

KIC 004587448

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})
004587448-01	OBS	6430.01	2.234140	131.804722	103.3	2.117	20.1	21.8	1.28	6600	1.52	2078.34
004587448-02	OBS	No	0.744700	131.566381	14.8	5.206	14.2	7.2	1.28	6600	0.50	8992.67
004587448-03	OBS	No	13.831007	135.128775	294.7	1.853	15.4	9.5	1.28	6600	2.21	182.84
004587448-05	OBS	No	21.841444	133.285979	130.5	27.805	11.1	6.0	1.28	6600	1.54	99.42
004587448-06	OBS	No	30.356375	156.281449	448.5	1.371	9.9	7.6	1.28	6600	2.93	64.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004587448-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
004587448-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
004587448-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
004587448-05	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
004587448-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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.

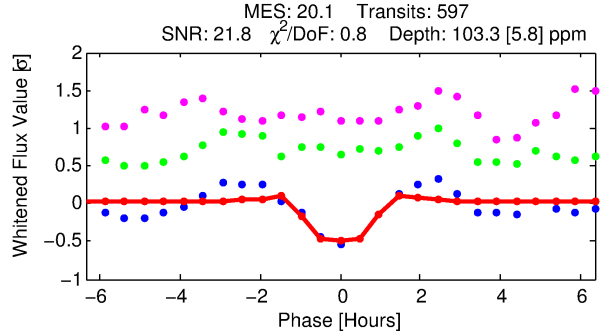
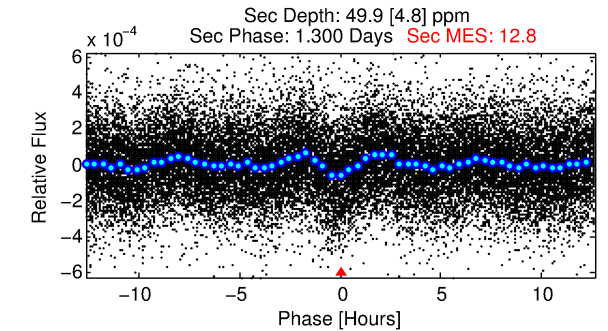
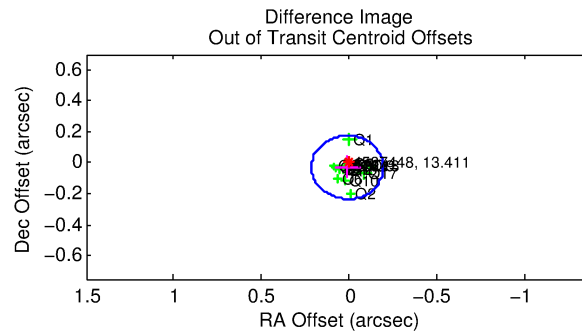
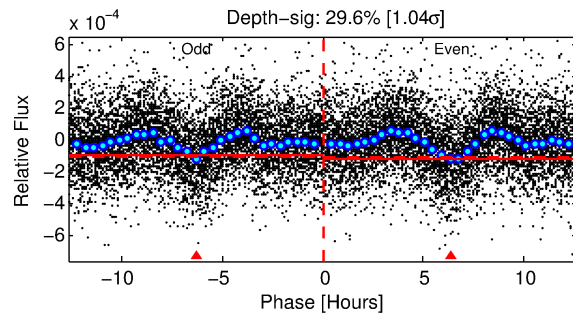
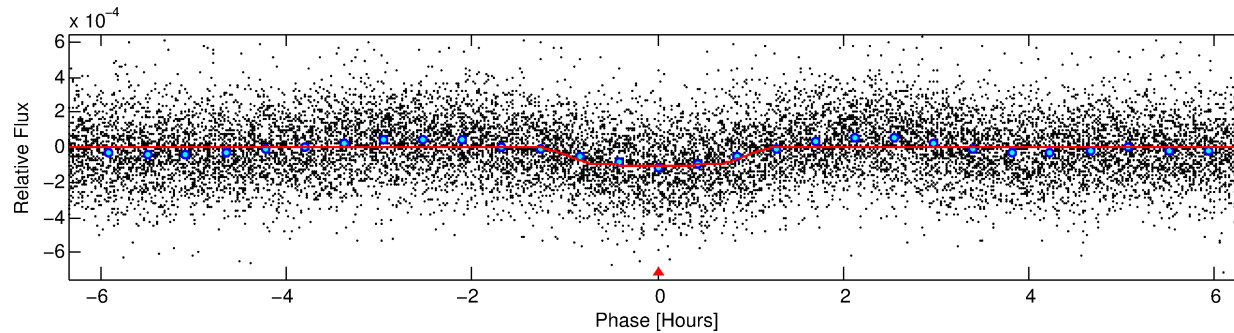
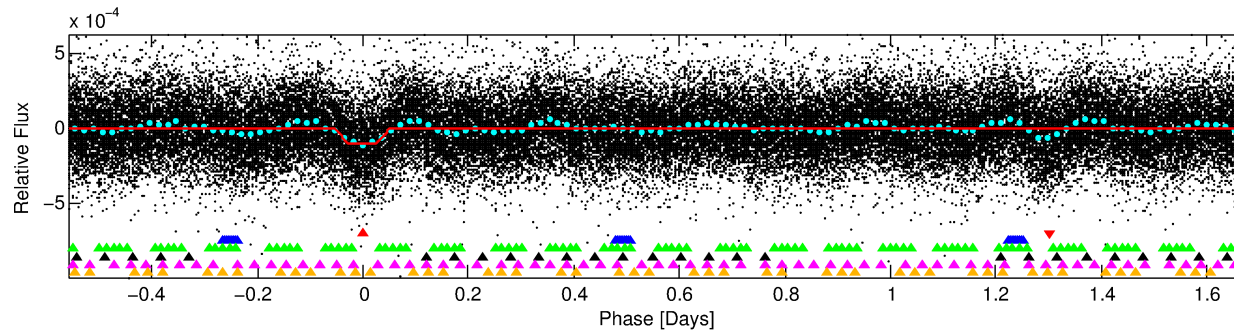
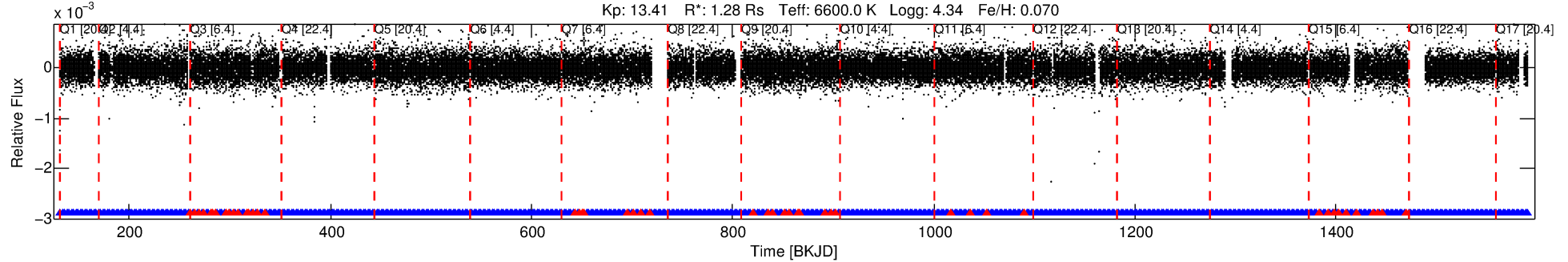
Ephemeris Match Information For 004587448-01

No Significant Match Found

DV One-Page Summary

KIC: 4587448 Candidate: 1 of 6 Period: 2.234 d
KOI: K06430 Corr: No Ephemeris Match

Kp: 13.41 R*: 1.28 Rs Teff: 6600.0 K Logg: 4.34 Fe/H: 0.070



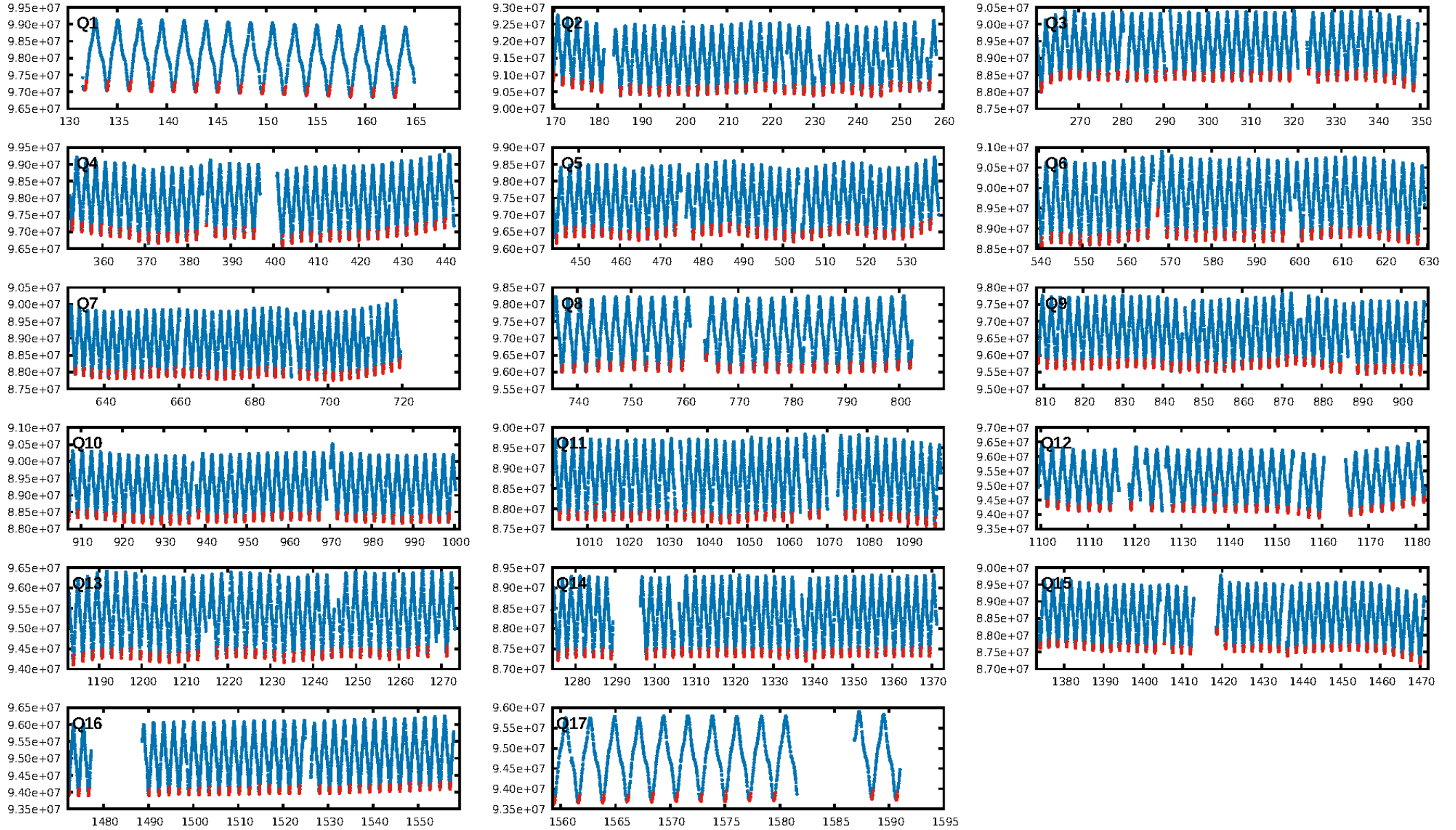
DV Fit Results:

Period = 2.23414 [0.00001] d
Epoch = 131.8047 [0.0013] BKJD
Rp/R* = 0.0109 [0.0027]
a/R* = 3.85 [5.20]
b = 0.90 [0.32]
Seff = 2078.34 [919.62]
Teq = 1722 [190] K
Rp = 1.52 [0.66] Re
a = 0.0365 [0.0107] AU
Ag = 15.93 [10.56] [1.41σ]
Teffp = 5318 [710] K [4.89σ]

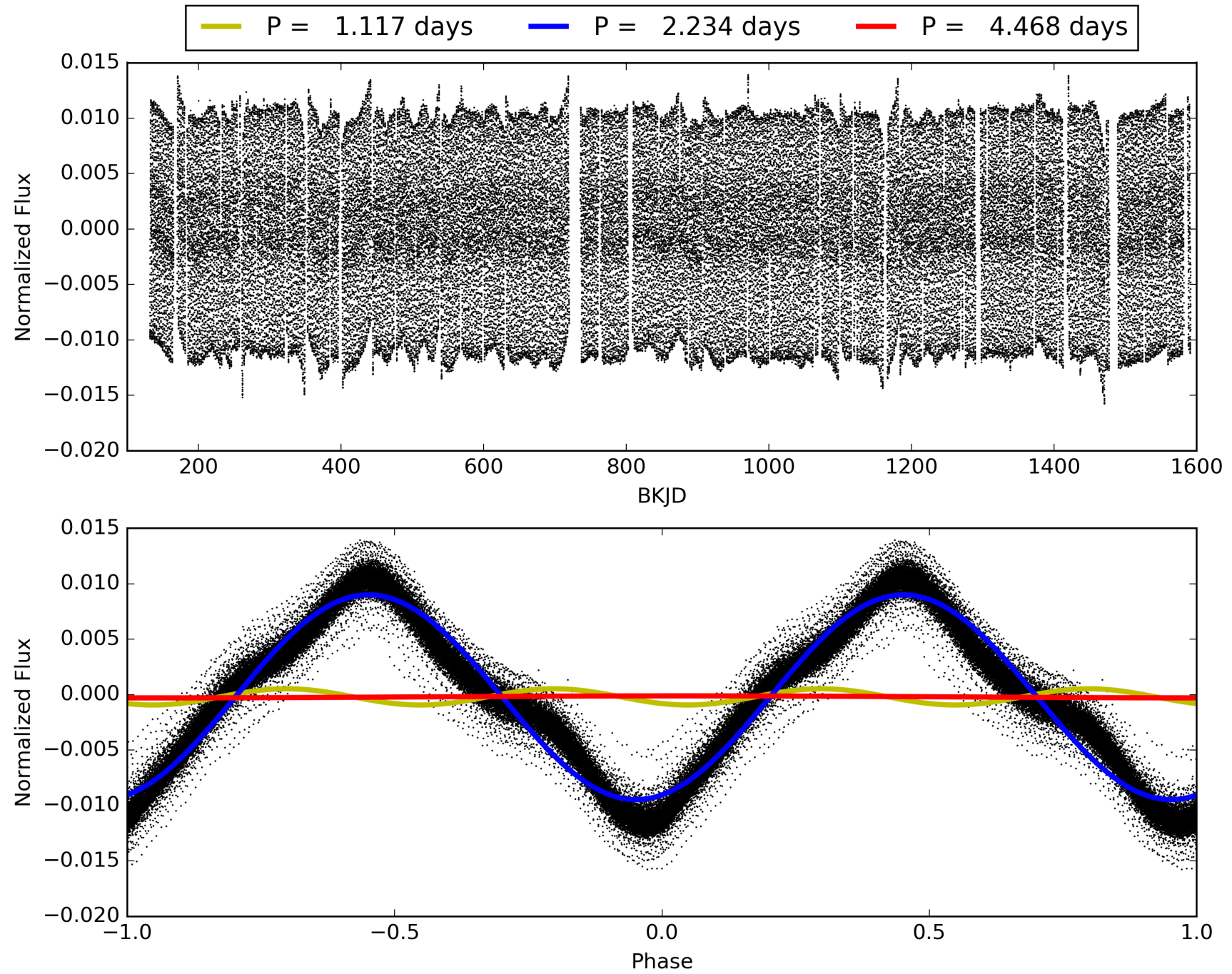
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.36σ]
LongPeriod-sig: 100.0% [98.92σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.92 [522/570]
GhostDiagnostic-chr: 8.482
Centroid-sig: 40.8%
Centroid-so: 0.421 arcsec [0.74σ]
OotOffset-rm: 0.031 arcsec [0.46σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.086 arcsec [1.25σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 004587448-01, PDC Light Curves

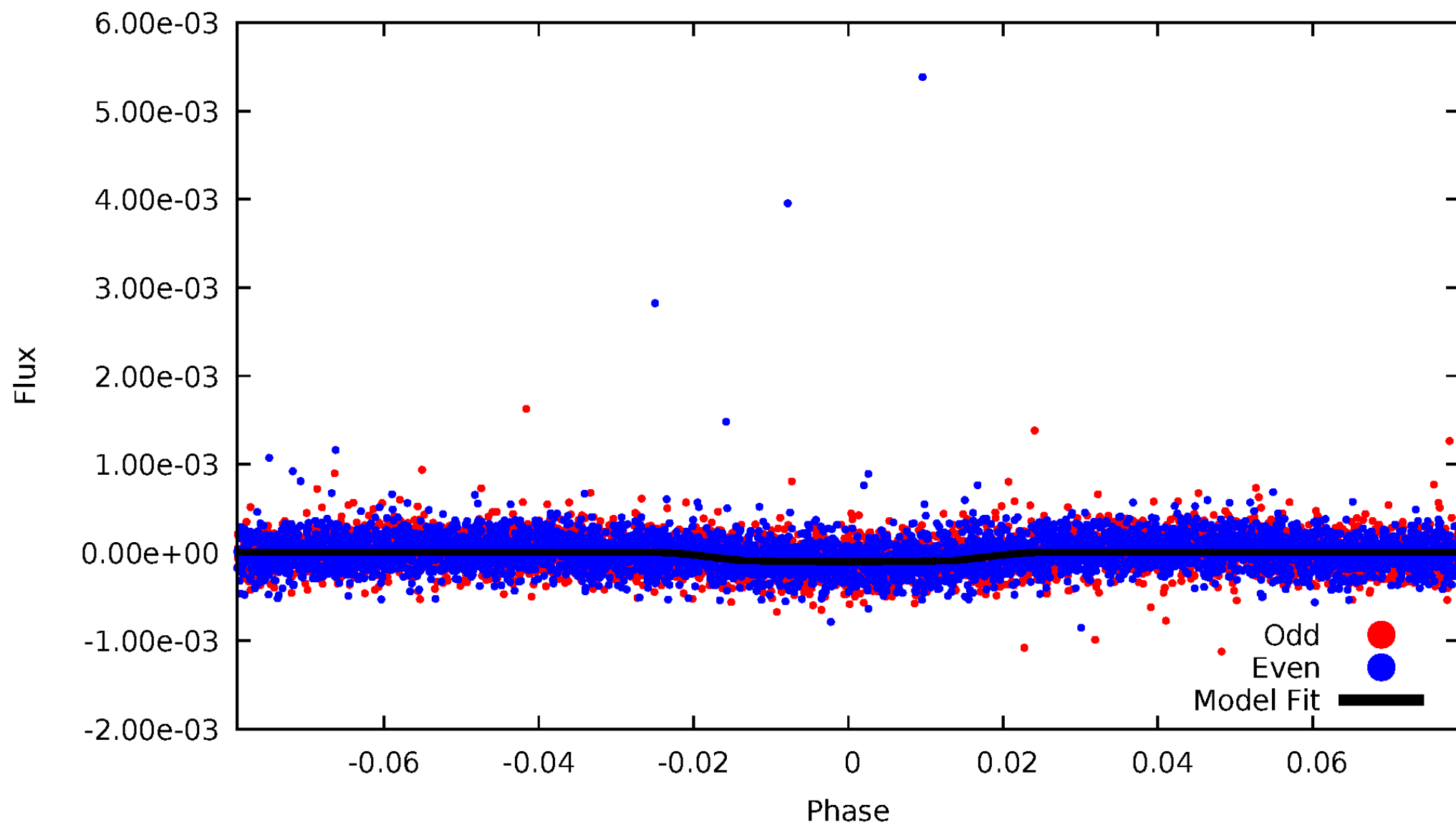


TCE 004587448-01



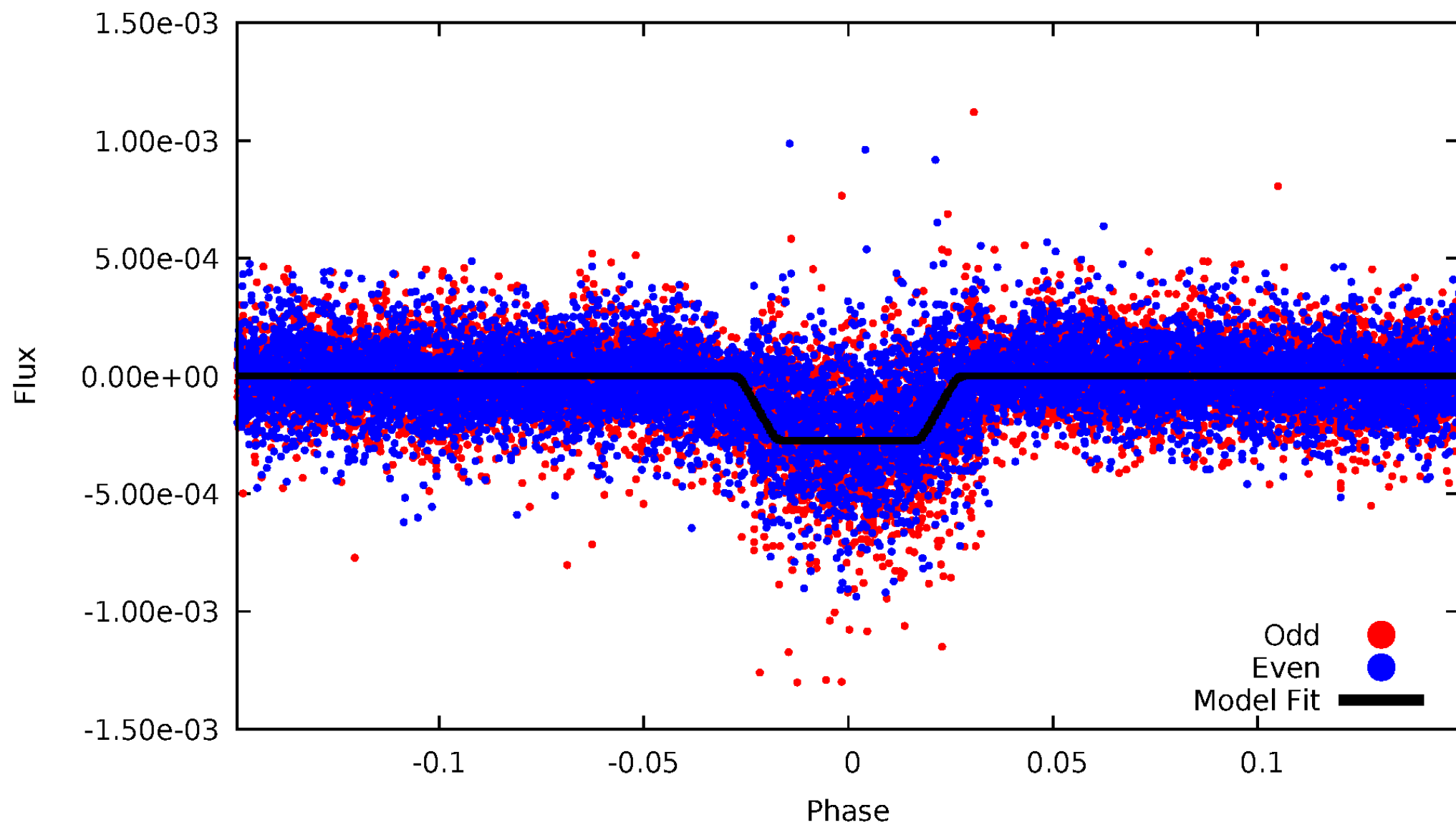
DV Odd/Even

TCE 004587448-01

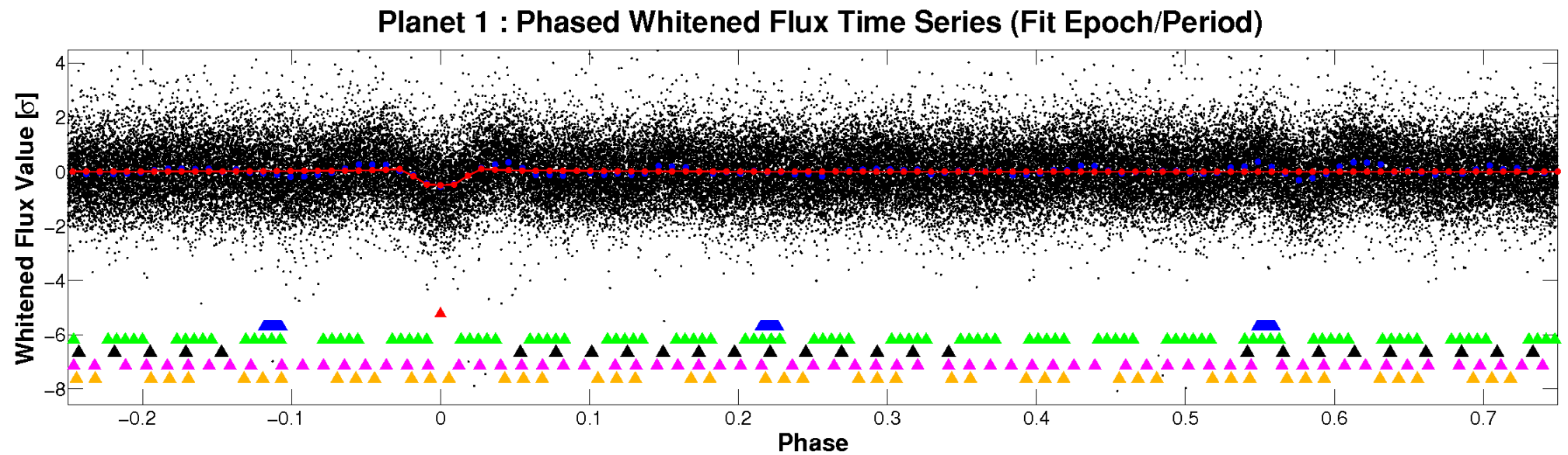
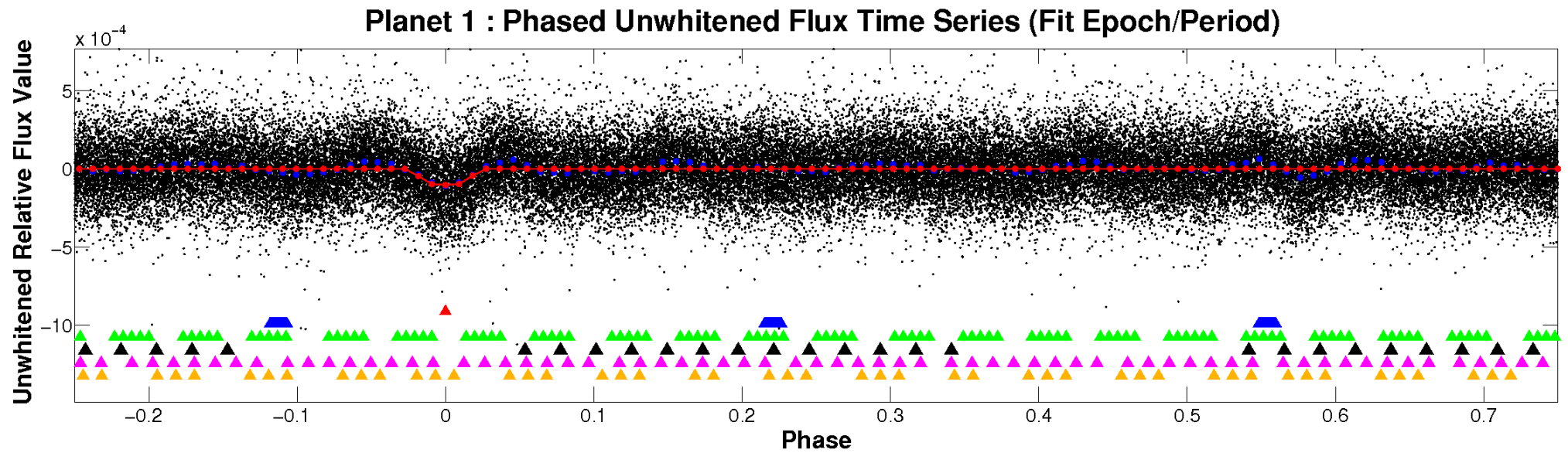


ALT Odd/Even

TCE 004587448-01

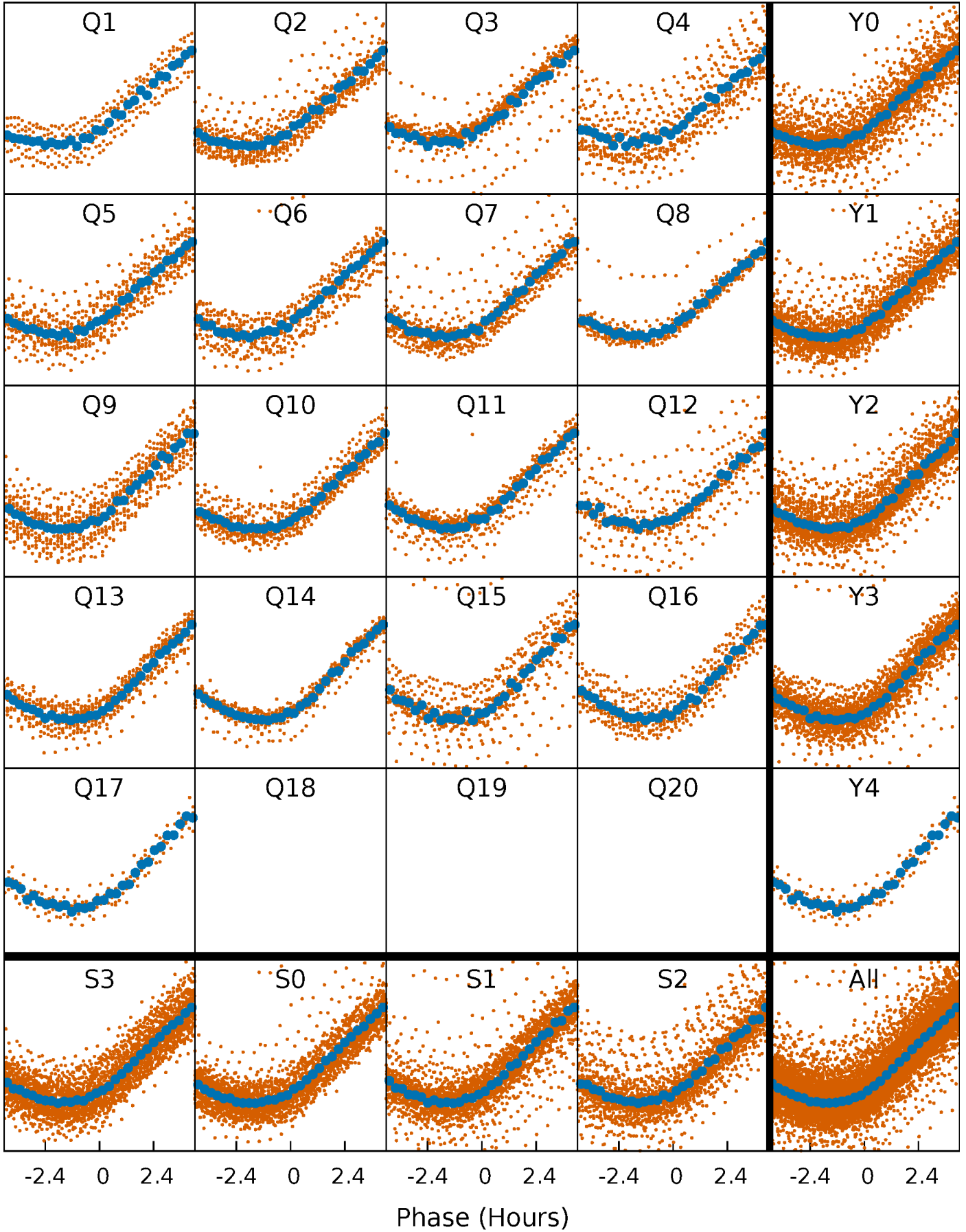


Non-Whitened Vs. Whitened Light Curve



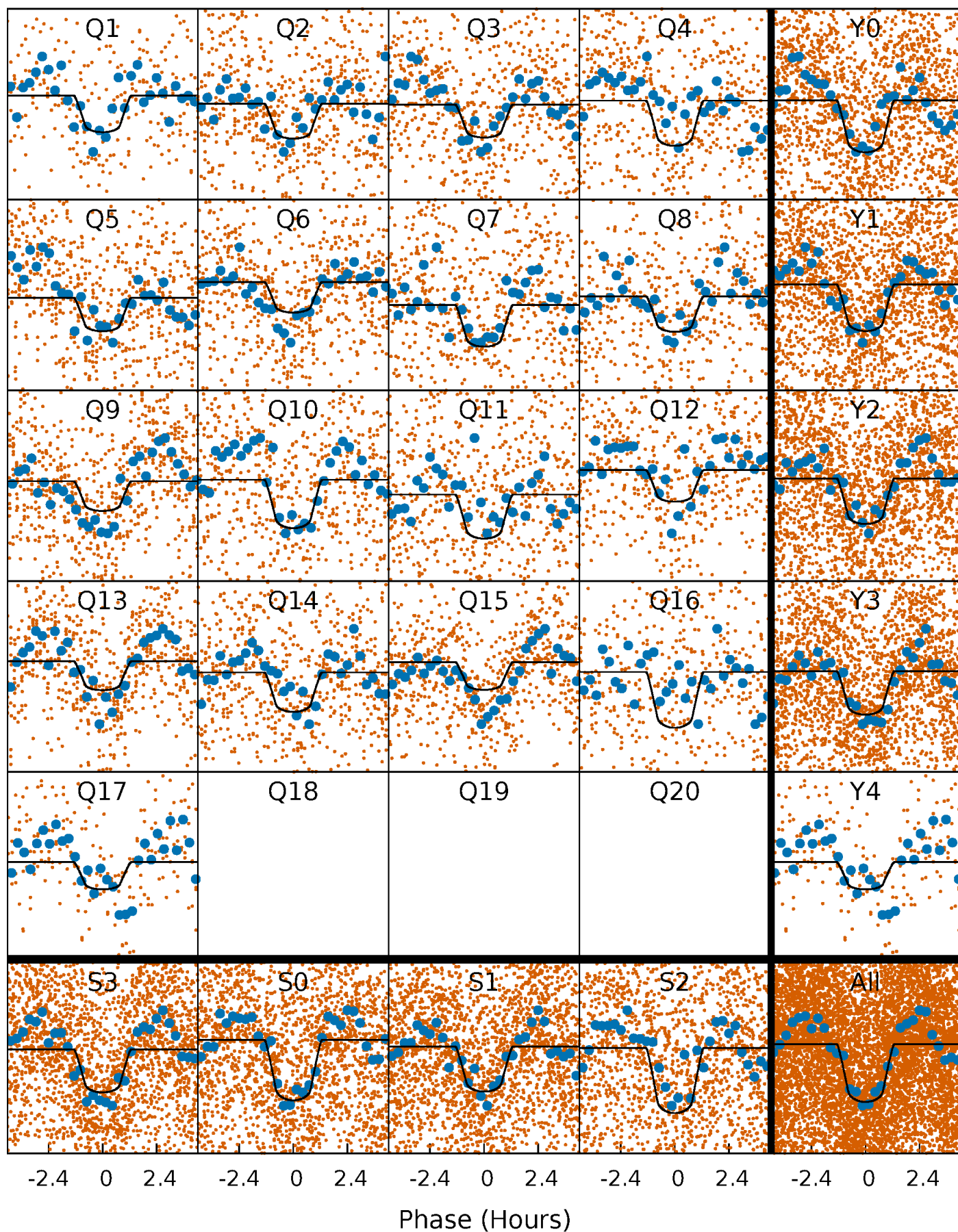
PDC Quarter-Phased Transit Curves

TCE 004587448-01 P= 2.234140 Days $T_0=131.804722$ (BKJD)



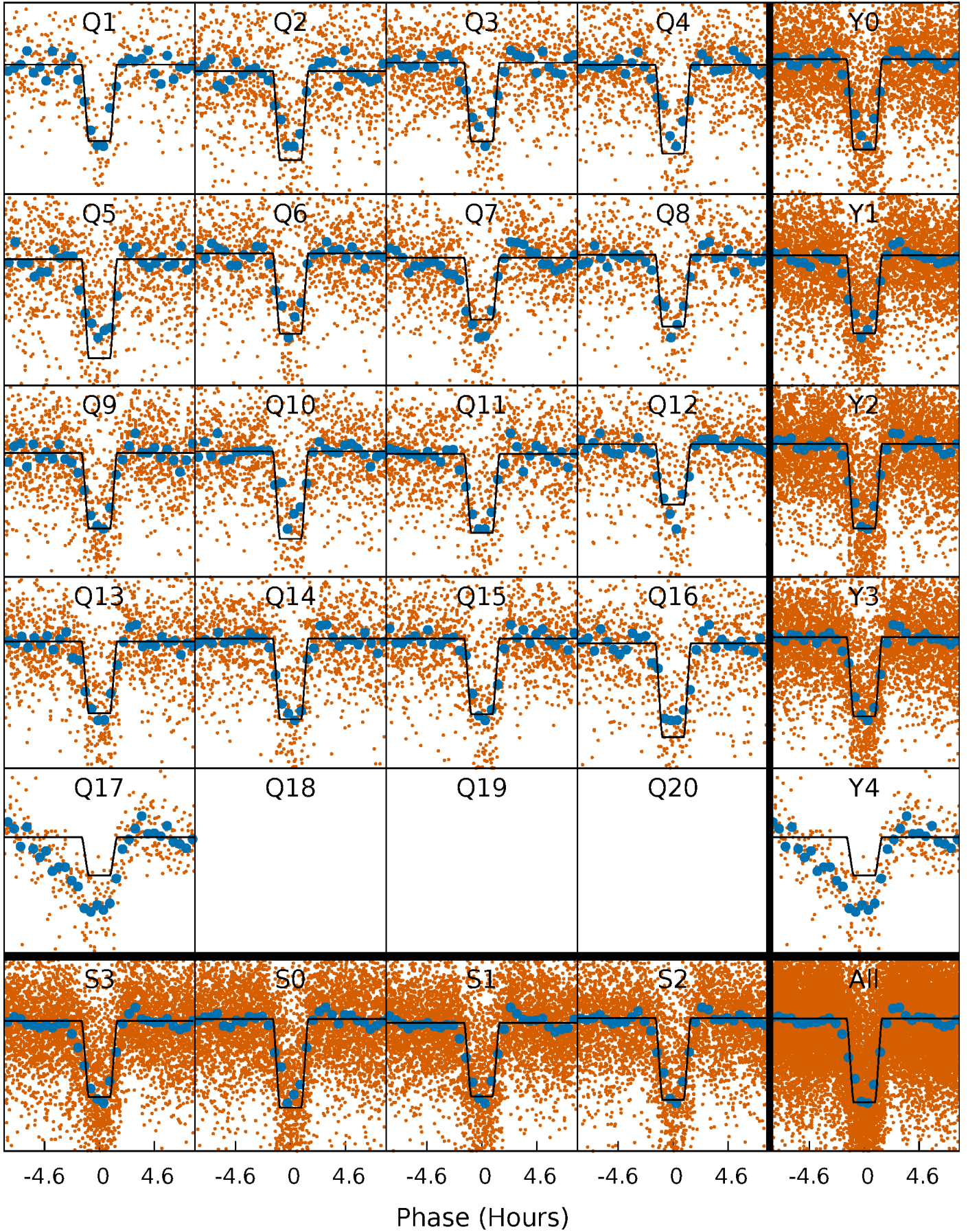
DV Quarter-Phased Transit Curves

TCE 004587448-01 P= 2.234140 Days $T_0=131.804722$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

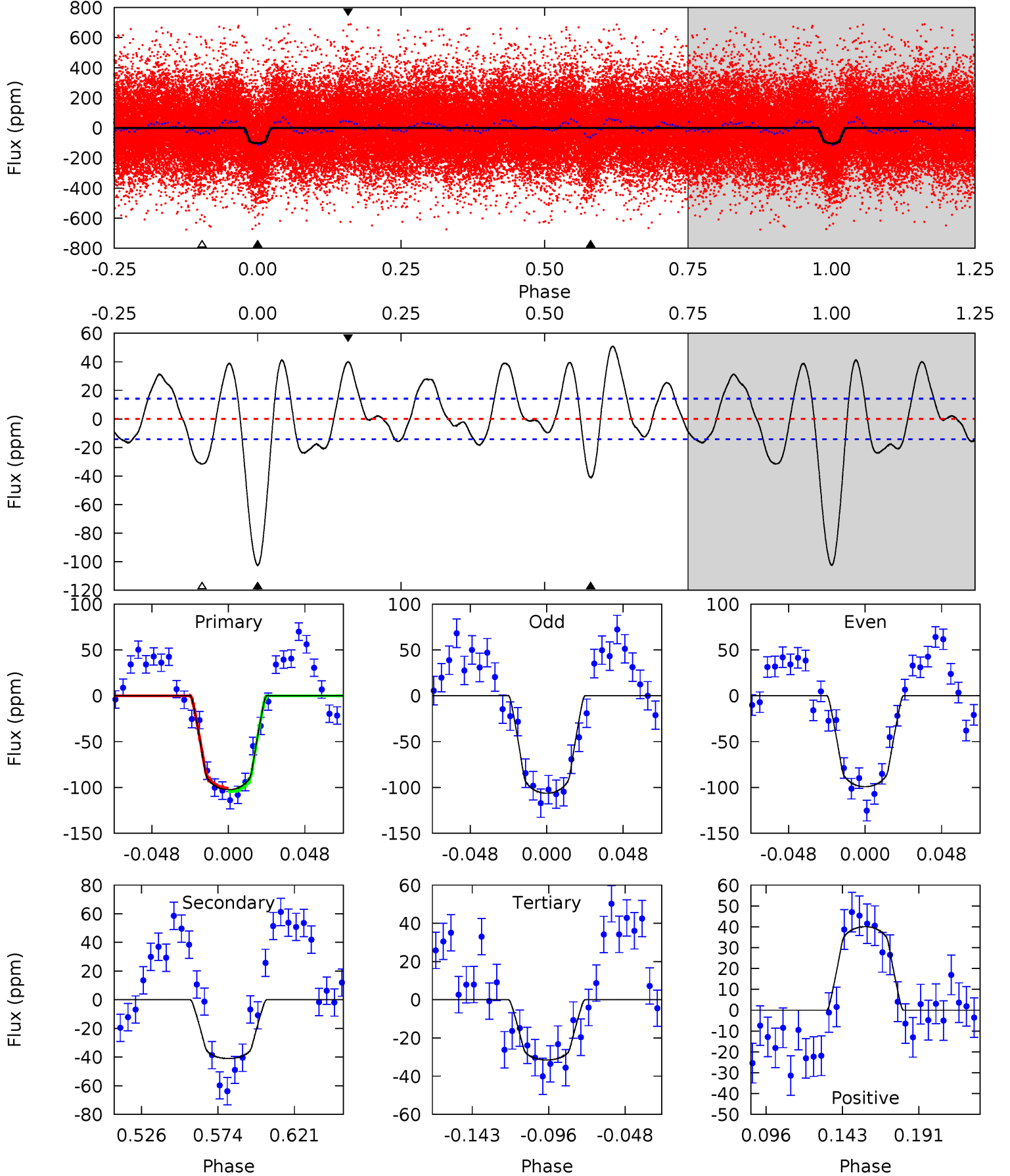
TCE 004587448-01 P= 2.234176 Days $T_0=131.788156$ (BKJD)



DV Model-Shift Uniqueness Test

004587448-01, P = 2.234140 Days, E = 129.570582 Days

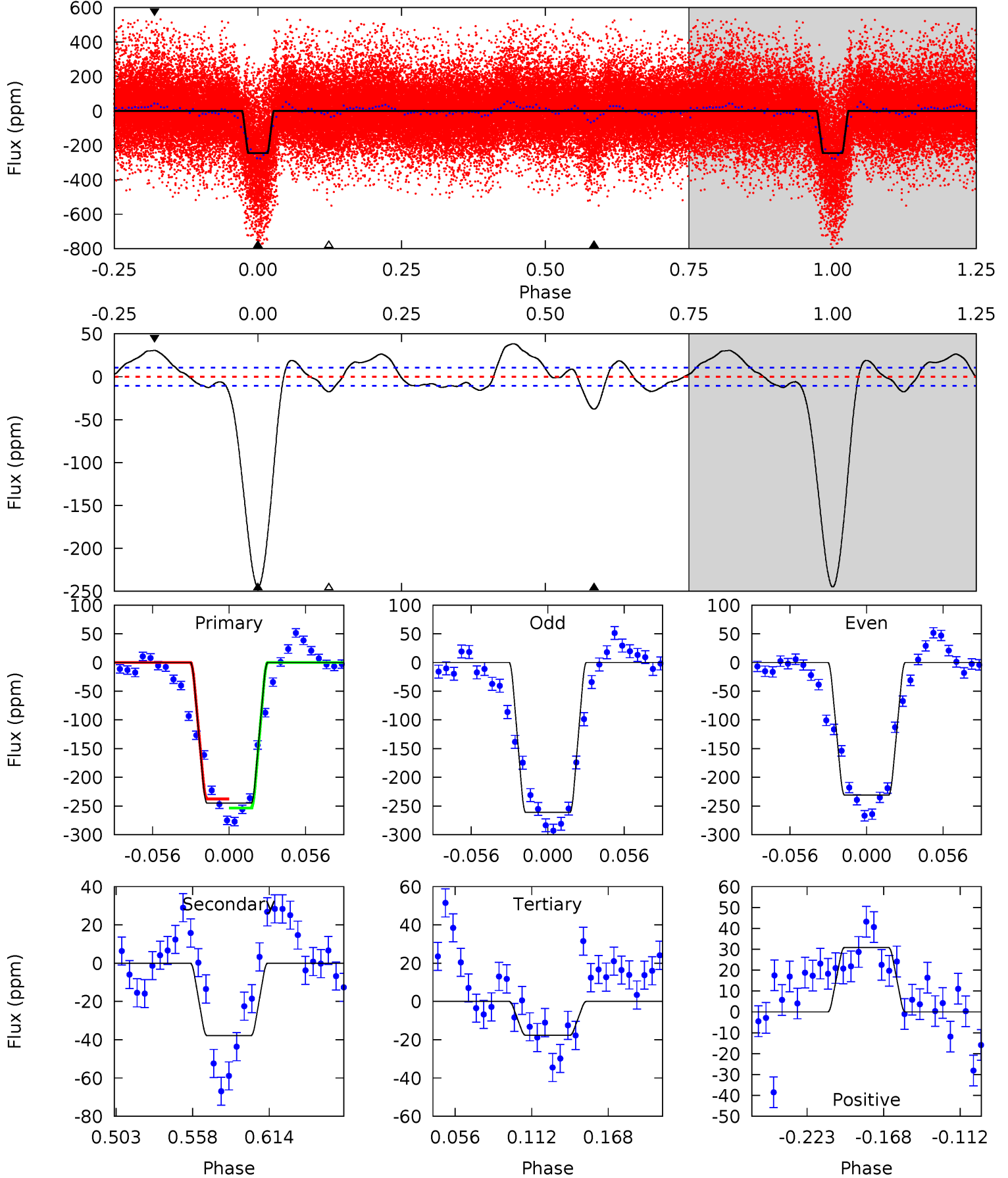
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.0	13.6	10.5	13.3	4.72	1.98	5.97	23.5	20.7	3.14	0.32	1.19	0.96	0.33	0.62



Alt Model-Shift Uniqueness Test

004587448-01, P = 2.234176 Days, E = 129.553980 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
108.0	16.7	7.80	13.6	4.69	1.91	6.82	100.2	94.4	8.86	3.08	6.66	0.99	0.14	3.44



Stellar Parameters For KIC 004587448

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6600^{+158}_{-237}	$4.340^{+0.056}_{-0.224}$	$0.070^{+0.250}_{-0.350}$	$1.277^{+0.457}_{-0.152}$	$1.305^{+0.175}_{-0.195}$	$0.882^{+0.277}_{-0.496}$
	+2%/-4%	+1%/-5%	+357%/-500%	+36%/-12%	+13%/-15%	+31%/-56%
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 004587448-01 / KOI 6430.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-41 ± 3	$1.57^{+0.50}_{-0.41}$	2461^{+174}_{-121}	5080^{+790}_{-491}	12^{+10}_{-5}
Alt.	-38 ± 2	$2.39^{+0.55}_{-0.46}$	2454^{+189}_{-133}	4204^{+337}_{-285}	$4.666^{+2.518}_{-1.505}$

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

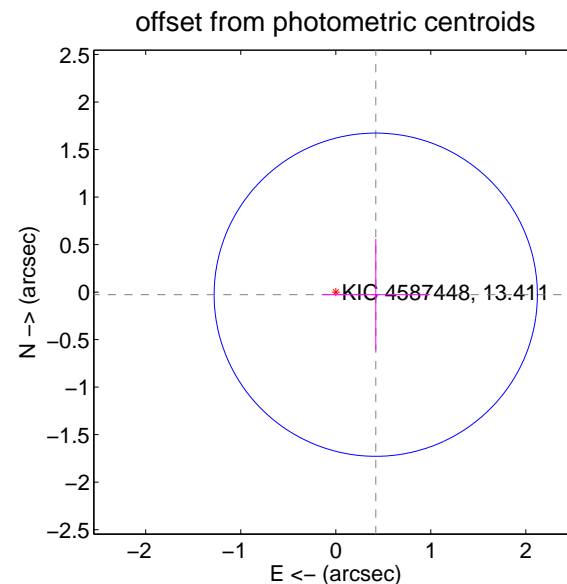
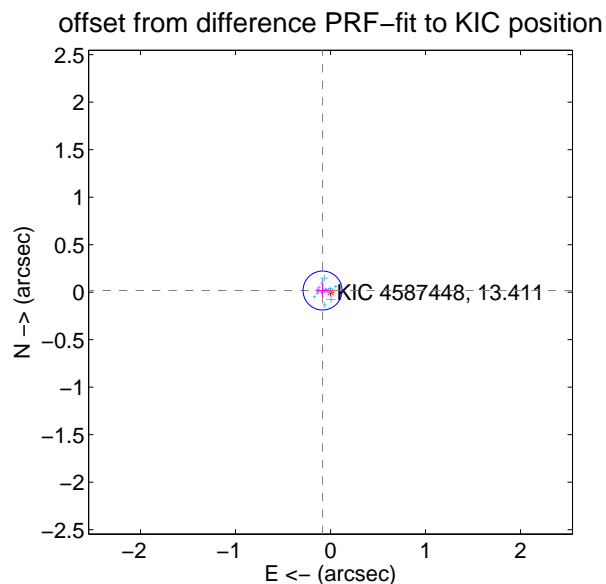
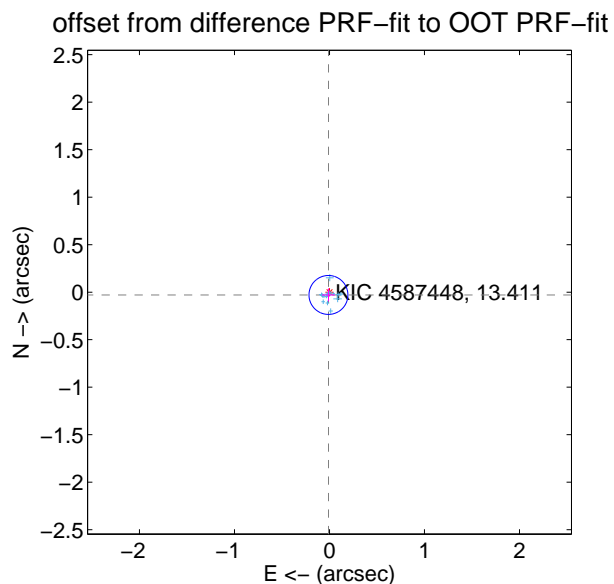
DV Centroid Data

