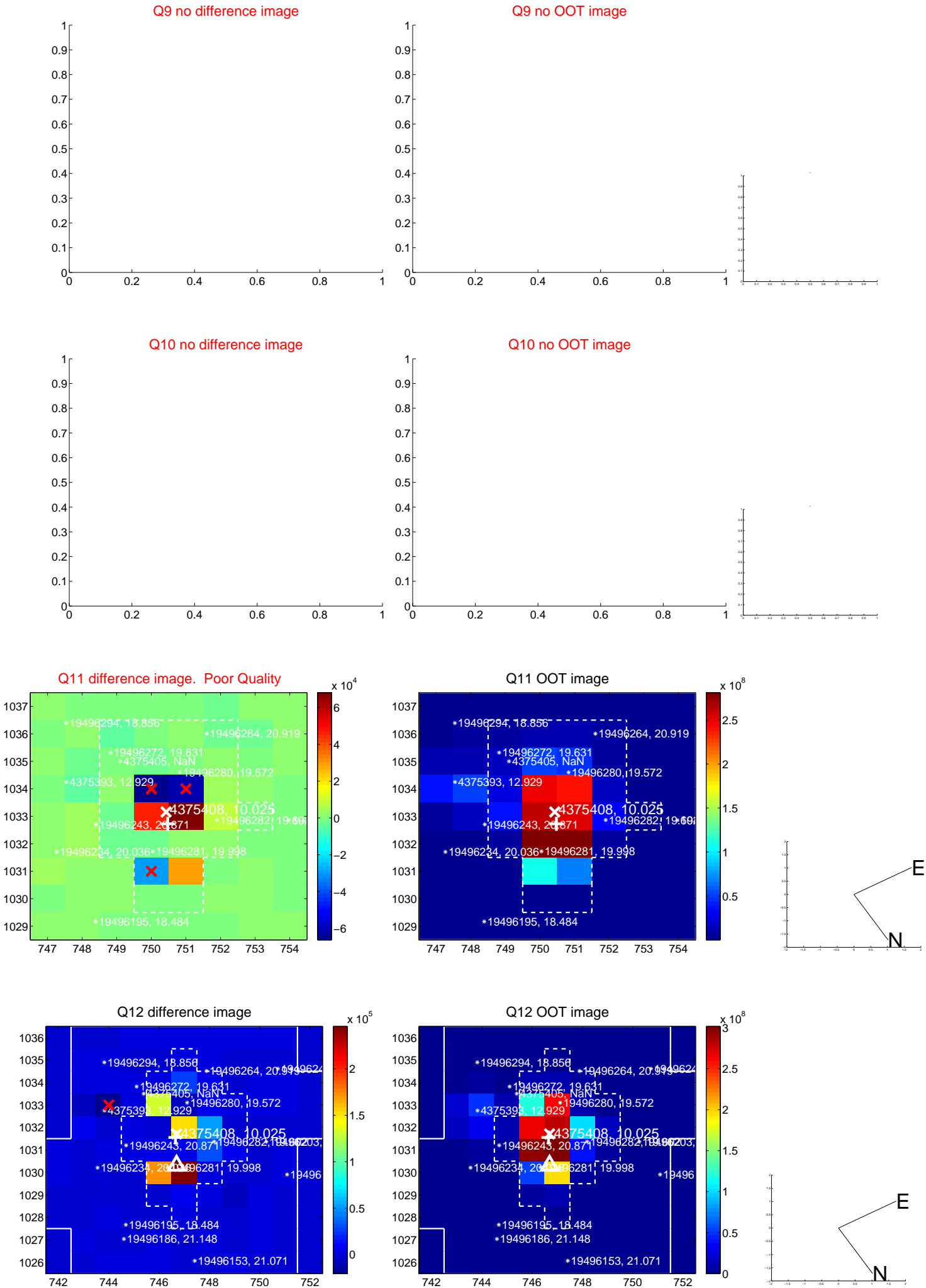
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



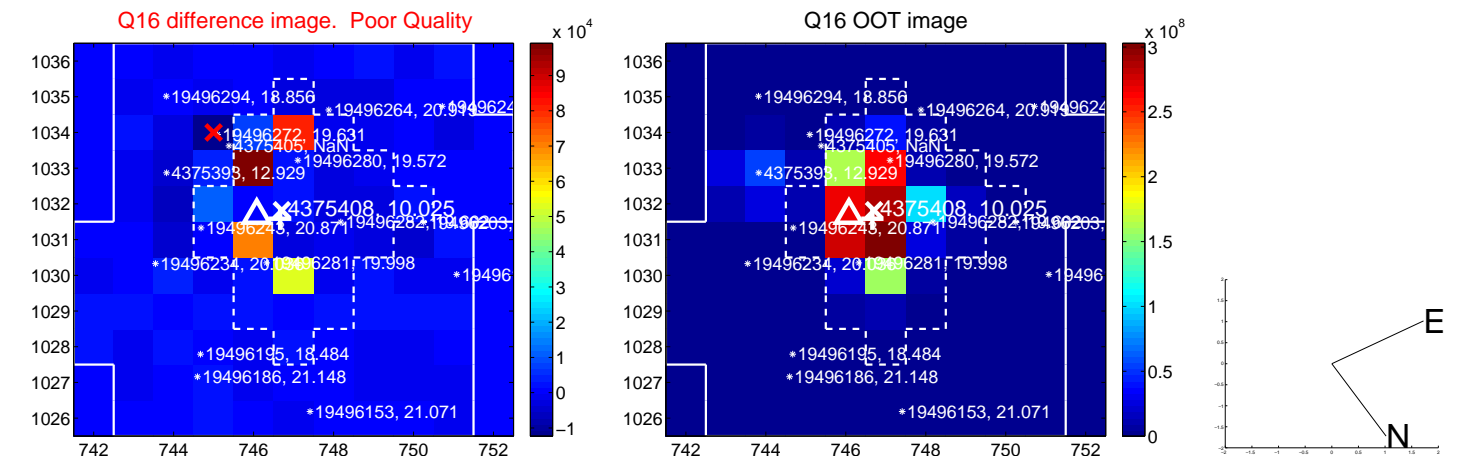
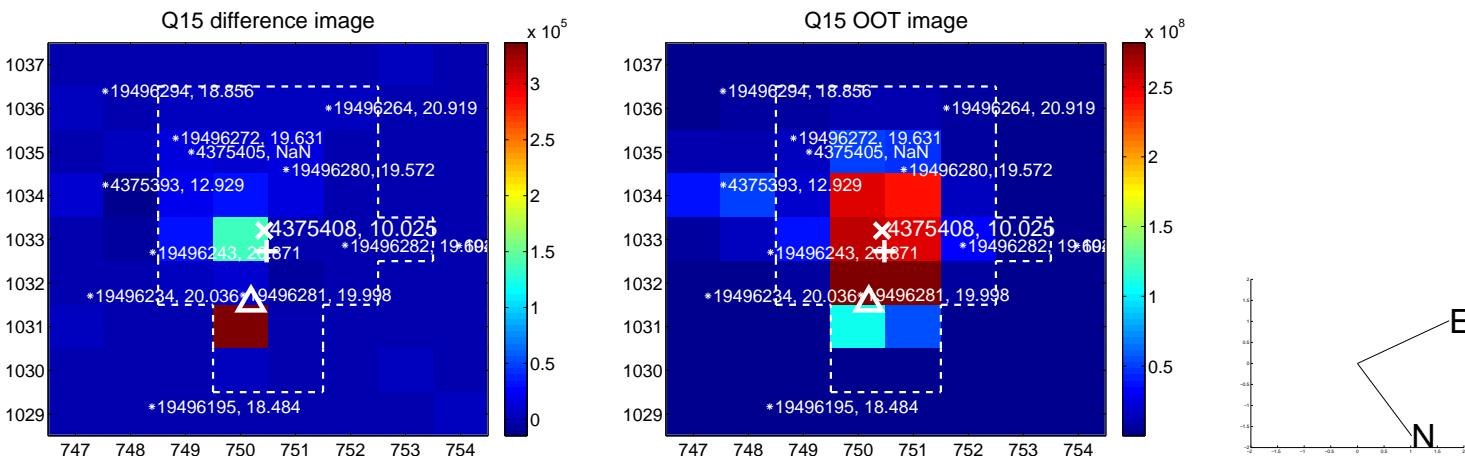
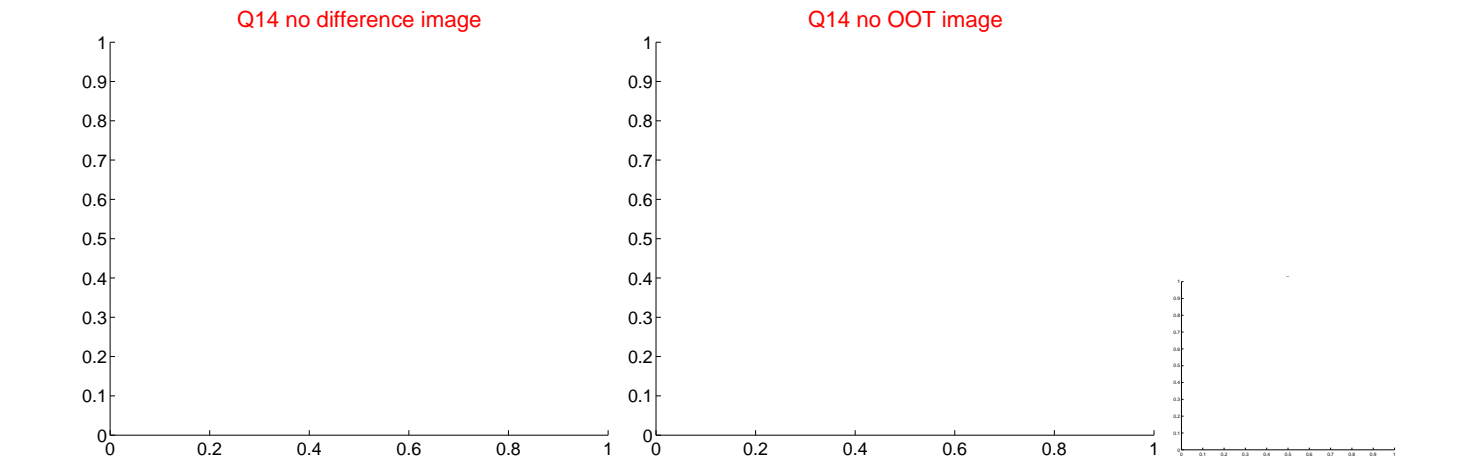
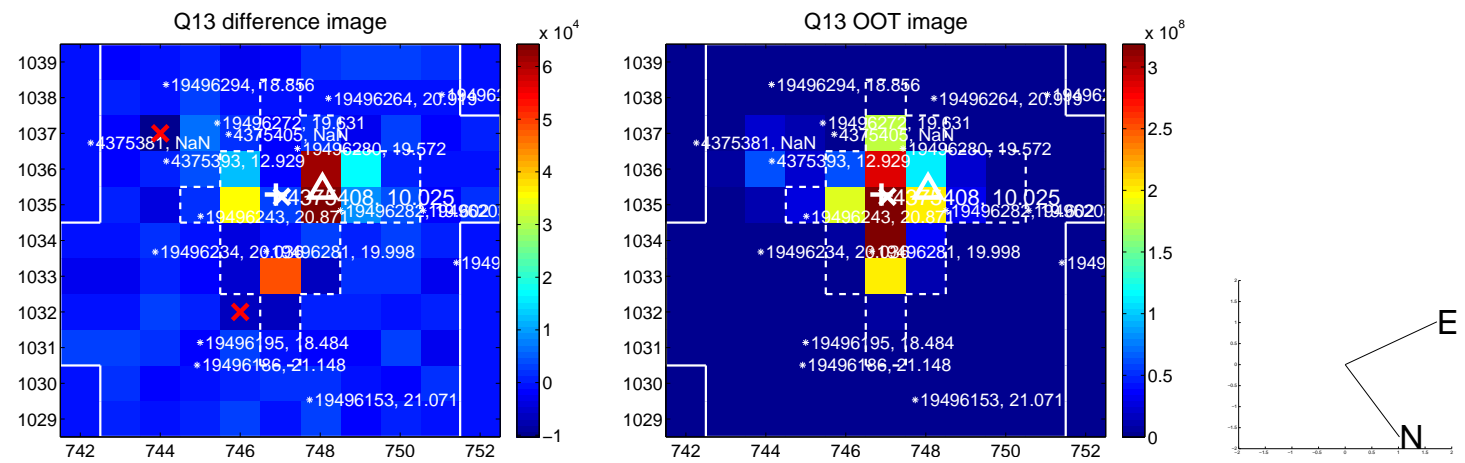
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



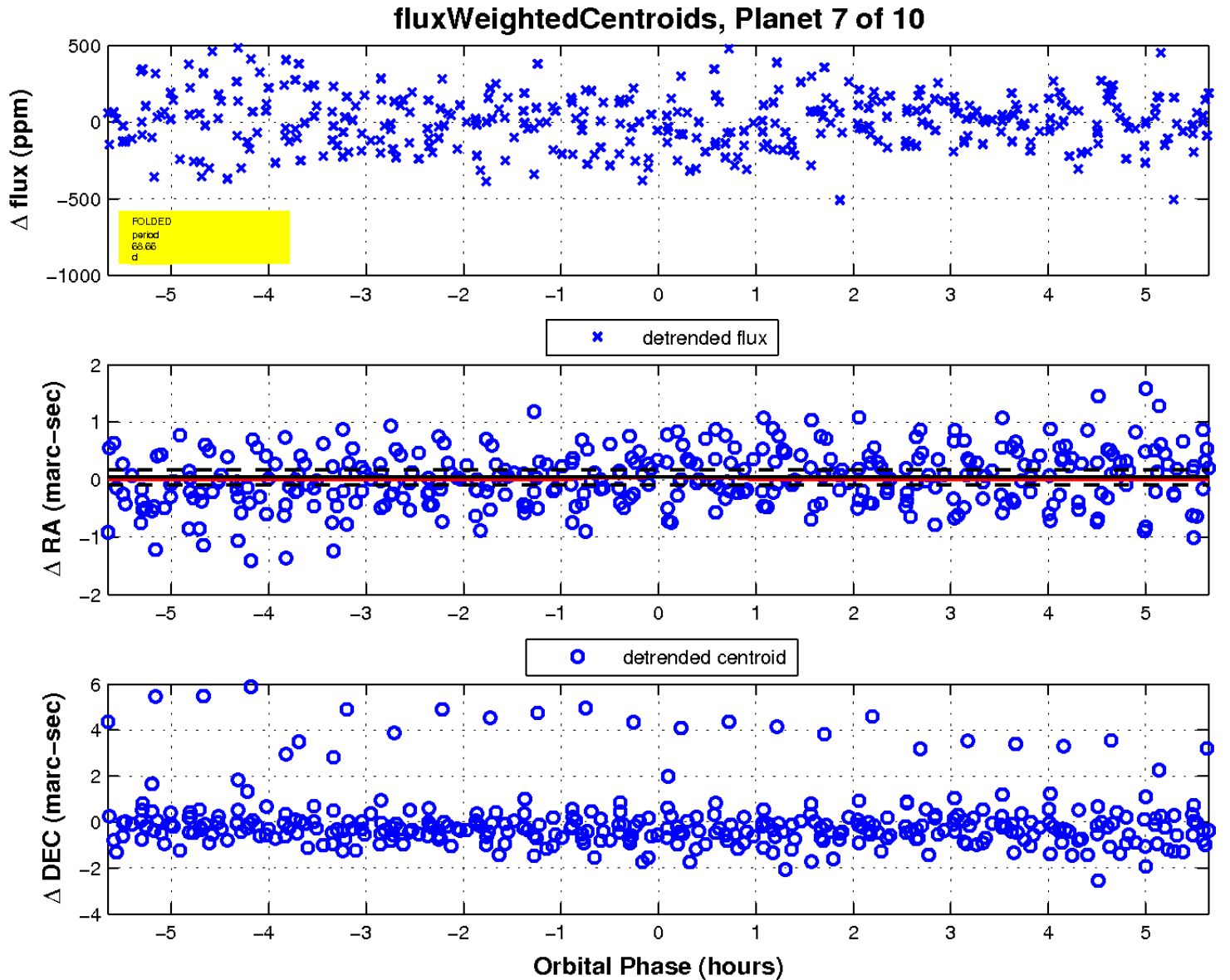
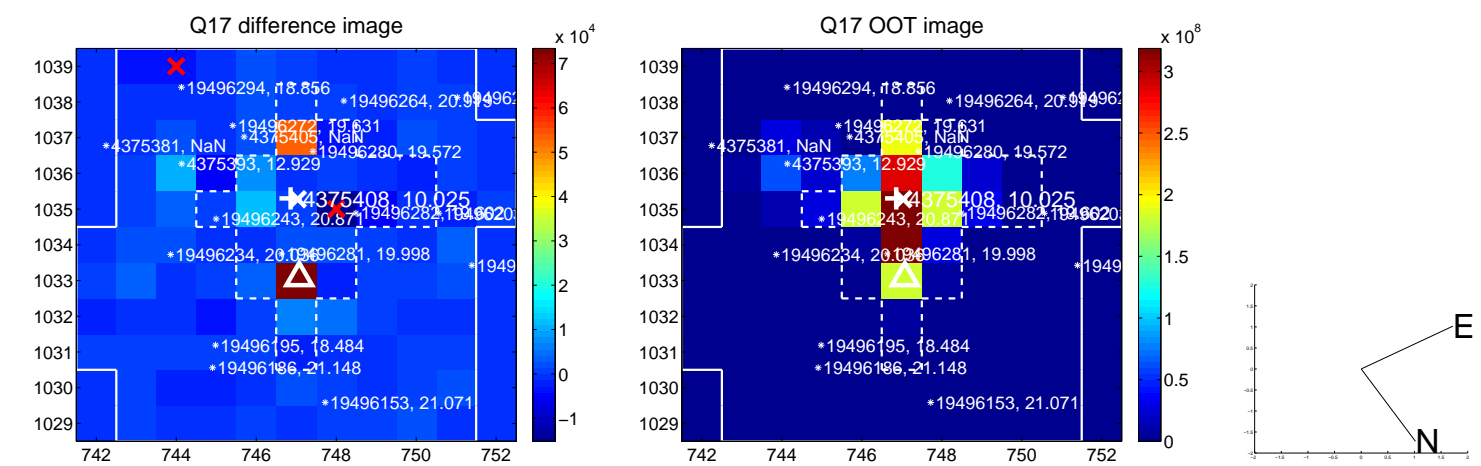
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



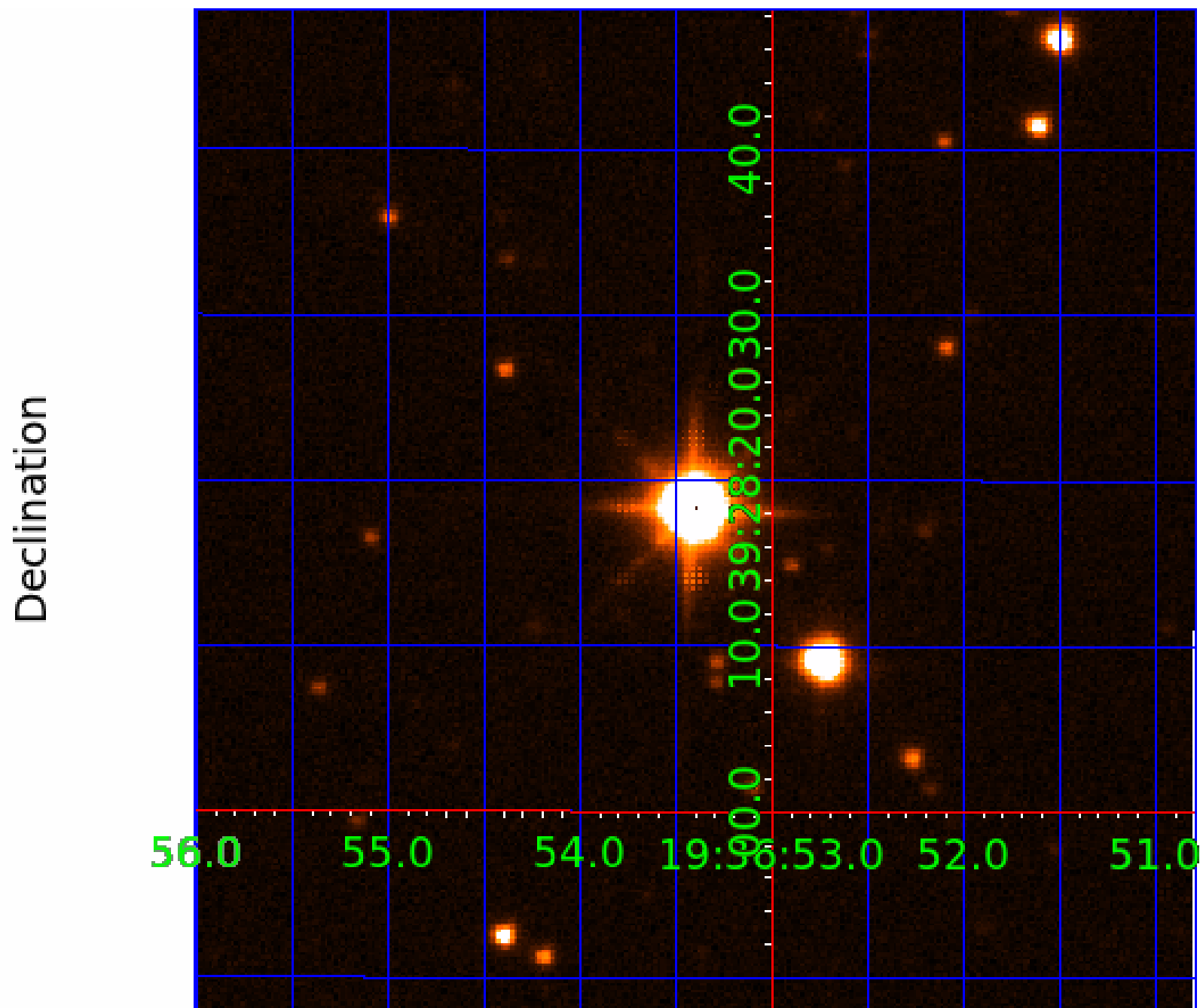
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



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})
004375408-01	OBS	No	1.183133	132.215637	11.3	7.303	9.1	4.0	1.89	6416	0.67	10369.43
004375408-02	OBS	No	106.298491	188.988020	339.5	5.435	11.0	10.3	1.89	6416	4.03	25.77
004375408-03	OBS	No	69.296632	156.360628	334.4	2.169	10.6	9.5	1.89	6416	4.02	45.59
004375408-04	OBS	No	14.842189	138.398480	154.1	3.376	10.2	10.6	1.89	6416	2.70	355.74
004375408-05	OBS	No	53.084762	138.448490	238.0	5.466	9.7	9.4	1.89	6416	3.28	65.04
004375408-06	OBS	No	64.546702	187.689827	258.0	4.142	9.4	8.7	1.89	6416	3.51	50.12
004375408-07	OBS	No	68.662063	188.964621	257.7	1.884	9.1	8.9	1.89	6416	3.58	46.15
004375408-08	OBS	No	154.922917	193.248880	220.0	7.033	8.9	8.0	1.89	6416	2.90	15.60
004375408-09	OBS	No	47.218486	147.679425	263.0	2.735	9.2	8.9	1.89	6416	3.58	76.03
004375408-10	OBS	No	29.333870	132.422001	232.7	2.287	9.1	10.2	1.89	6416	3.33	143.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004375408-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004375408-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004375408-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

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

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

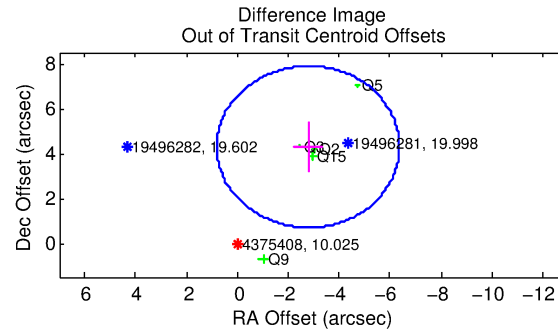
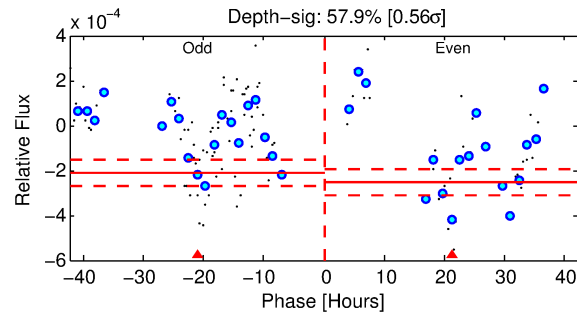
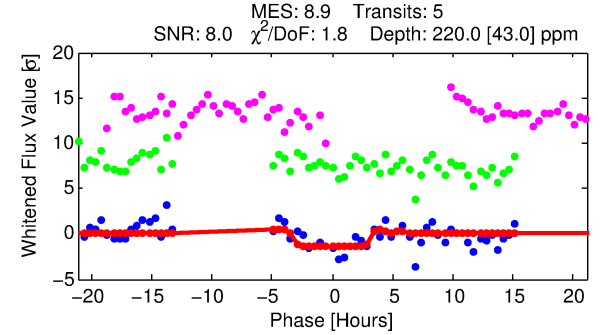
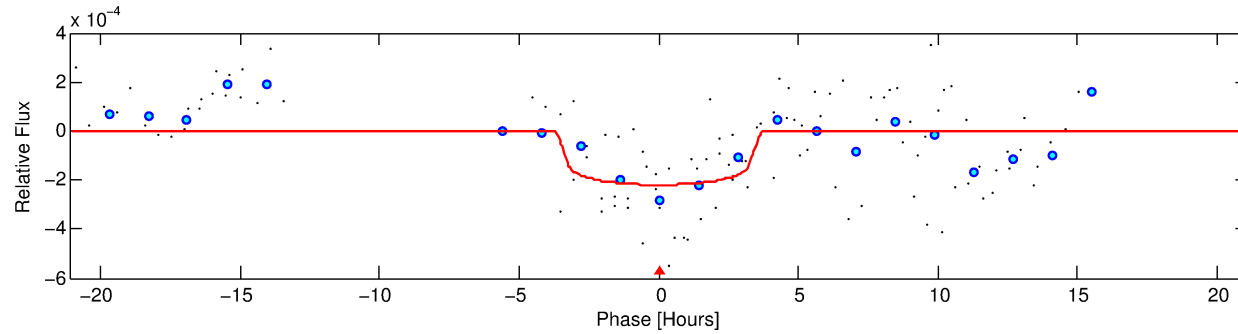
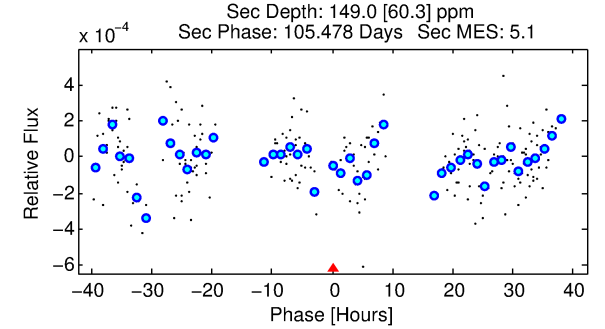
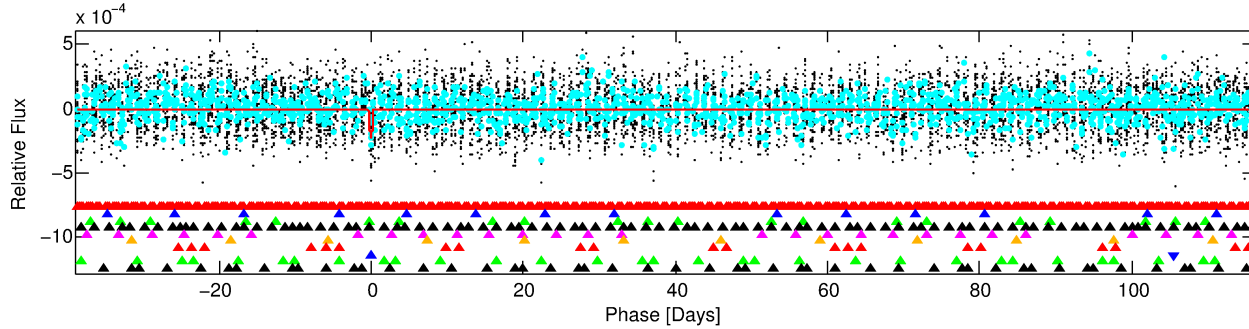
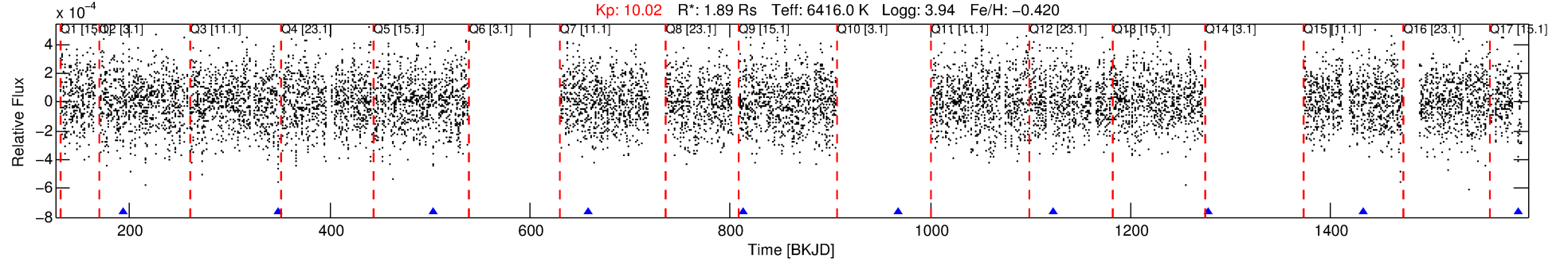
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004375408-08

No Significant Match Found

DV One-Page Summary

KIC: 4375408 Candidate: 8 of 10 Period: 154.923 d



DV Fit Results:

Period = 154.92292 [0.01328] d
Epoch = 193.2489 [0.0231] BKJD
 R_p/R^* = 0.0141 [0.0212]
 a/R^* = 146.99 [1192.11]
 b = 0.52 [11.65]
 Seff = 15.59 [10.98]
 T_{eq} = 507 [89] K
 R_p = 2.90 [4.53] R_e
 a = 0.5888 [0.2457] AU
 A_g = 3389.09 [10591.33] [0.32σ]
 T_{effp} = 5978 [4560] K [1.20σ]

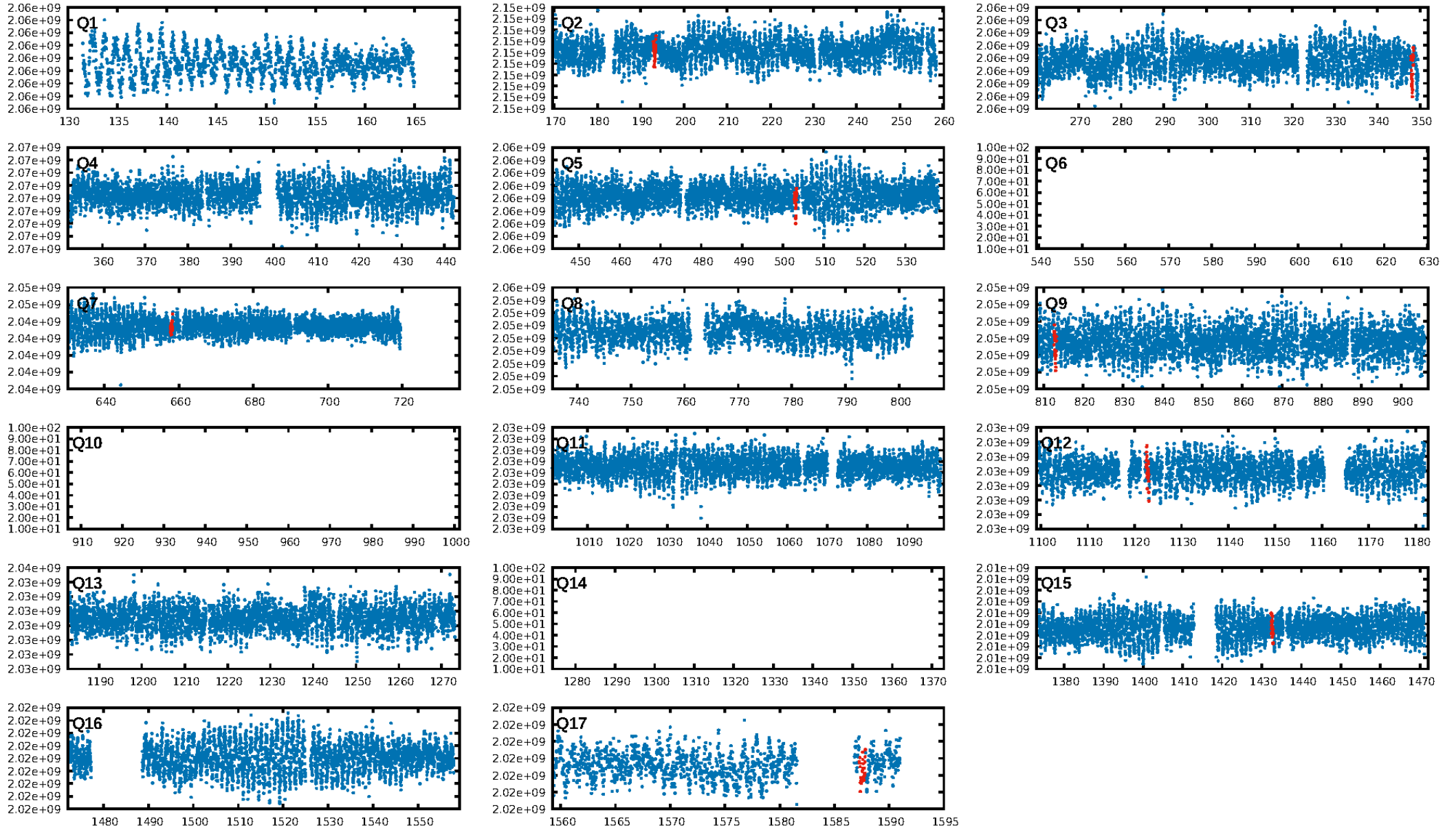
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [131.29σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 71.1%
ModelChiSquareGof-sig: 98.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 0.219 arcsec [0.25σ]
OotOffset-rm: 5.115 arcsec [4.27σ]
KicOffset-rm: 6.616 arcsec [5.26σ]
OotOffset-st: 1/2/0/2 [5]
KicOffset-st: 1/2/0/2 [5]
DiffImageQuality-fgm: 0.40 [2/5]
DiffImageOverlap-fno: 0.00 [0/7]

