

KIC 011821140

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})
011821140-01	OBS	No	0.539959	131.974420	12.5	1.414	13.5	10.0	3.21	8262	1.32	157882.31
011821140-02	OBS	No	0.505781	131.570825	72.4	0.696	12.7	30.7	3.21	8262	2.98	172265.67
011821140-03	OBS	No	0.505781	131.740210	79.4	0.678	14.7	34.2	3.21	8262	3.02	172265.57
011821140-04	OBS	No	0.505775	131.911369	50.3	0.964	18.5	27.5	3.21	8262	2.67	172268.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011821140-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED
011821140-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011821140-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
011821140-04	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED

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

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

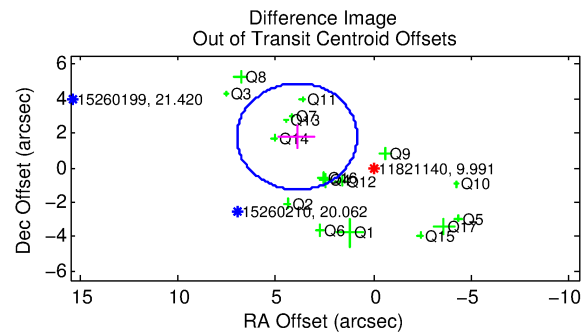
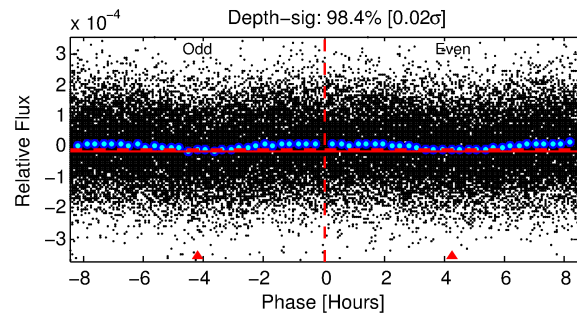
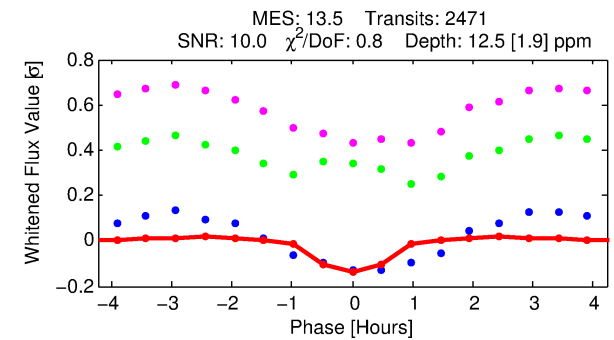
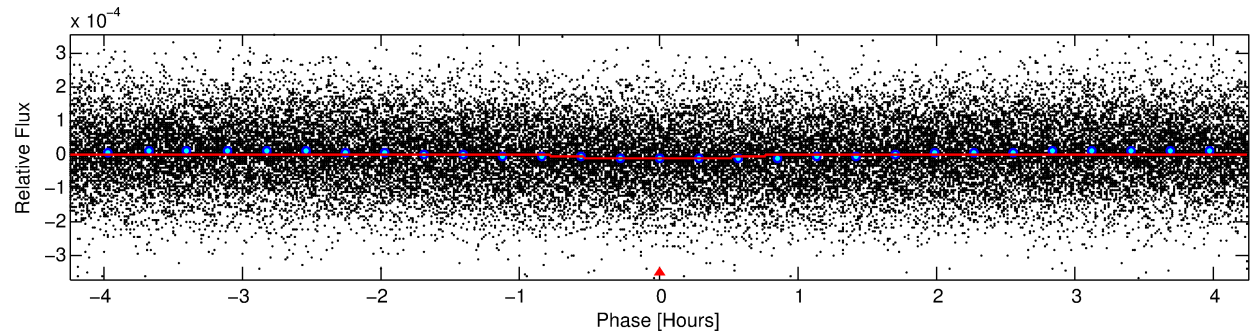
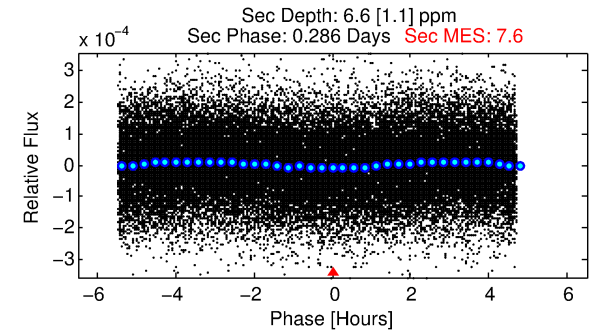
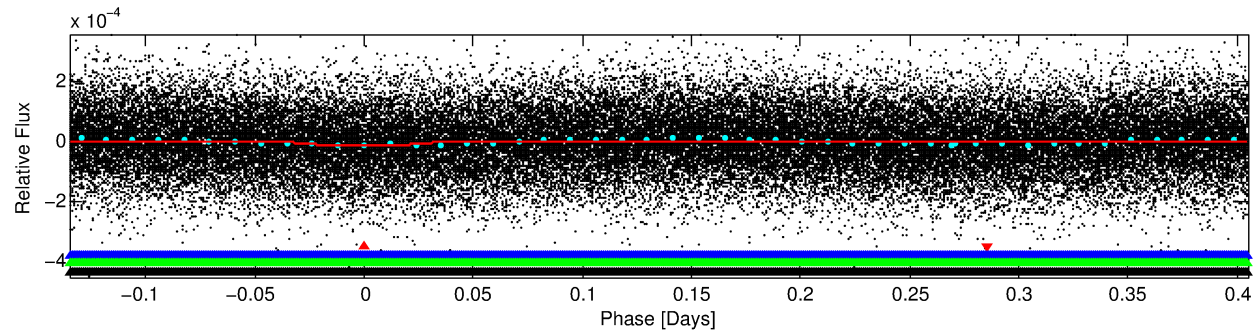
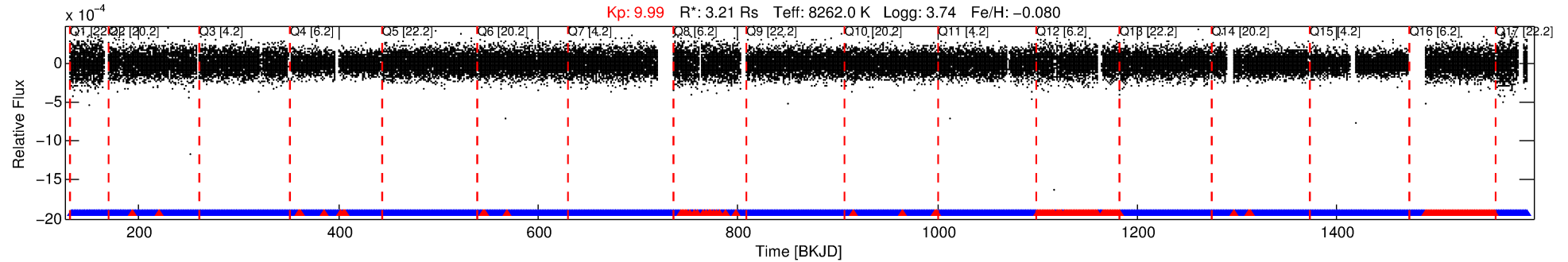
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011821140-01

No Significant Match Found

DV One-Page Summary

KIC: 11821140 Candidate: 1 of 4 Period: 0.540 d



DV Fit Results:

Period = 0.53996 [0.00001] d
Epoch = 131.9744 [0.0023] BKJD
Rp/R* = 0.0038 [0.0007]
a/R* = 1.62 [1.02]
b = 0.90 [0.23]
Seff = 157882.31 [116912.57]
Teq = 5083 [941] K
Rp = 1.32 [0.67] Re
a = 0.0165 [0.0075] AU
Ag = 0.57 [0.46] [-0.94σ]
Teffp = 6819 [733] K [1.46σ]

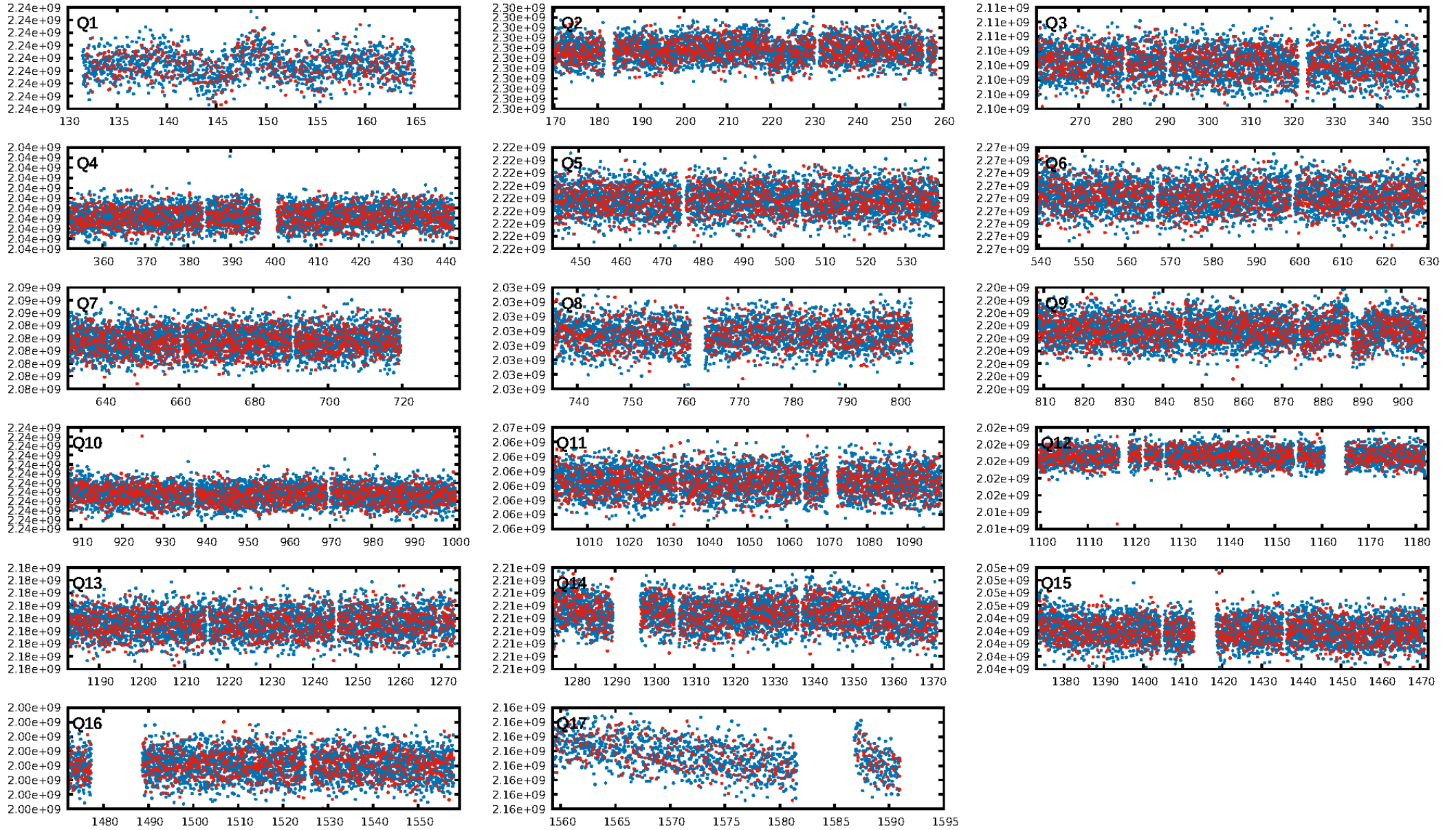
DV Diagnostic Results:

ShortPeriod-sig: 39.9% [0.52σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.89 [2103/2360]
GhostDiagnostic-chr: N/A
Centroid-sig: 42.1%
Centroid-so: 0.536 arcsec [0.71σ]
OotOffset-rm: 4.304 arcsec [4.20σ]
KicOffset-rm: 4.507 arcsec [4.50σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.53 [9/17]
DiffImageOverlap-fno: 0.00 [0/17]

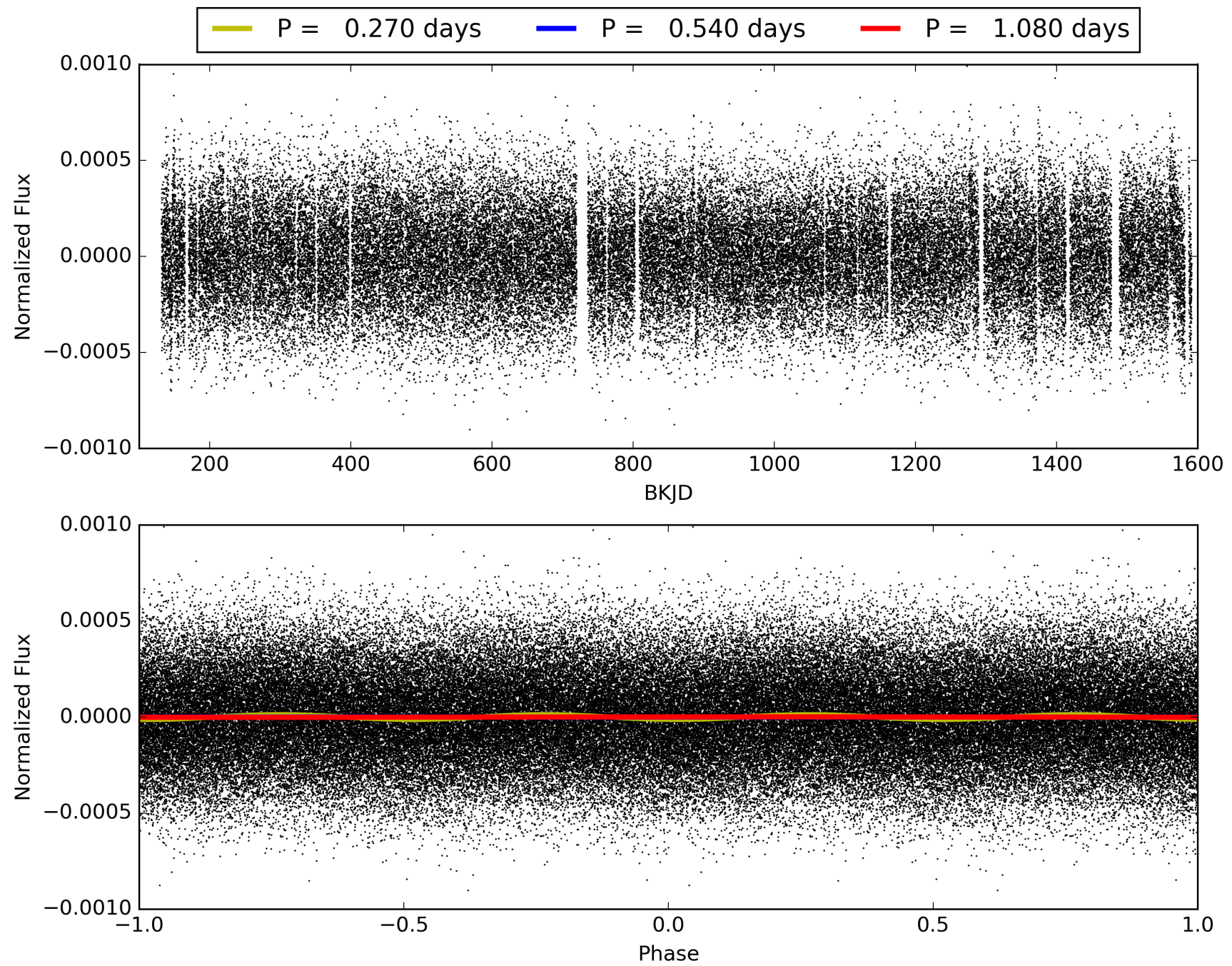
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:43:31 Z

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

TCE 011821140-01, PDC Light Curves

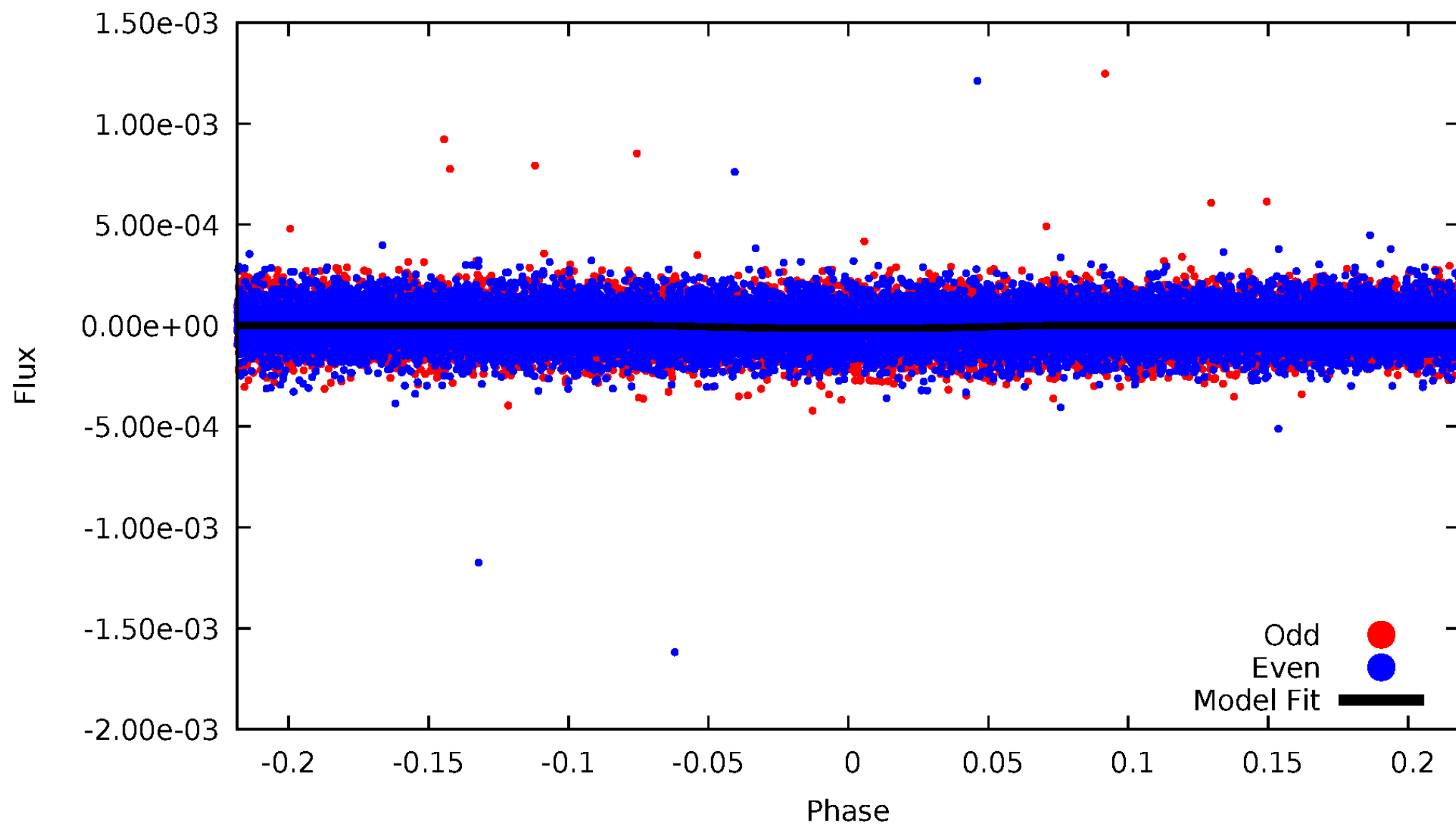


TCE 011821140-01



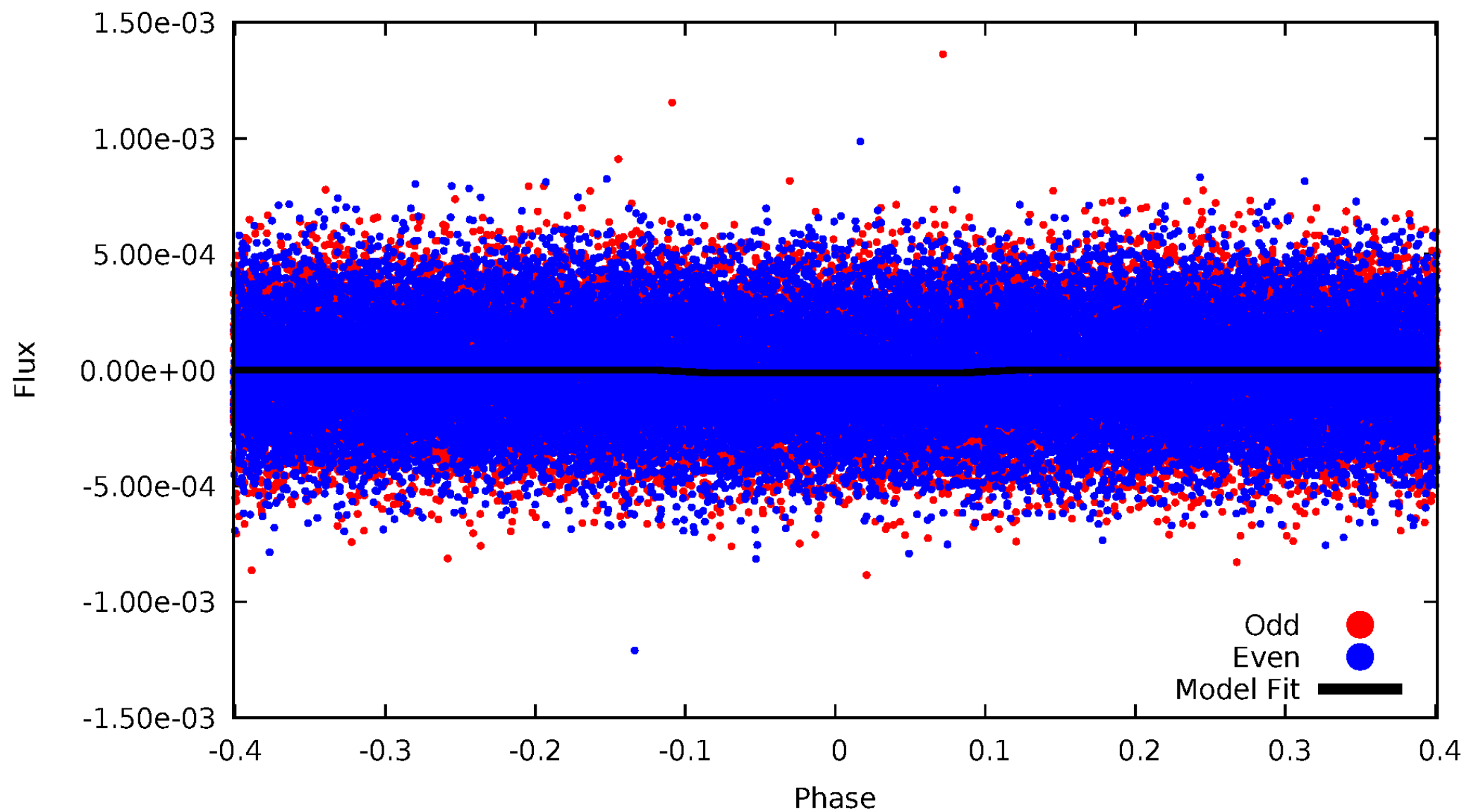
DV Odd/Even

TCE 011821140-01



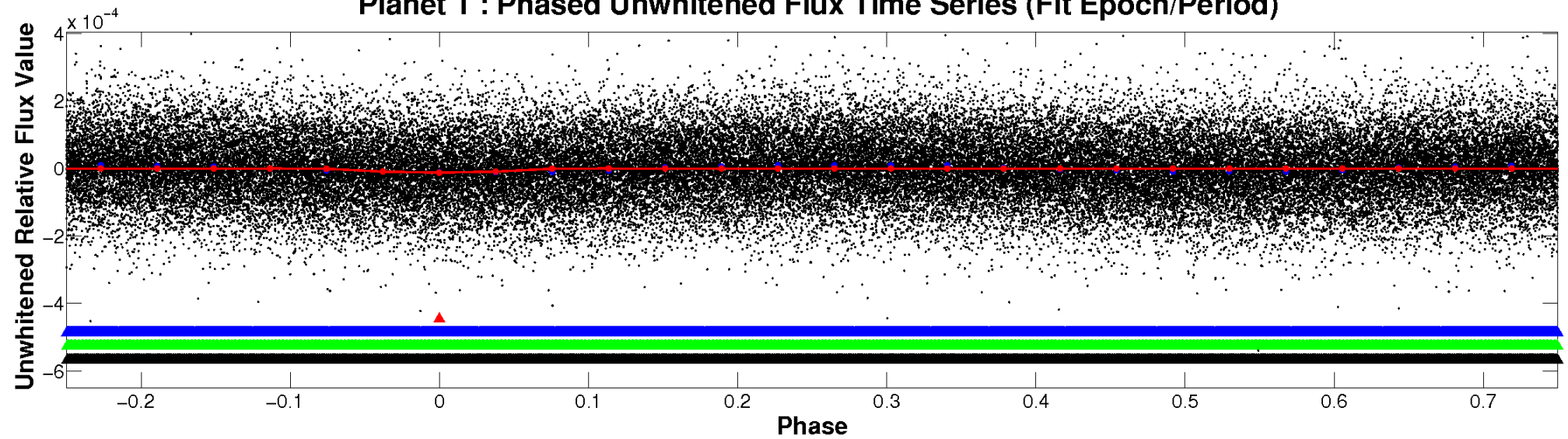
ALT Odd/Even

TCE 011821140-01

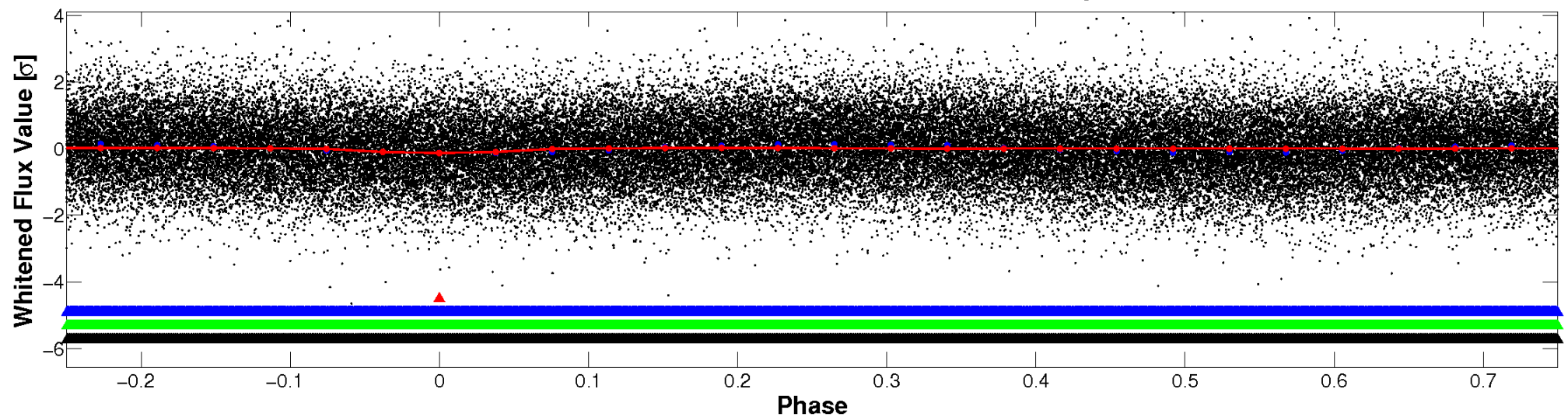


Non-Whitened Vs. Whitened Light Curve

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

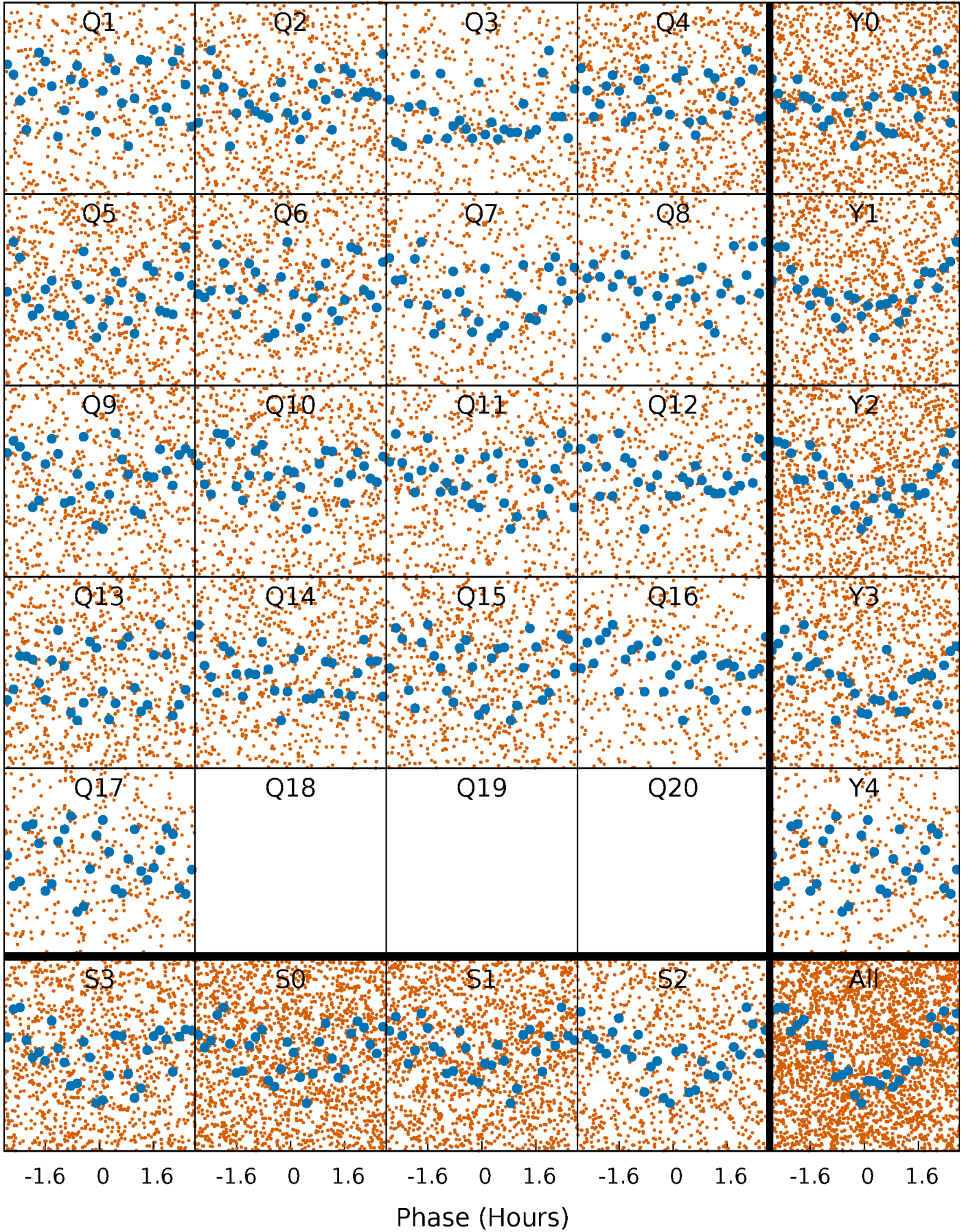


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



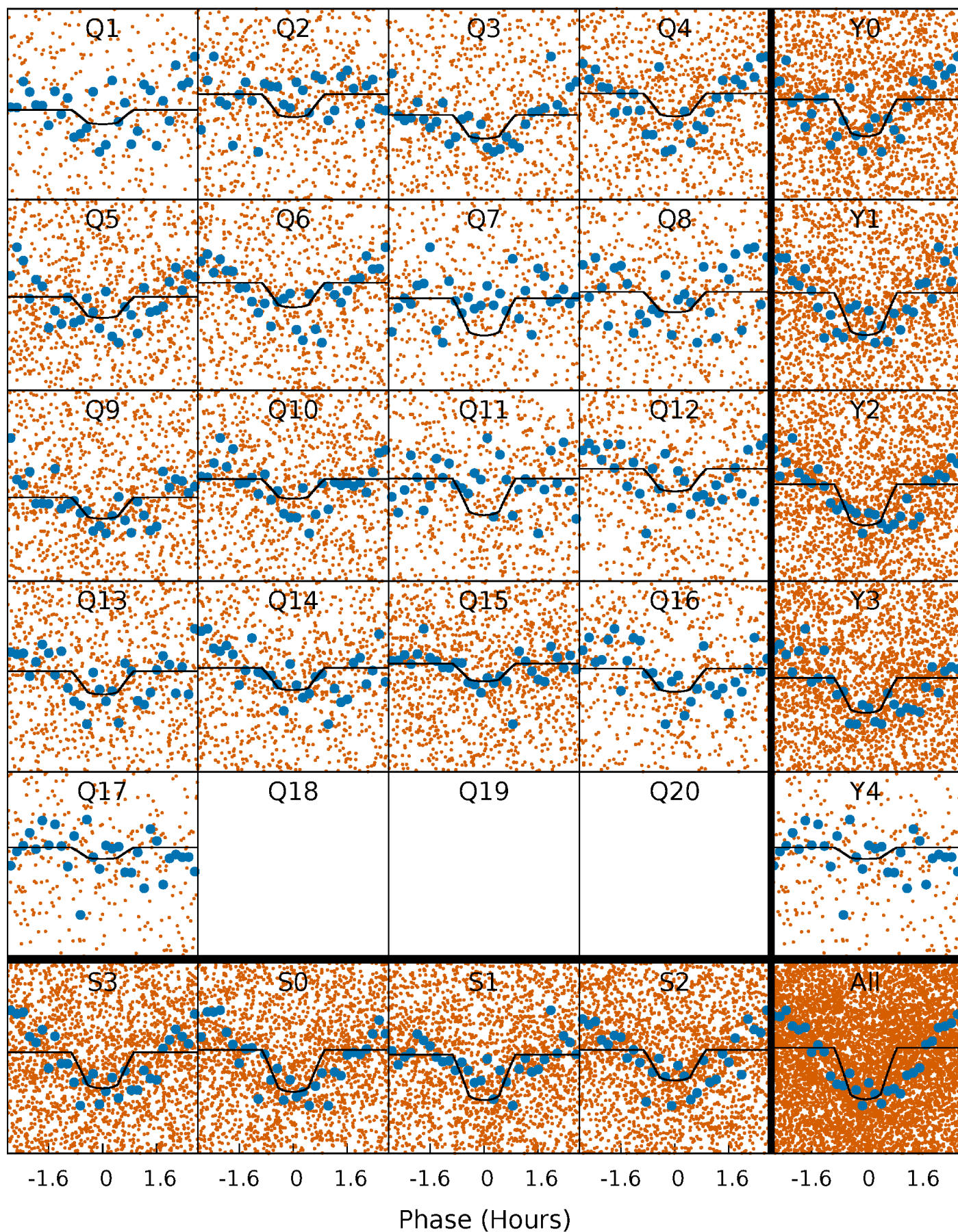
PDC Quarter-Phased Transit Curves

TCE 011821140-01 P= 0.539959 Days $T_0=131.974420$ (BKJD)



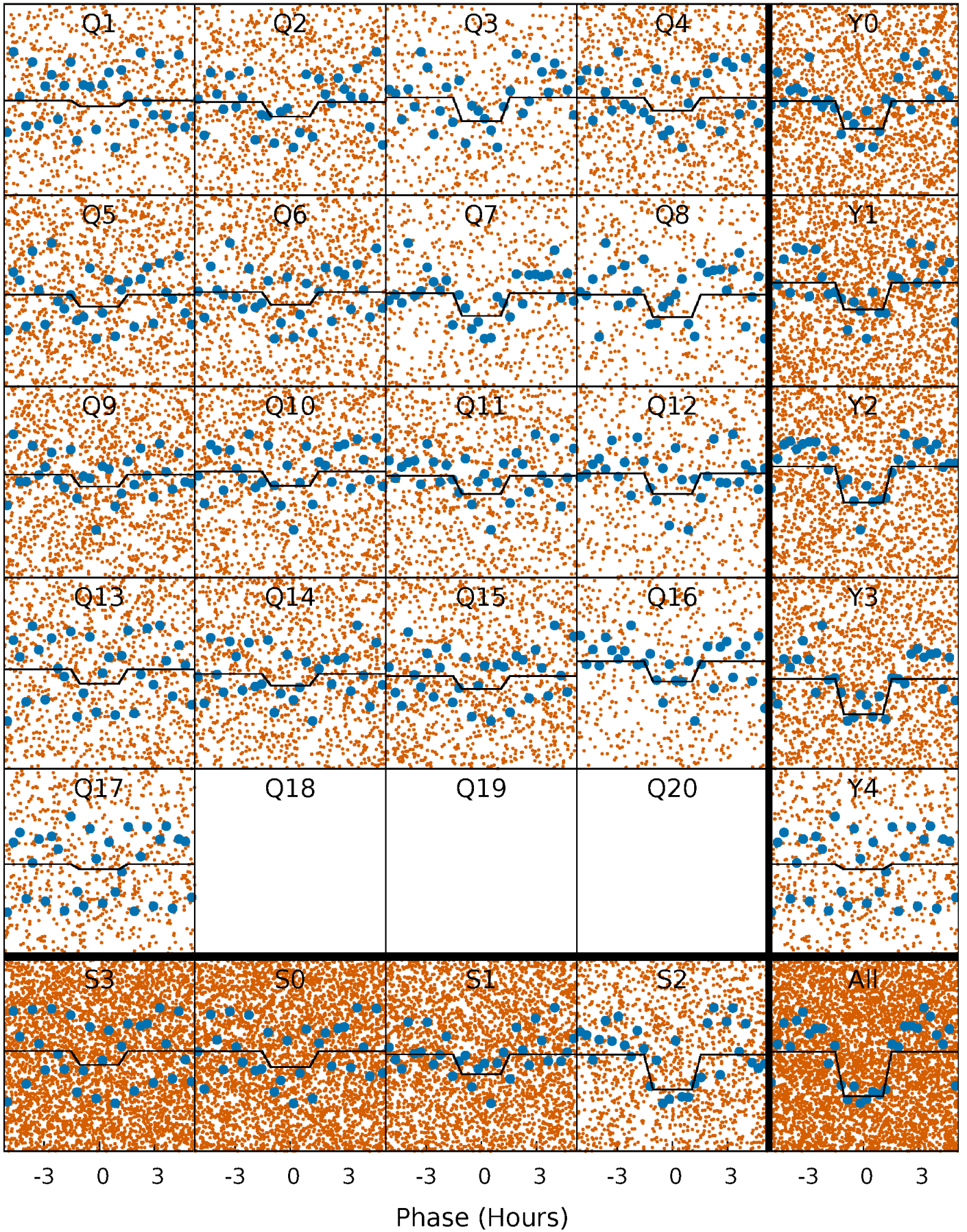
DV Quarter-Phased Transit Curves

TCE 011821140-01 P= 0.539959 Days $T_0=131.974420$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

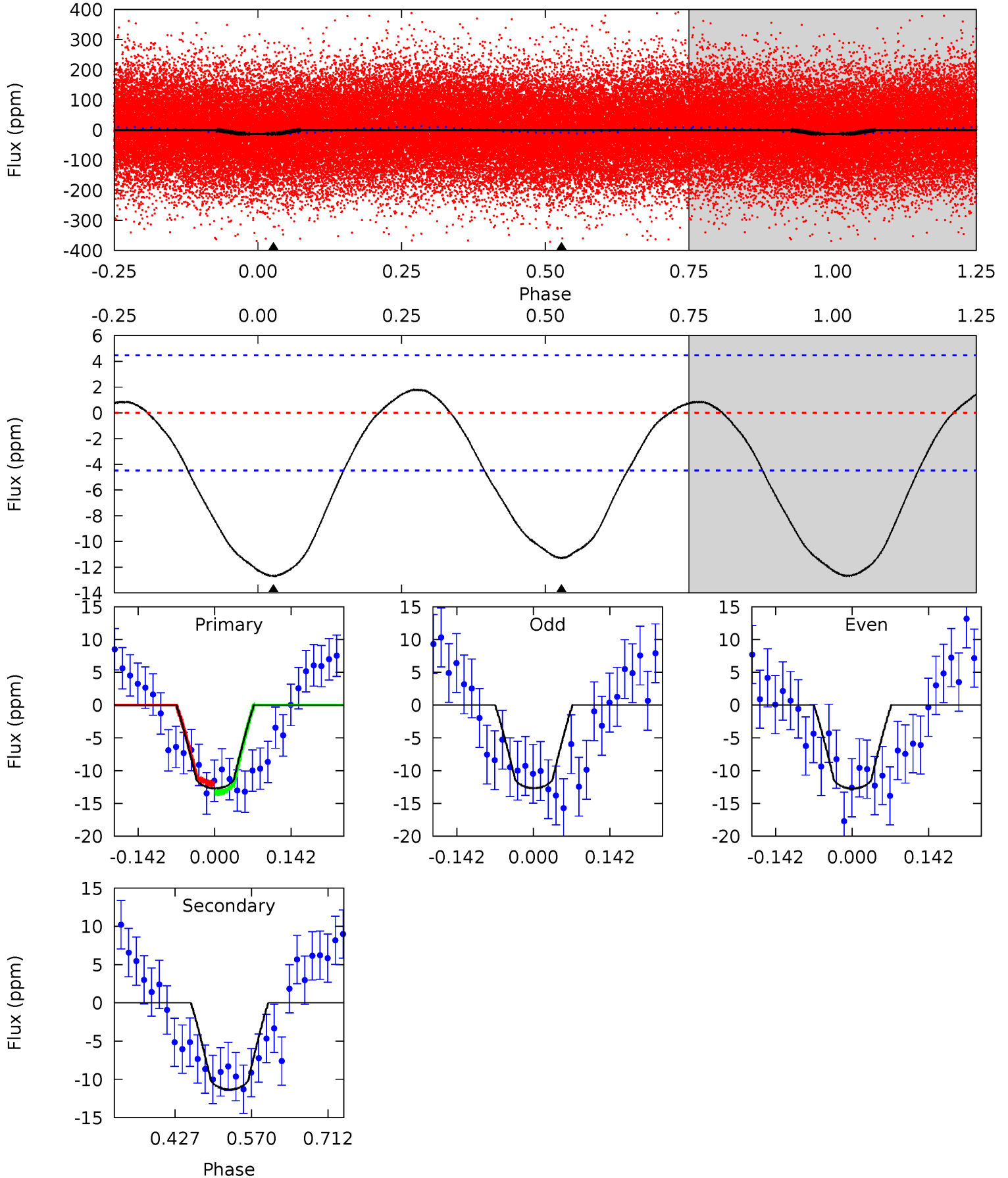
TCE 011821140-01 P= 0.539967 Days $T_0=131.973561$ (BKJD)



