

KIC 009953617

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})
009953617-01	OBS	No	2.758481	132.938186	340.5	7.614	12.5	12.9	3.12	7769	7.53	13966.36
009953617-02	OBS	No	2.758520	134.076629	246.7	5.545	9.2	9.6	3.12	7769	5.66	13966.10
009953617-03	OBS	No	0.509333	131.717935	1142.5	0.761	7.9	19.3	3.12	7769	12.52	132833.50
009953617-04	OBS	No	0.509321	131.980321	1026.8	0.597	9.5	16.0	3.12	7769	10.40	132837.68

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009953617-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009953617-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009953617-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009953617-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

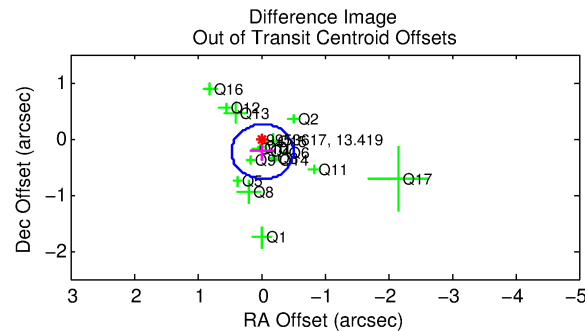
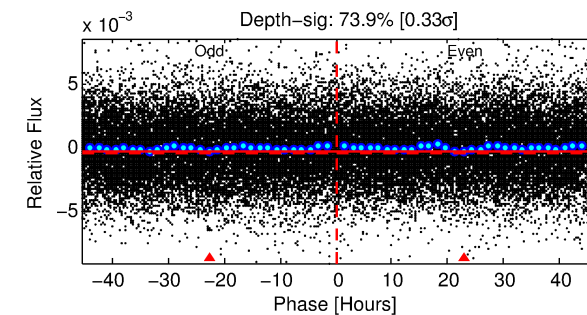
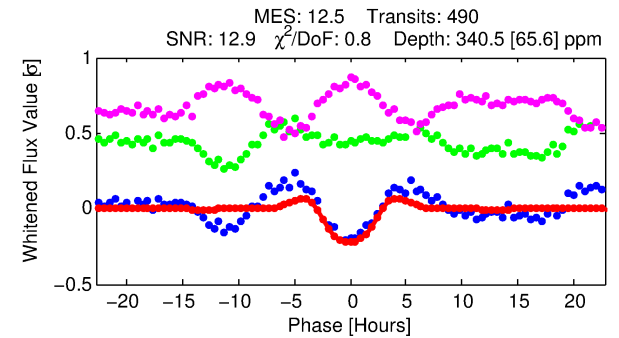
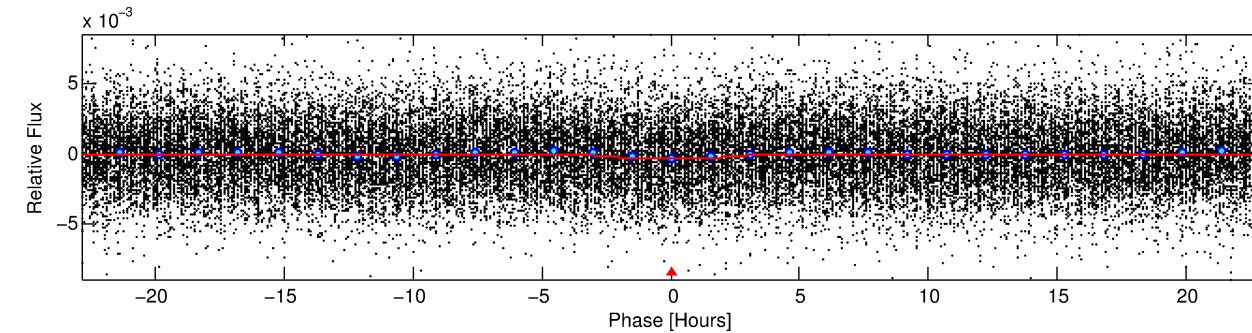
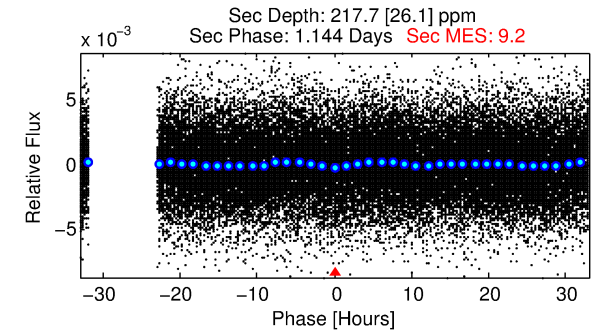
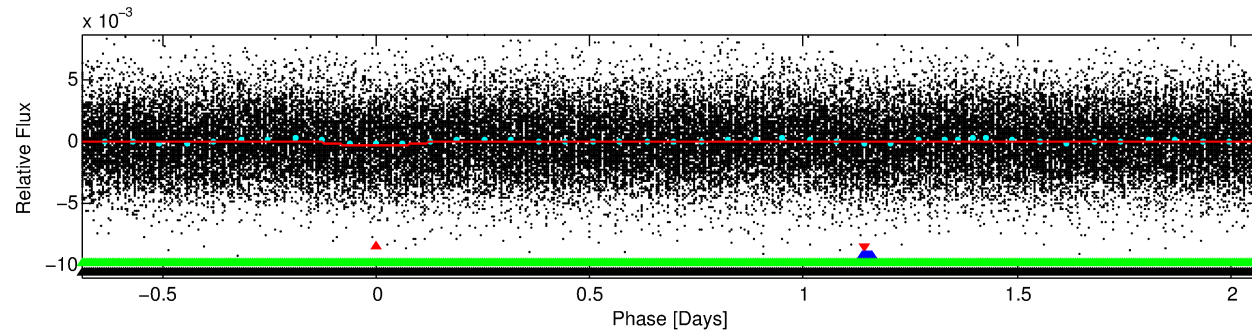
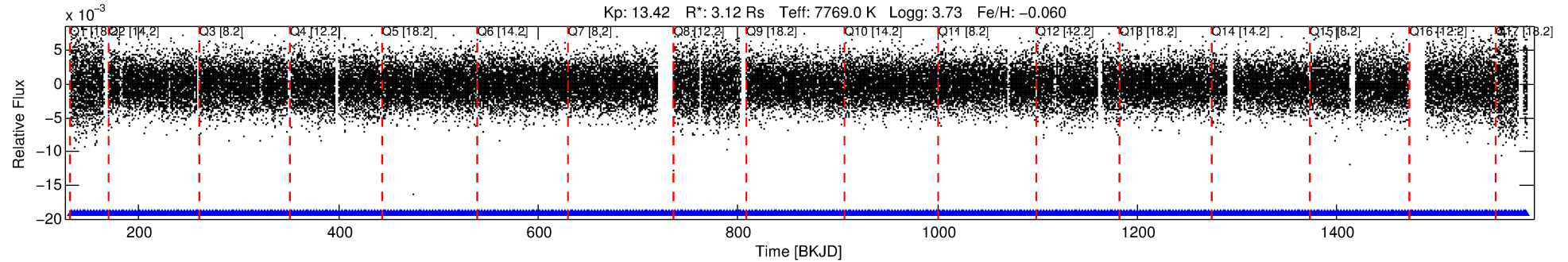
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009953617-01

No Significant Match Found

DV One-Page Summary

KIC: 9953617 Candidate: 1 of 4 Period: 2.758 d



DV Fit Results:

Period = 2.75848 [0.00004] d
Epoch = 132.9382 [0.0101] BKJD
Rp/R* = 0.0221 [0.0032]
a/R* = 1.29 [0.10]
b = 0.98 [0.01]
Seff = 13966.36 [10078.84]
Teq = 2772 [500] K
Rp = 7.53 [3.47] Re
a = 0.0477 [0.0207] AU
Ag = 4.81 [3.70] [1.03σ]
Teffp = 6348 [563] K [4.75σ]

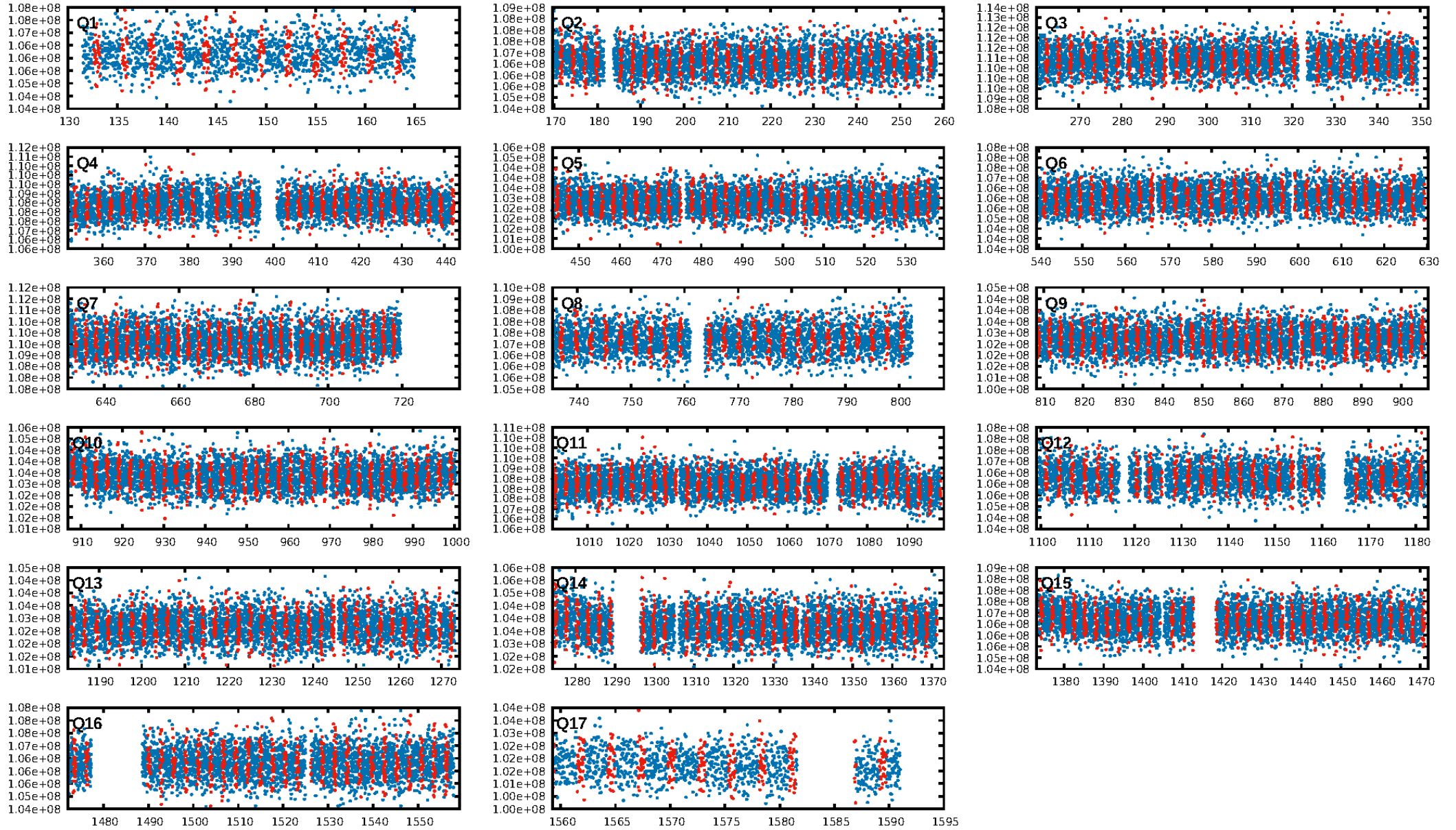
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.05σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [469/469]
GhostDiagnostic-chr: 2.805
Centroid-sig: 0.1%
Centroid-so: 0.452 arcsec [4.37σ]
OotOffset-rm: 0.233 arcsec [1.44σ]
KicOffset-rm: 0.360 arcsec [2.10σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 0.00 [0/17]

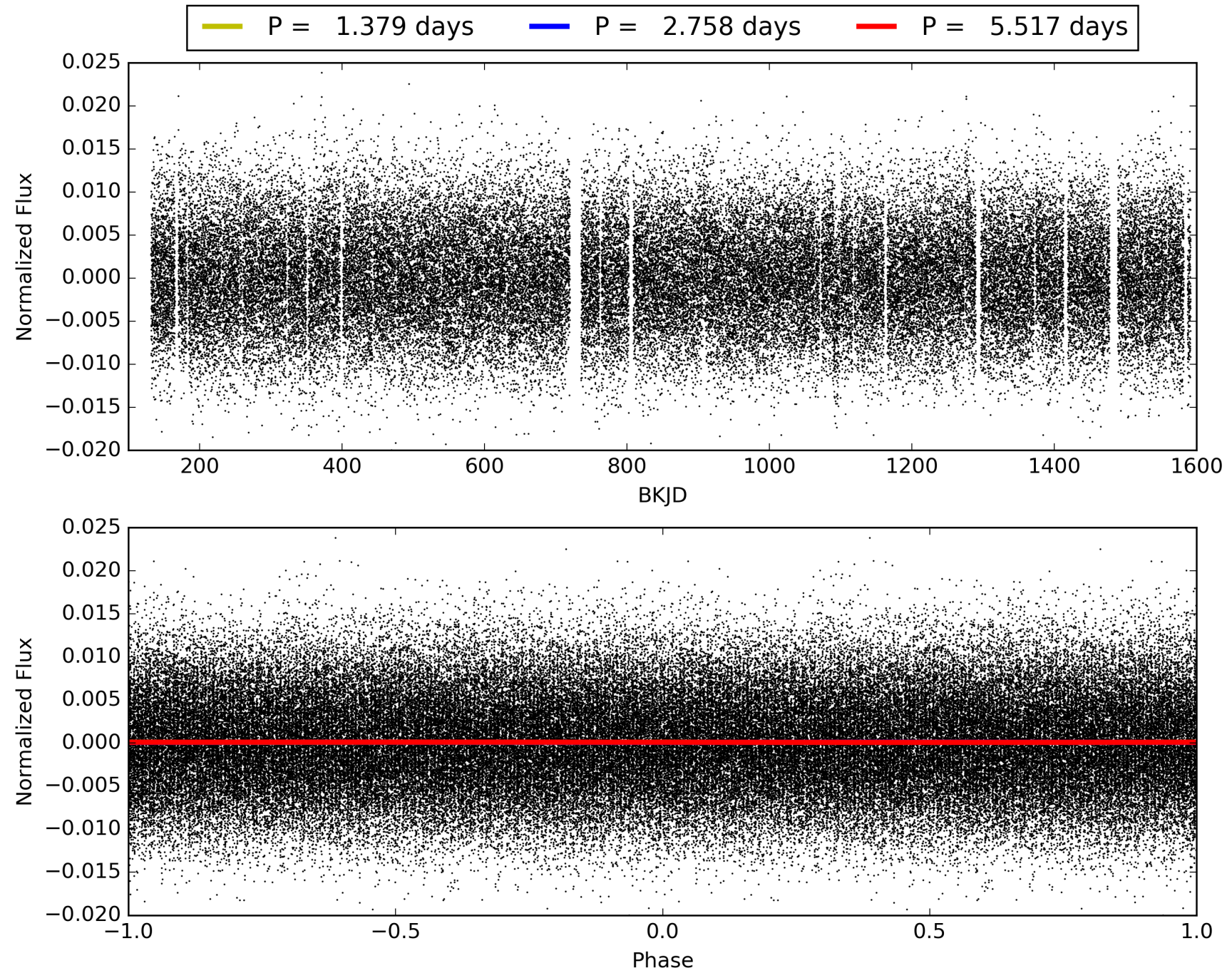
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009953617-01, PDC Light Curves

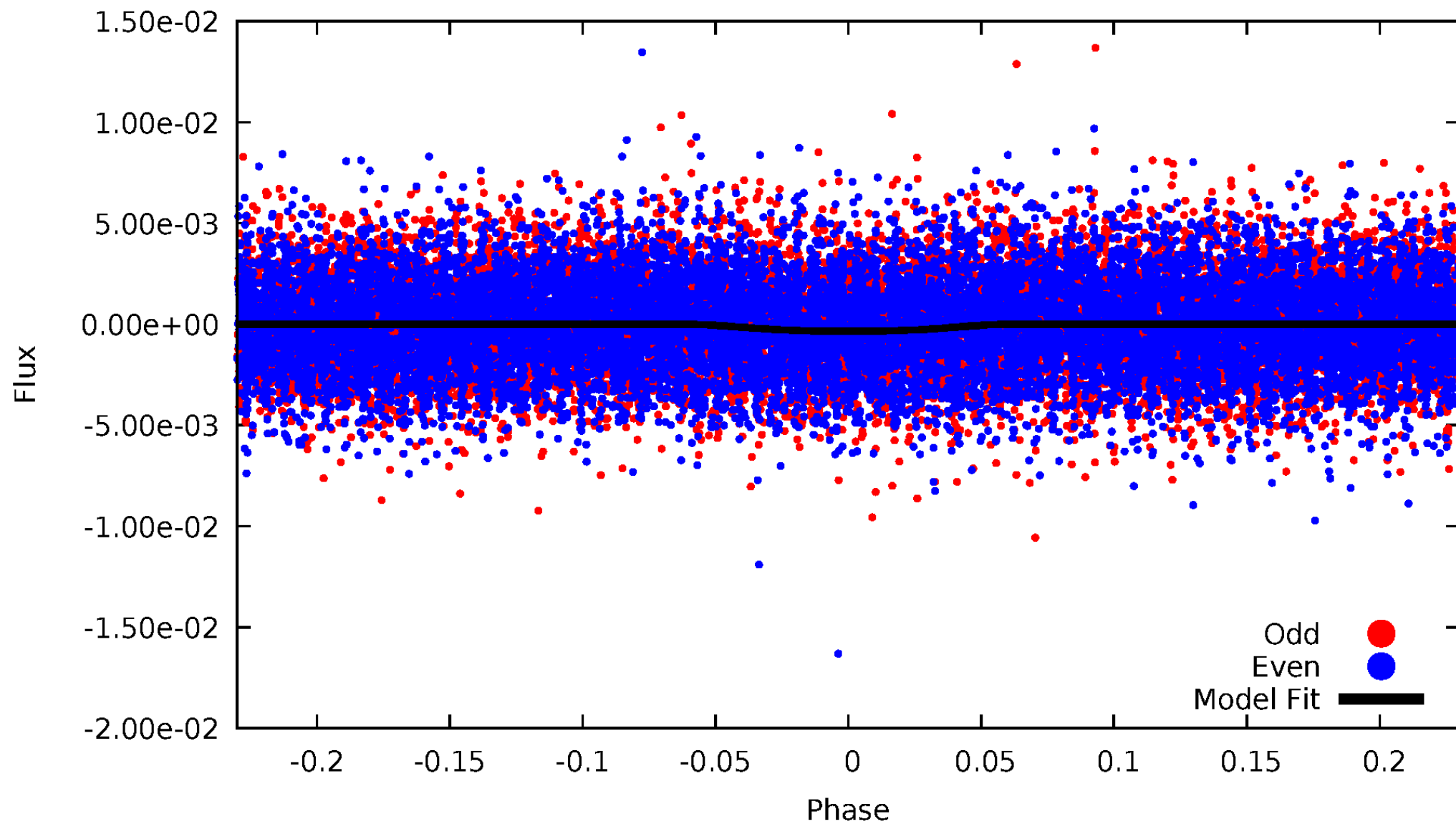


TCE 009953617-01



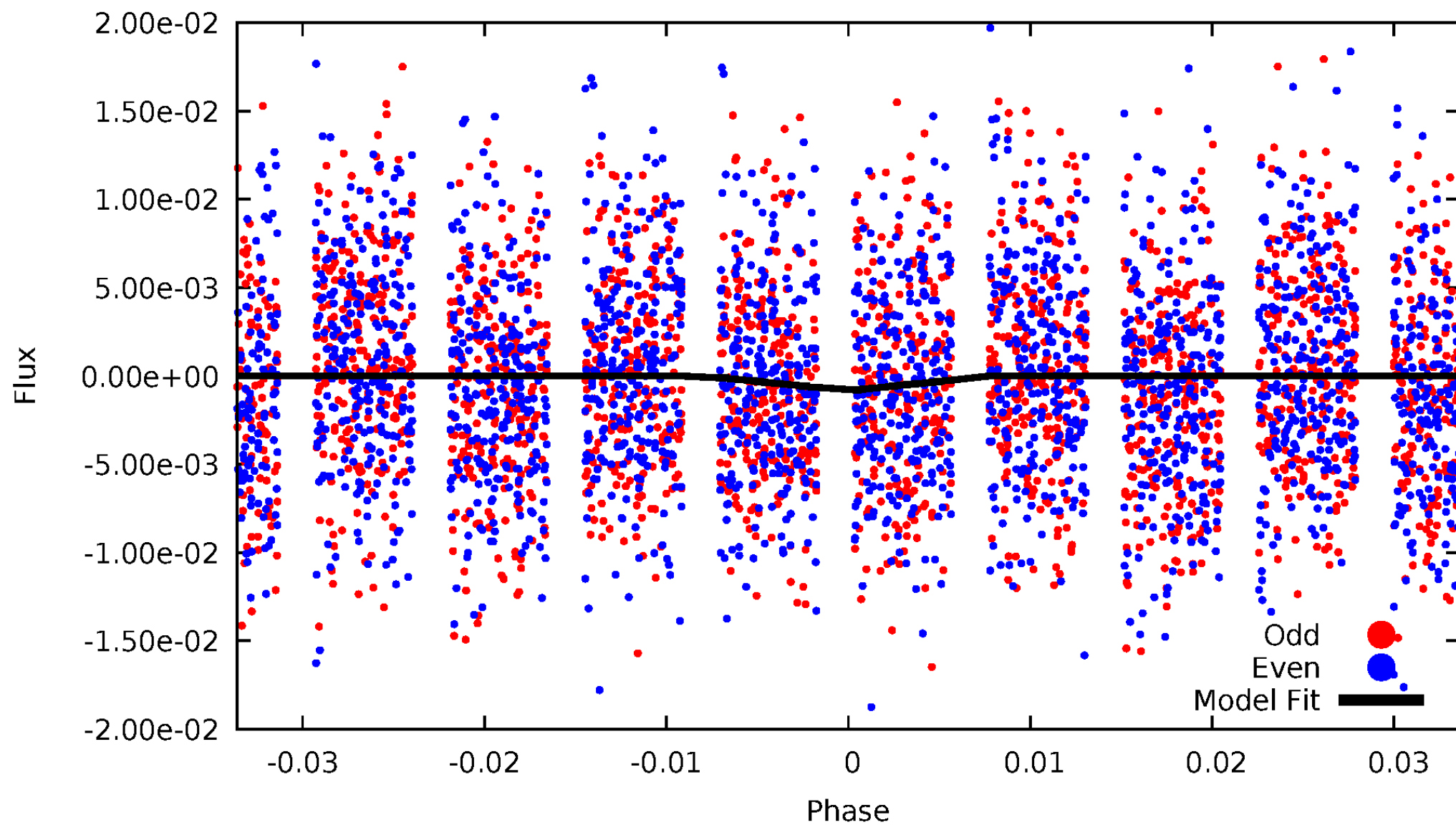
DV Odd/Even

TCE 009953617-01

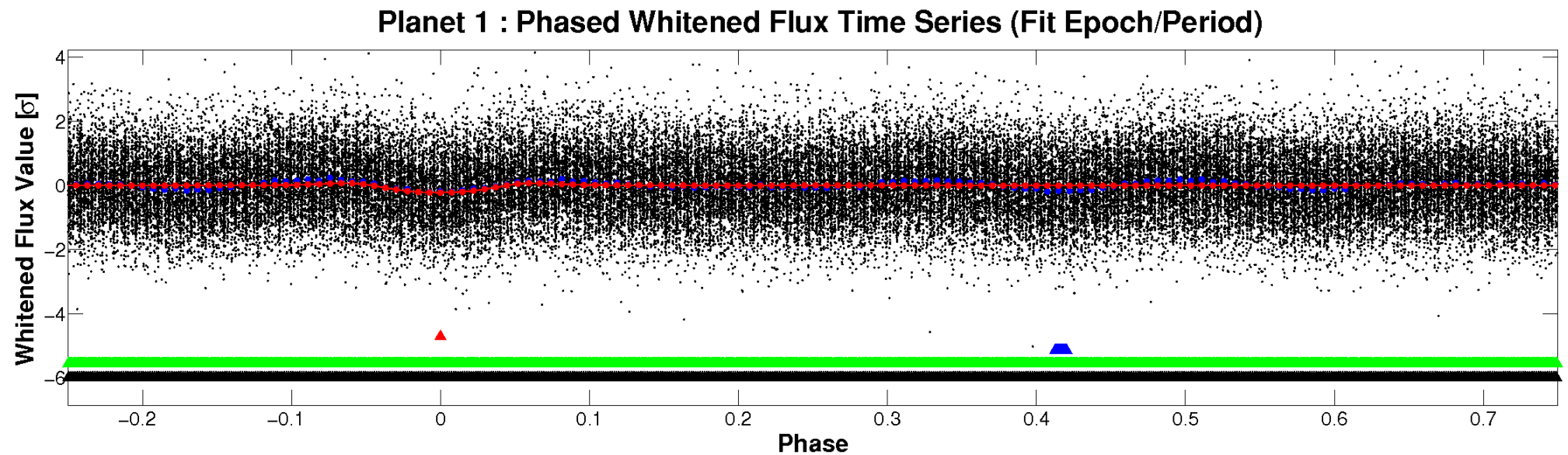
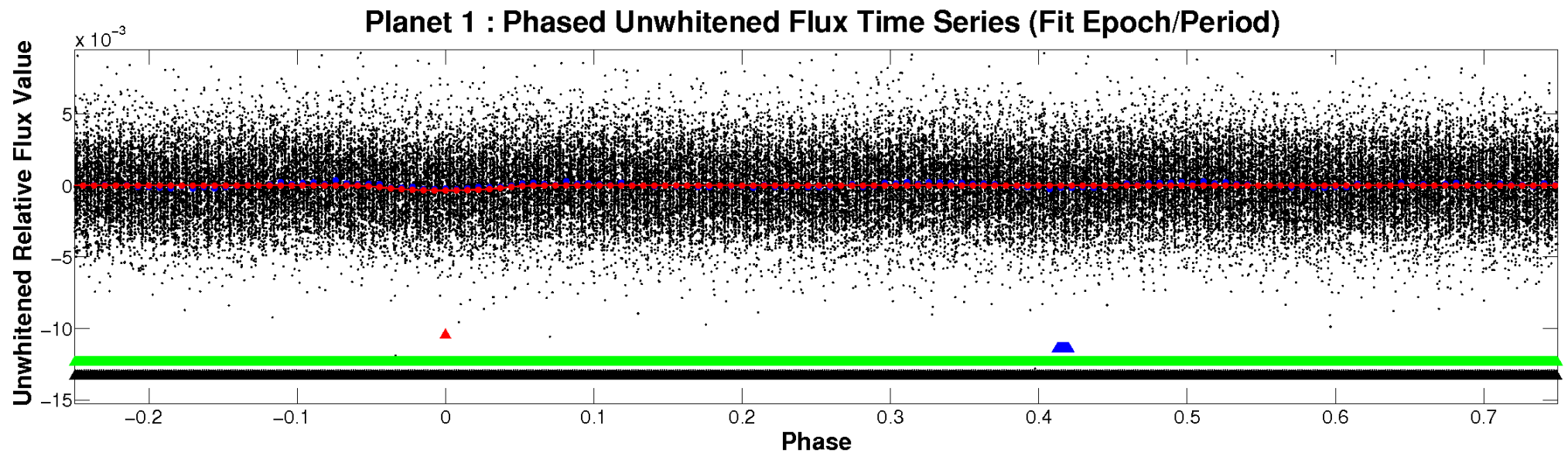


ALT Odd/Even

TCE 009953617-01

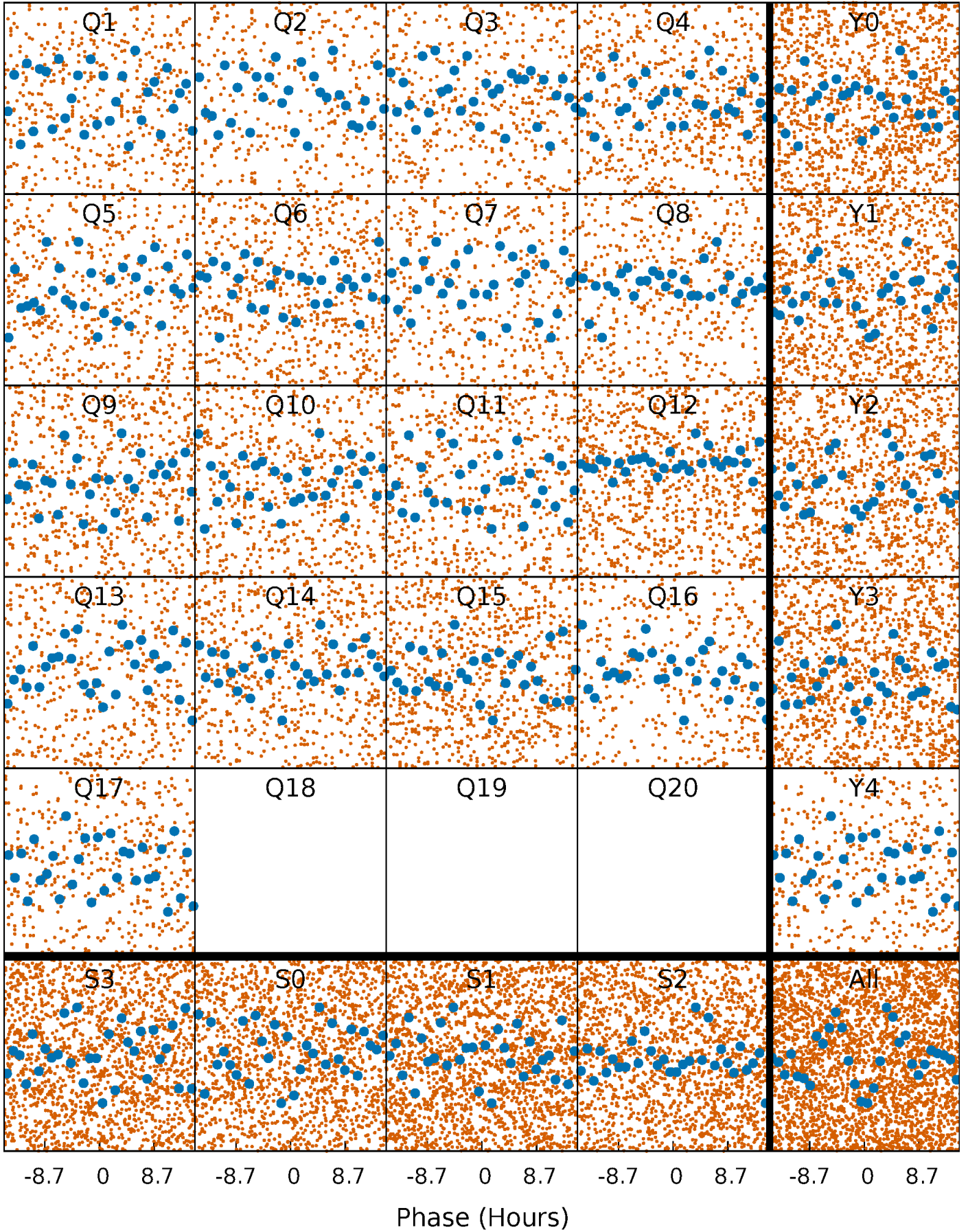


Non-Whitened Vs. Whitened Light Curve



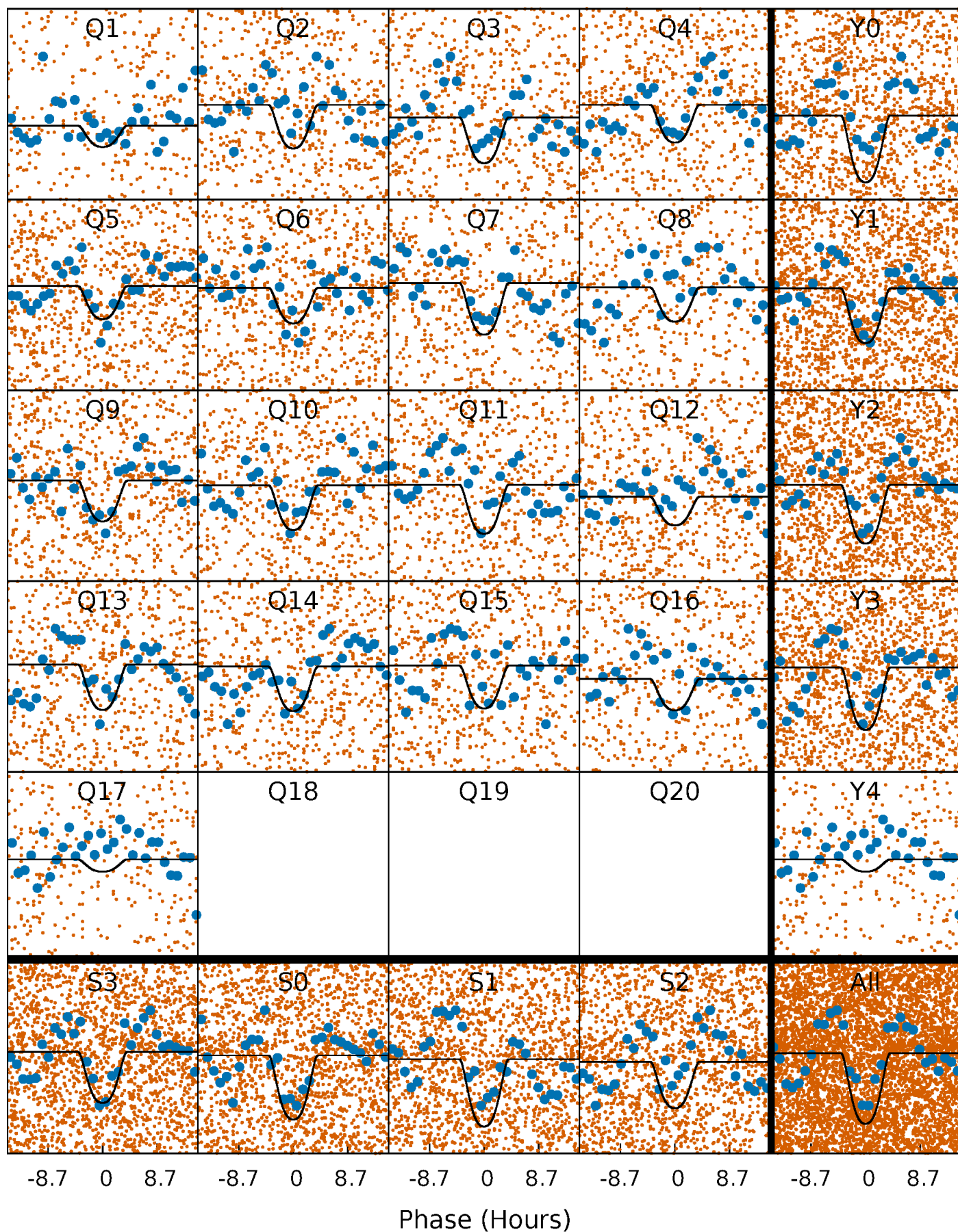
PDC Quarter-Phased Transit Curves

TCE 009953617-01 P= 2.758481 Days $T_0=132.938186$ (BKJD)



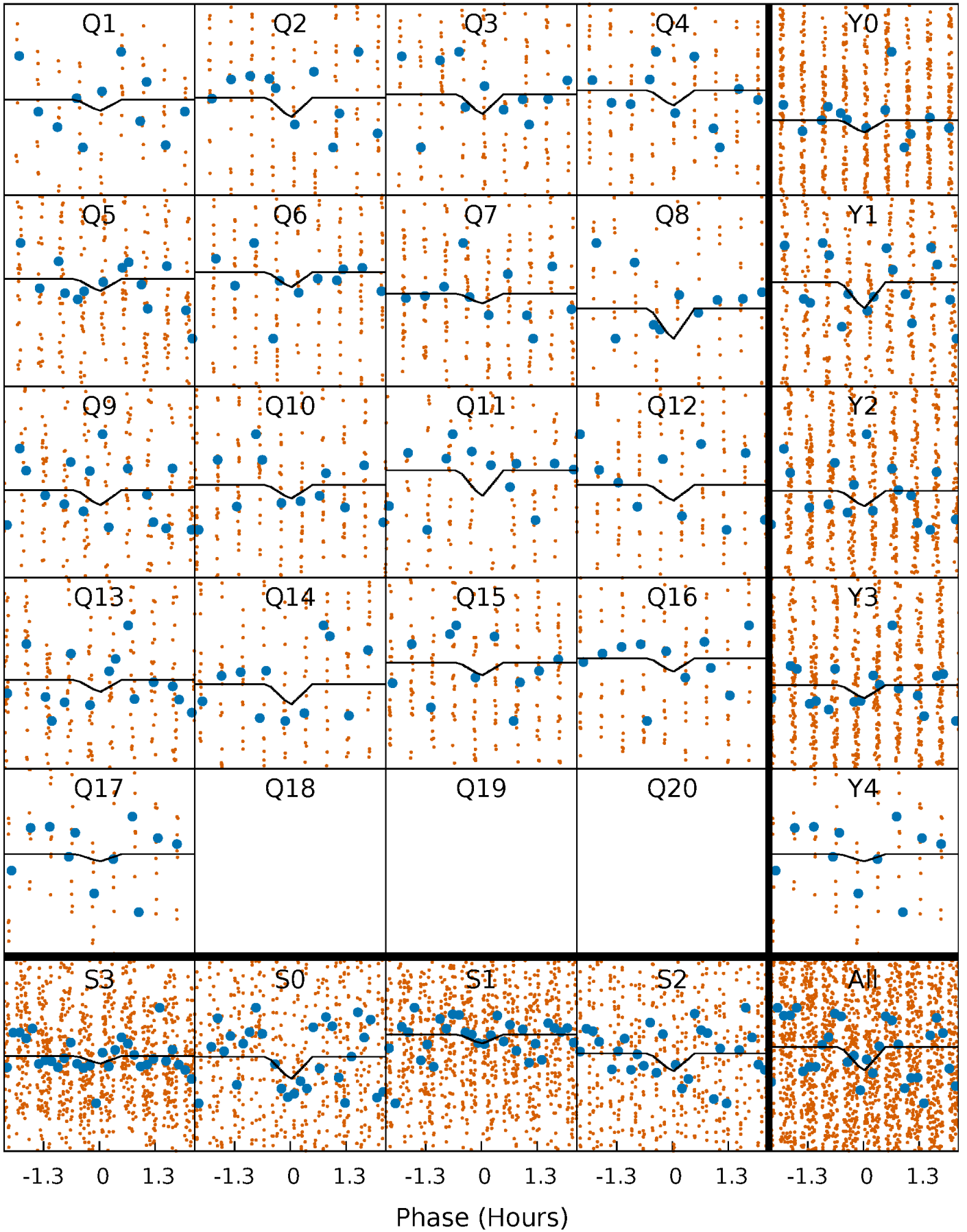
DV Quarter-Phased Transit Curves

TCE 009953617-01 P= 2.758481 Days $T_0=132.938186$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

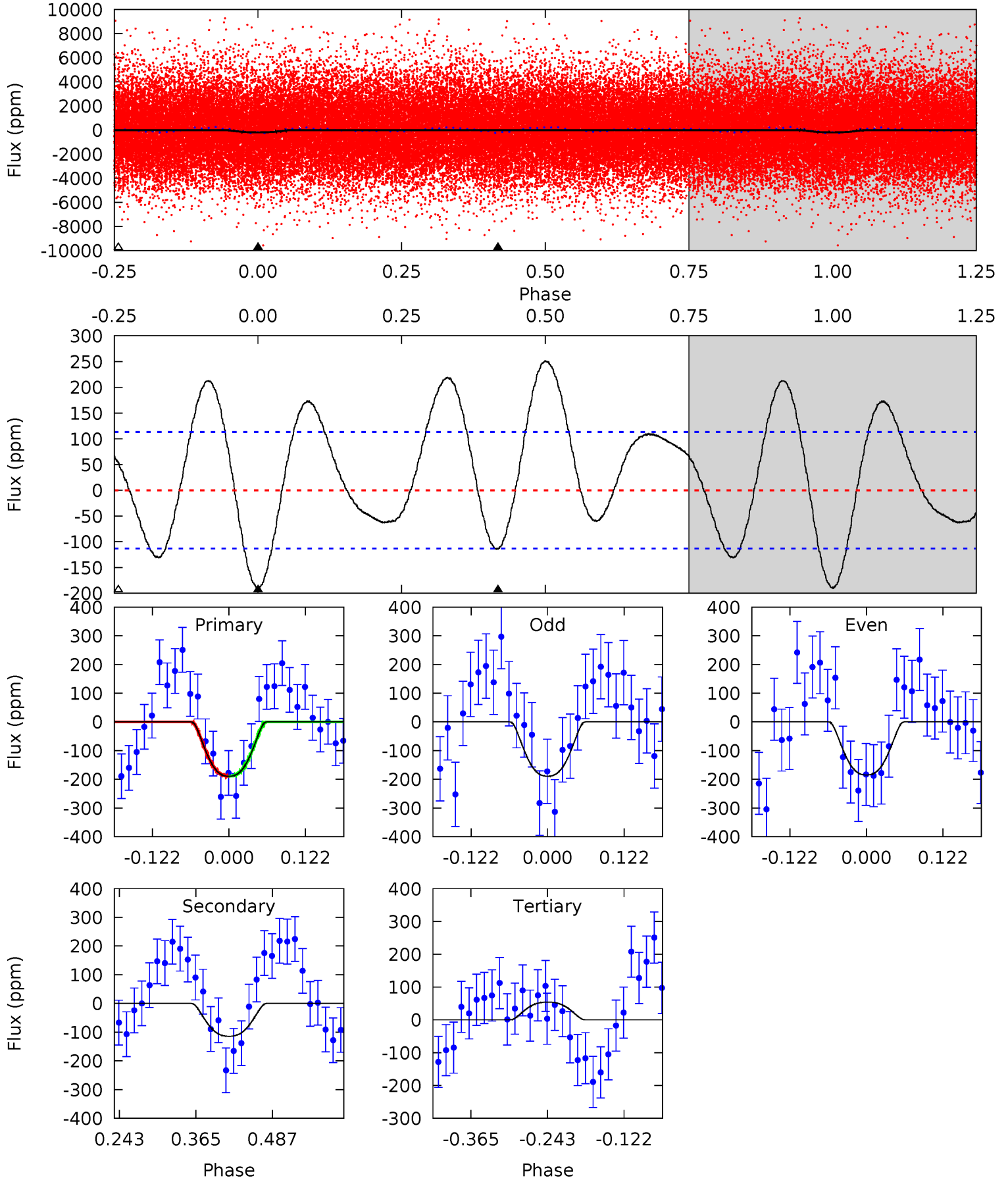
TCE 009953617-01 P= 2.758507 Days $T_0=132.859798$ (BKJD)



