

KIC 011970288

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})
011970288-01	OBS	7501.01	20.711101	133.947495	883.0	41.047	19.4	44.5	2.89	6956	16.08	571.64
011970288-02	OBS	No	3.213876	134.247824	129.4	16.852	15.4	20.7	2.89	6956	4.69	6855.28
011970288-04	OBS	No	145.168291	227.660244	189.5	8.073	9.3	8.7	2.89	6956	4.68	42.62
011970288-05	OBS	No	31.617880	162.306327	139.0	4.923	8.9	9.6	2.89	6956	3.96	325.20
011970288-06	OBS	No	66.899895	152.260036	217.1	2.643	9.1	8.4	2.89	6956	4.92	119.72
011970288-07	OBS	No	183.225321	196.888859	259.6	5.705	8.7	7.6	2.89	6956	9.04	31.24

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011970288-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED—CENT_SATURATED
011970288-02	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
011970288-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011970288-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
011970288-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
011970288-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

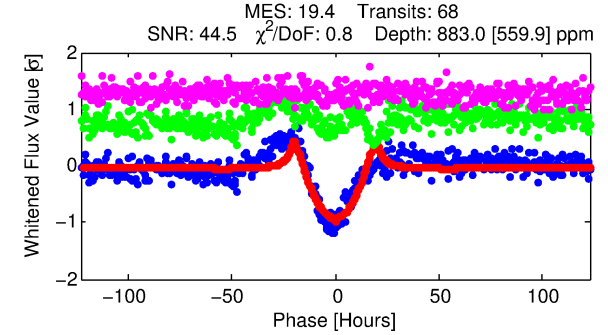
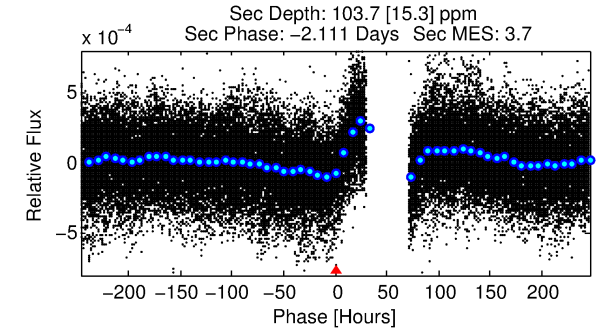
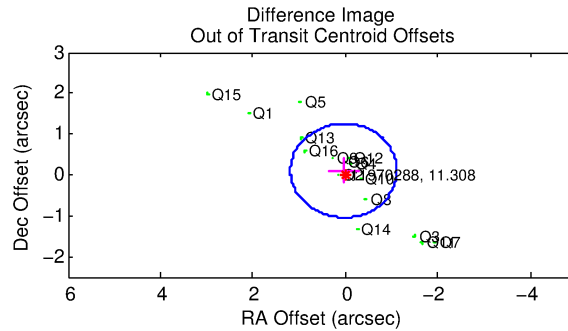
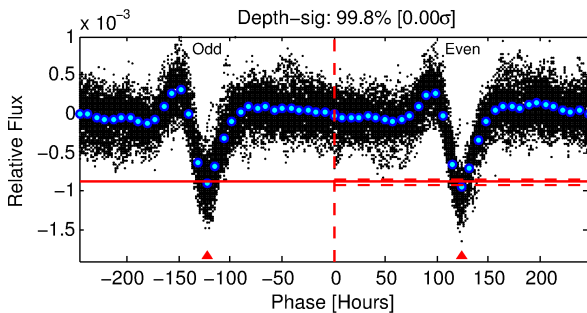
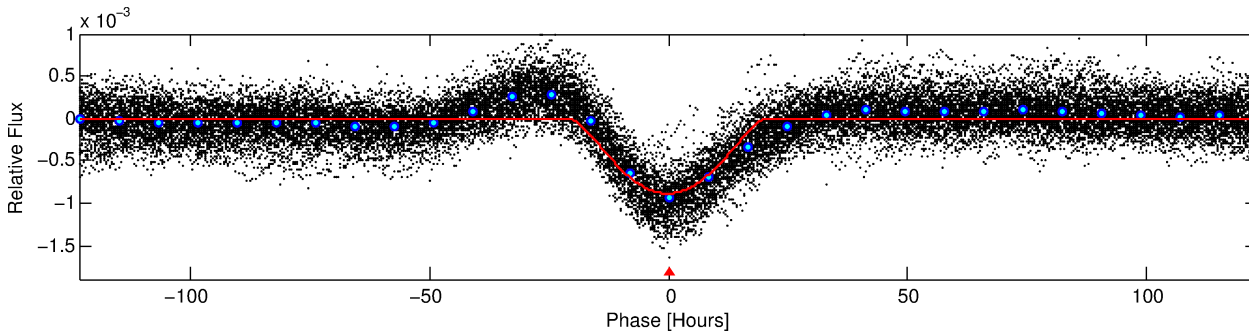
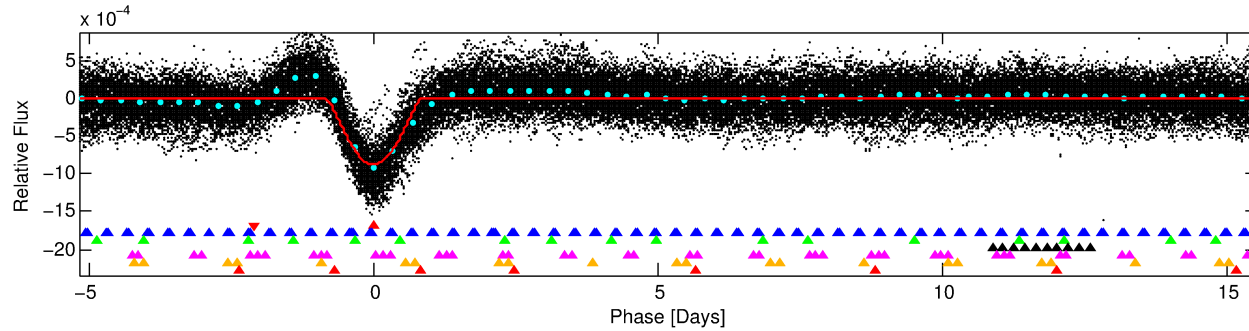
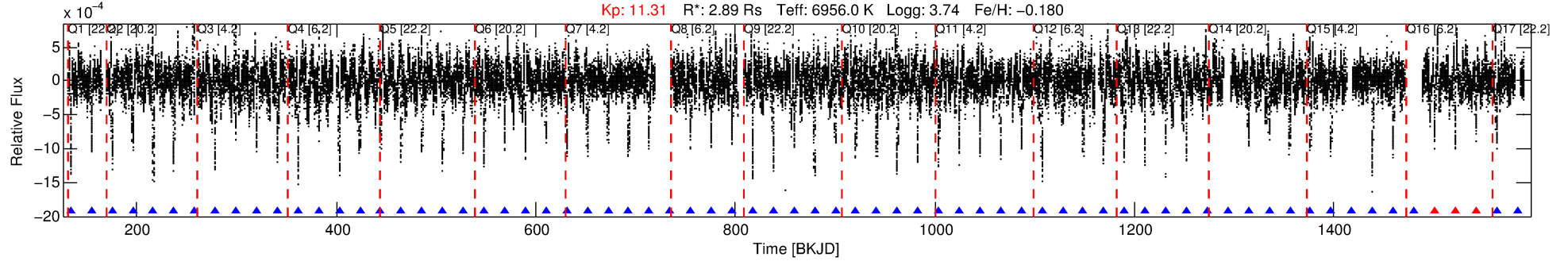
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011970288-01

No Significant Match Found

DV One-Page Summary

KIC: 11970288 Candidate: 1 of 7 Period: 20.711 d
KOI: K07501.01 Corr: 0.977



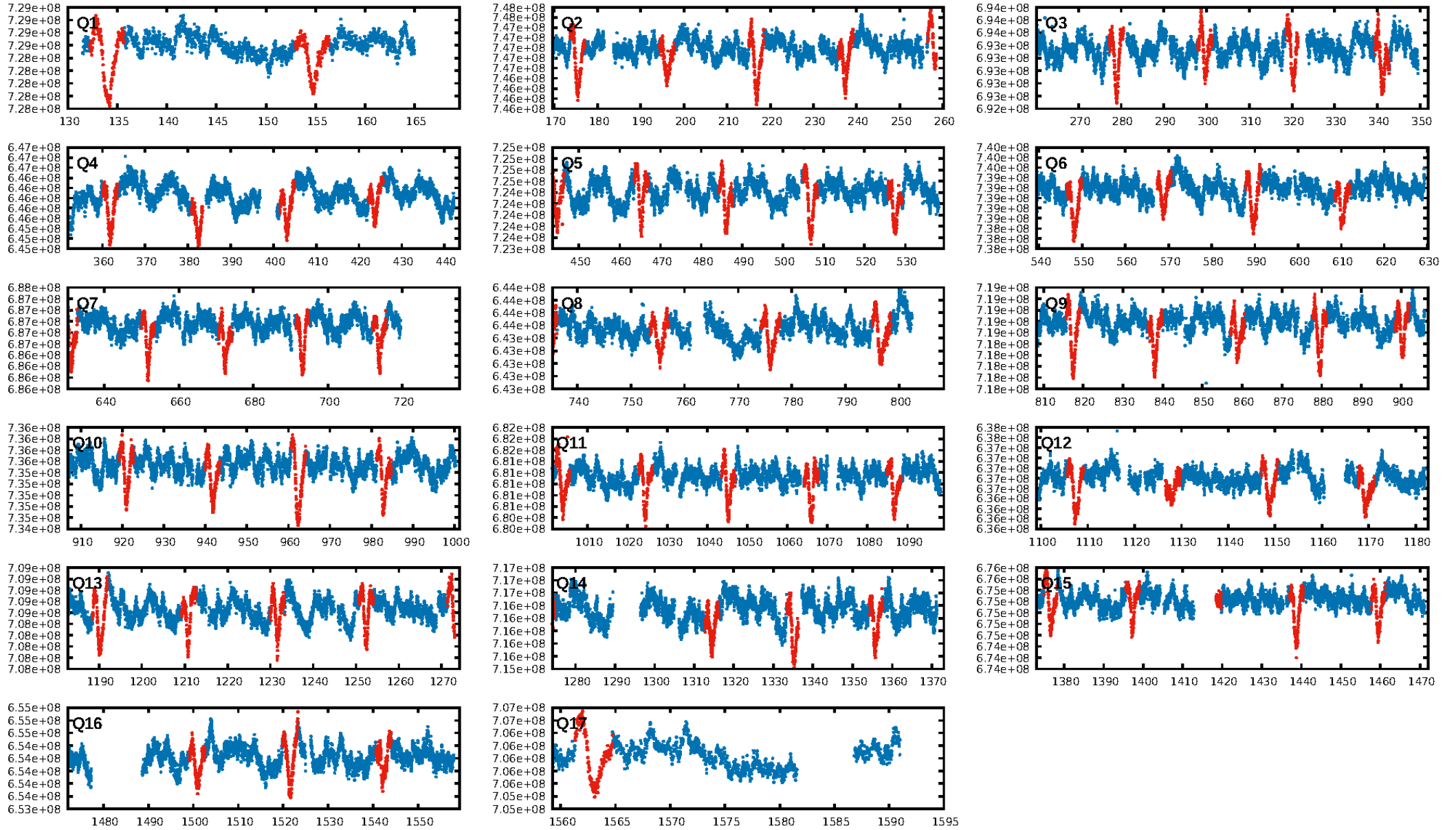
DV Fit Results:

Period = 20.71110 [0.00033] d
Epoch = 133.9475 [0.0132] BKJD
Rp/R* = 0.0510 [0.0124]
a/R* = 1.61 [0.04]
b = 1.00 [0.00]
Seff = 571.65 [282.74]
Teq = 1247 [154] K
Rp = 16.08 [6.47] Re
a = 0.1749 [0.0529] AU
Ag = 6.75 [4.71] [1.22 σ]
Teffp = 3108 [407] K [4.27 σ]

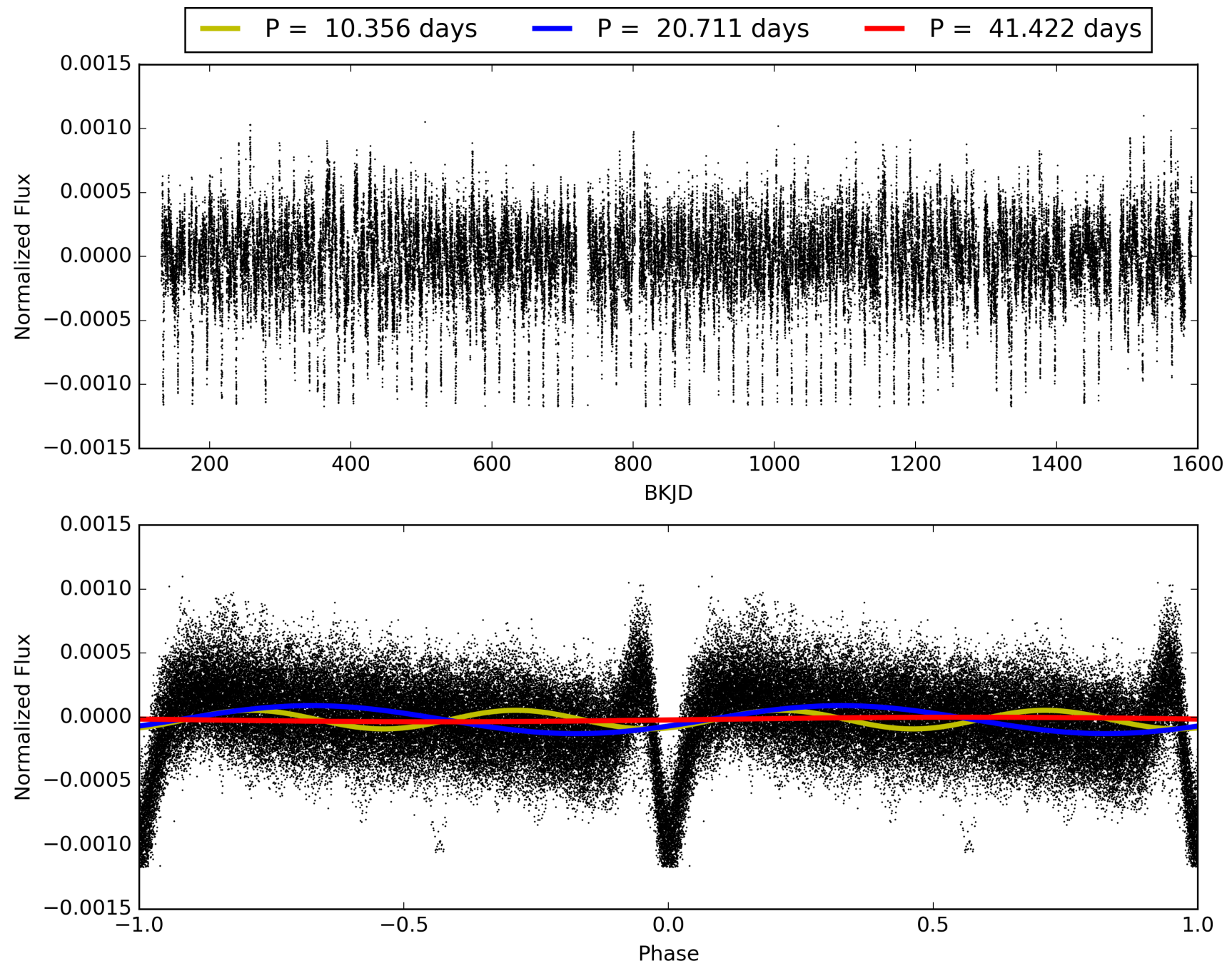
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [9.46 σ]
LongPeriod-sig: 100.0% [6.33 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.95 [62/65]
GhostDiagnostic-chr: 1.332
Centroid-sig: N/A
Centroid-so: 0.508 arcsec [12.72 σ]
OotOffset-rm: 0.111 arcsec [0.29 σ]
KicOffset-rm: 0.159 arcsec [0.38 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 0.00 [0/16]

TCE 011970288-01, PDC Light Curves

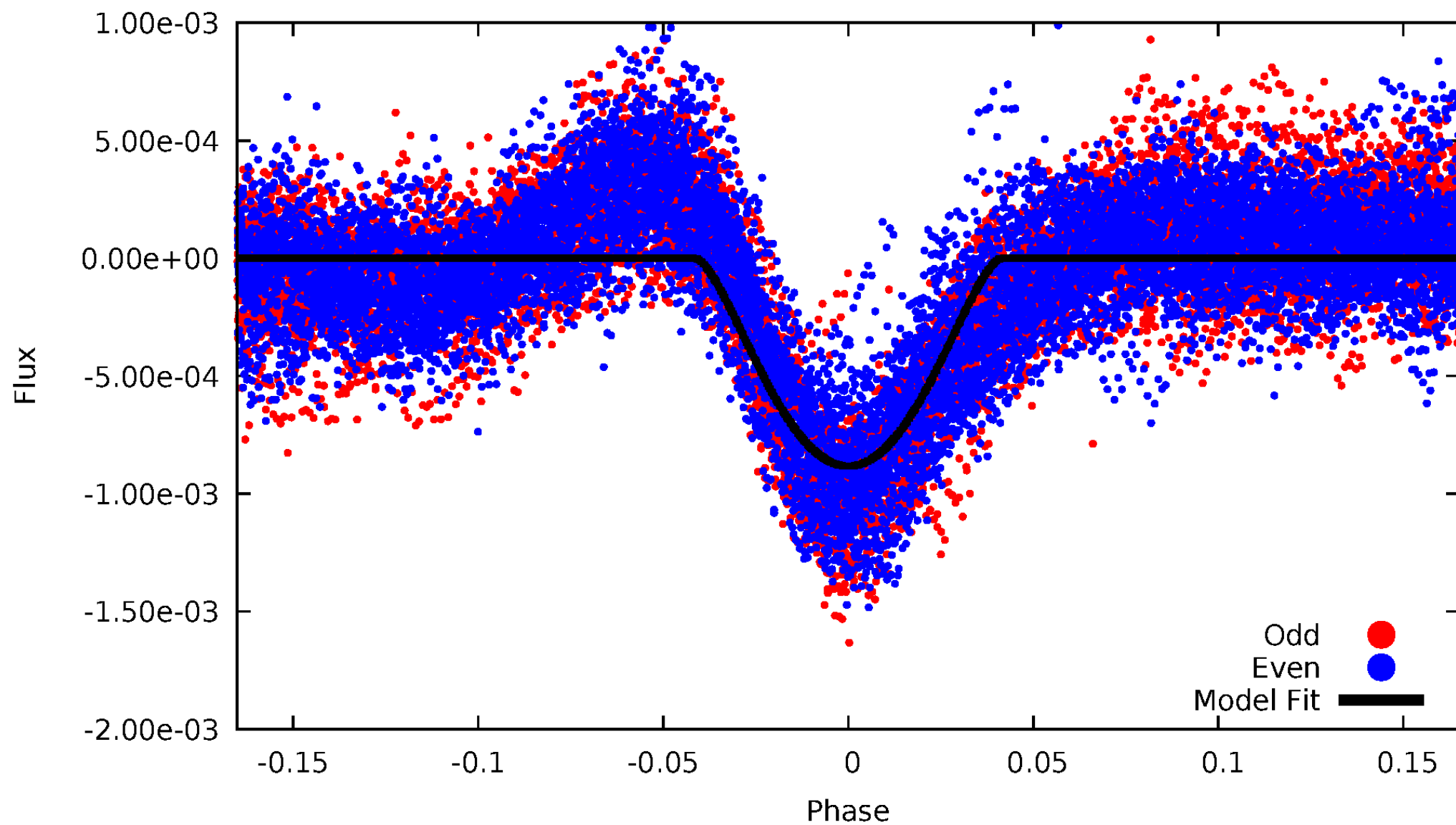


TCE 011970288-01



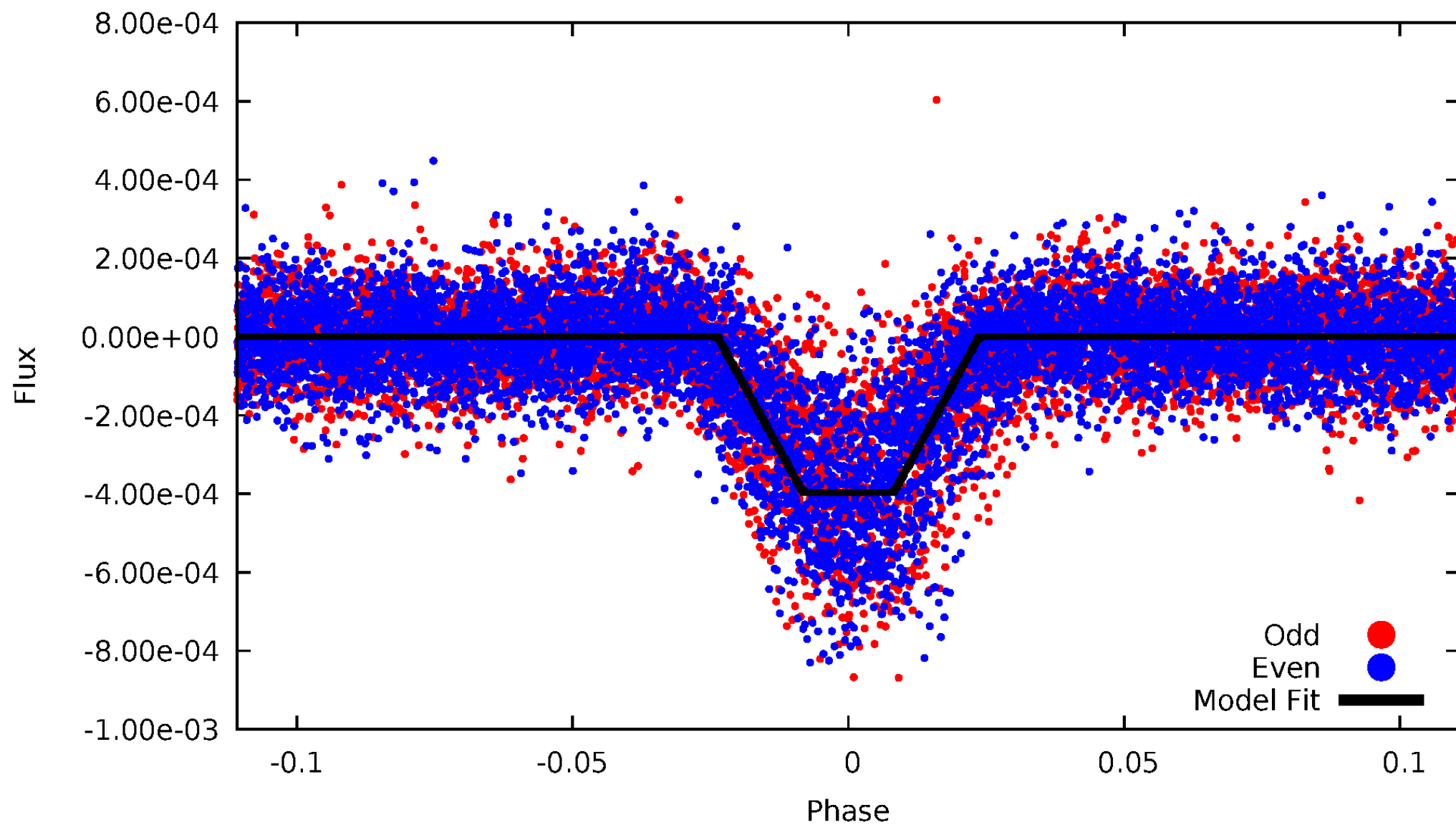
DV Odd/Even

TCE 011970288-01



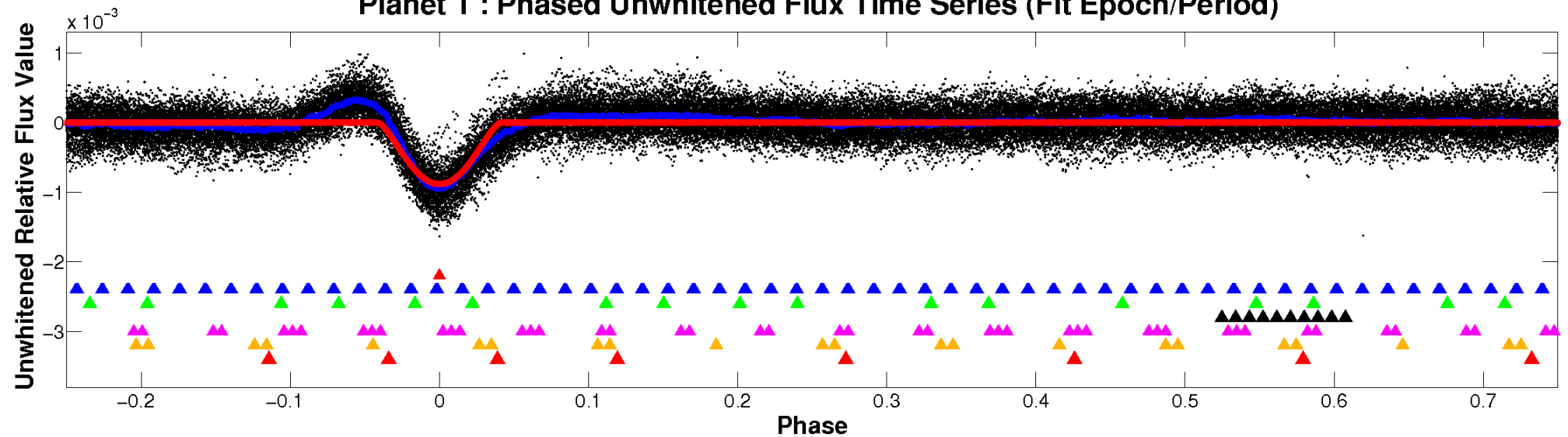
ALT Odd/Even

TCE 011970288-01

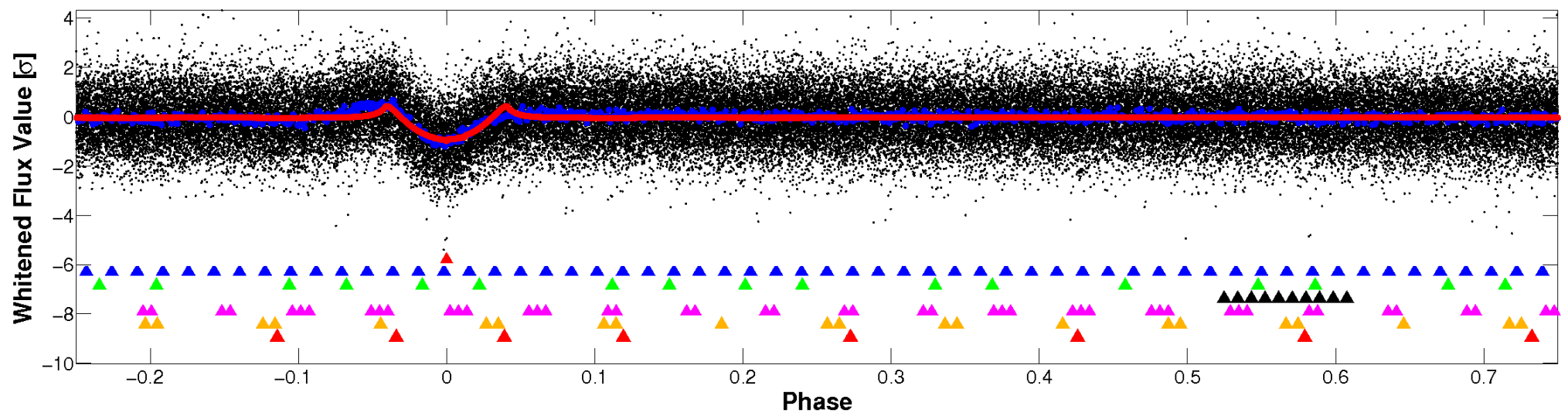


Non-Whitened Vs. Whitened Light Curve

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

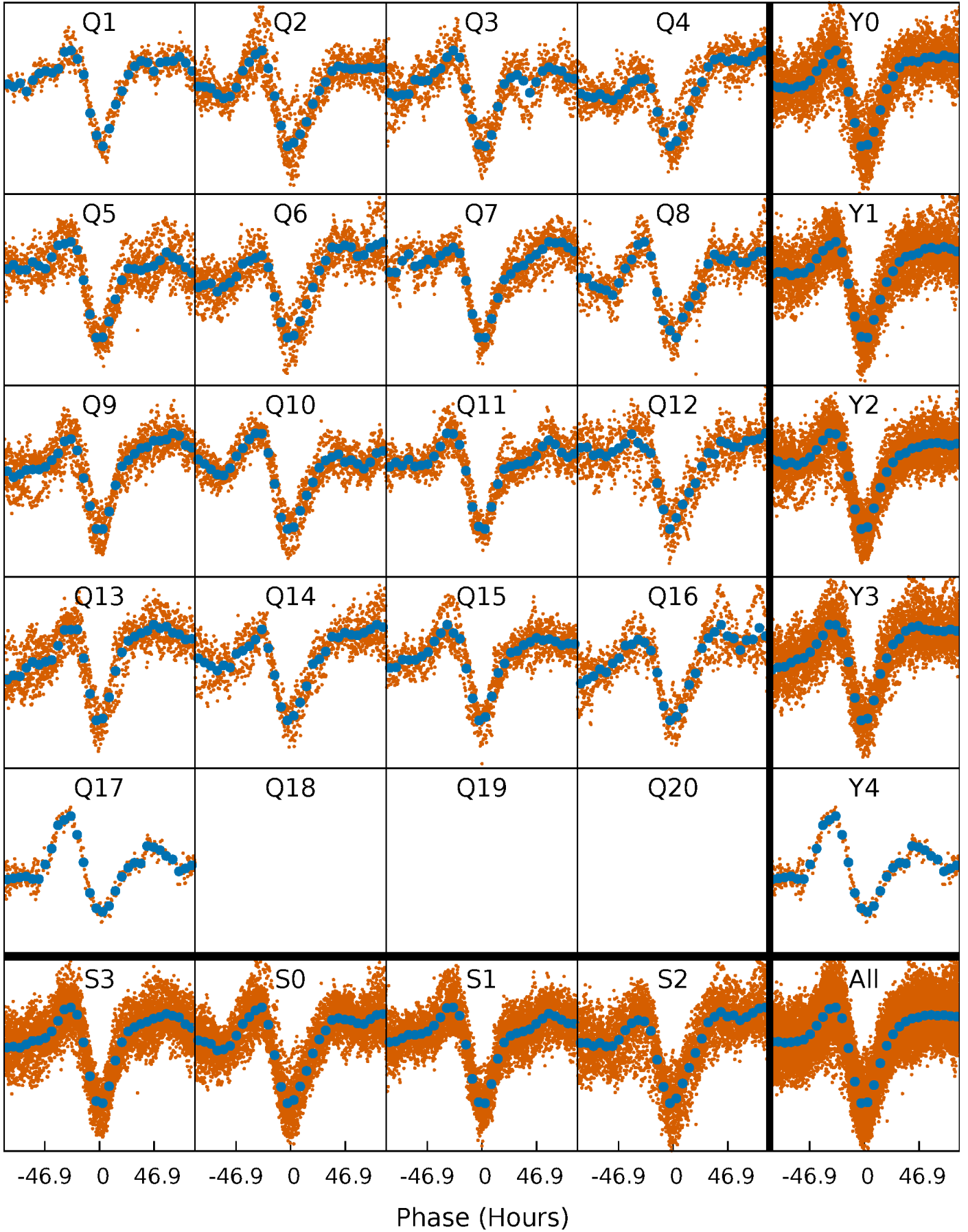


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



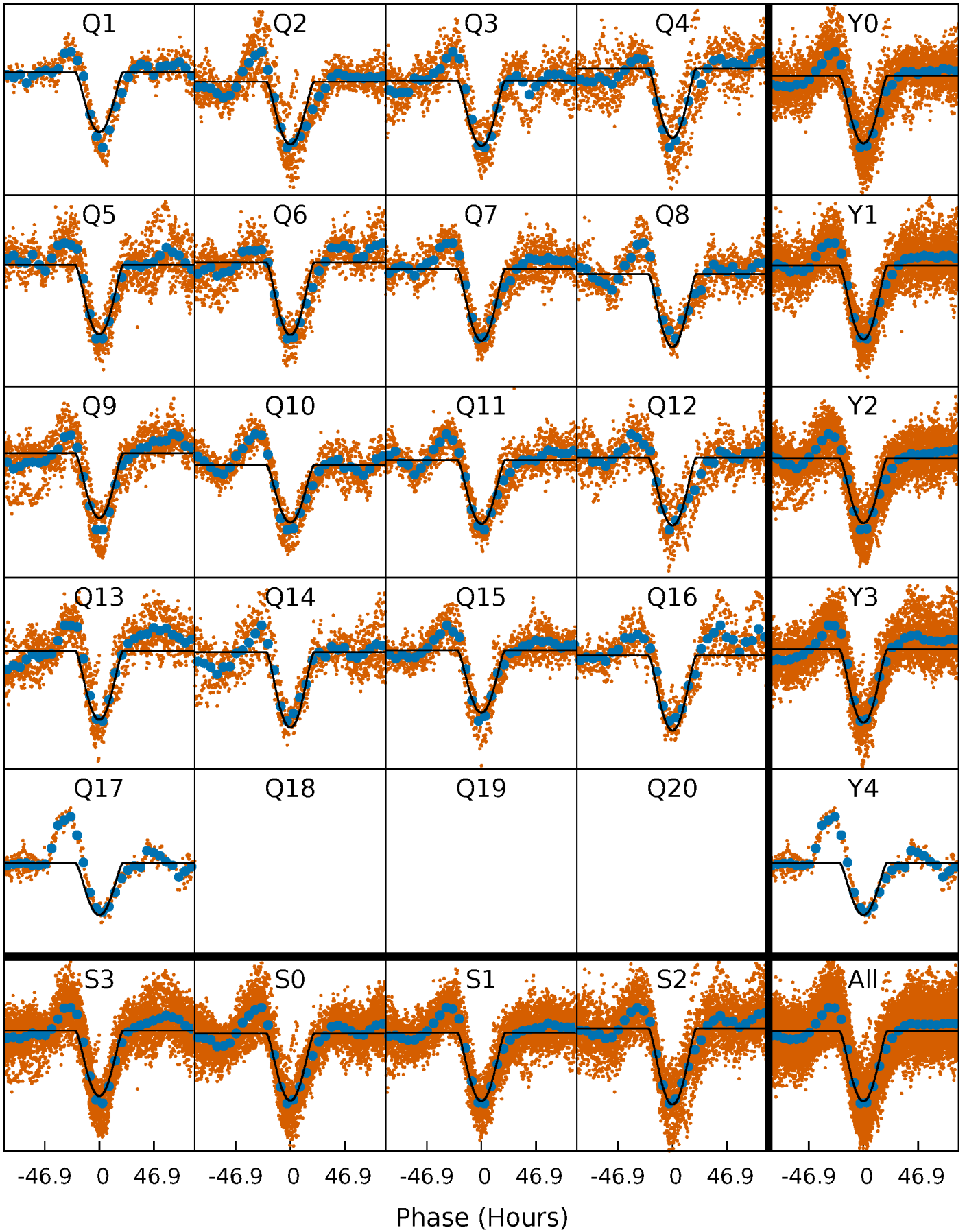
PDC Quarter-Phased Transit Curves

TCE 011970288-01 P= 20.711101 Days $T_0=133.947495$ (BKJD)



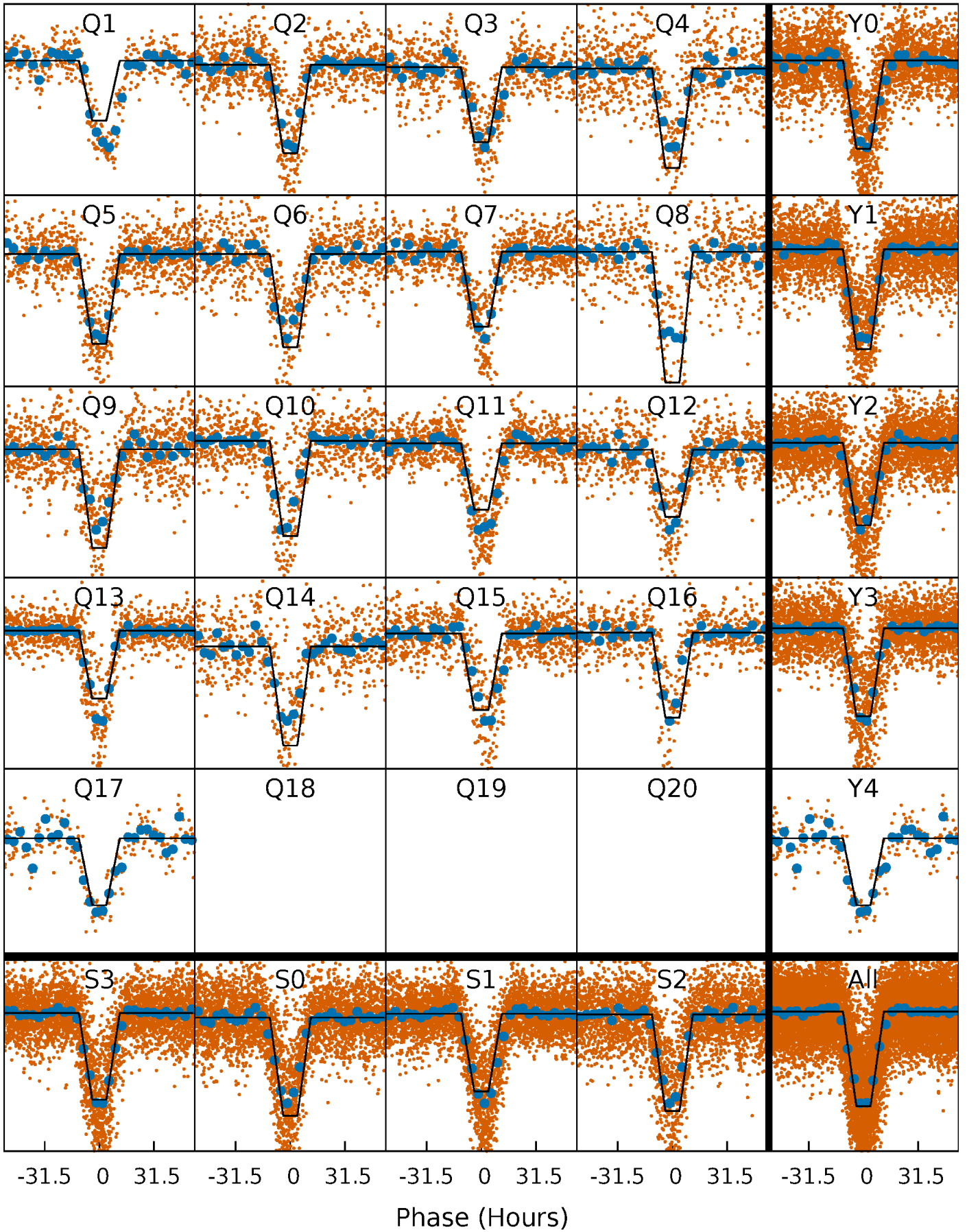
DV Quarter-Phased Transit Curves

TCE 011970288-01 P= 20.711101 Days $T_0=133.947495$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

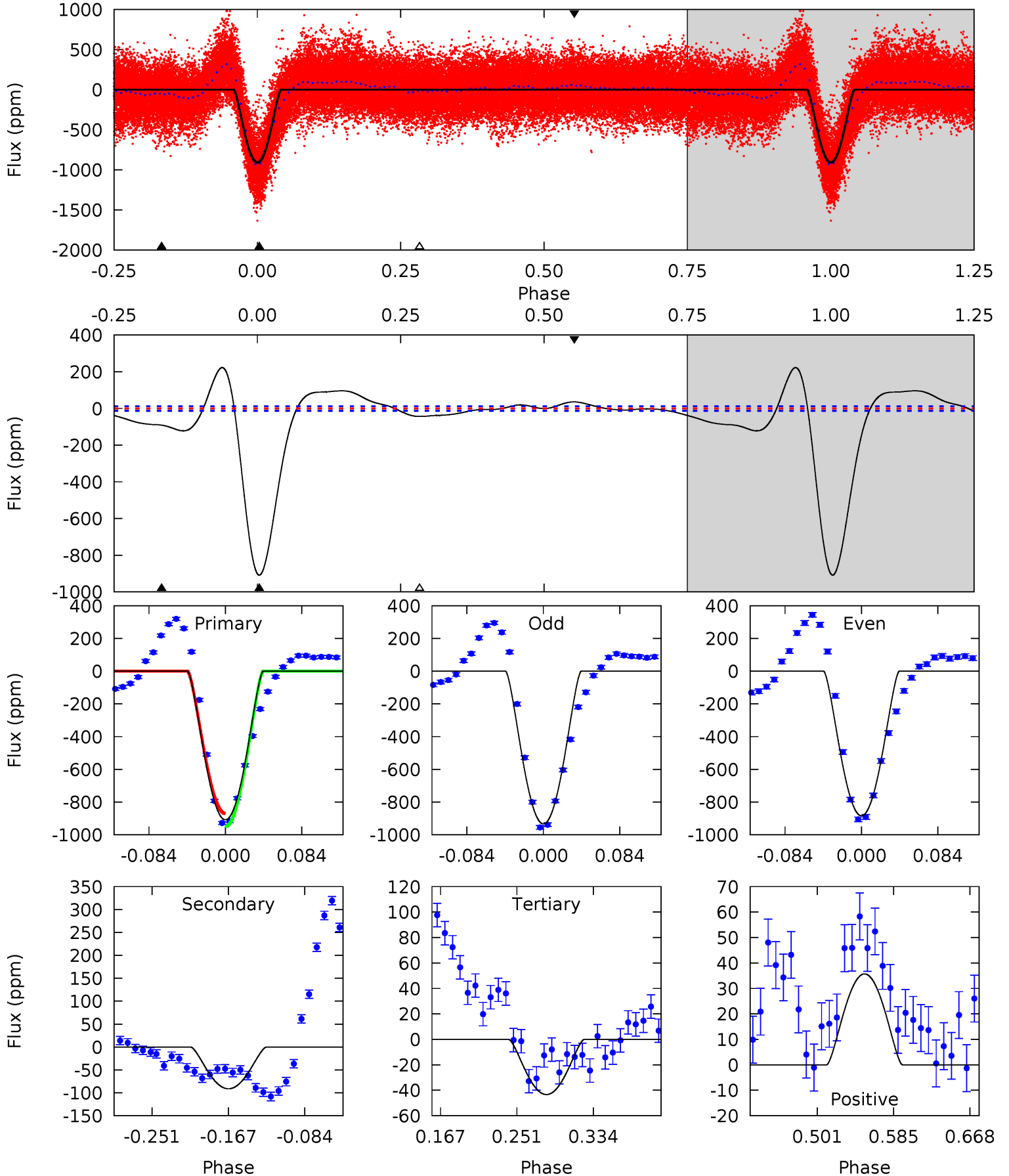
TCE 011970288-01 P= 20.709922 Days $T_0=133.848001$ (BKJD)



DV Model-Shift Uniqueness Test

011970288-01, P = 20.711101 Days, E = 113.236394 Days

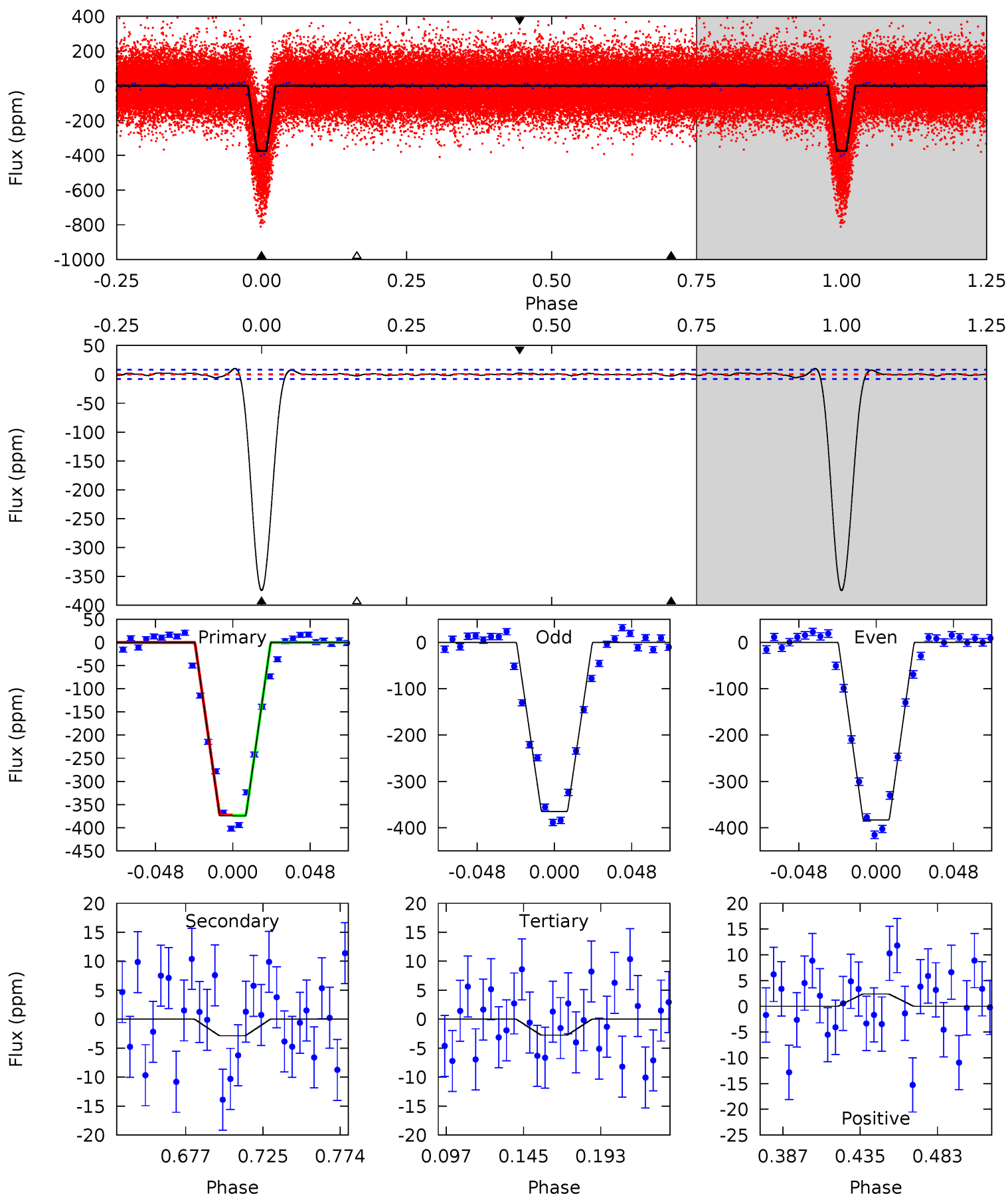
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
333.9	33.5	15.9	13.1	4.60	1.73	14.4	318.0	320.8	17.6	20.4	9.13	1.23	0.20	14.3



Alt Model-Shift Uniqueness Test

011970288-01, P = 20.709922 Days, E = 113.138079 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
219.3	1.67	1.61	1.40	4.71	1.97	0.99	217.7	217.9	0.06	0.27	5.38	0.97	0.03	0.29



Stellar Parameters For KIC 011970288

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6956^{+163}_{-225}	$3.738^{+0.278}_{-0.093}$	$-0.180^{+0.300}_{-0.250}$	$2.888^{+0.428}_{-0.927}$	$1.664^{+0.180}_{-0.335}$	$0.097^{+0.175}_{-0.028}$
	+2%/-3%	+7%/-2%	+167%/-139%	+15%/-32%	+11%/-20%	+180%/-29%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011970288-01 / KOI 7501.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-91 ± 3	$15.09^{+4.54}_{-3.77}$	1707^{+97}_{-139}	3451^{+307}_{-242}	$6.807^{+5.202}_{-2.776}$
Alt.	-3 ± 2	$5.99^{+3.80}_{-3.44}$	1710^{+98}_{-148}	2599^{+814}_{-820}	$1.178^{+5.164}_{-0.856}$

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

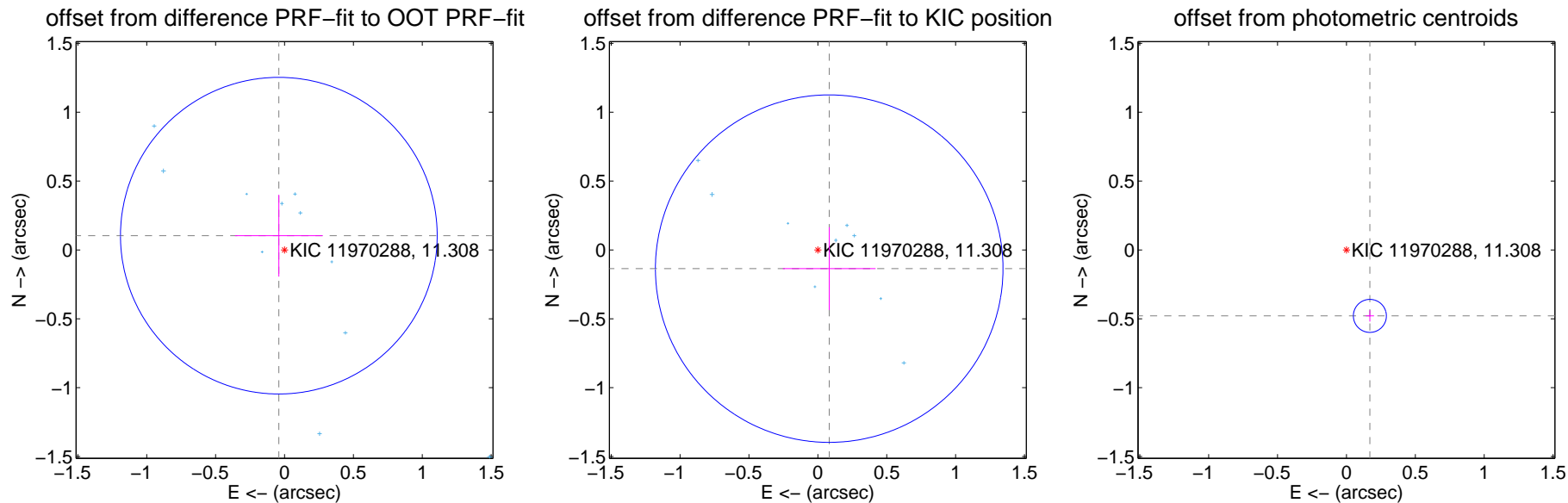
DV Centroid Data

Supplemental centroid analysis for 011970288-01. **Kepler magnitude: 11.31.** Transit SNR 44.48

There are 16 quarters with good PRF difference image offsets

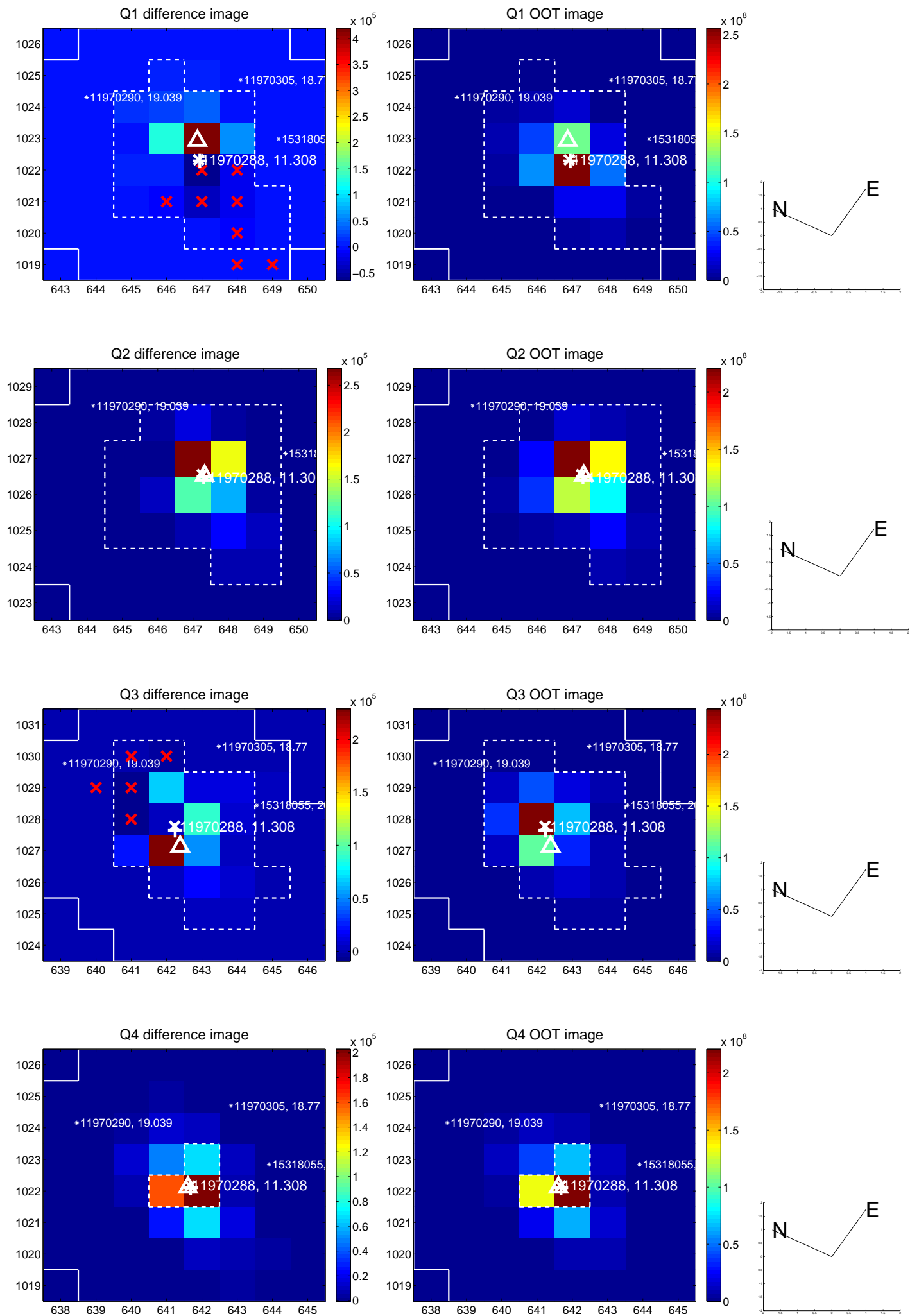
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.111 ± 0.383	0.29	0.041 ± 0.318	0.104 ± 0.297
PRF-fit source offset from KIC position	0.159 ± 0.420	0.38	-0.083 ± 0.337	-0.136 ± 0.301
photometric centroid source offset	0.51 ± 0.04	12.72	-0.17 ± 0.03	-0.48 ± 0.04

