

KIC 007422883

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})
007422883-01	OBS	6159.01	11.414424	142.595073	47330.4	6.458	385.9	662.0	1.52	6826	56.22	383.87
007422883-02	OBS	No	11.414418	137.365873	47705.0	6.443	274.2	582.3	1.52	6826	56.41	383.87
007422883-03	OBS	No	348.043243	391.916282	533.2	3.500	38.4	-1.0	1.52	6826	3.54	4.03
007422883-04	OBS	No	281.907334	357.225831	529.5	3.000	33.5	-1.0	1.52	6826	3.53	5.34

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007422883-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_SATURATED
007422883-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED
007422883-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
007422883-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—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 007422883-01

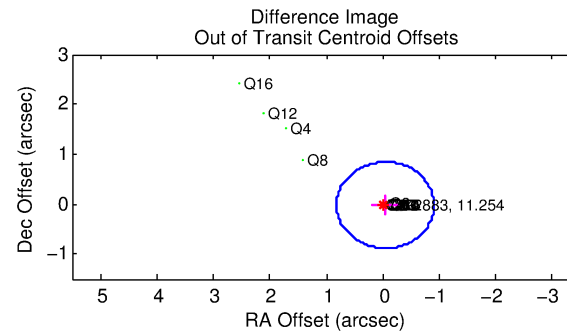
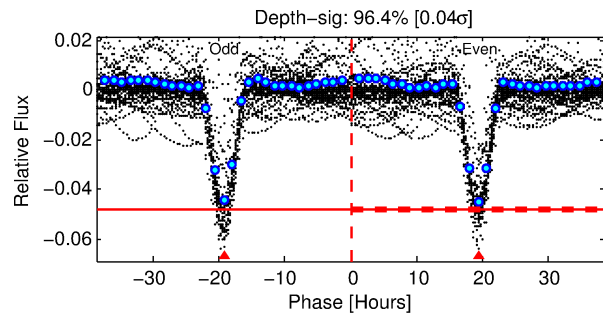
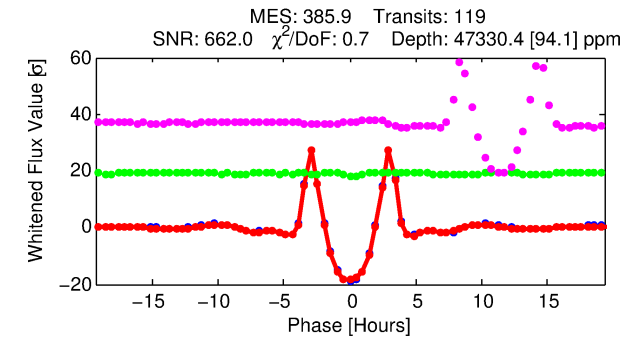
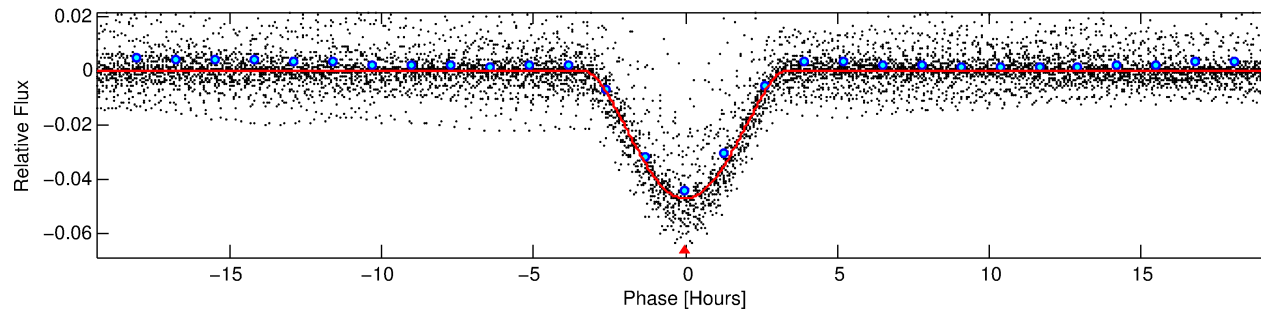
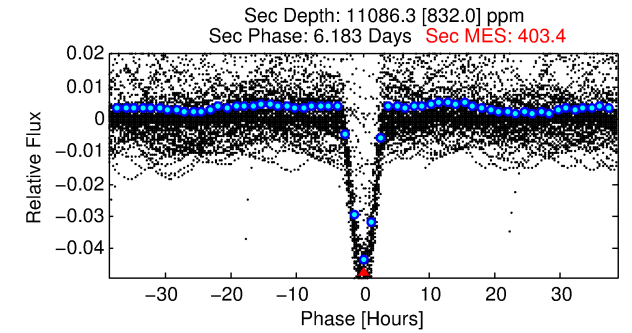
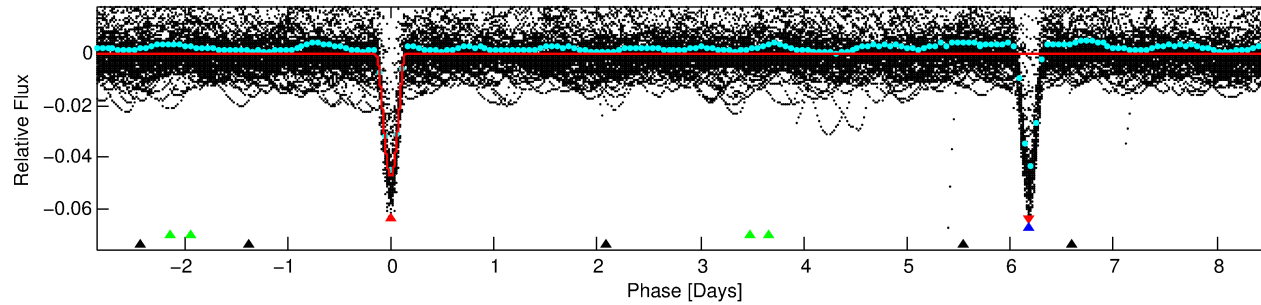
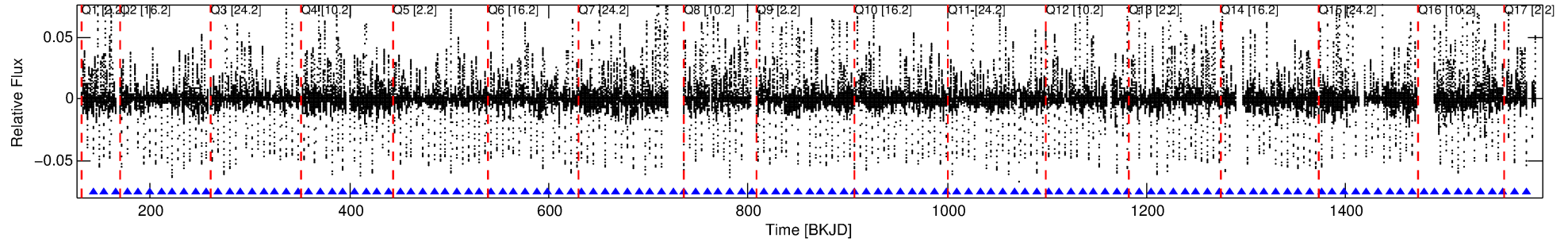
No Significant Match Found

DV One-Page Summary

KIC: 7422883 Candidate: 1 of 4 Period: 11.414 d

KOI: K06159.01 Corr: 0.984

Kp: 11.25 R*: 1.52 Rs Teff: 6826.0 K Logg: 4.19 Fe/H: -0.240



DV Fit Results:

Period = 11.41442 [0.00000] d
Epoch = 142.5951 [0.0001] BKJD
Rp/R* = 0.3389 [0.0052]
a/R* = 12.08 [0.01]
b = 1.00 [0.01]
Seff = 383.87 [142.32]
Teq = 1129 [105] K
Rp = 56.22 [16.56] Re
a = 0.1082 [0.0263] AU
Ag = 22.59 [8.06] [2.68σ]
Teffp = 3805 [145] K [14.97σ]

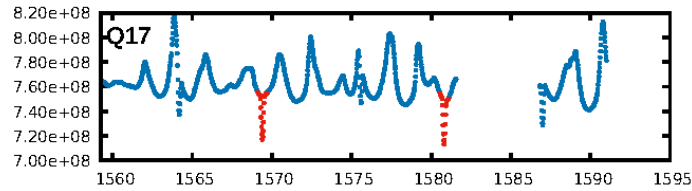
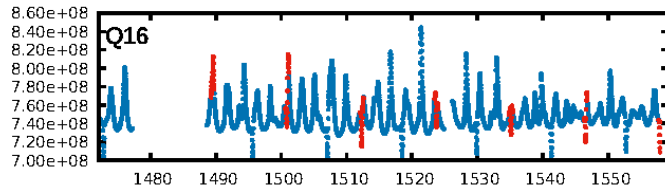
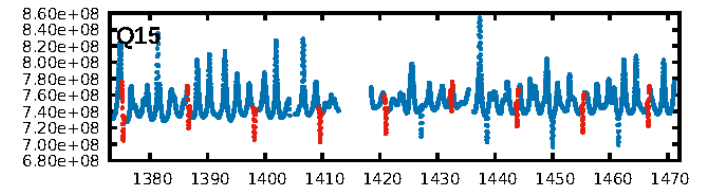
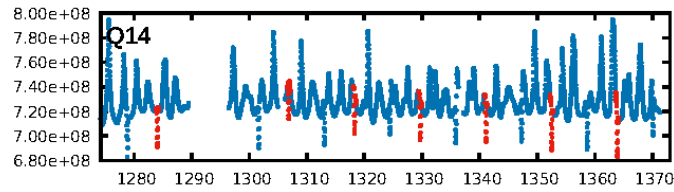
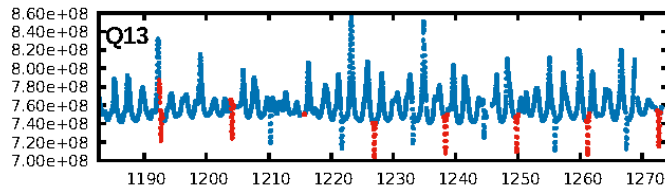
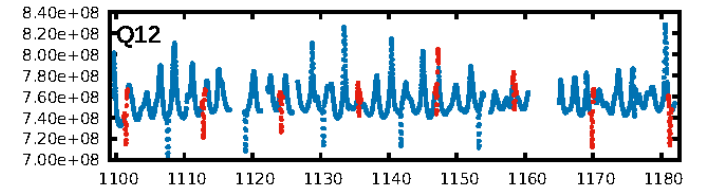
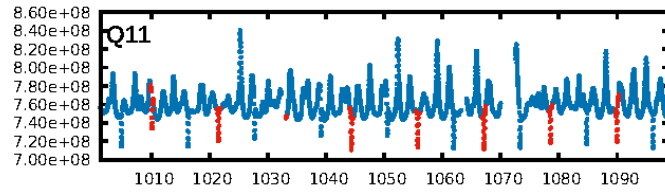
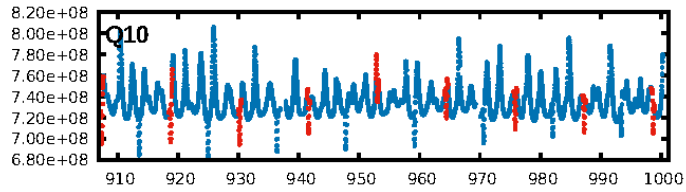
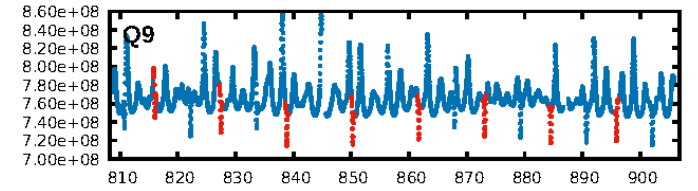
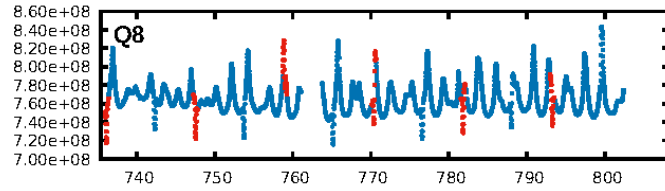
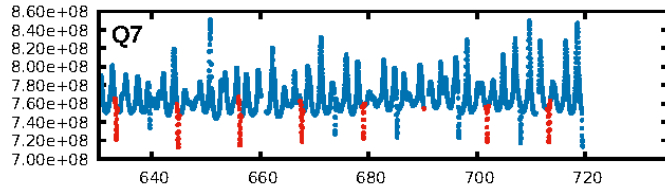
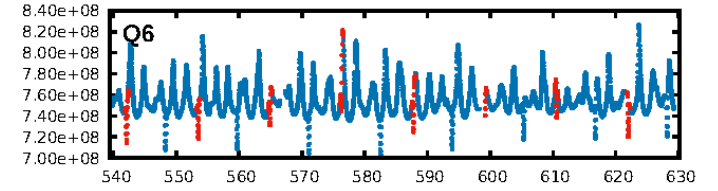
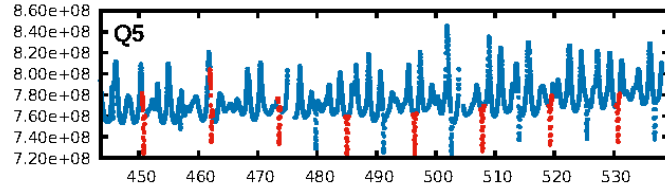
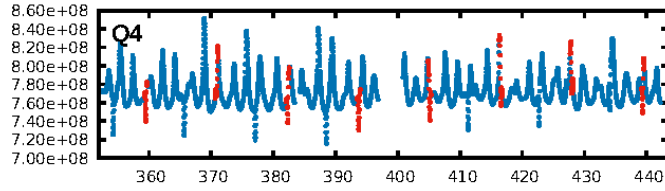
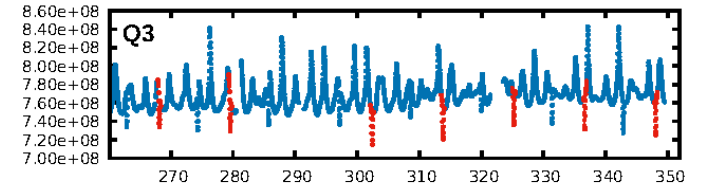
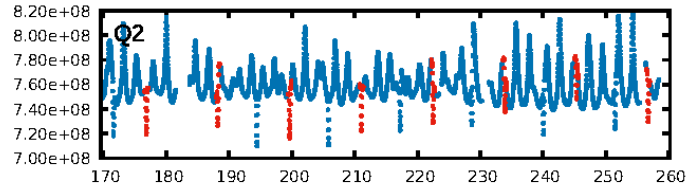
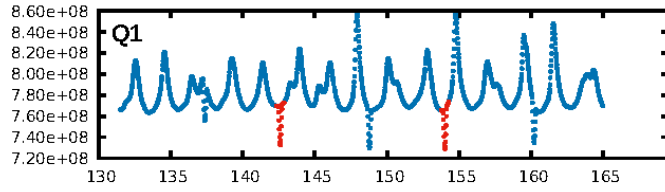
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 100.0% [911.72σ]
ModelChiSquare2-sig: 86.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [115/115]
GhostDiagnostic-chr: 1.406
Centroid-sig: N/A
Centroid-so: 0.186 arcsec [130.54σ]
OotOffset-rm: 0.044 arcsec [0.15σ]
KicOffset-rm: 0.089 arcsec [0.33σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

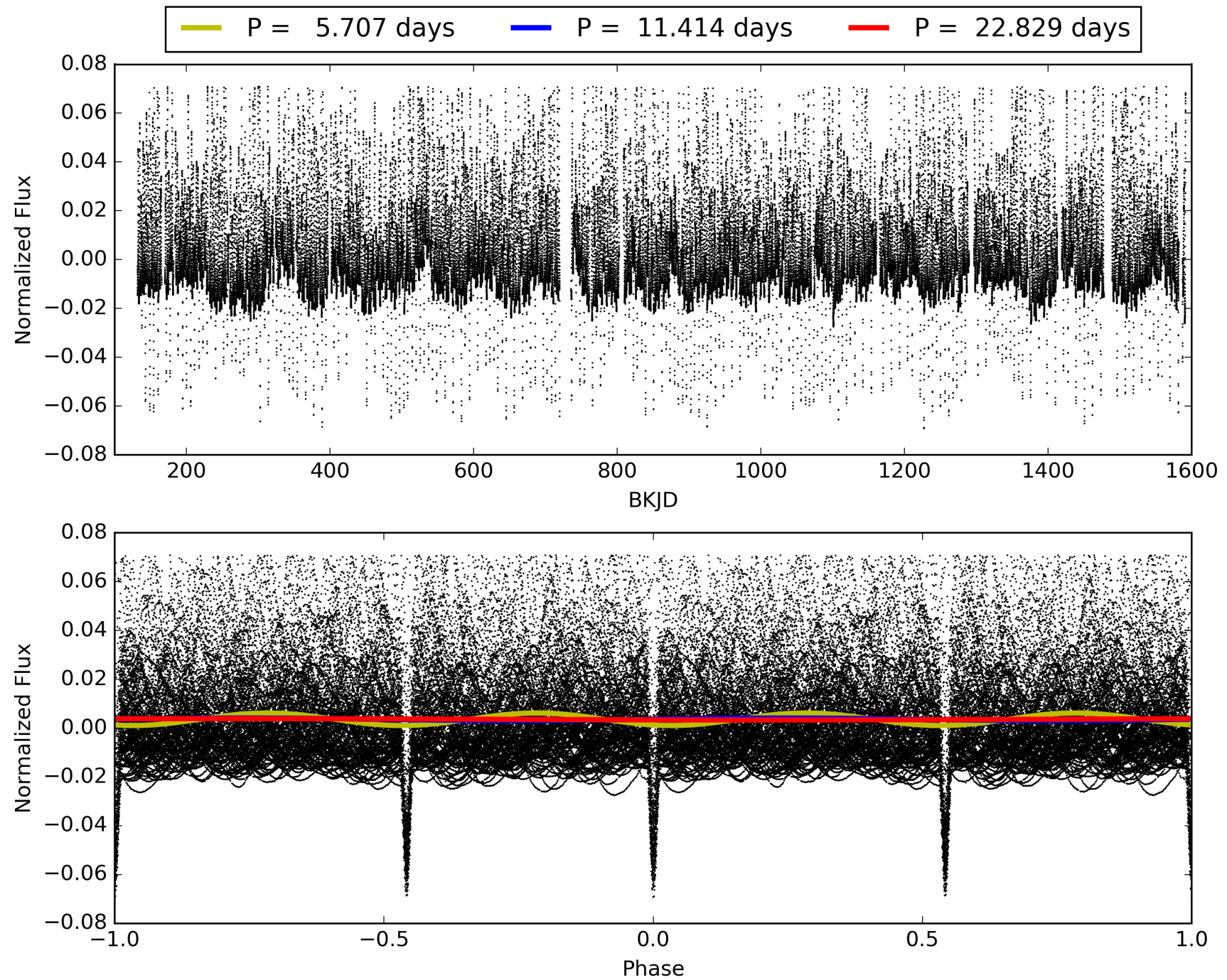
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:56:29 Z

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

TCE 007422883-01, PDC Light Curves

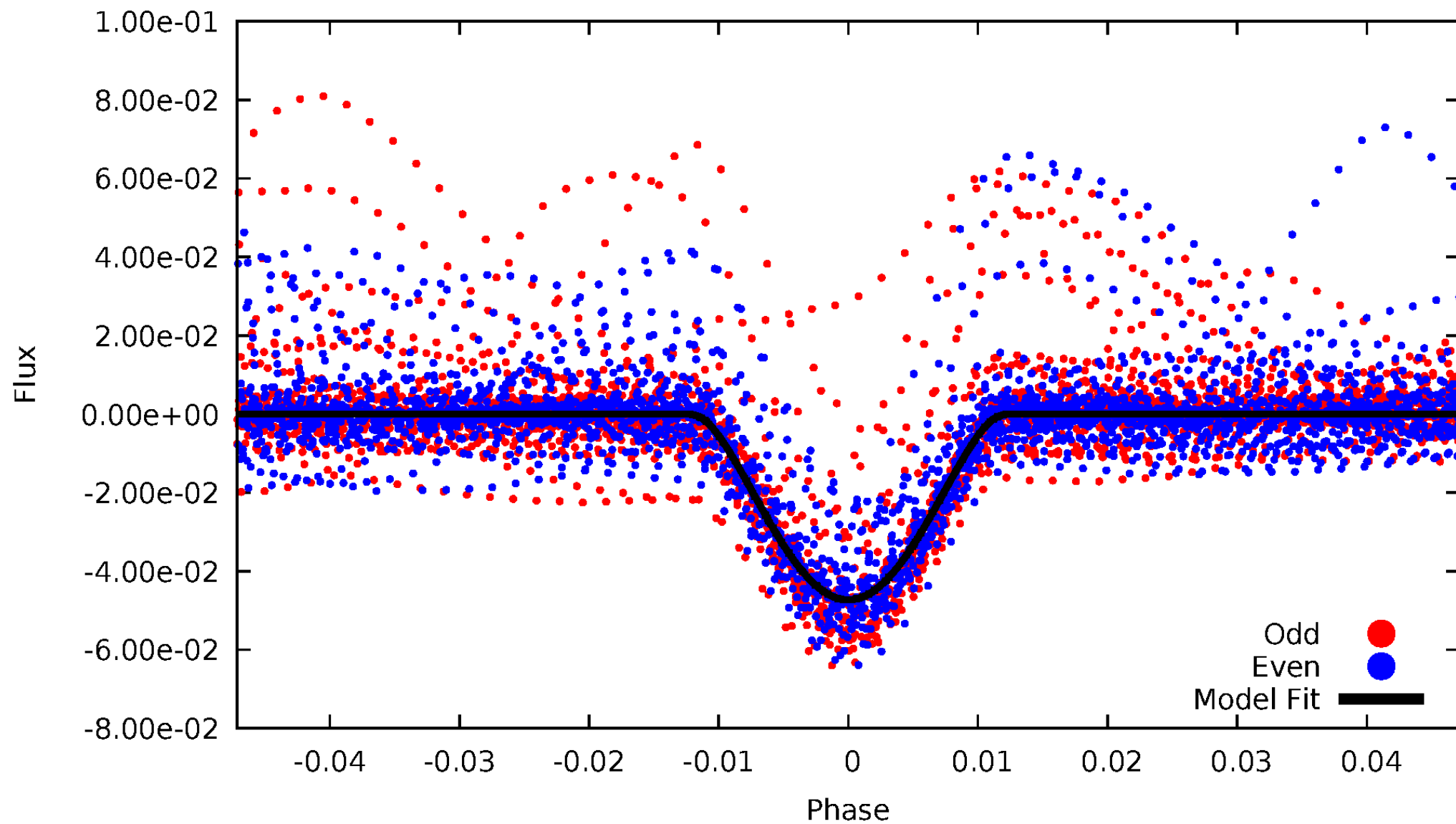


TCE 007422883-01



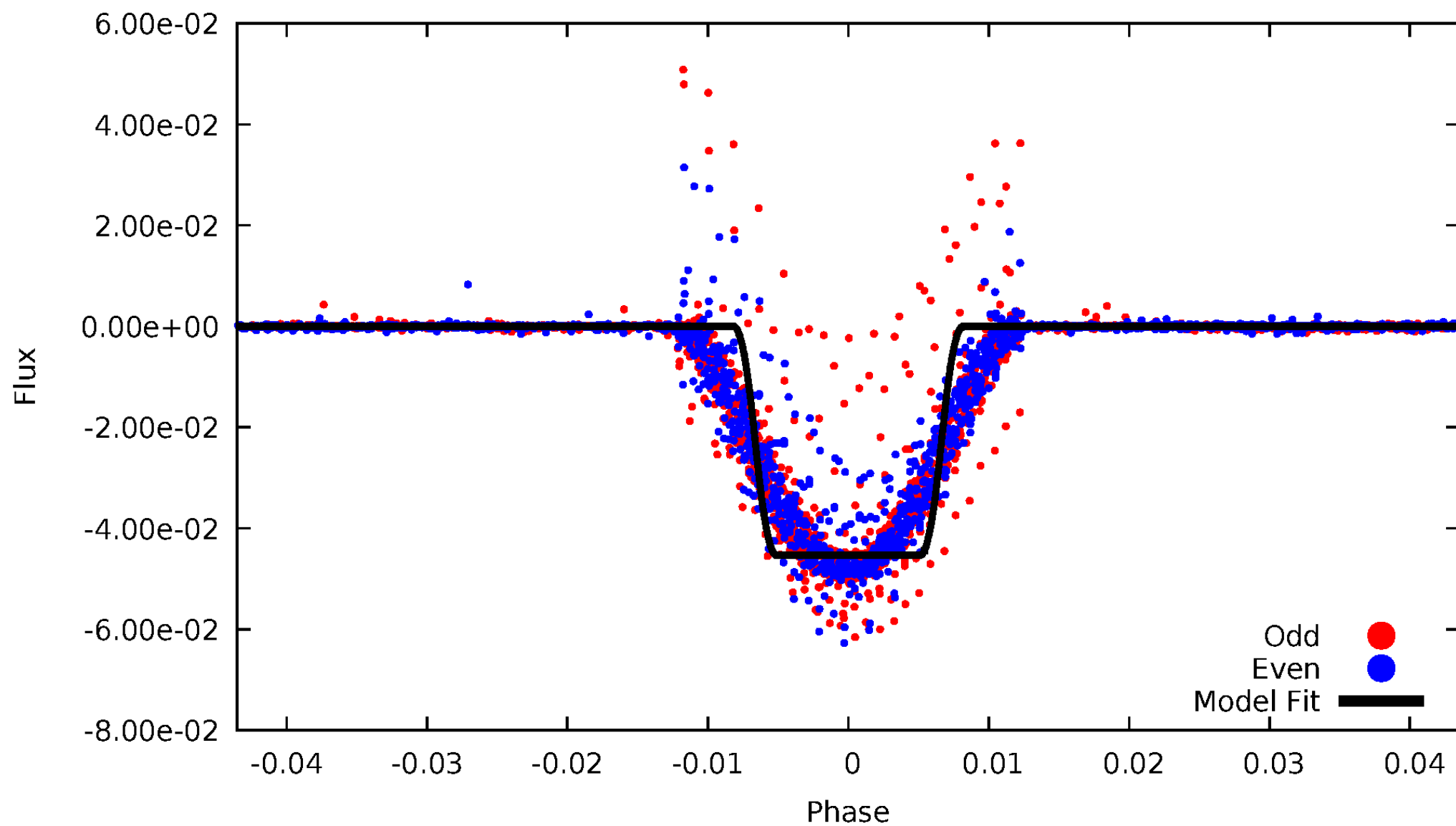
DV Odd/Even

TCE 007422883-01



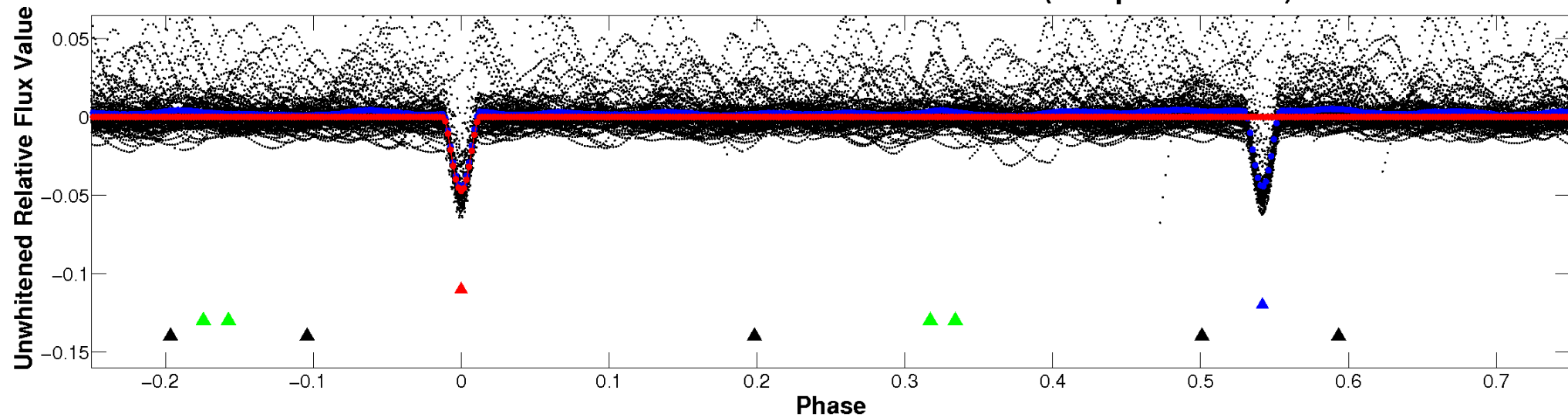
ALT Odd/Even

TCE 007422883-01

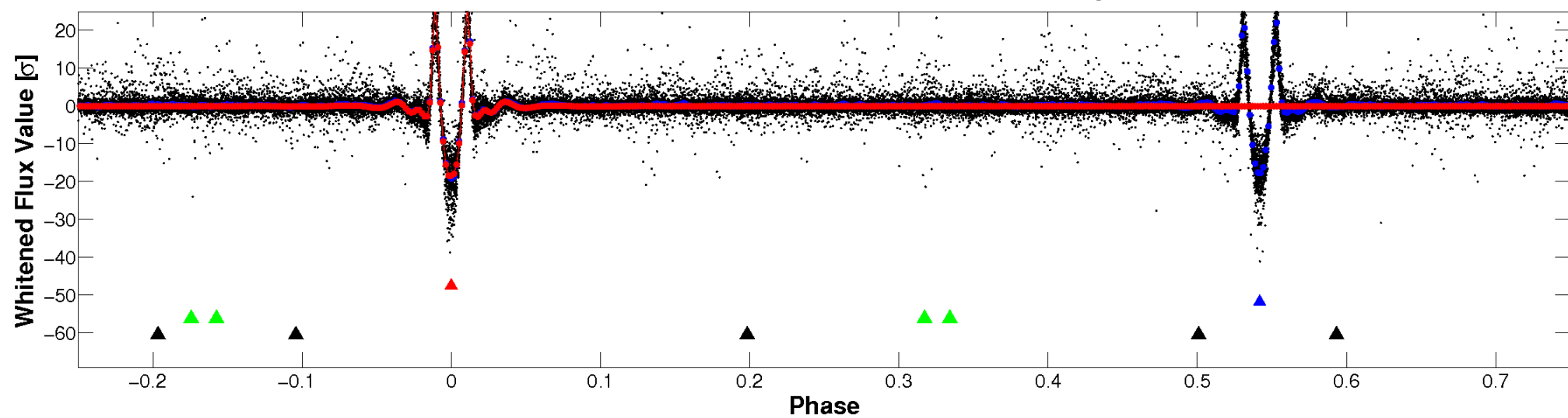


Non-Whitened Vs. Whitened Light Curve

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

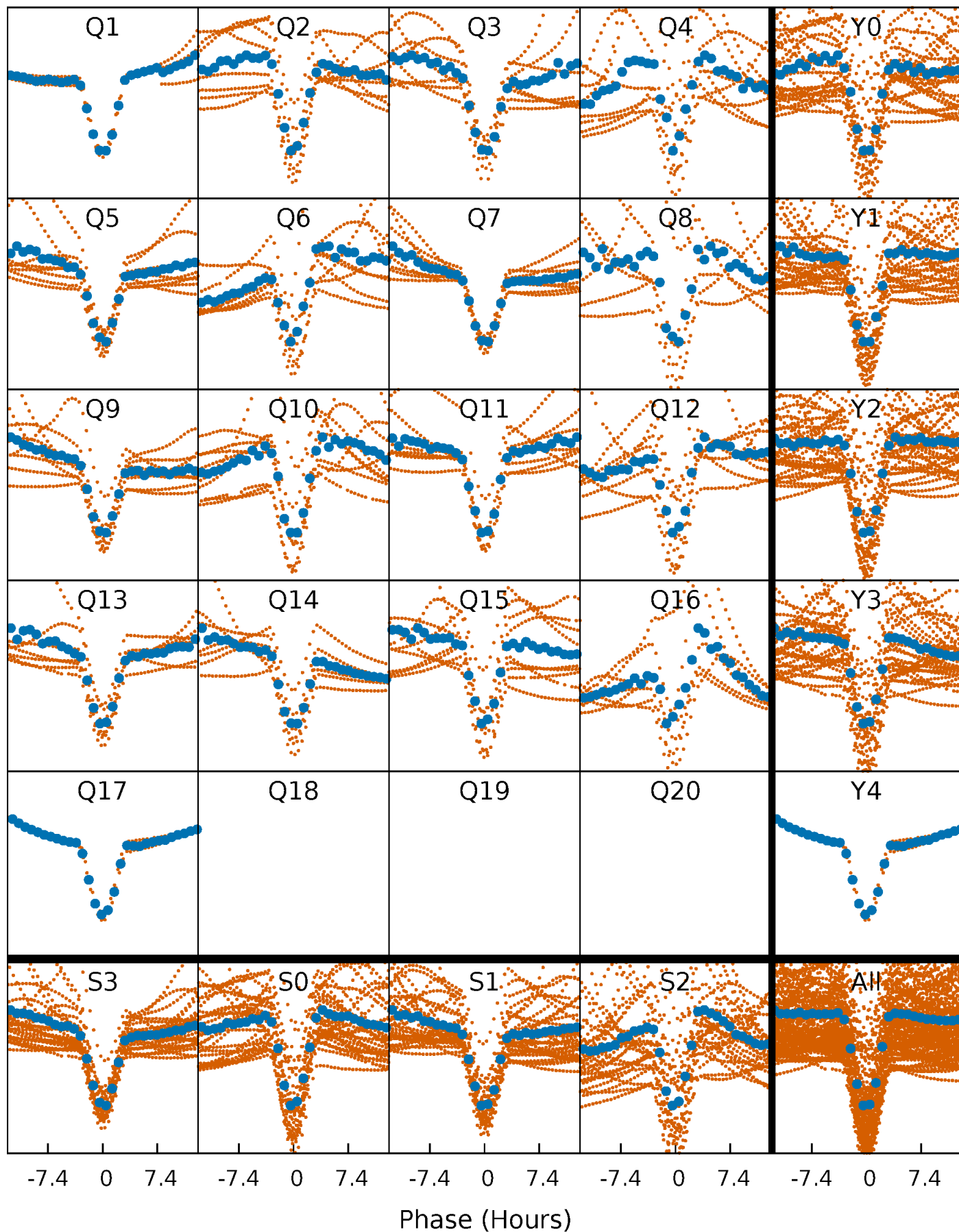


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



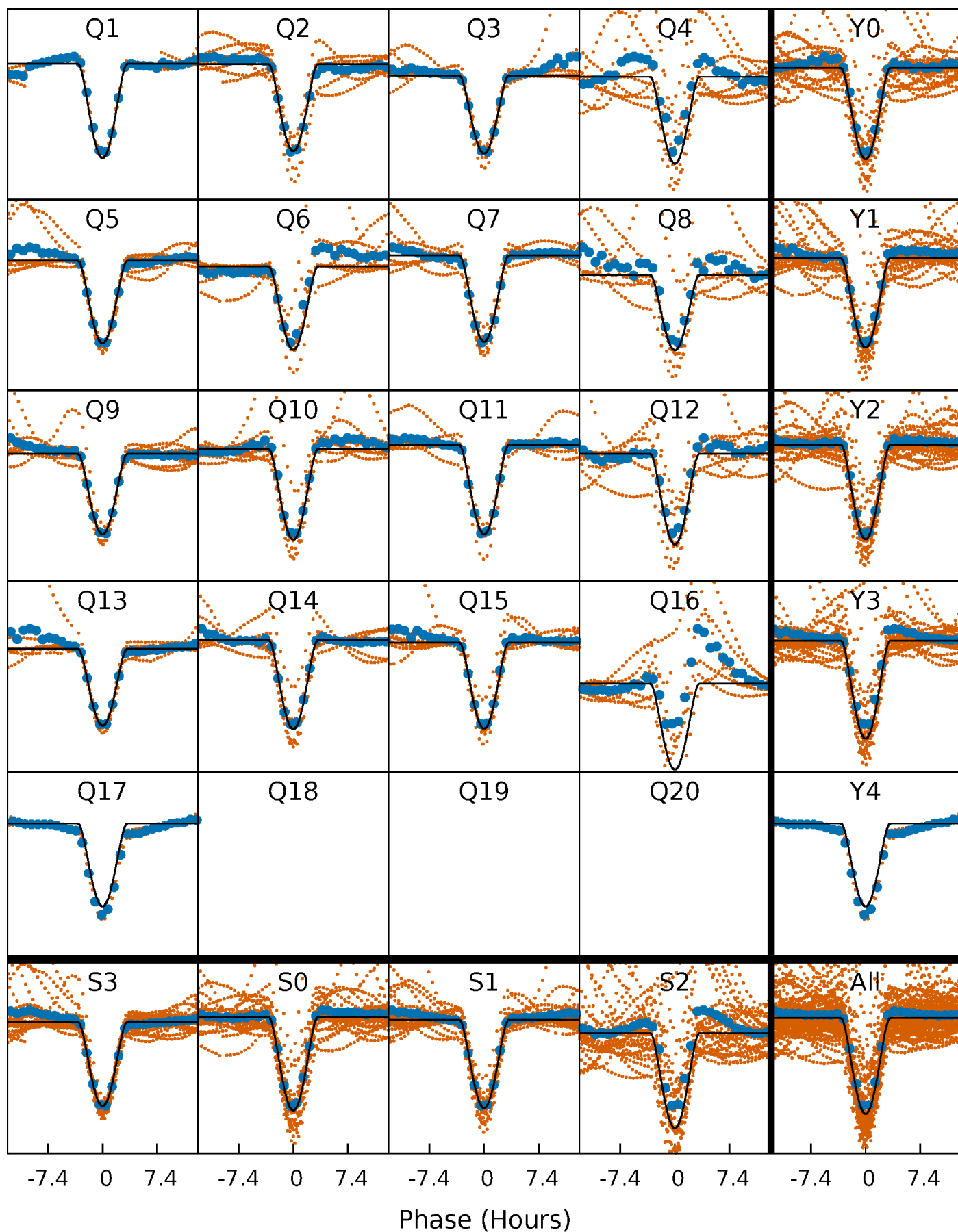
PDC Quarter-Phased Transit Curves

TCE 007422883-01 P= 11.414424 Days $T_0=142.595073$ (BKJD)