DV Model-Shift Uniqueness Test

009953617-01, P = 2.758481 Days, E = 130.179705 Days

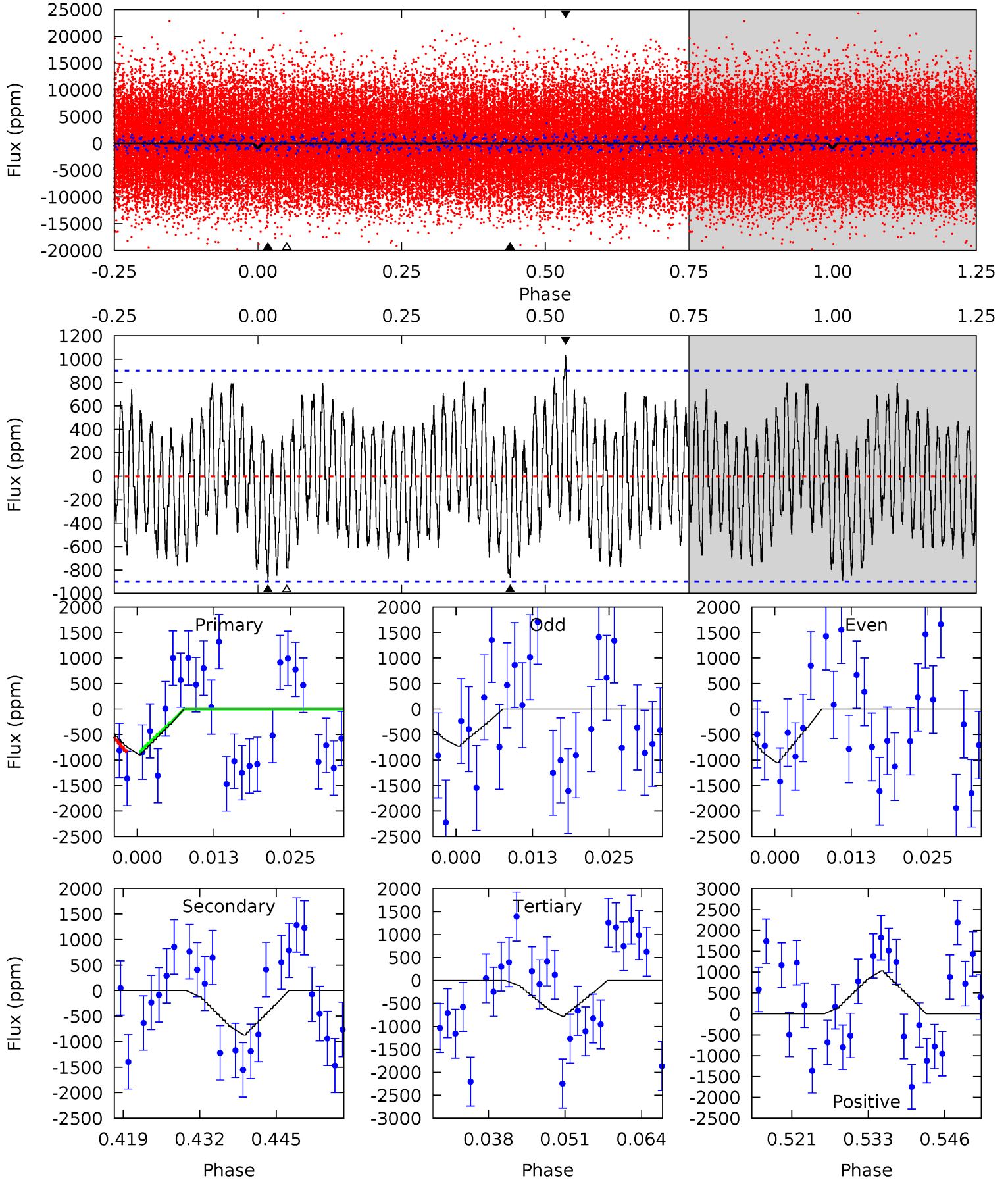
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.58	4.57	-2.16	0	4.52	1.55	2.77	9.74	7.58	6.72	4.57	0.09	0.99	0.57	0.00



Alt Model-Shift Uniqueness Test

009953617-01, P = 2.758507 Days, E = 130.101291 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.93	4.79	4.33	5.70	4.98	2.49	2.25	0.61	-0.77	0.47	-0.91	0.90	0.98	0.54	0.02



Stellar Parameters For KIC 009953617

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7769^{+215}_{-323}	$3.729^{+0.416}_{-0.073}$	$-0.060^{+0.200}_{-0.350}$	$3.122^{+0.456}_{-1.368}$	$1.905^{+0.103}_{-0.387}$	$0.088^{+0.325}_{-0.021}$
	+3%/-4%	+11%/-2%	+333%/-583%	+15%/-44%	+5%/-20%	+369%/-24%
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 009953617-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-114 \pm 25	$6.71^{+1.56}_{-1.54}$	3705^{+287}_{-420}	5195^{+538}_{-440}	$3.090^{+2.161}_{-1.142}$
Alt.	-869 \pm 181	$8.75^{+1.69}_{-1.94}$	3735^{+245}_{-378}	7946^{+822}_{-761}	14^{+9}_{-5}

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

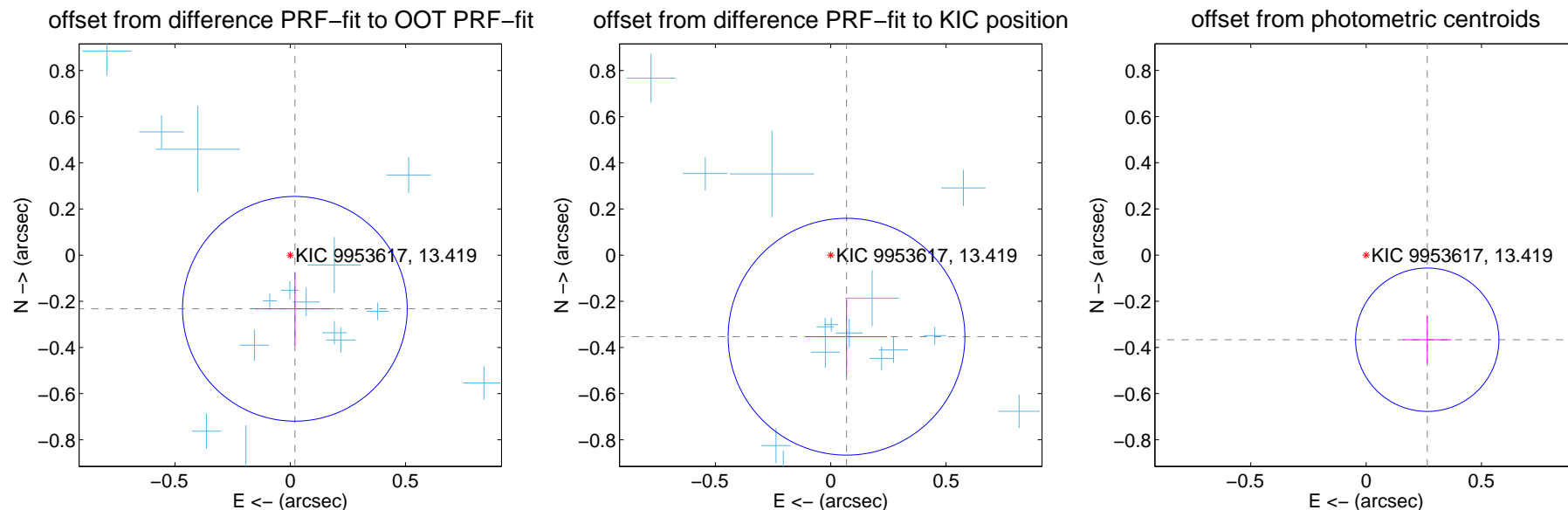
DV Centroid Data

Supplemental centroid analysis for 009953617-01. Kepler magnitude: 13.42. Transit SNR 12.87

There are 15 quarters with good PRF difference image offsets

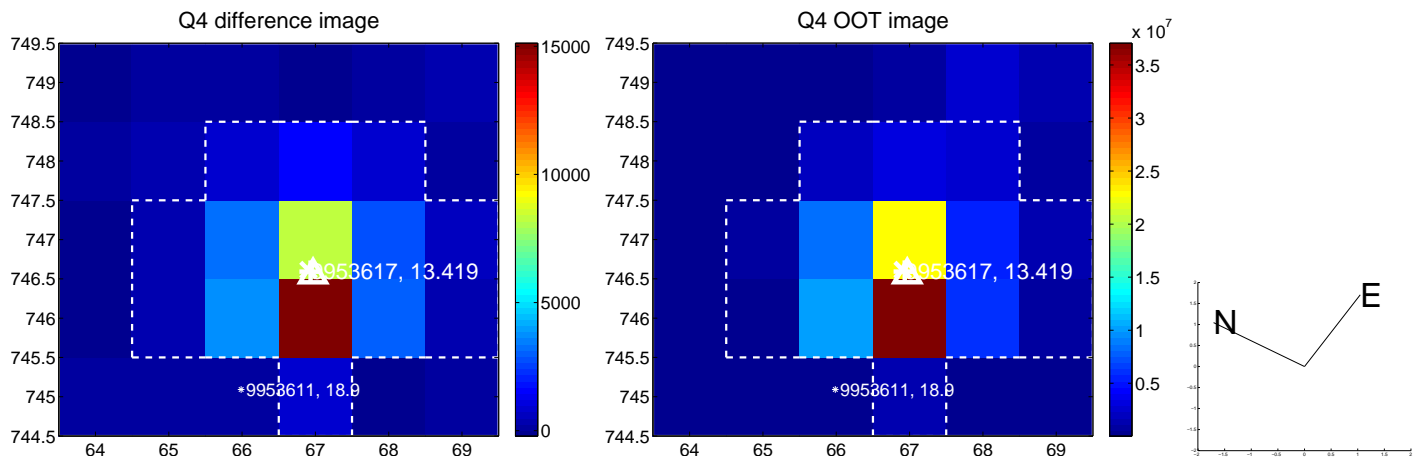
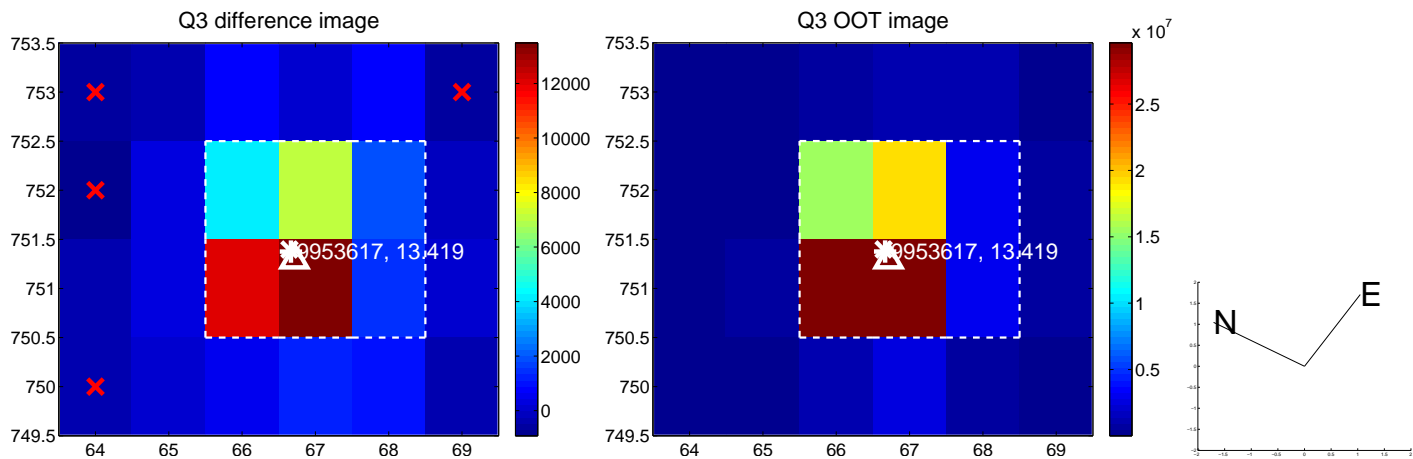
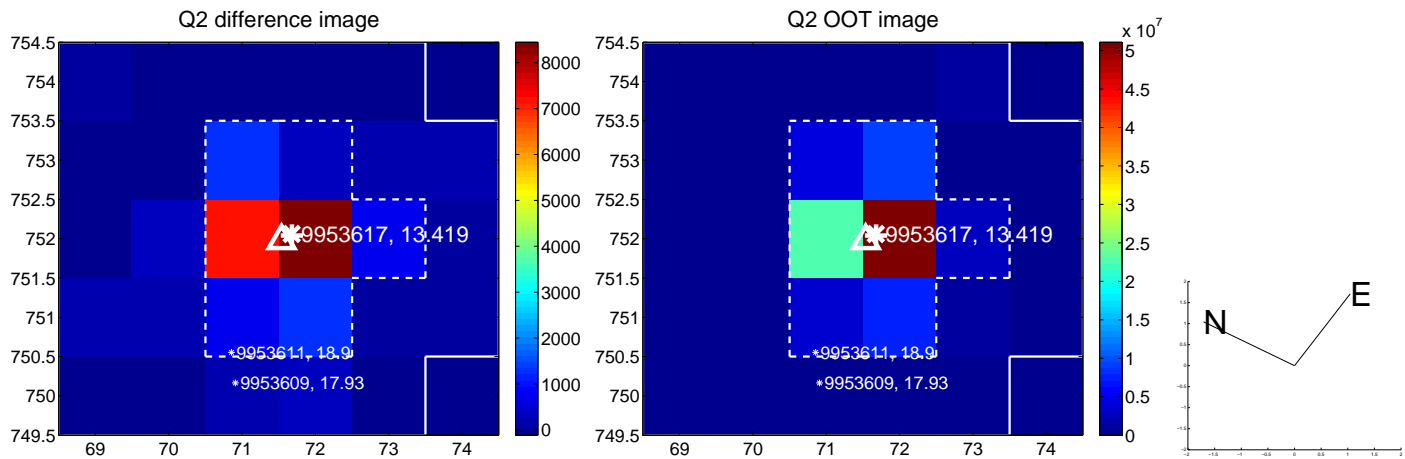
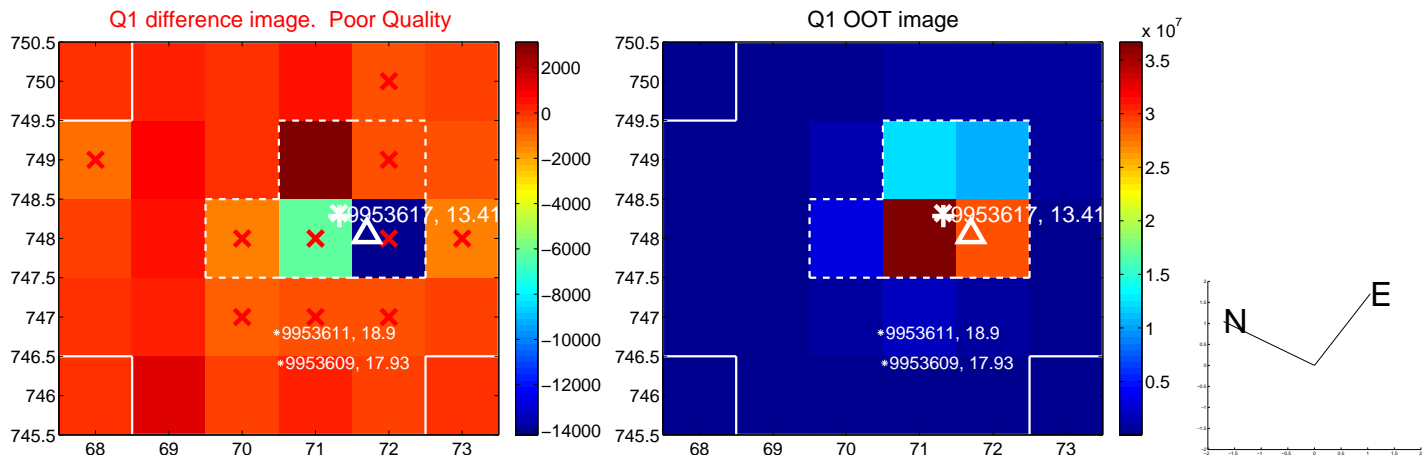
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.233 ± 0.162	1.44	-0.020 ± 0.173	-0.232 ± 0.159
PRF-fit source offset from KIC position	0.360 ± 0.171	2.10	-0.068 ± 0.176	-0.353 ± 0.162
photometric centroid source offset	0.45 ± 0.10	4.37	-0.26 ± 0.10	-0.37 ± 0.10

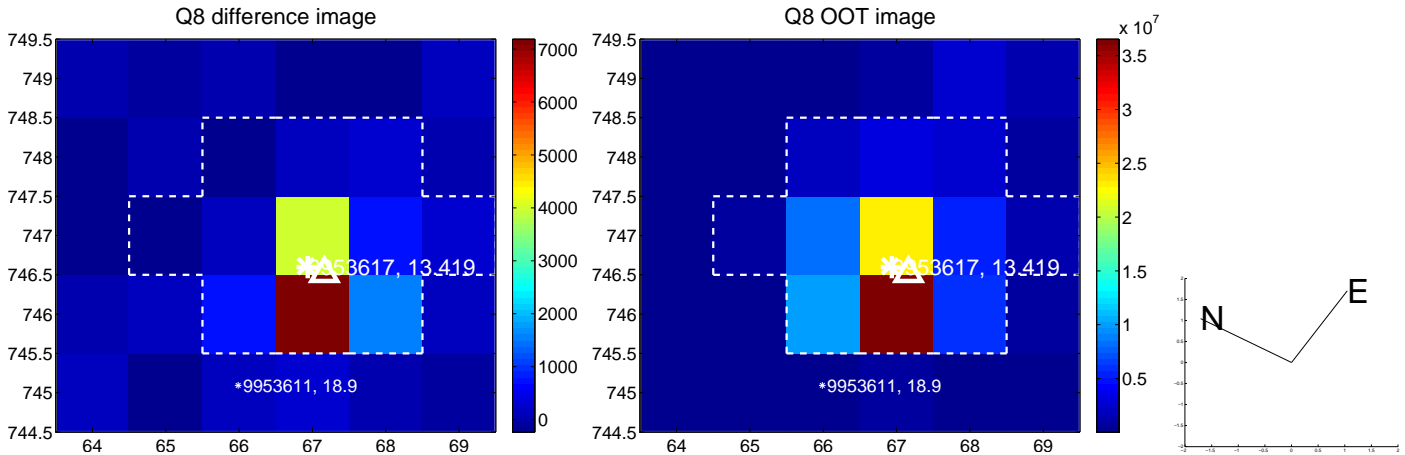
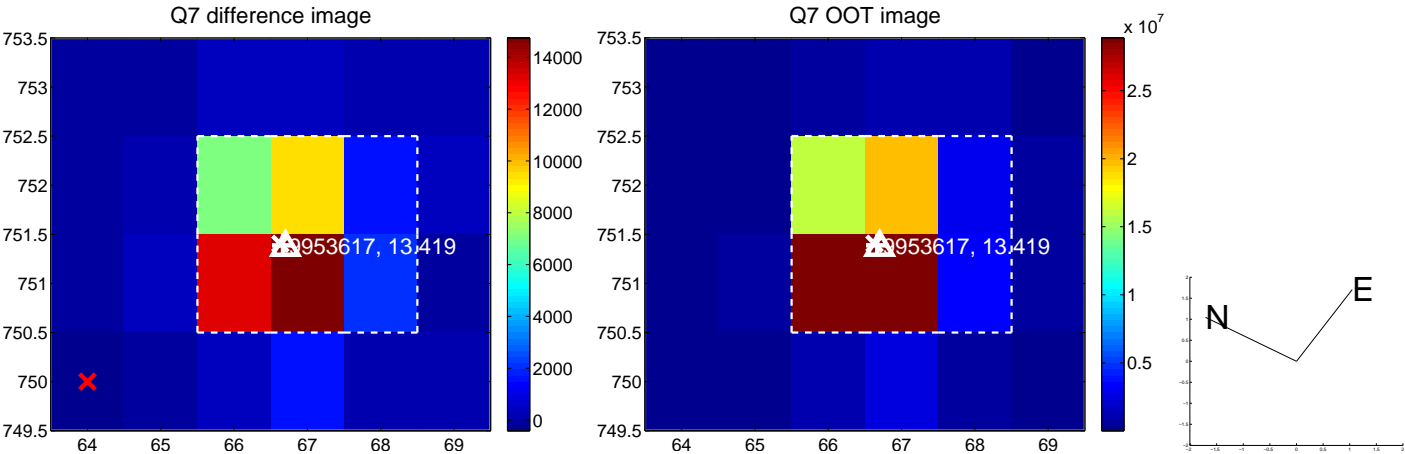
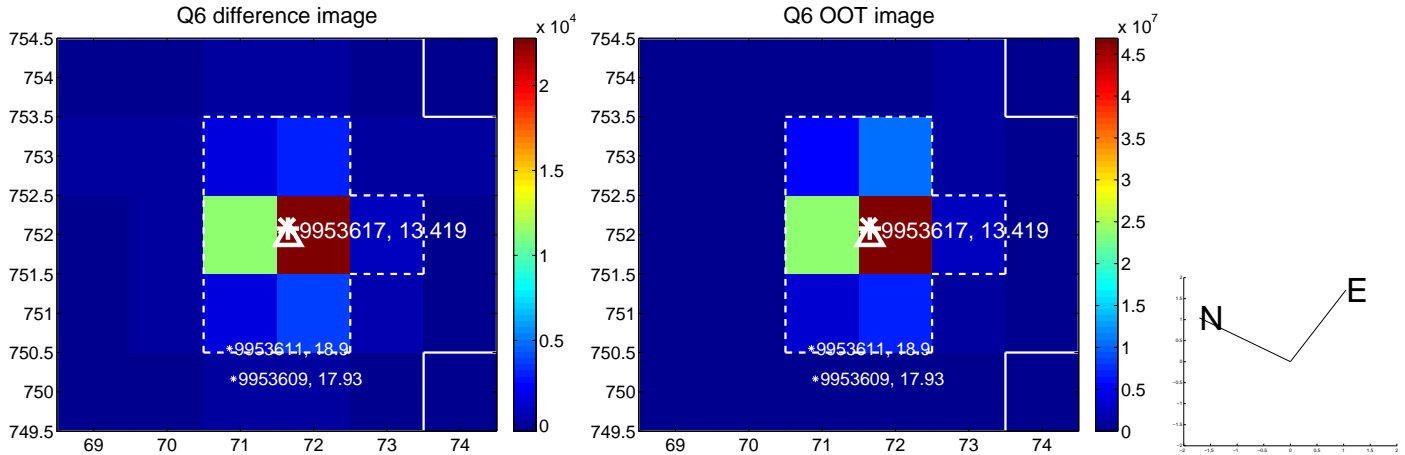
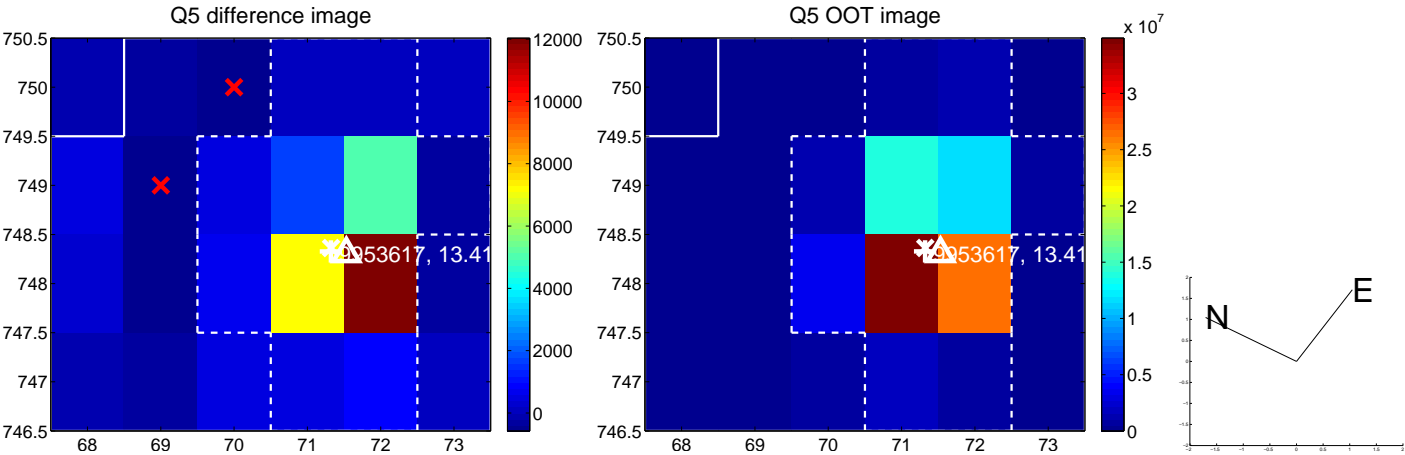


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

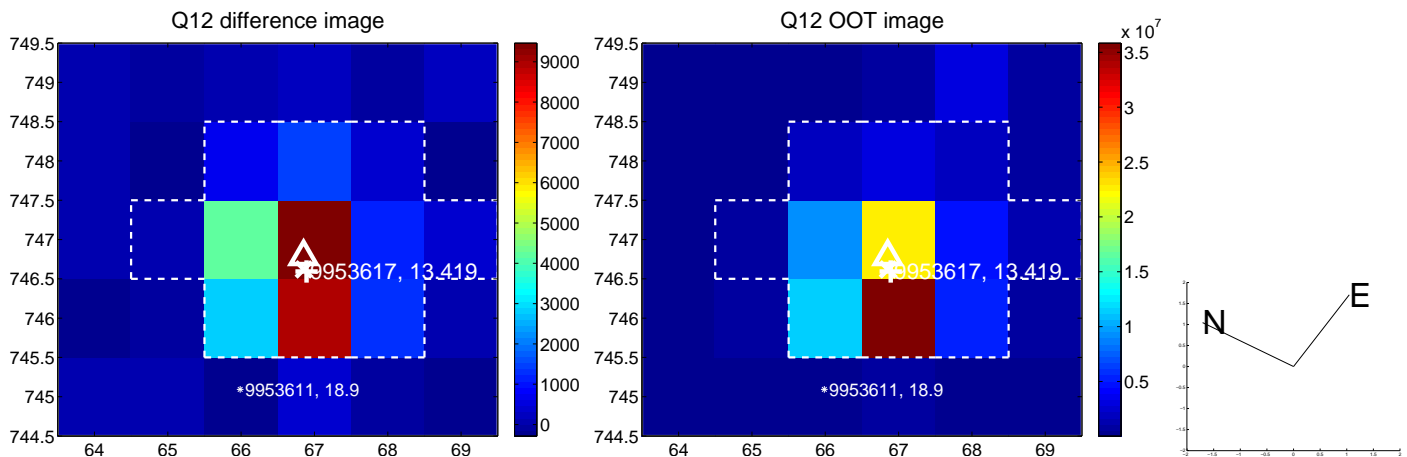
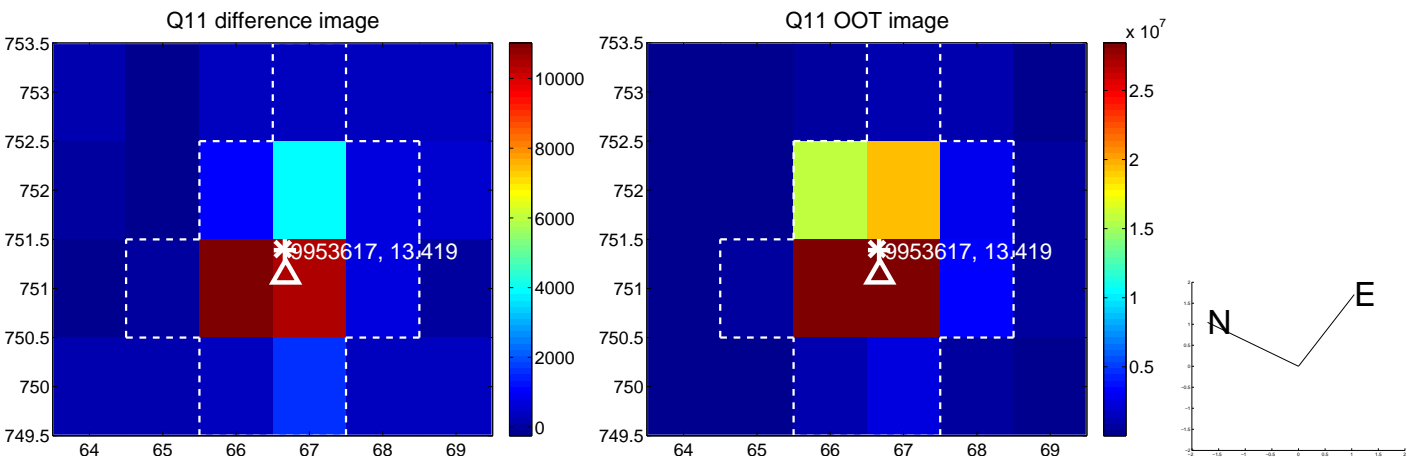
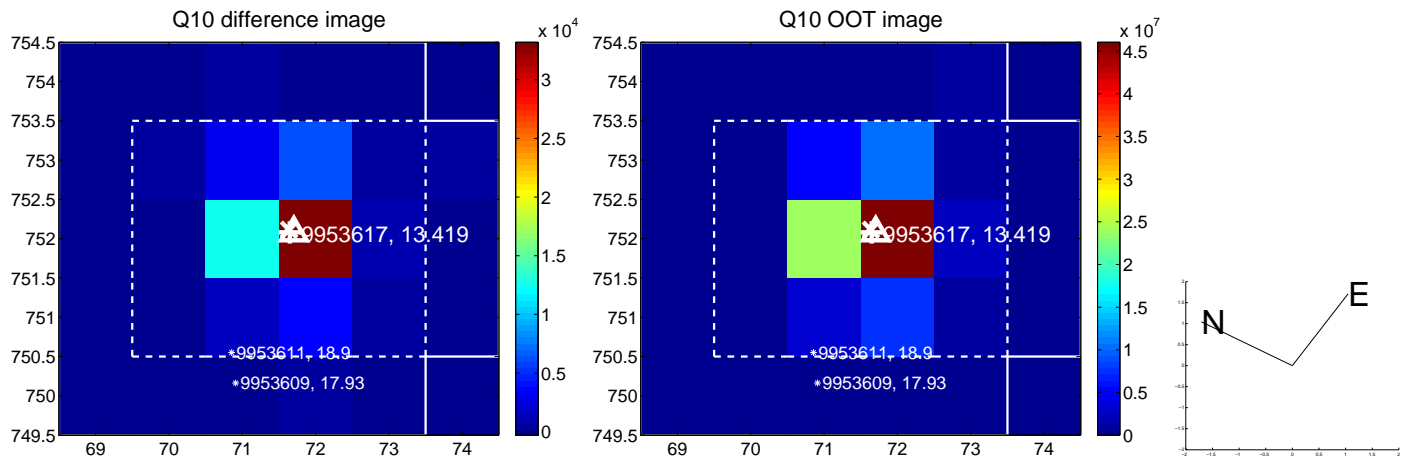
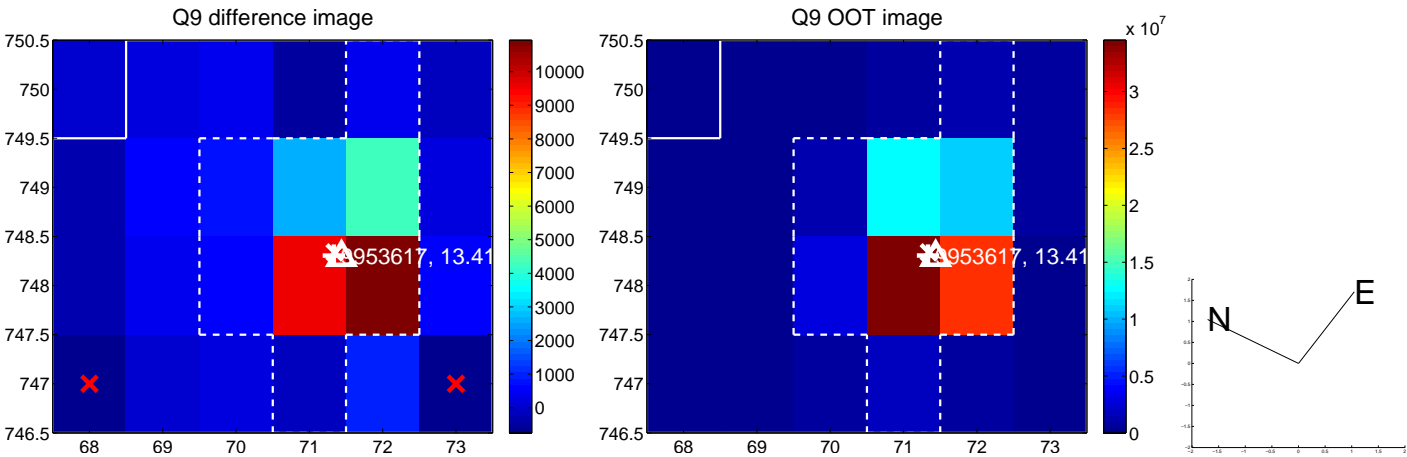
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



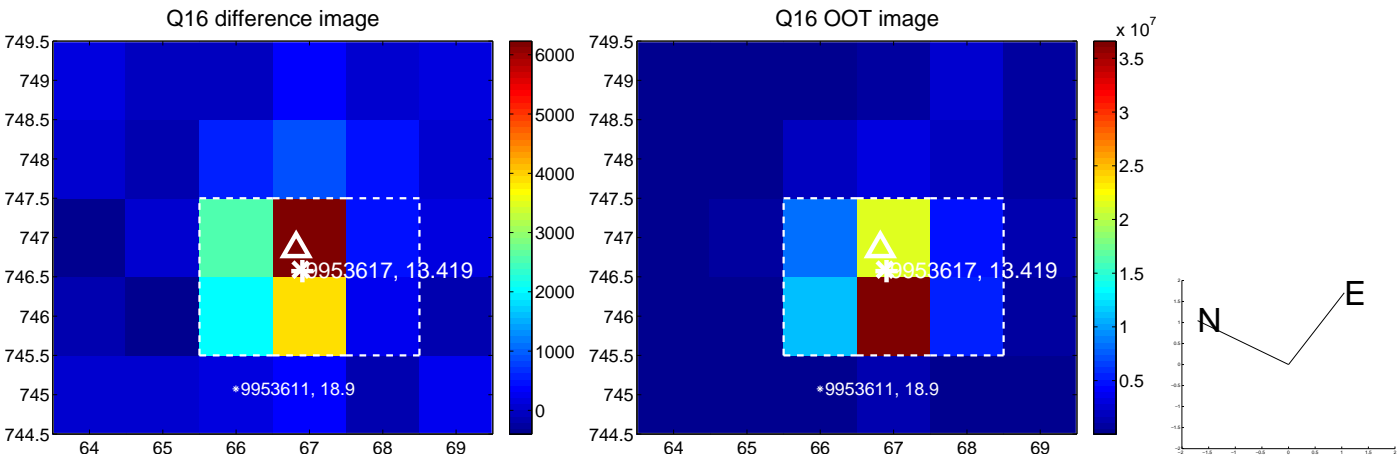
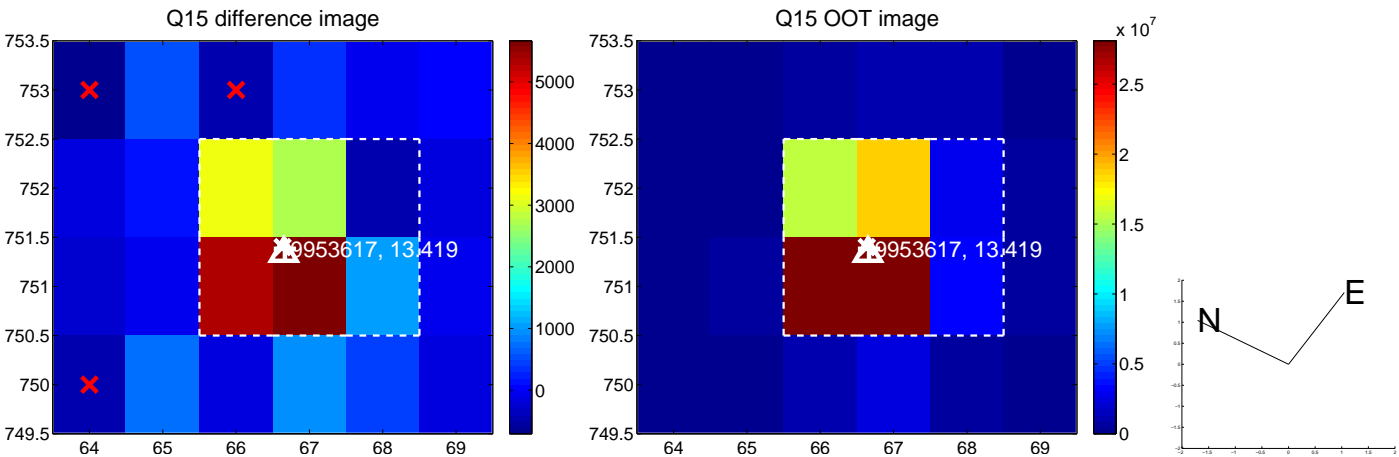
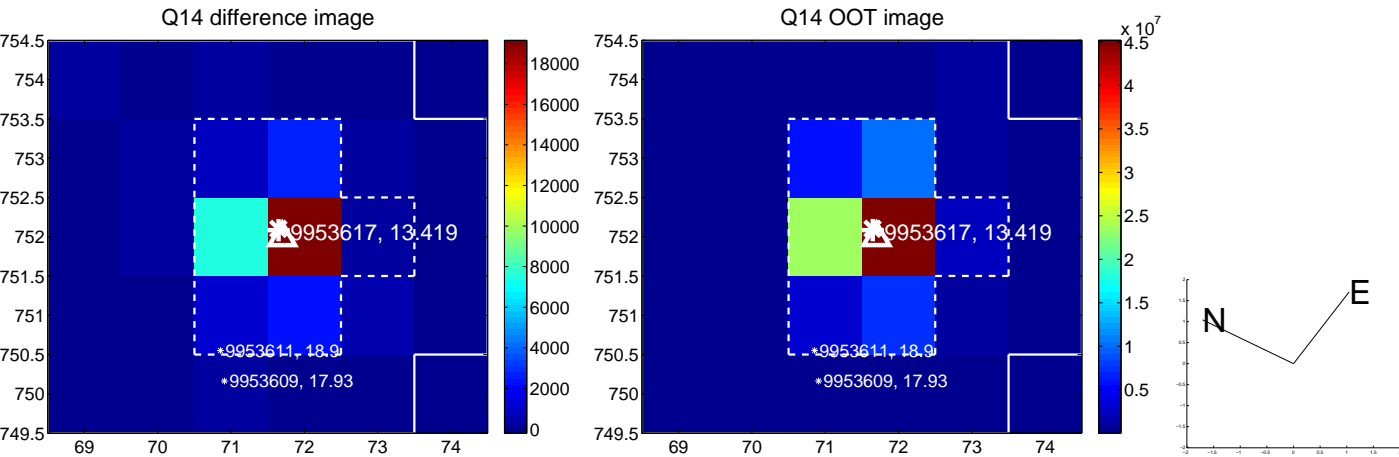
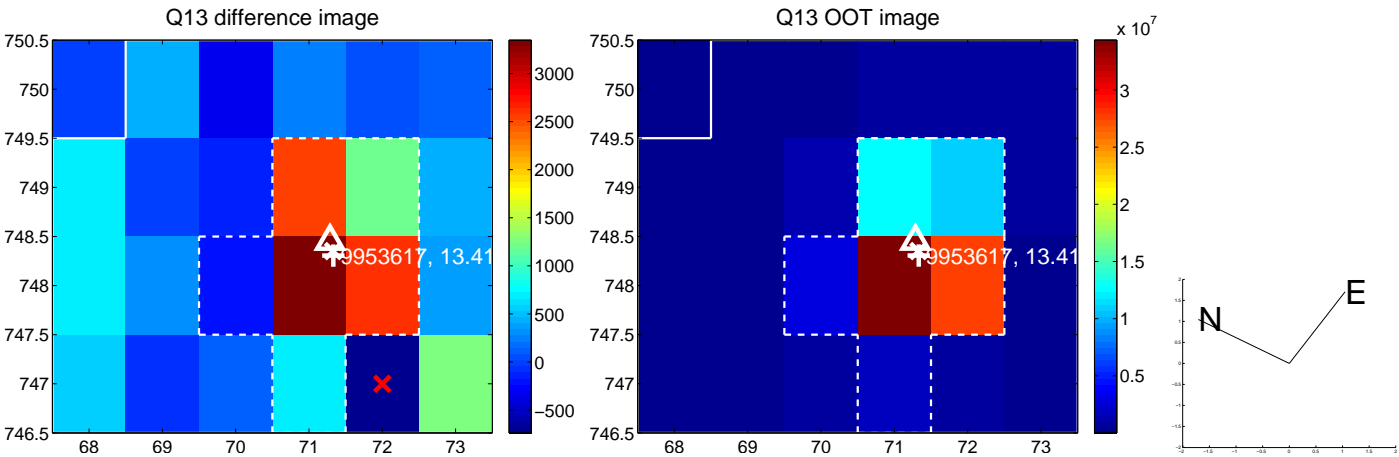
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



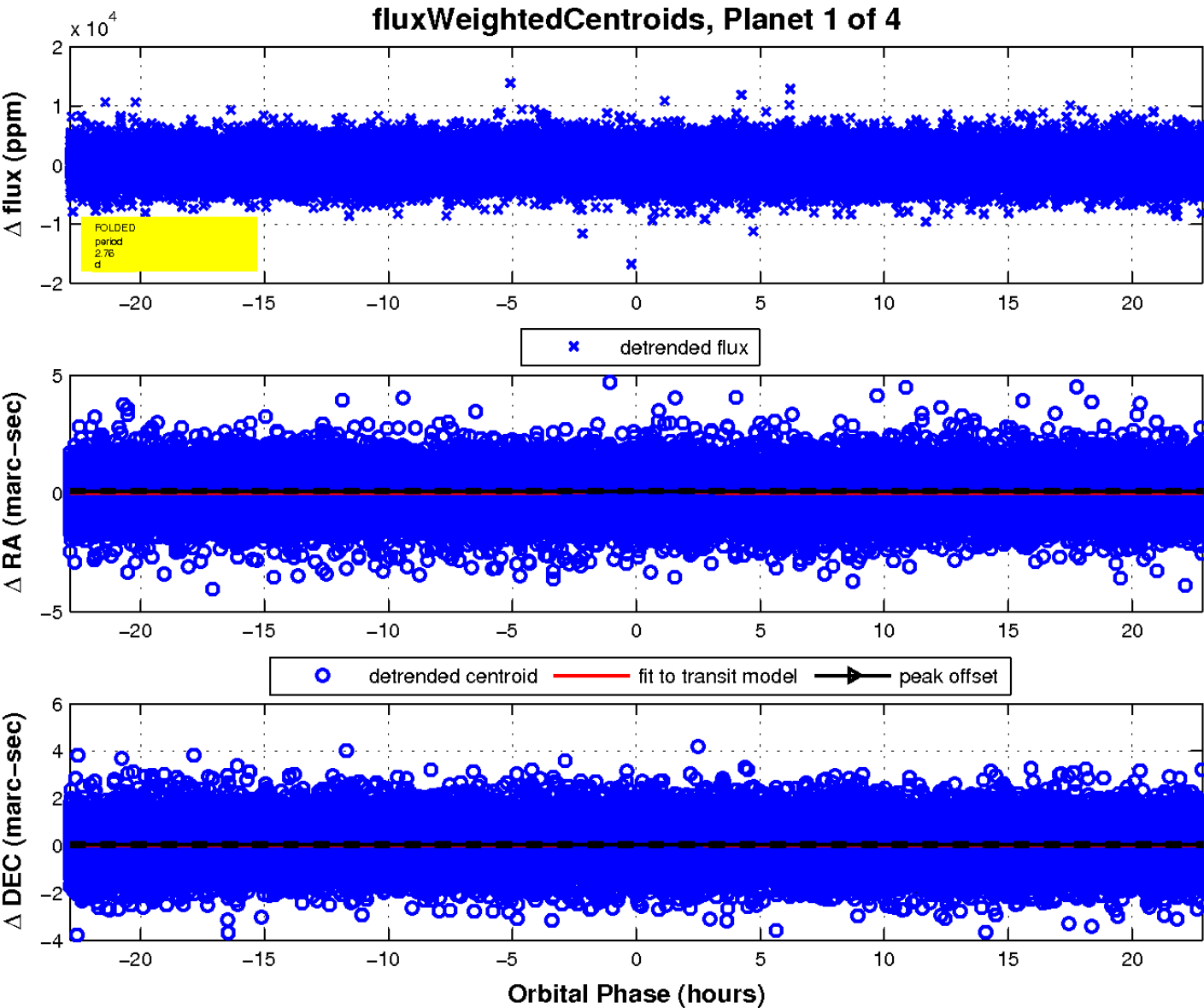
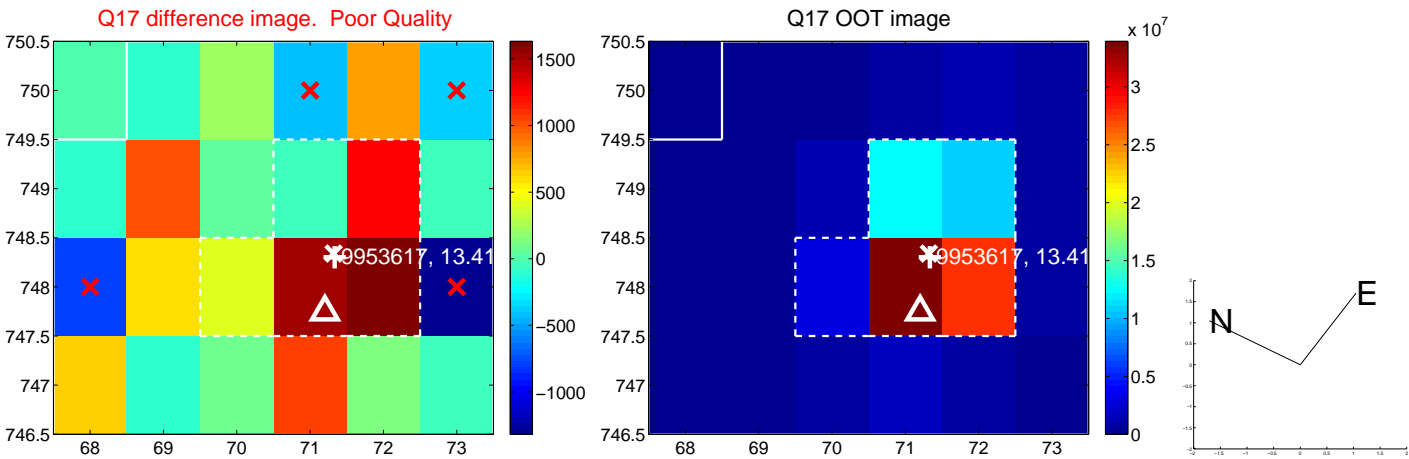
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white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