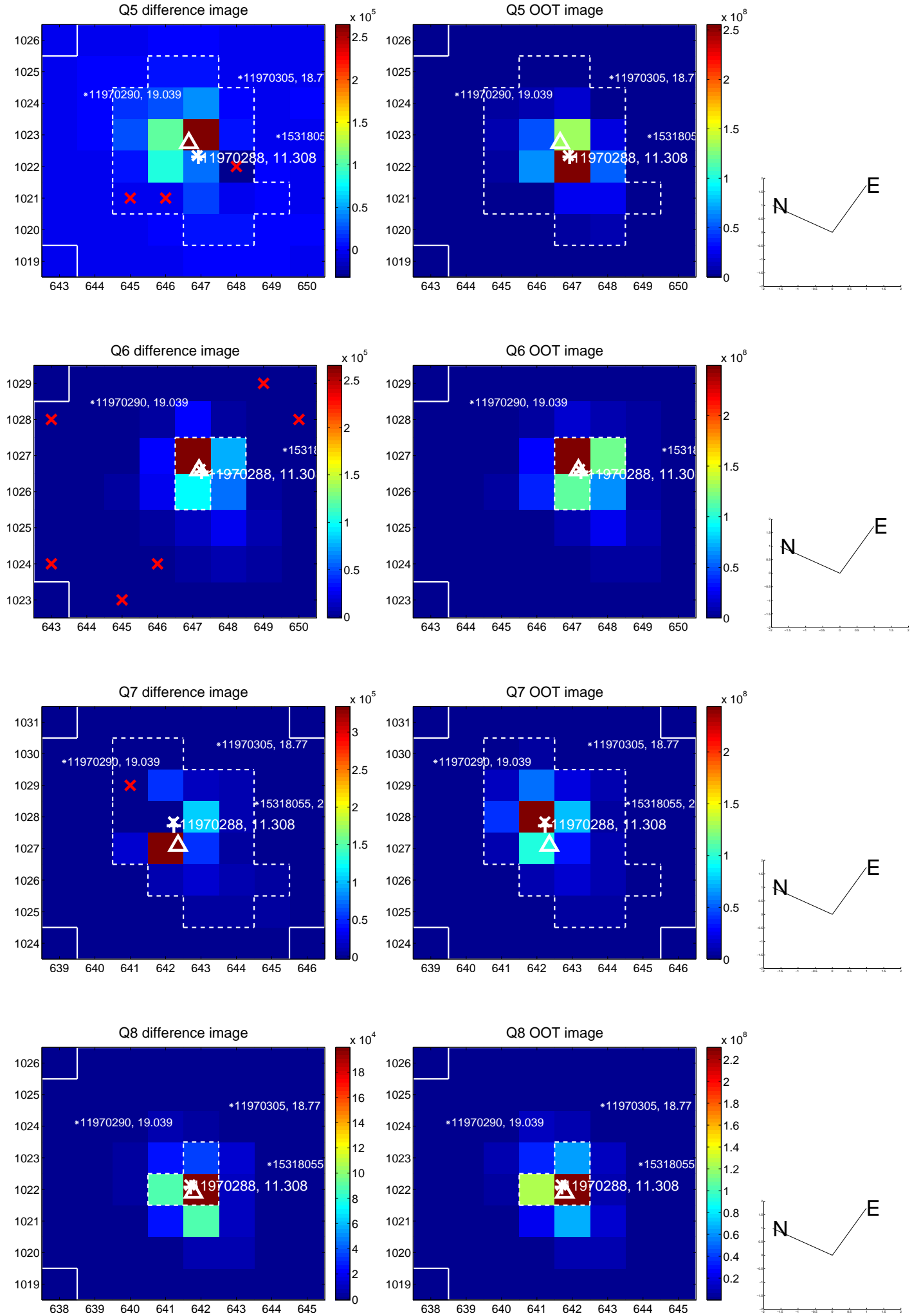


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

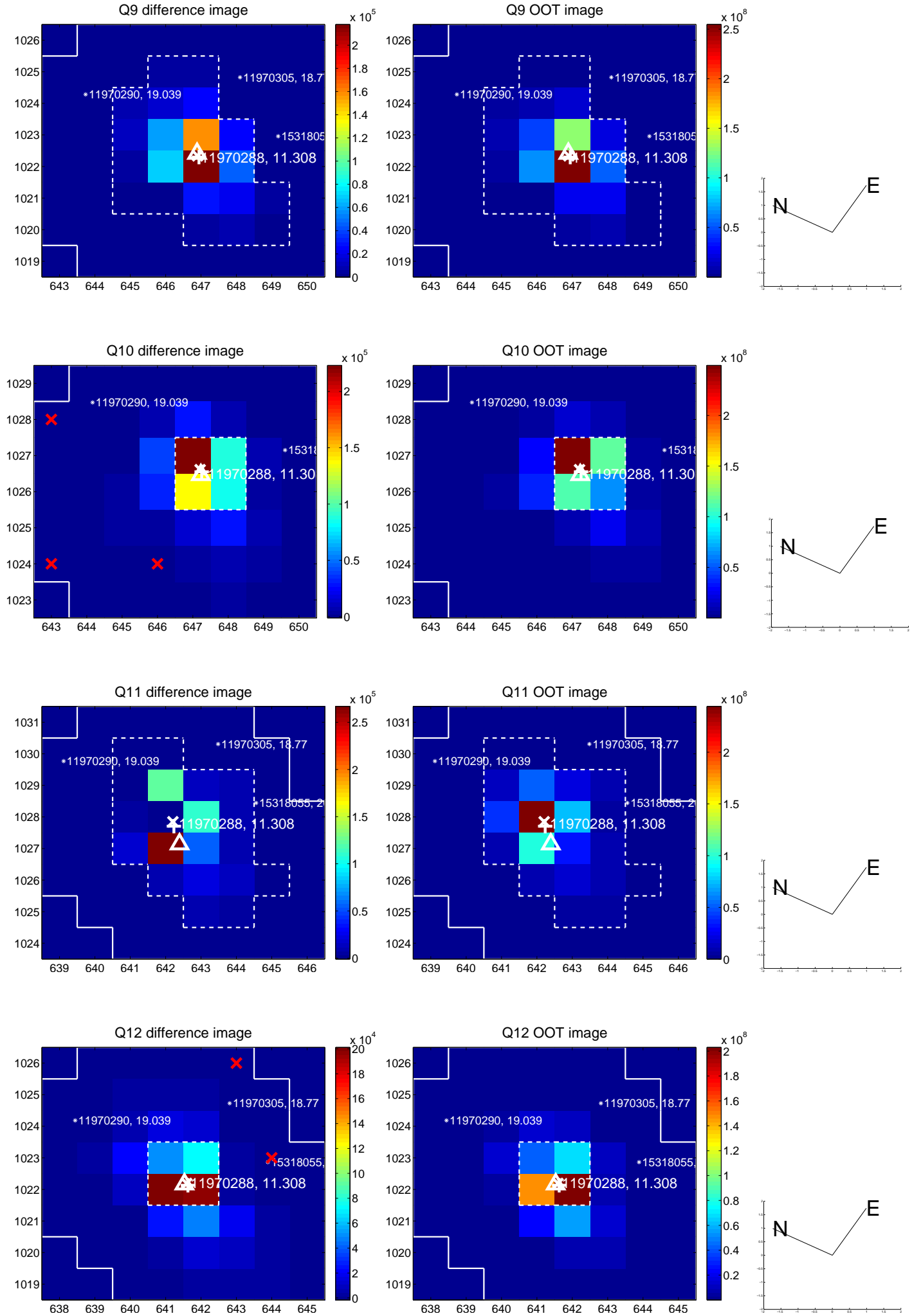
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



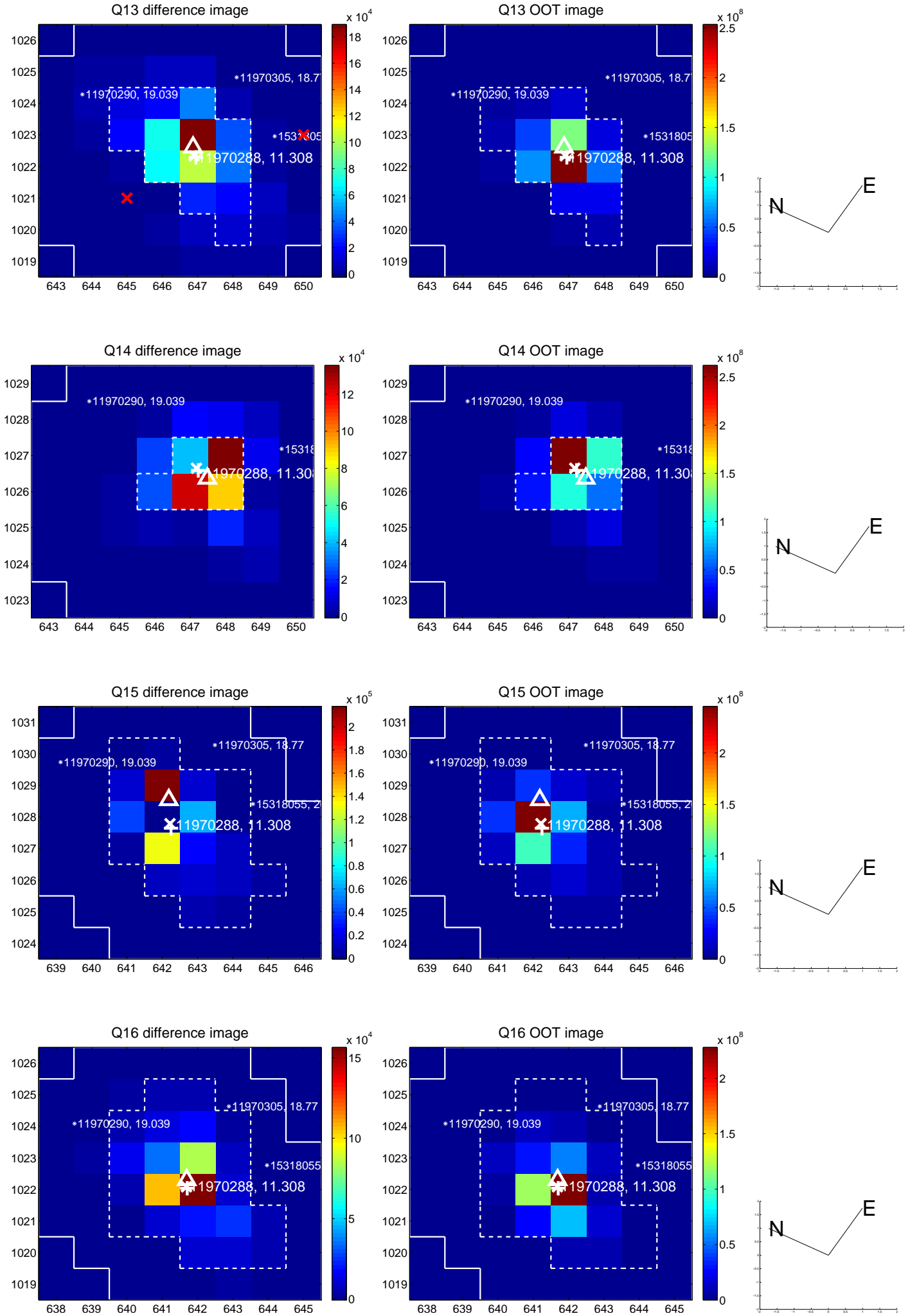
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



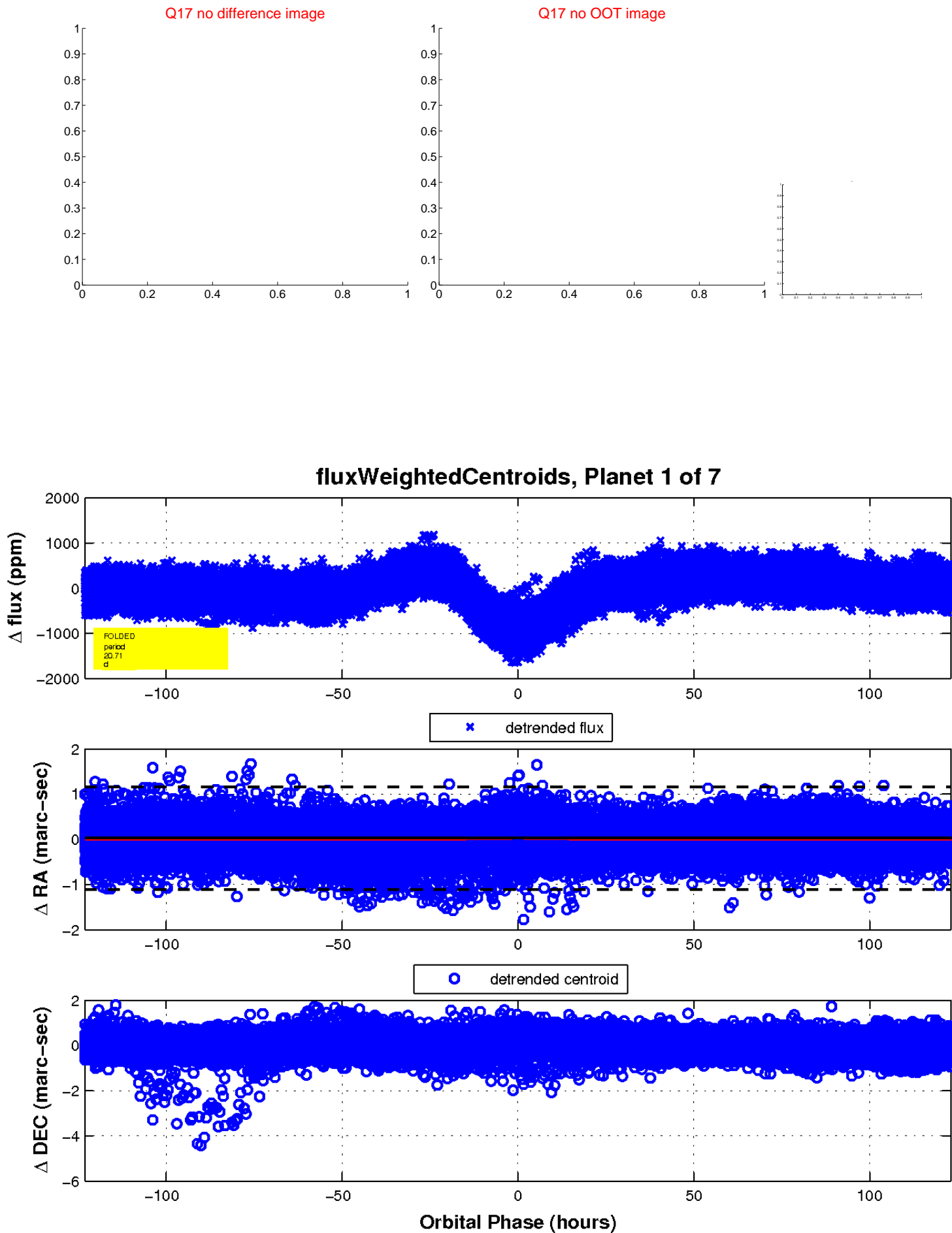
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

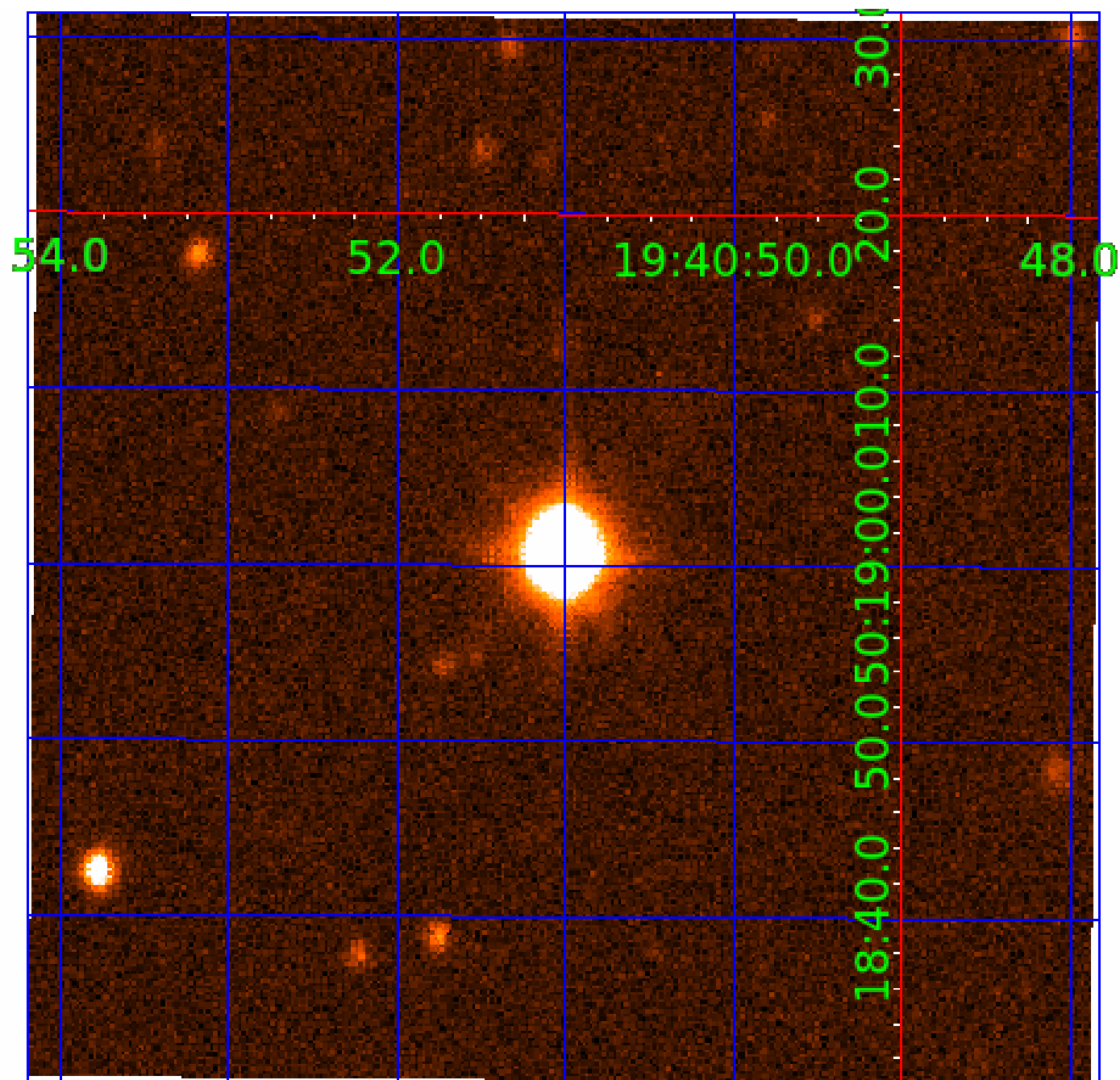


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011970288

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})
011970288-01	OBS	7501.01	20.711101	133.947495	883.0	41.047	19.4	44.5	2.89	6956	16.08	571.64
011970288-02	OBS	No	3.213876	134.247824	129.4	16.852	15.4	20.7	2.89	6956	4.69	6855.28
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011970288-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED—CENT_SATURATED
011970288-02	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
011970288-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011970288-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
011970288-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
011970288-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

Ephemeris Match Information For 011970288-02

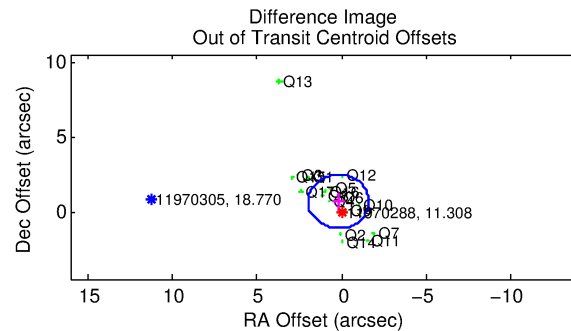
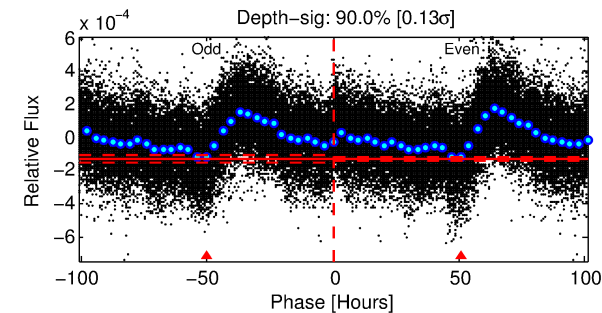
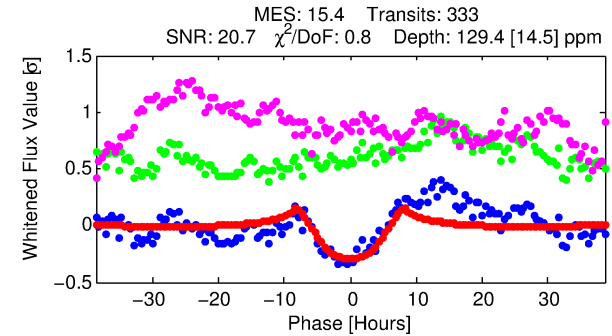
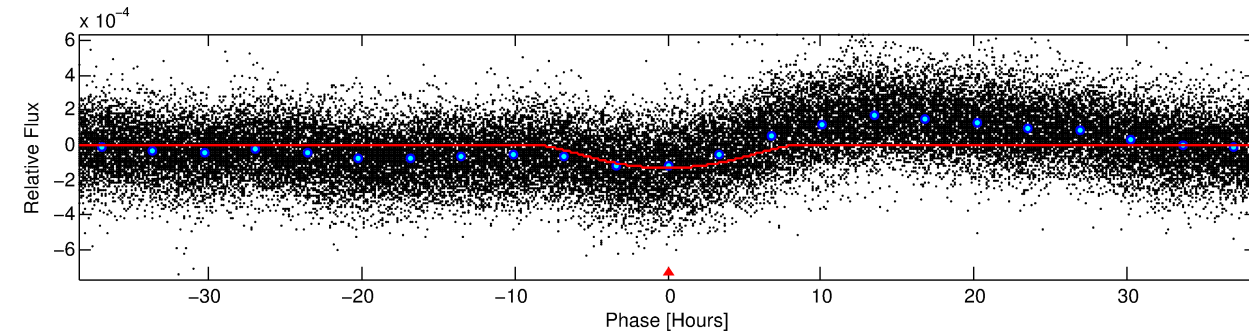
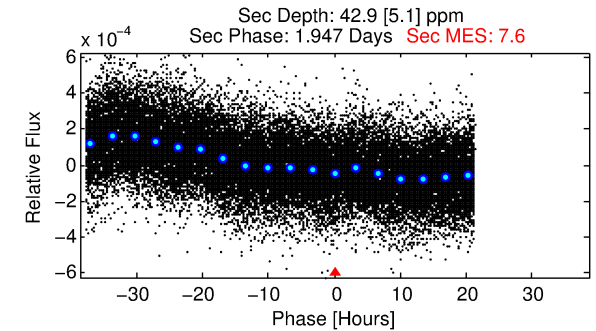
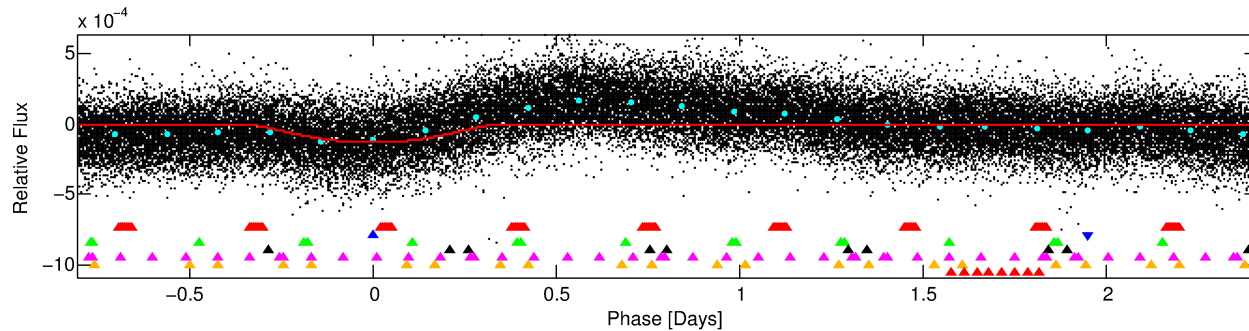
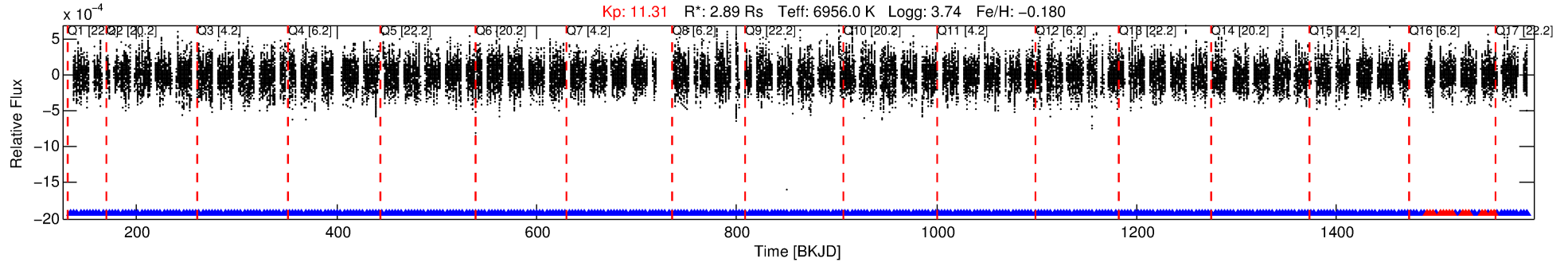
No Significant Match Found

DV One-Page Summary

KIC: 11970288 Candidate: 2 of 7 Period: 3.214 d

KOI: K07501 Corr: No Ephemeris Match

Kp: 11.31 R*: 2.89 Rs Teff: 6956.0 K Logg: 3.74 Fe/H: -0.180



DV Fit Results:

Period = 3.21388 [0.00004] d
Epoch = 134.2478 [0.0112] BKJD
Rp/R* = 0.0149 [0.0016]
a/R* = 1.05 [0.00]
b = 0.99 [0.00]
Seff = 6855.28 [3390.72]
Teq = 2320 [287] K
Rp = 4.69 [1.59] Re
a = 0.0505 [0.0153] AU
Ag = 2.73 [1.47] [1.18σ]
Teffp = 4613 [324] K [5.30σ]

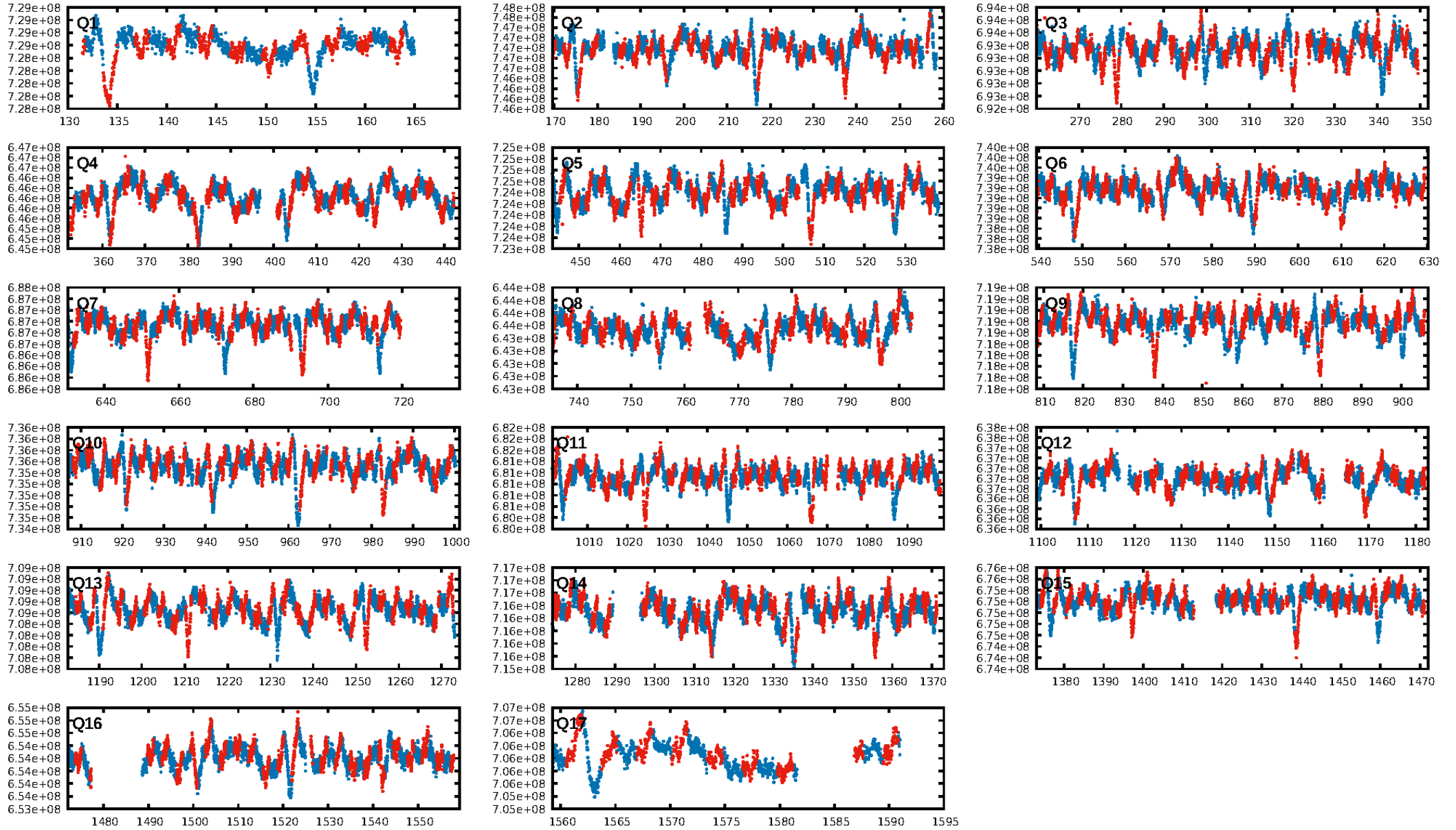
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [9.46σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.95 [304/319]
GhostDiagnostic-chr: 1.103
Centroid-sig: N/A
Centroid-so: 0.863 arcsec [7.92σ]
OotOffset-rm: 0.696 arcsec [1.17σ]
KicOffset-rm: 1.107 arcsec [1.65σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.82 [14/17]
DiffImageOverlap-fno: 1.00 [17/17]

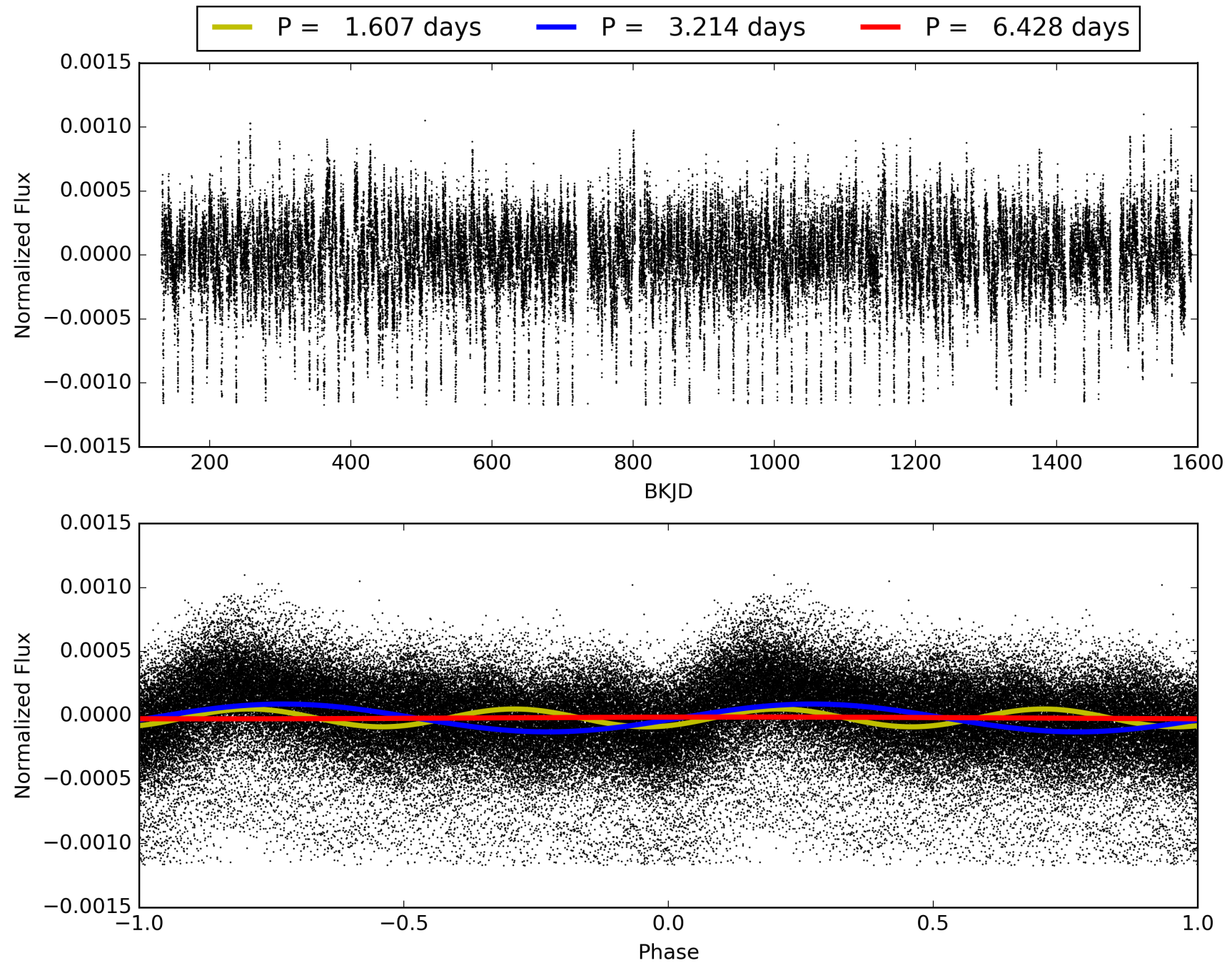
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:56:52 Z

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

TCE 011970288-02, PDC Light Curves

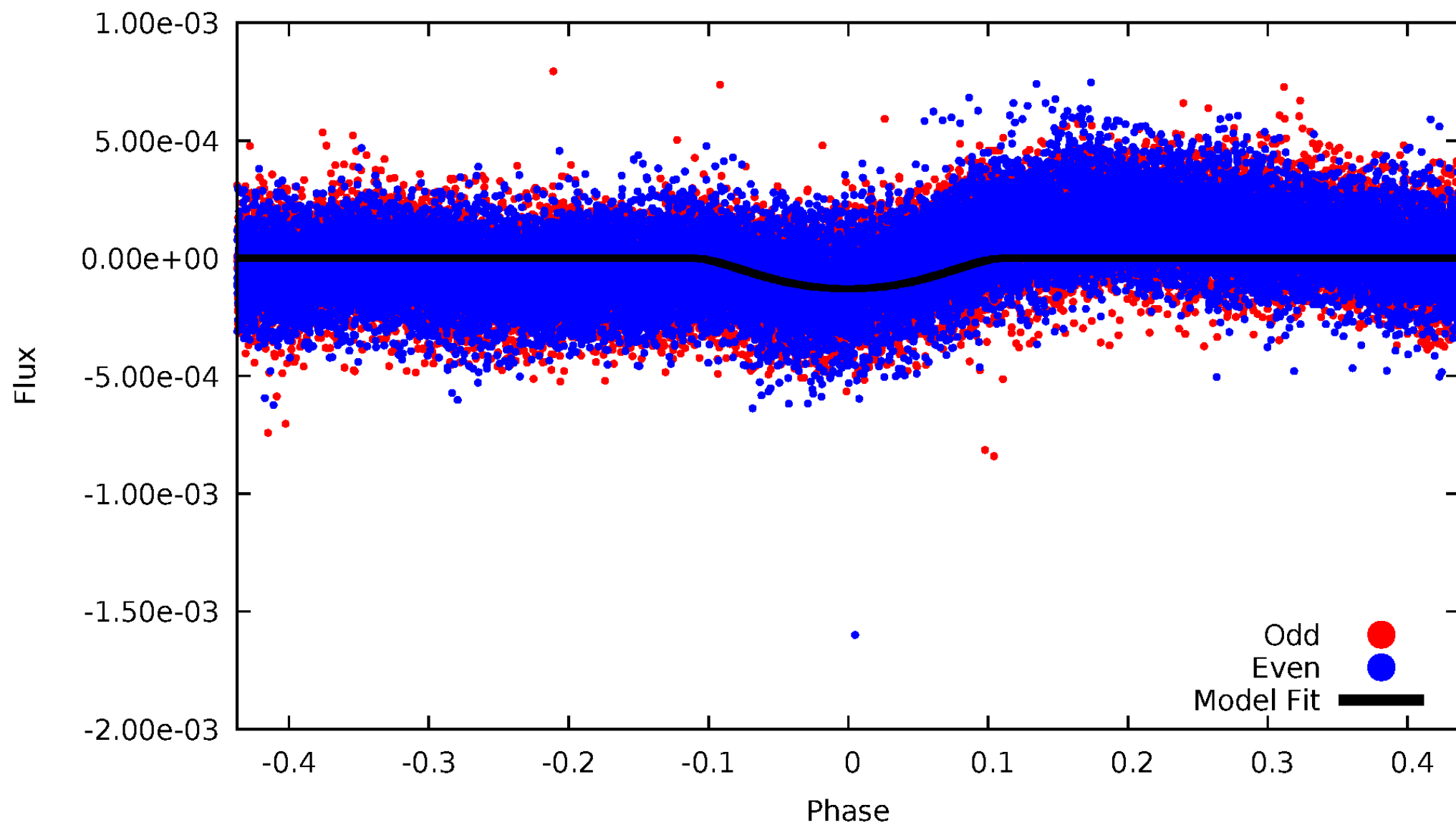


TCE 011970288-02



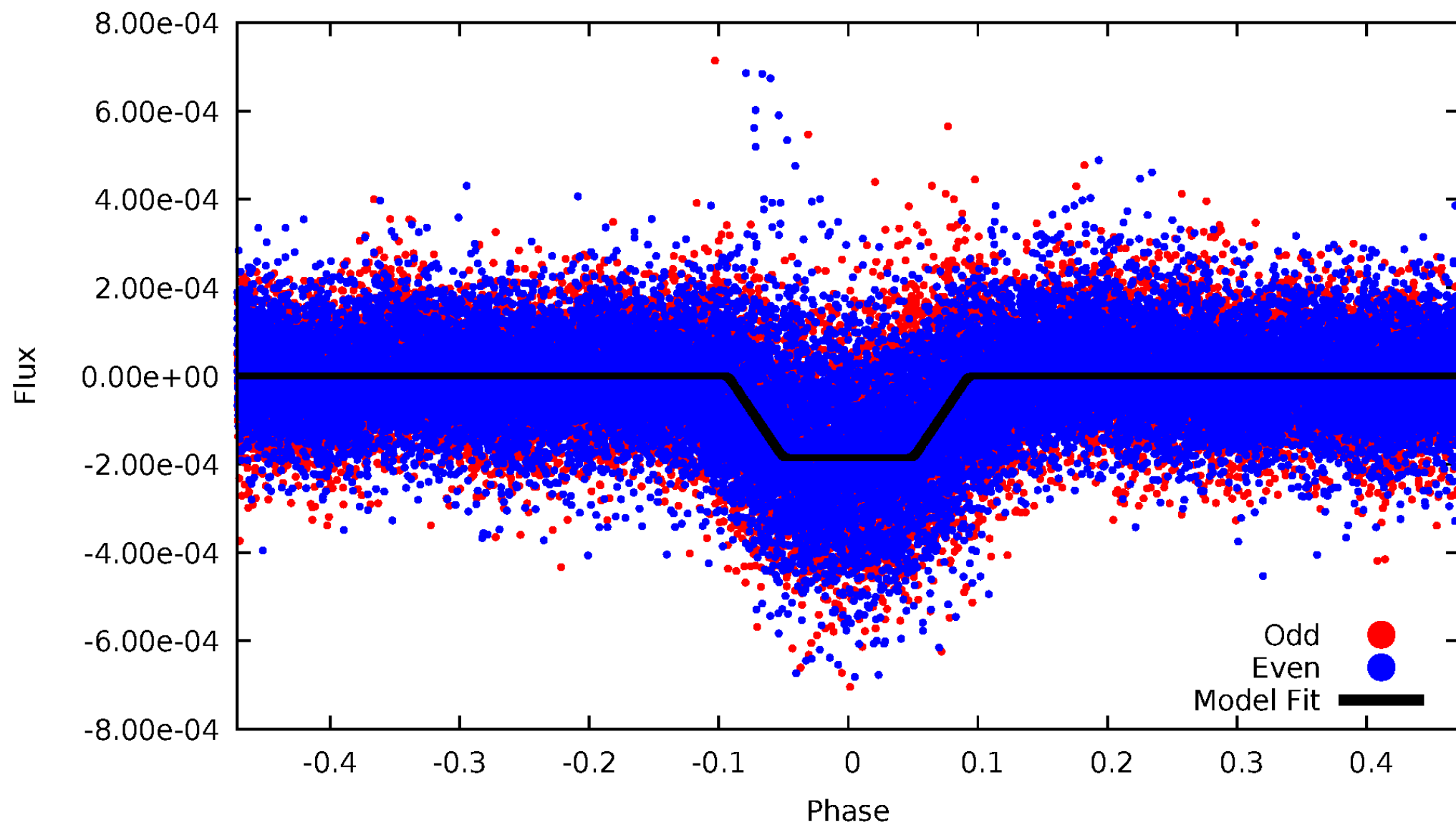
DV Odd/Even

TCE 011970288-02



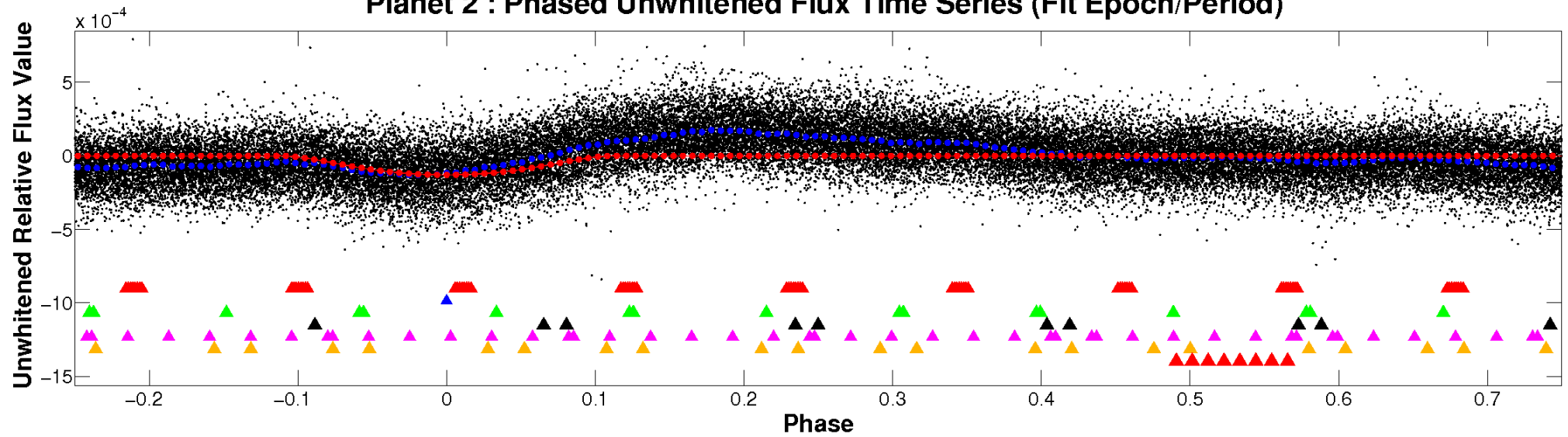
ALT Odd/Even

TCE 011970288-02

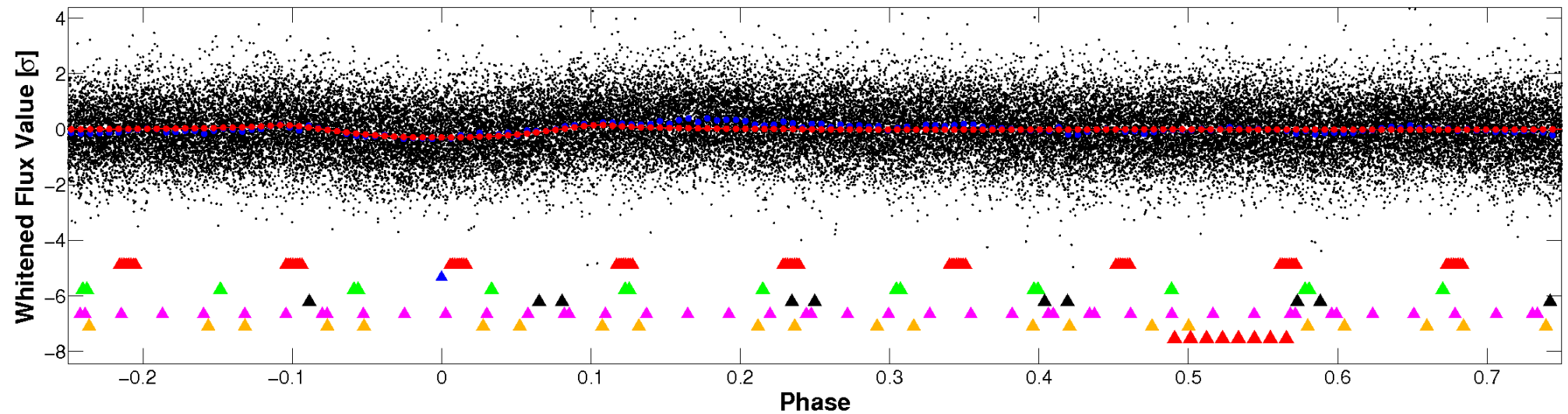


Non-Whitened Vs. Whitened Light Curve

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

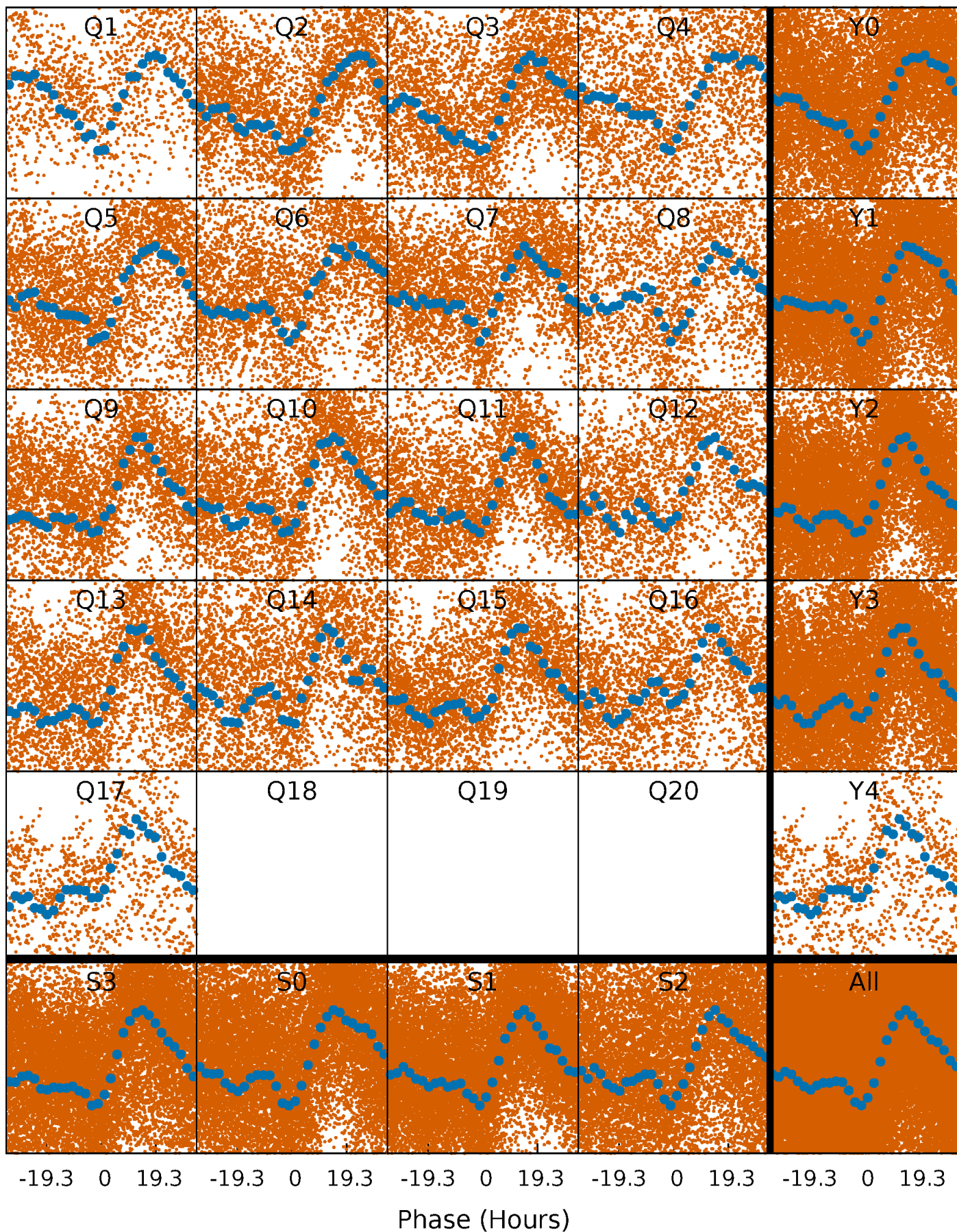


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



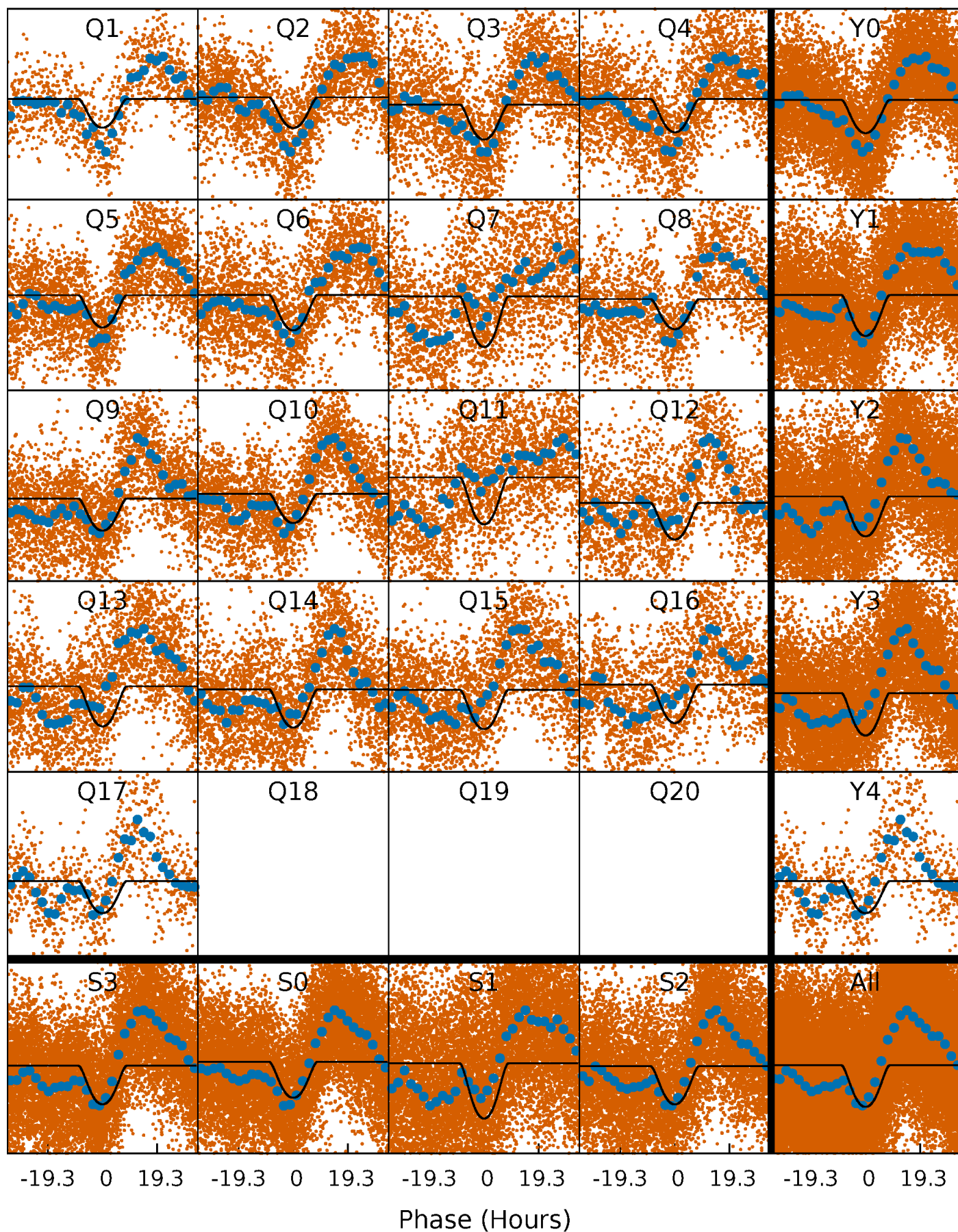
PDC Quarter-Phased Transit Curves

TCE 011970288-02 P= 3.213876 Days $T_0=134.247824$ (BKJD)



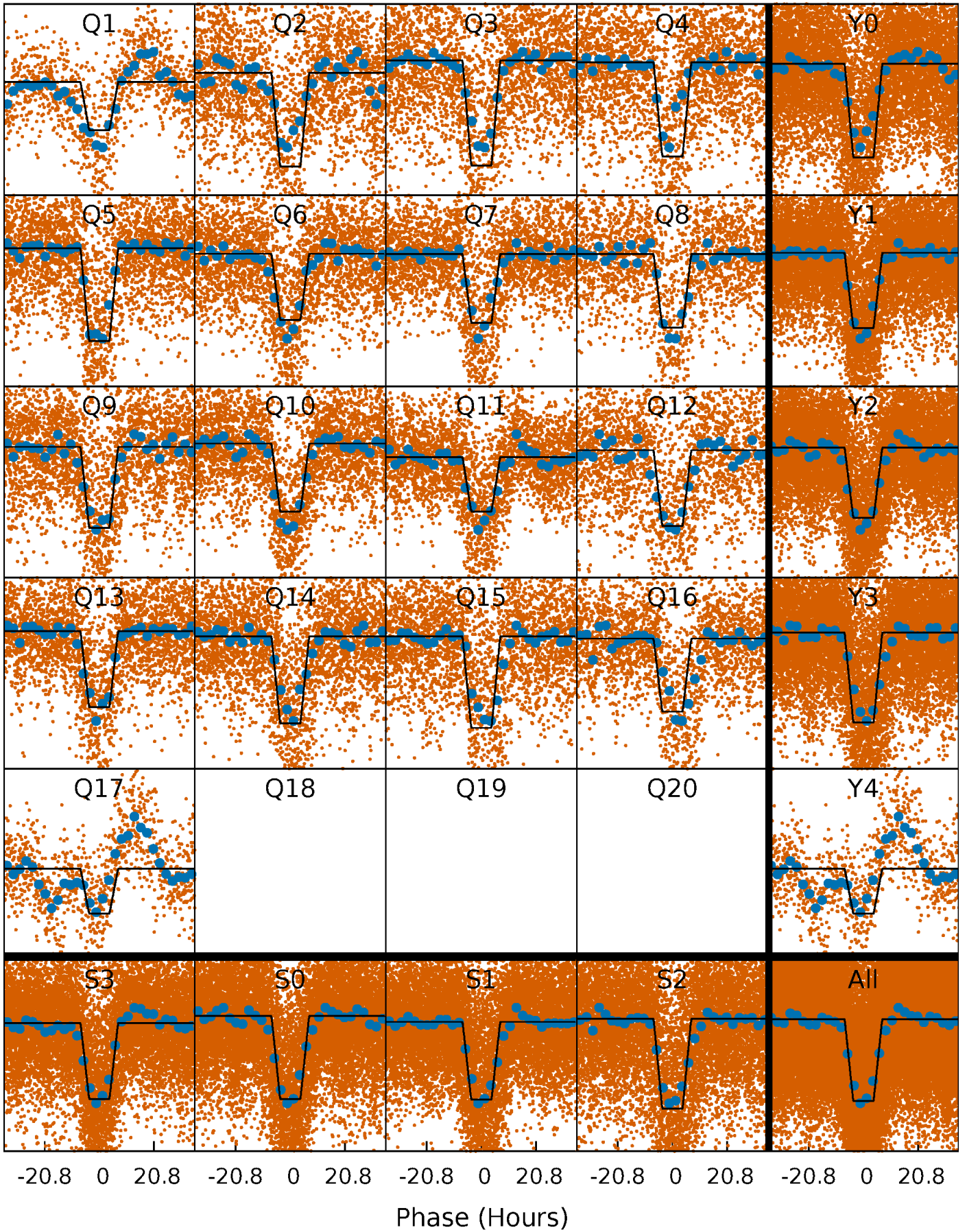
DV Quarter-Phased Transit Curves

TCE 011970288-02 P= 3.213876 Days $T_0=134.247824$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

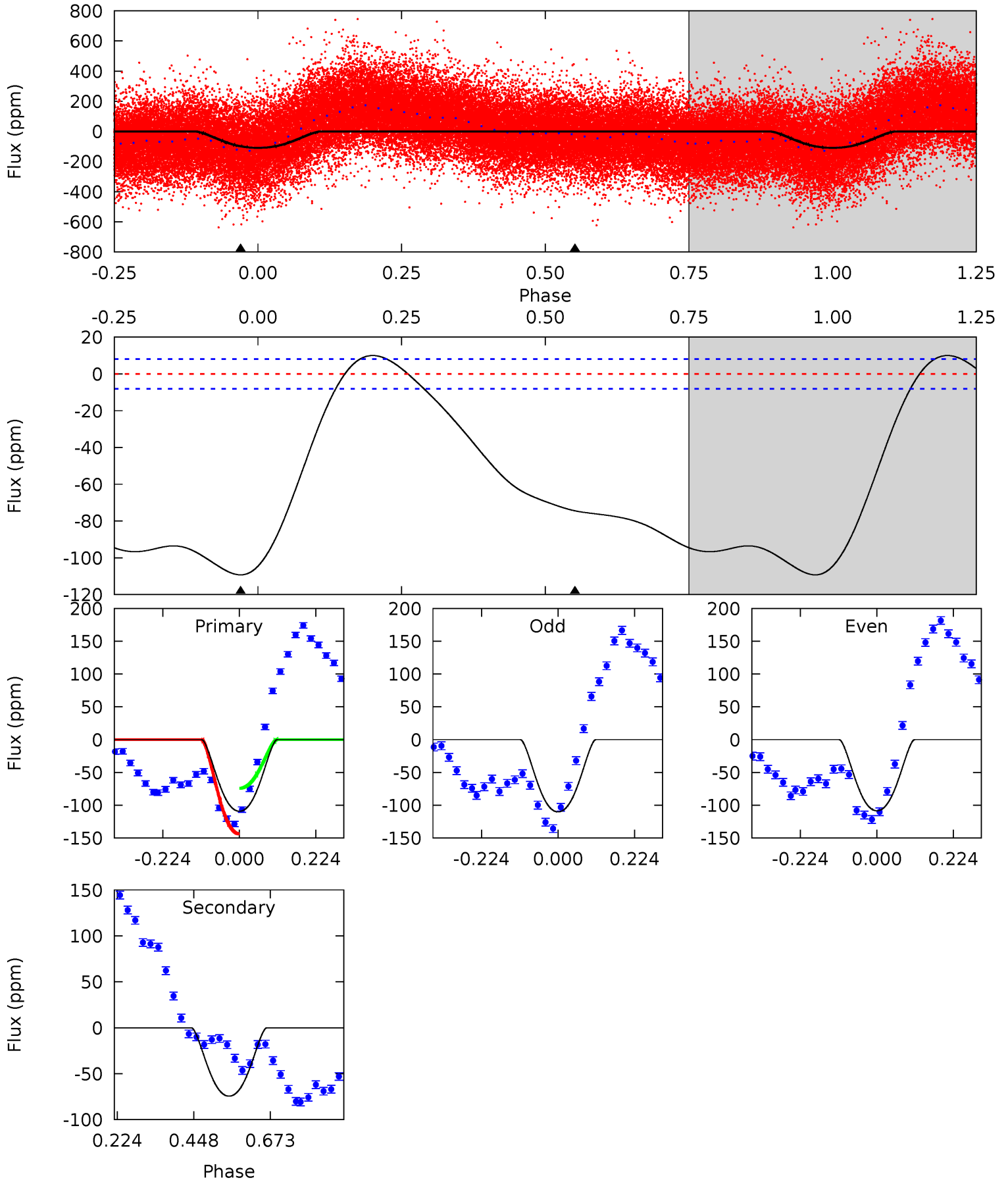
TCE 011970288-02 P= 3.213711 Days $T_0=134.295737$ (BKJD)