Supplemental centroid analysis for 004587448-01. Kepler magnitude: 13.41. Transit SNR 21.78

There are 17 quarters with good PRF difference image offsets

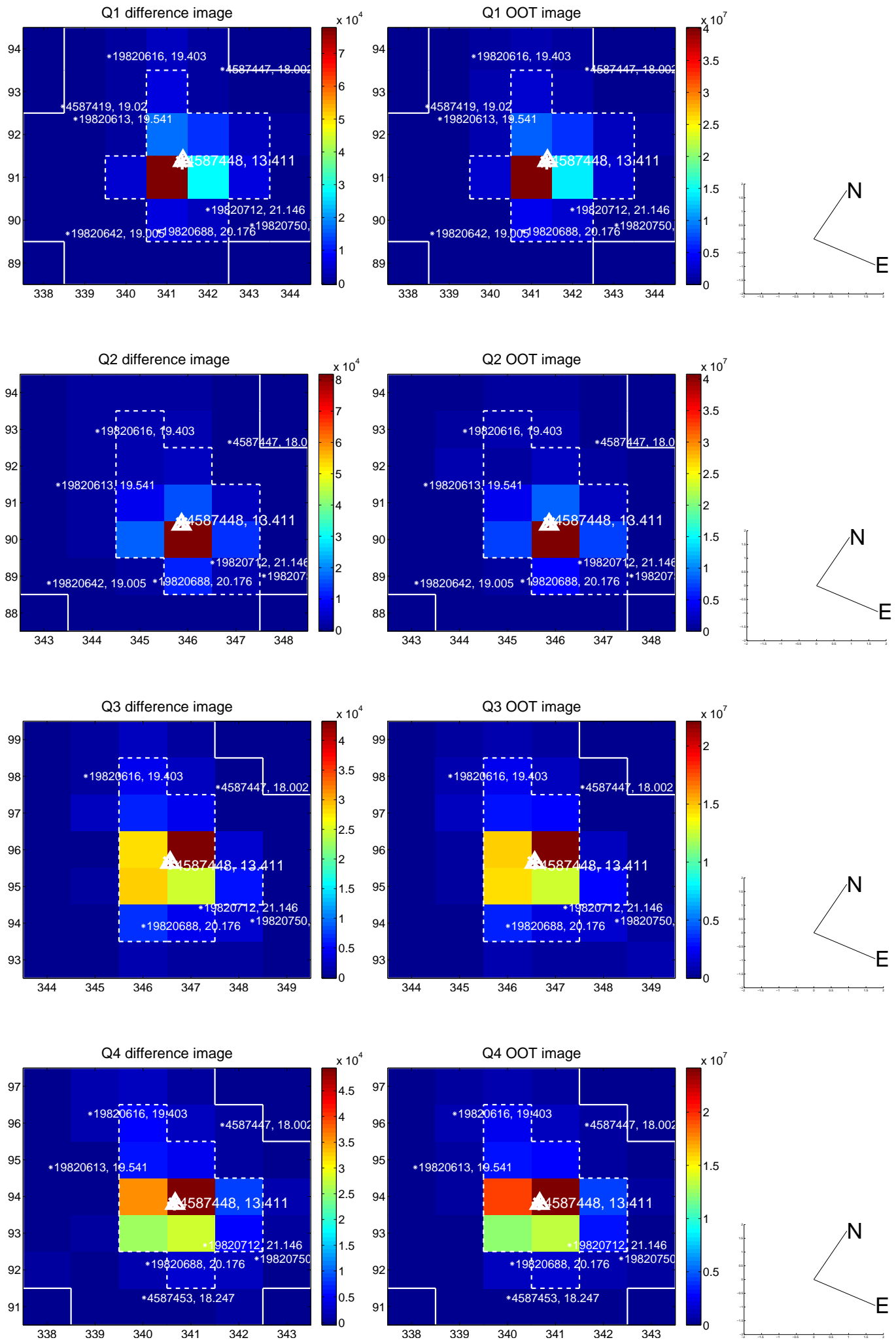
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.031 ± 0.068	0.46	0.011 ± 0.068	-0.029 ± 0.068
PRF-fit source offset from KIC position	0.086 ± 0.068	1.25	0.084 ± 0.068	0.017 ± 0.068
photometric centroid source offset	0.42 ± 0.57	0.74	-0.42 ± 0.57	-0.03 ± 0.59

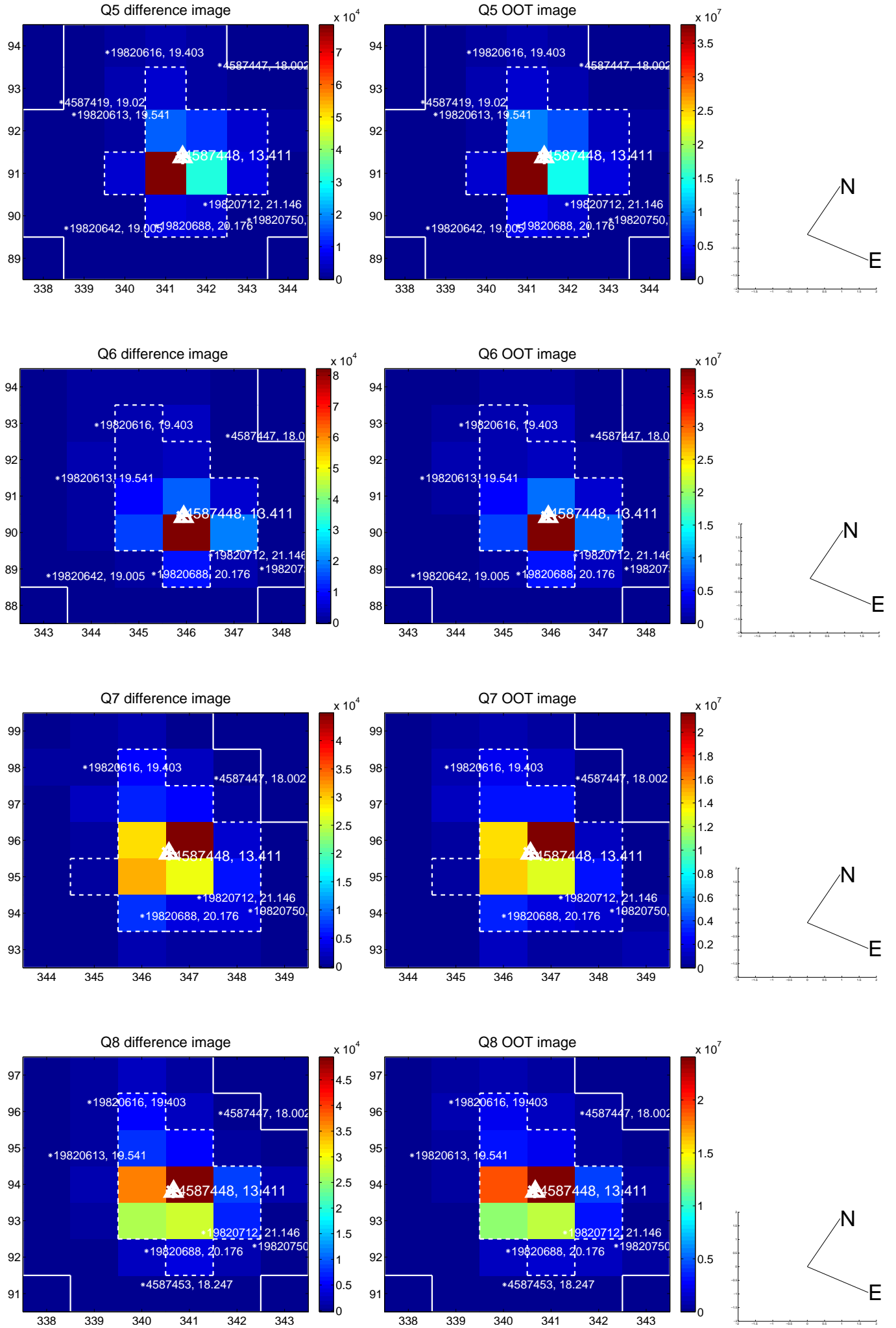


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

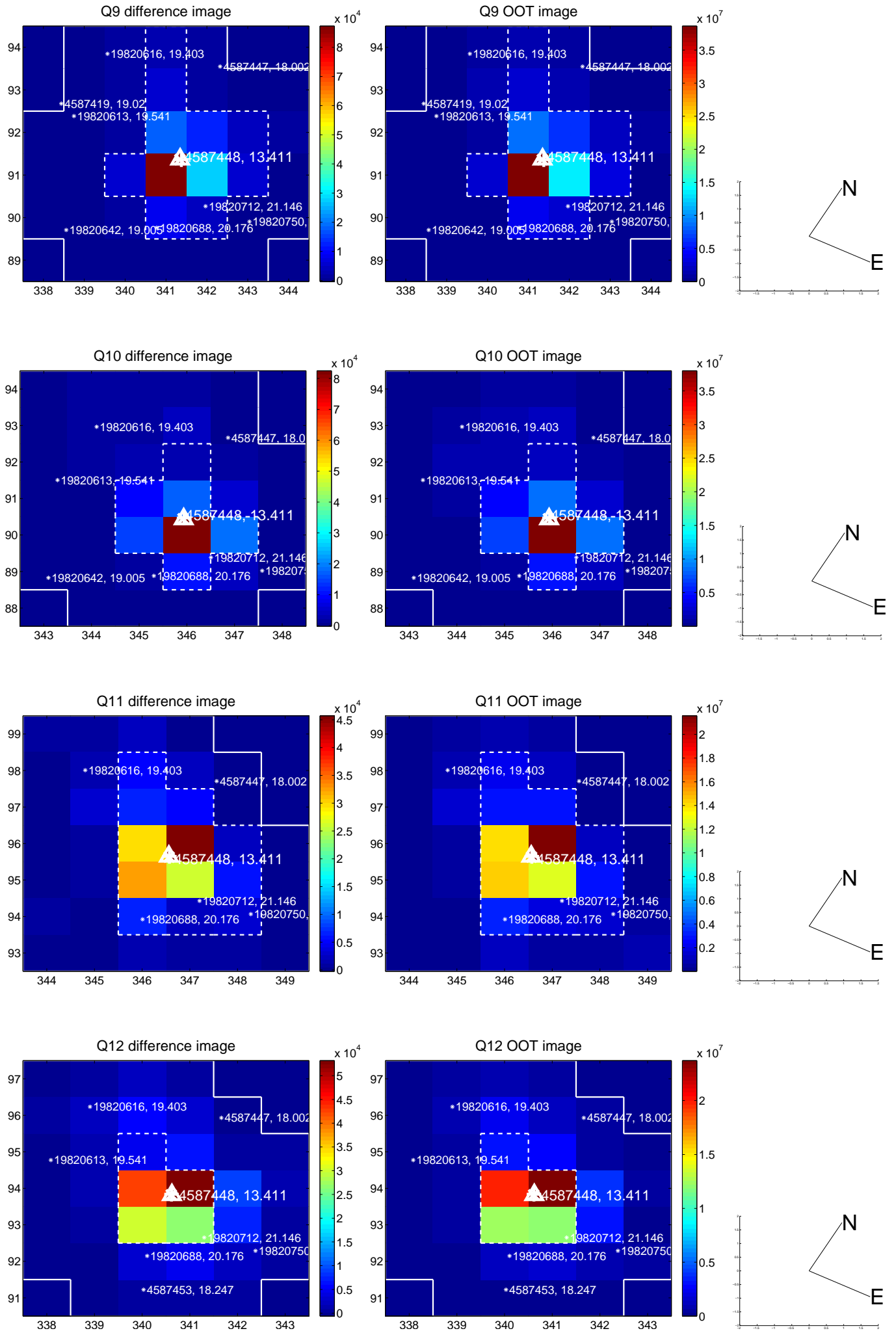
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



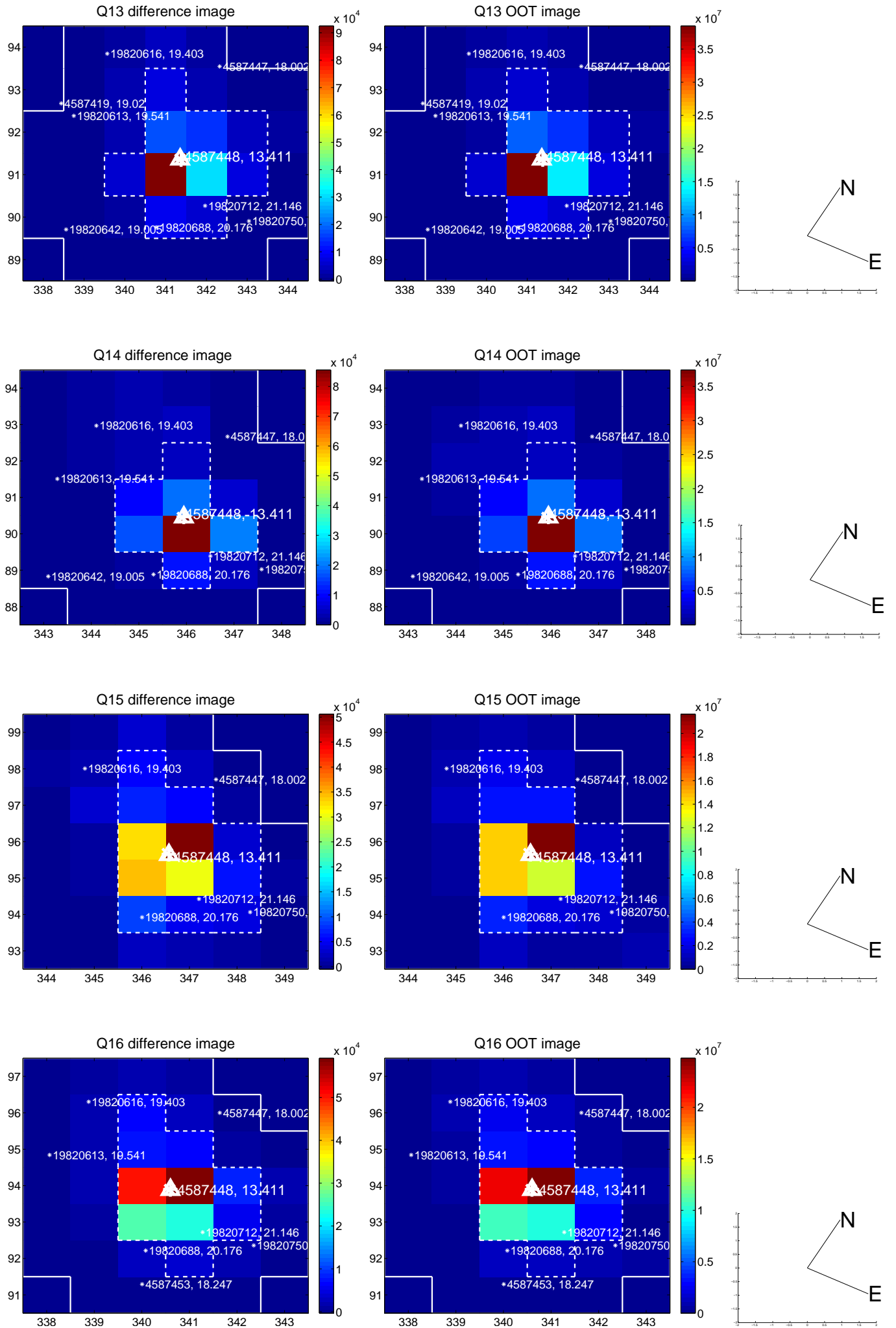
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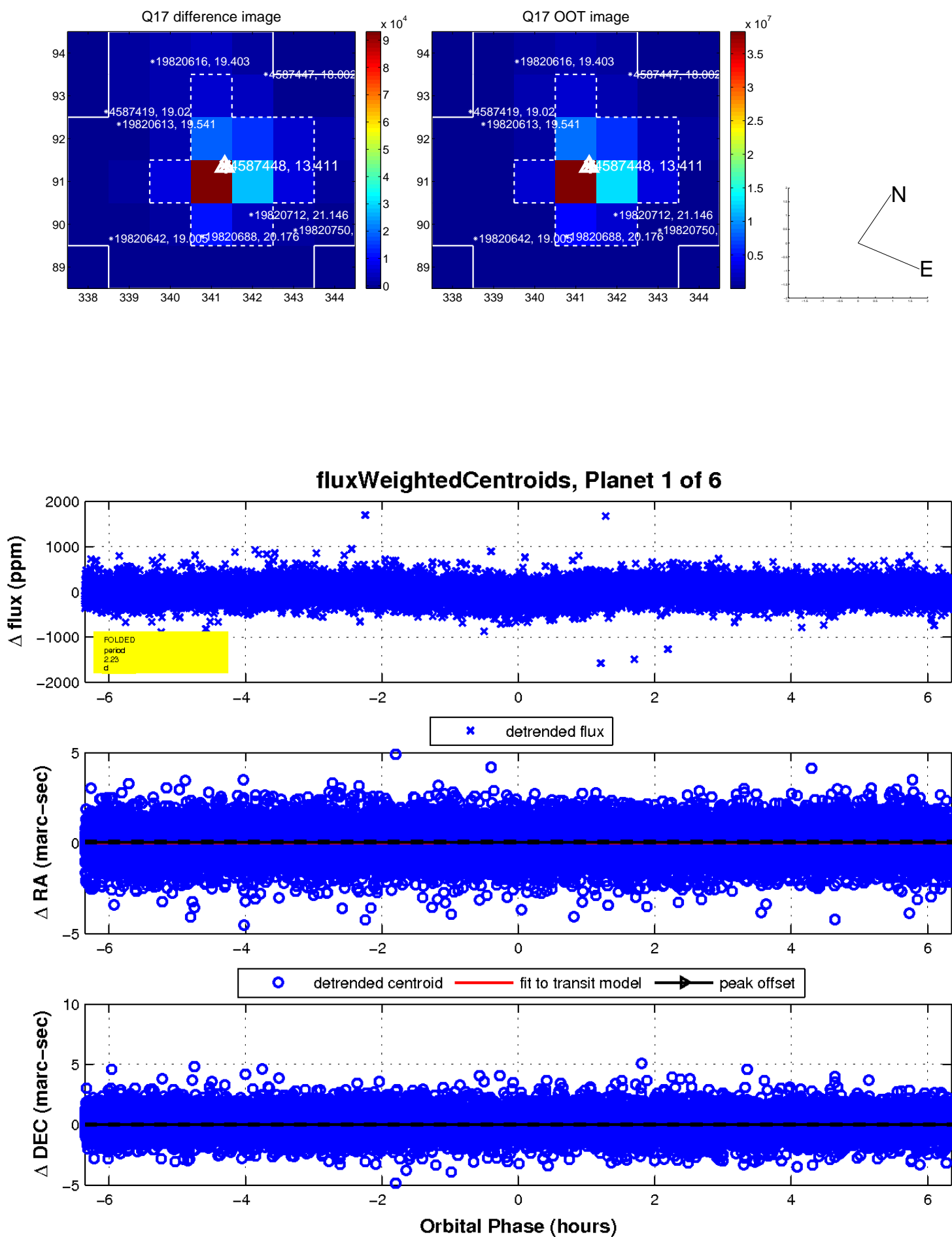
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



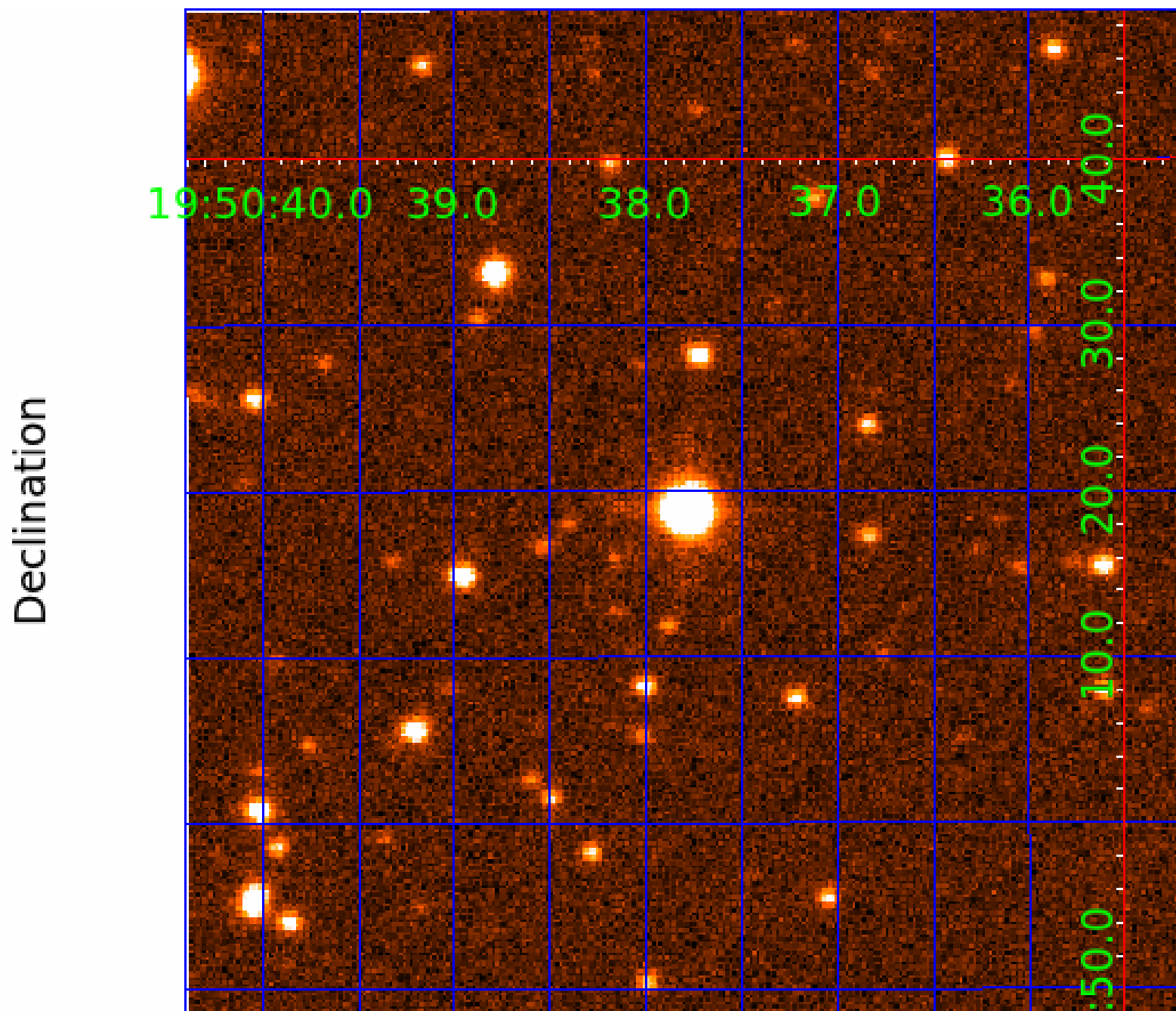
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004587448

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
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Robovetter Results

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004587448-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
004587448-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
004587448-05	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
004587448-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

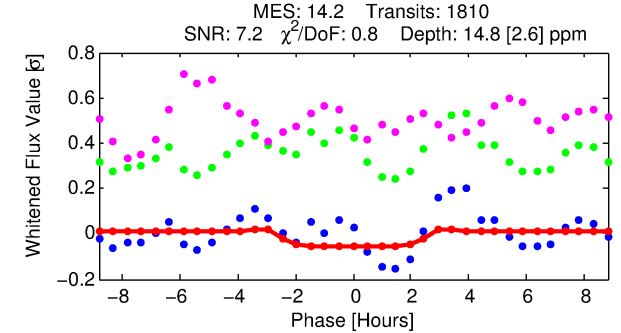
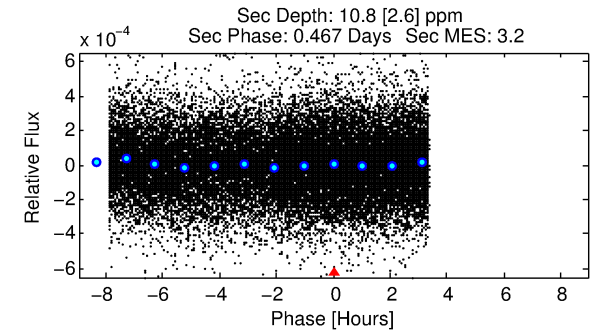
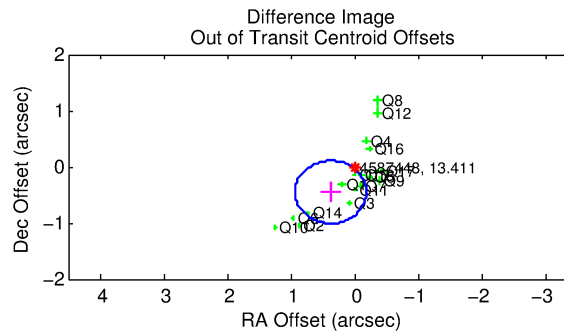
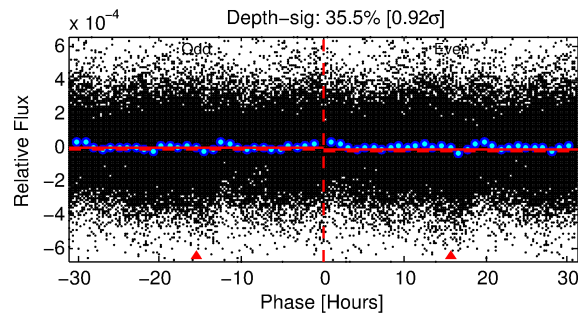
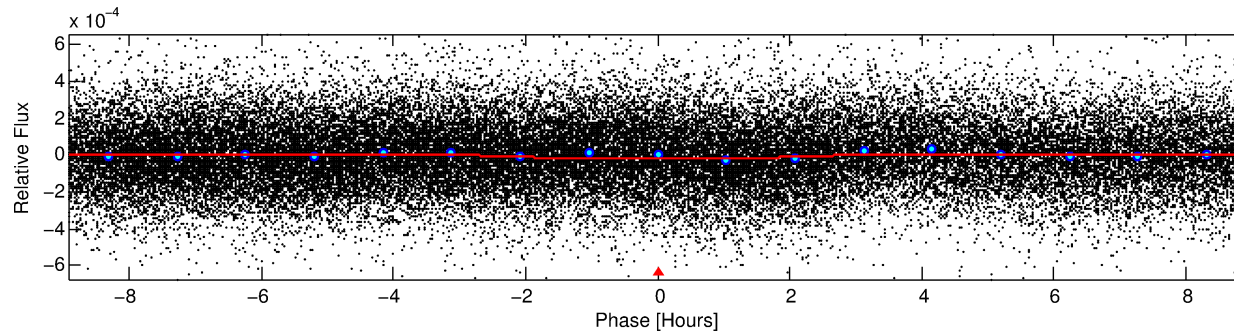
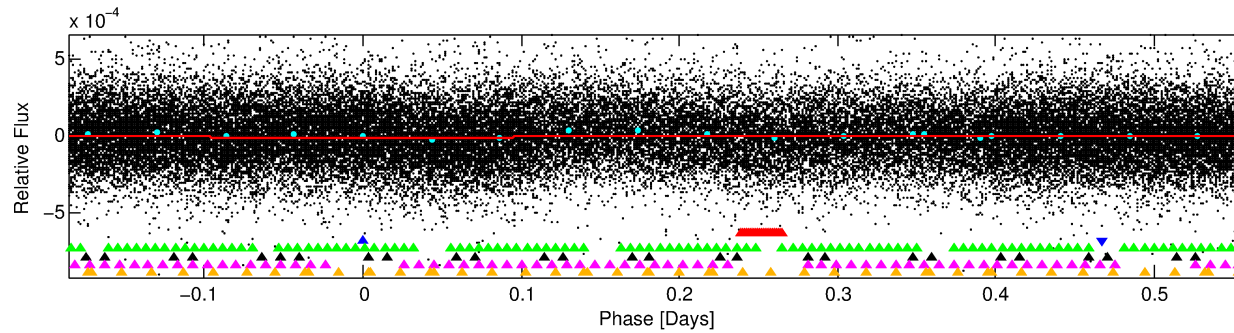
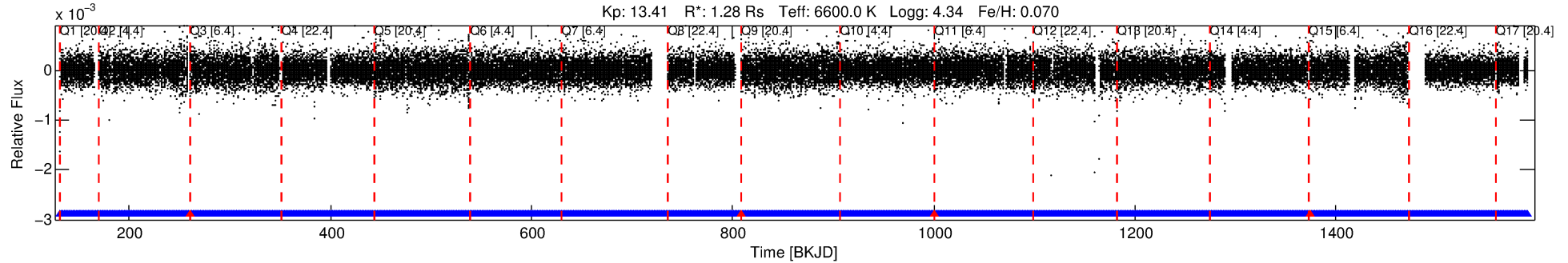
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004587448-02

No Significant Match Found

DV One-Page Summary

KIC: 4587448 Candidate: 2 of 6 Period: 0.745 d
KOI: K06430 Corr: No Ephemeris Match



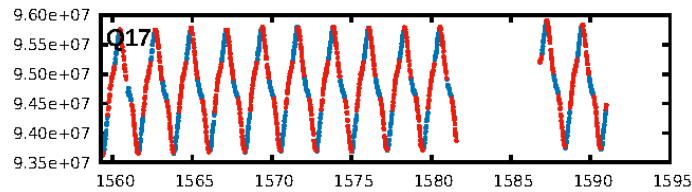
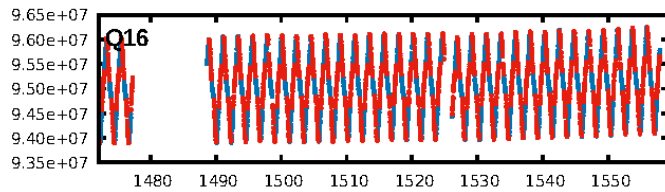
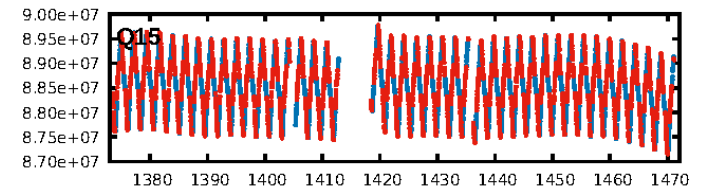
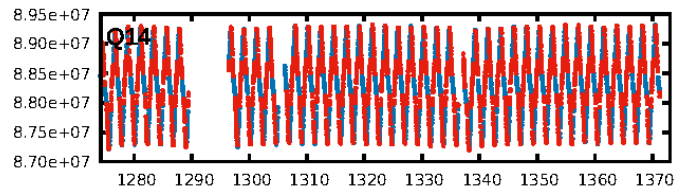
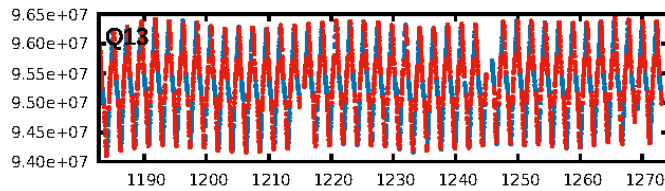
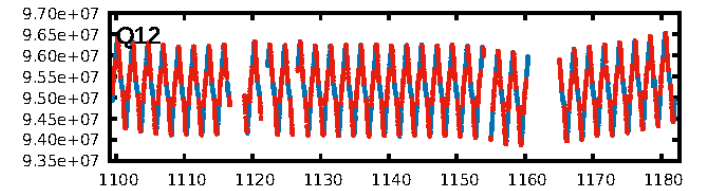
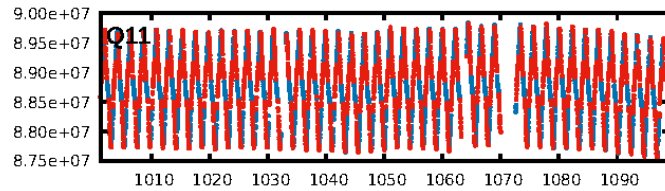
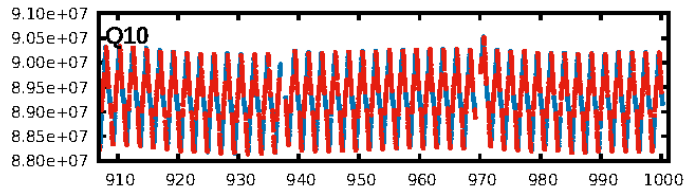
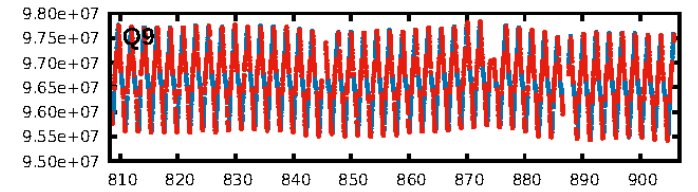
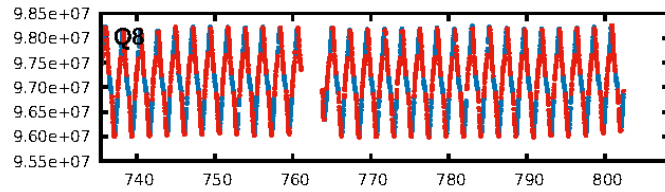
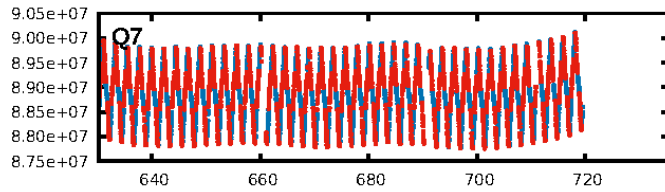
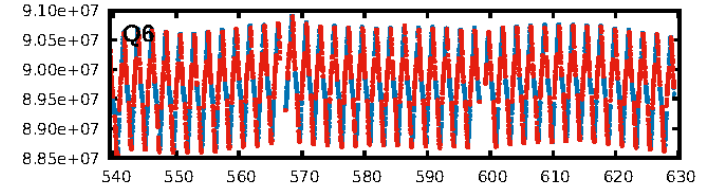
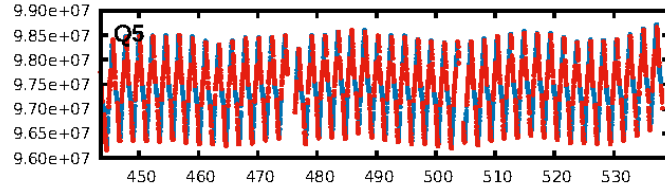
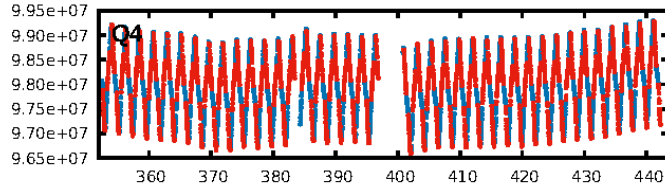
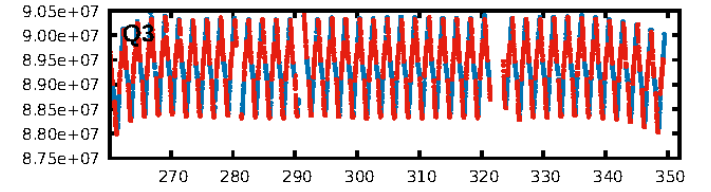
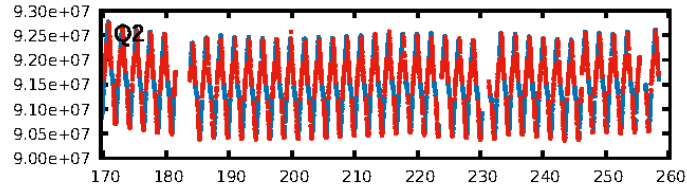
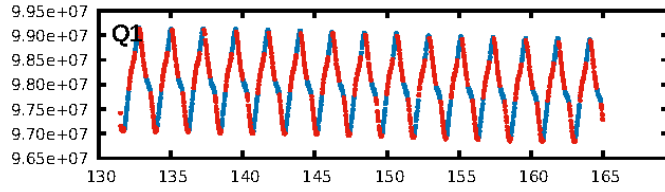
DV Fit Results:

Period = 0.74470 [0.00002] d
Epoch = 131.5664 [0.0060] BKJD
Rp/R* = 0.0036 [0.0035]
a/R* = 1.24 [2.22]
b = 0.35 [13.10]
Seff = 8992.68 [3979.06]
Teq = 2483 [275] K
Rp = 0.50 [0.52] Re
a = 0.0176 [0.0052] AU
Ag = 7.32 [14.61] [0.43 σ]
Teffp = 6315 [3088] K [1.24 σ]

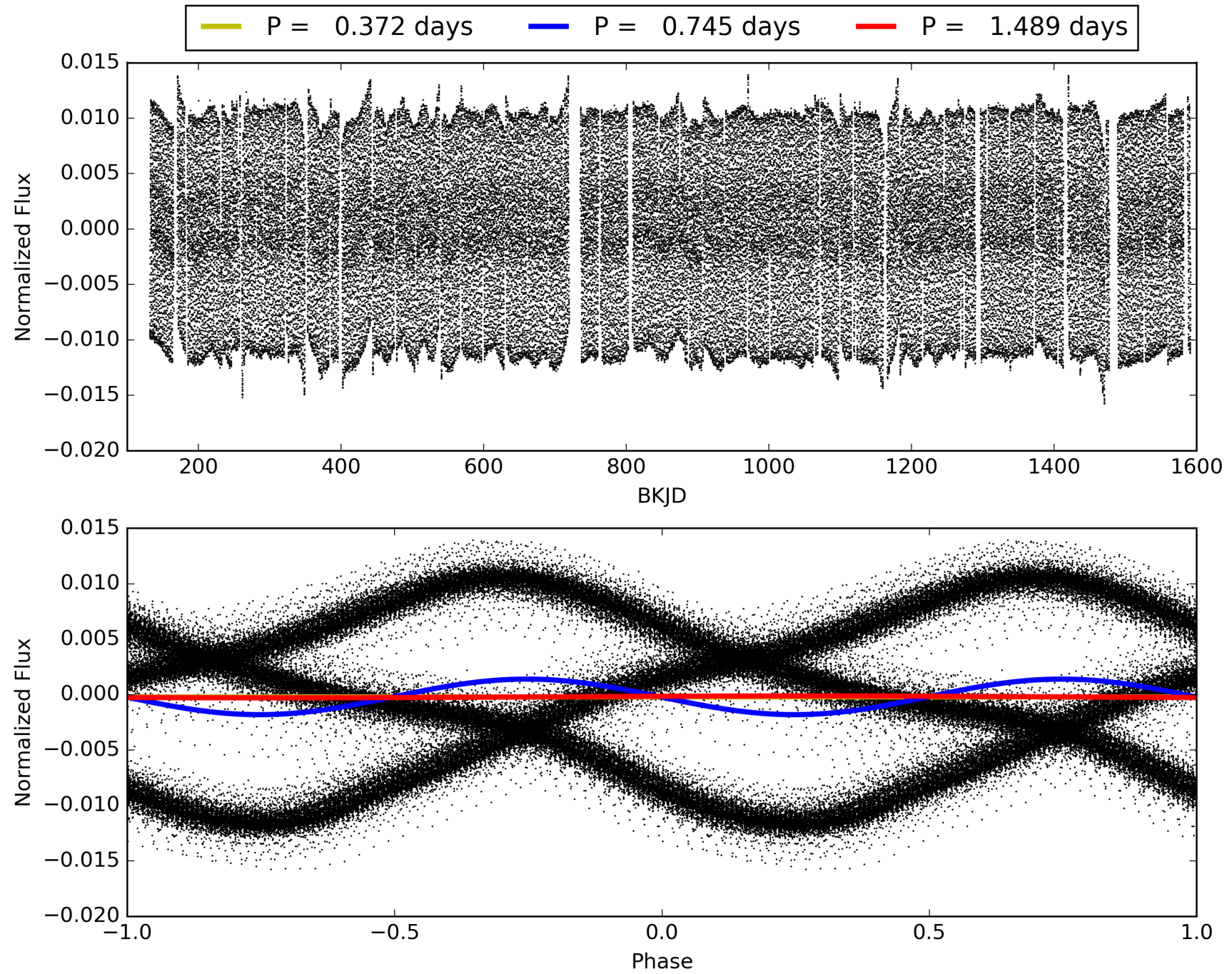
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [6.36 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1724/1728]
GhostDiagnostic-chr: 0.3774
Centroid-sig: 27.7%
Centroid-so: 1.744 arcsec [1.17 σ]
OotOffset-rm: 0.588 arcsec [3.16 σ]
KicOffset-rm: 0.606 arcsec [3.52 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 004587448-02, PDC Light Curves