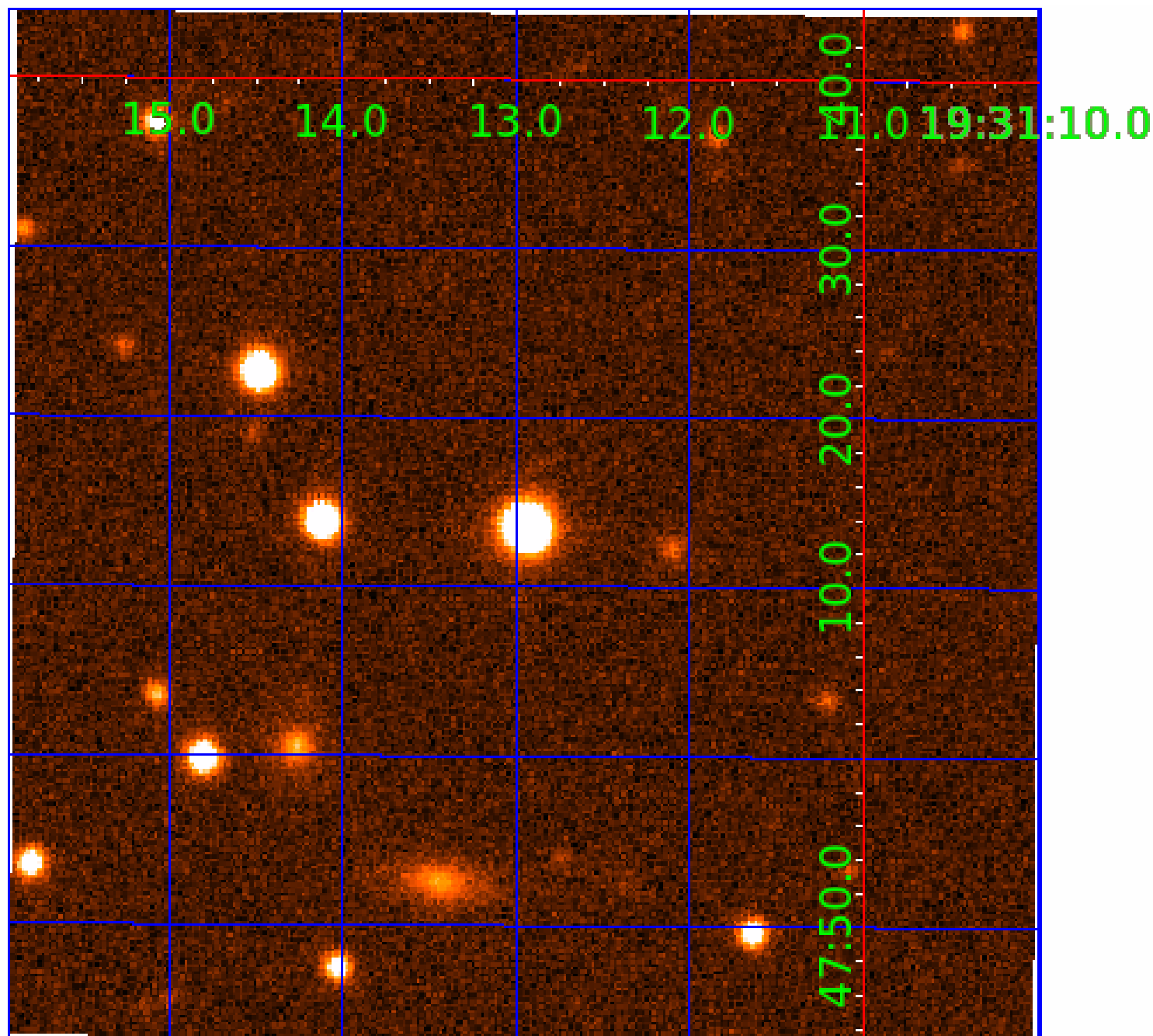


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009953617

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})
009953617-01	OBS	No	2.758481	132.938186	340.5	7.614	12.5	12.9	3.12	7769	7.53	13966.36
009953617-02	OBS	No	2.758520	134.076629	246.7	5.545	9.2	9.6	3.12	7769	5.66	13966.10
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009953617-04	OBS	No	0.509321	131.980321	1026.8	0.597	9.5	16.0	3.12	7769	10.40	132837.68

Robovetter Results

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009953617-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009953617-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009953617-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

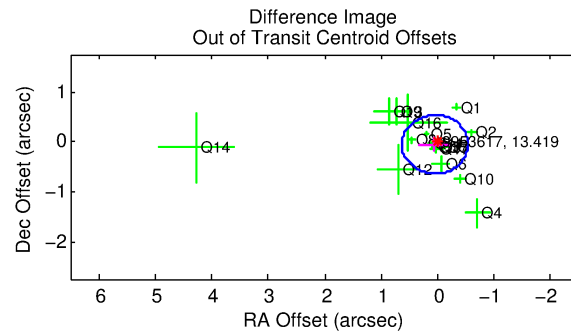
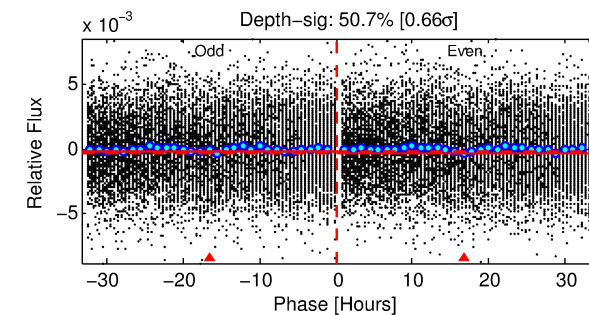
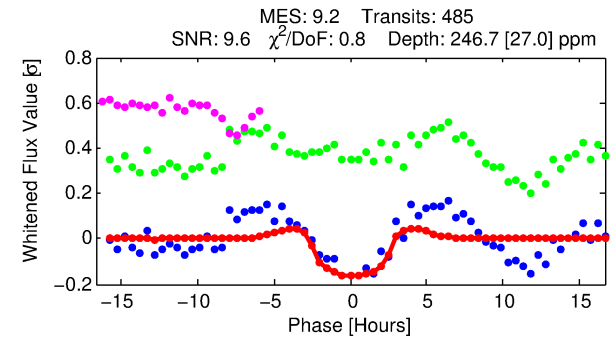
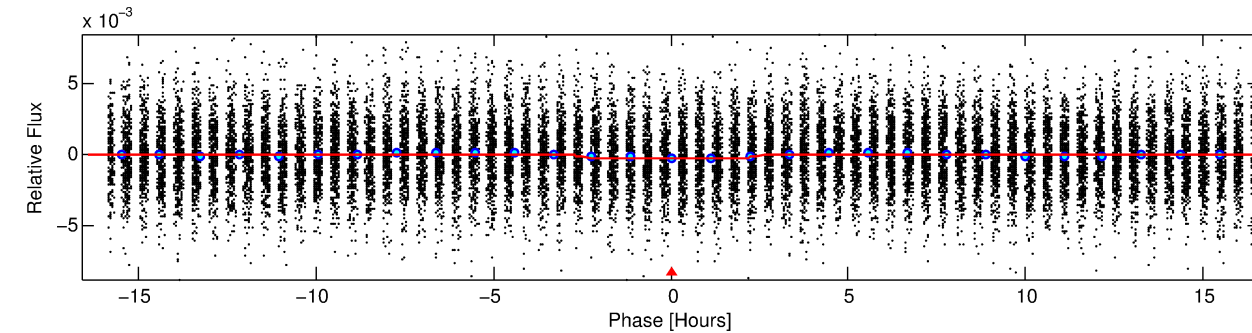
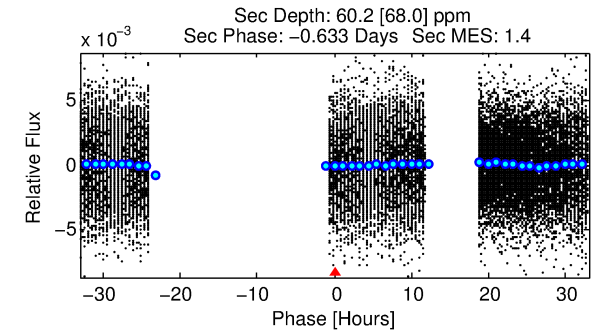
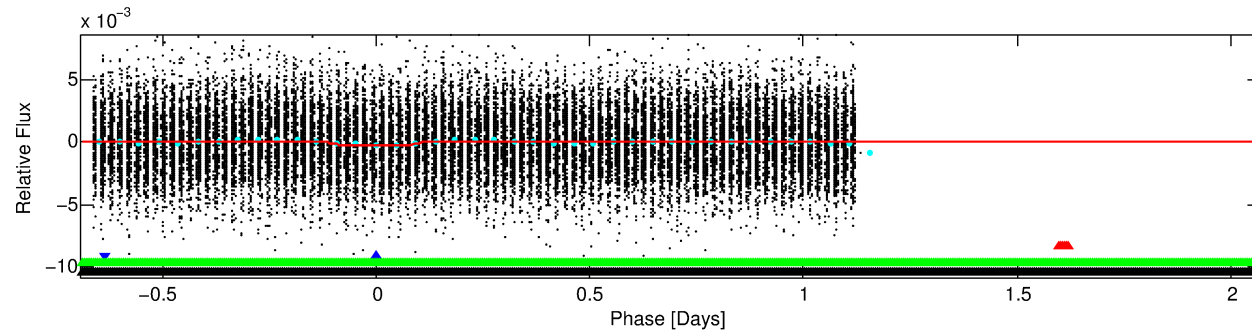
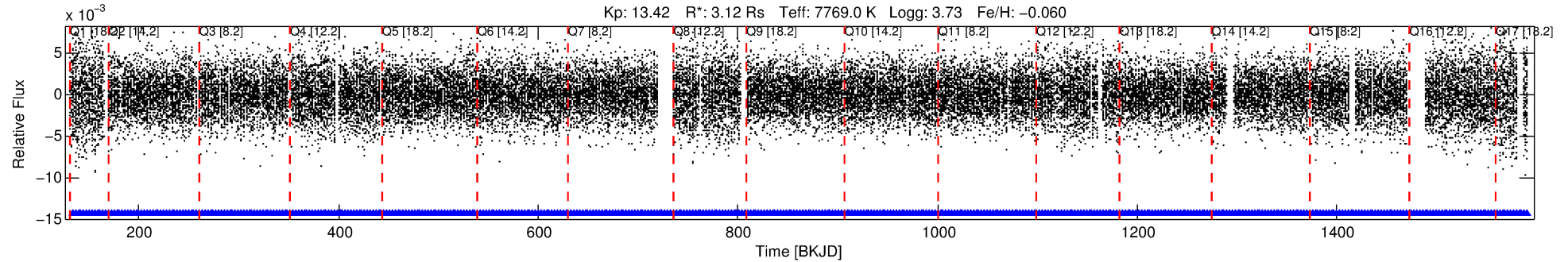
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009953617-02

No Significant Match Found

DV One-Page Summary

KIC: 9953617 Candidate: 2 of 4 Period: 2.759 d



DV Fit Results:

Period = 2.75852 [0.00004] d
Epoch = 134.0766 [0.0094] BKJD
Rp/R* = 0.0166 [0.0056]
a/R* = 2.08 [3.26]
b = 0.89 [0.48]
Seff = 13966.10 [10078.65]
Teq = 2772 [500] K
Rp = 5.66 [3.14] Re
a = 0.0477 [0.0207] AU
Ag = 2.35 [3.52] [0.39σ]
Teffp = 5309 [1763] K [1.38σ]

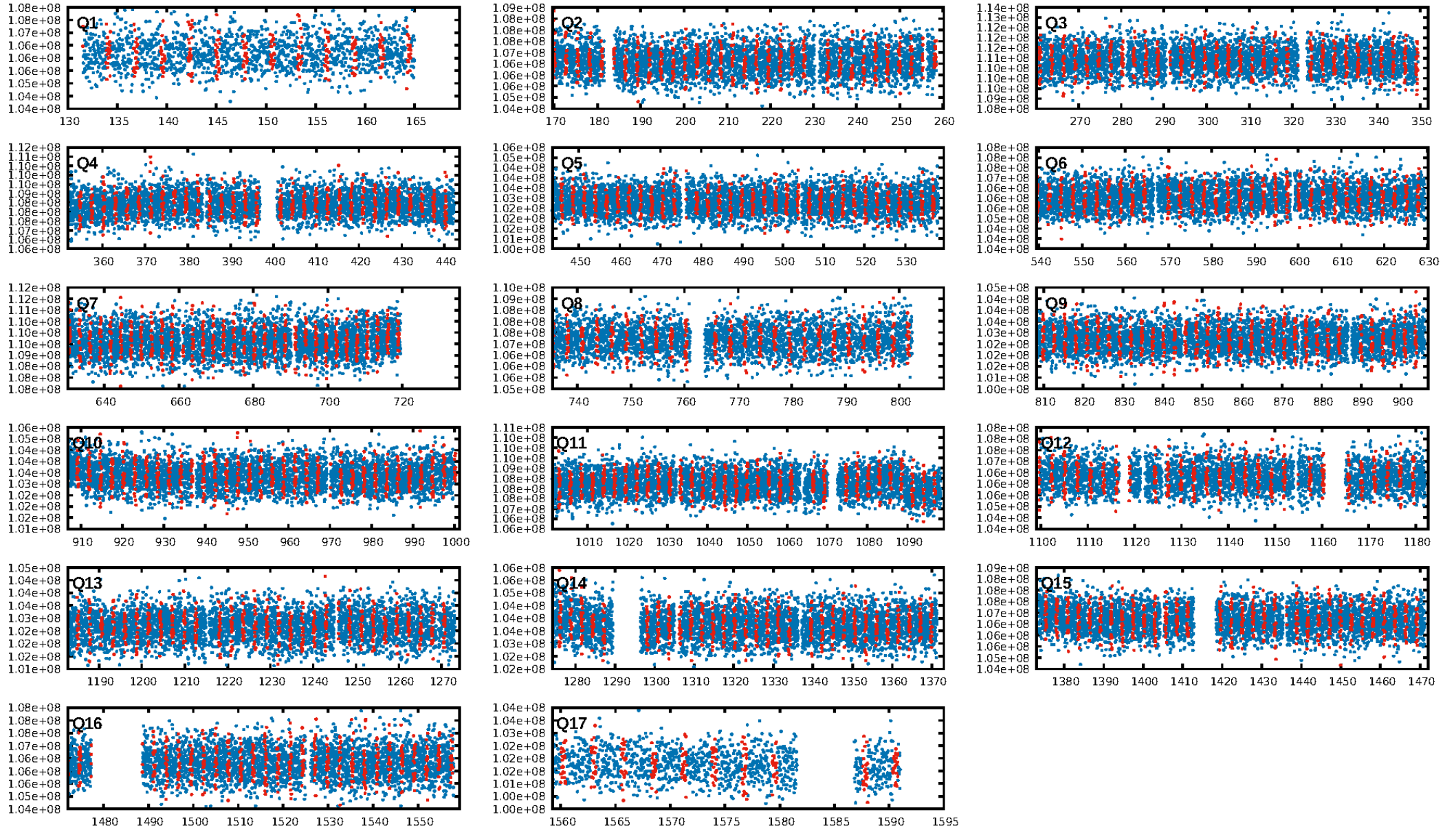
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [463/463]
GhostDiagnostic-chr: 3.565
Centroid-sig: 18.8%
Centroid-so: 0.371 arcsec [2.76σ]
OotOffset-rm: 0.076 arcsec [0.39σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.174 arcsec [1.23σ]
KicOffset-st: 4/4/4/5 [17]
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DiffImageOverlap-fno: 0.00 [0/17]

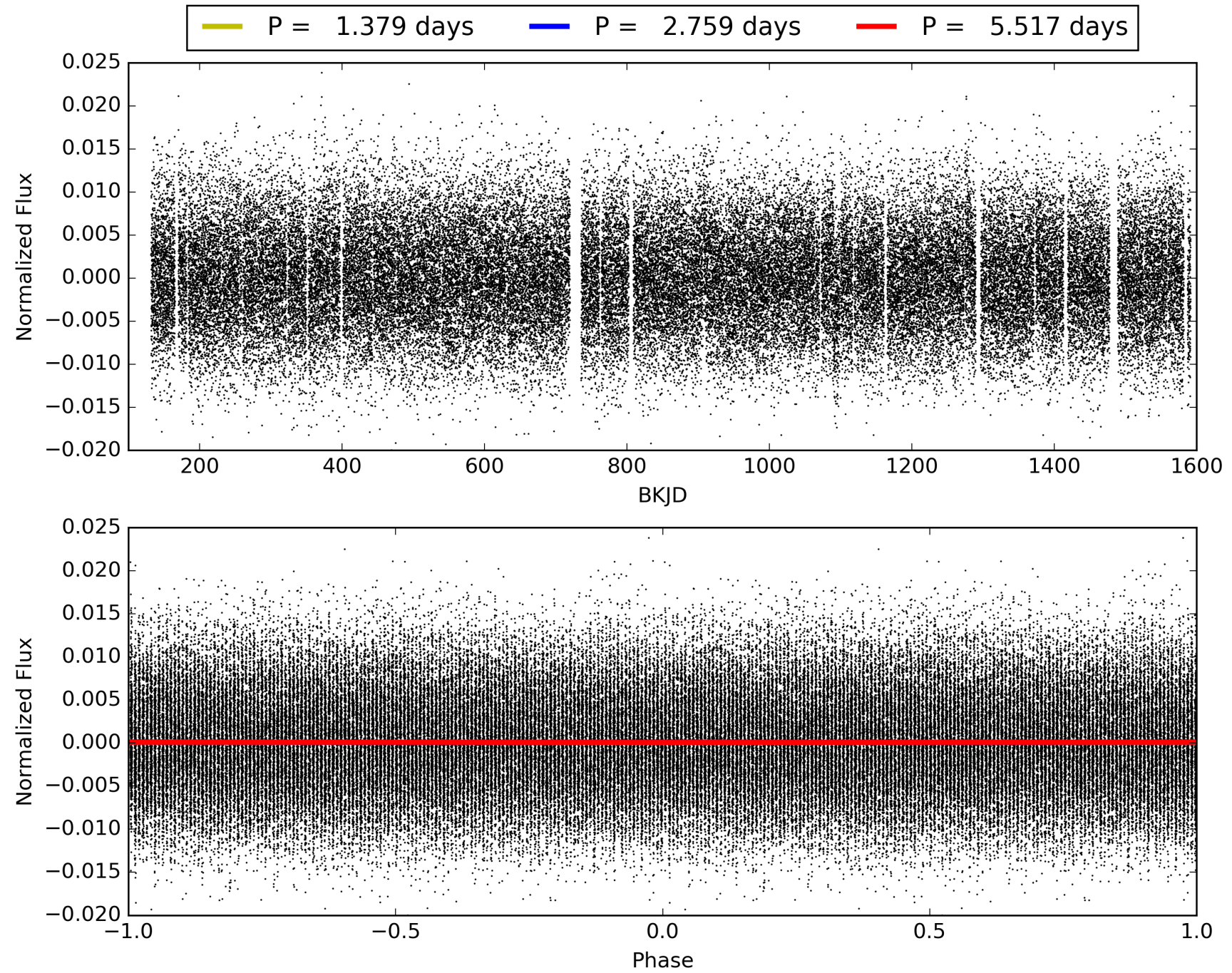
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009953617-02, PDC Light Curves

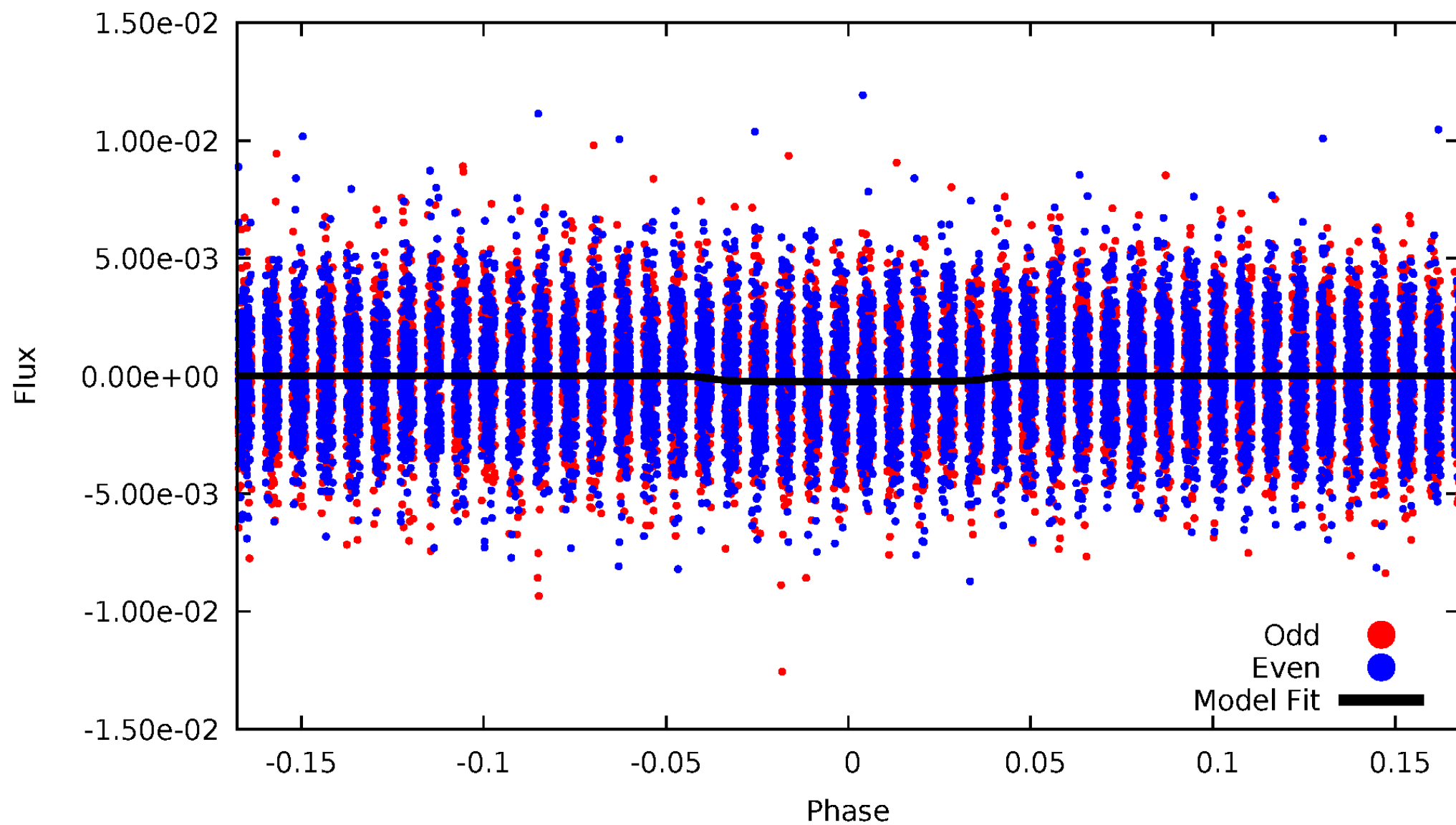


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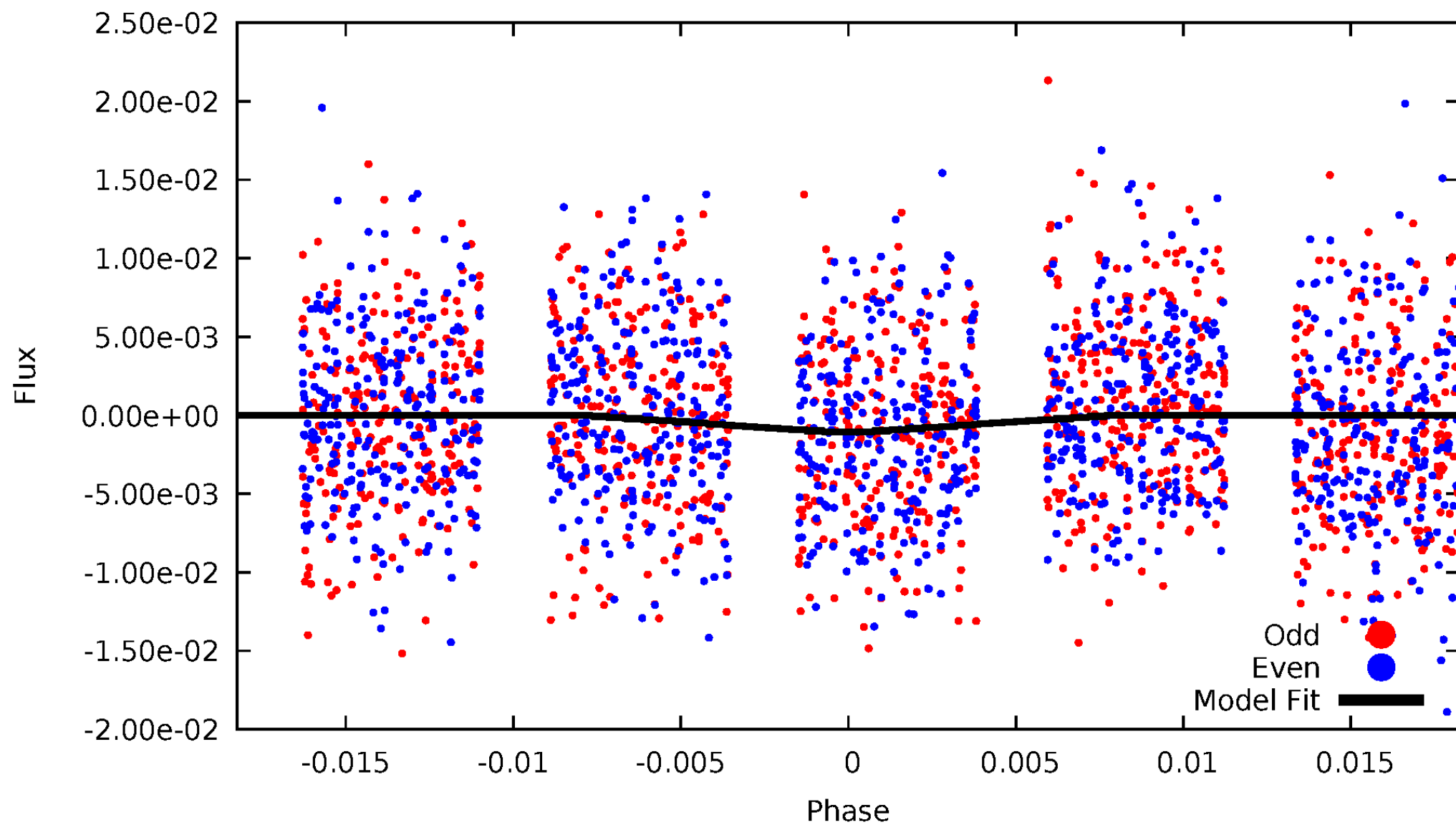
DV Odd/Even

TCE 009953617-02



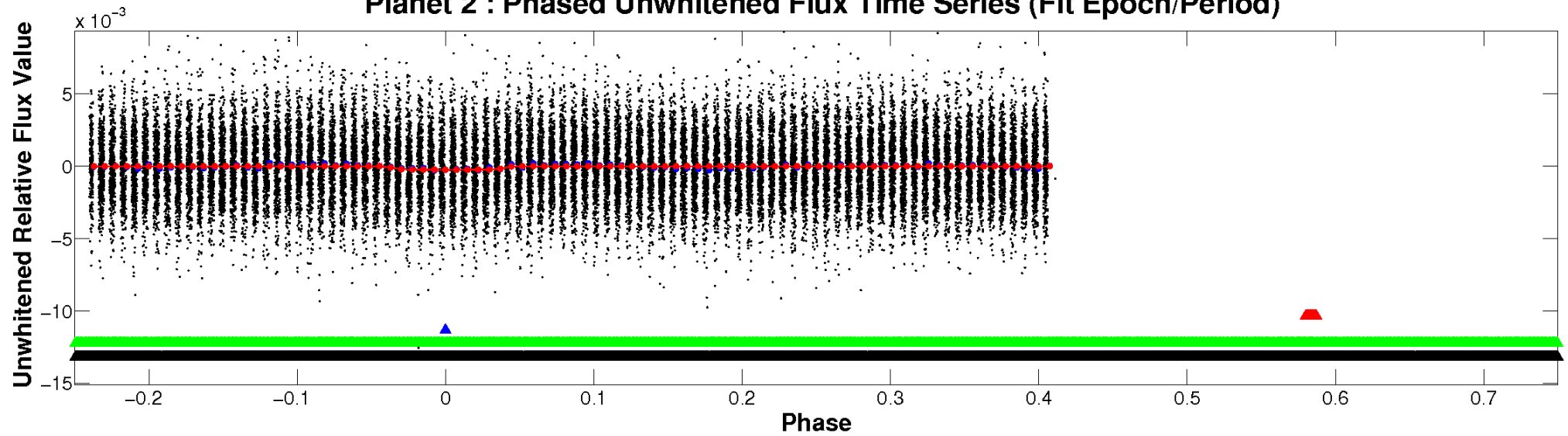
ALT Odd/Even

TCE 009953617-02

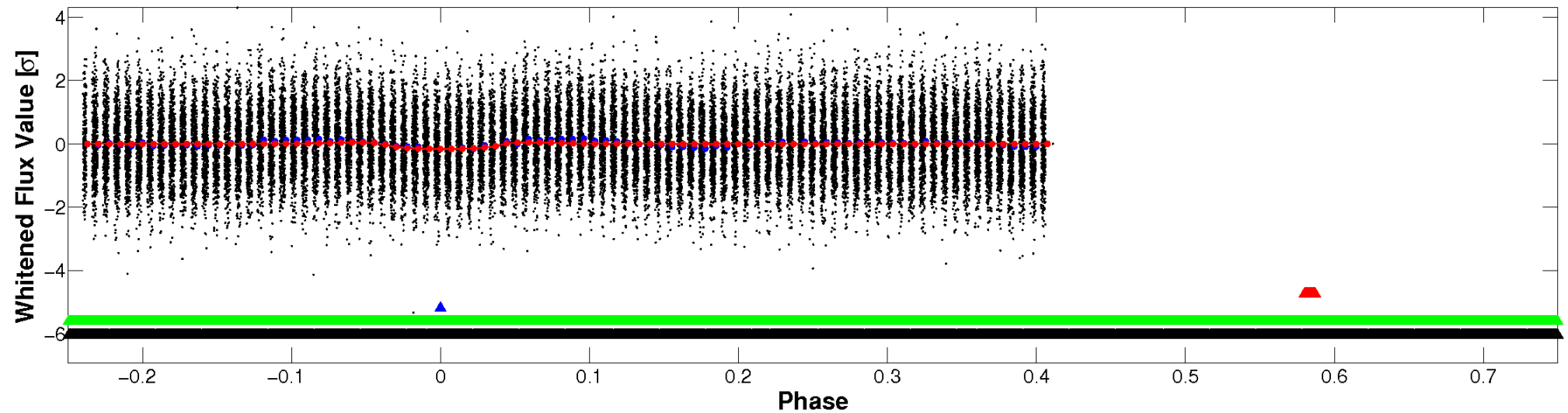


Non-Whitened Vs. Whitened Light Curve

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

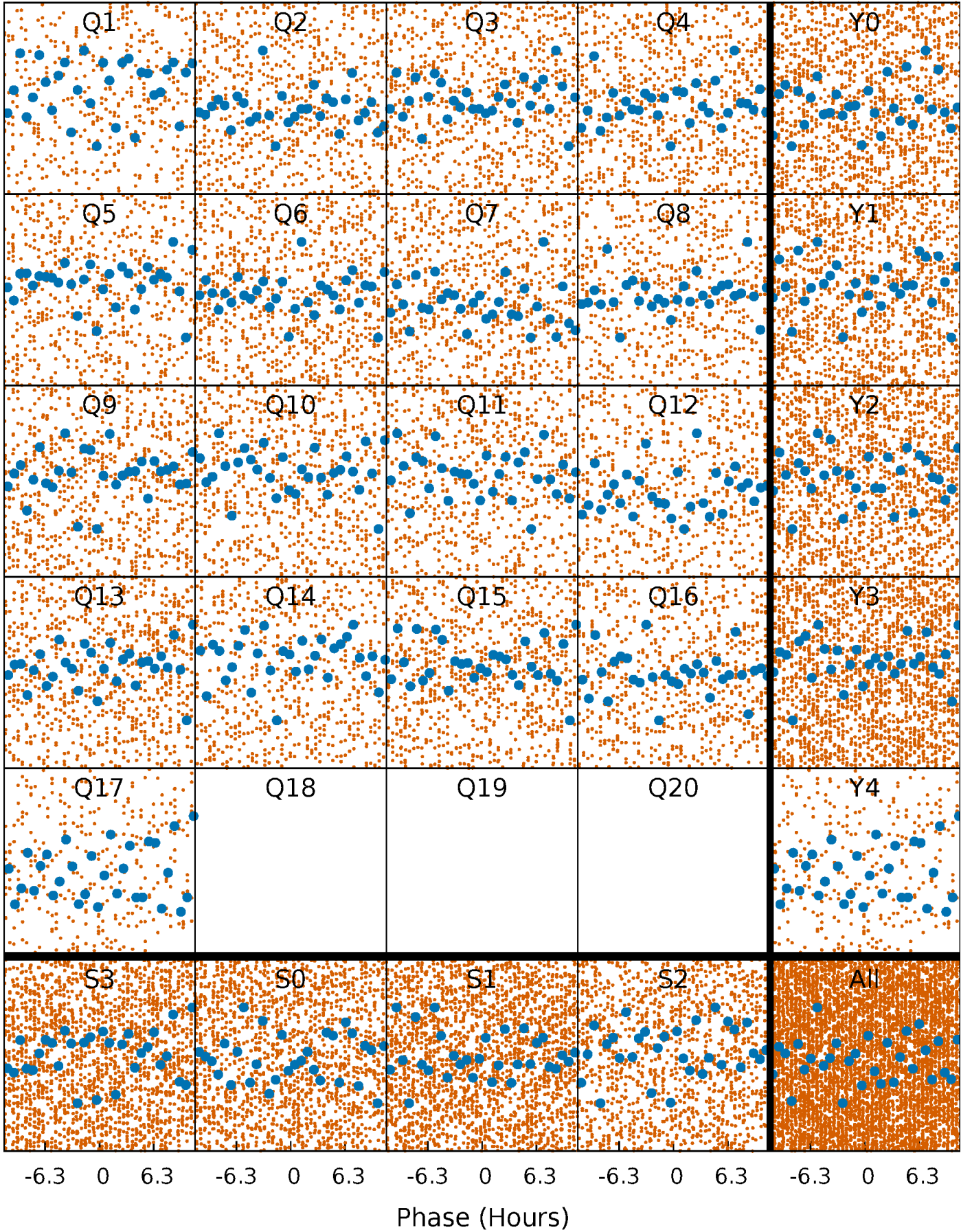


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



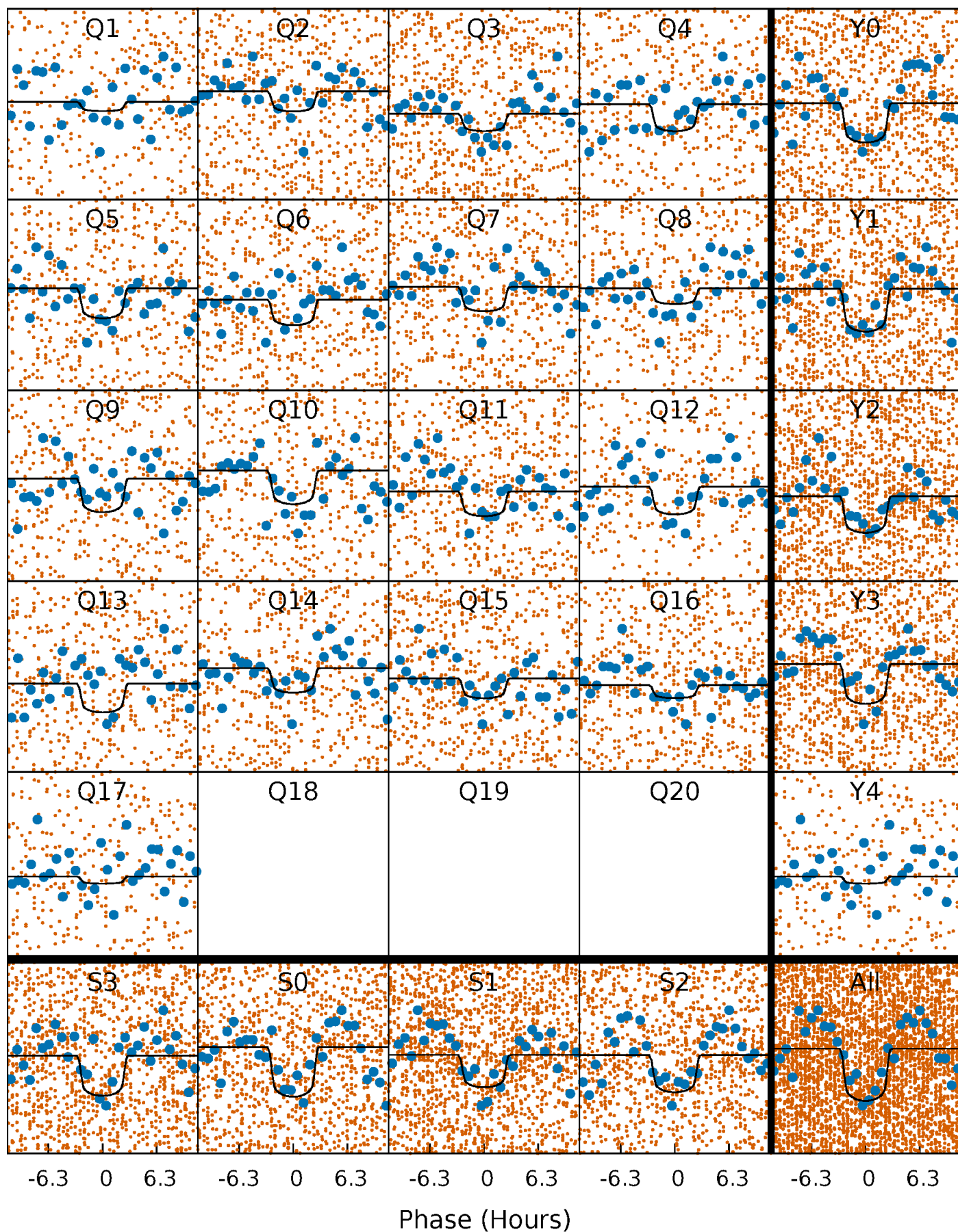
PDC Quarter-Phased Transit Curves

TCE 009953617-02 P= 2.758520 Days $T_0=134.076629$ (BKJD)



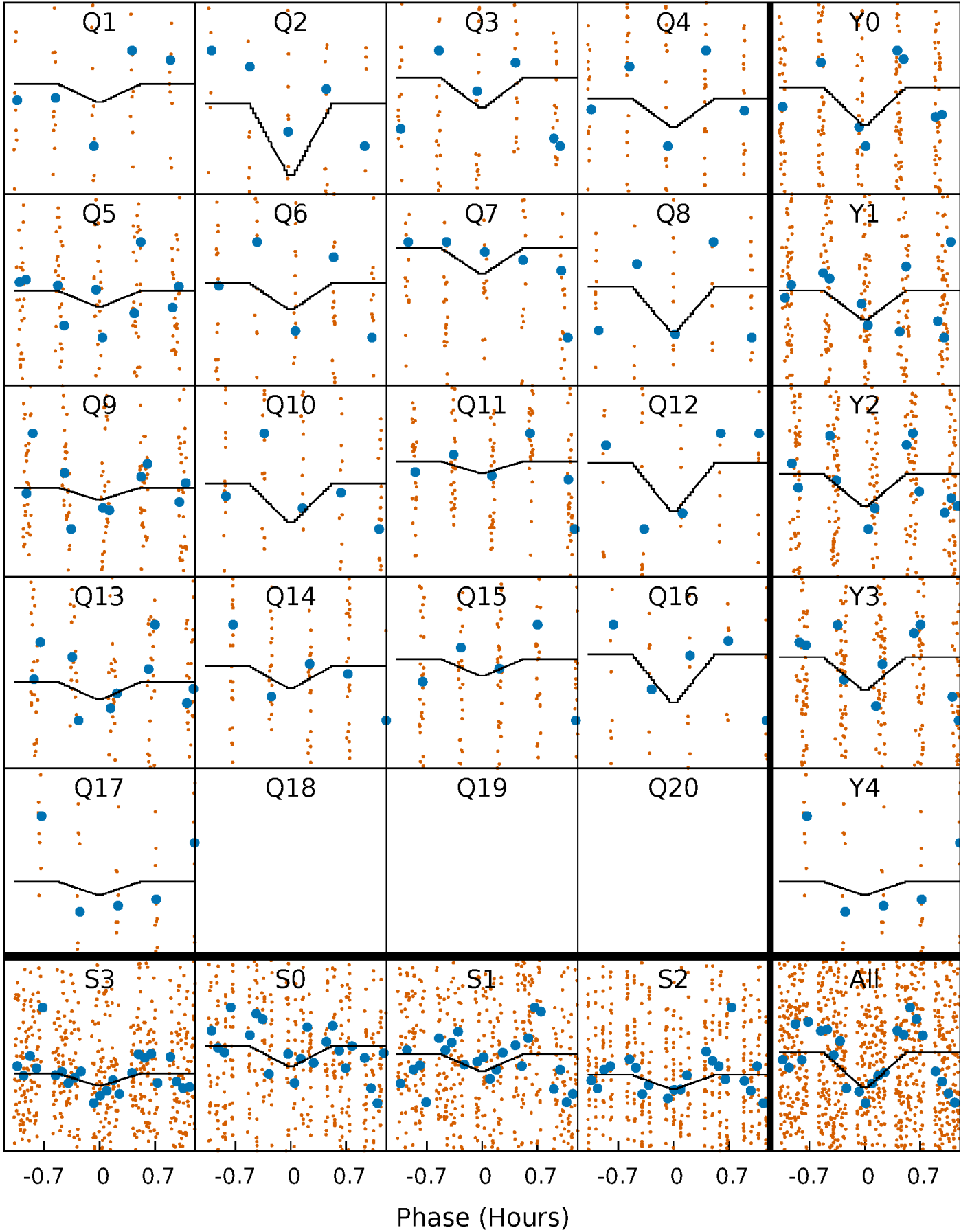
DV Quarter-Phased Transit Curves

TCE 009953617-02 P= 2.758520 Days $T_0=134.076629$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

