

KIC 005521451

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})
005521451-01	OBS	No	372.412047	232.784079	3312.3	22.490	38.0	26.2	0.78	5533	7.42	0.62
005521451-02	OBS	No	360.611467	234.046598	1367.7	15.000	32.4	-1.0	0.78	5533	2.86	0.65
005521451-03	OBS	No	372.837361	210.877980	992.2	17.192	29.0	10.5	0.78	5533	2.51	0.62
005521451-04	OBS	No	370.162272	209.997913	2267.3	15.633	29.7	20.1	0.78	5533	4.56	0.63
005521451-06	OBS	No	384.932939	191.959128	683.2	4.731	24.1	6.8	0.78	5533	2.27	0.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005521451-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS
005521451-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

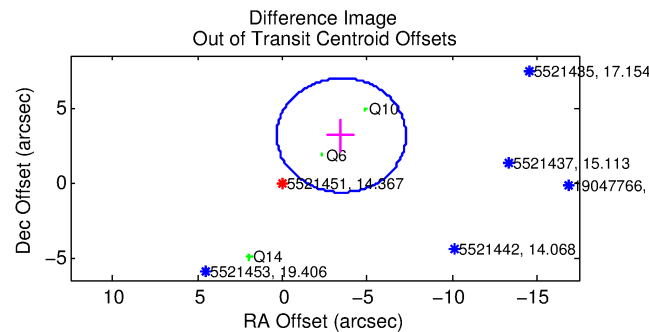
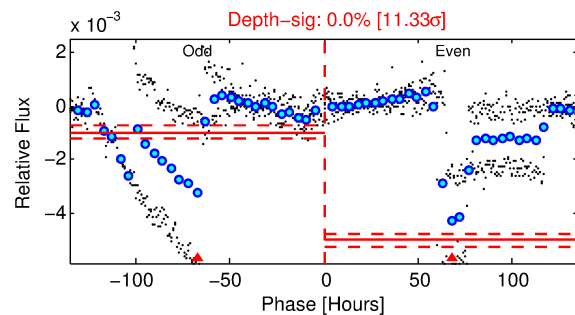
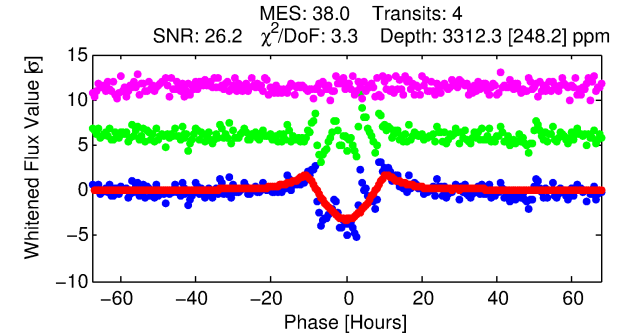
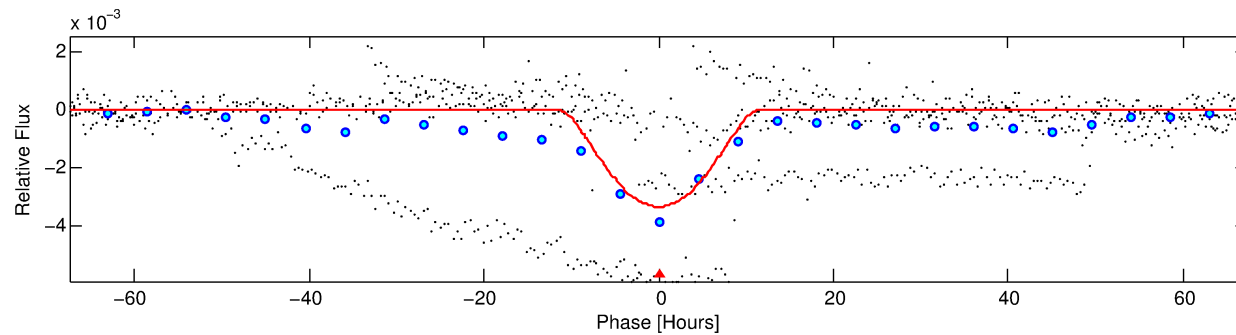
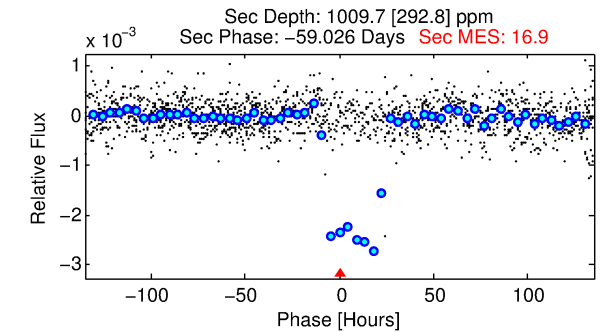
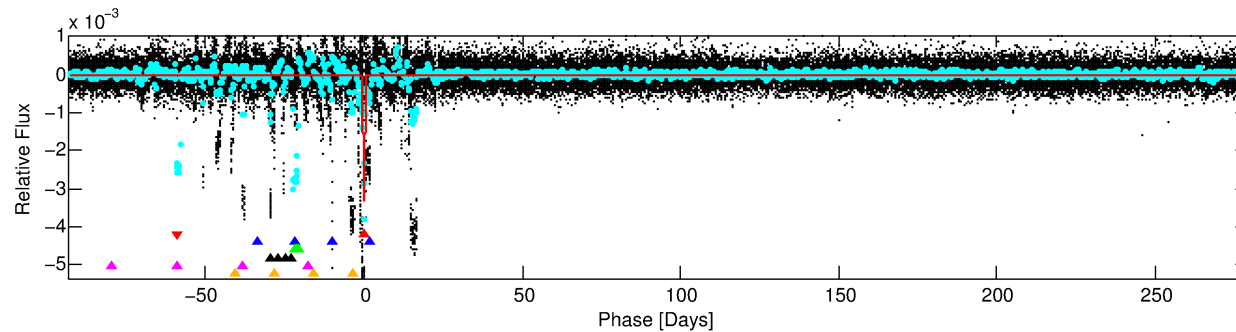
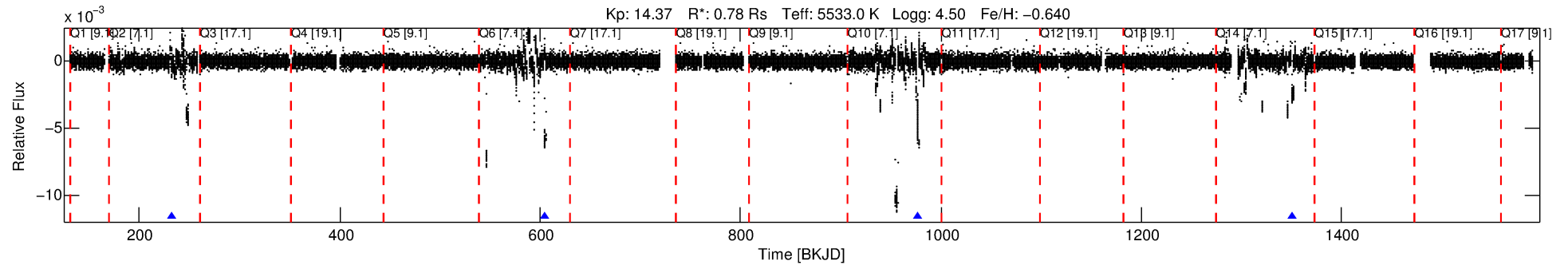
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005521451-01

No Significant Match Found

DV One-Page Summary

KIC: 5521451 Candidate: 1 of 6 Period: 372.412 d



DV Fit Results:

Period = 372.41205 [0.01230] d
Epoch = 232.7841 [0.0205] BKJD
Rp/R* = 0.0872 [0.0737]
a/R* = 58.80 [12.20]
b = 0.98 [0.12]
Seff = 0.63 [0.14]
Teq = 227 [13] K
Rp = 7.42 [6.37] Re
a = 0.9039 [0.1198] AU
Ag = 8234.74 [14204.25] [0.58 σ]
Teffp = 3340 [1434] K [2.17 σ]

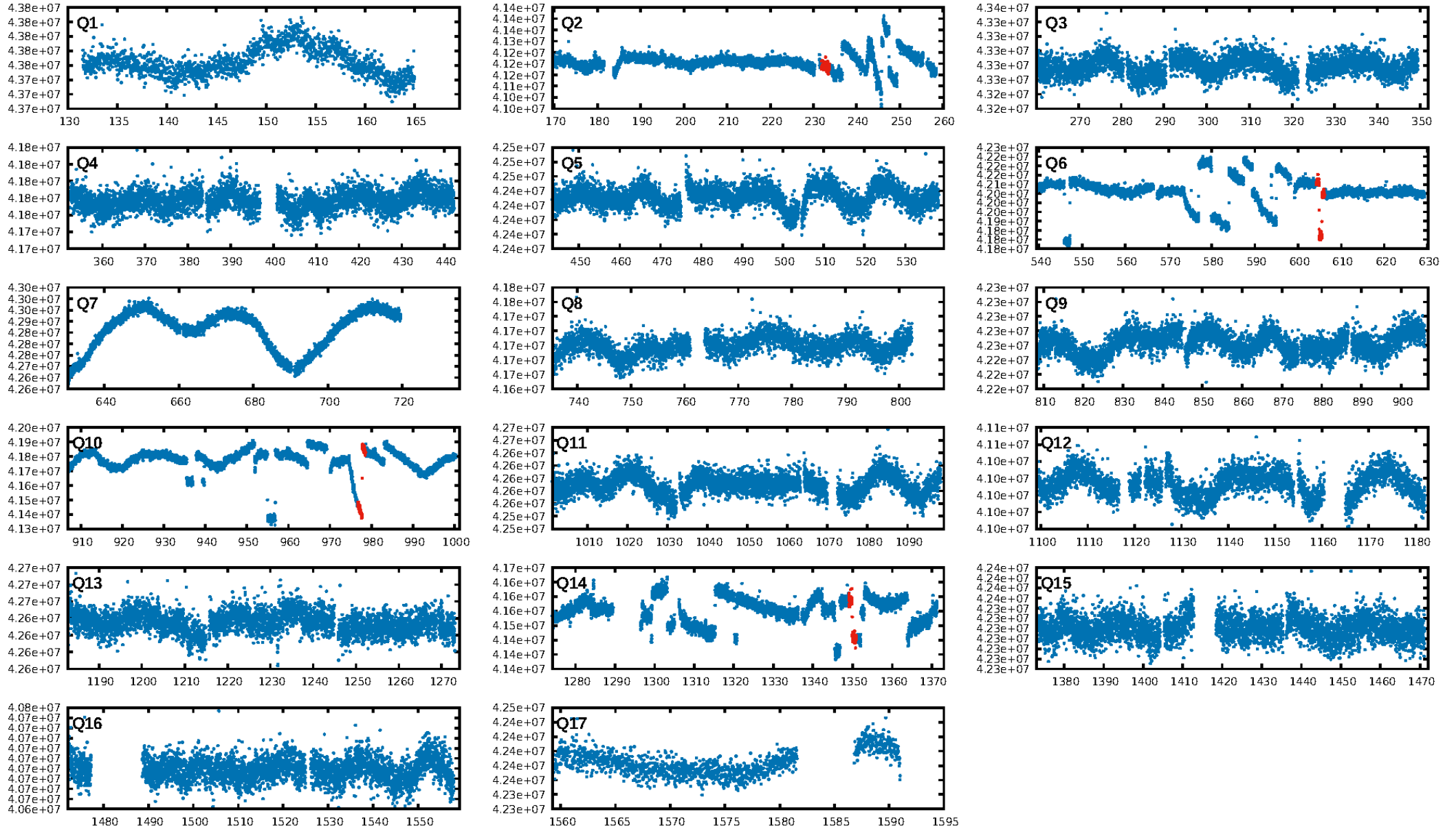
DV Diagnostic Results:

ShortPeriod-sig: 95.1% [1.97 σ]
LongPeriod-sig: 28.2% [0.36 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 2.18e-29
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.9832
Centroid-sig: 0.0%
Centroid-so: 2.002 arcsec [5.23 σ]
OotOffset-rm: 4.701 arcsec [3.71 σ]
KicOffset-rm: 4.435 arcsec [2.35 σ]
OotOffset-st: 3/0/0/0 [3]
KicOffset-st: 3/0/0/0 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 1.00 [3/3]

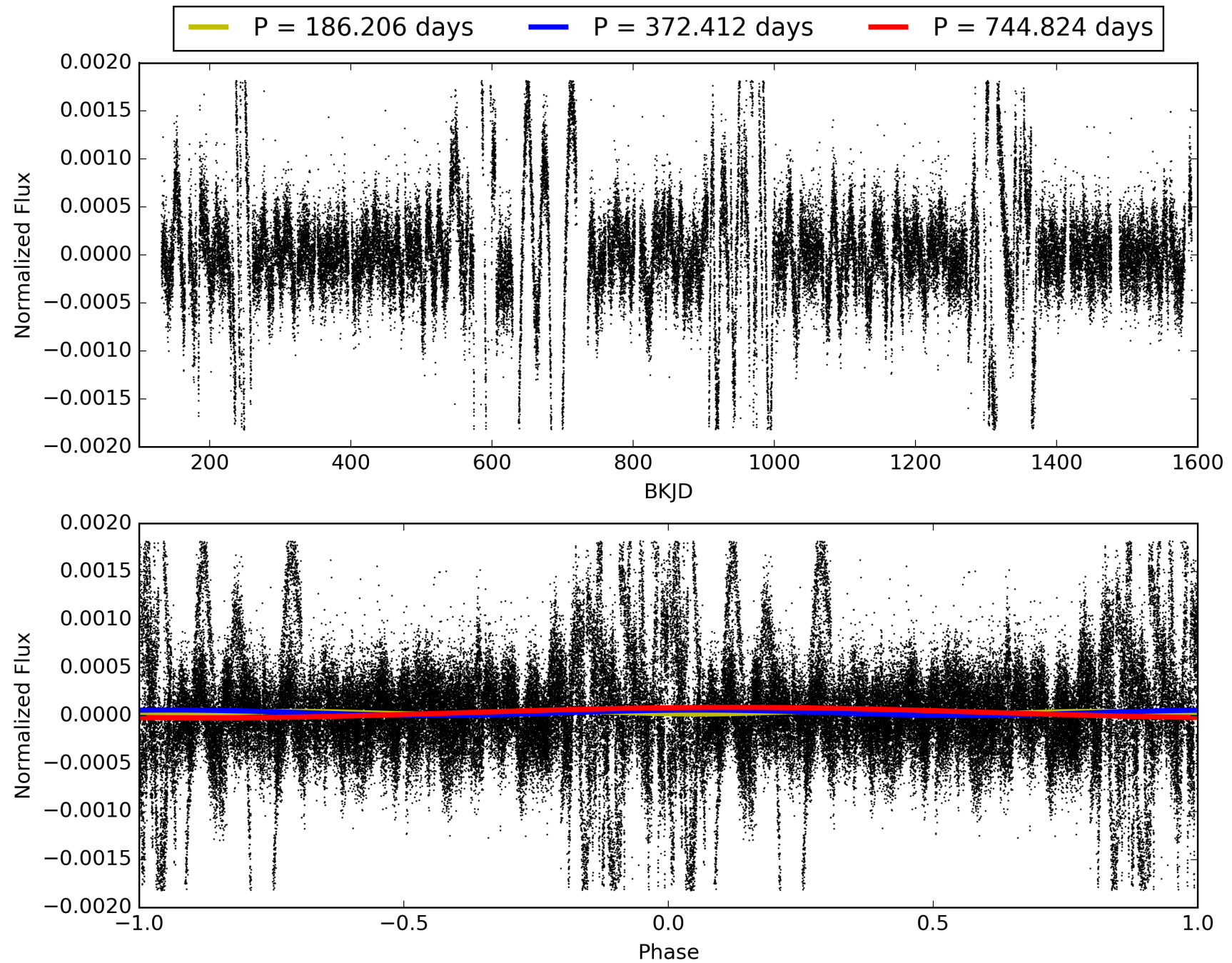
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:21:05 Z

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

TCE 005521451-01, PDC Light Curves

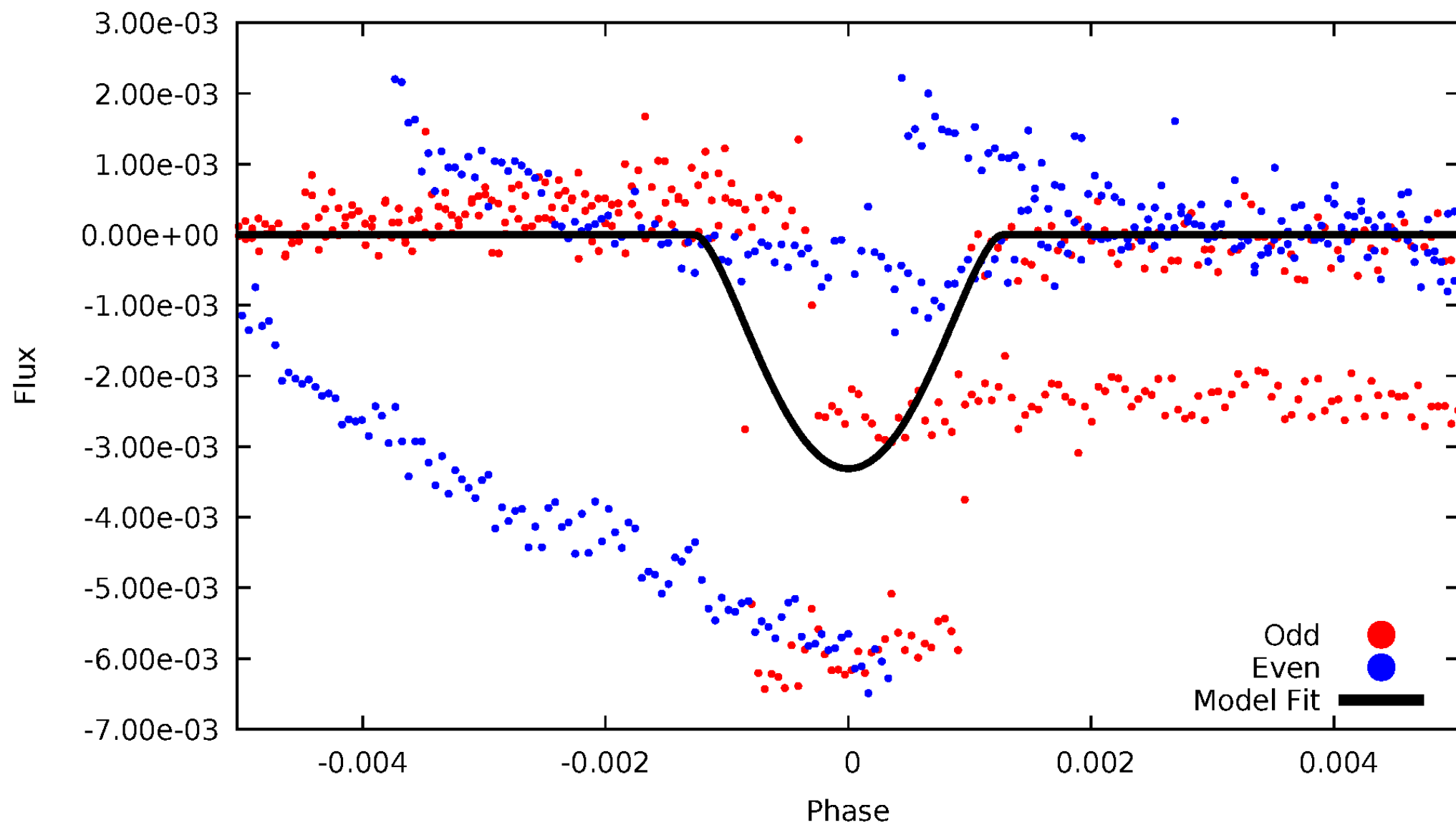


TCE 005521451-01



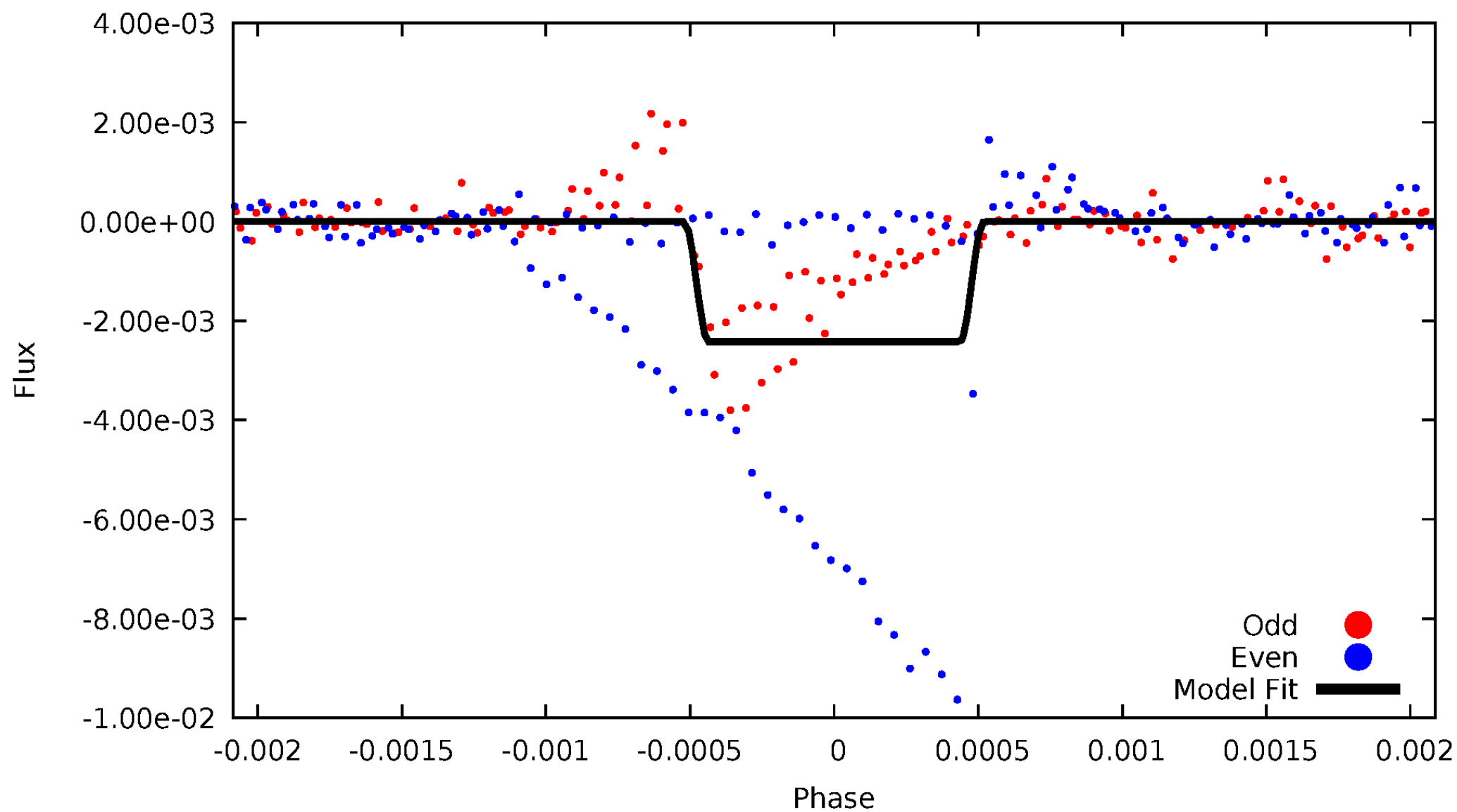
DV Odd/Even

TCE 005521451-01

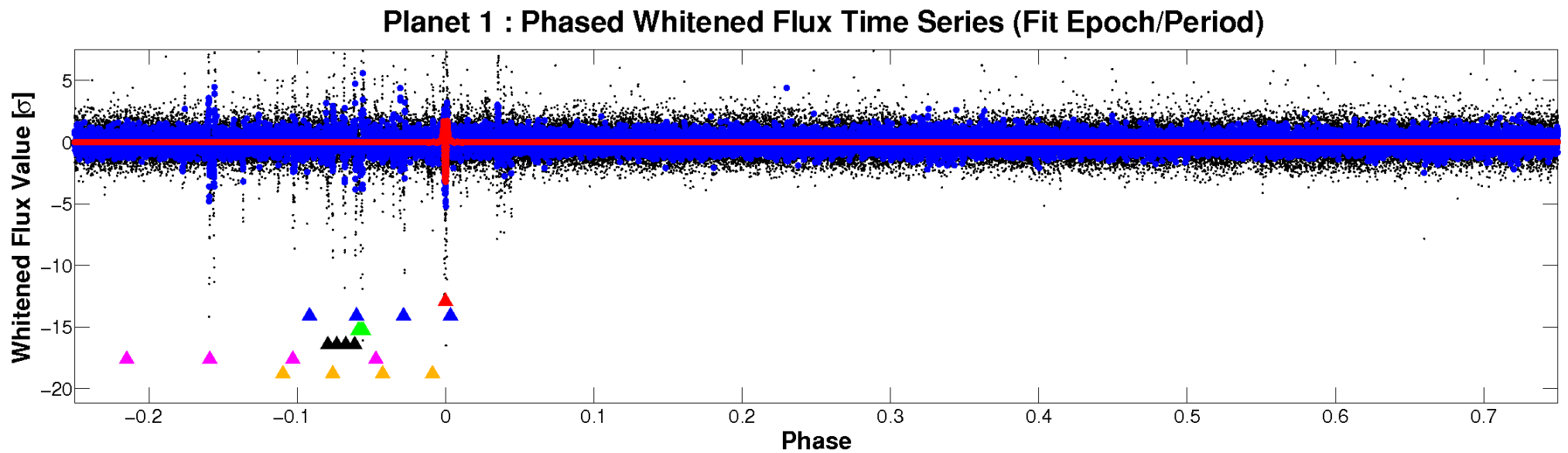
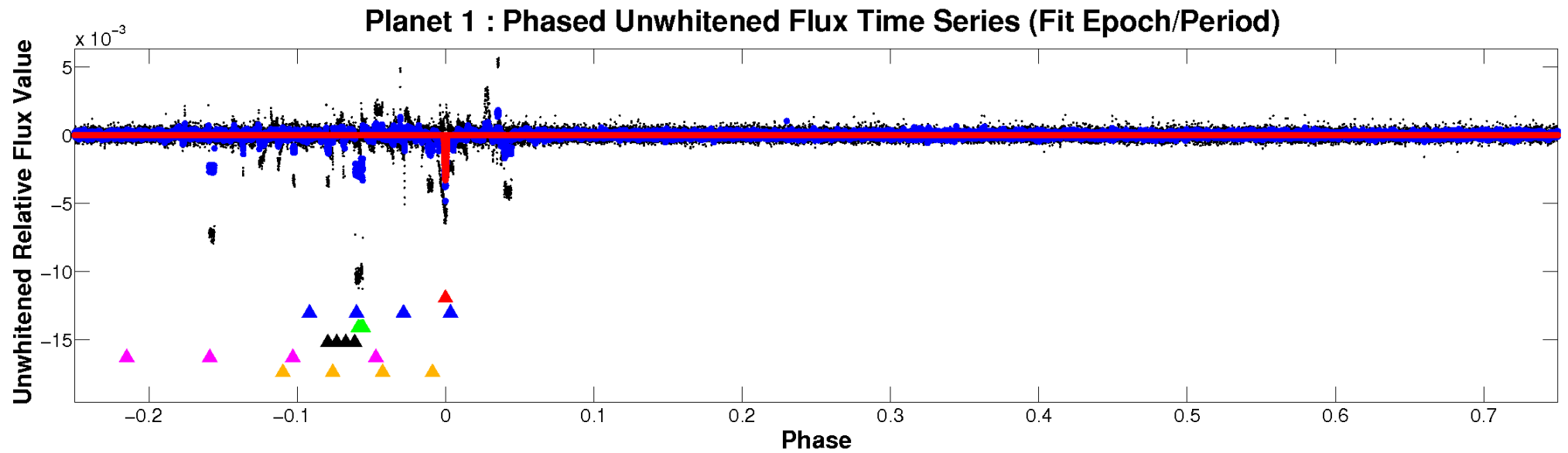


ALT Odd/Even

TCE 005521451-01

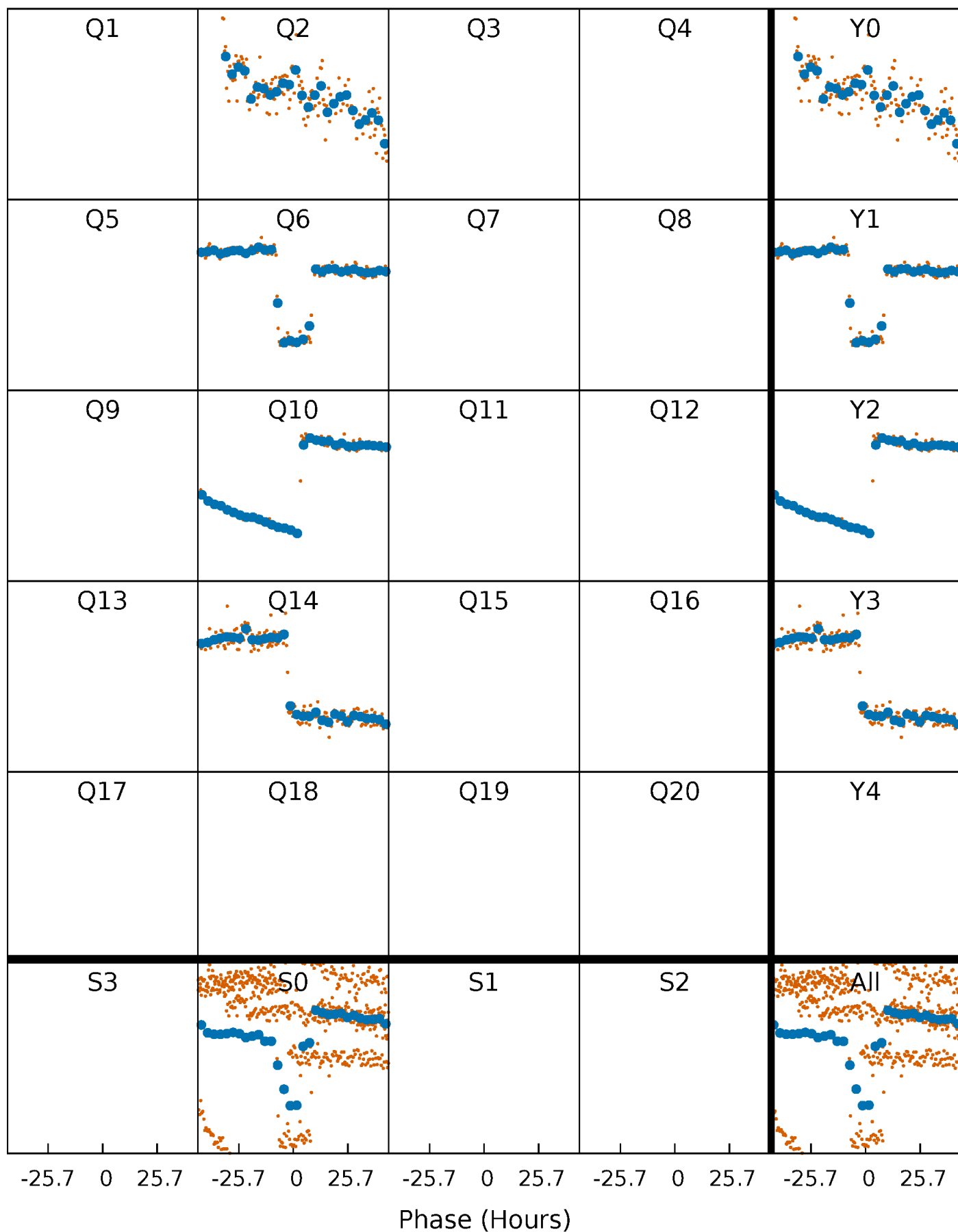


Non-Whitened Vs. Whitened Light Curve



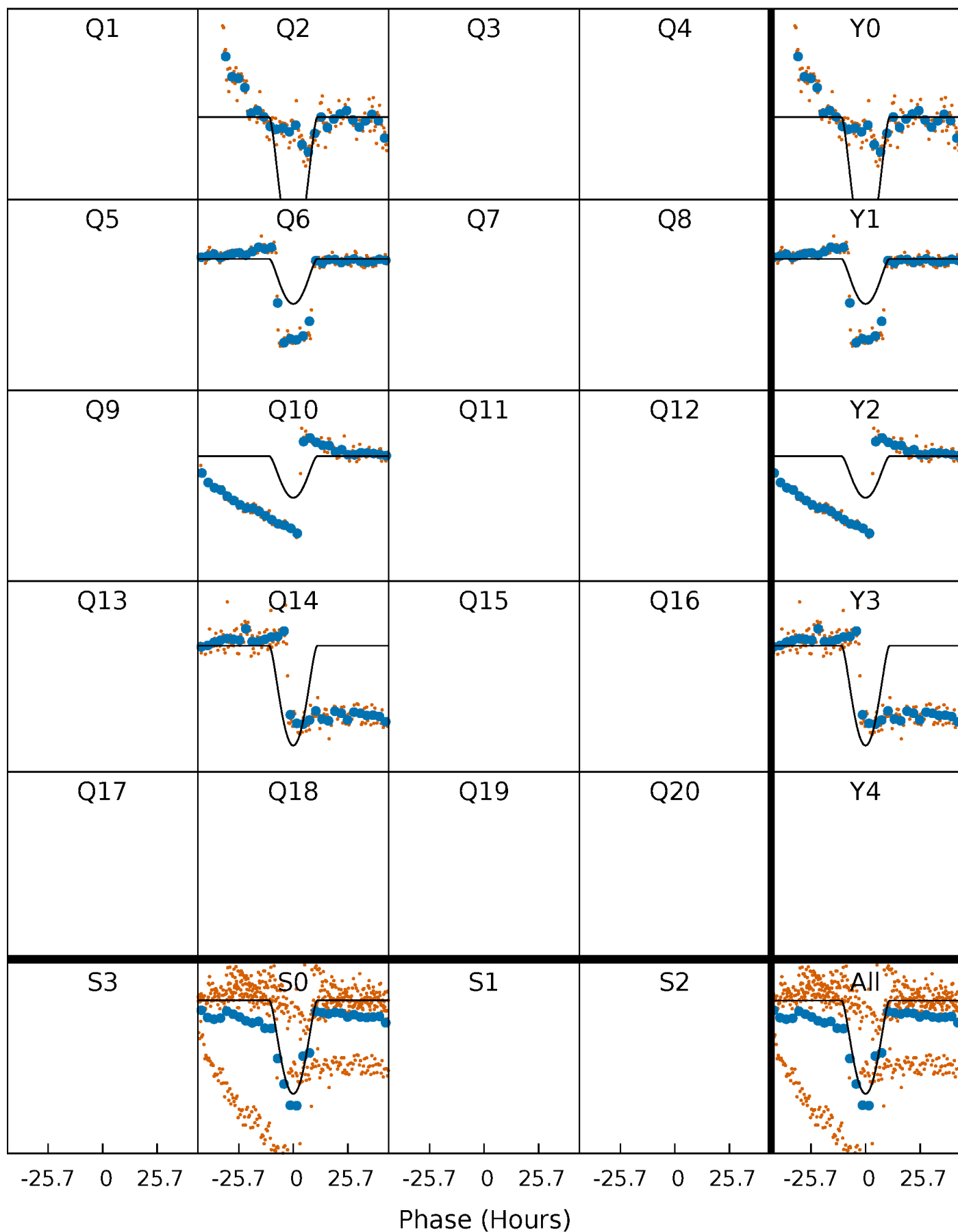
PDC Quarter-Phased Transit Curves

TCE 005521451-01 P=372.412046 Days $T_0=232.784079$ (BKJD)



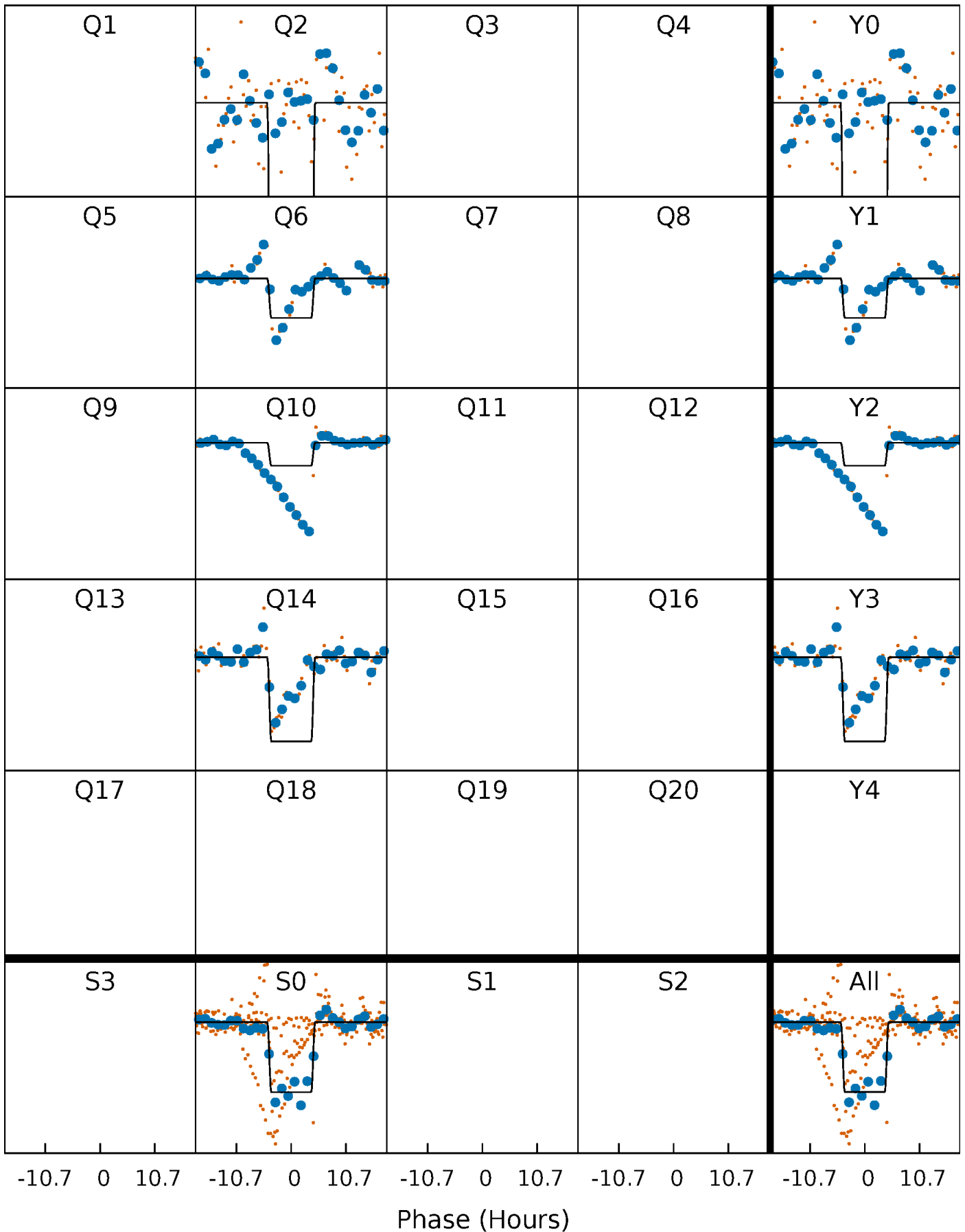
DV Quarter-Phased Transit Curves

TCE 005521451-01 P=372.412046 Days $T_0=232.784079$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

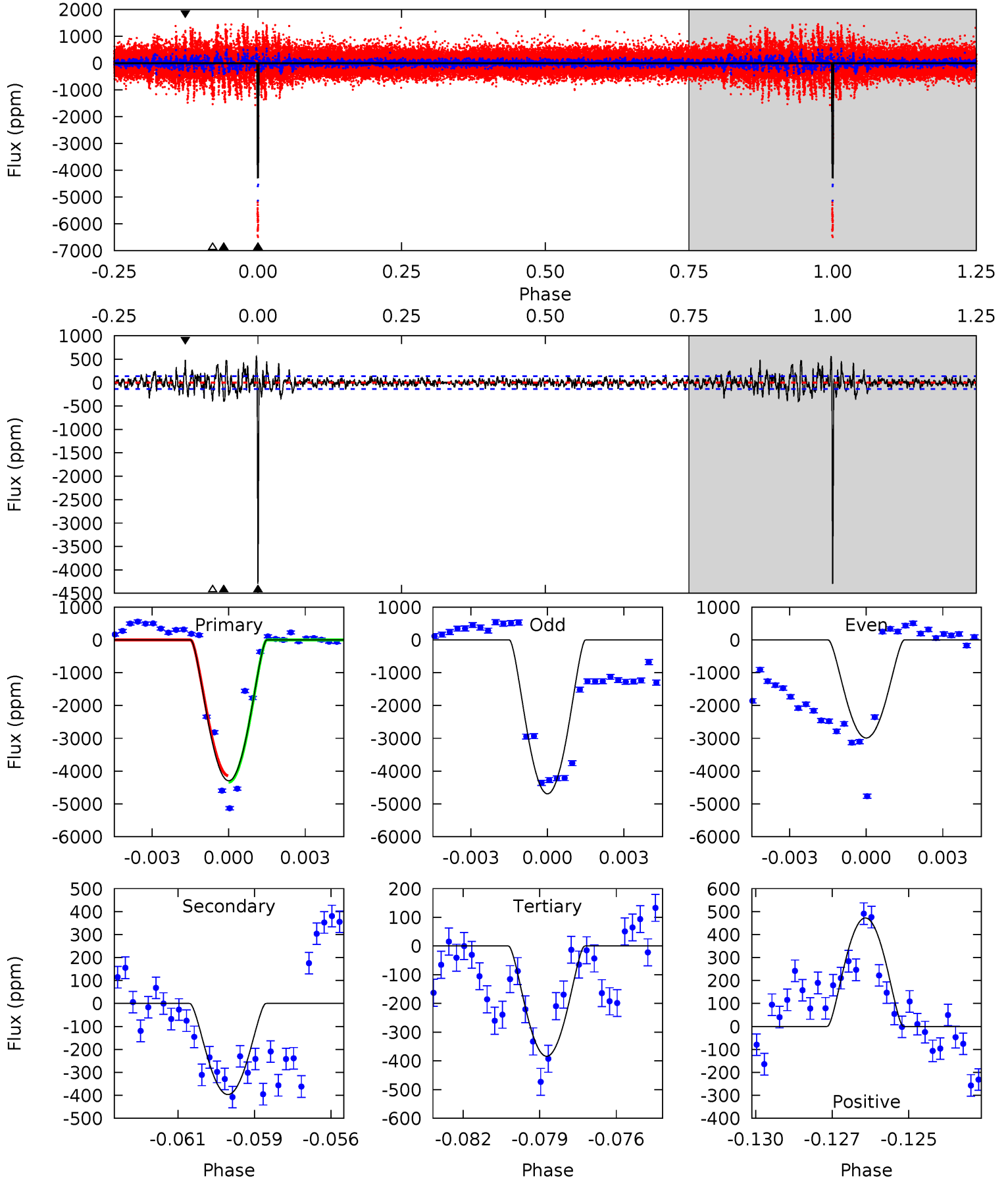
TCE 005521451-01 P=372.517421 Days $T_0=232.536736$ (BKJD)



DV Model-Shift Uniqueness Test

005521451-01, P = 372.412046 Days, E = 232.784079 Days

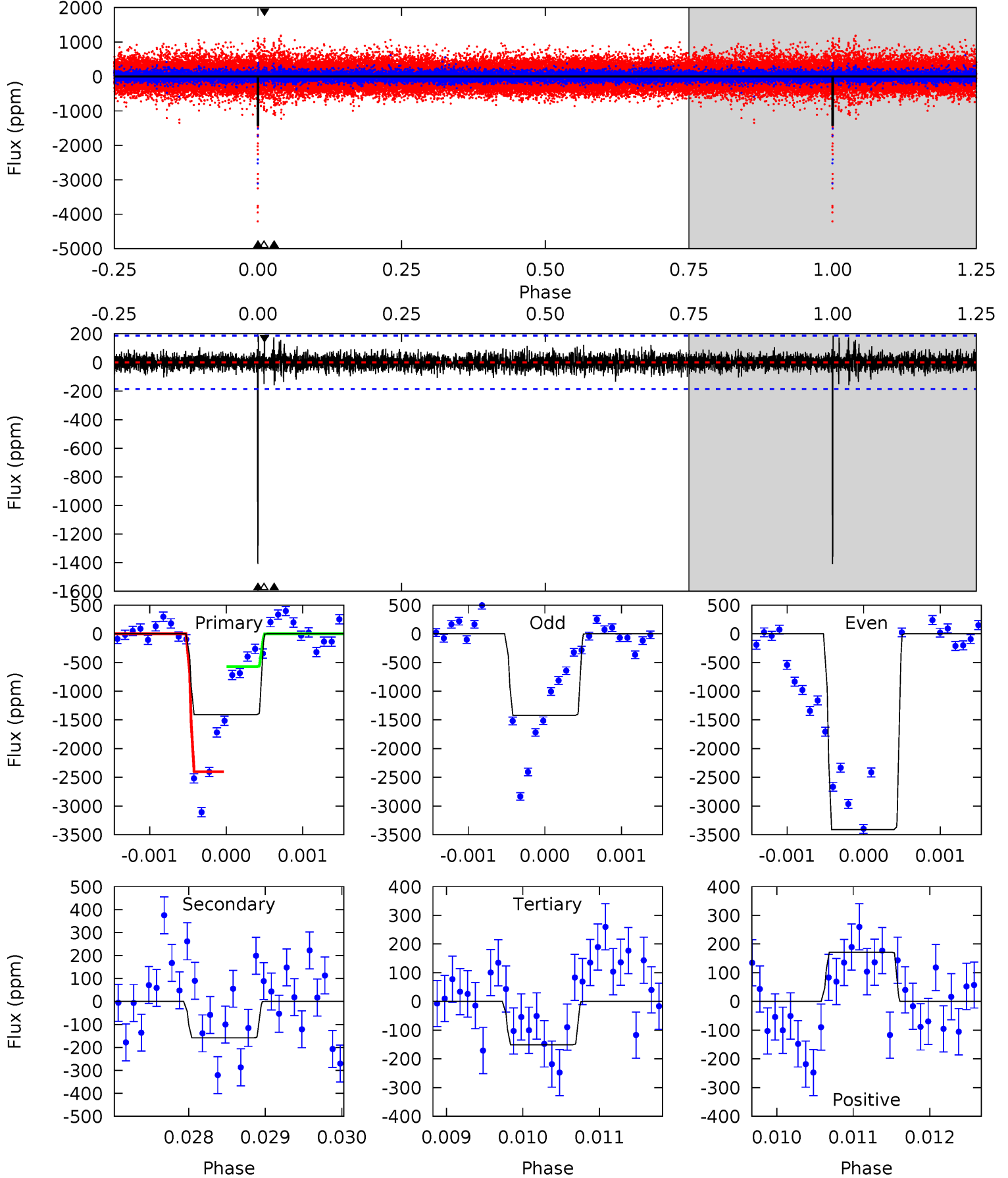
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
164.9	15.2	14.7	18.1	5.28	3.02	3.49	150.2	146.8	0.49	-2.90	27.9	1.03	0.12	3.71



