

KIC 006039039

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})
006039039-01	OBS	No	1.119120	132.473556	8.3	7.232	13.0	15.3	2.39	7568	0.70	24717.60
006039039-02	OBS	No	101.928115	146.373852	111.6	4.922	15.6	8.1	2.39	7568	2.85	60.32
006039039-03	OBS	No	103.990993	193.464626	95.2	4.603	13.1	7.7	2.39	7568	2.71	58.73
006039039-04	OBS	No	61.089050	158.247925	82.9	6.006	8.9	8.2	2.39	7568	2.46	119.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006039039-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
006039039-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED
006039039-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_SATURATED
006039039-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

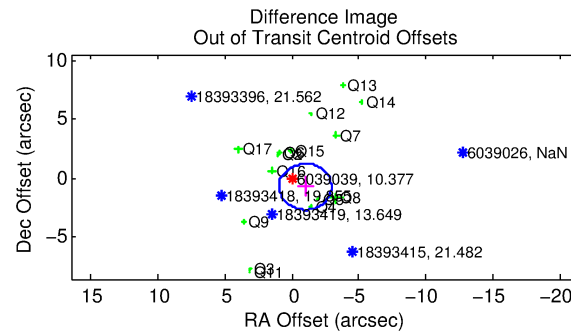
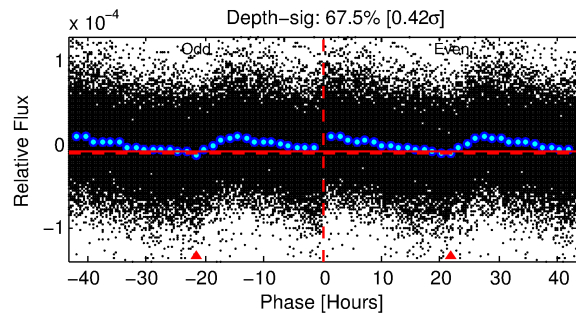
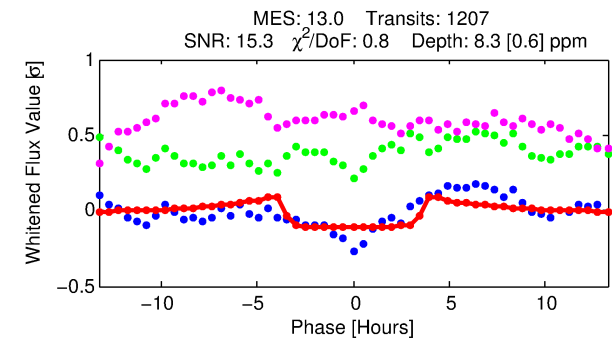
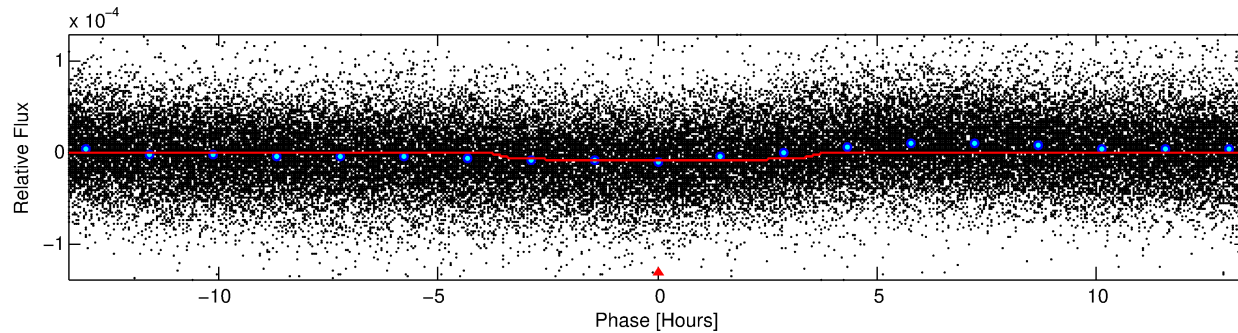
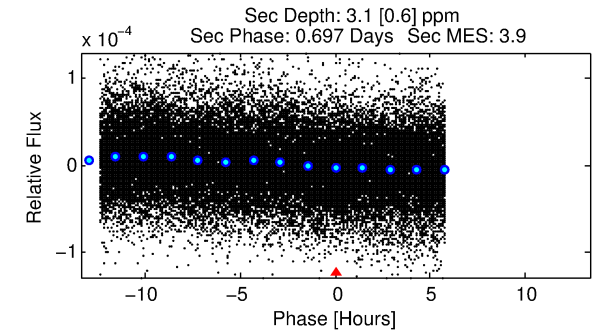
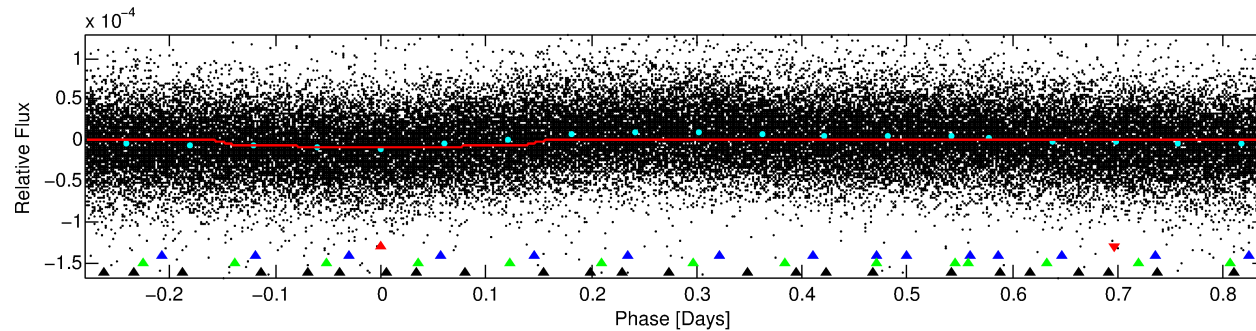
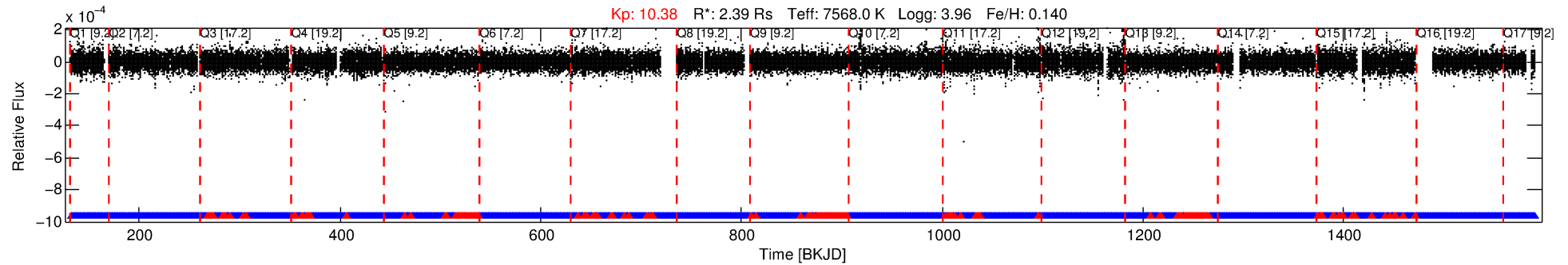
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006039039-01

No Significant Match Found

DV One-Page Summary

KIC: 6039039 Candidate: 1 of 4 Period: 1.119 d



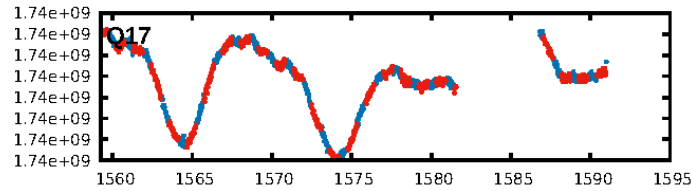
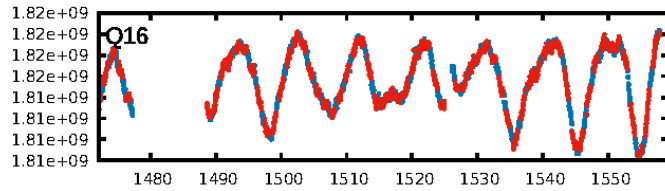
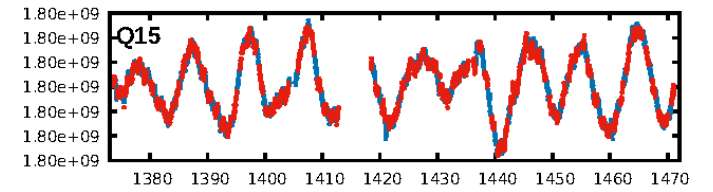
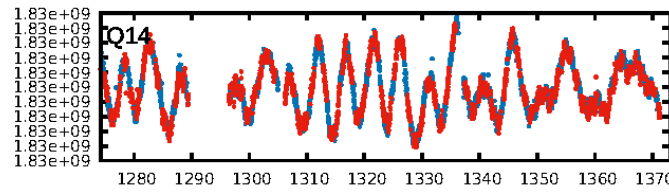
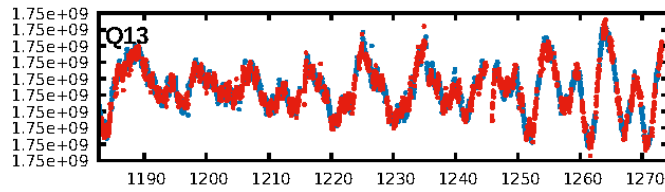
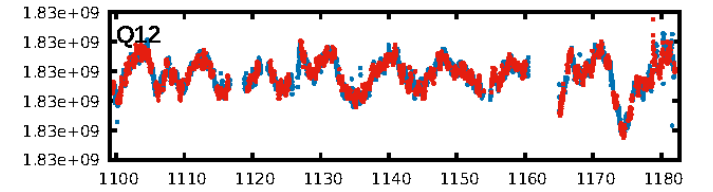
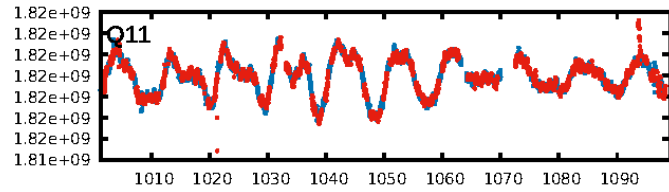
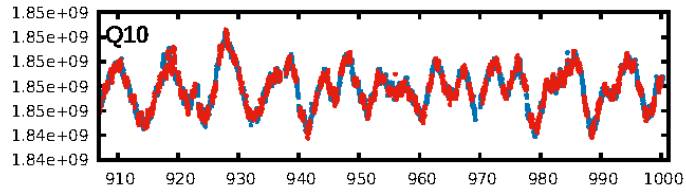
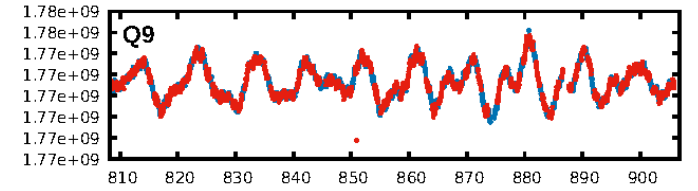
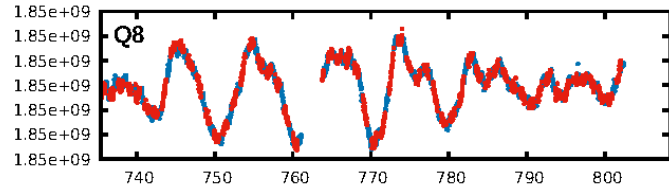
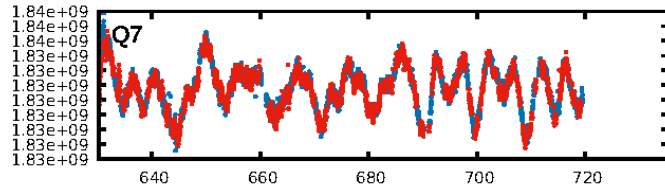
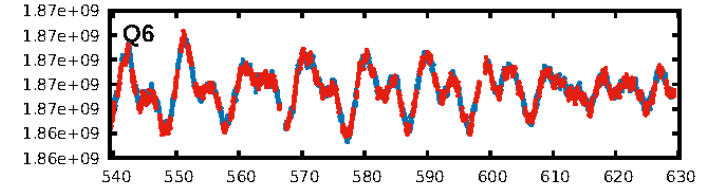
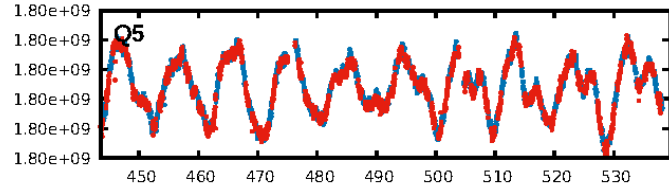
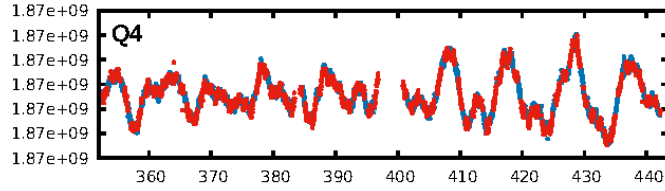
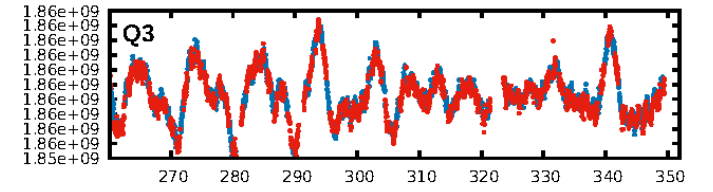
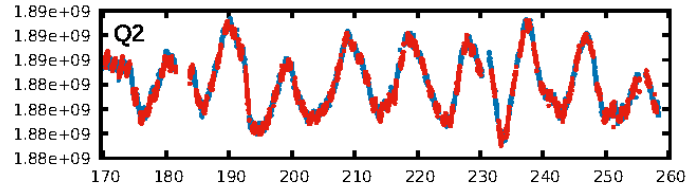
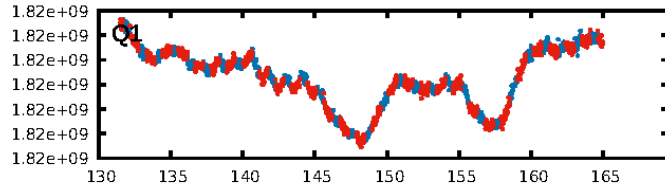
DV Fit Results:

Period = 1.11912 [0.00001] d
Epoch = 132.4736 [0.0023] BKJD
Rp/R* = 0.0027 [0.0009]
a/R* = 1.33 [1.16]
b = 0.21 [9.17]
Seff = 24717.61 [5493.67]
Teff = 3197 [178] K
Rp = 0.70 [0.26] Re
a = 0.0260 [0.0038] AU
Ag = 2.34 [1.72] [0.78σ]
Teffp = 6114 [1072] K [2.68σ]

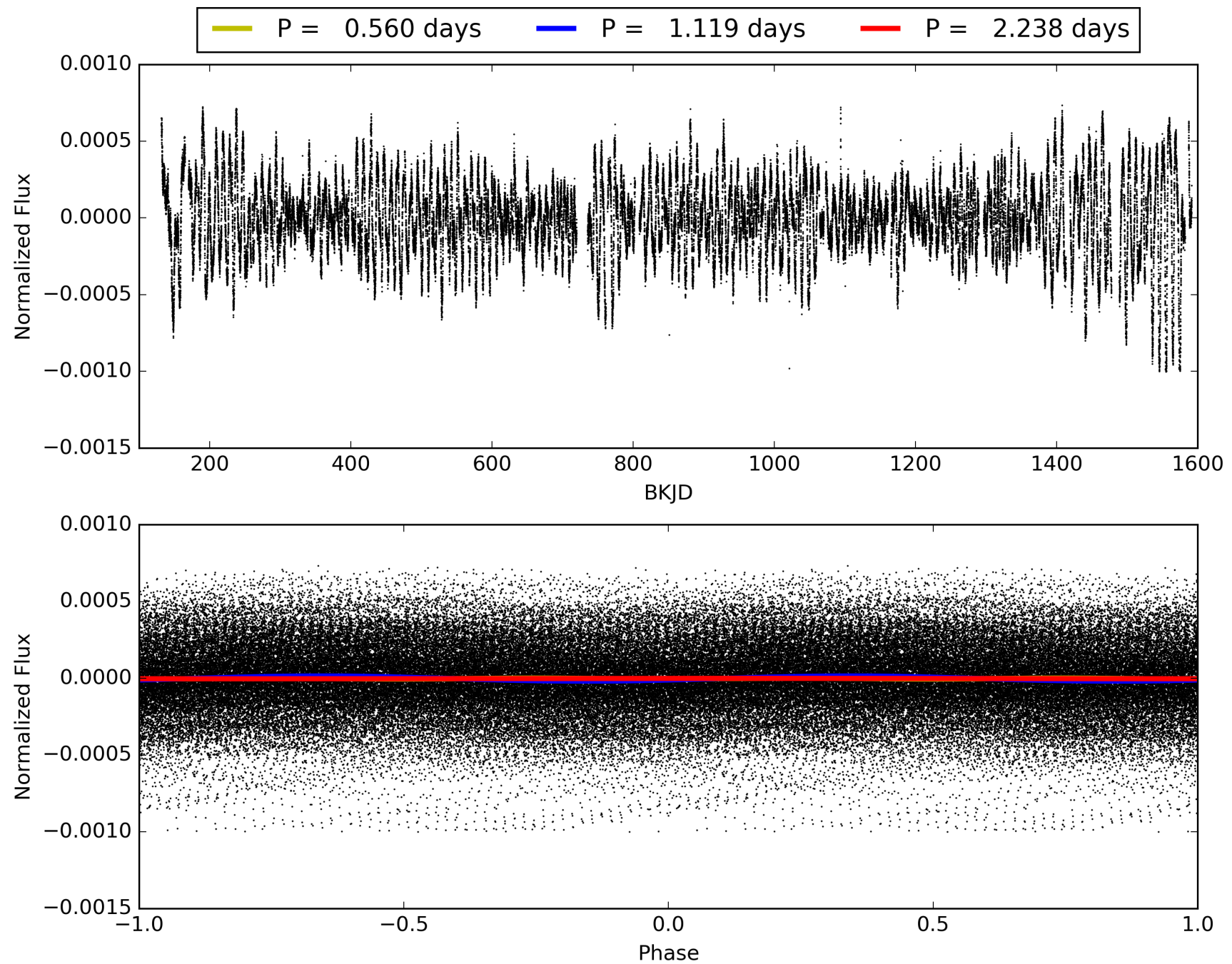
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [153.11σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.96e-32
RollingBand-fgt: 0.86 [995/1151]
GhostDiagnostic-chr: N/A
Centroid-sig: 71.5%
Centroid-so: 0.249 arcsec [0.23σ]
OotOffset-rm: 1.215 arcsec [1.87σ]
KicOffset-rm: 1.077 arcsec [1.21σ]
OotOffset-st: 3/4/4/4 [15]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 0.27 [4/15]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 006039039-01, PDC Light Curves

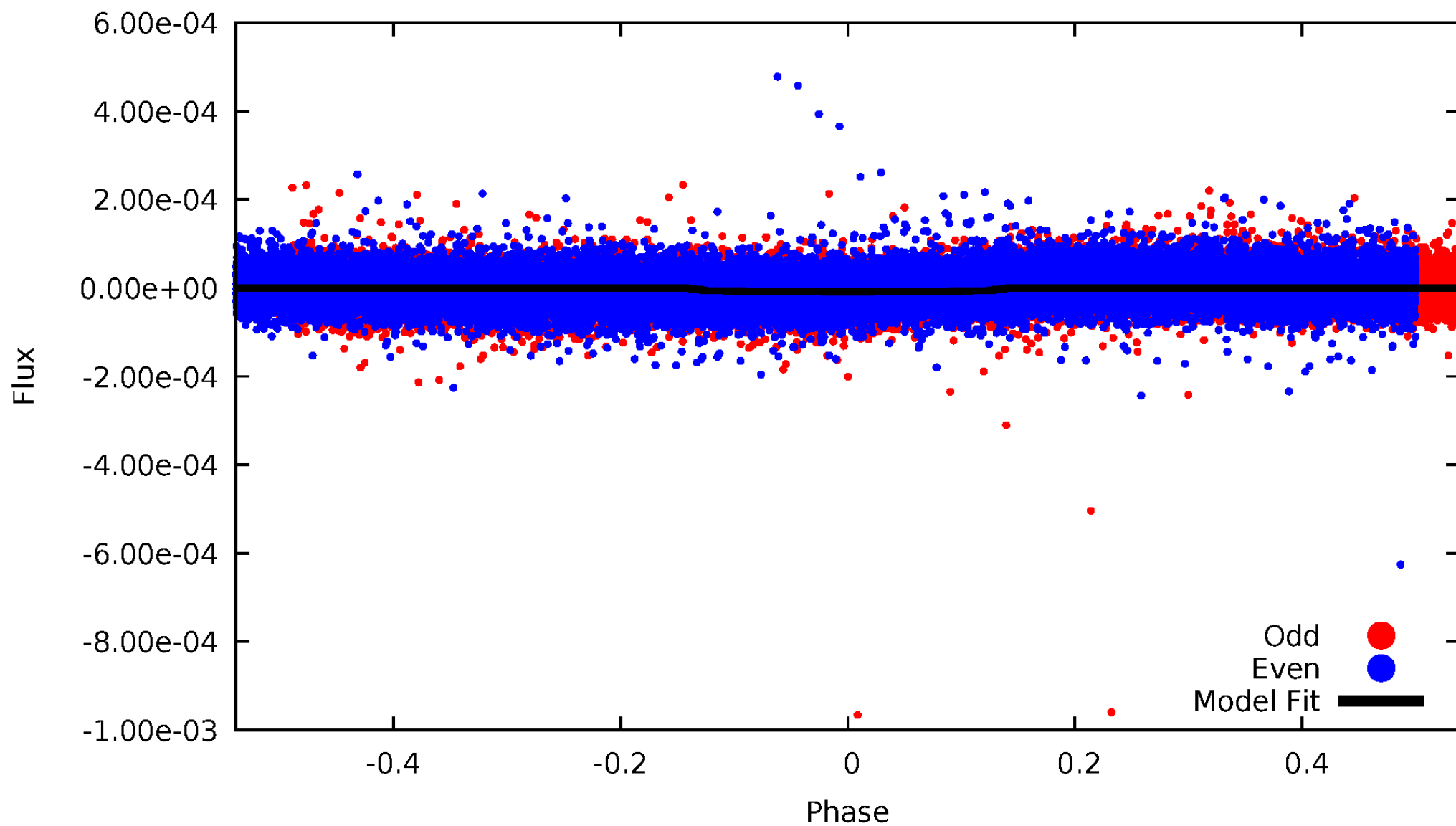


TCE 006039039-01



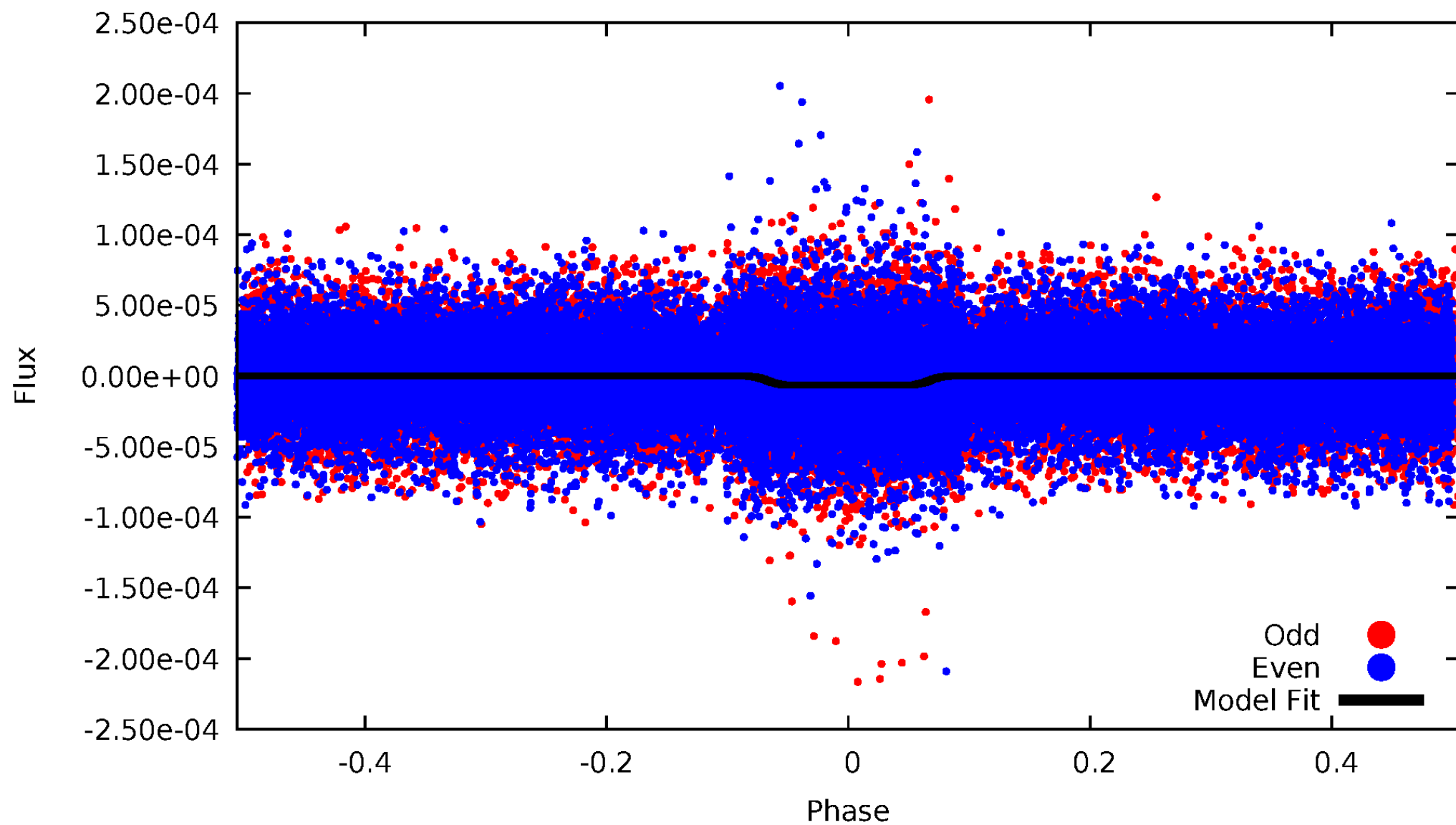
DV Odd/Even

TCE 006039039-01



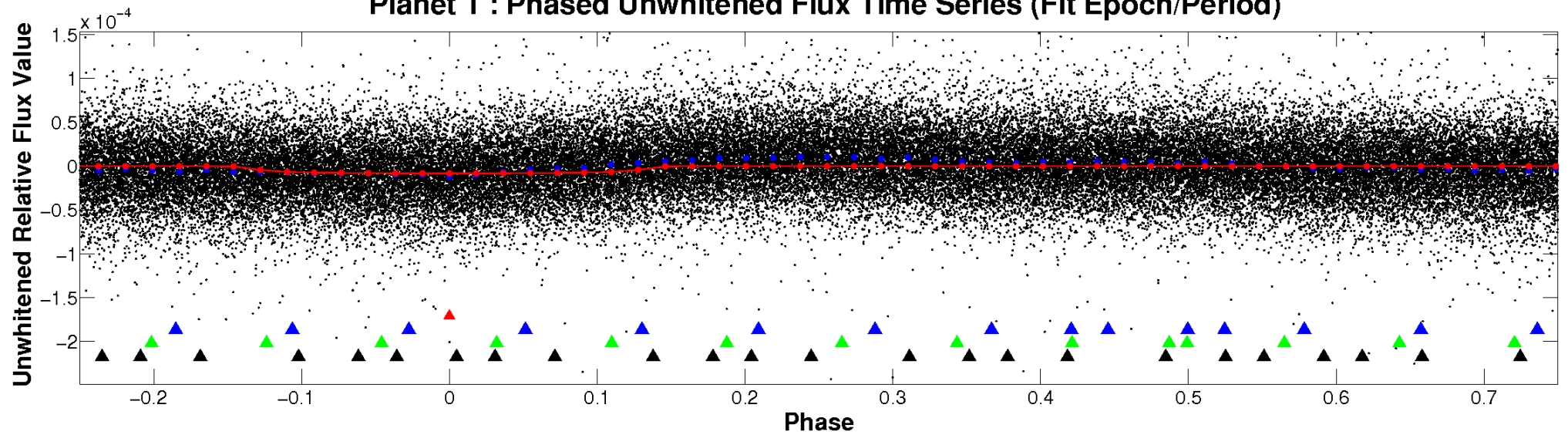
ALT Odd/Even

TCE 006039039-01

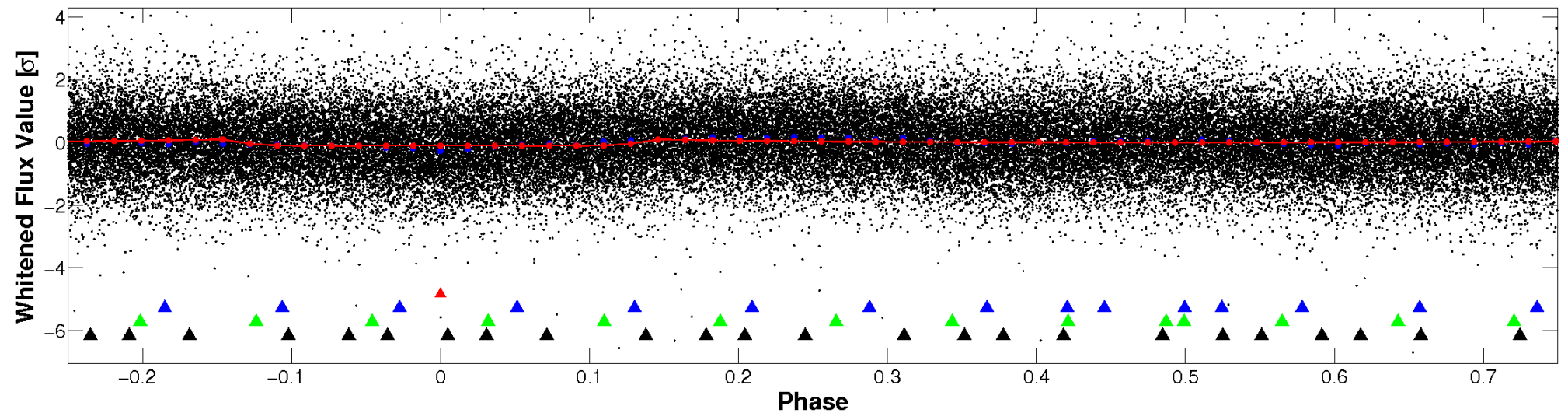


Non-Whitened Vs. Whitened Light Curve

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

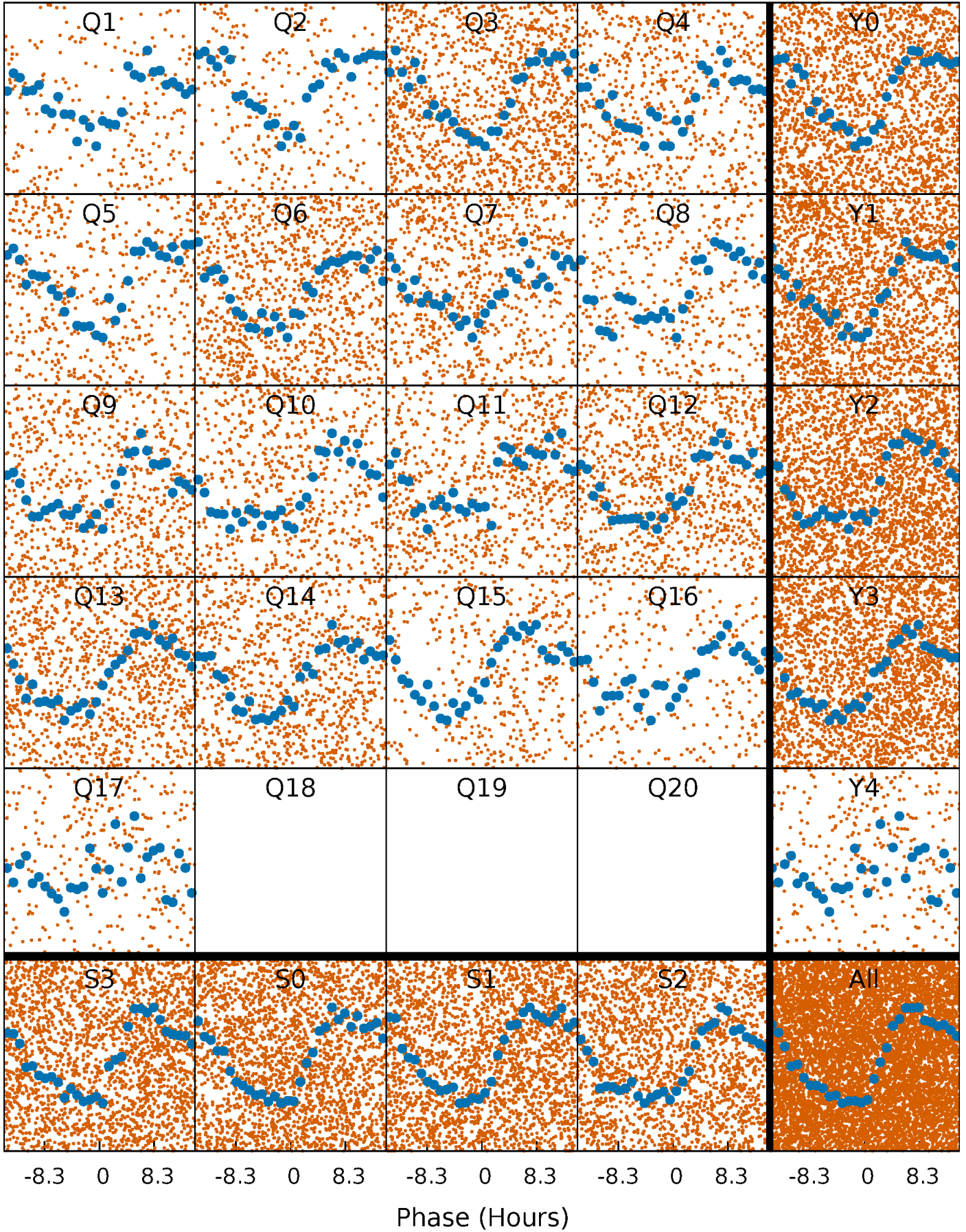


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



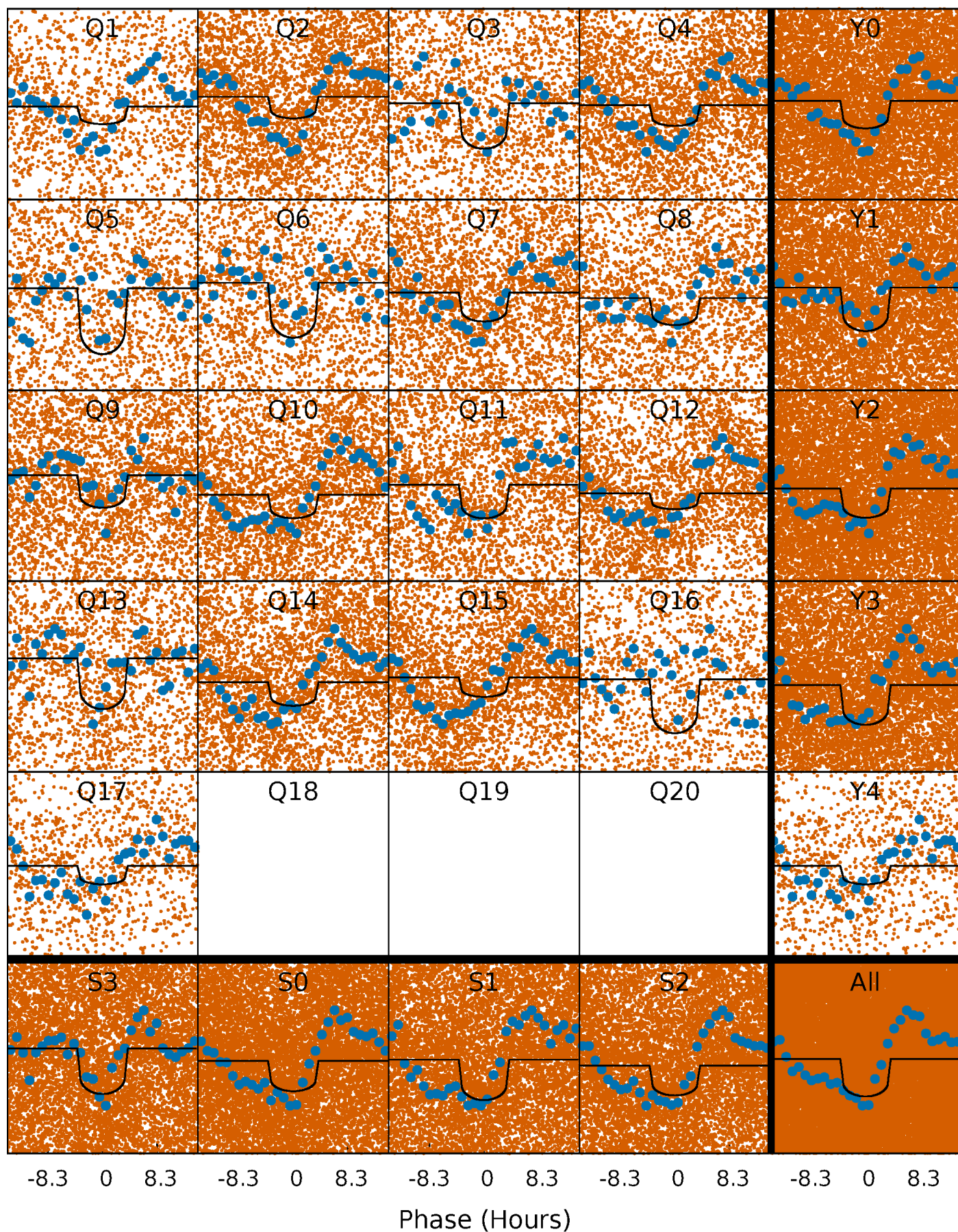
PDC Quarter-Phased Transit Curves

TCE 006039039-01 P= 1.119120 Days $T_0=132.473556$ (BKJD)



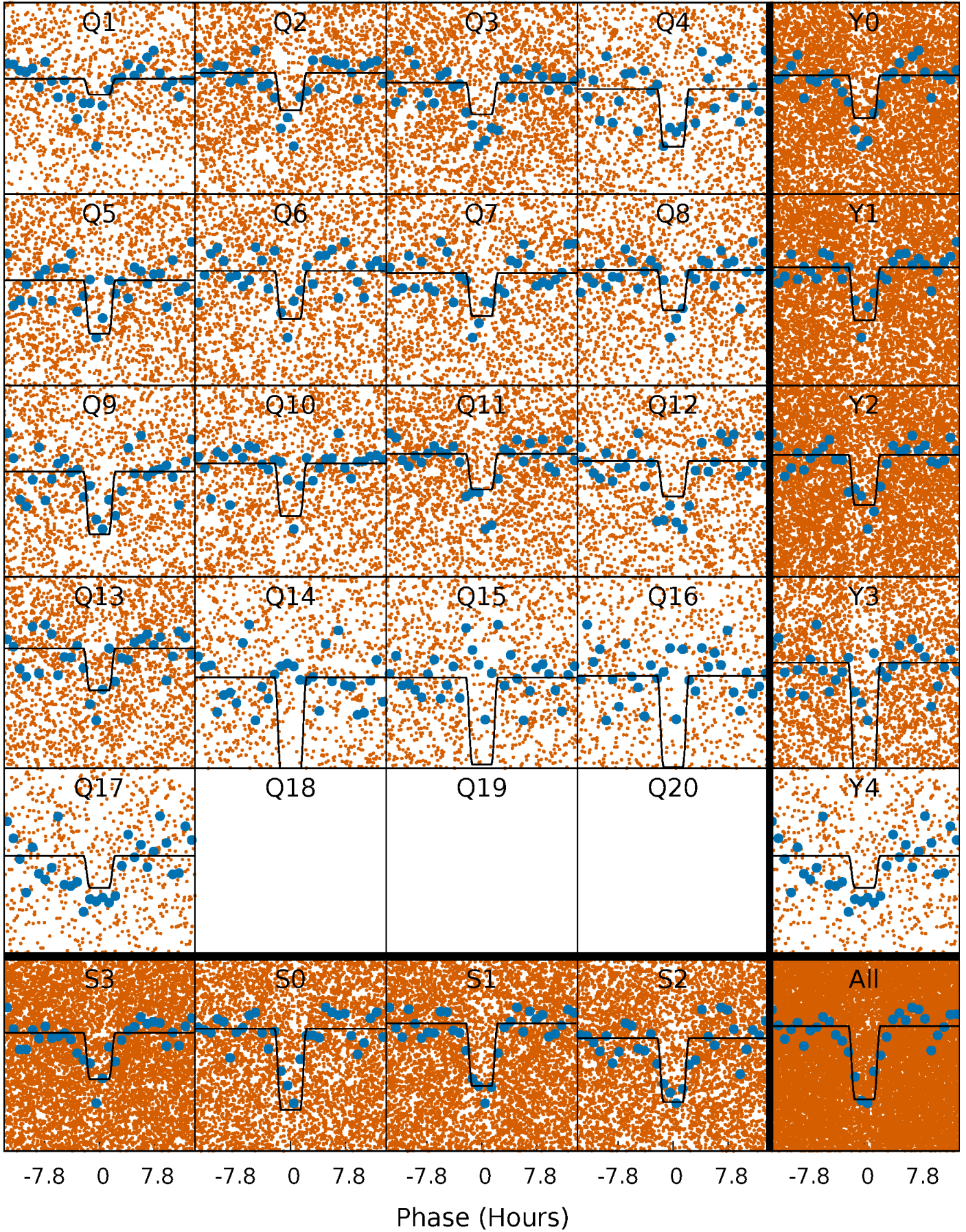
DV Quarter-Phased Transit Curves

TCE 006039039-01 P= 1.119120 Days $T_0=132.473556$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