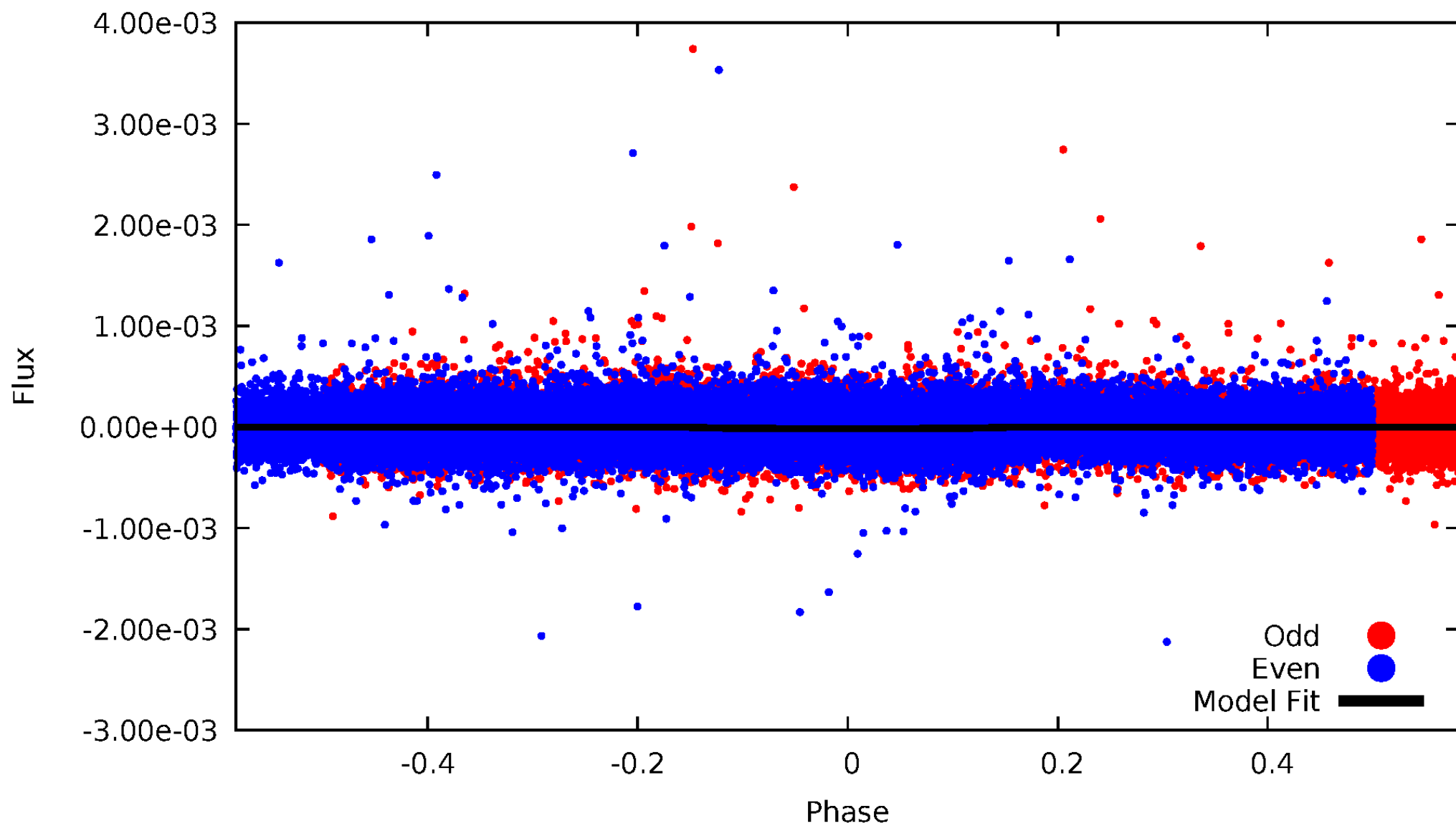


TCE 004587448-02



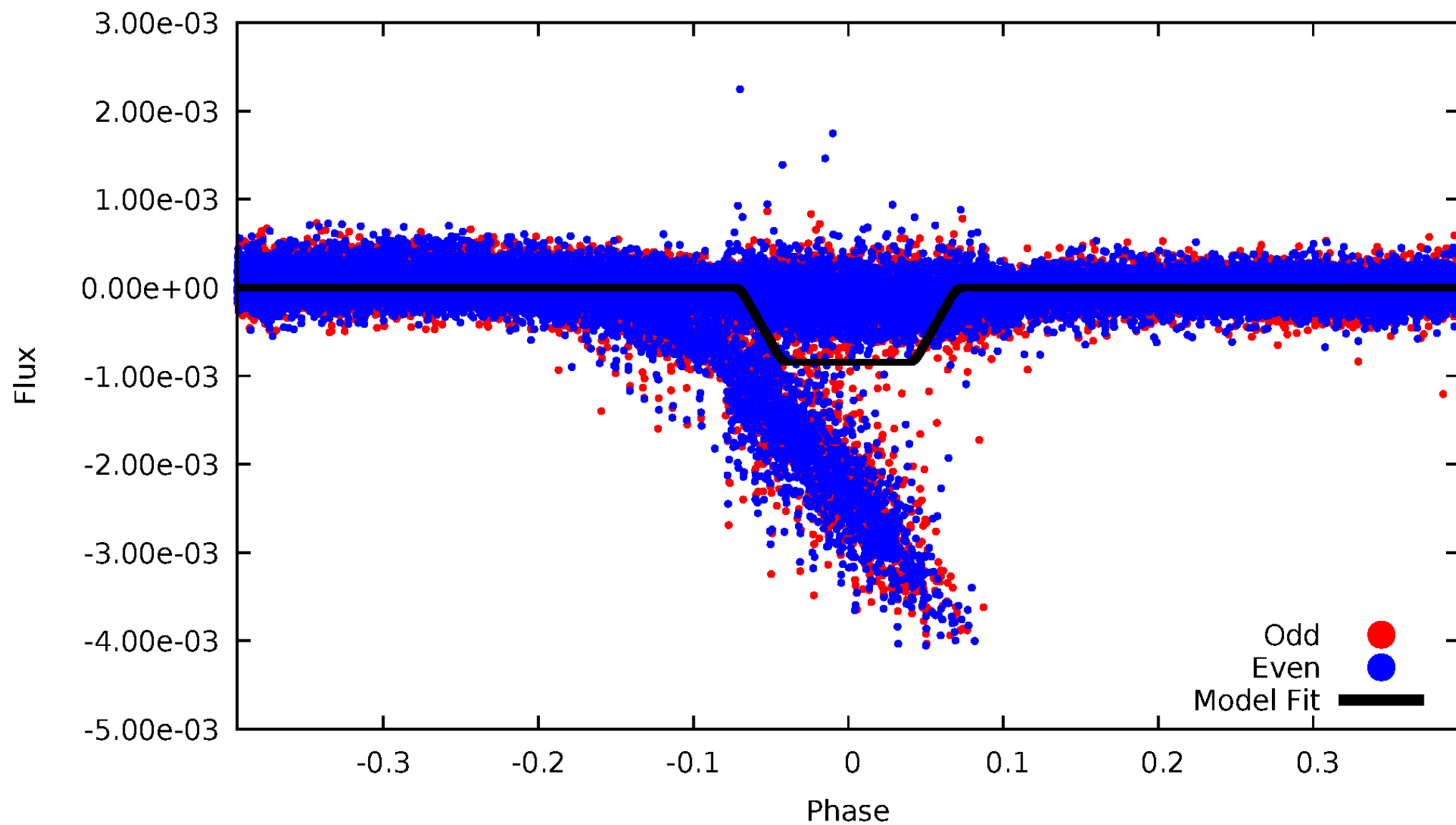
DV Odd/Even

TCE 004587448-02



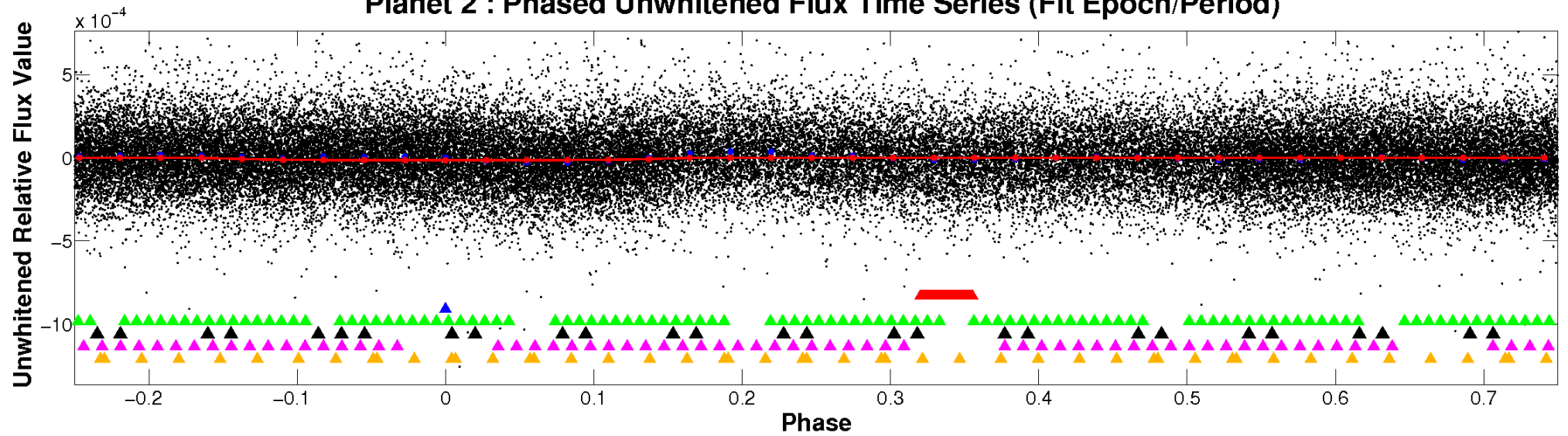
ALT Odd/Even

TCE 004587448-02

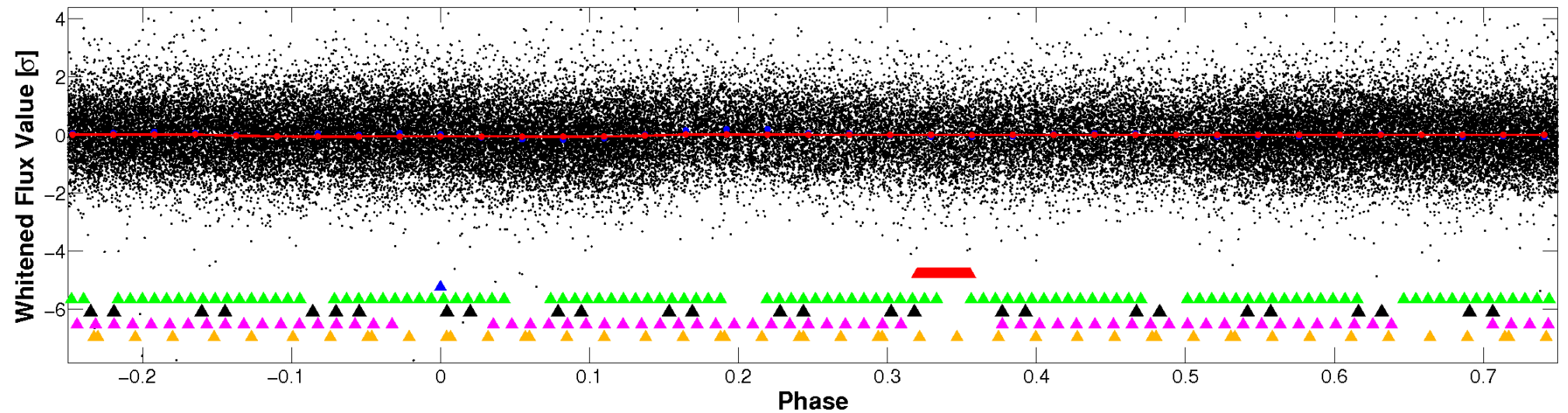


Non-Whitened Vs. Whitened Light Curve

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

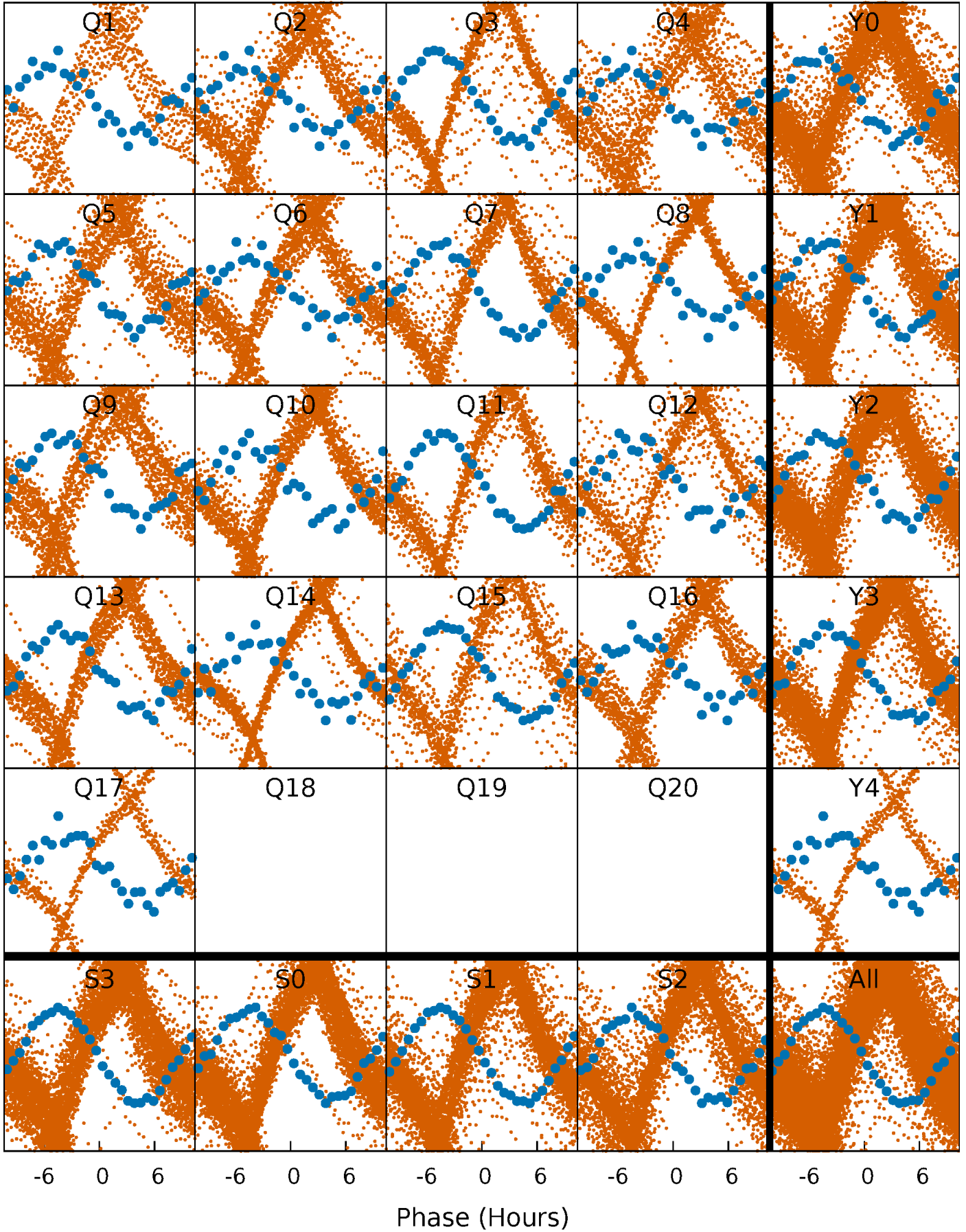


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



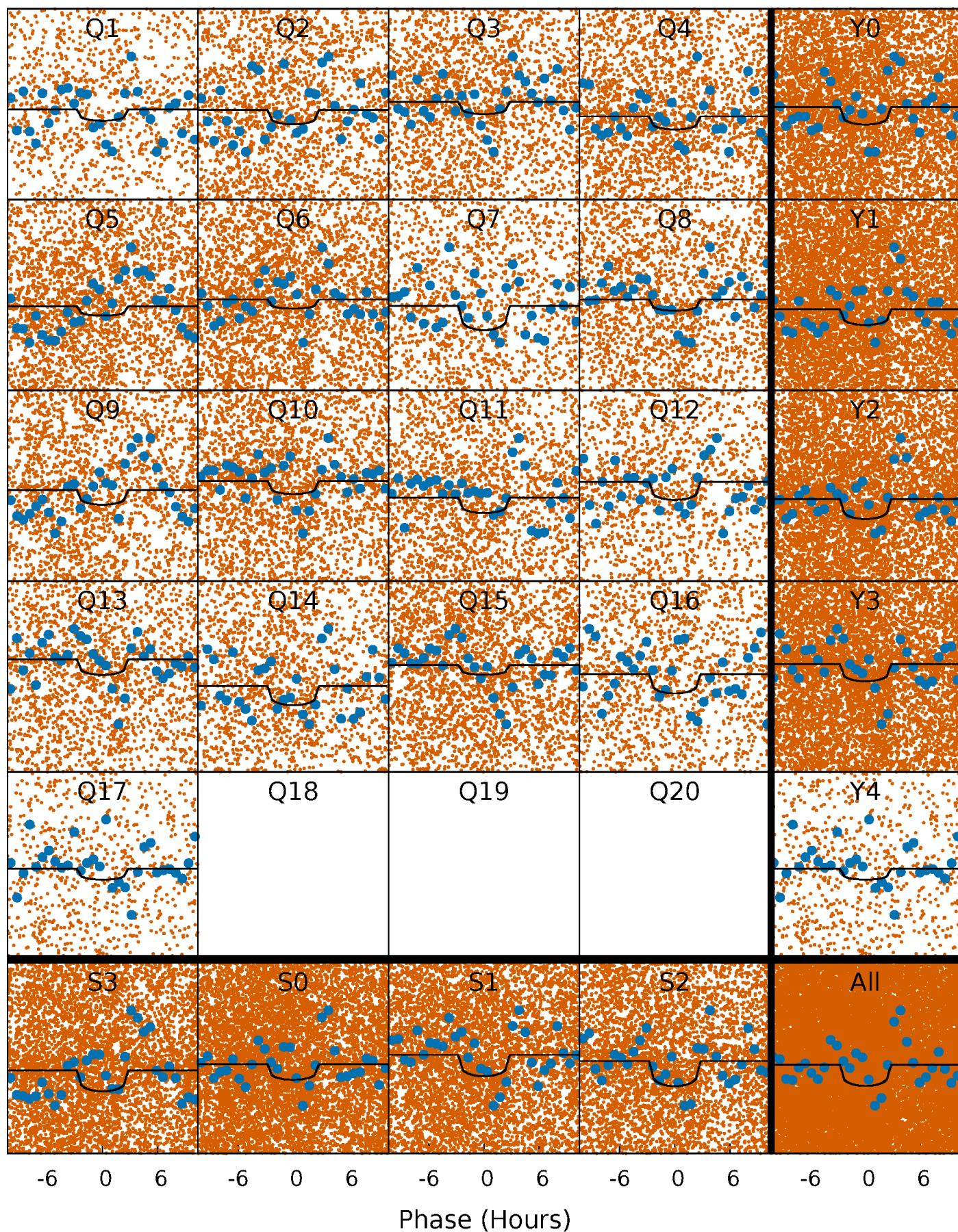
PDC Quarter-Phased Transit Curves

TCE 004587448-02 P= 0.744700 Days $T_0=131.566381$ (BKJD)



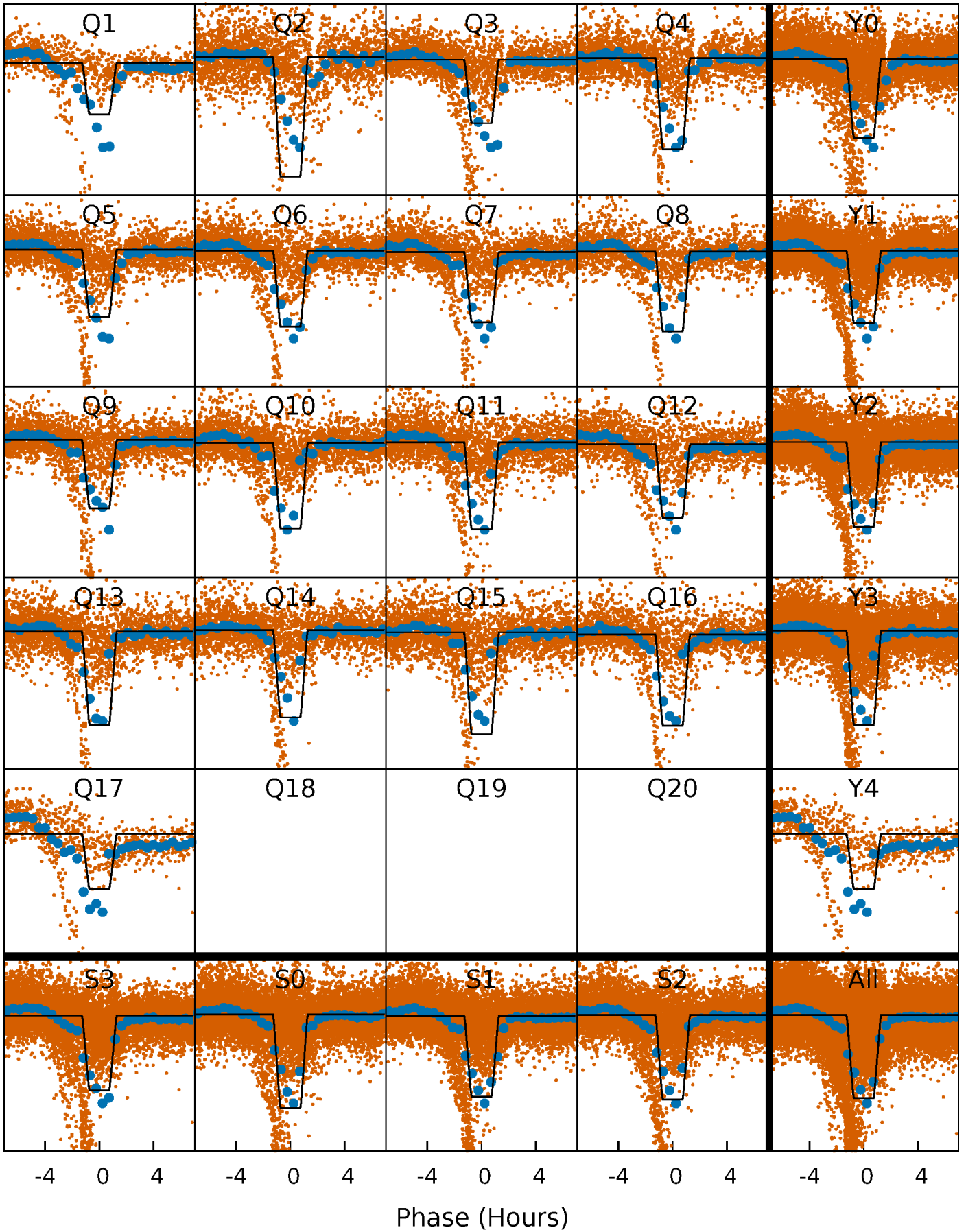
DV Quarter-Phased Transit Curves

TCE 004587448-02 P= 0.744700 Days $T_0=131.566381$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

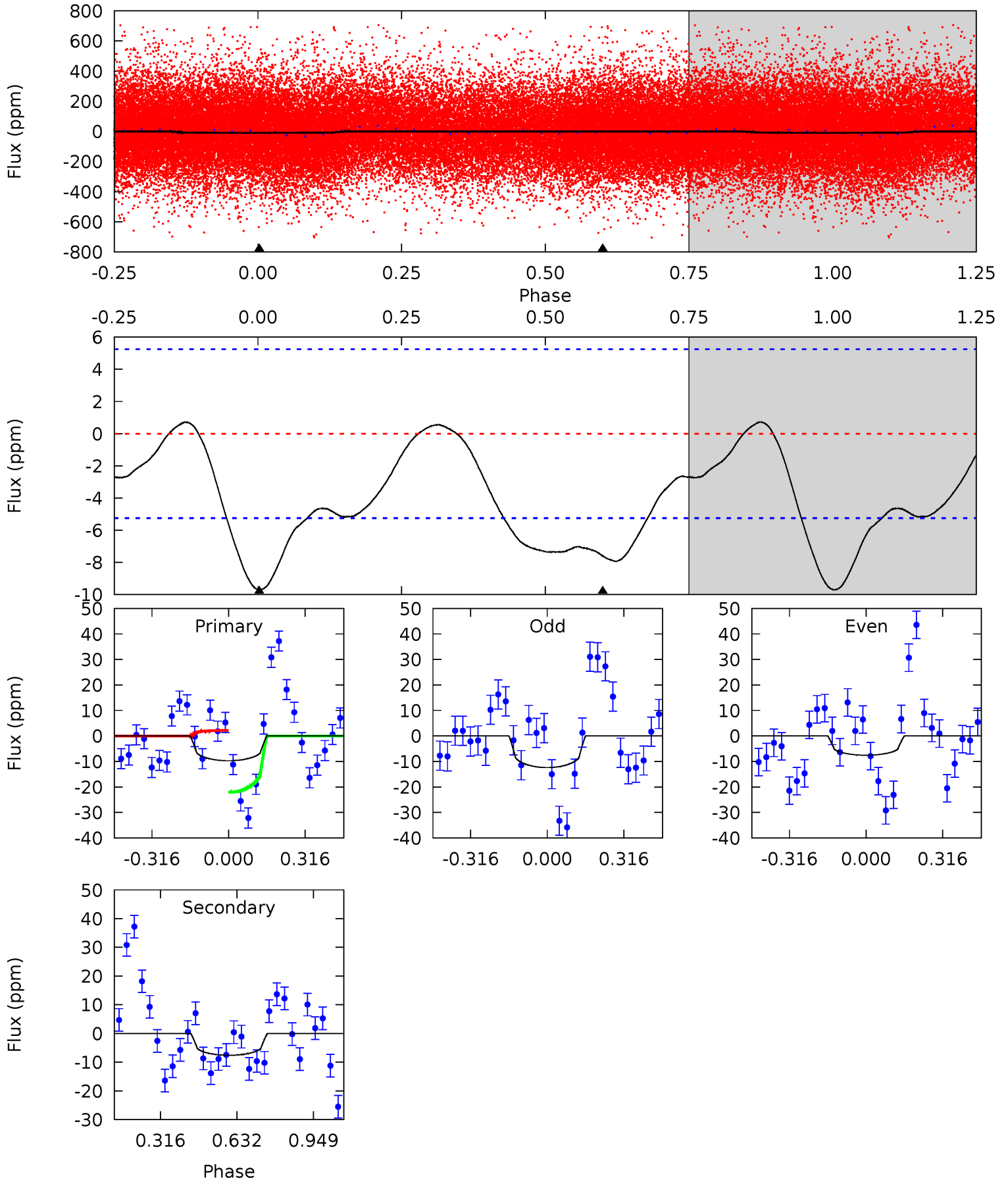
TCE 004587448-02 P= 0.744735 Days $T_0=131.590339$ (BKJD)



DV Model-Shift Uniqueness Test

004587448-02, P = 0.744700 Days, E = 130.821681 Days

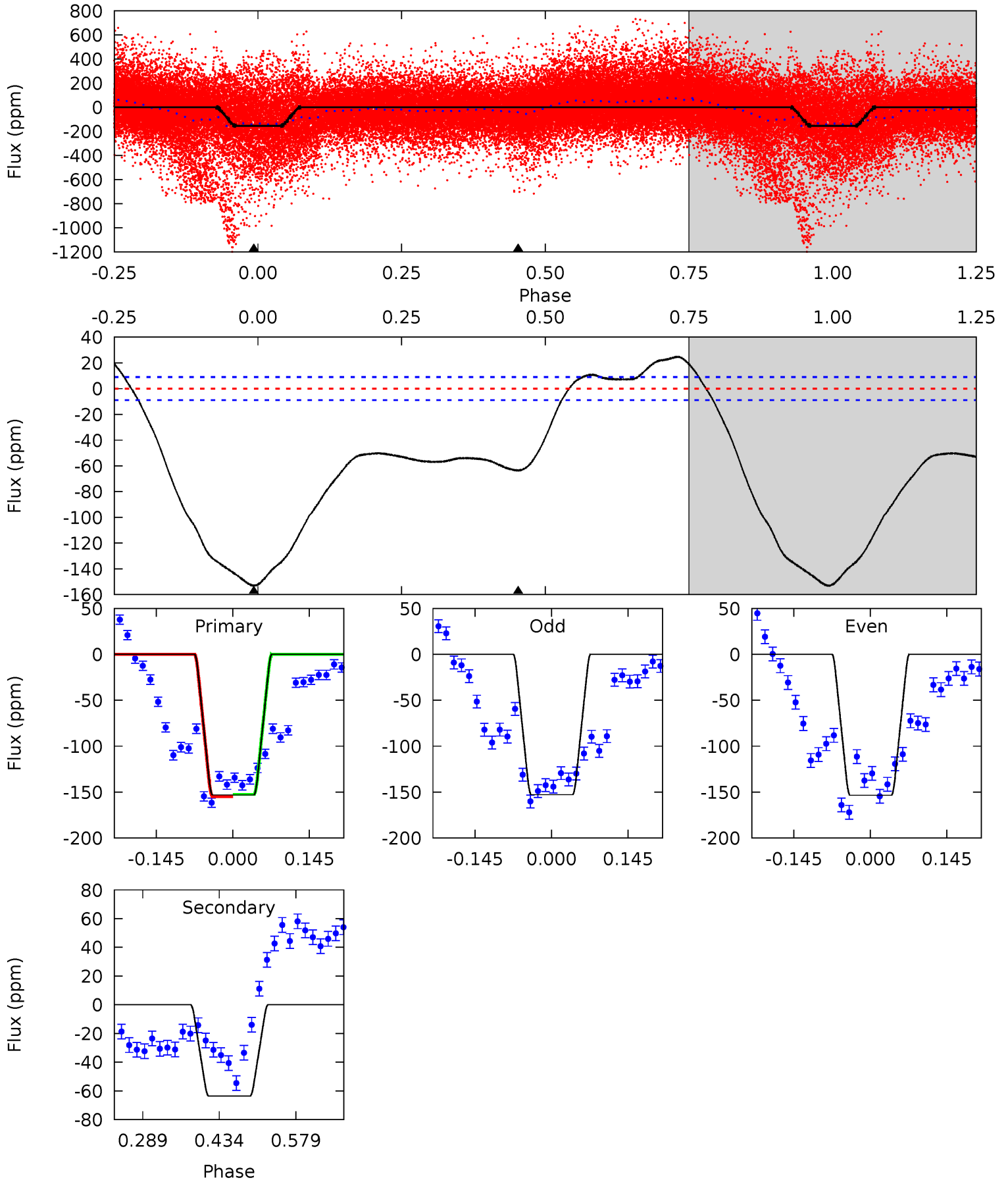
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.99	6.26	0	0	4.32	1.00	0.61	7.99	7.99	6.26	6.26	1.98	1.14	0.07	8.12



Alt Model-Shift Uniqueness Test

004587448-02, P = 0.744735 Days, E = 130.845604 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
77.0	32.0	0	0	4.49	1.46	16.4	77.0	77.0	32.0	32.0	0.16	3.49	0.14	0



Stellar Parameters For KIC 004587448

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6600^{+158}_{-237}	$4.340^{+0.056}_{-0.224}$	$0.070^{+0.250}_{-0.350}$	$1.277^{+0.457}_{-0.152}$	$1.305^{+0.175}_{-0.195}$	$0.882^{+0.277}_{-0.496}$
	+2%/-4%	+1%/-5%	+357%/-500%	+36%/-12%	+13%/-15%	+31%/-56%
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 004587448-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-8 ± 1	$0.63^{+0.48}_{-0.37}$	3542^{+283}_{-176}	5152^{+3275}_{-1240}	$3.119^{+15.771}_{-2.142}$
Alt.	-64 ± 2	$4.24^{+0.90}_{-0.69}$	3535^{+289}_{-166}	3377^{+310}_{-368}	$0.586^{+0.228}_{-0.176}$

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

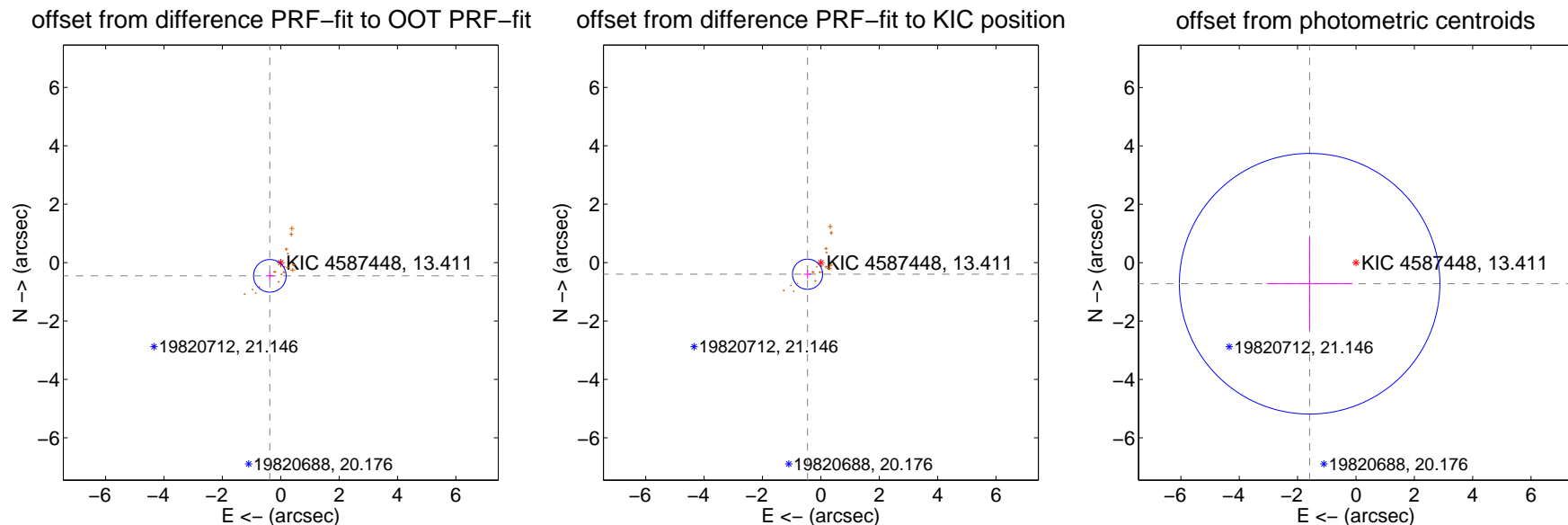
DV Centroid Data

Supplemental centroid analysis for 004587448-02. Kepler magnitude: 13.41. Transit SNR 7.20

There are 0 quarters with good PRF difference image offsets

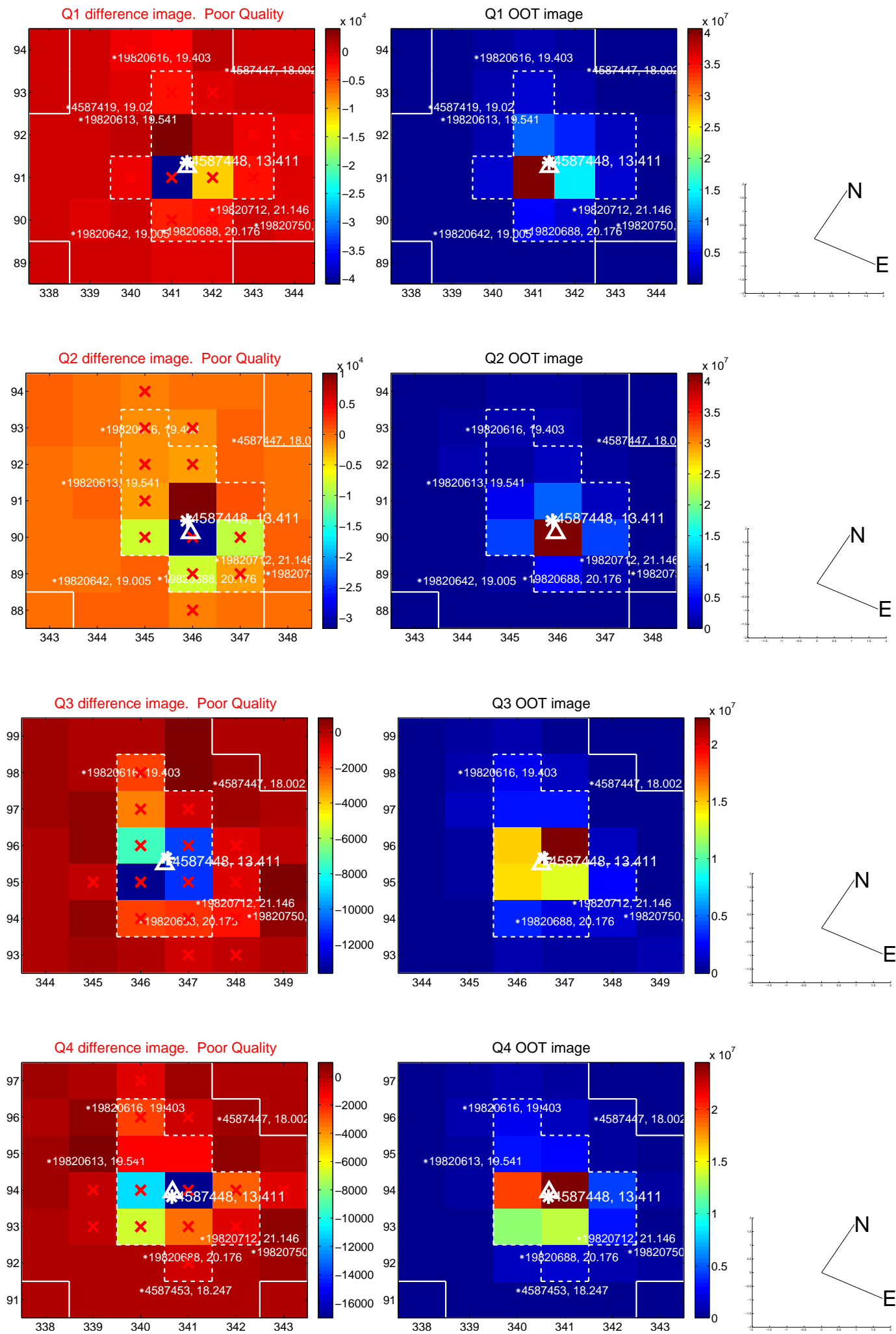
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.588 ± 0.186	3.16	0.374 ± 0.139	-0.454 ± 0.154
PRF-fit source offset from KIC position	0.606 ± 0.172	3.52	0.456 ± 0.128	-0.398 ± 0.151
photometric centroid source offset	1.74 ± 1.49	1.17	1.59 ± 1.47	-0.72 ± 1.58

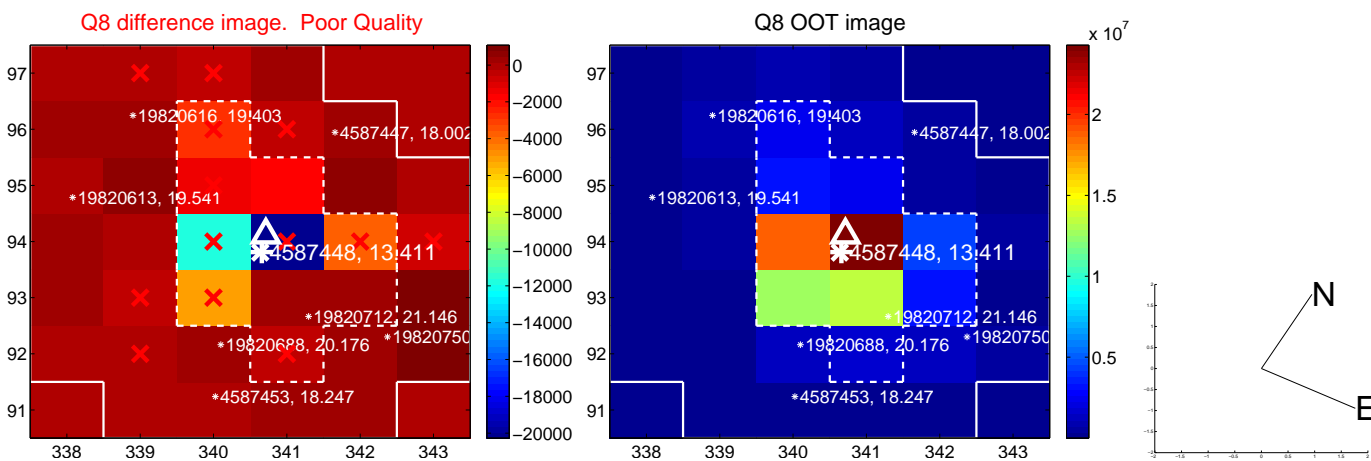
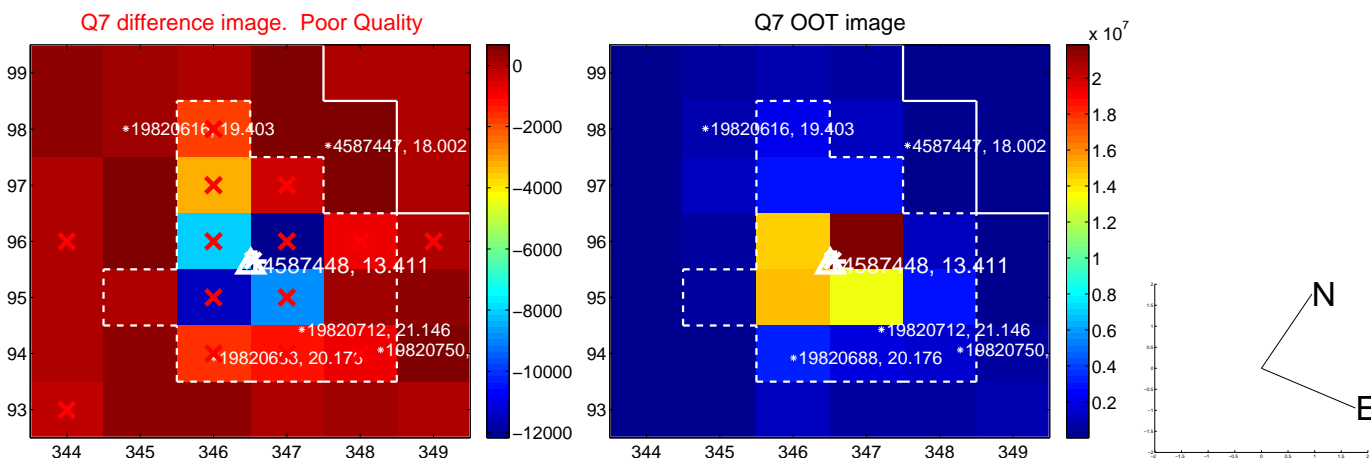
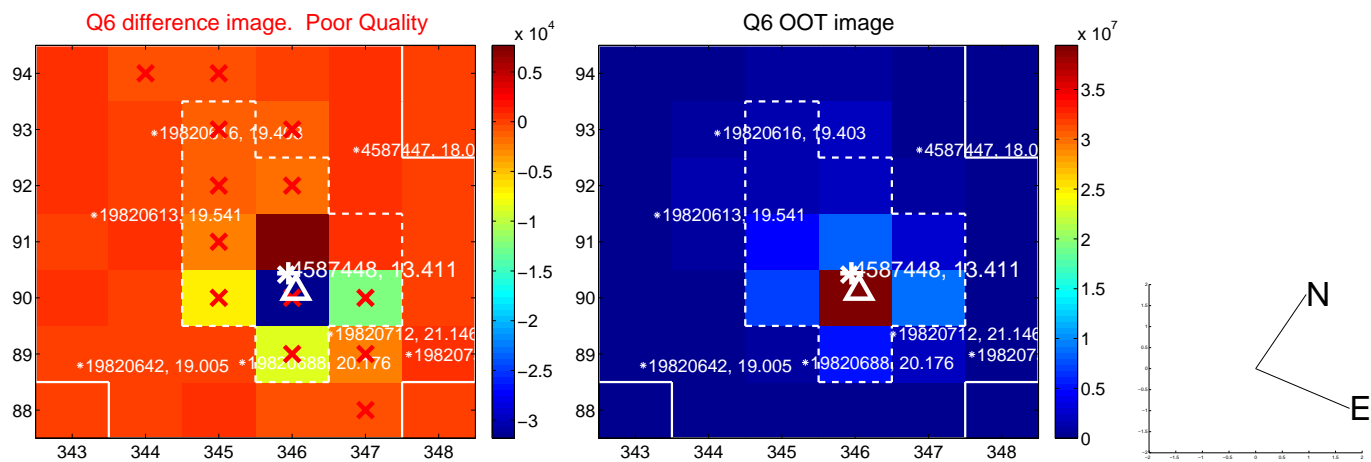
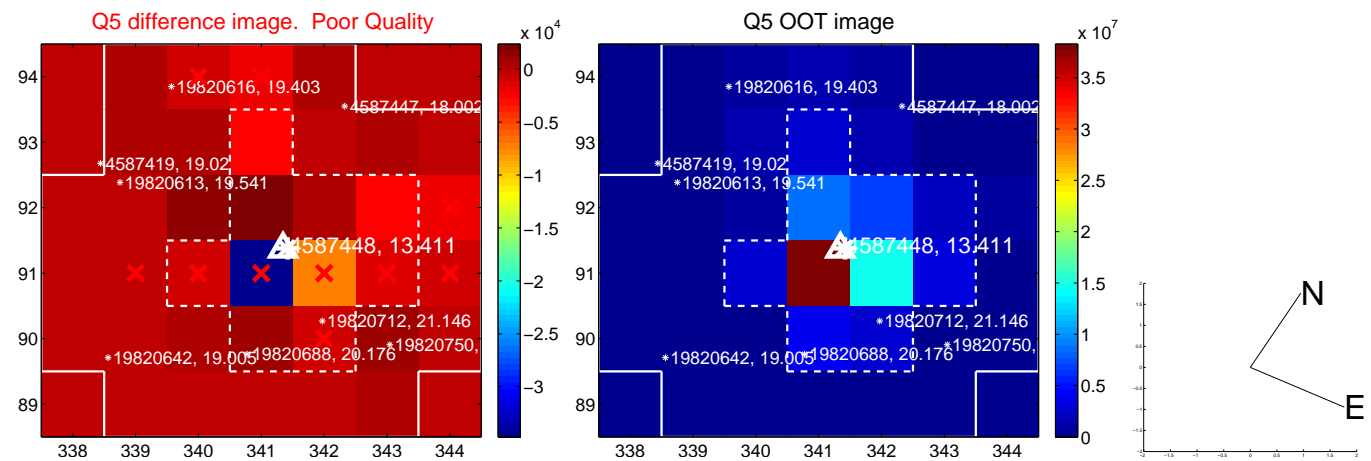


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

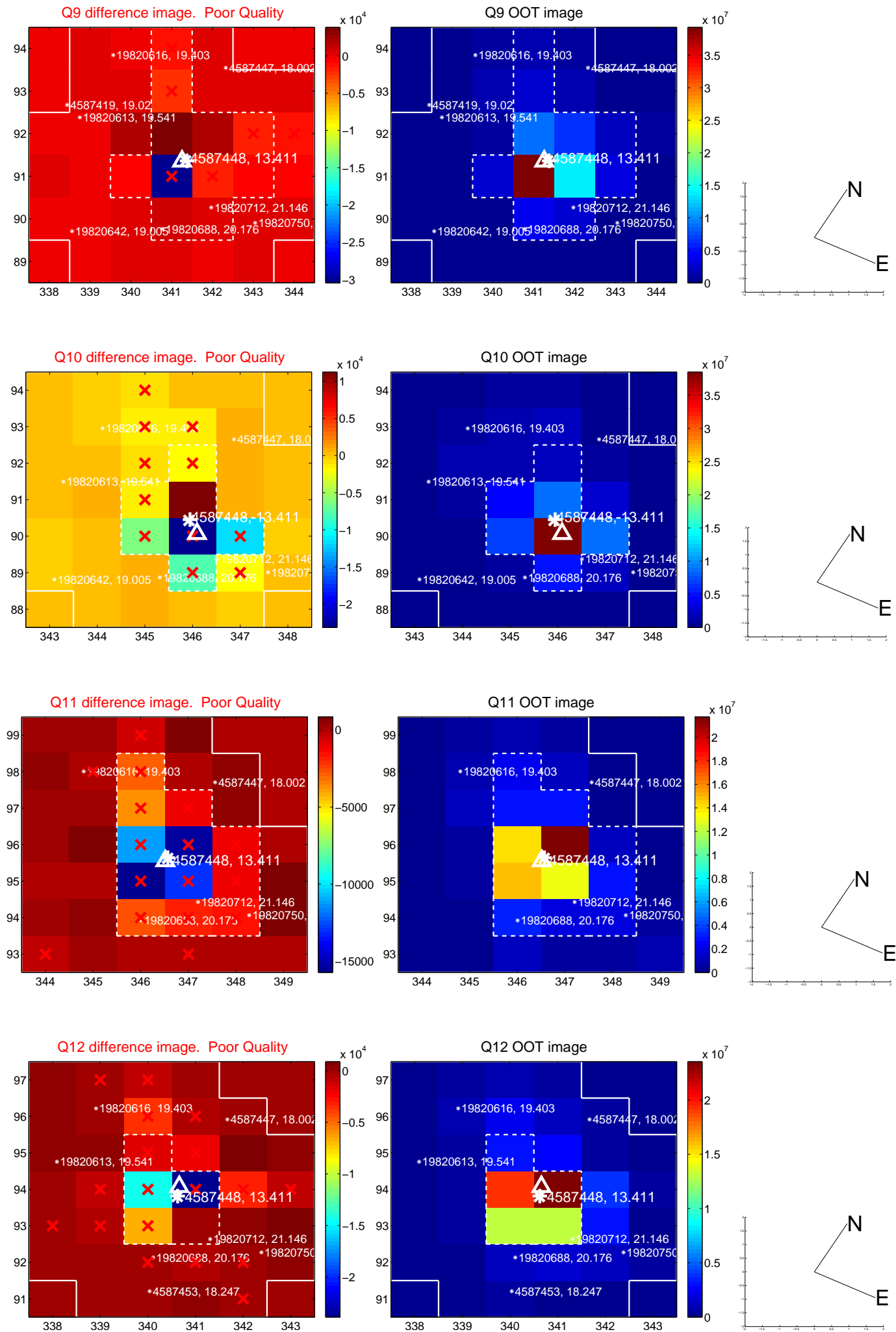
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



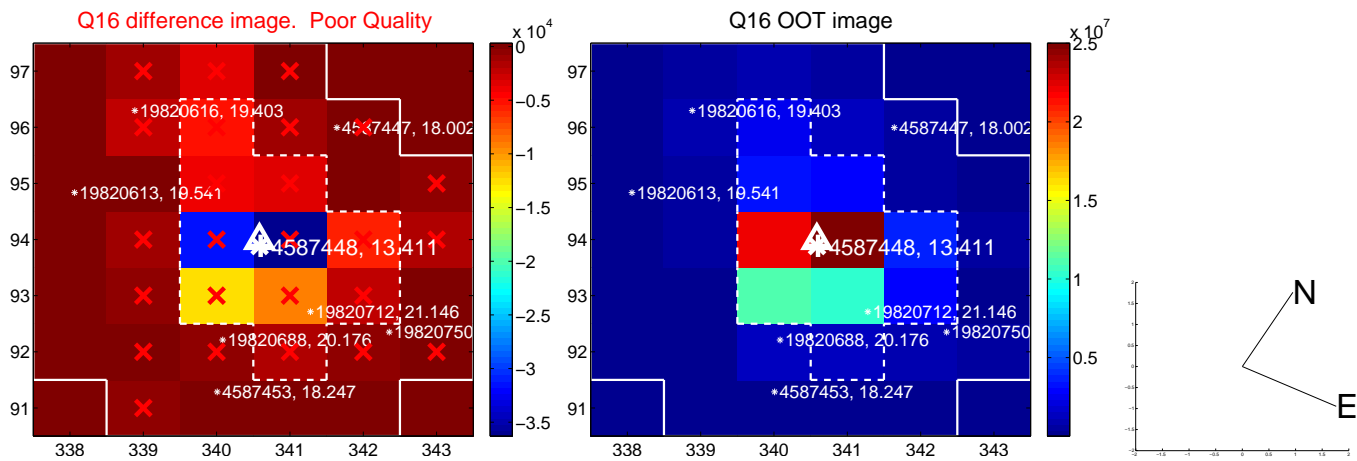
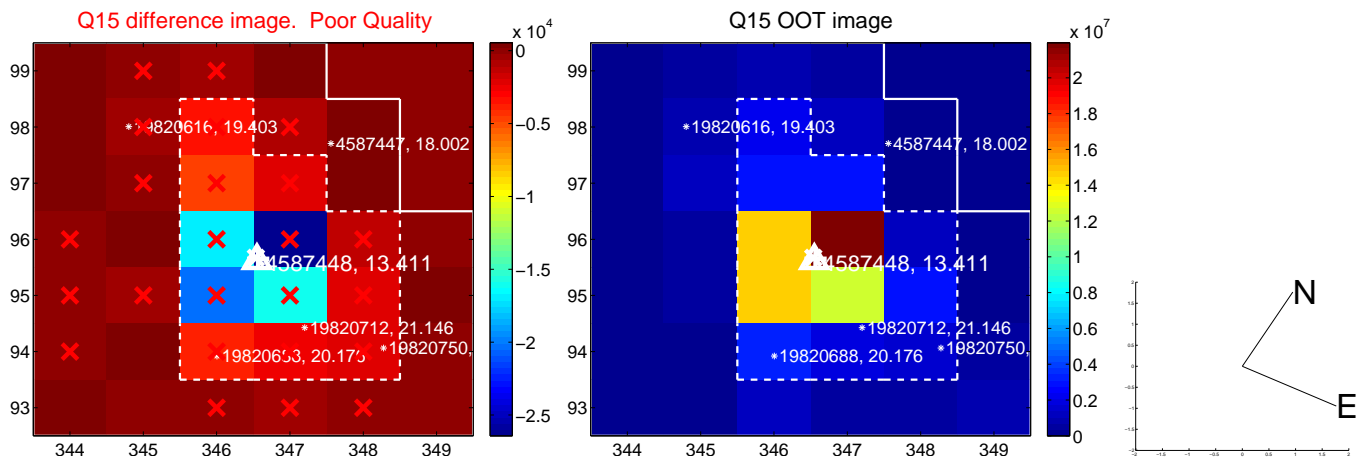
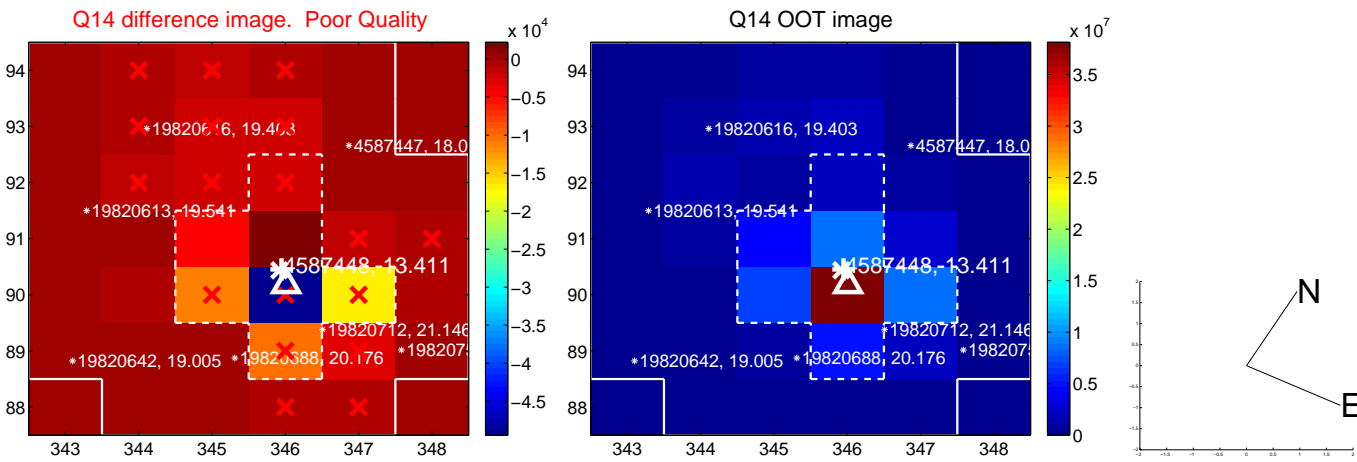
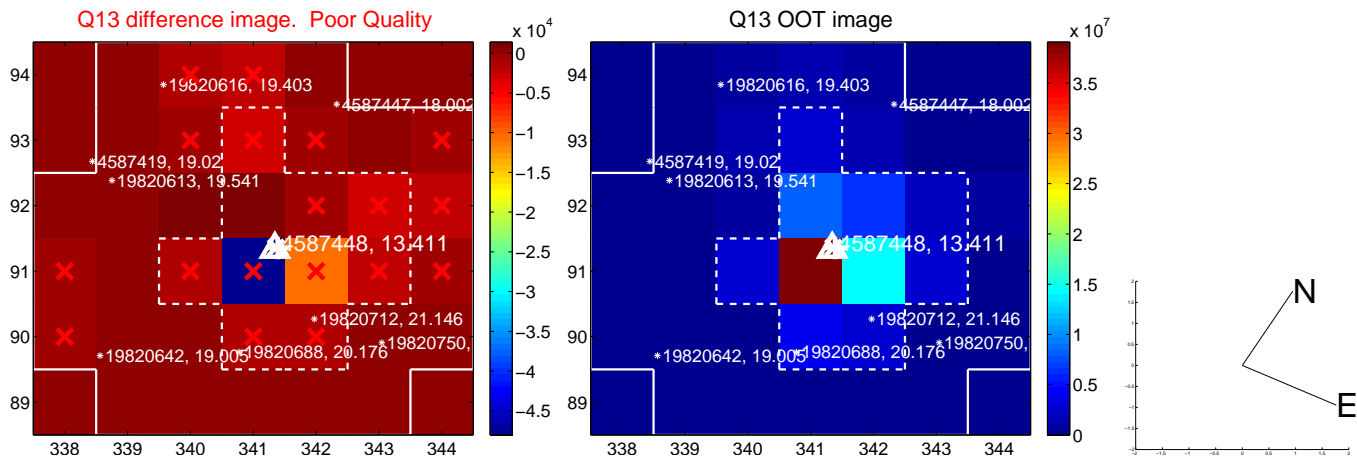
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



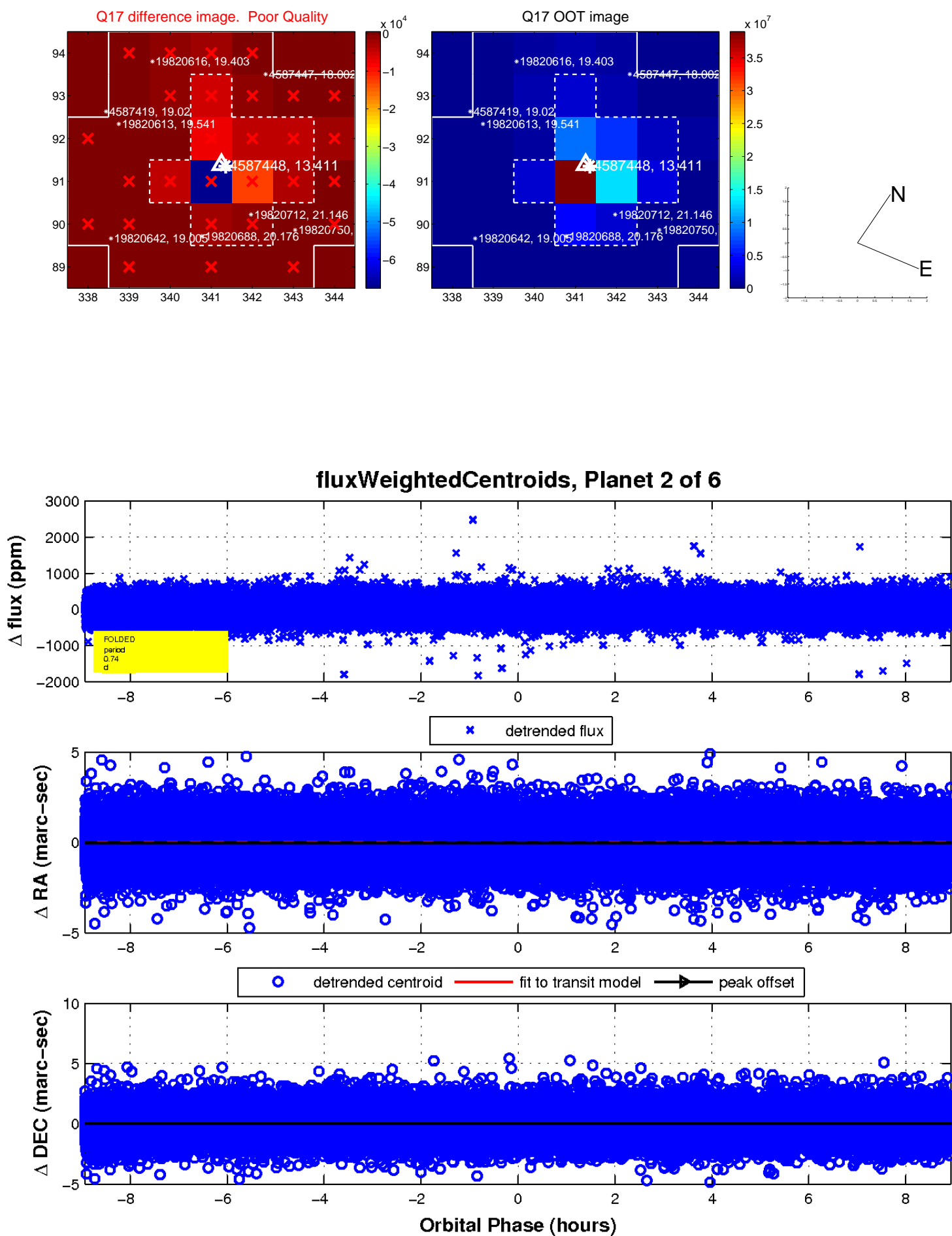
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



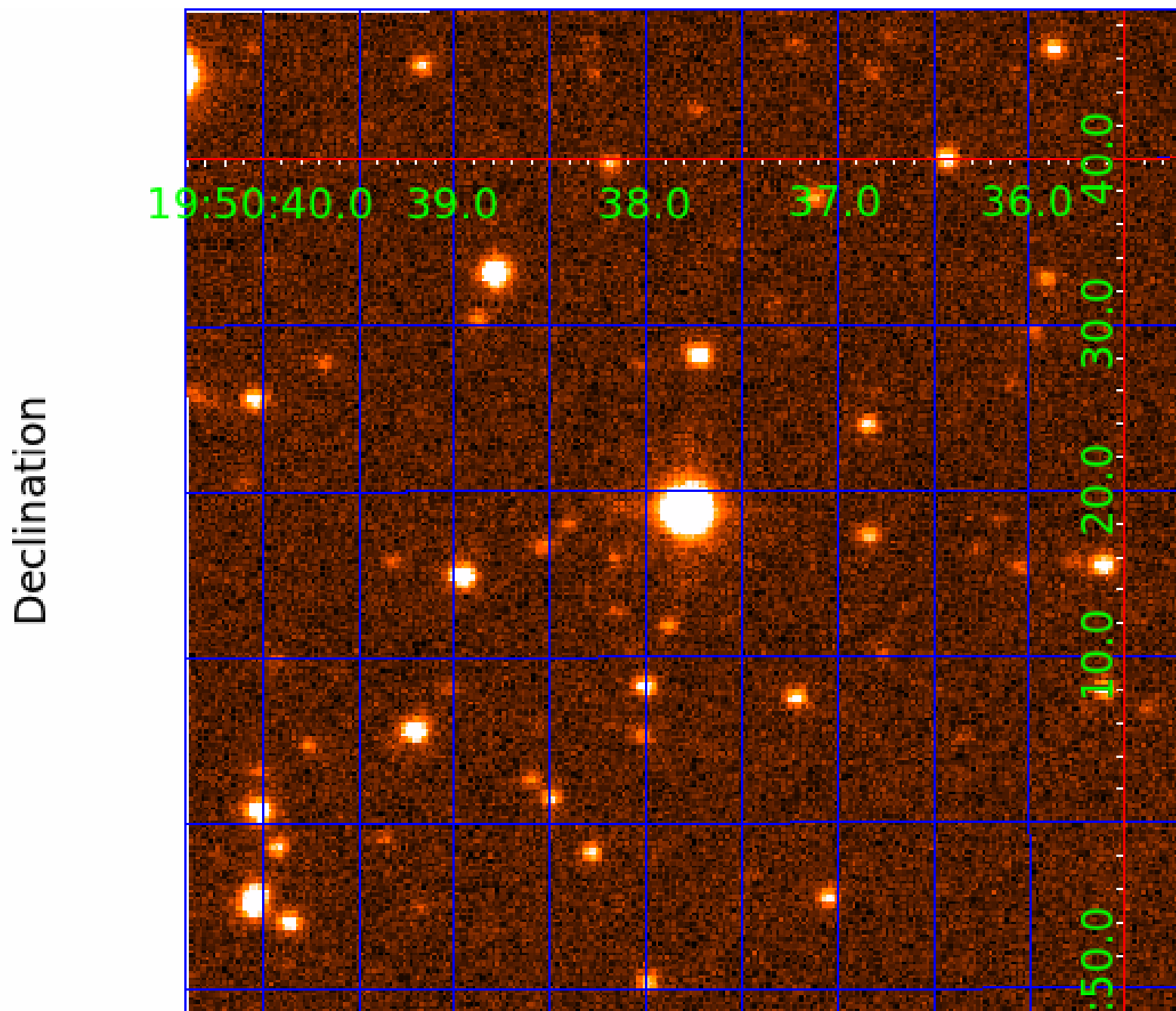
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004587448

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})
004587448-01	OBS	6430.01	2.234140	131.804722	103.3	2.117	20.1	21.8	1.28	6600	1.52	2078.34
004587448-02	OBS	No	0.744700	131.566381	14.8	5.206	14.2	7.2	1.28	6600	0.50	8992.67
004587448-03	OBS	No	13.831007	135.128775	294.7	1.853	15.4	9.5	1.28	6600	2.21	182.84
004587448-05	OBS	No	21.841444	133.285979	130.5	27.805	11.1	6.0	1.28	6600	1.54	99.42
004587448-06	OBS	No	30.356375	156.281449	448.5	1.371	9.9	7.6	1.28	6600	2.93	64.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004587448-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
004587448-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
004587448-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
004587448-05	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
004587448-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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.

