

KIC 007281668

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})
007281668-01	OBS	7829.01	0.566781	131.838192	25.3	2.621	10.9	12.7	0.87	5629	0.52	3823.07
007281668-02	OBS	No	140.688804	191.353746	284.8	20.744	17.0	5.8	0.87	5629	1.72	2.45
007281668-03	OBS	No	123.185790	201.975890	241.6	4.204	8.7	5.6	0.87	5629	1.44	2.93
007281668-05	OBS	No	157.882065	149.360481	176.6	7.968	8.1	3.9	0.87	5629	1.19	2.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007281668-01	OBS	FP	0.00	0	0	1	1	HALO_GHOST—EPHEM_MATCH
007281668-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
007281668-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007281668-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

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

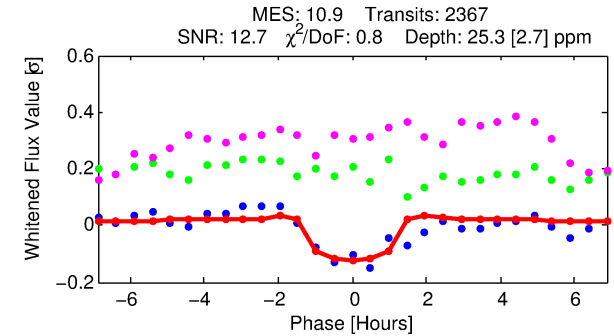
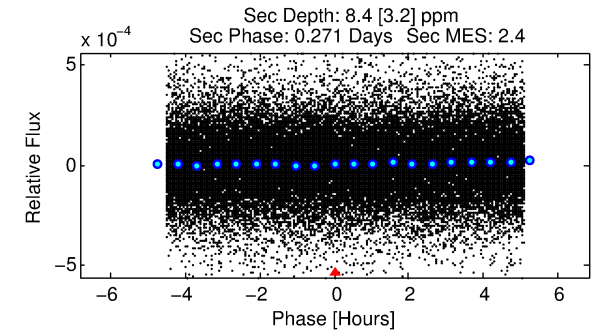
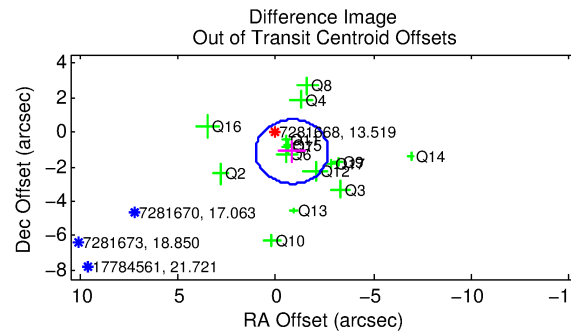
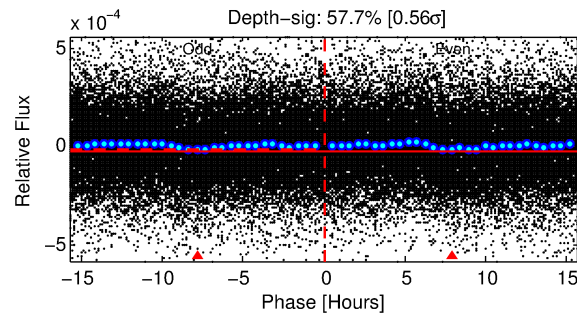
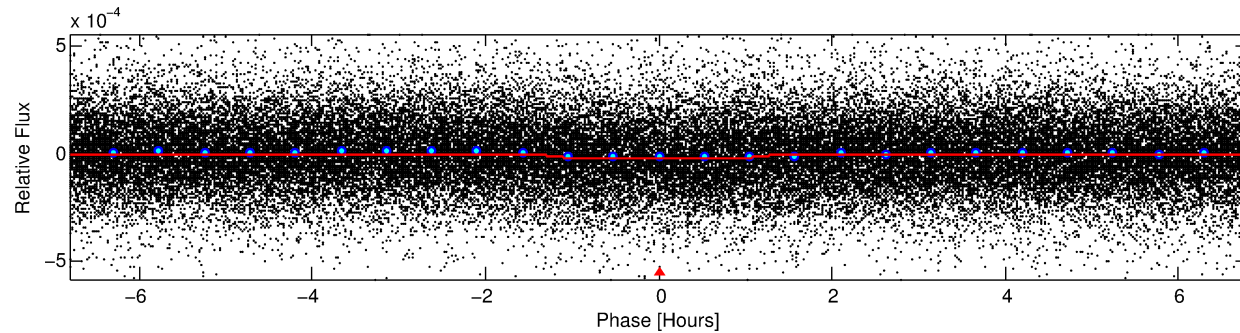
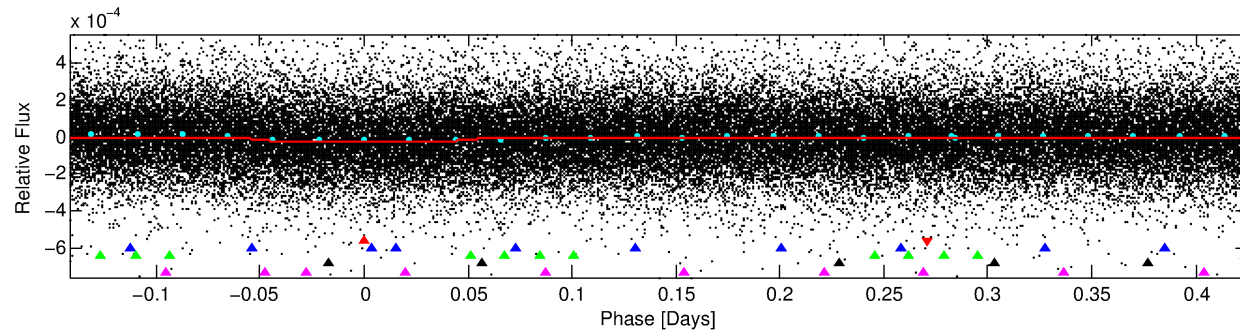
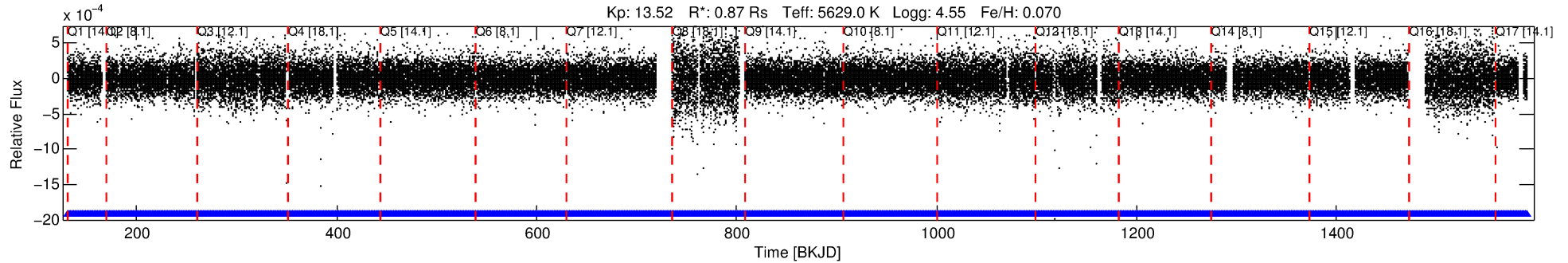
Ephemeris Match Information For 007281668-01

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist ($''$)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
007281668-01	7281668	RR-Lyr-pri	7198959	1:1	811.8	87	184	7.86	13.52	24932.00	Direct-PRF	0	3.49	17.77

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 7281668 Candidate: 1 of 5 Period: 0.567 d



DV Fit Results:

Period = 0.56678 [0.00001] d
Epoch = 131.8382 [0.0021] BKJD
Rp/R* = 0.0055 [0.0021]
a/R* = 1.20 [0.65]
b = 0.90 [0.39]
Seff = 3823.07 [804.44]
Teff = 2005 [105] K
Rp = 0.52 [0.21] Re
a = 0.0133 [0.0017] AU
Ag = 3.02 [2.64] [0.76 σ]
Teffp = 4085 [872] K [2.37 σ]

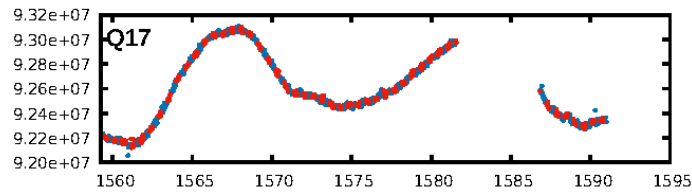
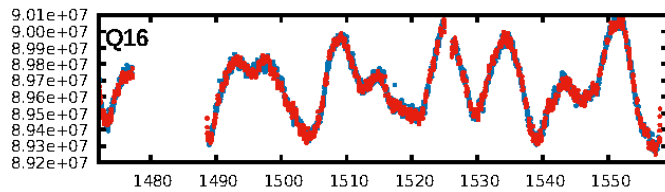
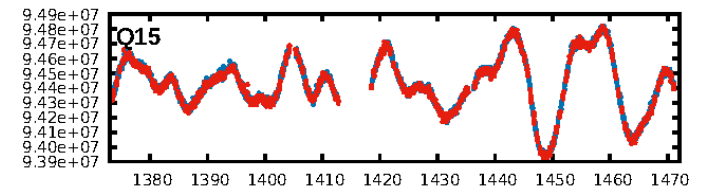
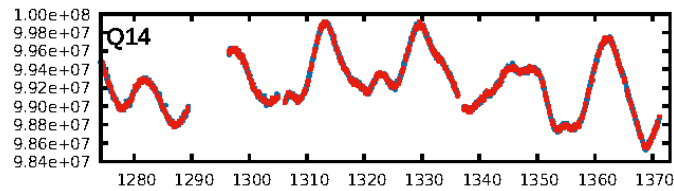
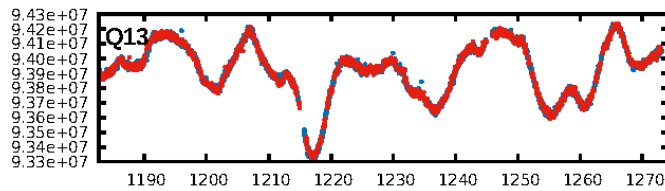
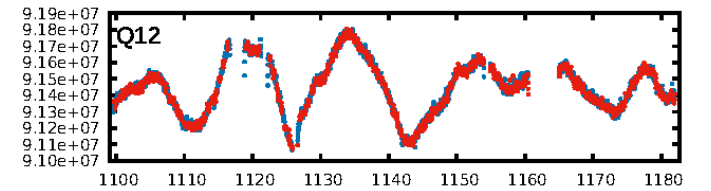
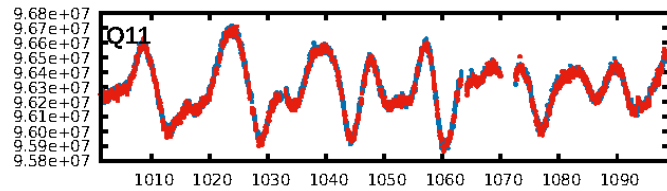
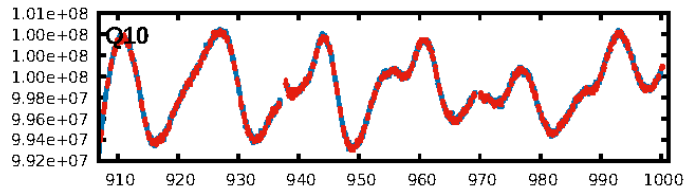
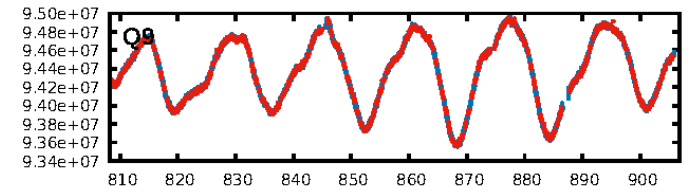
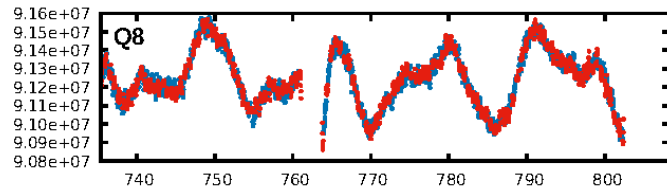
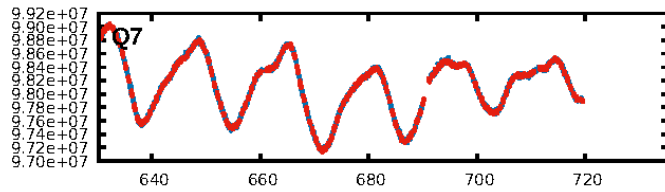
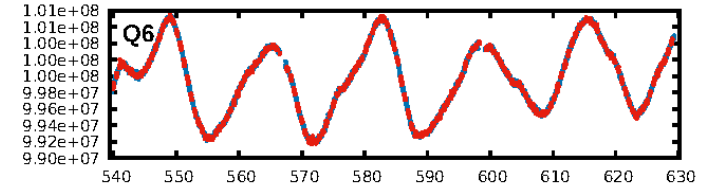
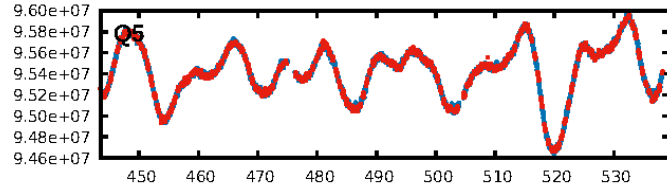
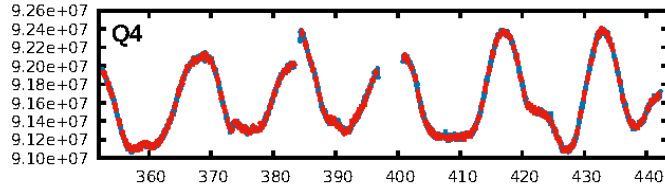
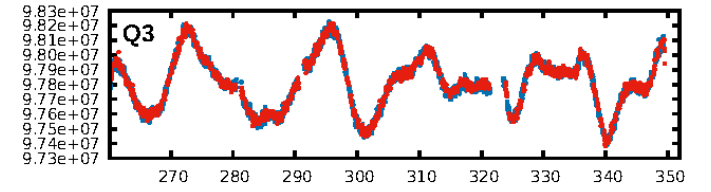
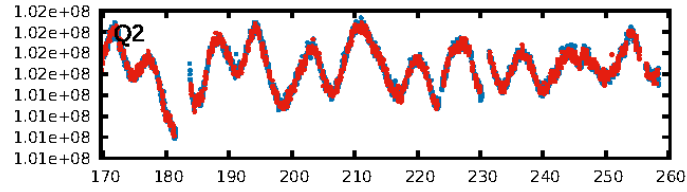
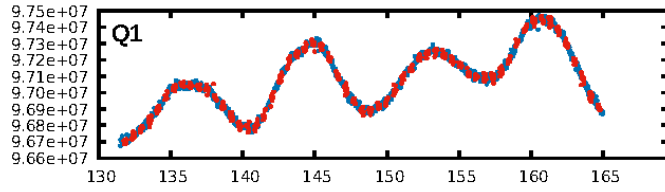
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [593.99 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.71e-21
RollingBand-fgt: 1.00 [2262/2262]
GhostDiagnostic-chr: -0.1988
Centroid-sig: 0.1%
Centroid-so: 1.311 arcsec [2.00 σ]
OotOffset-rm: 1.400 arcsec [2.26 σ]
KicOffset-rm: 1.642 arcsec [2.78 σ]
OotOffset-st: 4/4/4/3 [15]
KicOffset-st: 4/4/4/3 [15]
DiffImageQuality-fgm: 0.07 [1/15]
DiffImageOverlap-fno: 1.00 [17/17]

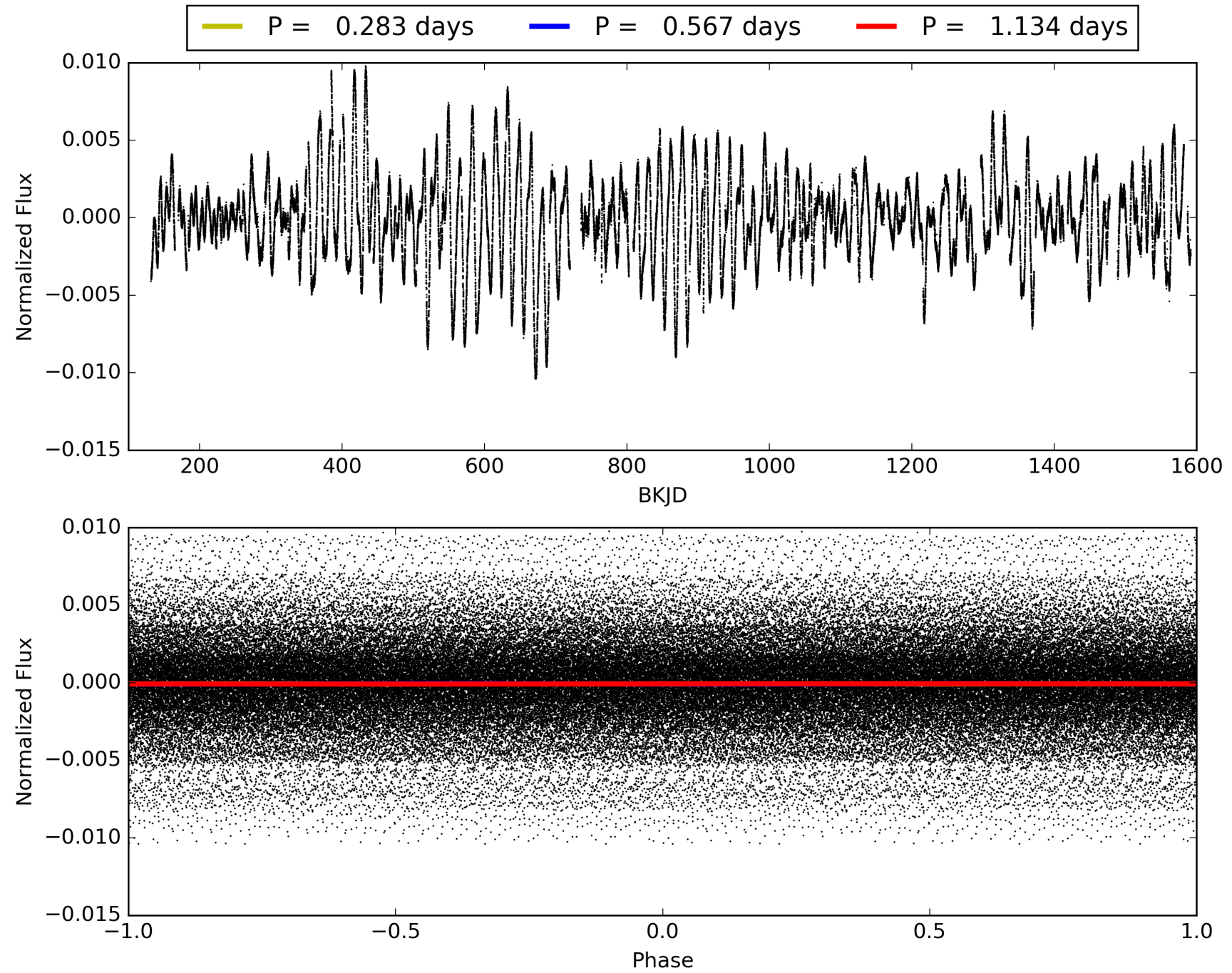
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:38:21 Z

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

TCE 007281668-01, PDC Light Curves

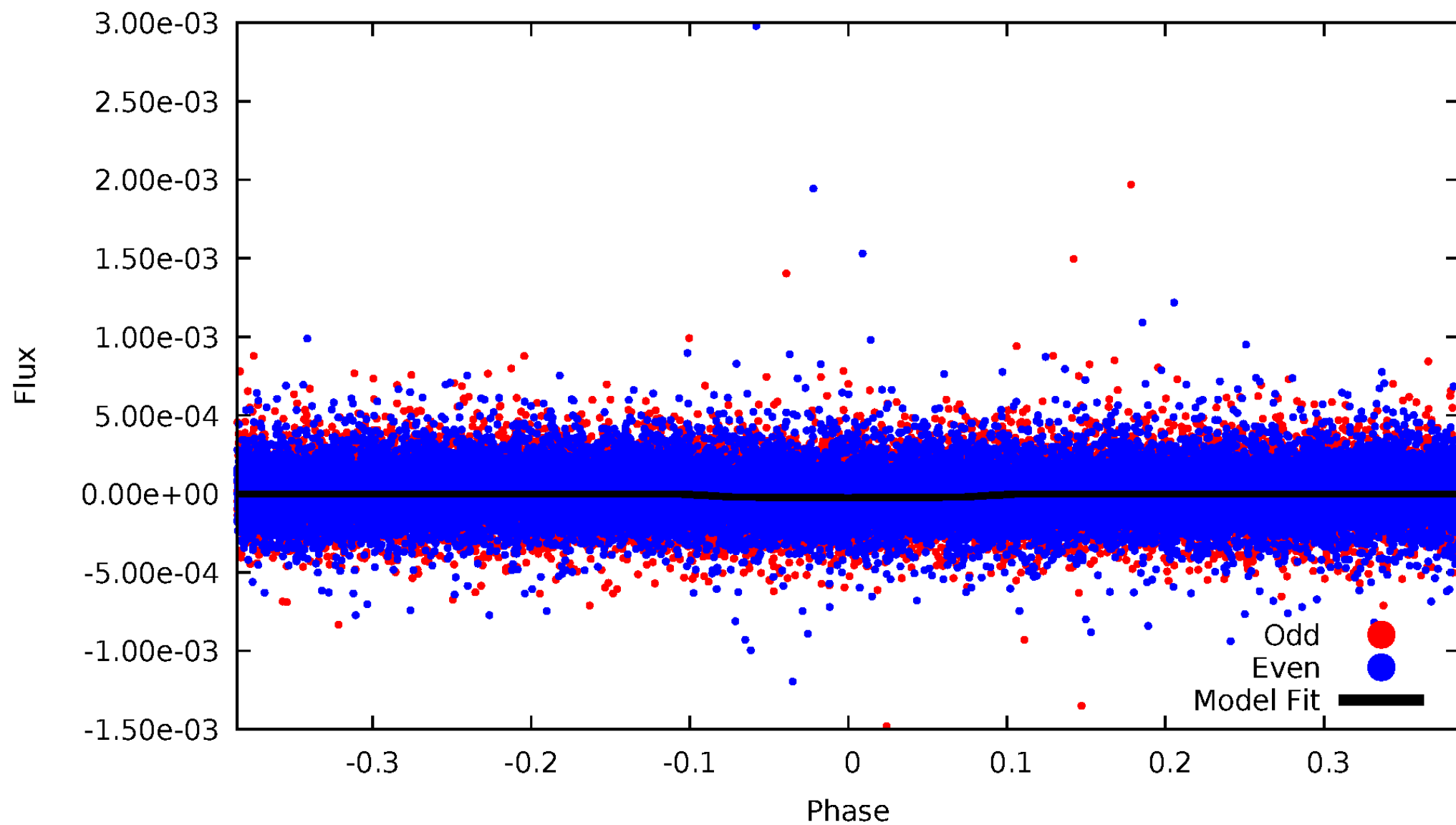


TCE 007281668-01



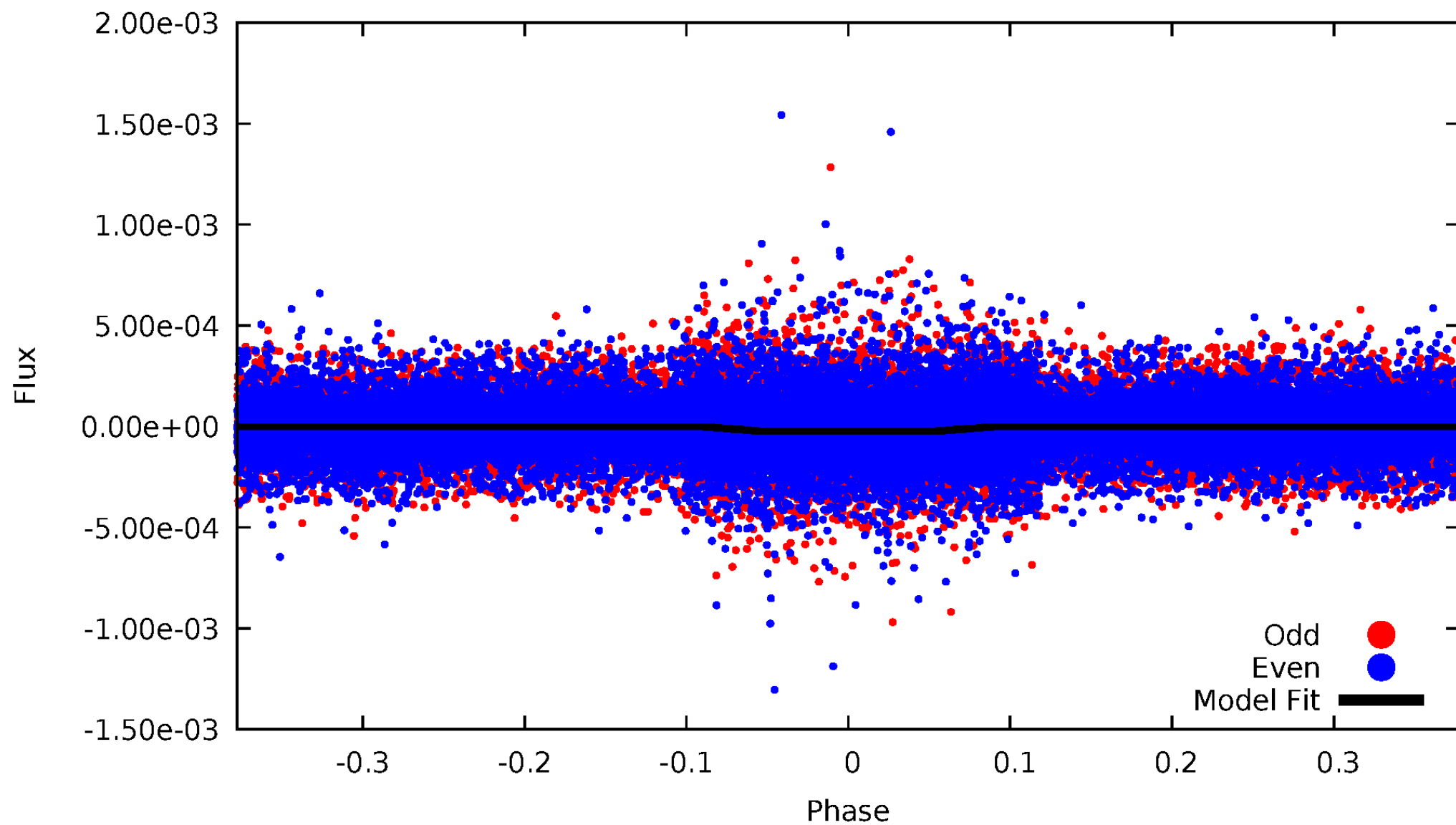
DV Odd/Even

TCE 007281668-01



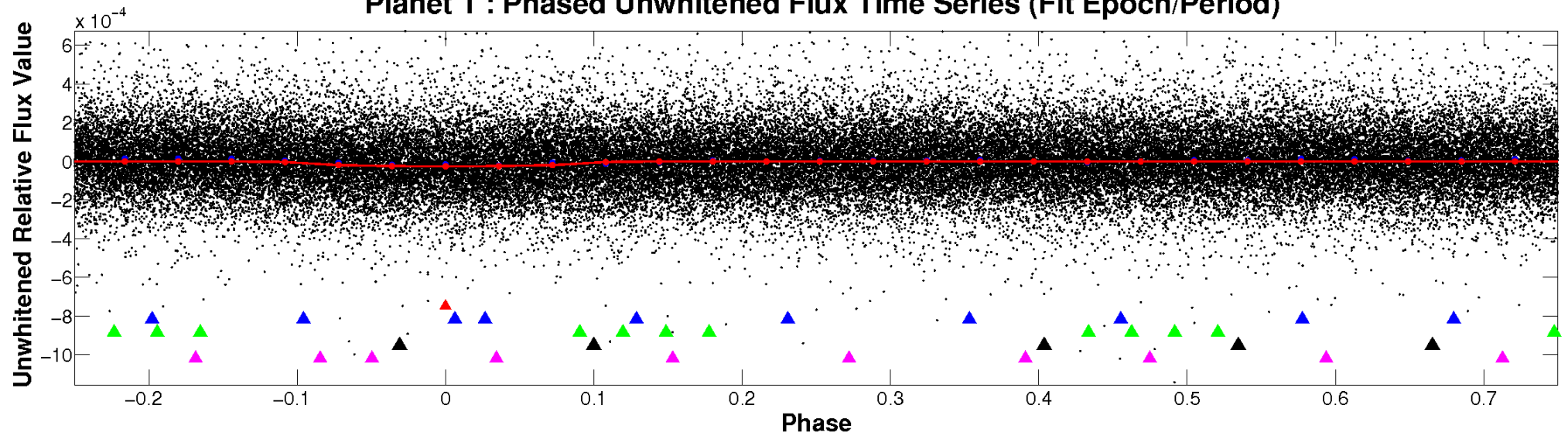
ALT Odd/Even

TCE 007281668-01

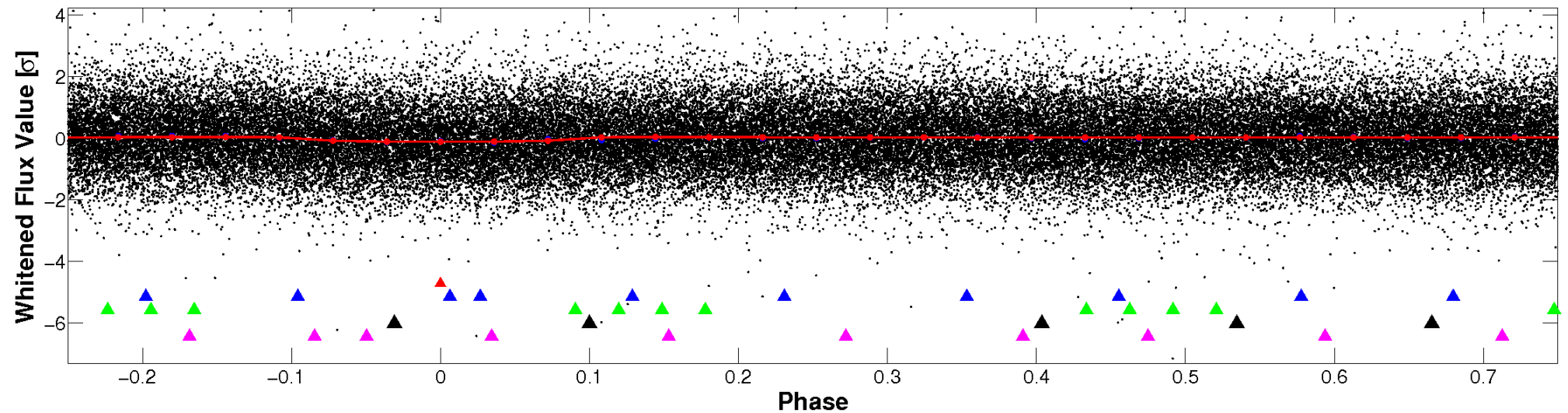


Non-Whitened Vs. Whitened Light Curve

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

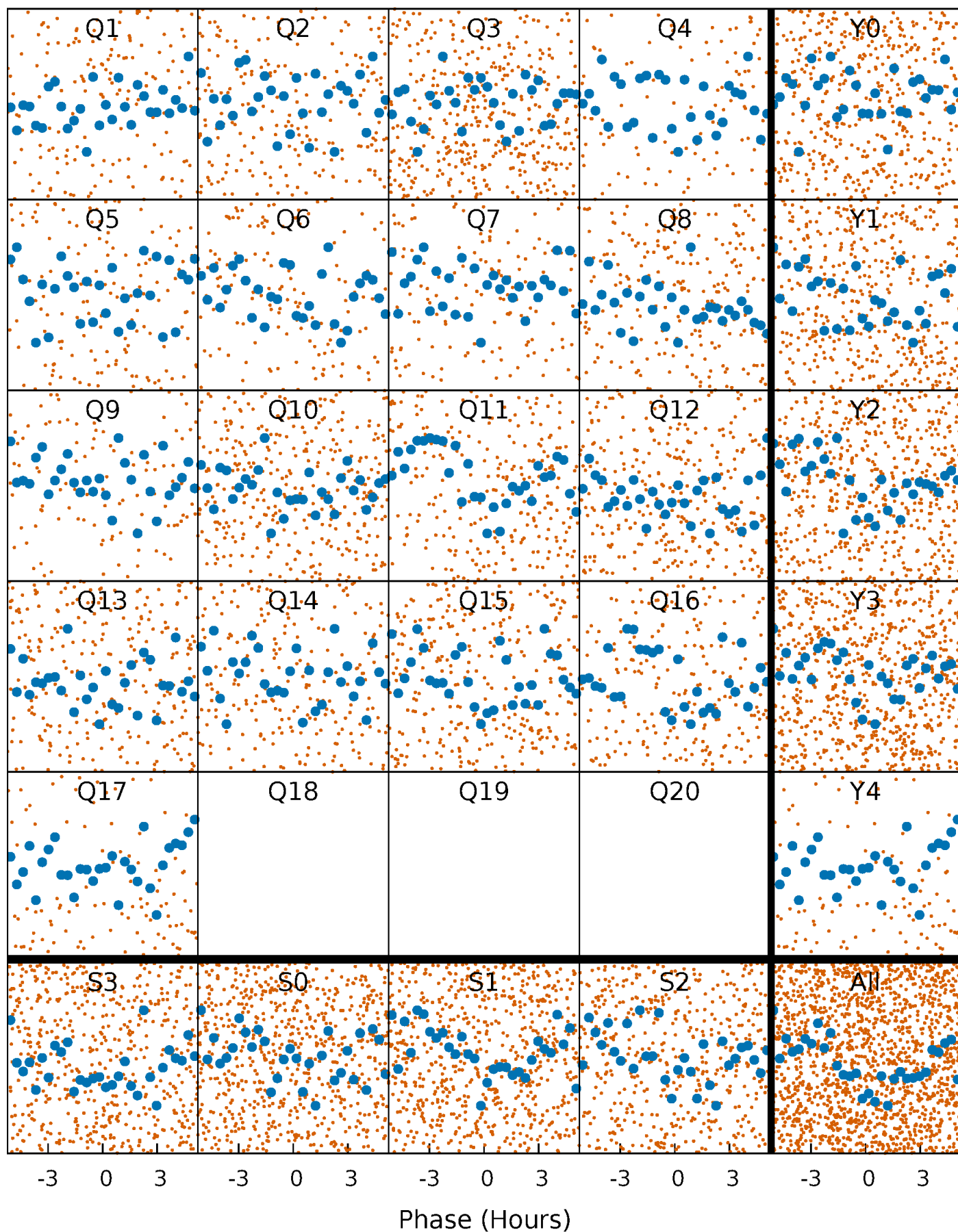


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



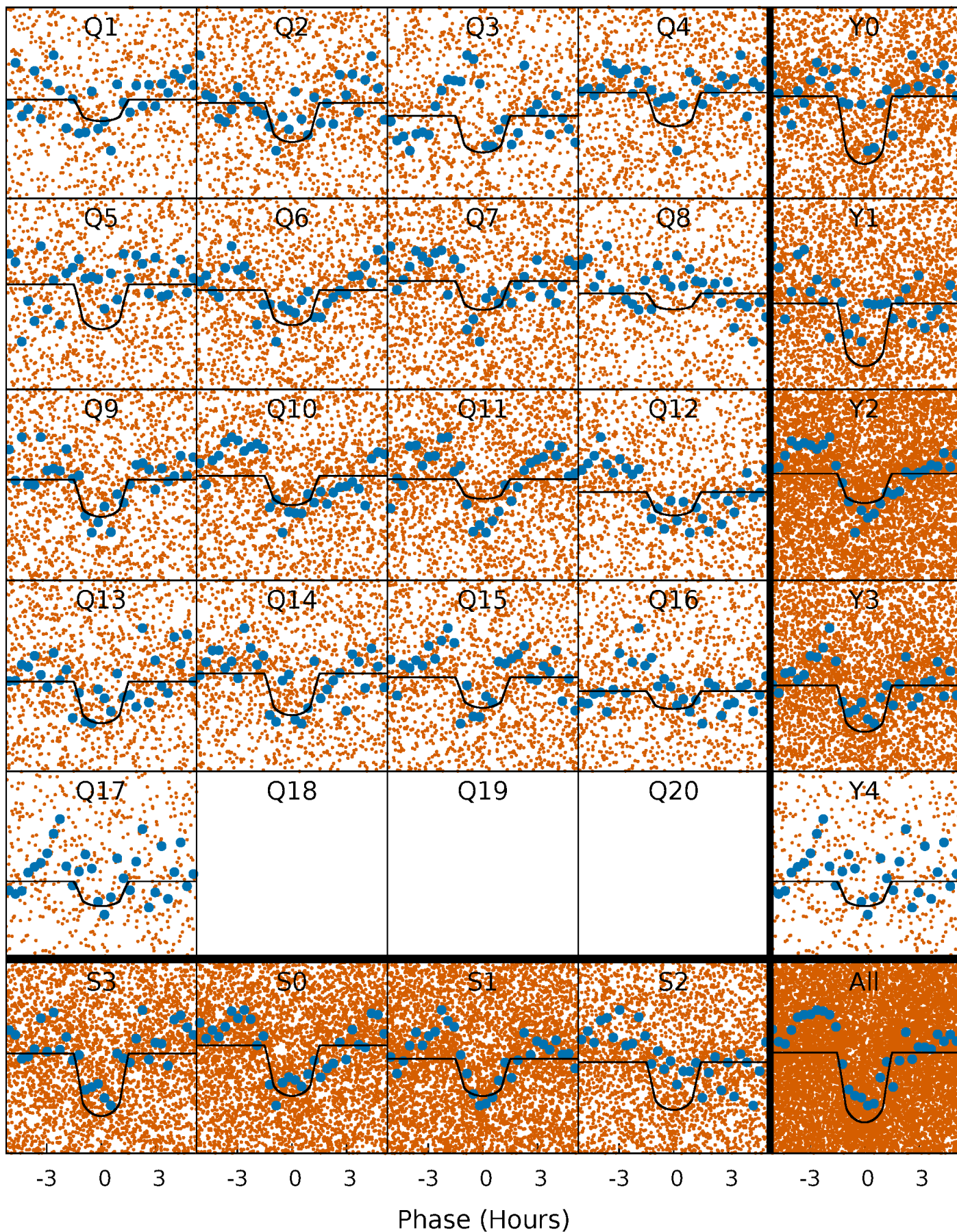
PDC Quarter-Phased Transit Curves

TCE 007281668-01 P= 0.566781 Days $T_0=131.838191$ (BKJD)



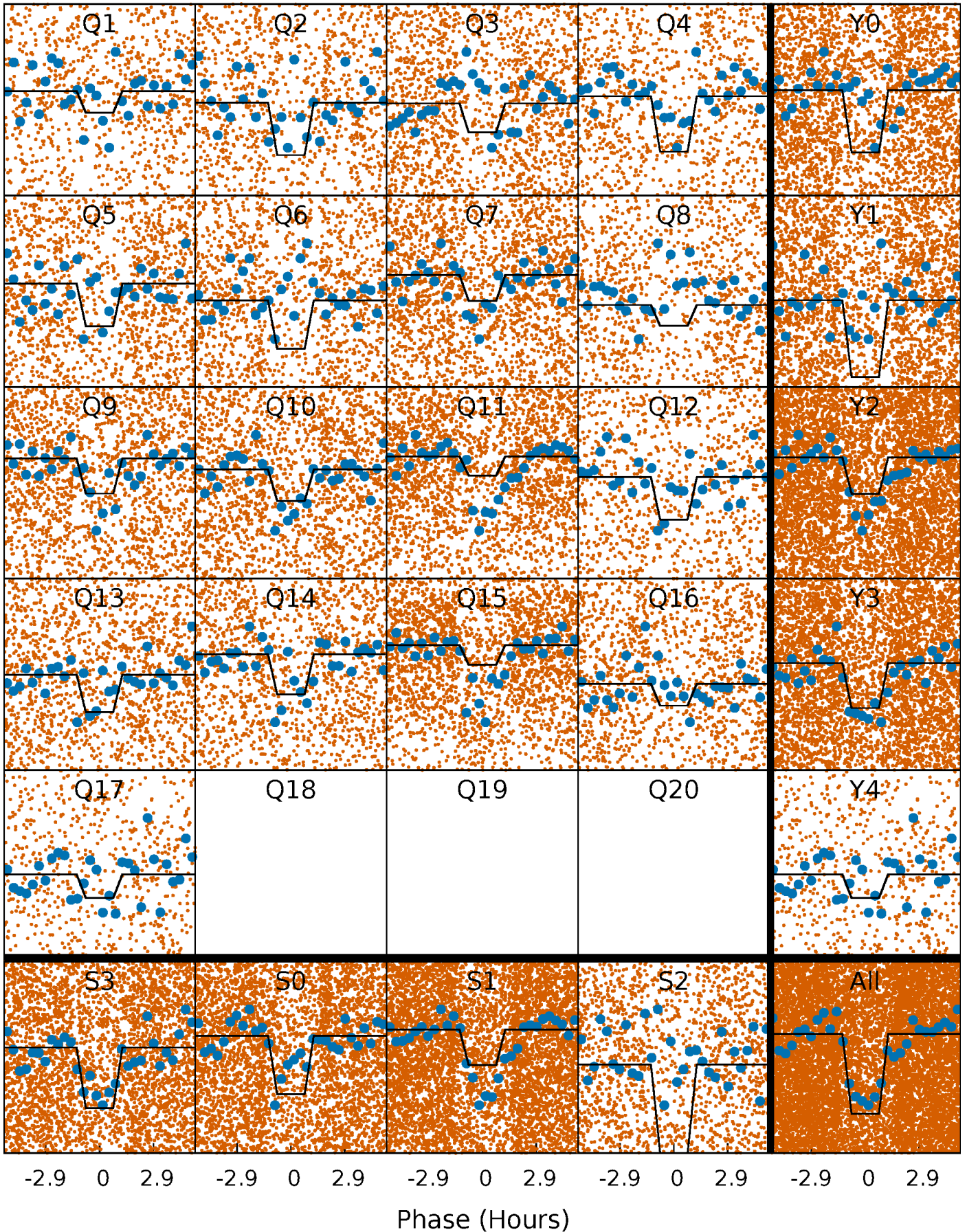
DV Quarter-Phased Transit Curves

TCE 007281668-01 P= 0.566781 Days $T_0=131.838191$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