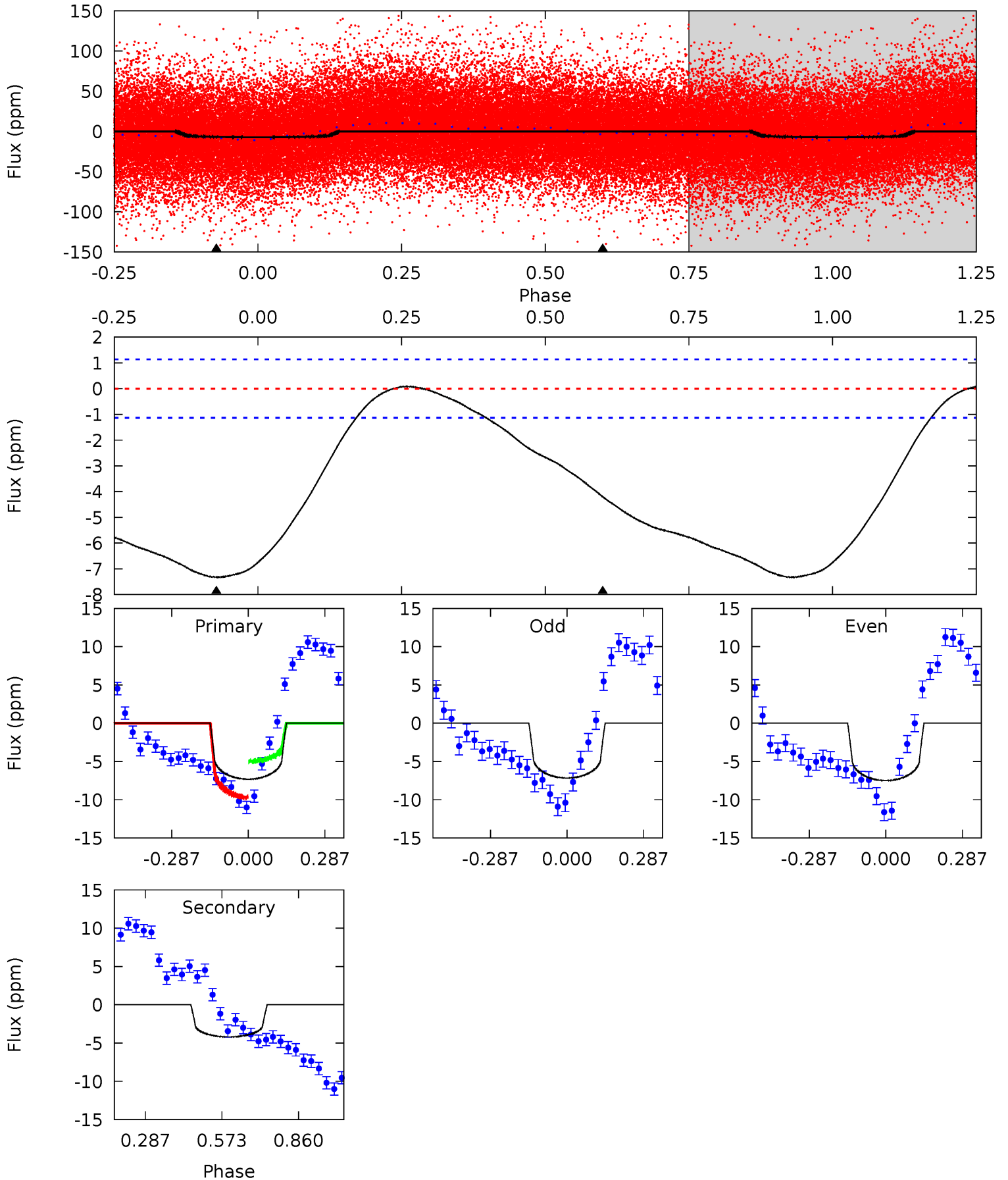
TCE 006039039-01 P= 1.119086 Days $T_0=132.496611$ (BKJD)



DV Model-Shift Uniqueness Test

006039039-01, P = 1.119120 Days, E = 131.354436 Days

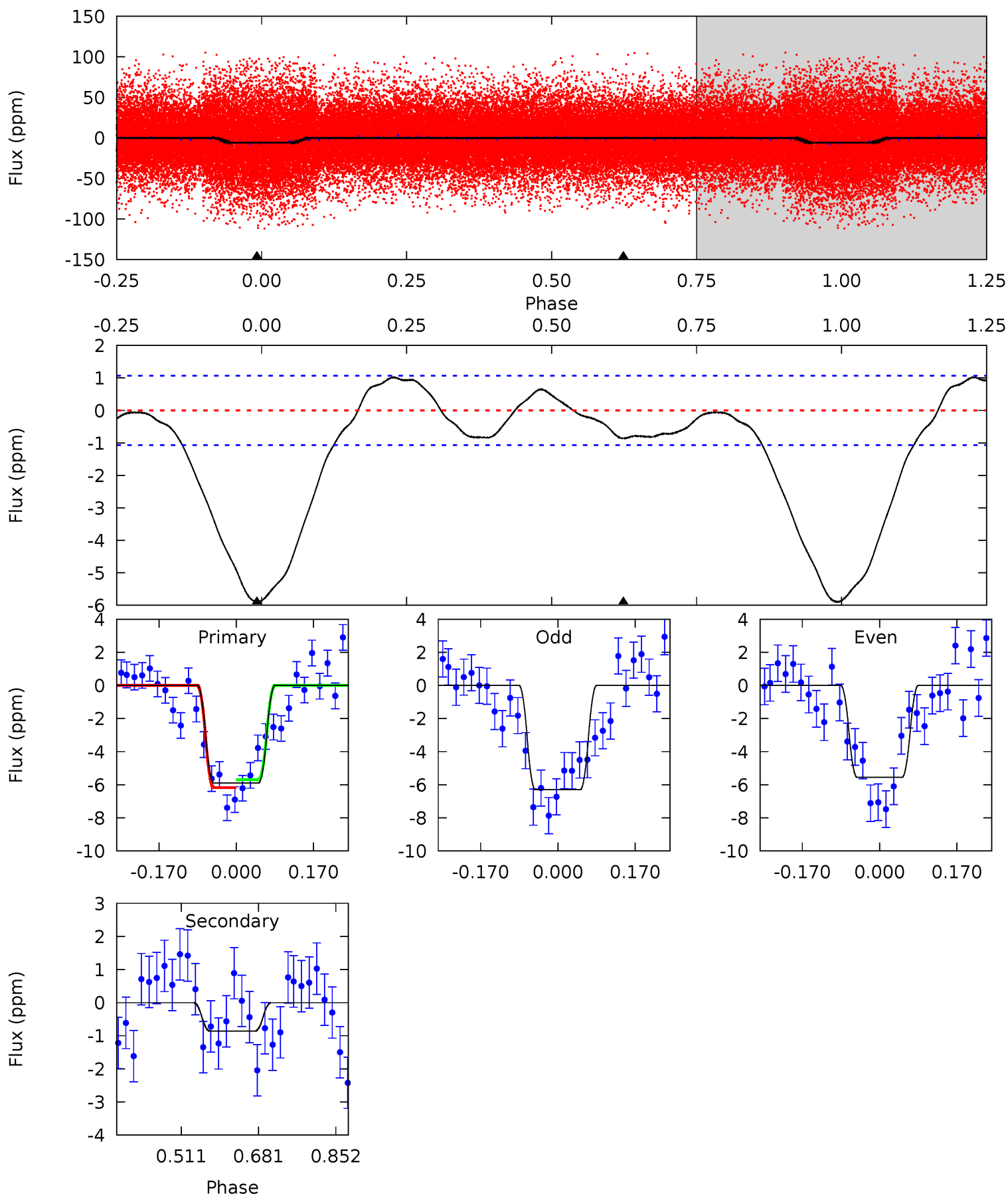
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.9	16.0	0	0	4.34	1.07	0.34	27.9	27.9	16.0	16.0	0.64	1.02	0.01	9.21



Alt Model-Shift Uniqueness Test

006039039-01, P = 1.119086 Days, E = 131.377525 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.6	3.59	0	0	4.45	1.37	2.67	24.6	24.6	3.59	3.59	1.54	0.94	0.15	1.00



Stellar Parameters For KIC 006039039

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7568^{+75}_{-83}	$3.956^{+0.121}_{-0.099}$	$0.140^{+0.050}_{-0.150}$	$2.388^{+0.334}_{-0.408}$	$1.881^{+0.078}_{-0.182}$	$0.194^{+0.114}_{-0.062}$
	+1%/-1%	+3%/-3%	+36%/-107%	+14%/-17%	+4%/-10%	+59%/-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 006039039-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-4 ± 0	$0.68^{+0.25}_{-0.23}$	4472^{+165}_{-181}	6392^{+1708}_{-928}	$3.329^{+4.337}_{-1.548}$
Alt.	-1 ± 0	$0.67^{+0.23}_{-0.23}$	4467^{+166}_{-189}	4183^{+1115}_{-1251}	$0.740^{+0.981}_{-0.399}$

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 $A_{obs} \gg 1.0$

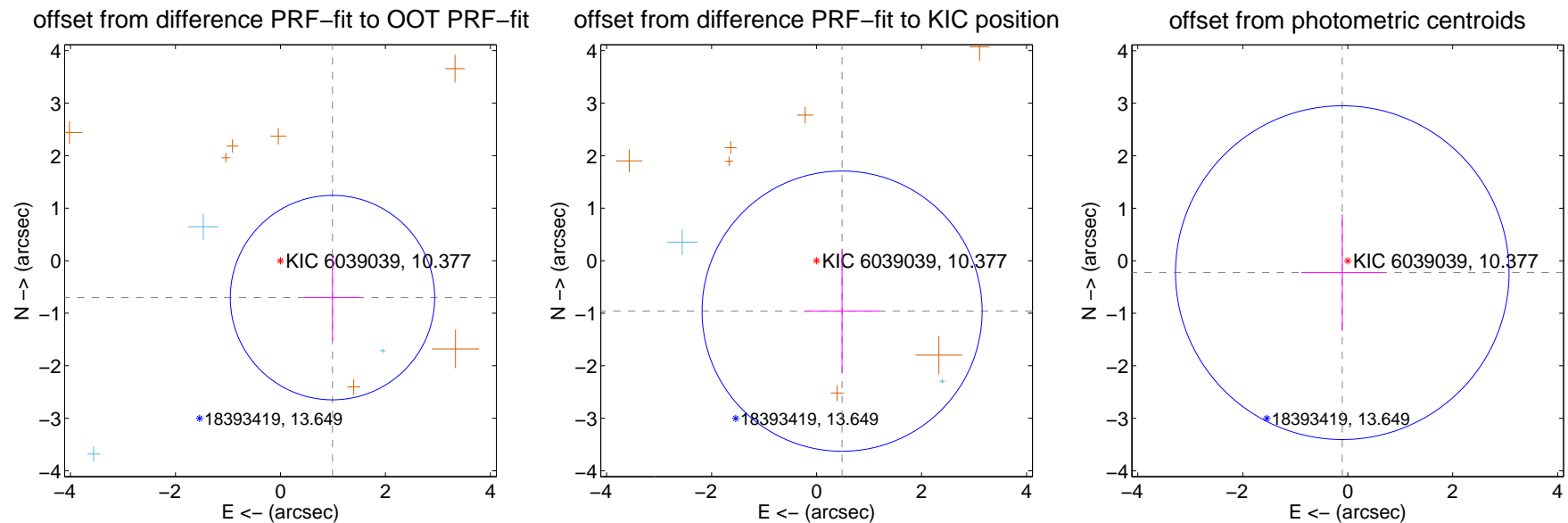
DV Centroid Data

Supplemental centroid analysis for 006039039-01. **Kepler magnitude: 10.38.** Transit SNR 15.34

There are 4 quarters with good PRF difference image offsets

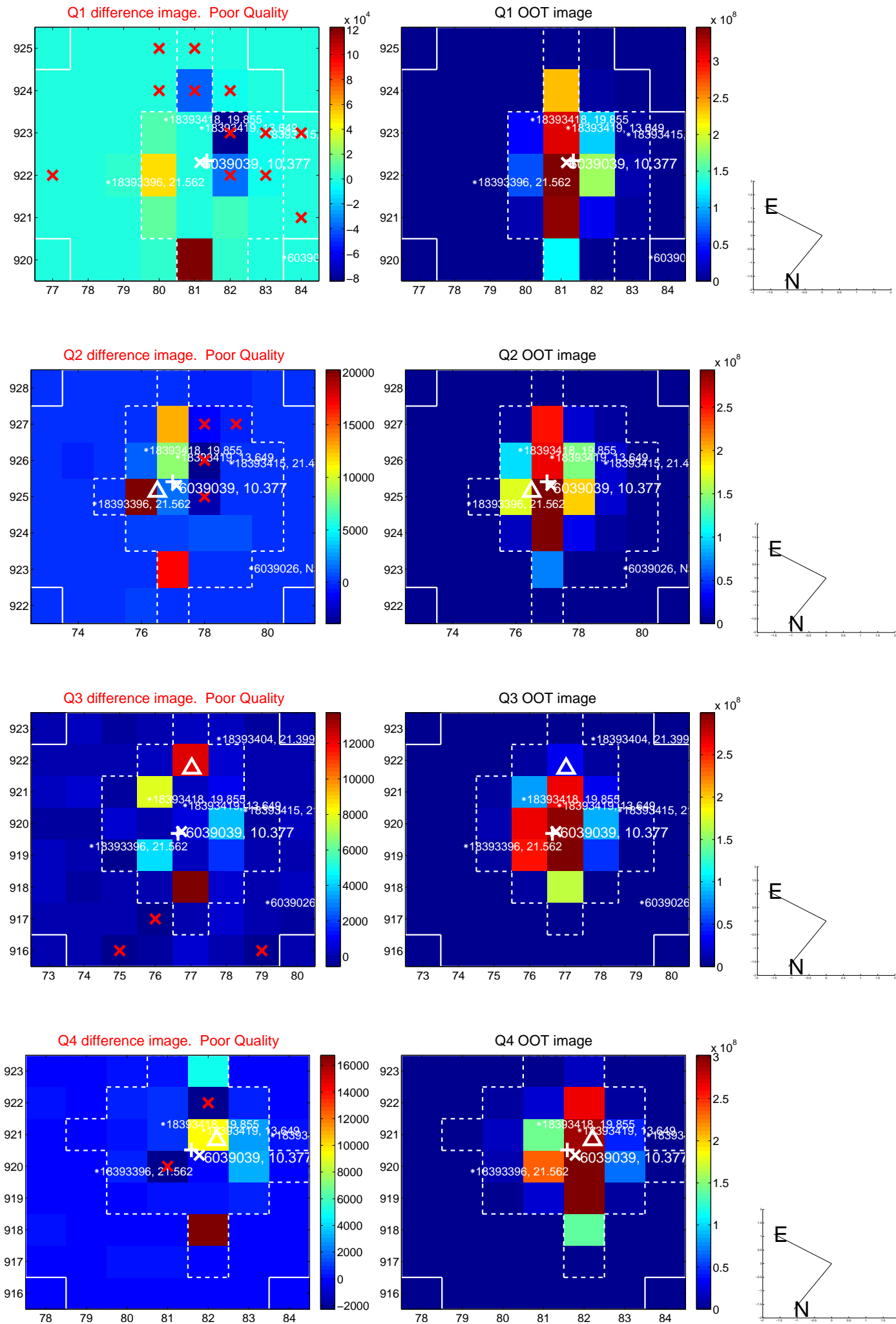
The direct PRF centroid is offset from the target star catalog position by about 0.70 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.215 ± 0.649	1.87	-0.991 ± 0.541	-0.703 ± 0.822
PRF-fit source offset from KIC position	1.077 ± 0.889	1.21	-0.486 ± 0.722	-0.961 ± 1.172
photometric centroid source offset	0.25 ± 1.06	0.23	0.10 ± 0.79	-0.23 ± 1.11

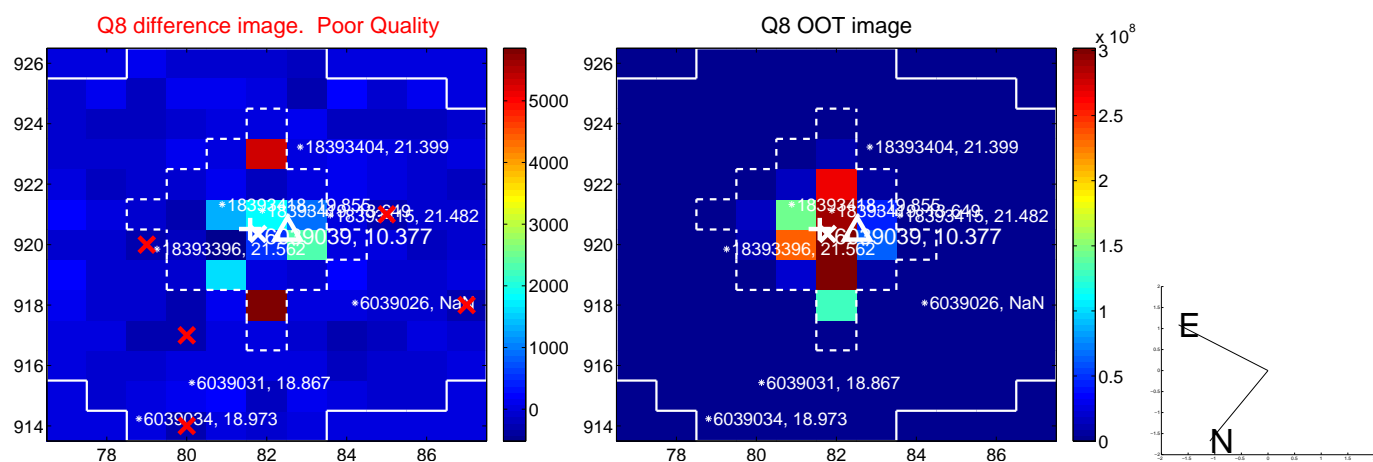
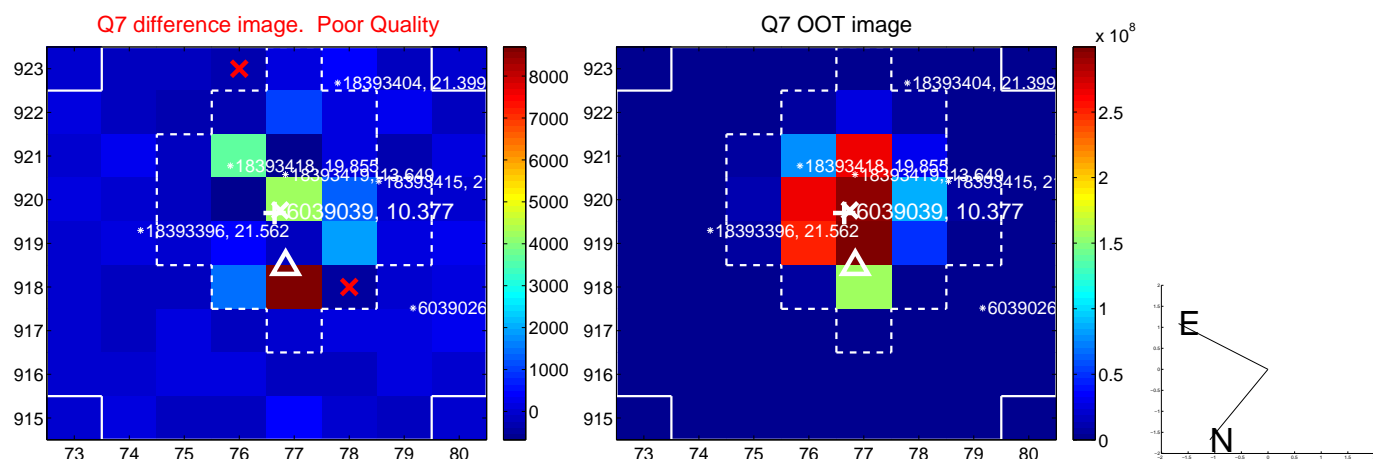
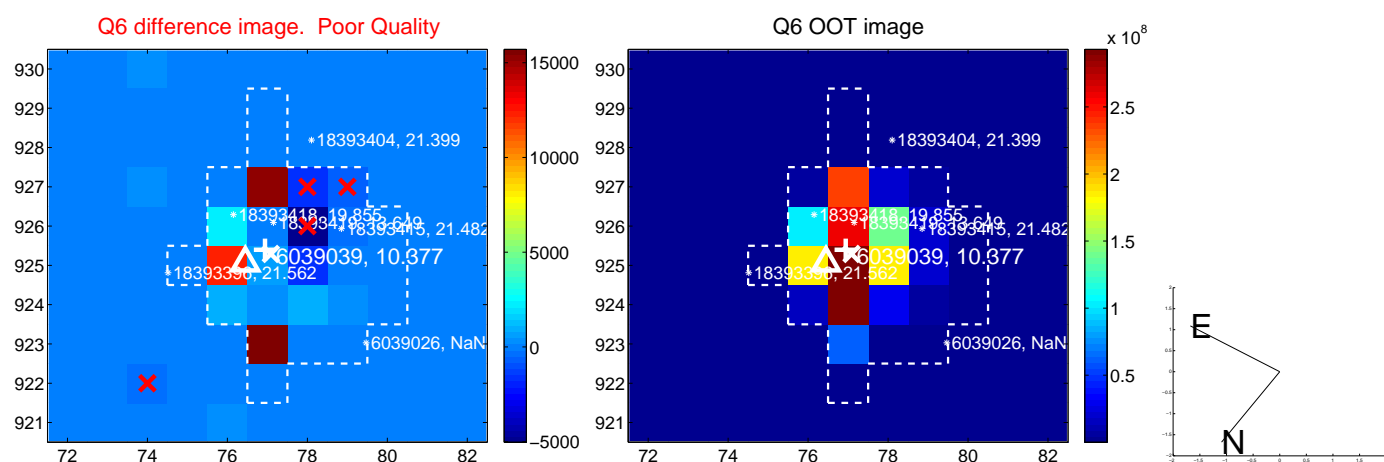
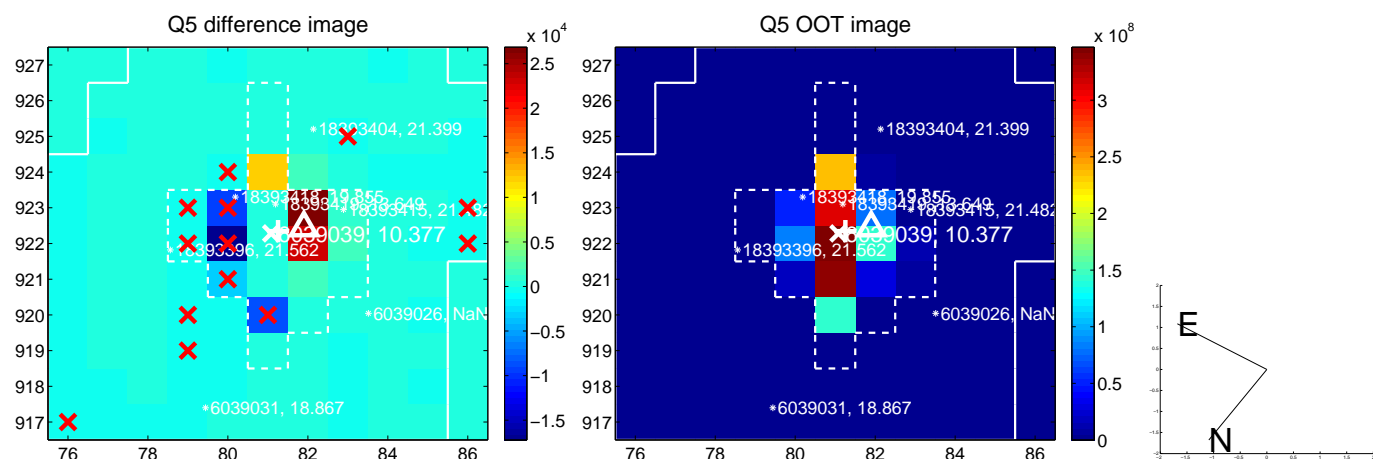


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

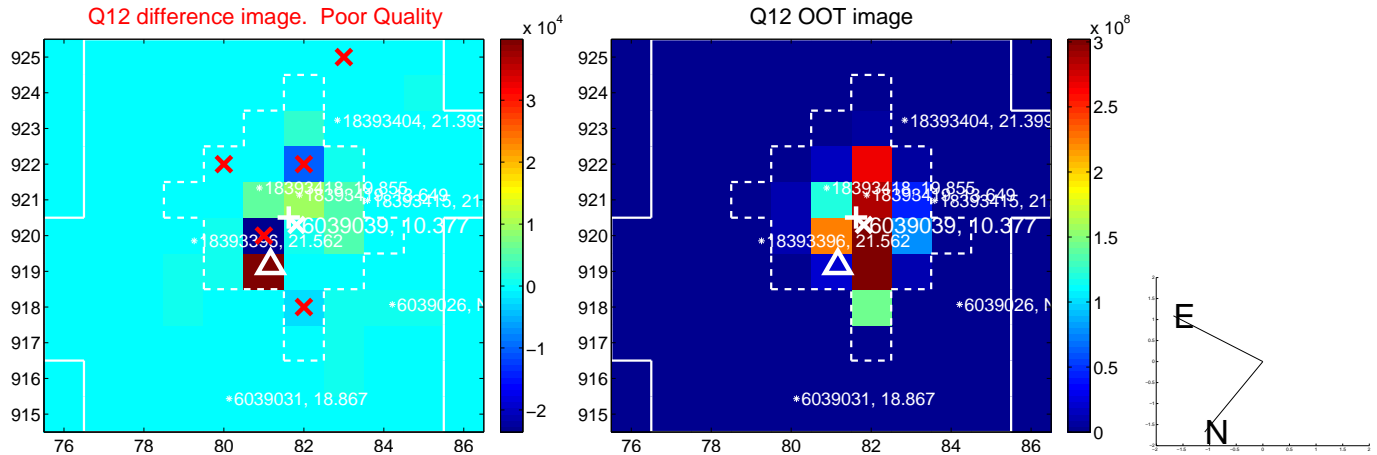
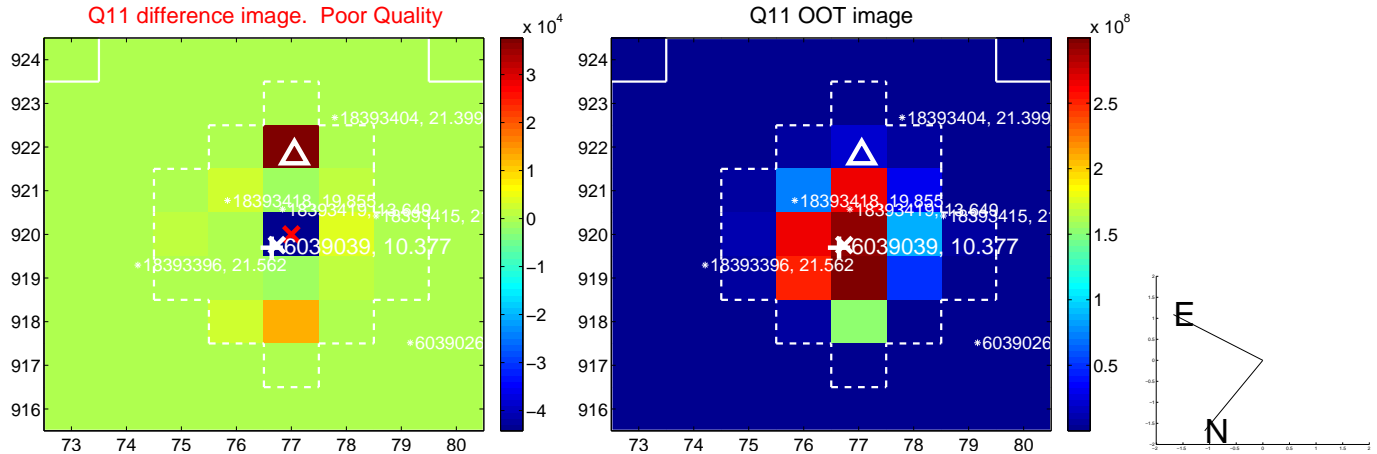
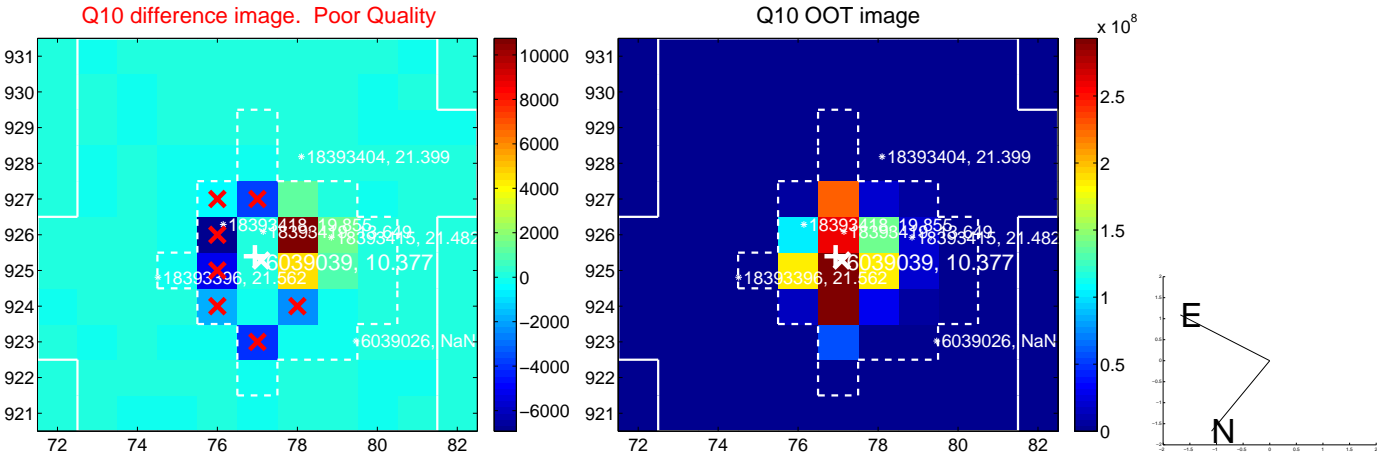
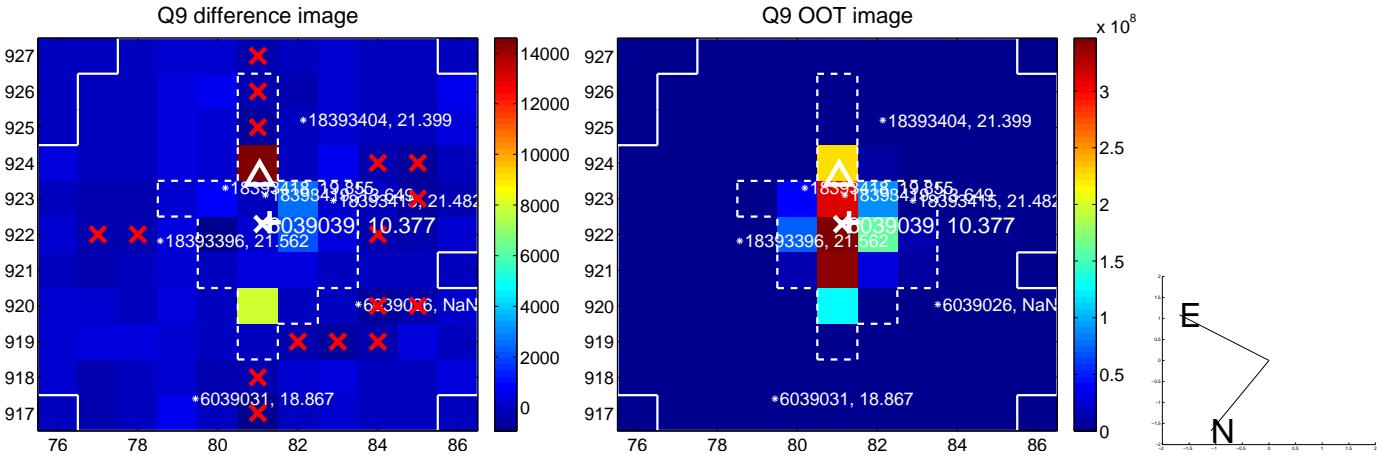
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



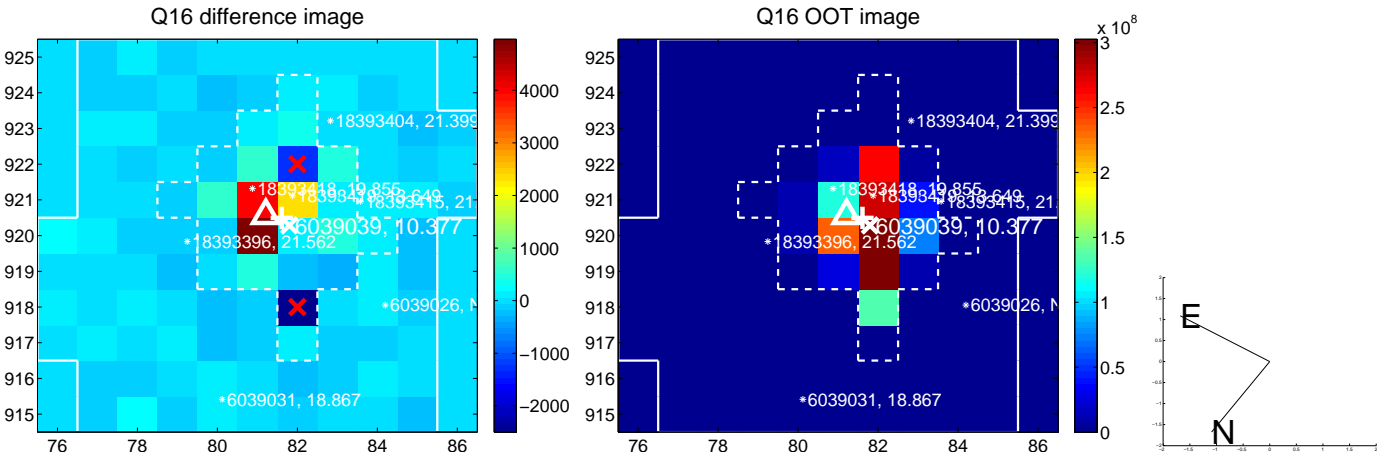
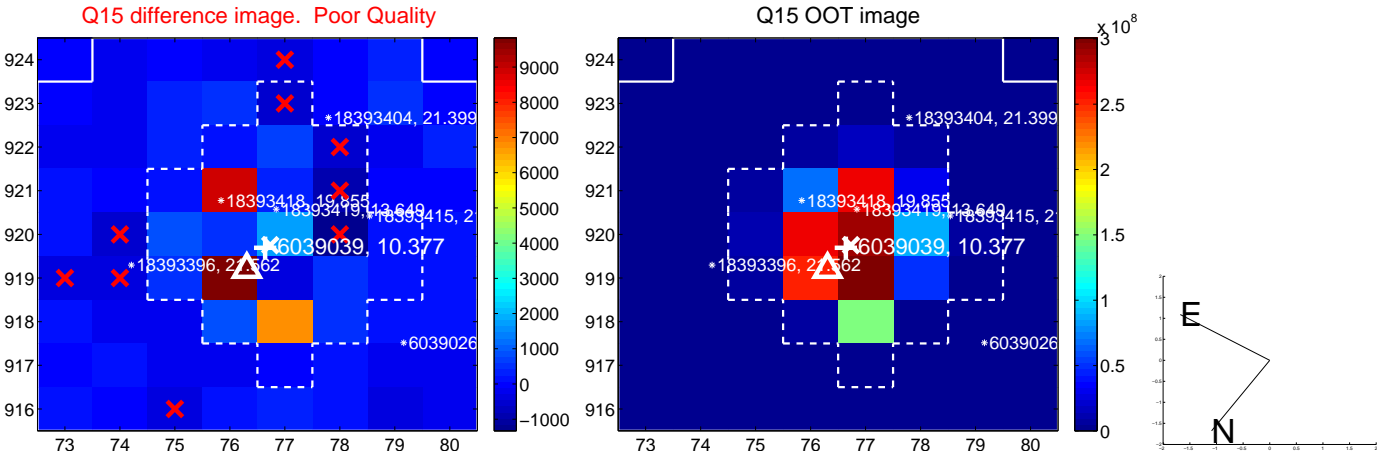
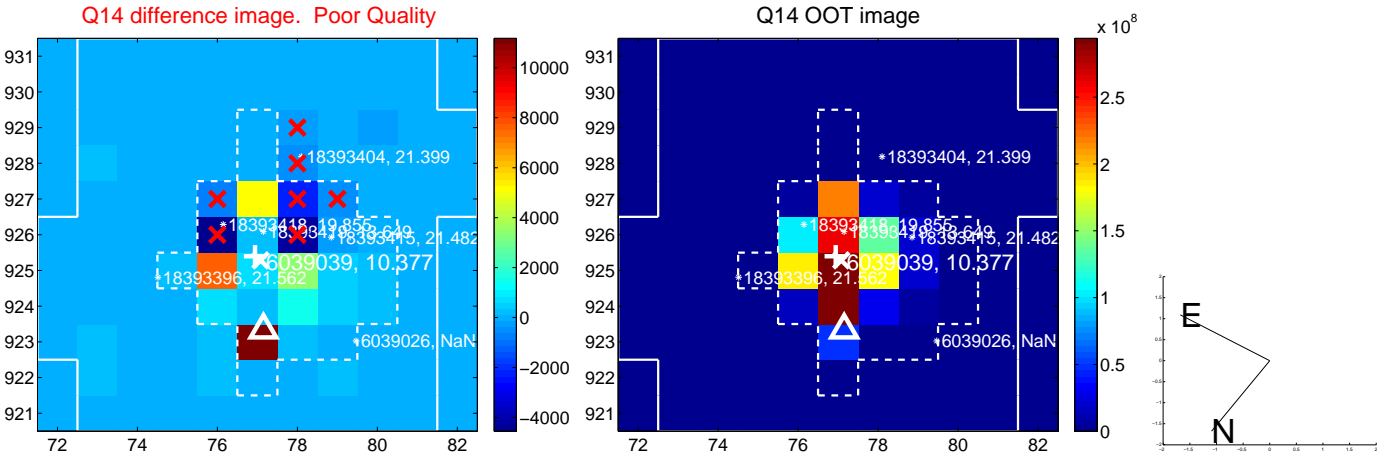
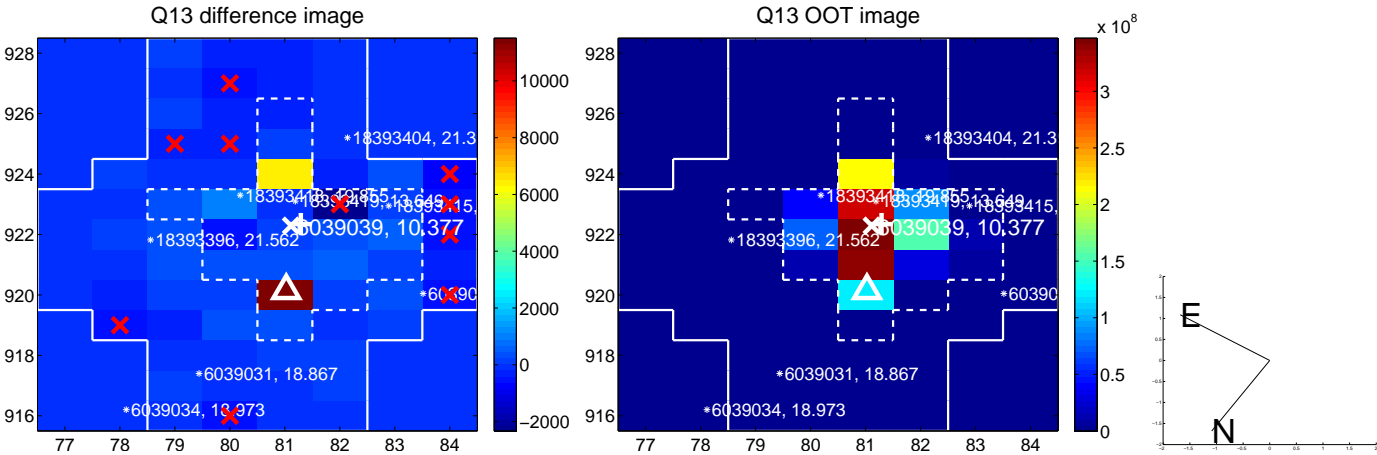
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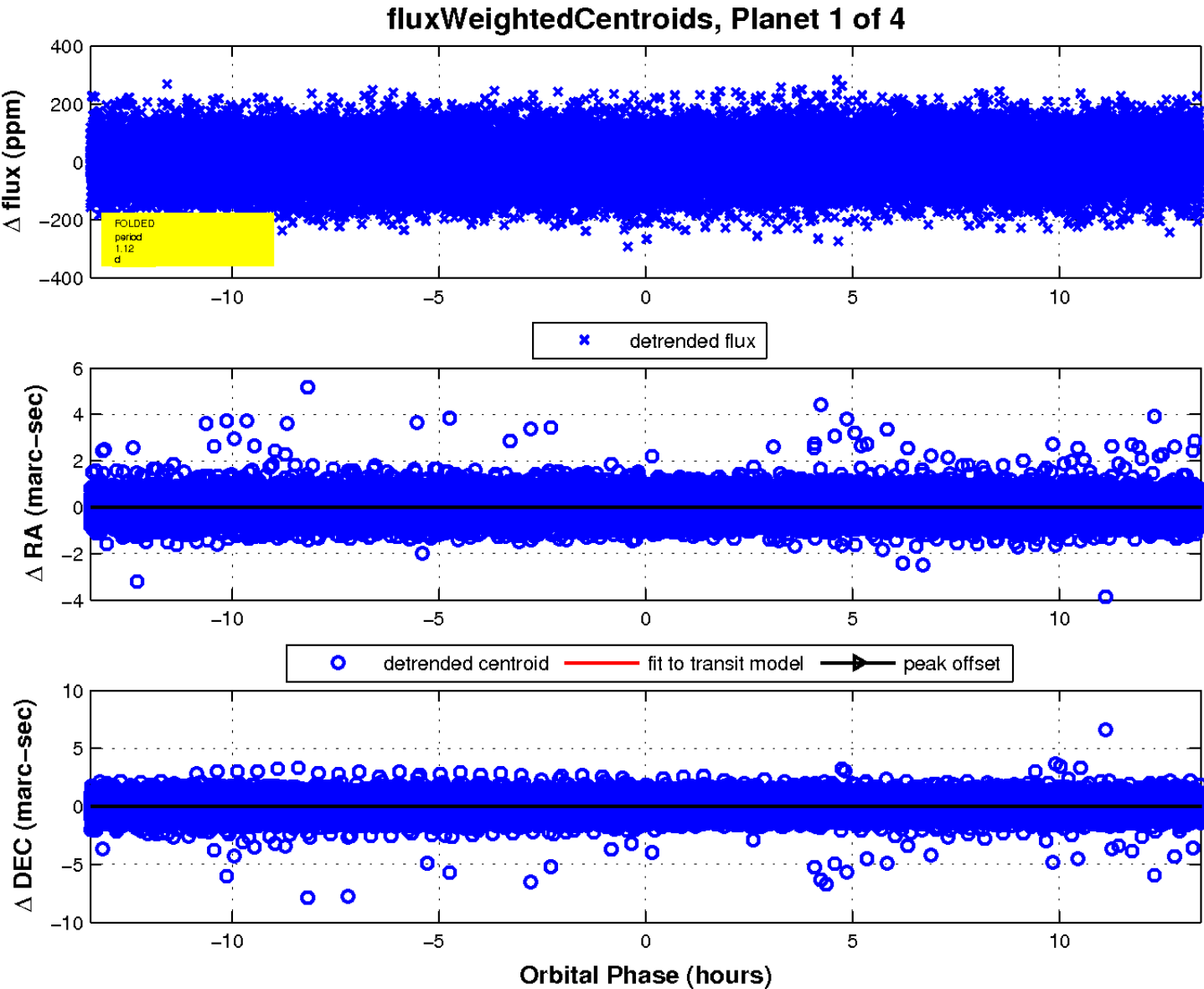
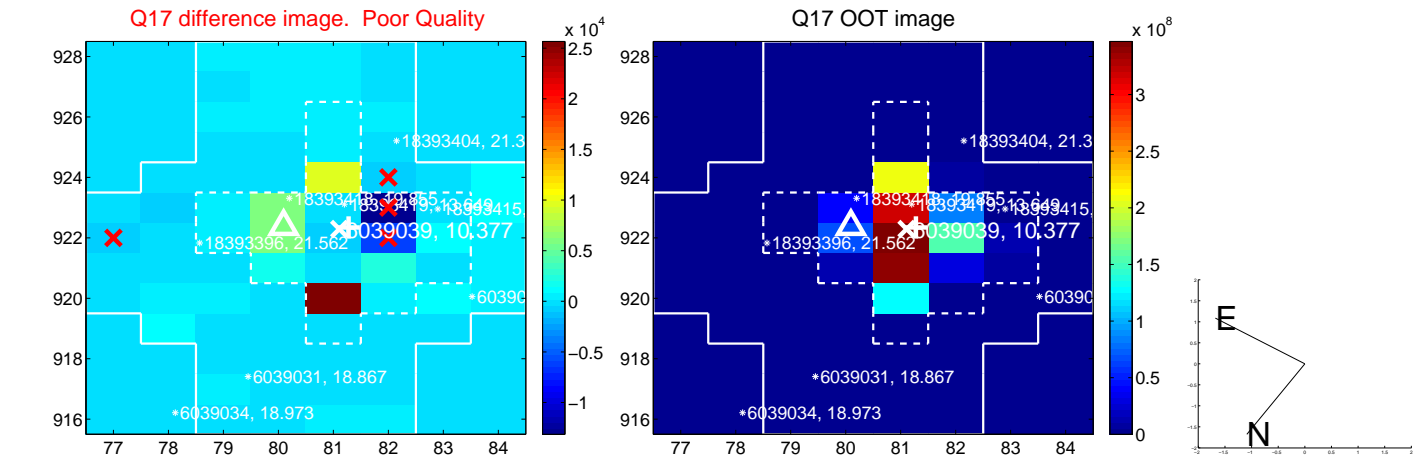
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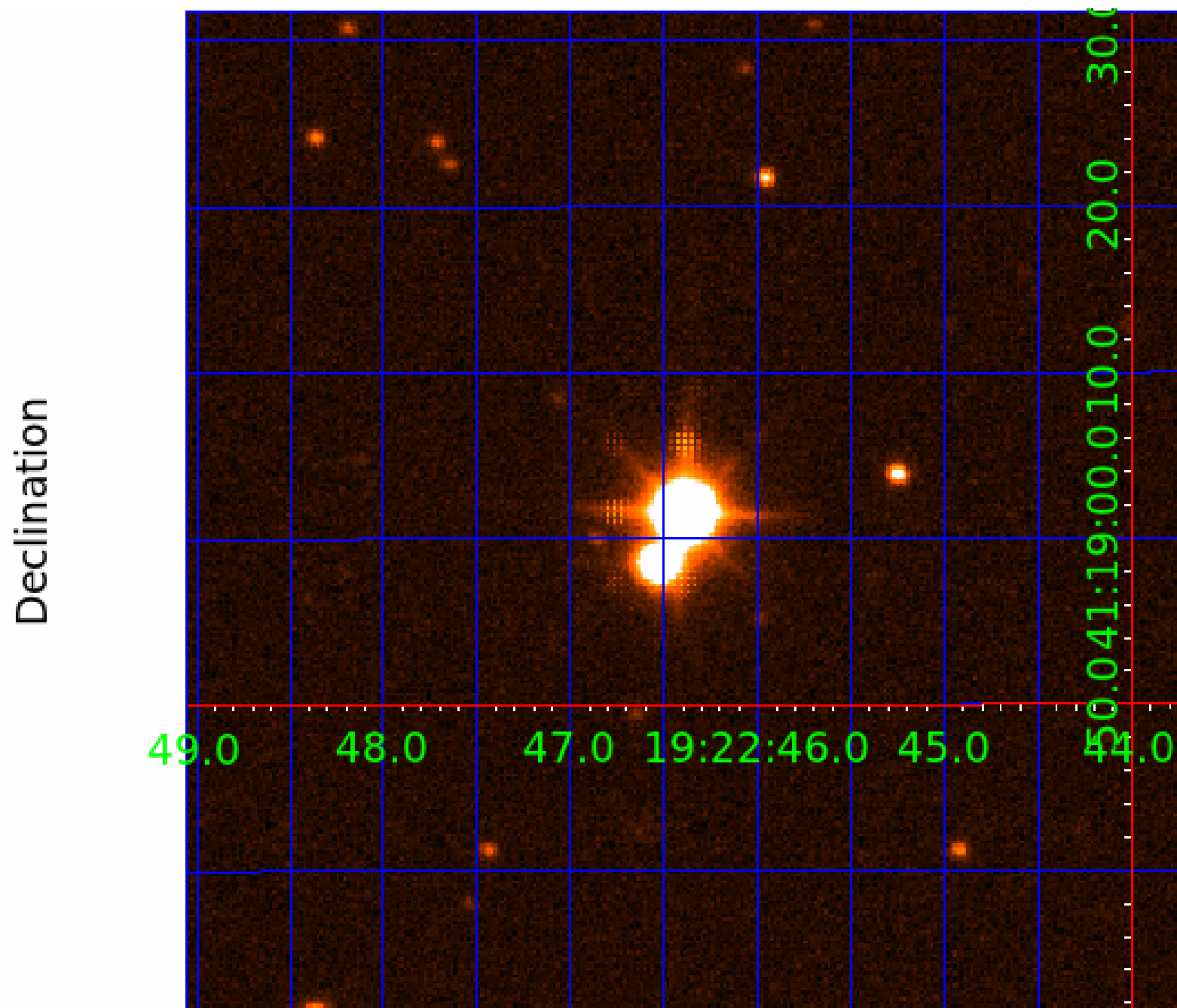
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UKIRT Image



