

KIC 006222529

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})
006222529-01	OBS	No	0.990206	132.208285	94.3	5.813	11.7	11.2	1.57	7802	1.62	16321.27
006222529-02	OBS	No	154.197849	146.034161	1428.0	3.799	8.6	10.1	1.57	7802	6.41	19.48
006222529-03	OBS	No	15.142085	137.864067	612.7	1.795	8.8	9.5	1.57	7802	4.37	430.00
006222529-04	OBS	No	56.352386	160.131651	563.2	6.682	7.9	6.4	1.57	7802	4.07	74.56
006222529-05	OBS	No	20.869302	150.962001	540.2	3.088	8.0	8.8	1.57	7802	4.20	280.36
006222529-06	OBS	No	74.439496	158.805458	557.0	7.203	7.4	6.2	1.57	7802	3.90	51.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006222529-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
006222529-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006222529-03	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
006222529-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006222529-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006222529-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

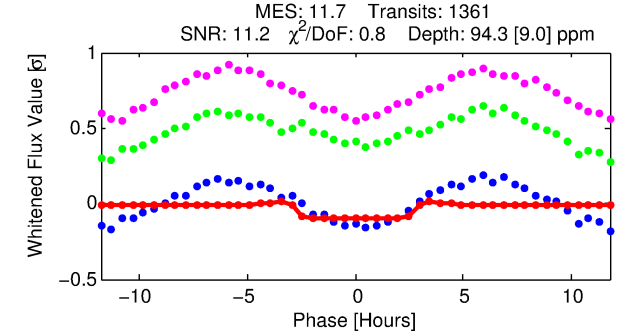
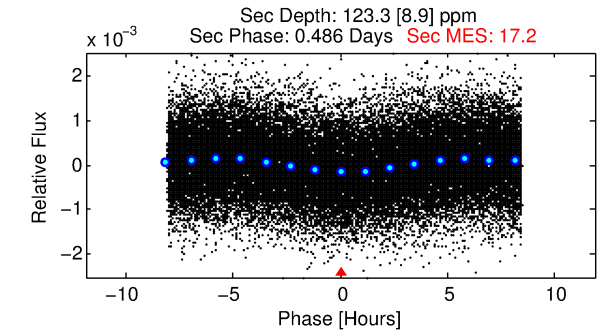
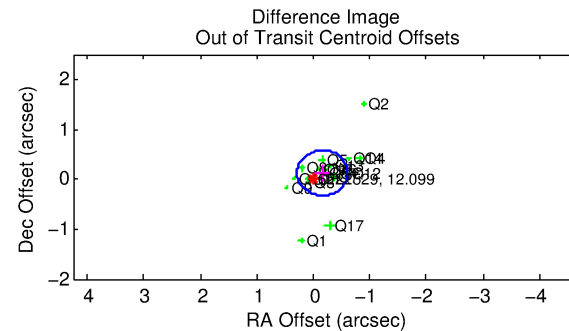
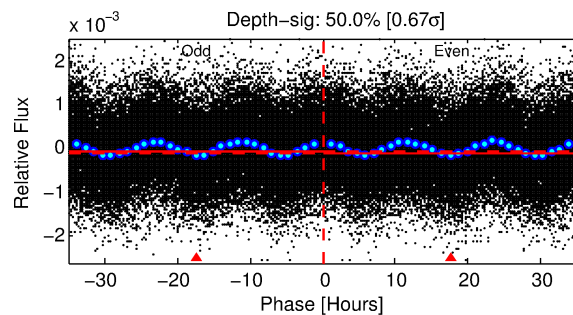
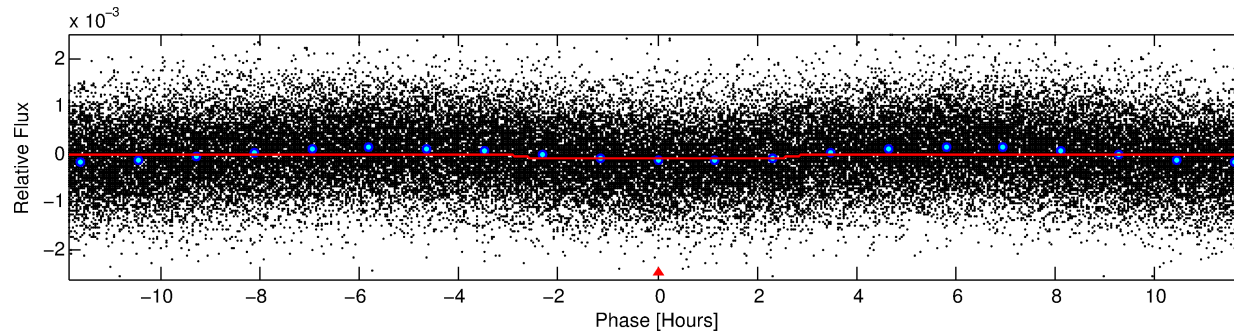
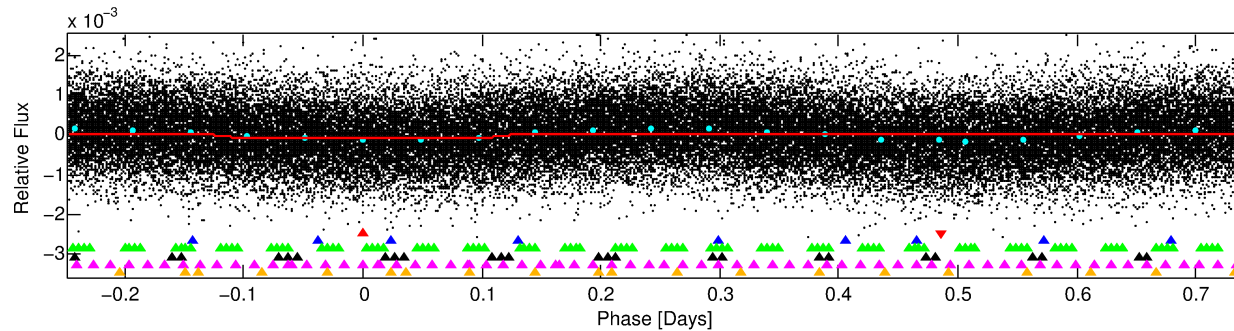
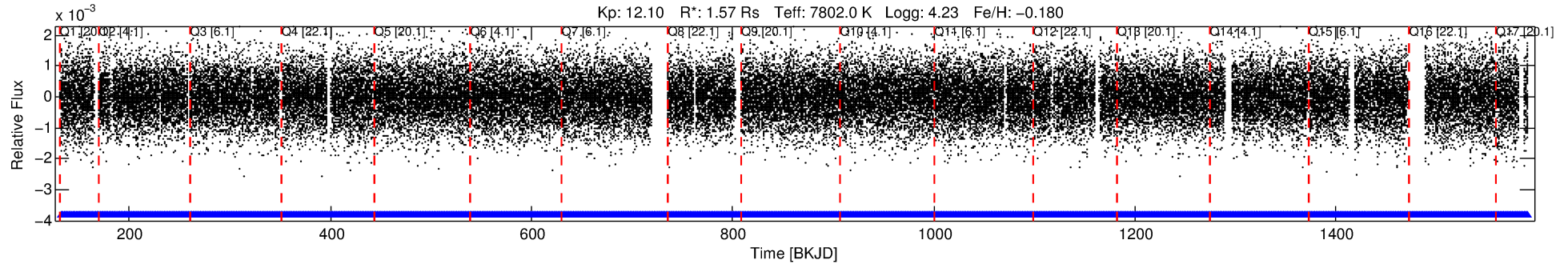
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006222529-01

No Significant Match Found

DV One-Page Summary

KIC: 6222529 Candidate: 1 of 6 Period: 0.990 d



DV Fit Results:

Period = 0.99021 [0.00001] d
Epoch = 132.2083 [0.0038] BKJD
Rp/R* = 0.0094 [0.0062]
a/R* = 1.29 [1.92]
b = 0.65 [3.37]
Seff = 16321.27 [4111.04]
Teq = 2882 [181] K
Rp = 1.62 [1.11] Re
a = 0.0224 [0.0038] AU
Ag = 13.02 [17.38] [0.69 σ]
Teffp = 8464 [2777] K [2.01 σ]

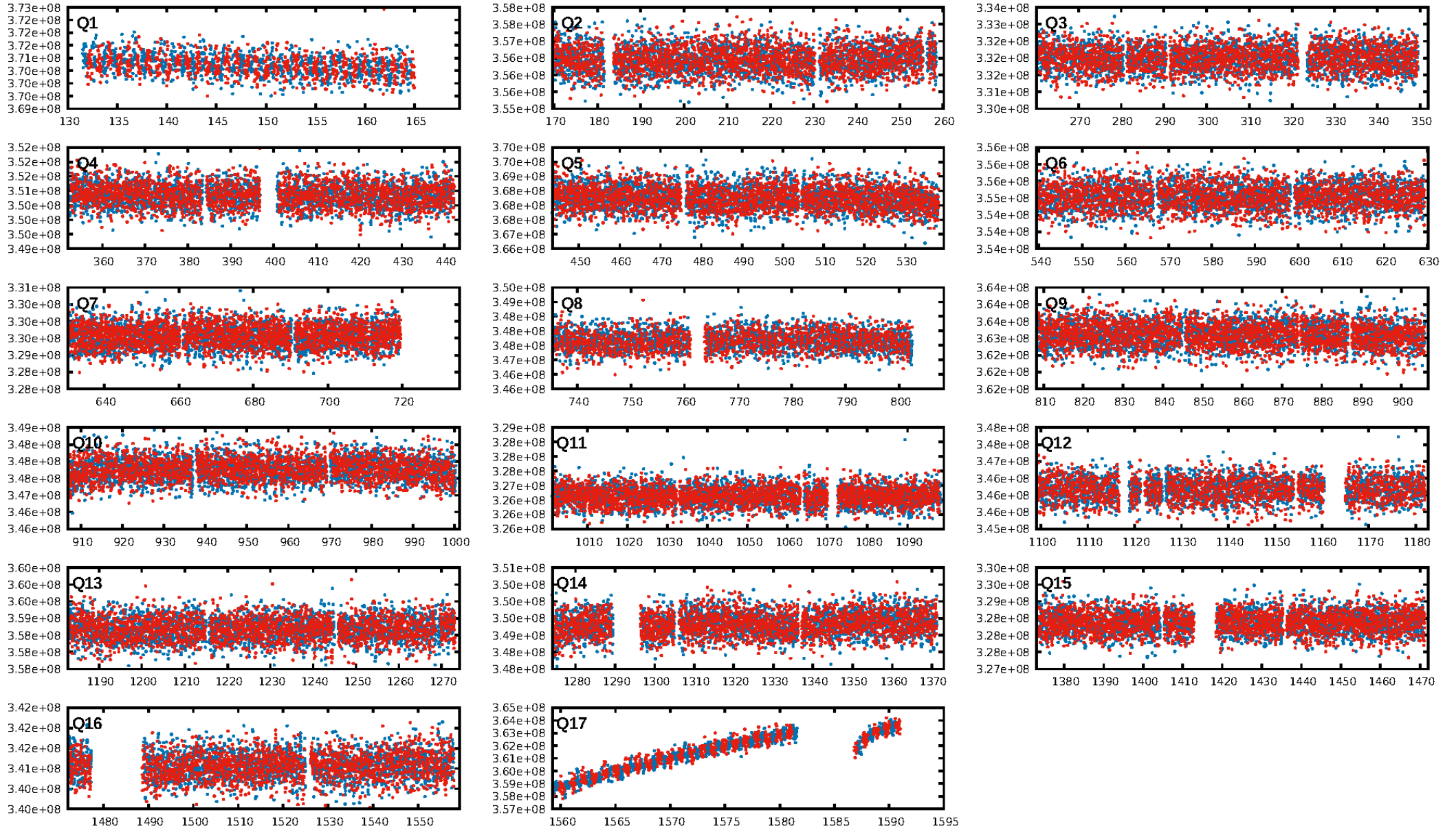
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [55.83 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.80e-13
RollingBand-fgt: 1.00 [1300/1300]
GhostDiagnostic-chr: 3.006
Centroid-sig: 70.2%
Centroid-so: 0.047 arcsec [0.56 σ]
OotOffset-rm: 0.201 arcsec [1.34 σ]
KicOffset-rm: 0.233 arcsec [1.49 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

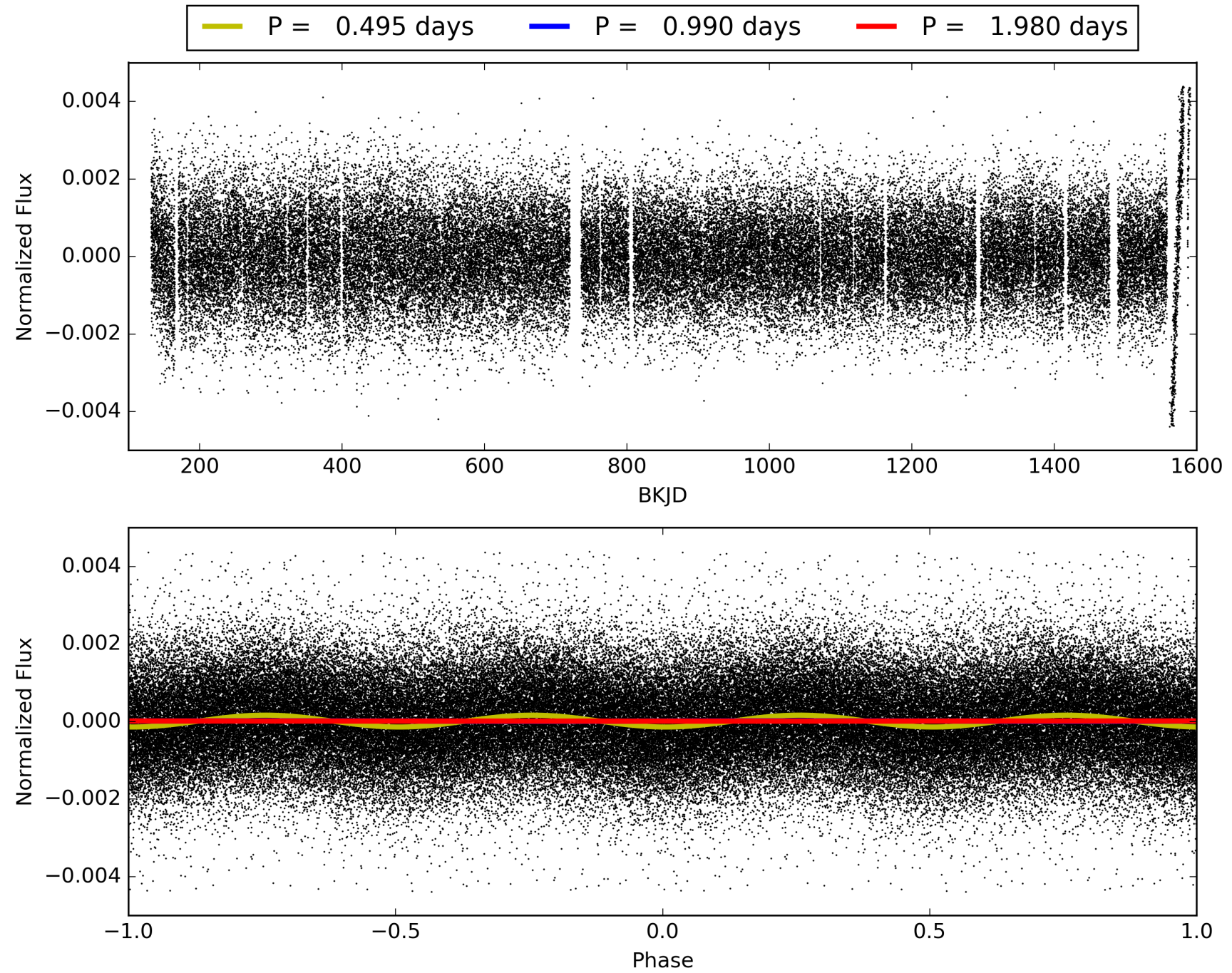
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 006222529-01, PDC Light Curves

