

KIC 005437459

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})
005437459-01	OBS	No	10.845933	142.028053	178.2	17.874	8.6	8.1	0.53	3892	0.90	9.36
005437459-02	OBS	No	448.731247	196.842191	835.8	14.751	9.5	6.4	0.53	3892	1.59	0.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005437459-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
005437459-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—INCONSISTENT_TRANS—HALO_GHOST

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

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

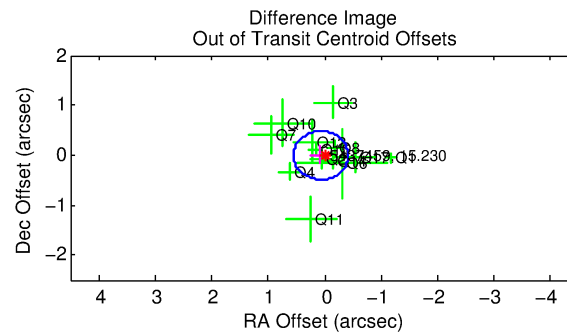
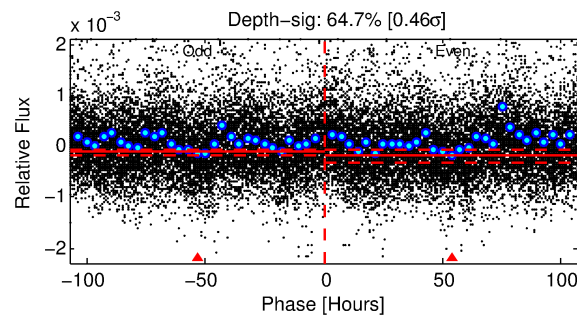
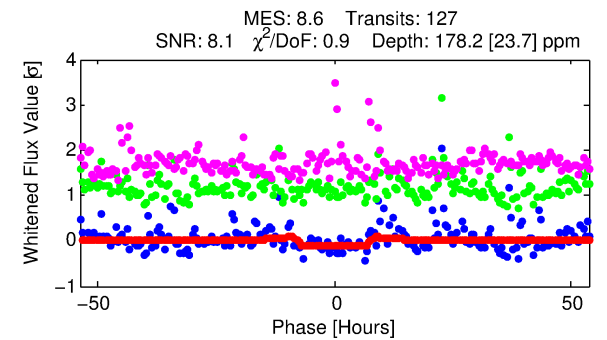
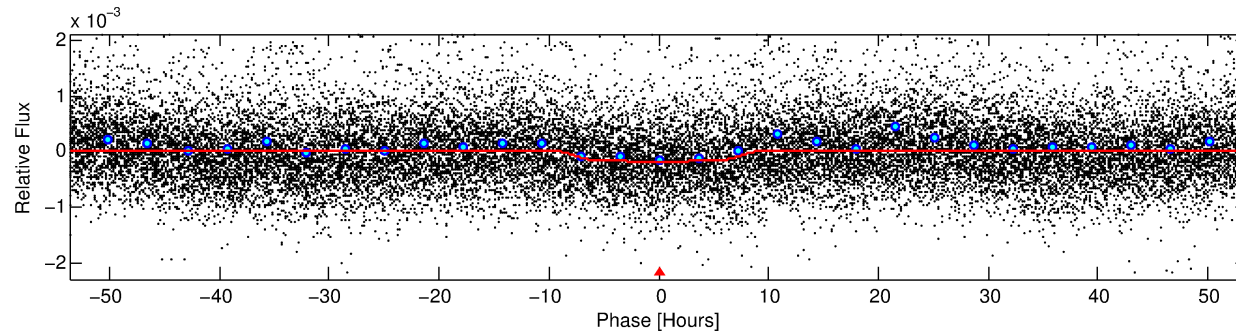
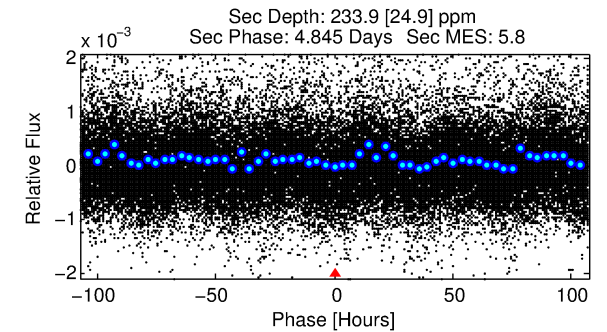
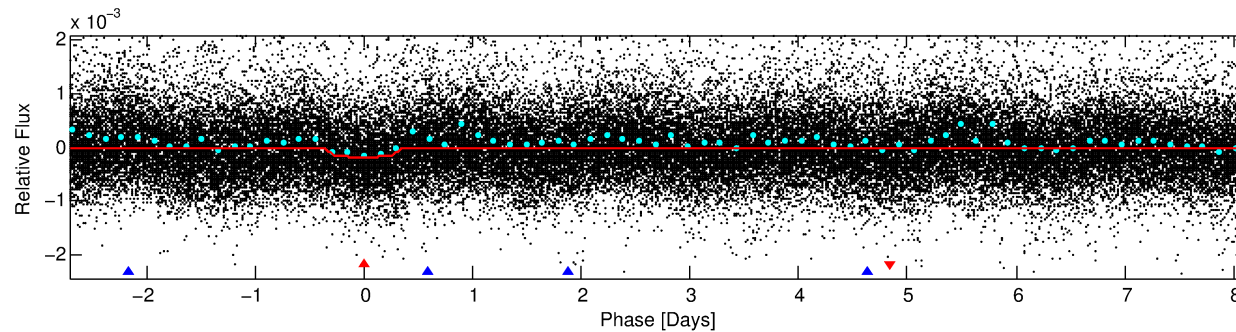
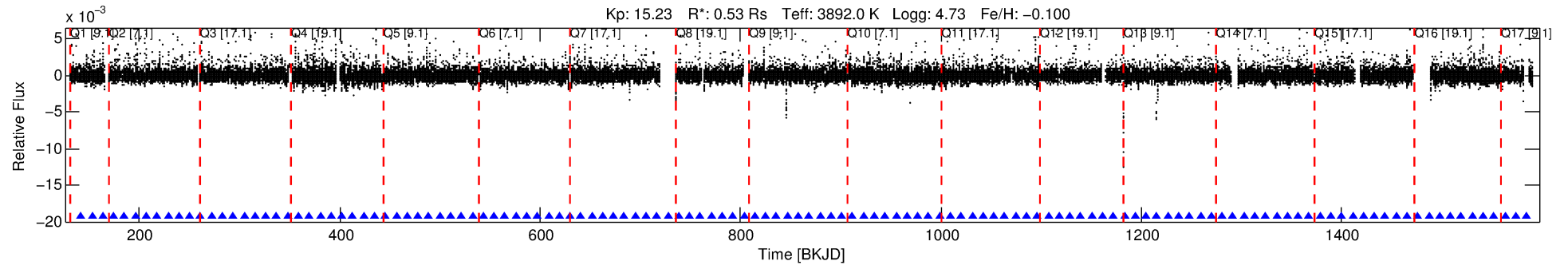
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005437459-01

No Significant Match Found

DV One-Page Summary

KIC: 5437459 Candidate: 1 of 2 Period: 10.846 d



DV Fit Results:

Period = 10.84593 [0.00035] d
Epoch = 142.0281 [0.0252] BKJD
Rp/R* = 0.0155 [0.0014]
a/R* = 1.96 [0.35]
b = 0.95 [0.03]
Seff = 9.36 [0.75]
Teq = 446 [9] K
Rp = 0.90 [0.09] Re
a = 0.0787 [0.0028] AU
Ag = 984.14 [211.27] [4.65σ]
Teffp = 3862 [211] K [16.18σ]

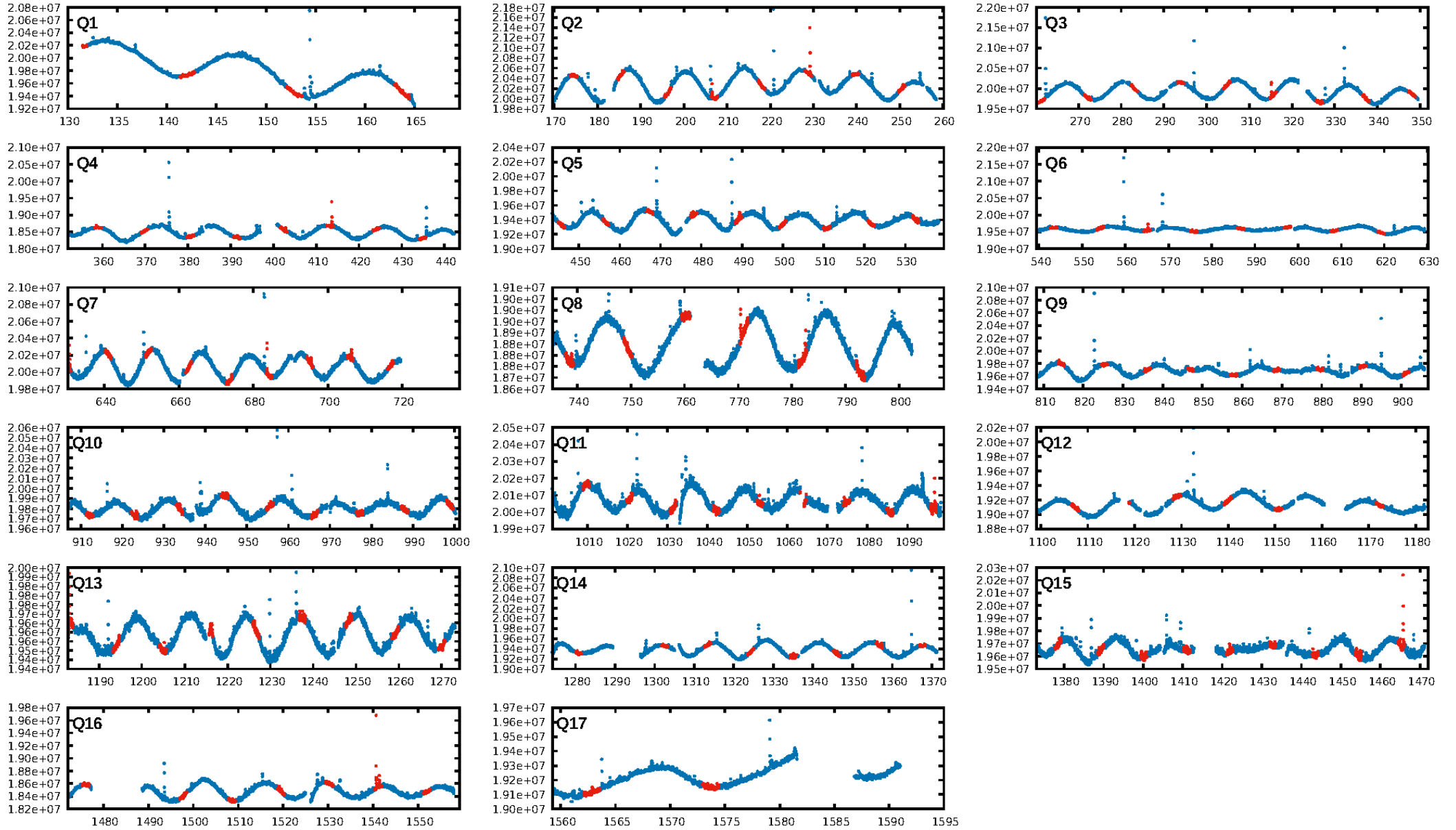
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [453.48σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.29e-11
RollingBand-fgt: 1.00 [121/121]
GhostDiagnostic-chr: 2.825
Centroid-sig: 21.9%
Centroid-so: 0.690 arcsec [1.22σ]
OotOffset-rm: 0.073 arcsec [0.45σ]
KicOffset-rm: 0.069 arcsec [0.46σ]
OotOffset-st: 4/4/3/2 [13]
KicOffset-st: 4/4/3/2 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [17/17]

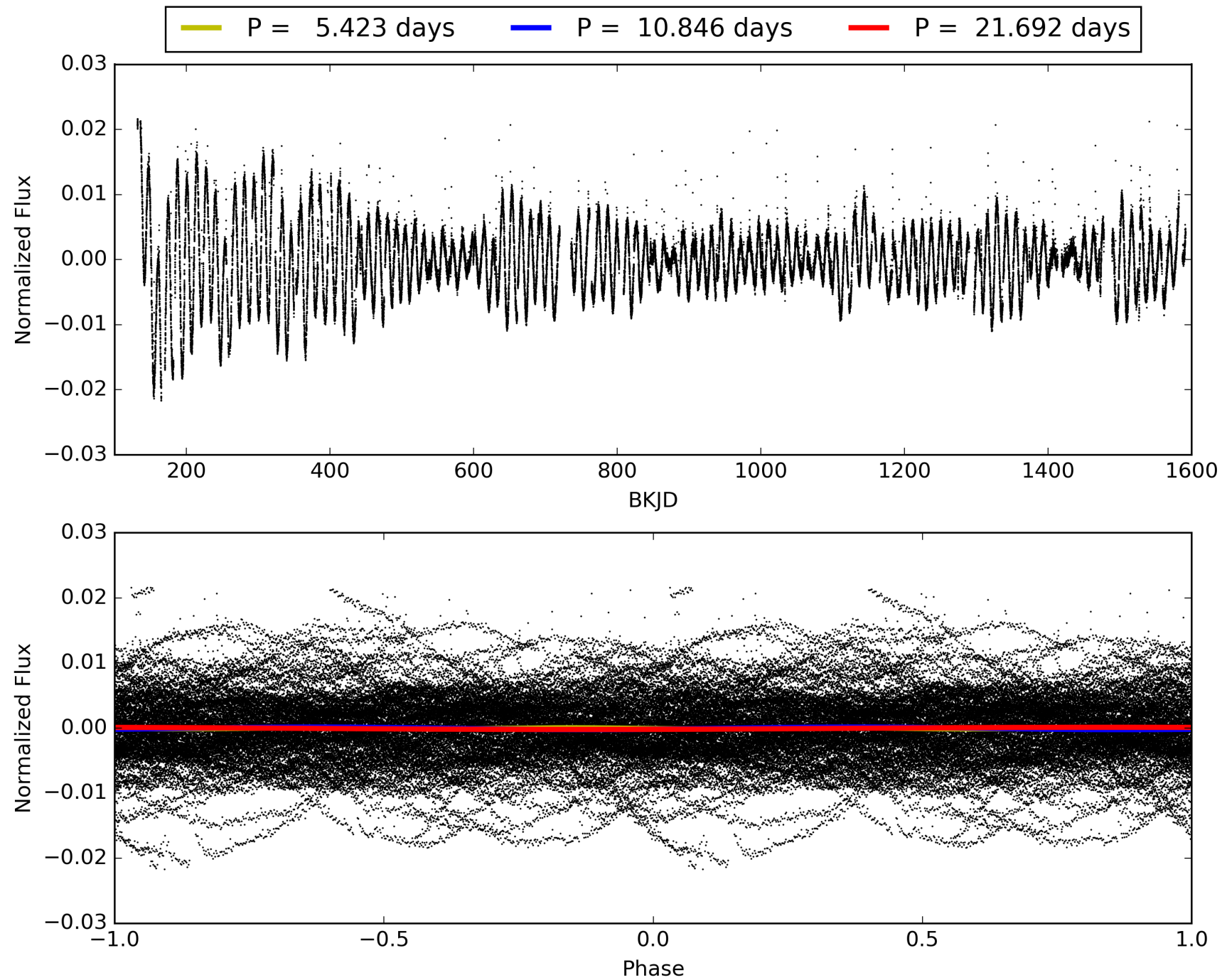
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:31:28 Z