Alt Model-Shift Uniqueness Test

005521451-01, P = 372.517421 Days, E = 232.536736 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
41.1	4.62	4.39	5.00	5.45	3.28	0.95	36.7	36.1	0.23	-0.38	33.1	1.67	0.12	0



Stellar Parameters For KIC 005521451

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5533^{+165}_{-148}	$4.505^{+0.108}_{-0.108}$	$-0.640^{+0.350}_{-0.300}$	$0.780^{+0.121}_{-0.099}$	$0.710^{+0.102}_{-0.036}$	$2.105^{+0.997}_{-0.674}$
	+3%/-3%	+2%/-2%	+55%/-47%	+16%/-13%	+14%/-5%	+47%/-32%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005521451-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-397 ± 26	$8.51^{+5.61}_{-5.23}$	317^{+15}_{-15}	3092^{+1169}_{-383}	2429^{+14176}_{-1533}
Alt.	-159 ± 34	$6.18^{+5.77}_{-4.14}$	317^{+16}_{-13}	2990^{+1325}_{-480}	1905^{+16498}_{-1416}

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 $A_{obs} \gg 1.0$

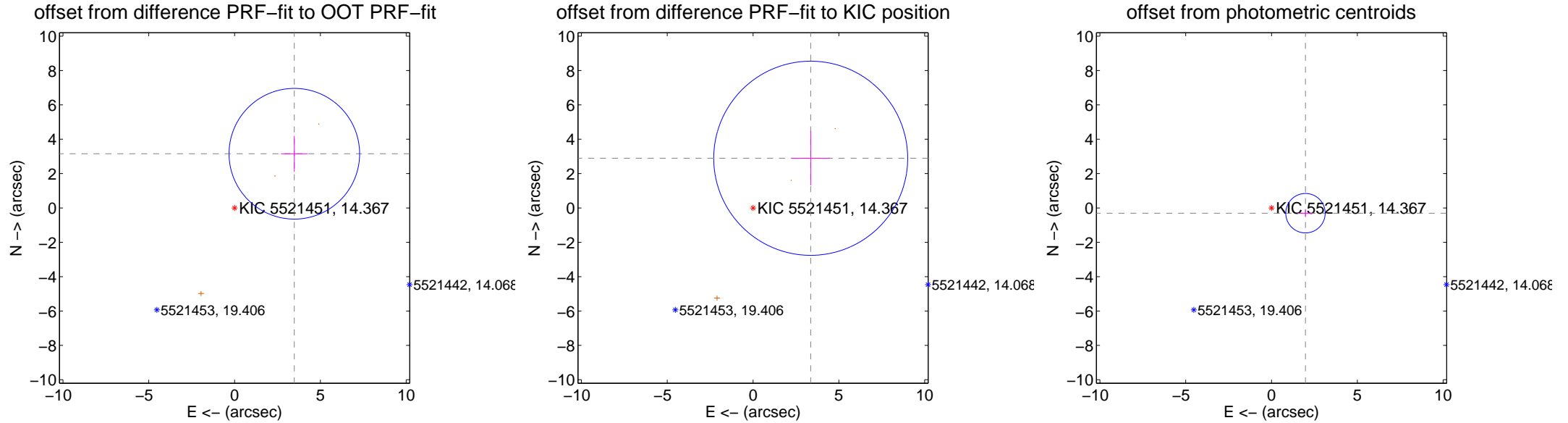
DV Centroid Data

Supplemental centroid analysis for 005521451-01. Kepler magnitude: 14.37. Transit SNR 26.23

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.701 \pm 1.269	3.71	-3.483 \pm 0.772	3.157 \pm 1.045
PRF-fit source offset from KIC position	4.435 \pm 1.884	2.35	-3.360 \pm 1.131	2.894 \pm 1.581
photometric centroid source offset	2.00 \pm 0.38	5.23	-1.98 \pm 0.39	-0.31 \pm 0.23

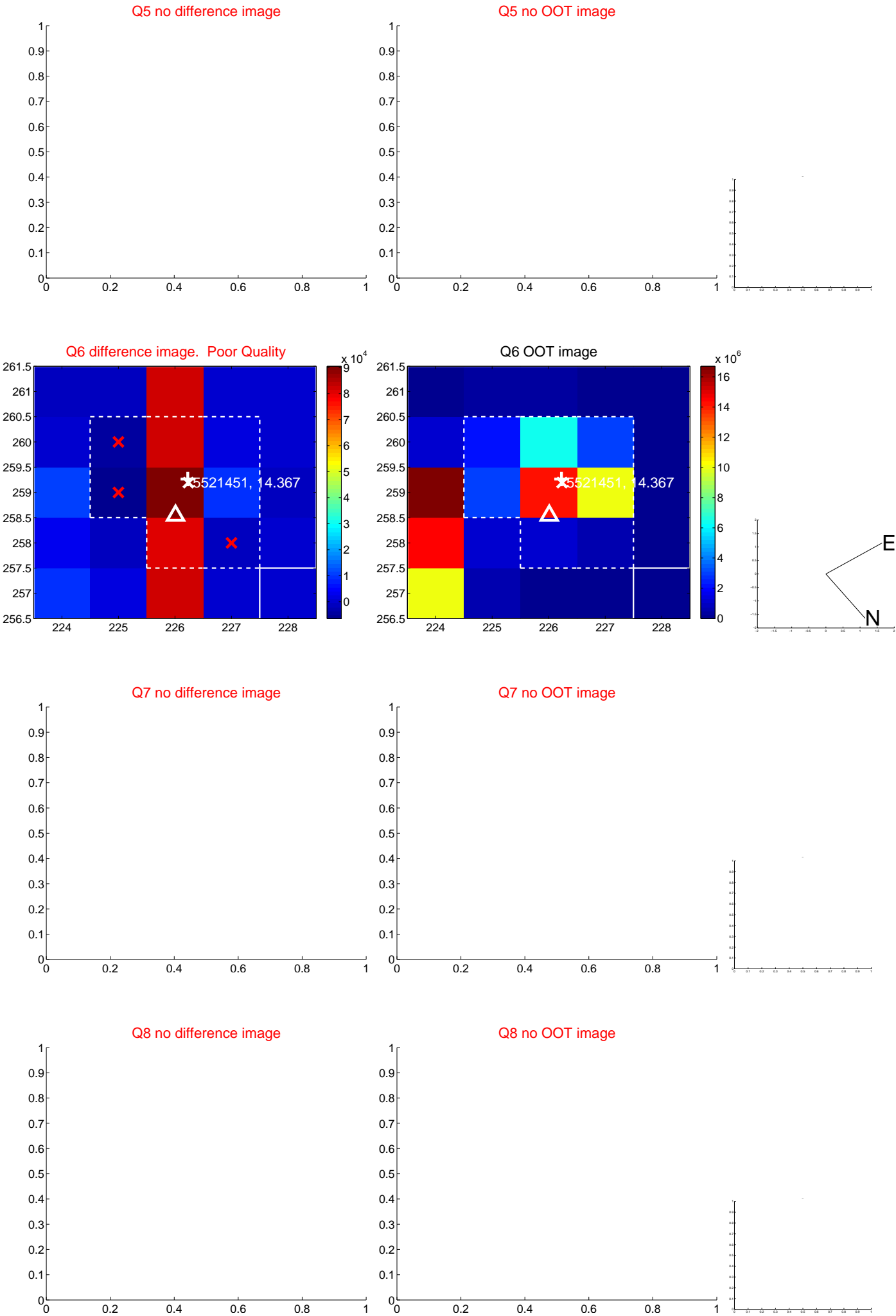


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

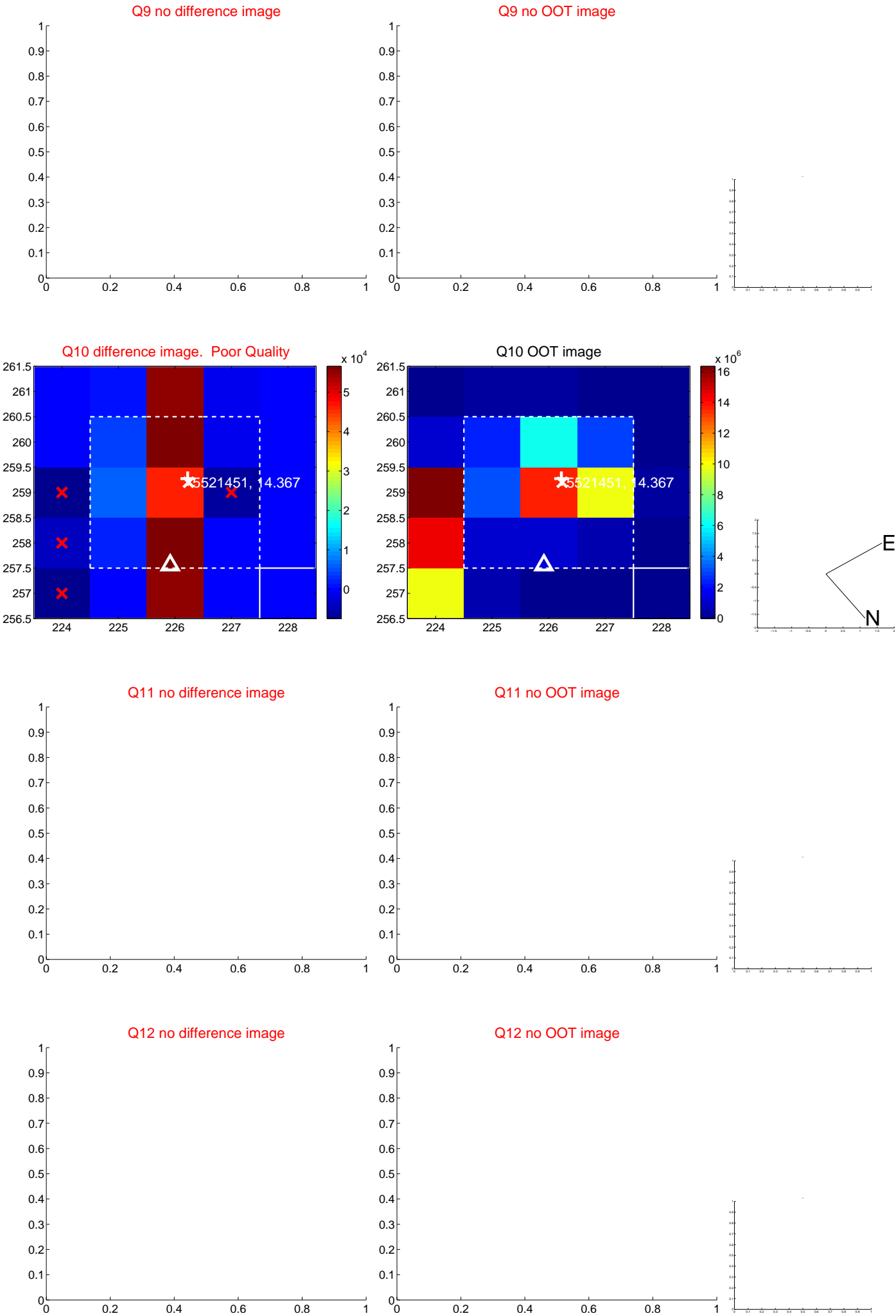
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



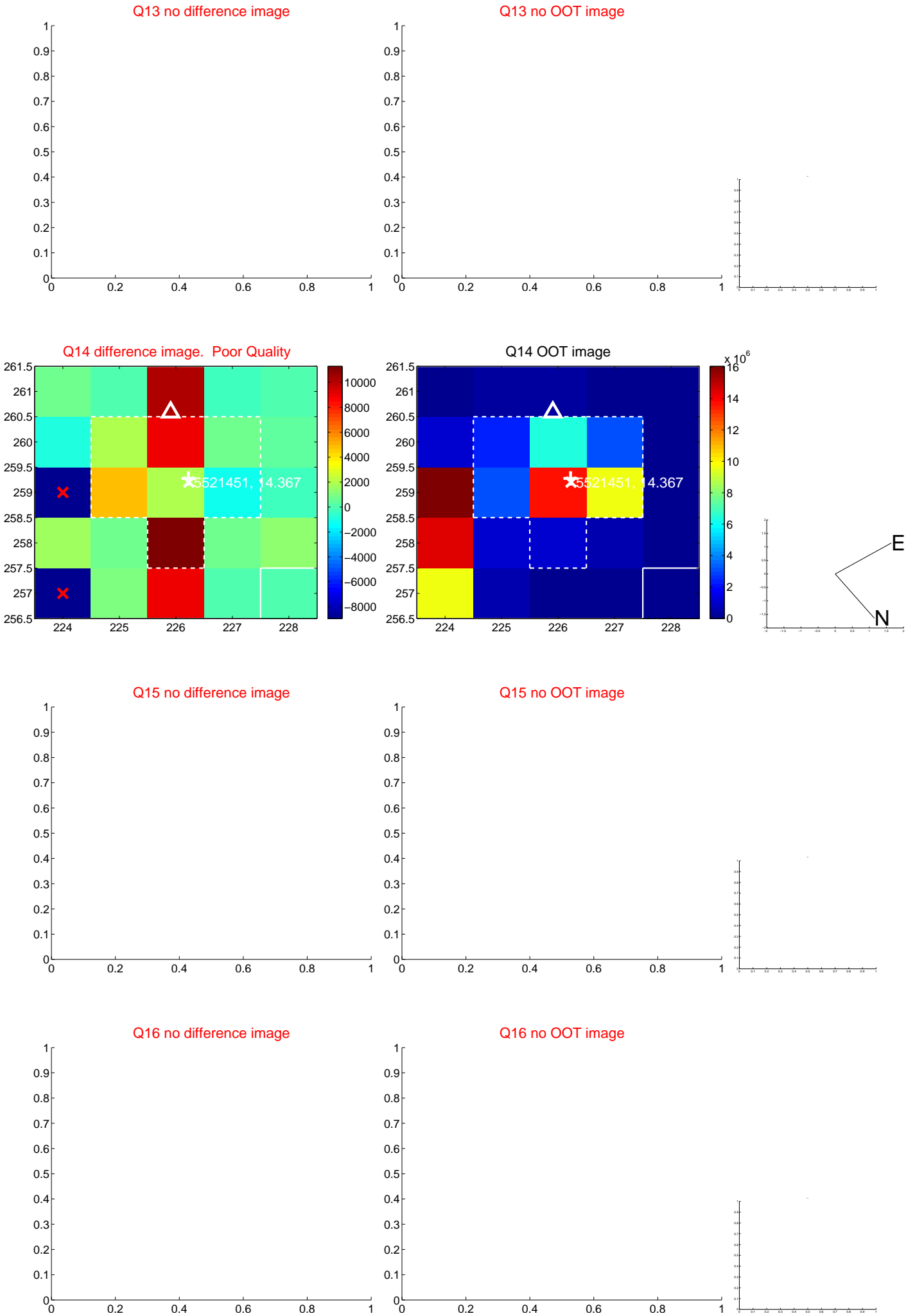
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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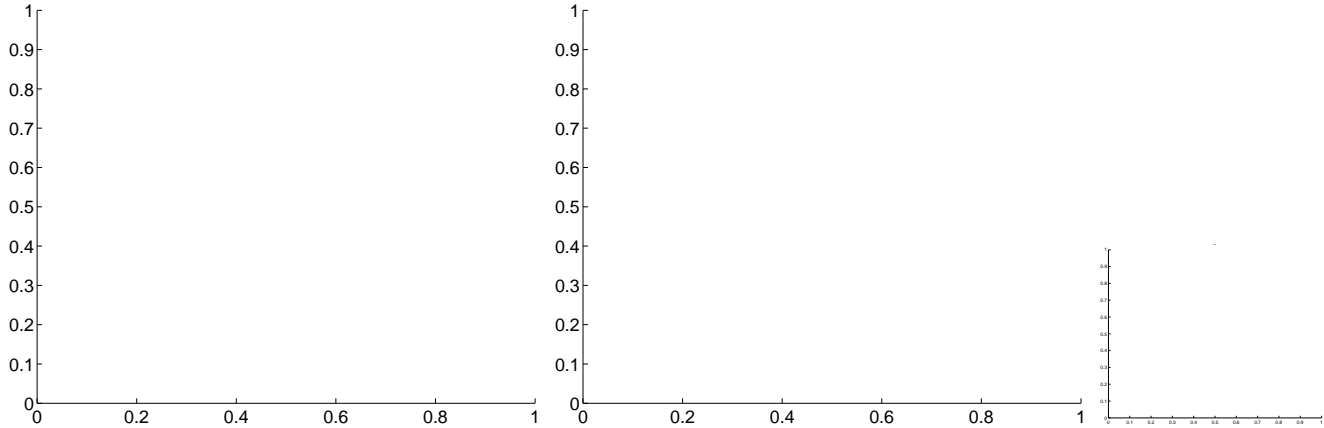
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



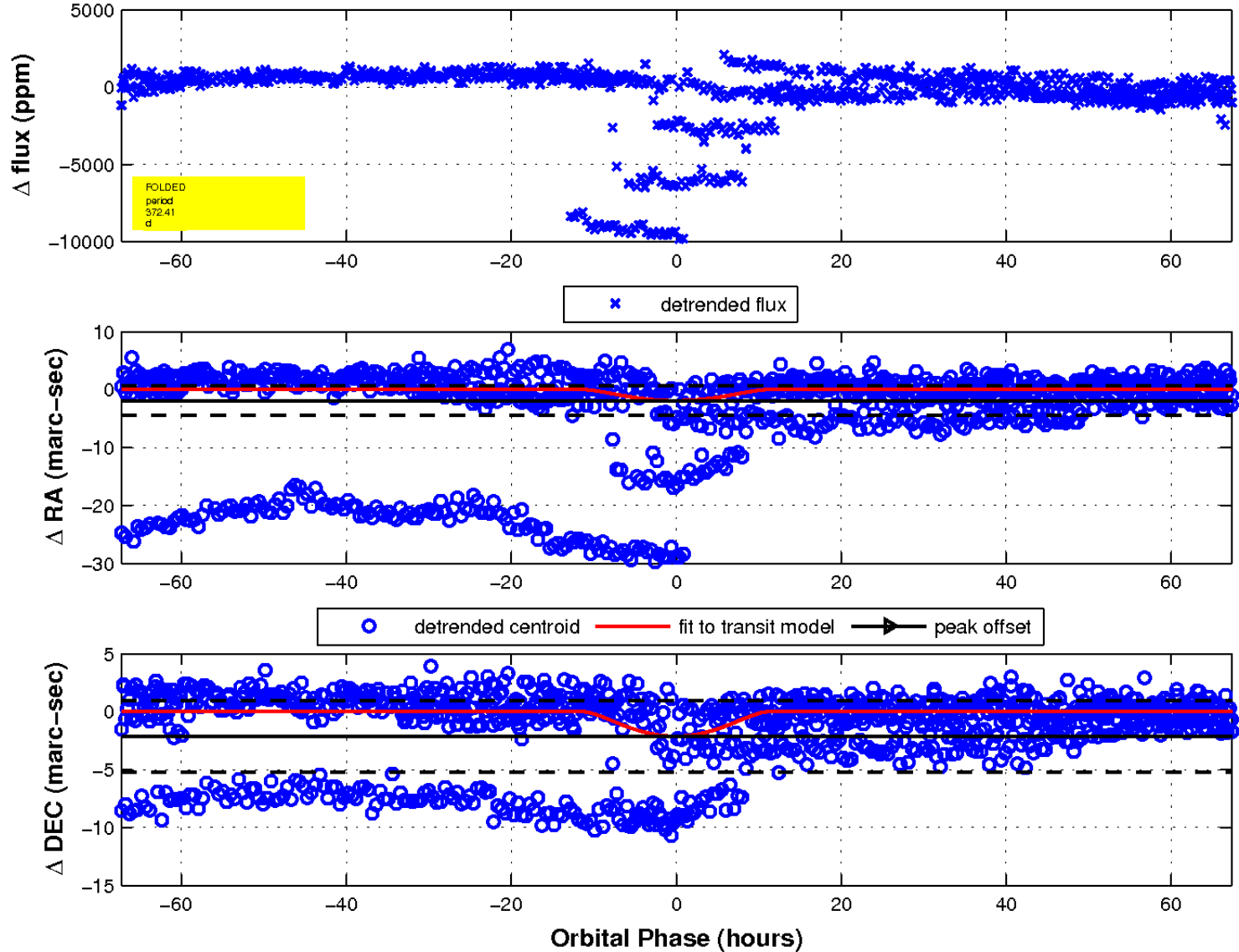
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q17 no difference image

Q17 no OOT image

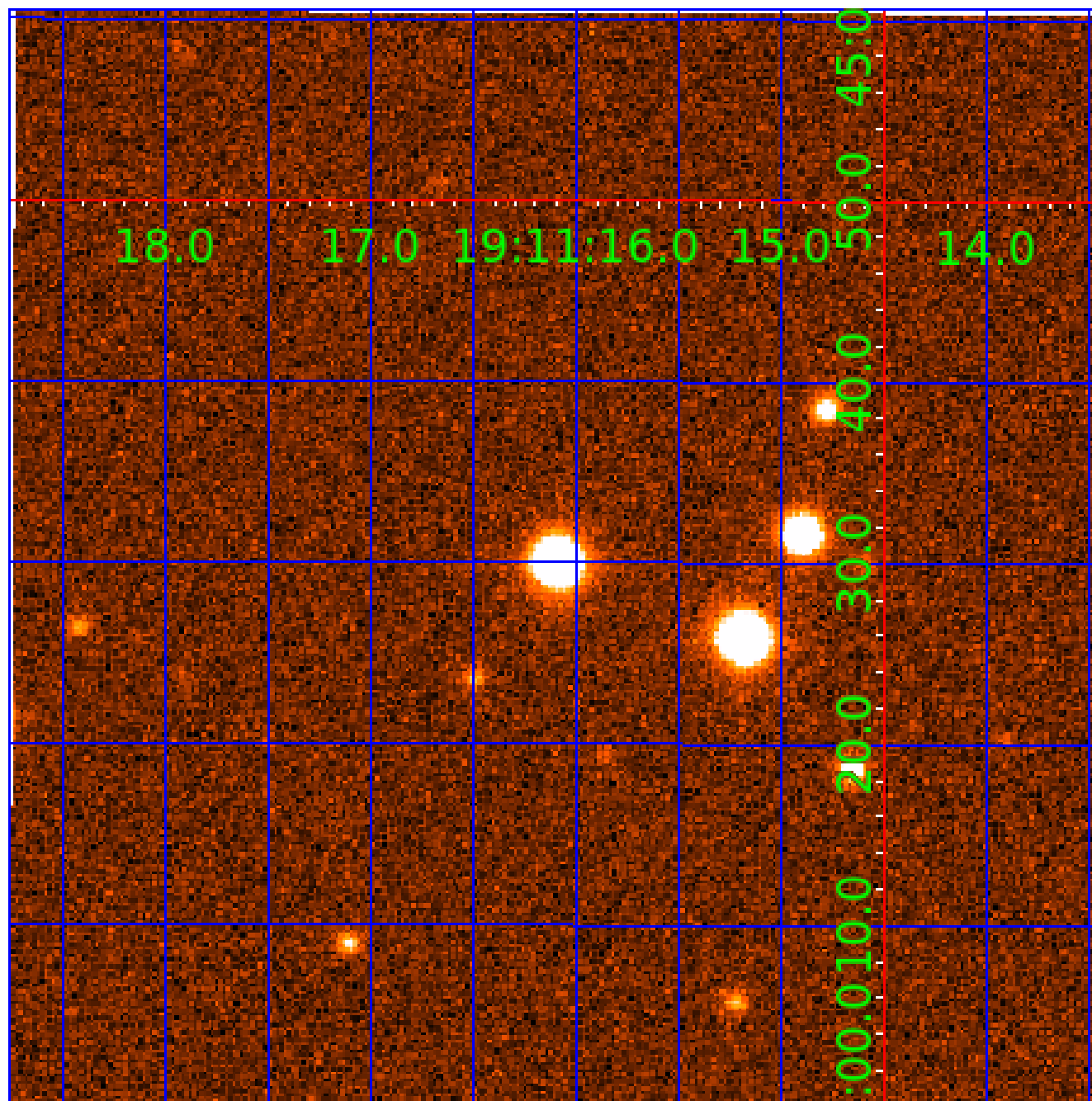


fluxWeightedCentroids, Planet 1 of 6



UKIRT Image

Declination



KIC 005521451

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})
005521451-01	OBS	No	372.412047	232.784079	3312.3	22.490	38.0	26.2	0.78	5533	7.42	0.62
005521451-02	OBS	No	360.611467	234.046598	1367.7	15.000	32.4	-1.0	0.78	5533	2.86	0.65
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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005521451-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS
005521451-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

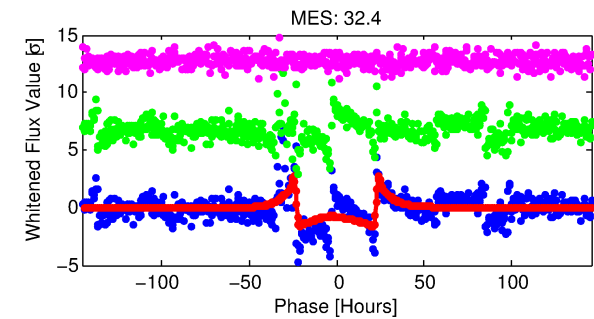
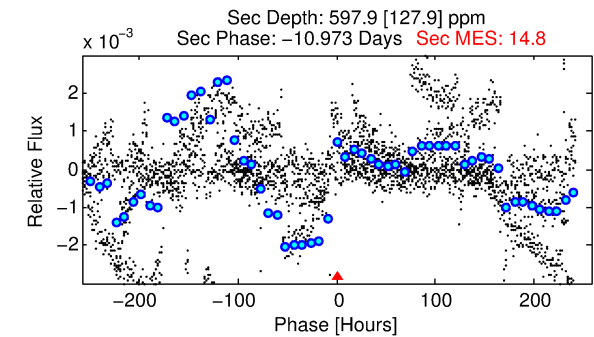
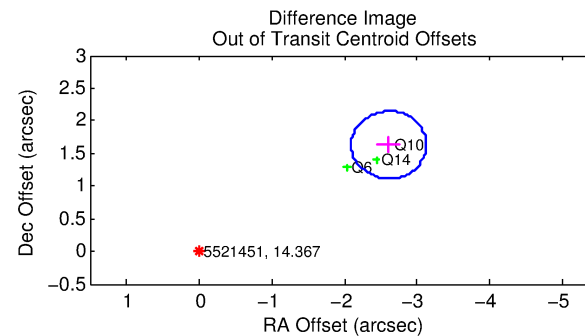
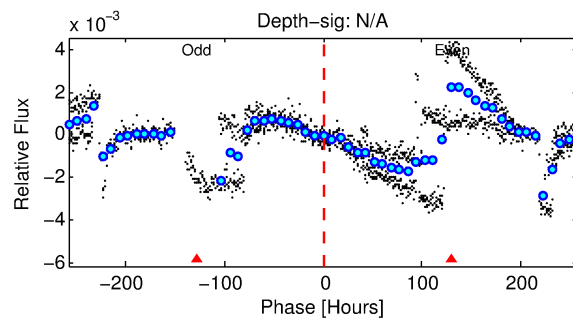
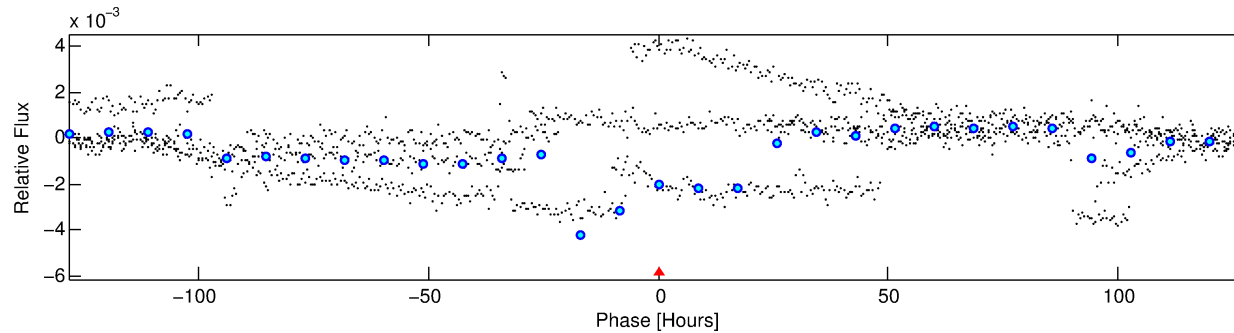
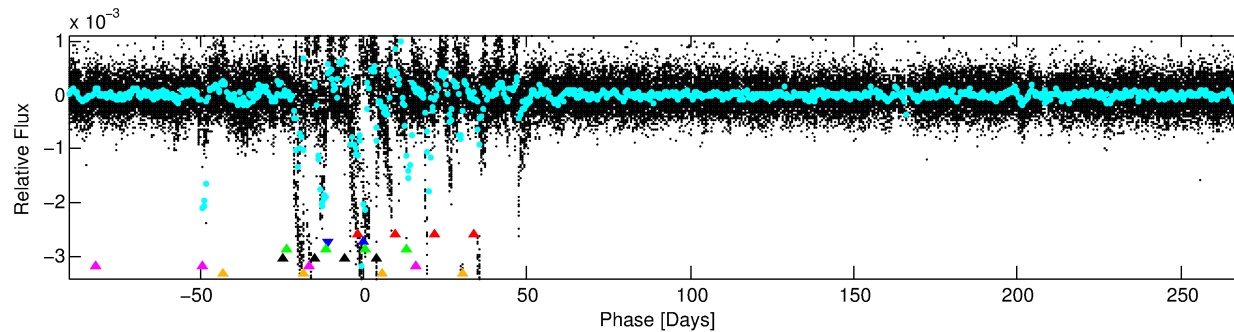
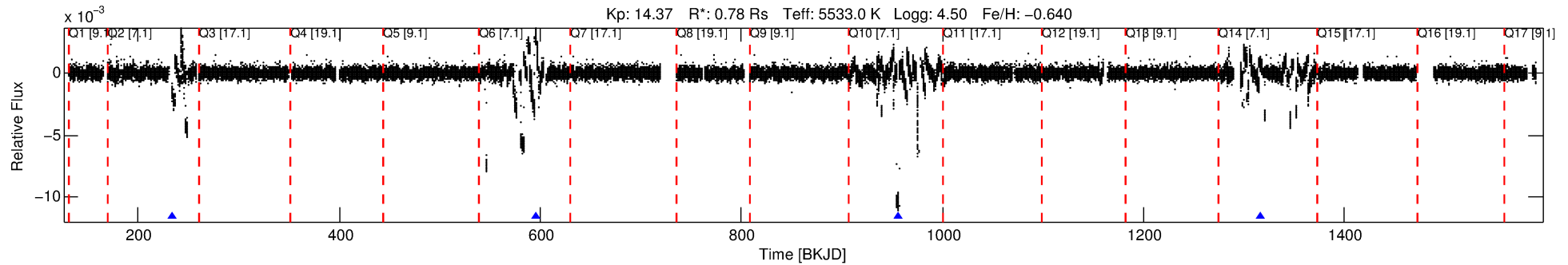
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005521451-02

No Significant Match Found

DV One-Page Summary

KIC: 5521451 Candidate: 2 of 6 Period: 360.611 d



TPS TCE Results:

Period = 360.61147 d
Epoch = 234.0466 BKJD

DV fit results are unavailable

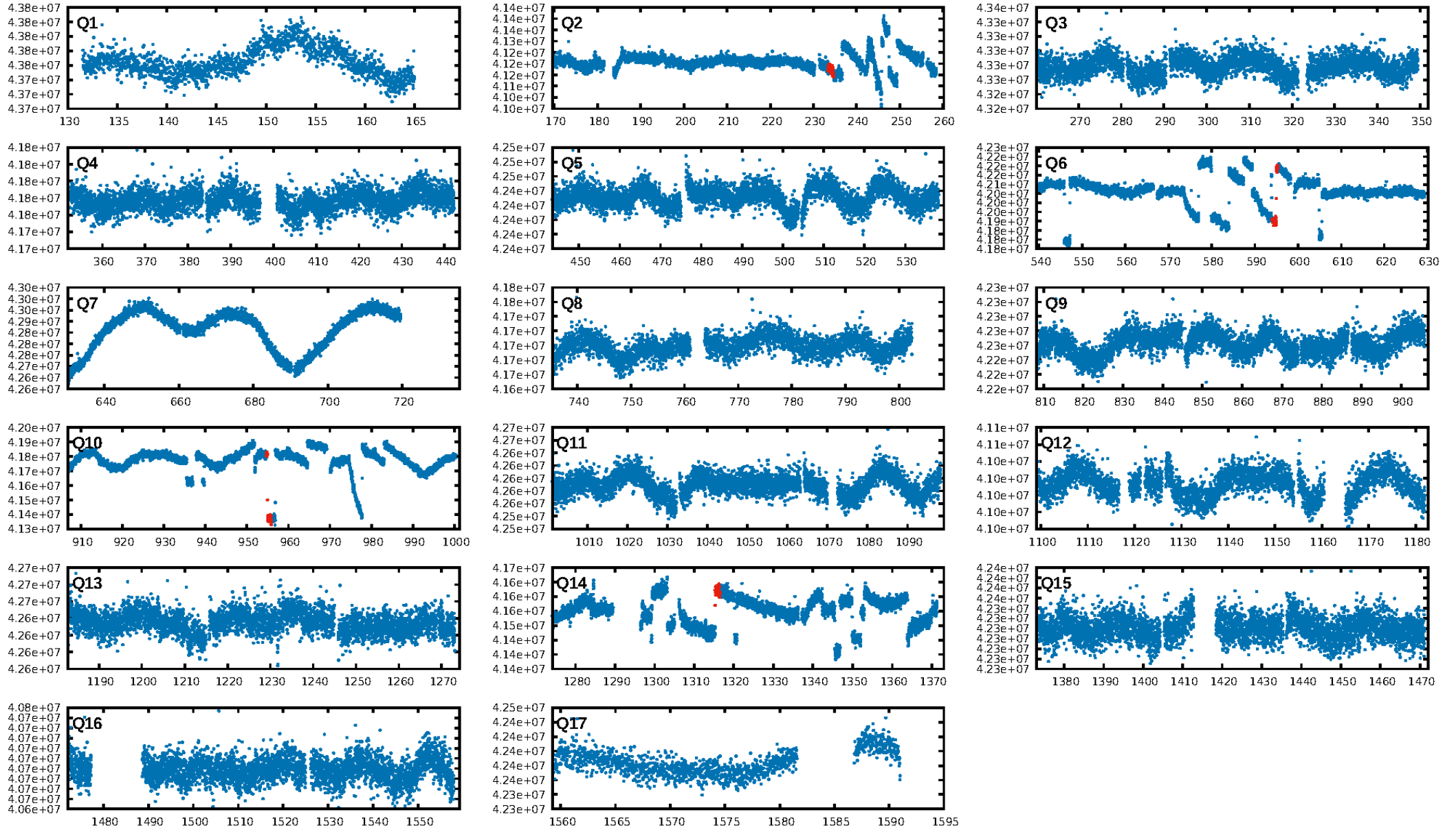
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [10.58σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.76e-23
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.844
Centroid-sig: 0.0%
Centroid-so: 2.887 arcsec [6.83σ]
OotOffset-rm: 3.076 arcsec [17.87σ]
KicOffset-rm: 2.834 arcsec [17.03σ]
OotOffset-st: 3/0/0/0 [3]
KicOffset-st: 3/0/0/0 [3]
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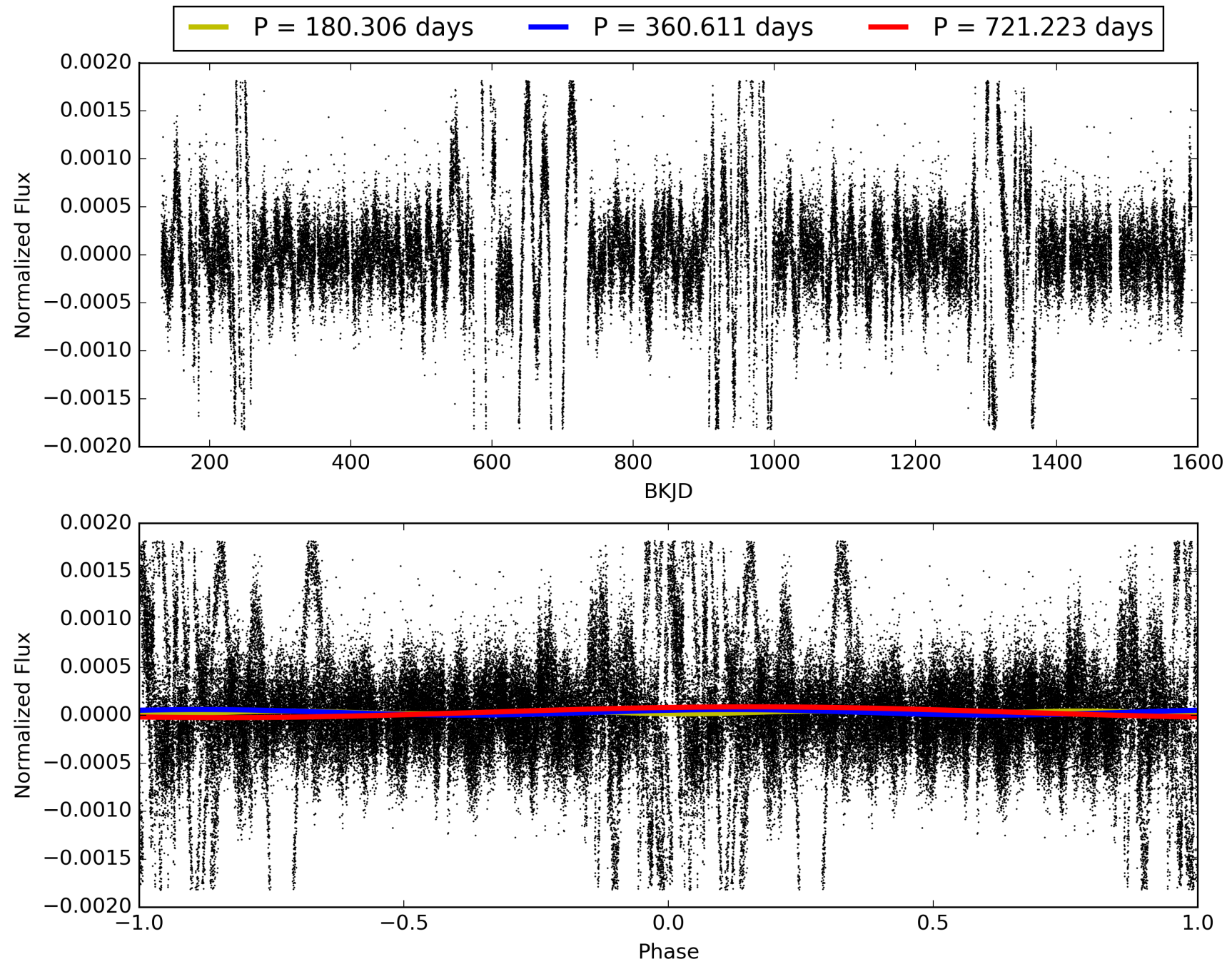
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:21:13 Z