KIC 006039039

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006039039-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_SATURATED
006039039-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

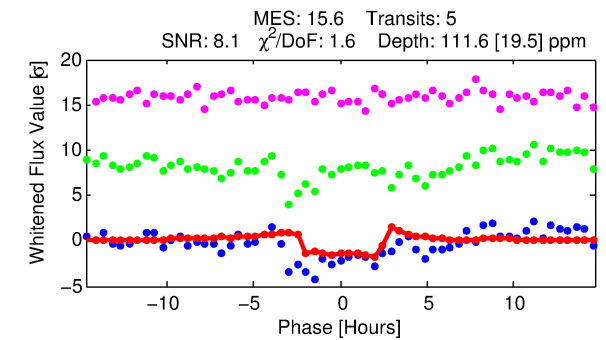
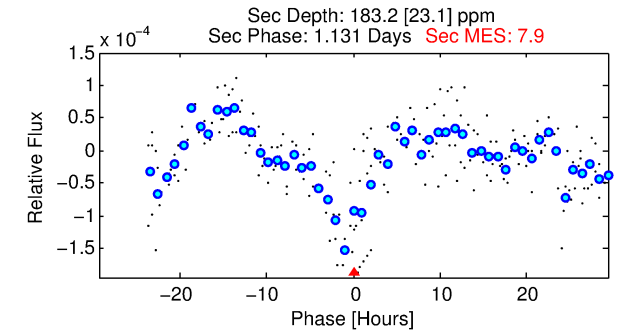
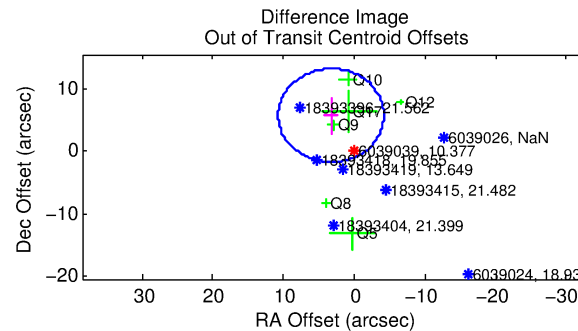
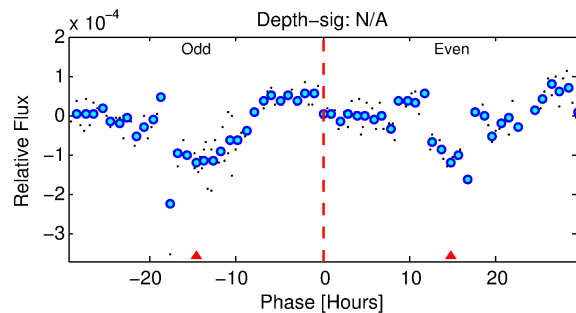
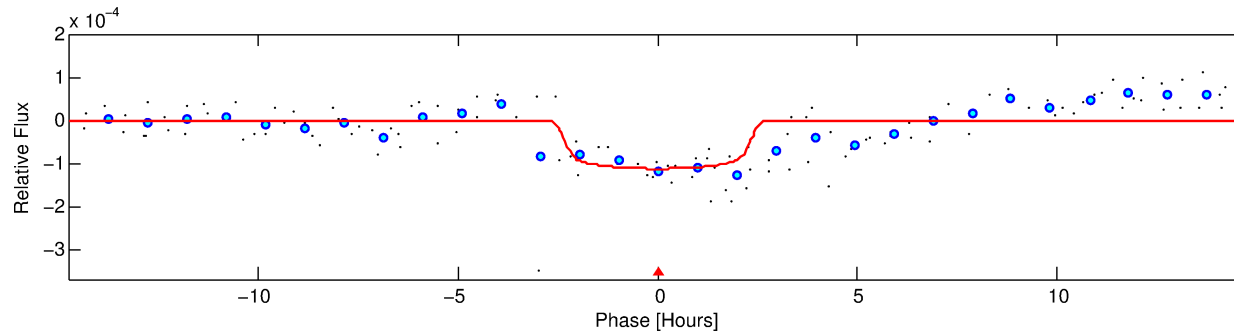
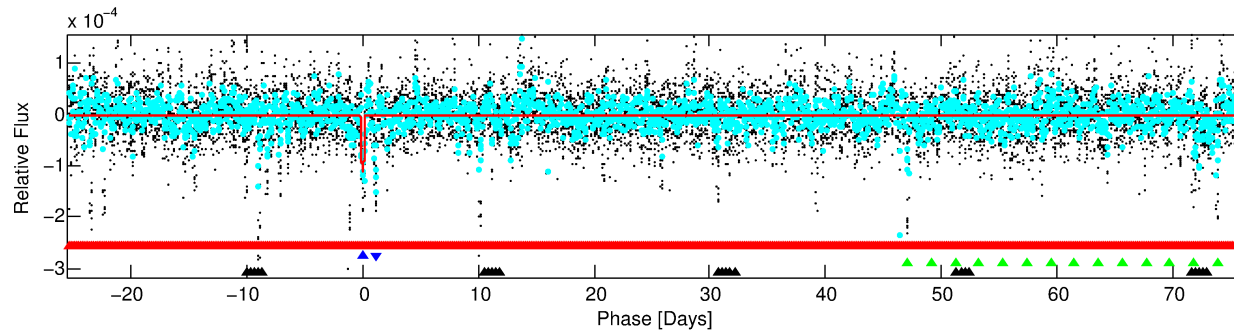
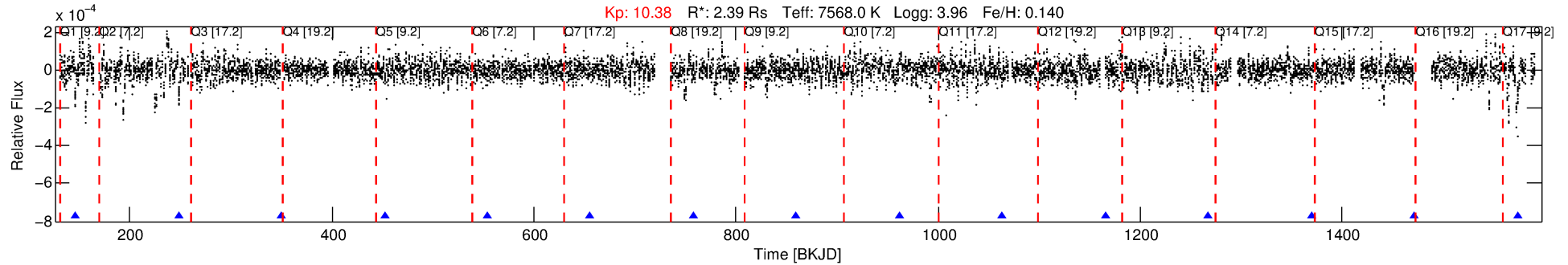
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006039039-02

No Significant Match Found

DV One-Page Summary

KIC: 6039039 Candidate: 2 of 4 Period: 101.928 d



DV Fit Results:

Period = 101.92811 [0.00078] d
Epoch = 146.3739 [0.0052] BKJD
Rp/R* = 0.0110 [0.0044]
a/R* = 83.33 [208.98]
b = 0.86 [0.75]
Seff = 60.32 [13.41]
Teq = 711 [39] K
Rp = 2.86 [1.25] Re
a = 0.5271 [0.0775] AU
Ag = 3434.91 [2909.99] [1.18σ]
Teffp = 8411 [1724] K [4.47σ]

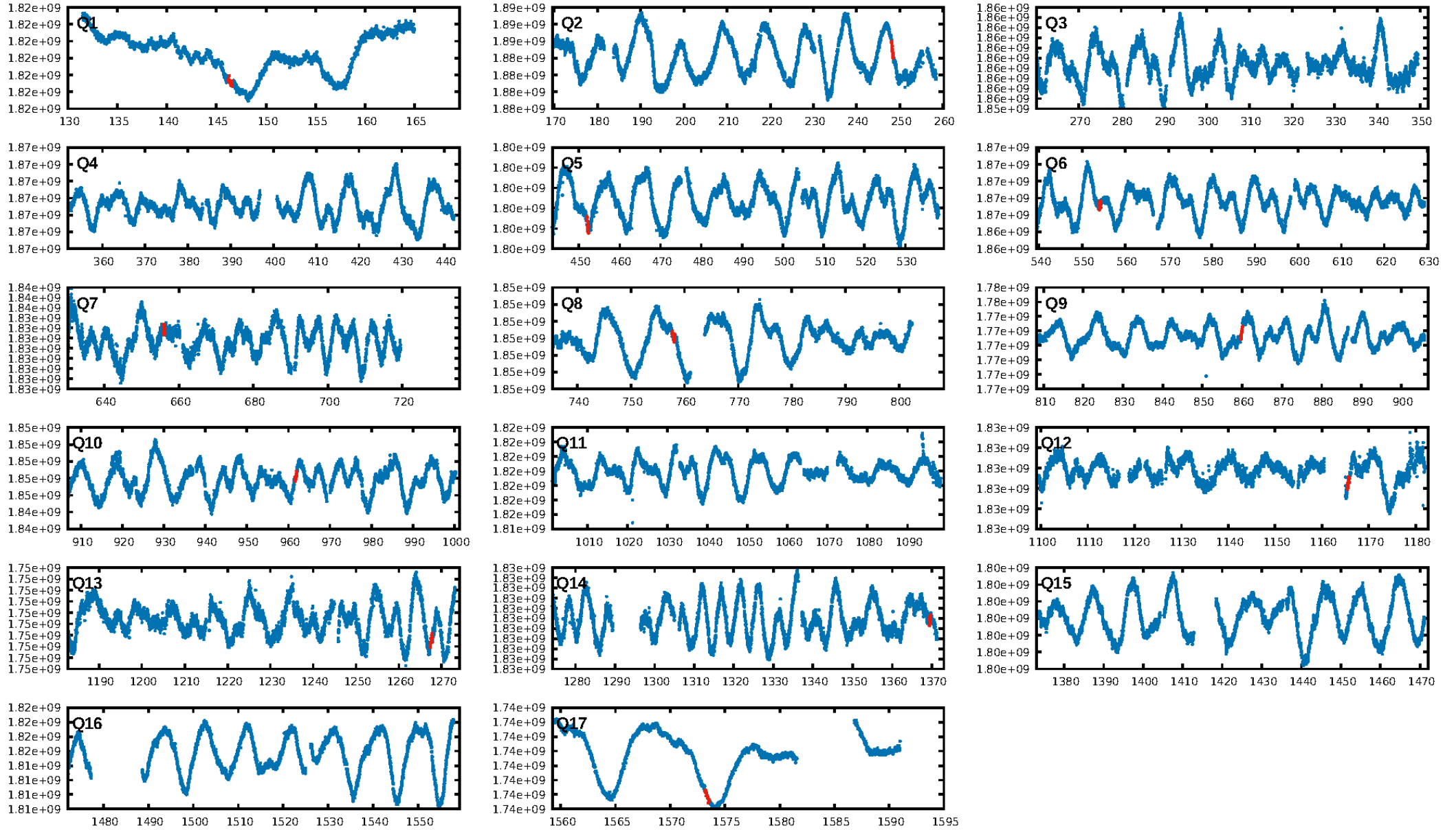
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [126.23σ]
LongPeriod-sig: 100.0% [7.35σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 98.6%
Bootstrap-pfa: 1.52e-27
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: N/A
Centroid-sig: 7.3%
Centroid-so: 1.028 arcsec [1.36σ]
OotOffset-rm: 6.598 arcsec [2.65σ]
KicOffset-rm: 6.515 arcsec [2.35σ]
OotOffset-st: 1/0/2/3 [6]
KicOffset-st: 1/0/2/3 [6]
DiffImageQuality-fgm: 0.00 [0/6]
DiffImageOverlap-fno: 0.00 [0/11]

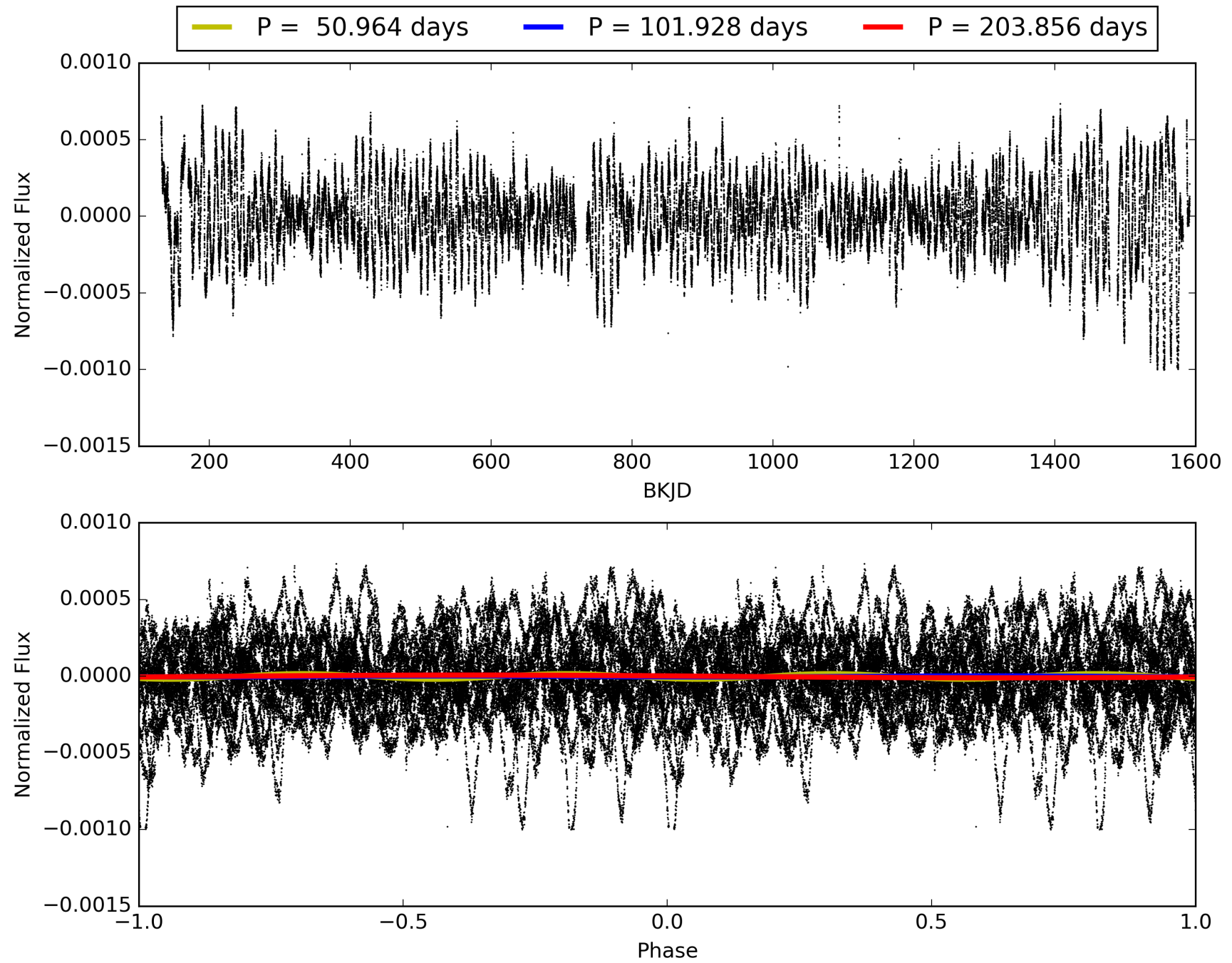
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:56:00 Z

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

TCE 006039039-02, PDC Light Curves

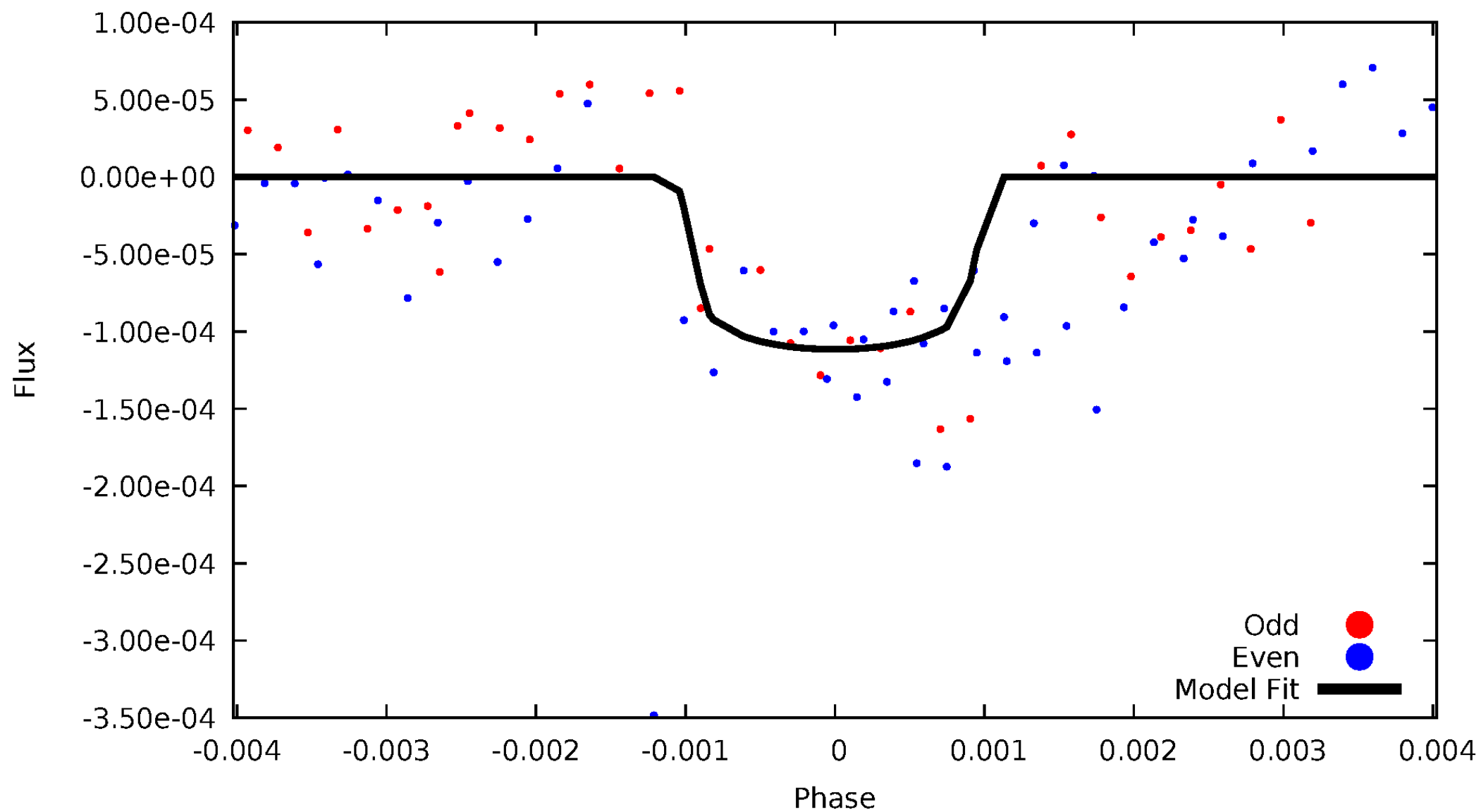


TCE 006039039-02



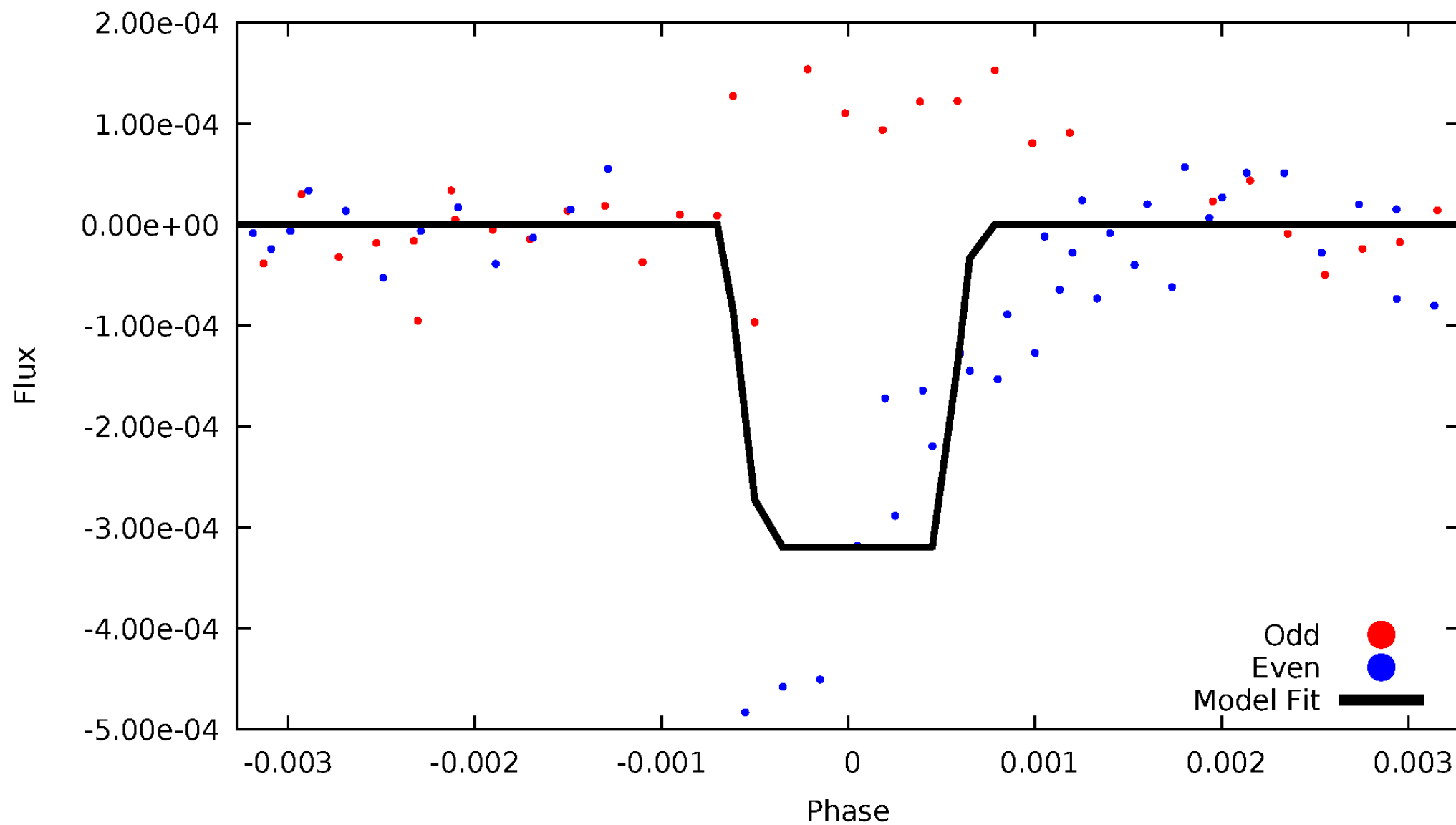
DV Odd/Even

TCE 006039039-02



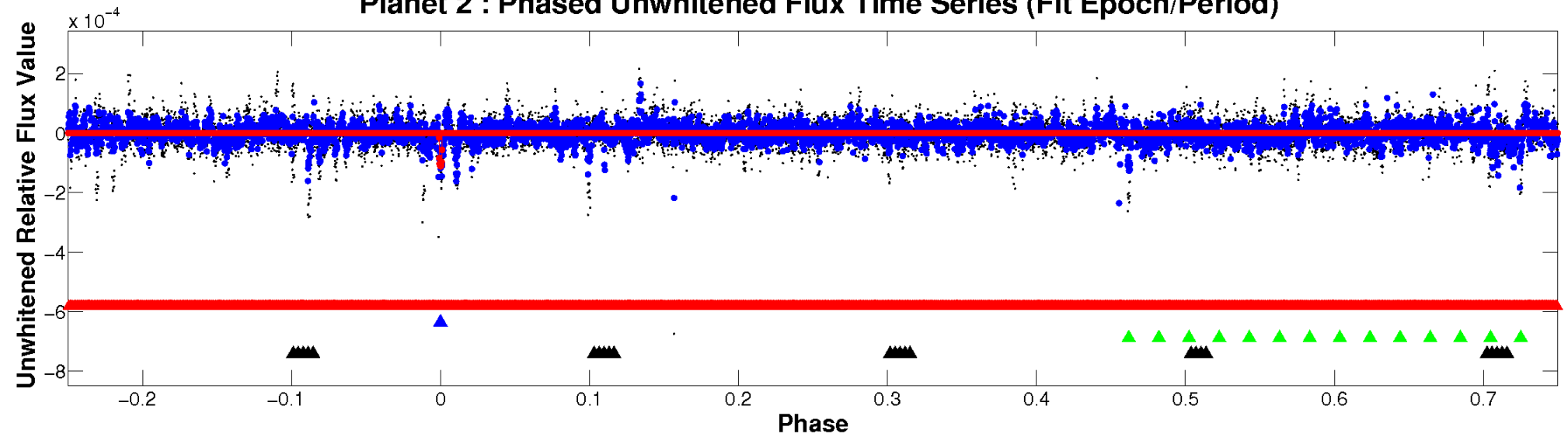
ALT Odd/Even

TCE 006039039-02

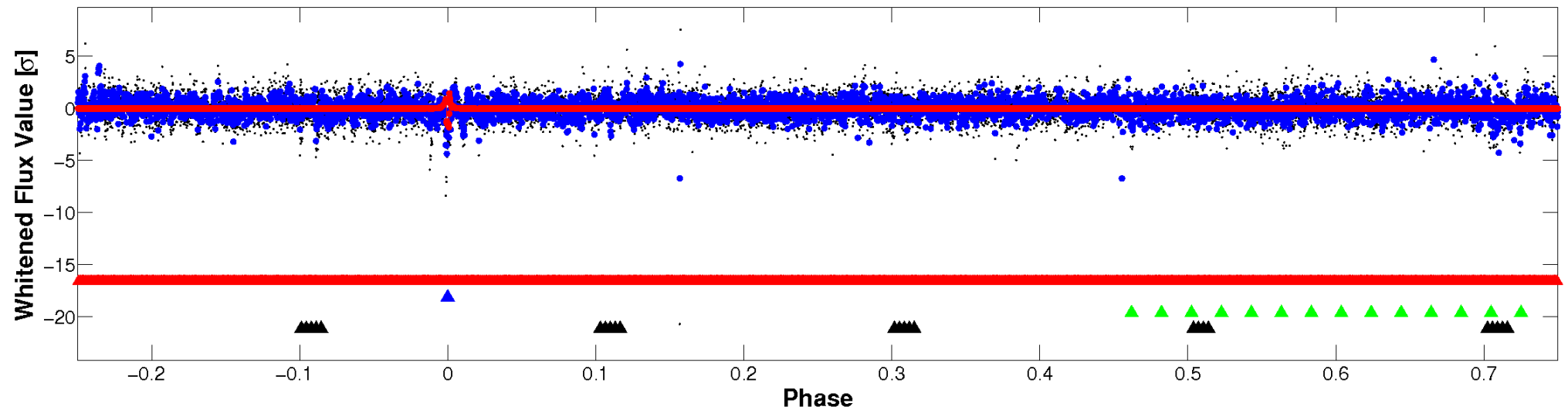


Non-Whitened Vs. Whitened Light Curve

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

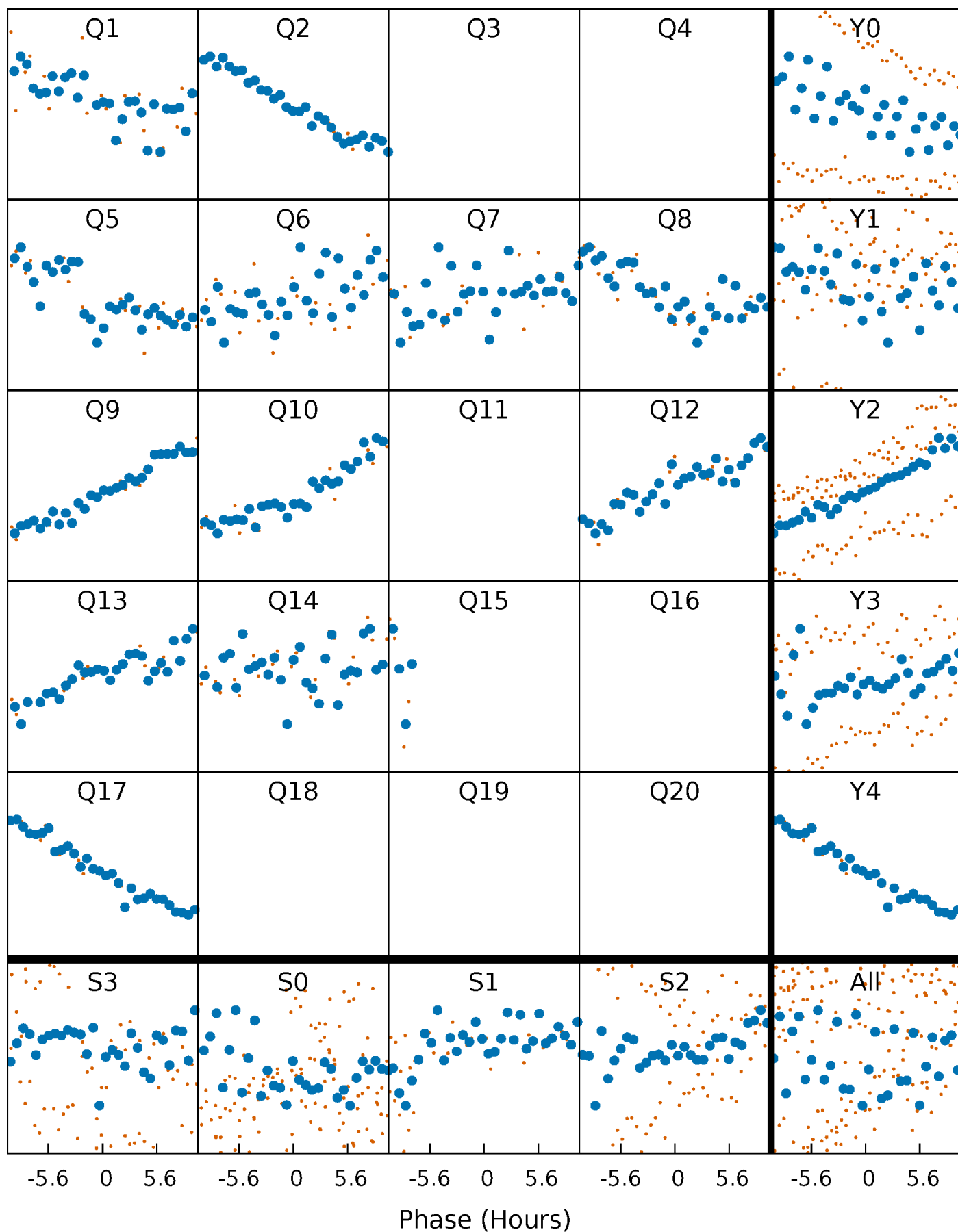


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



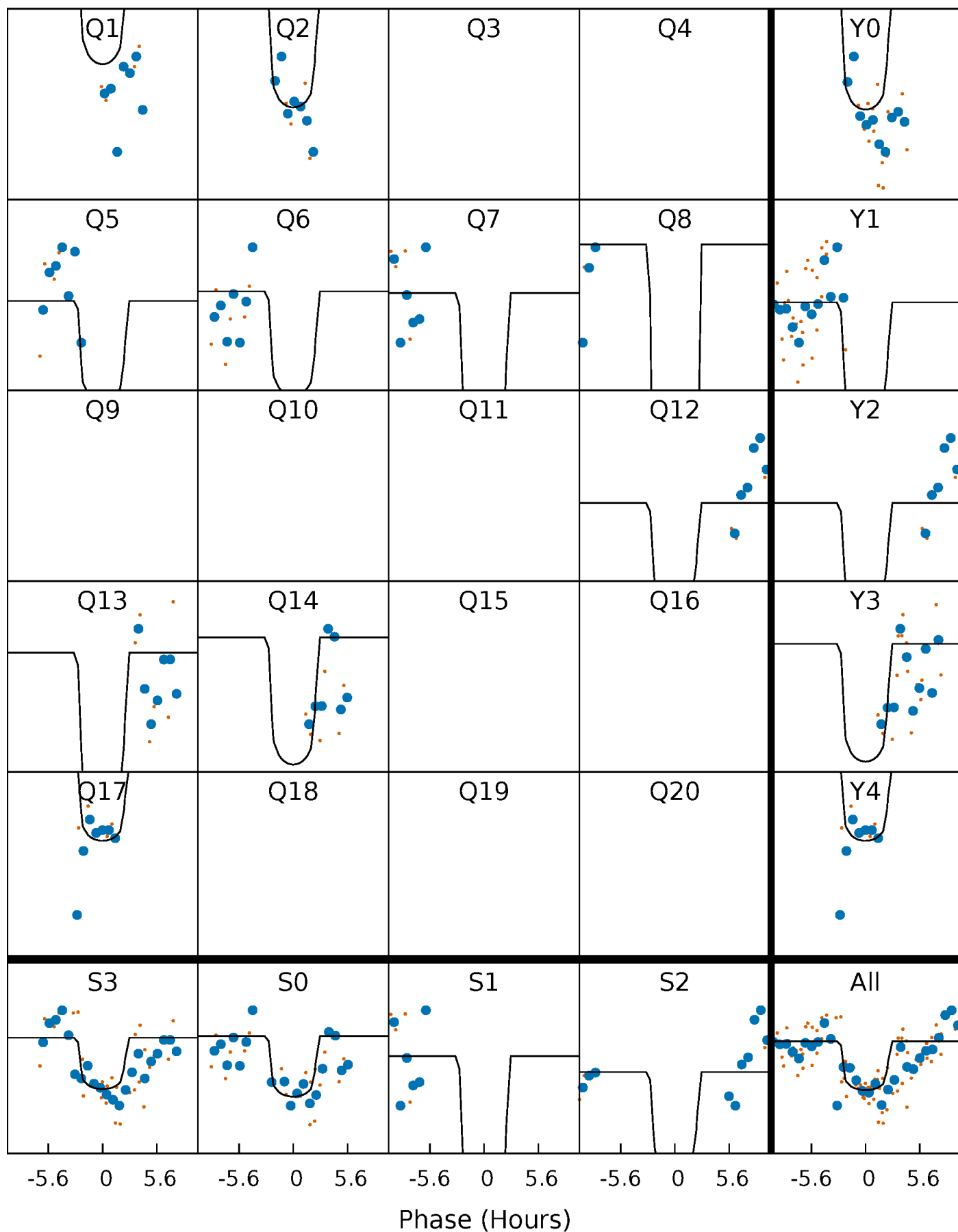
PDC Quarter-Phased Transit Curves

TCE 006039039-02 P=101.928115 Days $T_0=146.373852$ (BKJD)



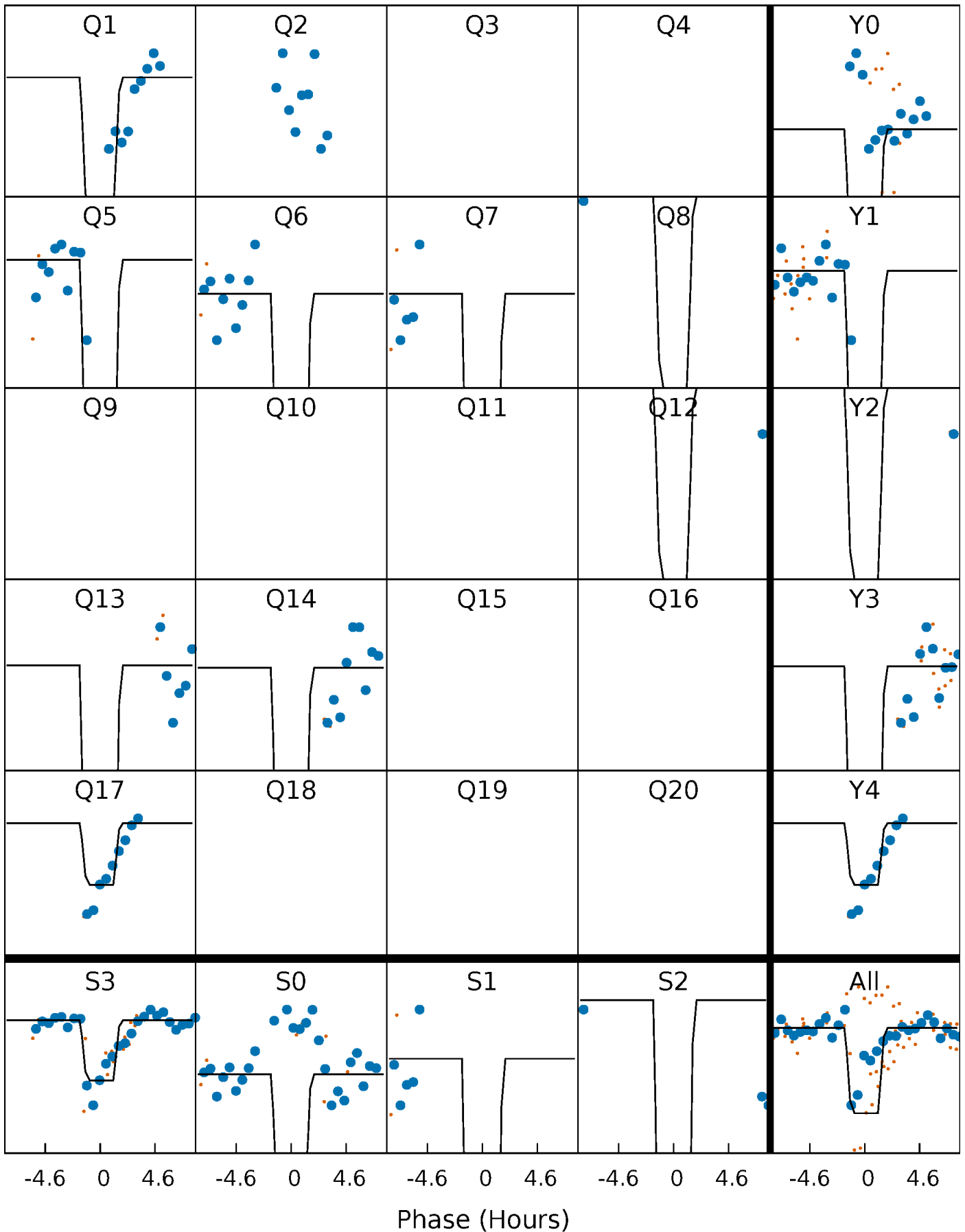
DV Quarter-Phased Transit Curves

TCE 006039039-02 P=101.928115 Days $T_0=146.373852$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