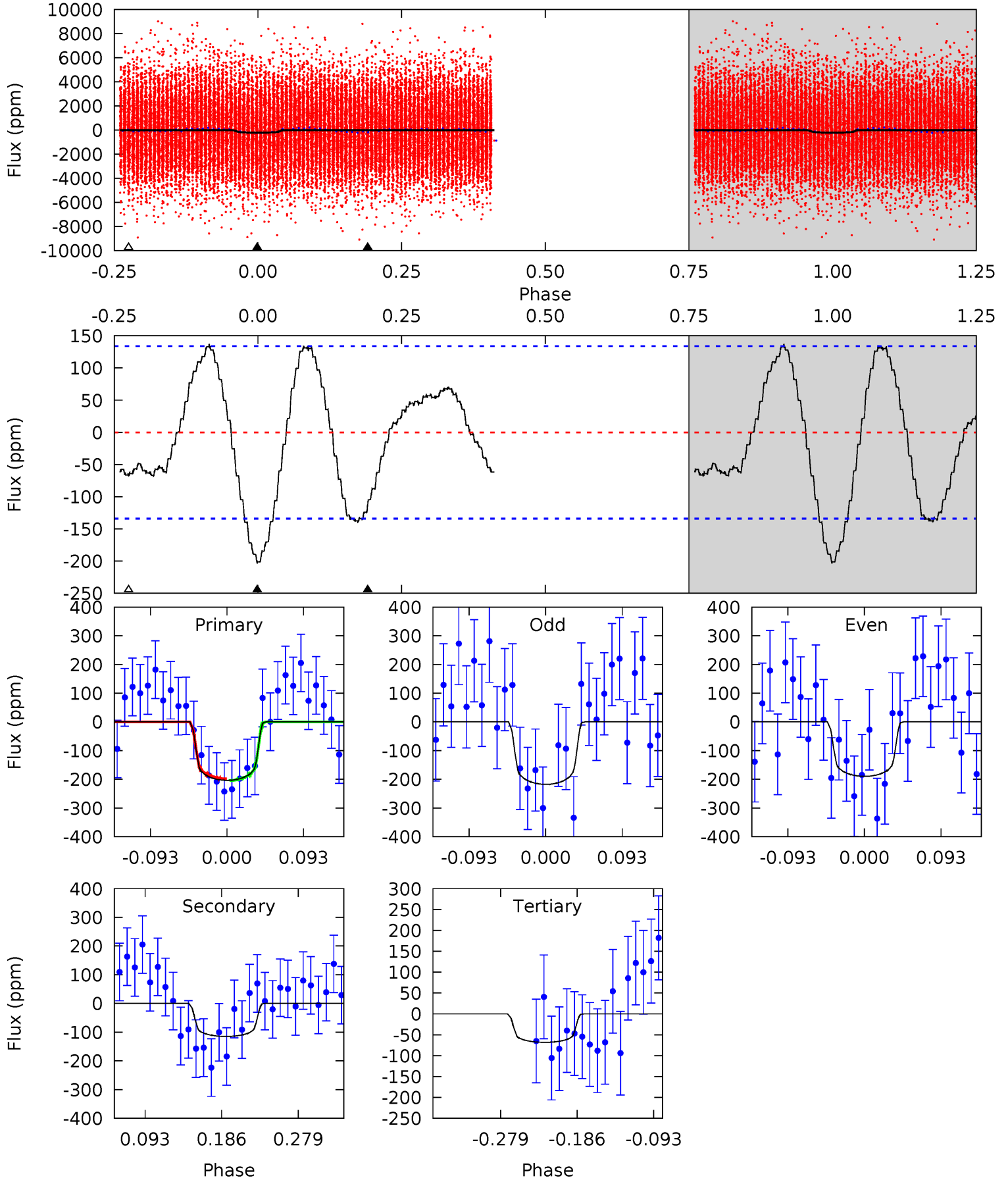
TCE 009953617-02 P= 2.758507 Days $T_0=134.070426$ (BKJD)



DV Model-Shift Uniqueness Test

009953617-02, P = 2.758520 Days, E = 131.318109 Days

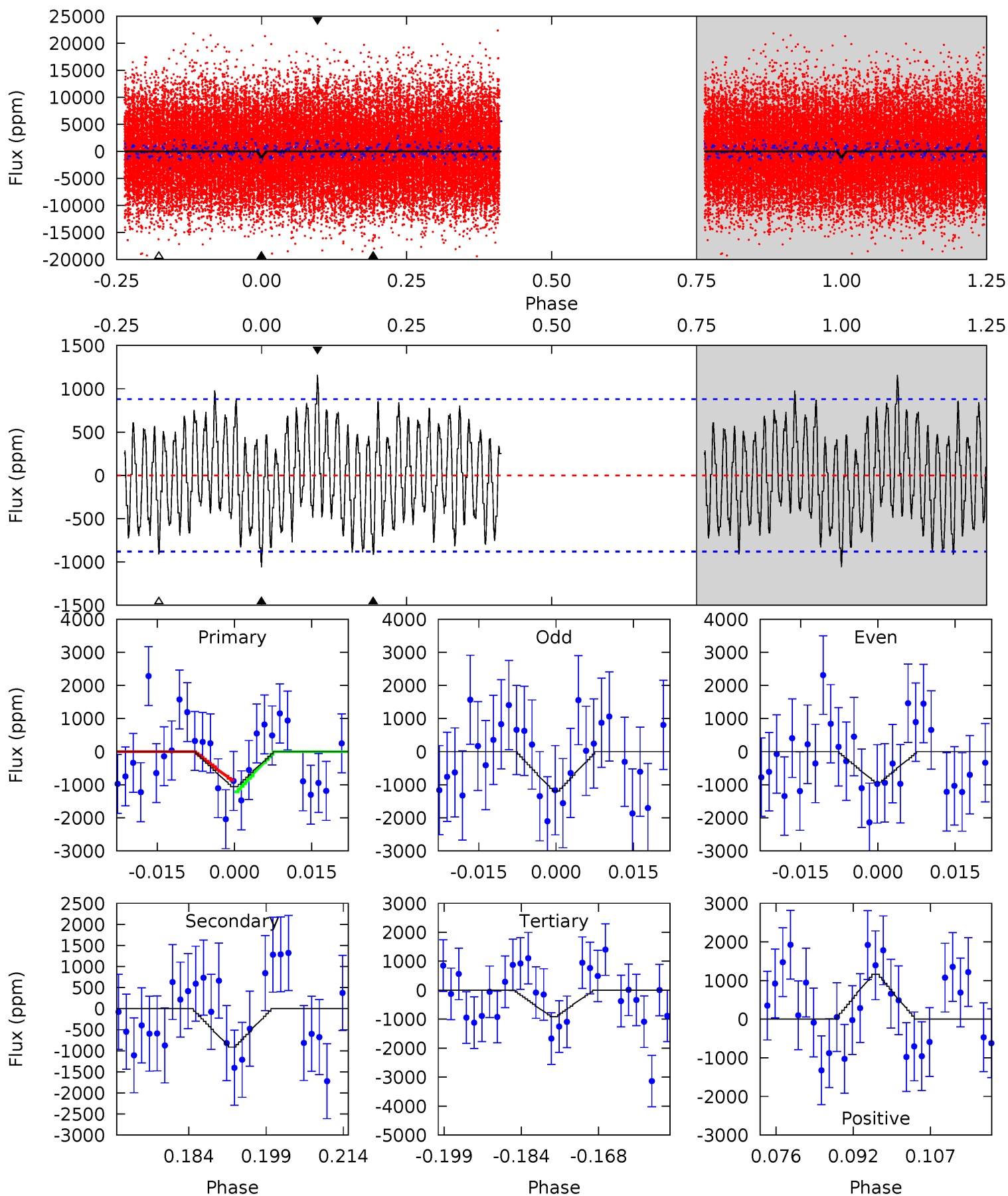
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.96	3.93	2.33	0	4.58	1.68	2.03	4.64	6.96	1.60	3.93	0.48	1.01	0.40	0.10



Alt Model-Shift Uniqueness Test

009953617-02, P = 2.758507 Days, E = 131.311919 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.96	5.13	5.13	6.52	4.94	2.43	2.60	0.83	-0.56	0.00	-1.39	0.75	1.04	0.52	1.00



Stellar Parameters For KIC 009953617

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7769^{+215}_{-323}	$3.729^{+0.416}_{-0.073}$	$-0.060^{+0.200}_{-0.350}$	$3.122^{+0.456}_{-1.368}$	$1.905^{+0.103}_{-0.387}$	$0.088^{+0.325}_{-0.021}$
	+3%/-4%	+11%/-2%	+333%/-583%	+15%/-44%	+5%/-20%	+369%/-24%
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 009953617-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-115 ± 29	$4.98^{+2.16}_{-1.80}$	3739^{+255}_{-434}	6029^{+1592}_{-931}	$5.573^{+8.807}_{-2.906}$
Alt.	-913 ± 178	$9.98^{+2.60}_{-2.52}$	3741^{+269}_{-464}	7347^{+1048}_{-821}	11^{+10}_{-4}

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 $A_{obs} \gg 1.0$

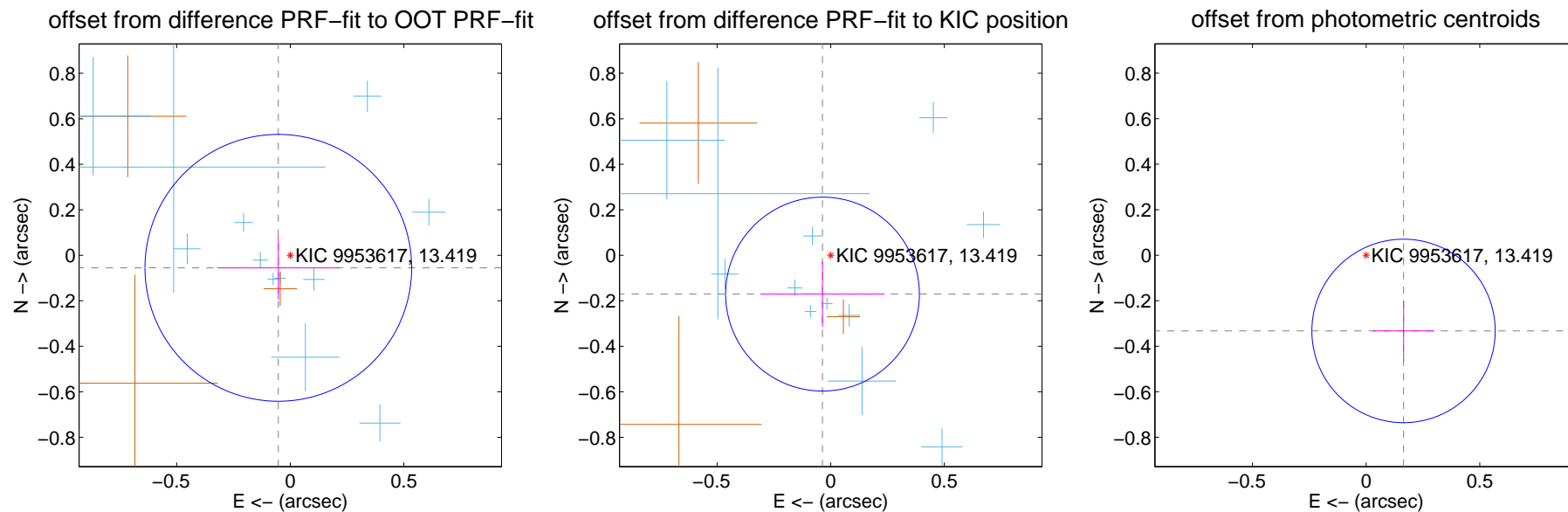
DV Centroid Data

Supplemental centroid analysis for 009953617-02. Kepler magnitude: 13.42. Transit SNR 9.63

There are 13 quarters with good PRF difference image offsets

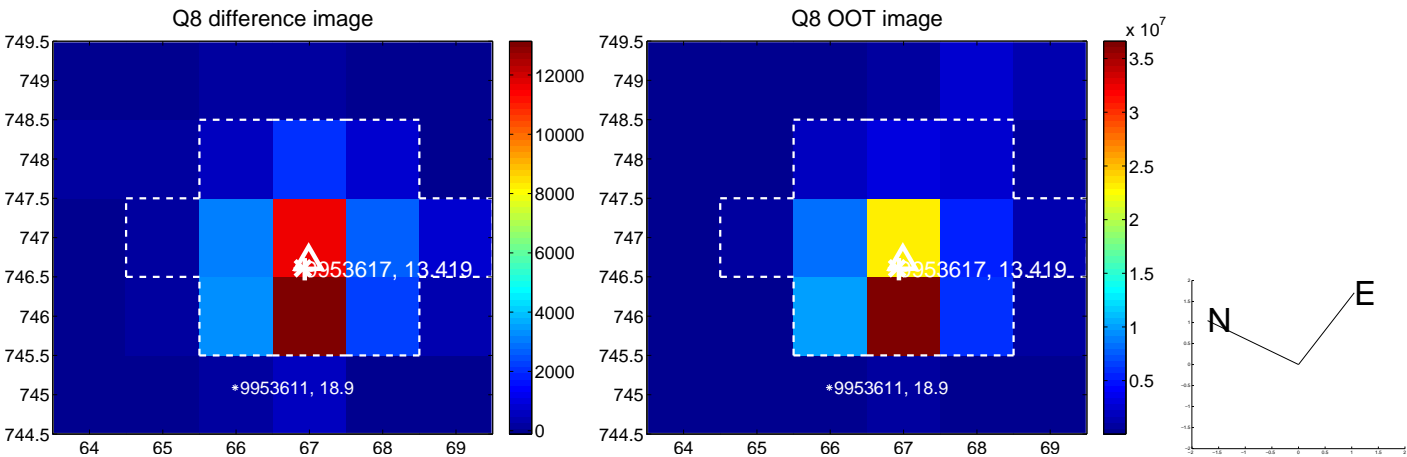
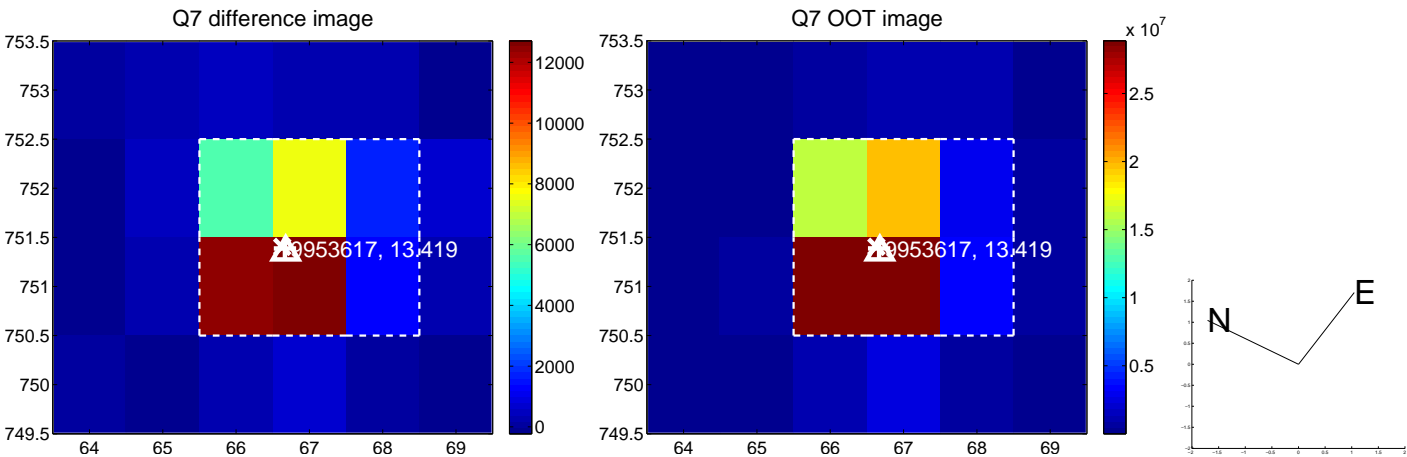
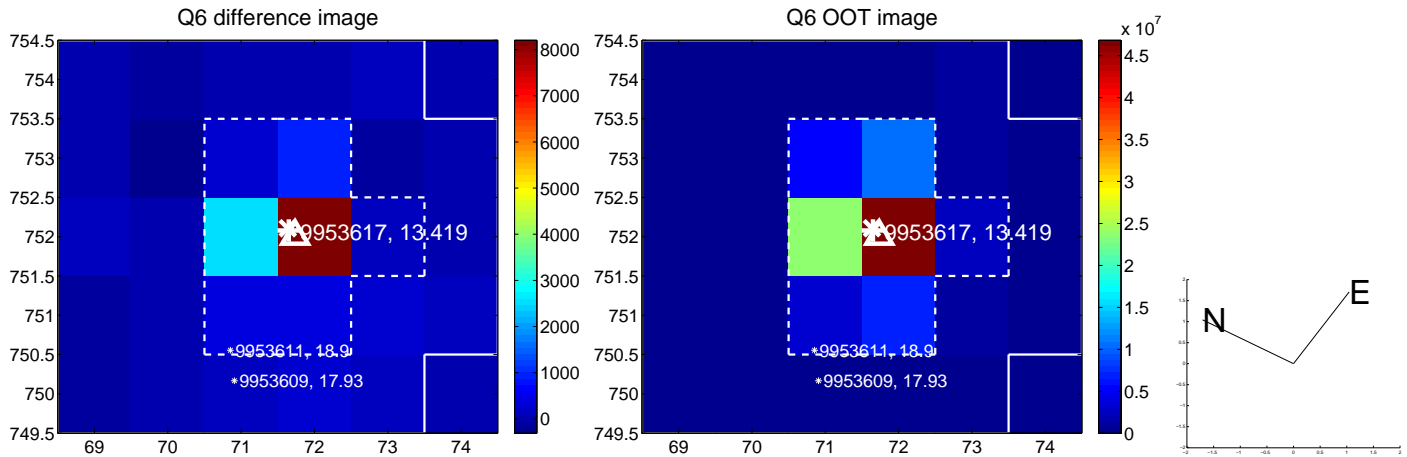
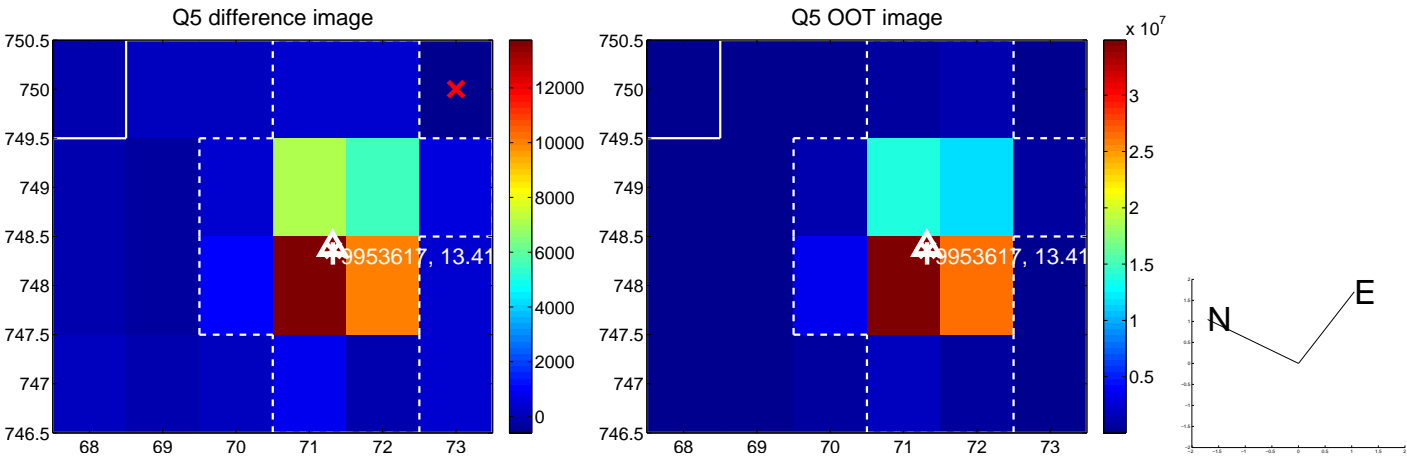
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.076 ± 0.196	0.39	0.053 ± 0.269	-0.055 ± 0.139
PRF-fit source offset from KIC position	0.174 ± 0.142	1.23	0.036 ± 0.273	-0.171 ± 0.144
photometric centroid source offset	0.37 ± 0.13	2.76	-0.16 ± 0.14	-0.33 ± 0.13

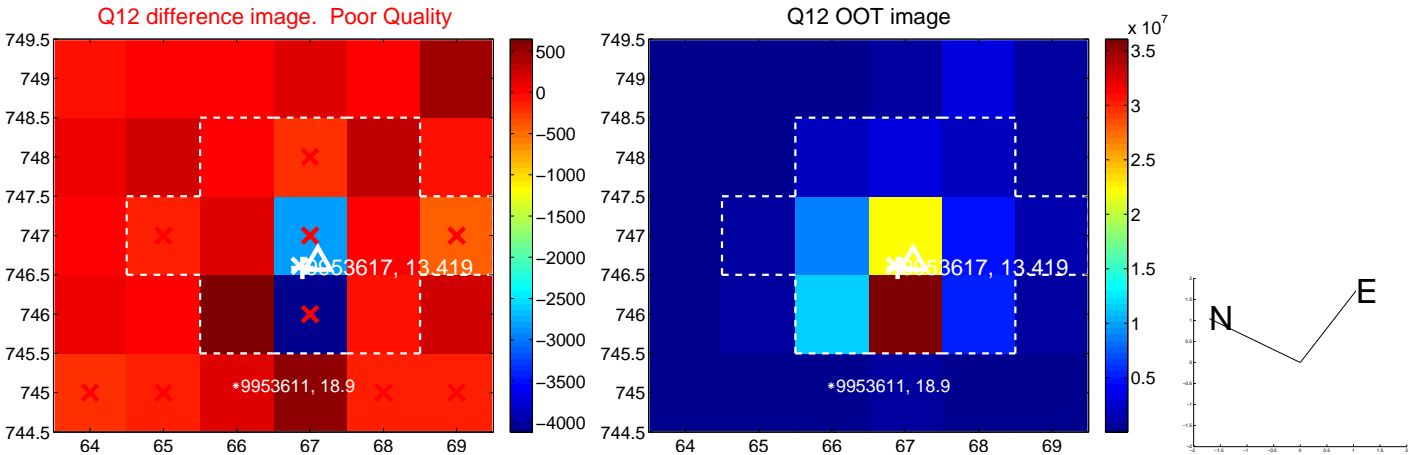
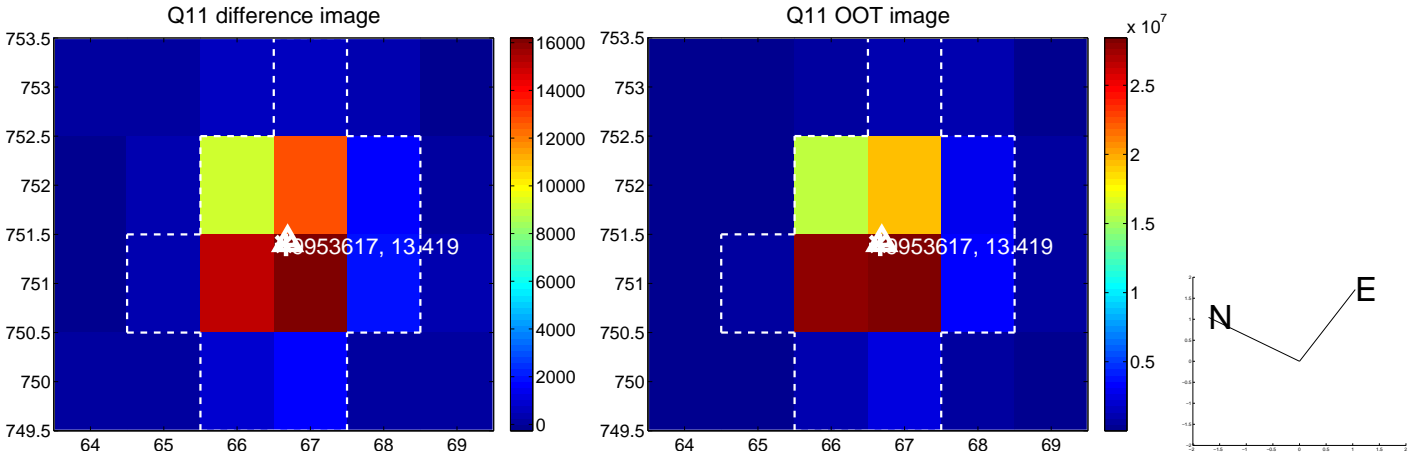
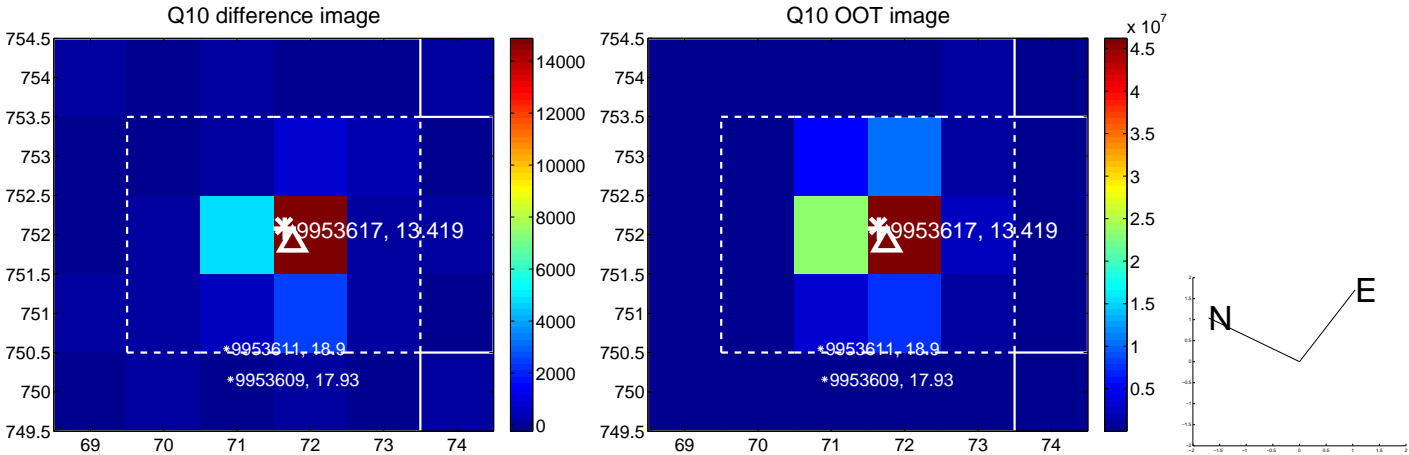
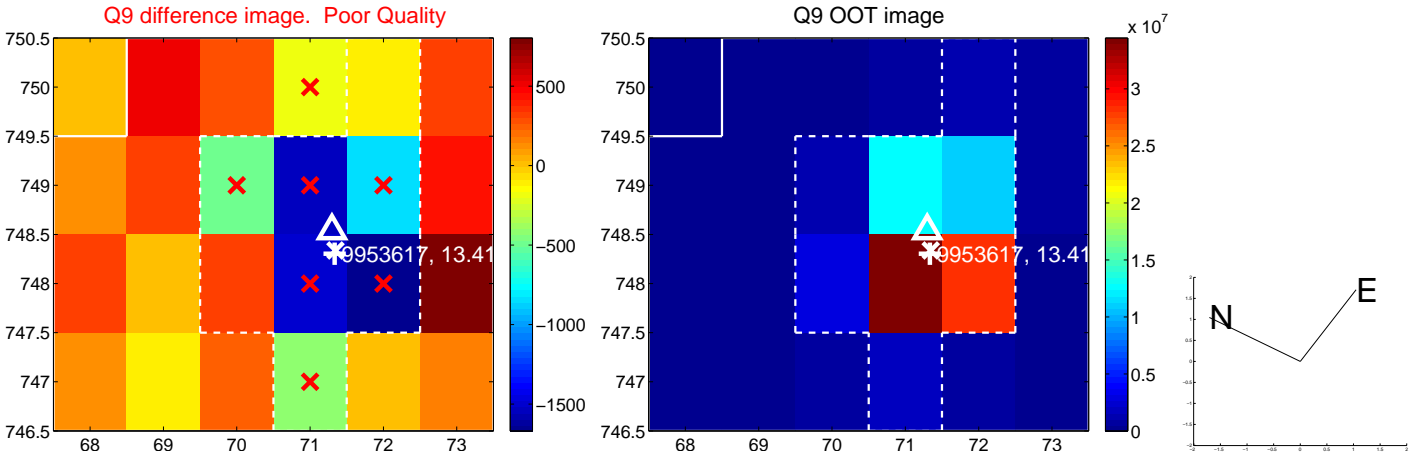


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

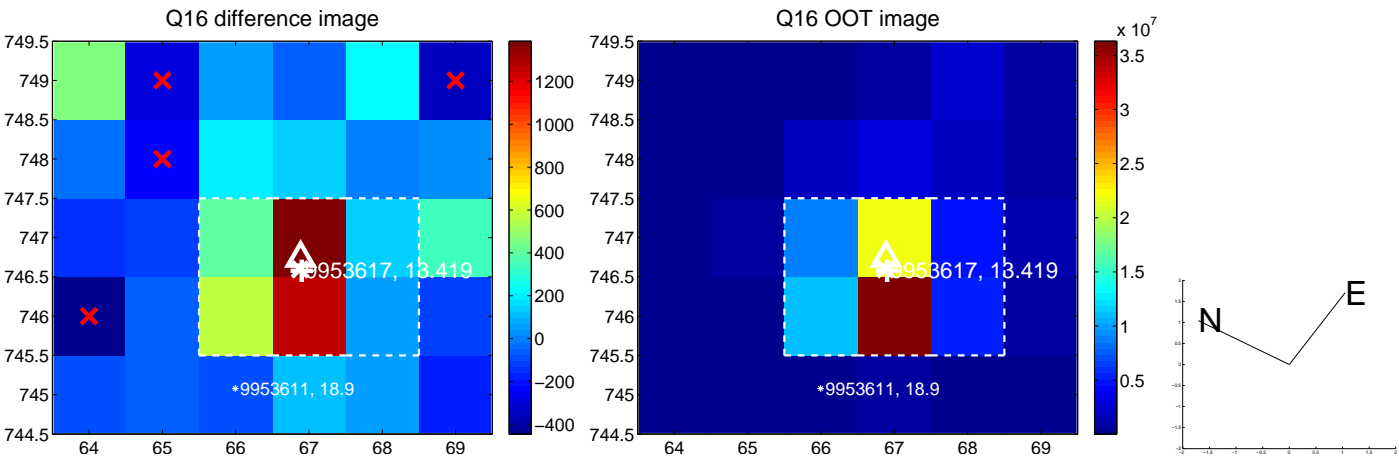
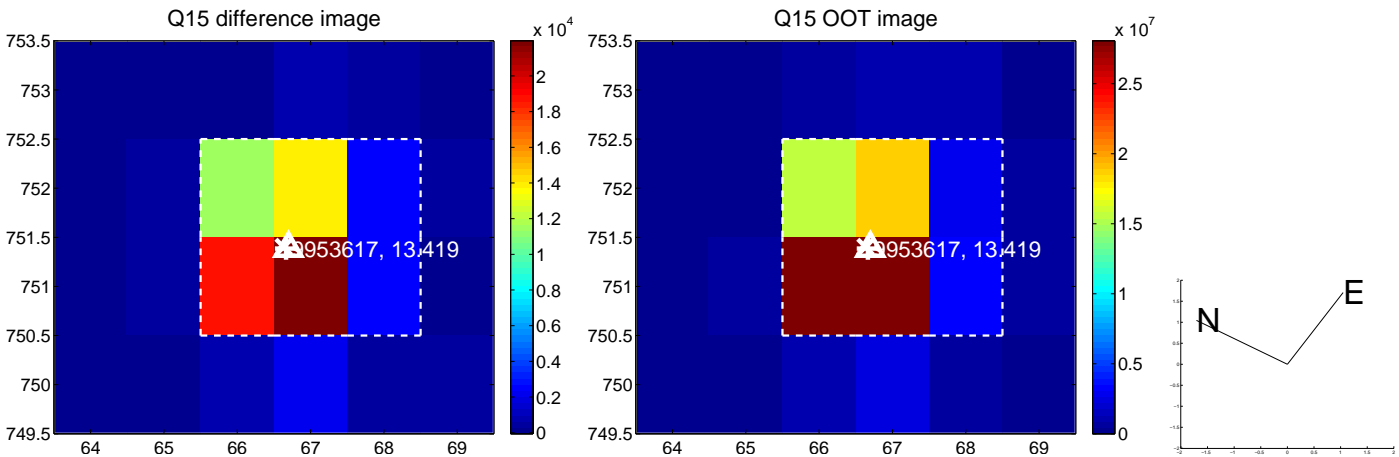
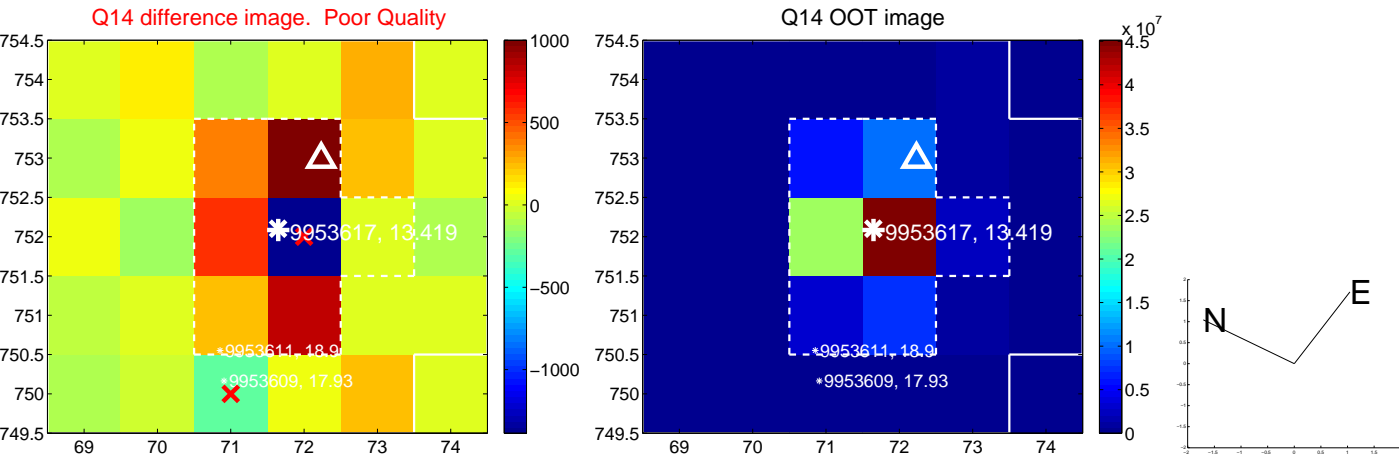
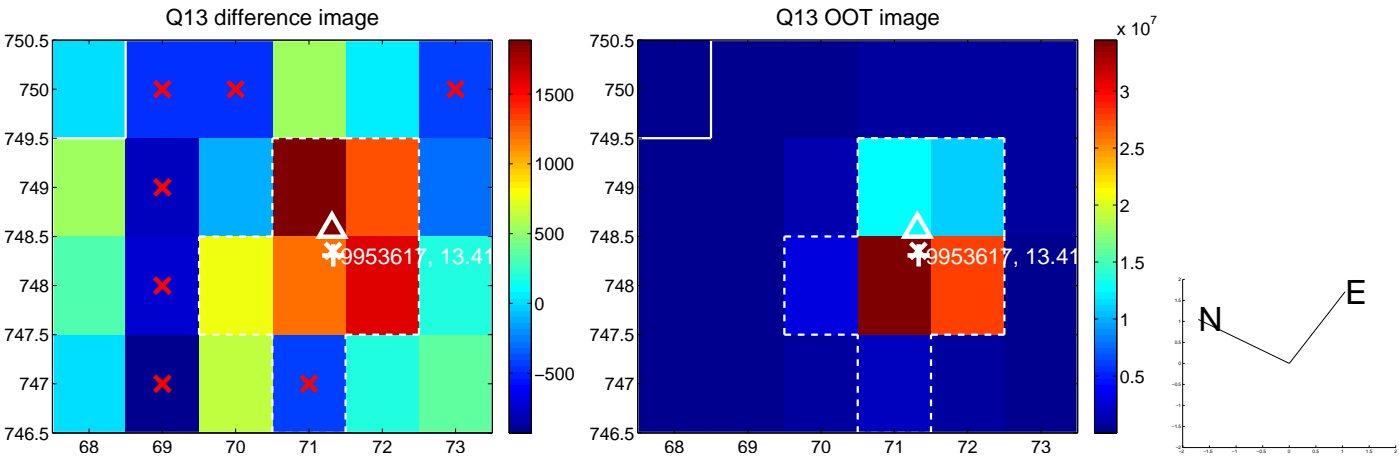
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



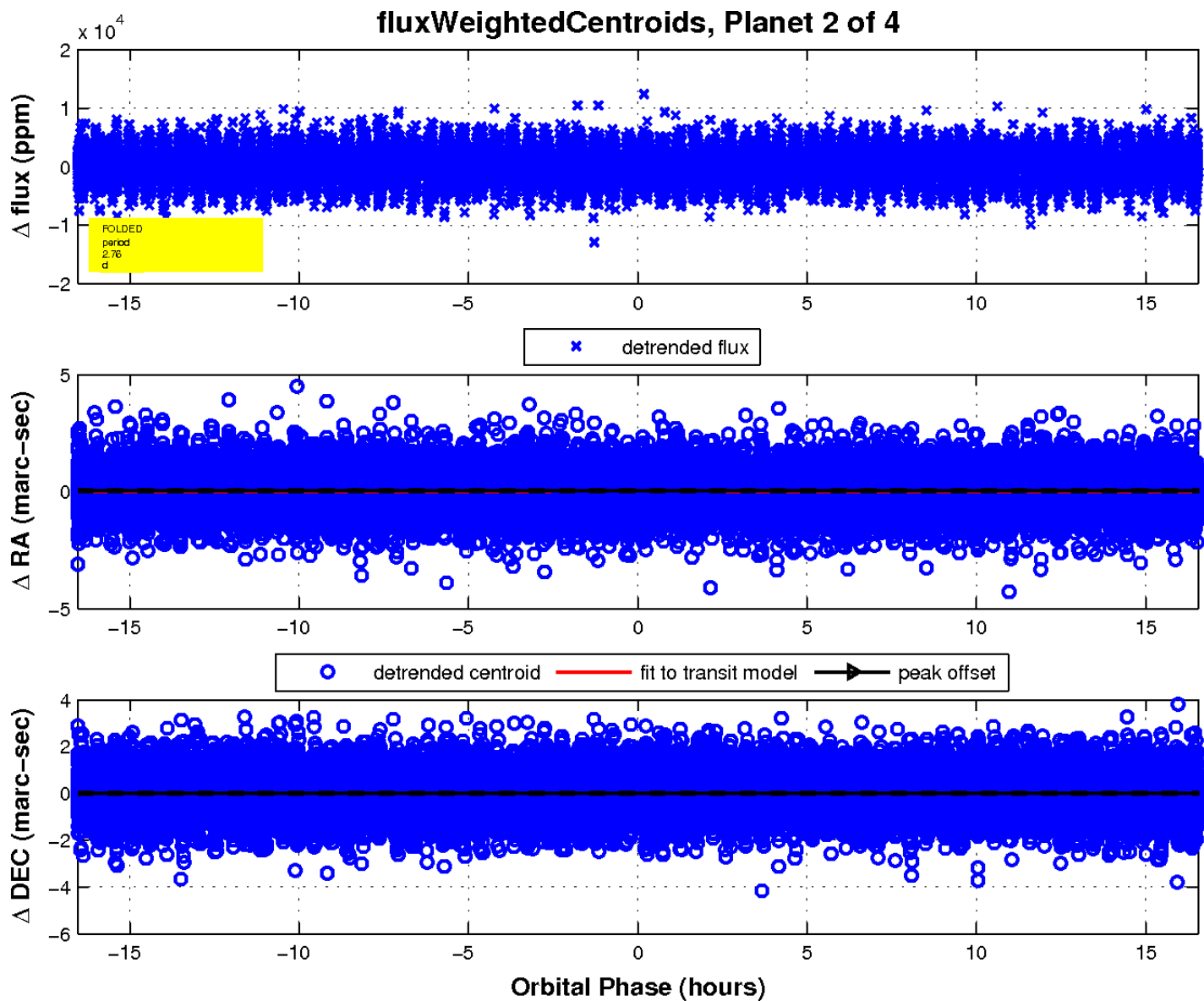
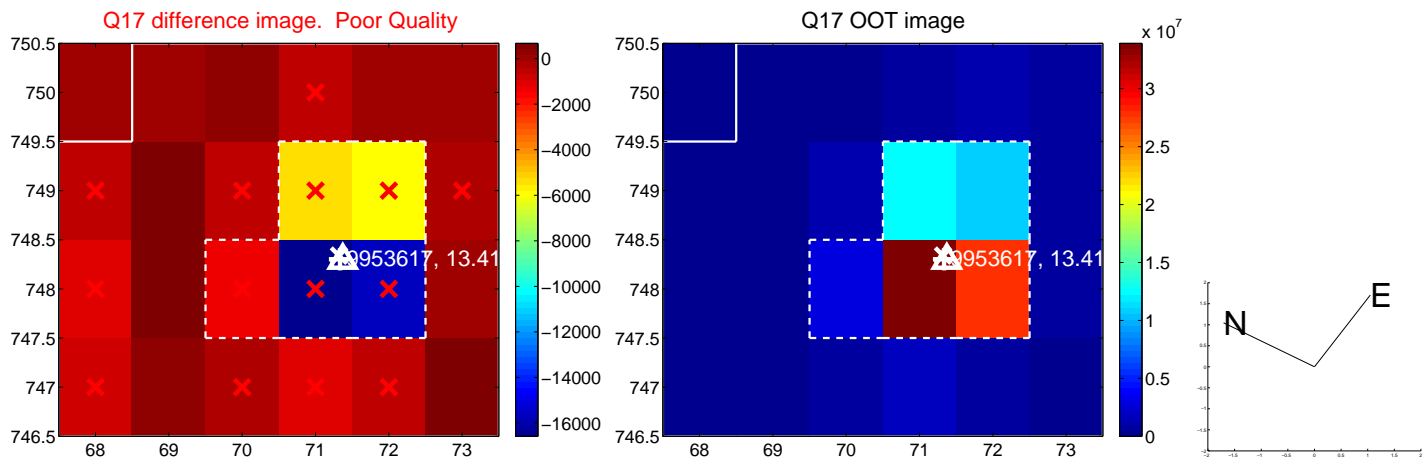
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