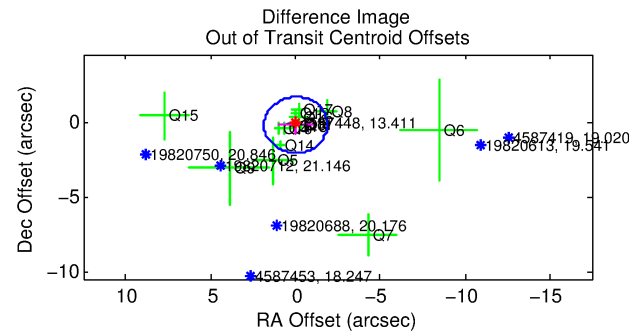
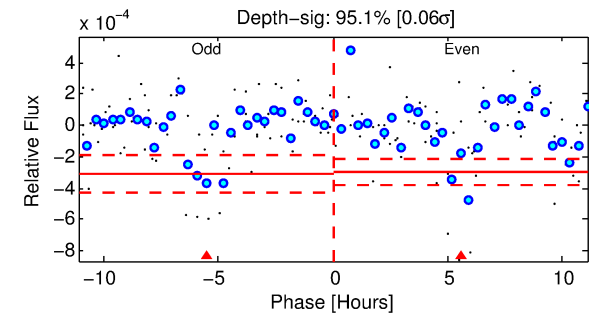
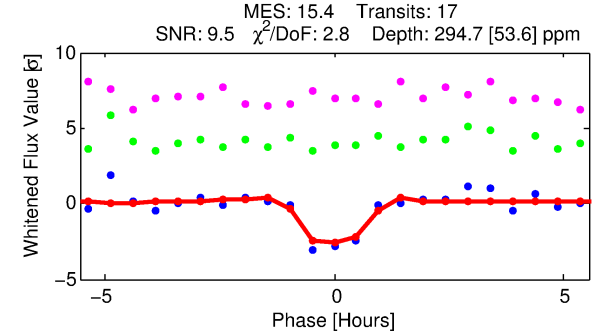
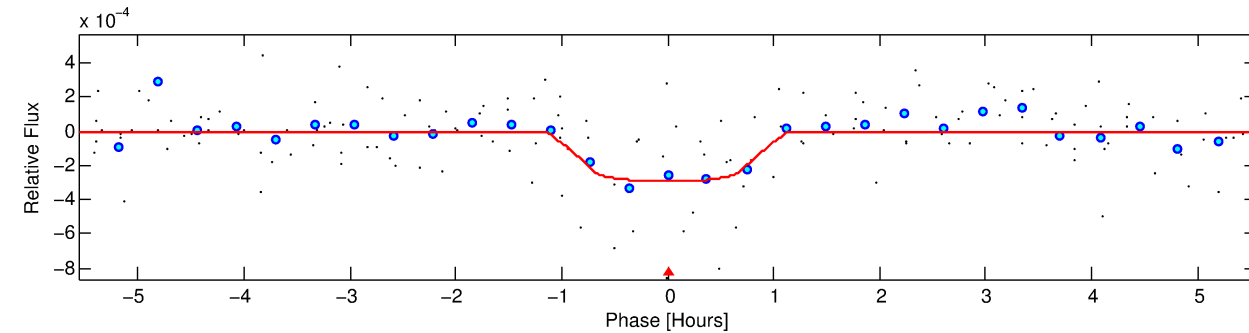
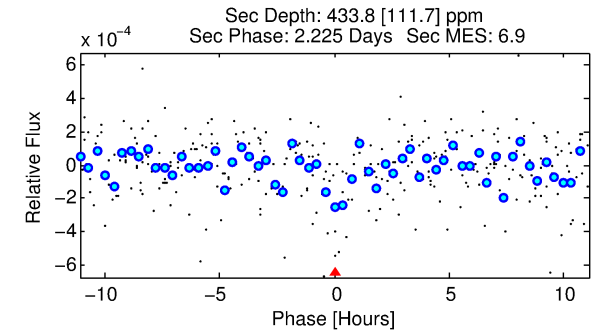
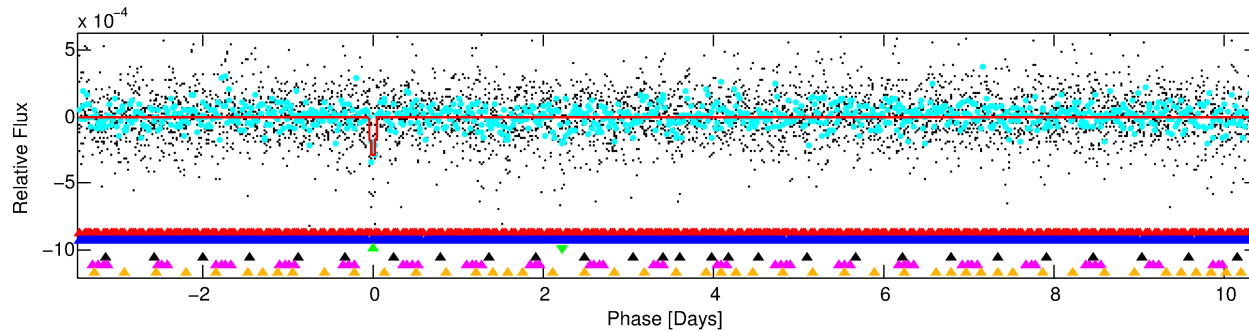
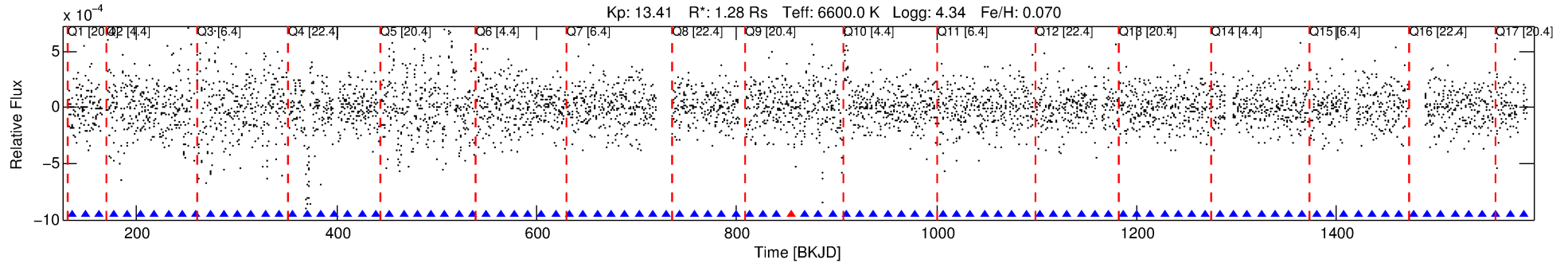
Ephemeris Match Information For 004587448-03

No Significant Match Found

DV One-Page Summary

KIC: 4587448 Candidate: 3 of 6 Period: 13.831 d
KOI: K06430 Corr: No Ephemeris Match

Kp: 13.41 R*: 1.28 Rs Teff: 6600.0 K Logg: 4.34 Fe/H: 0.070



DV Fit Results:

Period = 13.83101 [0.00017] d
Epoch = 135.1288 [0.0093] BKJD
Rp/R* = 0.0158 [0.0251]
a/R* = 57.83 [481.81]
b = 0.06 [141.39]
Seff = 182.83 [80.90]
Teff = 938 [104] K
Rp = 2.21 [3.58] Re
a = 0.1231 [0.0362] AU
Ag = 742.50 [2379.95] [0.31 sigma]
Teffp = 7568 [6018] K [1.10 sigma]

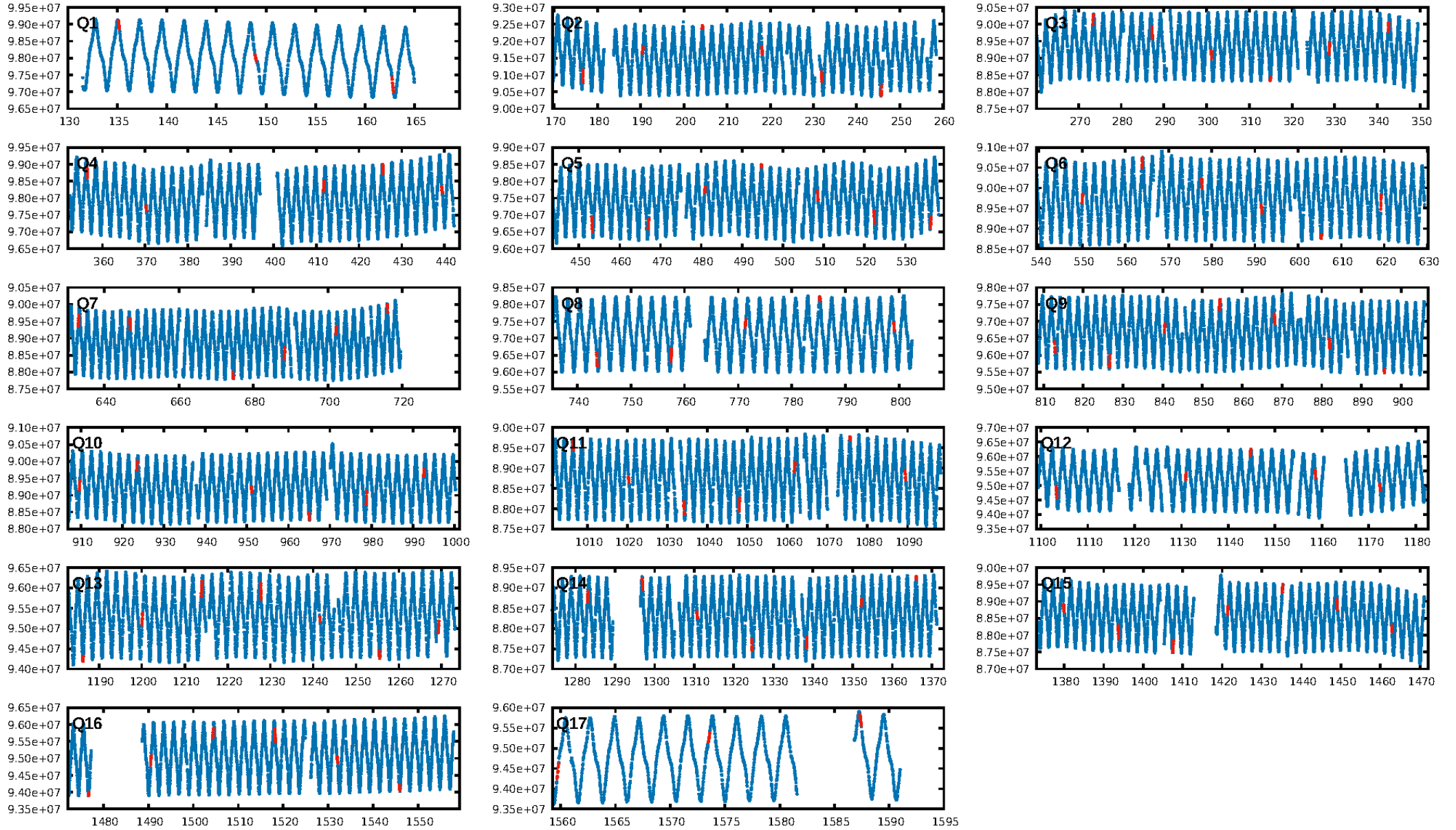
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [98.92 sigma]
LongPeriod-sig: 100.0% [6.90 sigma]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 21.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.94 [16/17]
GhostDiagnostic-chr: 0.7942
Centroid-sig: 66.5%
Centroid-so: 0.253 arcsec [0.48 sigma]
OotOffset-rm: 0.219 arcsec [0.35 sigma]
KicOffset-rm: 0.172 arcsec [0.31 sigma]
OotOffset-st: 3/4/4/4 [15]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 0.27 [4/15]
DiffImageOverlap-fno: 0.06 [1/17]

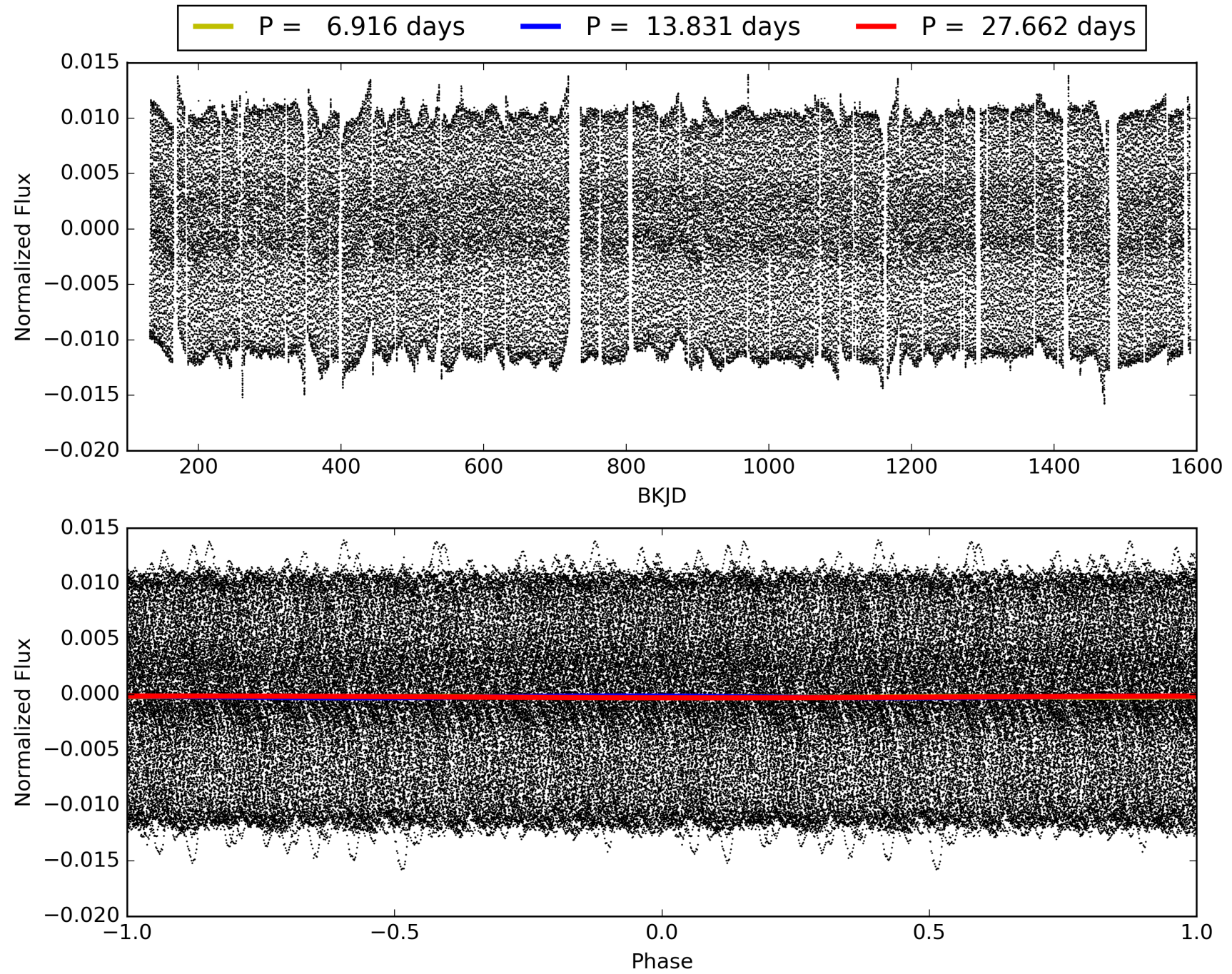
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 17:17:01 Z

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

TCE 004587448-03, PDC Light Curves

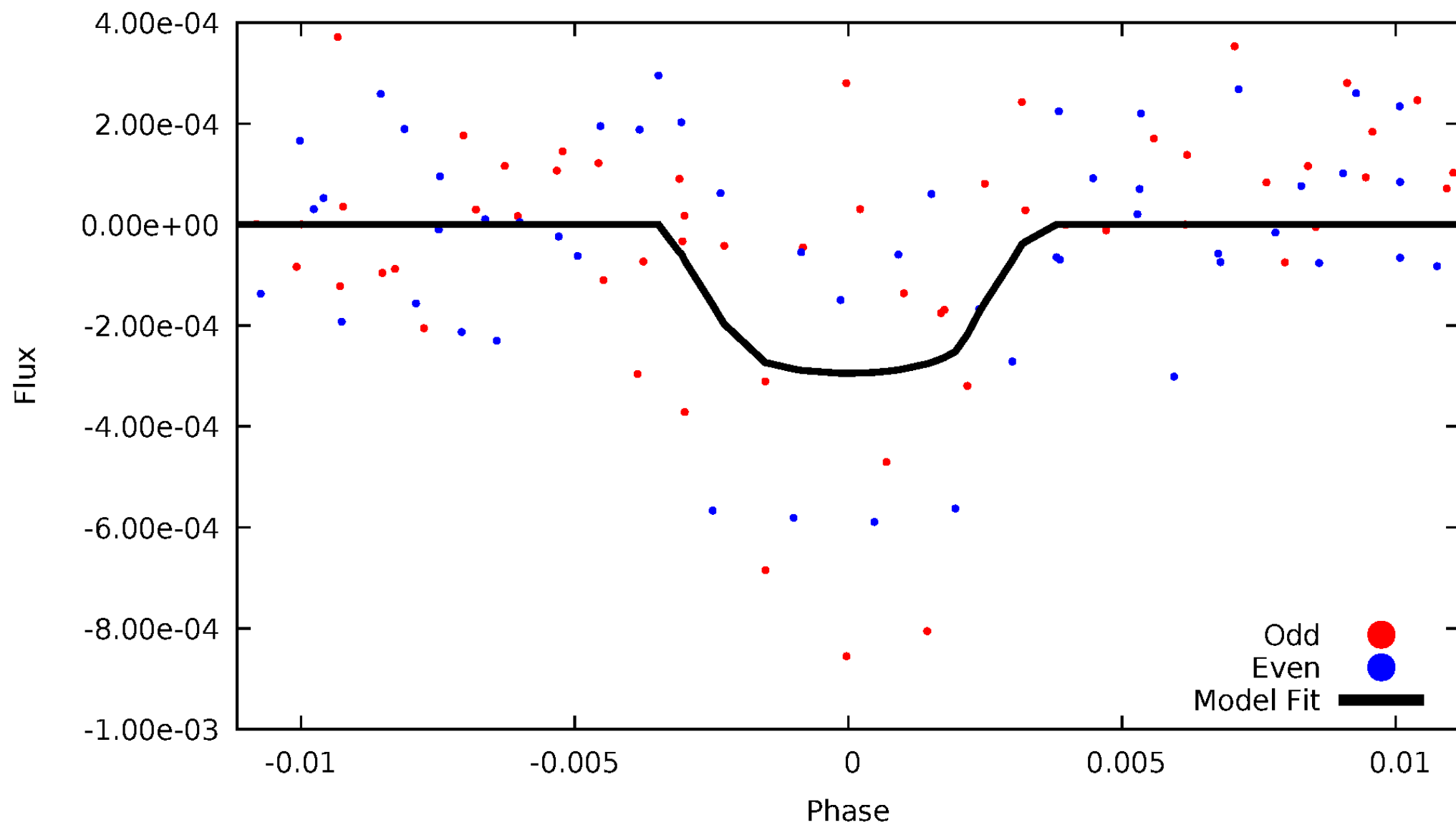


TCE 004587448-03



DV Odd/Even

TCE 004587448-03

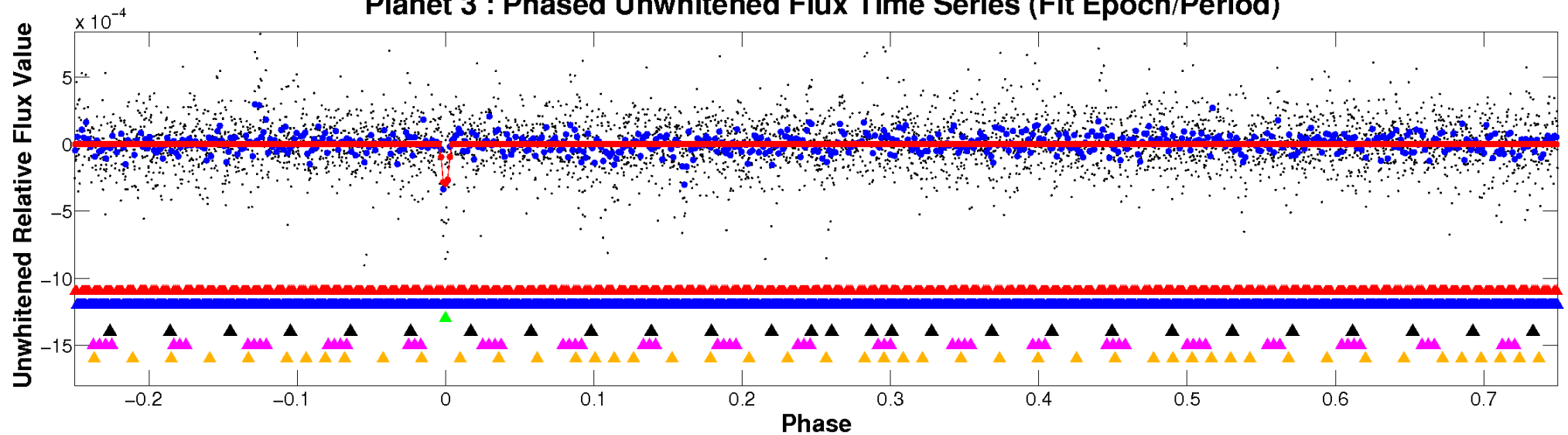


ALT Odd/Even

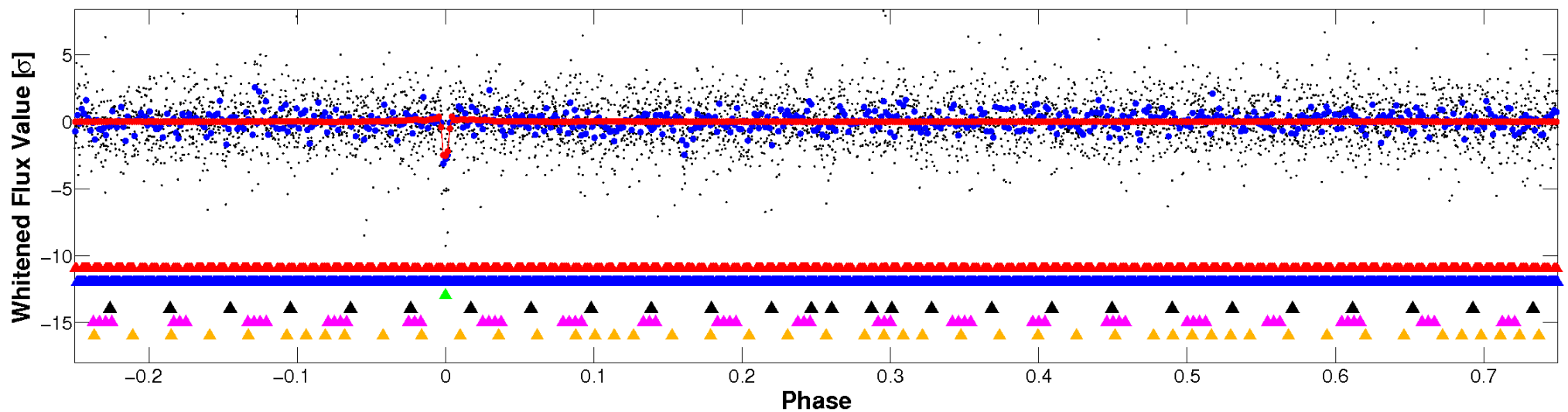
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

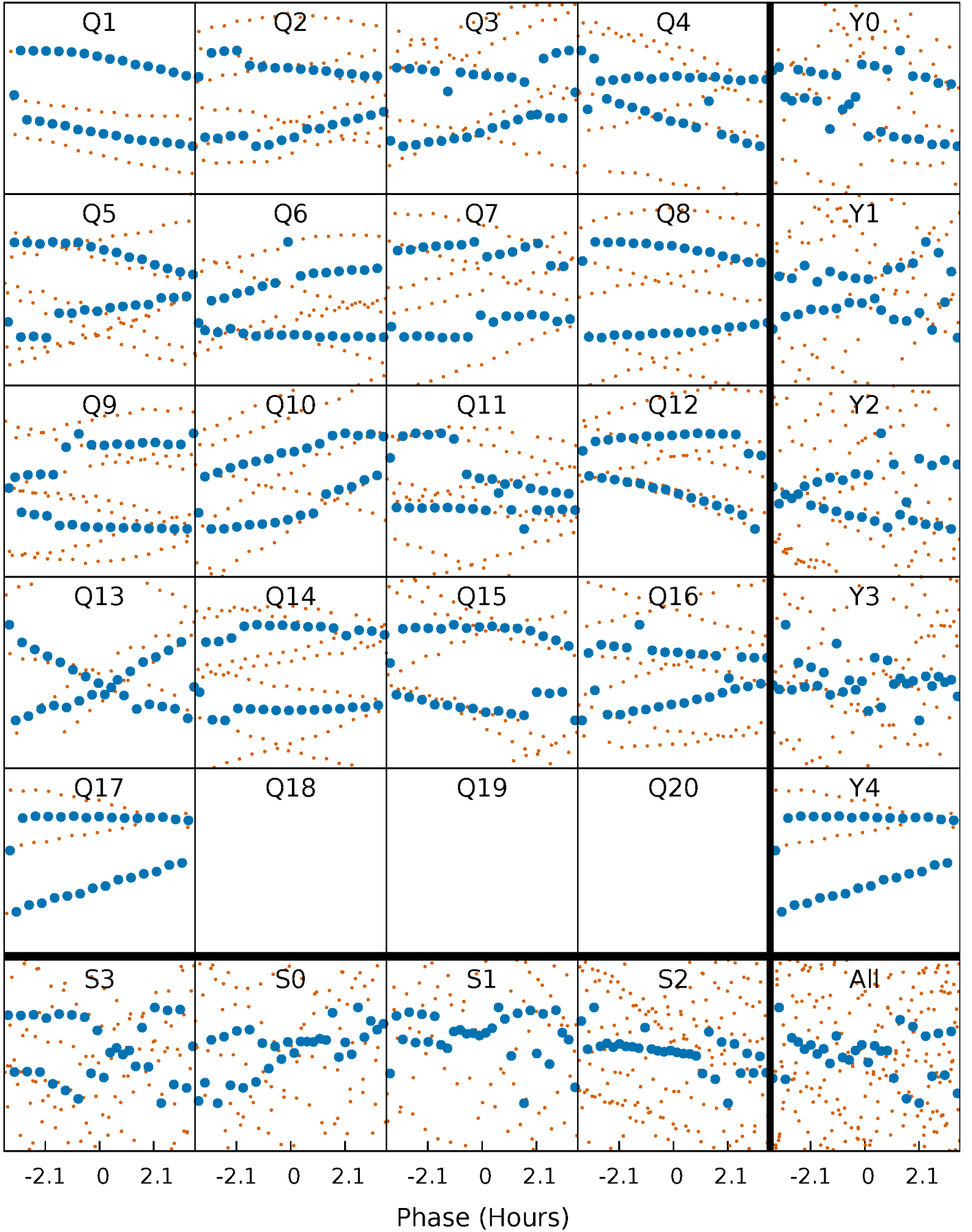


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



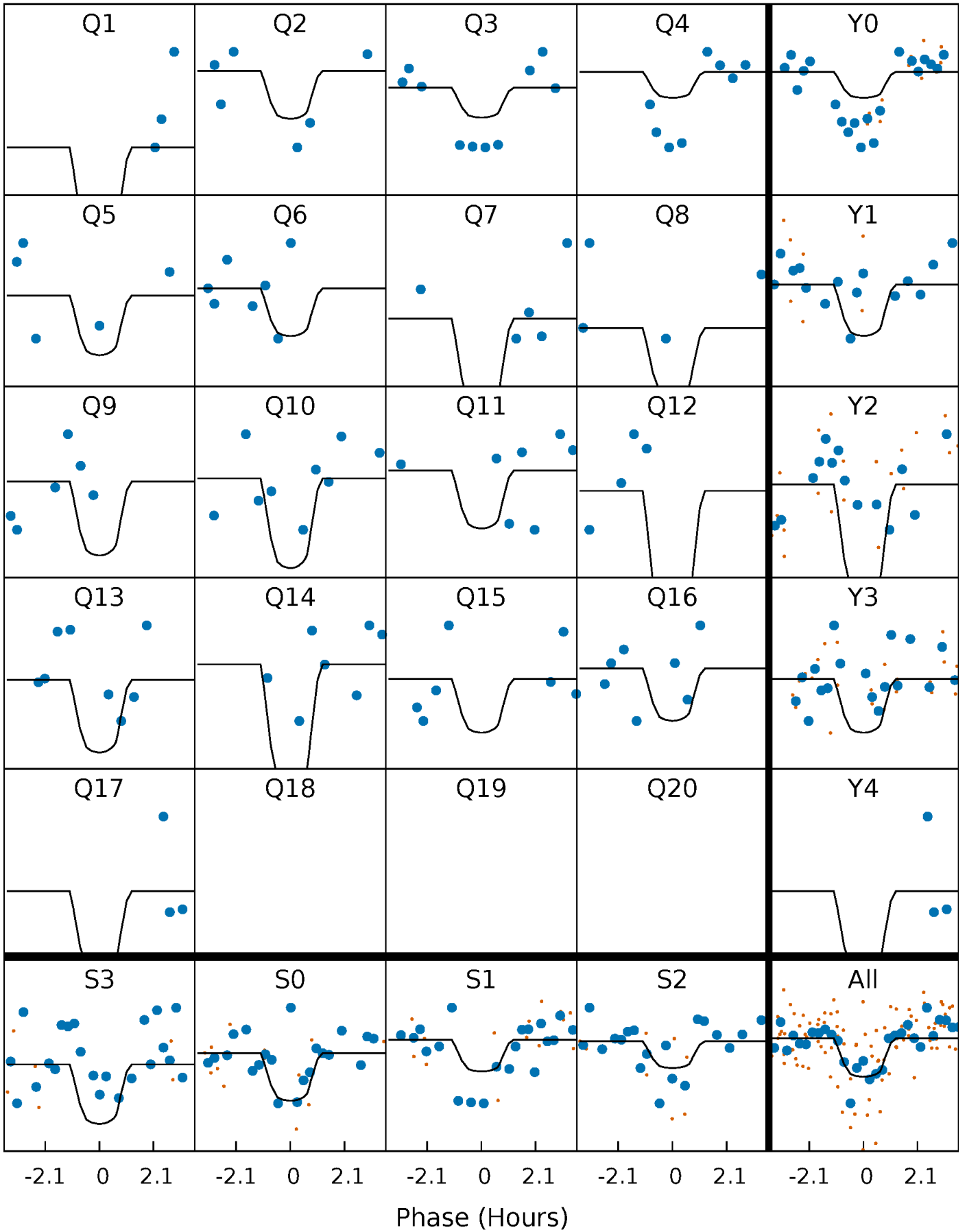
PDC Quarter-Phased Transit Curves

TCE 004587448-03 P= 13.831007 Days $T_0=135.128775$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 004587448-03 P= 13.831007 Days $T_0=135.128775$ (BKJD)

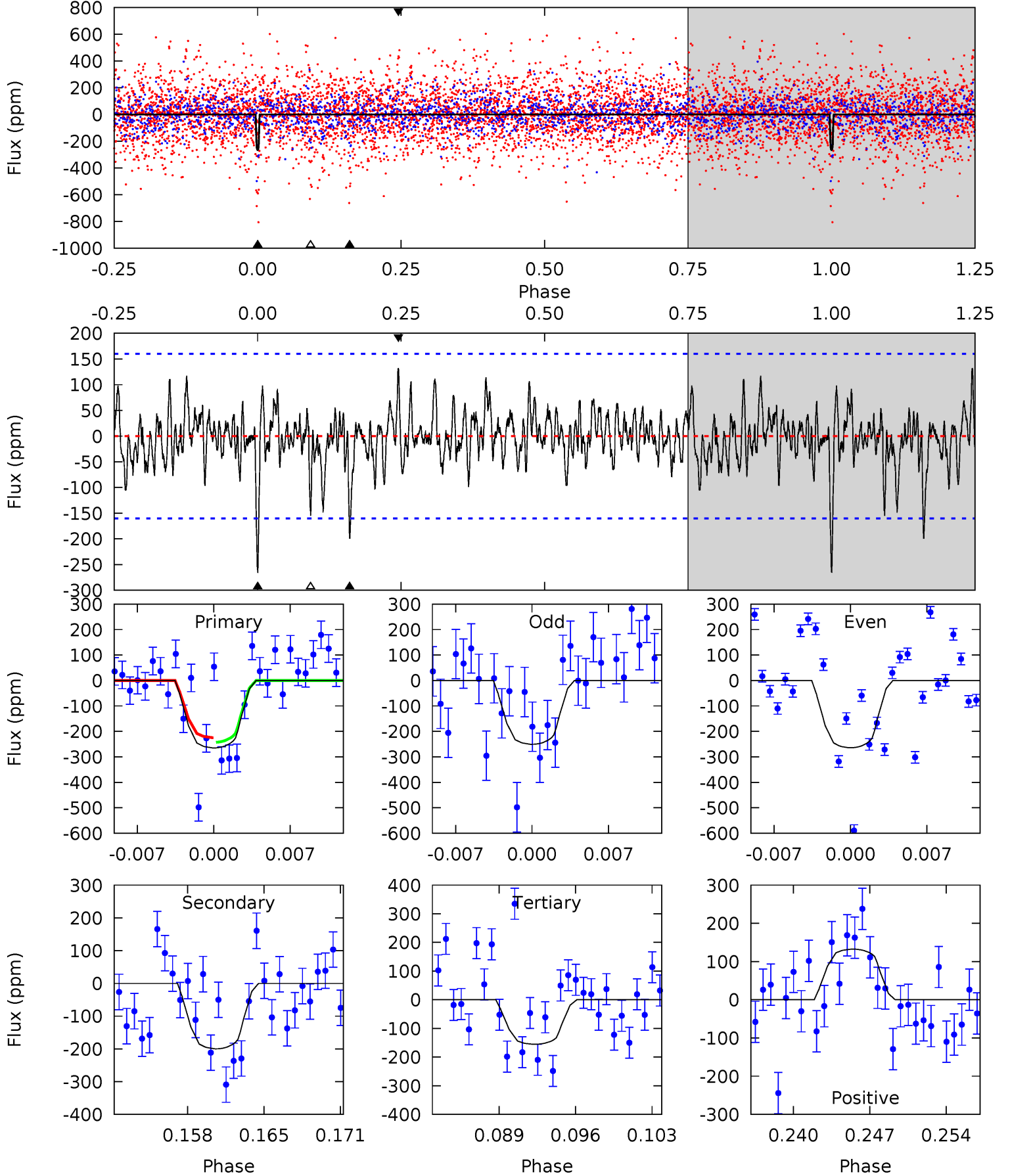


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

004587448-03, P = 13.831007 Days, E = 121.297768 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.42	6.35	4.94	4.21	5.10	2.70	1.29	3.48	4.21	1.41	2.14	0.21	2.48	0.33	0



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 004587448

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6600^{+158}_{-237}	$4.340^{+0.056}_{-0.224}$	$0.070^{+0.250}_{-0.350}$	$1.277^{+0.457}_{-0.152}$	$1.305^{+0.175}_{-0.195}$	$0.882^{+0.277}_{-0.496}$
	+2%/-4%	+1%/-5%	+357%/-500%	+36%/-12%	+13%/-15%	+31%/-56%
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 004587448-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-200 ± 31	$3.47^{+3.42}_{-2.24}$	1342^{+100}_{-71}	5035^{+3862}_{-1056}	130^{+947}_{-96}
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 $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

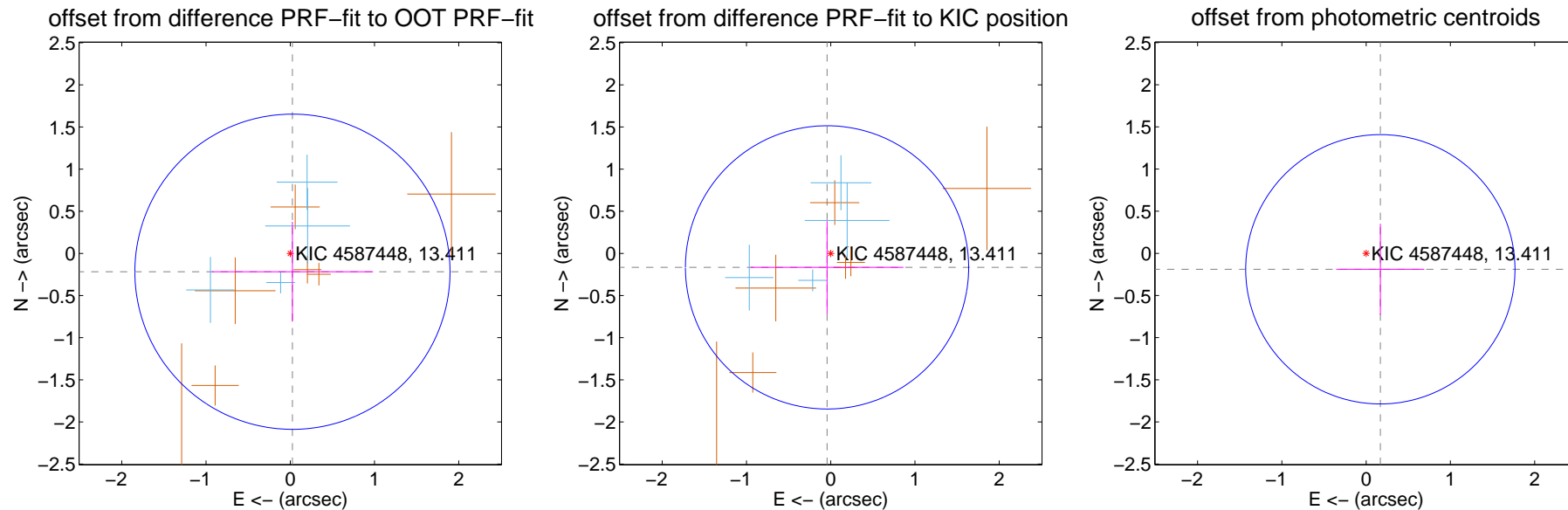
DV Centroid Data

Supplemental centroid analysis for 004587448-03. Kepler magnitude: 13.41. Transit SNR 9.52

There are 4 quarters with good PRF difference image offsets

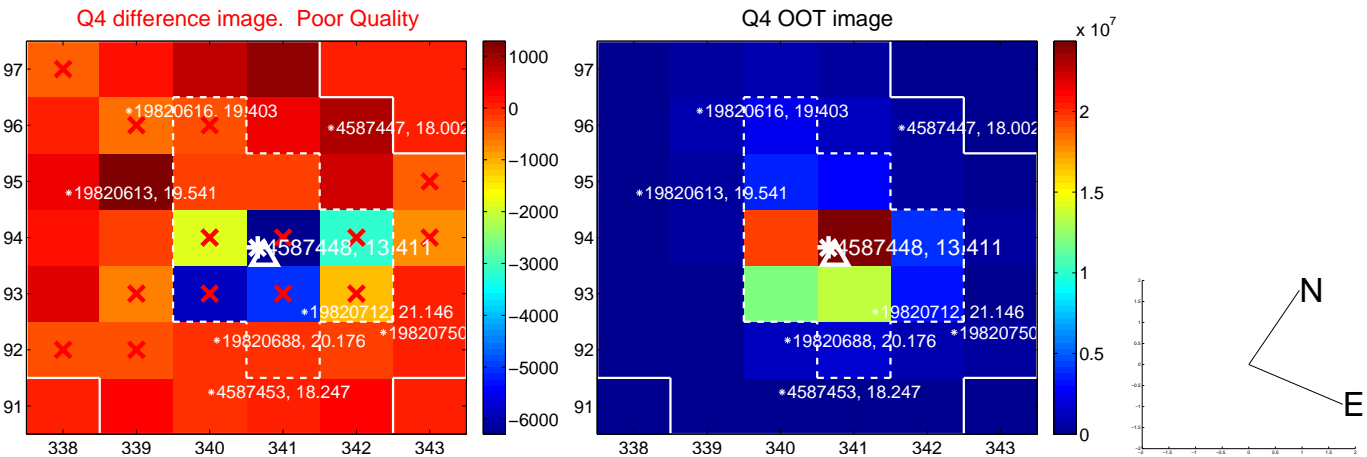
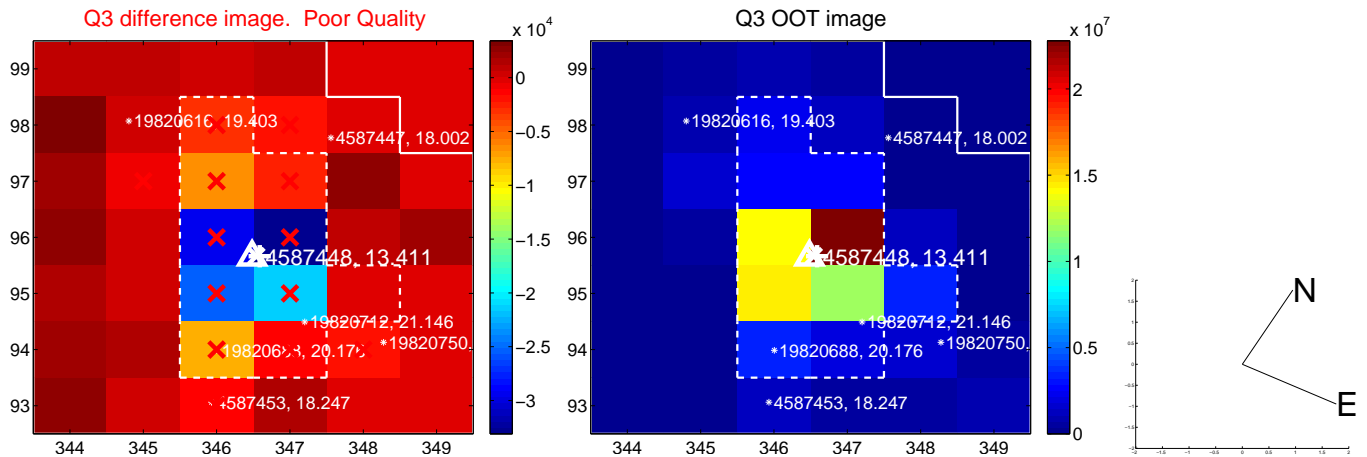
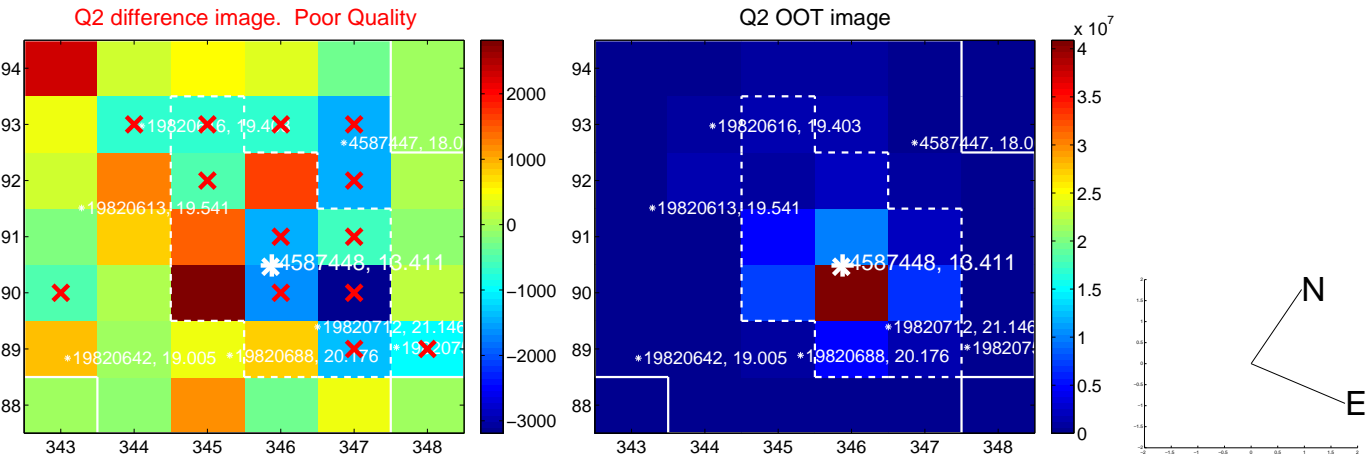
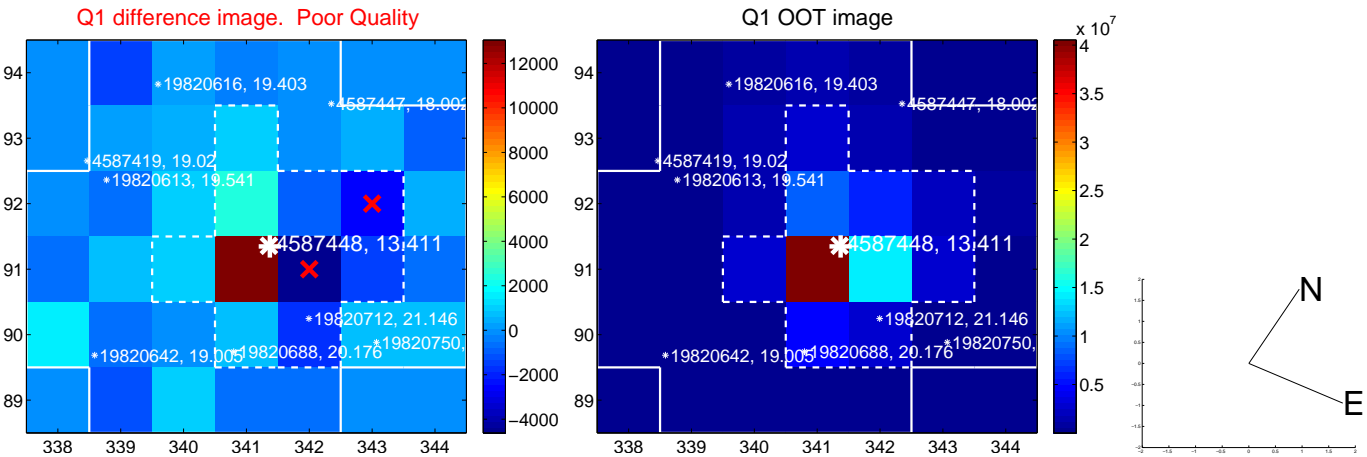
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.219 ± 0.623	0.35	-0.026 ± 0.957	-0.218 ± 0.592
PRF-fit source offset from KIC position	0.172 ± 0.560	0.31	0.044 ± 0.908	-0.166 ± 0.549
photometric centroid source offset	0.25 ± 0.53	0.48	-0.17 ± 0.52	-0.19 ± 0.54