DV Model-Shift Uniqueness Test

011821140-01, P = 0.539959 Days, E = 131.434461 Days

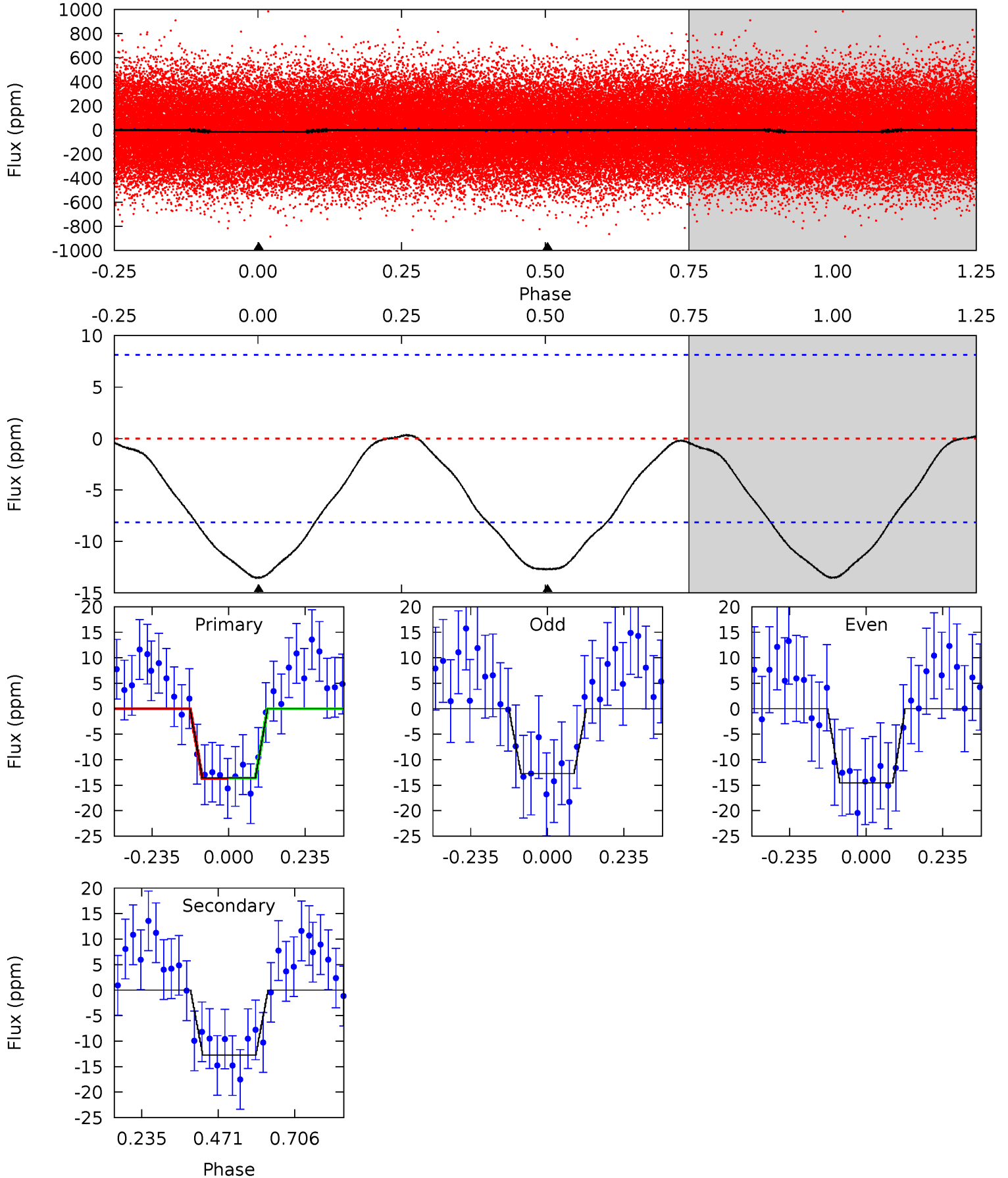
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	11.3	0	0	4.49	1.47	1.57	12.7	12.7	11.3	11.3	0.03	0.95	0.12	0.69



Alt Model-Shift Uniqueness Test

011821140-01, P = 0.539967 Days, E = 131.433594 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.30	6.86	0	0	4.38	1.19	0.22	7.30	7.30	6.86	6.86	0.49	0.97	0.03	0.04



Stellar Parameters For KIC 011821140

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8262^{+200}_{-372}	$3.738^{+0.420}_{-0.140}$	$-0.080^{+0.250}_{-0.350}$	$3.209^{+0.938}_{-1.524}$	$2.053^{+0.329}_{-0.493}$	$0.088^{+0.349}_{-0.036}$
	+2%/-5%	+11%/-4%	+312%/-438%	+29%/-47%	+16%/-24%	+399%/-41%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011821140-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-11 ± 1	$1.26^{+0.33}_{-0.34}$	6898^{+583}_{-773}	6871^{+1229}_{-835}	$1.052^{+0.876}_{-0.358}$
Alt.	-13 ± 2	$1.16^{+0.33}_{-0.35}$	6828^{+618}_{-894}	7520^{+1455}_{-1060}	$1.395^{+1.424}_{-0.535}$

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

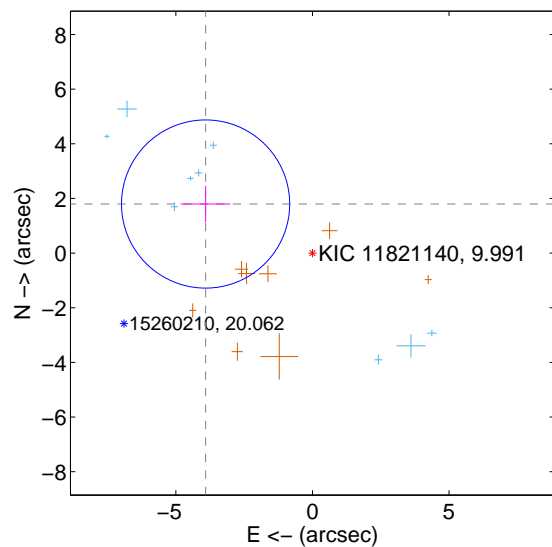
Supplemental centroid analysis for 011821140-01. **Kepler magnitude: 9.99.** Transit SNR 10.02

There are 9 quarters with good PRF difference image offsets

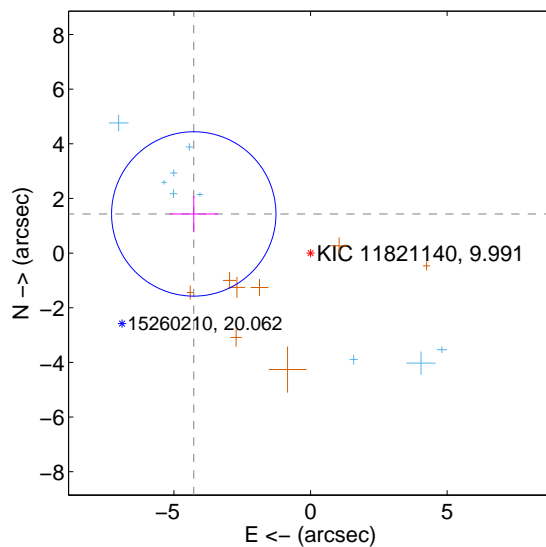
The direct PRF centroid is offset from the target star catalog position by about 0.77 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.304 ± 1.026	4.20	3.911 ± 0.909	1.796 ± 0.667
PRF-fit source offset from KIC position	4.507 ± 1.003	4.50	4.274 ± 0.893	1.433 ± 0.667
photometric centroid source offset	0.54 ± 0.75	0.71	-0.54 ± 0.75	0.02 ± 0.64

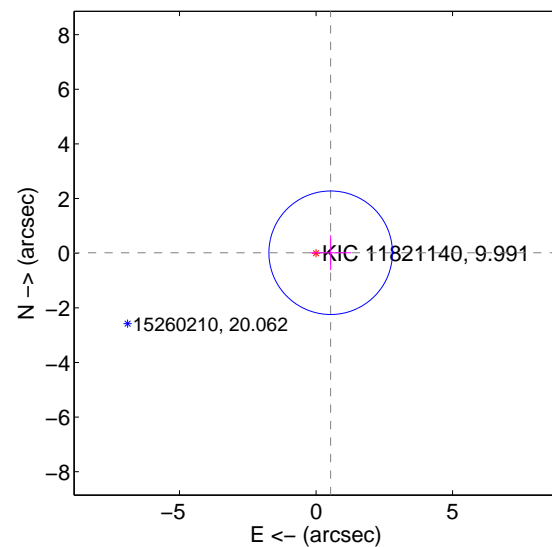
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

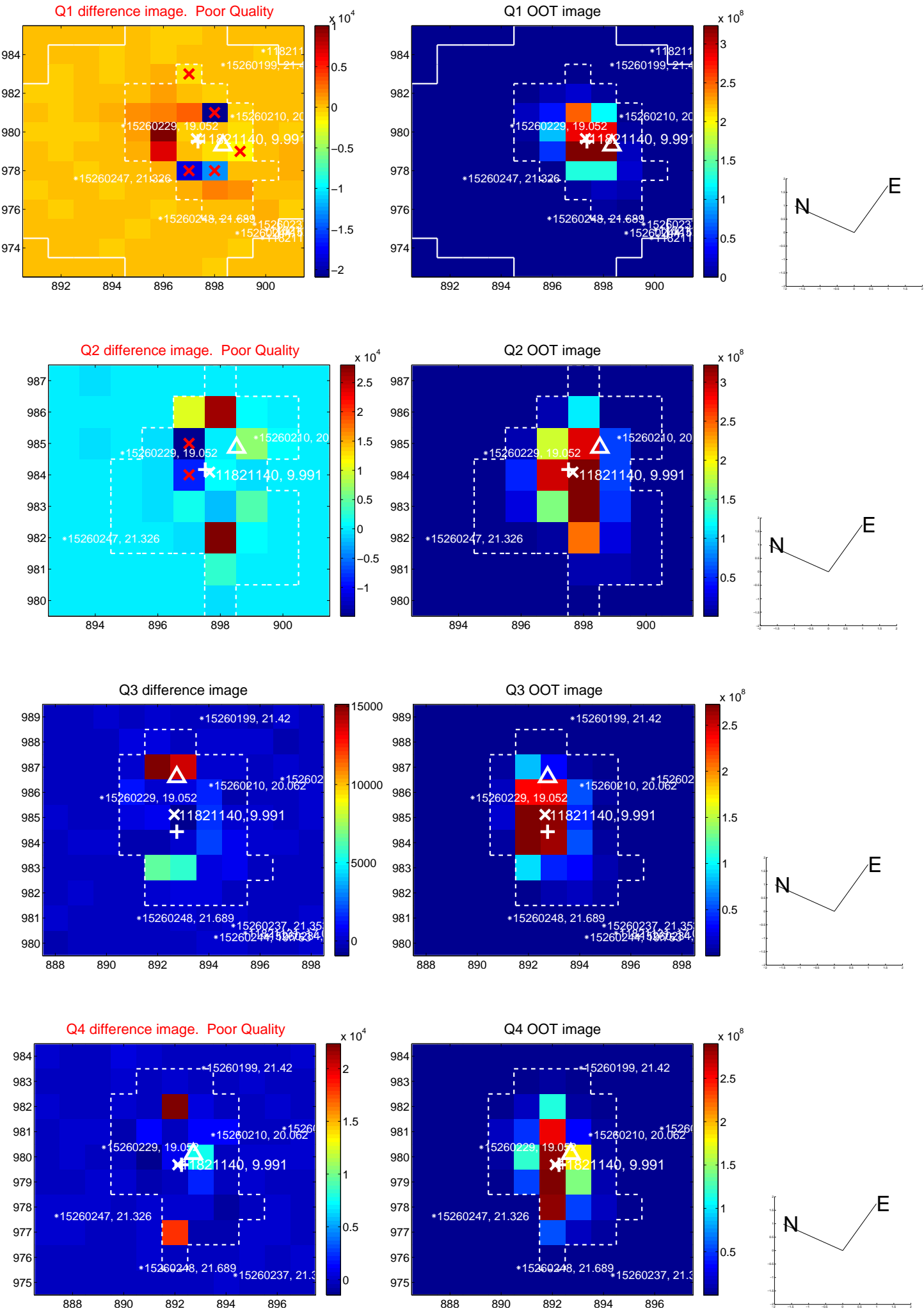


offset from photometric centroids

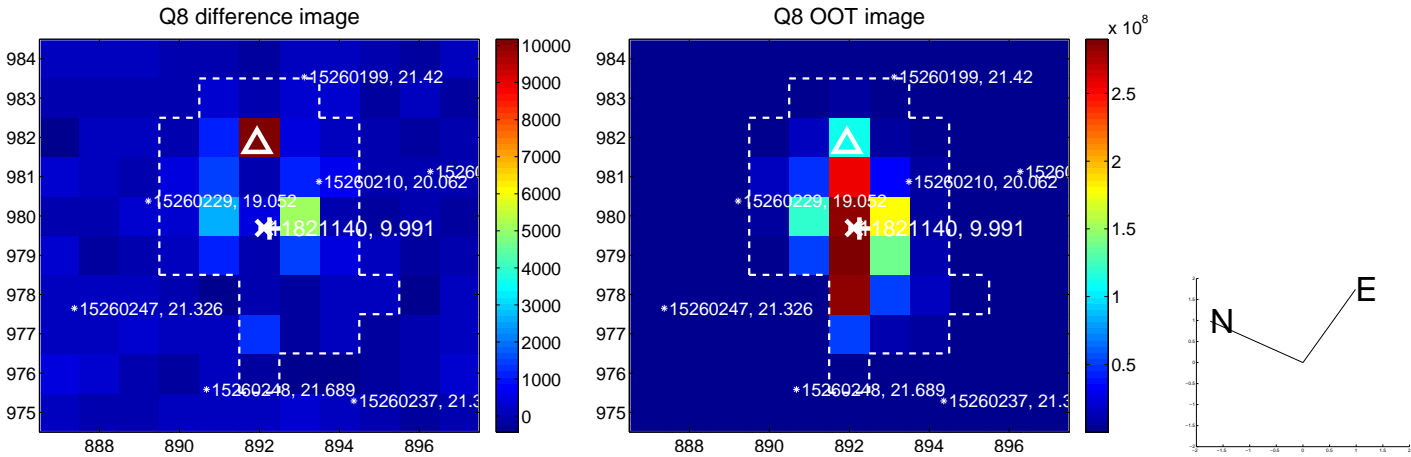
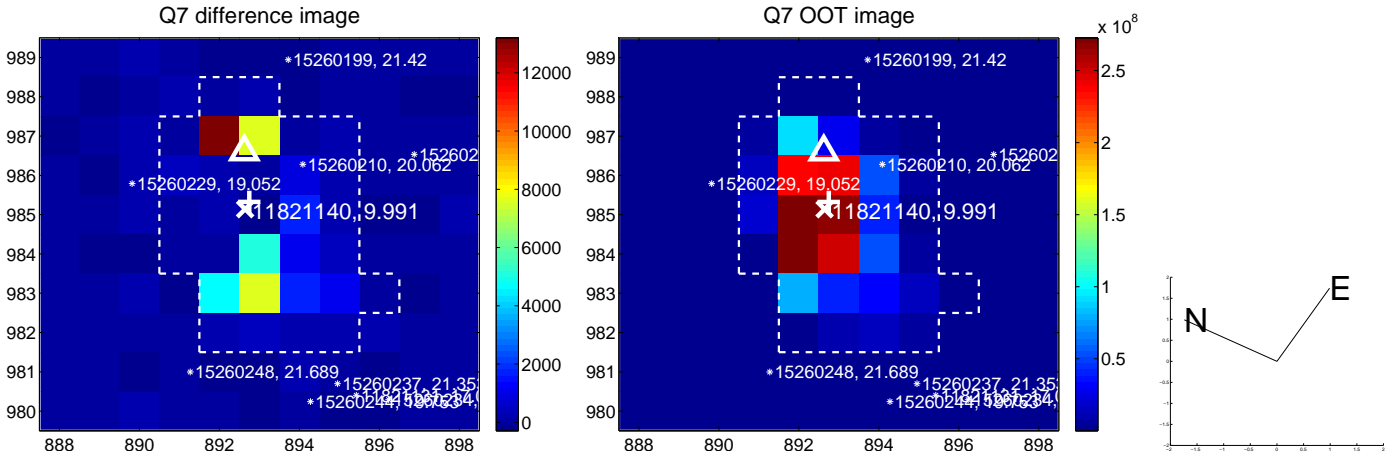
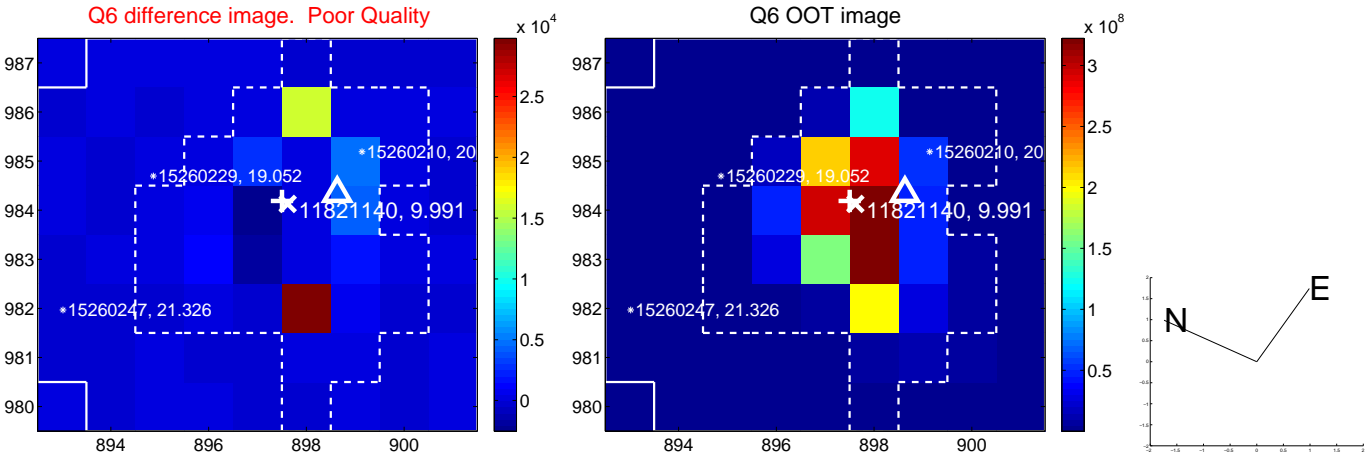
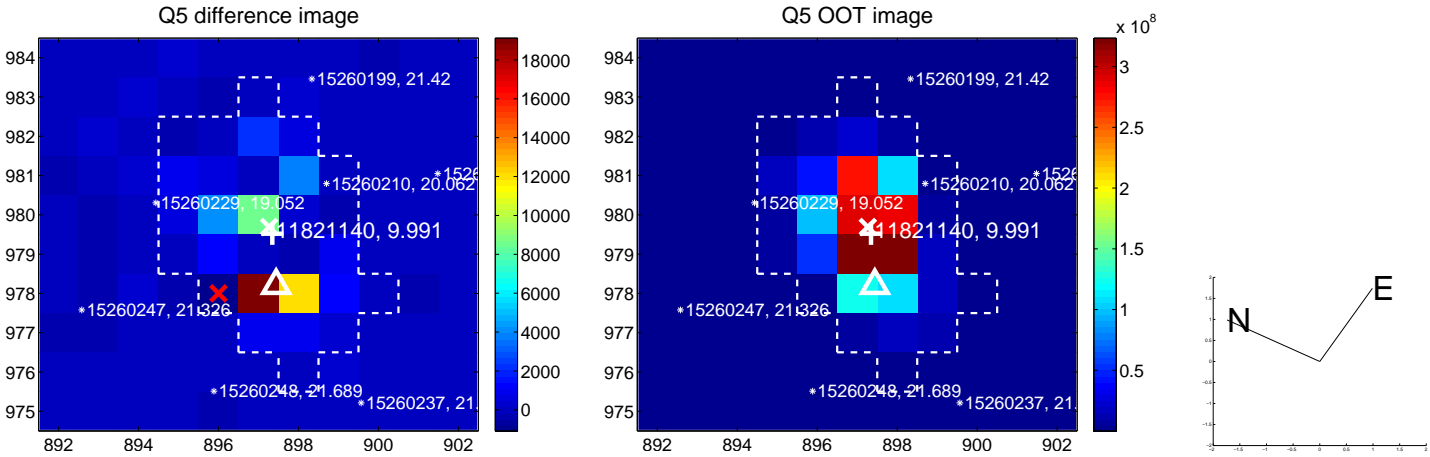


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

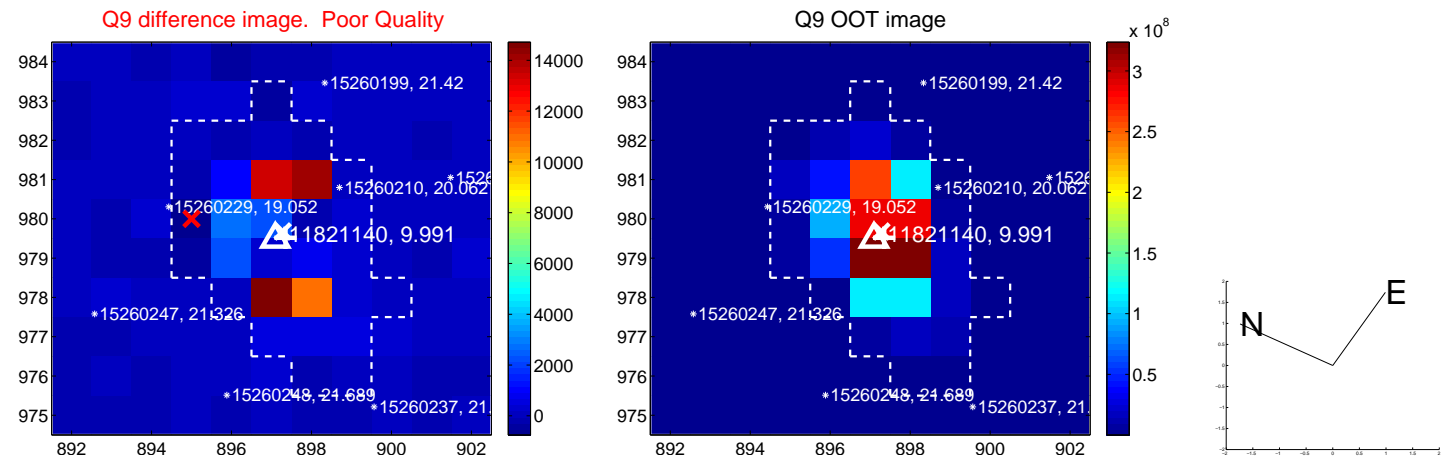
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



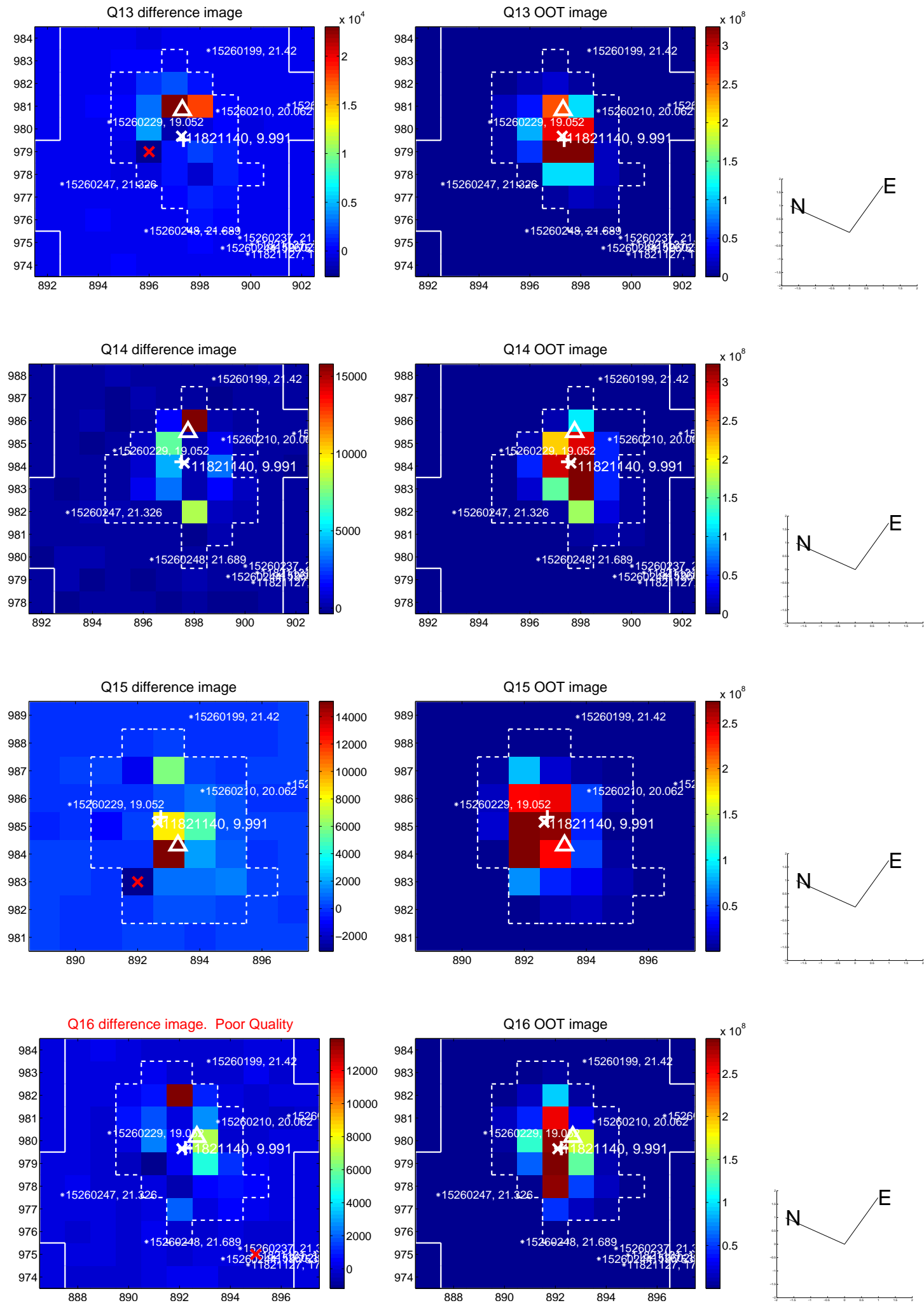
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



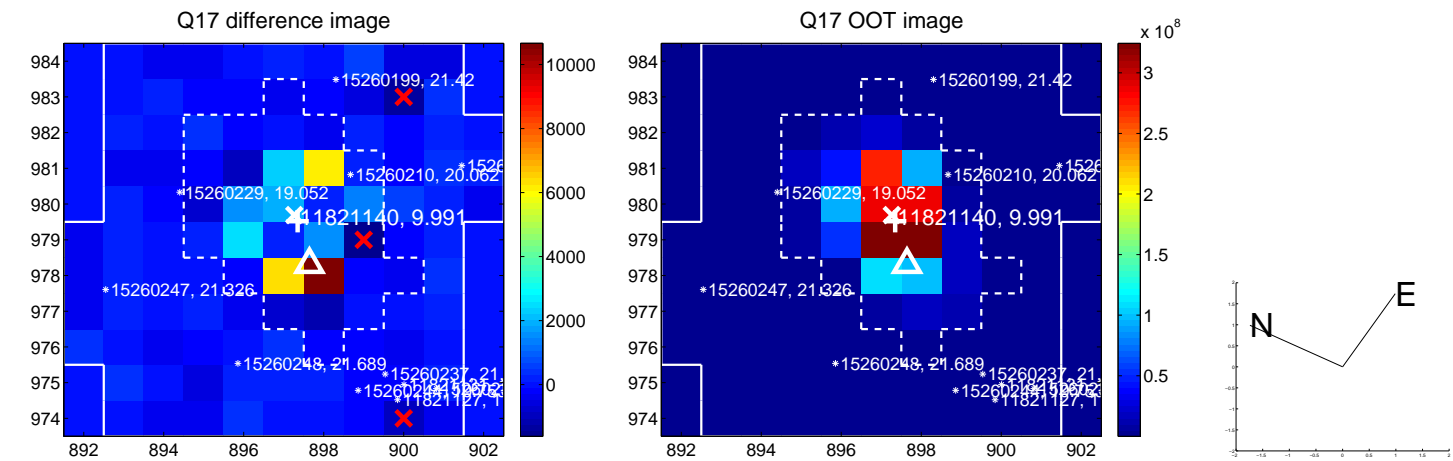
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



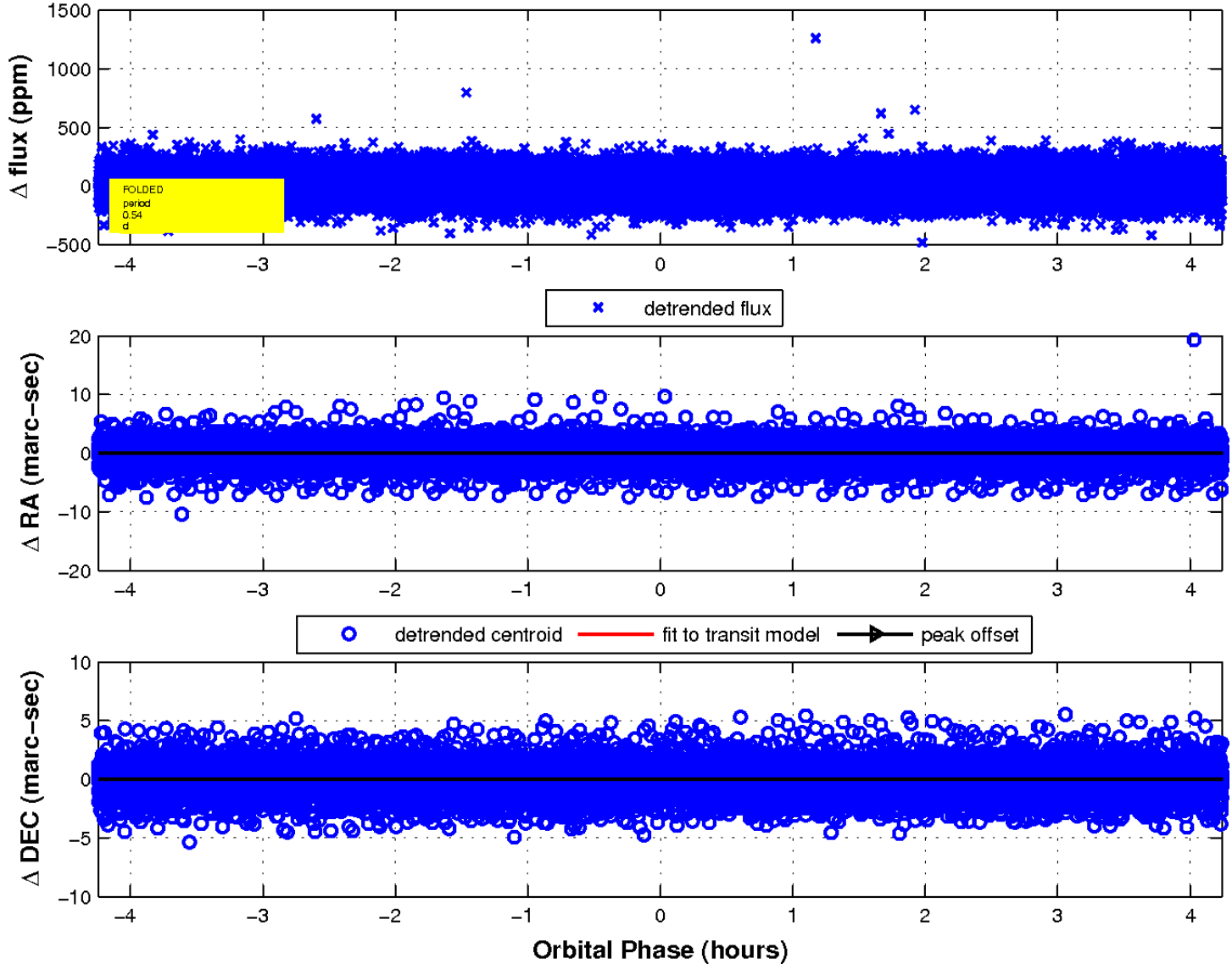
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



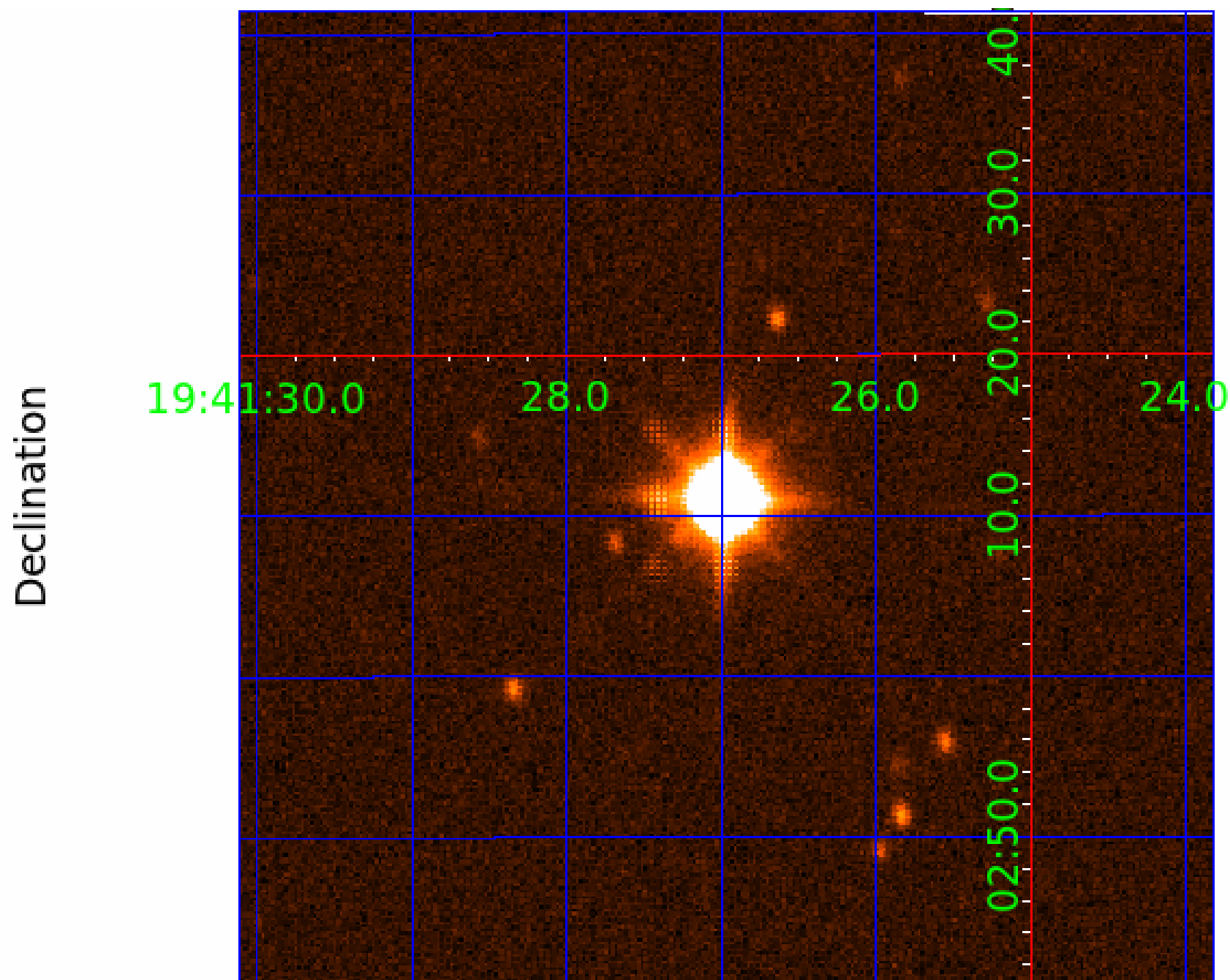
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 4



UKIRT Image



KIC 011821140

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})
011821140-01	OBS	No	0.539959	131.974420	12.5	1.414	13.5	10.0	3.21	8262	1.32	157882.31
011821140-02	OBS	No	0.505781	131.570825	72.4	0.696	12.7	30.7	3.21	8262	2.98	172265.67
011821140-03	OBS	No	0.505781	131.740210	79.4	0.678	14.7	34.2	3.21	8262	3.02	172265.57
011821140-04	OBS	No	0.505775	131.911369	50.3	0.964	18.5	27.5	3.21	8262	2.67	172268.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011821140-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED
011821140-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011821140-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
011821140-04	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED

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

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

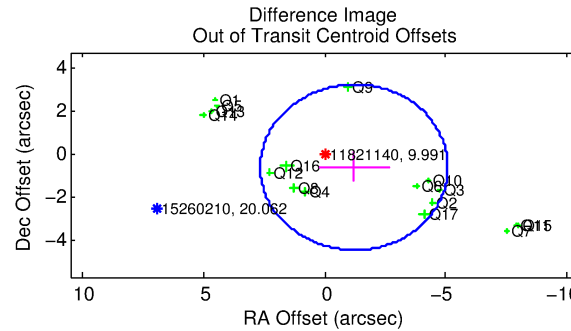
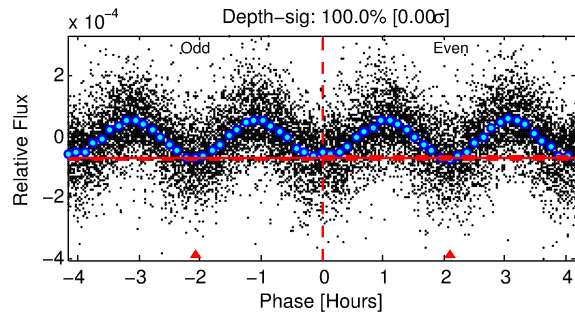
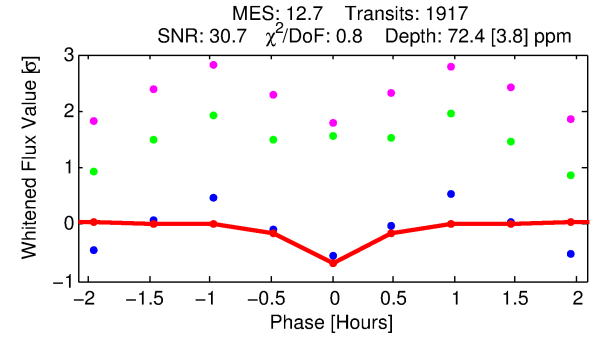
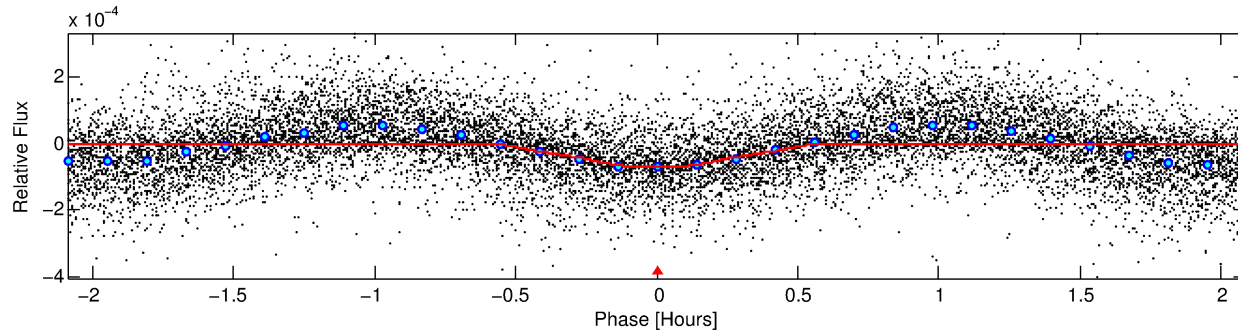
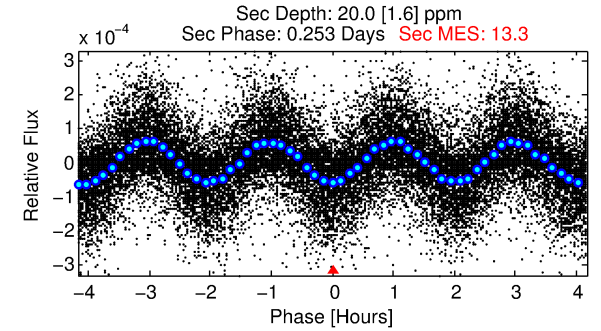
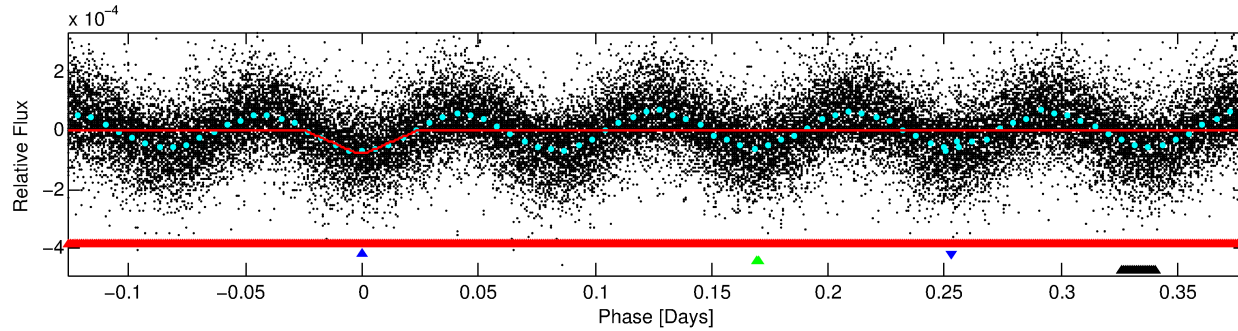
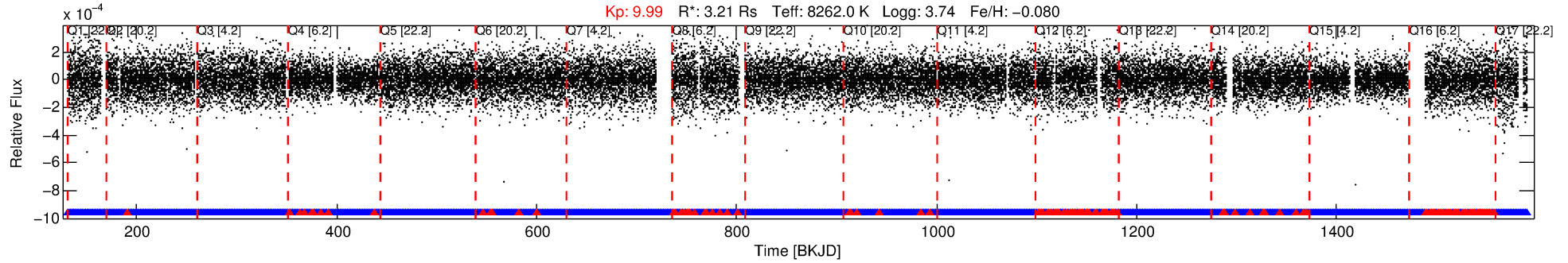
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011821140-02