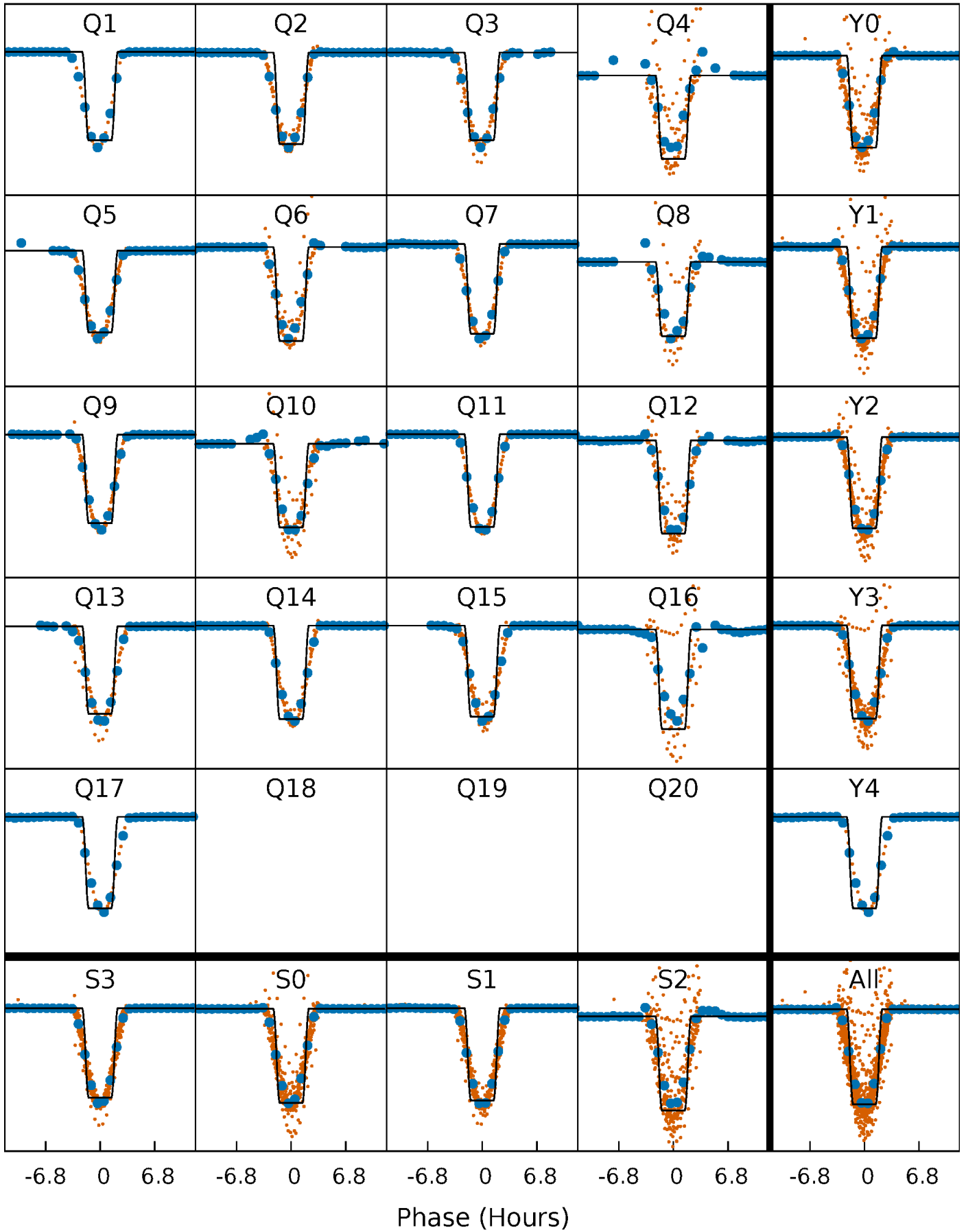
DV Quarter-Phased Transit Curves

TCE 007422883-01 P= 11.414424 Days $T_0=142.595073$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

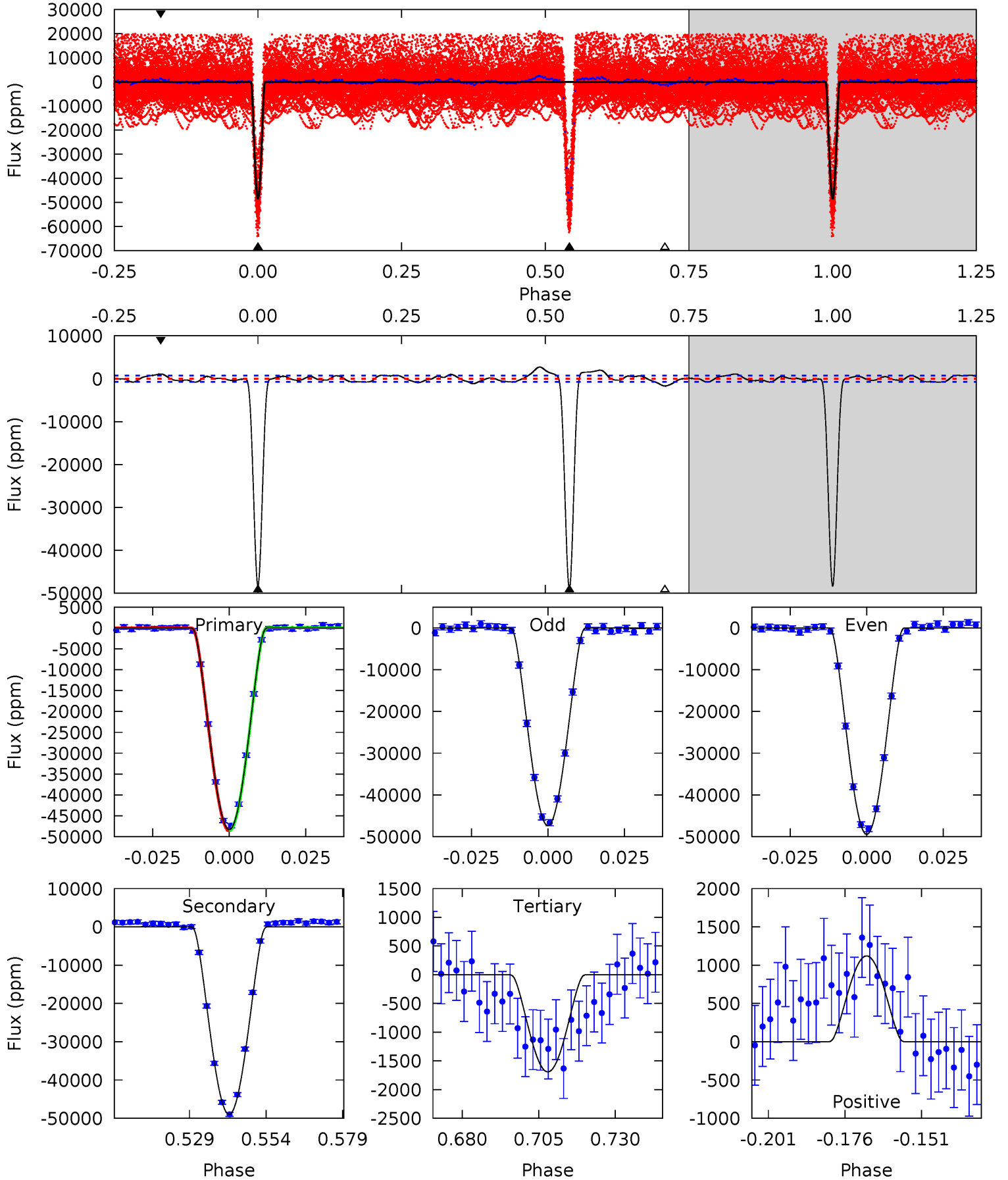
TCE 007422883-01 P= 11.414212 Days $T_0=142.607997$ (BKJD)



DV Model-Shift Uniqueness Test

007422883-01, P = 11.414424 Days, E = 131.180649 Days

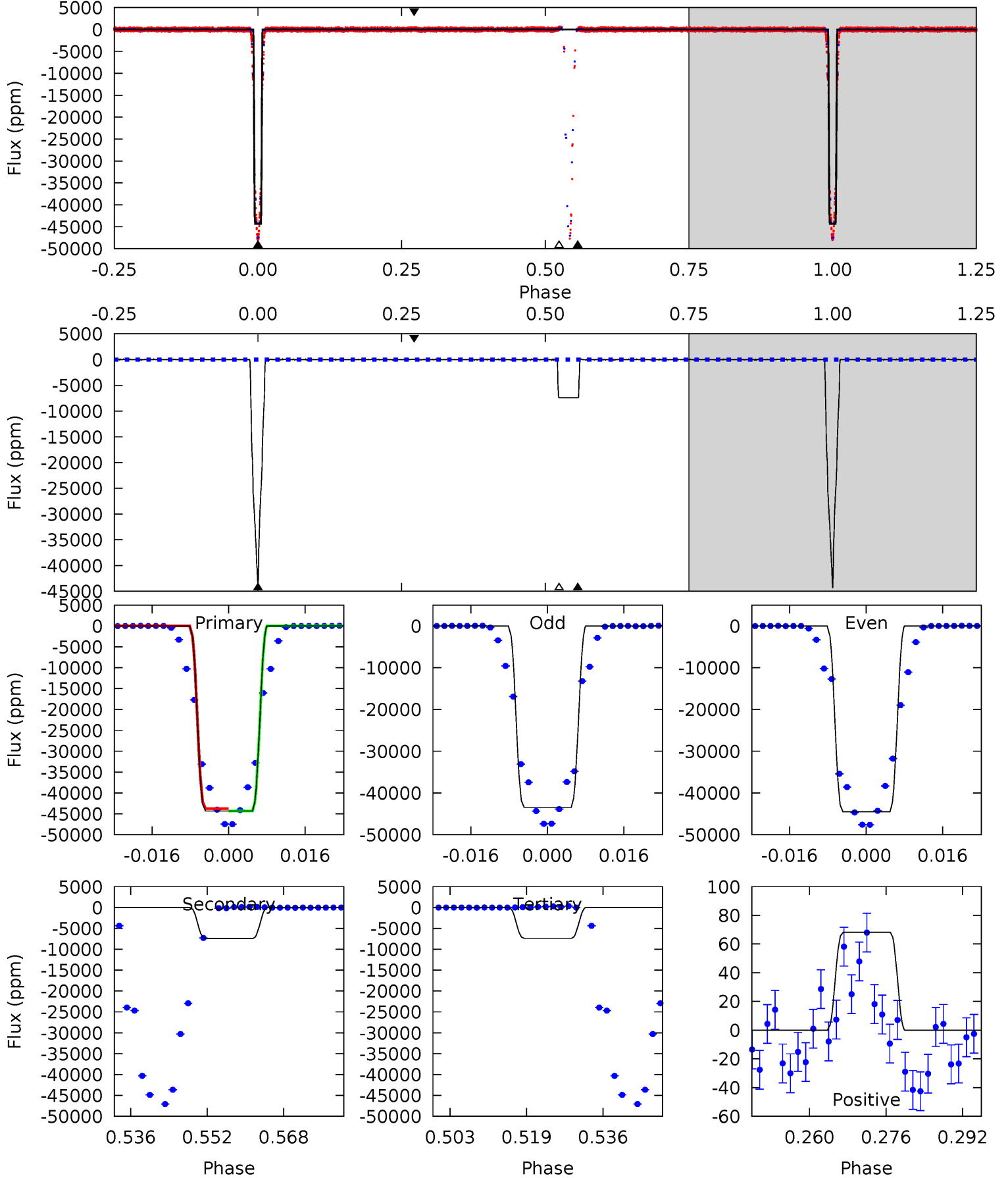
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
319.4	323.7	11.2	7.41	4.85	2.24	5.10	308.2	312.0	312.5	316.3	6.98	0.93	0.05	0.17



Alt Model-Shift Uniqueness Test

007422883-01, P = 11.414212 Days, E = 131.193785 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1093	183.4	182.3	1.68	4.93	2.40	6.22	910.3	1091	1.14	181.7	23.4	0.96	0.00	0



Stellar Parameters For KIC 007422883

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6826^{+152}_{-220}	$4.187^{+0.153}_{-0.187}$	$-0.240^{+0.250}_{-0.300}$	$1.520^{+0.447}_{-0.298}$	$1.307^{+0.182}_{-0.223}$	$0.524^{+0.401}_{-0.262}$
	+2%/-3%	+4%/-4%	+104%/-125%	+29%/-20%	+14%/-17%	+77%/-50%
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 007422883-01 / KOI 6159.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-48963 ± 151	$56.28^{+8.76}_{-6.08}$	1573^{+117}_{-89}	5564^{+127}_{-139}	104^{+25}_{-24}
Alt.	-7441 ± 41	$35.37^{+5.86}_{-4.22}$	1578^{+114}_{-101}	4496^{+95}_{-102}	38^{+10}_{-9}

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

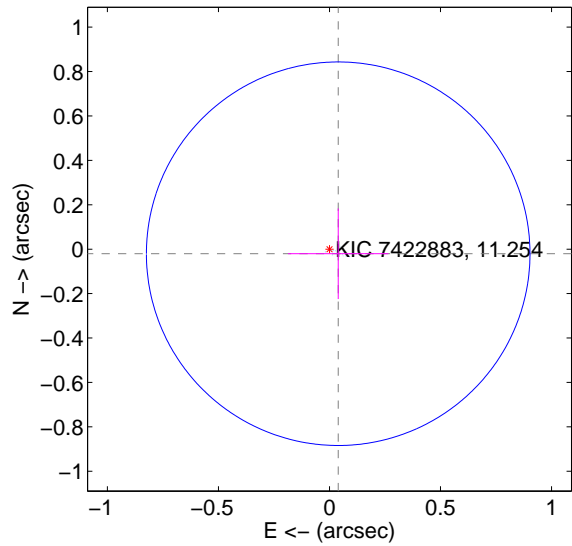
Supplemental centroid analysis for 007422883-01. **Kepler magnitude: 11.25**. Transit SNR 661.96

There are 17 quarters with good PRF difference image offsets

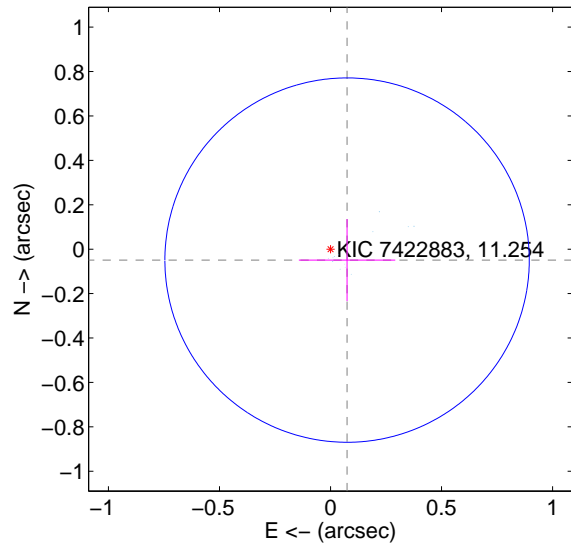
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.044 ± 0.288	0.15	-0.039 ± 0.226	-0.020 ± 0.204
PRF-fit source offset from KIC position	0.089 ± 0.273	0.33	-0.075 ± 0.217	-0.049 ± 0.185
photometric centroid source offset	0.19 ± 0.00	130.54	-0.19 ± 0.00	0.00 ± 0.00

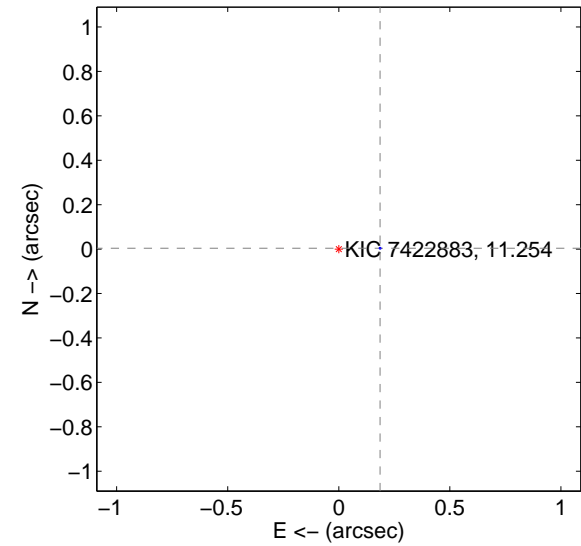
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

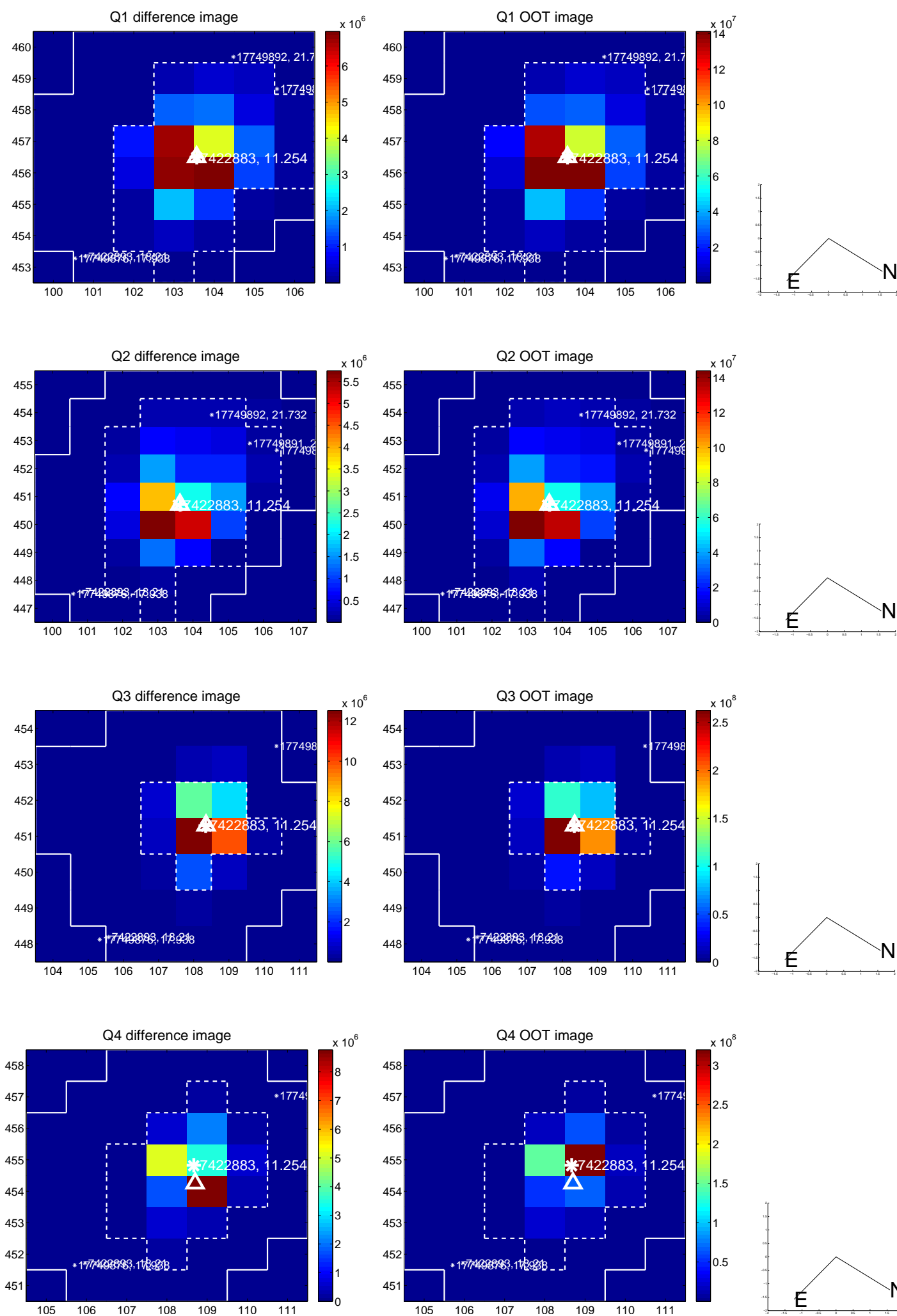


offset from photometric centroids

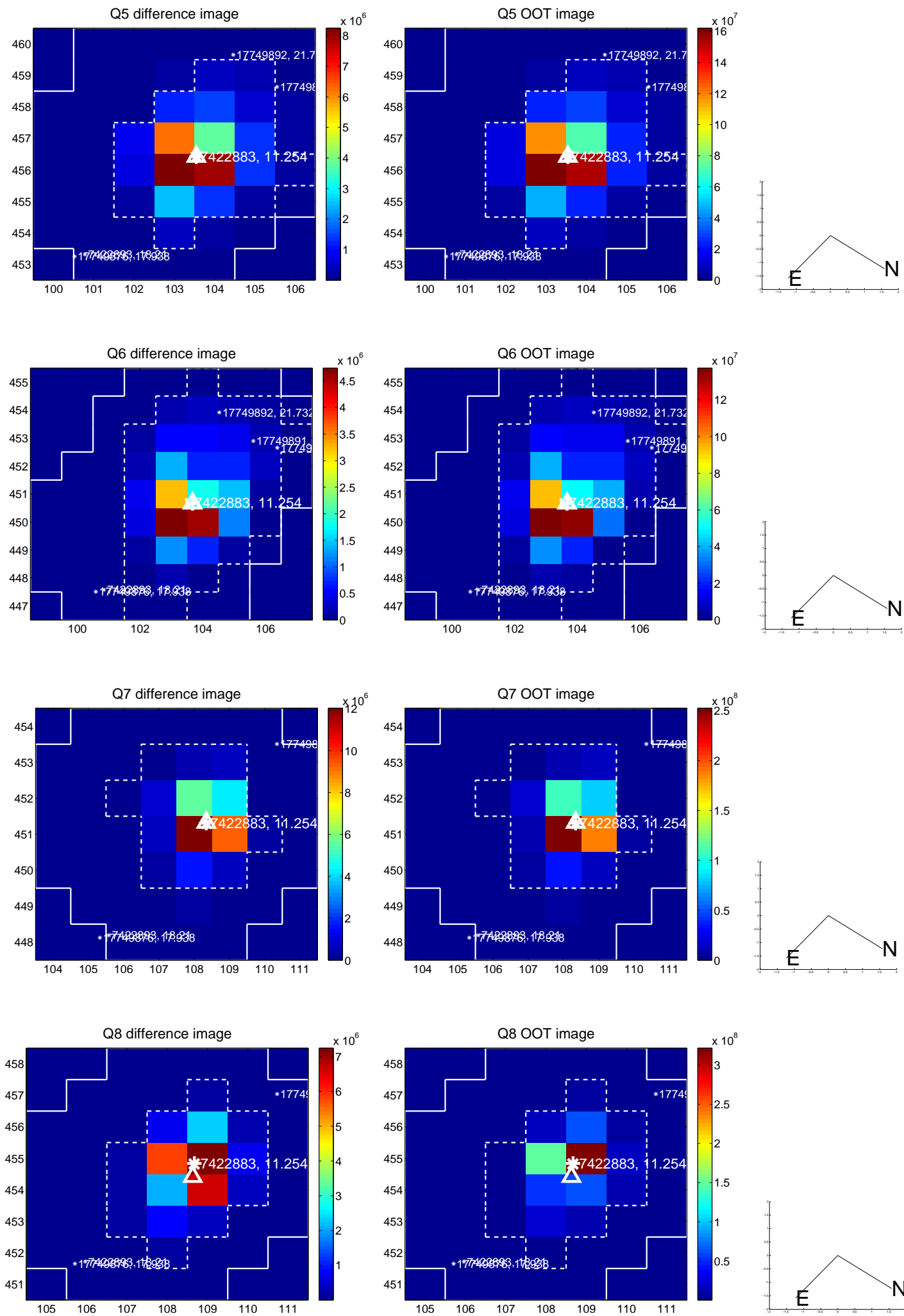


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

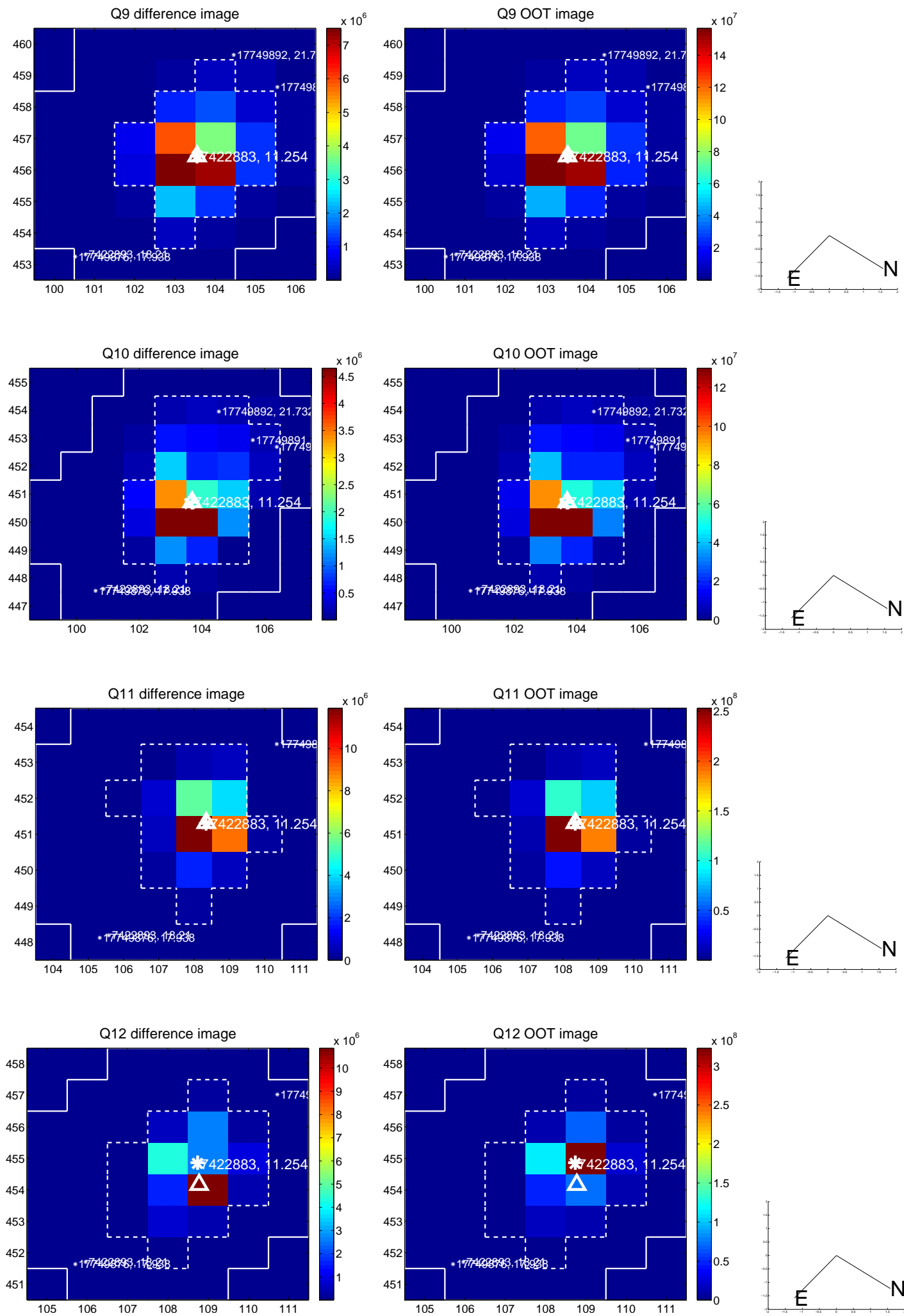
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



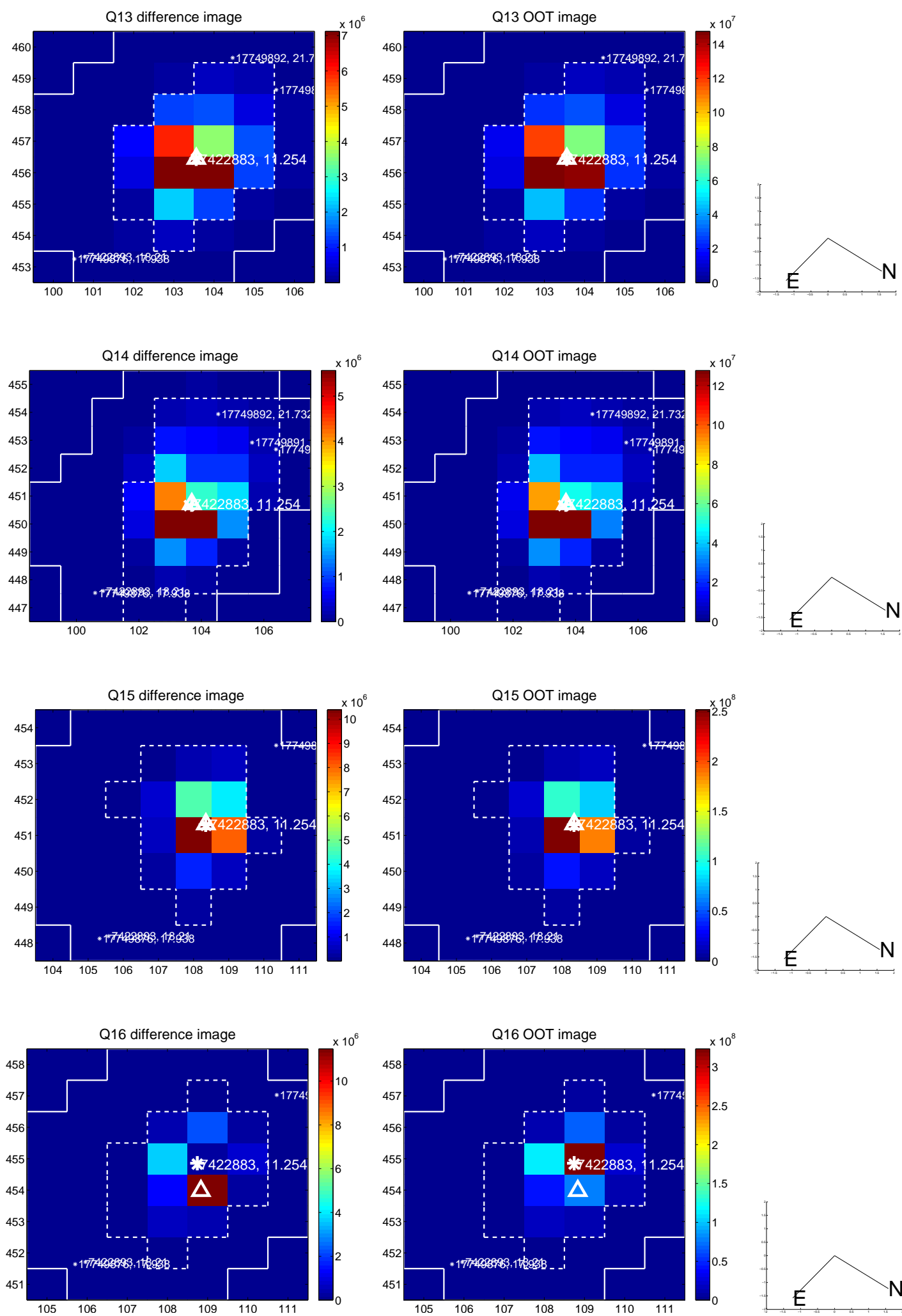
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