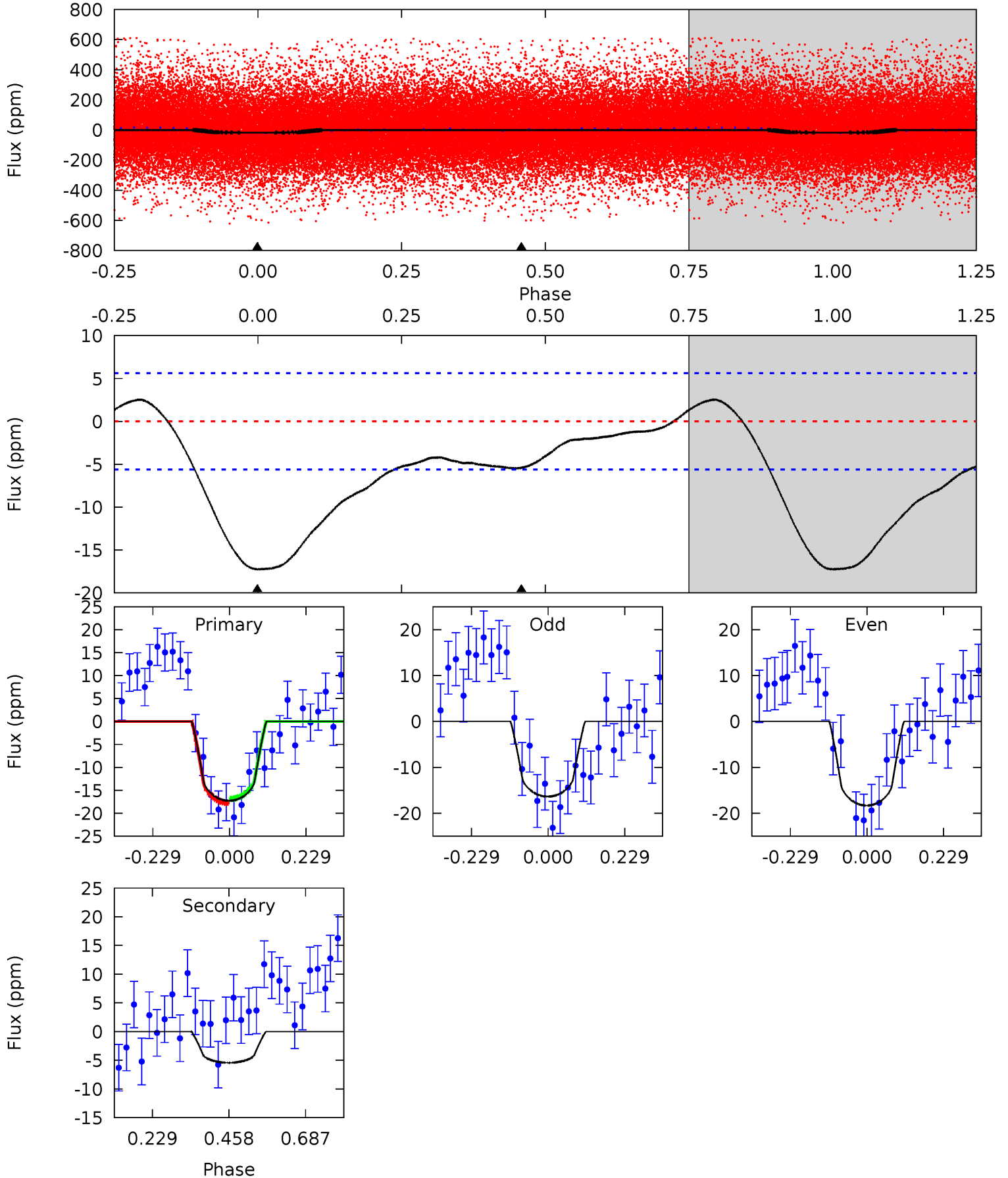
TCE 007281668-01 P= 0.566775 Days $T_0=131.834620$ (BKJD)



DV Model-Shift Uniqueness Test

007281668-01, P = 0.566781 Days, E = 131.271410 Days

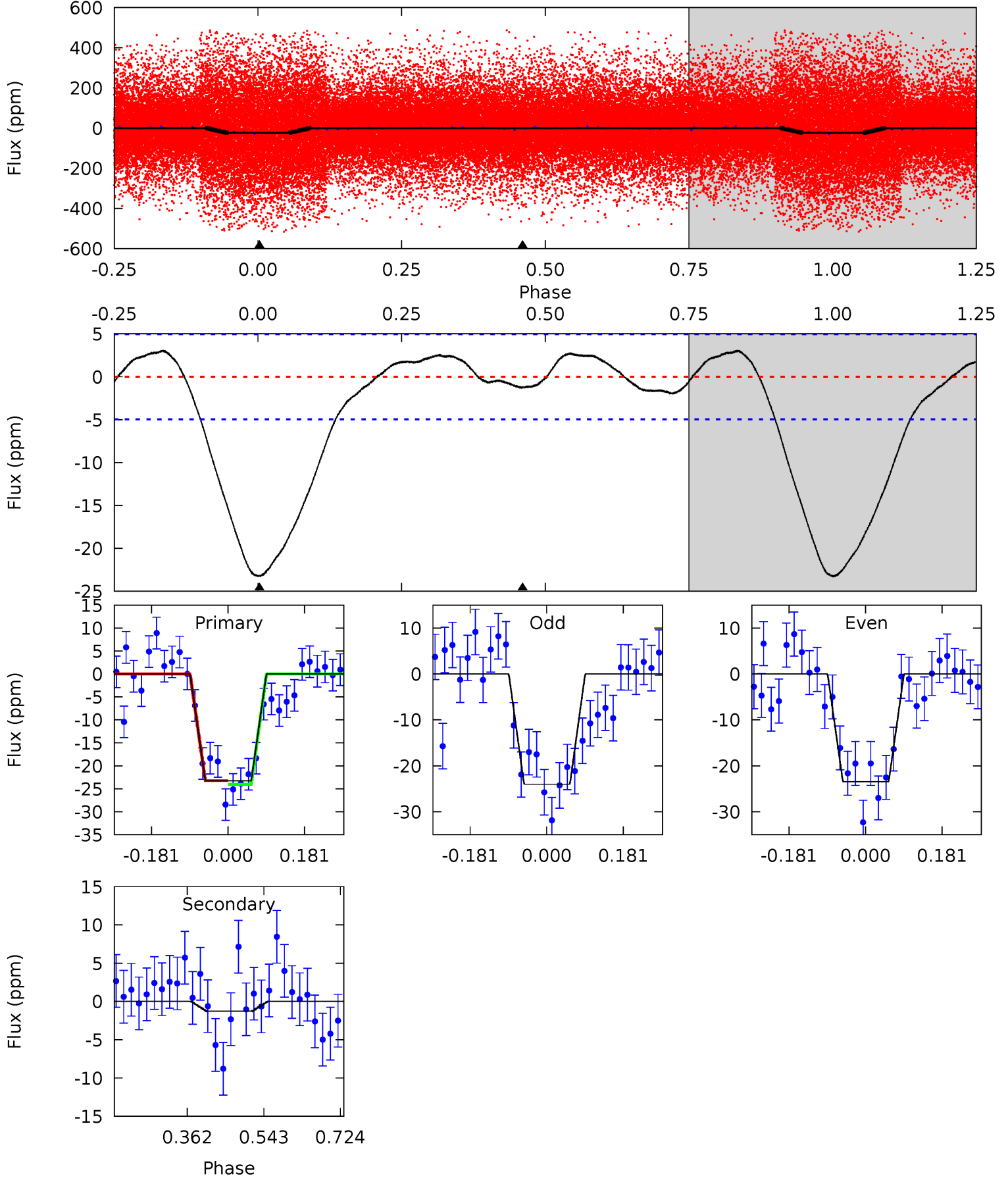
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	4.25	0	0	4.39	1.20	1.68	13.5	13.5	4.25	4.25	0.77	0.84	0.13	0.33



Alt Model-Shift Uniqueness Test

007281668-01, P = 0.566775 Days, E = 131.267845 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.9	1.14	0	0	4.44	1.34	1.38	20.9	20.9	1.14	1.14	0.25	1.15	0.12	0.35



Stellar Parameters For KIC 007281668

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5629^{+75}_{-84}	$4.553^{+0.013}_{-0.117}$	$0.070^{+0.150}_{-0.150}$	$0.870^{+0.120}_{-0.032}$	$0.987^{+0.041}_{-0.071}$	$2.107^{+0.158}_{-0.673}$
	+1%/-1%	+0%/-3%	+214%/-214%	+14%/-4%	+4%/-7%	+7%/-32%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 007281668-01 / KOI 7829.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-5 ± 1	$0.55^{+0.20}_{-0.21}$	2840^{+89}_{-57}	3831^{+797}_{-522}	$1.738^{+2.724}_{-0.844}$
Alt.	-1 ± 1	$0.48^{+0.20}_{-0.19}$	2841^{+96}_{-63}	2812^{+1052}_{-5707}	$0.488^{+1.311}_{-0.413}$

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 $A_{obs} \gg 1.0$

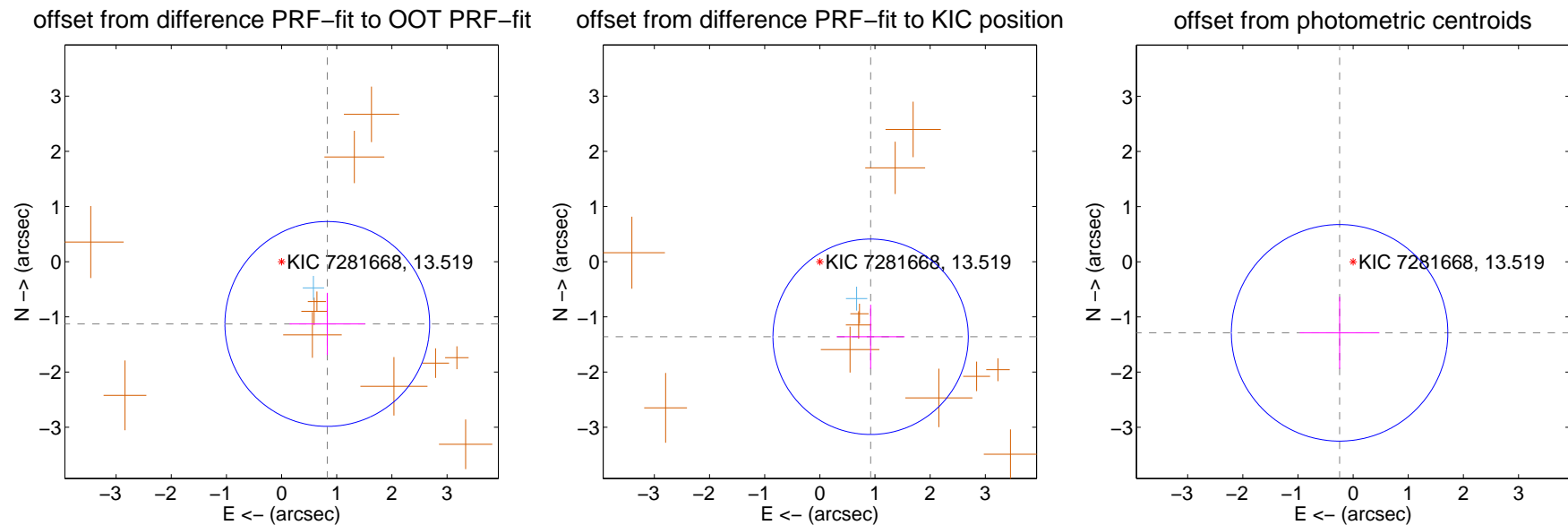
DV Centroid Data

Supplemental centroid analysis for 007281668-01. Kepler magnitude: 13.52. Transit SNR 12.65

There are 1 quarters with good PRF difference image offsets

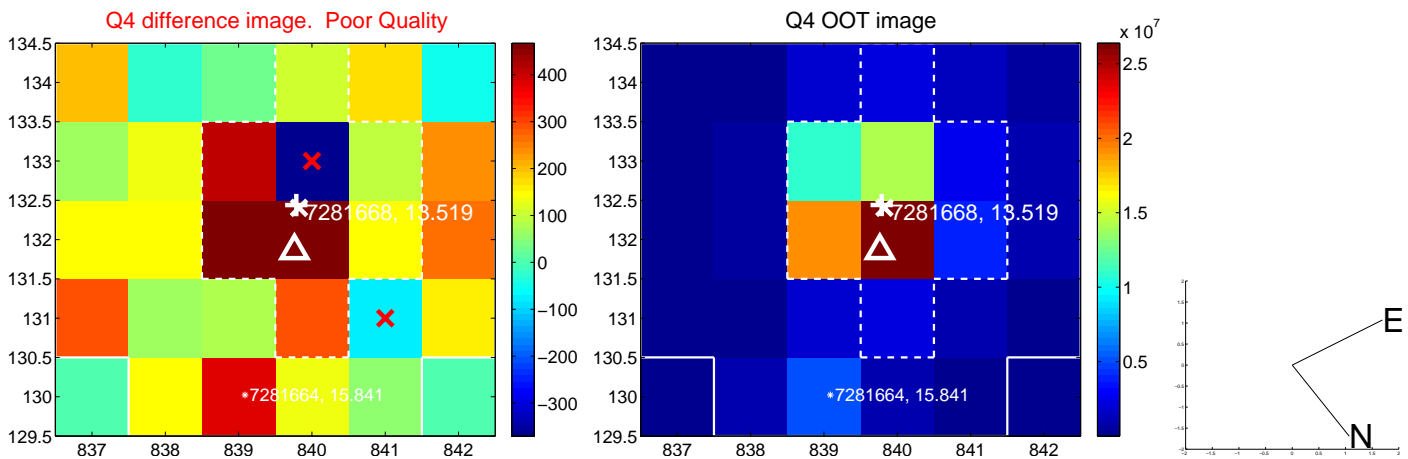
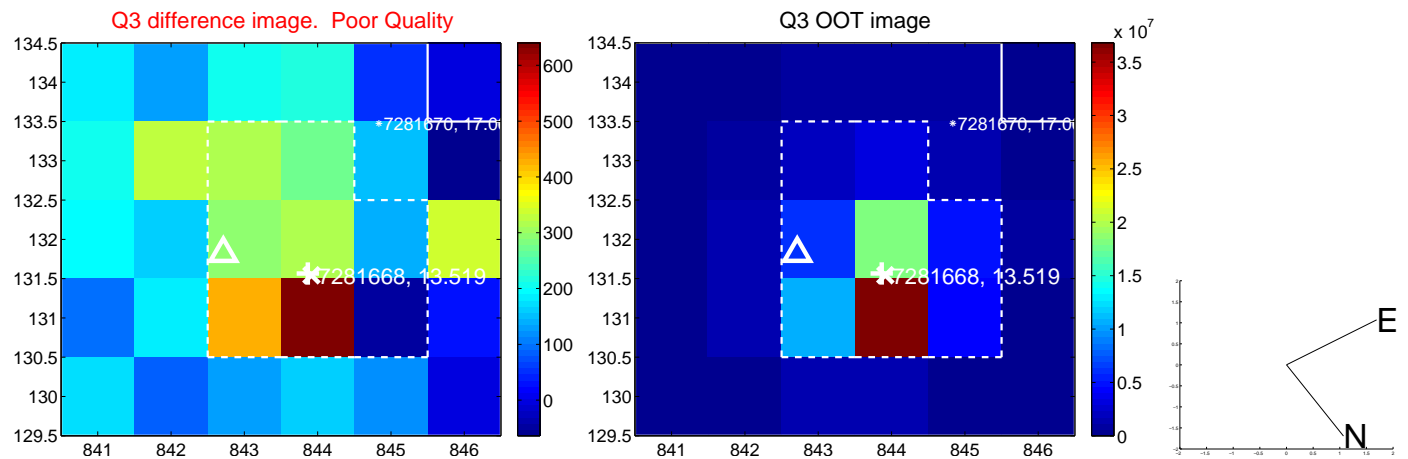
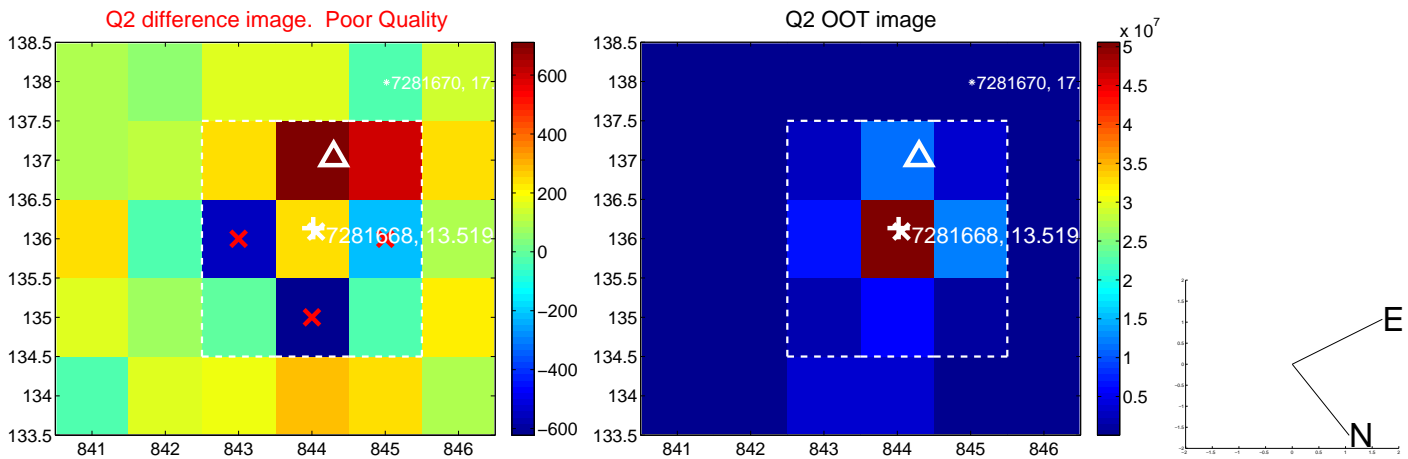
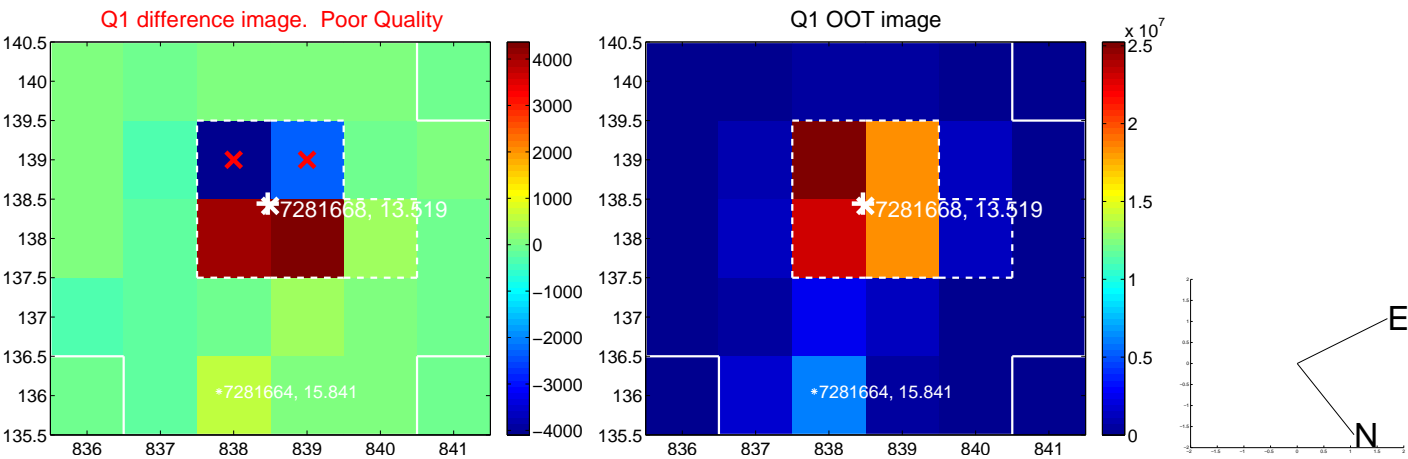
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.400 ± 0.619	2.26	-0.829 ± 0.684	-1.128 ± 0.563
PRF-fit source offset from KIC position	1.642 ± 0.590	2.78	-0.920 ± 0.617	-1.360 ± 0.580
photometric centroid source offset	1.31 ± 0.65	2.00	0.24 ± 0.72	-1.29 ± 0.65

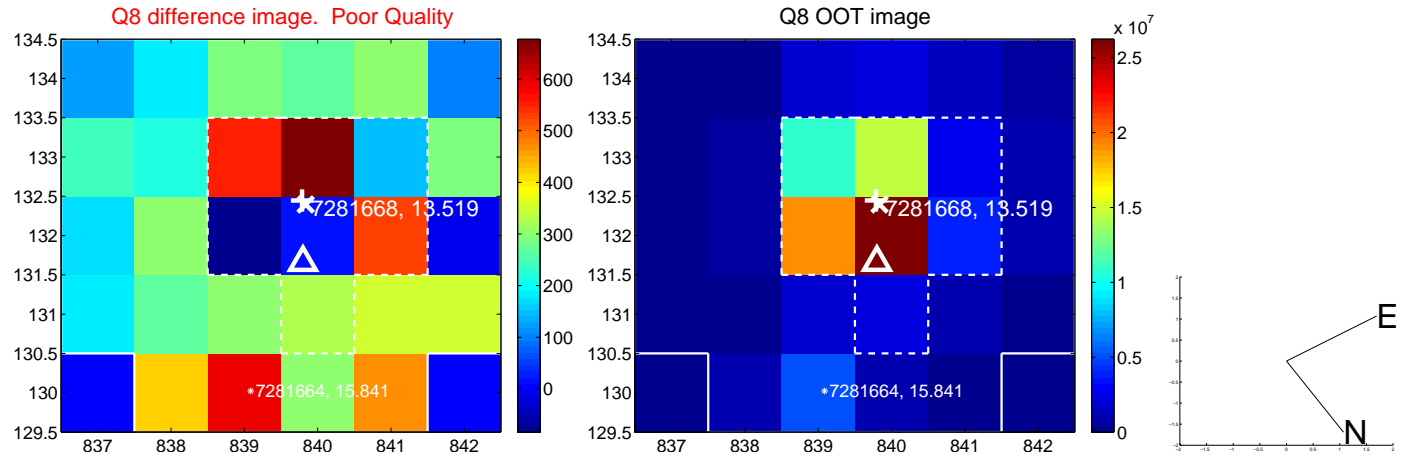
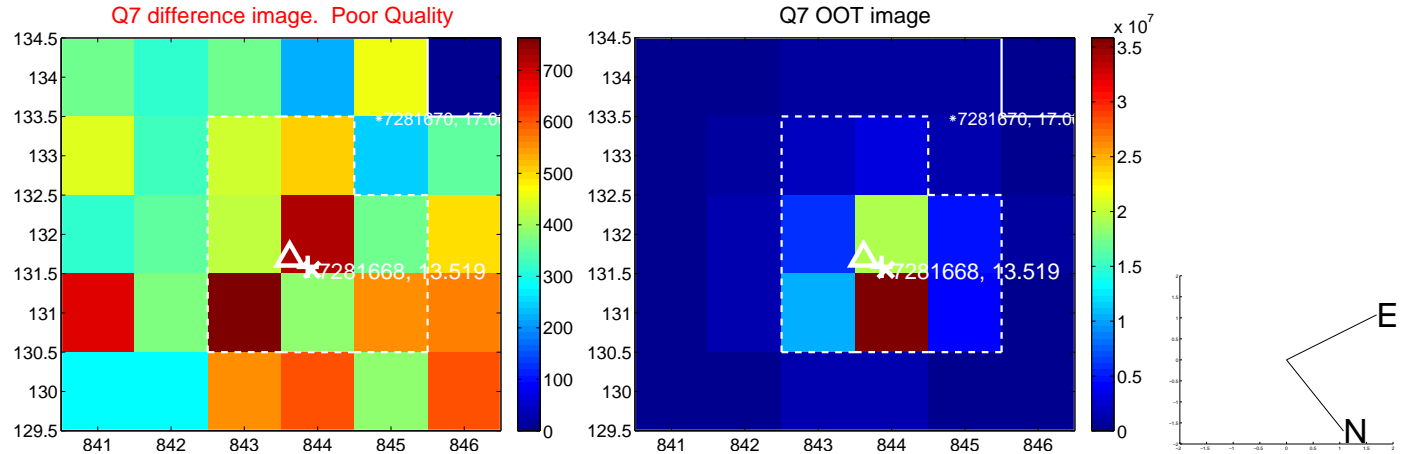
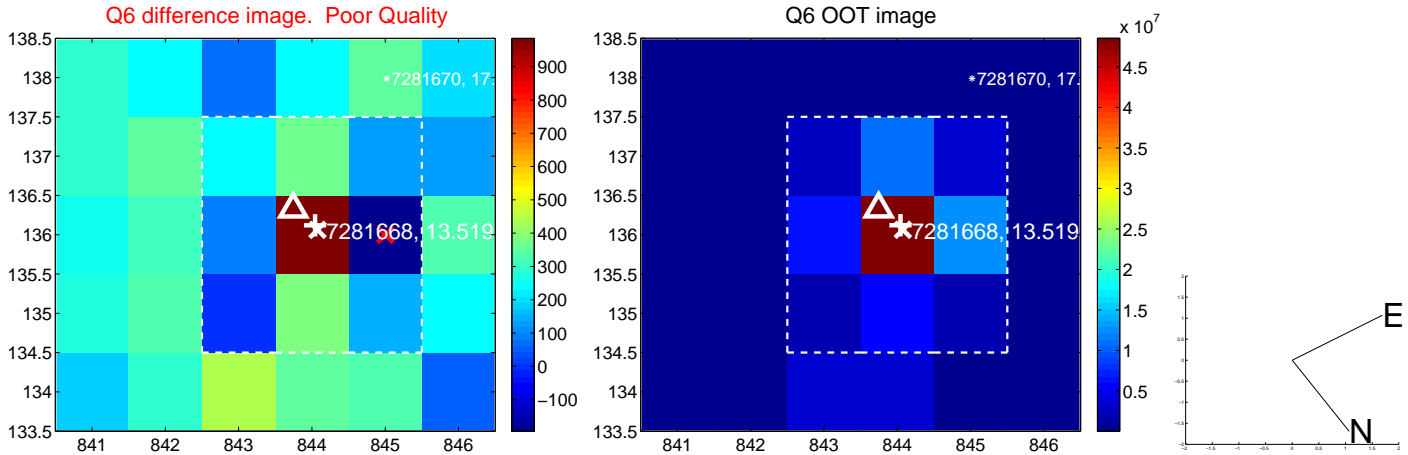
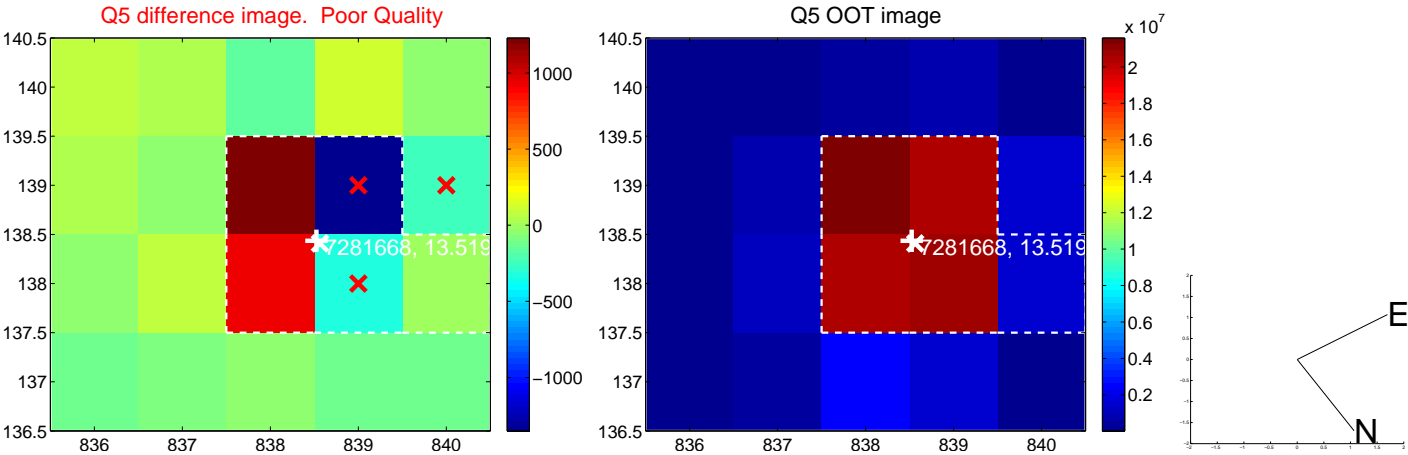


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

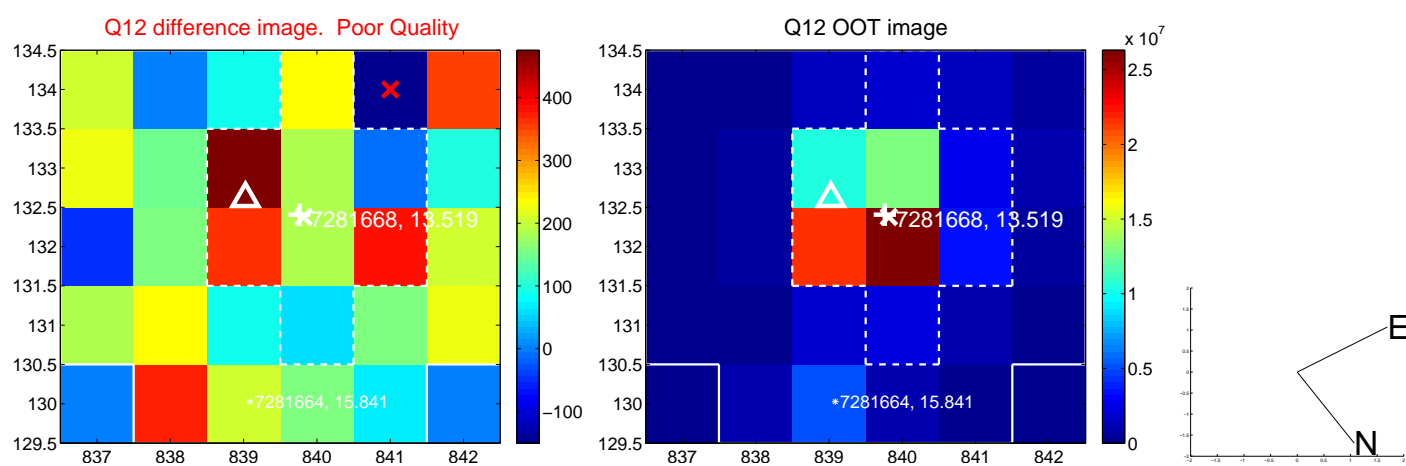
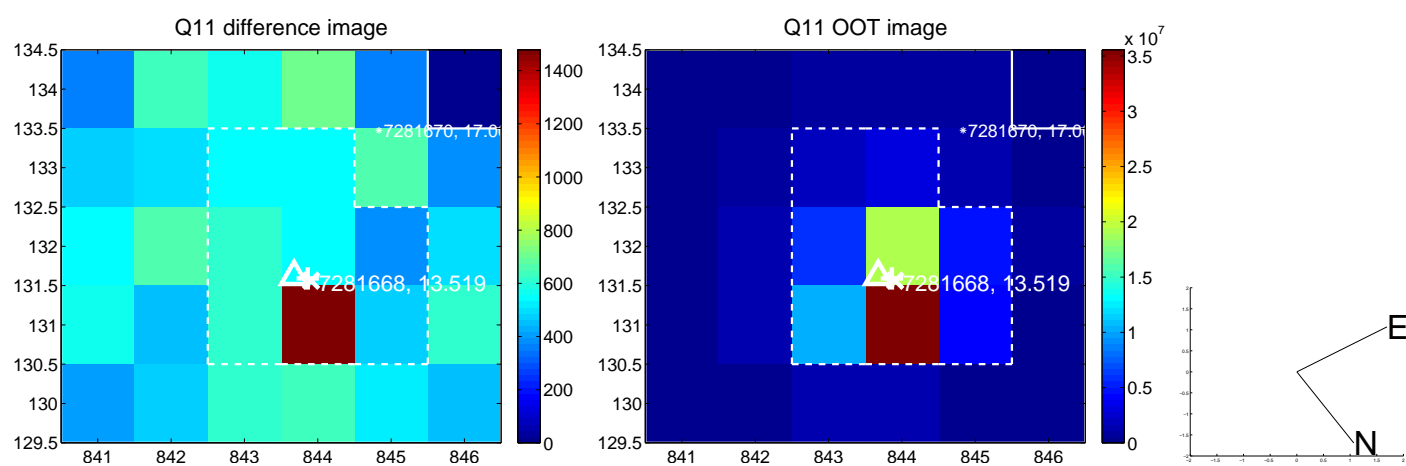
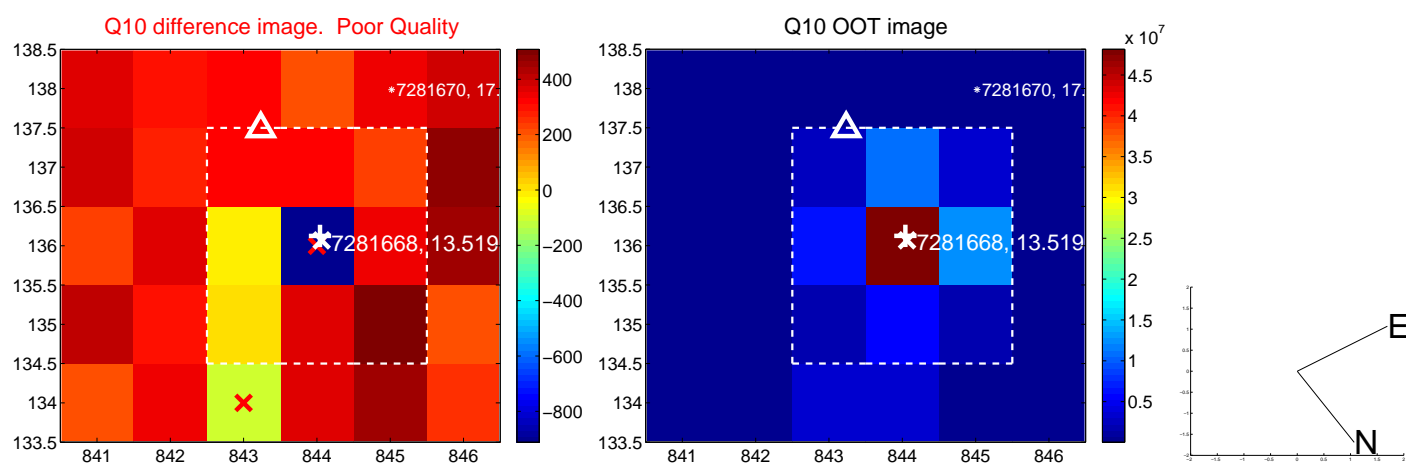
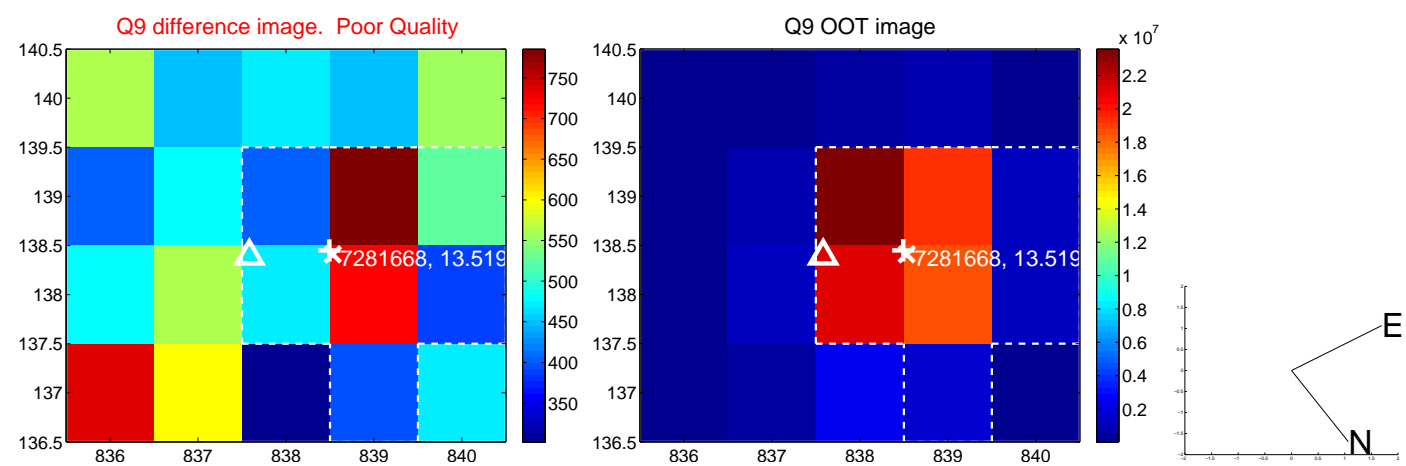
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