No Significant Match Found

DV One-Page Summary

KIC: 11821140 Candidate: 2 of 4 Period: 0.506 d



DV Fit Results:

Period = 0.50578 [0.00000] d
Epoch = 131.5708 [0.0005] BKJD
Rp/R* = 0.0085 [0.0008]
a/R* = 4.11 [2.18]
b = 0.70 [0.41]
Seff = 172265.67 [127563.52]
Teq = 5195 [962] K
Rp = 2.98 [1.44] Re
a = 0.0158 [0.0071] AU
Ag = 0.31 [0.23] [-2.96σ]
Teffp = 5997 [418] K [0.77σ]

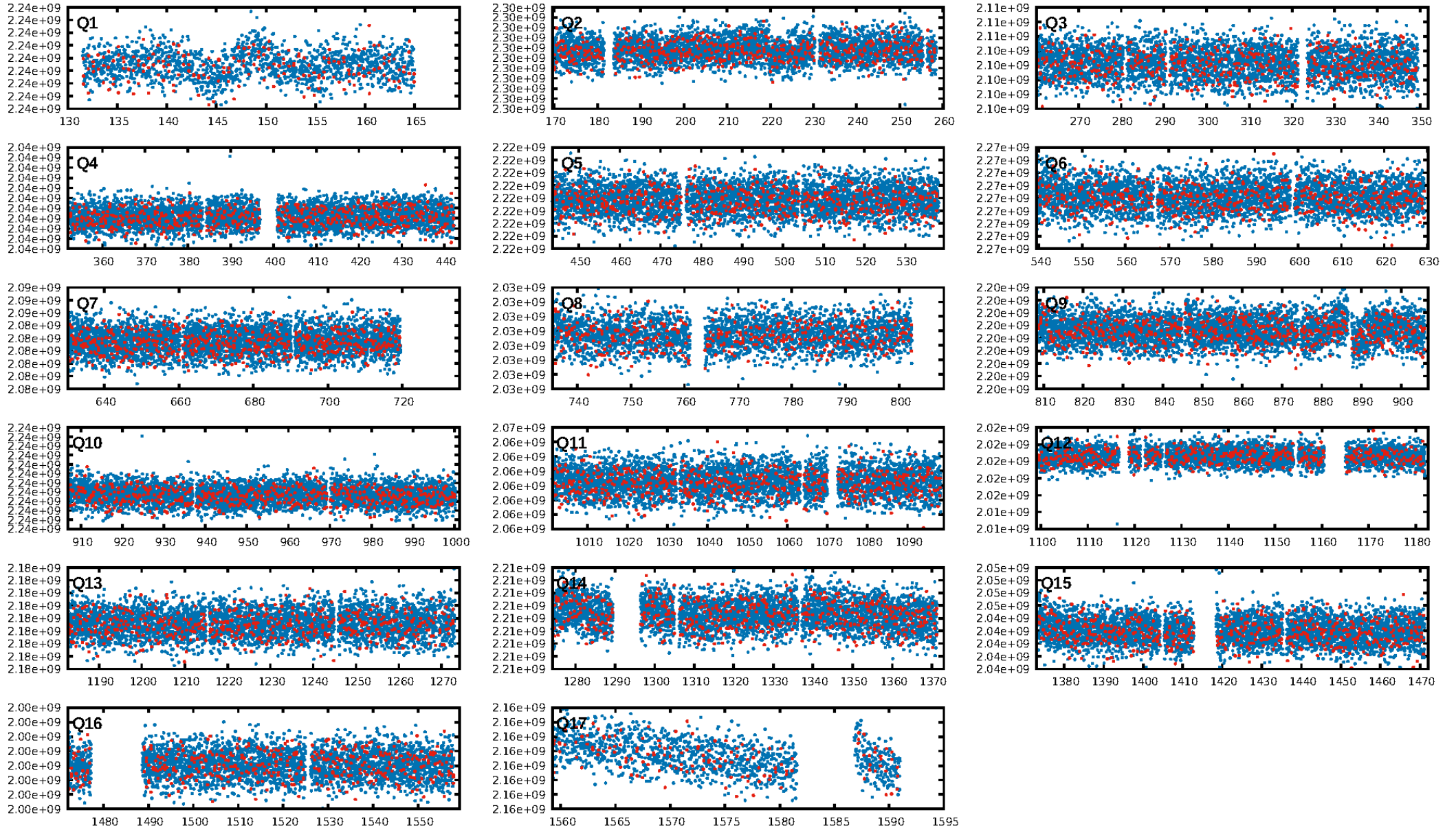
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.89 [1632/1835]
GhostDiagnostic-chr: N/A
Centroid-sig: 58.8%
Centroid-so: 0.721 arcsec [4.36σ]
OotOffset-rm: 1.367 arcsec [1.06σ]
KicOffset-rm: 1.677 arcsec [1.40σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.12 [2/17]
DiffImageOverlap-fno: 0.00 [0/17]

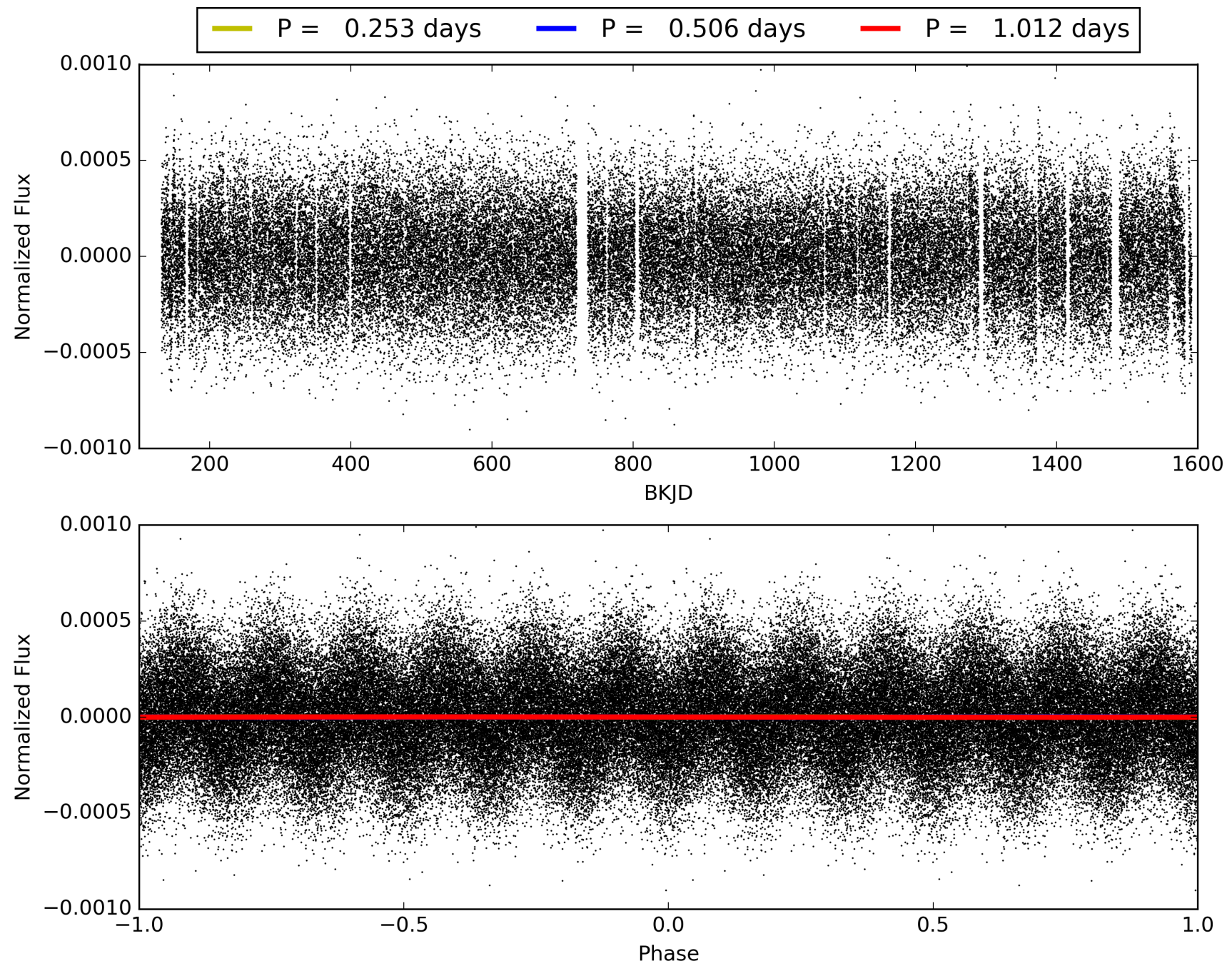
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:43:42 Z

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

TCE 011821140-02, PDC Light Curves

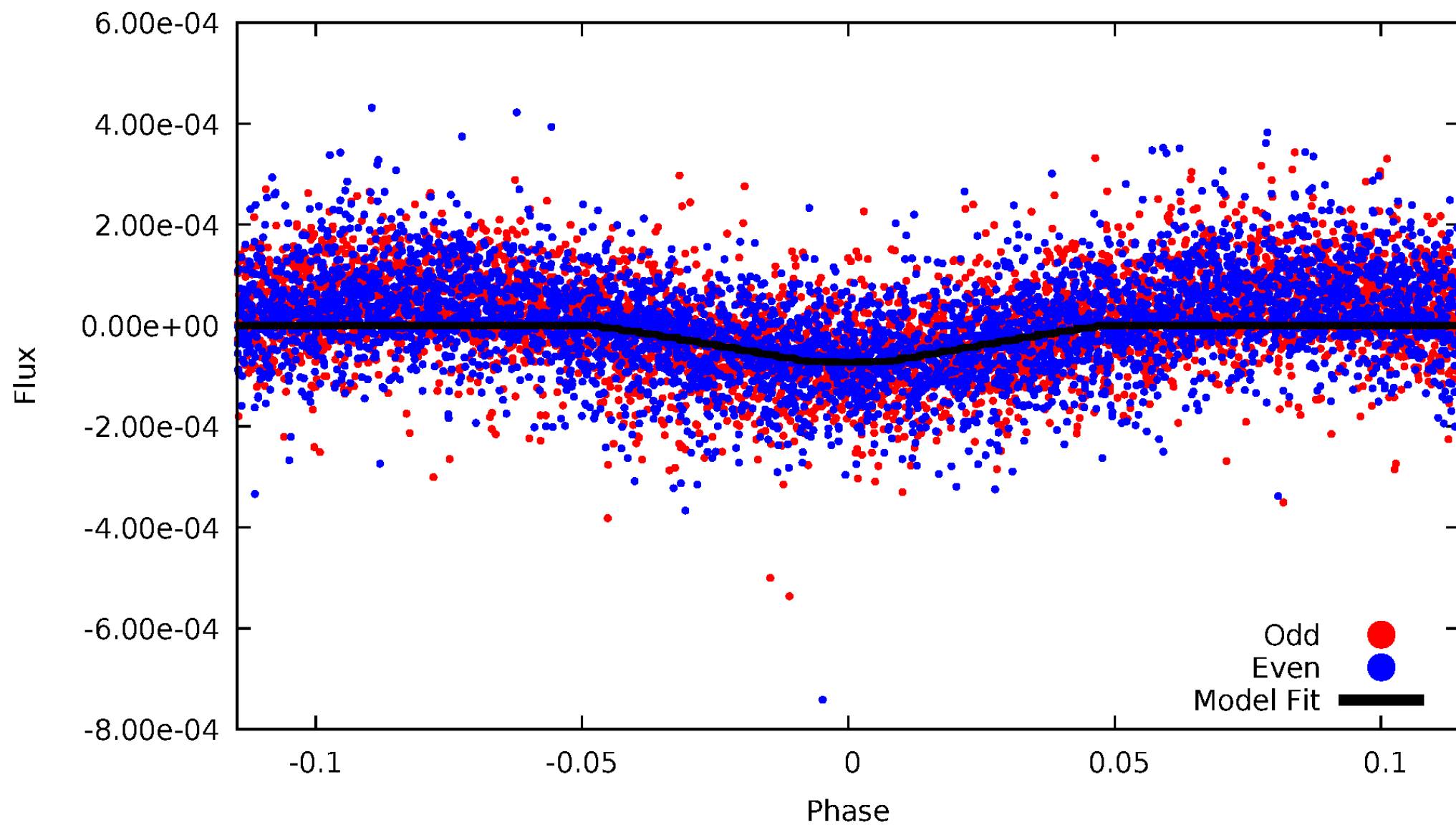


TCE 011821140-02



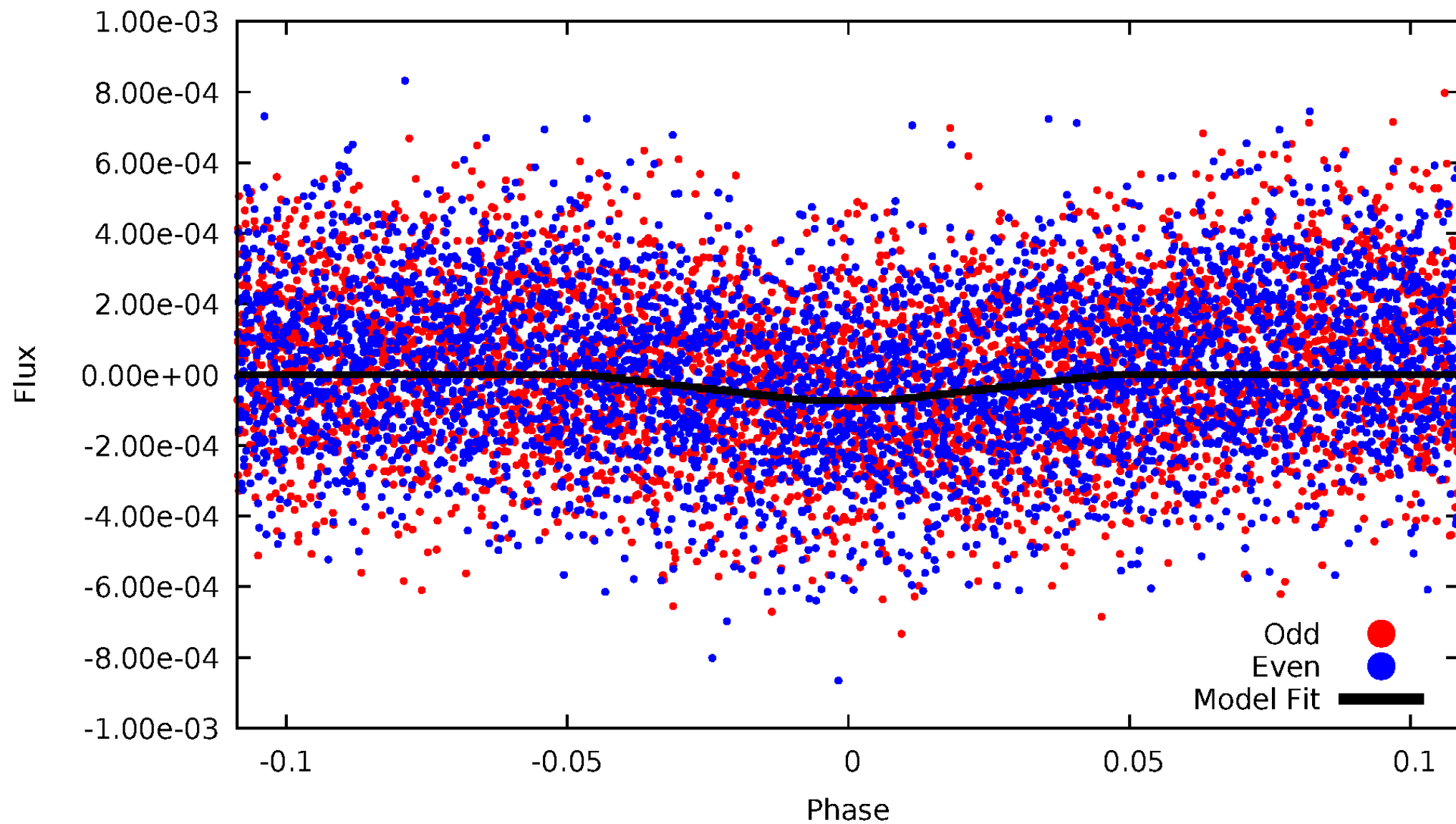
DV Odd/Even

TCE 011821140-02



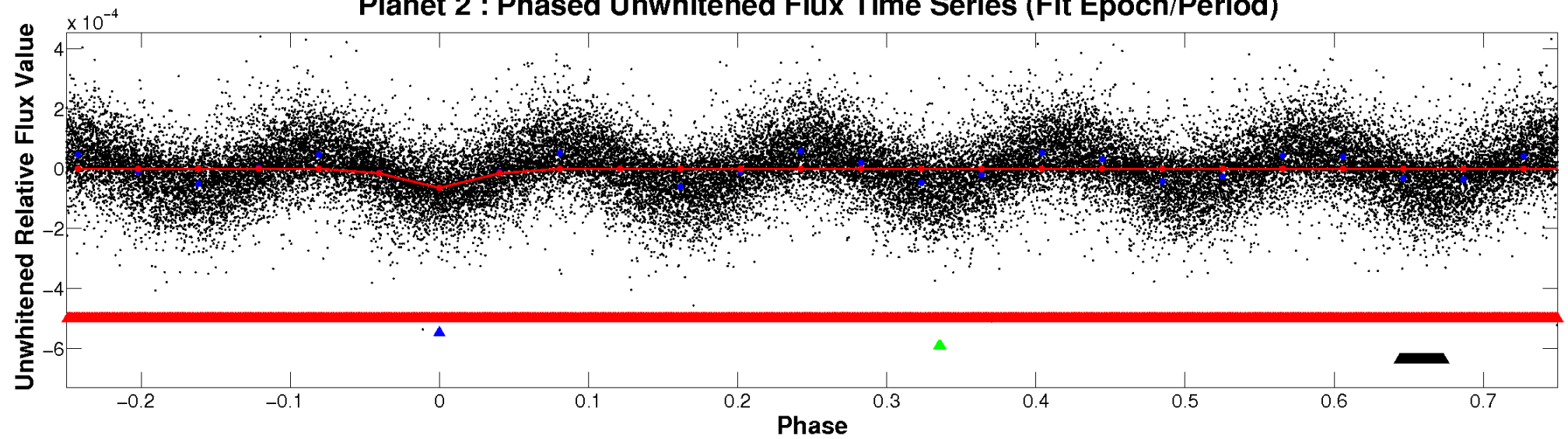
ALT Odd/Even

TCE 011821140-02

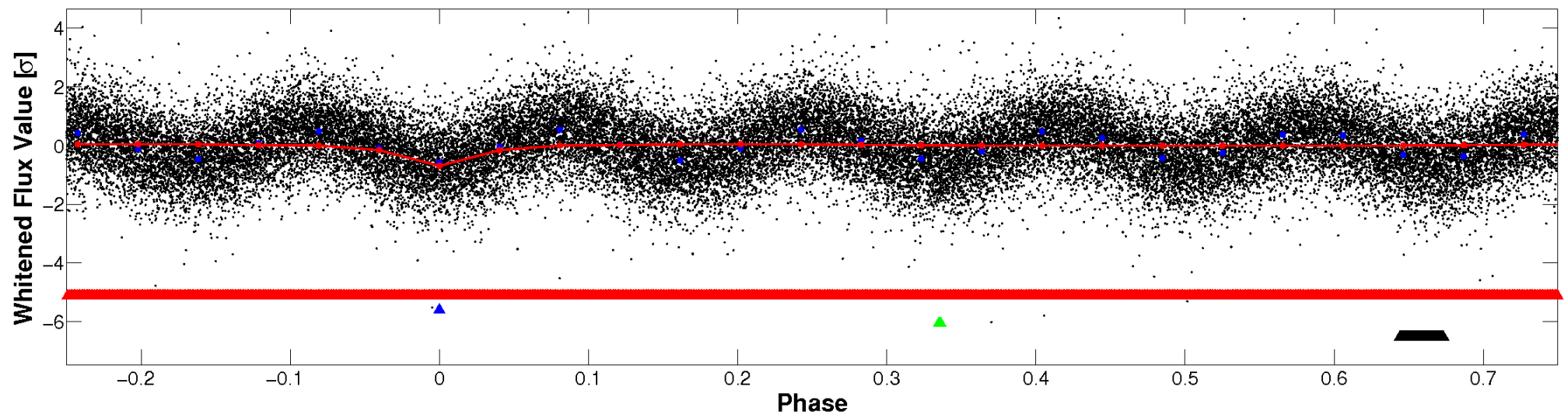


Non-Whitened Vs. Whitened Light Curve

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

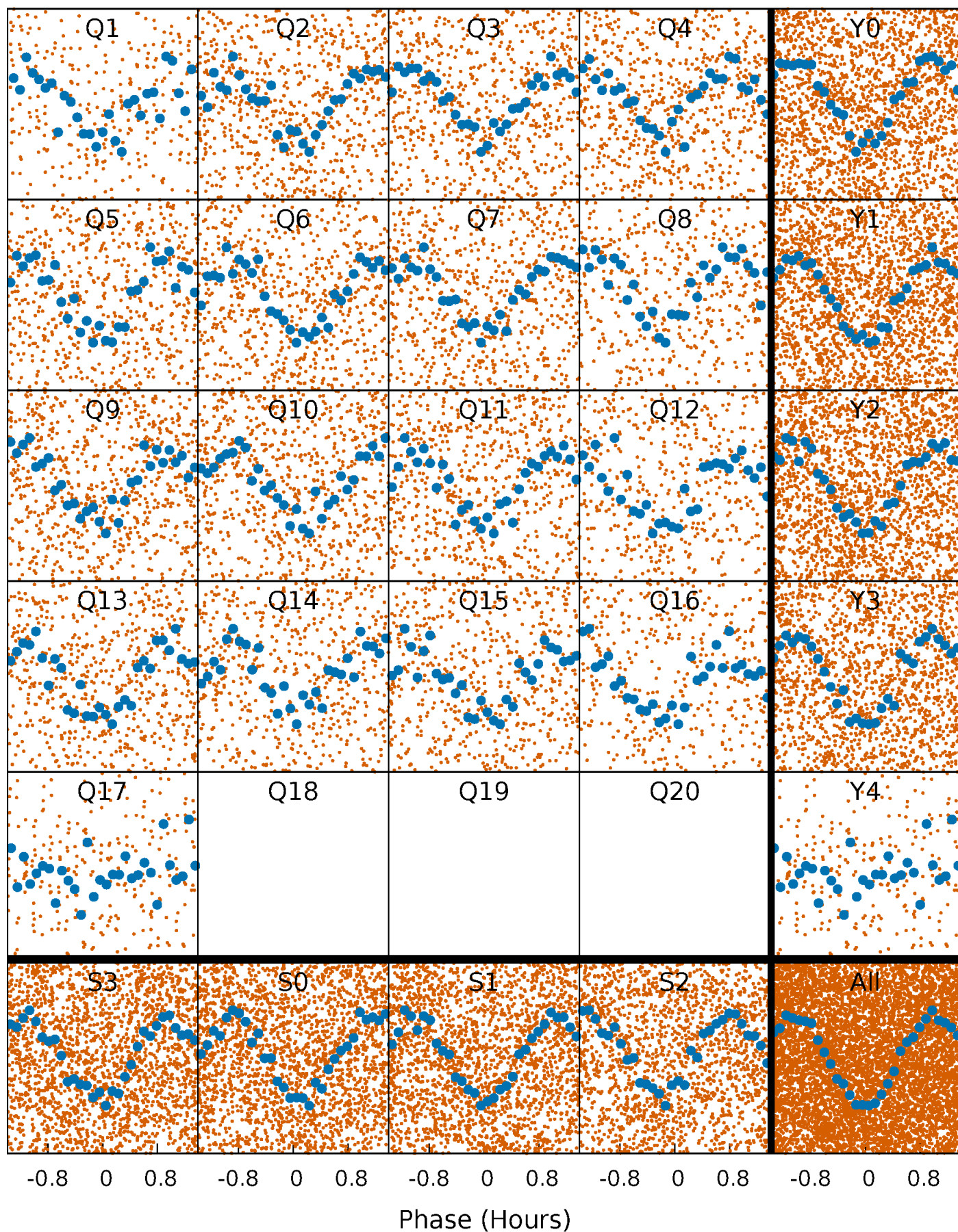


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



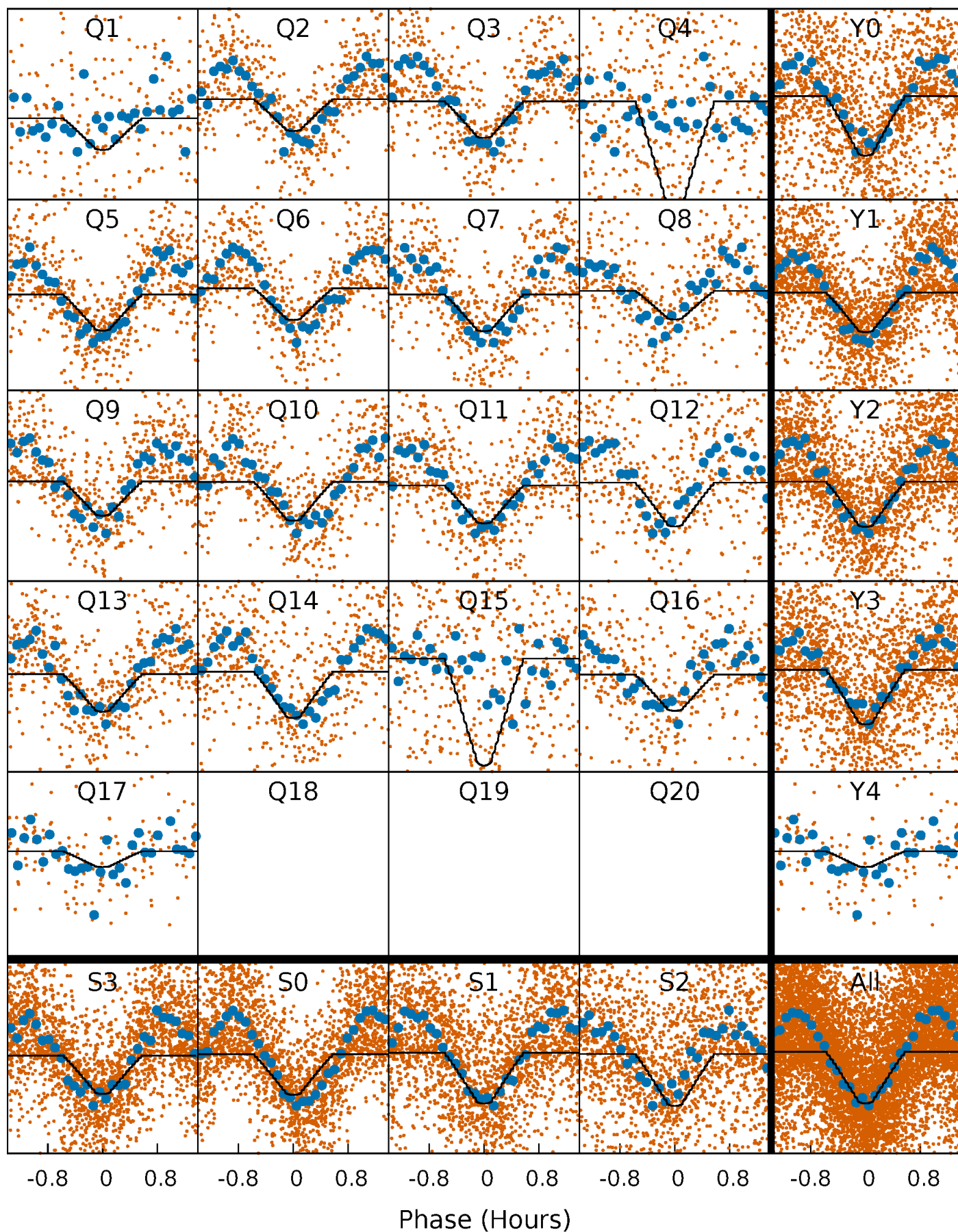
PDC Quarter-Phased Transit Curves

TCE 011821140-02 P= 0.505781 Days $T_0=131.570825$ (BKJD)



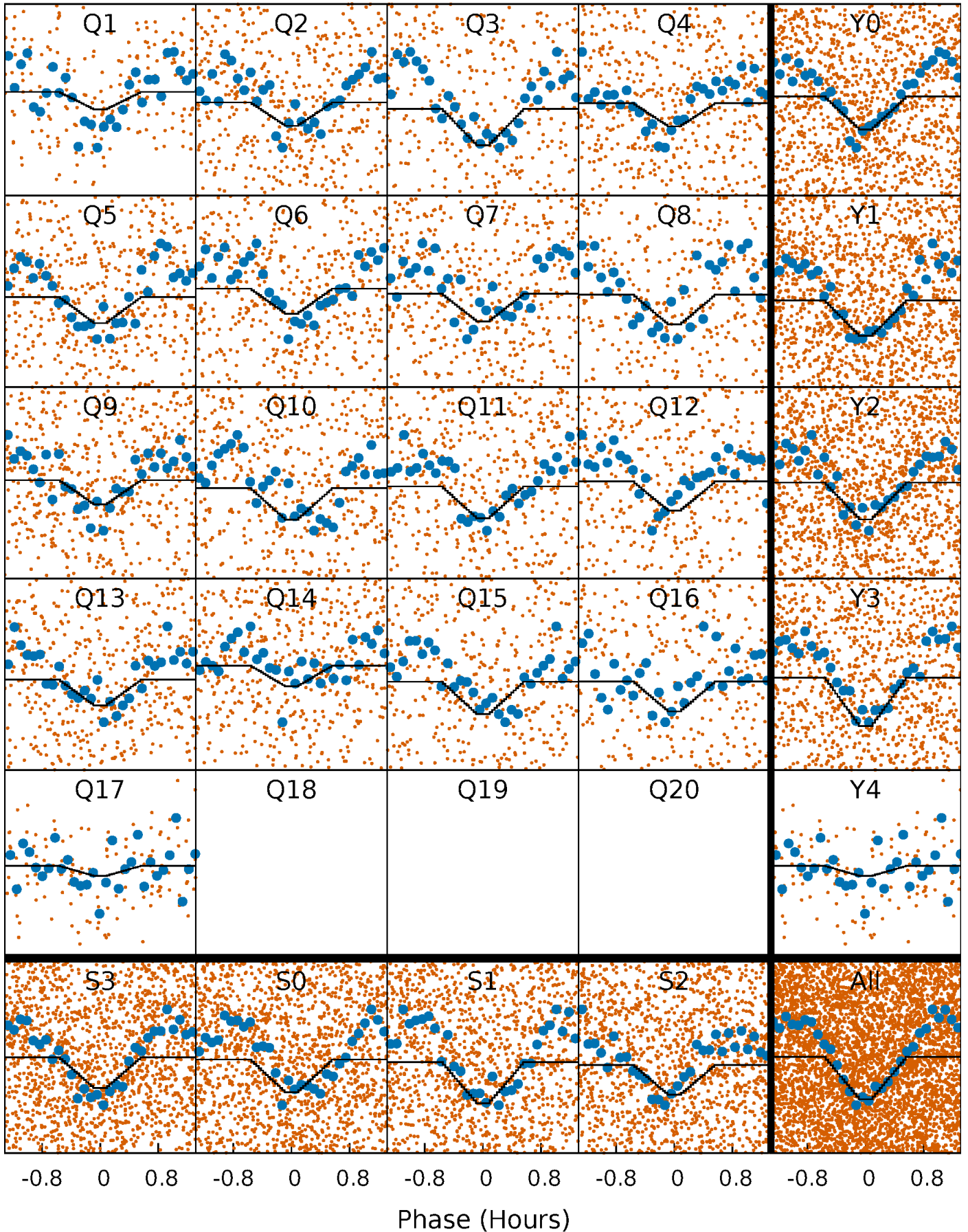
DV Quarter-Phased Transit Curves

TCE 011821140-02 P= 0.505781 Days $T_0=131.570825$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

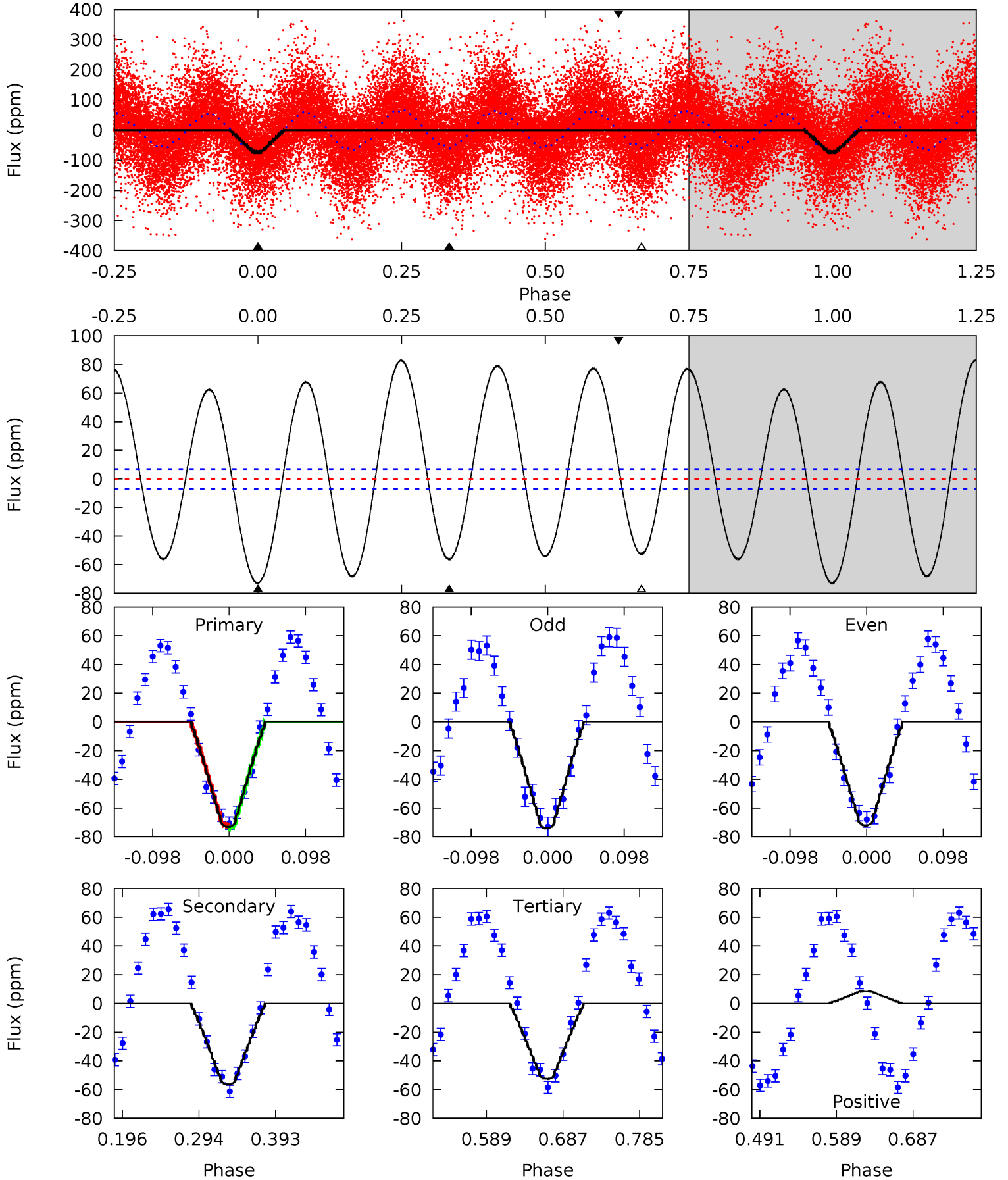
TCE 011821140-02 P= 0.505779 Days $T_0=131.570684$ (BKJD)



DV Model-Shift Uniqueness Test

011821140-02, P = 0.505781 Days, E = 131.065044 Days

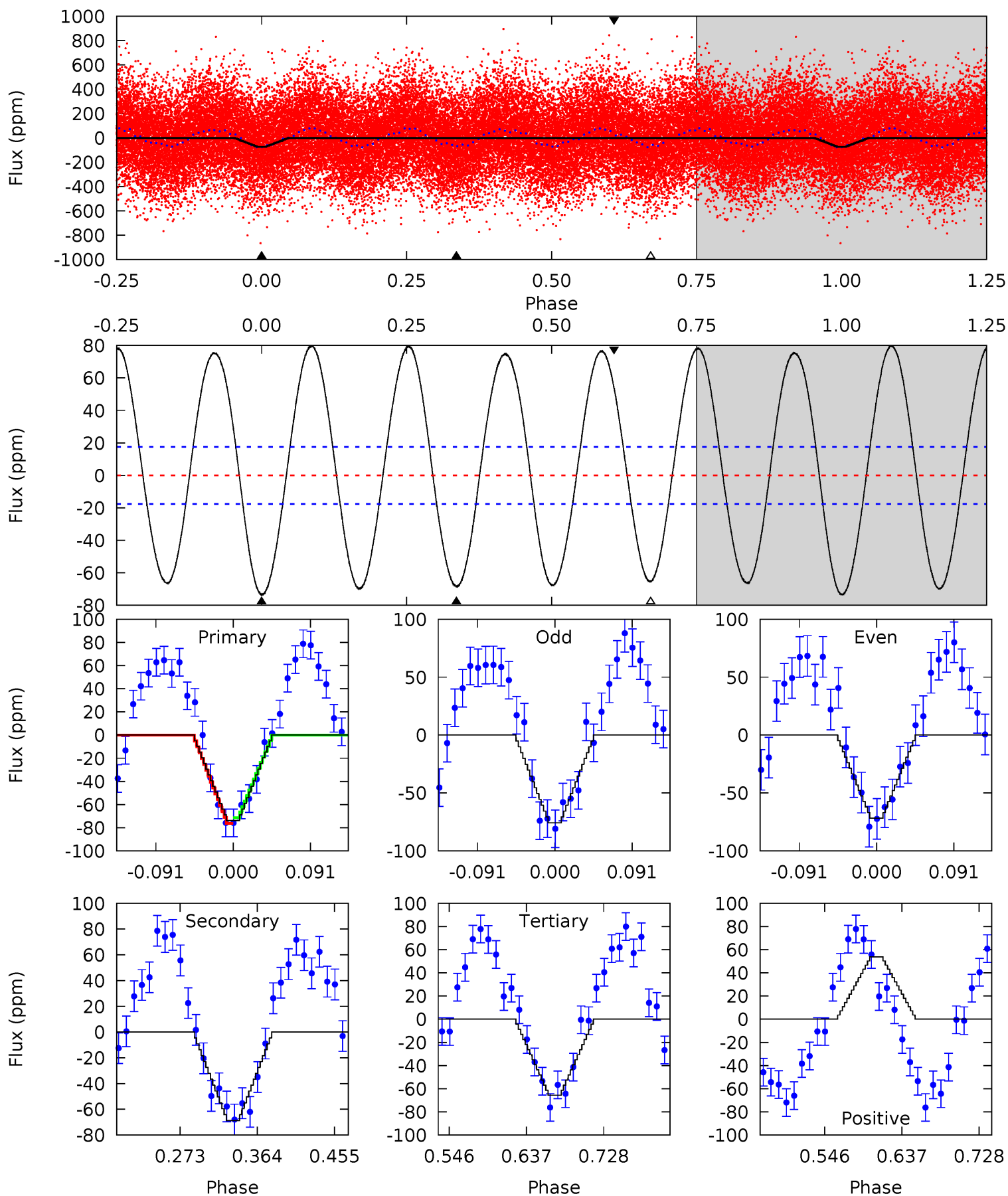
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
48.7	37.6	35.0	5.65	4.57	1.65	30.2	13.7	43.1	2.54	31.9	0.67	1.01	0.53	0.72



Alt Model-Shift Uniqueness Test

011821140-02, P = 0.505779 Days, E = 131.064905 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.2	17.9	17.1	14.0	4.58	1.69	13.0	2.11	5.19	0.81	3.88	0.52	1.03	0.52	0.64



Stellar Parameters For KIC 011821140

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8262^{+200}_{-372}	$3.738^{+0.420}_{-0.140}$	$-0.080^{+0.250}_{-0.350}$	$3.209^{+0.938}_{-1.524}$	$2.053^{+0.329}_{-0.493}$	$0.088^{+0.349}_{-0.036}$
	+2%/-5%	+11%/-4%	+312%/-438%	+29%/-47%	+16%/-24%	+399%/-41%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011821140-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-56 ± 2	$2.82^{+0.58}_{-0.69}$	7004^{+660}_{-773}	6861^{+631}_{-679}	$0.986^{+0.622}_{-0.307}$
Alt.	-69 ± 4	$2.85^{+0.63}_{-0.71}$	7029^{+580}_{-808}	7297^{+705}_{-632}	$1.152^{+0.766}_{-0.354}$