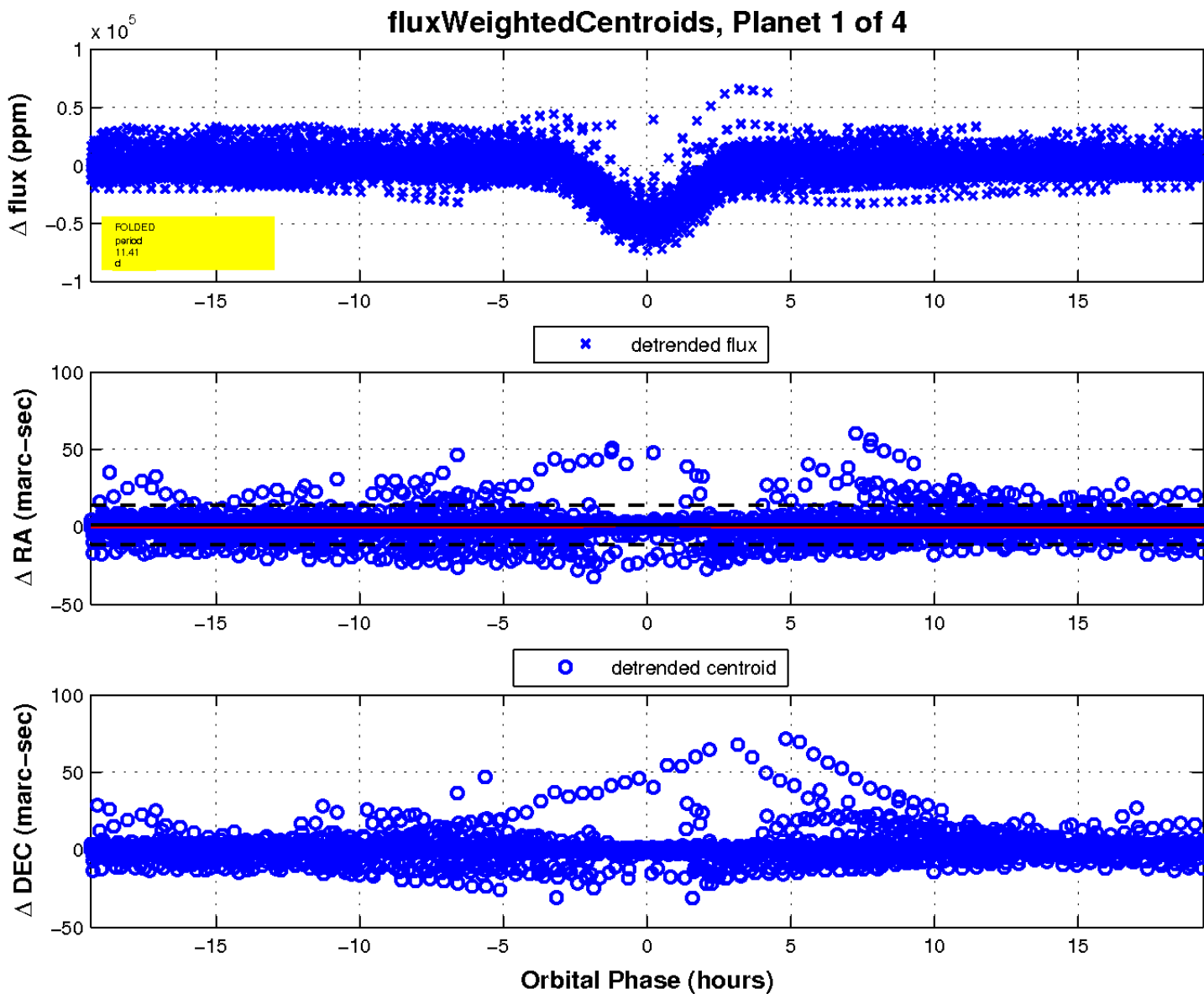
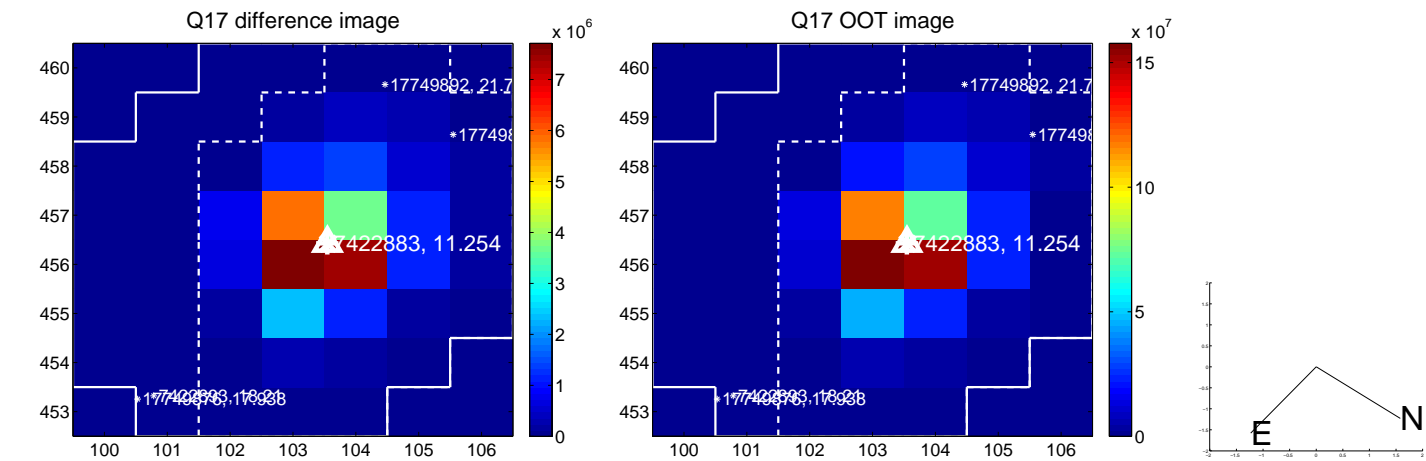
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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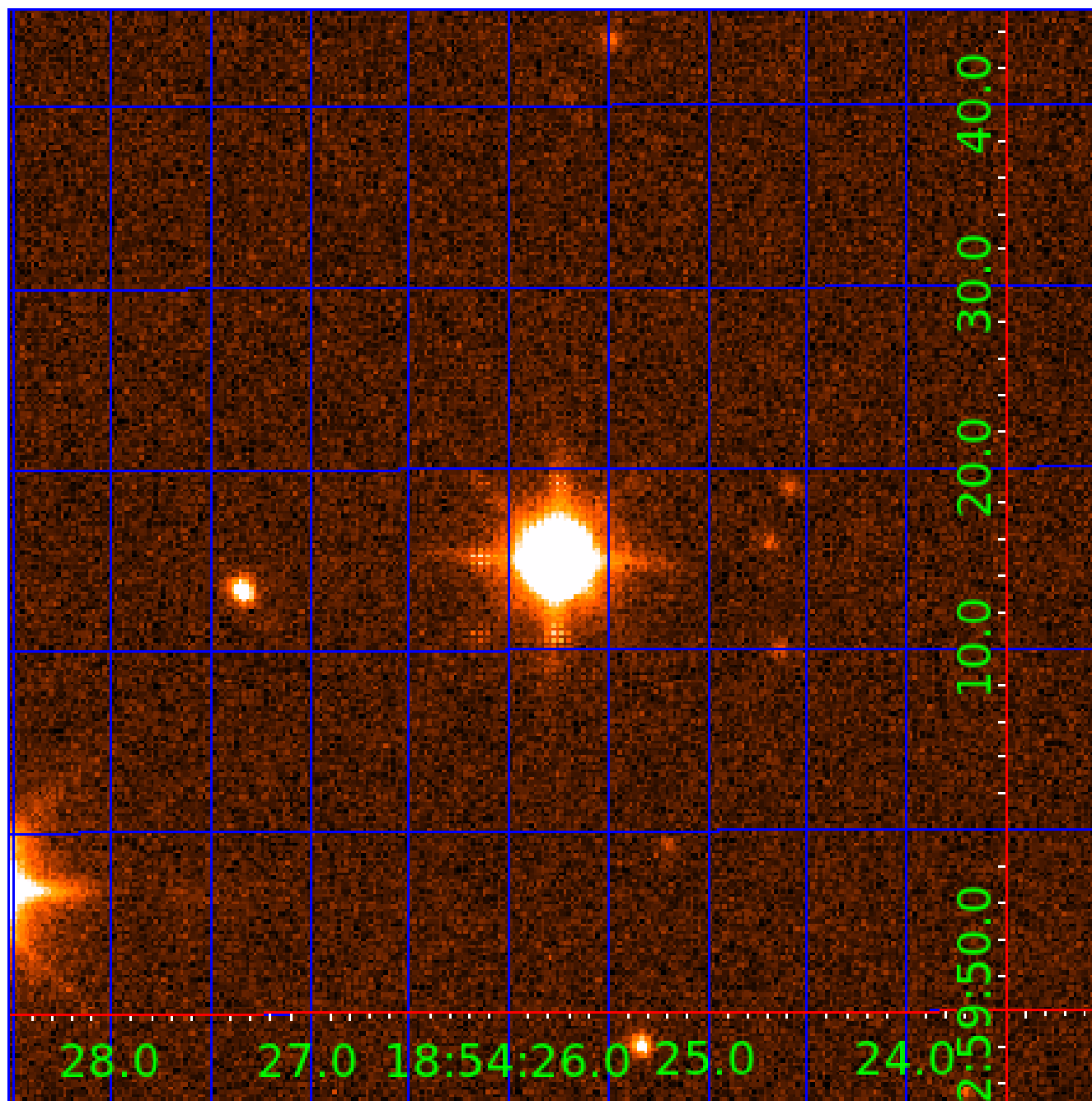


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007422883

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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TCE	Run Type	Disp	Score	N	S	C	E	Comments
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007422883-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED
007422883-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
007422883-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—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 007422883-02

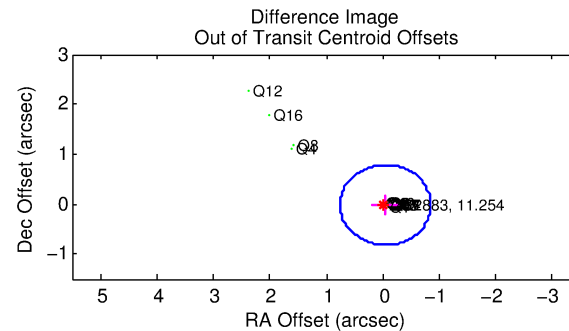
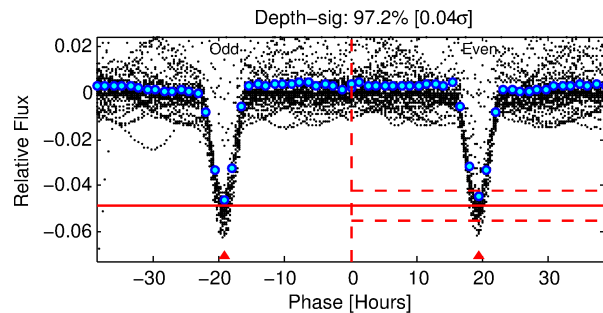
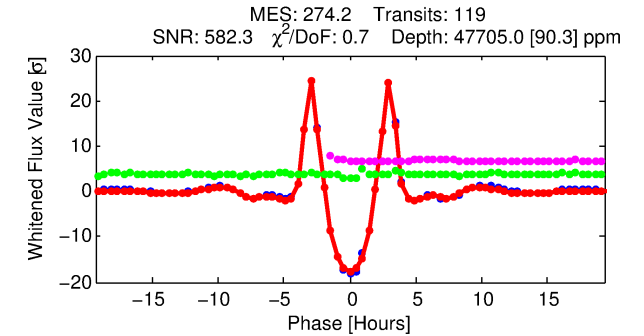
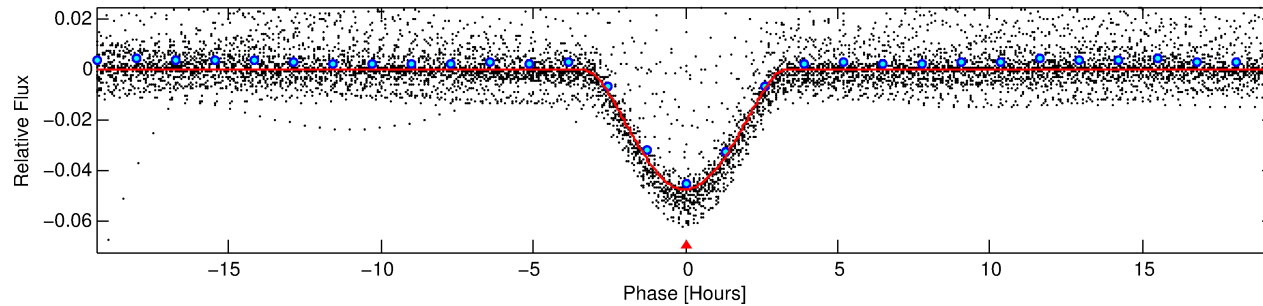
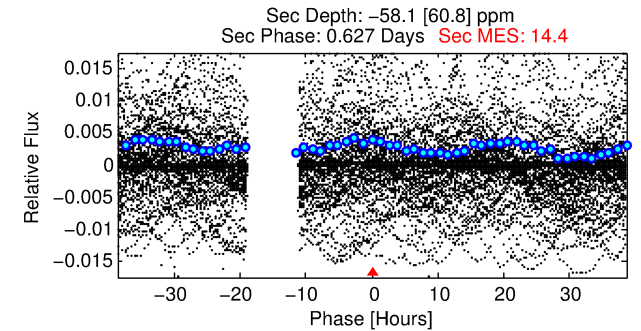
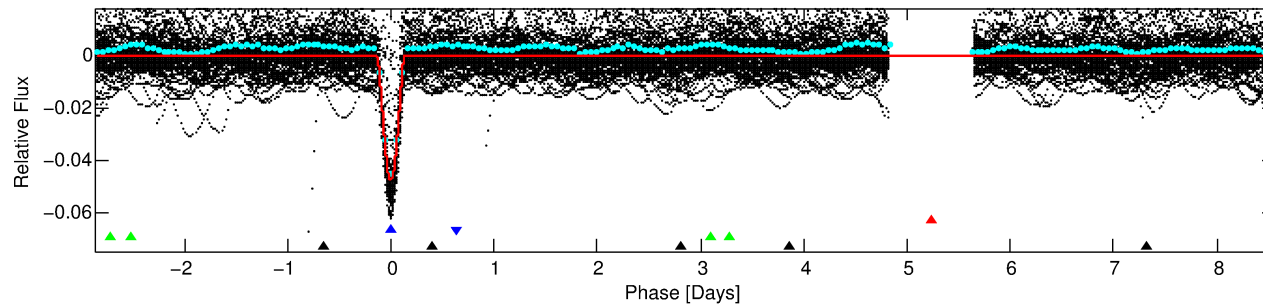
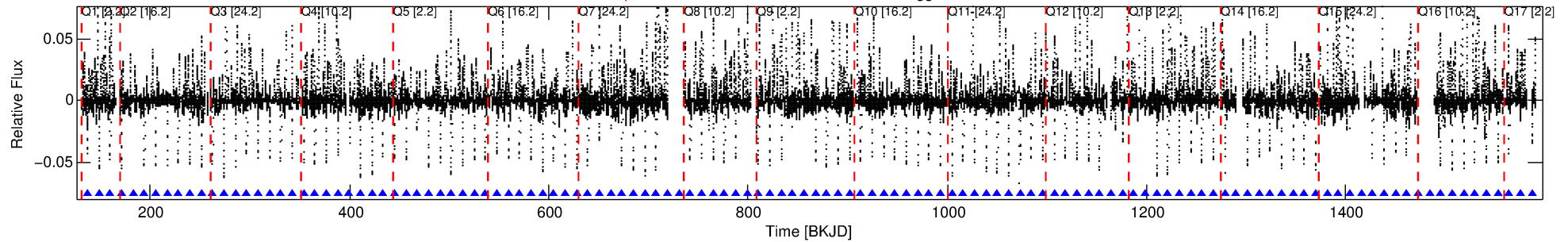
No Significant Match Found

DV One-Page Summary

KIC: 7422883 Candidate: 2 of 4 Period: 11.414 d

KOI: K06159 Corr: No Ephemeris Match

Kp: 11.25 R*: 1.52 Rs Teff: 6826.0 K Logg: 4.19 Fe/H: -0.240



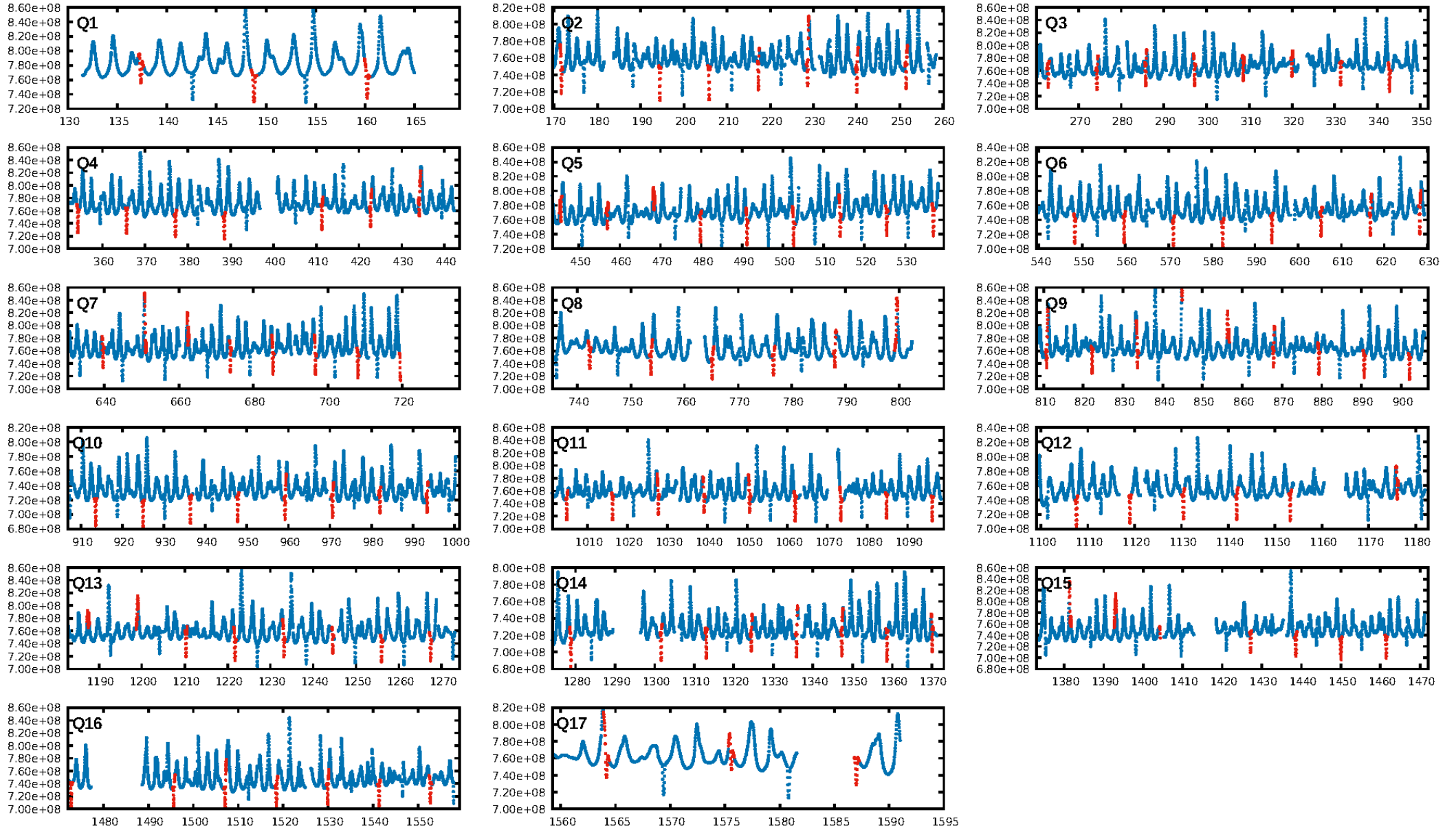
DV Fit Results:

Period = 11.41442 [0.00000] d
Epoch = 137.3659 [0.0001] BKJD
Rp/R* = 0.3401 [0.0061]
a/R* = 12.13 [0.01]
b = 1.00 [0.01]
Seff = 383.87 [142.32]
Teff = 1129 [105] K
Rp = 56.41 [16.62] Re
a = 0.1082 [0.0263] AU
Ag = N/A
Teffp = N/A

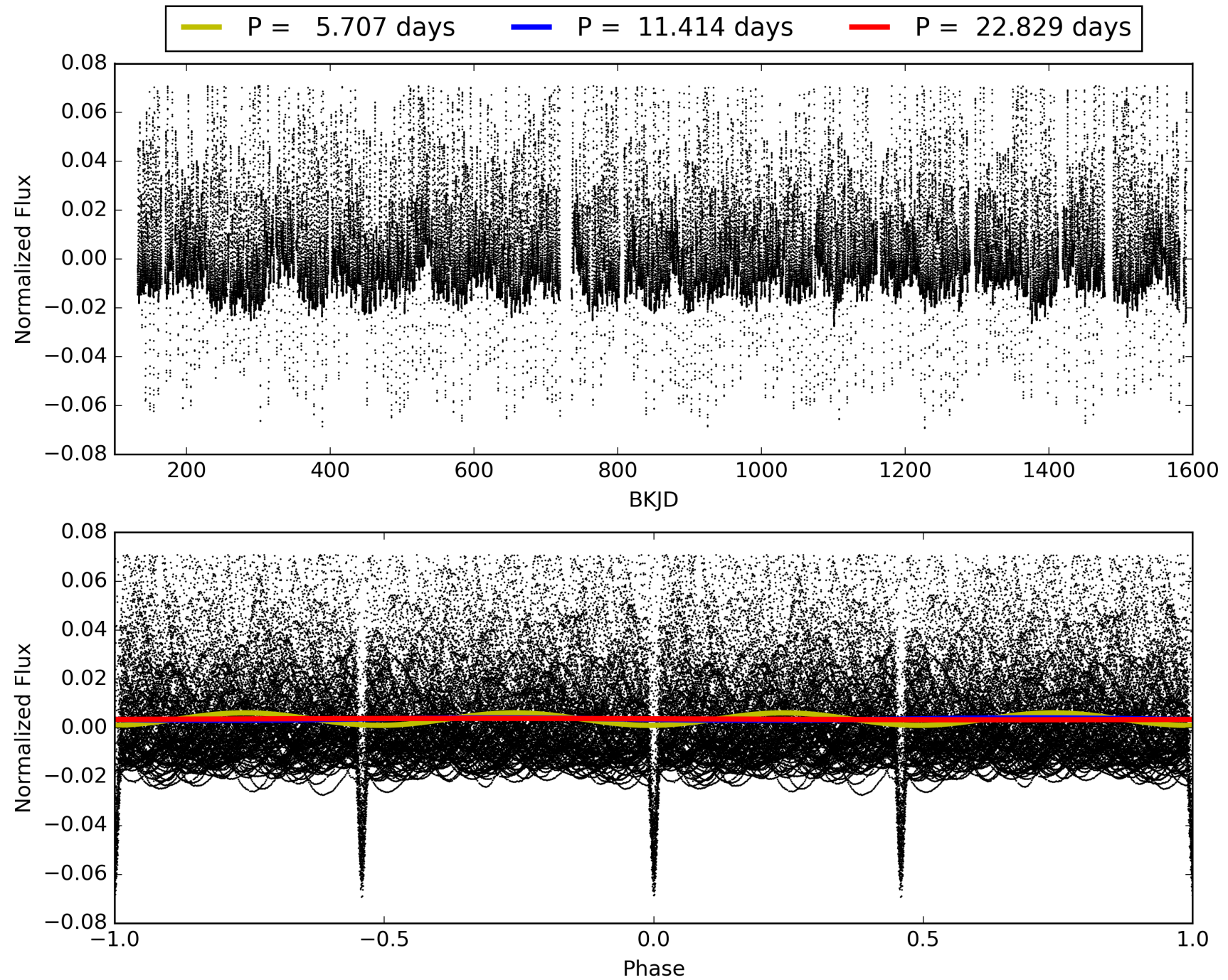
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [113/113]
GhostDiagnostic-chr: 1.417
Centroid-sig: N/A
Centroid-so: 0.184 arcsec [132.92σ]
OotOffset-rm: 0.047 arcsec [0.18σ]
KicOffset-rm: 0.108 arcsec [0.42σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 007422883-02, PDC Light Curves

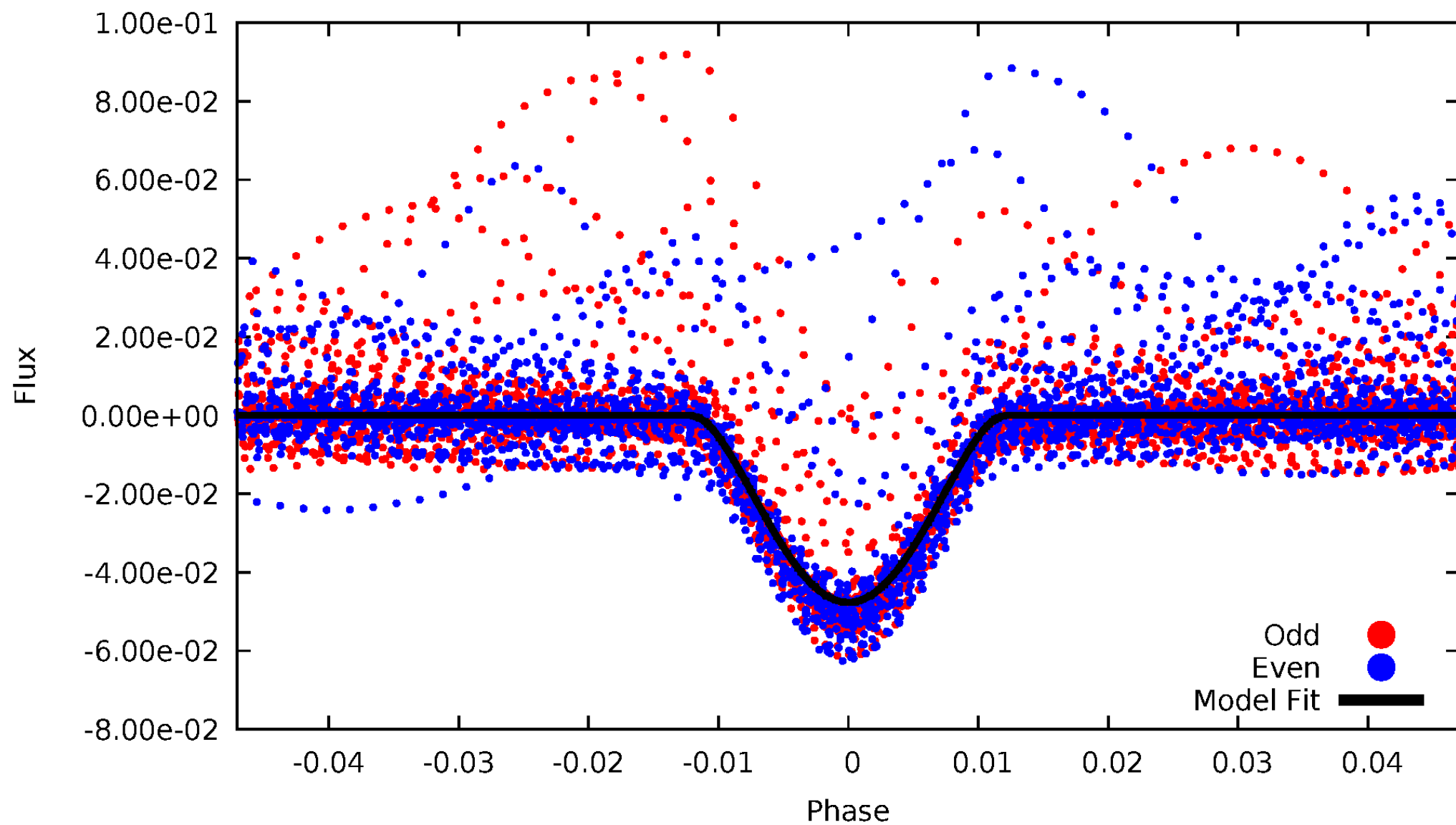


TCE 007422883-02



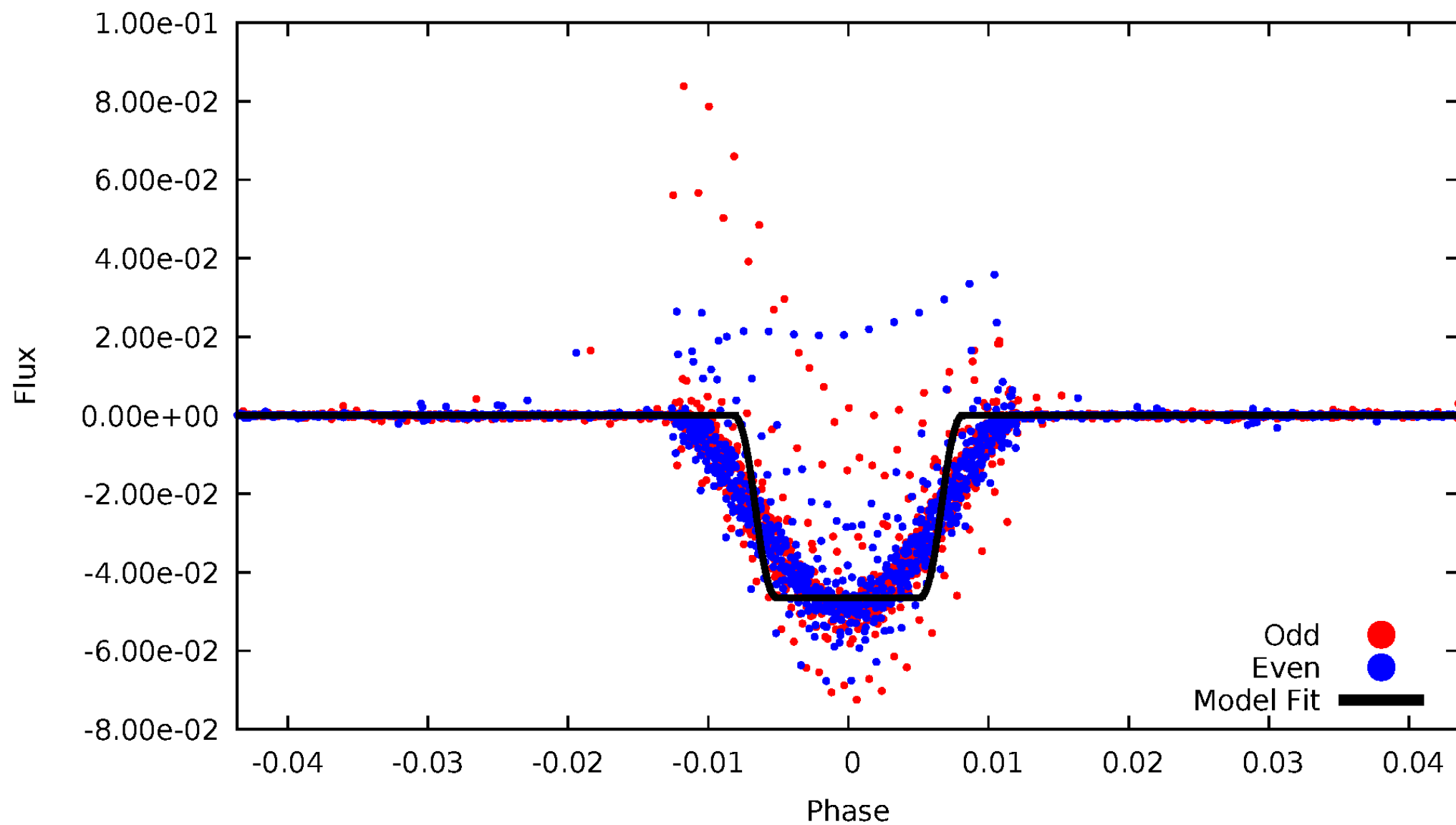
DV Odd/Even

TCE 007422883-02



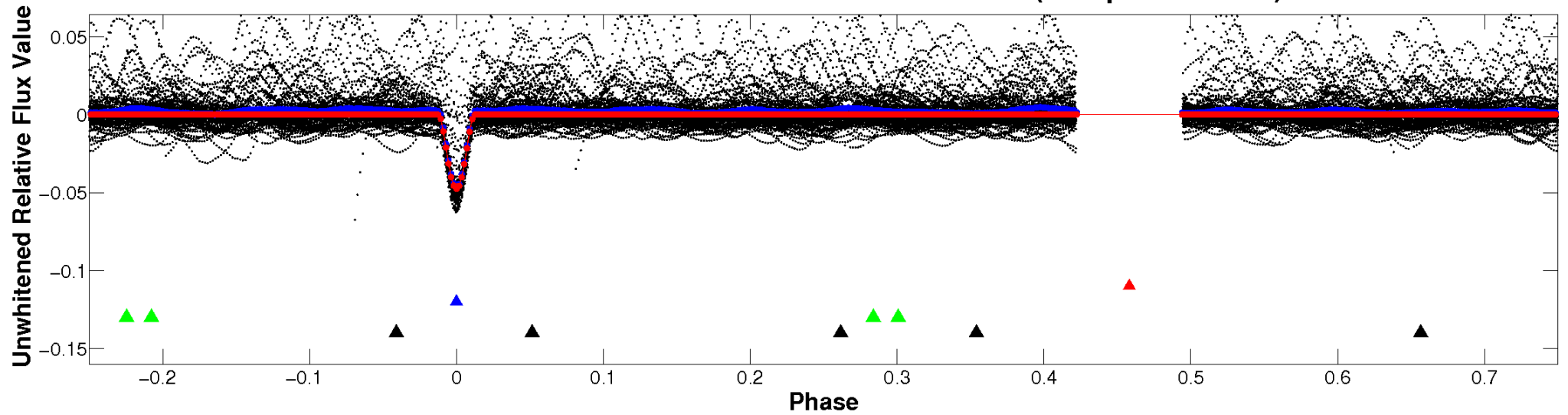
ALT Odd/Even

TCE 007422883-02

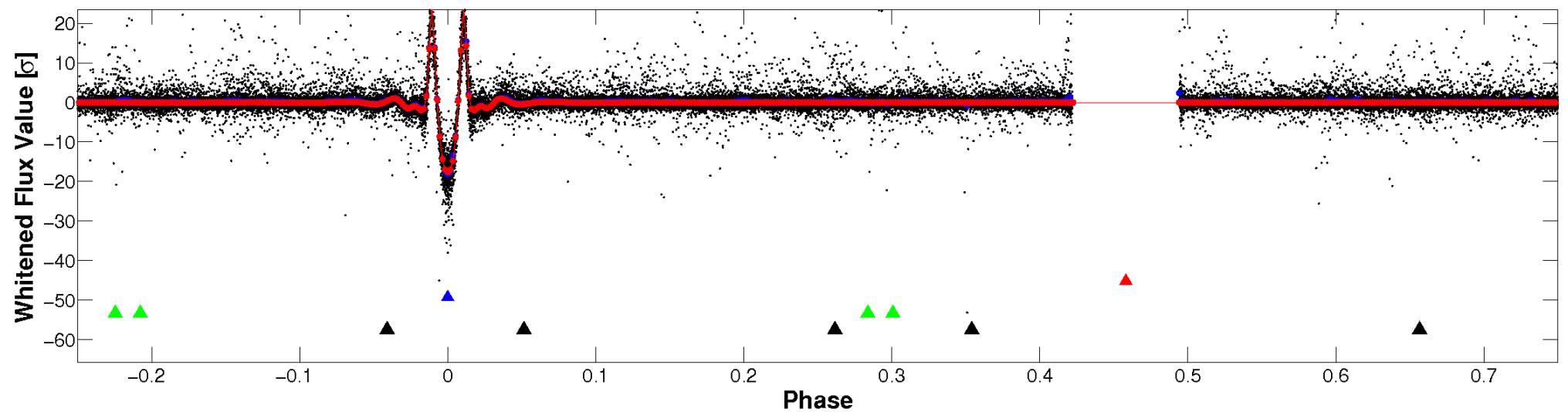


Non-Whitened Vs. Whitened Light Curve

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

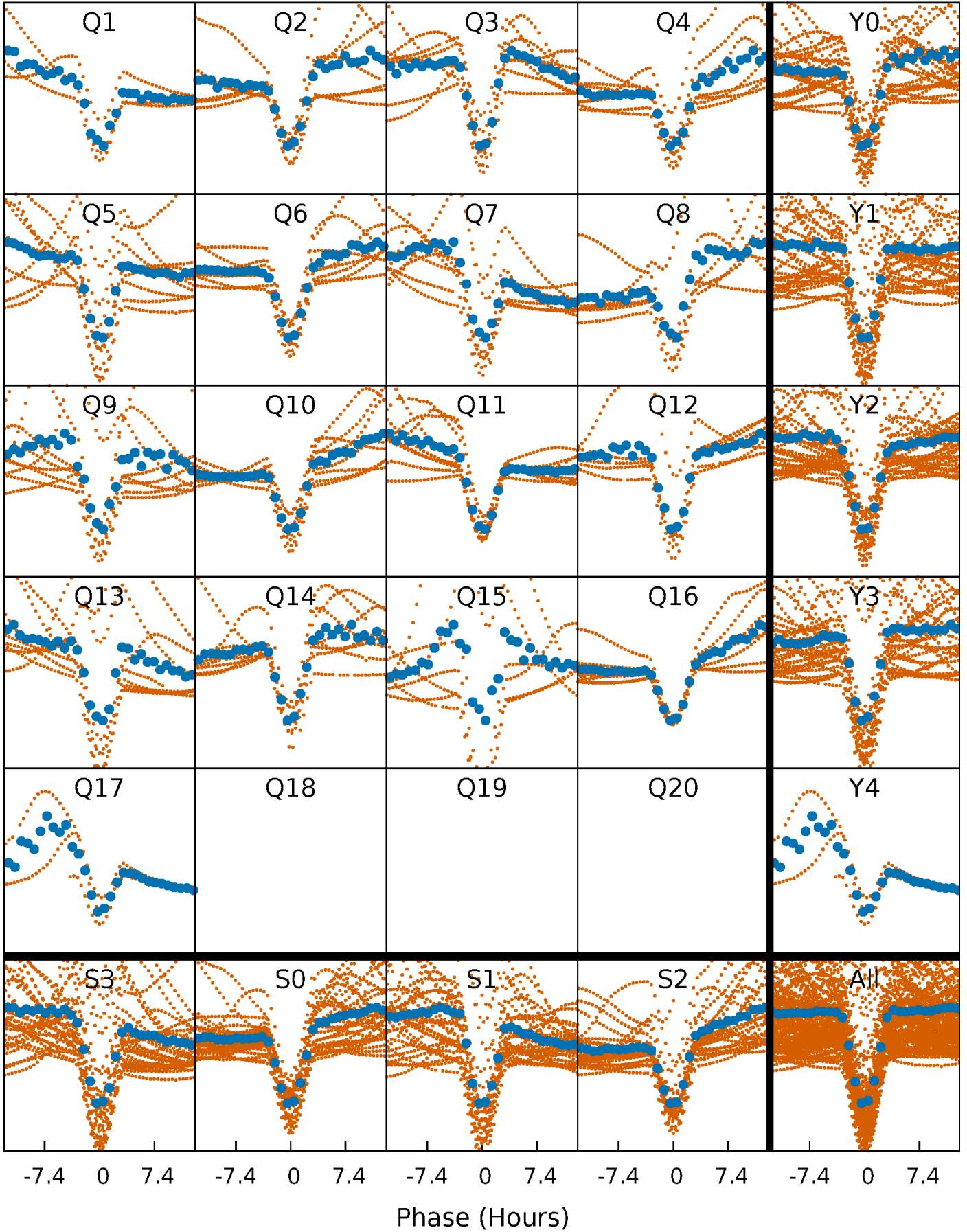


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



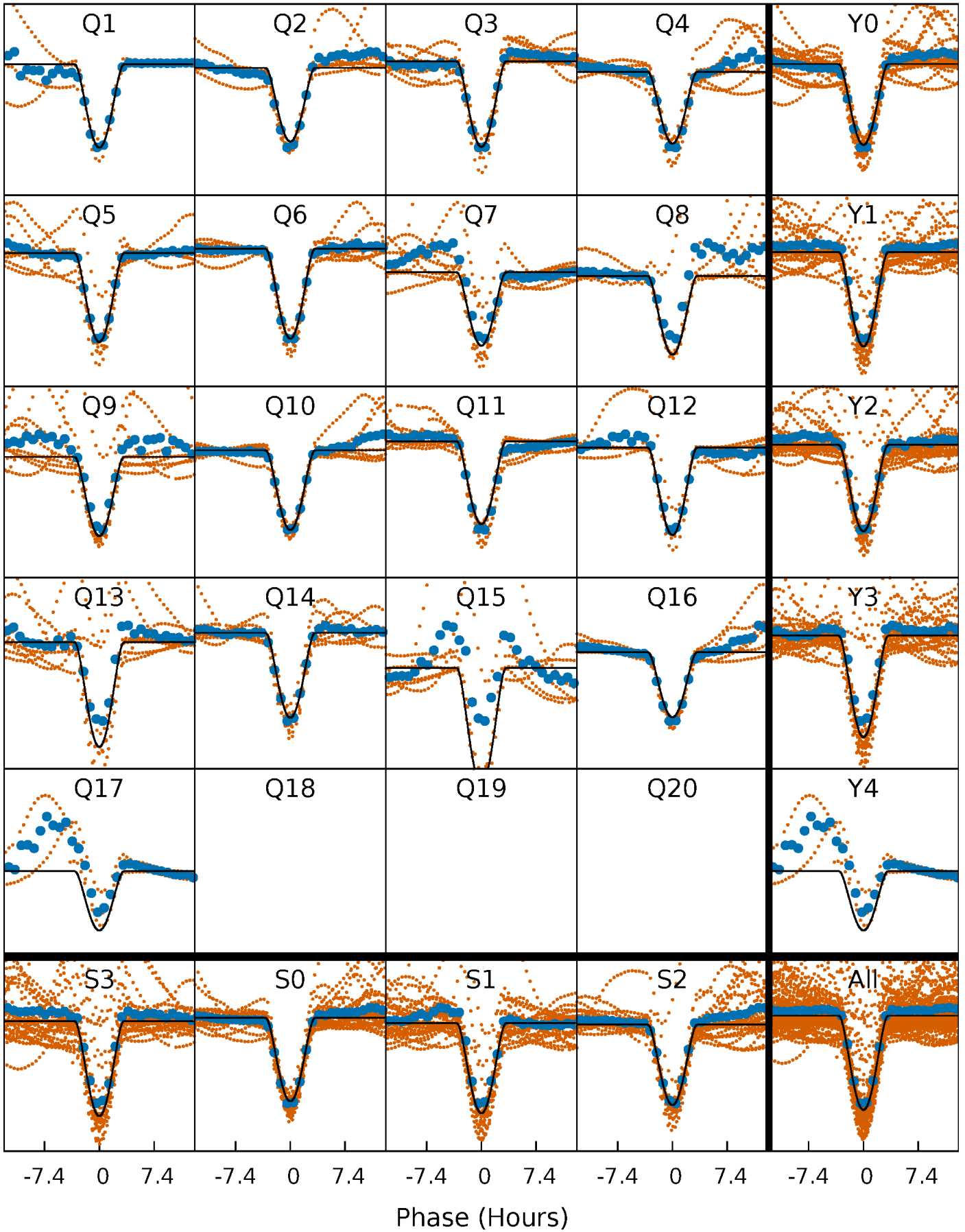
PDC Quarter-Phased Transit Curves

TCE 007422883-02 P= 11.414418 Days $T_0=137.365873$ (BKJD)