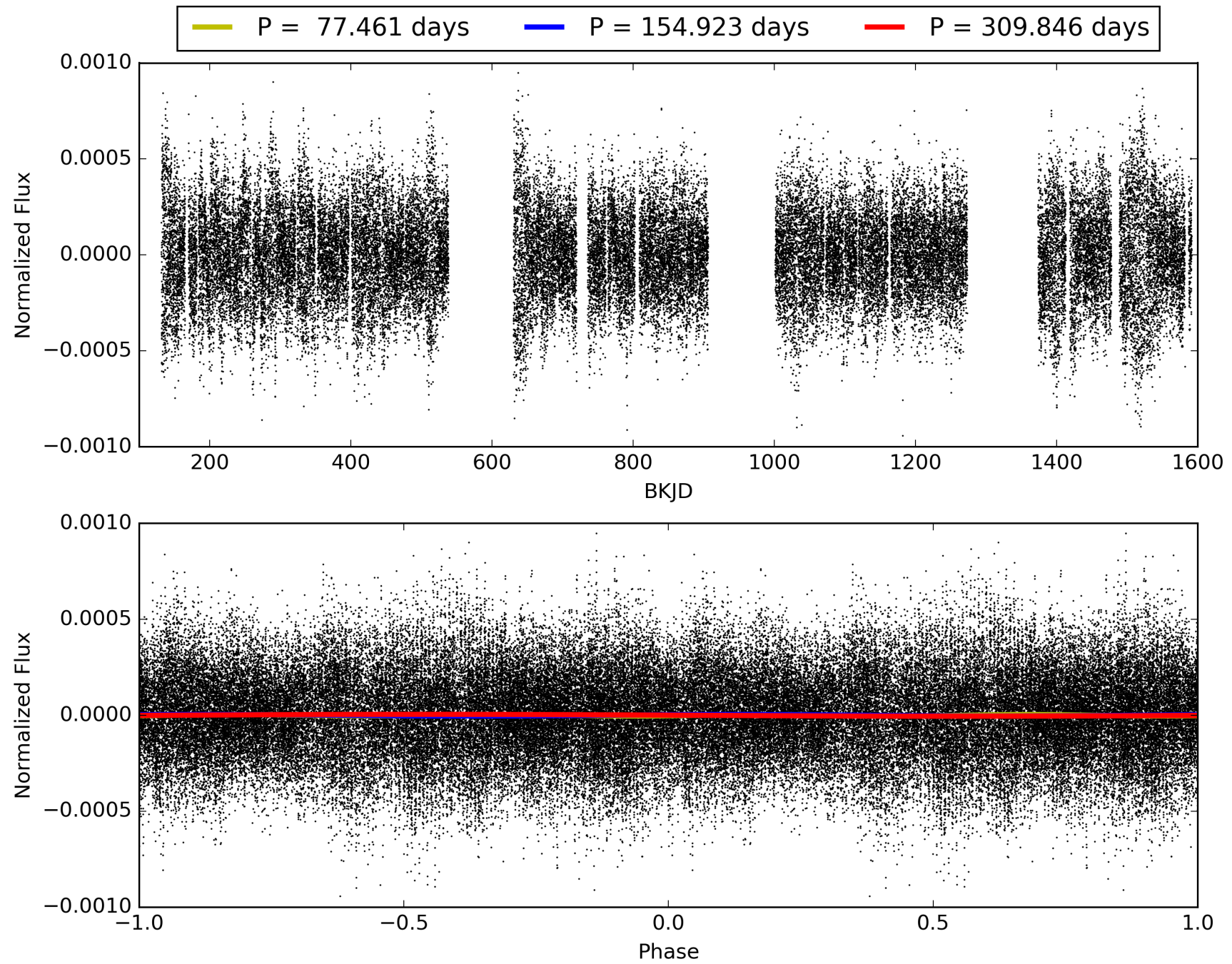
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:59:07 Z

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

TCE 004375408-08, PDC Light Curves

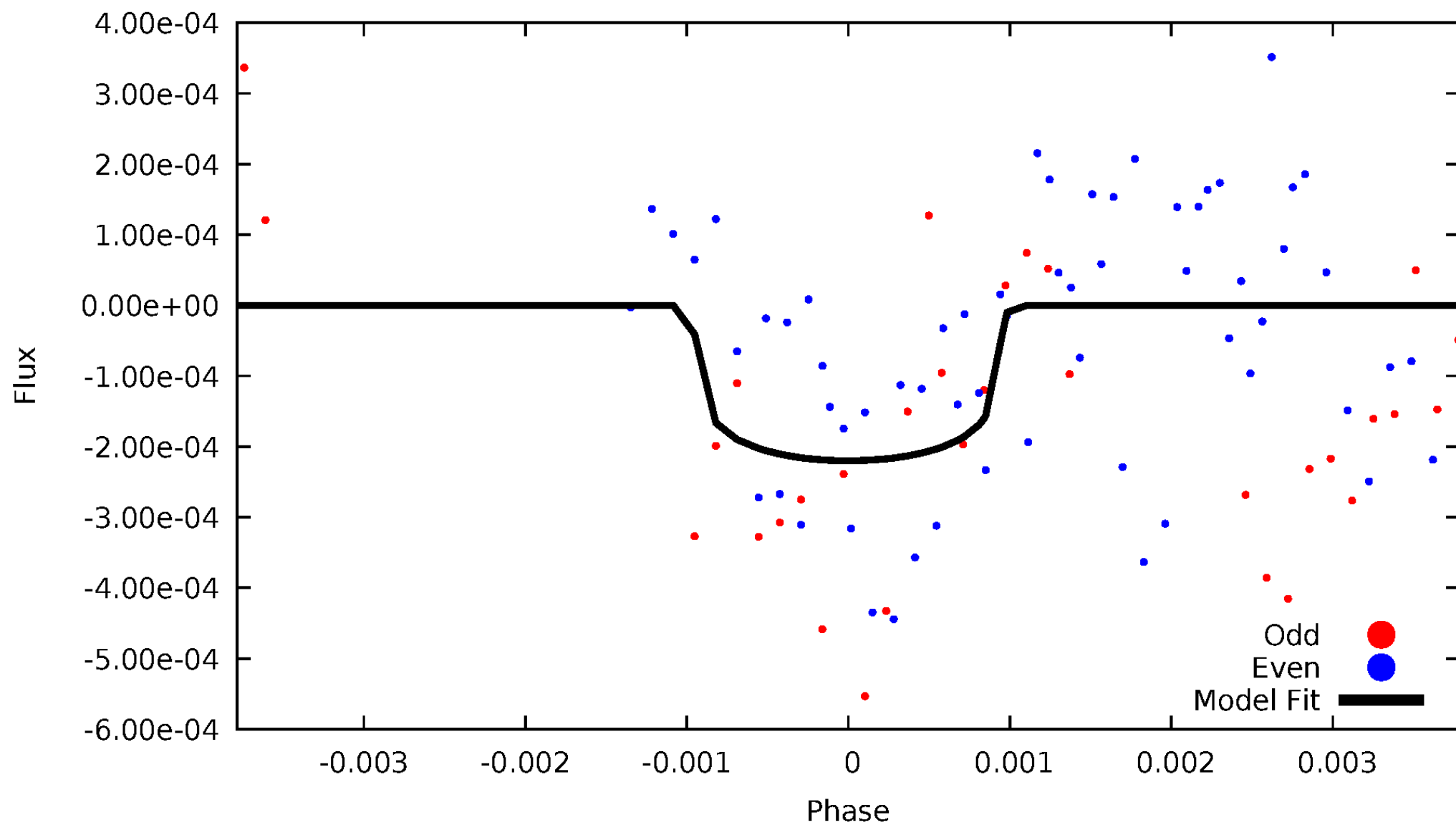


TCE 004375408-08



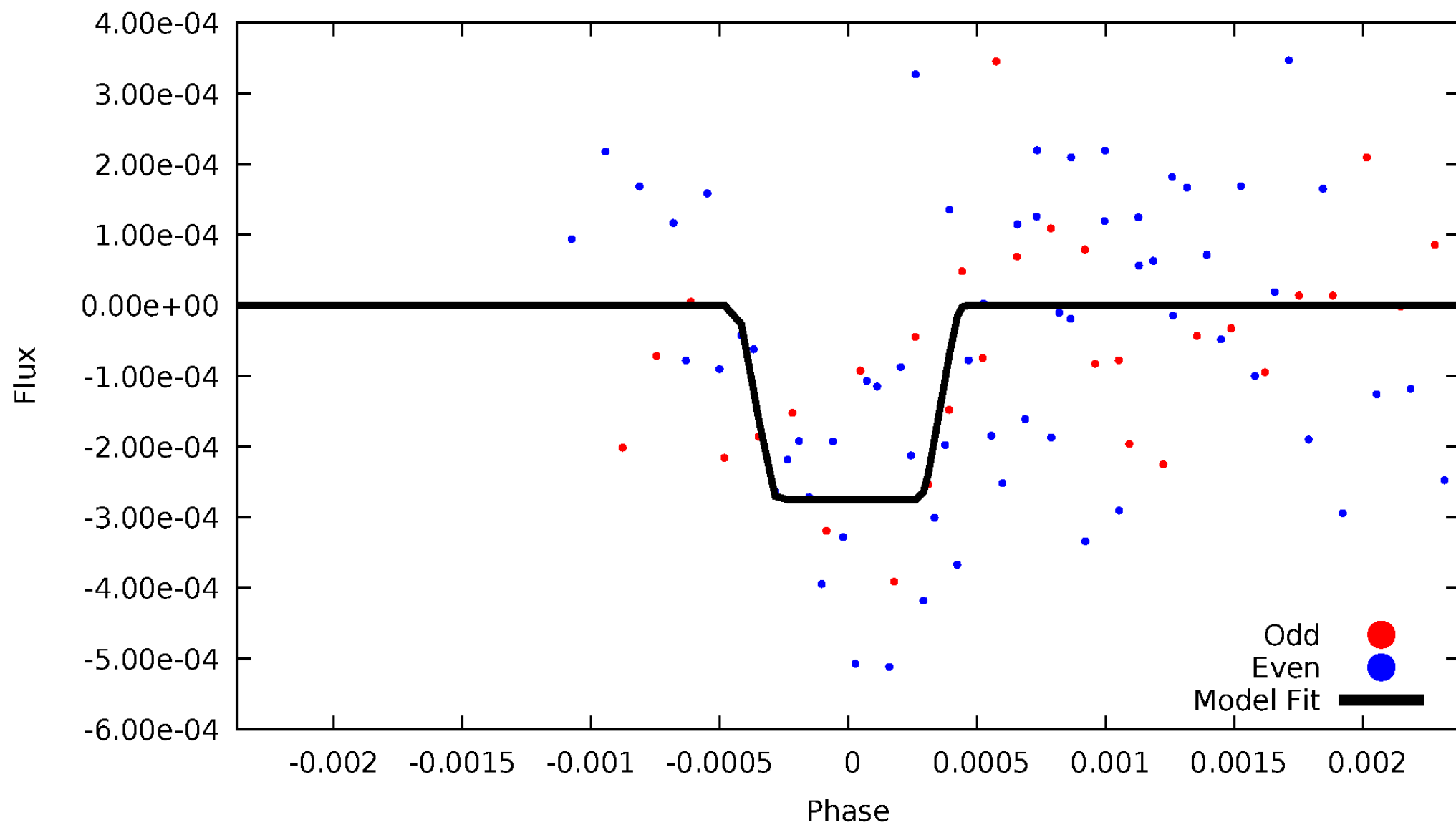
DV Odd/Even

TCE 004375408-08



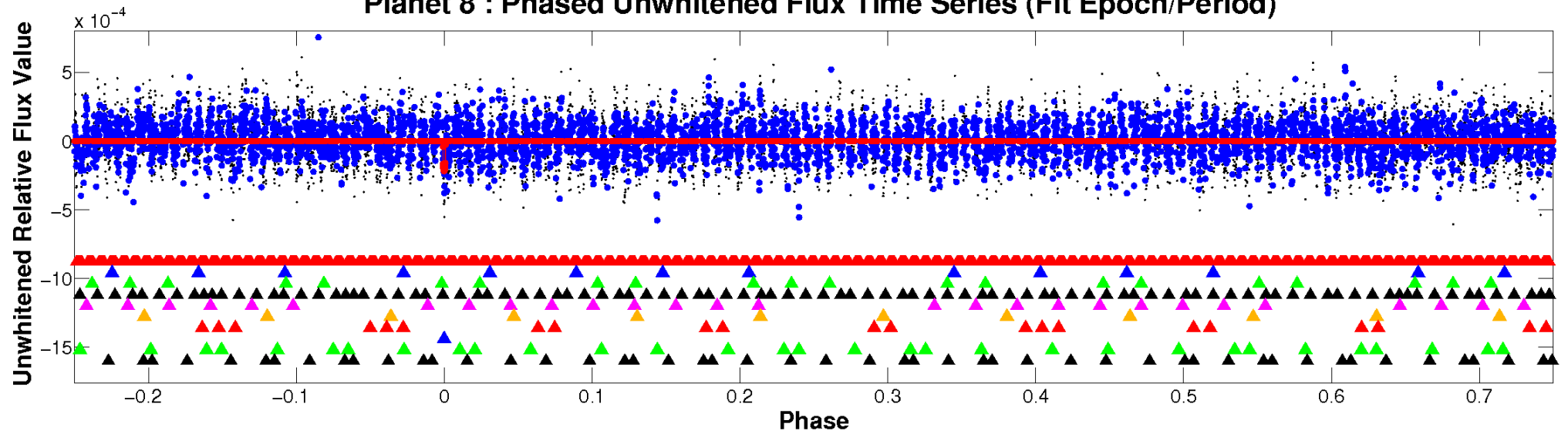
ALT Odd/Even

TCE 004375408-08

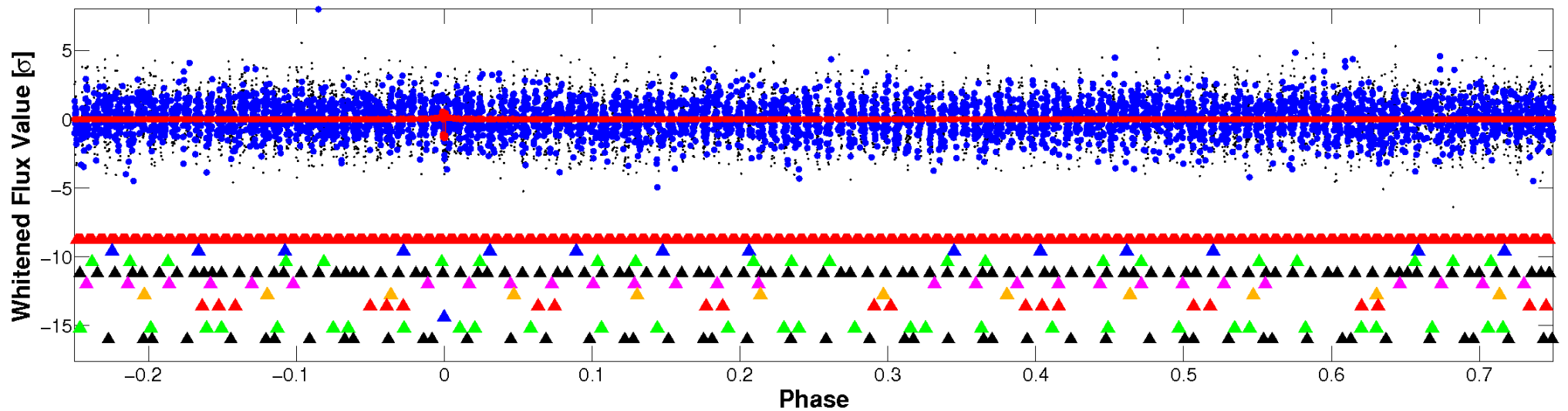


Non-Whitened Vs. Whitened Light Curve

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

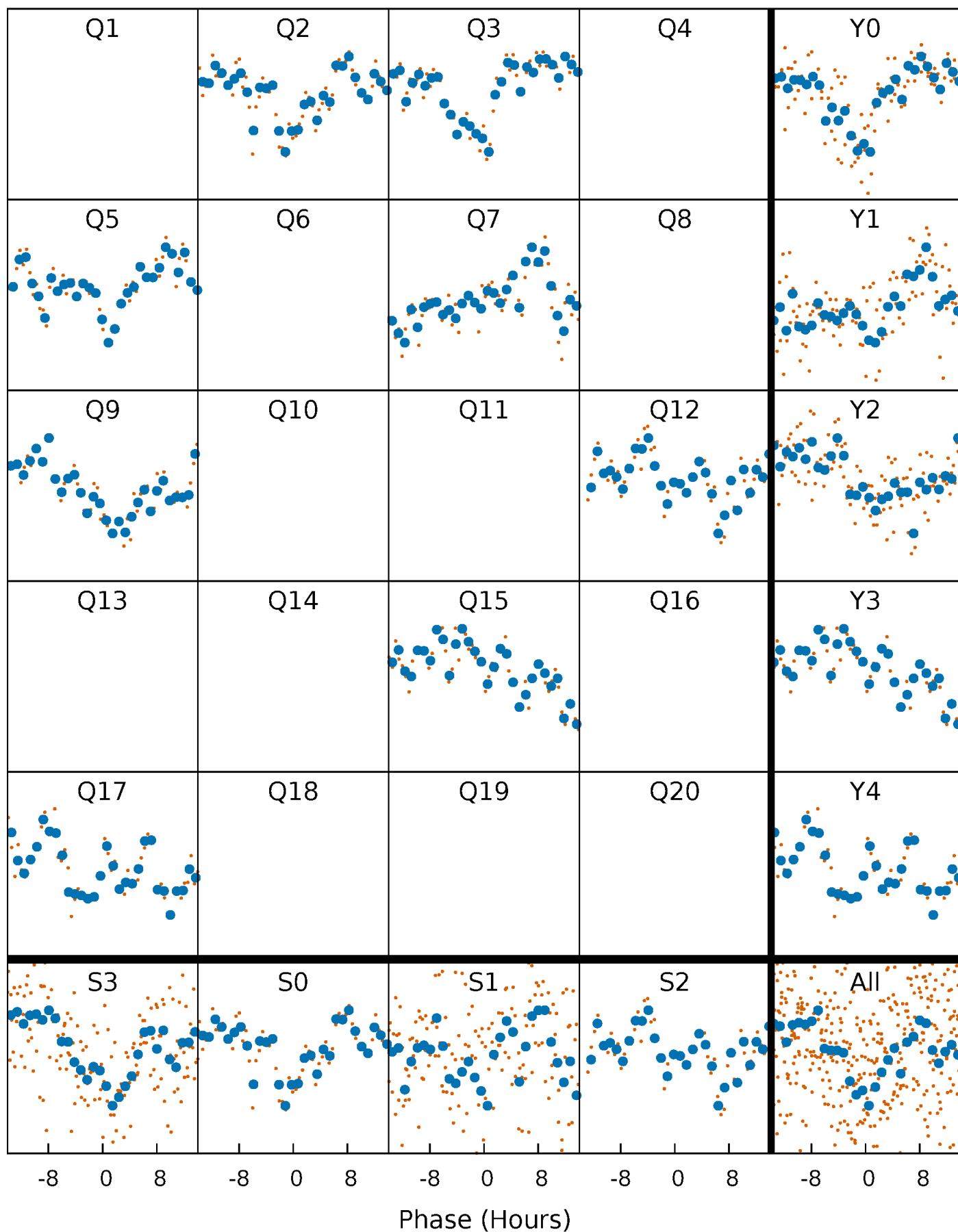


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



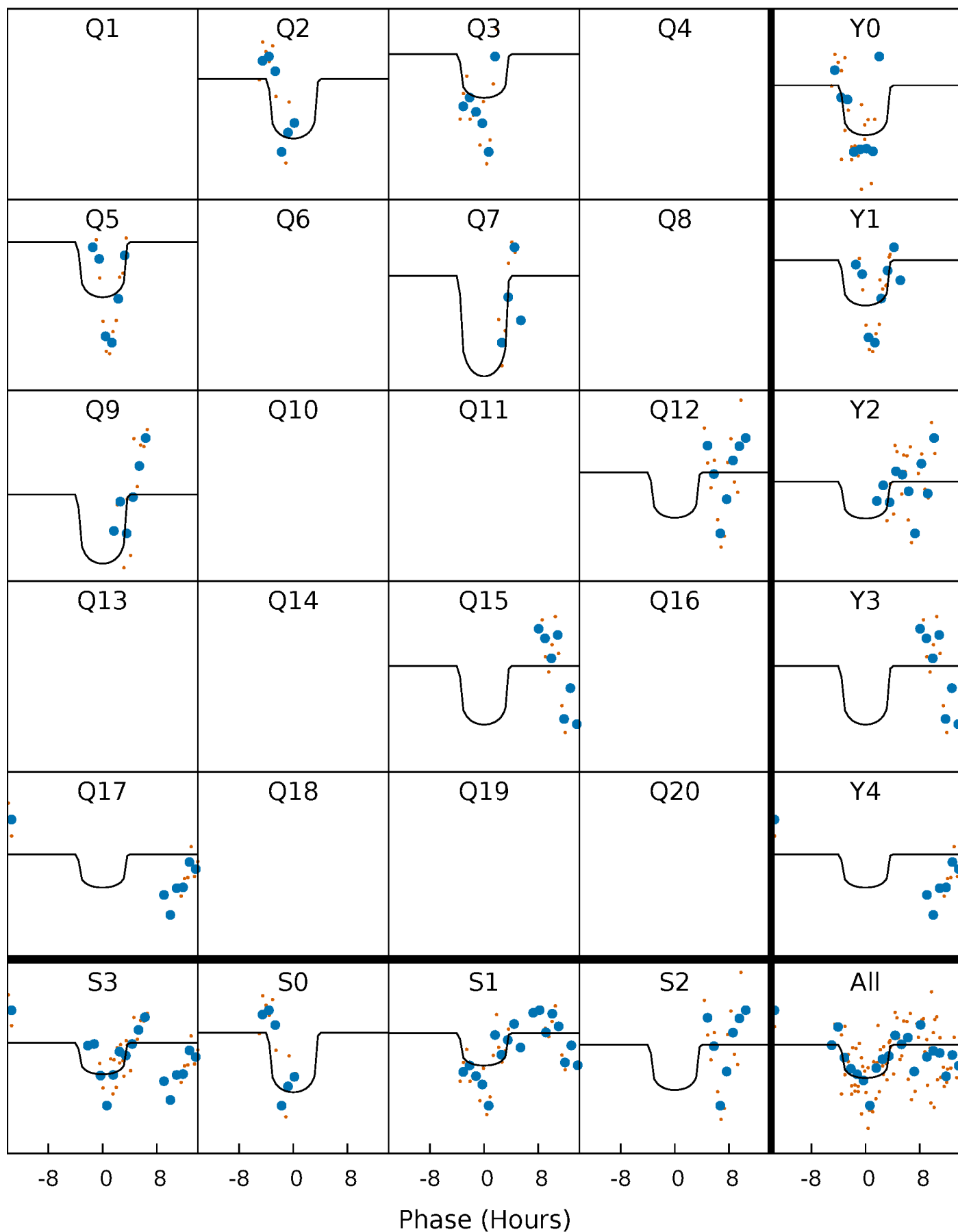
PDC Quarter-Phased Transit Curves

TCE 004375408-08 $P=154.922917$ Days $T_0=193.248880$ (BKJD)



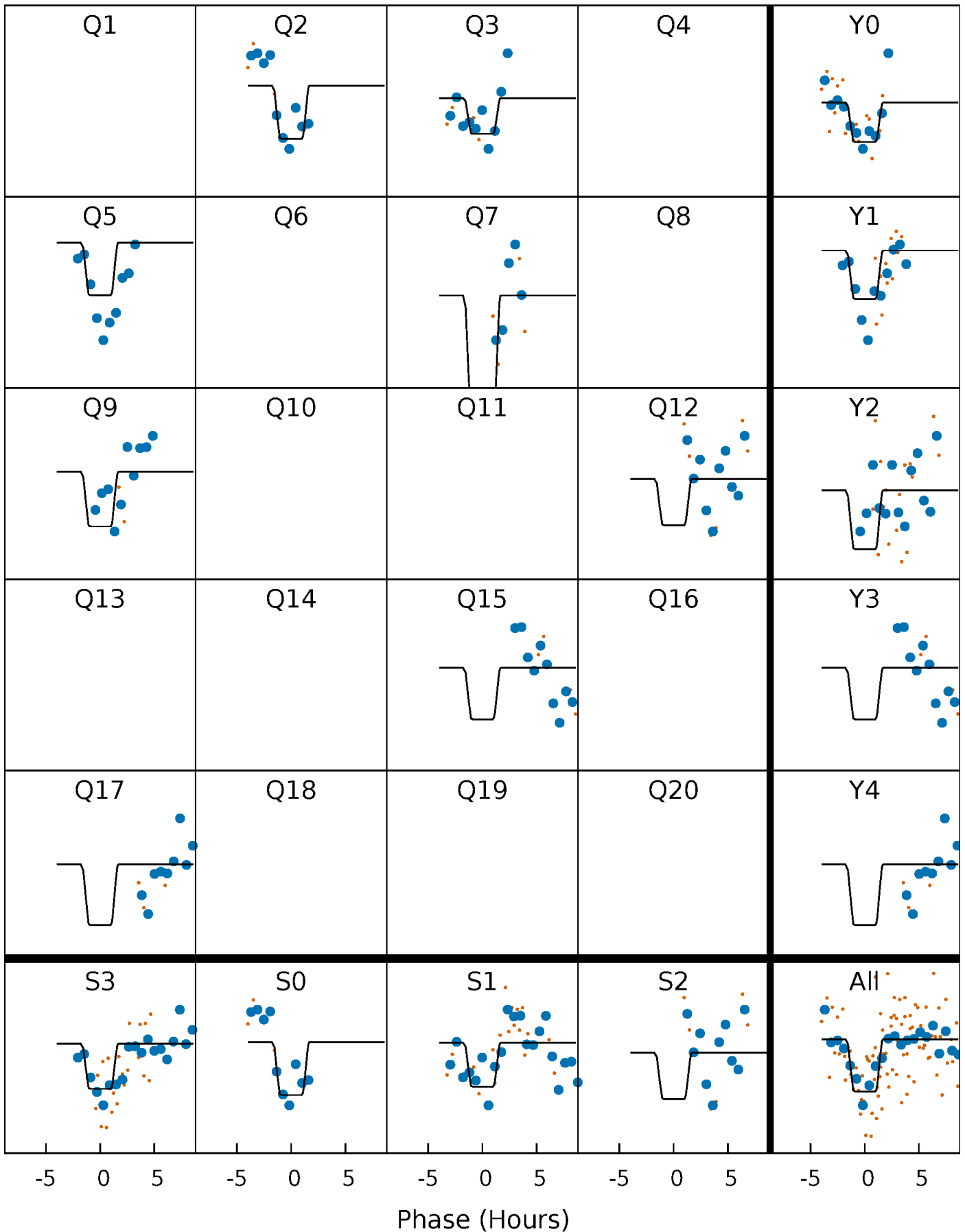
DV Quarter-Phased Transit Curves

TCE 004375408-08 $P=154.922917$ Days $T_0=193.248880$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

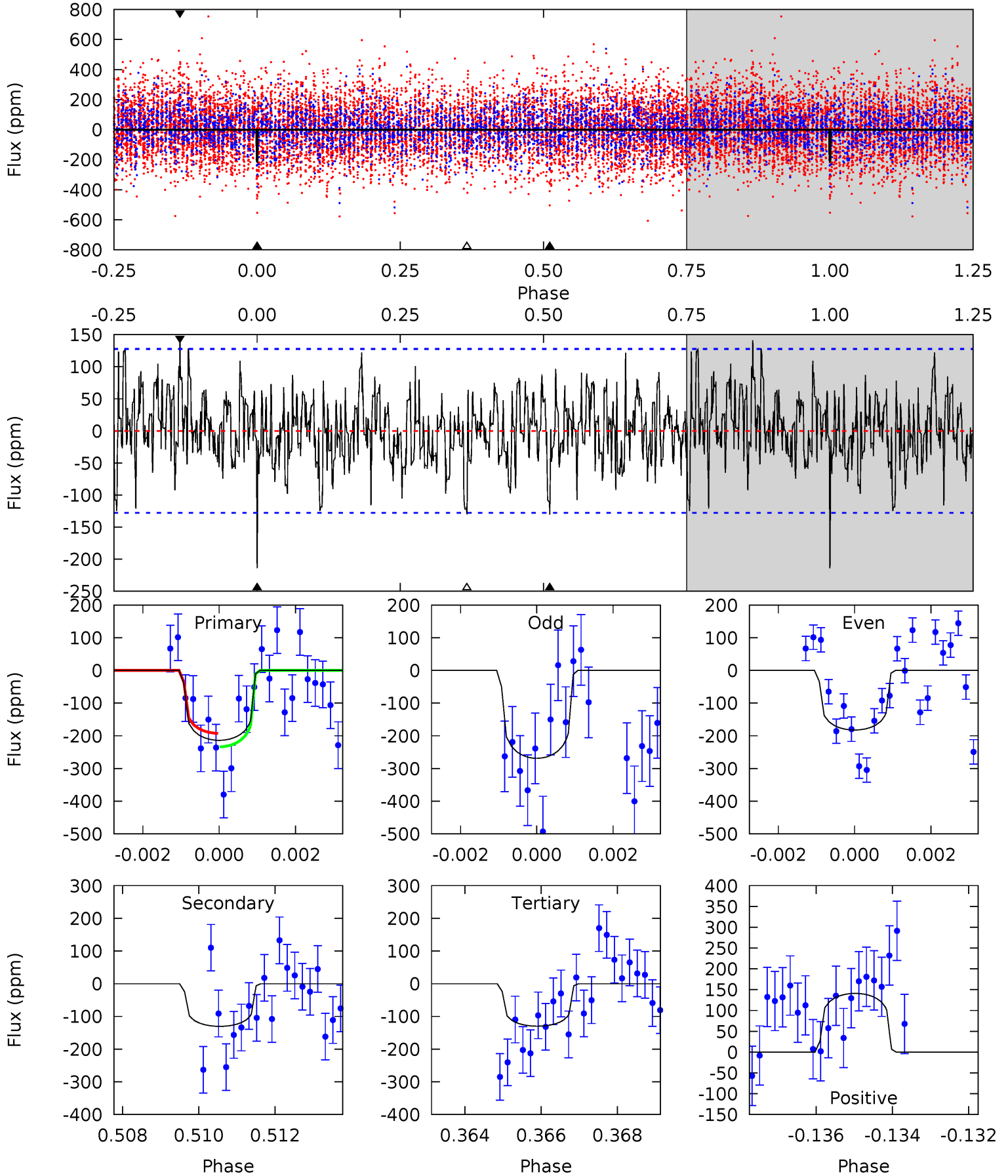
TCE 004375408-08 $P=154.953415$ Days $T_0=193.206695$ (BKJD)