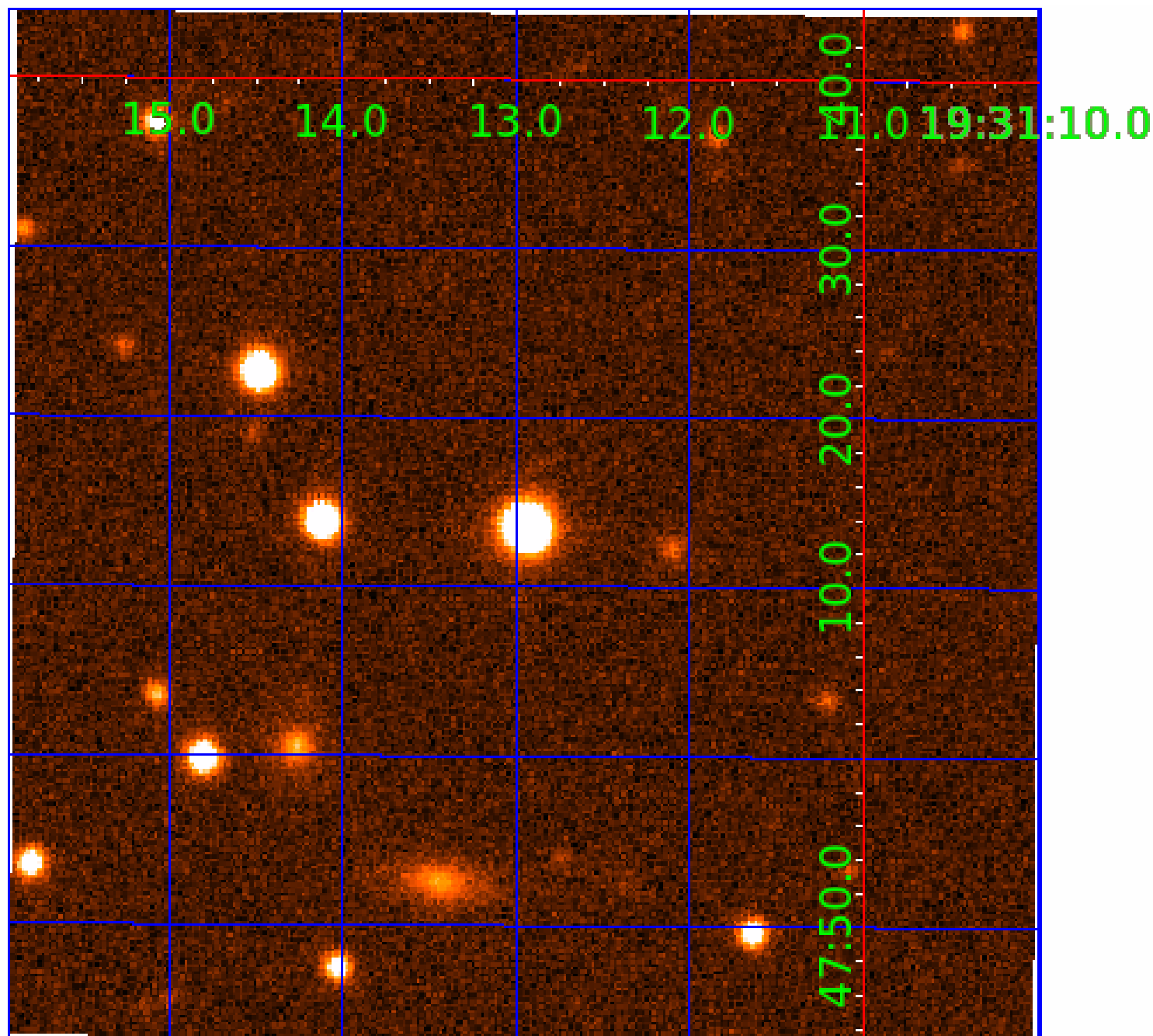


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009953617

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})
009953617-01	OBS	No	2.758481	132.938186	340.5	7.614	12.5	12.9	3.12	7769	7.53	13966.36
009953617-02	OBS	No	2.758520	134.076629	246.7	5.545	9.2	9.6	3.12	7769	5.66	13966.10
009953617-03	OBS	No	0.509333	131.717935	1142.5	0.761	7.9	19.3	3.12	7769	12.52	132833.50
009953617-04	OBS	No	0.509321	131.980321	1026.8	0.597	9.5	16.0	3.12	7769	10.40	132837.68

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009953617-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009953617-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009953617-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009953617-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

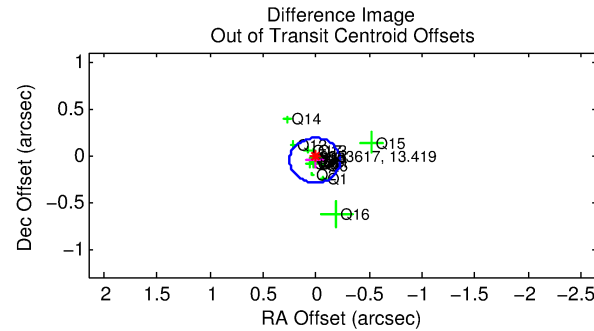
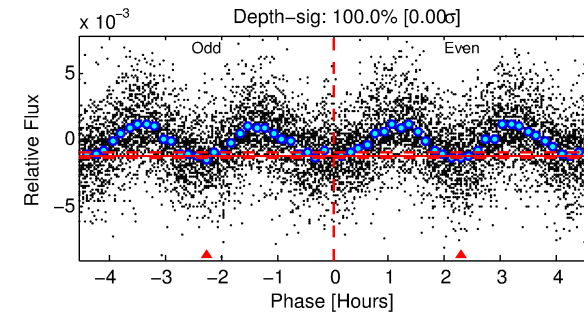
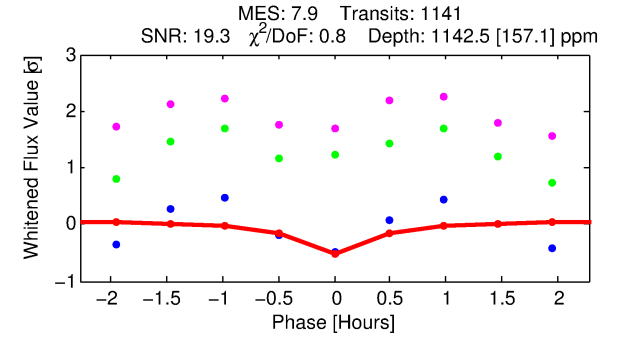
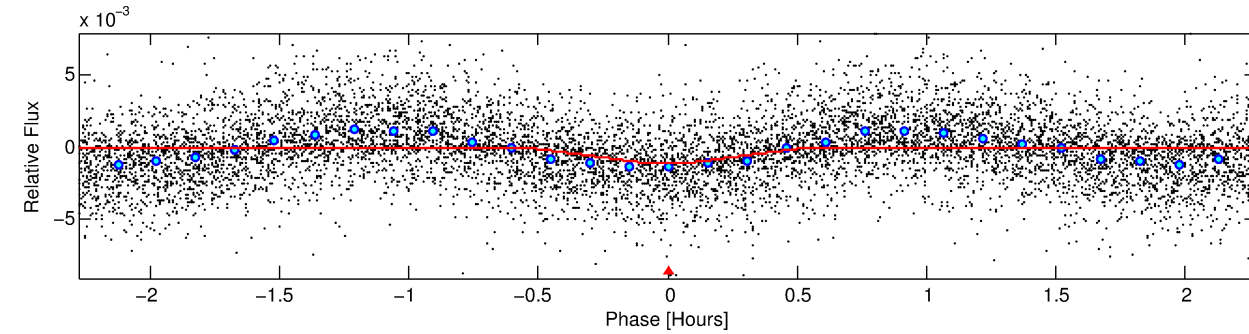
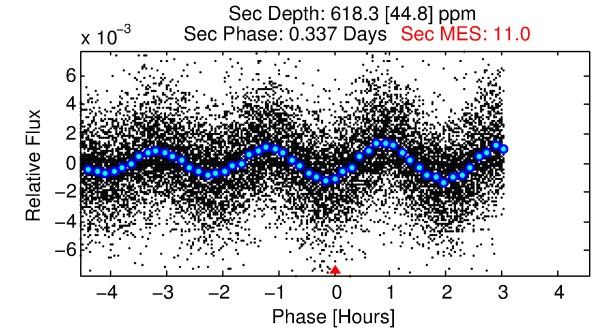
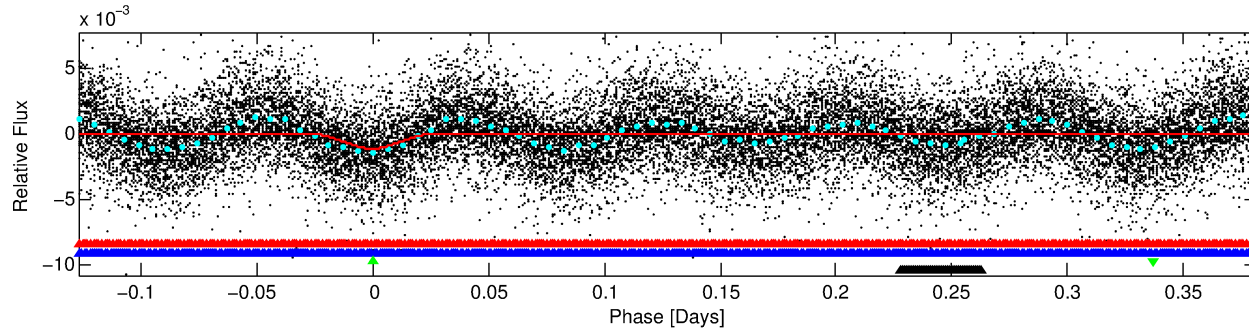
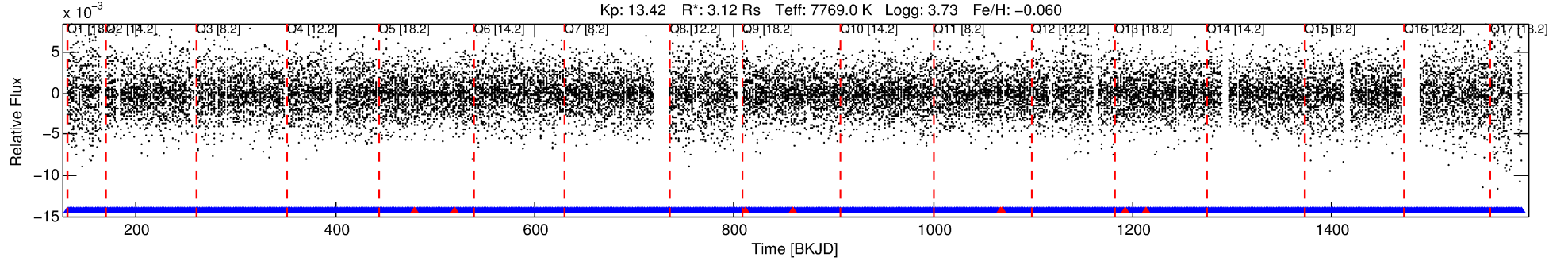
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009953617-03

No Significant Match Found

DV One-Page Summary

KIC: 9953617 Candidate: 3 of 4 Period: 0.509 d



DV Fit Results:

Period = 0.50933 [0.00001] d
Epoch = 131.7179 [0.0009] BKJD
Rp/R* = 0.0367 [0.0122]
a/R* = 2.80 [4.25]
b = 0.90 [0.38]
Seff = 132833.50 [95859.39]
Teq = 4868 [878] K
Rp = 12.52 [6.87] Re
a = 0.0155 [0.0067] AU
Ag = 0.52 [0.50] [-0.95σ]
Teffp = 6391 [1097] K [1.08σ]

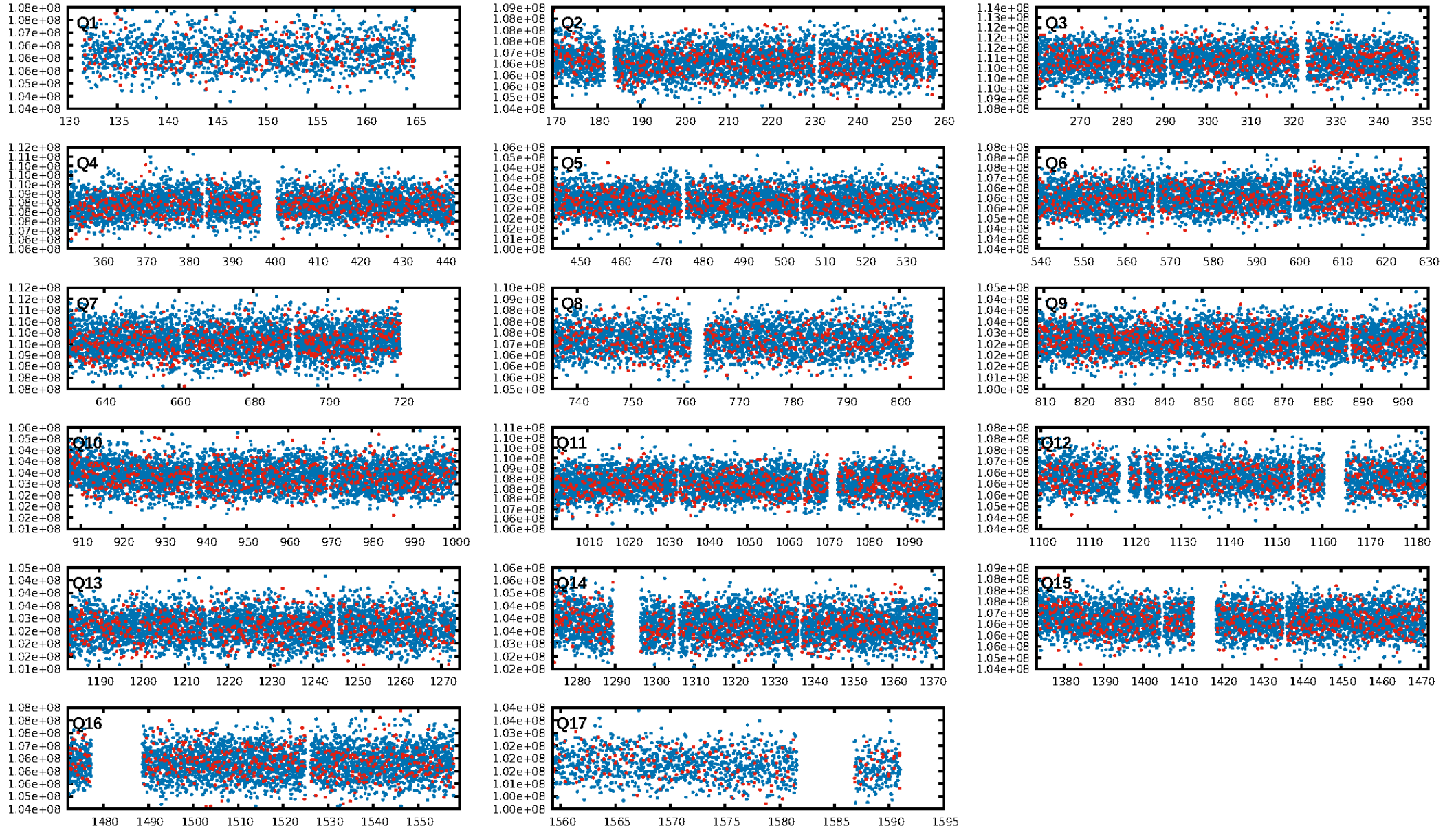
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 100.0% [7.05σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [1081/1089]
GhostDiagnostic-chr: 1.755
Centroid-sig: 0.1%
Centroid-so: 0.313 arcsec [9.23σ]
OotOffset-rm: 0.057 arcsec [0.71σ]
KicOffset-rm: 0.163 arcsec [1.92σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 0.00 [0/17]

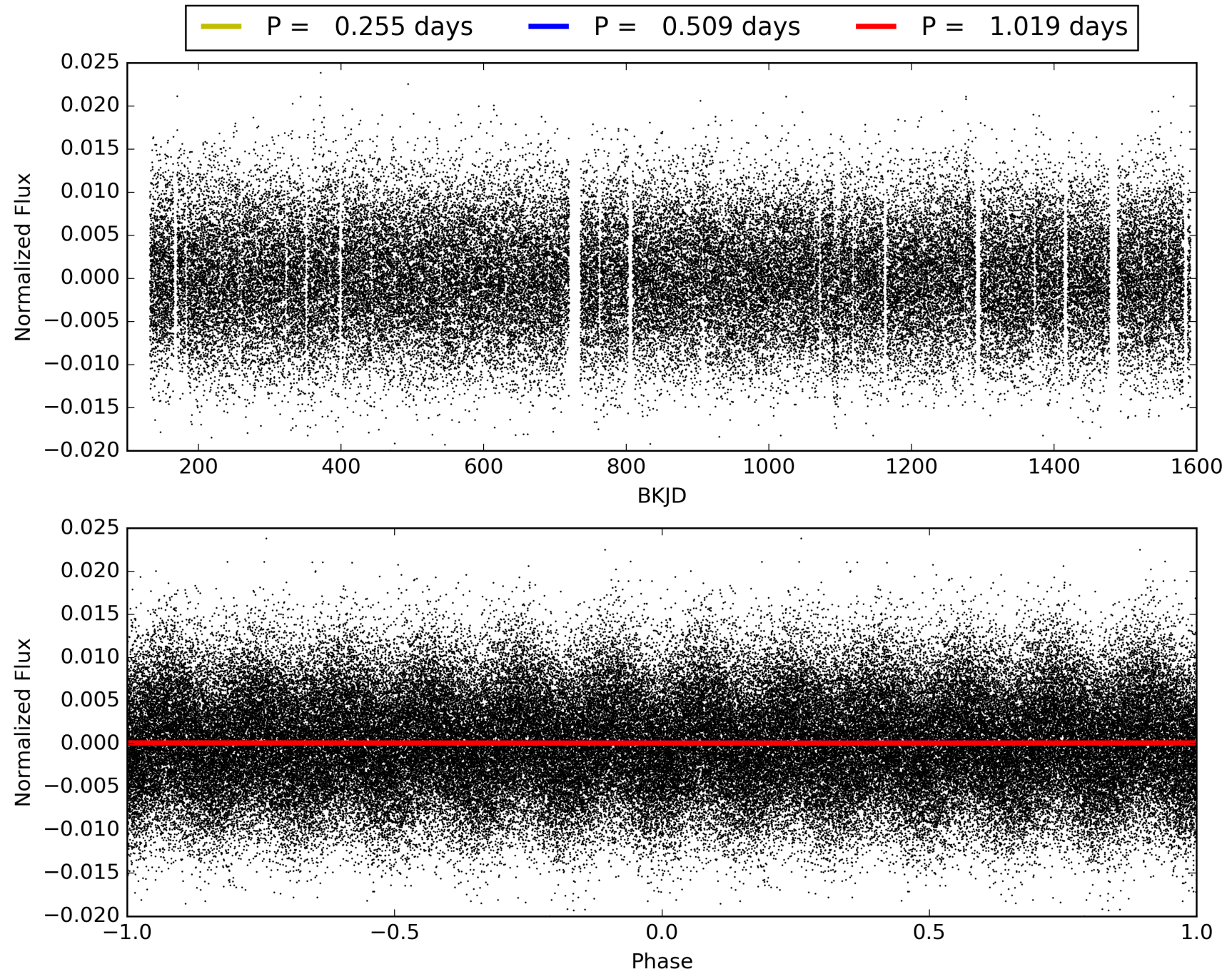
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:14:56 Z

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

TCE 009953617-03, PDC Light Curves

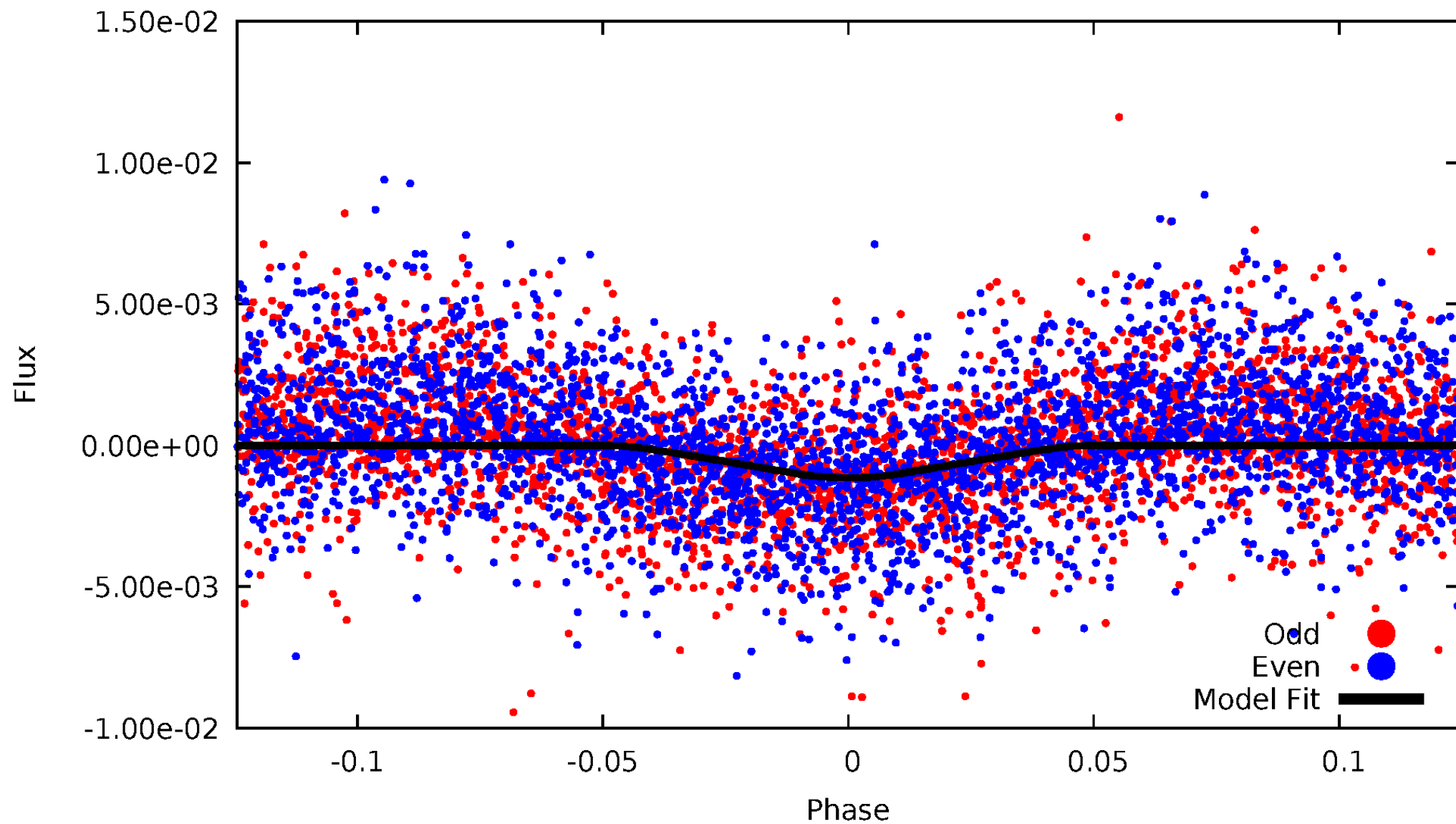


TCE 009953617-03



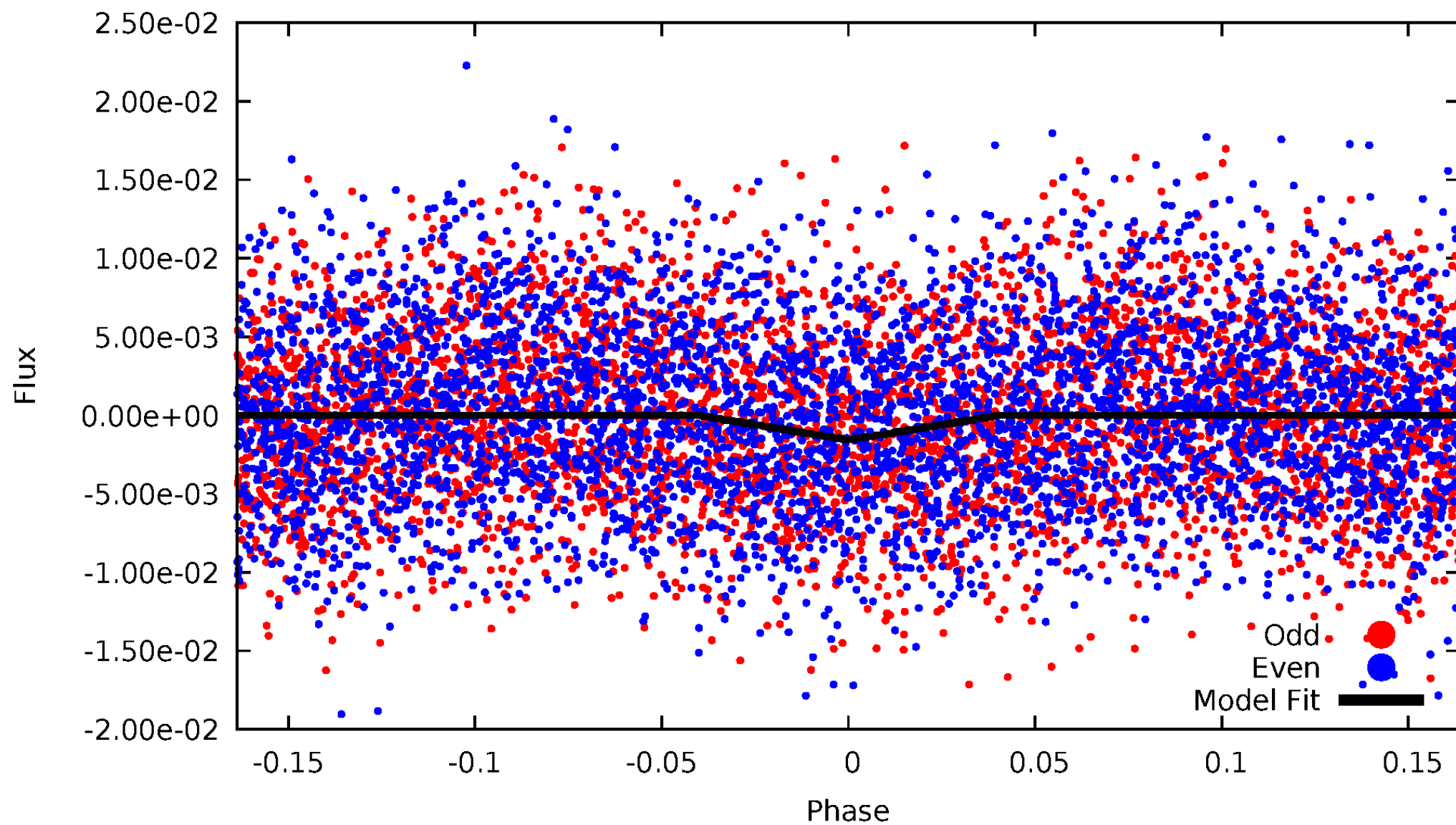
DV Odd/Even

TCE 009953617-03



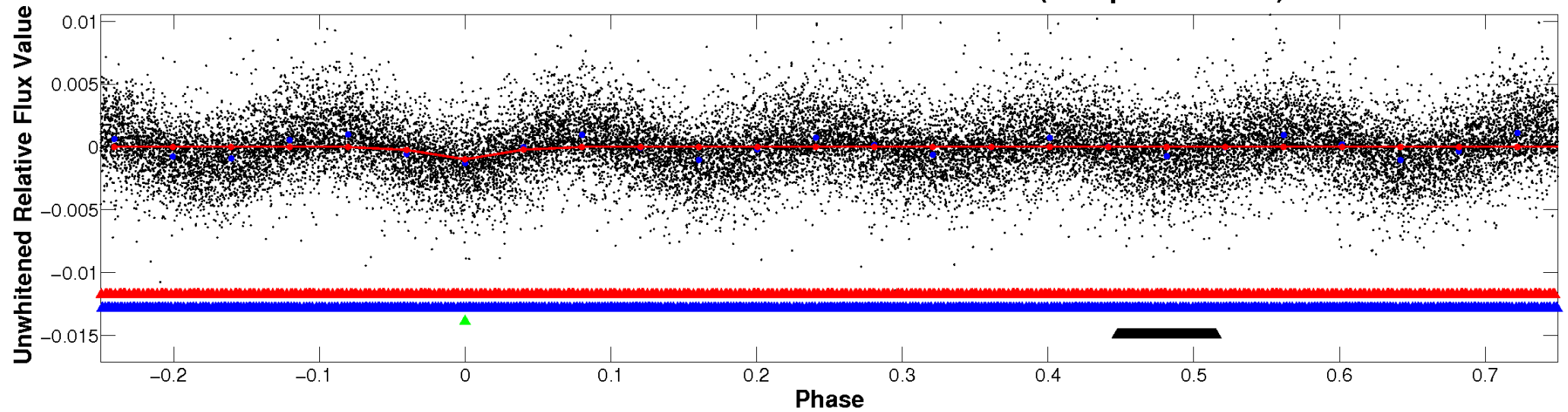
ALT Odd/Even

TCE 009953617-03

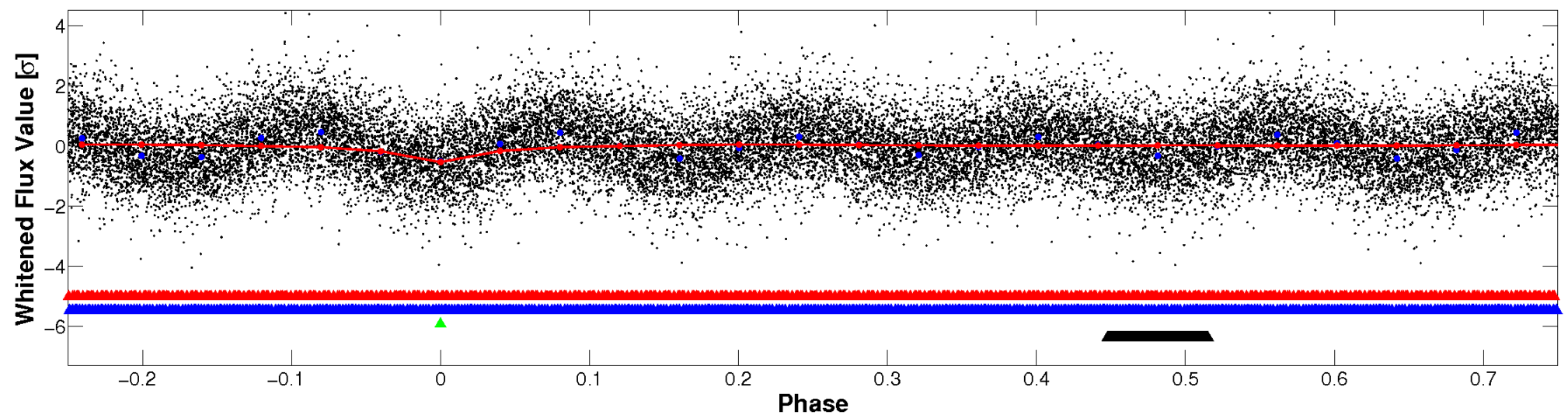


Non-Whitened Vs. Whitened Light Curve

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

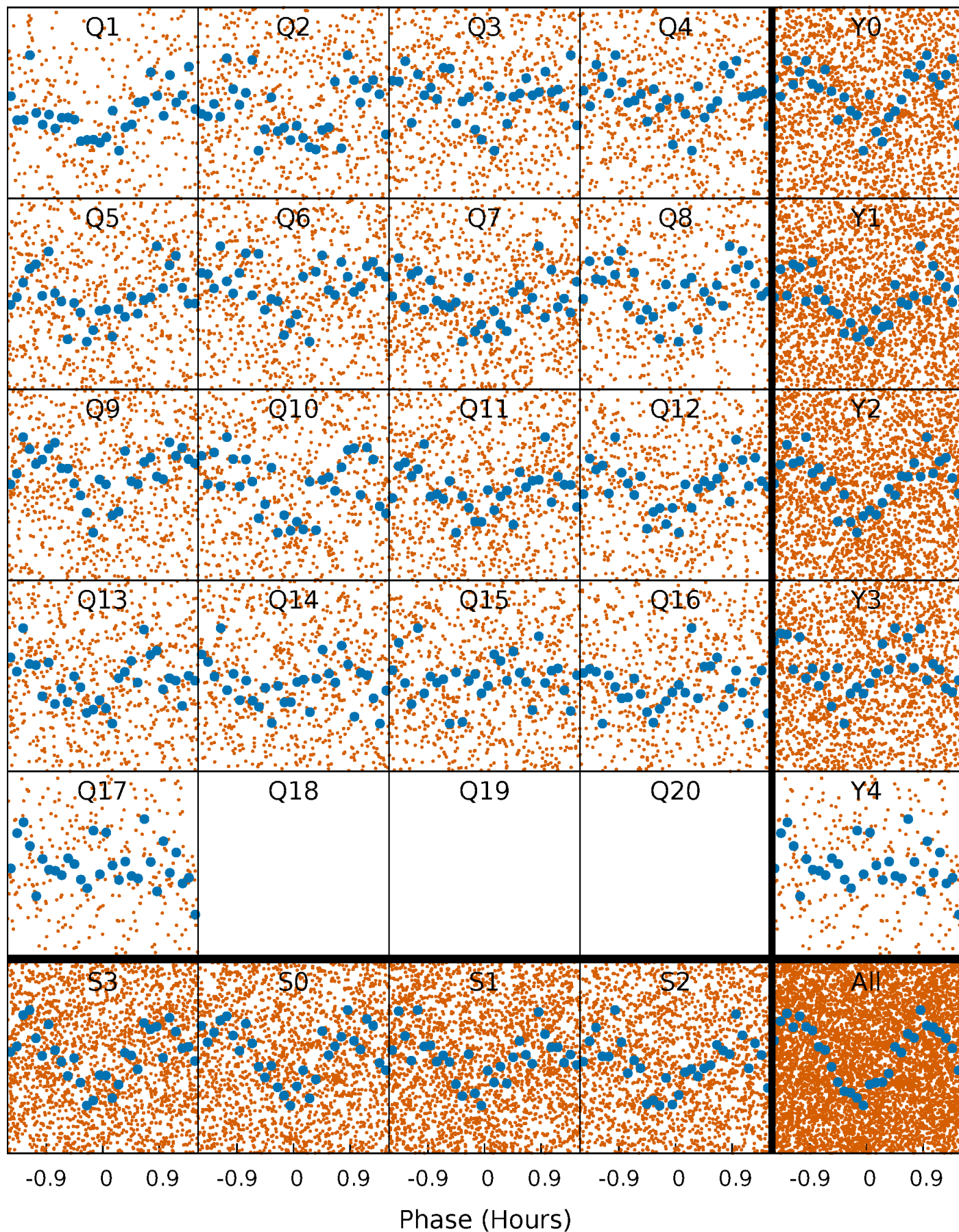


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



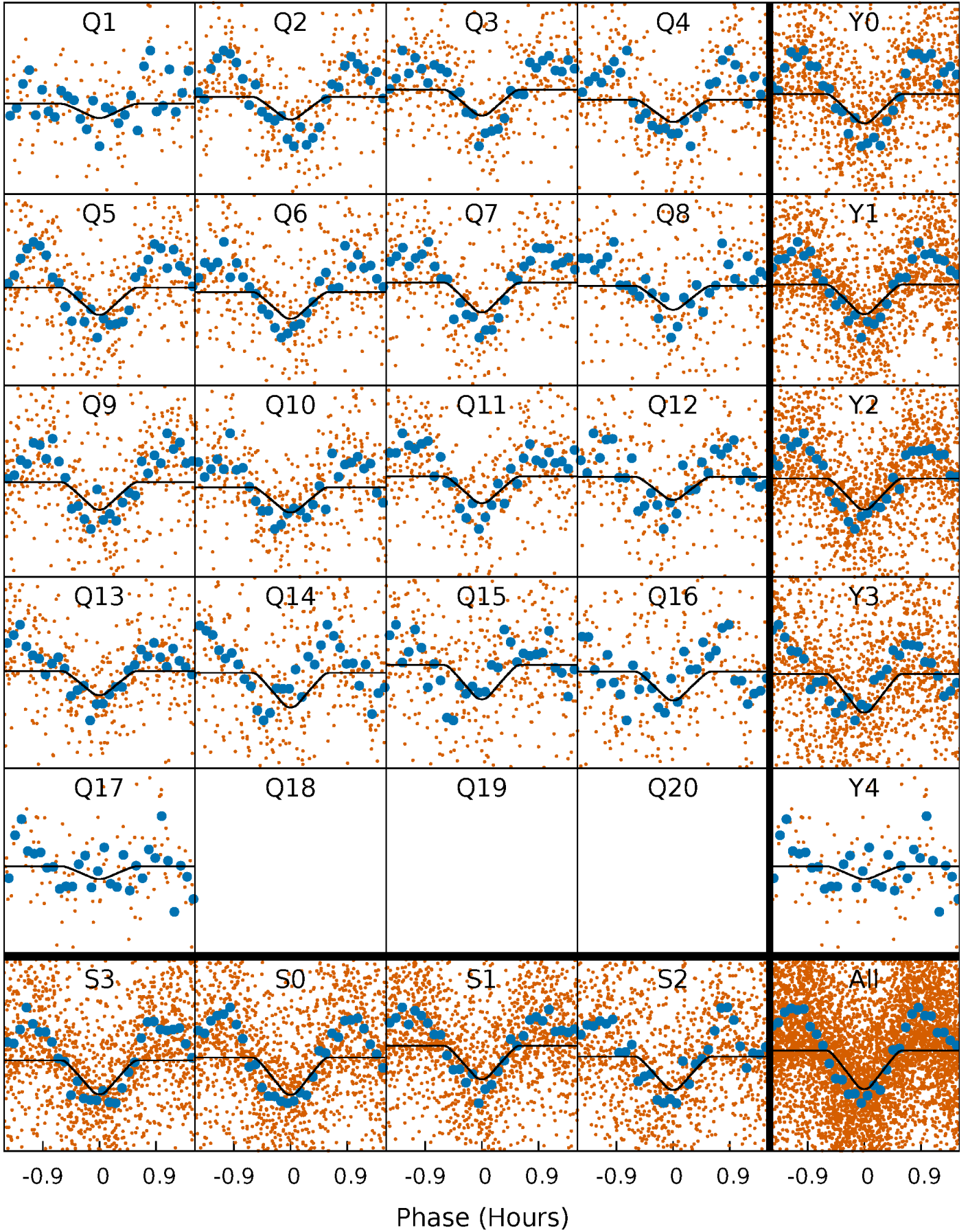
PDC Quarter-Phased Transit Curves

TCE 009953617-03 P= 0.509333 Days $T_0=131.717935$ (BKJD)



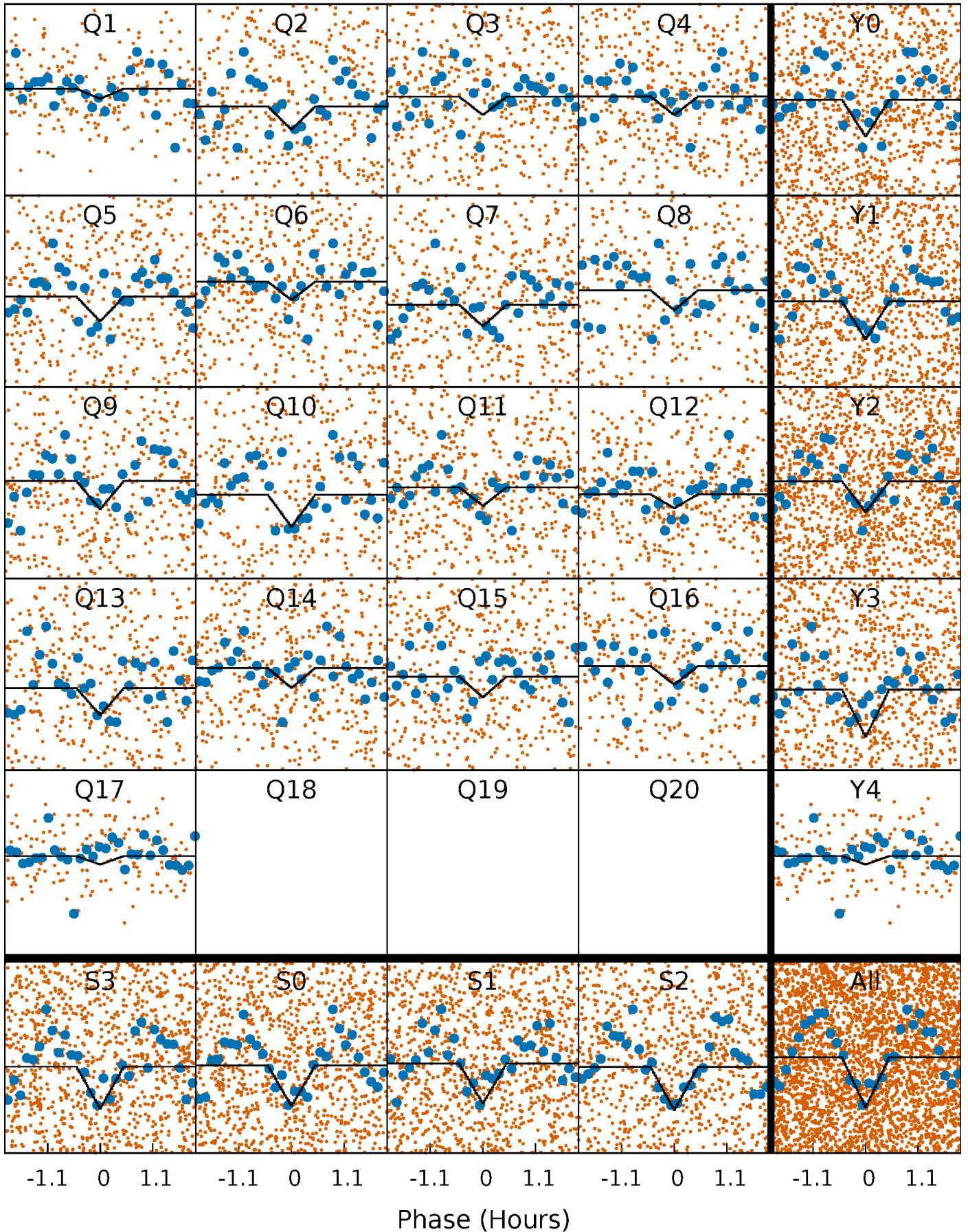
DV Quarter-Phased Transit Curves

TCE 009953617-03 P= 0.509333 Days $T_0=131.717935$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

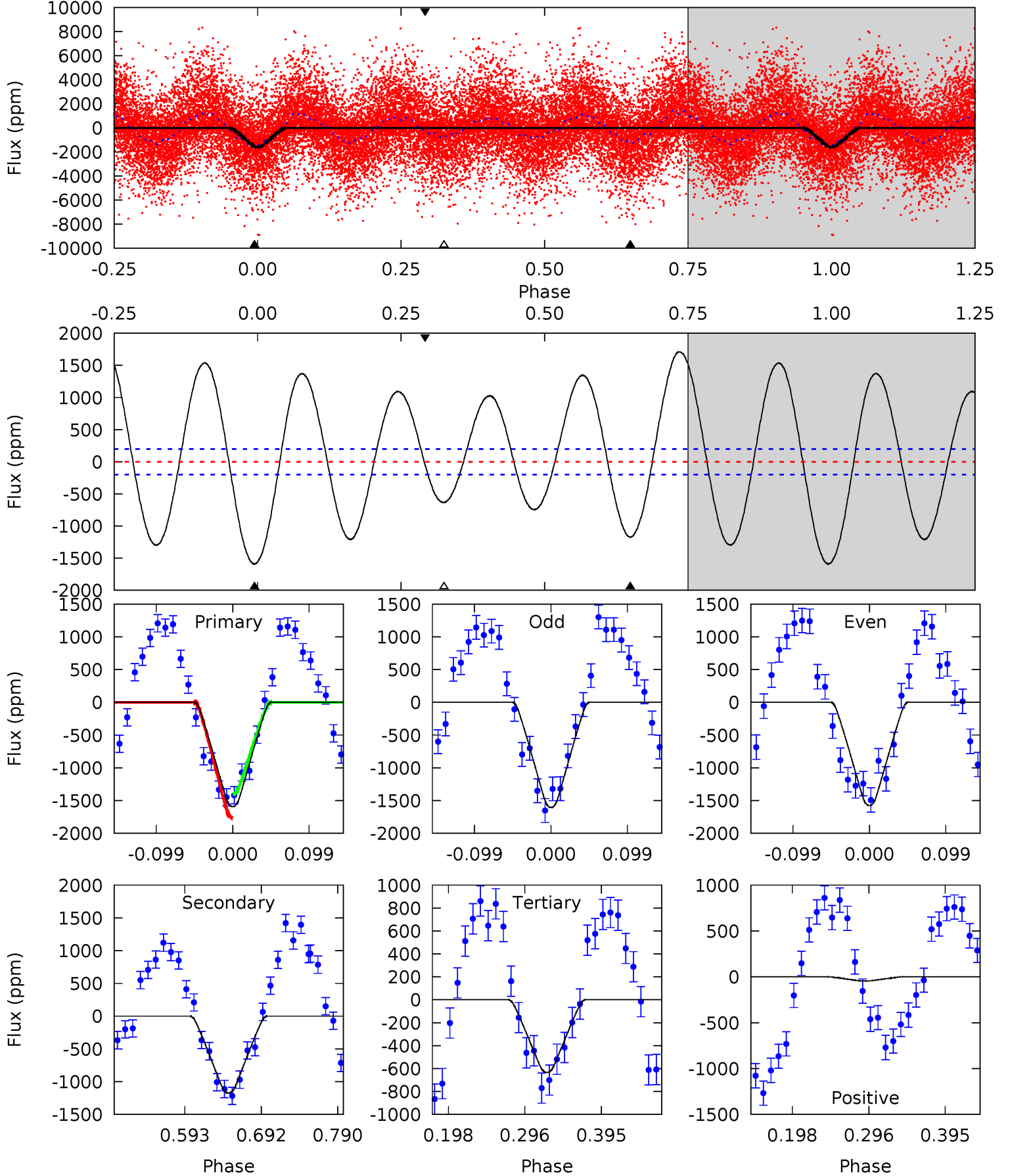
TCE 009953617-03 P= 0.509330 Days $T_0=131.718105$ (BKJD)