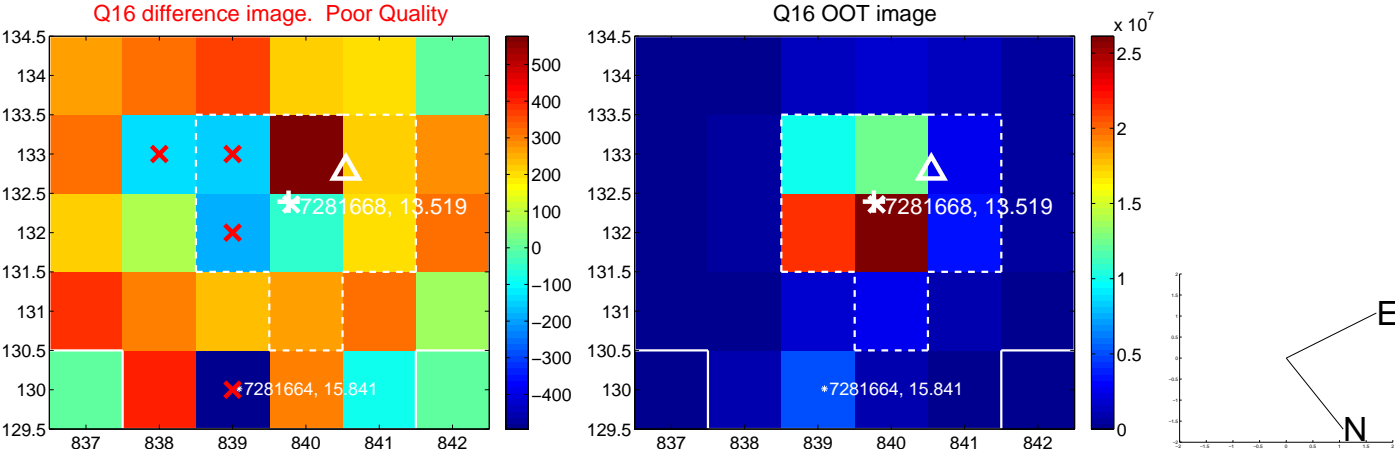
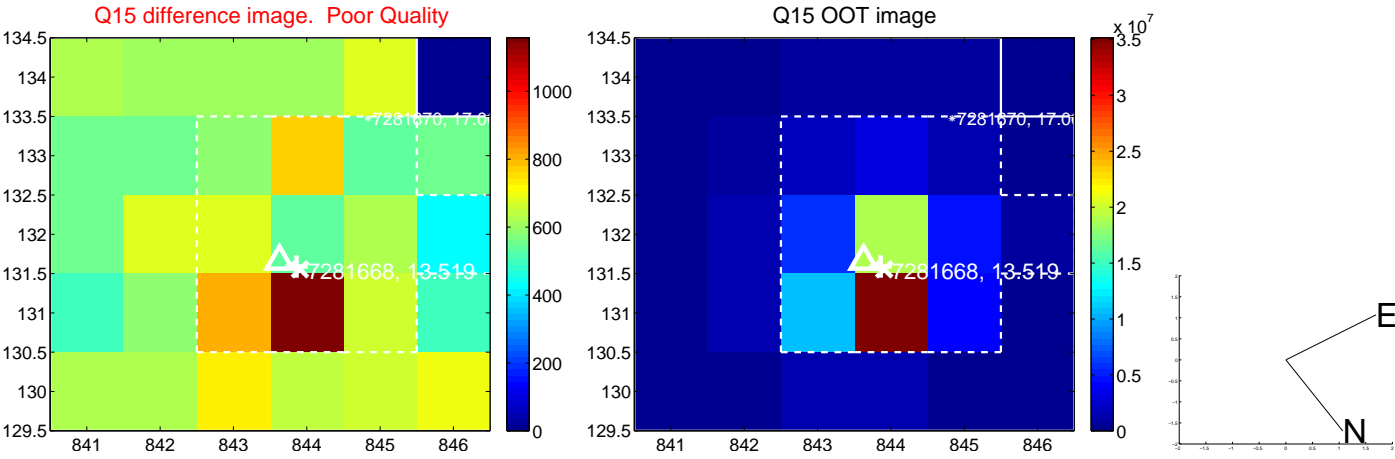
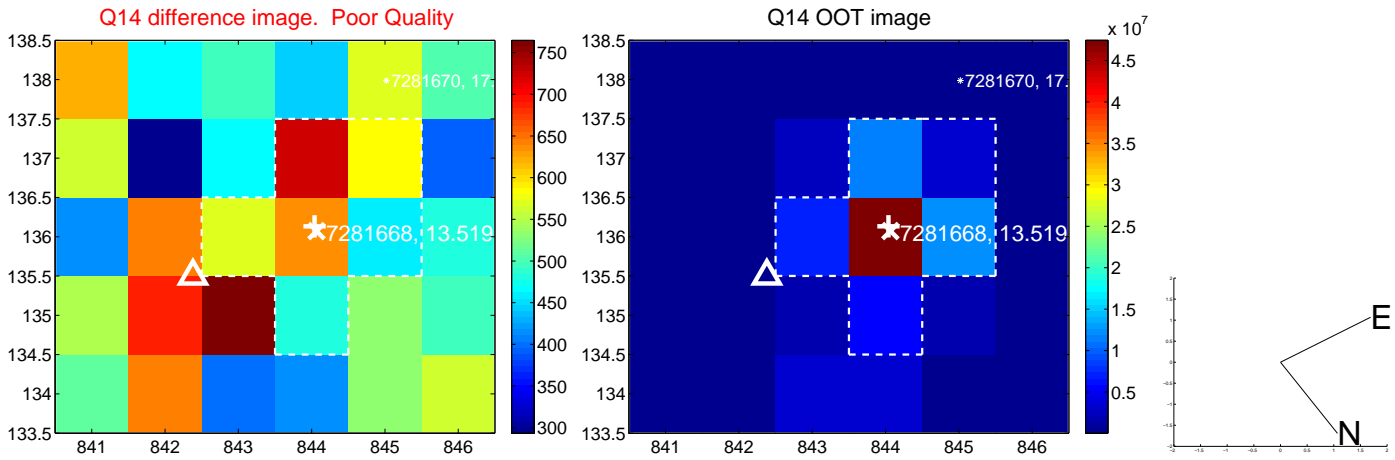
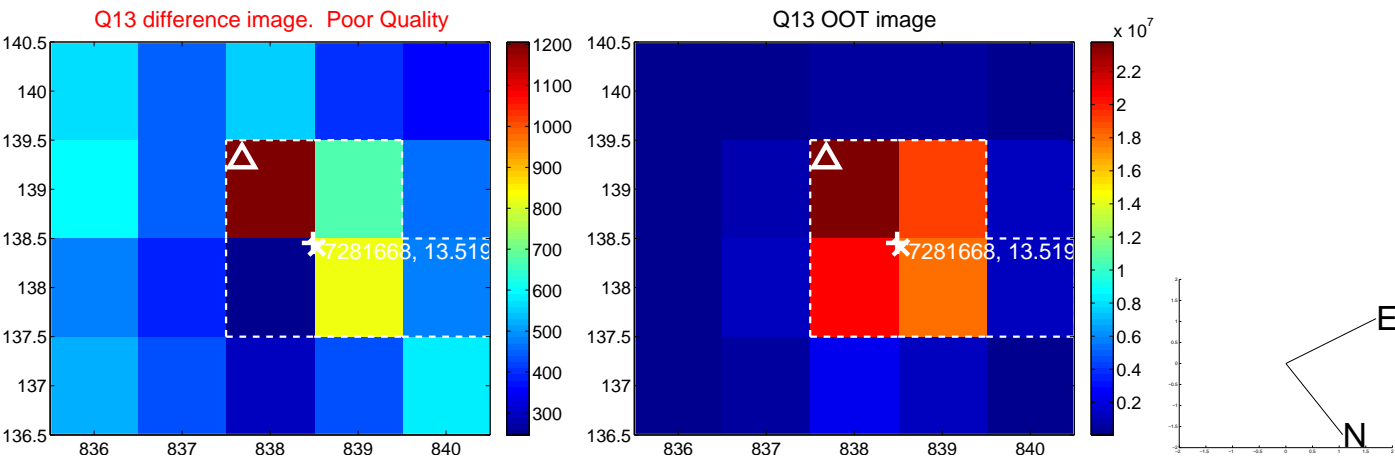
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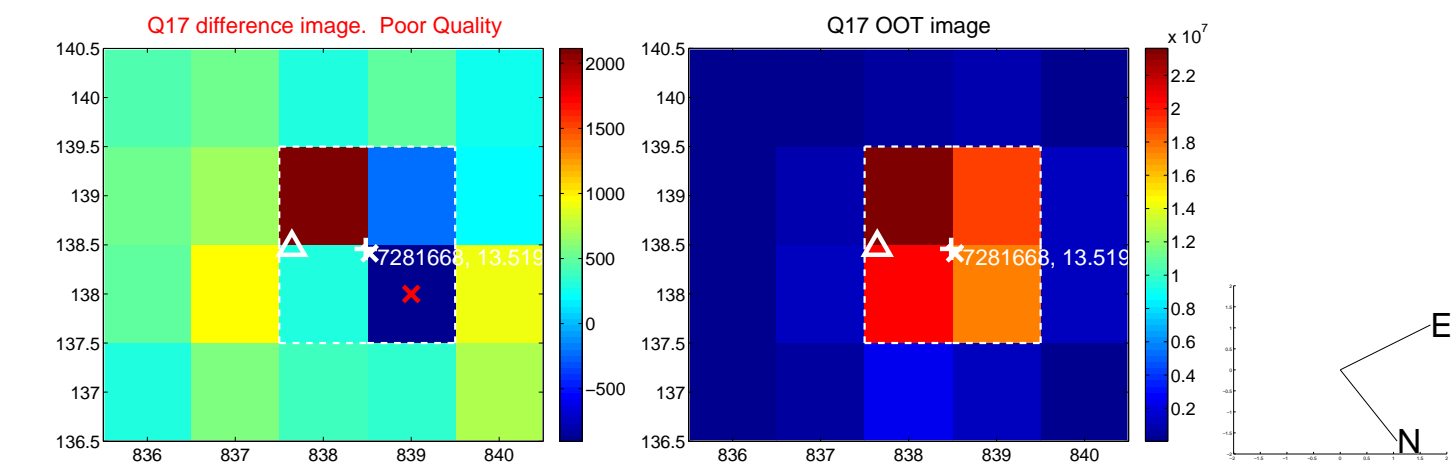
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



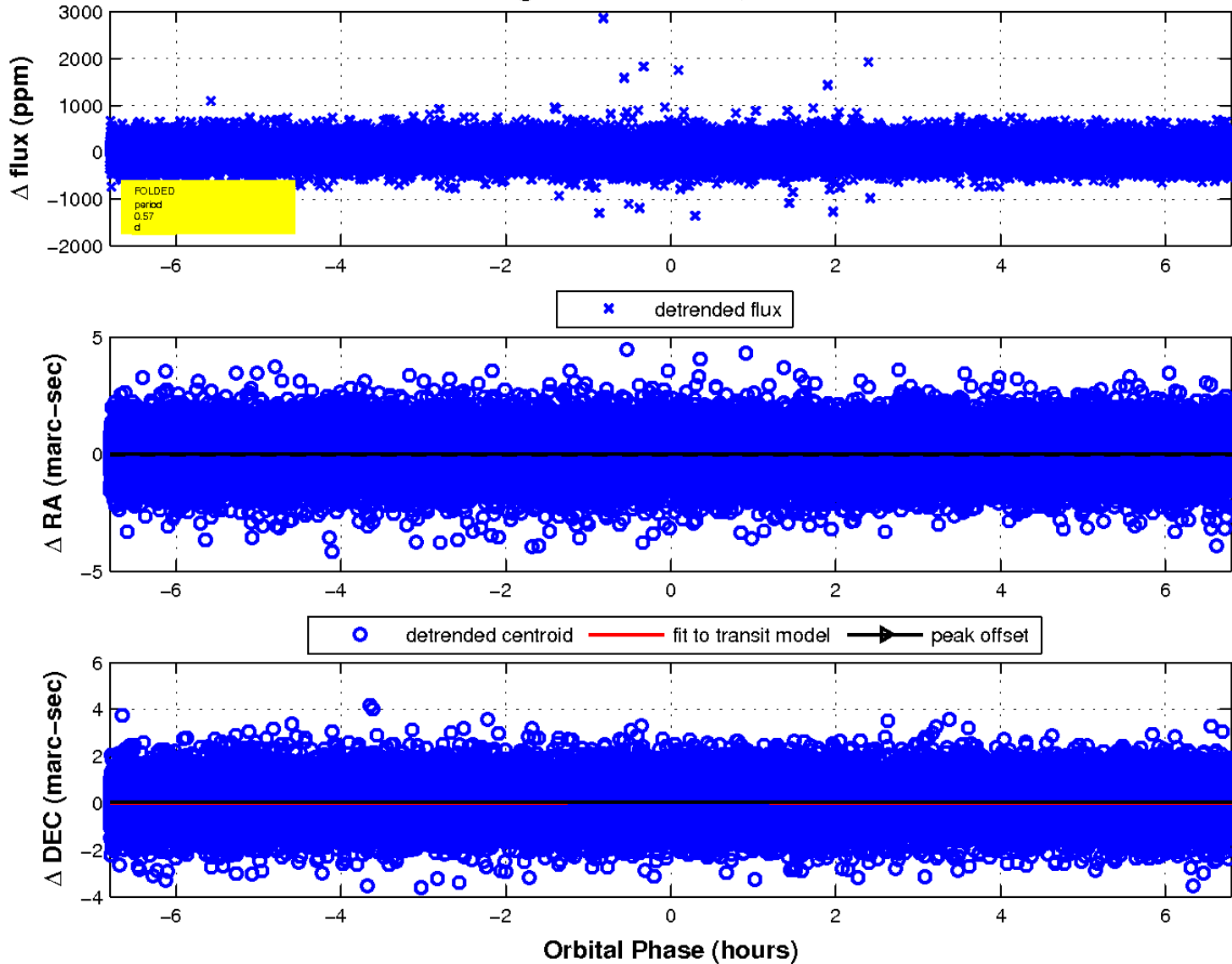
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



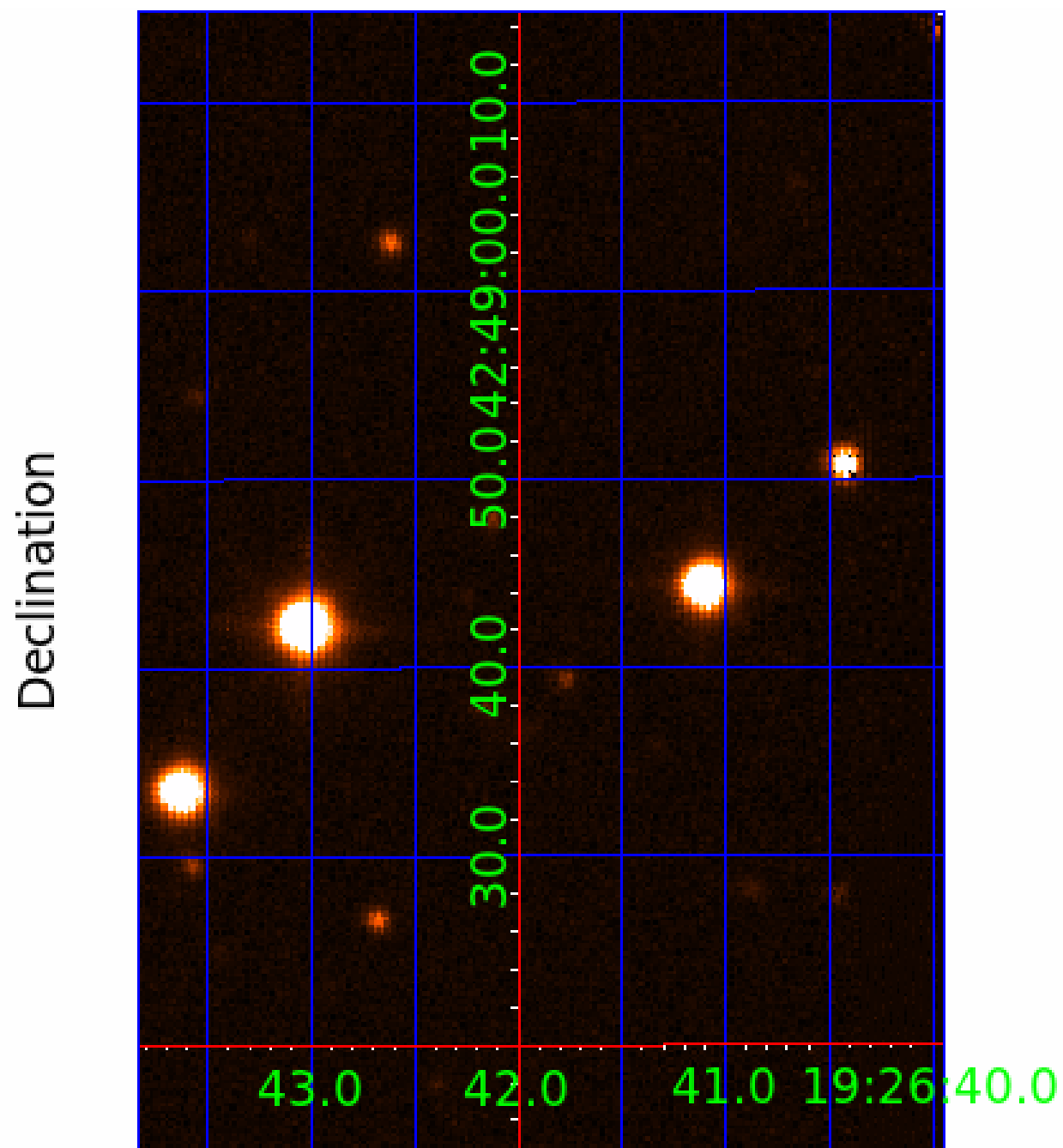
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 5



UKIRT Image



KIC 007281668

Q1-17 DR25 TCE Parameters

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007281668-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
007281668-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007281668-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

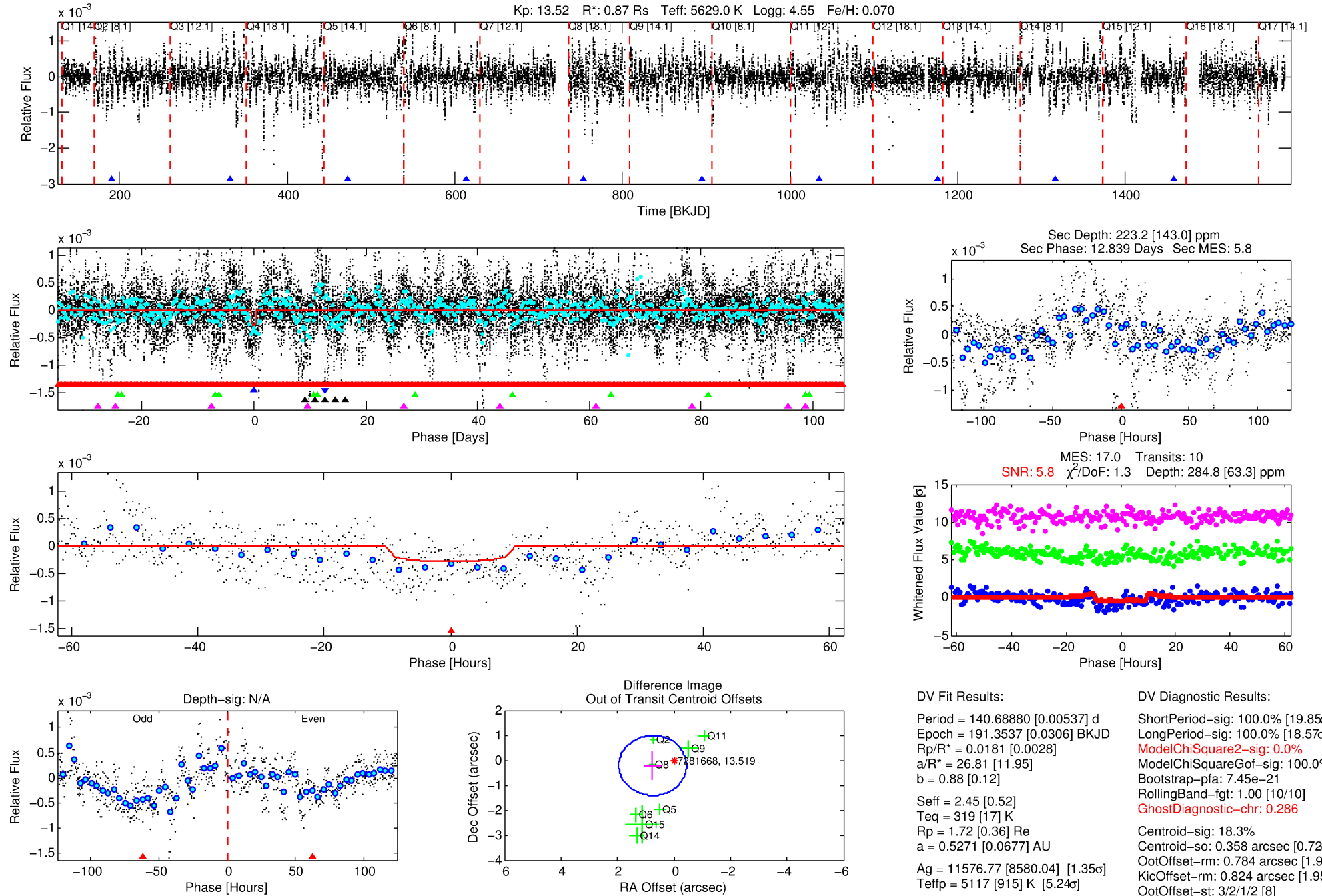
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007281668-02

No Significant Match Found

DV One-Page Summary

KIC: 7281668 Candidate: 2 of 5 Period: 140.689 d



DV Fit Results:

Period = 140.68880 [0.00537] d
 Epoch = 191.3537 [0.0306] BKJD
 Rp/R* = 0.0181 [0.0028]
 a/R* = 26.81 [11.95]
 b = 0.88 [0.12]
 Seff = 2.45 [0.52]
 Teq = 319 [17] K
 Rp = 1.72 [0.36] Re
 a = 0.5271 [0.0677] AU
 Ag = 11576.77 [8580.04] [1.35 σ]
 Tefp = 5117 [915] K [5.24 σ]

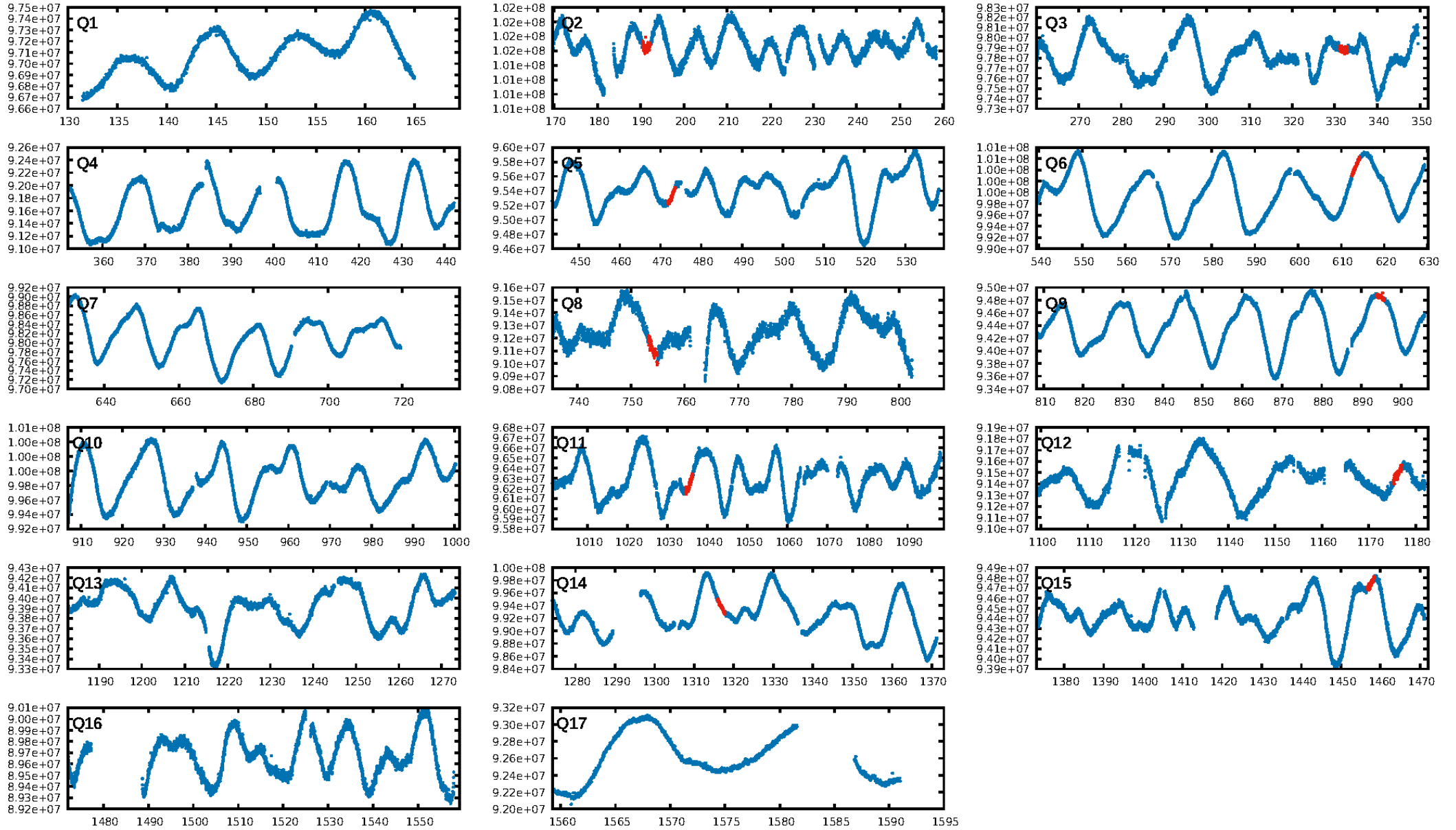
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [19.85 σ]
 LongPeriod-sig: 100.0% [18.57 σ]
 ModelChiSquare2-sig: 0.0%
 ModelChiSquareGof-sig: 100.0%
 Bootstrap-pfa: 7.45e-21
 RollingBand-fgt: 1.00 [10/10]
 GhostDiagnostic-chr: 0.286
 Centroid-sig: 18.3%
 Centroid-so: 0.358 arcsec [0.72 σ]
 OotOffset-rm: 0.784 arcsec [1.96 σ]
 KicOffset-rm: 0.824 arcsec [1.95 σ]
 OotOffset-st: 3/2/1/2 [8]
 KicOffset-st: 3/2/1/2 [8]
 DiffImageQuality-fgm: 0.38 [3/8]
 DiffImageOverlap-fno: 0.00 [0/9]

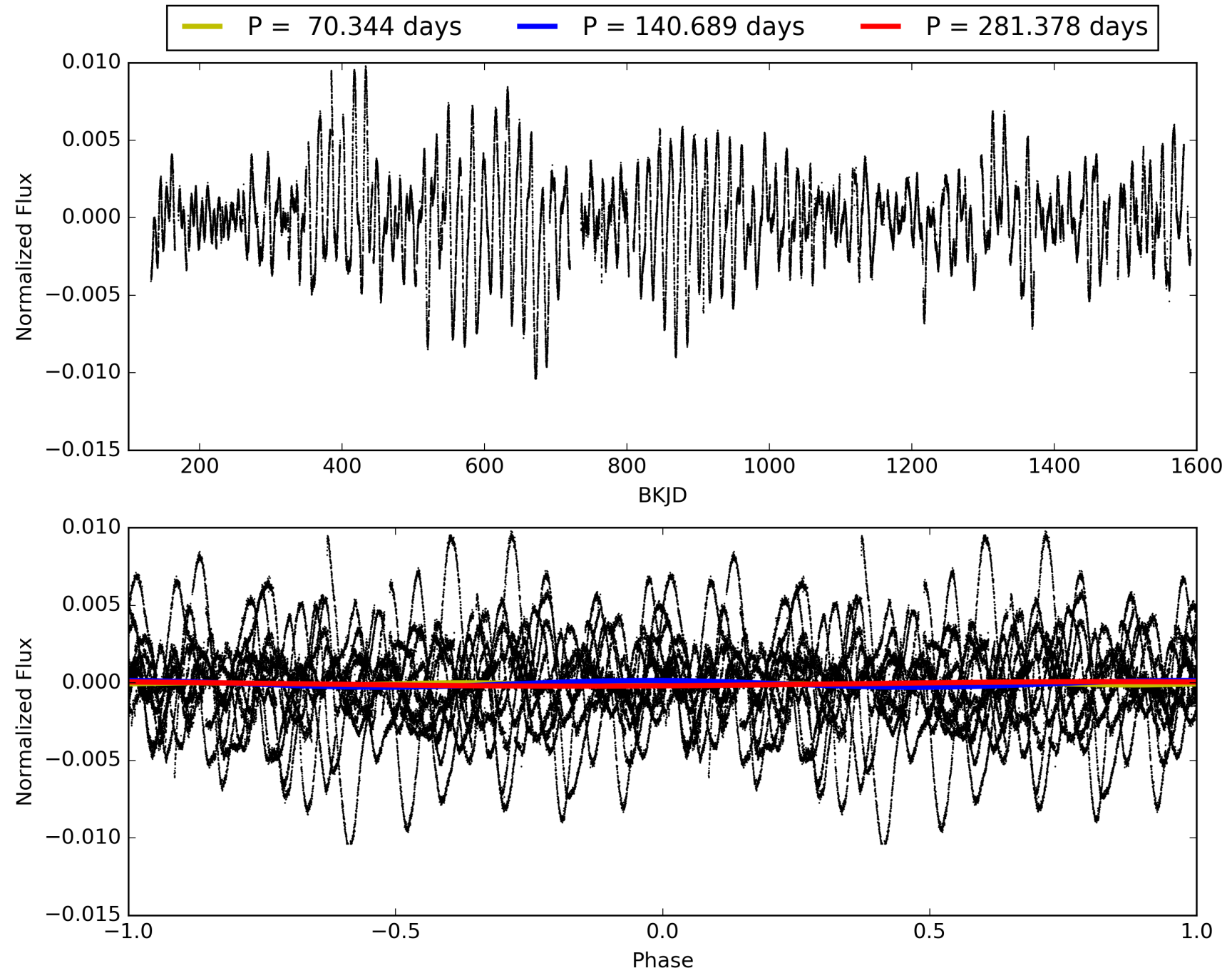
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:38:32 Z