DV Model-Shift Uniqueness Test

004375408-08, P = 154.922917 Days, E = 38.325963 Days

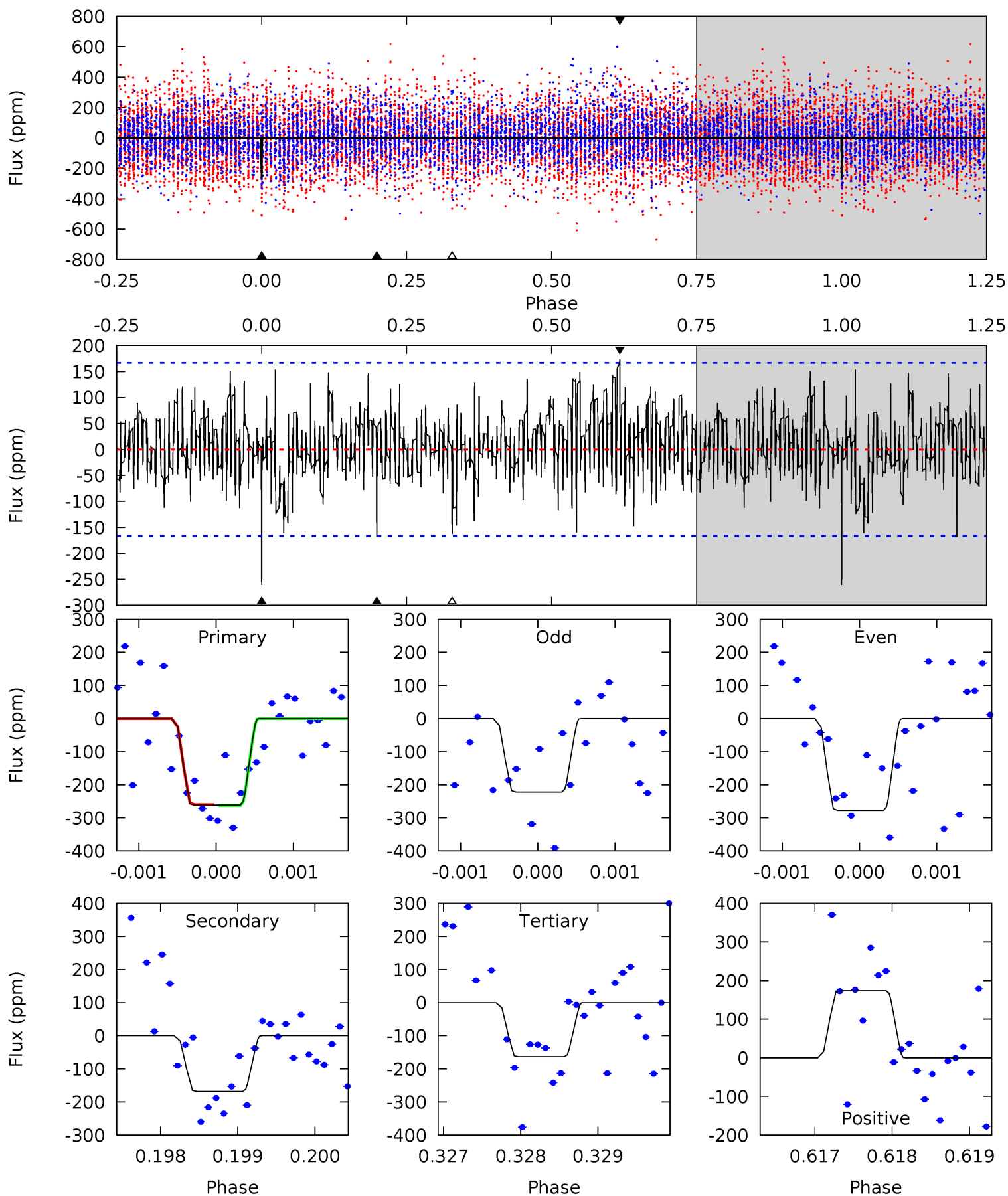
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.90	5.43	5.41	5.87	5.32	3.08	1.82	3.49	3.03	0.02	-0.44	1.74	1.15	0.40	0.85



Alt Model-Shift Uniqueness Test

004375408-08, P = 154.953415 Days, E = 38.253280 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.59	5.54	5.37	5.71	5.48	3.34	1.61	3.22	2.89	0.17	-0.17	0.88	0.65	0.40	0.05



Stellar Parameters For KIC 004375408

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6416^{+181}_{-227}	$3.941^{+0.413}_{-0.138}$	$-0.420^{+0.300}_{-0.300}$	$1.887^{+0.448}_{-0.768}$	$1.133^{+0.169}_{-0.188}$	$0.237^{+0.824}_{-0.092}$
	+3%/-4%	+10%/-4%	+71%/-71%	+24%/-41%	+15%/-17%	+347%/-39%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004375408-08 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-130 ± 24	$3.76^{+3.96}_{-2.49}$	694^{+54}_{-79}	4926^{+3722}_{-1149}	1716^{+12870}_{-1320}
Alt.	-168 ± 30	$4.42^{+3.59}_{-2.78}$	692^{+53}_{-76}	4914^{+3033}_{-994}	1694^{+10094}_{-1200}

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 $A_{obs} \gg 1.0$

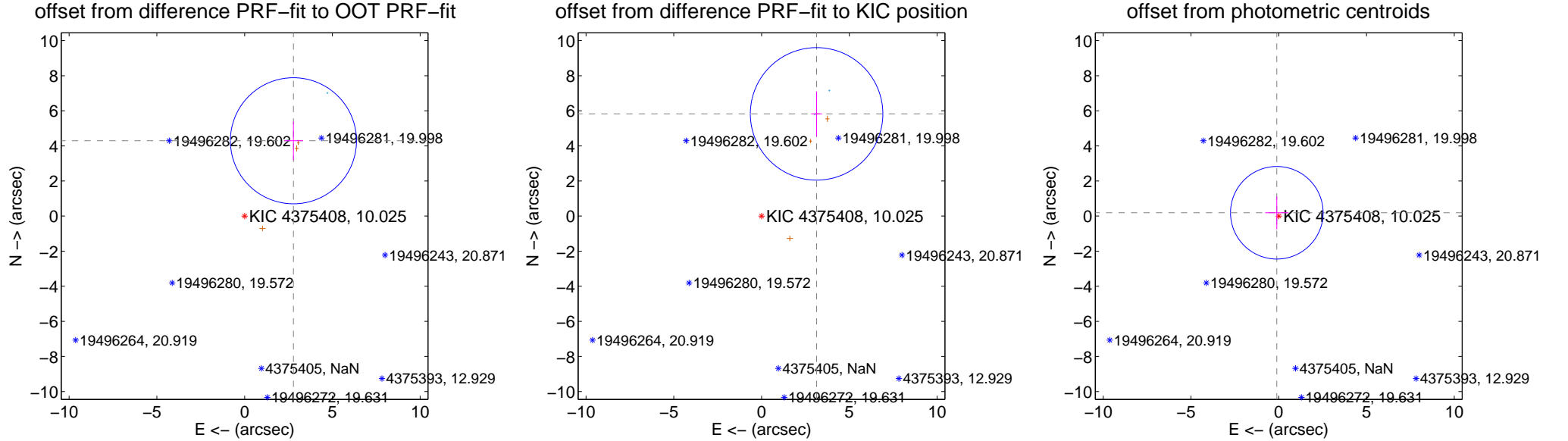
DV Centroid Data

Supplemental centroid analysis for 004375408-08. **Kepler magnitude: 10.03.** Transit SNR 8.02

There are 2 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.115 ± 1.198	4.27	-2.781 ± 0.543	4.293 ± 1.090
PRF-fit source offset from KIC position	6.616 ± 1.259	5.26	-3.136 ± 0.313	5.826 ± 1.277
photometric centroid source offset	0.22 ± 0.88	0.25	0.11 ± 0.67	0.19 ± 0.94



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.

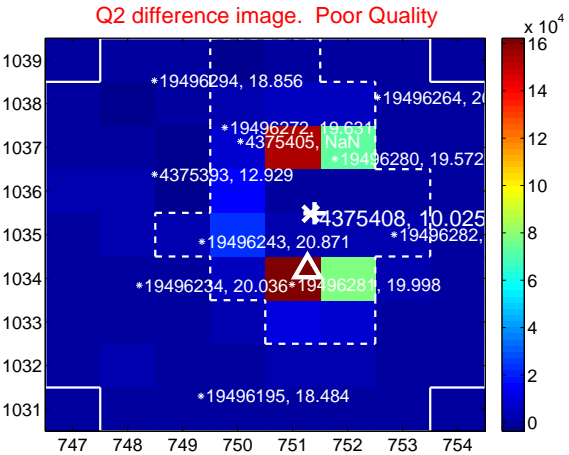
Q1 no difference image



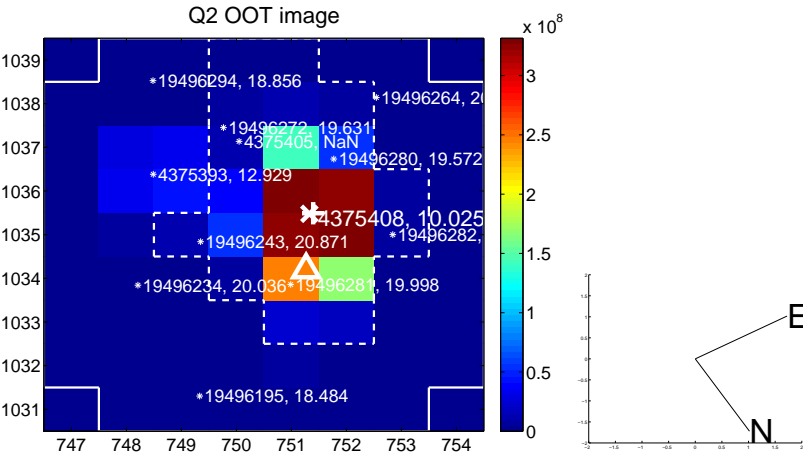
Q1 no OOT image



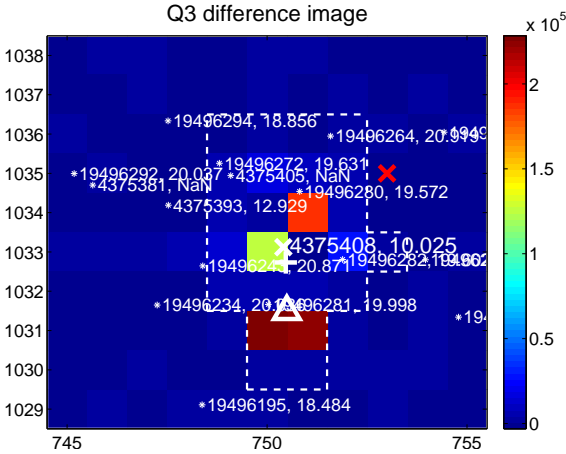
Q2 difference image. Poor Quality



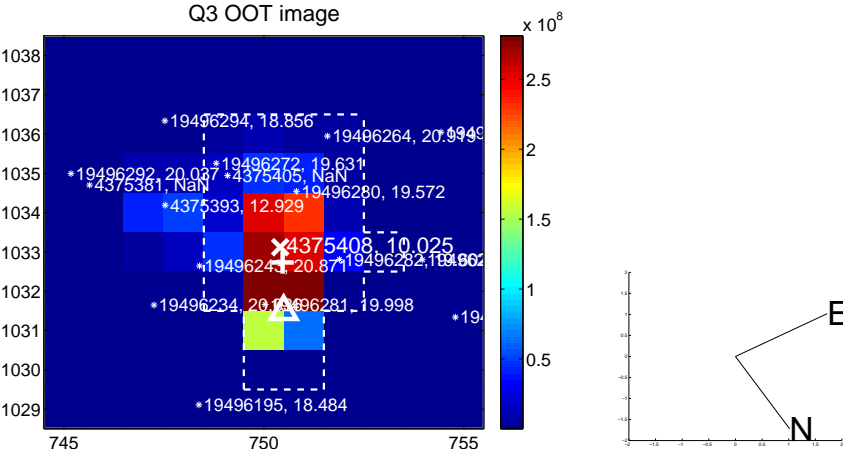
Q2 OOT image



Q3 difference image



Q3 OOT image



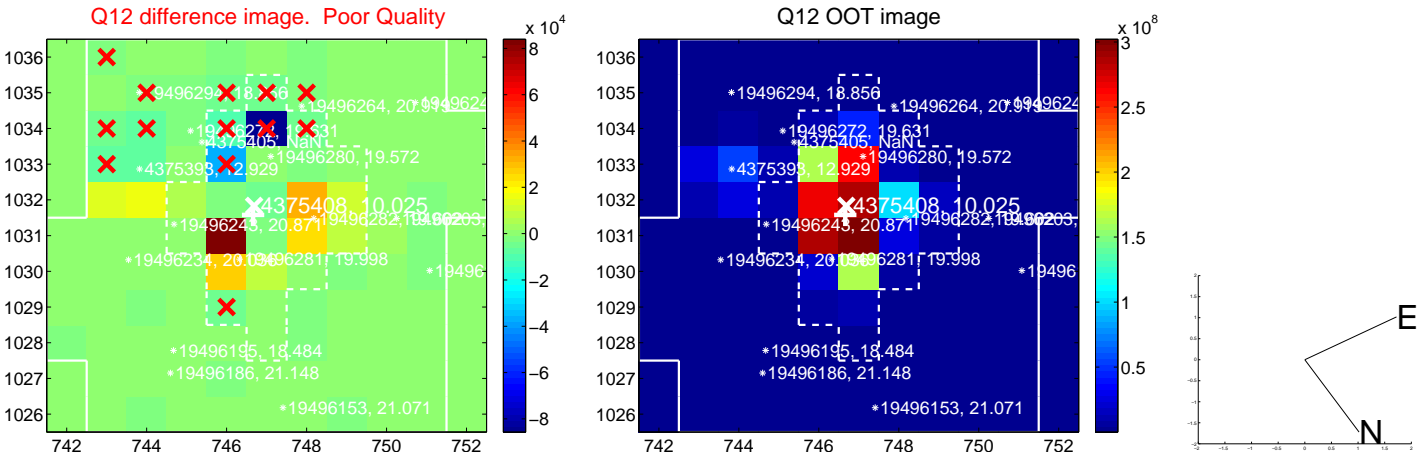
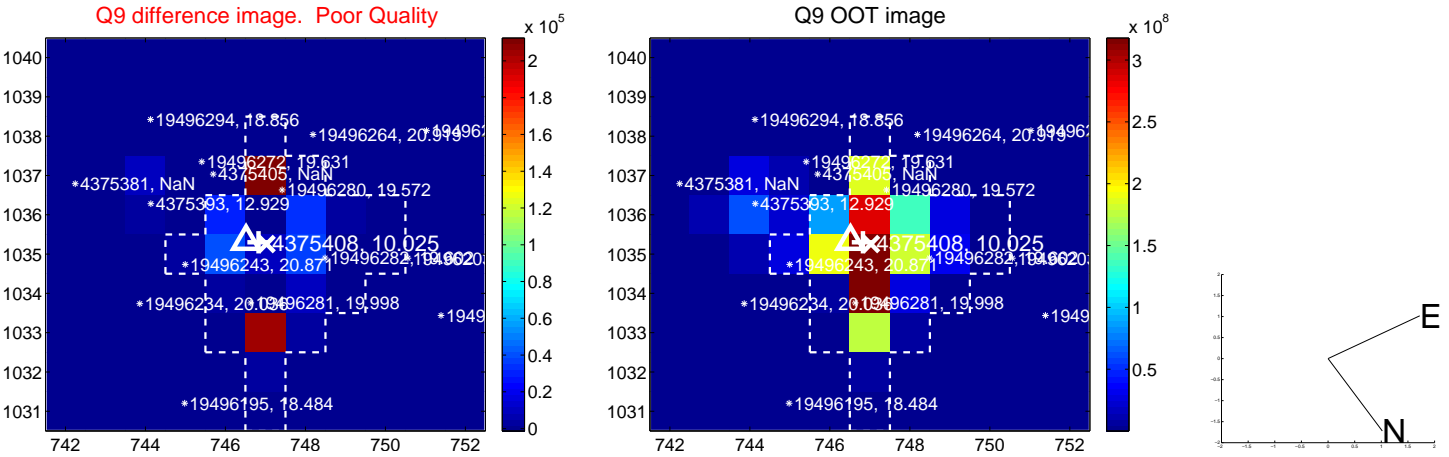
Q4 no difference image



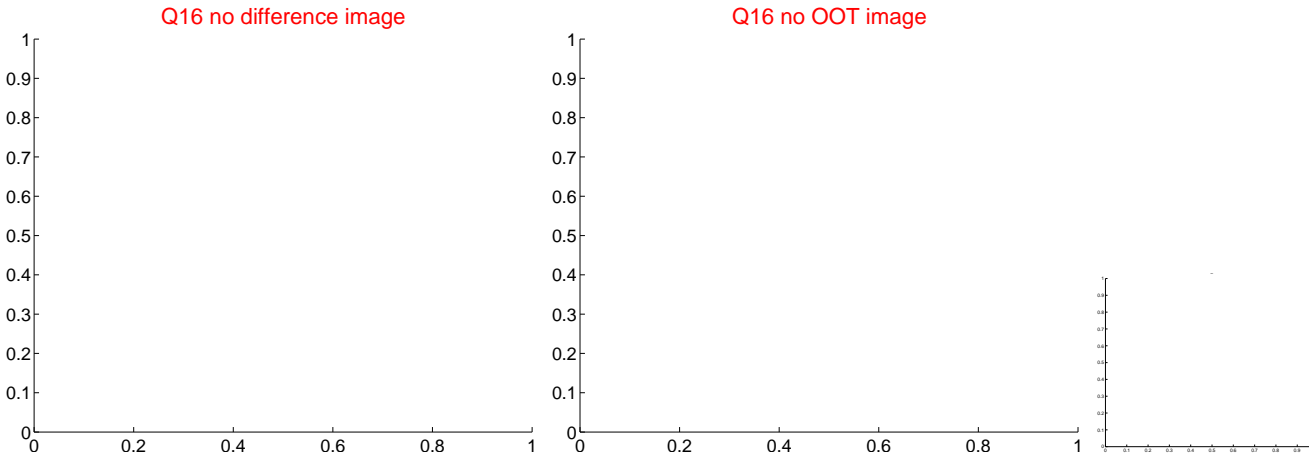
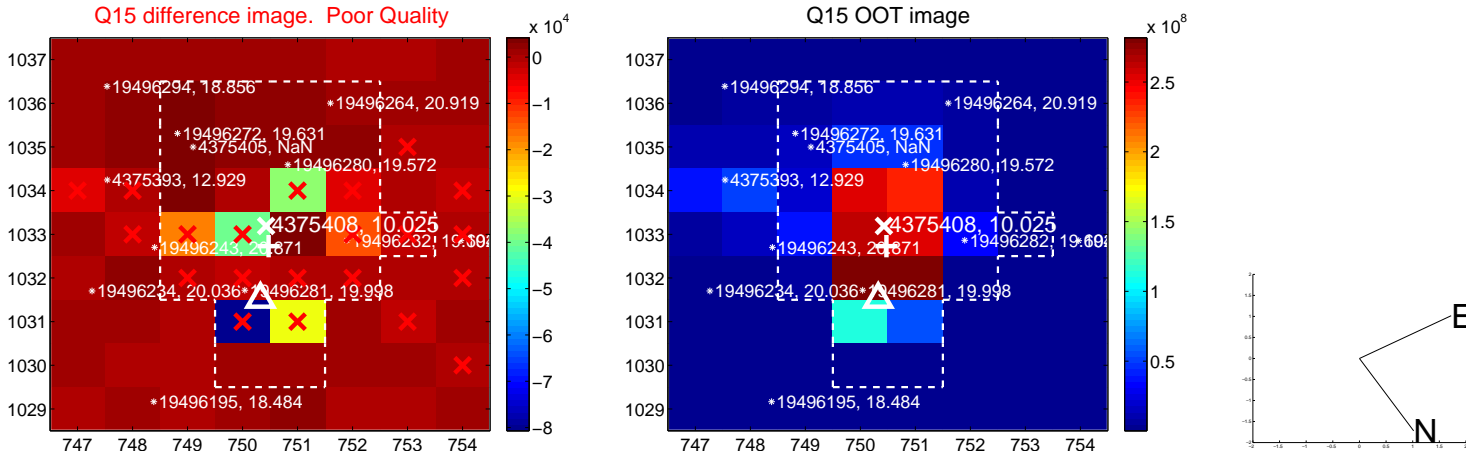
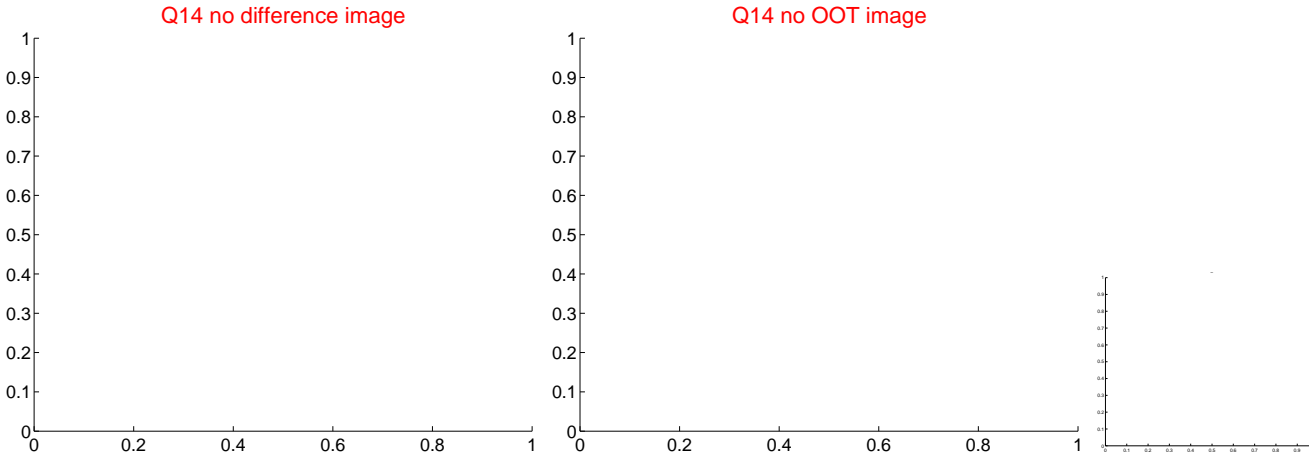
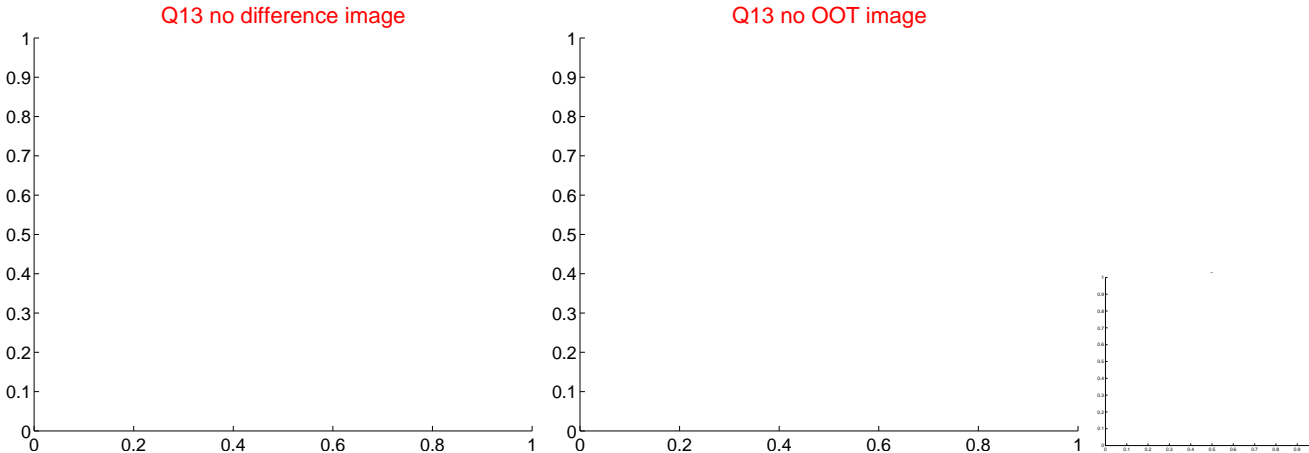
Q4 no OOT image



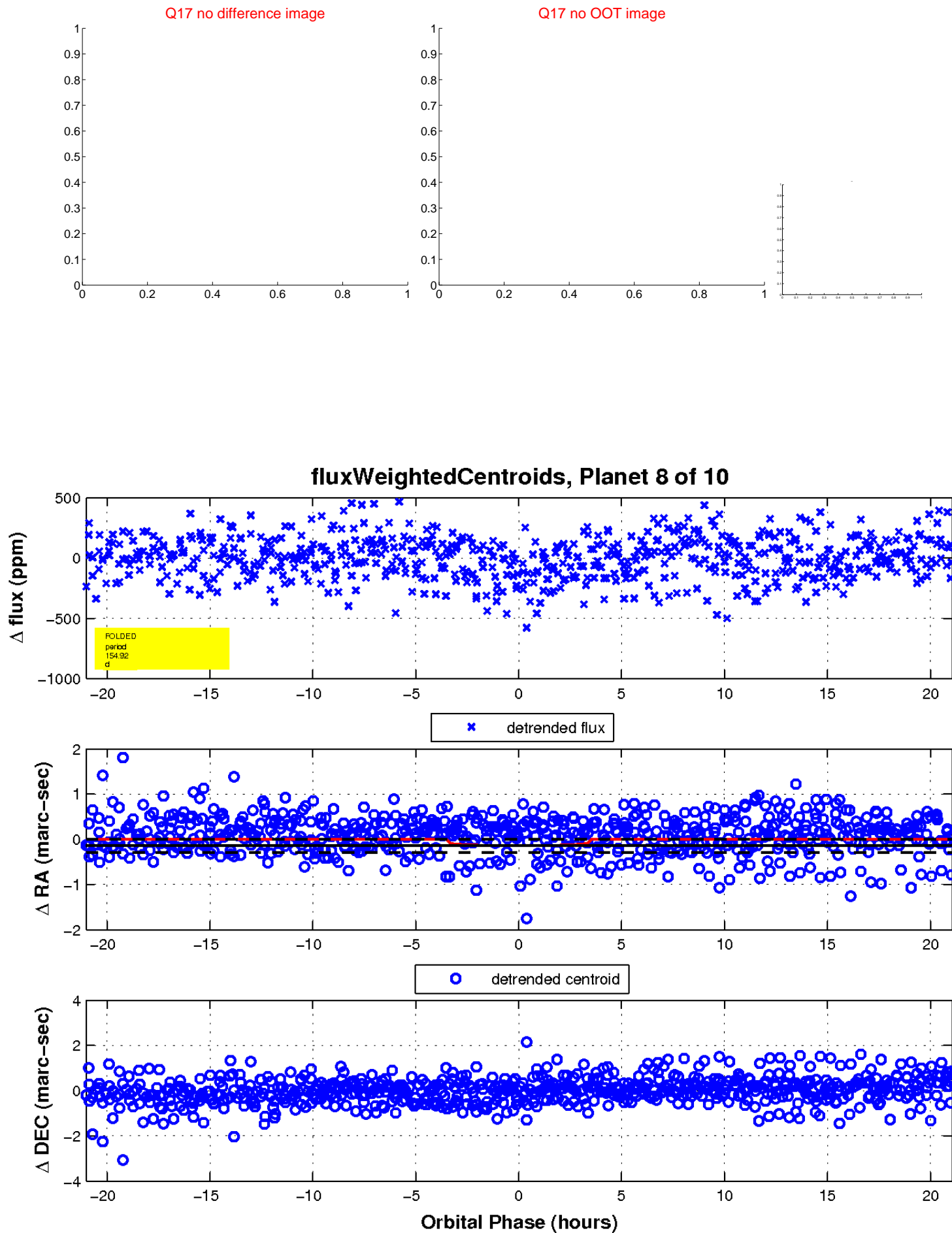
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



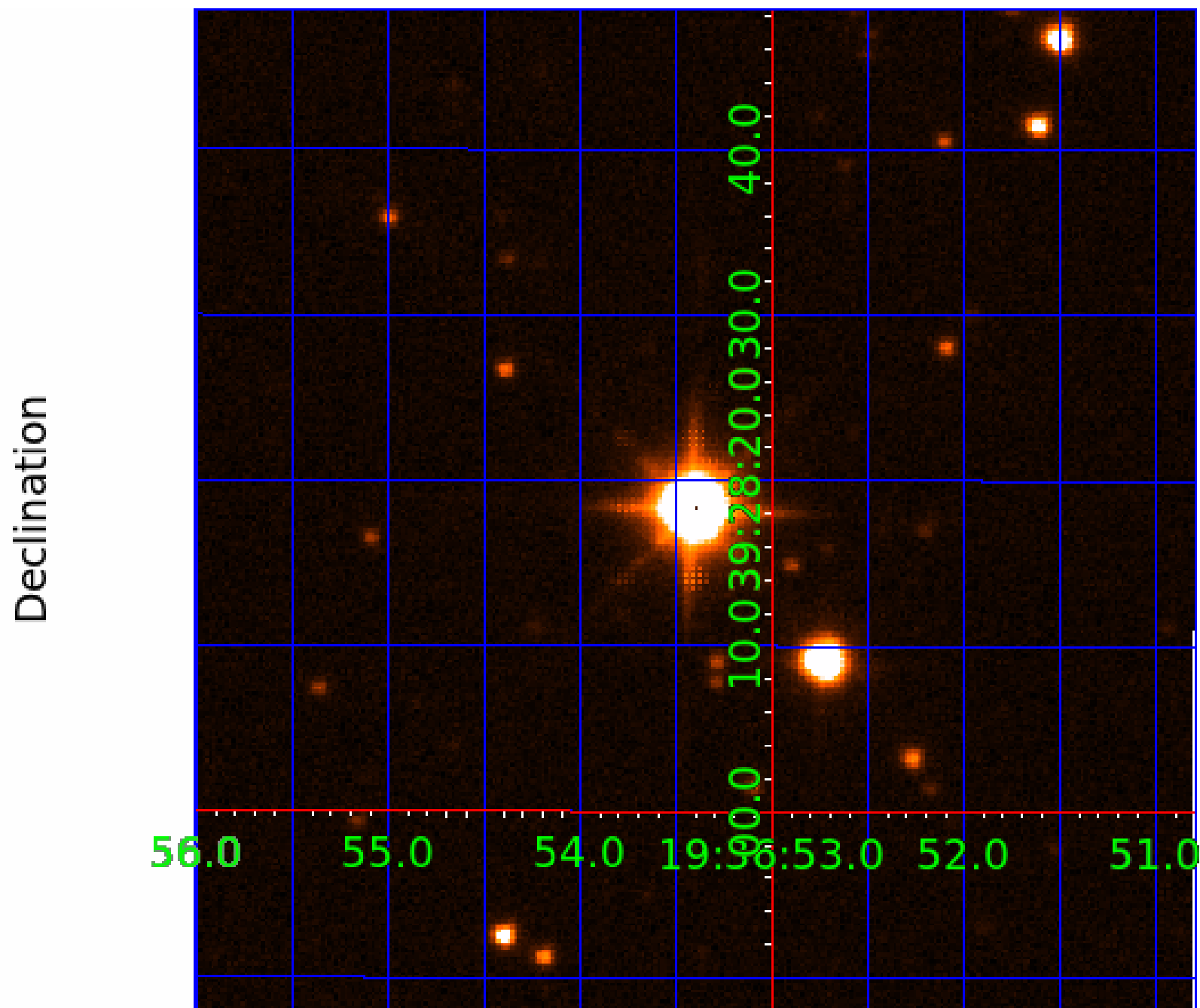
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



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})
004375408-01	OBS	No	1.183133	132.215637	11.3	7.303	9.1	4.0	1.89	6416	0.67	10369.43
004375408-02	OBS	No	106.298491	188.988020	339.5	5.435	11.0	10.3	1.89	6416	4.03	25.77
004375408-03	OBS	No	69.296632	156.360628	334.4	2.169	10.6	9.5	1.89	6416	4.02	45.59
004375408-04	OBS	No	14.842189	138.398480	154.1	3.376	10.2	10.6	1.89	6416	2.70	355.74
004375408-05	OBS	No	53.084762	138.448490	238.0	5.466	9.7	9.4	1.89	6416	3.28	65.04
004375408-06	OBS	No	64.546702	187.689827	258.0	4.142	9.4	8.7	1.89	6416	3.51	50.12
004375408-07	OBS	No	68.662063	188.964621	257.7	1.884	9.1	8.9	1.89	6416	3.58	46.15
004375408-08	OBS	No	154.922917	193.248880	220.0	7.033	8.9	8.0	1.89	6416	2.90	15.60
004375408-09	OBS	No	47.218486	147.679425	263.0	2.735	9.2	8.9	1.89	6416	3.58	76.03
004375408-10	OBS	No	29.333870	132.422001	232.7	2.287	9.1	10.2	1.89	6416	3.33	143.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004375408-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004375408-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004375408-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