DV Model-Shift Uniqueness Test

009953617-03, P = 0.509333 Days, E = 131.208602 Days

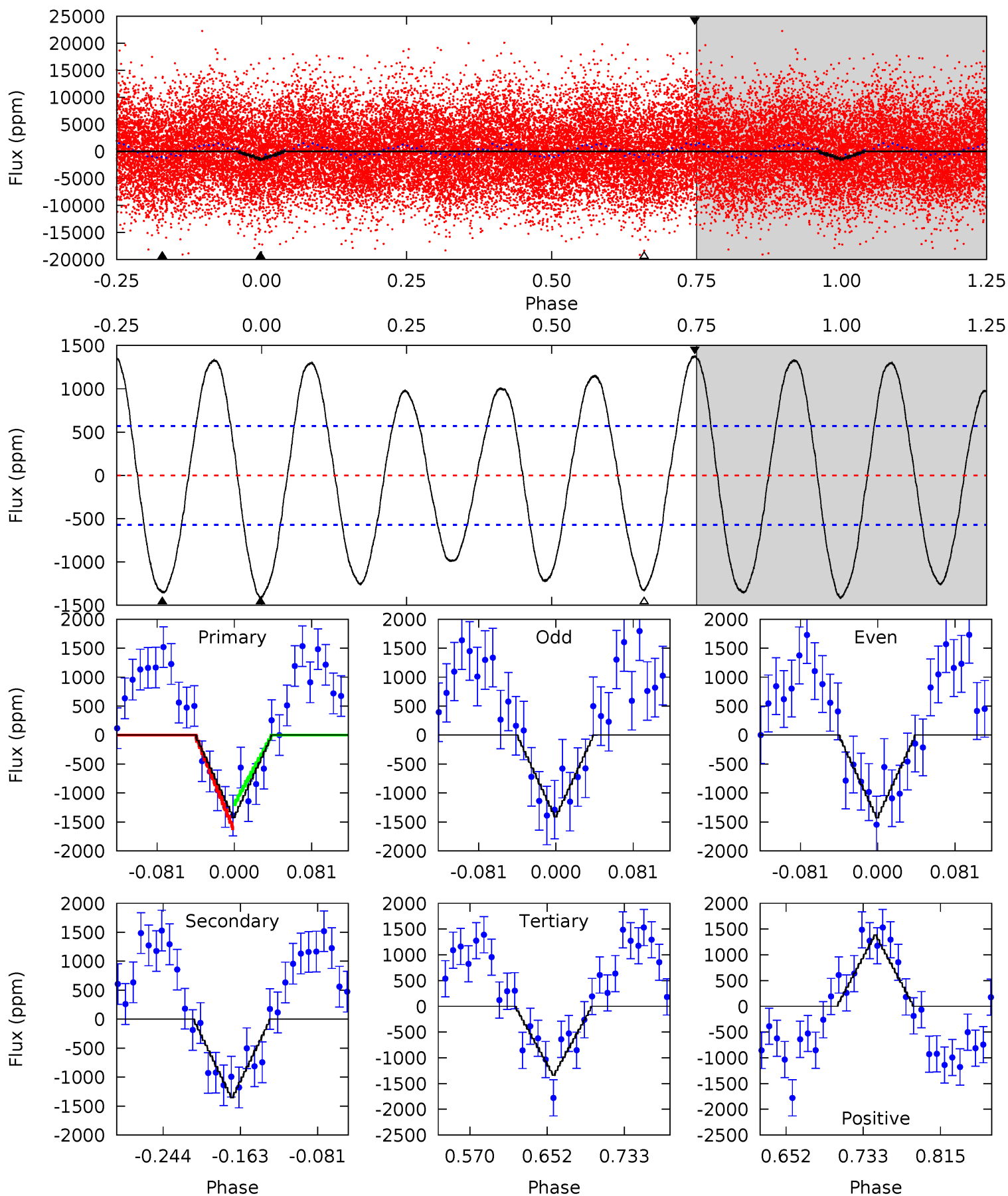
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.5	26.9	14.6	-1.04	4.57	1.65	17.4	21.9	37.5	12.4	28.0	0.33	1.02	0.52	4.19



Alt Model-Shift Uniqueness Test

009953617-03, P = 0.509330 Days, E = 131.208775 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	11.0	10.8	11.2	4.61	1.74	6.74	0.69	0.31	0.19	-0.20	0.05	0.95	0.49	1.66



Stellar Parameters For KIC 009953617

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7769^{+215}_{-323}	$3.729^{+0.416}_{-0.073}$	$-0.060^{+0.200}_{-0.350}$	$3.122^{+0.456}_{-1.368}$	$1.905^{+0.103}_{-0.387}$	$0.088^{+0.325}_{-0.021}$
	+3%/-4%	+11%/-2%	+333%/-583%	+15%/-44%	+5%/-20%	+369%/-24%
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 009953617-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1172 ± 44	$11.15^{+4.68}_{-4.09}$	6540^{+470}_{-696}	6815^{+2281}_{-1350}	$1.206^{+1.863}_{-0.589}$
Alt.	-1360 ± 124	$12.17^{+4.77}_{-4.40}$	6554^{+458}_{-757}	6765^{+2058}_{-1324}	$1.169^{+1.628}_{-0.546}$

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

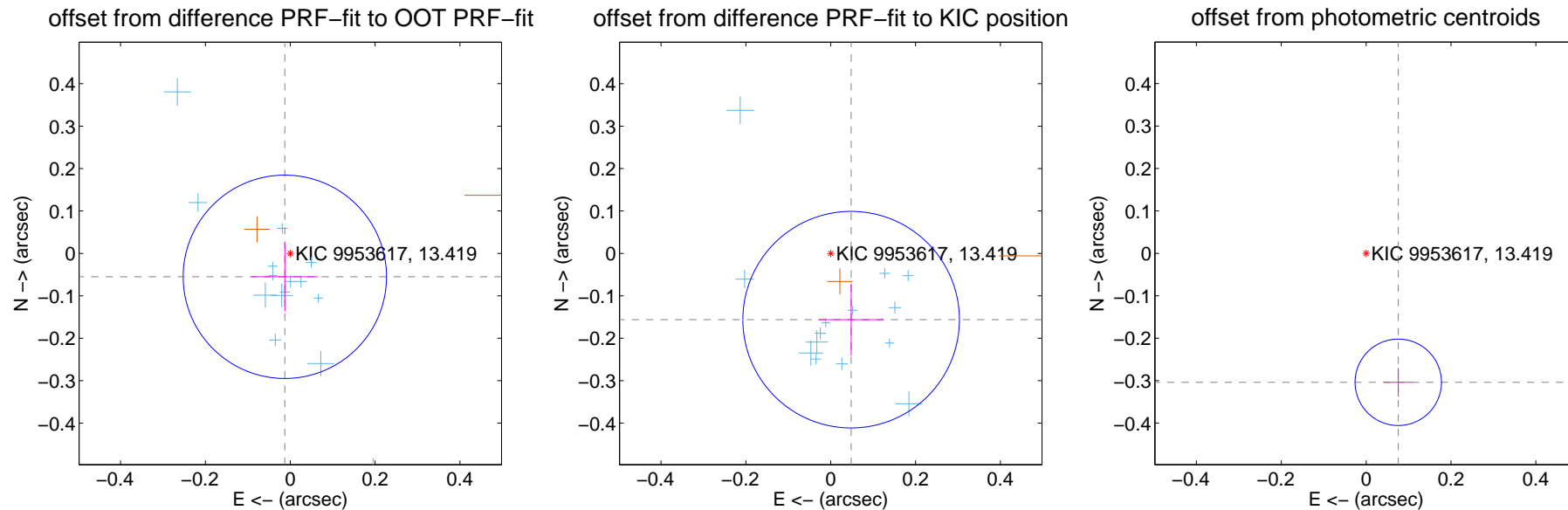
DV Centroid Data

Supplemental centroid analysis for 009953617-03. Kepler magnitude: 13.42. Transit SNR 19.34

There are 15 quarters with good PRF difference image offsets

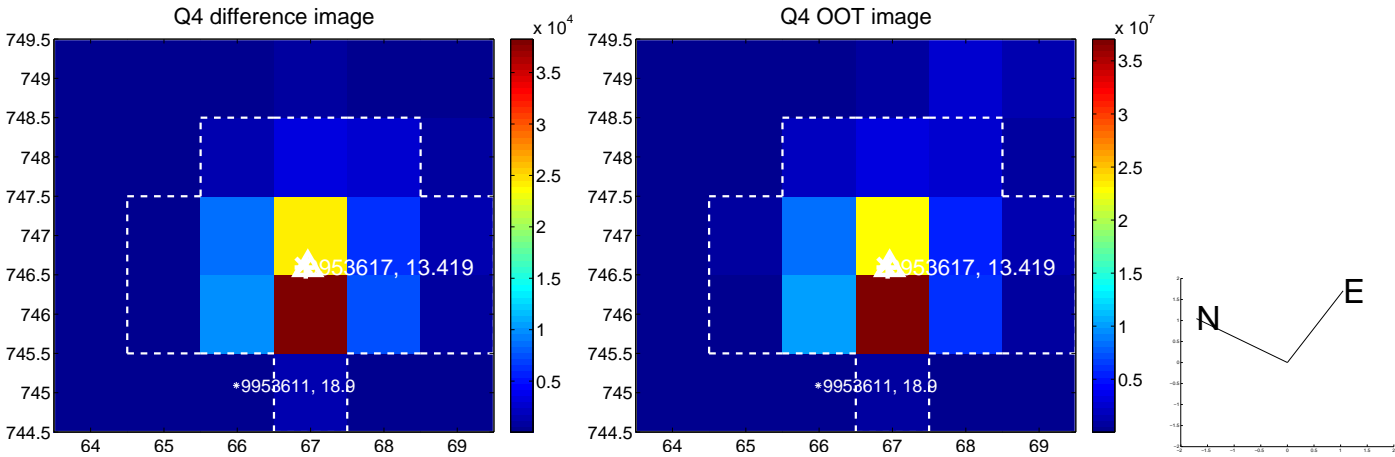
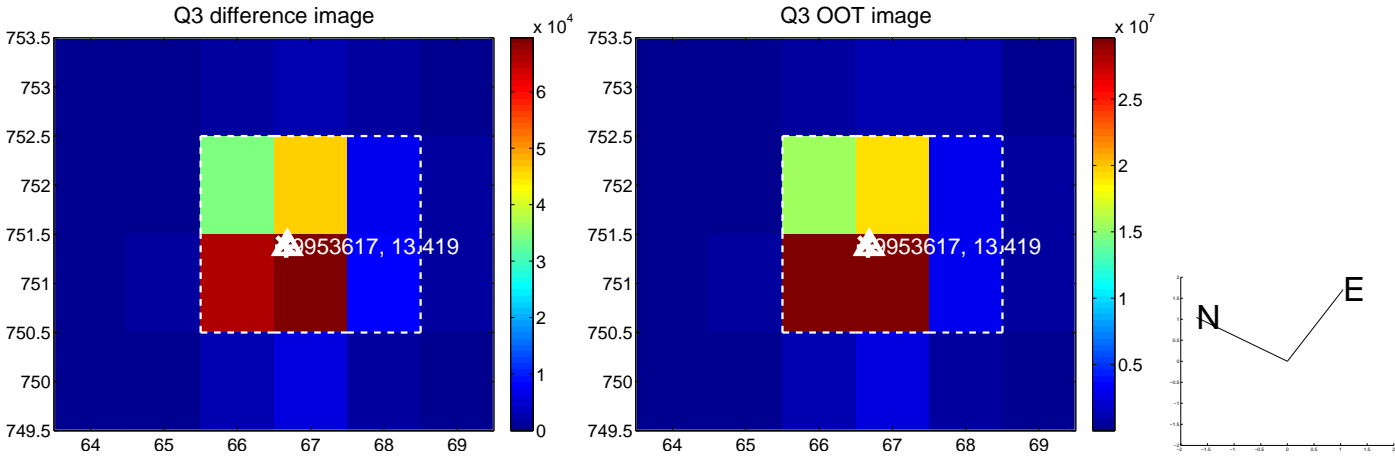
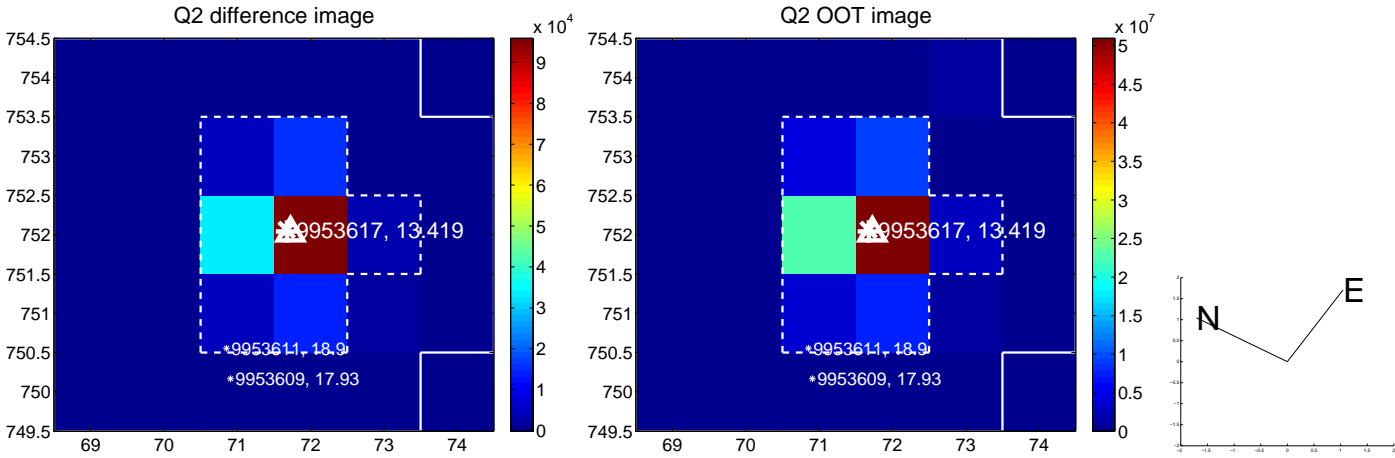
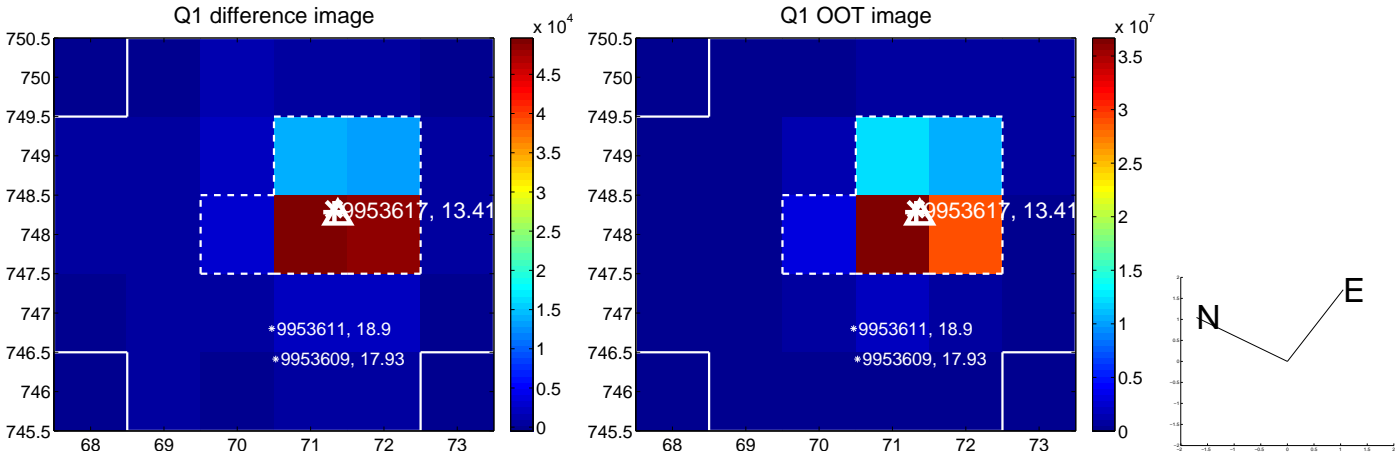
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.057 ± 0.080	0.71	0.013 ± 0.078	-0.055 ± 0.081
PRF-fit source offset from KIC position	0.163 ± 0.085	1.92	-0.048 ± 0.077	-0.156 ± 0.084
photometric centroid source offset	0.31 ± 0.03	9.23	-0.08 ± 0.03	-0.30 ± 0.03

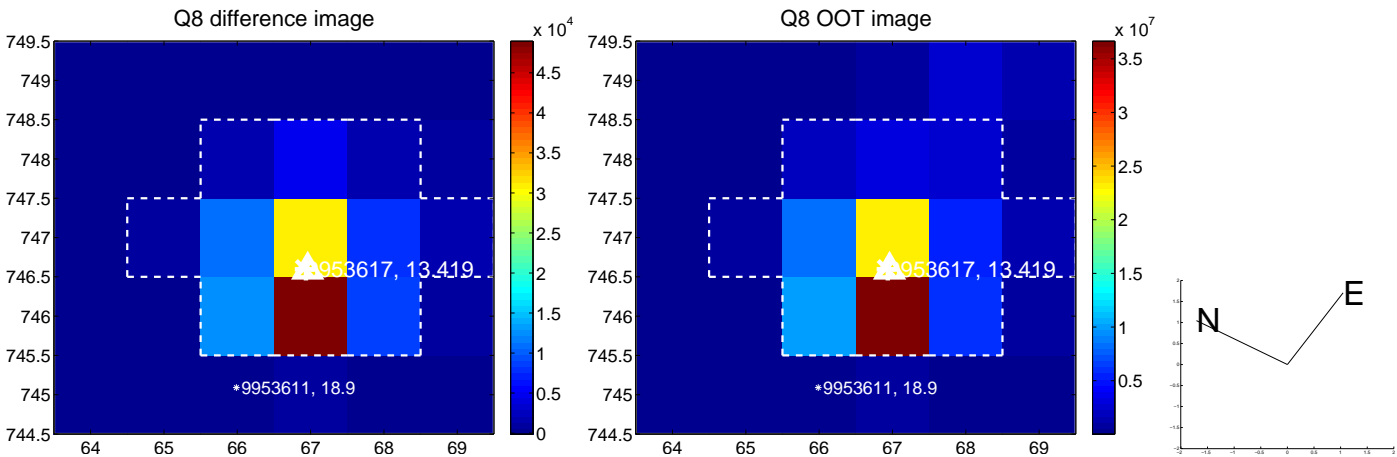
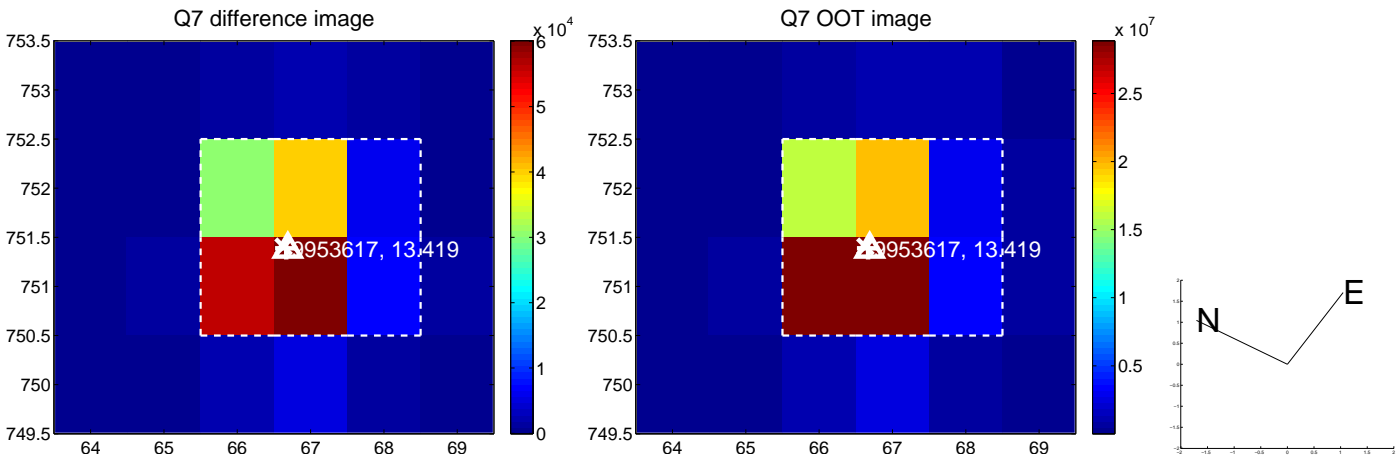
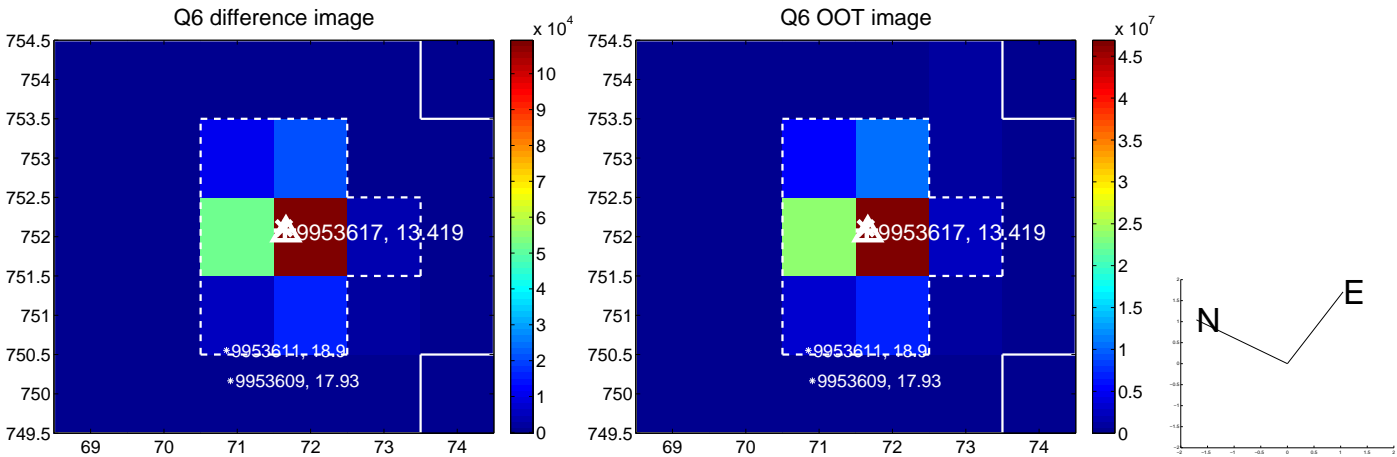
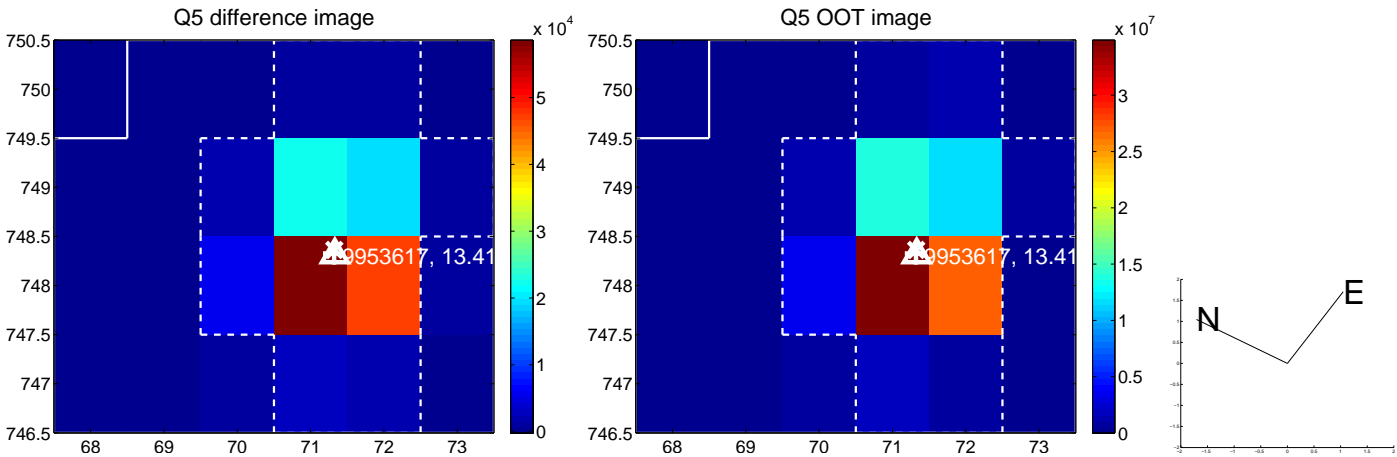


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

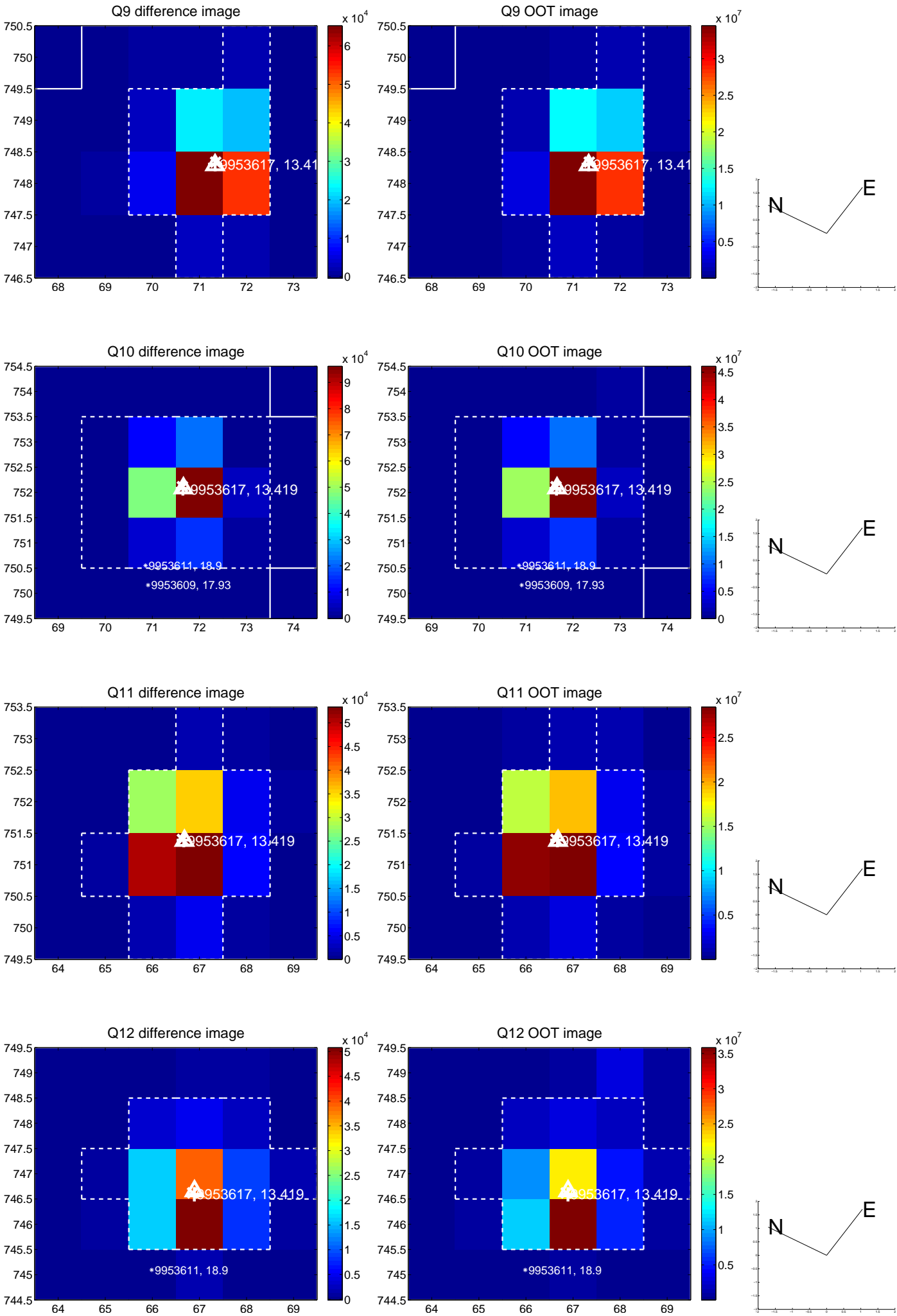
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



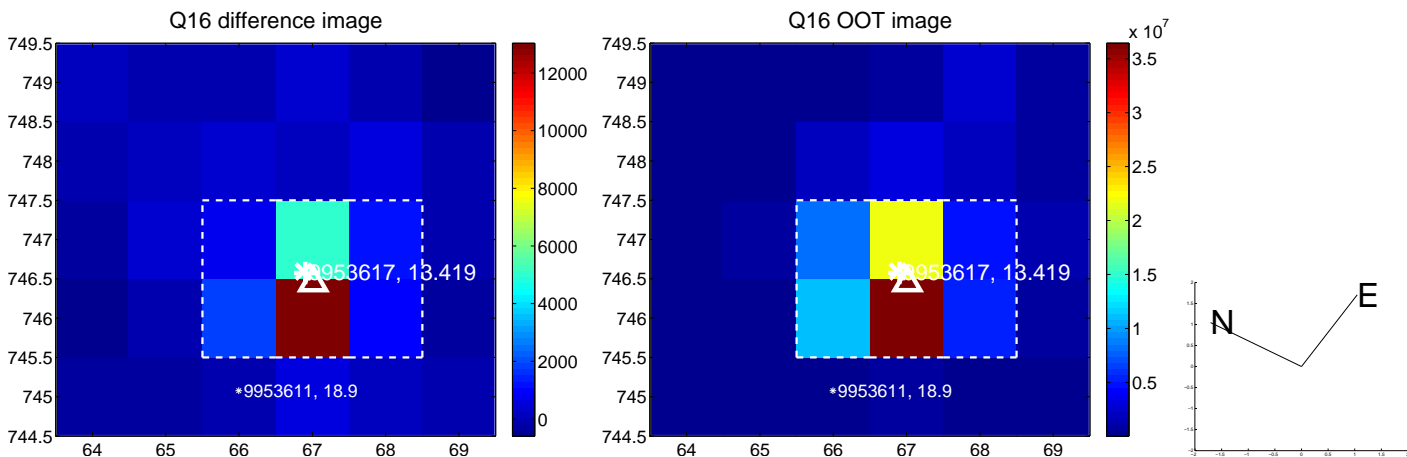
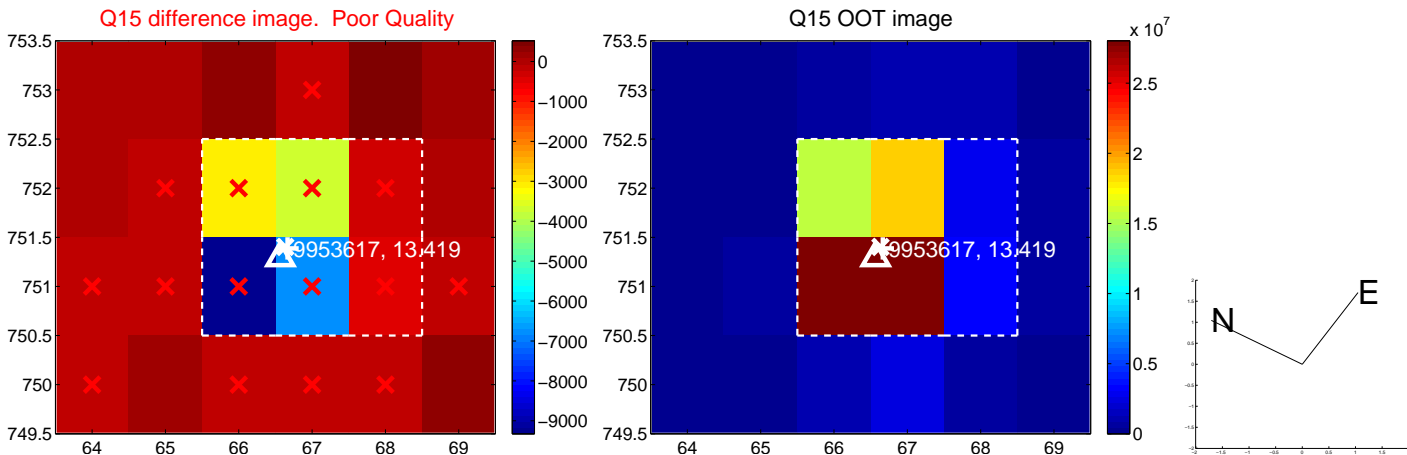
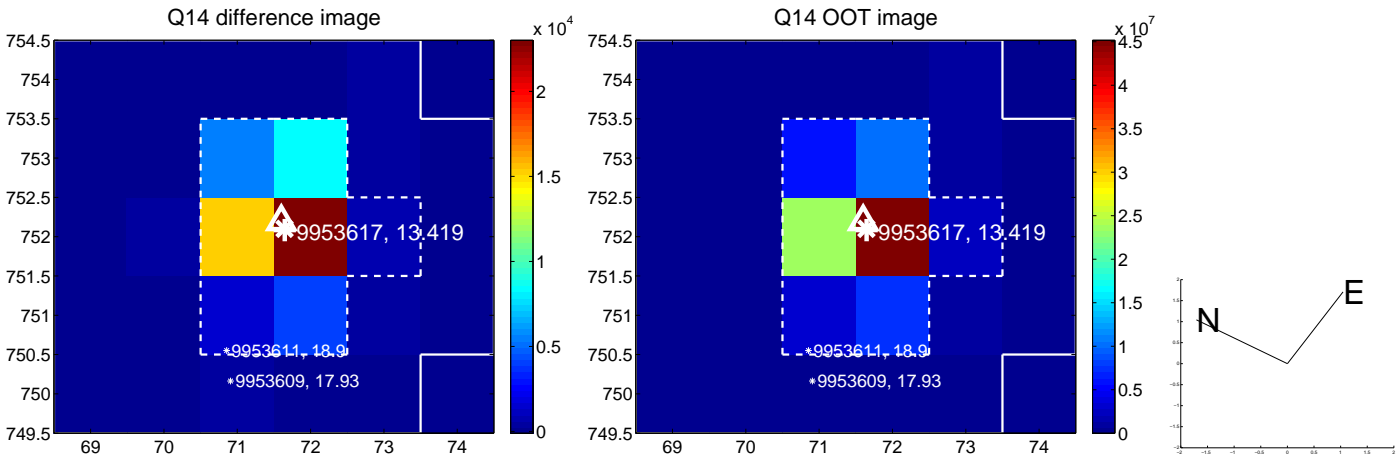
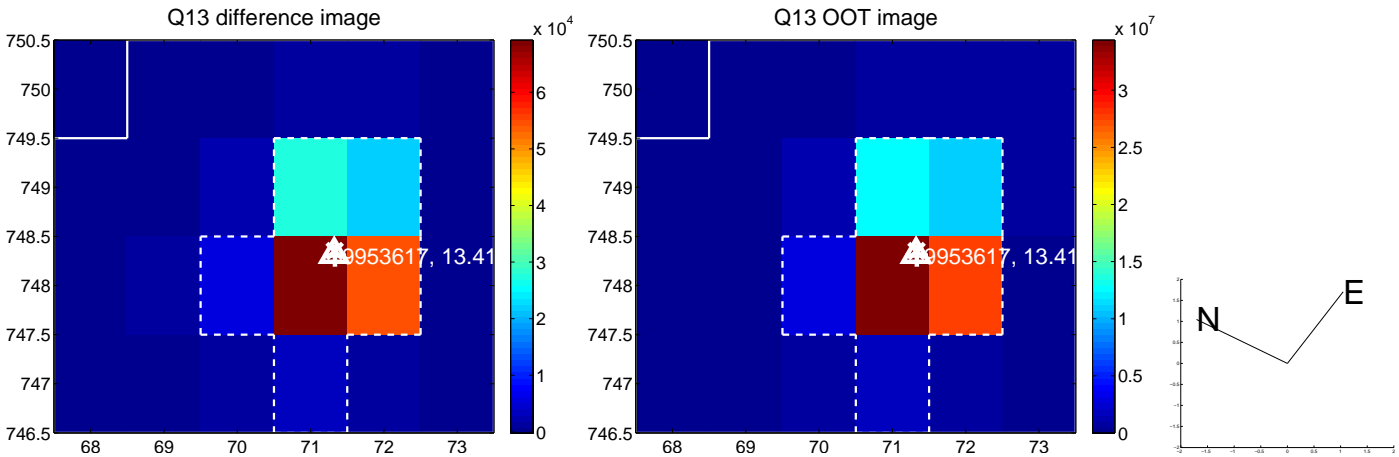
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



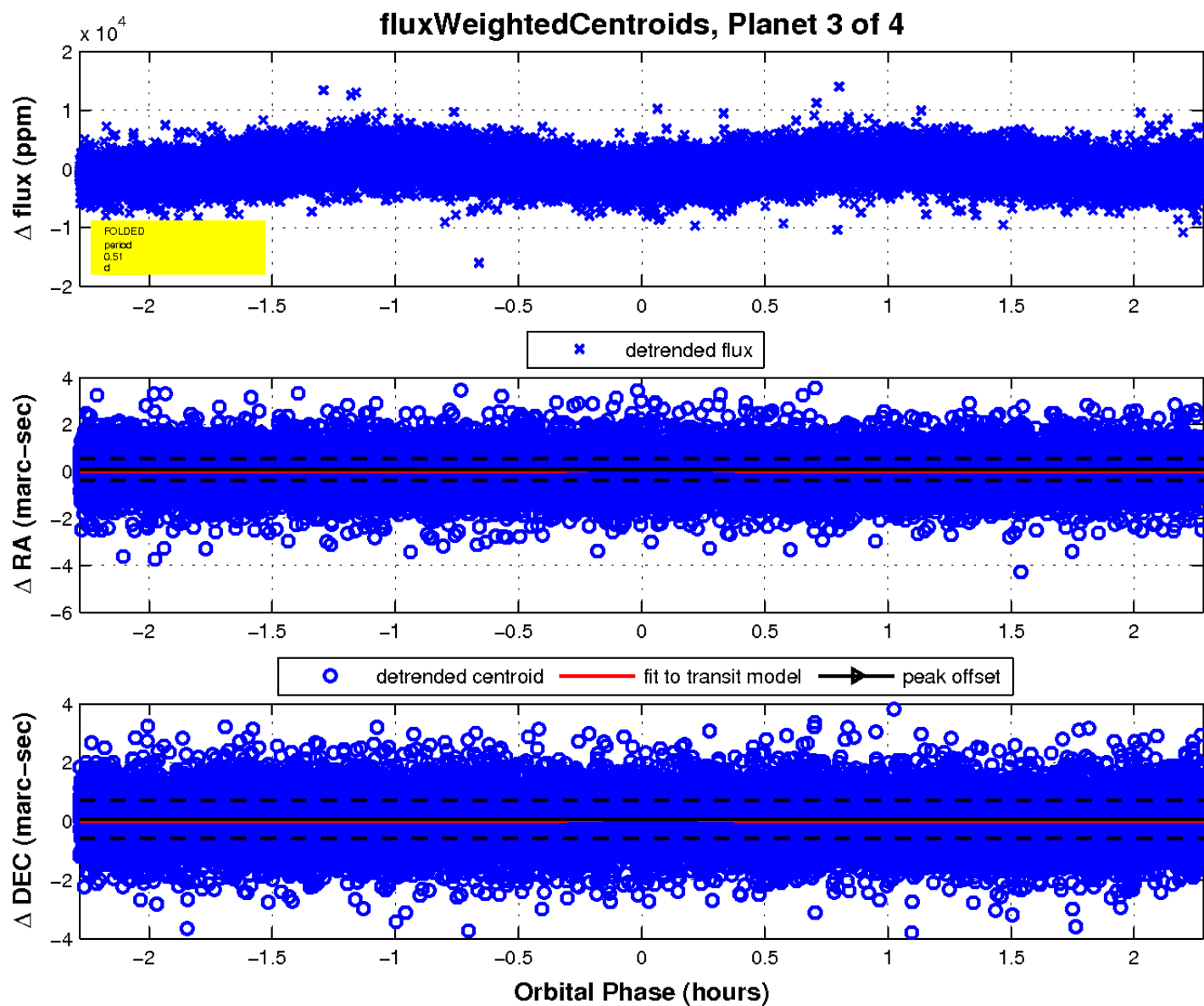
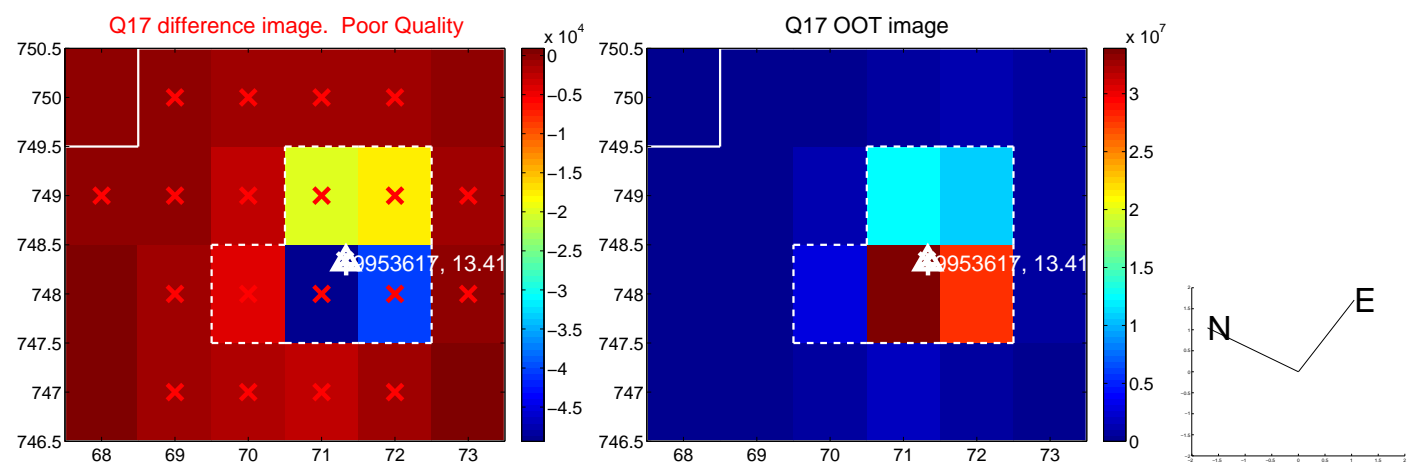
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