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

TCE 007281668-02, PDC Light Curves

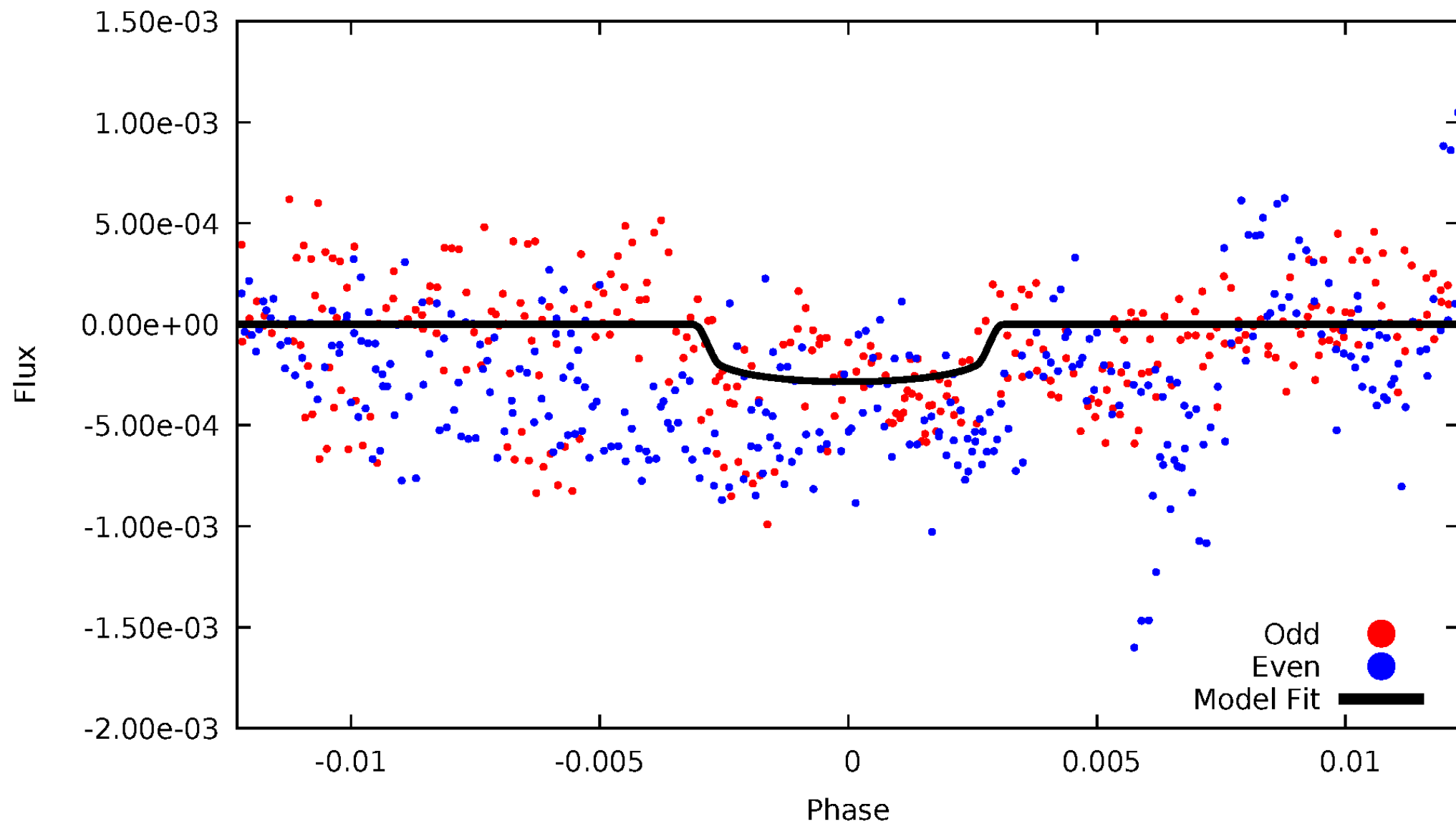


TCE 007281668-02



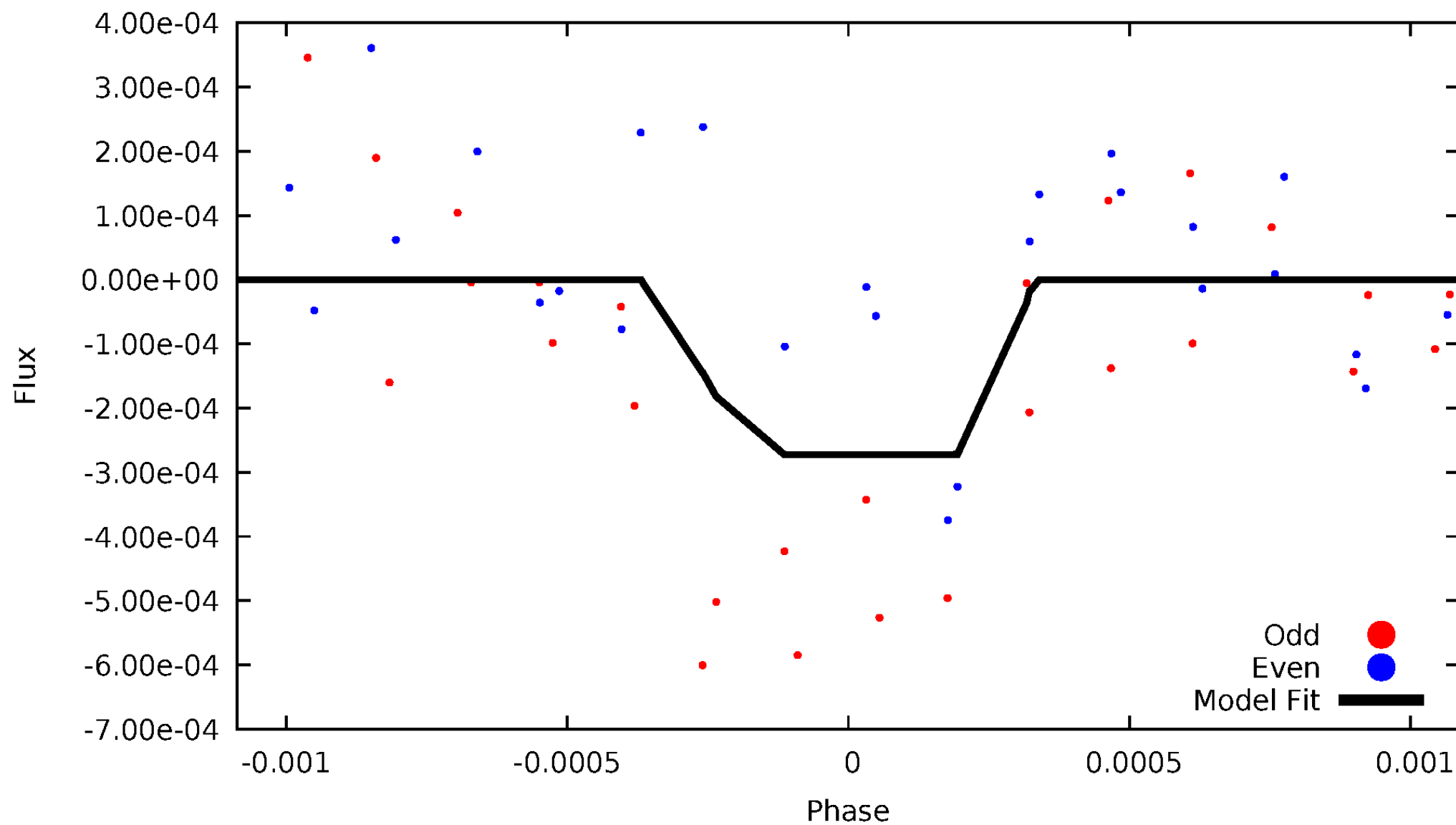
DV Odd/Even

TCE 007281668-02



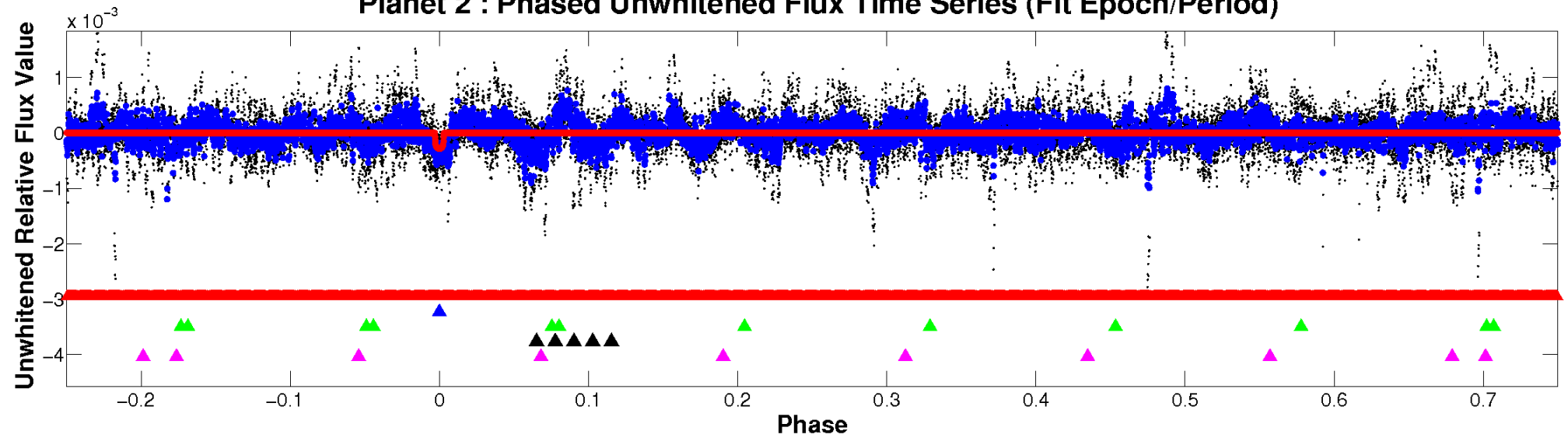
ALT Odd/Even

TCE 007281668-02

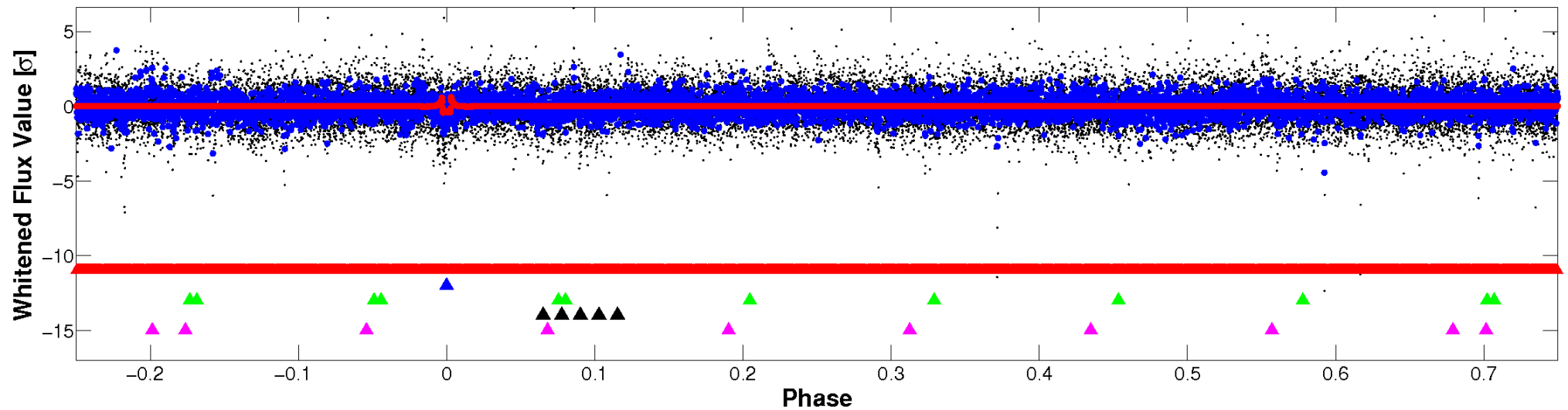


Non-Whitened Vs. Whitened Light Curve

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

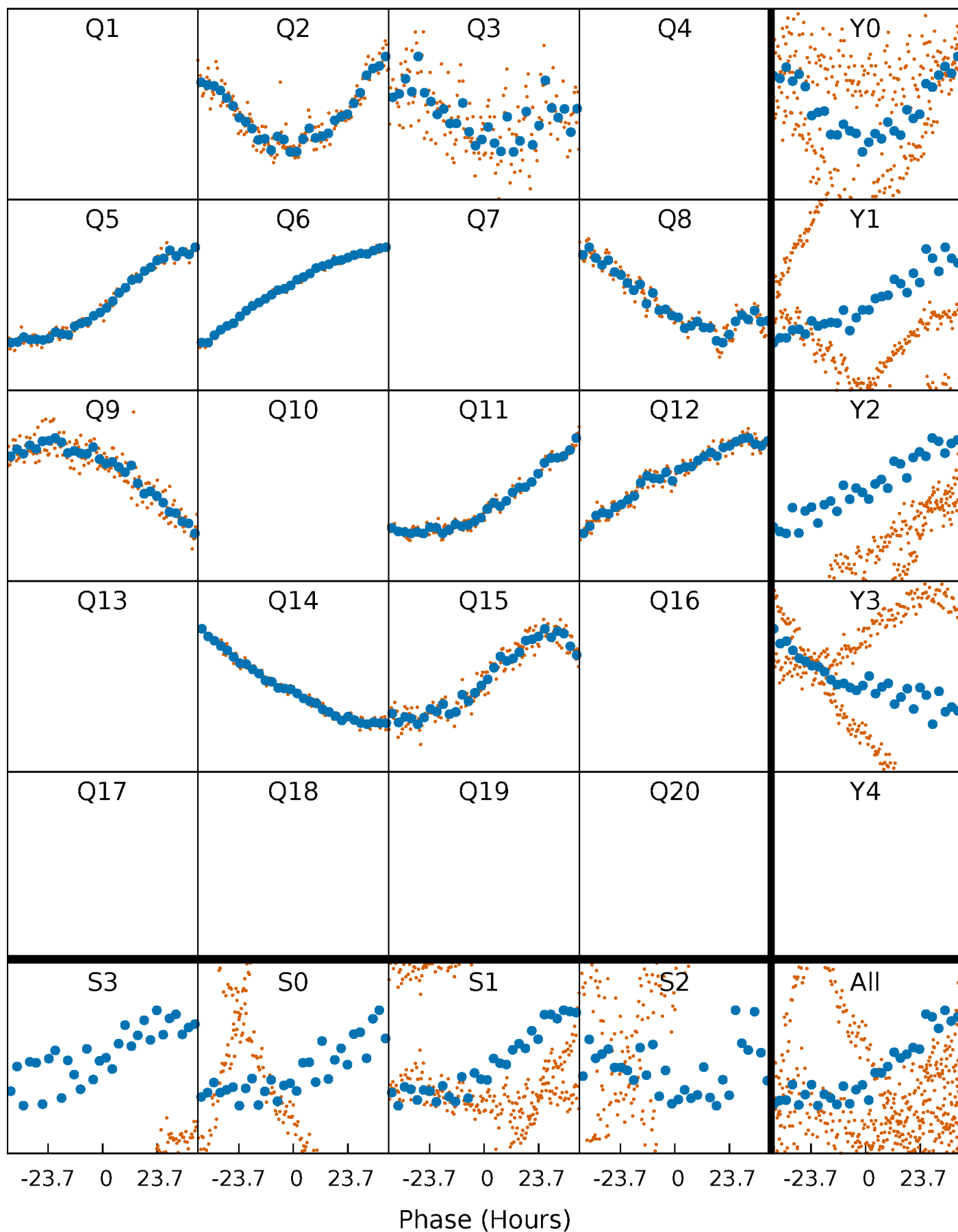


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



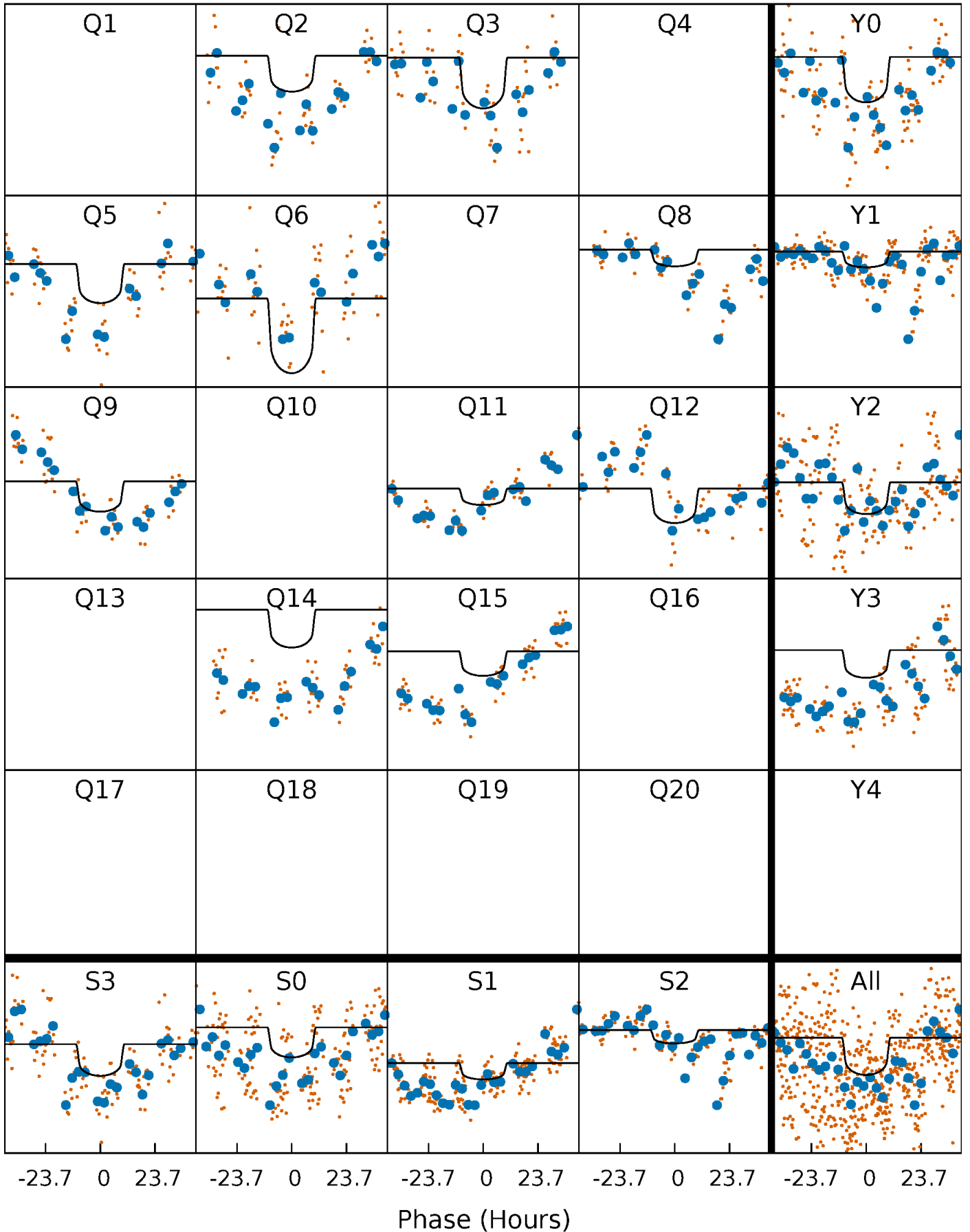
PDC Quarter-Phased Transit Curves

TCE 007281668-02 P=140.688804 Days $T_0=191.353746$ (BKJD)



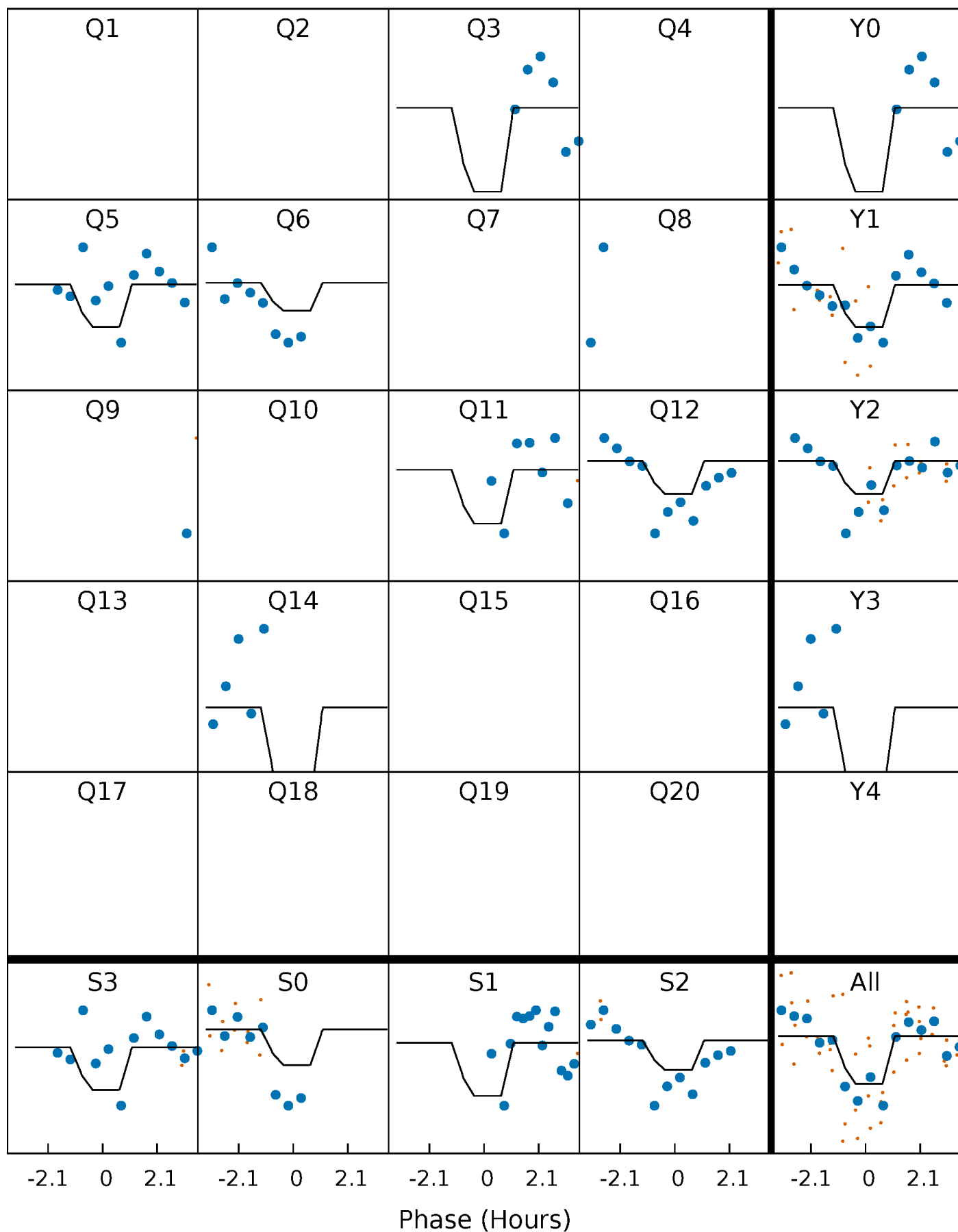
DV Quarter-Phased Transit Curves

TCE 007281668-02 P=140.688804 Days $T_0=191.353746$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

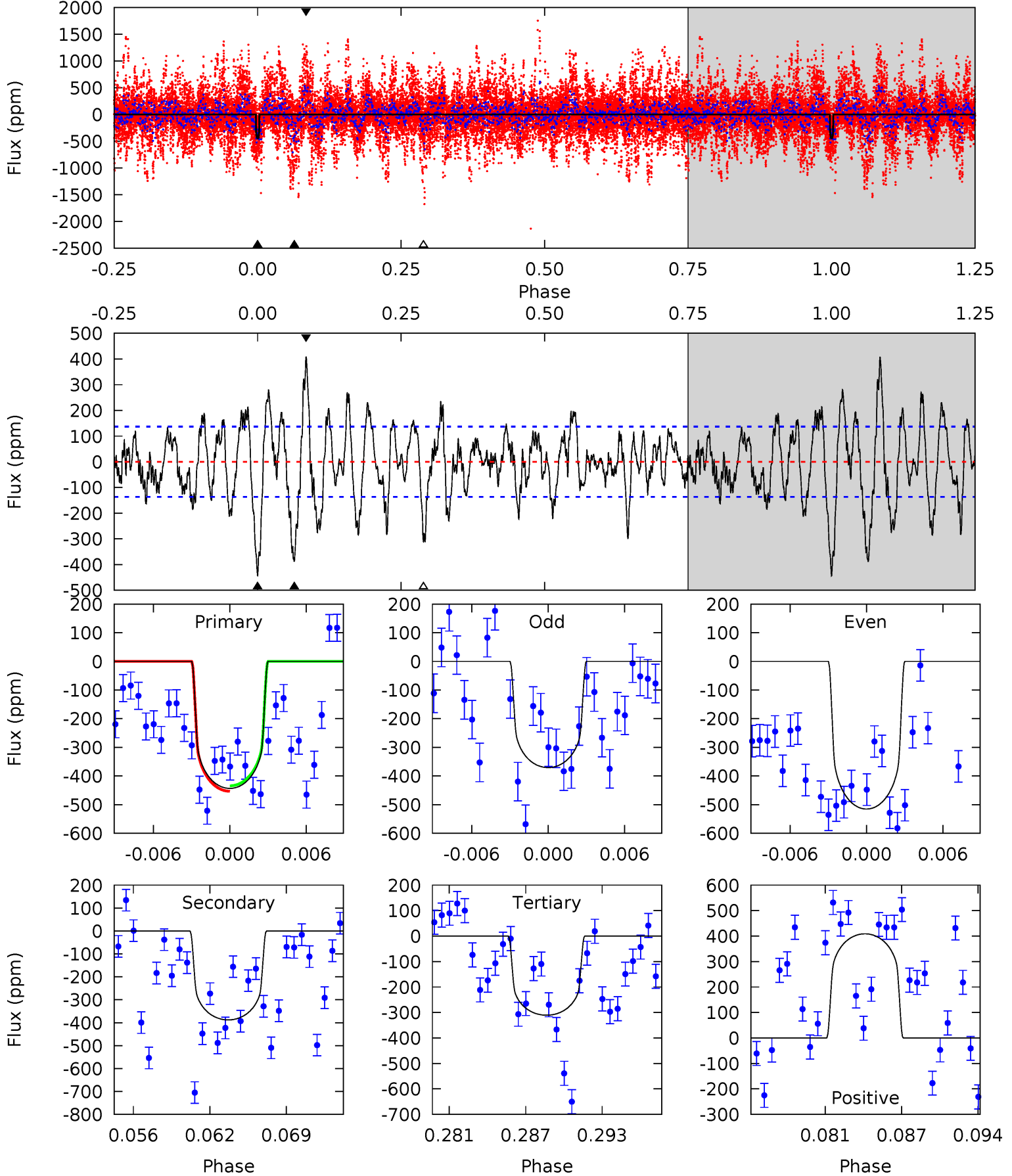
TCE 007281668-02 P=140.685061 Days $T_0=191.357130$ (BKJD)



DV Model-Shift Uniqueness Test

007281668-02, P = 140.688804 Days, E = 50.664942 Days

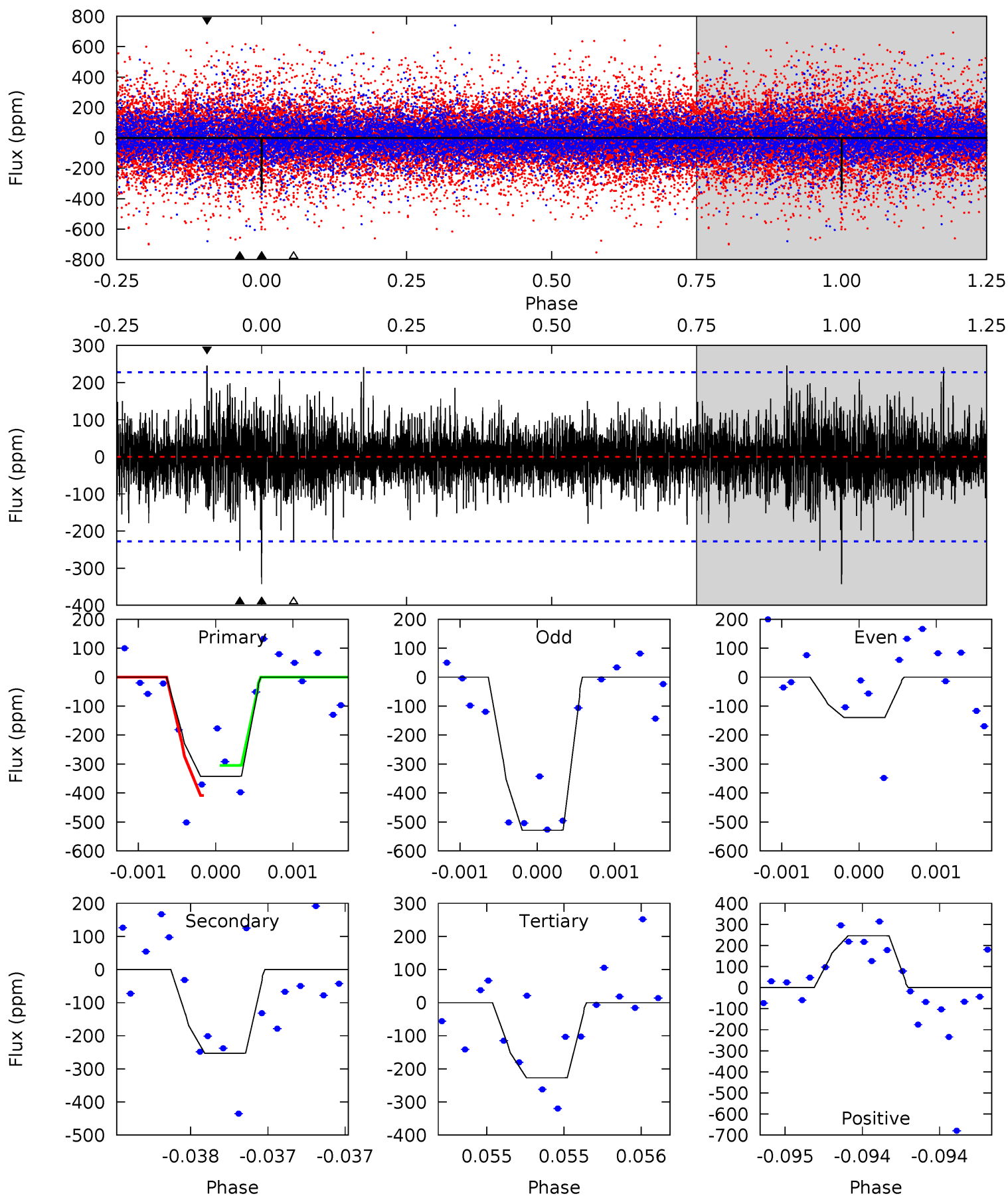
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.6	14.5	11.6	15.3	5.12	2.73	4.16	4.96	1.29	2.89	-0.78	2.62	1.01	0.48	0.36



Alt Model-Shift Uniqueness Test

007281668-02, P = 140.685061 Days, E = 50.672069 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.34	6.16	5.53	5.98	5.55	3.44	1.27	2.81	2.35	0.63	0.17	4.81	1.02	0.42	1.21



Stellar Parameters For KIC 007281668

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5629^{+75}_{-84}	$4.553^{+0.013}_{-0.117}$	$0.070^{+0.150}_{-0.150}$	$0.870^{+0.120}_{-0.032}$	$0.987^{+0.041}_{-0.071}$	$2.107^{+0.158}_{-0.673}$
	+1%/-1%	+0%/-3%	+214%/-214%	+14%/-4%	+4%/-7%	+7%/-32%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 007281668-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-388 ± 27	$1.78^{+0.28}_{-0.28}$	453^{+15}_{-11}	5847^{+523}_{-392}	18527^{+7630}_{-4934}
Alt.	-253 ± 41	$1.62^{+0.31}_{-0.29}$	452^{+16}_{-10}	5520^{+552}_{-414}	14558^{+7231}_{-4736}

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

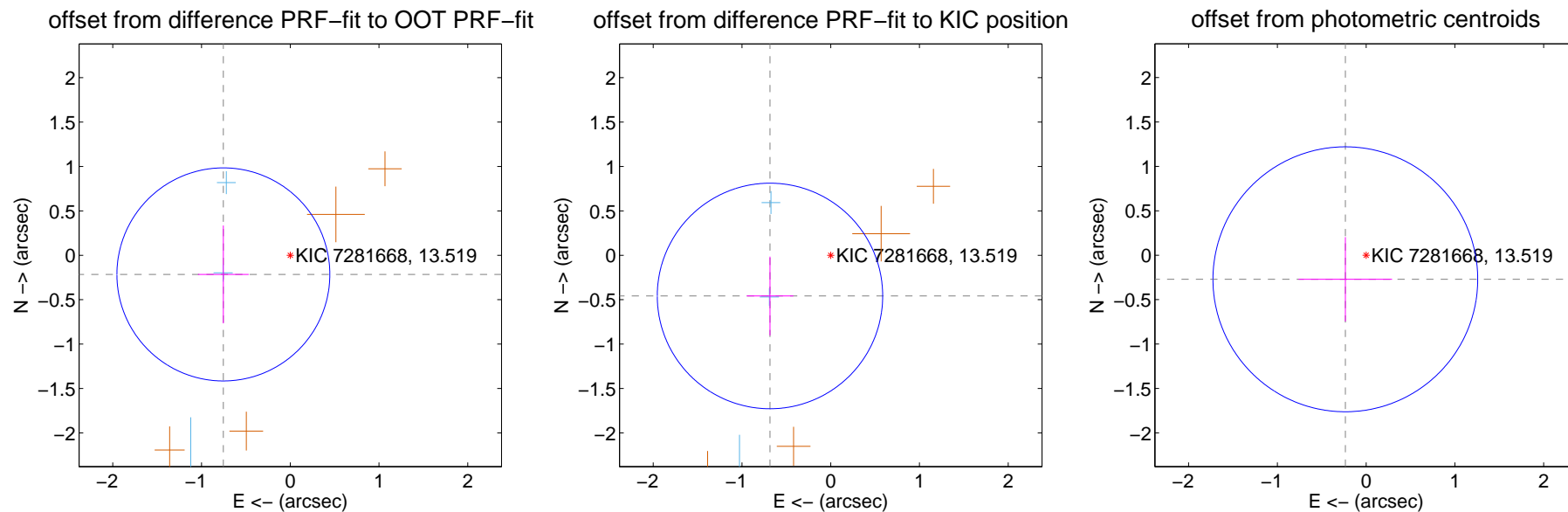
DV Centroid Data

Supplemental centroid analysis for 007281668-02. Kepler magnitude: 13.52. Transit SNR 5.77

There are 3 quarters with good PRF difference image offsets

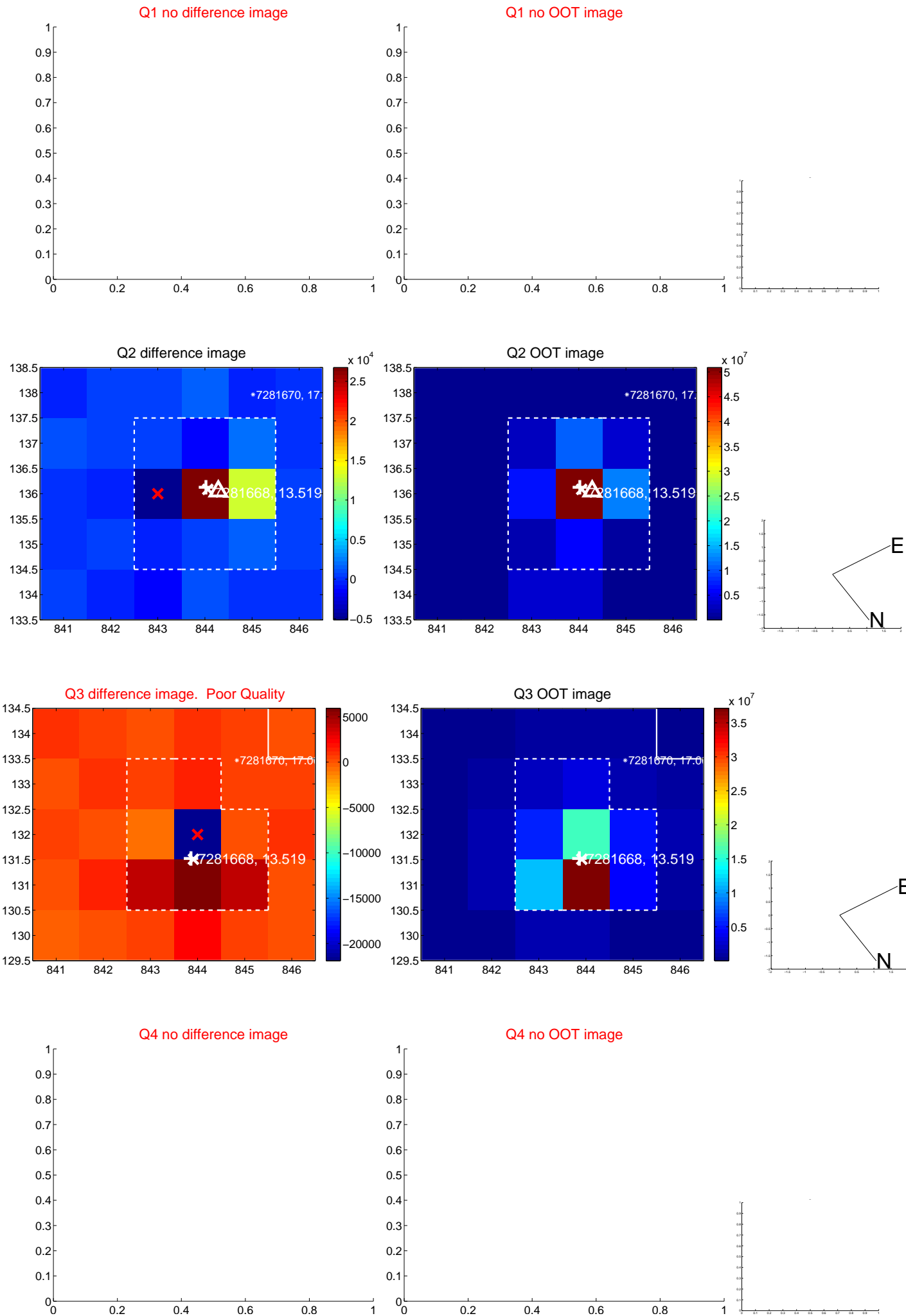
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.784 ± 0.400	1.96	0.754 ± 0.286	-0.216 ± 0.551
PRF-fit source offset from KIC position	0.824 ± 0.423	1.95	0.684 ± 0.262	-0.458 ± 0.443
photometric centroid source offset	0.36 ± 0.50	0.72	0.23 ± 0.53	-0.27 ± 0.47

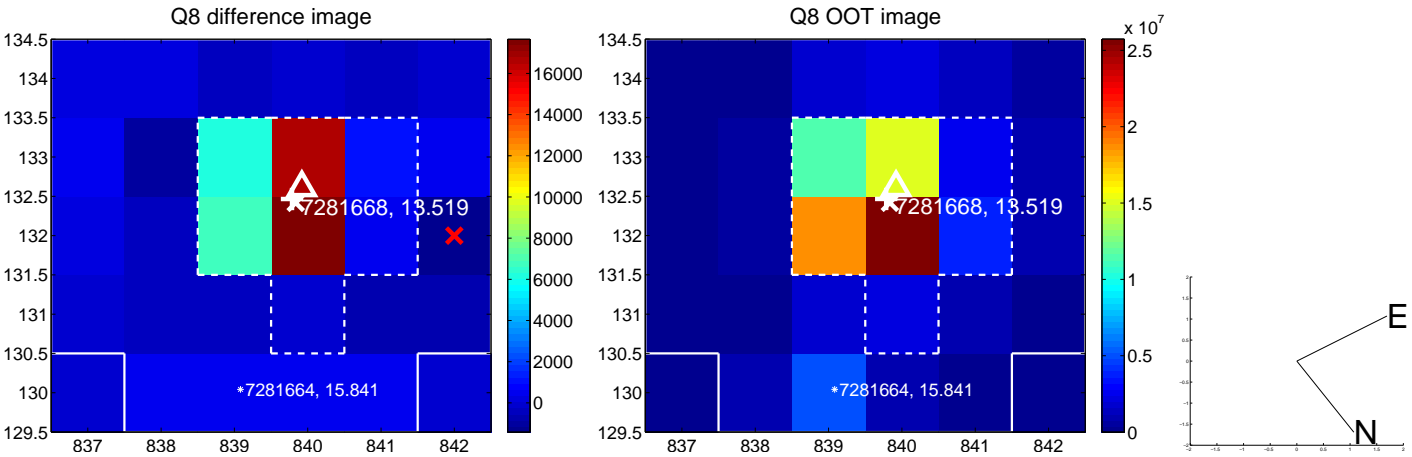
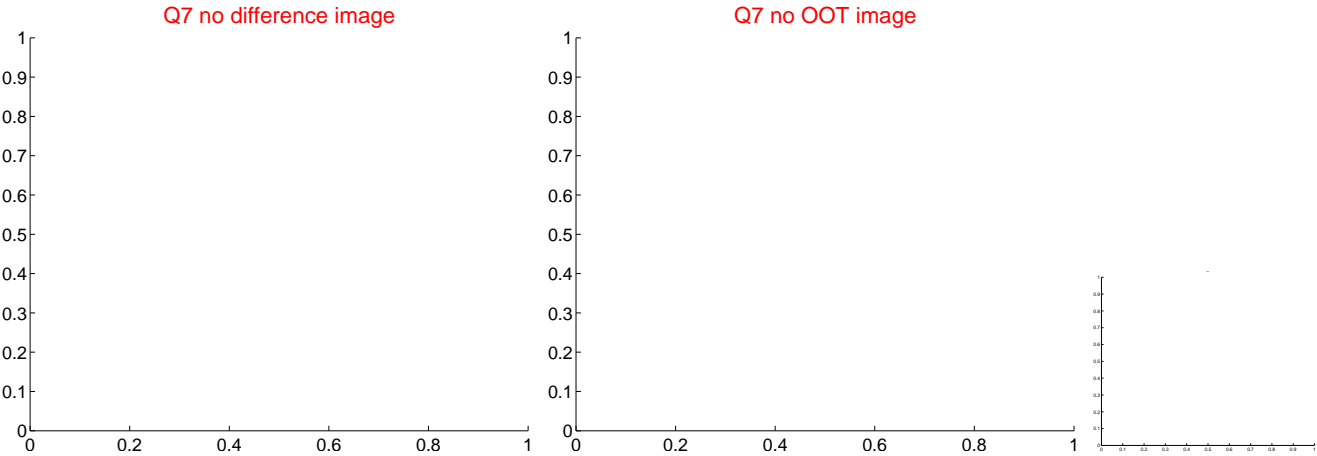
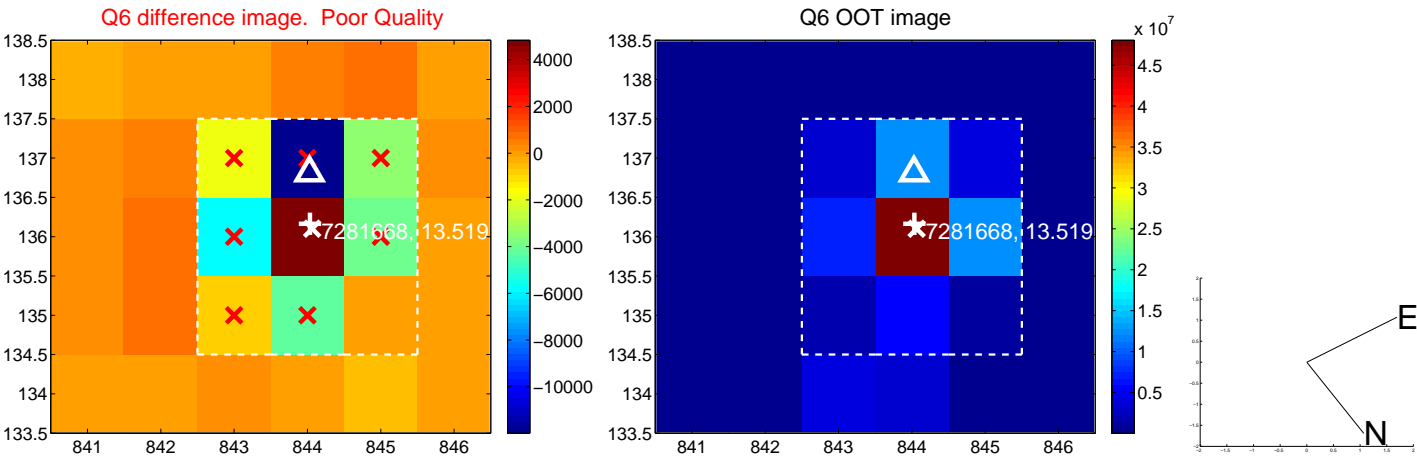
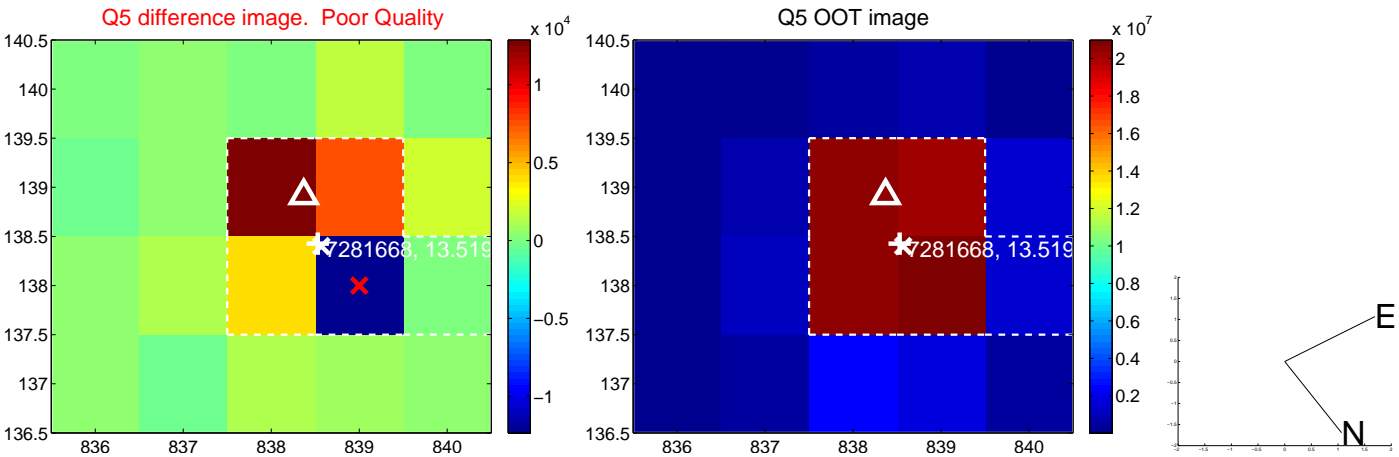


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

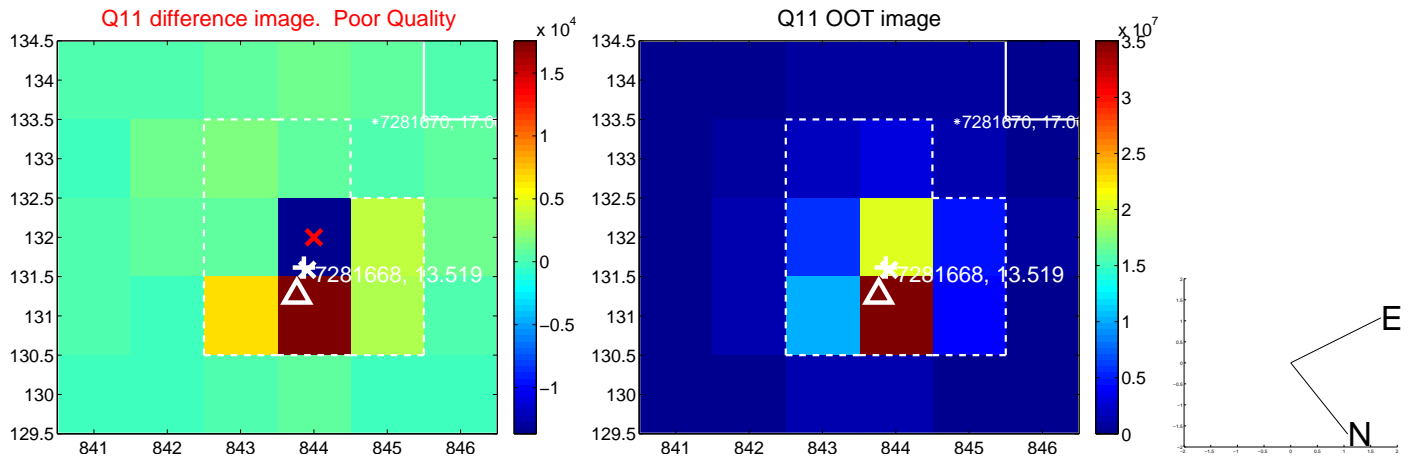
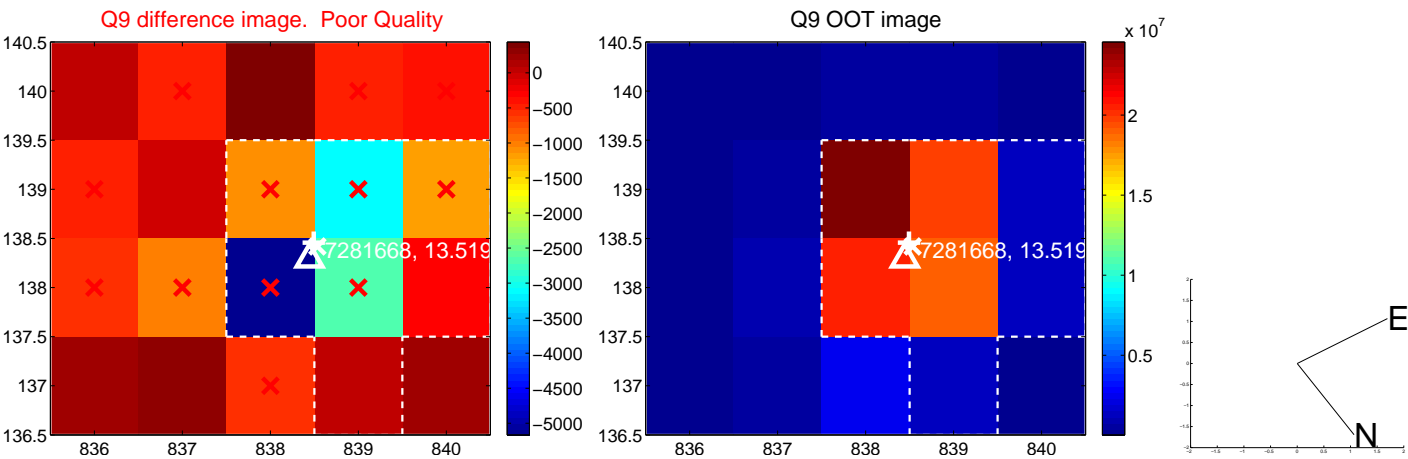
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



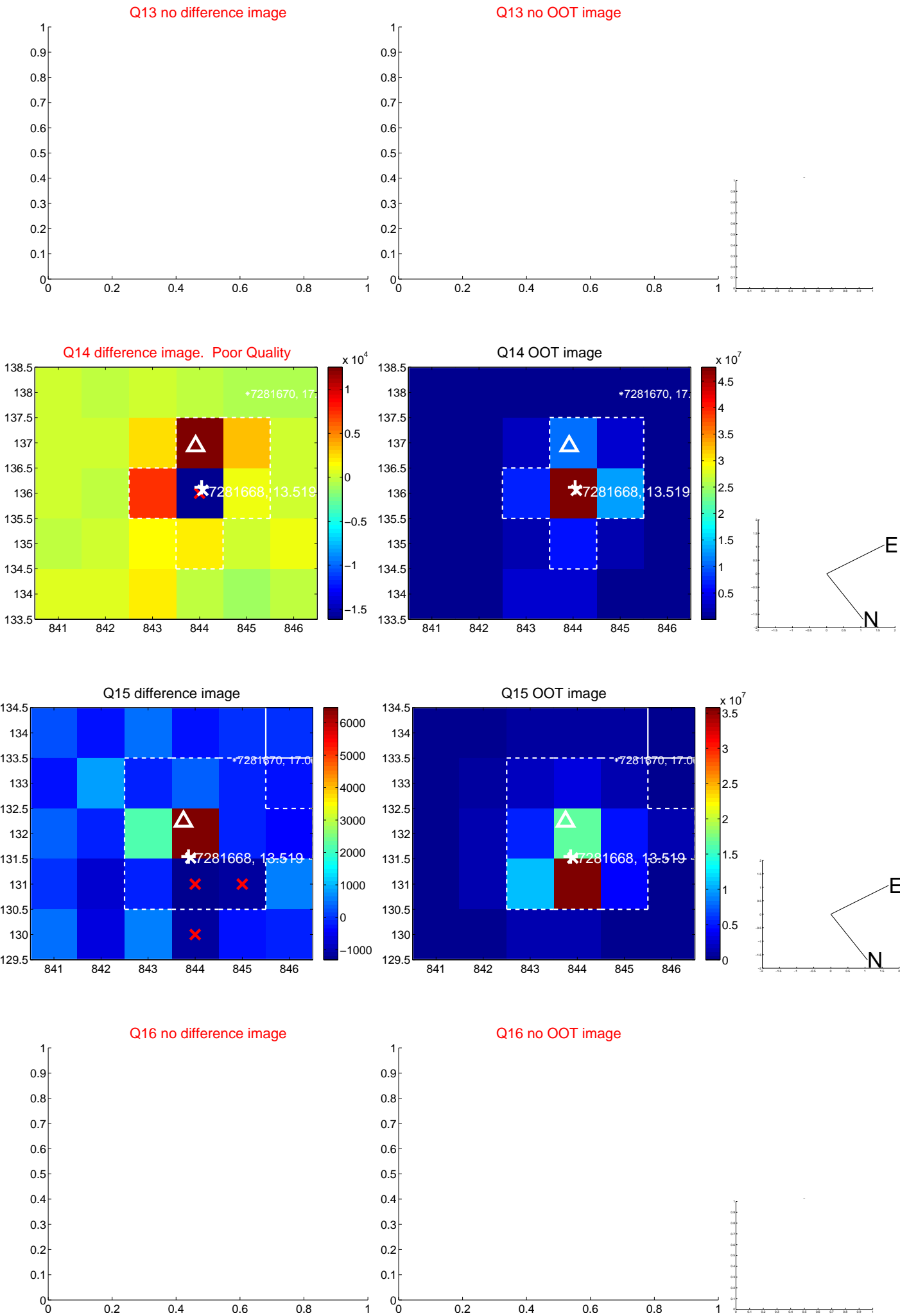
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