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

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

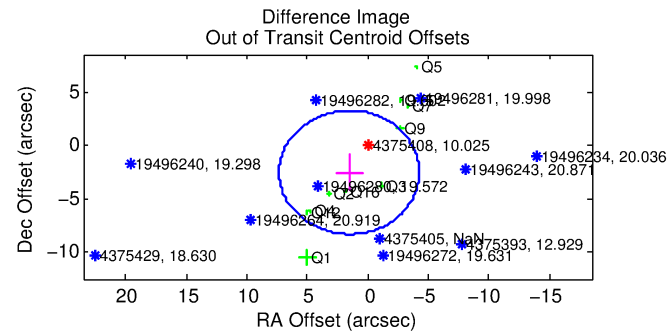
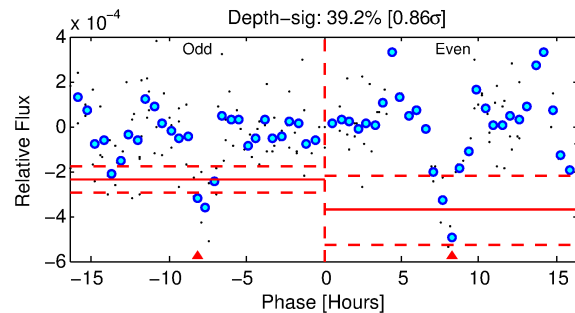
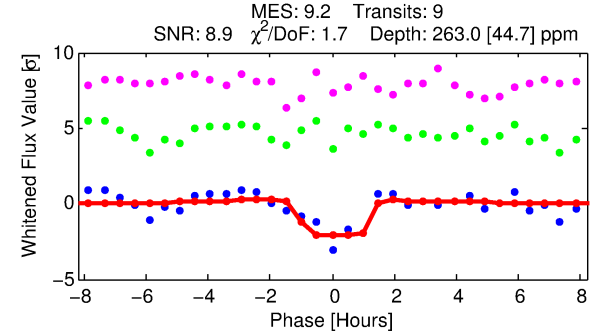
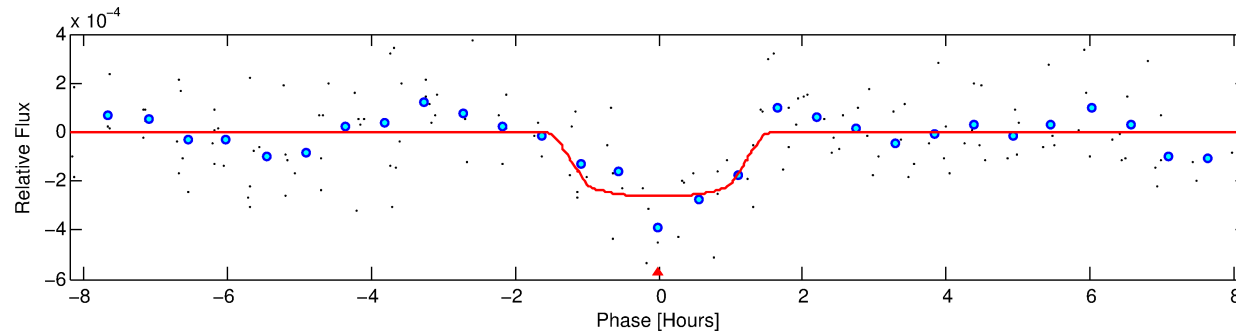
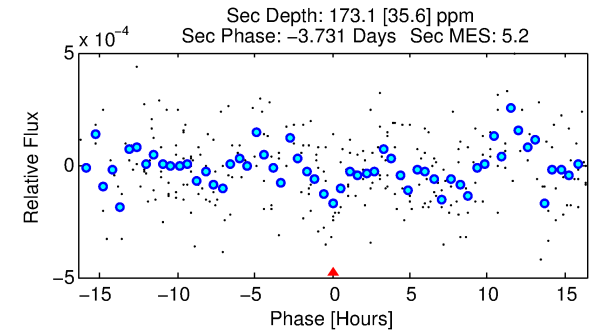
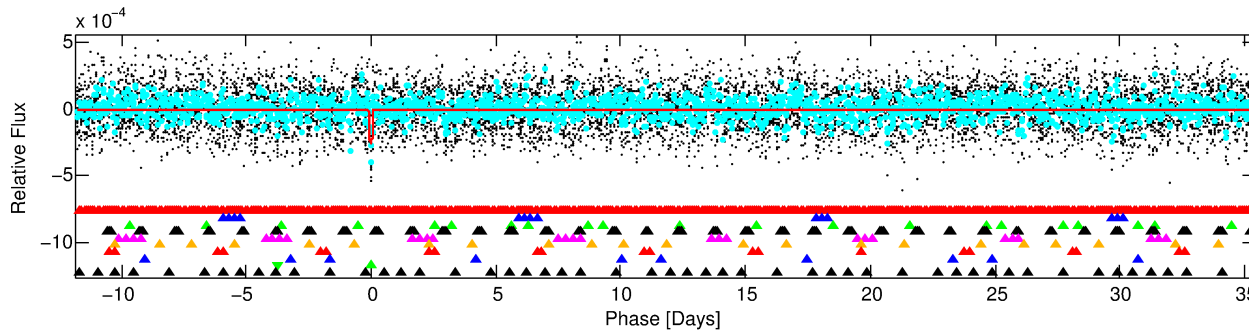
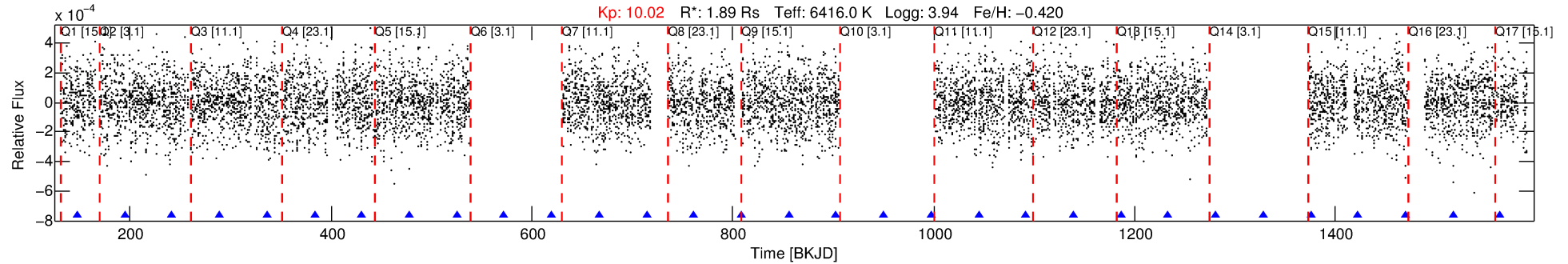
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004375408-09

No Significant Match Found

DV One-Page Summary

KIC: 4375408 Candidate: 9 of 10 Period: 47.218 d



DV Fit Results:

Period = 47.21849 [0.00039] d
Epoch = 147.6794 [0.0091] BKJD
Rp/R* = 0.0174 [0.0106]
a/R* = 62.58 [215.10]
b = 0.90 [0.74]
Seff = 76.03 [53.52]
Teq = 753 [133] K
Rp = 3.58 [2.63] Re
a = 0.2667 [0.1113] AU
Ag = 528.94 [751.83] [0.70σ]
Teffp = 5583 [1746] K [2.76σ]

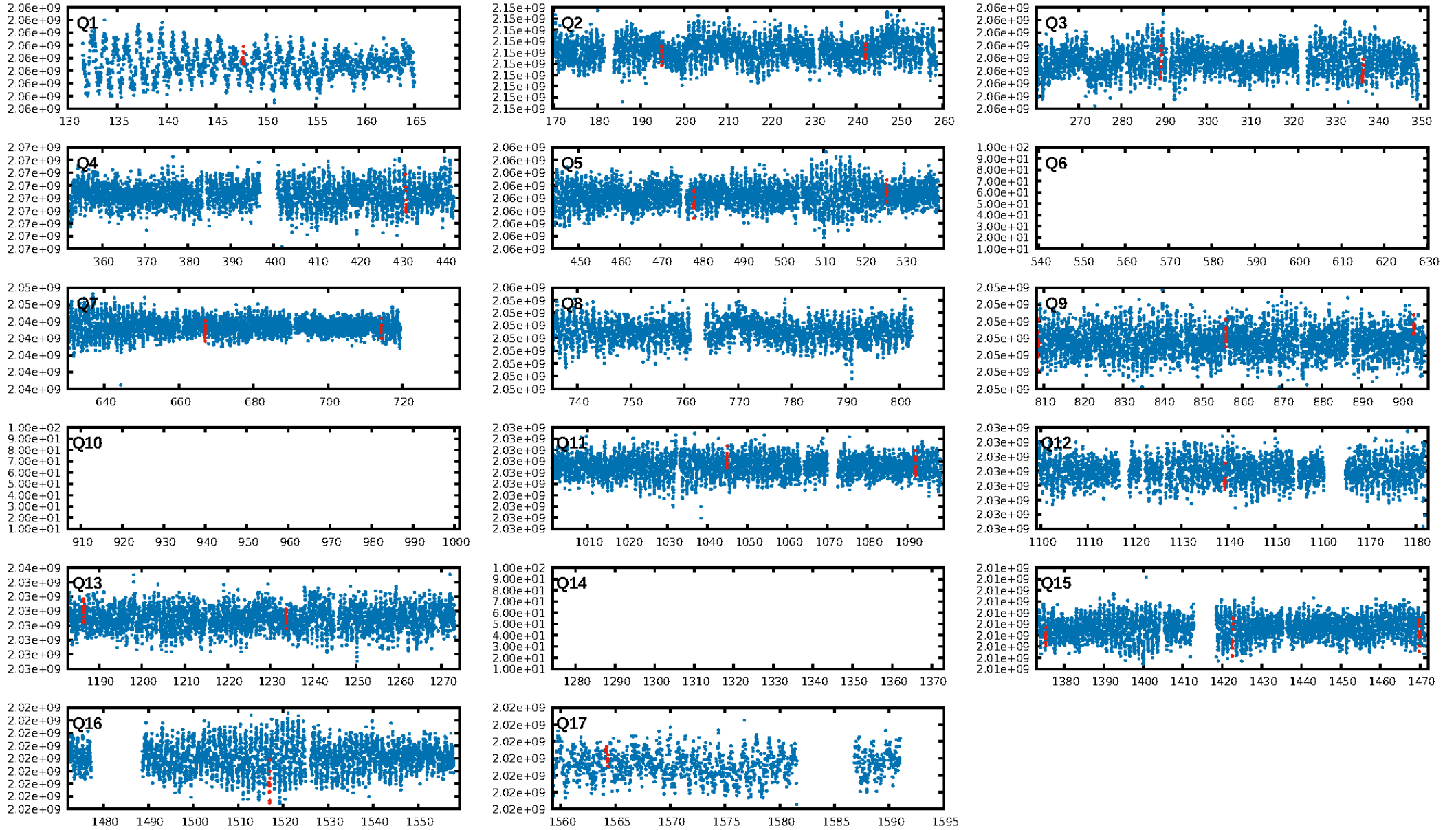
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [120.38σ]
LongPeriod-sig: 100.0% [23.03σ]
ModelChiSquare2-sig: 3.9%
ModelChiSquareGof-sig: 87.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 0.877 arcsec [1.91σ]
OotOffset-rm: 2.970 arcsec [1.54σ]
KicOffset-rm: 2.244 arcsec [1.12σ]
OotOffset-st: 1/3/3/3 [10]
KicOffset-st: 1/3/3/3 [10]
DiffImageQuality-fgm: 0.20 [2/10]
DiffImageOverlap-fno: 0.31 [4/13]

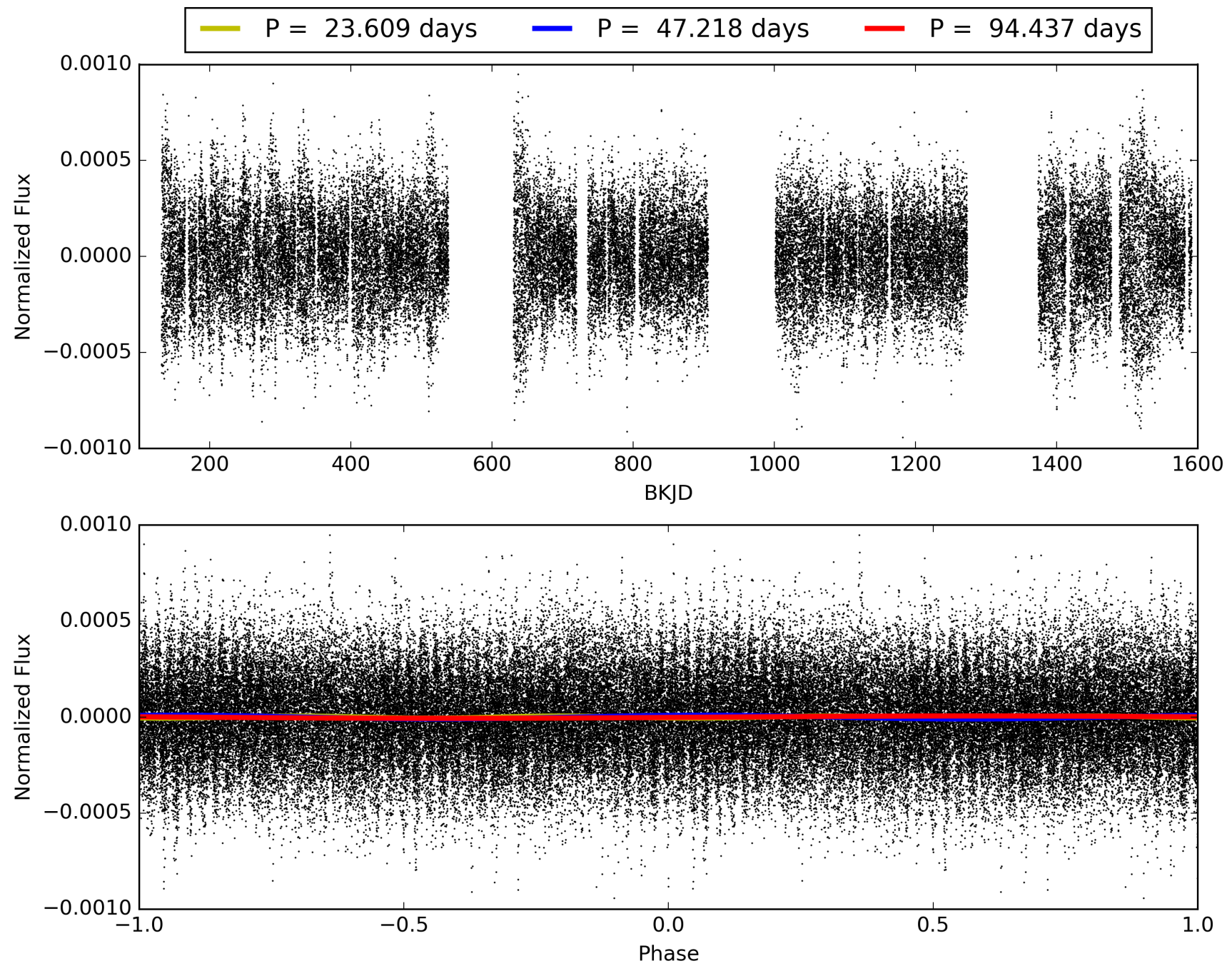
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:59:10 Z

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

TCE 004375408-09, PDC Light Curves

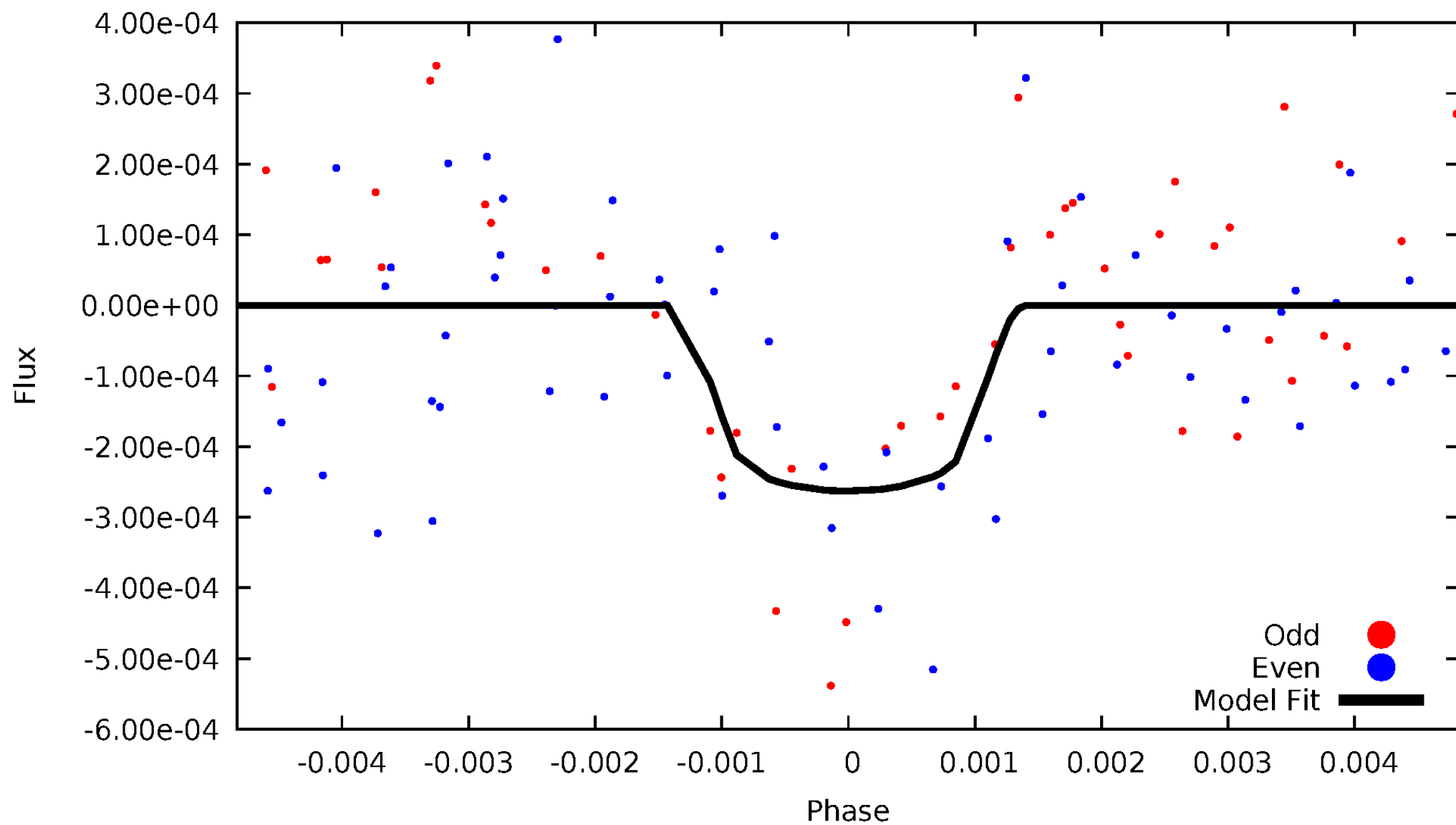


TCE 004375408-09



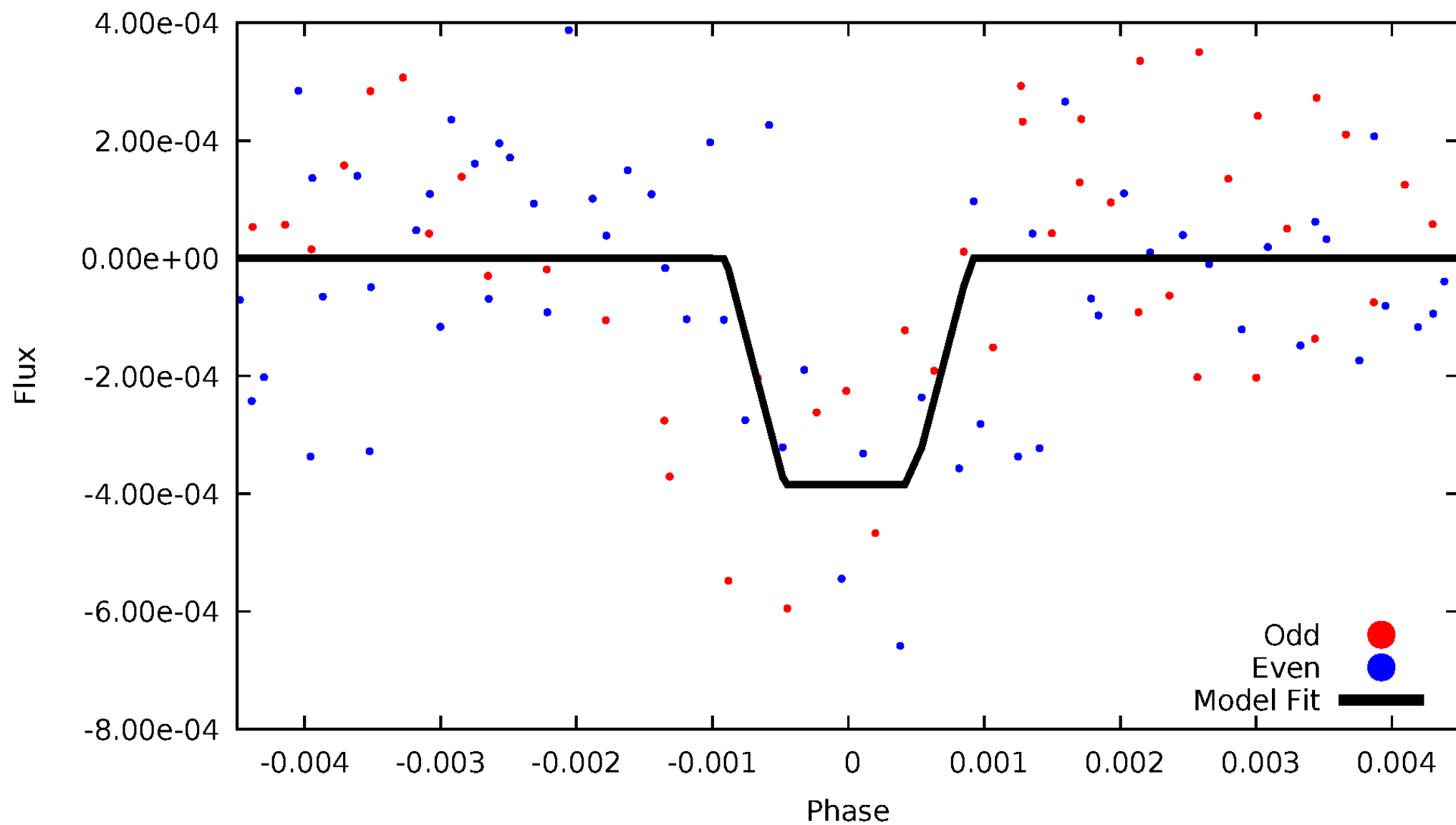
DV Odd/Even

TCE 004375408-09



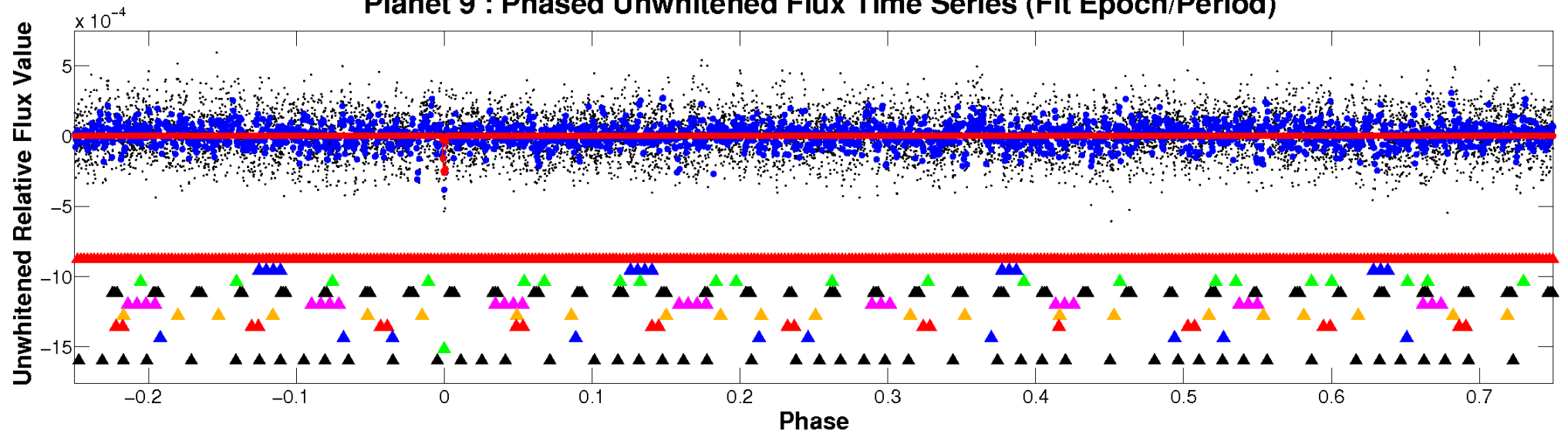
ALT Odd/Even

TCE 004375408-09

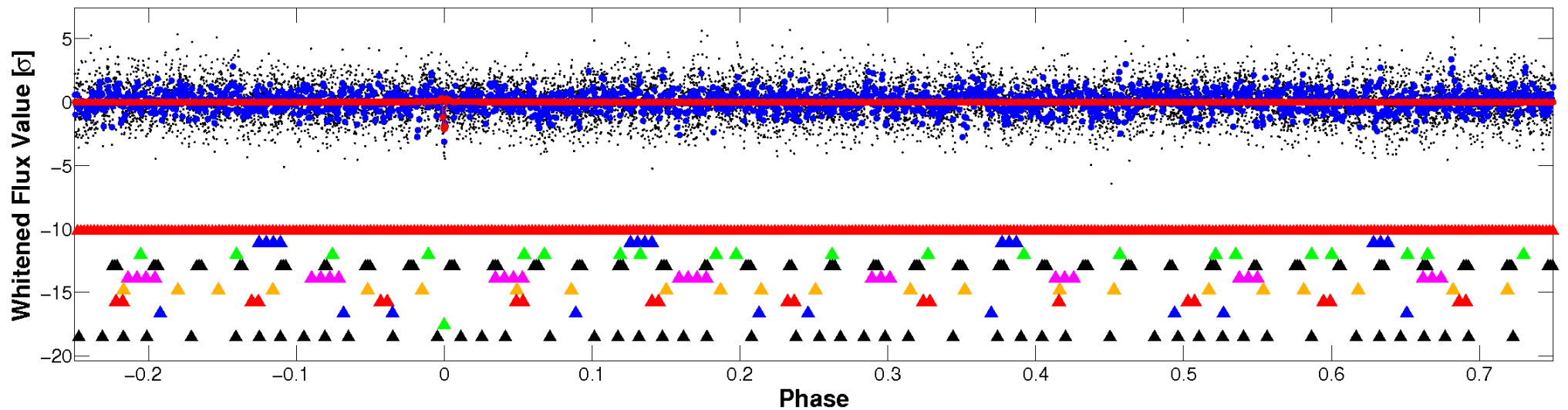


Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

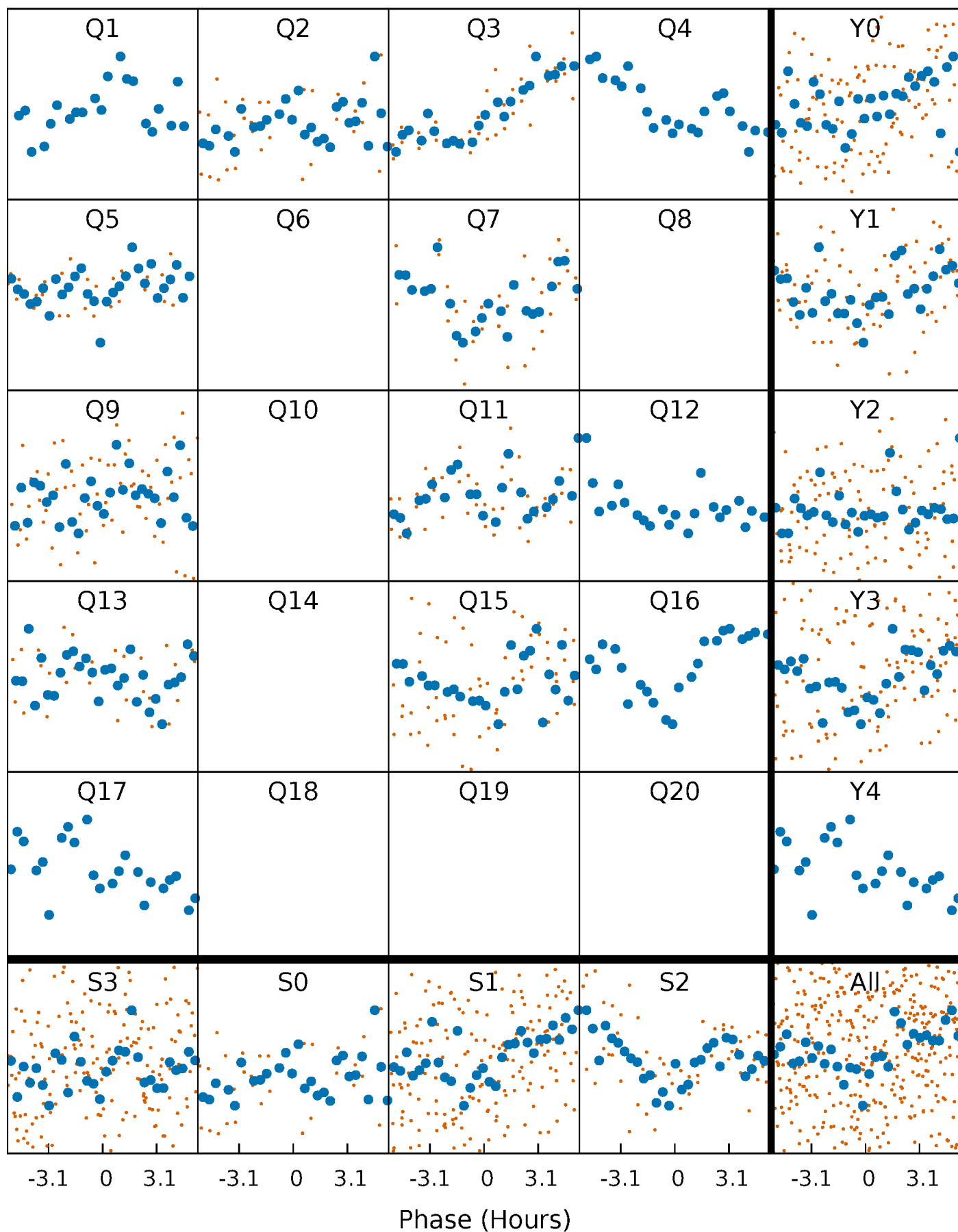


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



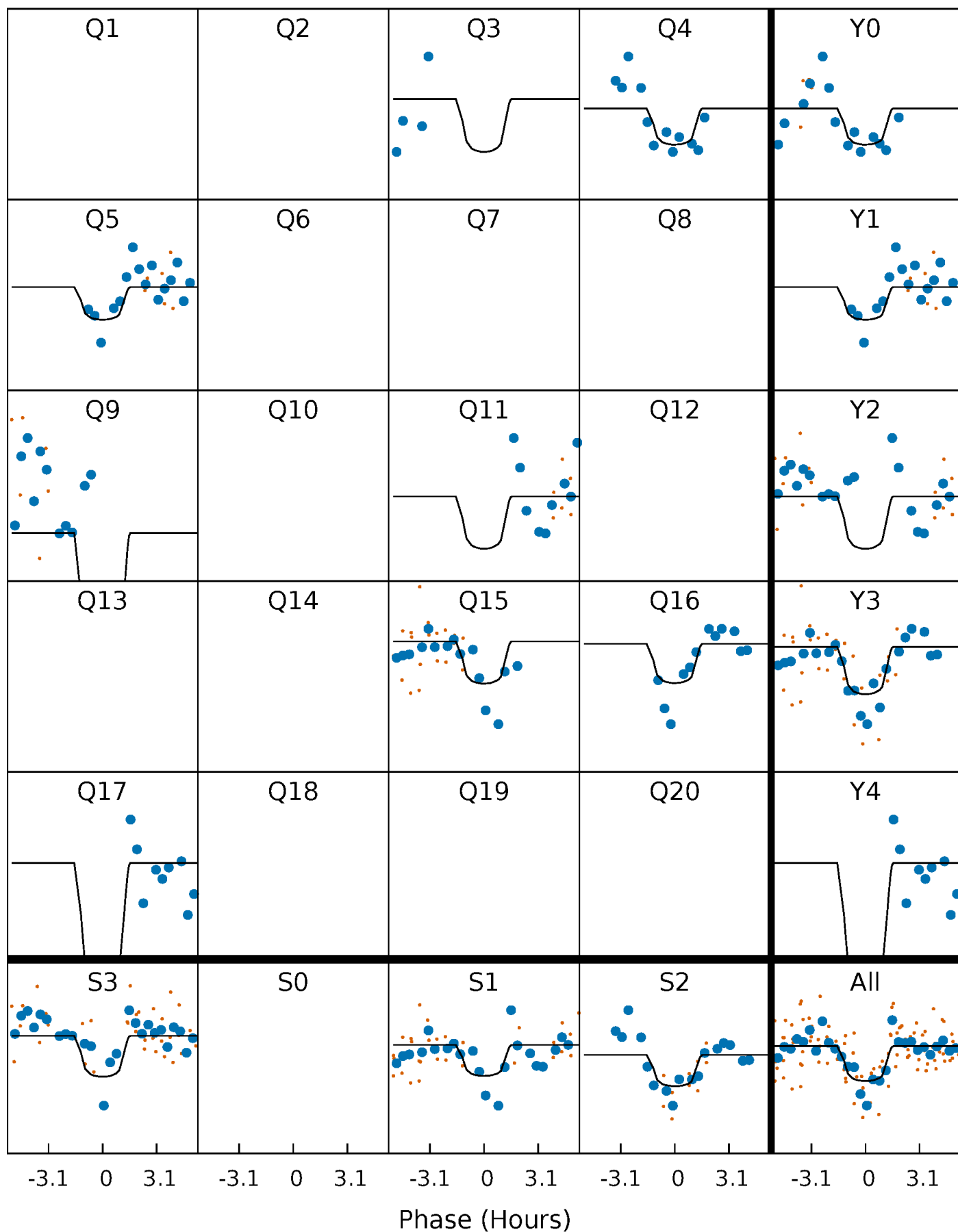
PDC Quarter-Phased Transit Curves

TCE 004375408-09 $P = 47.218486$ Days $T_0 = 147.679425$ (BKJD)