DV Model-Shift Uniqueness Test

011970288-02, P = 3.213876 Days, E = 134.247824 Days

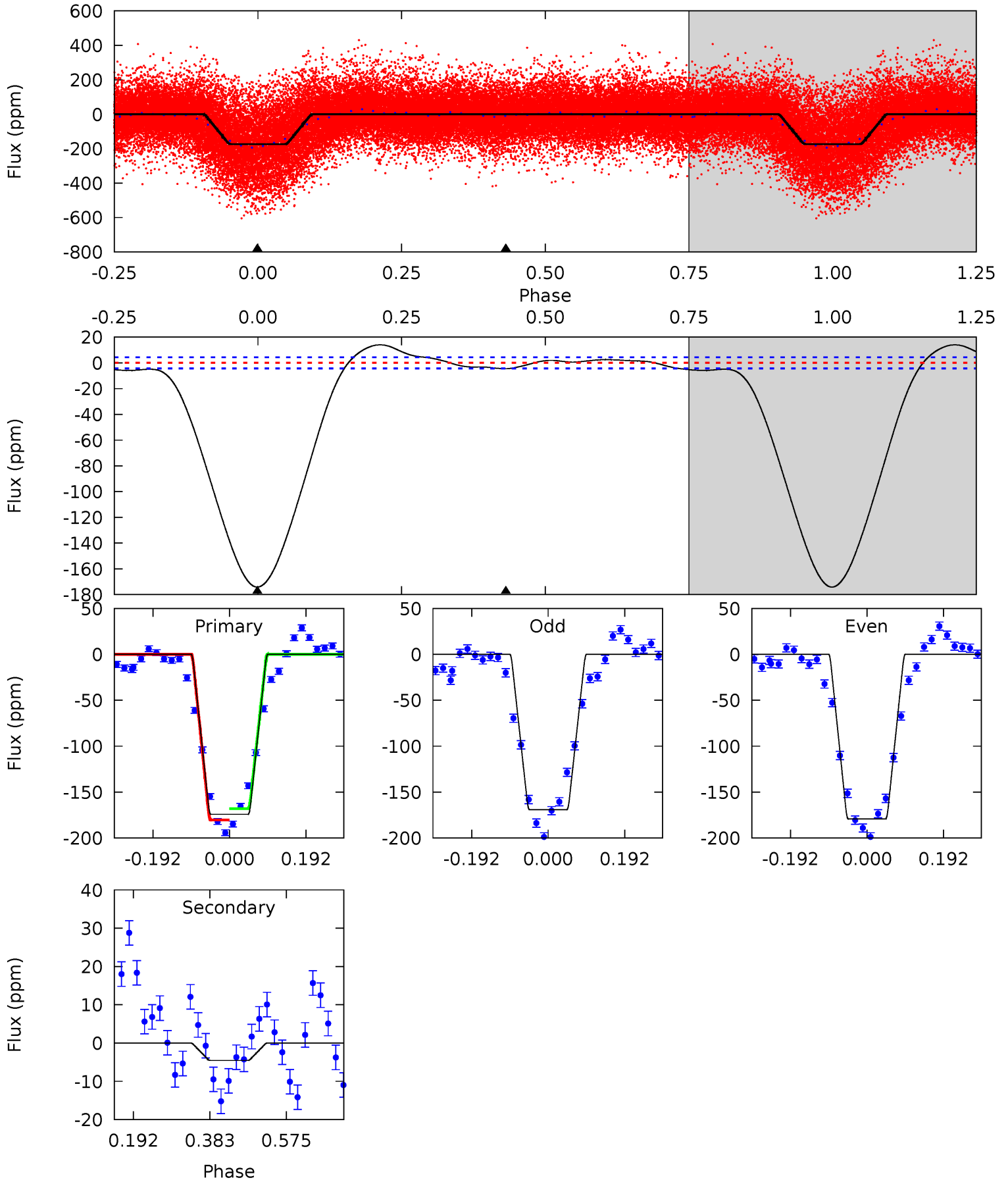
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
59.4	40.5	0	0	4.39	1.22	5.15	59.4	59.4	40.5	40.5	0.46	1.12	0.08	20.3



Alt Model-Shift Uniqueness Test

011970288-02, P = 3.213711 Days, E = 134.295737 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
177.1	4.63	0	0	4.43	1.31	6.90	177.1	177.1	4.63	4.63	5.10	0.99	0.07	6.15



Stellar Parameters For KIC 011970288

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6956^{+163}_{-225}	$3.738^{+0.278}_{-0.093}$	$-0.180^{+0.300}_{-0.250}$	$2.888^{+0.428}_{-0.927}$	$1.664^{+0.180}_{-0.335}$	$0.097^{+0.175}_{-0.028}$
	+2%/-3%	+7%/-2%	+167%/-139%	+15%/-32%	+11%/-20%	+180%/-29%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011970288-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-74 ± 2	$4.49^{+0.78}_{-0.81}$	3181^{+186}_{-262}	5230^{+292}_{-278}	$5.204^{+2.284}_{-1.386}$
Alt.	-5 ± 1	$4.08^{+0.79}_{-0.80}$	3169^{+193}_{-268}	2606^{+458}_{-5107}	$0.375^{+0.199}_{-0.117}$

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

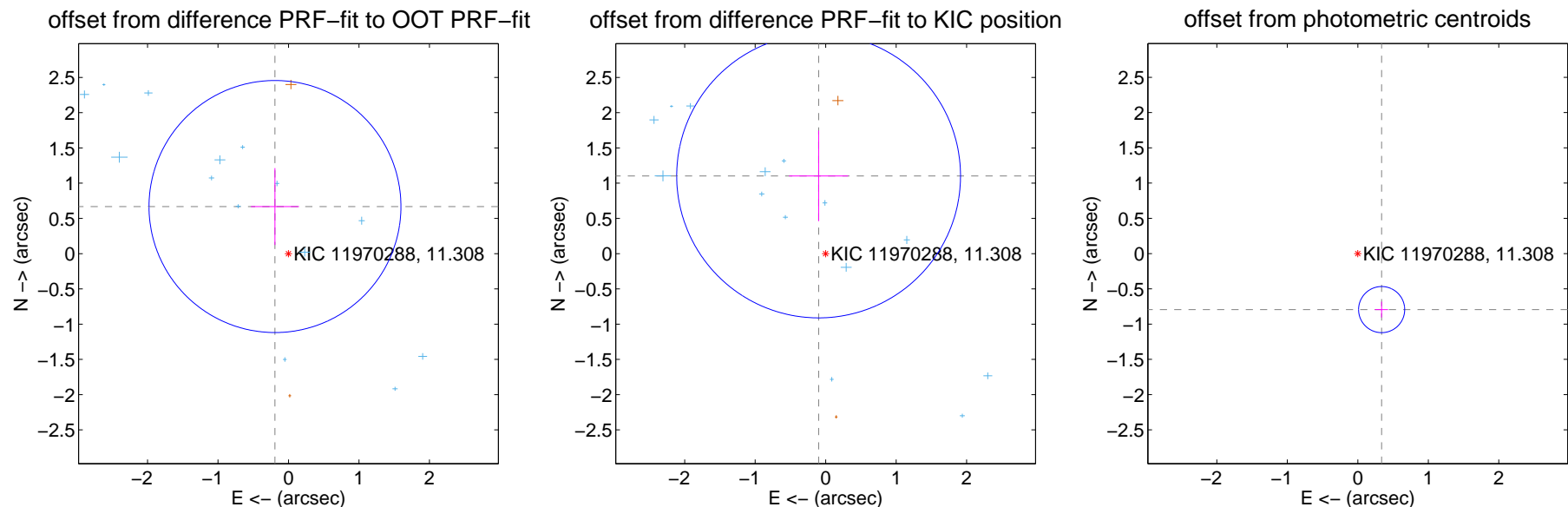
DV Centroid Data

Supplemental centroid analysis for 011970288-02. **Kepler magnitude: 11.31.** Transit SNR 20.71

There are 14 quarters with good PRF difference image offsets

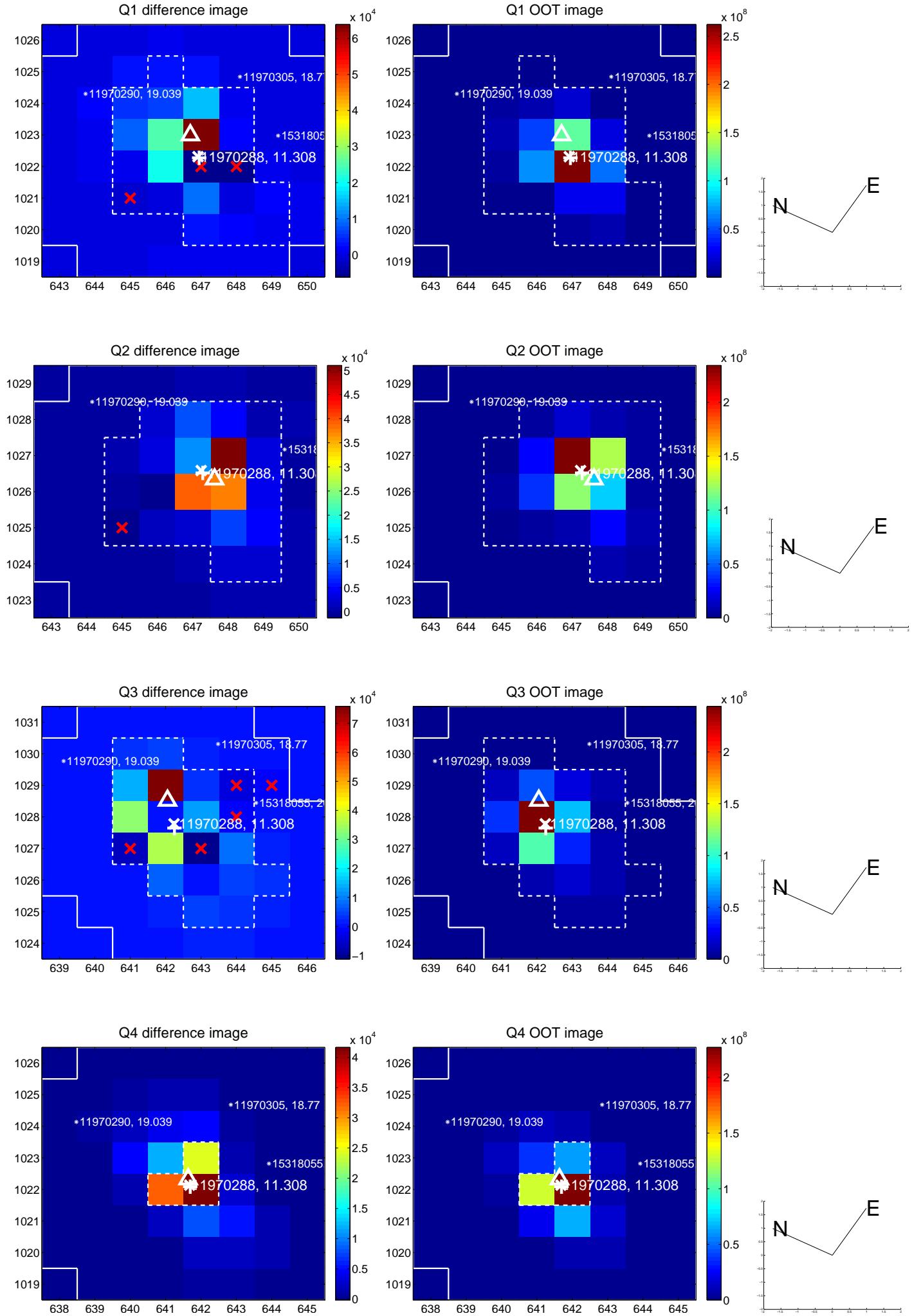
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.696 ± 0.596	1.17	0.192 ± 0.341	0.668 ± 0.545
PRF-fit source offset from KIC position	1.107 ± 0.671	1.65	0.100 ± 0.420	1.103 ± 0.643
photometric centroid source offset	0.86 ± 0.11	7.92	-0.34 ± 0.09	-0.79 ± 0.11

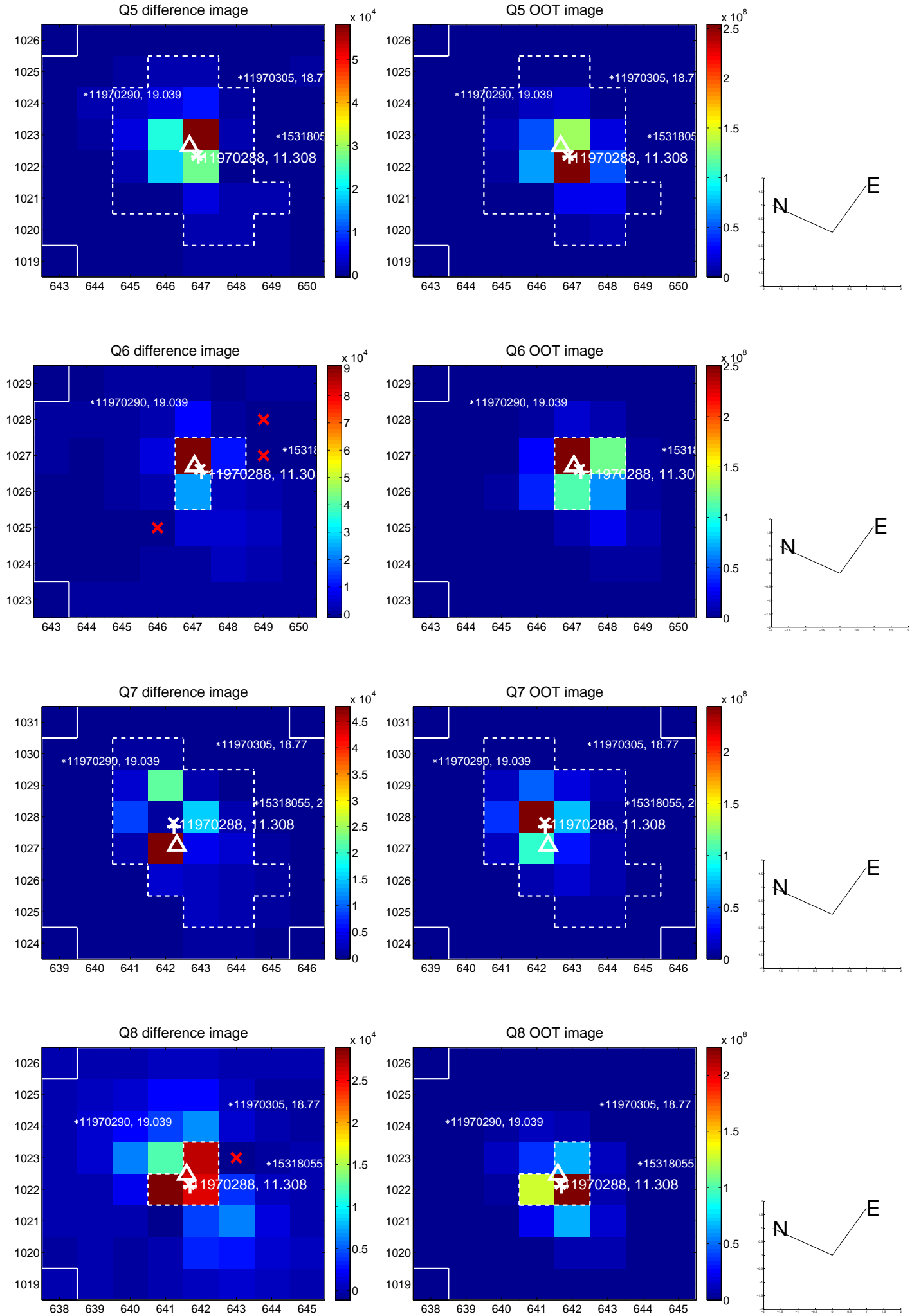


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

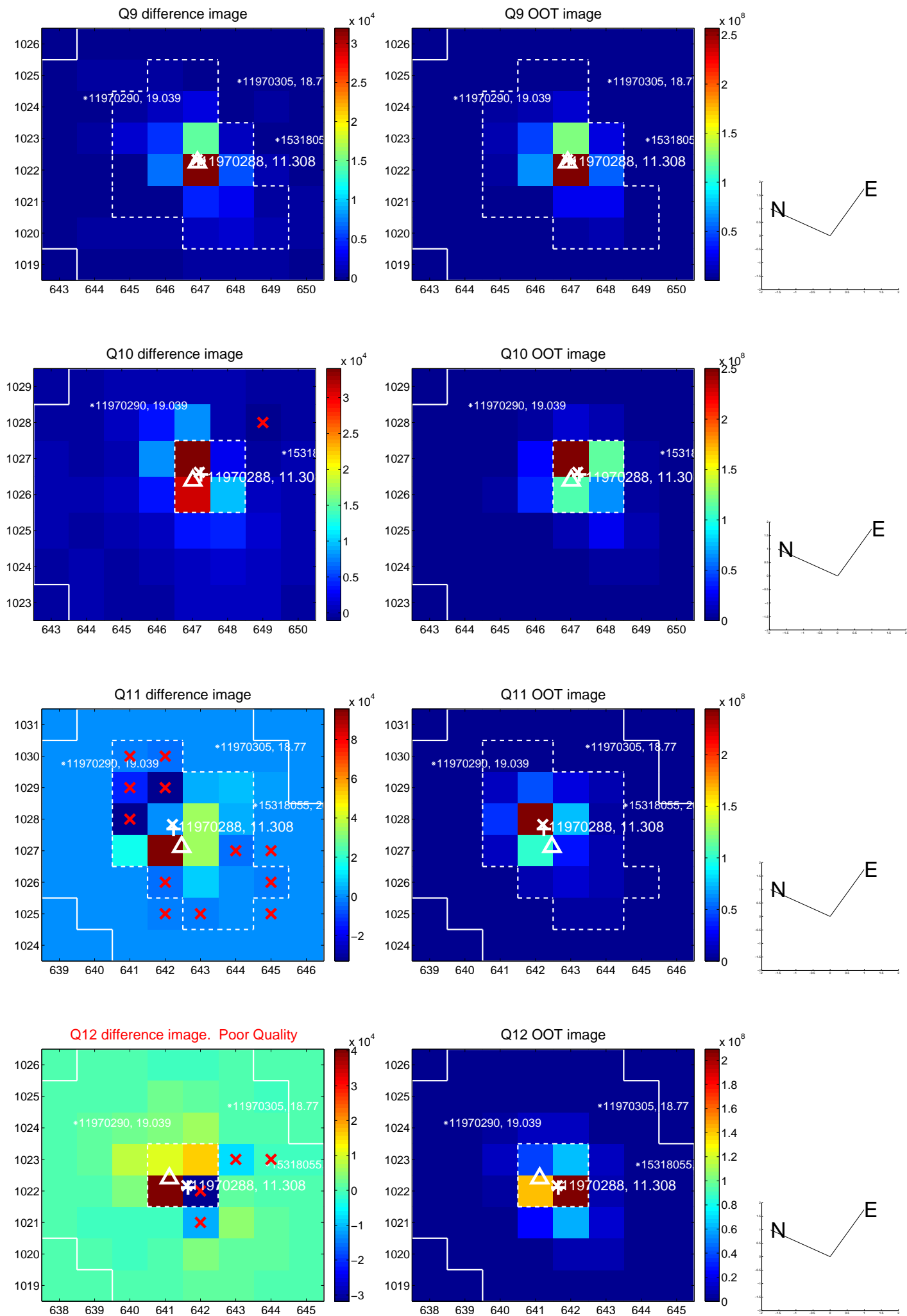
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



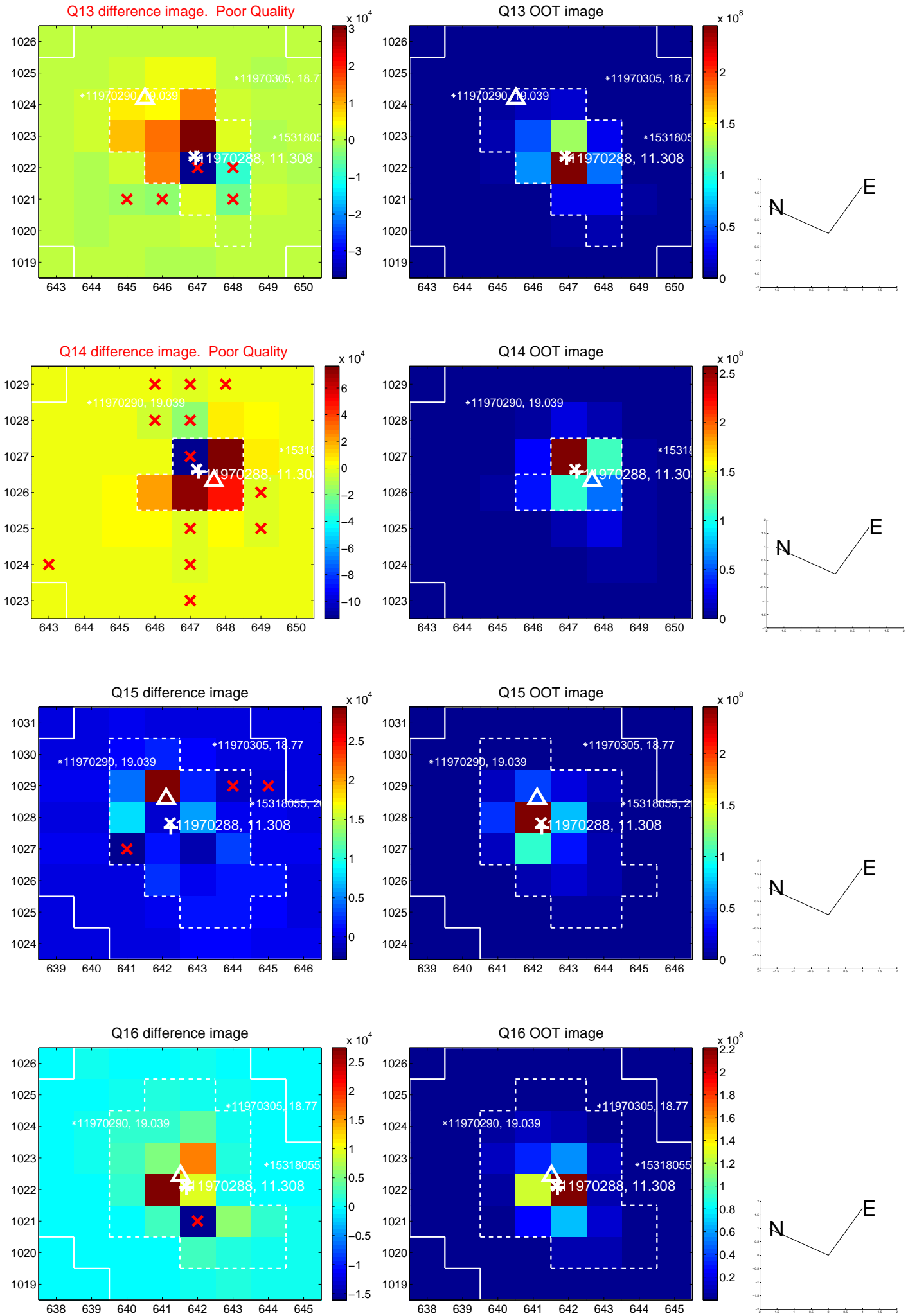
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



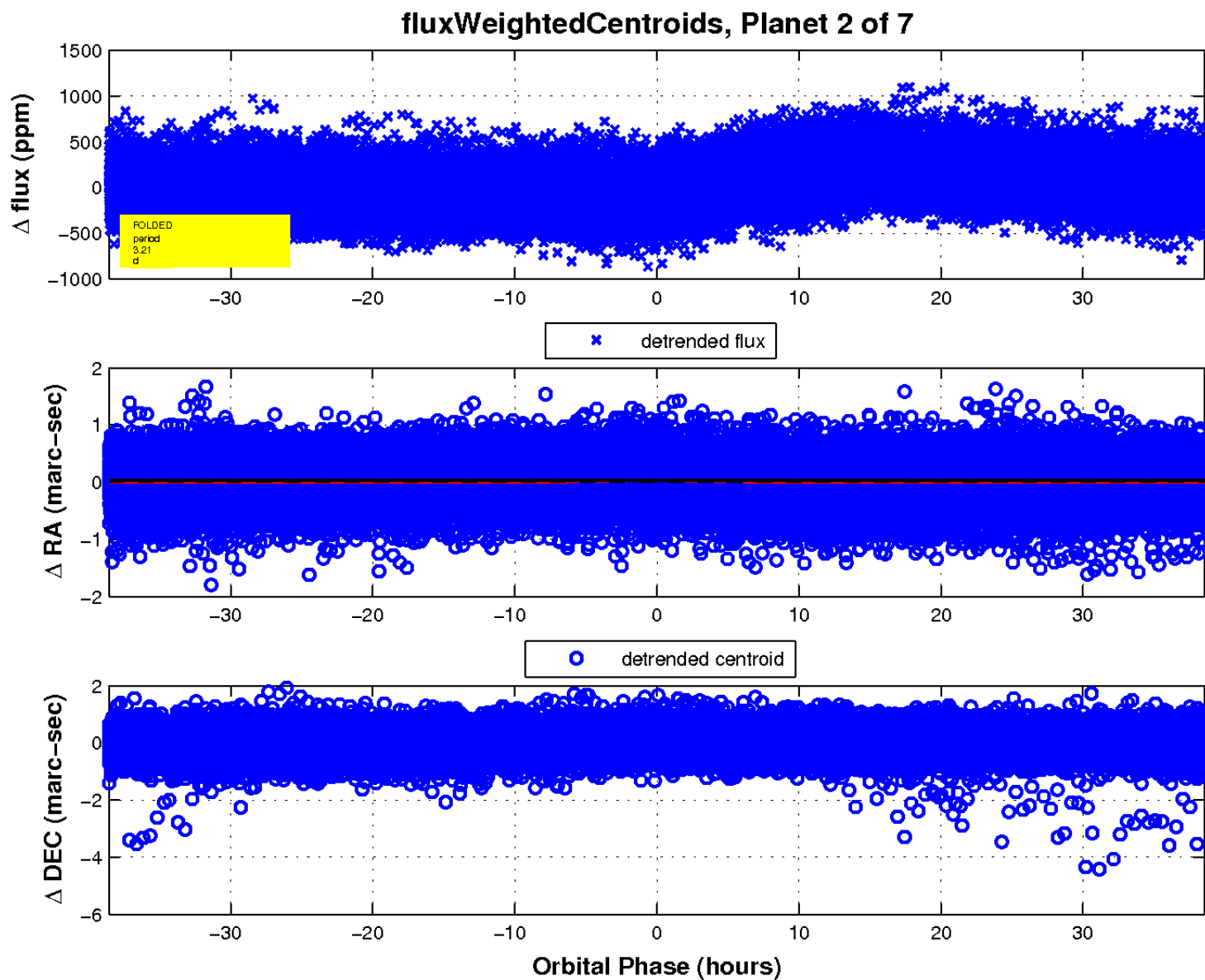
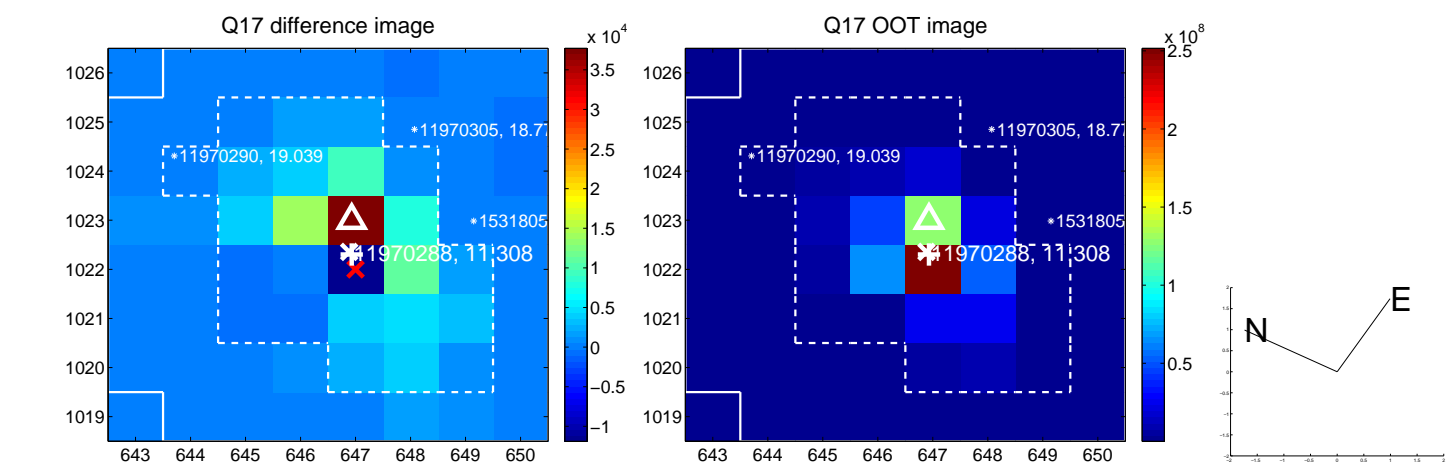
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

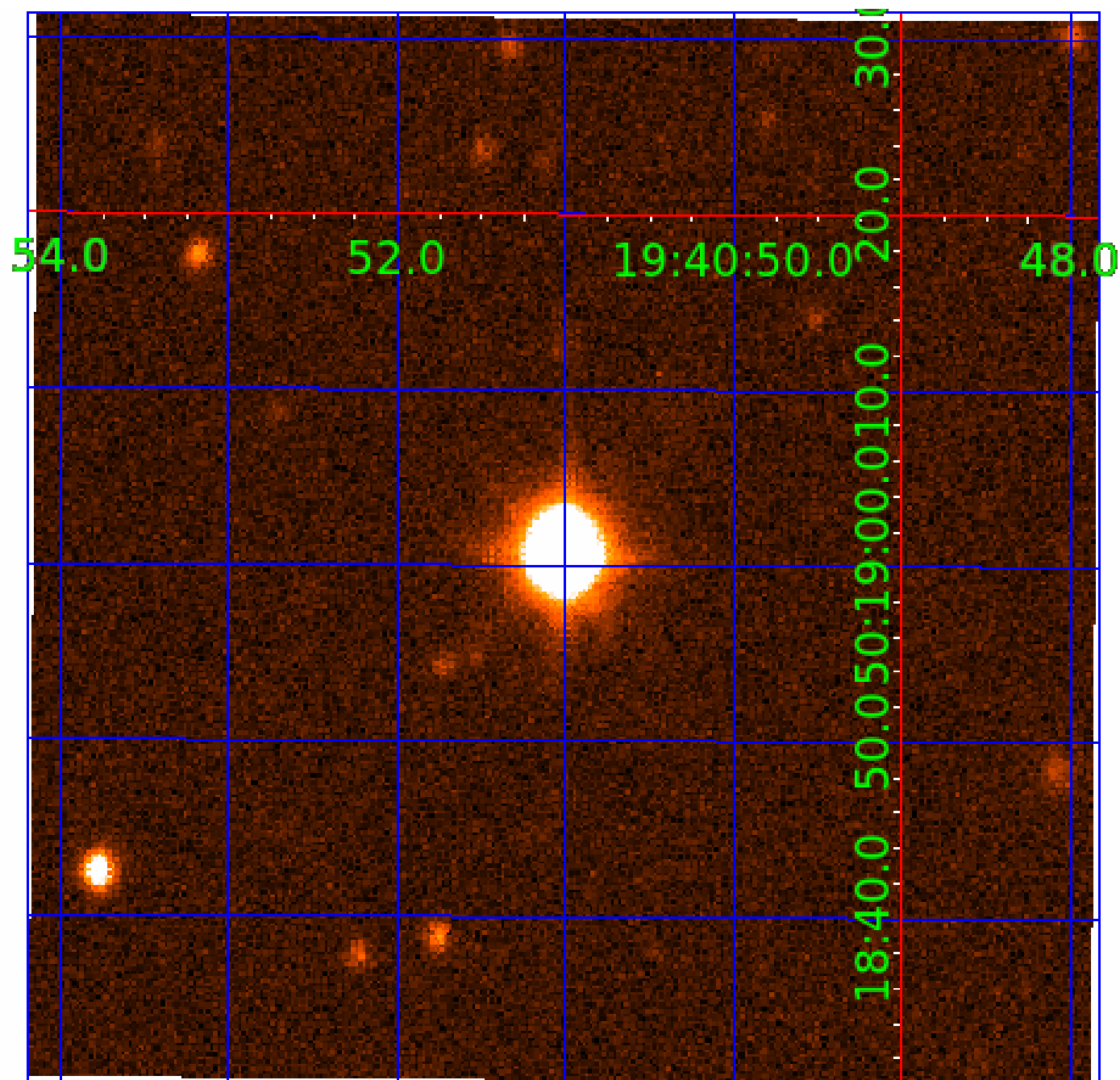


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011970288

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})
011970288-01	OBS	7501.01	20.711101	133.947495	883.0	41.047	19.4	44.5	2.89	6956	16.08	571.64
011970288-02	OBS	No	3.213876	134.247824	129.4	16.852	15.4	20.7	2.89	6956	4.69	6855.28
011970288-04	OBS	No	145.168291	227.660244	189.5	8.073	9.3	8.7	2.89	6956	4.68	42.62
011970288-05	OBS	No	31.617880	162.306327	139.0	4.923	8.9	9.6	2.89	6956	3.96	325.20
011970288-06	OBS	No	66.899895	152.260036	217.1	2.643	9.1	8.4	2.89	6956	4.92	119.72
011970288-07	OBS	No	183.225321	196.888859	259.6	5.705	8.7	7.6	2.89	6956	9.04	31.24

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011970288-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED—CENT_SATURATED
011970288-02	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
011970288-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011970288-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
011970288-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
011970288-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

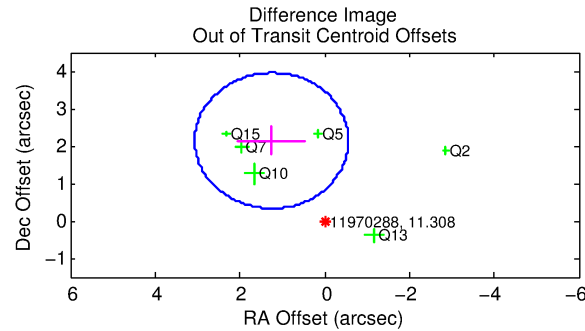
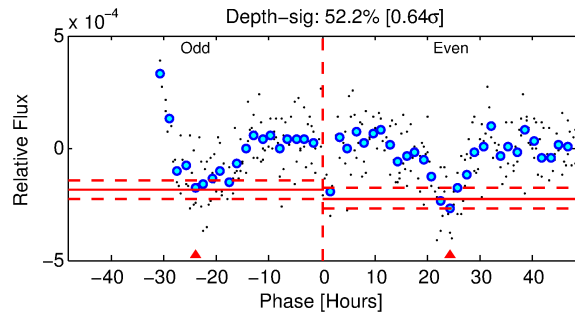
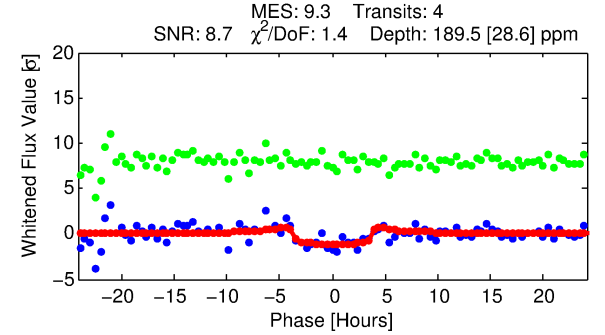
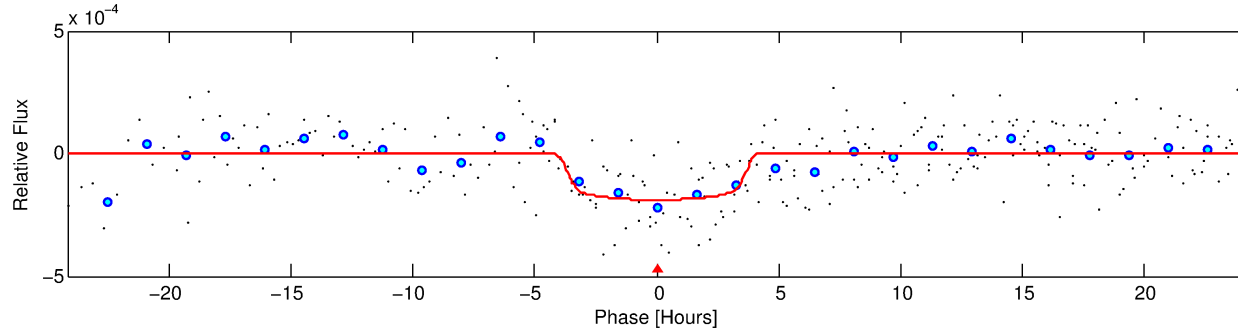
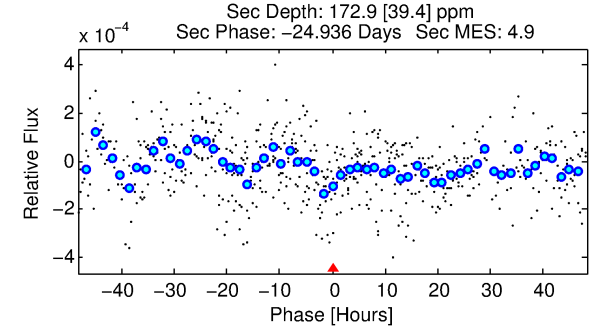
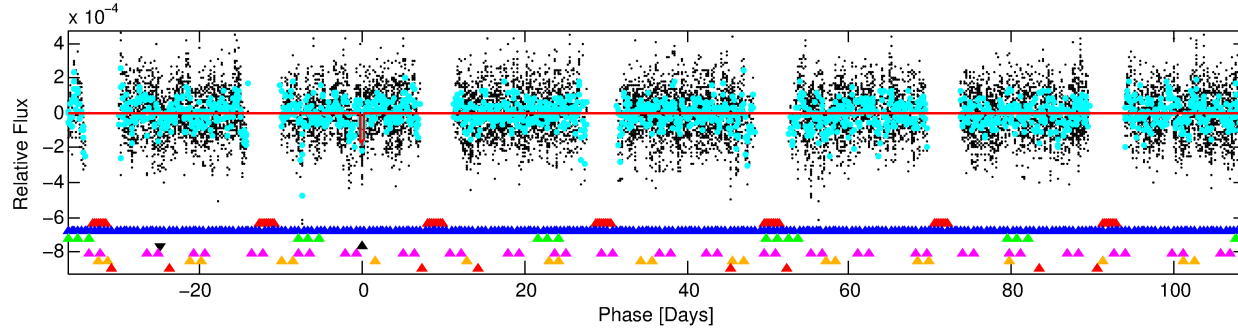
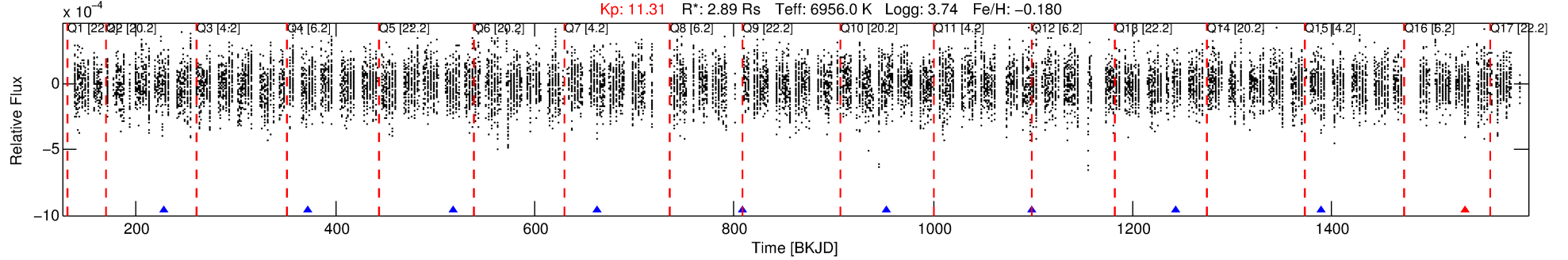
Ephemeris Match Information For 011970288-04

No Significant Match Found

DV One-Page Summary

KIC: 11970288 Candidate: 4 of 7 Period: 145.168 d
KOI: K07501 Corr: No Ephemeris Match

Kp: 11.31 R*: 2.89 Rs Teff: 6956.0 K Logg: 3.74 Fe/H: -0.180



DV Fit Results:

Period = 145.16829 [0.00224] d
Epoch = 227.6602 [0.0150] BKJD
Rp/R* = 0.0149 [0.0022]
a/R* = 59.74 [41.14]
b = 0.92 [0.12]
Seff = 42.62 [21.08]
Teq = 652 [81] K
Rp = 4.68 [1.65] Re
a = 0.6407 [0.1936] AU
Ag = 1779.60 [1073.81] [1.66σ]
Teffp = 6542 [640] K [9.14σ]

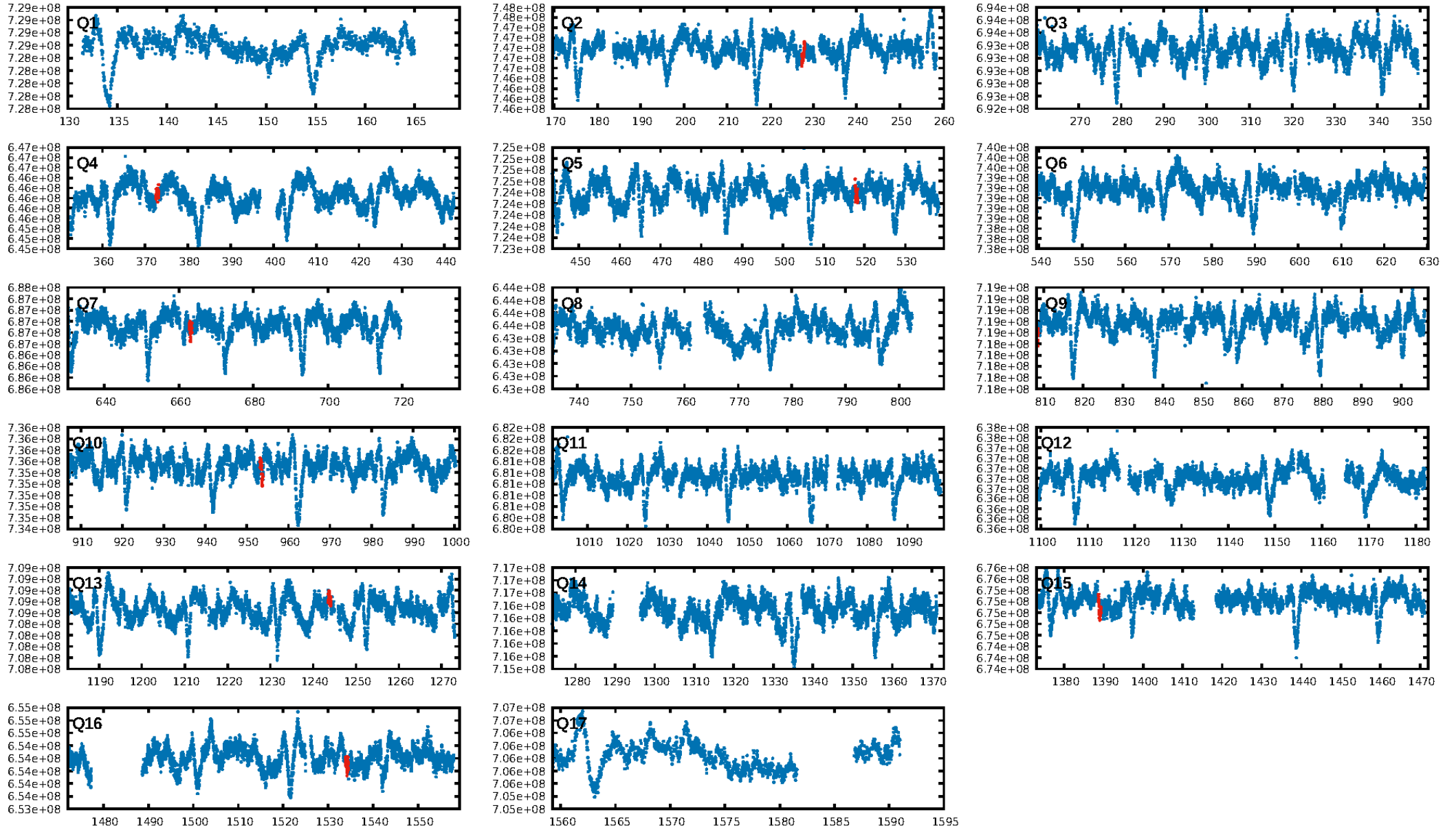
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [80.67σ]
LongPeriod-sig: 100.0% [92.40σ]
ModelChiSquare2-sig: 8.7%
ModelChiSquareGof-sig: 60.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.75 [3/4]
GhostDiagnostic-chr: -0.7216
Centroid-sig: N/A
Centroid-so: 0.835 arcsec [1.60σ]
OotOffset-rm: 2.479 arcsec [4.11σ]
KicOffset-rm: 2.139 arcsec [4.49σ]
OotOffset-st: 2/2/0/2 [6]
KicOffset-st: 2/2/0/2 [6]
DiffImageQuality-fgm: 0.33 [2/6]
DiffImageOverlap-fno: 0.50 [3/6]

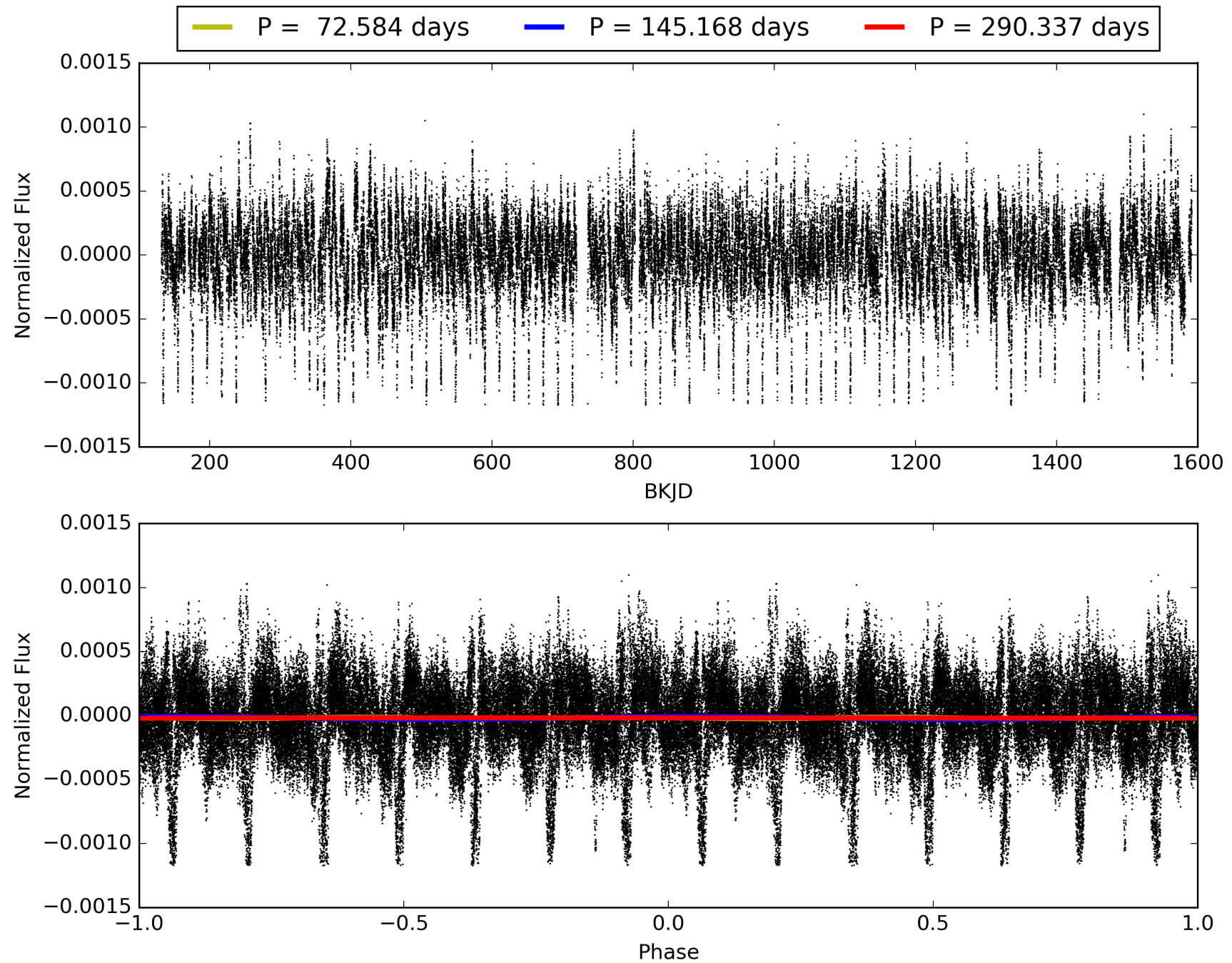
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:57:06 Z