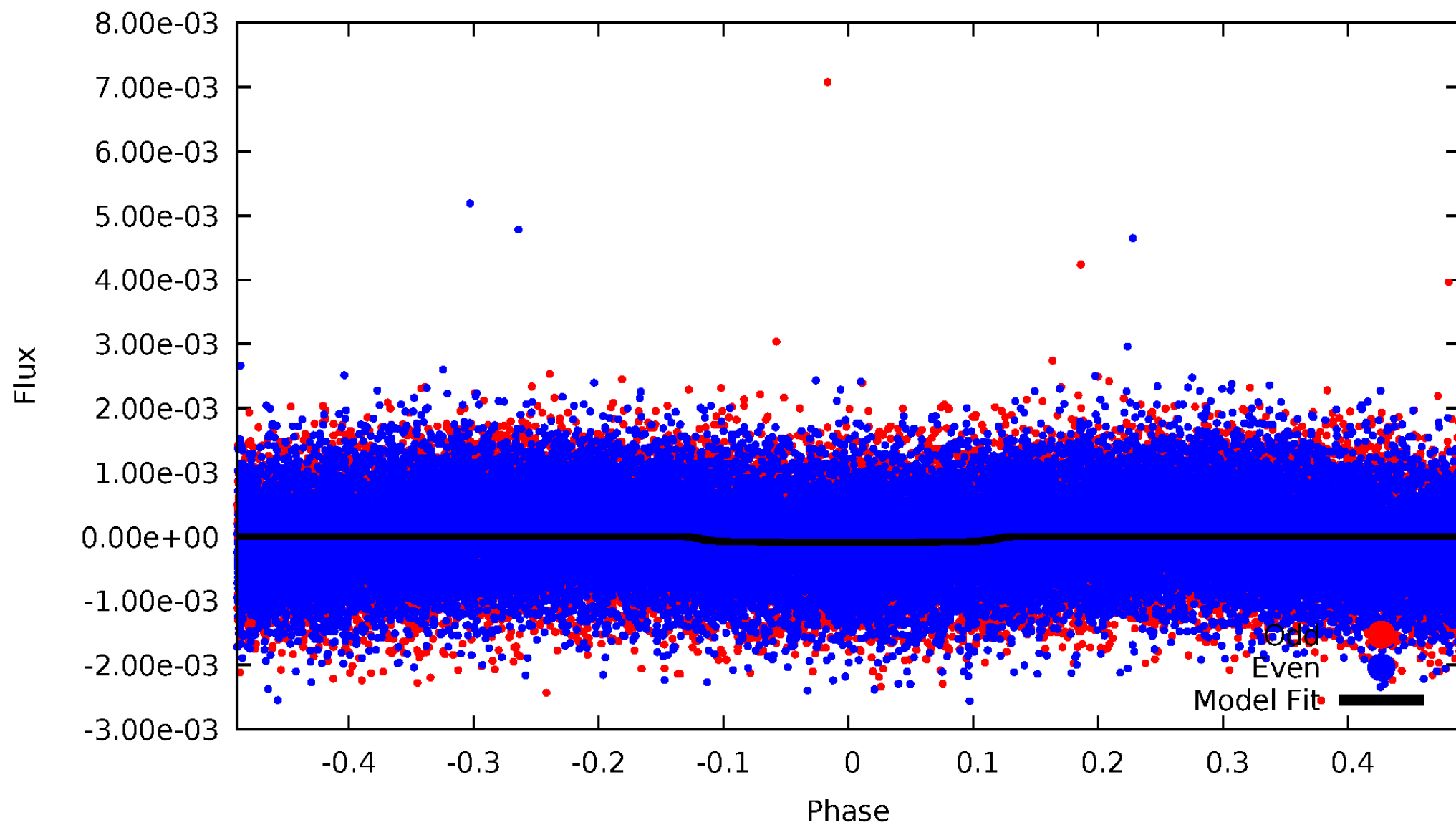


TCE 006222529-01



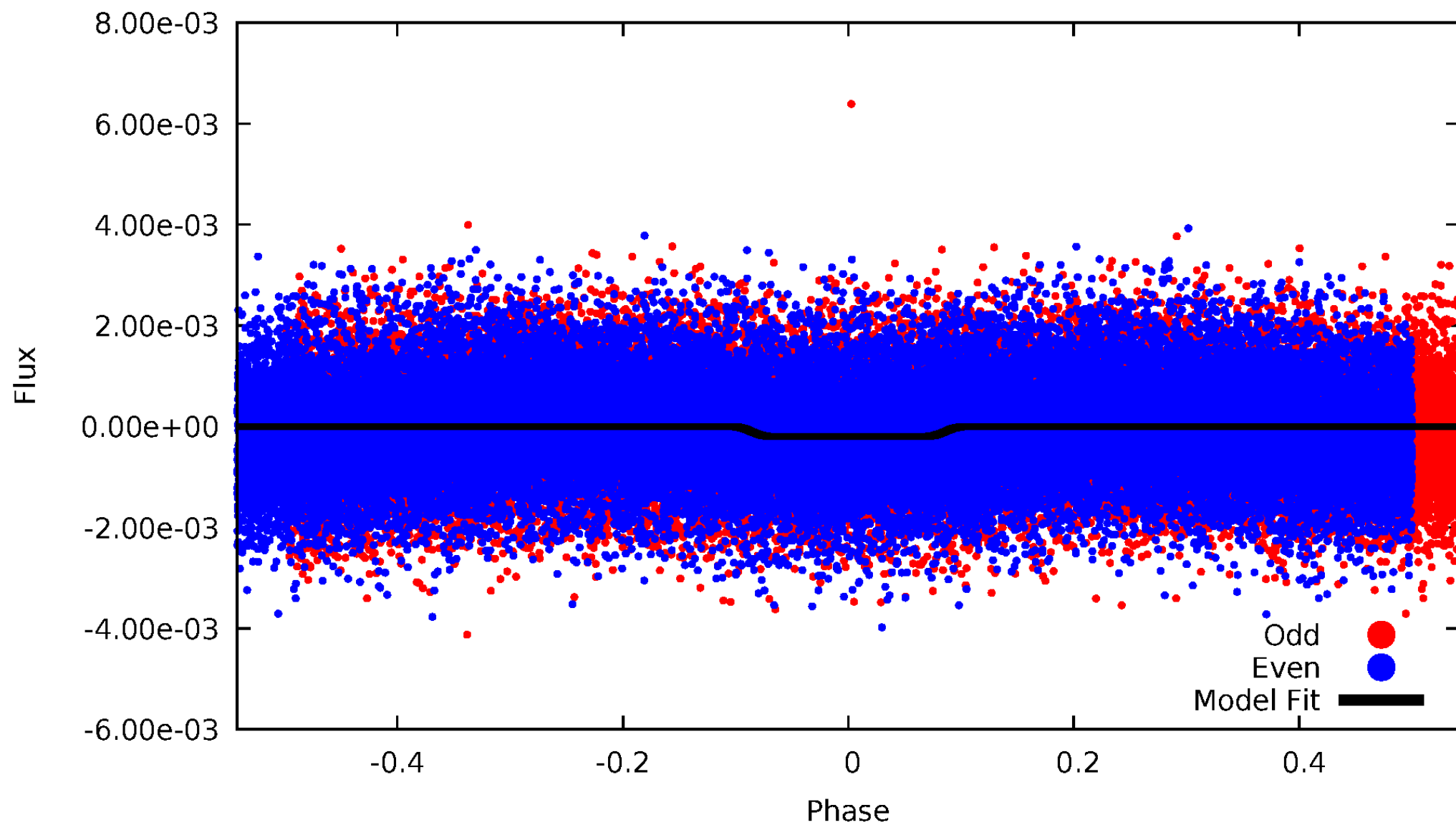
DV Odd/Even

TCE 006222529-01

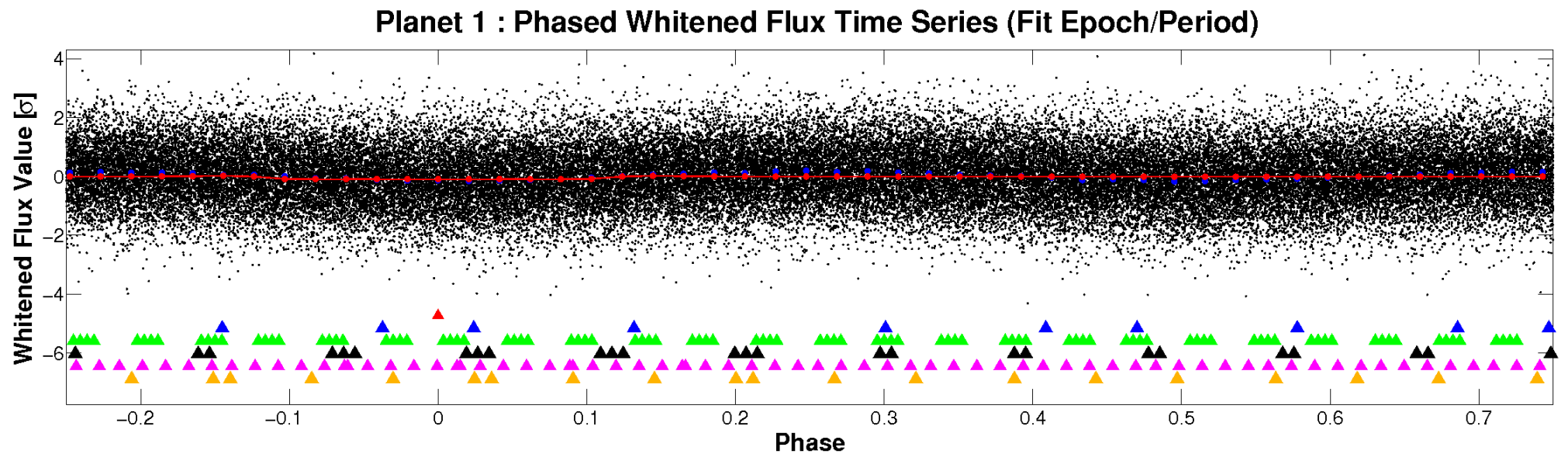
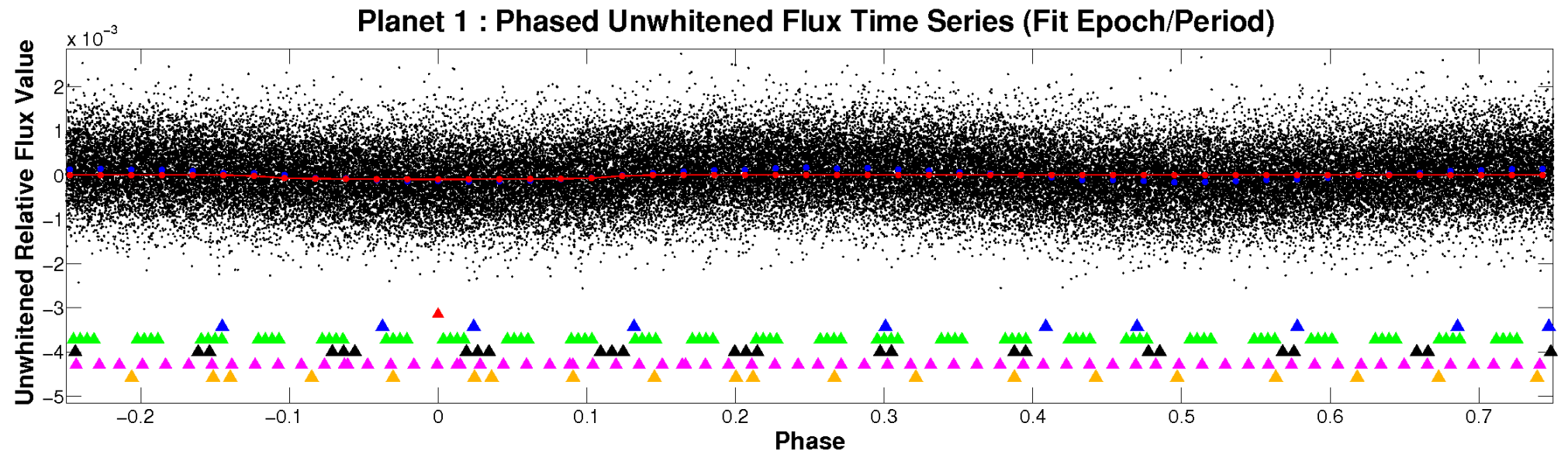