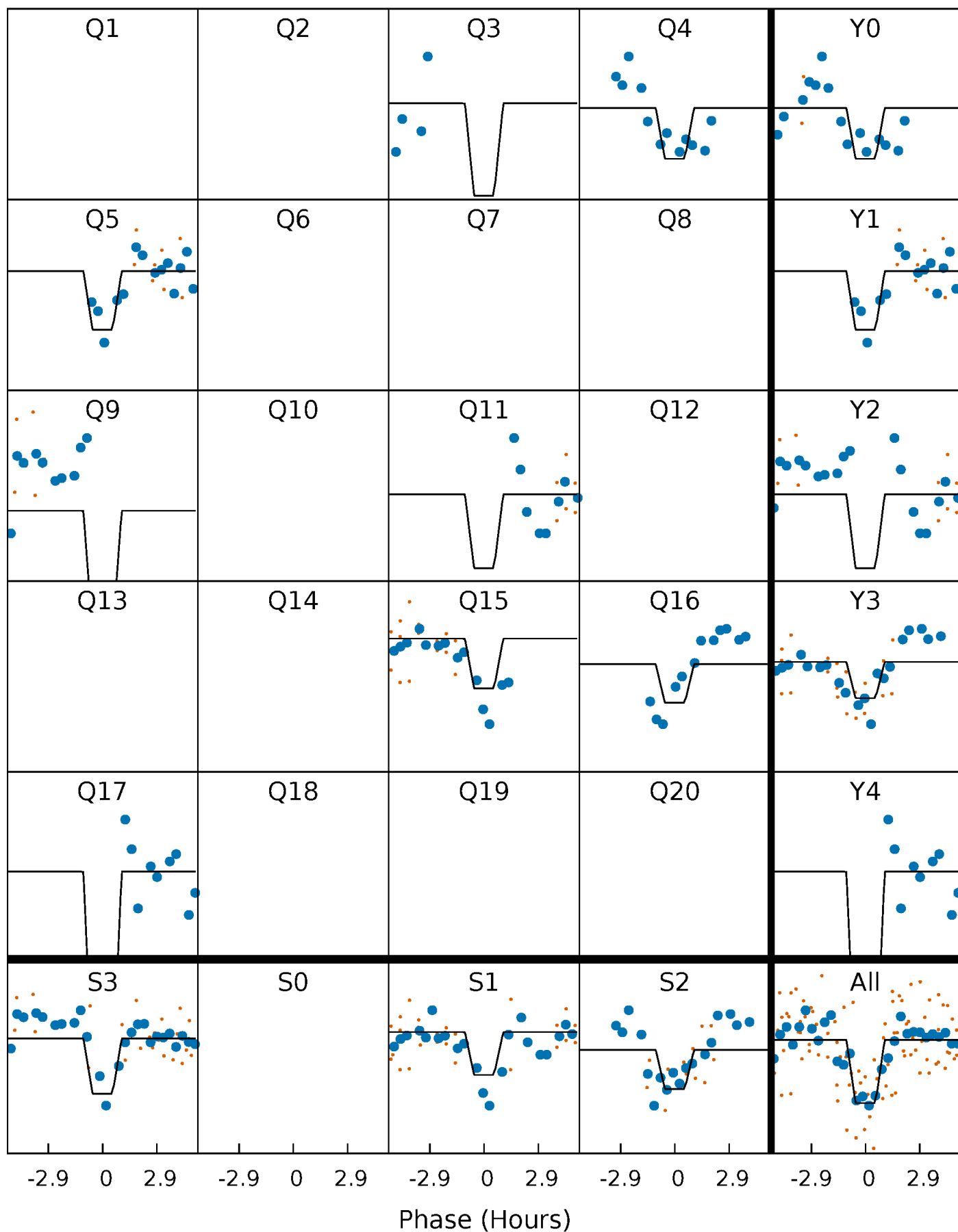
DV Quarter-Phased Transit Curves

TCE 004375408-09 $P = 47.218486$ Days $T_0 = 147.679425$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

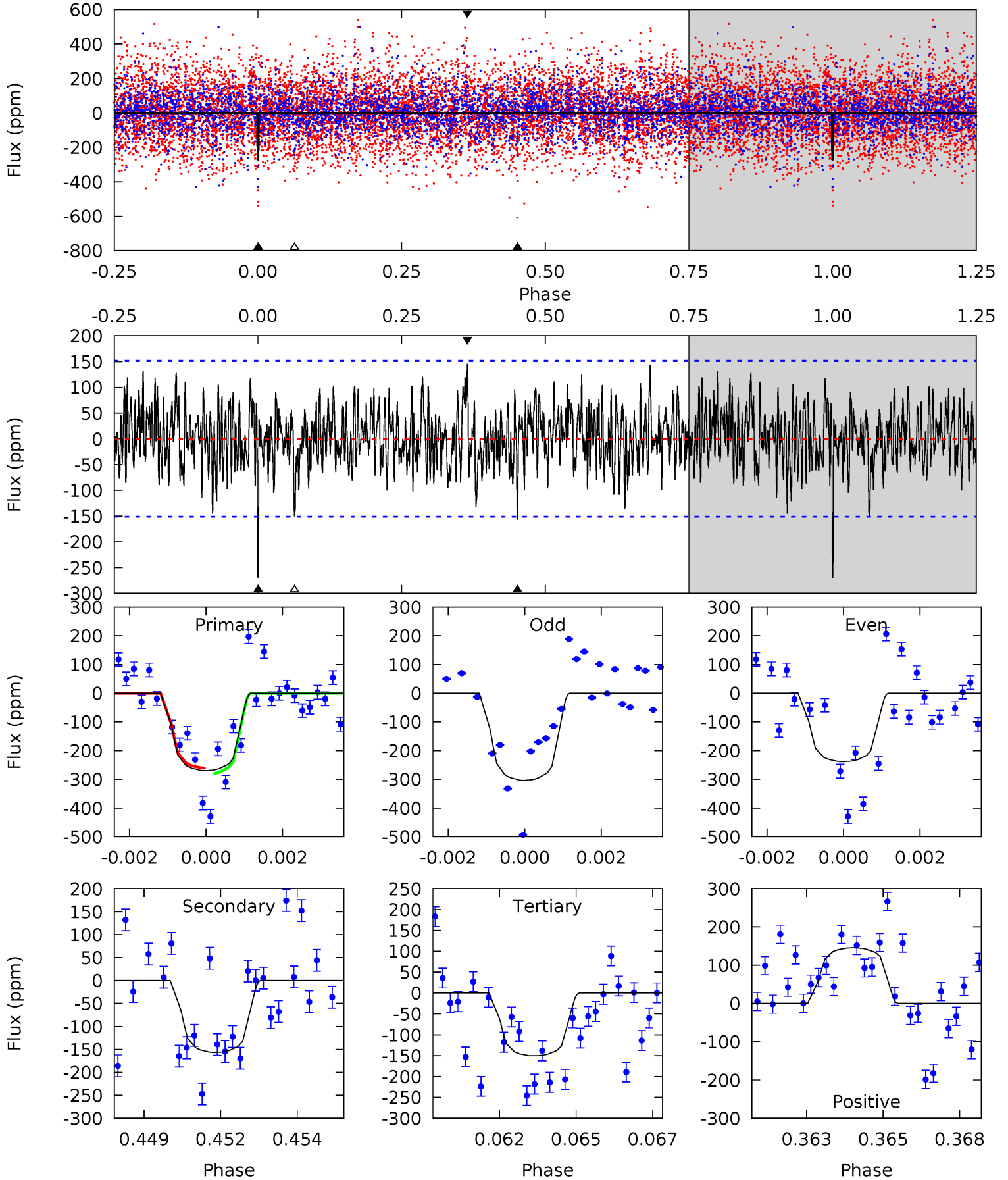
TCE 004375408-09 $P = 47.219615$ Days $T_0 = 147.661353$ (BKJD)



DV Model-Shift Uniqueness Test

004375408-09, P = 47.218486 Days, E = 100.460939 Days

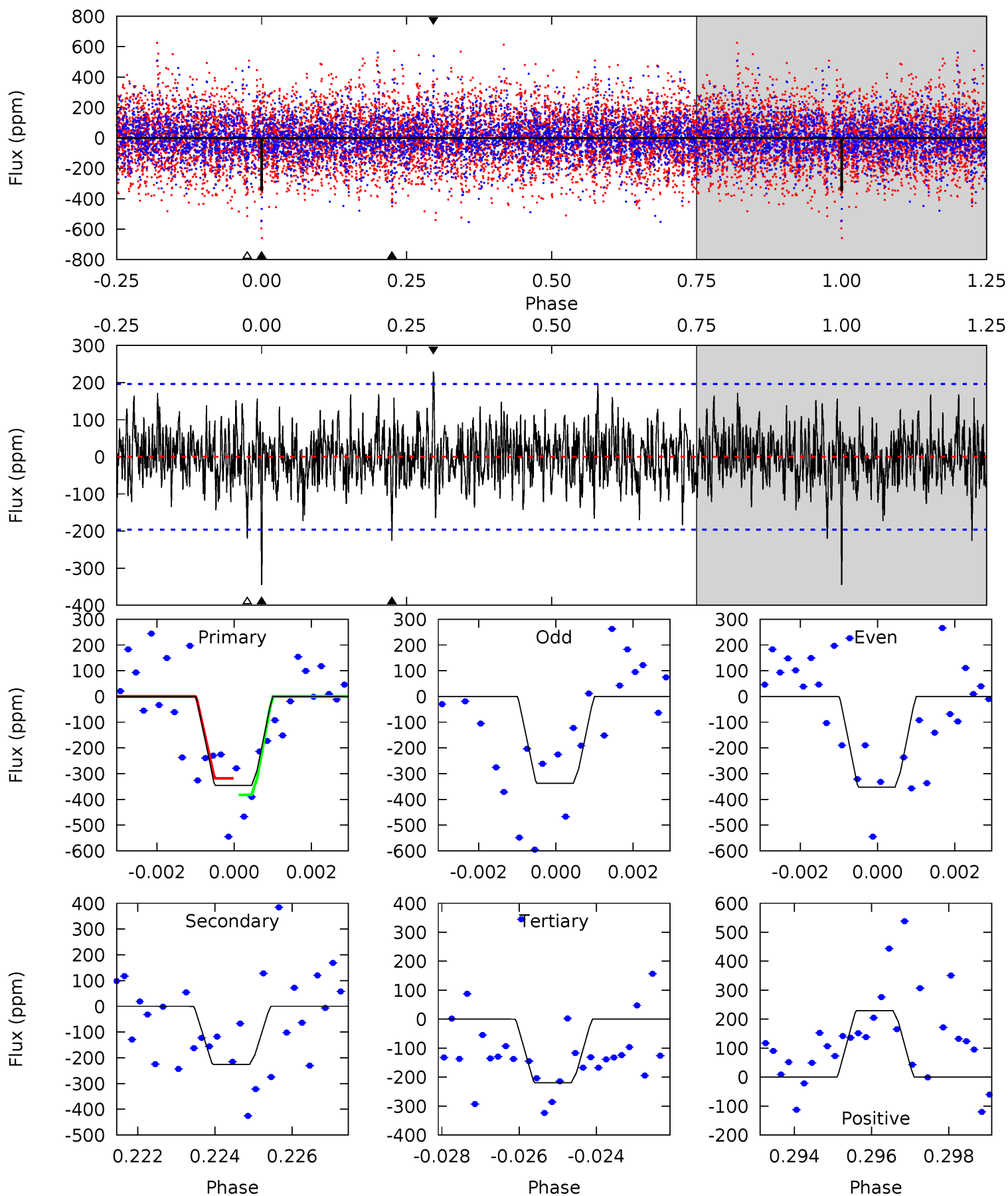
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.45	5.49	5.27	5.10	5.29	3.04	1.67	4.18	4.36	0.22	0.39	1.14	0.77	0.35	0.35



Alt Model-Shift Uniqueness Test

004375408-09, P = 47.219615 Days, E = 100.441738 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.40	6.15	5.98	6.26	5.34	3.12	1.58	3.42	3.14	0.17	-0.10	0.20	1.11	0.40	0.88



Stellar Parameters For KIC 004375408

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6416^{+181}_{-227}	$3.941^{+0.413}_{-0.138}$	$-0.420^{+0.300}_{-0.300}$	$1.887^{+0.448}_{-0.768}$	$1.133^{+0.169}_{-0.188}$	$0.237^{+0.824}_{-0.092}$
	+3%/-4%	+10%/-4%	+71%/-71%	+24%/-41%	+15%/-17%	+347%/-39%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004375408-09 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-157 ± 29	$3.33^{+2.31}_{-1.73}$	1028^{+83}_{-103}	5343^{+2814}_{-922}	533^{+1934}_{-348}
Alt.	-226 ± 37	$3.72^{+2.11}_{-1.84}$	1033^{+72}_{-120}	5585^{+2658}_{-935}	642^{+1905}_{-396}

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

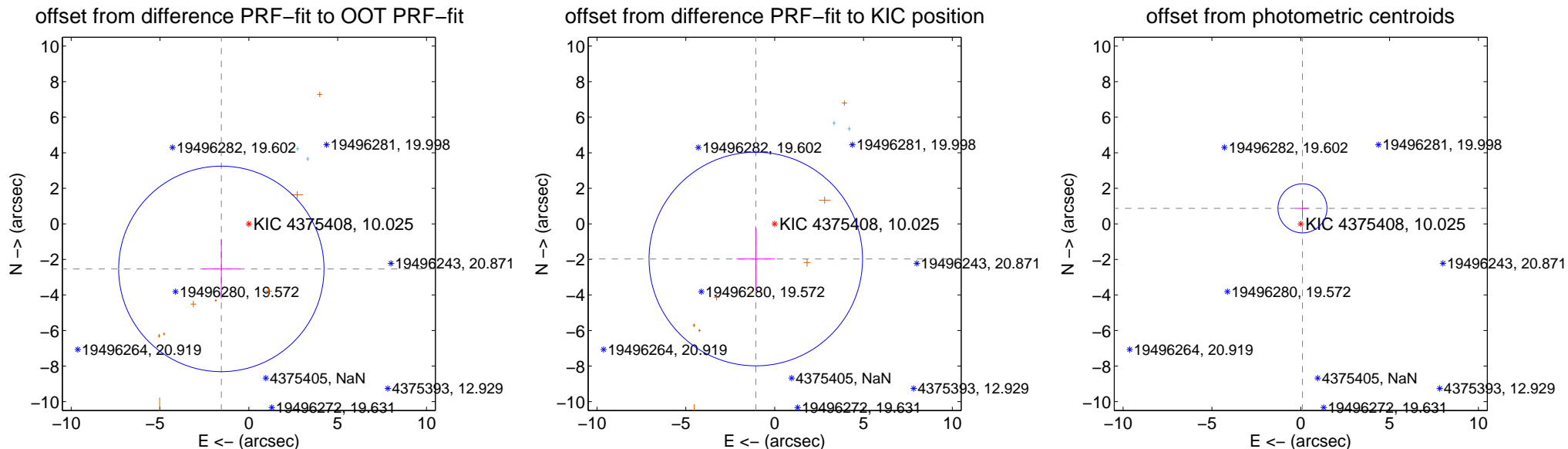
DV Centroid Data

Supplemental centroid analysis for 004375408-09. **Kepler magnitude: 10.03.** Transit SNR 8.88

There are 2 quarters with good PRF difference image offsets

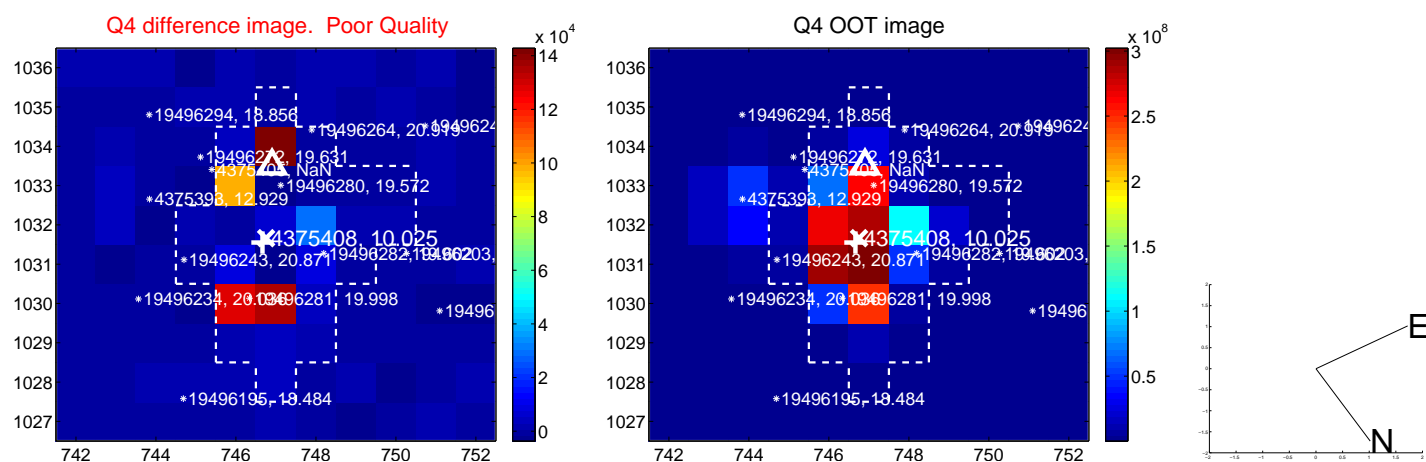
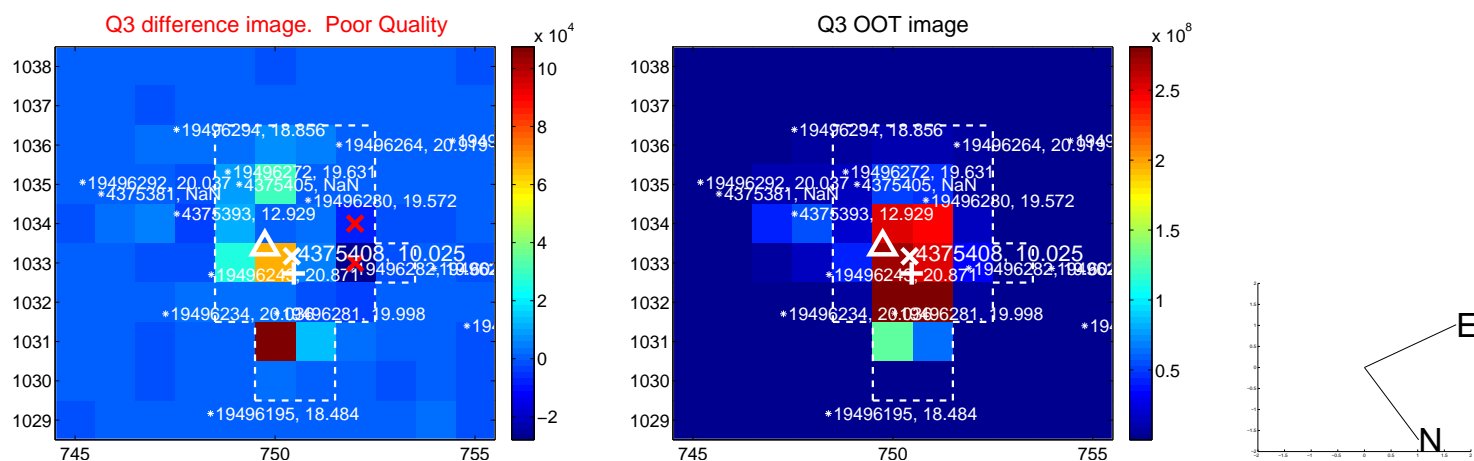
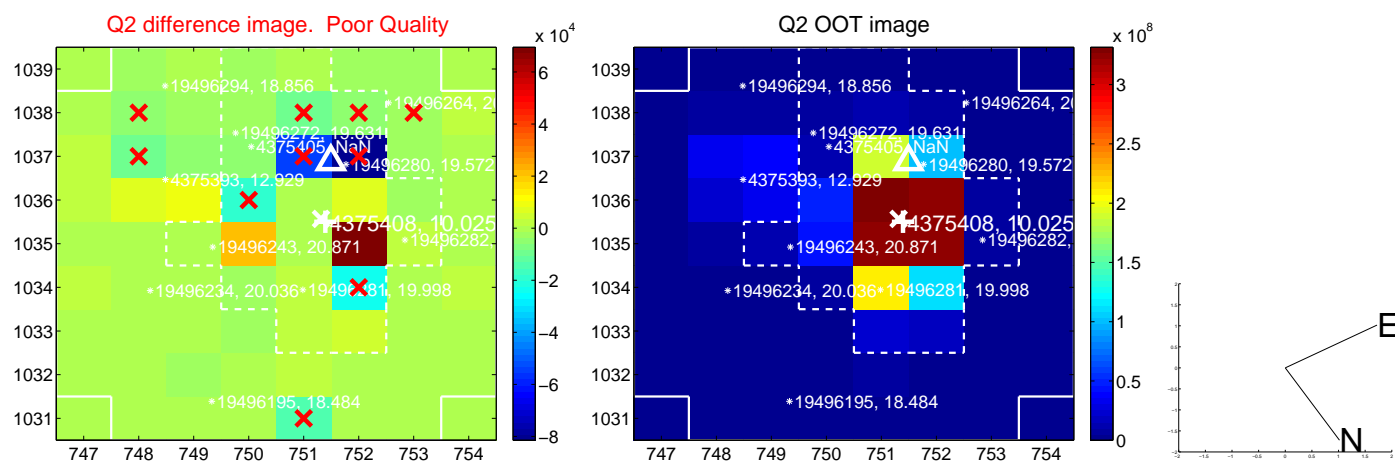
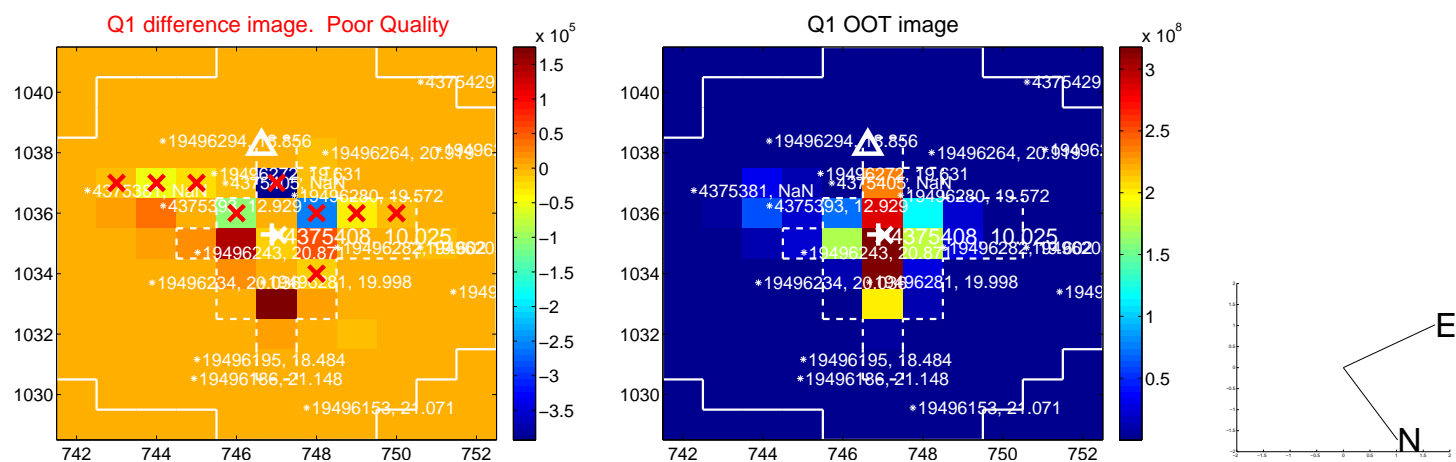
The direct PRF centroid is offset from the target star catalog position by about 0.68 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.970 ± 1.927	1.54	1.549 ± 1.057	-2.534 ± 1.659
PRF-fit source offset from KIC position	2.244 ± 2.003	1.12	1.062 ± 1.081	-1.977 ± 1.728
photometric centroid source offset	0.88 ± 0.46	1.91	-0.10 ± 0.34	0.87 ± 0.46

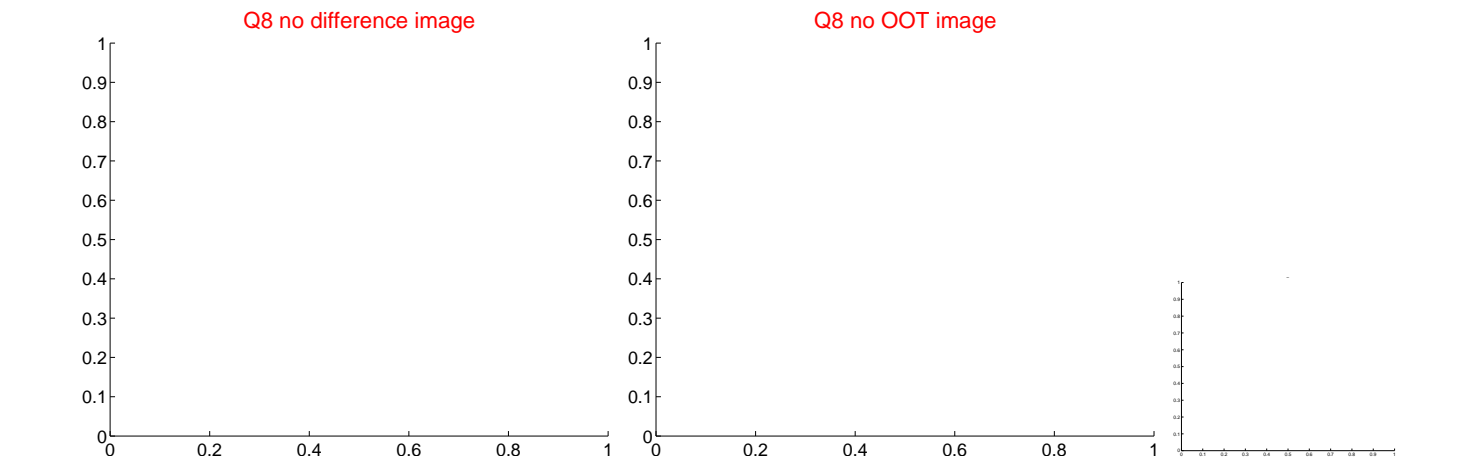
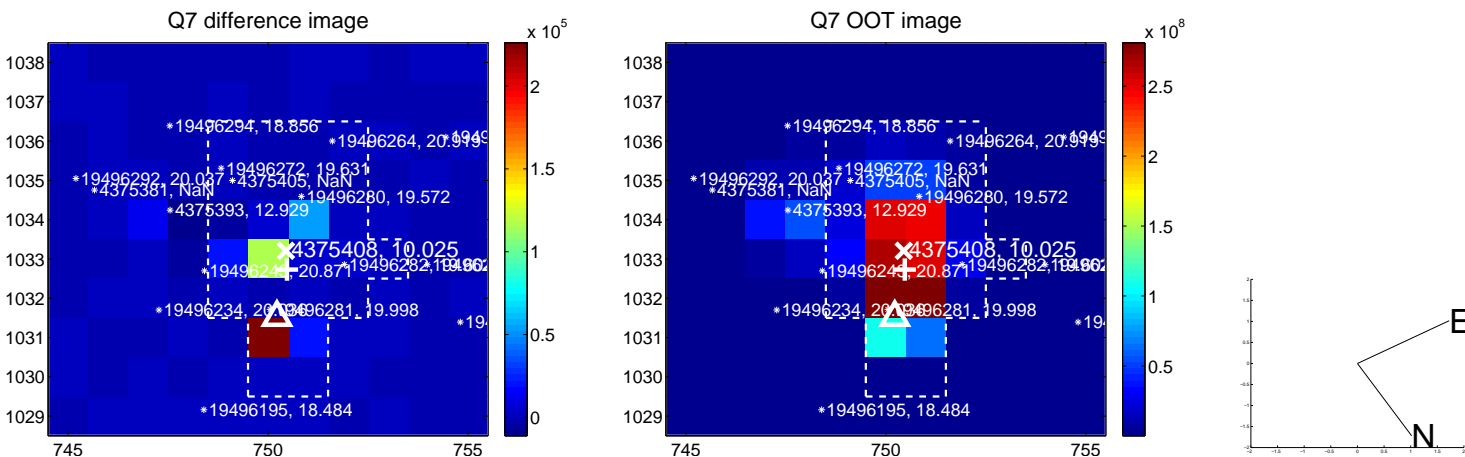
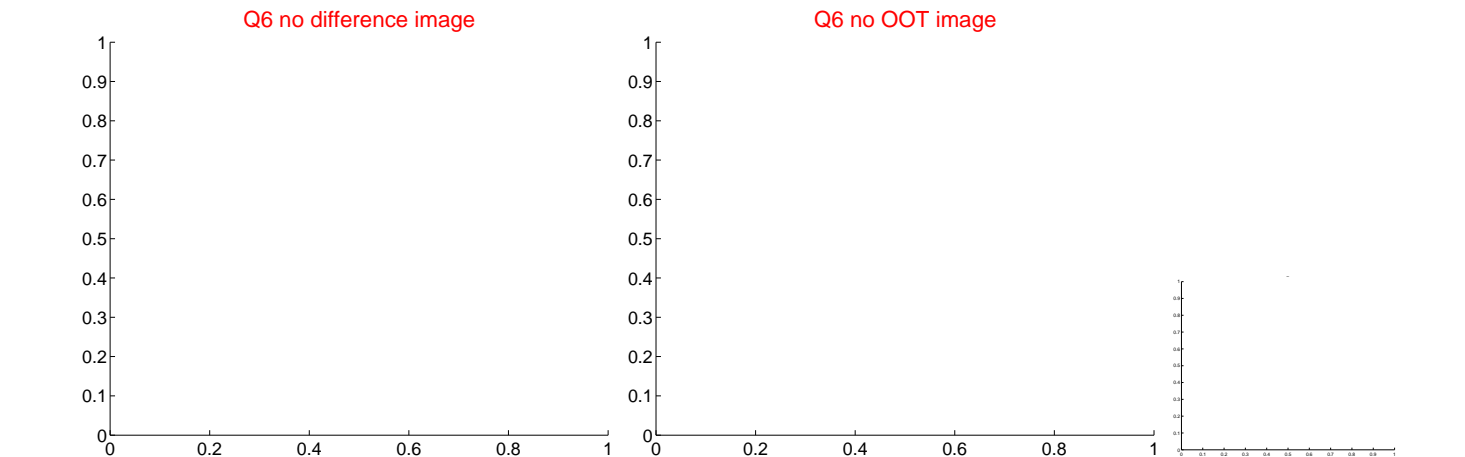
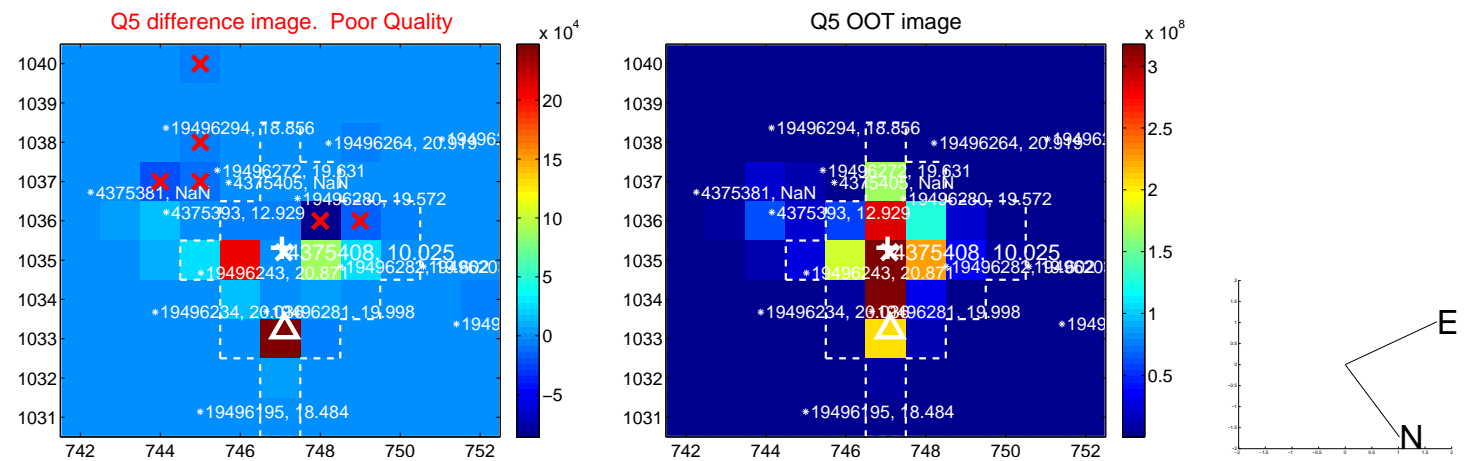