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

TCE 011970288-04, PDC Light Curves

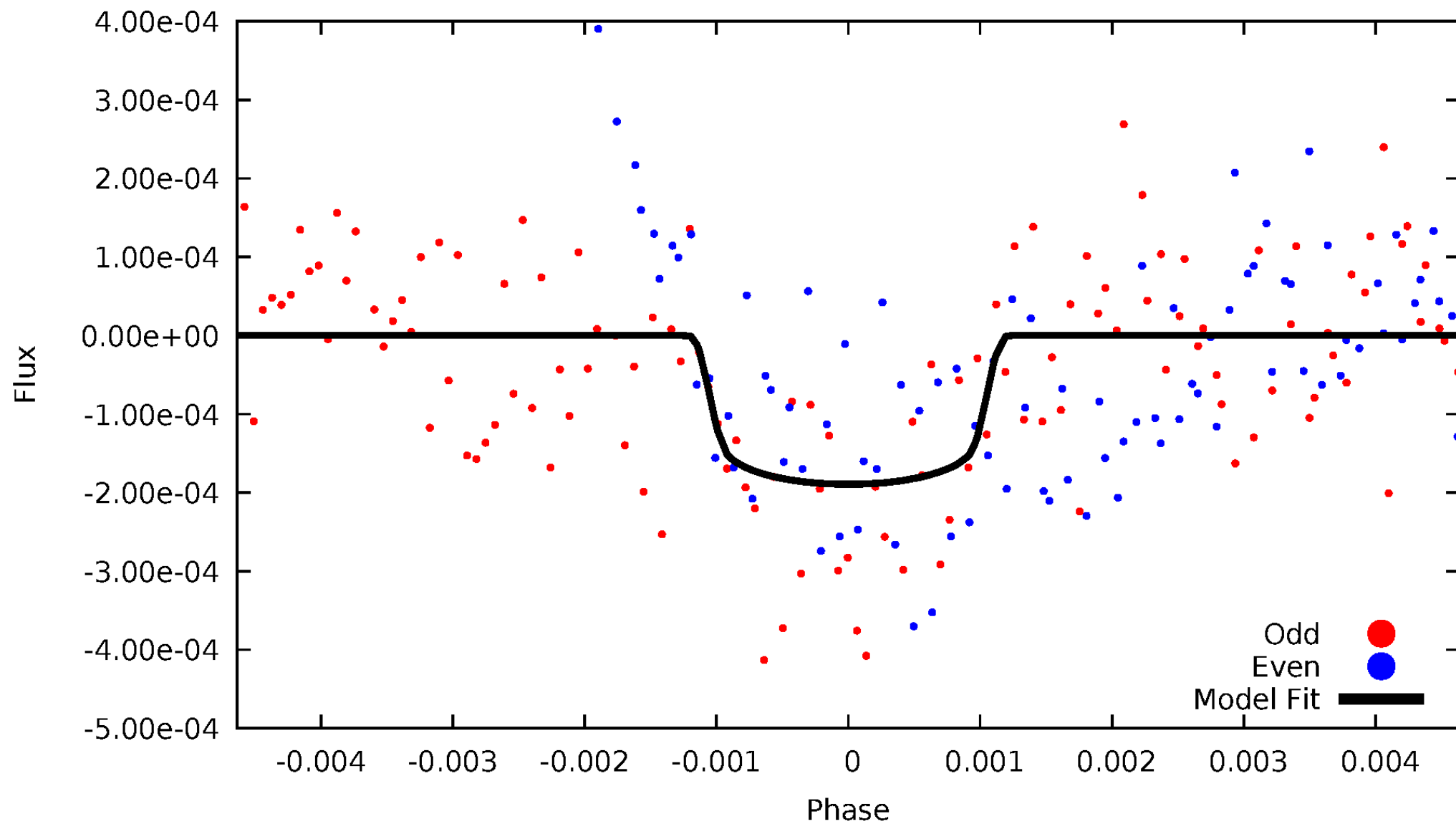


TCE 011970288-04



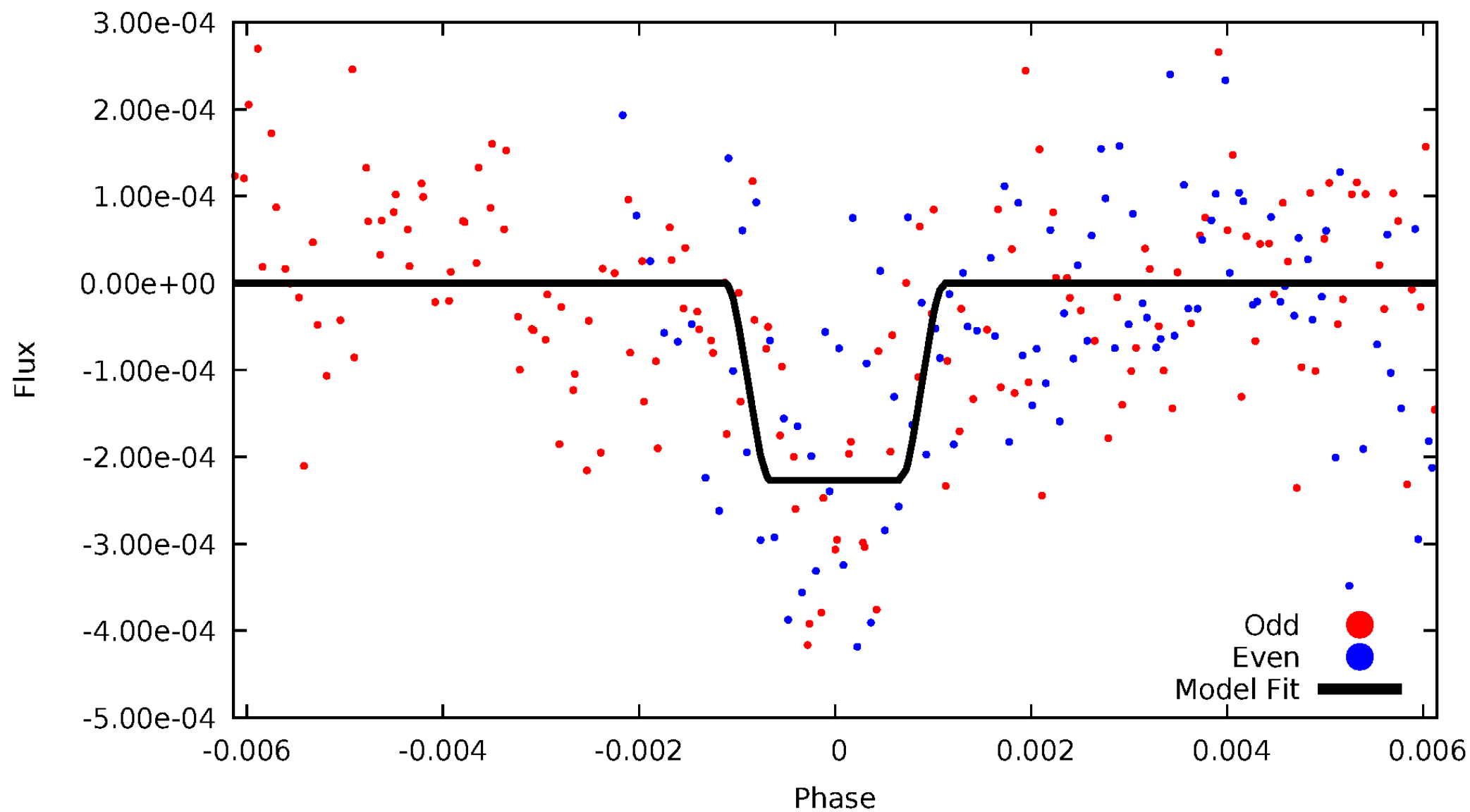
DV Odd/Even

TCE 011970288-04



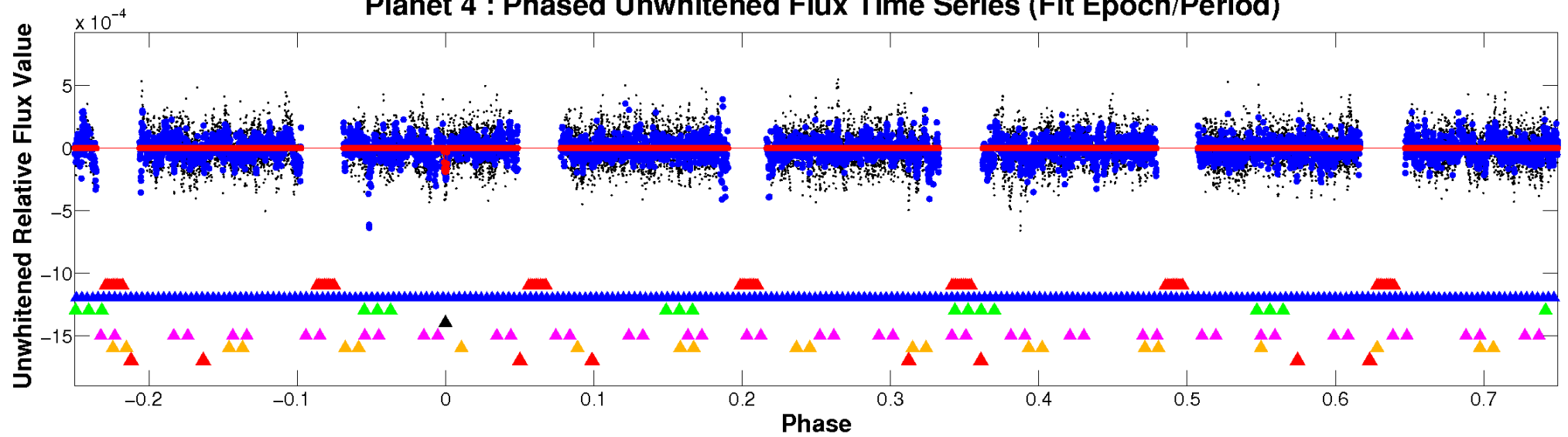
ALT Odd/Even

TCE 011970288-04

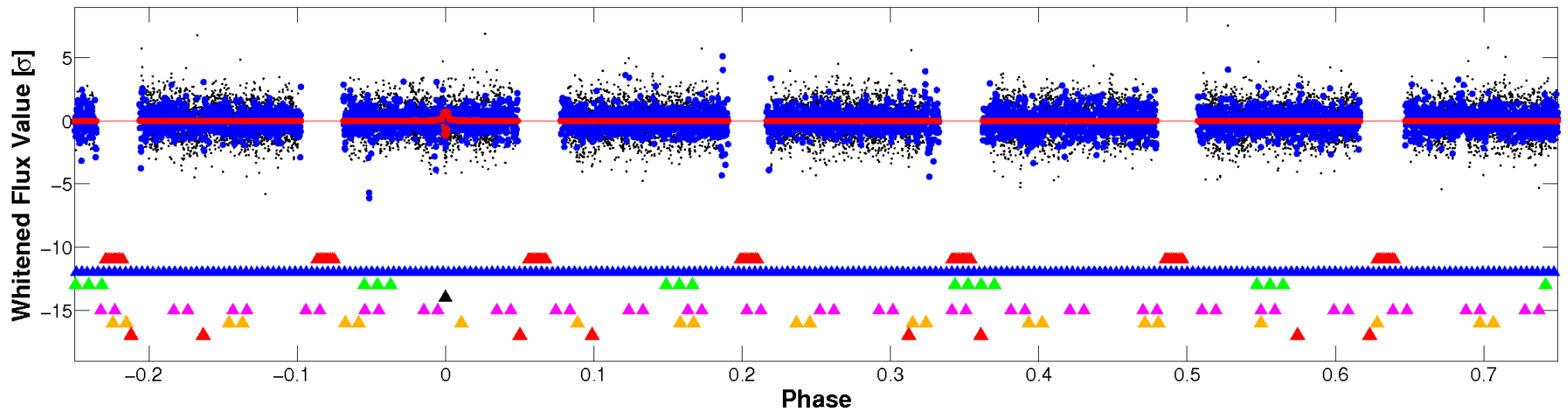


Non-Whitened Vs. Whitened Light Curve

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

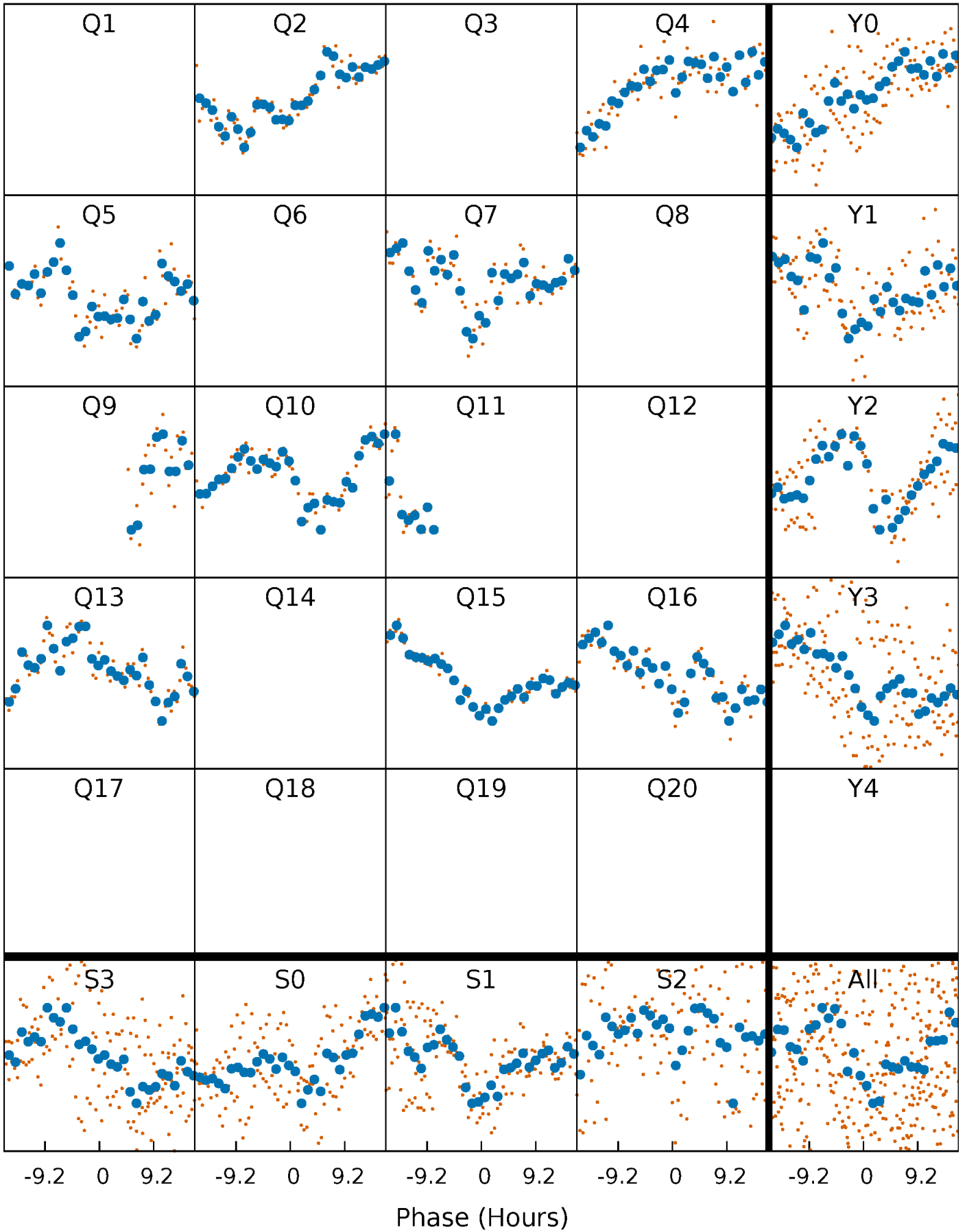


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



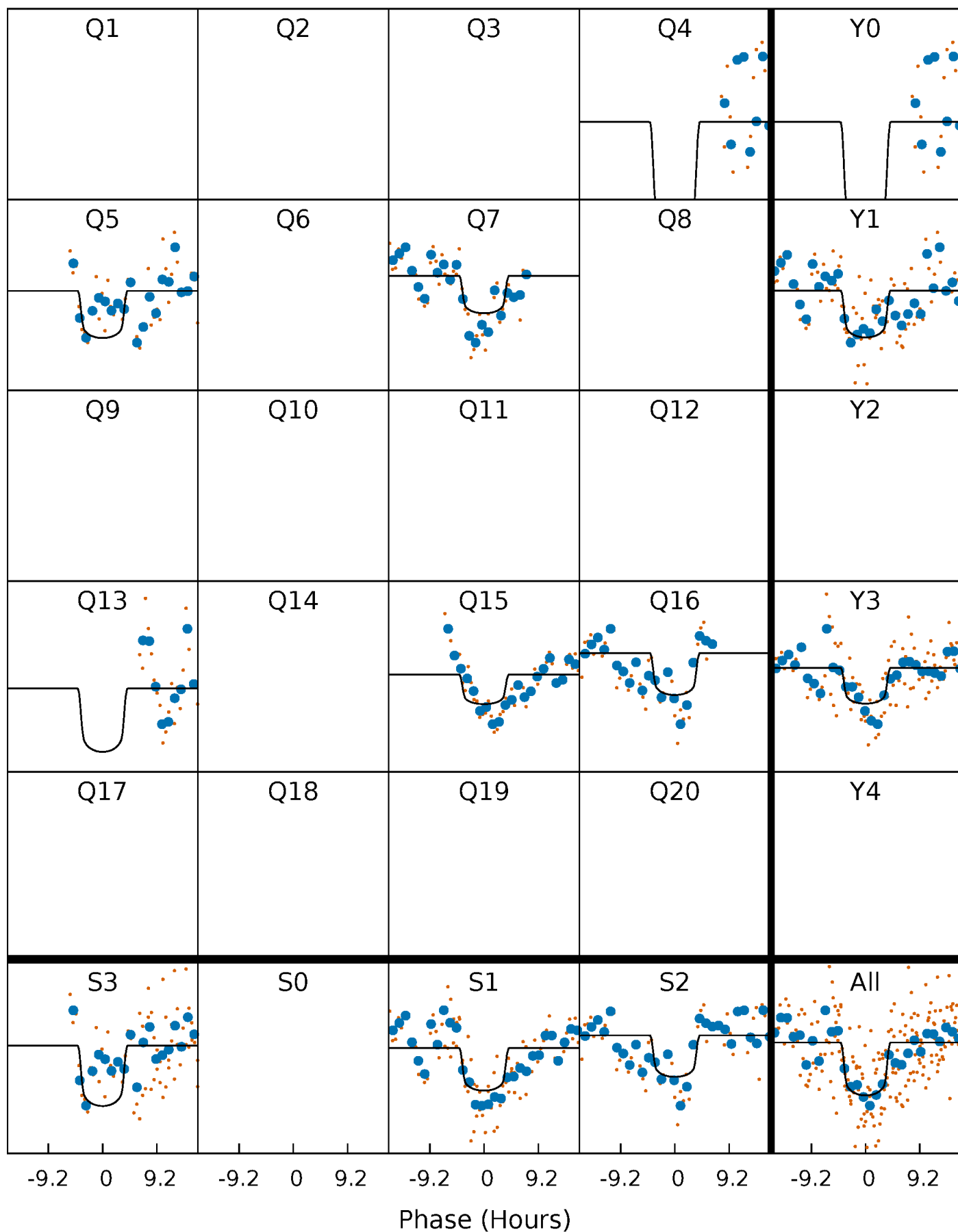
PDC Quarter-Phased Transit Curves

TCE 011970288-04 $P=145.168291$ Days $T_0=227.660244$ (BKJD)



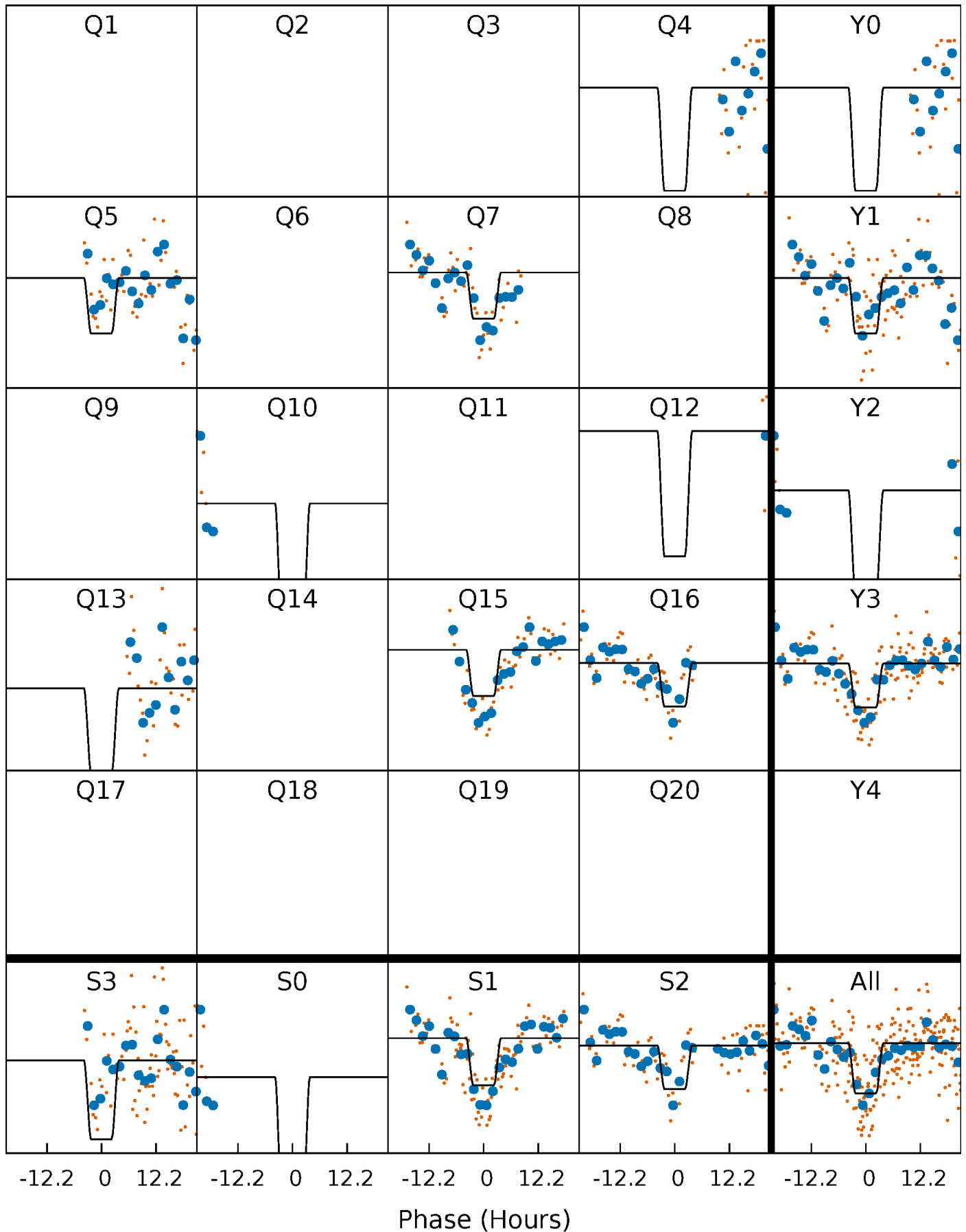
DV Quarter-Phased Transit Curves

TCE 011970288-04 $P=145.168291$ Days $T_0=227.660244$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

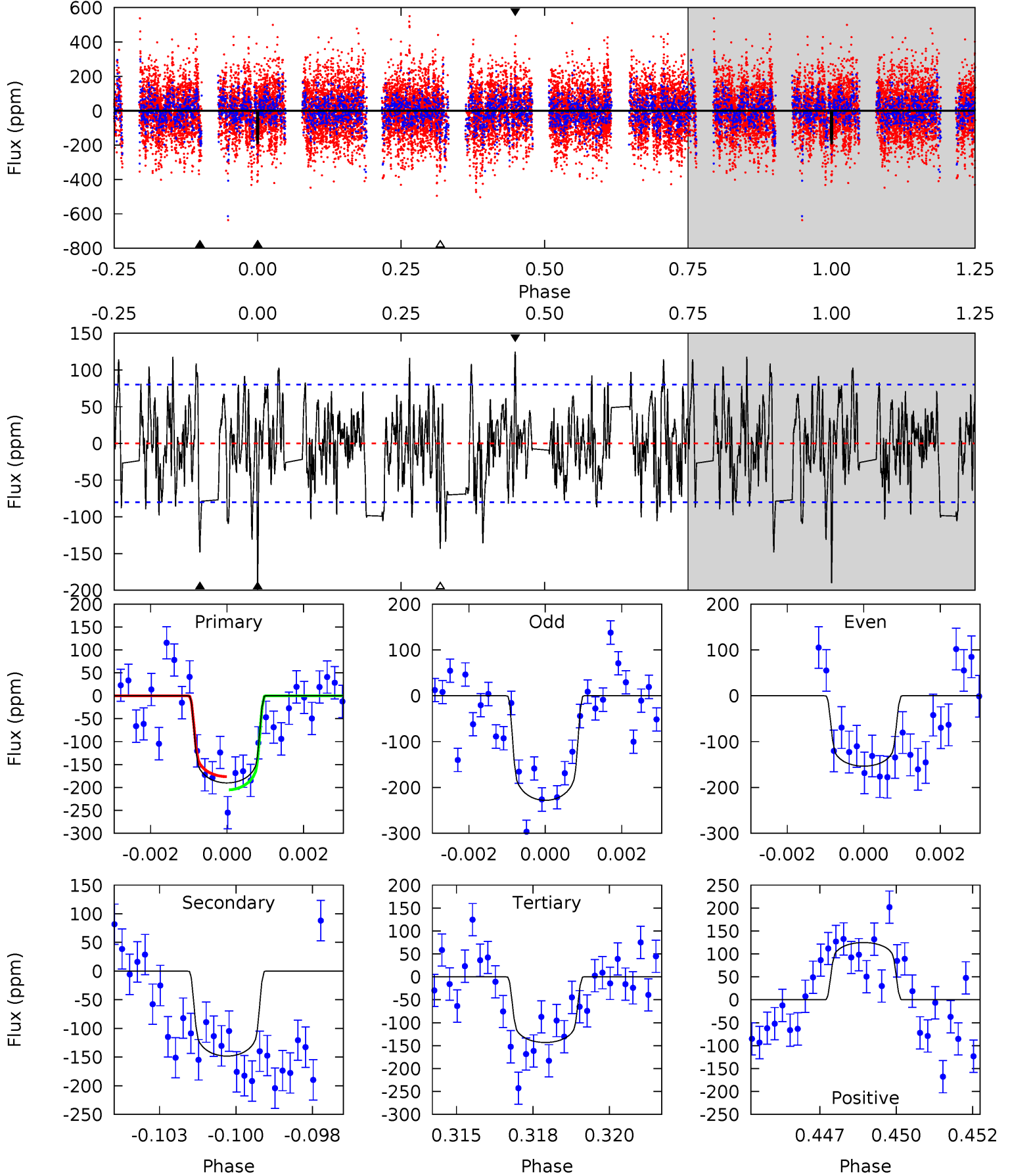
TCE 011970288-04 P=145.186590 Days $T_0=227.553205$ (BKJD)



DV Model-Shift Uniqueness Test

011970288-04, P = 145.168291 Days, E = 82.491953 Days

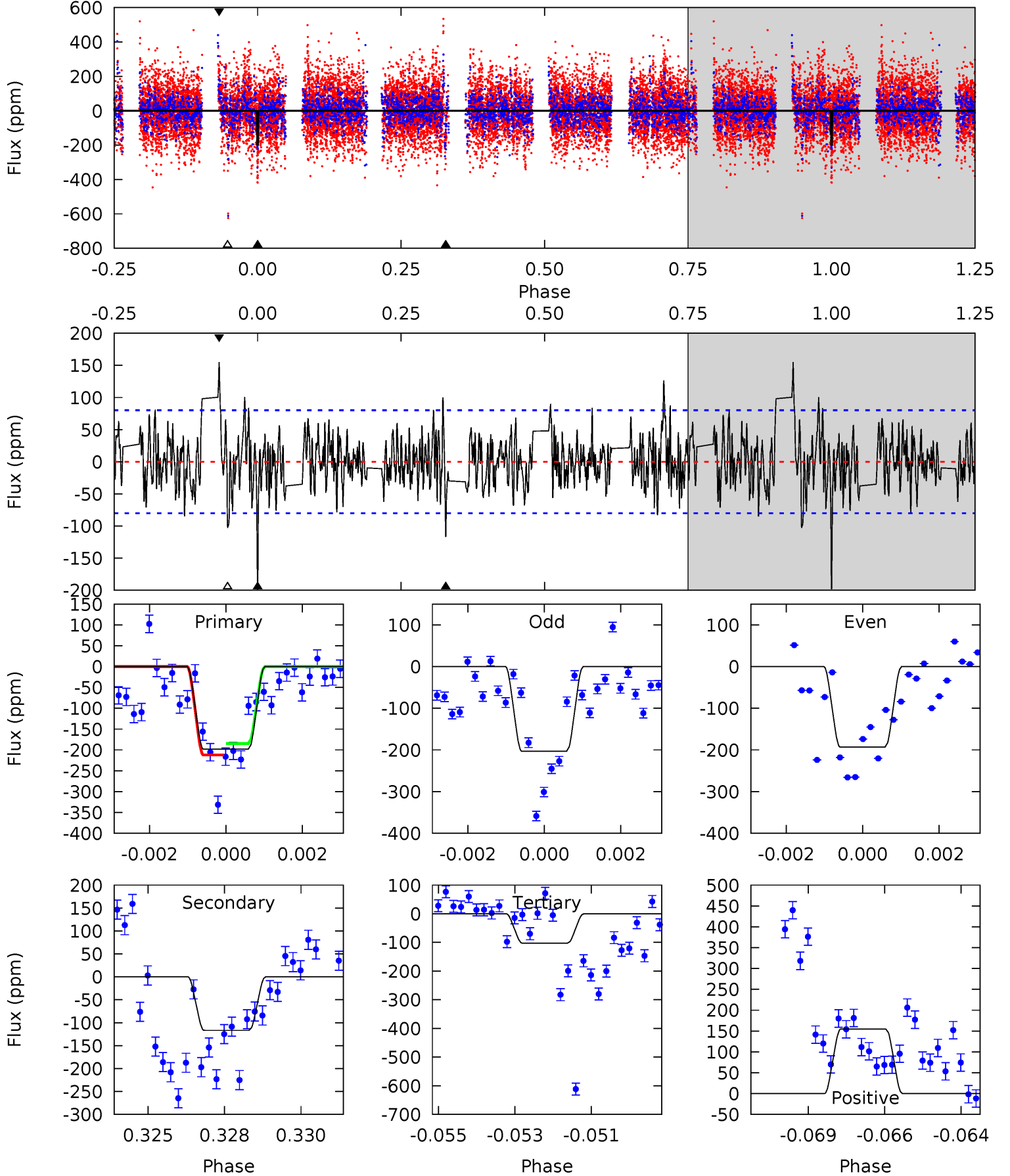
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	9.80	9.46	8.25	5.29	3.03	2.90	3.10	4.32	0.34	1.55	2.46	0.90	0.40	0.95



Alt Model-Shift Uniqueness Test

011970288-04, P = 145.186590 Days, E = 82.366615 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	7.74	6.81	10.3	5.31	3.06	2.21	6.32	2.86	0.93	-2.53	0.33	0.97	0.44	0.92



Stellar Parameters For KIC 011970288

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6956^{+163}_{-225}	$3.738^{+0.278}_{-0.093}$	$-0.180^{+0.300}_{-0.250}$	$2.888^{+0.428}_{-0.927}$	$1.664^{+0.180}_{-0.335}$	$0.097^{+0.175}_{-0.028}$
	+2%/-3%	+7%/-2%	+167%/-139%	+15%/-32%	+11%/-20%	+180%/-29%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011970288-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-148 ± 15	$4.50^{+0.88}_{-0.95}$	897^{+51}_{-73}	6245^{+561}_{-468}	1663^{+964}_{-507}
Alt.	-117 ± 15	$4.52^{+0.99}_{-1.01}$	896^{+52}_{-84}	5836^{+517}_{-435}	1275^{+811}_{-414}

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

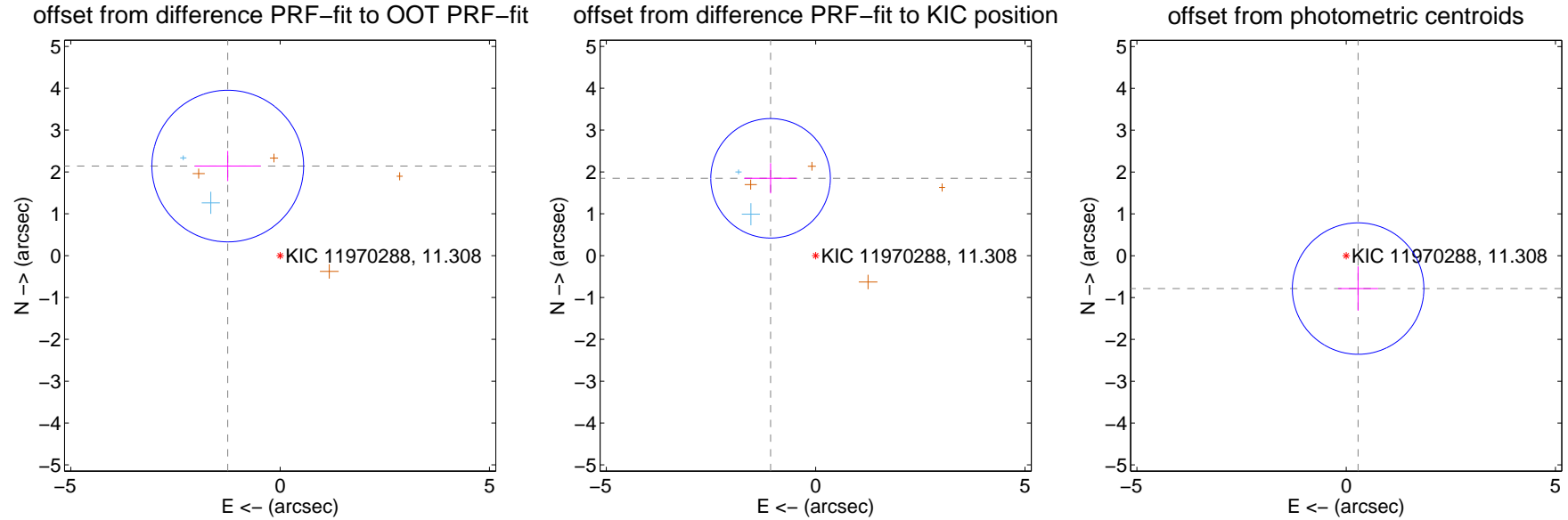
DV Centroid Data

Supplemental centroid analysis for 011970288-04. **Kepler magnitude: 11.31.** Transit SNR 8.73

There are 2 quarters with good PRF difference image offsets

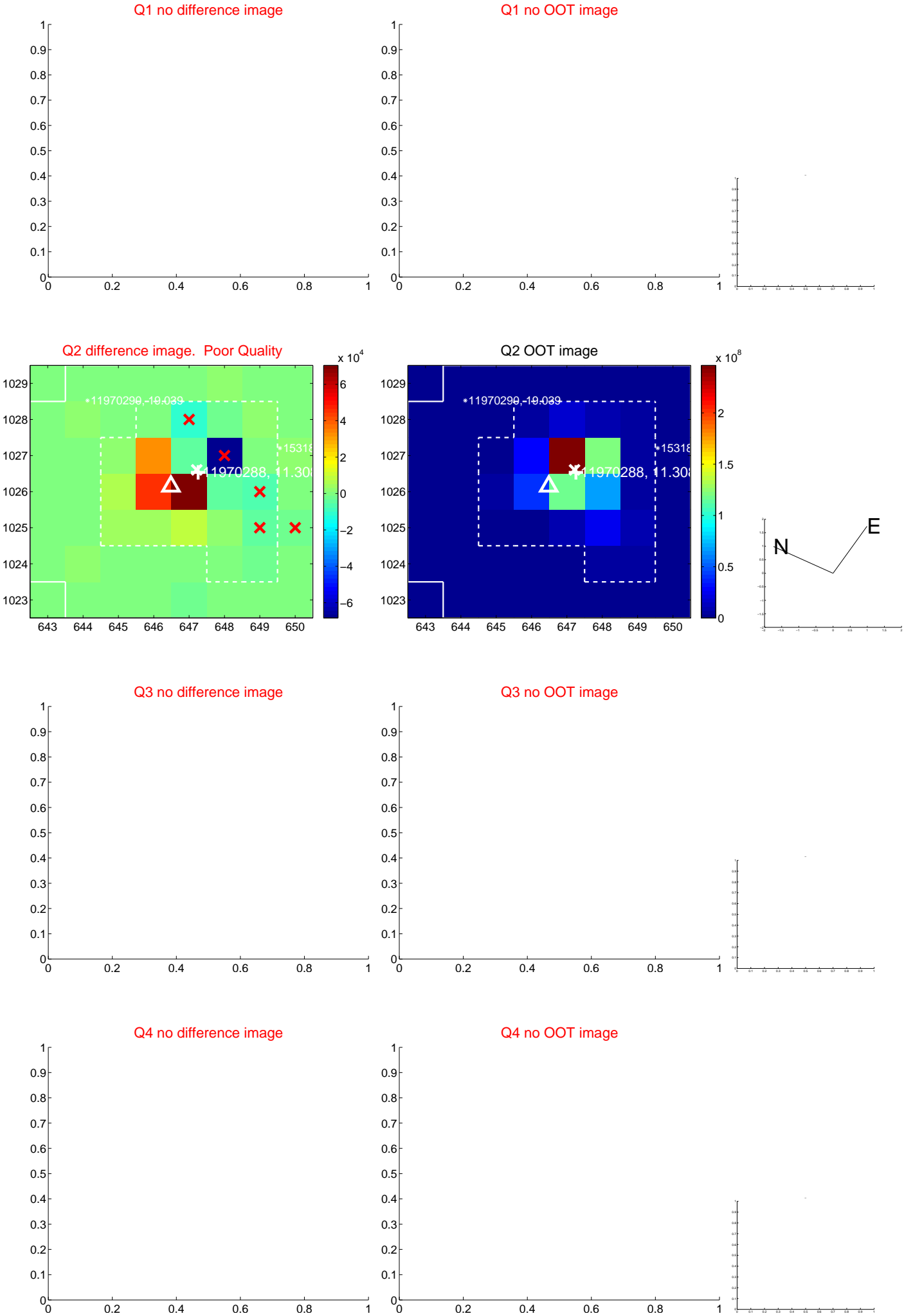
The direct PRF centroid is offset from the target star catalog position by about 0.58 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.479 ± 0.604	4.11	1.251 ± 0.786	2.140 ± 0.361
PRF-fit source offset from KIC position	2.139 ± 0.476	4.49	1.077 ± 0.633	1.848 ± 0.361
photometric centroid source offset	0.84 ± 0.52	1.60	-0.28 ± 0.48	-0.79 ± 0.53

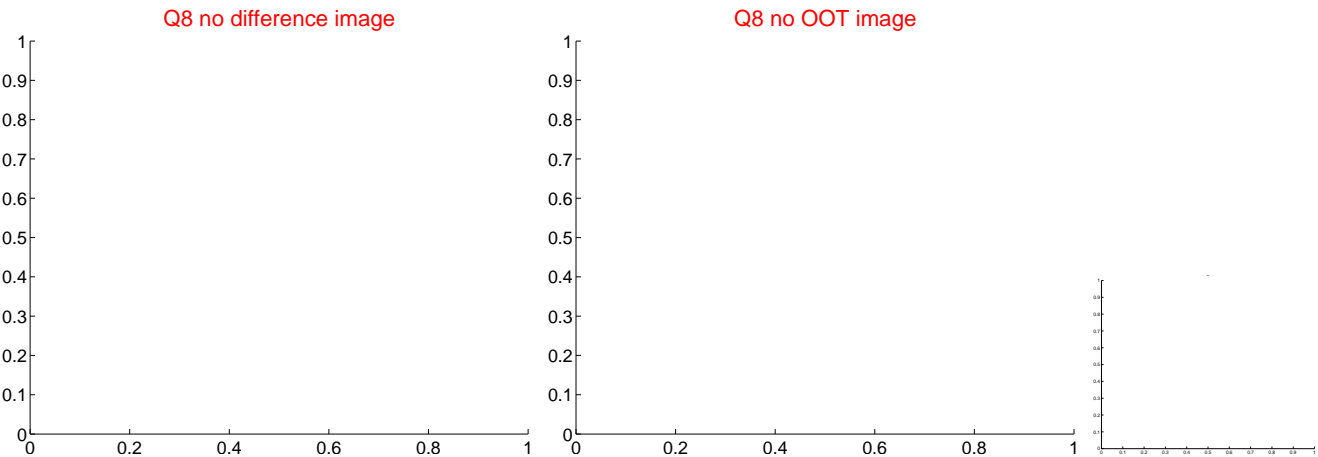
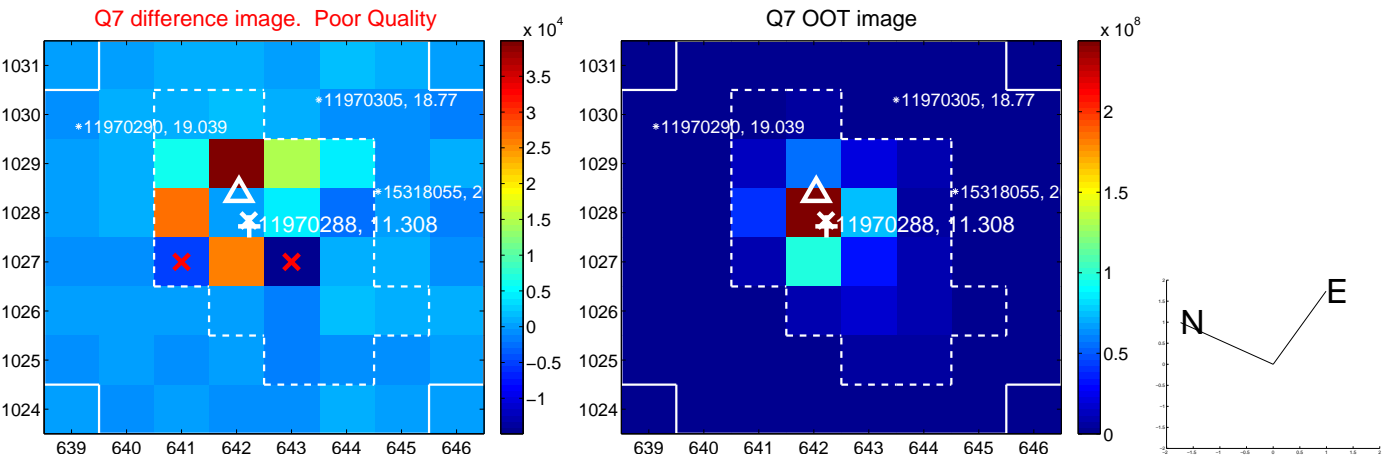
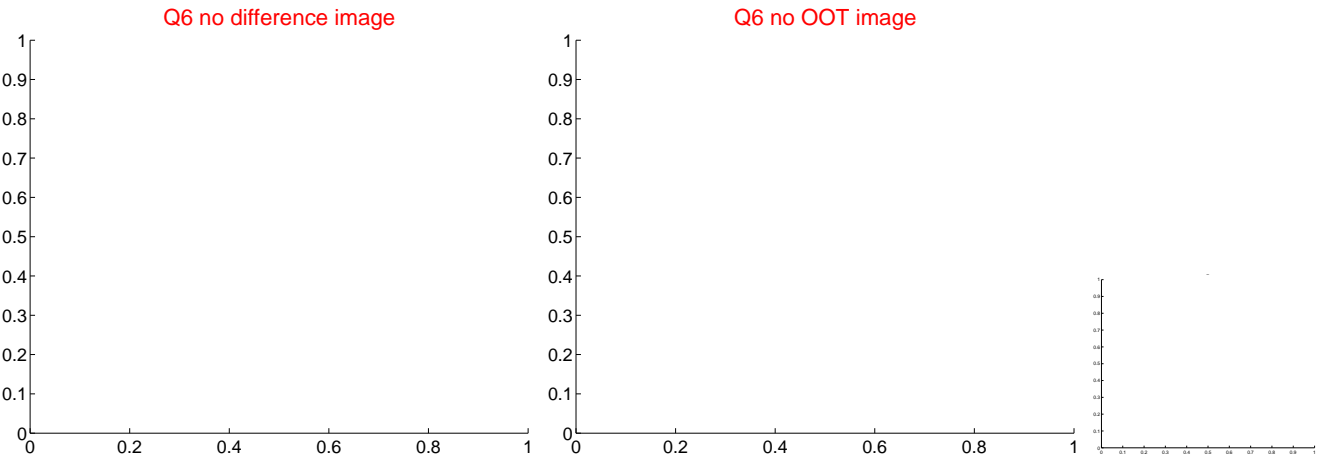
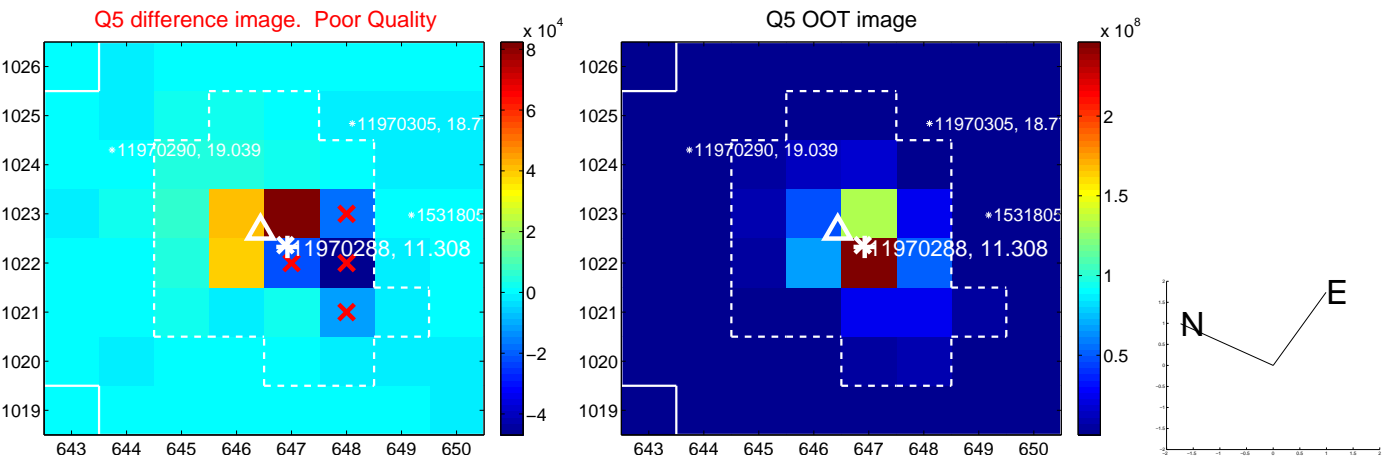


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

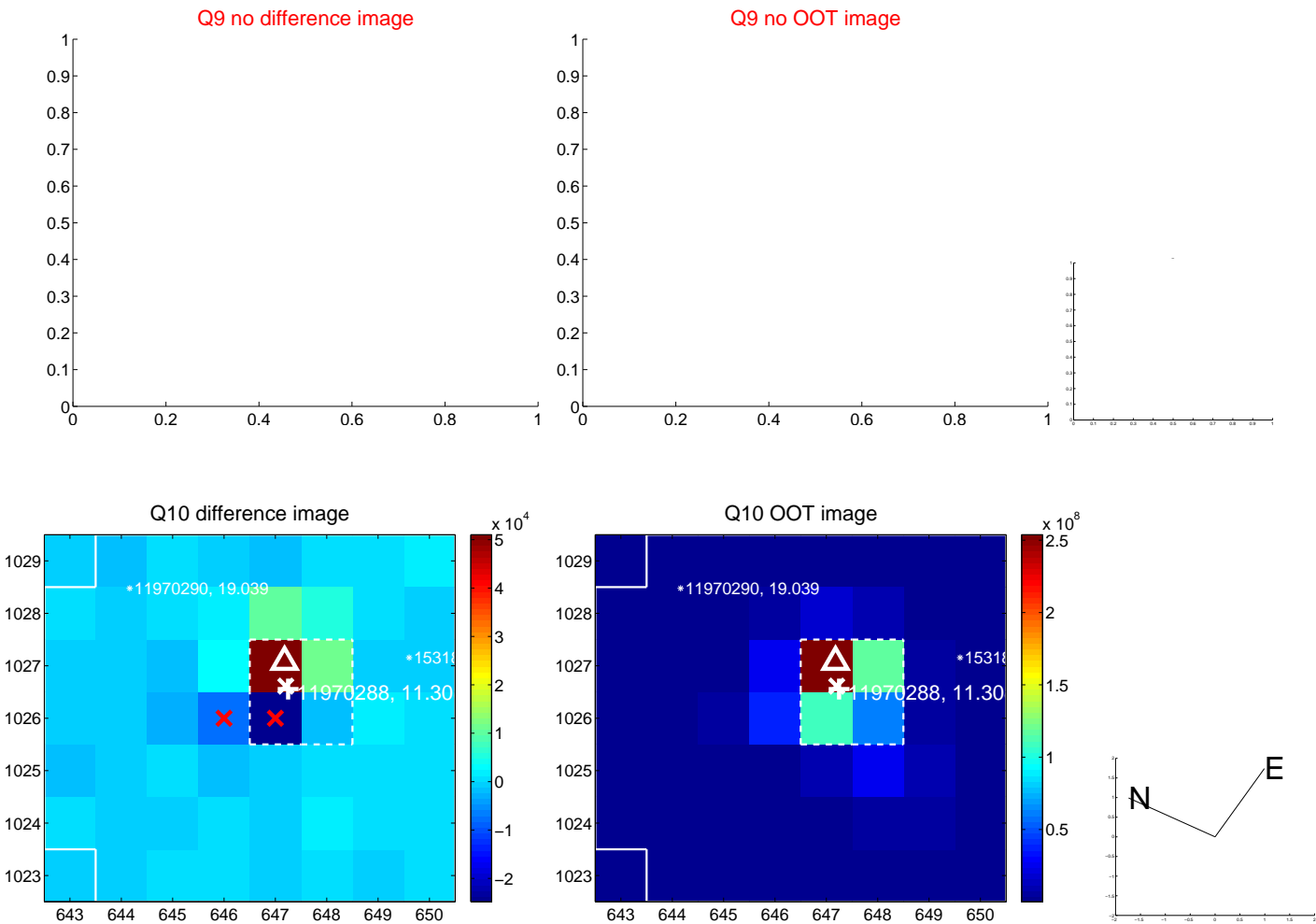
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



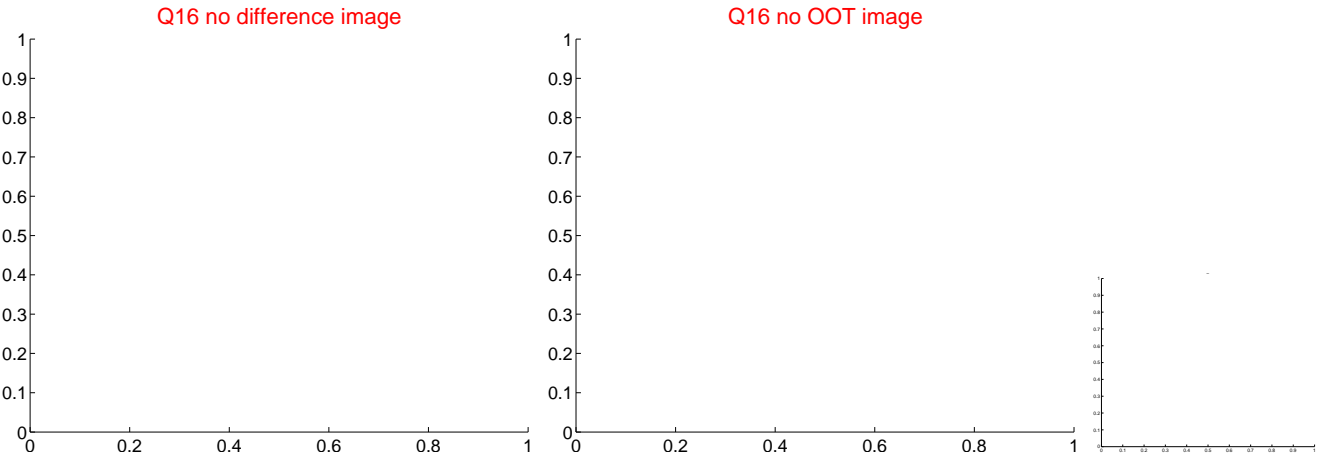
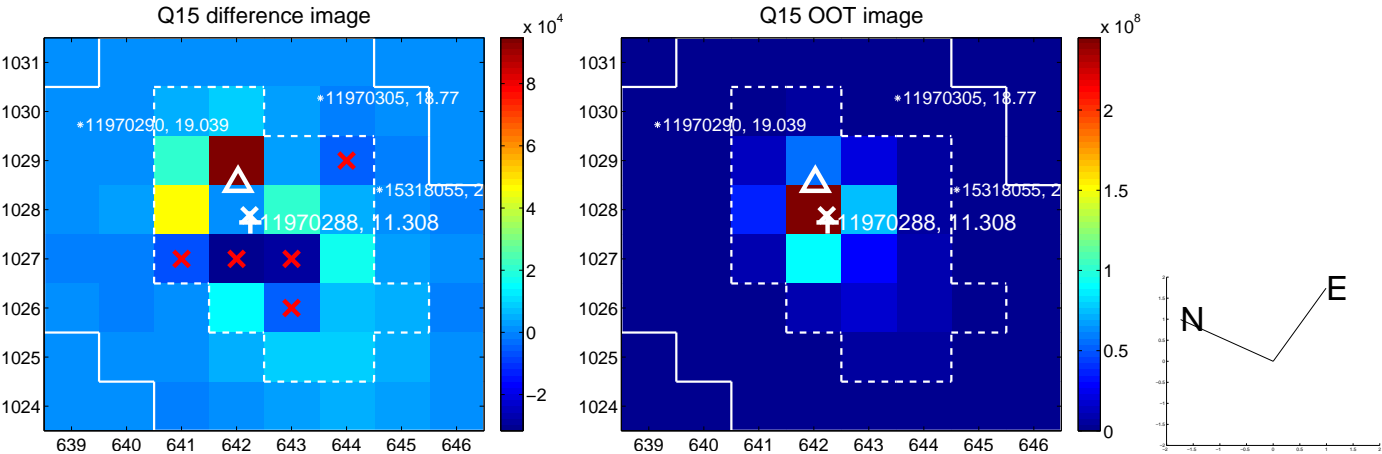
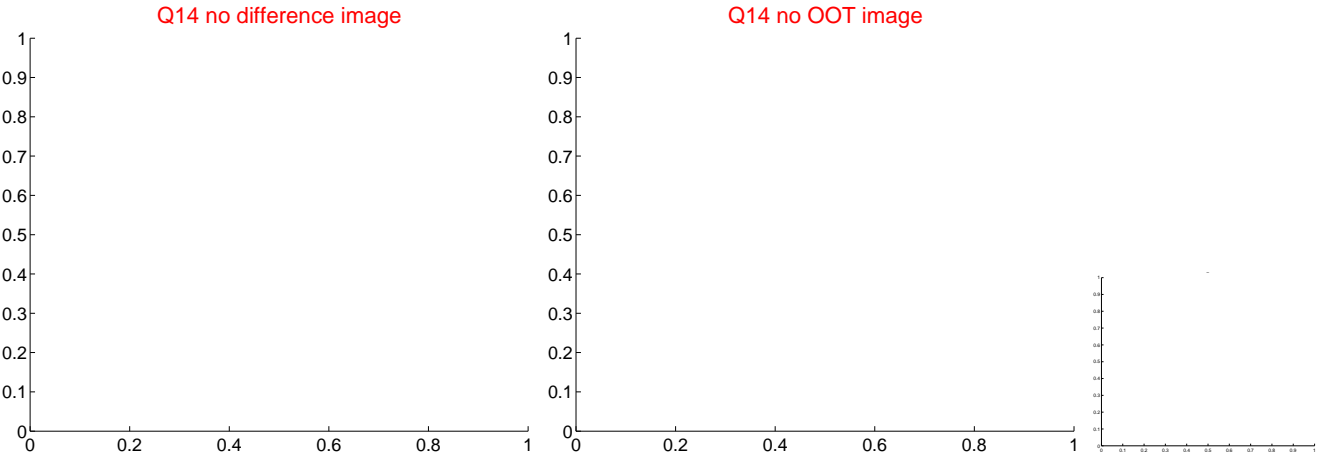
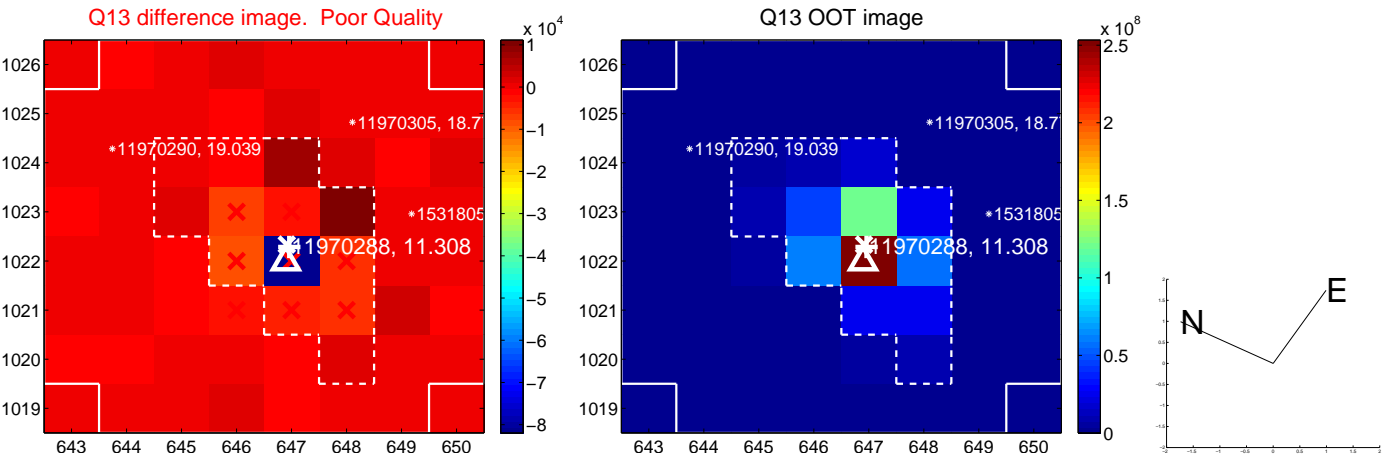
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



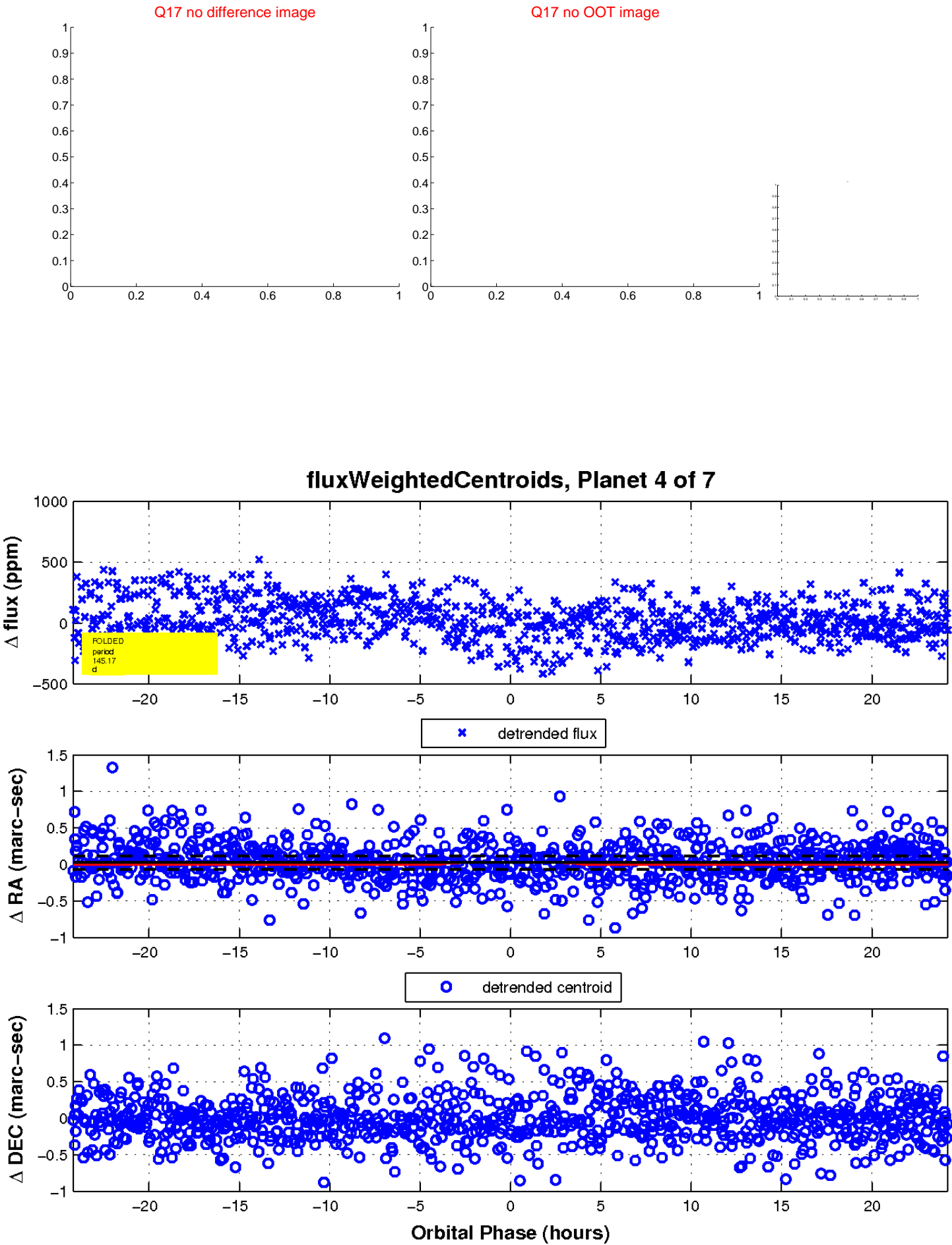
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

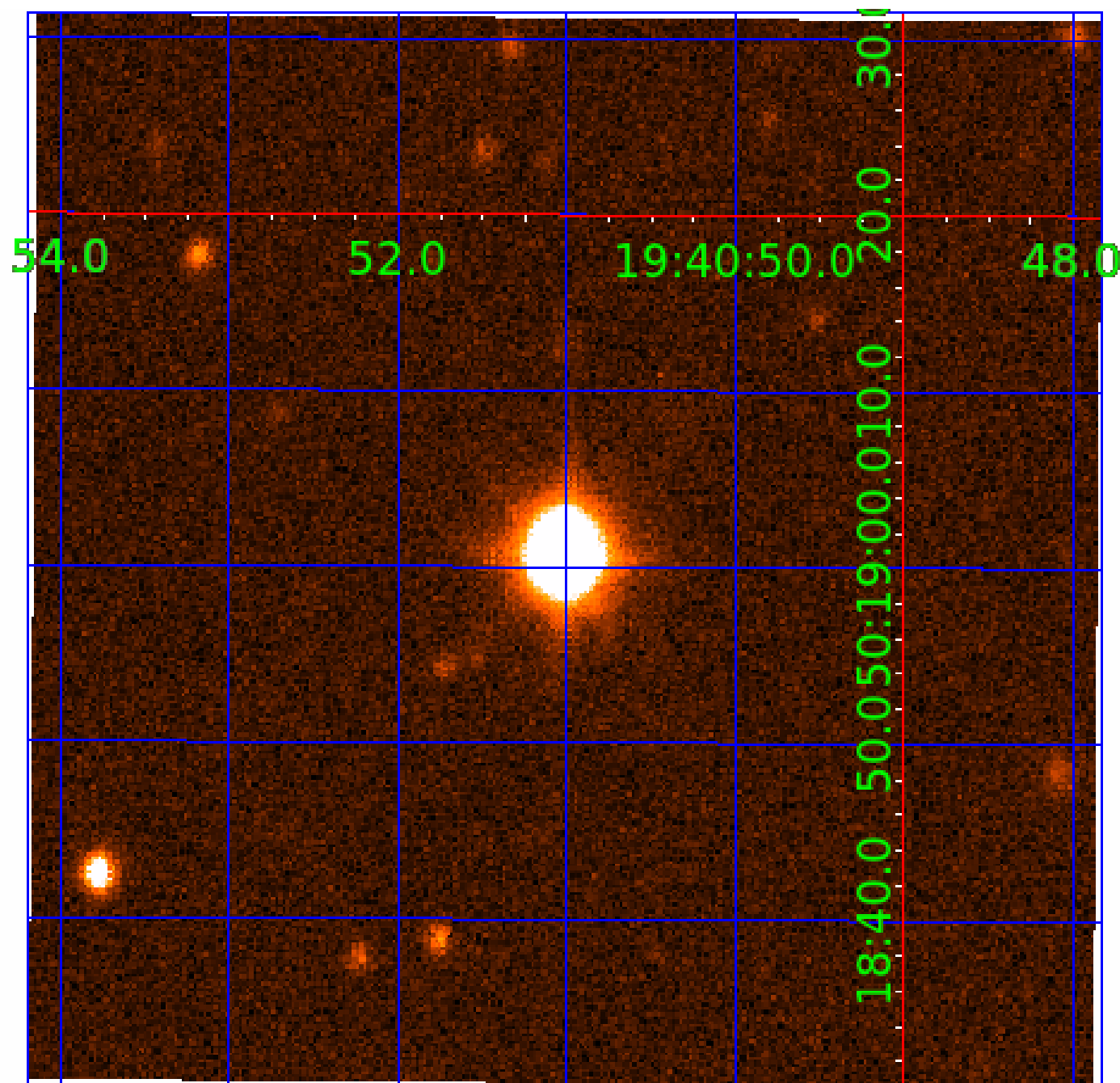


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011970288

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})
011970288-01	OBS	7501.01	20.711101	133.947495	883.0	41.047	19.4	44.5	2.89	6956	16.08	571.64
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011970288-04	OBS	No	145.168291	227.660244	189.5	8.073	9.3	8.7	2.89	6956	4.68	42.62
011970288-05	OBS	No	31.617880	162.306327	139.0	4.923	8.9	9.6	2.89	6956	3.96	325.20
011970288-06	OBS	No	66.899895	152.260036	217.1	2.643	9.1	8.4	2.89	6956	4.92	119.72
011970288-07	OBS	No	183.225321	196.888859	259.6	5.705	8.7	7.6	2.89	6956	9.04	31.24

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011970288-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED—CENT_SATURATED
011970288-02	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
011970288-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011970288-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
011970288-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
011970288-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