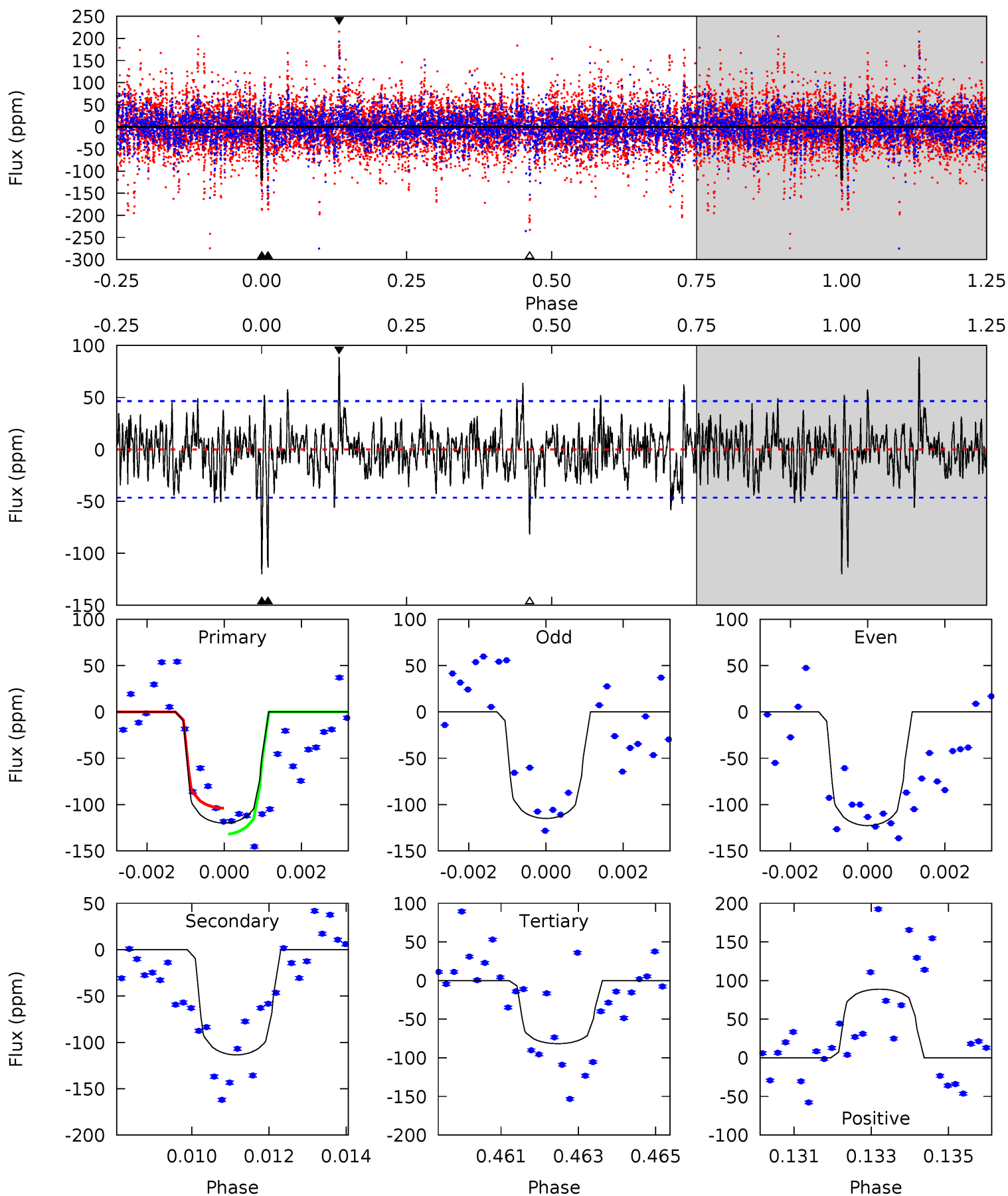
TCE 006039039-02 P=101.925139 Days $T_0=146.348227$ (BKJD)



DV Model-Shift Uniqueness Test

006039039-02, P = 101.928115 Days, E = 44.445737 Days

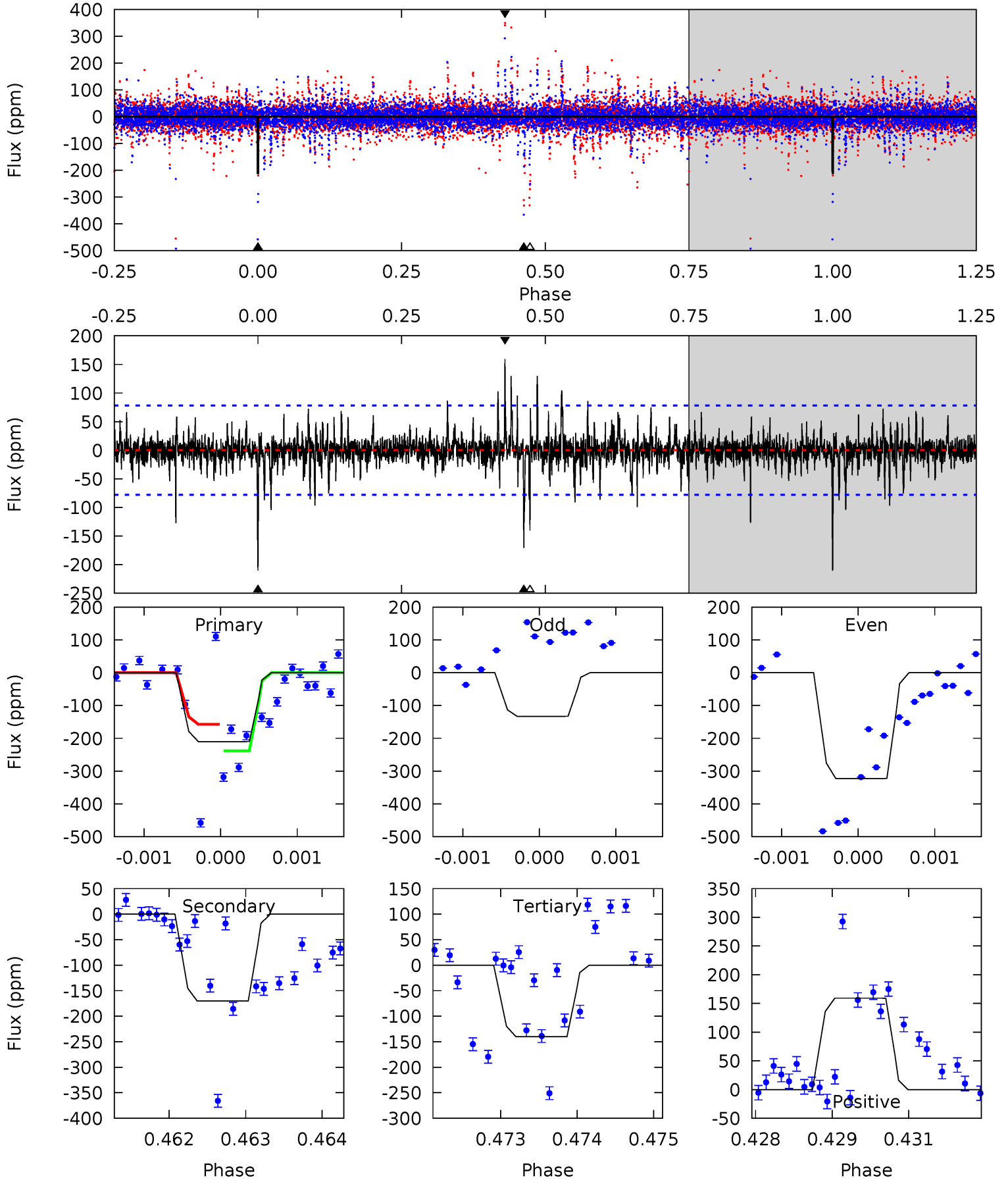
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	13.0	9.38	10.2	5.33	3.10	2.10	4.39	3.57	3.65	2.83	0.42	1.02	0.43	1.58



Alt Model-Shift Uniqueness Test

006039039-02, P = 101.925139 Days, E = 44.423088 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.6	11.8	9.74	11.1	5.42	3.24	1.52	4.85	3.53	2.08	0.76	5.49	0.79	0.43	2.67



Stellar Parameters For KIC 006039039

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	7568^{+75}_{-83}	$3.956^{+0.121}_{-0.099}$	$0.140^{+0.050}_{-0.150}$	$2.388^{+0.334}_{-0.408}$	$1.881^{+0.078}_{-0.182}$	$0.194^{+0.114}_{-0.062}$
	+1%/-1%	+3%/-3%	+36%/-107%	+14%/-17%	+4%/-10%	+59%/-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 006039039-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-114±9	$2.82^{+1.14}_{-1.09}$	992^{+40}_{-42}	7432^{+2758}_{-1244}	2156^{+3664}_{-1071}
Alt.	-170±14	$4.65^{+1.25}_{-1.29}$	992^{+39}_{-41}	6325^{+1147}_{-683}	1202^{+988}_{-466}

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

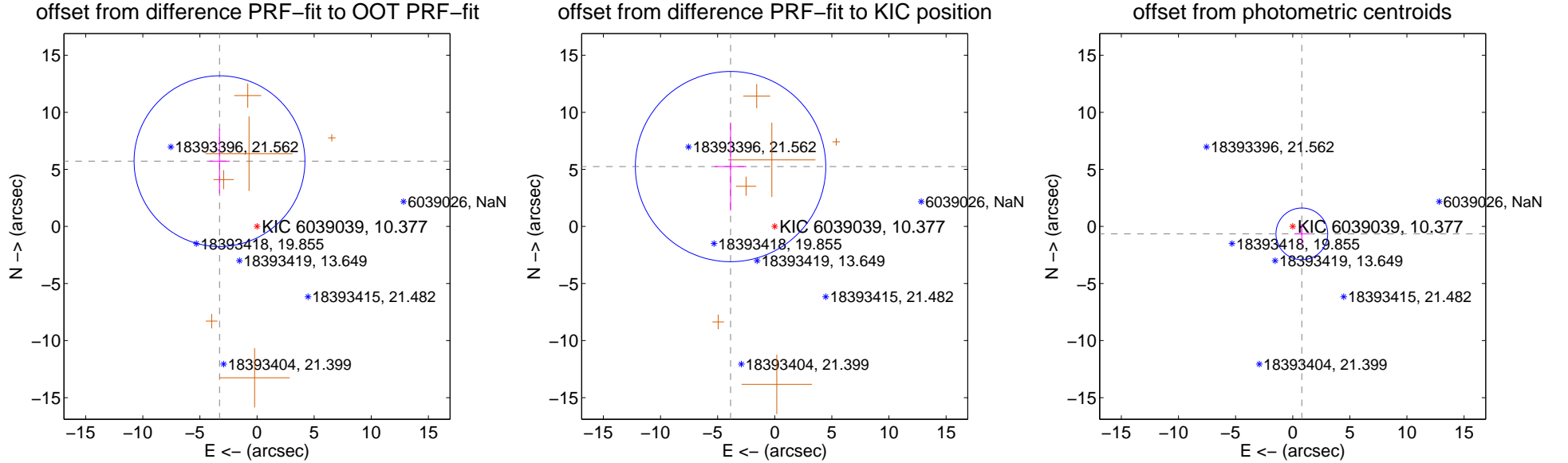
DV Centroid Data

Supplemental centroid analysis for 006039039-02. **Kepler magnitude: 10.38.** Transit SNR 8.11

There are 0 quarters with good PRF difference image offsets

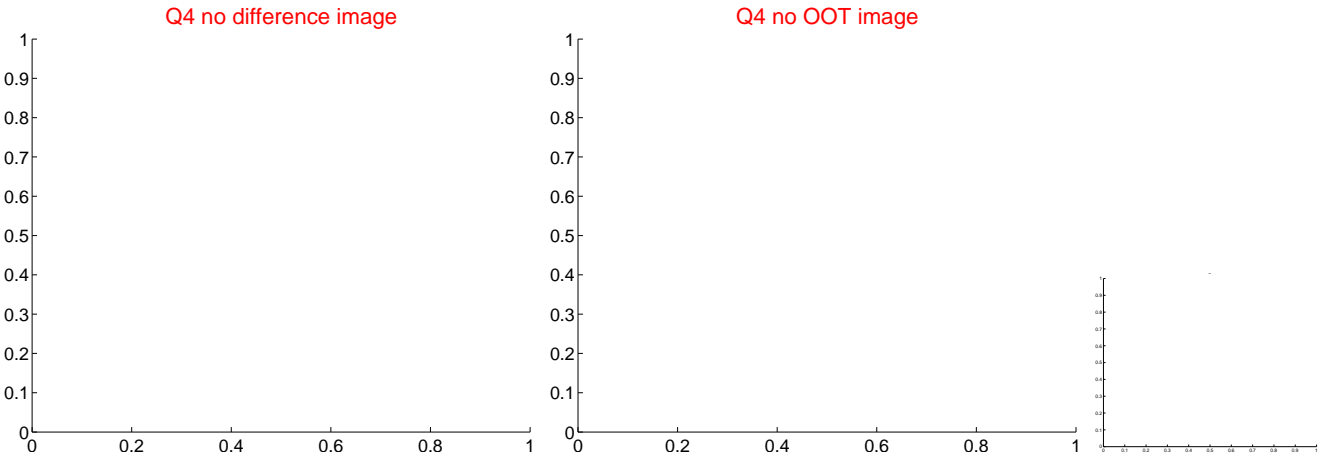
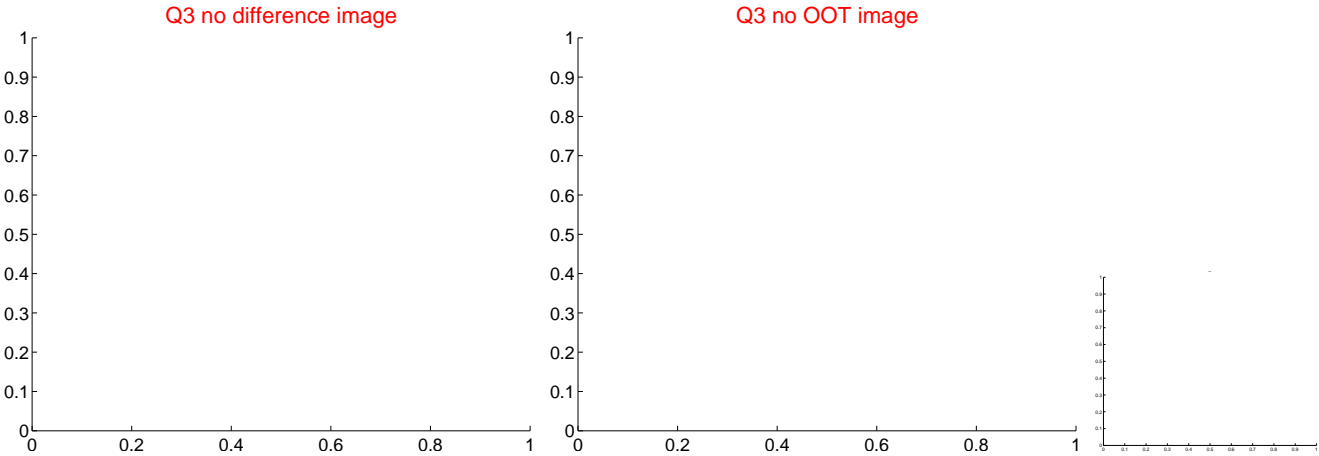
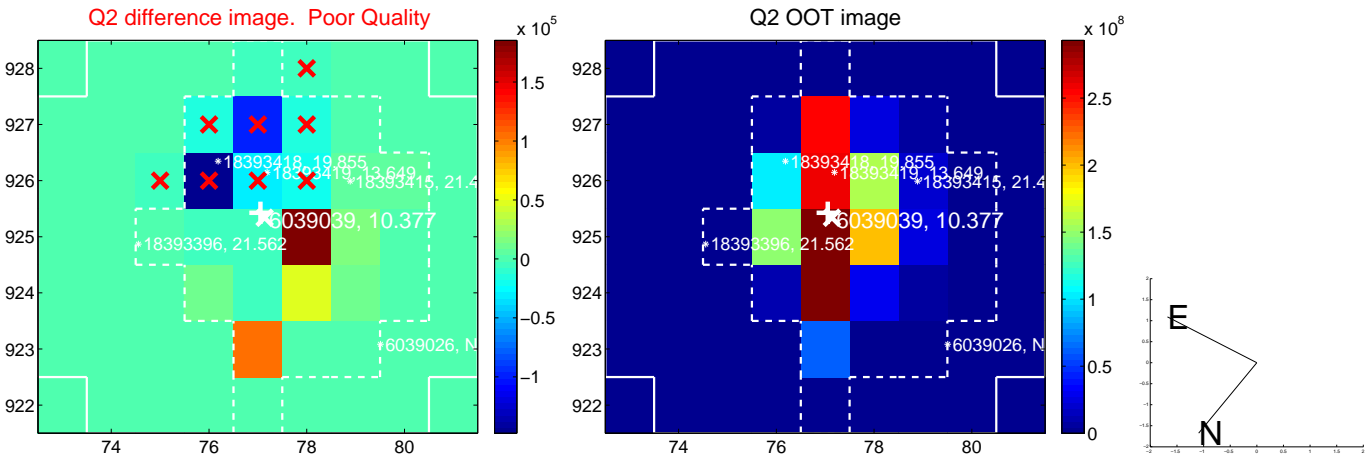
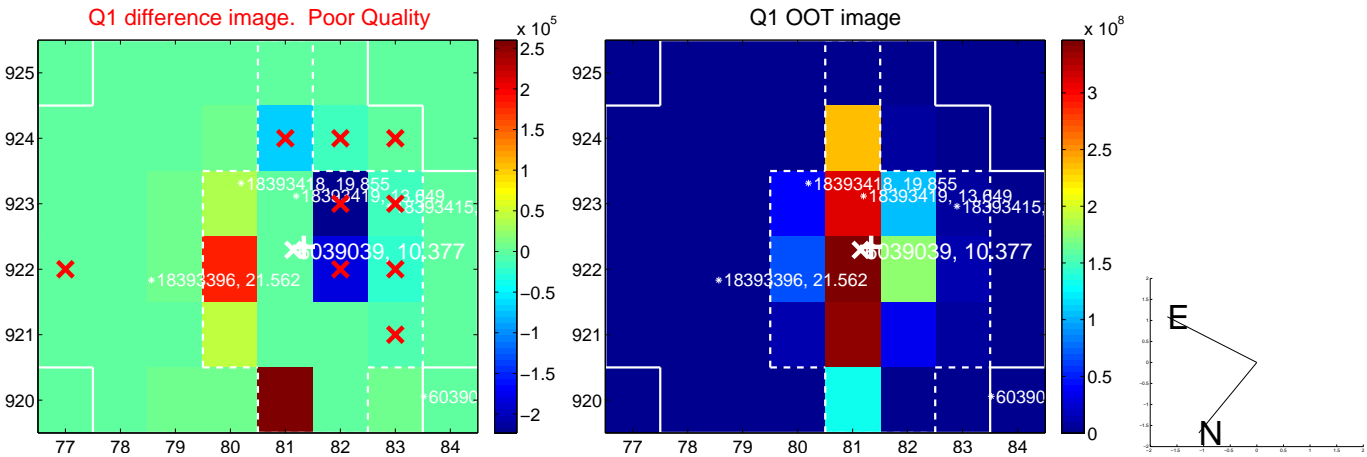
The direct PRF centroid is offset from the target star catalog position by about 0.70 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.598 ± 2.493	2.65	3.284 ± 0.911	5.723 ± 2.826
PRF-fit source offset from KIC position	6.515 ± 2.778	2.35	3.865 ± 1.408	5.245 ± 3.873
photometric centroid source offset	1.03 ± 0.75	1.36	-0.80 ± 0.66	-0.65 ± 0.88

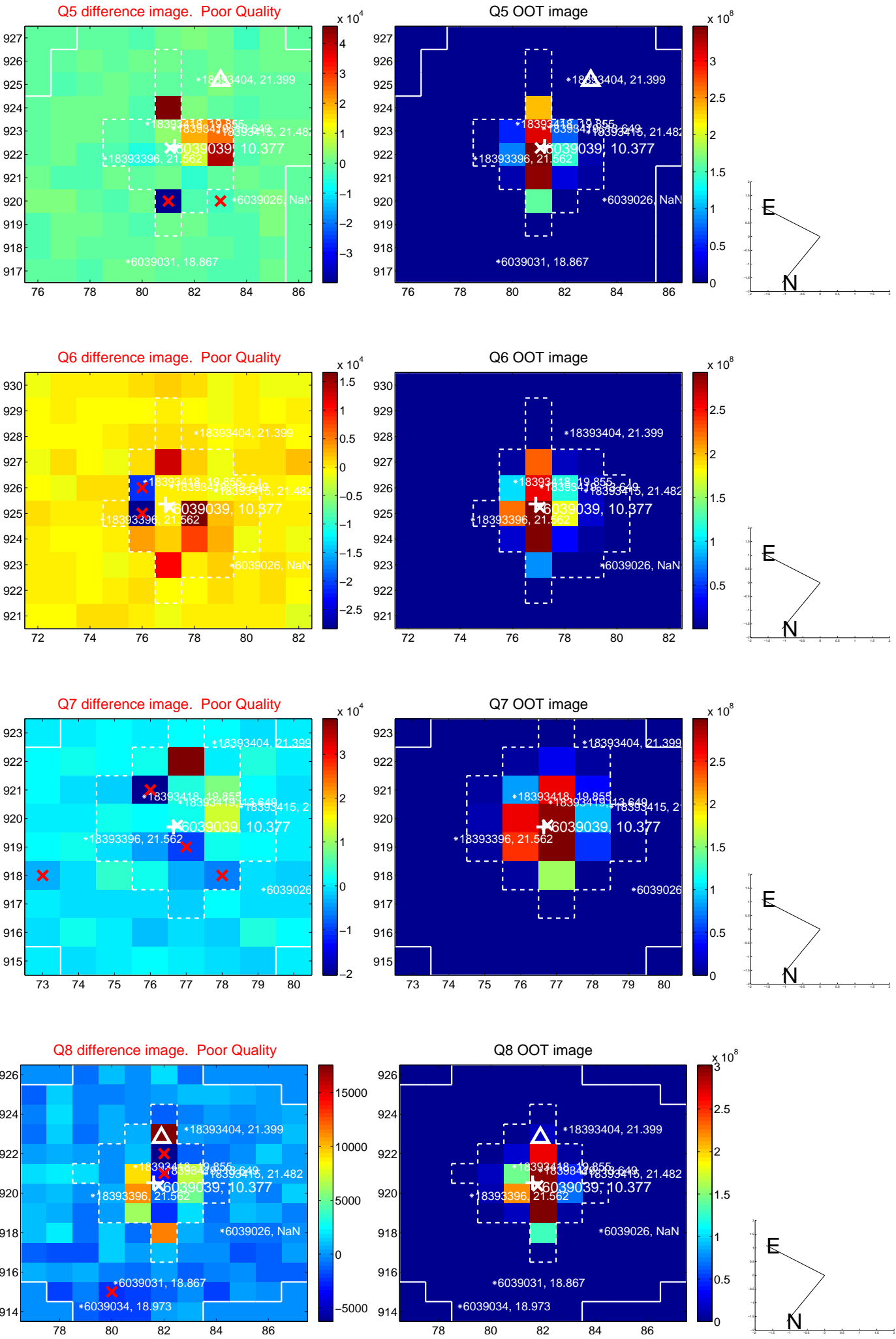


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

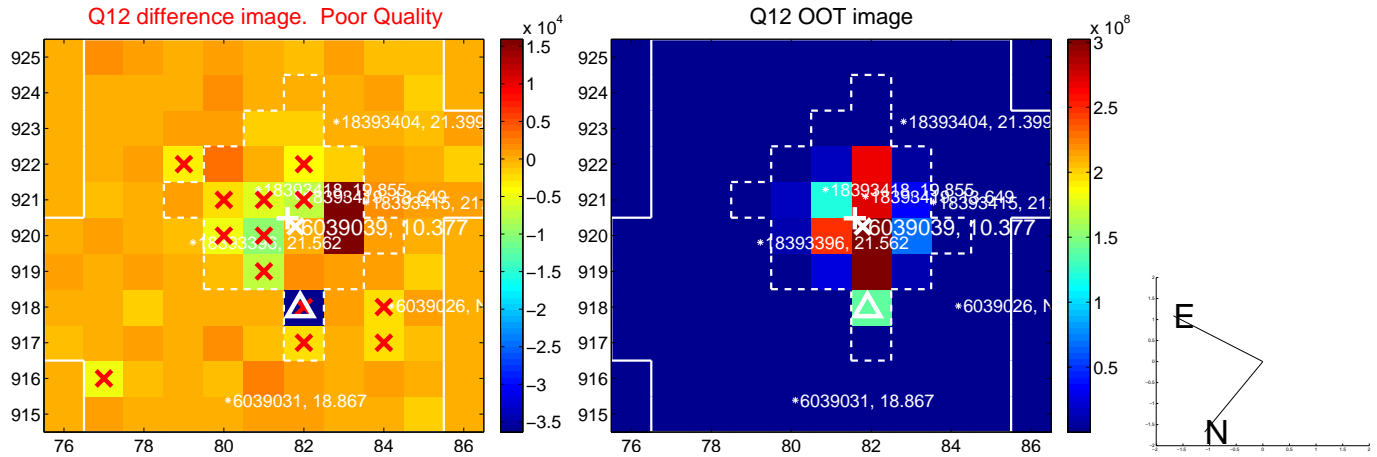
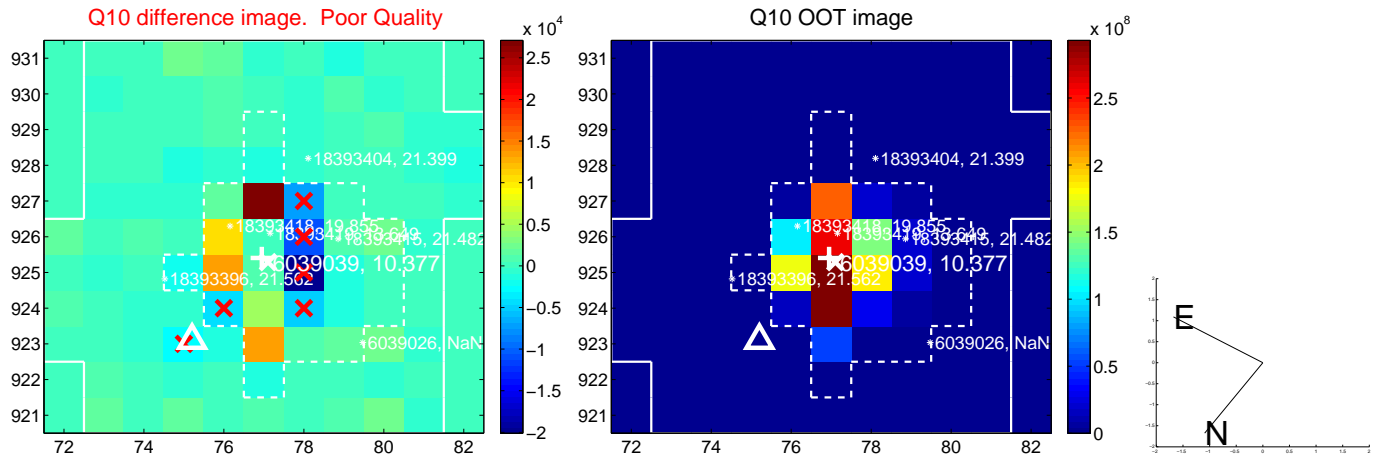
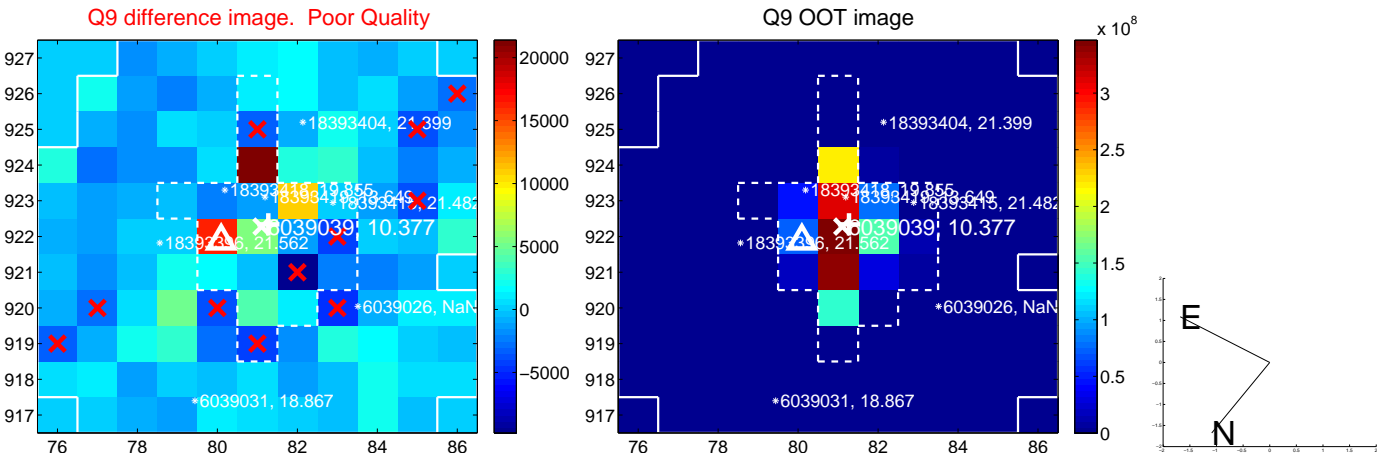
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



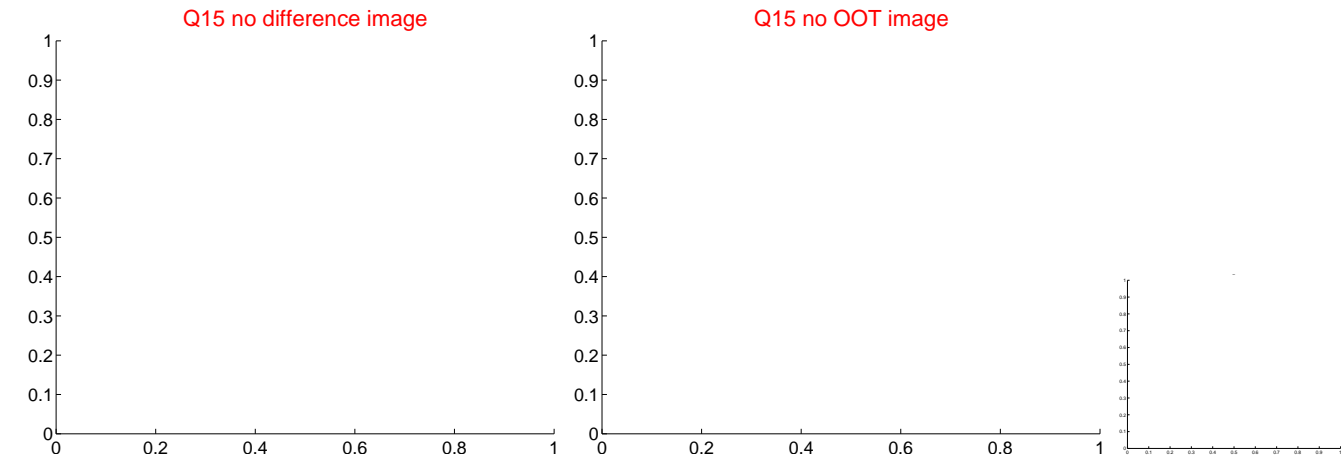
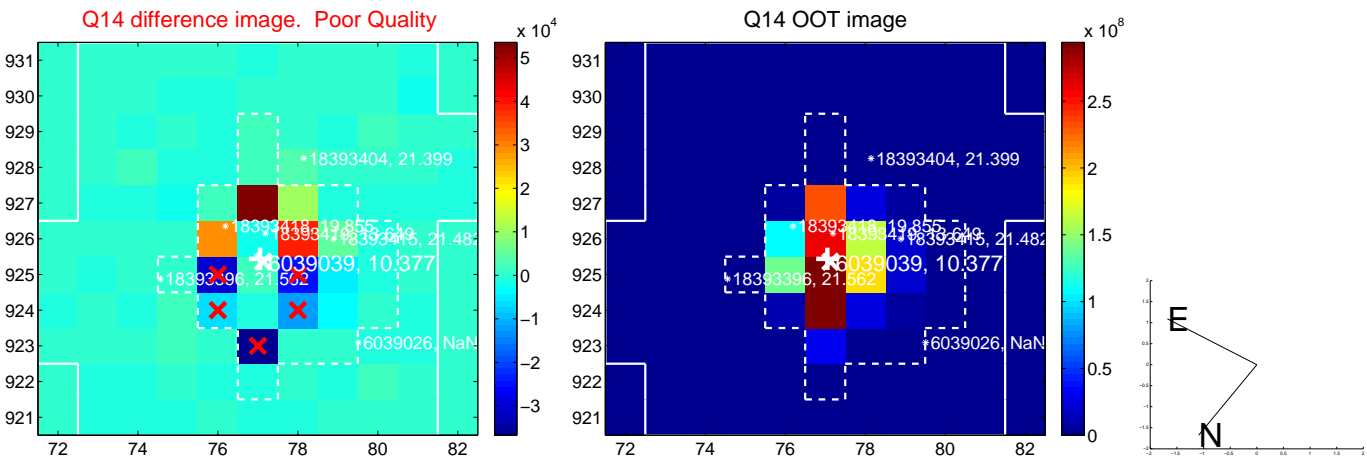
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



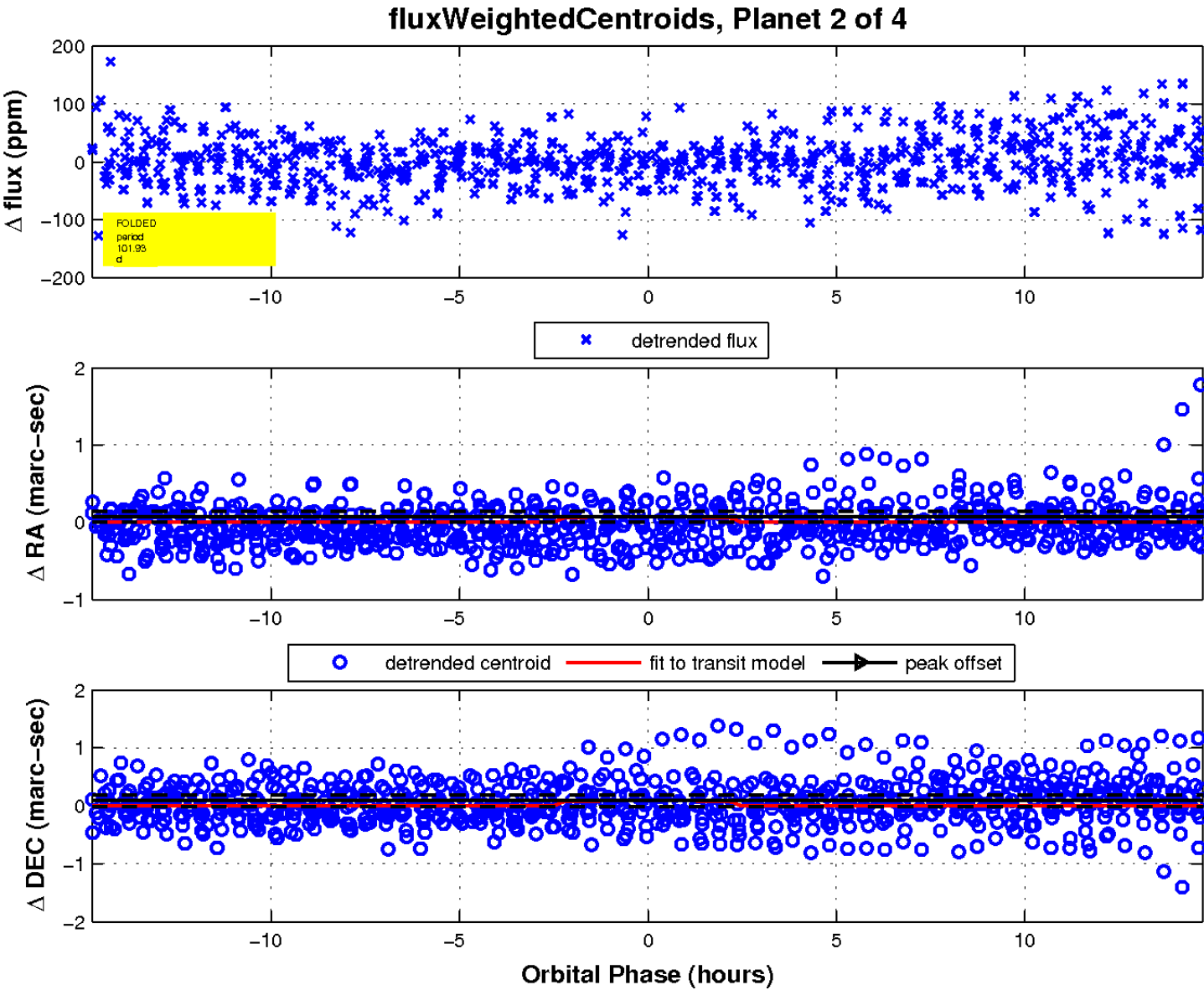
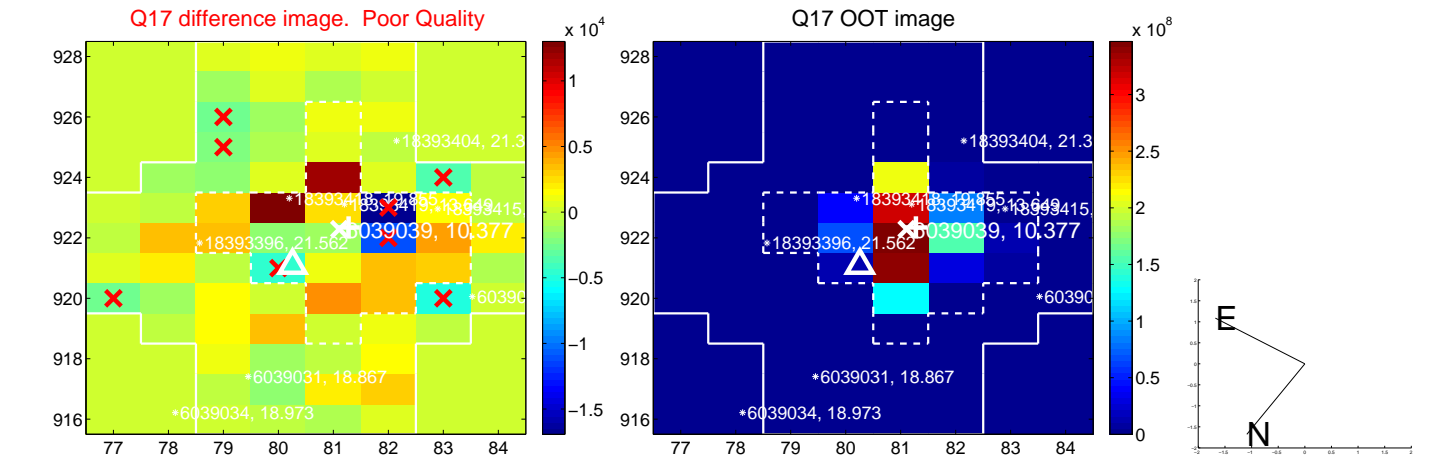
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



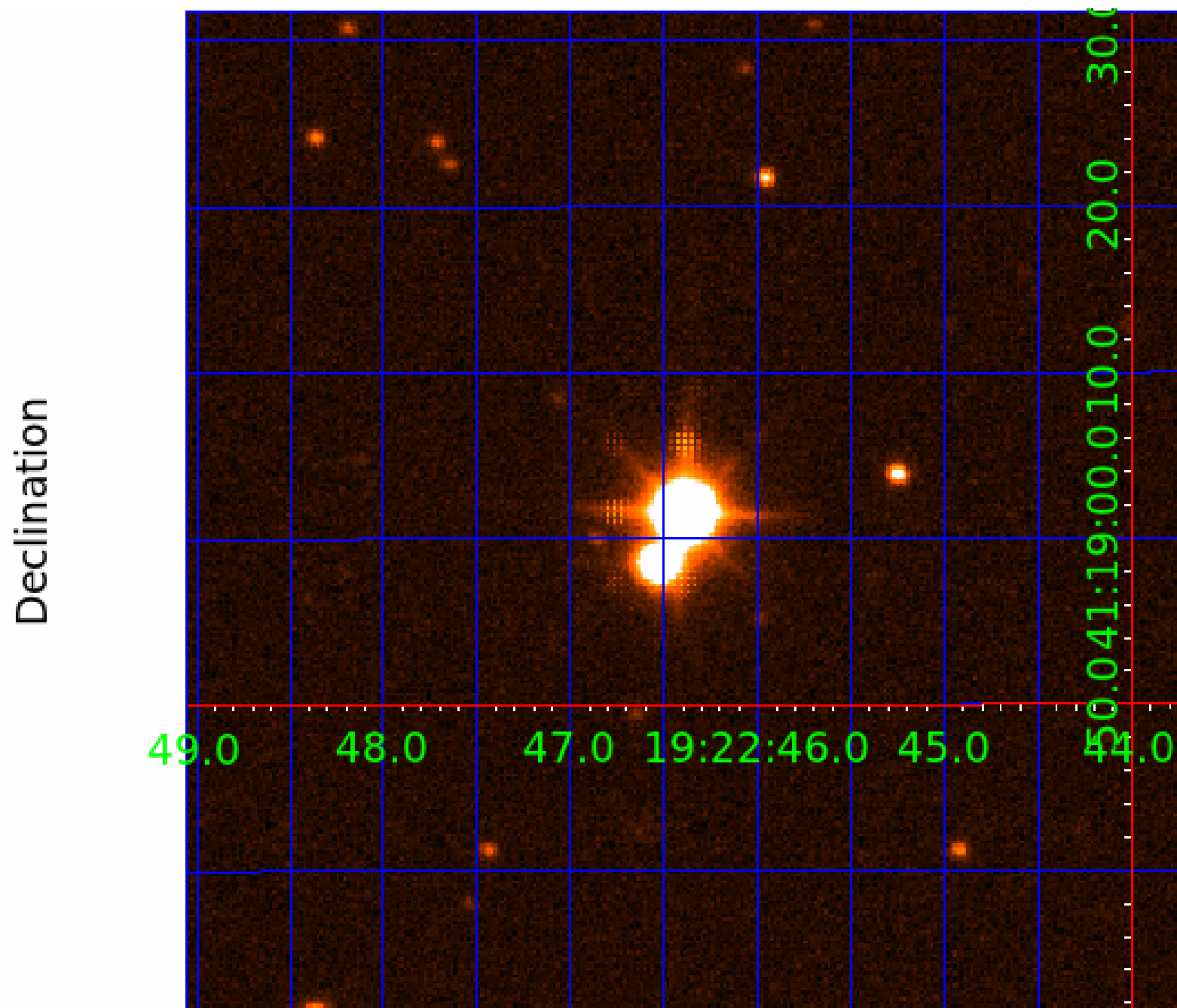
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 006039039