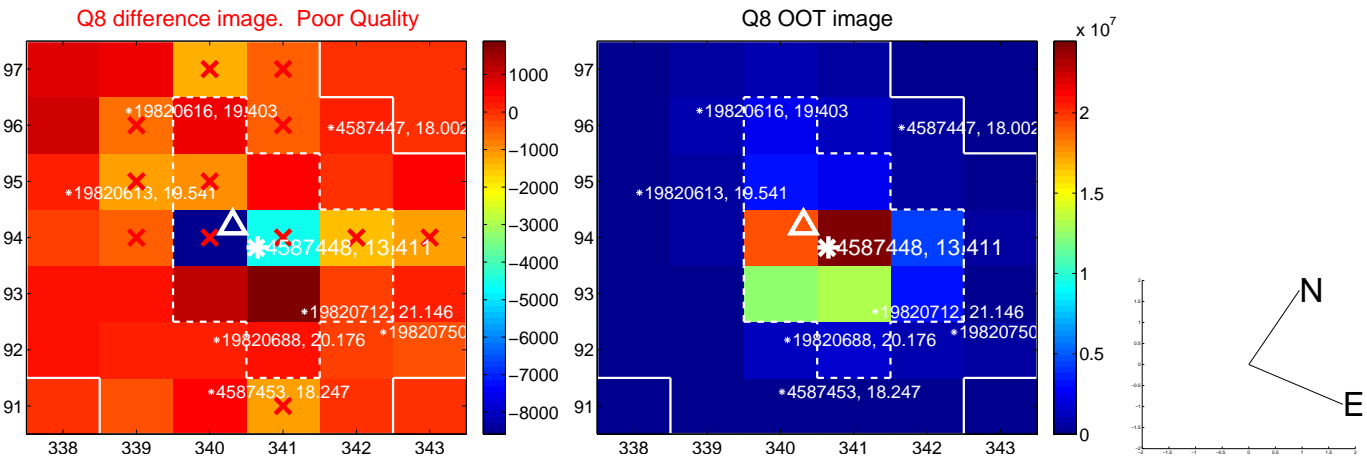
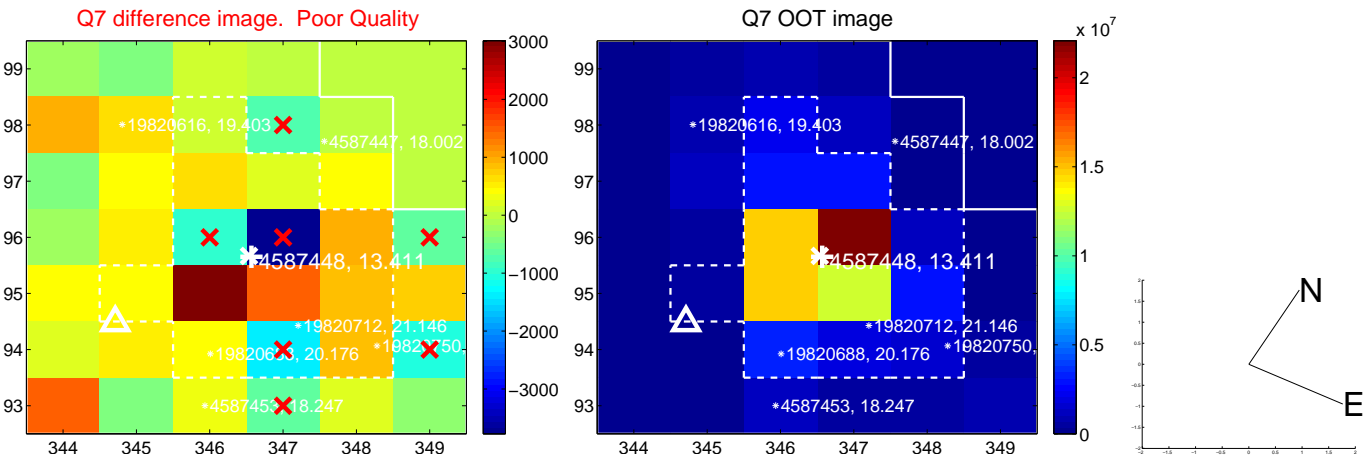
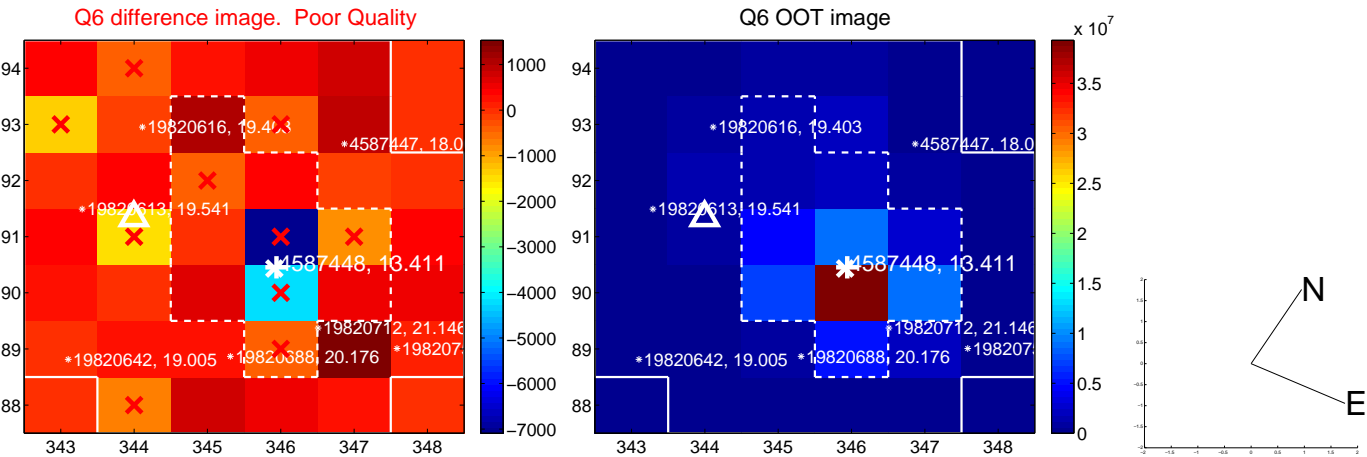
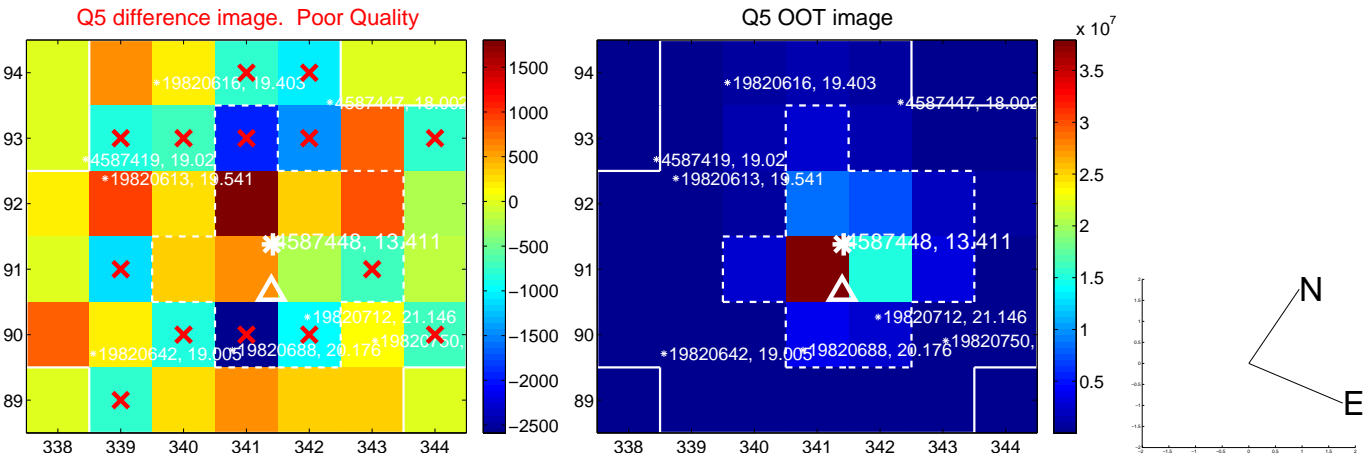


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

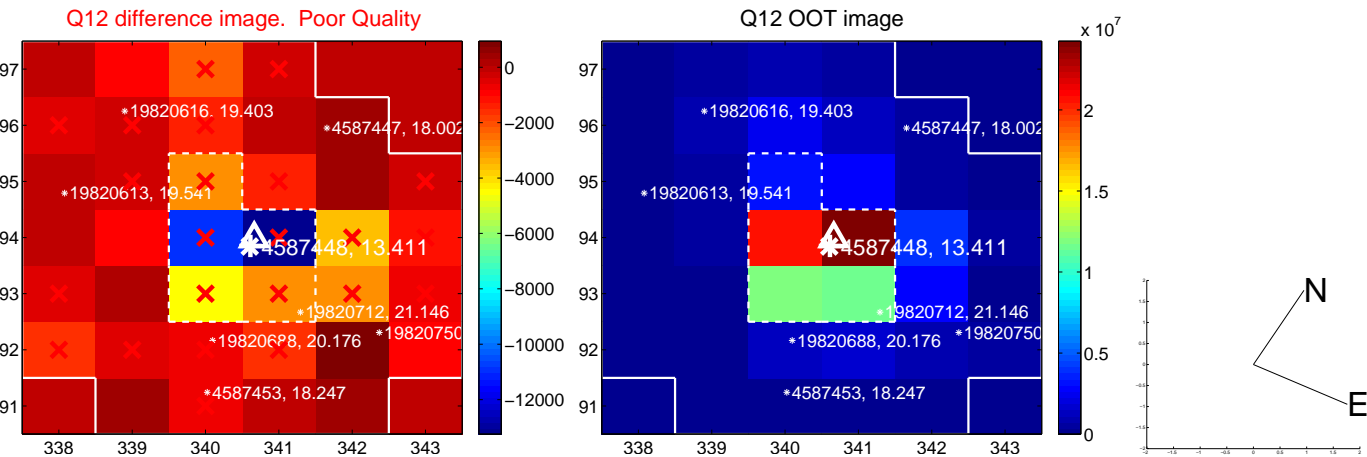
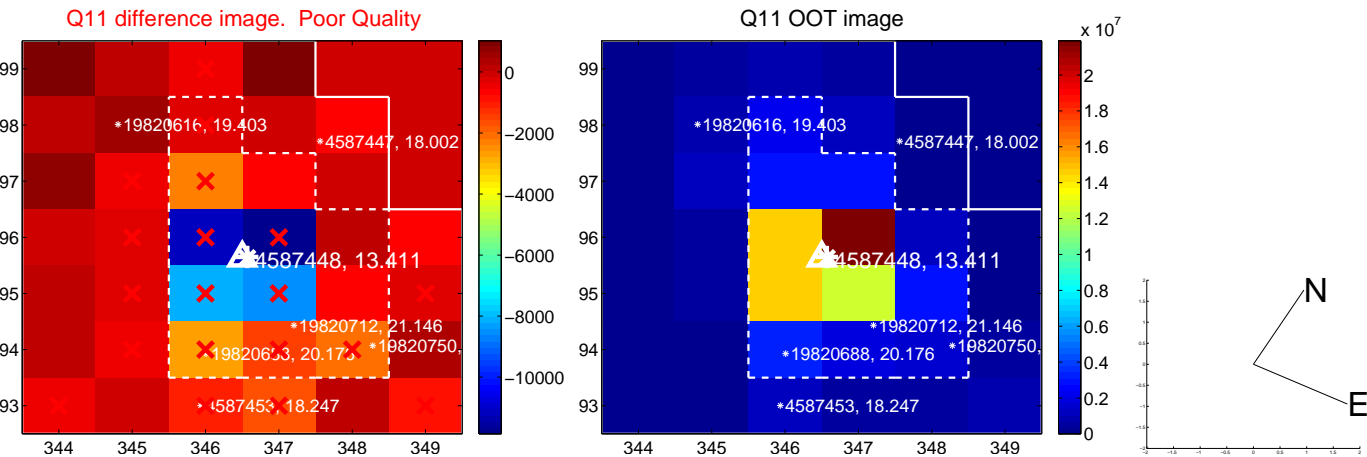
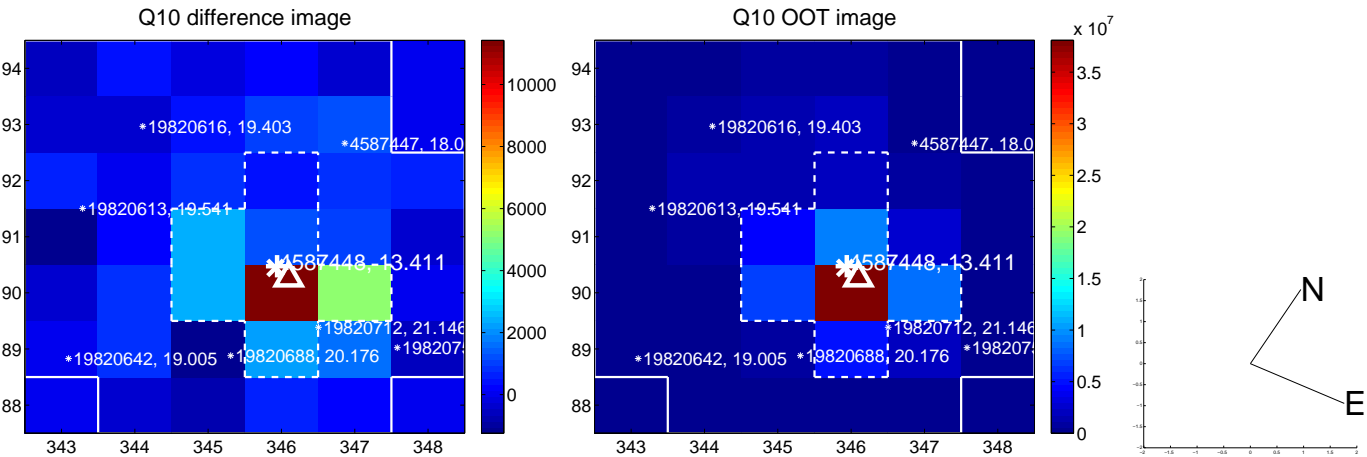
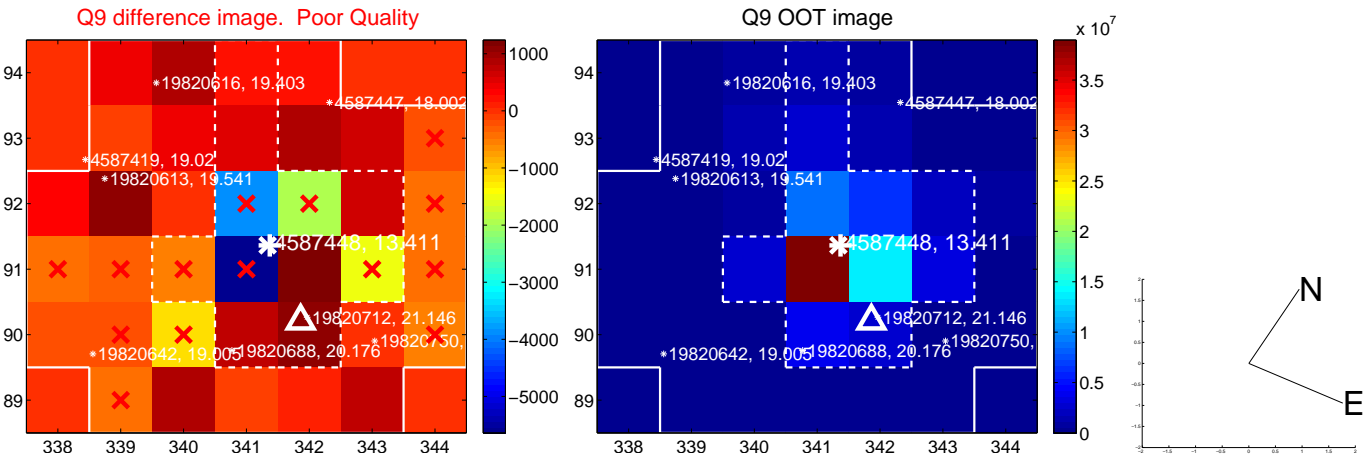
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



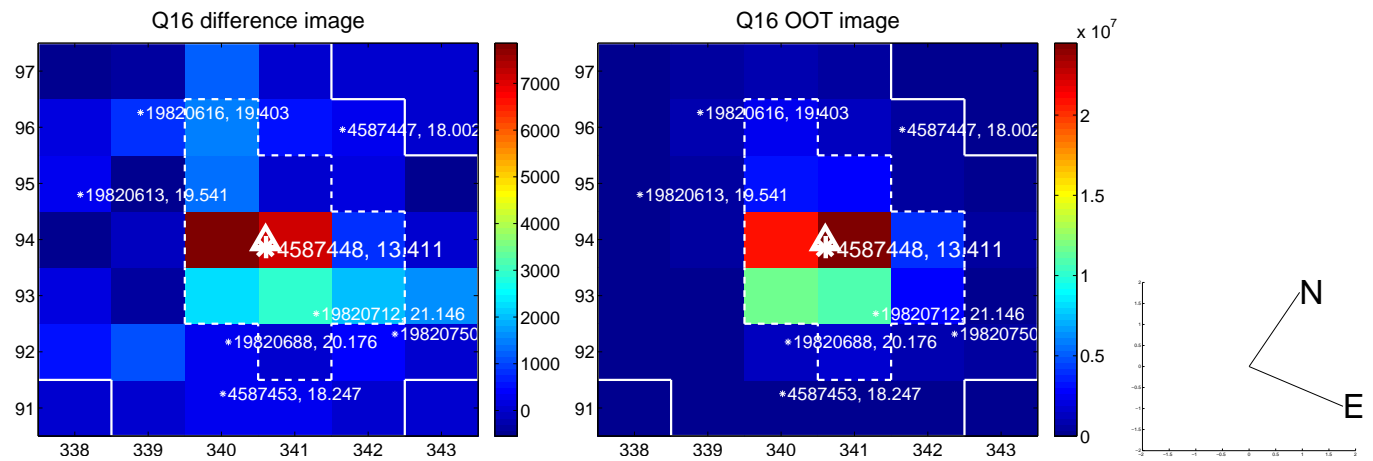
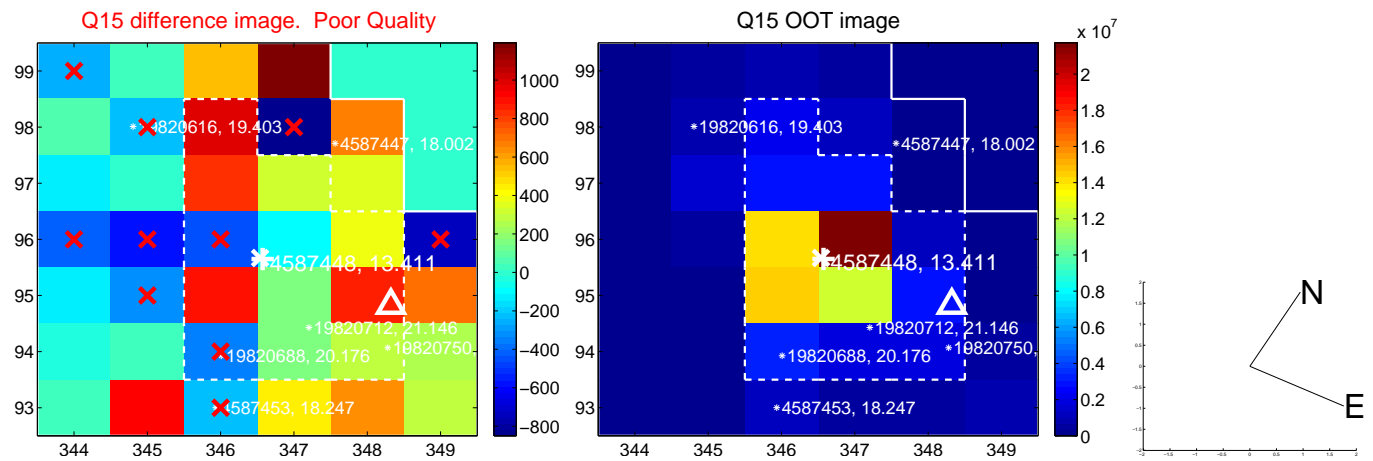
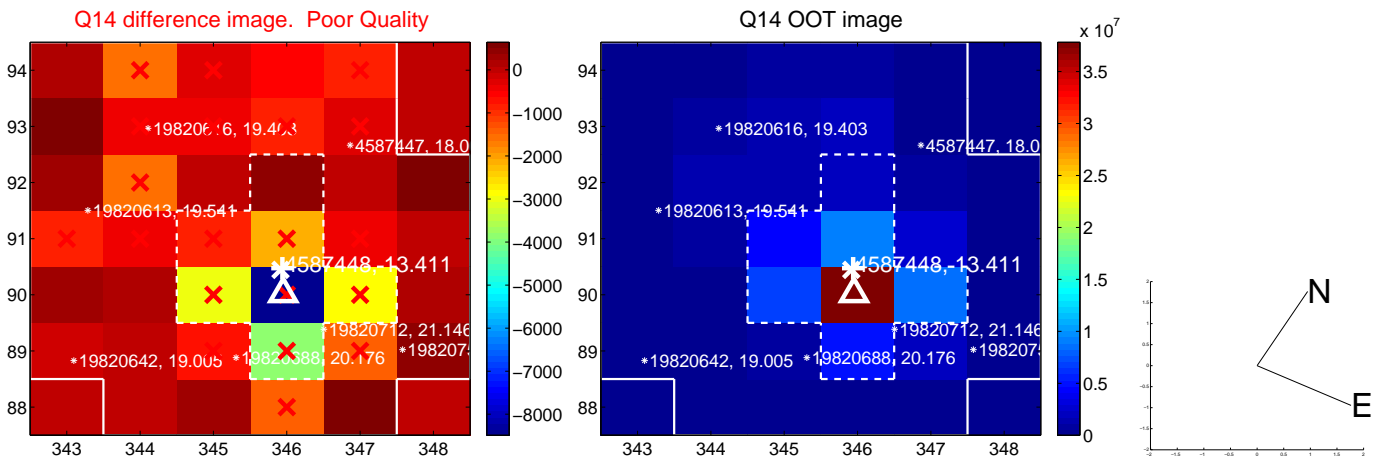
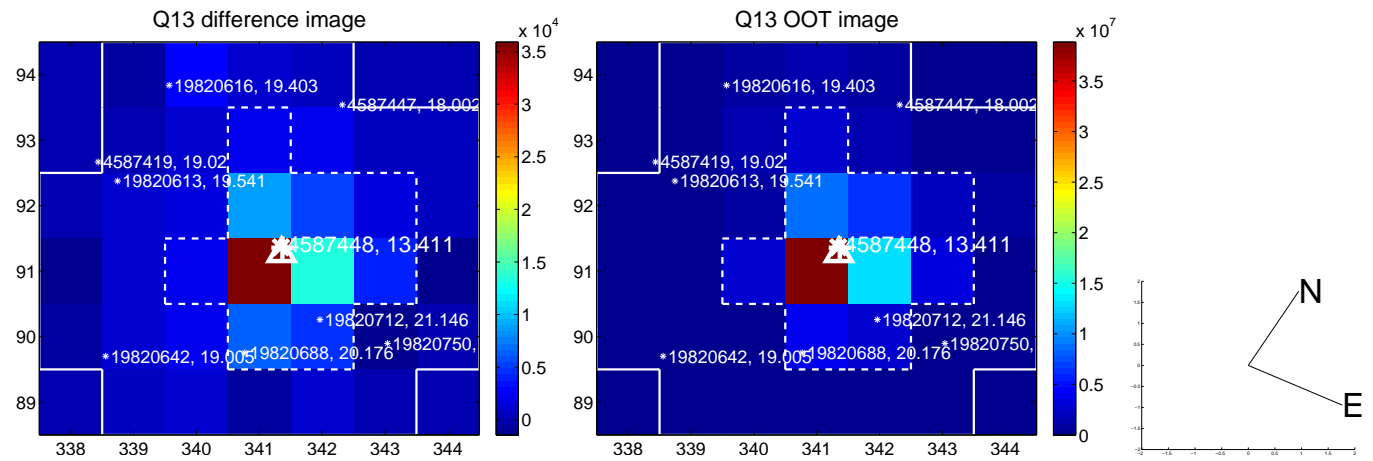
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



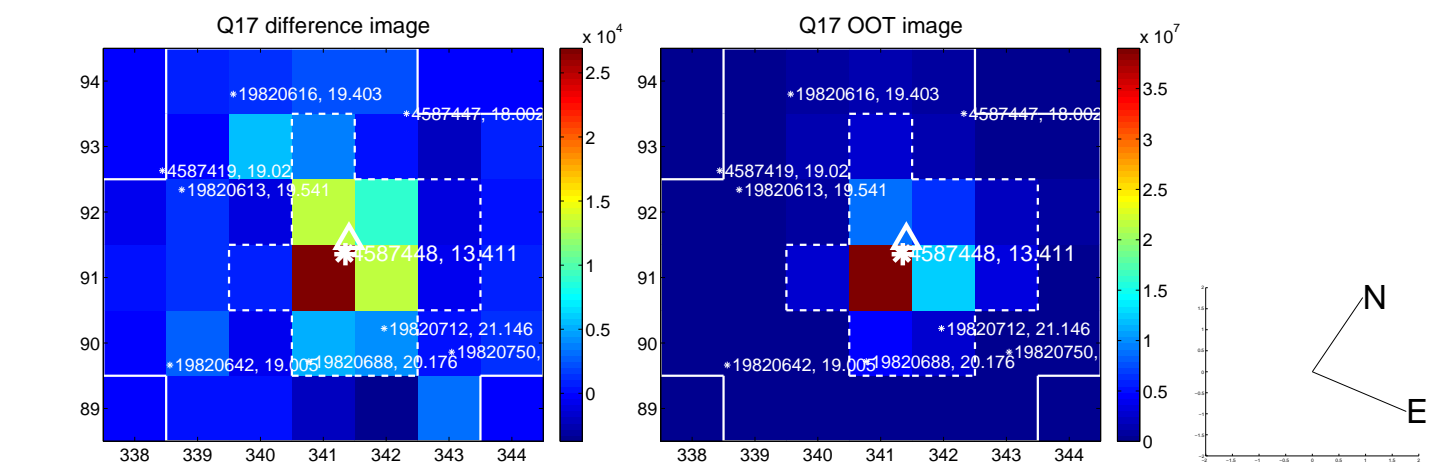
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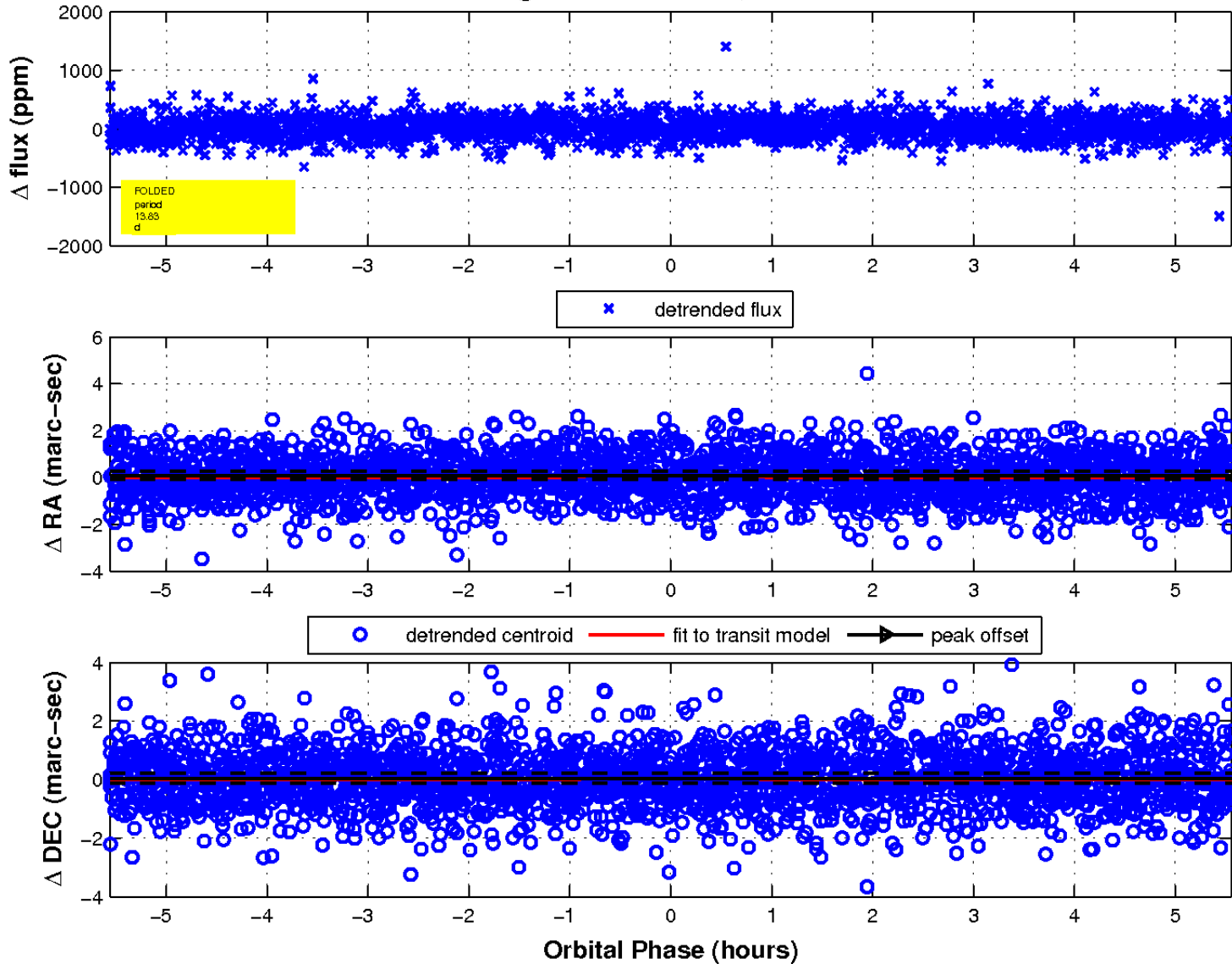
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



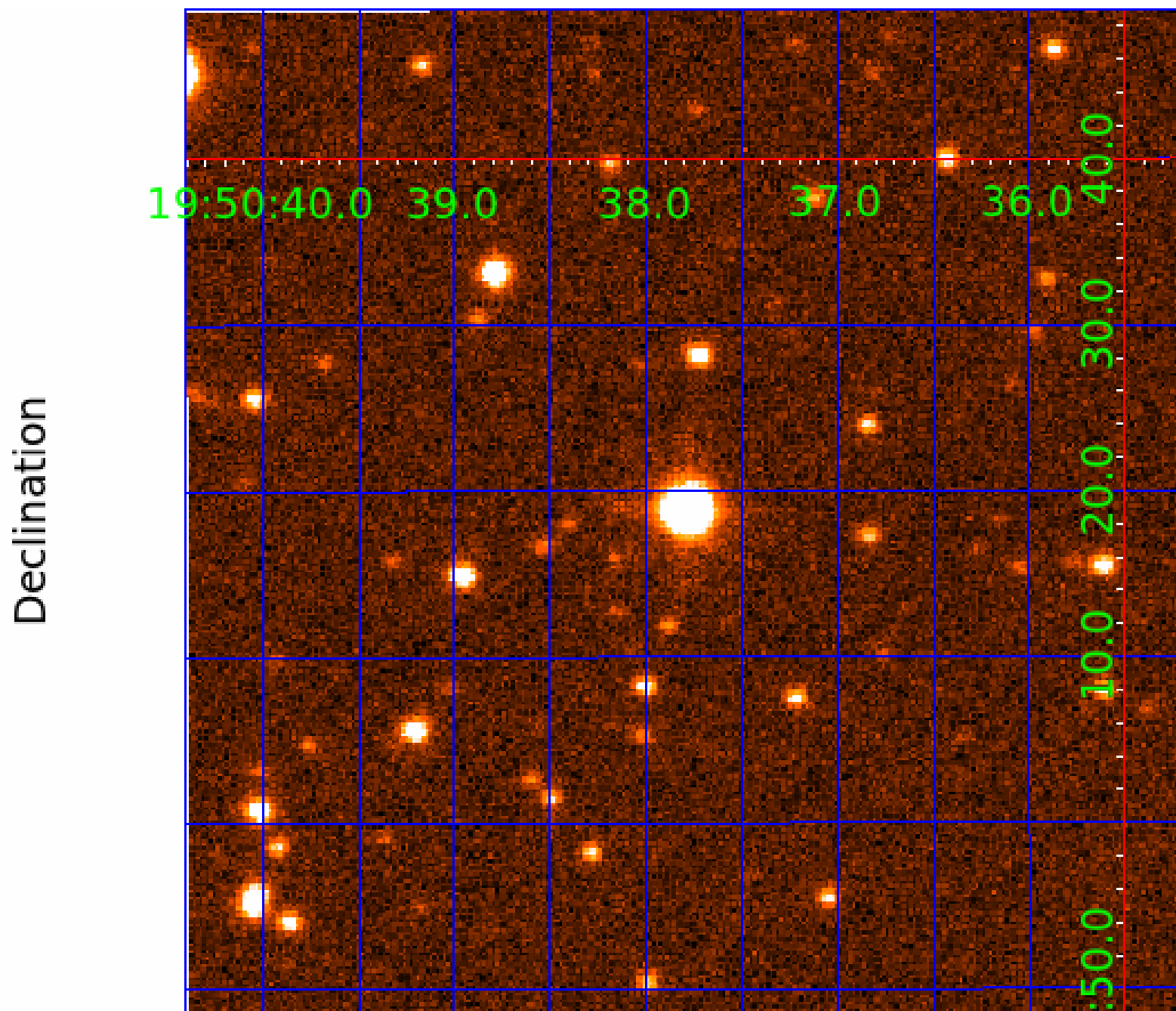
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 3 of 6



UKIRT Image



KIC 004587448

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})
004587448-01	OBS	6430.01	2.234140	131.804722	103.3	2.117	20.1	21.8	1.28	6600	1.52	2078.34
004587448-02	OBS	No	0.744700	131.566381	14.8	5.206	14.2	7.2	1.28	6600	0.50	8992.67
004587448-03	OBS	No	13.831007	135.128775	294.7	1.853	15.4	9.5	1.28	6600	2.21	182.84
004587448-05	OBS	No	21.841444	133.285979	130.5	27.805	11.1	6.0	1.28	6600	1.54	99.42
004587448-06	OBS	No	30.356375	156.281449	448.5	1.371	9.9	7.6	1.28	6600	2.93	64.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004587448-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
004587448-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
004587448-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
004587448-05	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
004587448-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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.

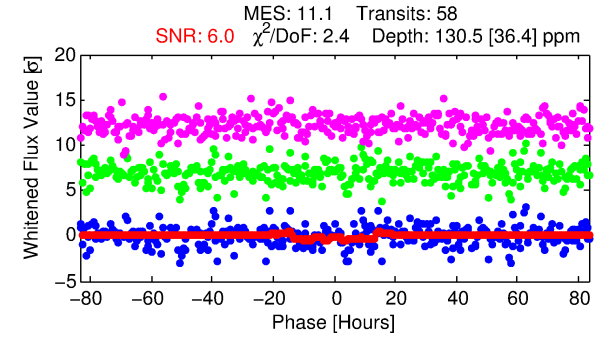
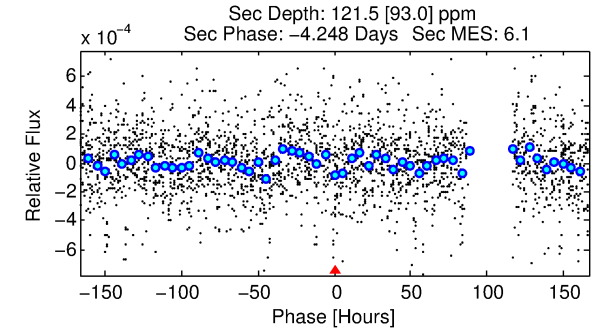
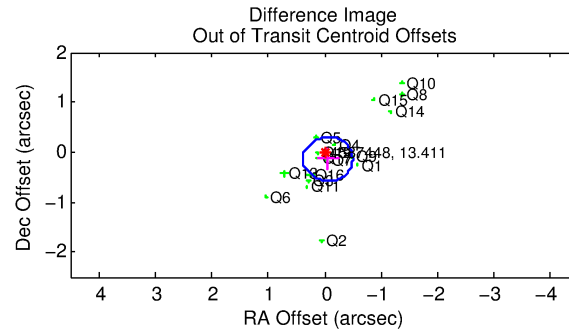
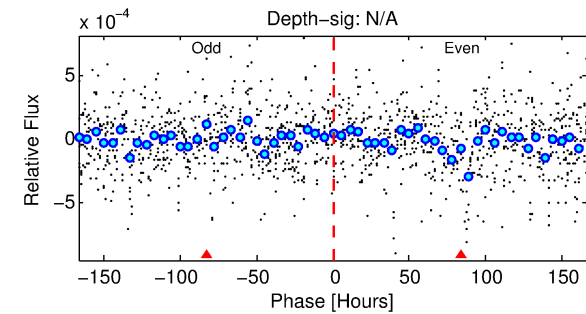
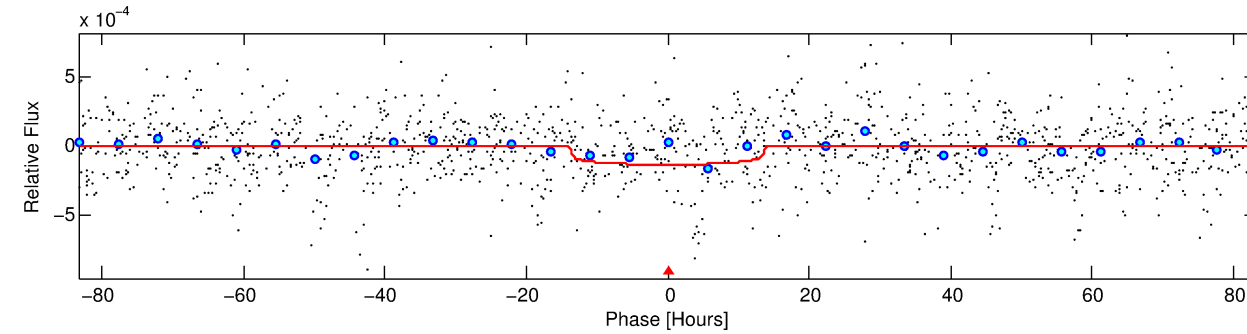
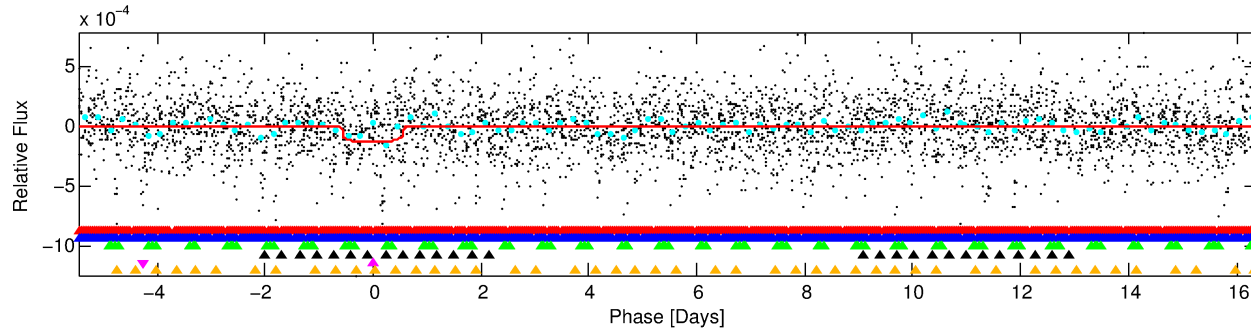
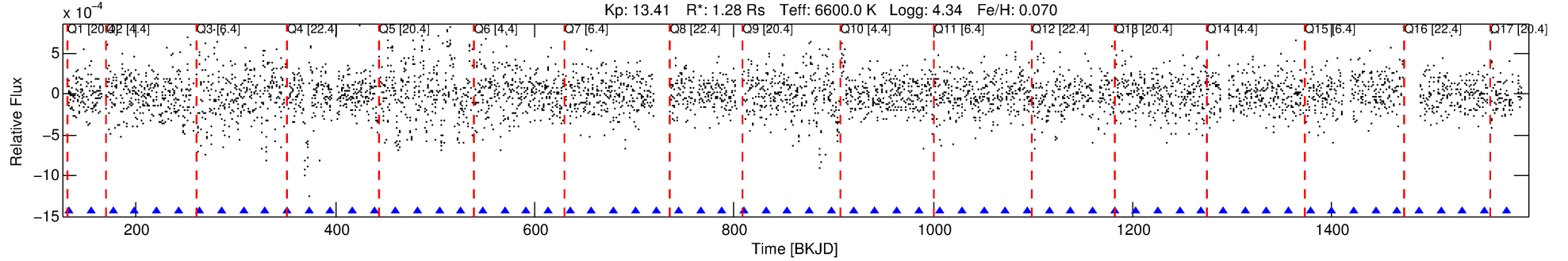
Ephemeris Match Information For 004587448-05

No Significant Match Found

DV One-Page Summary

KIC: 4587448 Candidate: 5 of 6 Period: 21.841 d
KOI: K06430 Corr: No Ephemeris Match

Kp: 13.41 R*: 1.28 Rs Teff: 6600.0 K Logg: 4.34 Fe/H: 0.070



DV Fit Results:

Period = 21.84144 [0.00152] d
Epoch = 133.2860 [0.0480] BKJD
Rp/R* = 0.0110 [0.0035]
a/R* = 4.77 [6.72]
b = 0.64 [1.36]
Seff = 99.42 [43.99]
Teq = 805 [89] K
Rp = 1.54 [0.73] Re
a = 0.1670 [0.0491] AU
Ag = 787.41 [845.41] [0.93σ]
Teffp = 6595 [1647] K [3.51σ]

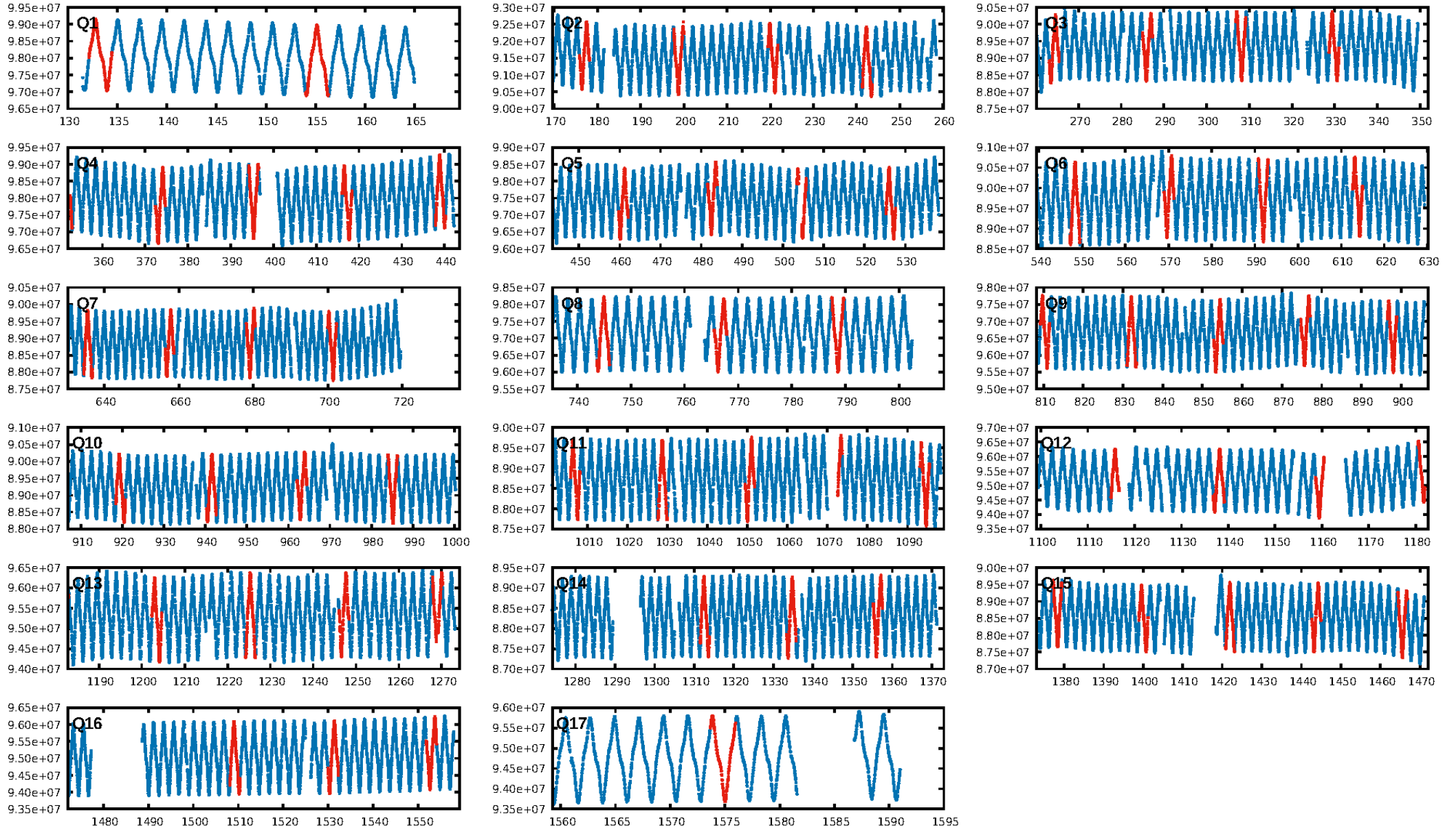
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.90σ]
LongPeriod-sig: 100.0% [7.34σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [55/55]
GhostDiagnostic-chr: -0.2766
Centroid-sig: 21.8%
Centroid-so: 0.616 arcsec [0.98σ]
OotOffset-rm: 0.149 arcsec [1.02σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.119 arcsec [0.49σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.35 [6/17]
DiffImageOverlap-fno: 0.00 [0/17]

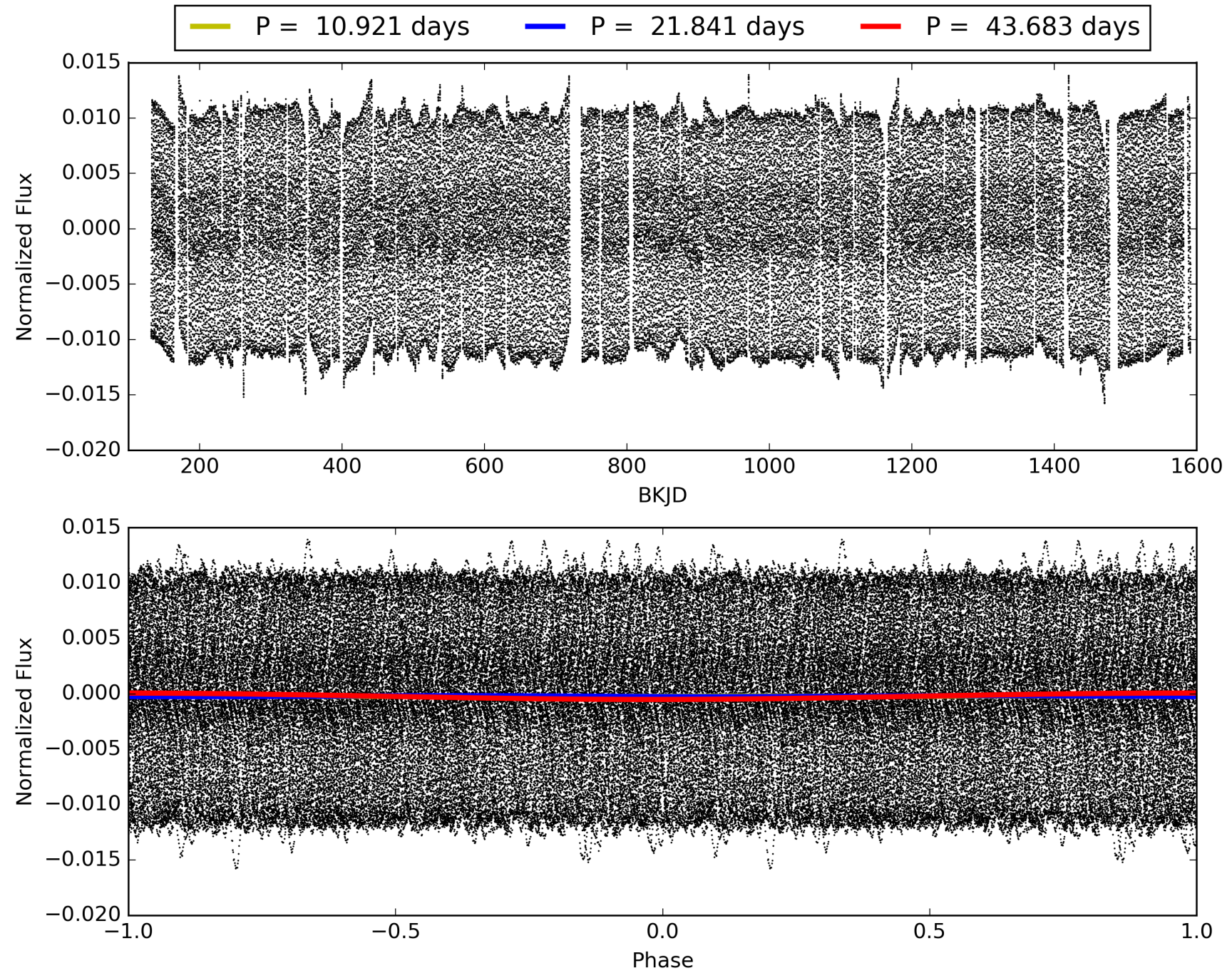
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 17:17:08 Z