ALT Odd/Even

TCE 006222529-01

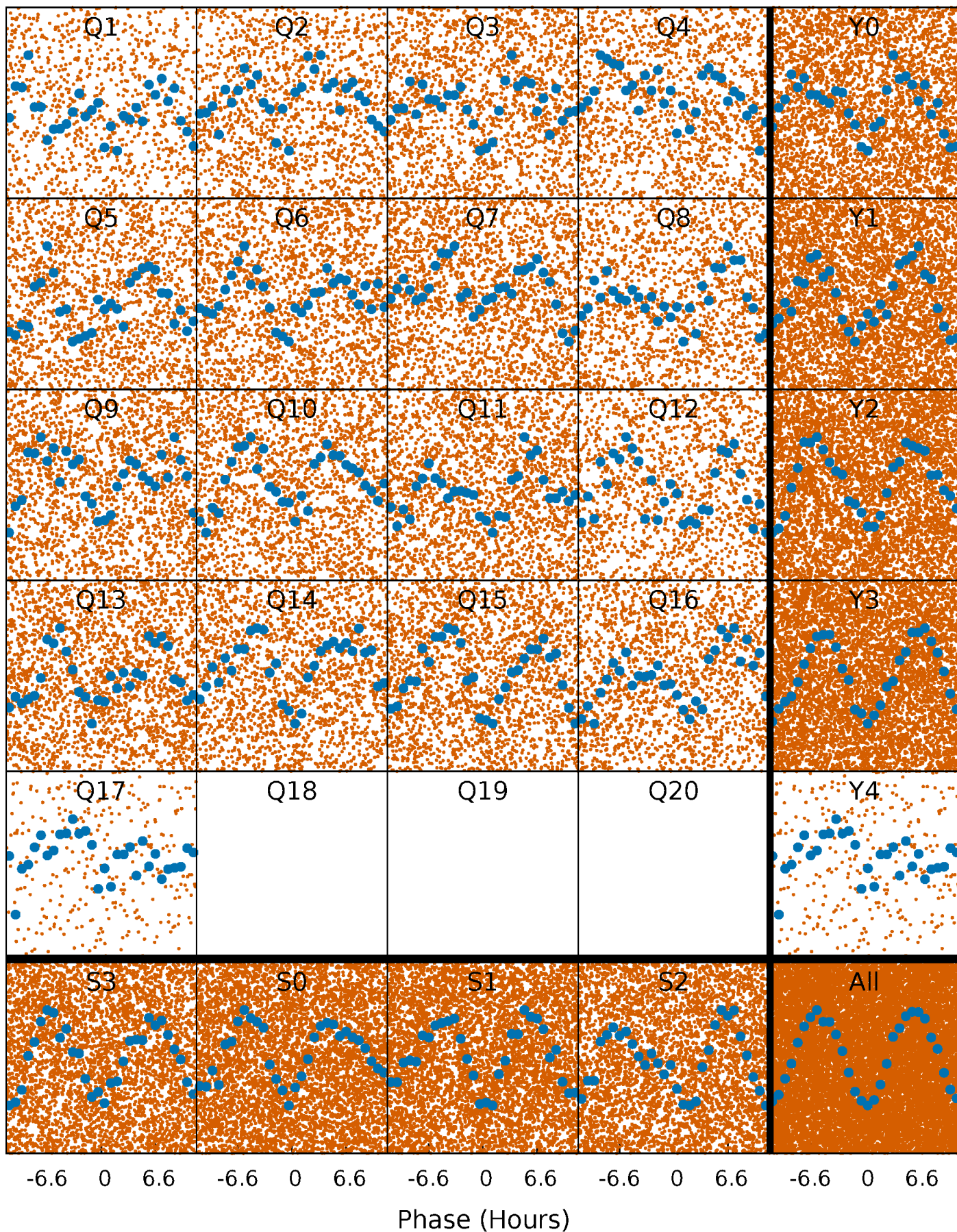


Non-Whitened Vs. Whitened Light Curve



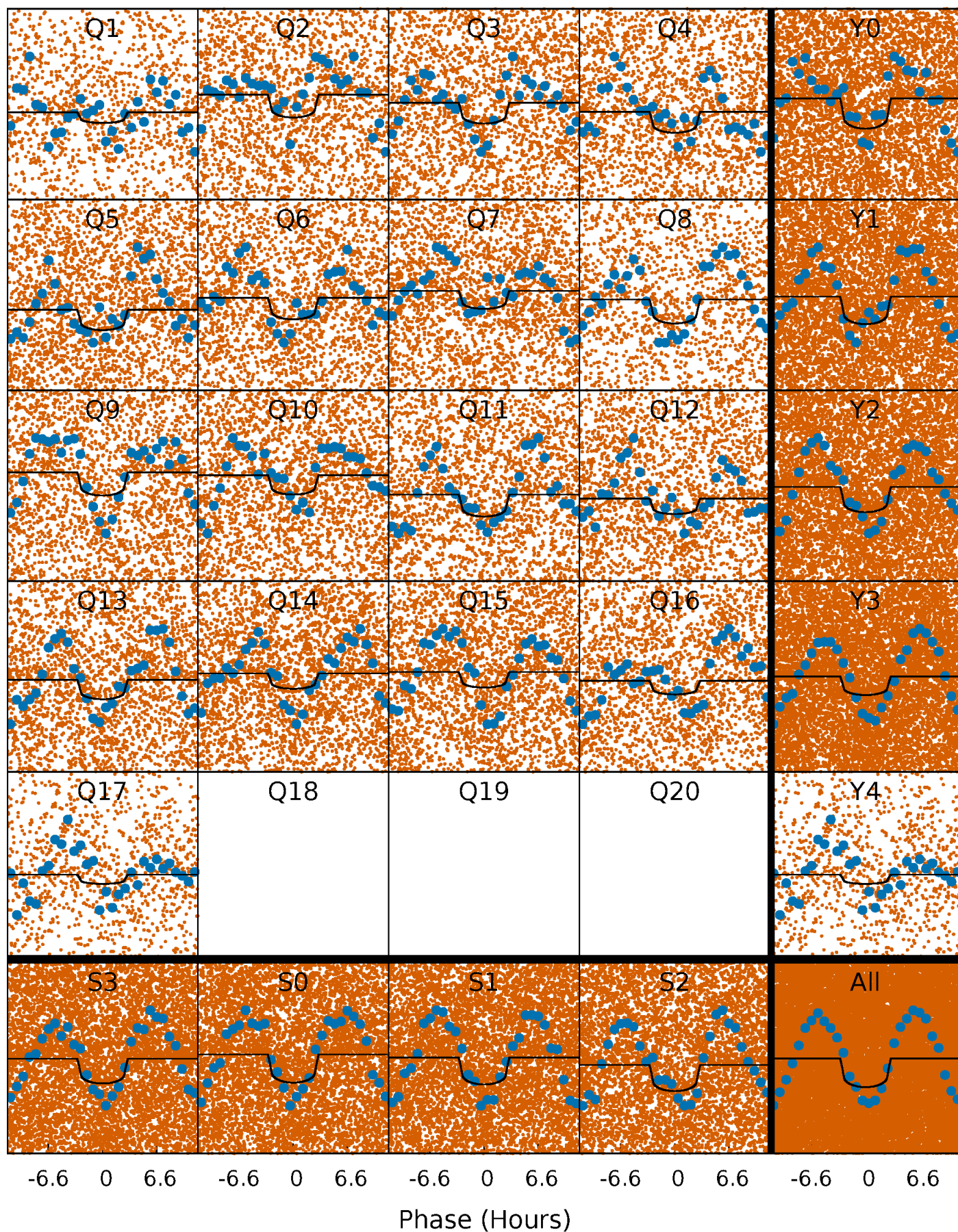
PDC Quarter-Phased Transit Curves

TCE 006222529-01 P= 0.990206 Days $T_0=132.208285$ (BKJD)



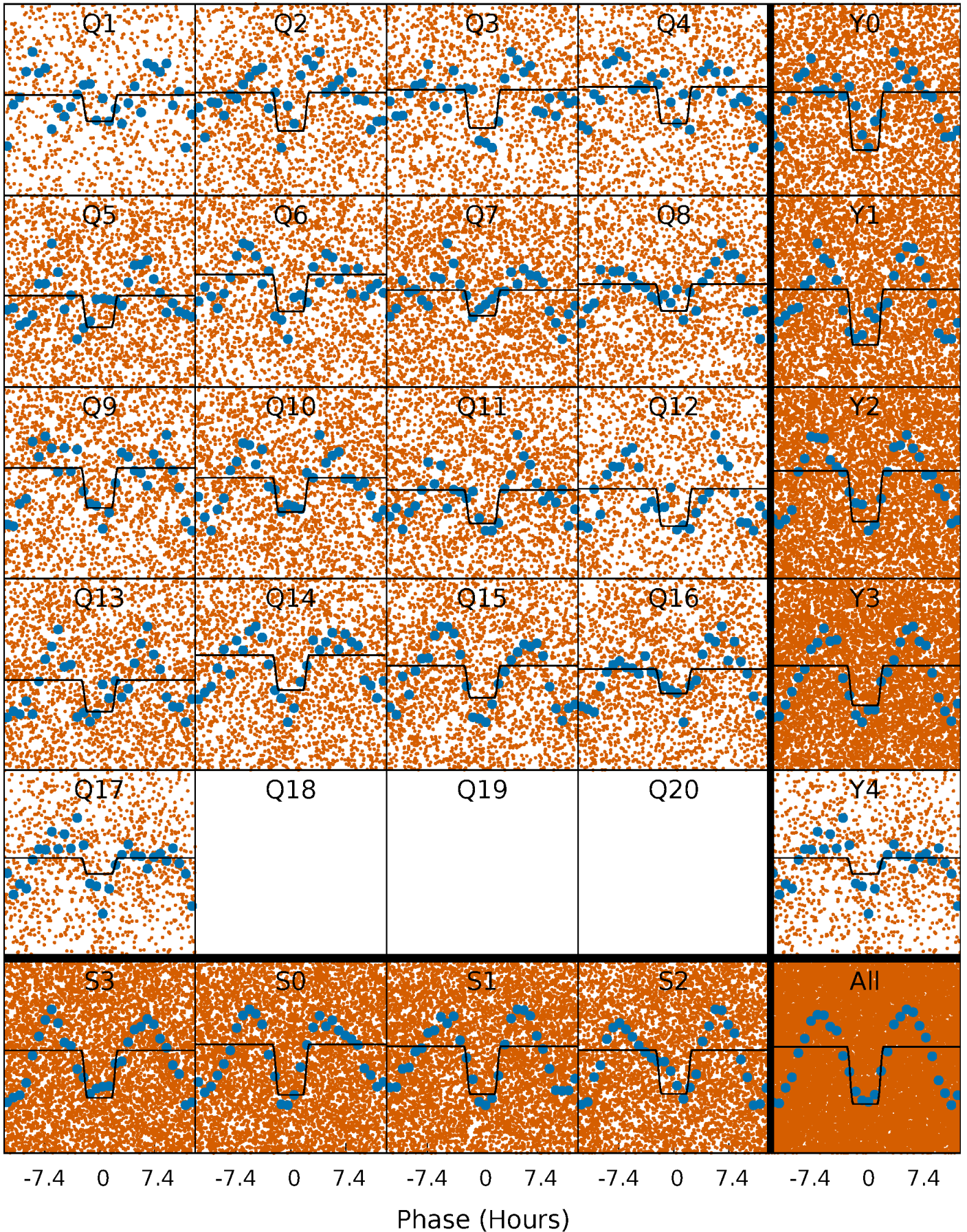
DV Quarter-Phased Transit Curves

TCE 006222529-01 P= 0.990206 Days $T_0=132.208285$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

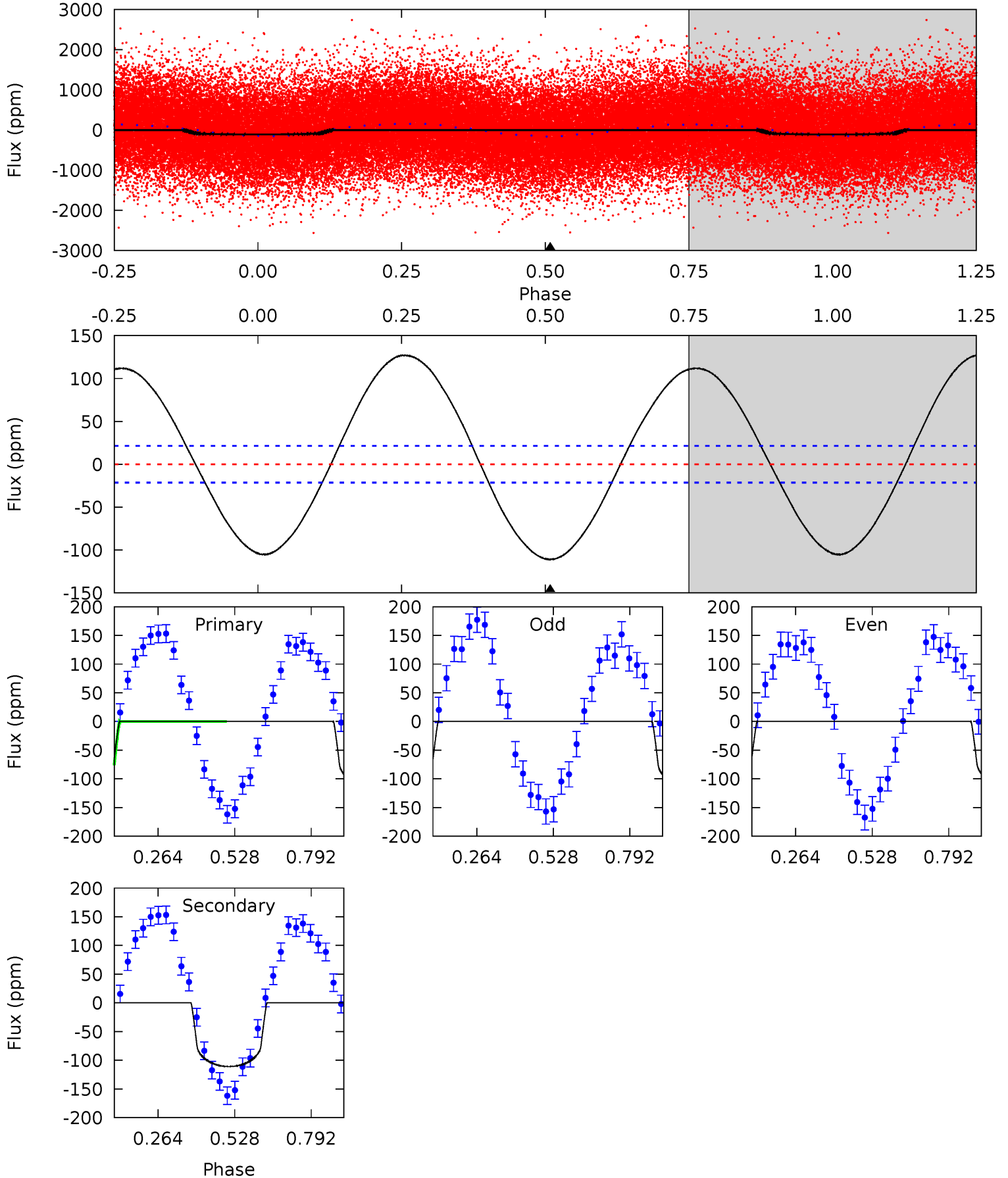
TCE 006222529-01 P= 0.990244 Days $T_0=132.188284$ (BKJD)



DV Model-Shift Uniqueness Test

006222529-01, P = 0.990206 Days, E = 131.218079 Days

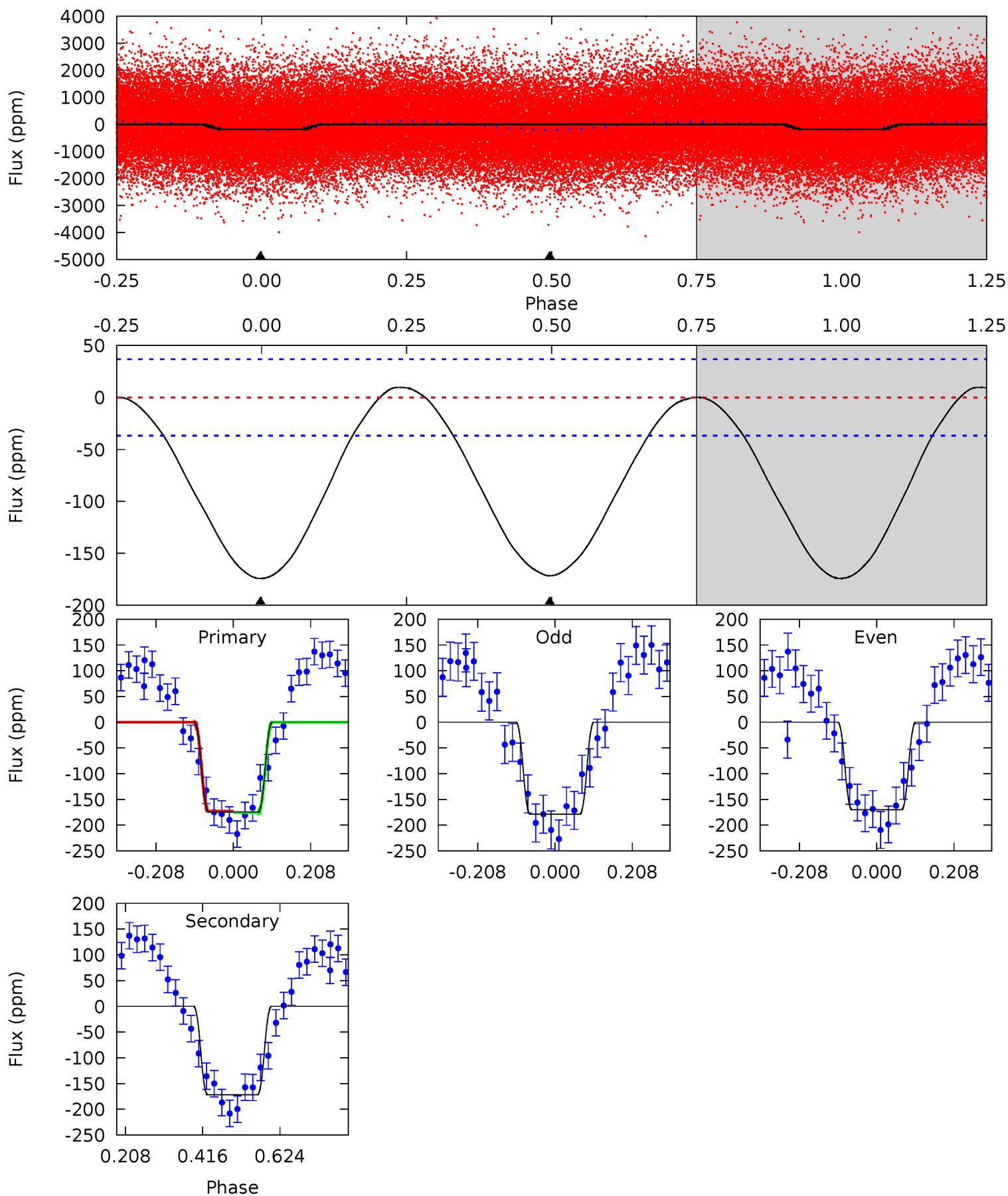
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.6	22.6	0	0	4.36	1.12	15.7	22.6	22.6	22.6	22.6	0.25	0.97	0.53	3.68