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

TCE 005437459-01, PDC Light Curves

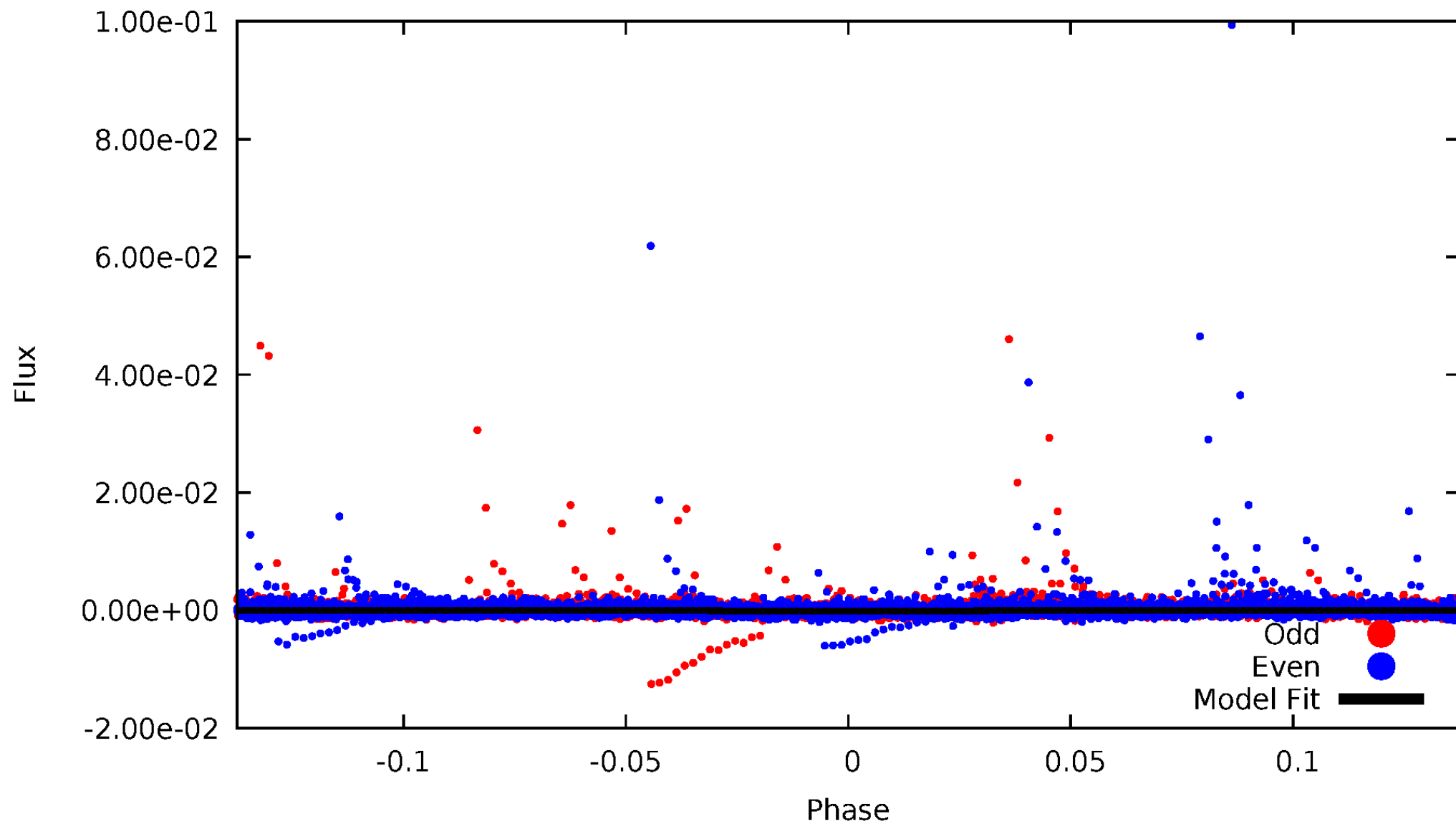


TCE 005437459-01



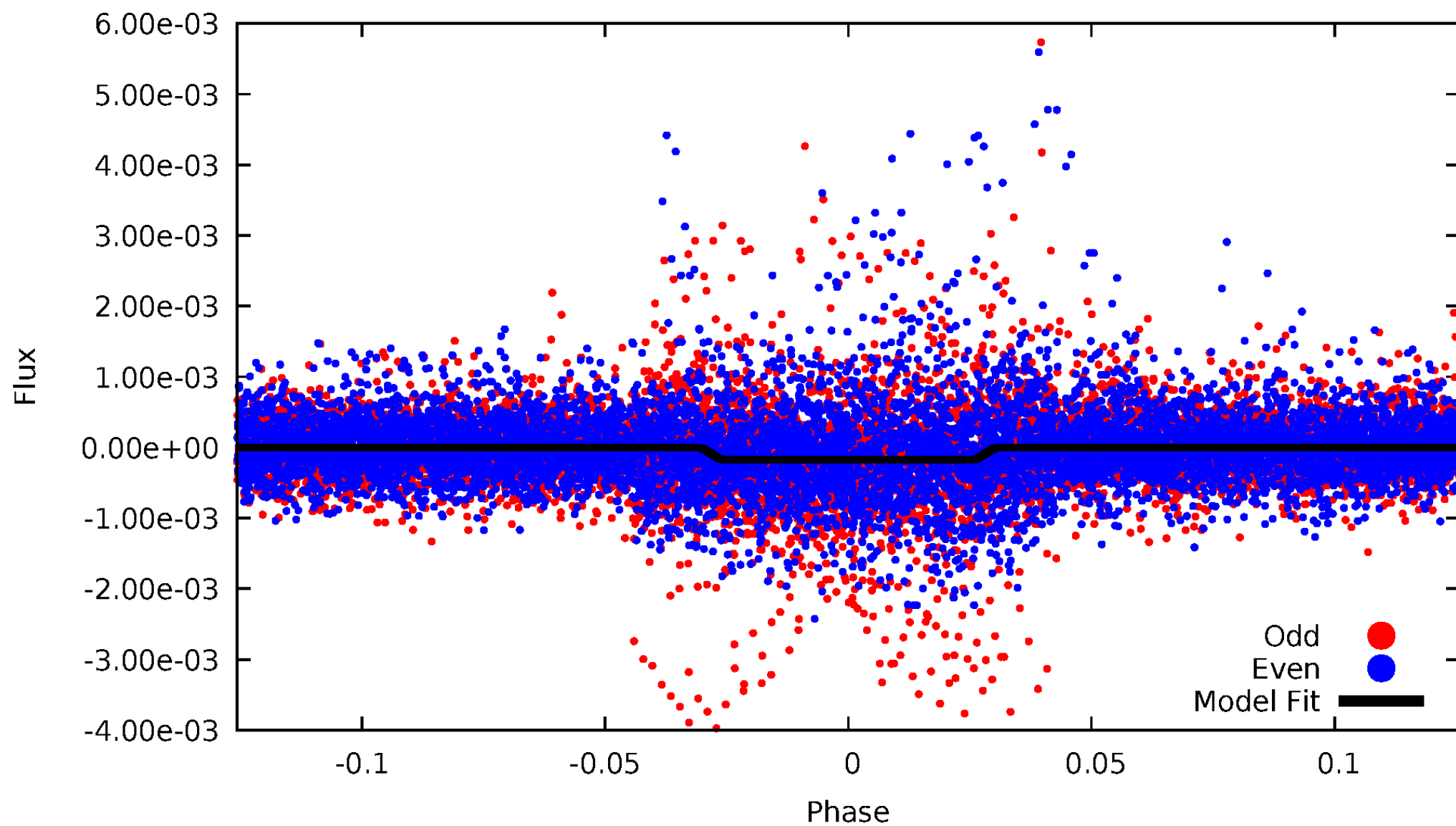
DV Odd/Even

TCE 005437459-01



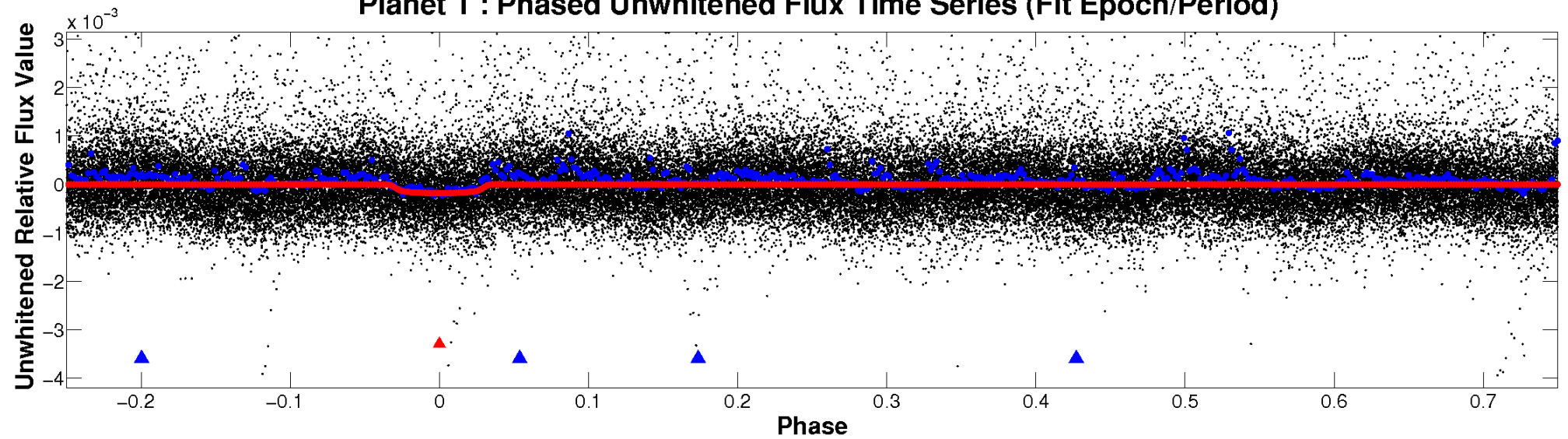
ALT Odd/Even

TCE 005437459-01

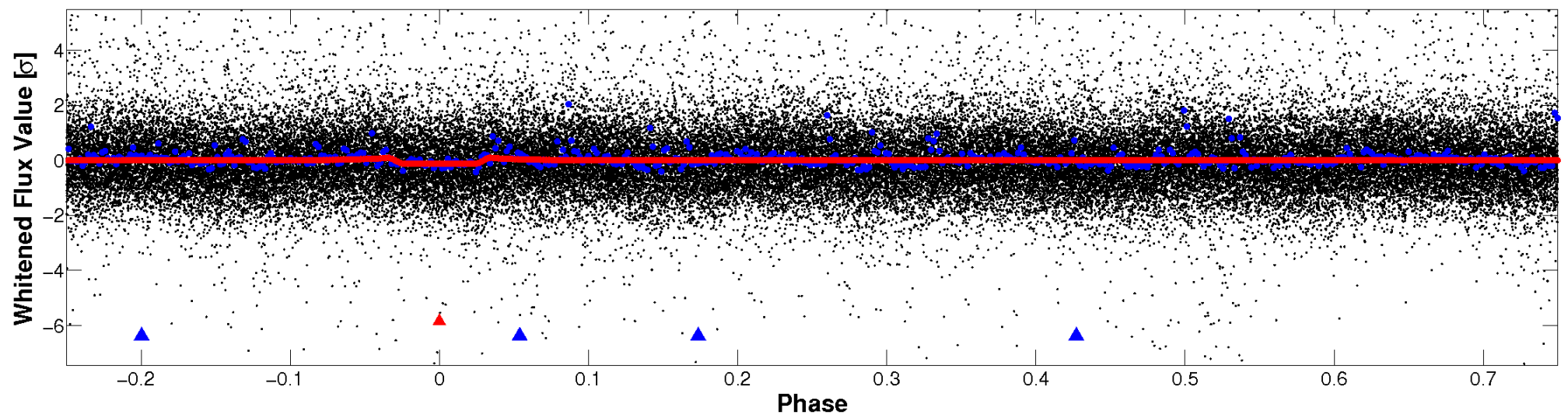


Non-Whitened Vs. Whitened Light Curve

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

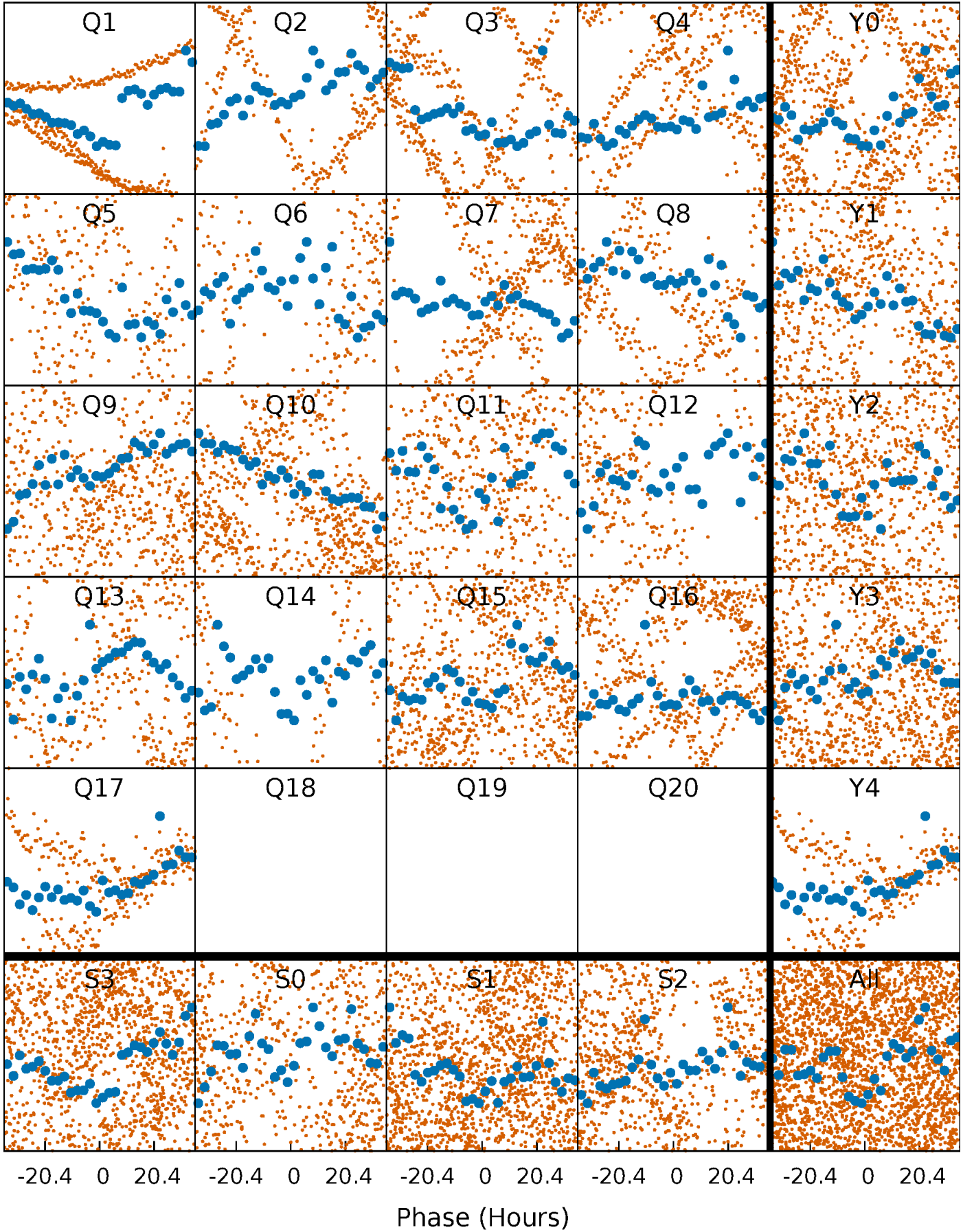


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



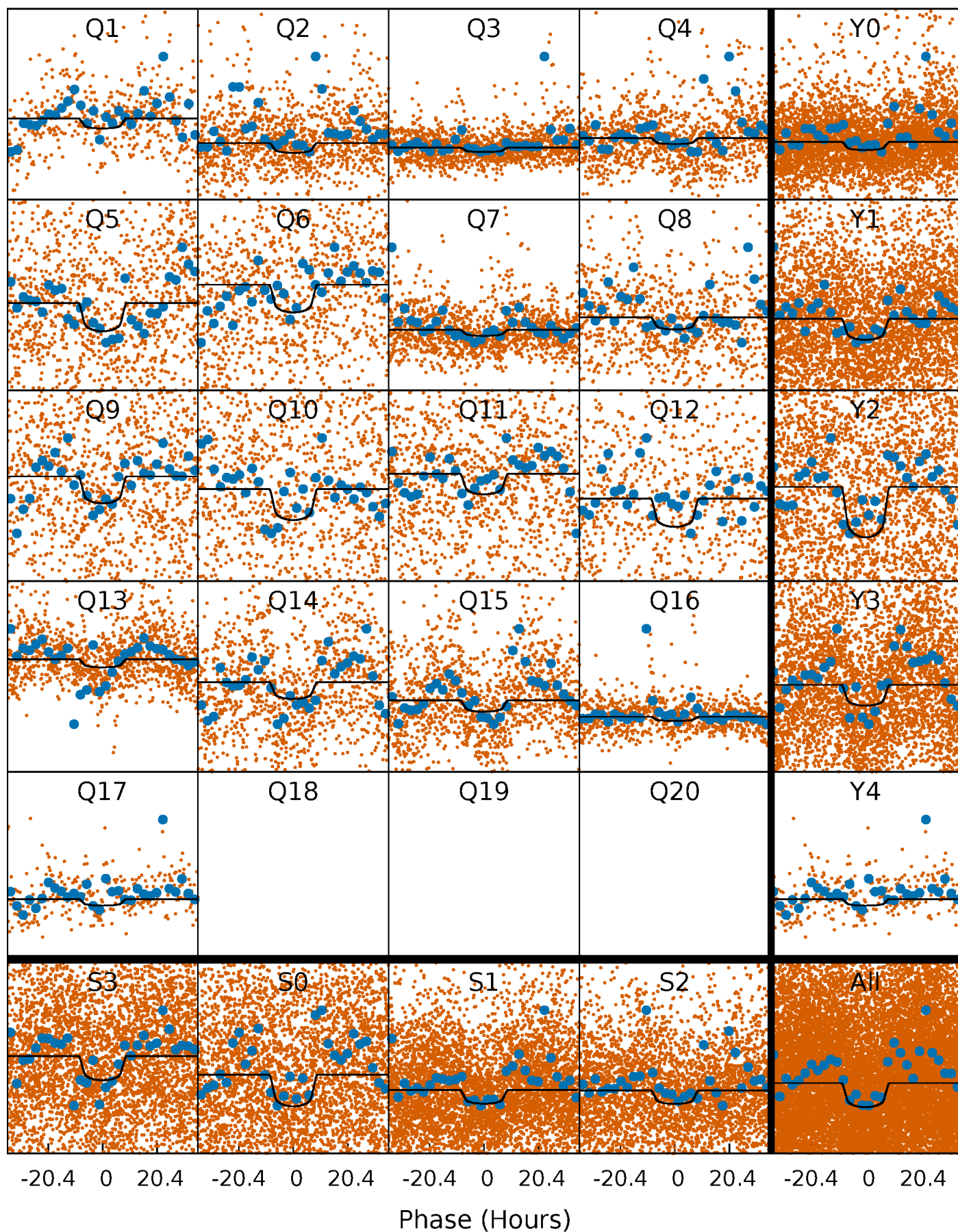
PDC Quarter-Phased Transit Curves

TCE 005437459-01 P= 10.845933 Days $T_0=142.028053$ (BKJD)



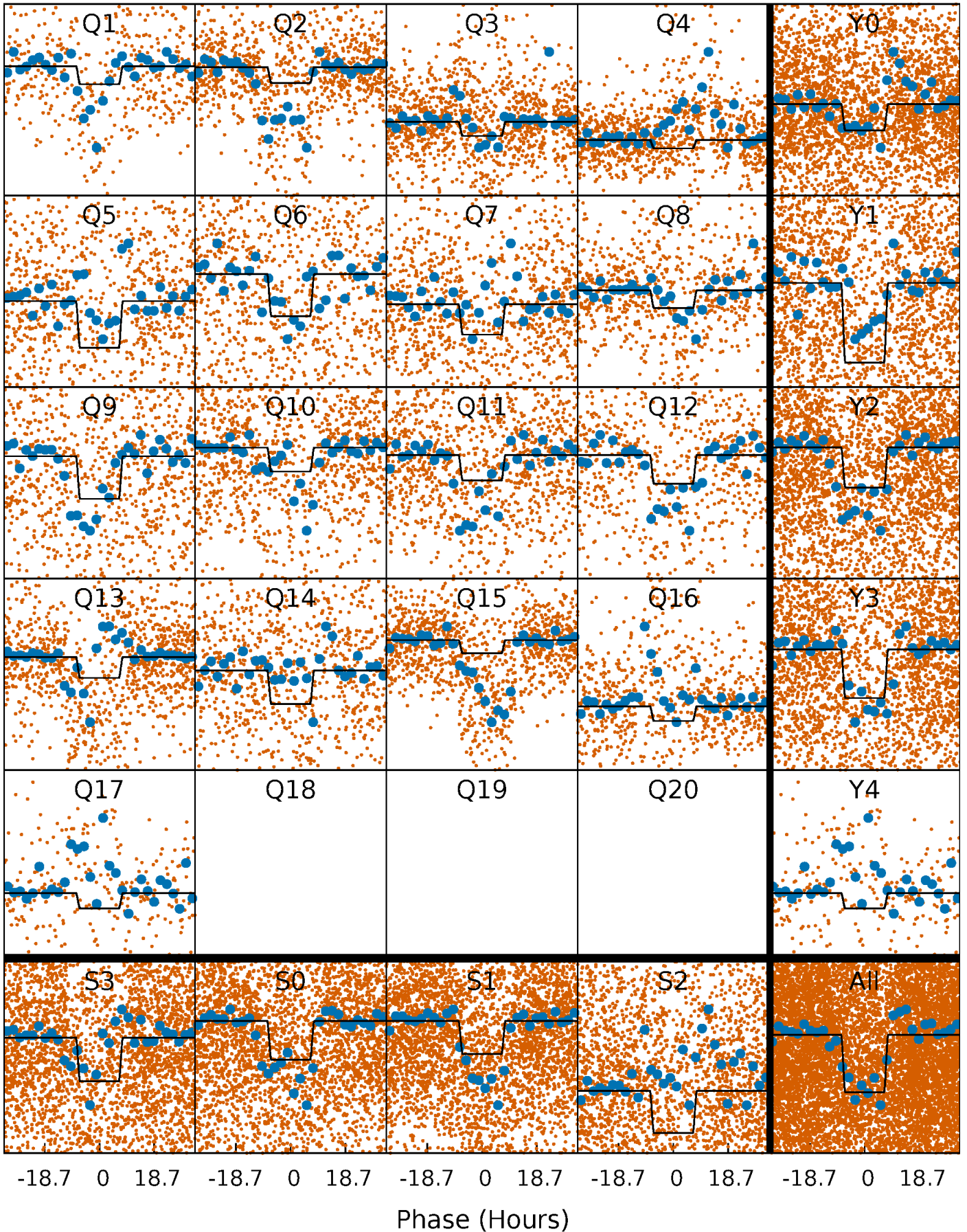
DV Quarter-Phased Transit Curves

TCE 005437459-01 P= 10.845933 Days $T_0=142.028053$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