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

TCE 004587448-05, PDC Light Curves

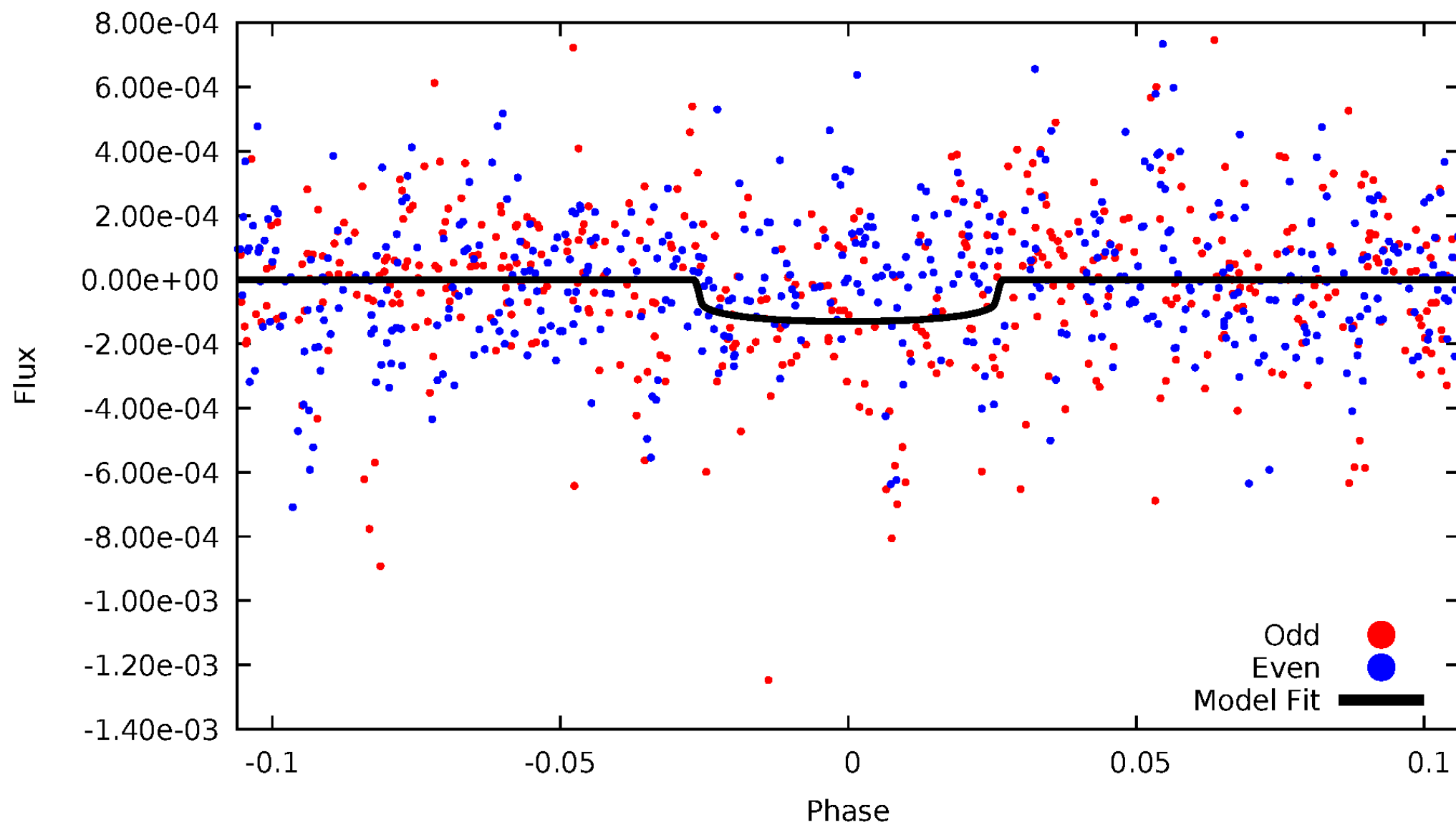


TCE 004587448-05



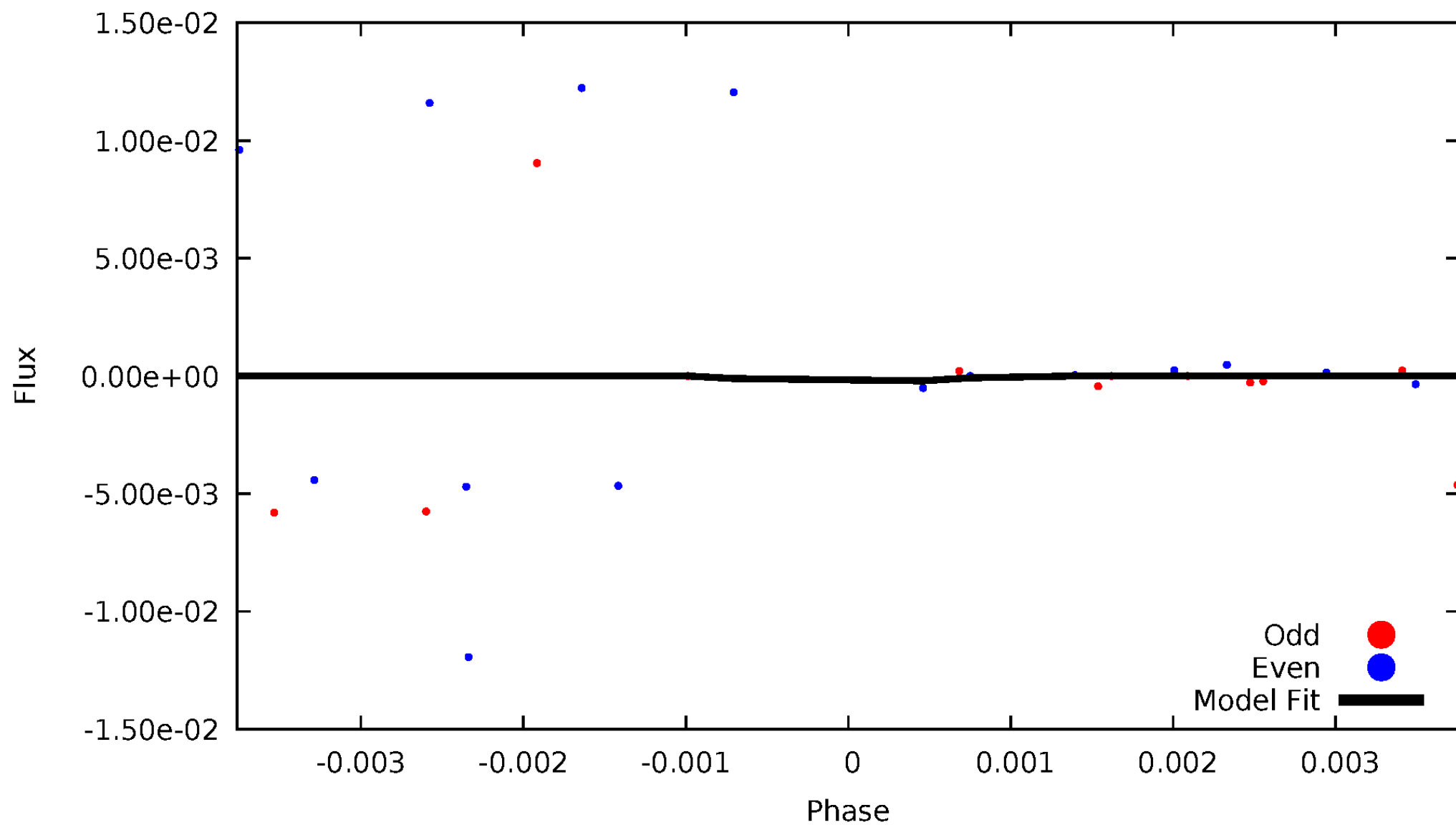
DV Odd/Even

TCE 004587448-05



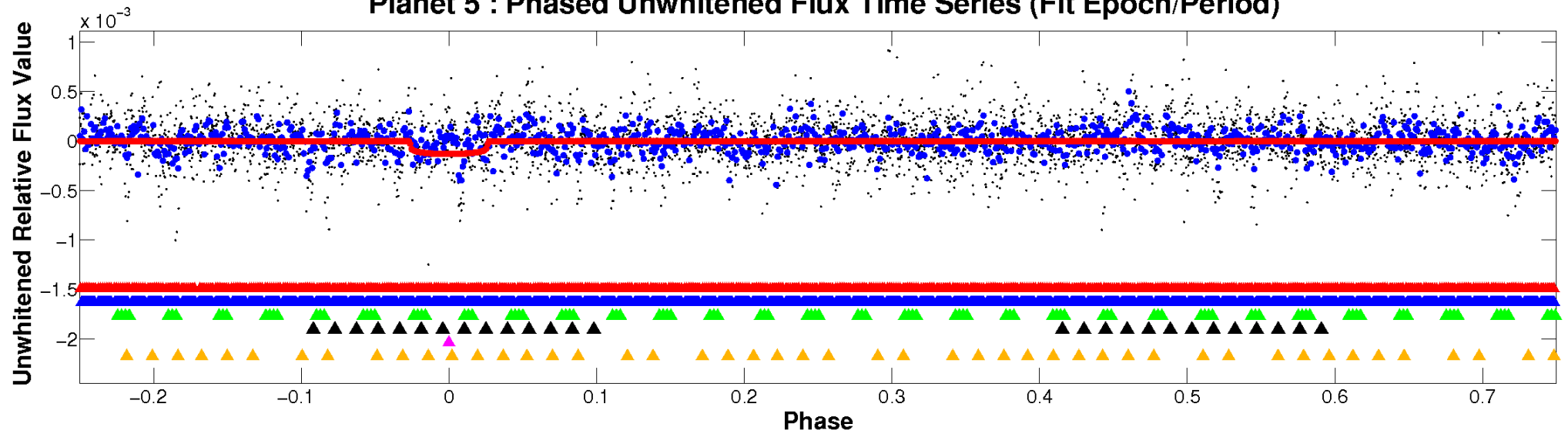
ALT Odd/Even

TCE 004587448-05

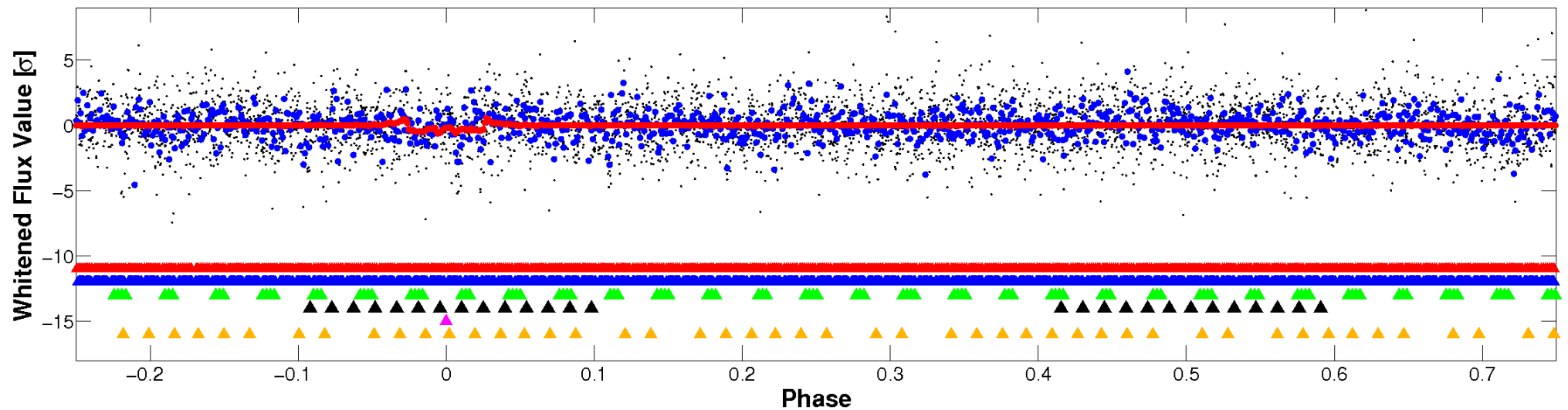


Non-Whitened Vs. Whitened Light Curve

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

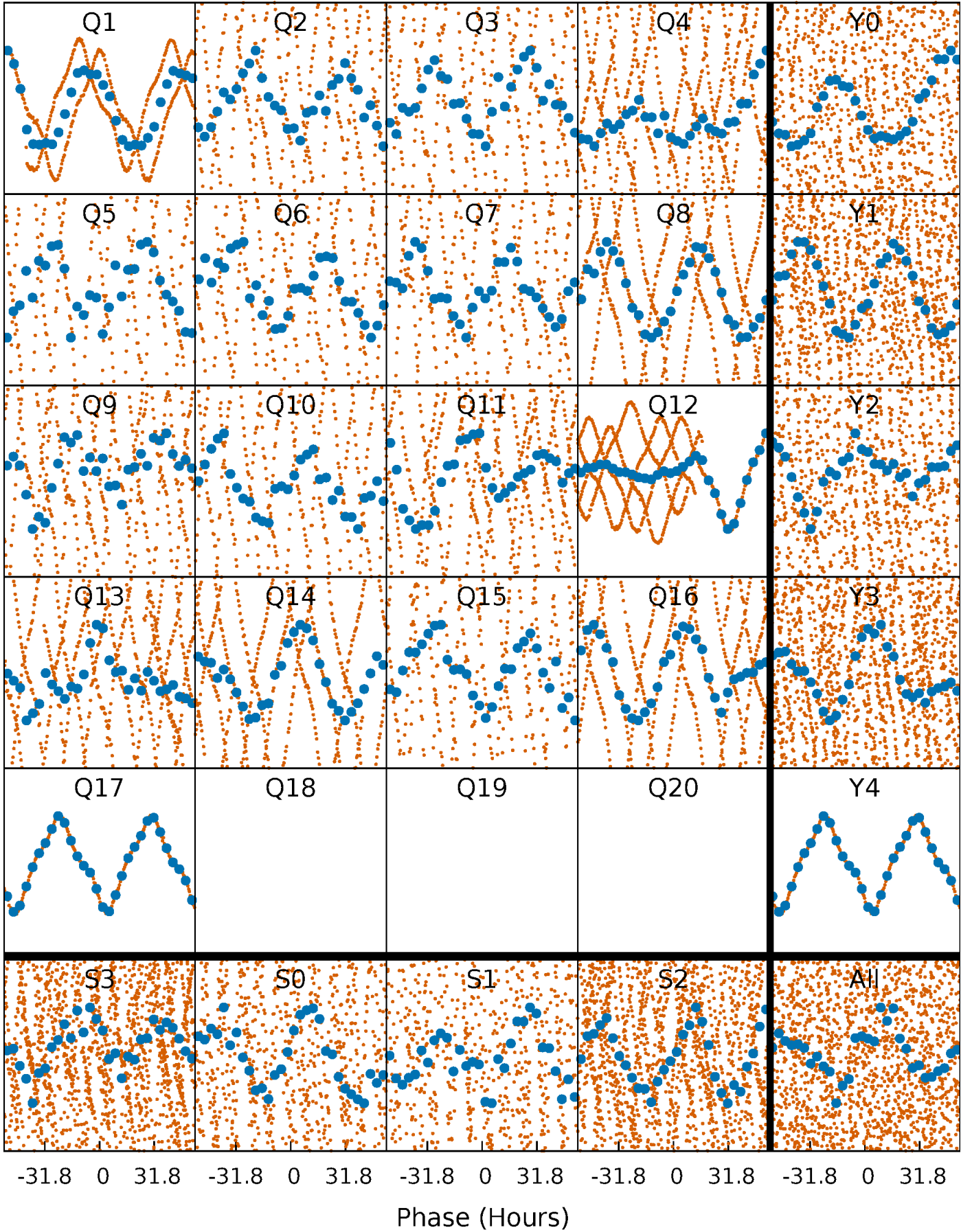


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



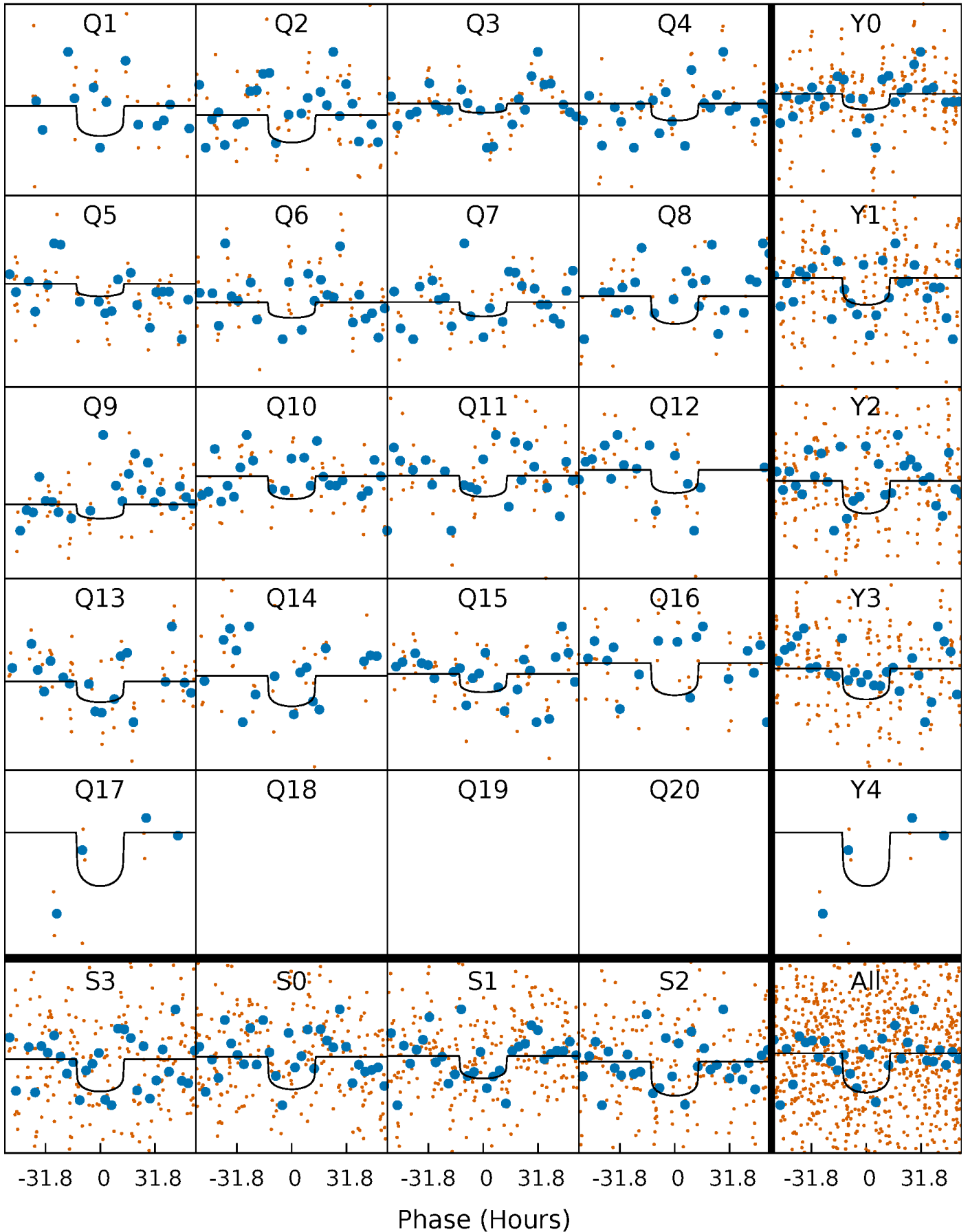
PDC Quarter-Phased Transit Curves

TCE 004587448-05 $P = 21.841444$ Days $T_0 = 133.285979$ (BKJD)



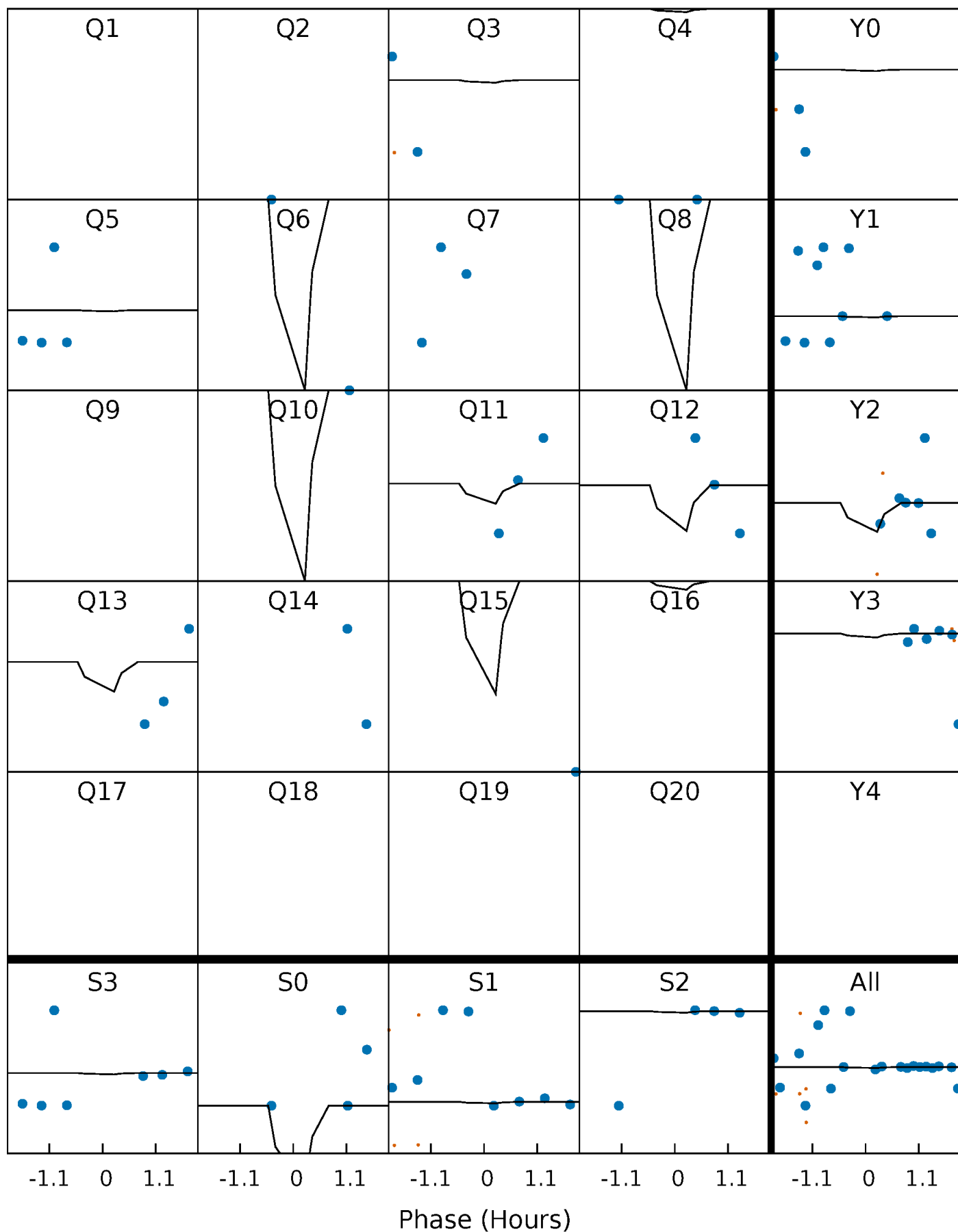
DV Quarter-Phased Transit Curves

TCE 004587448-05 P= 21.841444 Days $T_0=133.285979$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

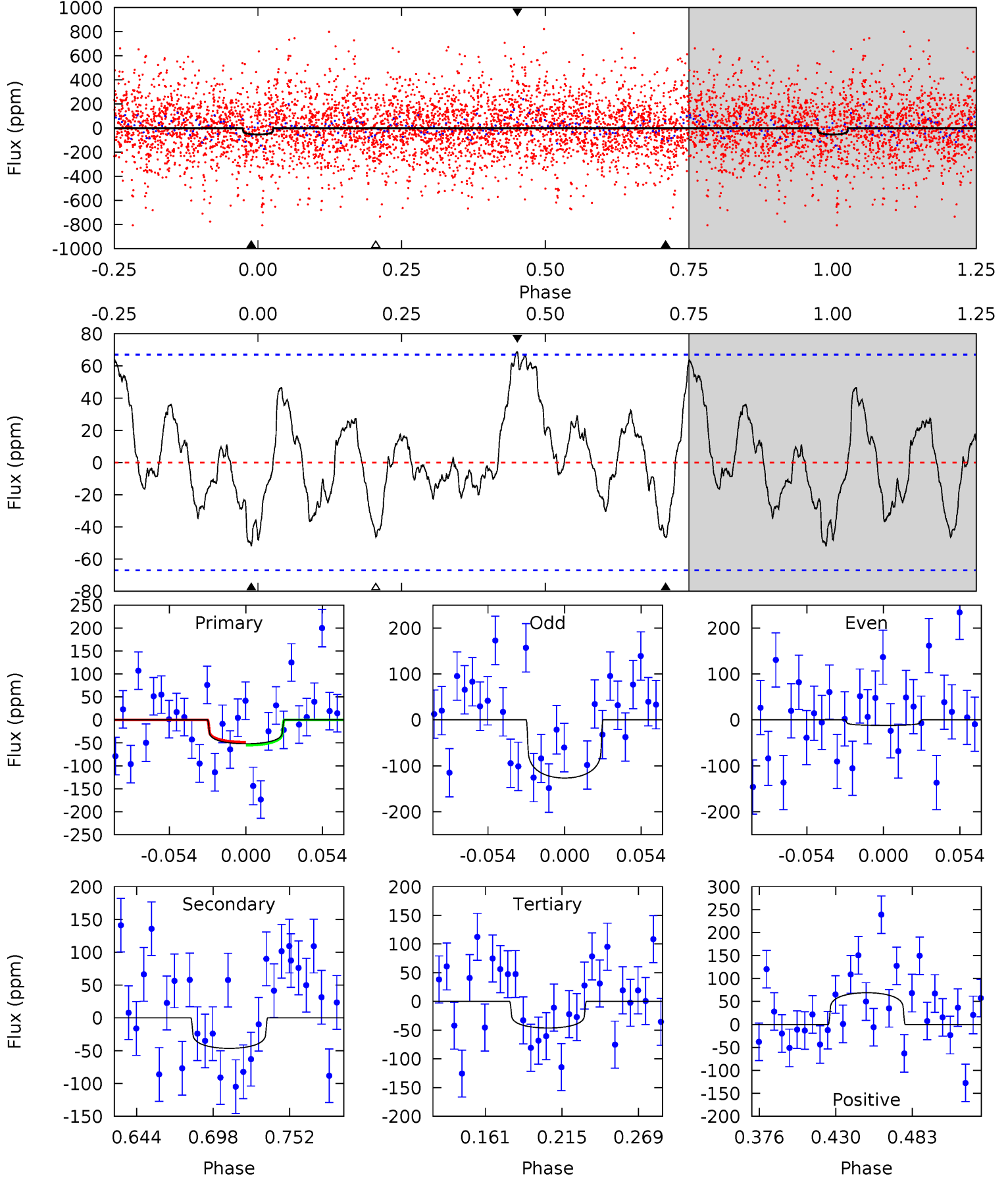
TCE 004587448-05 P= 21.840910 Days $T_0=133.552740$ (BKJD)



DV Model-Shift Uniqueness Test

004587448-05, P = 21.841444 Days, E = 111.444535 Days

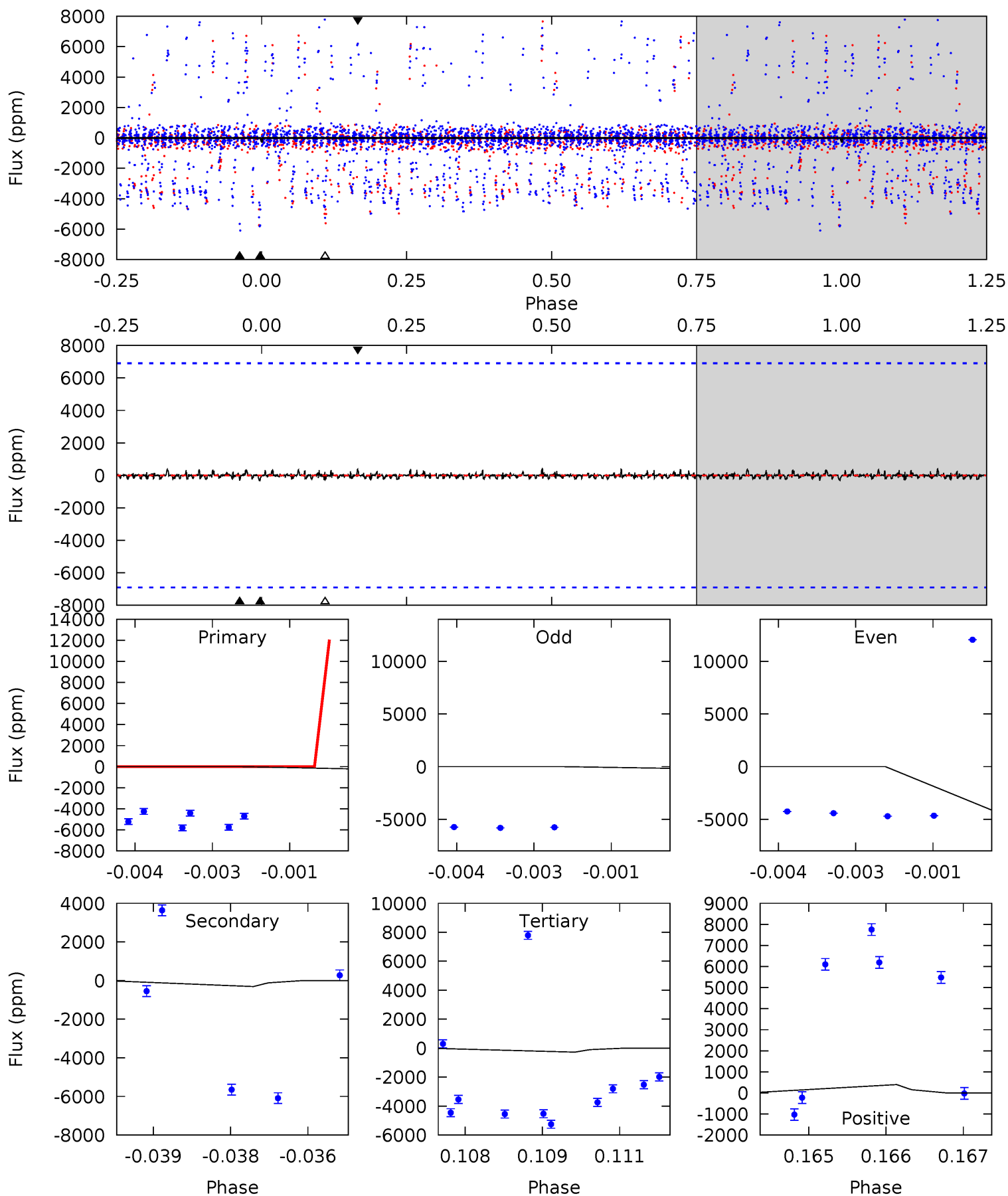
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.64	3.26	3.24	4.83	4.69	1.93	1.70	0.40	-1.19	0.02	-1.57	4.00	3.56	0.57	0.23



Alt Model-Shift Uniqueness Test

004587448-05, P = 21.840910 Days, E = 111.711830 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.23	0.24	0.21	0.31	5.38	3.18	0.06	0.01	-0.08	0.03	-0.06	1.63	0	0.56	0.01



Stellar Parameters For KIC 004587448

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6600^{+158}_{-237}	$4.340^{+0.056}_{-0.224}$	$0.070^{+0.250}_{-0.350}$	$1.277^{+0.457}_{-0.152}$	$1.305^{+0.175}_{-0.195}$	$0.882^{+0.277}_{-0.496}$
	+2%/-4%	+1%/-5%	+357%/-500%	+36%/-12%	+13%/-15%	+31%/-56%
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 004587448-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-47 ± 14	$1.62^{+0.52}_{-0.54}$	1150^{+100}_{-59}	5201^{+1079}_{-683}	264^{+350}_{-134}
Alt.	-313 ± 1282	$2.88^{+0.72}_{-0.56}$	1151^{+87}_{-59}	6065^{+4158}_{-14821}	486^{+2433}_{-2199}

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

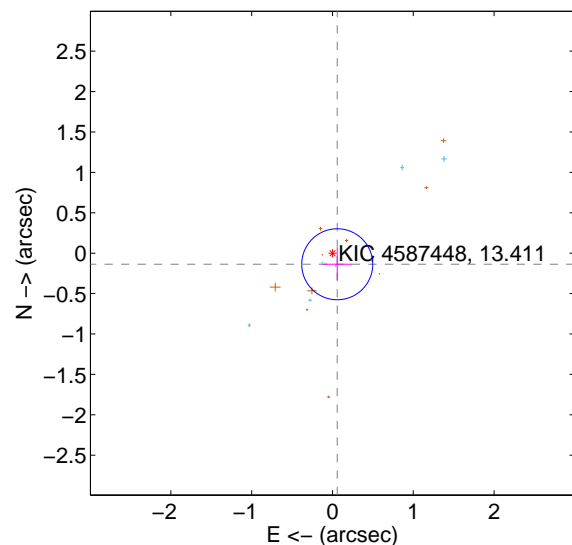
Supplemental centroid analysis for 004587448-05. Kepler magnitude: 13.41. Transit SNR 5.99

There are 6 quarters with good PRF difference image offsets

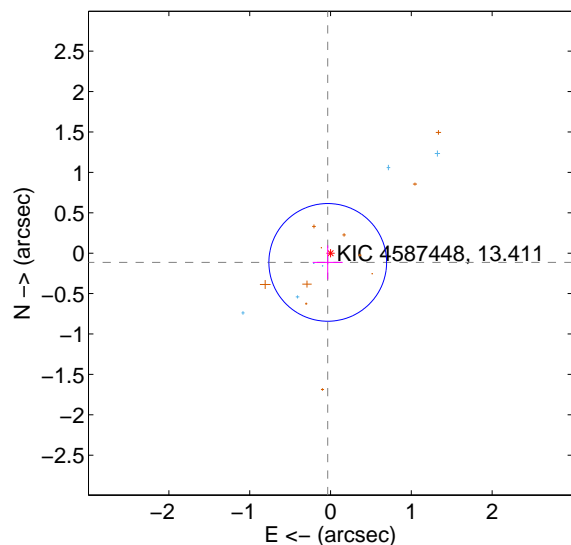
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.149 ± 0.146	1.02	-0.059 ± 0.181	-0.137 ± 0.202
PRF-fit source offset from KIC position	0.119 ± 0.243	0.49	0.034 ± 0.185	-0.114 ± 0.211
photometric centroid source offset	0.62 ± 0.63	0.98	-0.06 ± 0.53	-0.61 ± 0.63

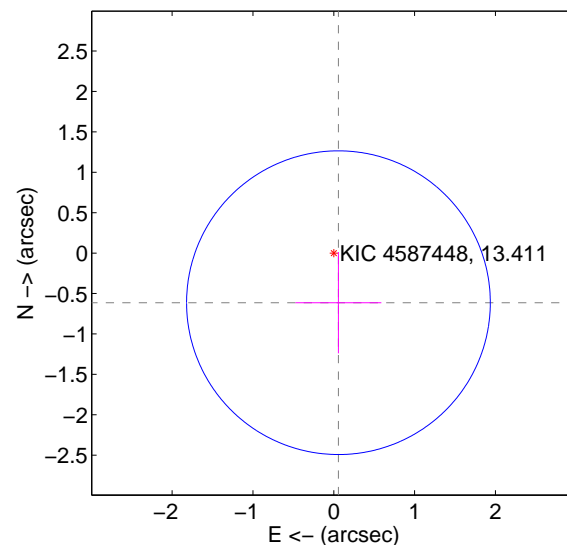
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

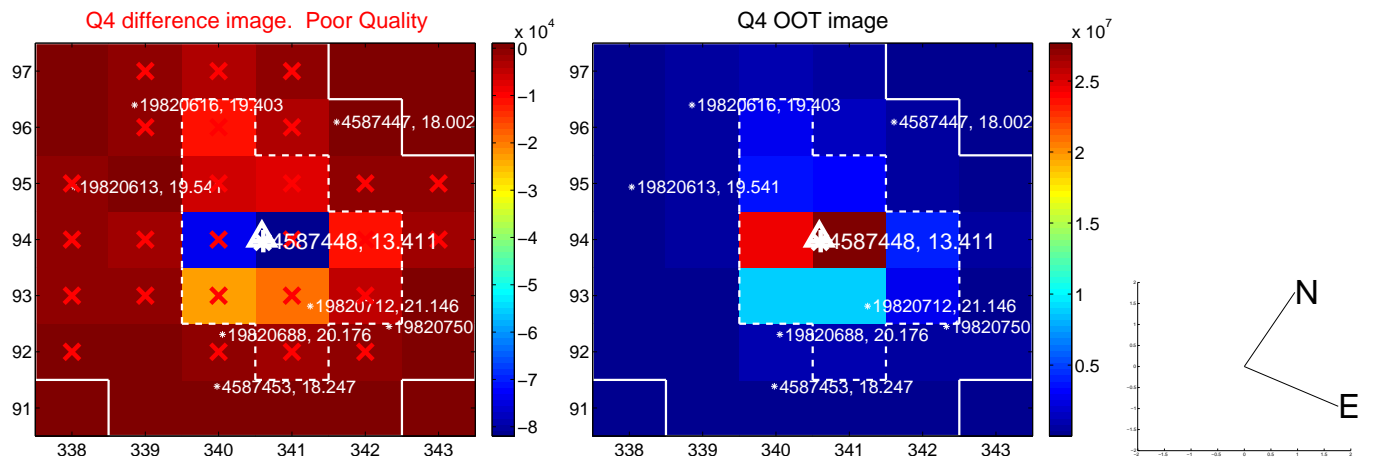
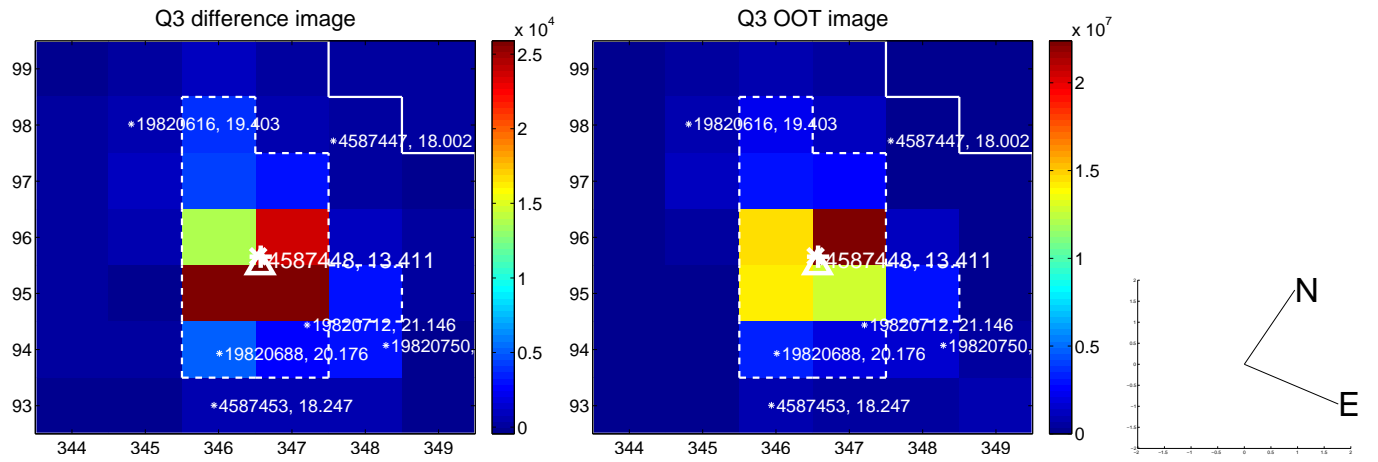
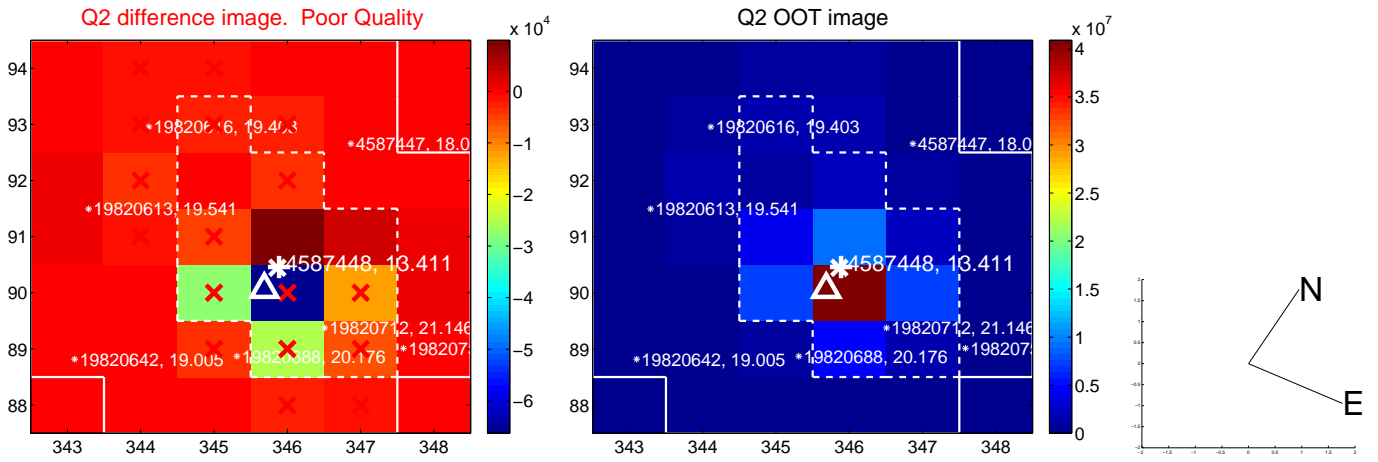
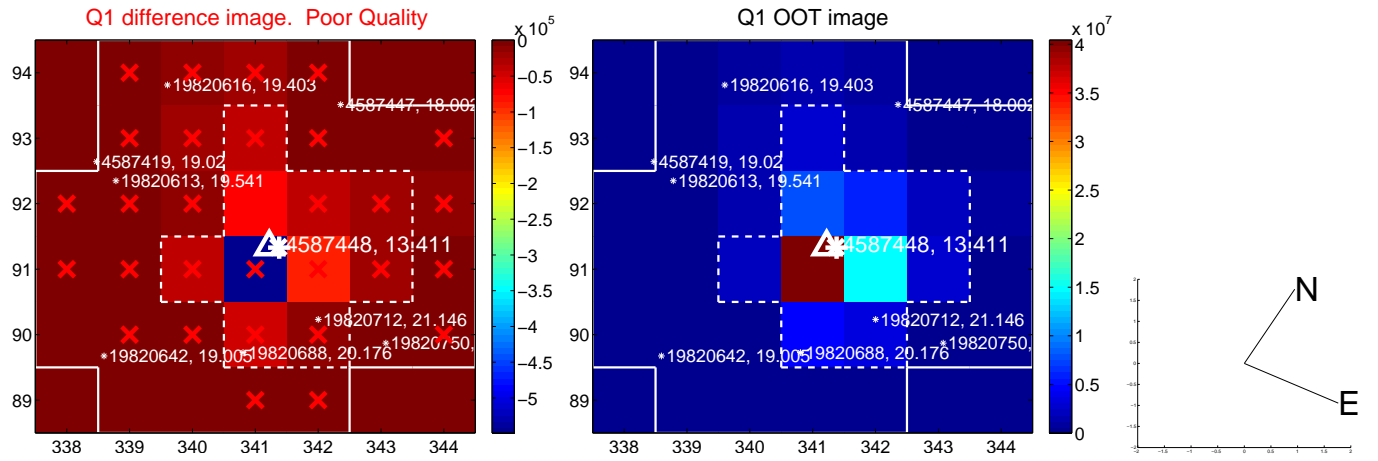


offset from photometric centroids

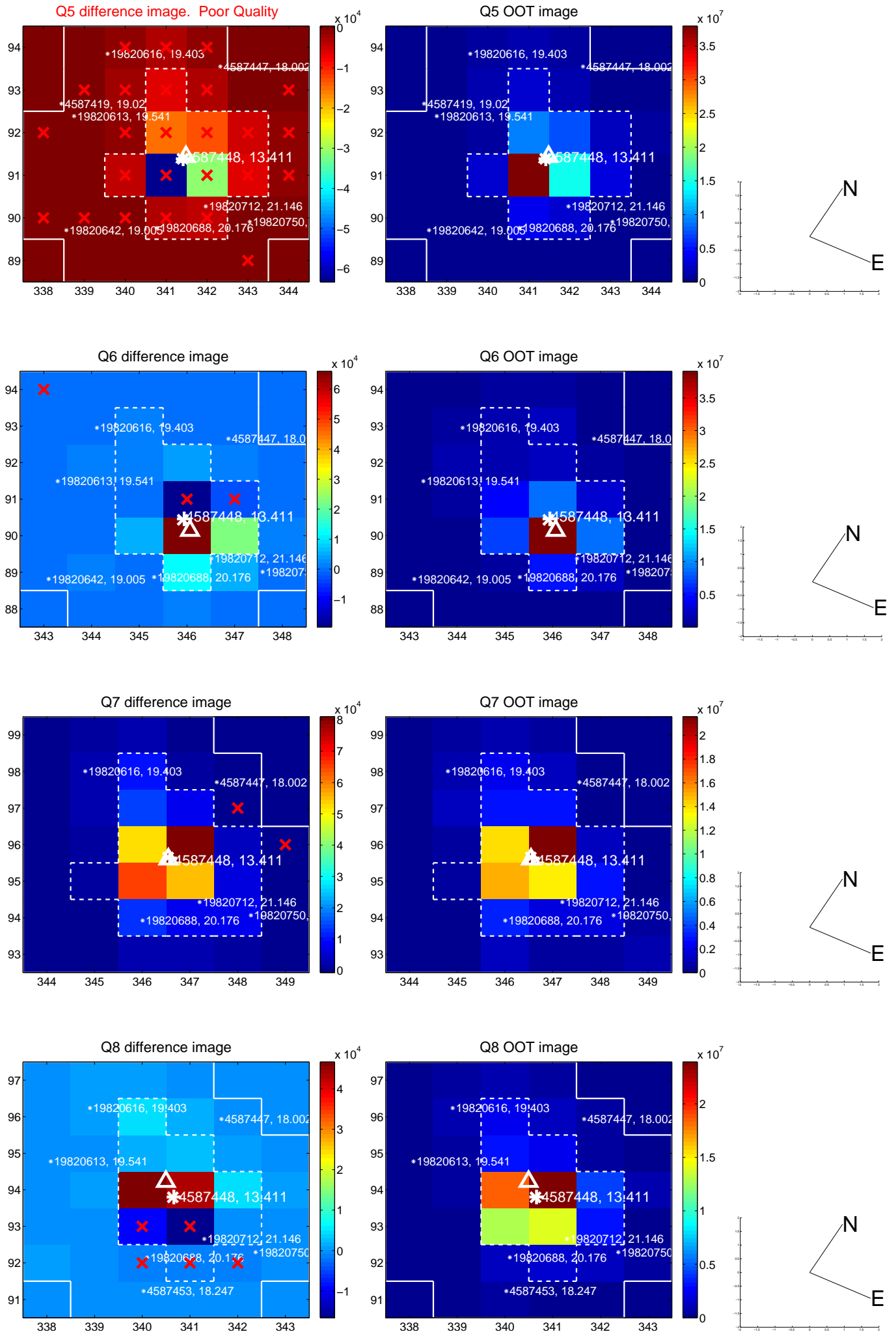


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

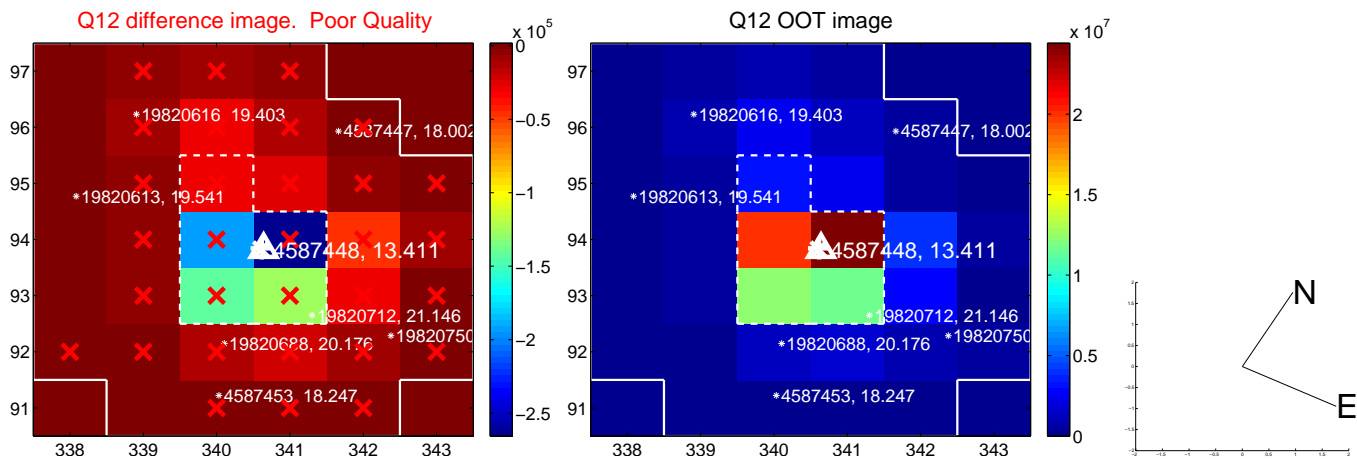
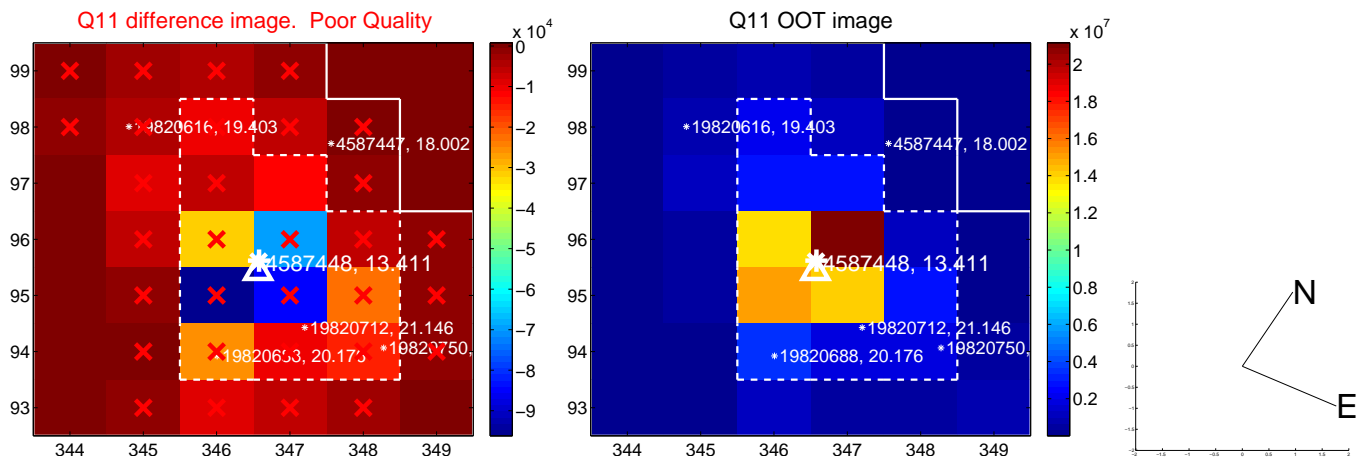
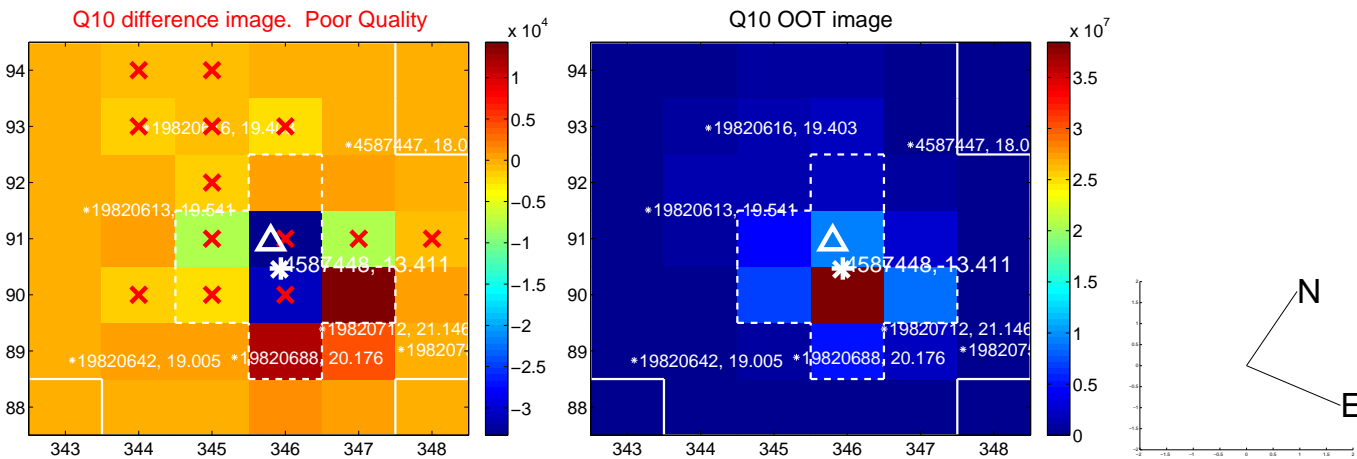
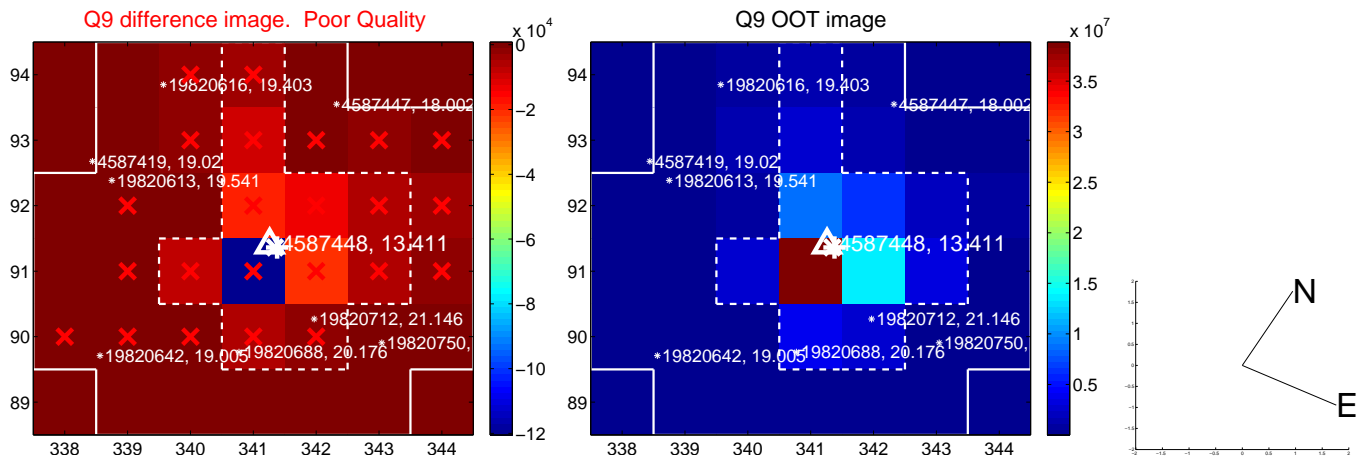
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