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})
006039039-01	OBS	No	1.119120	132.473556	8.3	7.232	13.0	15.3	2.39	7568	0.70	24717.60
006039039-02	OBS	No	101.928115	146.373852	111.6	4.922	15.6	8.1	2.39	7568	2.85	60.32
006039039-03	OBS	No	103.990993	193.464626	95.2	4.603	13.1	7.7	2.39	7568	2.71	58.73
006039039-04	OBS	No	61.089050	158.247925	82.9	6.006	8.9	8.2	2.39	7568	2.46	119.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006039039-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
006039039-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED
006039039-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_SATURATED
006039039-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

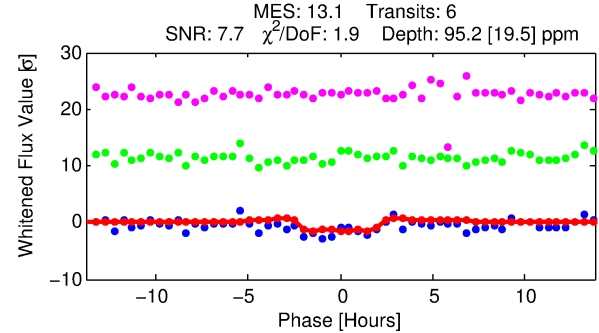
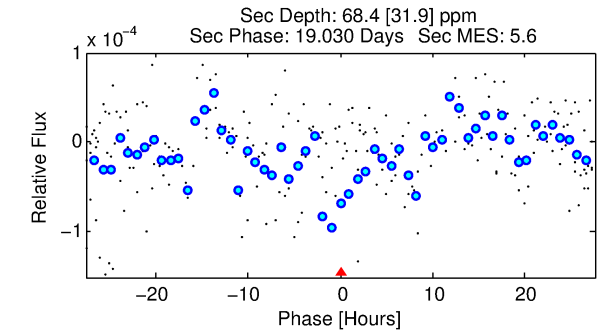
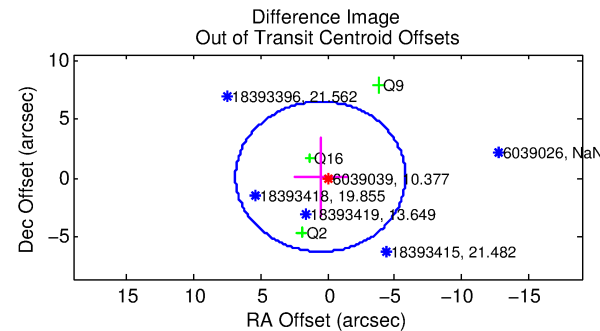
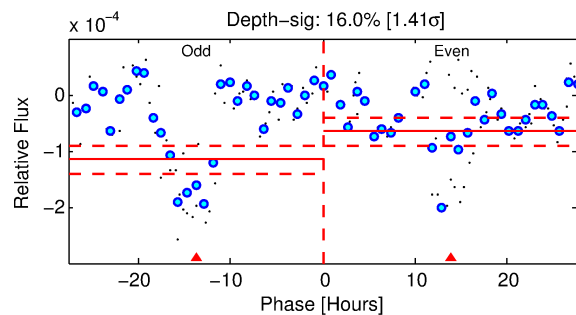
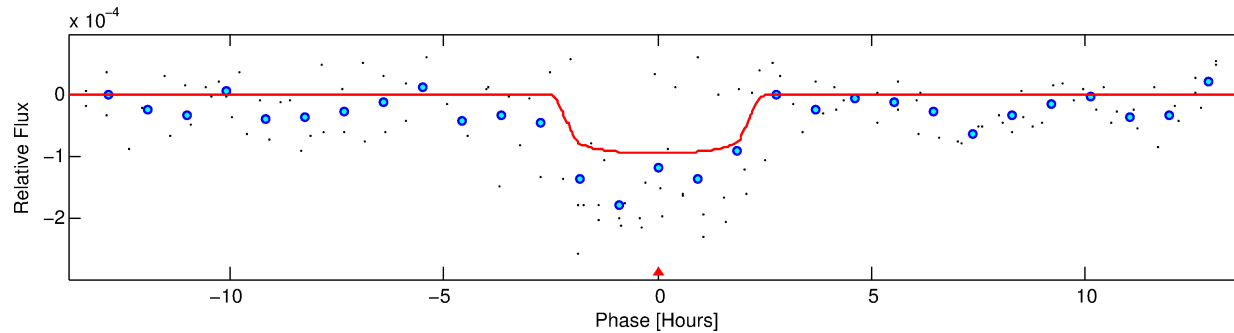
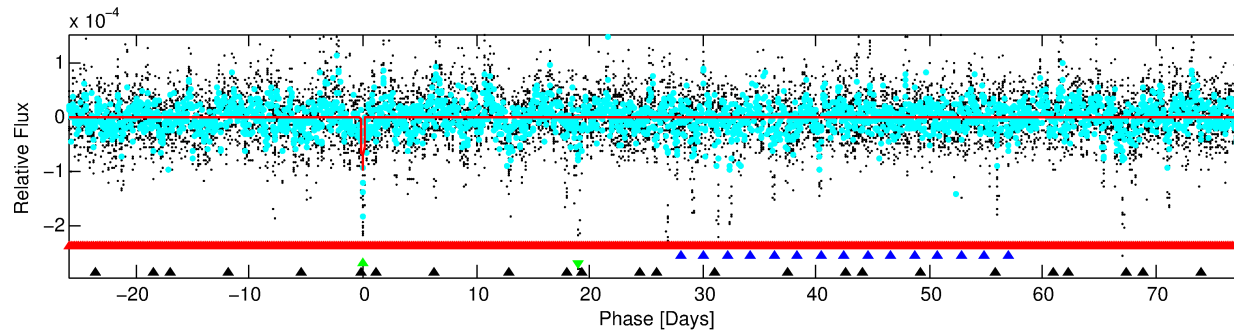
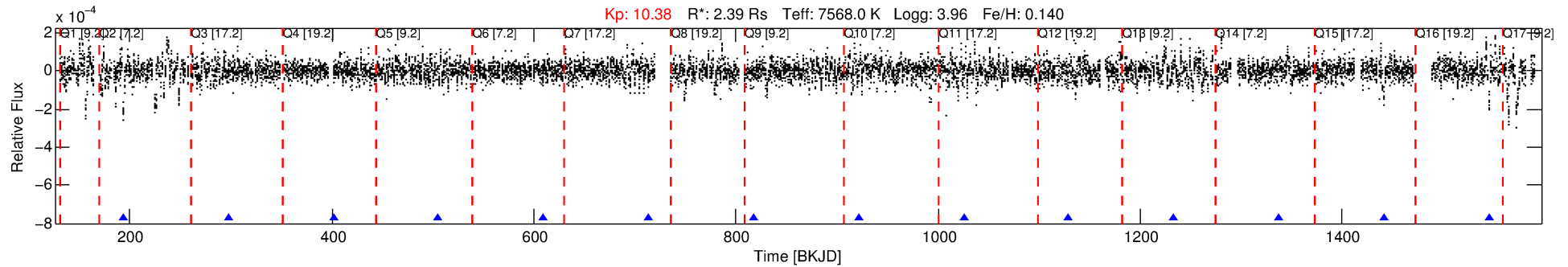
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006039039-03

No Significant Match Found

DV One-Page Summary

KIC: 6039039 Candidate: 3 of 4 Period: 103.991 d



DV Fit Results:

Period = 103.99099 [0.00129] d
Epoch = 193.4646 [0.0117] BKJD
Rp/R* = 0.0104 [0.0050]
a/R* = 77.06 [235.91]
b = 0.91 [0.60]
Seff = 58.73 [13.05]
Teq = 706 [39] K
Rp = 2.71 [1.39] Re
a = 0.5342 [0.0785] AU
Ag = 1463.46 [1603.44] [0.91 σ]
Teffp = 6750 [1814] K [3.33 σ]

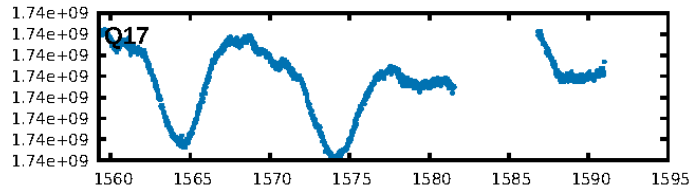
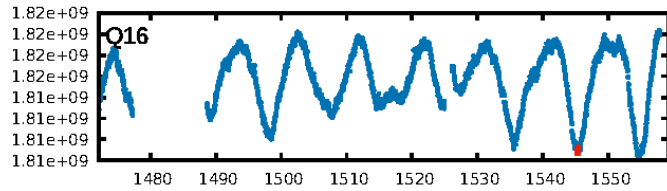
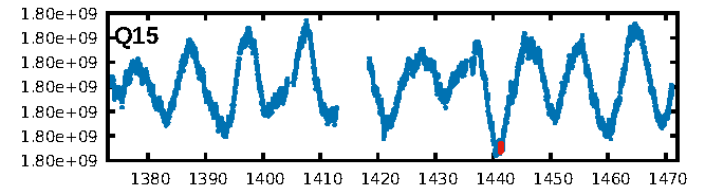
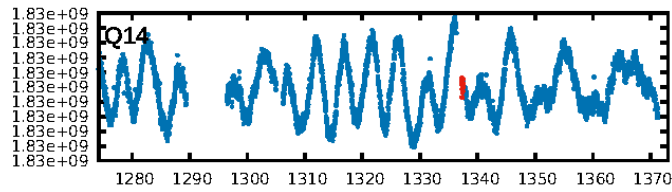
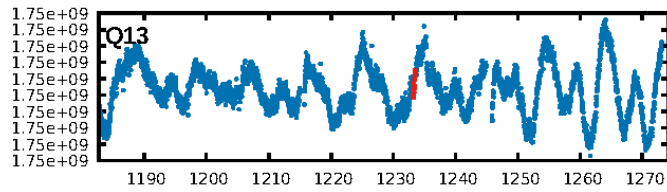
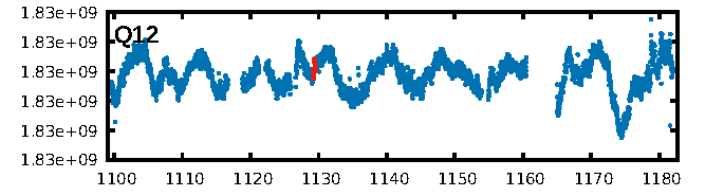
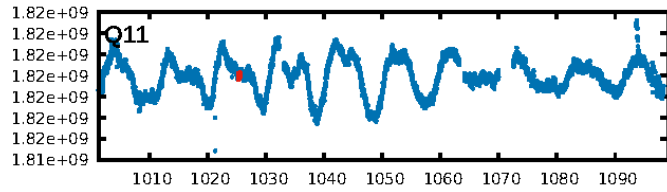
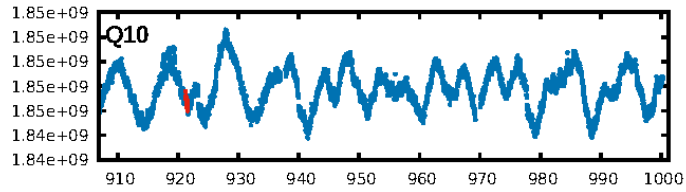
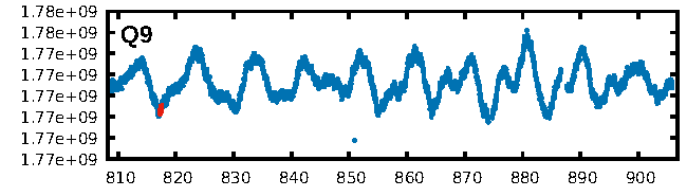
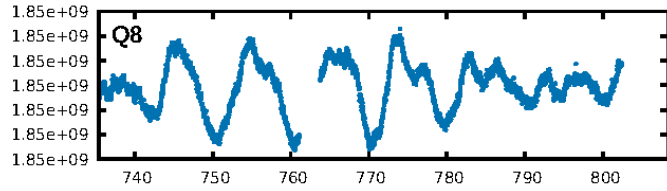
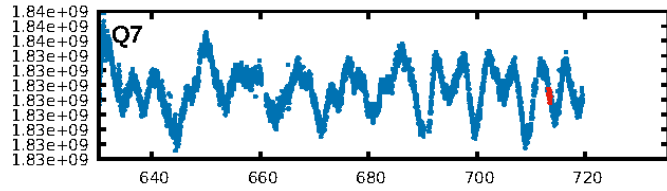
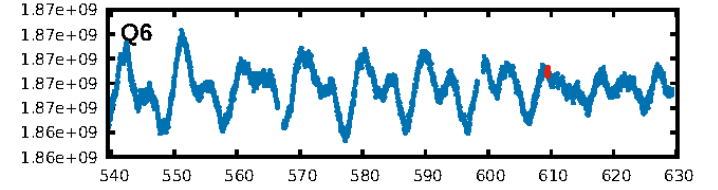
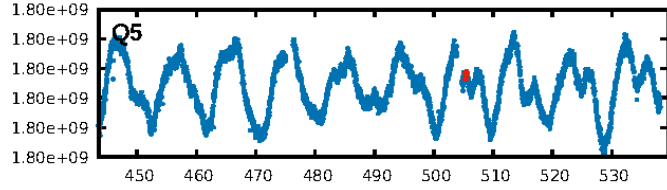
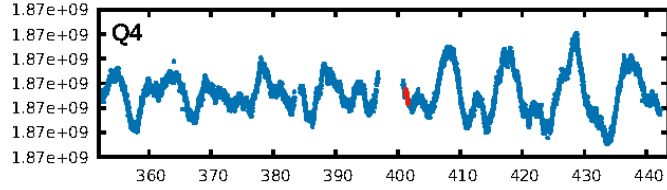
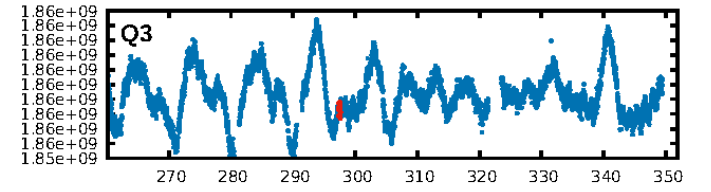
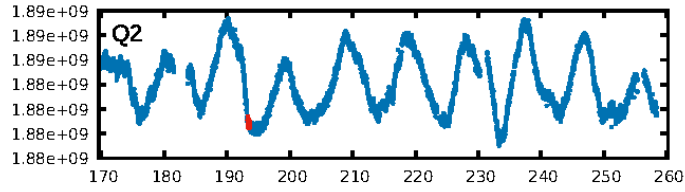
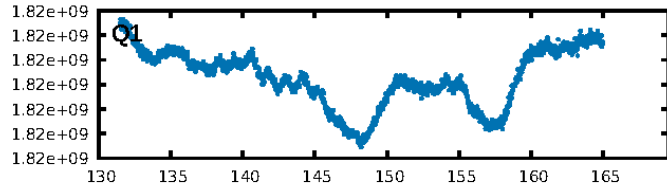
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.35 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 60.8%
Bootstrap-pfa: 3.21e-20
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: N/A
Centroid-sig: 69.1%
Centroid-so: 0.279 arcsec [0.33 σ]
OotOffset-rm: 0.542 arcsec [0.26 σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-rm: 2.512 arcsec [1.61 σ]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/11]

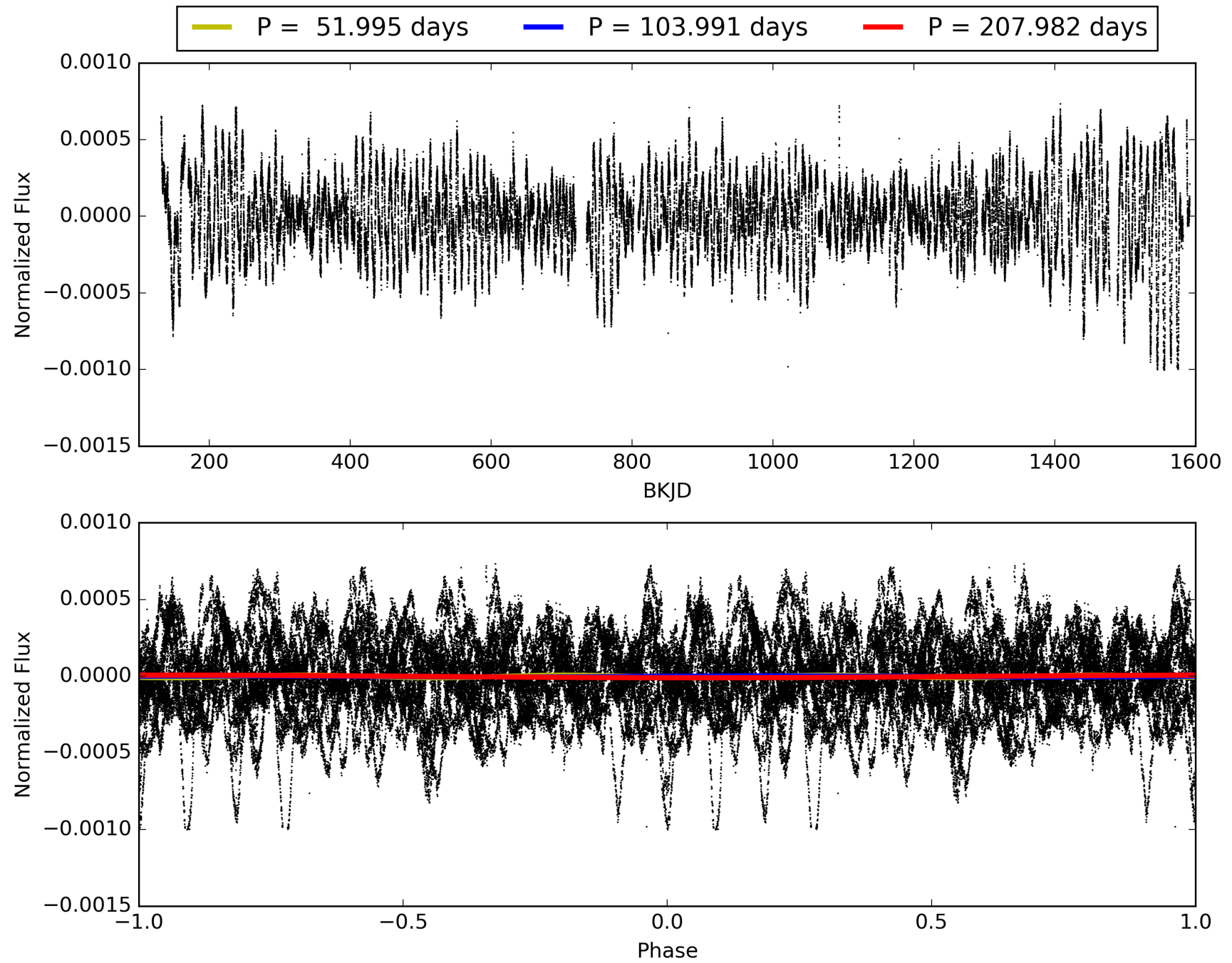
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:56:04 Z

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

TCE 006039039-03, PDC Light Curves

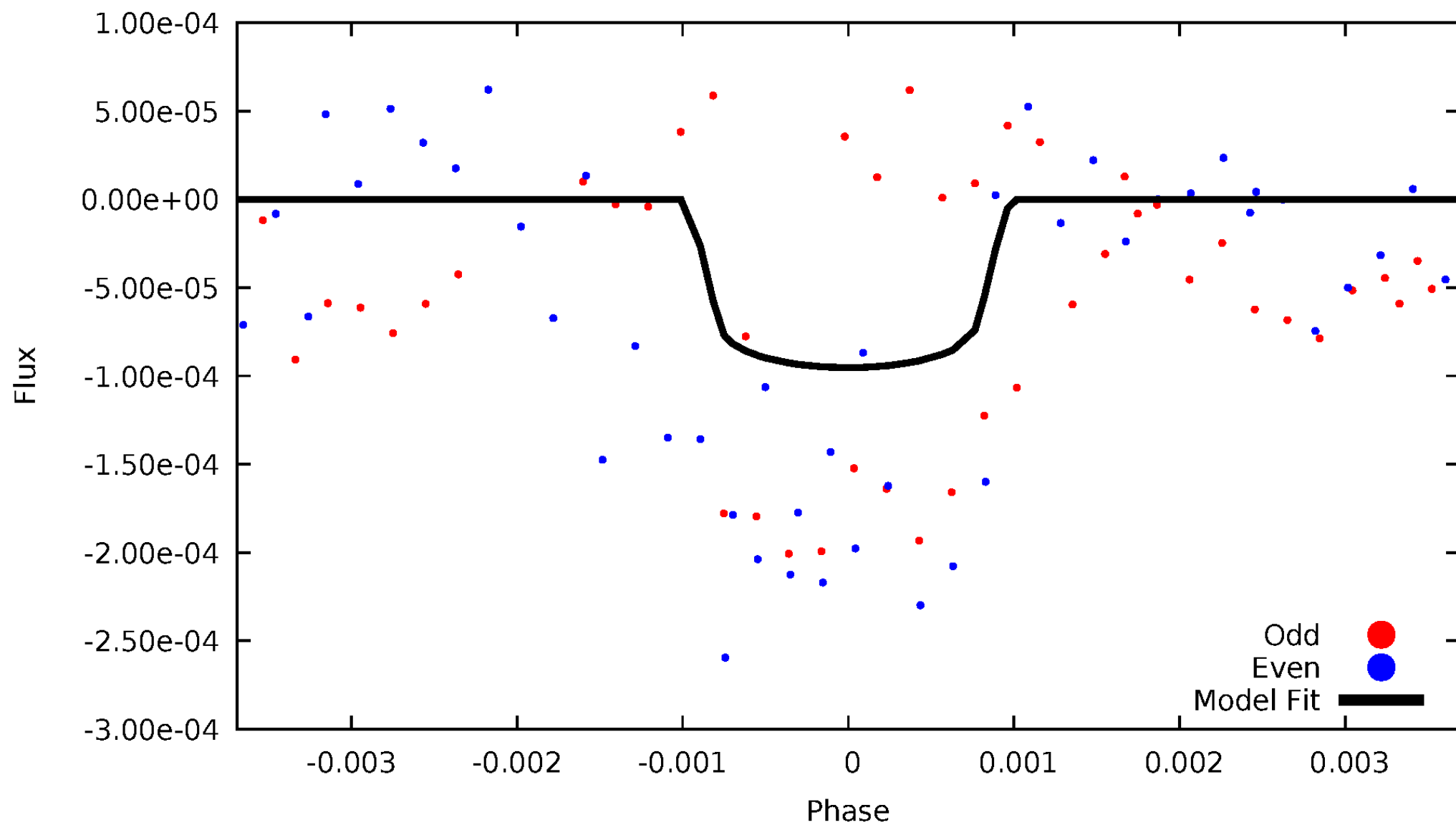


TCE 006039039-03



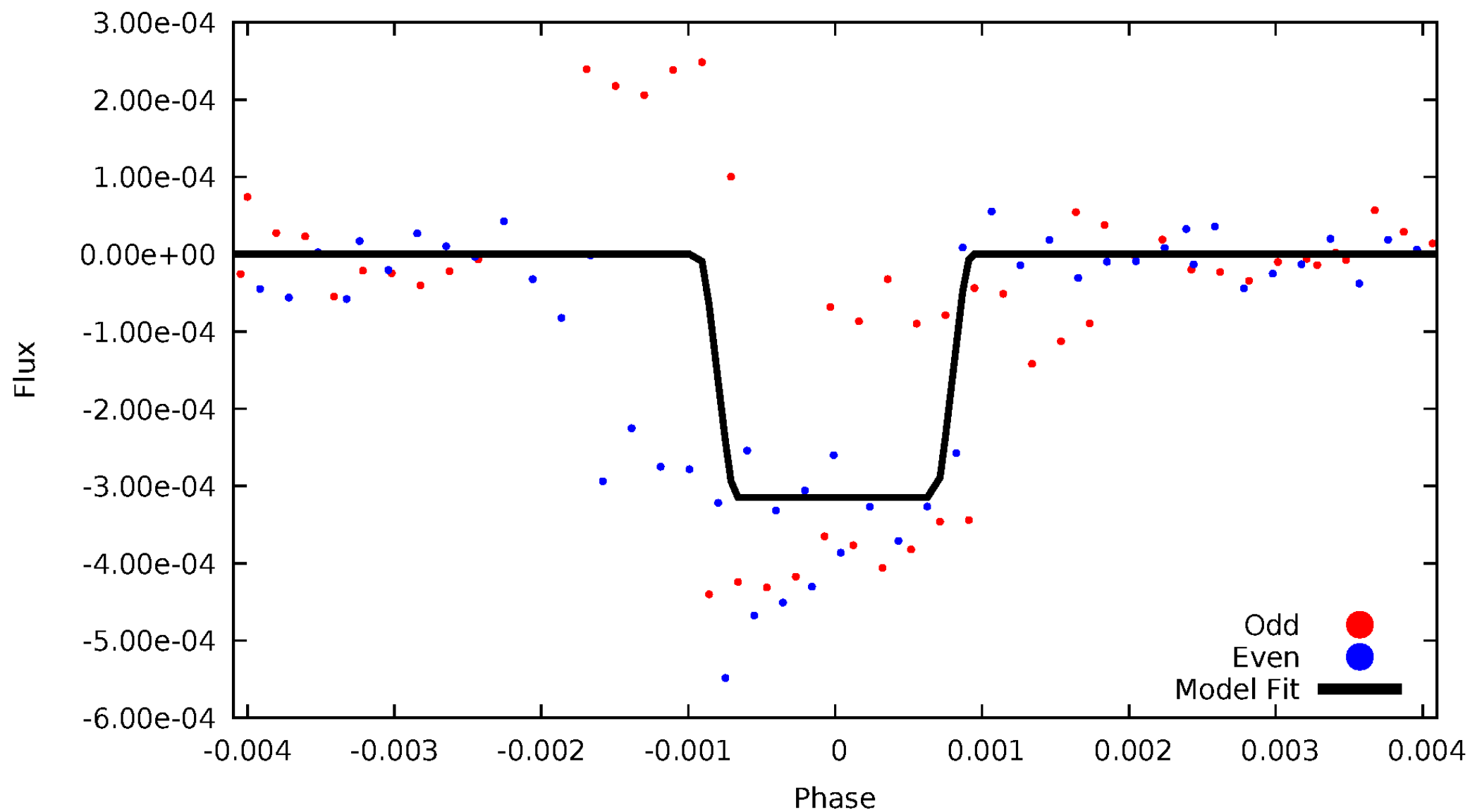
DV Odd/Even

TCE 006039039-03



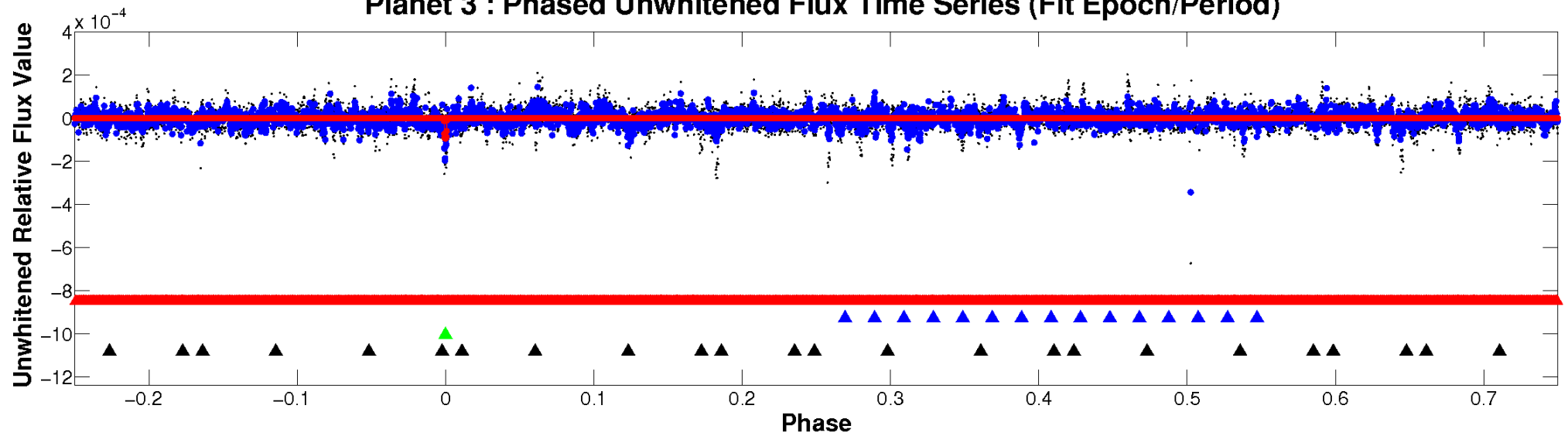
ALT Odd/Even

TCE 006039039-03

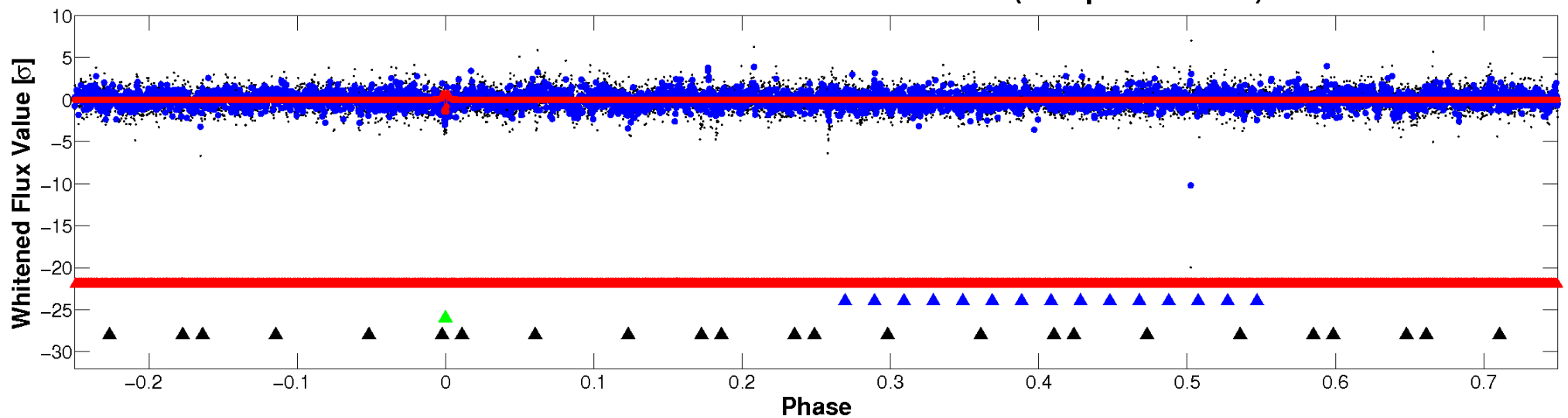


Non-Whitened Vs. Whitened Light Curve

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

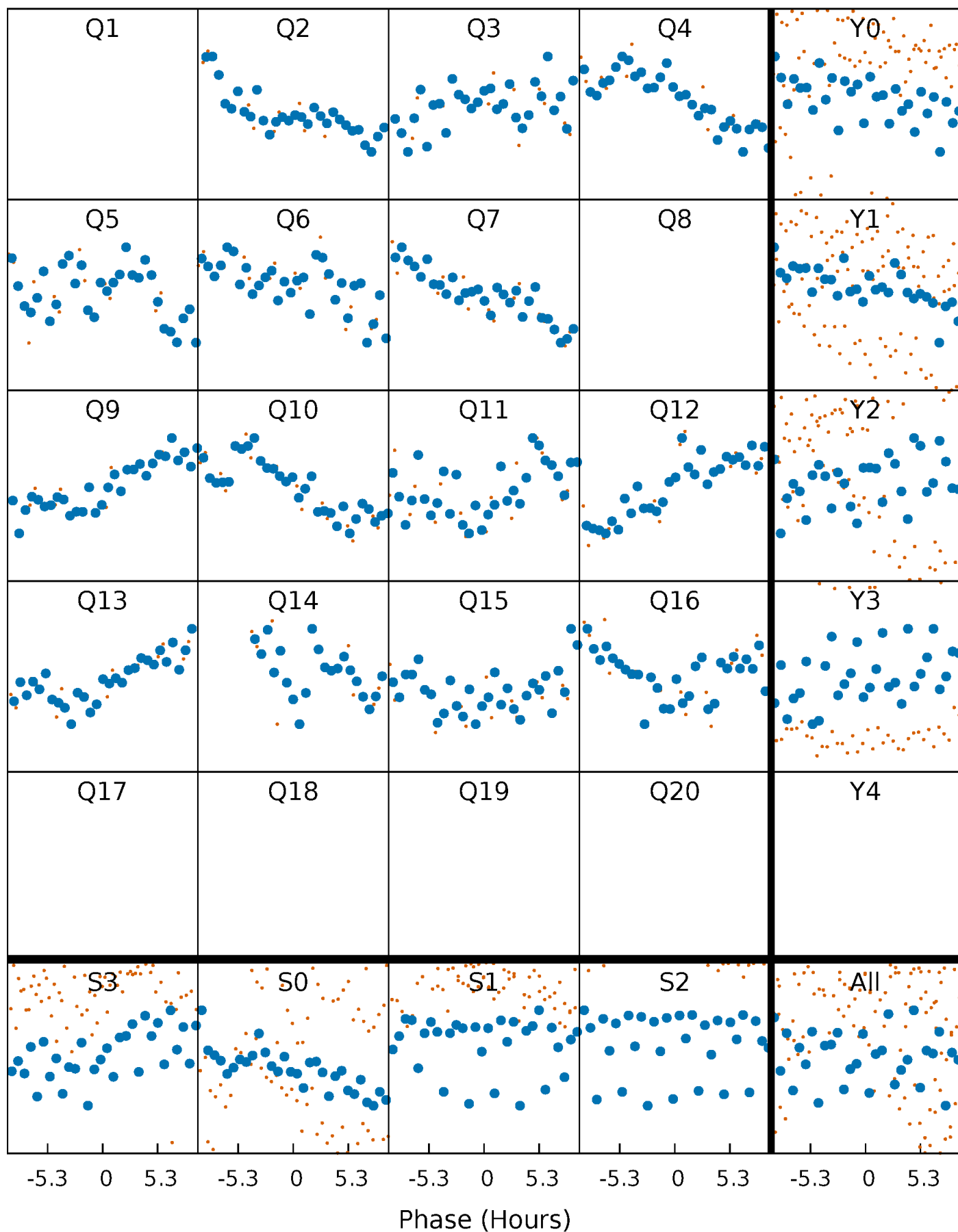


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



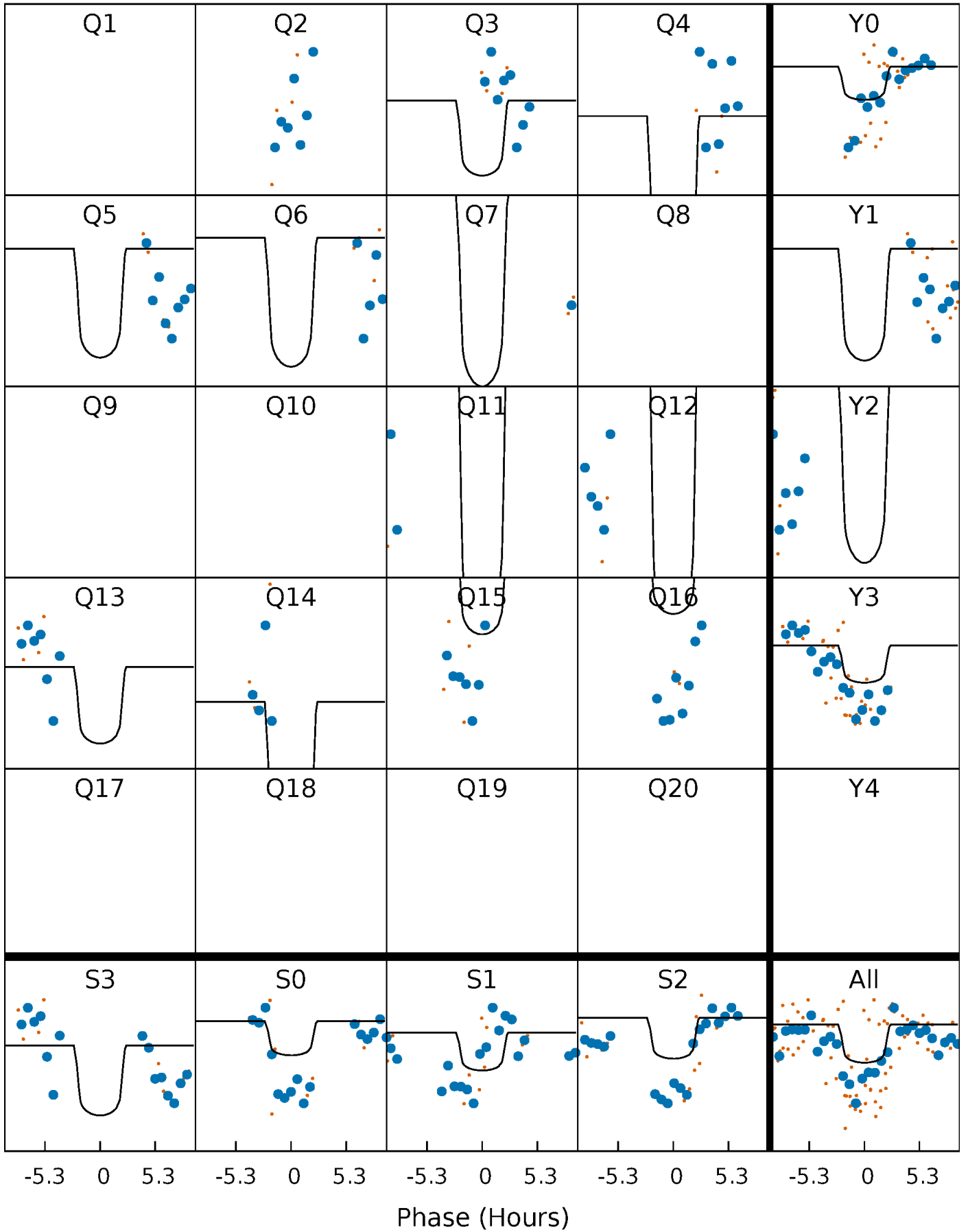
PDC Quarter-Phased Transit Curves

TCE 006039039-03 P=103.990993 Days $T_0=193.464626$ (BKJD)



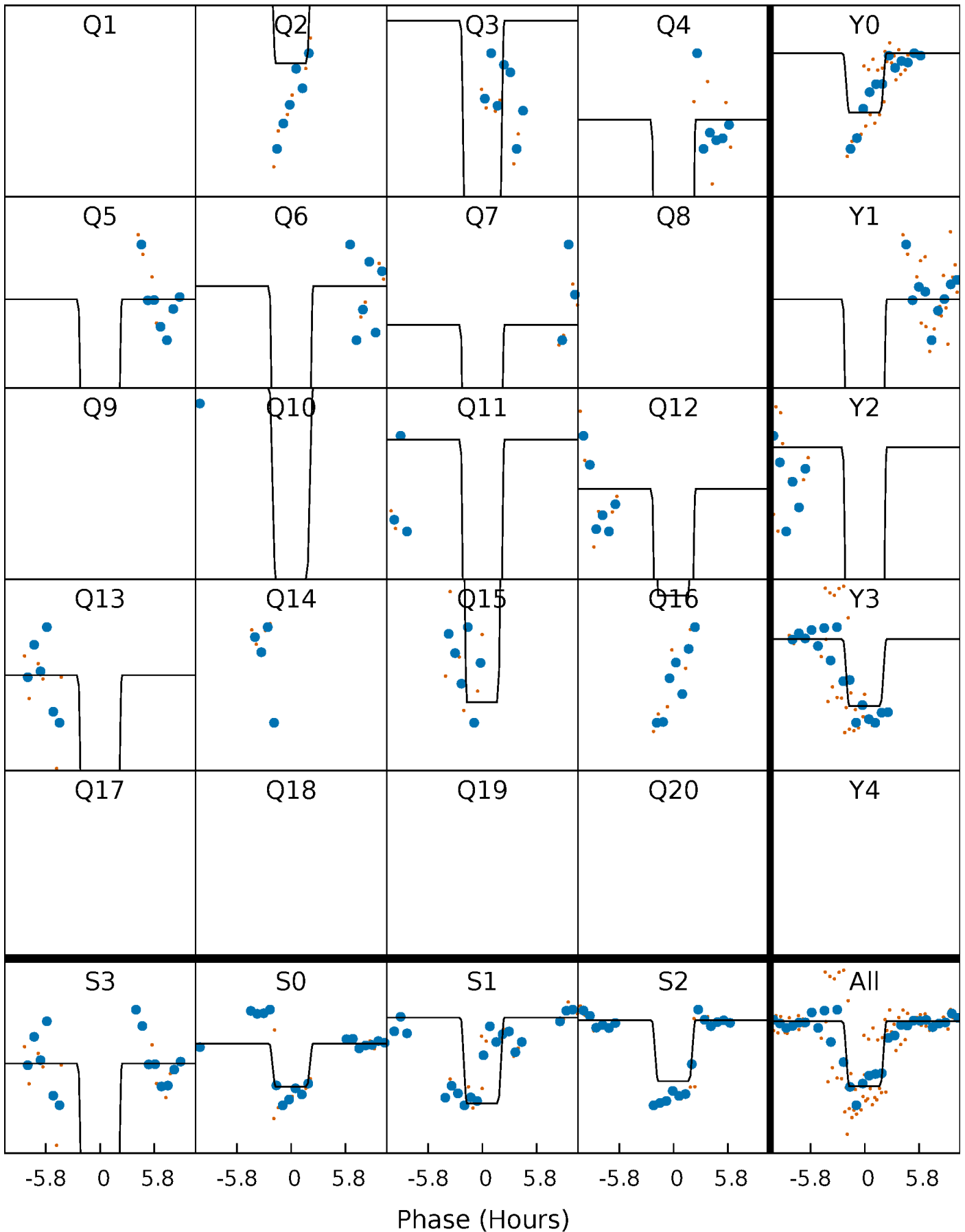
DV Quarter-Phased Transit Curves

TCE 006039039-03 $P=103.990993$ Days $T_0=193.464626$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