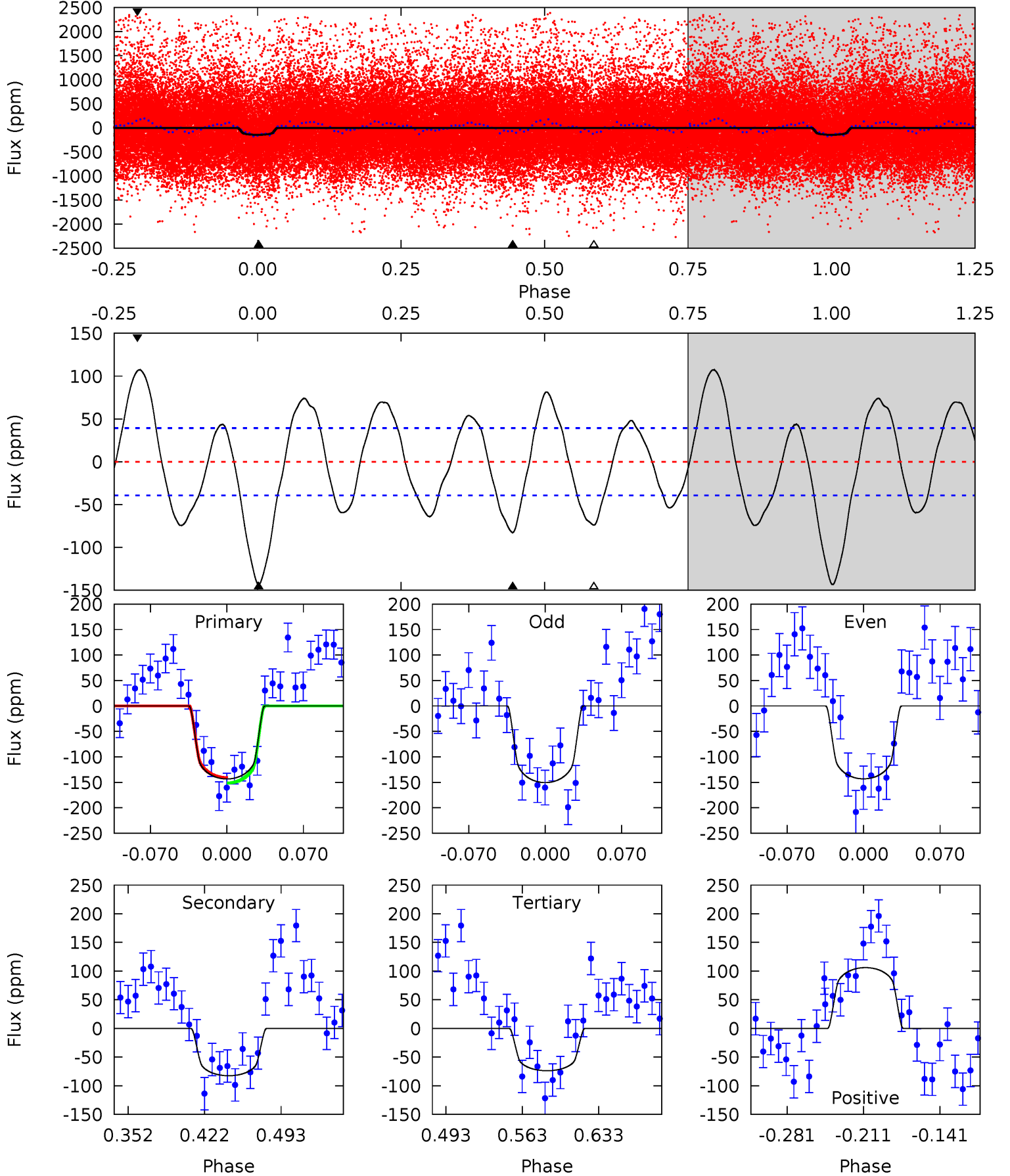
TCE 005437459-01 P= 10.845955 Days $T_0=142.030667$ (BKJD)



DV Model-Shift Uniqueness Test

005437459-01, P = 10.845933 Days, E = 131.182120 Days

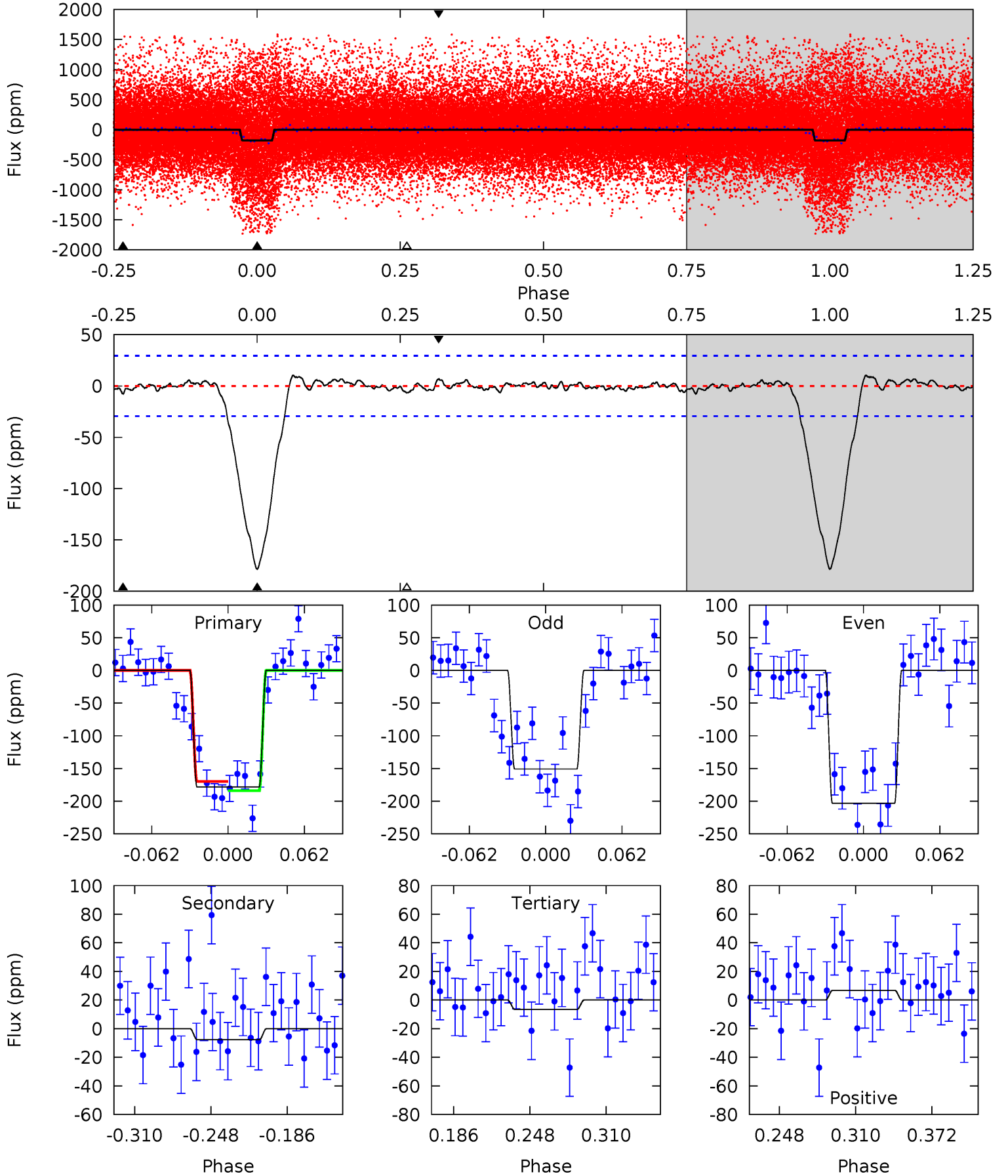
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.0	9.76	8.73	12.5	4.64	1.81	5.82	8.23	4.41	1.03	-2.78	0.44	0.56	0.43	0.63



Alt Model-Shift Uniqueness Test

005437459-01, P = 10.845955 Days, E = 131.184712 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.3	1.22	1.04	1.08	4.66	1.87	0.50	27.3	27.2	0.19	0.15	4.18	1.19	0.06	1.14



Stellar Parameters For KIC 005437459

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3892^{+54}_{-62}	$4.730^{+0.020}_{-0.026}$	$-0.100^{+0.100}_{-0.100}$	$0.531^{+0.023}_{-0.023}$	$0.553^{+0.022}_{-0.027}$	$5.201^{+0.507}_{-0.511}$
	+1%/-2%	+0%/-1%	+100%/-100%	+4%/-4%	+4%/-5%	+10%/-10%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 005437459-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-83 ± 8	$0.90^{+0.09}_{-0.08}$	624^{+10}_{-11}	3275^{+115}_{-106}	345^{+84}_{-61}
Alt.	-8 ± 6	$0.77^{+0.09}_{-0.08}$	624^{+11}_{-11}	2474^{+216}_{-412}	44^{+40}_{-35}

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

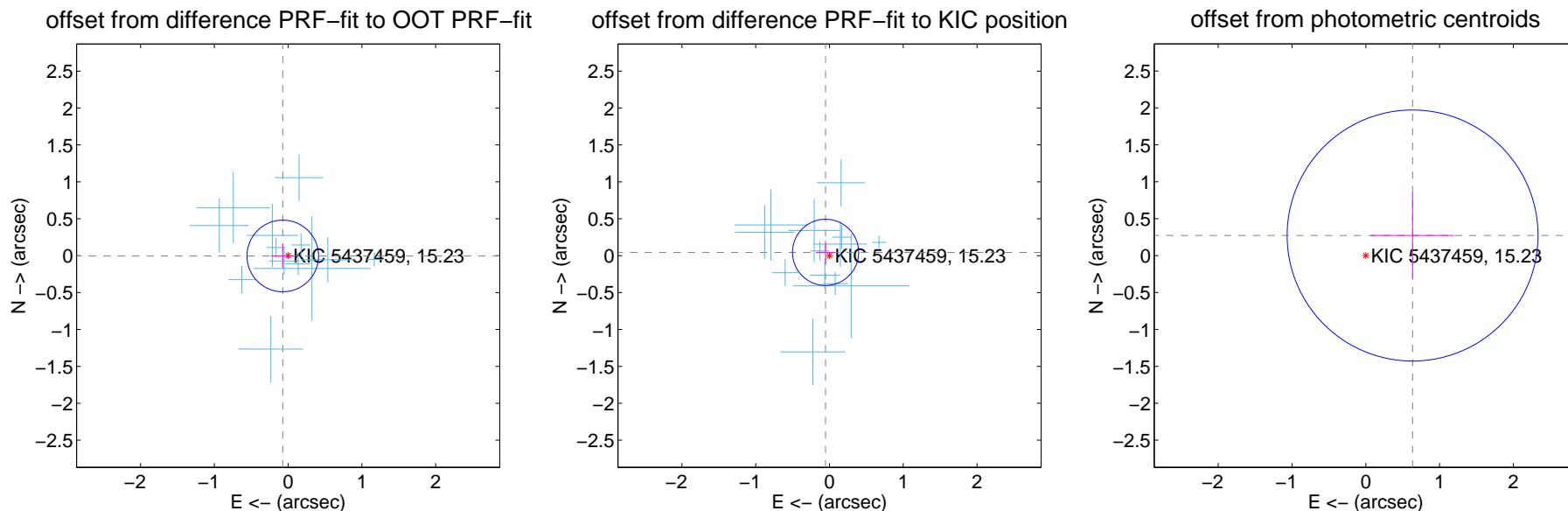
DV Centroid Data

Supplemental centroid analysis for 005437459-01. Kepler magnitude: 15.23. Transit SNR 8.09

There are 13 quarters with good PRF difference image offsets

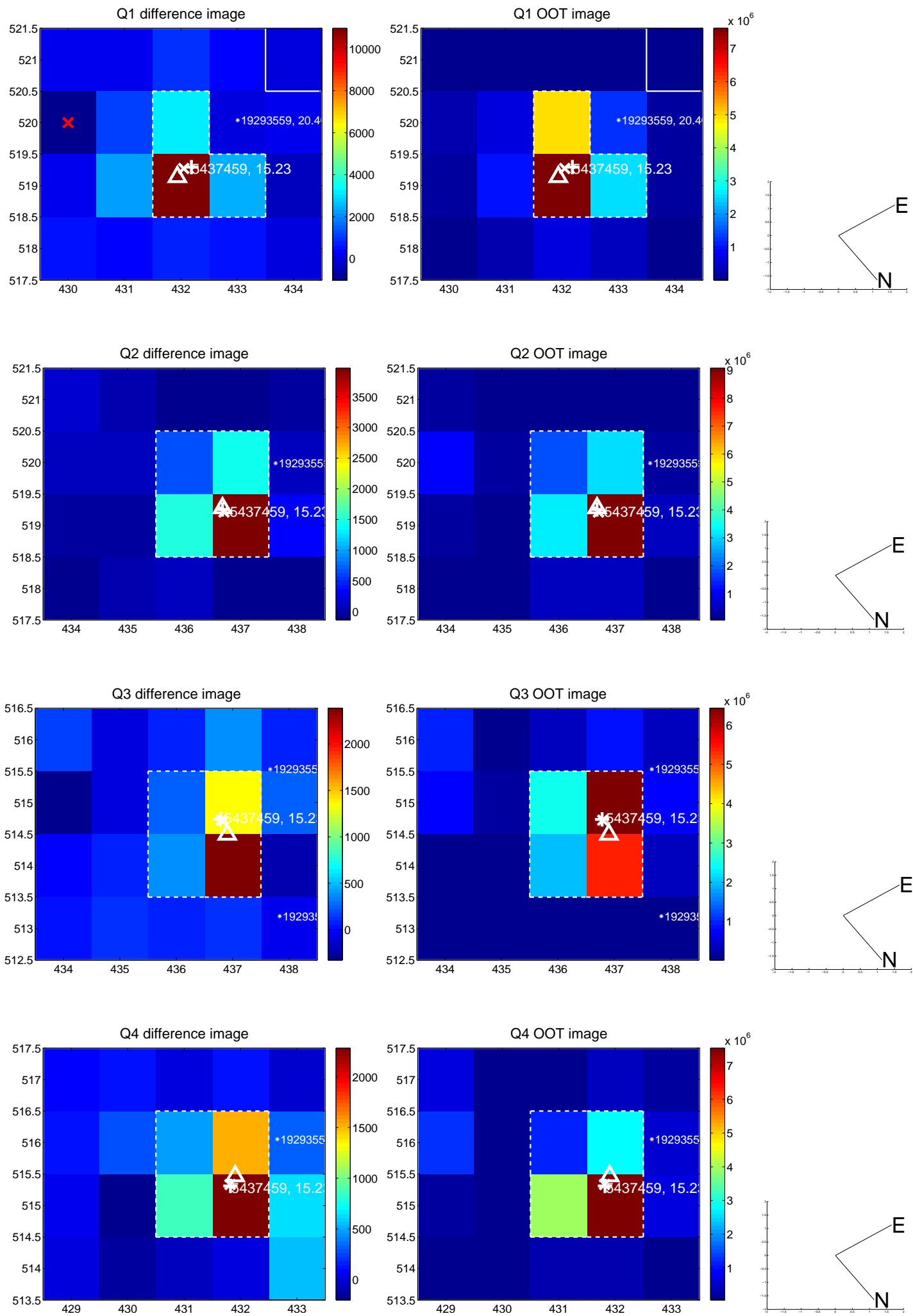
The direct PRF centroid is offset from the target star catalog position by about 0.45 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.073 ± 0.162	0.45	0.072 ± 0.162	-0.004 ± 0.168
PRF-fit source offset from KIC position	0.069 ± 0.149	0.46	0.053 ± 0.130	0.045 ± 0.158
photometric centroid source offset	0.69 ± 0.57	1.22	-0.63 ± 0.56	0.27 ± 0.58