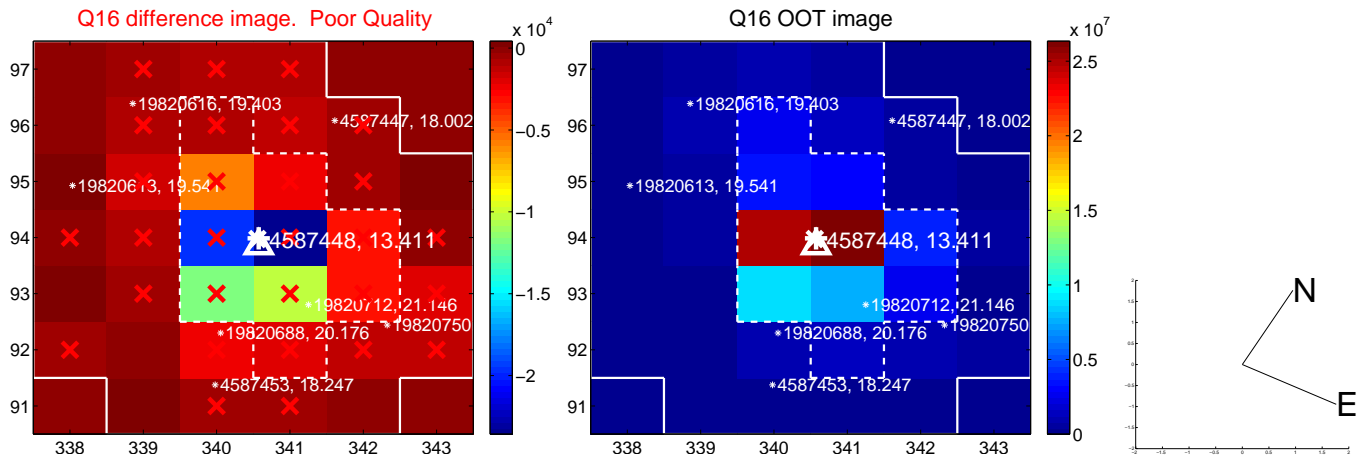
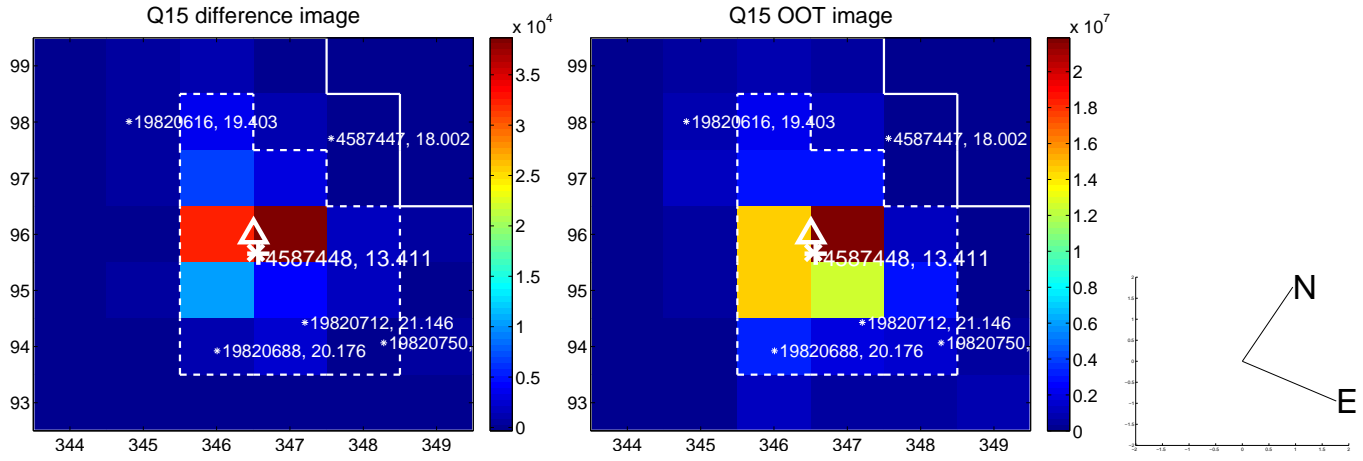
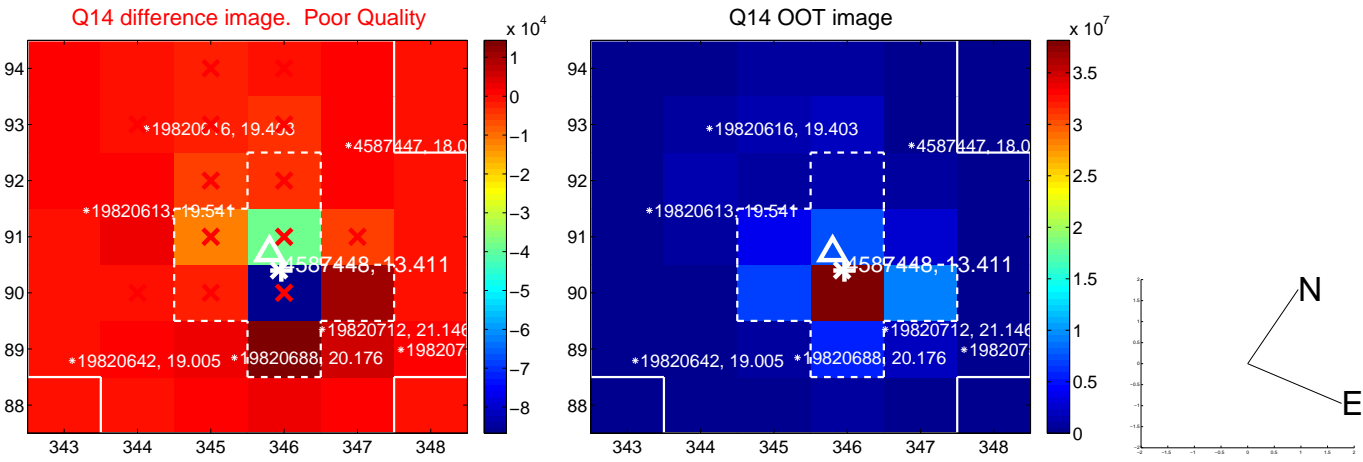
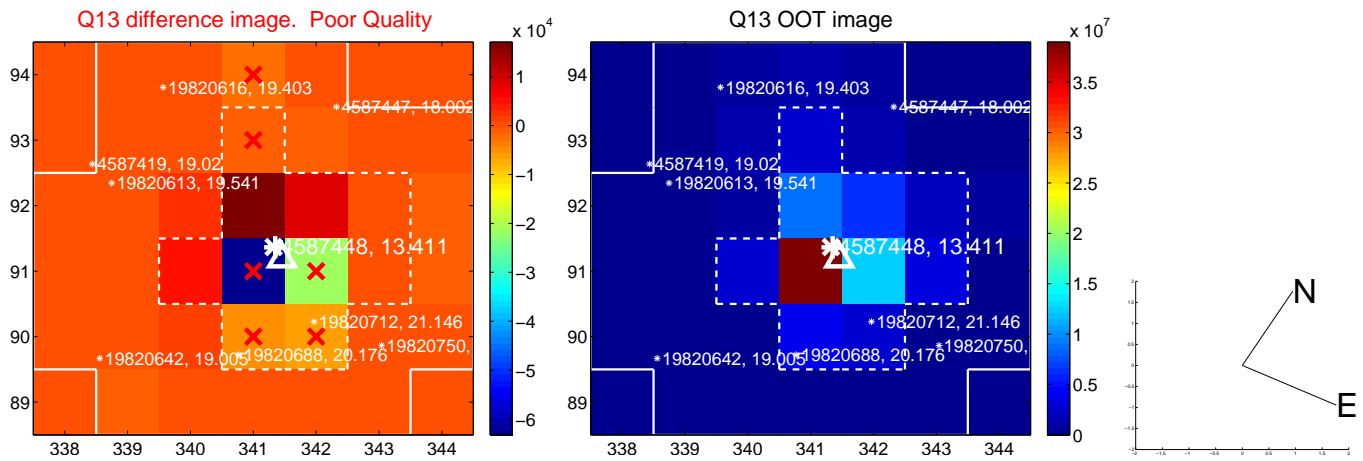
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



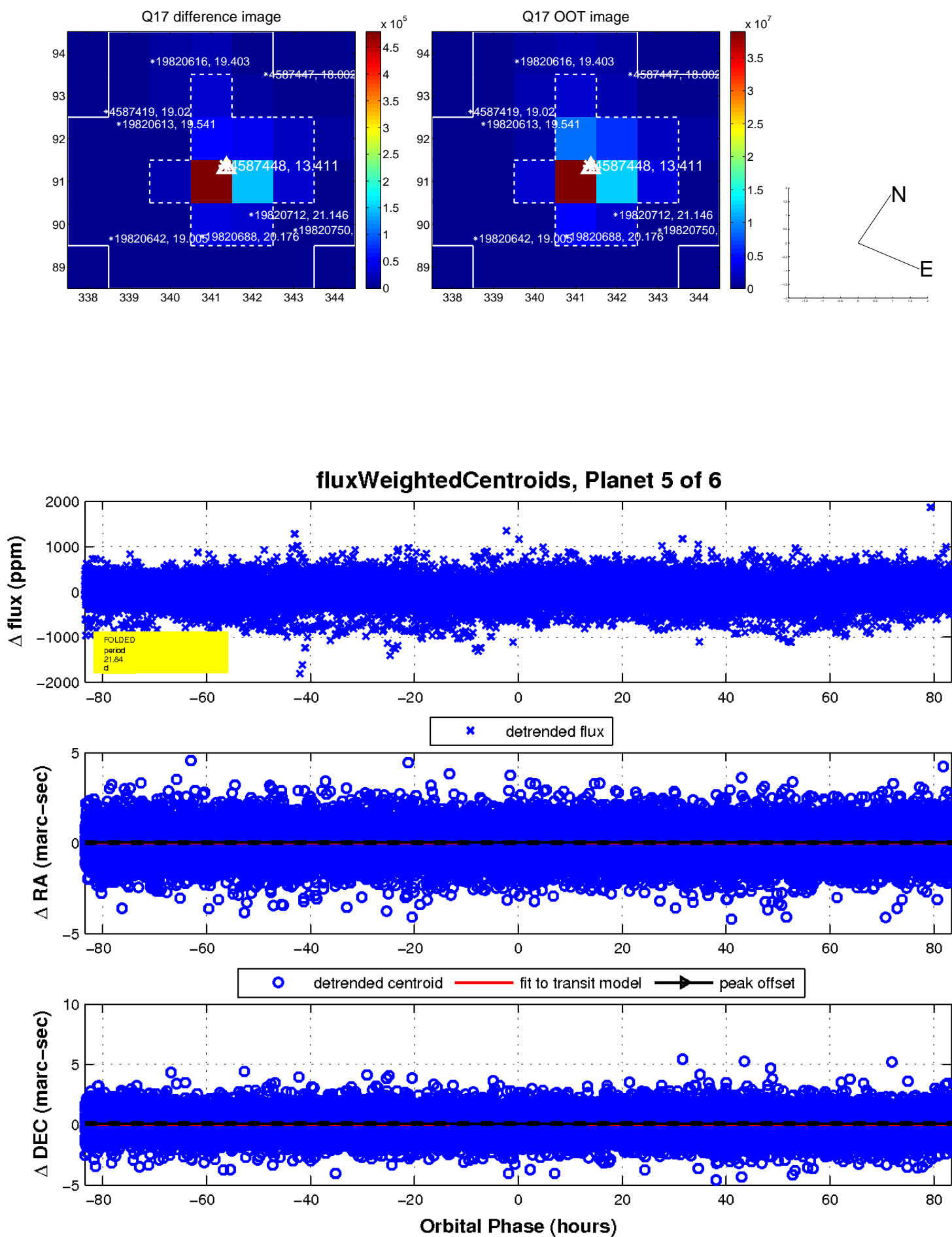
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



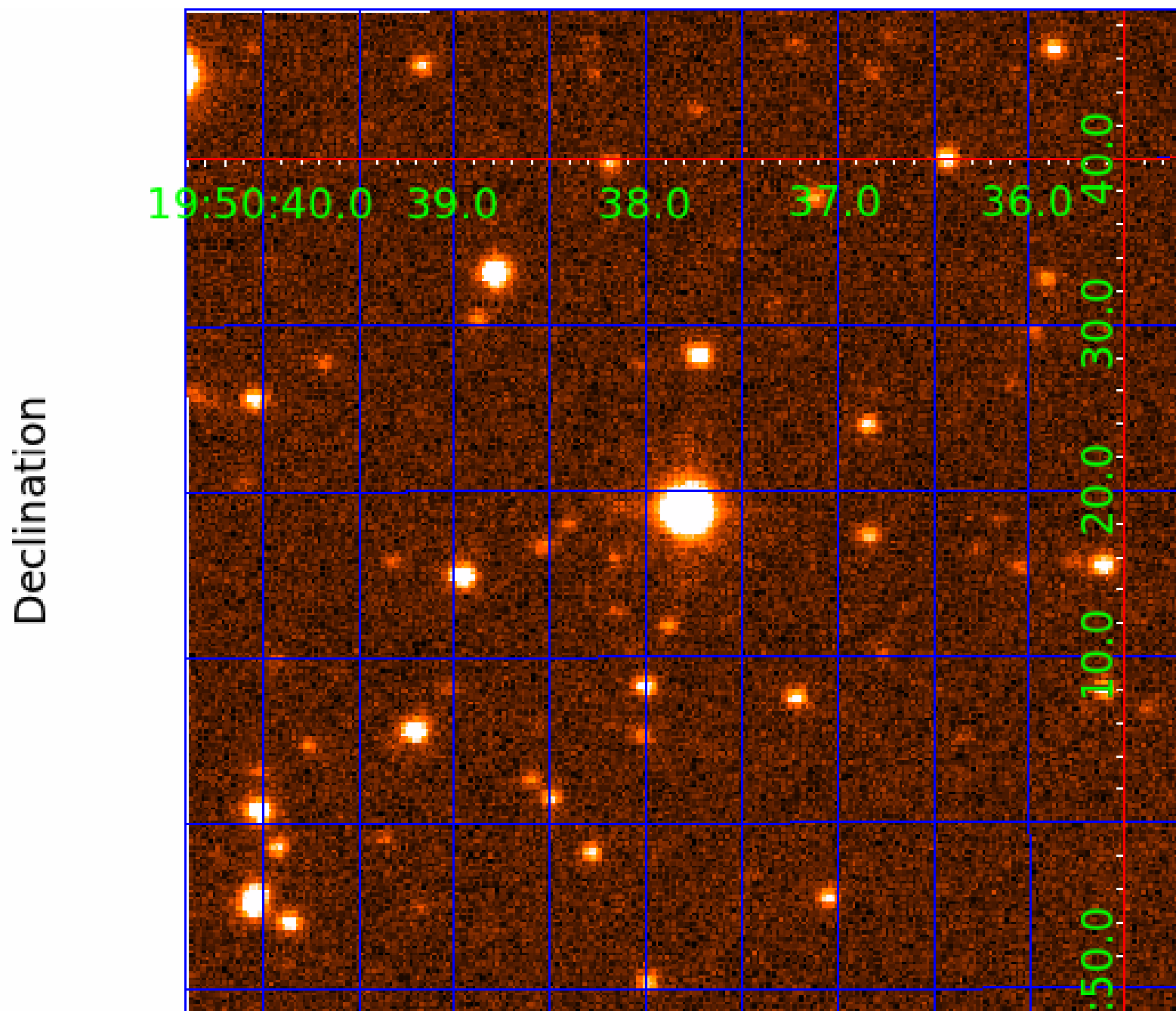
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004587448

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})
004587448-01	OBS	6430.01	2.234140	131.804722	103.3	2.117	20.1	21.8	1.28	6600	1.52	2078.34
004587448-02	OBS	No	0.744700	131.566381	14.8	5.206	14.2	7.2	1.28	6600	0.50	8992.67
004587448-03	OBS	No	13.831007	135.128775	294.7	1.853	15.4	9.5	1.28	6600	2.21	182.84
004587448-05	OBS	No	21.841444	133.285979	130.5	27.805	11.1	6.0	1.28	6600	1.54	99.42
004587448-06	OBS	No	30.356375	156.281449	448.5	1.371	9.9	7.6	1.28	6600	2.93	64.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004587448-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
004587448-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
004587448-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
004587448-05	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
004587448-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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 004587448-06

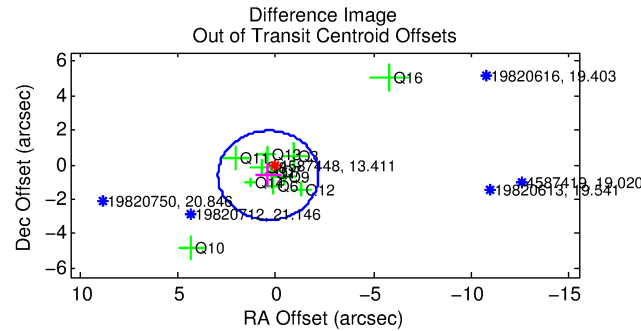
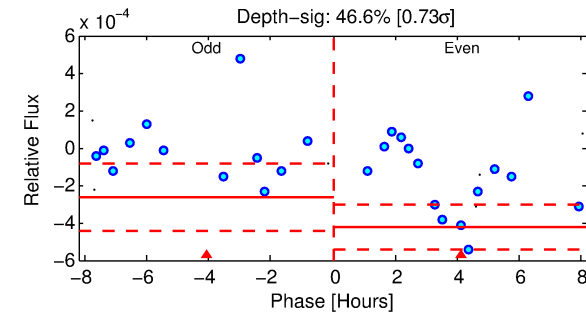
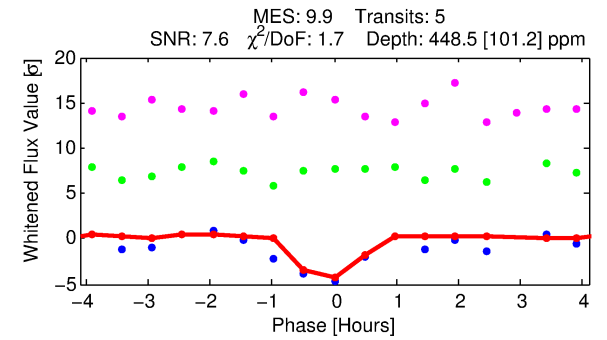
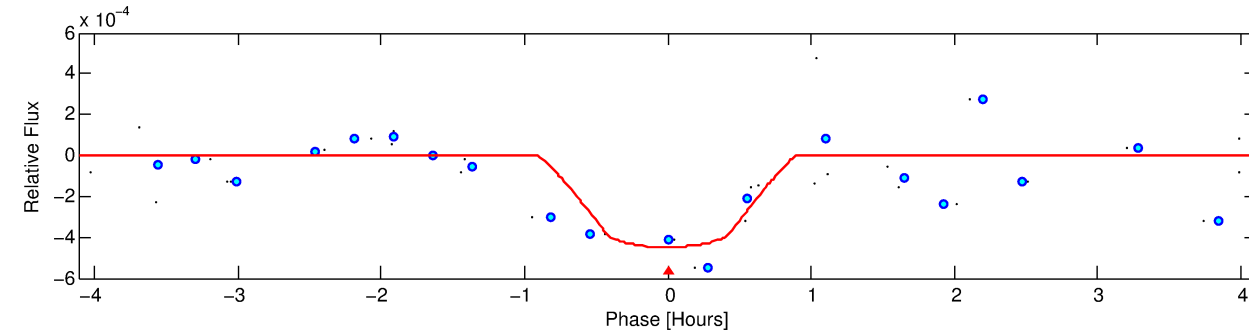
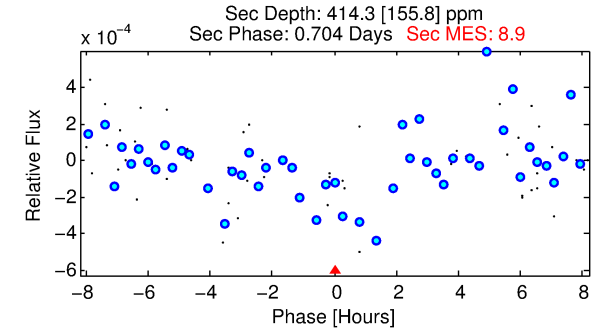
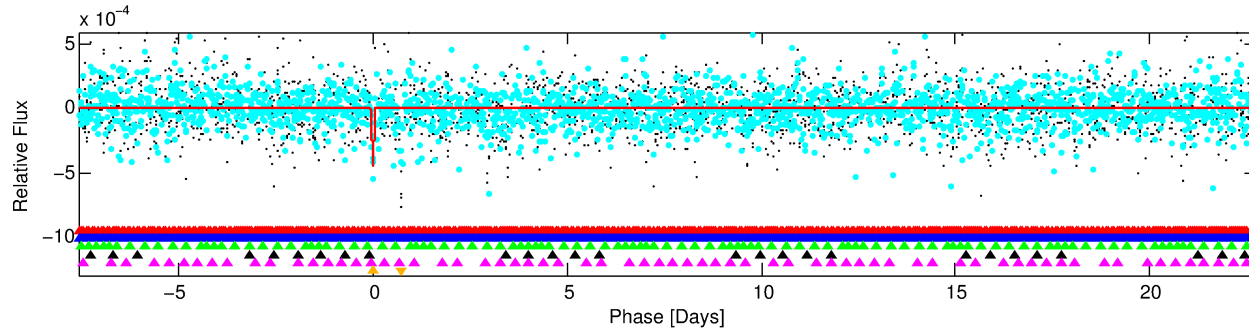
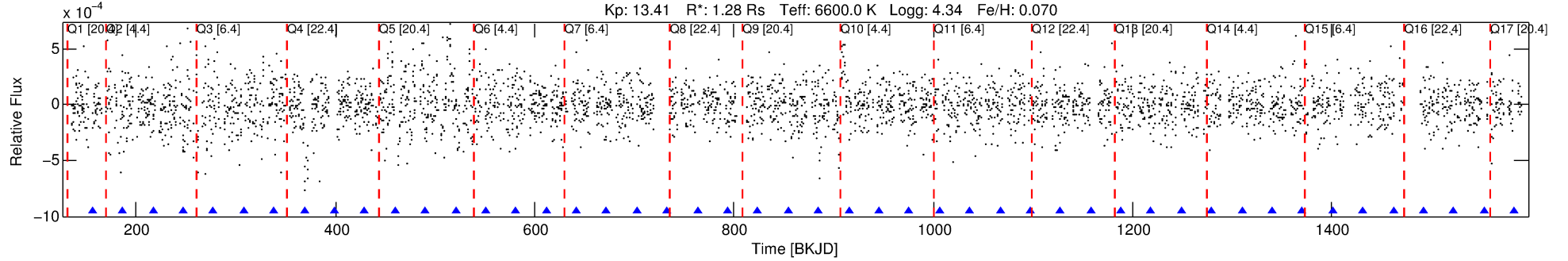
No Significant Match Found

DV One-Page Summary

KIC: 4587448 Candidate: 6 of 6 Period: 30.356 d

KOI: K06430 Corr: No Ephemeris Match

Kp: 13.41 R*: 1.28 Rs Teff: 6600.0 K Logg: 4.34 Fe/H: 0.070



DV Fit Results:

Period = 30.35637 [0.00031] d
Epoch = 156.2814 [0.0056] BKJD
Rp/R* = 0.0210 [0.0465]
a/R* = 120.86 [1440.06]
b = 0.73 [7.80]
Seff = 64.10 [28.36]
Teq = 722 [80] K
Rp = 2.93 [6.57] Re
a = 0.2080 [0.0612] AU
Ag = 1148.84 [5124.87] [0.22σ]
Teffp = 6495 [7215] K [0.80σ]

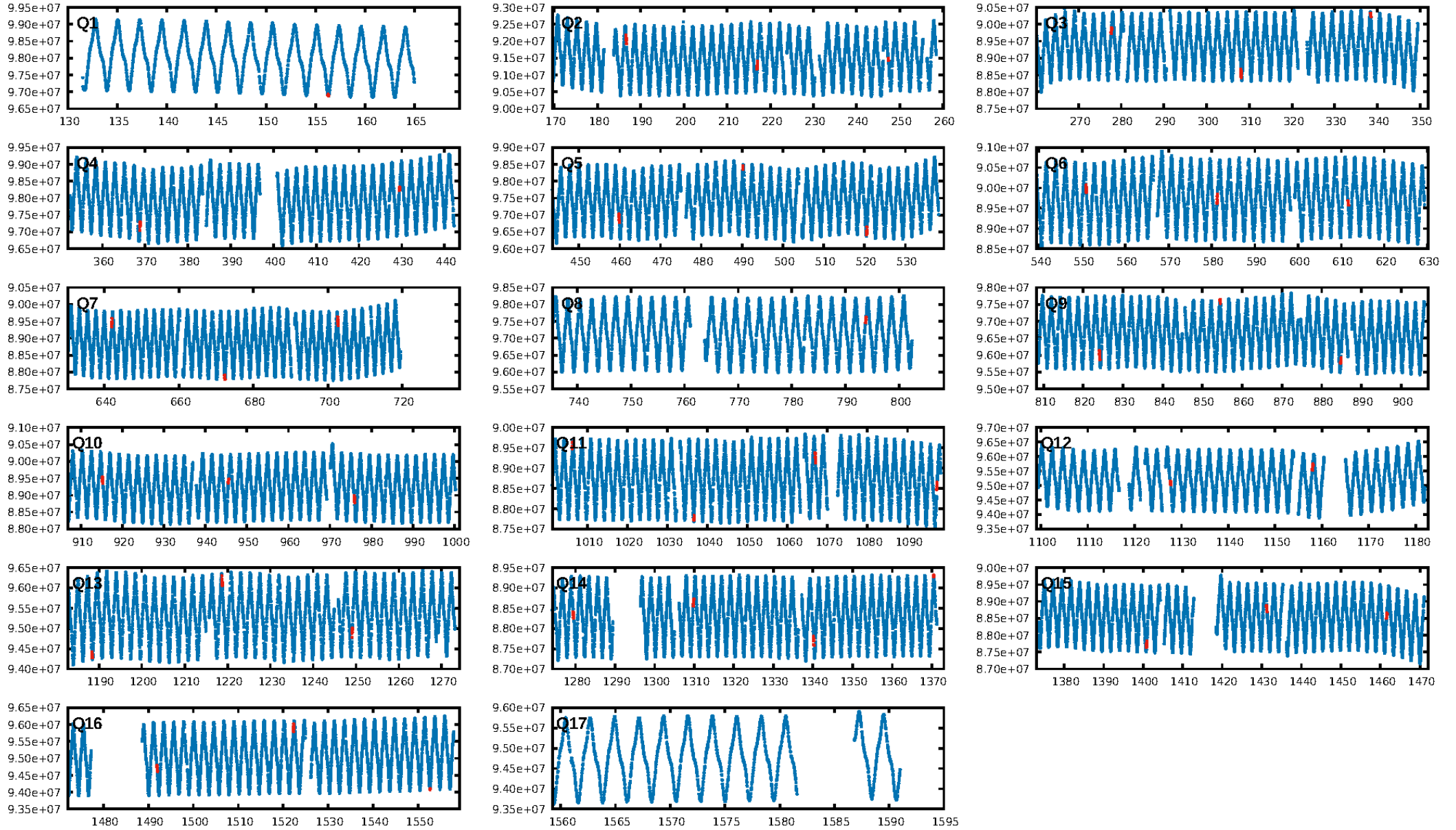
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.34σ]
LongPeriod-sig: 100.0% [111.70σ]
ModelChiSquare2-sig: 92.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.7443
Centroid-sig: 61.0%
Centroid-so: 0.511 arcsec [0.85σ]
OotOffset-rm: 0.721 arcsec [0.84σ]
KicOffset-rm: 0.723 arcsec [0.83σ]
OotOffset-st: 3/3/3/3 [12]
KicOffset-st: 3/3/3/3 [12]
DiffImageQuality-fgm: 0.50 [6/12]
DiffImageOverlap-fno: 0.06 [1/16]

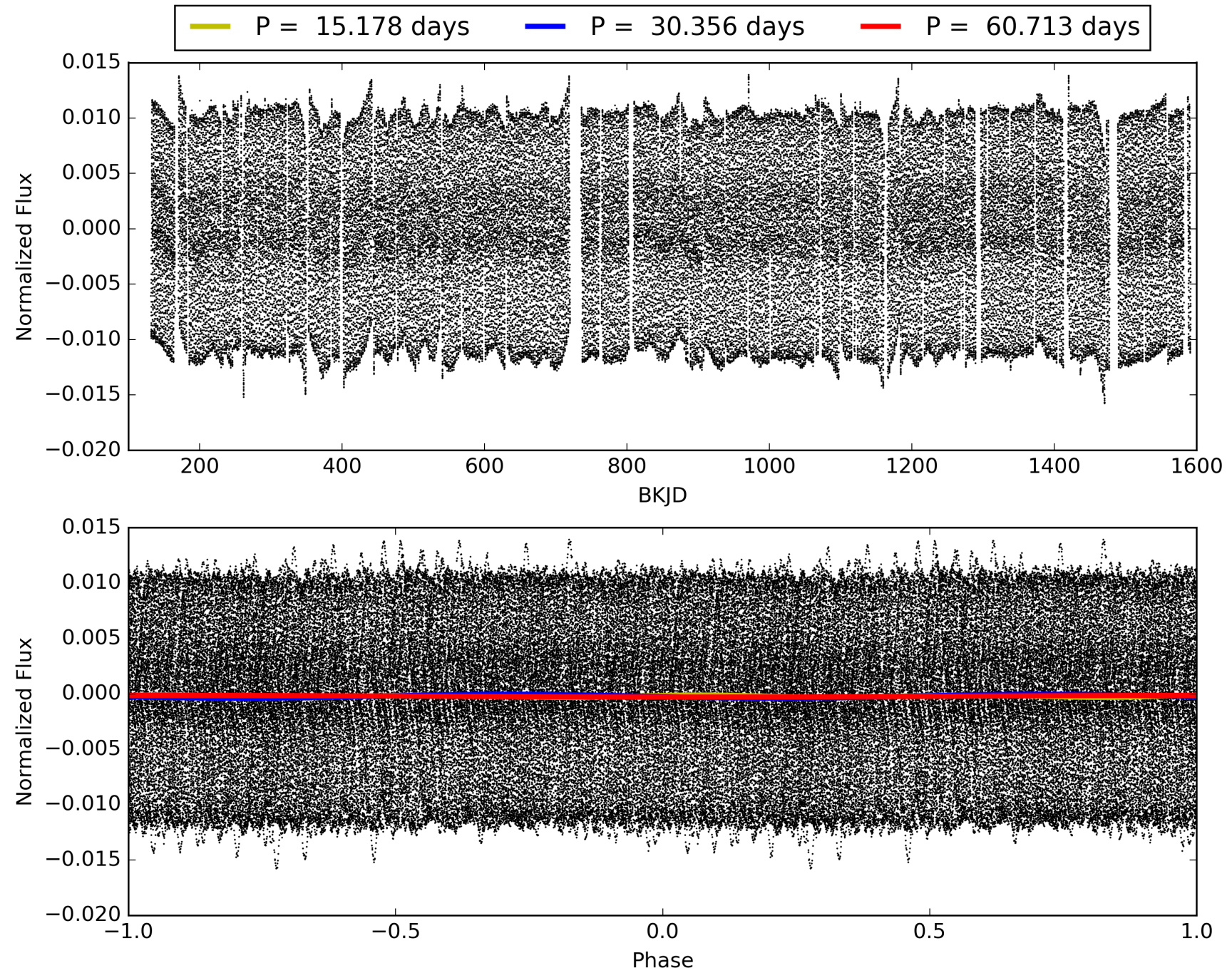
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 17:17:11 Z

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

TCE 004587448-06, PDC Light Curves

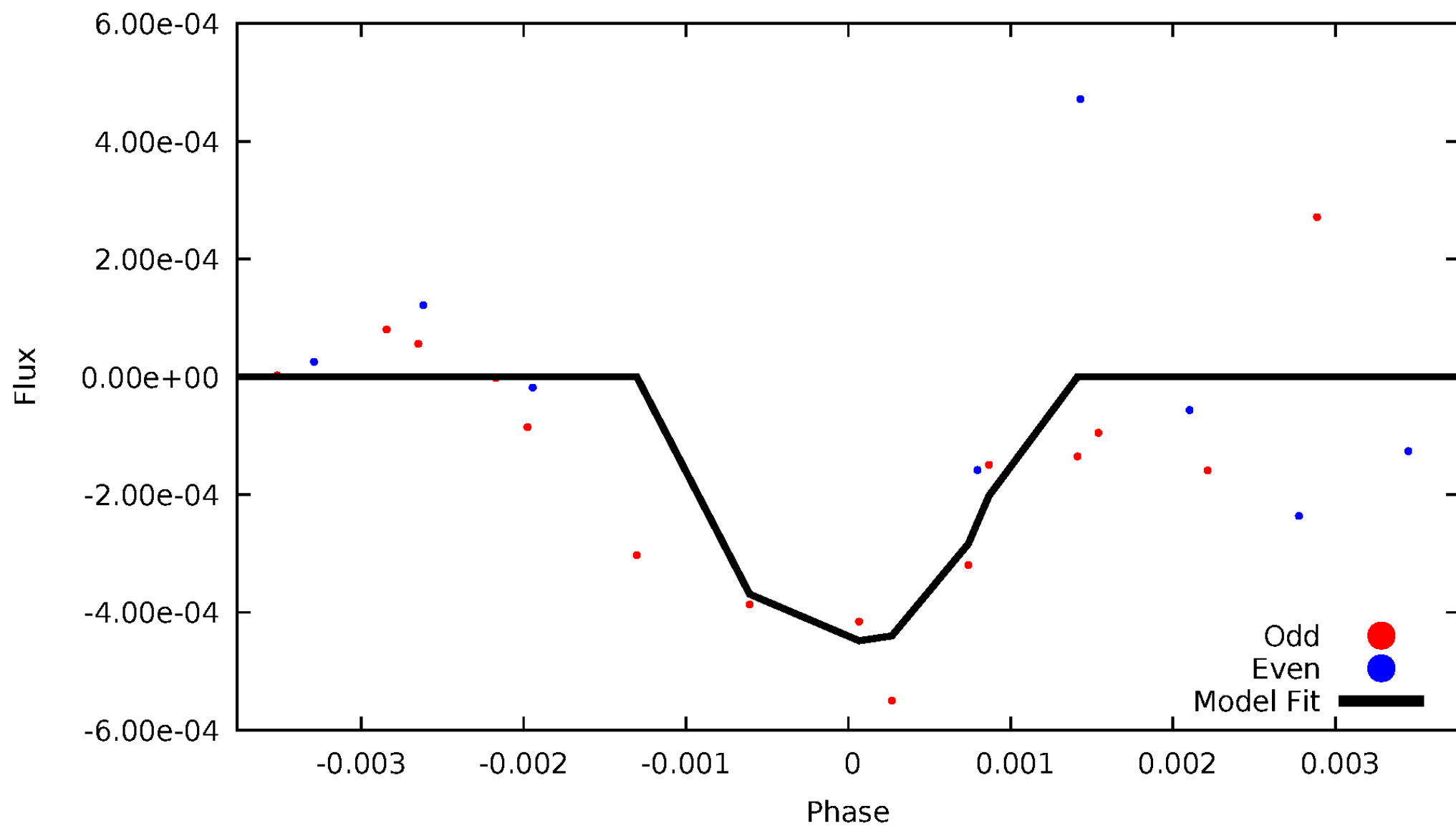


TCE 004587448-06



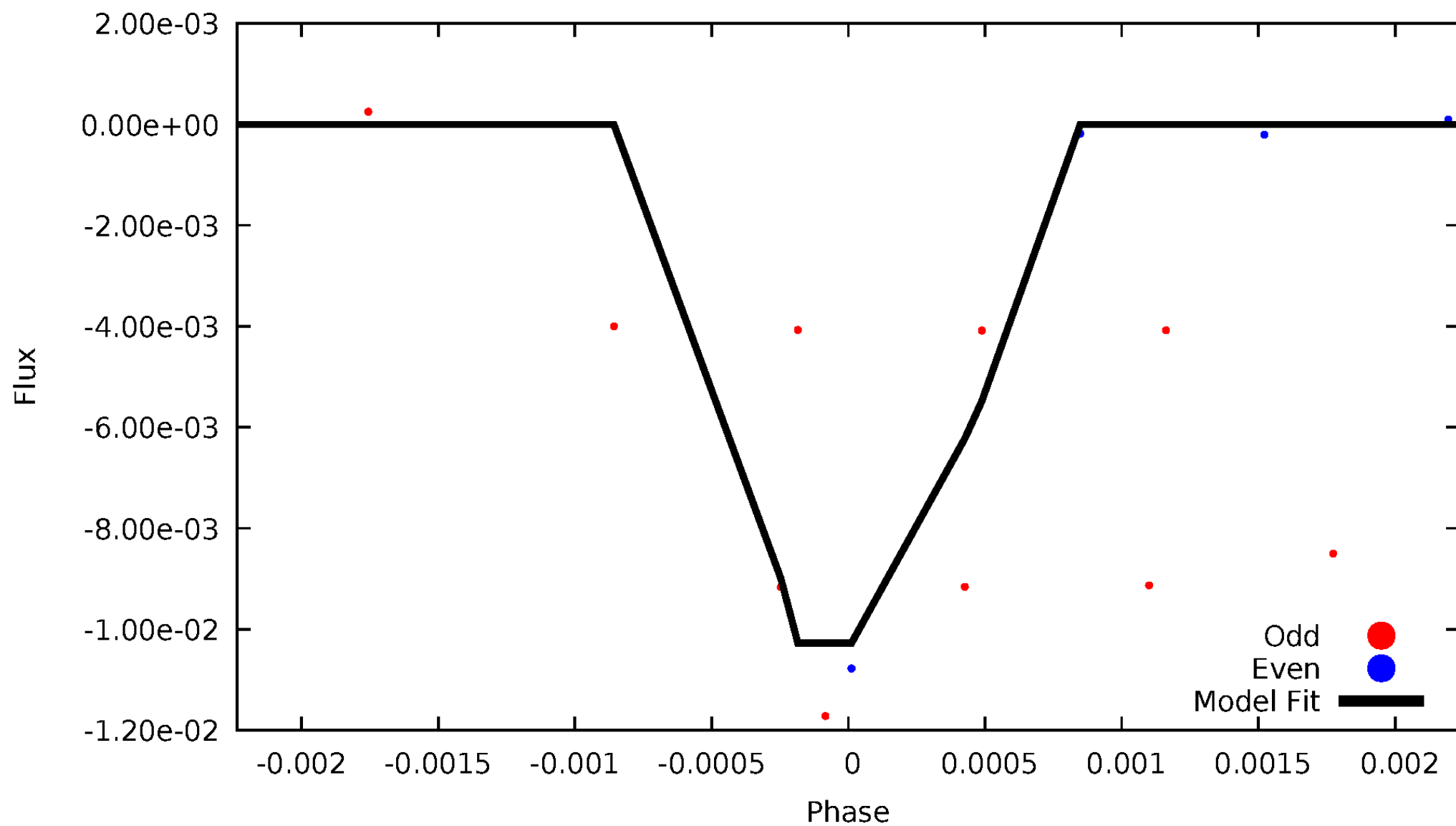
DV Odd/Even

TCE 004587448-06



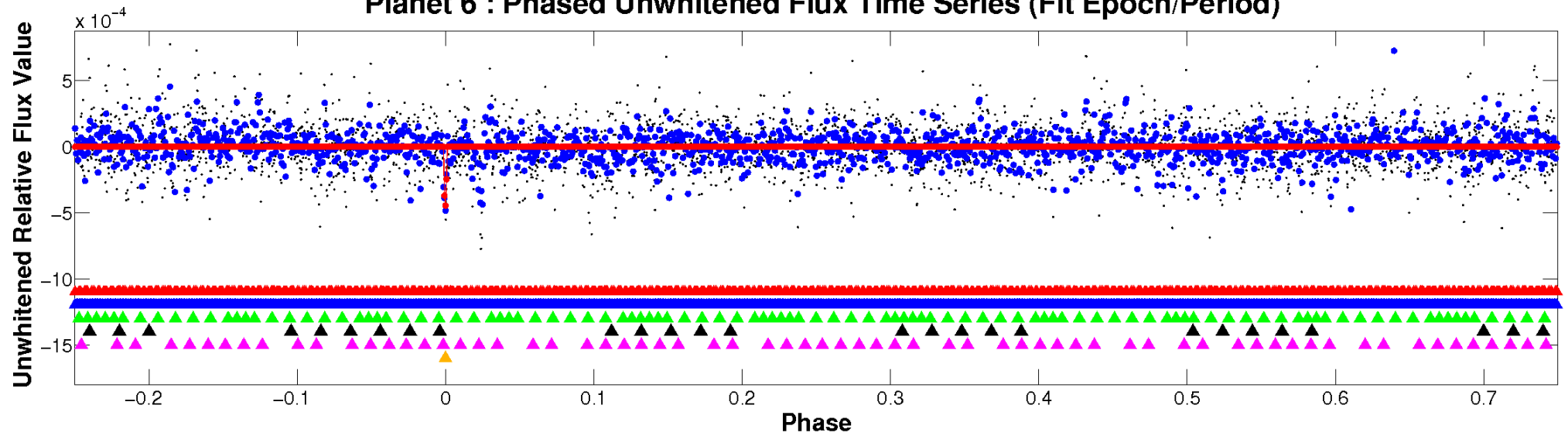
ALT Odd/Even

TCE 004587448-06

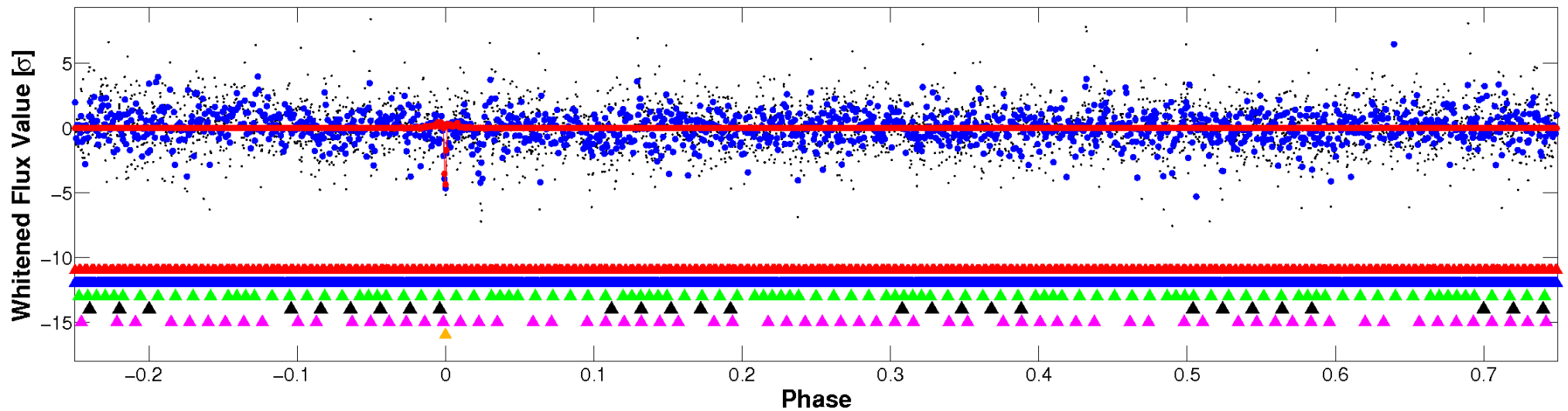


Non-Whitened Vs. Whitened Light Curve

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

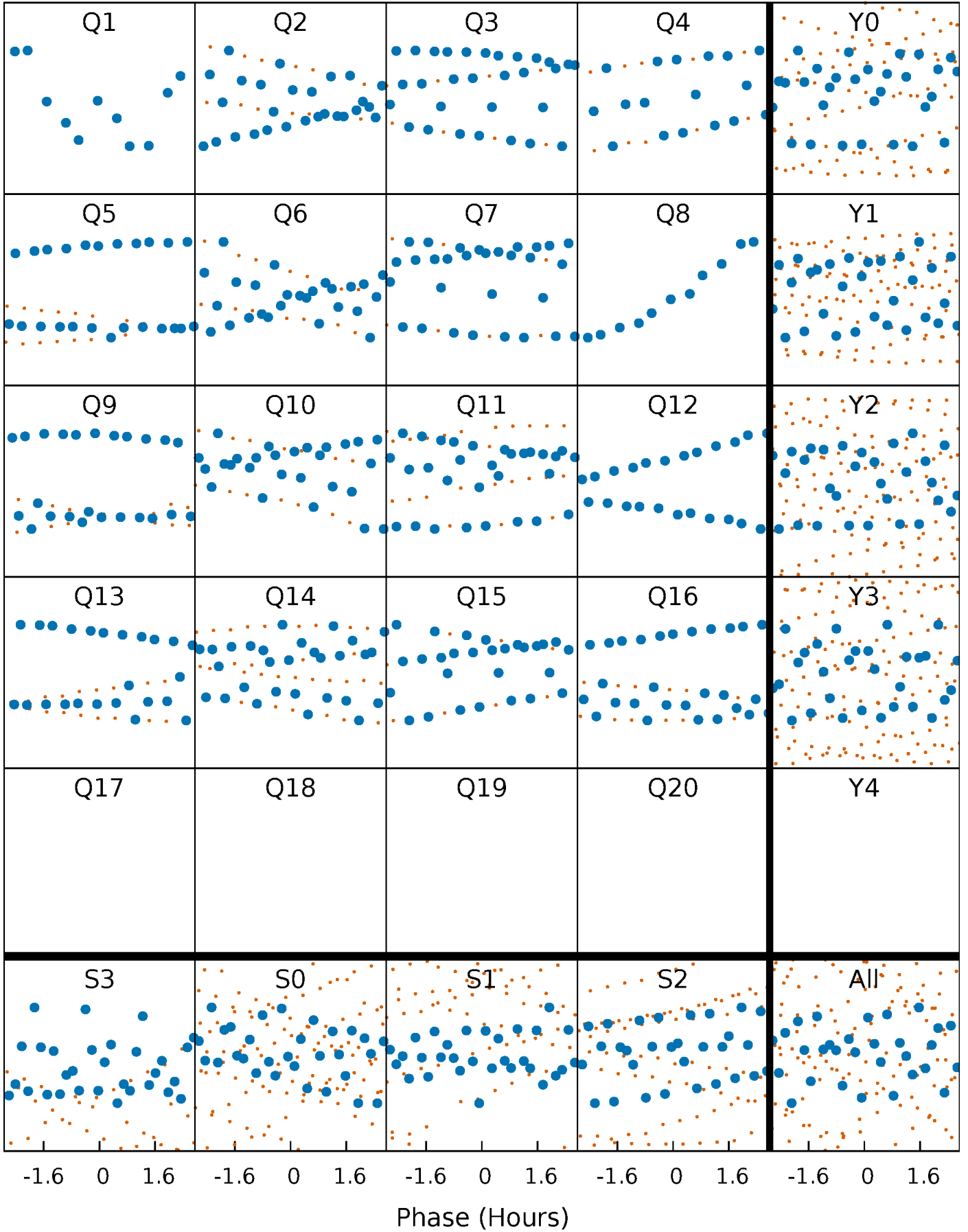


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



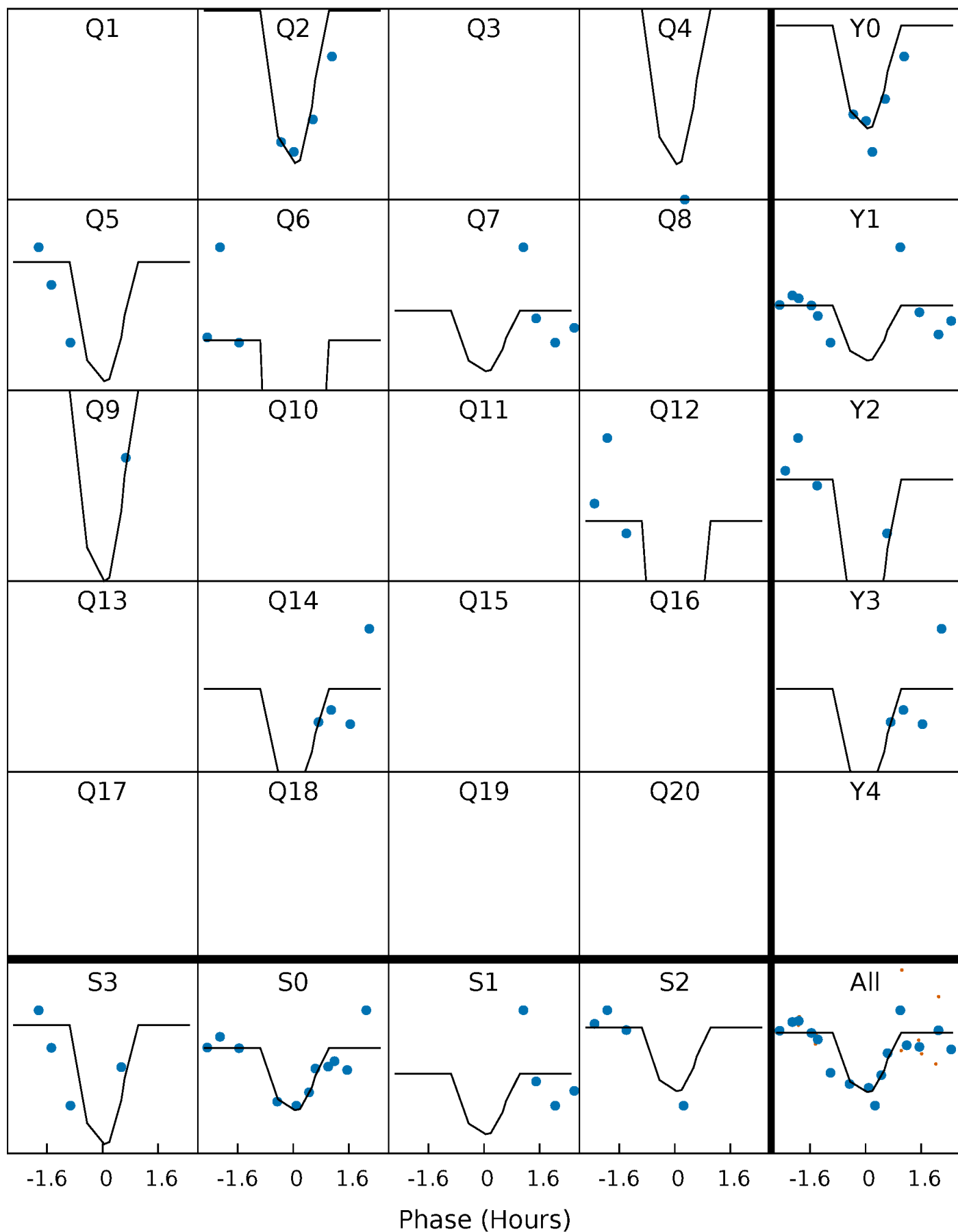
PDC Quarter-Phased Transit Curves

TCE 004587448-06 P= 30.356375 Days $T_0=156.281450$ (BKJD)