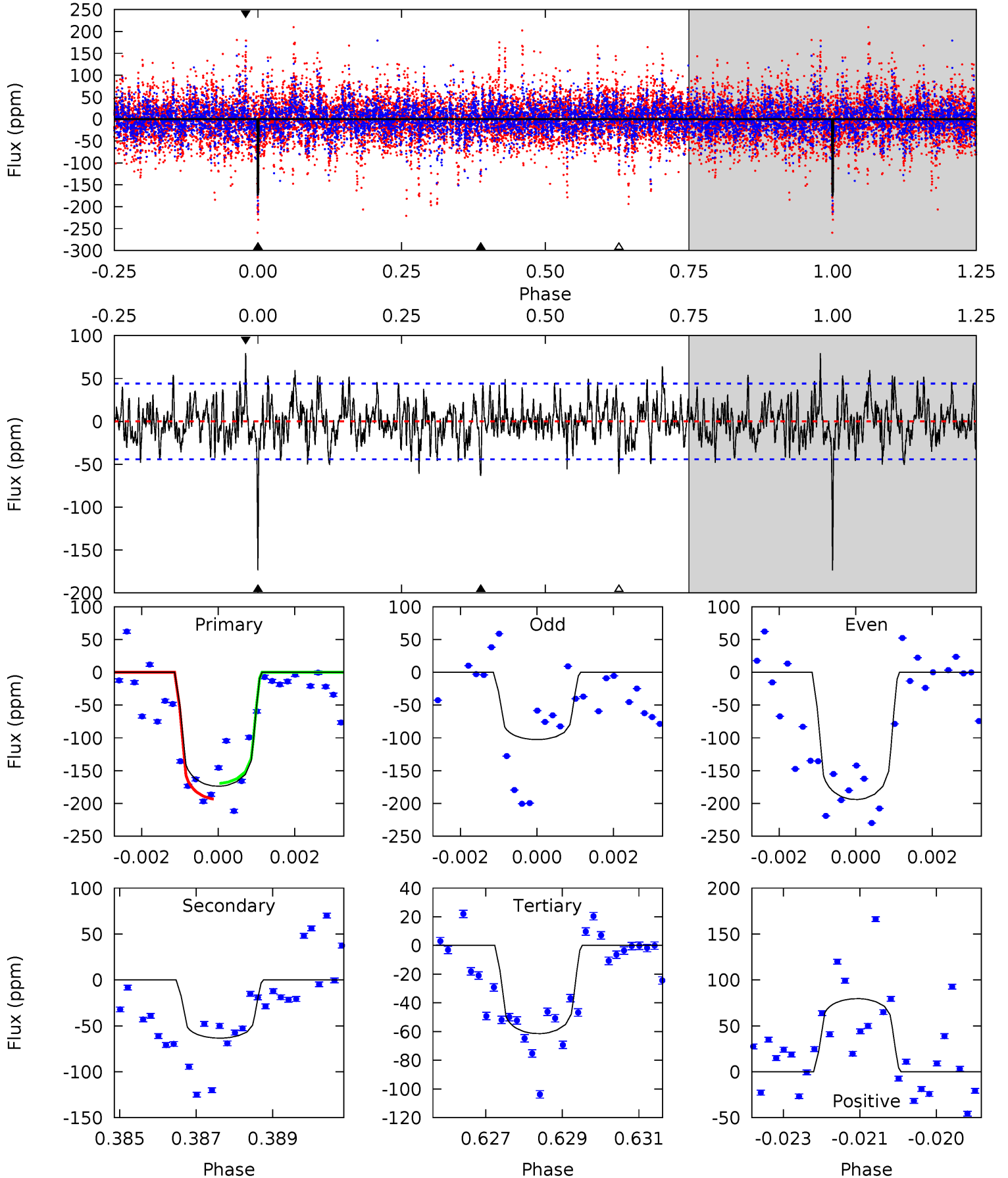
TCE 006039039-03 P=103.991806 Days $T_0=193.465108$ (BKJD)



DV Model-Shift Uniqueness Test

006039039-03, P = 103.990993 Days, E = 89.473633 Days

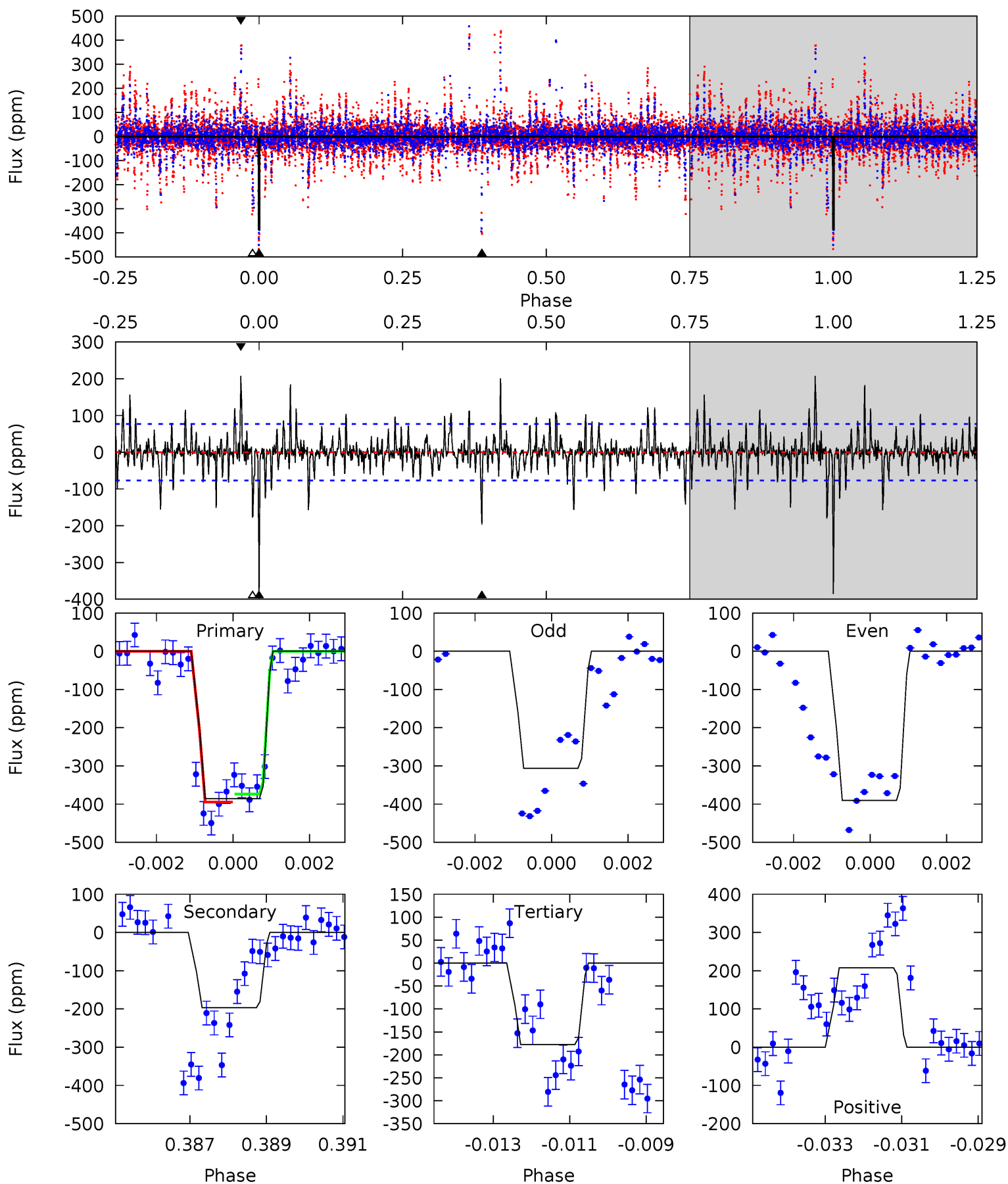
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.1	7.69	7.45	9.66	5.35	3.13	2.33	13.6	11.4	0.24	-1.96	5.76	0.76	0.31	0



Alt Model-Shift Uniqueness Test

006039039-03, P = 103.991806 Days, E = 89.473302 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.8	13.7	12.4	14.5	5.34	3.12	2.61	14.5	12.4	1.35	-0.76	2.90	0.71	0.35	0.74



Stellar Parameters For KIC 006039039

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7568^{+75}_{-83}	$3.956^{+0.121}_{-0.099}$	$0.140^{+0.050}_{-0.150}$	$2.388^{+0.334}_{-0.408}$	$1.881^{+0.078}_{-0.182}$	$0.194^{+0.114}_{-0.062}$
	+1%/-1%	+3%/-3%	+36%/-107%	+14%/-17%	+4%/-10%	+59%/-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 006039039-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-63 ± 8	$2.72^{+1.28}_{-1.28}$	987^{+35}_{-40}	6522^{+2753}_{-1143}	1338^{+3326}_{-722}
Alt.	-197 ± 14	$4.56^{+1.39}_{-1.34}$	987^{+38}_{-45}	6596^{+1474}_{-760}	1435^{+1478}_{-581}

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

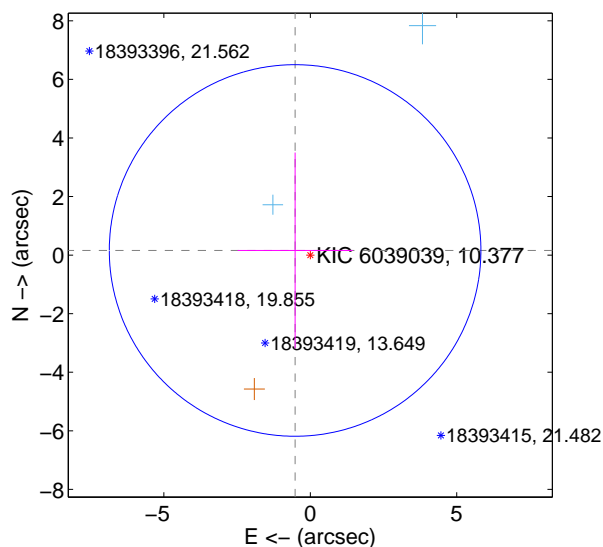
Supplemental centroid analysis for 006039039-03. **Kepler magnitude: 10.38.** Transit SNR 7.72

There are 2 quarters with good PRF difference image offsets

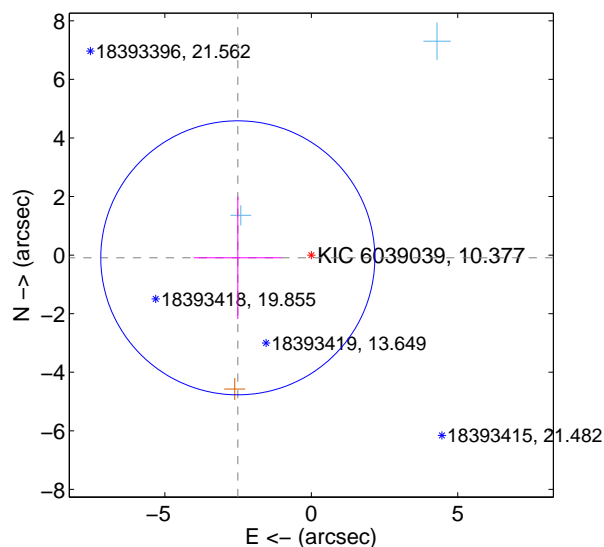
The direct PRF centroid is offset from the target star catalog position by about 1.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.542 ± 2.115	0.26	0.519 ± 1.963	0.158 ± 3.344
PRF-fit source offset from KIC position	2.512 ± 1.560	1.61	2.510 ± 1.500	-0.093 ± 2.088
photometric centroid source offset	0.28 ± 0.86	0.33	-0.13 ± 0.66	-0.25 ± 0.90

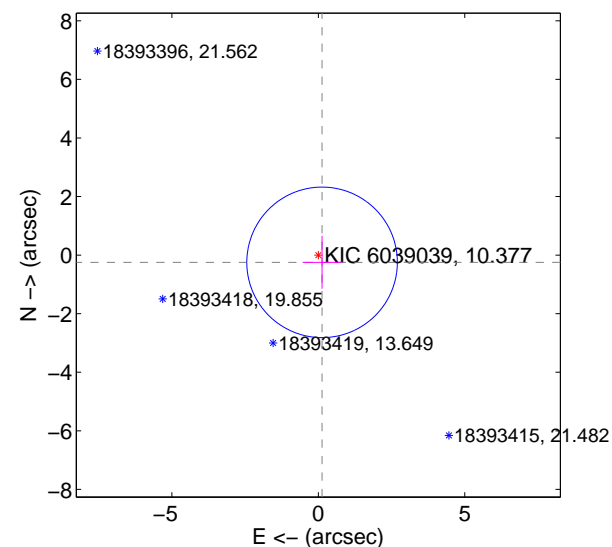
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

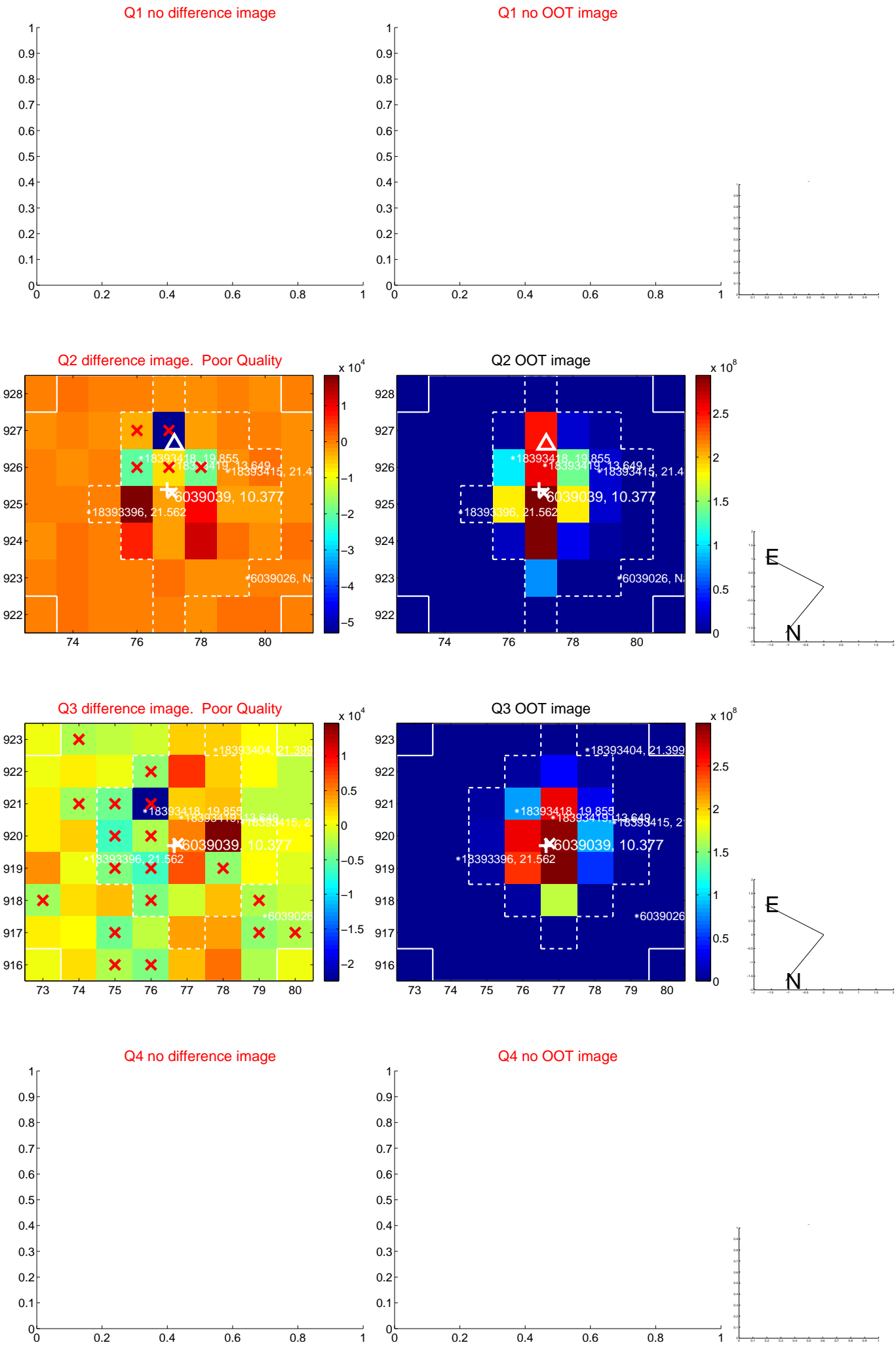


offset from photometric centroids

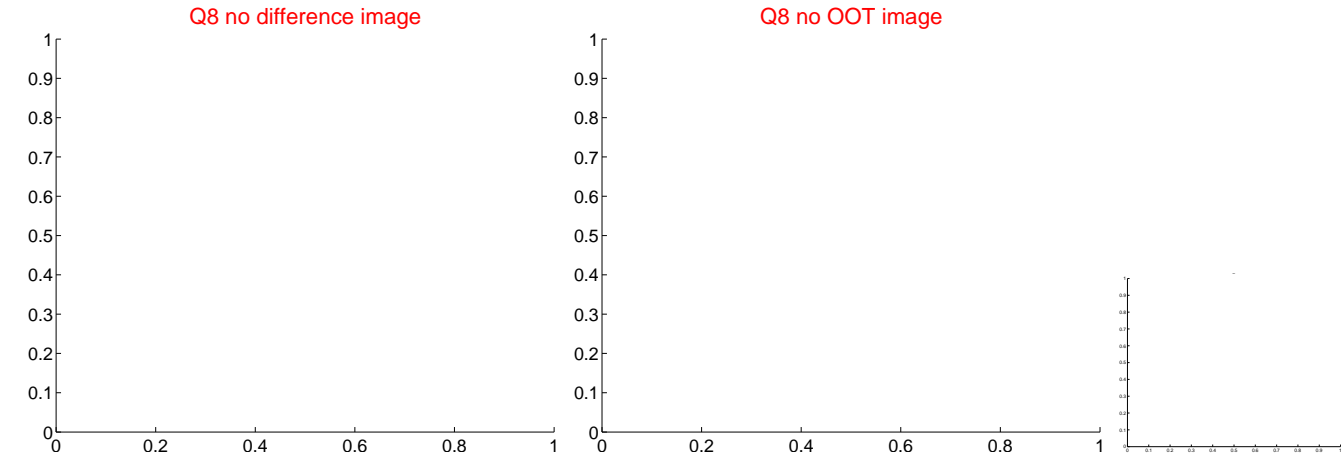
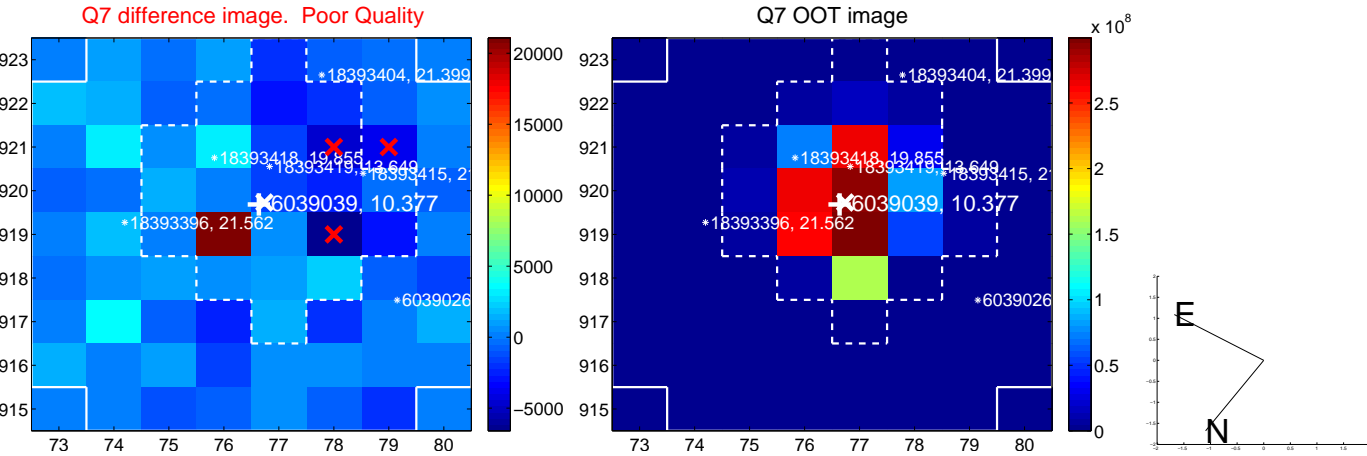
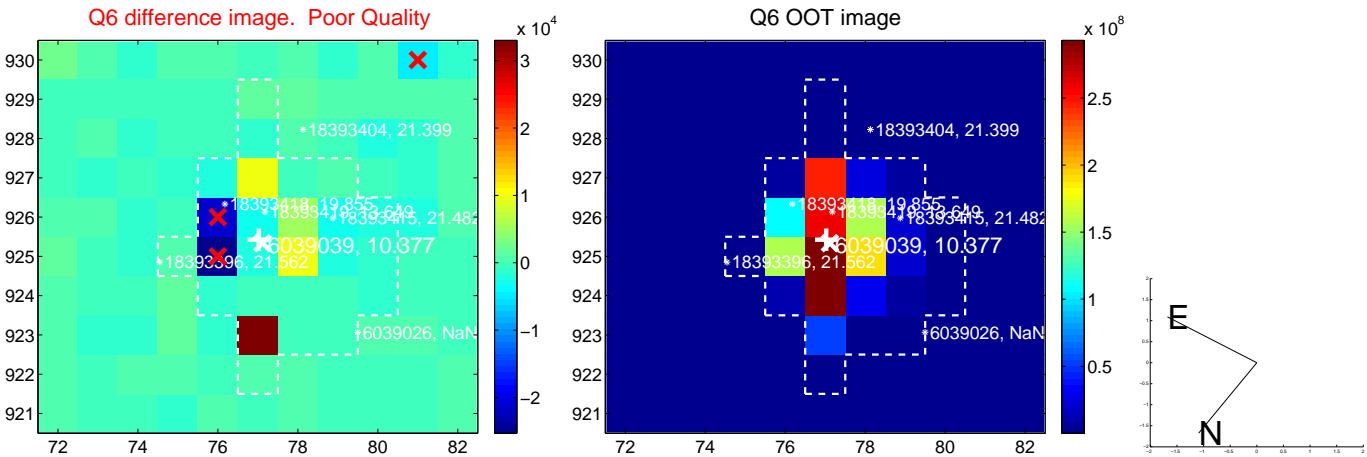
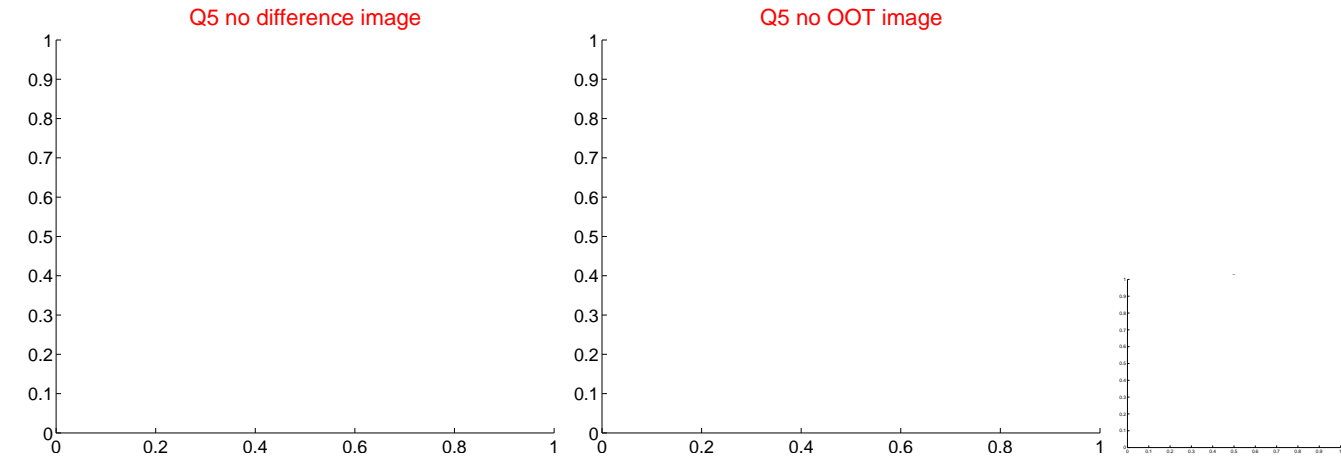


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

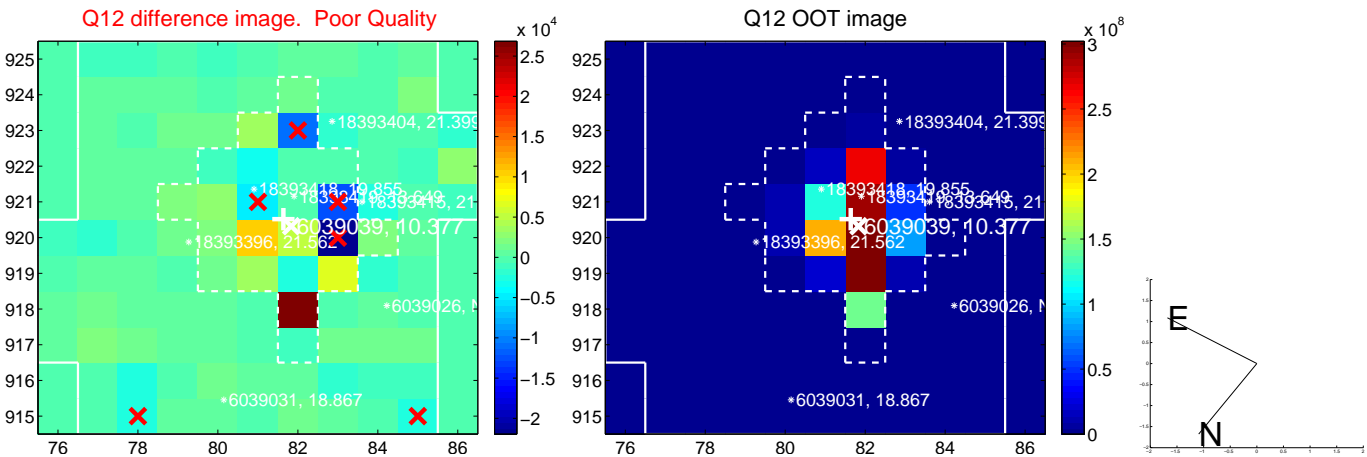
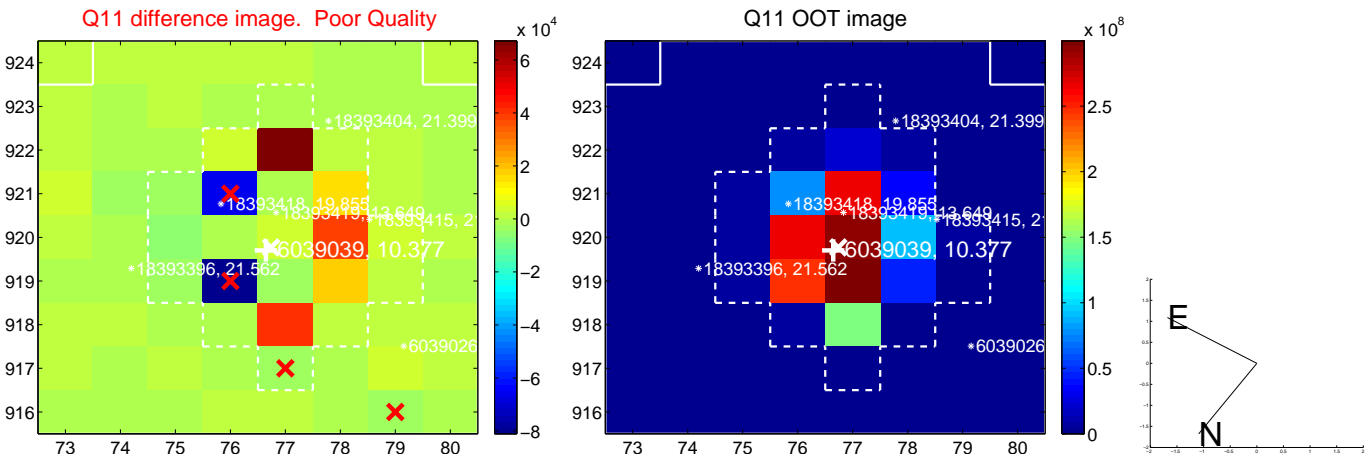
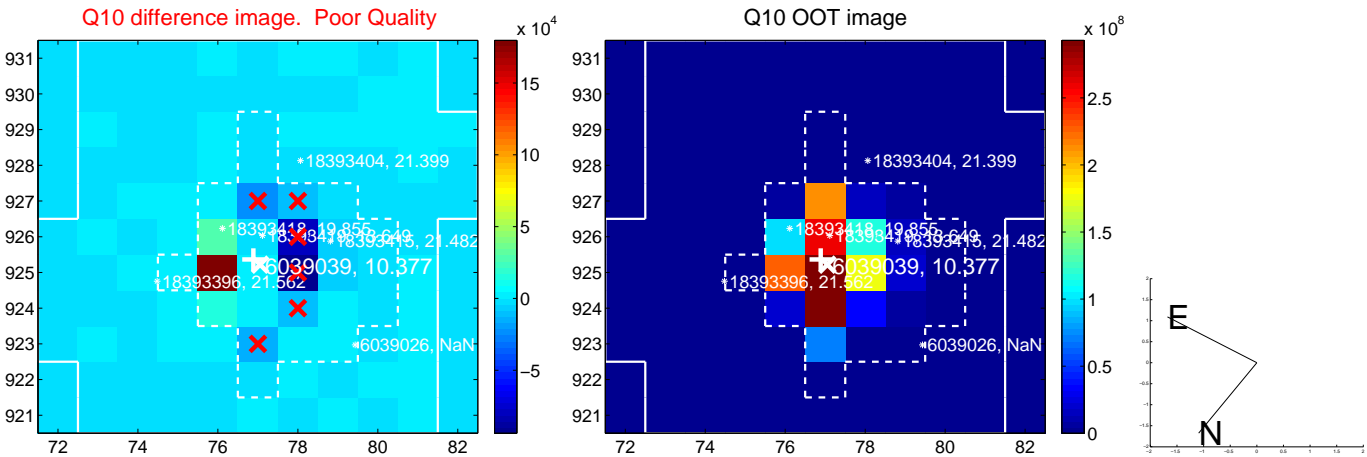
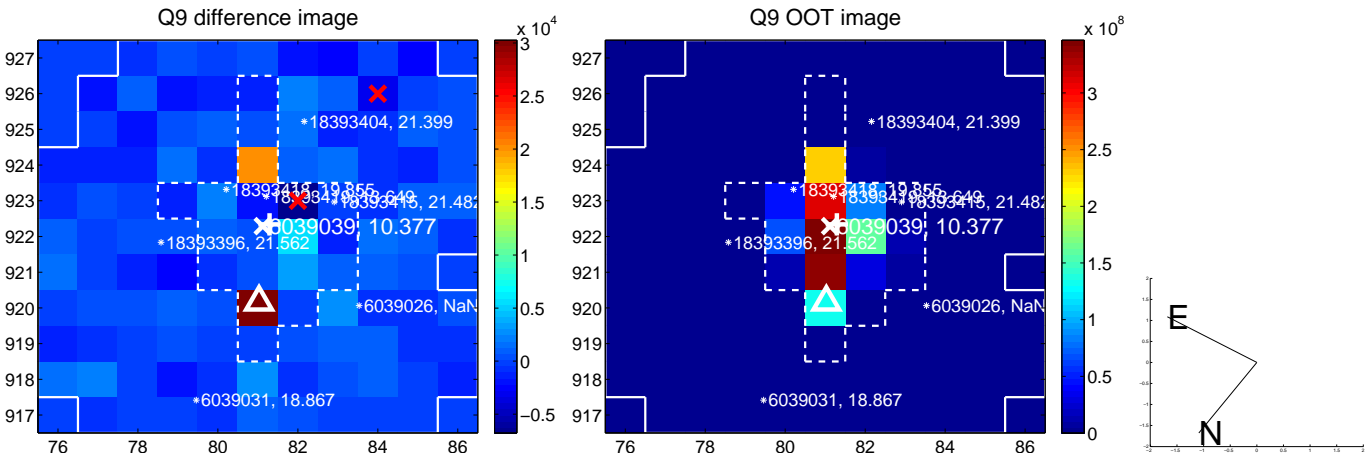
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



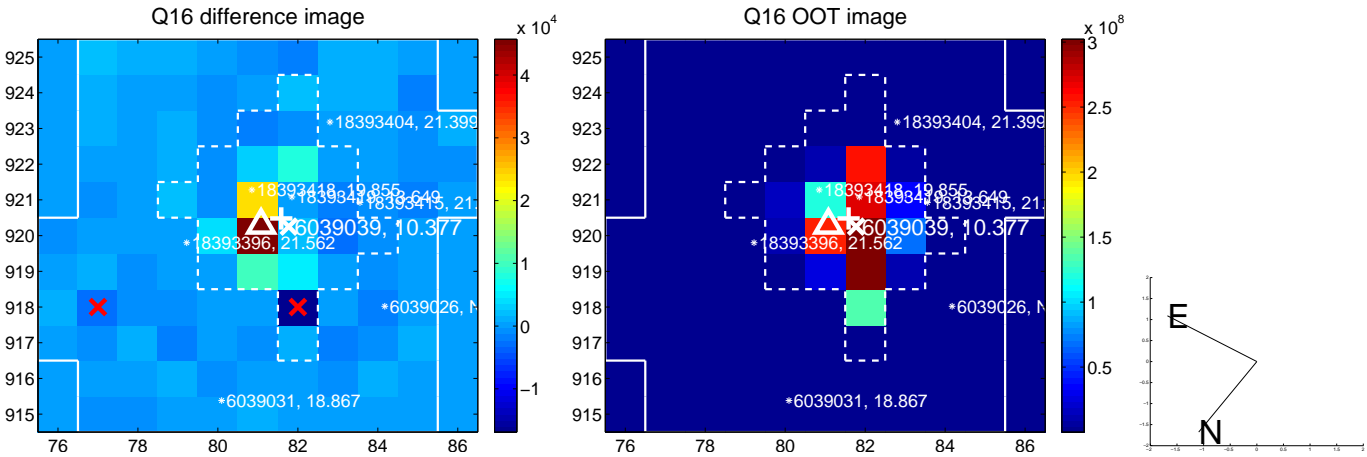
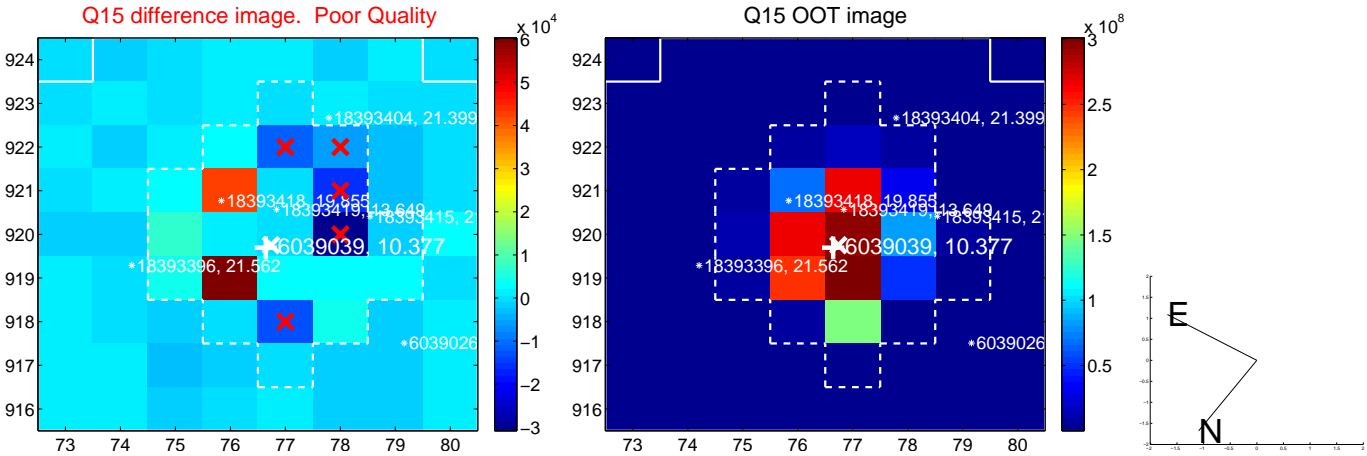
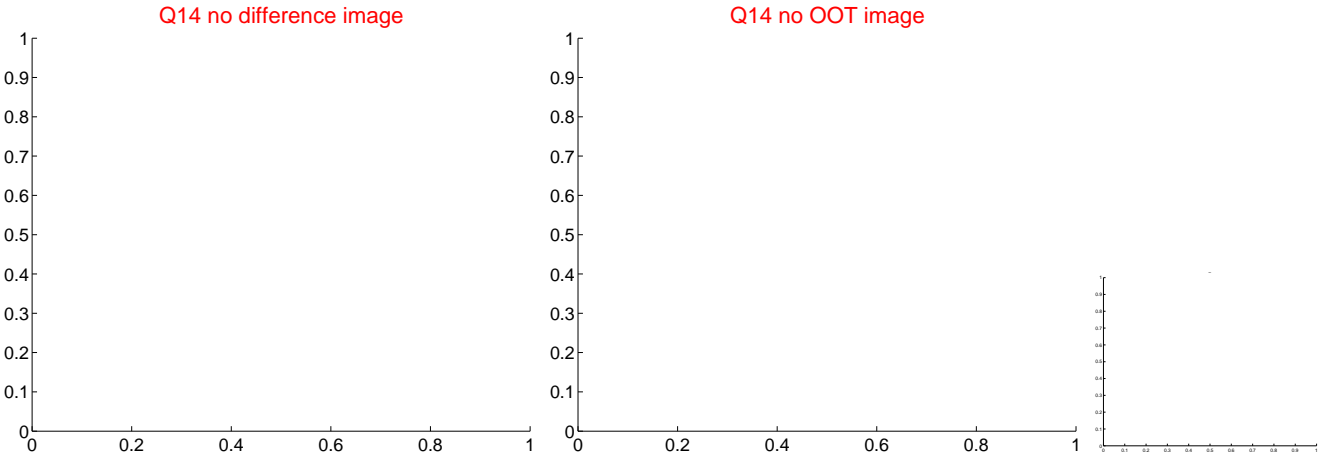
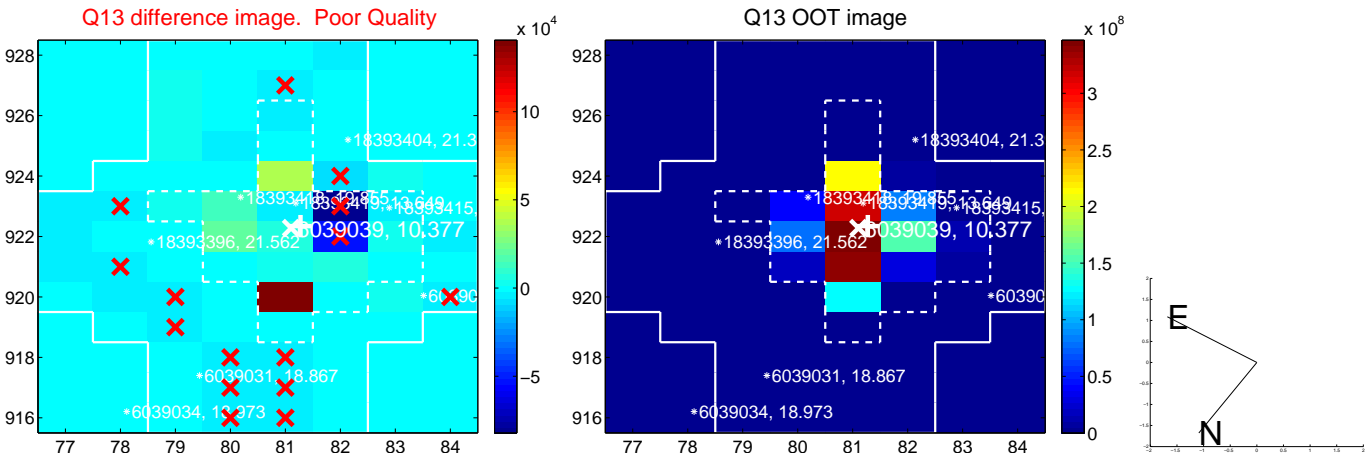
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



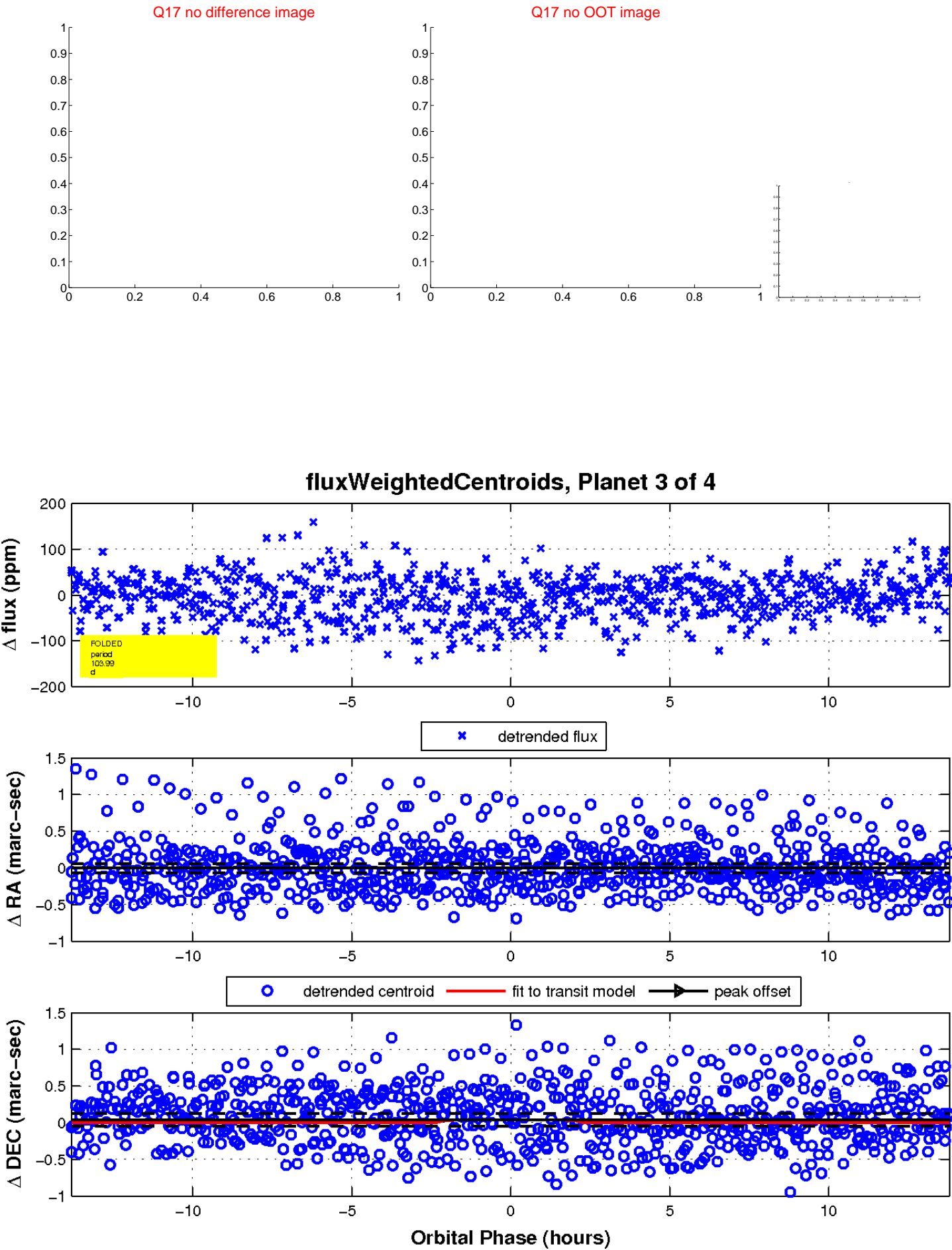
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