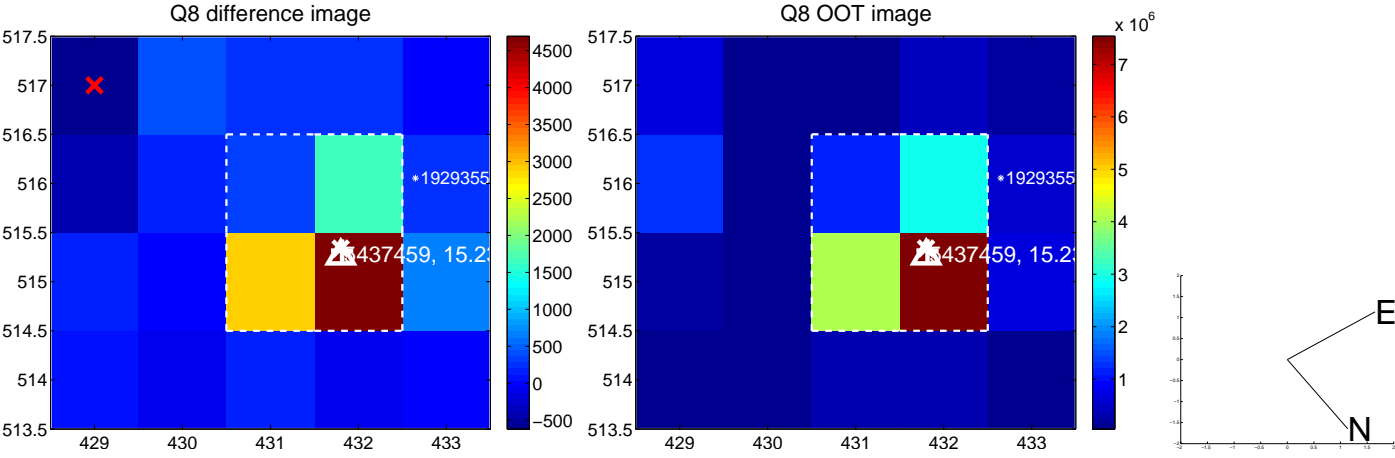
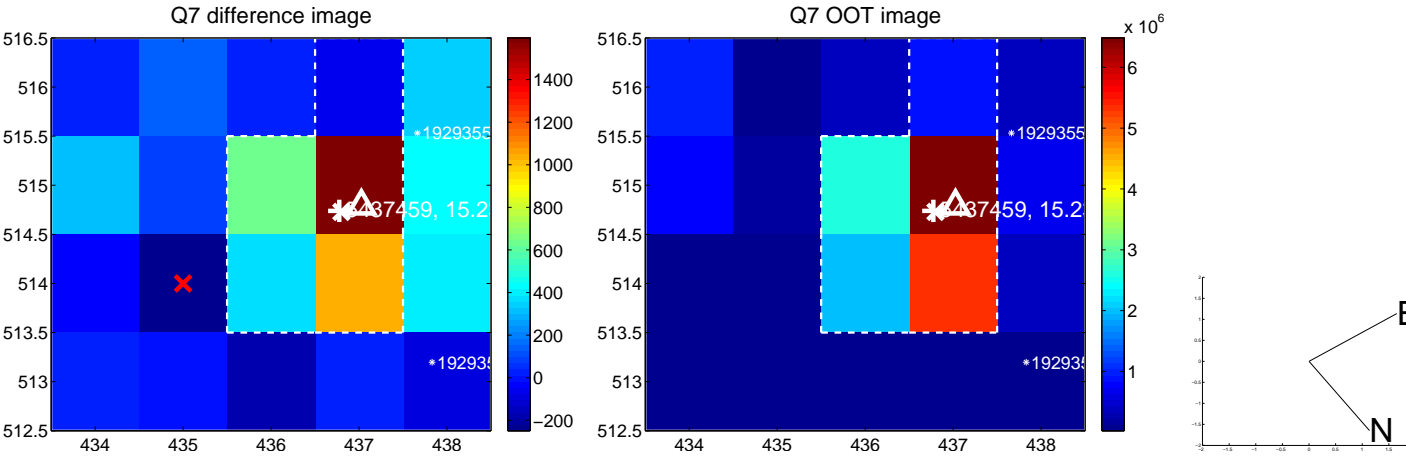
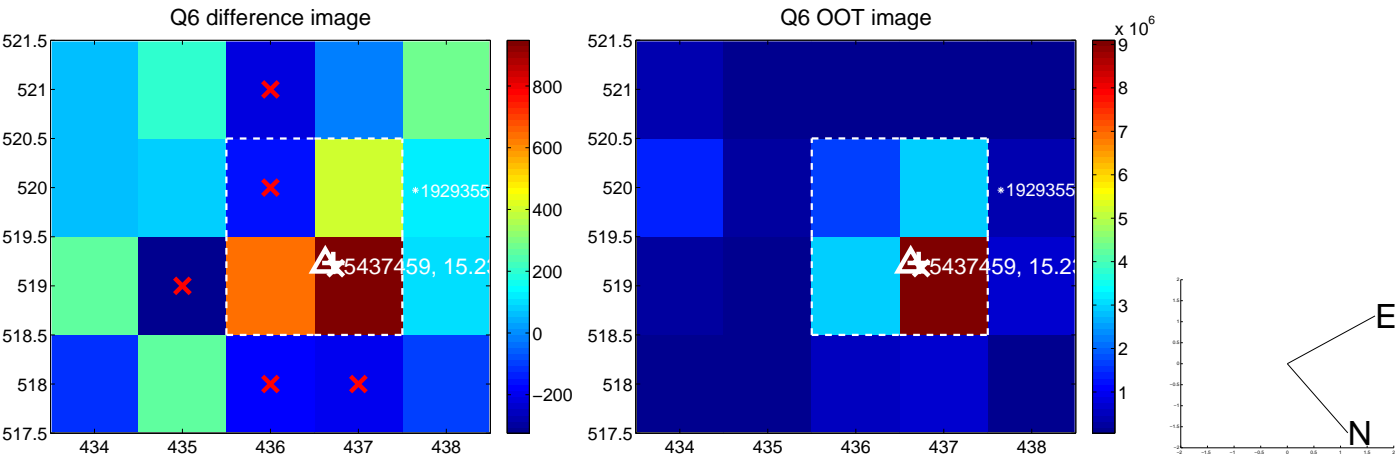
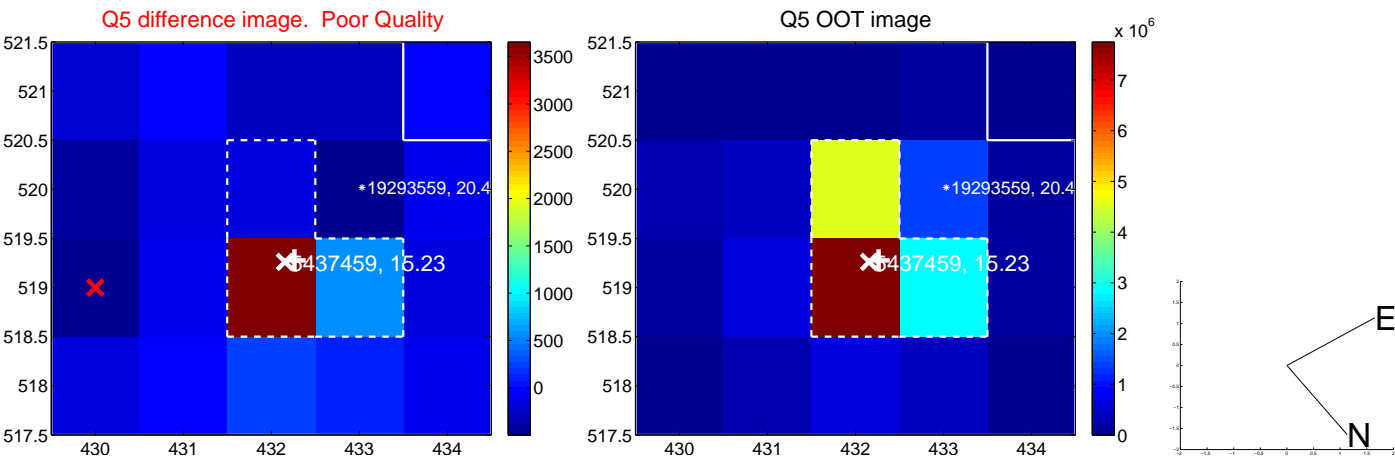


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

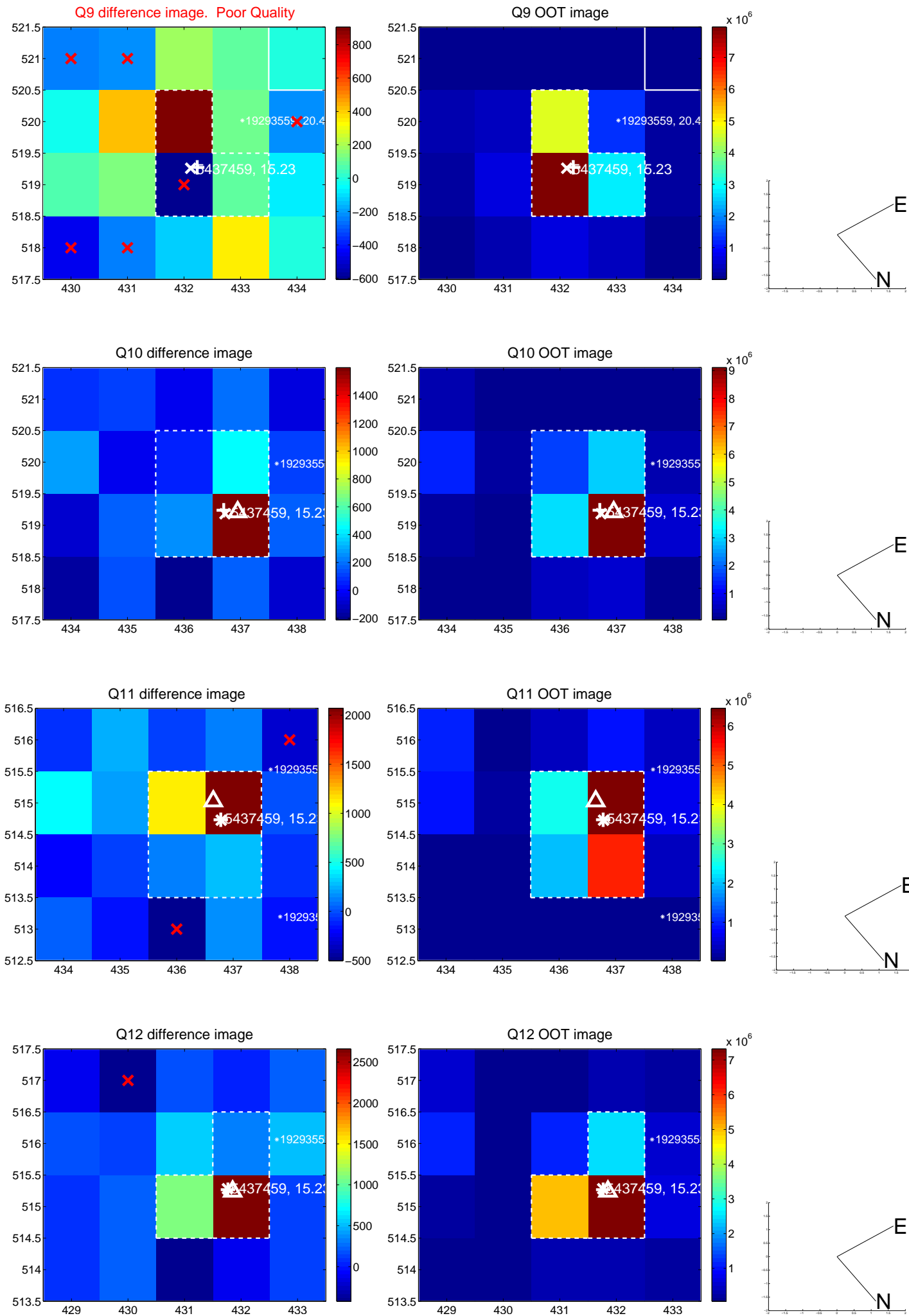
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



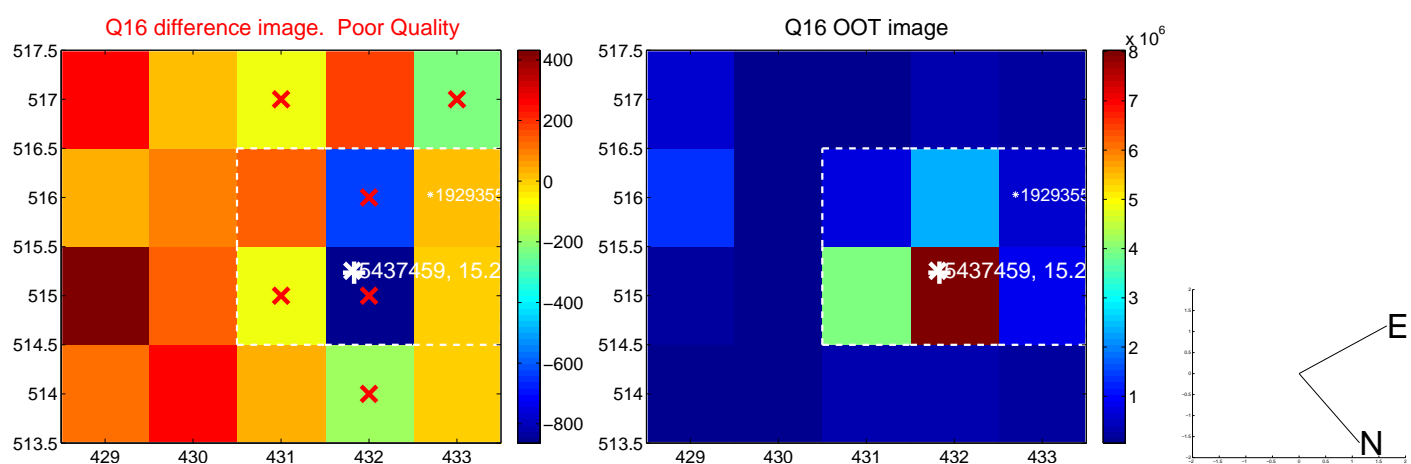
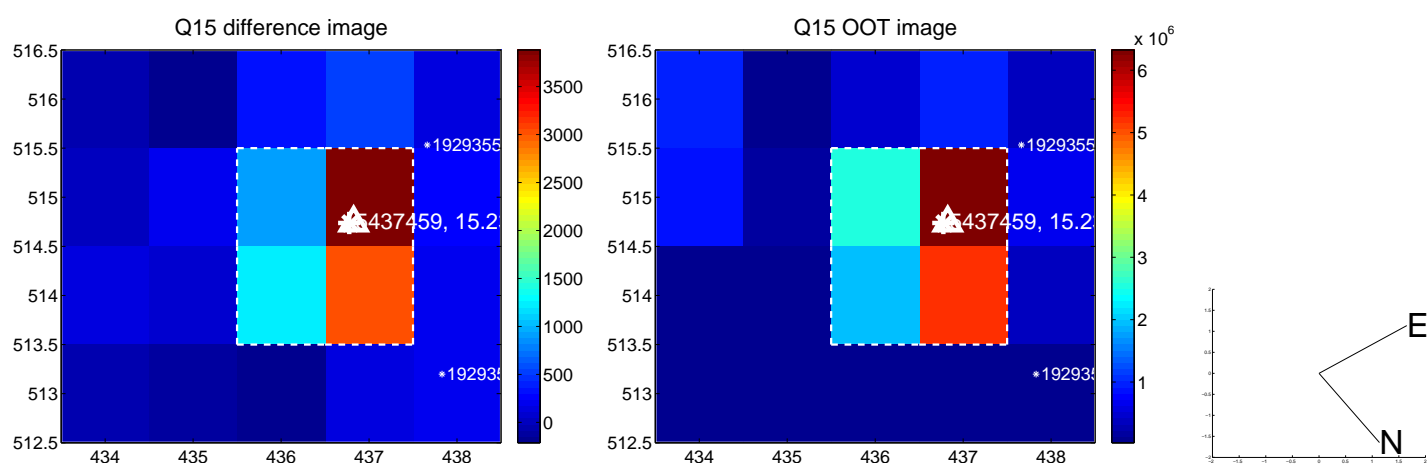
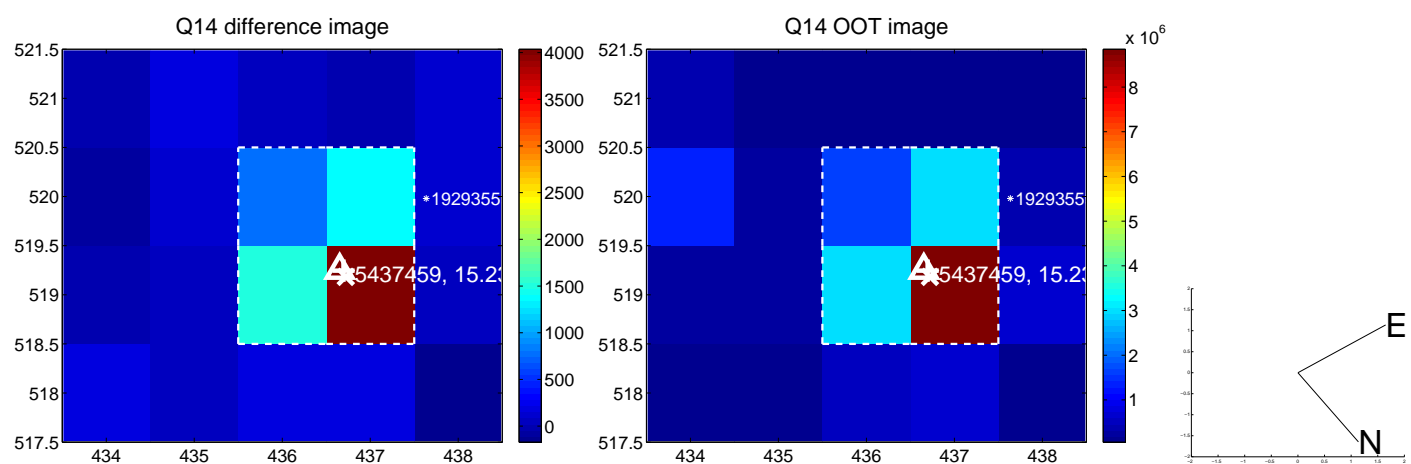
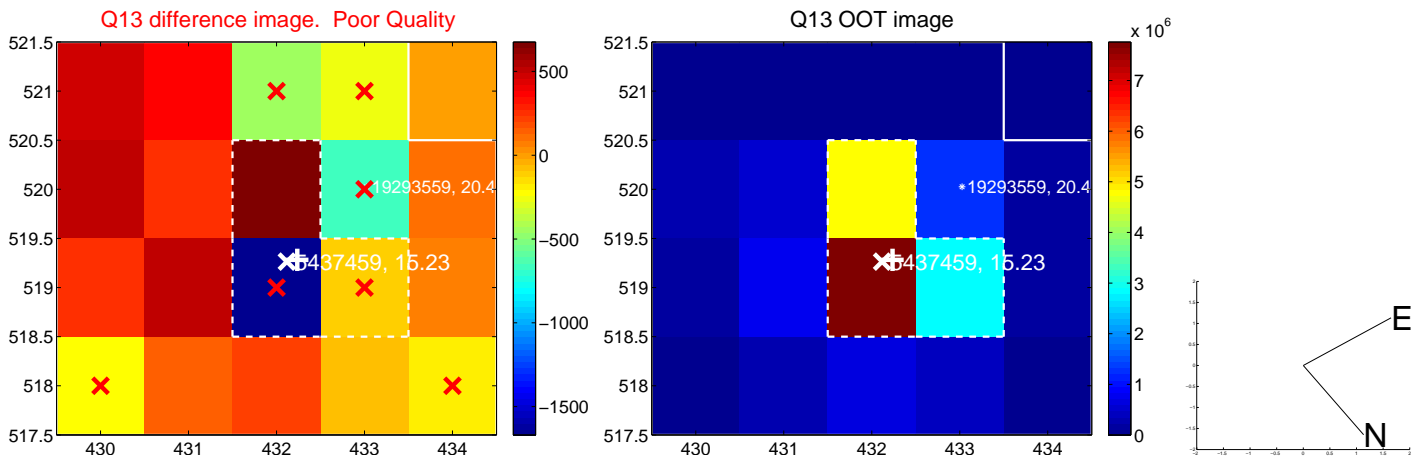
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