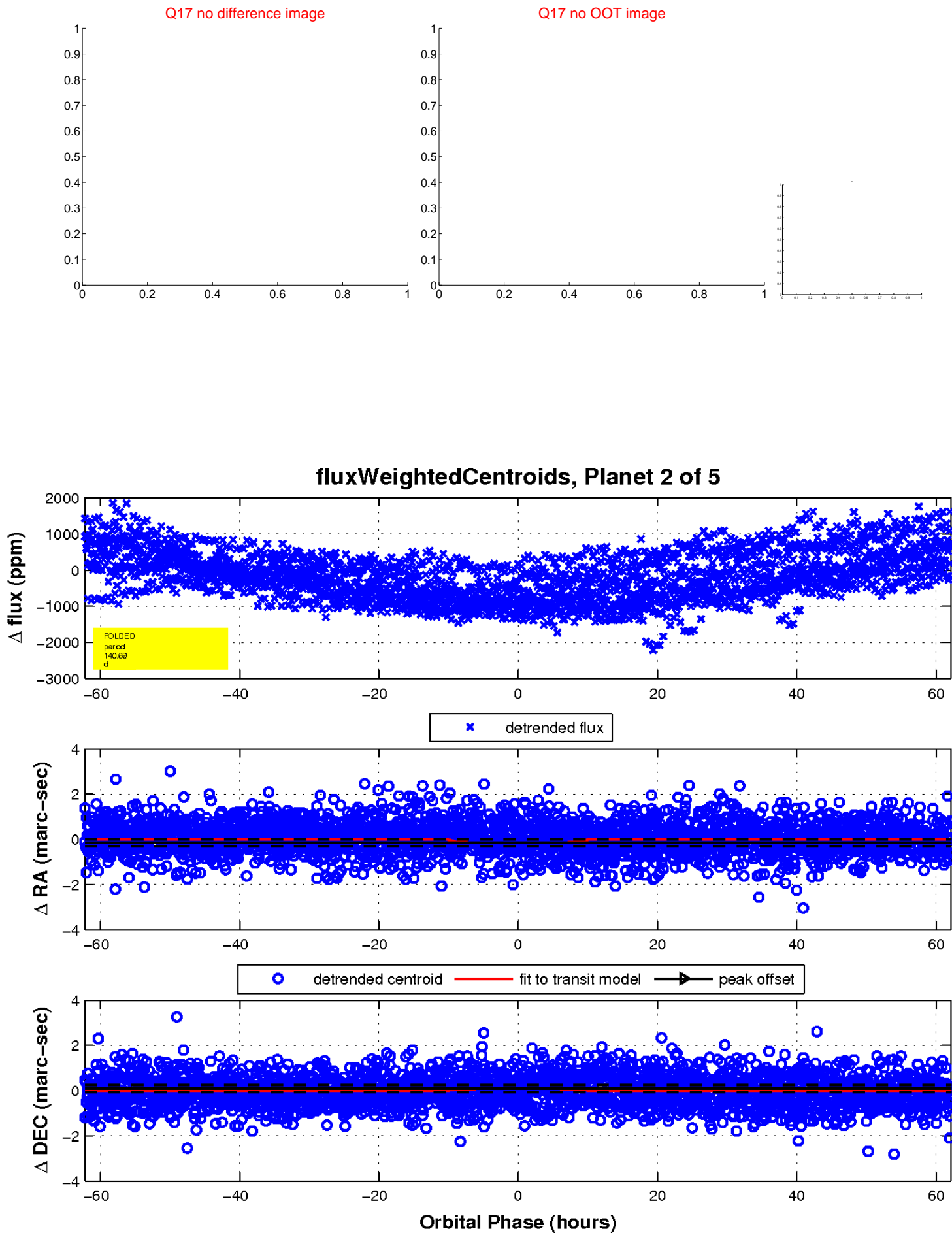
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



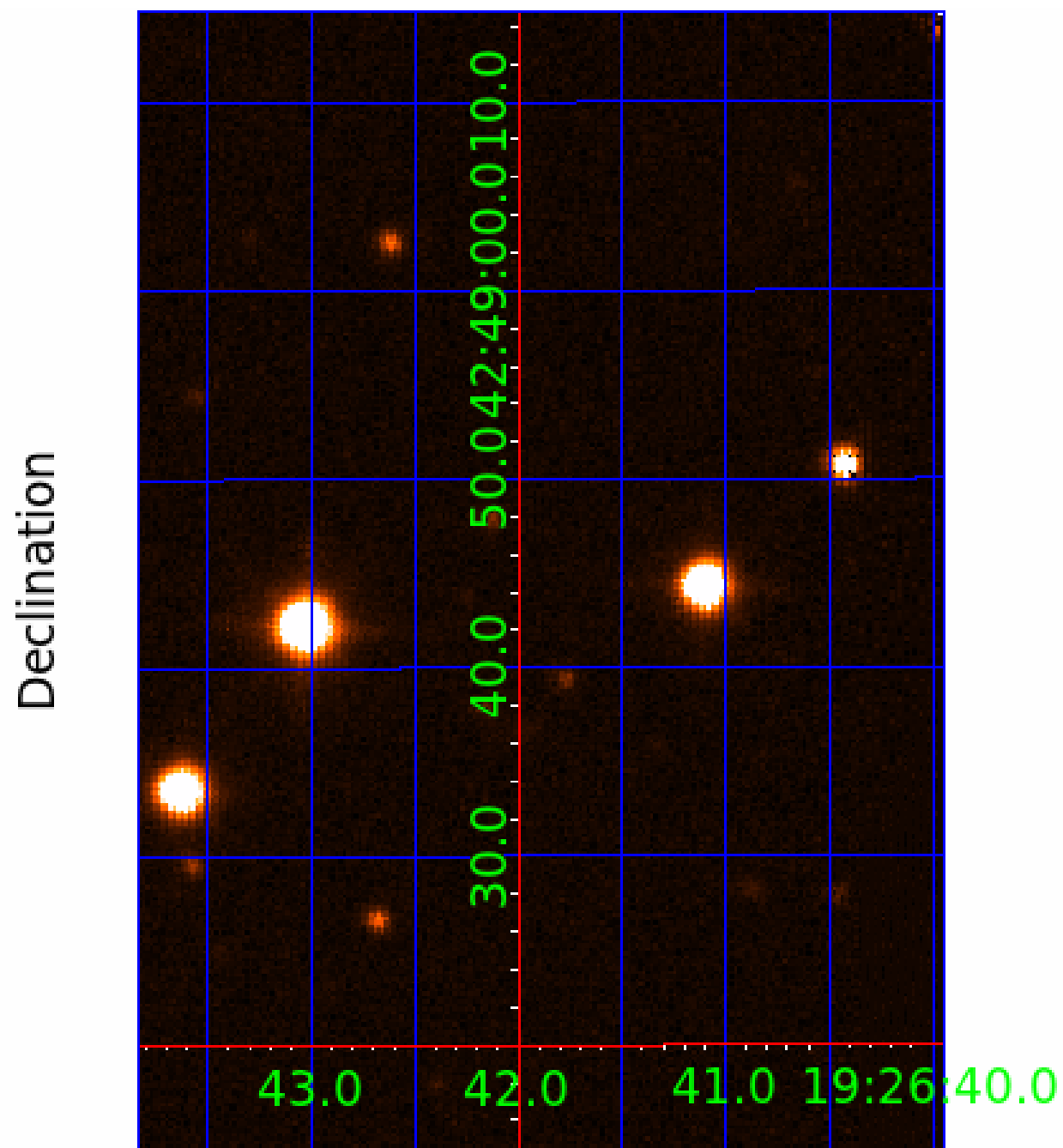
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 007281668

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})
007281668-01	OBS	7829.01	0.566781	131.838192	25.3	2.621	10.9	12.7	0.87	5629	0.52	3823.07
007281668-02	OBS	No	140.688804	191.353746	284.8	20.744	17.0	5.8	0.87	5629	1.72	2.45
007281668-03	OBS	No	123.185790	201.975890	241.6	4.204	8.7	5.6	0.87	5629	1.44	2.93
007281668-05	OBS	No	157.882065	149.360481	176.6	7.968	8.1	3.9	0.87	5629	1.19	2.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007281668-01	OBS	FP	0.00	0	0	1	1	HALO_GHOST—EPHEM_MATCH
007281668-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
007281668-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007281668-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

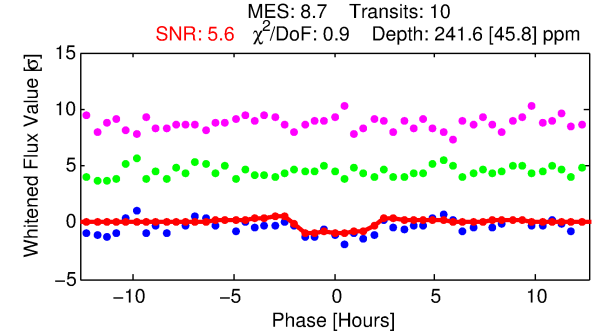
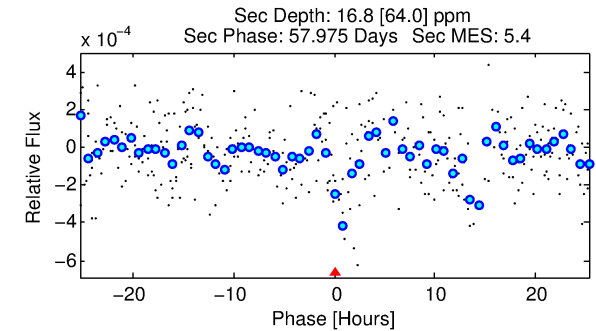
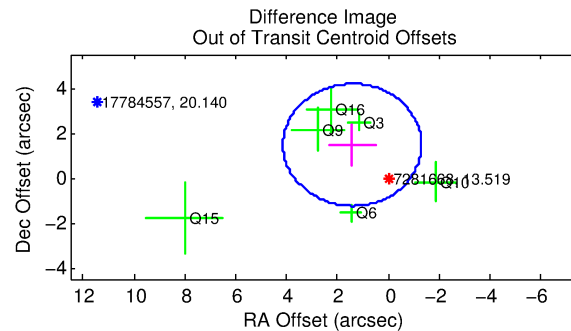
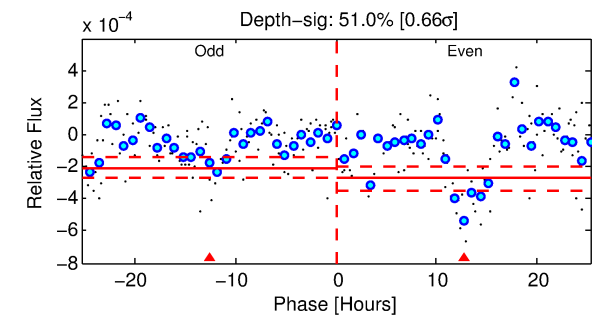
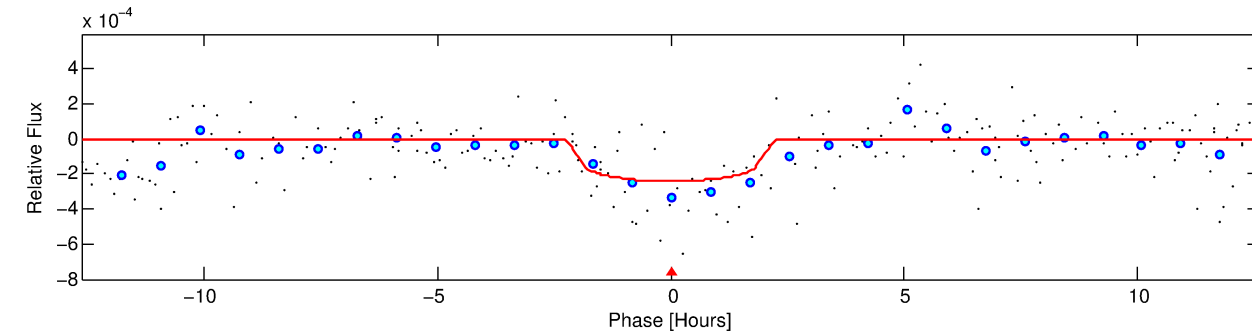
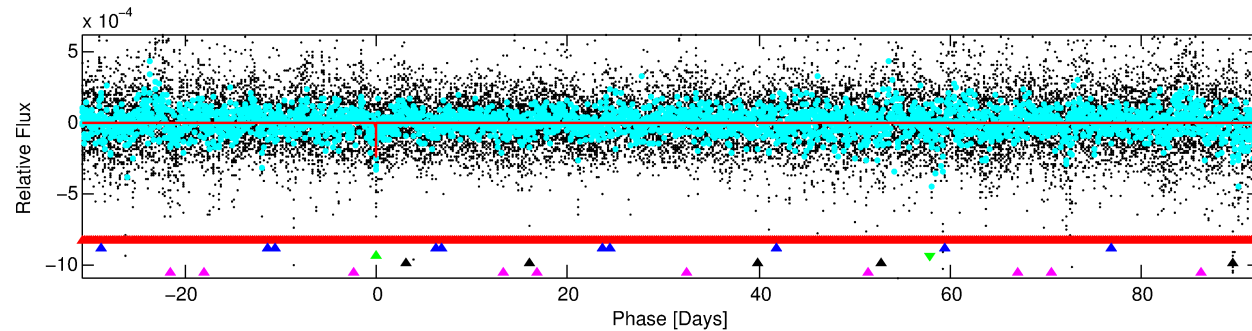
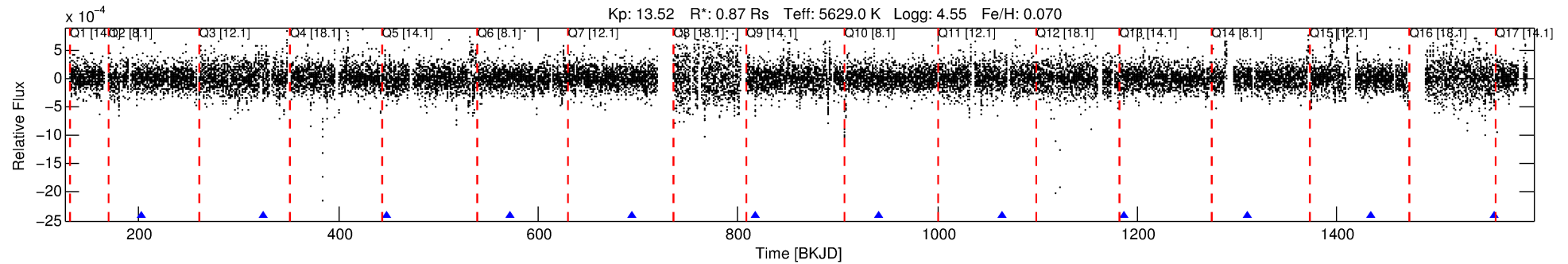
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007281668-03

No Significant Match Found

DV One-Page Summary

KIC: 7281668 Candidate: 3 of 5 Period: 123.186 d



DV Fit Results:

Period = 123.18579 [0.00142] d
Epoch = 201.9759 [0.0110] BKJD
Rp/R* = 0.0152 [0.0180]
a/R* = 164.51 [816.41]
b = 0.70 [3.67]
Seff = 2.93 [0.62]
Teq = 333 [18] K
Rp = 1.44 [1.72] Re
a = 0.4824 [0.0620] AU
Ag = 1033.50 [4636.88] [0.22σ]
Teffp = 2923 [3276] K [0.79σ]

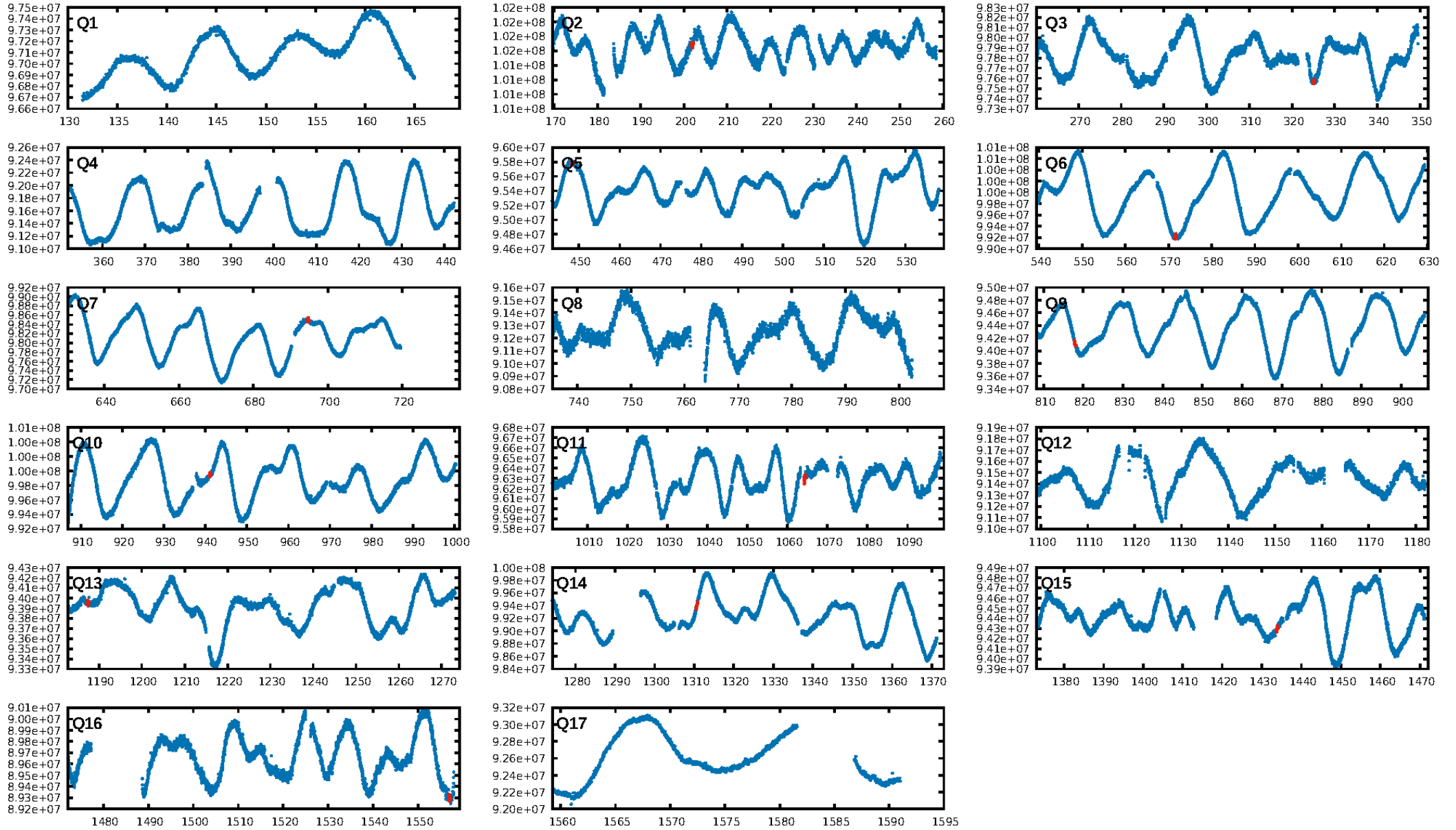
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [593.99σ]
LongPeriod-sig: 100.0% [19.85σ]
ModelChiSquare2-sig: 77.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.17e-09
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 2.248
Centroid-sig: 9.1%
Centroid-so: 1.116 arcsec [1.39σ]
OotOffset-rm: 2.039 arcsec [2.25σ]
KicOffset-rm: 1.867 arcsec [1.97σ]
OotOffset-st: 2/2/1/1 [6]
KicOffset-st: 2/2/1/1 [6]
DiffImageQuality-fgm: 0.50 [3/6]
DiffImageOverlap-fno: 0.00 [0/10]

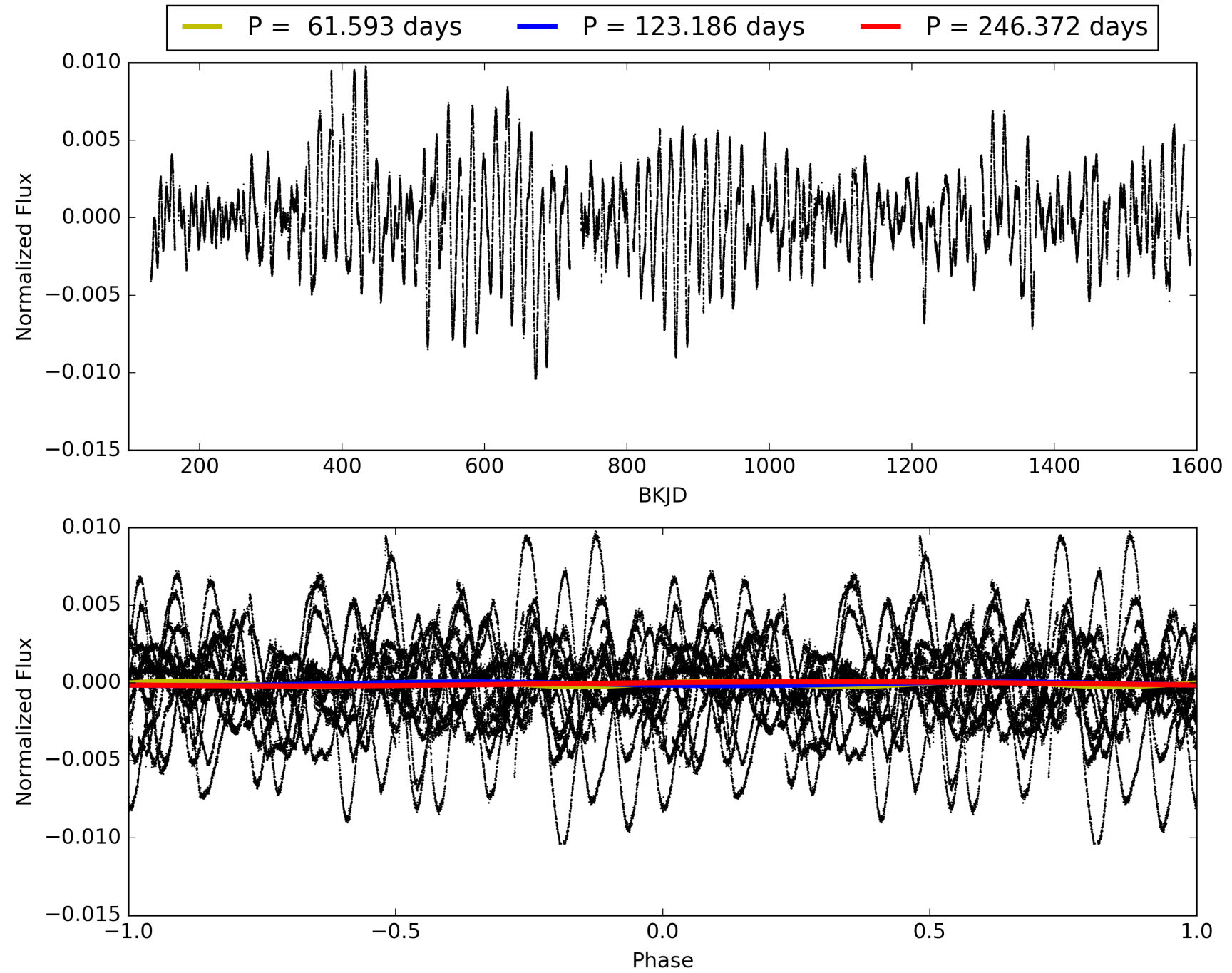
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:38:37 Z

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

TCE 007281668-03, PDC Light Curves

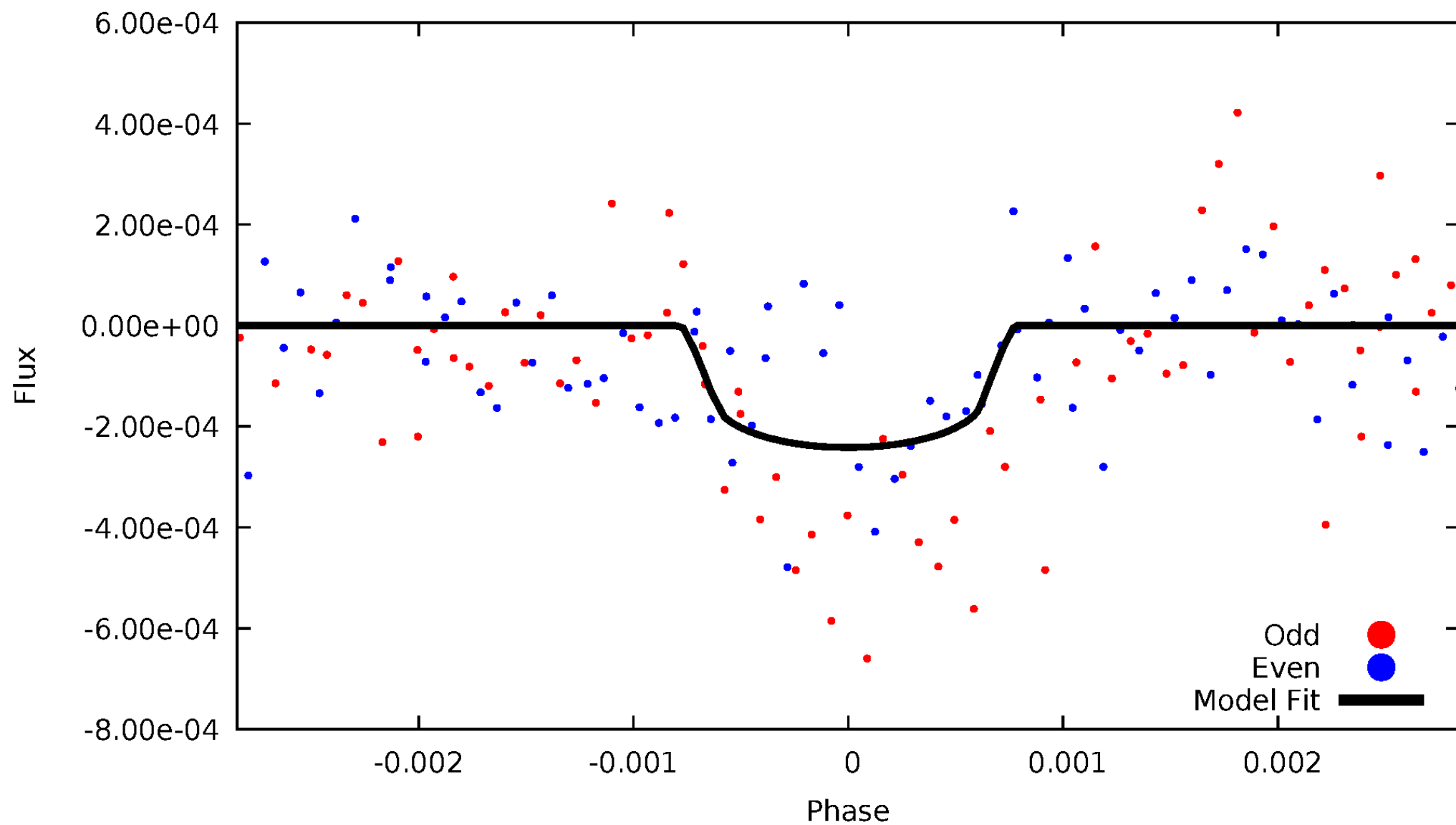


TCE 007281668-03



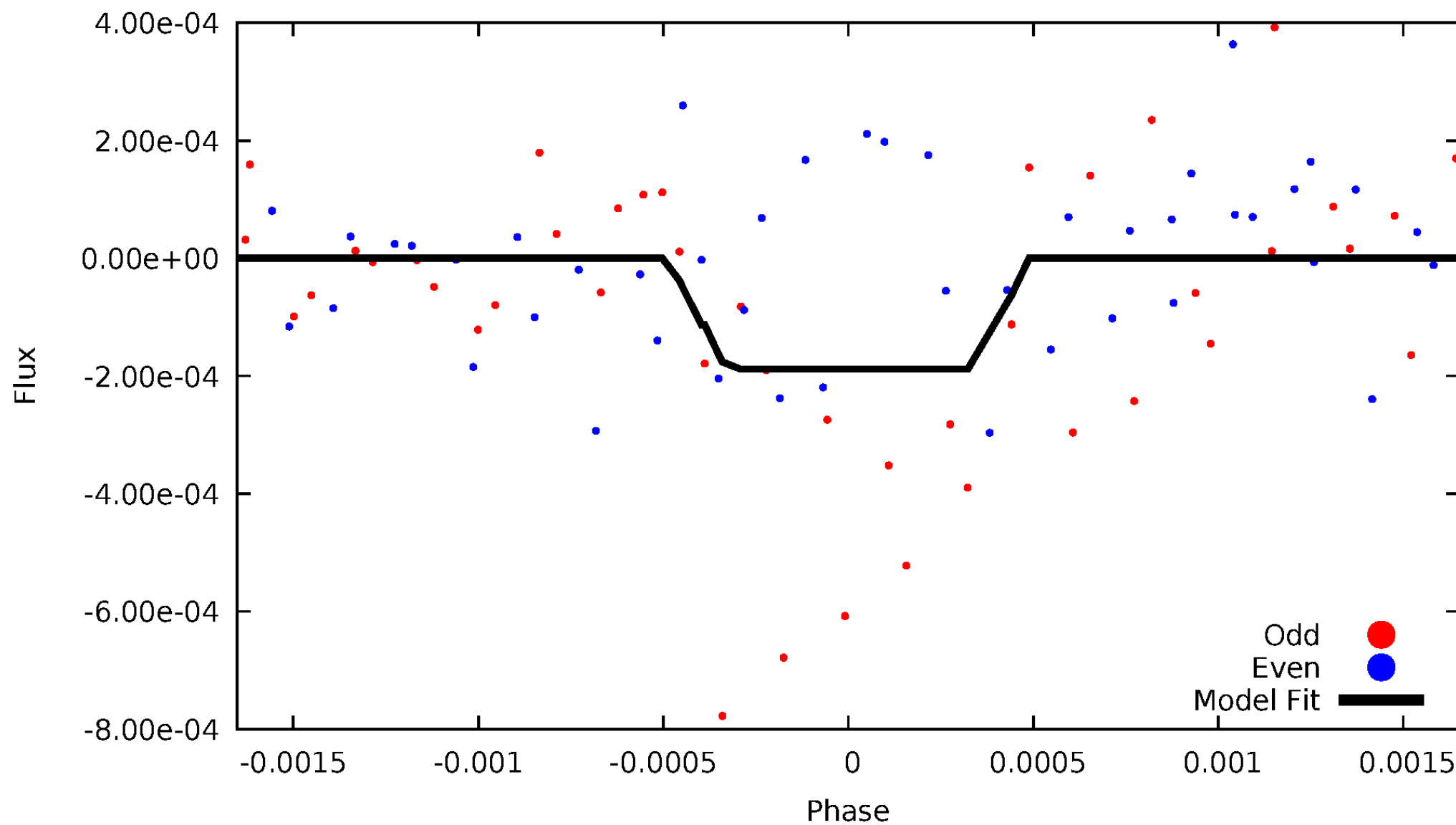
DV Odd/Even

TCE 007281668-03



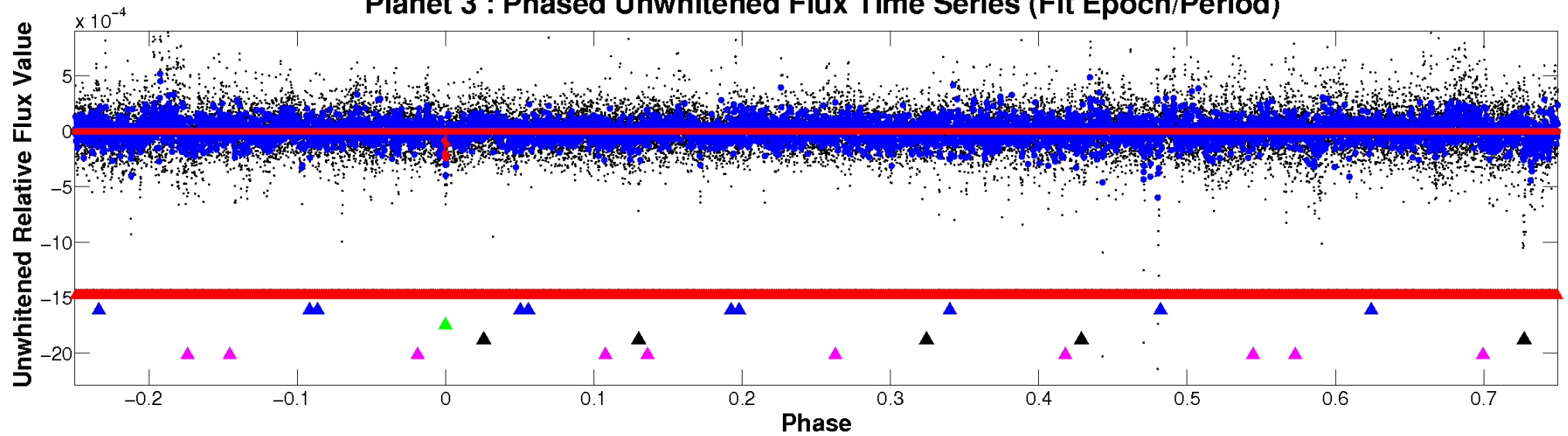
ALT Odd/Even

TCE 007281668-03

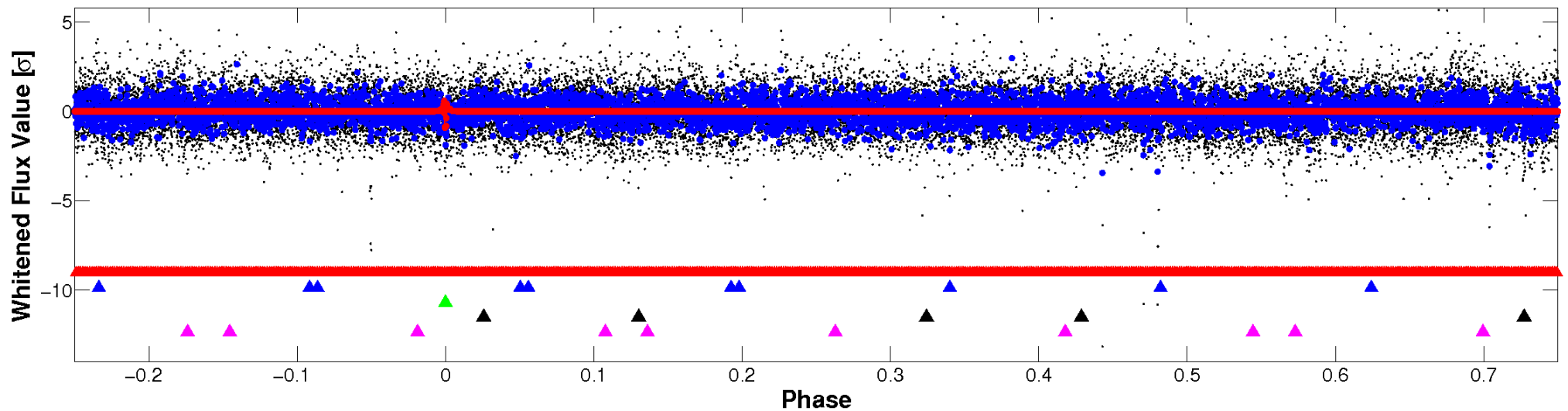


Non-Whitened Vs. Whitened Light Curve

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

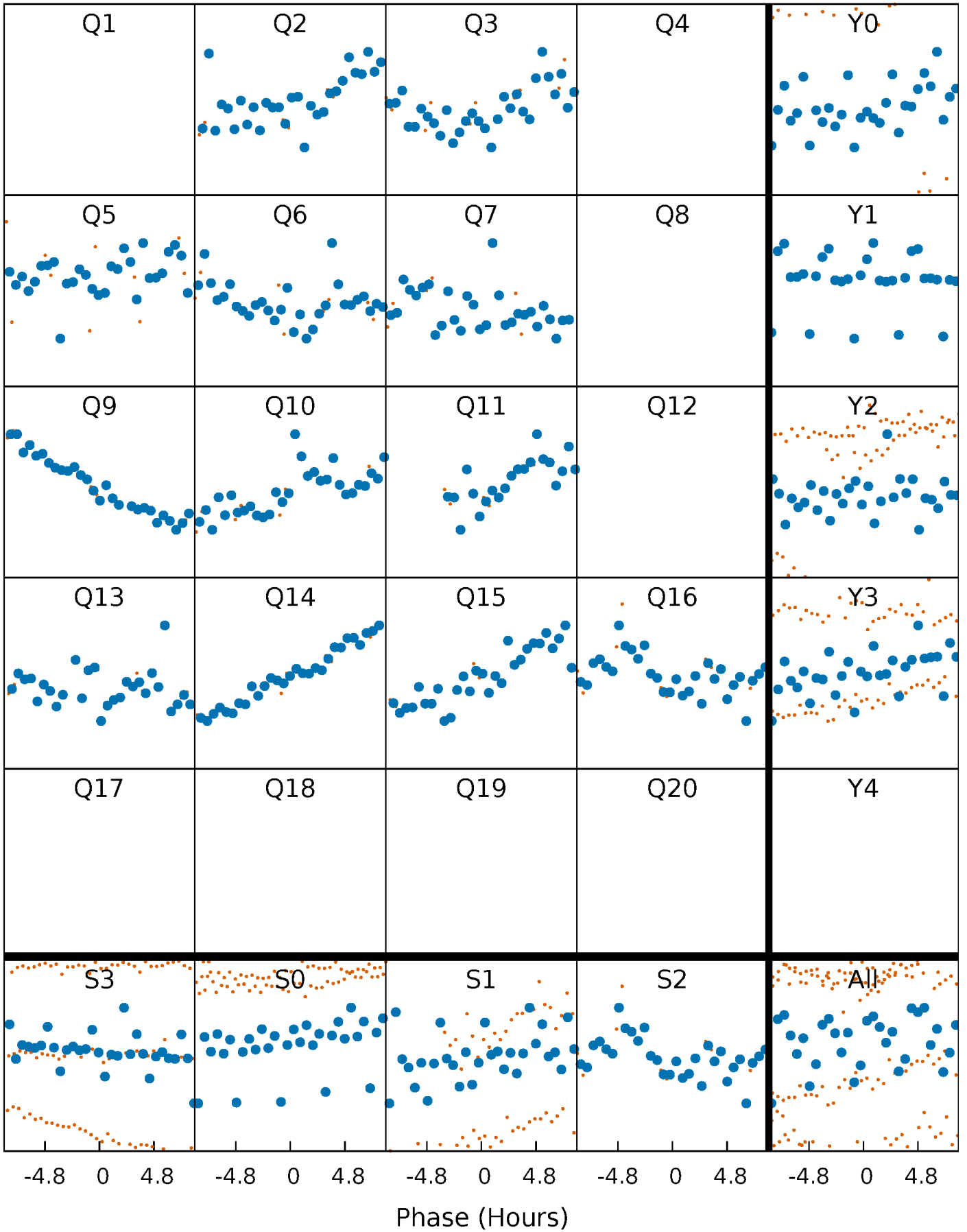


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



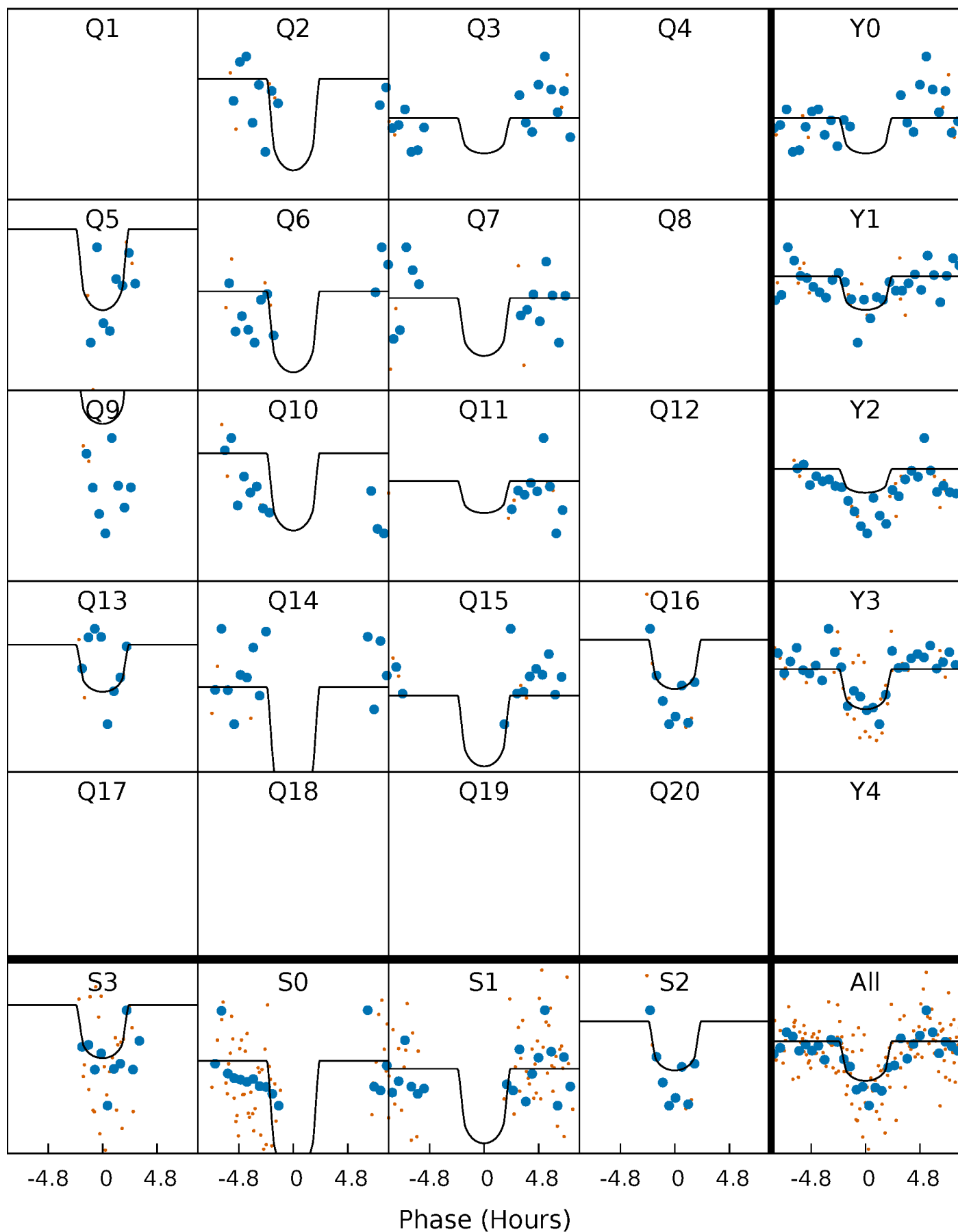
PDC Quarter-Phased Transit Curves

TCE 007281668-03 P=123.185790 Days $T_0=201.975889$ (BKJD)