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

TCE 005521451-02, PDC Light Curves

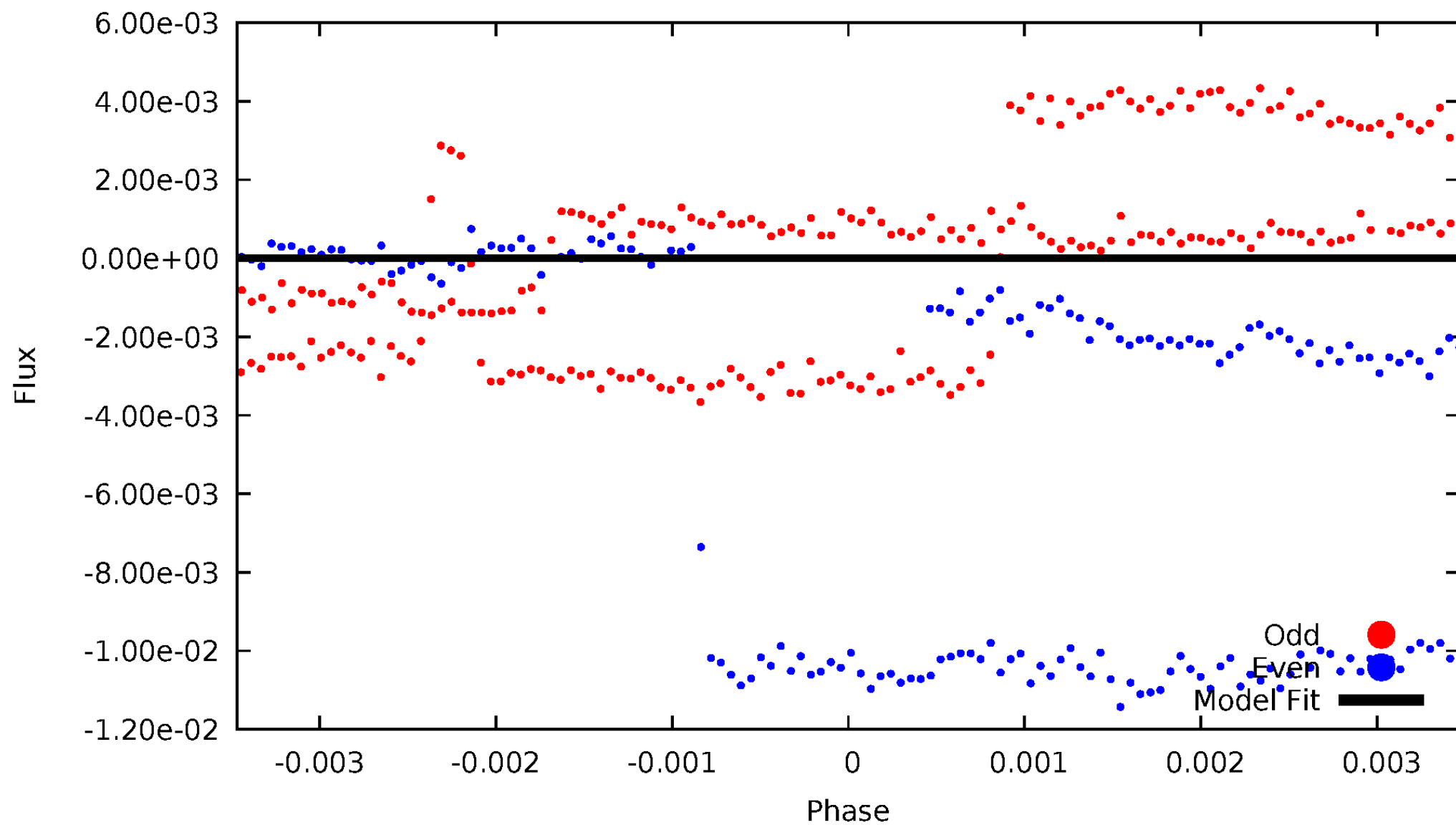


TCE 005521451-02



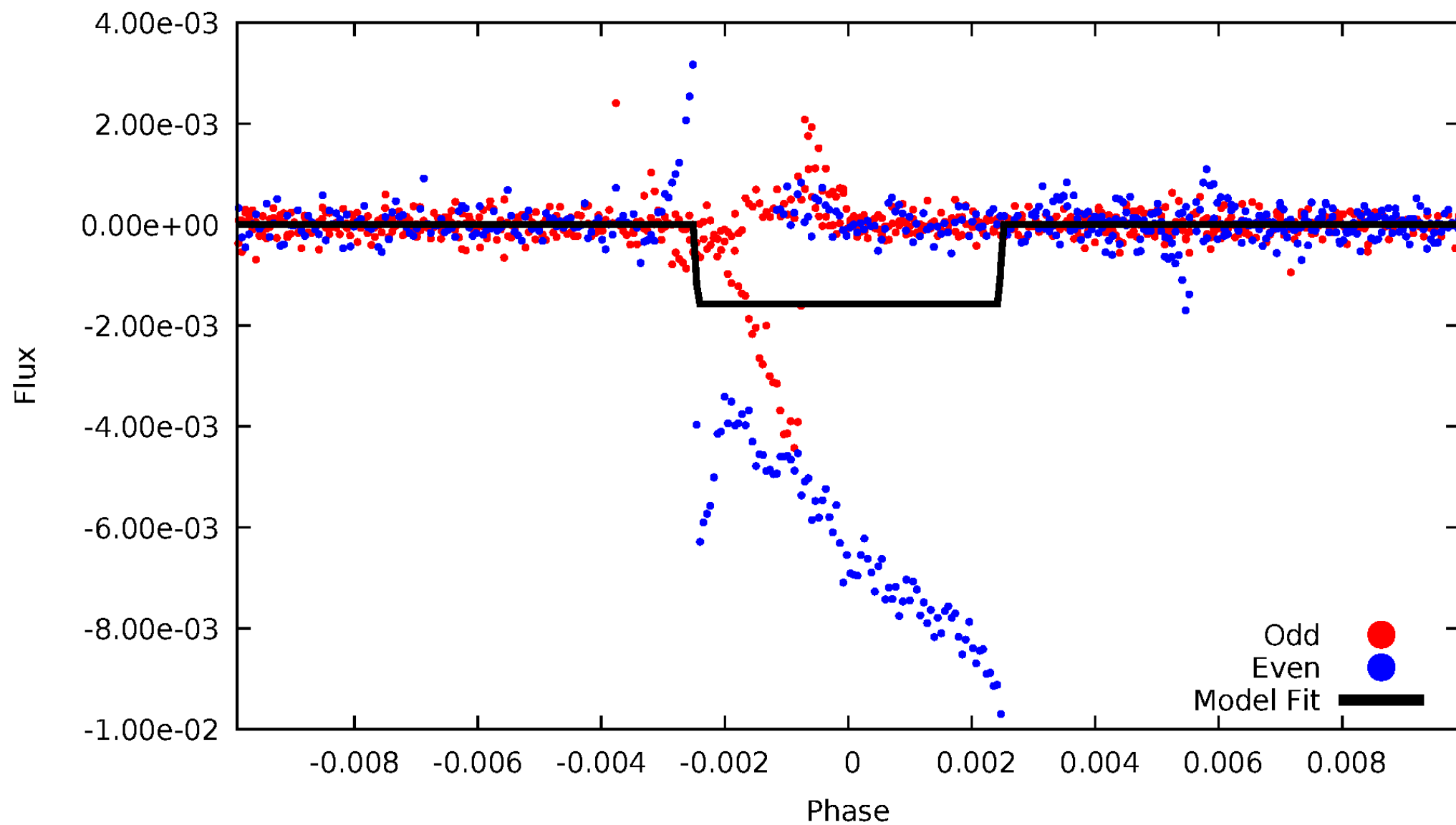
DV Odd/Even

TCE 005521451-02

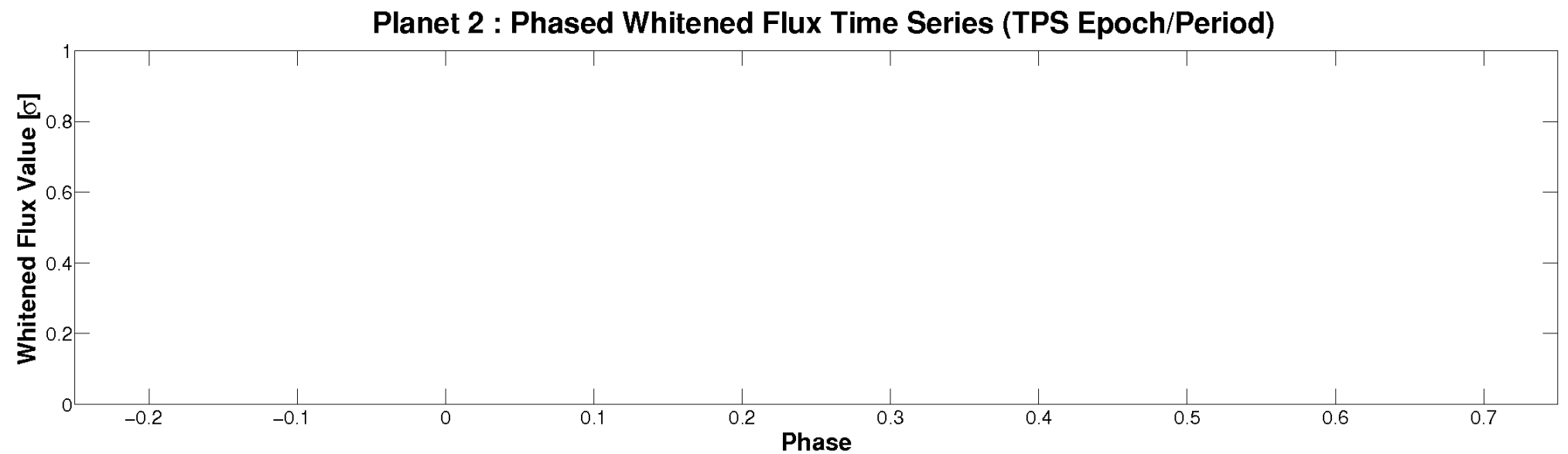
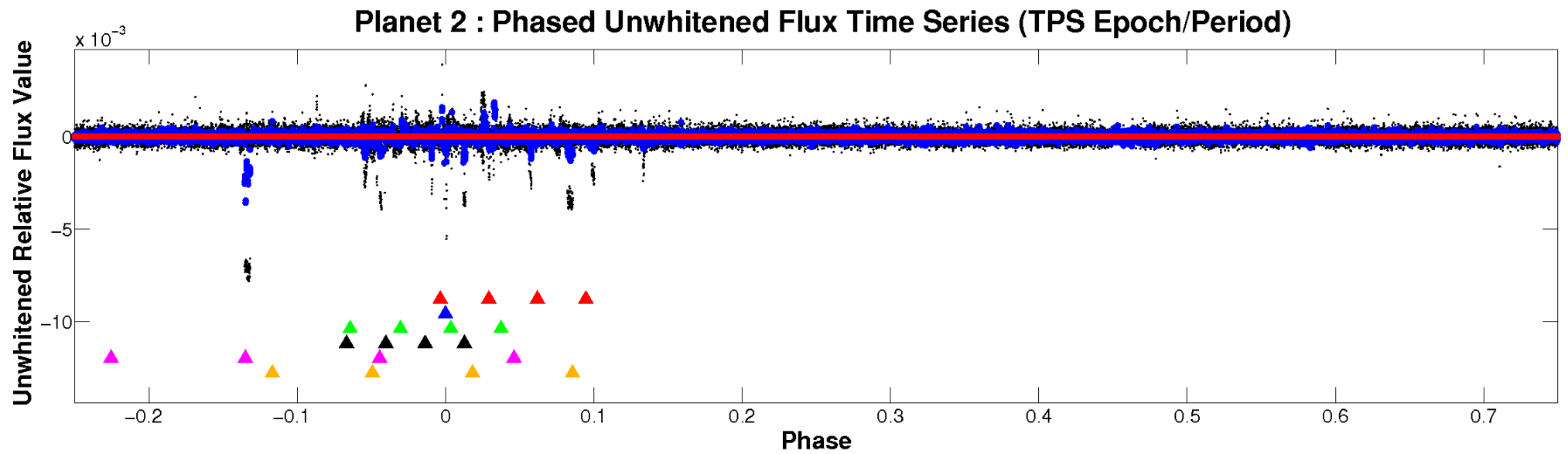


ALT Odd/Even

TCE 005521451-02

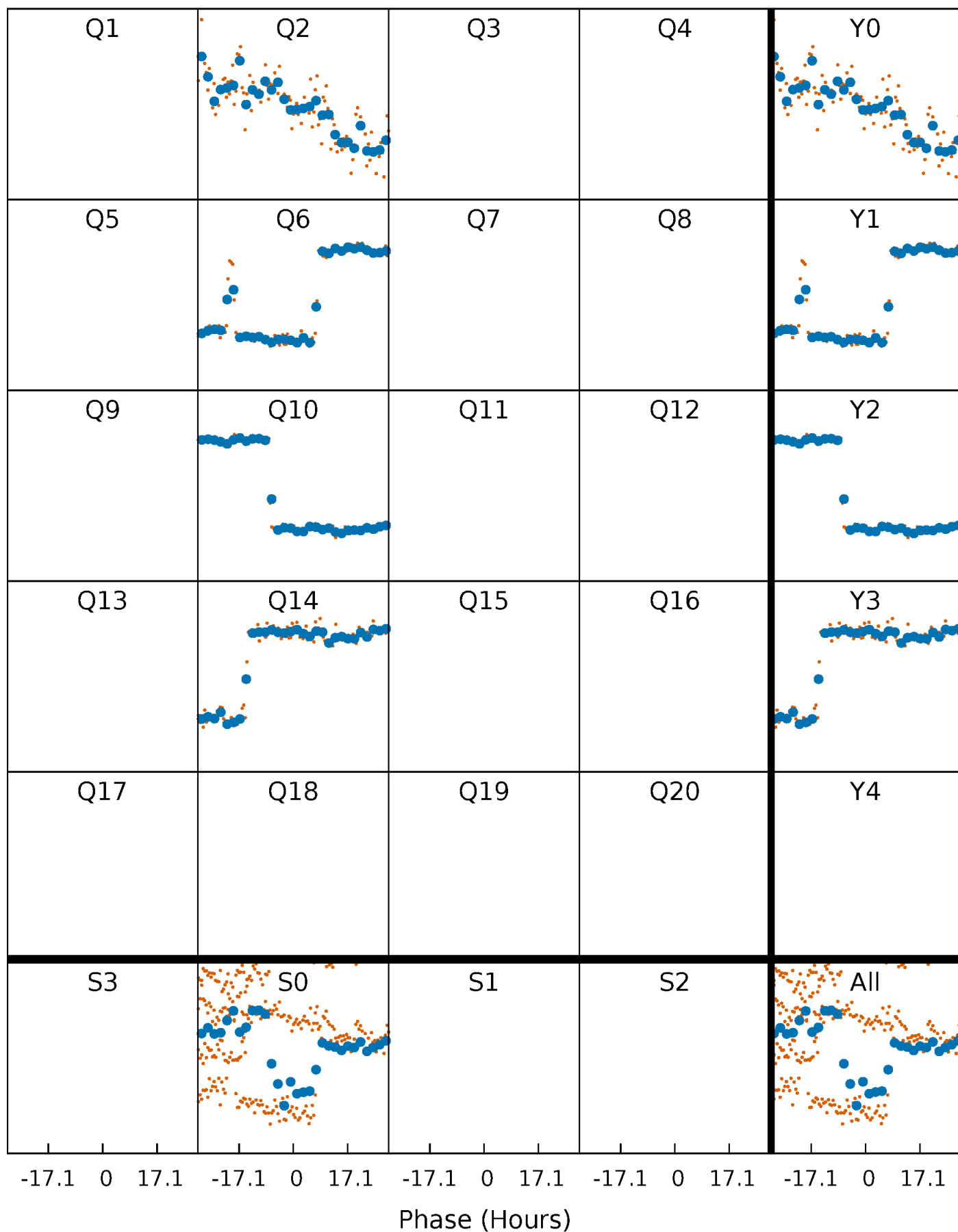


Non-Whitened Vs. Whitened Light Curve



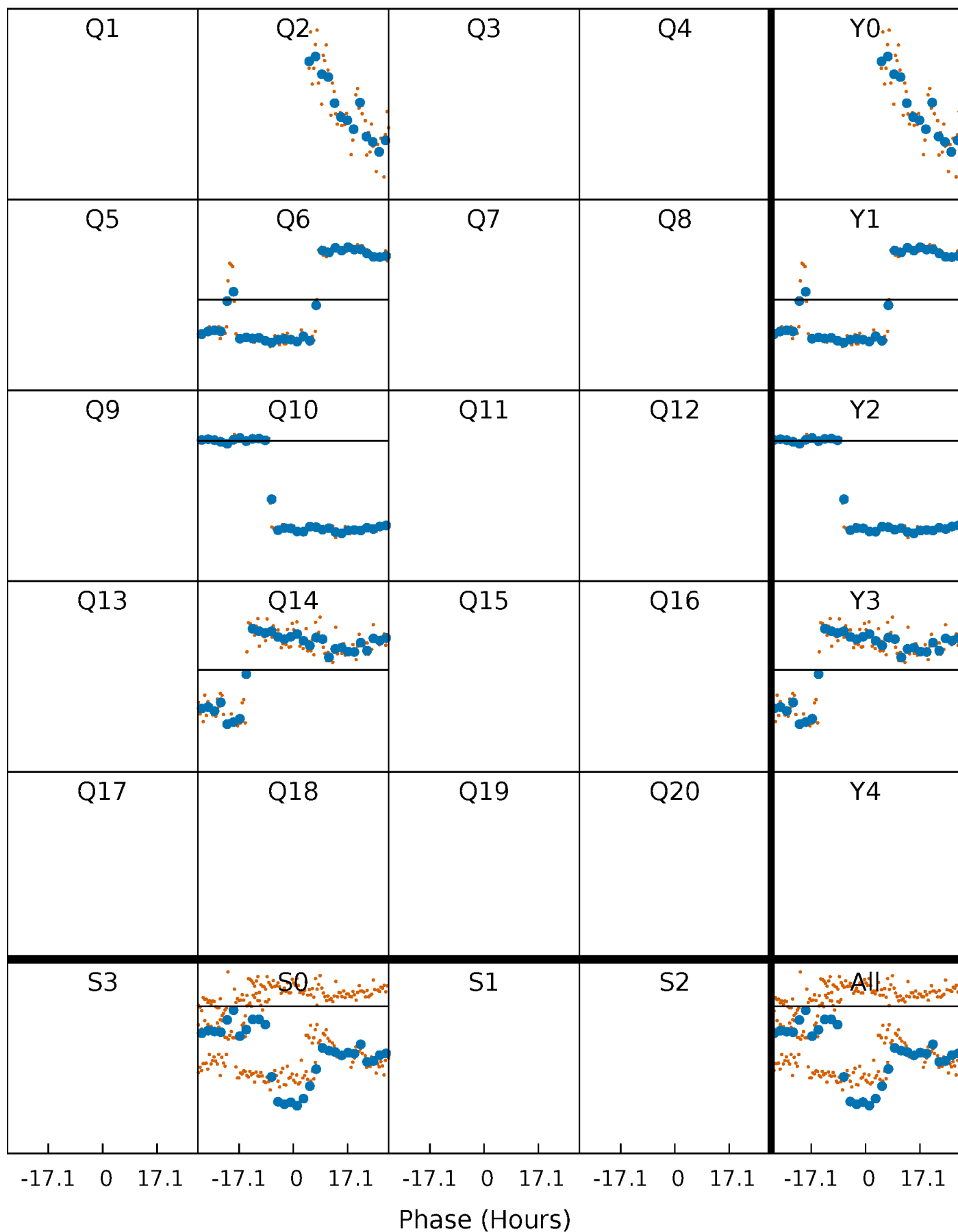
PDC Quarter-Phased Transit Curves

TCE 005521451-02 P=360.611467 Days $T_0=234.046598$ (BKJD)



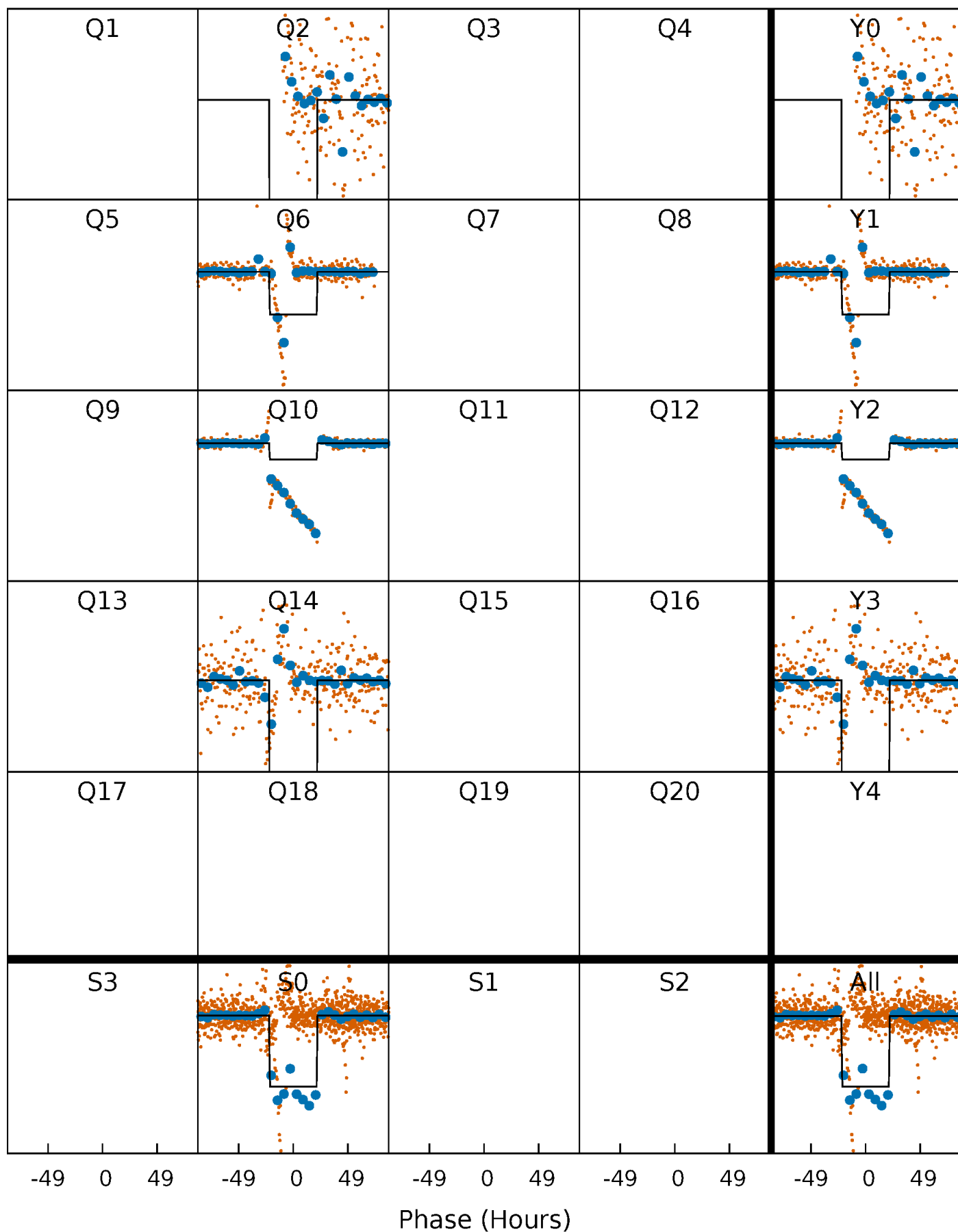
DV Quarter-Phased Transit Curves

TCE 005521451-02 P=360.611467 Days $T_0=234.046598$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

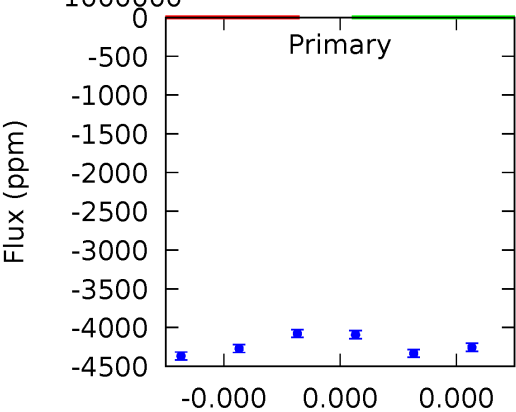
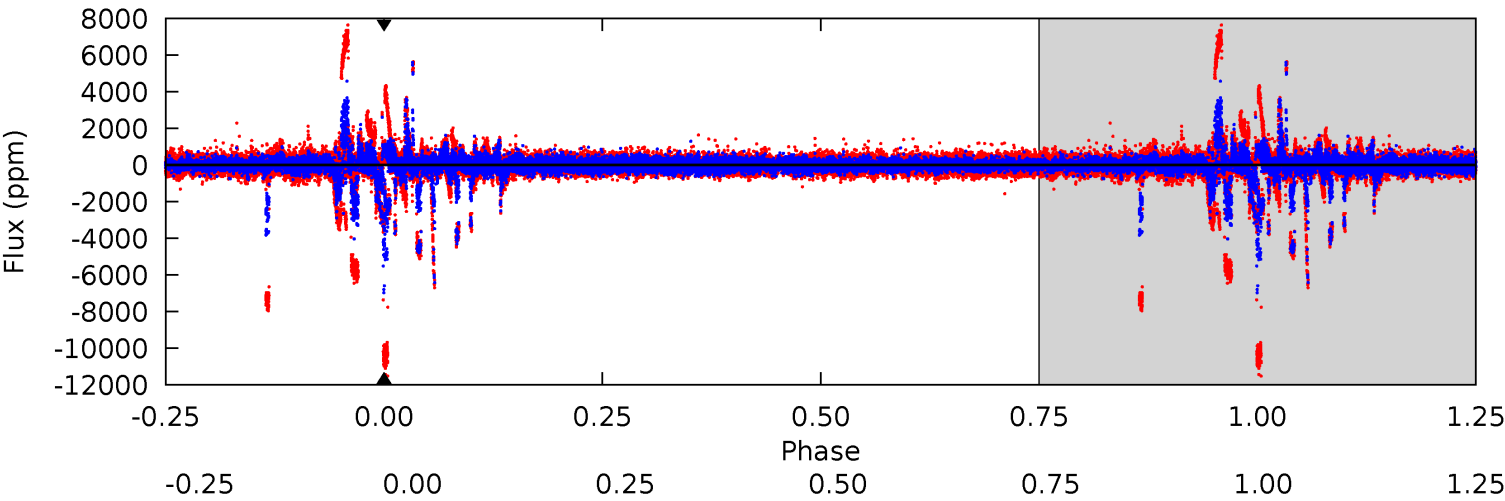
TCE 005521451-02 P=360.611467 Days $T_0=234.632516$ (BKJD)



DV Model-Shift Uniqueness Test

005521451-02, P = 360.611467 Days, E = 234.046598 Days

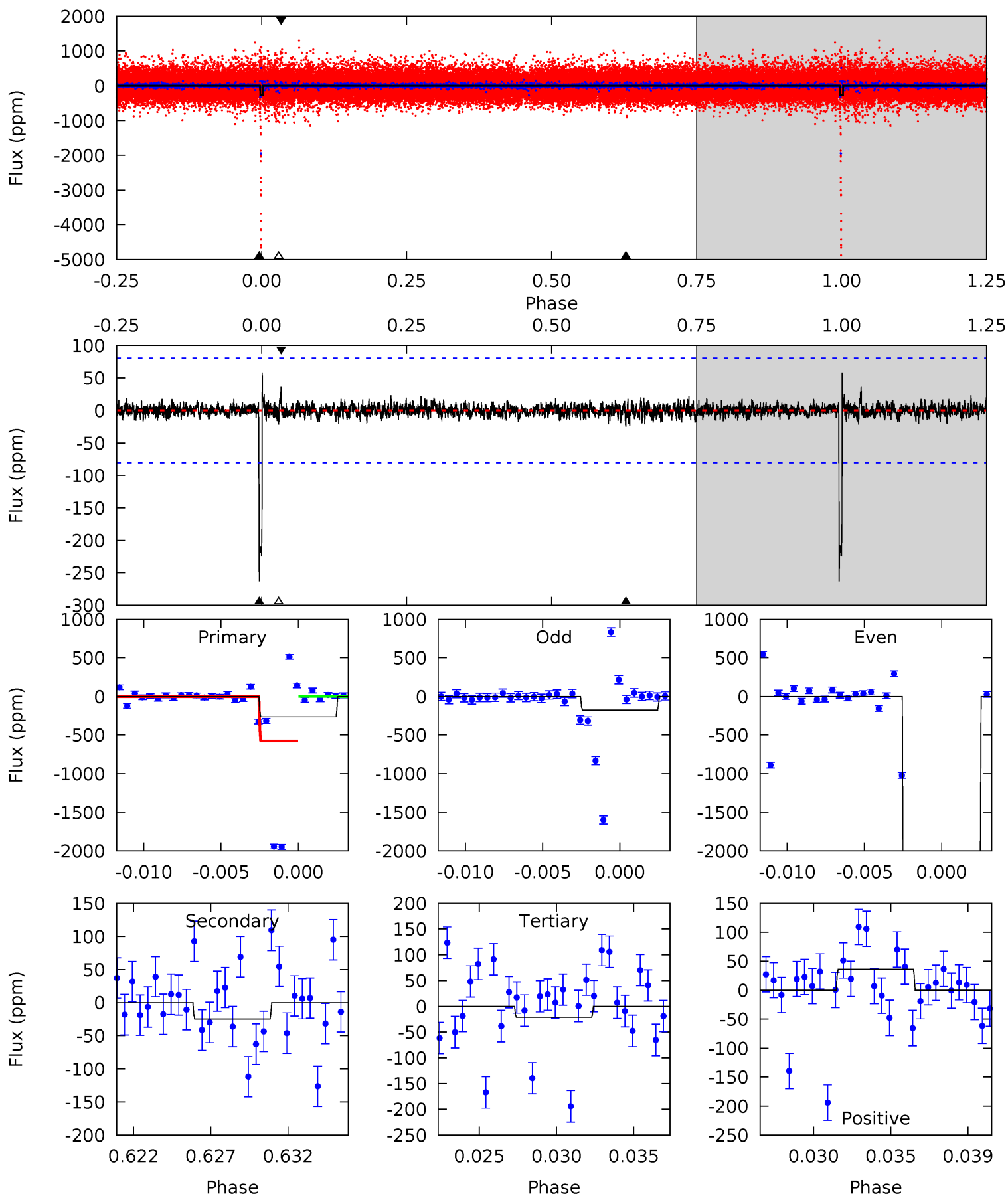
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

005521451-02, P = 360.611467 Days, E = 234.632516 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.9	1.60	1.39	2.33	5.16	2.81	0.41	15.5	14.6	0.21	-0.73	130.8	8.09	0.18	18.3



Stellar Parameters For KIC 005521451

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5533^{+165}_{-148}	$4.505^{+0.108}_{-0.108}$	$-0.640^{+0.350}_{-0.300}$	$0.780^{+0.121}_{-0.099}$	$0.710^{+0.102}_{-0.036}$	$2.105^{+0.997}_{-0.674}$
	+3%/-3%	+2%/-2%	+55%/-47%	+16%/-13%	+14%/-5%	+47%/-32%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005521451-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$7.27^{+6.93}_{-4.86}$	320^{+16}_{-14}	5015^{+12350}_{-19995}	$39327^{+1710099}_{-1310862}$
Alt.	-25 ± 16	$7.08^{+7.36}_{-4.84}$	320^{+15}_{-15}	2235^{+753}_{-358}	179^{+1758}_{-144}

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

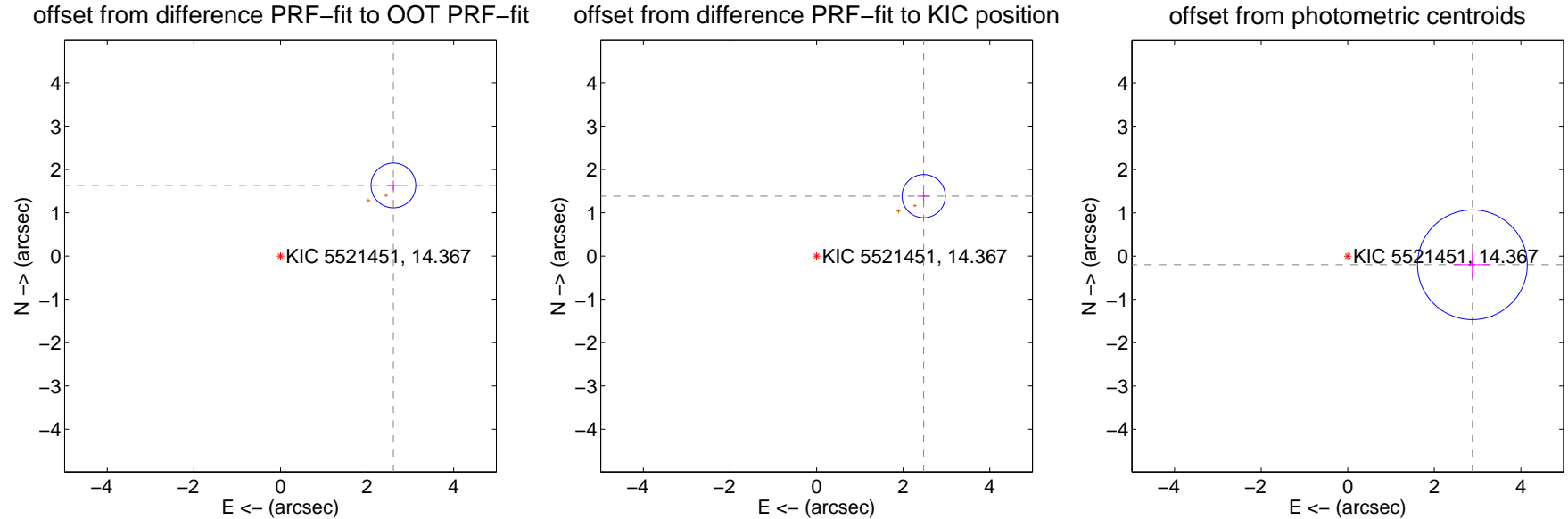
DV Centroid Data

Supplemental centroid analysis for 005521451-02. Kepler magnitude: 14.37. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.076 ± 0.172	17.87	-2.609 ± 0.152	1.631 ± 0.112
PRF-fit source offset from KIC position	2.834 ± 0.166	17.03	-2.474 ± 0.146	1.384 ± 0.106
photometric centroid source offset	2.89 ± 0.42	6.83	-2.88 ± 0.42	-0.20 ± 0.31



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

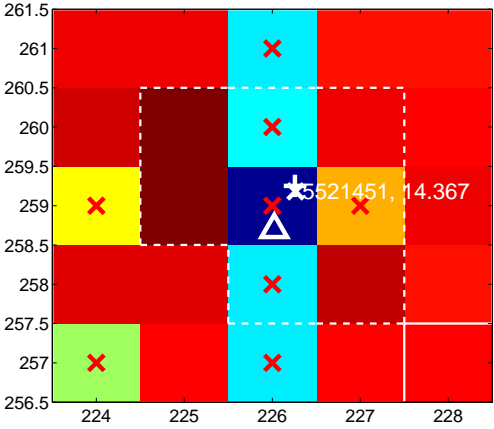
Q5 no difference image



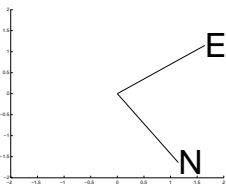
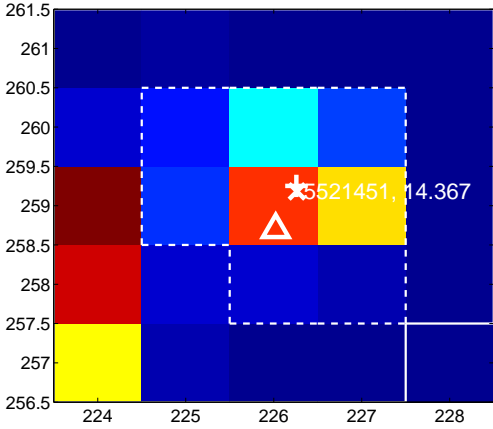
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



Q7 no difference image



Q7 no OOT image



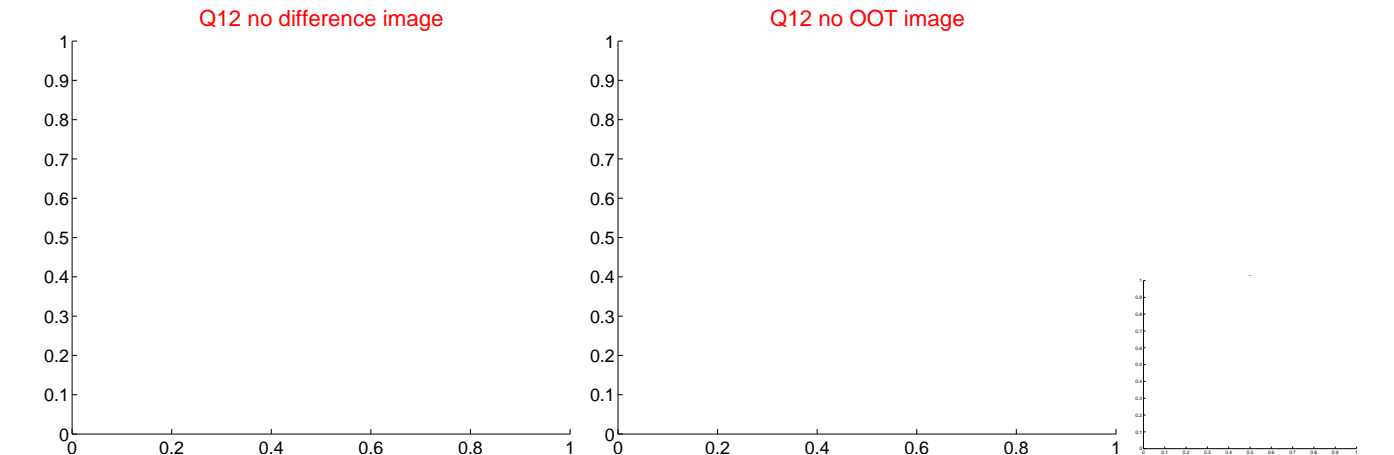
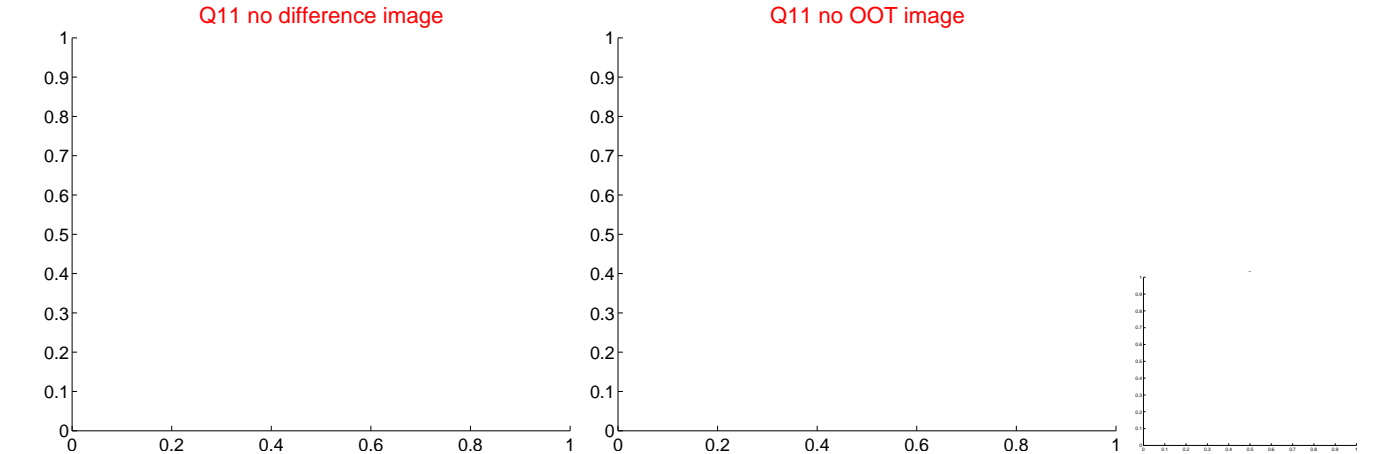
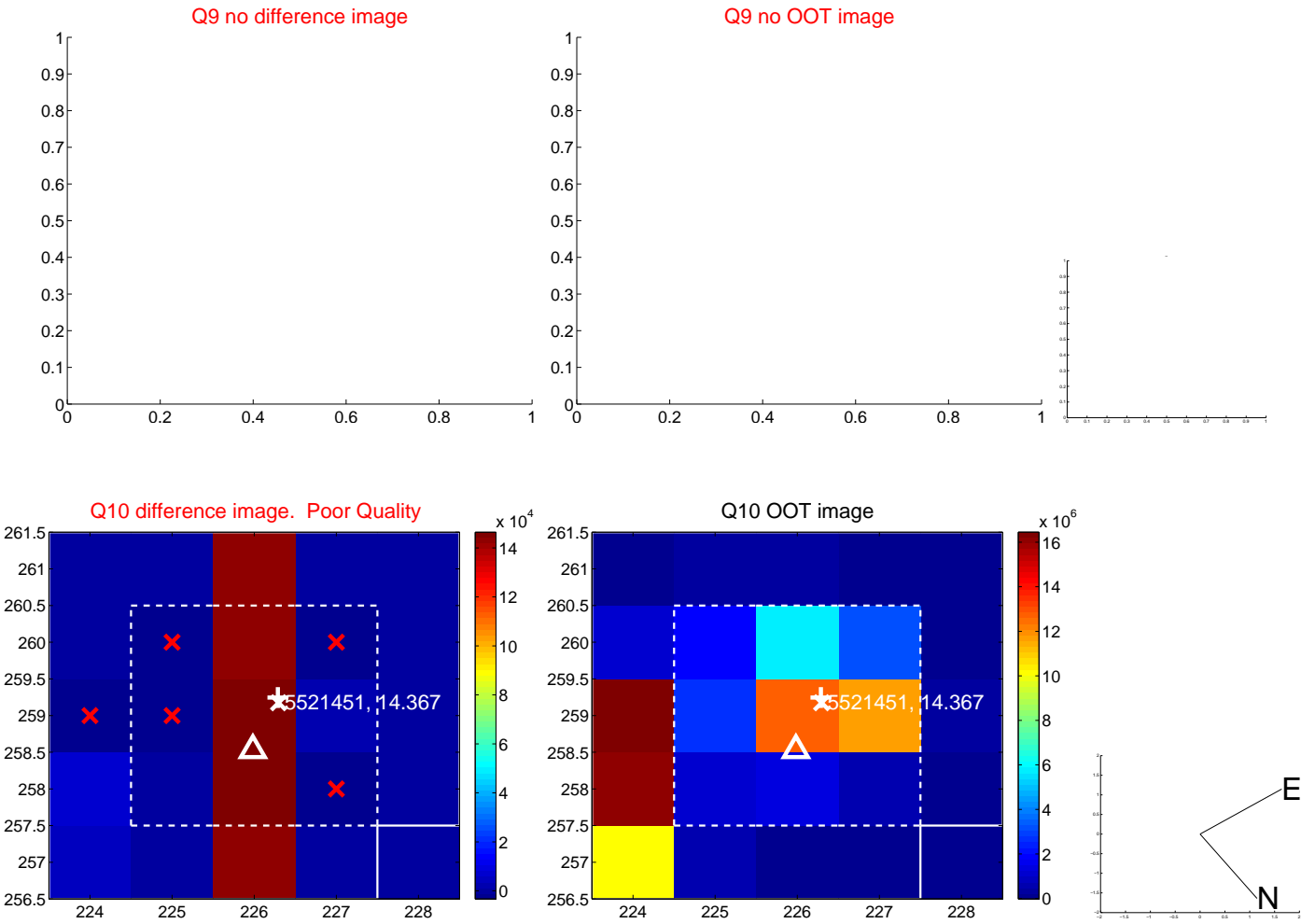
Q8 no difference image



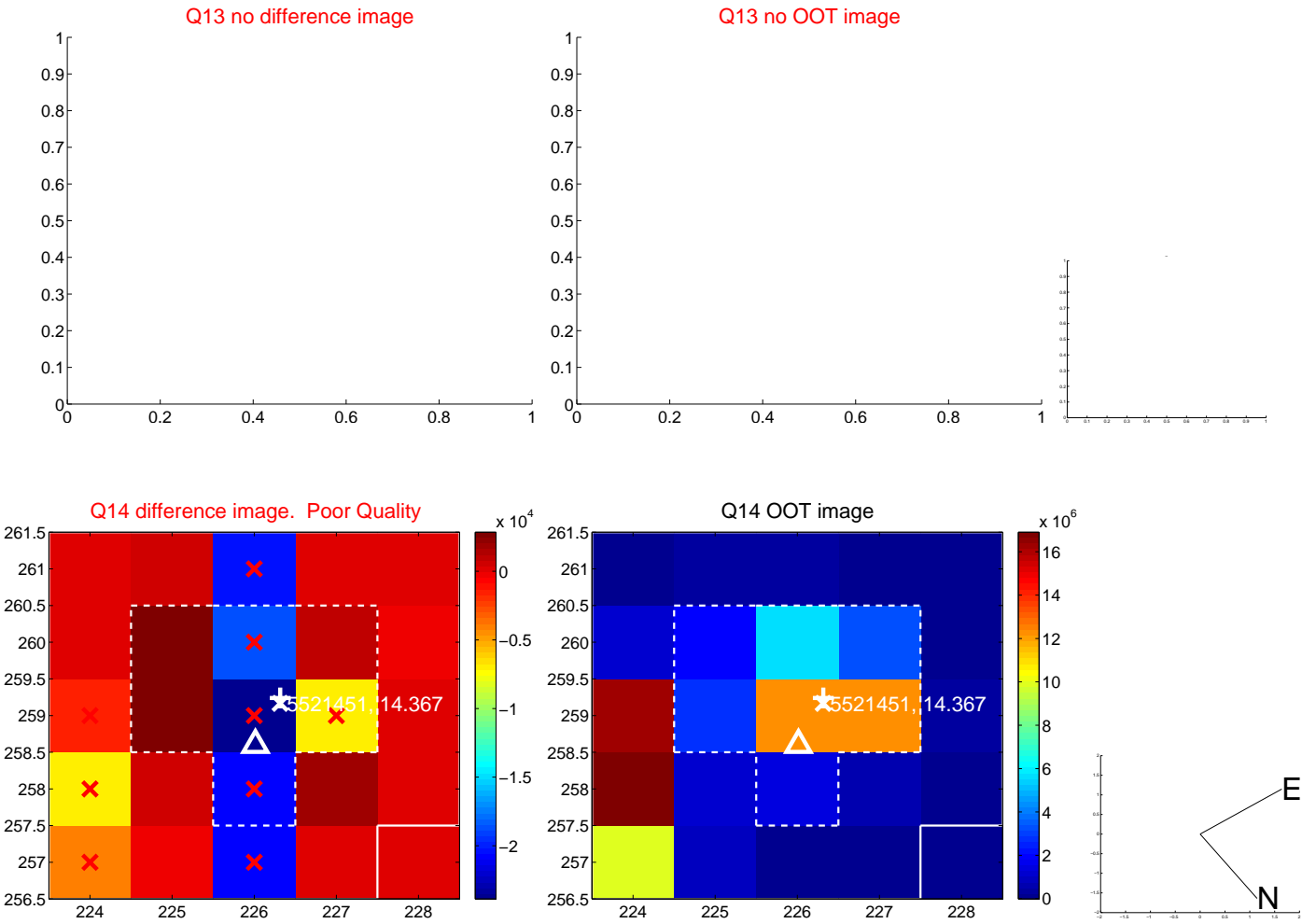
Q8 no OOT image



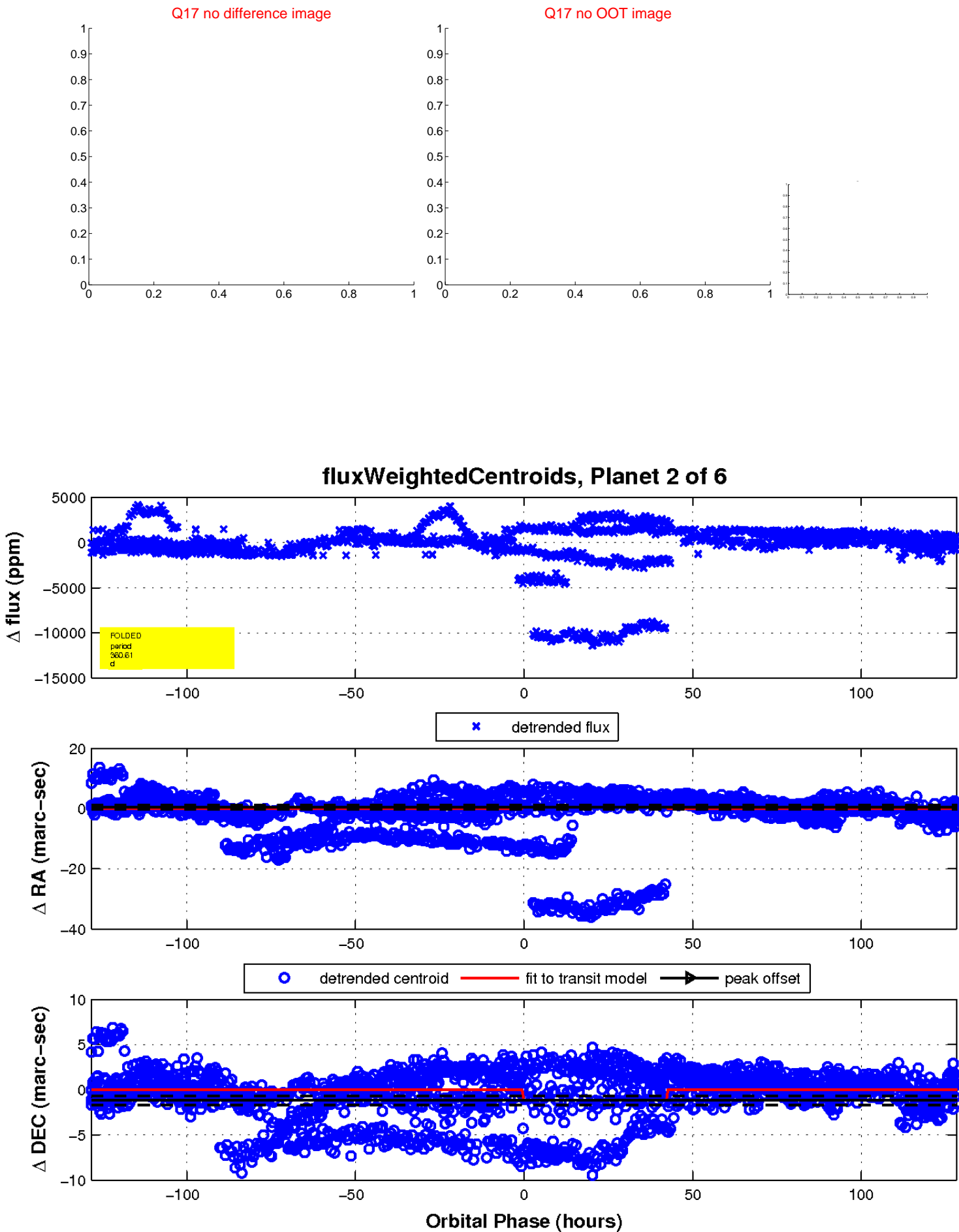
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