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

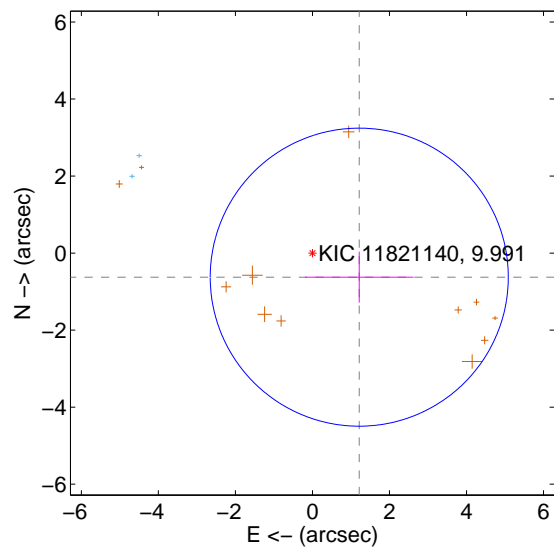
Supplemental centroid analysis for 011821140-02. **Kepler magnitude: 9.99.** Transit SNR 30.69

There are 2 quarters with good PRF difference image offsets

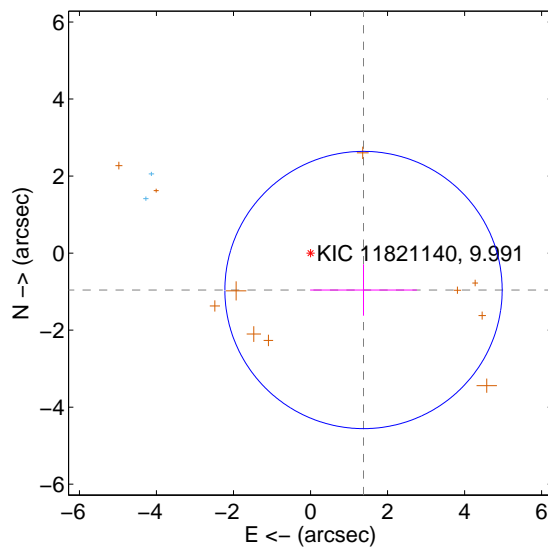
The direct PRF centroid is offset from the target star catalog position by about 0.76 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.367 ± 1.290	1.06	-1.216 ± 1.410	-0.625 ± 0.662
PRF-fit source offset from KIC position	1.677 ± 1.200	1.40	-1.376 ± 1.387	-0.958 ± 0.667
photometric centroid source offset	0.72 ± 0.17	4.36	-0.53 ± 0.18	-0.49 ± 0.15

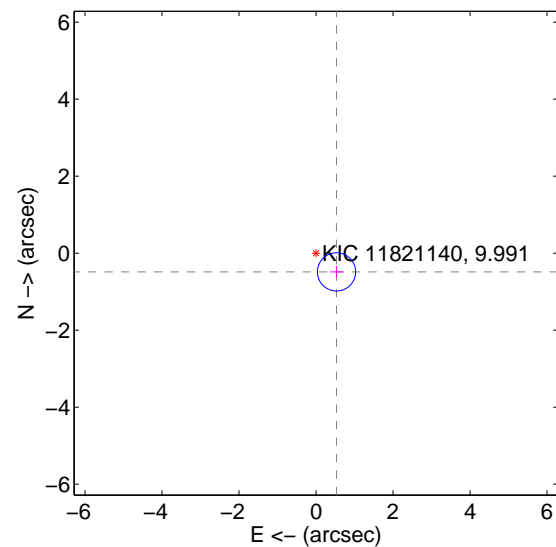
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

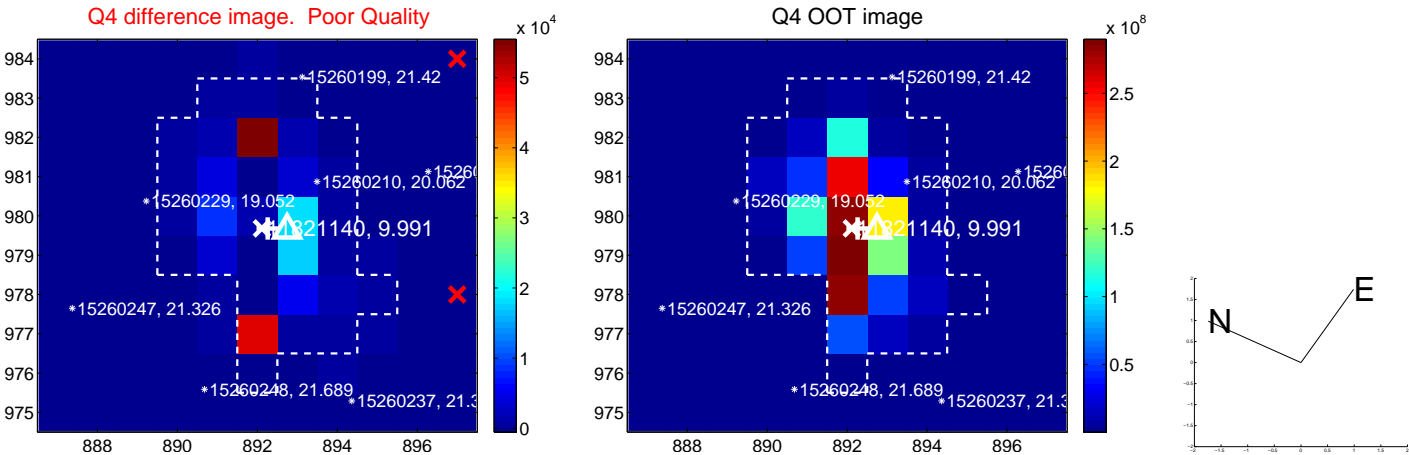
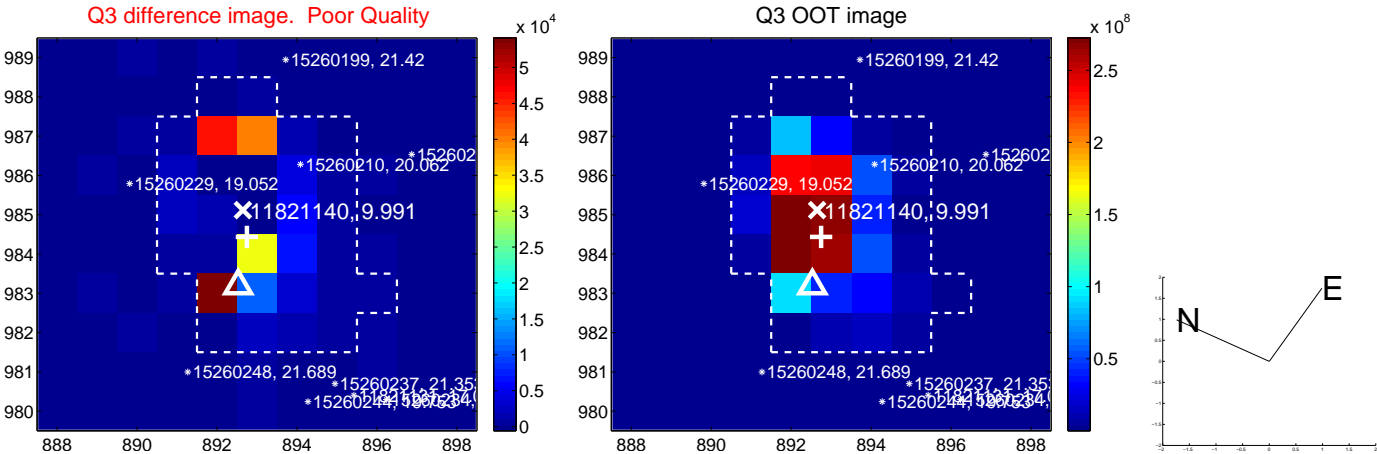
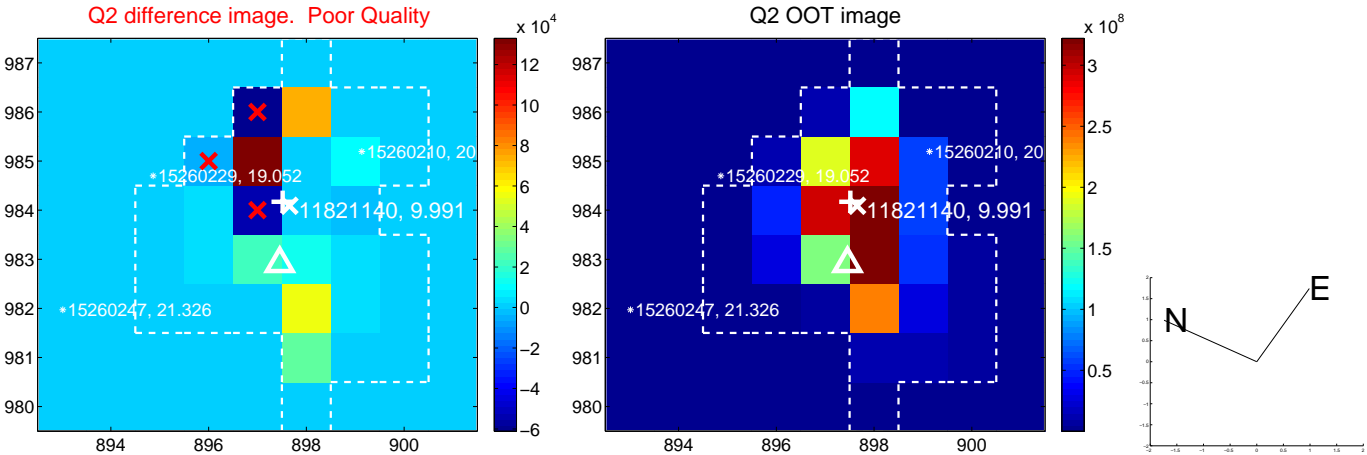
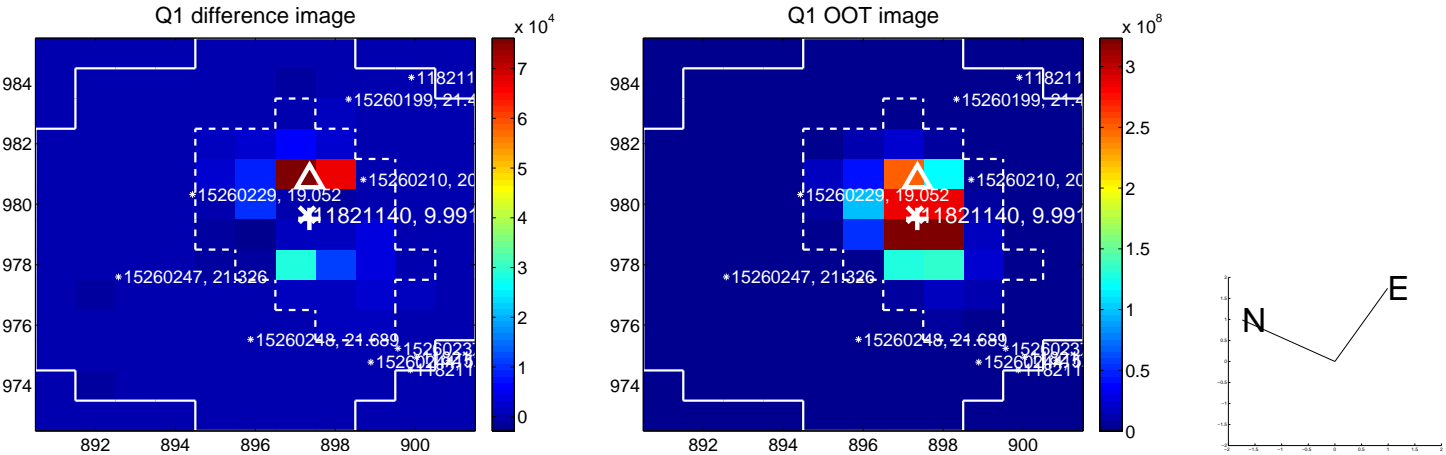


offset from photometric centroids

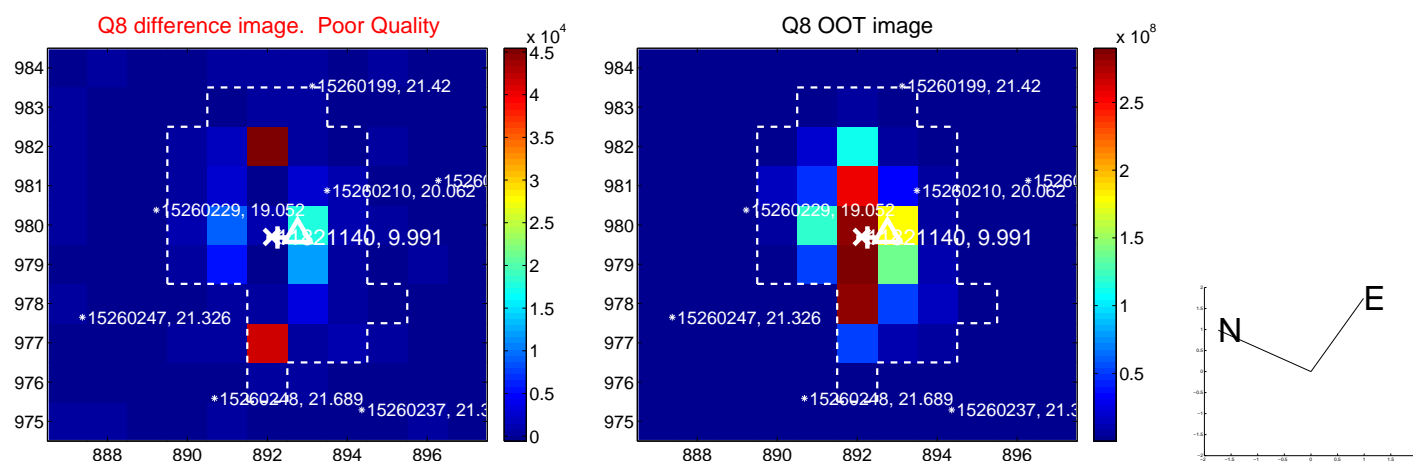
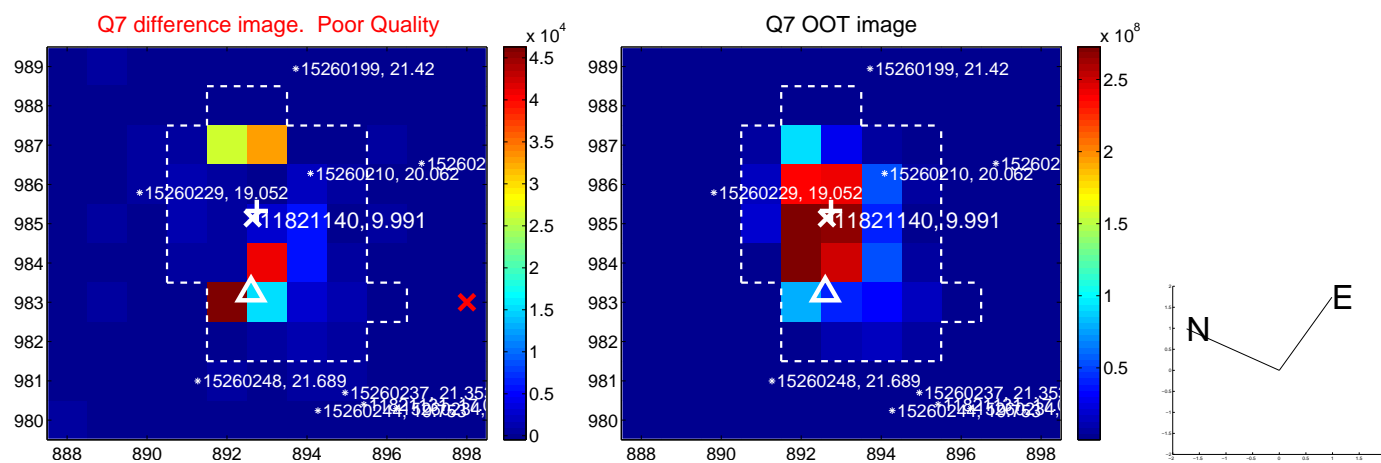
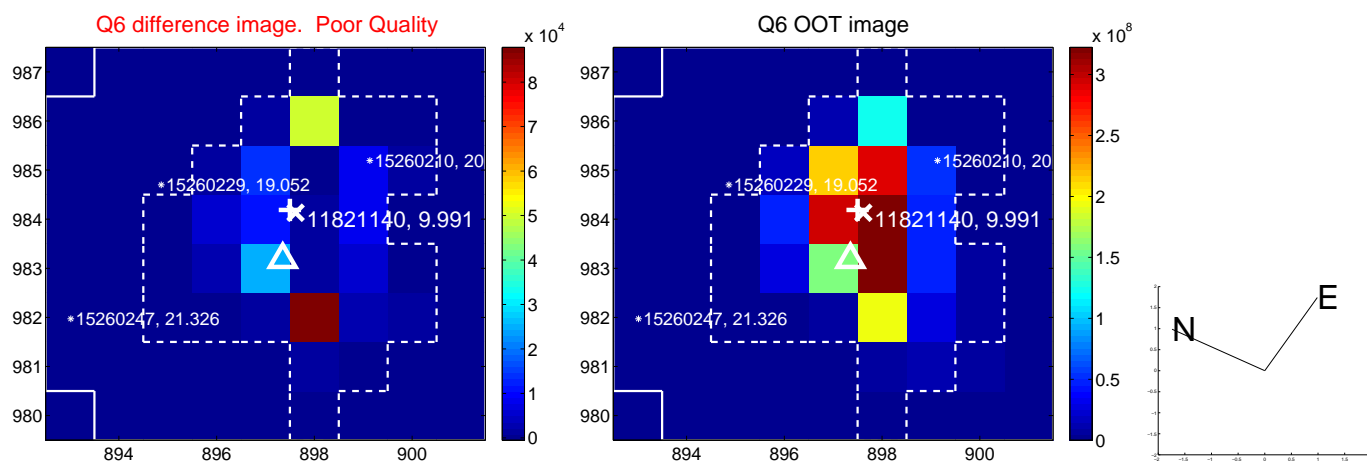
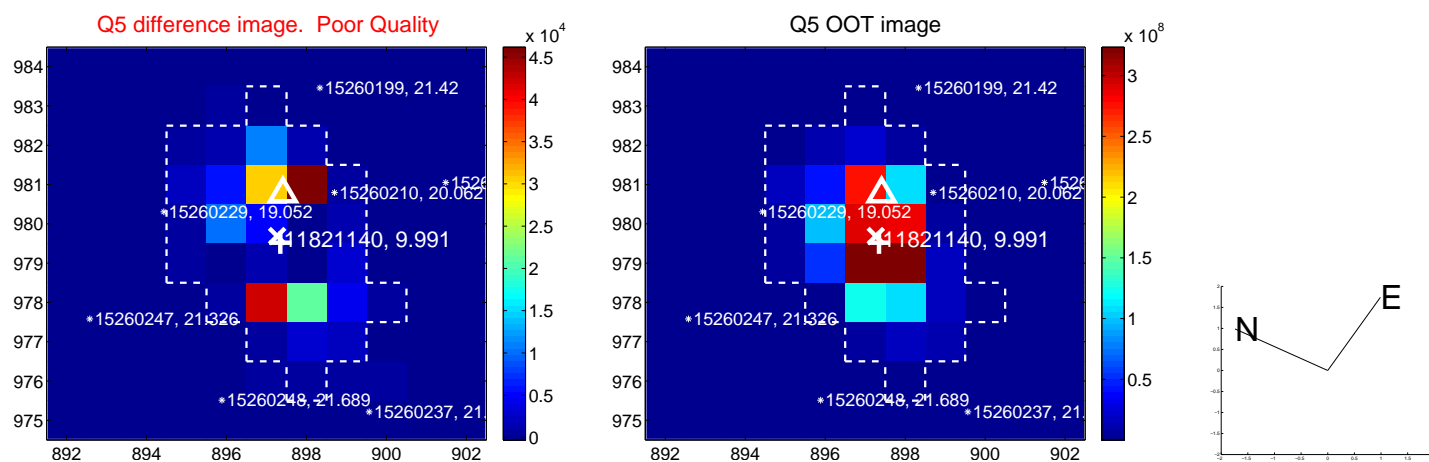


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

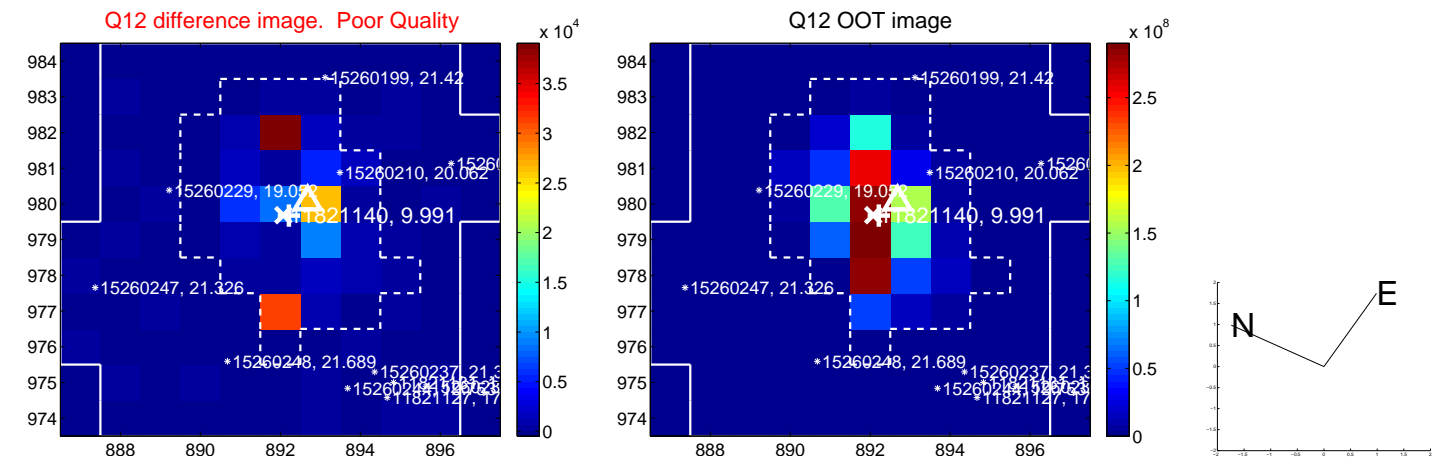
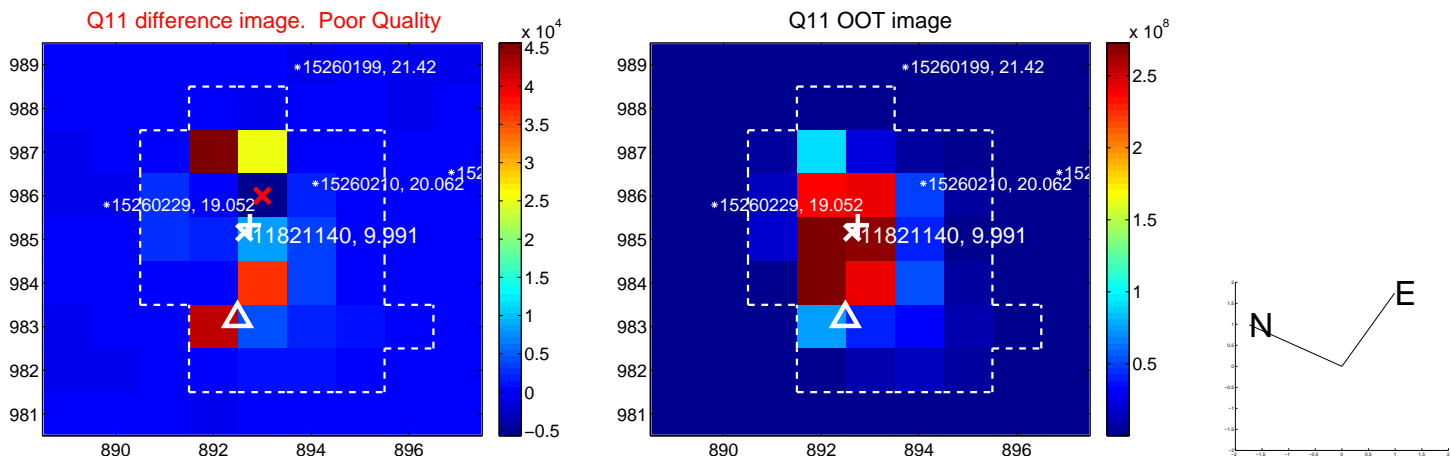
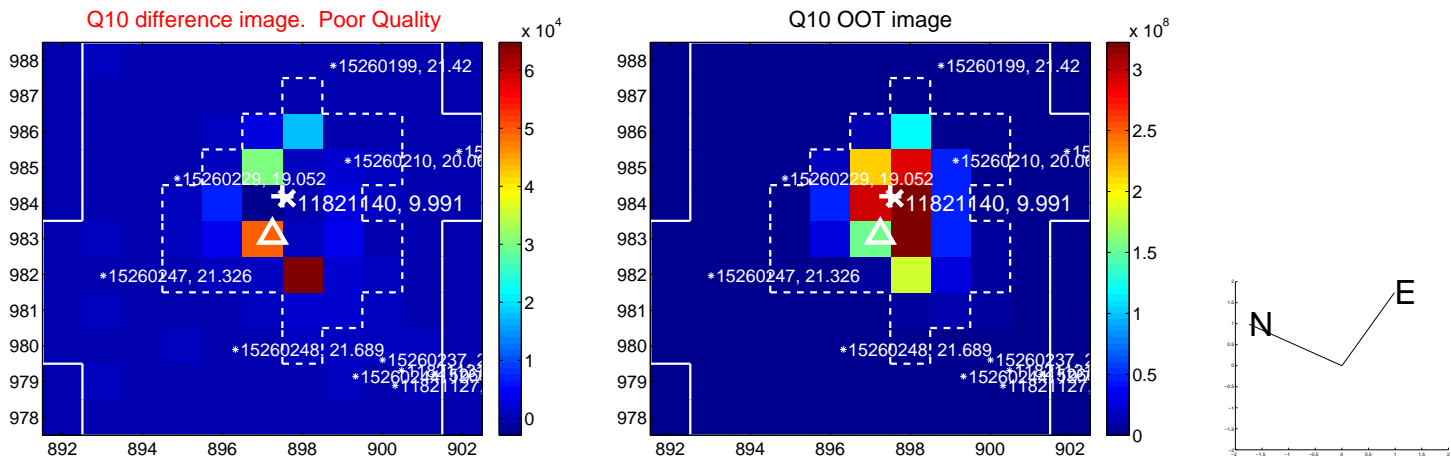
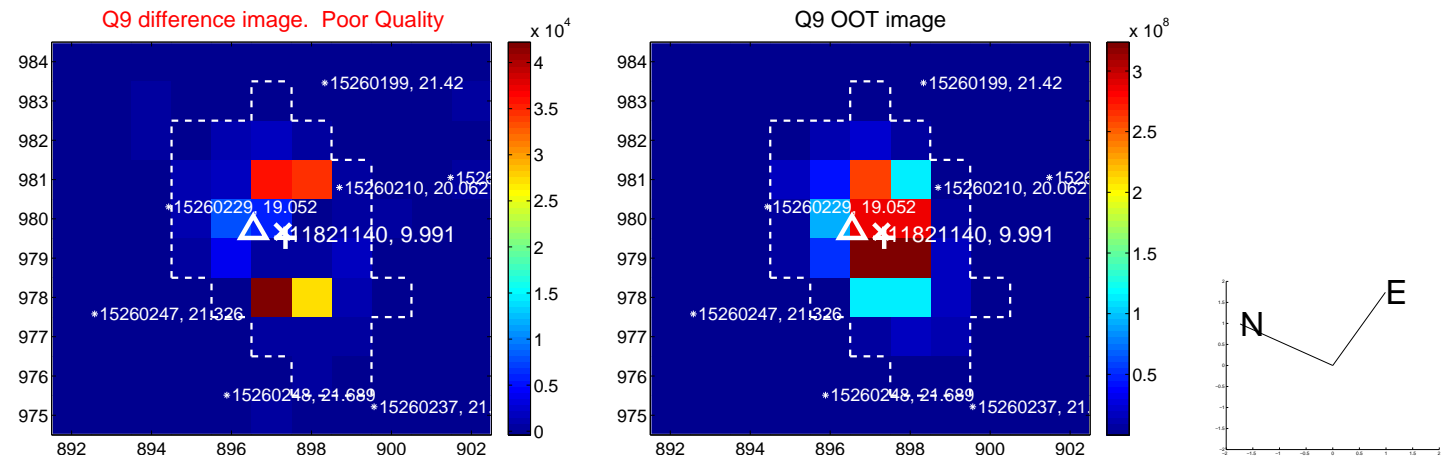
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



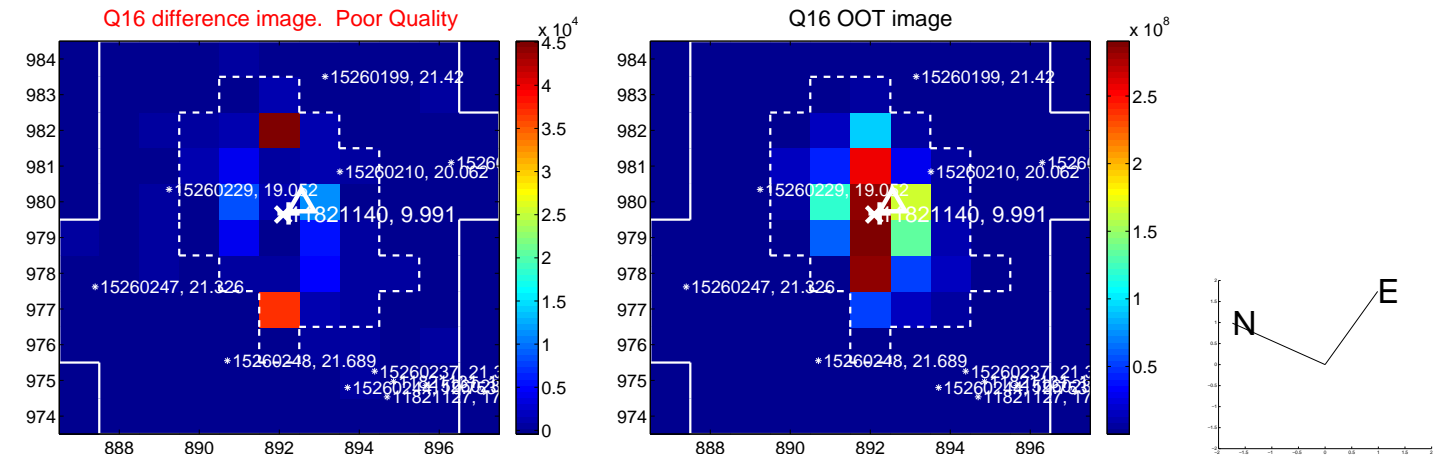
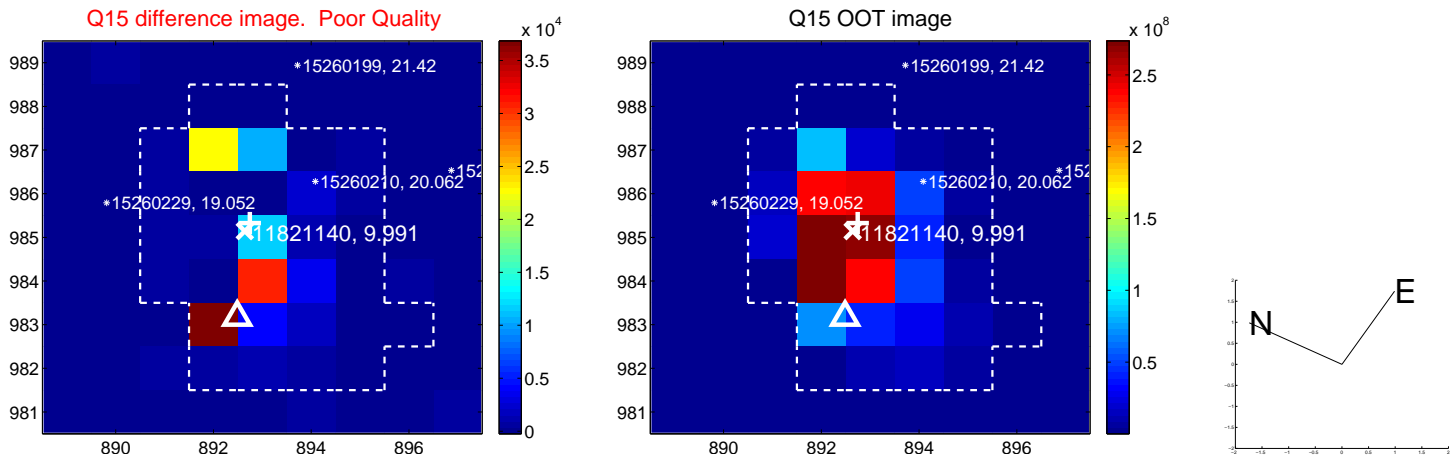
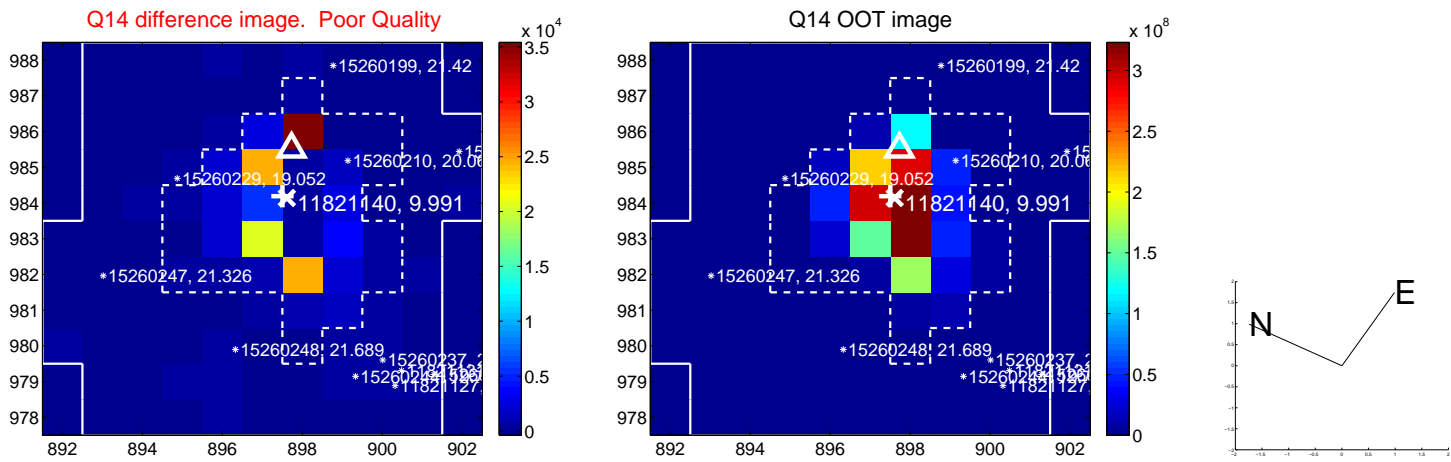
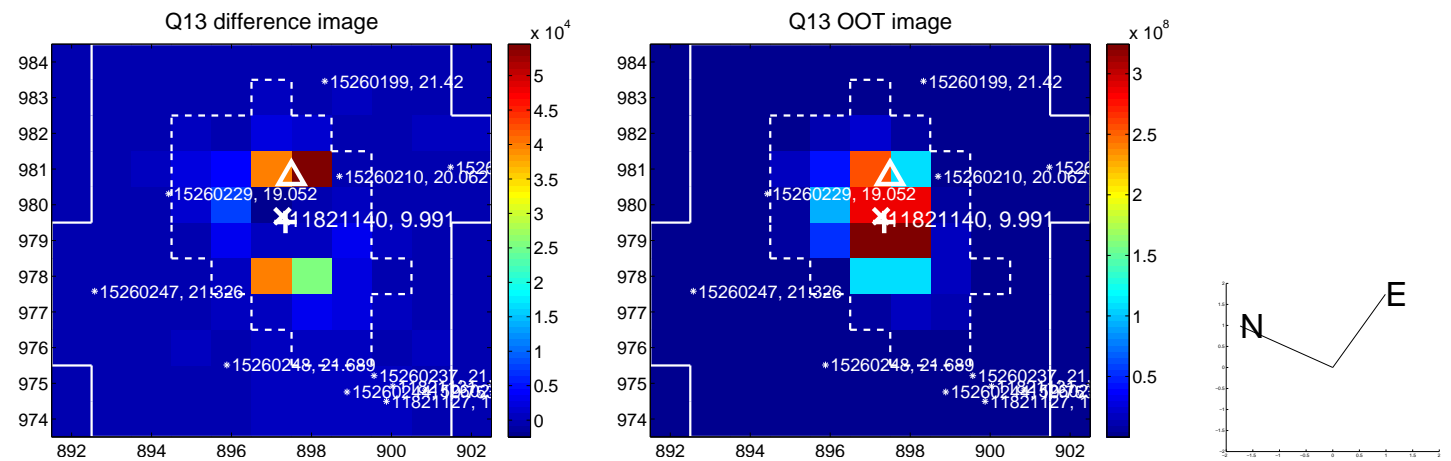
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



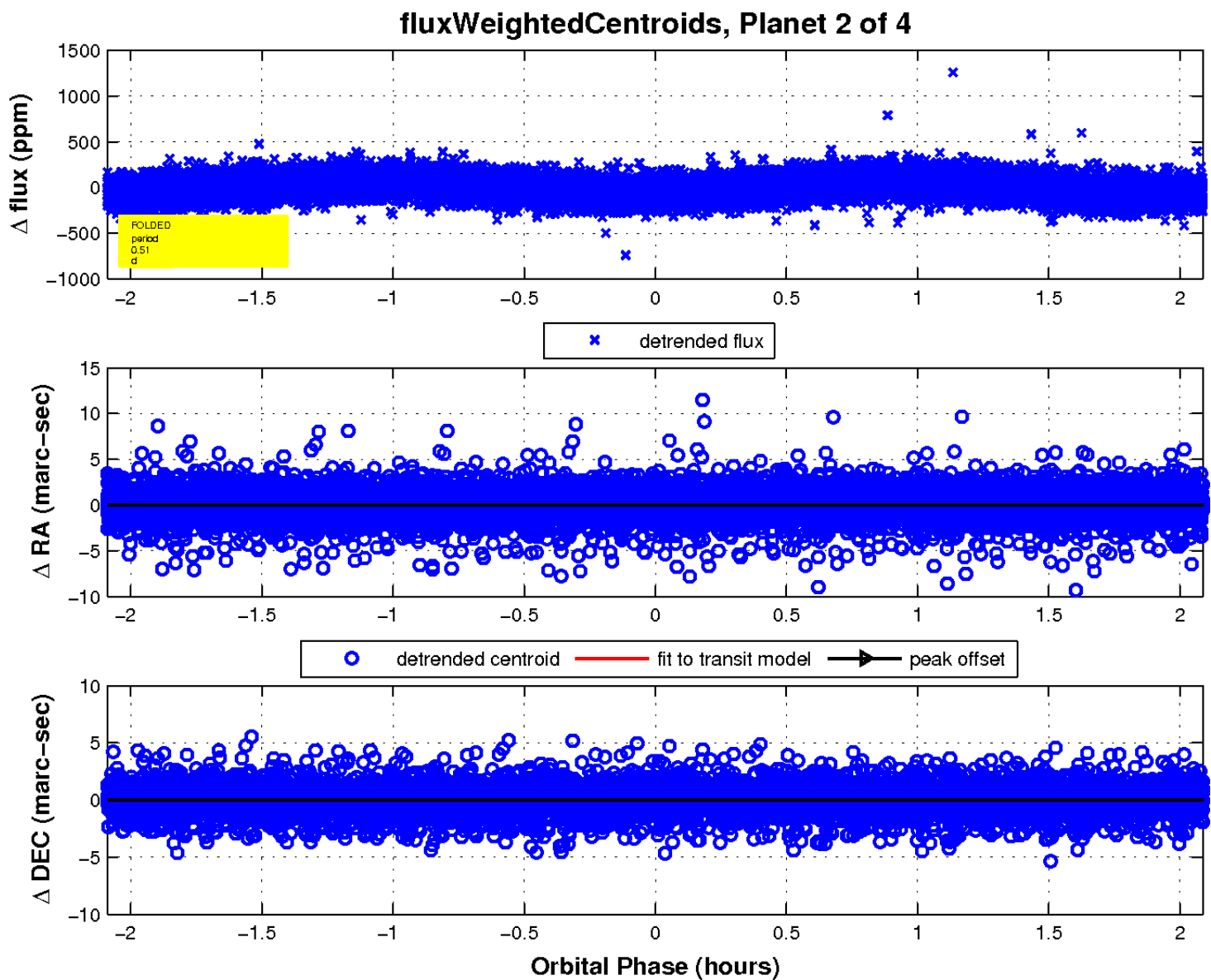
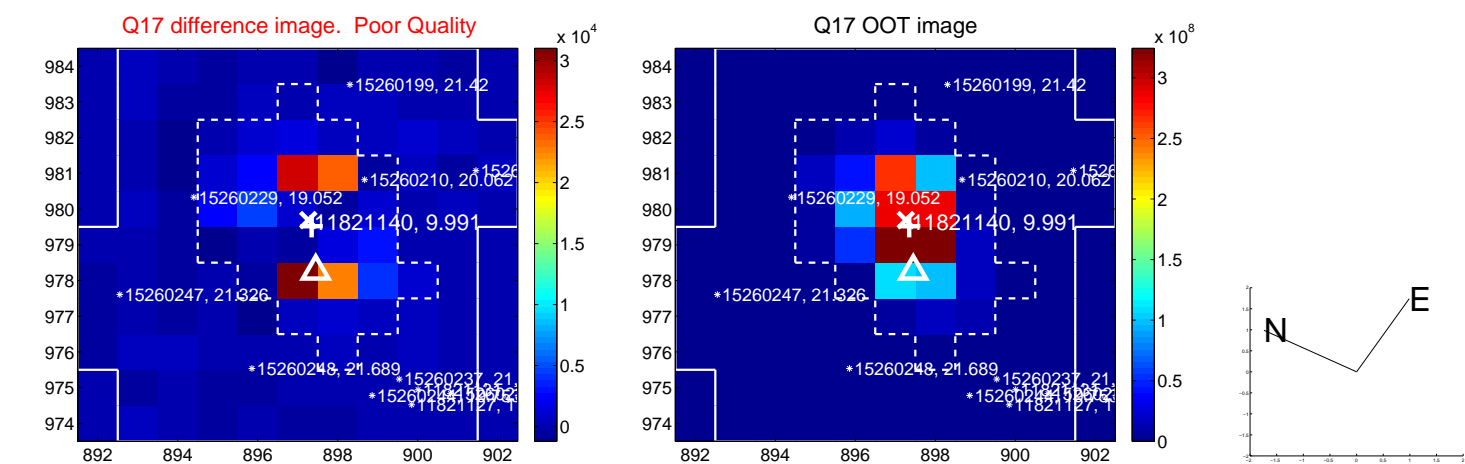
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