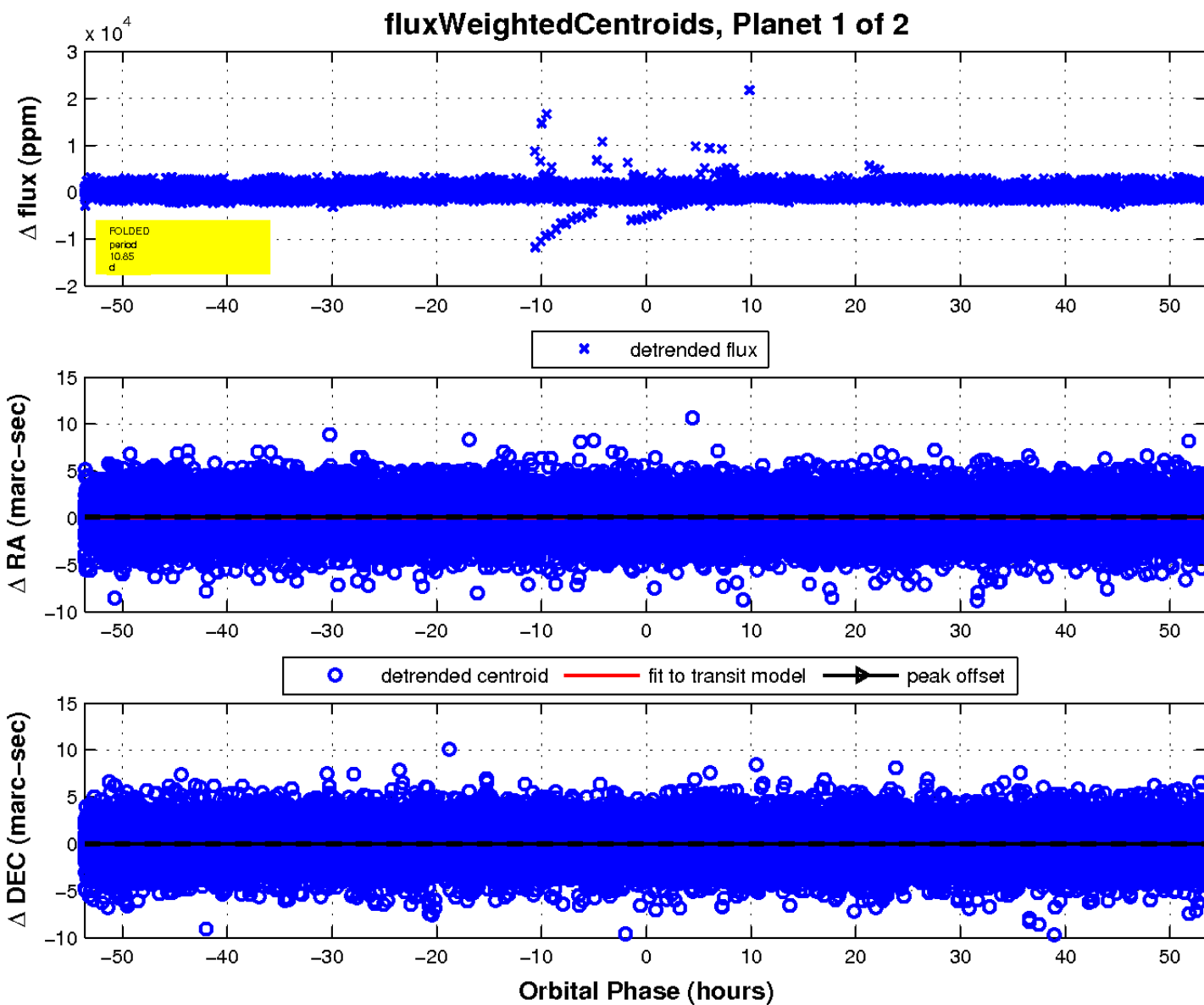
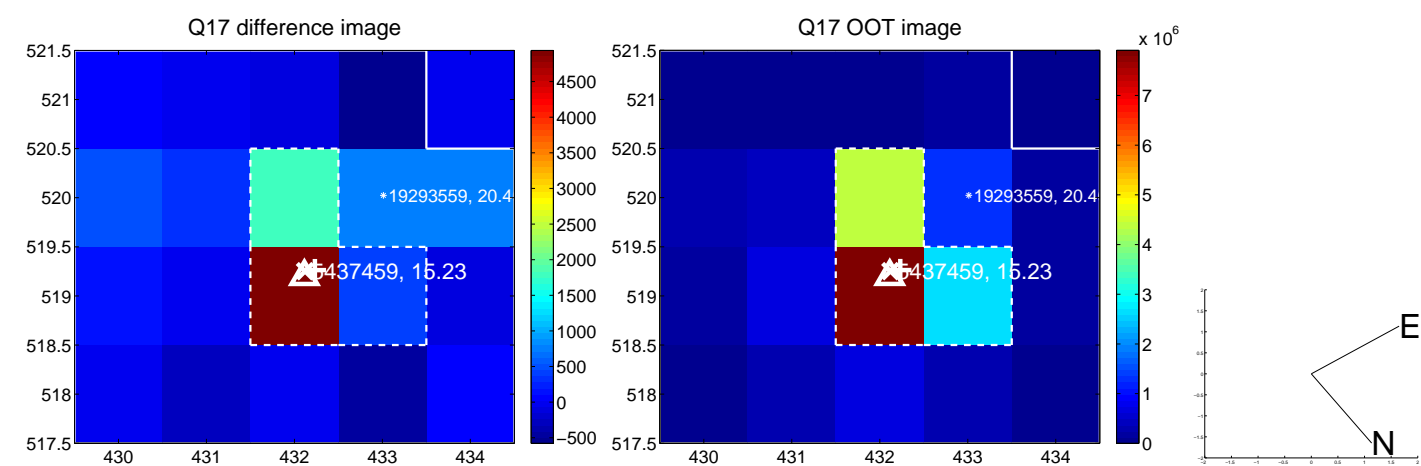
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

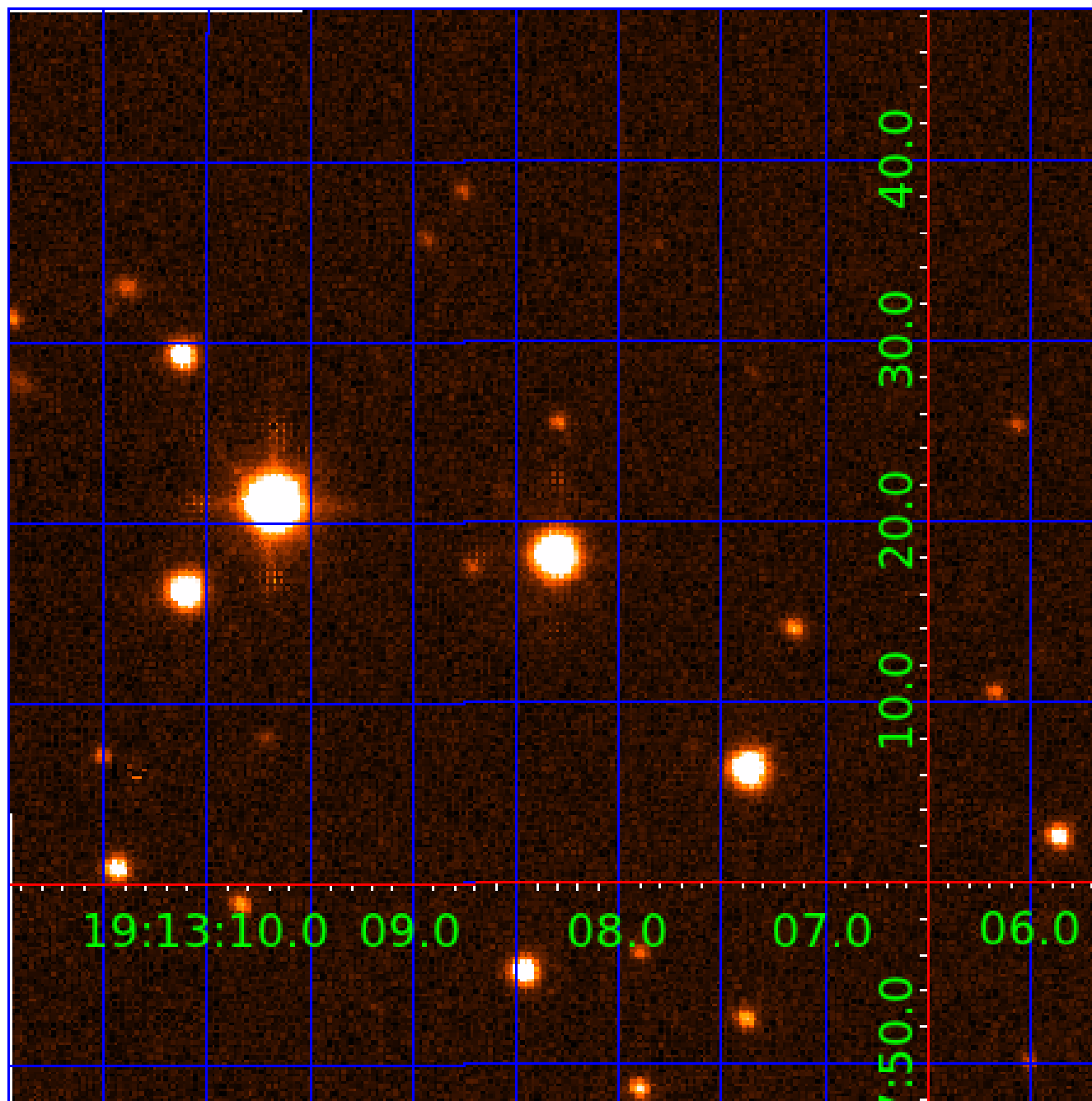


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005437459

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})
005437459-01	OBS	No	10.845933	142.028053	178.2	17.874	8.6	8.1	0.53	3892	0.90	9.36
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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005437459-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—INCONSISTENT_TRANS—HALO_GHOST

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

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

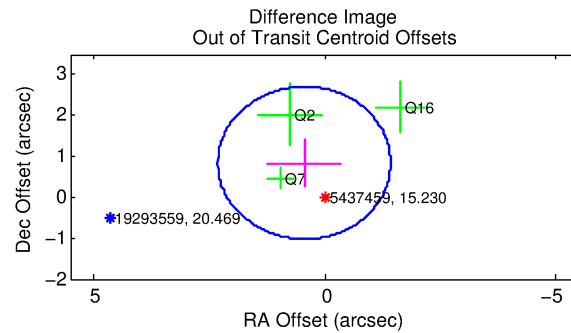
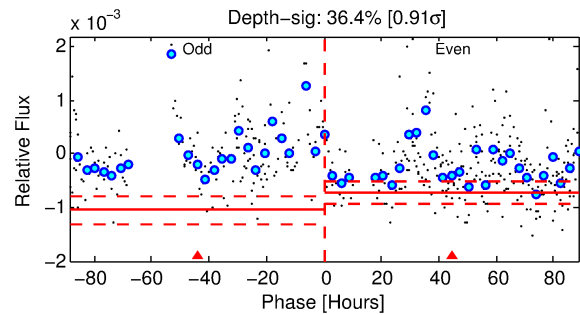
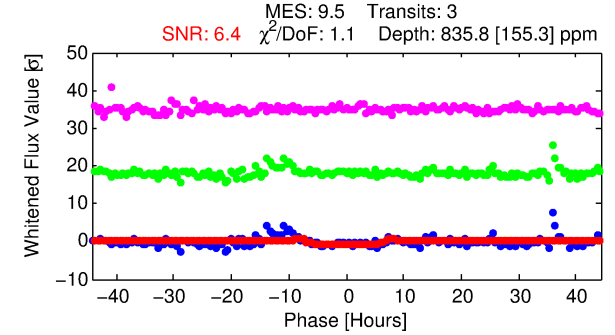
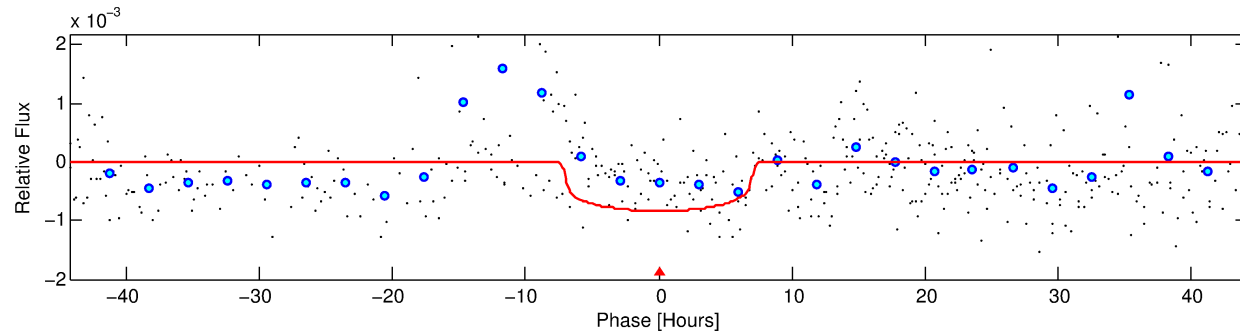
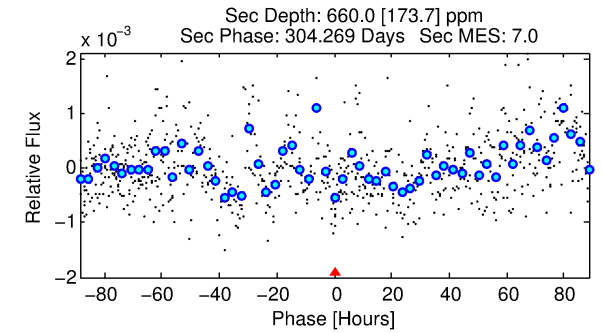
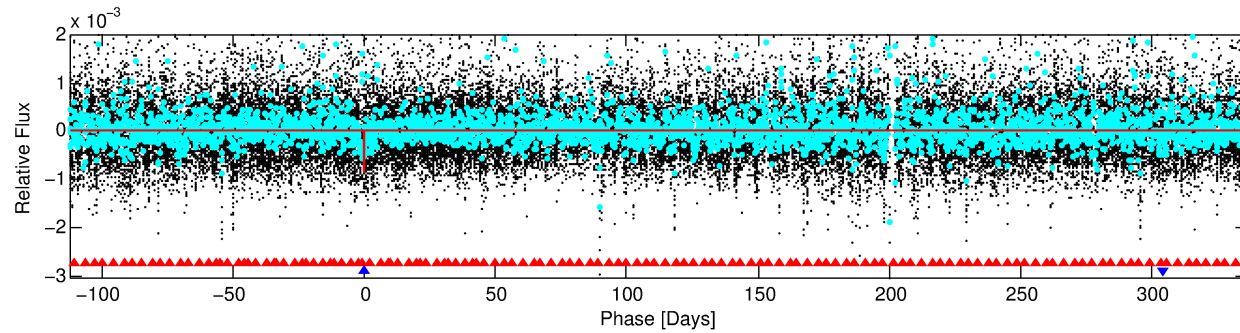
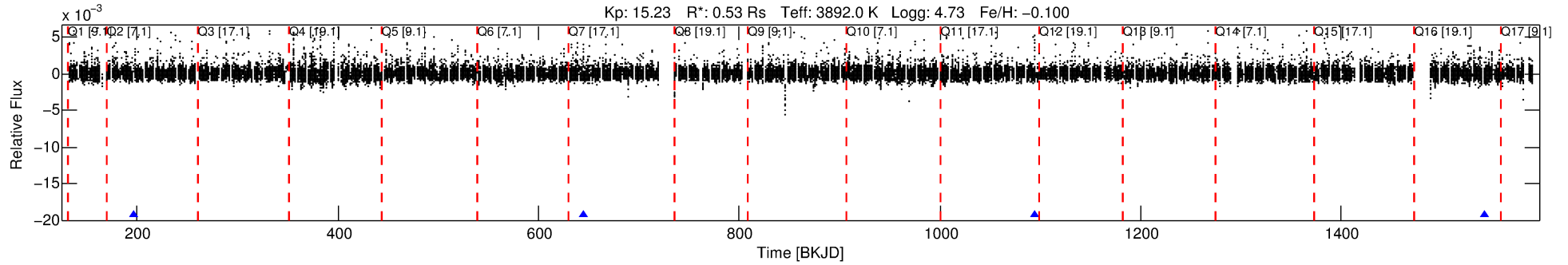
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005437459-02

No Significant Match Found

DV One-Page Summary

KIC: 5437459 Candidate: 2 of 2 Period: 448.731 d



DV Fit Results:

Period = 448.73125 [0.01498] d
Epoch = 196.8422 [0.0306] BKJD
Rp/R* = 0.0275 [0.0118]
a/R* = 194.34 [343.19]
b = 0.60 [1.91]
Seff = 0.07 [0.01]
Teq = 129 [3] K
Rp = 1.59 [0.69] Re
a = 0.9413 [0.0330] AU
Ag = 126714.38 [114201.07] [1.11 σ]
Teffp = 3762 [848] K [4.28 σ]