Alt Model-Shift Uniqueness Test

006222529-01, P = 0.990244 Days, E = 131.198040 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.9	20.6	0	0	4.41	1.26	0.67	20.9	20.9	20.6	20.6	0.53	0.96	0.05	0.16



Stellar Parameters For KIC 006222529

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7802^{+77}_{-85}	$4.231^{+0.045}_{-0.135}$	$-0.180^{+0.150}_{-0.150}$	$1.574^{+0.322}_{-0.129}$	$1.534^{+0.128}_{-0.096}$	$0.554^{+0.122}_{-0.205}$
	+1%/-1%	+1%/-3%	+83%/-83%	+20%/-8%	+8%/-6%	+22%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 006222529-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-111 ± 5	$1.70^{+1.06}_{-0.88}$	4061^{+198}_{-109}	8241^{+5994}_{-2084}	11^{+33}_{-7}
Alt.	-172 ± 8	$2.55^{+1.09}_{-1.00}$	4067^{+181}_{-112}	7208^{+3099}_{-1223}	$7.256^{+12.291}_{-3.651}$

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

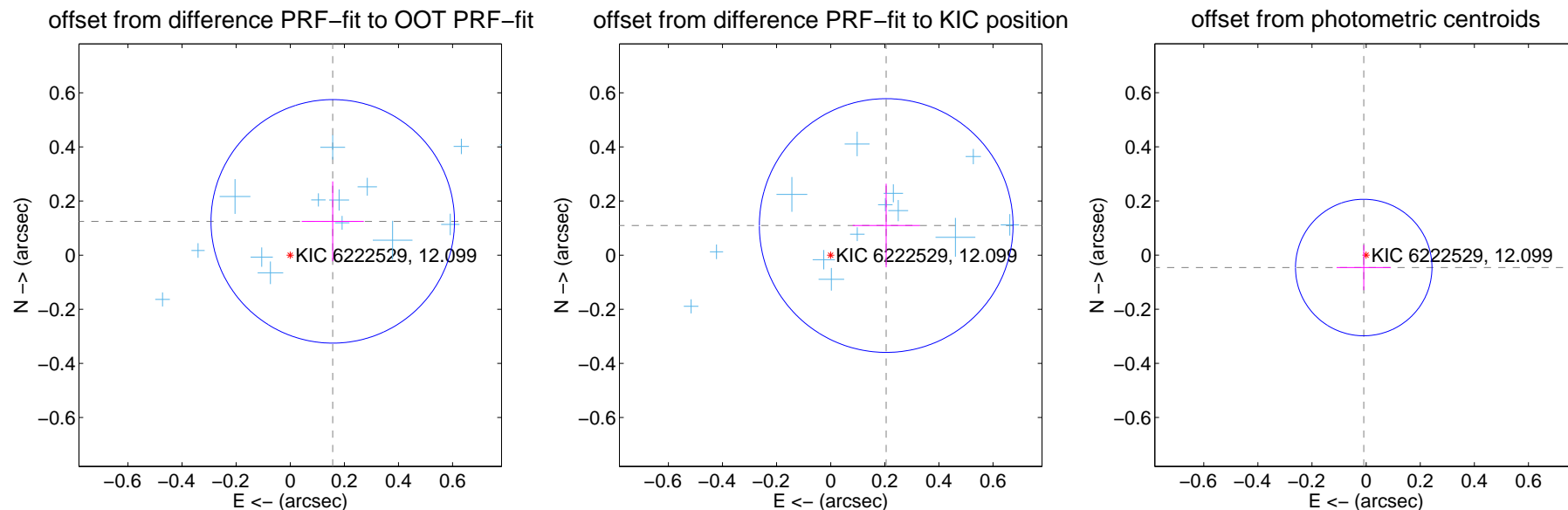
DV Centroid Data

Supplemental centroid analysis for 006222529-01. Kepler magnitude: 12.10. Transit SNR 11.17

There are 17 quarters with good PRF difference image offsets

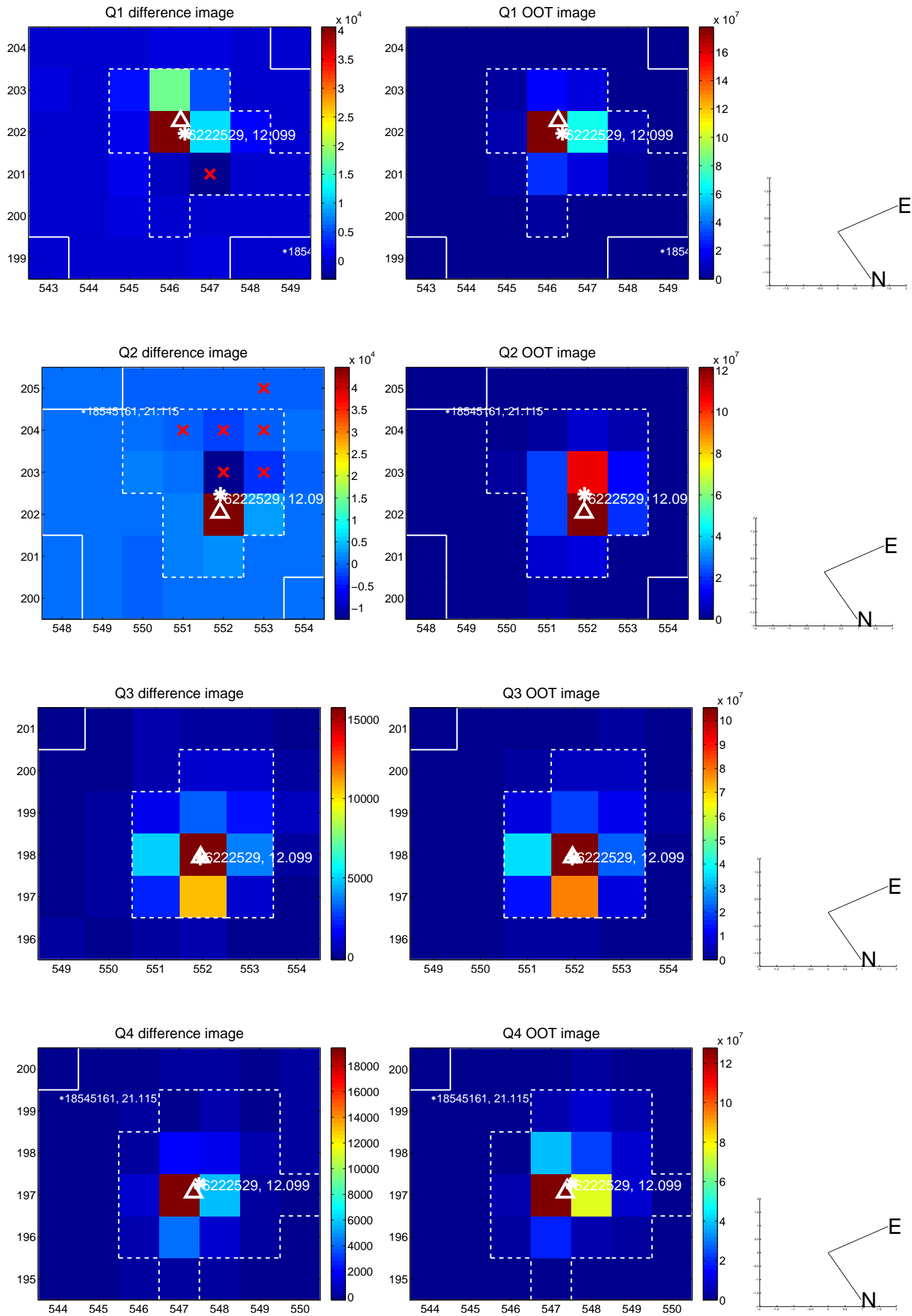
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.201 ± 0.150	1.34	-0.157 ± 0.115	0.125 ± 0.148
PRF-fit source offset from KIC position	0.233 ± 0.156	1.49	-0.205 ± 0.124	0.109 ± 0.154
photometric centroid source offset	0.05 ± 0.08	0.56	0.01 ± 0.10	-0.05 ± 0.08

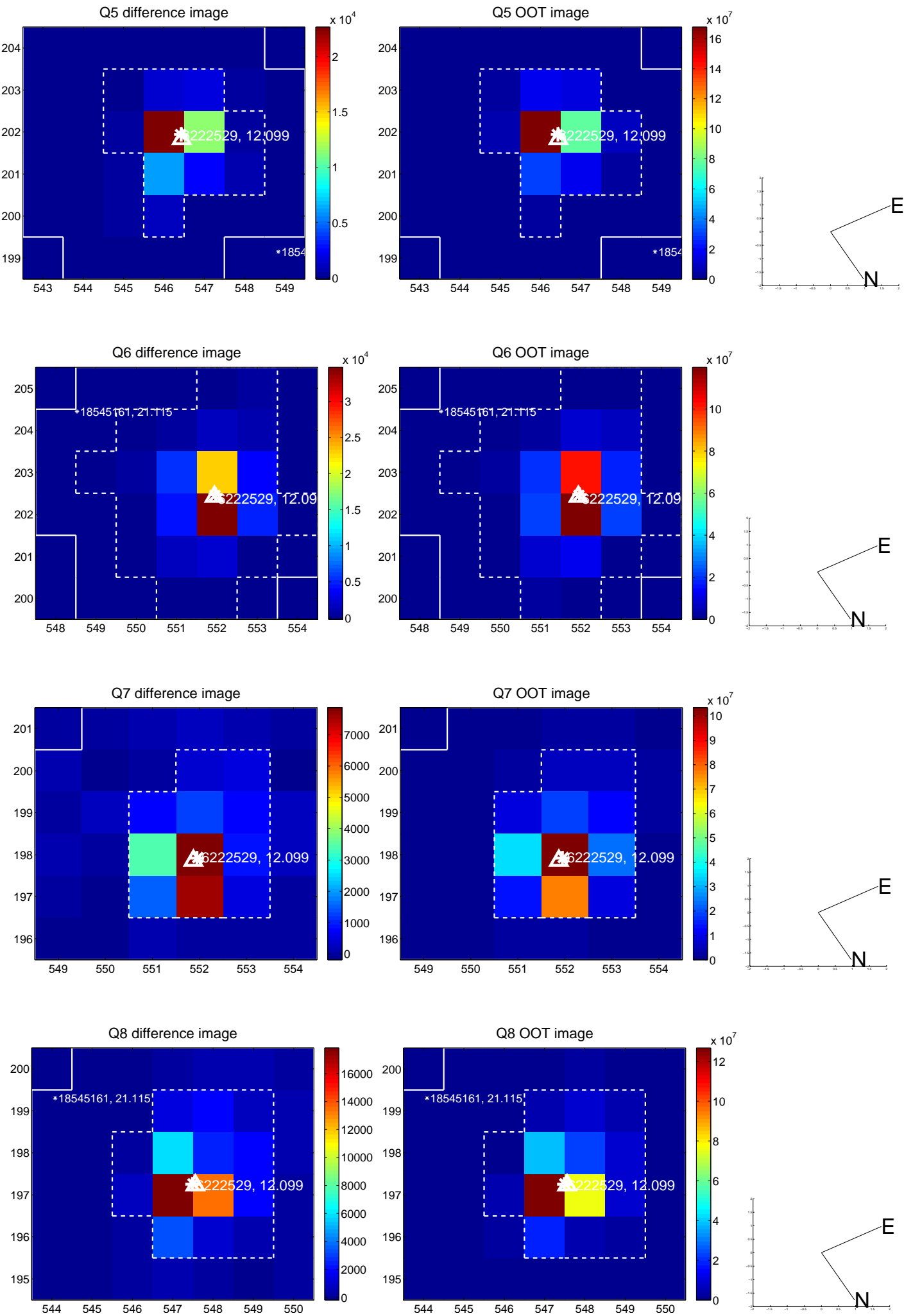


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

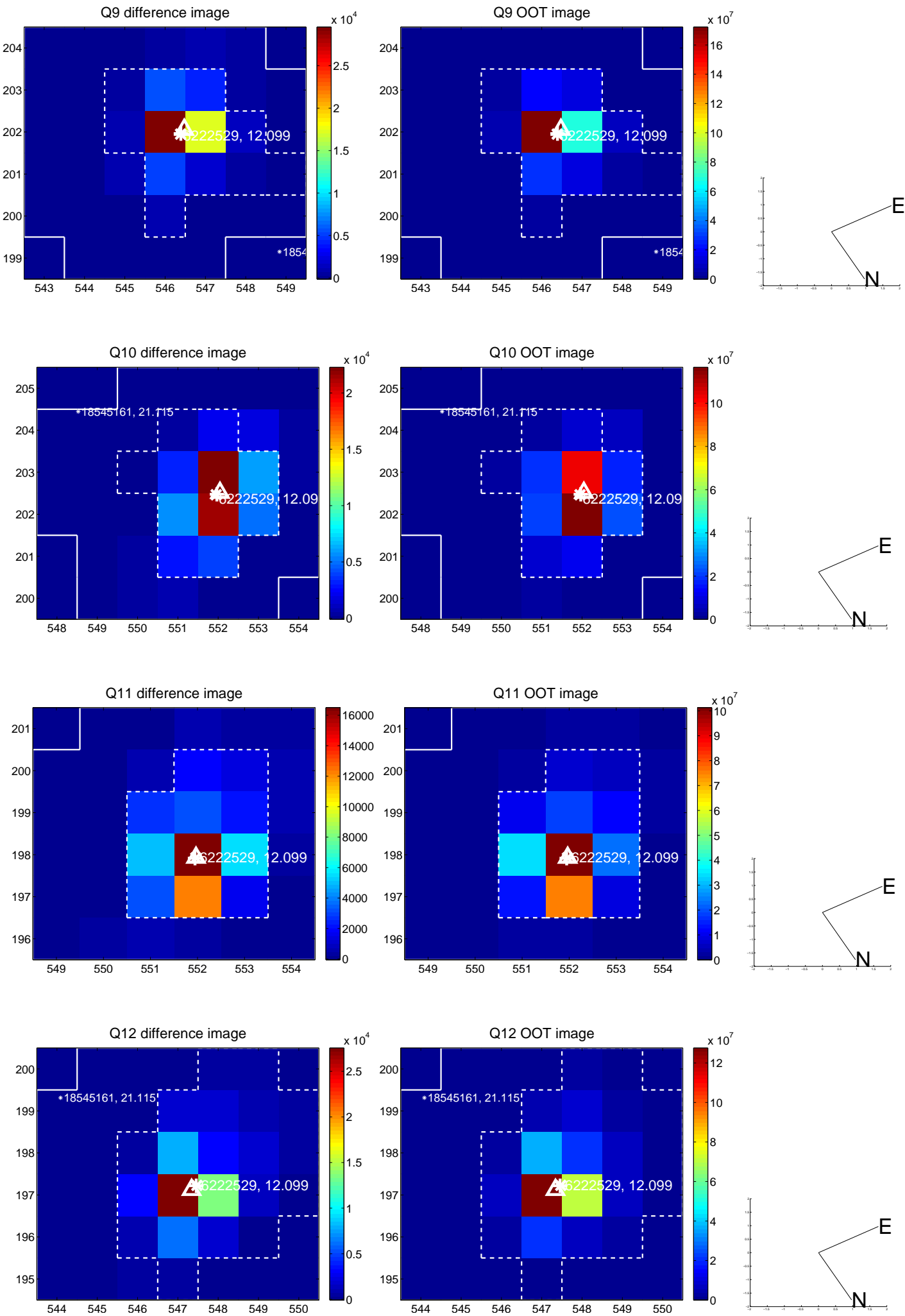
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