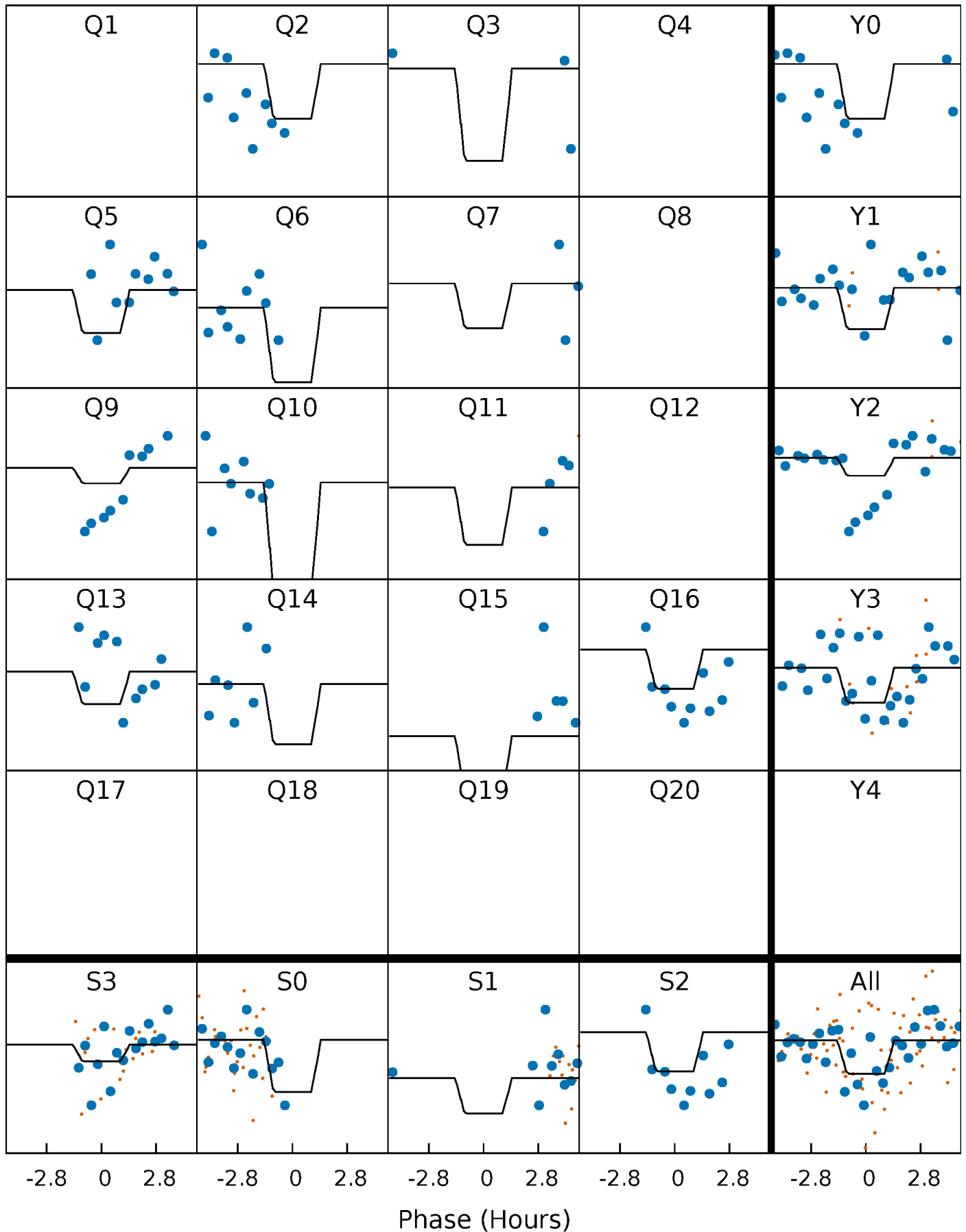
DV Quarter-Phased Transit Curves

TCE 007281668-03 P=123.185790 Days $T_0=201.975889$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

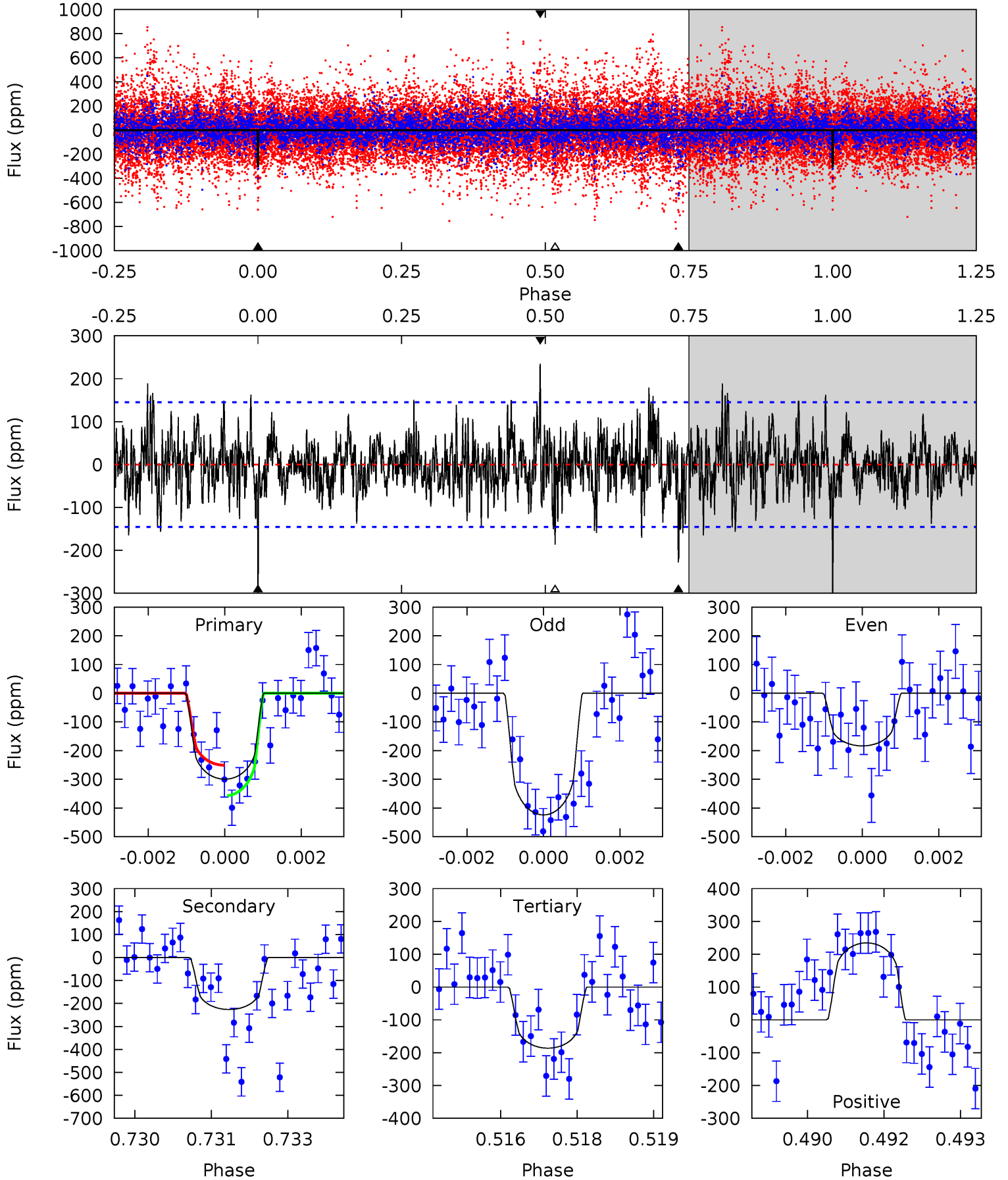
TCE 007281668-03 P=123.184899 Days $T_0=201.951277$ (BKJD)



DV Model-Shift Uniqueness Test

007281668-03, P = 123.185790 Days, E = 78.790099 Days

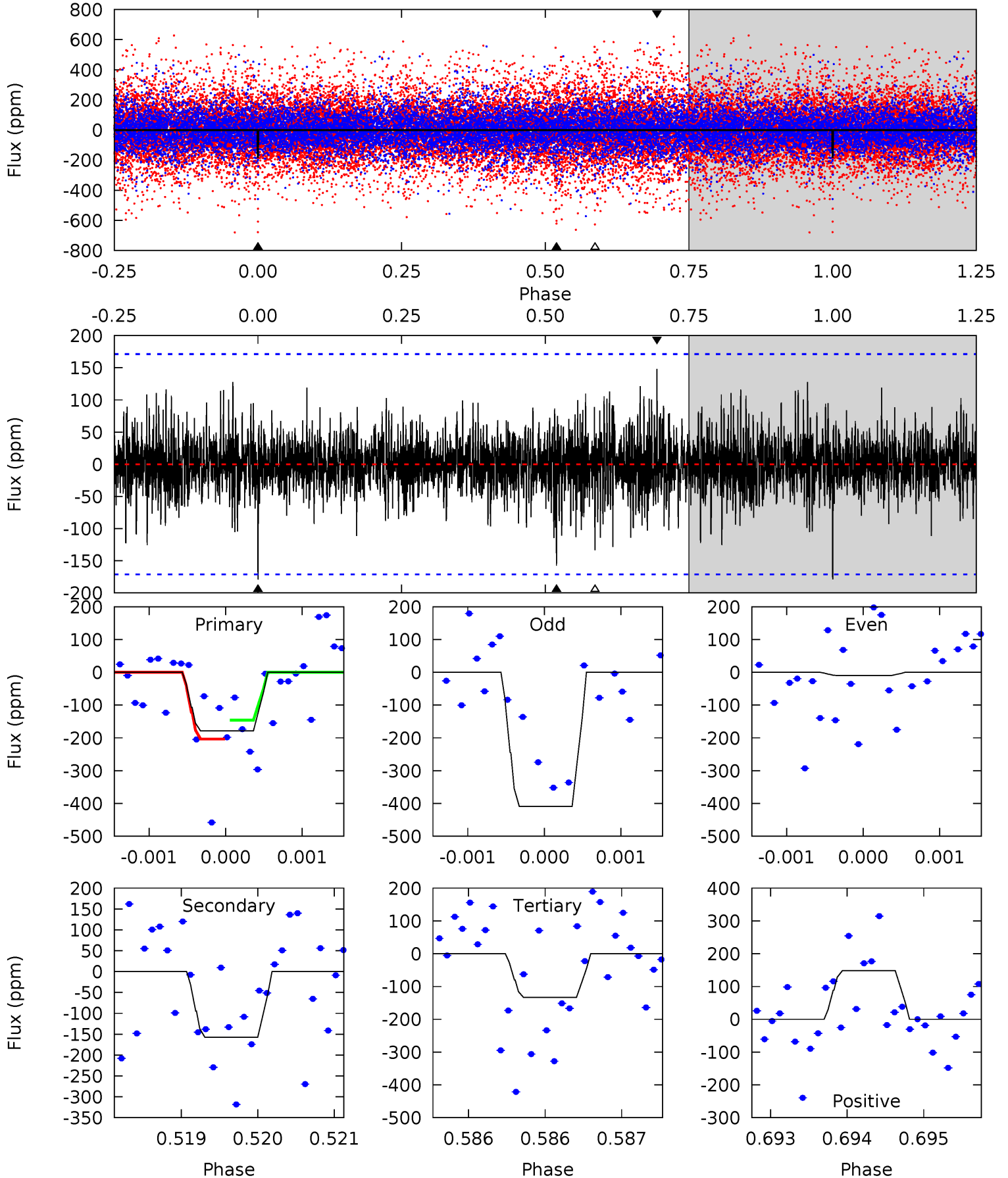
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	8.37	6.89	8.68	5.37	3.17	1.96	4.19	2.40	1.48	-0.31	4.38	1.53	0.44	1.98



Alt Model-Shift Uniqueness Test

007281668-03, P = 123.184899 Days, E = 78.766378 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.72	5.04	4.27	4.74	5.47	3.32	1.10	1.45	0.98	0.77	0.30	6.39	1.19	0.45	0.92



Stellar Parameters For KIC 007281668

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5629^{+75}_{-84}	$4.553^{+0.013}_{-0.117}$	$0.070^{+0.150}_{-0.150}$	$0.870^{+0.120}_{-0.032}$	$0.987^{+0.041}_{-0.071}$	$2.107^{+0.158}_{-0.673}$
	+1%/-1%	+0%/-3%	+214%/-214%	+14%/-4%	+4%/-7%	+7%/-32%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 007281668-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-226 ± 27	$1.99^{+1.47}_{-1.35}$	472^{+17}_{-10}	4968^{+4037}_{-995}	7168^{+65952}_{-4808}
Alt.	-158 ± 31	$1.91^{+1.54}_{-1.25}$	473^{+16}_{-11}	4651^{+3072}_{-924}	5379^{+41021}_{-3769}

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

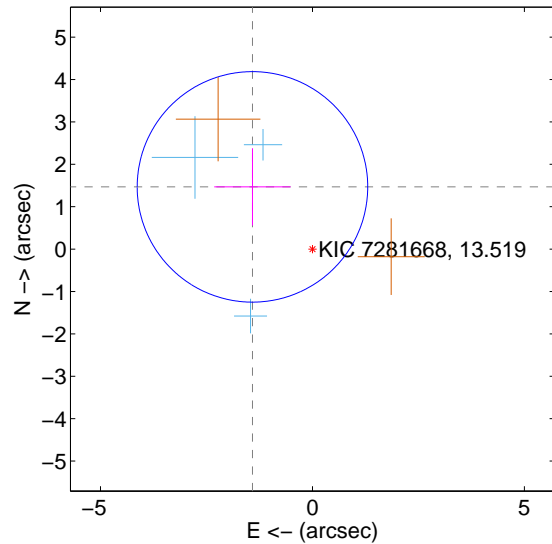
Supplemental centroid analysis for 007281668-03. Kepler magnitude: 13.52. Transit SNR 5.58

There are 3 quarters with good PRF difference image offsets

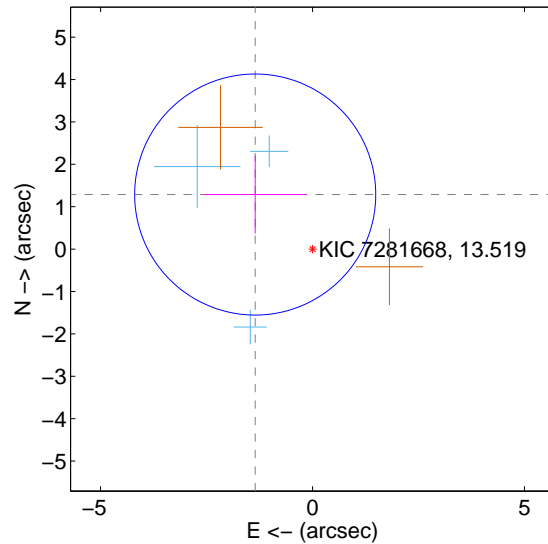
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.039 ± 0.907	2.25	1.415 ± 0.902	1.468 ± 0.911
PRF-fit source offset from KIC position	1.867 ± 0.948	1.97	1.353 ± 1.211	1.287 ± 0.920
photometric centroid source offset	1.12 ± 0.80	1.39	-0.55 ± 0.85	0.97 ± 0.79

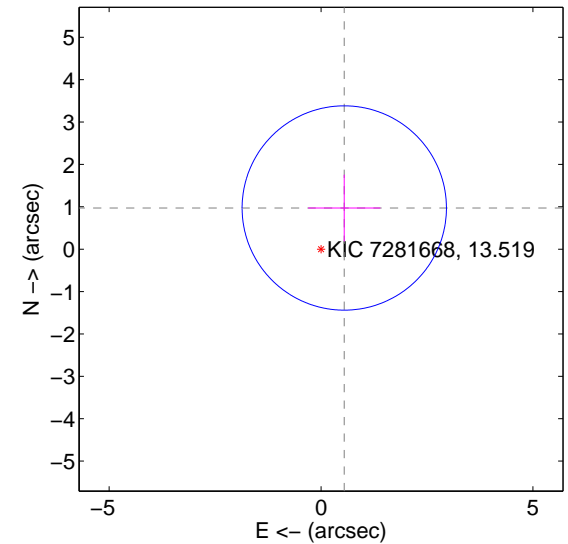
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

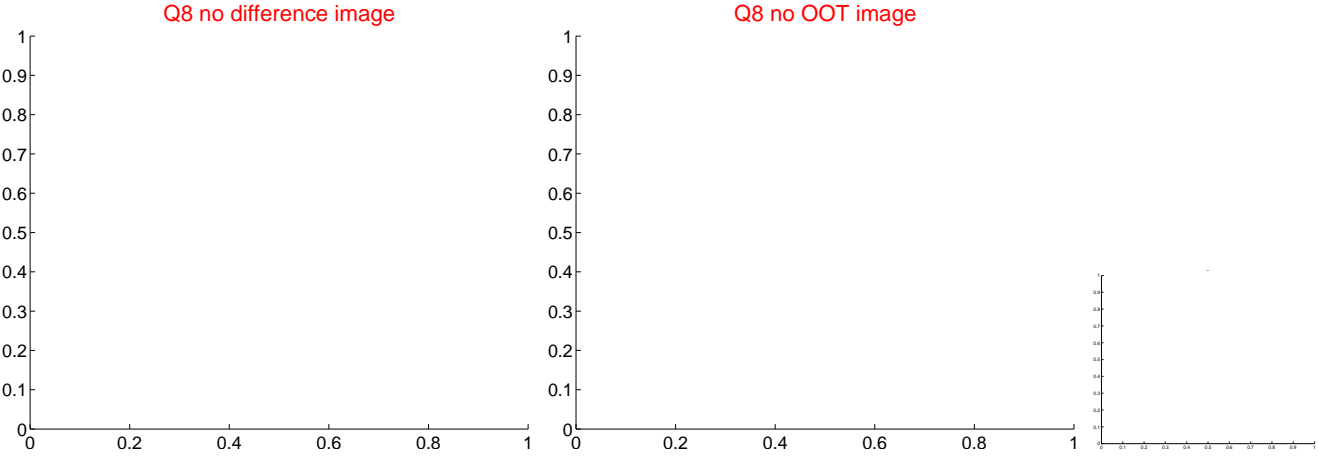
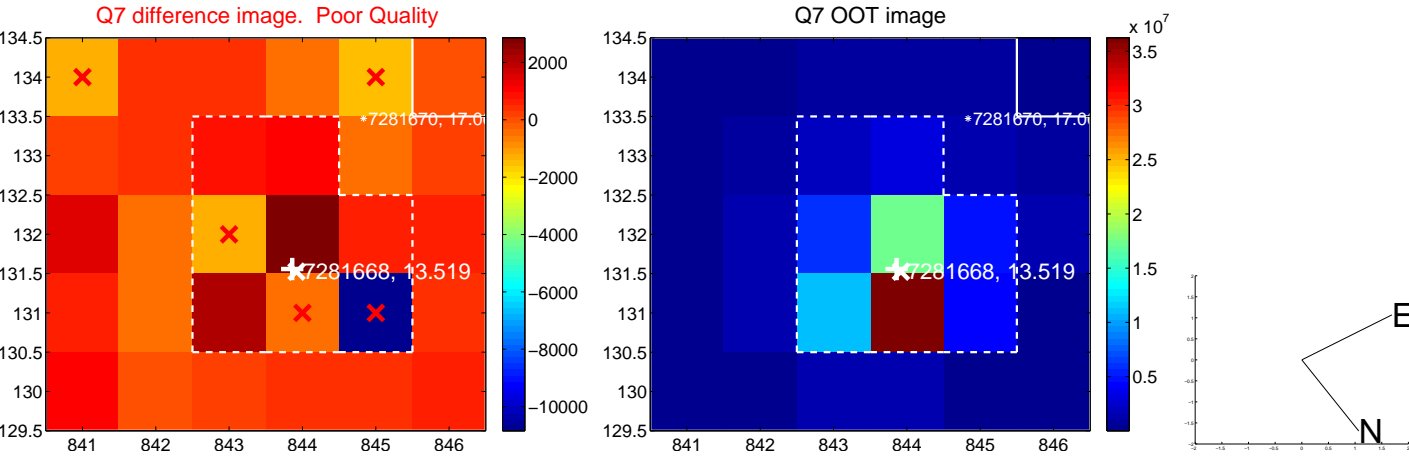
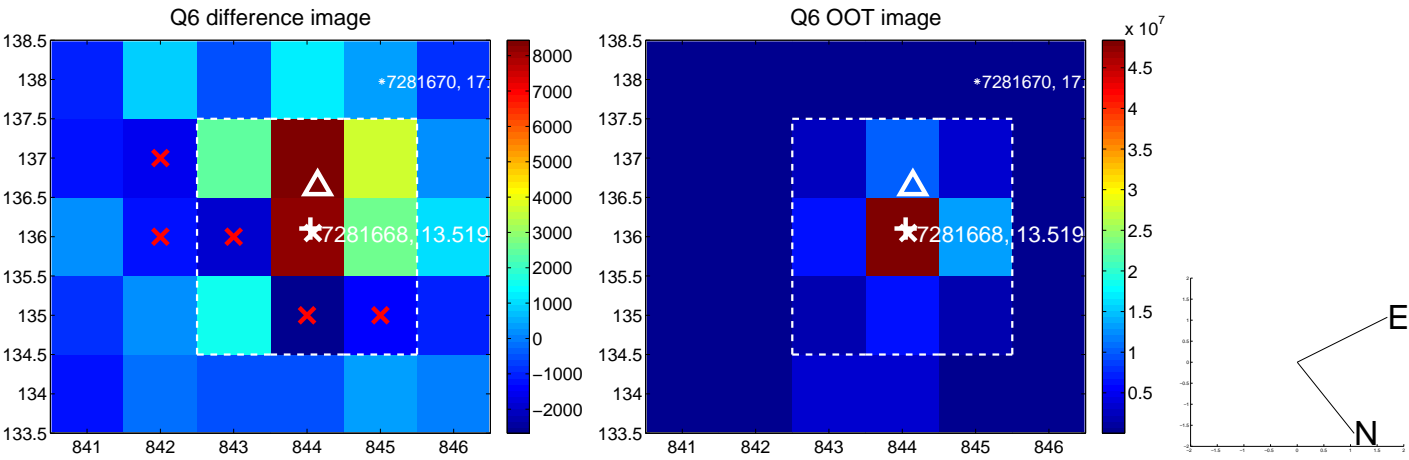
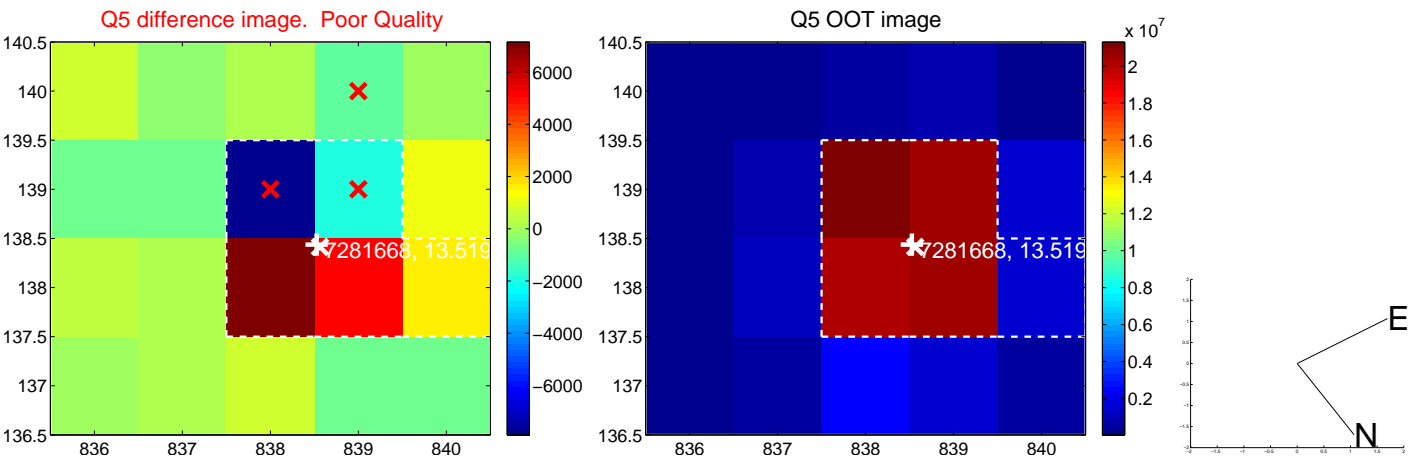


offset from photometric centroids

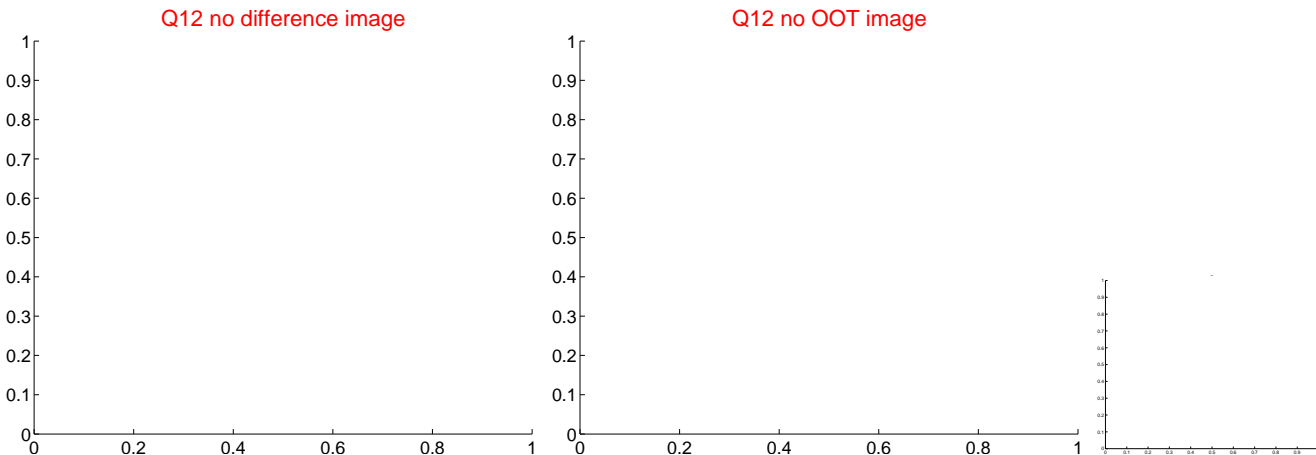
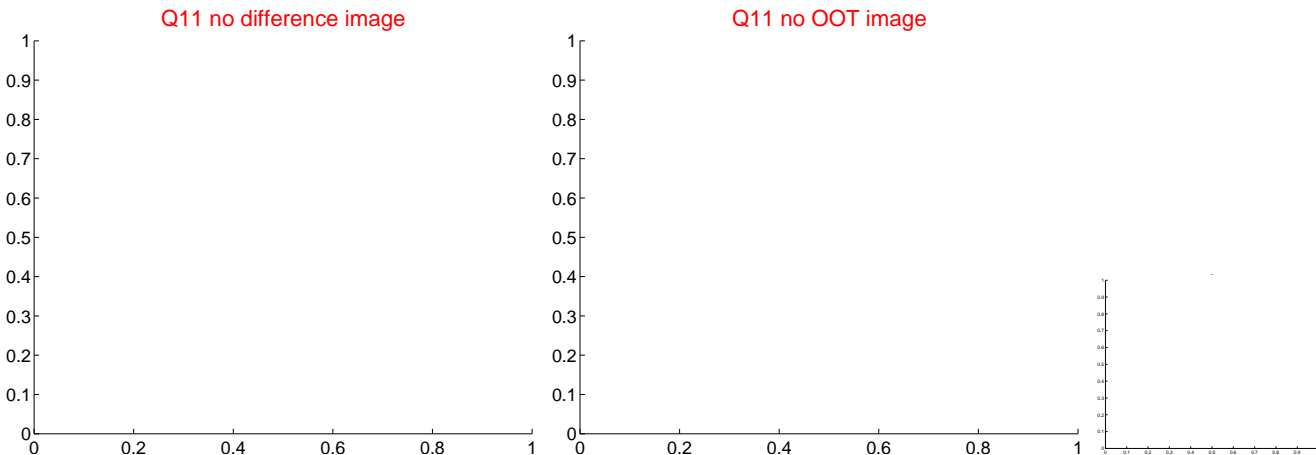
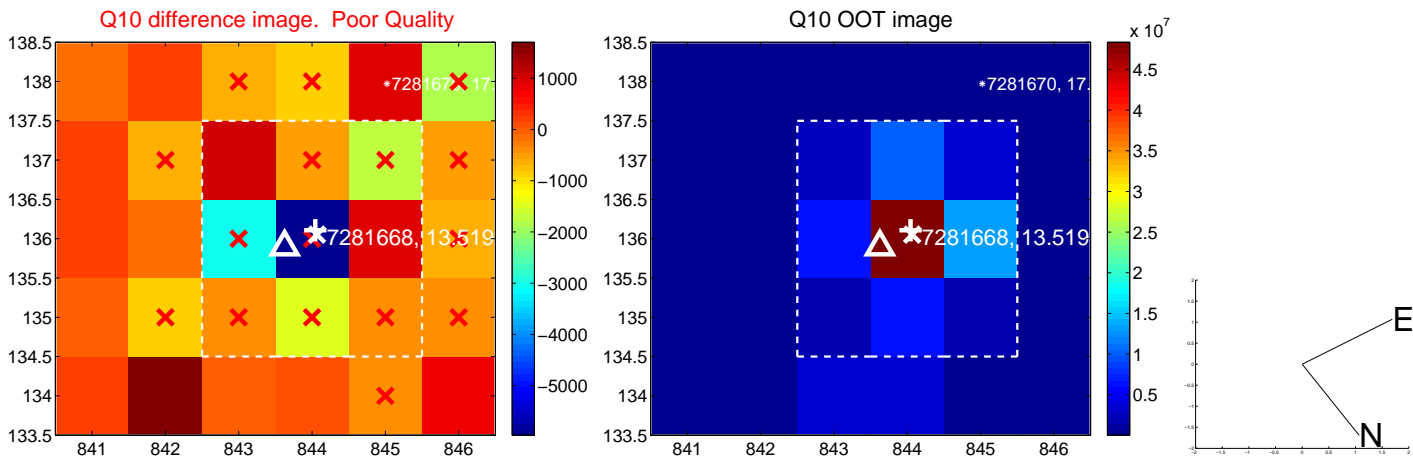
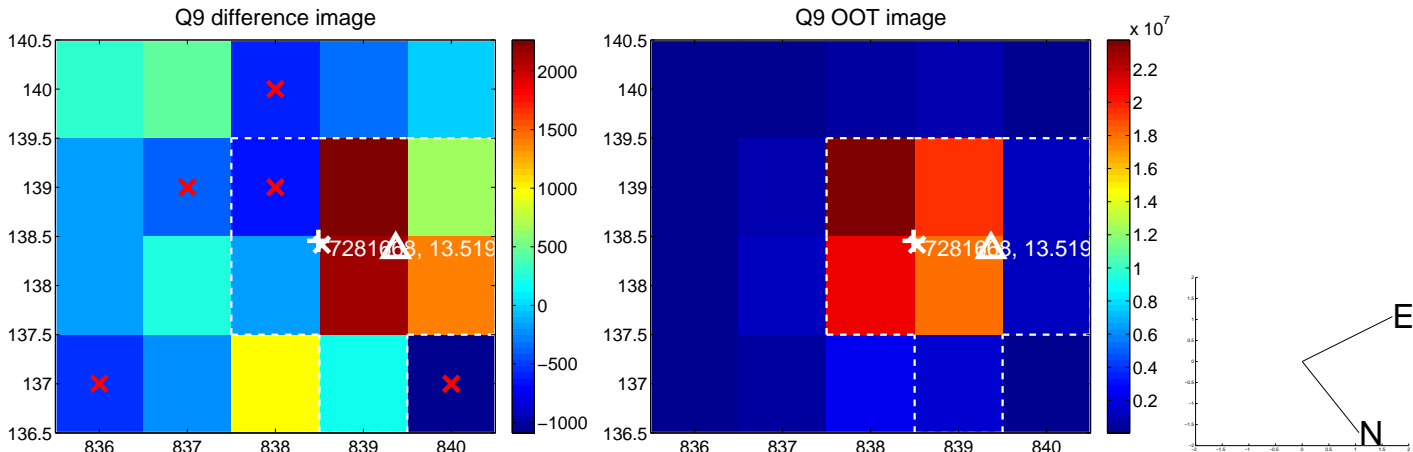


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

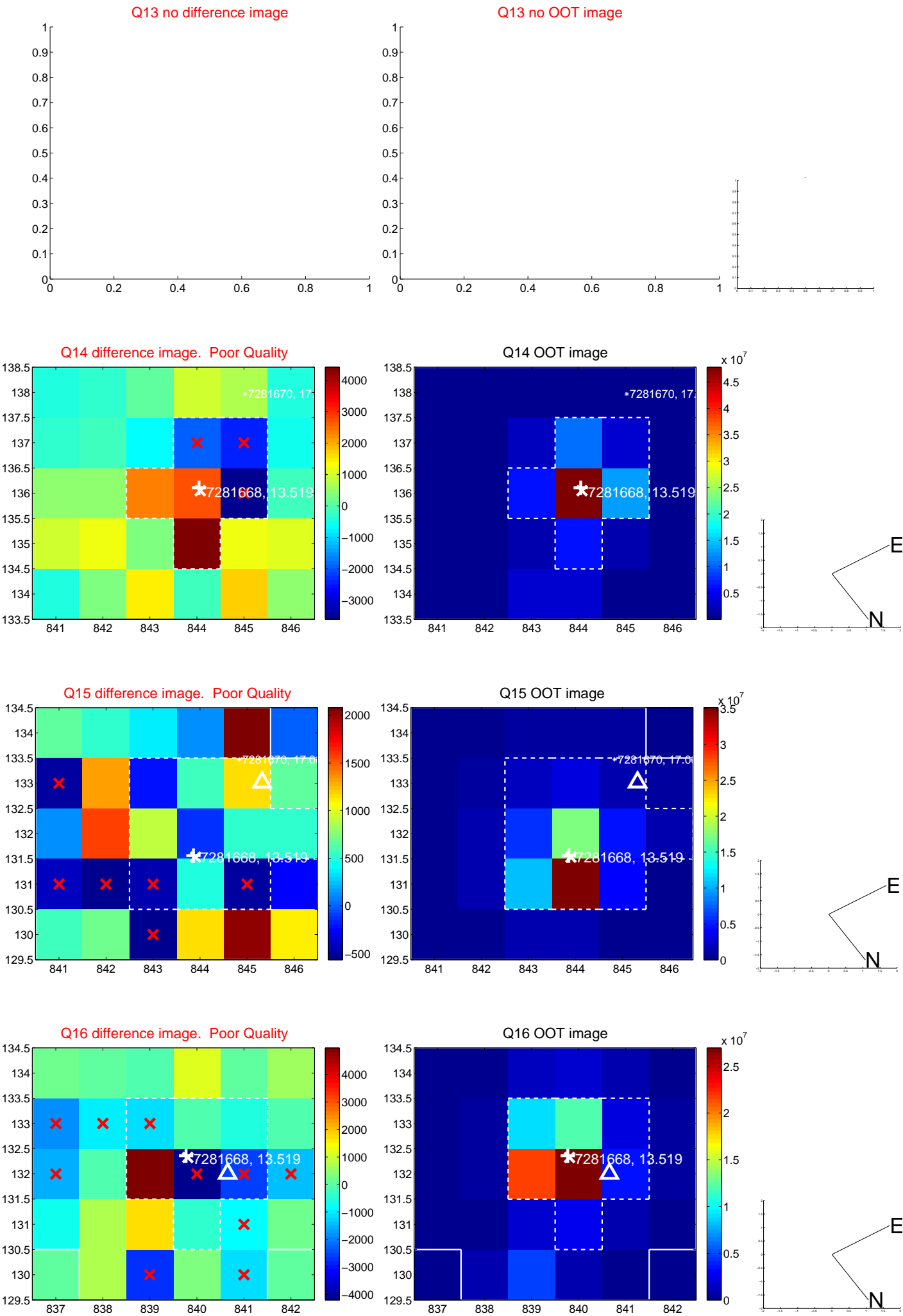
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



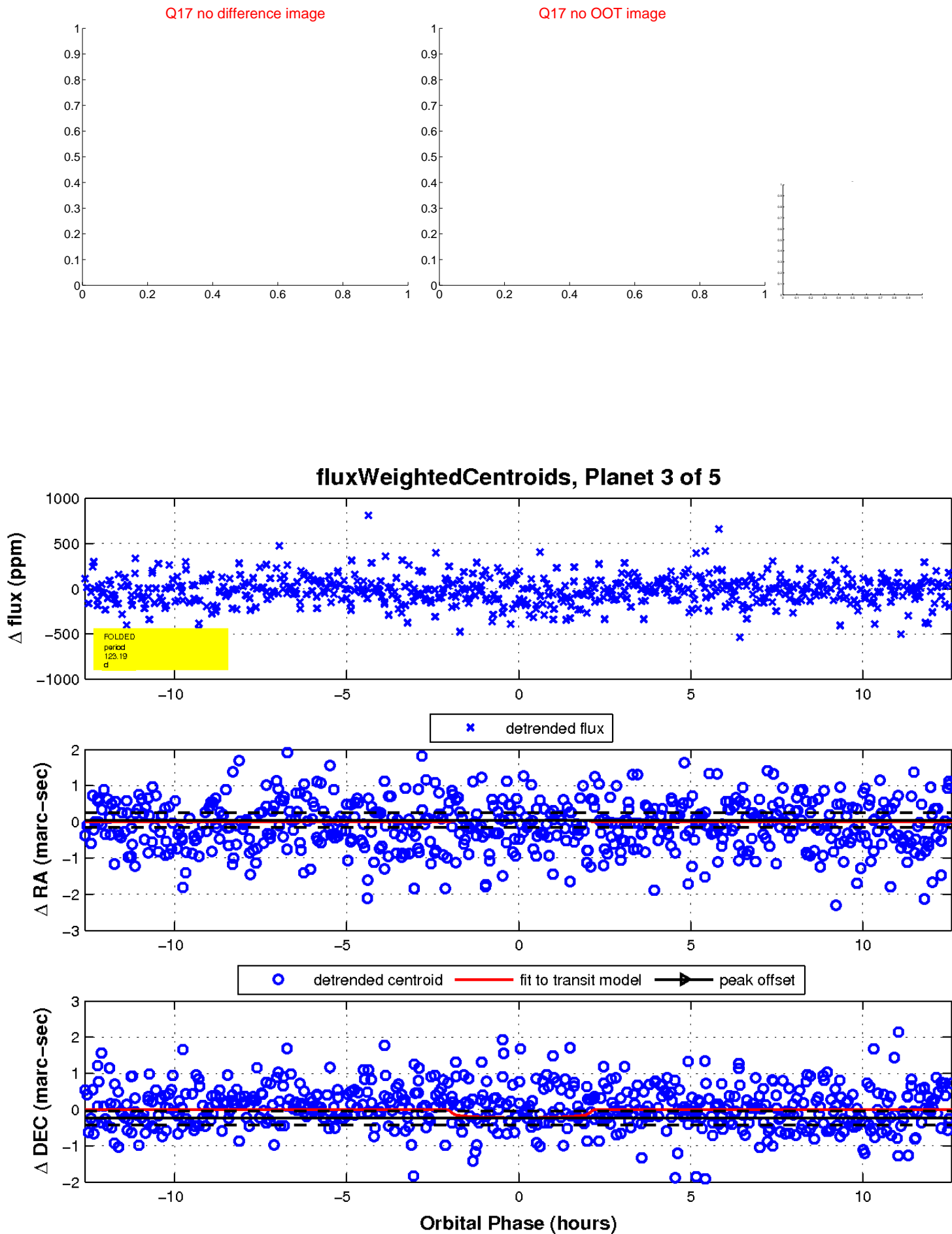
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