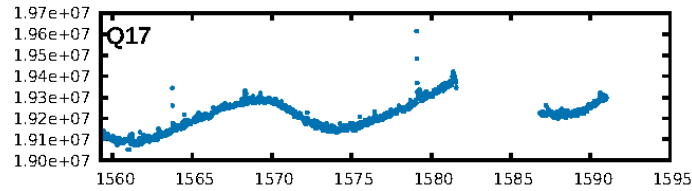
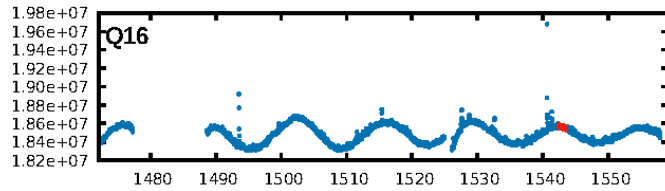
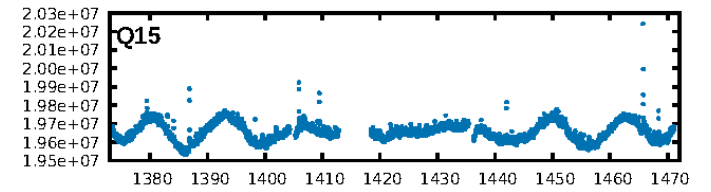
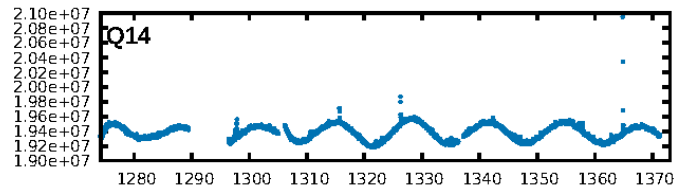
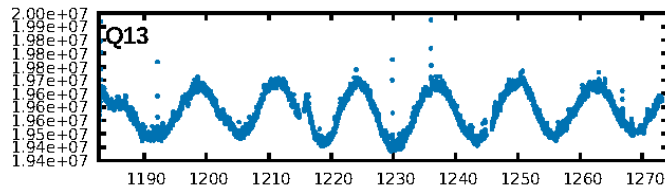
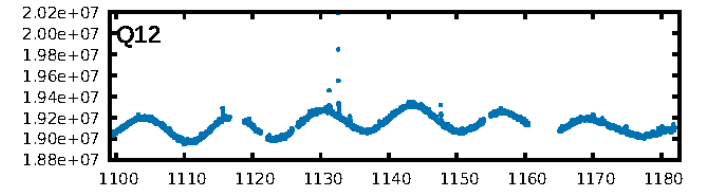
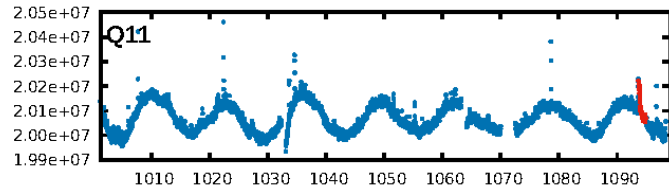
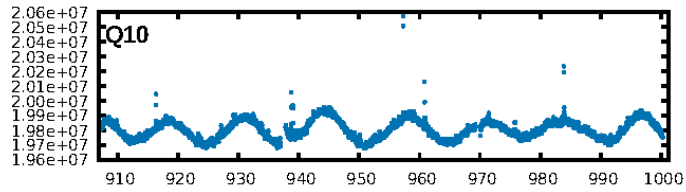
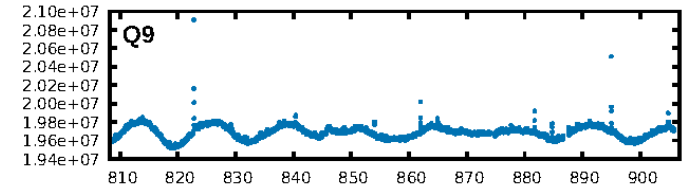
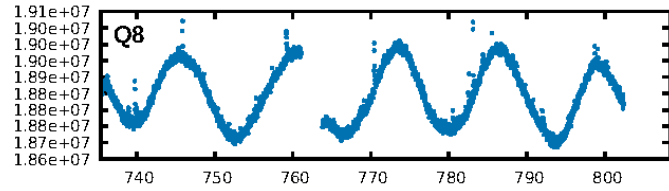
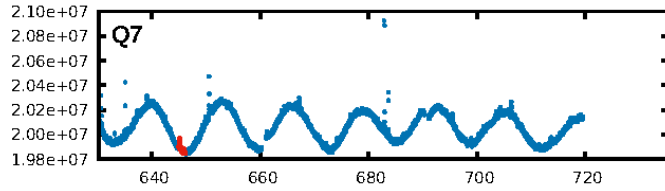
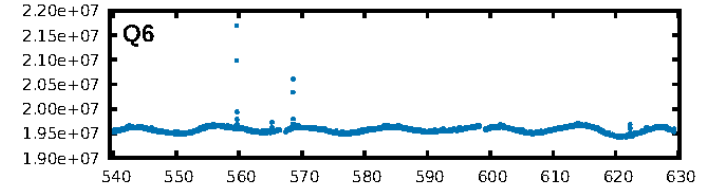
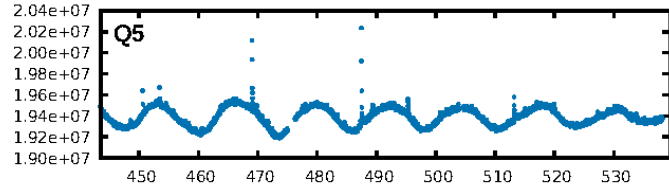
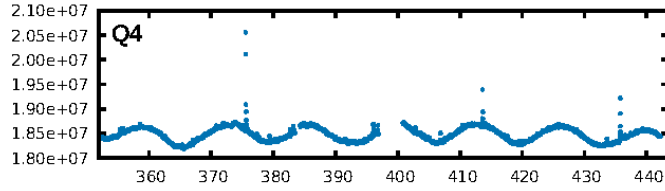
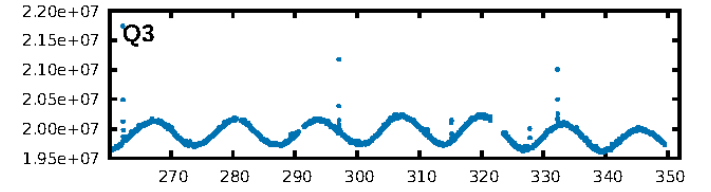
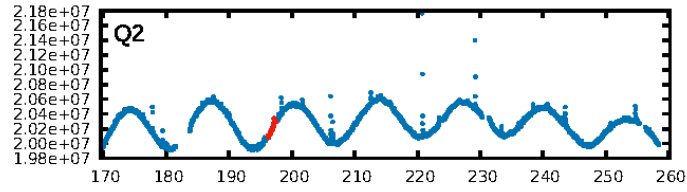
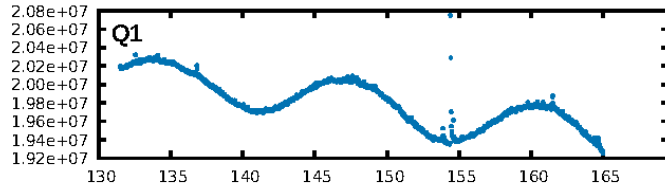
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [453.48 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 53.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.95e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.2366
Centroid-sig: 58.5%
Centroid-so: 0.382 arcsec [0.49 σ]
OotOffset-rm: 0.950 arcsec [1.53 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.835 arcsec [1.32 σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.67 [2/3]

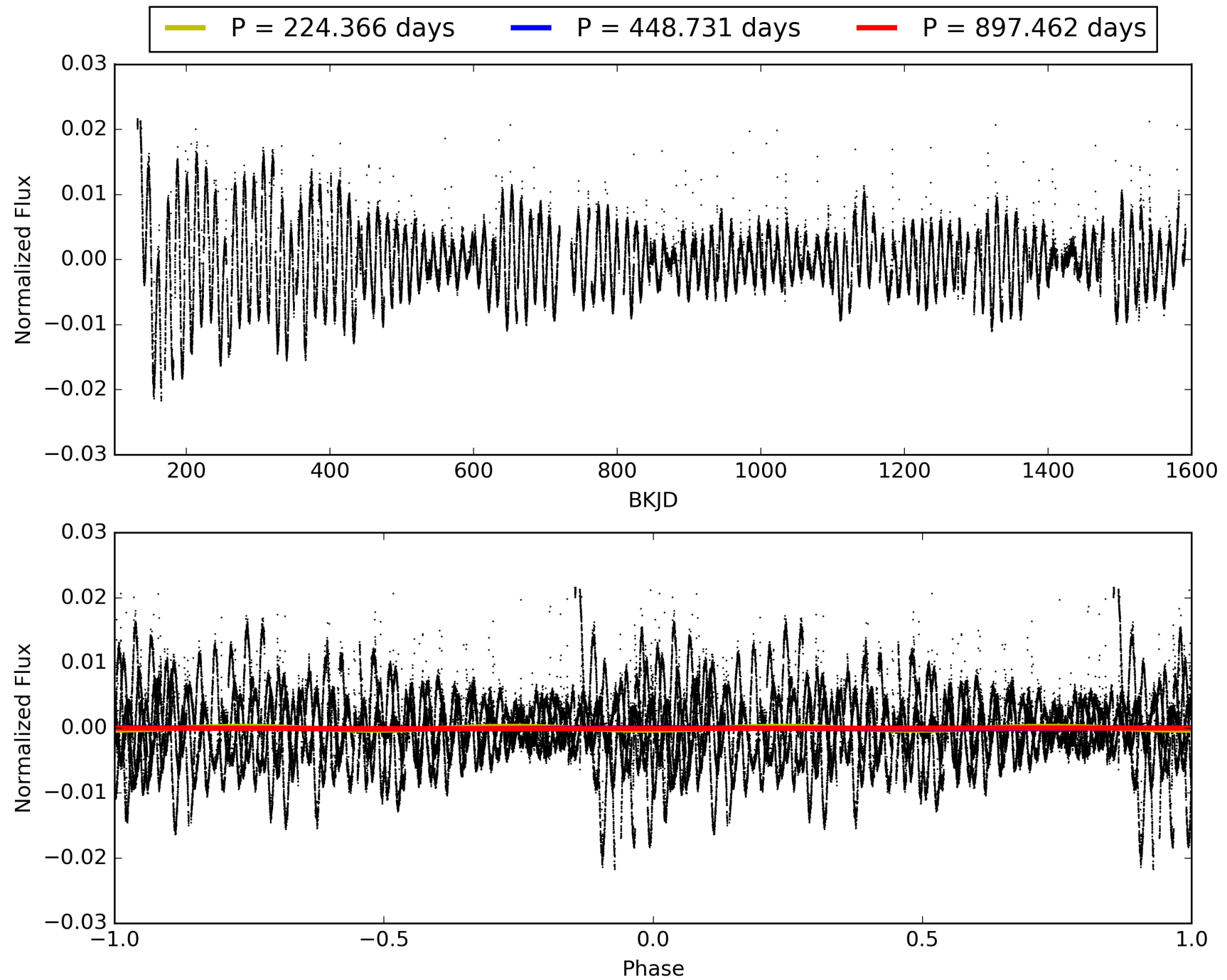
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005437459-02, PDC Light Curves