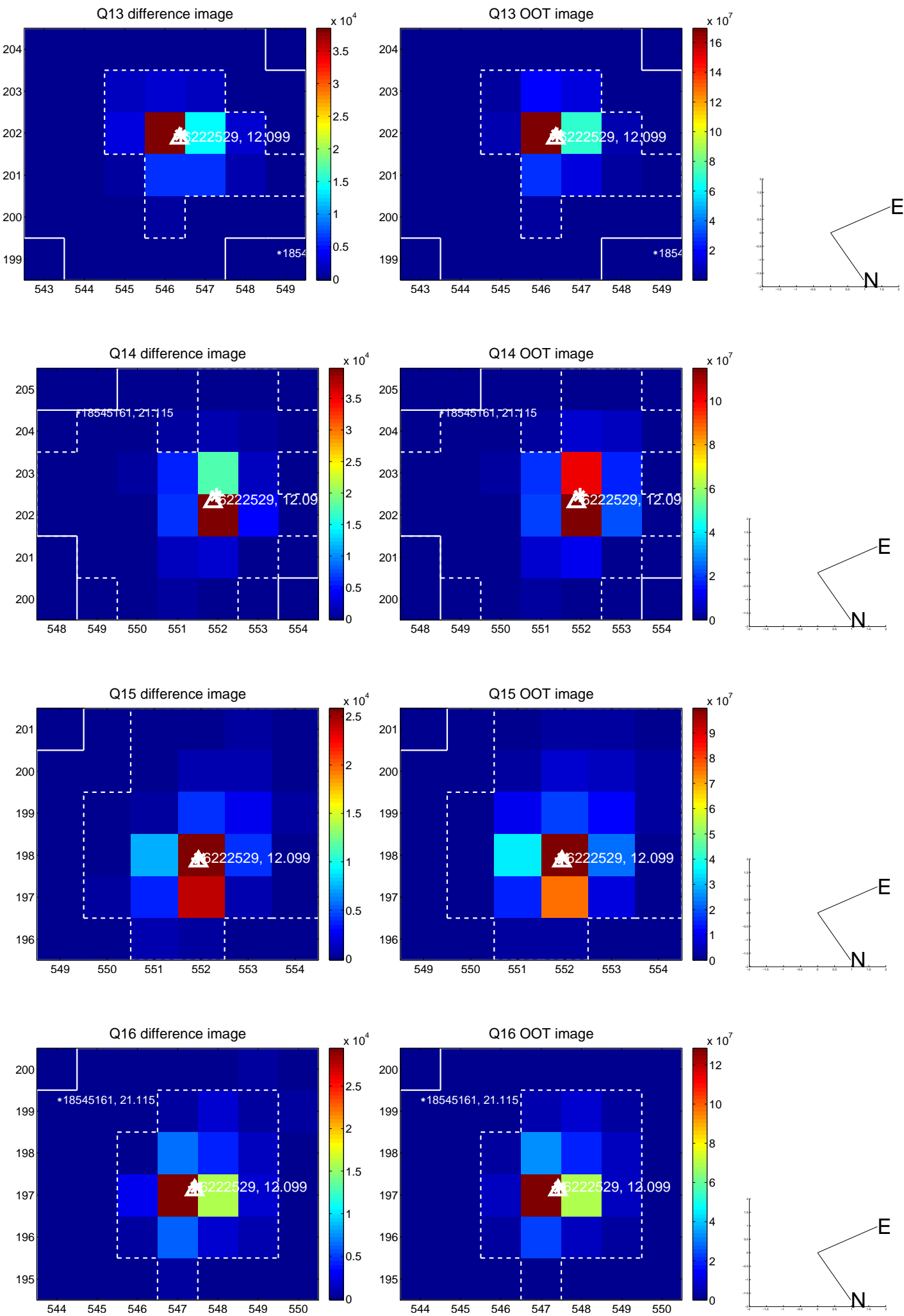
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



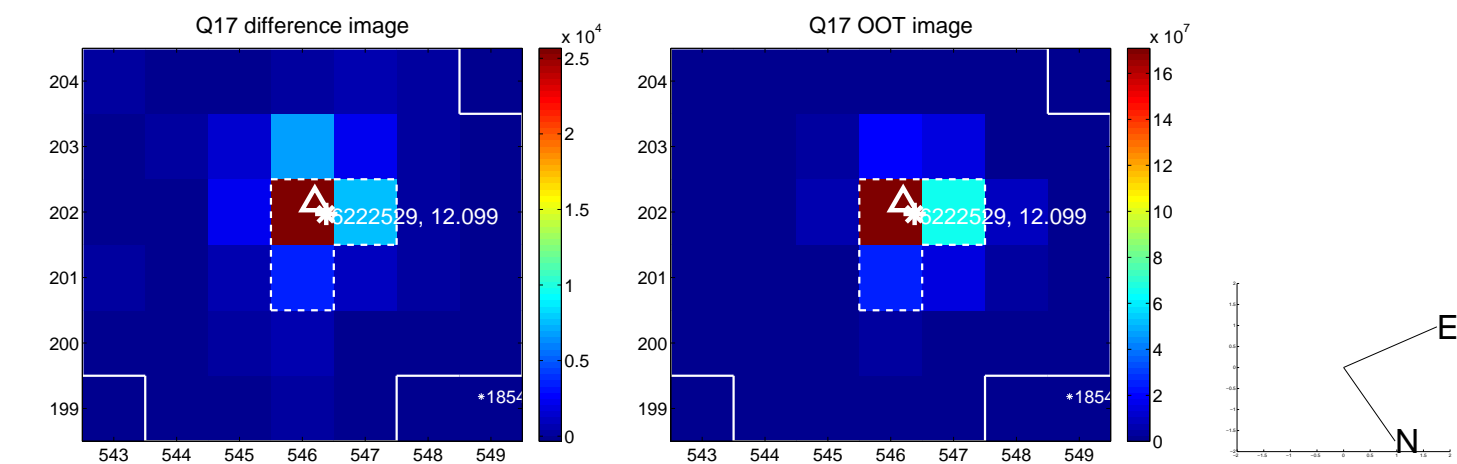
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



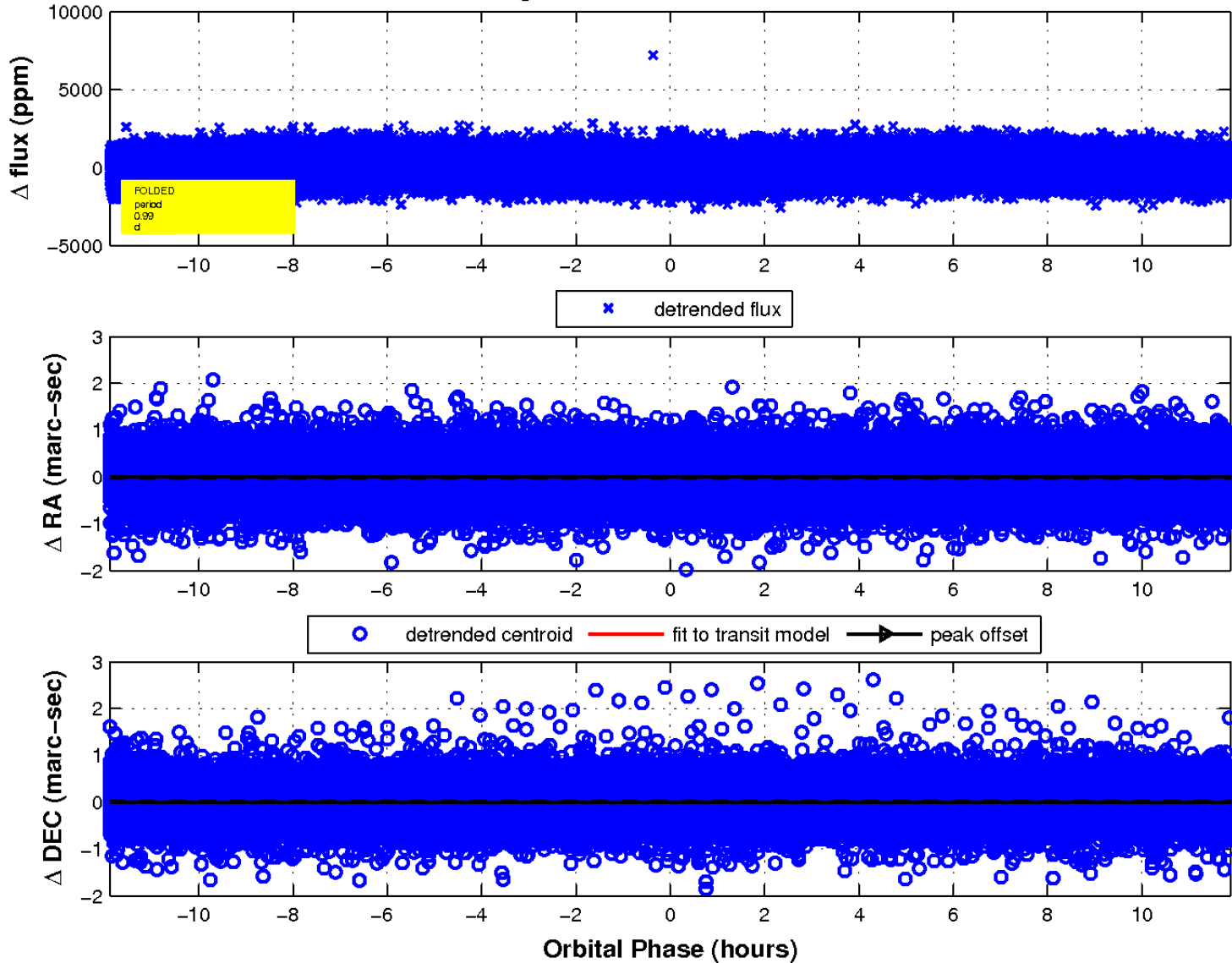
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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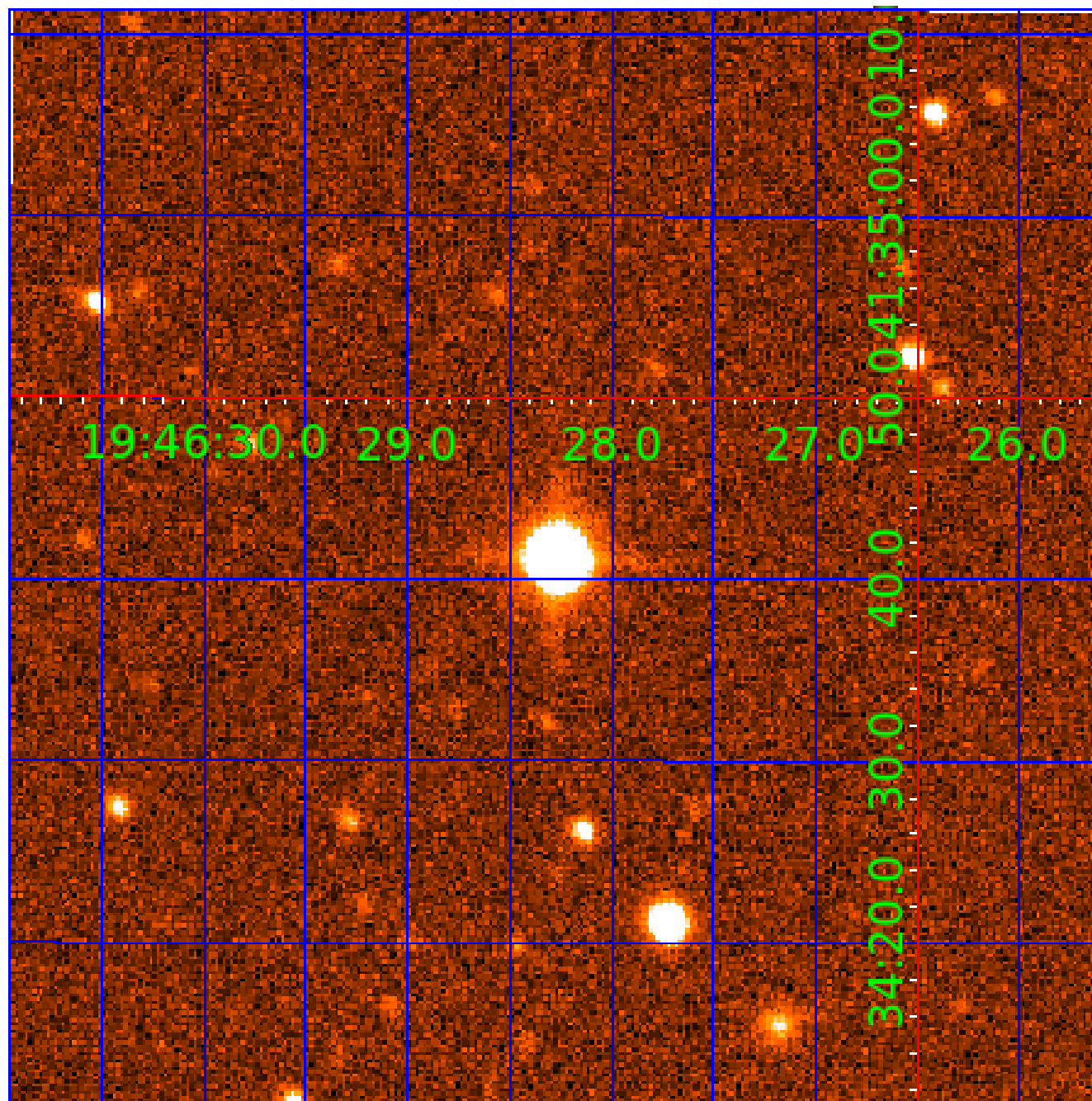


fluxWeightedCentroids, Planet 1 of 6



UKIRT Image

Declination



KIC 006222529

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})
006222529-01	OBS	No	0.990206	132.208285	94.3	5.813	11.7	11.2	1.57	7802	1.62	16321.27
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006222529-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
006222529-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006222529-03	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
006222529-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006222529-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006222529-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