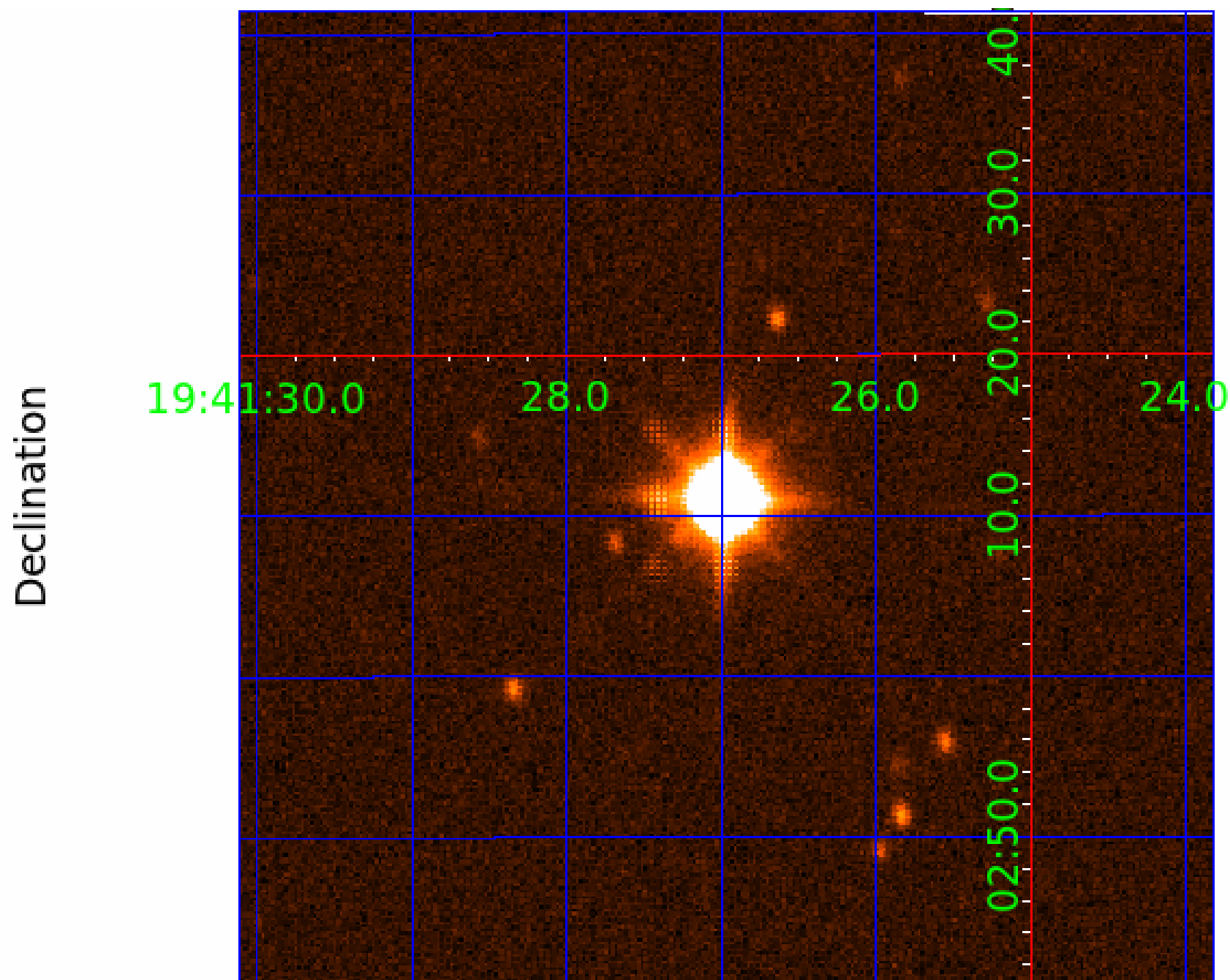
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 011821140

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})
011821140-01	OBS	No	0.539959	131.974420	12.5	1.414	13.5	10.0	3.21	8262	1.32	157882.31
011821140-02	OBS	No	0.505781	131.570825	72.4	0.696	12.7	30.7	3.21	8262	2.98	172265.67
011821140-03	OBS	No	0.505781	131.740210	79.4	0.678	14.7	34.2	3.21	8262	3.02	172265.57
011821140-04	OBS	No	0.505775	131.911369	50.3	0.964	18.5	27.5	3.21	8262	2.67	172268.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011821140-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED
011821140-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011821140-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
011821140-04	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED

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

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

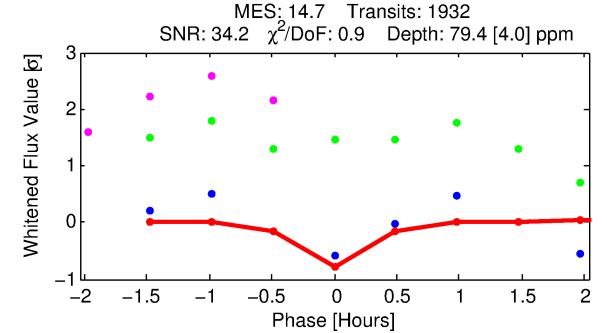
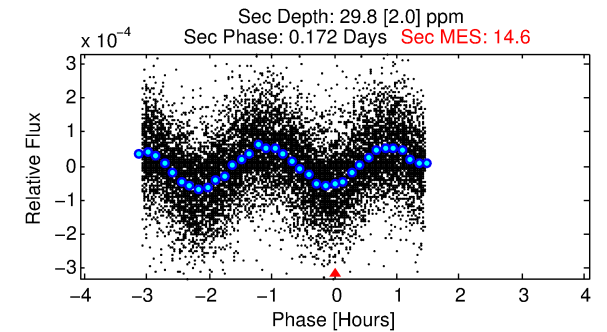
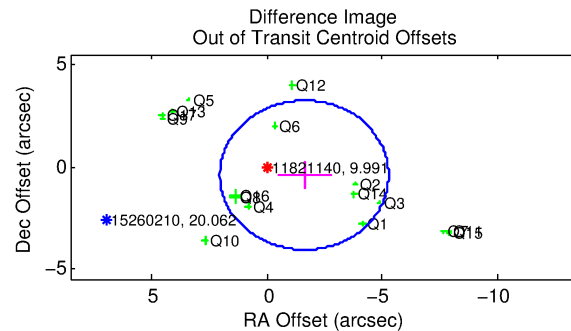
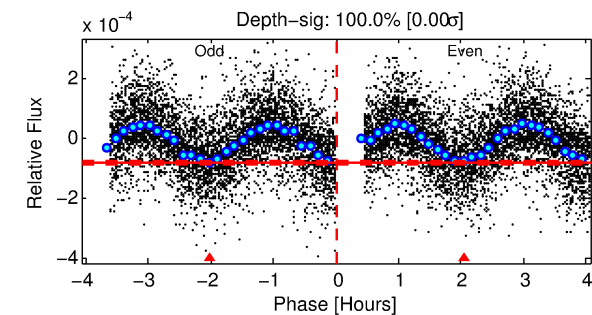
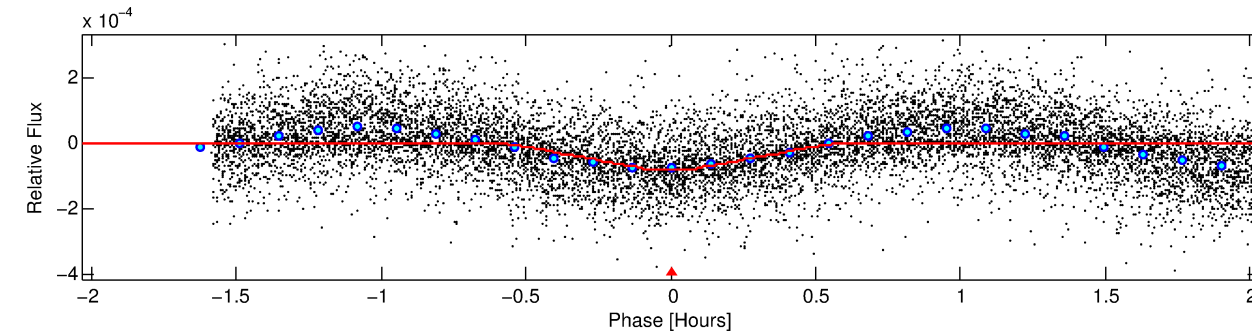
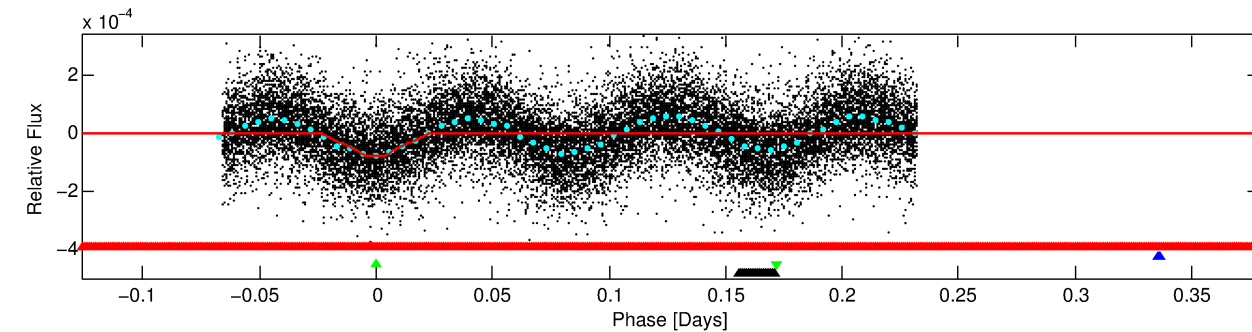
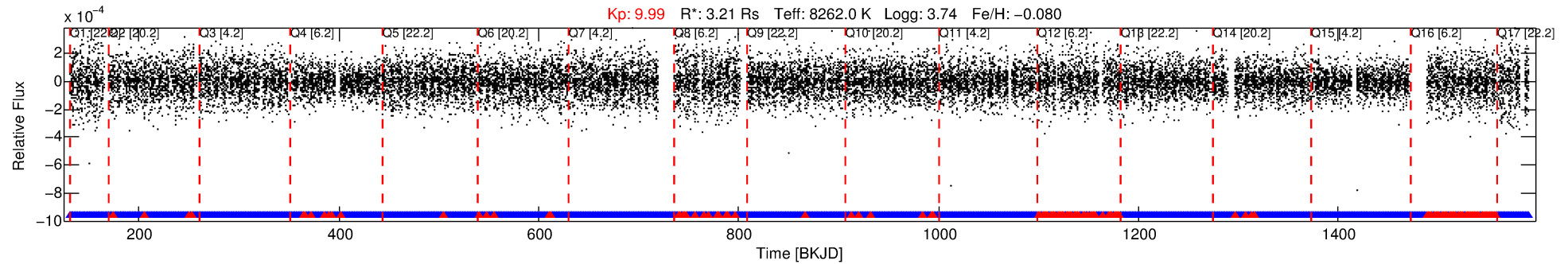
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011821140-03

No Significant Match Found

DV One-Page Summary

KIC: 11821140 Candidate: 3 of 4 Period: 0.506 d



DV Fit Results:

Period = 0.50578 [0.00000] d
Epoch = 131.7402 [0.0004] BKJD
Rp/R* = 0.0086 [0.0010]
a/R* = 5.04 [3.30]
b = 0.50 [1.03]
Seff = 172265.57 [127563.44]
Teff = 5195 [962] K
Rp = 3.02 [1.48] Re
a = 0.0158 [0.0071] AU
Ag = 0.45 [0.34] [-1.61 σ]
Teffp = 6576 [506] K [1.27 σ]

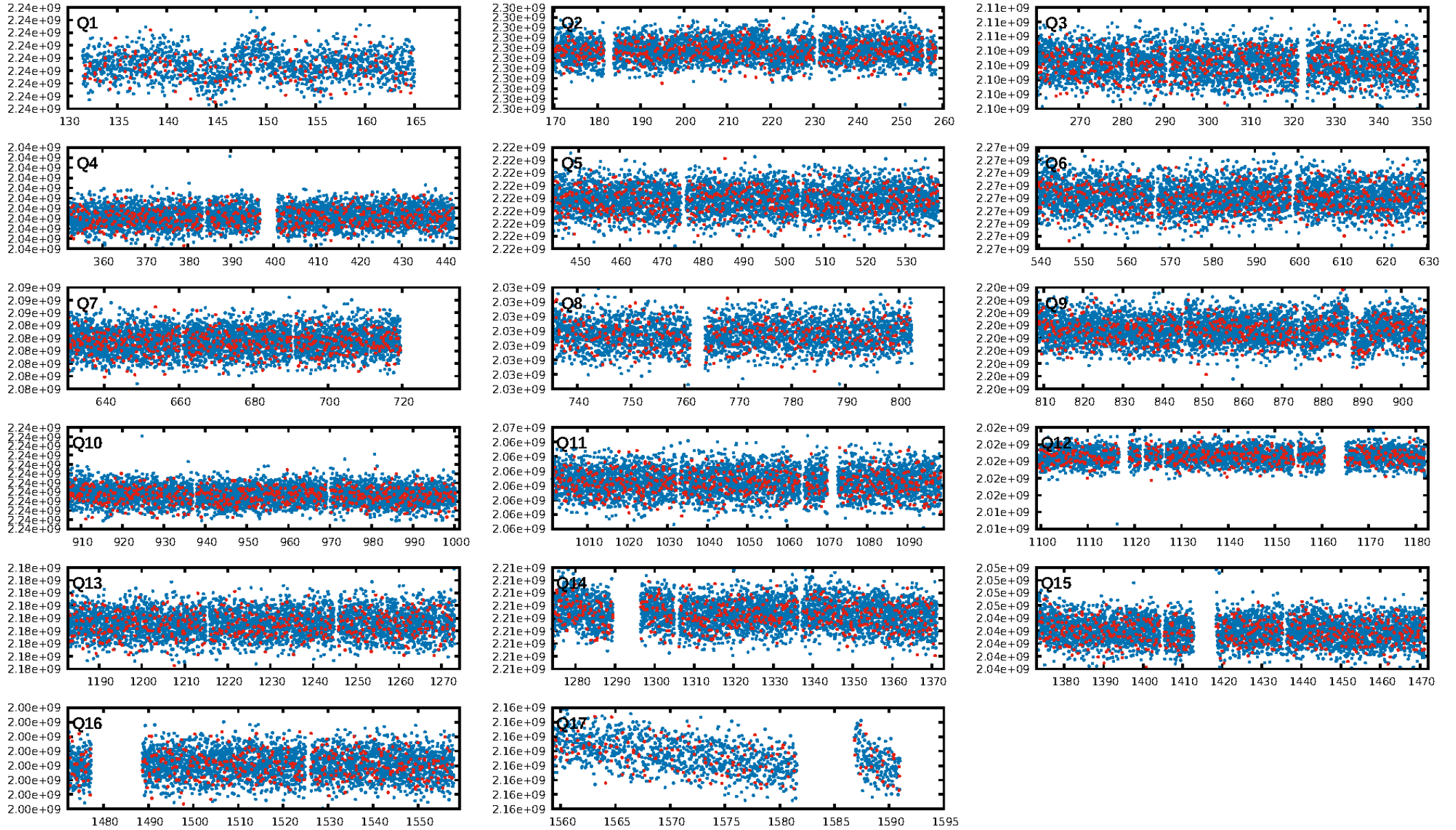
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: 39.9% [0.52 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.89 [1635/1844]
GhostDiagnostic-chr: N/A
Centroid-sig: 2.2%
Centroid-so: 0.804 arcsec [5.37 σ]
OotOffset-rm: 1.667 arcsec [1.37 σ]
KicOffset-rm: 1.957 arcsec [1.73 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.24 [4/17]
DiffImageOverlap-fno: 0.00 [0/17]

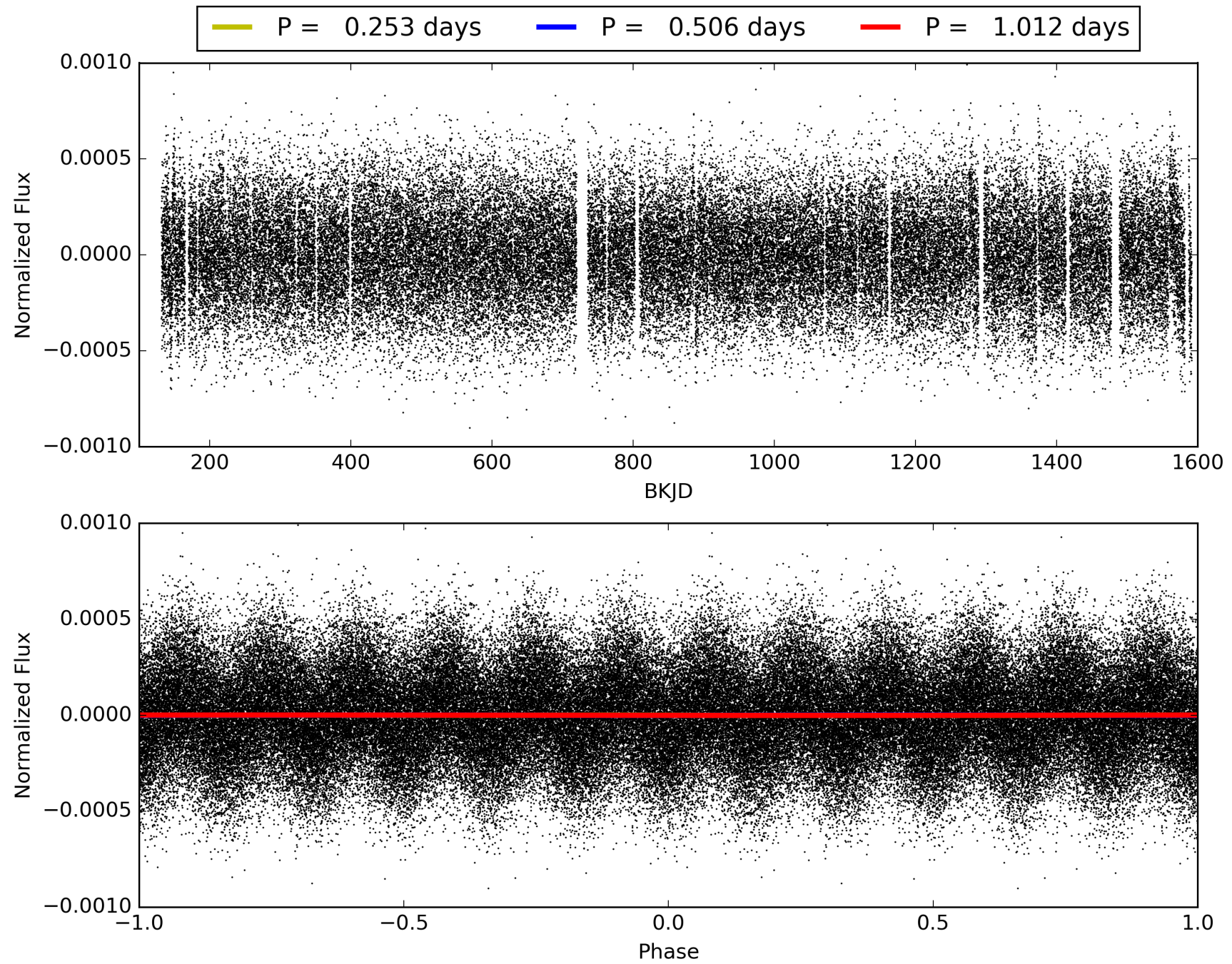
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:43:50 Z

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

TCE 011821140-03, PDC Light Curves

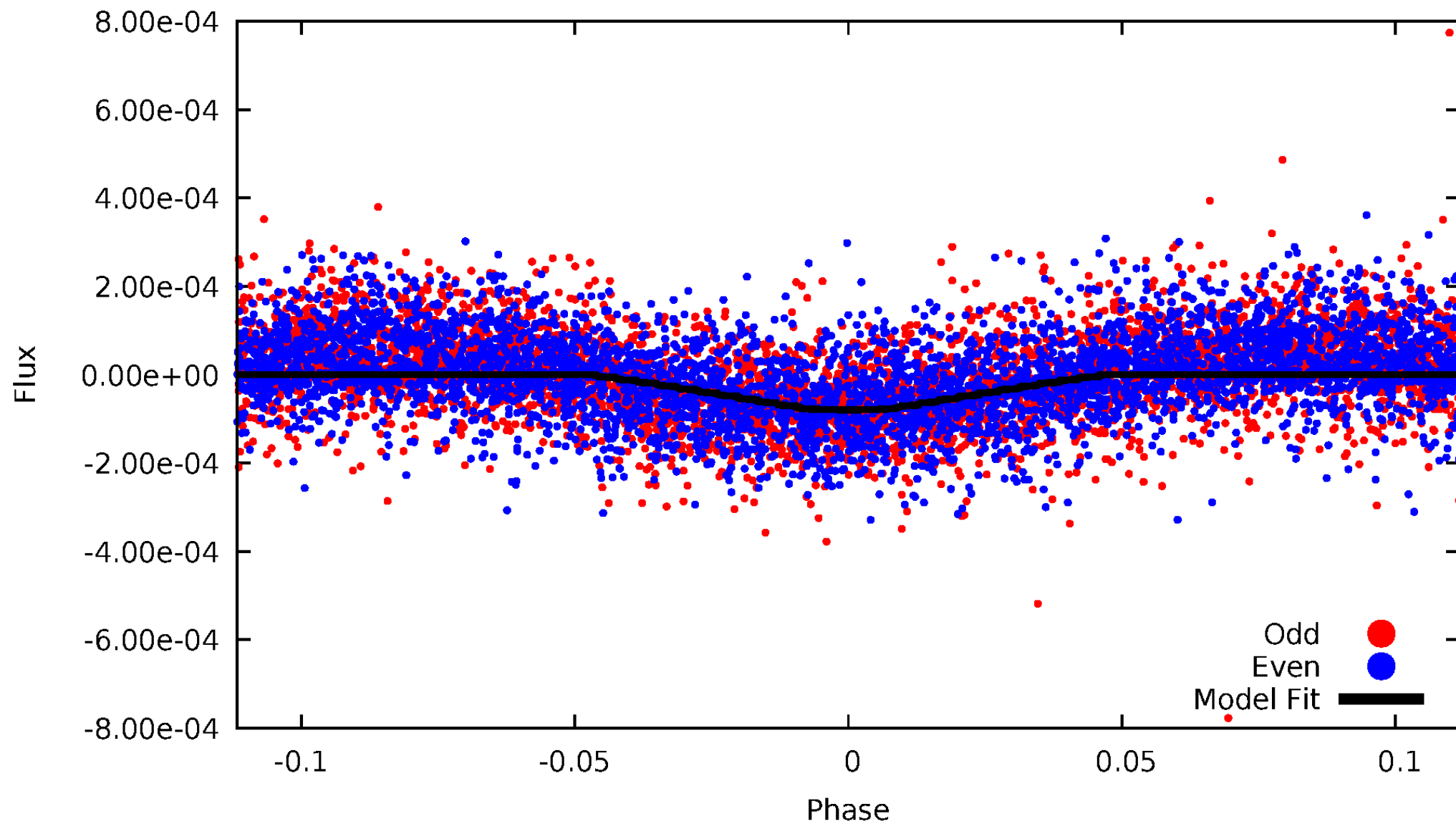


TCE 011821140-03



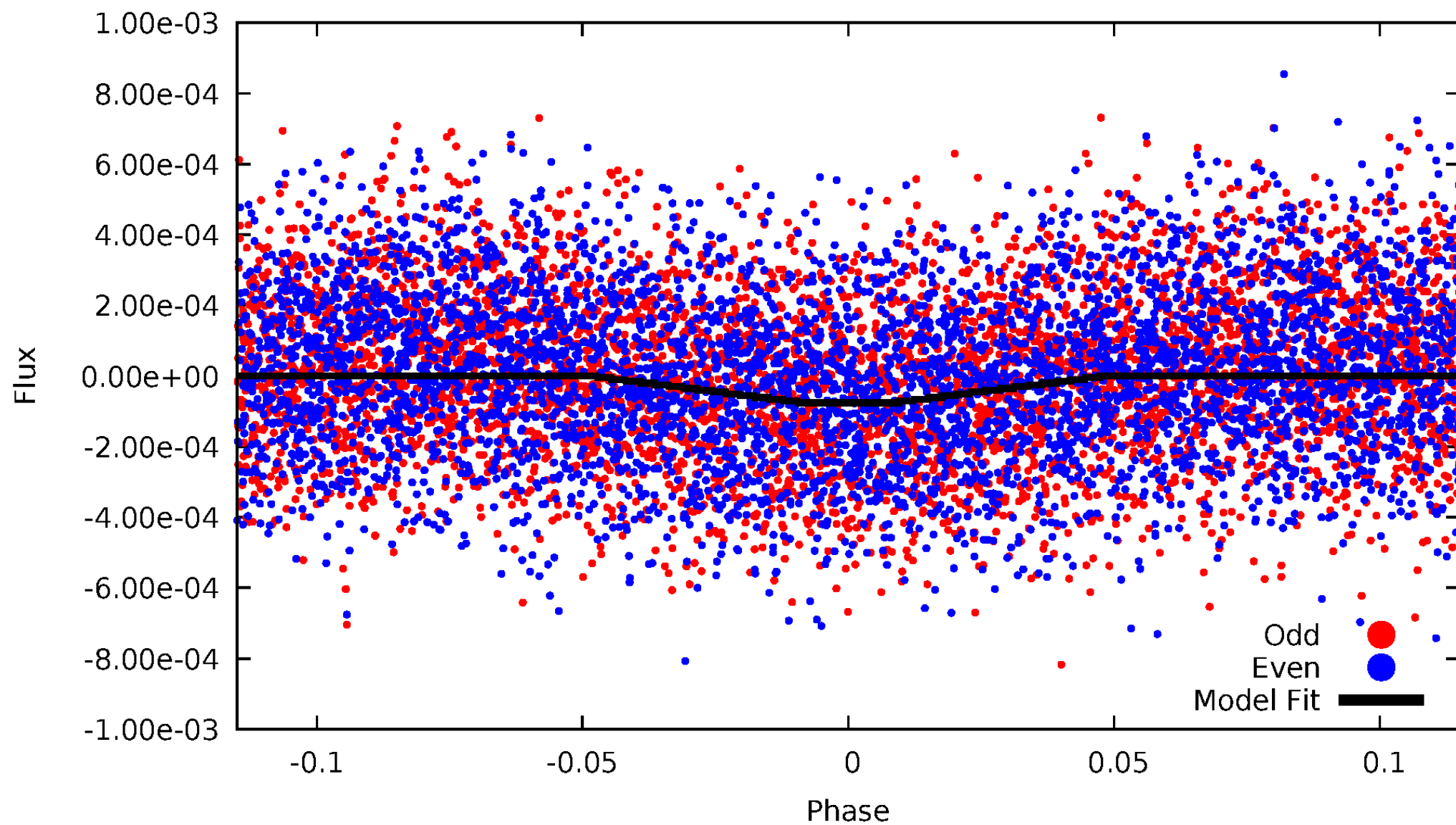
DV Odd/Even

TCE 011821140-03



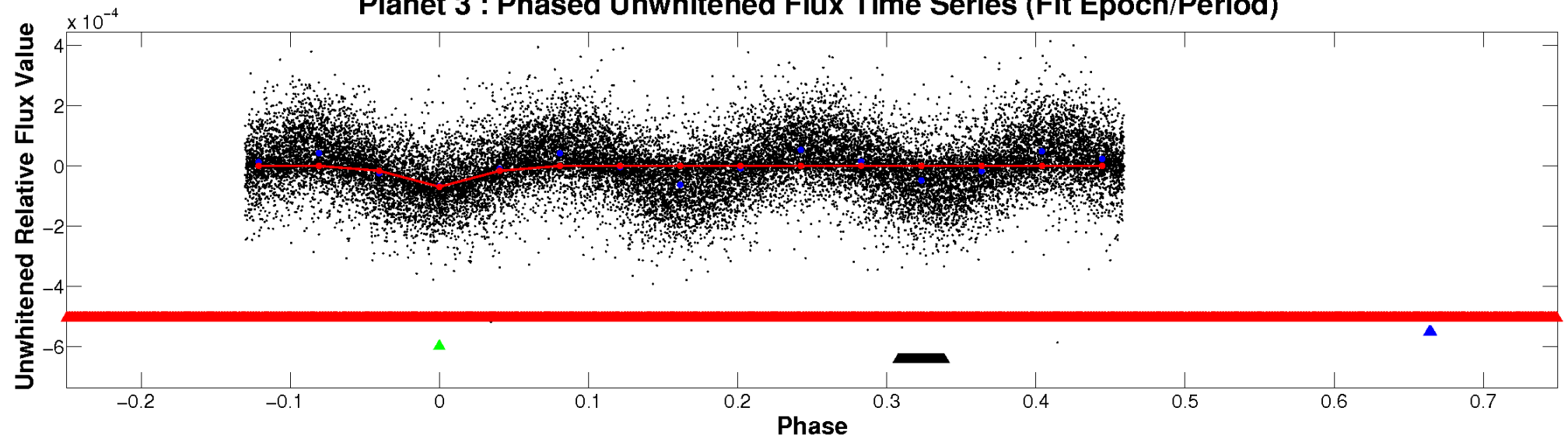
ALT Odd/Even

TCE 011821140-03

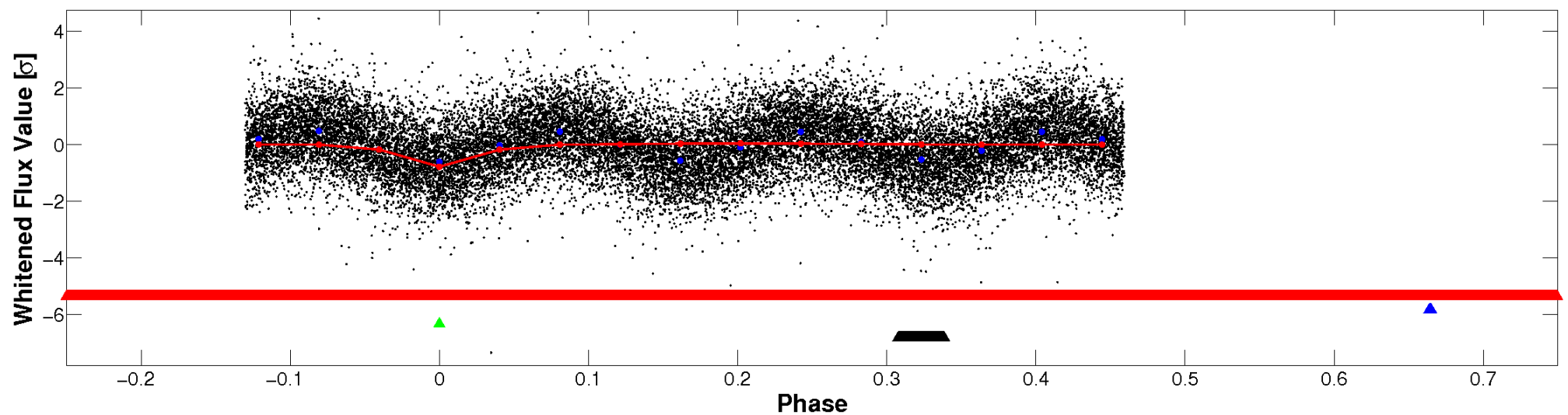


Non-Whitened Vs. Whitened Light Curve

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

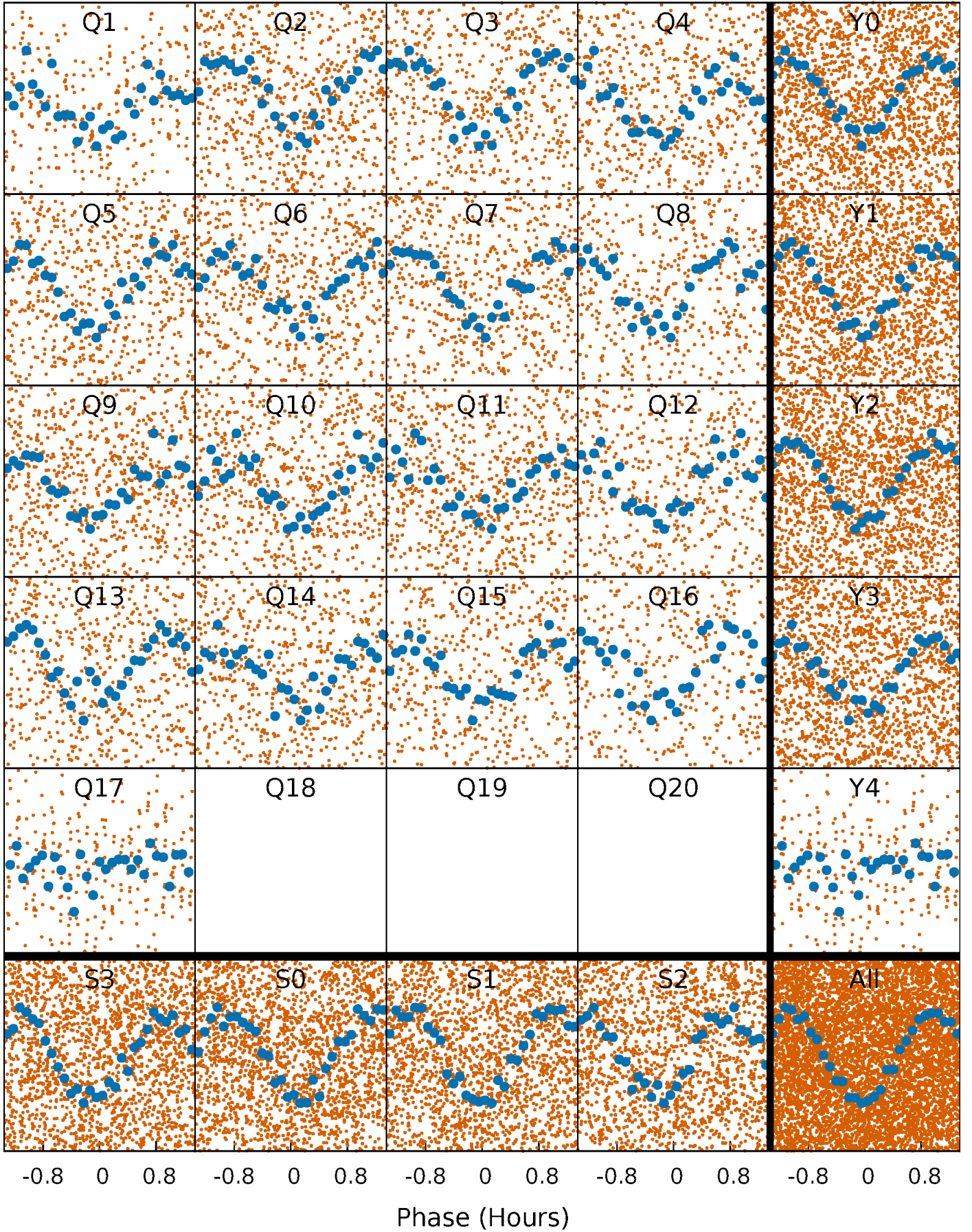


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



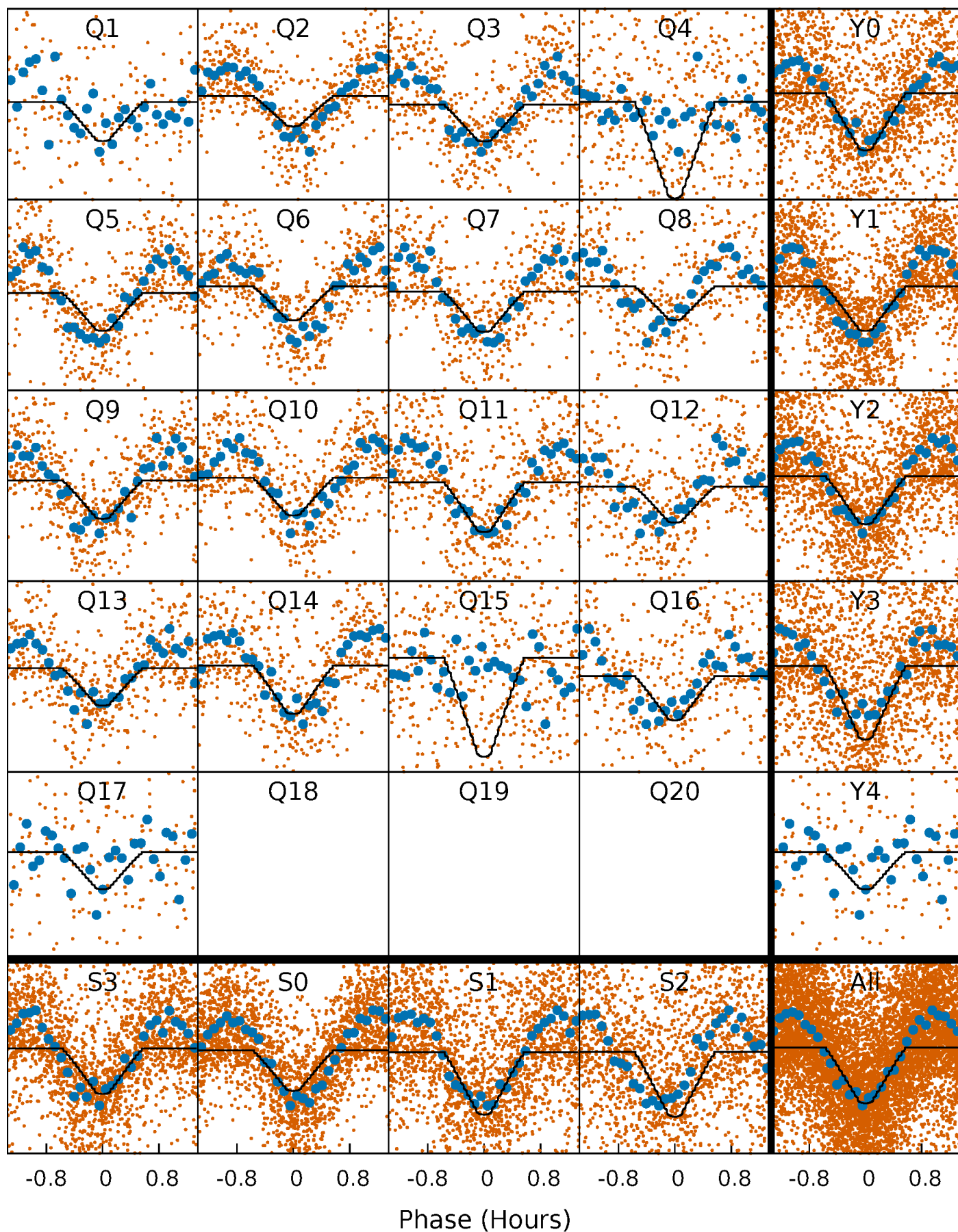
PDC Quarter-Phased Transit Curves

TCE 011821140-03 P= 0.505781 Days $T_0=131.740210$ (BKJD)



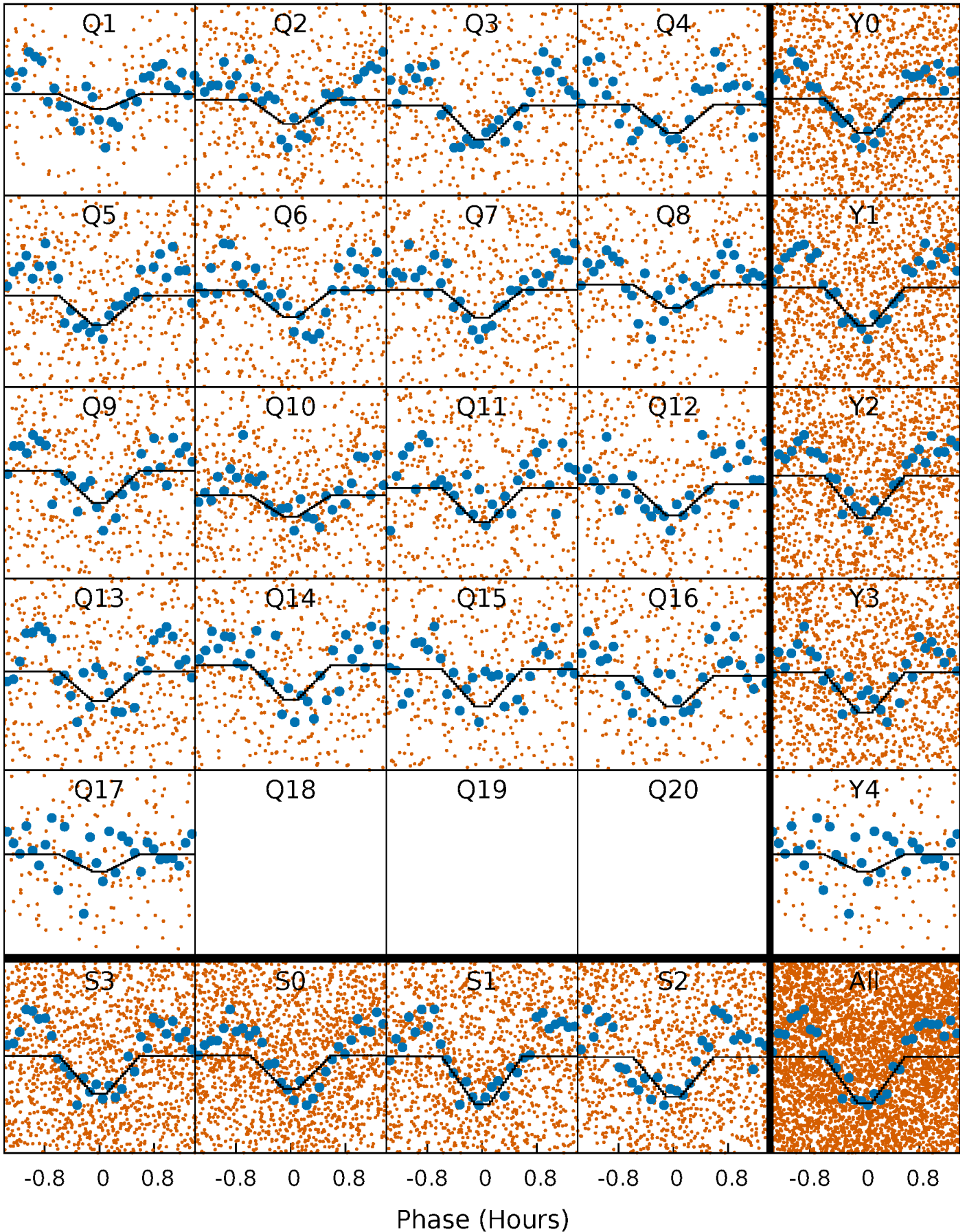
DV Quarter-Phased Transit Curves

TCE 011821140-03 P= 0.505781 Days $T_0=131.740210$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