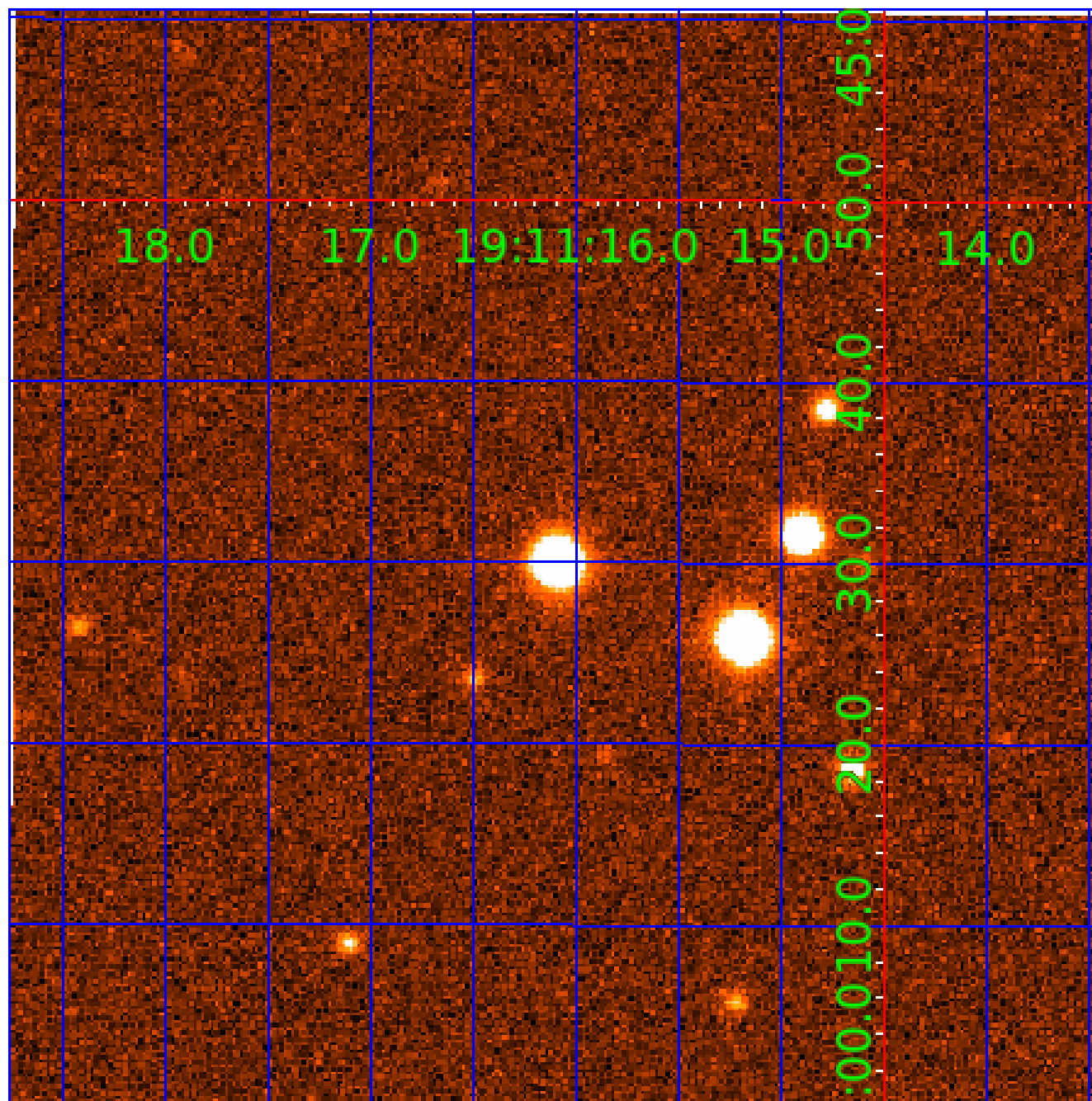


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005521451

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})
005521451-01	OBS	No	372.412047	232.784079	3312.3	22.490	38.0	26.2	0.78	5533	7.42	0.62
005521451-02	OBS	No	360.611467	234.046598	1367.7	15.000	32.4	-1.0	0.78	5533	2.86	0.65
005521451-03	OBS	No	372.837361	210.877980	992.2	17.192	29.0	10.5	0.78	5533	2.51	0.62
005521451-04	OBS	No	370.162272	209.997913	2267.3	15.633	29.7	20.1	0.78	5533	4.56	0.63
005521451-06	OBS	No	384.932939	191.959128	683.2	4.731	24.1	6.8	0.78	5533	2.27	0.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005521451-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS
005521451-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

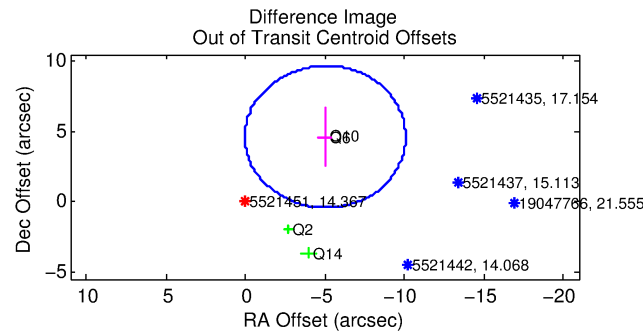
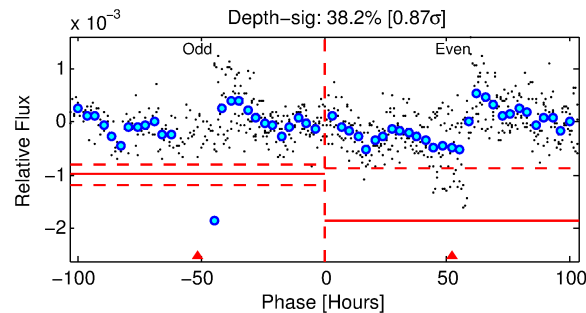
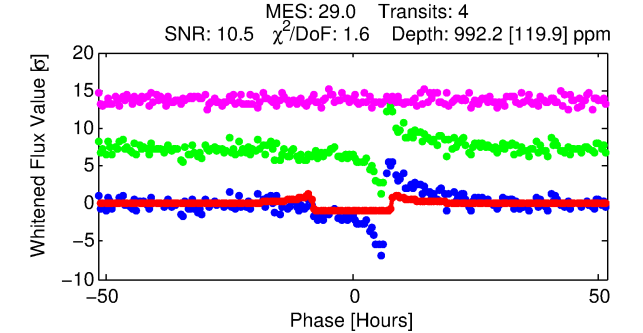
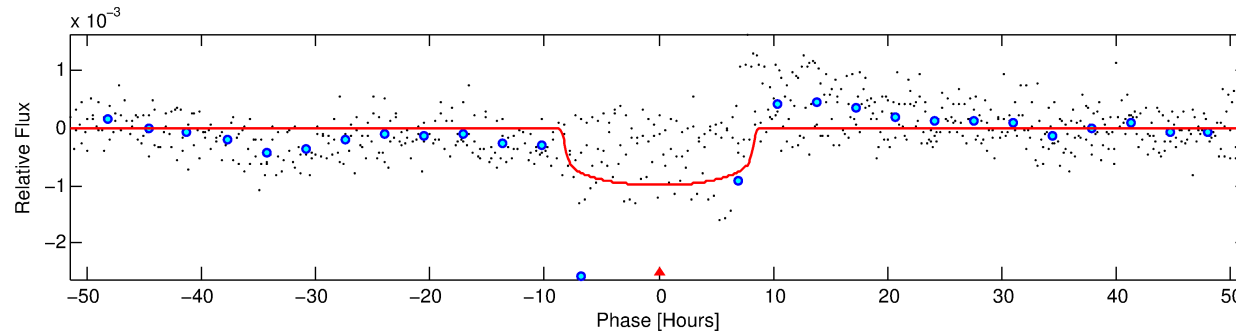
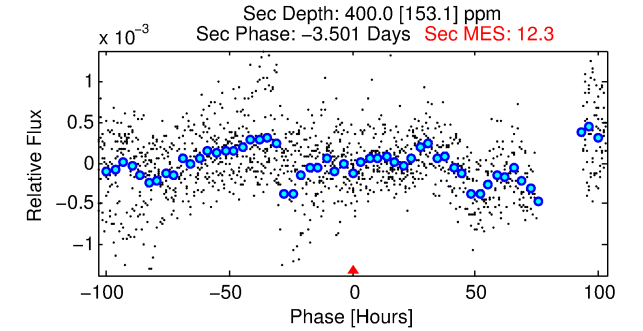
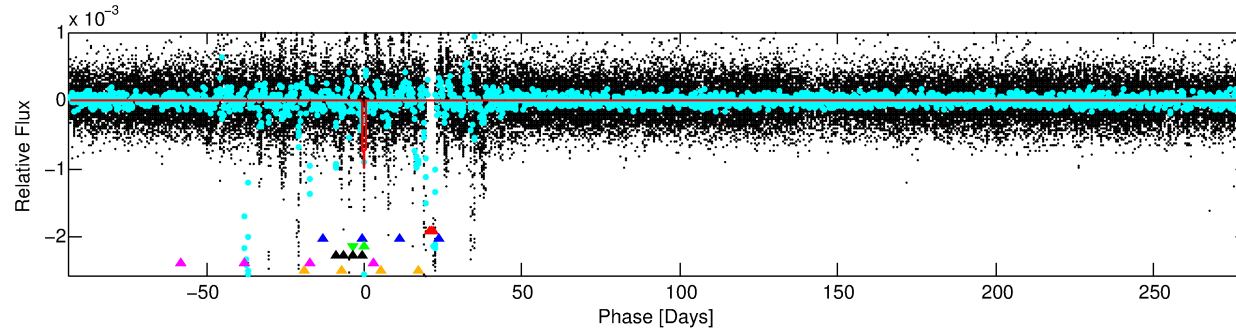
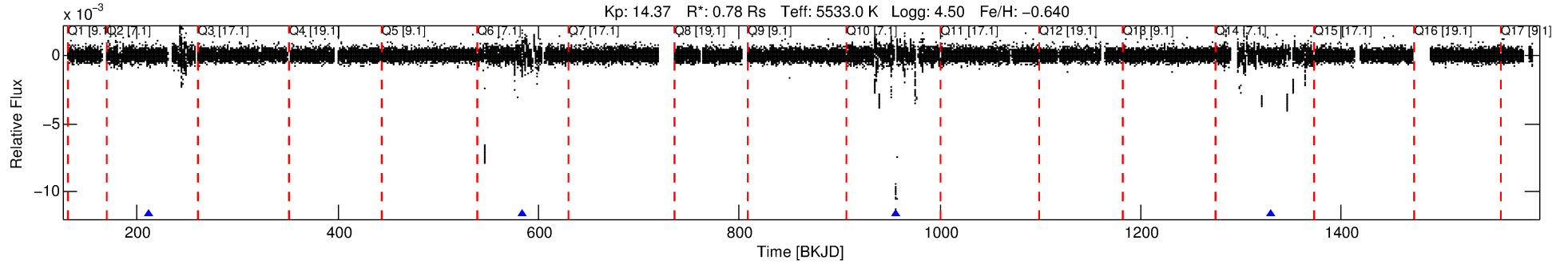
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005521451-03

No Significant Match Found

DV One-Page Summary

KIC: 5521451 Candidate: 3 of 6 Period: 372.837 d



DV Fit Results:

Period = 372.83736 [0.00510] d
Epoch = 210.8780 [0.0099] BKJD
Rp/R* = 0.0295 [0.0054]
a/R* = 150.32 [113.54]
b = 0.49 [1.19]
Seff = 0.62 [0.14]
Teq = 227 [13] K
Rp = 2.51 [0.60] Re
a = 0.9046 [0.1199] AU
Ag = 28590.65 [16197.28] [1.77 σ]
Teffp = 4557 [621] K [6.97 σ]

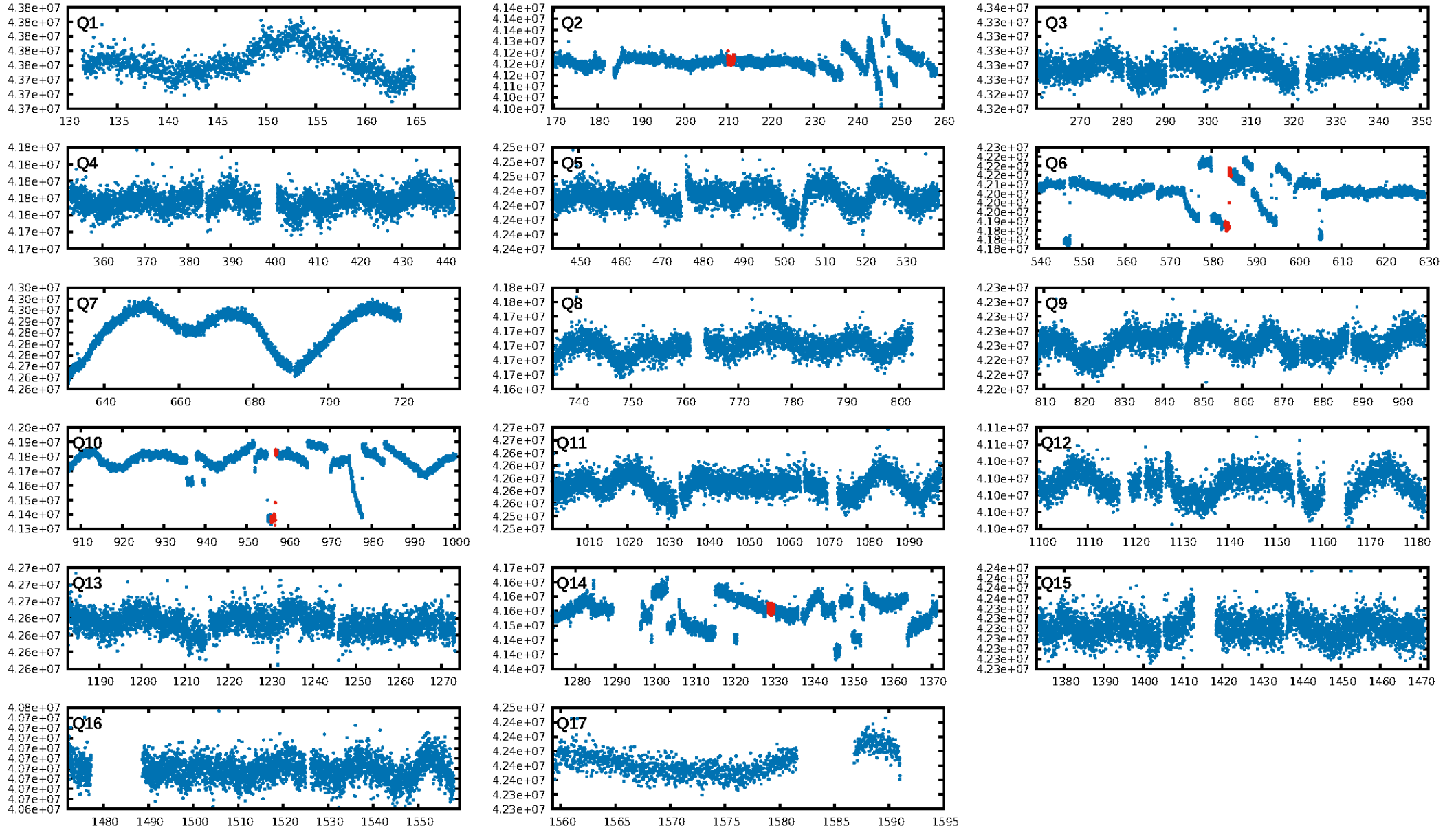
DV Diagnostic Results:

ShortPeriod-sig: 28.2% [0.36 σ]
LongPeriod-sig: 100.0% [16.28 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 11.1%
Bootstrap-pfa: 4.52e-20
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.7527
Centroid-sig: 0.0%
Centroid-so: 3.641 arcsec [3.97 σ]
OotOffset-rm: 6.844 arcsec [4.06 σ]
KicOffset-rm: 6.576 arcsec [4.14 σ]
OotOffset-st: 4/0/0/0 [4]
KicOffset-st: 4/0/0/0 [4]
DiffImageQuality-fgm: 0.00 [0/4]
DiffImageOverlap-fno: 0.50 [2/4]

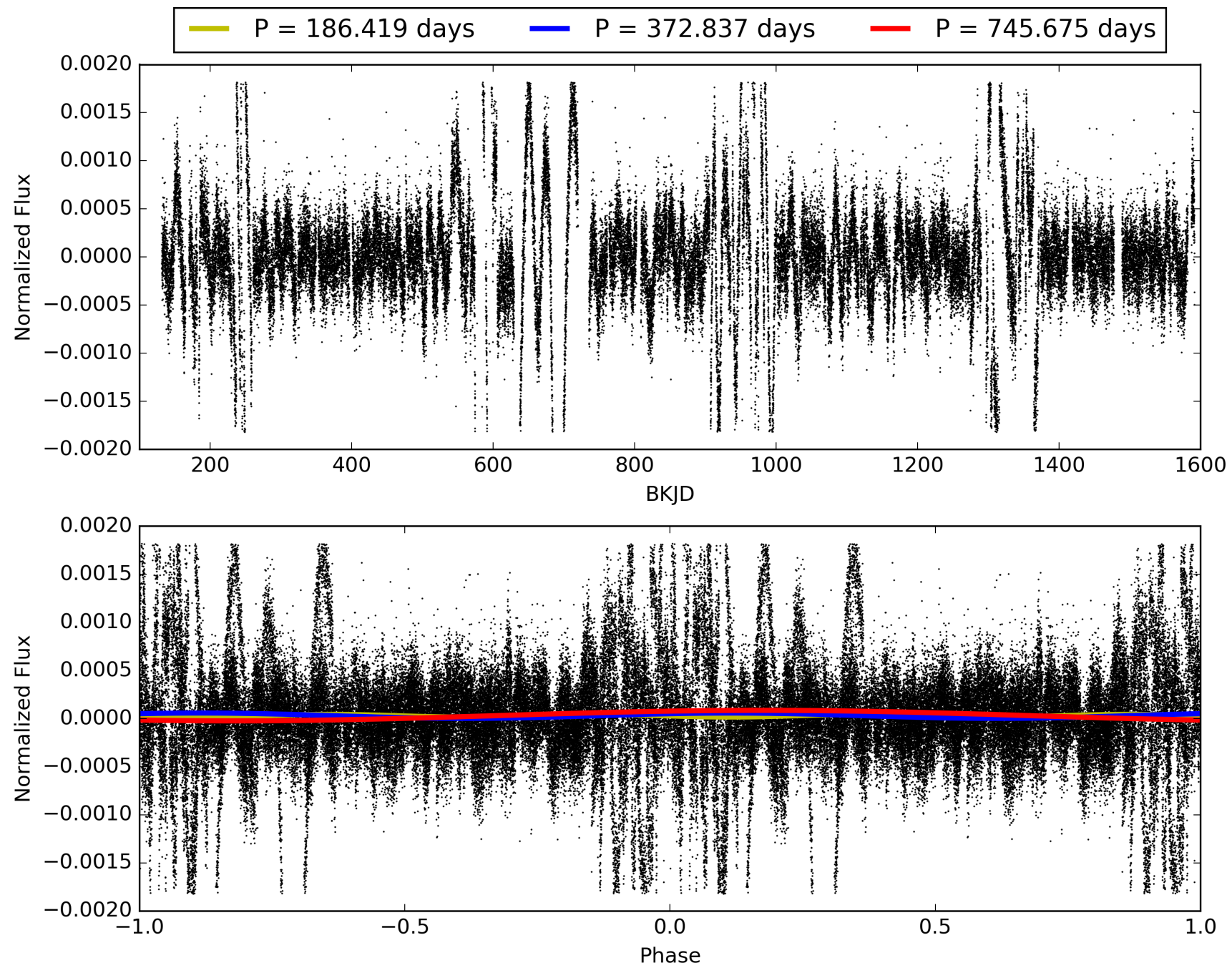
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:21:21 Z

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

TCE 005521451-03, PDC Light Curves

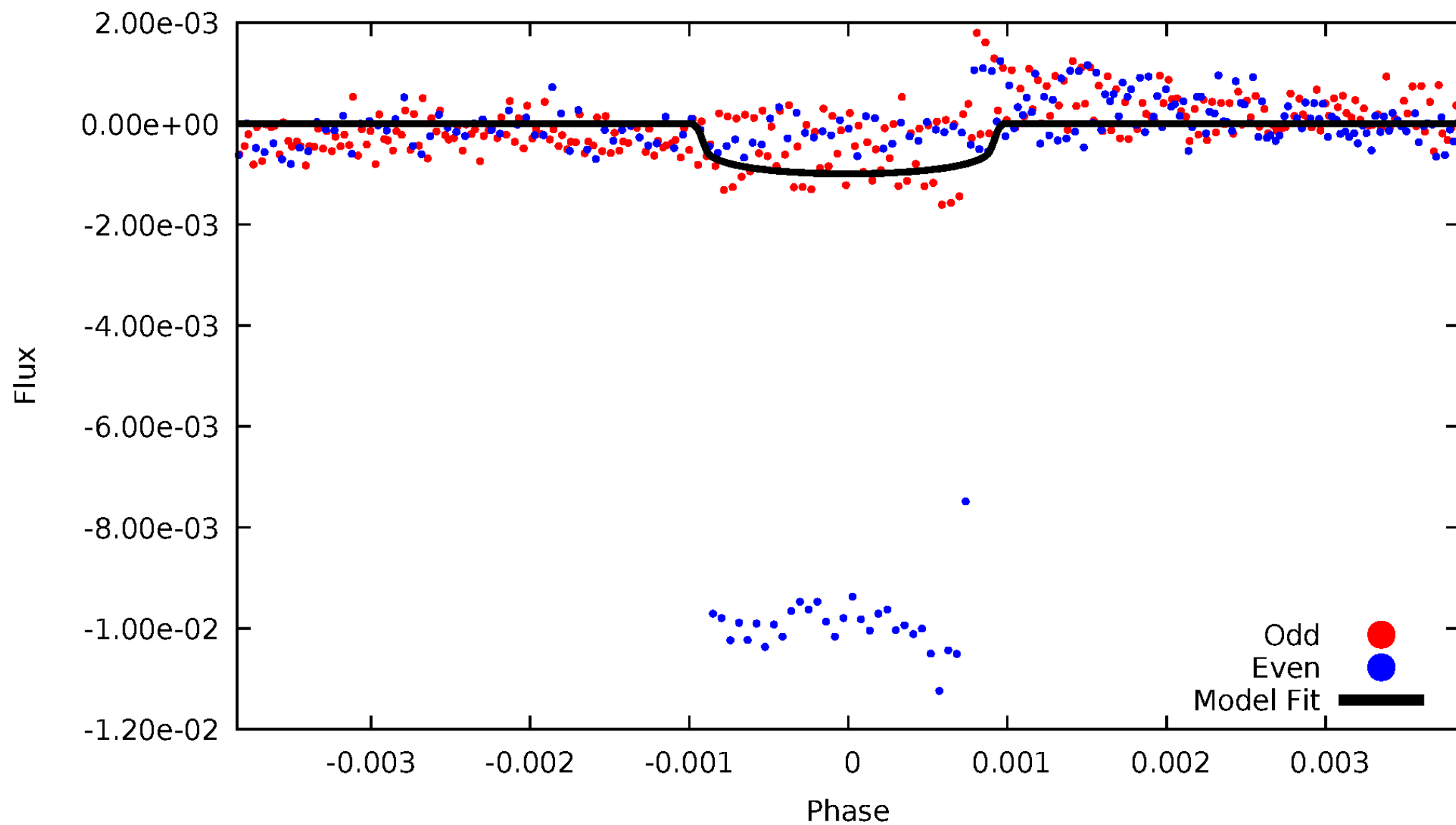


TCE 005521451-03



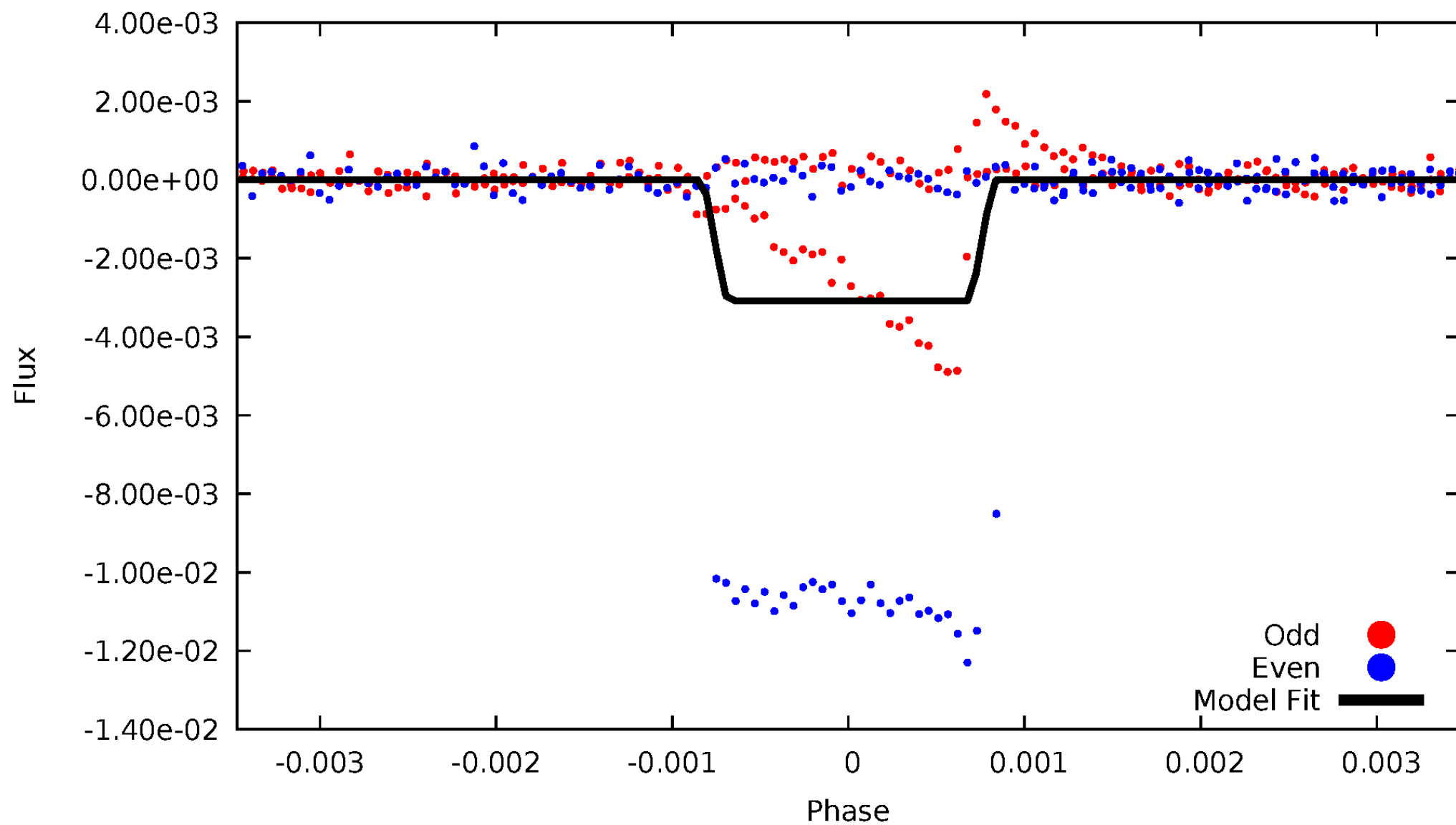
DV Odd/Even

TCE 005521451-03



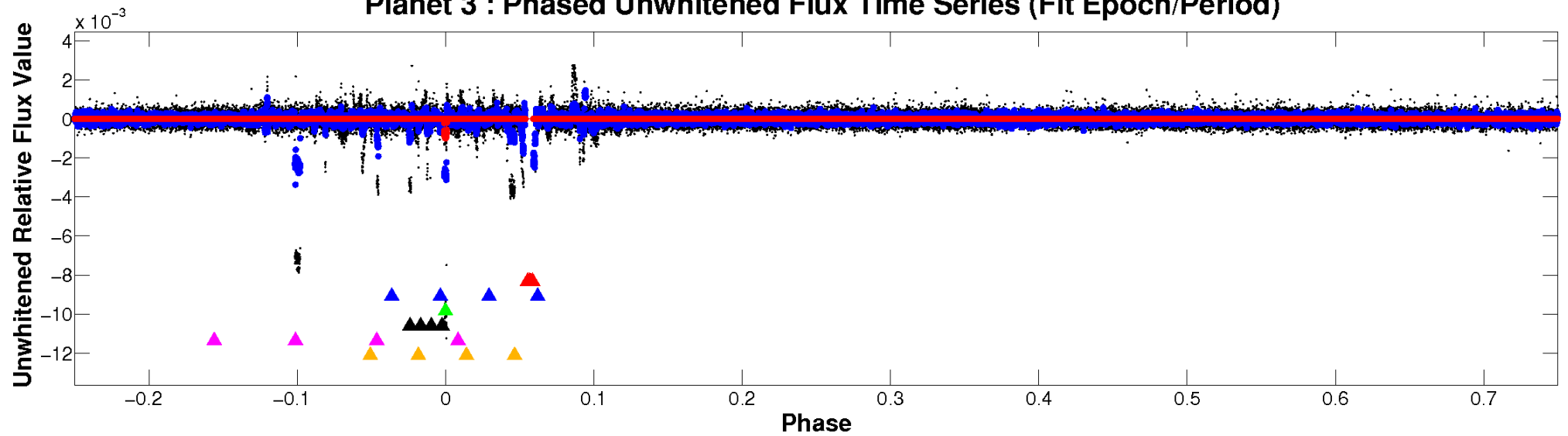
ALT Odd/Even

TCE 005521451-03

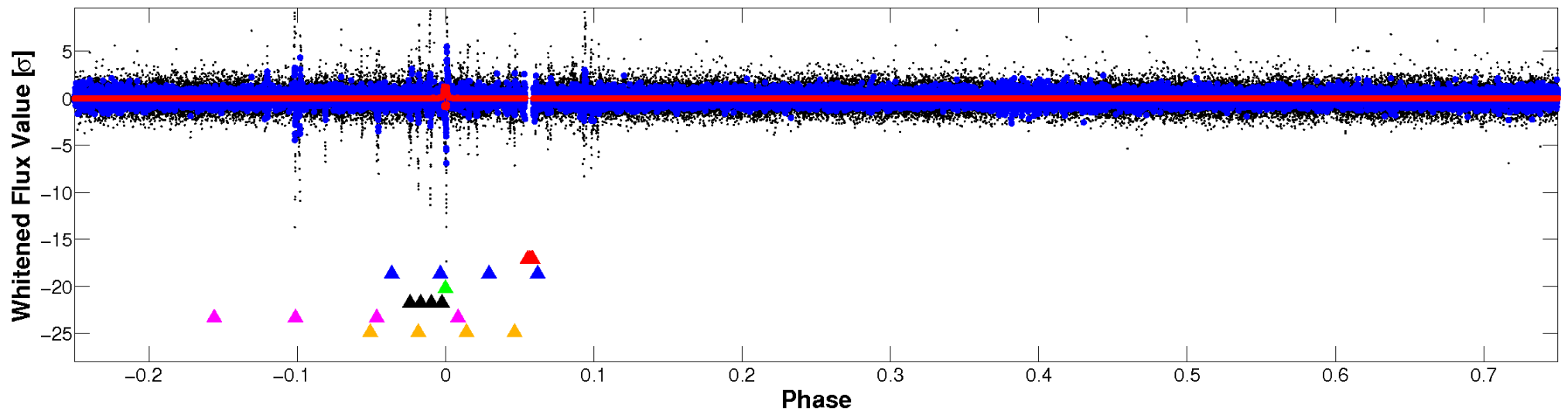


Non-Whitened Vs. Whitened Light Curve

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

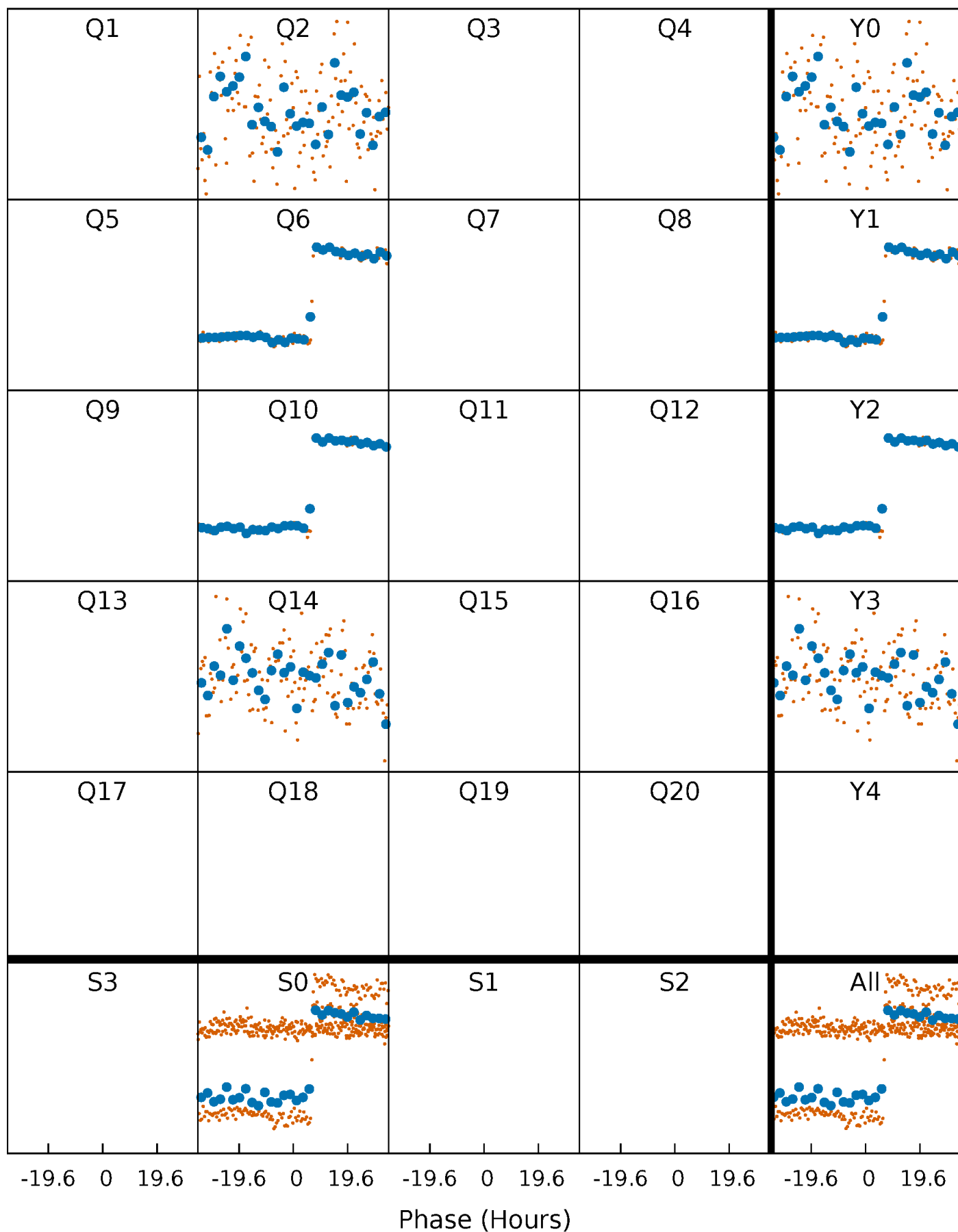


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



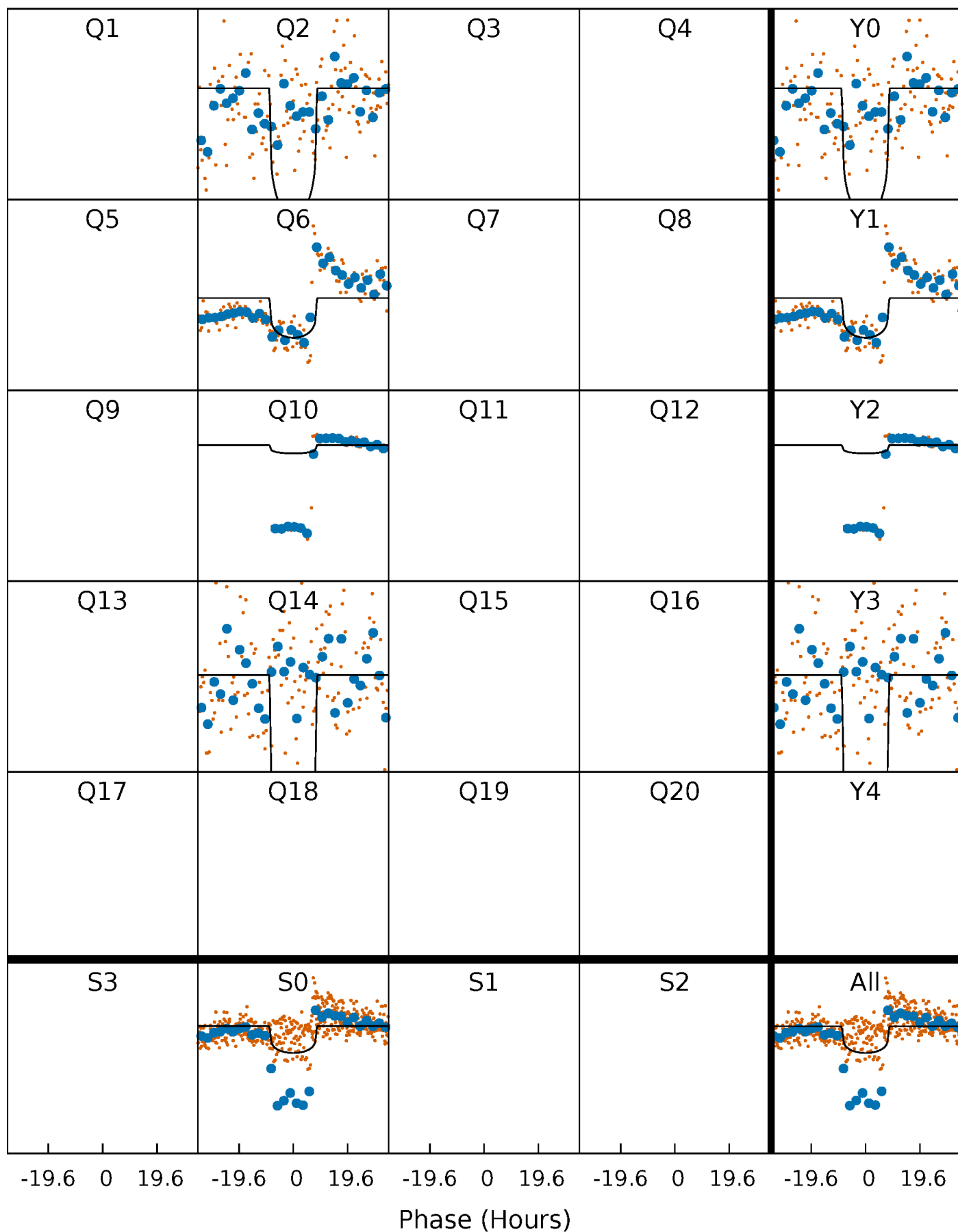
PDC Quarter-Phased Transit Curves

TCE 005521451-03 $P=372.837361$ Days $T_0=210.877980$ (BKJD)



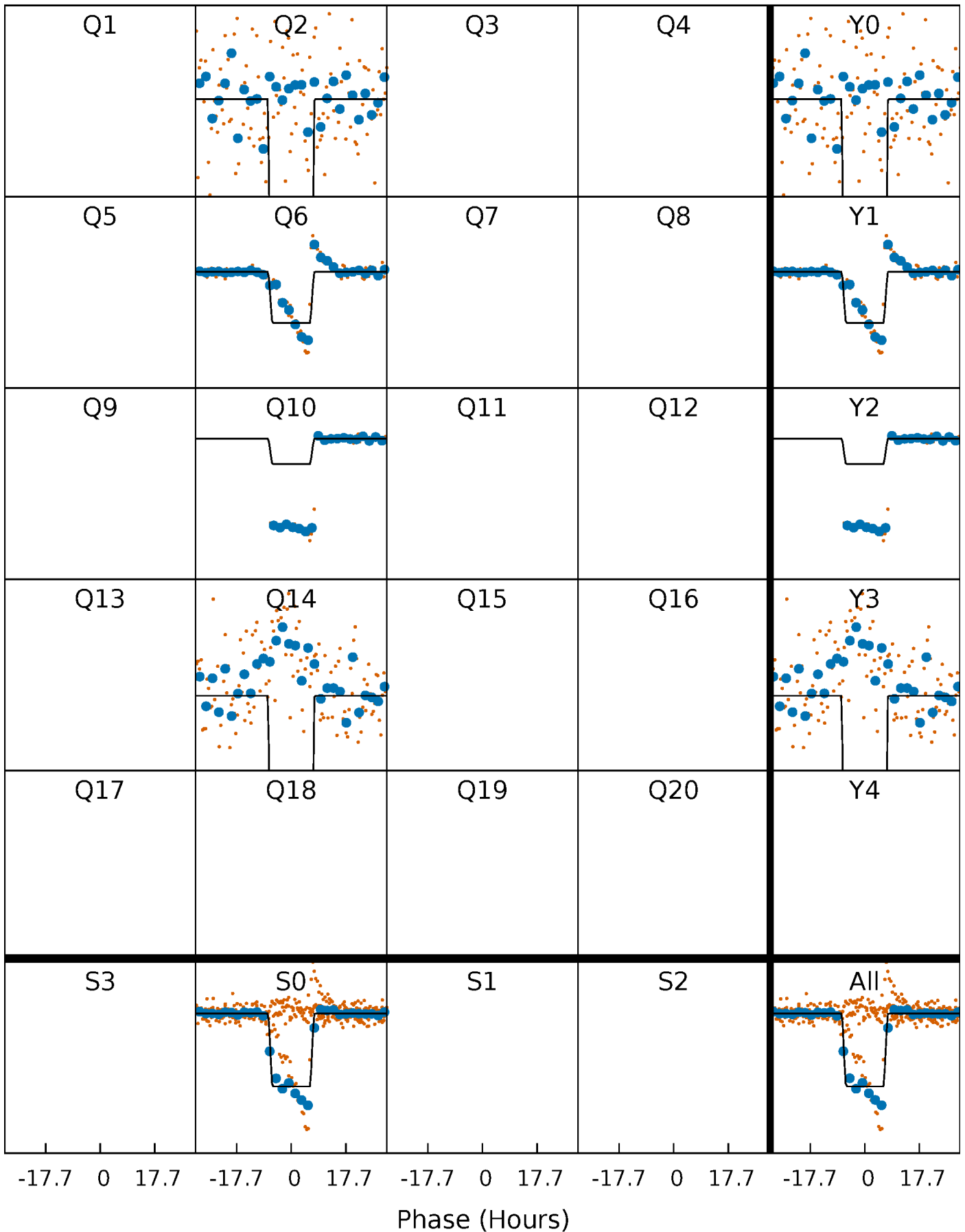
DV Quarter-Phased Transit Curves

TCE 005521451-03 P=372.837361 Days $T_0=210.877980$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

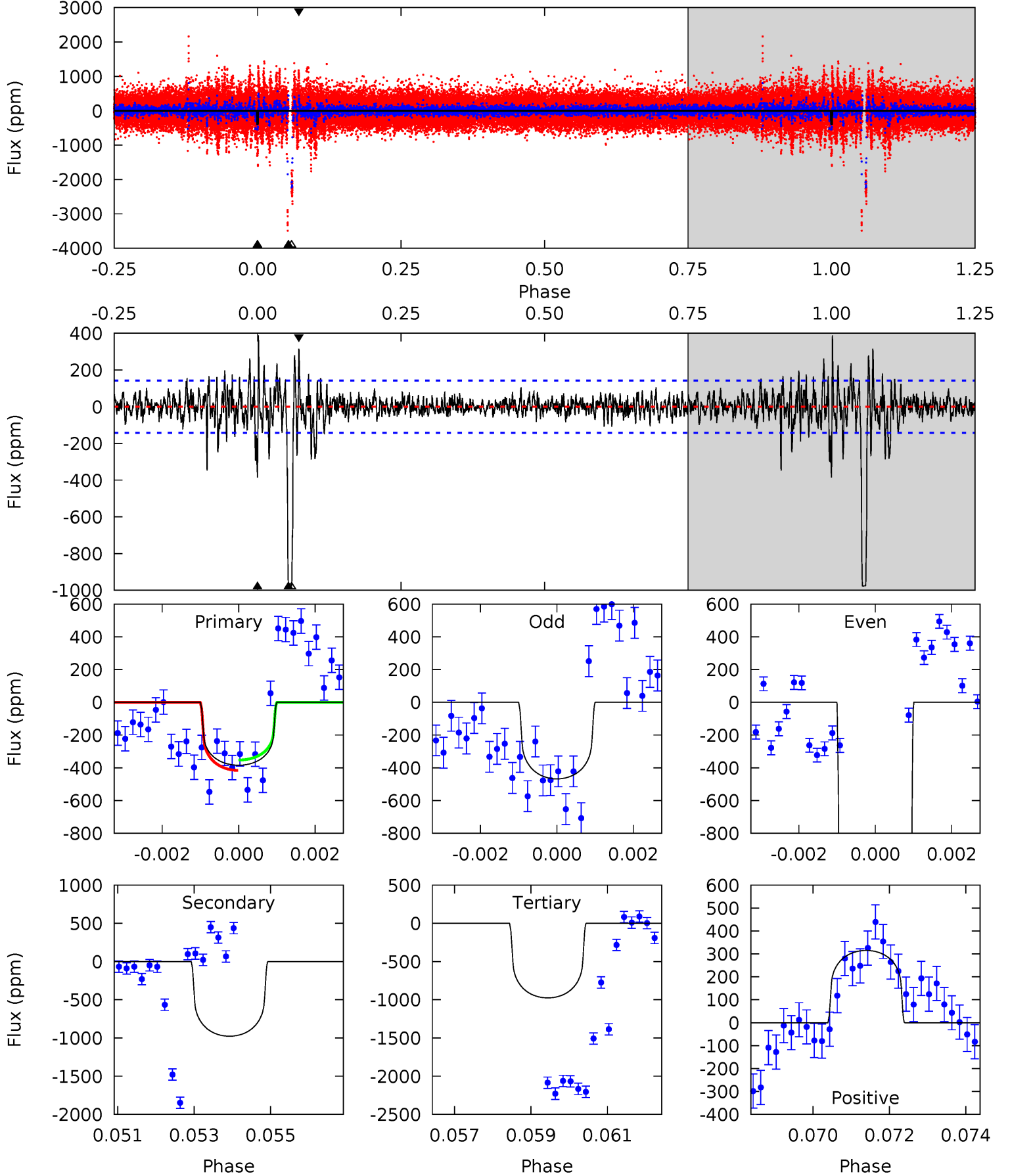
TCE 005521451-03 P=372.769435 Days $T_0=210.975595$ (BKJD)