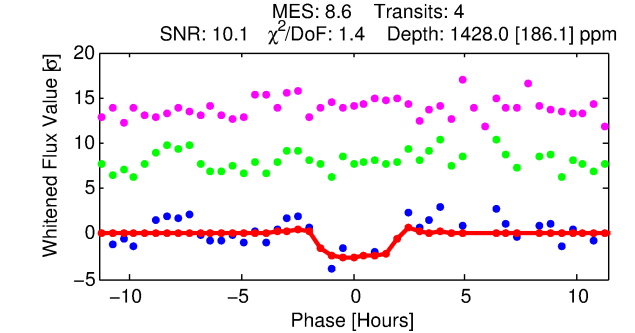
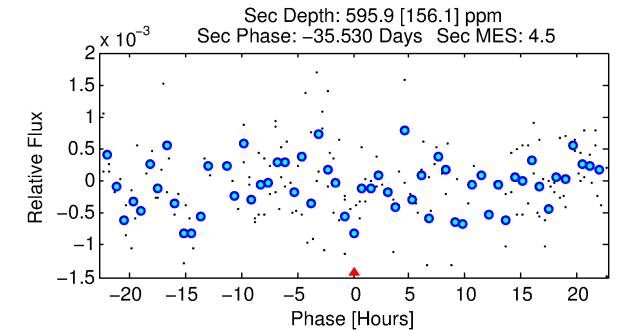
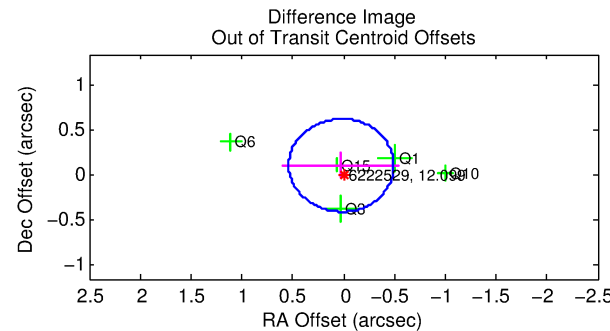
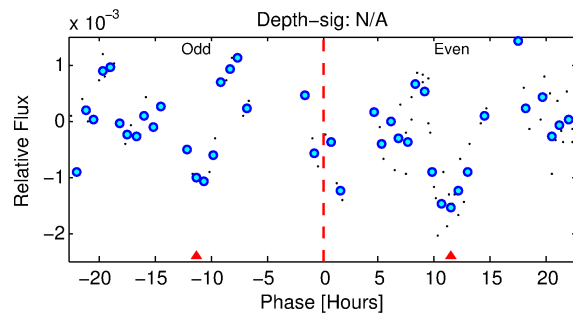
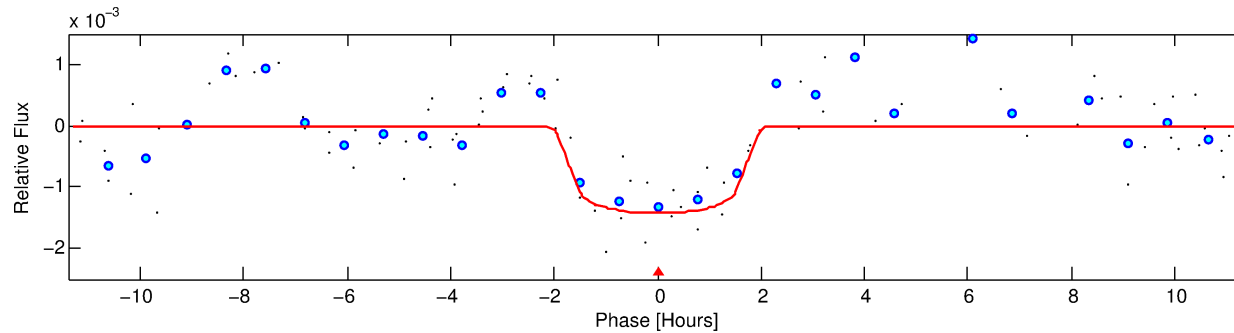
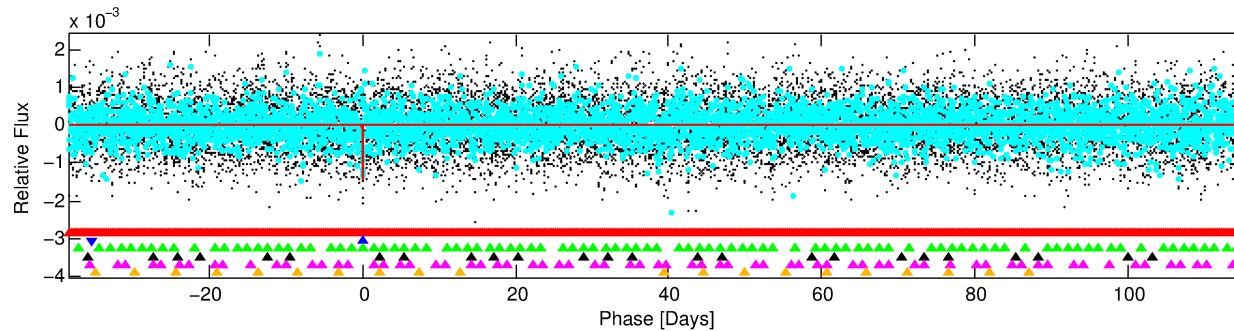
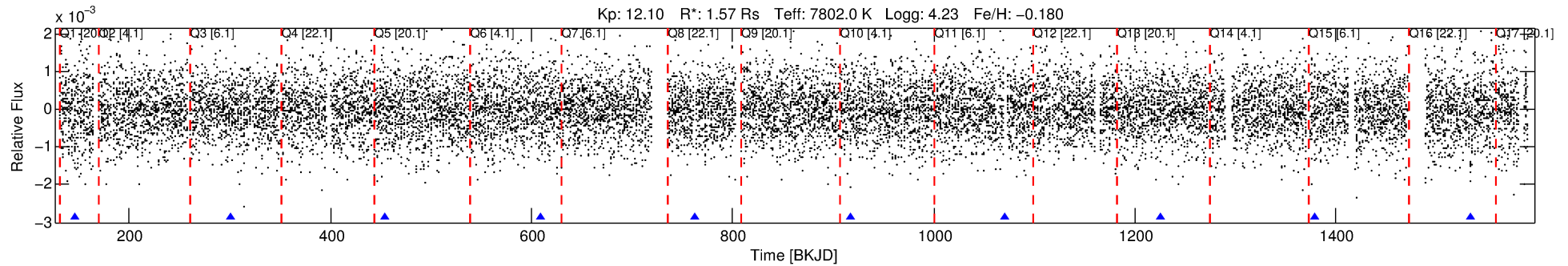
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006222529-02

No Significant Match Found

DV One-Page Summary

KIC: 6222529 Candidate: 2 of 6 Period: 154.198 d



DV Fit Results:

Period = 154.19785 [0.00157] d
Epoch = 146.0342 [0.0099] BKJD
Rp/R* = 0.0373 [0.0207]
a/R* = 230.79 [713.05]
b = 0.72 [2.07]
Seff = 19.48 [4.91]
Teq = 536 [34] K
Rp = 6.41 [3.78] Re
a = 0.6498 [0.1113] AU
Ag = 3370.22 [3926.85] [0.86σ]
Teffp = 6311 [1797] K [3.21σ]

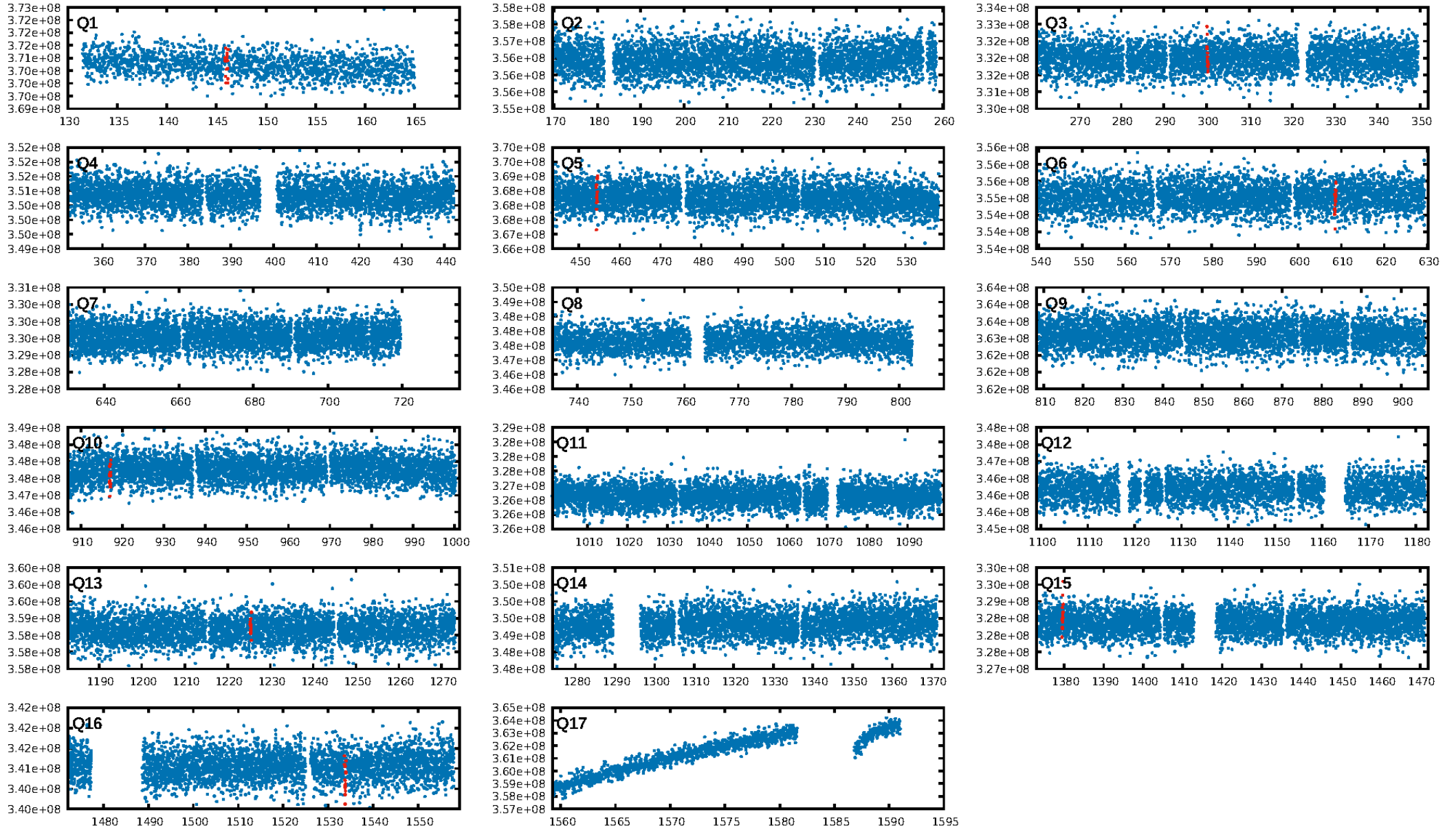
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [235.07σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 7.8%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: 9.54e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -4.801
Centroid-sig: 67.0%
Centroid-so: 0.013 arcsec [0.12σ]
OotOffset-rm: 0.116 arcsec [0.67σ]
KicOffset-rm: 0.170 arcsec [0.57σ]
OotOffset-st: 2/2/0/1 [5]
KicOffset-st: 2/2/0/1 [5]
DiffImageQuality-fgm: 0.60 [3/5]
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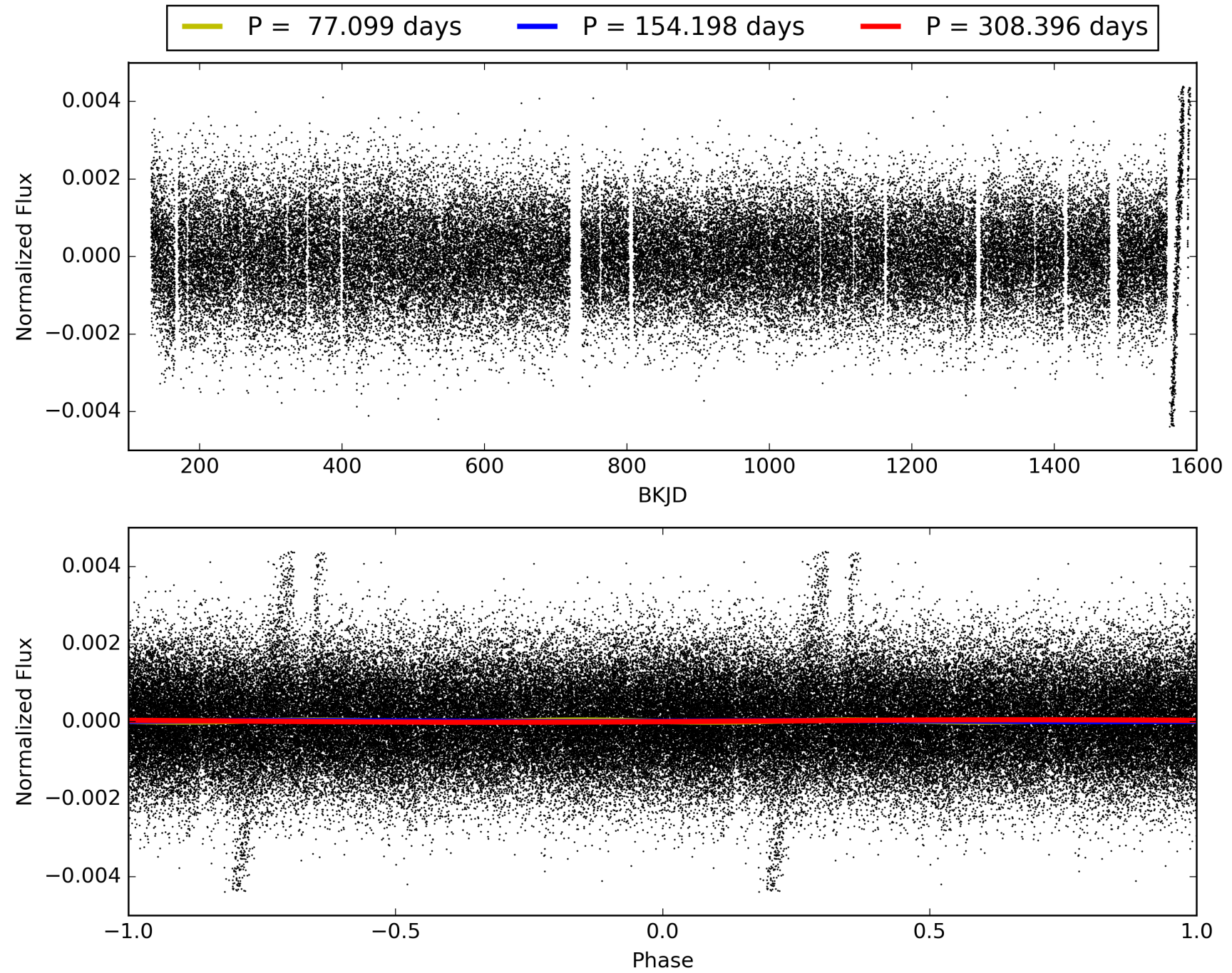
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 006222529-02, PDC Light Curves