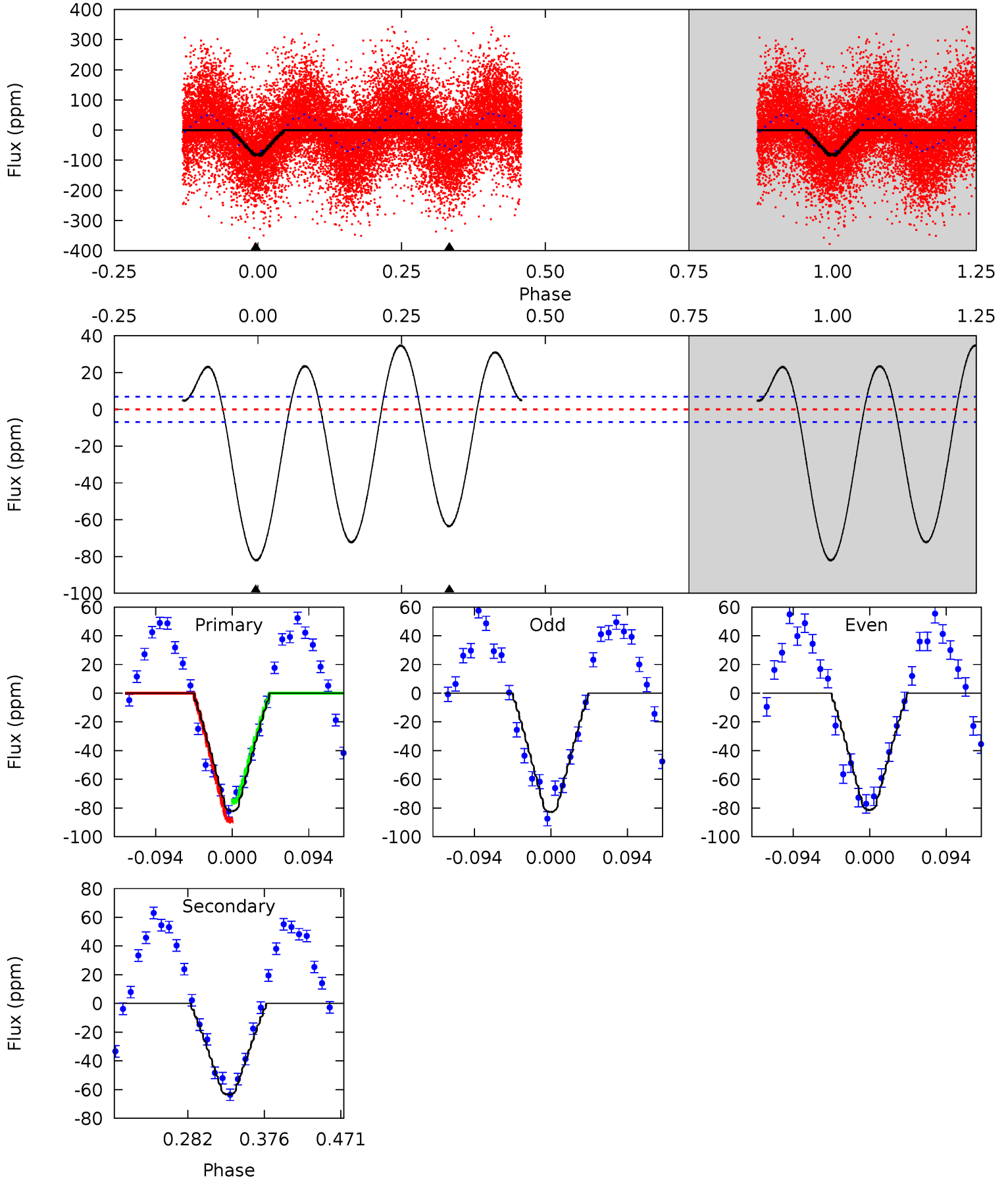
TCE 011821140-03 P= 0.505779 Days $T_0=131.740087$ (BKJD)



DV Model-Shift Uniqueness Test

011821140-03, P = 0.505781 Days, E = 131.234429 Days

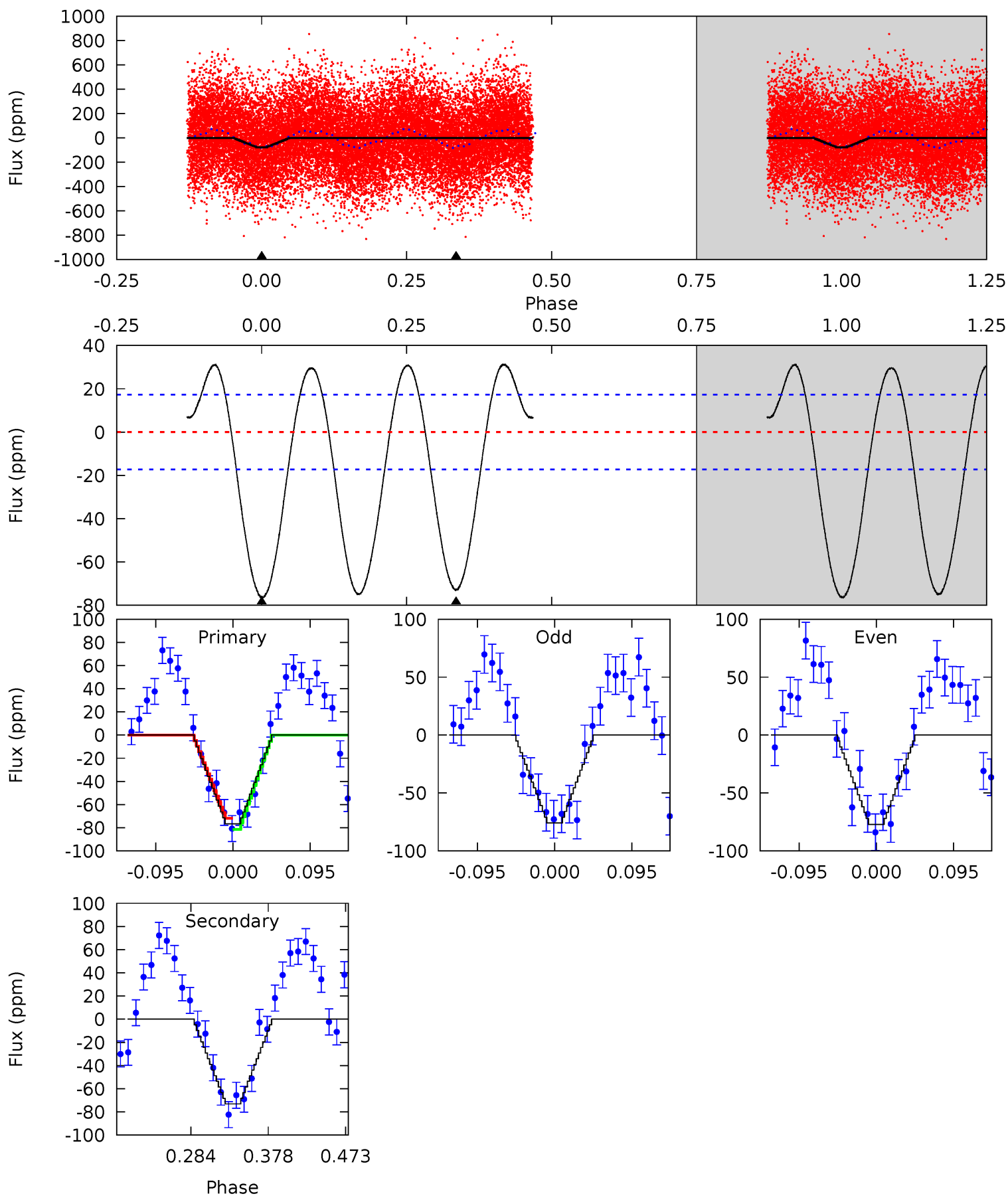
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
54.6	42.3	0	0	4.58	1.67	22.1	54.6	54.6	42.3	42.3	0.47	0.97	0.30	4.60



Alt Model-Shift Uniqueness Test

011821140-03, P = 0.505779 Days, E = 131.234308 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.3	19.4	0	0	4.58	1.67	9.27	20.3	20.3	19.4	19.4	0.16	0.99	0.29	1.31



Stellar Parameters For KIC 011821140

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8262^{+200}_{-372}	$3.738^{+0.420}_{-0.140}$	$-0.080^{+0.250}_{-0.350}$	$3.209^{+0.938}_{-1.524}$	$2.053^{+0.329}_{-0.493}$	$0.088^{+0.349}_{-0.036}$
	+2%/-5%	+11%/-4%	+312%/-438%	+29%/-47%	+16%/-24%	+399%/-41%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011821140-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-64 ± 2	$2.82^{+0.68}_{-0.67}$	7078^{+568}_{-803}	7111^{+839}_{-723}	$1.101^{+0.727}_{-0.372}$
Alt.	-73 ± 4	$2.85^{+0.75}_{-0.71}$	7021^{+648}_{-793}	7424^{+825}_{-745}	$1.228^{+0.873}_{-0.421}$

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

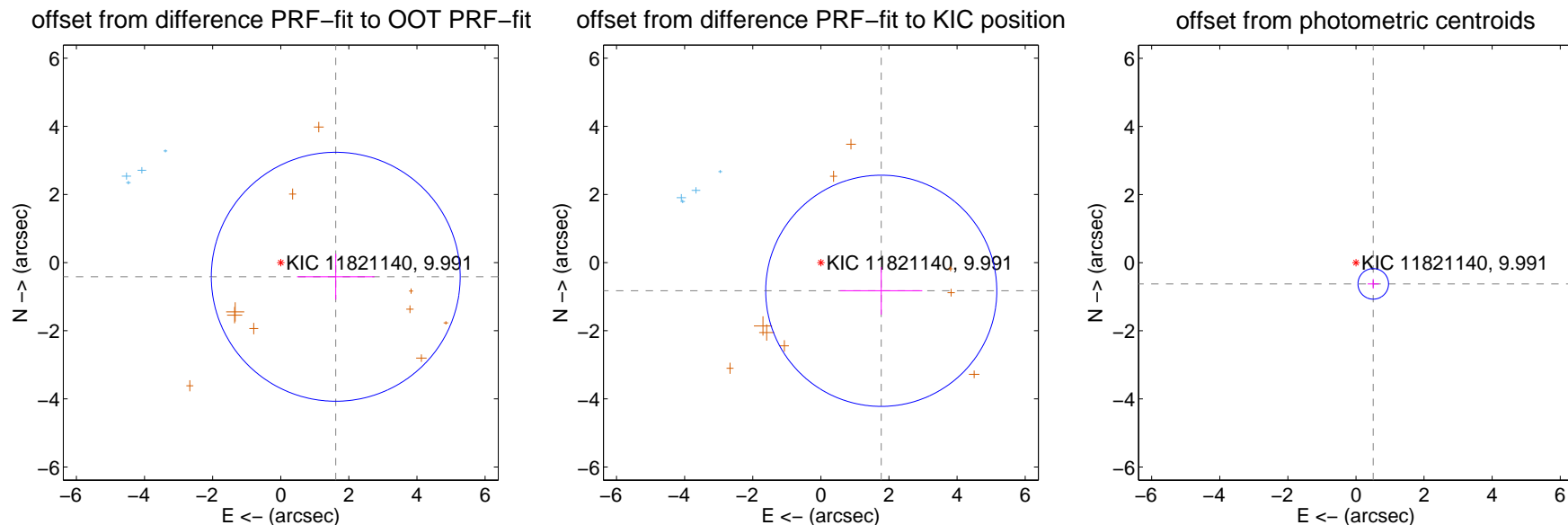
DV Centroid Data

Supplemental centroid analysis for 011821140-03. **Kepler magnitude: 9.99.** Transit SNR 34.24

There are 4 quarters with good PRF difference image offsets

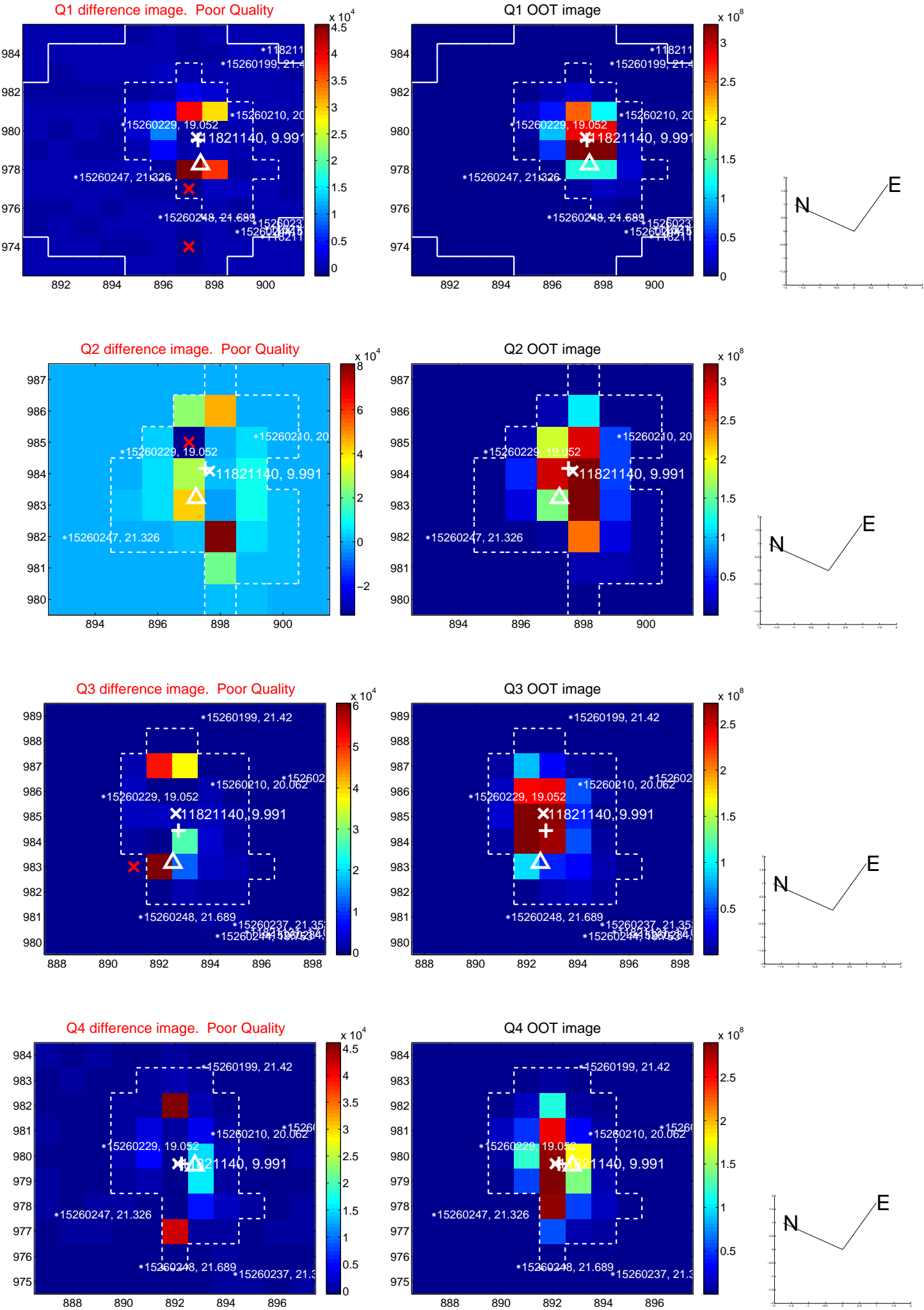
The direct PRF centroid is offset from the target star catalog position by about 0.77 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.667 ± 1.218	1.37	-1.615 ± 1.135	-0.416 ± 0.671
PRF-fit source offset from KIC position	1.957 ± 1.131	1.73	-1.773 ± 1.205	-0.828 ± 0.699
photometric centroid source offset	0.80 ± 0.15	5.37	-0.51 ± 0.16	-0.62 ± 0.14

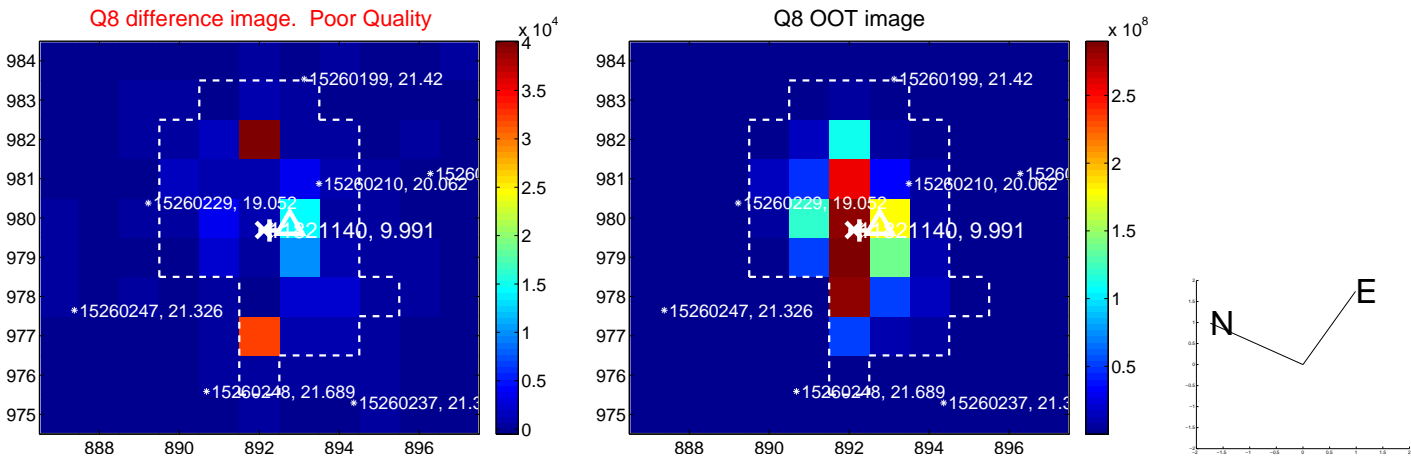
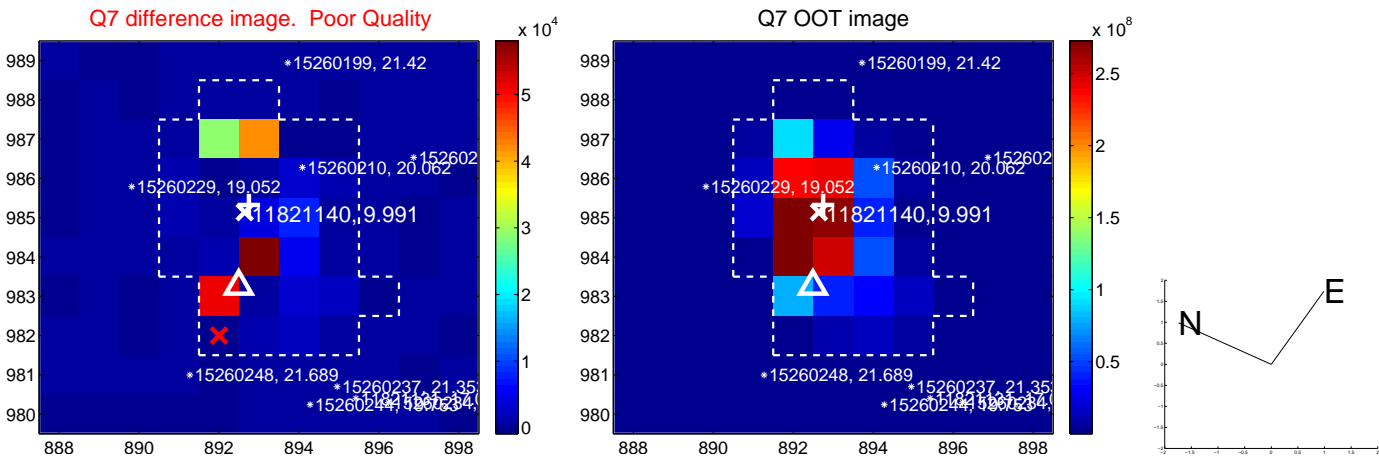
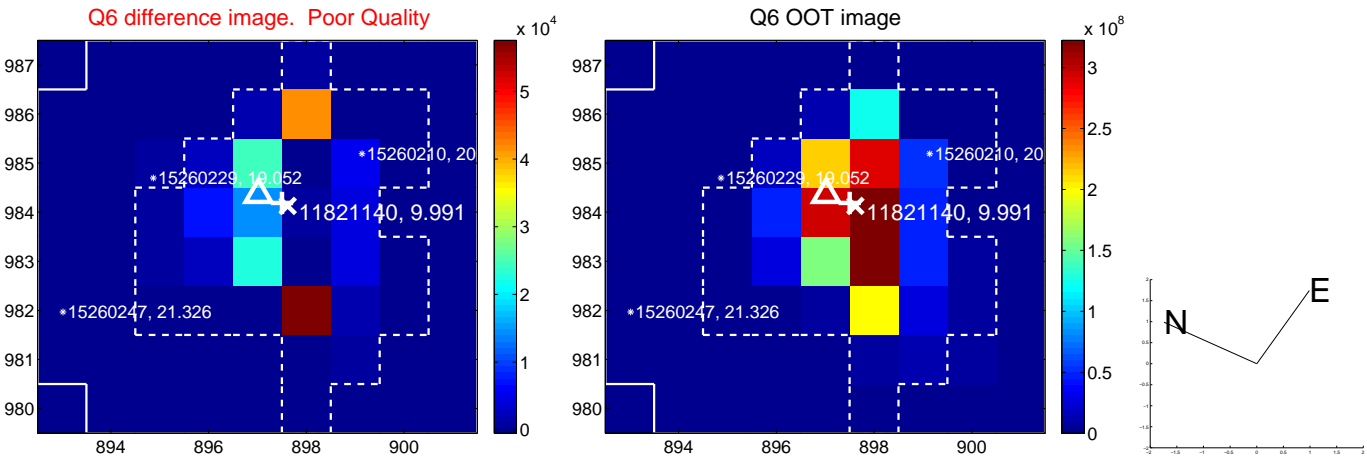
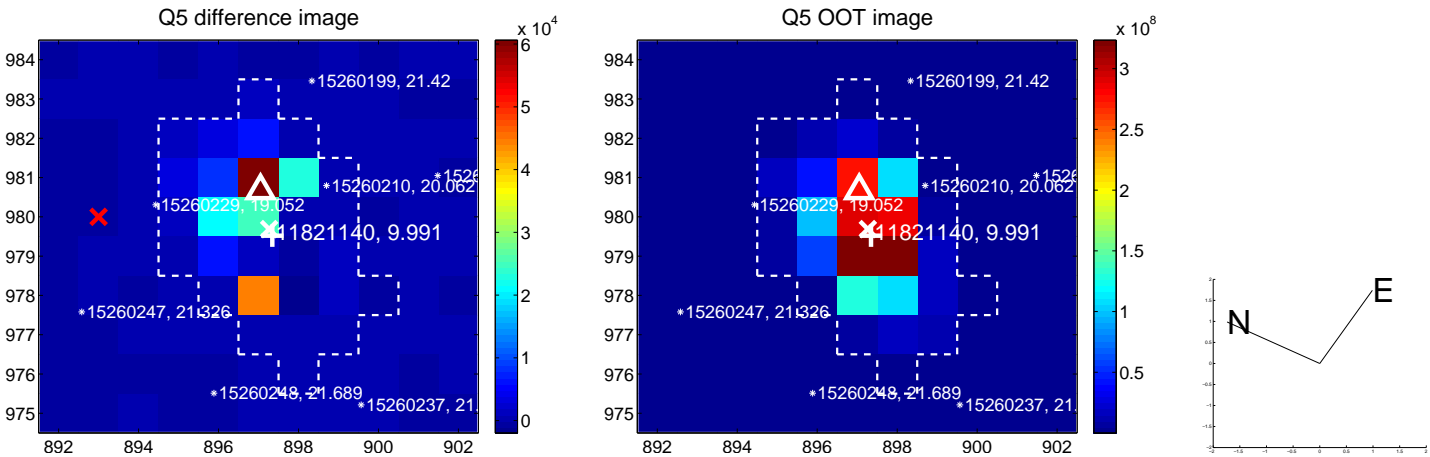


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

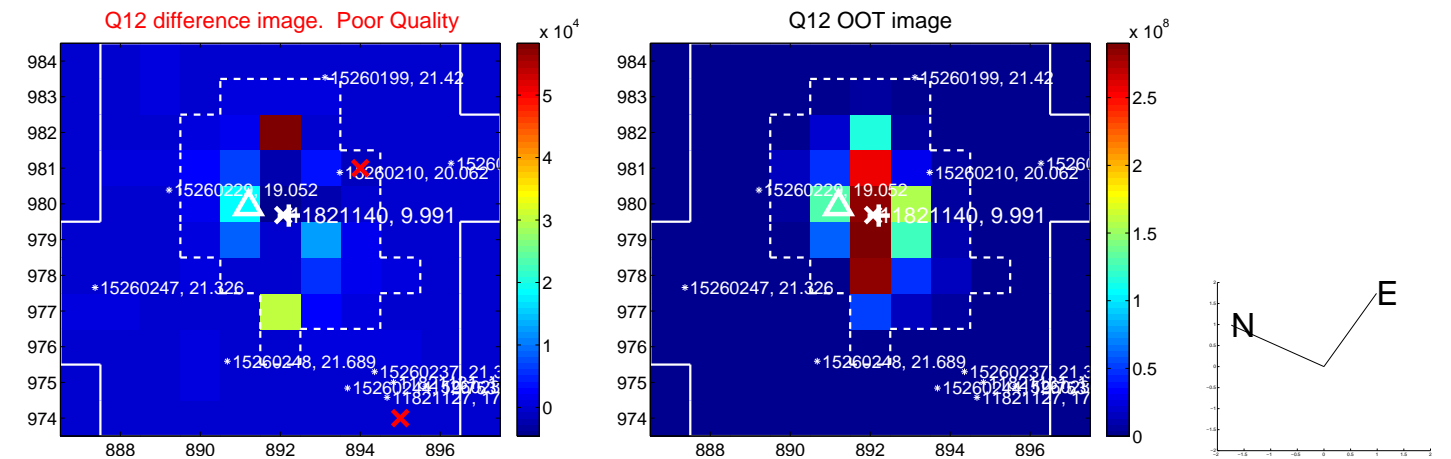
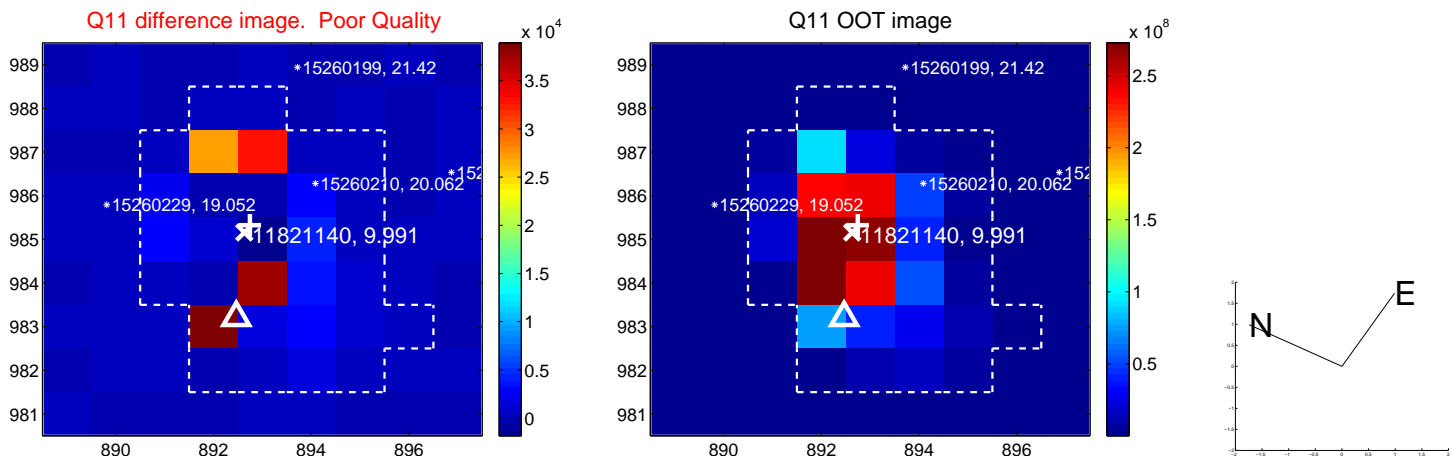
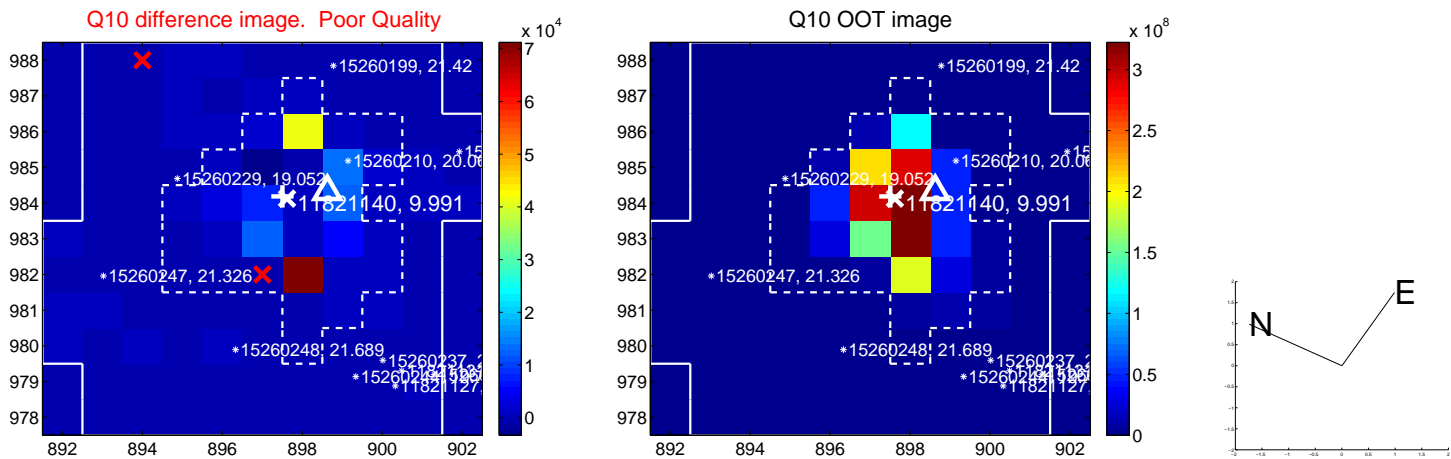
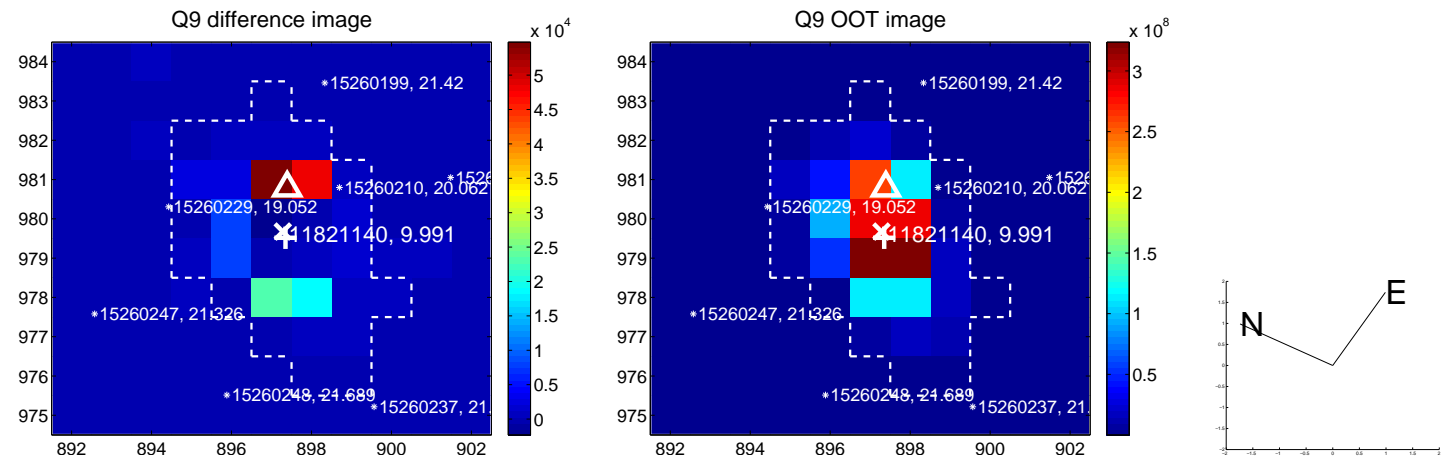
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



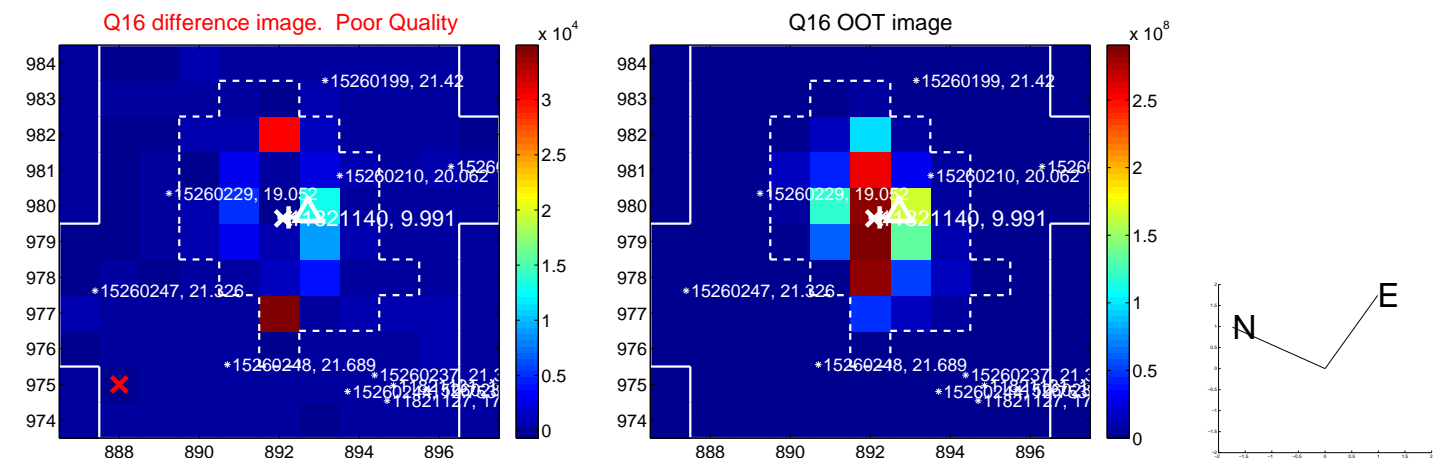
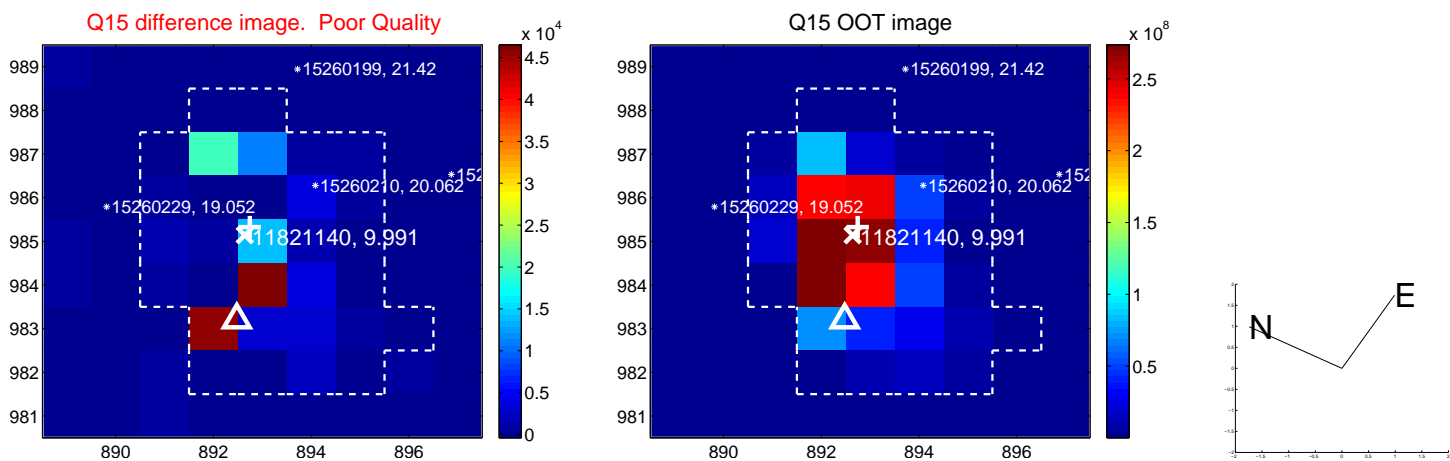
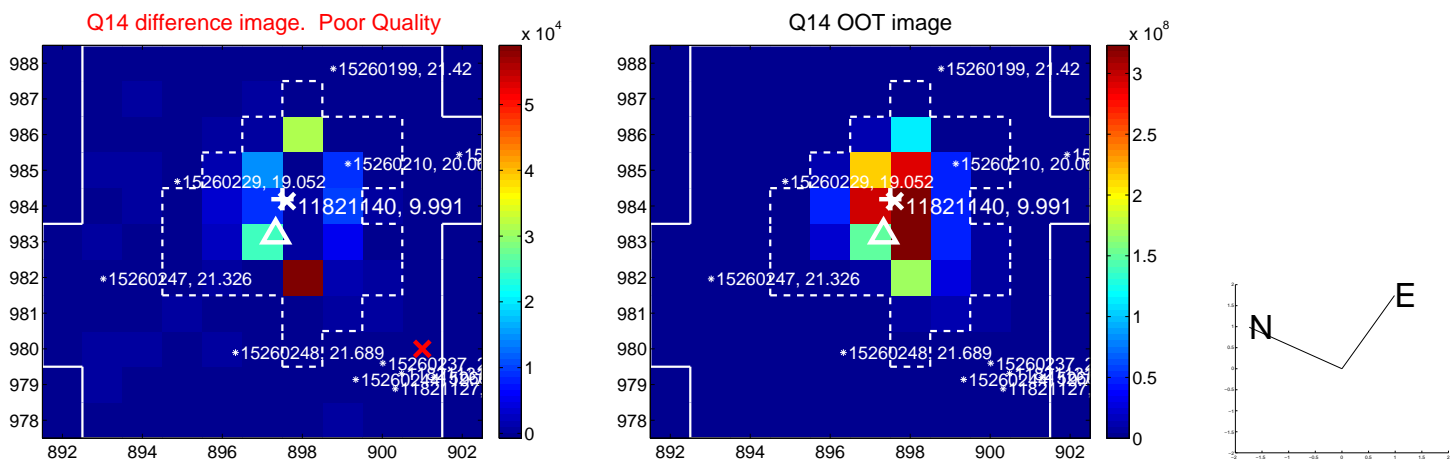
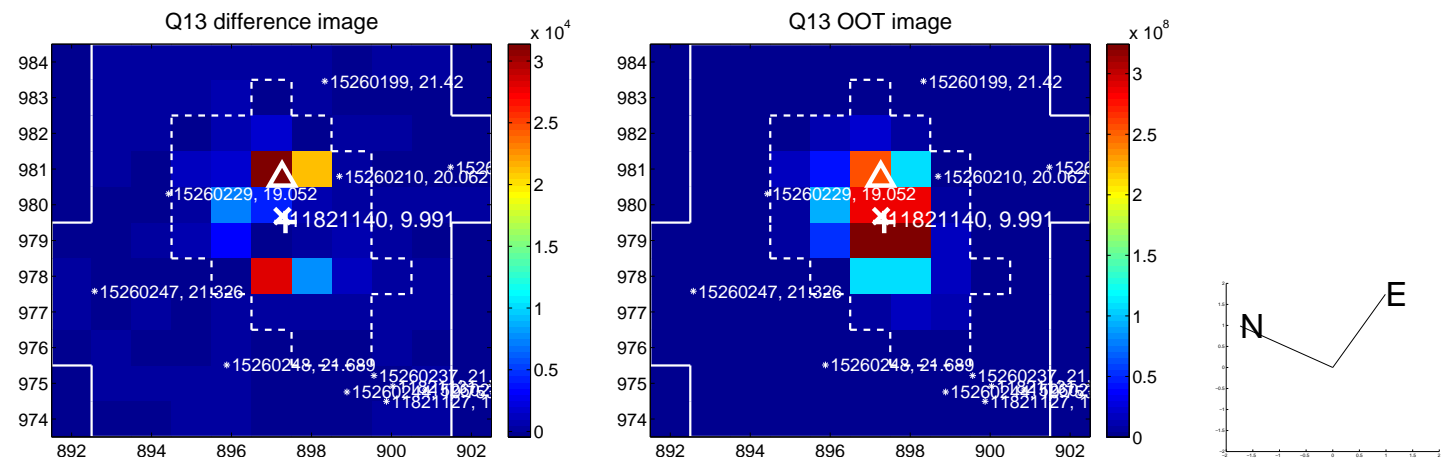
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