DV Model-Shift Uniqueness Test

005521451-03, P = 372.837361 Days, E = 210.877980 Days

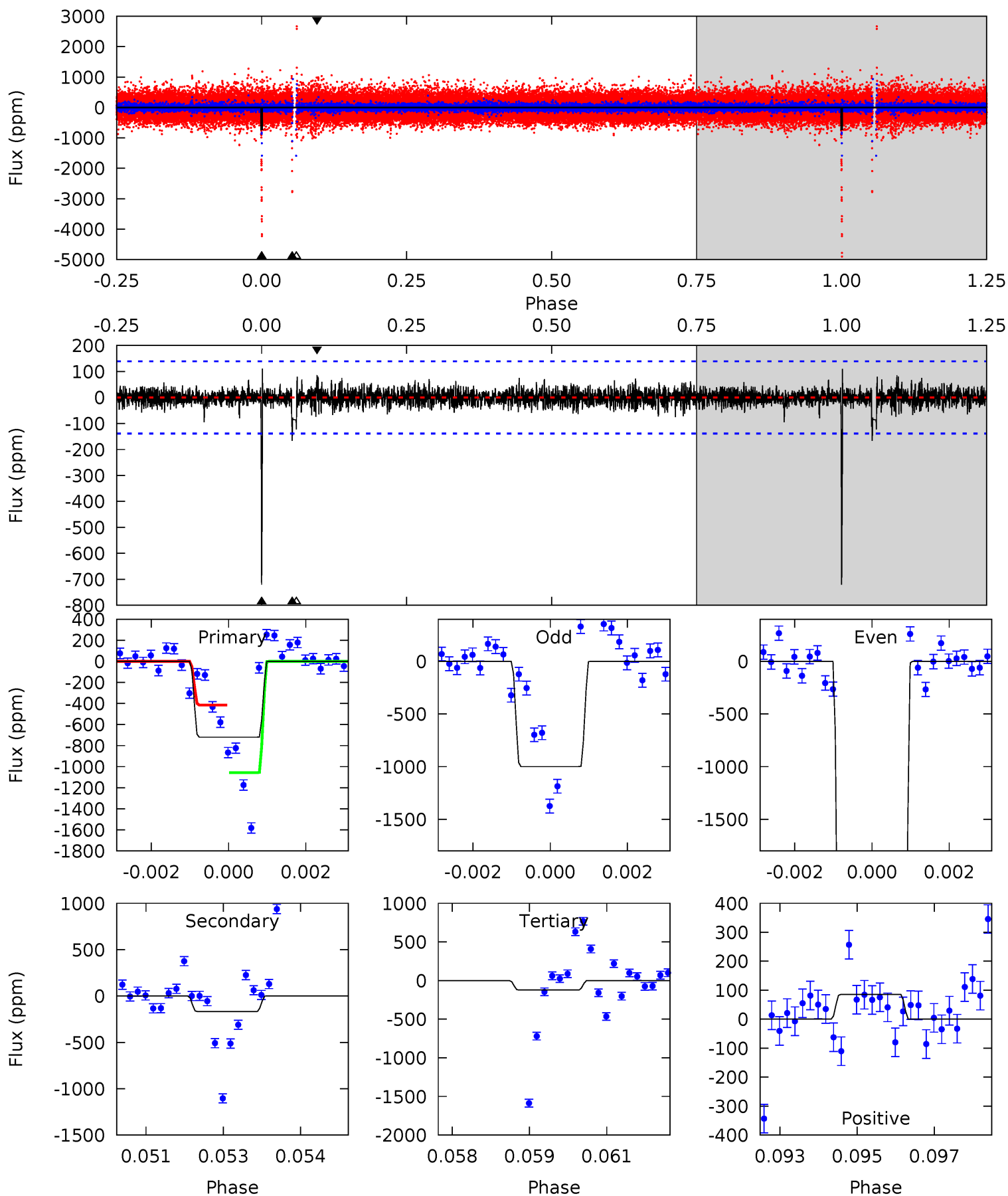
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.4	36.5	36.4	11.8	5.33	3.10	2.41	-22.1	2.58	0.04	24.7	79.5	4.90	0.28	1.19



Alt Model-Shift Uniqueness Test

005521451-03, P = 372.769435 Days, E = 210.975595 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.7	6.44	4.71	3.30	5.36	3.14	0.80	23.0	24.5	1.73	3.15	101.6	2.71	0.13	12.1



Stellar Parameters For KIC 005521451

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5533^{+165}_{-148}	$4.505^{+0.108}_{-0.108}$	$-0.640^{+0.350}_{-0.300}$	$0.780^{+0.121}_{-0.099}$	$0.710^{+0.102}_{-0.036}$	$2.105^{+0.997}_{-0.674}$
	+3%/-3%	+2%/-2%	+55%/-47%	+16%/-13%	+14%/-5%	+47%/-32%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005521451-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-977 ± 27	$2.55^{+0.54}_{-0.54}$	317^{+16}_{-15}	5705^{+652}_{-485}	69155^{+39449}_{-21622}
Alt.	-167 ± 26	$4.76^{+0.63}_{-0.59}$	317^{+16}_{-15}	3243^{+141}_{-136}	3363^{+1177}_{-889}

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

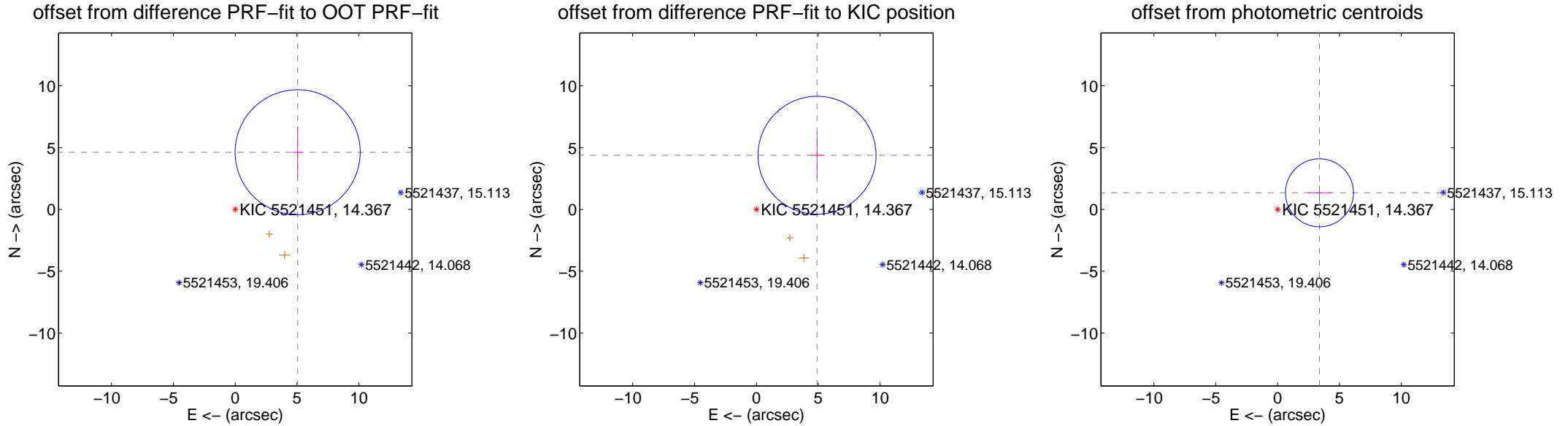
DV Centroid Data

Supplemental centroid analysis for 005521451-03. Kepler magnitude: 14.37. Transit SNR 10.45

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.844 ± 1.685	4.06	-5.045 ± 0.424	4.625 ± 2.099
PRF-fit source offset from KIC position	6.576 ± 1.590	4.14	-4.901 ± 0.487	4.385 ± 1.880
photometric centroid source offset	3.64 ± 0.92	3.97	-3.38 ± 0.96	1.35 ± 0.60



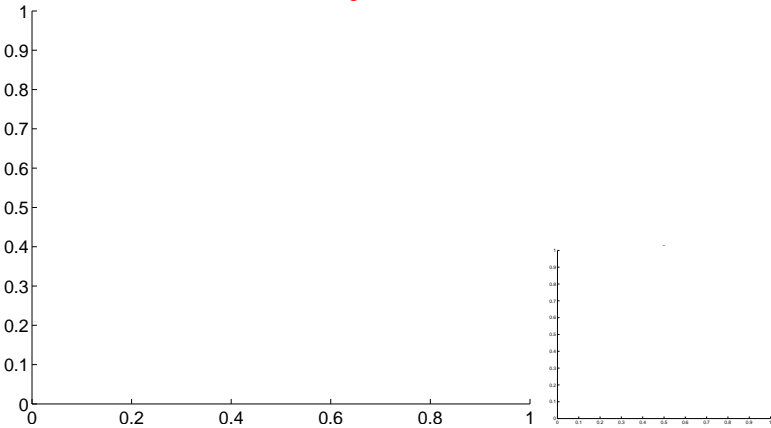
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

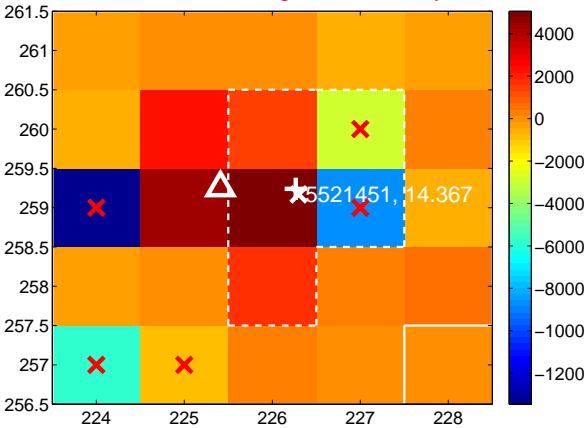
Q1 no difference image



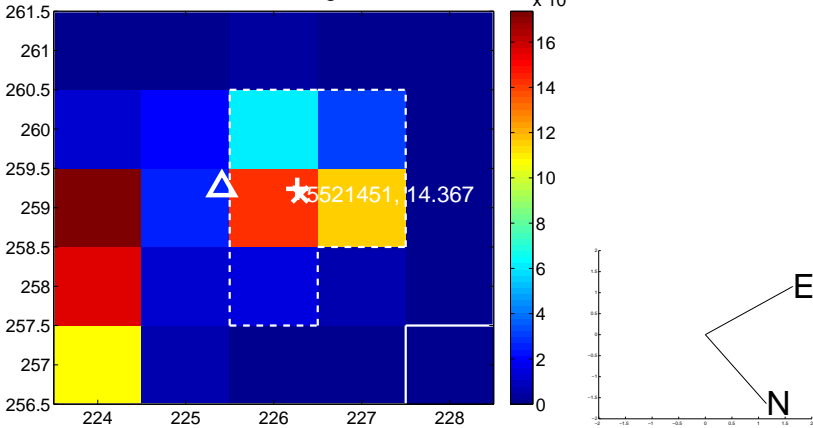
Q1 no OOT image



Q2 difference image. Poor Quality



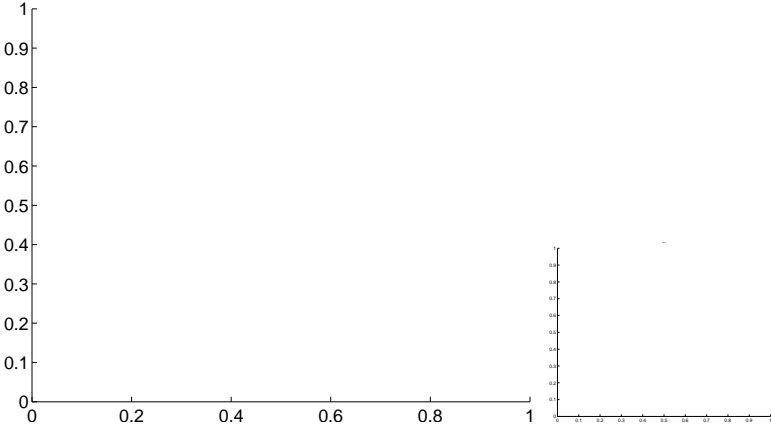
Q2 OOT image



Q3 no difference image



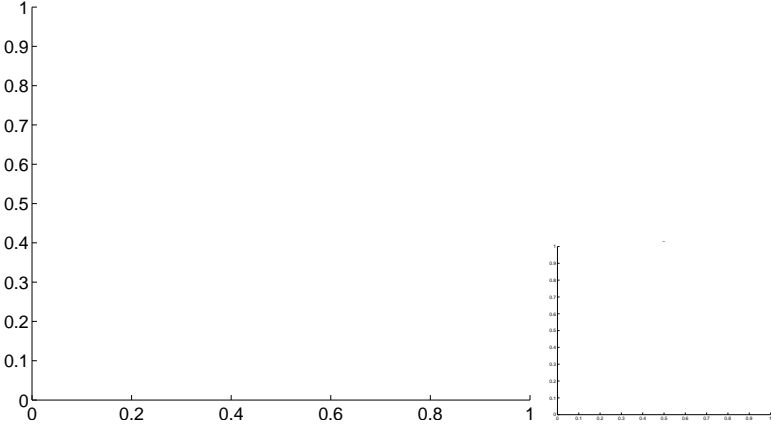
Q3 no OOT image



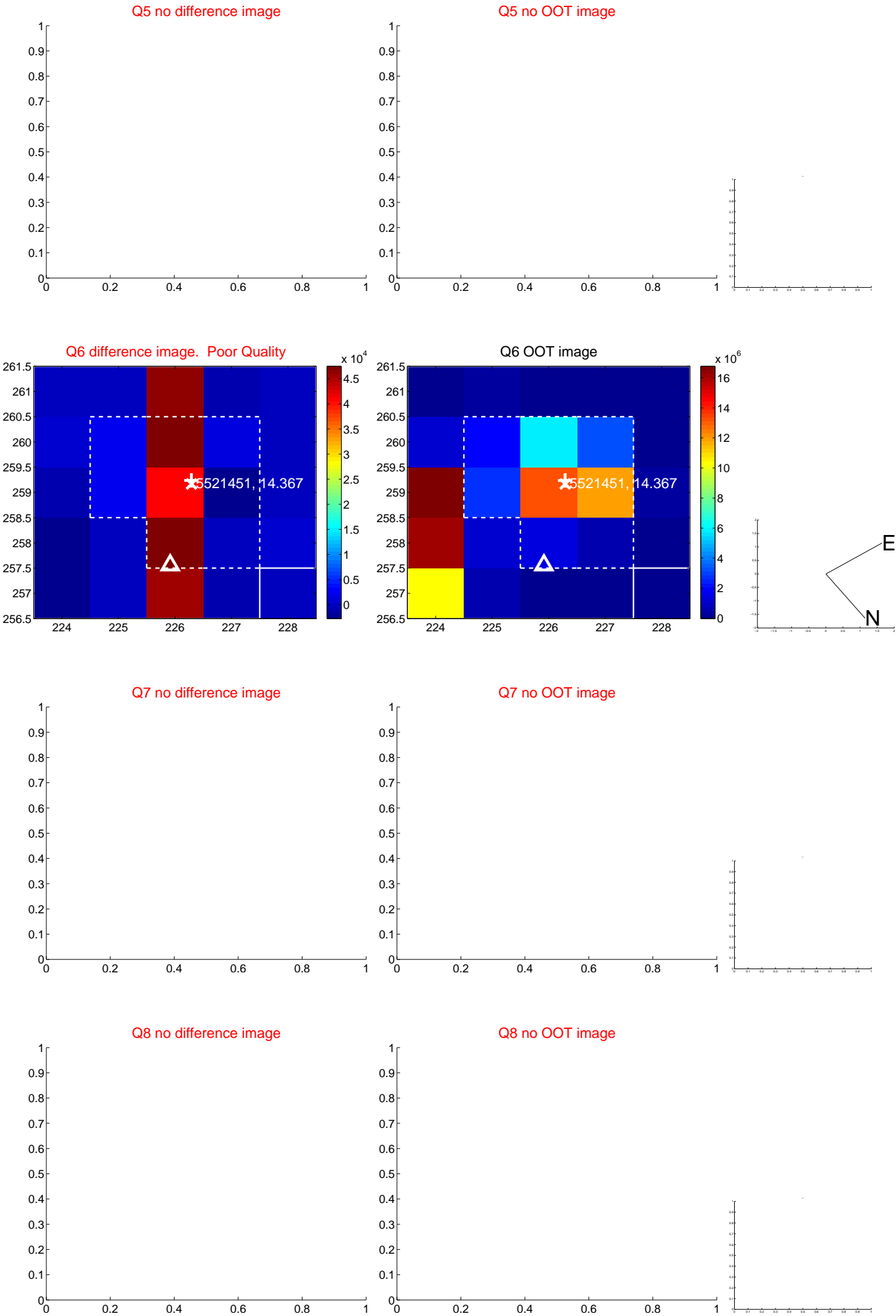
Q4 no difference image



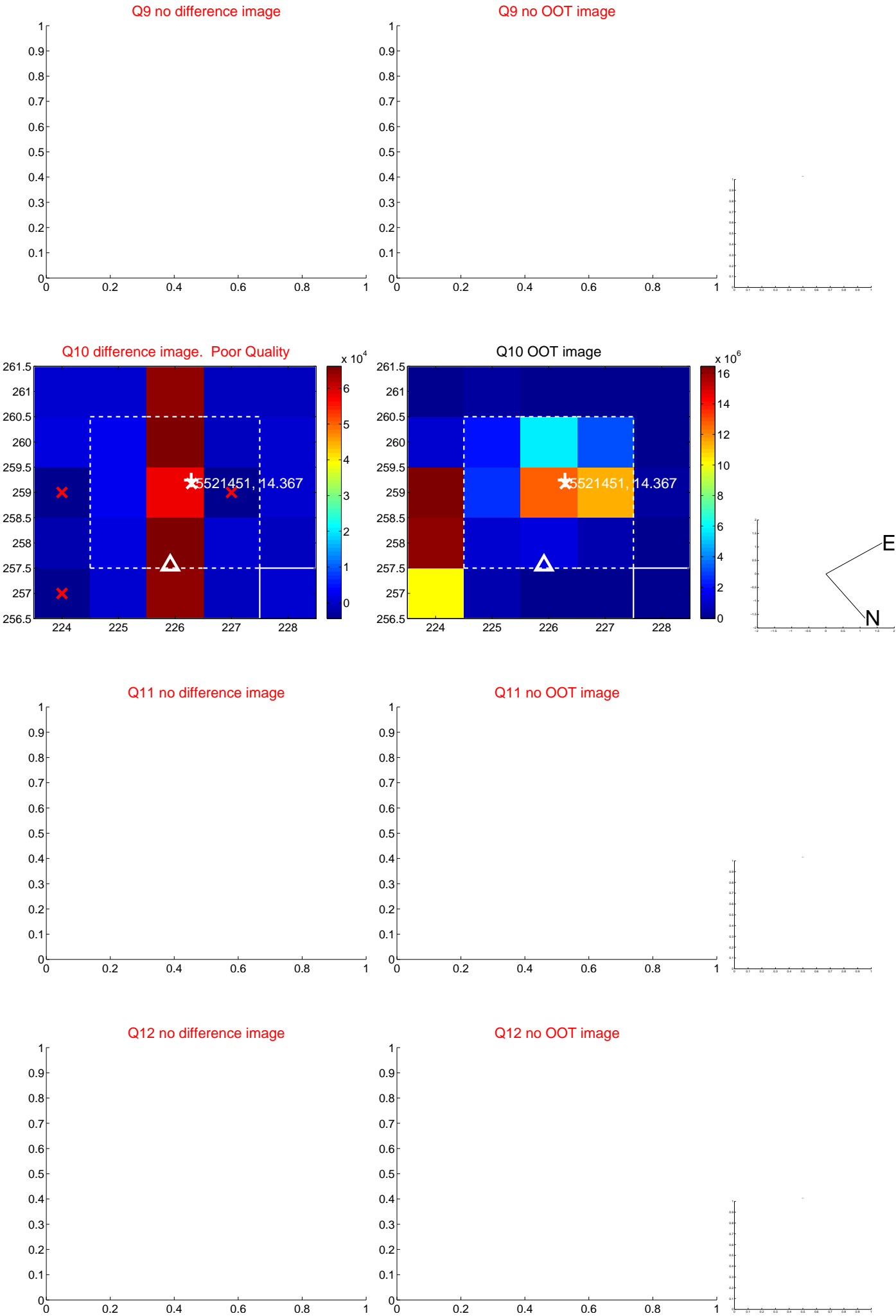
Q4 no OOT image



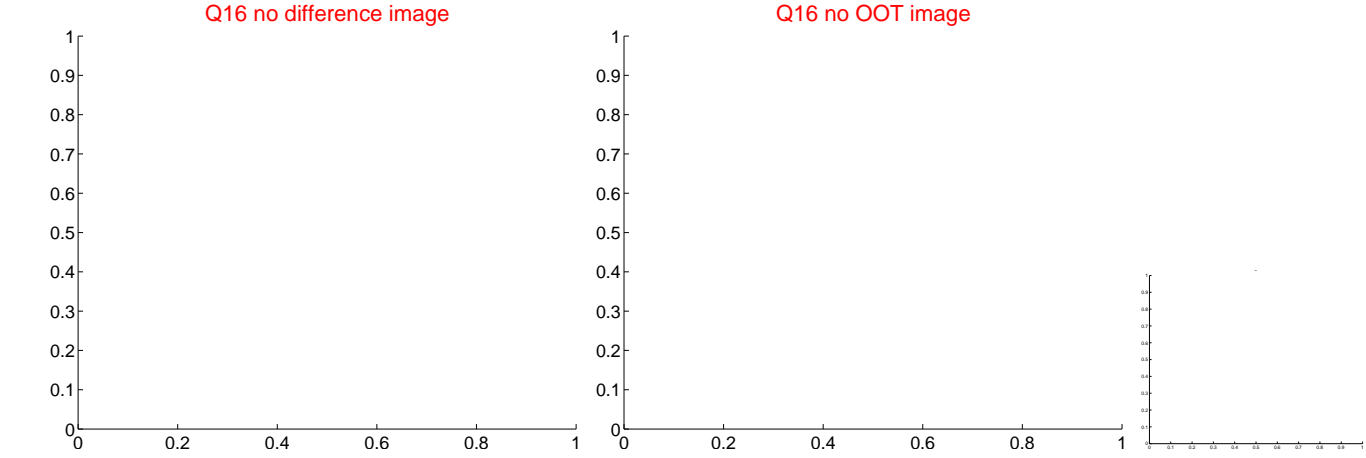
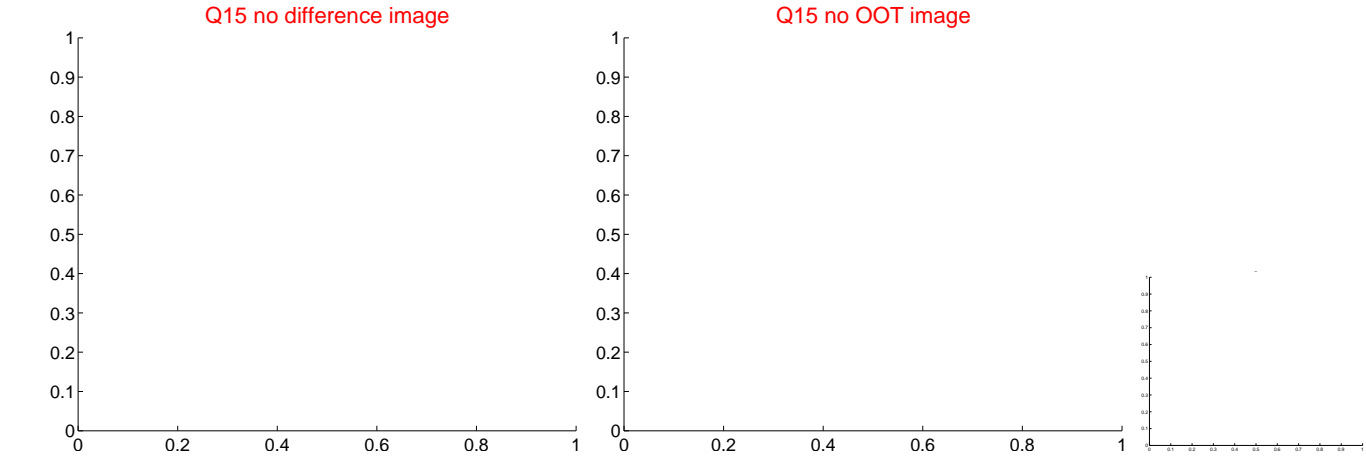
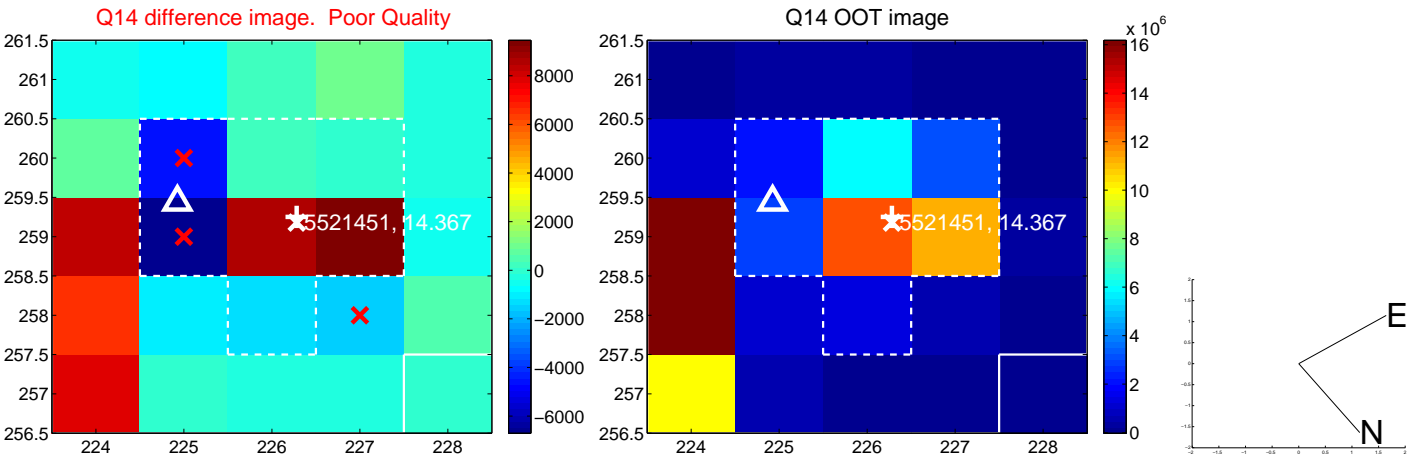
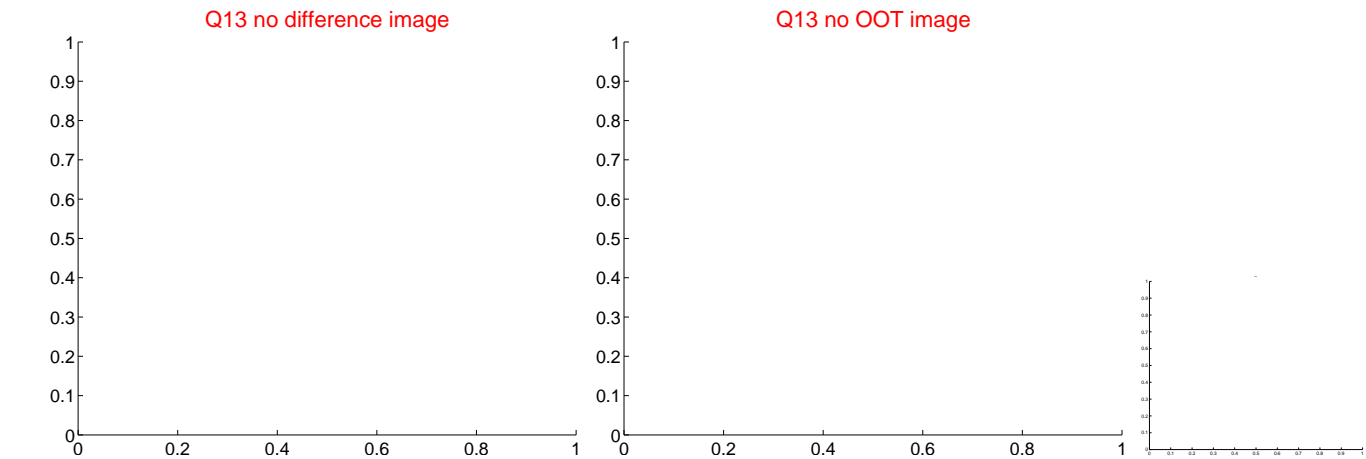
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

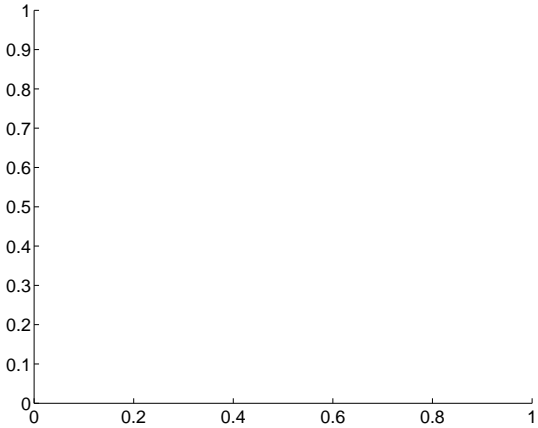


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

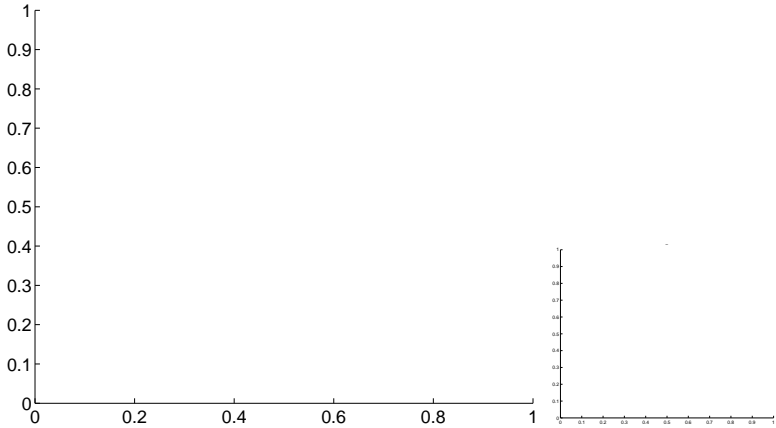


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

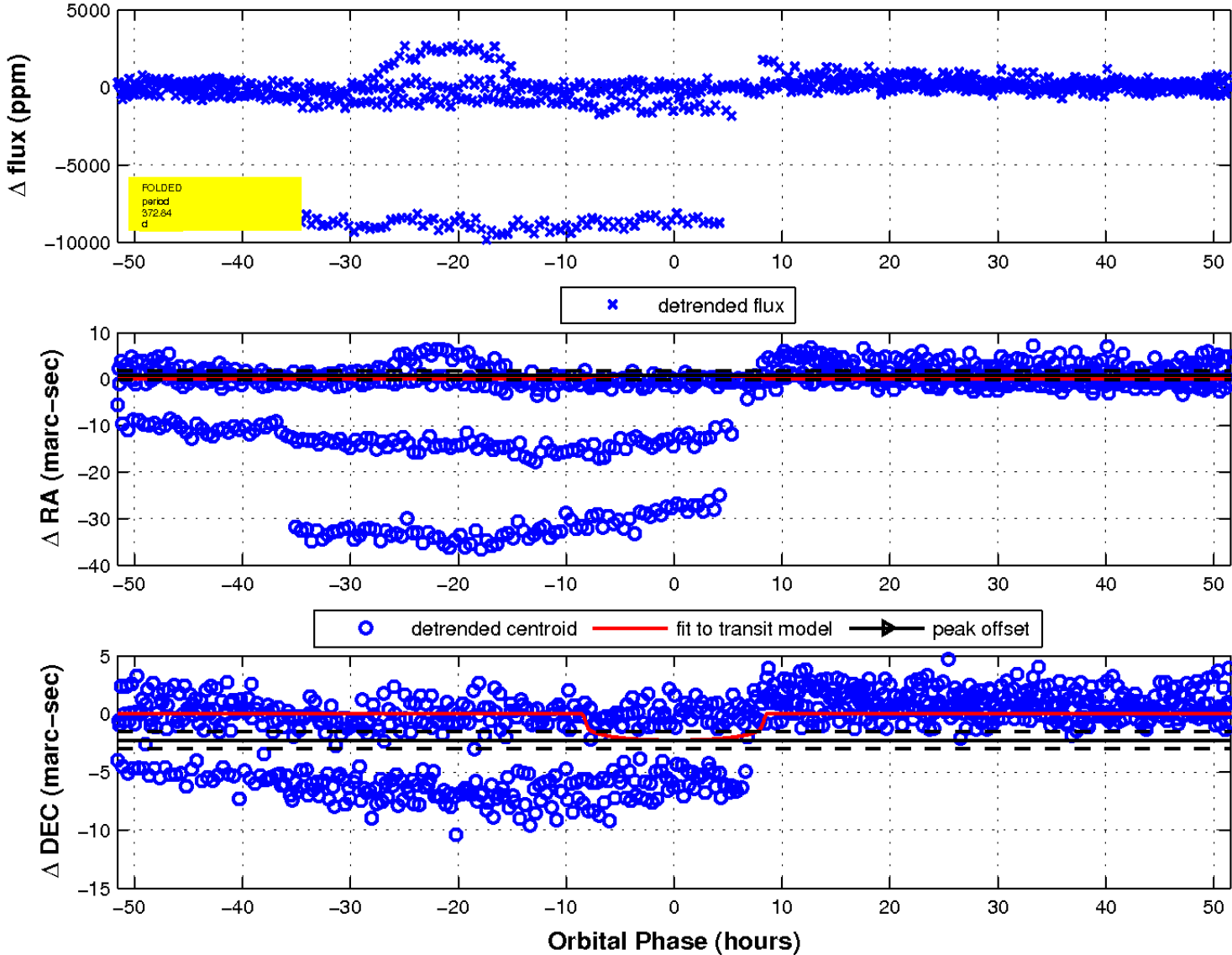
Q17 no difference image



Q17 no OOT image

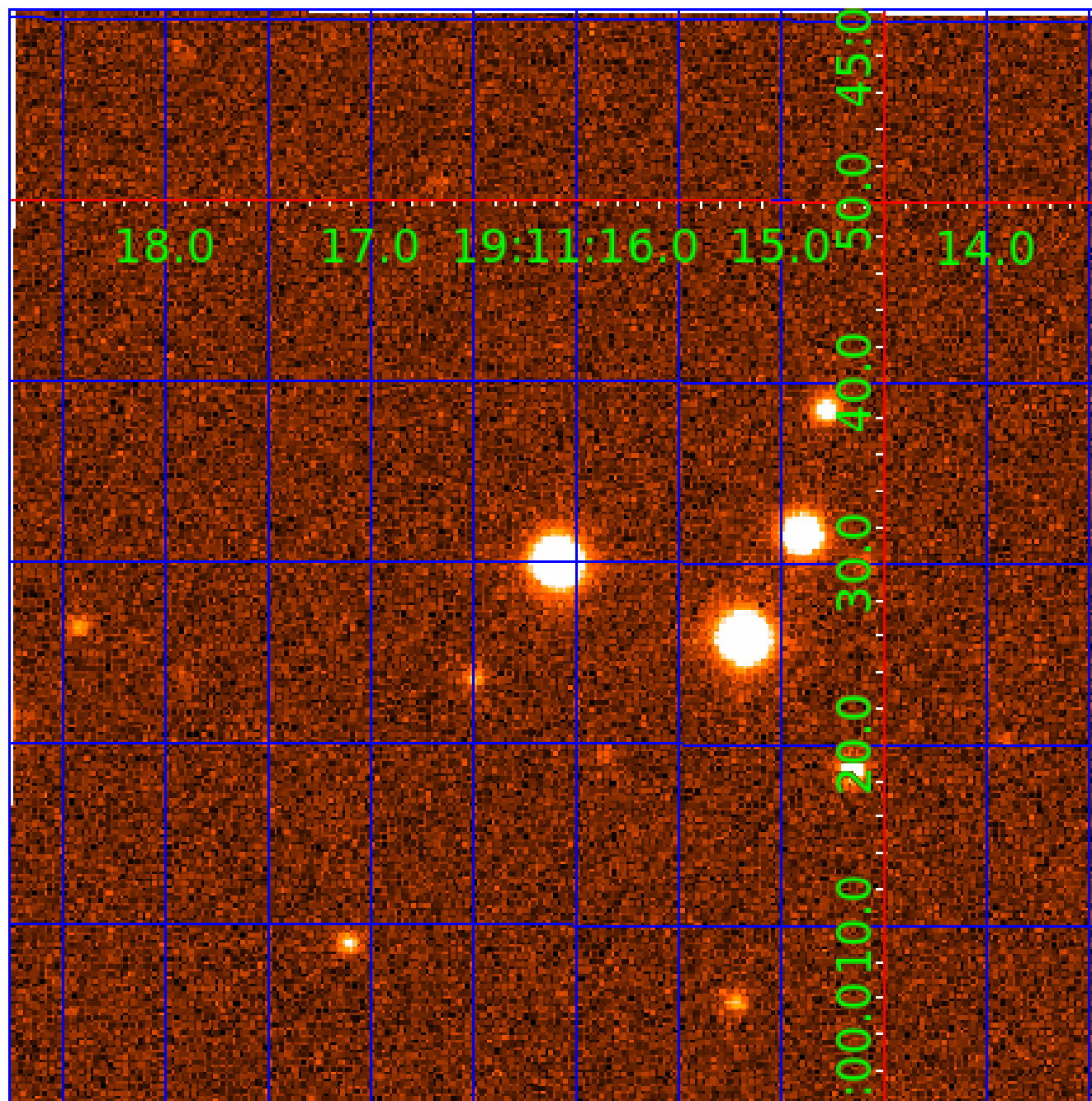


fluxWeightedCentroids, Planet 3 of 6



UKIRT Image

Declination



KIC 005521451

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})
005521451-01	OBS	No	372.412047	232.784079	3312.3	22.490	38.0	26.2	0.78	5533	7.42	0.62
005521451-02	OBS	No	360.611467	234.046598	1367.7	15.000	32.4	-1.0	0.78	5533	2.86	0.65
005521451-03	OBS	No	372.837361	210.877980	992.2	17.192	29.0	10.5	0.78	5533	2.51	0.62
005521451-04	OBS	No	370.162272	209.997913	2267.3	15.633	29.7	20.1	0.78	5533	4.56	0.63
005521451-06	OBS	No	384.932939	191.959128	683.2	4.731	24.1	6.8	0.78	5533	2.27	0.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005521451-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS
005521451-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

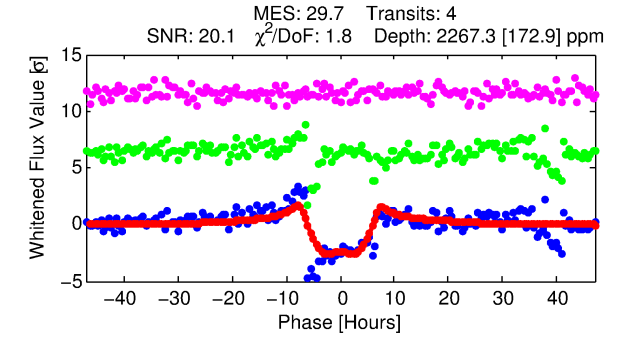
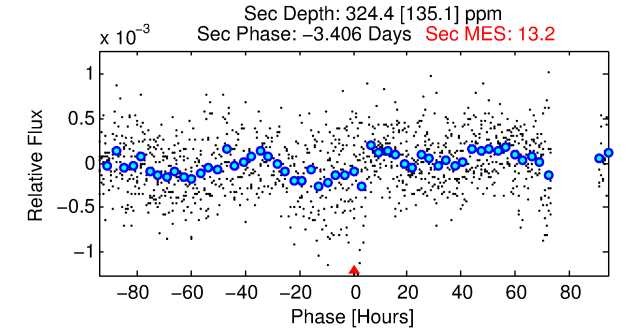
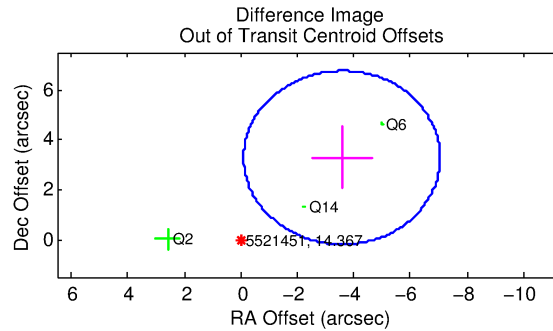
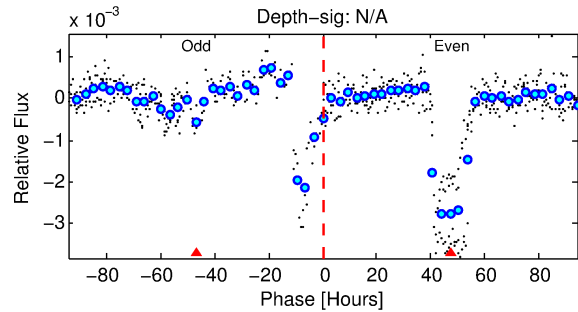
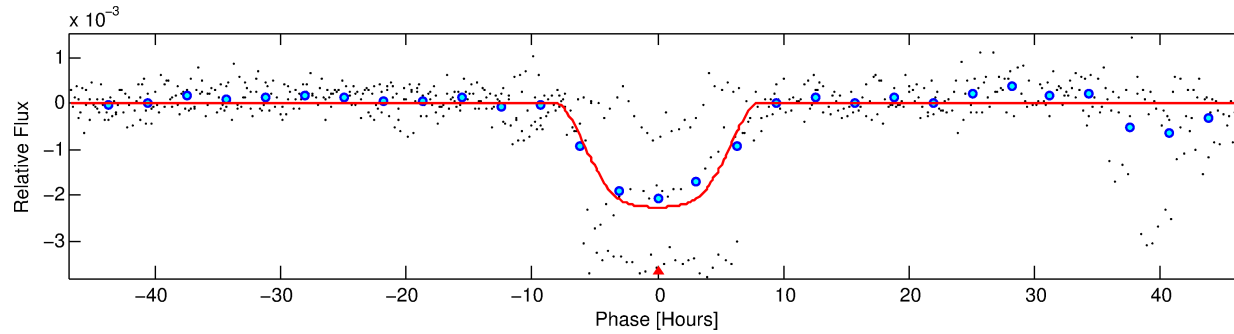
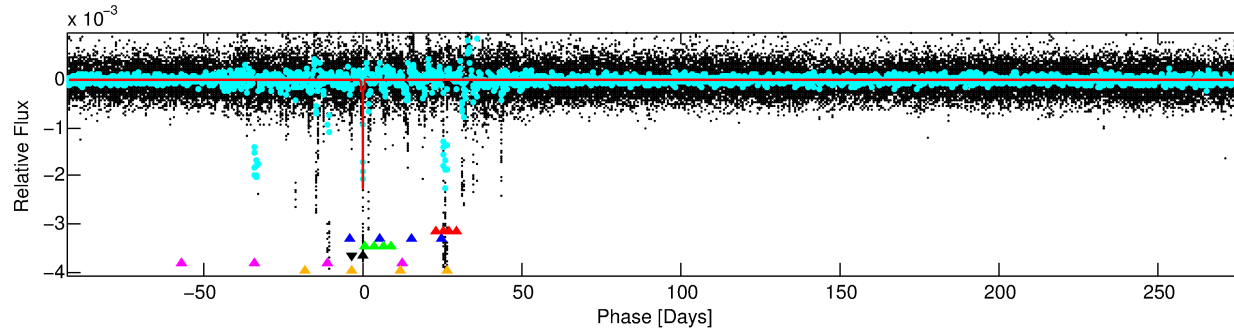
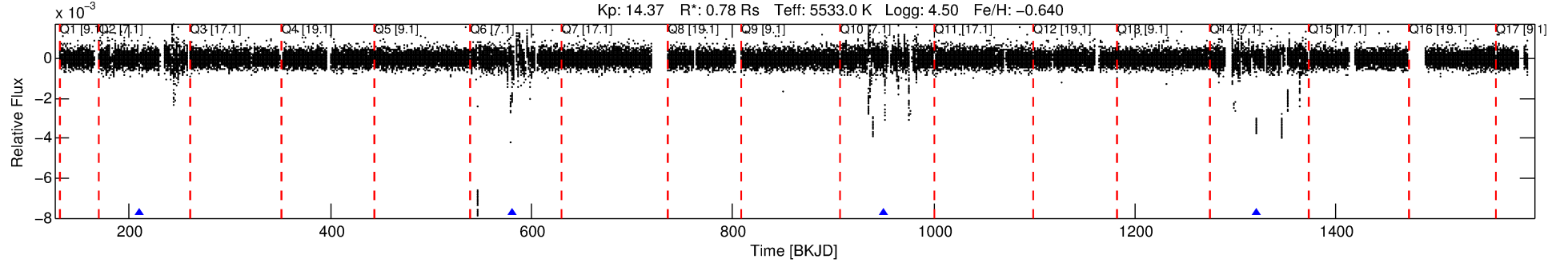
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005521451-04