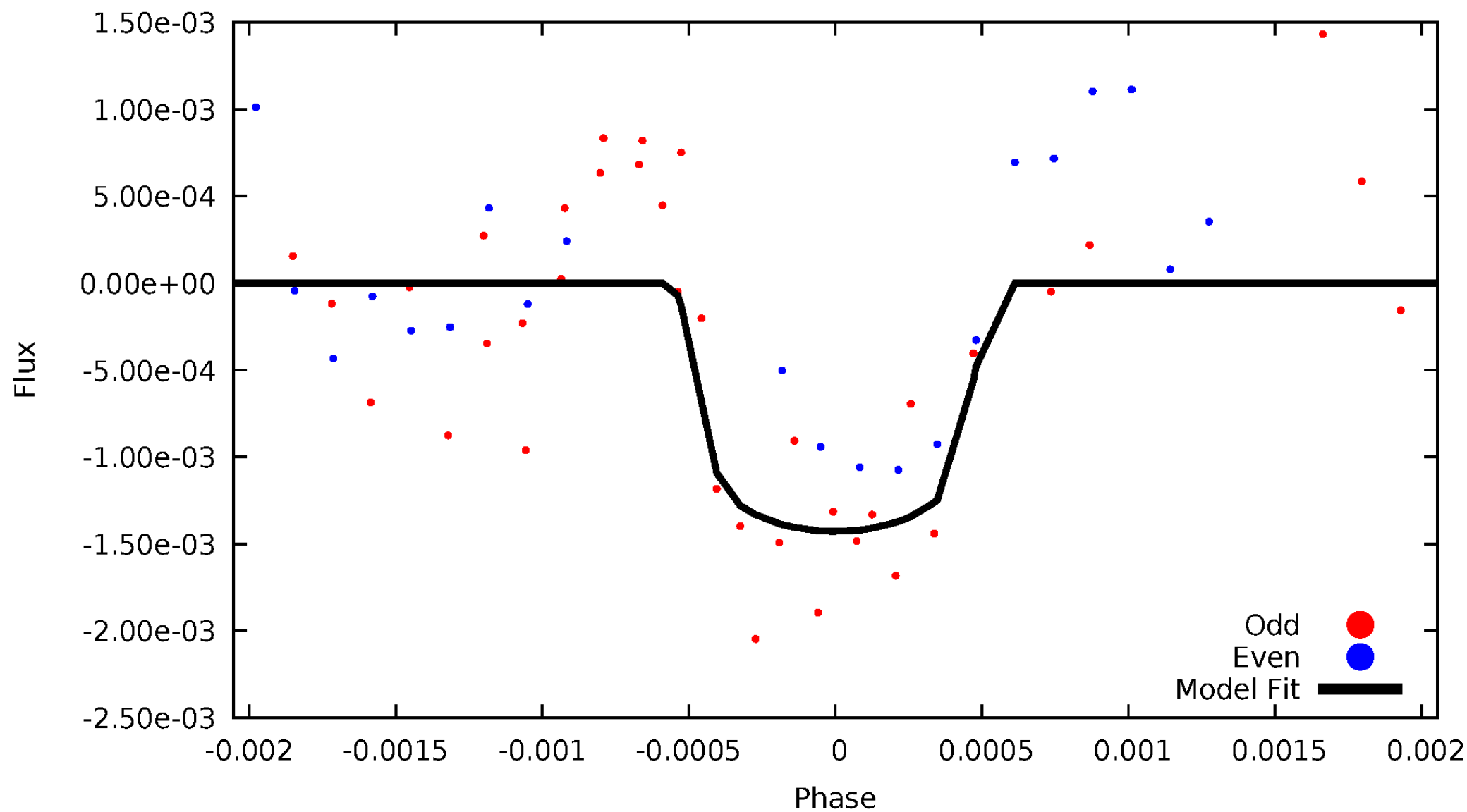


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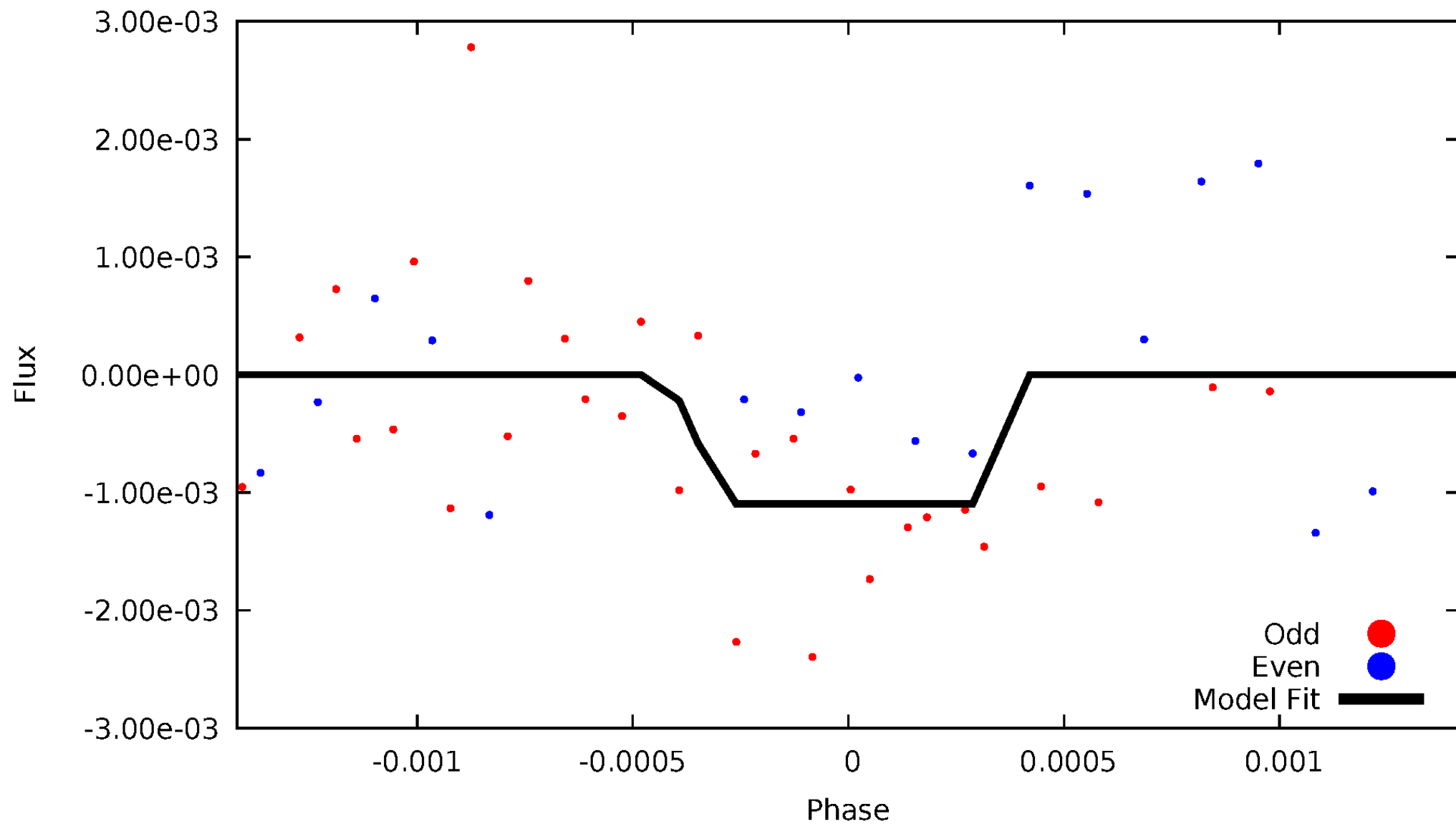
DV Odd/Even