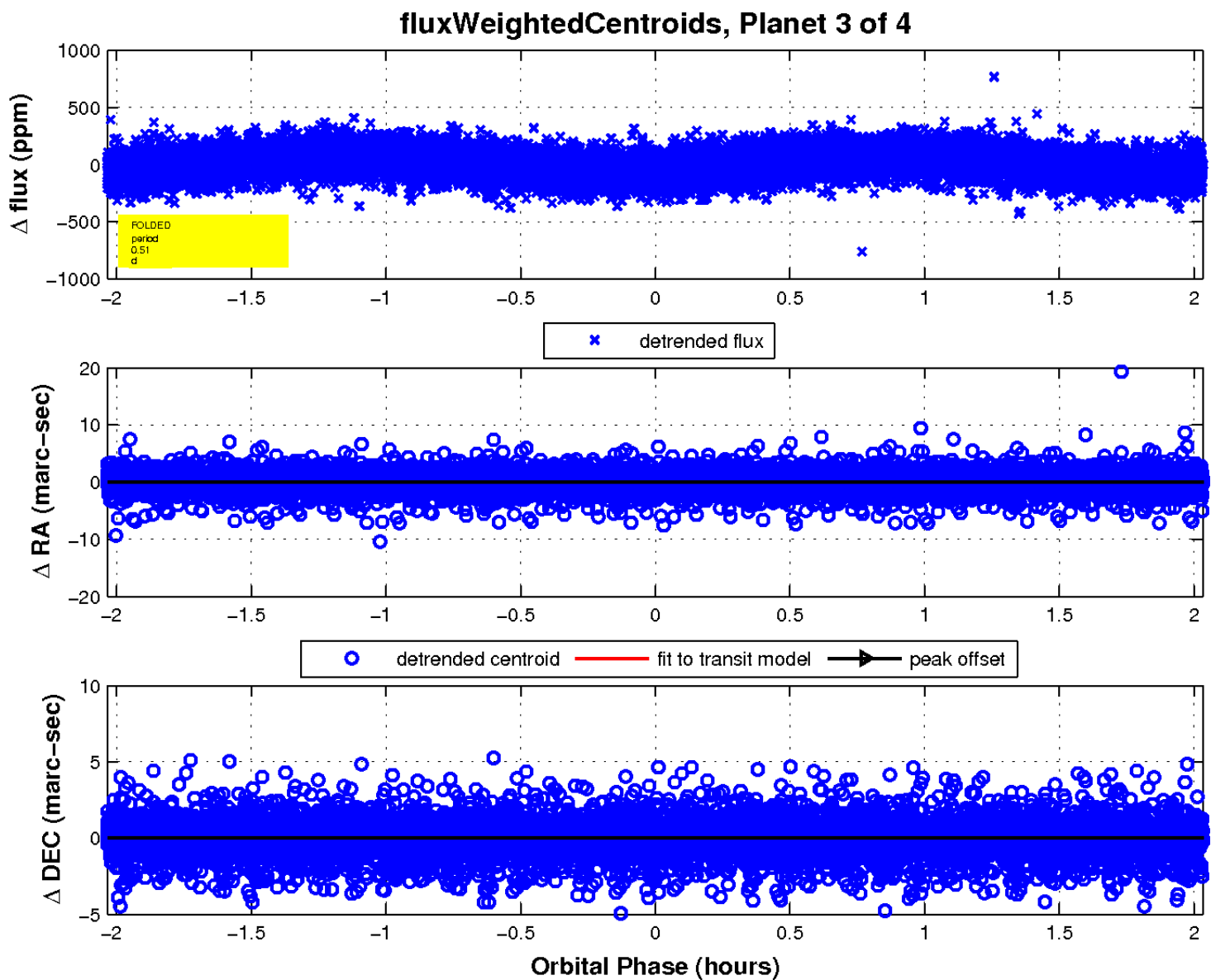
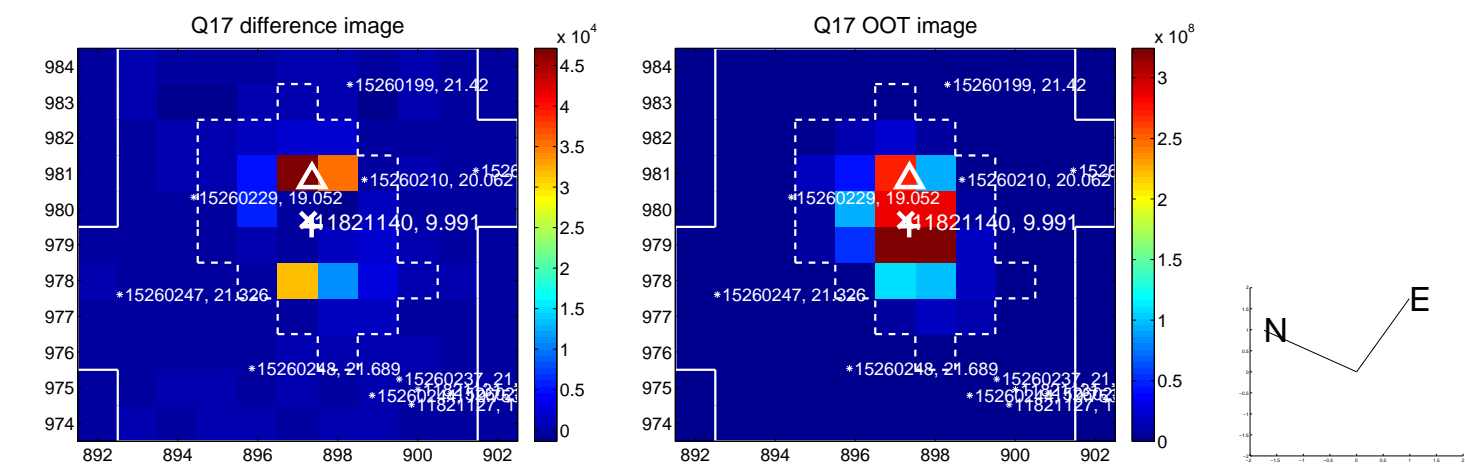
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



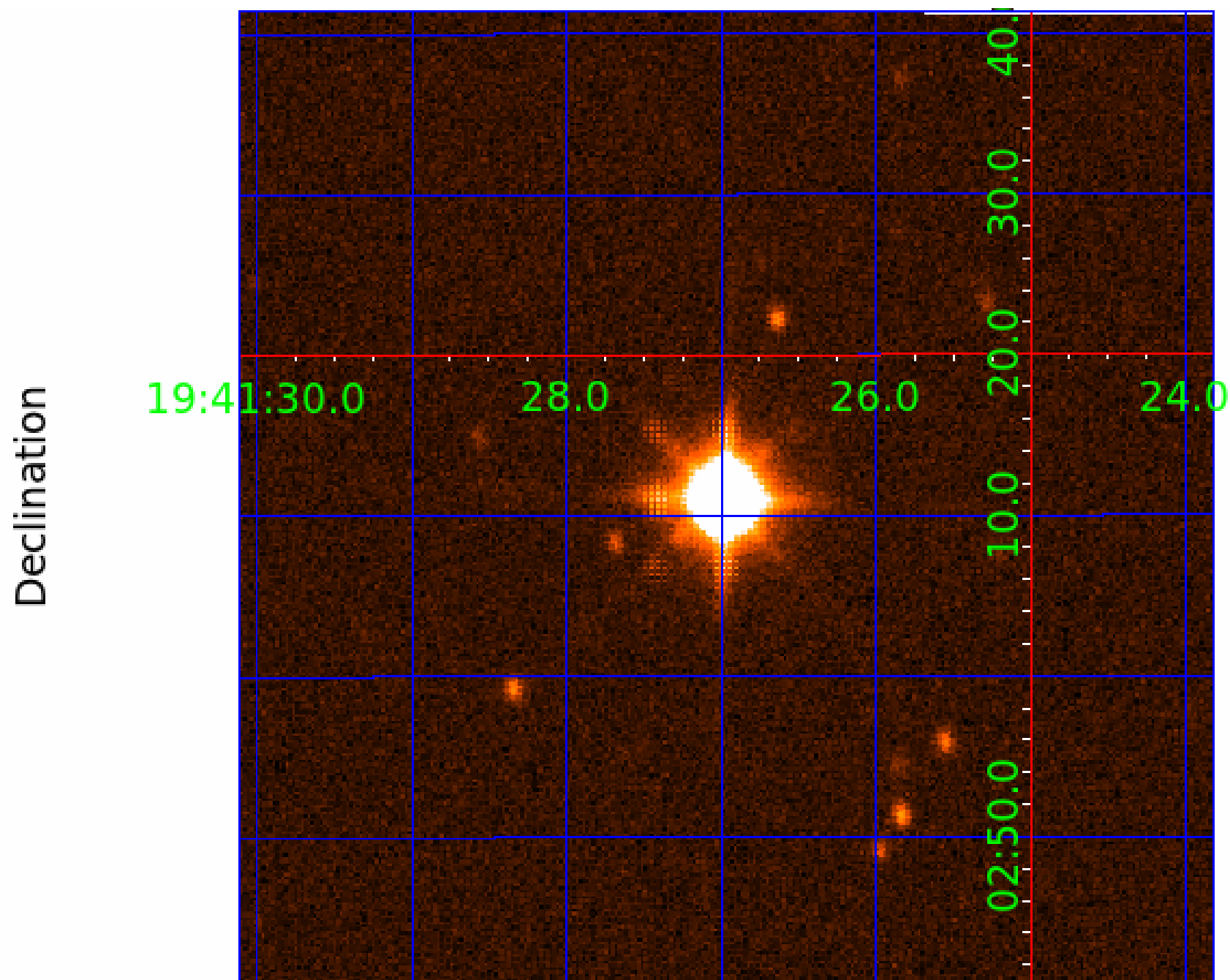
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 011821140

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})
011821140-01	OBS	No	0.539959	131.974420	12.5	1.414	13.5	10.0	3.21	8262	1.32	157882.31
011821140-02	OBS	No	0.505781	131.570825	72.4	0.696	12.7	30.7	3.21	8262	2.98	172265.67
011821140-03	OBS	No	0.505781	131.740210	79.4	0.678	14.7	34.2	3.21	8262	3.02	172265.57
011821140-04	OBS	No	0.505775	131.911369	50.3	0.964	18.5	27.5	3.21	8262	2.67	172268.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011821140-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED
011821140-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011821140-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
011821140-04	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED

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

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

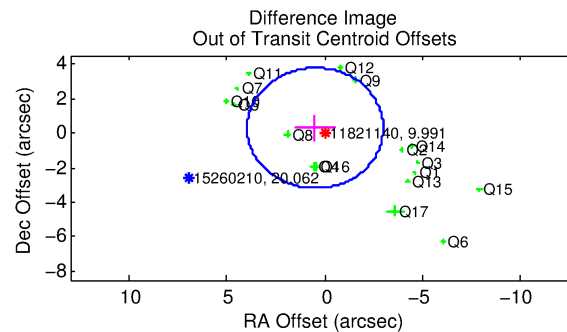
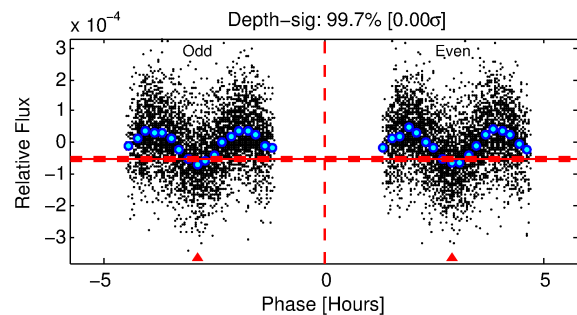
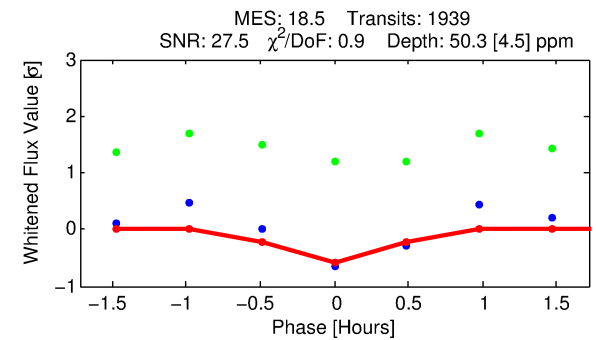
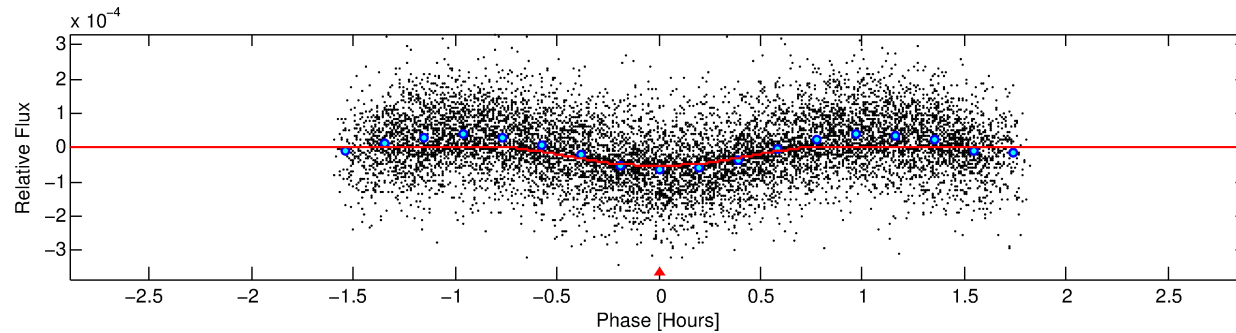
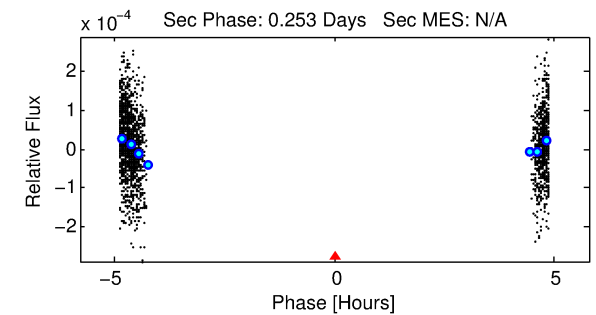
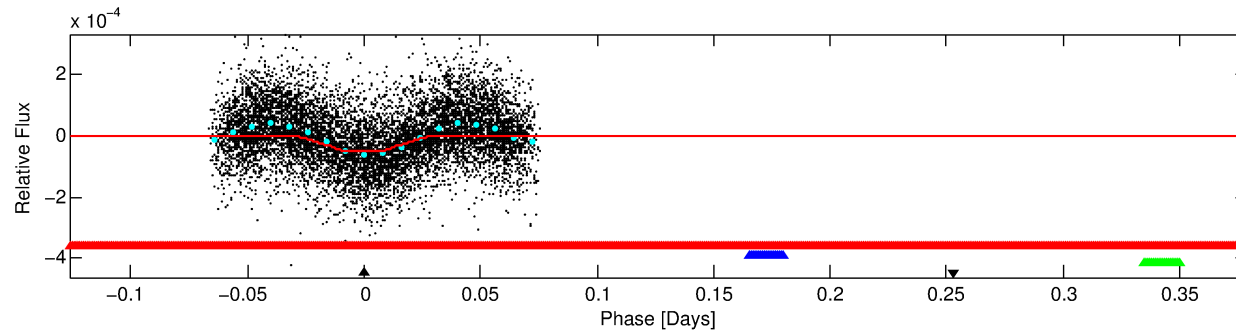
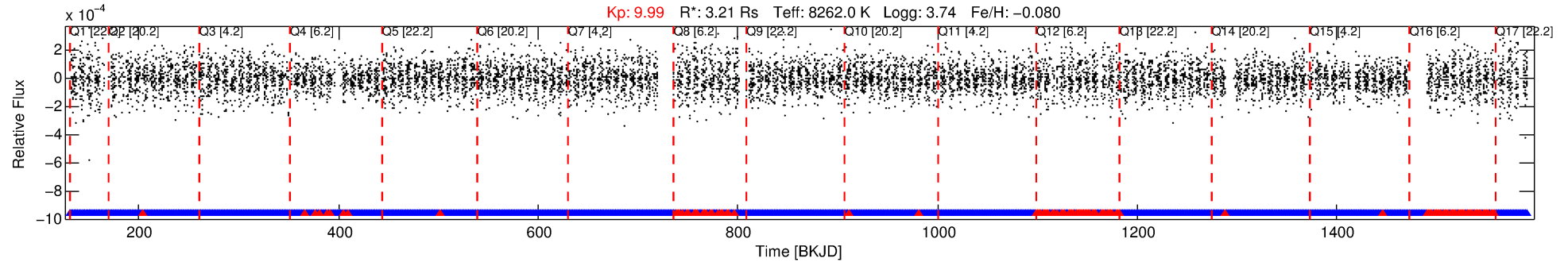
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011821140-04

No Significant Match Found

DV One-Page Summary

KIC: 11821140 Candidate: 4 of 4 Period: 0.506 d



DV Fit Results:

Period = 0.50578 [0.00001] d
Epoch = 131.9114 [0.0007] BKJD
Rp/R* = 0.0076 [0.0008]
a/R* = 2.04 [0.93]
b = 0.90 [0.13]
Seff = 172268.01 [127565.25]
Teff = 5195 [962] K
Rp = 2.67 [1.30] Re
a = 0.0158 [0.0071] AU

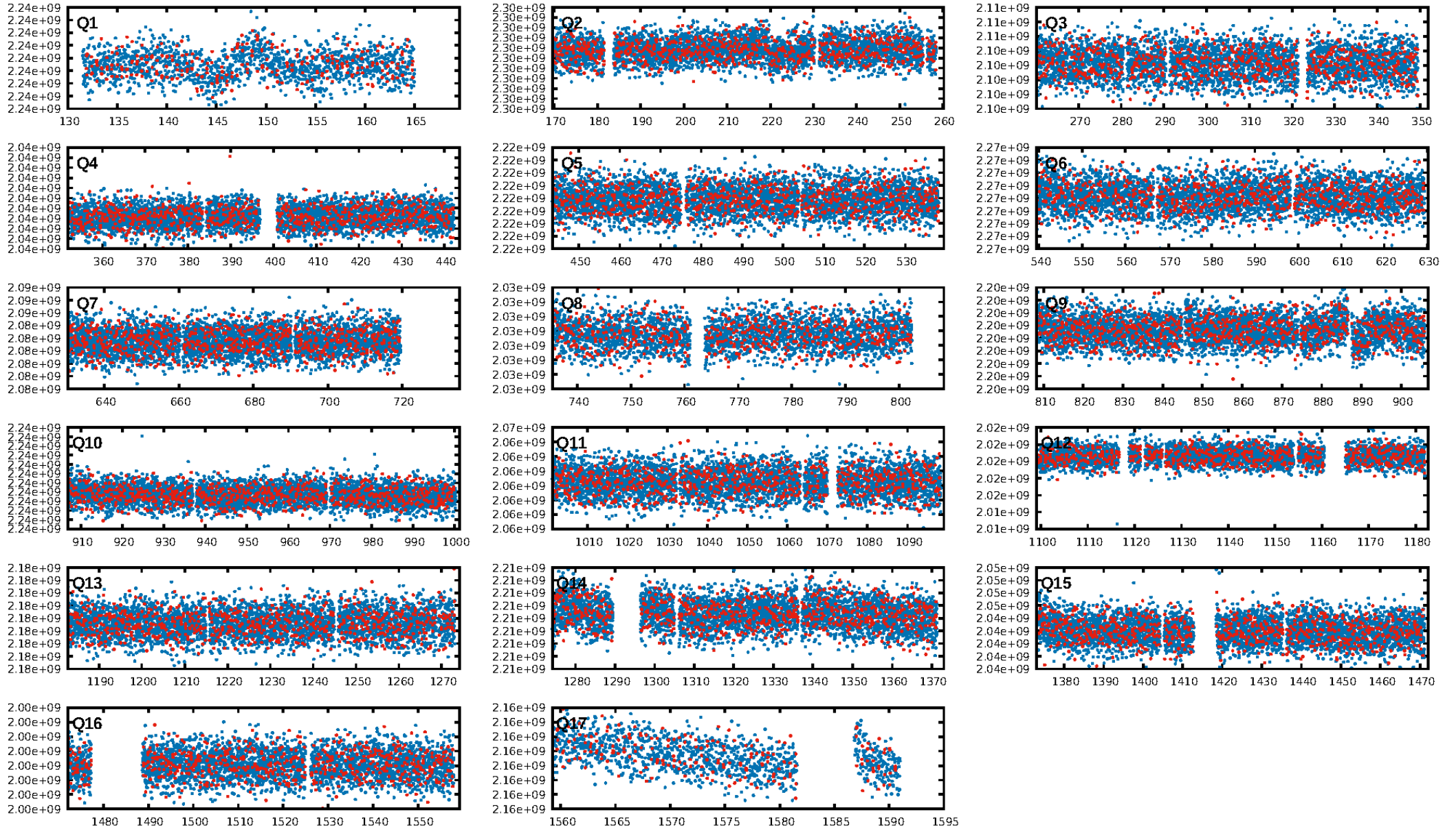
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.89 [1652/1851]
GhostDiagnostic-chr: N/A
Centroid-sig: 2.3%
Centroid-so: 0.719 arcsec [3.80σ]
OotOffset-rm: 0.564 arcsec [0.49σ]
KicOffset-rm: 0.448 arcsec [0.35σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.12 [2/17]
DiffImageOverlap-fno: 0.00 [0/17]

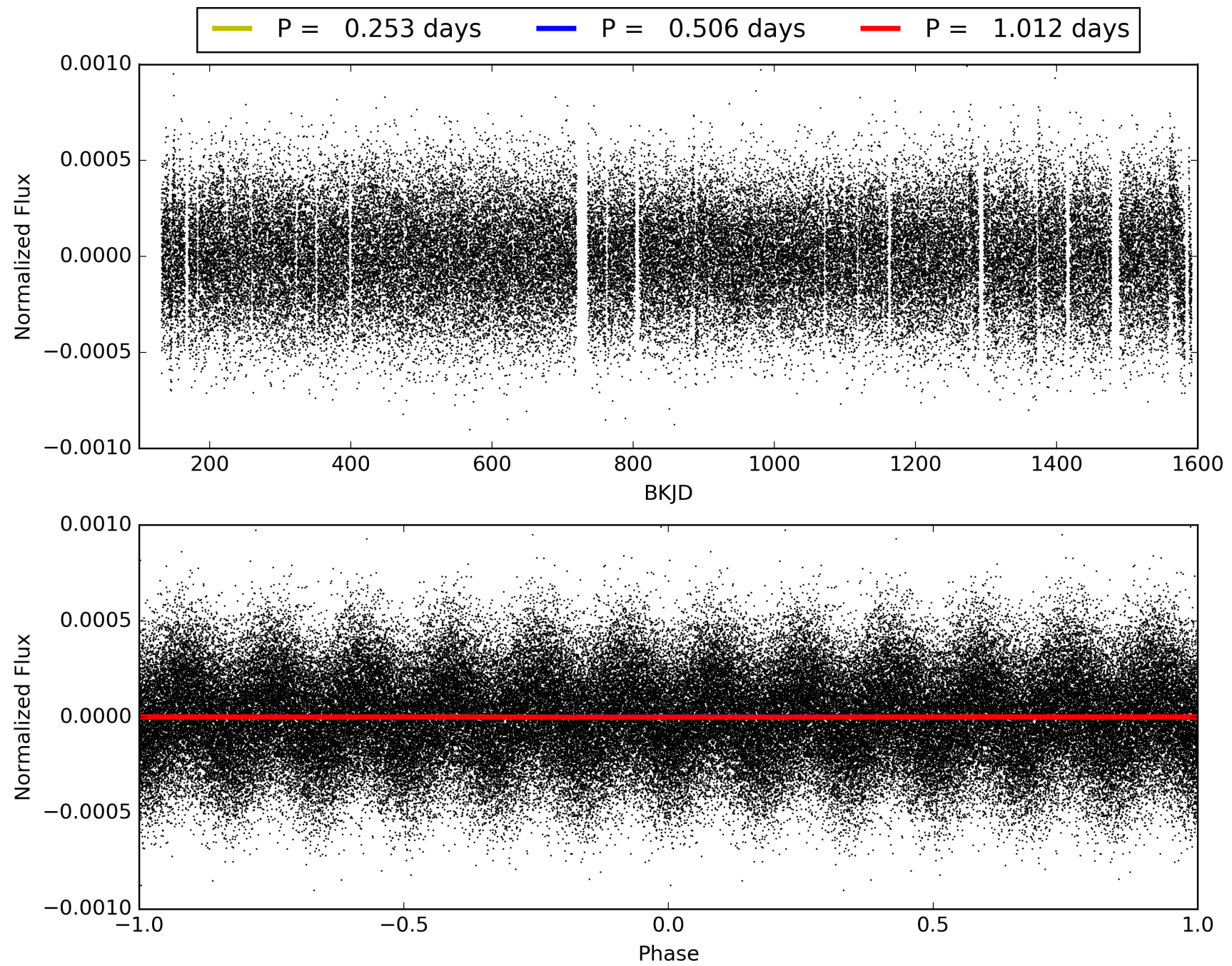
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:43:57 Z

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

TCE 011821140-04, PDC Light Curves

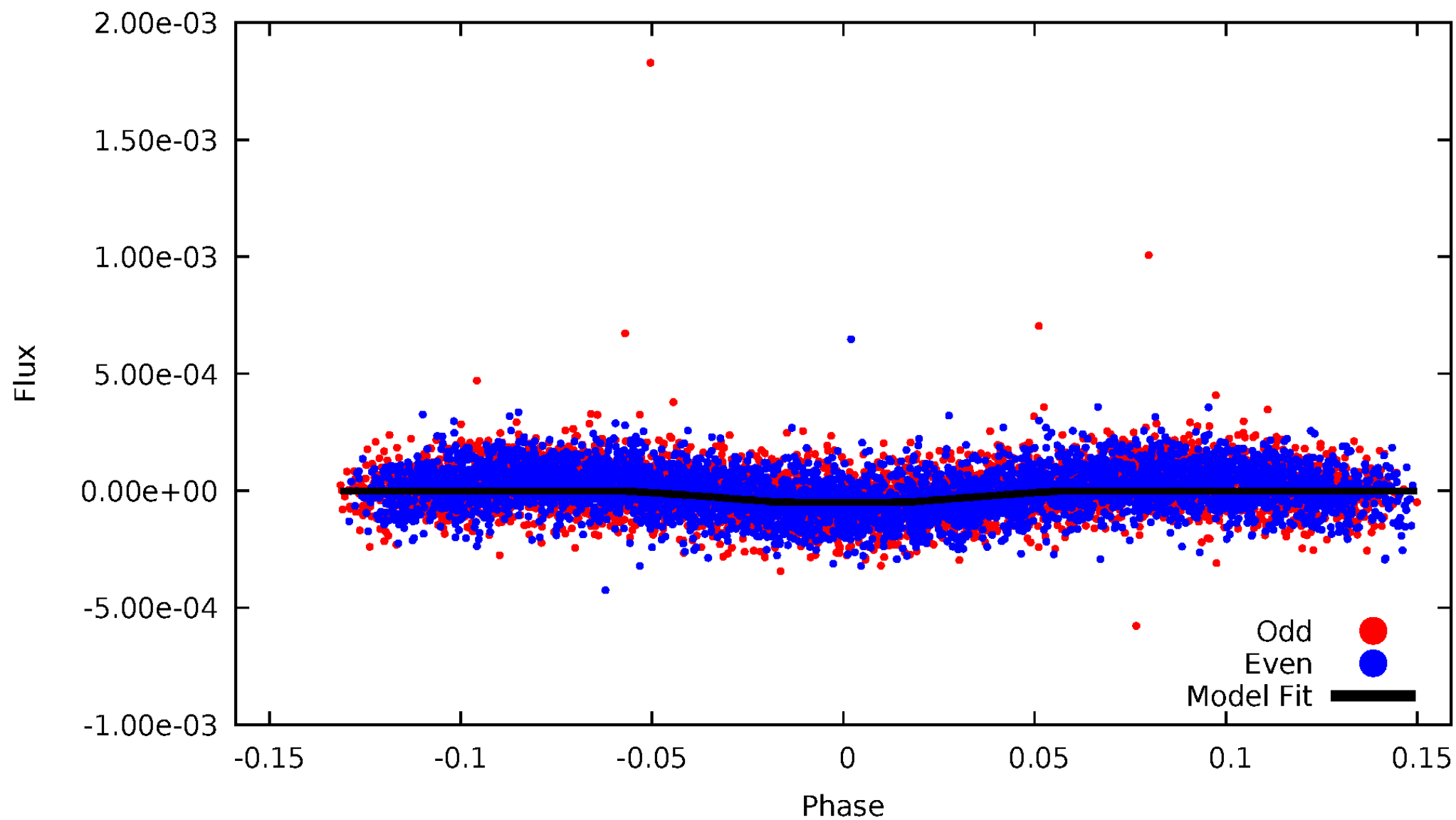


TCE 011821140-04



DV Odd/Even

TCE 011821140-04

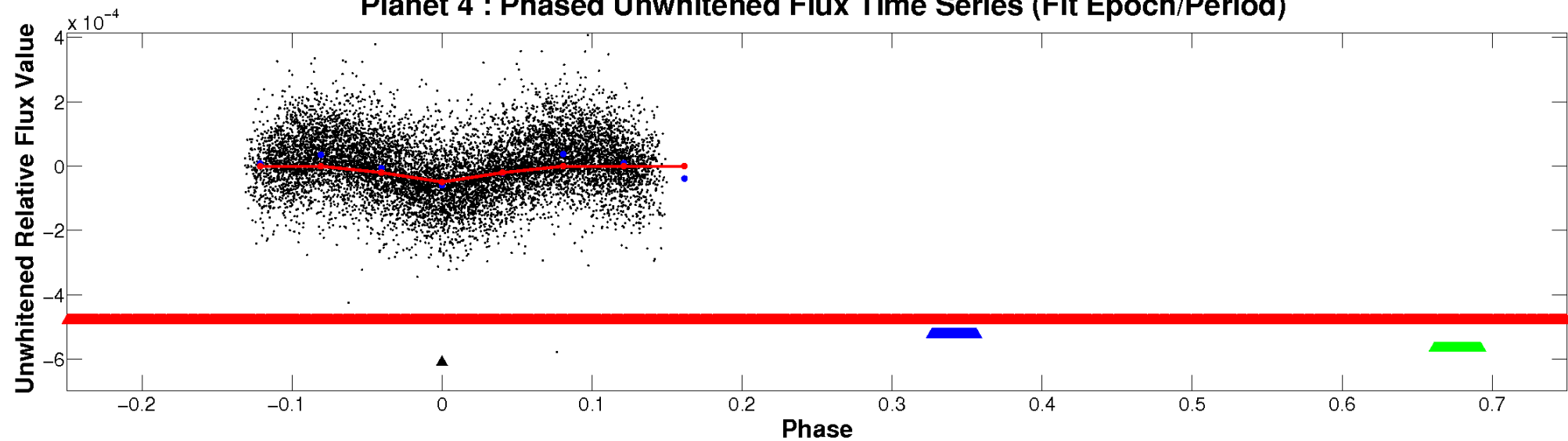


ALT Odd/Even

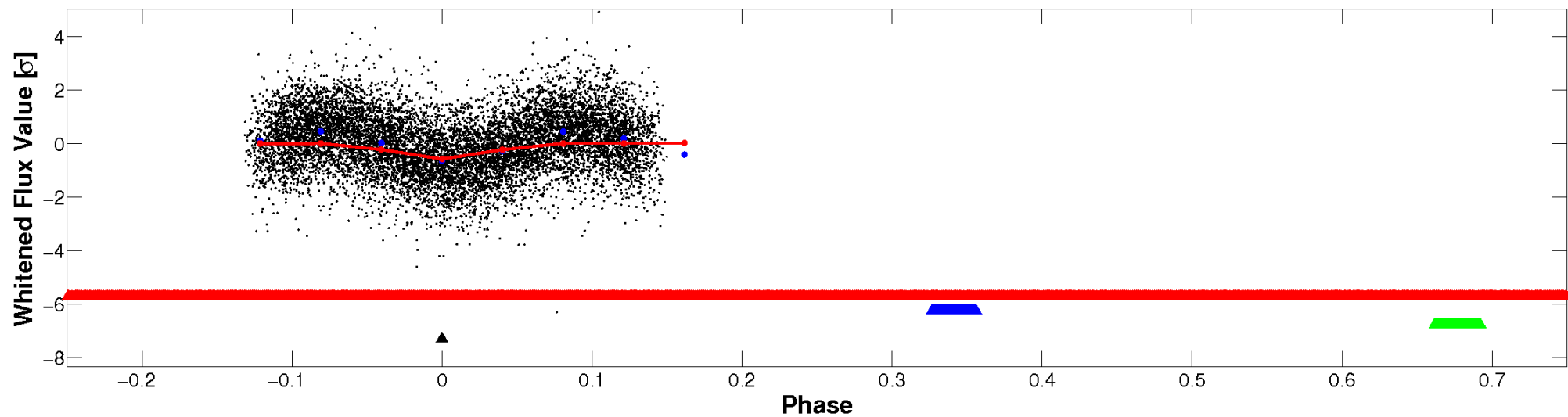
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

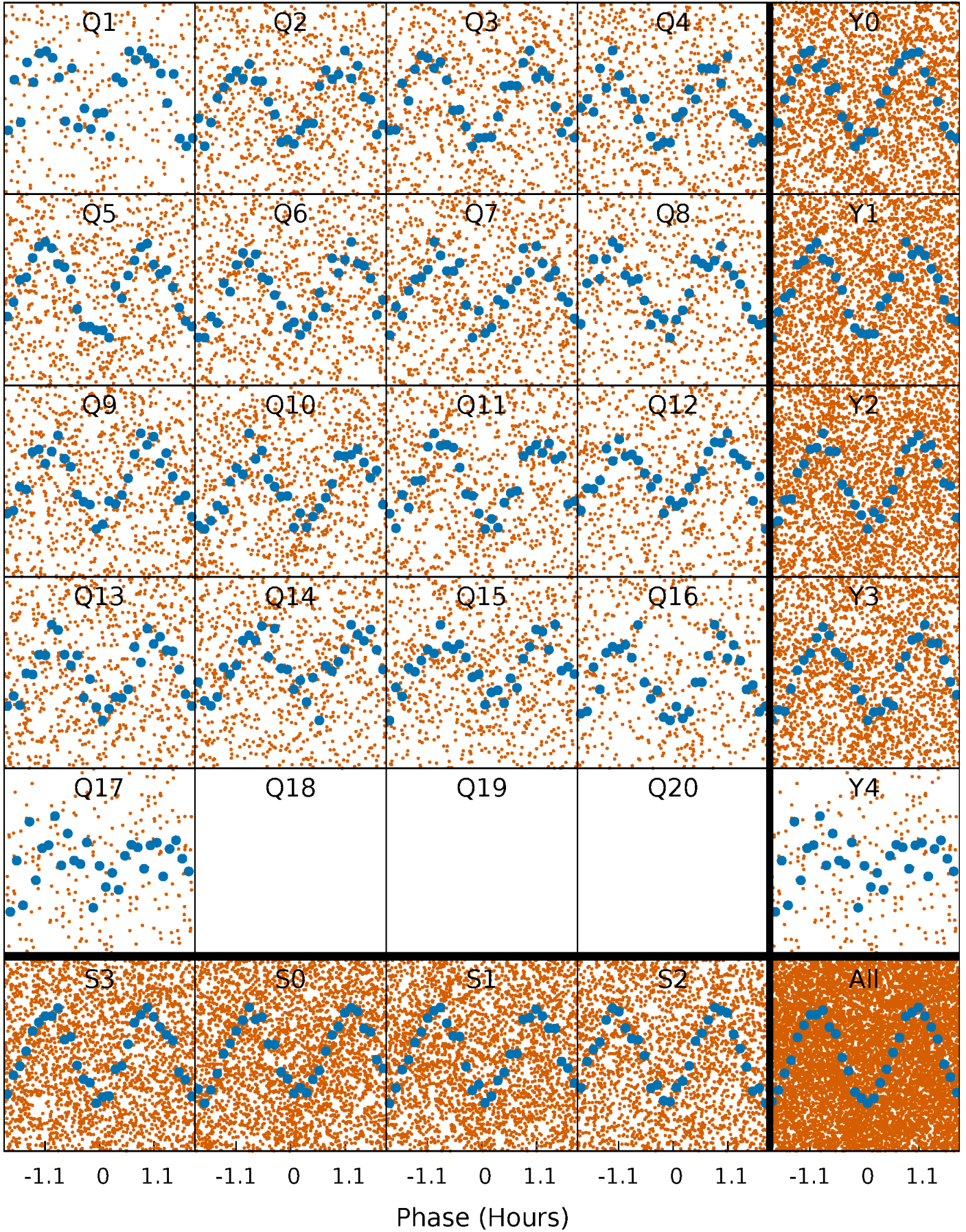


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



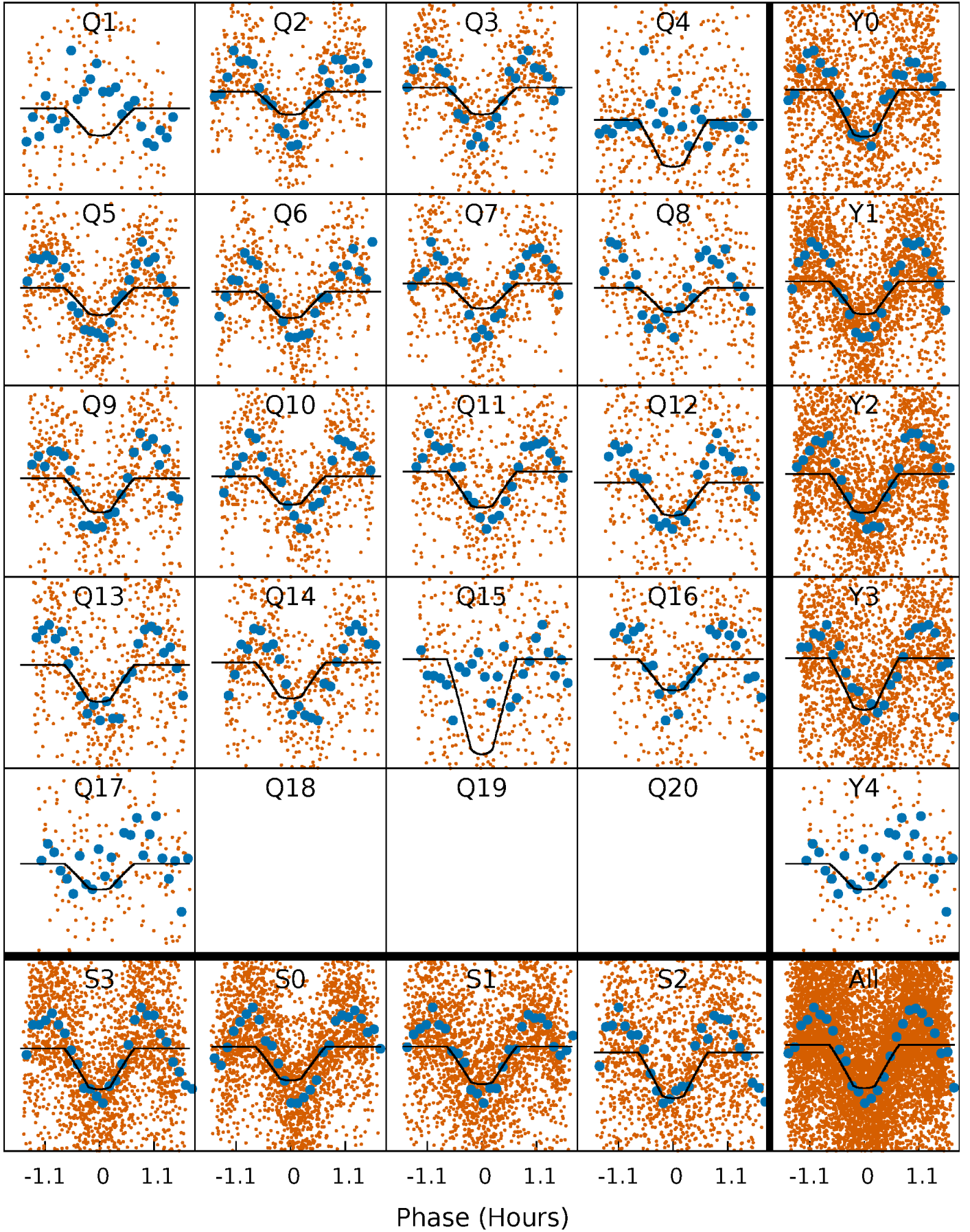
PDC Quarter-Phased Transit Curves

TCE 011821140-04 P= 0.505775 Days $T_0=131.911369$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 011821140-04 $P = 0.505775$ Days $T_0 = 131.911369$ (BKJD)