No Significant Match Found

DV One-Page Summary

KIC: 5521451 Candidate: 4 of 6 Period: 370.162 d



DV Fit Results:

Period = 370.16227 [0.00736] d
Epoch = 209.9979 [0.0147] BKJD
Rp/R* = 0.0536 [0.0025]
a/R* = 90.33 [6.60]
b = 0.93 [0.01]
Seff = 0.63 [0.14]
Teq = 227 [13] K
Rp = 4.56 [0.74] Re
a = 0.9002 [0.1193] AU
Ag = 6949.16 [3263.00] [2.13] σ
Teffp = 3207 [355] K [8.38] σ

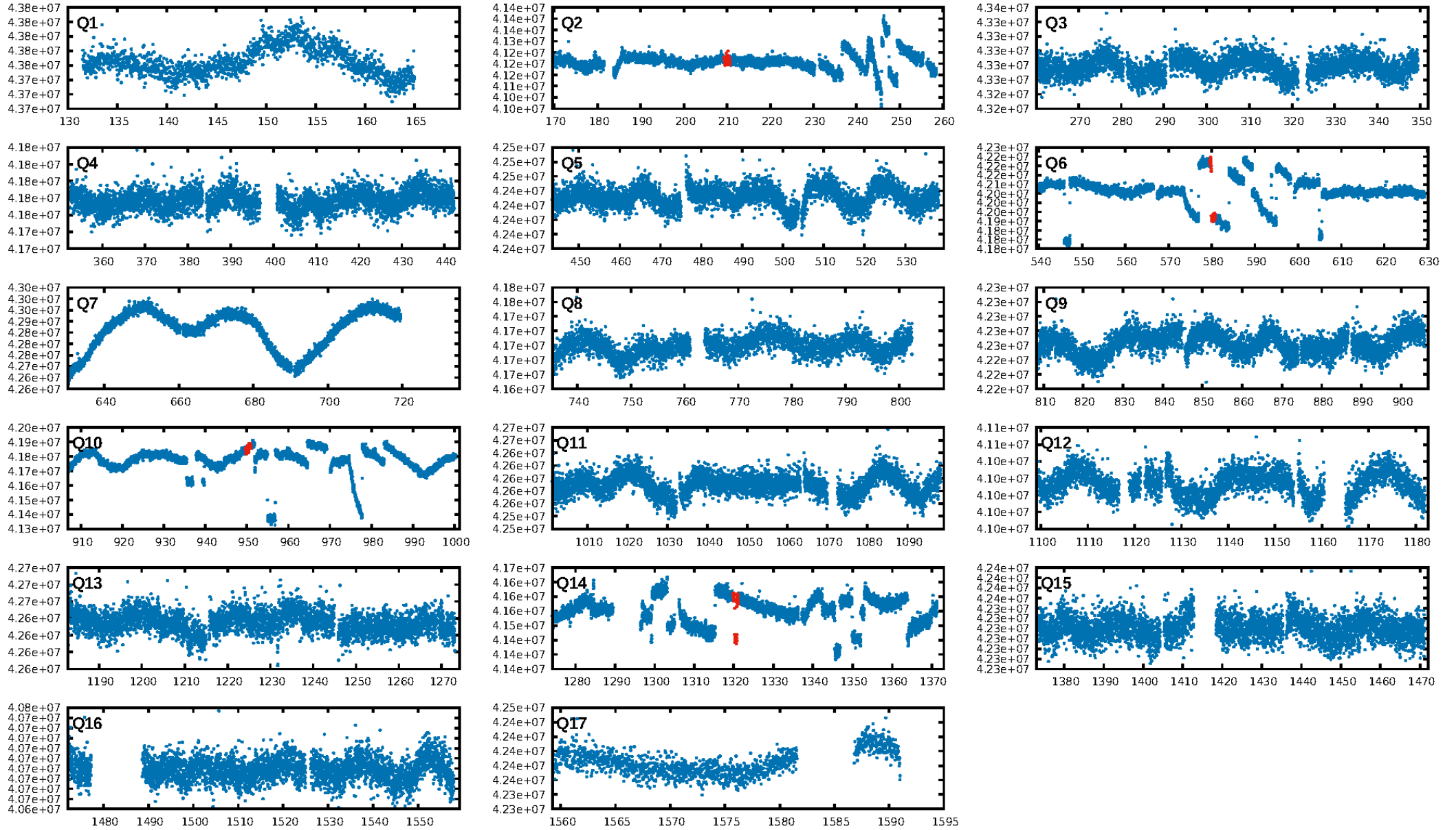
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.58] σ
LongPeriod-sig: 95.1% [1.97] σ
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 1.6%
Bootstrap-pfa: 4.85e-20
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.6077
Centroid-sig: 0.0%
Centroid-so: 0.352 arcsec [1.12] σ
OotOffset-rm: 4.852 arcsec [4.19] σ
OotOffset-st: 3/0/0/0 [3]
KicOffset-st: 3/0/0/0 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 0.75 [3/4]

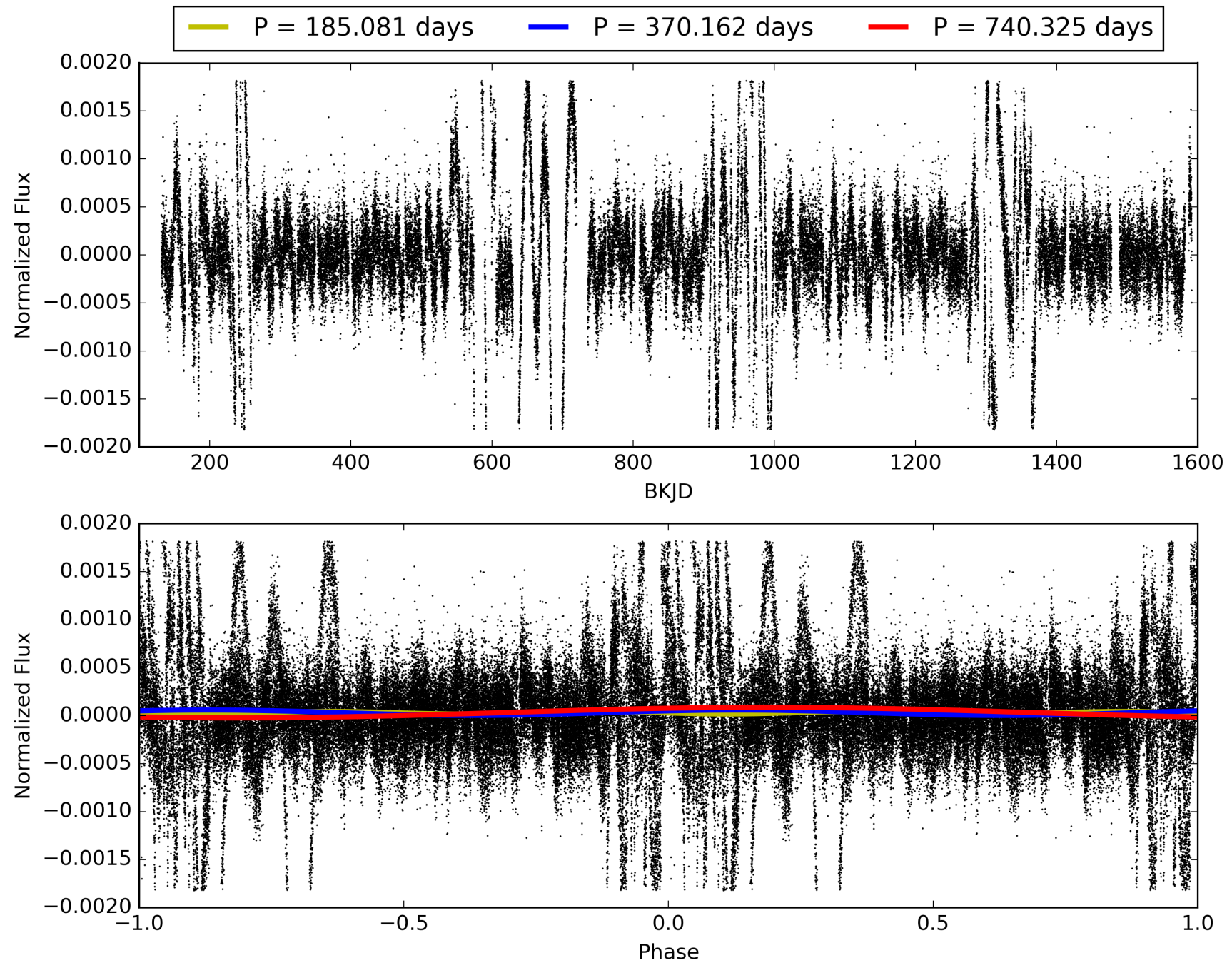
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:21:29 Z

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

TCE 005521451-04, PDC Light Curves

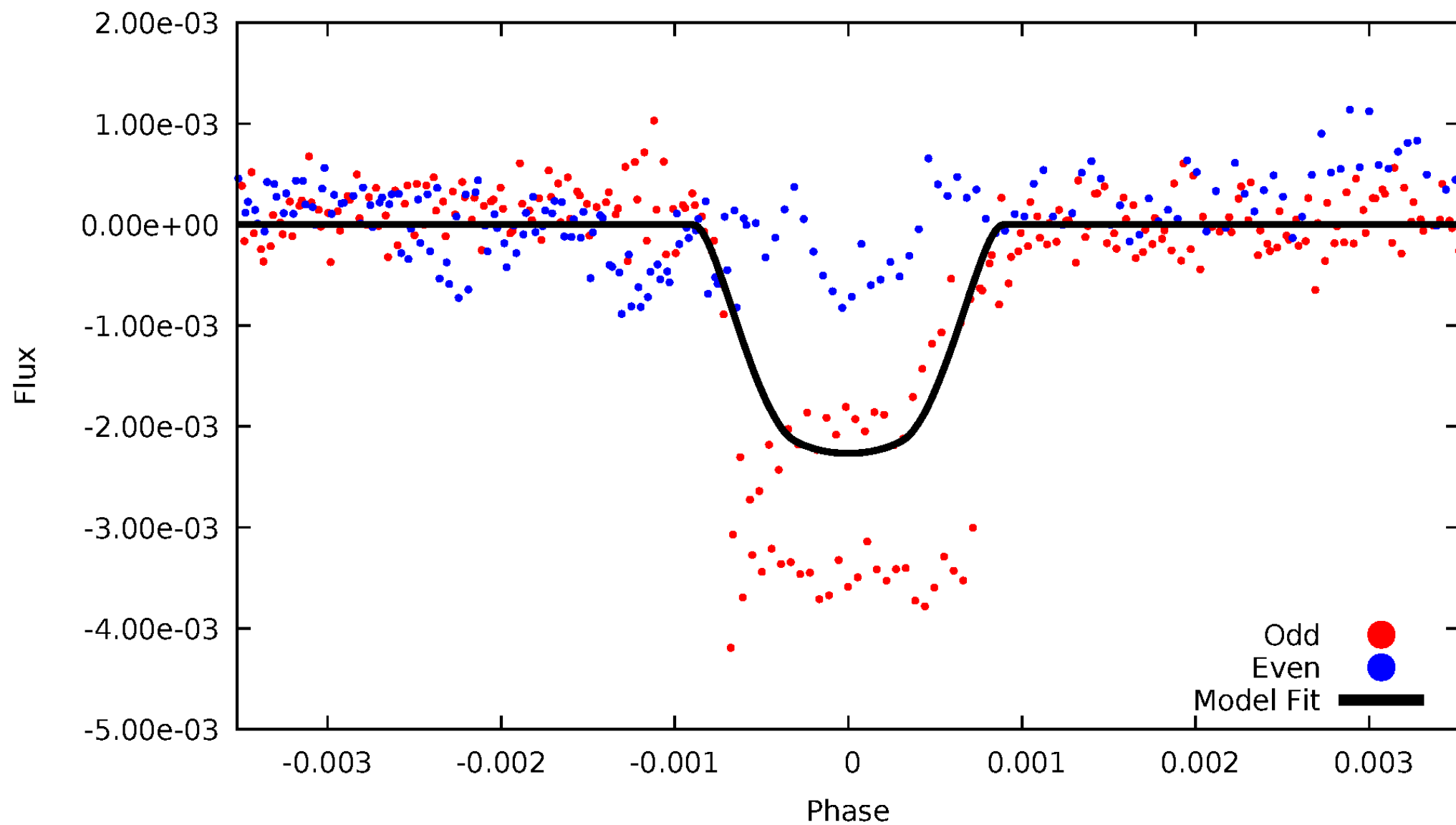


TCE 005521451-04



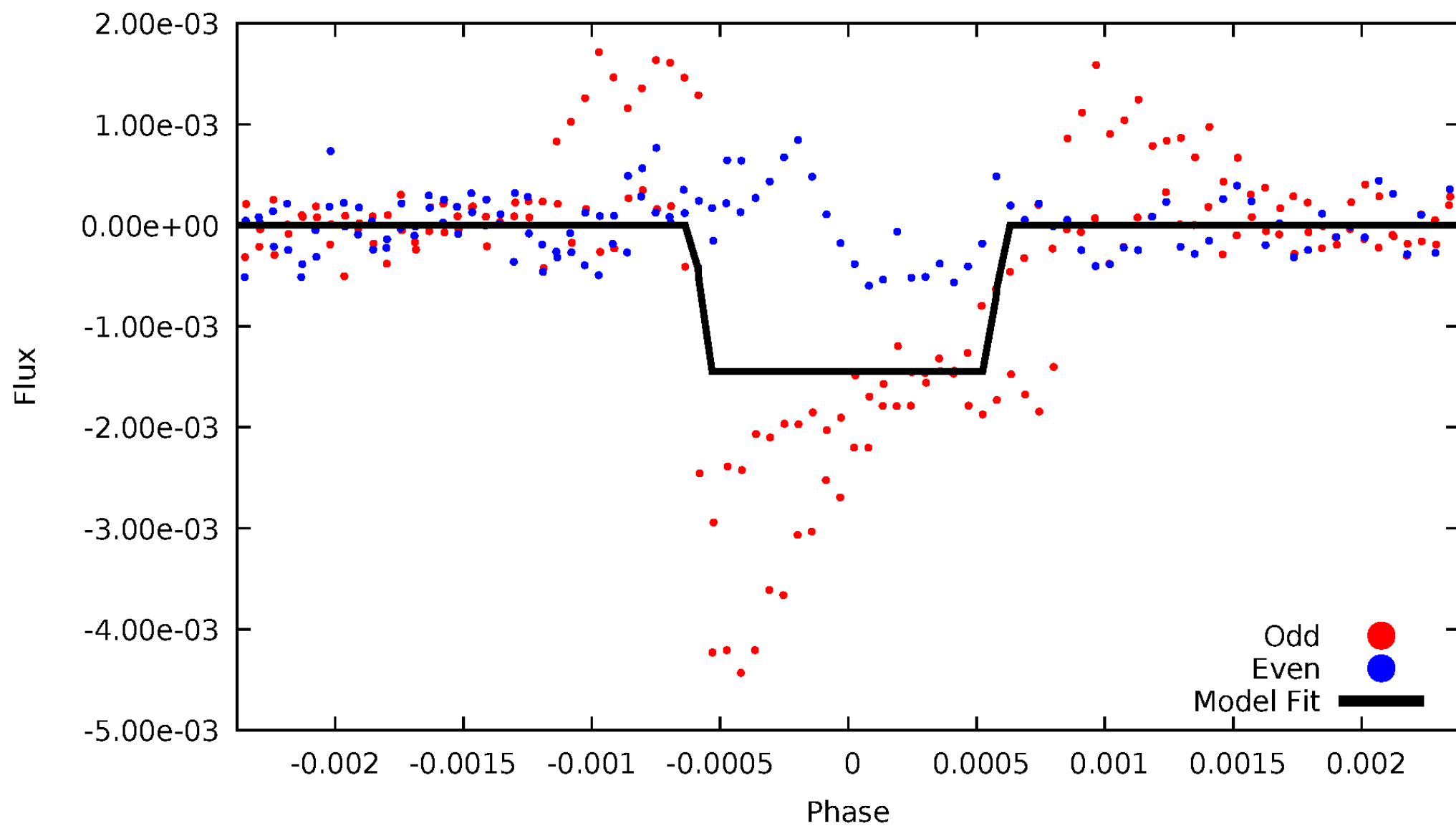
DV Odd/Even

TCE 005521451-04



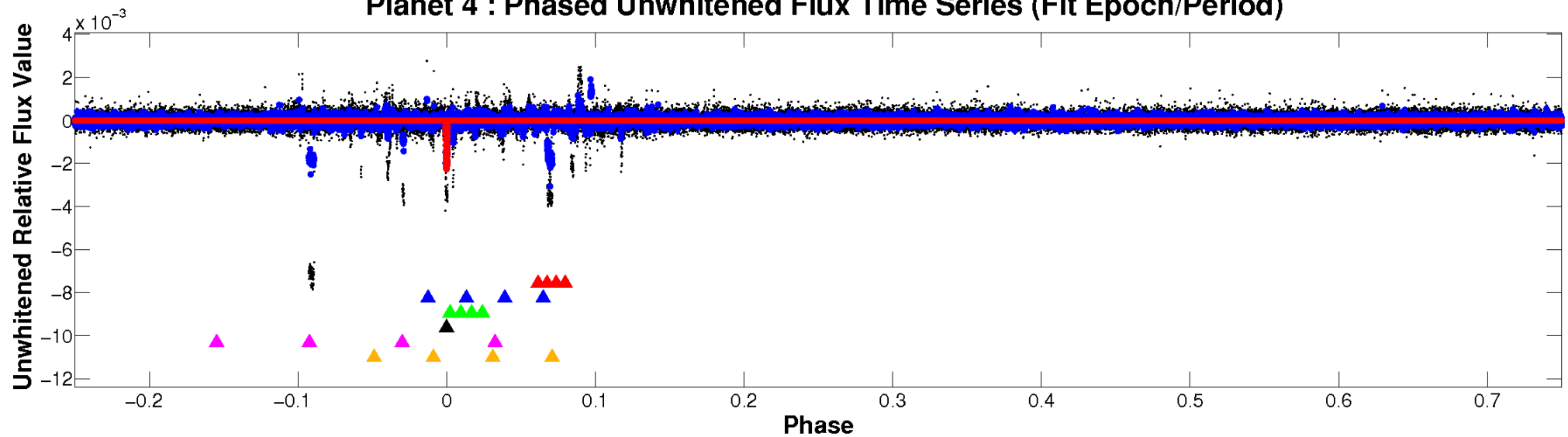
ALT Odd/Even

TCE 005521451-04

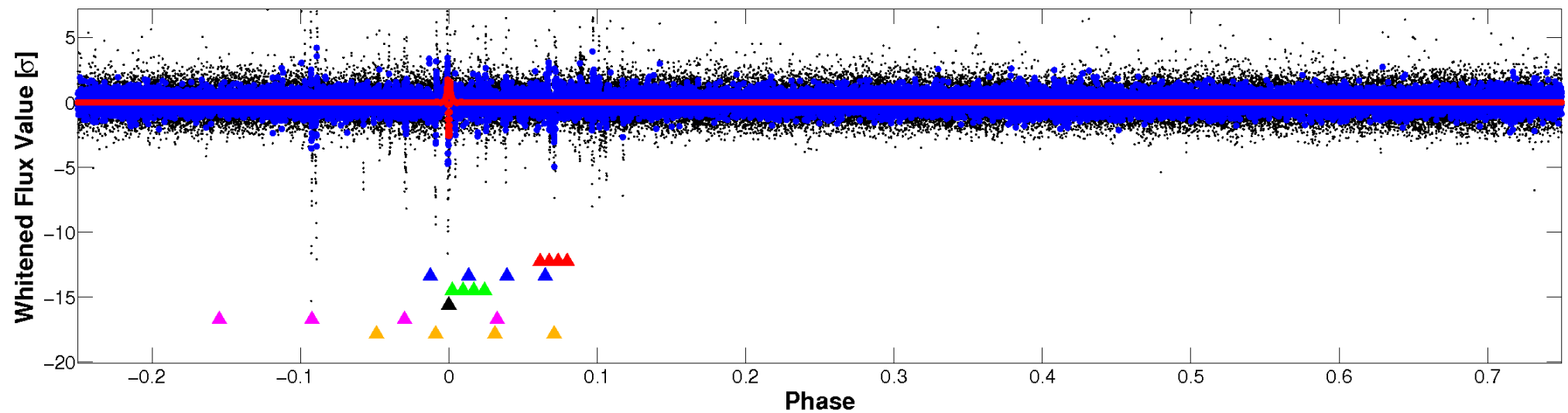


Non-Whitened Vs. Whitened Light Curve

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

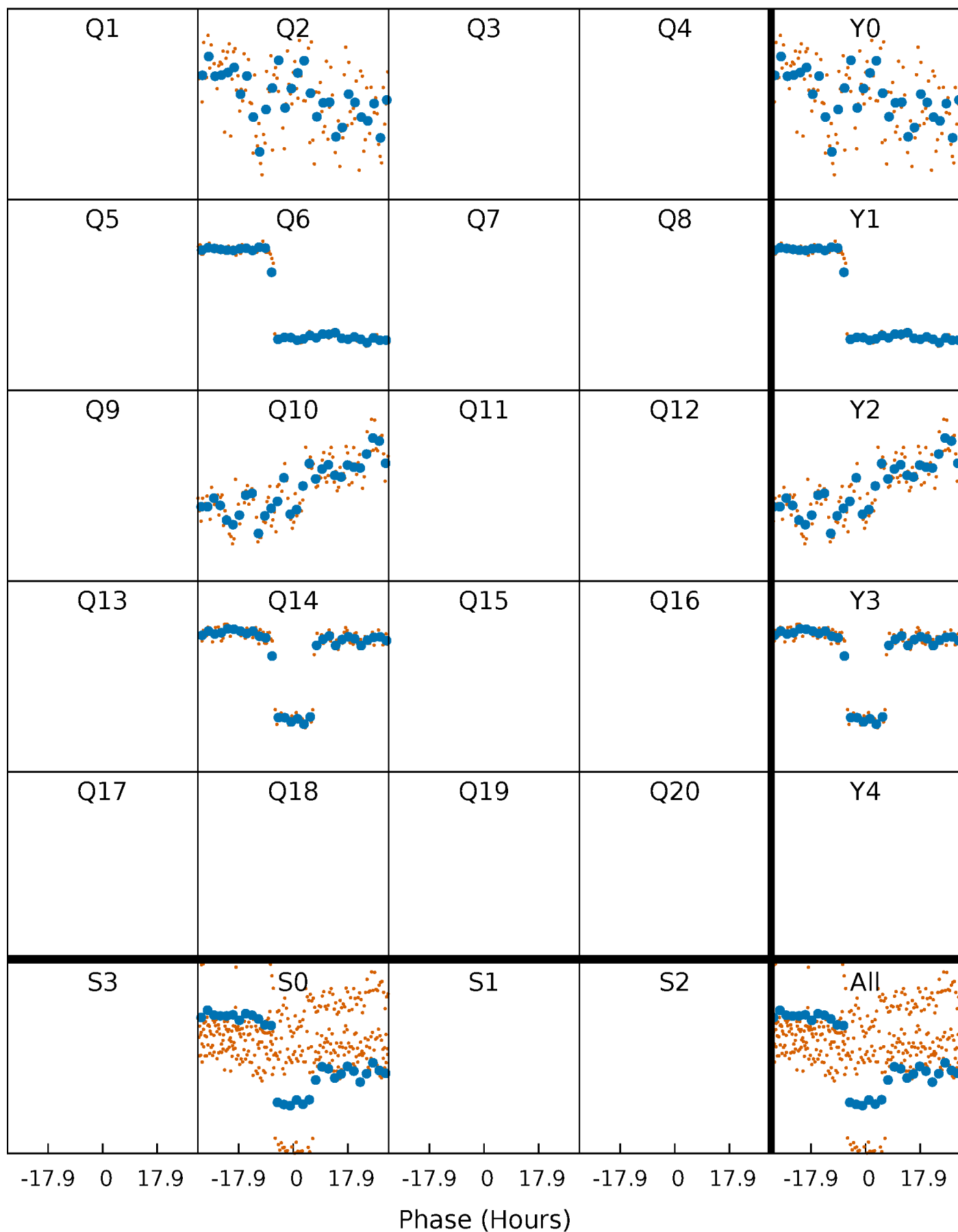


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



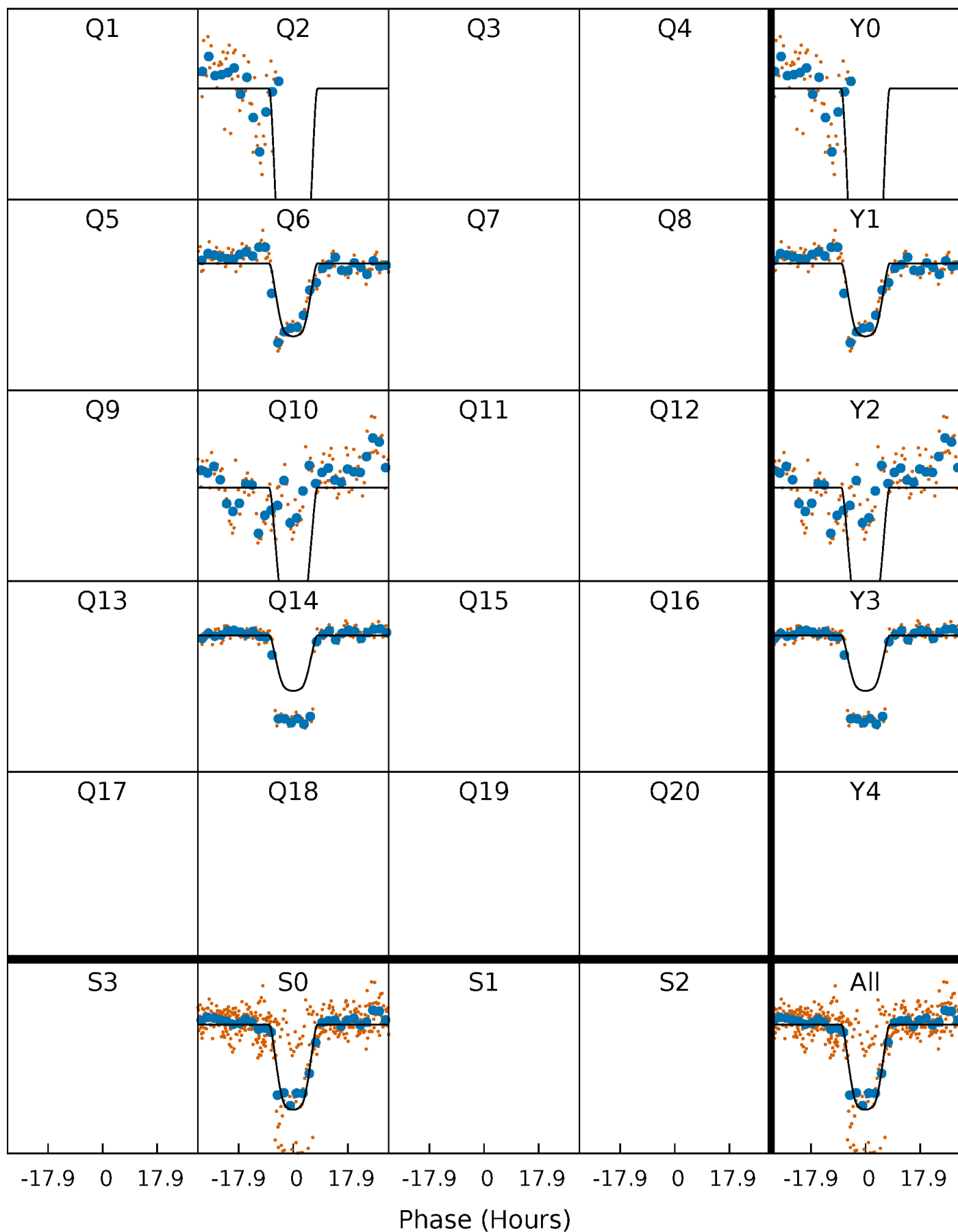
PDC Quarter-Phased Transit Curves

TCE 005521451-04 P=370.162272 Days $T_0=209.997913$ (BKJD)



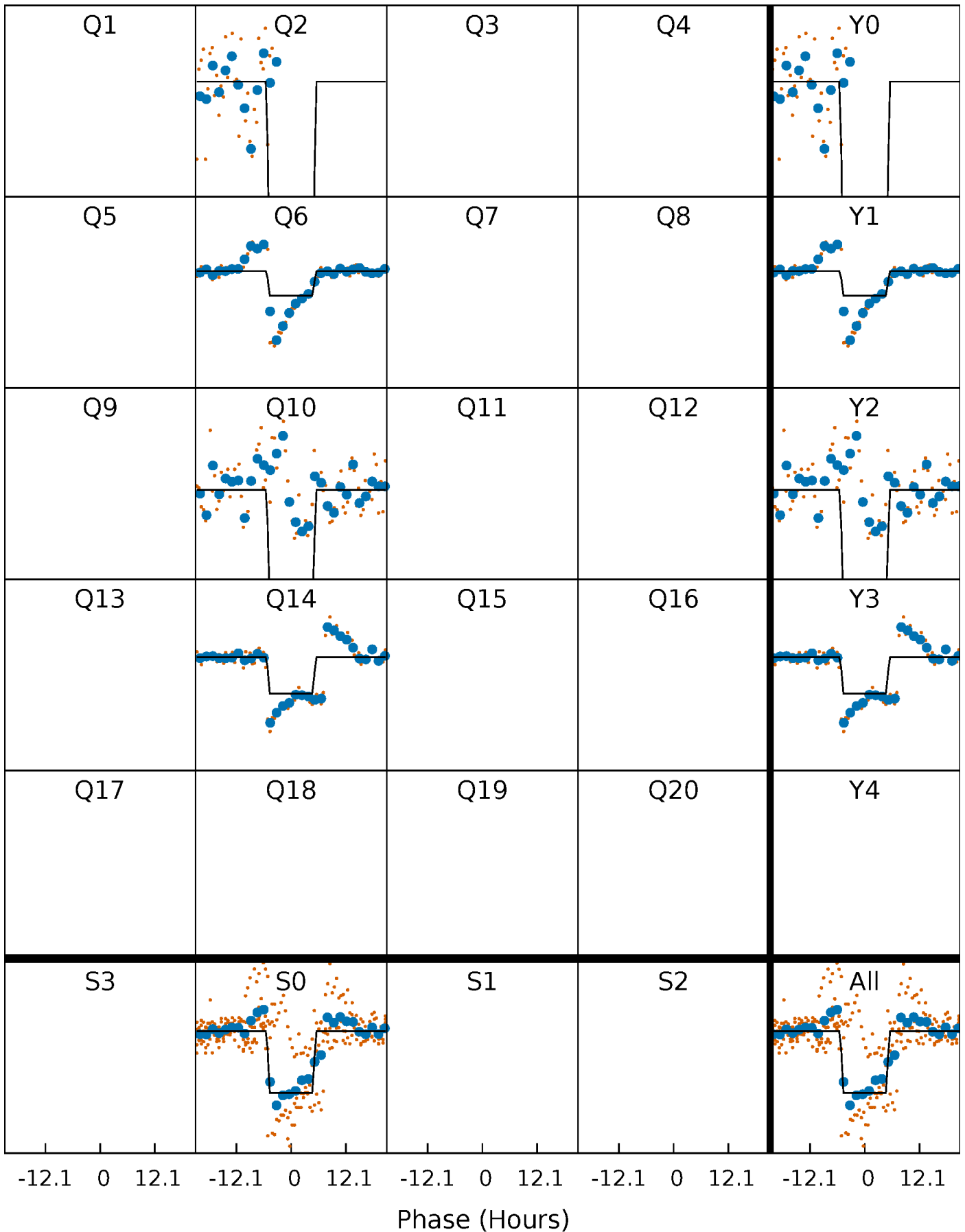
DV Quarter-Phased Transit Curves

TCE 005521451-04 P=370.162272 Days $T_0=209.997913$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

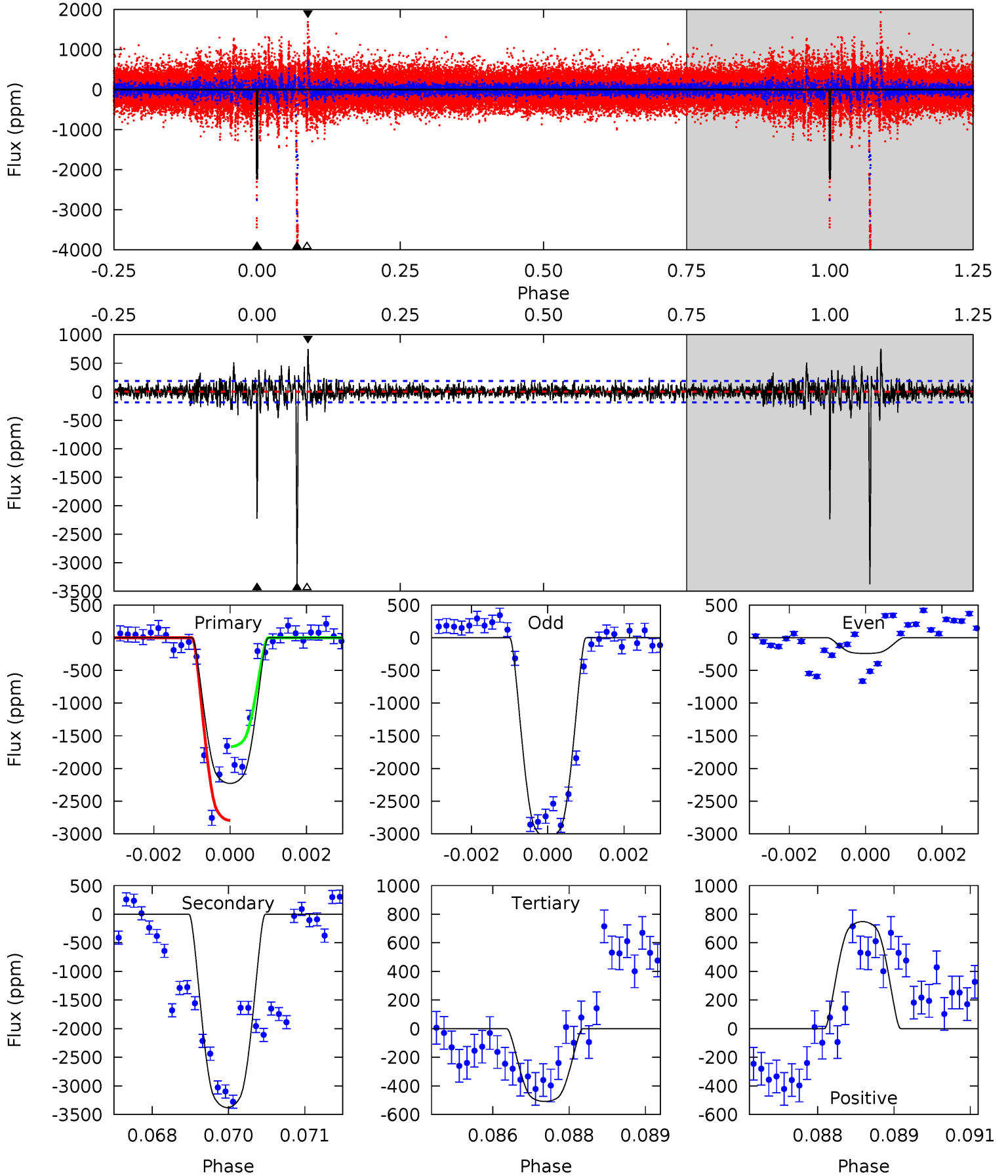
TCE 005521451-04 P=370.174373 Days $T_0=209.930898$ (BKJD)



DV Model-Shift Uniqueness Test

005521451-04, P = 370.162272 Days, E = 209.997913 Days

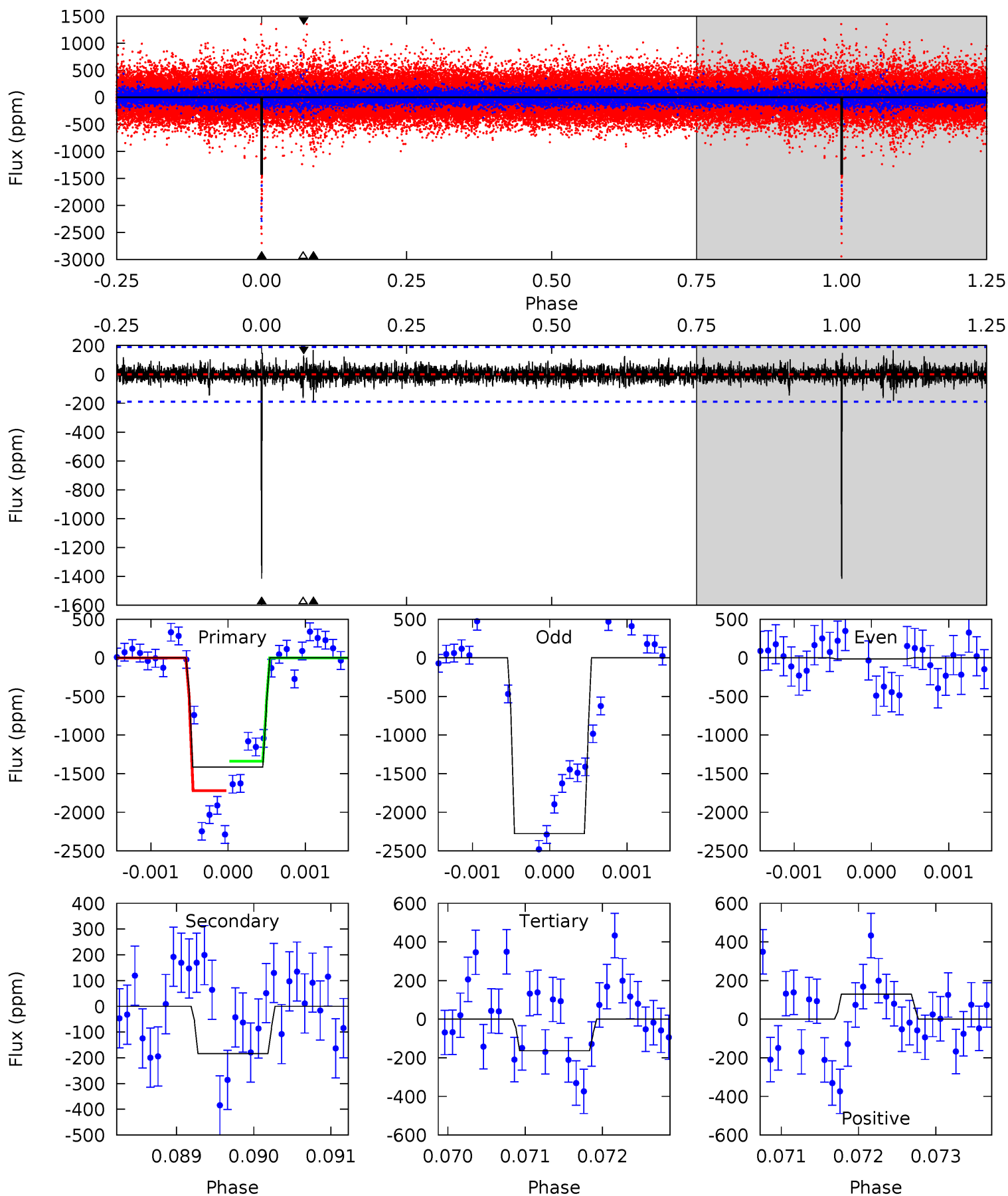
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
63.9	96.8	14.6	21.4	5.35	3.12	2.66	49.3	42.4	82.2	75.3	43.0	1.28	0.18	16.0



Alt Model-Shift Uniqueness Test

005521451-04, P = 370.174373 Days, E = 209.930898 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.6	5.28	4.68	3.73	5.42	3.25	0.89	35.9	36.9	0.59	1.55	37.6	1.13	0.11	5.18



Stellar Parameters For KIC 005521451

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5533^{+165}_{-148}	$4.505^{+0.108}_{-0.108}$	$-0.640^{+0.350}_{-0.300}$	$0.780^{+0.121}_{-0.099}$	$0.710^{+0.102}_{-0.036}$	$2.105^{+0.997}_{-0.674}$
	+3%/-3%	+2%/-2%	+55%/-47%	+16%/-13%	+14%/-5%	+47%/-32%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005521451-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-3376 ± 35	$4.63^{+0.45}_{-0.43}$	319^{+15}_{-15}	5758^{+219}_{-211}	72421^{+14811}_{-12185}
Alt.	-184 ± 35	$3.30^{+0.35}_{-0.33}$	319^{+14}_{-15}	3699^{+157}_{-170}	7600^{+2430}_{-1953}

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

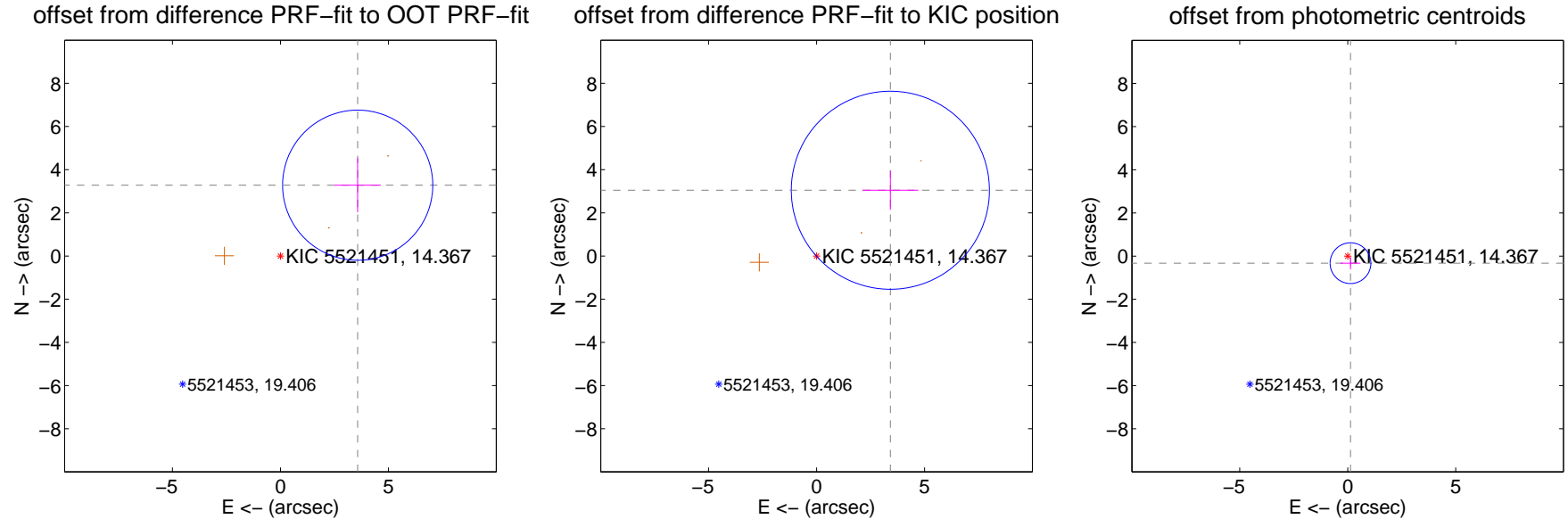
DV Centroid Data

Supplemental centroid analysis for 005521451-04. Kepler magnitude: 14.37. Transit SNR 20.12

There are 0 quarters with good PRF difference image offsets

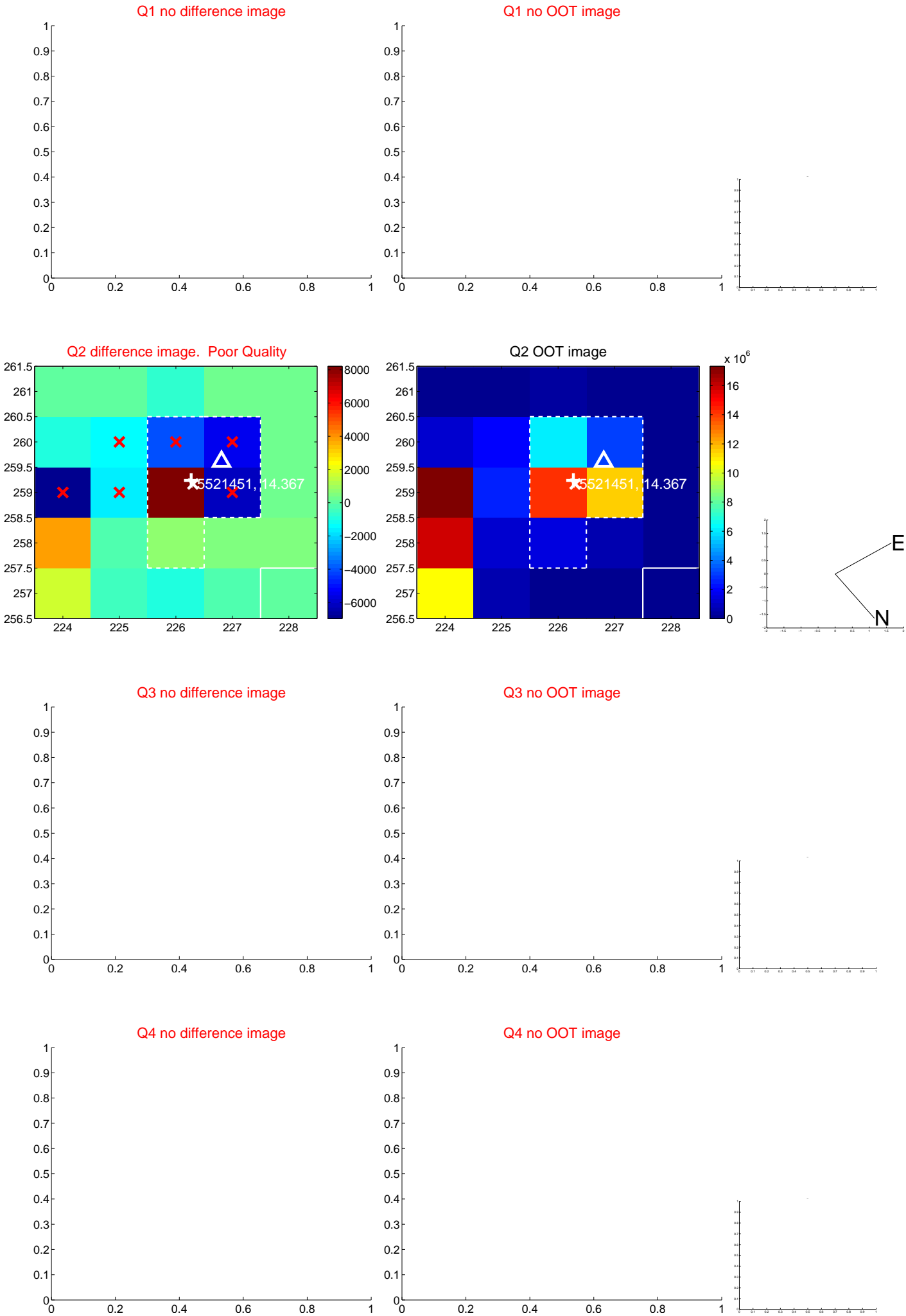
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.852 ± 1.159	4.19	-3.575 ± 1.075	3.280 ± 1.251
PRF-fit source offset from KIC position	4.577 ± 1.528	2.99	-3.416 ± 1.298	3.046 ± 0.907
photometric centroid source offset	0.35 ± 0.31	1.12	-0.13 ± 0.46	-0.33 ± 0.29