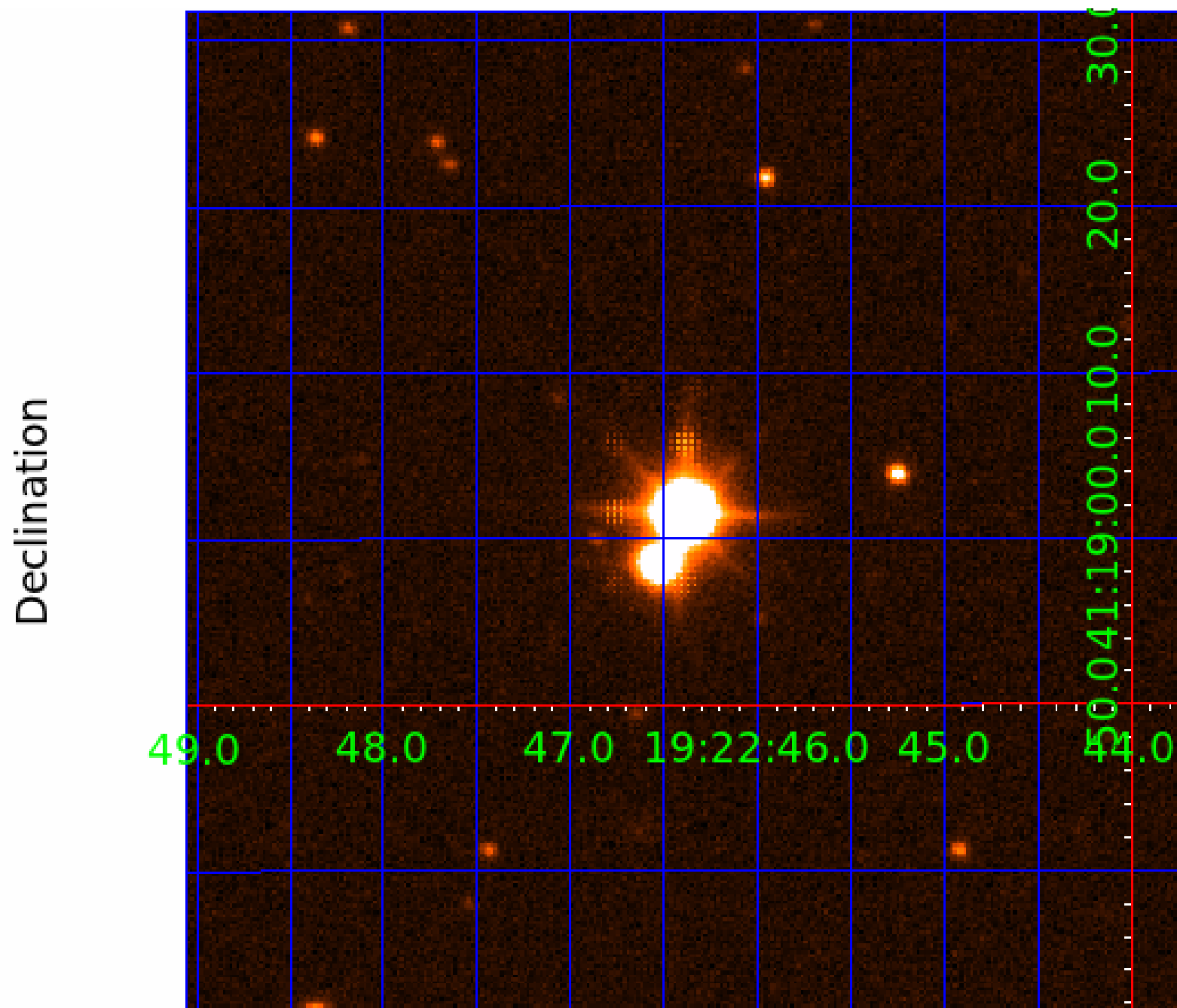
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 006039039

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})
006039039-01	OBS	No	1.119120	132.473556	8.3	7.232	13.0	15.3	2.39	7568	0.70	24717.60
006039039-02	OBS	No	101.928115	146.373852	111.6	4.922	15.6	8.1	2.39	7568	2.85	60.32
006039039-03	OBS	No	103.990993	193.464626	95.2	4.603	13.1	7.7	2.39	7568	2.71	58.73
006039039-04	OBS	No	61.089050	158.247925	82.9	6.006	8.9	8.2	2.39	7568	2.46	119.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006039039-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
006039039-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED
006039039-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_SATURATED
006039039-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

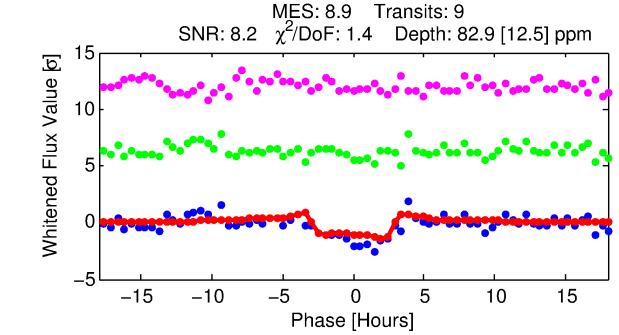
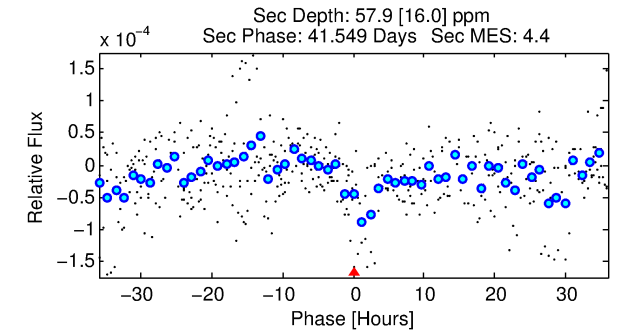
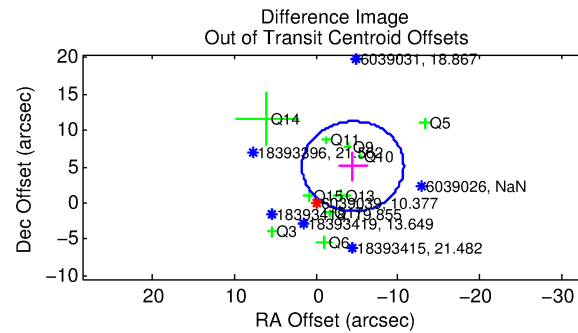
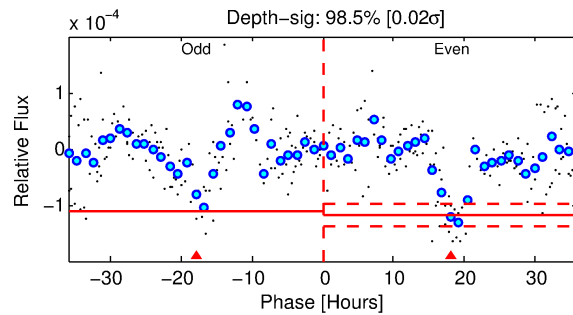
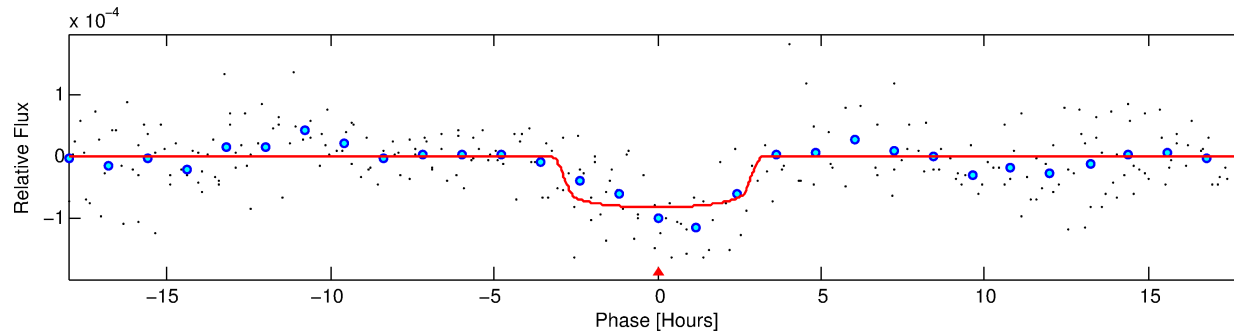
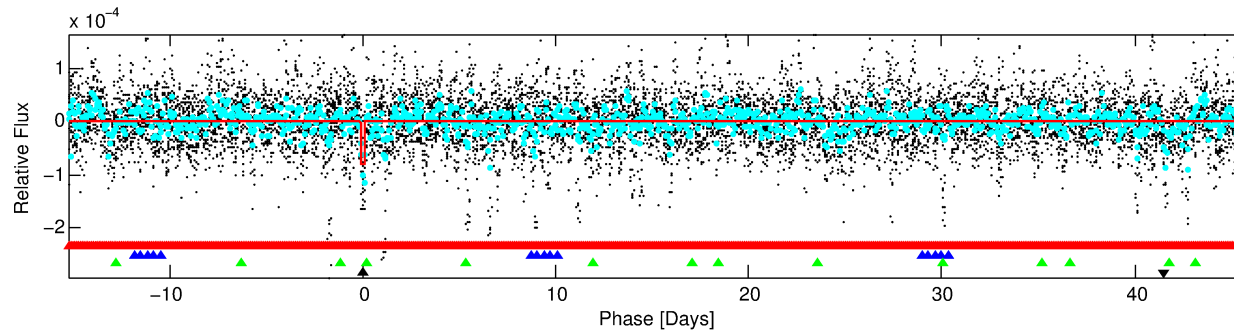
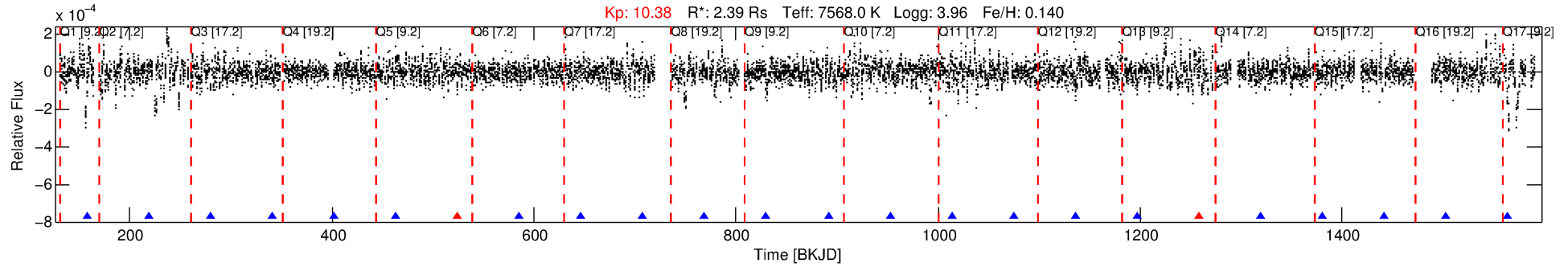
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006039039-04

No Significant Match Found

DV One-Page Summary

KIC: 6039039 Candidate: 4 of 4 Period: 61.089 d



DV Fit Results:

Period = 61.08905 [0.00085] d
 Epoch = 158.2479 [0.0093] BKJD
 Rp/R* = 0.0094 [0.0044]
 a/R* = 40.95 [122.57]
 b = 0.86 [0.90]
 Seff = 119.37 [26.53]
 Teq = 843 [47] K
 Rp = 2.46 [1.21] Re
 a = 0.3747 [0.0551] AU
 Ag = 740.20 [732.66] [1.01 σ]
 Tefp = 6797 [1642] K [3.62 σ]

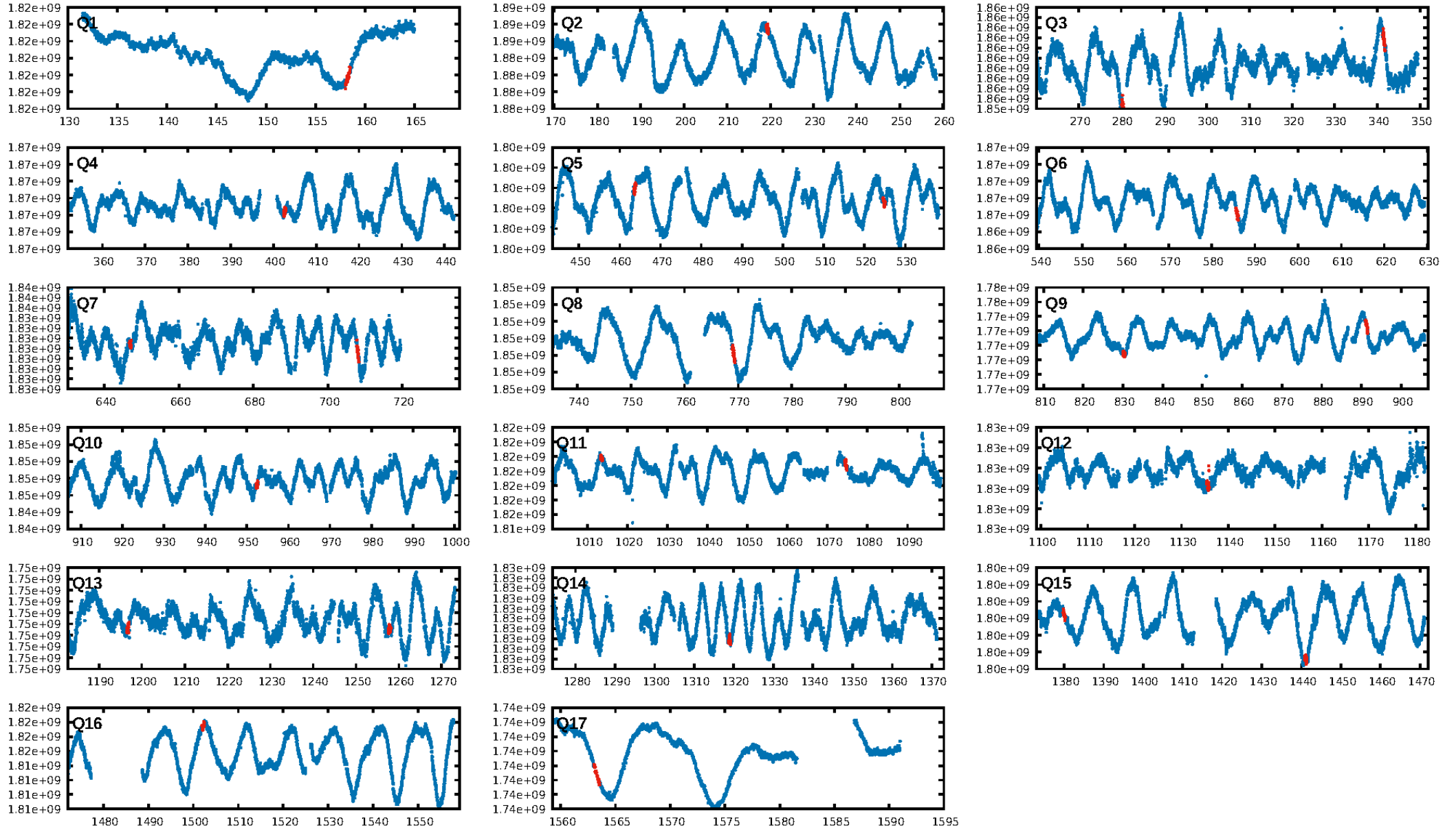
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [153.11 σ]
 LongPeriod-sig: 100.0% [126.23 σ]
 ModelChiSquare2-sig: 0.0%
 ModelChiSquareGof-sig: 100.0%
 Bootstrap-pfa: 3.70e-12
 RollingBand-fgt: 0.75 [6/8]
 GhostDiagnostic-chr: N/A
 Centroid-sig: 2.8%
 Centroid-so: 1.043 arcsec [1.64 σ]
 OotOffset-rm: 6.765 arcsec [3.27 σ]
 KicOffset-rm: 6.401 arcsec [2.88 σ]
 OotOffset-st: 3/3/0/4 [10]
 KicOffset-st: 3/3/0/4 [10]
 DiffImageQuality-fgm: 0.10 [1/10]
 DiffImageOverlap-fno: 0.00 [0/17]

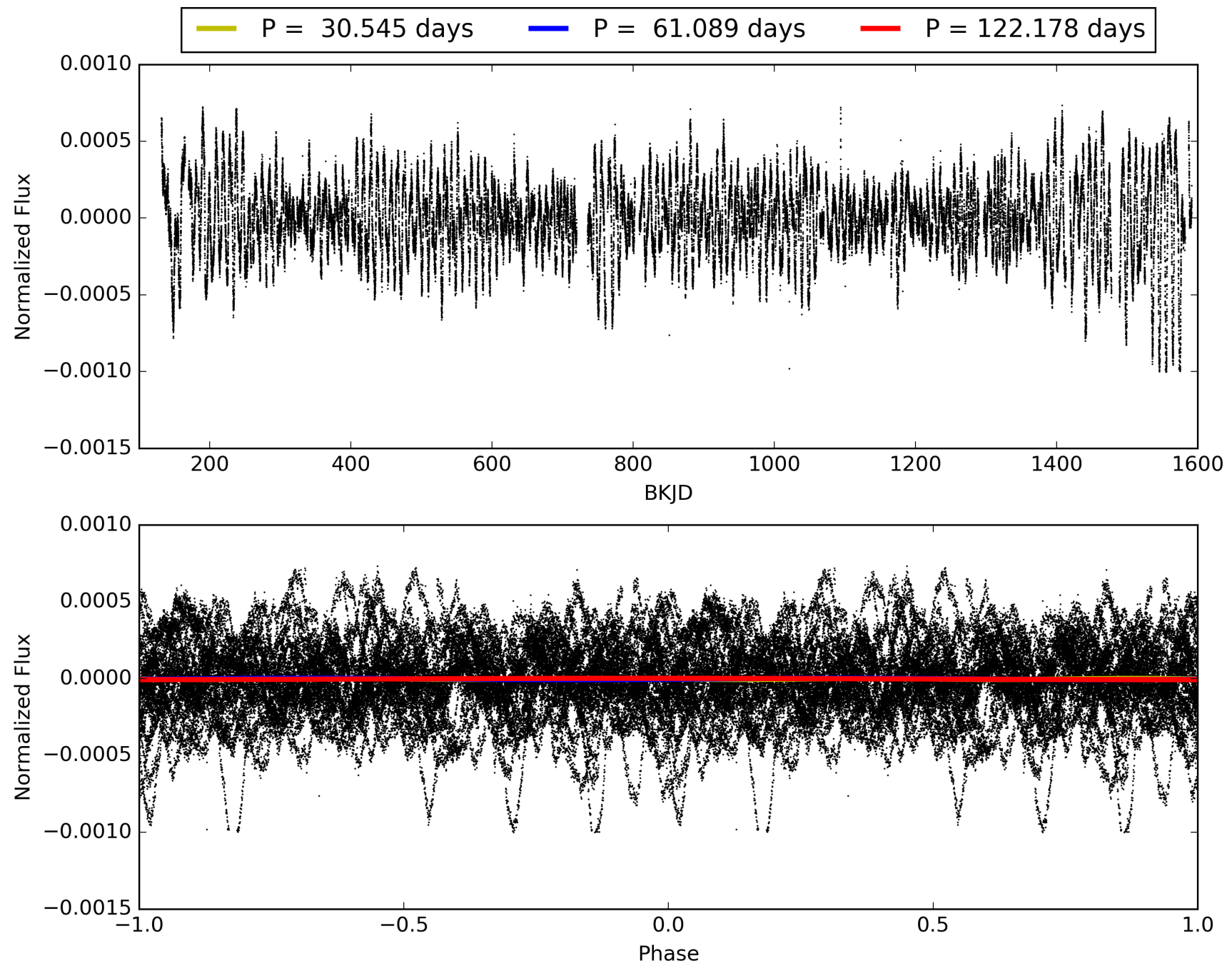
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:56:07 Z

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

TCE 006039039-04, PDC Light Curves

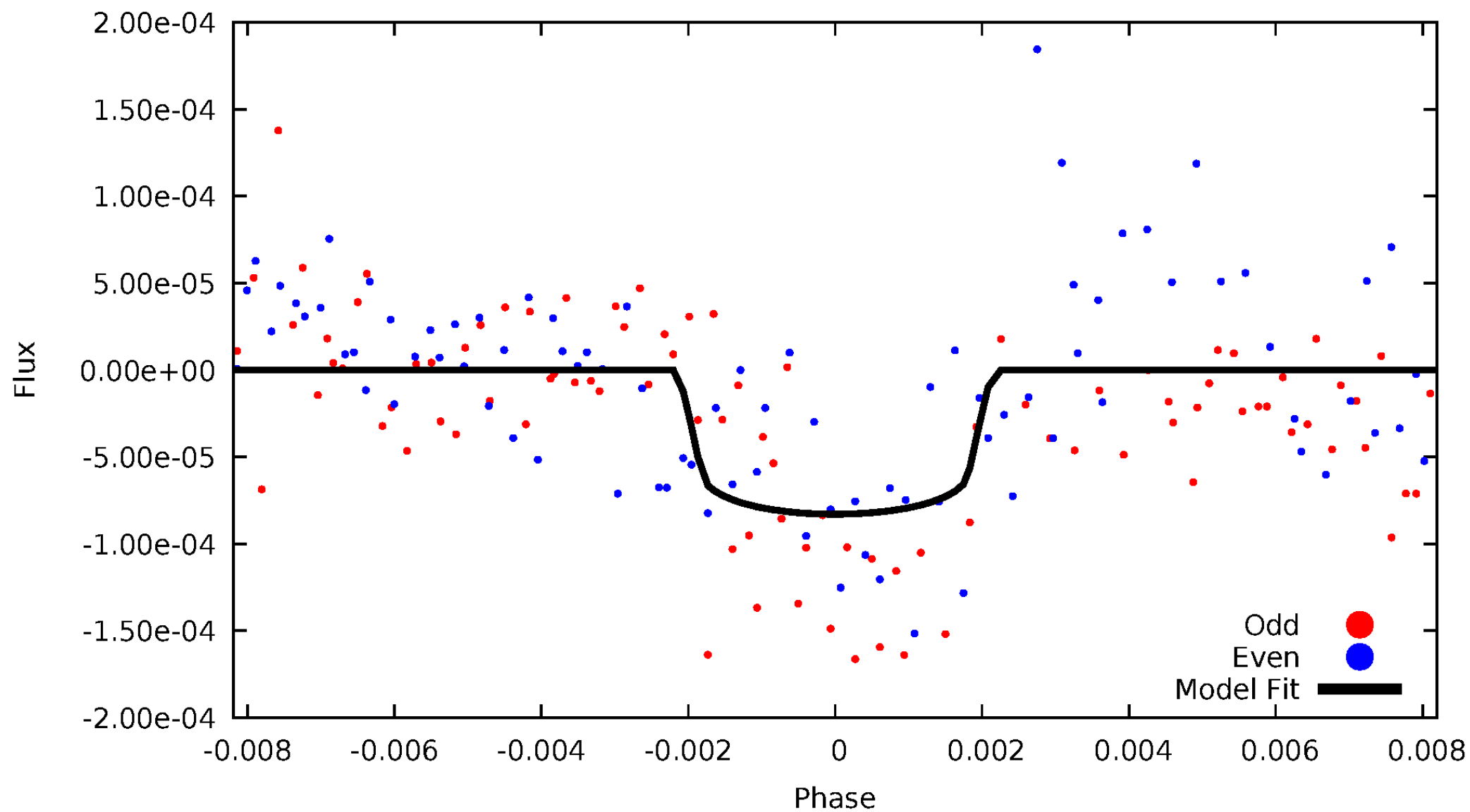


TCE 006039039-04



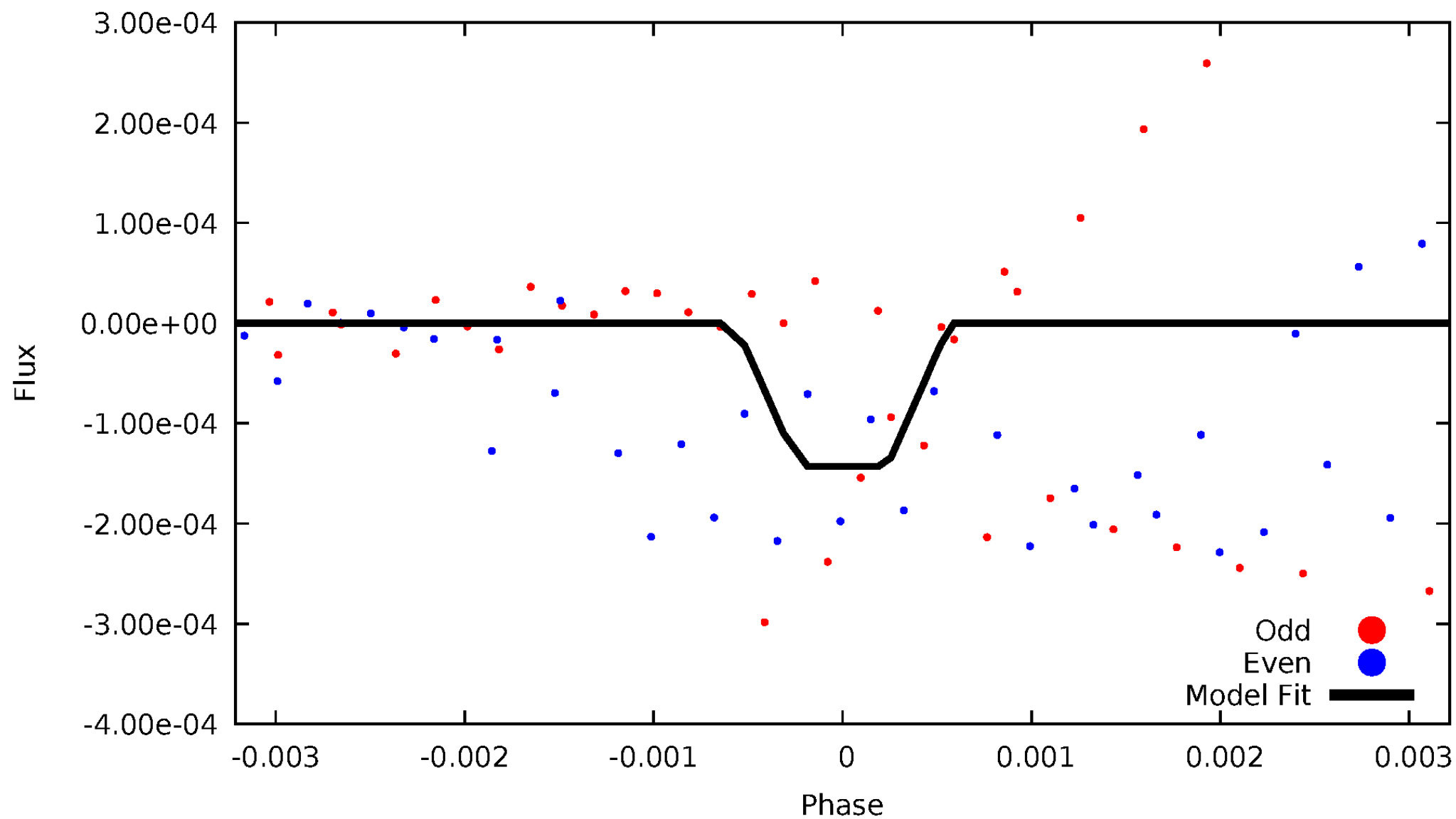
DV Odd/Even

TCE 006039039-04



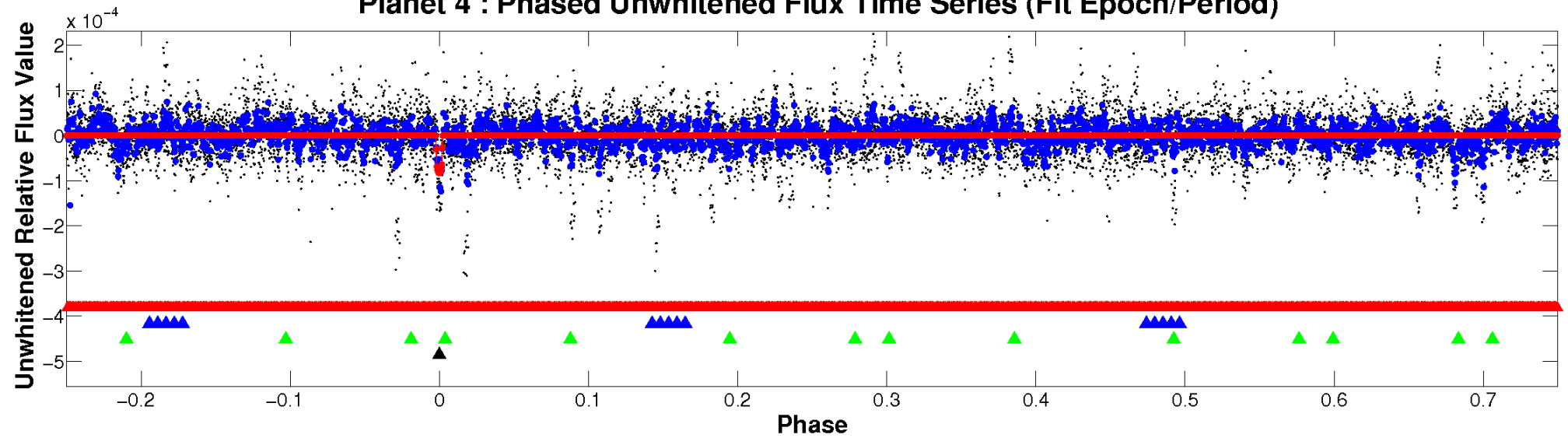
ALT Odd/Even

TCE 006039039-04

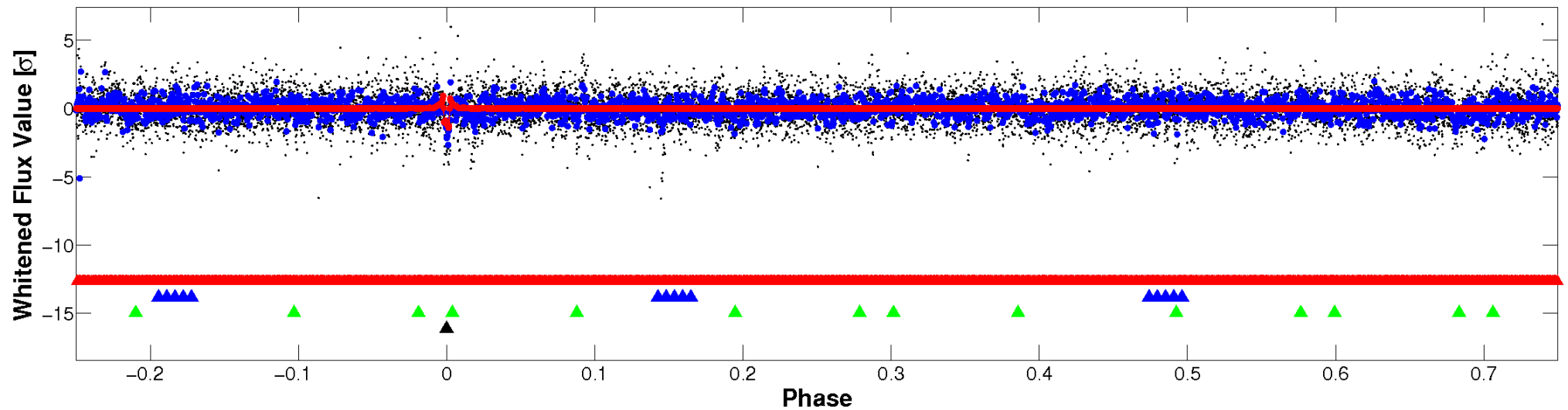


Non-Whitened Vs. Whitened Light Curve

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

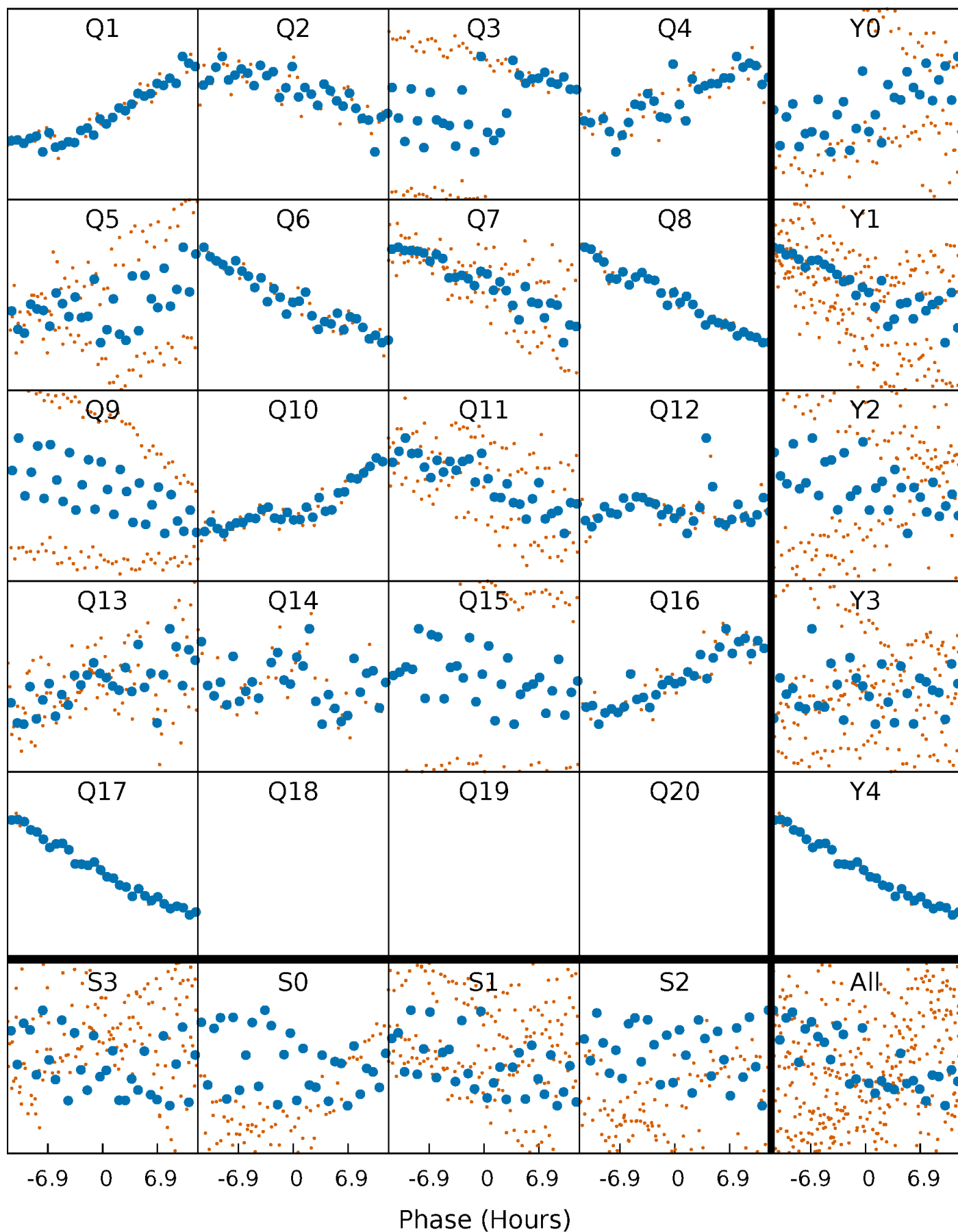


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



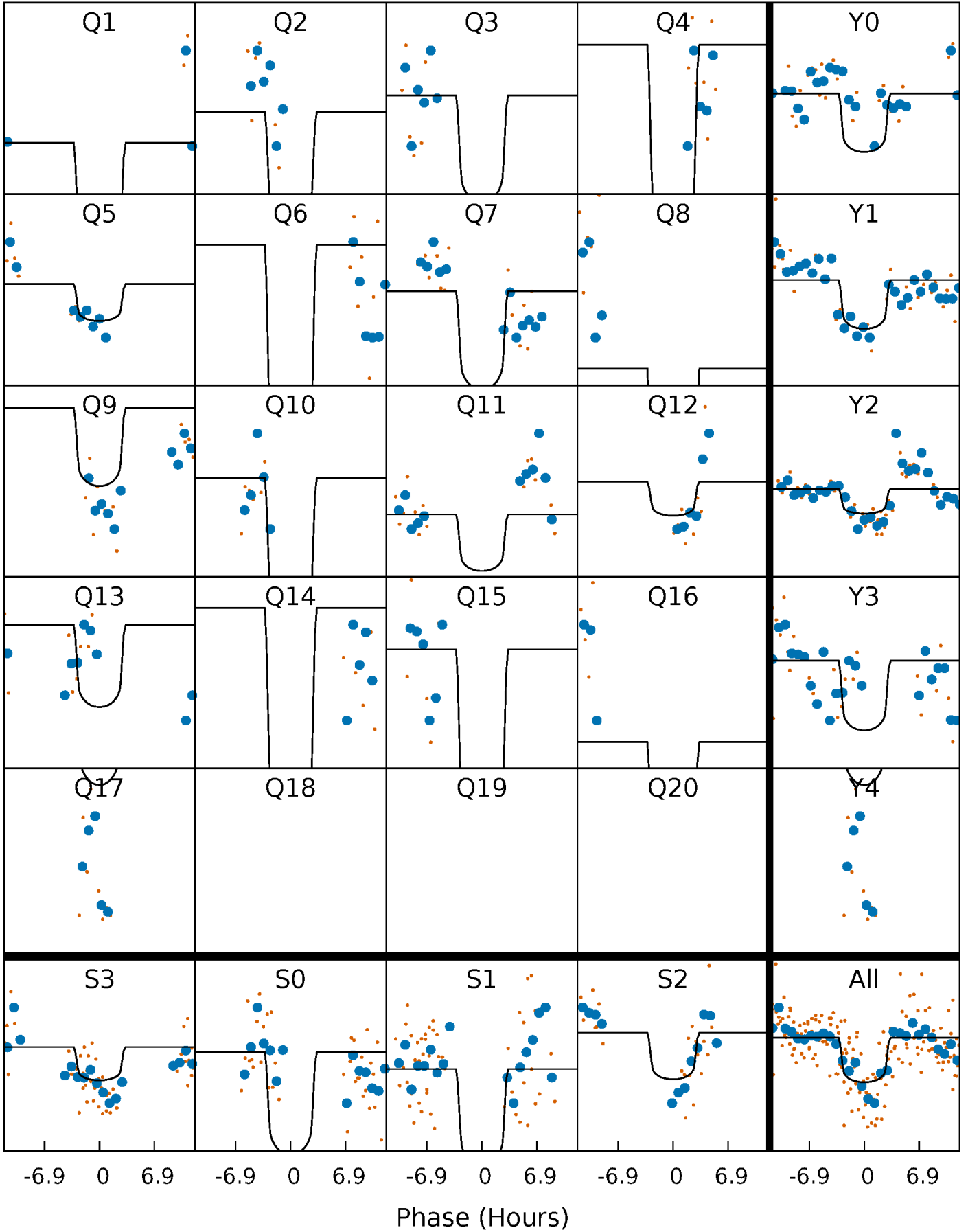
PDC Quarter-Phased Transit Curves

TCE 006039039-04 P= 61.089050 Days $T_0=158.247925$ (BKJD)



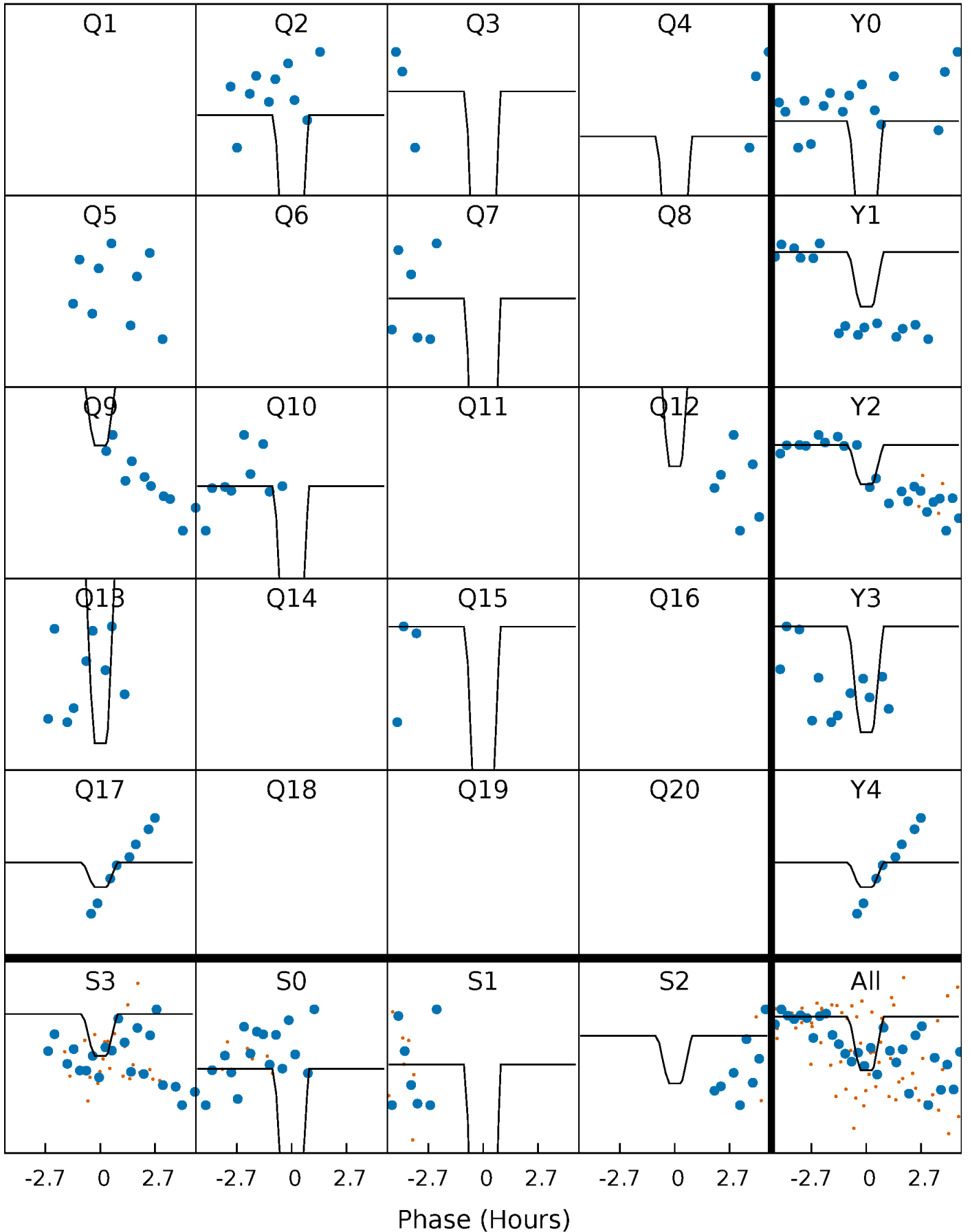
DV Quarter-Phased Transit Curves

TCE 006039039-04 P= 61.089050 Days $T_0=158.247925$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