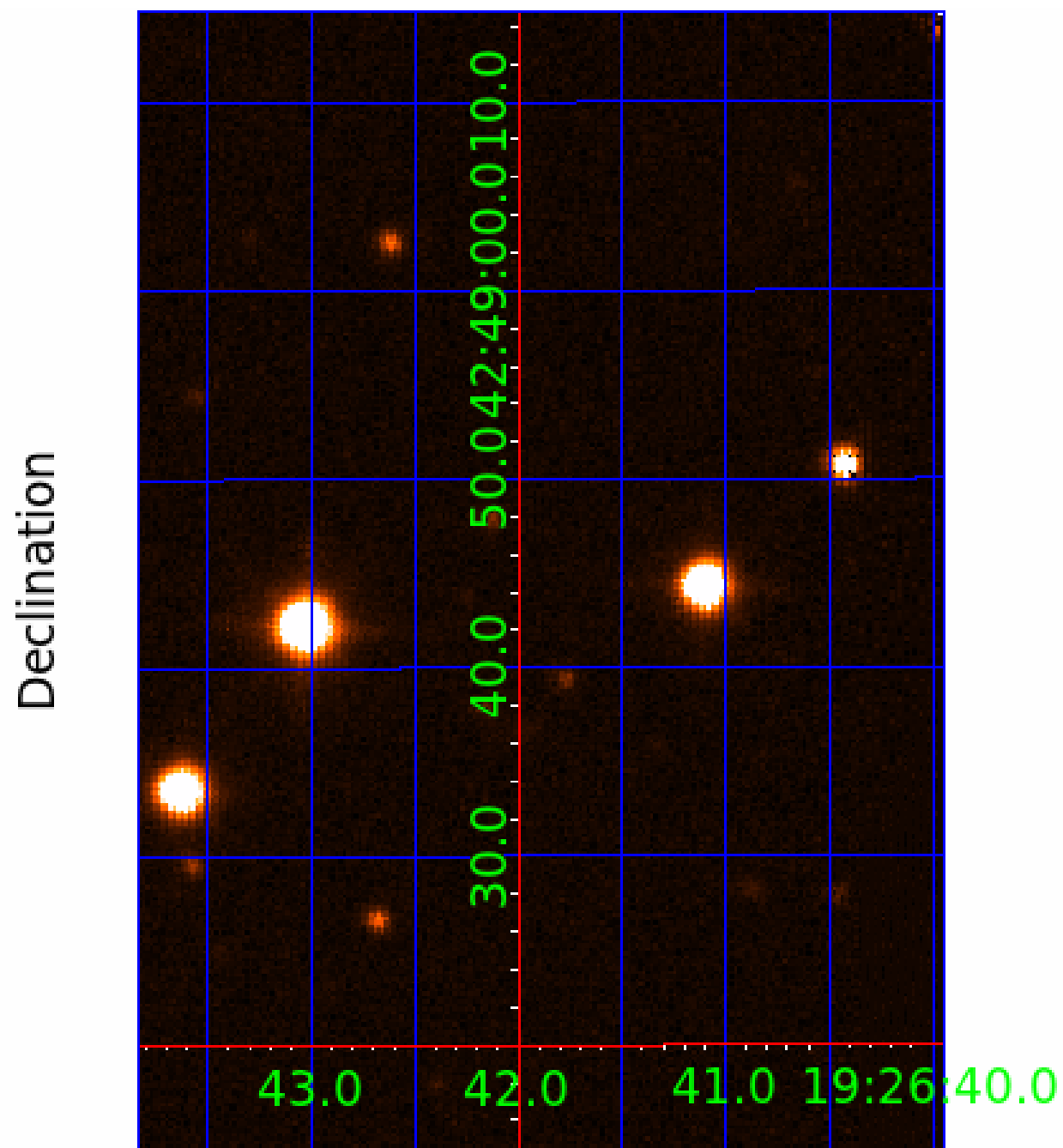
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 007281668

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})
007281668-01	OBS	7829.01	0.566781	131.838192	25.3	2.621	10.9	12.7	0.87	5629	0.52	3823.07
007281668-02	OBS	No	140.688804	191.353746	284.8	20.744	17.0	5.8	0.87	5629	1.72	2.45
007281668-03	OBS	No	123.185790	201.975890	241.6	4.204	8.7	5.6	0.87	5629	1.44	2.93
007281668-05	OBS	No	157.882065	149.360481	176.6	7.968	8.1	3.9	0.87	5629	1.19	2.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007281668-01	OBS	FP	0.00	0	0	1	1	HALO_GHOST—EPHEM_MATCH
007281668-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
007281668-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007281668-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

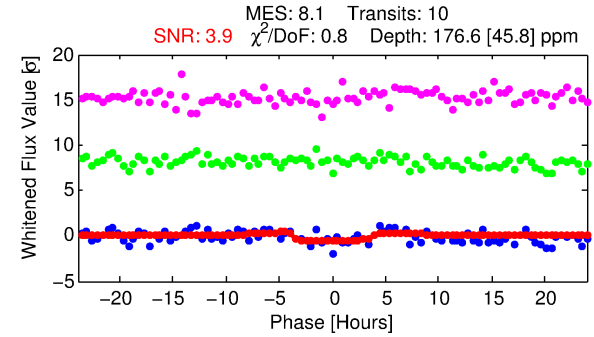
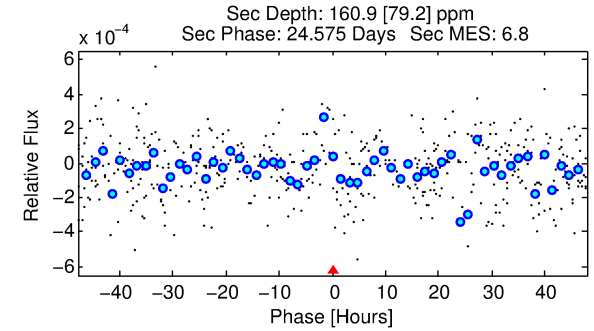
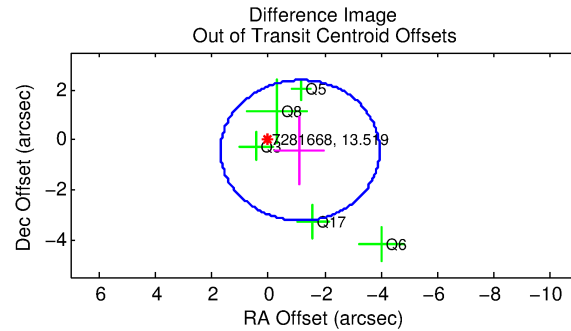
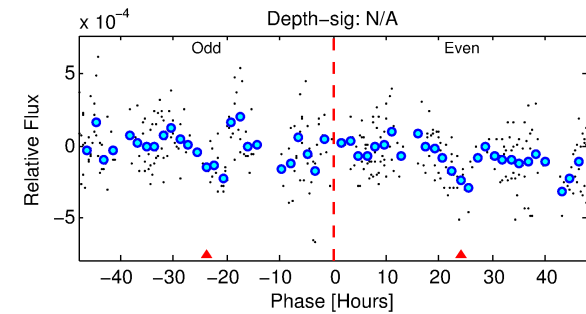
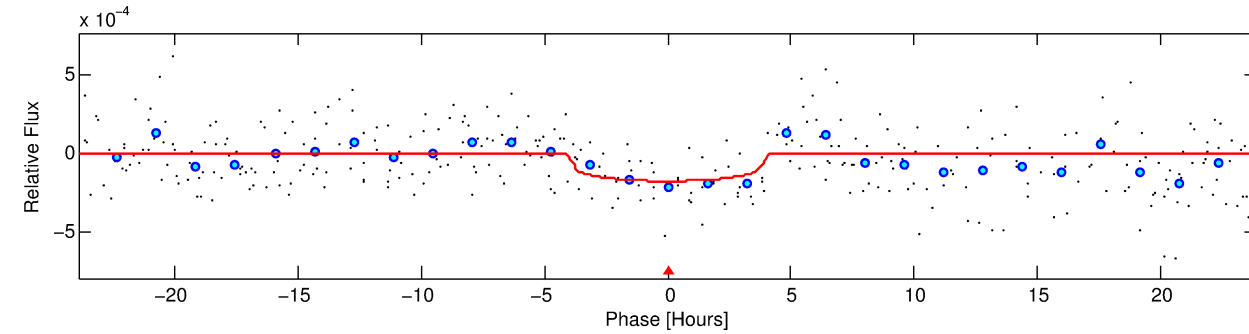
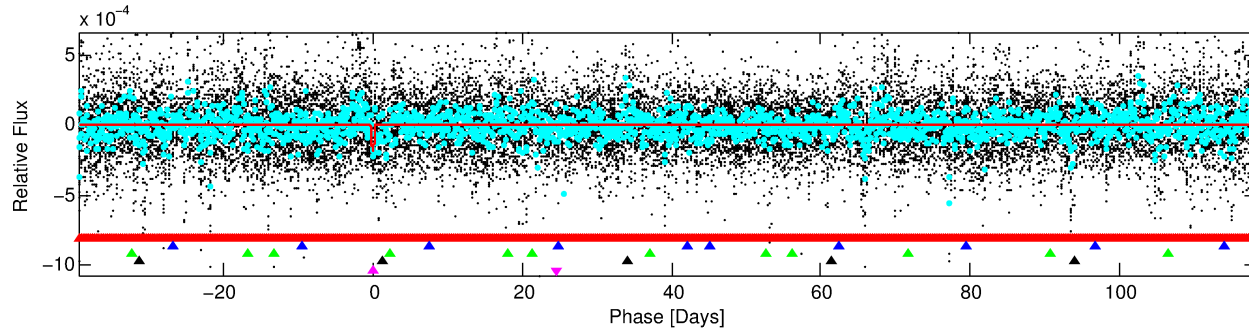
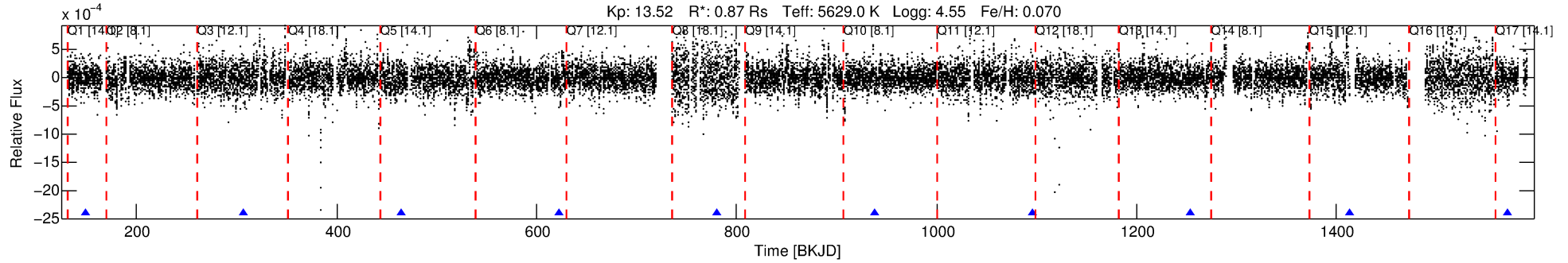
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007281668-05

No Significant Match Found

DV One-Page Summary

KIC: 7281668 Candidate: 5 of 5 Period: 157.882 d



DV Fit Results:

Period = 157.88206 [0.00315] d
Epoch = 149.3605 [0.0194] BKJD
Rp/R* = 0.0125 [0.0247]
a/R* = 128.96 [1057.43]
b = 0.55 [10.59]
Seff = 2.10 [0.44]
Teq = 307 [16] K
Rp = 1.19 [2.35] Re
a = 0.5692 [0.0732] AU
Ag = 20343.44 [81019.24] [0.25σ]
Teffp = 5669 [5638] K [0.95σ]

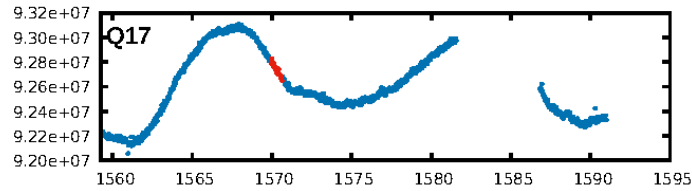
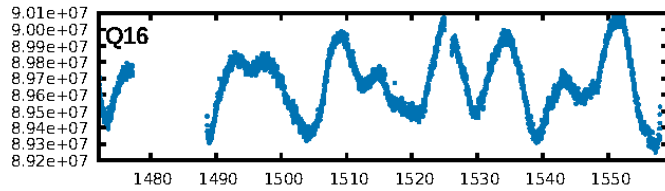
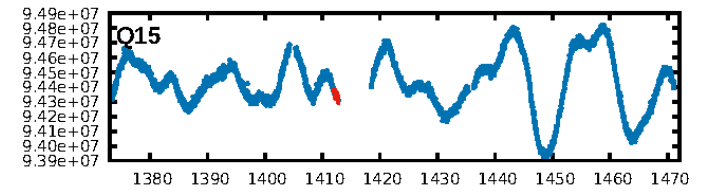
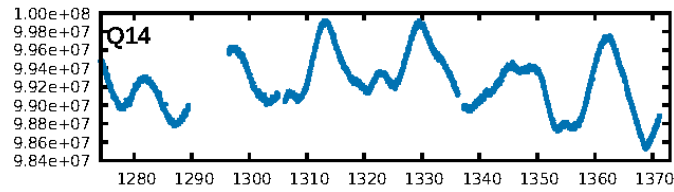
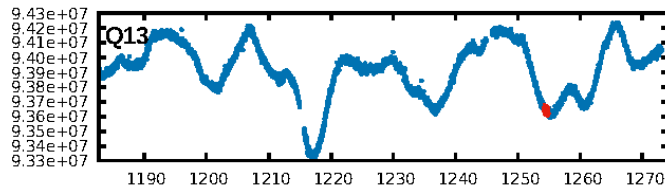
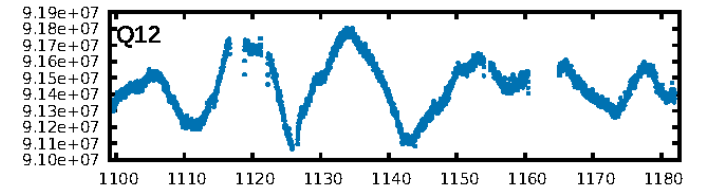
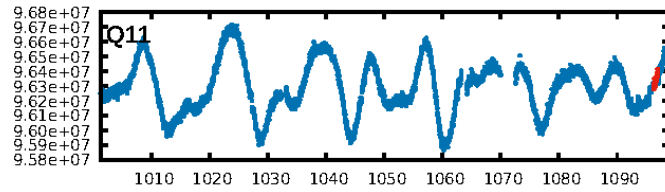
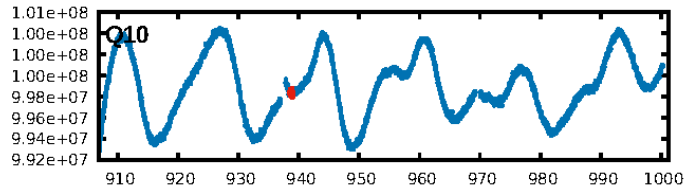
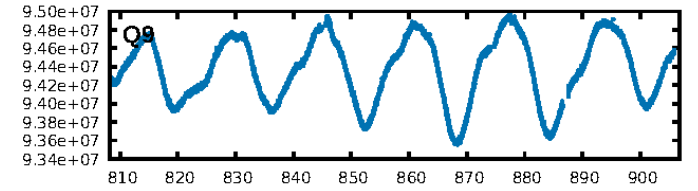
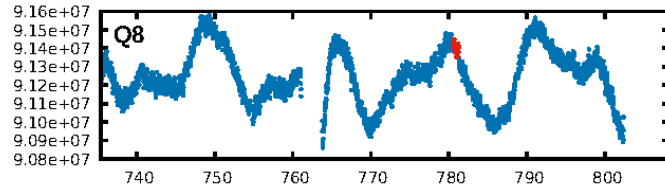
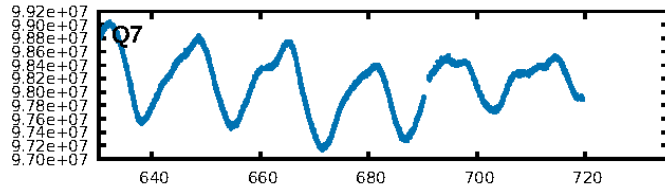
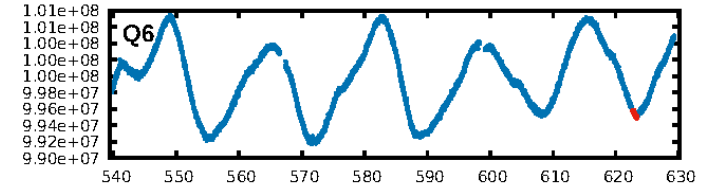
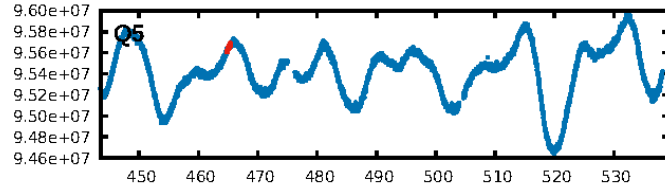
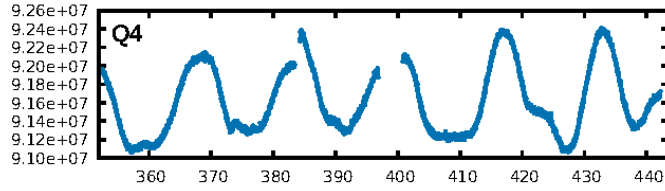
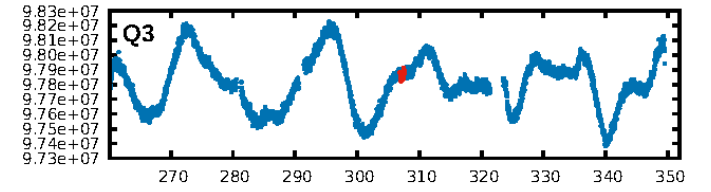
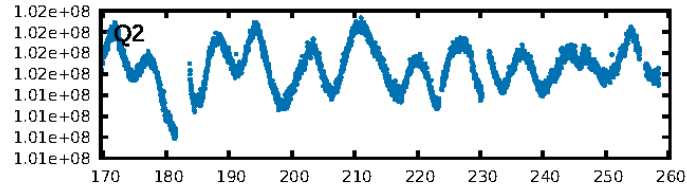
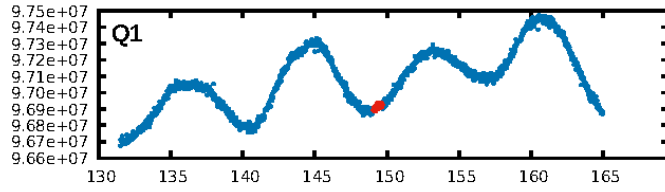
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [18.57σ]
LongPeriod-sig: 100.0% [342.28σ]
ModelChiSquare2-sig: 99.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.08e-08
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 0.09992
Centroid-sig: 0.0%
Centroid-so: 2.806 arcsec [3.12σ]
OotOffset-rm: 1.211 arcsec [1.29σ]
OotOffset-st: 1/1/1/2 [5]
KicOffset-rm: 1.360 arcsec [1.32σ]
KicOffset-st: 1/1/1/2 [5]
DiffImageQuality-fgm: 0.20 [1/5]
DiffImageOverlap-fno: 0.00 [0/7]

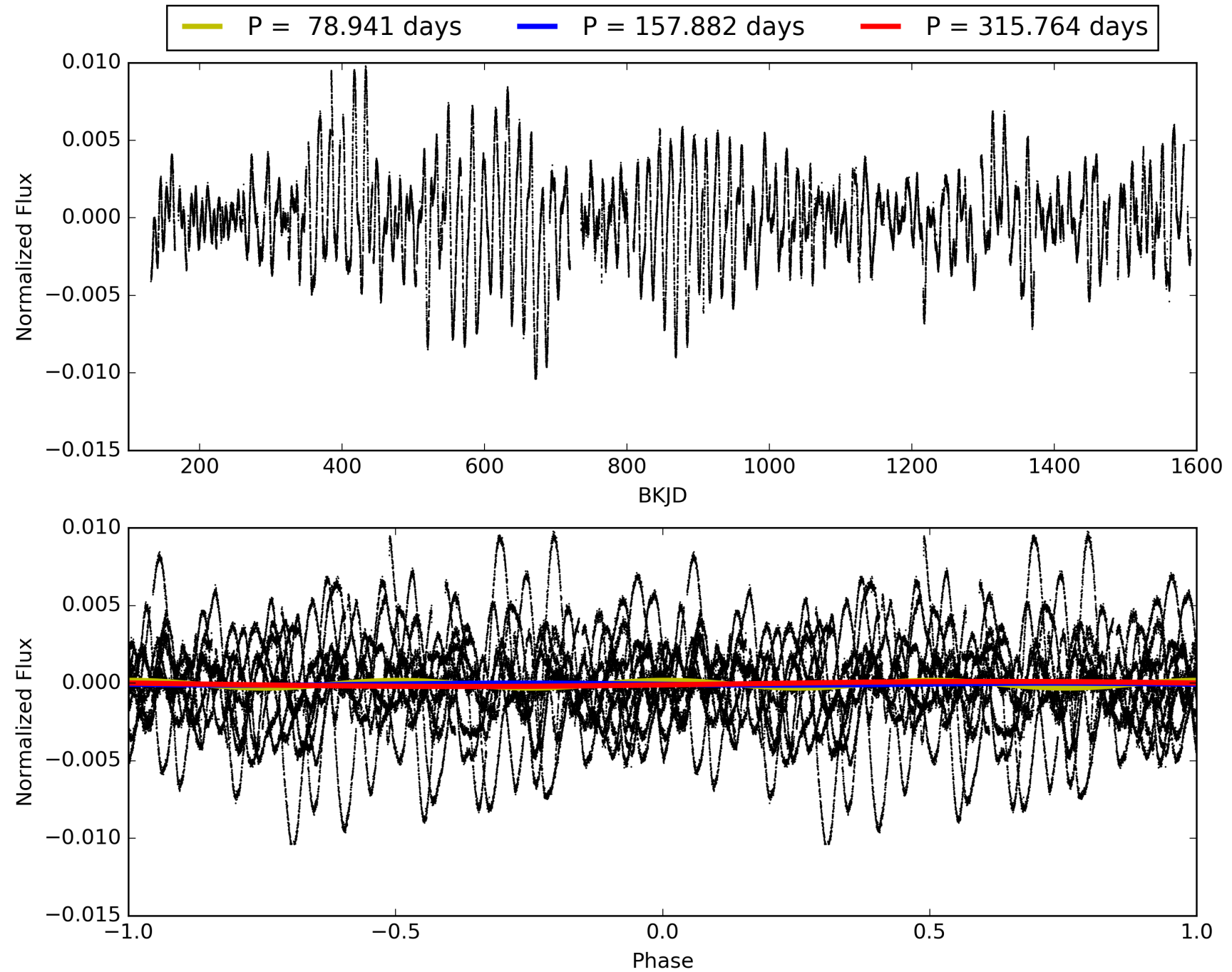
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:38:49 Z

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

TCE 007281668-05, PDC Light Curves

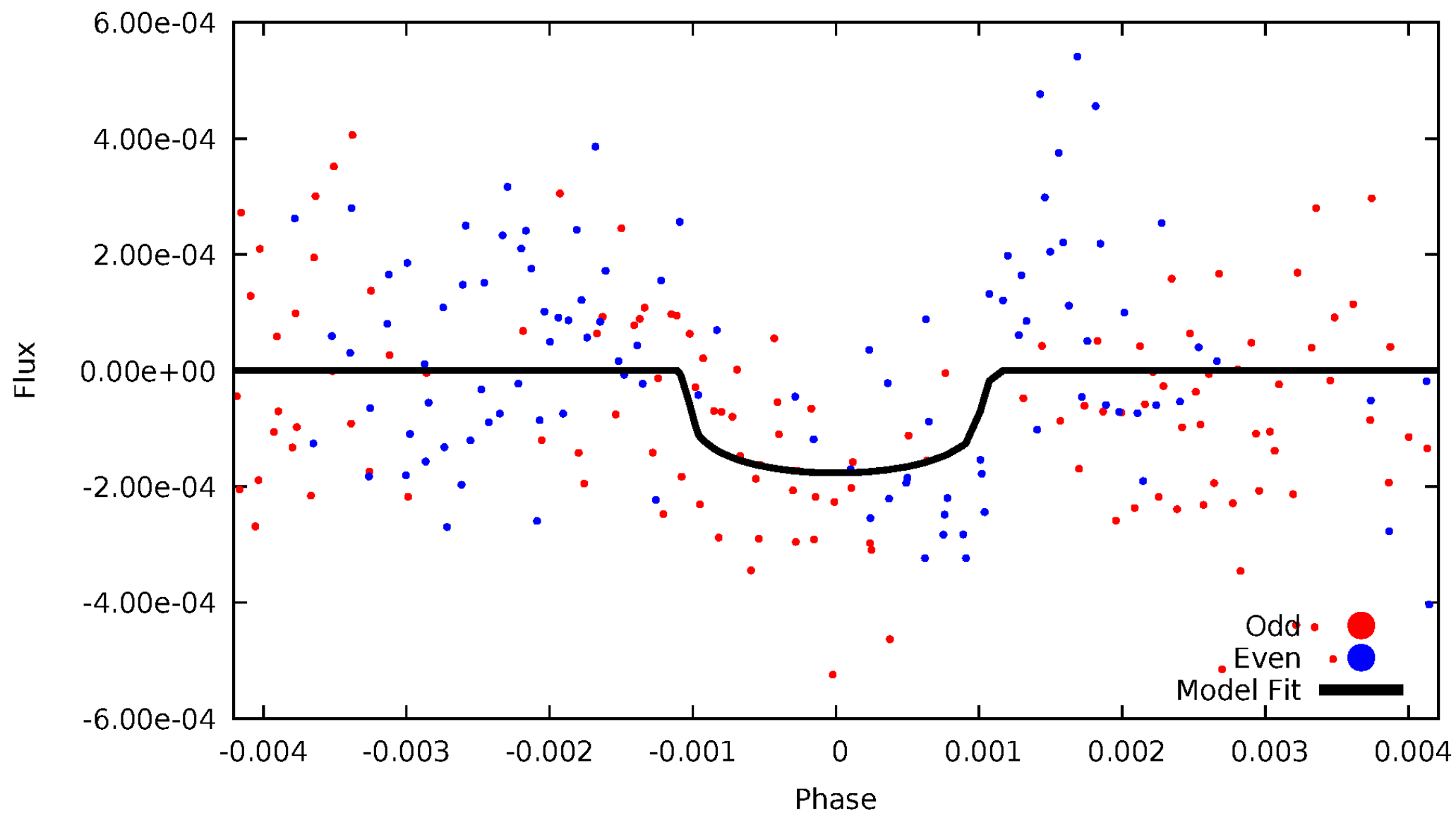


TCE 007281668-05



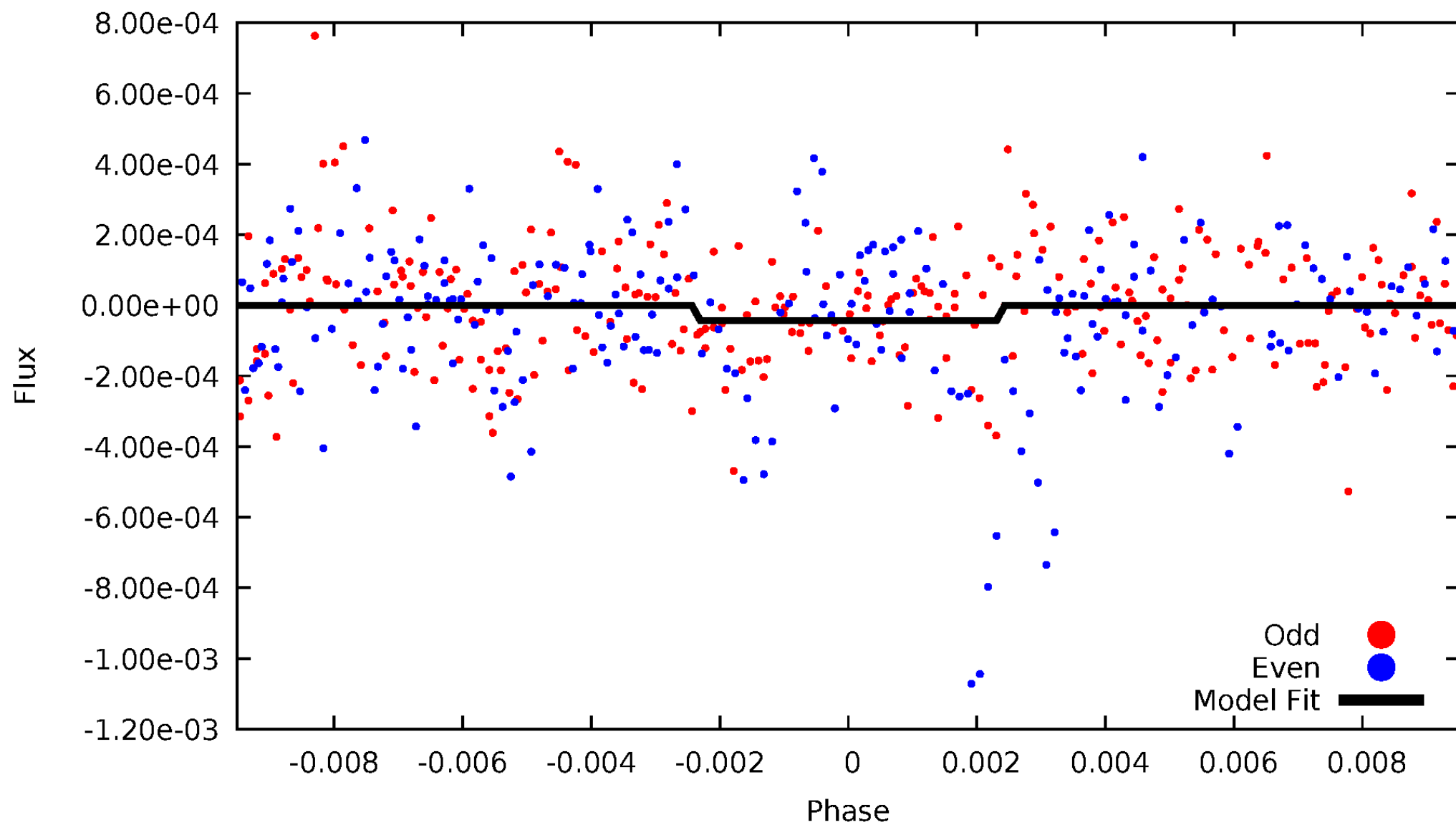
DV Odd/Even

TCE 007281668-05



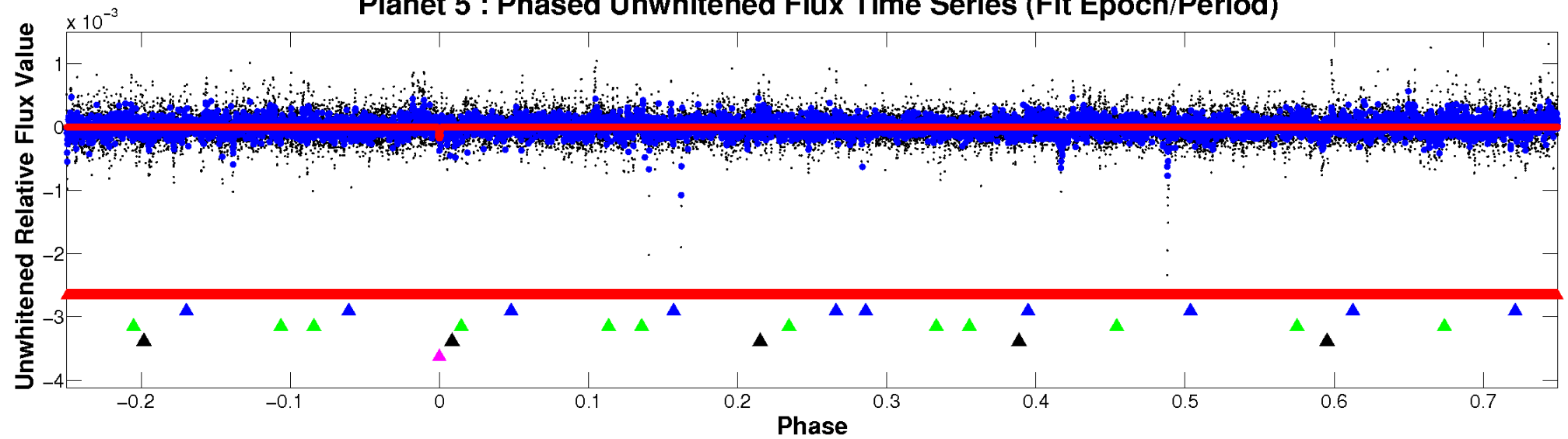
ALT Odd/Even

TCE 007281668-05

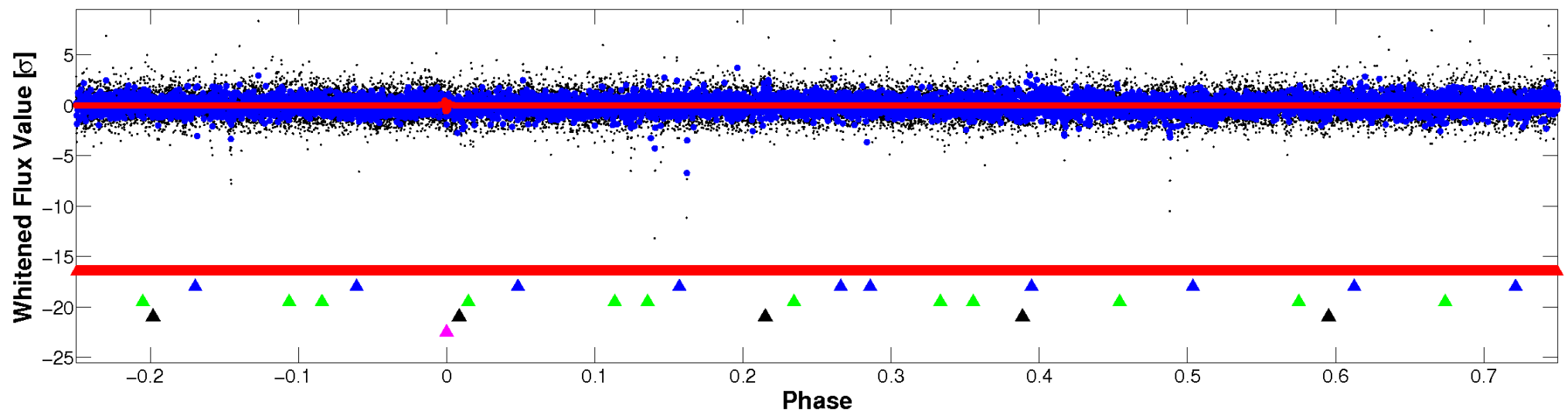


Non-Whitened Vs. Whitened Light Curve

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

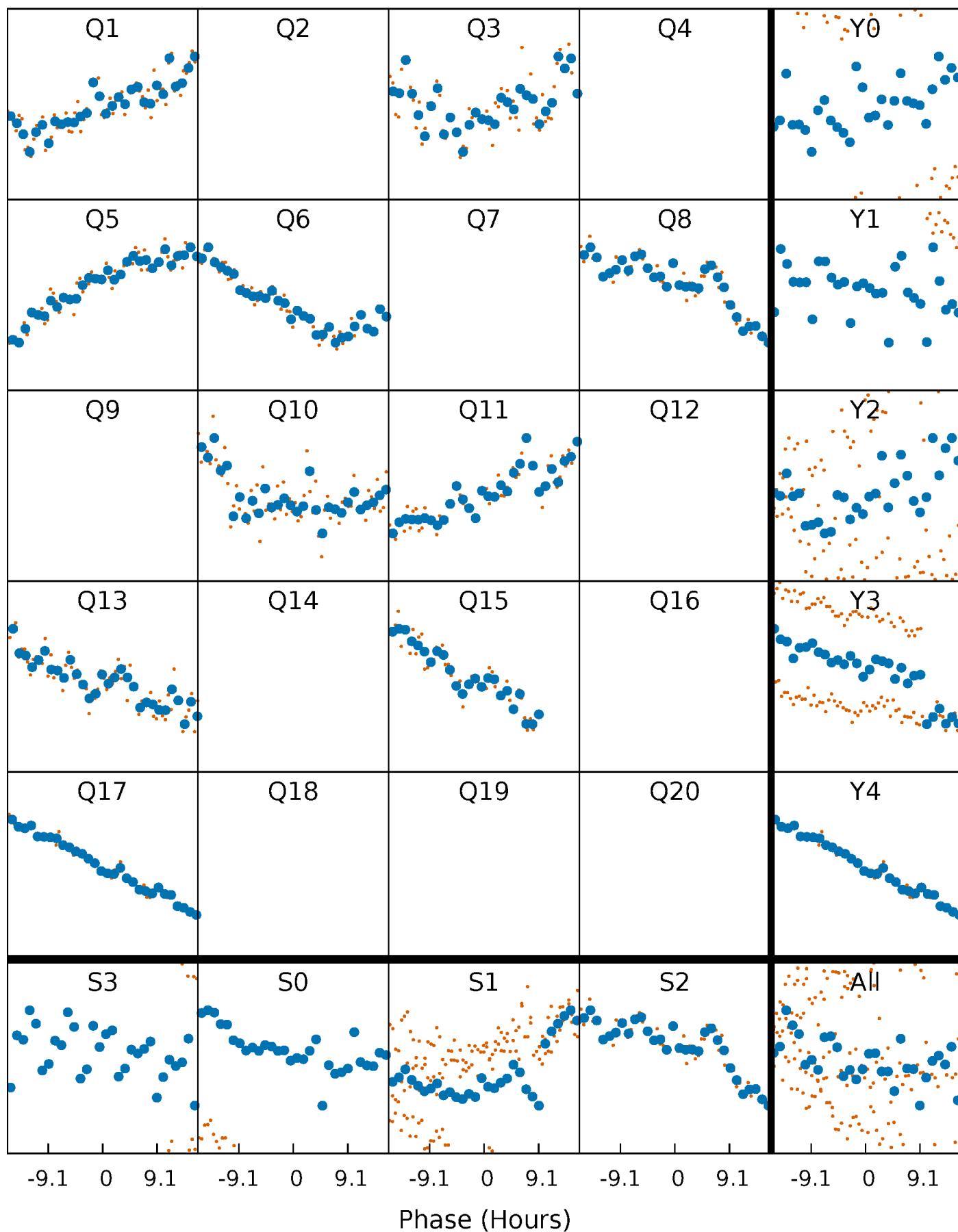


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



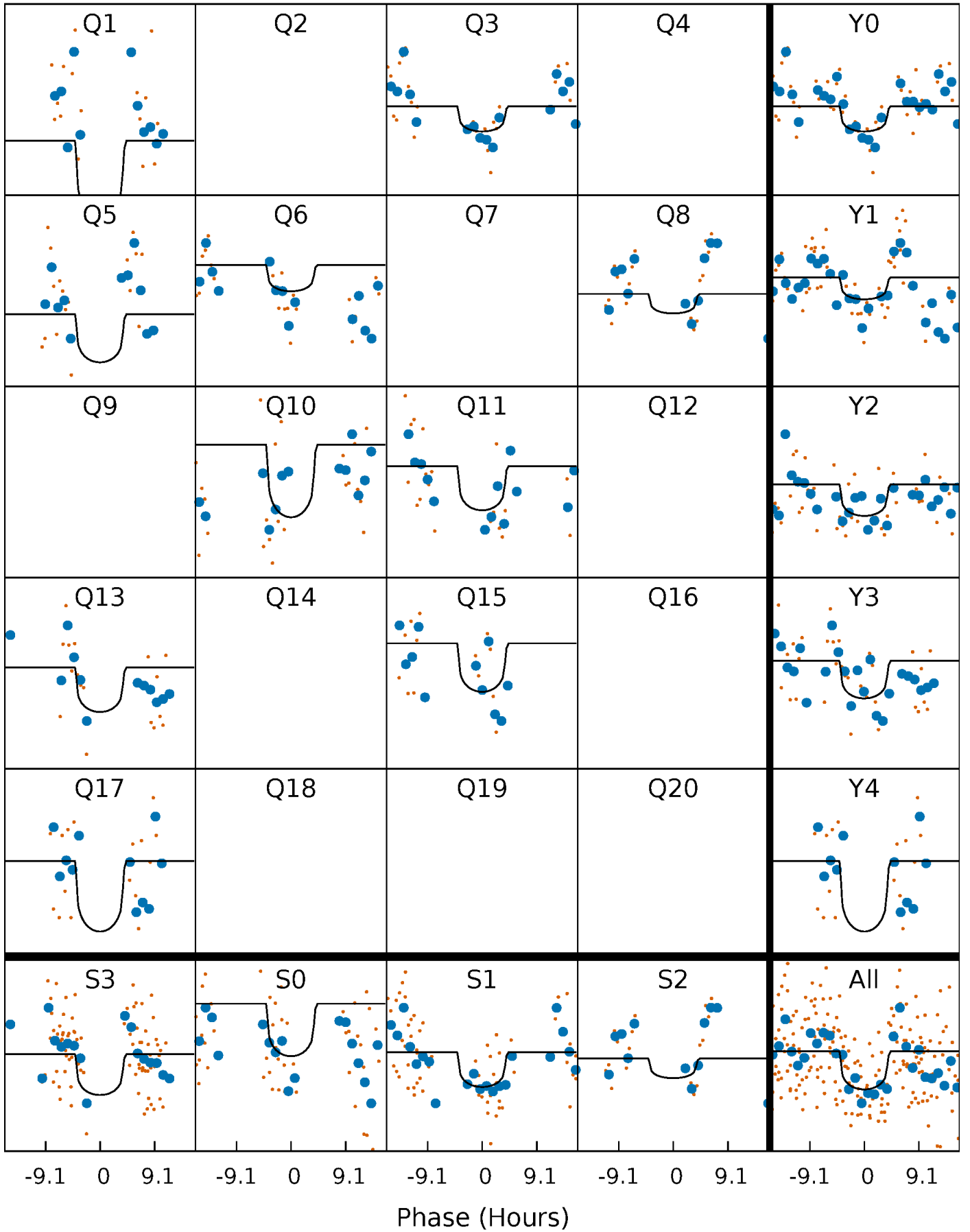
PDC Quarter-Phased Transit Curves

TCE 007281668-05 $P=157.882065$ Days $T_0=149.360481$ (BKJD)