Ephemeris Match Information For 011970288-05

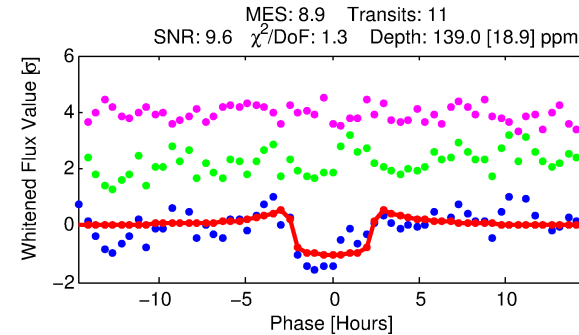
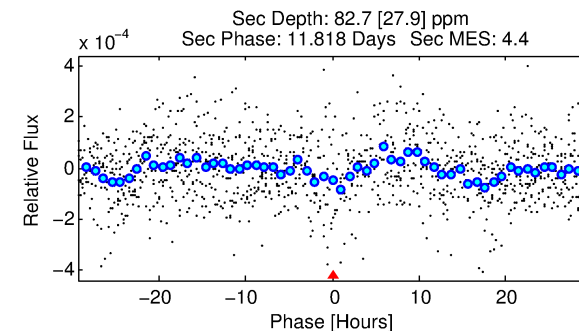
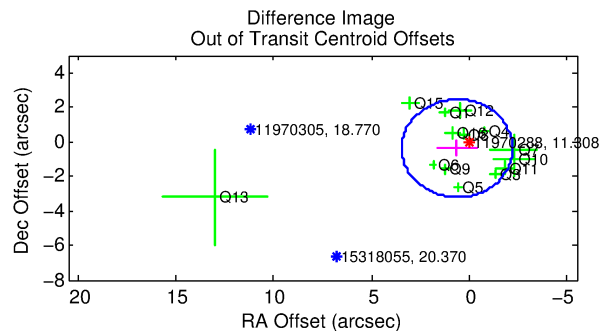
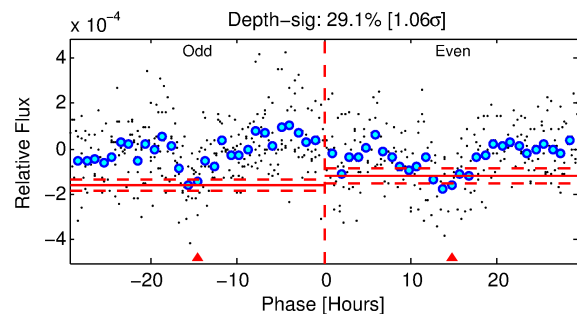
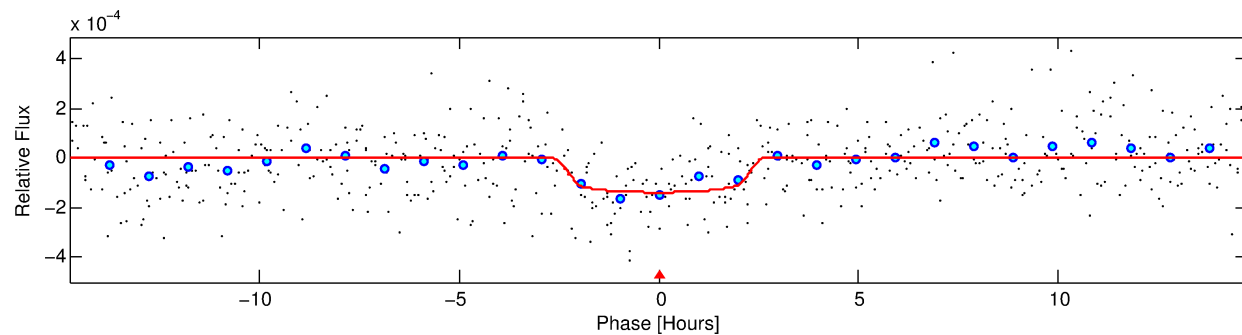
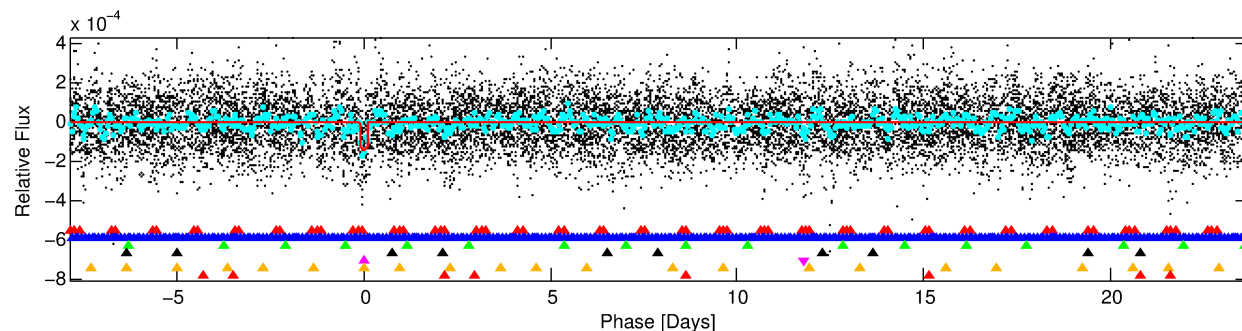
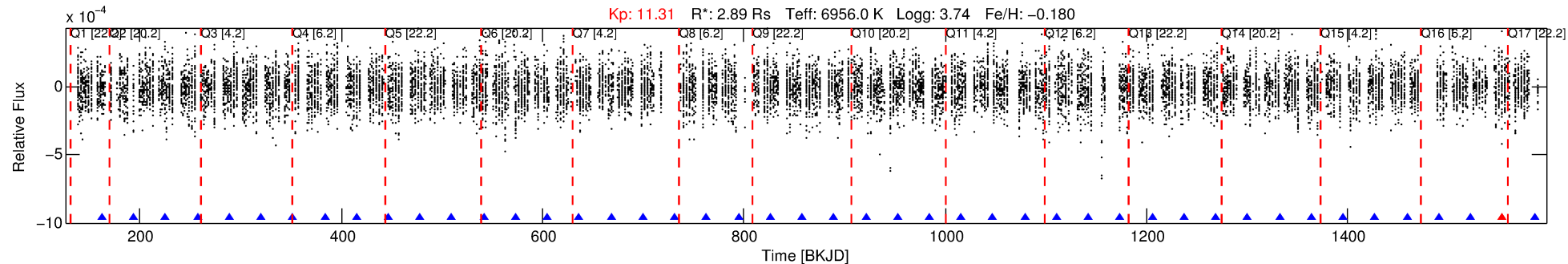
No Significant Match Found

DV One-Page Summary

KIC: 11970288 Candidate: 5 of 7 Period: 31.618 d

KOI: K07501 Corr: No Ephemeris Match

Kp: 11.31 R*: 2.89 Rs Teff: 6956.0 K Logg: 3.74 Fe/H: -0.180



DV Fit Results:

Period = 31.61788 [0.00035] d
Epoch = 162.3063 [0.0094] BKJD
Rp/R* = 0.0125 [0.0039]
a/R* = 22.80 [41.52]
b = 0.90 [0.39]
Seff = 325.20 [160.85]
Teq = 1083 [134] K
Rp = 3.95 [1.77] Re
a = 0.2319 [0.0701] AU
Ag = 156.47 [133.82] [1.16σ]
Teffp = 5921 [1068] K [4.50σ]

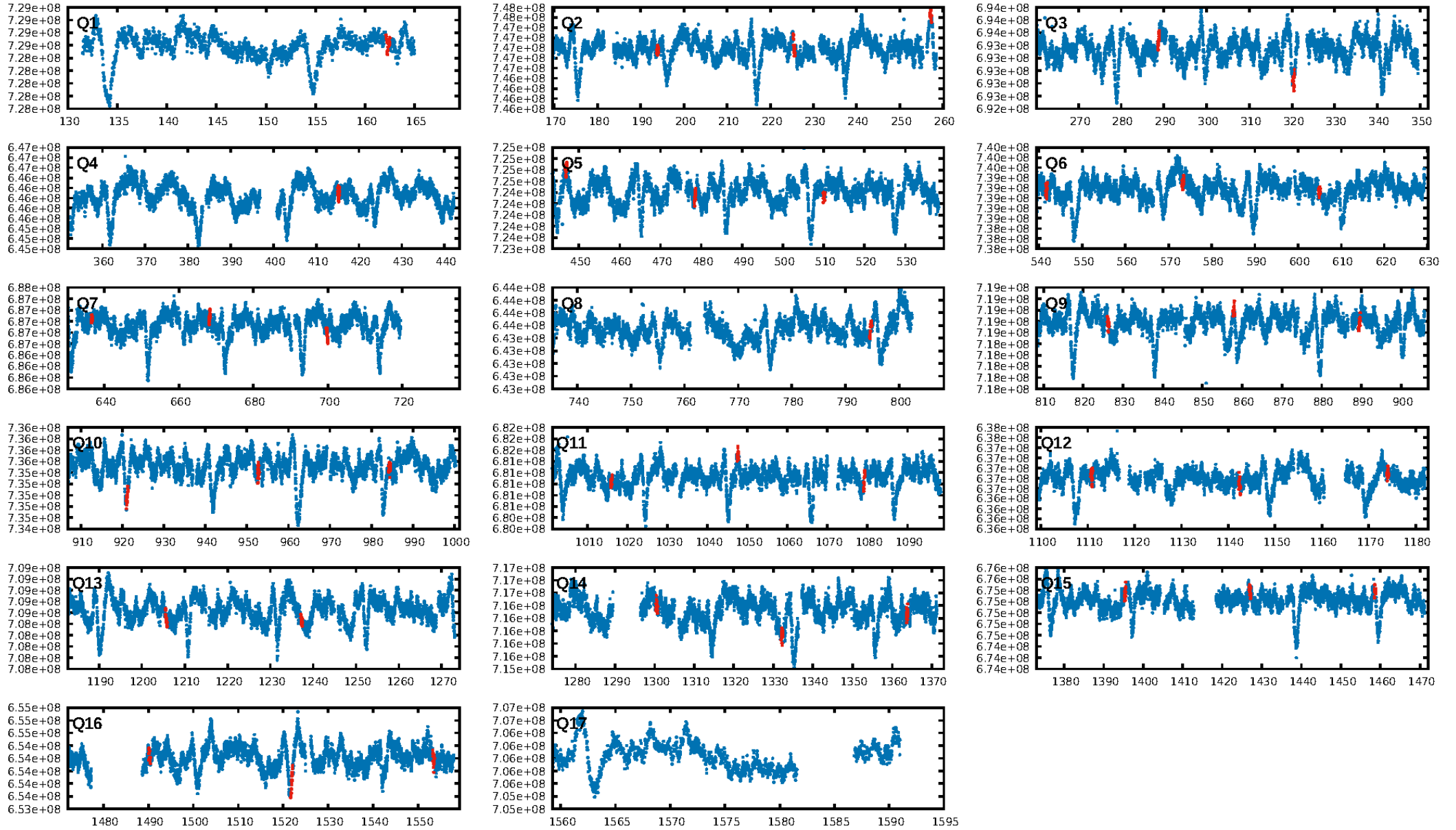
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.33σ]
LongPeriod-sig: 100.0% [151.53σ]
ModelChiSquare2-sig: 16.6%
ModelChiSquareGof-sig: 98.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.91 [10/11]
GhostDiagnostic-chr: 8.881
Centroid-sig: N/A
Centroid-so: 0.544 arcsec [1.60σ]
OotOffset-rm: 0.738 arcsec [0.78σ]
KicOffset-rm: 0.803 arcsec [1.00σ]
OotOffset-st: 2/4/4/4 [14]
KicOffset-st: 2/4/4/4 [14]
DiffImageQuality-fgm: 0.64 [9/14]
DiffImageOverlap-fno: 0.88 [14/16]

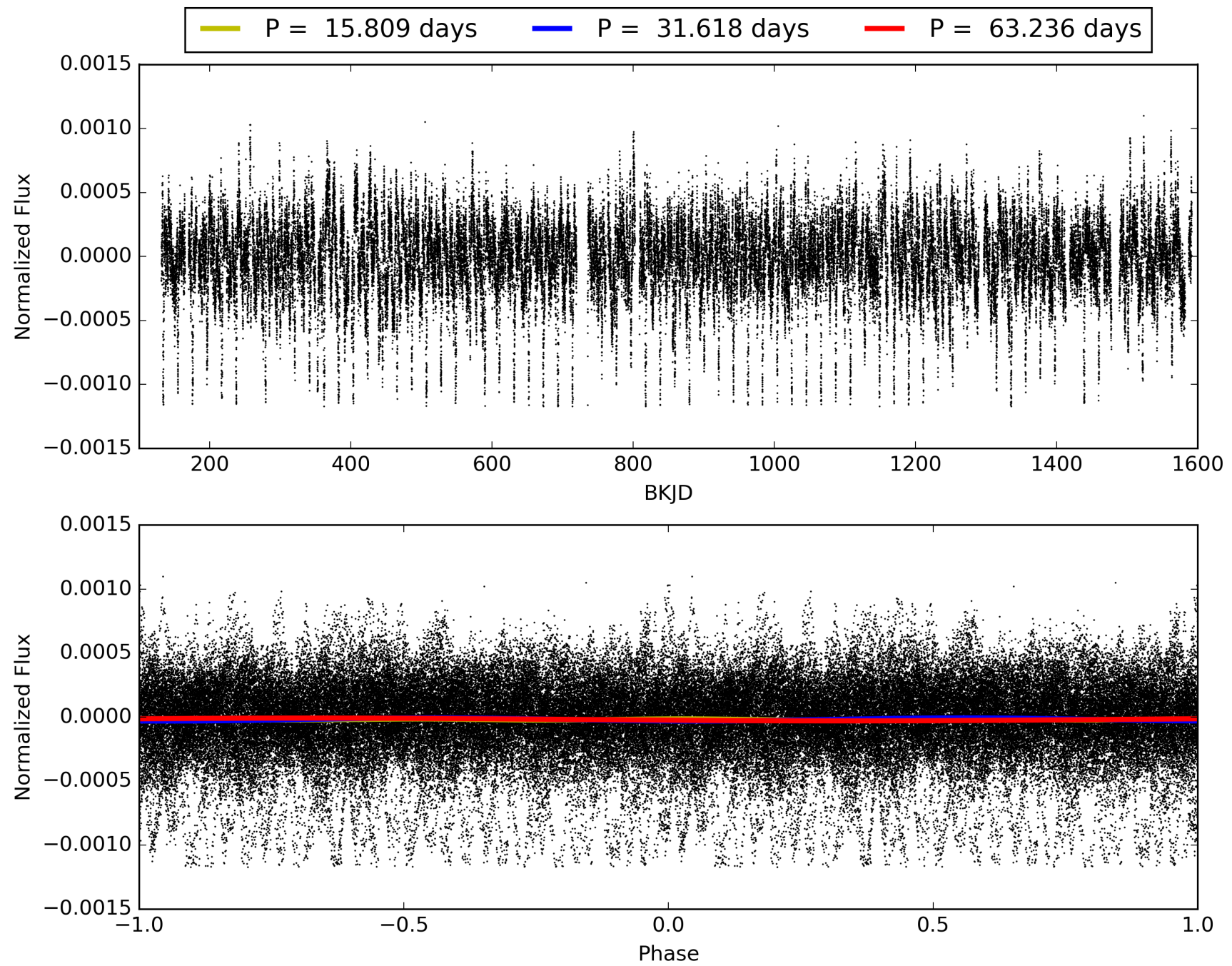
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:57:09 Z

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

TCE 011970288-05, PDC Light Curves

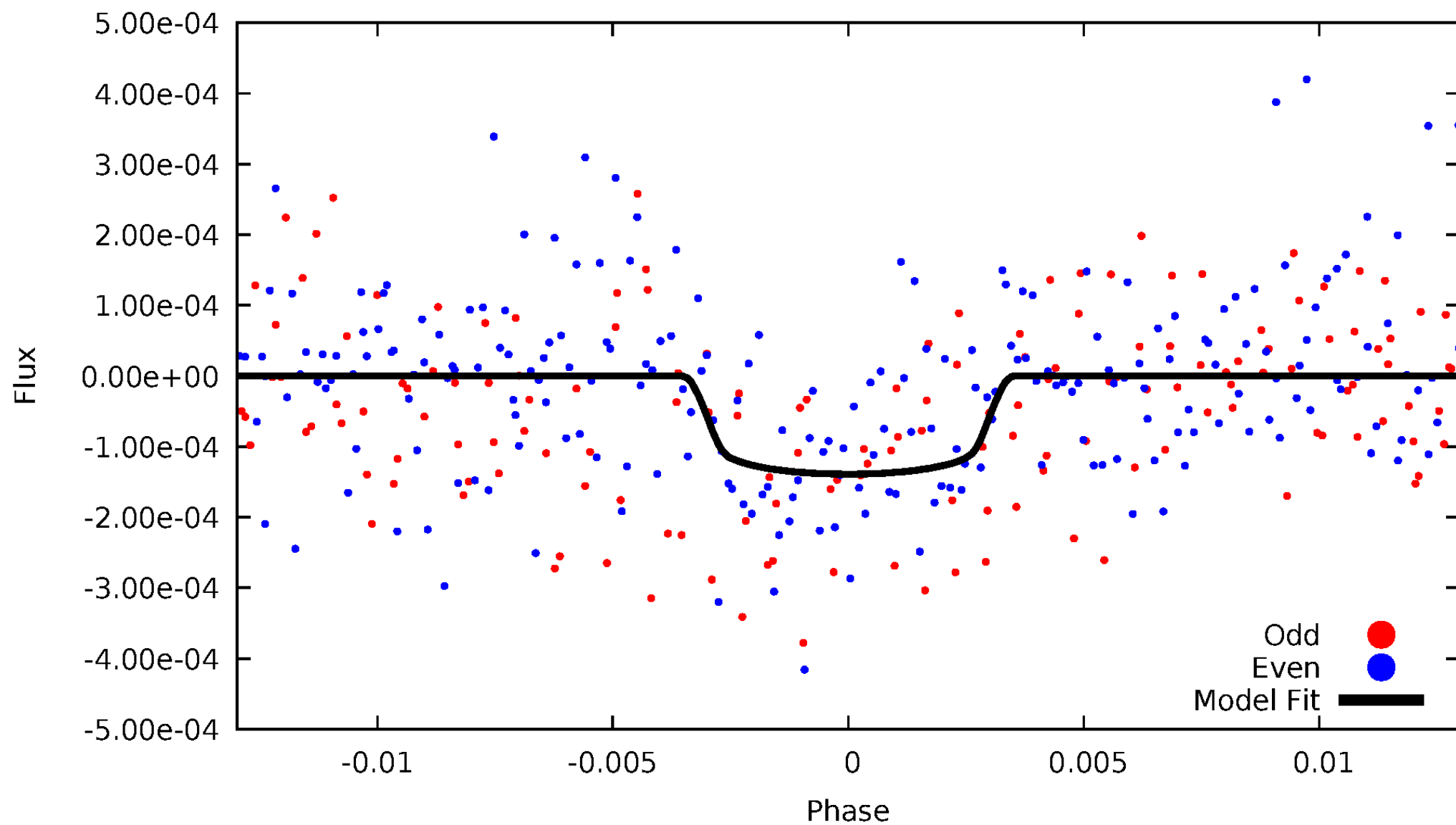


TCE 011970288-05



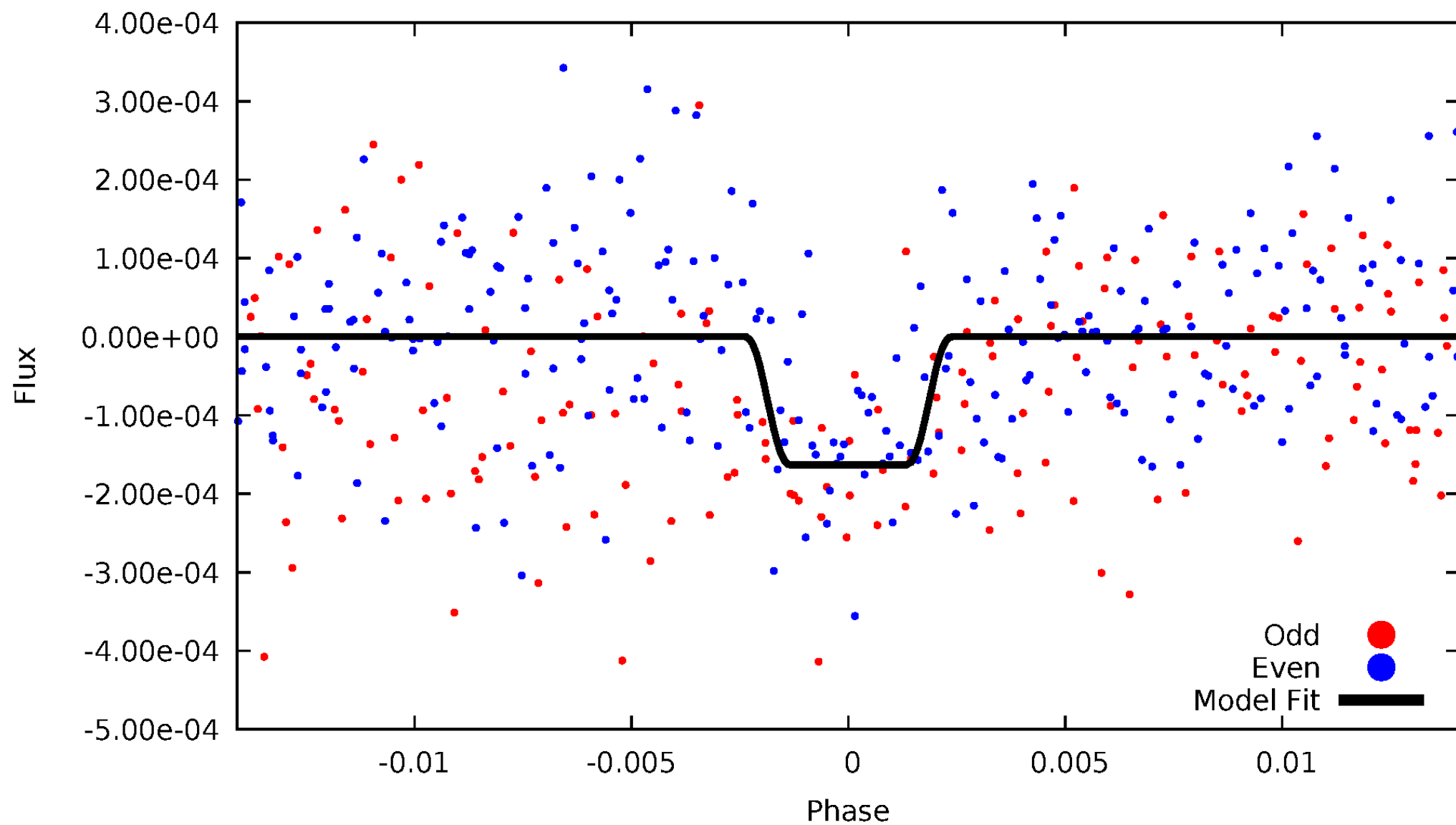
DV Odd/Even

TCE 011970288-05



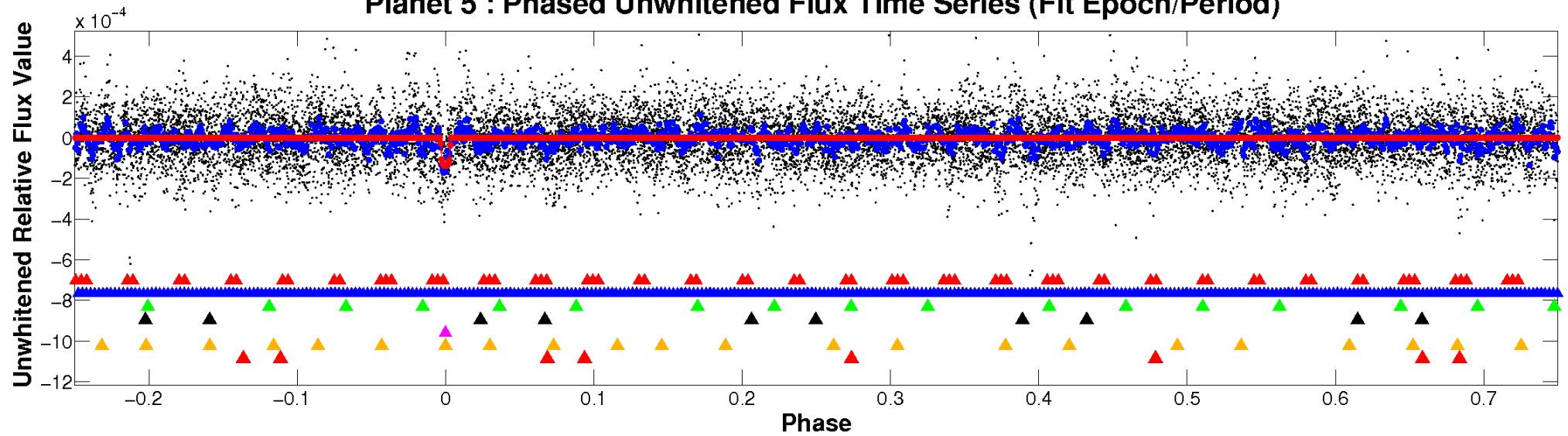
ALT Odd/Even

TCE 011970288-05

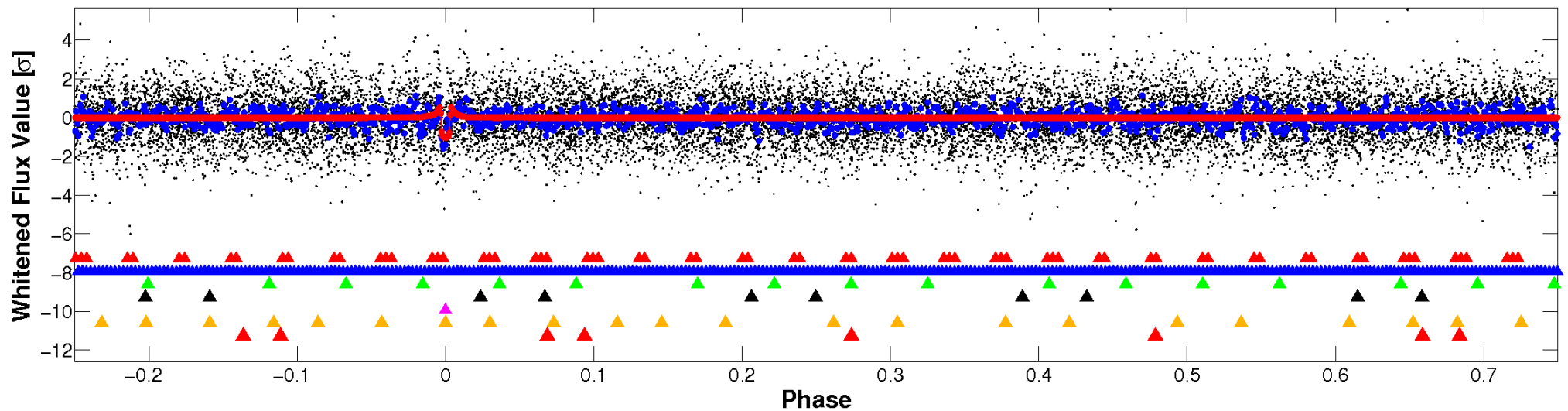


Non-Whitened Vs. Whitened Light Curve

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

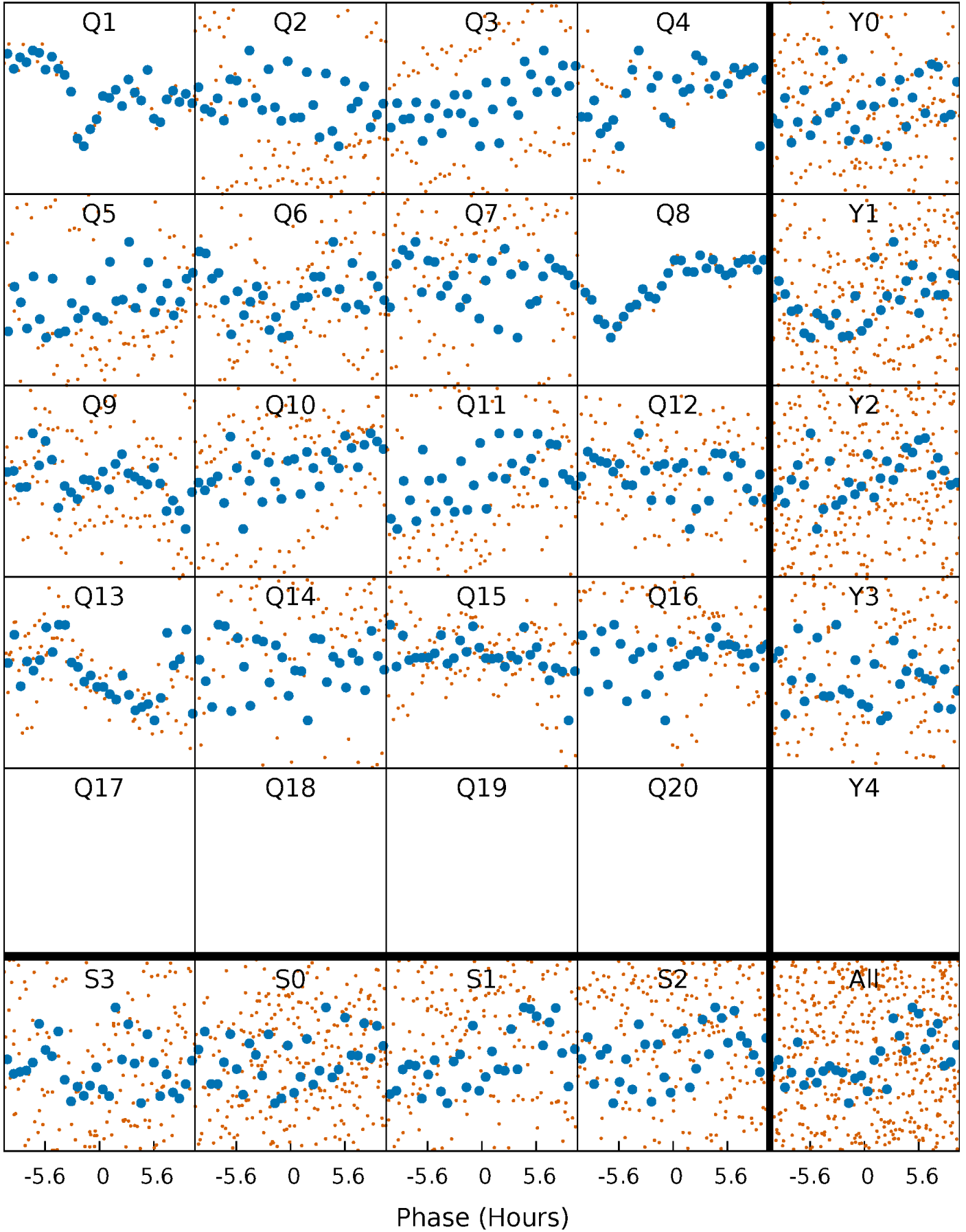


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



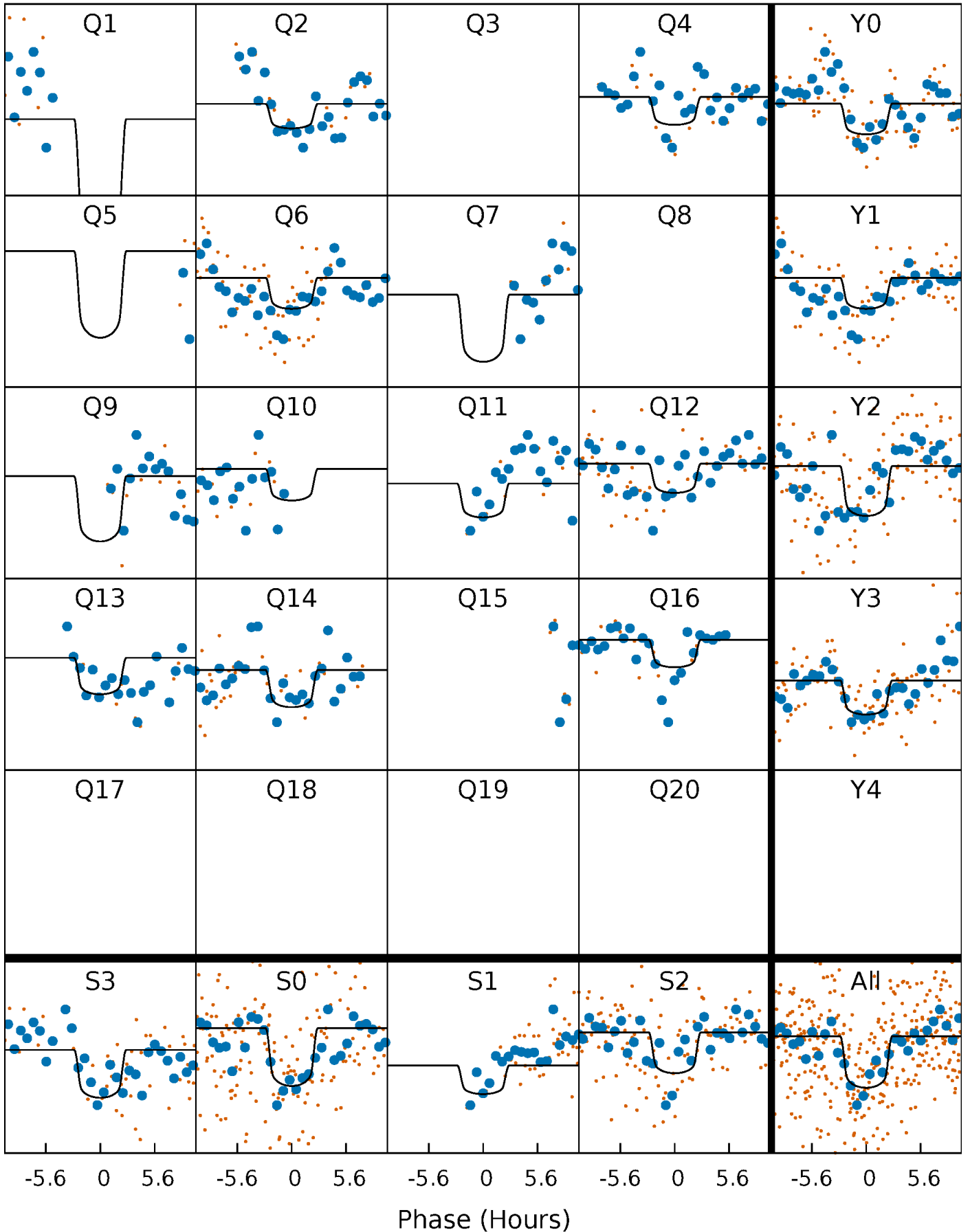
PDC Quarter-Phased Transit Curves

TCE 011970288-05 $P = 31.617880$ Days $T_0 = 162.306327$ (BKJD)



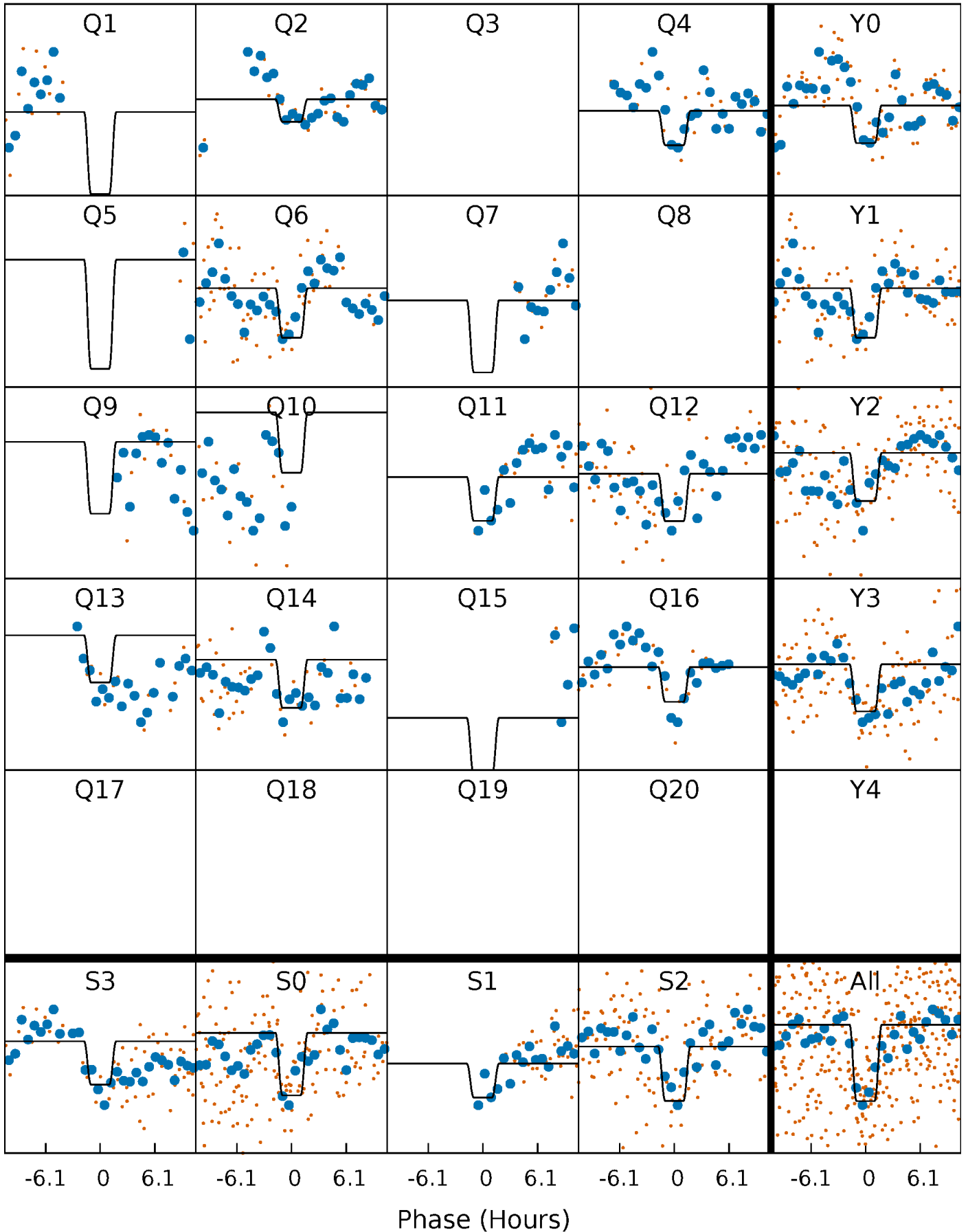
DV Quarter-Phased Transit Curves

TCE 011970288-05 $P = 31.617880$ Days $T_0 = 162.306327$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

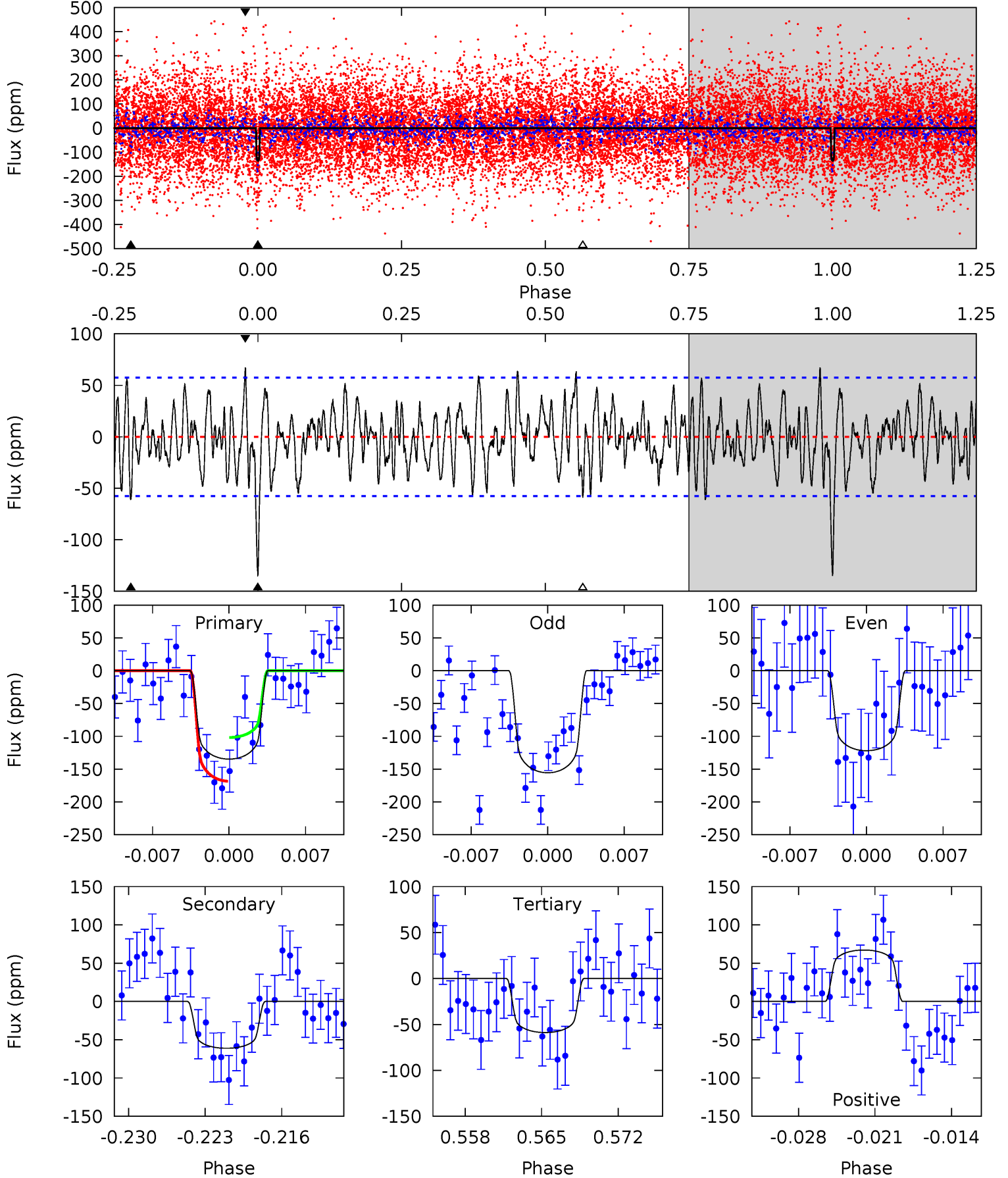
TCE 011970288-05 P= 31.617792 Days $T_0=162.276067$ (BKJD)



DV Model-Shift Uniqueness Test

011970288-05, P = 31.617880 Days, E = 130.688447 Days

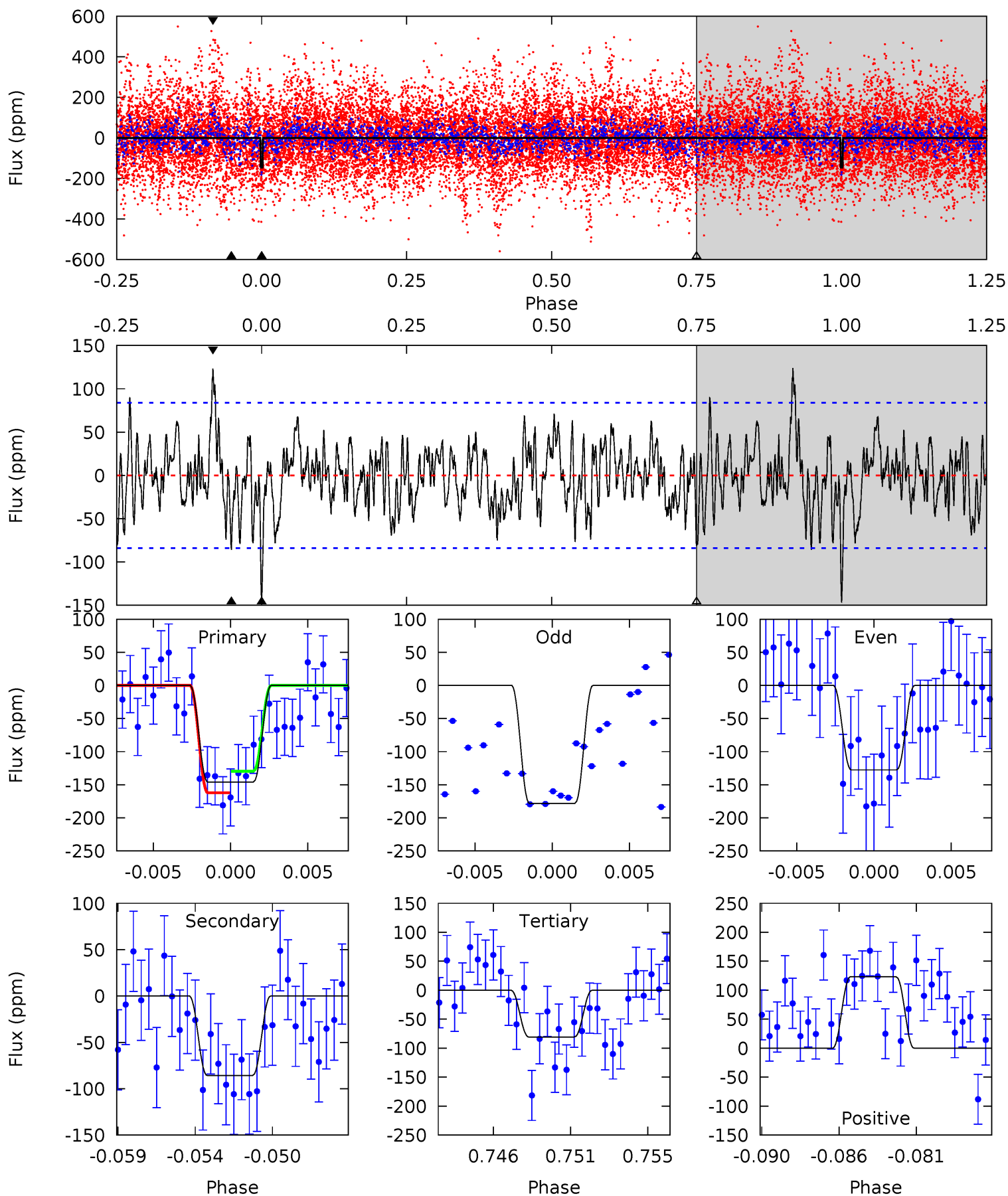
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	5.42	5.22	5.96	5.10	2.70	2.10	6.73	5.99	0.20	-0.53	1.45	1.11	0.33	2.95



Alt Model-Shift Uniqueness Test

011970288-05, P = 31.617792 Days, E = 130.658275 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.01	5.28	4.98	7.60	5.18	2.84	1.94	4.03	1.41	0.30	-2.32	1.52	1.12	0.46	1.00



Stellar Parameters For KIC 011970288

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6956^{+163}_{-225}	$3.738^{+0.278}_{-0.093}$	$-0.180^{+0.300}_{-0.250}$	$2.888^{+0.428}_{-0.927}$	$1.664^{+0.180}_{-0.335}$	$0.097^{+0.175}_{-0.028}$
	+2%/-3%	+7%/-2%	+167%/-139%	+15%/-32%	+11%/-20%	+180%/-29%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011970288-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-61 ± 11	$3.69^{+1.42}_{-1.29}$	1488^{+75}_{-125}	5524^{+1223}_{-719}	134^{+180}_{-67}
Alt.	-86 ± 16	$3.76^{+1.40}_{-1.27}$	1485^{+78}_{-130}	5835^{+1385}_{-695}	175^{+226}_{-80}

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

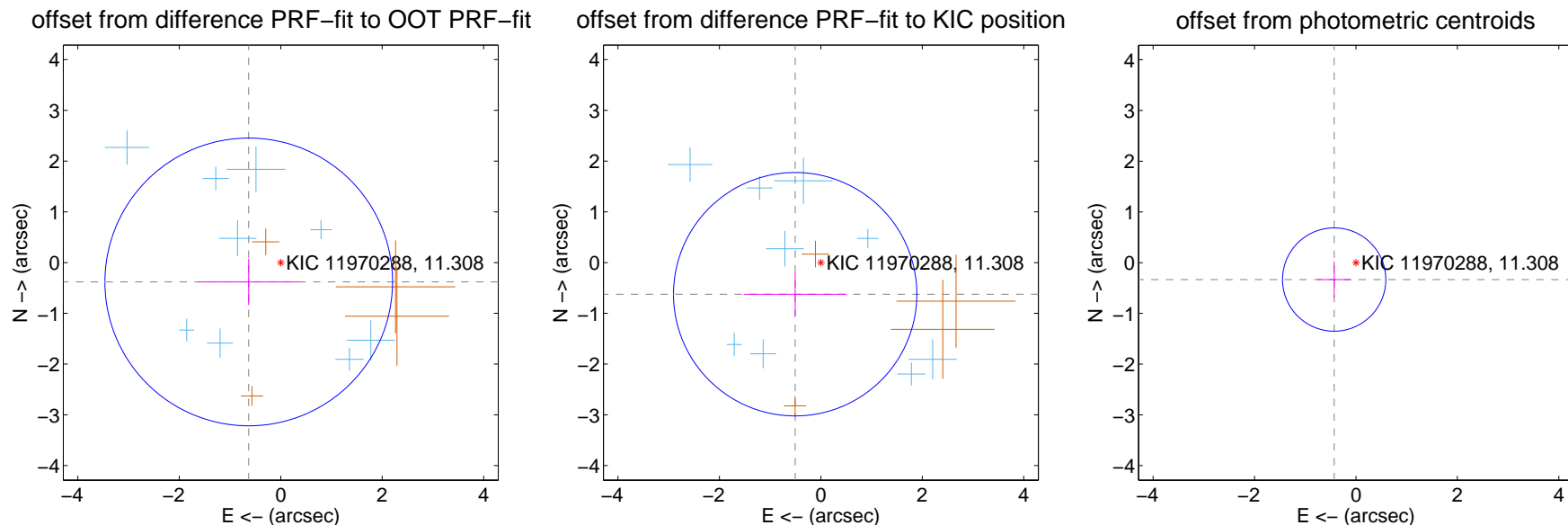
DV Centroid Data

Supplemental centroid analysis for 011970288-05. **Kepler magnitude: 11.31.** Transit SNR 9.55

There are 9 quarters with good PRF difference image offsets

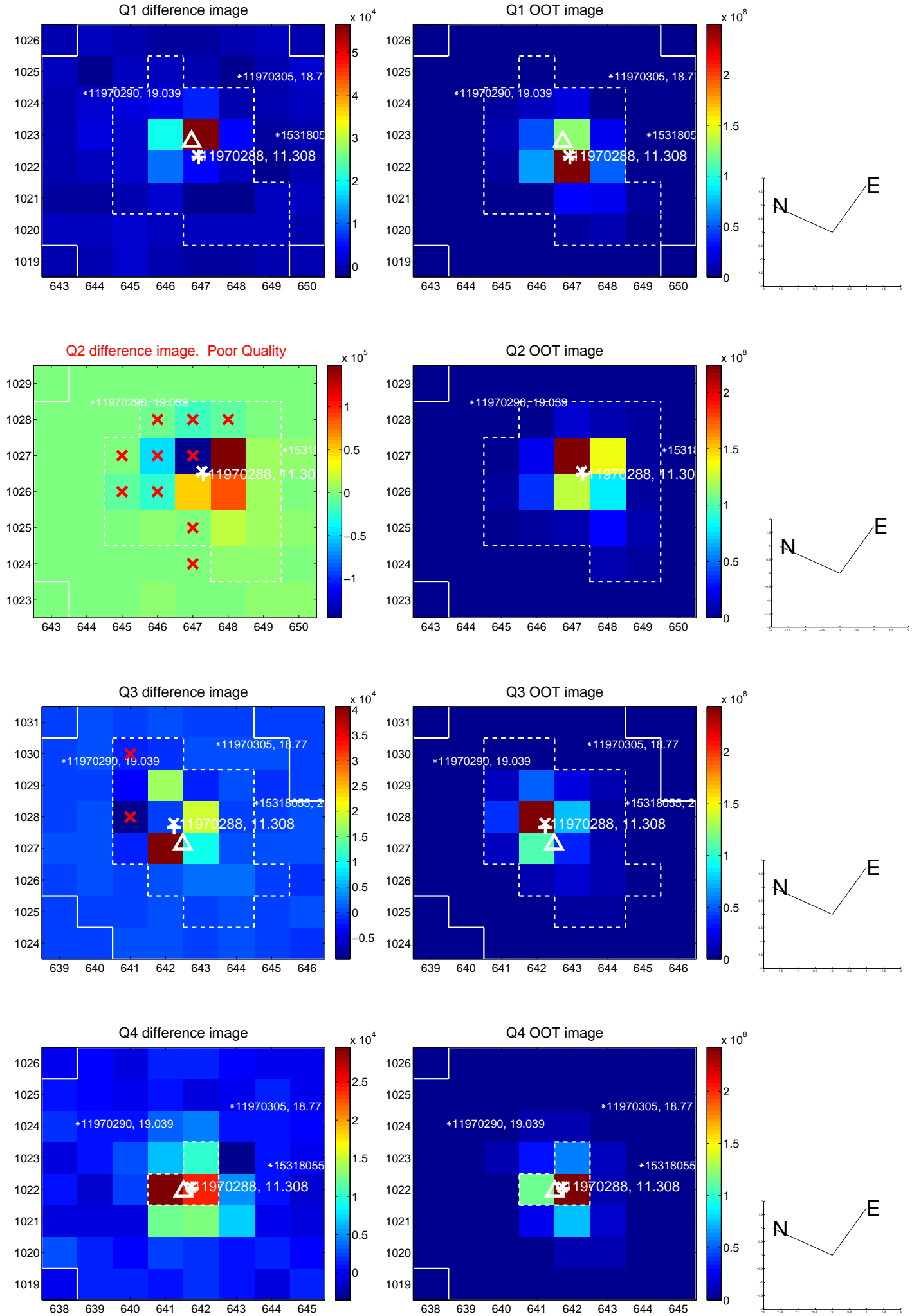
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.738 ± 0.945	0.78	0.631 ± 0.991	-0.381 ± 0.458
PRF-fit source offset from KIC position	0.803 ± 0.800	1.00	0.507 ± 1.013	-0.623 ± 0.433
photometric centroid source offset	0.54 ± 0.34	1.60	0.43 ± 0.33	-0.33 ± 0.36

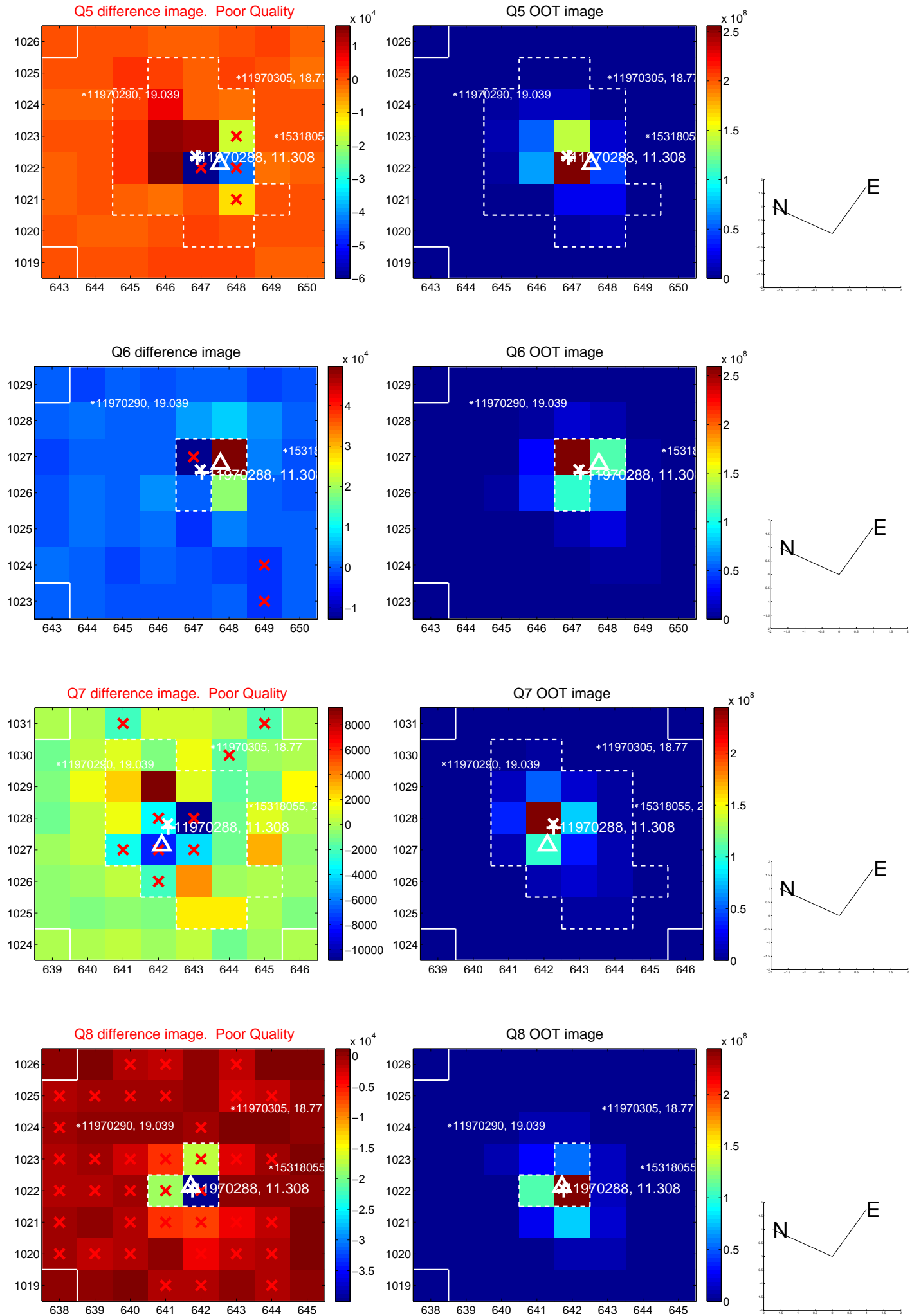


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

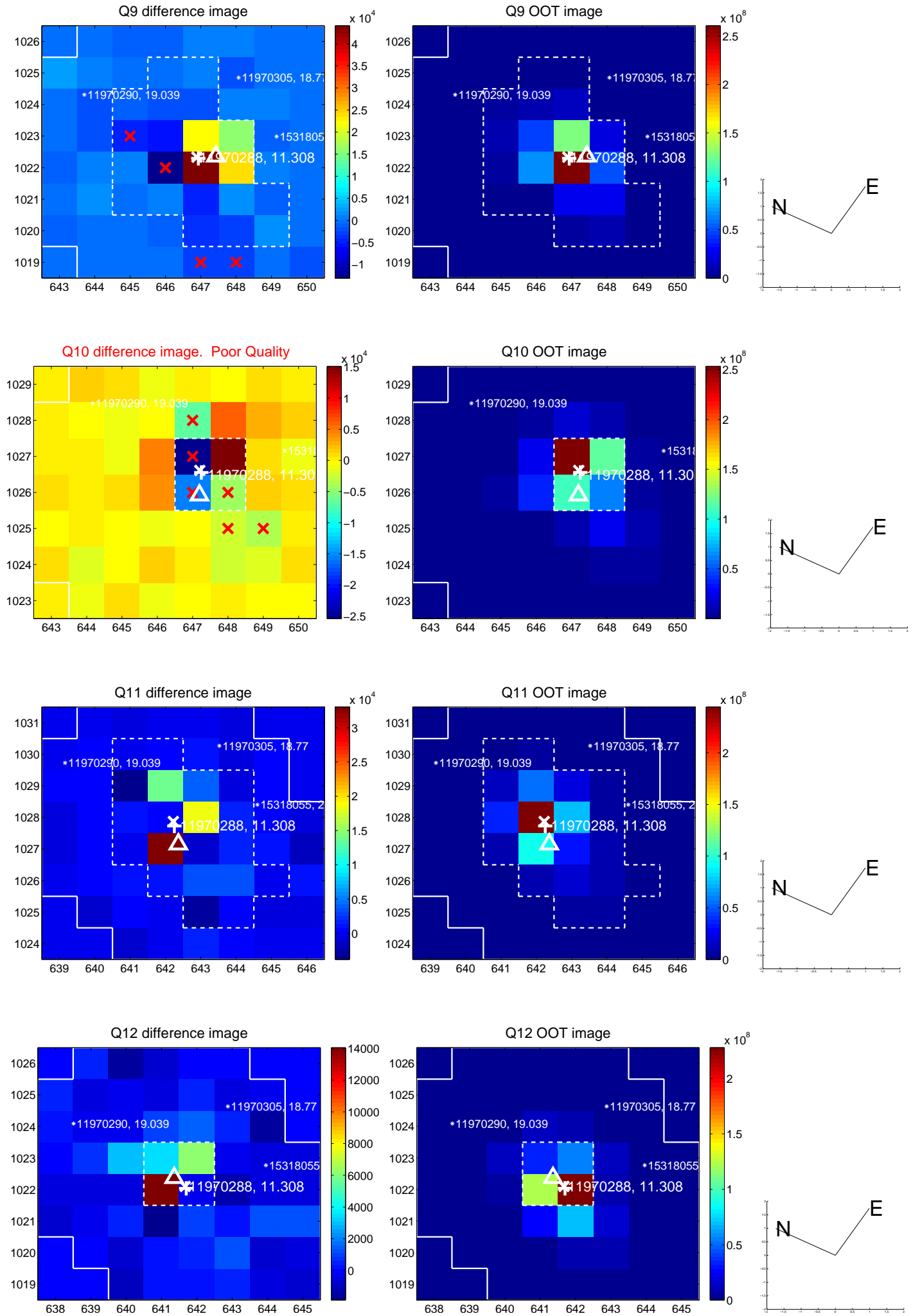
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