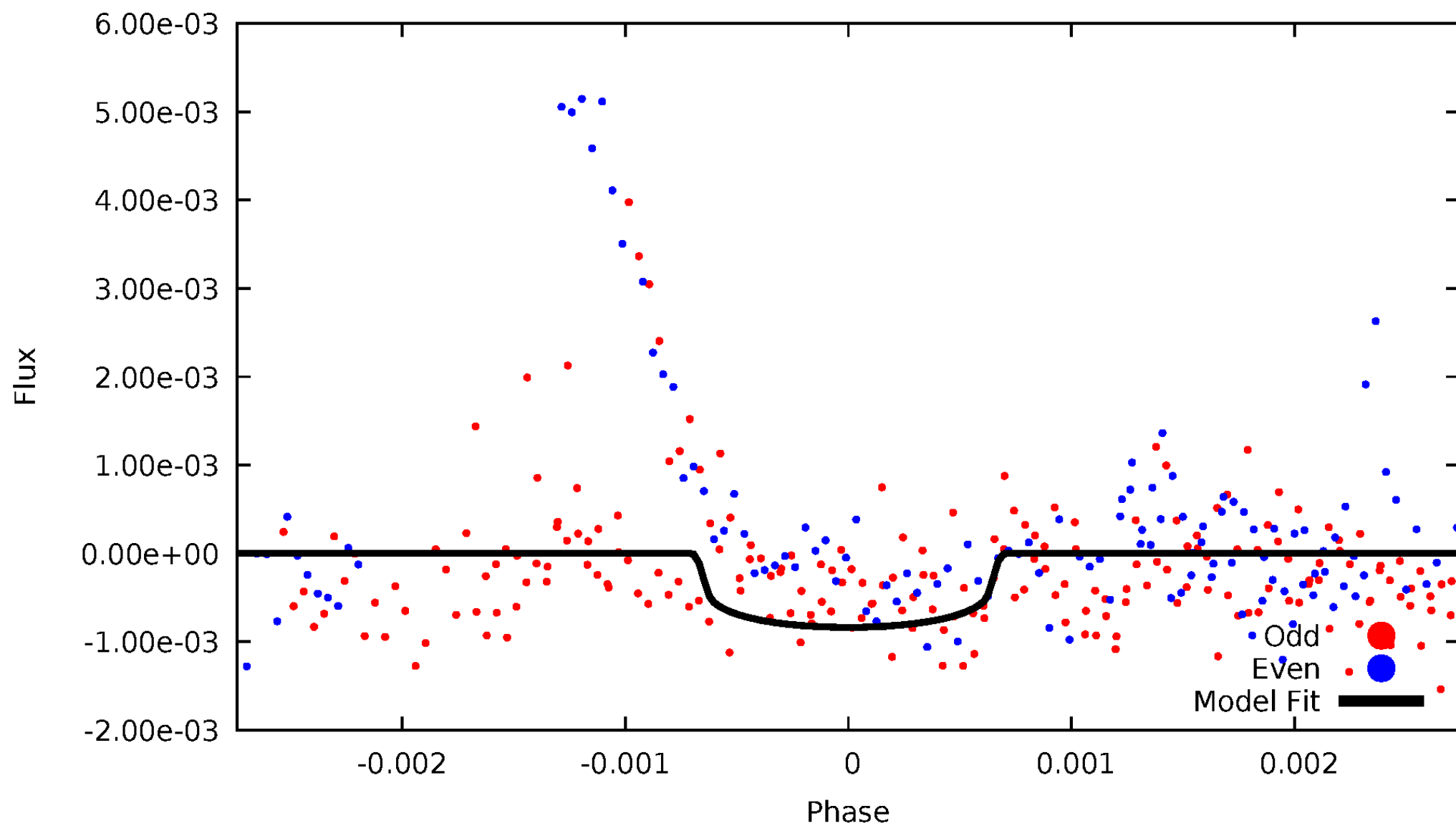


TCE 005437459-02



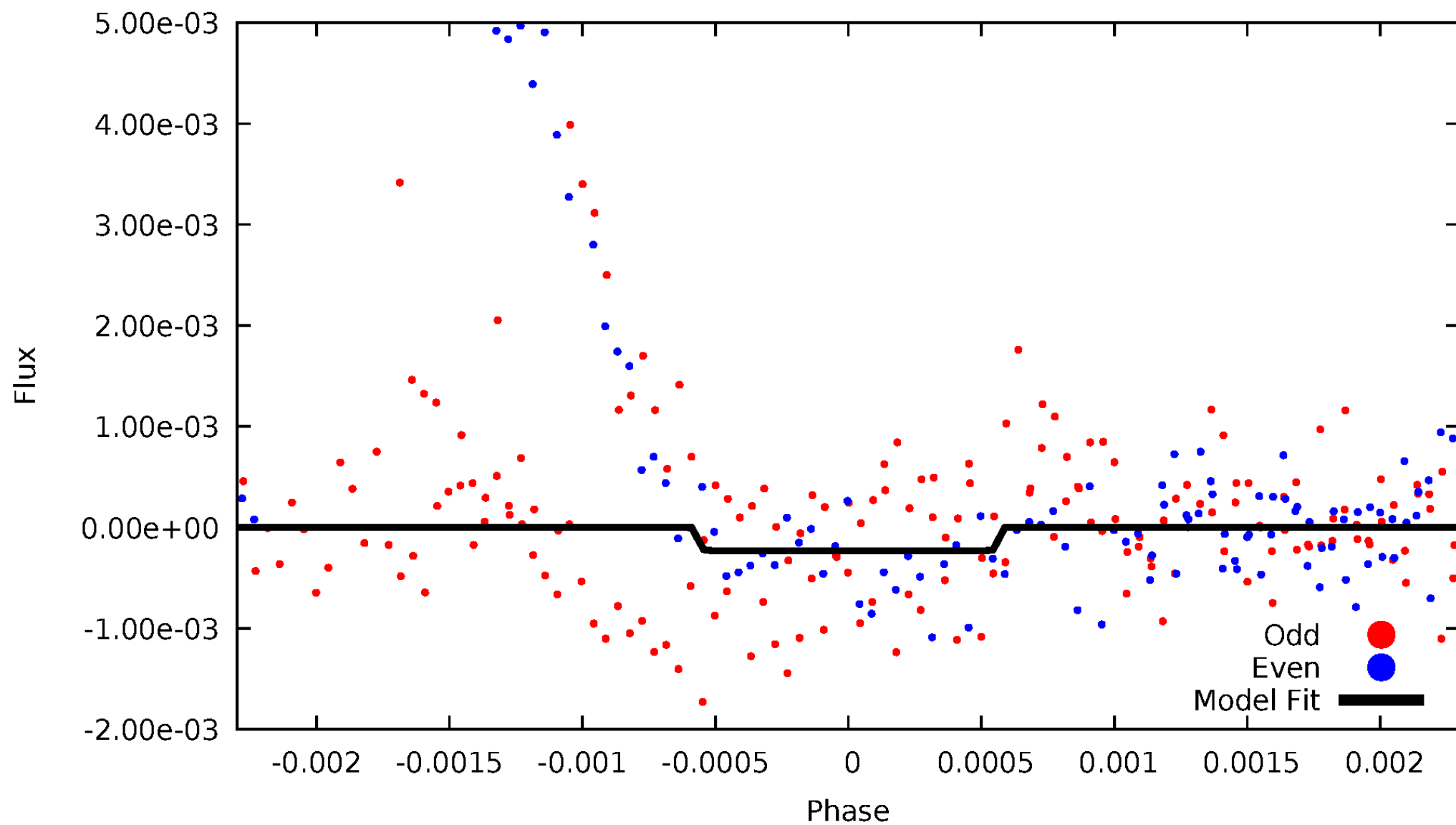
DV Odd/Even

TCE 005437459-02



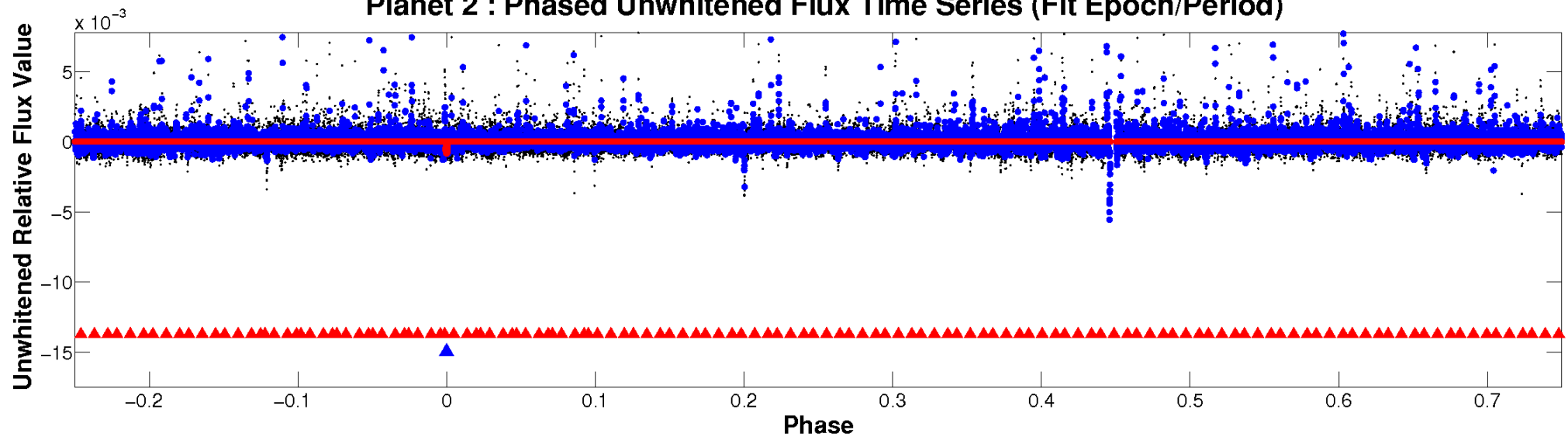
ALT Odd/Even

TCE 005437459-02

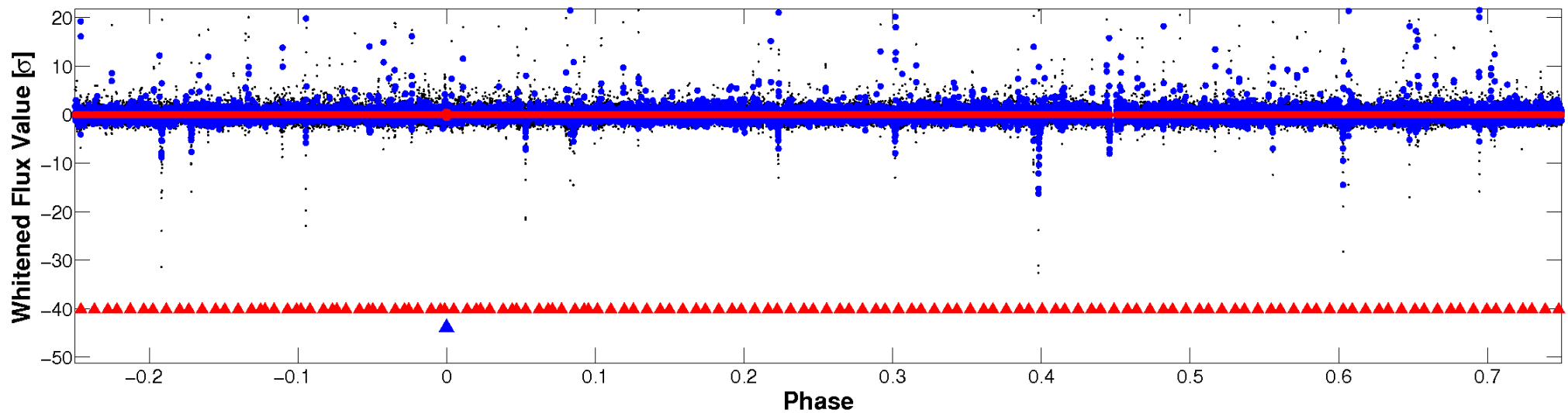


Non-Whitened Vs. Whitened Light Curve

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

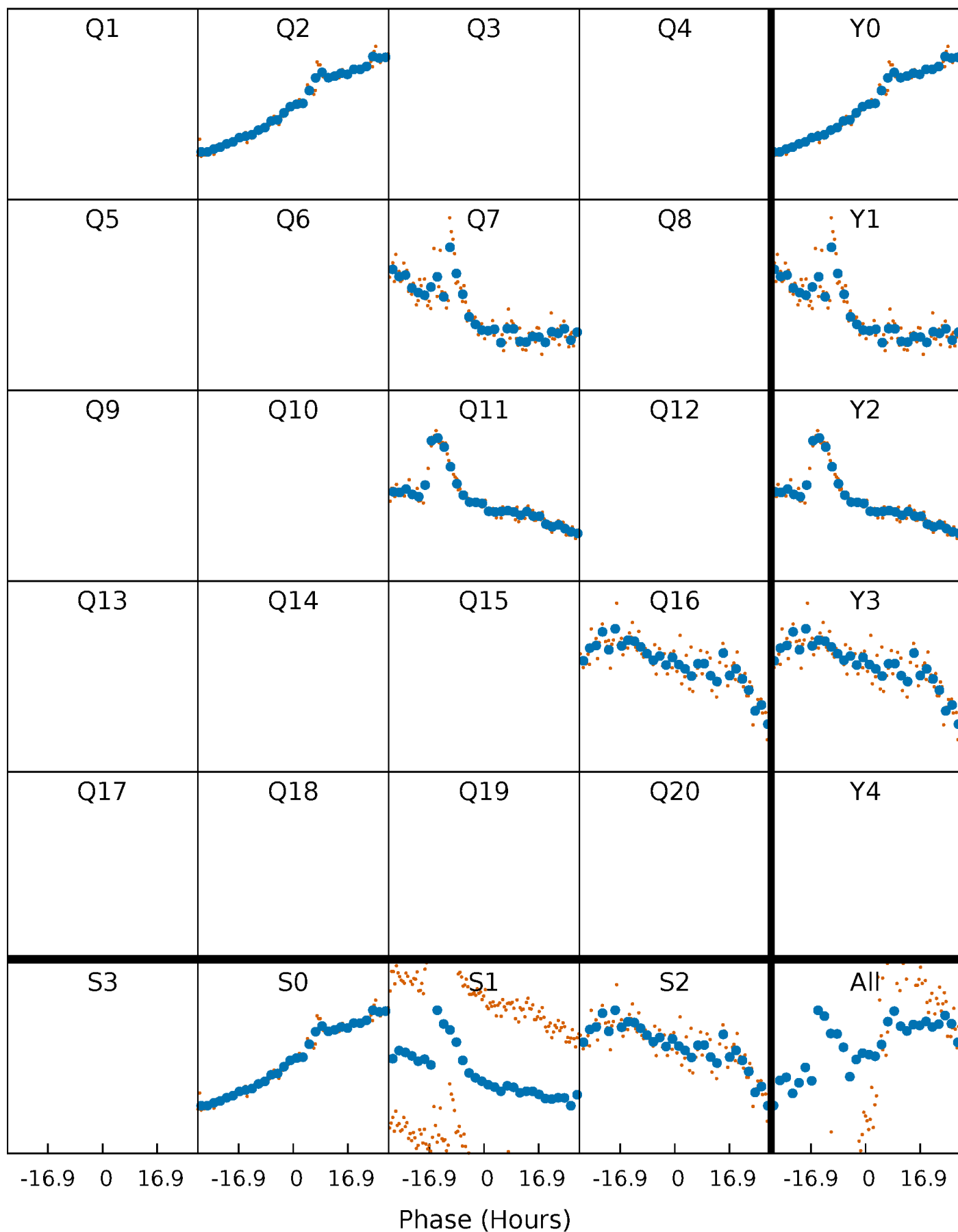


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



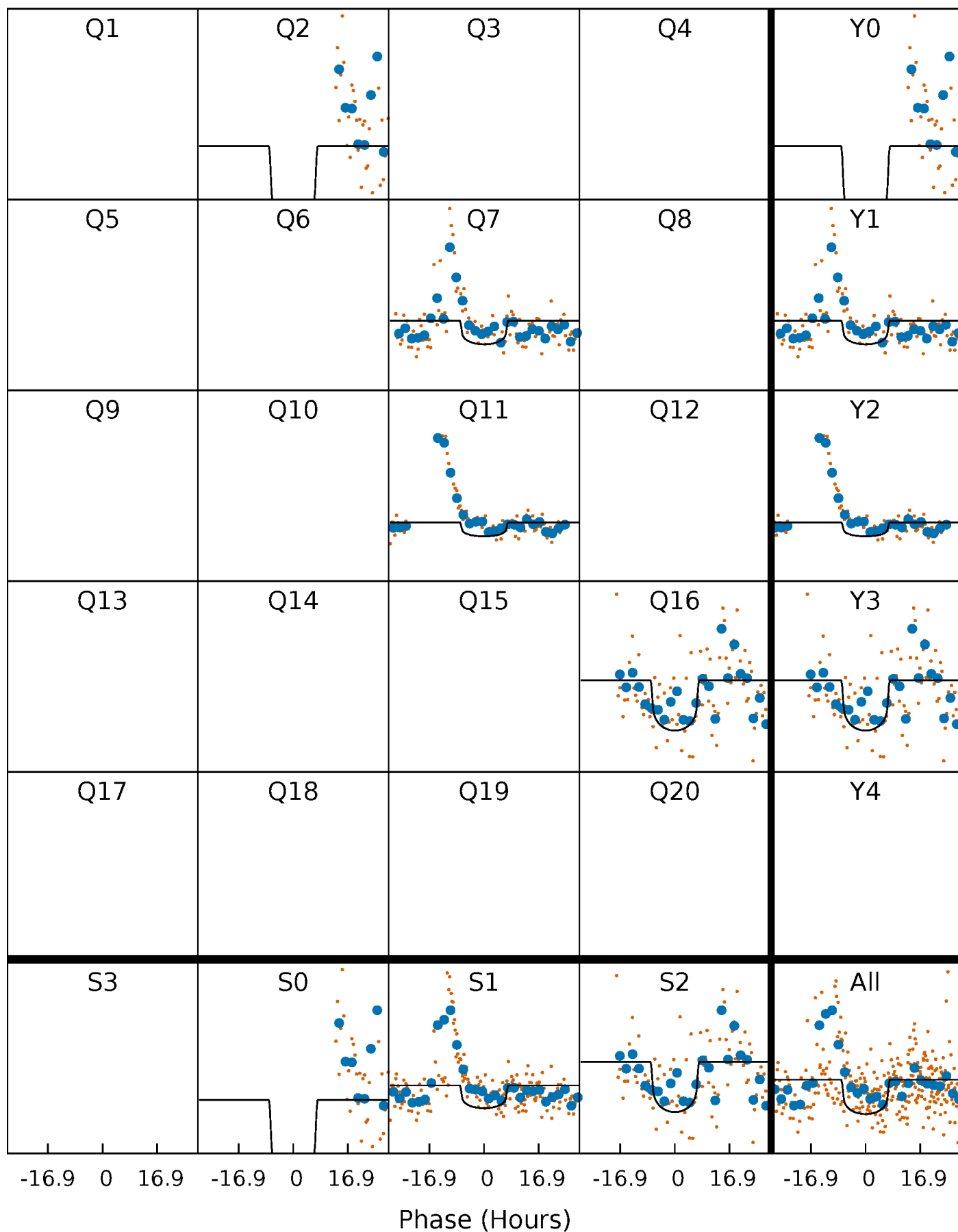
PDC Quarter-Phased Transit Curves

TCE 005437459-02 P=448.731247 Days $T_0=196.842191$ (BKJD)



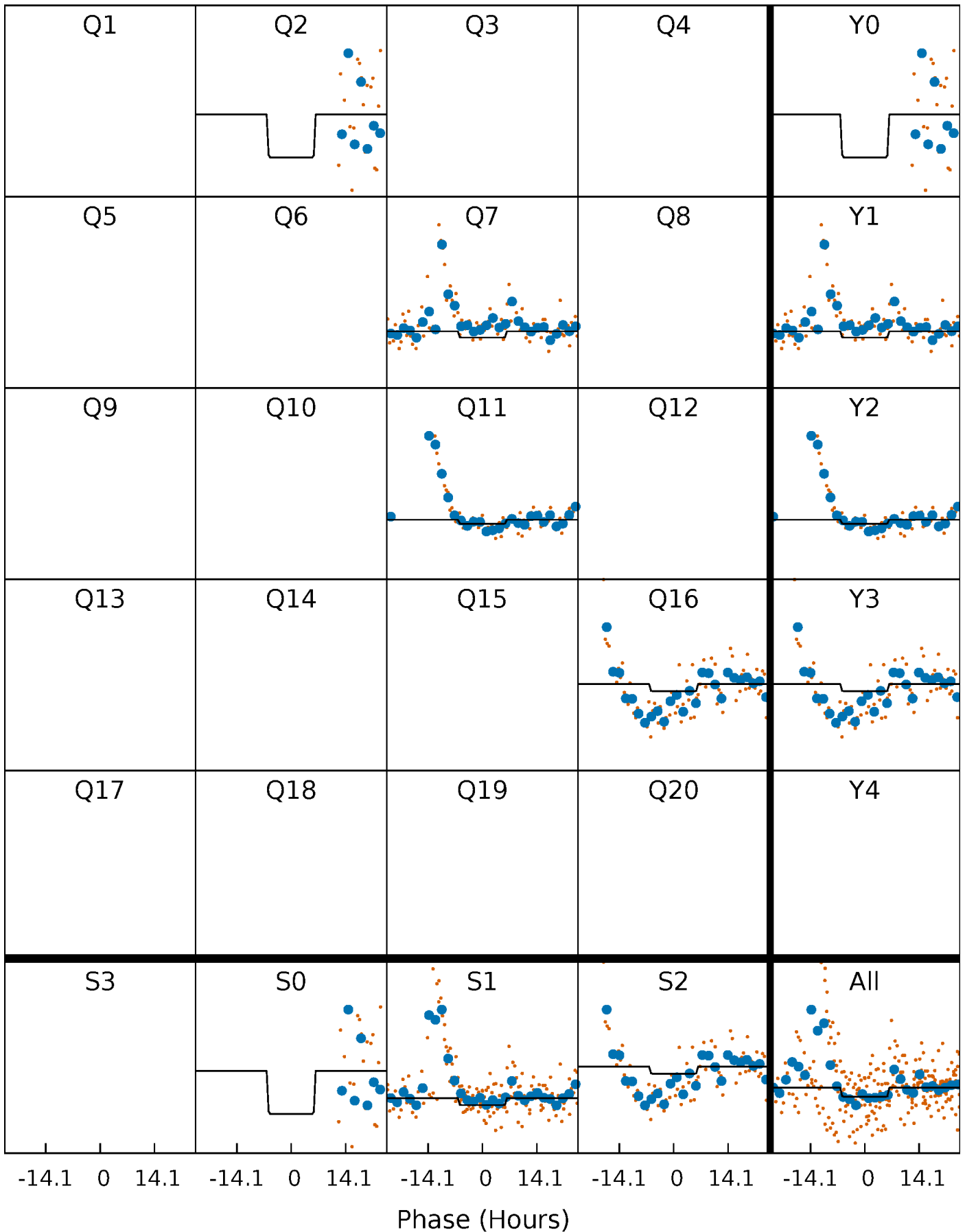
DV Quarter-Phased Transit Curves

TCE 005437459-02 P=448.731247 Days $T_0=196.842191$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

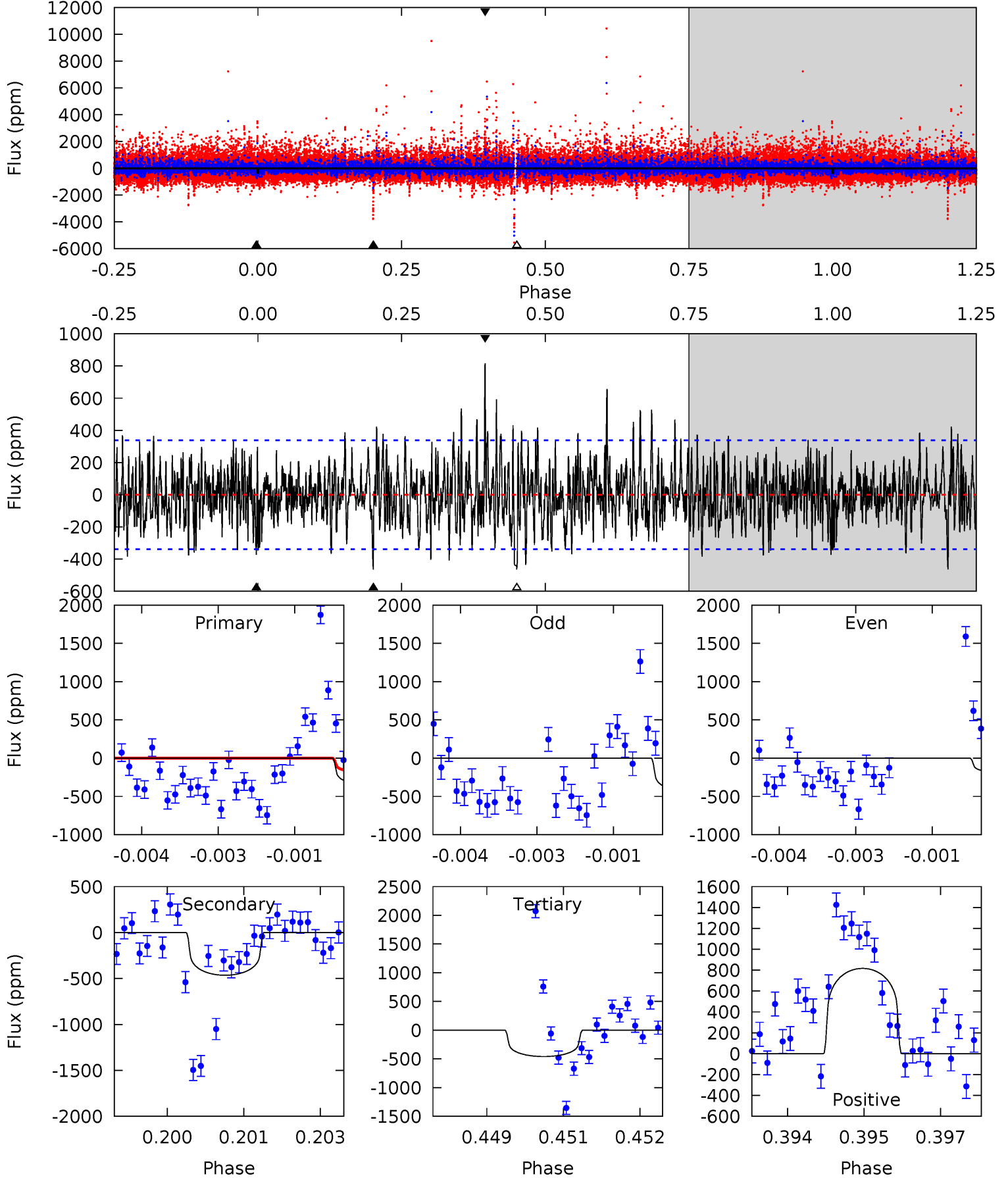
TCE 005437459-02 P=448.720978 Days $T_0=196.879915$ (BKJD)



DV Model-Shift Uniqueness Test

005437459-02, P = 448.731247 Days, E = 196.842191 Days

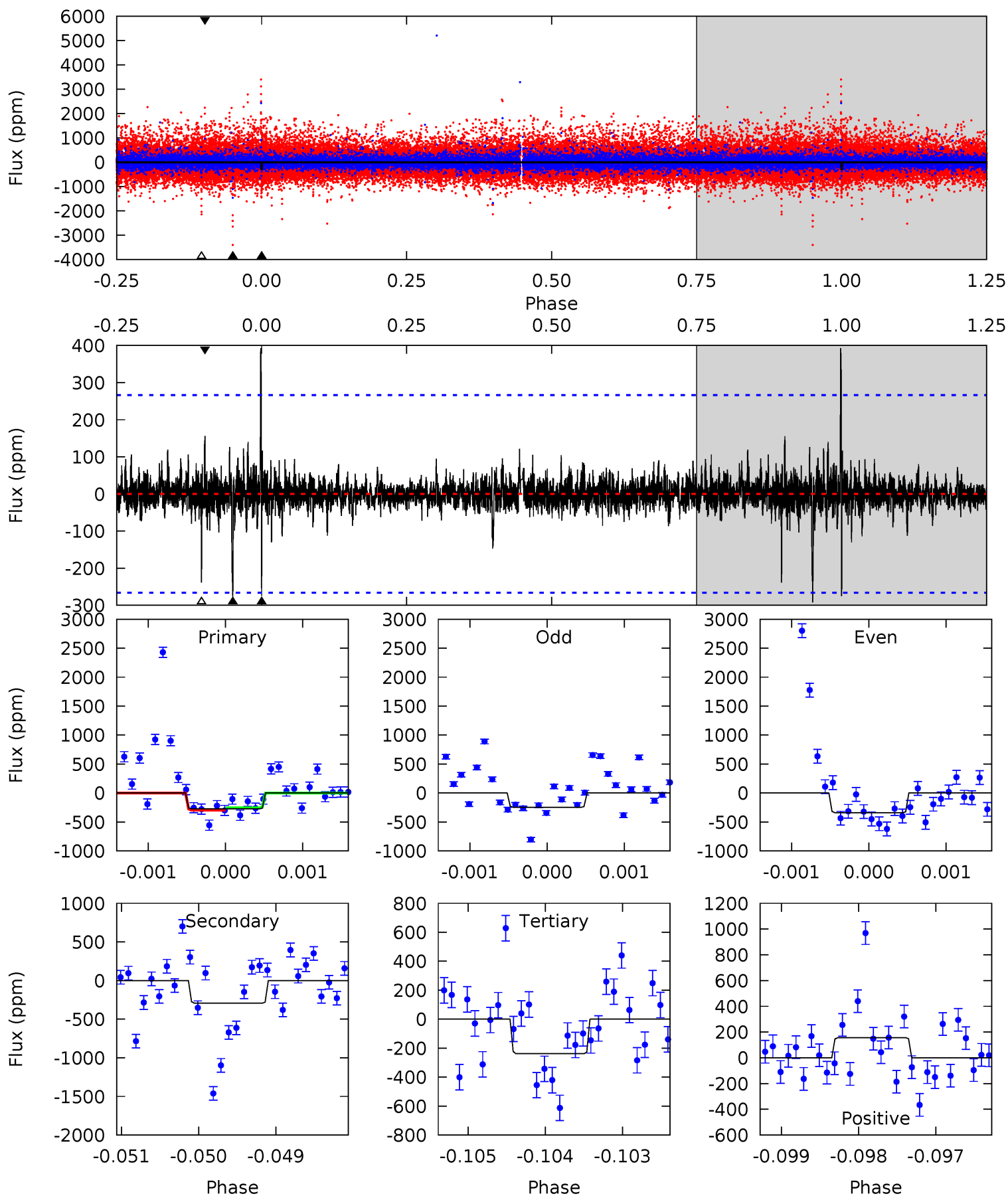
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.65	7.40	7.32	13.0	5.39	3.20	2.40	-1.67	-7.36	0.09	-5.61	1.34	1.09	0.64	2.65