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

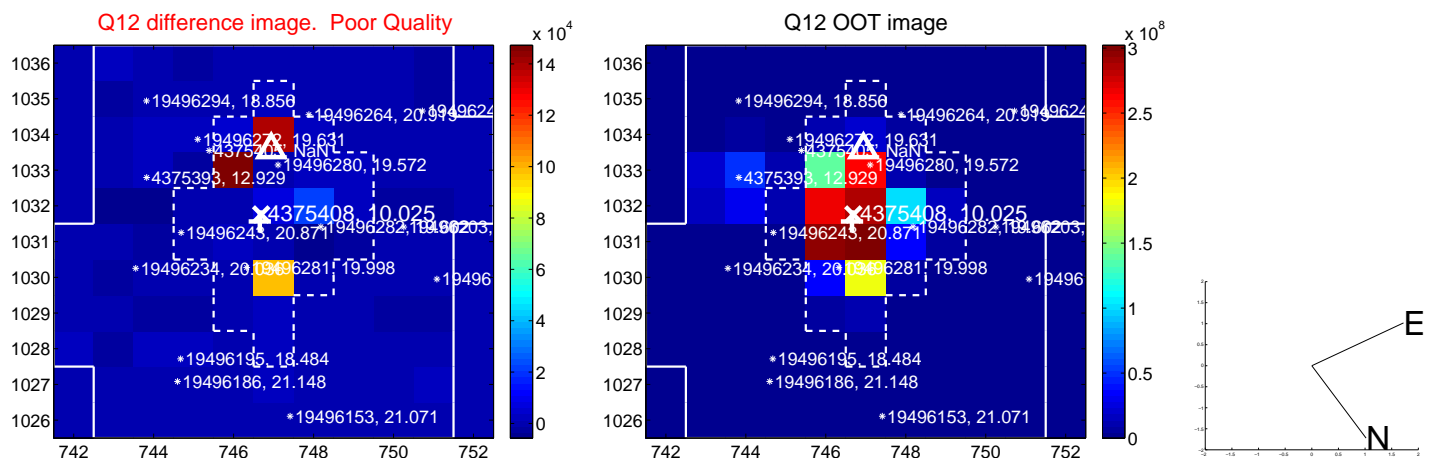
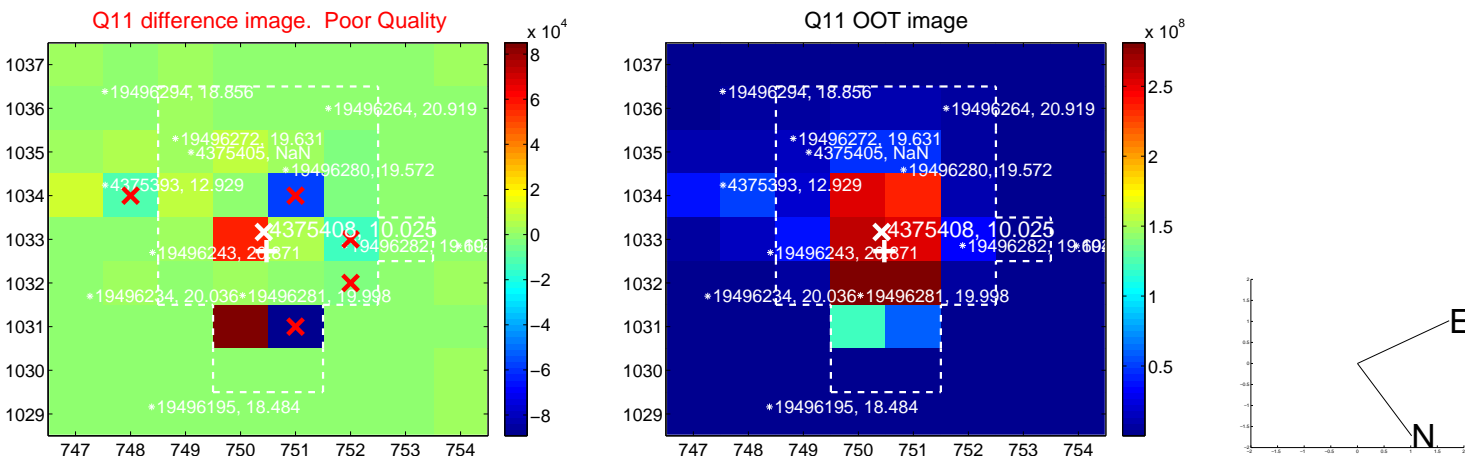
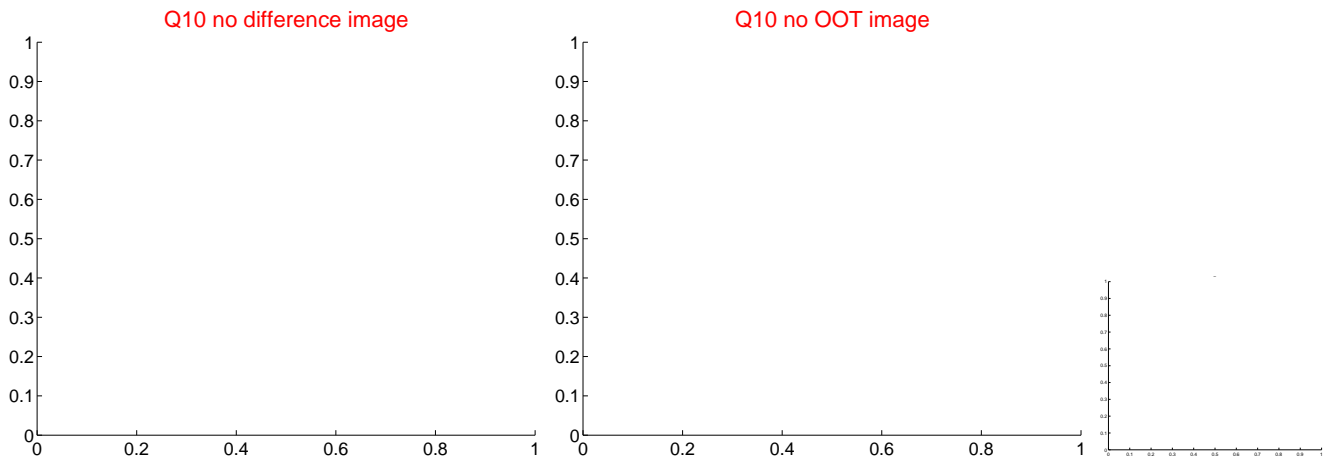
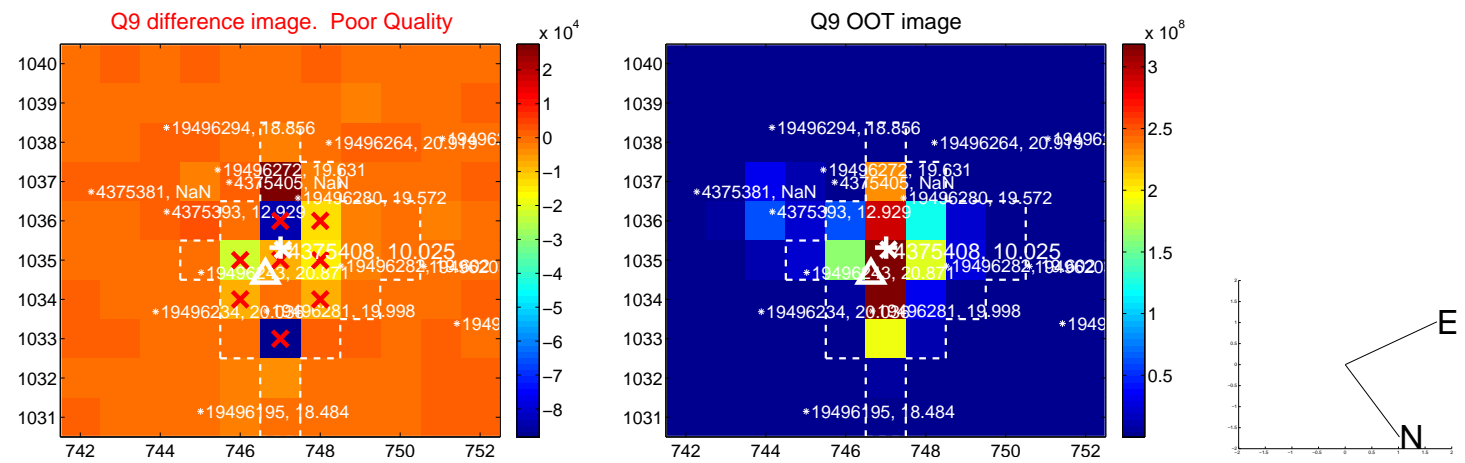
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



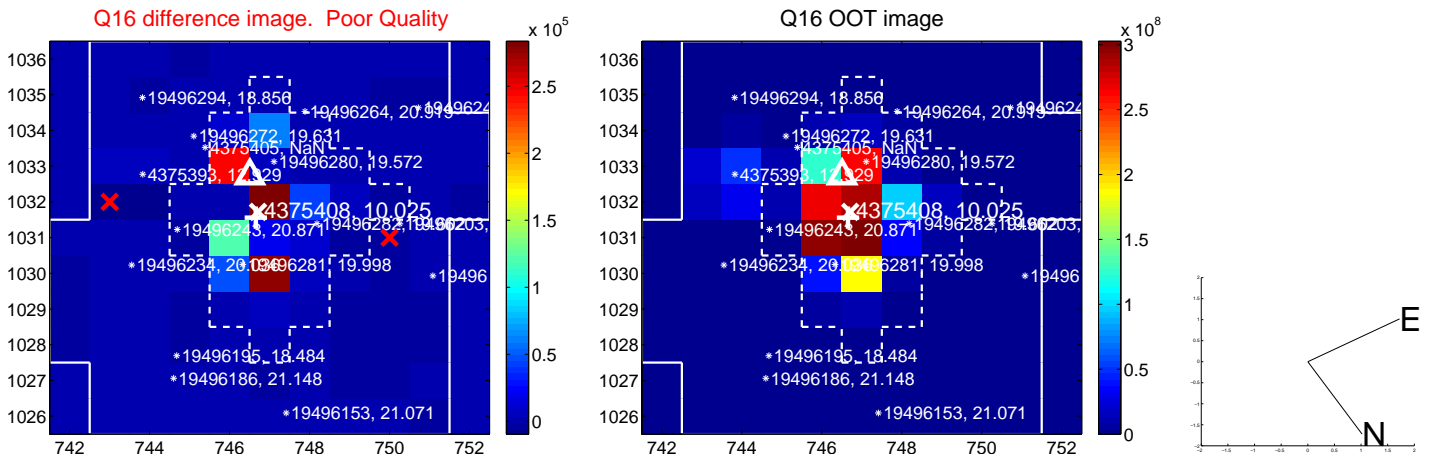
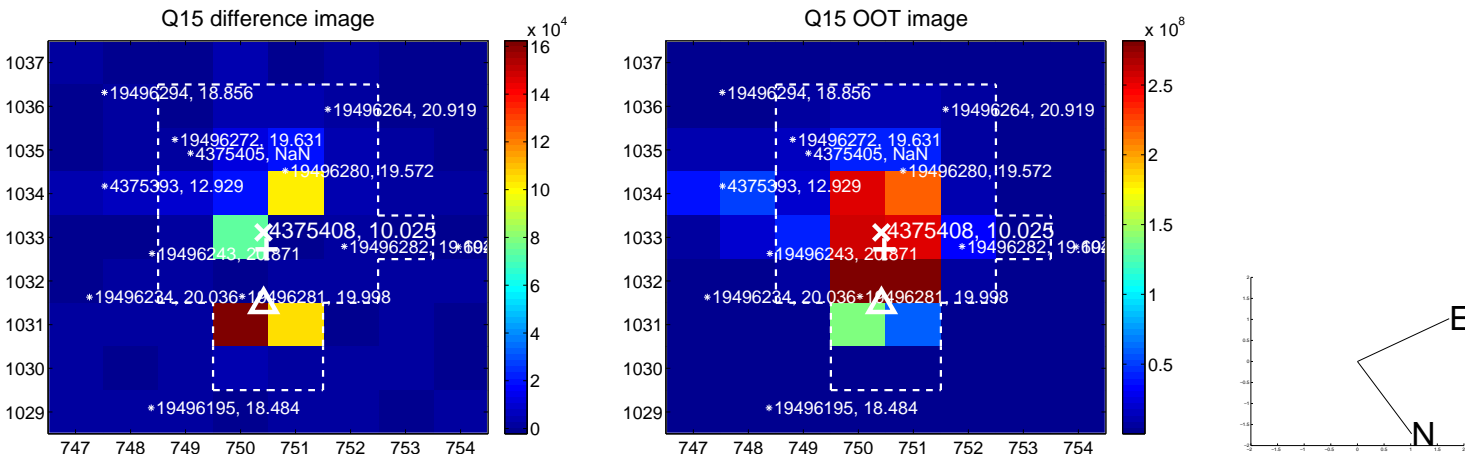
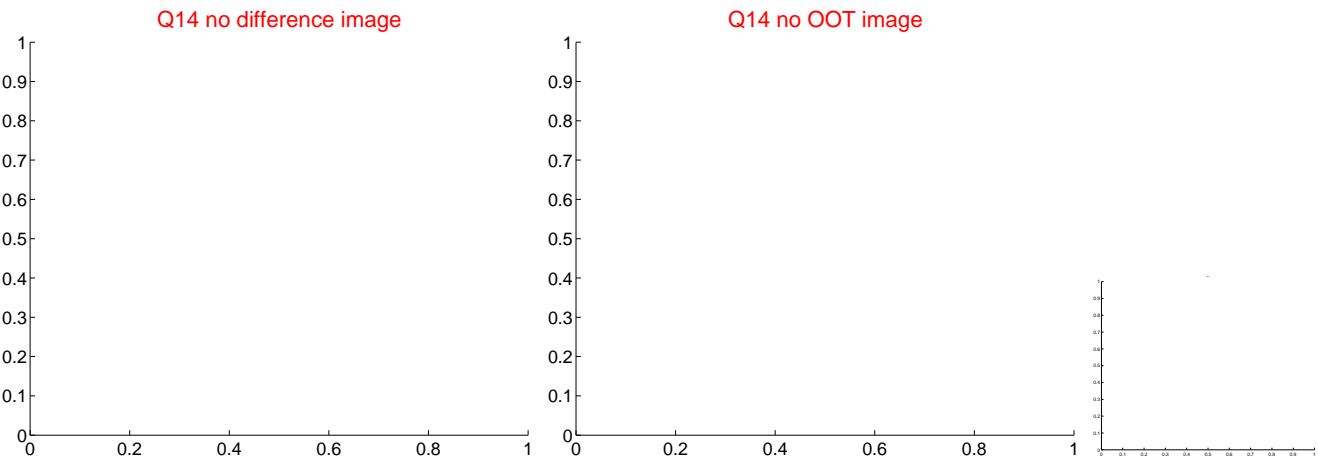
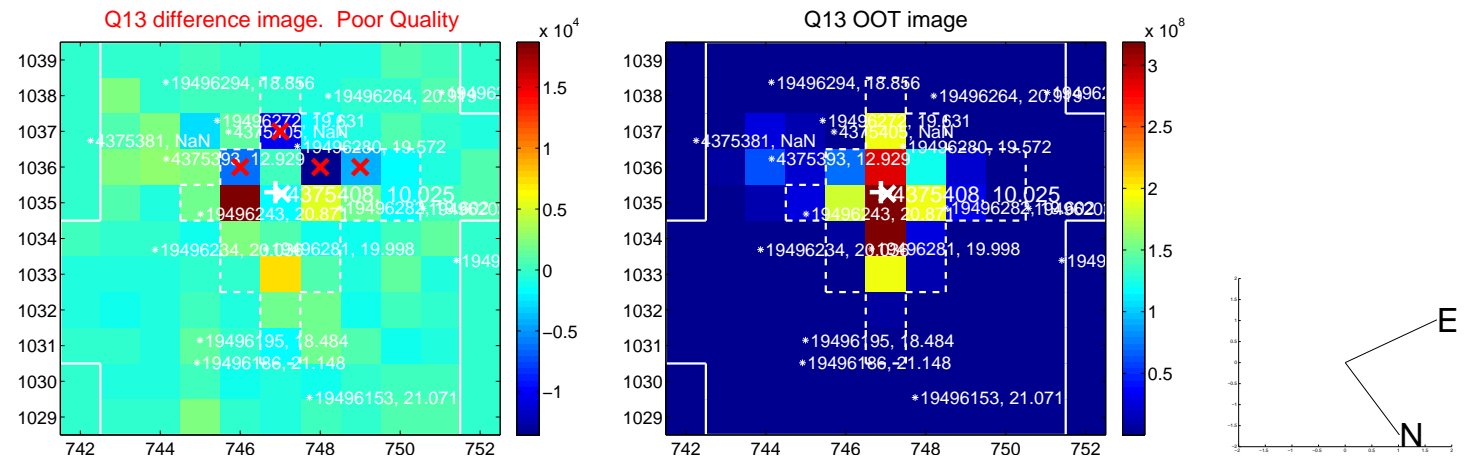
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



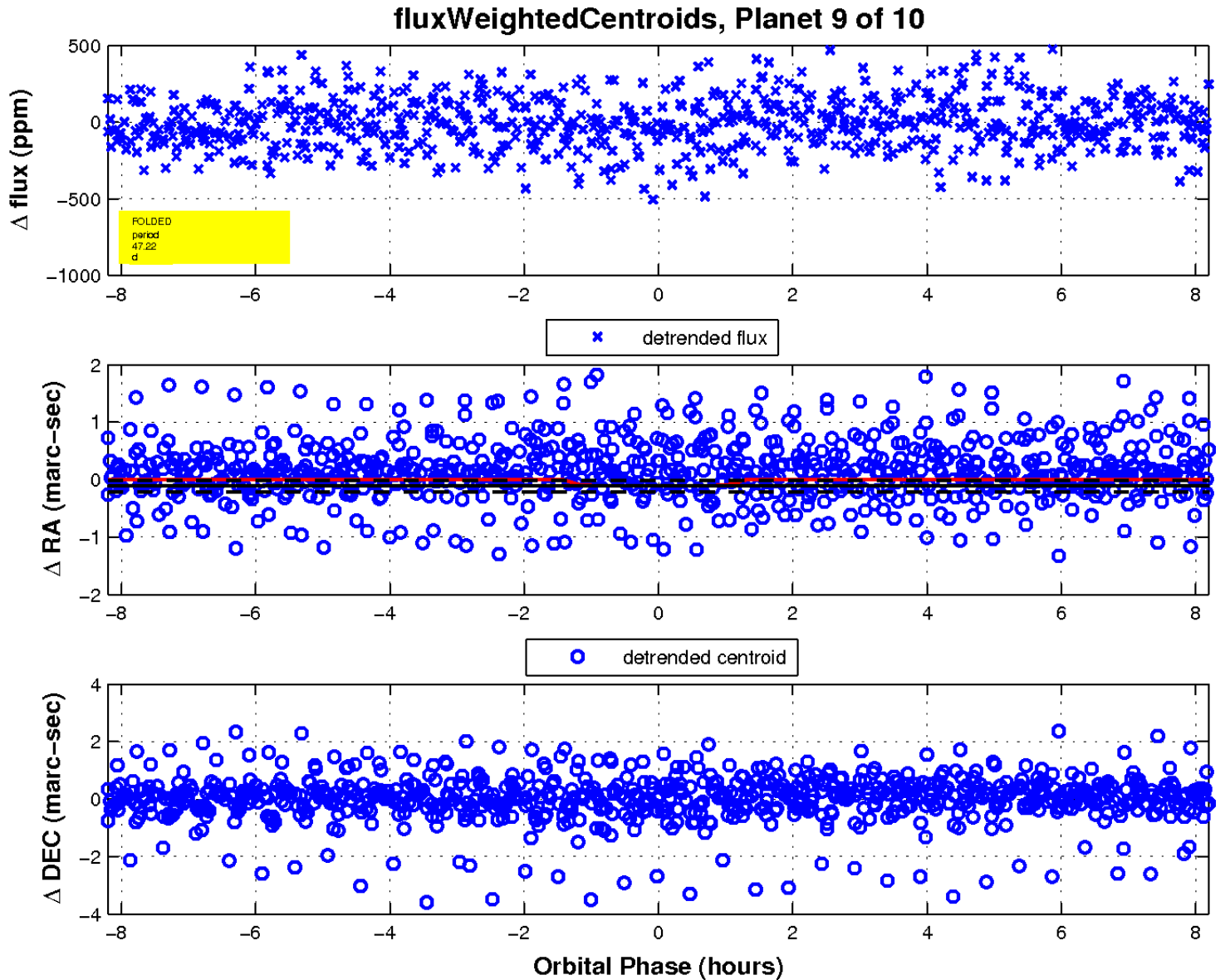
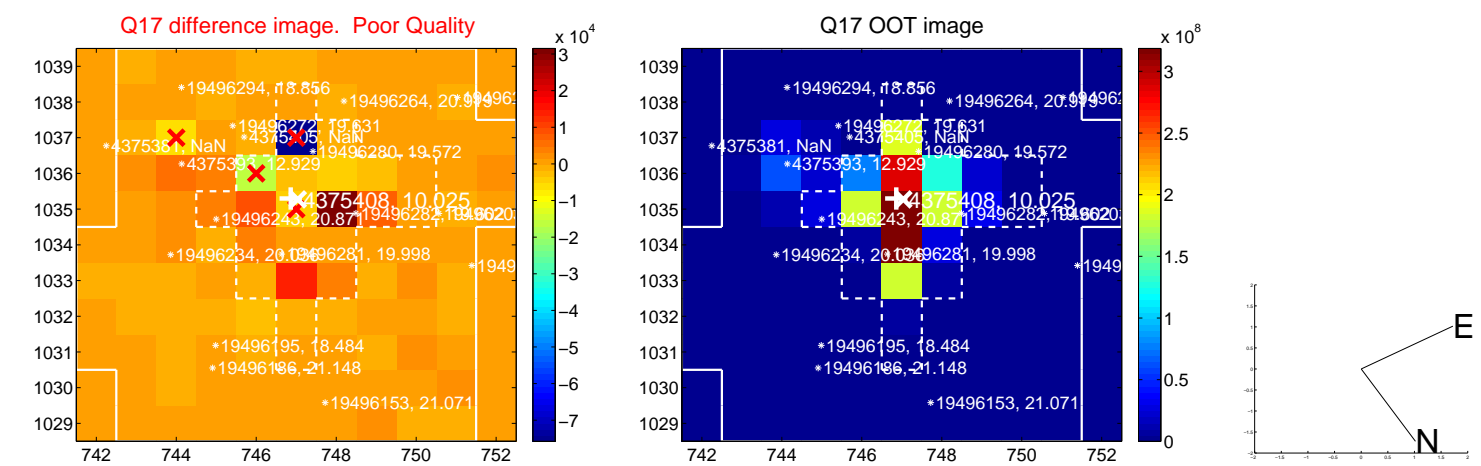
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



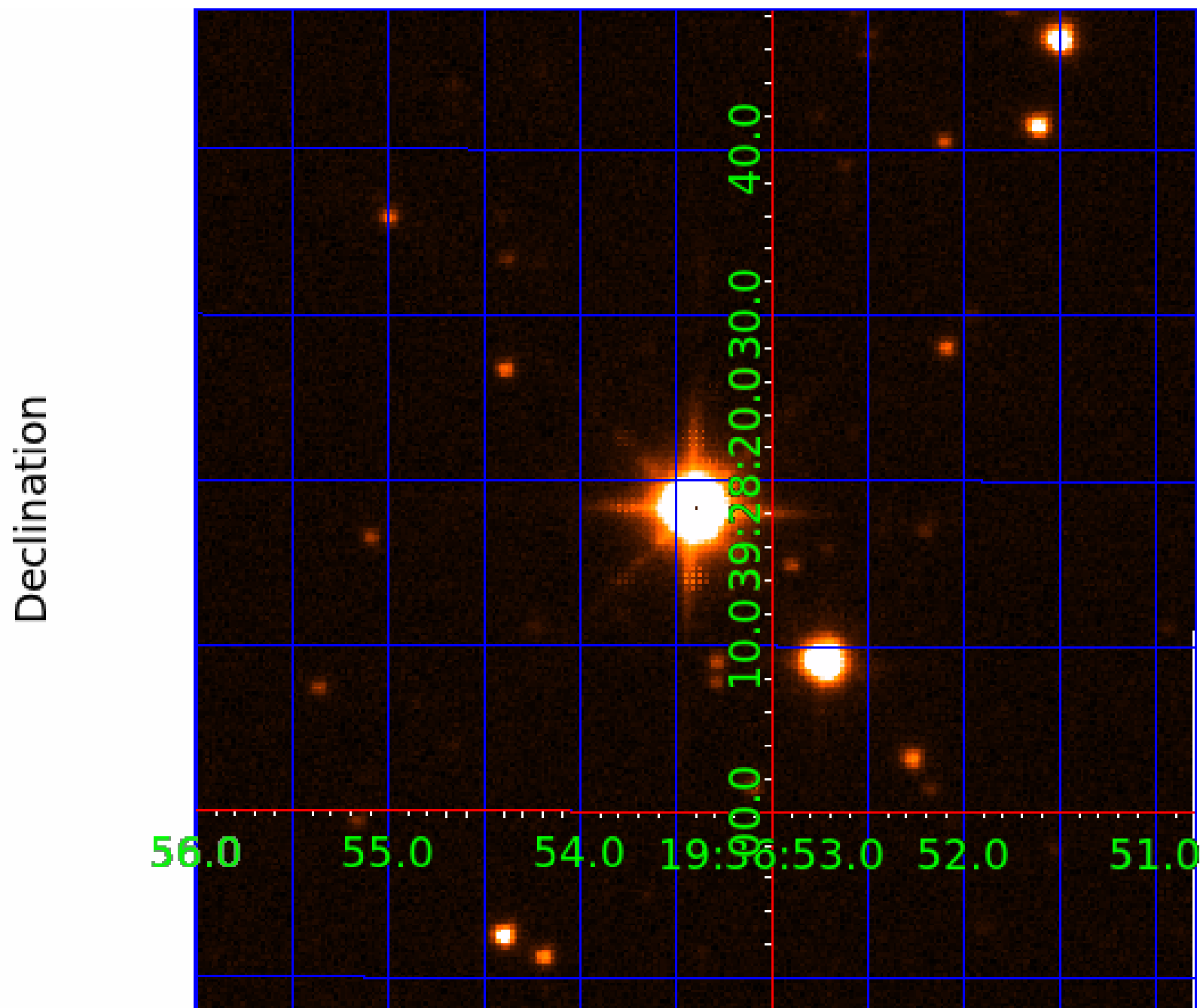
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



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})
004375408-01	OBS	No	1.183133	132.215637	11.3	7.303	9.1	4.0	1.89	6416	0.67	10369.43
004375408-02	OBS	No	106.298491	188.988020	339.5	5.435	11.0	10.3	1.89	6416	4.03	25.77
004375408-03	OBS	No	69.296632	156.360628	334.4	2.169	10.6	9.5	1.89	6416	4.02	45.59
004375408-04	OBS	No	14.842189	138.398480	154.1	3.376	10.2	10.6	1.89	6416	2.70	355.74
004375408-05	OBS	No	53.084762	138.448490	238.0	5.466	9.7	9.4	1.89	6416	3.28	65.04
004375408-06	OBS	No	64.546702	187.689827	258.0	4.142	9.4	8.7	1.89	6416	3.51	50.12
004375408-07	OBS	No	68.662063	188.964621	257.7	1.884	9.1	8.9	1.89	6416	3.58	46.15
004375408-08	OBS	No	154.922917	193.248880	220.0	7.033	8.9	8.0	1.89	6416	2.90	15.60
004375408-09	OBS	No	47.218486	147.679425	263.0	2.735	9.2	8.9	1.89	6416	3.58	76.03
004375408-10	OBS	No	29.333870	132.422001	232.7	2.287	9.1	10.2	1.89	6416	3.33	143.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004375408-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
004375408-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004375408-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004375408-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004375408-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

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

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

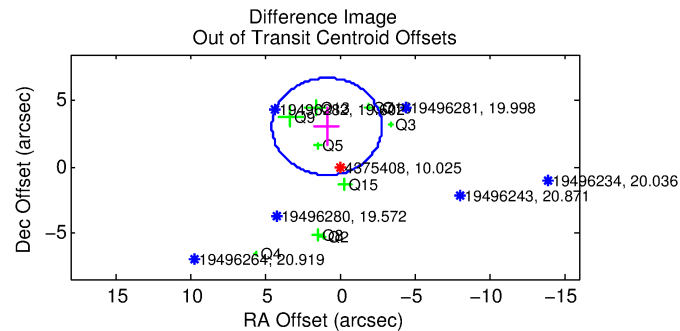
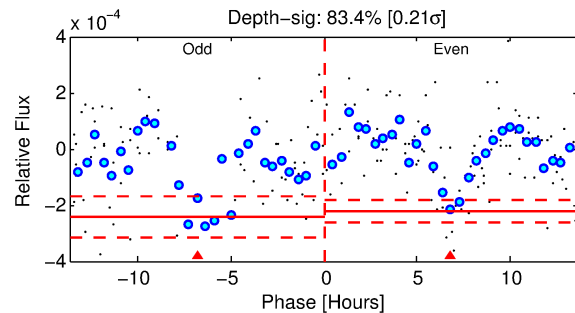
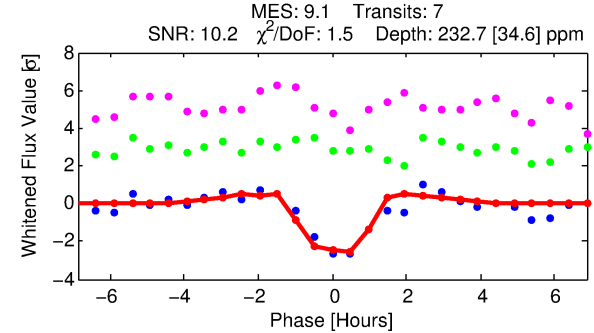
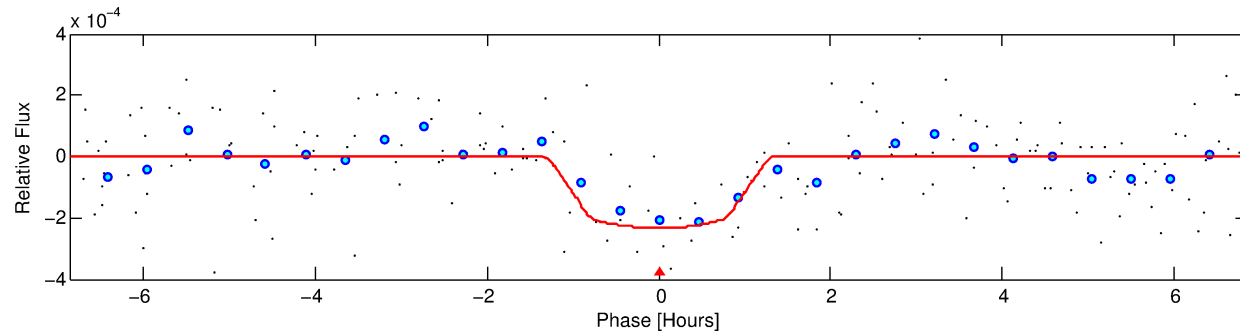
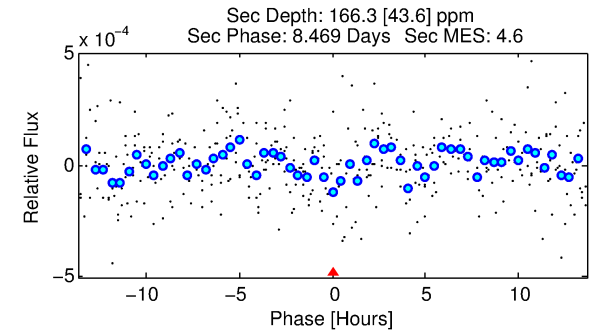
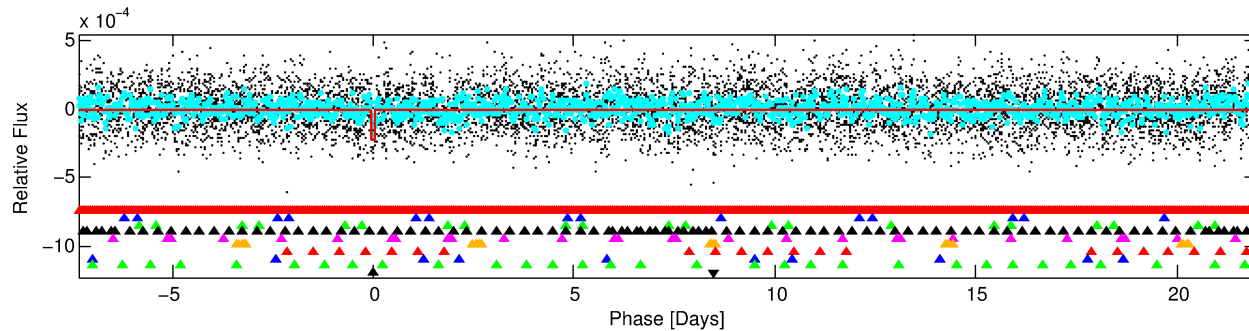
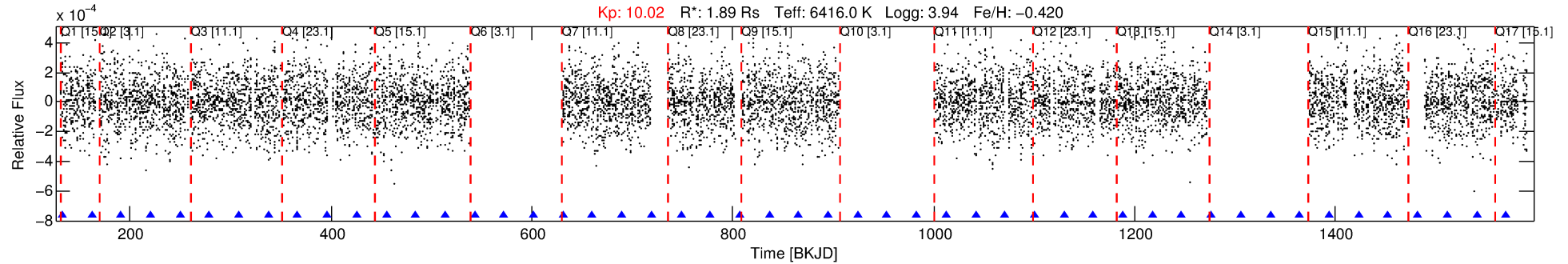
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004375408-10

No Significant Match Found

DV One-Page Summary

KIC: 4375408 Candidate: 10 of 10 Period: 29.334 d



DV Fit Results:

Period = 29.33387 [0.00022] d
Epoch = 132.4220 [0.0053] BKJD
 $R_p/R^* = 0.0162$ [0.0155]
 $a/R^* = 49.03$ [266.50]
 $b = 0.88$ [1.36]
 $\text{Seff} = 143.43$ [100.97]
 $T_{\text{eq}} = 882$ [155] K
 $R_p = 3.33$ [3.47] R_e
 $a = 0.1941$ [0.0810] AU
 $A_g = 311.41$ [639.96] [0.49σ]
 $T_{\text{eff}} = 5731$ [2781] K [1.74σ]