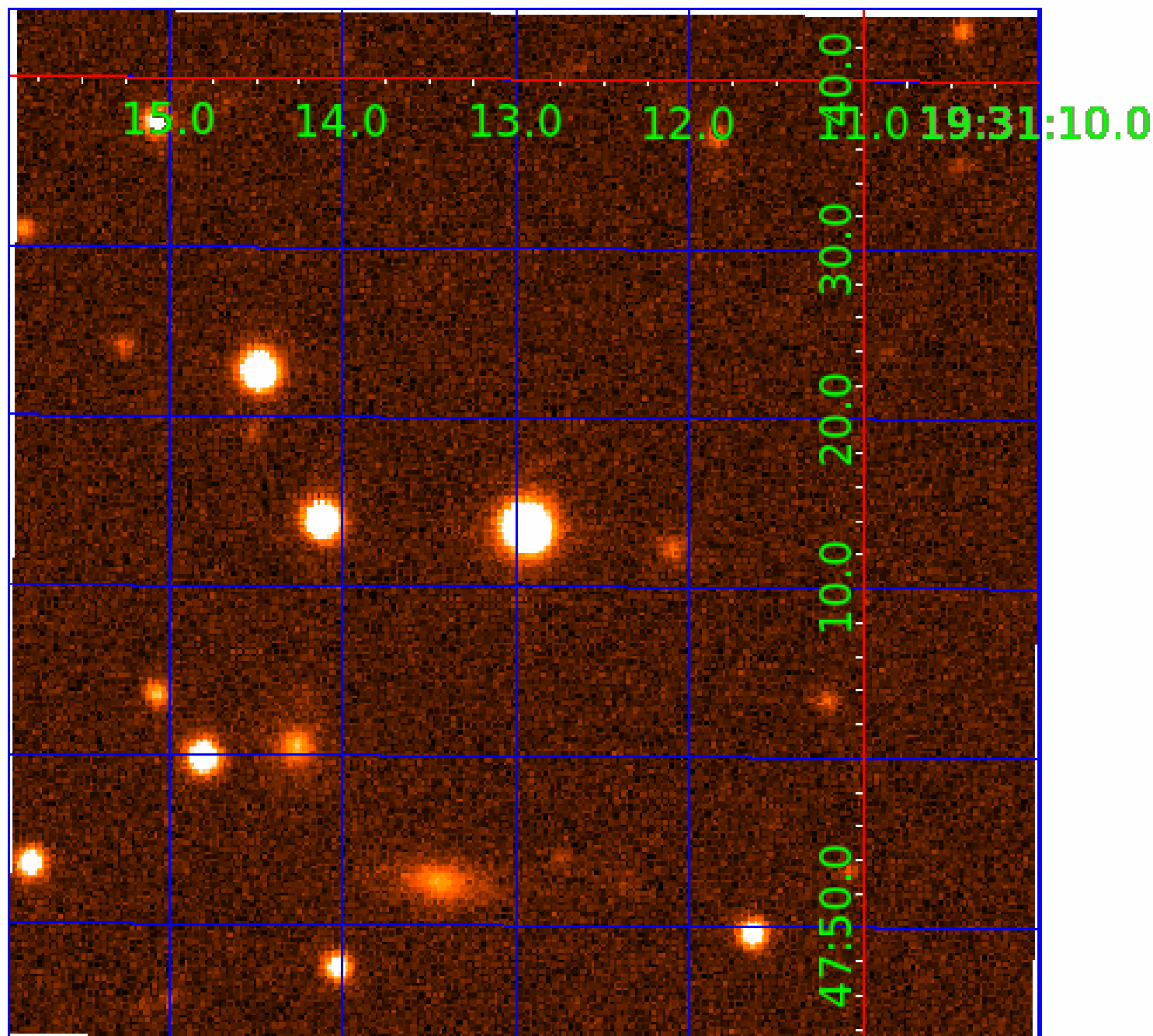


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009953617

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})
009953617-01	OBS	No	2.758481	132.938186	340.5	7.614	12.5	12.9	3.12	7769	7.53	13966.36
009953617-02	OBS	No	2.758520	134.076629	246.7	5.545	9.2	9.6	3.12	7769	5.66	13966.10
009953617-03	OBS	No	0.509333	131.717935	1142.5	0.761	7.9	19.3	3.12	7769	12.52	132833.50
009953617-04	OBS	No	0.509321	131.980321	1026.8	0.597	9.5	16.0	3.12	7769	10.40	132837.68

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009953617-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009953617-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009953617-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009953617-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

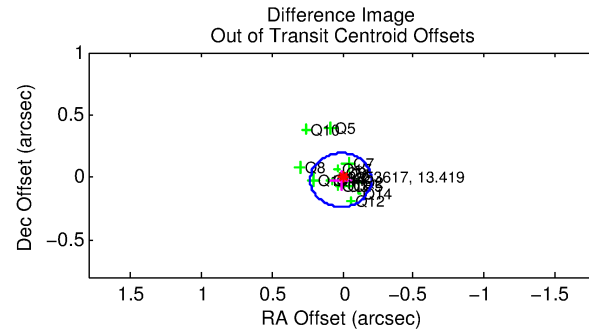
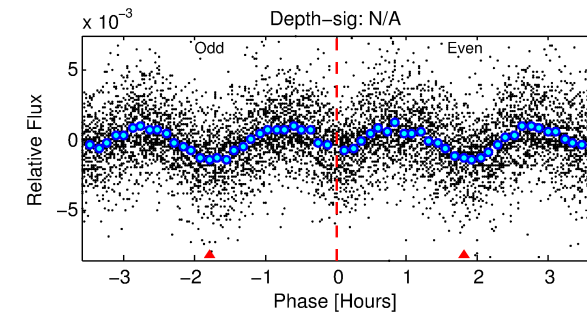
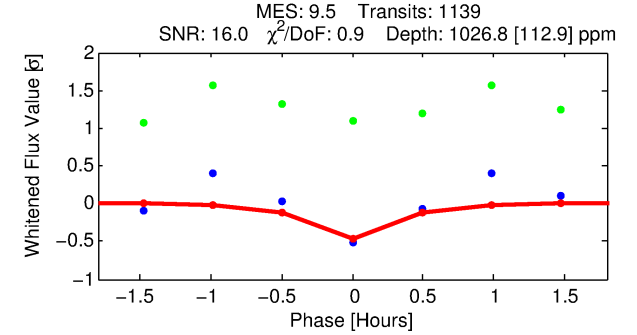
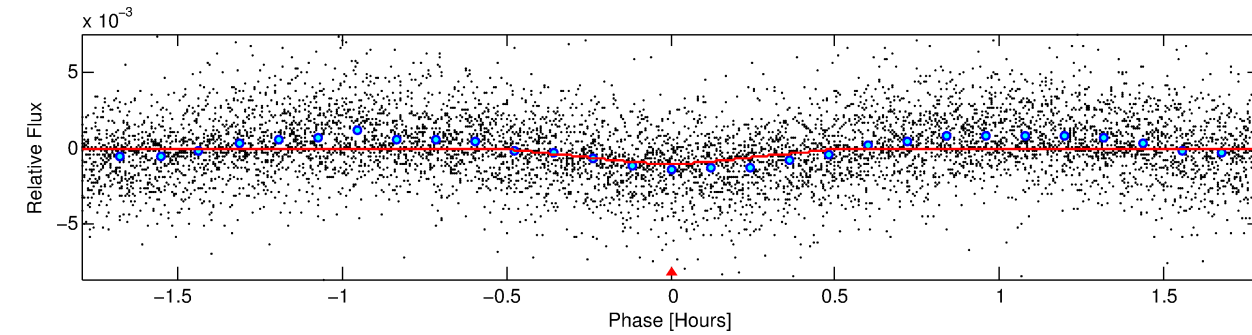
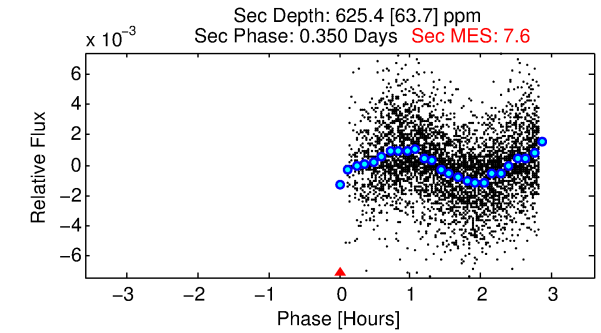
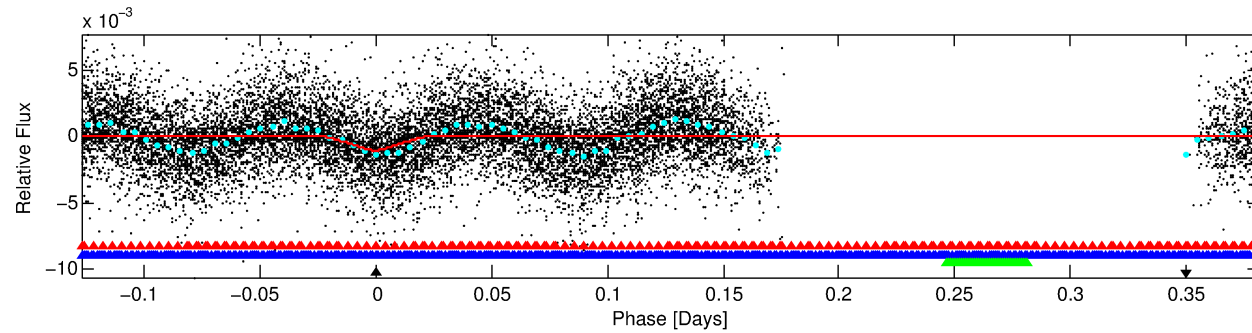
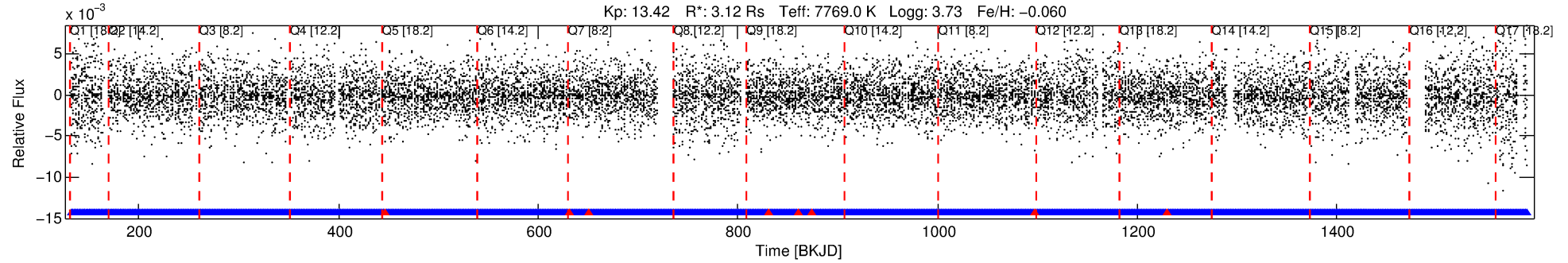
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009953617-04

No Significant Match Found

DV One-Page Summary

KIC: 9953617 Candidate: 4 of 4 Period: 0.509 d



DV Fit Results:

Period = 0.50932 [0.00001] d
Epoch = 131.9803 [0.0009] BKJD
Rp/R* = 0.0305 [0.0152]
a/R* = 6.69 [18.46]
b = 0.13 [20.94]
Seff = 132837.68 [95862.40]
Teq = 4868 [878] K
Rp = 10.40 [6.90] Re
a = 0.0155 [0.0067] AU
Ag = 0.76 [0.93] [-0.26σ]
Teffp = 7033 [1784] K [1.09σ]

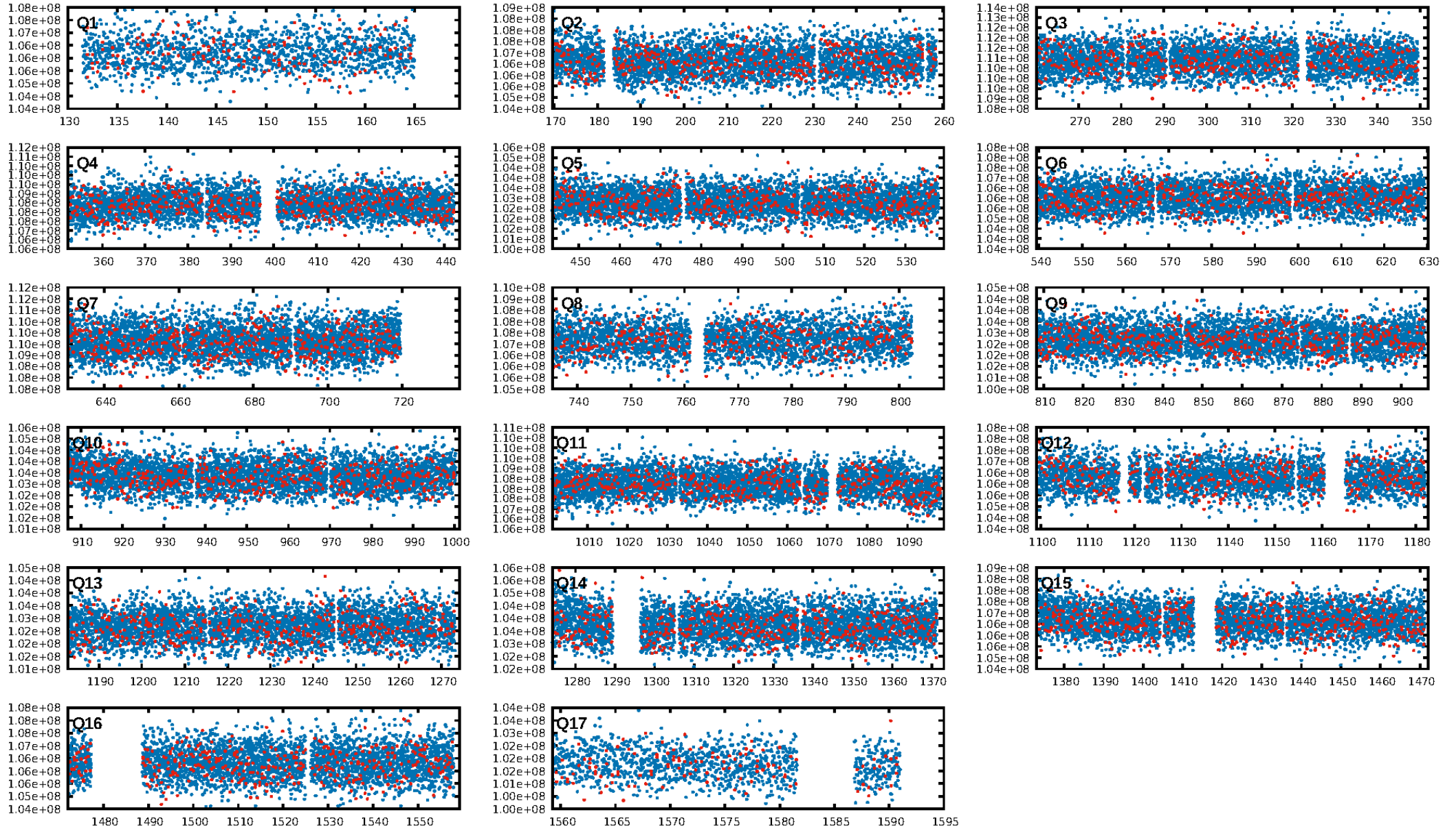
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [1081/1089]
GhostDiagnostic-chr: 3.752
Centroid-sig: 37.3%
Centroid-so: 0.290 arcsec [7.23σ]
OotOffset-rm: 0.026 arcsec [0.37σ]
KicOffset-rm: 0.141 arcsec [1.78σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

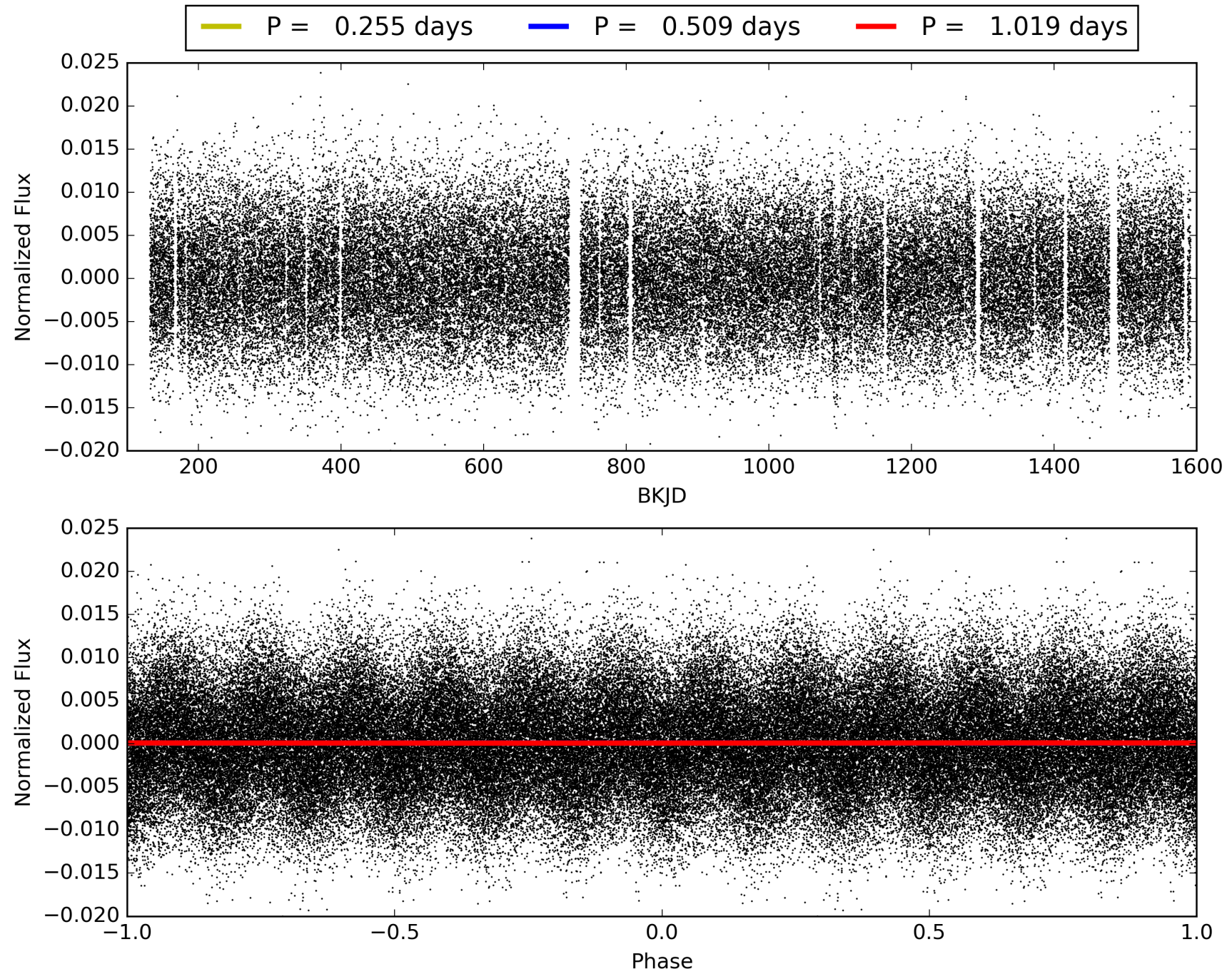
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:15:02 Z

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

TCE 009953617-04, PDC Light Curves

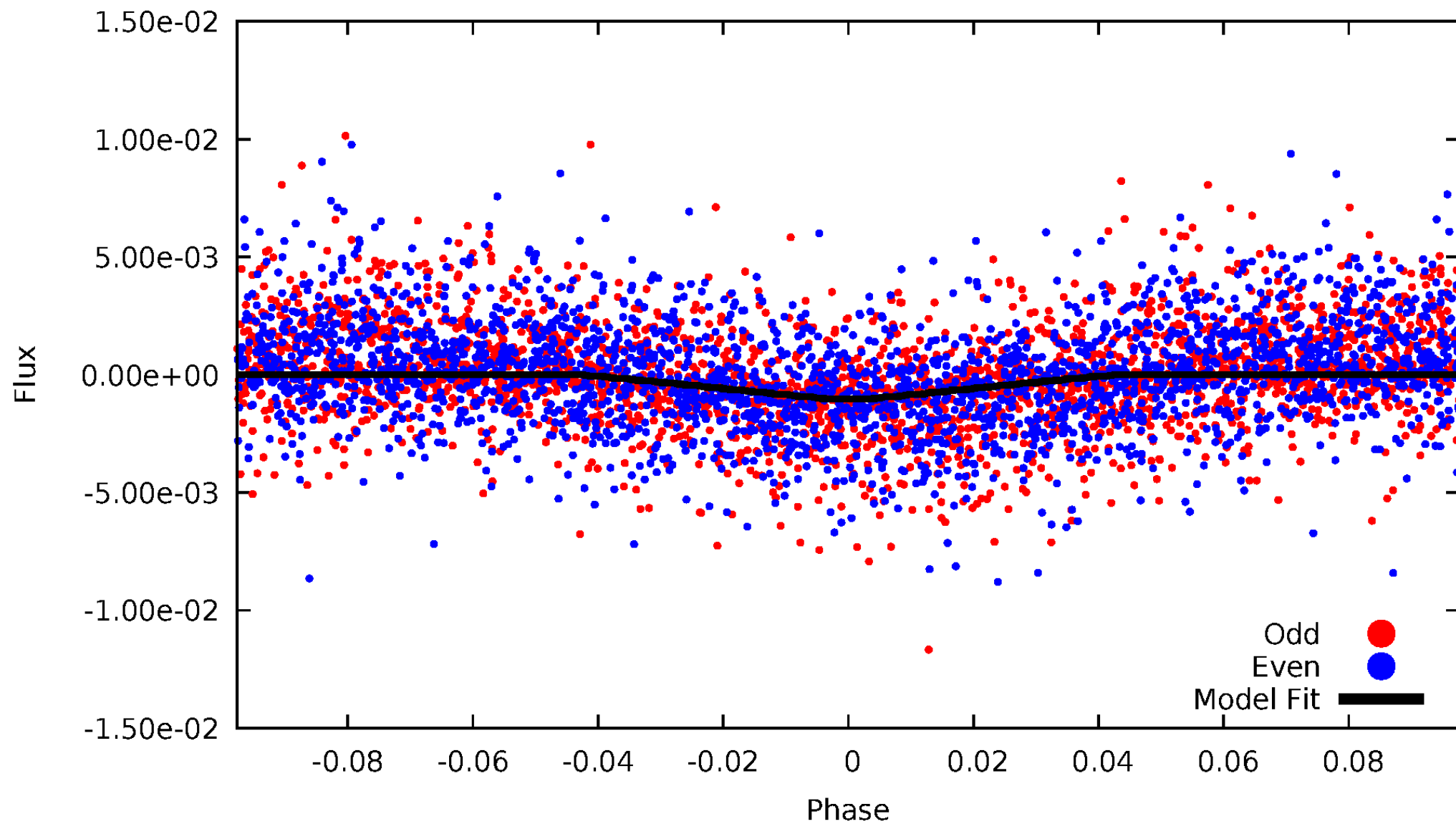


TCE 009953617-04



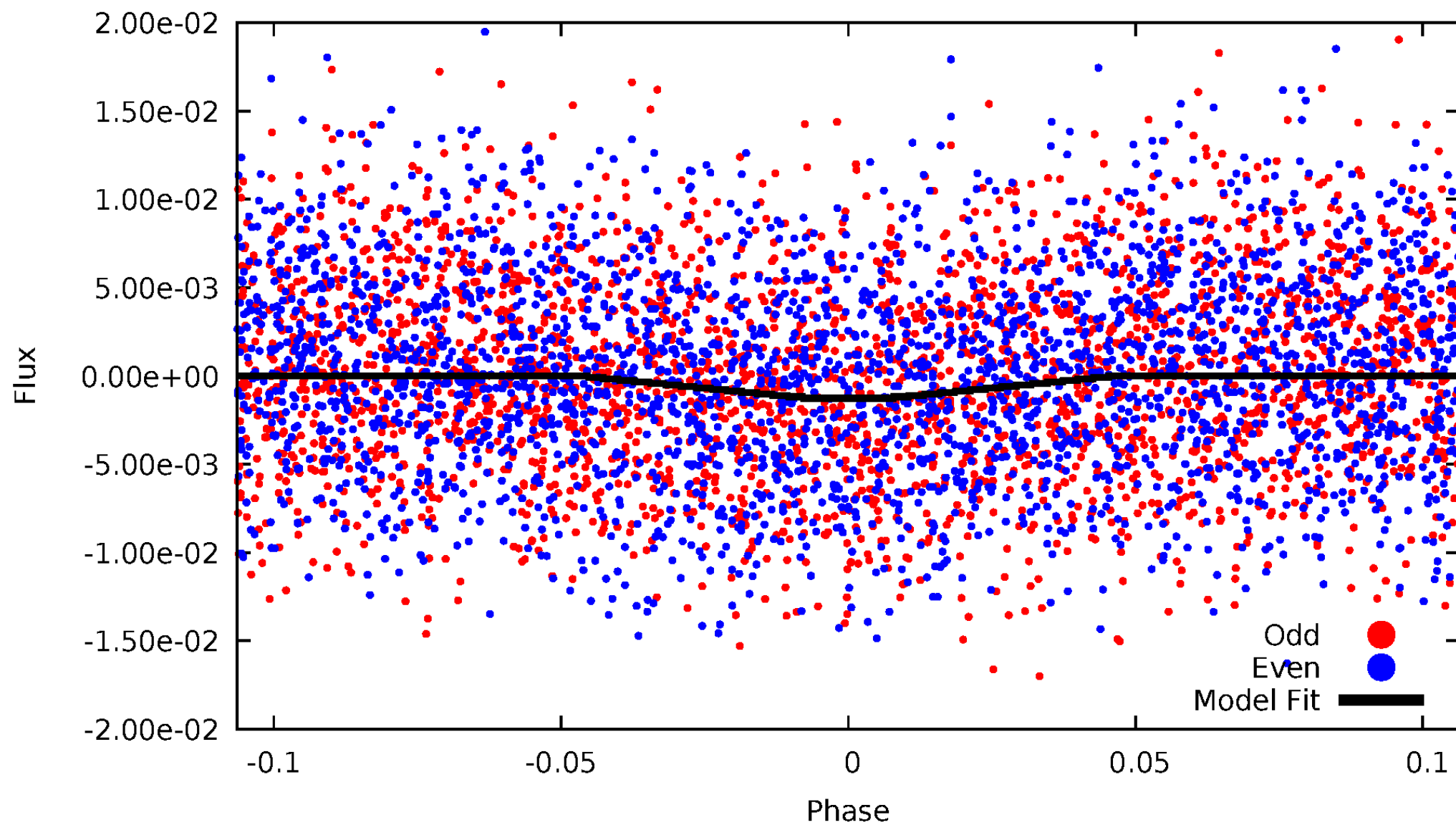
DV Odd/Even

TCE 009953617-04



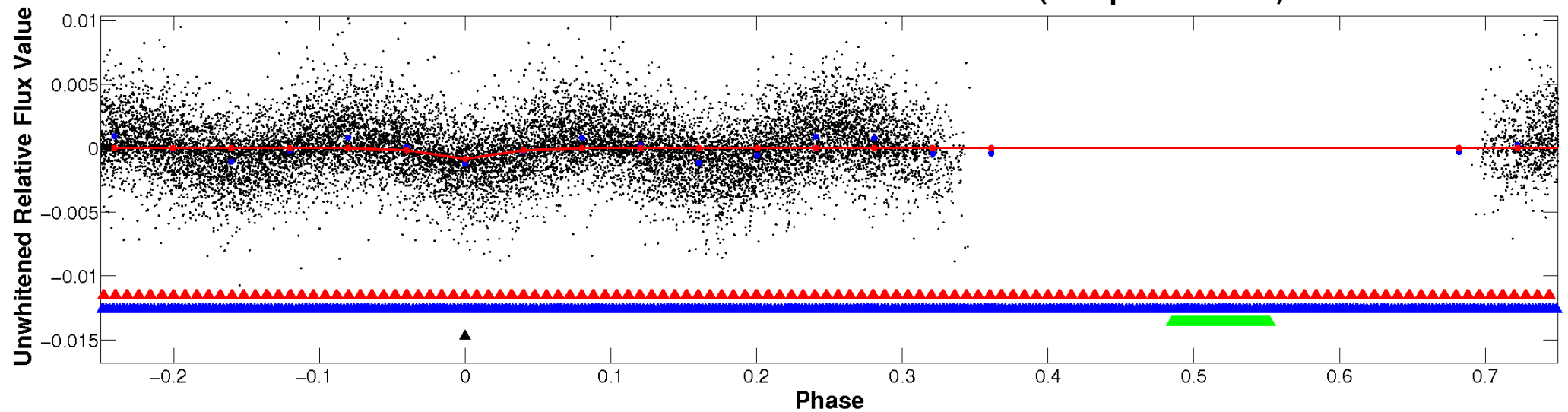
ALT Odd/Even

TCE 009953617-04

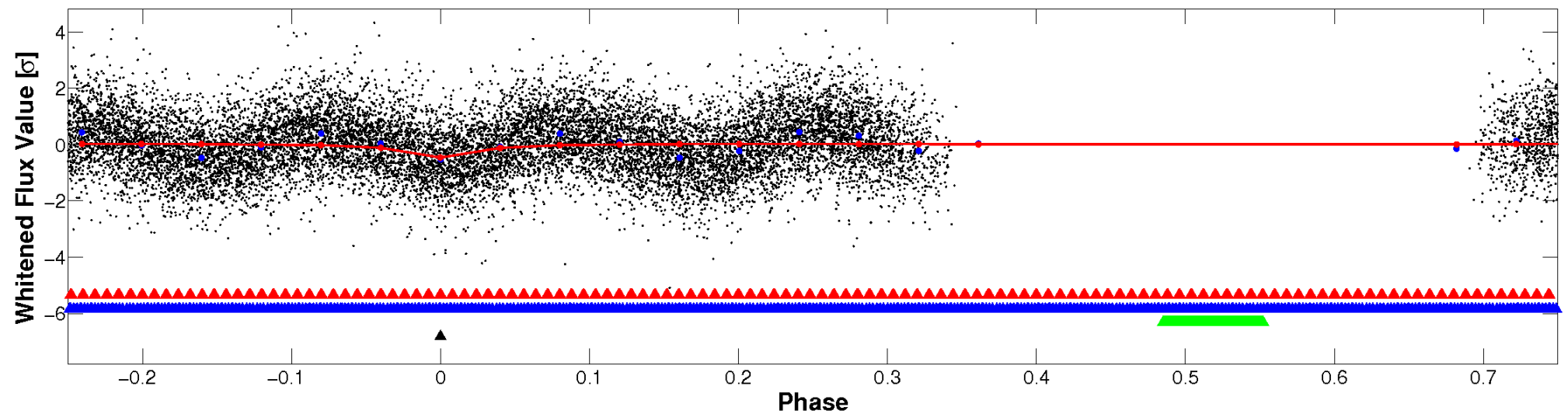


Non-Whitened Vs. Whitened Light Curve

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

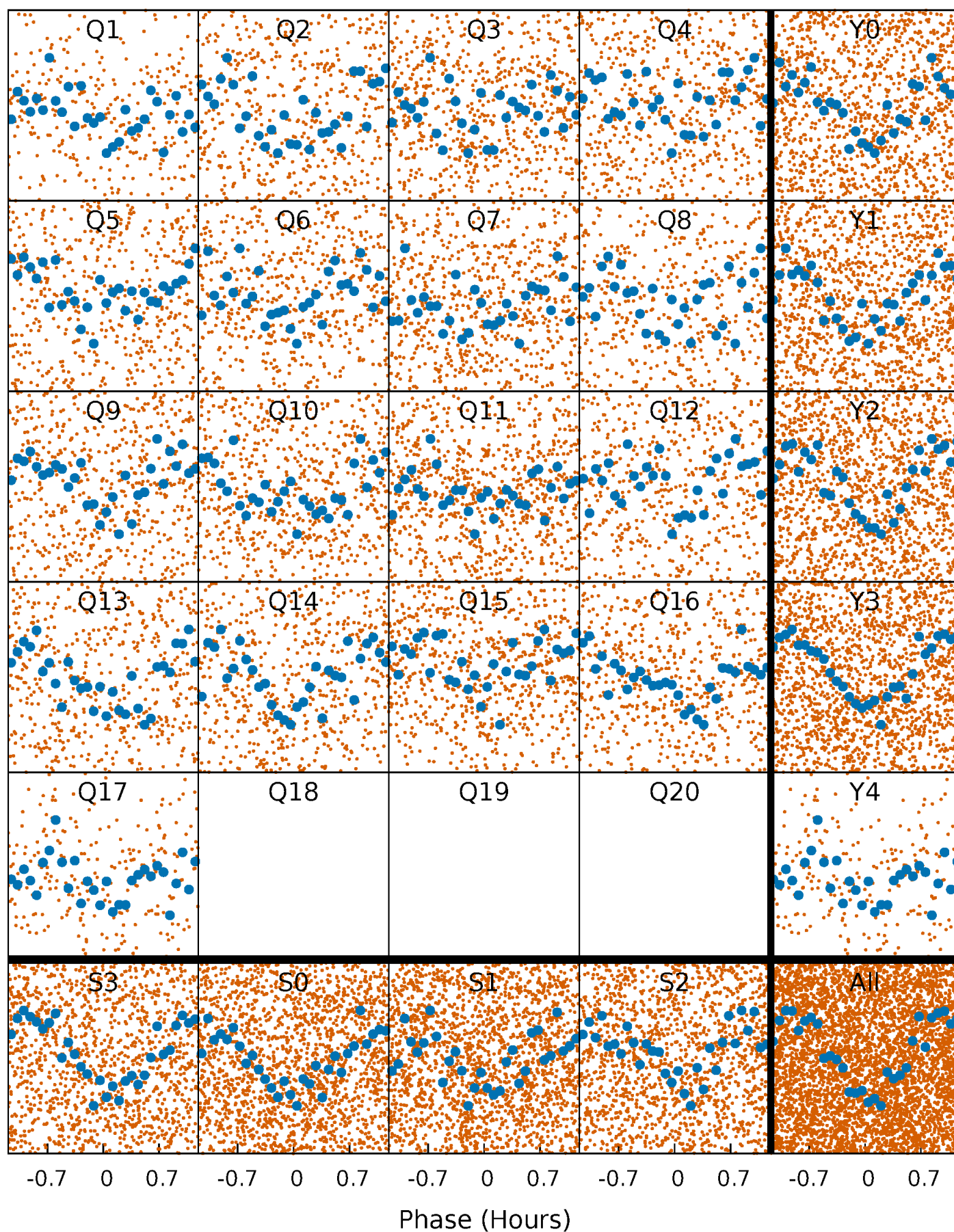


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



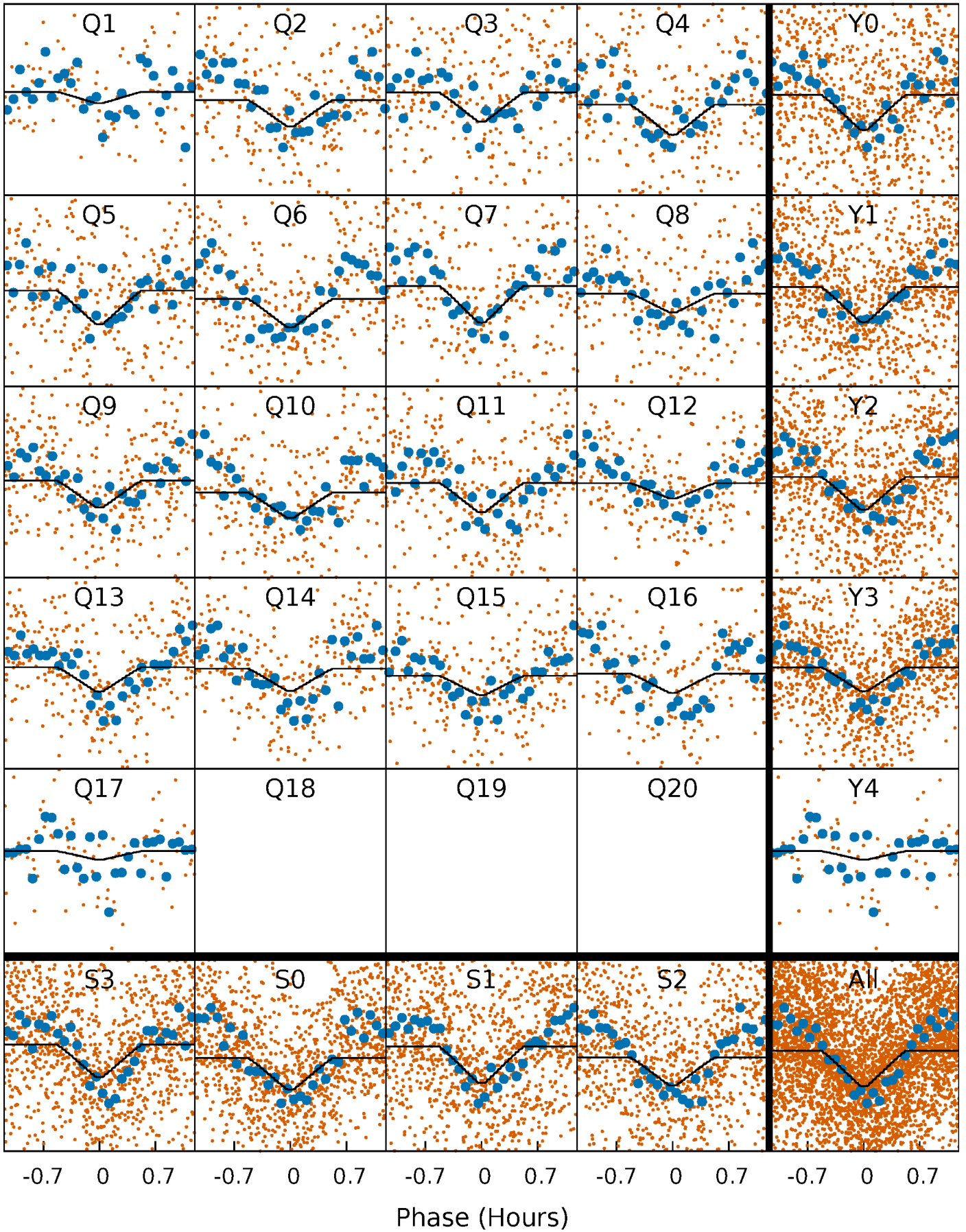
PDC Quarter-Phased Transit Curves

TCE 009953617-04 P= 0.509321 Days $T_0=131.980321$ (BKJD)



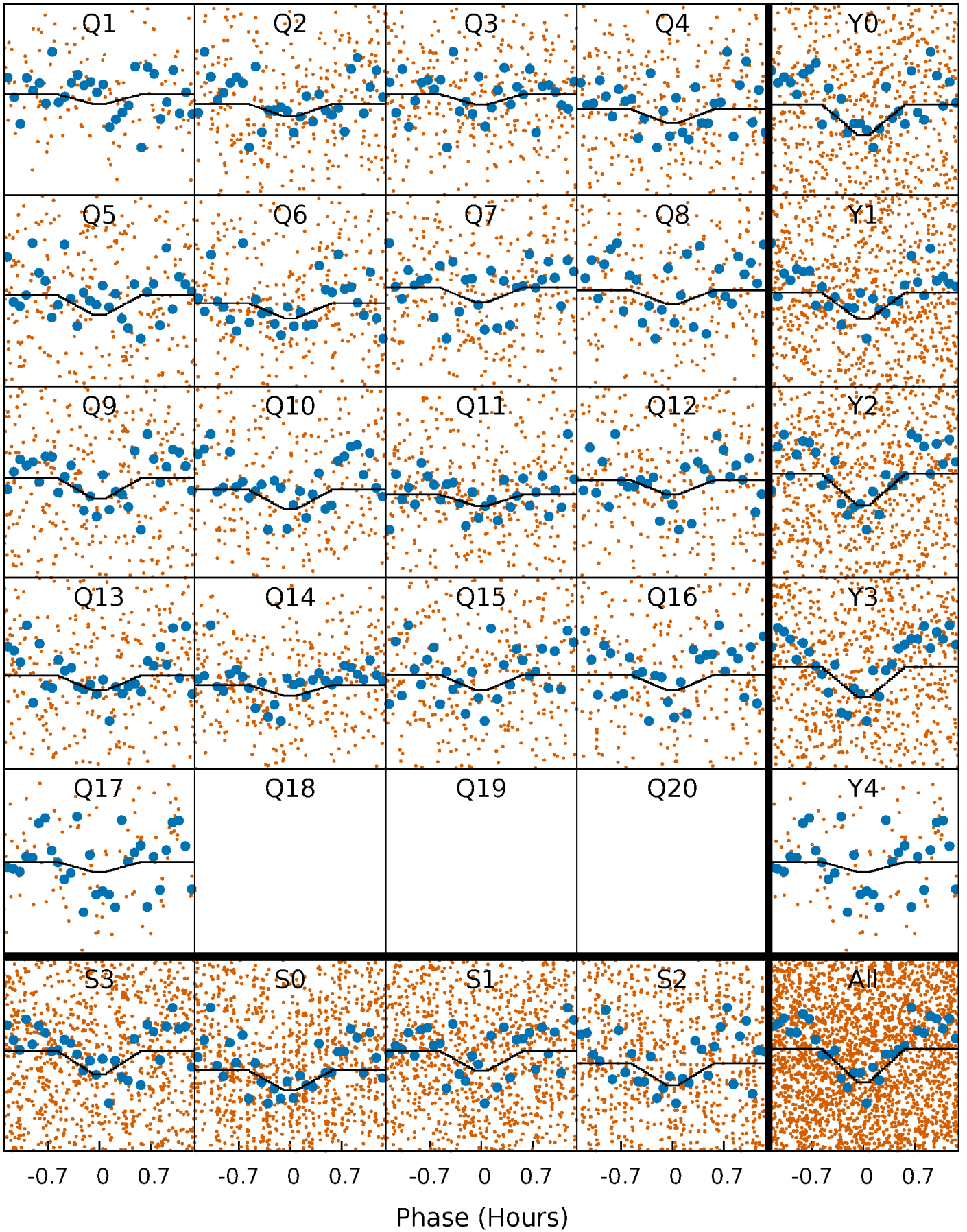
DV Quarter-Phased Transit Curves

TCE 009953617-04 P= 0.509321 Days $T_0=131.980321$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

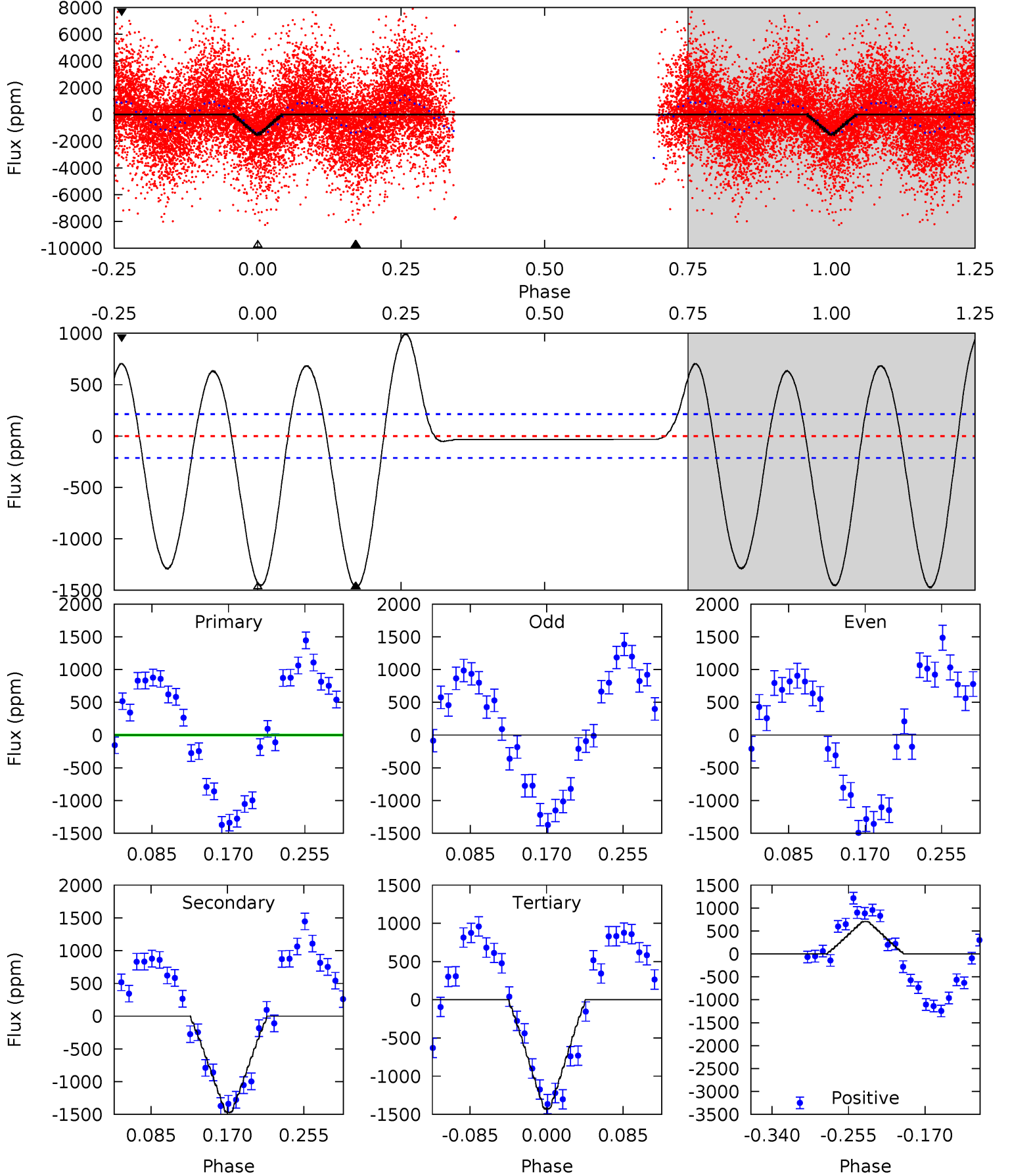
TCE 009953617-04 P= 0.509325 Days $T_0=131.976607$ (BKJD)