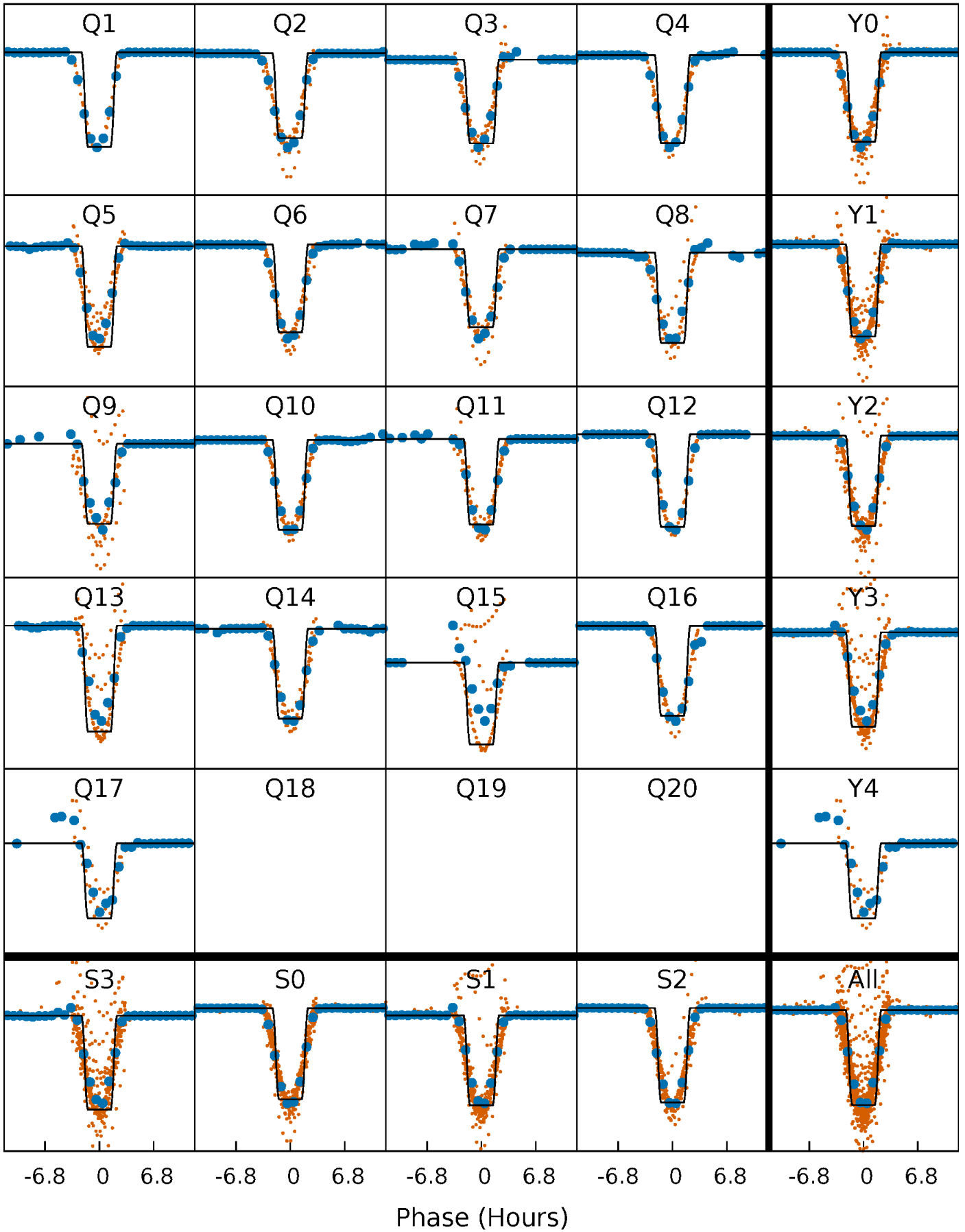
DV Quarter-Phased Transit Curves

TCE 007422883-02 P= 11.414418 Days $T_0=137.365873$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

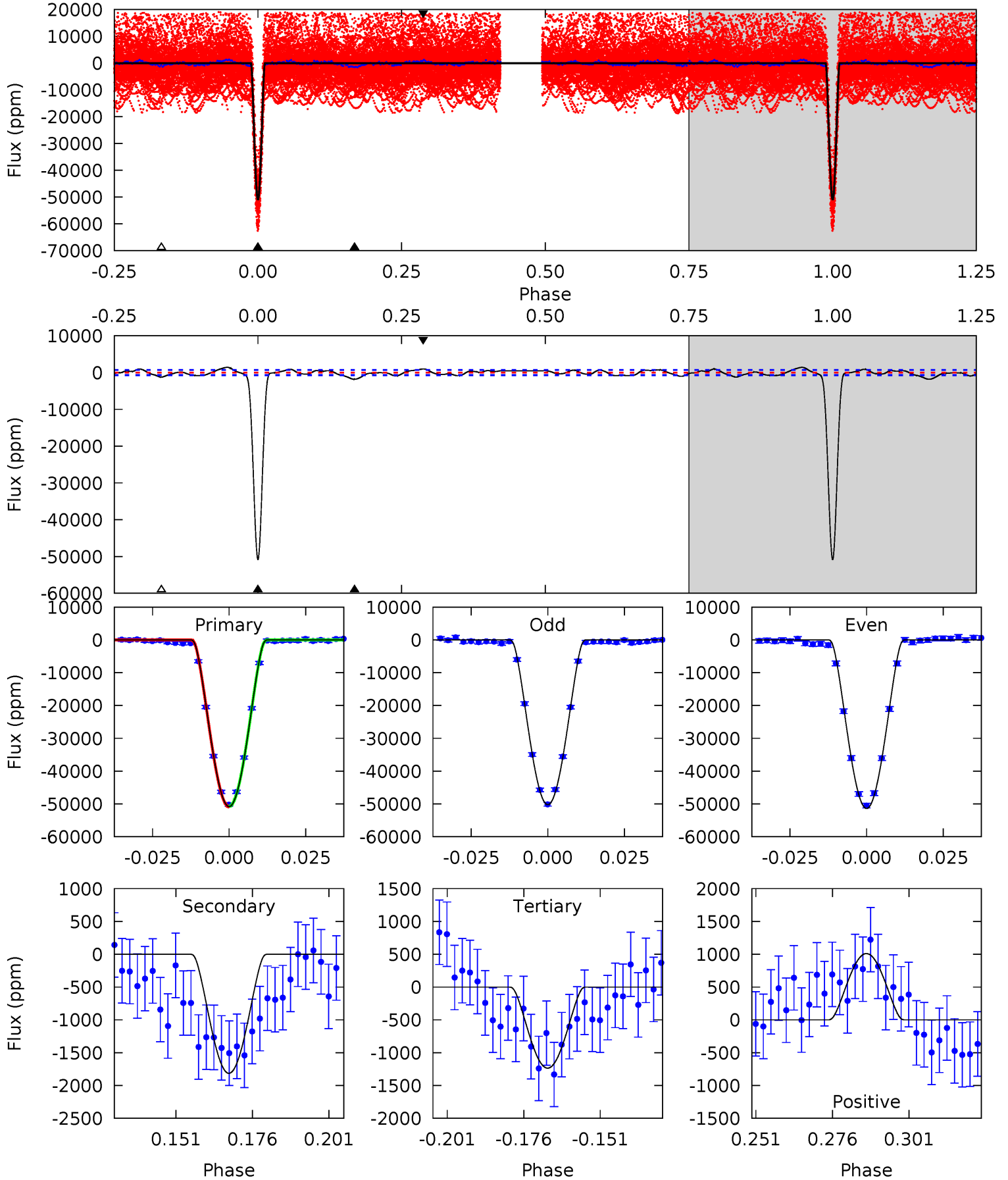
TCE 007422883-02 P= 11.414212 Days $T_0=137.380081$ (BKJD)



DV Model-Shift Uniqueness Test

007422883-02, P = 11.414418 Days, E = 125.951455 Days

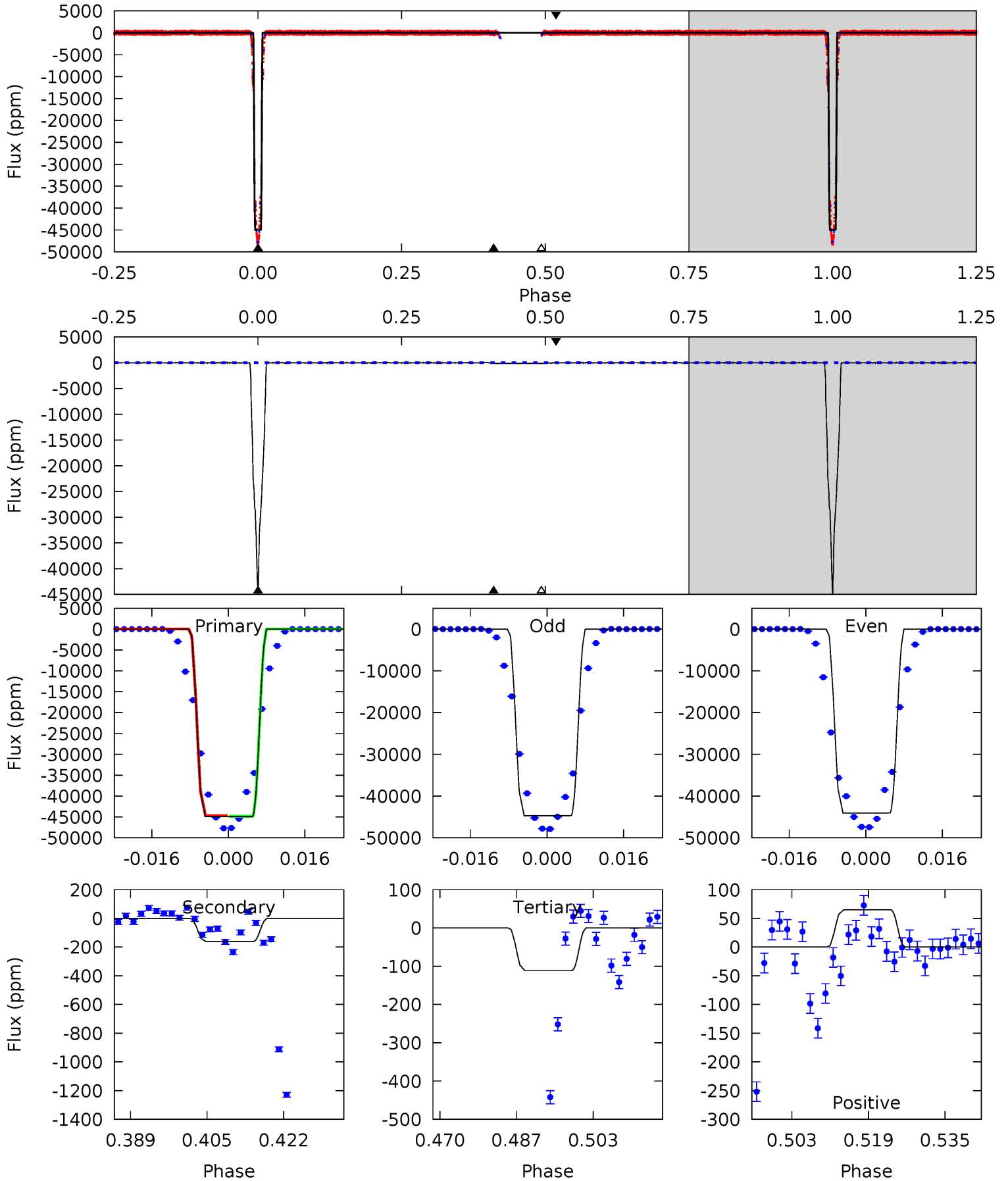
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
347.4	12.4	8.45	6.91	4.85	2.24	3.83	339.0	340.5	3.95	5.50	4.04	0.92	0.03	0.55



Alt Model-Shift Uniqueness Test

007422883-02, P = 11.414212 Days, E = 125.965869 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3435	12.4	8.51	4.98	4.93	2.40	1.34	3426	3430	3.85	7.39	25.5	0.97	0.00	0



Stellar Parameters For KIC 007422883

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6826^{+152}_{-220}	$4.187^{+0.153}_{-0.187}$	$-0.240^{+0.250}_{-0.300}$	$1.520^{+0.447}_{-0.298}$	$1.307^{+0.182}_{-0.223}$	$0.524^{+0.401}_{-0.262}$
	+2%/-3%	+4%/-4%	+104%/-125%	+29%/-20%	+14%/-17%	+77%/-50%
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 007422883-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1814 ± 146	$56.43^{+9.40}_{-6.56}$	1576^{+116}_{-93}	3014^{+59}_{-64}	$3.607^{+1.035}_{-0.882}$
Alt.	-162 ± 13	$35.74^{+6.55}_{-4.14}$	1577^{+133}_{-96}	2364^{+61}_{-85}	$0.814^{+0.207}_{-0.232}$

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 $A_{obs} \gg 1.0$

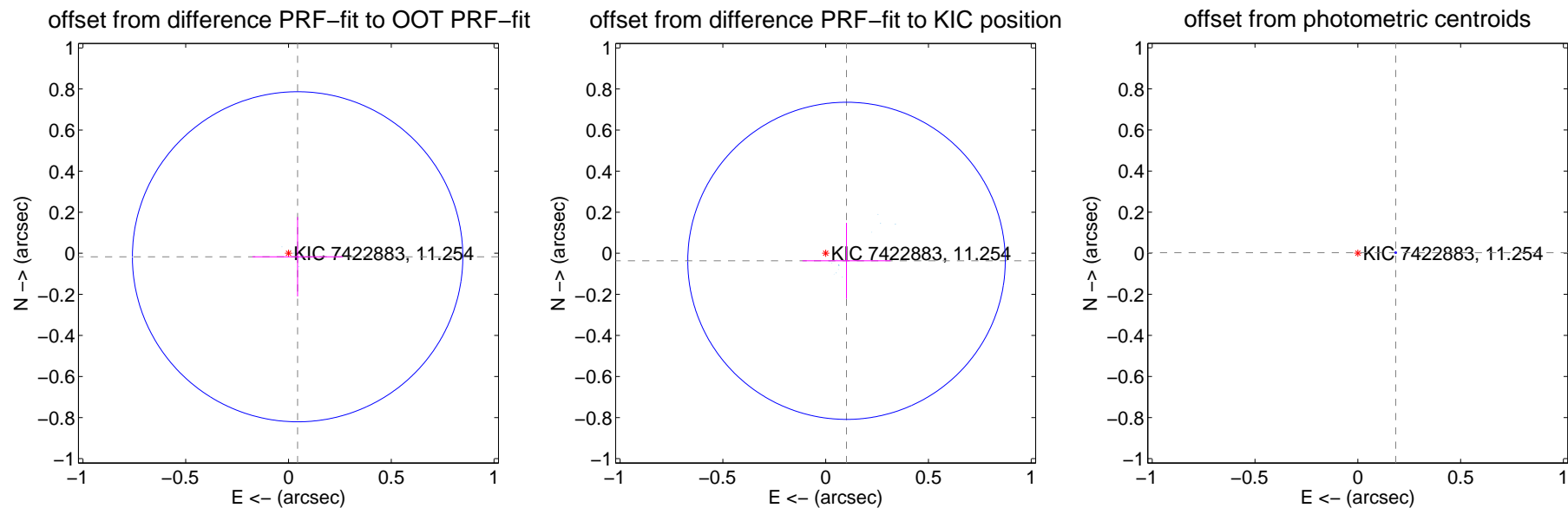
DV Centroid Data

Supplemental centroid analysis for 007422883-02. **Kepler magnitude: 11.25**. Transit SNR 582.29

There are 17 quarters with good PRF difference image offsets

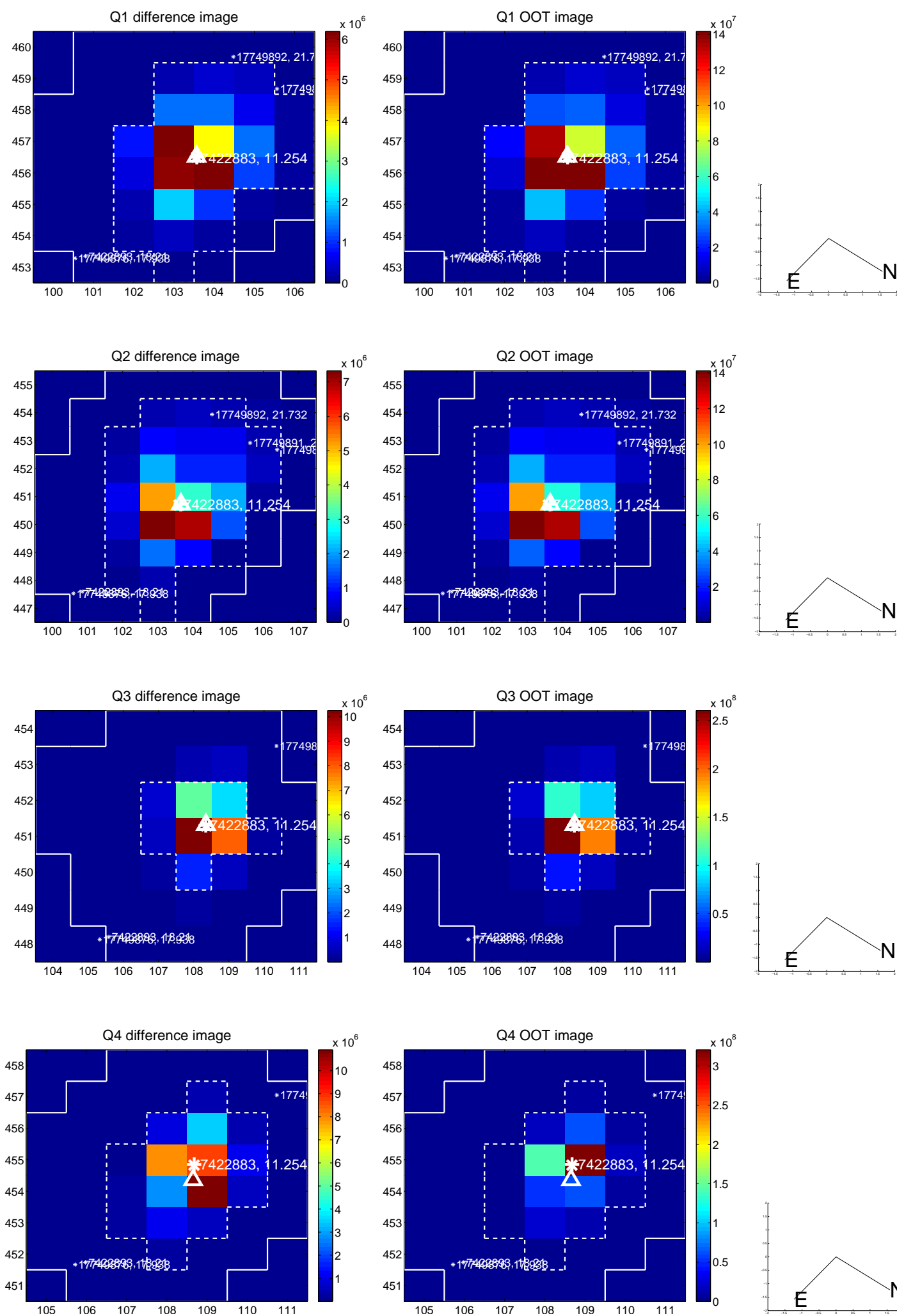
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.047 ± 0.268	0.18	-0.044 ± 0.219	-0.017 ± 0.193
PRF-fit source offset from KIC position	0.108 ± 0.257	0.42	-0.101 ± 0.214	-0.037 ± 0.185
photometric centroid source offset	0.18 ± 0.00	132.92	-0.18 ± 0.00	0.00 ± 0.00

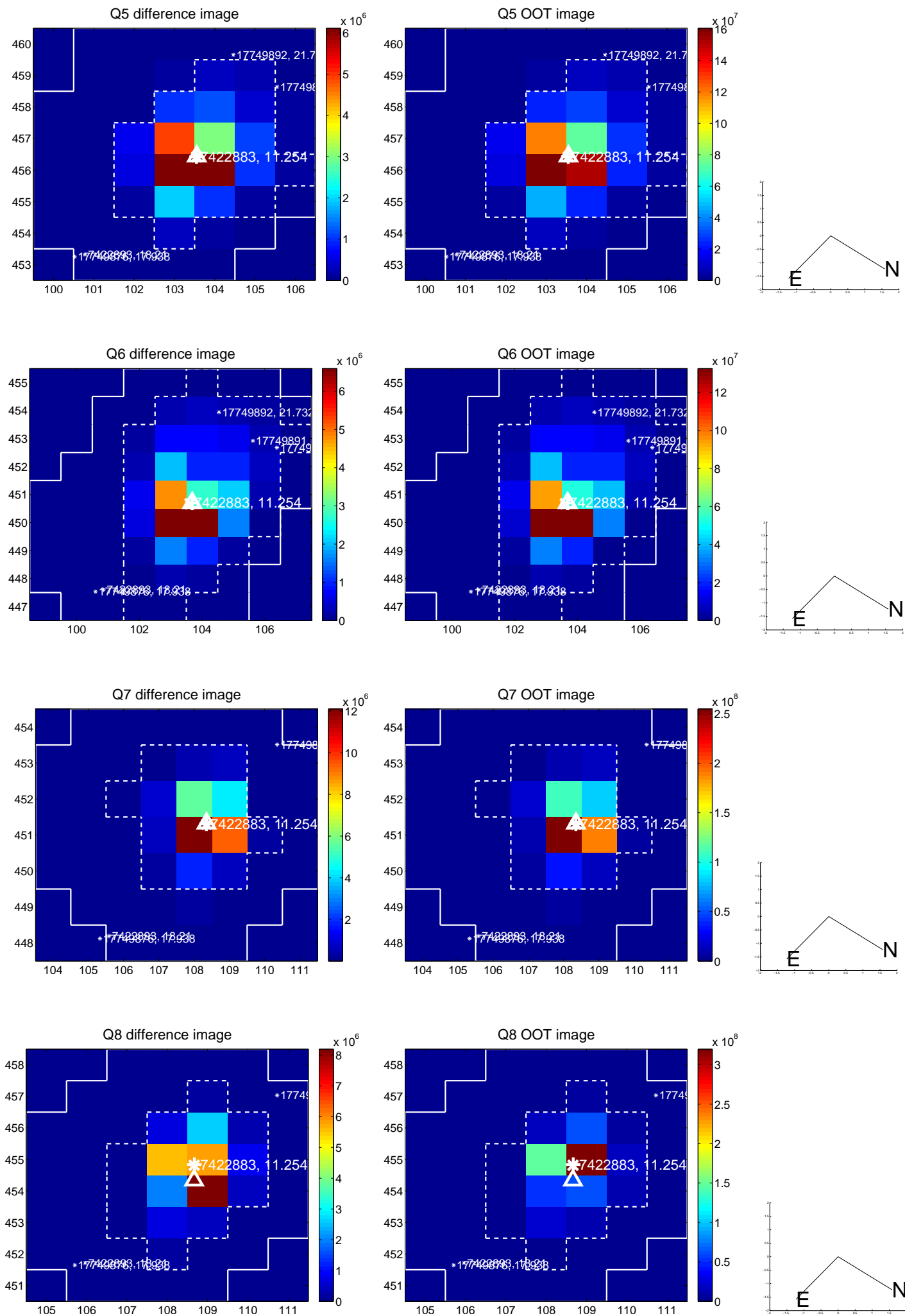


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

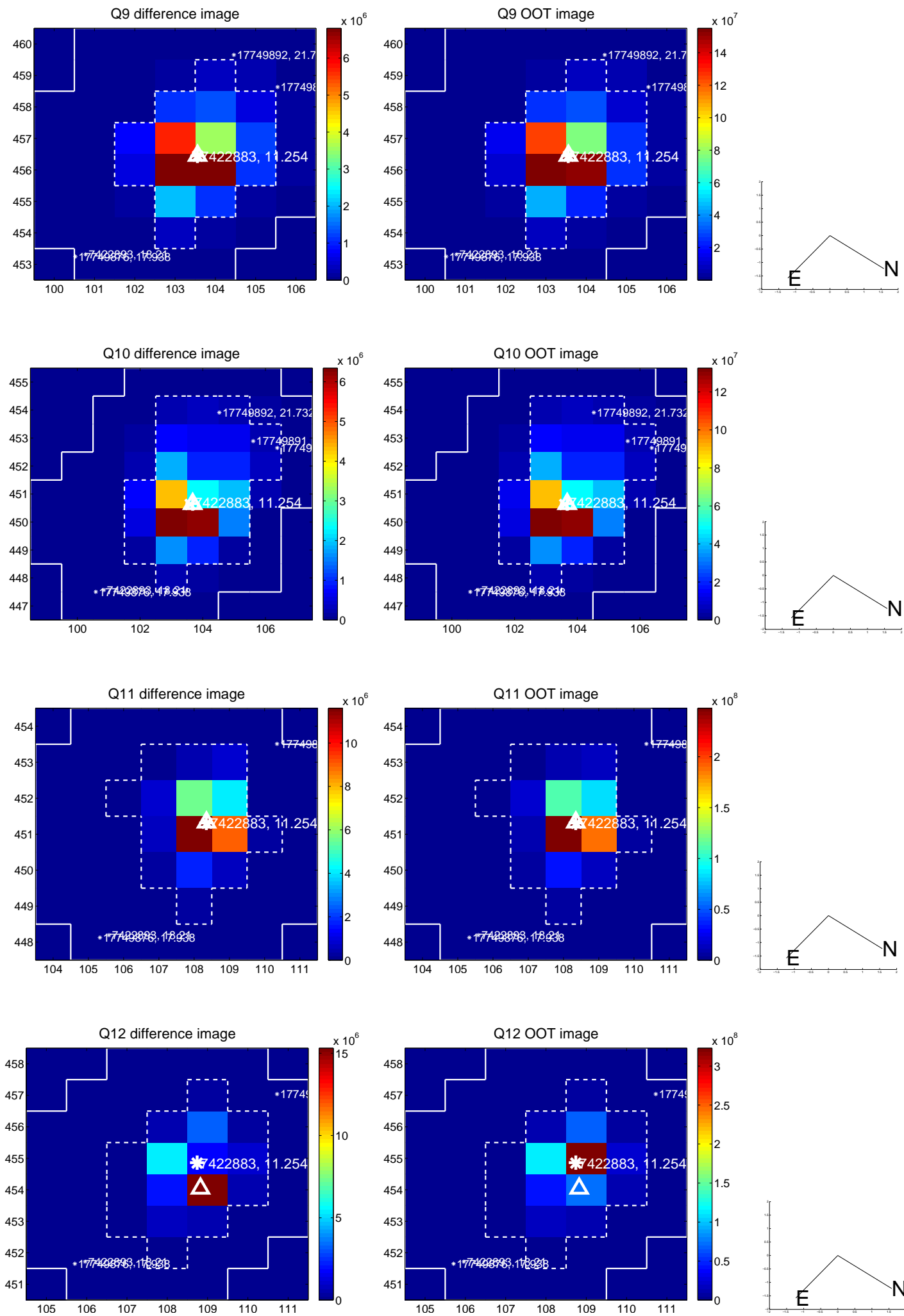
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



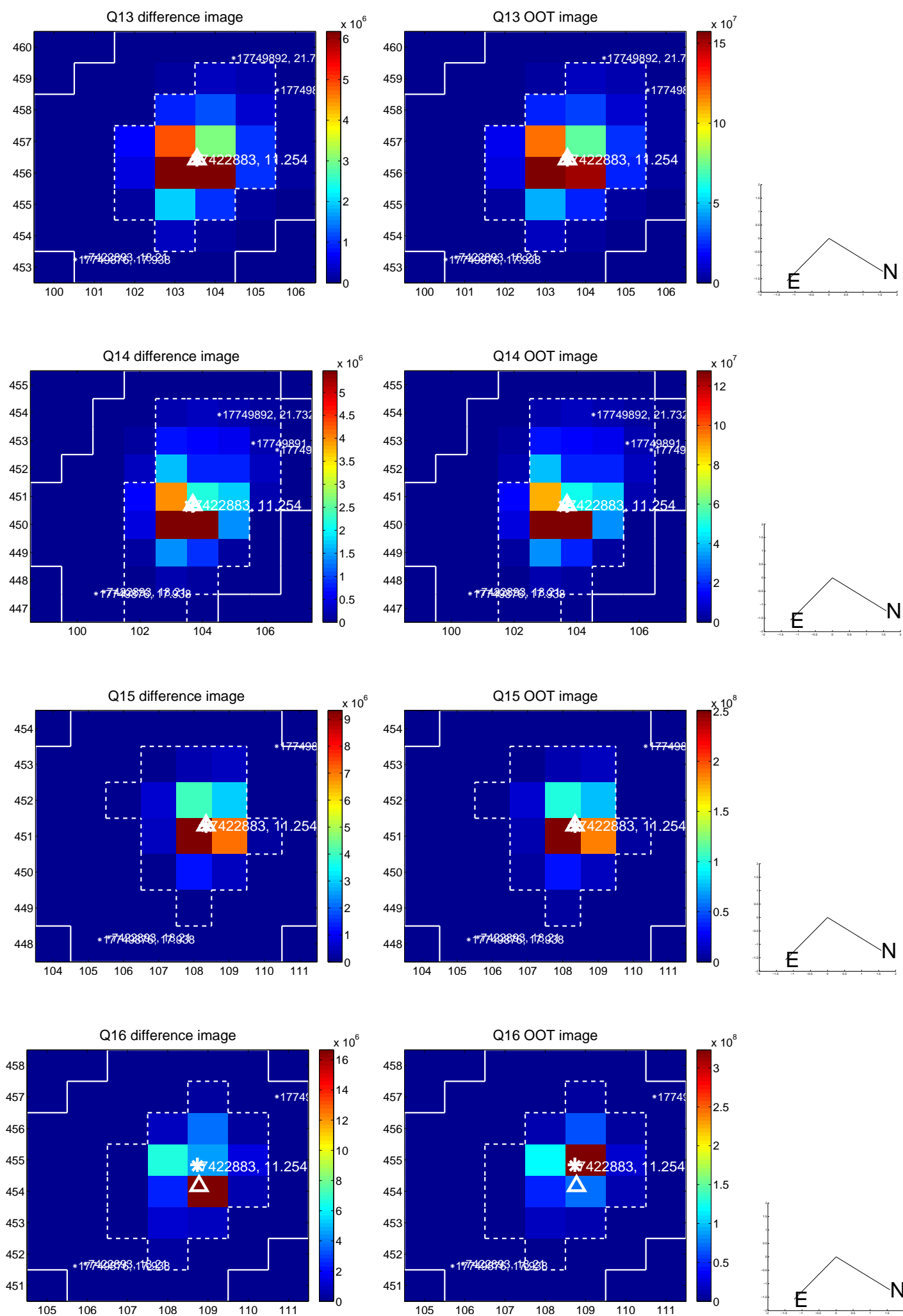
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

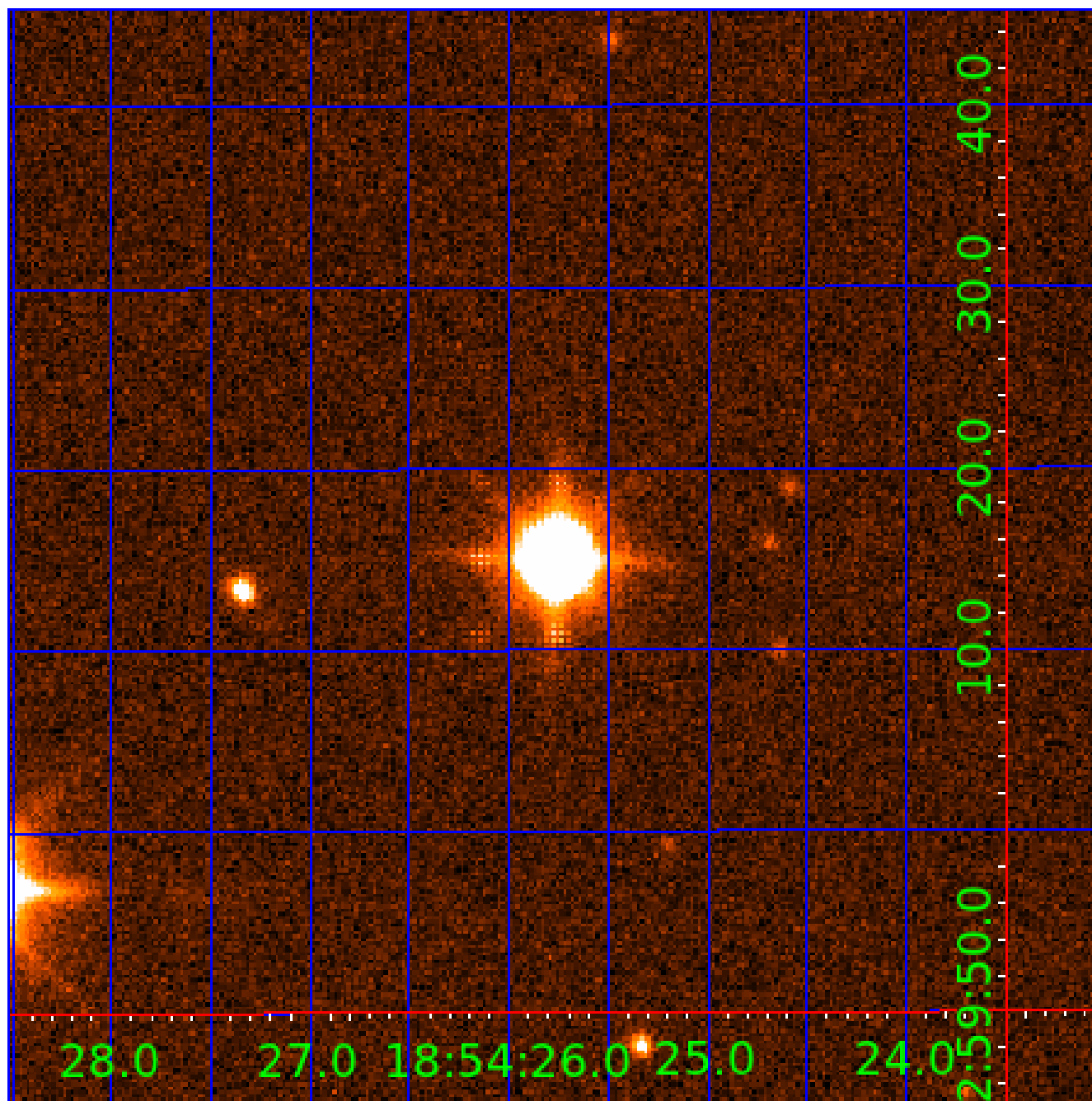


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007422883

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})
007422883-01	OBS	6159.01	11.414424	142.595073	47330.4	6.458	385.9	662.0	1.52	6826	56.22	383.87
007422883-02	OBS	No	11.414418	137.365873	47705.0	6.443	274.2	582.3	1.52	6826	56.41	383.87
007422883-03	OBS	No	348.043243	391.916282	533.2	3.500	38.4	-1.0	1.52	6826	3.54	4.03
007422883-04	OBS	No	281.907334	357.225831	529.5	3.000	33.5	-1.0	1.52	6826	3.53	5.34