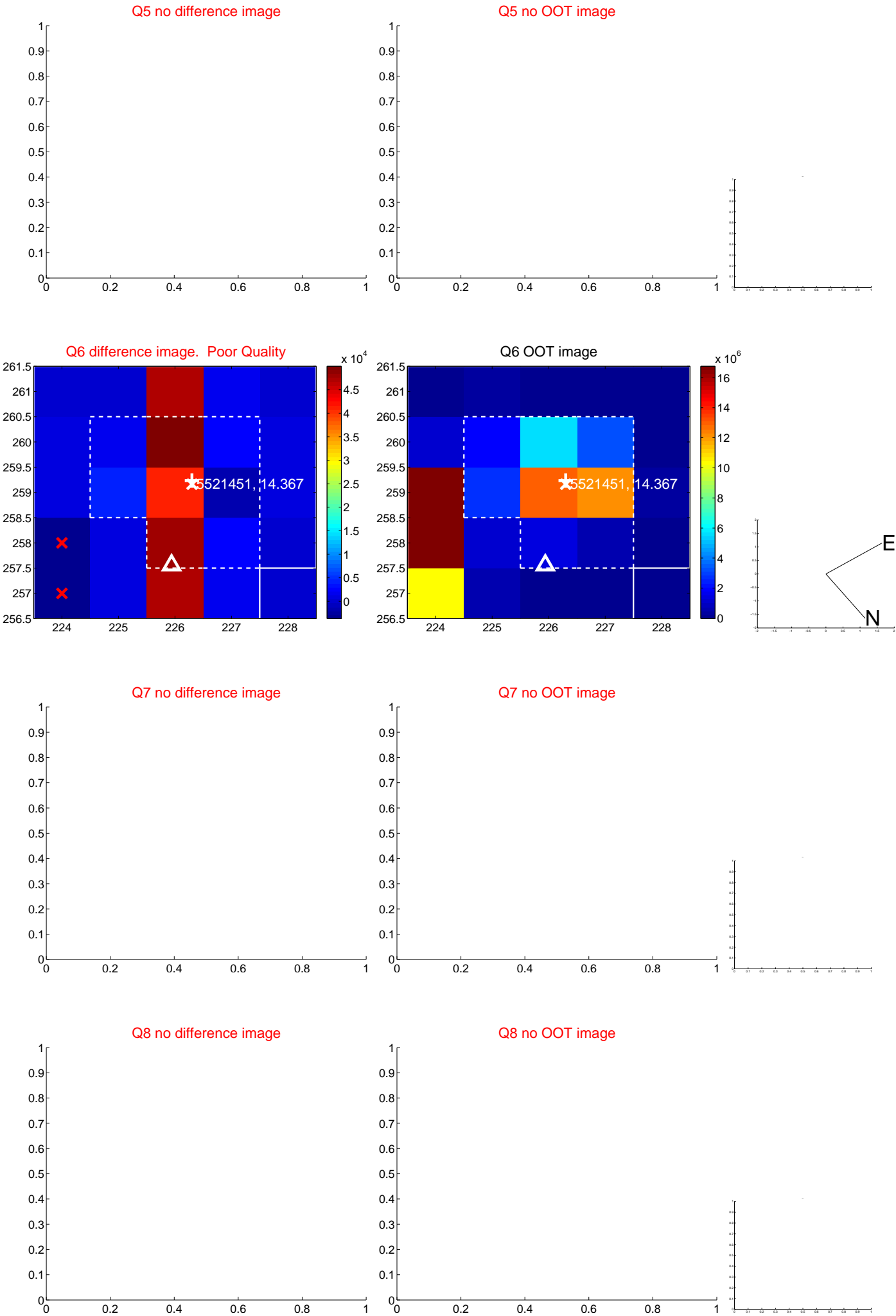


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

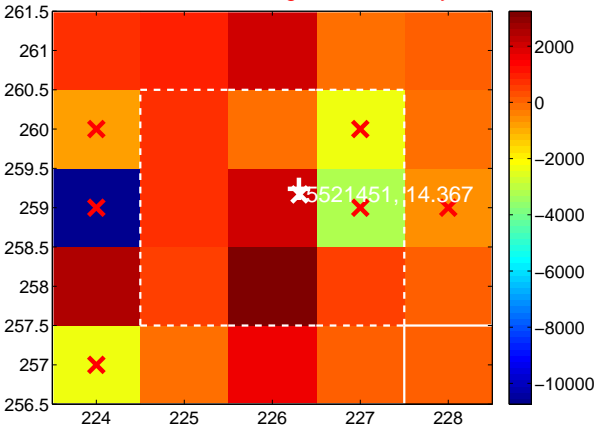
Q9 no difference image



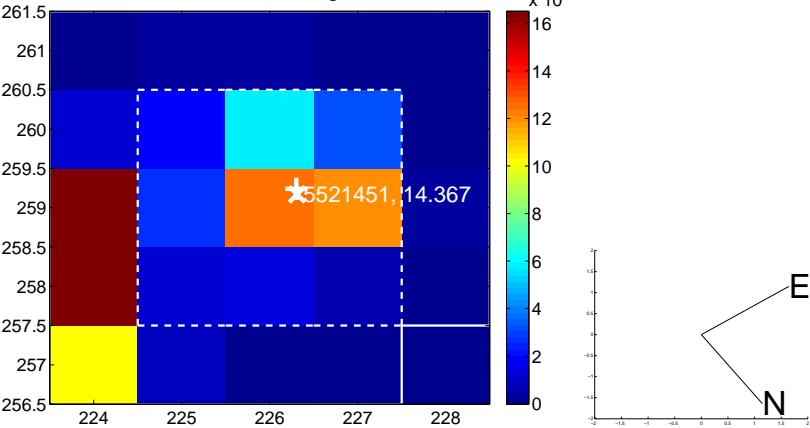
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



Q11 no difference image



Q11 no OOT image



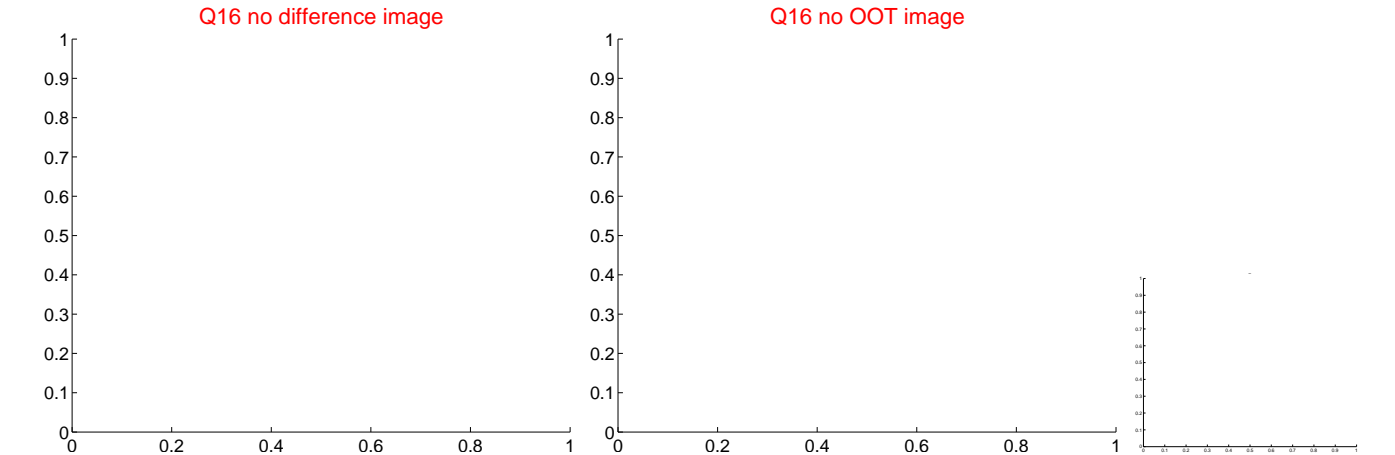
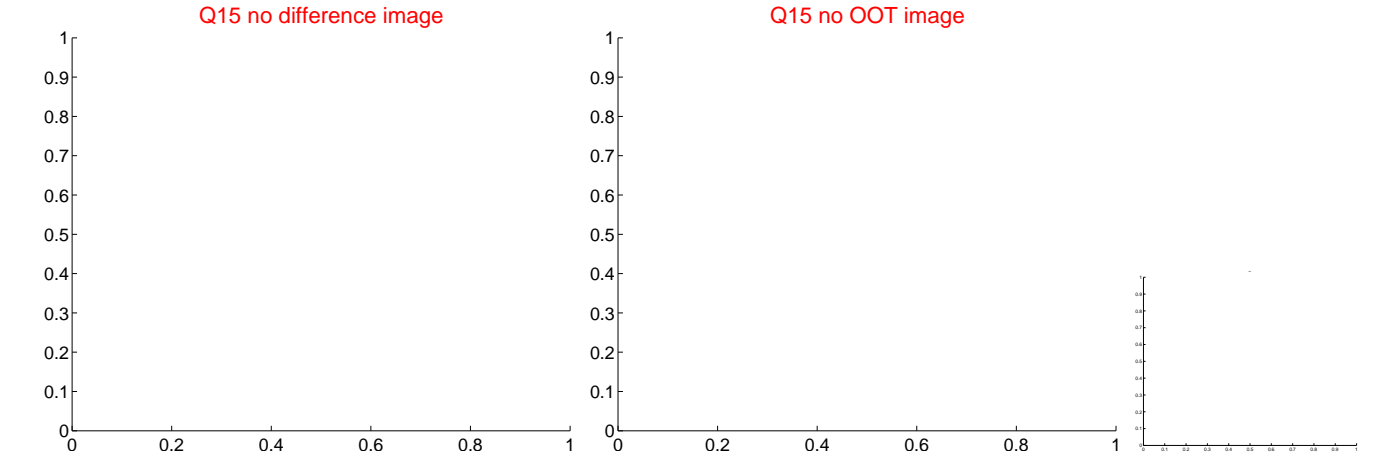
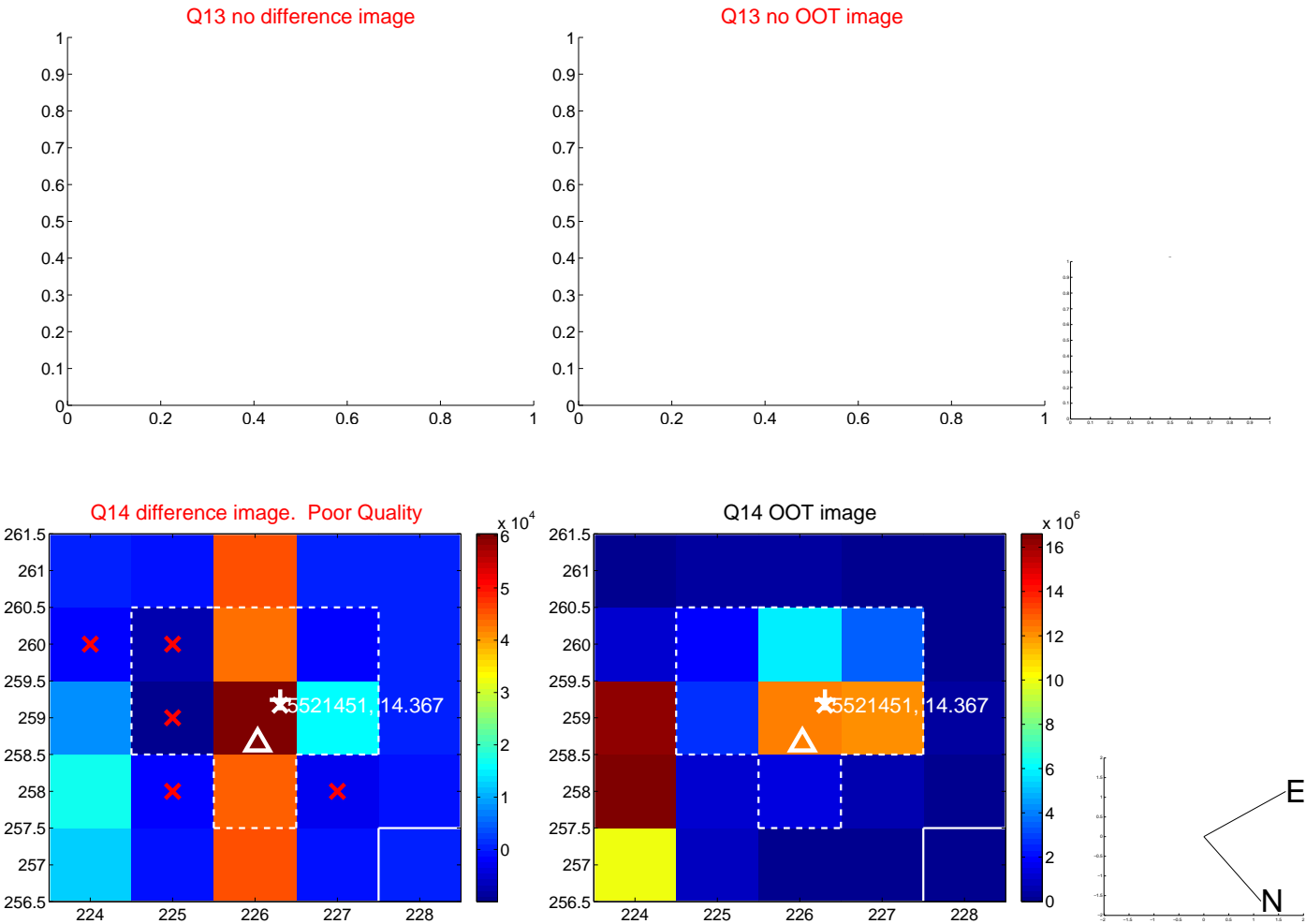
Q12 no difference image



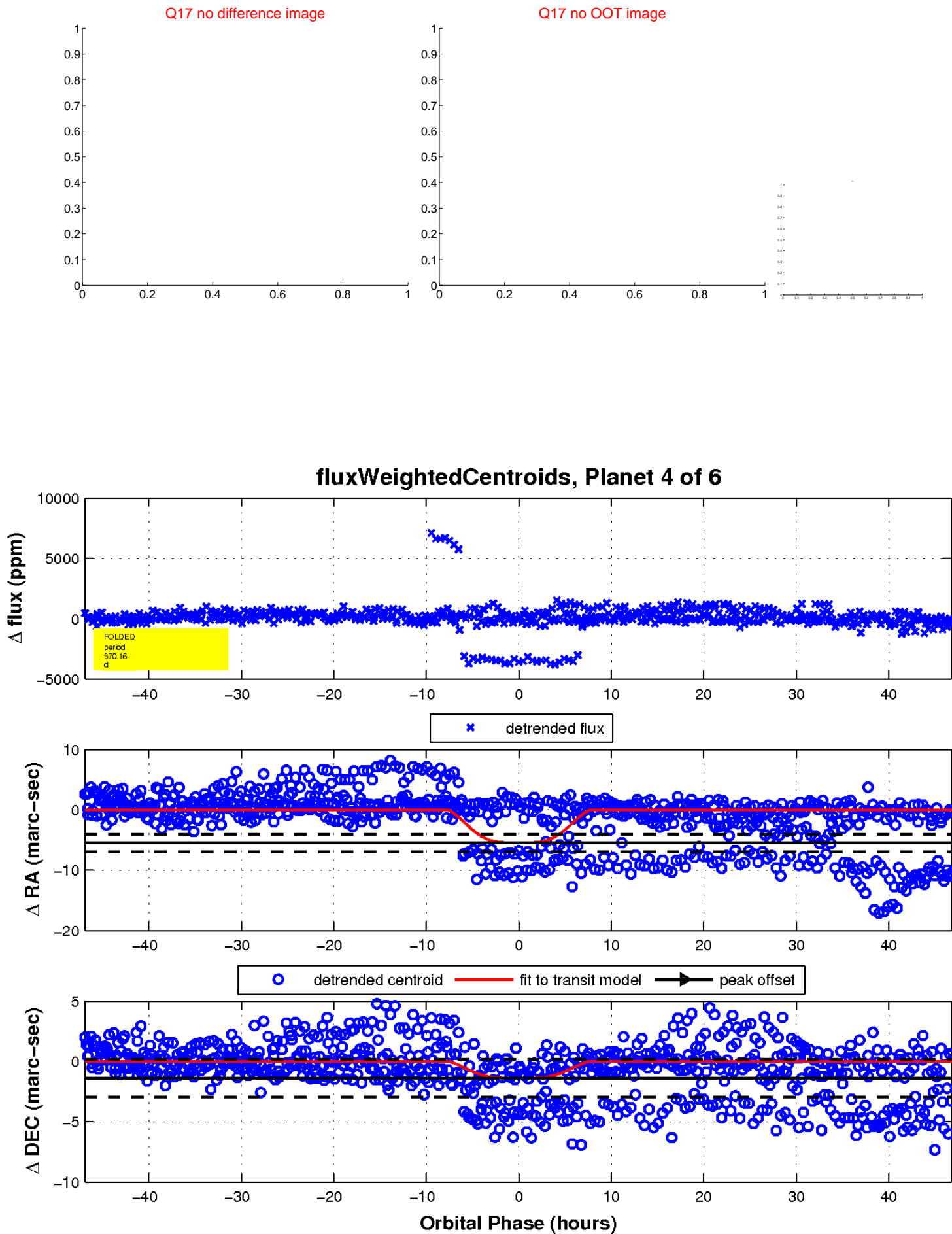
Q12 no OOT image



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

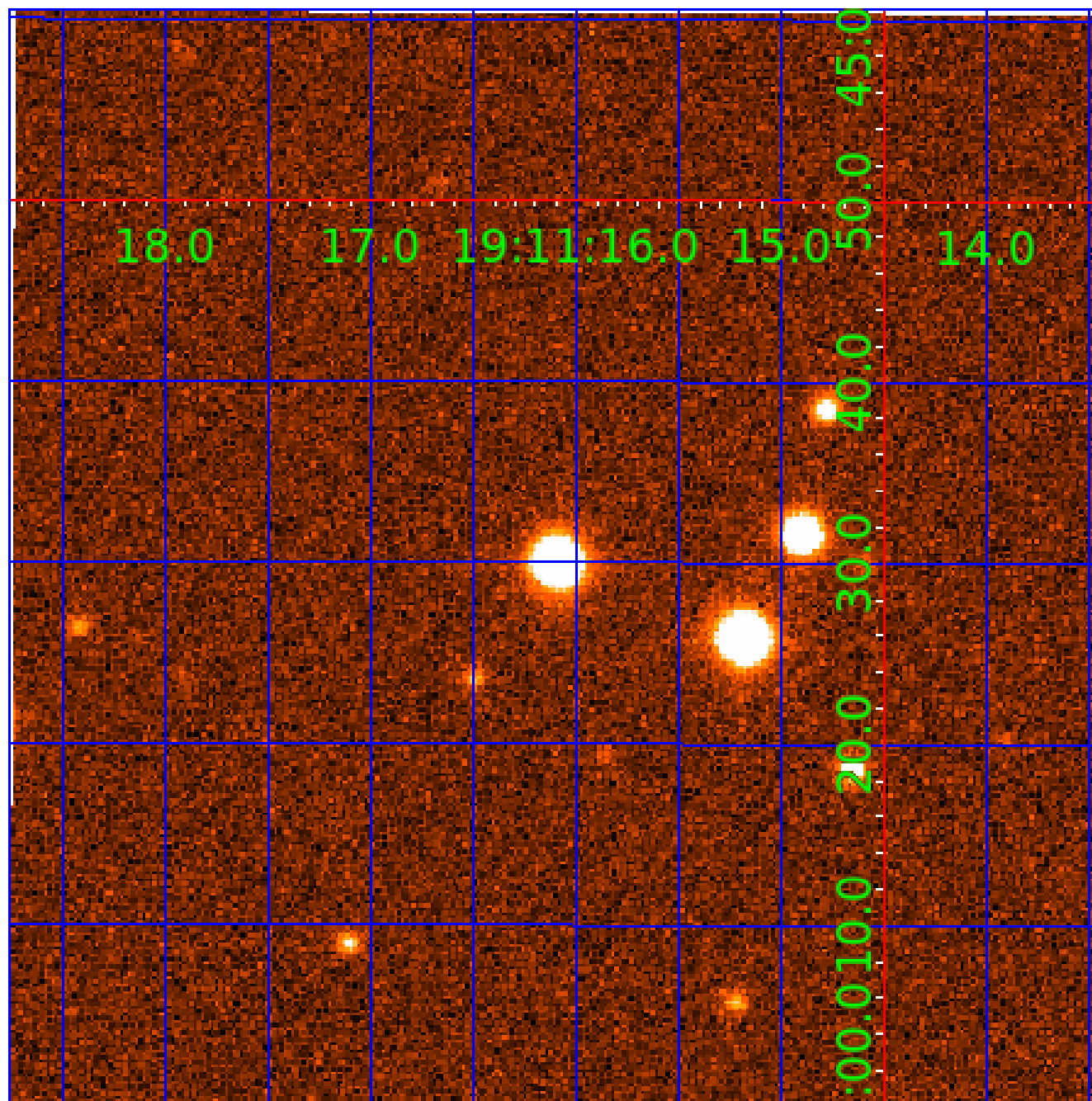


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005521451

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})
005521451-01	OBS	No	372.412047	232.784079	3312.3	22.490	38.0	26.2	0.78	5533	7.42	0.62
005521451-02	OBS	No	360.611467	234.046598	1367.7	15.000	32.4	-1.0	0.78	5533	2.86	0.65
005521451-03	OBS	No	372.837361	210.877980	992.2	17.192	29.0	10.5	0.78	5533	2.51	0.62
005521451-04	OBS	No	370.162272	209.997913	2267.3	15.633	29.7	20.1	0.78	5533	4.56	0.63
005521451-06	OBS	No	384.932939	191.959128	683.2	4.731	24.1	6.8	0.78	5533	2.27	0.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005521451-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS
005521451-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005521451-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

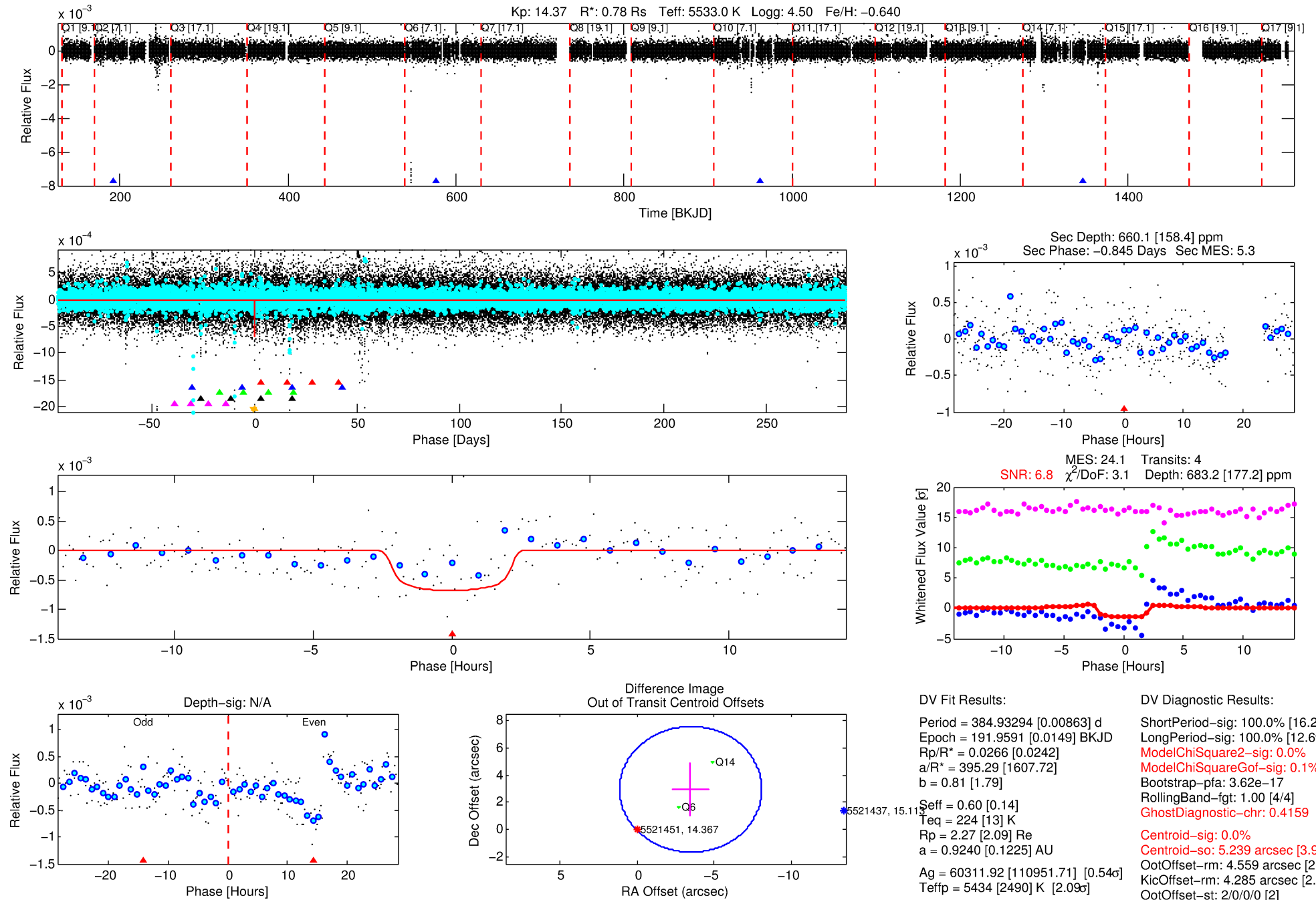
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005521451-06

No Significant Match Found

DV One-Page Summary

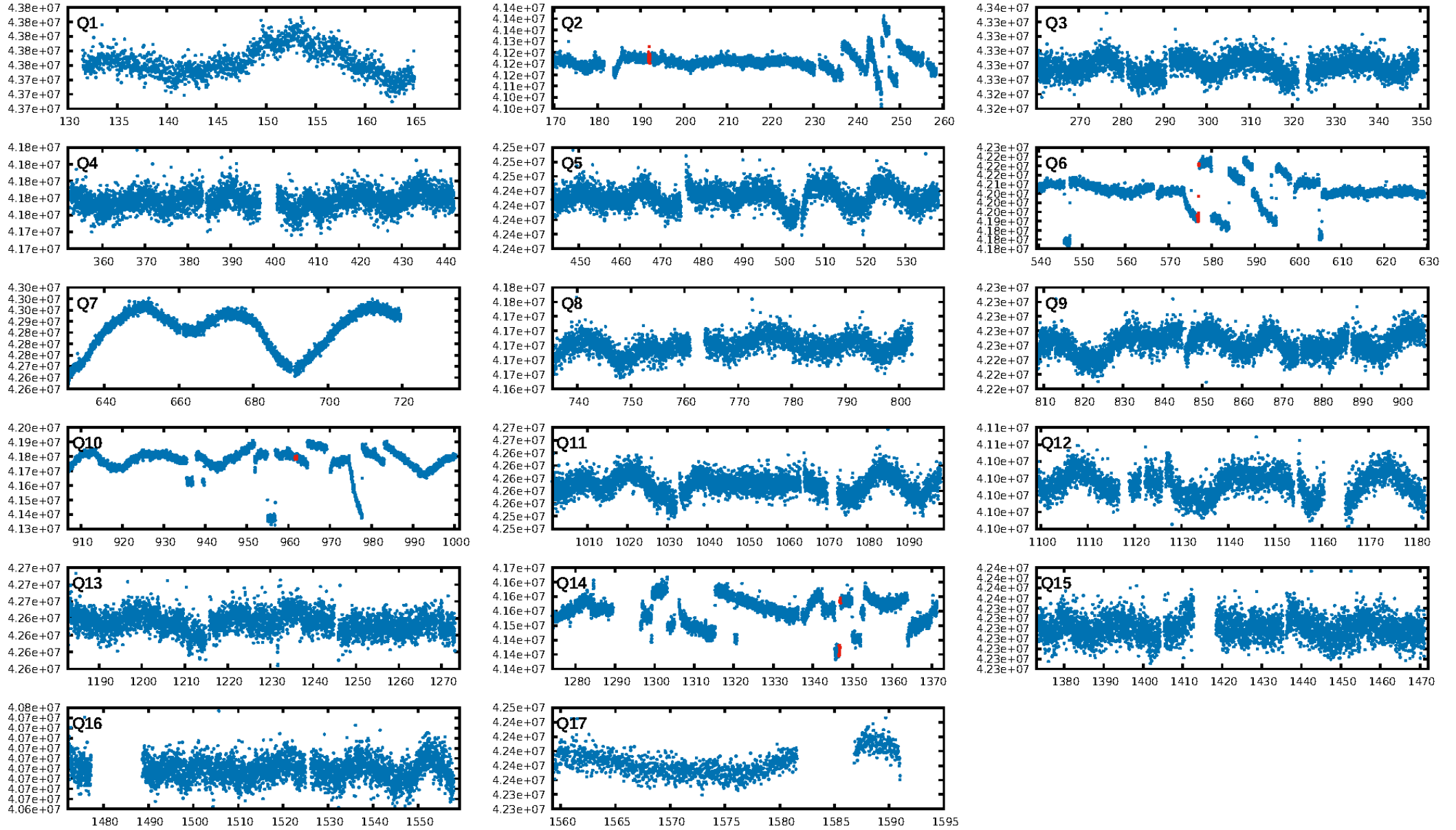
KIC: 5521451 Candidate: 6 of 6 Period: 384.933 d



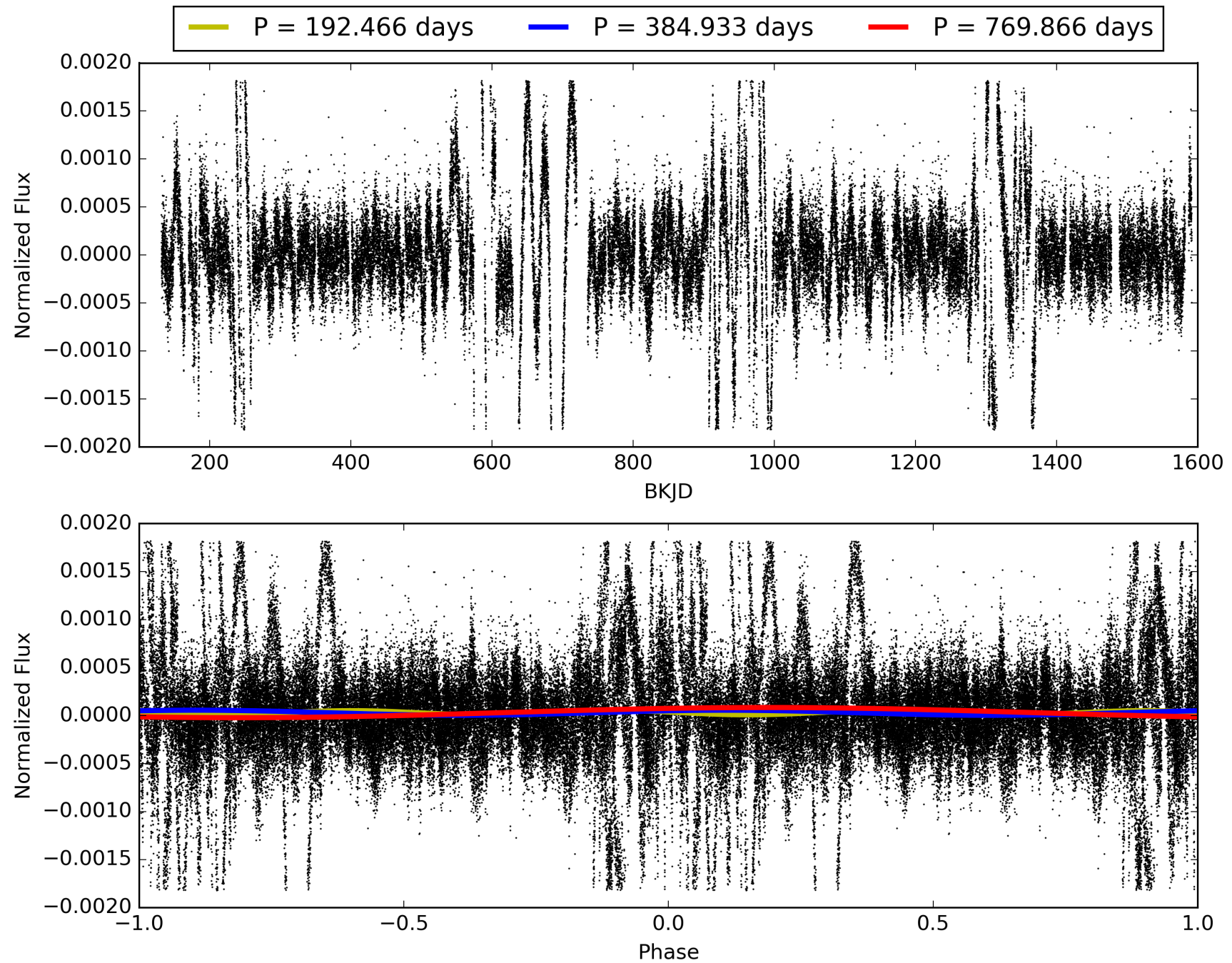
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:21:51 Z