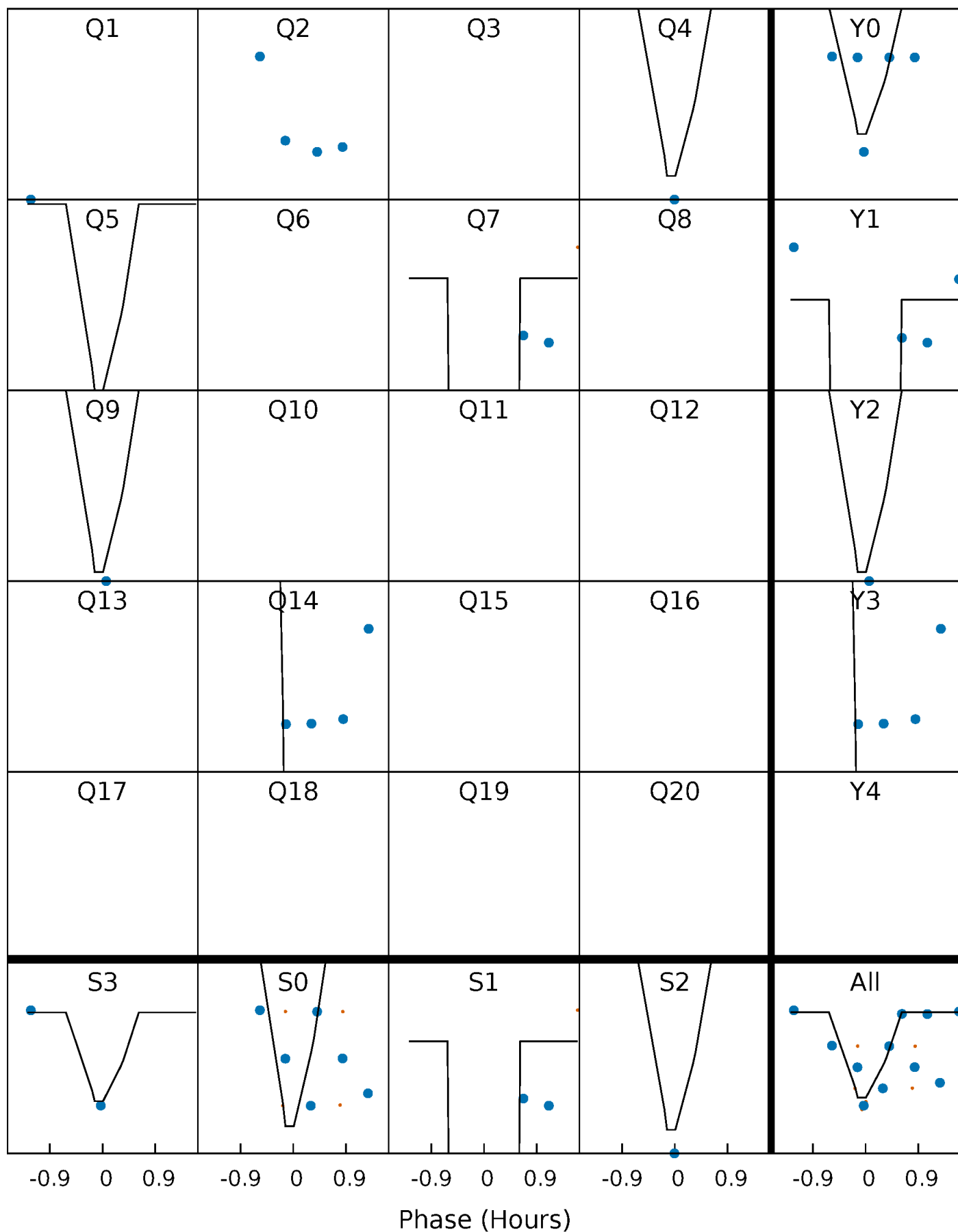
DV Quarter-Phased Transit Curves

TCE 004587448-06 P= 30.356375 Days $T_0=156.281450$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

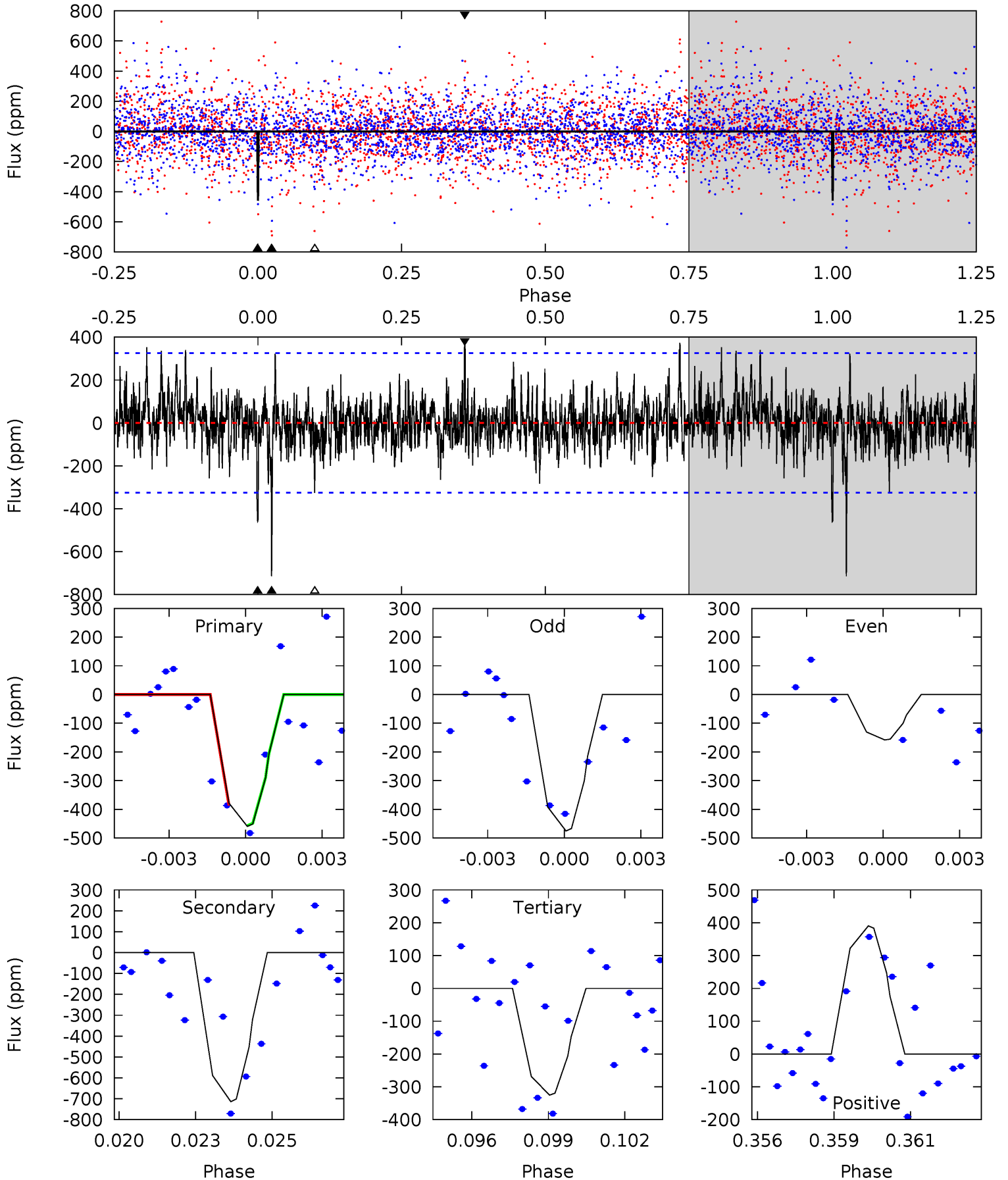
TCE 004587448-06 P= 30.357145 Days $T_0=156.286737$ (BKJD)



DV Model-Shift Uniqueness Test

004587448-06, P = 30.356375 Days, E = 125.925075 Days

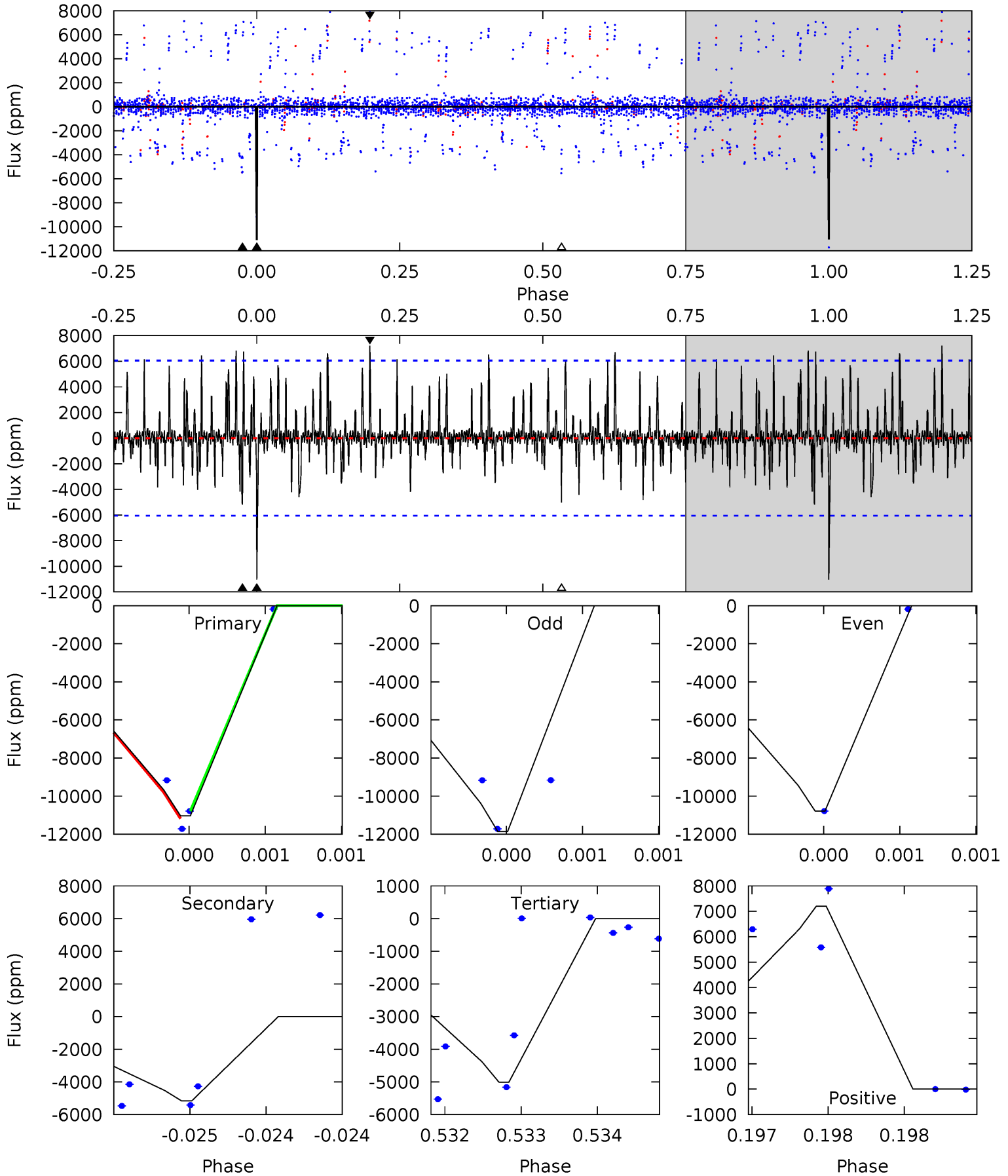
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.43	11.5	5.26	6.31	5.26	2.99	1.44	2.17	1.12	6.29	5.24	1.77	1.00	0.35	0.51



Alt Model-Shift Uniqueness Test

004587448-06, P = 30.357145 Days, E = 125.929592 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.0	4.71	4.56	6.56	5.51	3.38	1.19	5.48	3.49	0.15	-1.85	0.46	1.00	0.40	0.18



Stellar Parameters For KIC 004587448

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6600^{+158}_{-237}	$4.340^{+0.056}_{-0.224}$	$0.070^{+0.250}_{-0.350}$	$1.277^{+0.457}_{-0.152}$	$1.305^{+0.175}_{-0.195}$	$0.882^{+0.277}_{-0.496}$
	+2%/-4%	+1%/-5%	+357%/-500%	+36%/-12%	+13%/-15%	+31%/-56%
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 004587448-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-714±62	$6.22^{+5.61}_{-3.88}$	1029^{+78}_{-51}	5174^{+3581}_{-1075}	411^{+2425}_{-293}
Alt.	-5170±1099	$15.55^{+6.81}_{-7.11}$	1027^{+79}_{-51}	5425^{+2056}_{-788}	499^{+1234}_{-271}

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

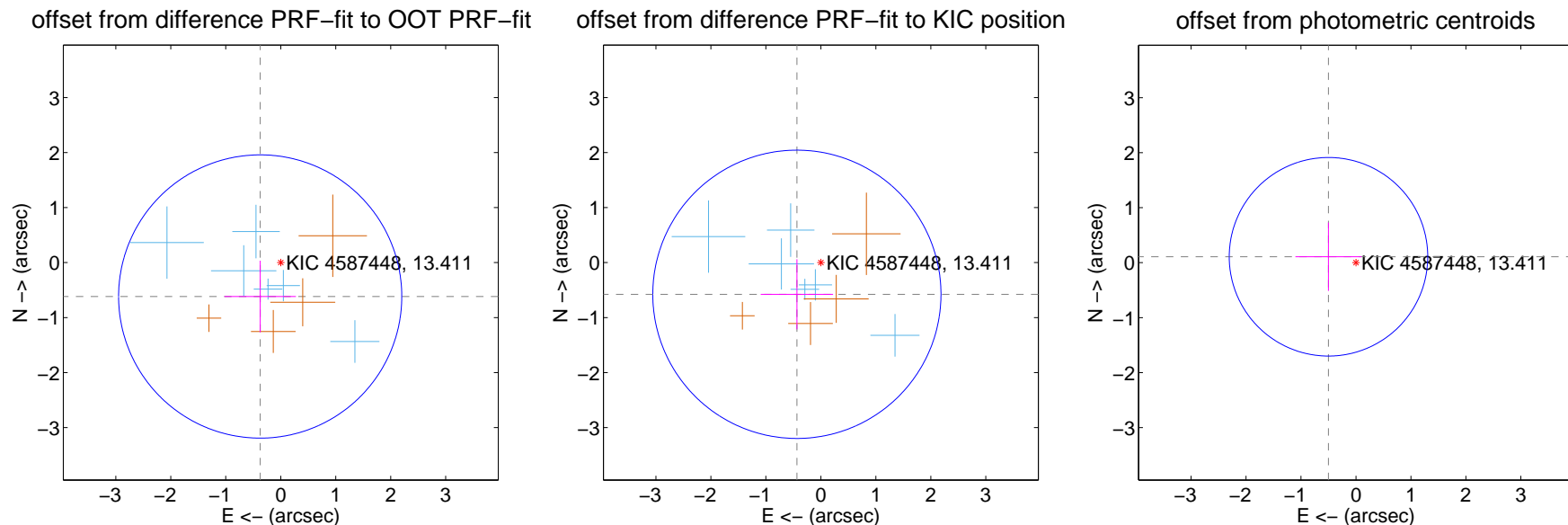
DV Centroid Data

Supplemental centroid analysis for 004587448-06. Kepler magnitude: 13.41. Transit SNR 7.59

There are 6 quarters with good PRF difference image offsets

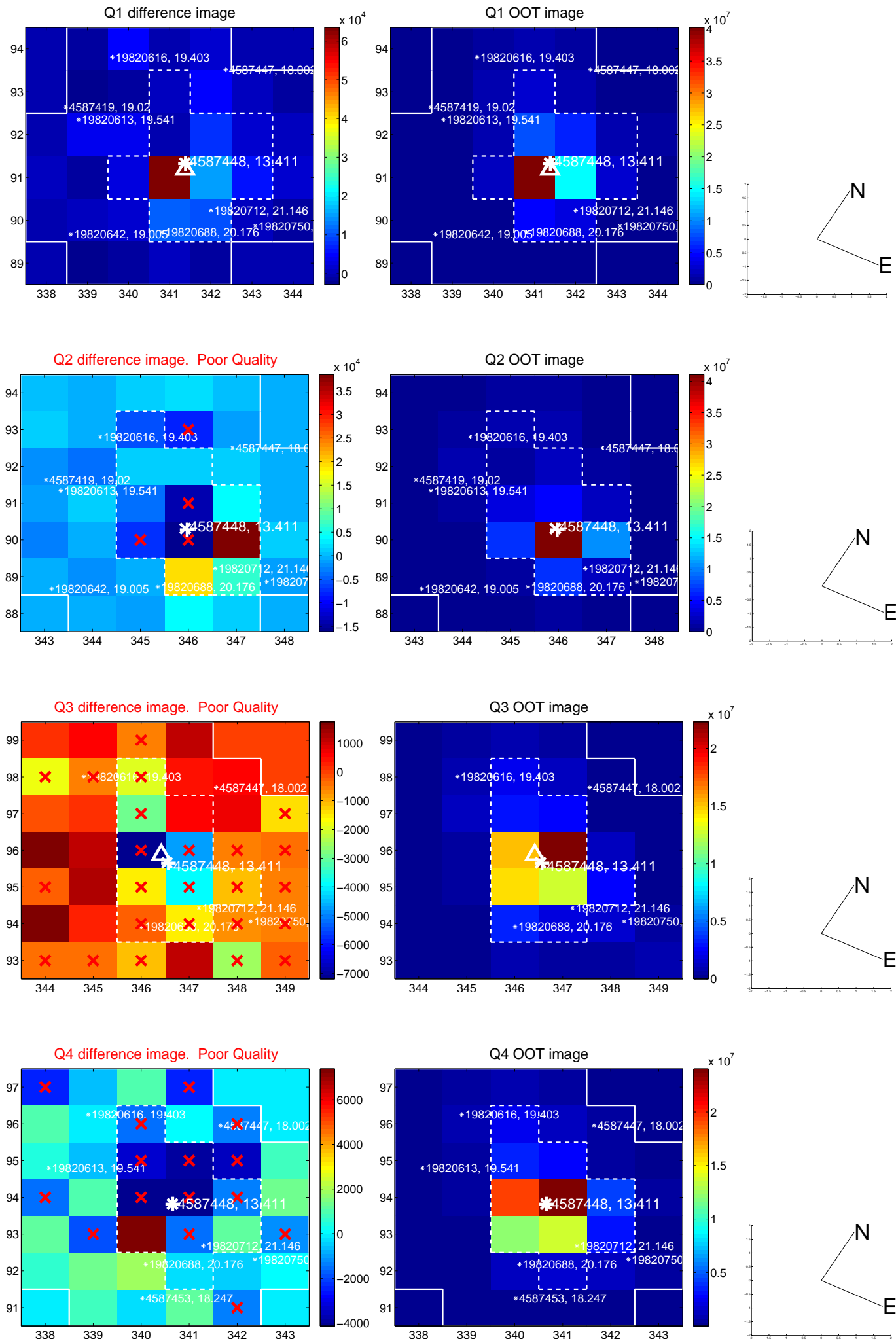
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.721 ± 0.858	0.84	0.374 ± 0.650	-0.616 ± 0.651
PRF-fit source offset from KIC position	0.723 ± 0.873	0.83	0.436 ± 0.658	-0.576 ± 0.638
photometric centroid source offset	0.51 ± 0.60	0.85	0.50 ± 0.60	0.11 ± 0.62

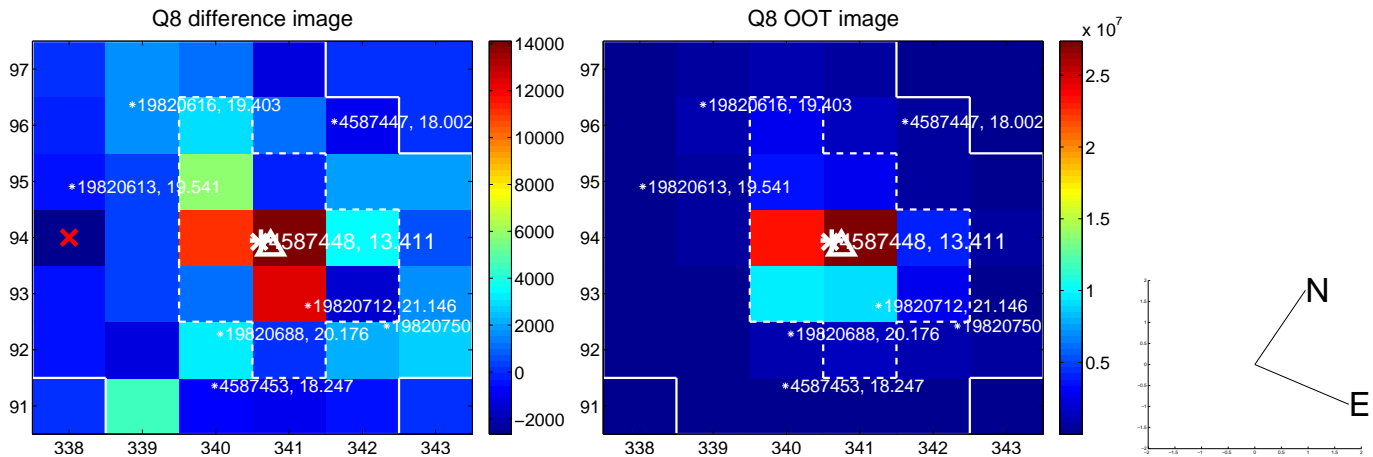
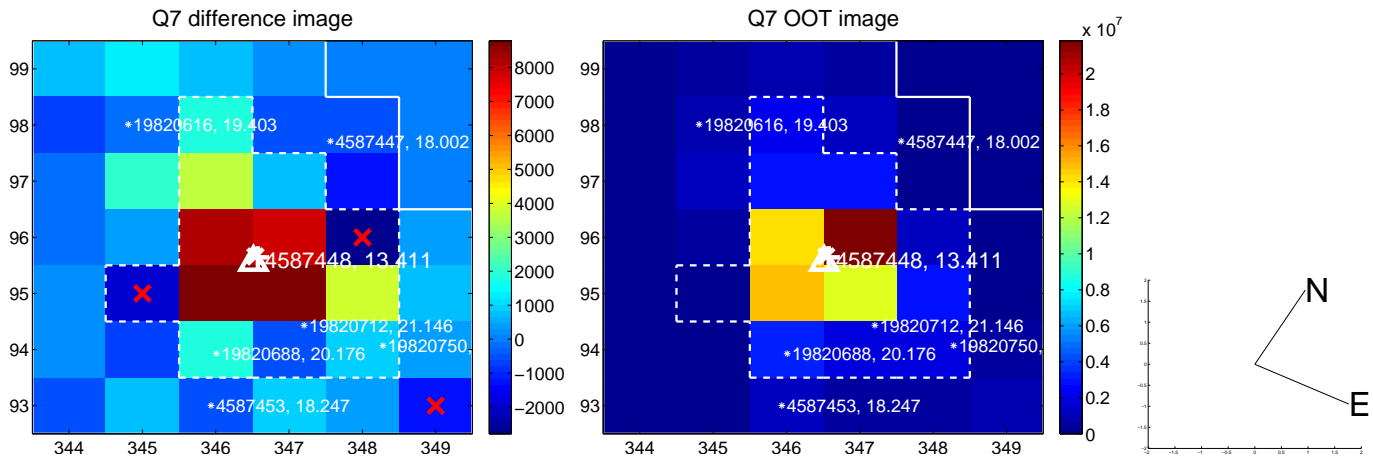
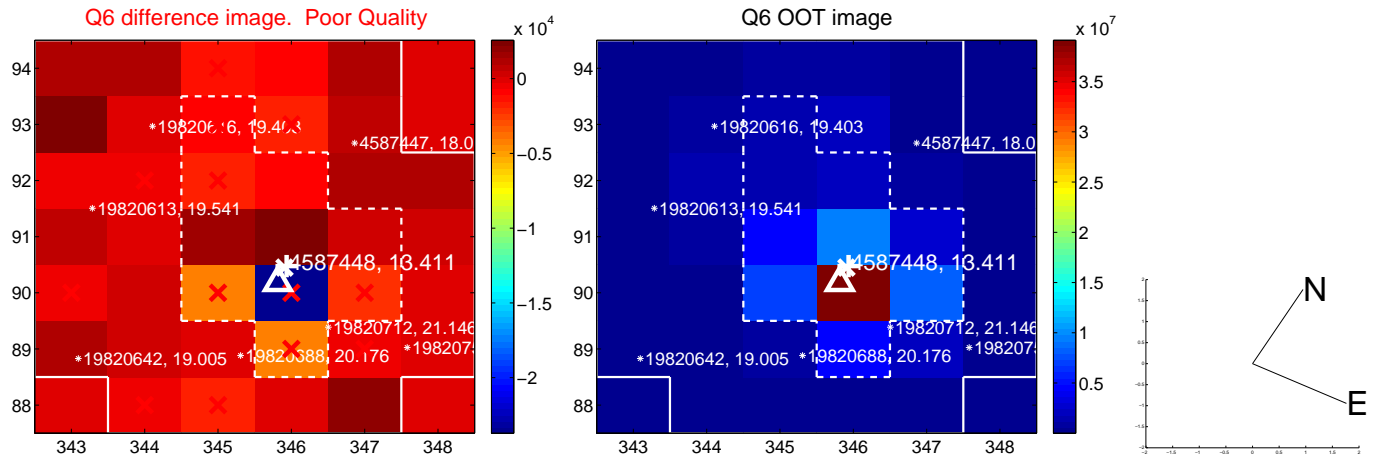
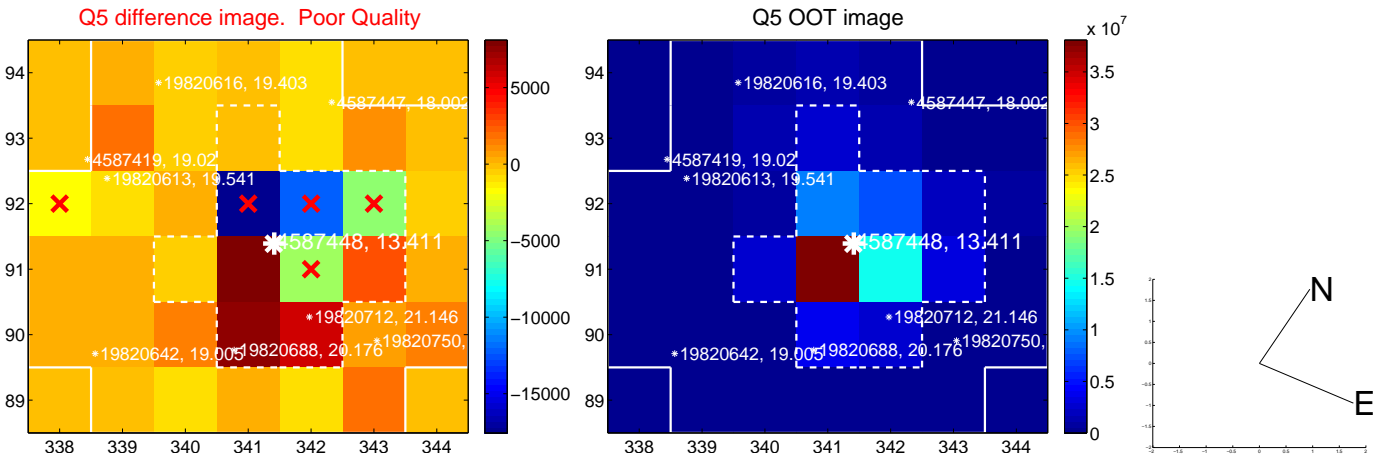


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

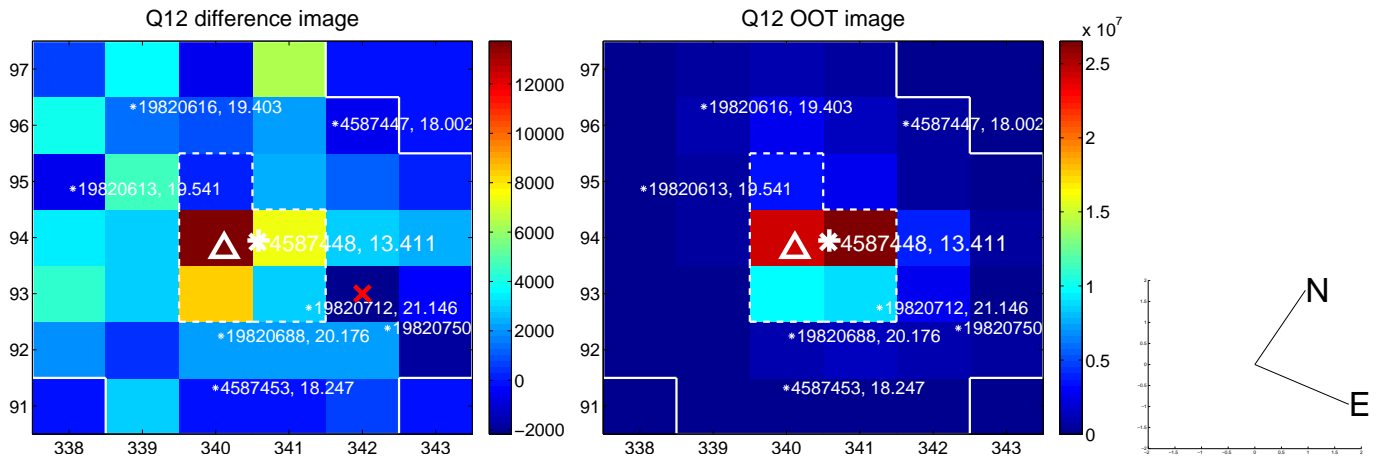
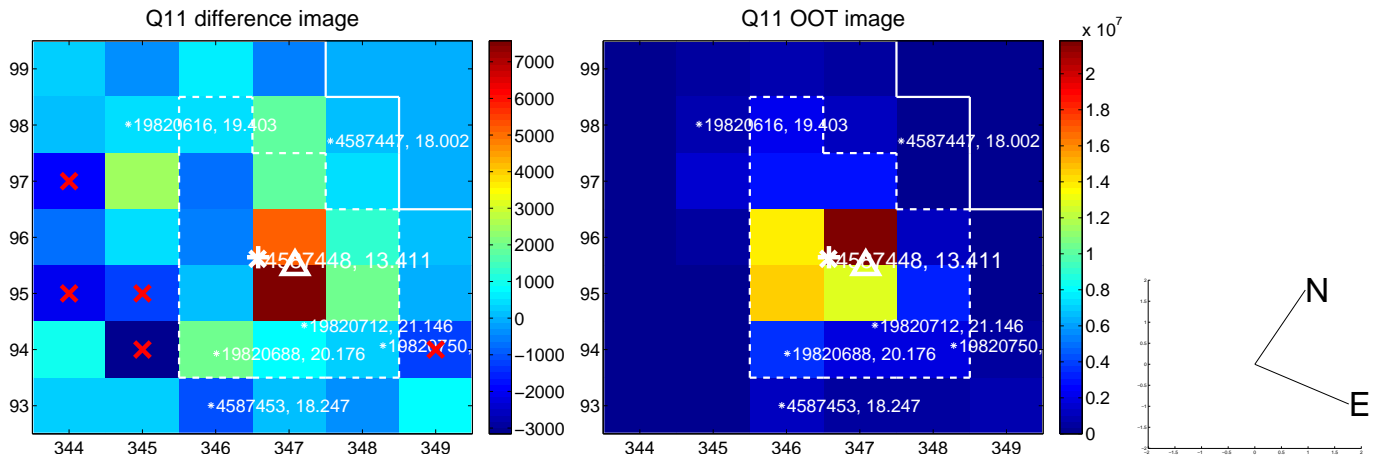
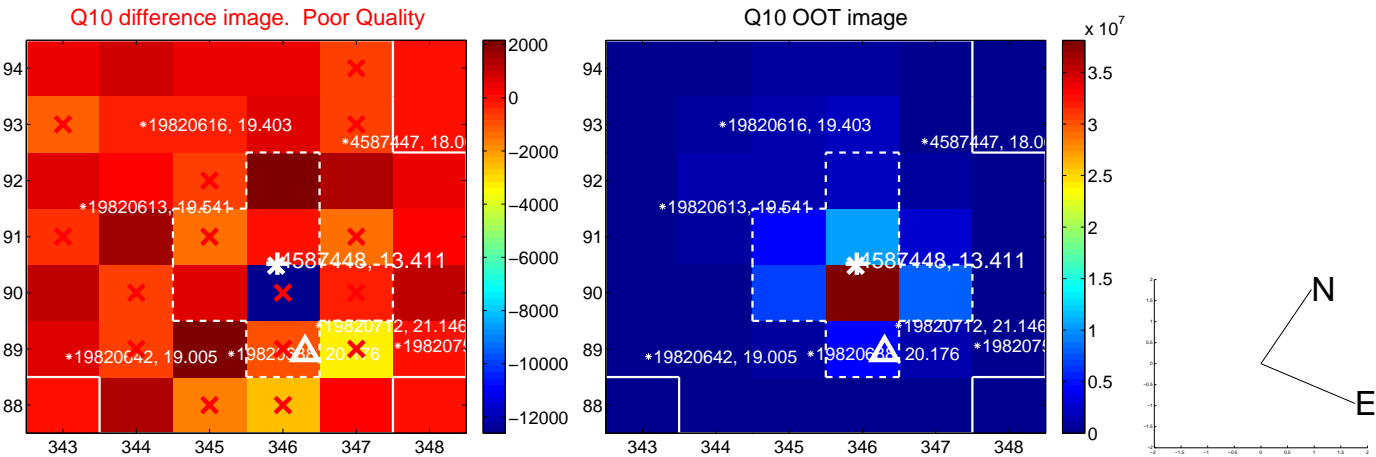
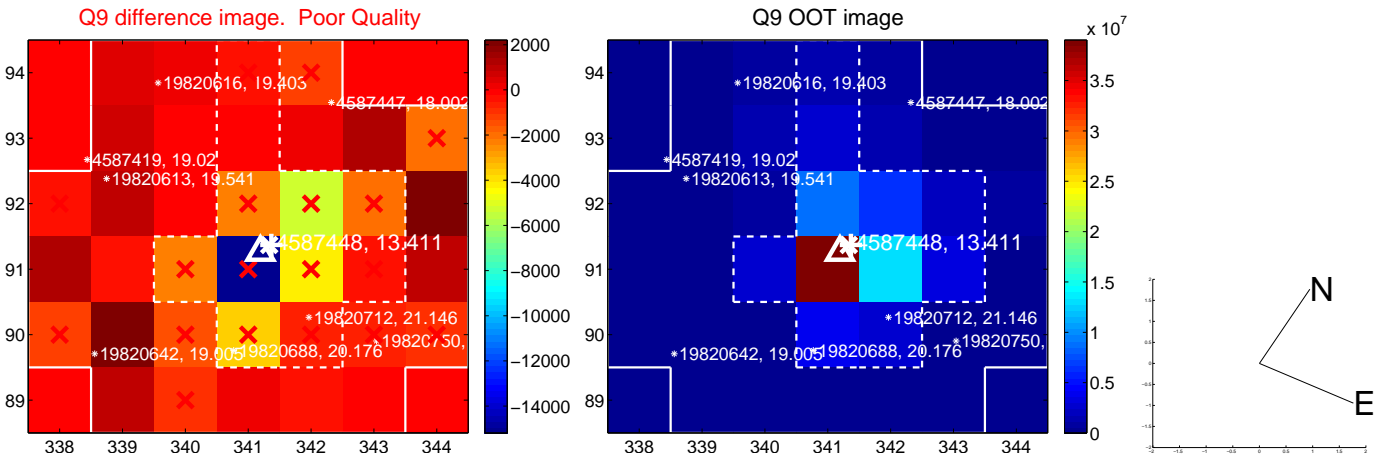
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



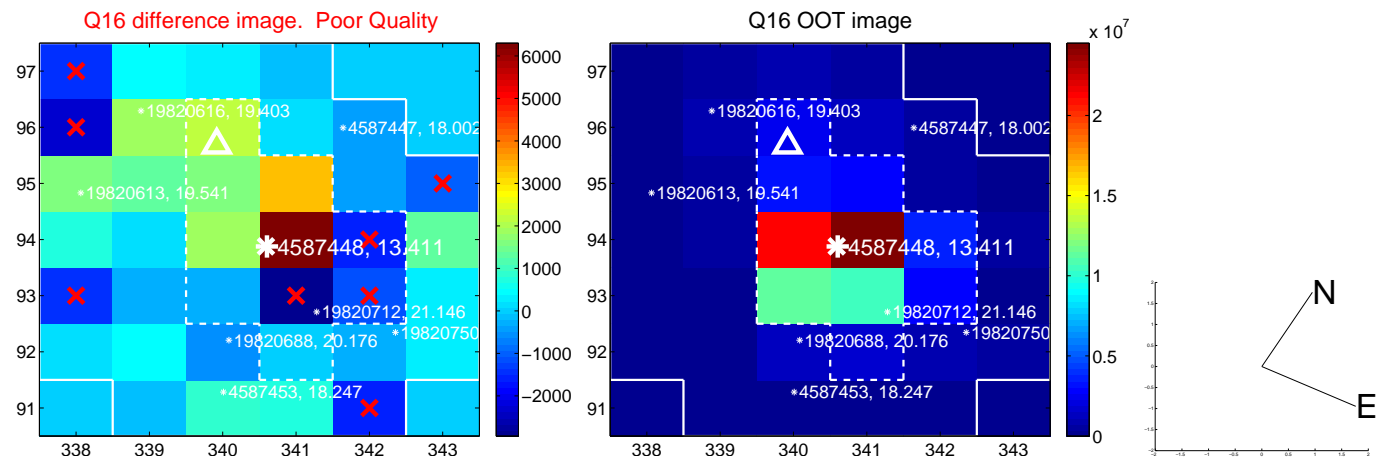
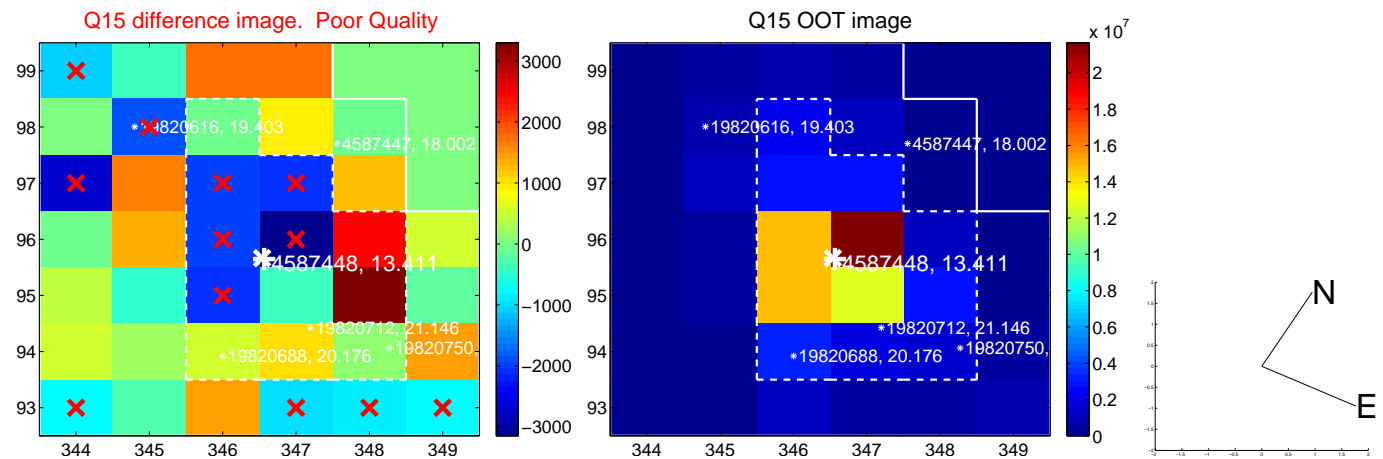
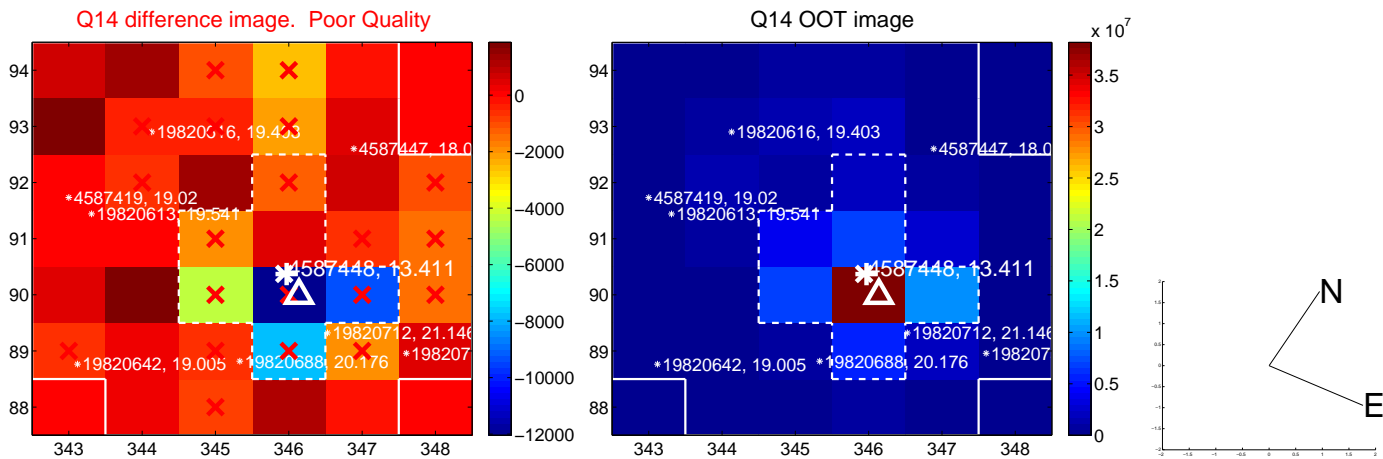
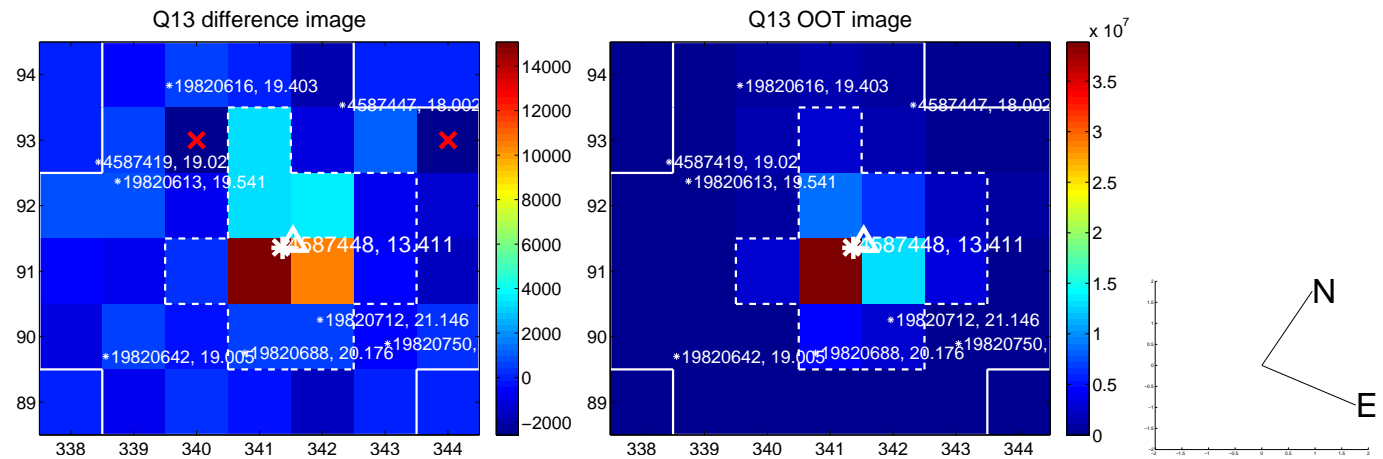
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



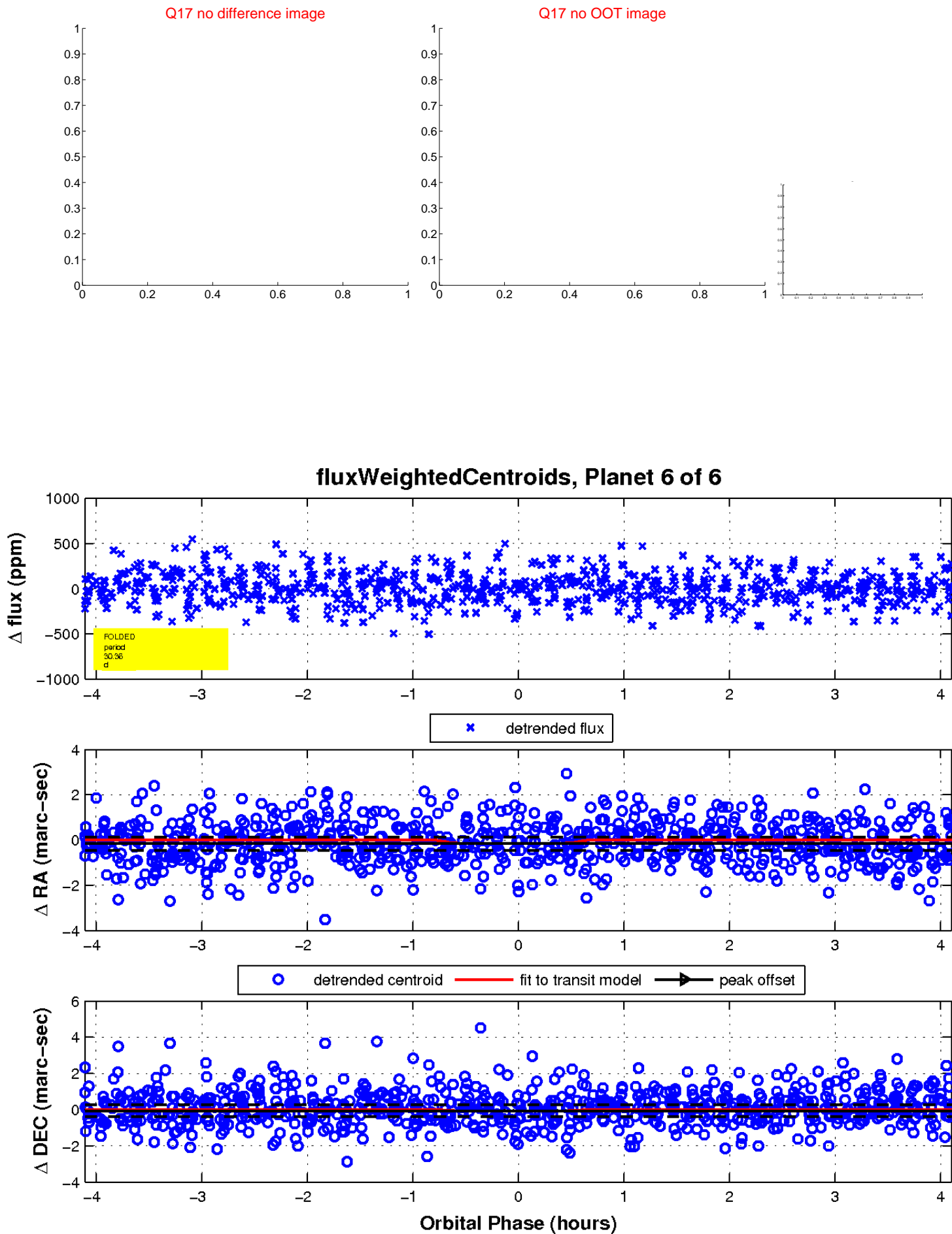
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