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007422883-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_SATURATED
007422883-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED
007422883-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
007422883-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—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 007422883-03

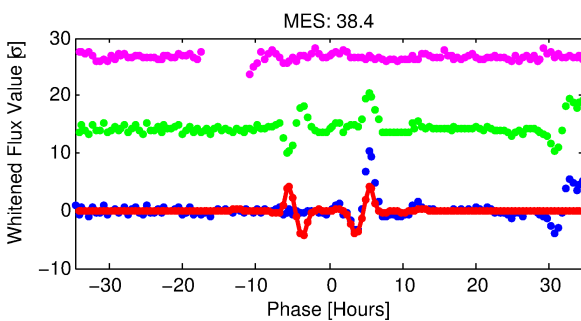
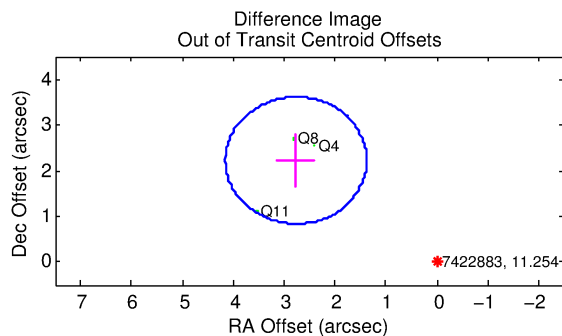
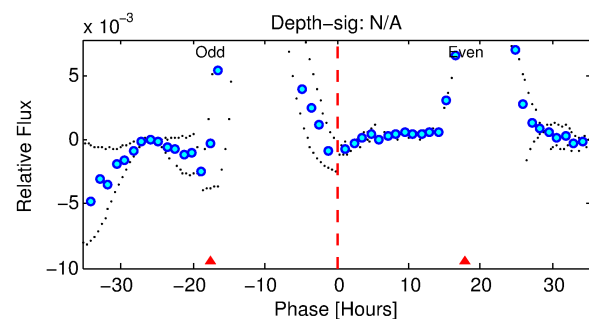
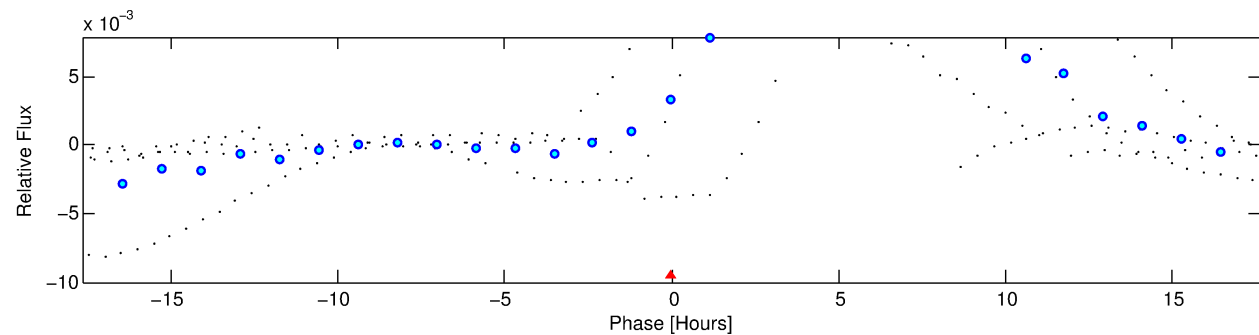
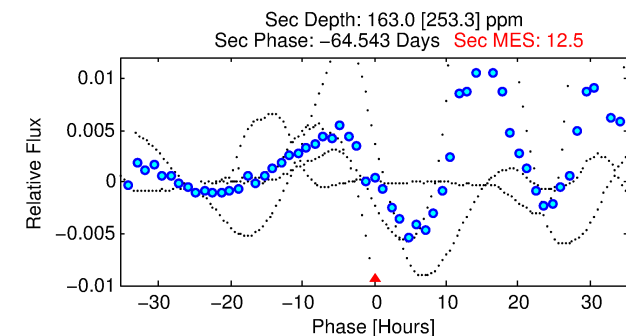
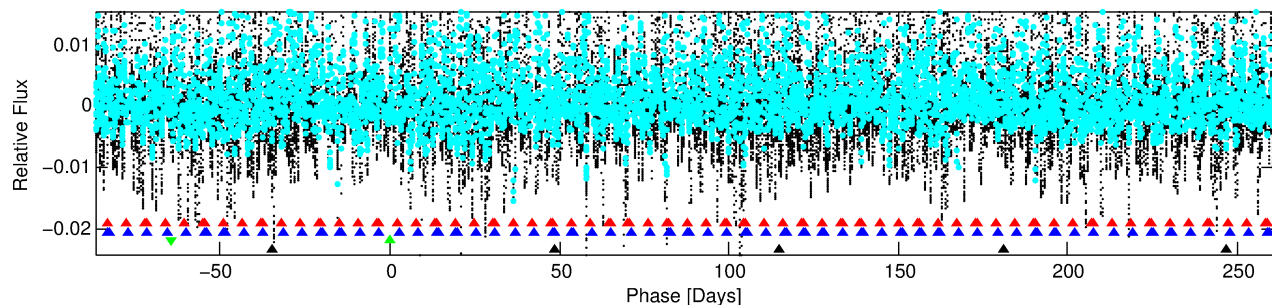
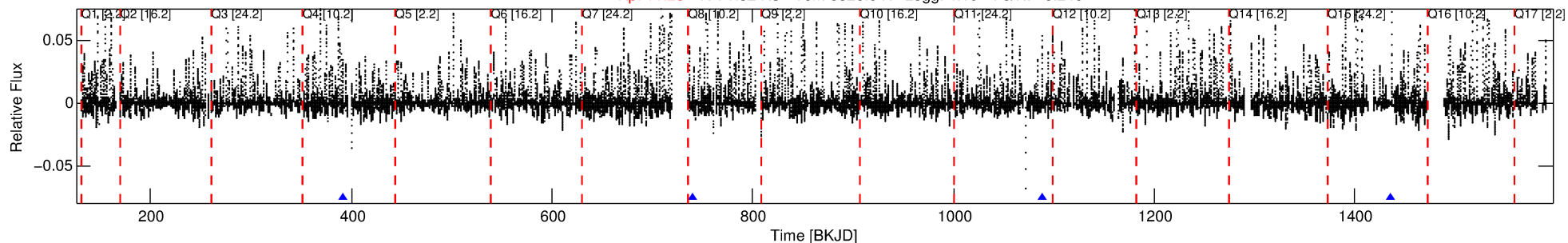
No Significant Match Found

DV One-Page Summary

KIC: 7422883 Candidate: 3 of 4 Period: 348.043 d

KOI: K06159 Corr: No Ephemeris Match

Kp: 11.25 R*: 1.52 Rs Teff: 6826.0 K Logg: 4.19 Fe/H: -0.240



TPS TCE Results:

Period = 348.04324 d

Epoch = 391.9163 BKJD

DV fit results are unavailable

DV Diagnostic Results:

ShortPeriod-sig: 100.0% [344.33σ]

LongPeriod-sig: N/A

ModelChiSquare2-sig: N/A

ModelChiSquareGof-sig: N/A

Bootstrap-pfa: N/A

RollingBand-fgt: 1.00 [3/3]

GhostDiagnostic-chr: 1.682

Centroid-sig: N/A

Centroid-so: 0.154 arcsec [1.95σ]

OotOffset-rm: 3.552 arcsec [7.67σ]

KicOffset-rm: 3.511 arcsec [7.51σ]

OotOffset-st: 0/1/2/0 [3]

KicOffset-st: 0/1/2/0 [3]

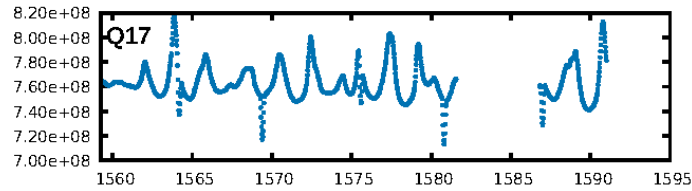
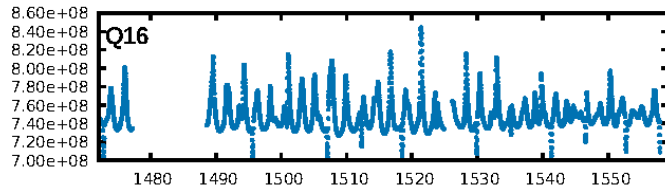
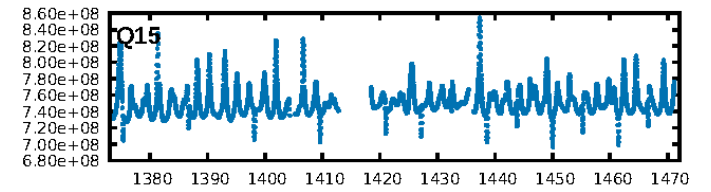
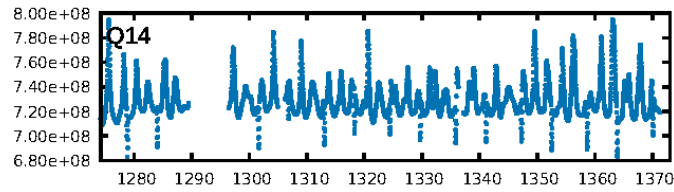
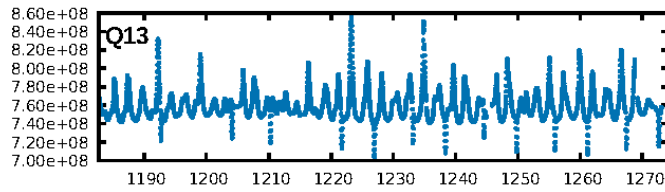
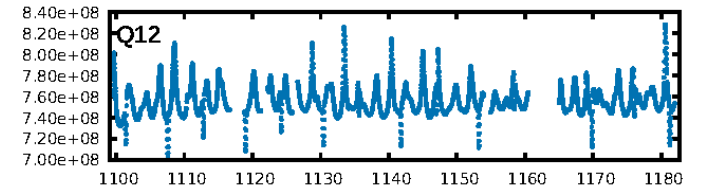
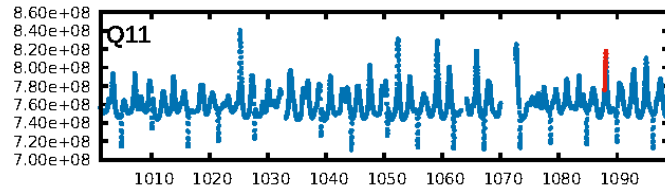
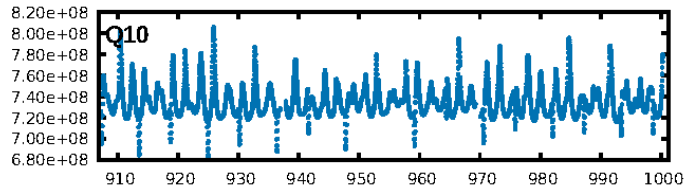
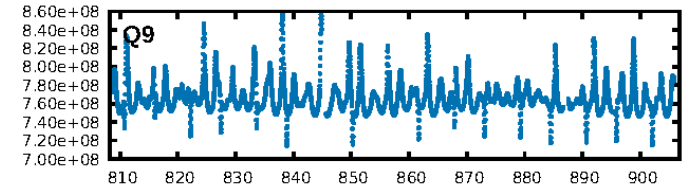
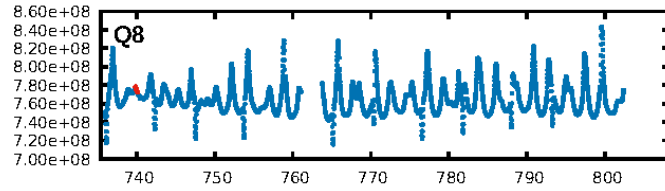
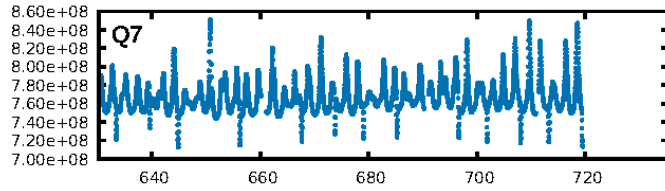
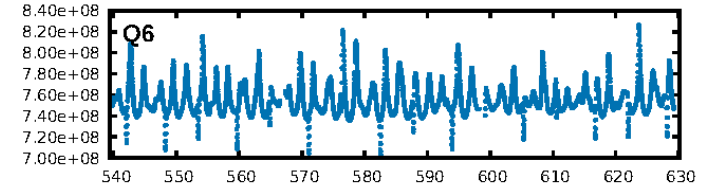
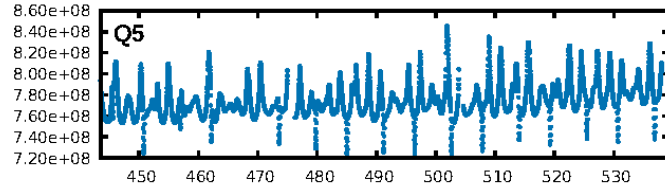
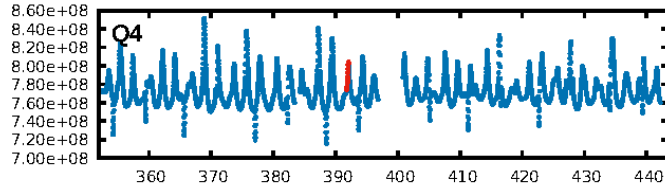
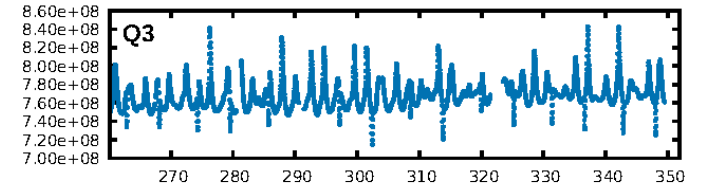
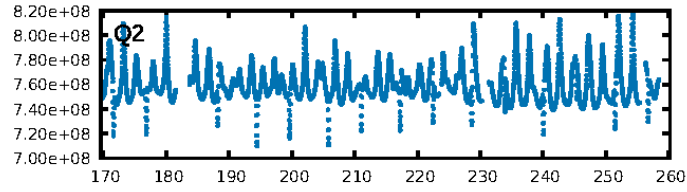
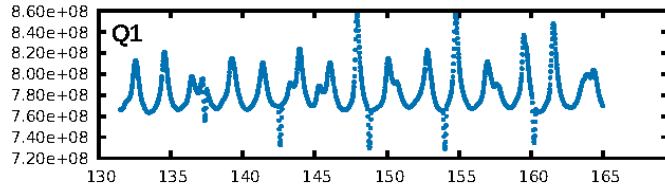
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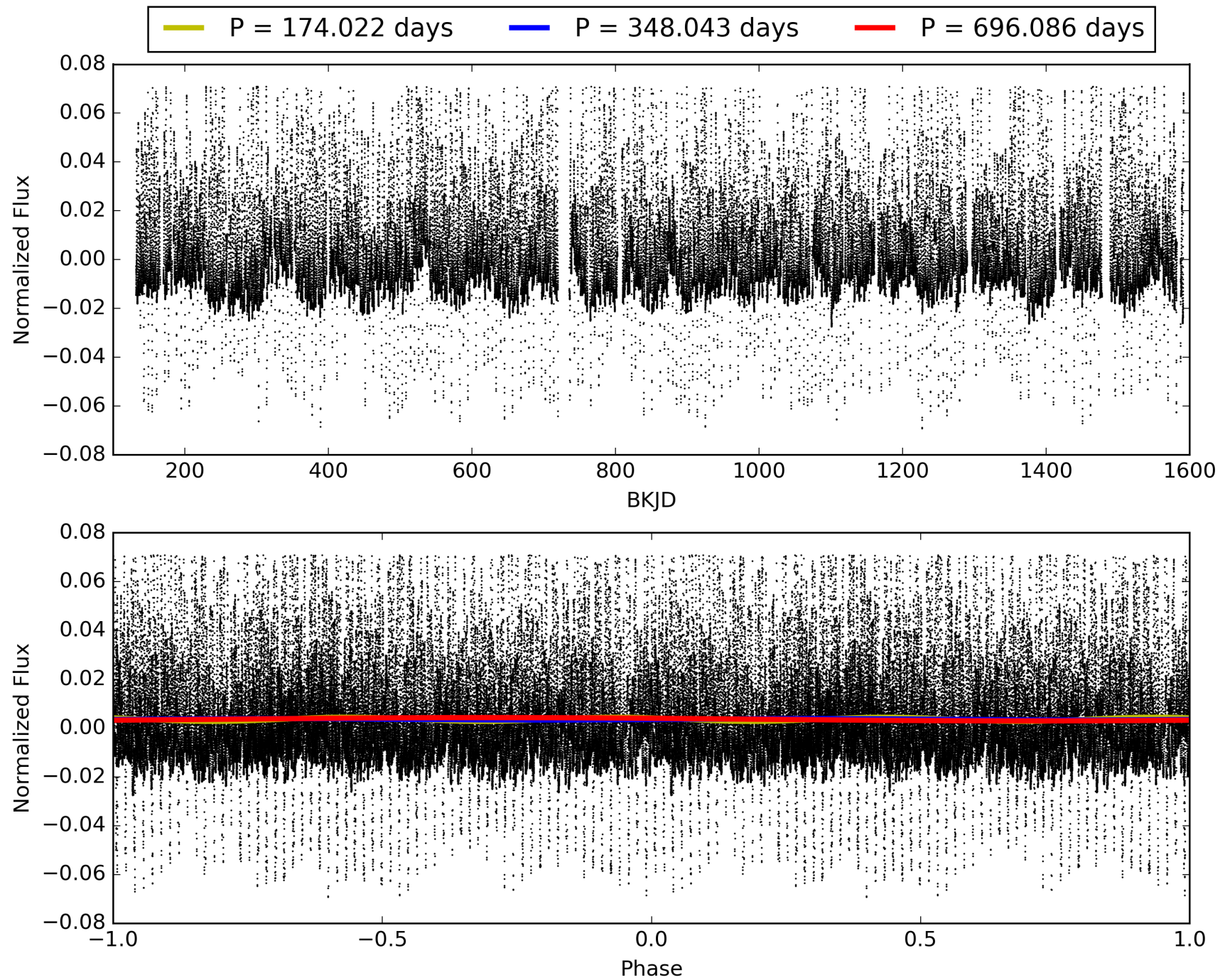
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:56:45 Z

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

TCE 007422883-03, PDC Light Curves

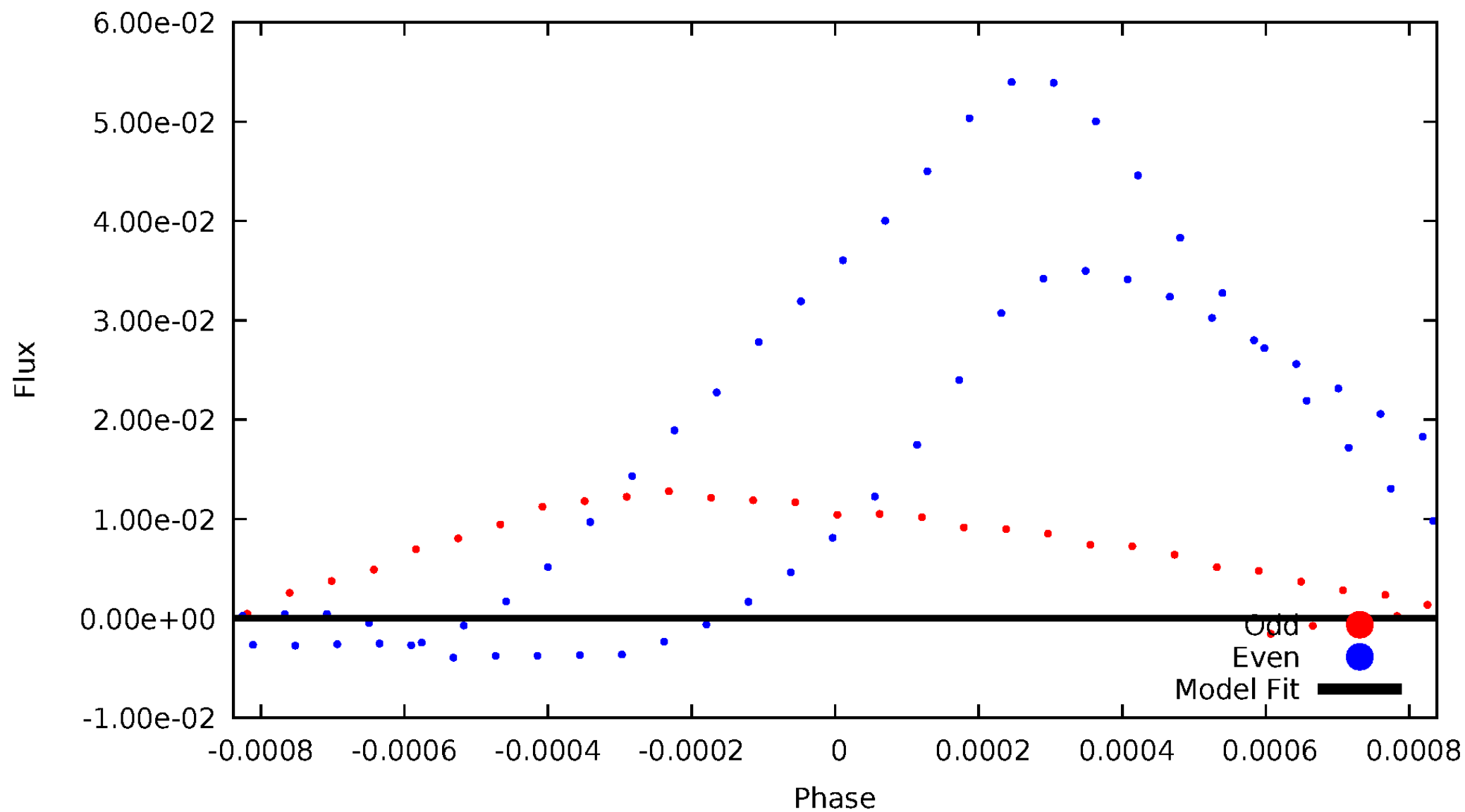


TCE 007422883-03



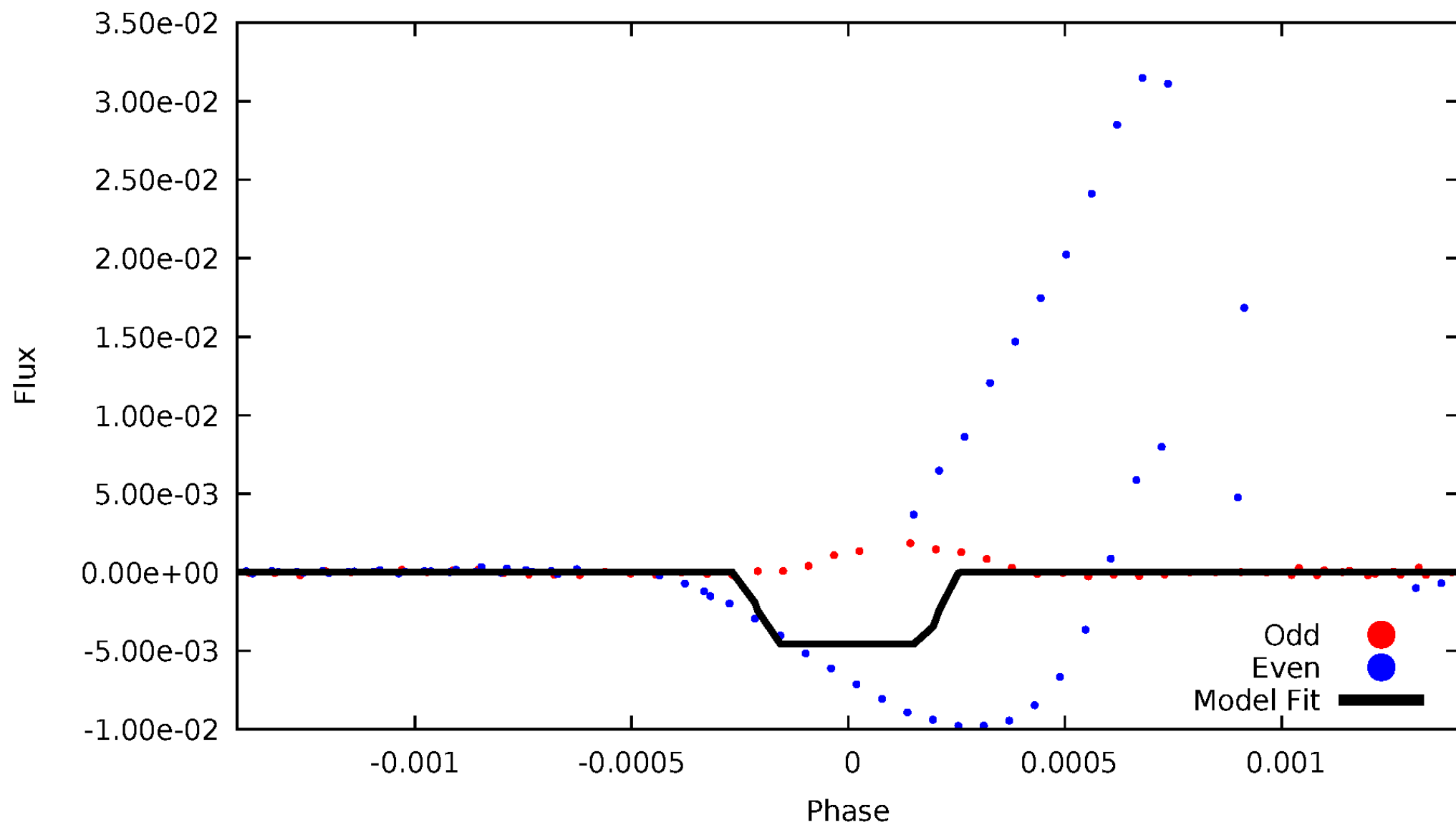
DV Odd/Even

TCE 007422883-03



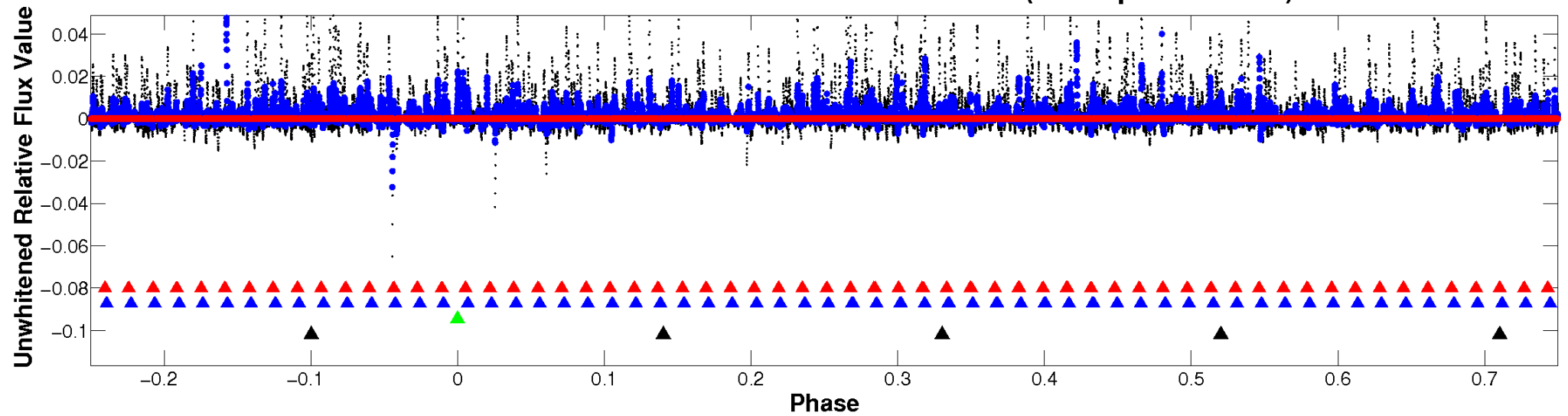
ALT Odd/Even

TCE 007422883-03

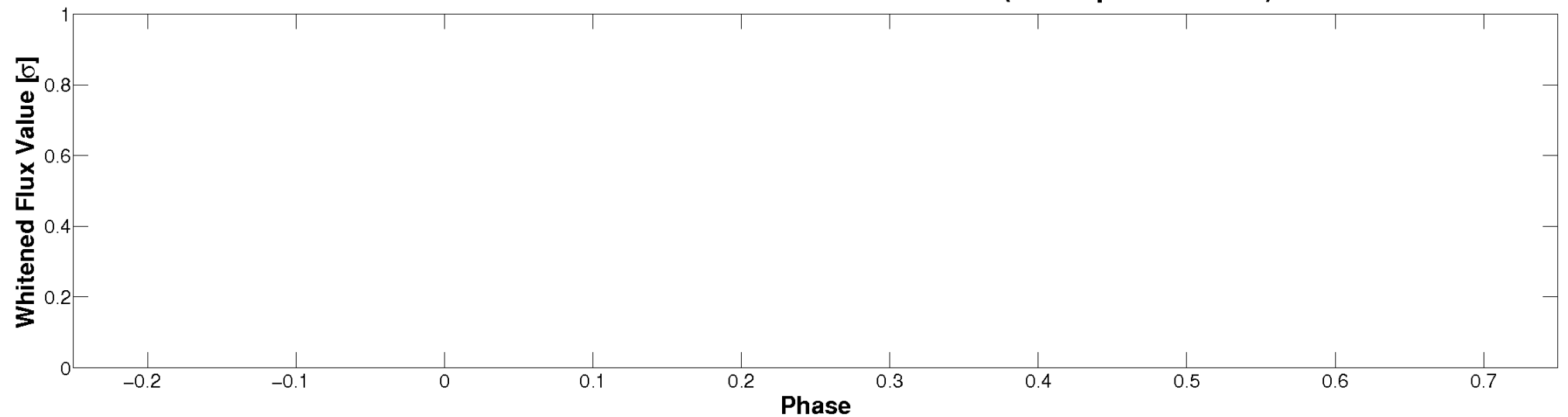


Non-Whitened Vs. Whitened Light Curve

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

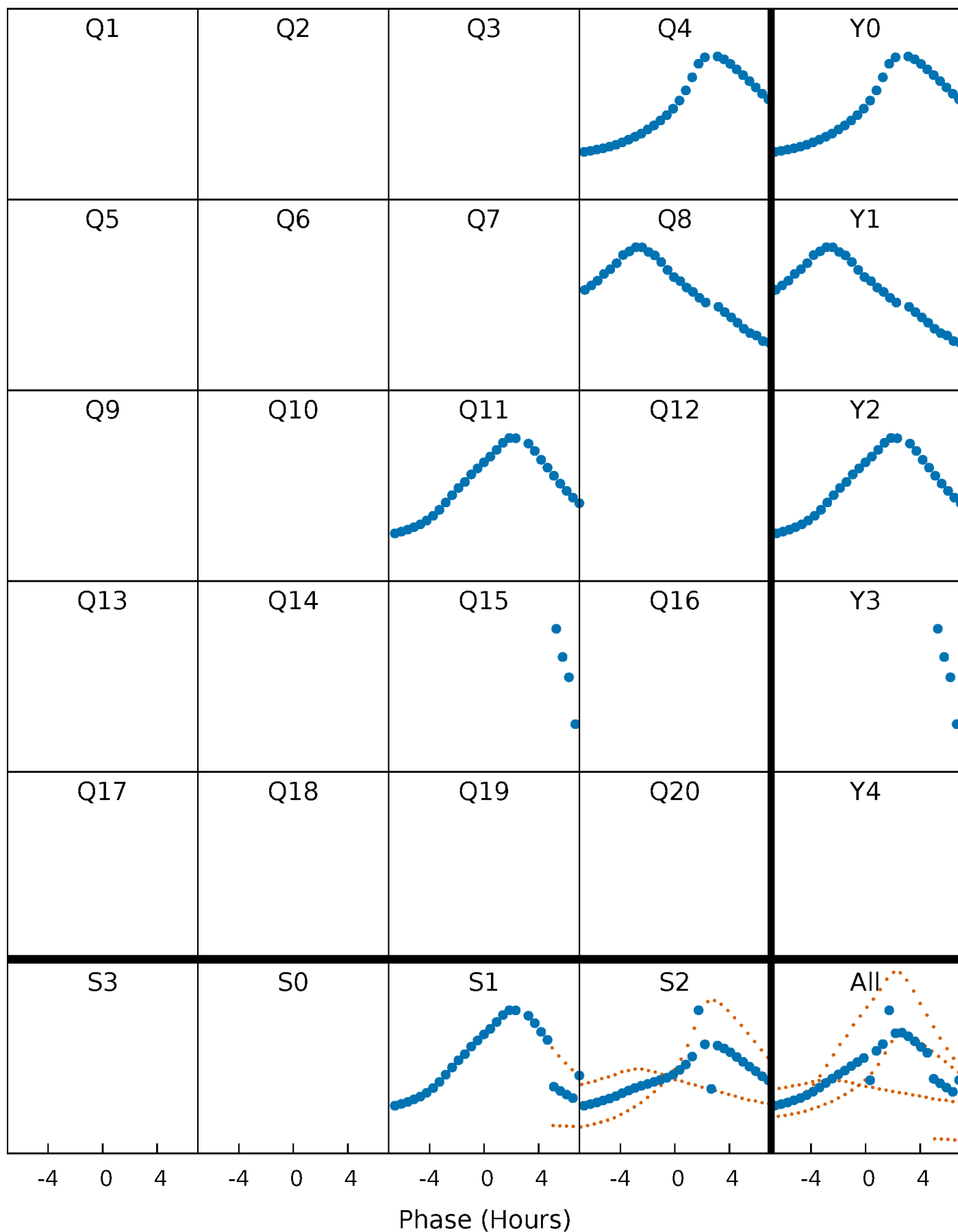


Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)



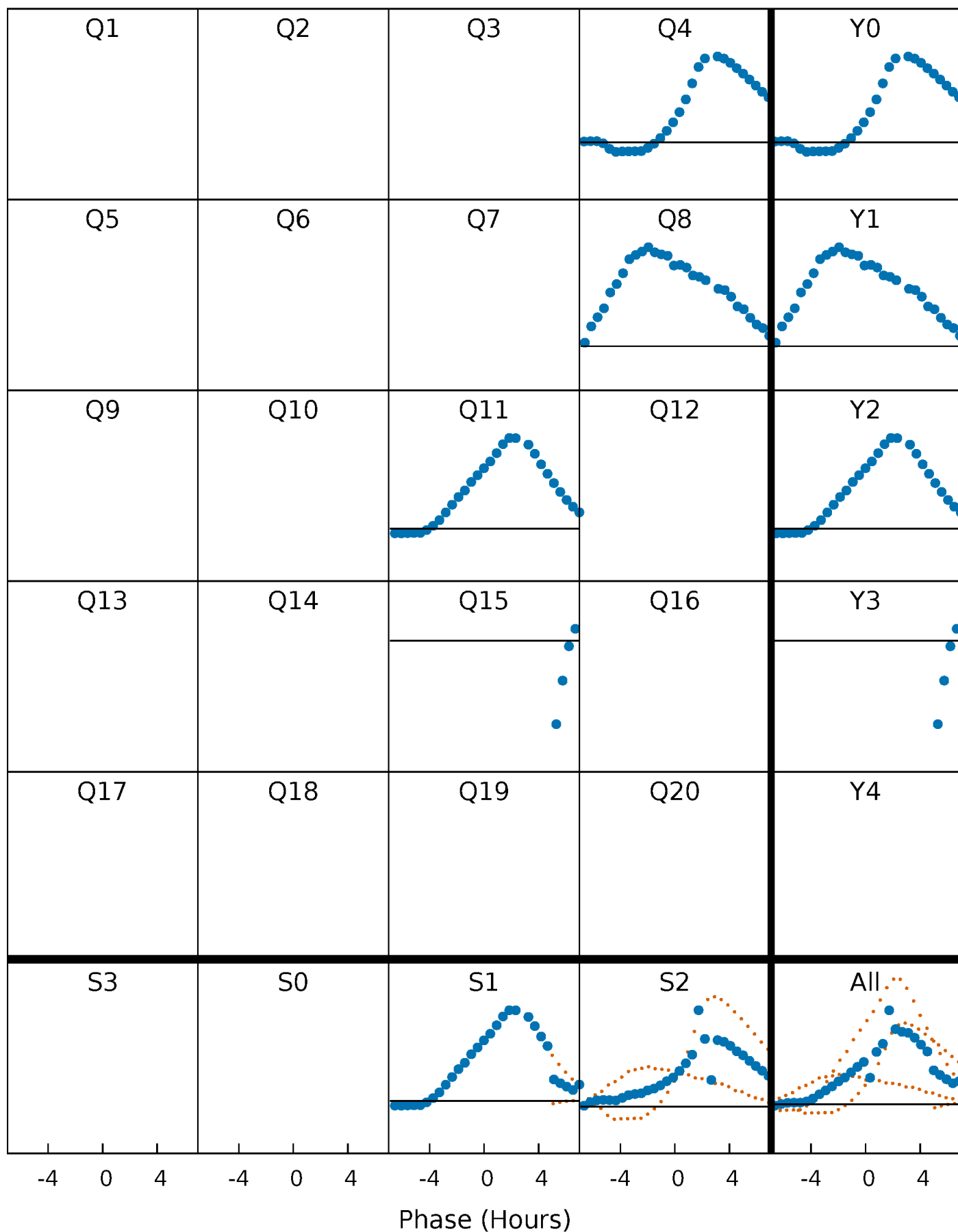
PDC Quarter-Phased Transit Curves

TCE 007422883-03 P=348.043243 Days $T_0=391.916283$ (BKJD)