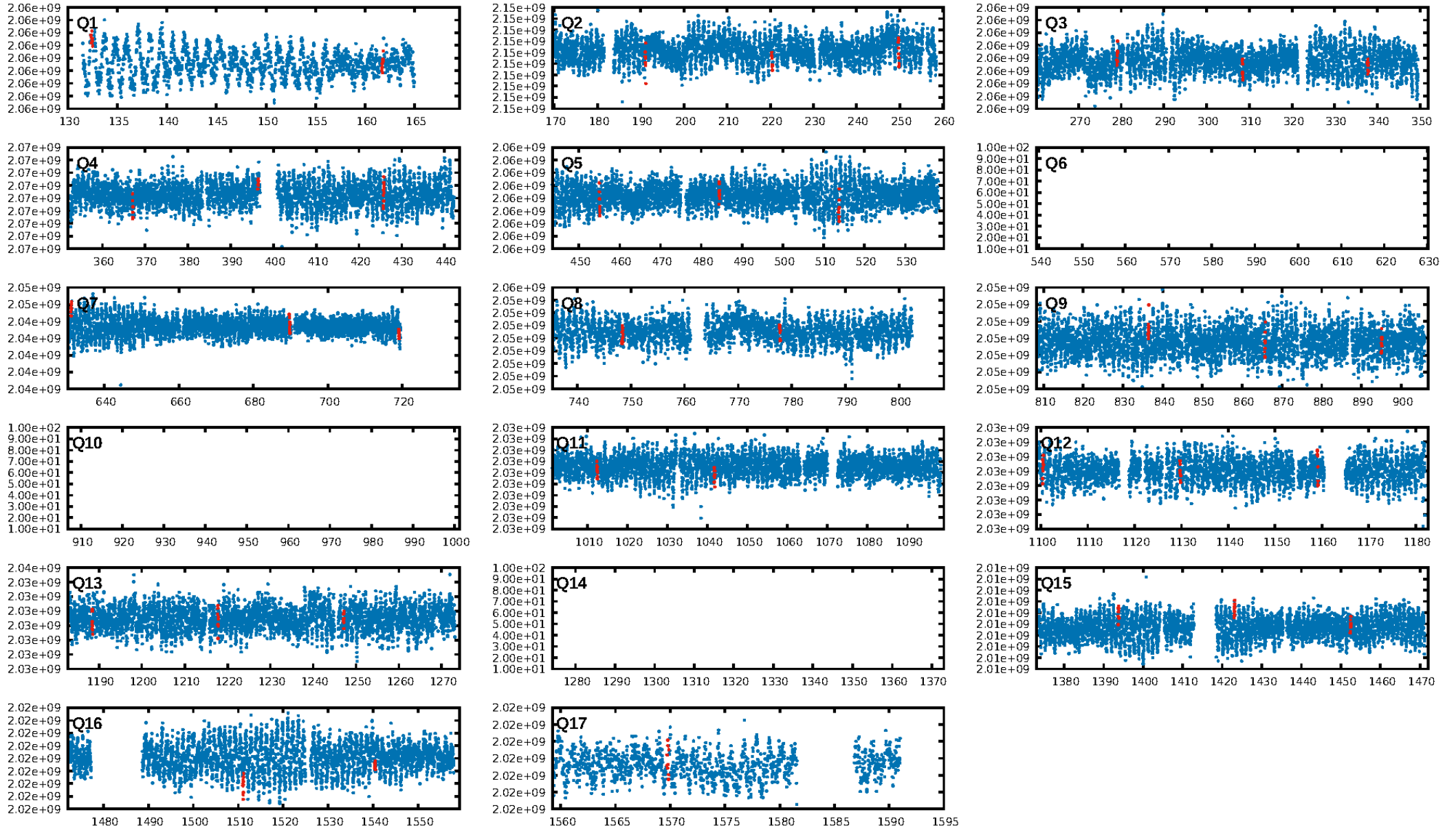
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [85.29σ]
LongPeriod-sig: 100.0% [120.38σ]
ModelChiSquare2-sig: 47.8%
ModelChiSquareGof-sig: 94.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 0.472 arcsec [1.38σ]
OotOffset-rm: 3.151 arcsec [2.58σ]
KicOffset-rm: 3.552 arcsec [2.47σ]
OotOffset-st: 1/3/3/3 [10]
KicOffset-st: 1/3/3/3 [10]
DiffImageQuality-fgm: 0.10 [1/10]
DiffImageOverlap-fno: 0.36 [5/14]

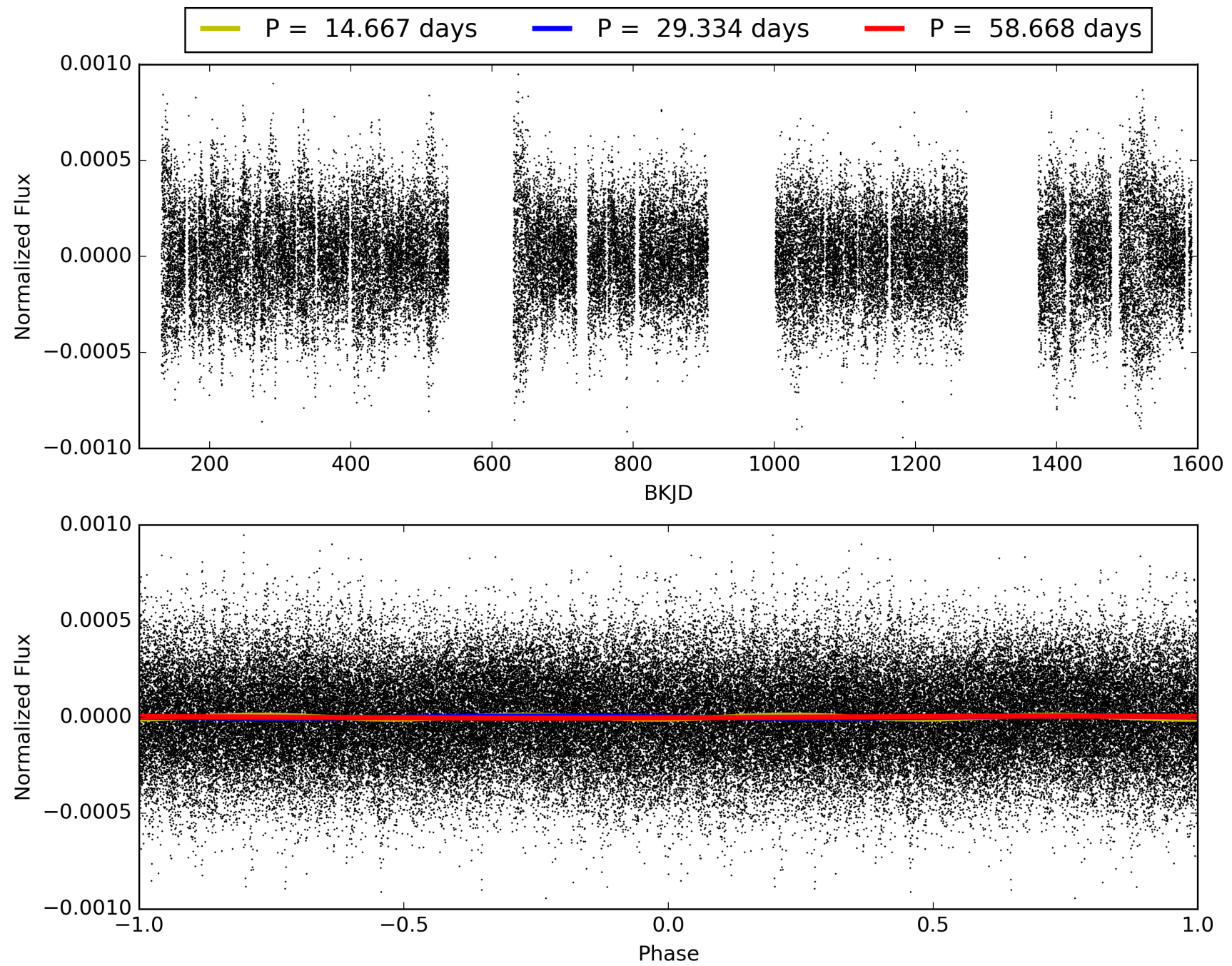
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:59:14 Z

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

TCE 004375408-10, PDC Light Curves

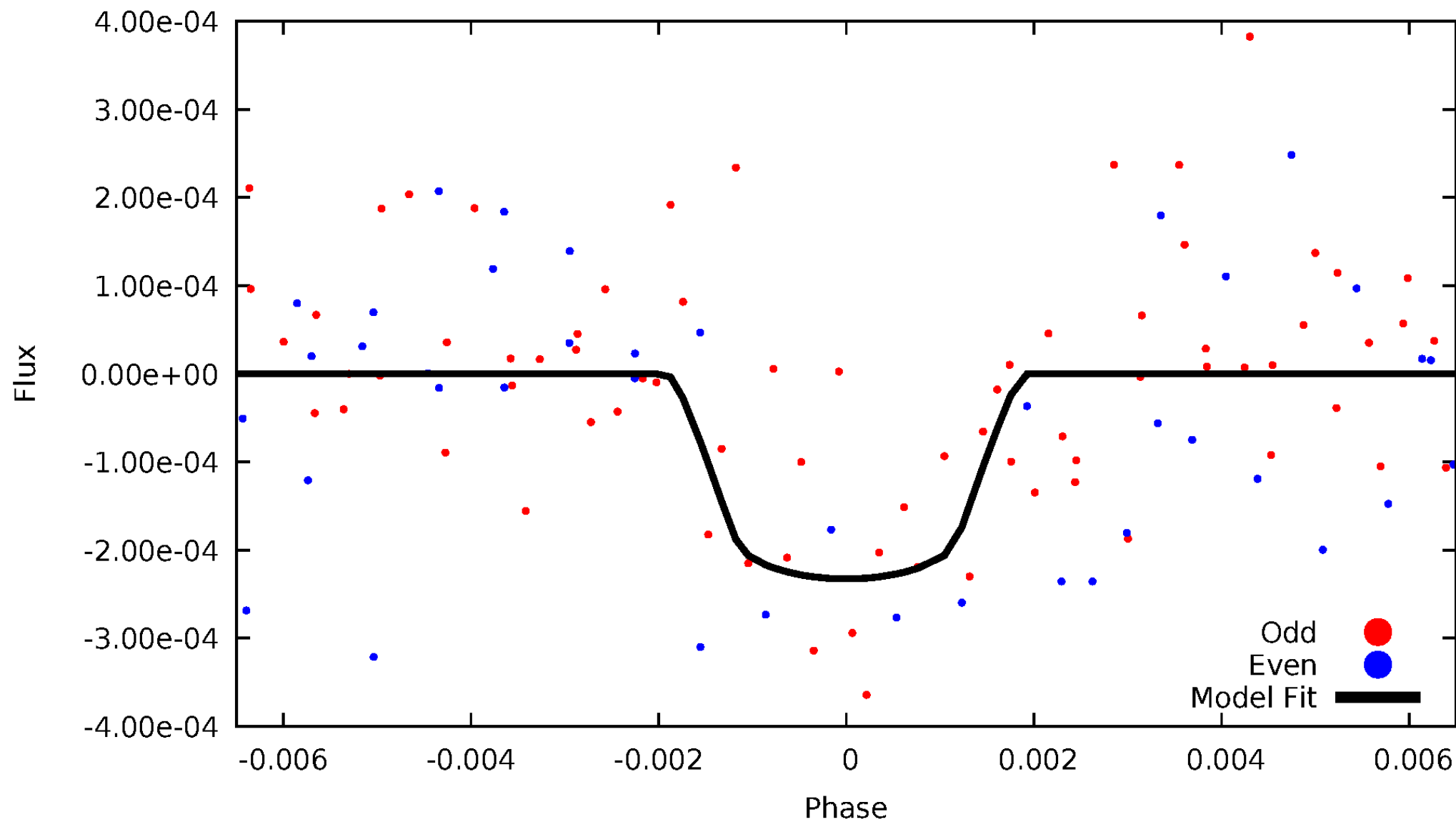


TCE 004375408-10



DV Odd/Even

TCE 004375408-10

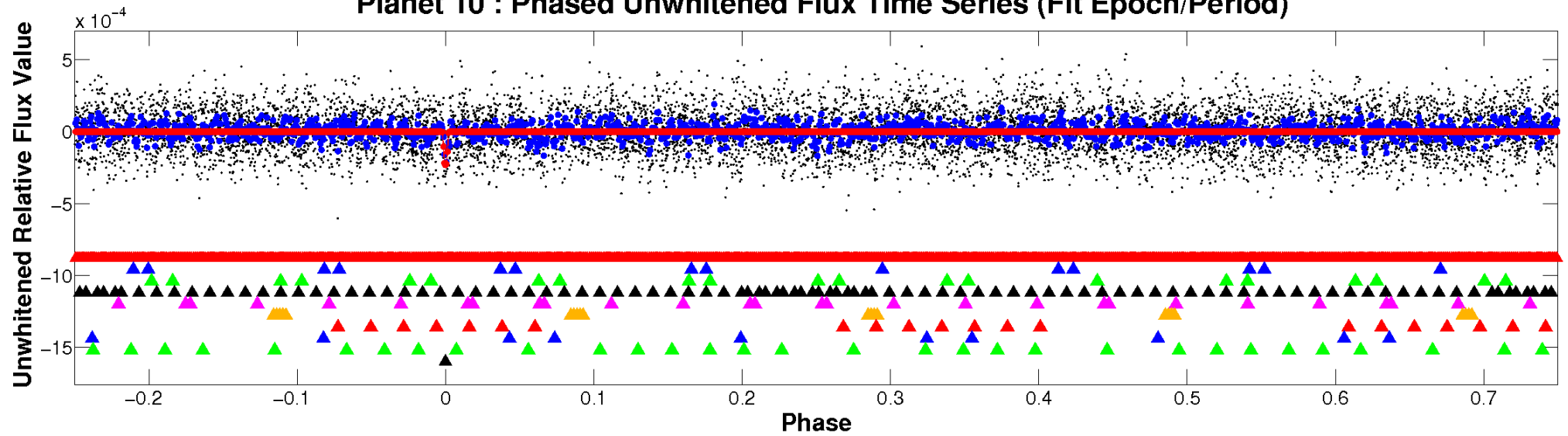


ALT Odd/Even

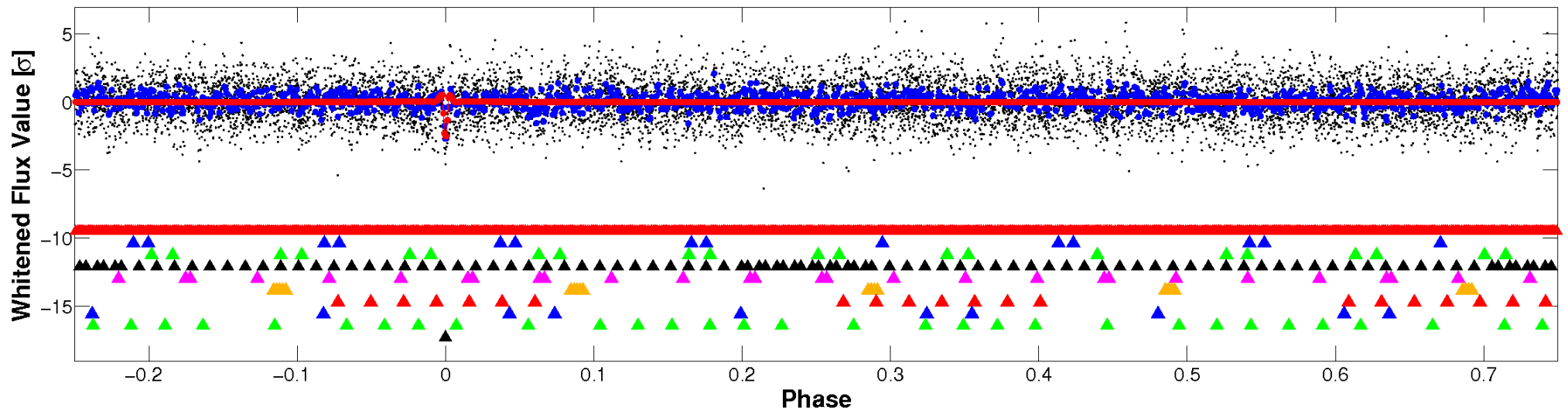
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

Planet 10 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

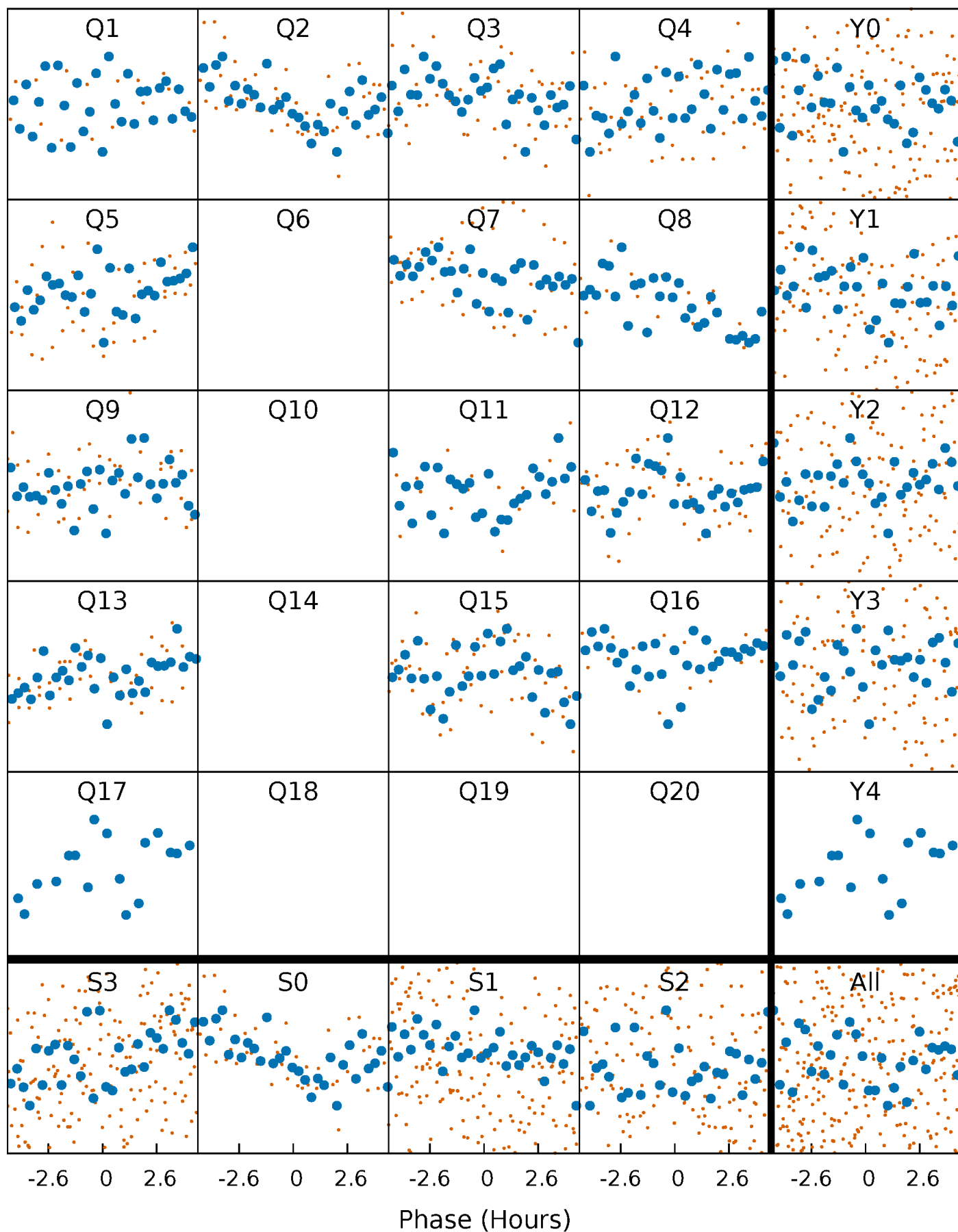


Planet 10 : Phased Whitened Flux Time Series (Fit Epoch/Period)



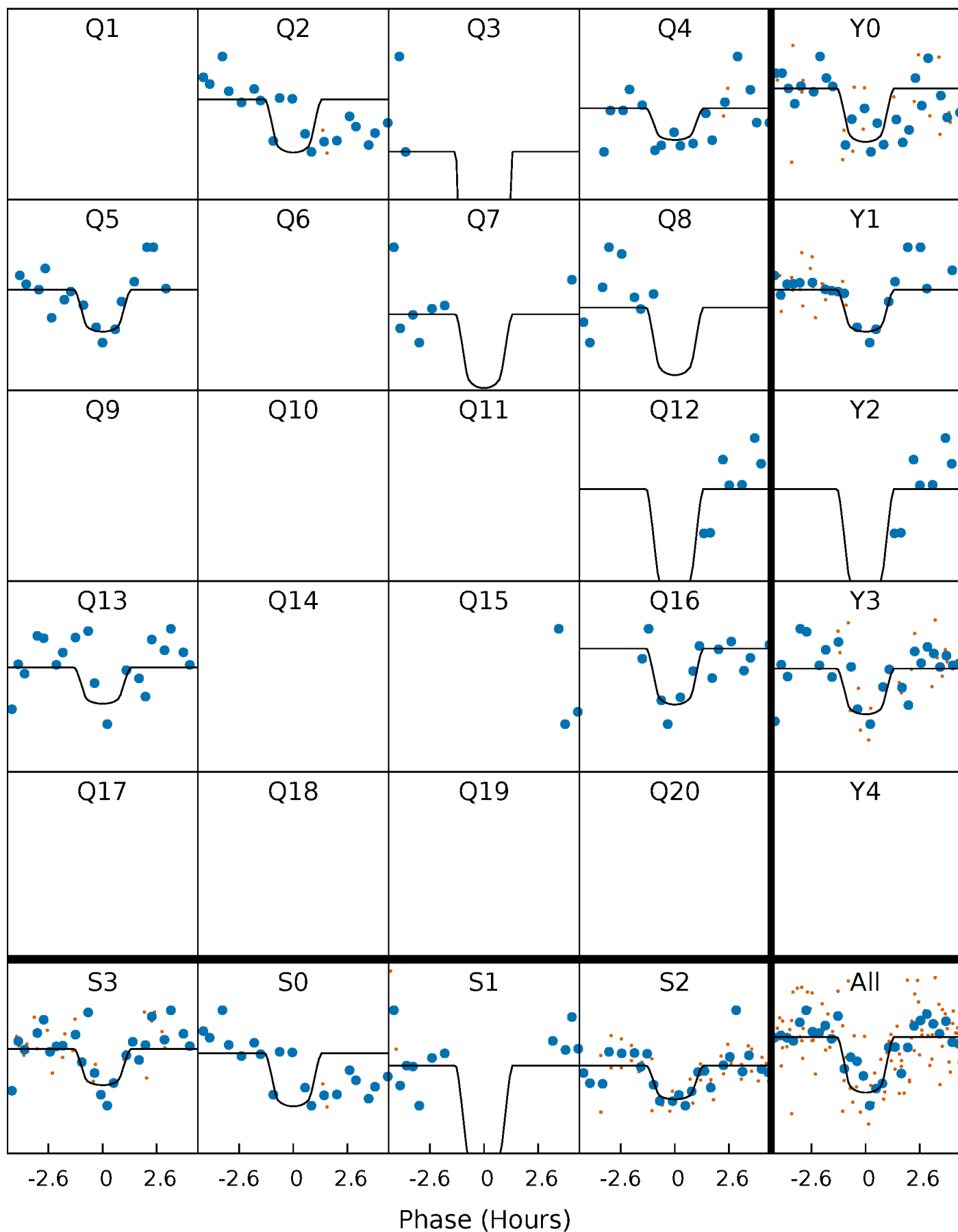
PDC Quarter-Phased Transit Curves

TCE 004375408-10 P= 29.333870 Days $T_0=132.422001$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 004375408-10 P= 29.333870 Days $T_0=132.422001$ (BKJD)

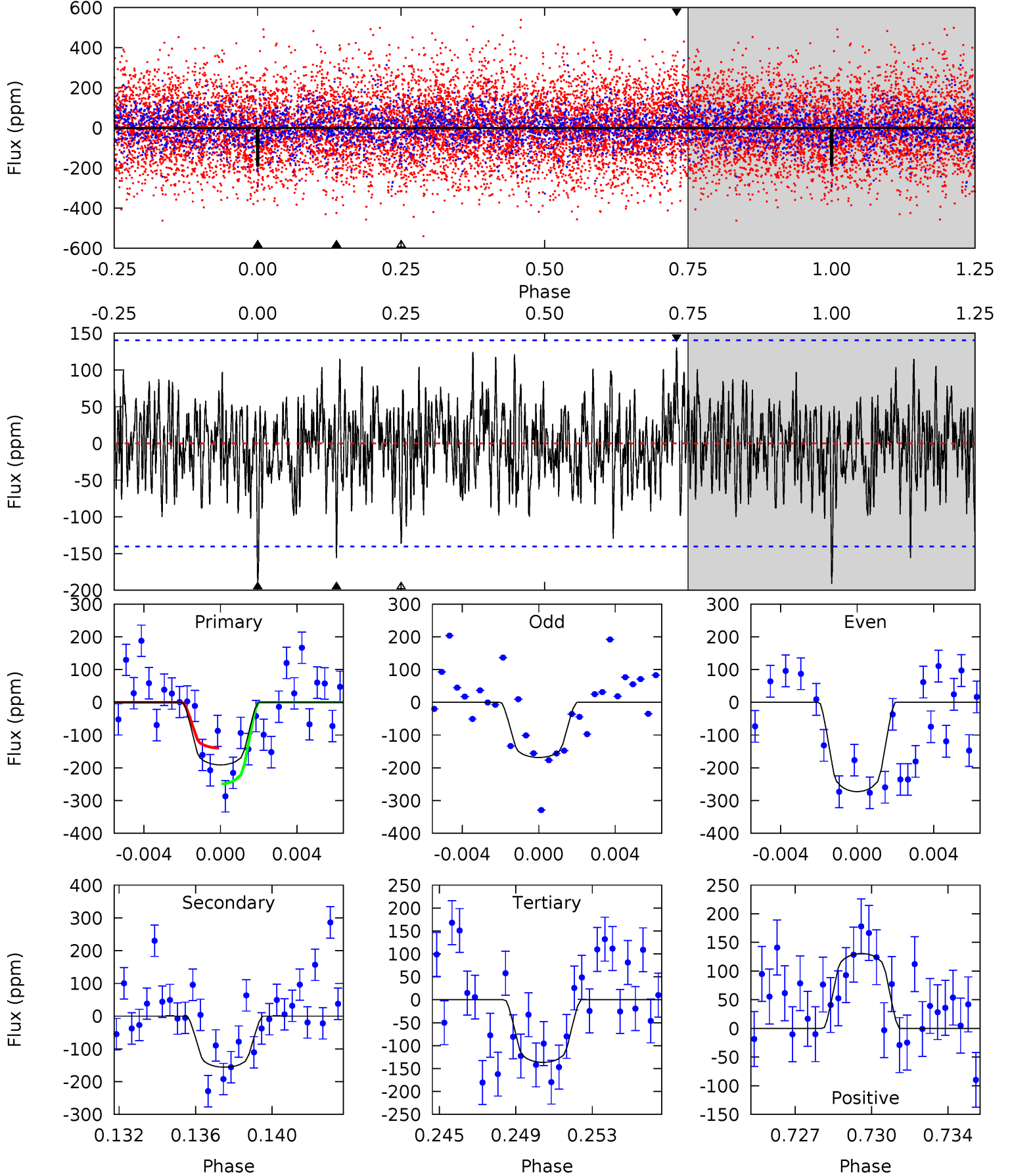


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

004375408-10, $P = 29.333870$ Days, $E = 103.088131$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.08	5.78	5.06	4.84	5.20	2.89	1.58	2.02	2.24	0.72	0.94	1.67	0.87	0.41	2.03



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 004375408

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6416^{+181}_{-227}	$3.941^{+0.413}_{-0.138}$	$-0.420^{+0.300}_{-0.300}$	$1.887^{+0.448}_{-0.768}$	$1.133^{+0.169}_{-0.188}$	$0.237^{+0.824}_{-0.092}$
	+3%/-4%	+10%/-4%	+71%/-71%	+24%/-41%	+15%/-17%	+347%/-39%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004375408-10 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-156 ± 27	$3.65^{+3.11}_{-2.28}$	1210^{+91}_{-144}	5207^{+3639}_{-1050}	235^{+1457}_{-163}
Alt.	N/A	N/A	N/A	N/A	N/A

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

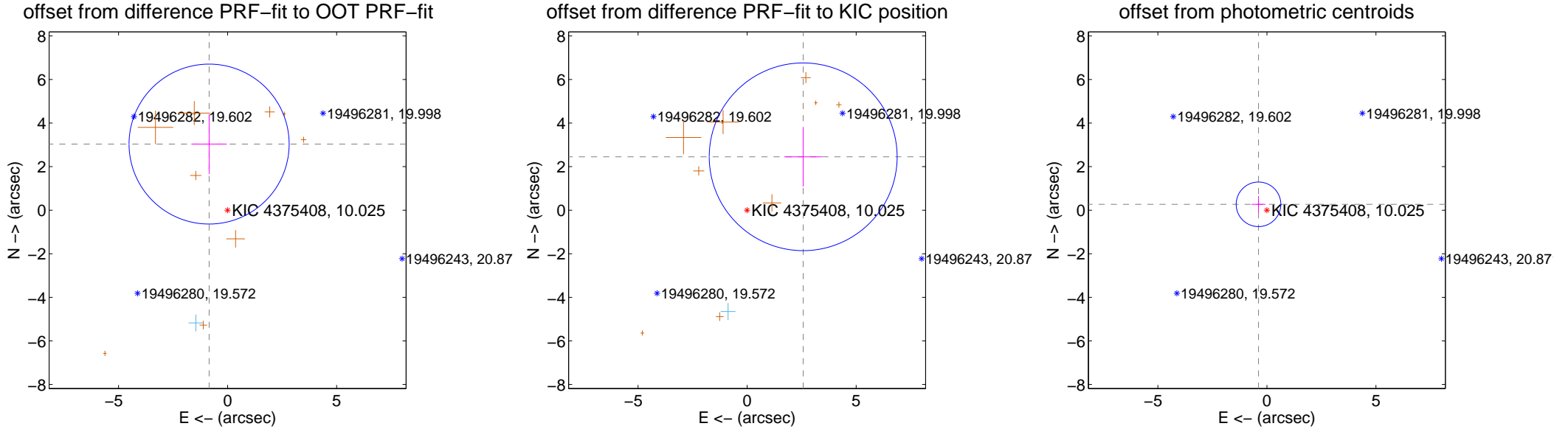
DV Centroid Data

Supplemental centroid analysis for 004375408-10. **Kepler magnitude: 10.03.** Transit SNR 10.24

There are 1 quarters with good PRF difference image offsets

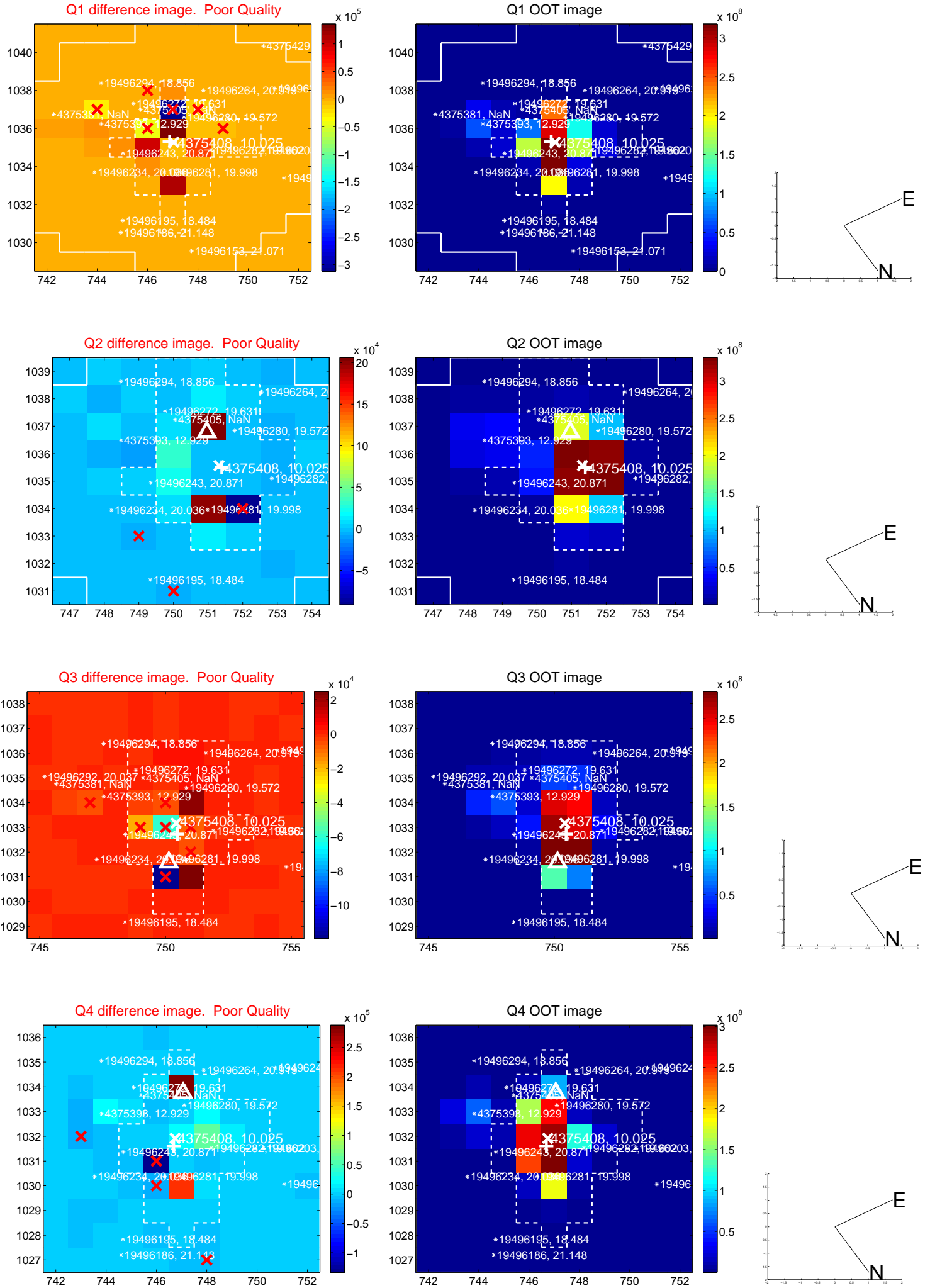
The direct PRF centroid is offset from the target star catalog position by about 0.75 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.151 ± 1.224	2.58	0.848 ± 0.813	3.035 ± 1.376
PRF-fit source offset from KIC position	3.552 ± 1.436	2.47	-2.571 ± 0.868	2.452 ± 1.364
photometric centroid source offset	0.47 ± 0.34	1.38	0.39 ± 0.32	0.27 ± 0.38