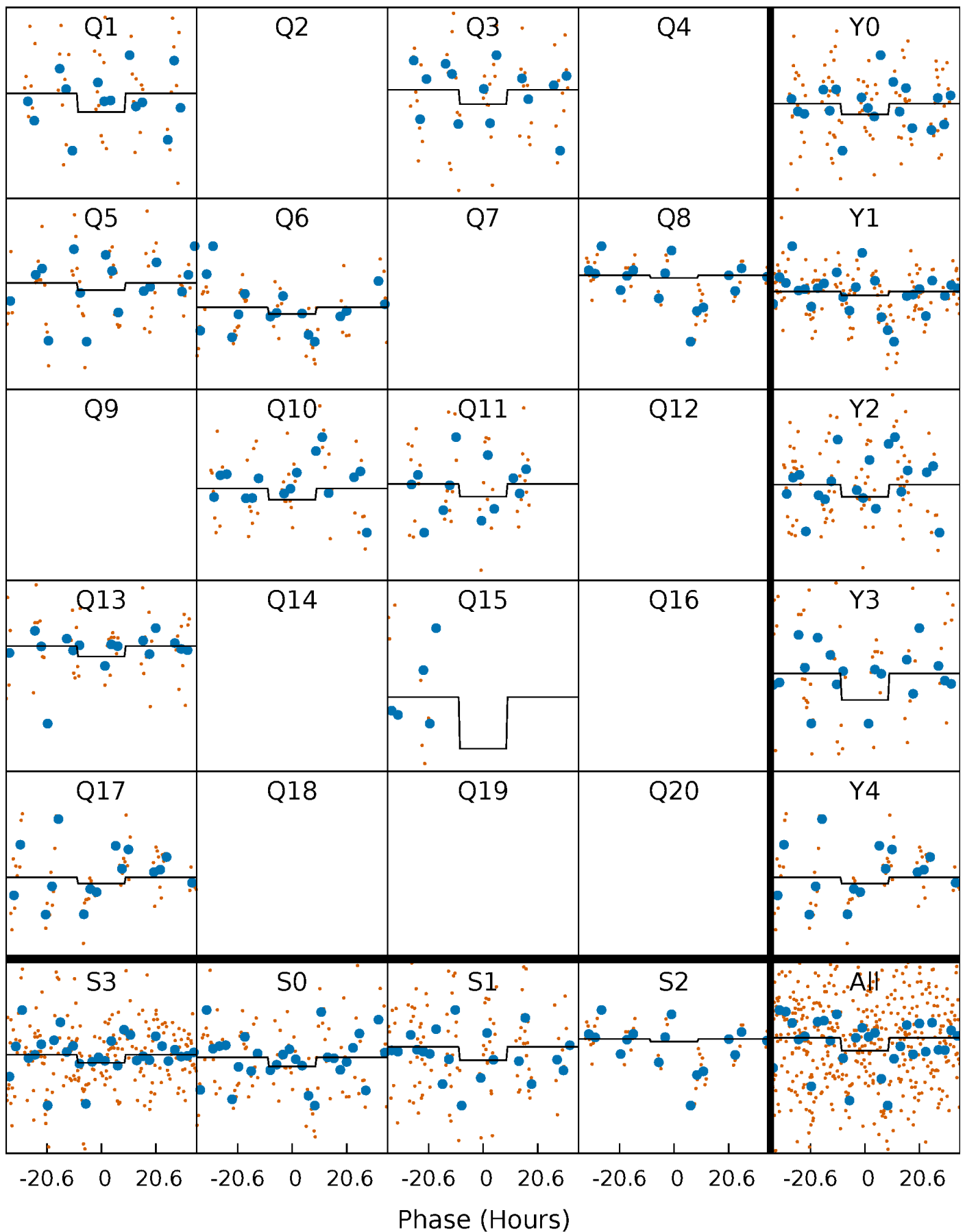
DV Quarter-Phased Transit Curves

TCE 007281668-05 $P=157.882065$ Days $T_0=149.360481$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

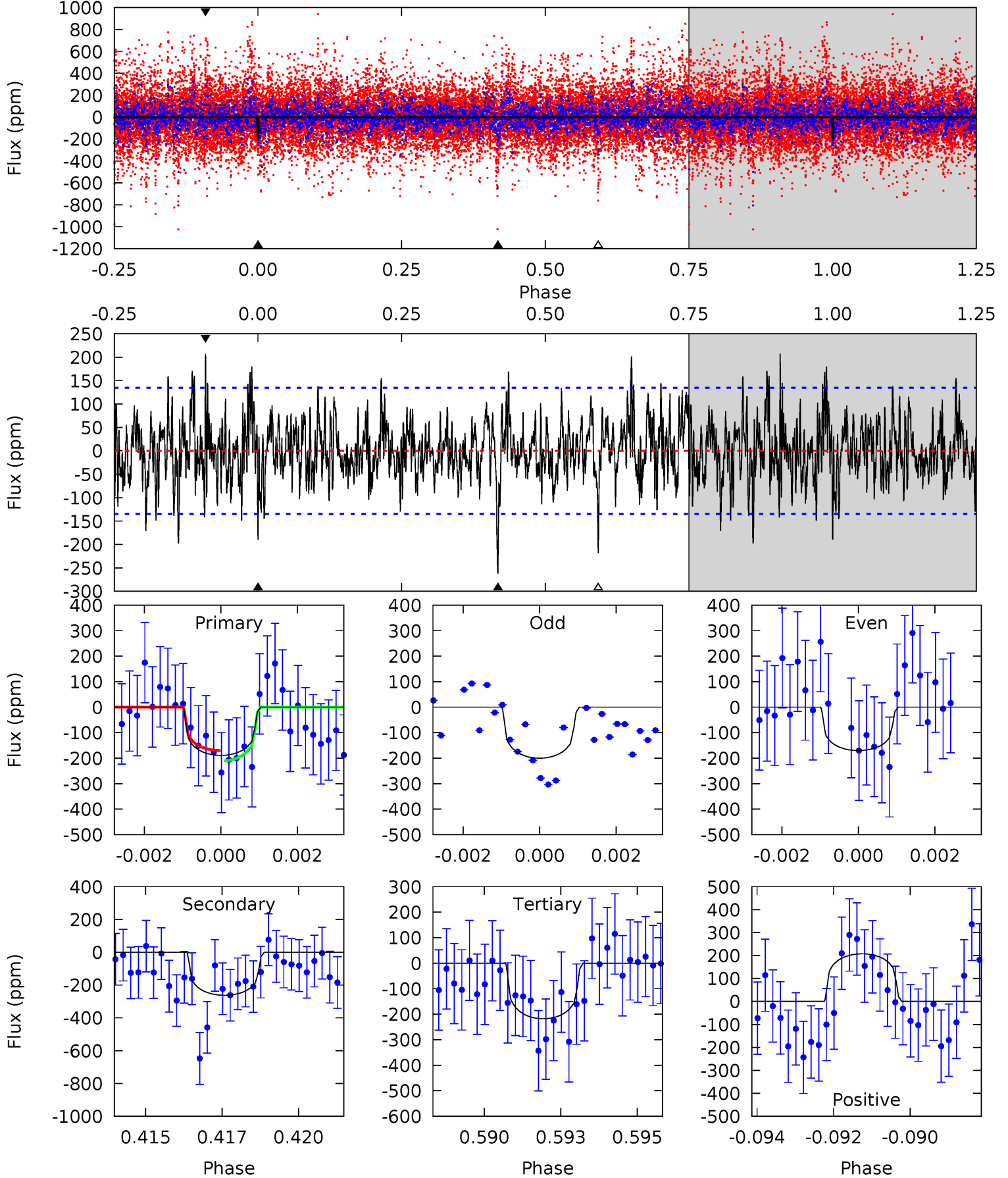
TCE 007281668-05 P=158.028089 Days $T_0=149.127336$ (BKJD)



DV Model-Shift Uniqueness Test

007281668-05, P = 157.882065 Days, E = 149.360481 Days

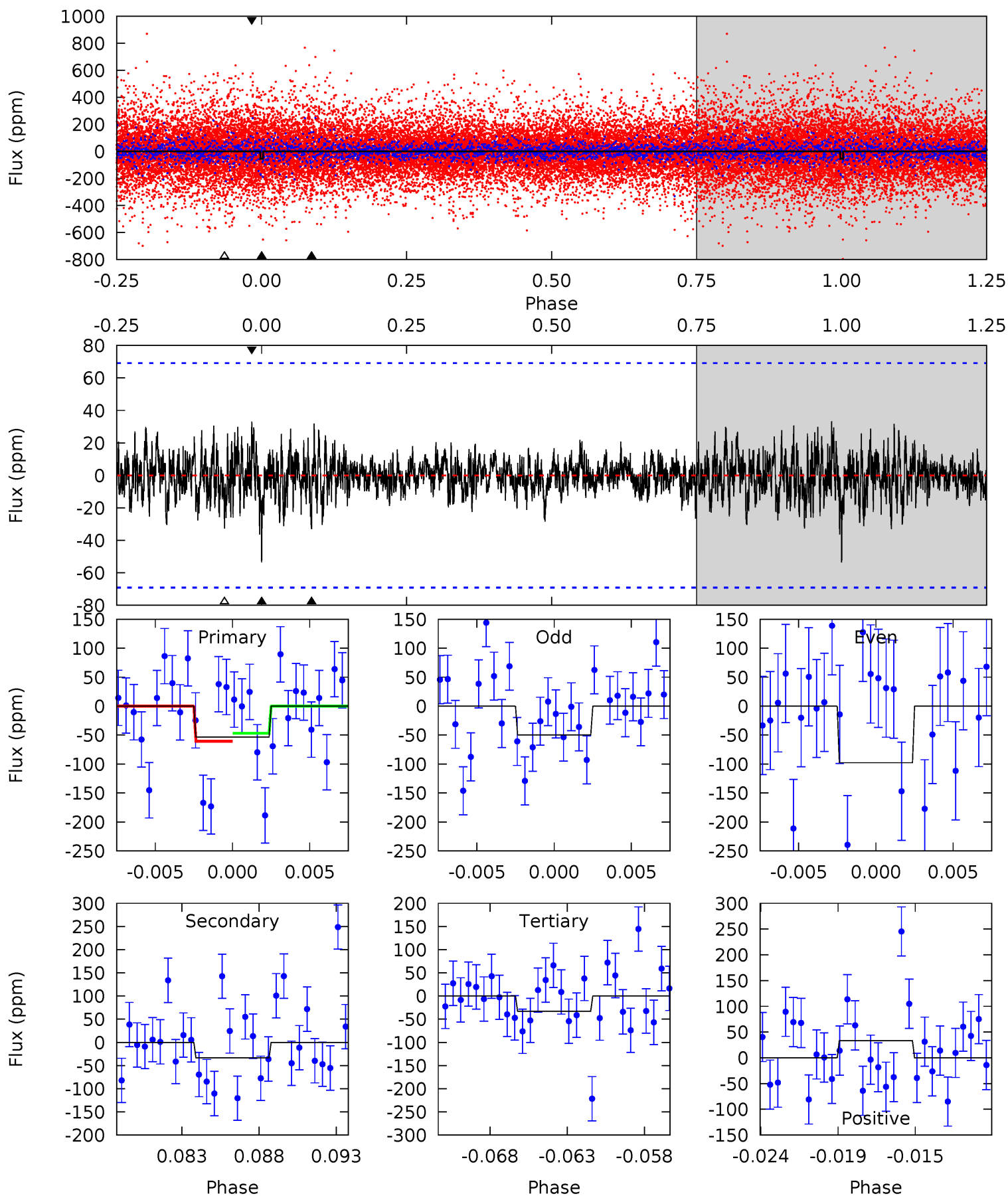
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.45	10.3	8.57	8.17	5.31	3.06	2.17	-1.12	-0.72	1.75	2.15	0.56	0.88	0.44	0.81



Alt Model-Shift Uniqueness Test

007281668-05, P = 158.028089 Days, E = 149.127336 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.99	2.47	2.44	2.48	5.16	2.82	0.68	1.55	1.51	0.03	-0.00	1.73	2.85	0.38	0.51



Stellar Parameters For KIC 007281668

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5629^{+75}_{-84}	$4.553^{+0.013}_{-0.117}$	$0.070^{+0.150}_{-0.150}$	$0.870^{+0.120}_{-0.032}$	$0.987^{+0.041}_{-0.071}$	$2.107^{+0.158}_{-0.673}$
	+1%/-1%	+0%/-3%	+214%/-214%	+14%/-4%	+4%/-7%	+7%/-32%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 007281668-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-262 ± 25	$2.28^{+1.93}_{-1.50}$	435^{+15}_{-10}	4817^{+3480}_{-992}	9038^{+68415}_{-6363}
Alt.	-33 ± 13	$1.94^{+1.81}_{-1.33}$	434^{+14}_{-9}	3489^{+1813}_{-672}	1554^{+12612}_{-1209}

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 $A_{obs} \gg 1.0$

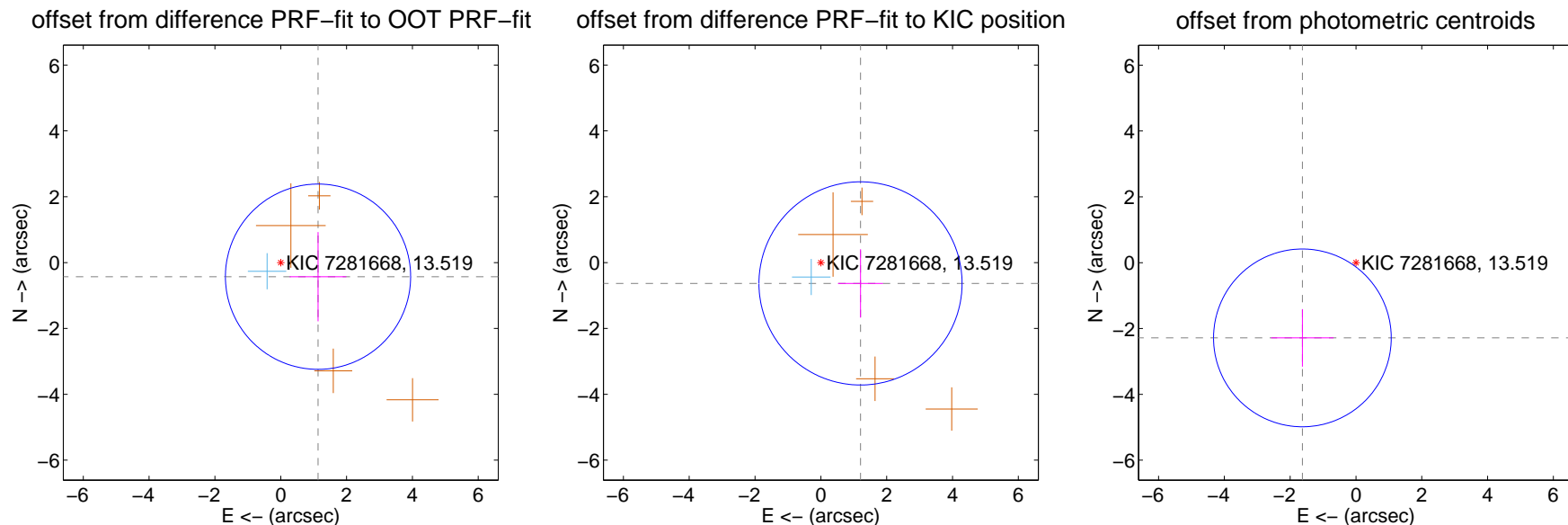
DV Centroid Data

Supplemental centroid analysis for 007281668-05. Kepler magnitude: 13.52. Transit SNR 3.94

There are 1 quarters with good PRF difference image offsets

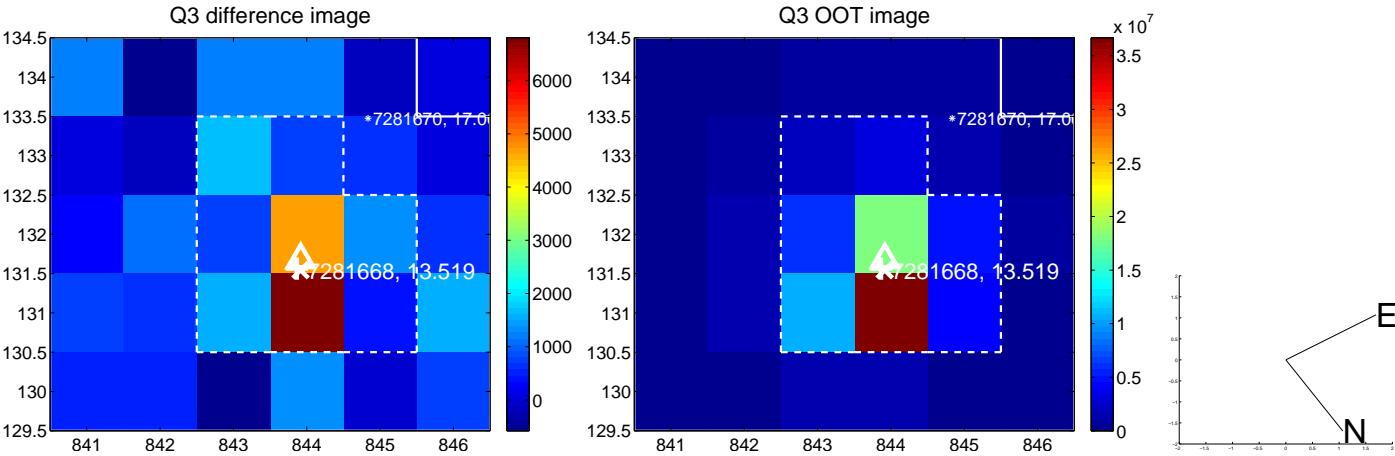
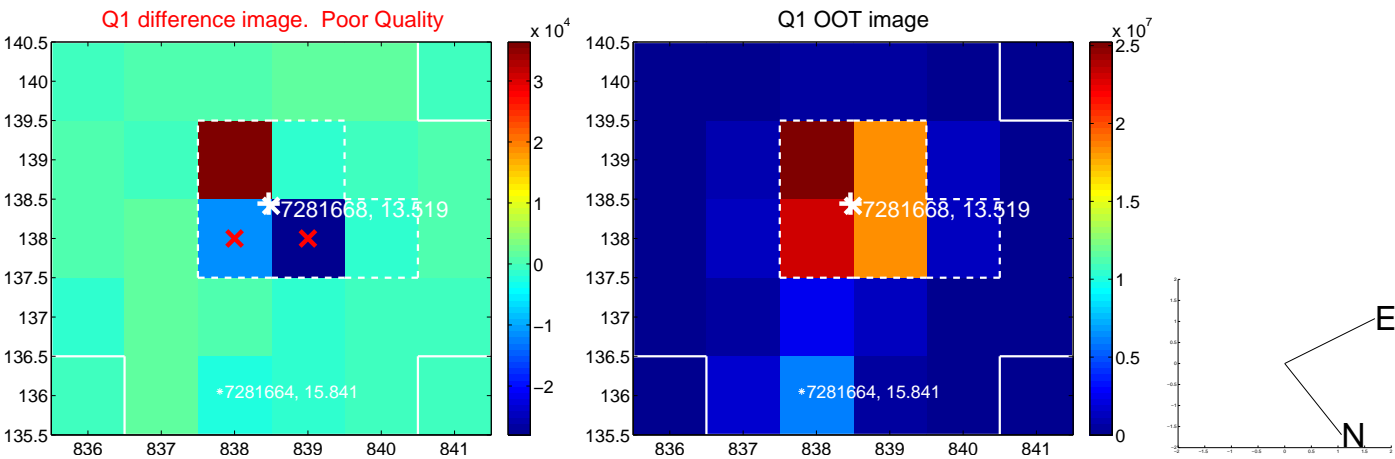
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.211 ± 0.938	1.29	-1.132 ± 0.862	-0.429 ± 1.355
PRF-fit source offset from KIC position	1.360 ± 1.028	1.32	-1.204 ± 0.683	-0.632 ± 1.038
photometric centroid source offset	2.81 ± 0.90	3.12	1.63 ± 0.95	-2.29 ± 0.87

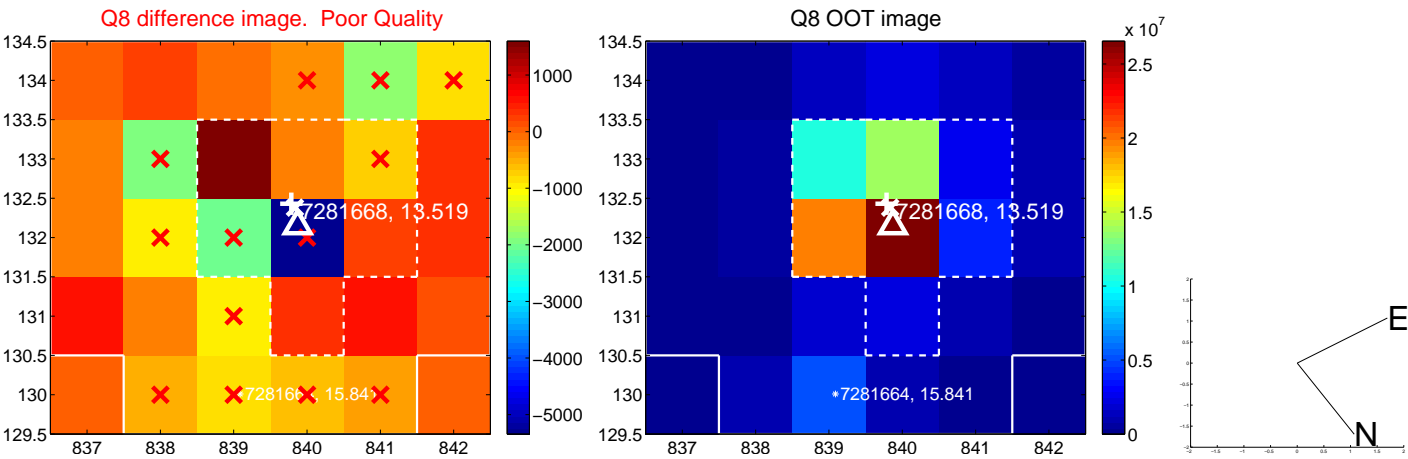
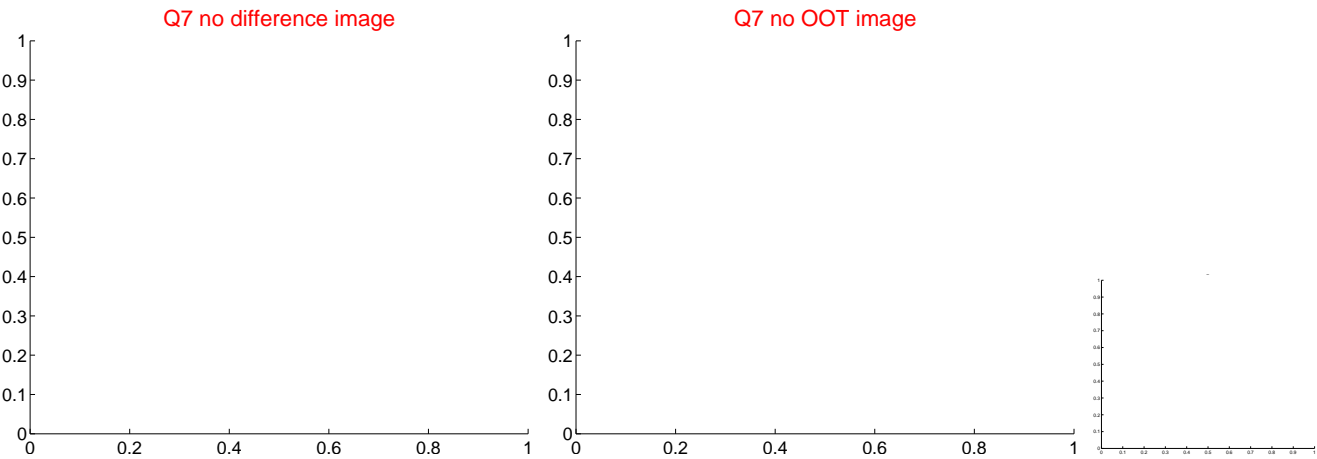
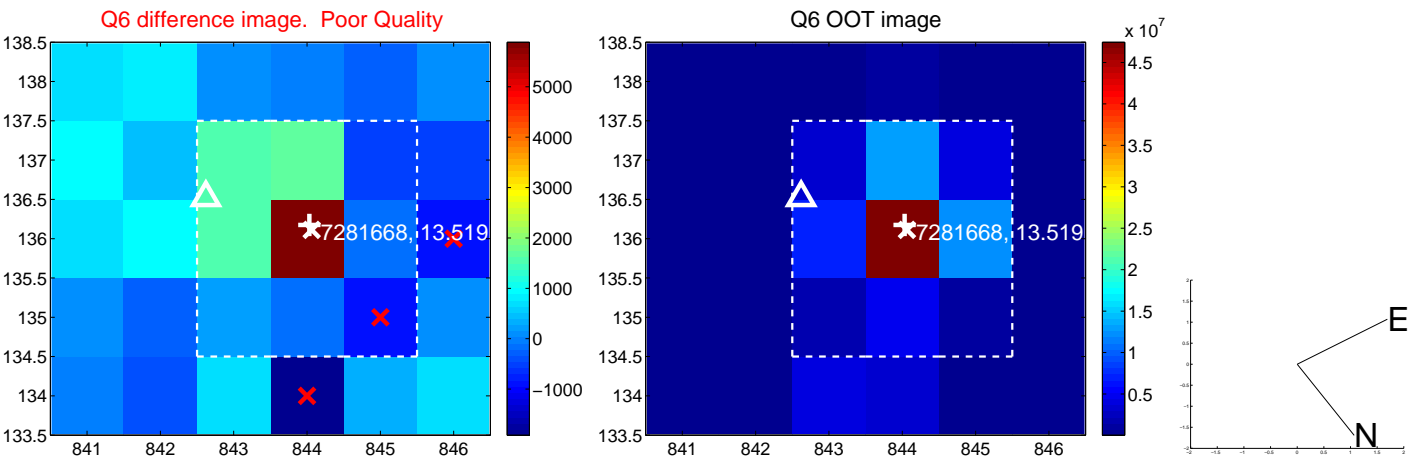
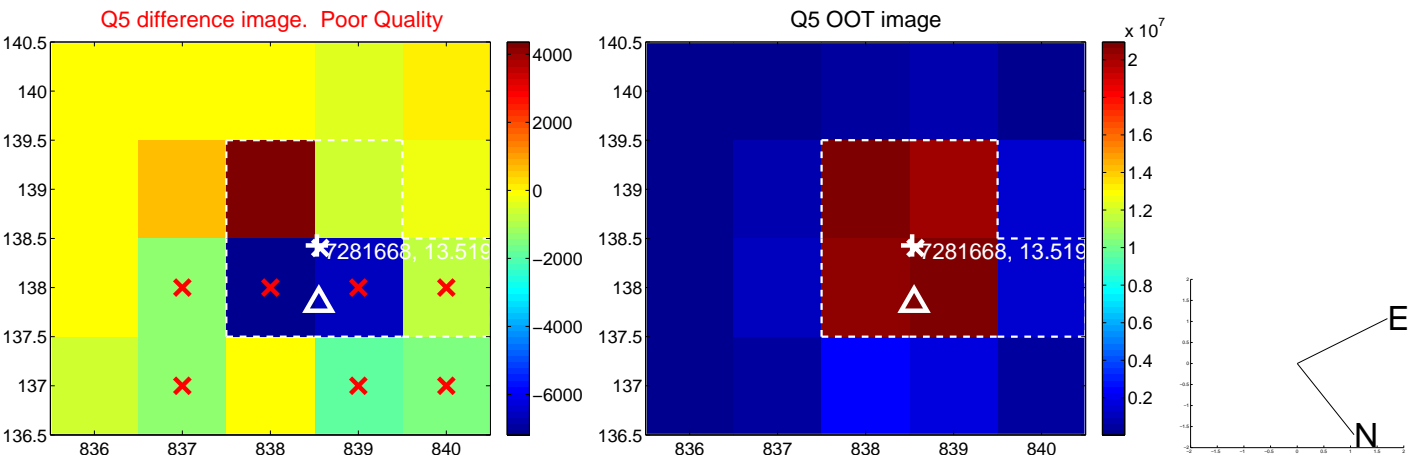


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



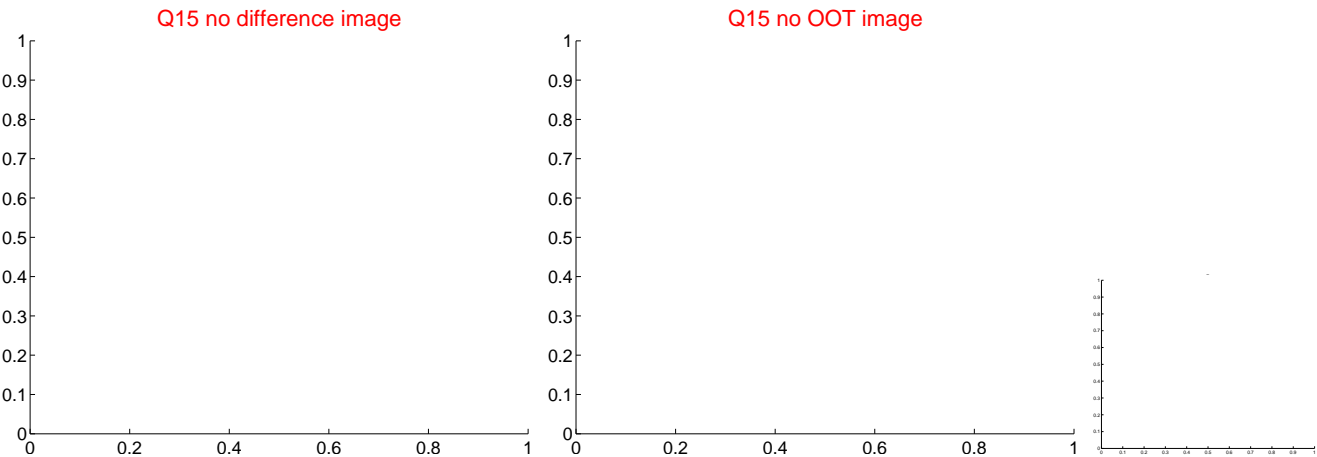
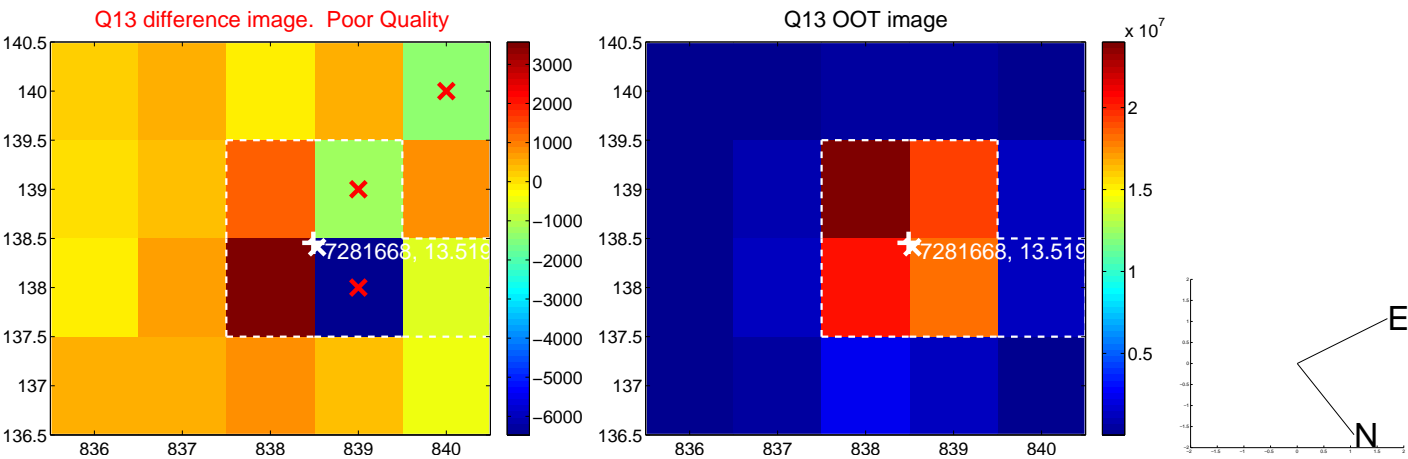
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



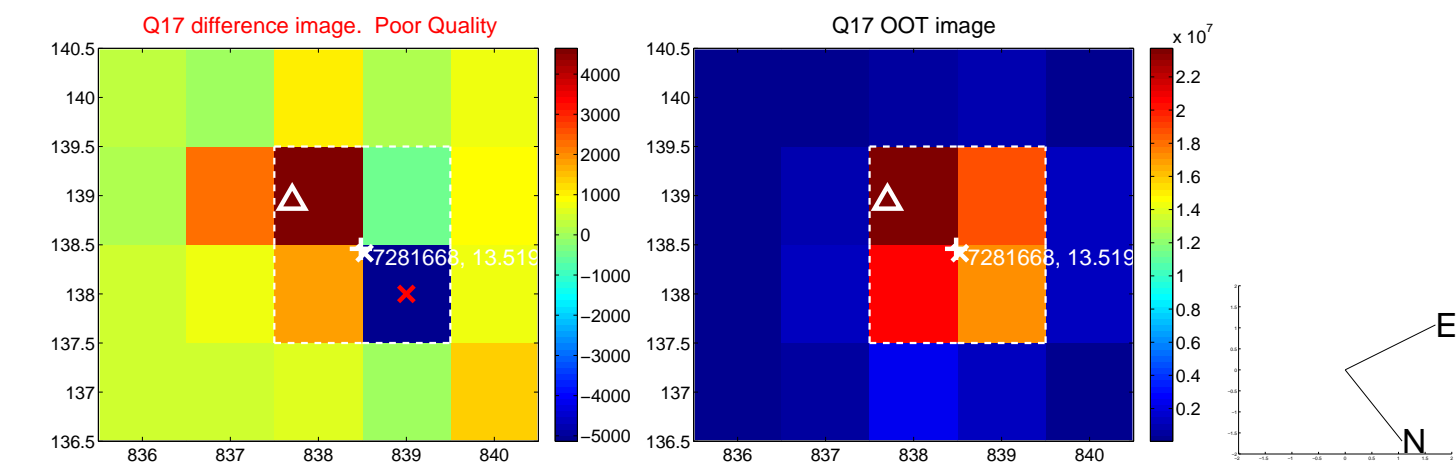
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



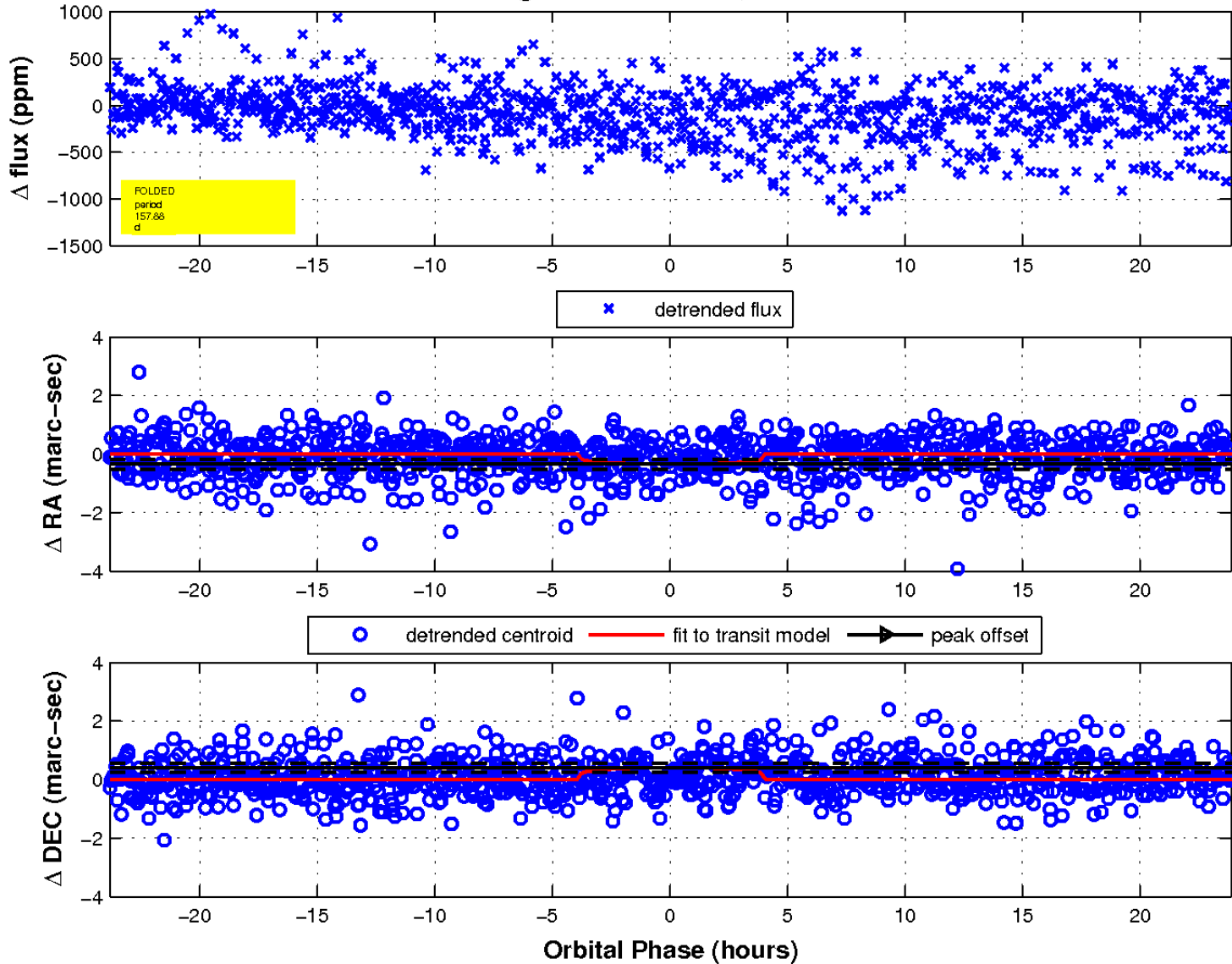
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



fluxWeightedCentroids, Planet 5 of 5



UKIRT Image