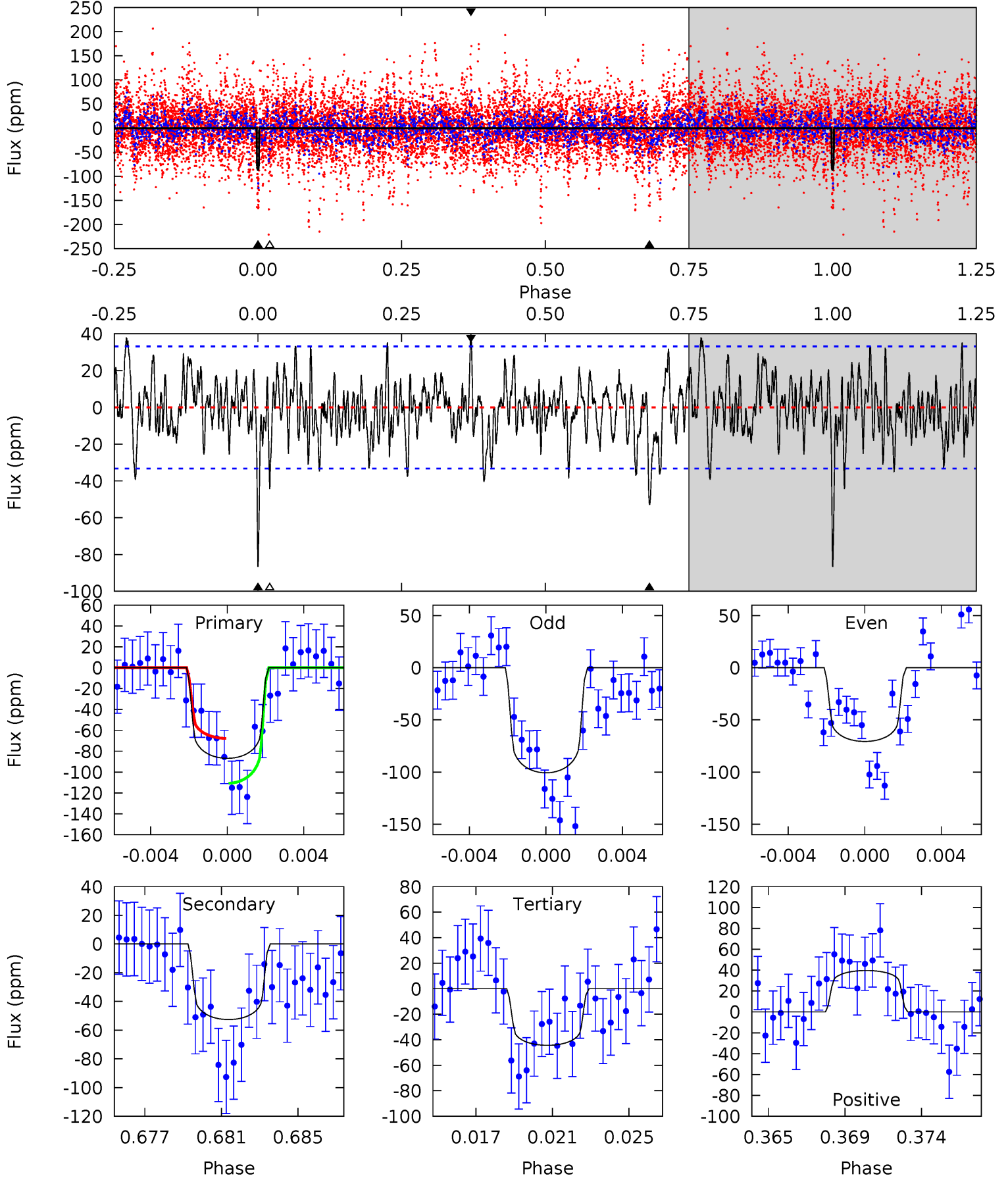
TCE 006039039-04 P= 61.090499 Days $T_0=158.154391$ (BKJD)



DV Model-Shift Uniqueness Test

006039039-04, P = 61.089050 Days, E = 97.158875 Days

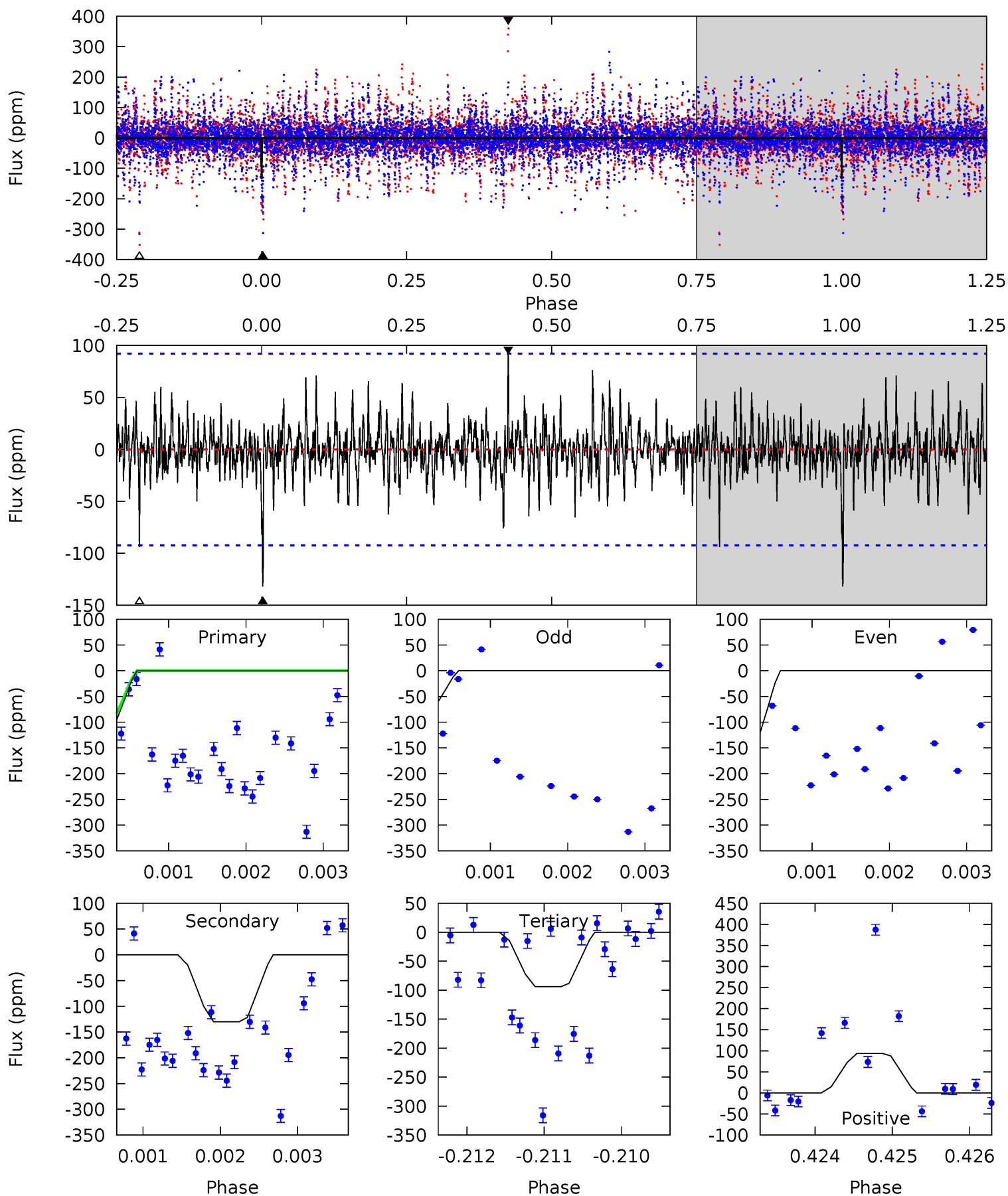
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	8.22	6.93	6.19	5.19	2.87	2.10	6.63	7.37	1.29	2.03	2.27	1.08	0.31	3.35



Alt Model-Shift Uniqueness Test

006039039-04, P = 61.090499 Days, E = 97.063892 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.79	7.67	5.55	5.54	5.45	3.29	1.17	2.24	2.25	2.12	2.13	2.12	0.81	0.42	1.37



Stellar Parameters For KIC 006039039

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	7568^{+75}_{-83}	$3.956^{+0.121}_{-0.099}$	$0.140^{+0.050}_{-0.150}$	$2.388^{+0.334}_{-0.408}$	$1.881^{+0.078}_{-0.182}$	$0.194^{+0.114}_{-0.062}$
	+1%/-1%	+3%/-3%	+36%/-107%	+14%/-17%	+4%/-10%	+59%/-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 006039039-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-53 ± 6	$2.47^{+1.10}_{-1.12}$	1179^{+45}_{-48}	6488^{+2745}_{-1056}	657^{+1576}_{-336}
Alt.	-130 ± 17	$3.07^{+1.17}_{-1.14}$	1175^{+46}_{-47}	7337^{+2505}_{-1168}	1052^{+1530}_{-529}

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 $A_{obs} \gg 1.0$

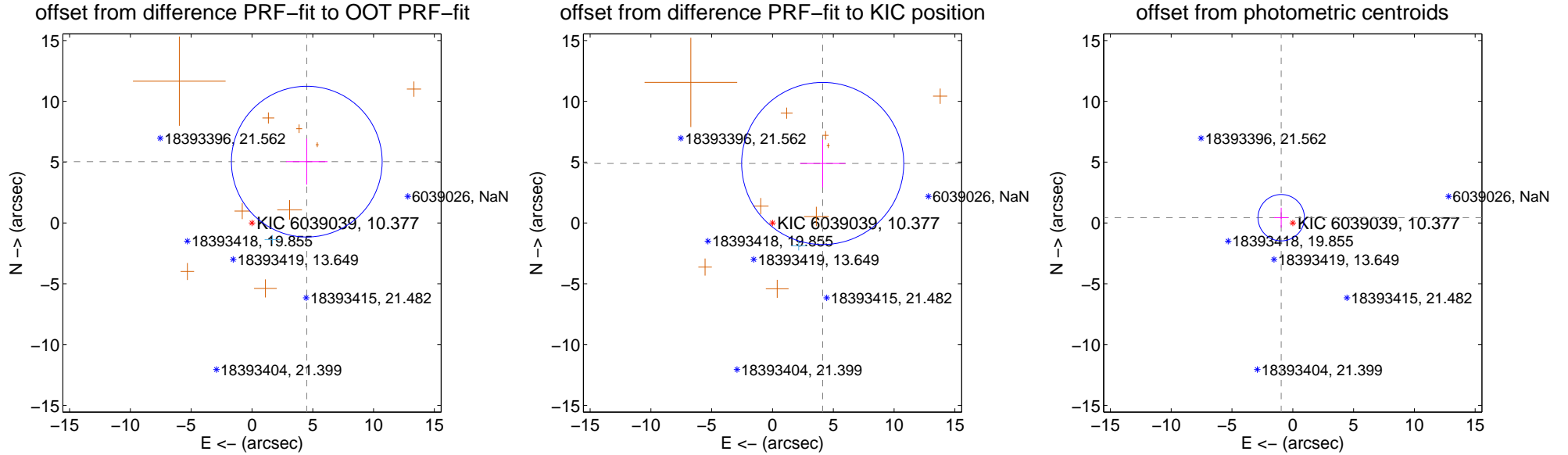
DV Centroid Data

Supplemental centroid analysis for 006039039-04. **Kepler magnitude: 10.38.** Transit SNR 8.25

There are 1 quarters with good PRF difference image offsets

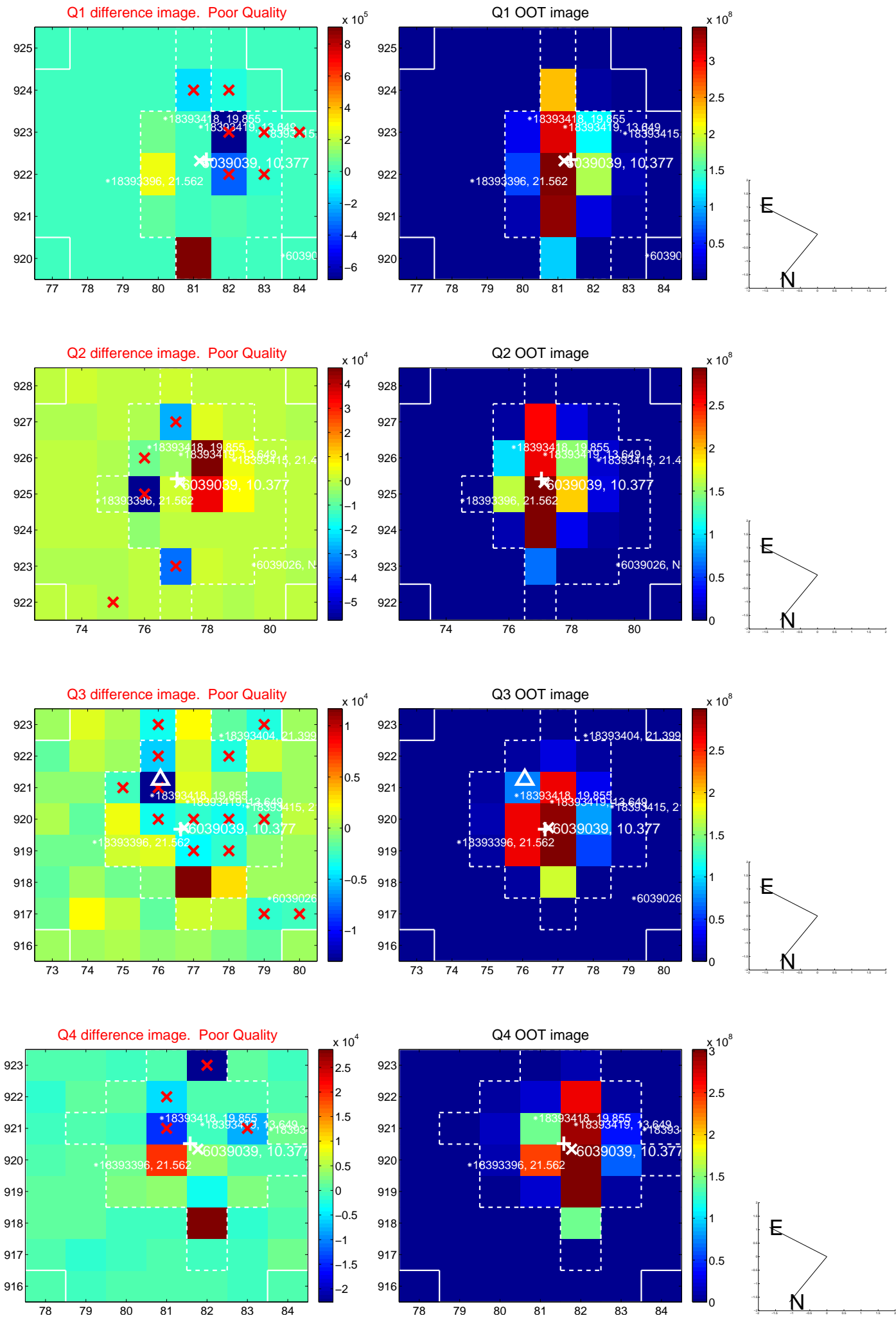
The direct PRF centroid is offset from the target star catalog position by about 0.71 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.765 ± 2.067	3.27	-4.509 ± 1.711	5.043 ± 1.890
PRF-fit source offset from KIC position	6.401 ± 2.222	2.88	-4.129 ± 1.870	4.891 ± 1.967
photometric centroid source offset	1.04 ± 0.64	1.64	0.95 ± 0.59	0.43 ± 0.82

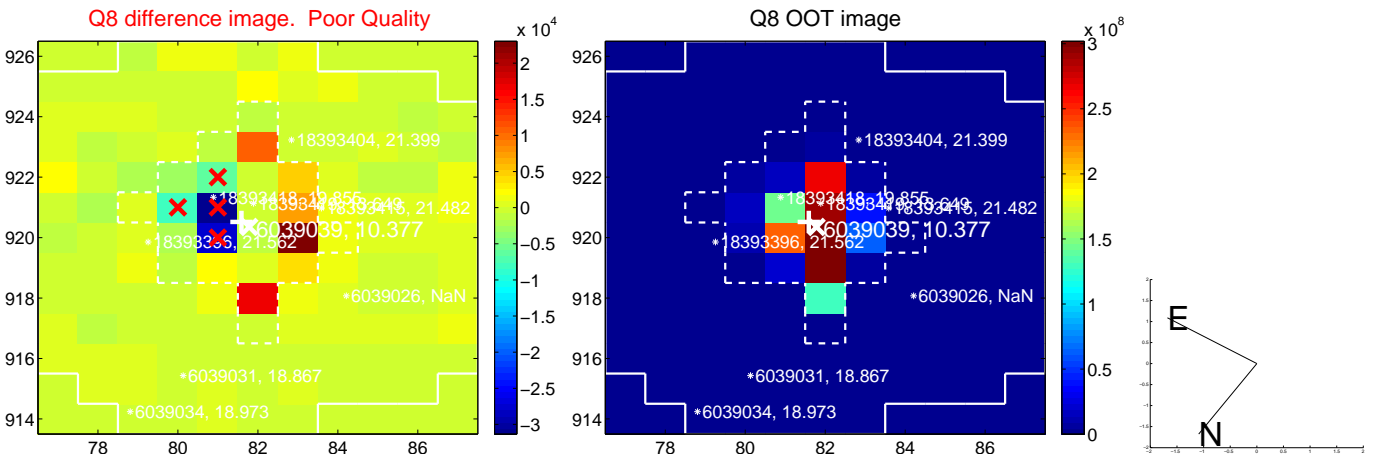
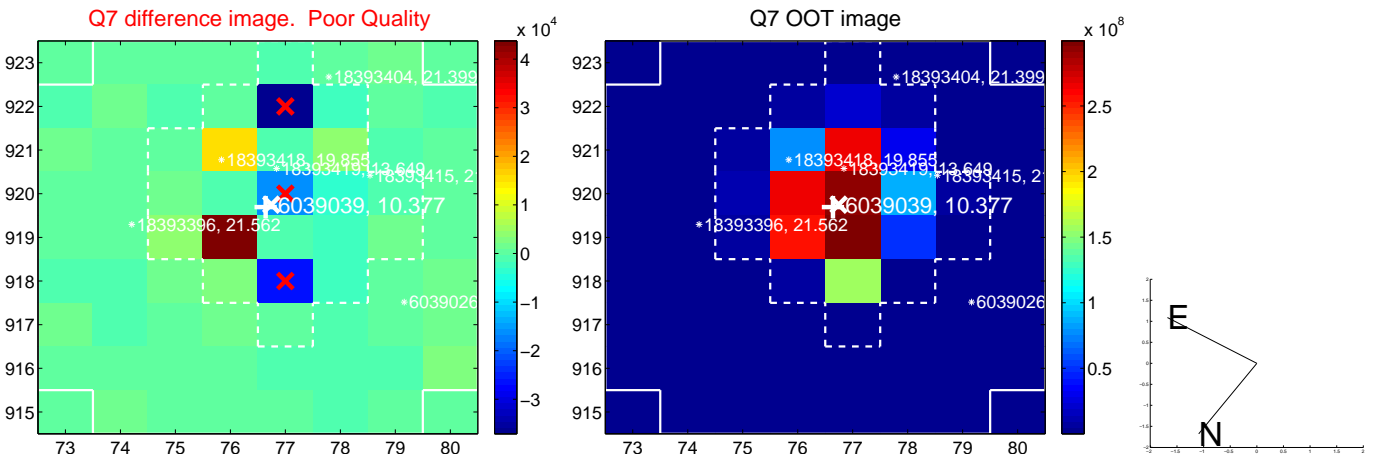
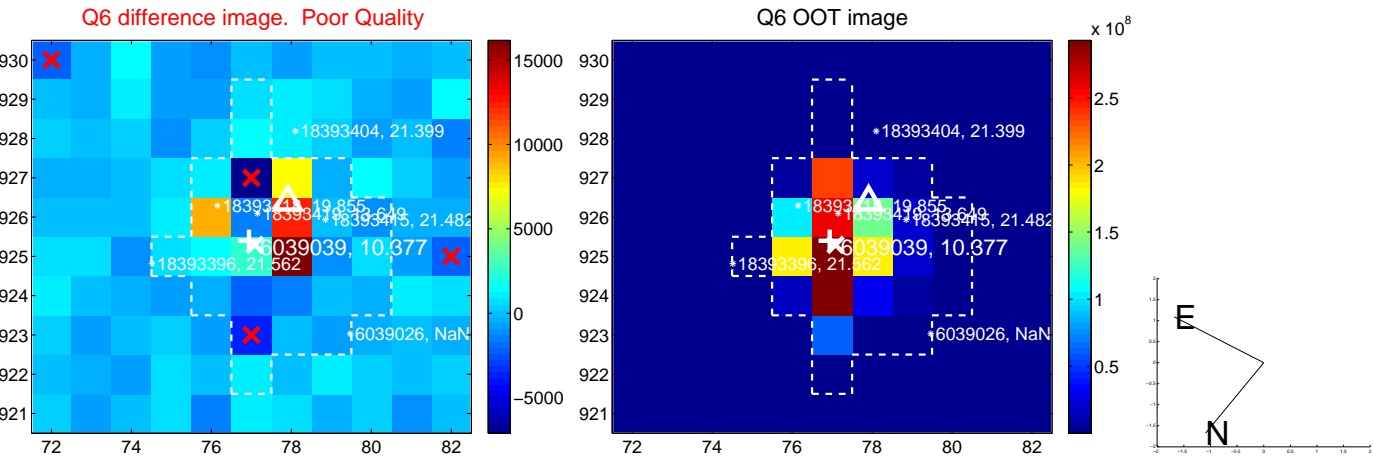
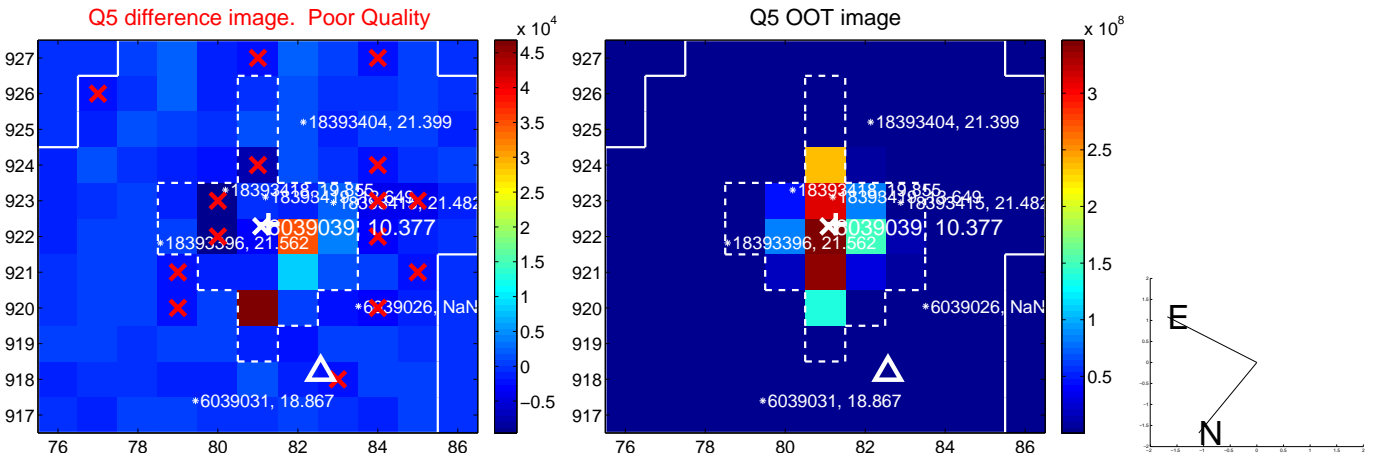


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

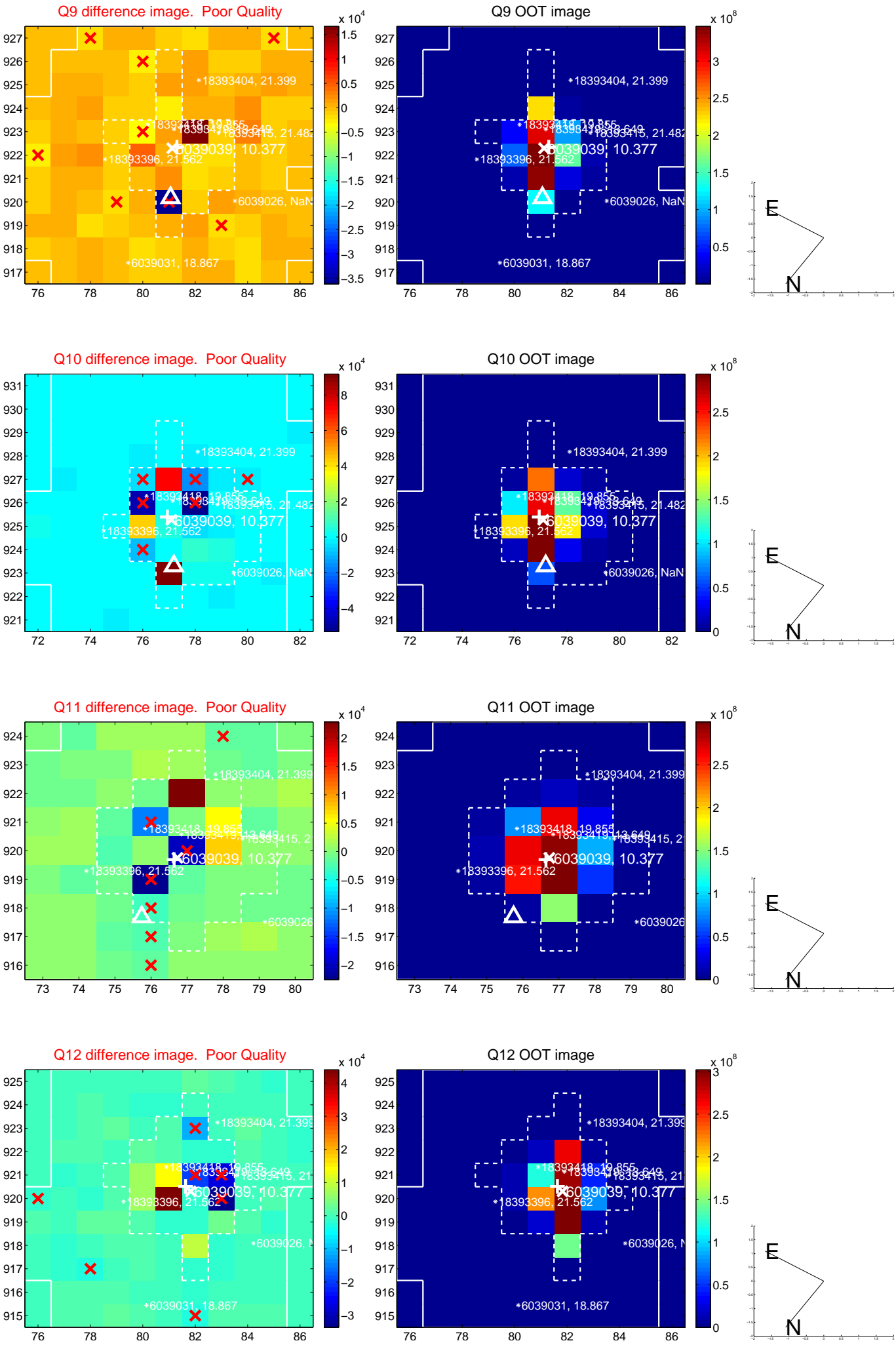
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



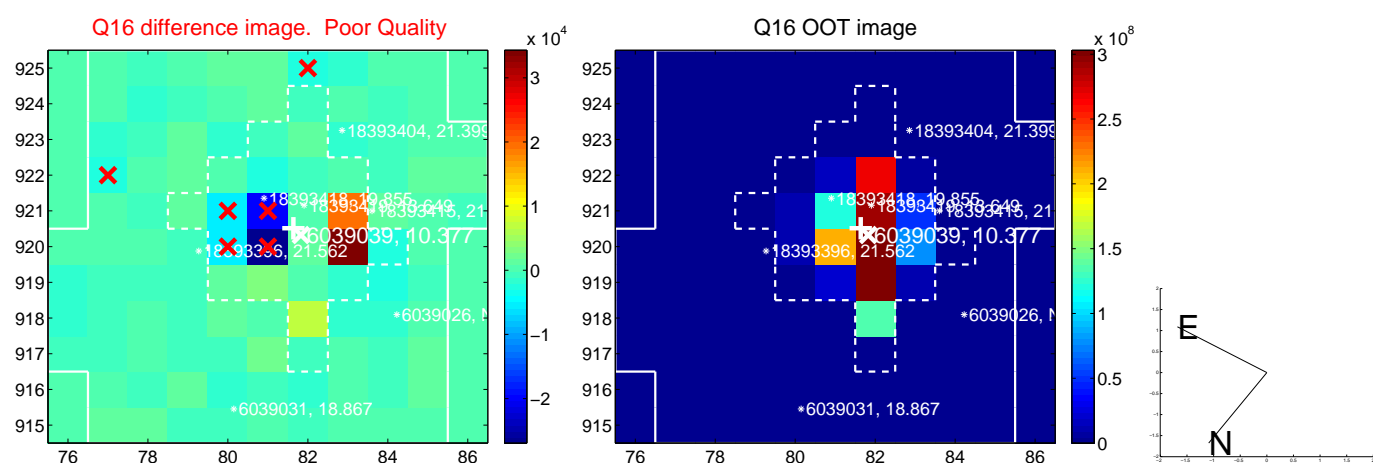
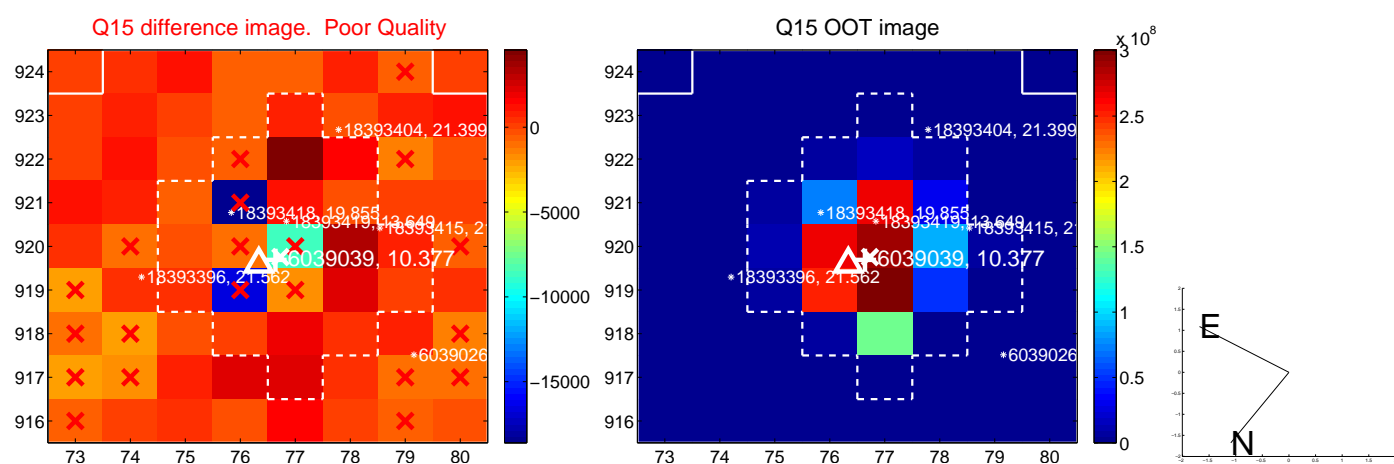
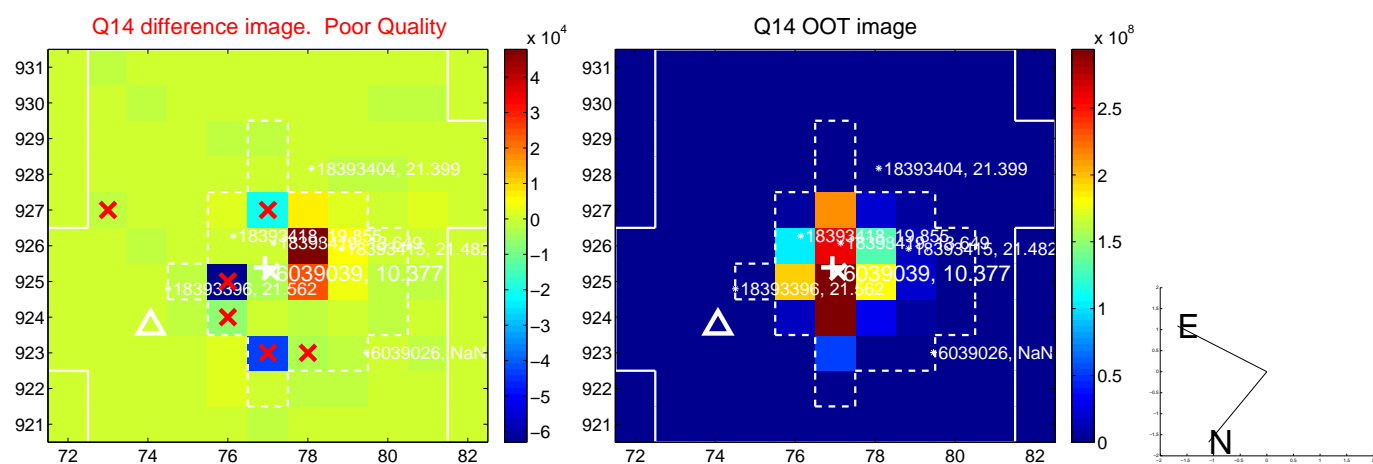
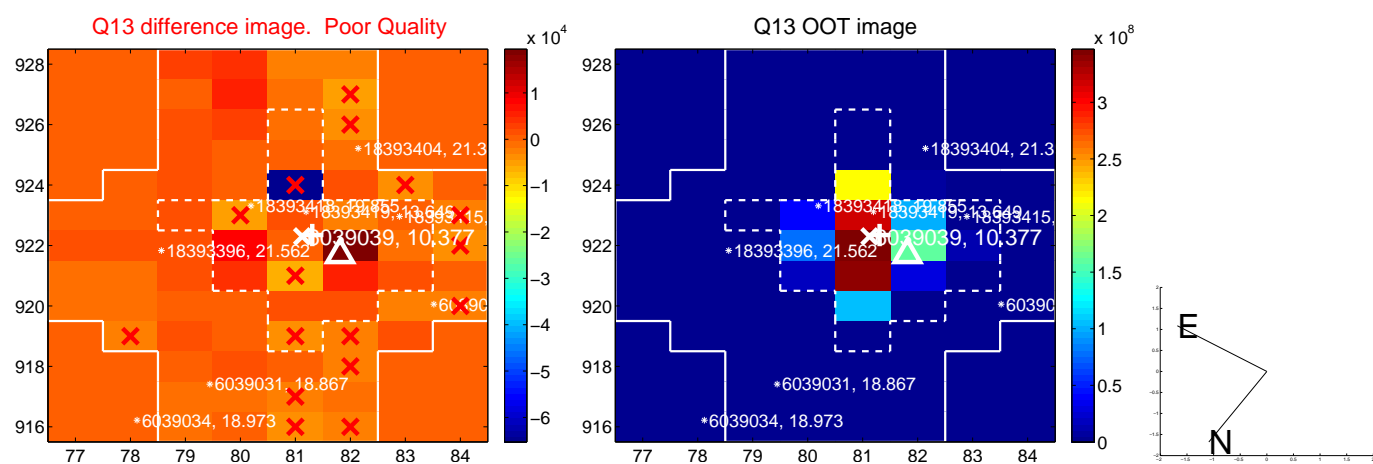
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



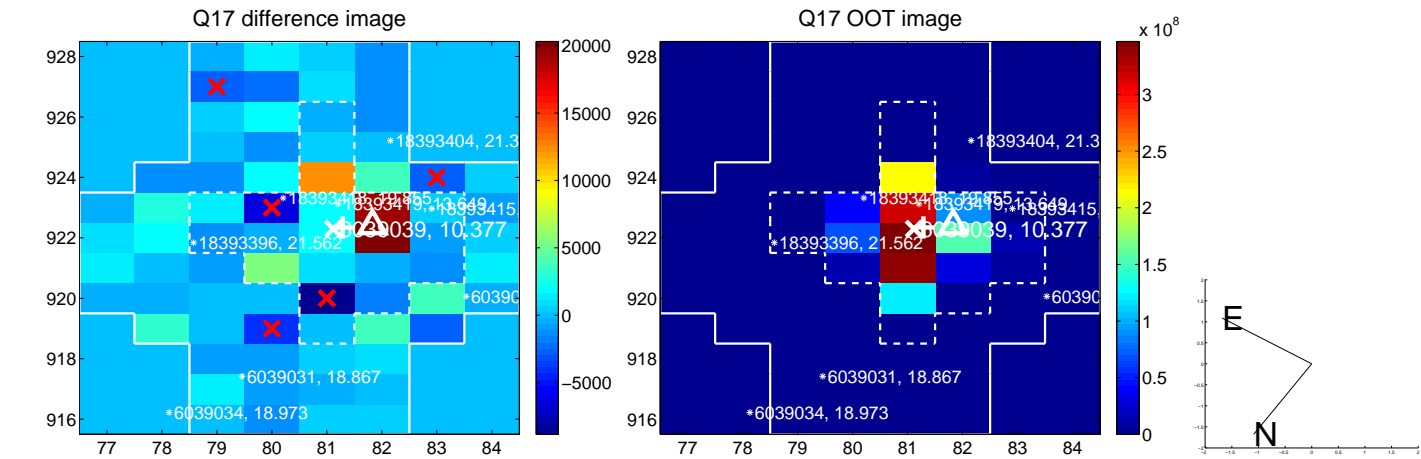
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



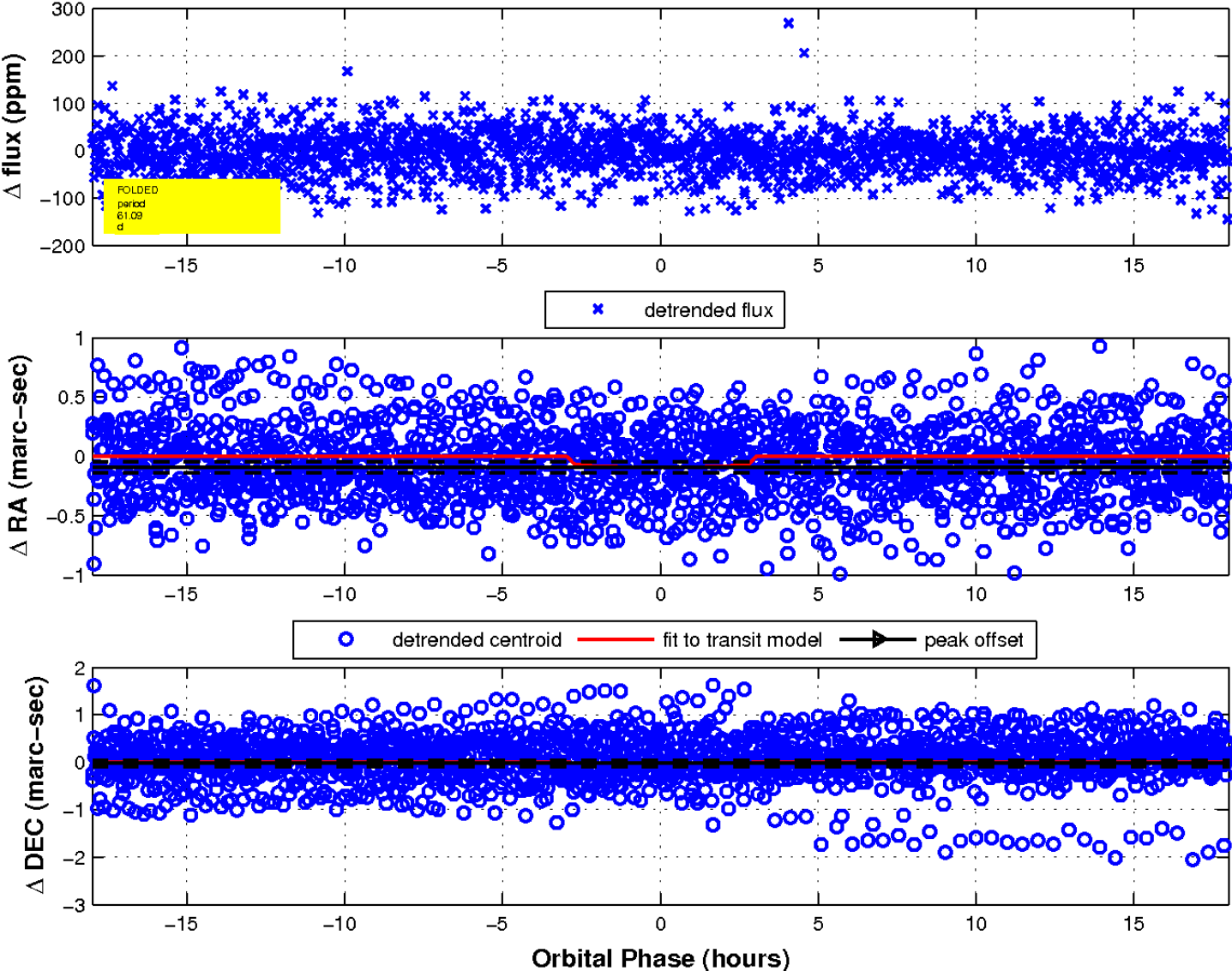
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