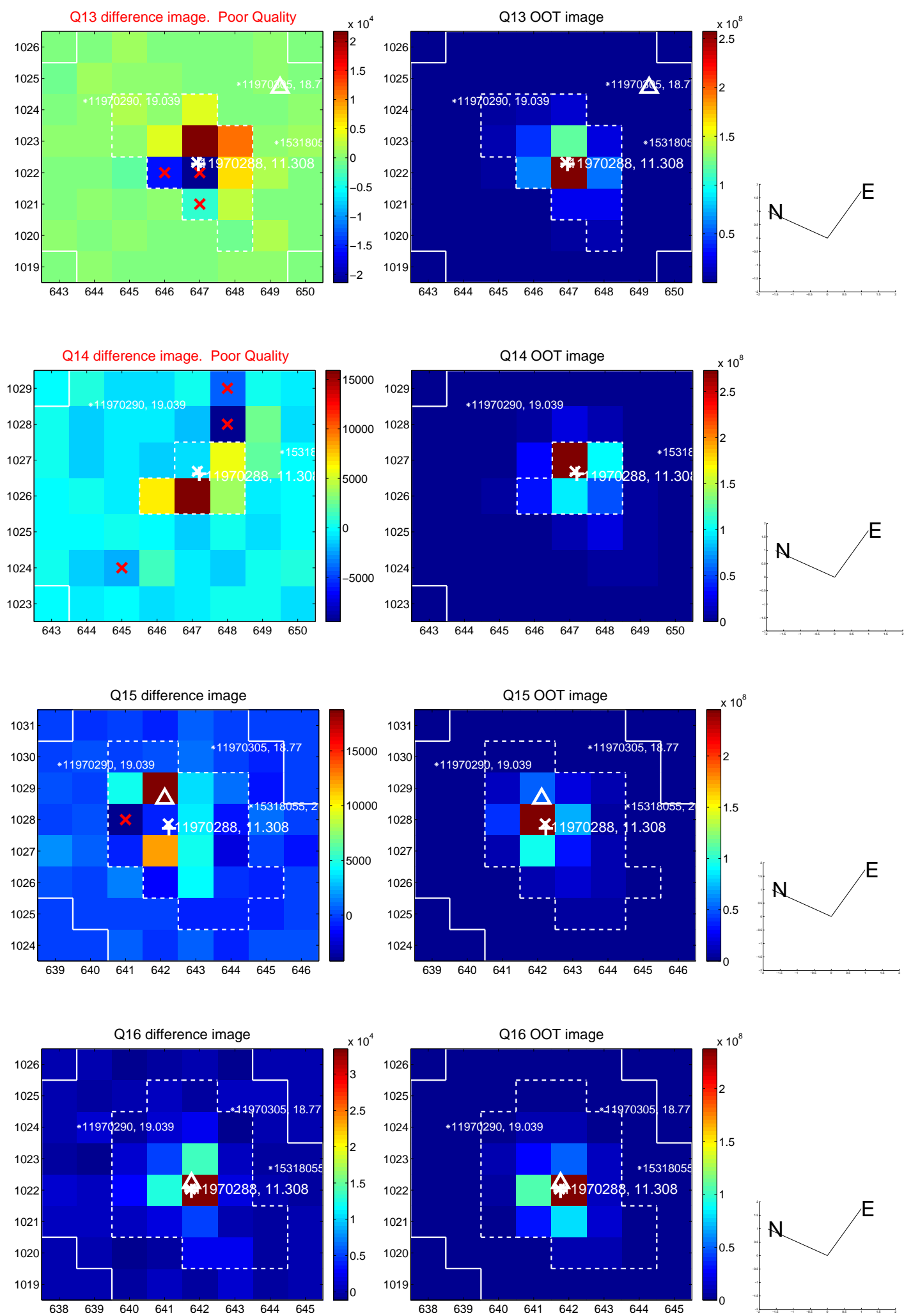
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



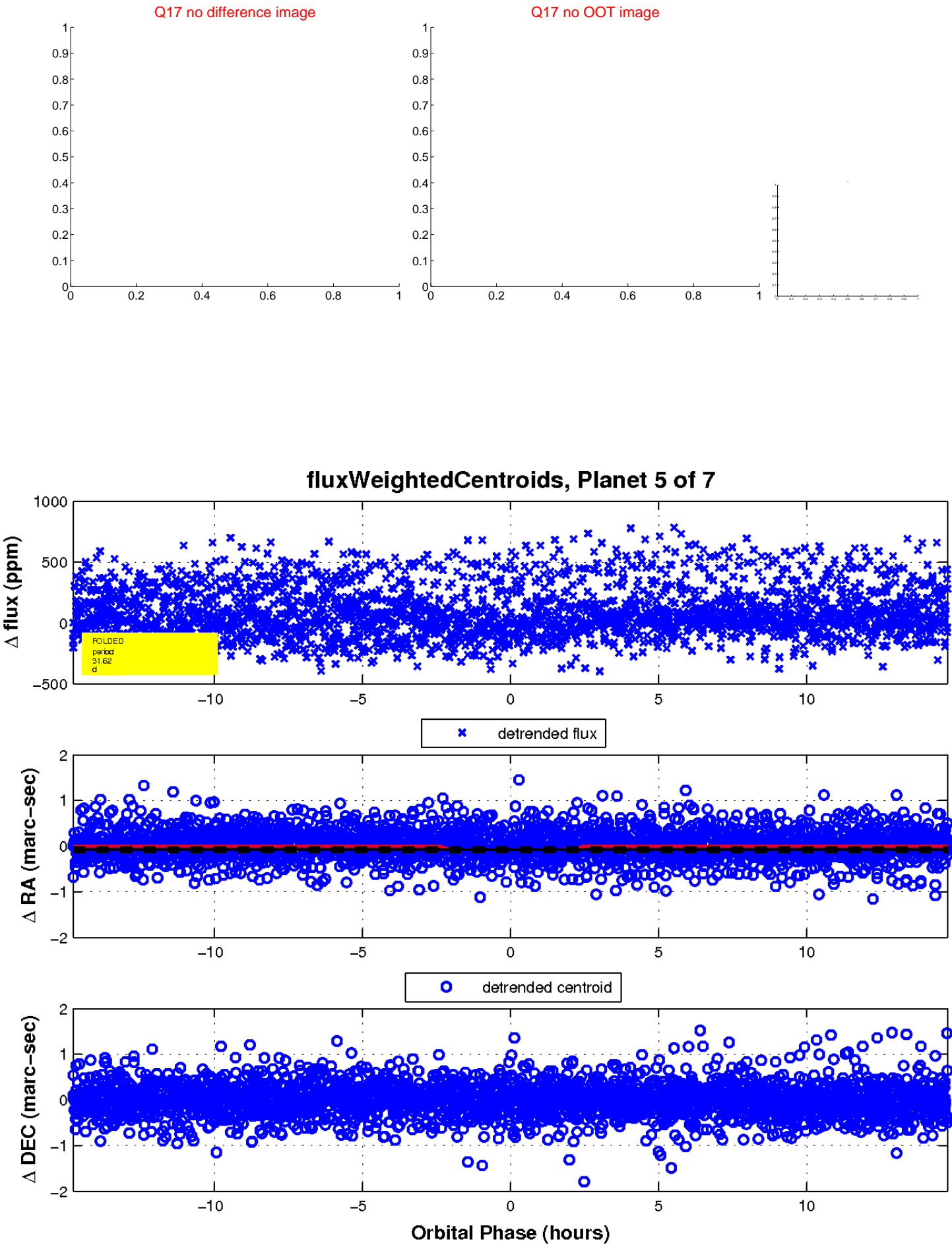
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

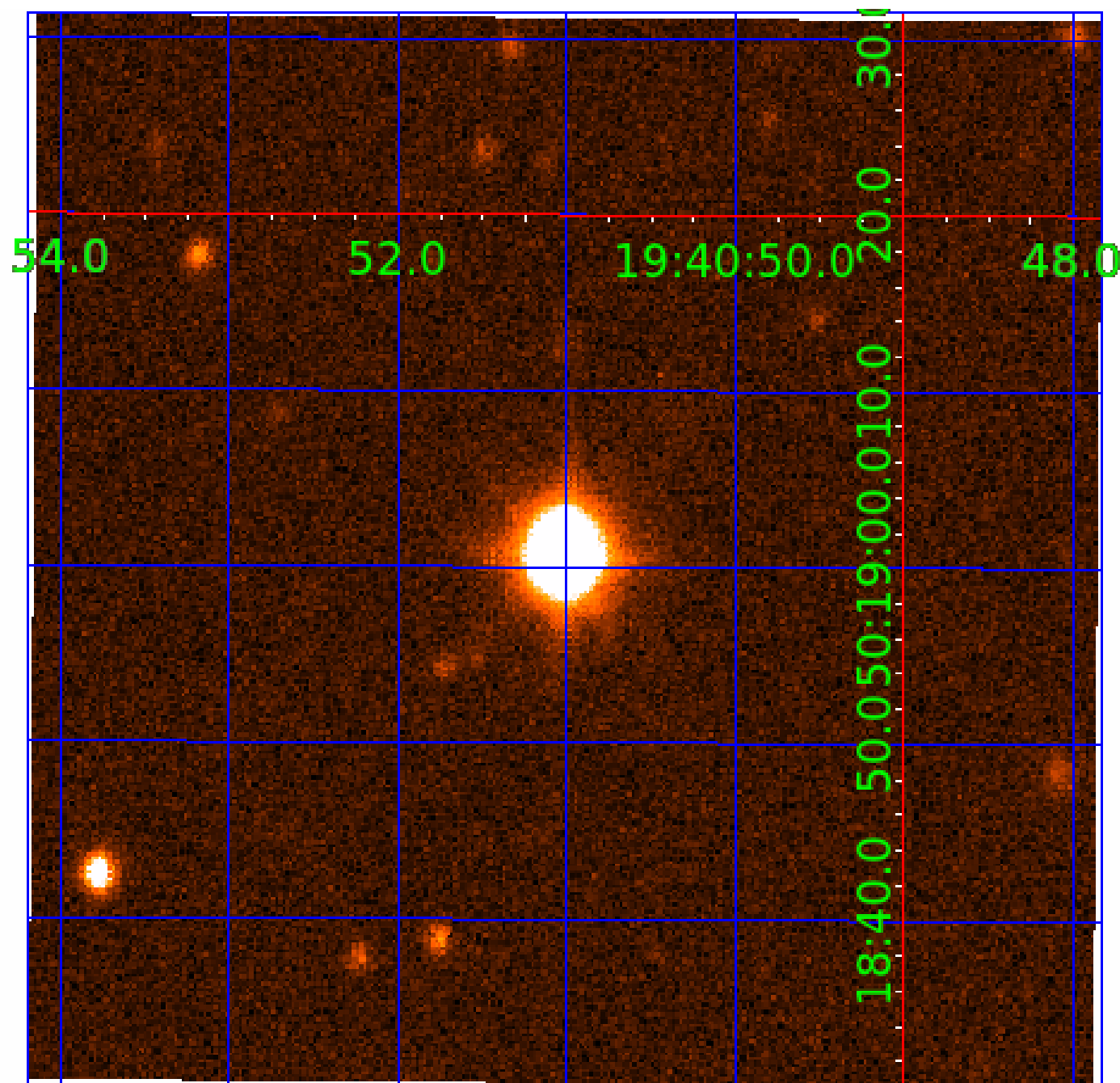


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011970288

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})
011970288-01	OBS	7501.01	20.711101	133.947495	883.0	41.047	19.4	44.5	2.89	6956	16.08	571.64
011970288-02	OBS	No	3.213876	134.247824	129.4	16.852	15.4	20.7	2.89	6956	4.69	6855.28
011970288-04	OBS	No	145.168291	227.660244	189.5	8.073	9.3	8.7	2.89	6956	4.68	42.62
011970288-05	OBS	No	31.617880	162.306327	139.0	4.923	8.9	9.6	2.89	6956	3.96	325.20
011970288-06	OBS	No	66.899895	152.260036	217.1	2.643	9.1	8.4	2.89	6956	4.92	119.72
011970288-07	OBS	No	183.225321	196.888859	259.6	5.705	8.7	7.6	2.89	6956	9.04	31.24

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011970288-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED—CENT_SATURATED
011970288-02	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
011970288-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011970288-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
011970288-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
011970288-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

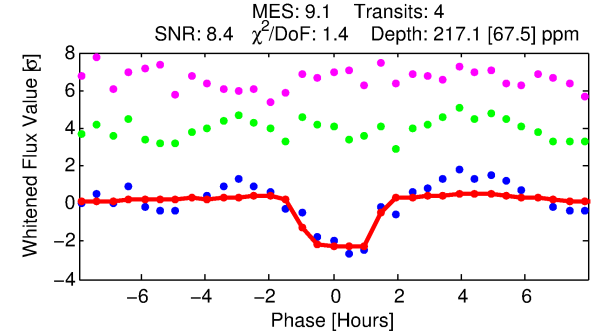
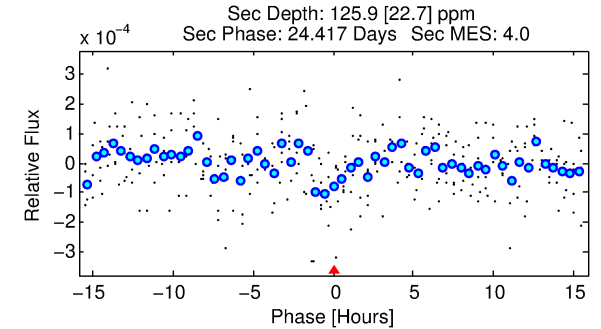
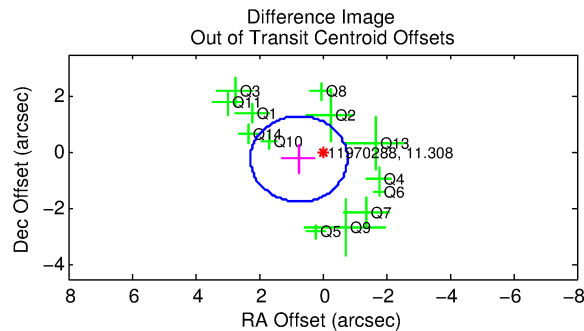
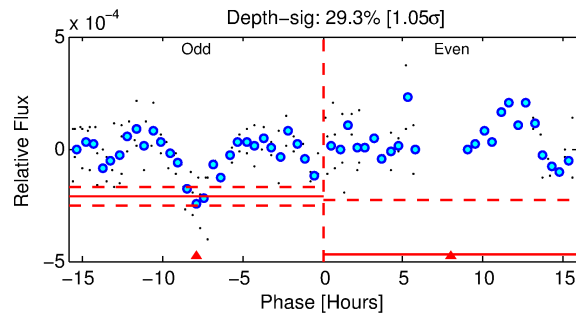
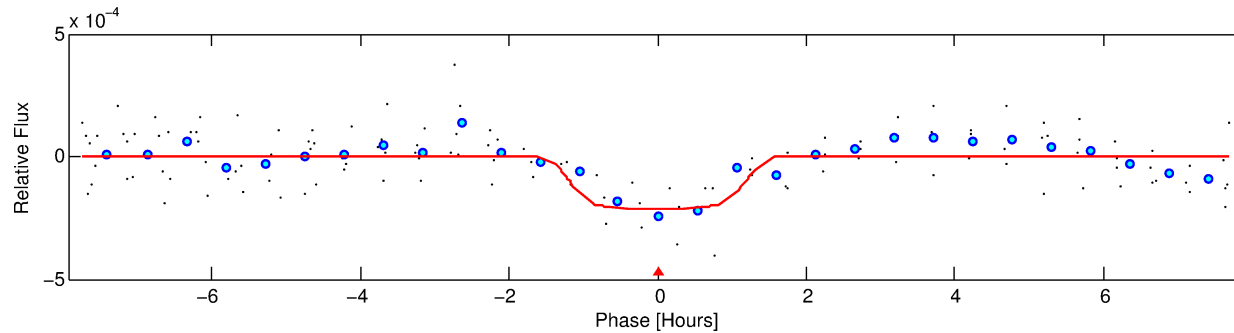
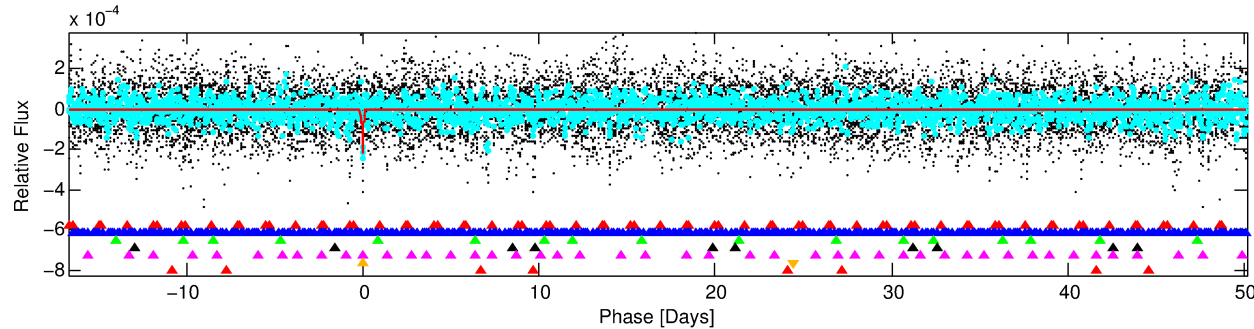
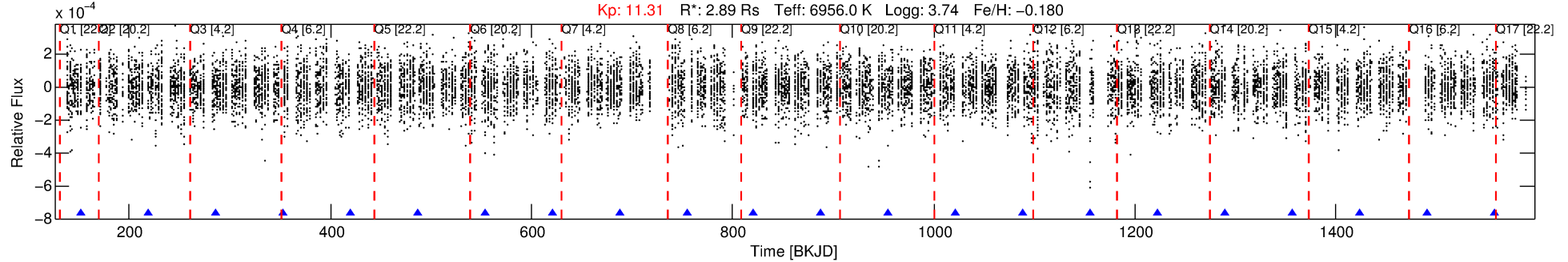
Ephemeris Match Information For 011970288-06

No Significant Match Found

DV One-Page Summary

KIC: 11970288 Candidate: 6 of 7 Period: 66.900 d
KOI: K07501 Corr: No Ephemeris Match

Kp: 11.31 R*: 2.89 Rs Teff: 6956.0 K Logg: 3.74 Fe/H: -0.180



DV Fit Results:

Period = 66.89989 [0.00231] d
Epoch = 152.2600 [0.0189] BKJD
Rp/R* = 0.0156 [0.0912]
a/R* = 93.70 [3392.43]
b = 0.89 [8.34]
Seff = 119.72 [59.21]
Teq = 843 [104] K
Rp = 4.92 [28.79] Re
a = 0.3823 [0.1155] AU
Ag = 417.44 [4878.86] [0.09σ]
Teffp = 5895 [17210] K [0.29σ]

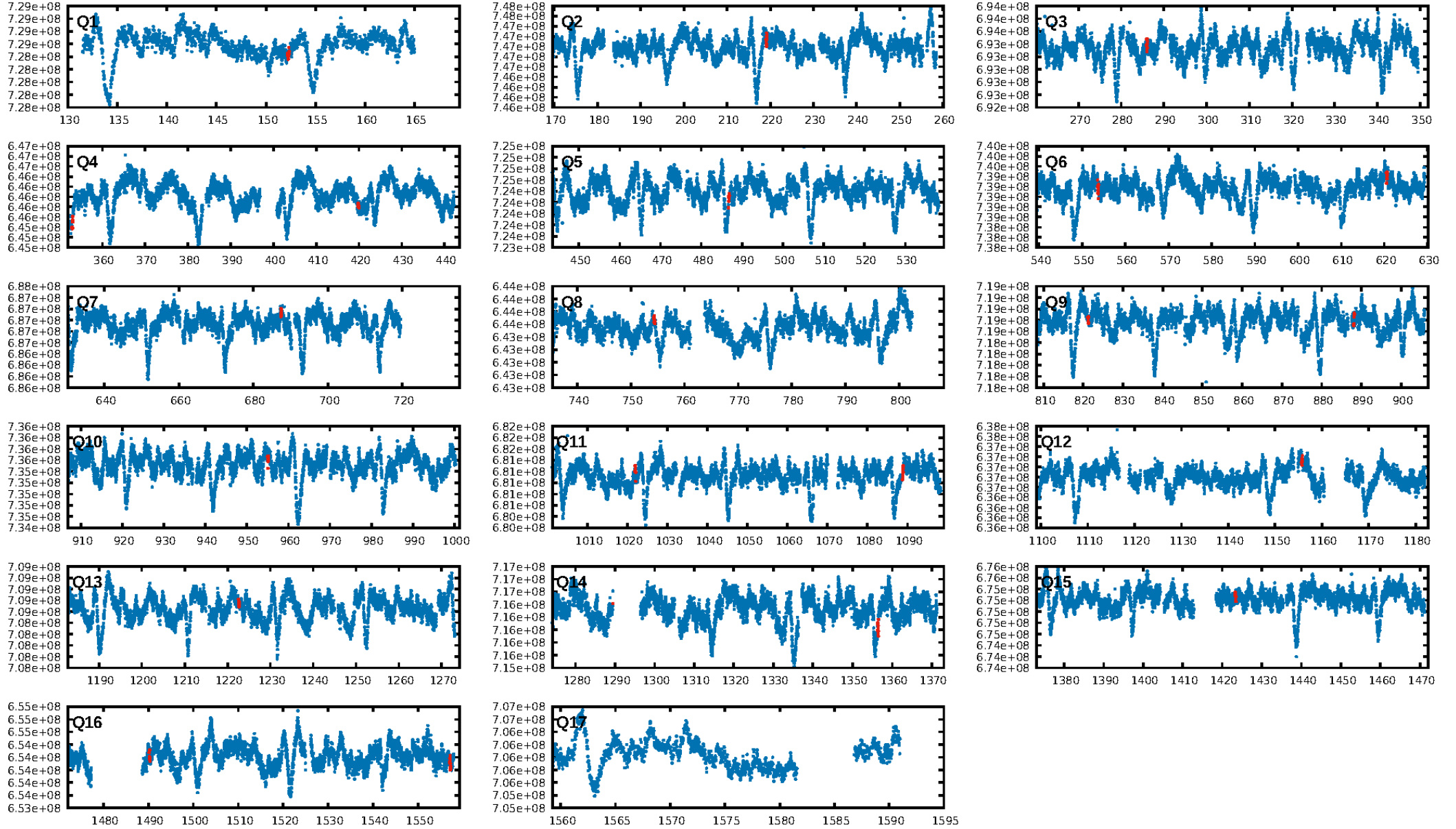
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [151.53σ]
LongPeriod-sig: 100.0% [31.85σ]
ModelChiSquare2-sig: 6.7%
ModelChiSquareGof-sig: 93.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 6.552
Centroid-sig: N/A
Centroid-so: 0.563 arcsec [1.60σ]
OotOffset-rm: 0.781 arcsec [1.53σ]
KicOffset-rm: 0.712 arcsec [1.39σ]
OotOffset-st: 4/3/2/4 [13]
KicOffset-st: 4/3/2/4 [13]
DiffImageQuality-fgm: 0.54 [7/13]
DiffImageOverlap-fno: 0.60 [9/15]

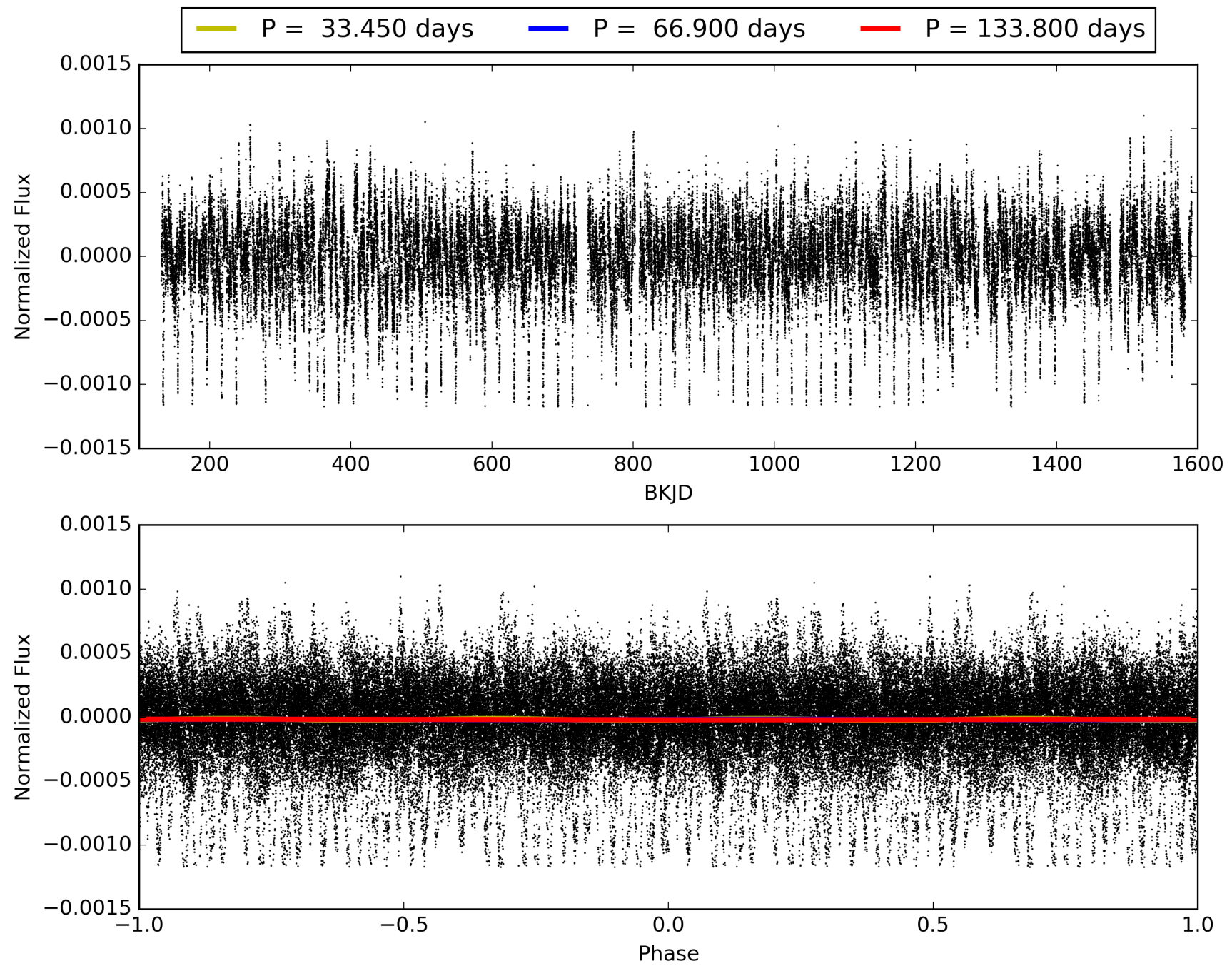
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:57:14 Z

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

TCE 011970288-06, PDC Light Curves

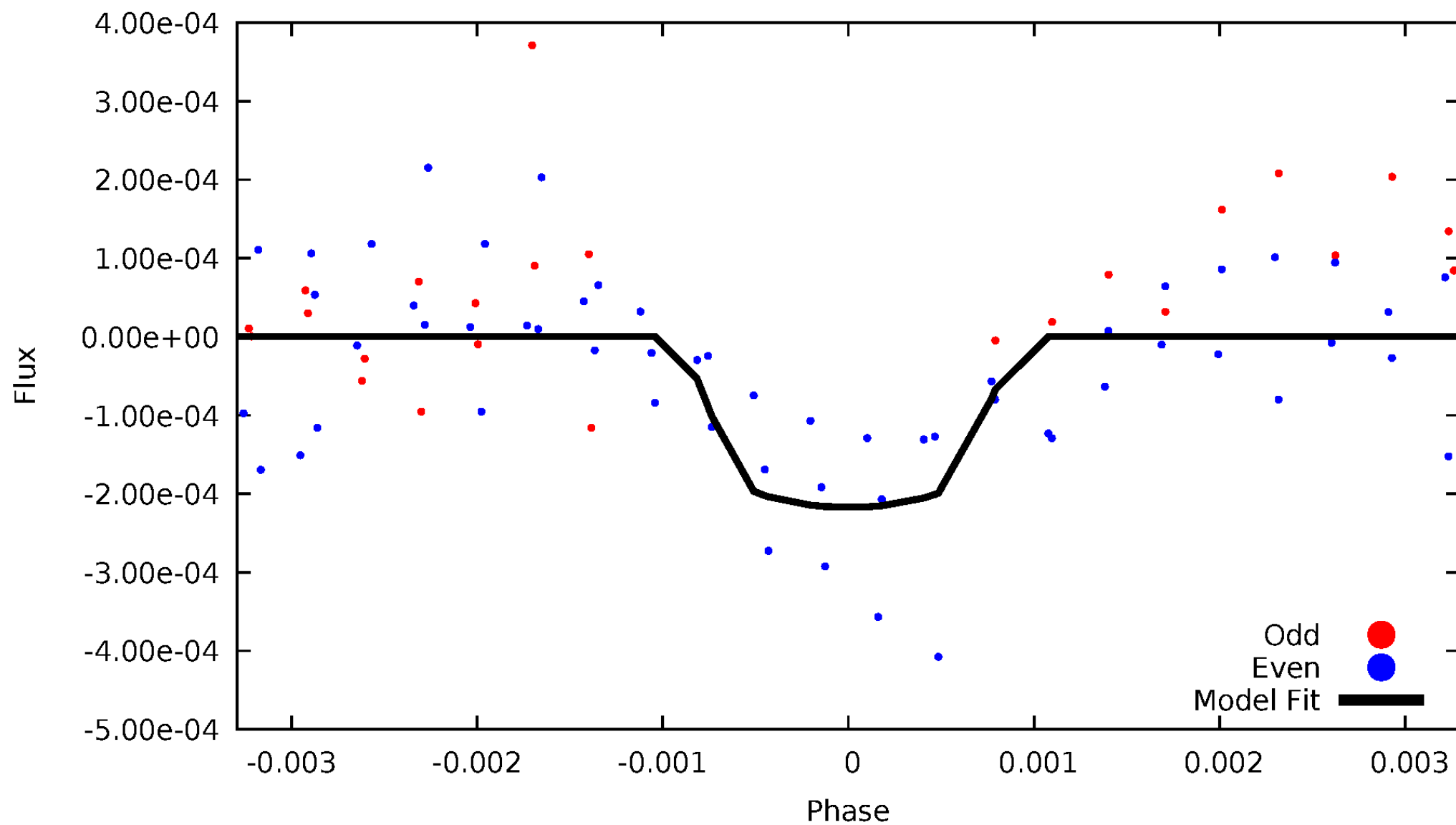


TCE 011970288-06



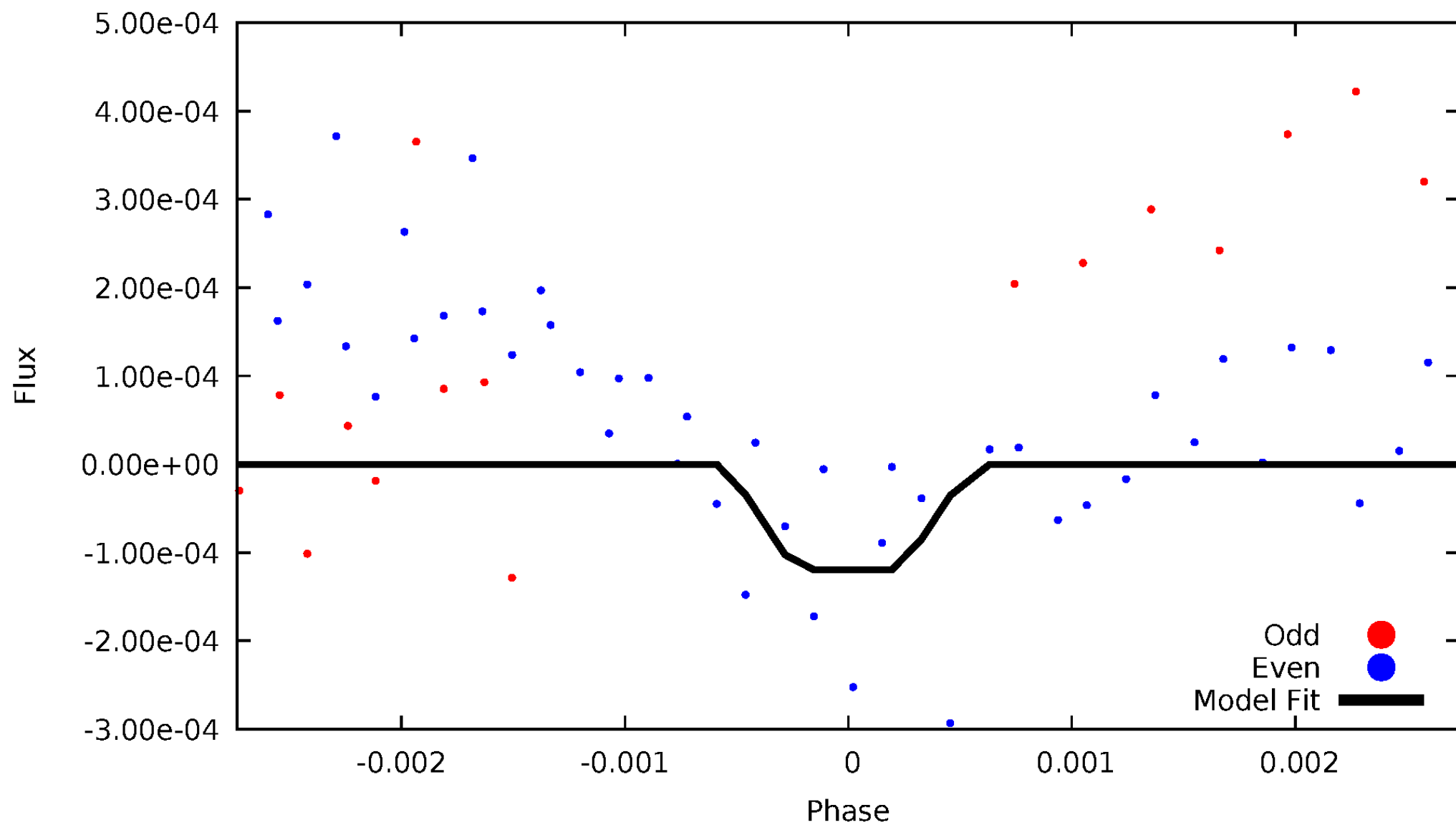
DV Odd/Even

TCE 011970288-06



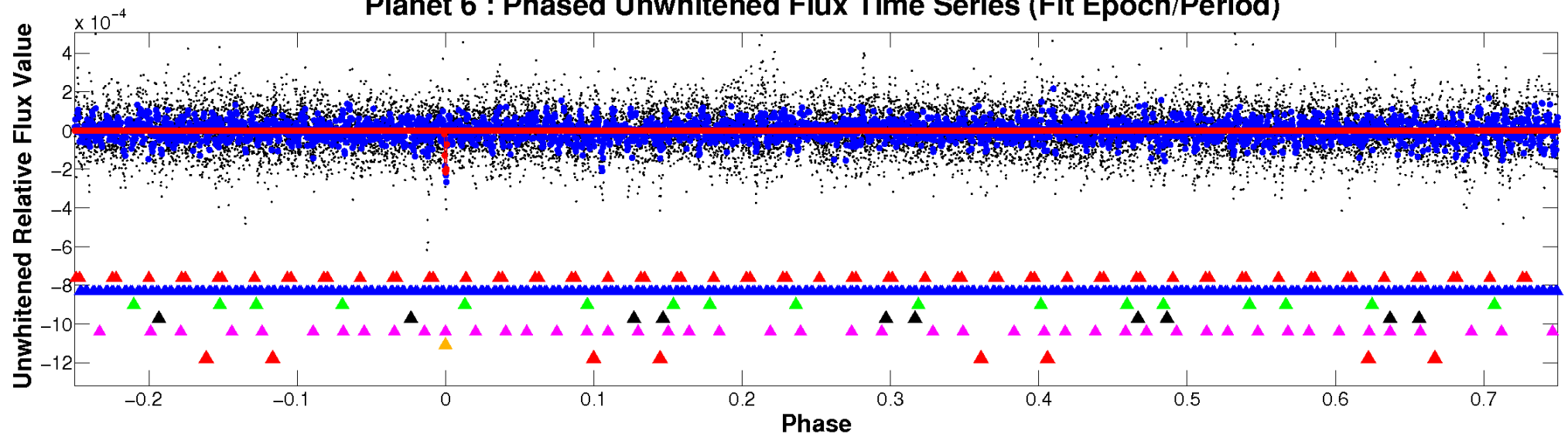
ALT Odd/Even

TCE 011970288-06

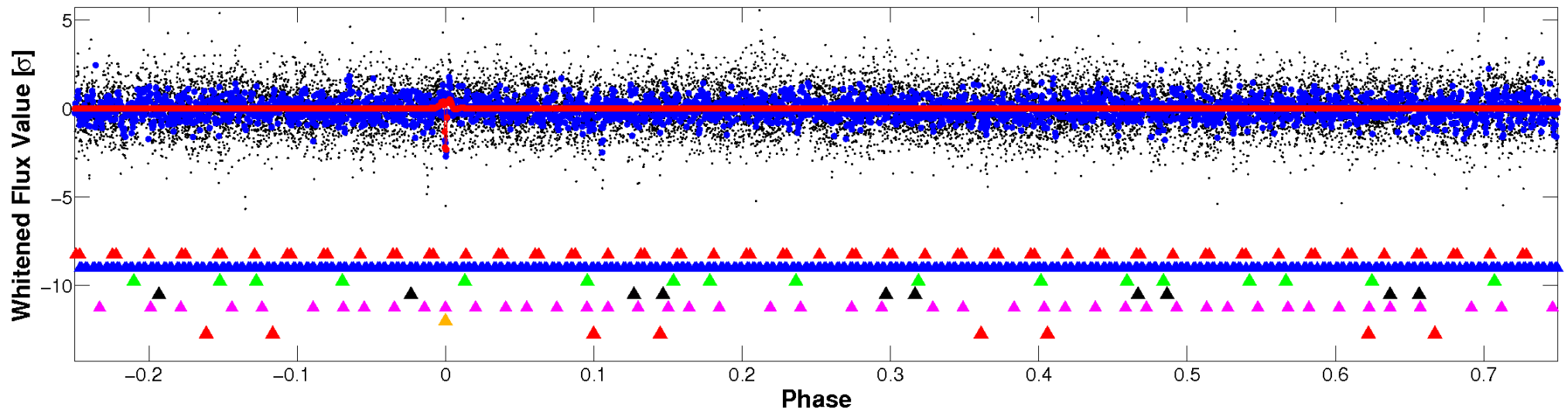


Non-Whitened Vs. Whitened Light Curve

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

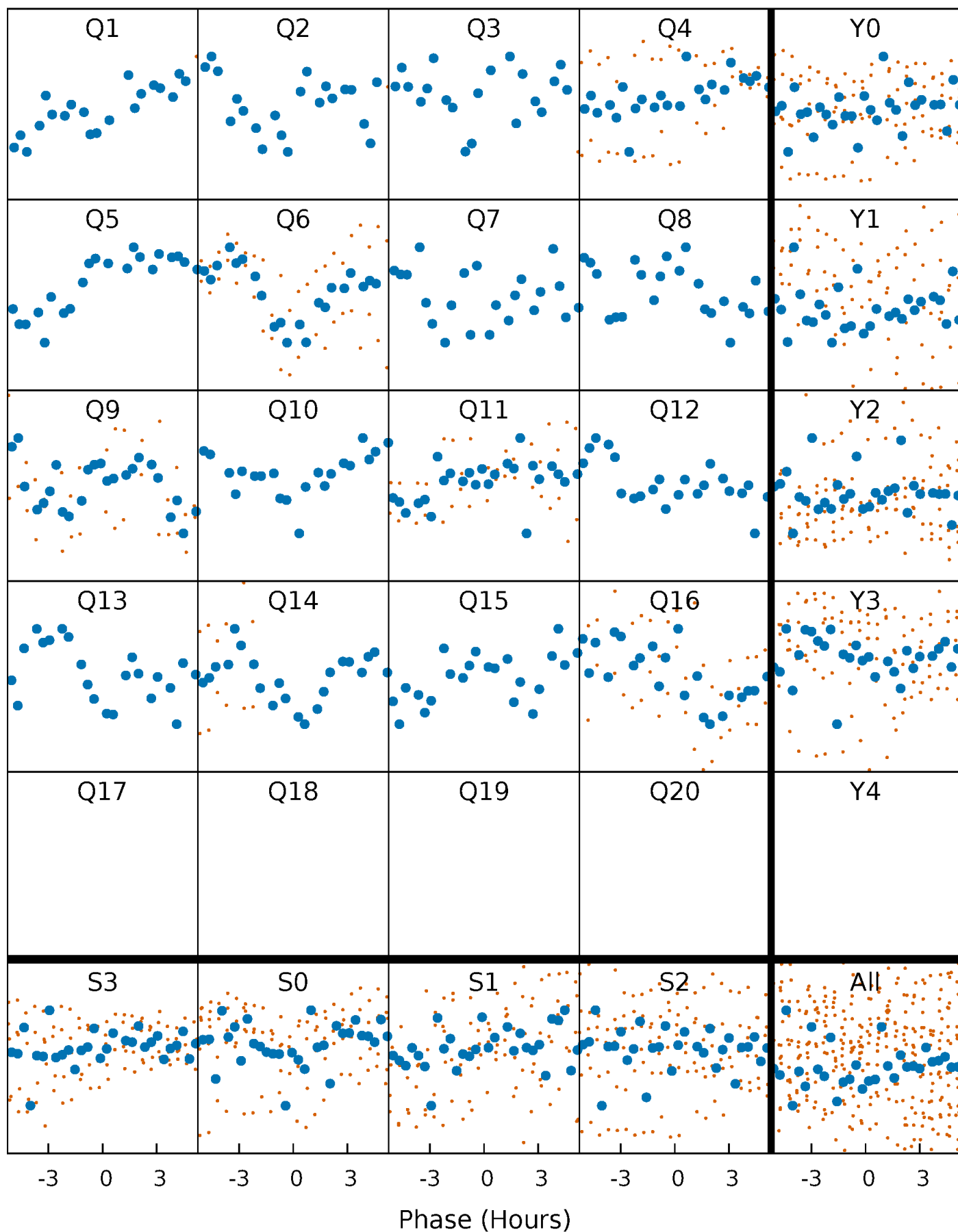


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



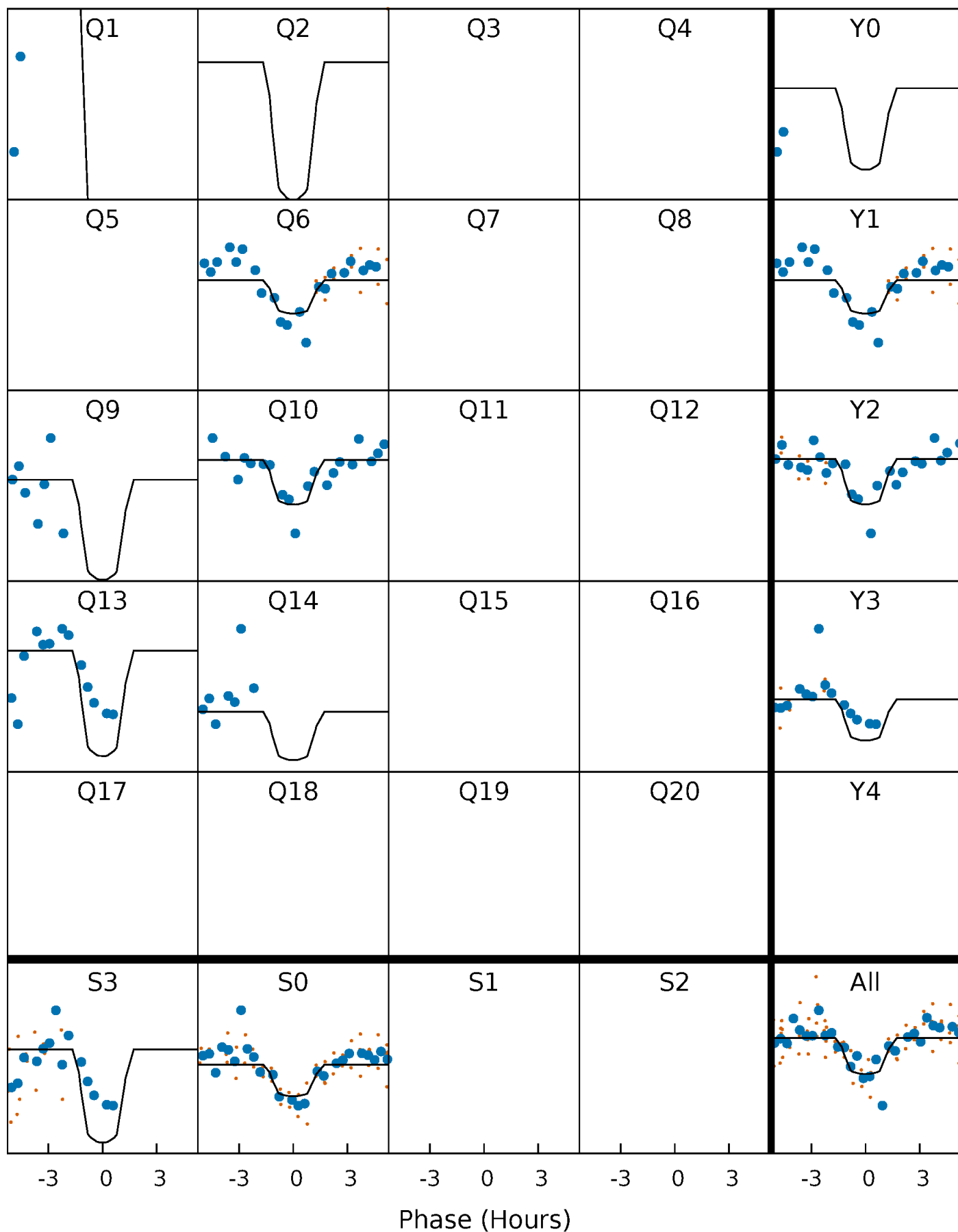
PDC Quarter-Phased Transit Curves

TCE 011970288-06 P= 66.899895 Days $T_0=152.260036$ (BKJD)



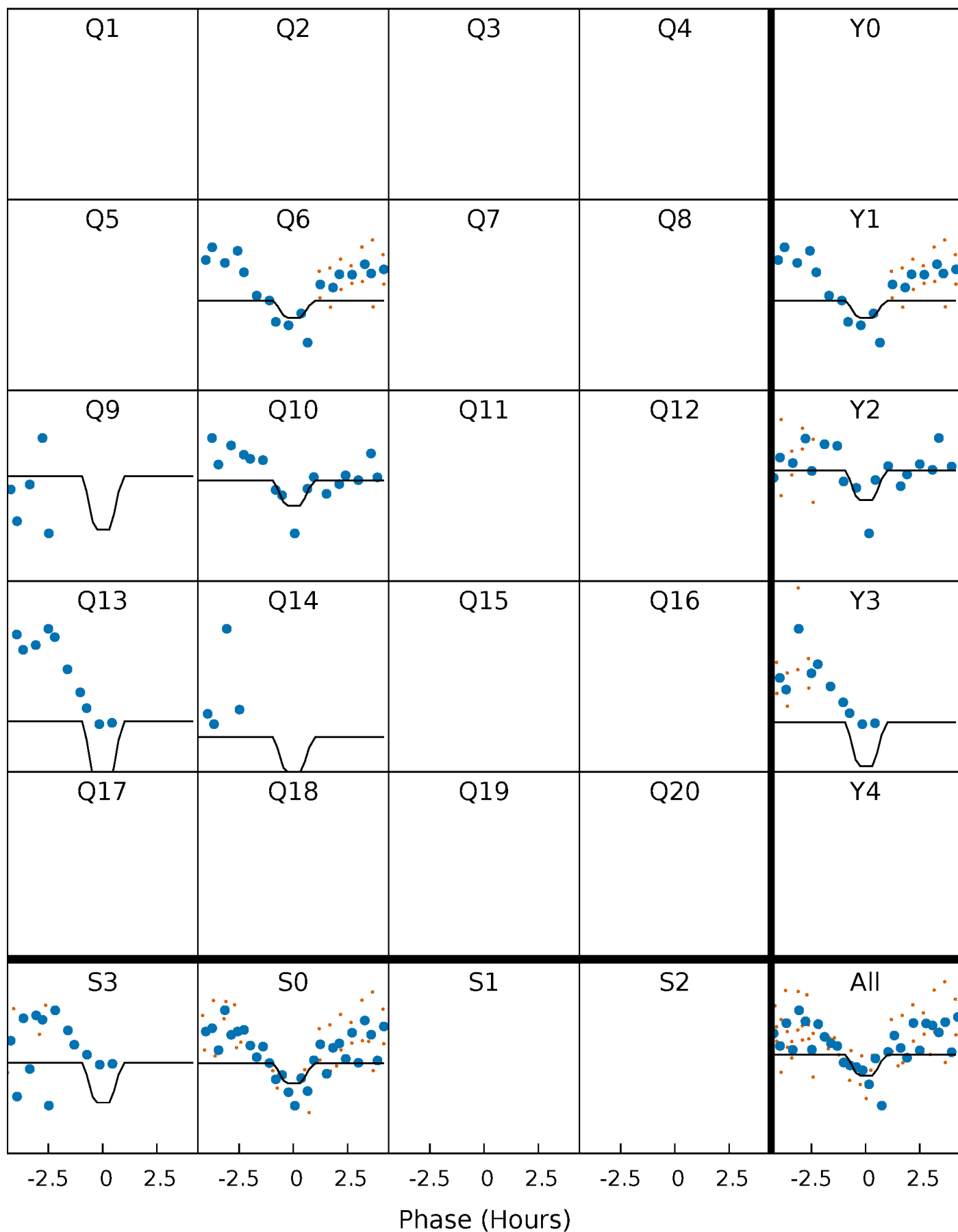
DV Quarter-Phased Transit Curves

TCE 011970288-06 P= 66.899895 Days $T_0=152.260036$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

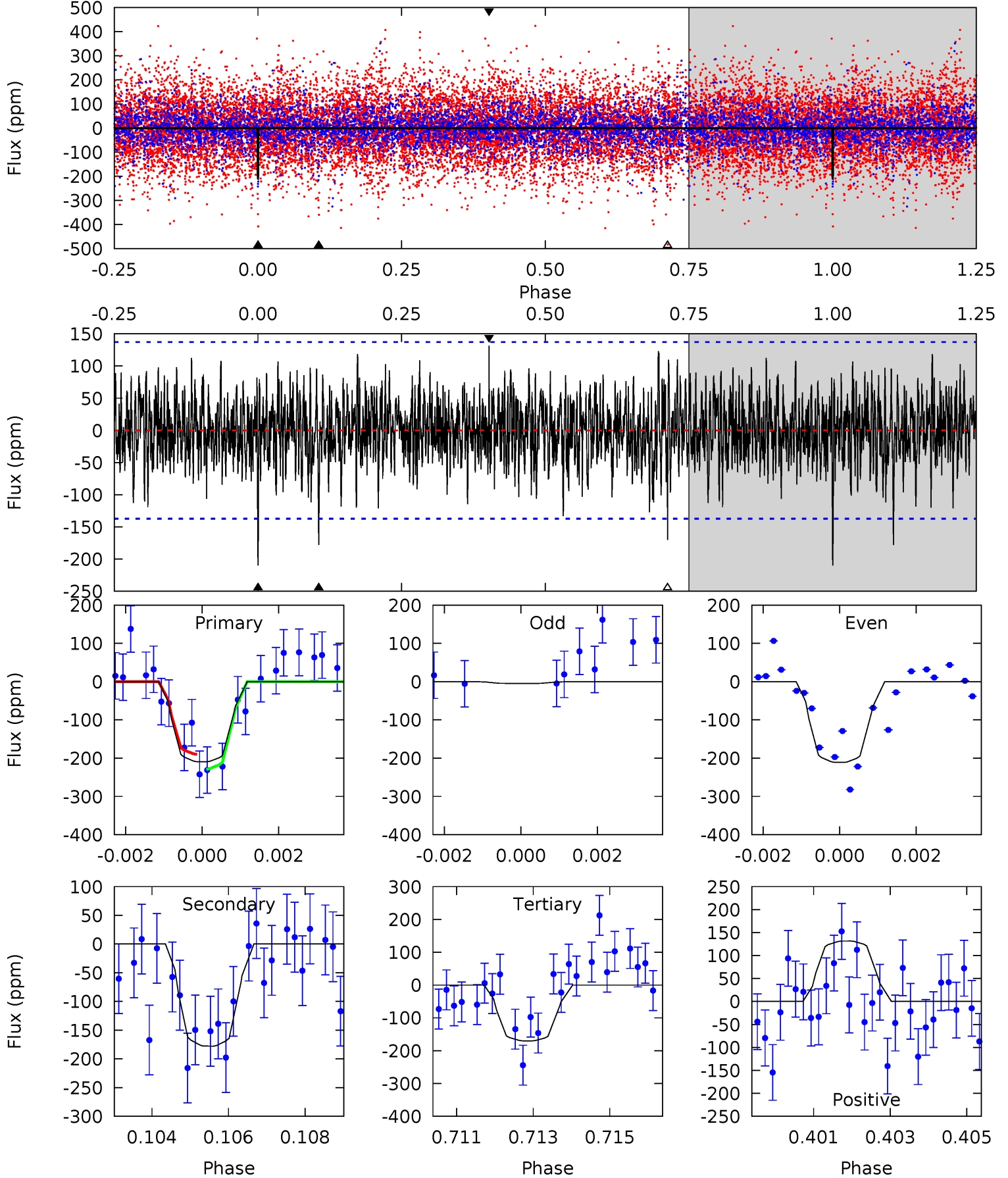
TCE 011970288-06 P= 66.901121 Days $T_0=152.254611$ (BKJD)