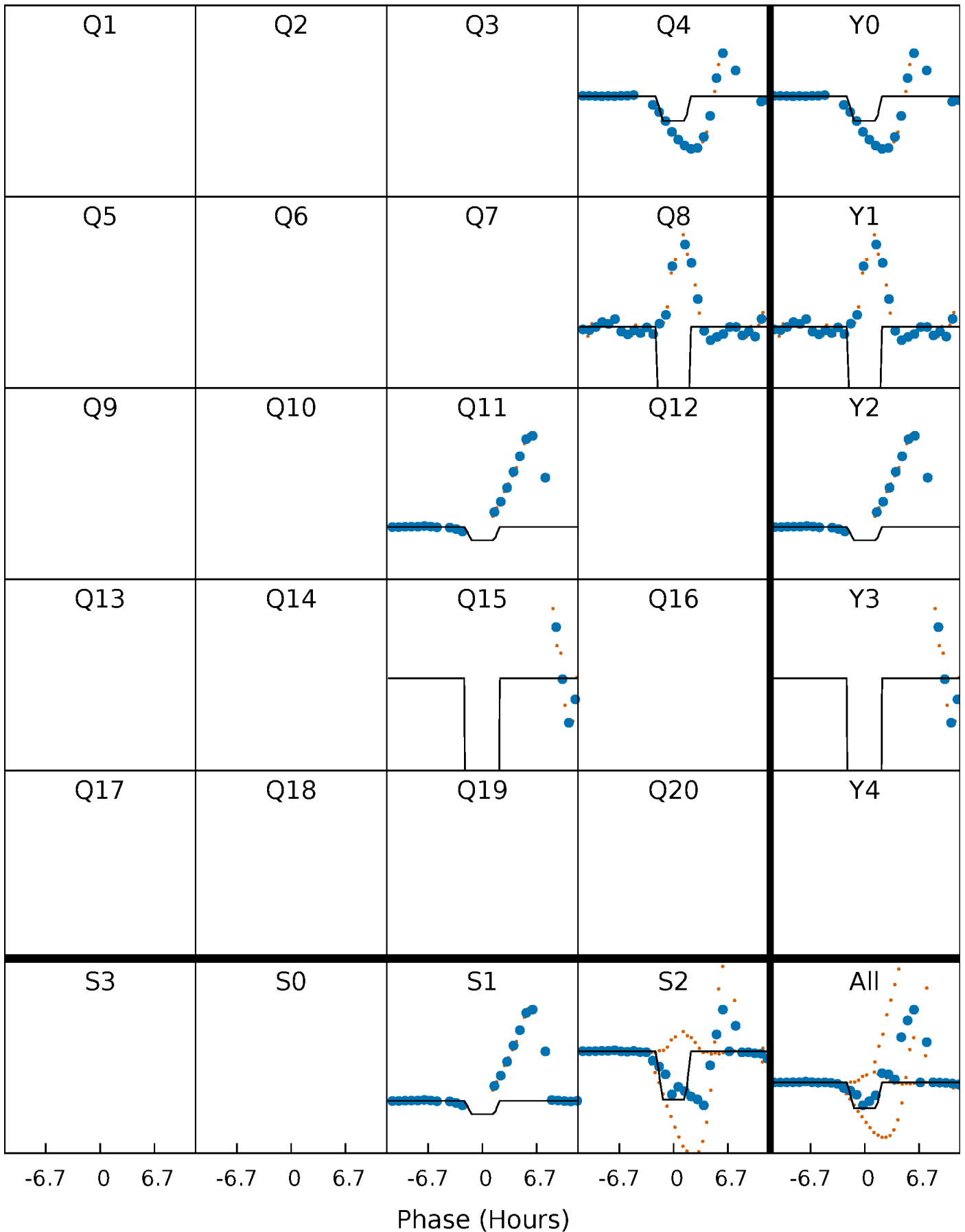
DV Quarter-Phased Transit Curves

TCE 007422883-03 P=348.043243 Days $T_0=391.916283$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

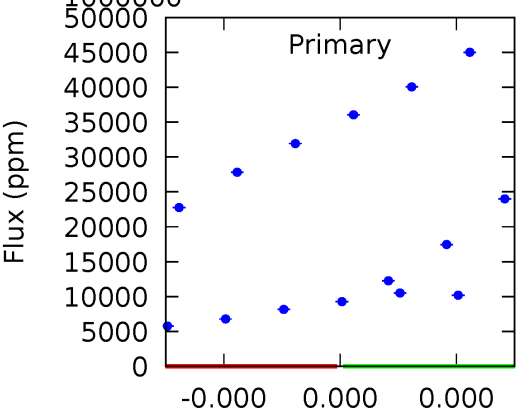
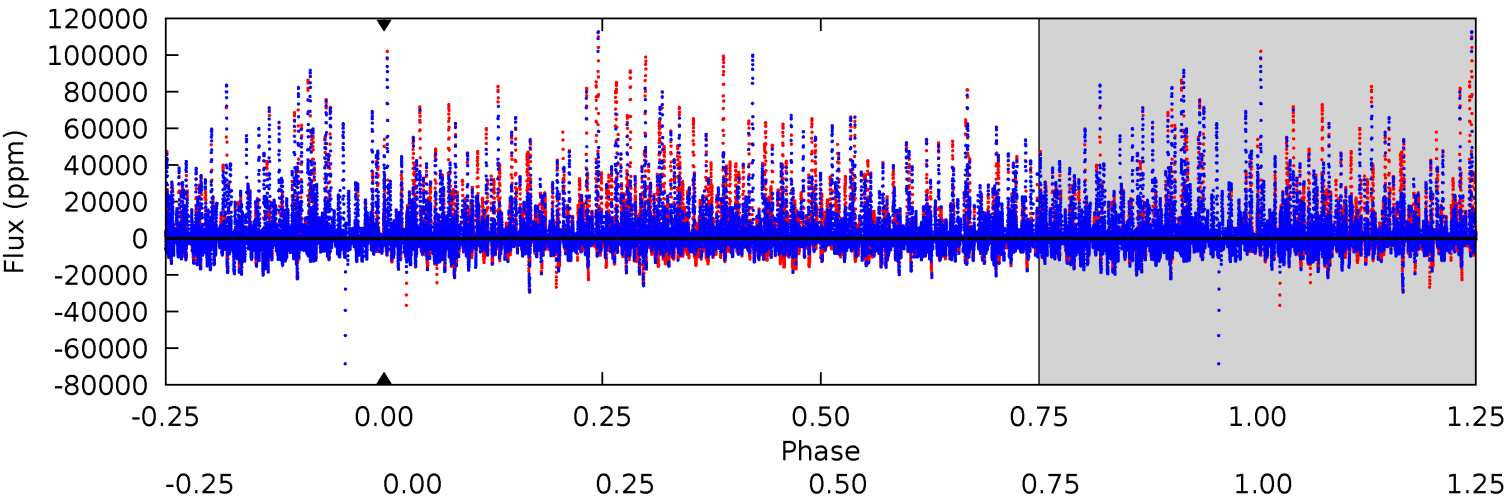
TCE 007422883-03 P=348.043243 Days $T_0=391.765435$ (BKJD)



DV Model-Shift Uniqueness Test

007422883-03, P = 348.043243 Days, E = 43.873040 Days

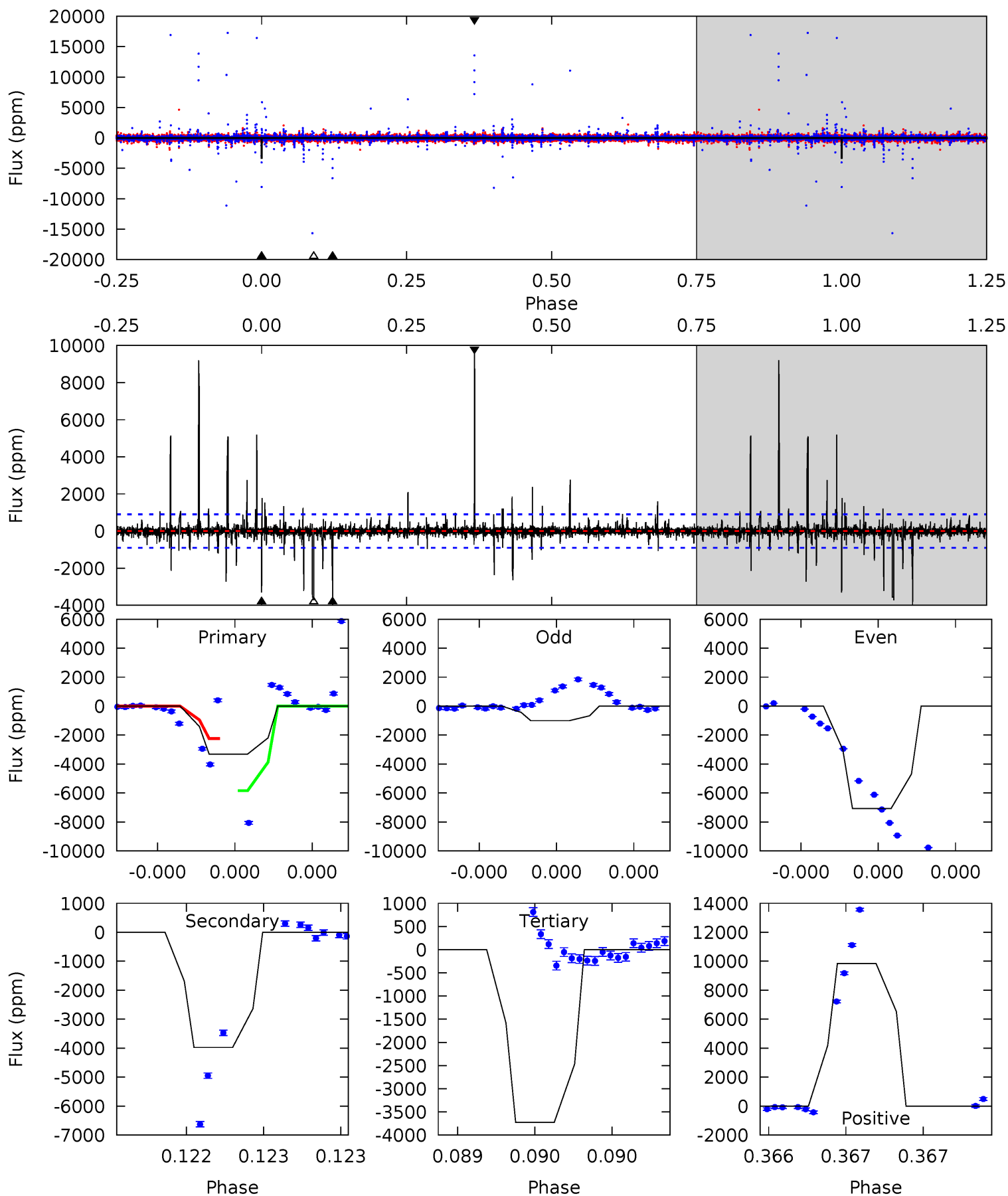
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

007422883-03, P = 348.043243 Days, E = 43.722192 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.4	24.6	23.0	60.8	5.58	3.50	1.26	-2.55	-40.4	1.56	-36.3	16.7	-0.18	0.71	0



Stellar Parameters For KIC 007422883

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6826^{+152}_{-220}	$4.187^{+0.153}_{-0.187}$	$-0.240^{+0.250}_{-0.300}$	$1.520^{+0.447}_{-0.298}$	$1.307^{+0.182}_{-0.223}$	$0.524^{+0.401}_{-0.262}$
	+2%/-3%	+4%/-4%	+104%/-125%	+29%/-20%	+14%/-17%	+77%/-50%
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 007422883-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$13.34^{+13.38}_{-8.89}$	504^{+37}_{-32}	4285^{+25322}_{-29569}	$2720^{+677373}_{-509601}$
Alt.	-3977 ± 162	$16.25^{+15.54}_{-10.63}$	506^{+37}_{-31}	5472^{+4665}_{-1276}	8912^{+68715}_{-6499}

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

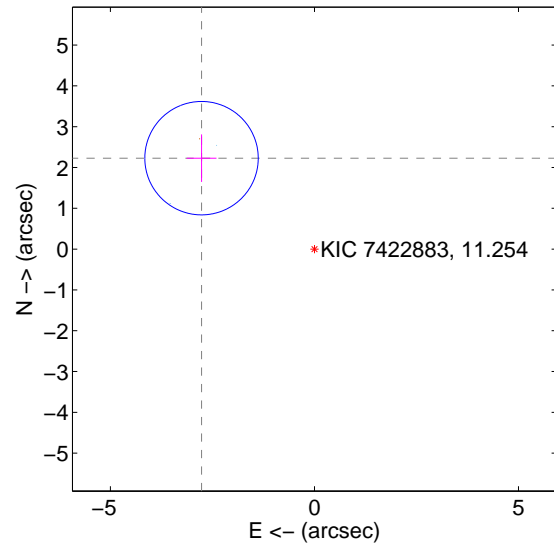
Supplemental centroid analysis for 007422883-03. **Kepler magnitude: 11.25.** Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

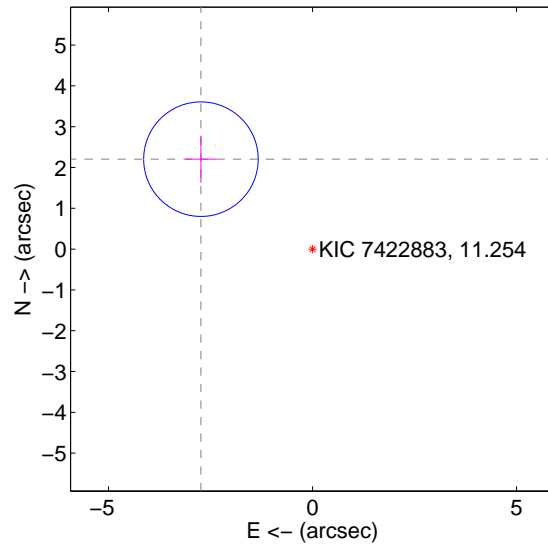
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.552 ± 0.463	7.67	2.767 ± 0.365	2.228 ± 0.583
PRF-fit source offset from KIC position	3.511 ± 0.468	7.51	2.734 ± 0.380	2.203 ± 0.578
photometric centroid source offset	0.15 ± 0.08	1.95	-0.12 ± 0.08	-0.10 ± 0.08

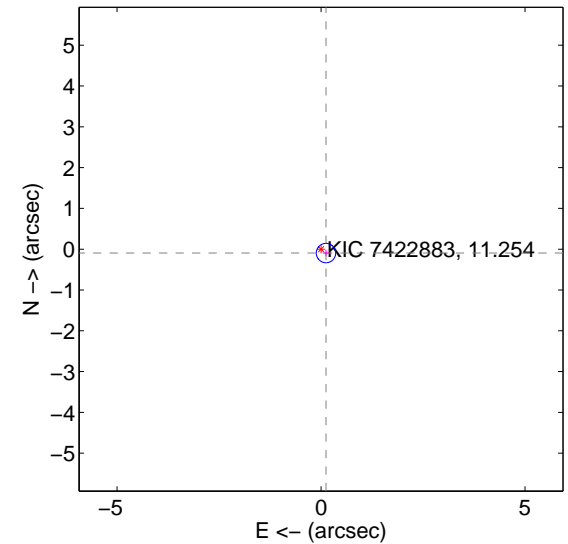
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

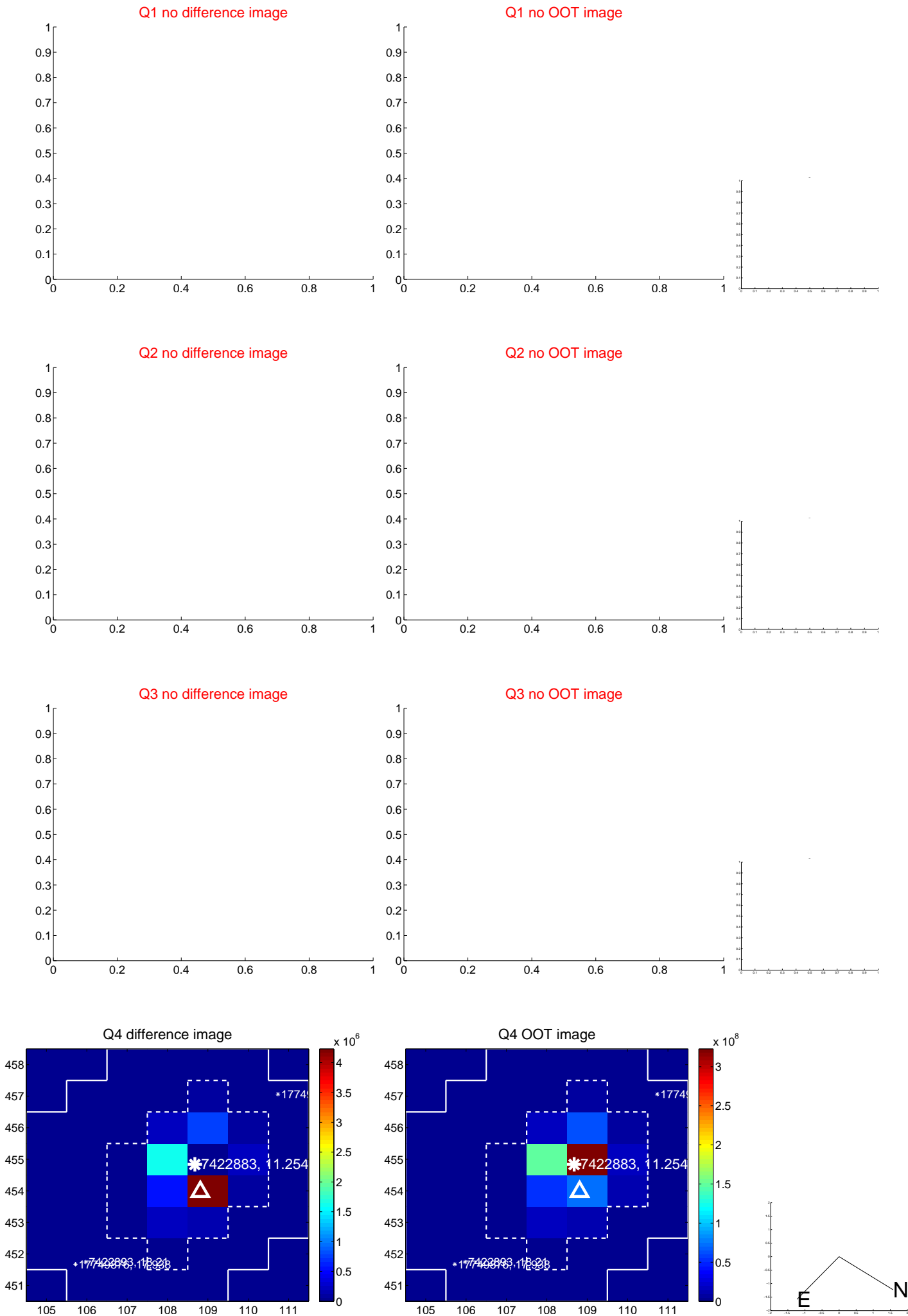


offset from photometric centroids

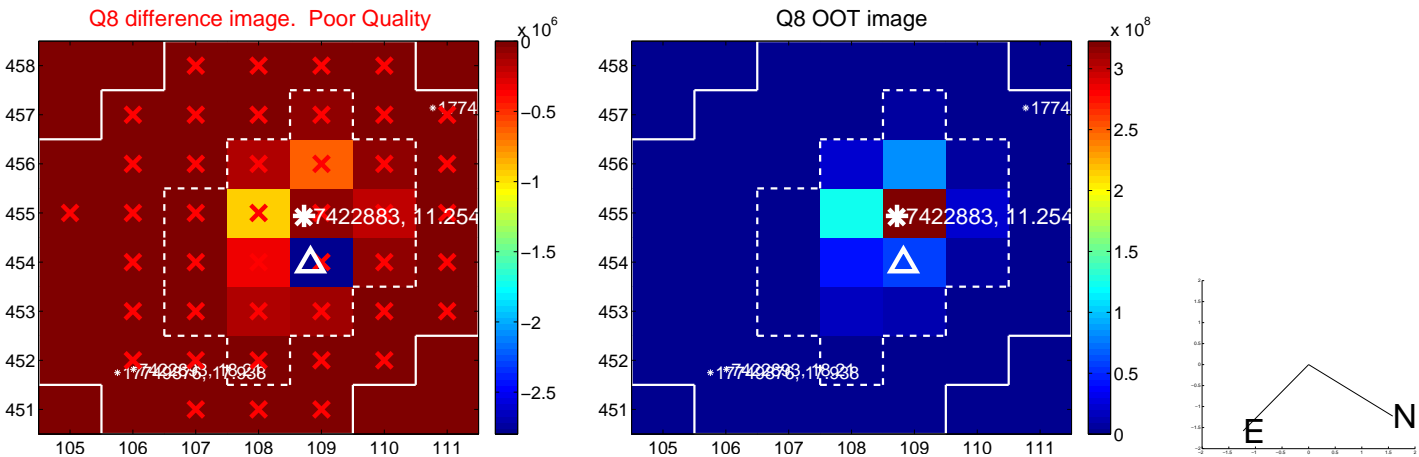


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

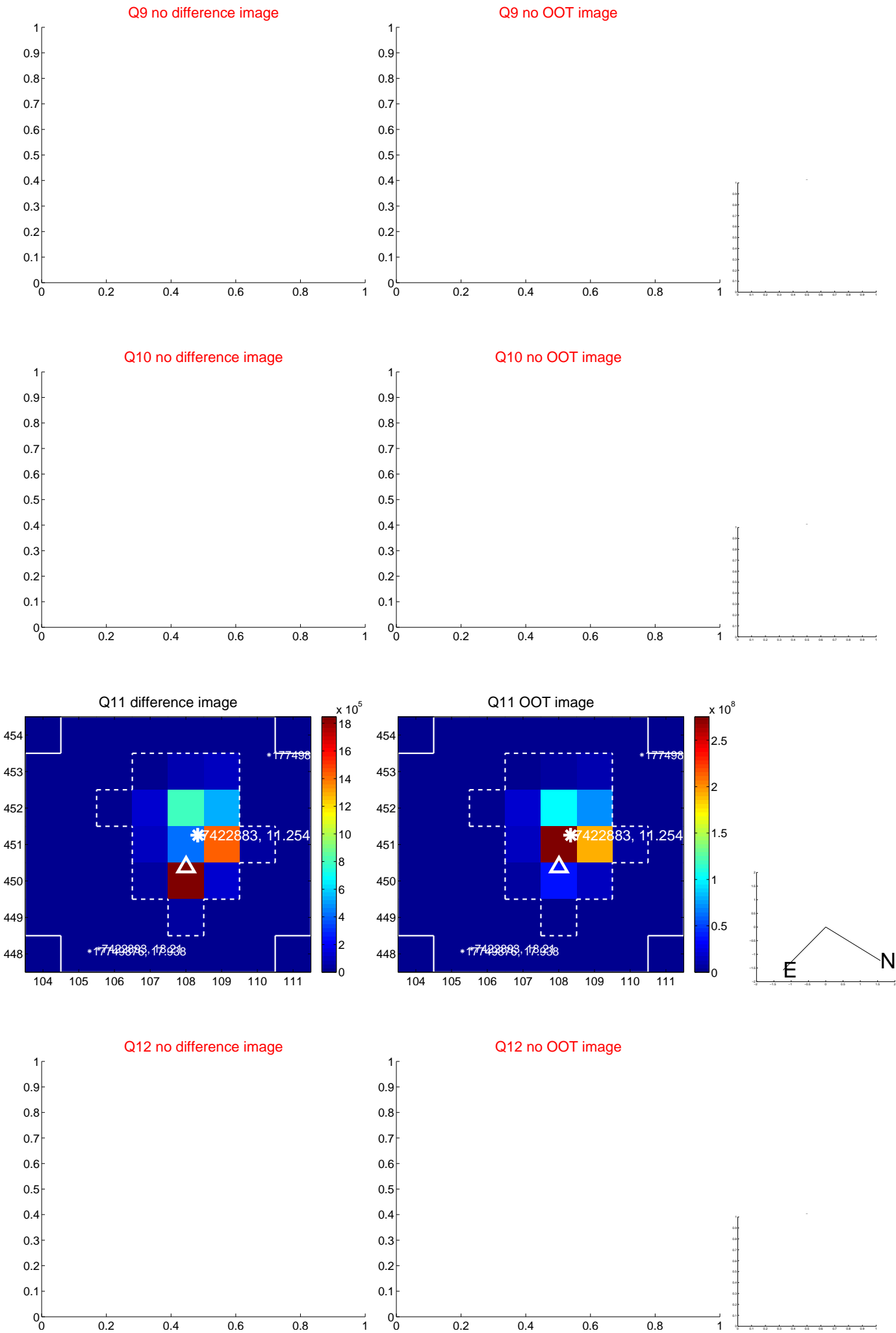
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



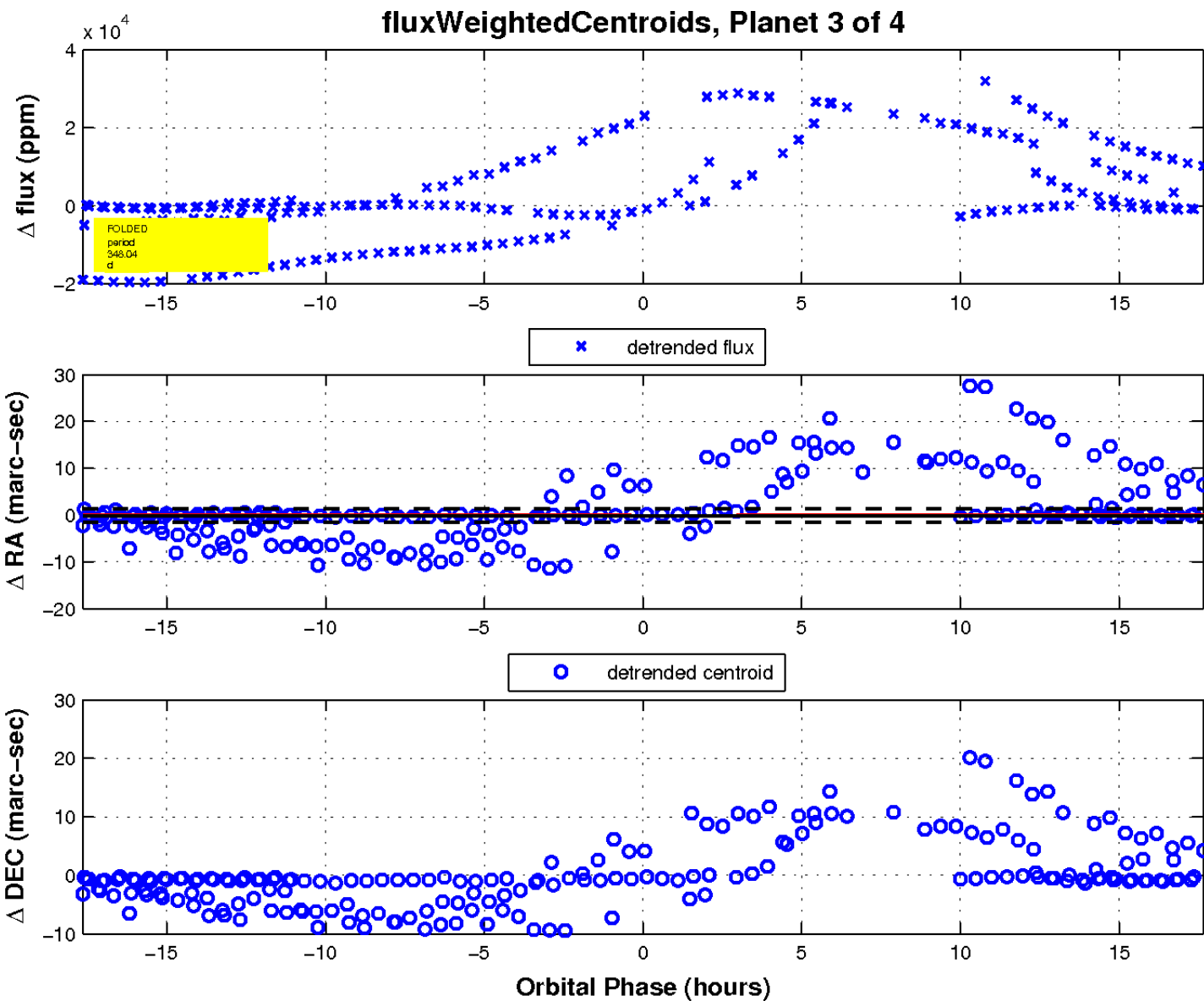
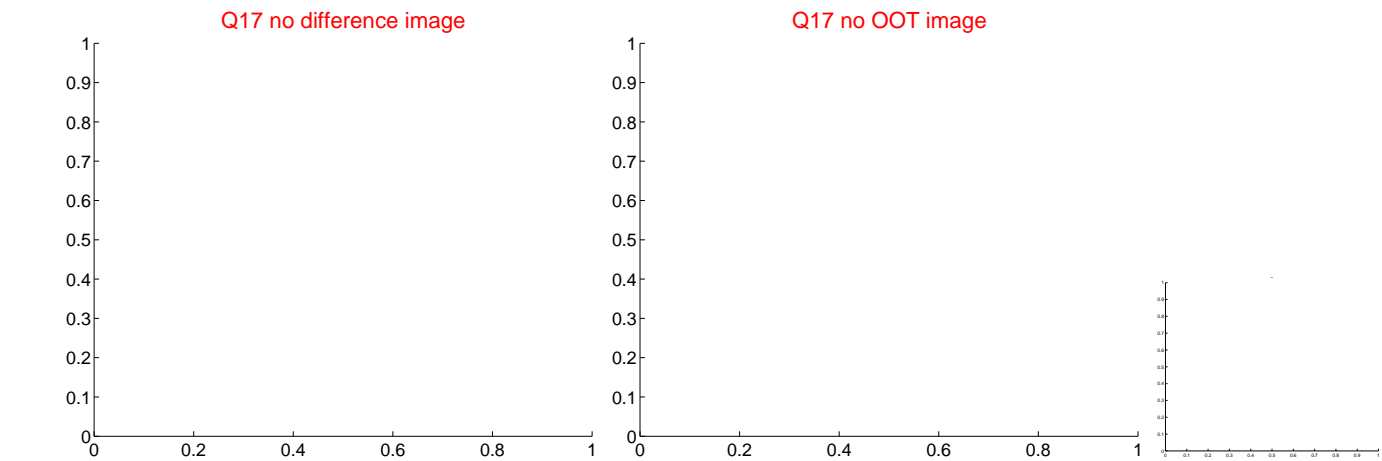
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

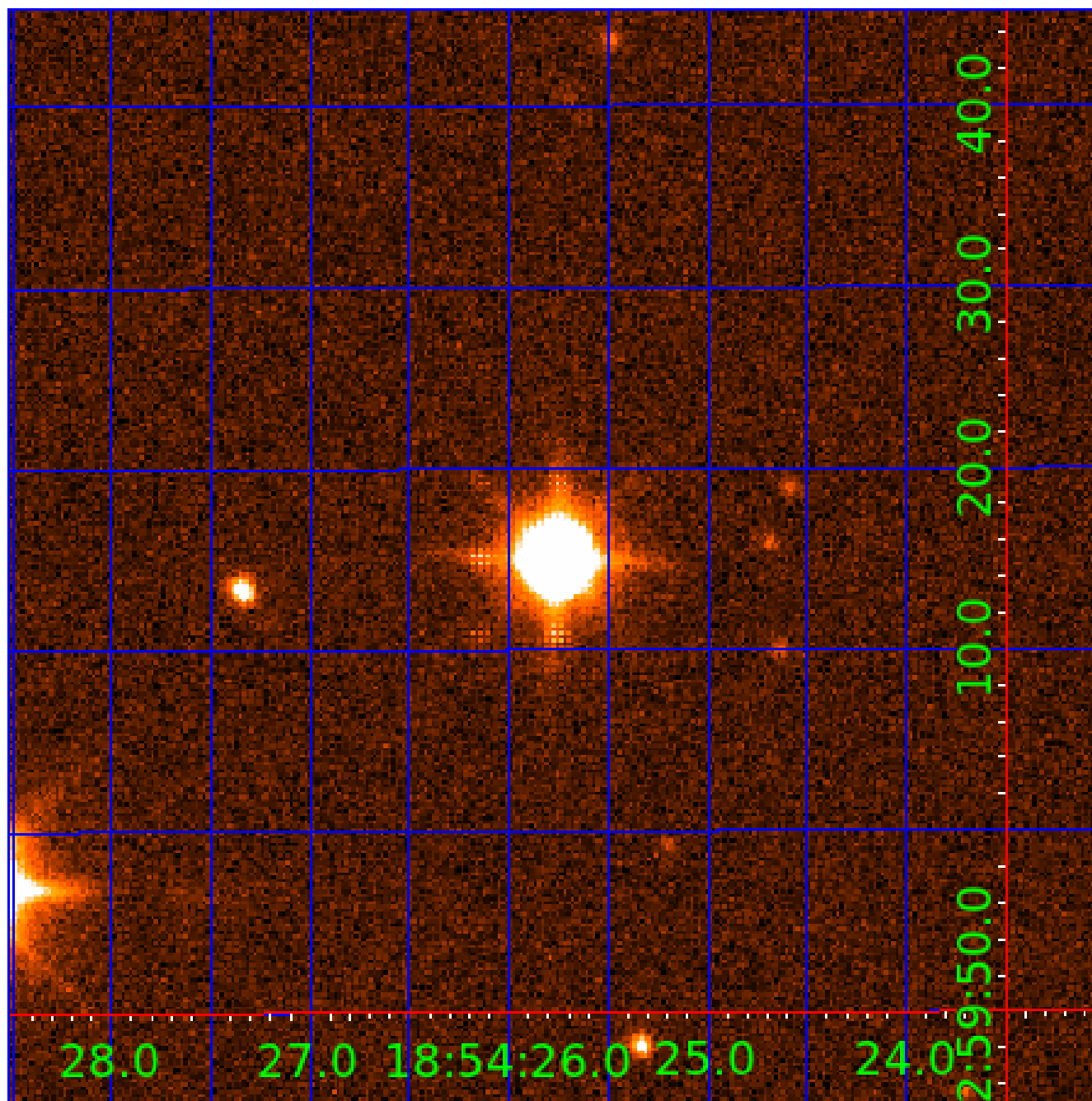


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007422883

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})
007422883-01	OBS	6159.01	11.414424	142.595073	47330.4	6.458	385.9	662.0	1.52	6826	56.22	383.87
007422883-02	OBS	No	11.414418	137.365873	47705.0	6.443	274.2	582.3	1.52	6826	56.41	383.87
007422883-03	OBS	No	348.043243	391.916282	533.2	3.500	38.4	-1.0	1.52	6826	3.54	4.03
007422883-04	OBS	No	281.907334	357.225831	529.5	3.000	33.5	-1.0	1.52	6826	3.53	5.34

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007422883-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_SATURATED
007422883-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED
007422883-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
007422883-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—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 007422883-04