Alt Model-Shift Uniqueness Test

005437459-02, P = 448.720978 Days, E = 196.879915 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.60	5.95	4.86	3.18	5.43	3.25	0.61	0.74	2.42	1.09	2.78	0.86	0.88	0.57	0.39



Stellar Parameters For KIC 005437459

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3892^{+54}_{-62}	$4.730^{+0.020}_{-0.026}$	$-0.100^{+0.100}_{-0.100}$	$0.531^{+0.023}_{-0.023}$	$0.553^{+0.022}_{-0.027}$	$5.201^{+0.507}_{-0.511}$
	+1%/-2%	+0%/-1%	+100%/-100%	+4%/-4%	+4%/-5%	+10%/-10%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 005437459-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-465 ± 63	$1.60^{+0.76}_{-0.68}$	180^{+3}_{-3}	3591^{+772}_{-422}	$89678^{+183118}_{-49500}$
Alt.	-292 ± 49	$0.96^{+0.65}_{-0.55}$	180^{+3}_{-3}	3970^{+1603}_{-673}	$158124^{+705986}_{-106316}$

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

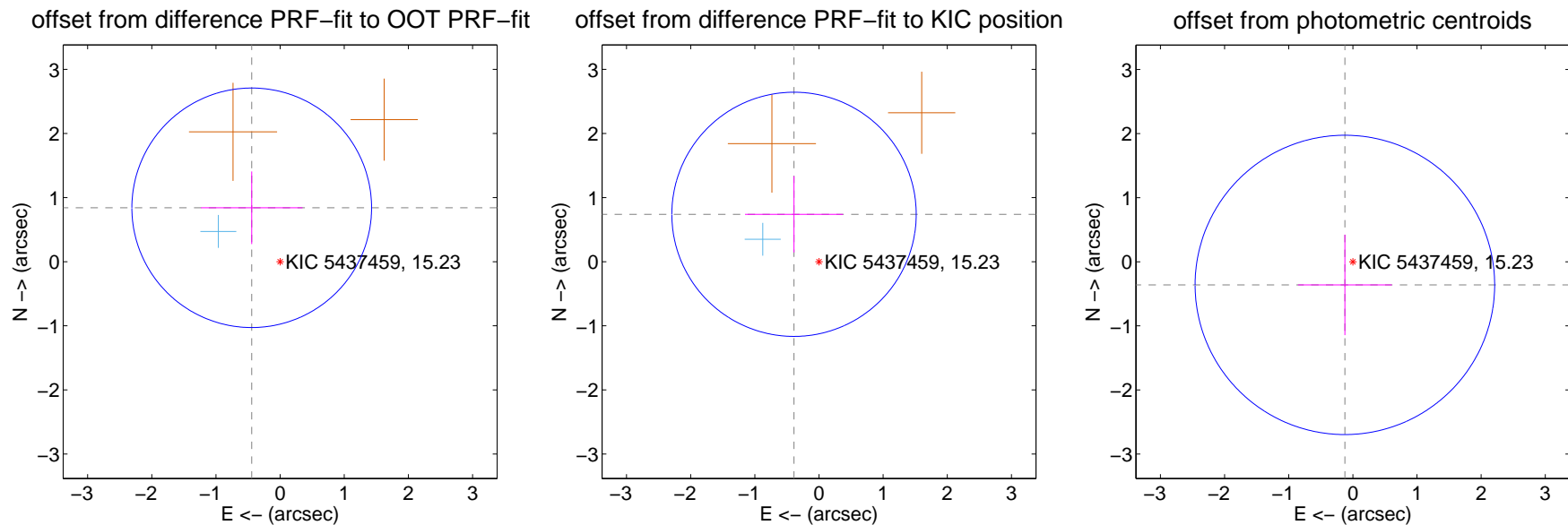
DV Centroid Data

Supplemental centroid analysis for 005437459-02. Kepler magnitude: 15.23. Transit SNR 6.45

There are 1 quarters with good PRF difference image offsets

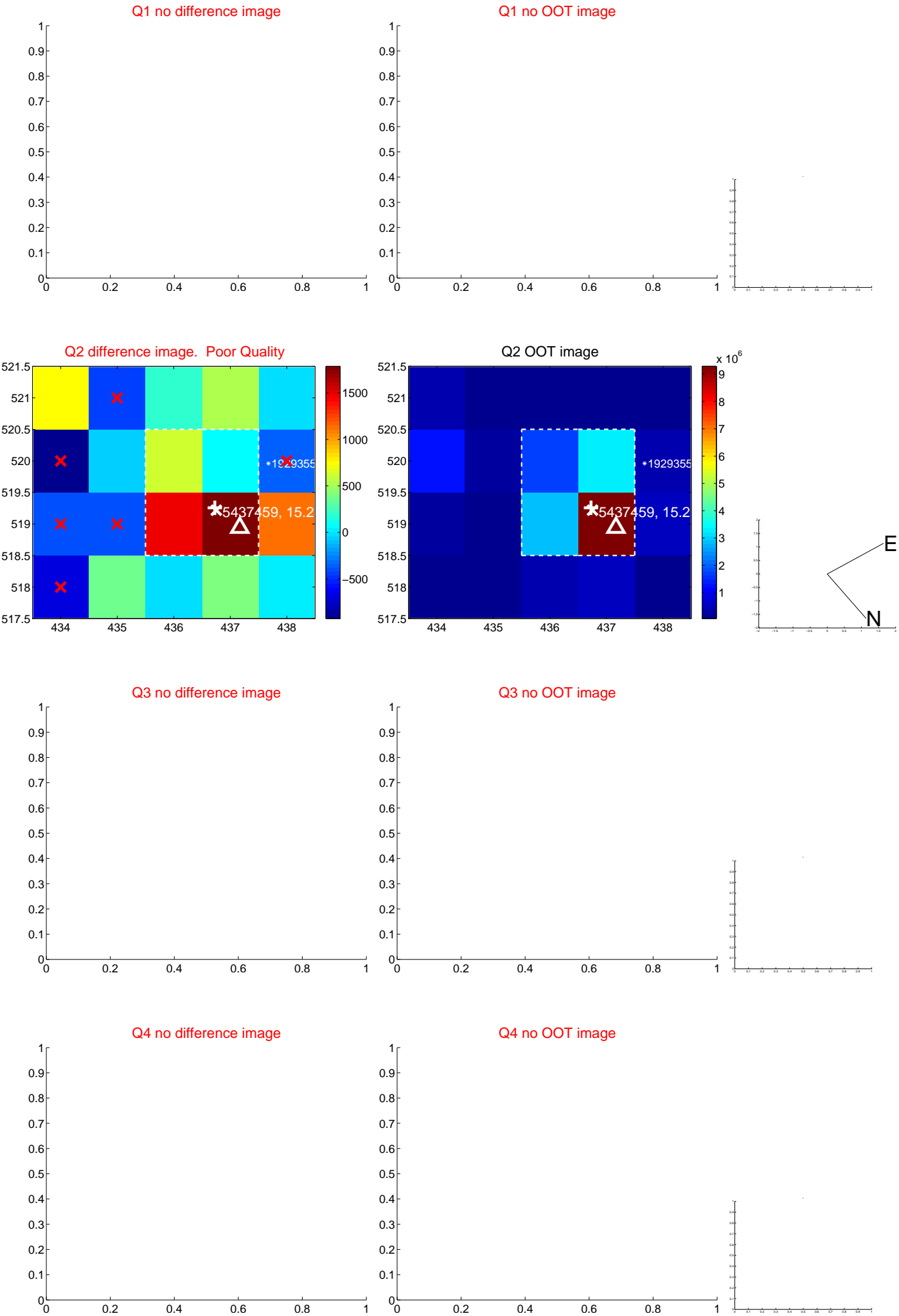
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.950 ± 0.623	1.53	0.442 ± 0.791	0.841 ± 0.567
PRF-fit source offset from KIC position	0.835 ± 0.635	1.32	0.389 ± 0.763	0.739 ± 0.594
photometric centroid source offset	0.38 ± 0.78	0.49	0.12 ± 0.73	-0.36 ± 0.78



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

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



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

Q5 no difference image



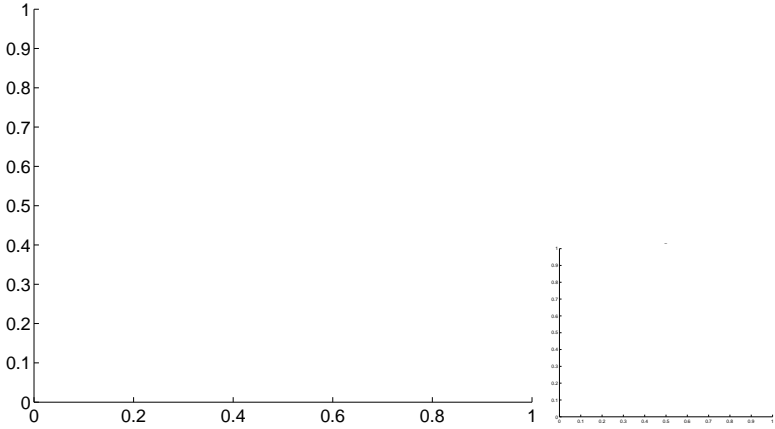
Q5 no OOT image



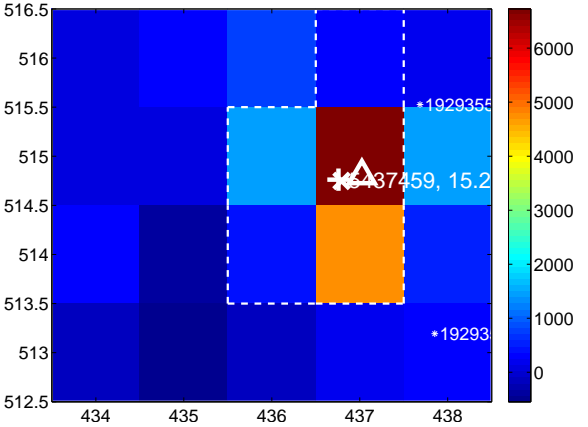
Q6 no difference image



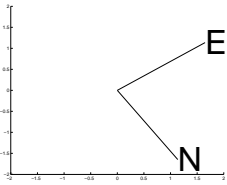
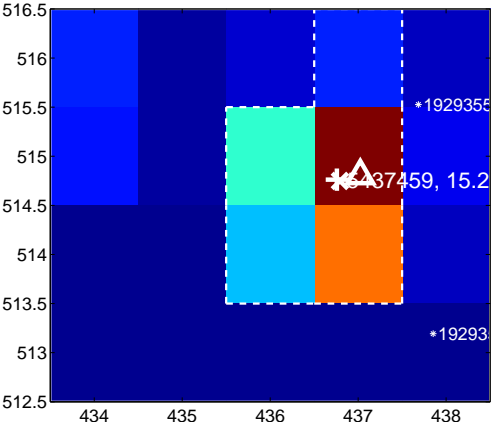
Q6 no OOT image



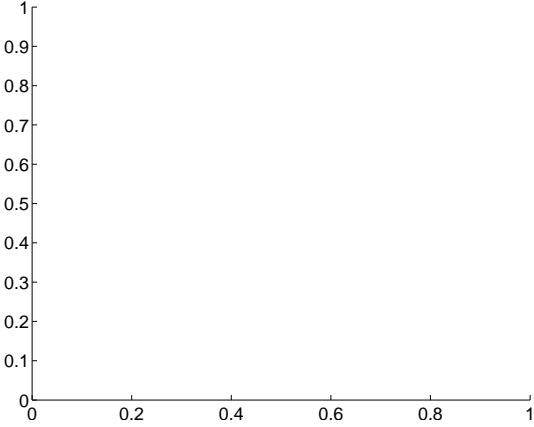
Q7 difference image



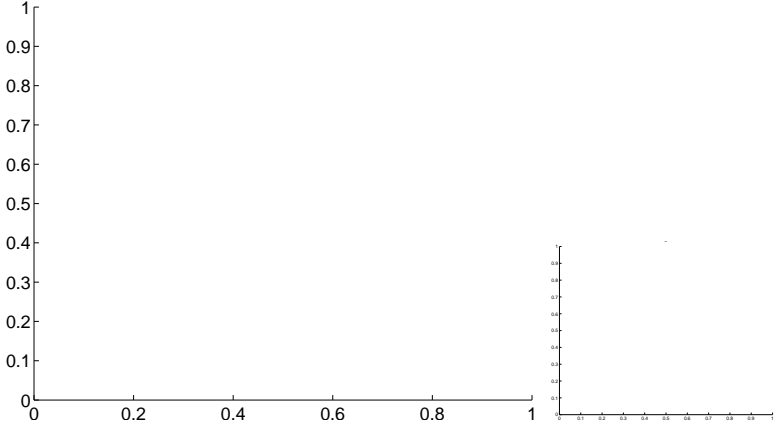
Q7 OOT image



Q8 no difference image



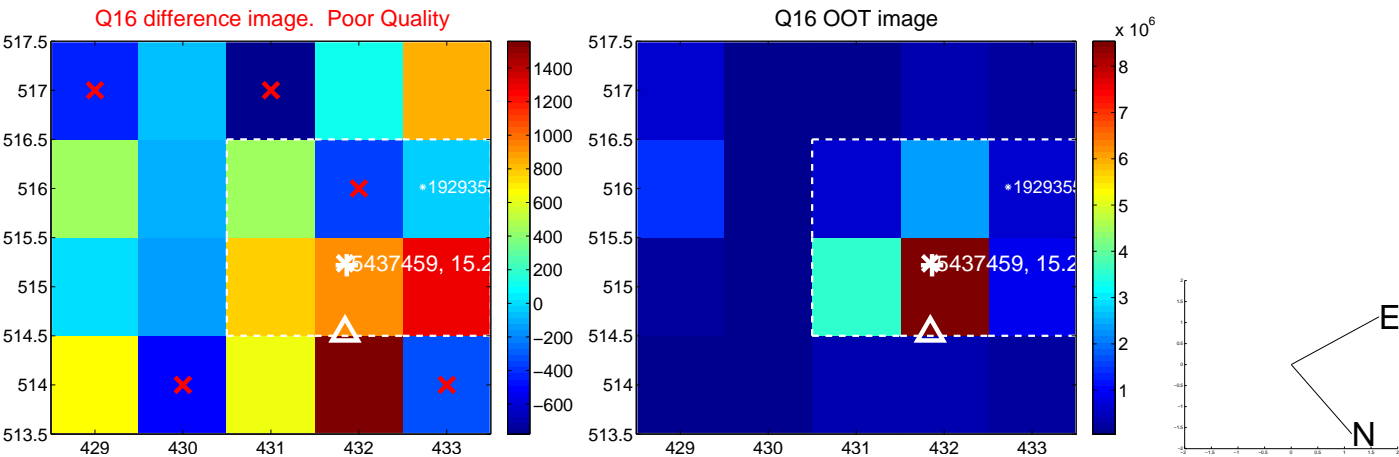
Q8 no OOT image



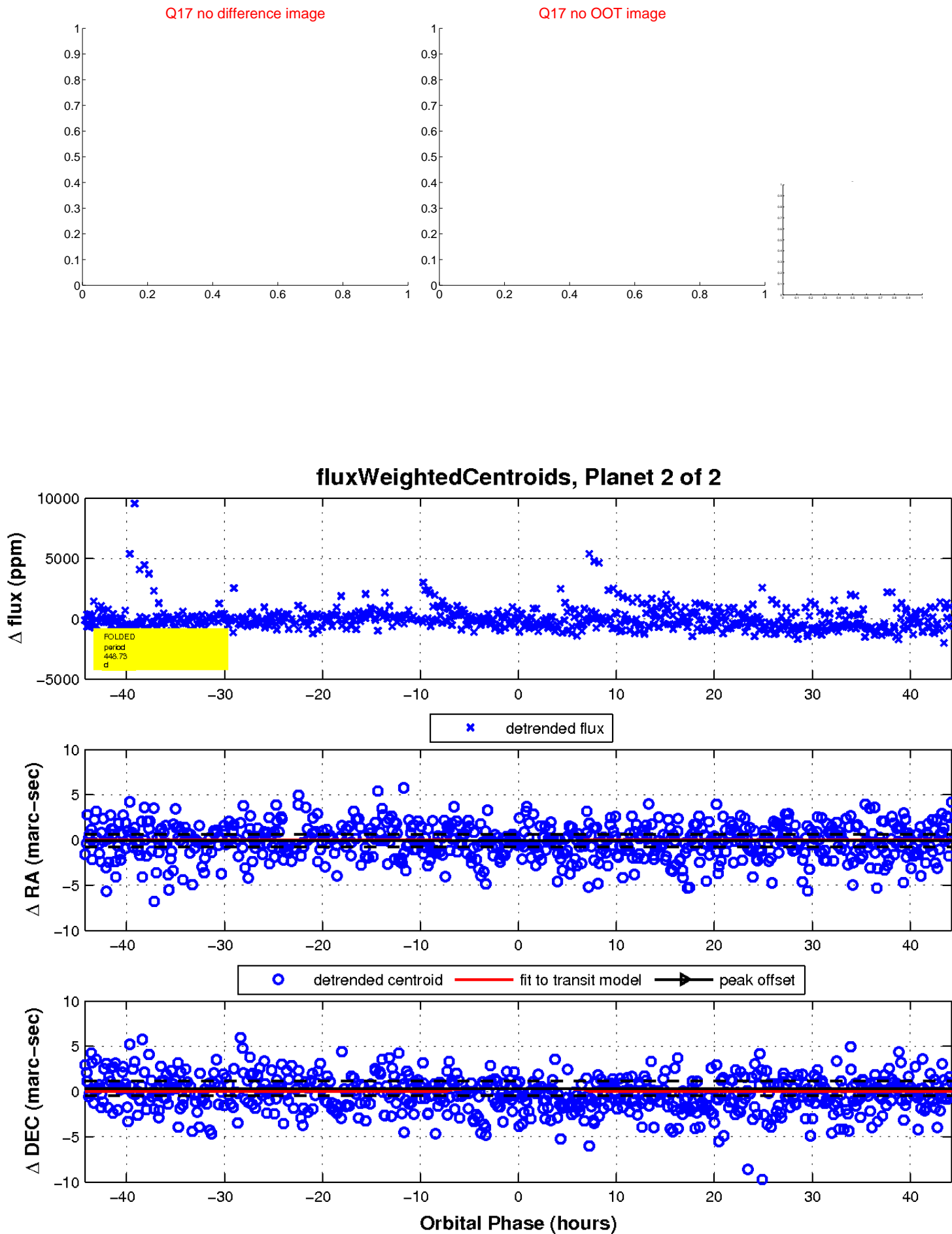
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