DV Model-Shift Uniqueness Test

011970288-06, P = 66.899895 Days, E = 85.360141 Days

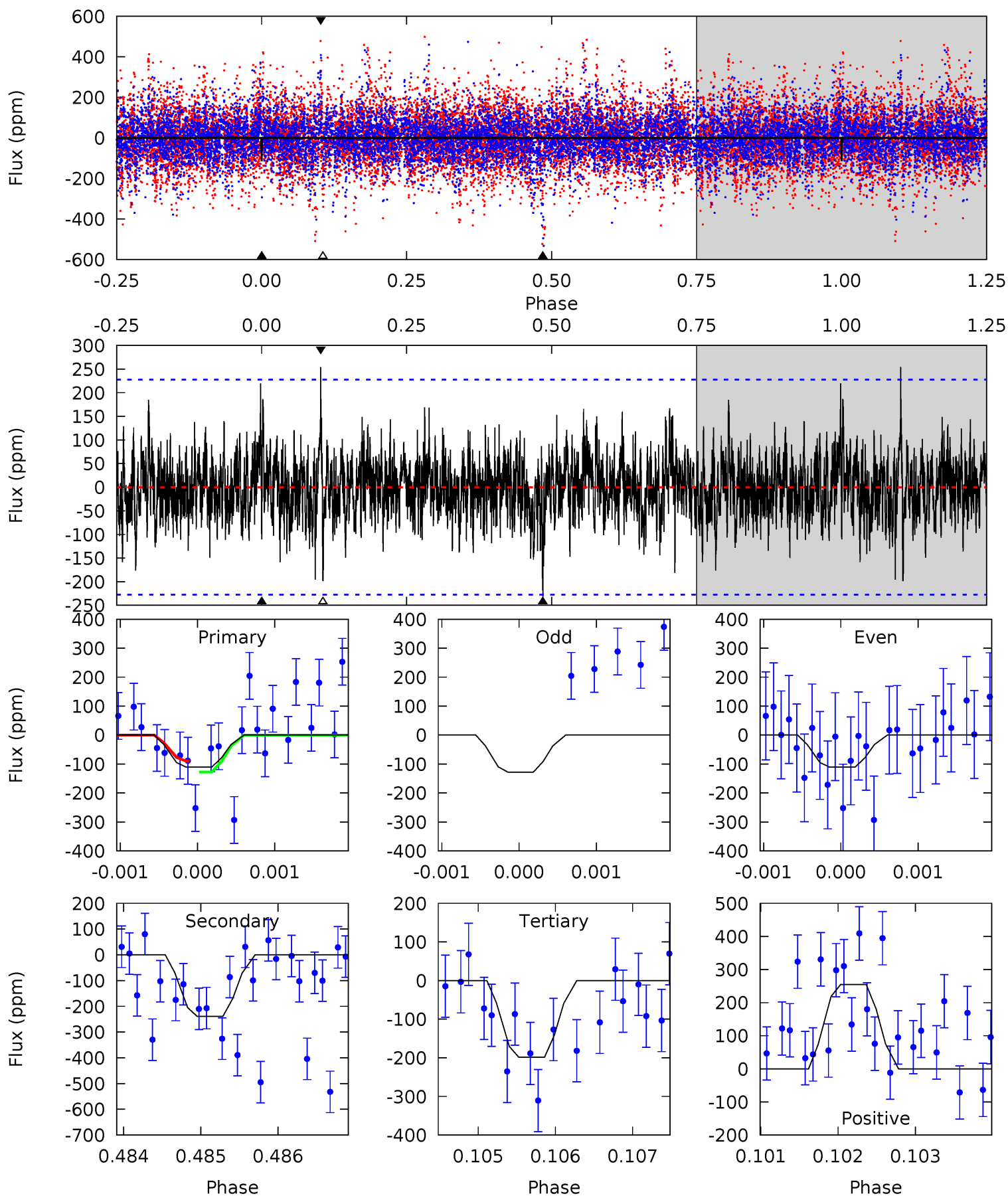
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.16	6.93	6.63	5.13	5.34	3.12	1.55	1.53	3.04	0.30	1.80	1.96	0.99	0.39	0.76



Alt Model-Shift Uniqueness Test

011970288-06, P = 66.901121 Days, E = 85.353490 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.64	5.72	4.75	6.09	5.44	3.28	1.28	-2.11	-3.45	0.97	-0.37	0.25	0.73	0.52	0.44



Stellar Parameters For KIC 011970288

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6956^{+163}_{-225}	$3.738^{+0.278}_{-0.093}$	$-0.180^{+0.300}_{-0.250}$	$2.888^{+0.428}_{-0.927}$	$1.664^{+0.180}_{-0.335}$	$0.097^{+0.175}_{-0.028}$
	+2%/-3%	+7%/-2%	+167%/-139%	+15%/-32%	+11%/-20%	+180%/-29%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011970288-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-178 ± 26	$20.38^{+20.90}_{-14.39}$	1160^{+63}_{-92}	3495^{+2131}_{-636}	33^{+370}_{-24}
Alt.	-239 ± 42	$19.93^{+19.71}_{-13.84}$	1159^{+61}_{-93}	3747^{+2288}_{-754}	49^{+468}_{-38}

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 $A_{obs} \gg 1.0$

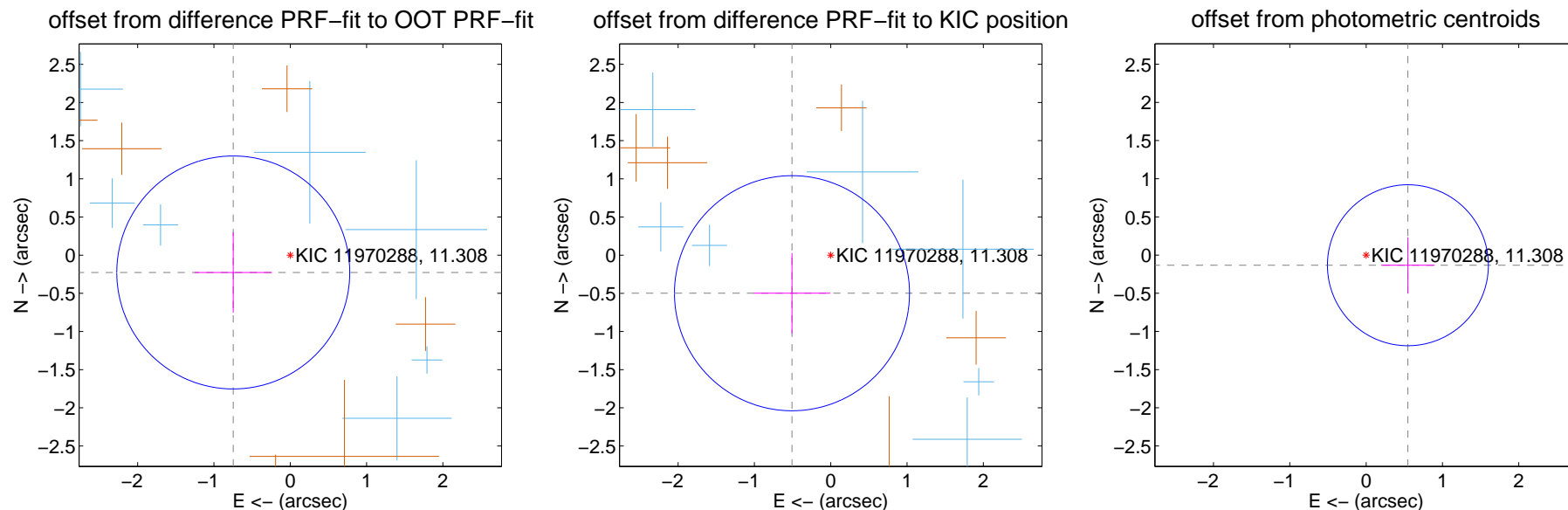
DV Centroid Data

Supplemental centroid analysis for 011970288-06. **Kepler magnitude: 11.31.** Transit SNR 8.37

There are 7 quarters with good PRF difference image offsets

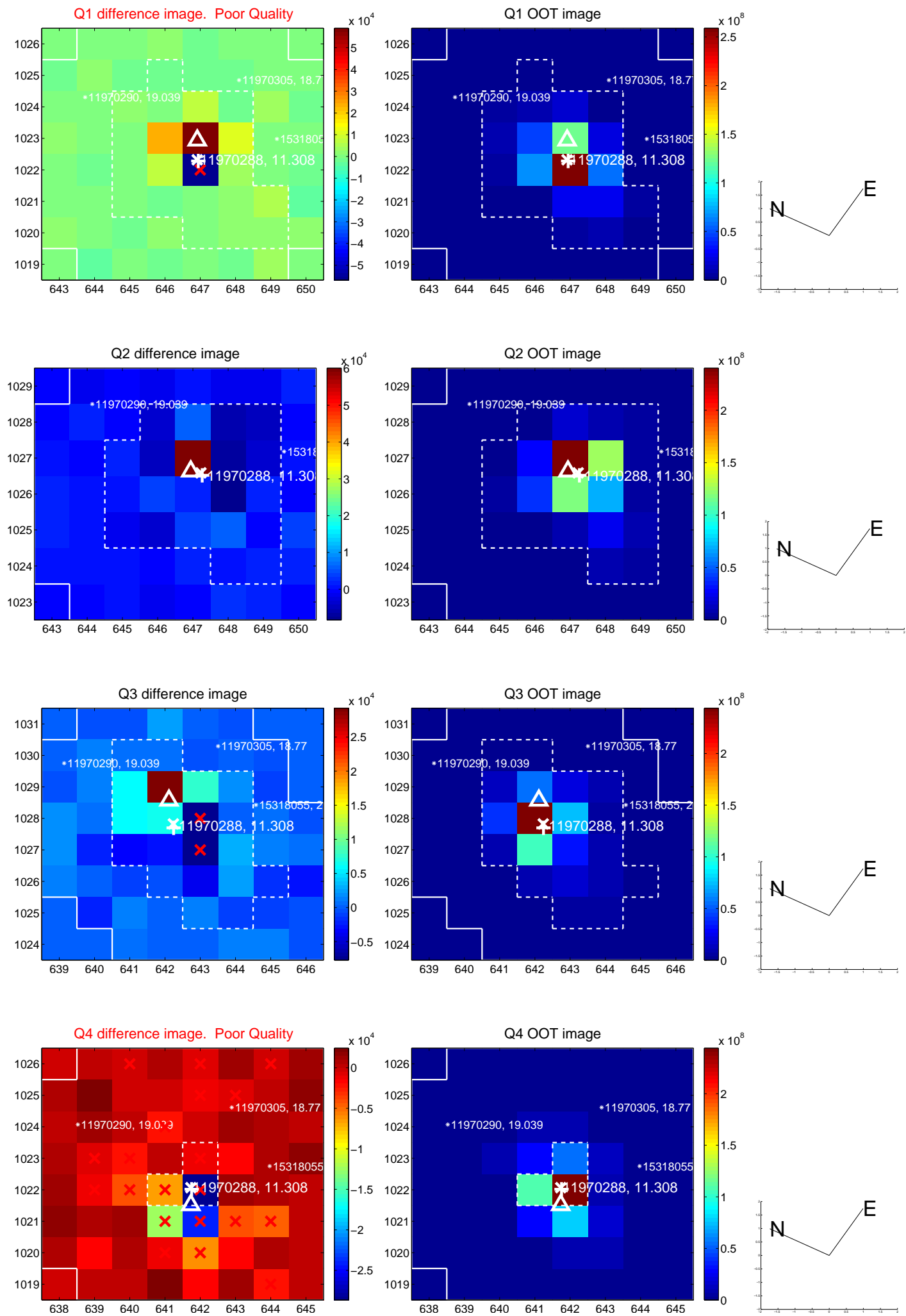
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.781 ± 0.509	1.53	0.747 ± 0.507	-0.227 ± 0.526
PRF-fit source offset from KIC position	0.712 ± 0.513	1.39	0.507 ± 0.502	-0.499 ± 0.525
photometric centroid source offset	0.56 ± 0.35	1.60	-0.55 ± 0.35	-0.13 ± 0.37

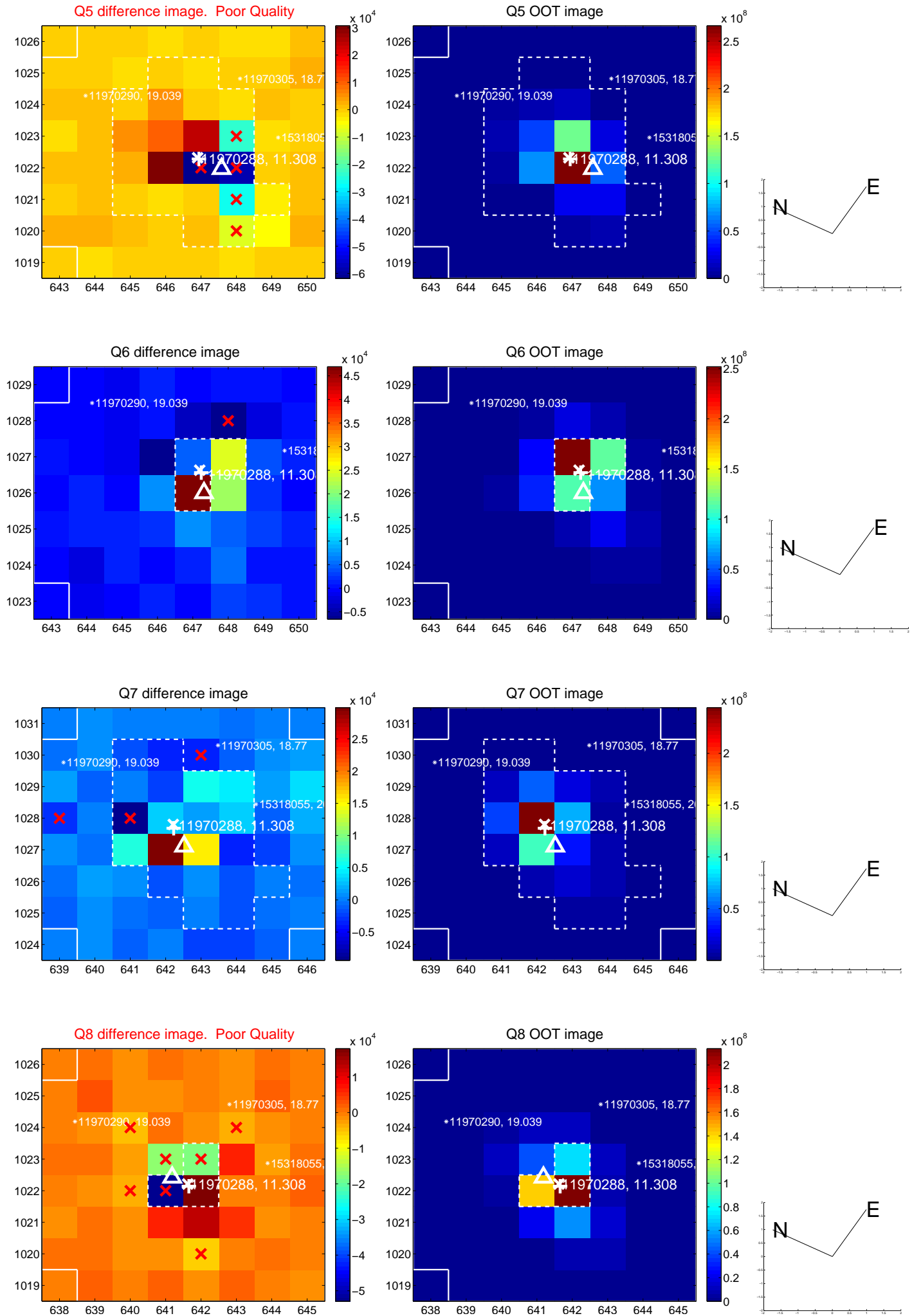


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

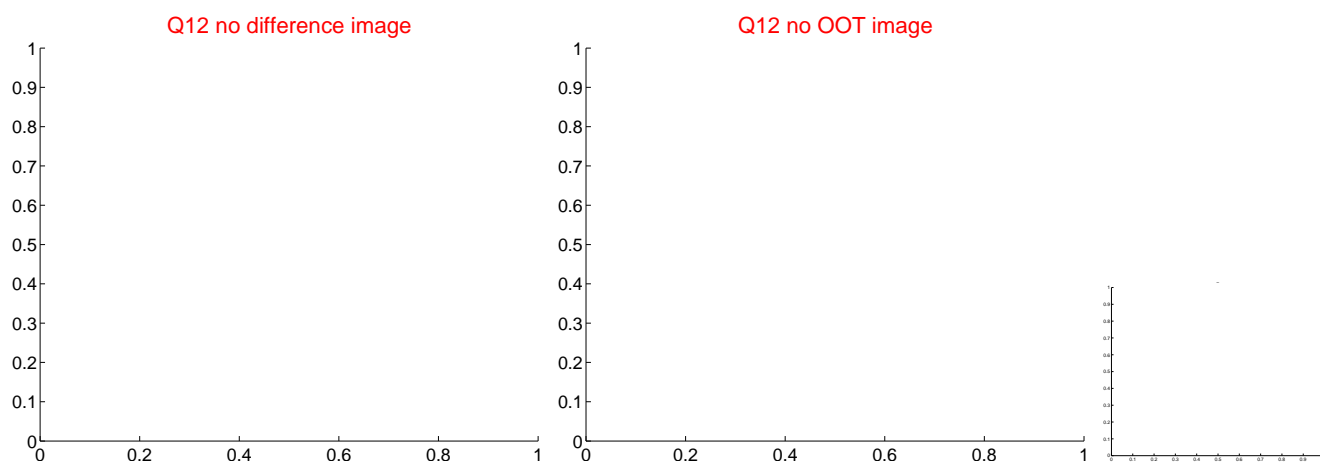
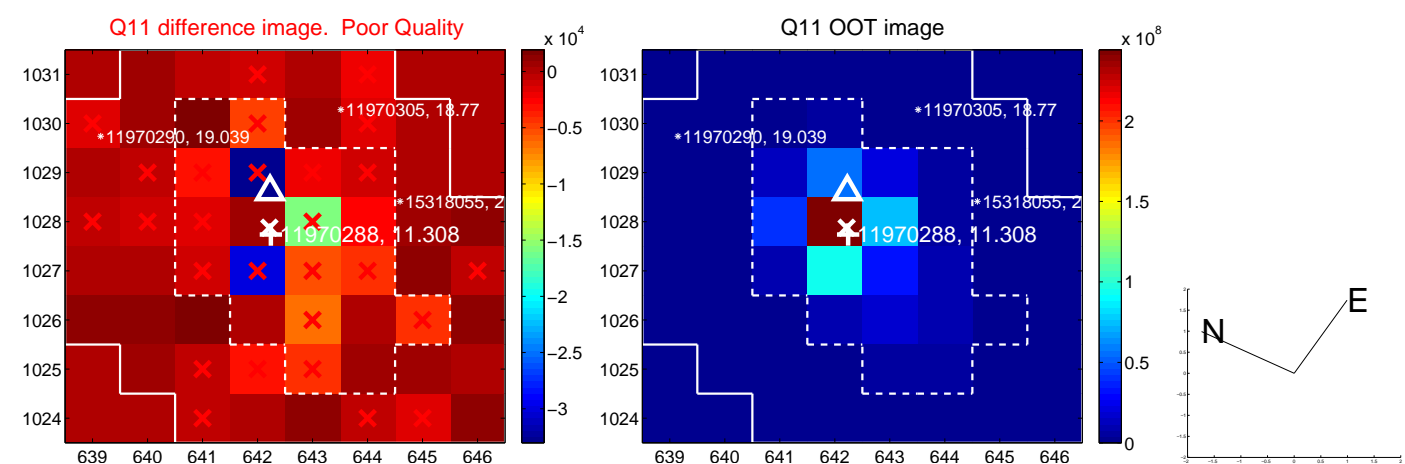
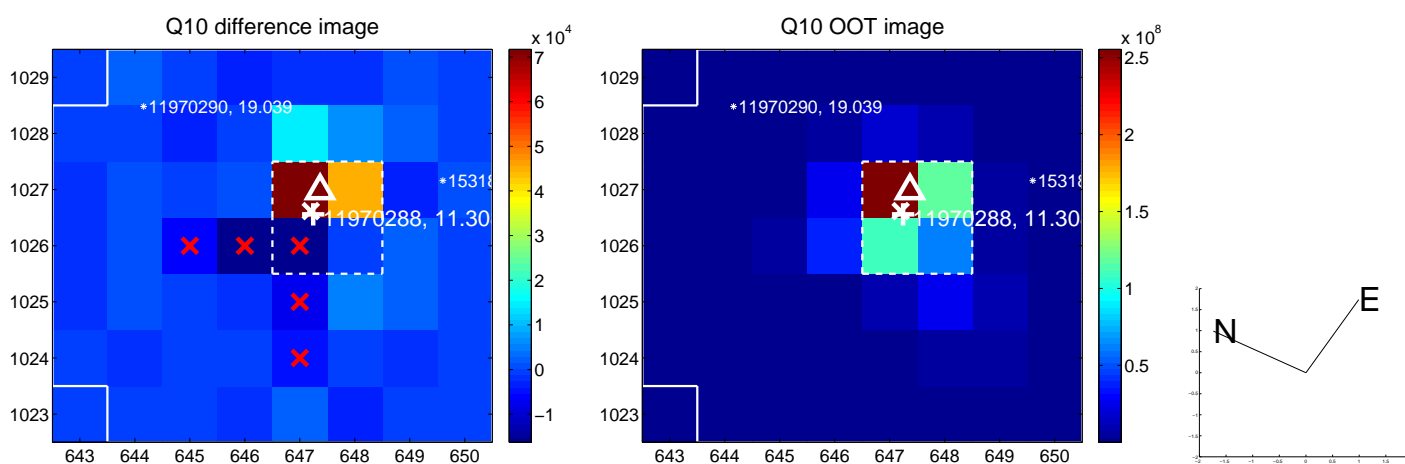
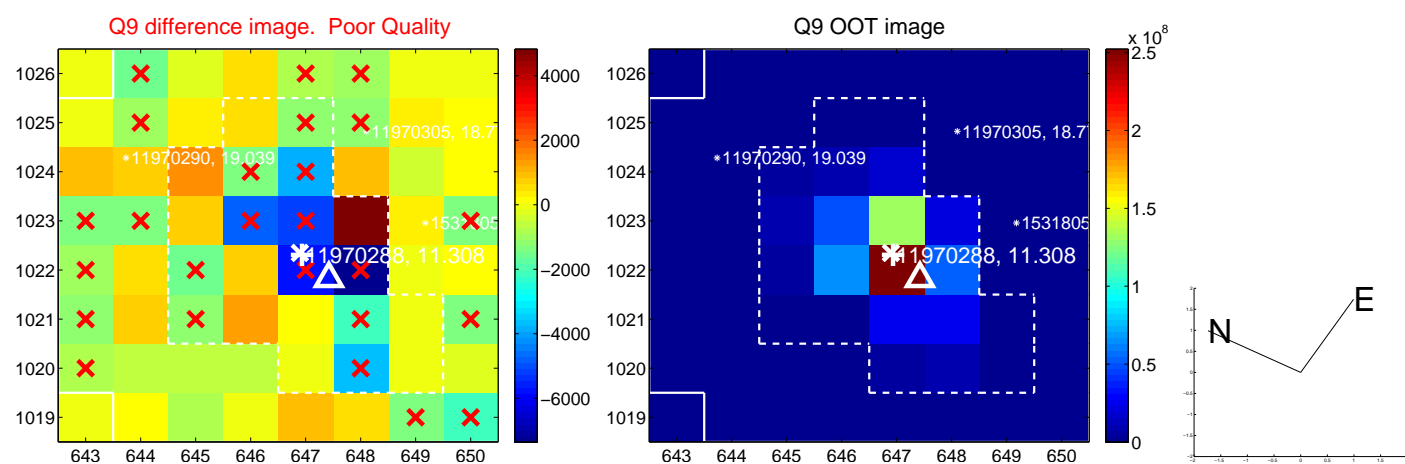
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



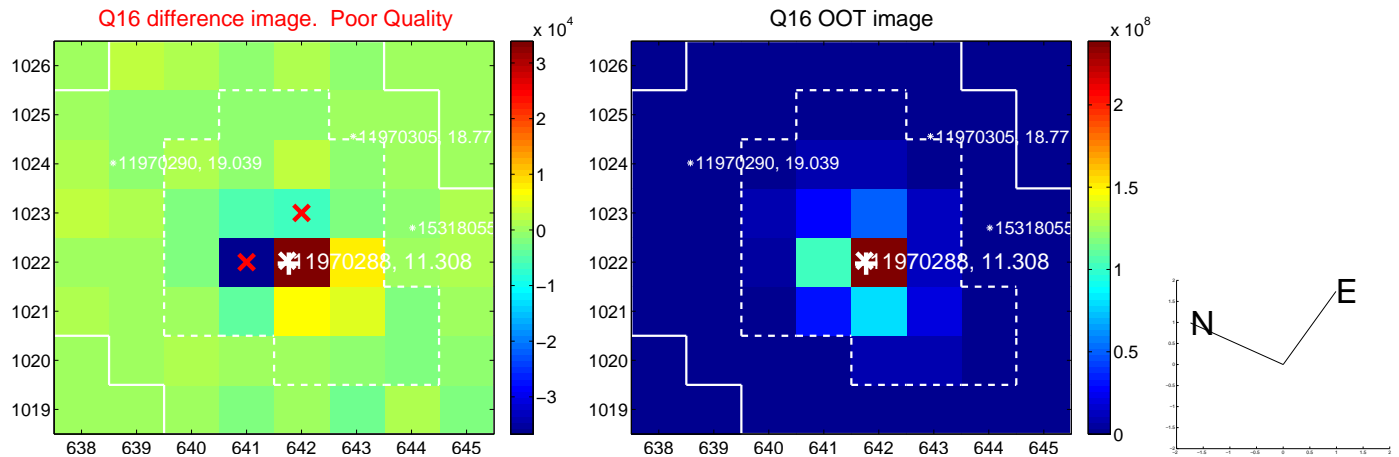
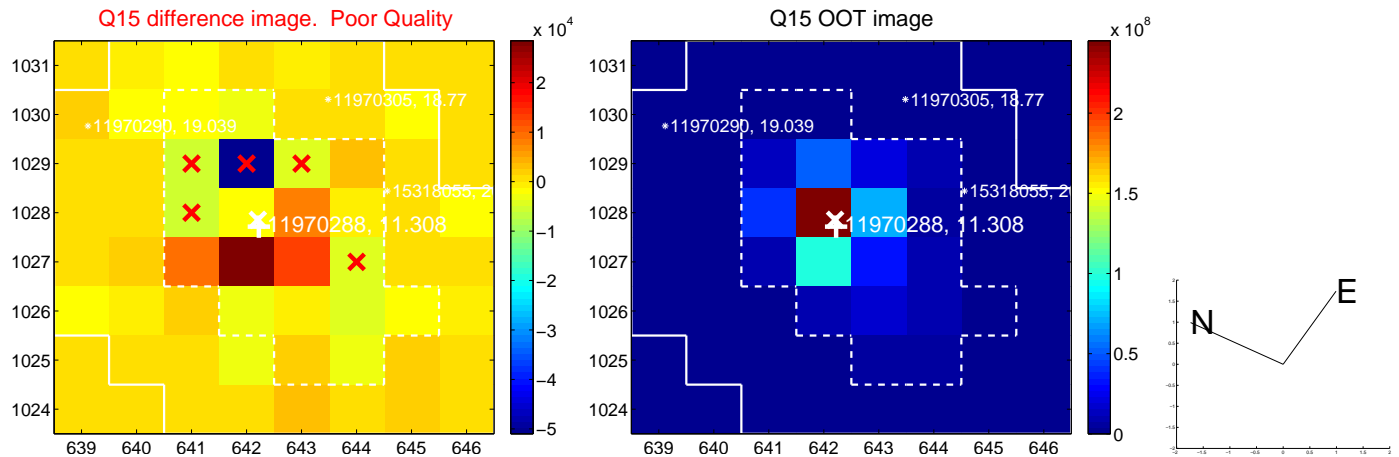
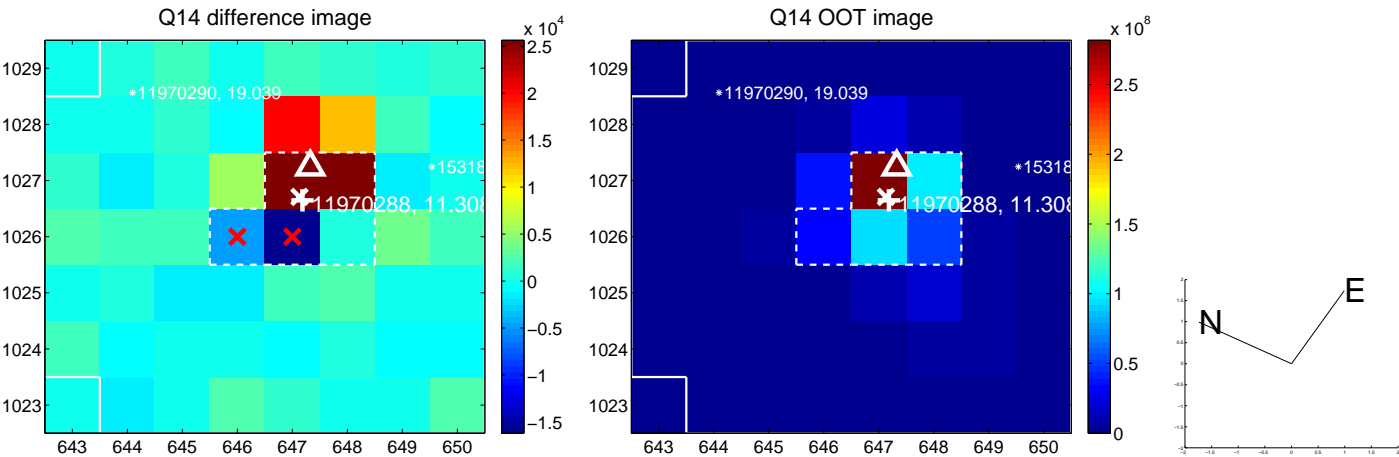
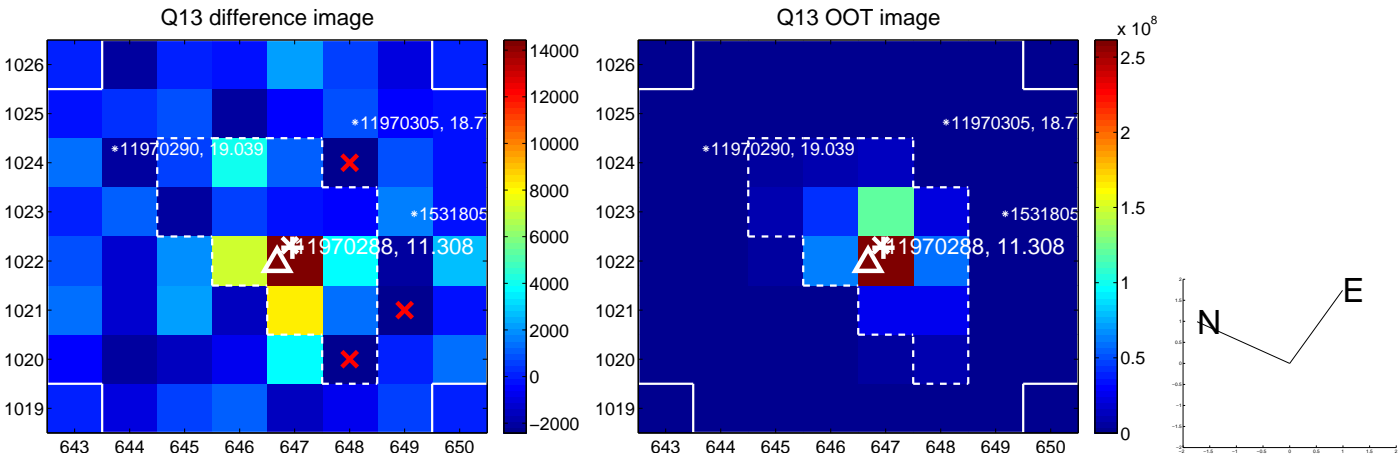
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



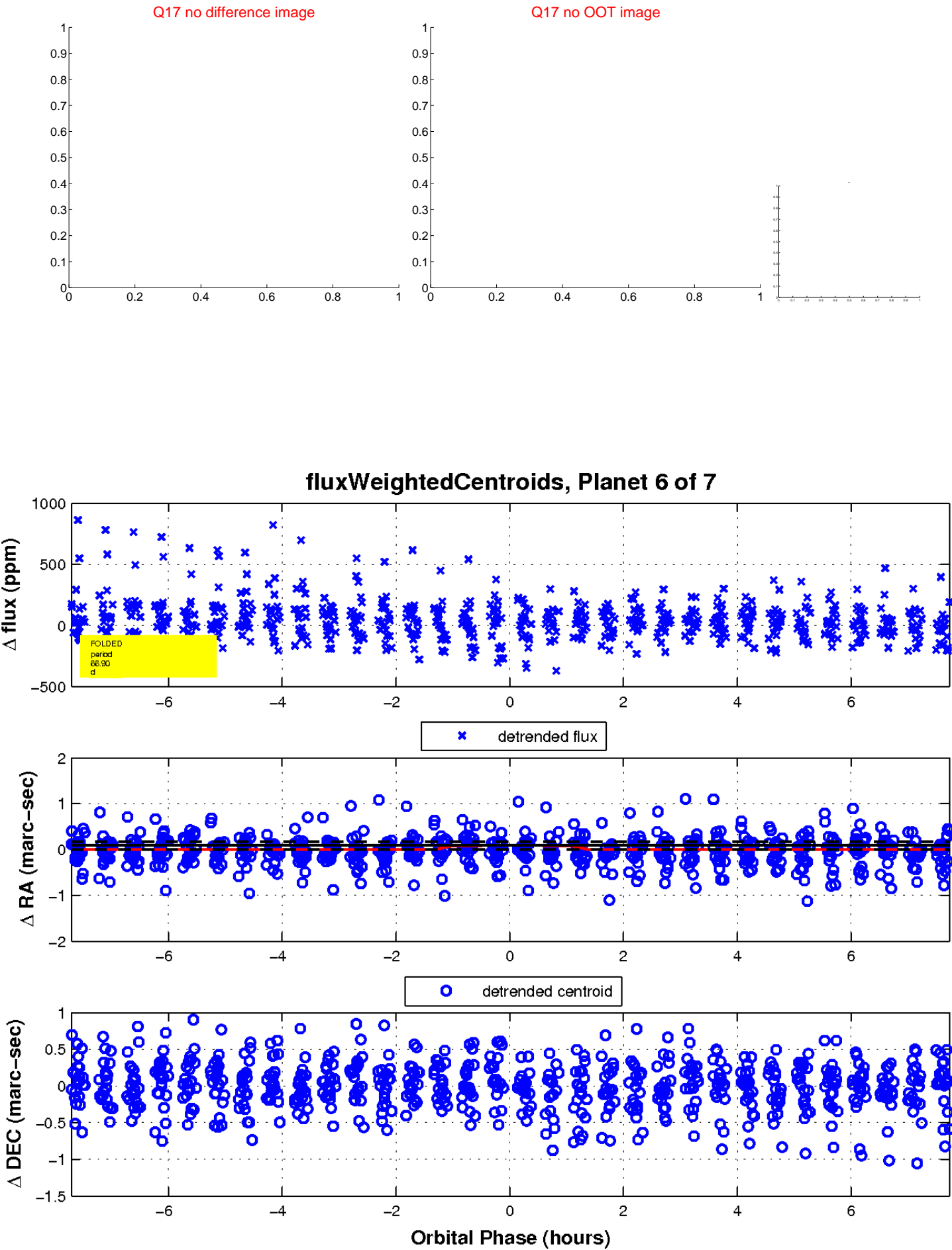
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

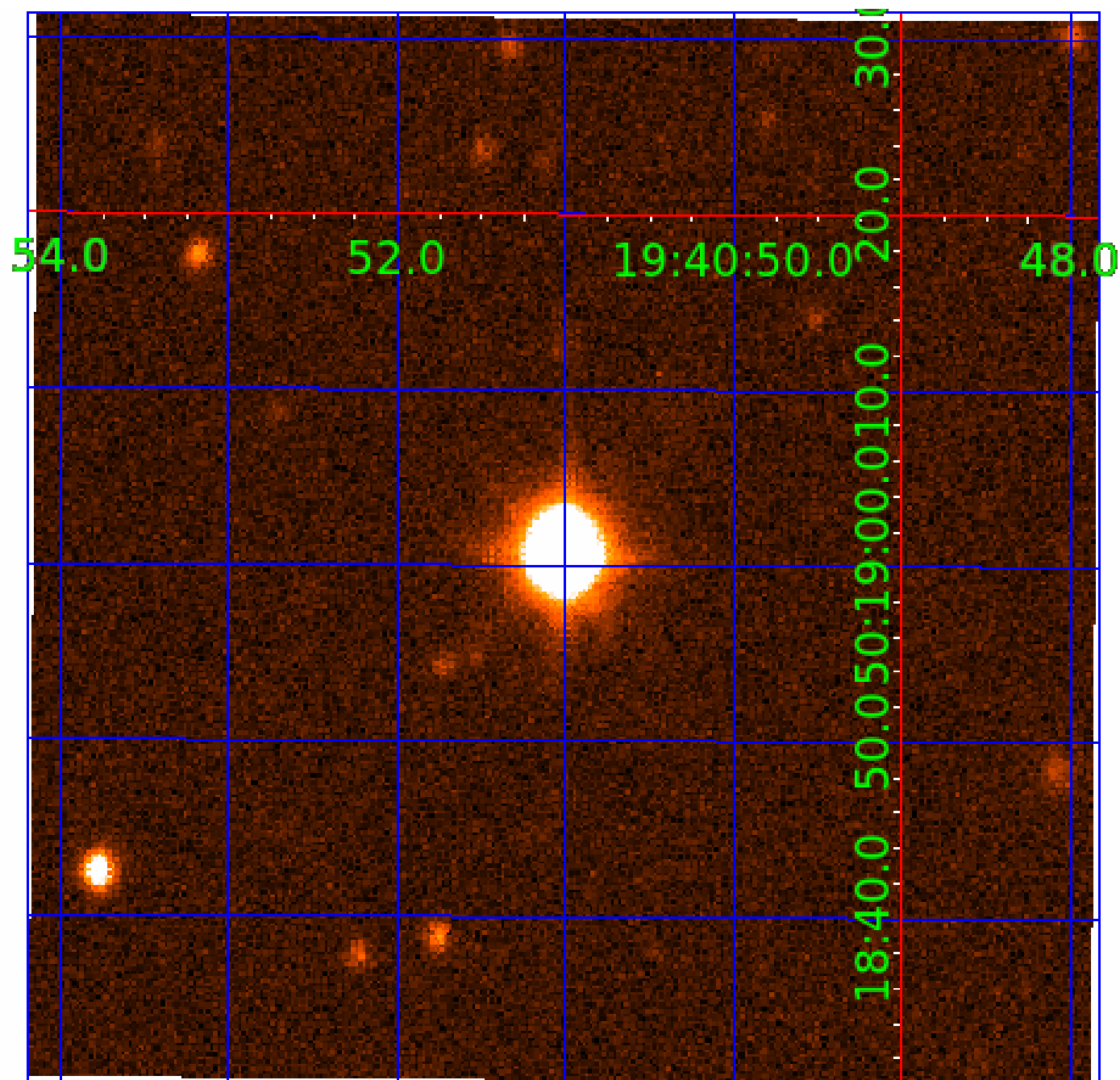


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011970288

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})
011970288-01	OBS	7501.01	20.711101	133.947495	883.0	41.047	19.4	44.5	2.89	6956	16.08	571.64
011970288-02	OBS	No	3.213876	134.247824	129.4	16.852	15.4	20.7	2.89	6956	4.69	6855.28
011970288-04	OBS	No	145.168291	227.660244	189.5	8.073	9.3	8.7	2.89	6956	4.68	42.62
011970288-05	OBS	No	31.617880	162.306327	139.0	4.923	8.9	9.6	2.89	6956	3.96	325.20
011970288-06	OBS	No	66.899895	152.260036	217.1	2.643	9.1	8.4	2.89	6956	4.92	119.72
011970288-07	OBS	No	183.225321	196.888859	259.6	5.705	8.7	7.6	2.89	6956	9.04	31.24

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011970288-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED—CENT_SATURATED
011970288-02	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
011970288-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011970288-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
011970288-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
011970288-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

Ephemeris Match Information For 011970288-07

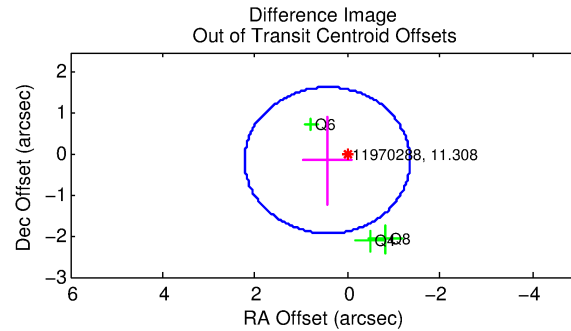
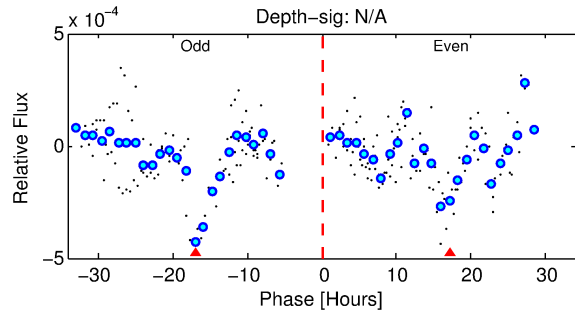
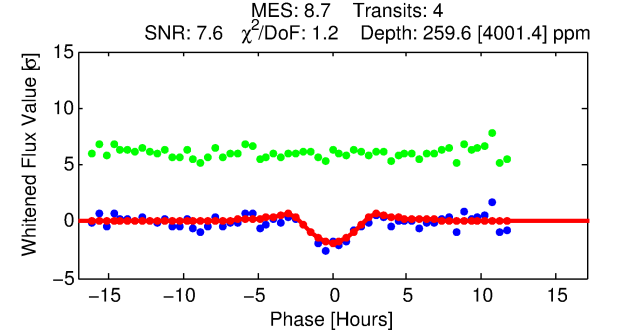
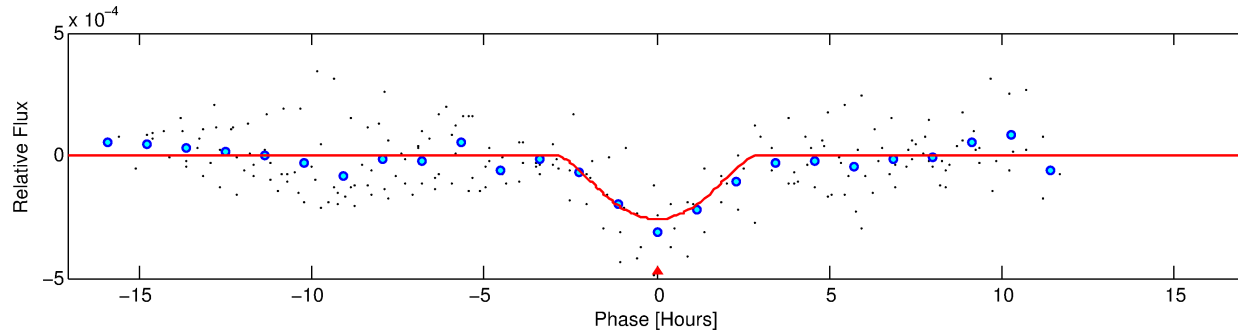
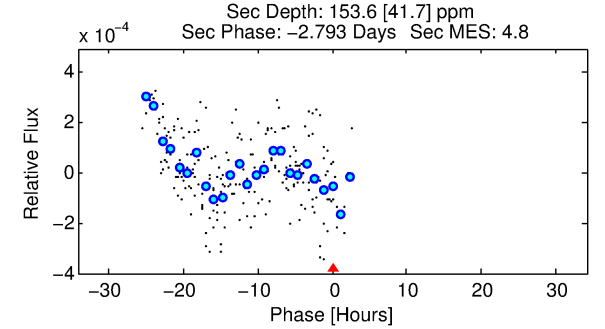
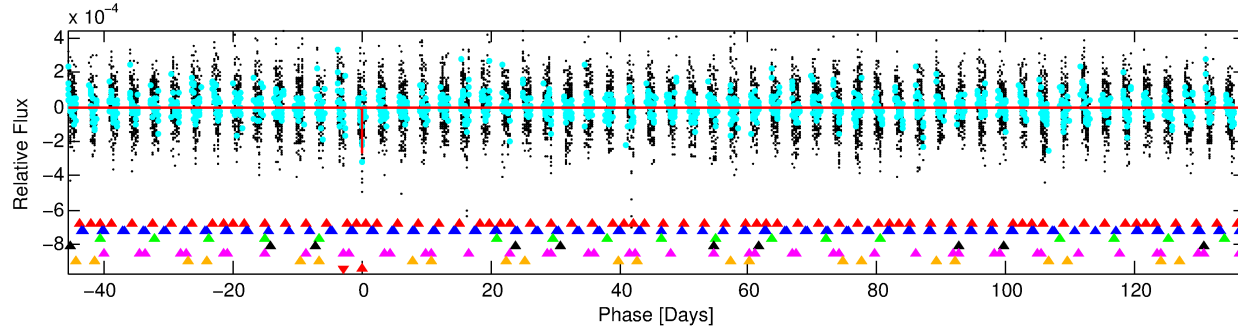
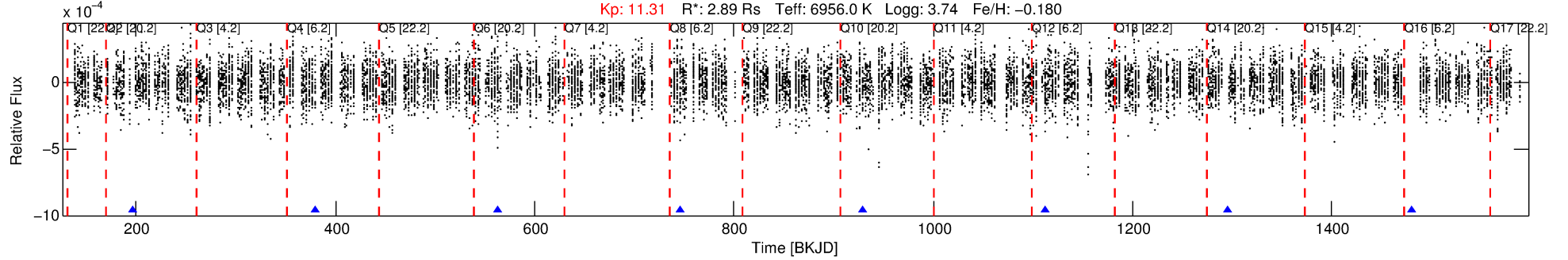
No Significant Match Found

DV One-Page Summary

KIC: 11970288 Candidate: 7 of 7 Period: 183.225 d

KOI: K07501 Corr: No Ephemeris Match

Kp: 11.31 R*: 2.89 Rs Teff: 6956.0 K Logg: 3.74 Fe/H: -0.180



DV Fit Results:

Period = 183.22532 [0.00675] d
Epoch = 196.8889 [0.0244] BKJD
Rp/R* = 0.0287 [0.1118]
a/R* = 59.17 [61.65]
b = 1.00 [0.14]
Seff = 31.24 [15.45]
Teq = 603 [75] K
Rp = 9.04 [35.37] Re
a = 0.7483 [0.2261] AU
Ag = 579.50 [4532.68] [0.13σ]
Teffp = 4573 [8927] K [0.44σ]

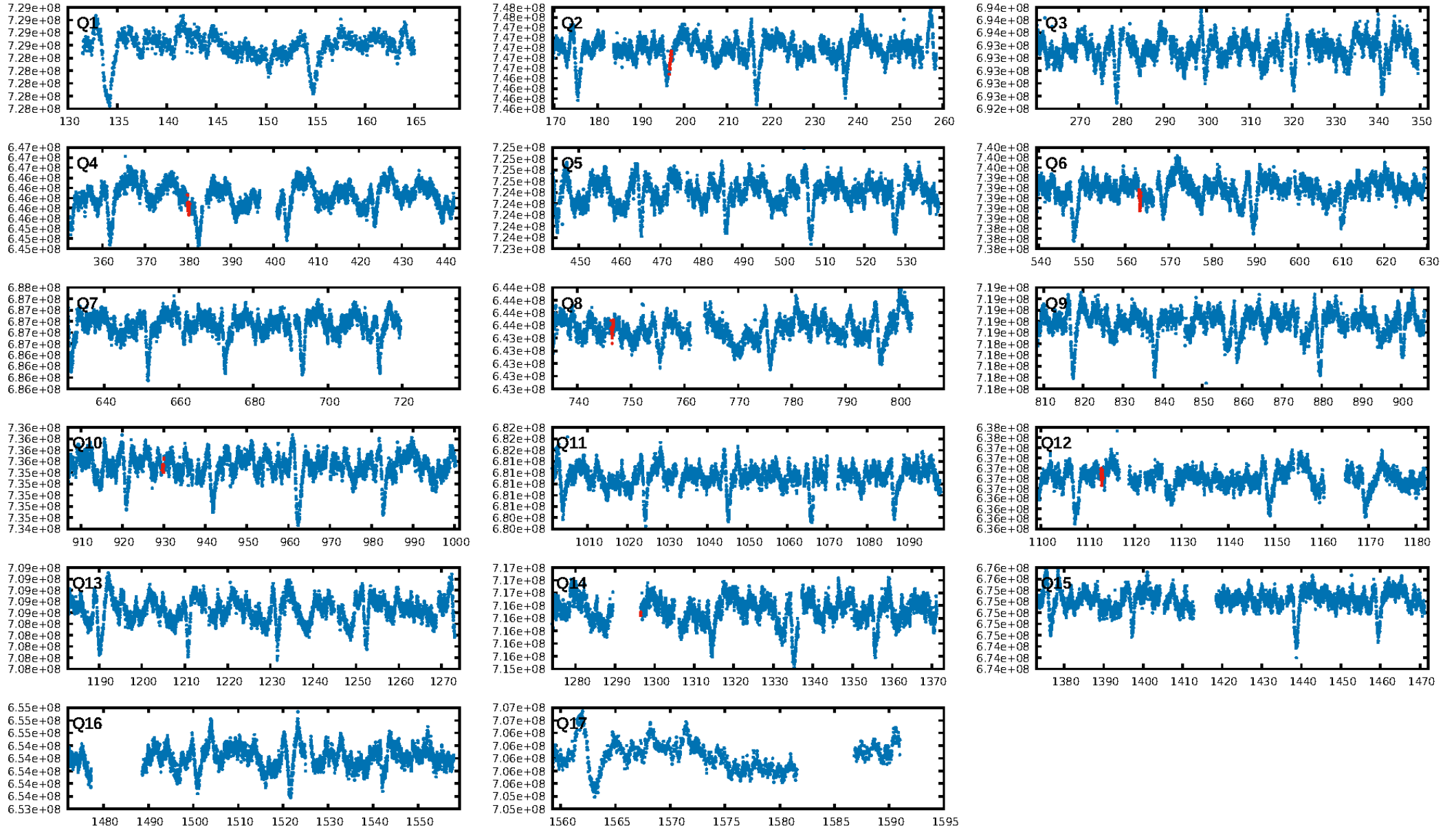
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [92.40σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 3.9%
ModelChiSquareGof-sig: 96.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.2525
Centroid-sig: N/A
Centroid-so: 0.603 arcsec [1.32σ]
OotOffset-rm: 0.465 arcsec [0.78σ]
KicOffset-rm: 0.487 arcsec [0.54σ]
OotOffset-st: 1/0/2/0 [3]
KicOffset-st: 1/0/2/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.75 [3/4]

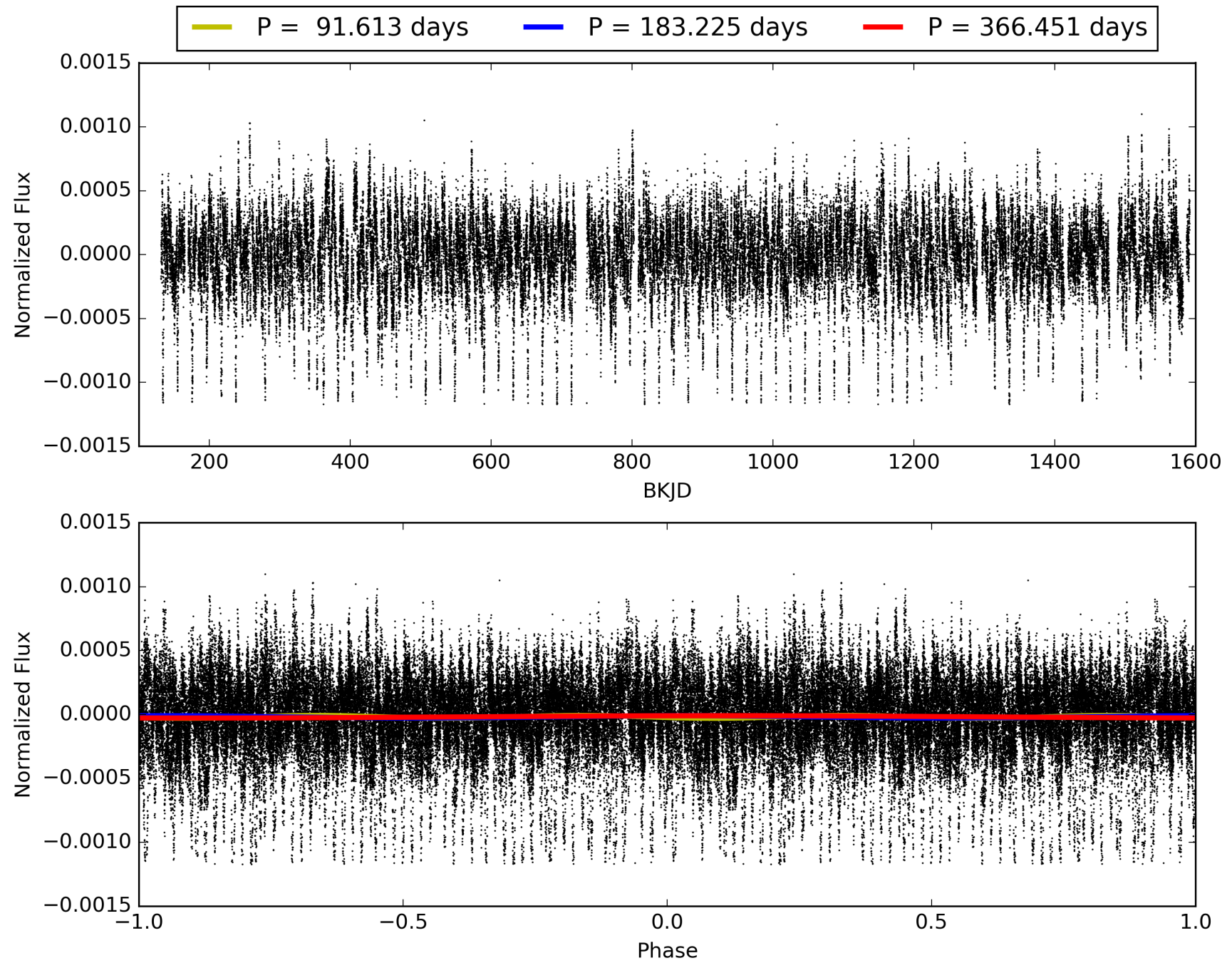
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:57:18 Z