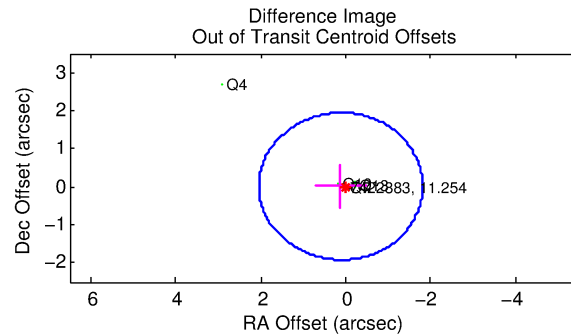
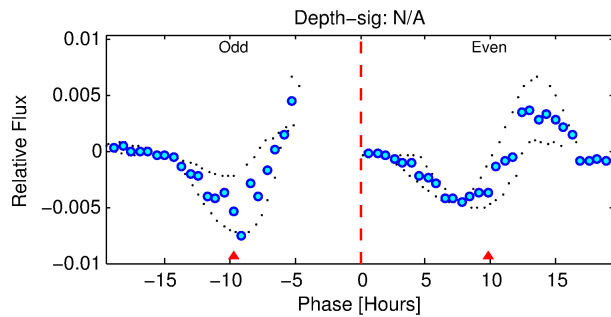
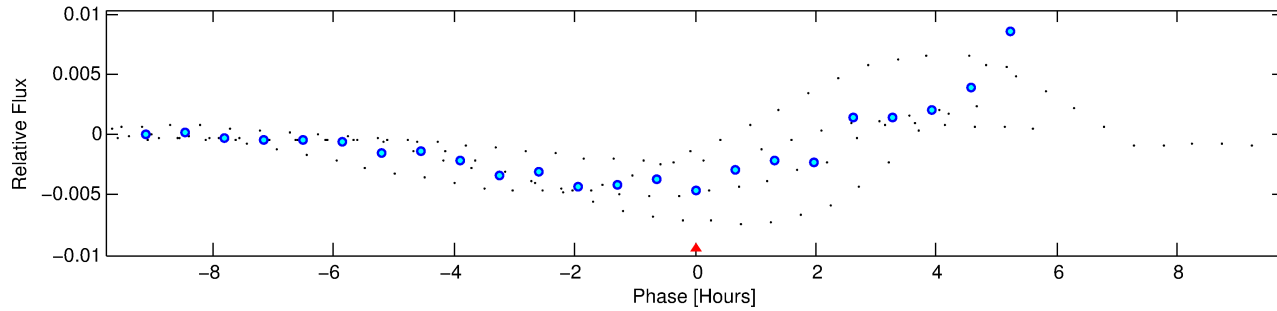
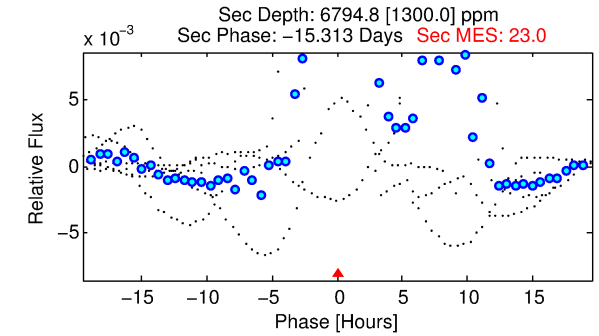
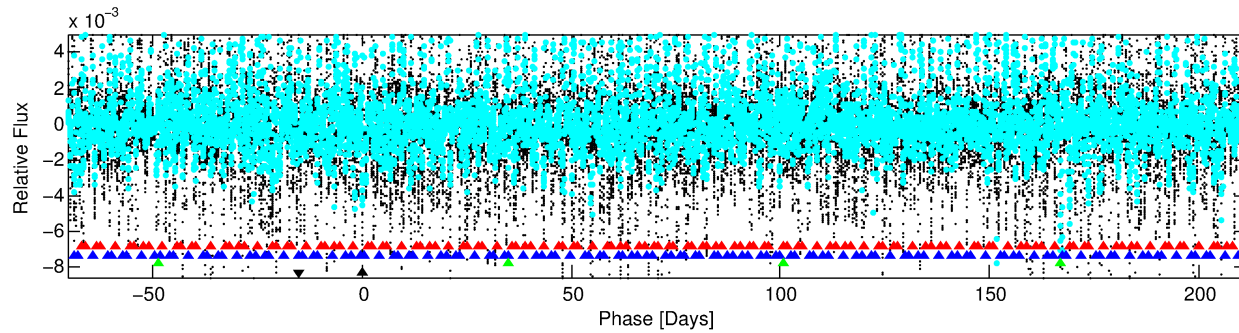
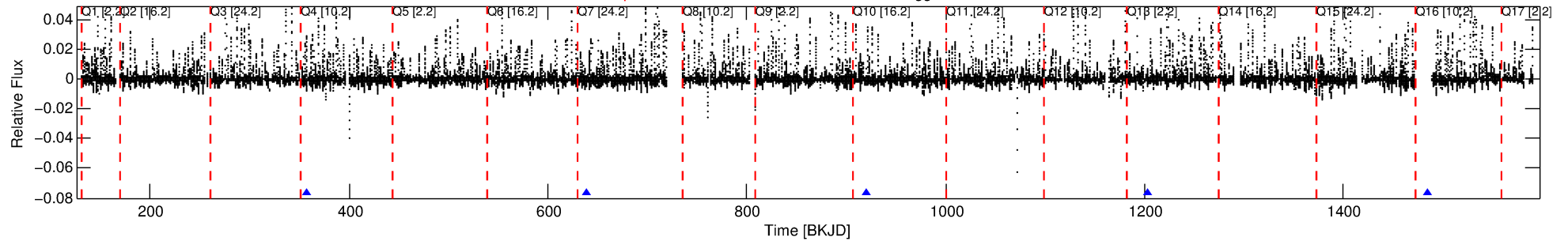
No Significant Match Found

DV One-Page Summary

KIC: 7422883 Candidate: 4 of 4 Period: 281.907 d

KOI: K06159 Corr: No Ephemeris Match

Kp: 11.25 R*: 1.52 Rs Teff: 6826.0 K Logg: 4.19 Fe/H: -0.240



TPS TCE Results:

Period = 281.90733 d
Epoch = 357.2258 BKJD

DV fit results are unavailable

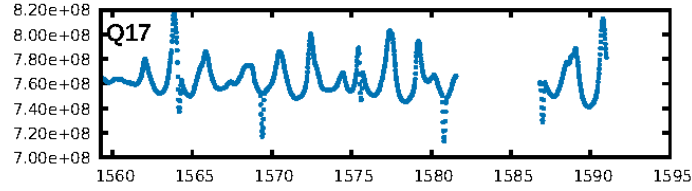
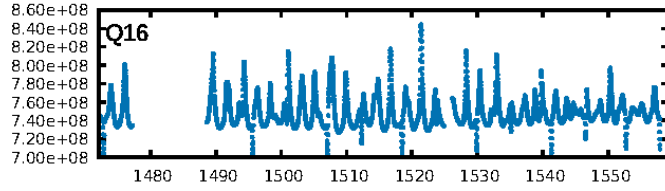
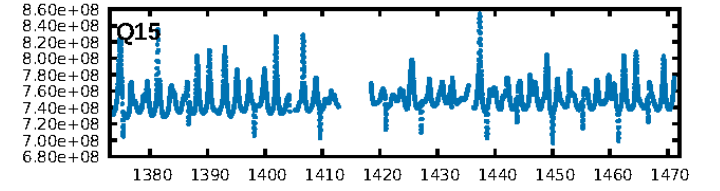
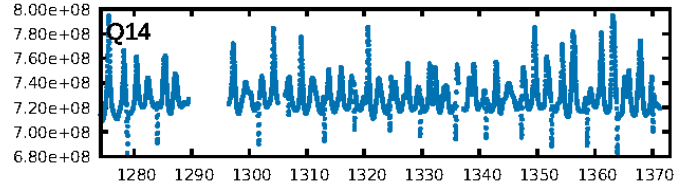
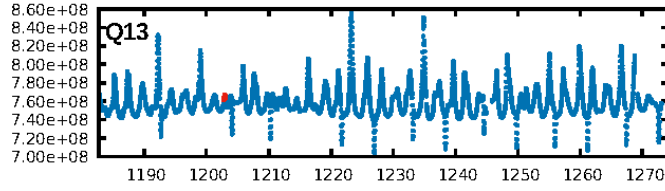
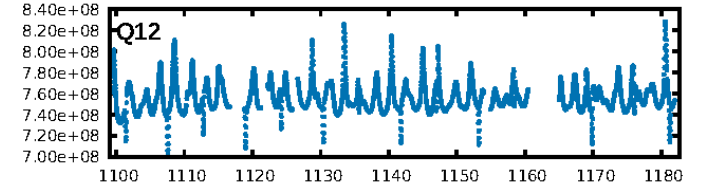
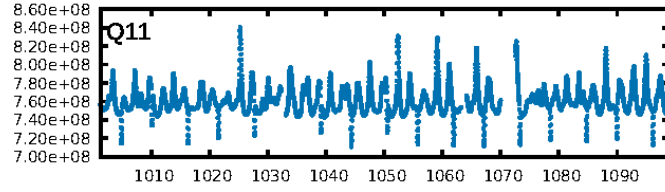
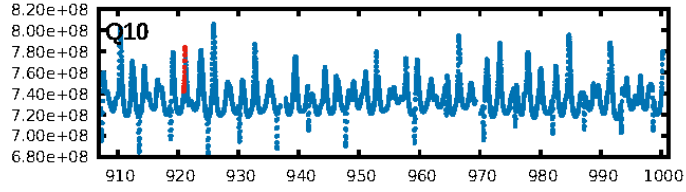
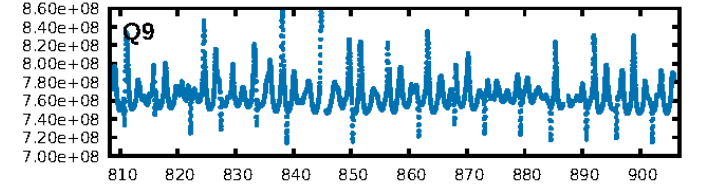
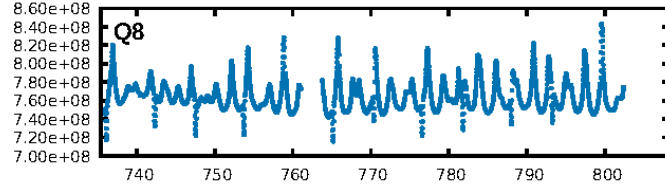
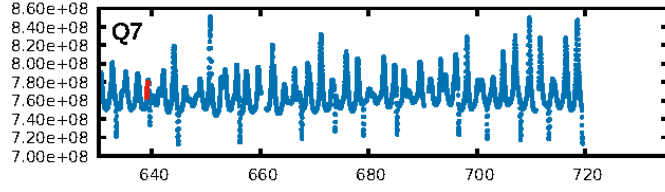
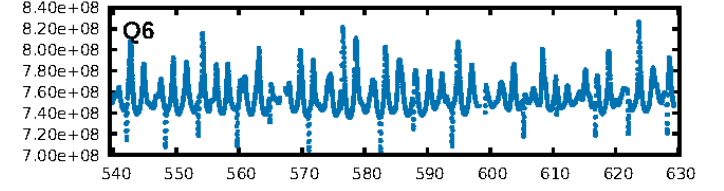
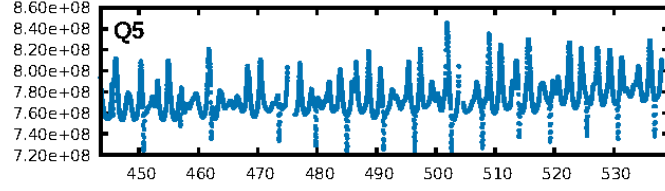
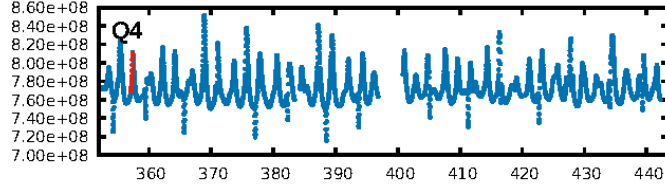
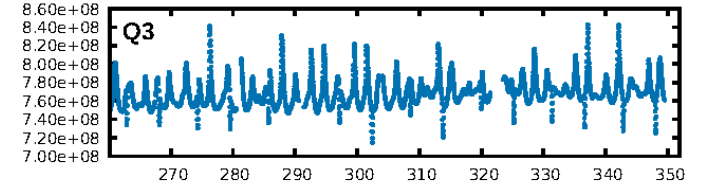
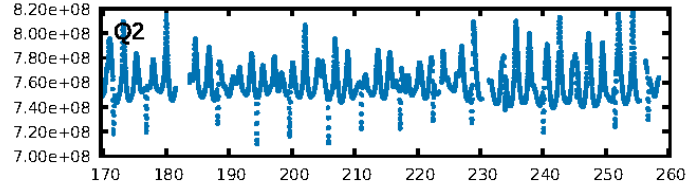
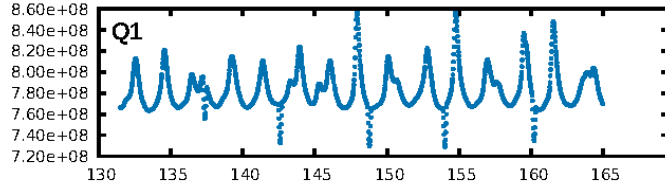
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [911.72σ]
LongPeriod-sig: 100.0% [344.33σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.8374
Centroid-sig: N/A
Centroid-so: 0.147 arcsec [1.50σ]
OotOffset-rm: 0.107 arcsec [0.17σ]
KicOffset-rm: 0.671 arcsec [0.84σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [4/4]

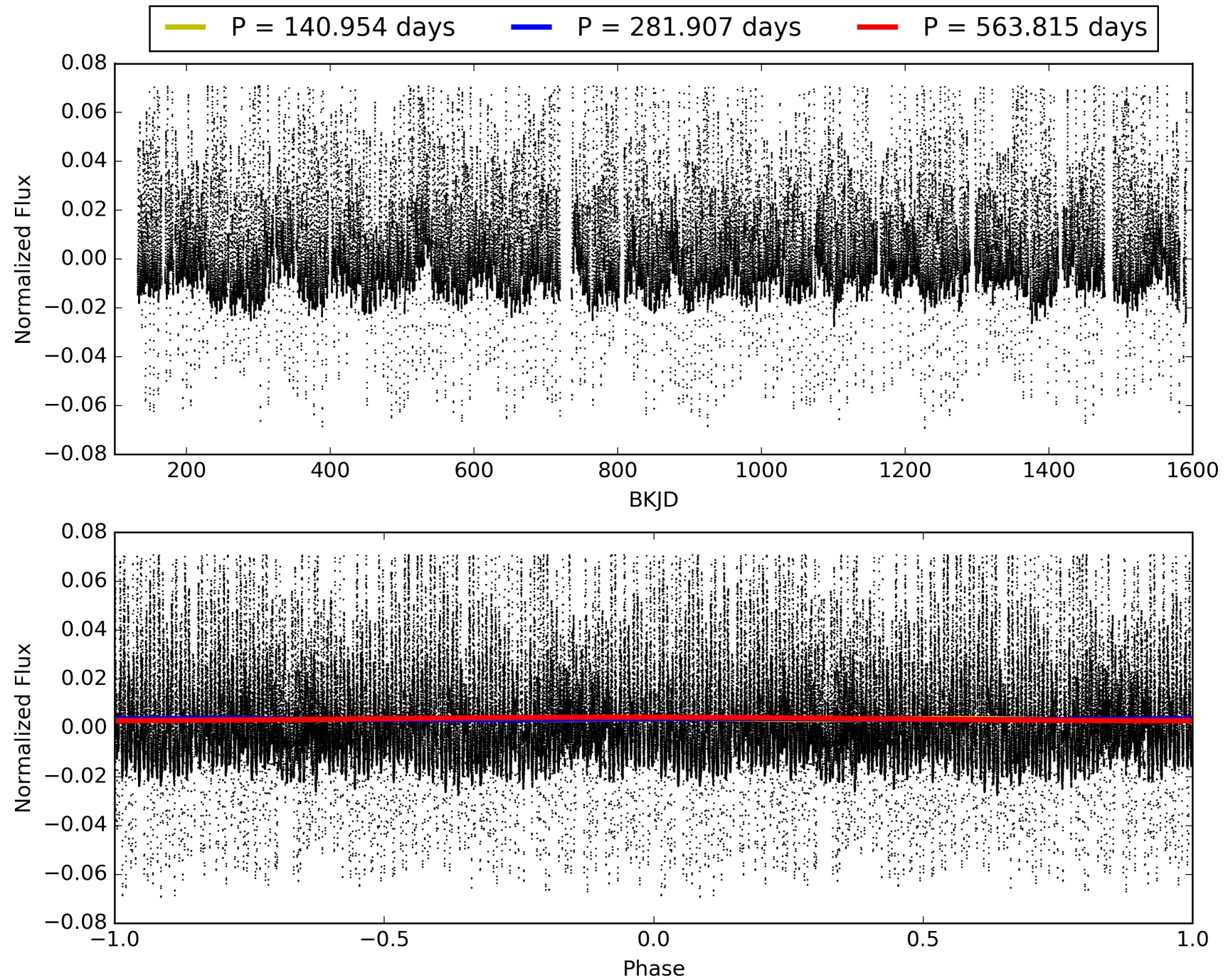
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:56:57 Z

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

TCE 007422883-04, PDC Light Curves

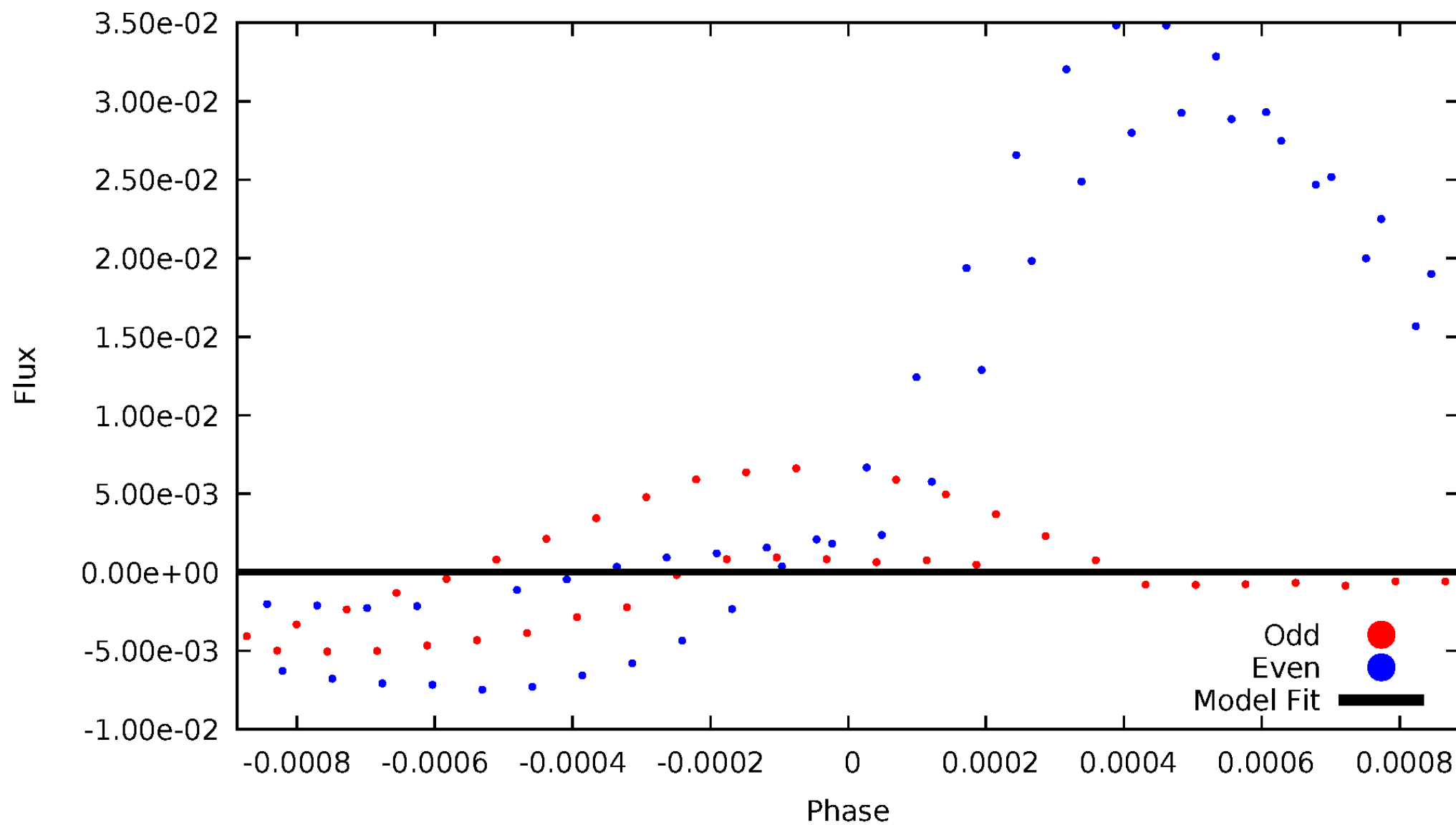


TCE 007422883-04



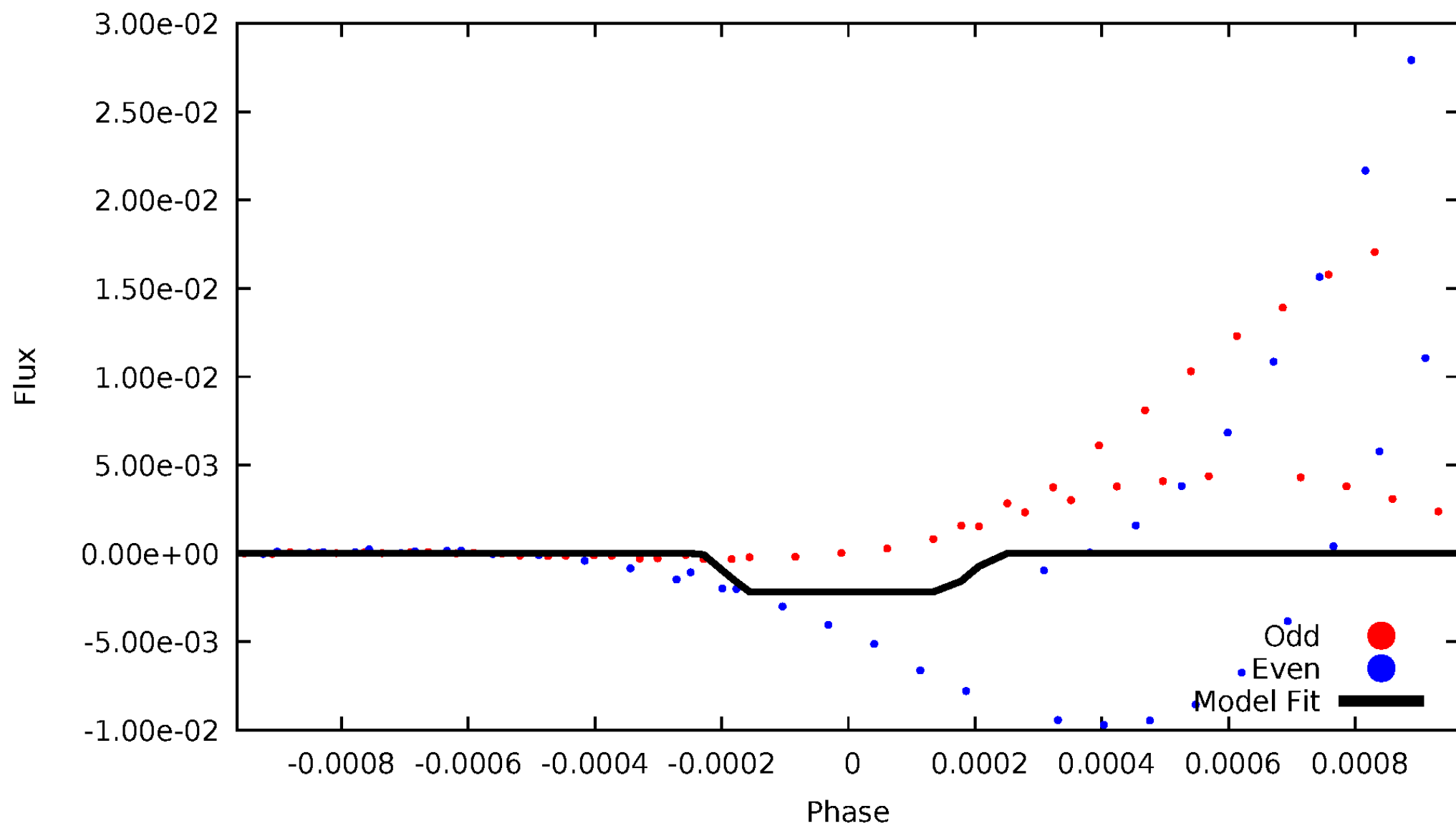
DV Odd/Even

TCE 007422883-04



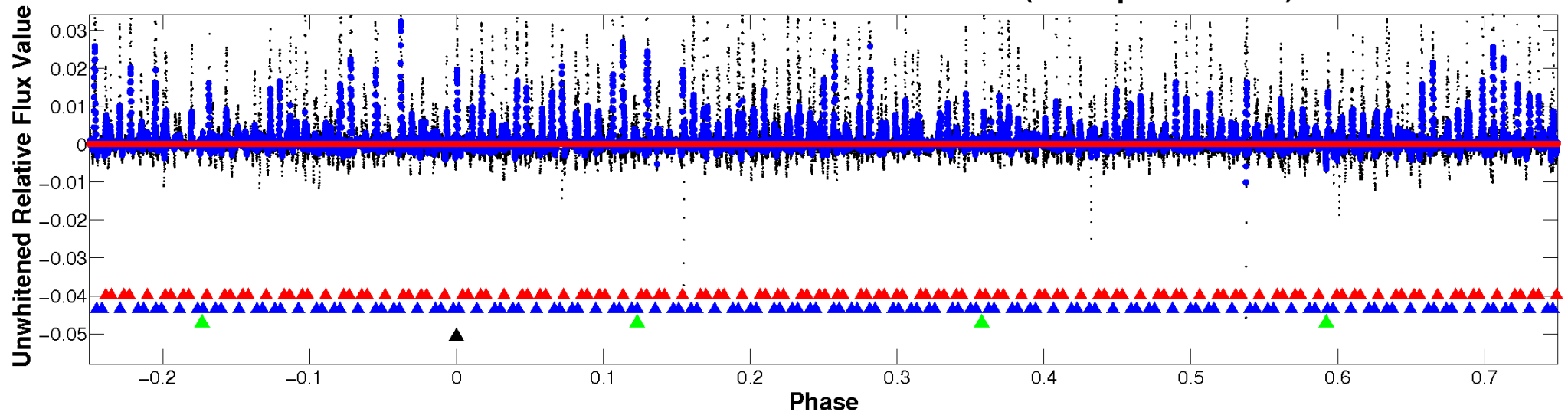
ALT Odd/Even

TCE 007422883-04

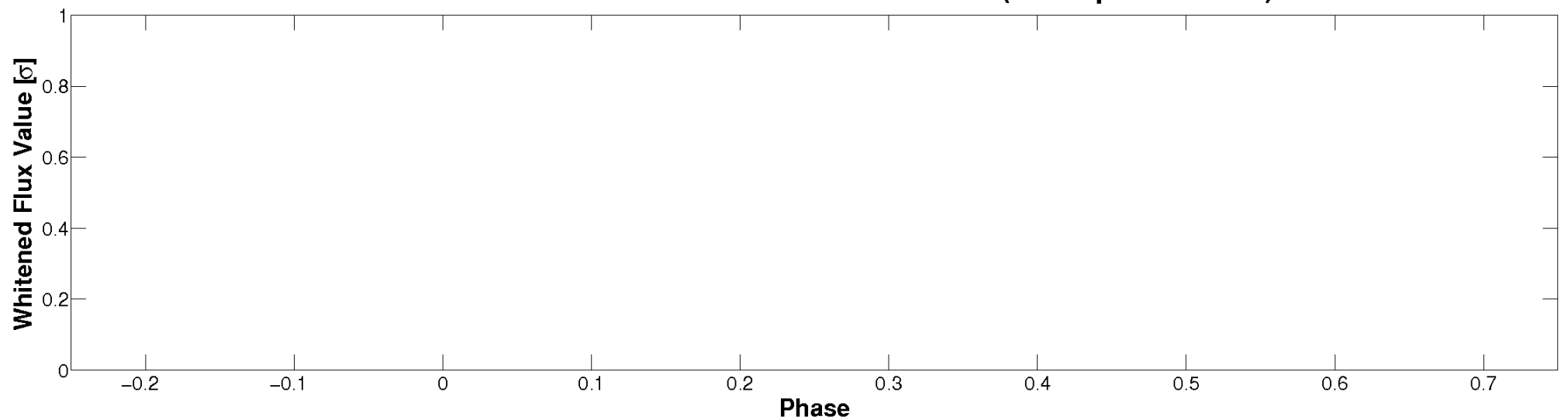


Non-Whitened Vs. Whitened Light Curve

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

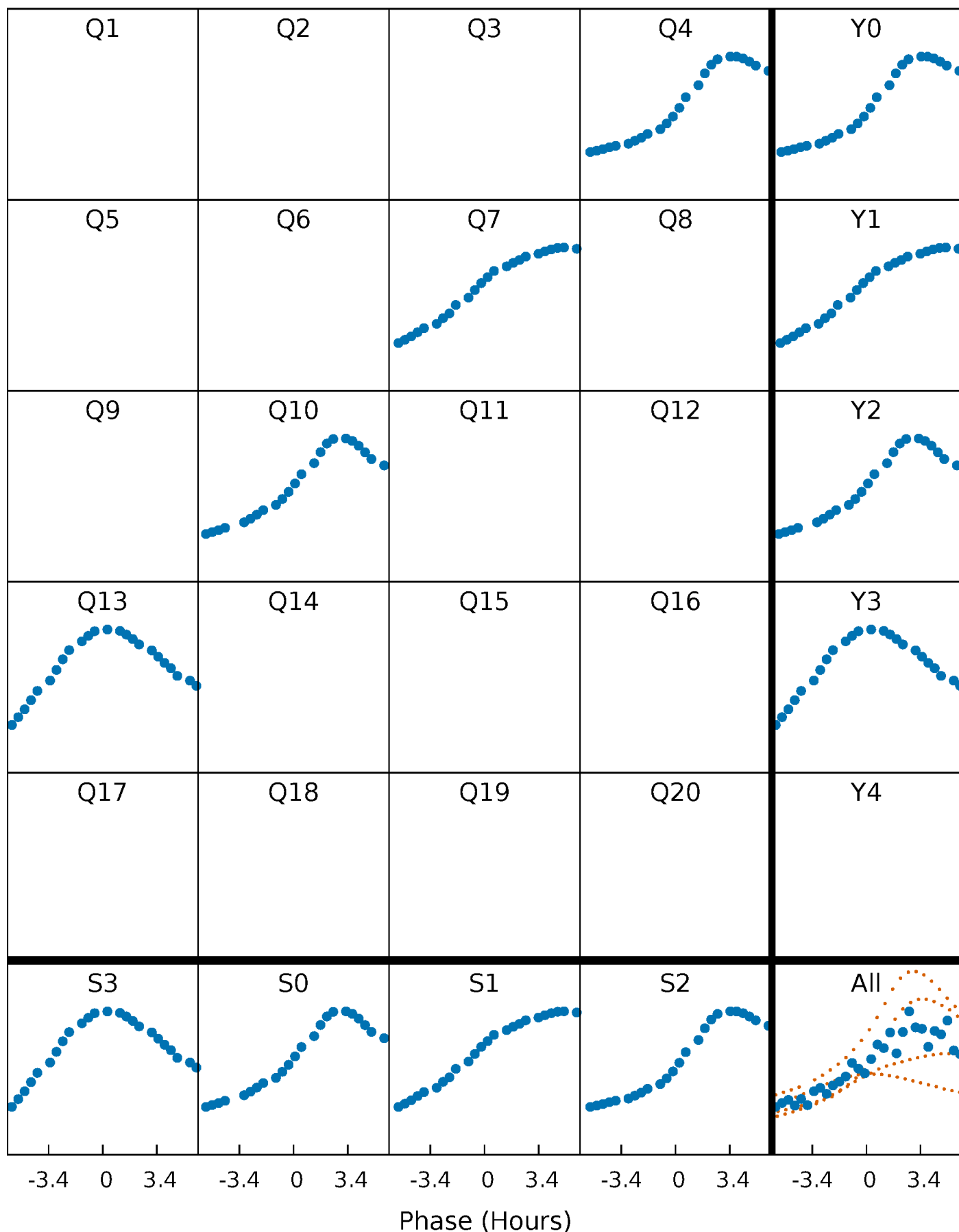


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



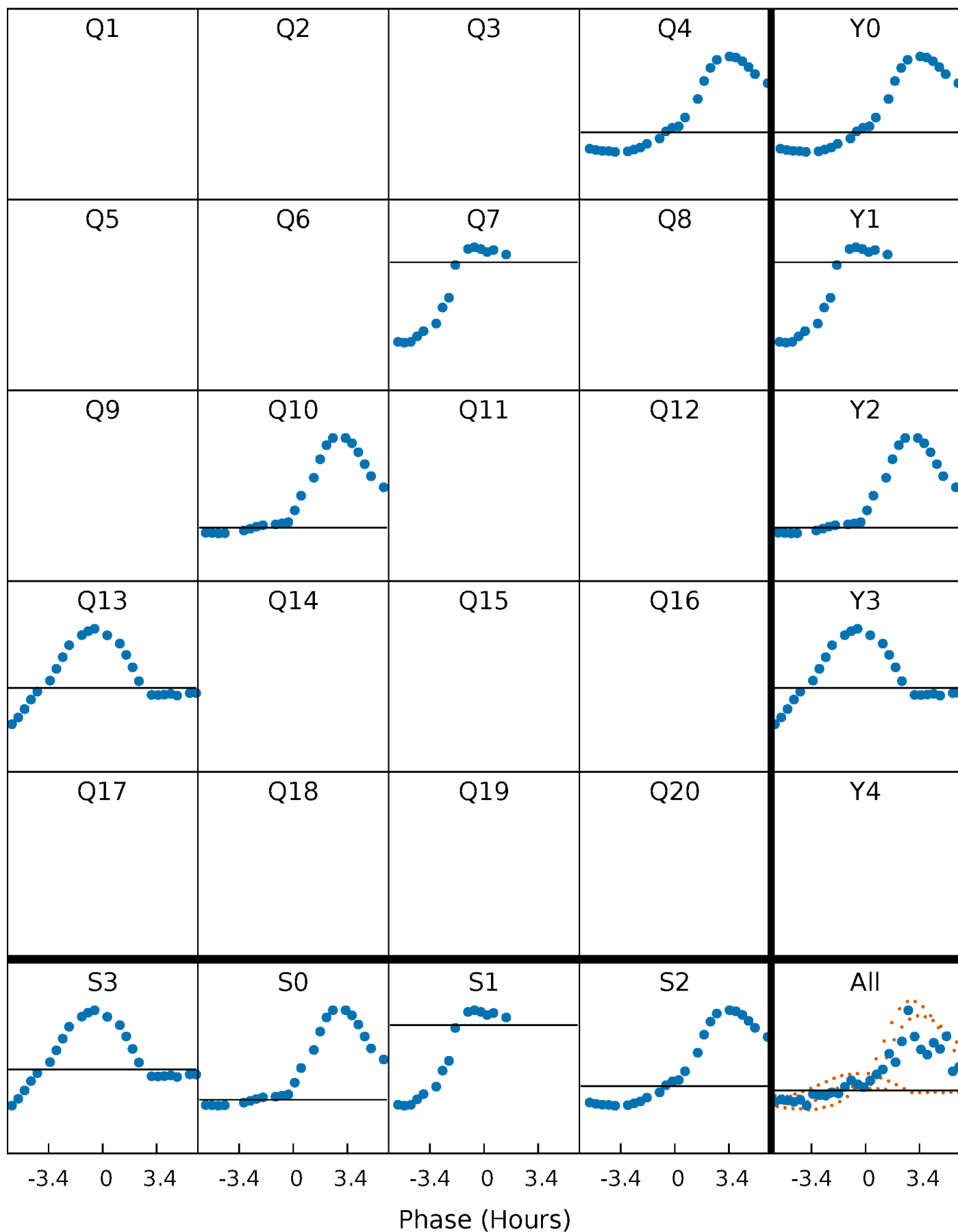
PDC Quarter-Phased Transit Curves

TCE 007422883-04 P=281.907334 Days $T_0=357.225831$ (BKJD)