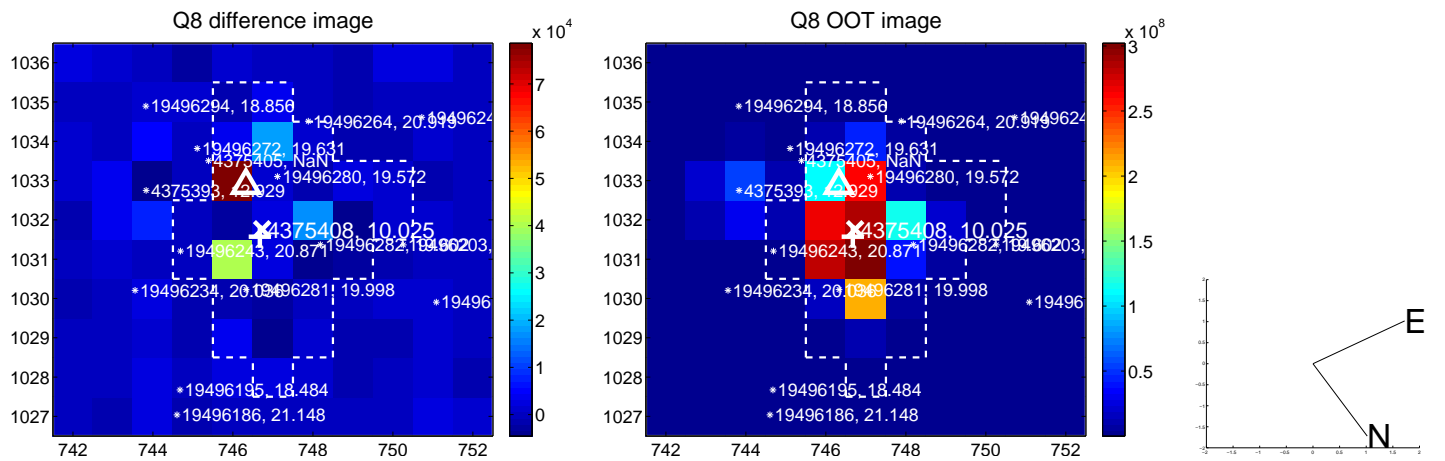
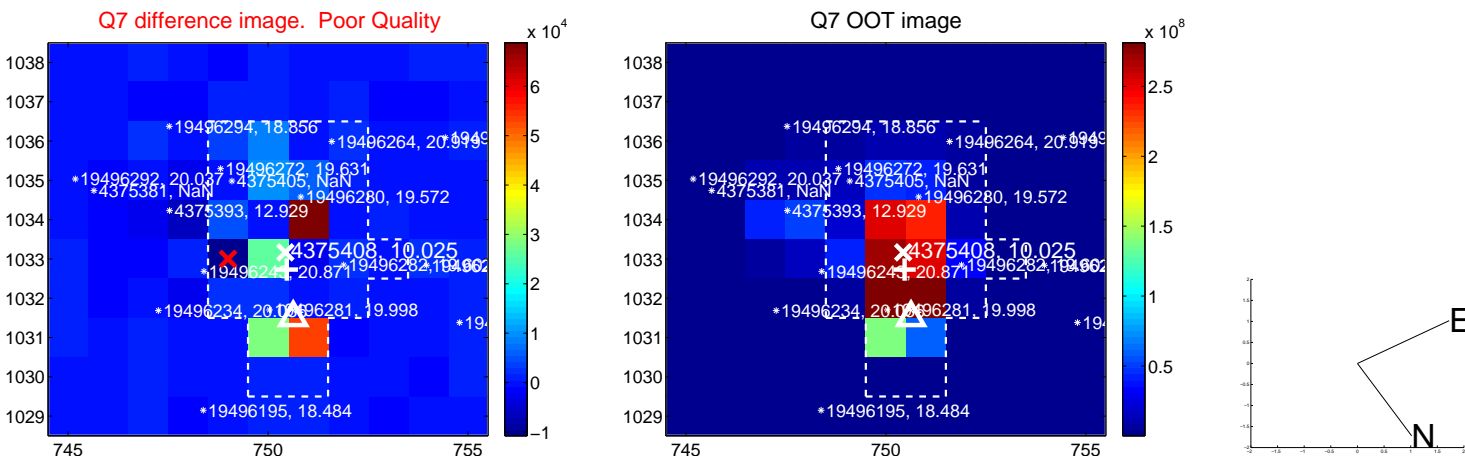
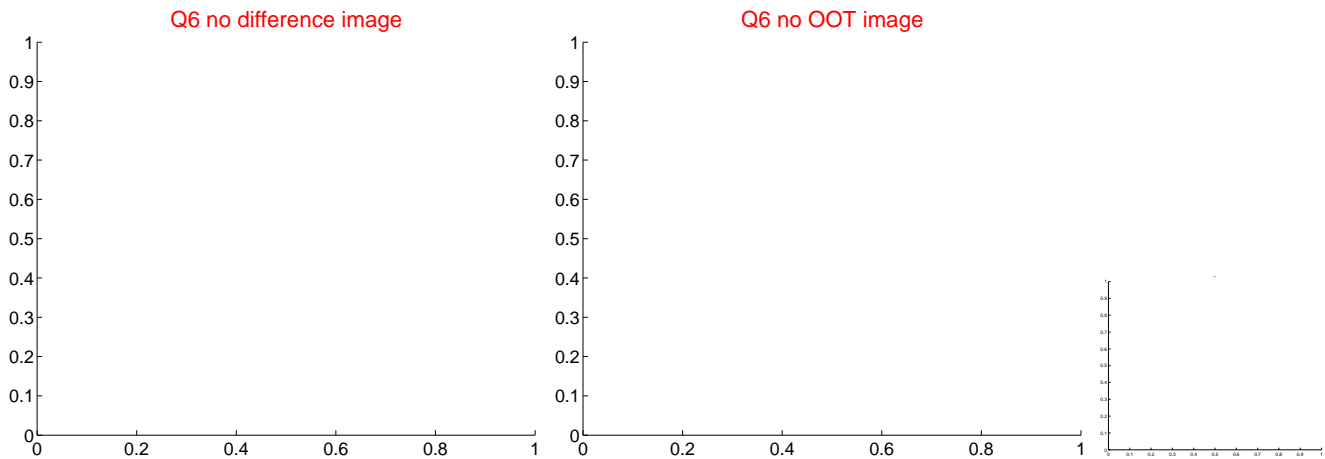
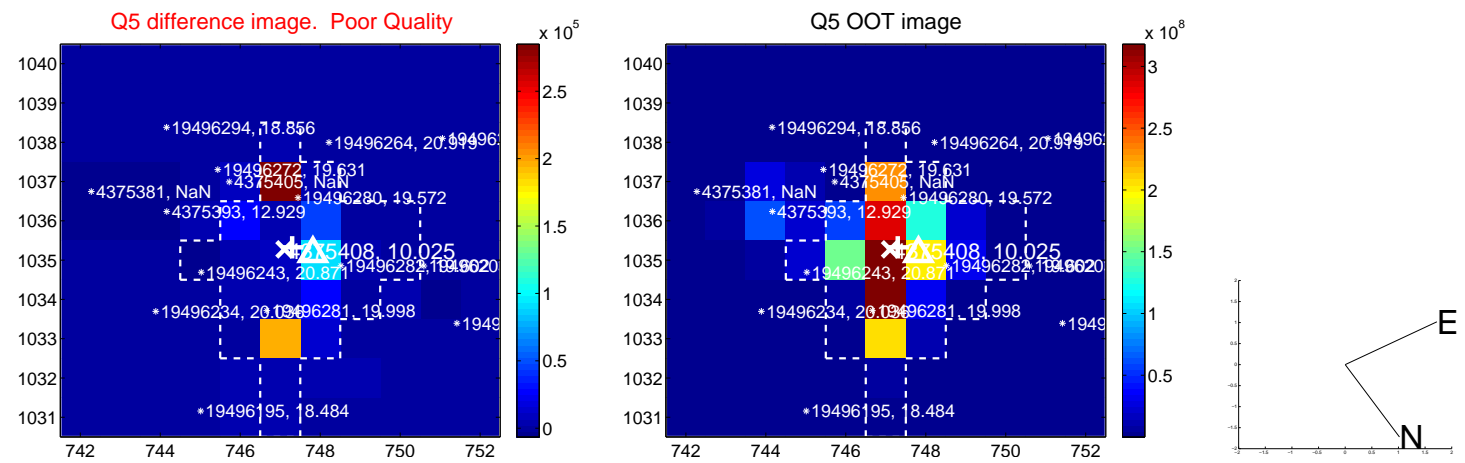


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

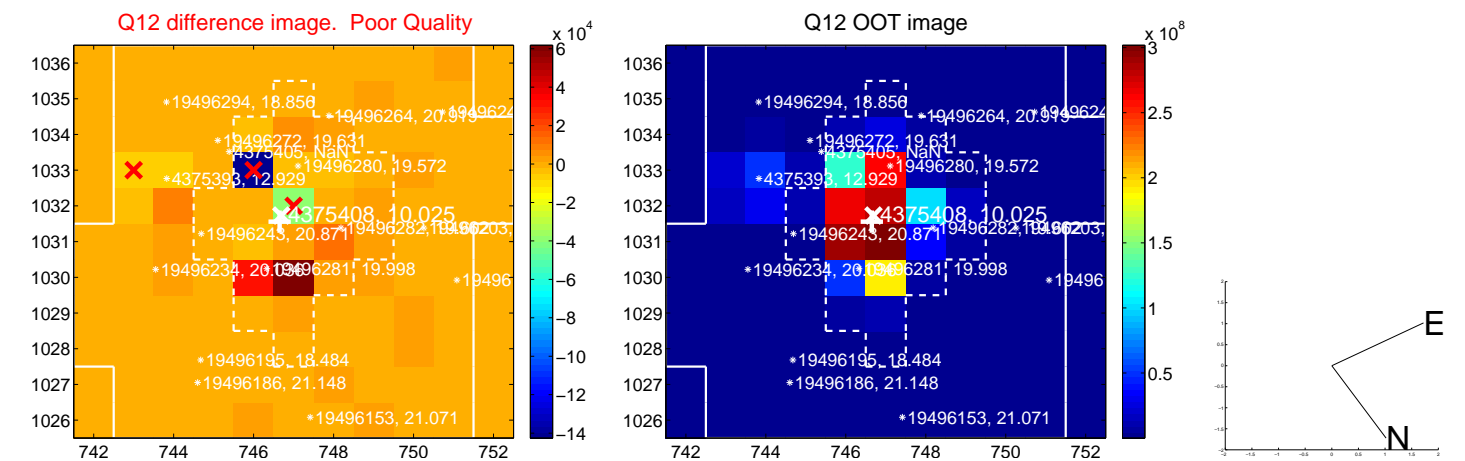
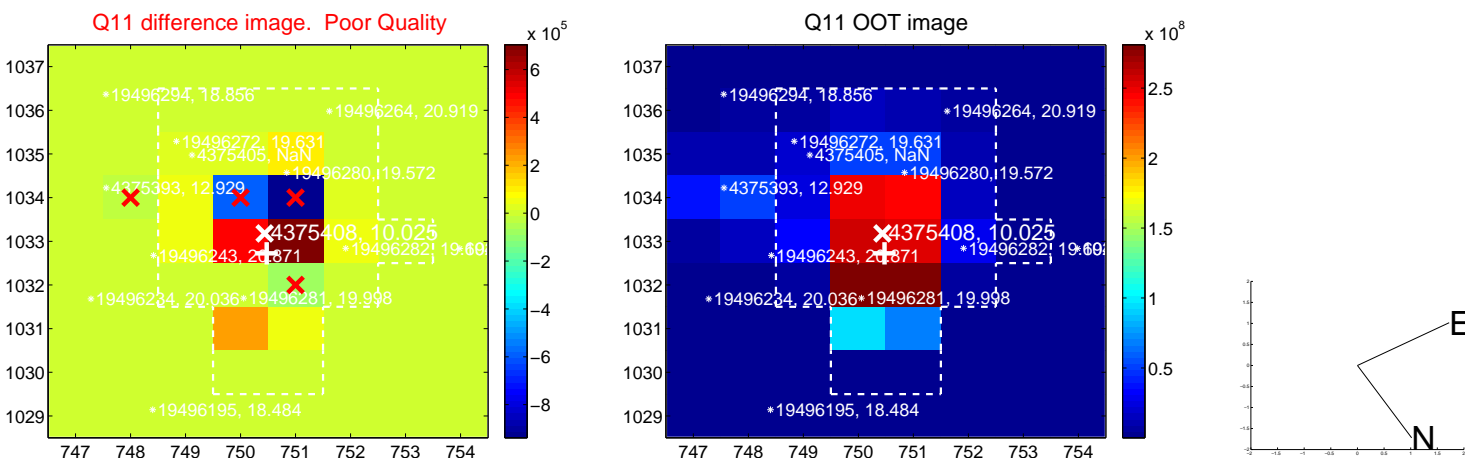
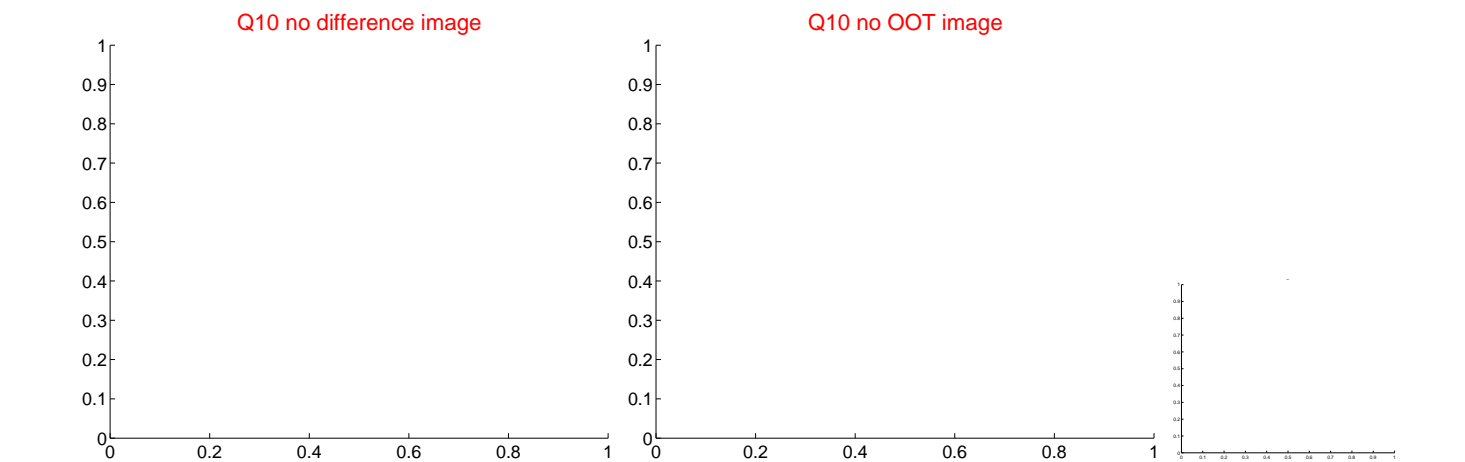
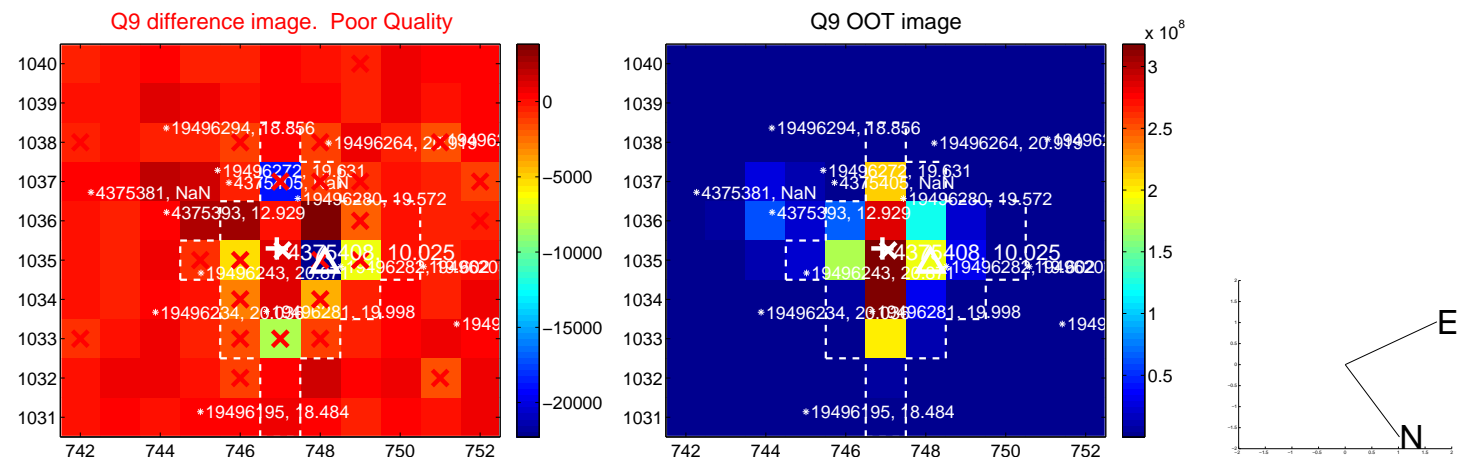
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



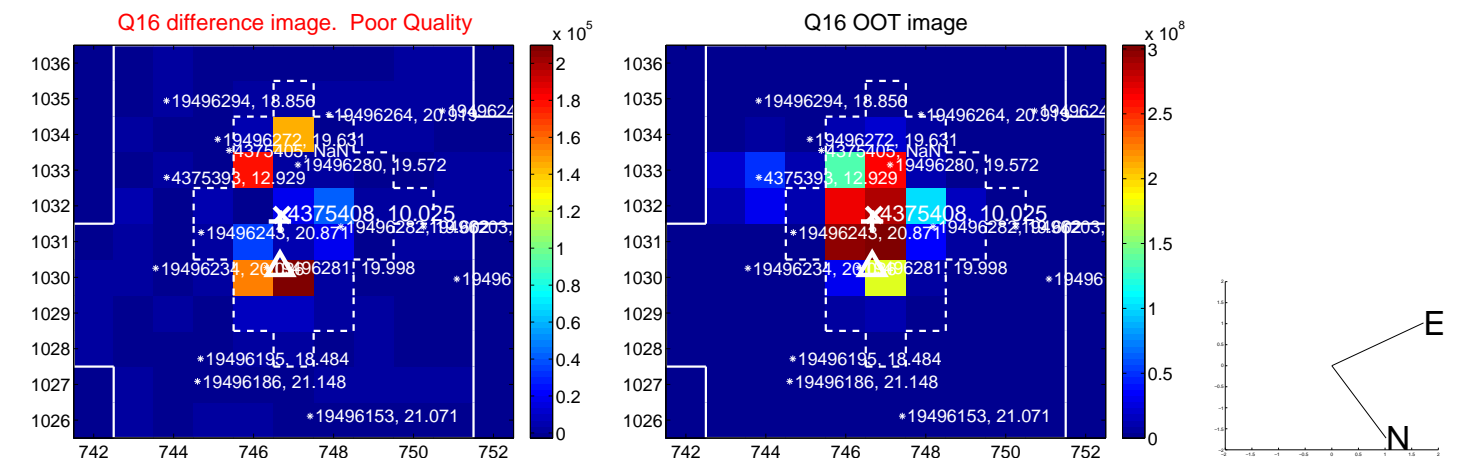
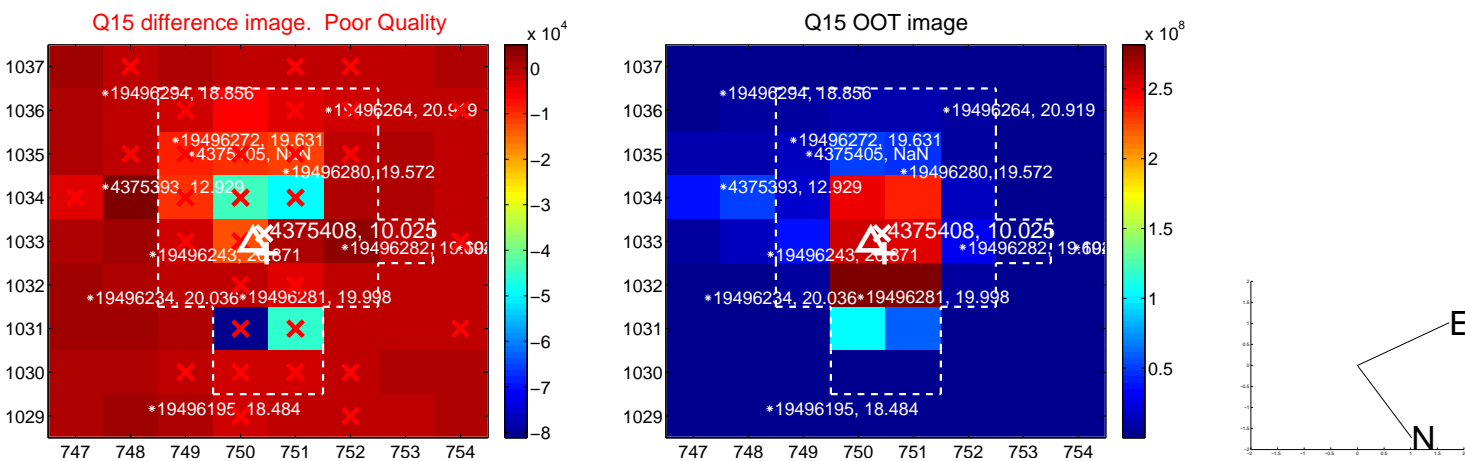
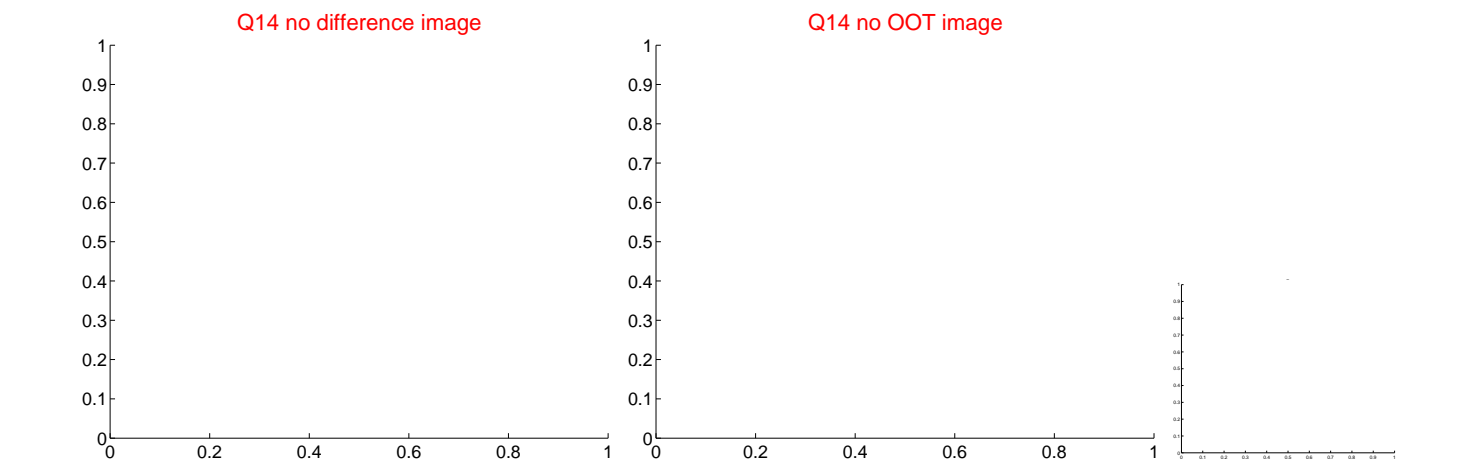
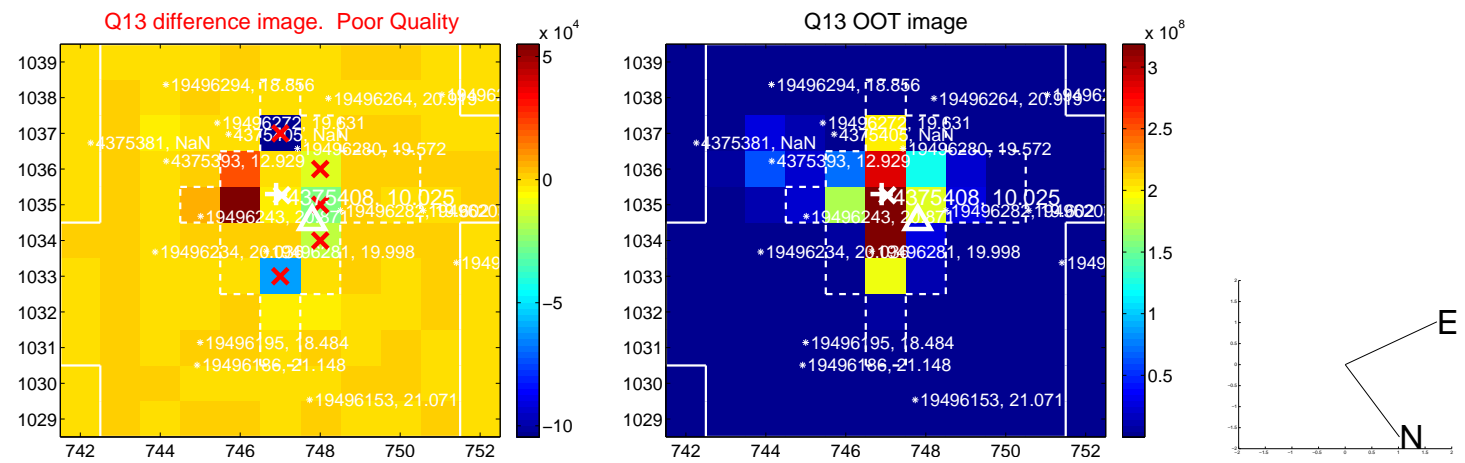
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



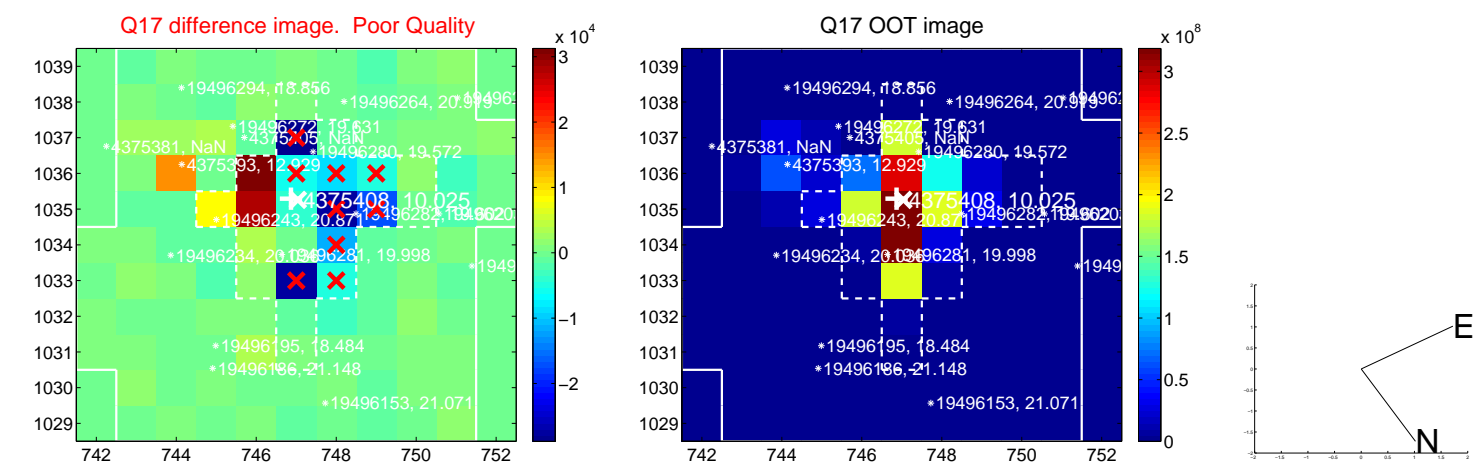
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



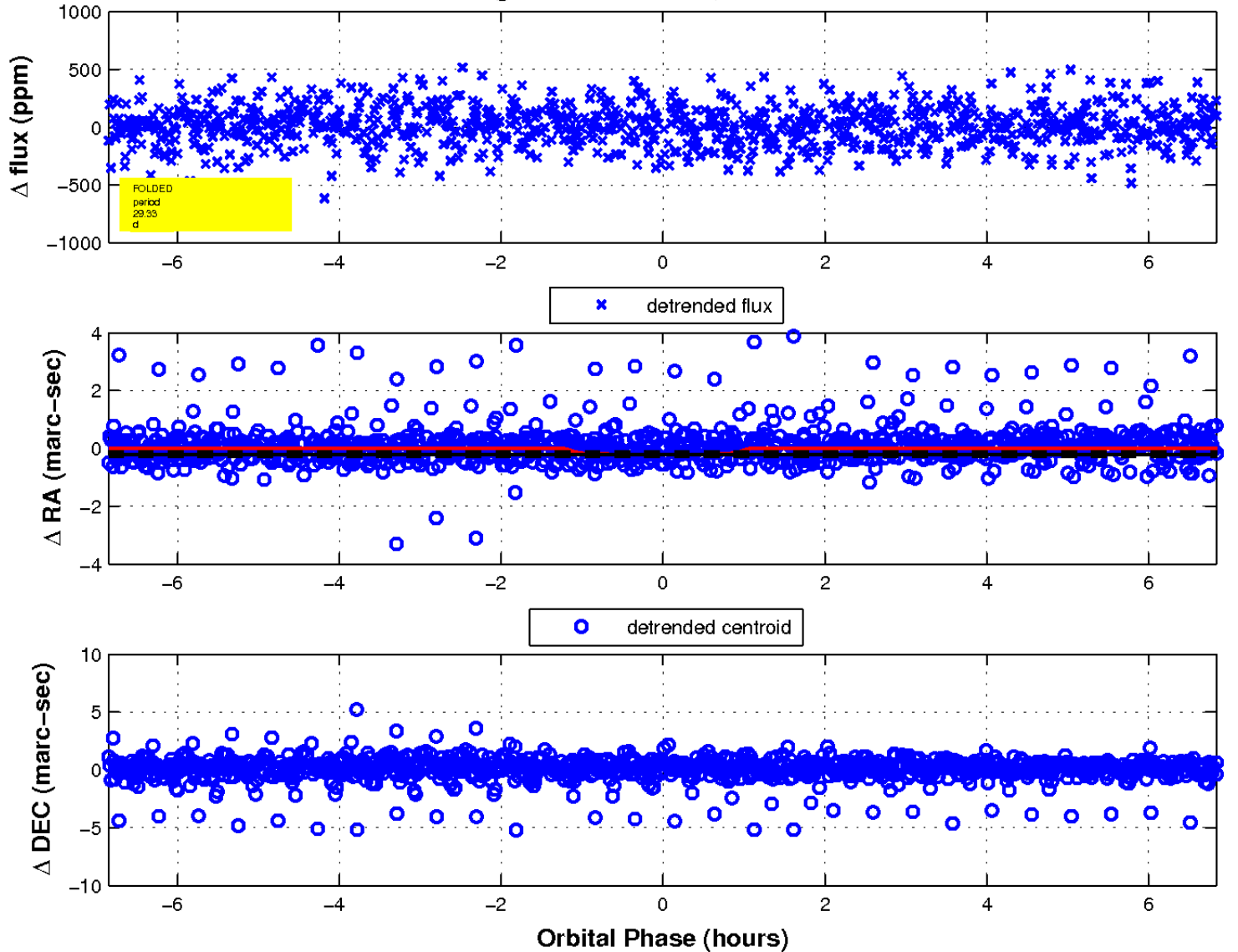
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 10 of 10



UKIRT Image