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

TCE 011970288-07, PDC Light Curves

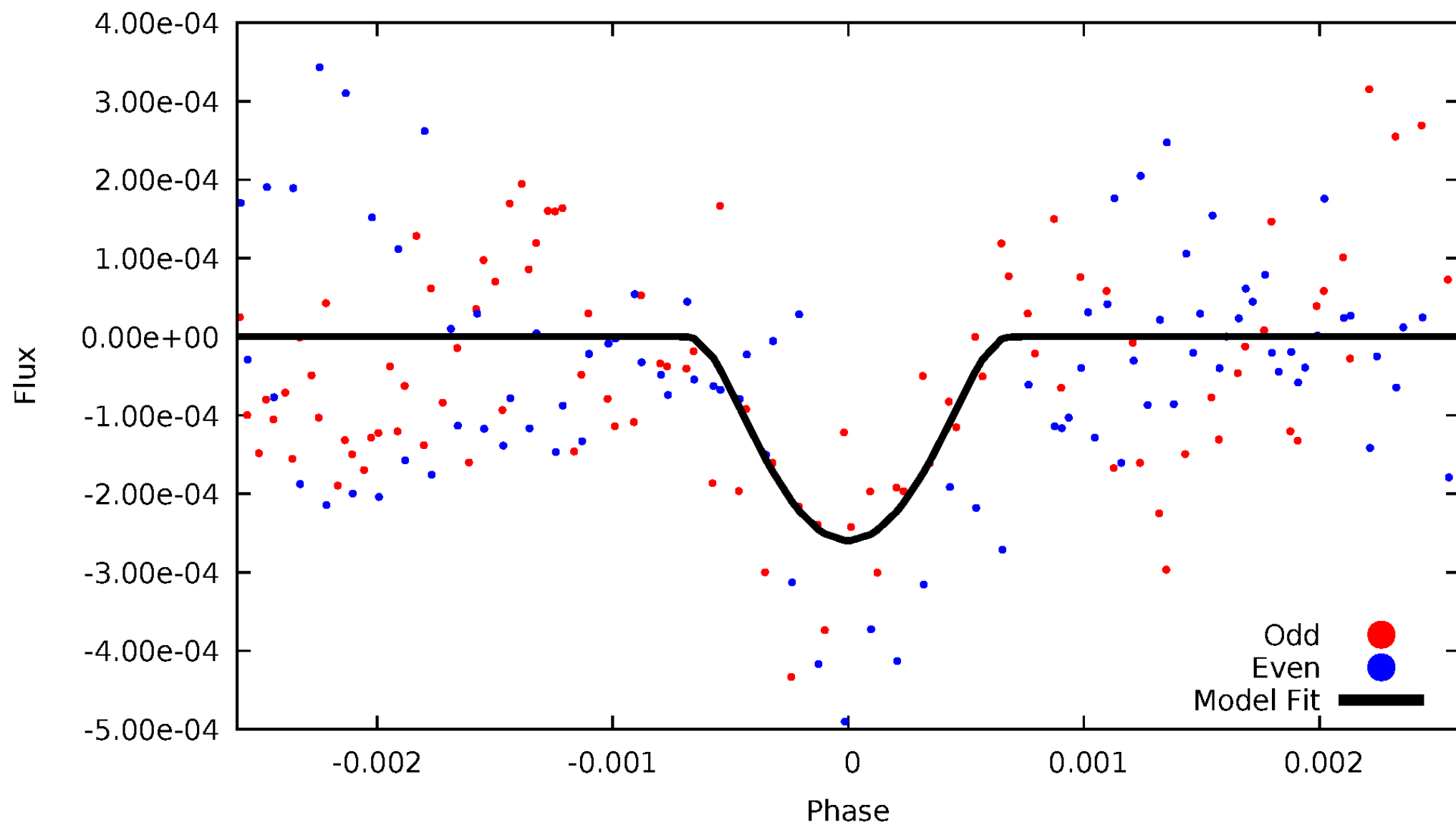


TCE 011970288-07



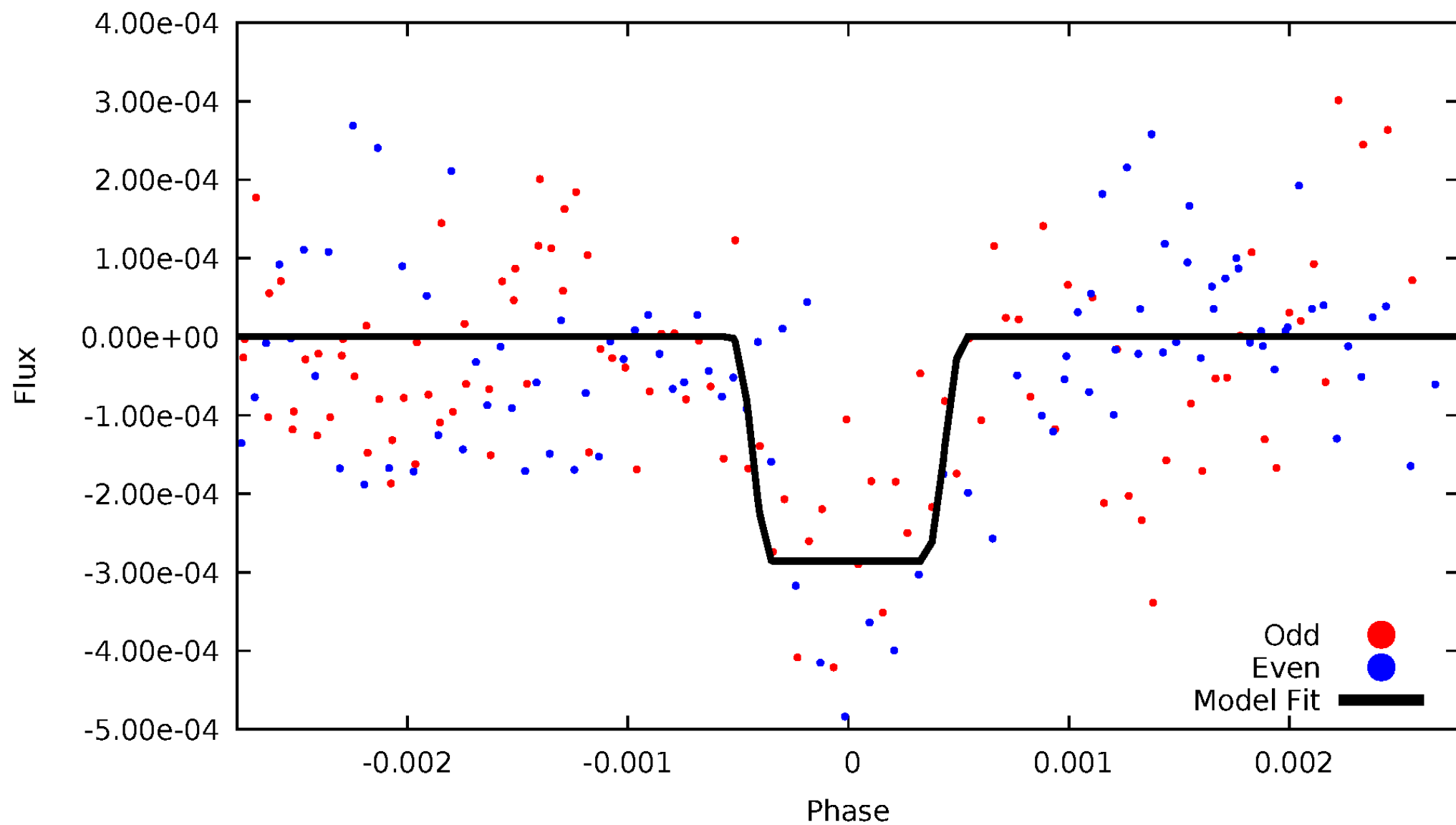
DV Odd/Even

TCE 011970288-07



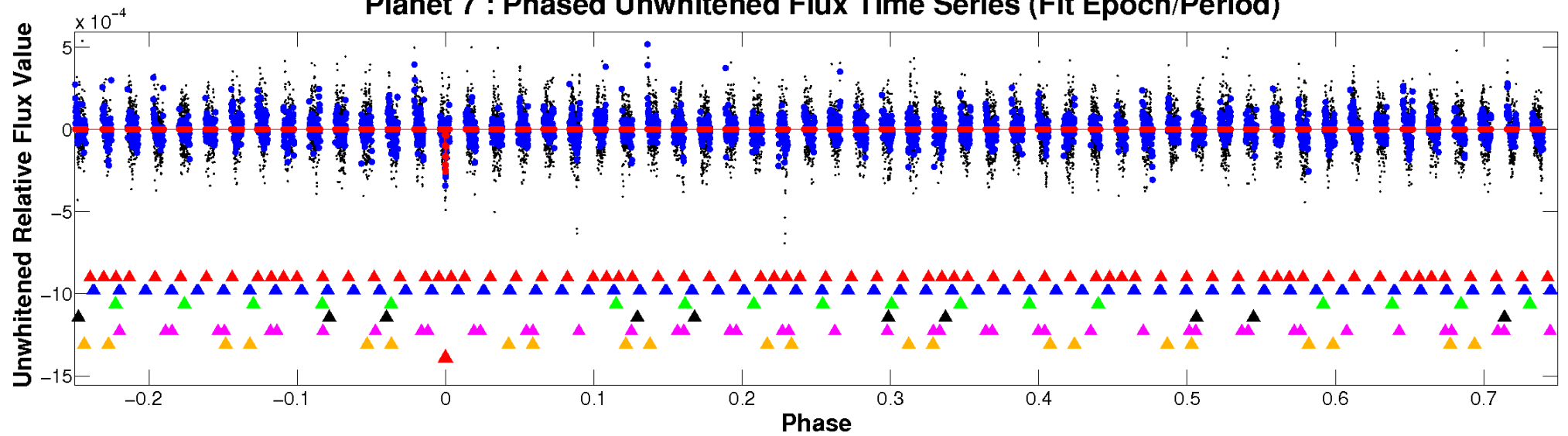
ALT Odd/Even

TCE 011970288-07

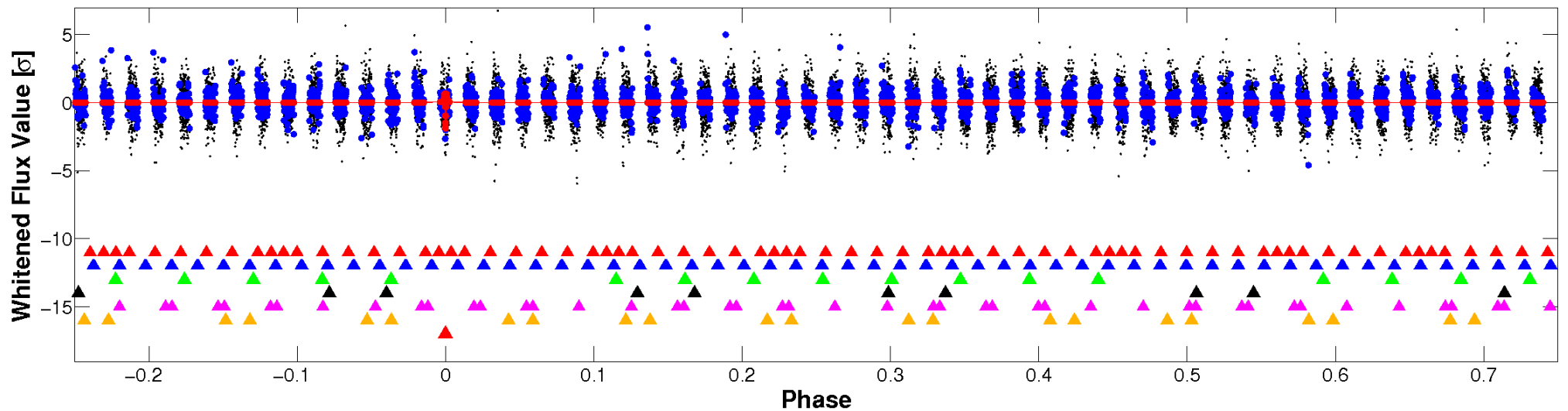


Non-Whitened Vs. Whitened Light Curve

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



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



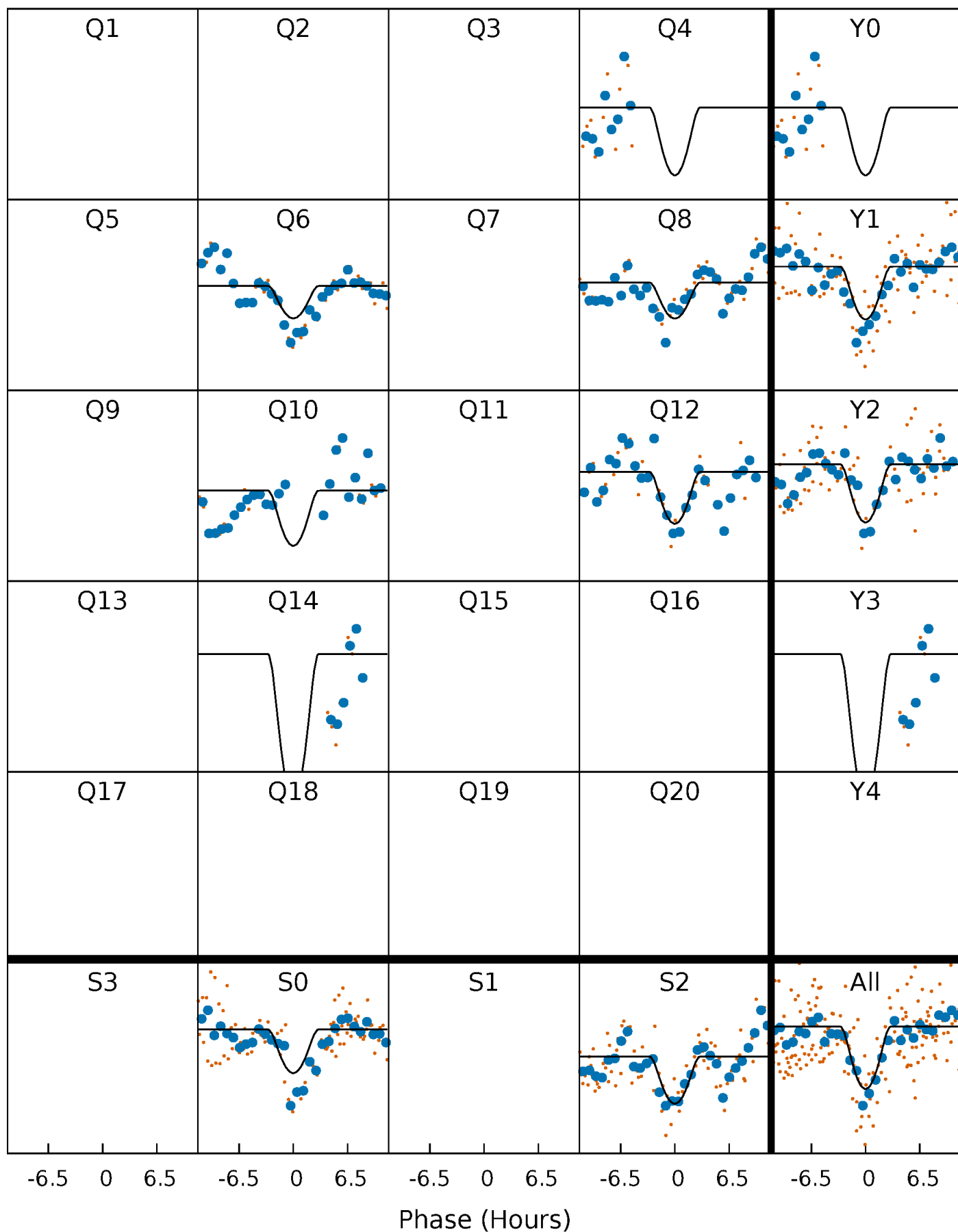
PDC Quarter-Phased Transit Curves

TCE 011970288-07 $P=183.225321$ Days $T_0=196.888859$ (BKJD)



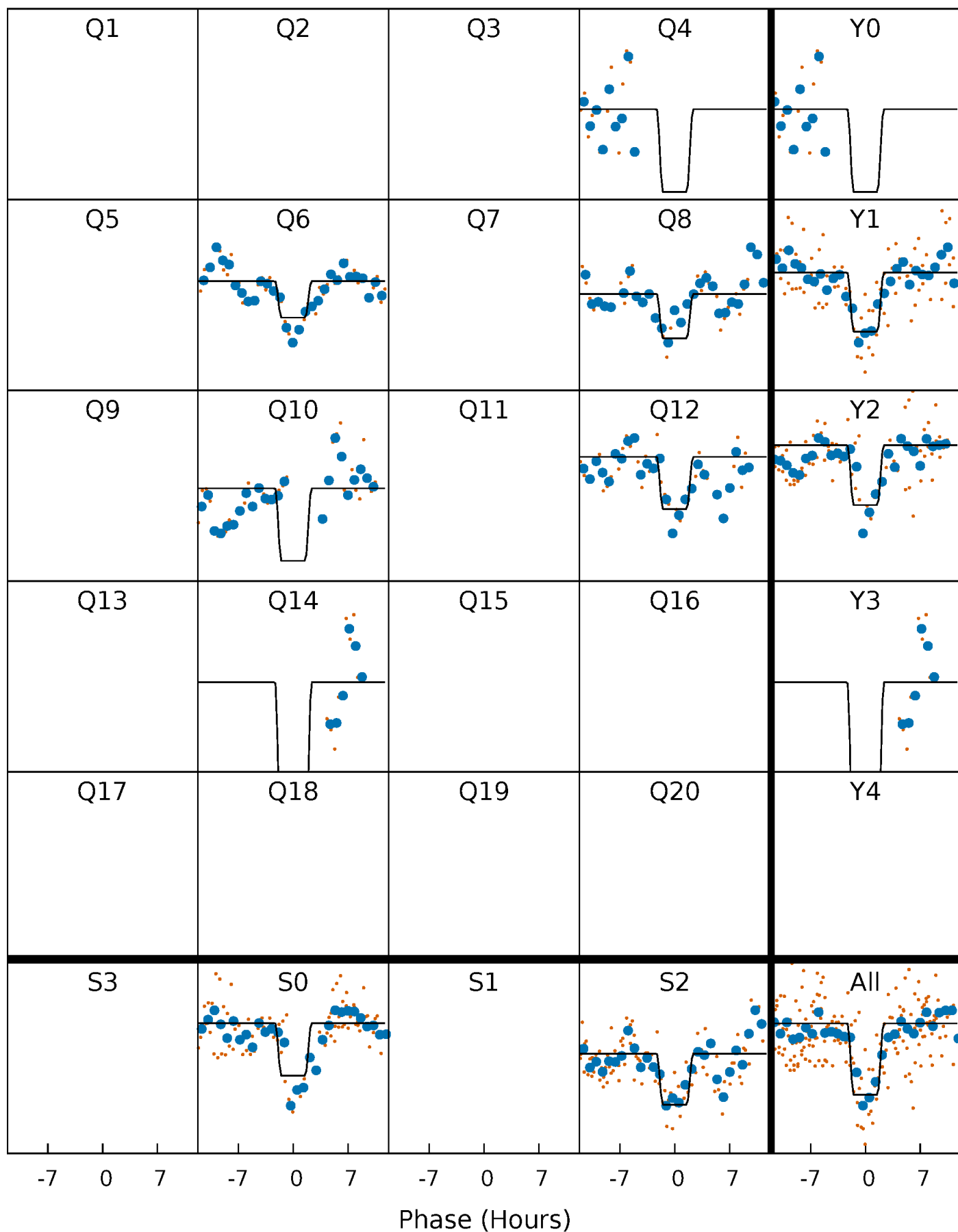
DV Quarter-Phased Transit Curves

TCE 011970288-07 $P=183.225321$ Days $T_0=196.888859$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

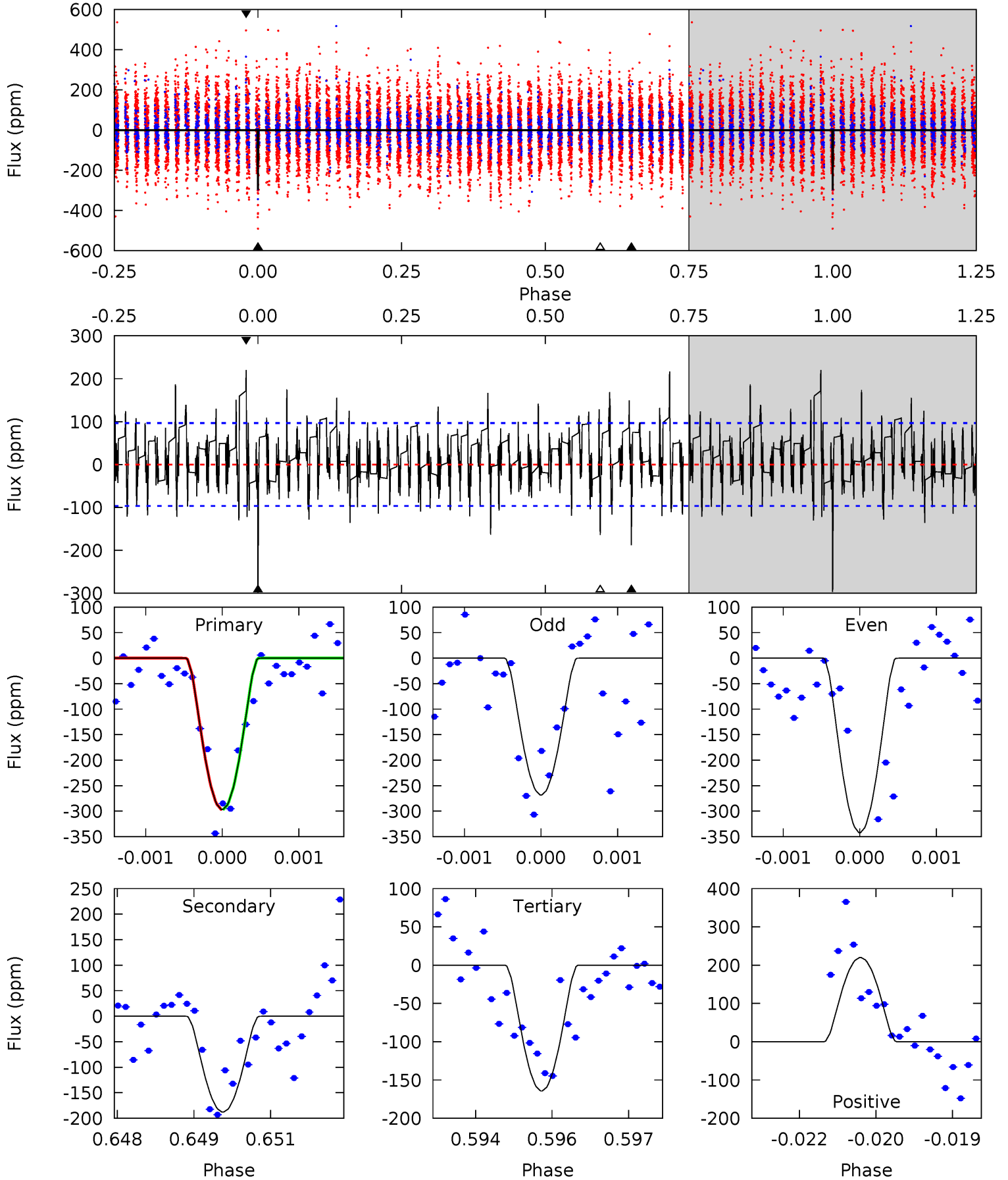
TCE 011970288-07 $P=183.223306$ Days $T_0=196.892928$ (BKJD)



DV Model-Shift Uniqueness Test

011970288-07, P = 183.225321 Days, E = 13.663538 Days

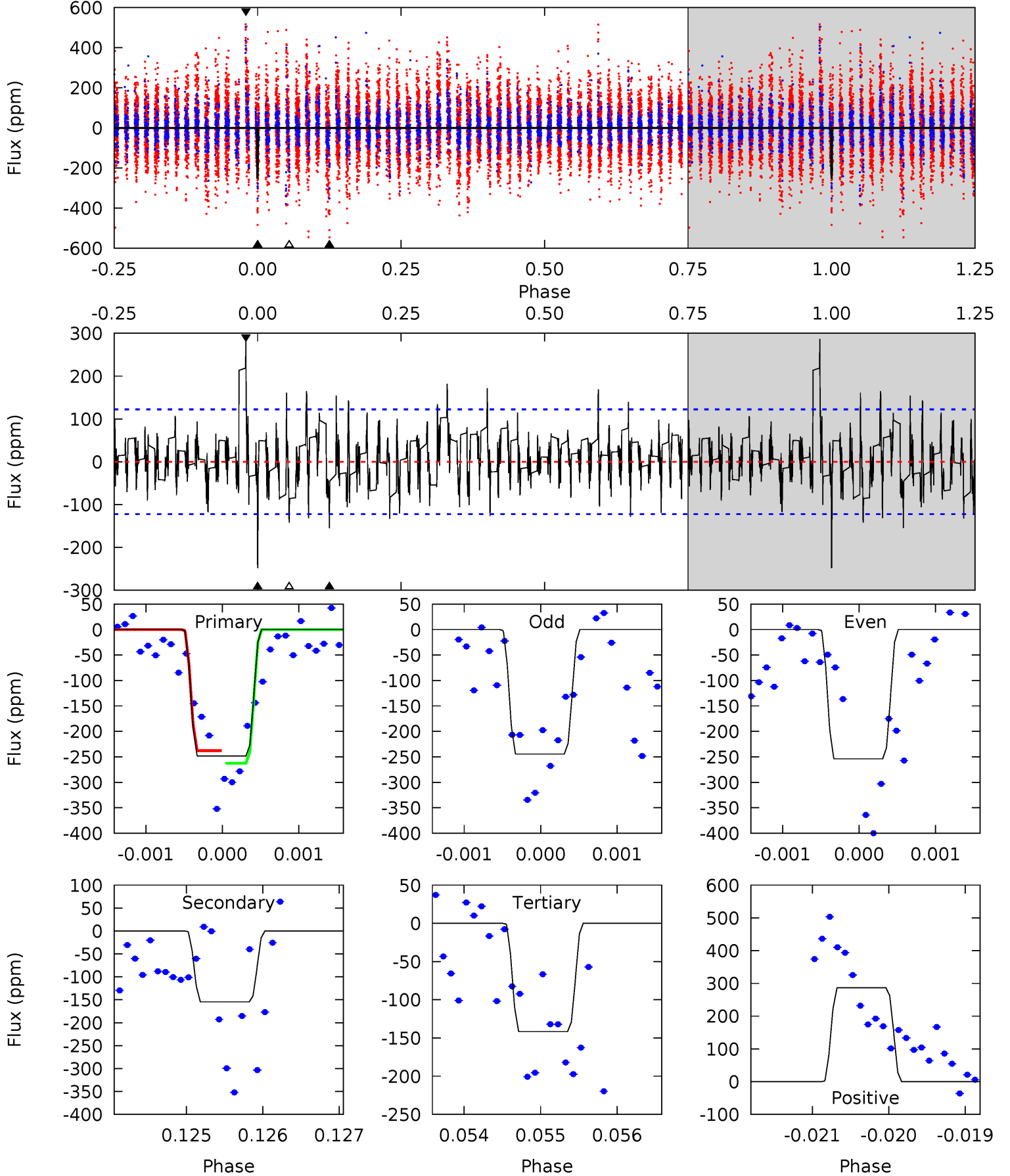
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.6	10.5	9.16	12.3	5.39	3.19	3.01	7.39	4.28	1.31	-1.80	2.03	0.90	0.43	0.01



Alt Model-Shift Uniqueness Test

011970288-07, P = 183.223306 Days, E = 13.669622 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	6.89	6.31	12.8	5.44	3.28	2.14	4.74	-1.72	0.58	-5.88	0.20	0.84	0.54	0.54



Stellar Parameters For KIC 011970288

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6956^{+163}_{-225}	$3.738^{+0.278}_{-0.093}$	$-0.180^{+0.300}_{-0.250}$	$2.888^{+0.428}_{-0.927}$	$1.664^{+0.180}_{-0.335}$	$0.097^{+0.175}_{-0.028}$
	+2%/-3%	+7%/-2%	+167%/-139%	+15%/-32%	+11%/-20%	+180%/-29%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011970288-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-188 ± 18	$26.31^{+28.51}_{-17.53}$	827^{+49}_{-69}	3262^{+1599}_{-587}	80^{+684}_{-62}
Alt.	-155 ± 22	$23.58^{+26.60}_{-16.05}$	827^{+46}_{-69}	3286^{+1720}_{-617}	85^{+802}_{-66}

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

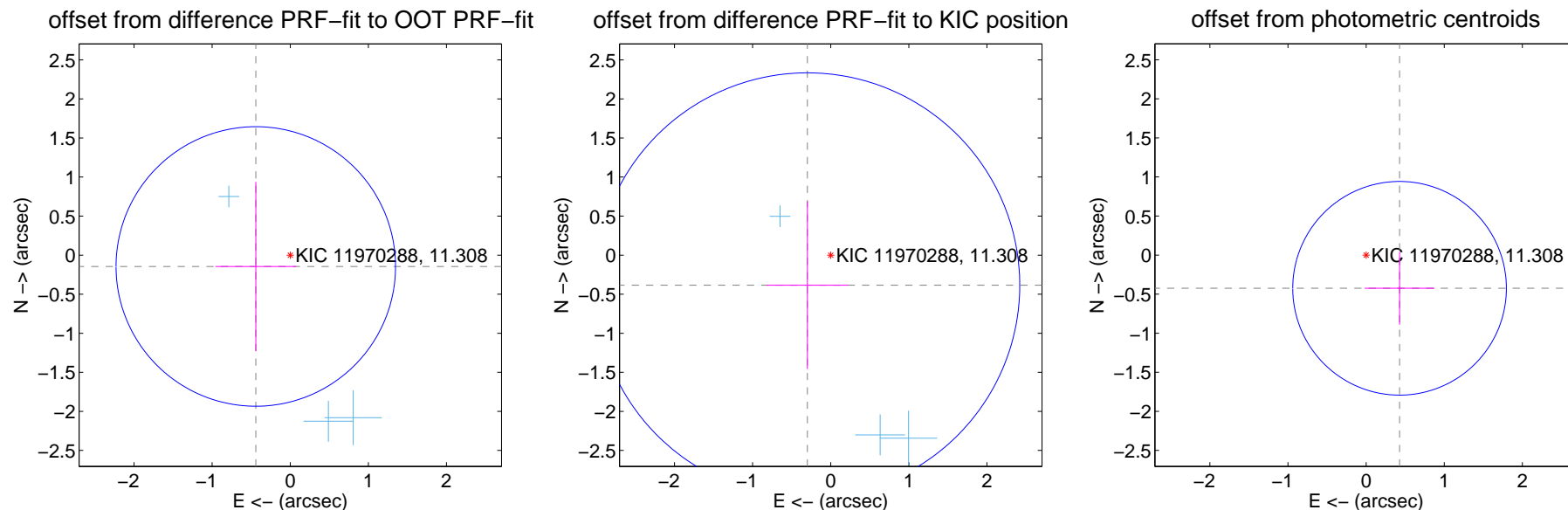
DV Centroid Data

Supplemental centroid analysis for 011970288-07. **Kepler magnitude: 11.31.** Transit SNR 7.63

There are 3 quarters with good PRF difference image offsets

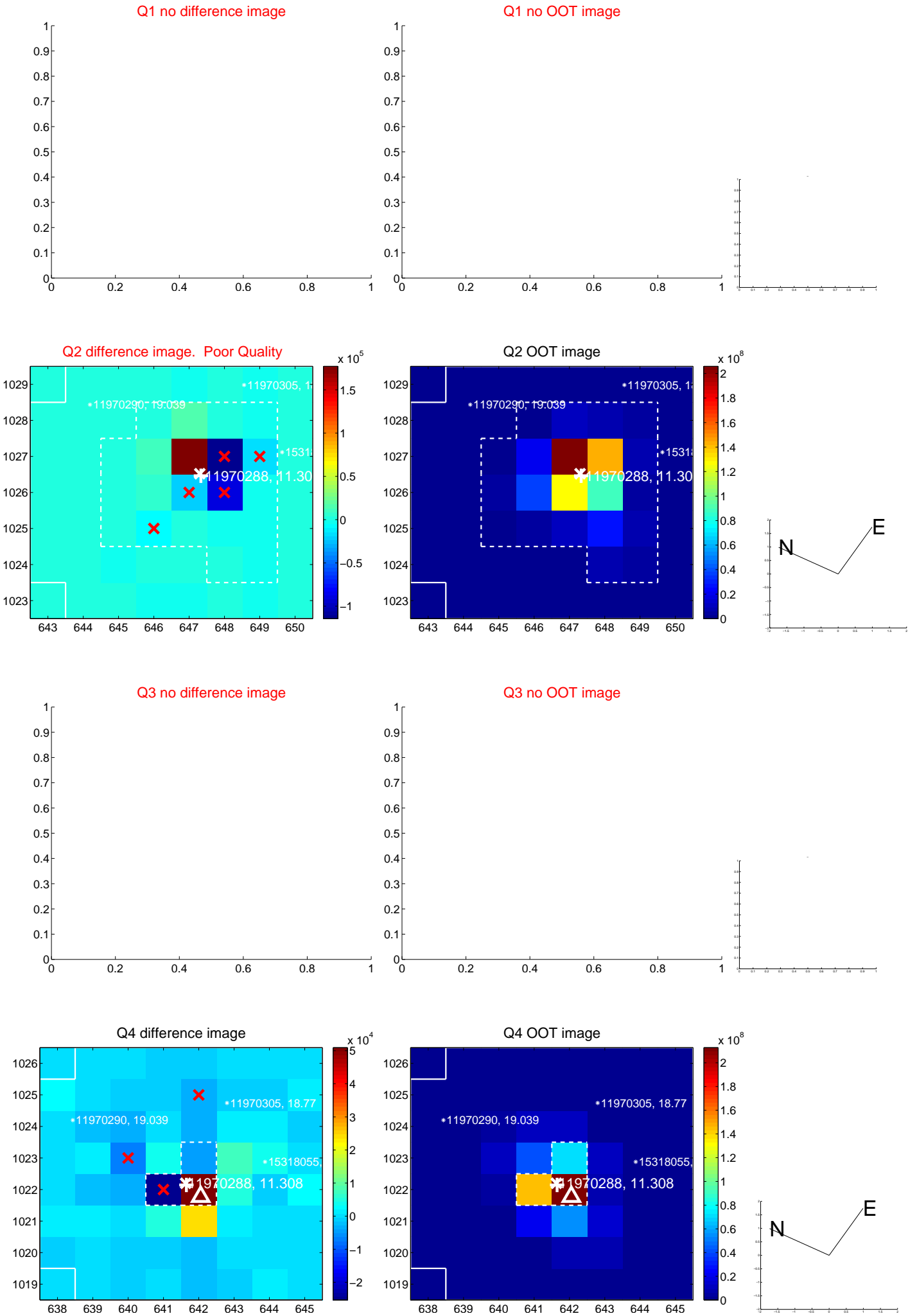
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.465 ± 0.596	0.78	0.442 ± 0.517	-0.145 ± 1.084
PRF-fit source offset from KIC position	0.487 ± 0.906	0.54	0.299 ± 0.524	-0.385 ± 1.072
photometric centroid source offset	0.60 ± 0.46	1.32	-0.43 ± 0.45	-0.42 ± 0.46



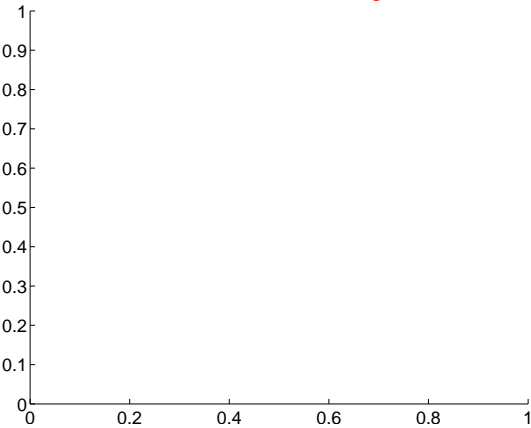
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

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

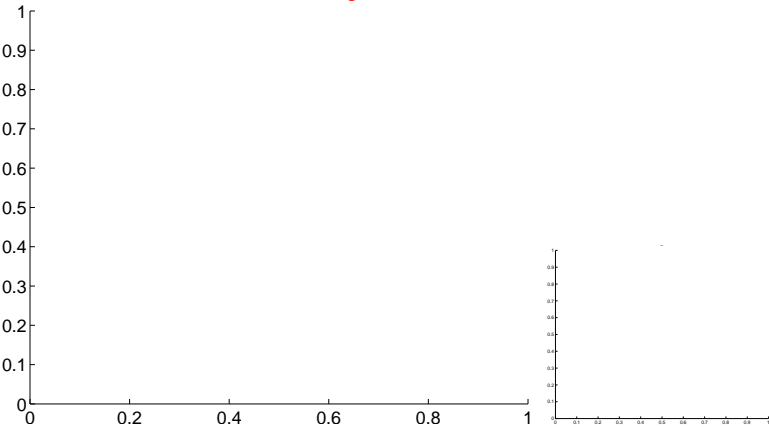


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

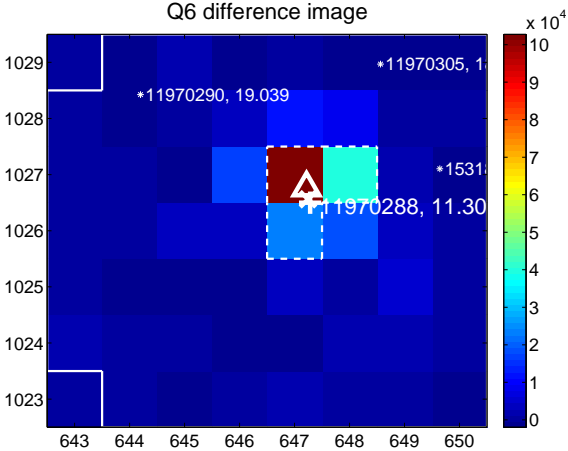
Q5 no difference image



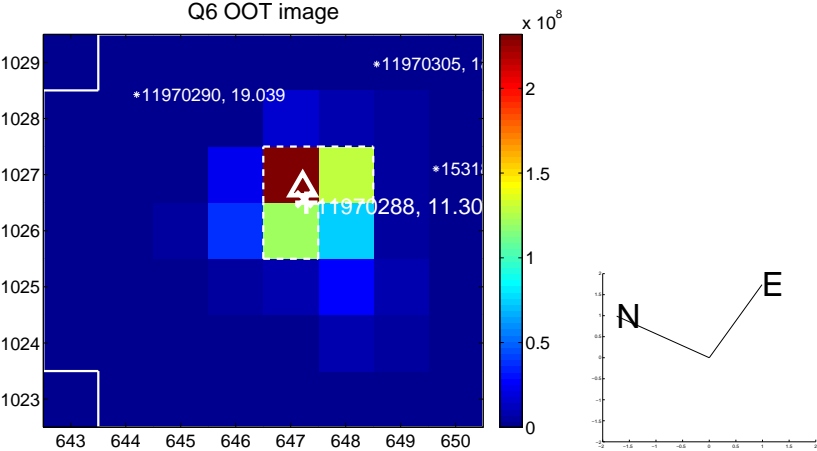
Q5 no OOT image



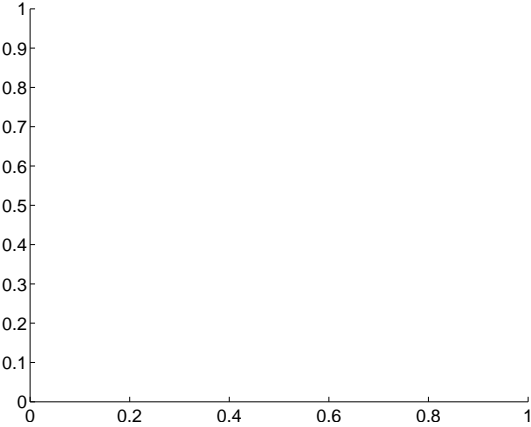
Q6 difference image



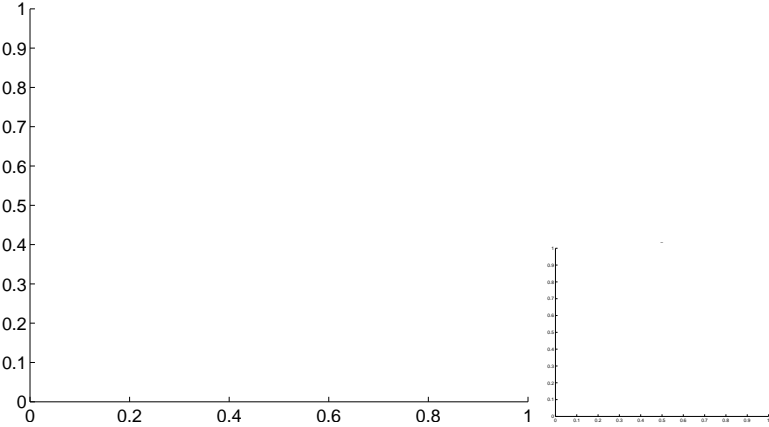
Q6 OOT image



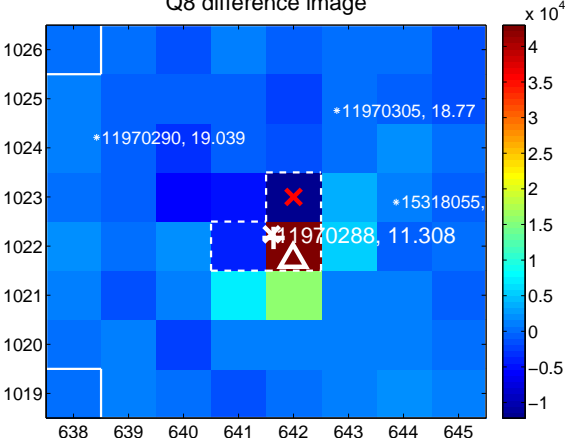
Q7 no difference image



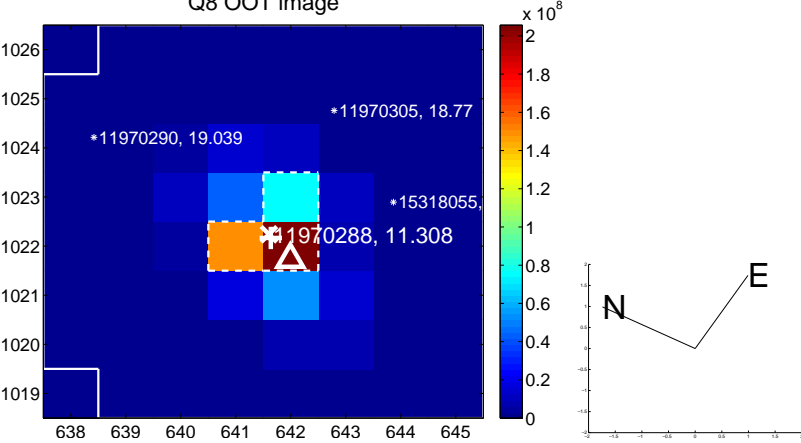
Q7 no OOT image



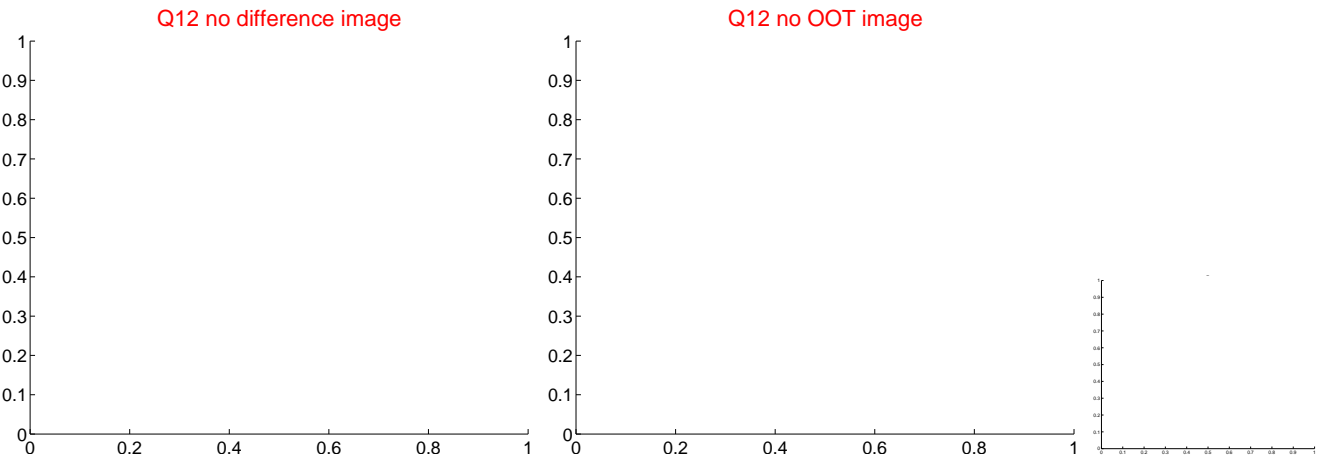
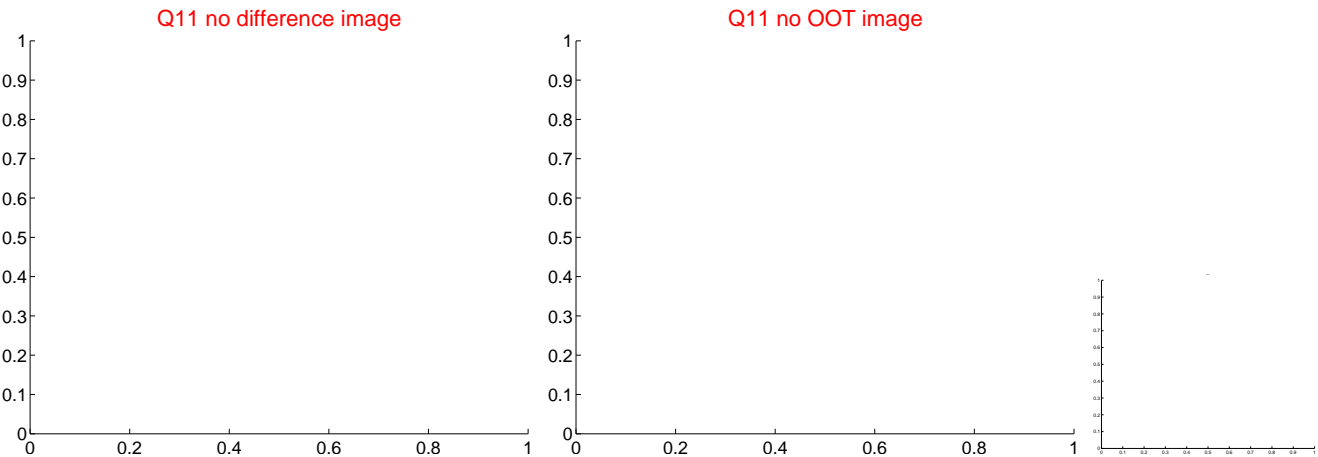
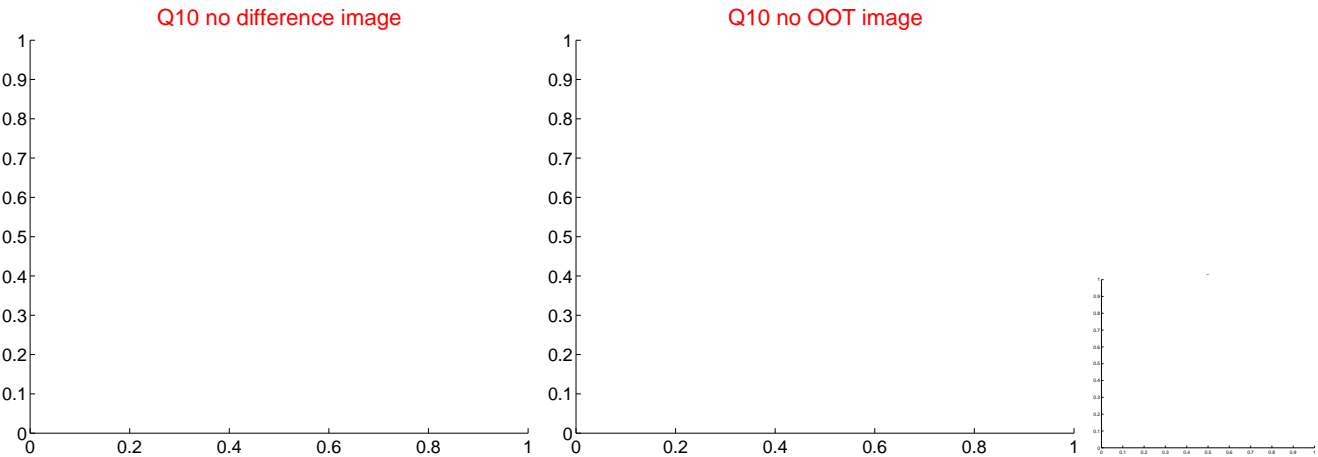
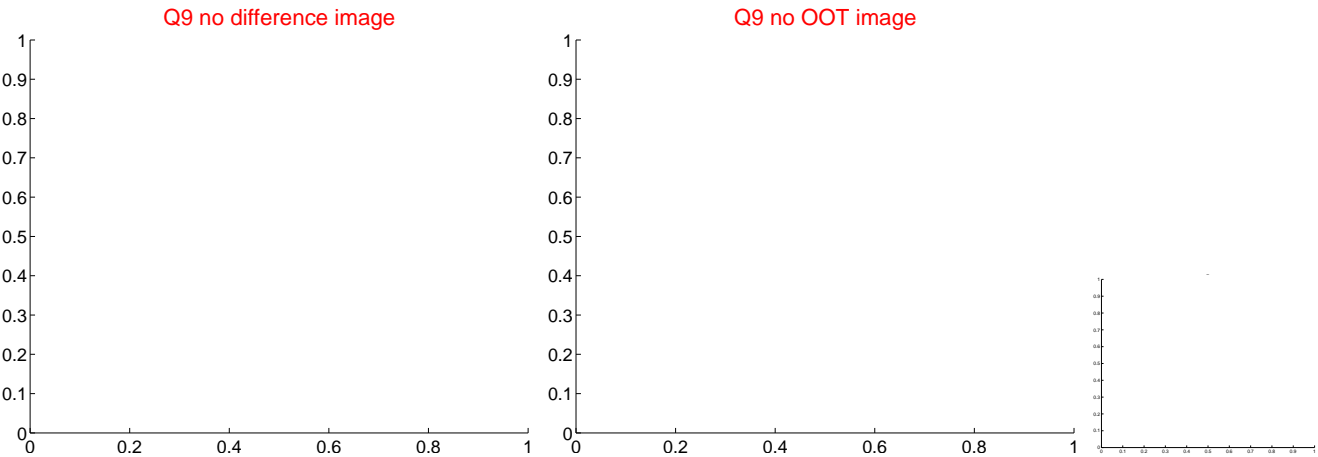
Q8 difference image



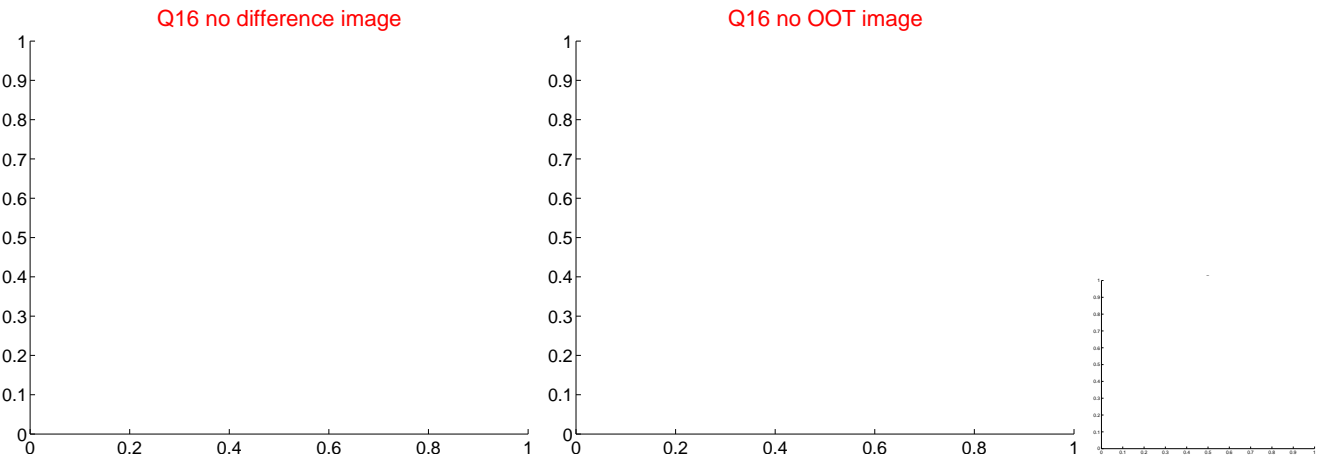
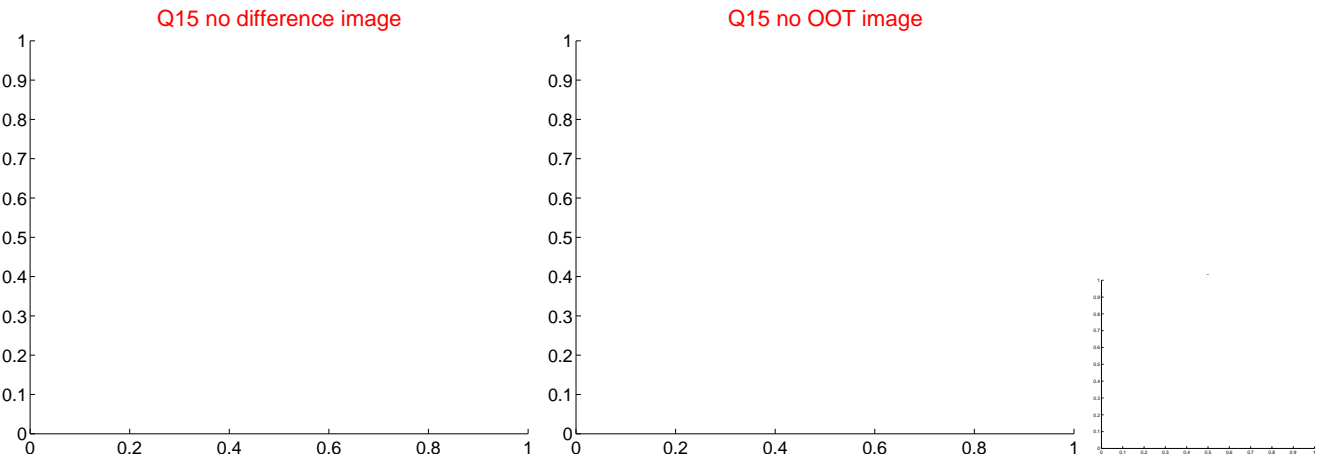
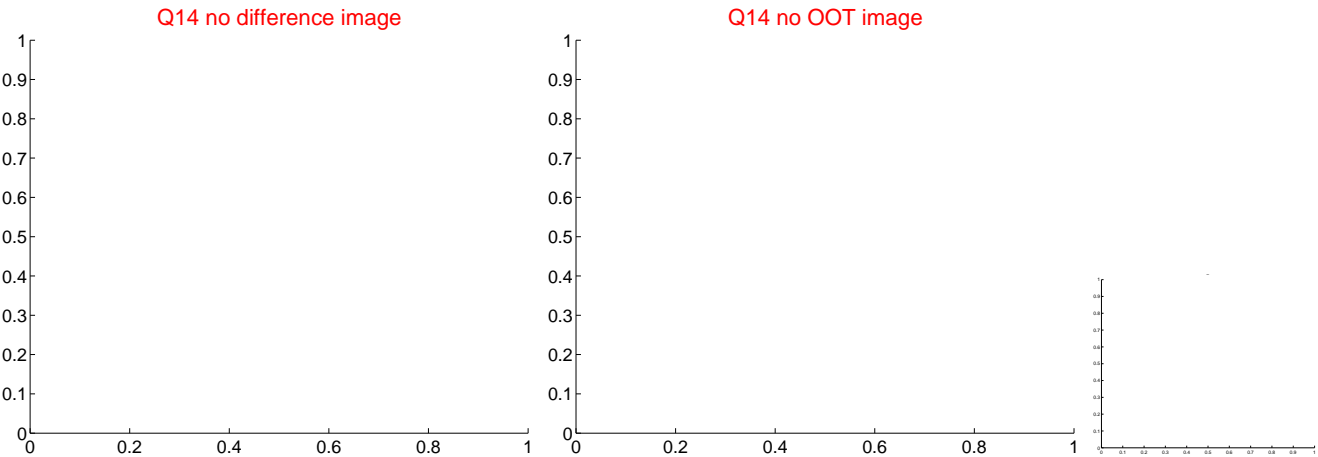
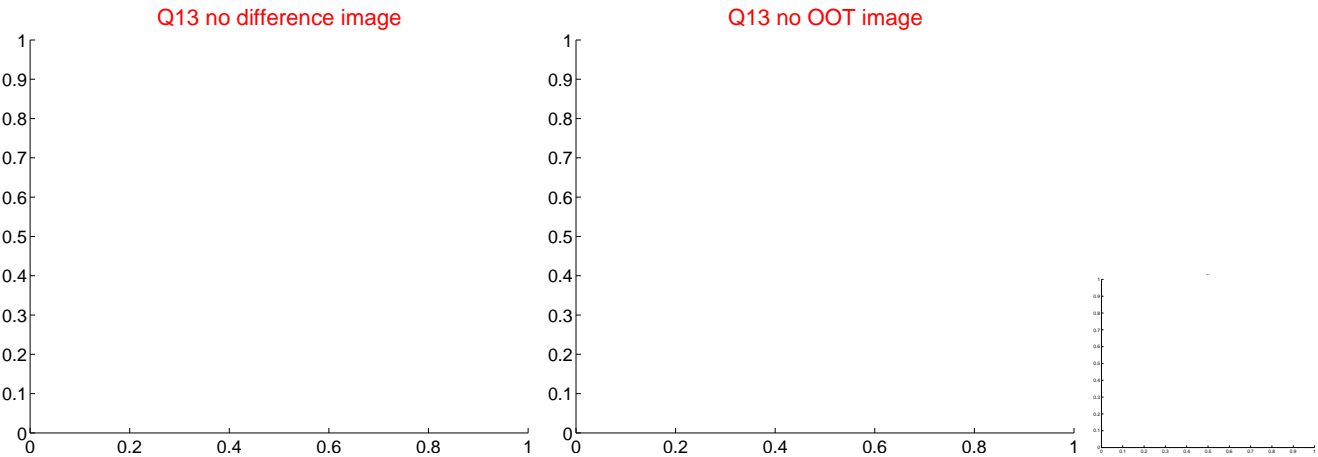
Q8 OOT image



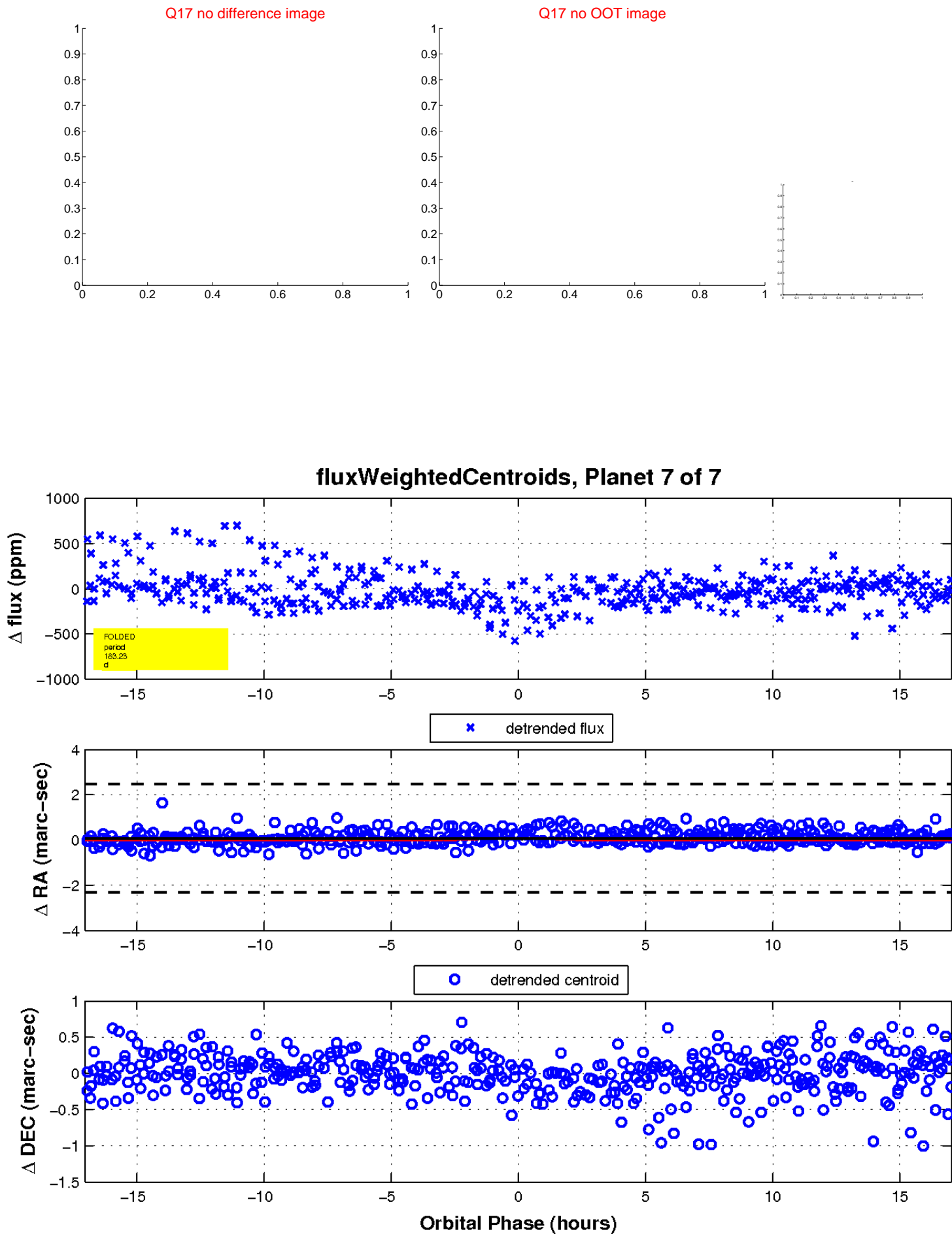
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