DV Model-Shift Uniqueness Test

009953617-04, P = 0.509321 Days, E = 131.471000 Days

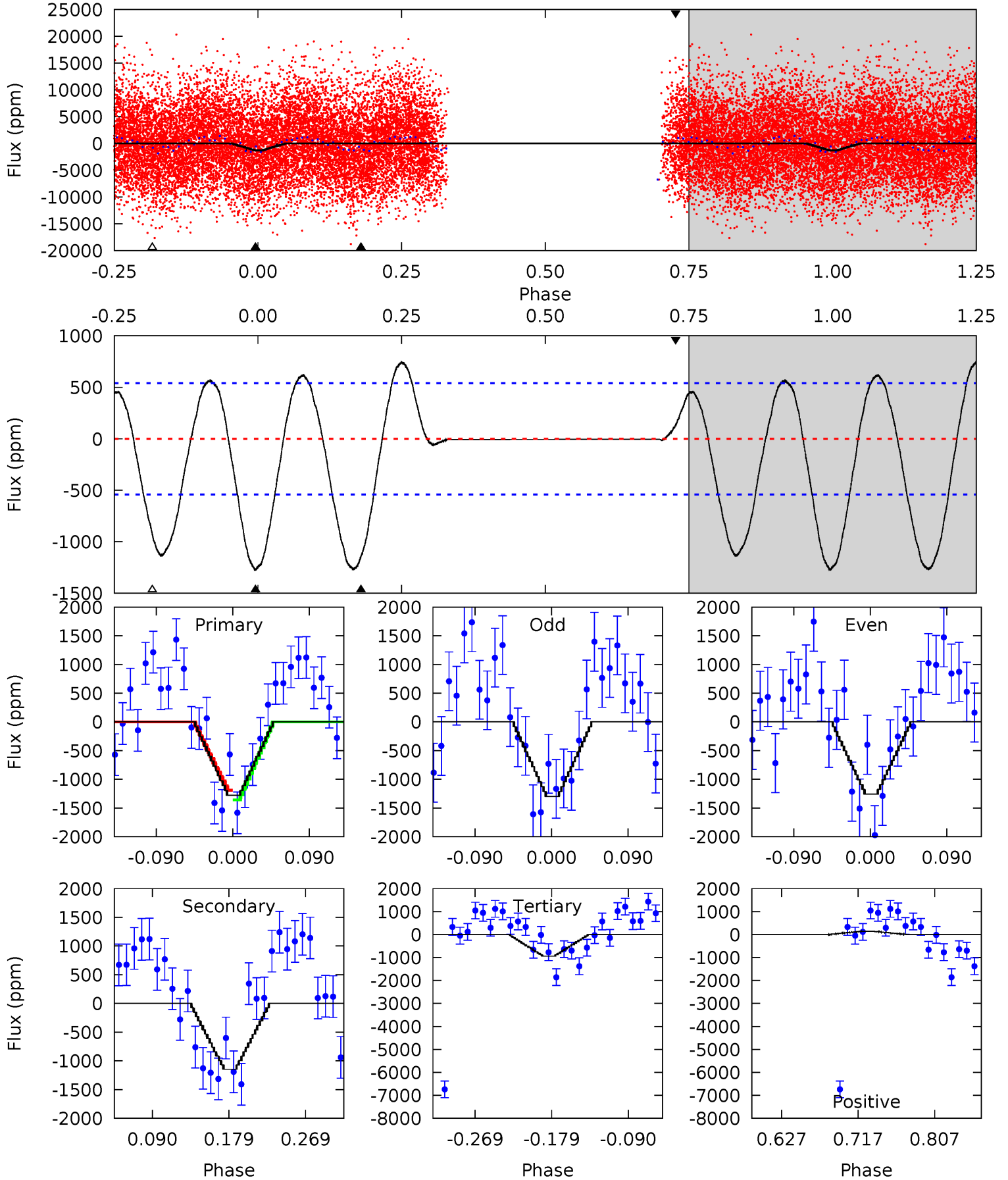
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.7	31.8	30.9	15.2	4.60	1.72	15.6	0.84	16.5	0.88	16.6	2.06	1.07	0.40	4.32



Alt Model-Shift Uniqueness Test

009953617-04, P = 0.509325 Days, E = 131.467282 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	9.73	7.98	1.21	4.59	1.70	4.51	2.88	9.65	1.75	8.52	0.17	0.92	0.37	0.72



Stellar Parameters For KIC 009953617

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7769^{+215}_{-323}	$3.729^{+0.416}_{-0.073}$	$-0.060^{+0.200}_{-0.350}$	$3.122^{+0.456}_{-1.368}$	$1.905^{+0.103}_{-0.387}$	$0.088^{+0.325}_{-0.021}$
	+3%/-4%	+11%/-2%	+333%/-583%	+15%/-44%	+5%/-20%	+369%/-24%
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 009953617-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1472 ± 46	$9.42^{+4.93}_{-4.67}$	6559^{+436}_{-720}	8372^{+5826}_{-2059}	$2.148^{+6.026}_{-1.222}$
Alt.	-1146 ± 118	$10.72^{+5.06}_{-4.50}$	6541^{+474}_{-782}	6945^{+3101}_{-1637}	$1.312^{+2.412}_{-0.703}$

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

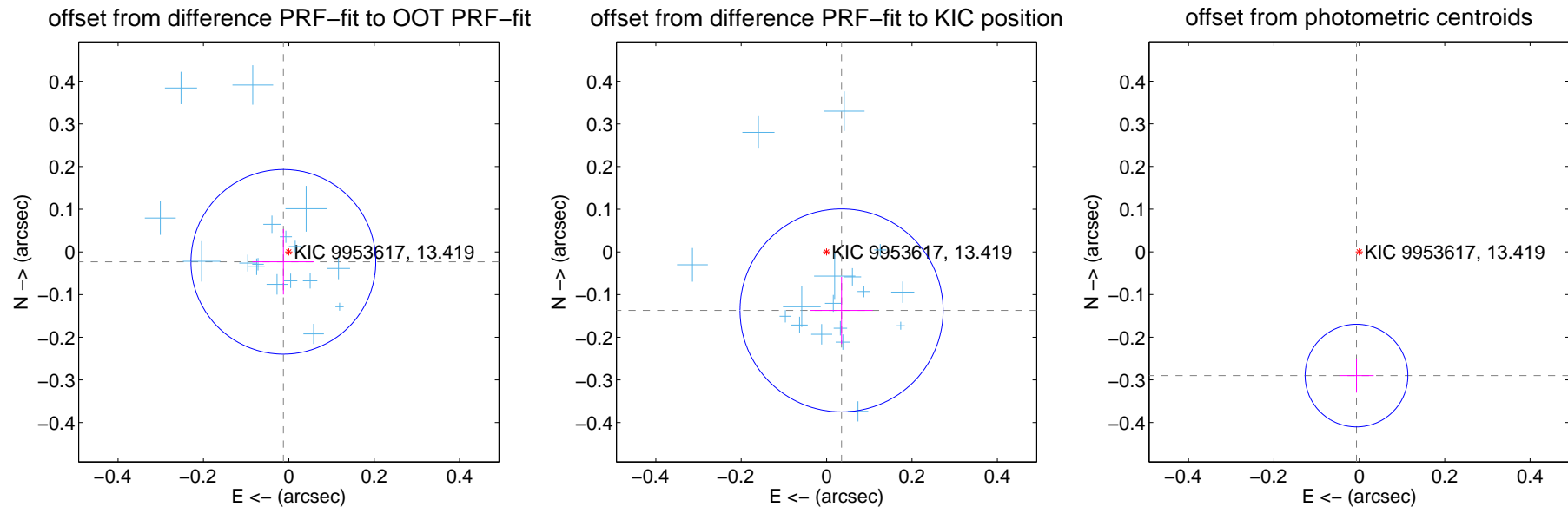
DV Centroid Data

Supplemental centroid analysis for 009953617-04. Kepler magnitude: 13.42. Transit SNR 15.98

There are 17 quarters with good PRF difference image offsets

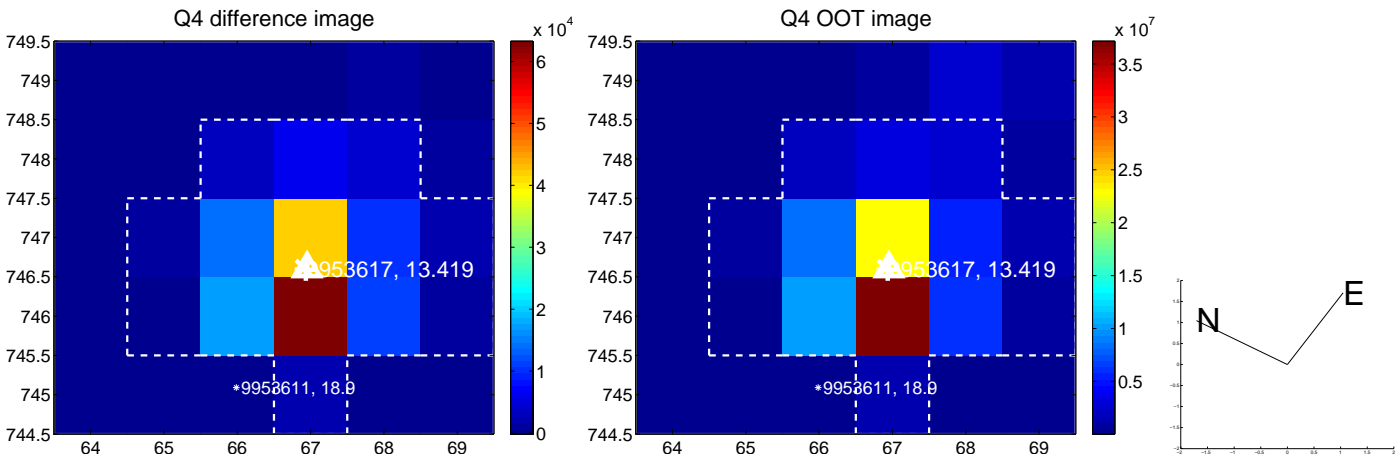
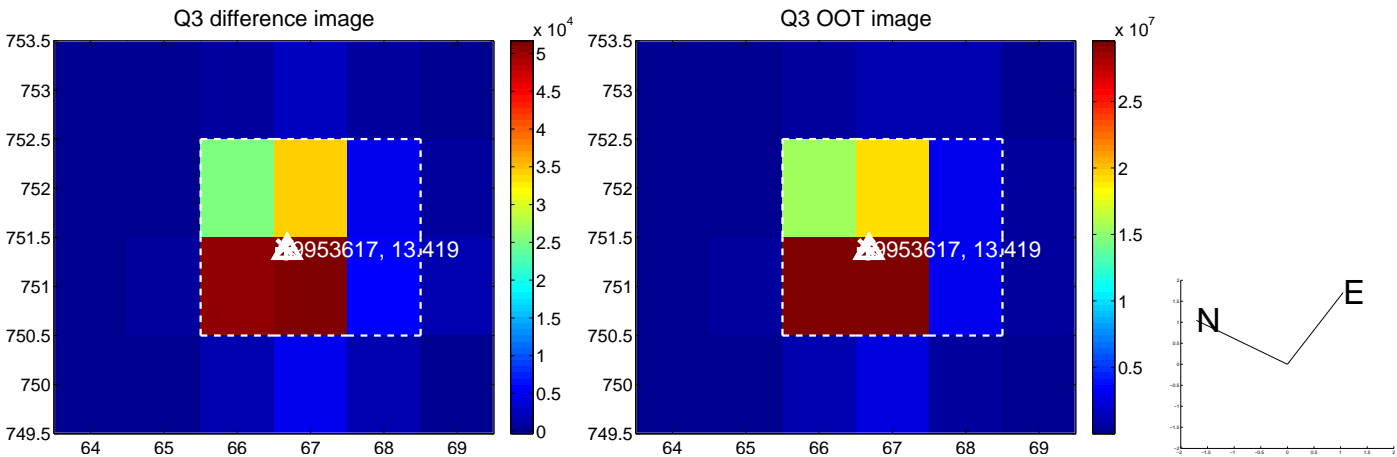
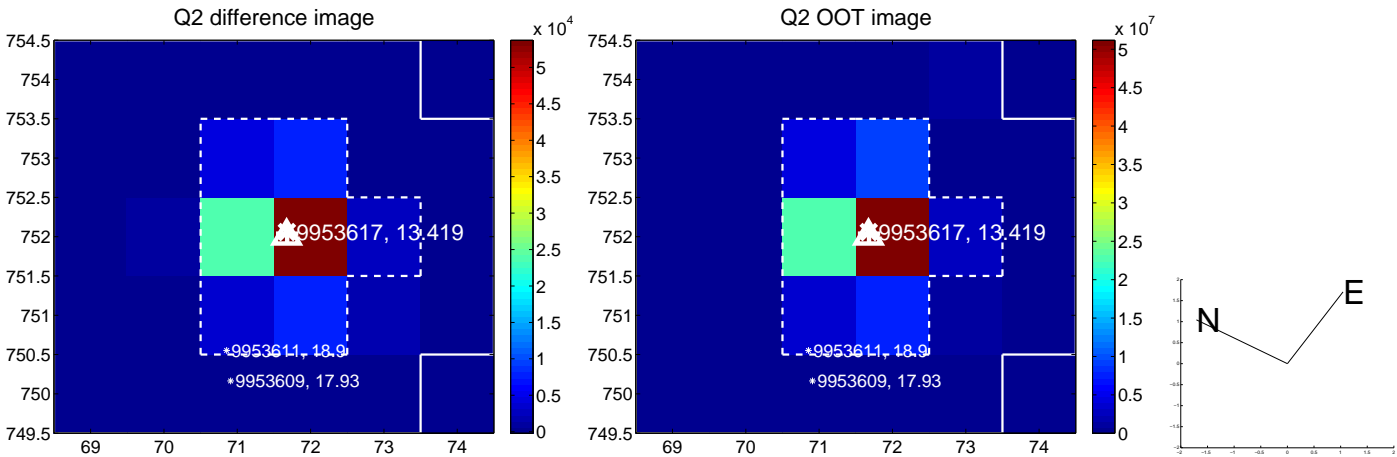
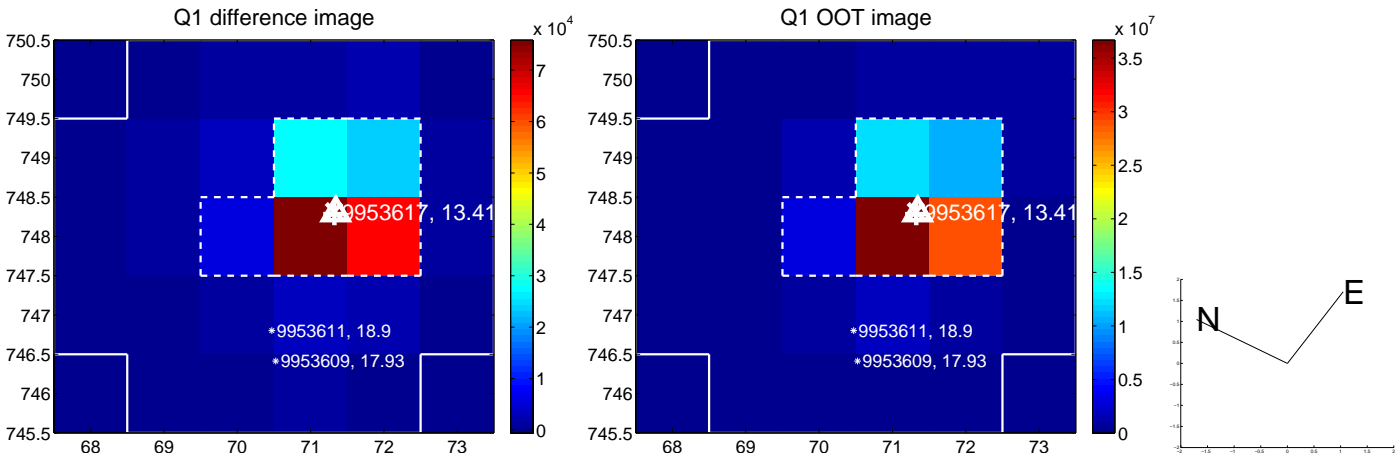
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.026 ± 0.072	0.37	0.013 ± 0.073	-0.023 ± 0.077
PRF-fit source offset from KIC position	0.141 ± 0.079	1.78	-0.035 ± 0.073	-0.137 ± 0.079
photometric centroid source offset	0.29 ± 0.04	7.23	0.01 ± 0.04	-0.29 ± 0.04

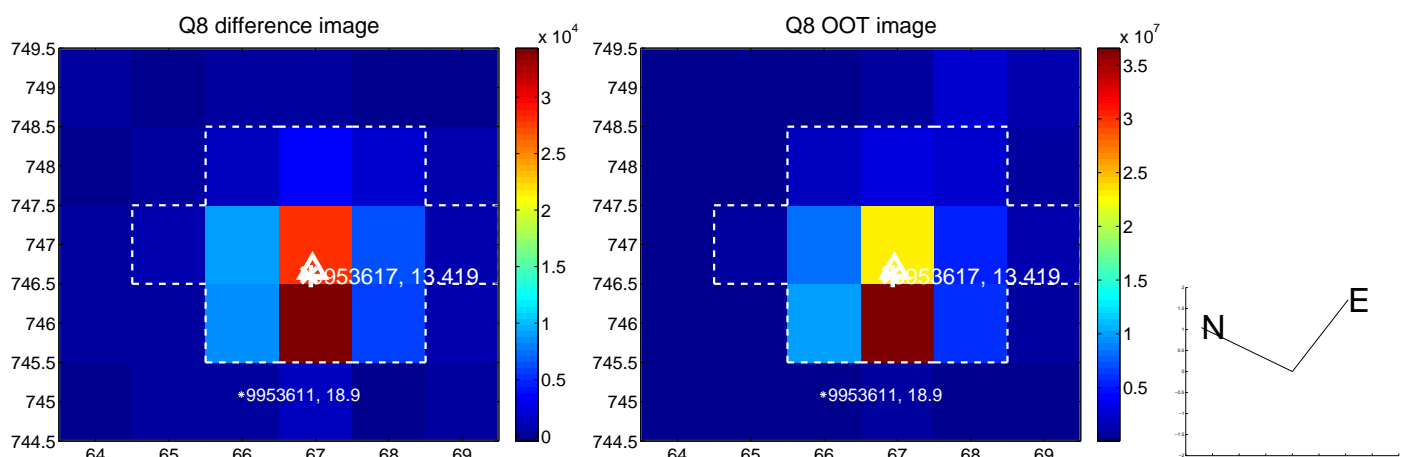
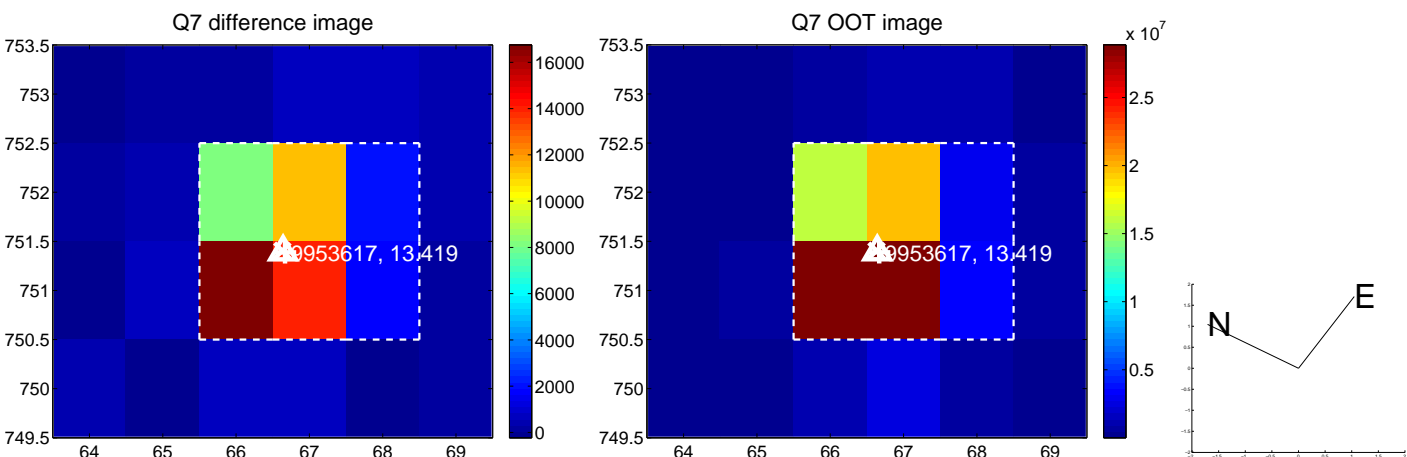
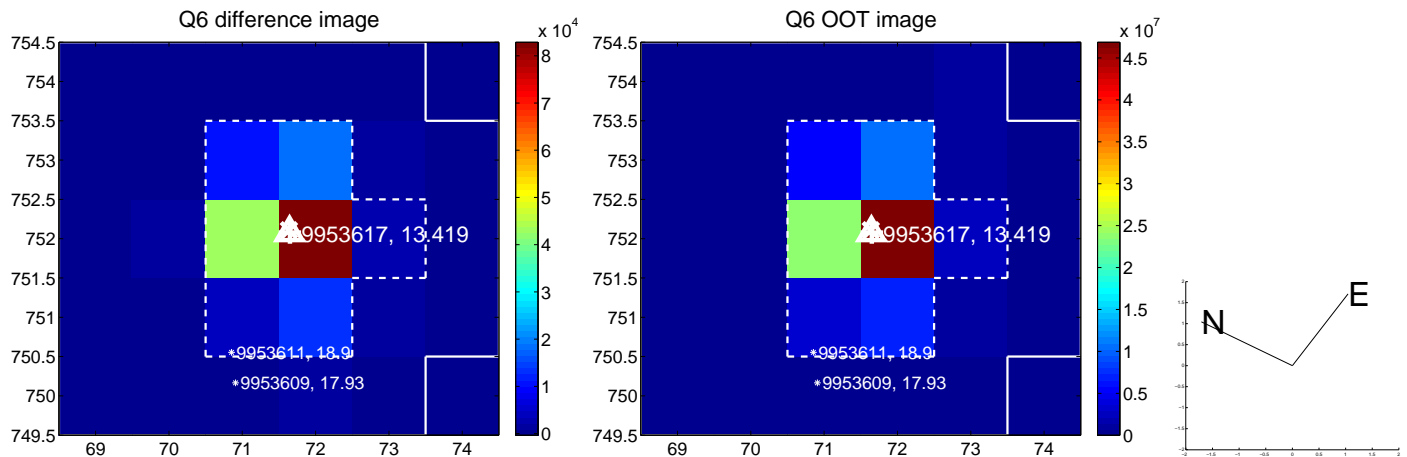
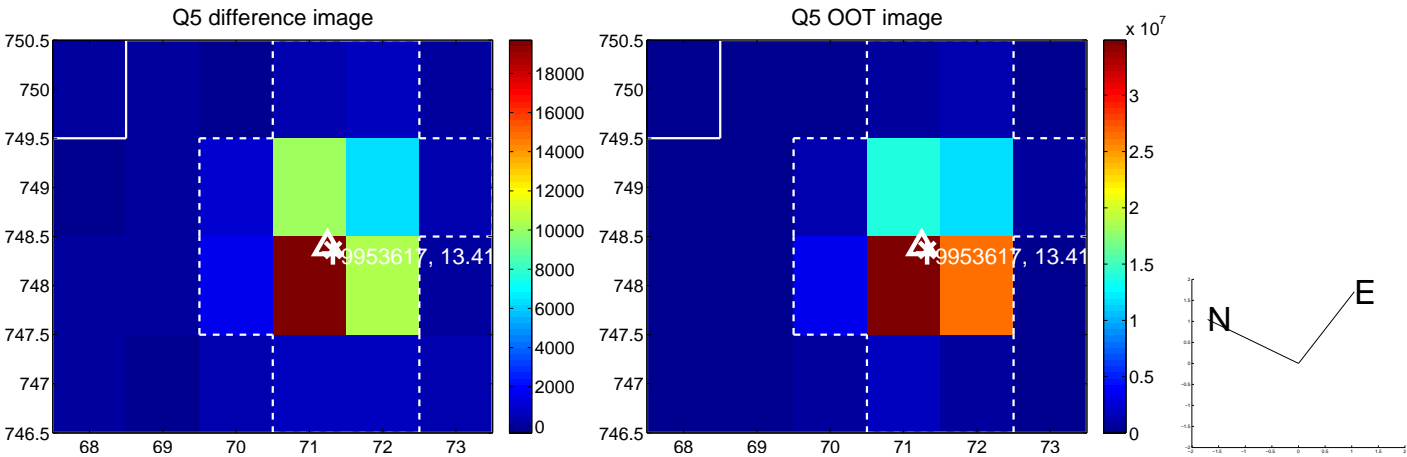


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

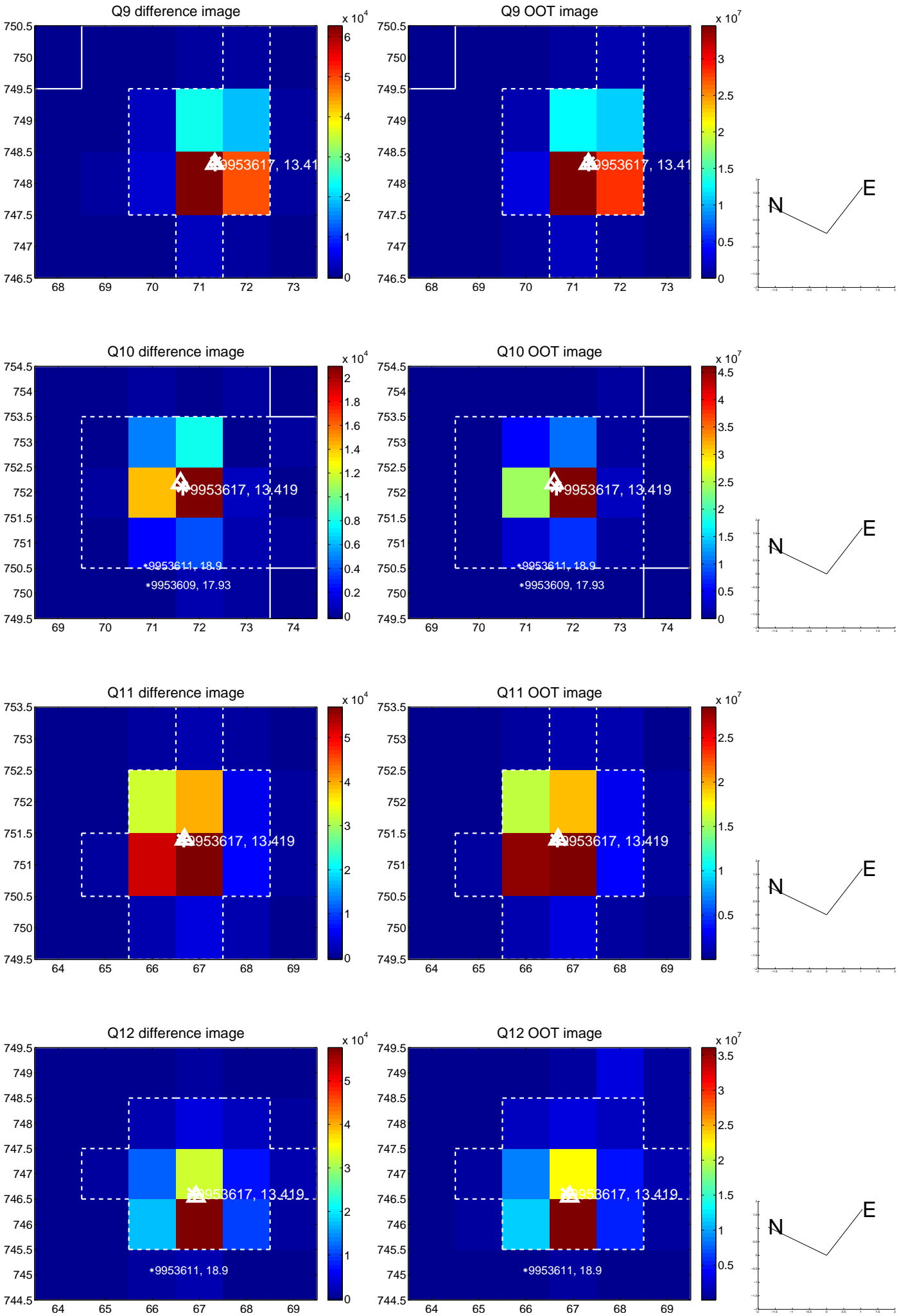
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



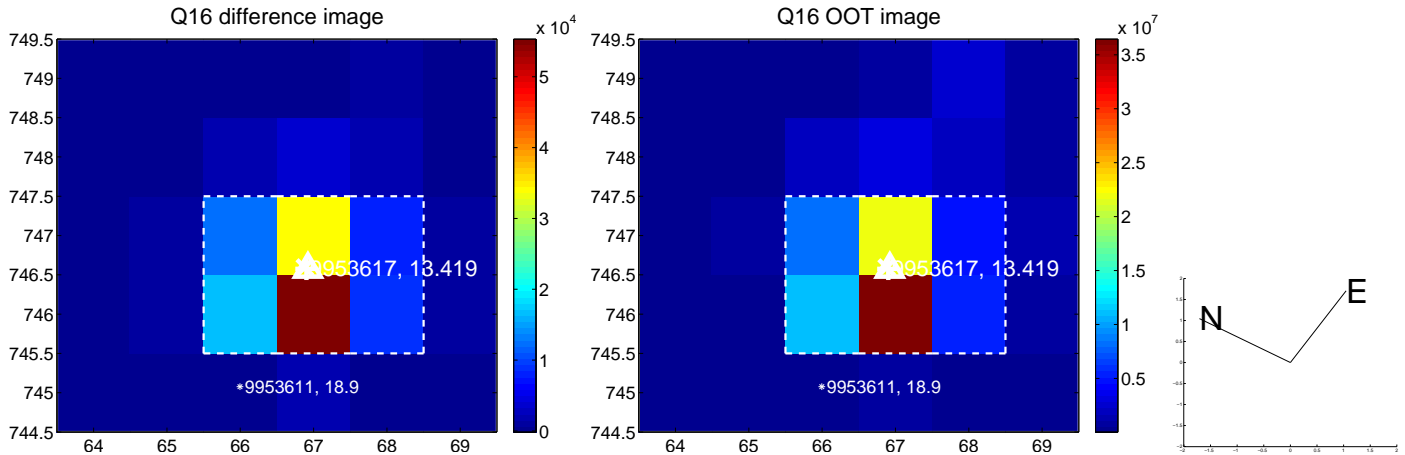
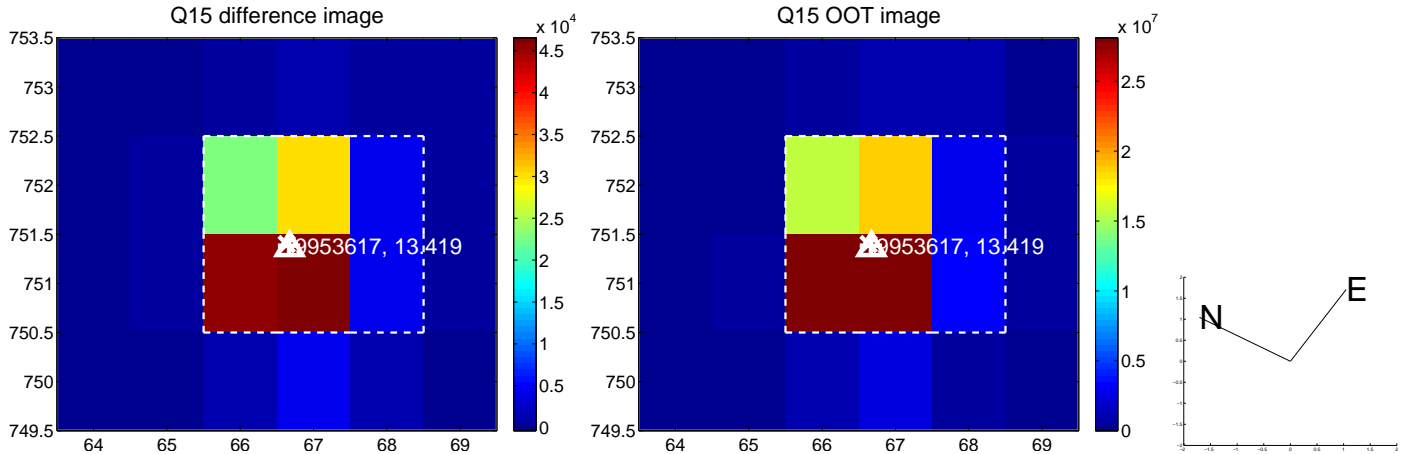
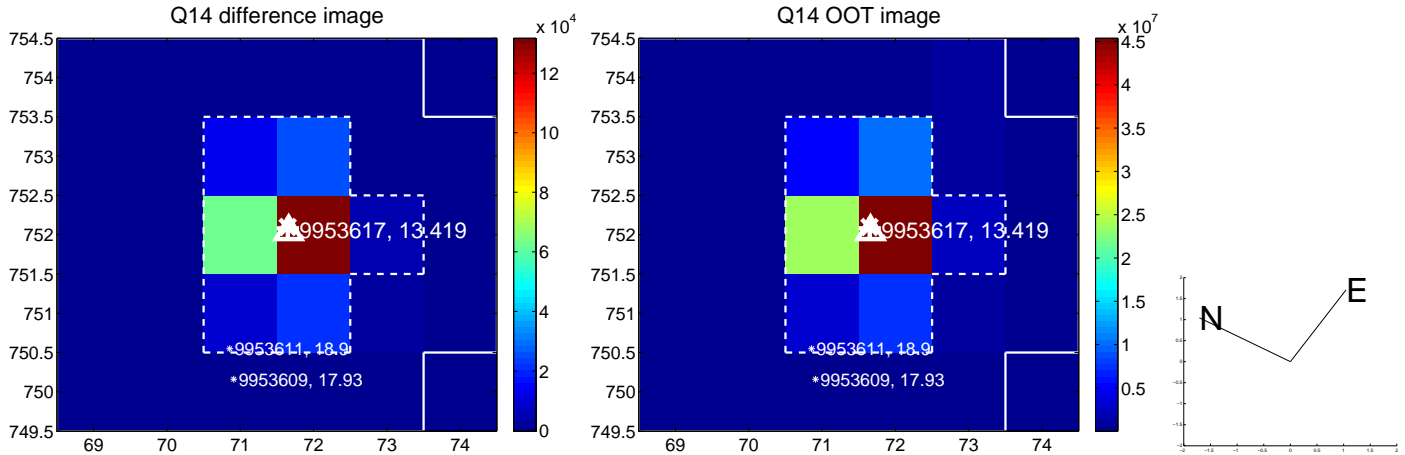
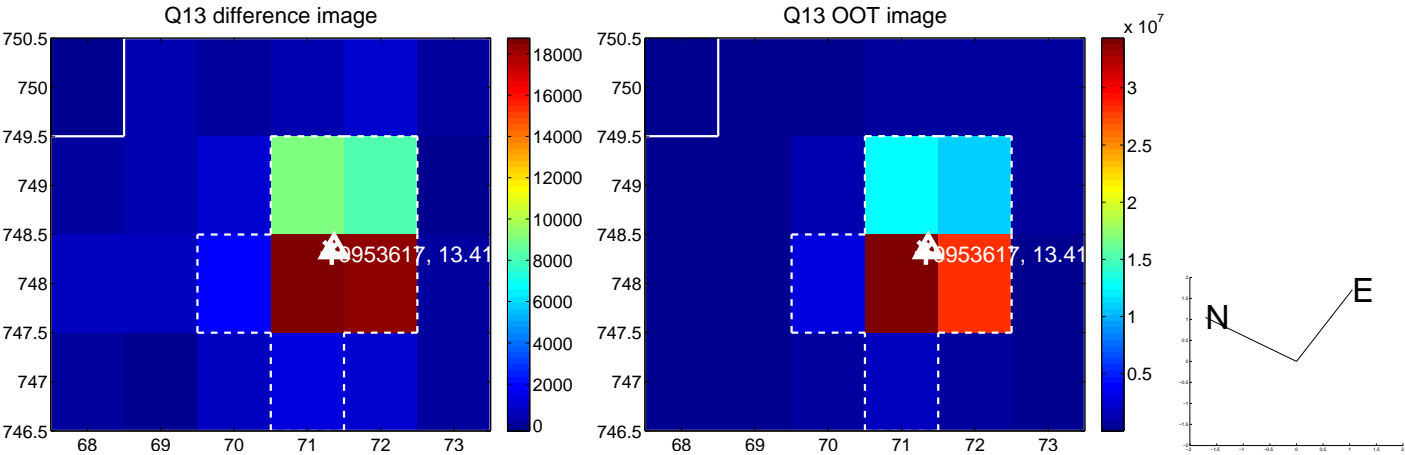
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



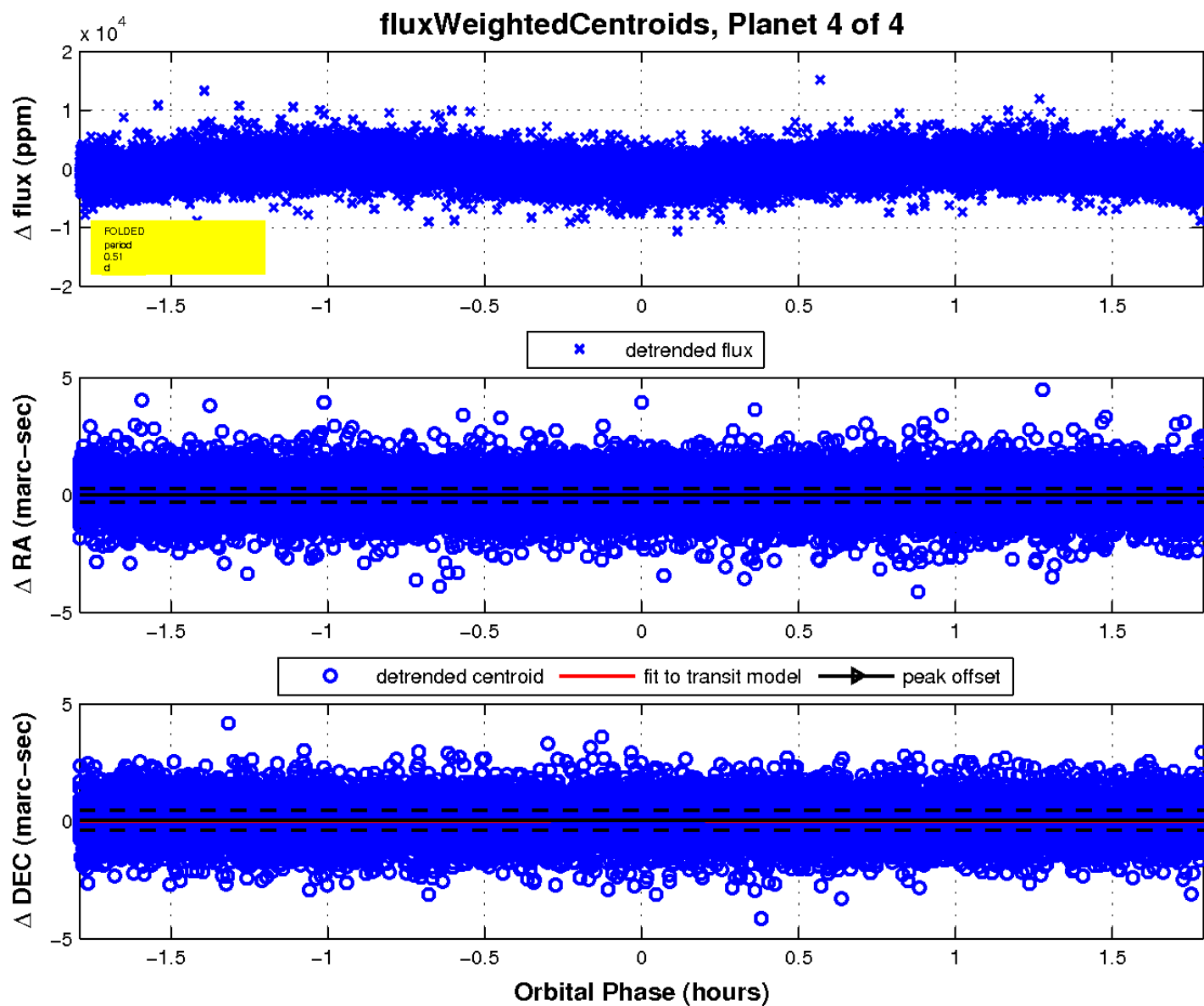
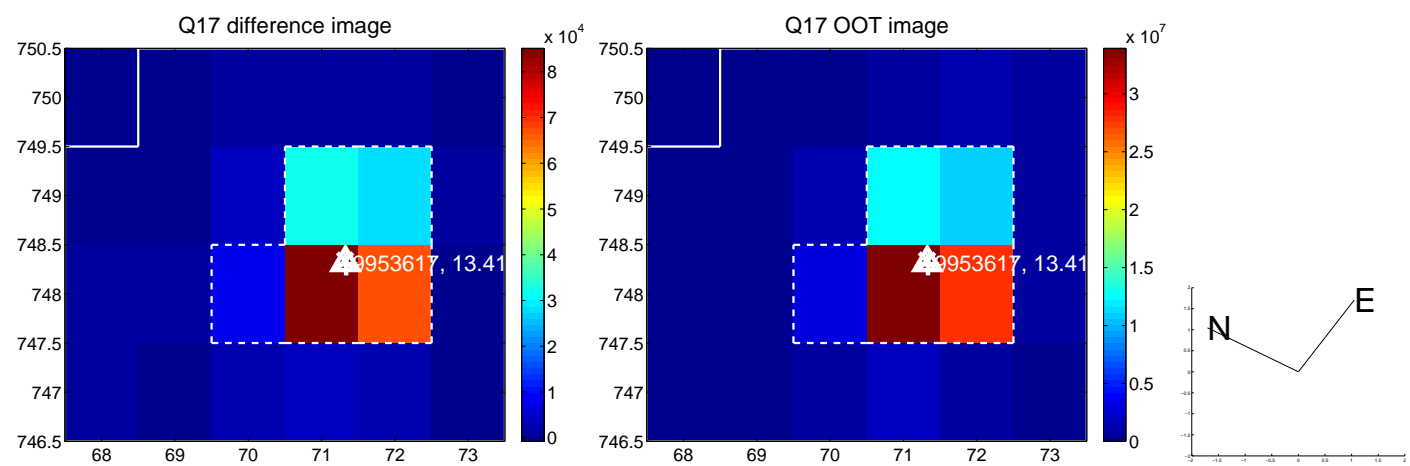
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