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

TCE 005521451-06, PDC Light Curves

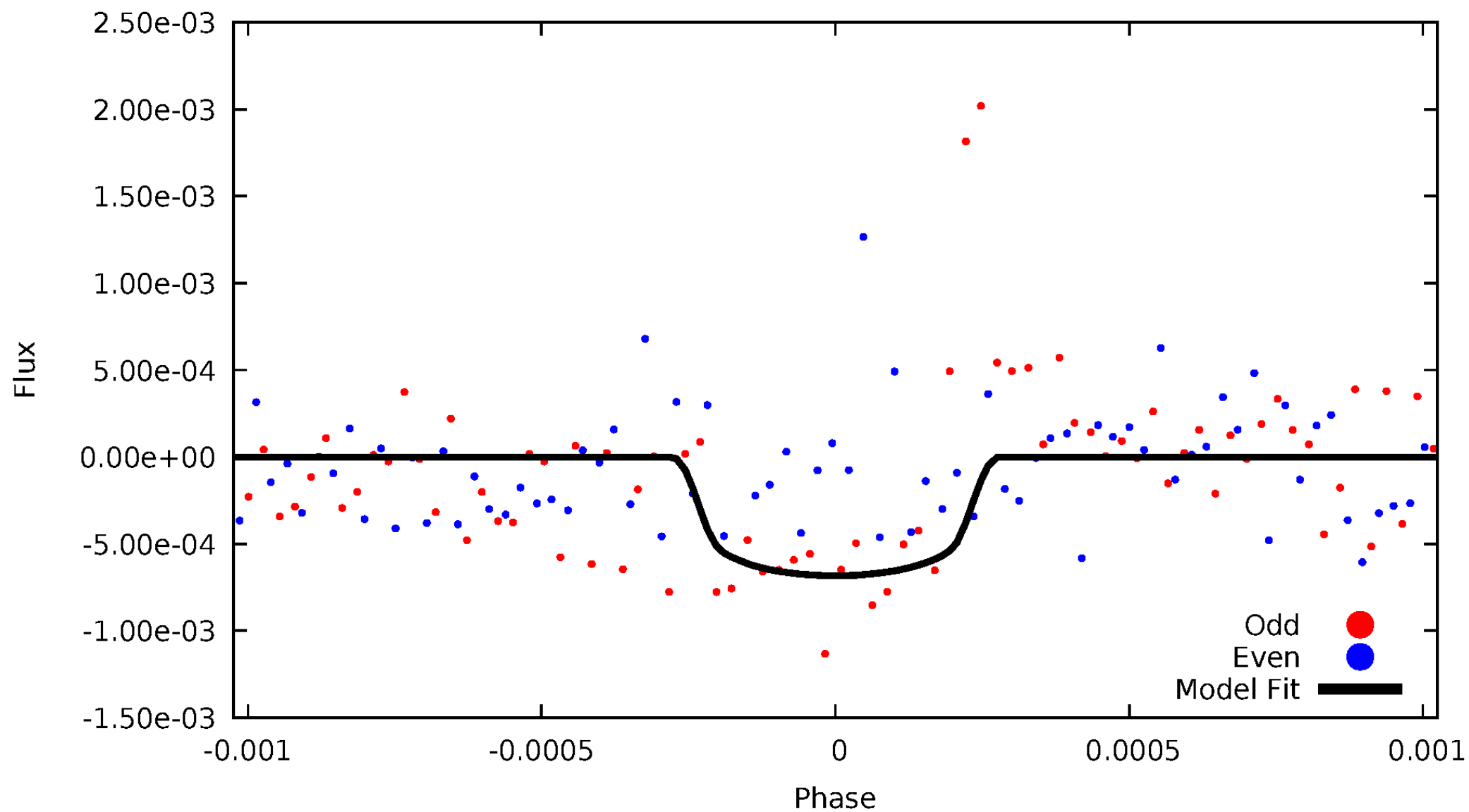


TCE 005521451-06



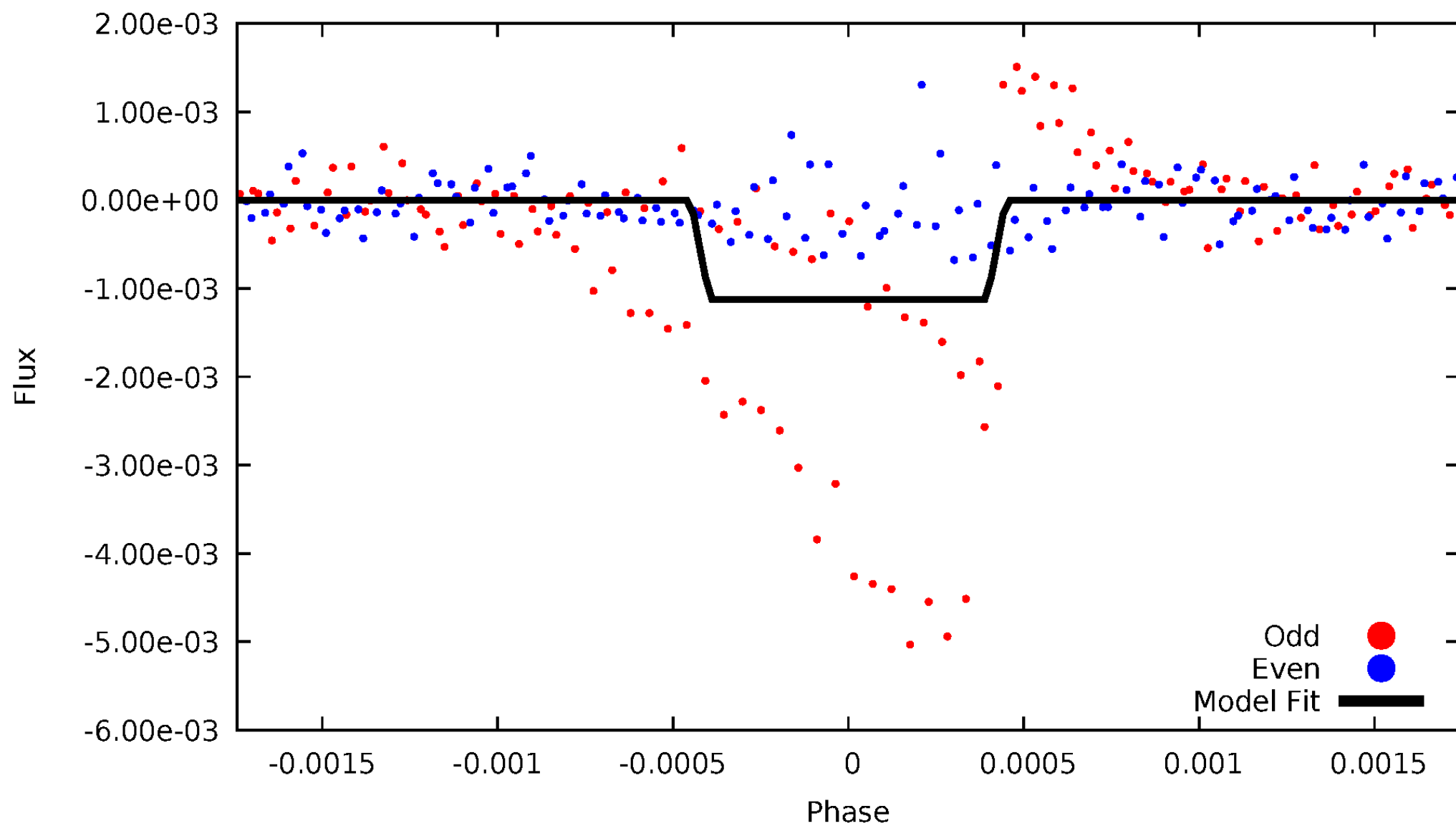
DV Odd/Even

TCE 005521451-06



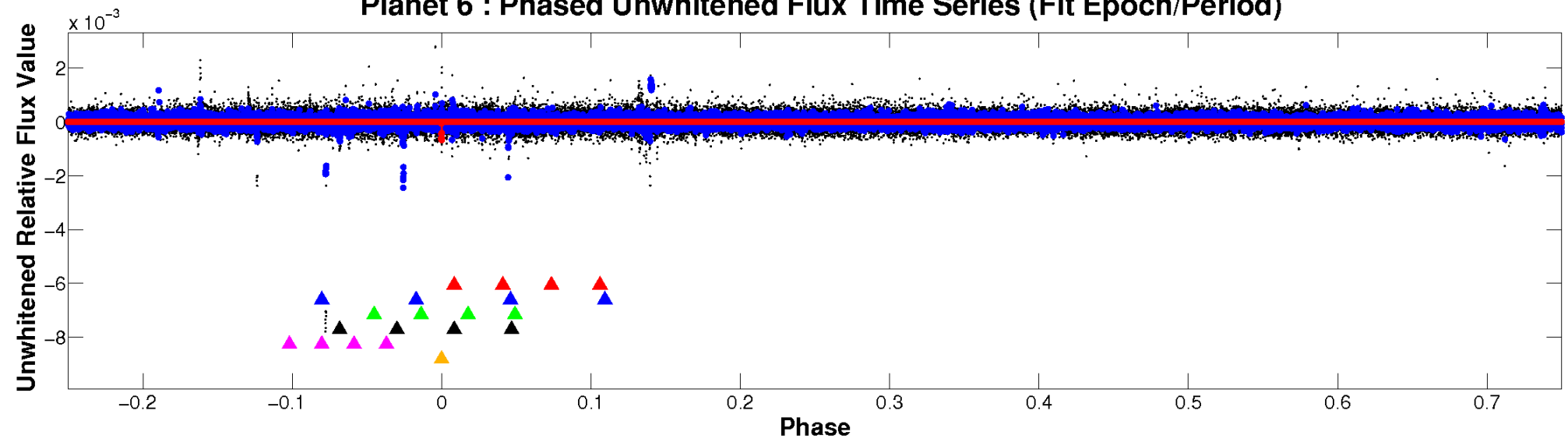
ALT Odd/Even

TCE 005521451-06

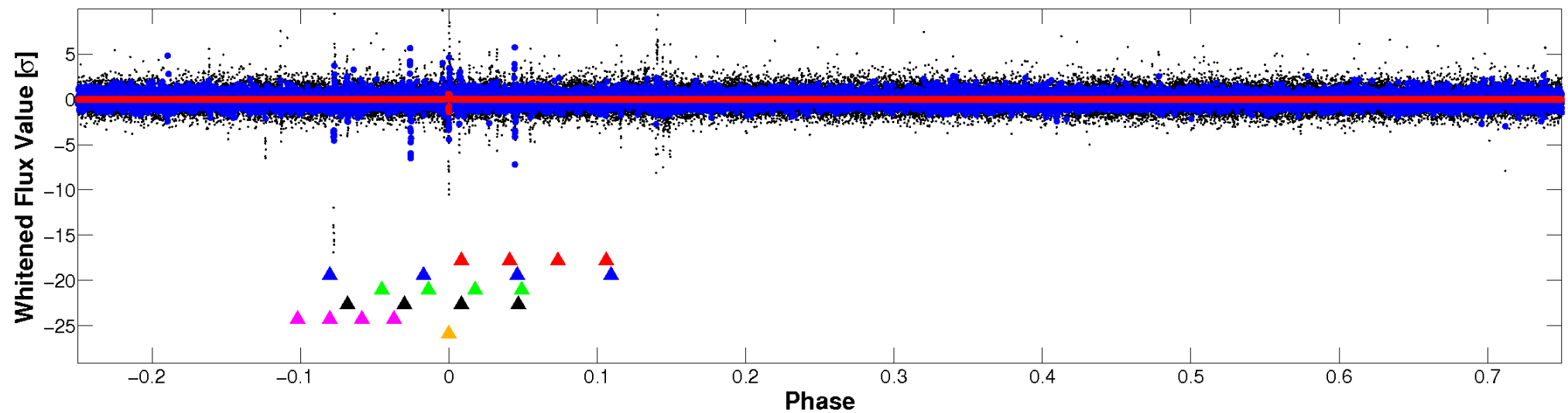


Non-Whitened Vs. Whitened Light Curve

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

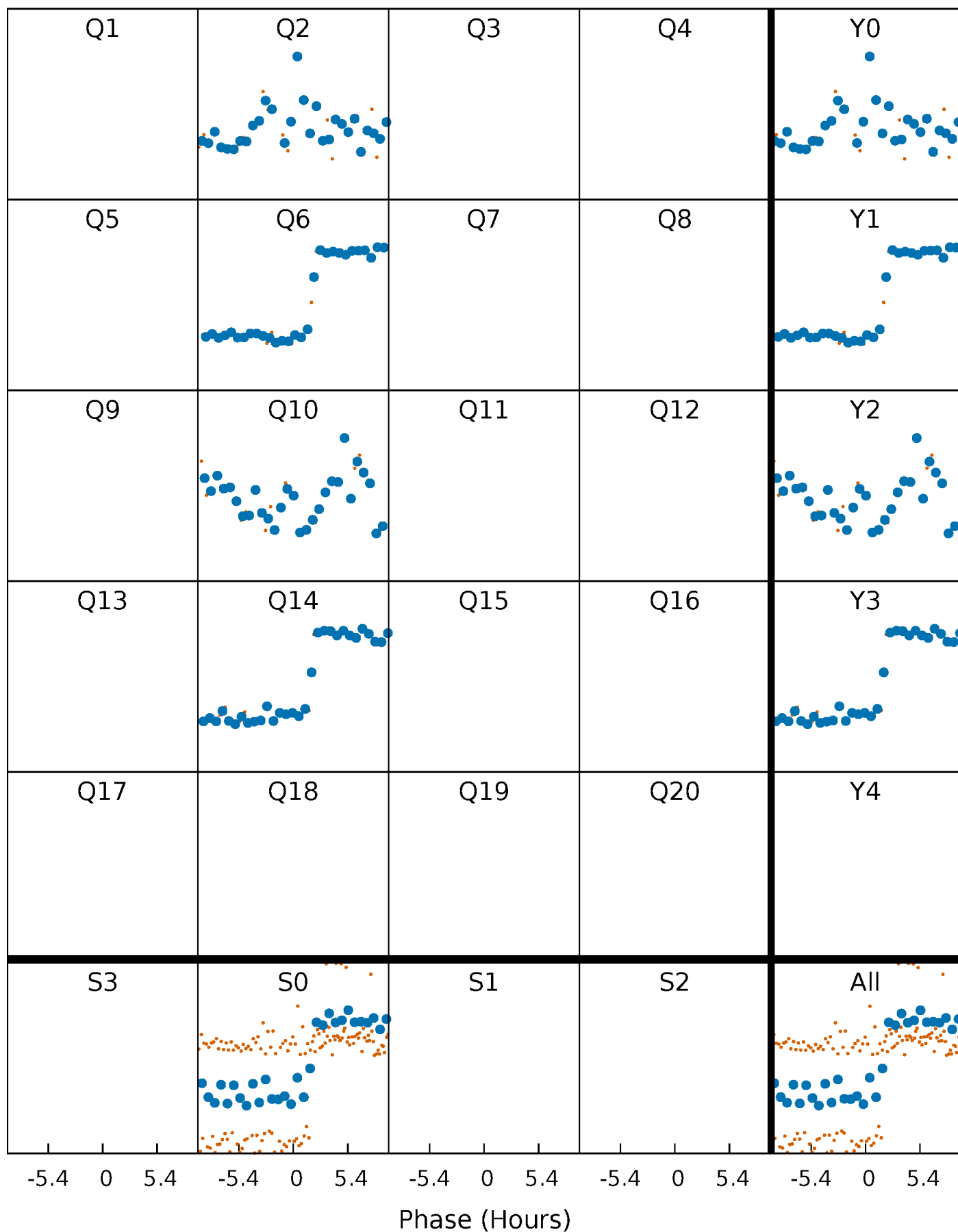


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



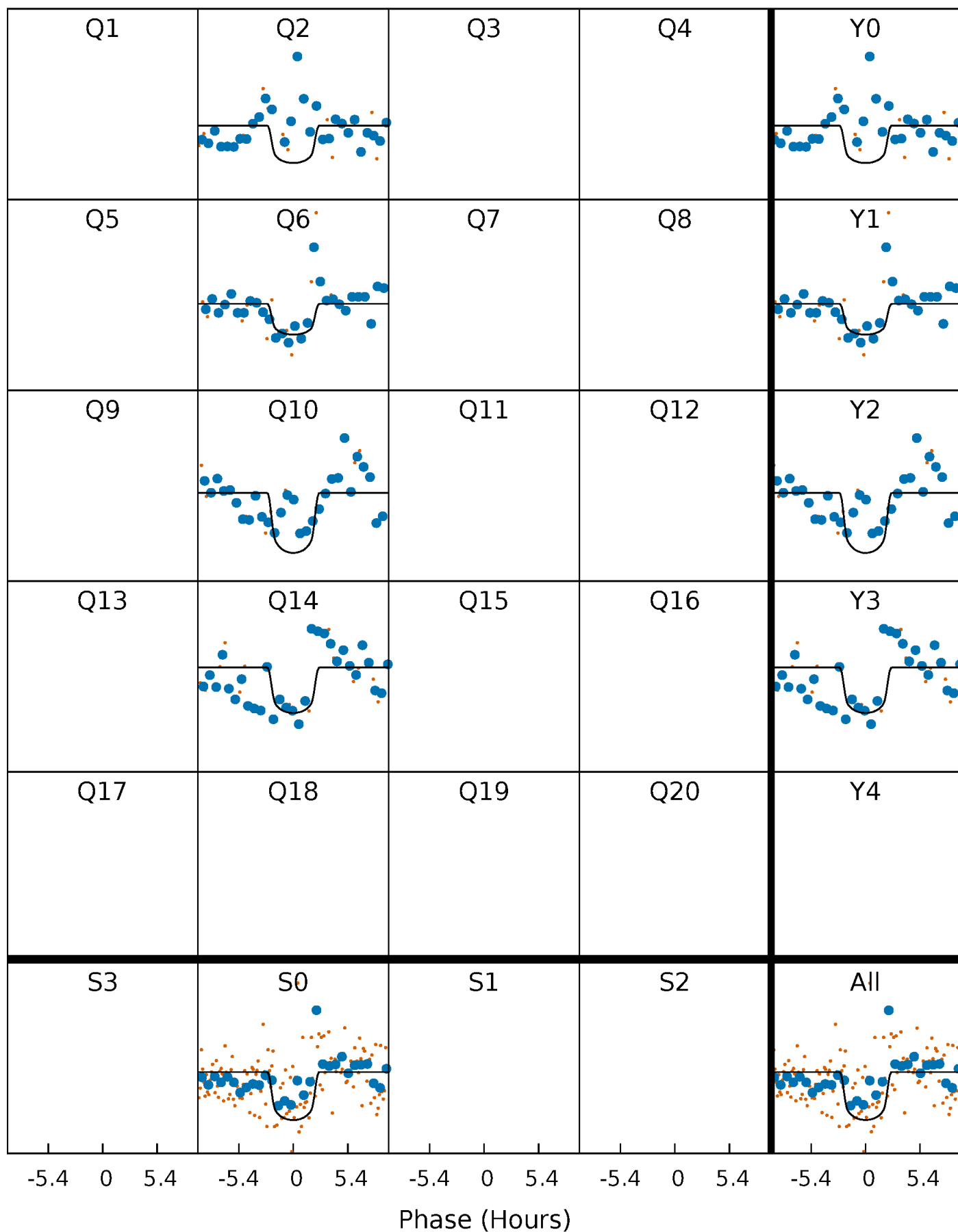
PDC Quarter-Phased Transit Curves

TCE 005521451-06 P=384.932939 Days $T_0=191.959128$ (BKJD)



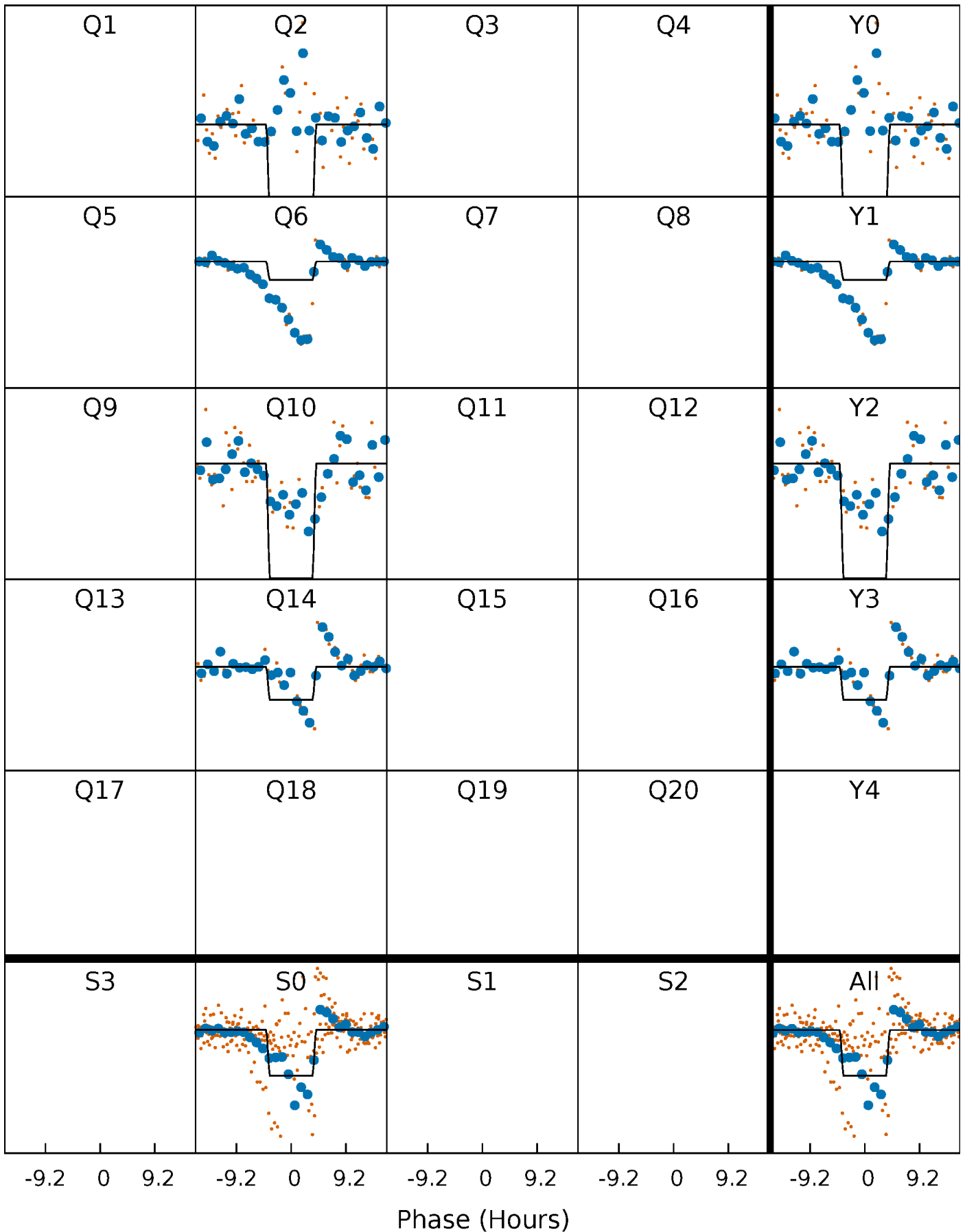
DV Quarter-Phased Transit Curves

TCE 005521451-06 P=384.932939 Days $T_0=191.959128$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

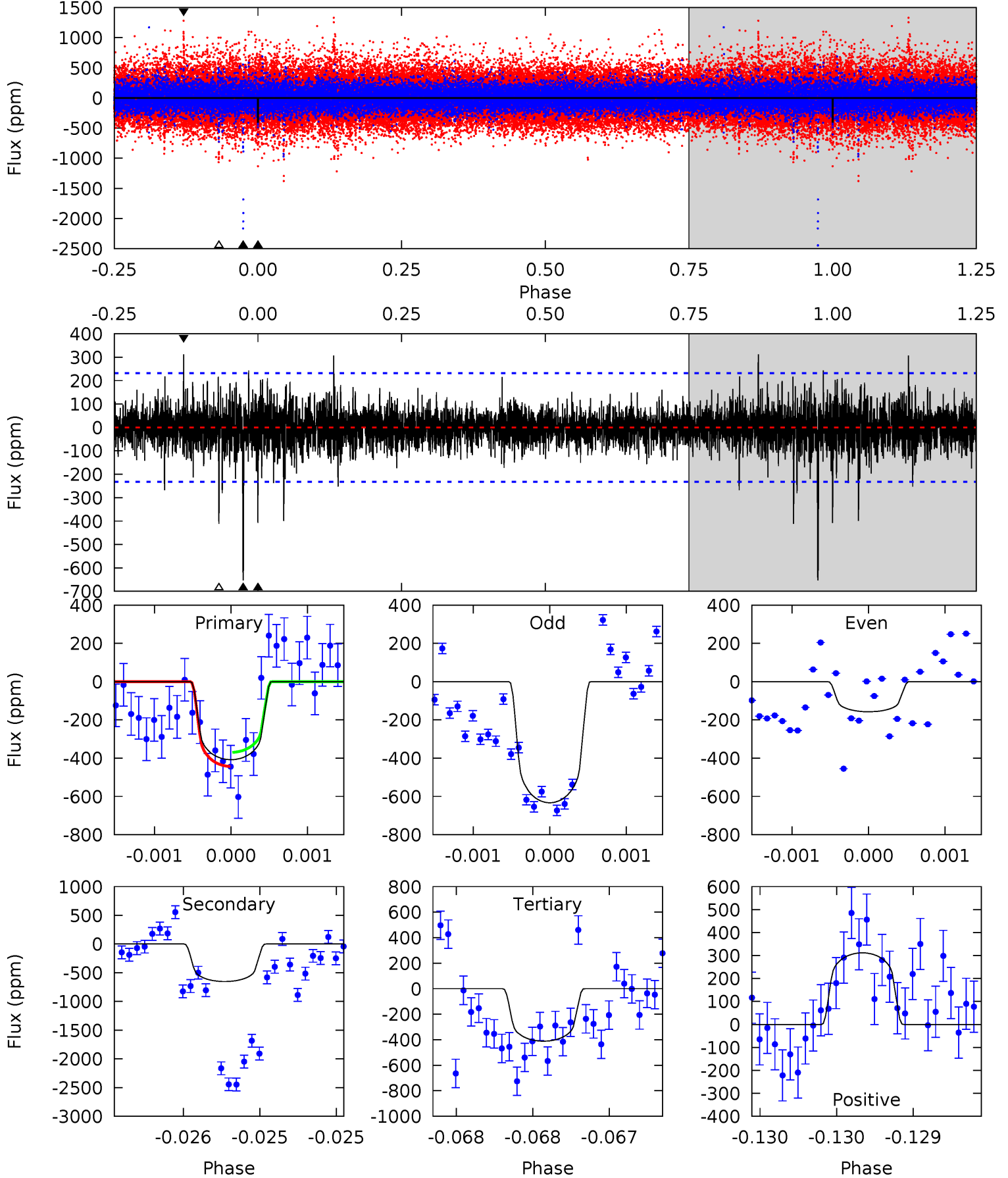
TCE 005521451-06 P=384.920592 Days $T_0=191.896932$ (BKJD)



DV Model-Shift Uniqueness Test

005521451-06, P = 384.932939 Days, E = 191.959128 Days

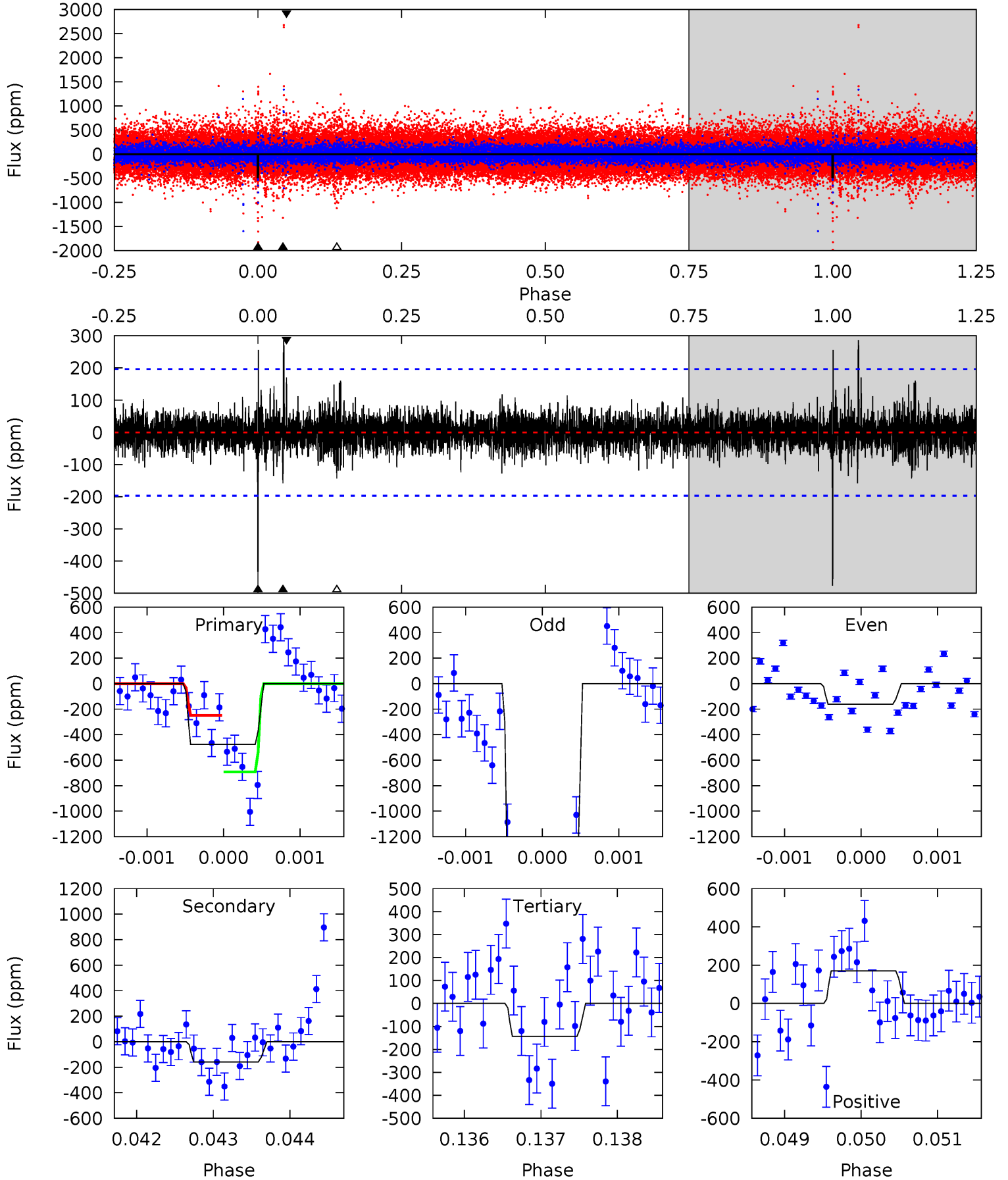
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.76	15.6	9.85	7.47	5.56	3.46	1.39	-0.08	2.30	5.79	8.18	5.41	0.71	0.32	0.88



Alt Model-Shift Uniqueness Test

005521451-06, $P = 384.920592$ Days, $E = 191.896932$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	4.39	3.99	4.73	5.47	3.32	0.95	9.26	8.52	0.40	-0.34	31.6	1.76	0.38	6.24



Stellar Parameters For KIC 005521451

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5533^{+165}_{-148}	$4.505^{+0.108}_{-0.108}$	$-0.640^{+0.350}_{-0.300}$	$0.780^{+0.121}_{-0.099}$	$0.710^{+0.102}_{-0.036}$	$2.105^{+0.997}_{-0.674}$
	+3%/-3%	+2%/-2%	+55%/-47%	+16%/-13%	+14%/-5%	+47%/-32%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005521451-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-653 ± 42	$2.59^{+1.97}_{-1.54}$	314^{+16}_{-15}	5116^{+3224}_{-999}	$46708^{+243182}_{-31578}$
Alt.	-158 ± 36	$3.14^{+1.96}_{-1.88}$	314^{+15}_{-14}	3654^{+1544}_{-539}	7638^{+39870}_{-4935}

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 $A_{obs} \gg 1.0$

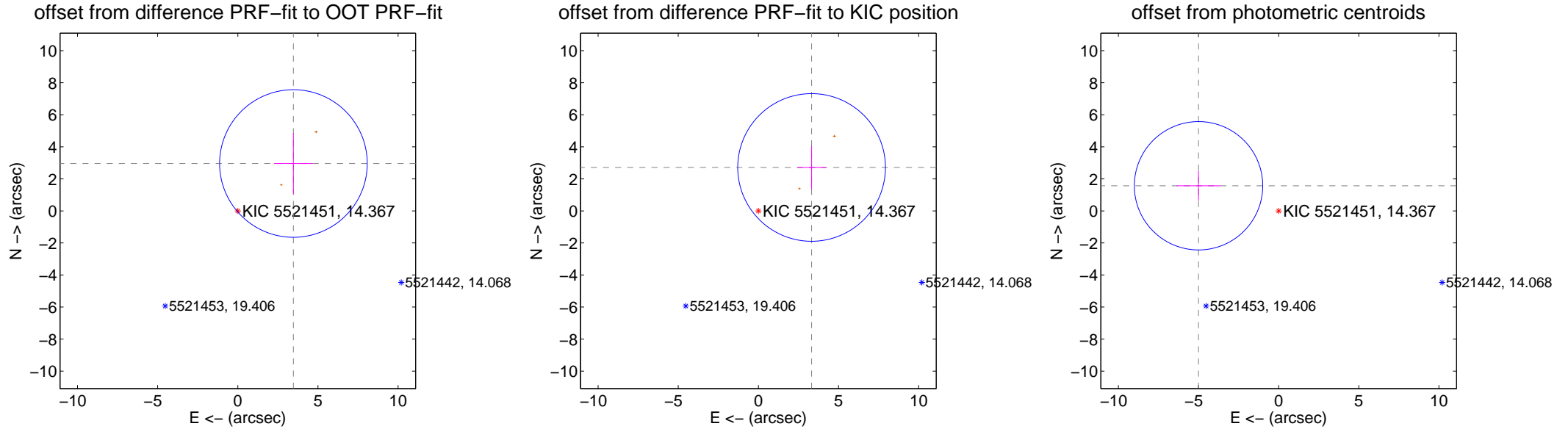
DV Centroid Data

Supplemental centroid analysis for 005521451-06. Kepler magnitude: 14.37. Transit SNR 6.78

There are 0 quarters with good PRF difference image offsets

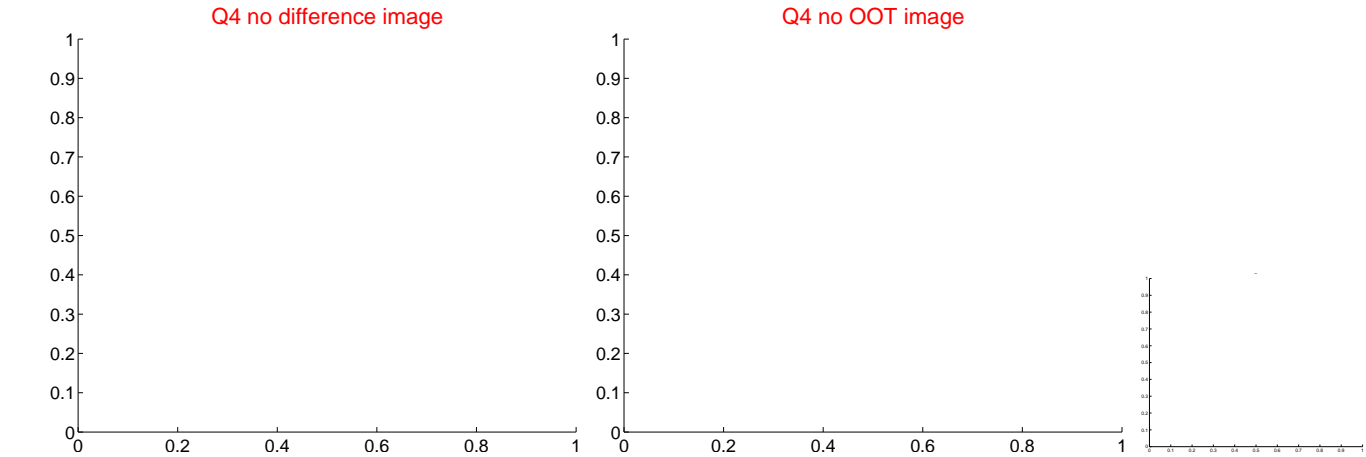
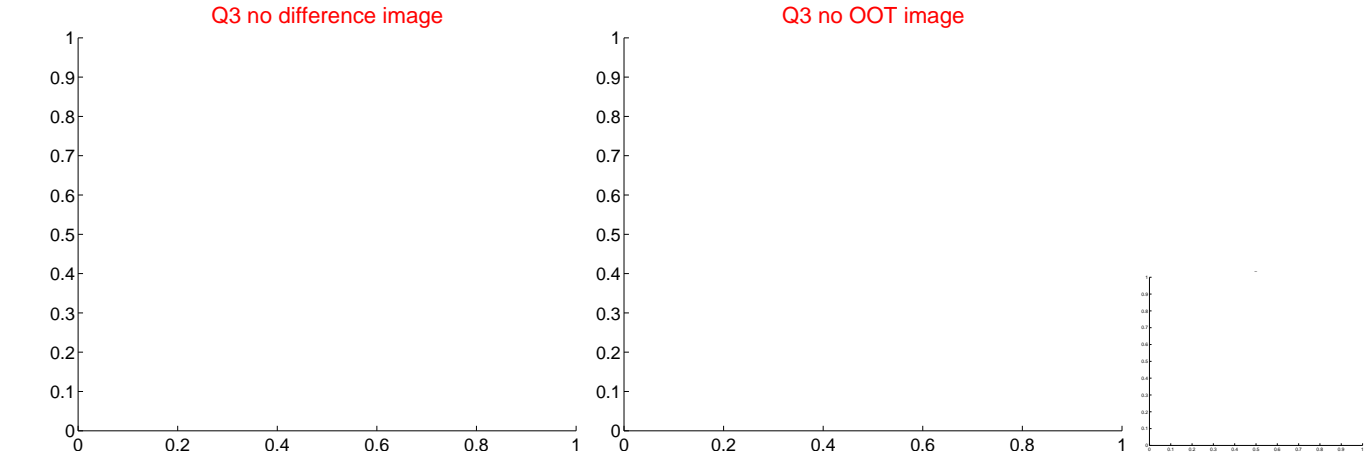
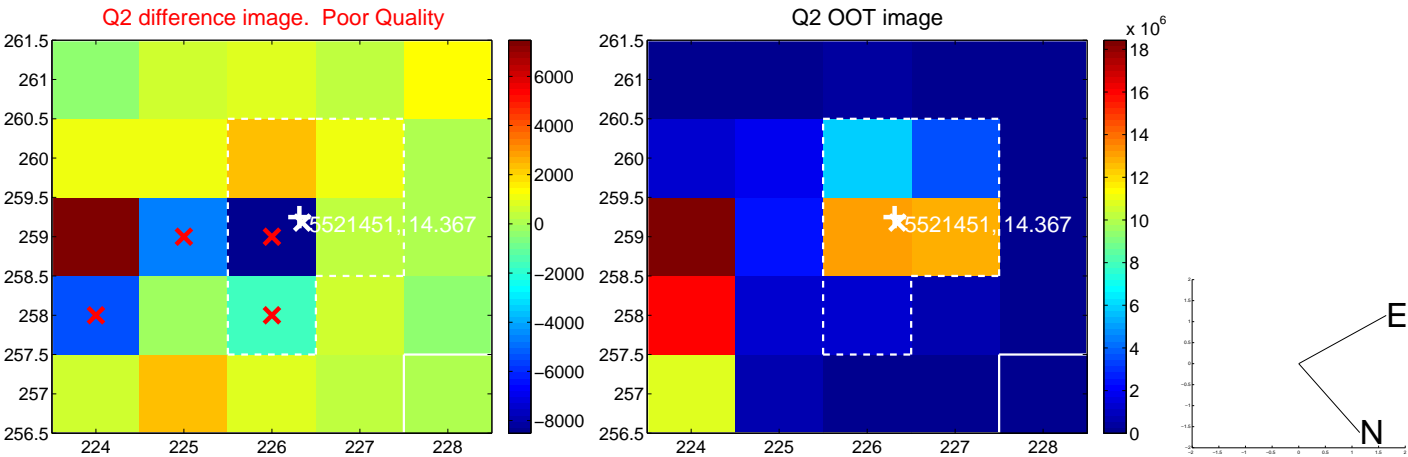
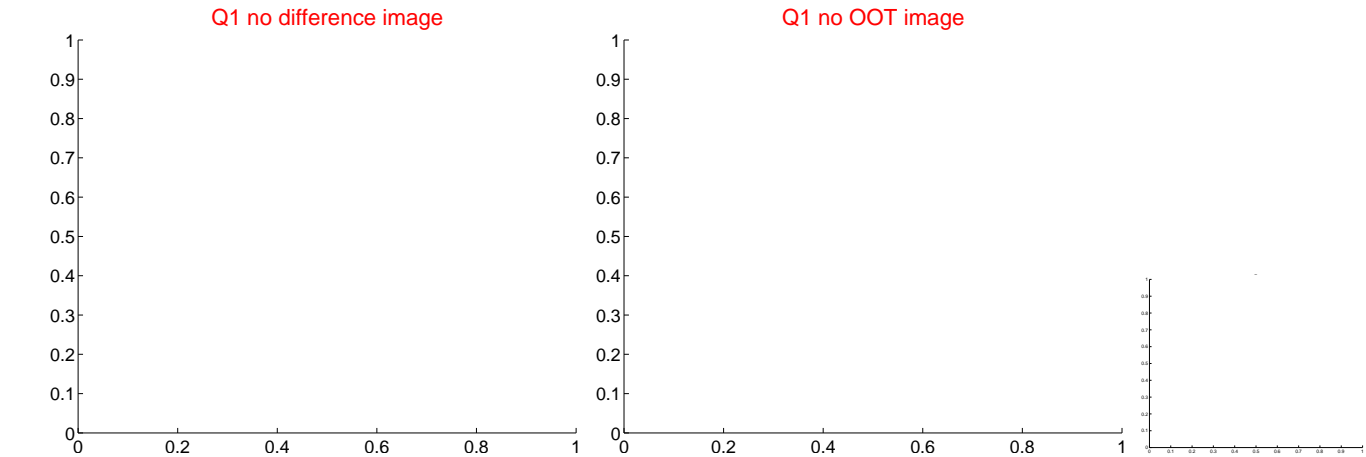
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.559 ± 1.535	2.97	-3.469 ± 1.210	2.957 ± 1.893
PRF-fit source offset from KIC position	4.285 ± 1.536	2.79	-3.319 ± 0.892	2.711 ± 1.338
photometric centroid source offset	5.24 ± 1.33	3.93	5.00 ± 1.37	1.57 ± 0.93

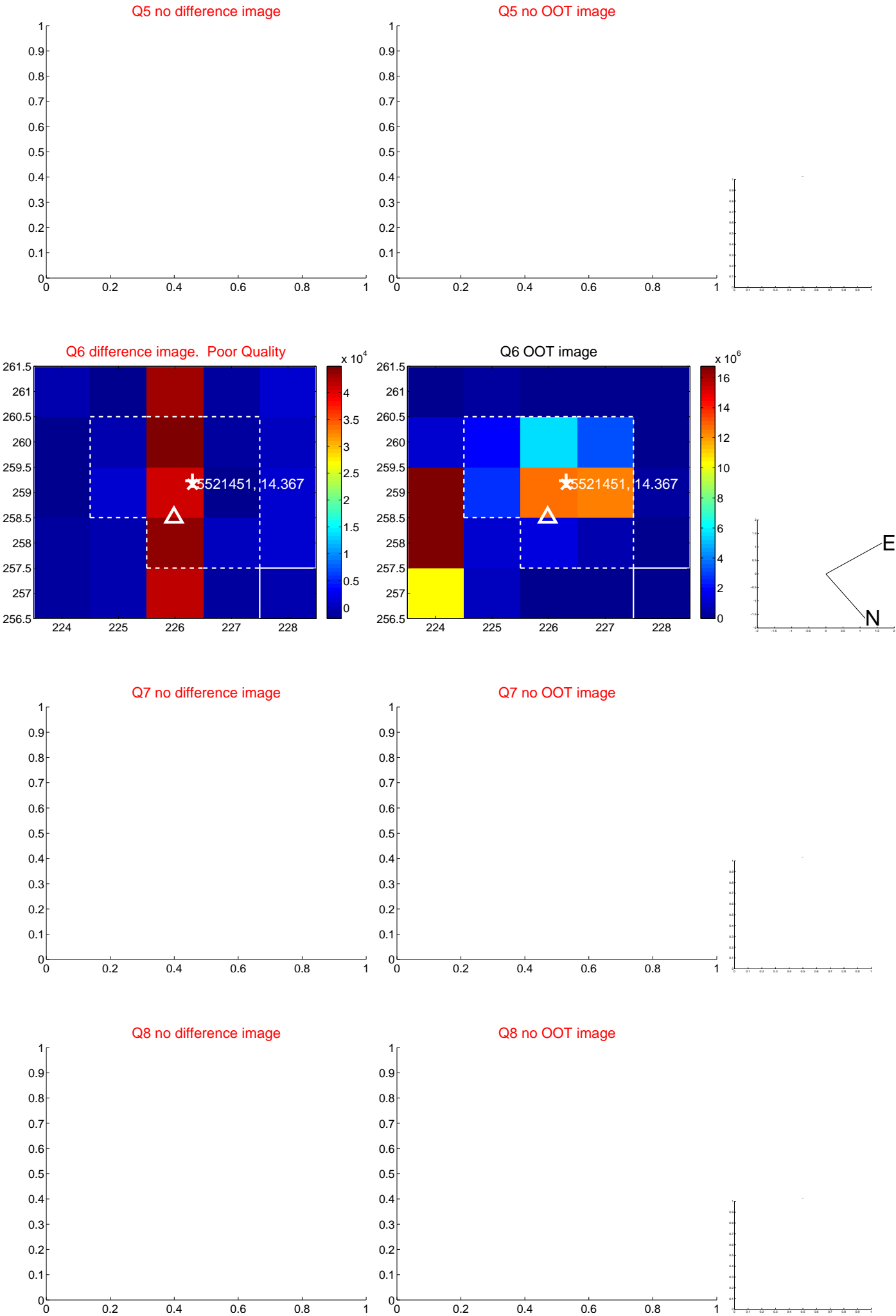


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

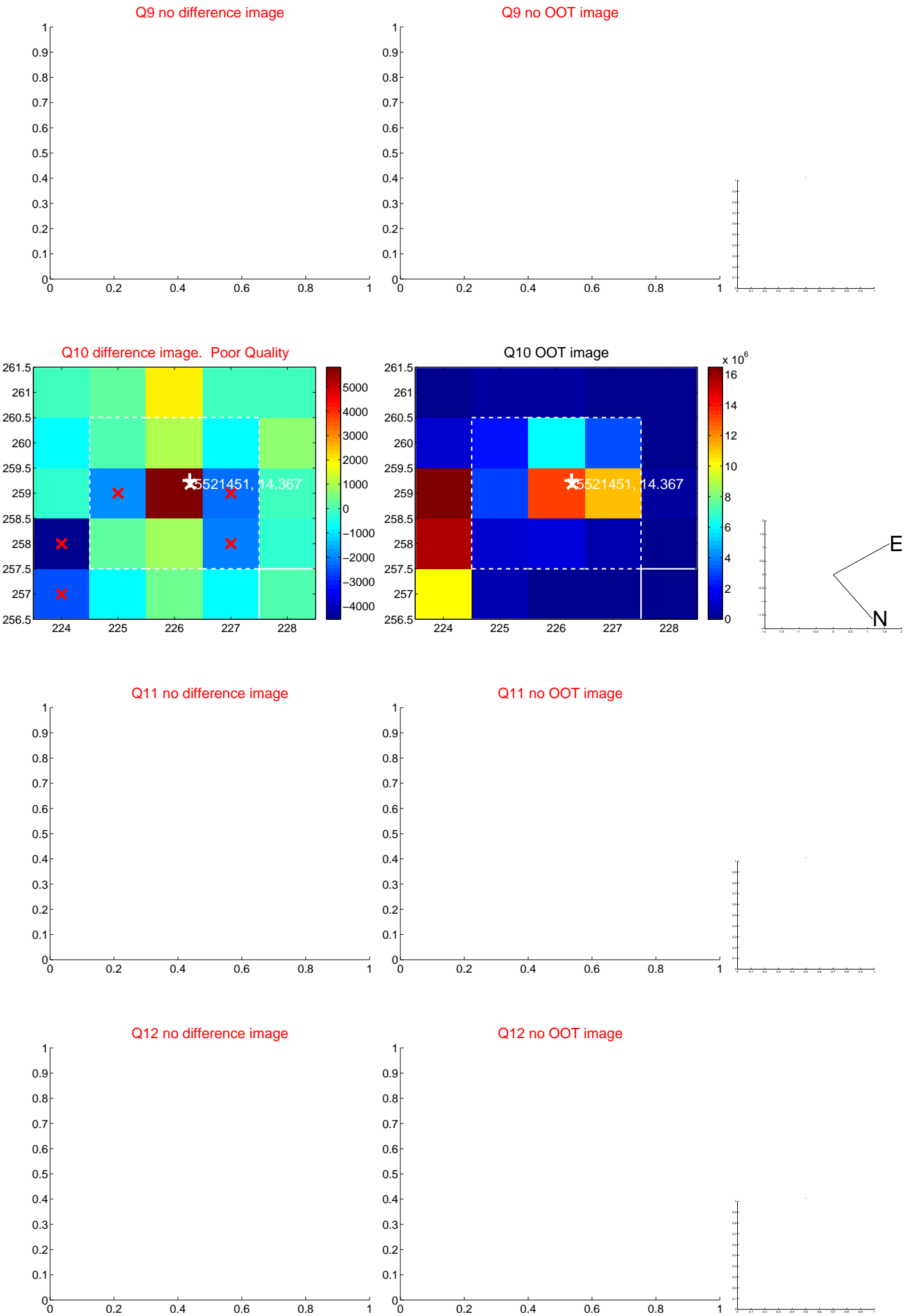
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



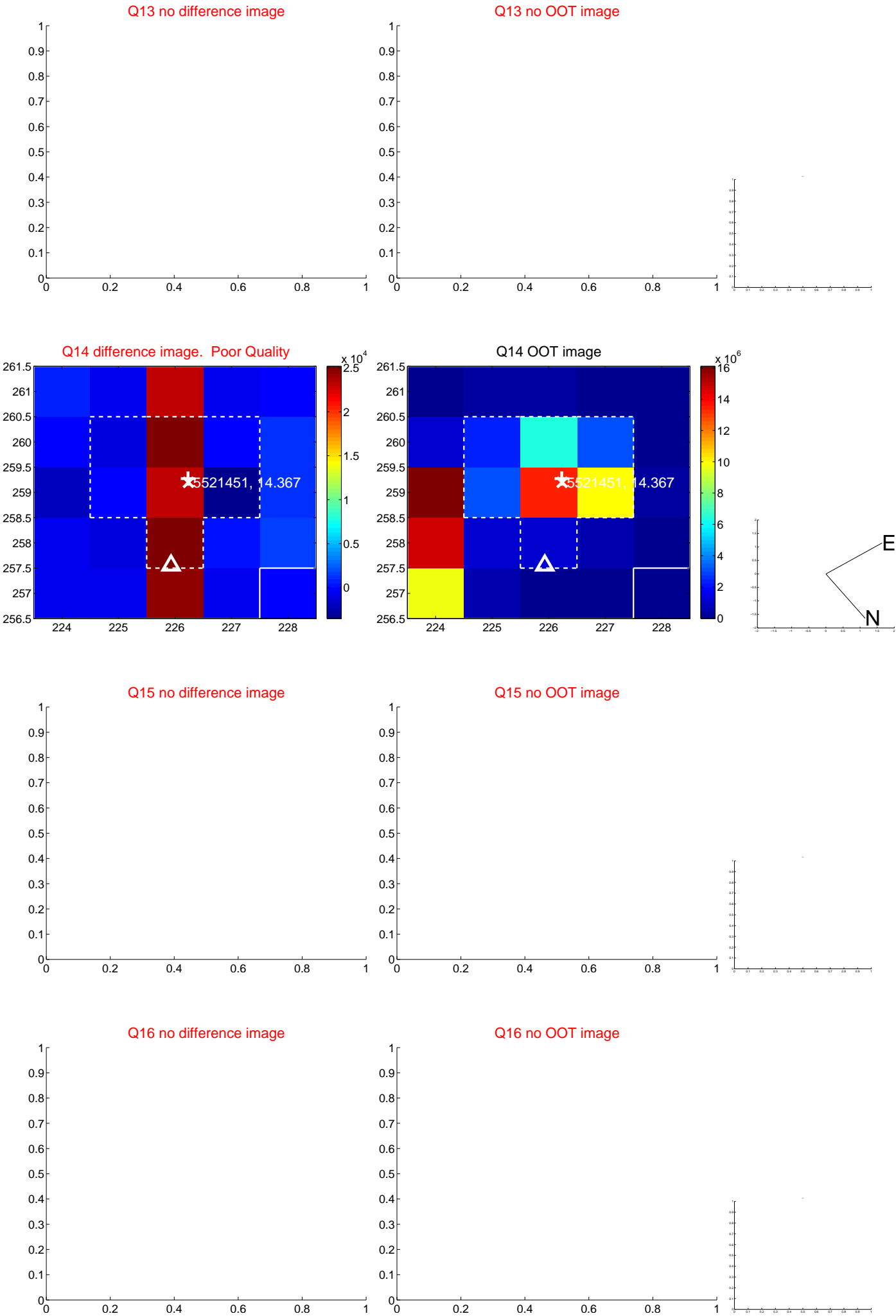
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



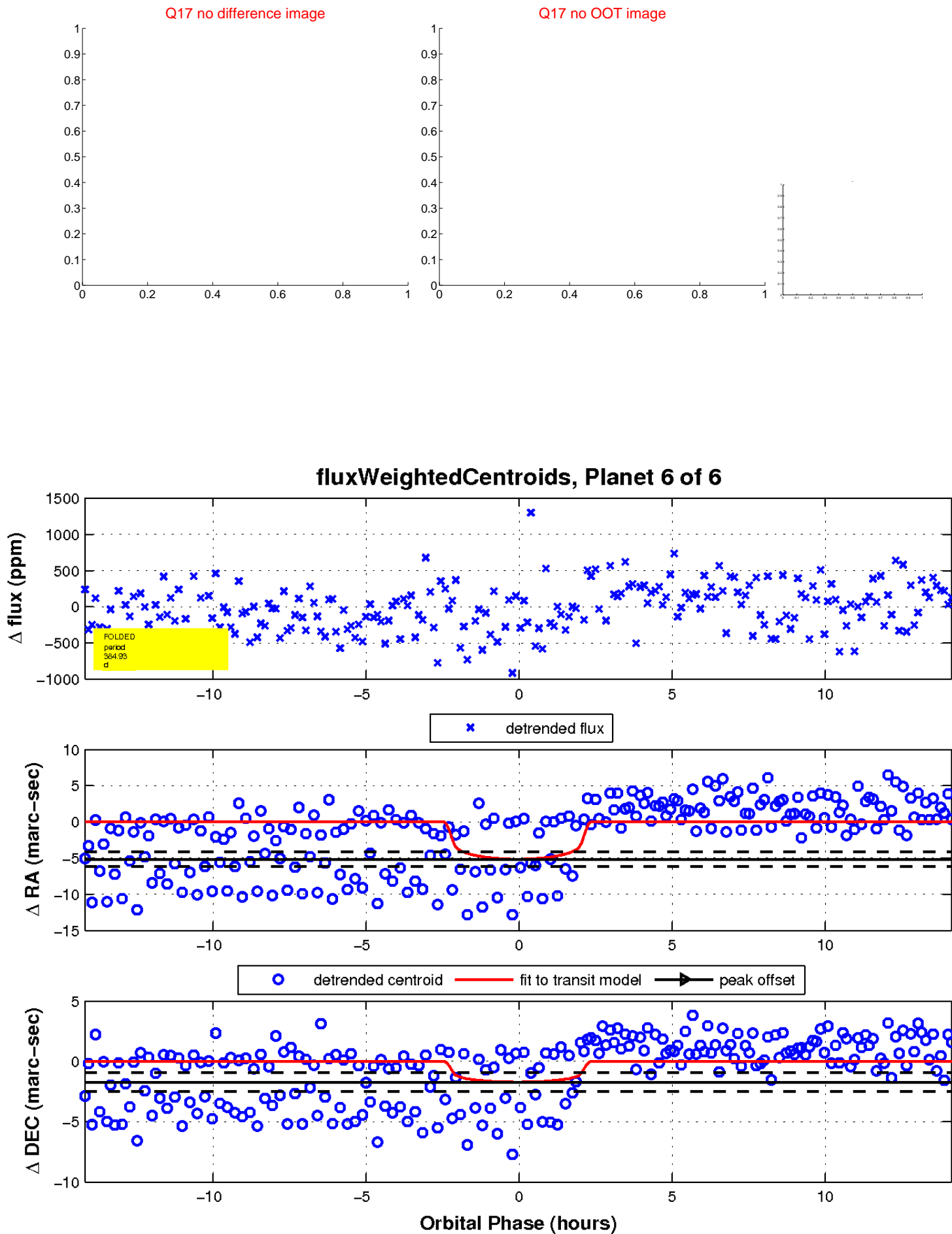
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



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



UKIRT Image

Declination