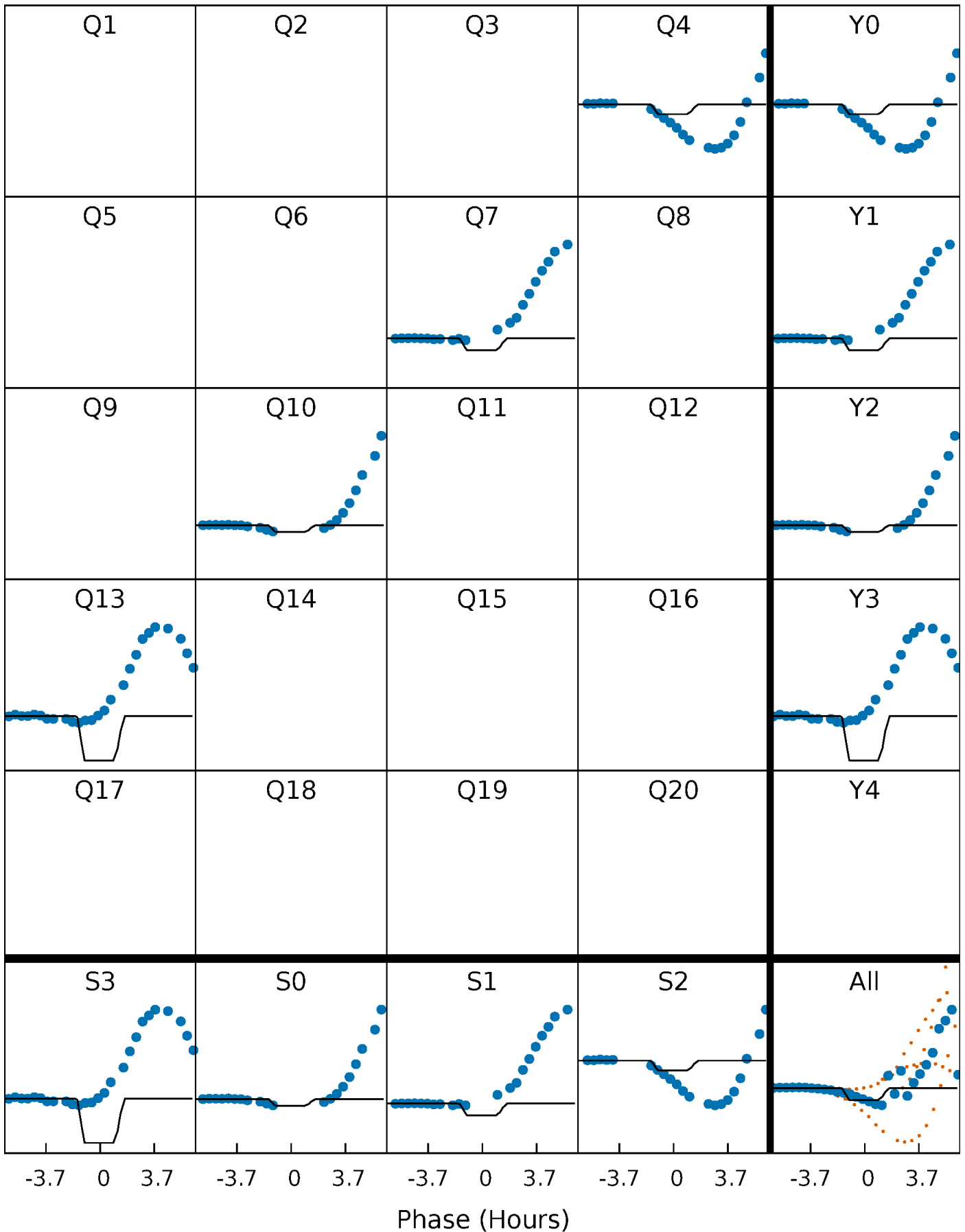
DV Quarter-Phased Transit Curves

TCE 007422883-04 P=281.907334 Days $T_0=357.225831$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

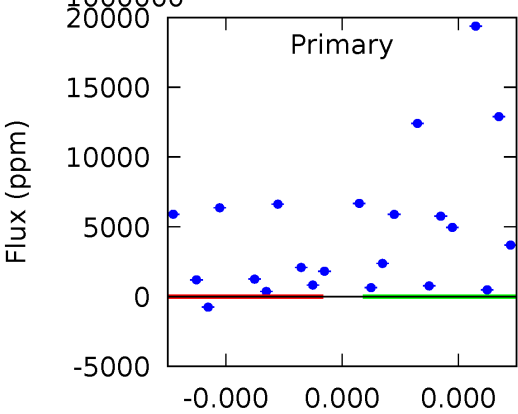
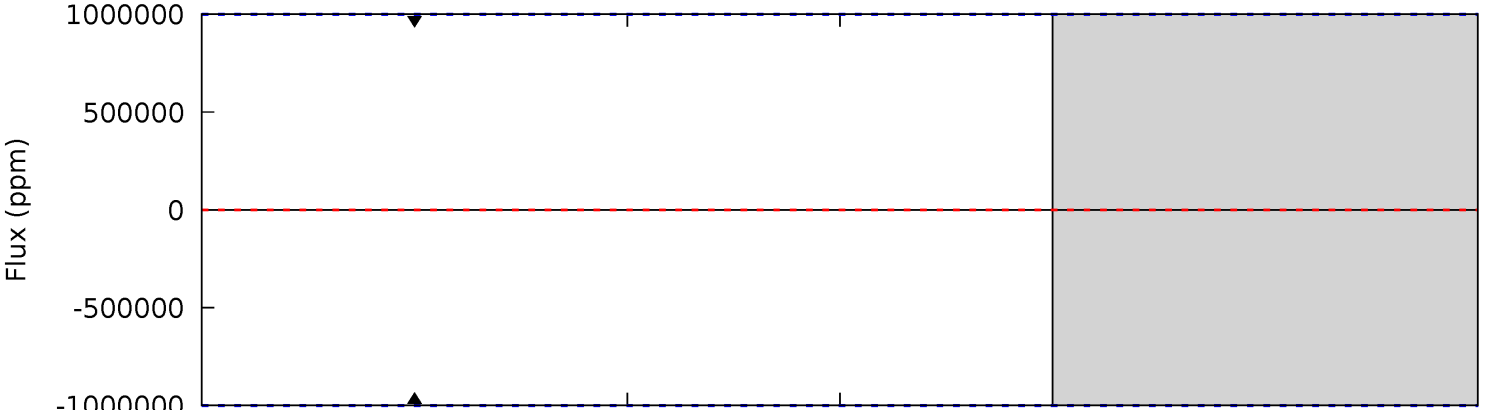
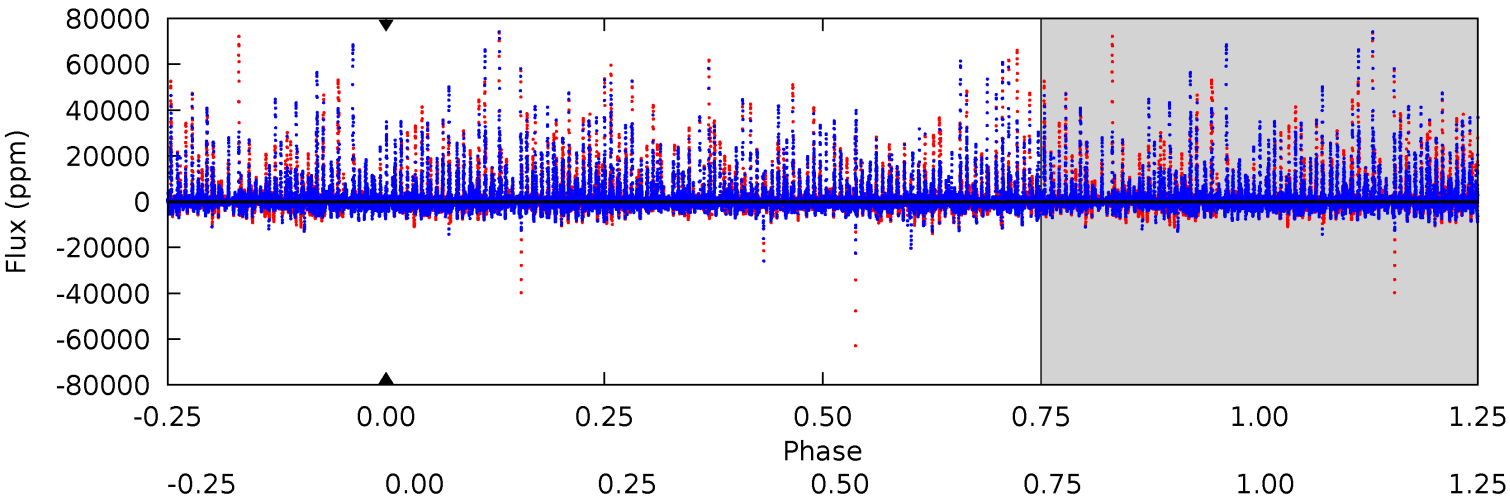
TCE 007422883-04 P=281.907334 Days $T_0=357.044087$ (BKJD)



DV Model-Shift Uniqueness Test

007422883-04, P = 281.907334 Days, E = 75.318497 Days

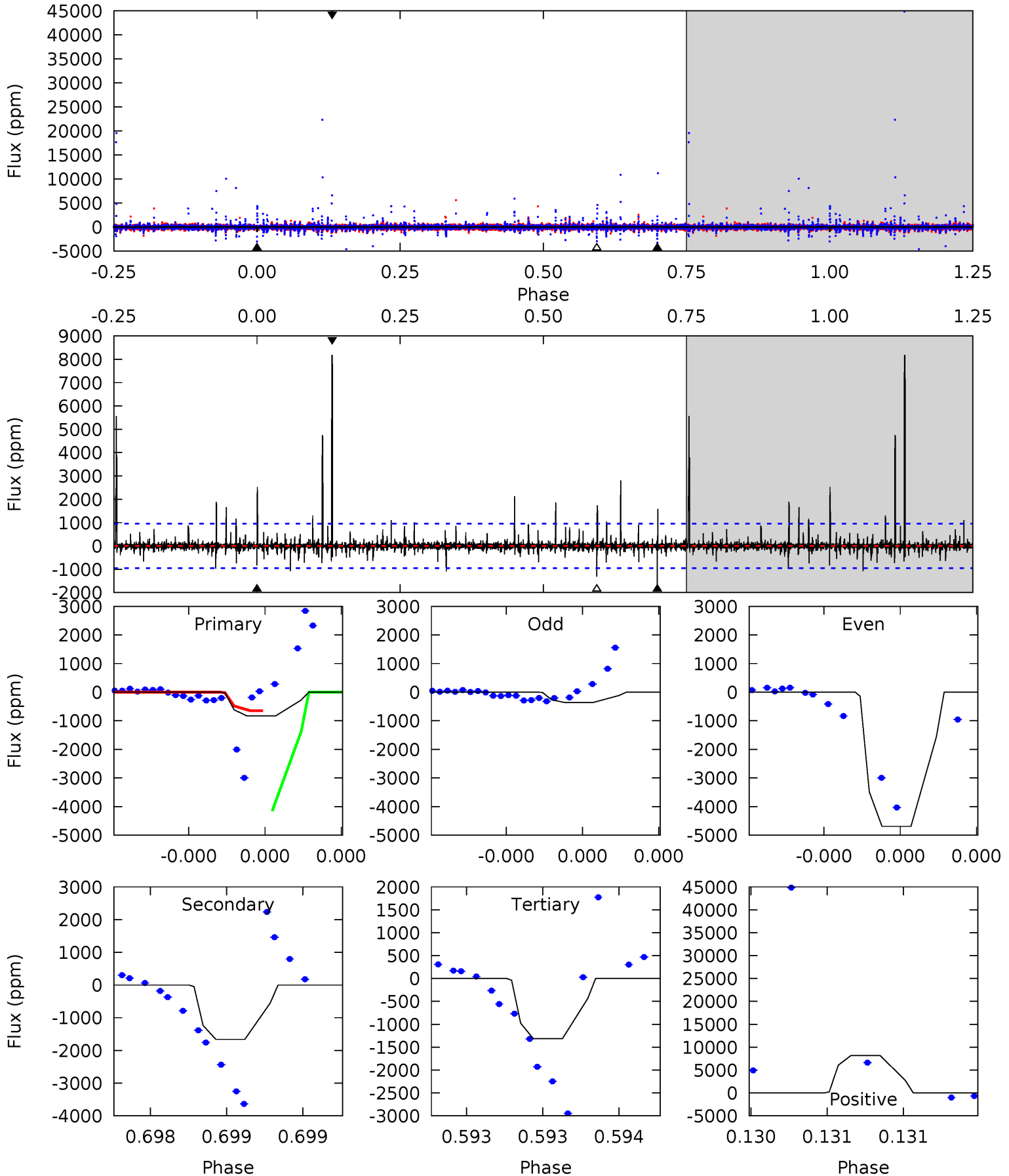
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

007422883-04, P = 281.907334 Days, E = 75.136753 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.85	9.73	7.70	47.8	5.60	3.52	0.89	-2.85	-43.0	2.03	-38.1	11.4	-5.27	0.83	7.56



Stellar Parameters For KIC 007422883

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6826^{+152}_{-220}	$4.187^{+0.153}_{-0.187}$	$-0.240^{+0.250}_{-0.300}$	$1.520^{+0.447}_{-0.298}$	$1.307^{+0.182}_{-0.223}$	$0.524^{+0.401}_{-0.262}$
	+2%/-3%	+4%/-4%	+104%/-125%	+29%/-20%	+14%/-17%	+77%/-50%
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 007422883-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$12.39^{+12.93}_{-8.45}$	542^{+40}_{-34}	2993^{+30684}_{-29695}	$311^{+586800}_{-417521}$
Alt.	-1662 ± 171	$13.91^{+15.16}_{-9.71}$	541^{+40}_{-35}	4780^{+4124}_{-1087}	3993^{+39788}_{-3099}

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 $A_{obs} \gg 1.0$

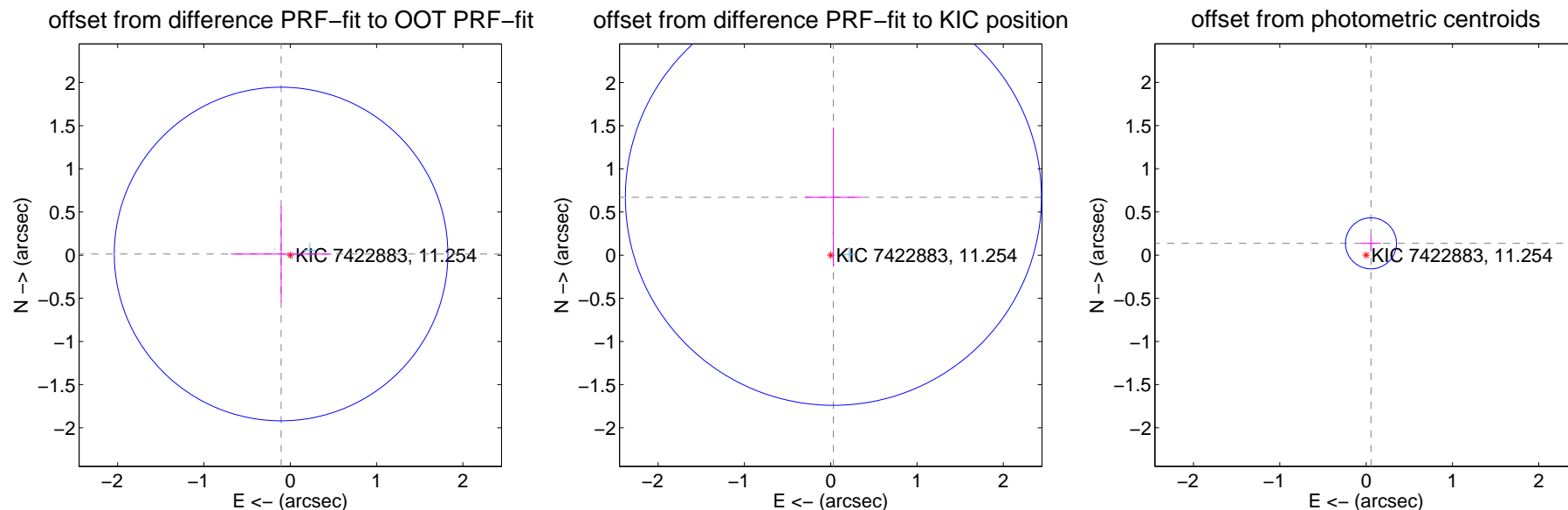
DV Centroid Data

Supplemental centroid analysis for 007422883-04. **Kepler magnitude: 11.25.** Transit SNR -1.00

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.107 ± 0.644	0.17	0.107 ± 0.583	0.013 ± 0.554
PRF-fit source offset from KIC position	0.671 ± 0.803	0.84	-0.031 ± 0.326	0.671 ± 0.804
photometric centroid source offset	0.15 ± 0.10	1.50	-0.06 ± 0.12	0.14 ± 0.09



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

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

Q1 no difference image



Q1 no OOT image



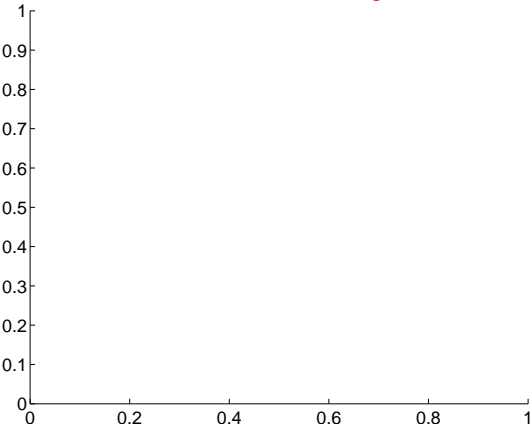
Q2 no difference image



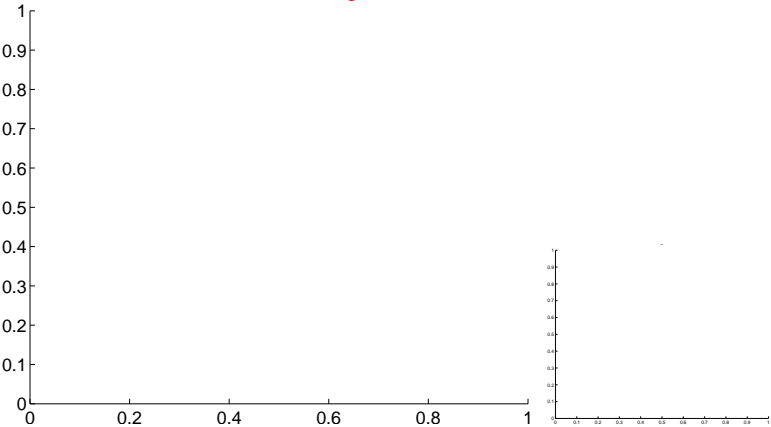
Q2 no OOT image



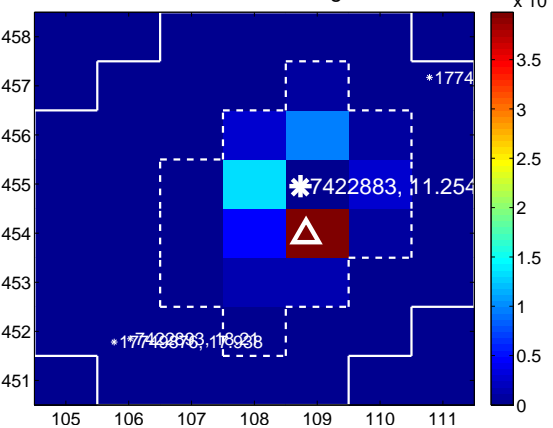
Q3 no difference image



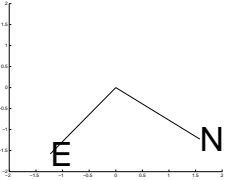
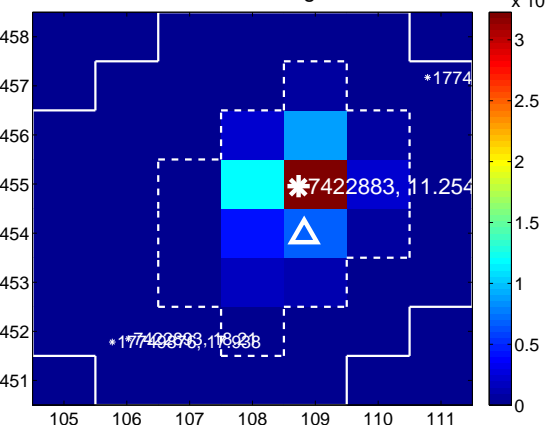
Q3 no OOT image



Q4 difference image



Q4 OOT image



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

Q5 no difference image



Q5 no OOT image



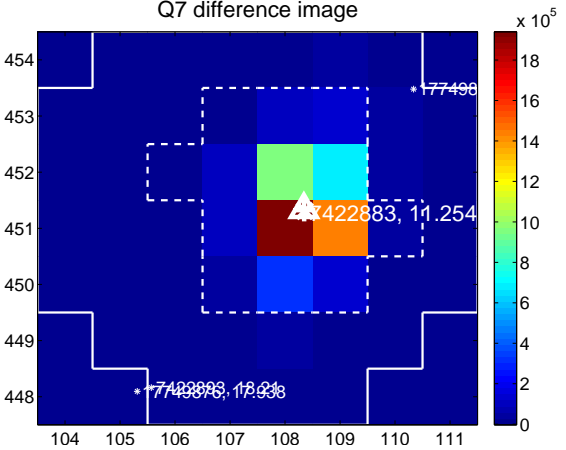
Q6 no difference image



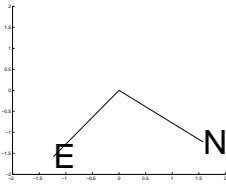
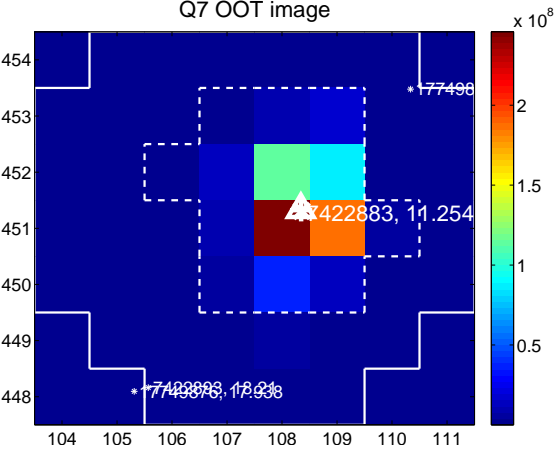
Q6 no OOT image



Q7 difference image



Q7 OOT image



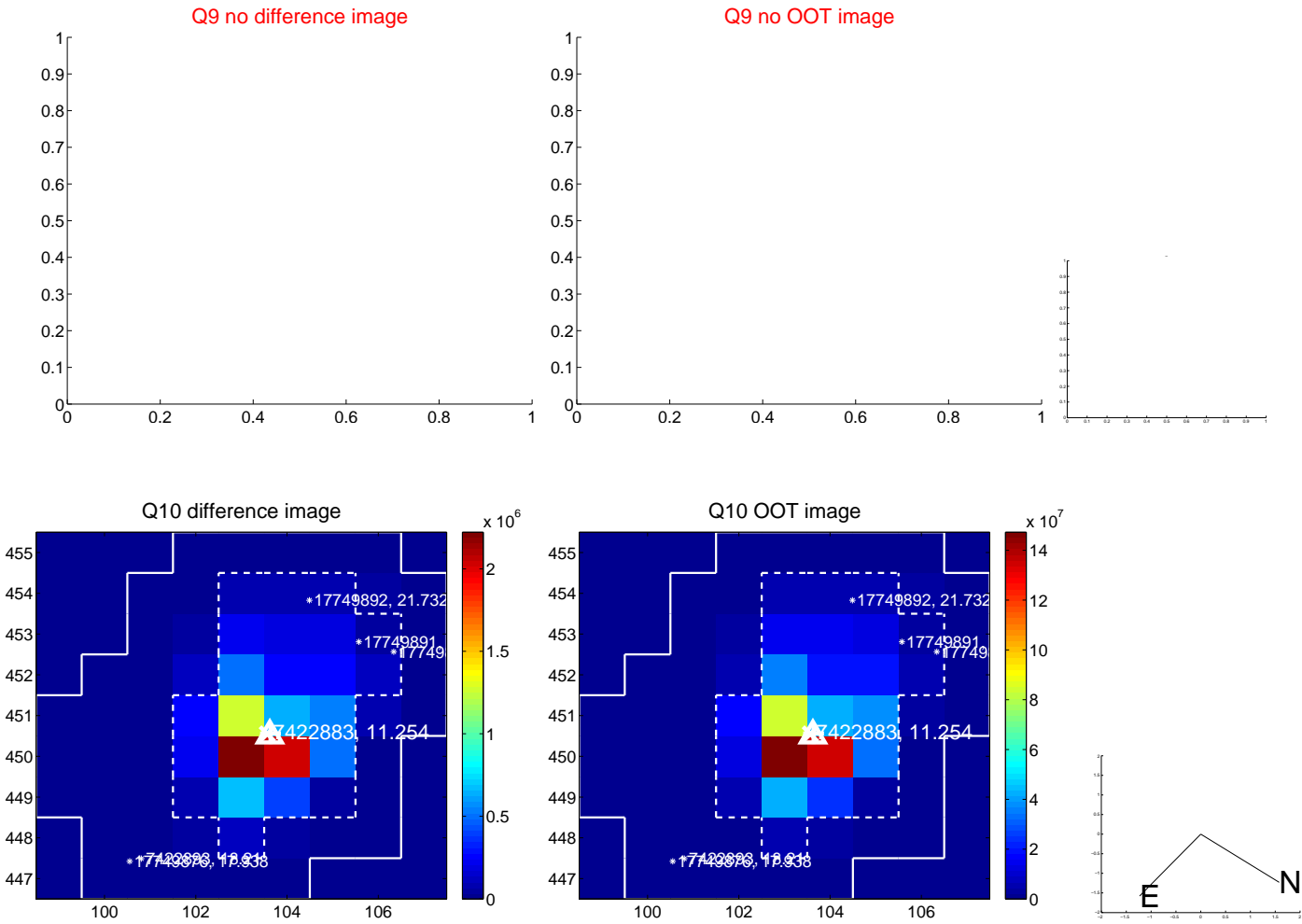
Q8 no difference image



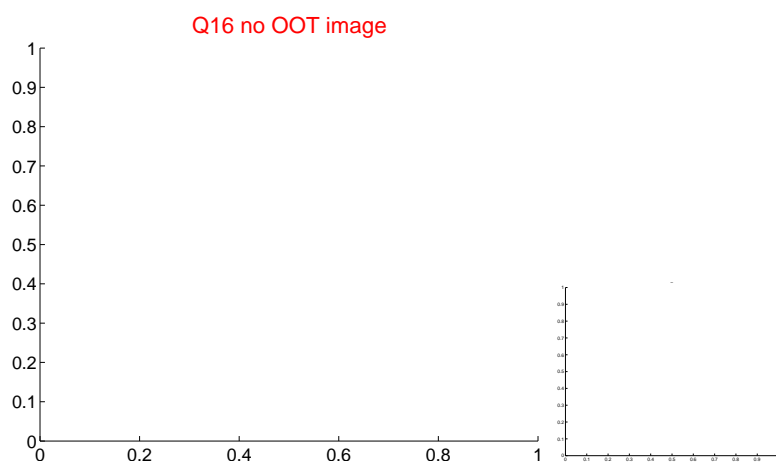
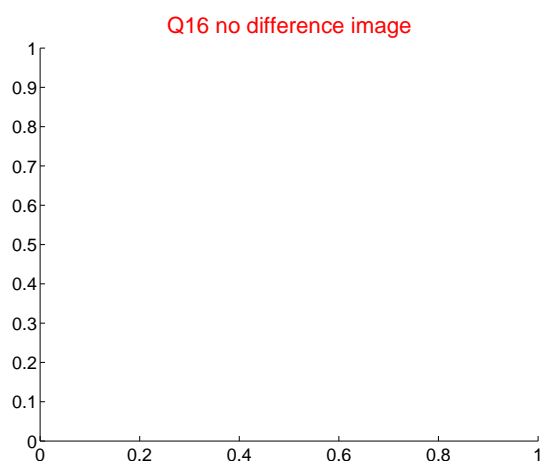
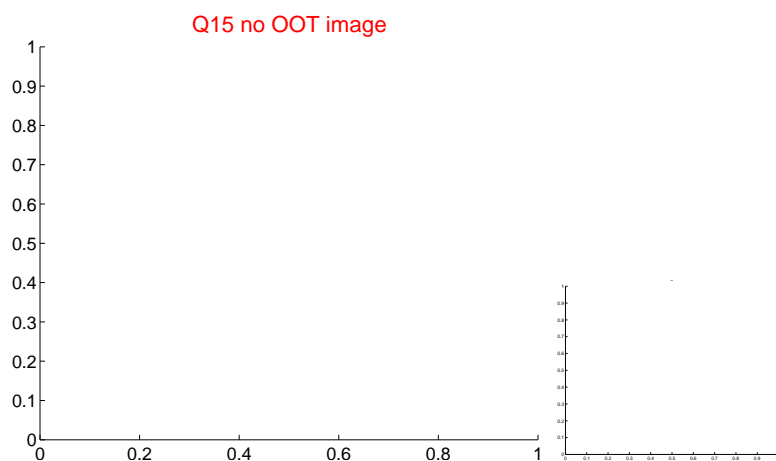
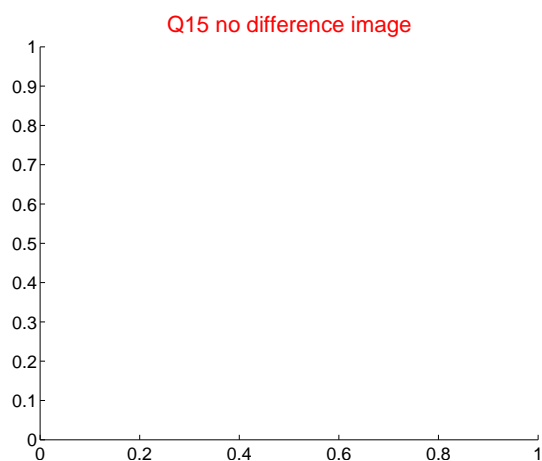
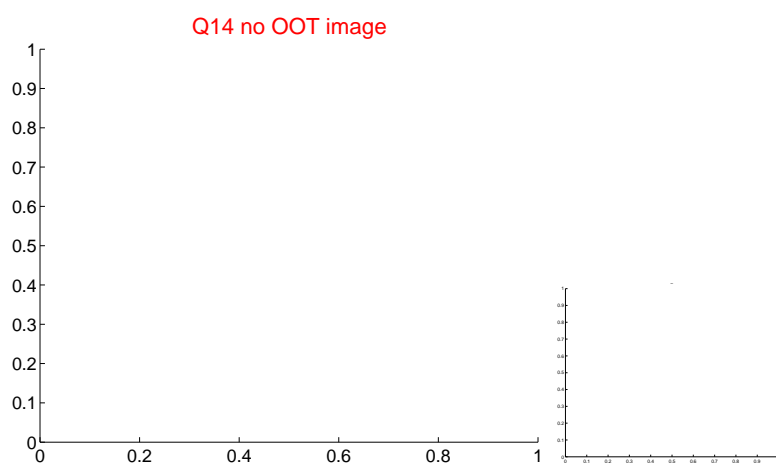
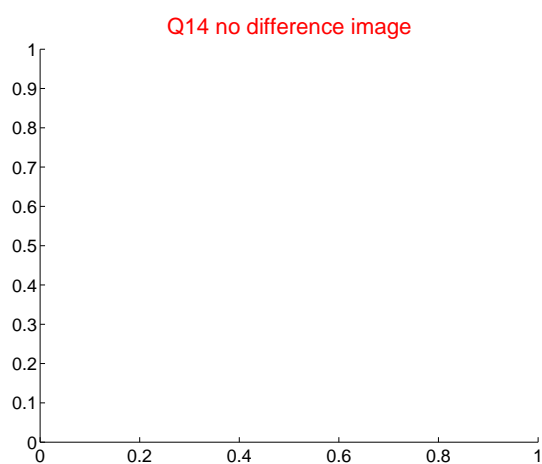
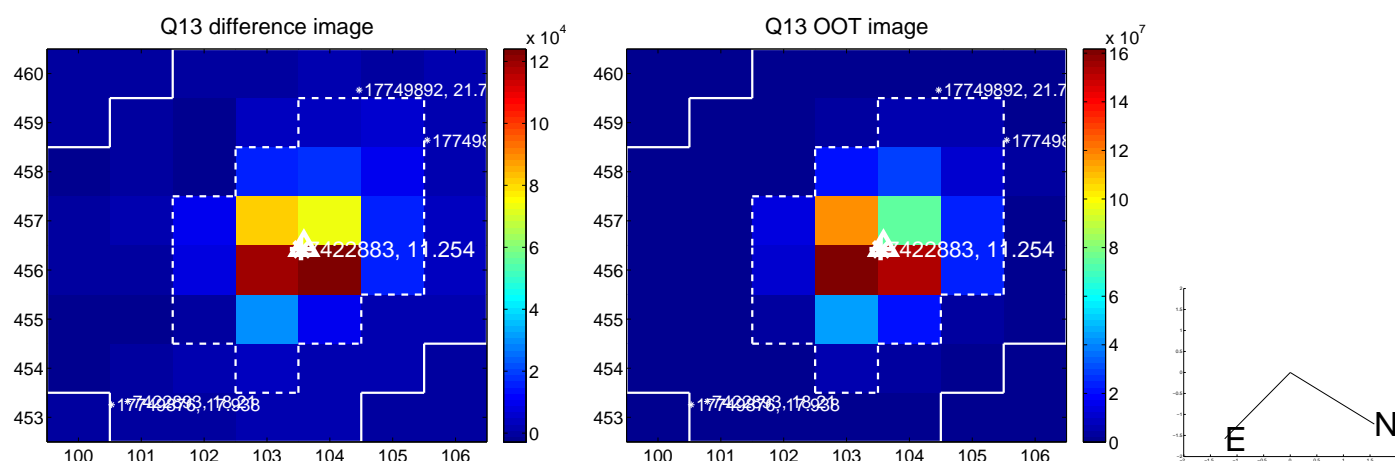
Q8 no OOT image



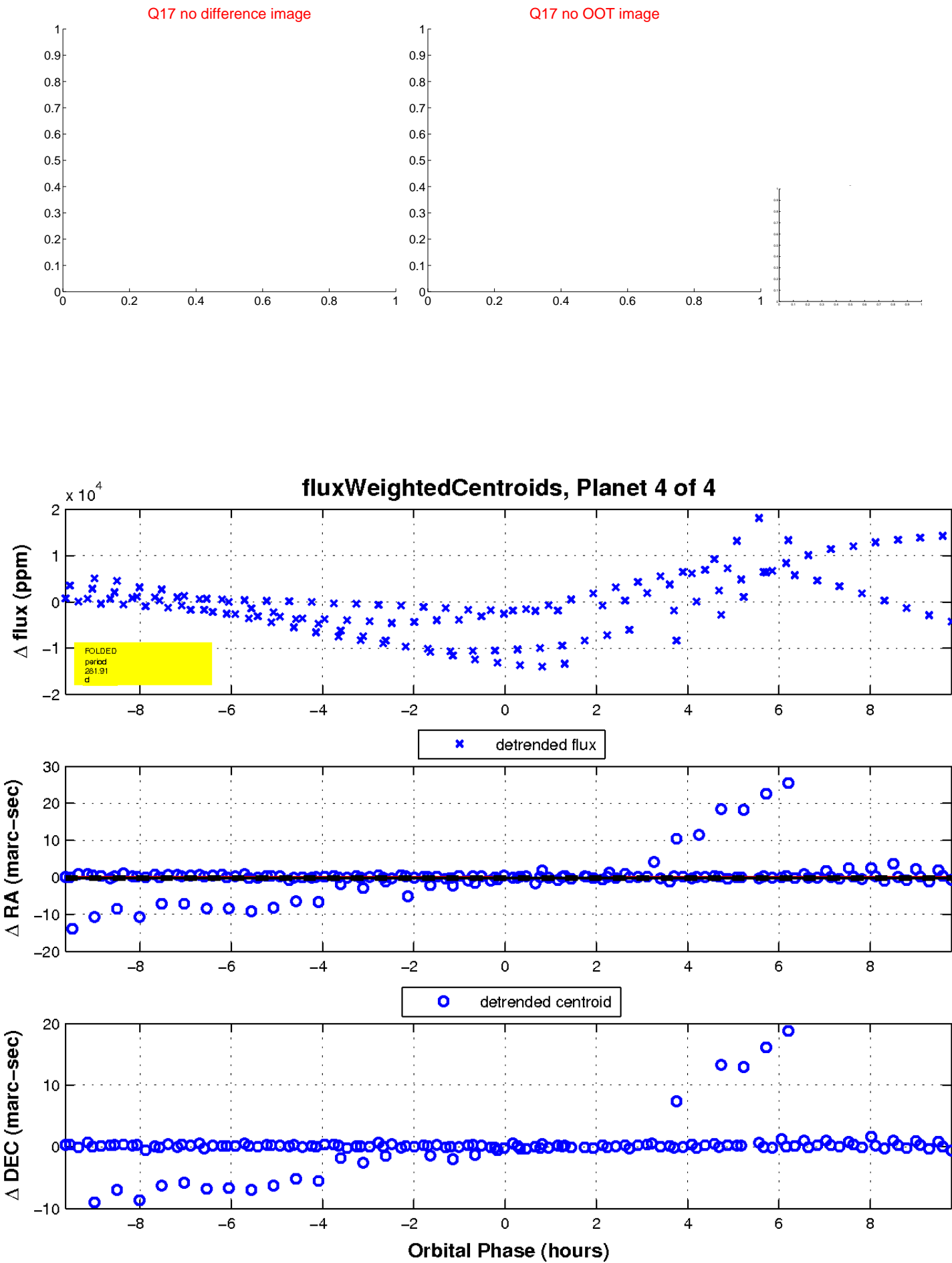
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \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