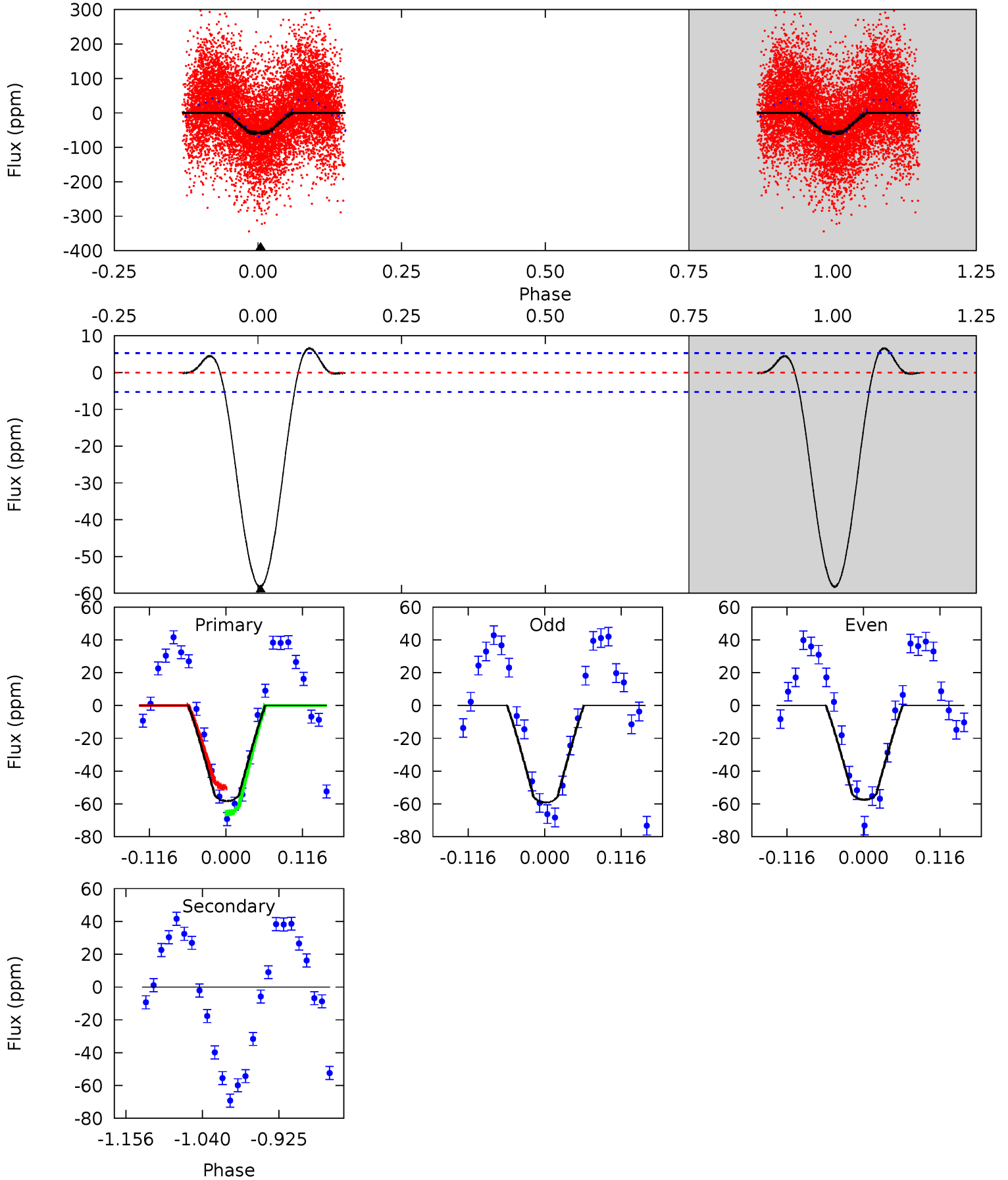


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

011821140-04, P = 0.505775 Days, E = 131.405594 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
49.9	0	0	0	4.53	1.57	0.28	49.9	49.9	0	0	0.75	0.97	0.10	6.20



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 011821140

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8262^{+200}_{-372}	$3.738^{+0.420}_{-0.140}$	$-0.080^{+0.250}_{-0.350}$	$3.209^{+0.938}_{-1.524}$	$2.053^{+0.329}_{-0.493}$	$0.088^{+0.349}_{-0.036}$
	+2%/-5%	+11%/-4%	+312%/-438%	+29%/-47%	+16%/-24%	+399%/-41%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011821140-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1	$2.52^{+0.55}_{-0.55}$	7057^{+589}_{-789}	-5621^{+559}_{-437}	$0.002^{+0.026}_{-0.027}$
Alt.	N/A	N/A	N/A	N/A	N/A

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

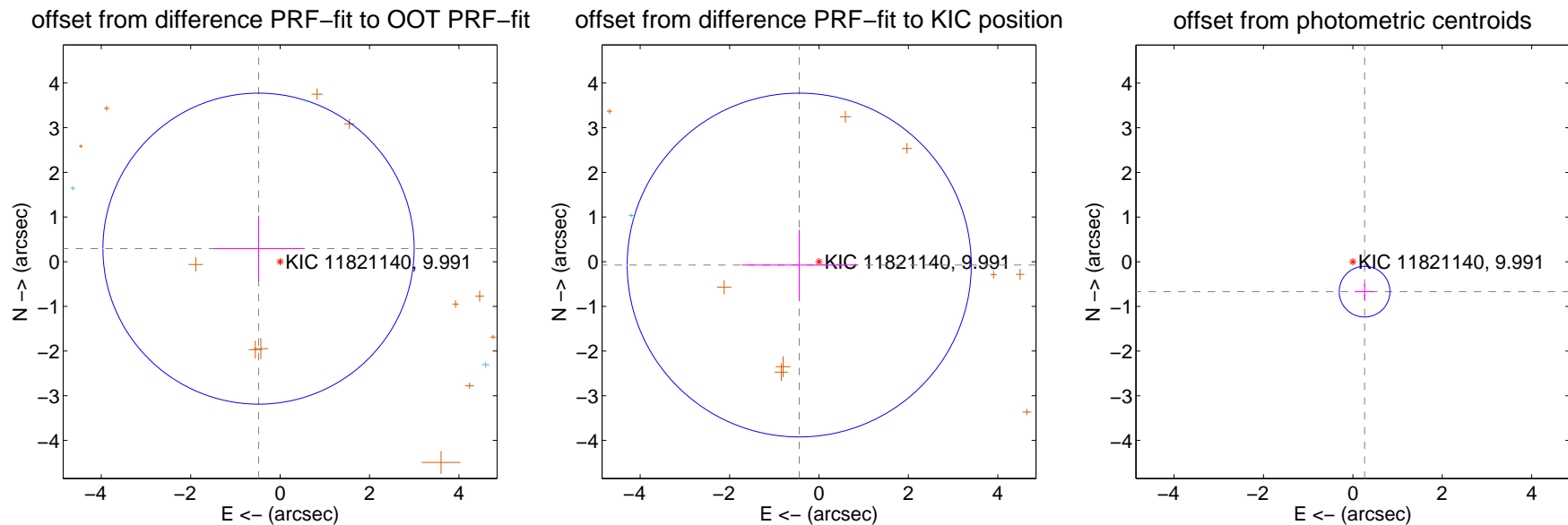
DV Centroid Data

Supplemental centroid analysis for 011821140-04. **Kepler magnitude: 9.99.** Transit SNR 27.51

There are 2 quarters with good PRF difference image offsets

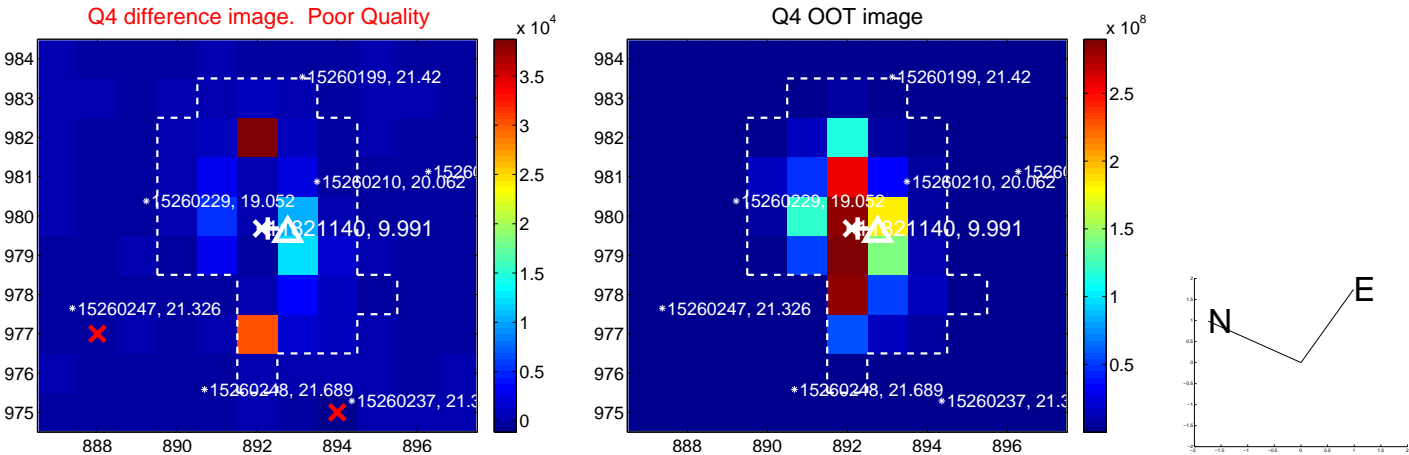
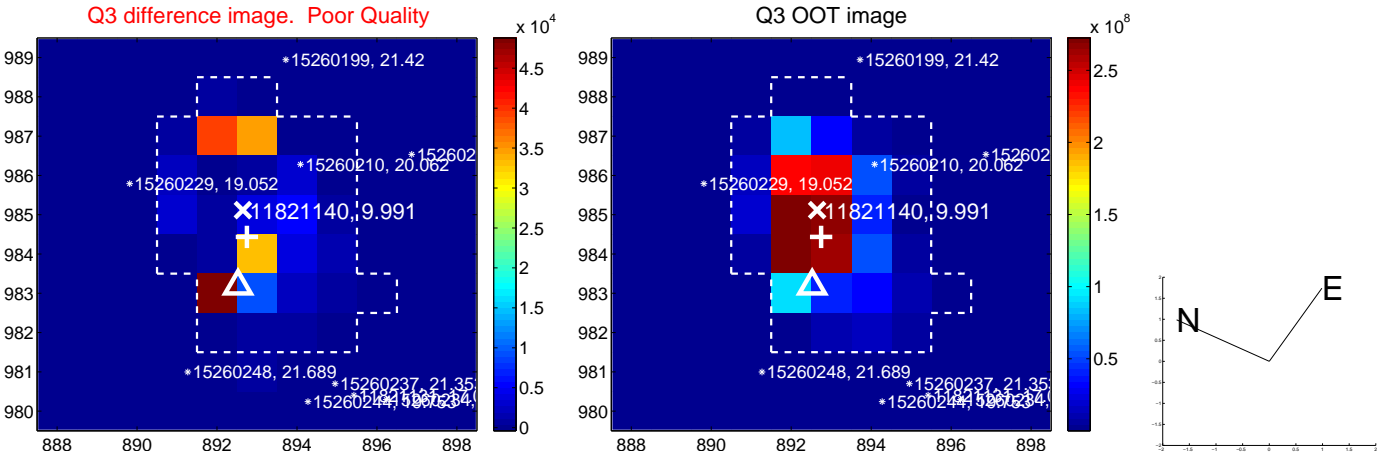
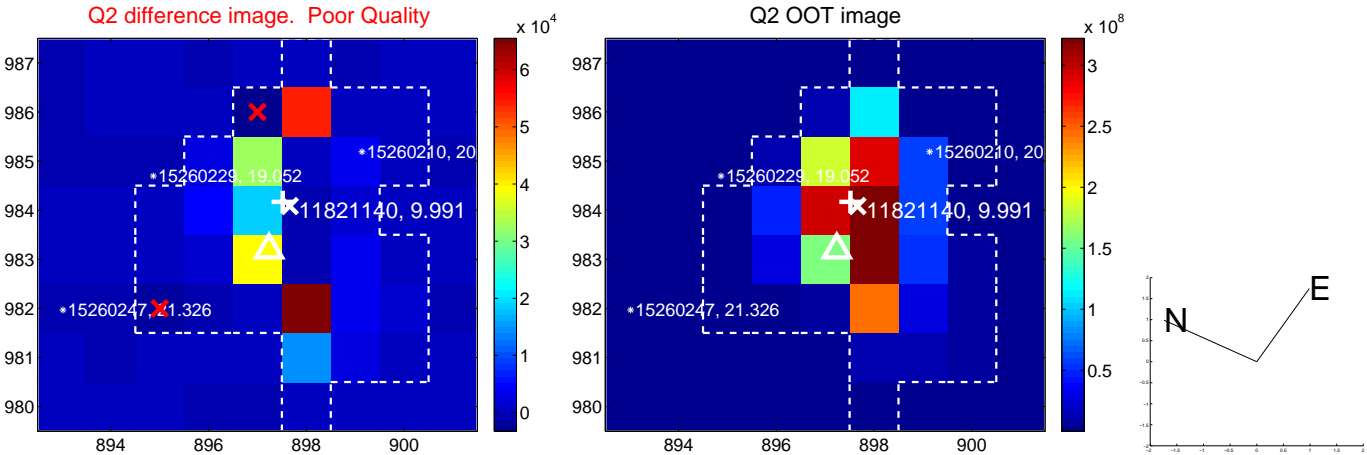
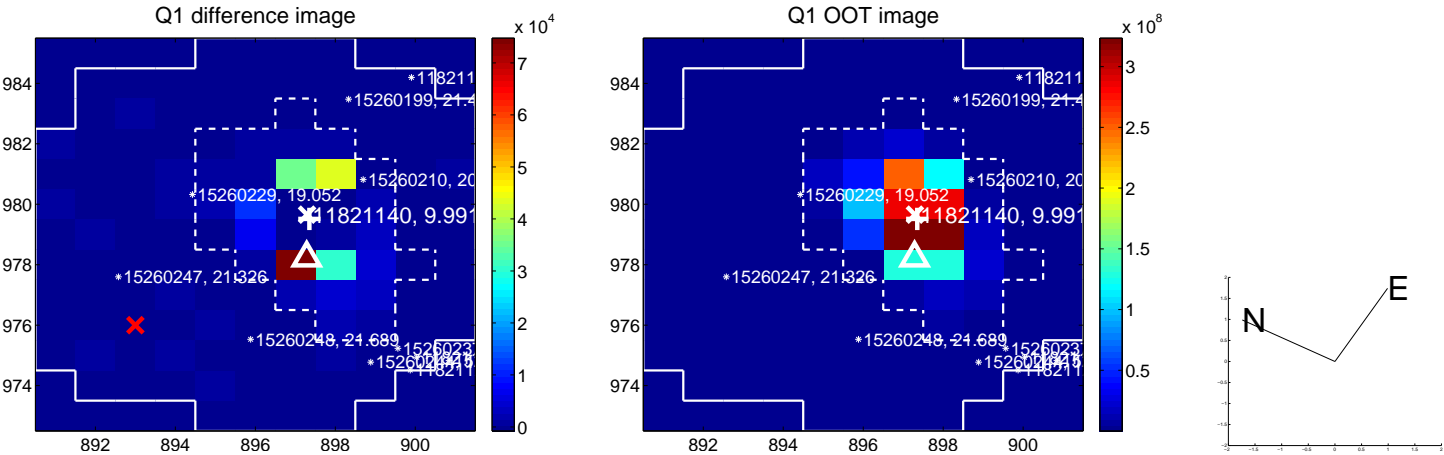
The direct PRF centroid is offset from the target star catalog position by about 0.77 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.564 ± 1.160	0.49	0.482 ± 1.007	0.292 ± 0.736
PRF-fit source offset from KIC position	0.448 ± 1.283	0.35	0.442 ± 1.294	-0.075 ± 0.790
photometric centroid source offset	0.72 ± 0.19	3.80	-0.26 ± 0.22	-0.67 ± 0.18

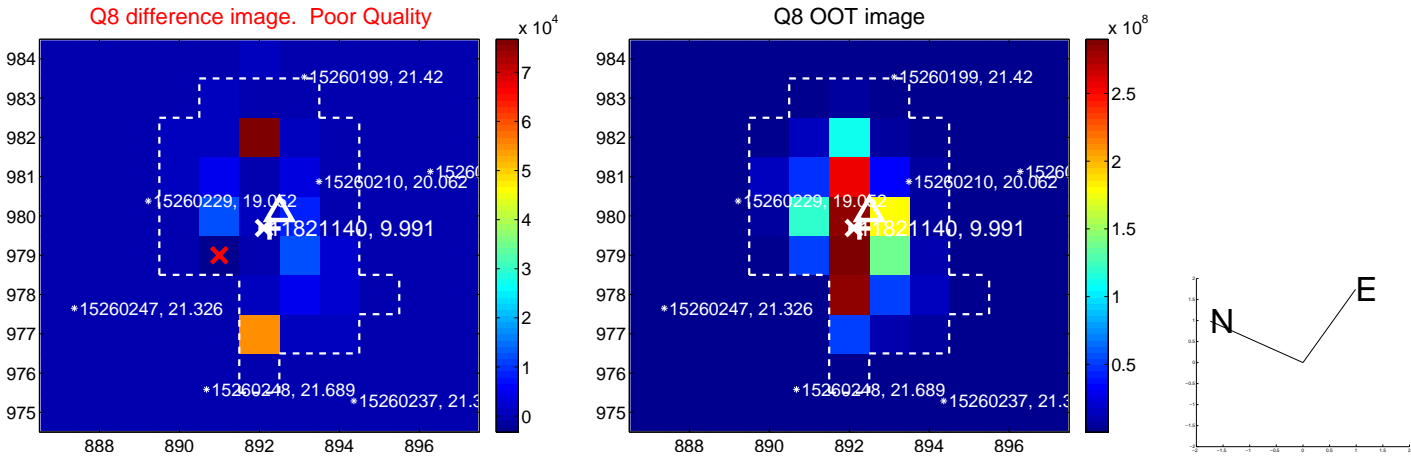
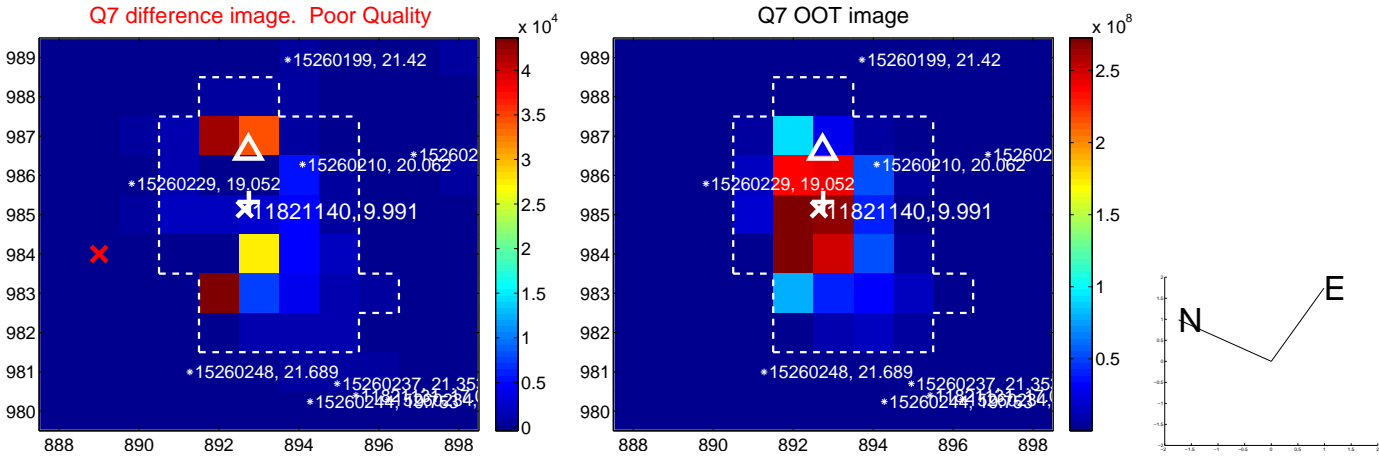
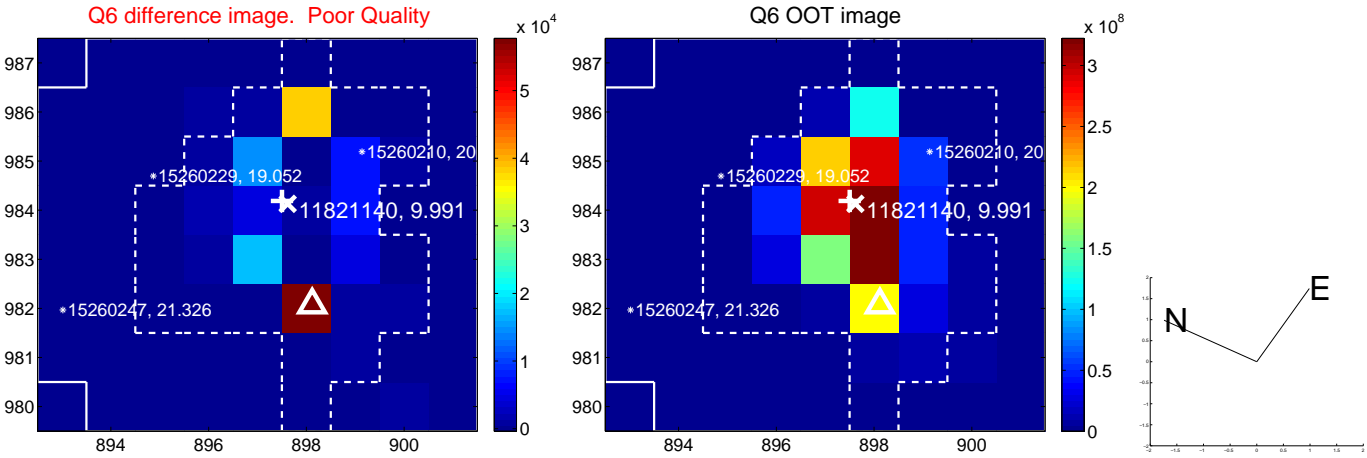
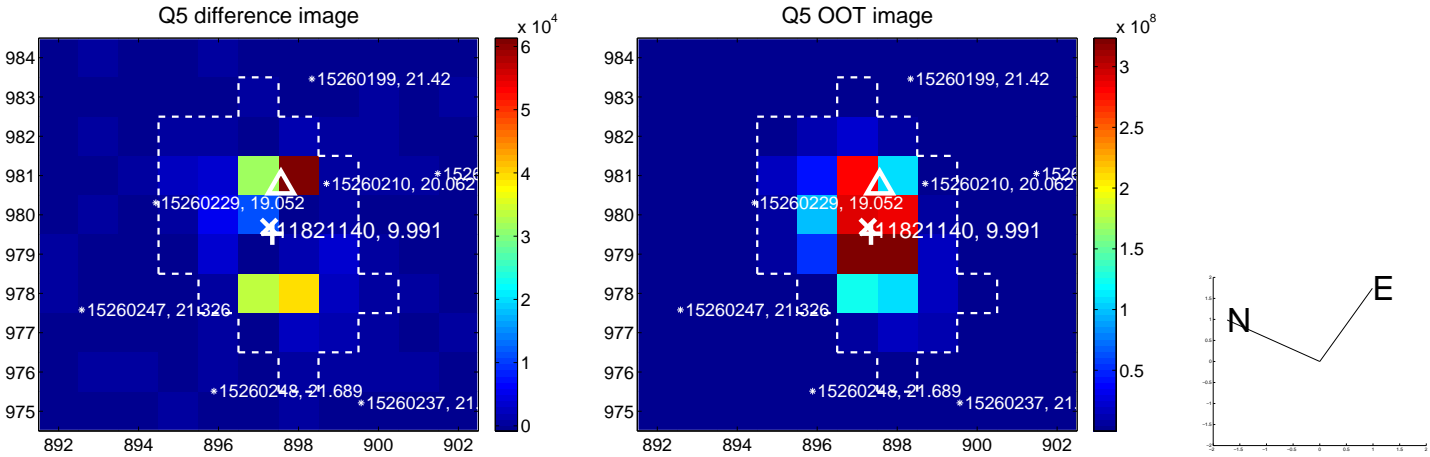


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

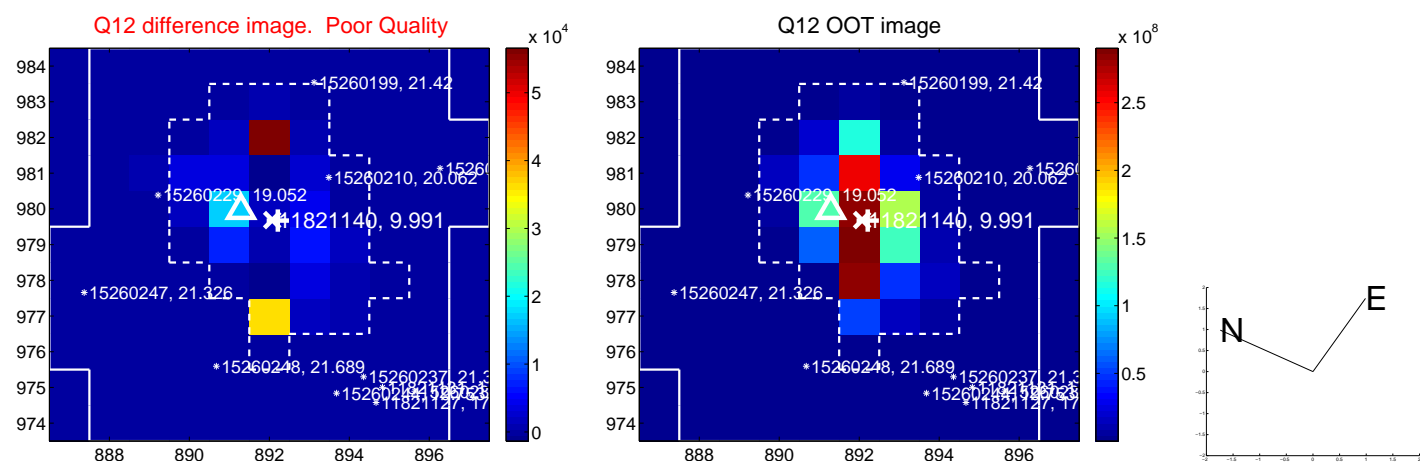
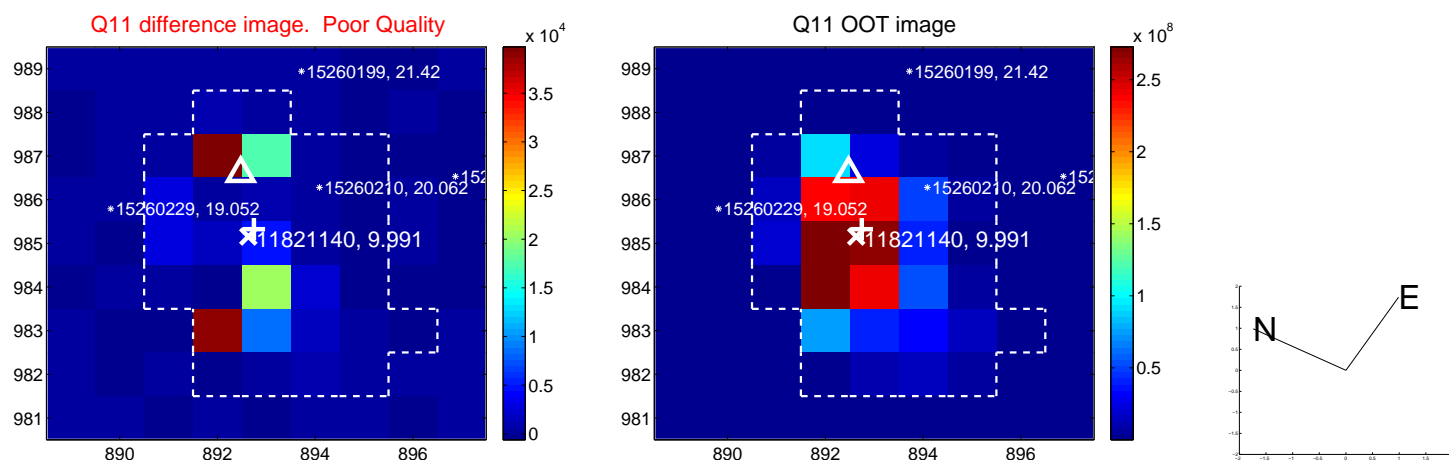
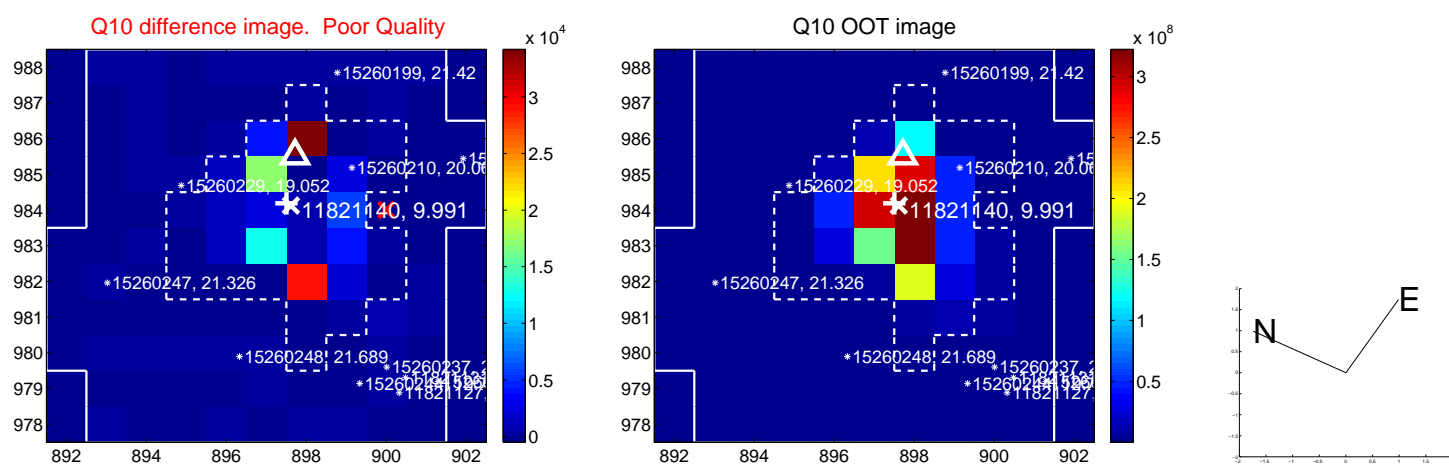
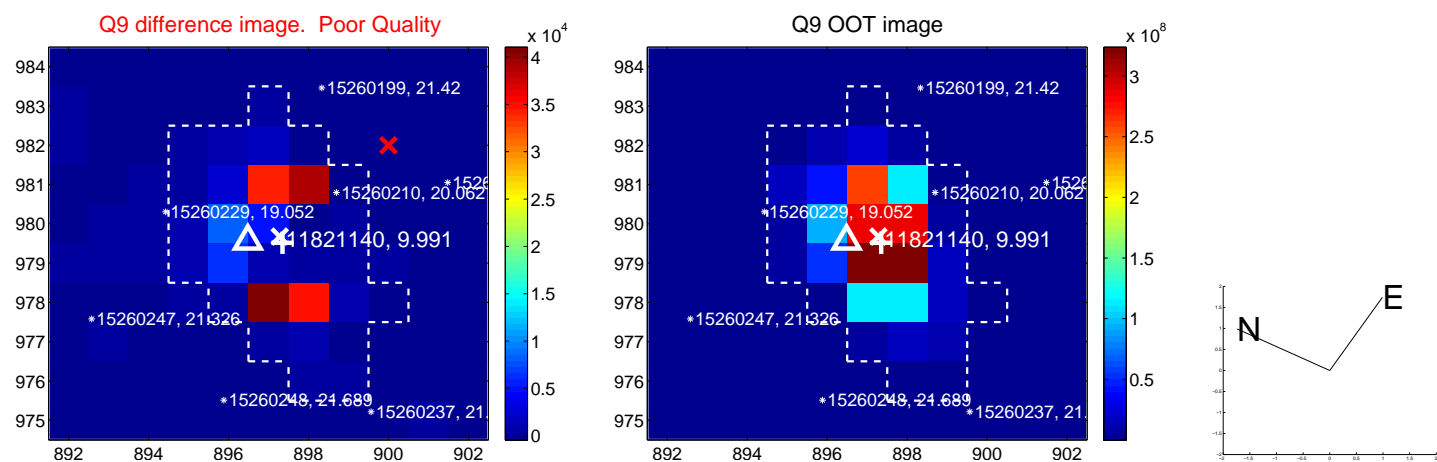
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



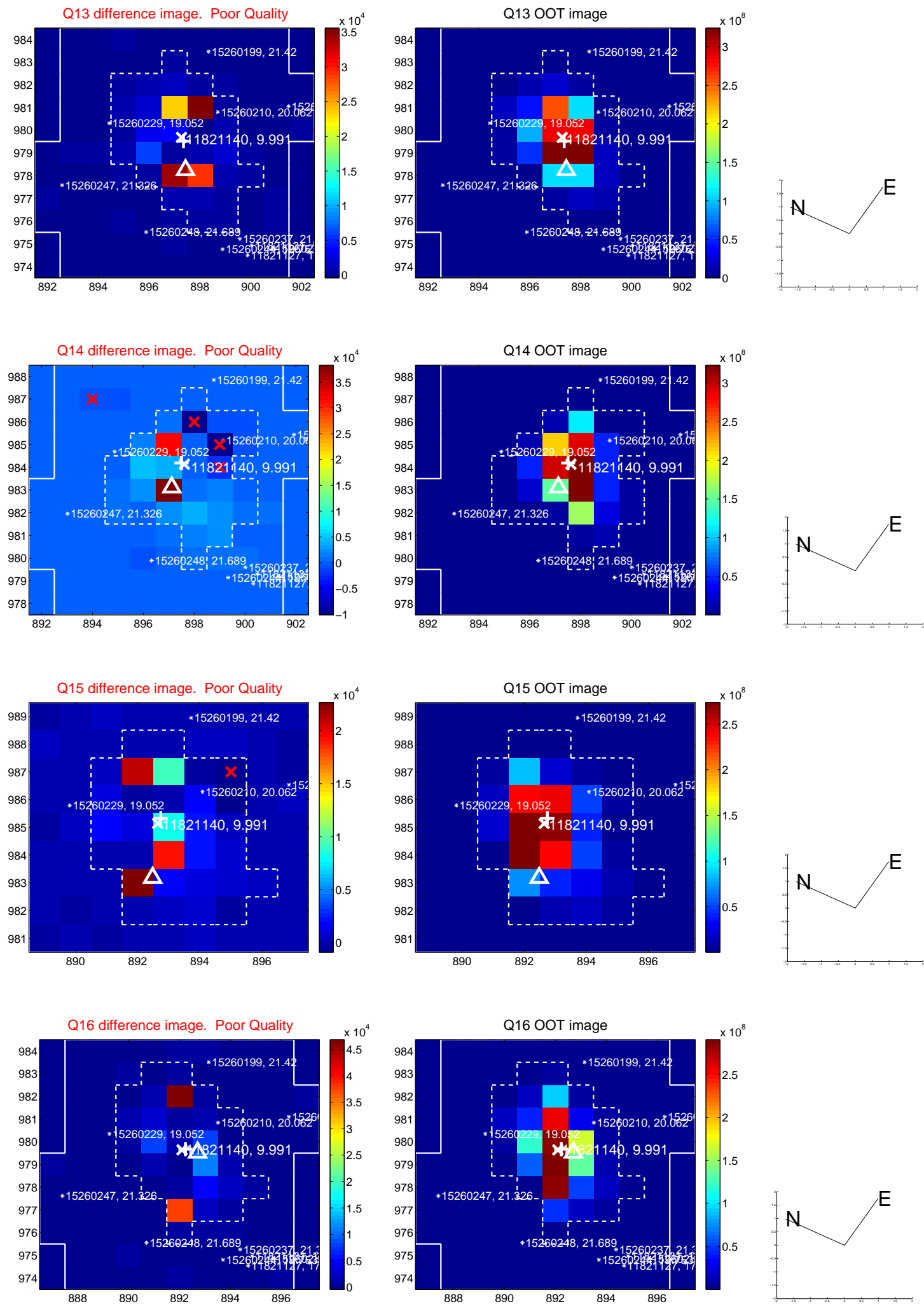
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



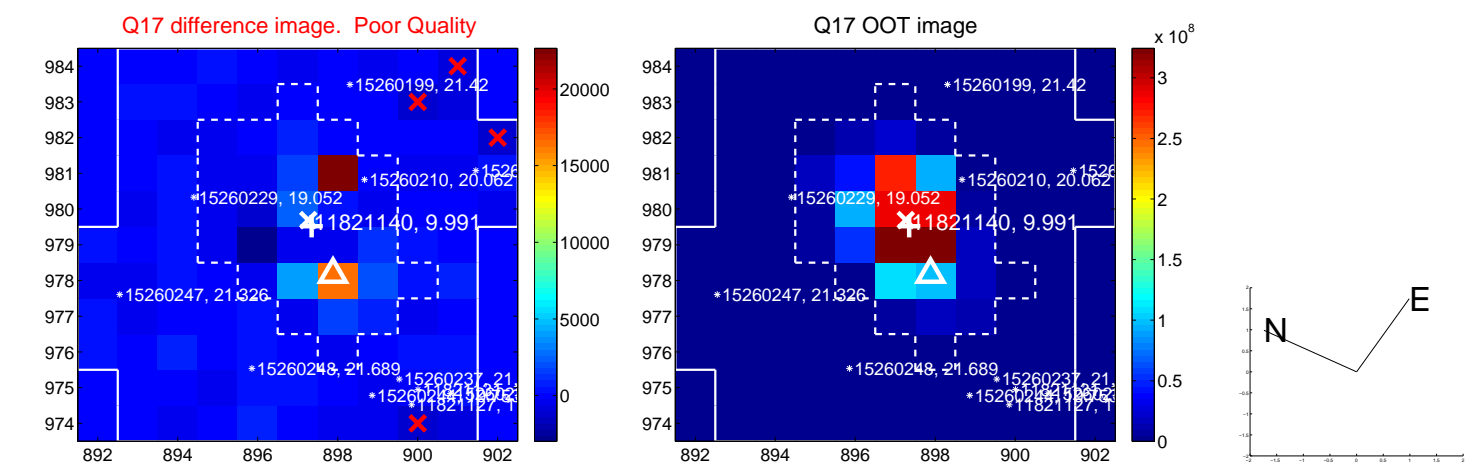
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



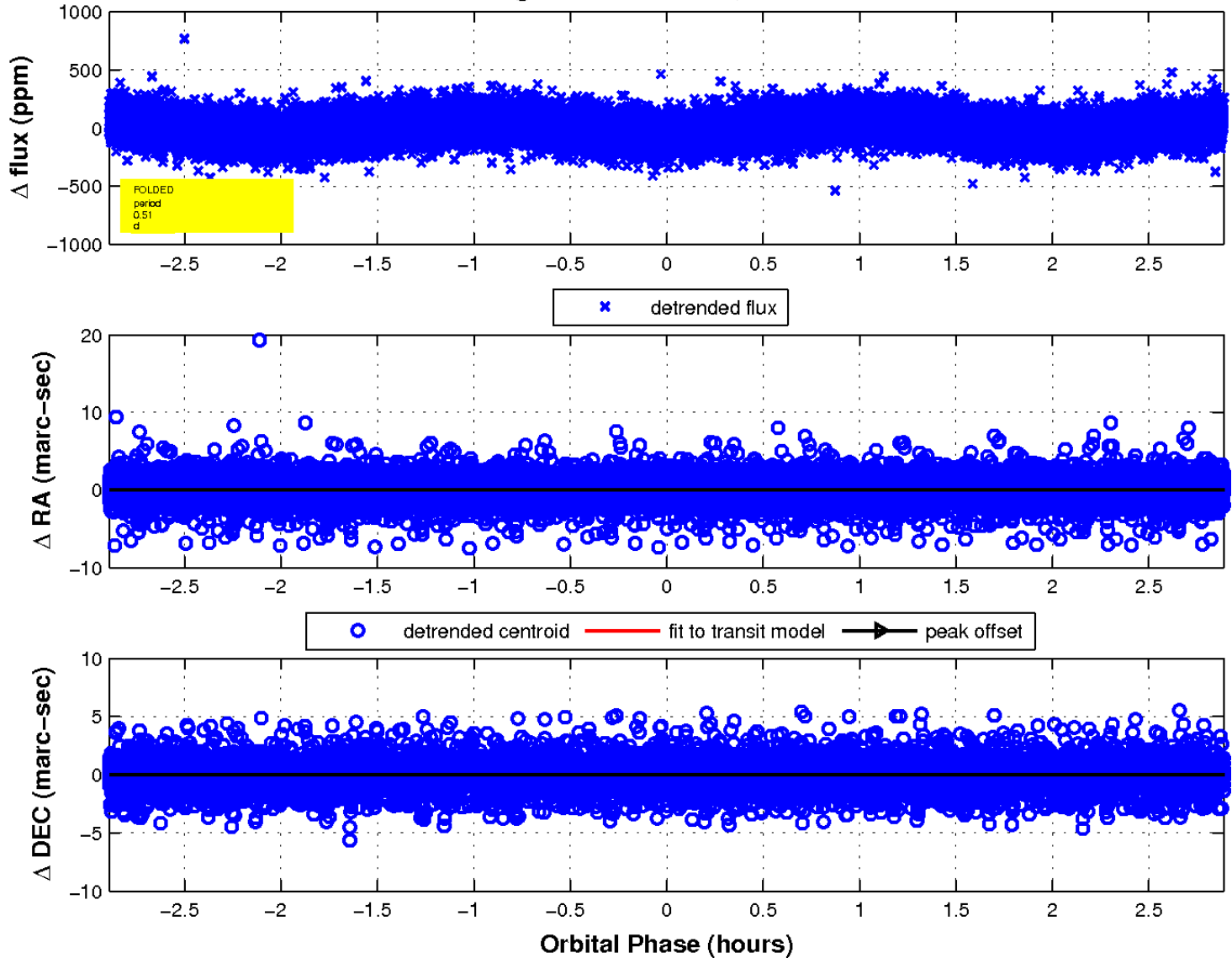
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