TCE 006222529-02



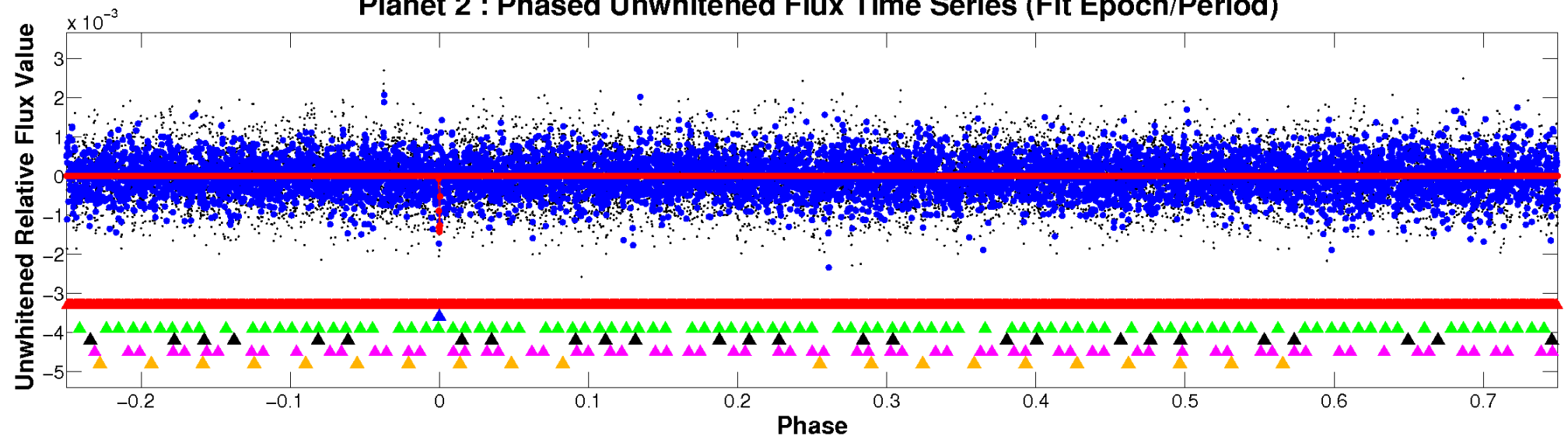
ALT Odd/Even

TCE 006222529-02

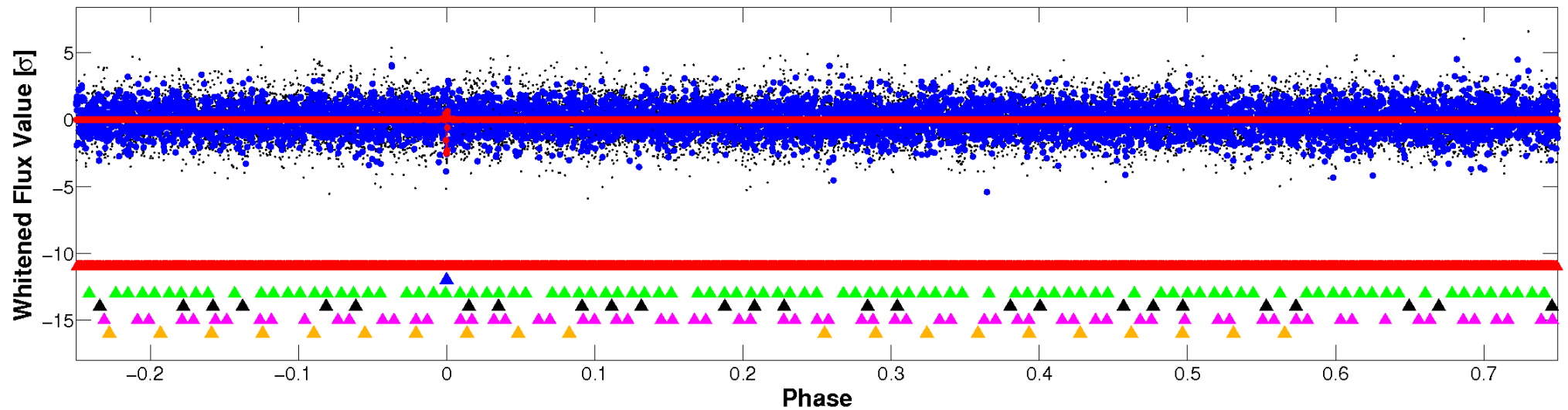


Non-Whitened Vs. Whitened Light Curve

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

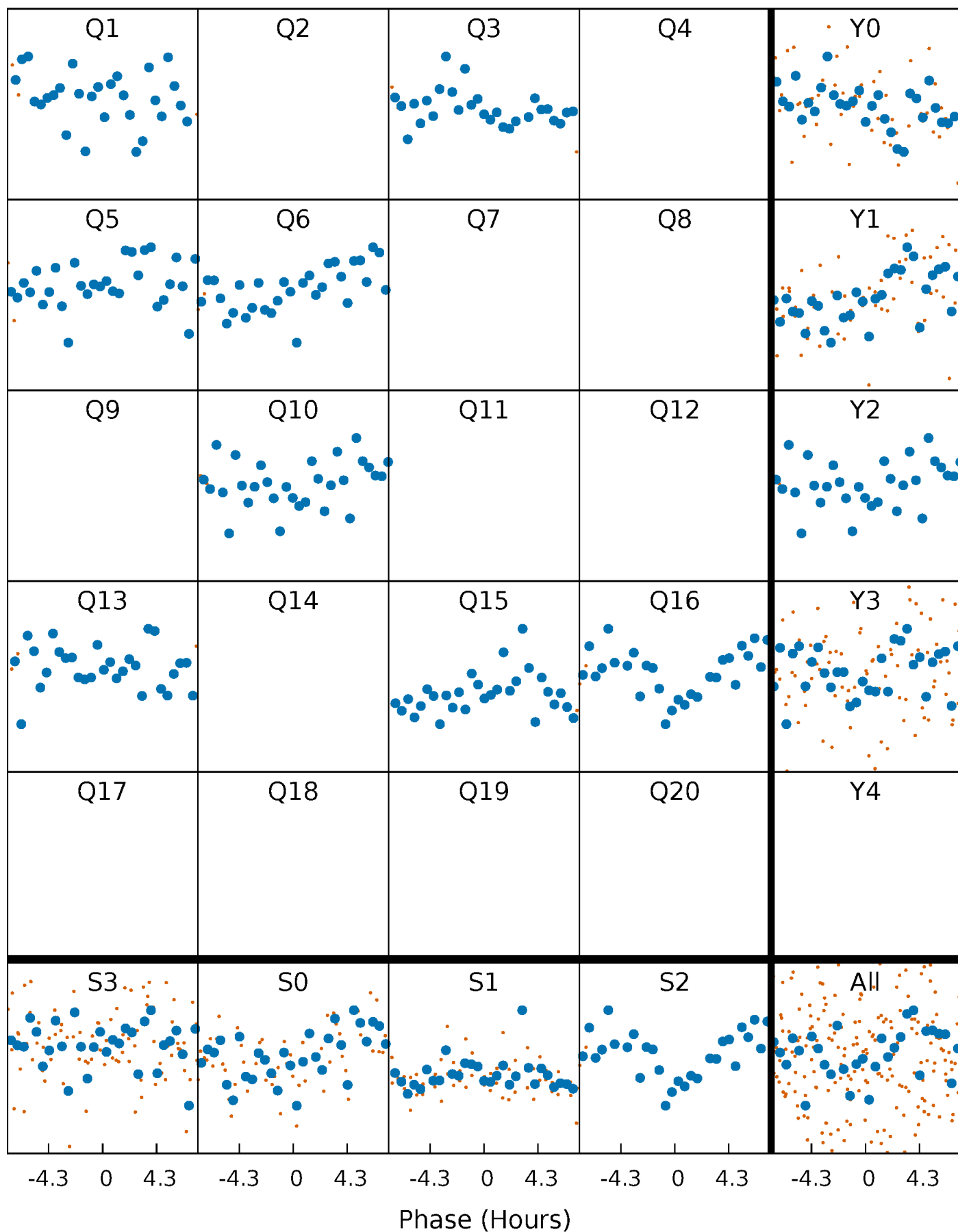


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



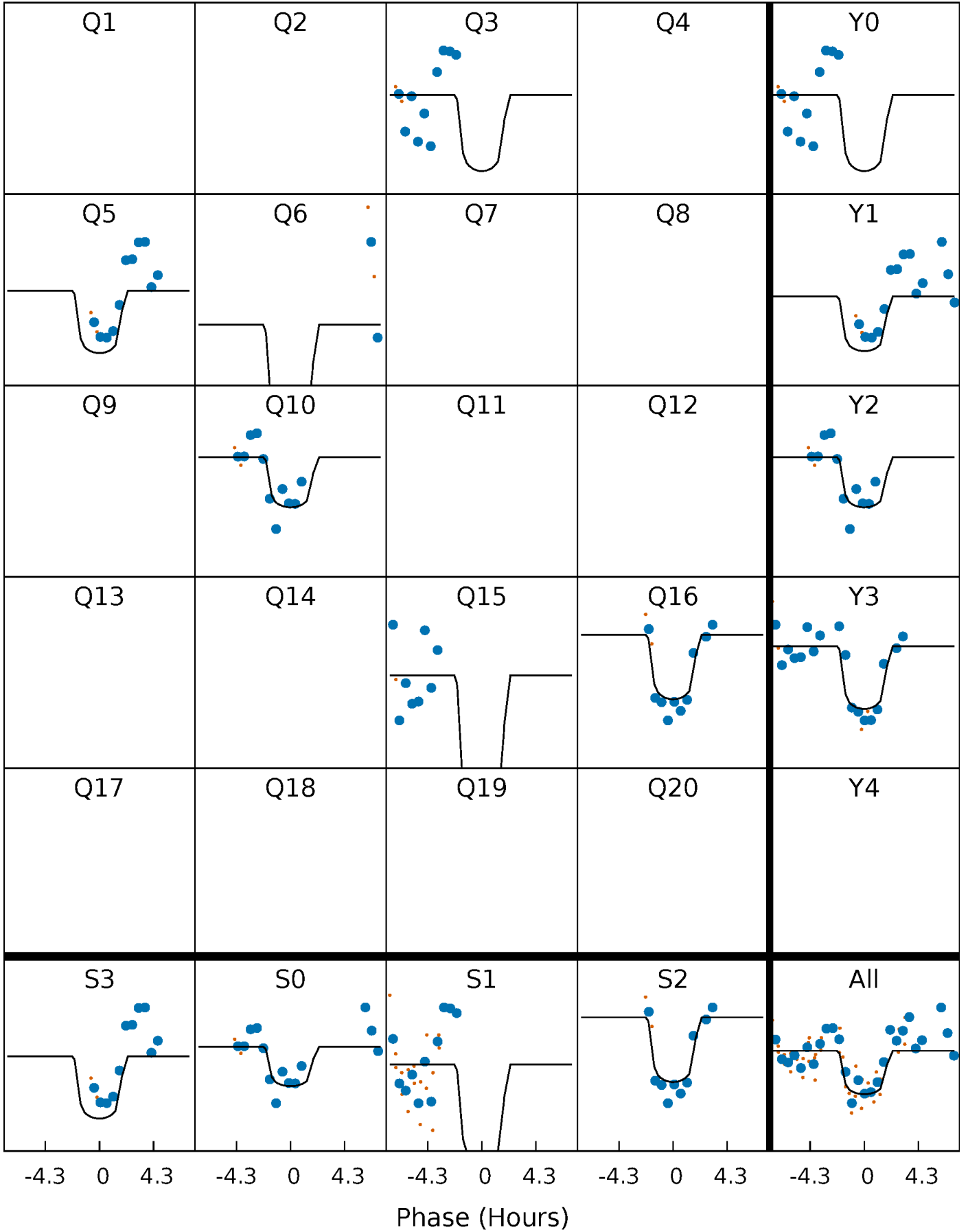
PDC Quarter-Phased Transit Curves

TCE 006222529-02 P=154.197849 Days $T_0=146.034161$ (BKJD)



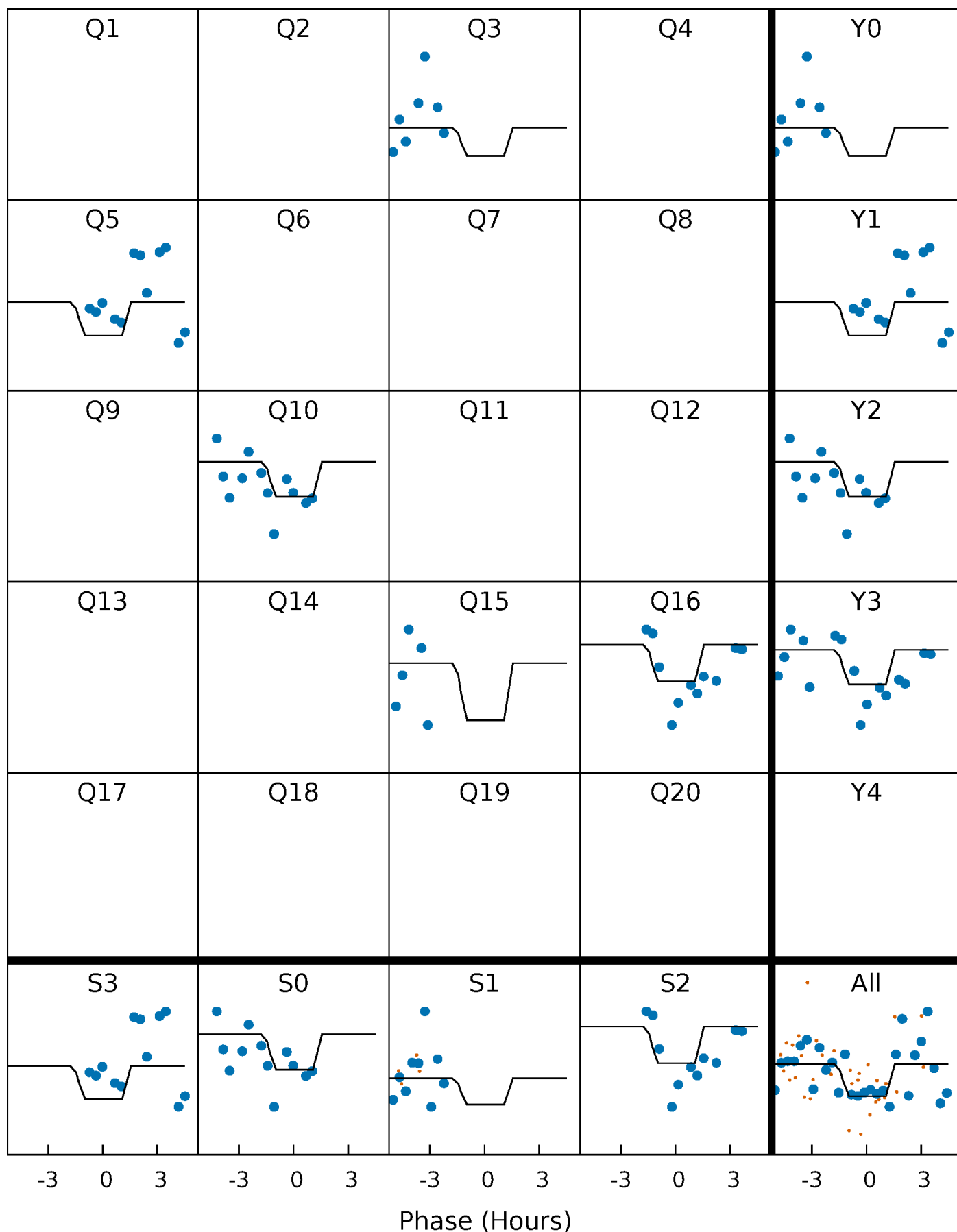
DV Quarter-Phased Transit Curves

TCE 006222529-02 P=154.197849 Days $T_0=146.034161$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

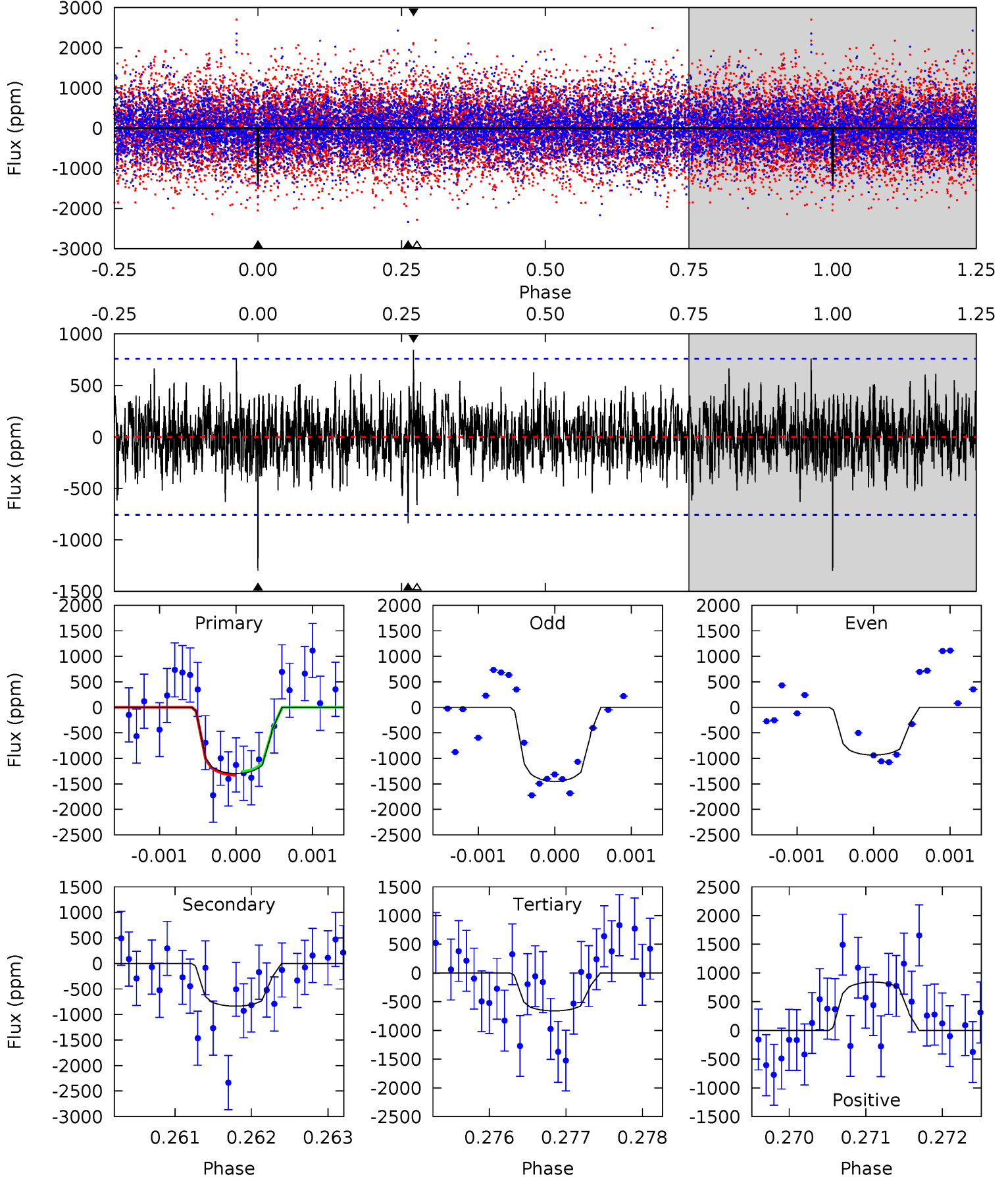
TCE 006222529-02 P=154.194134 Days $T_0=146.050744$ (BKJD)



DV Model-Shift Uniqueness Test

006222529-02, P = 154.197849 Days, E = 146.034161 Days

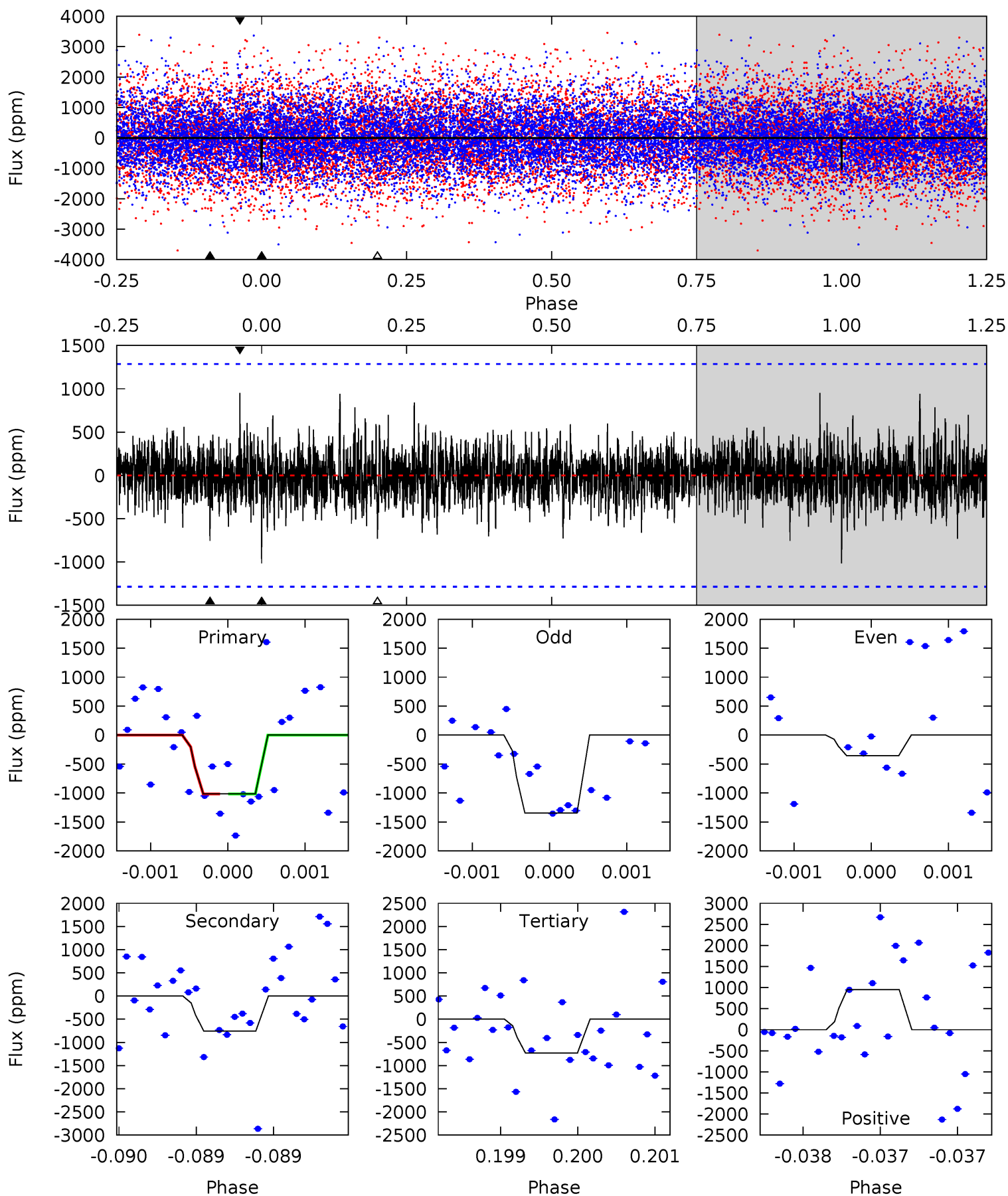
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.33	6.02	4.74	6.06	5.45	3.29	1.42	4.59	3.27	1.28	-0.04	1.71	0.97	0.39	0.24



Alt Model-Shift Uniqueness Test

006222529-02, P = 154.194134 Days, E = 146.050744 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.34	3.22	3.11	4.06	5.49	3.35	0.89	1.23	0.28	0.11	-0.84	1.96	0.80	0.48	0.00



Stellar Parameters For KIC 006222529

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7802^{+77}_{-85}	$4.231^{+0.045}_{-0.135}$	$-0.180^{+0.150}_{-0.150}$	$1.574^{+0.322}_{-0.129}$	$1.534^{+0.128}_{-0.096}$	$0.554^{+0.122}_{-0.205}$
	+1%/-1%	+1%/-3%	+83%/-83%	+20%/-8%	+8%/-6%	+22%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 006222529-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-838 ± 139	$6.47^{+3.95}_{-3.09}$	755^{+34}_{-19}	6778^{+3436}_{-1409}	4562^{+12041}_{-2785}
Alt.	-756 ± 234	$6.17^{+3.64}_{-3.39}$	756^{+36}_{-21}	6841^{+4478}_{-1526}	4687^{+16392}_{-3016}

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 $A_{obs} \gg 1.0$

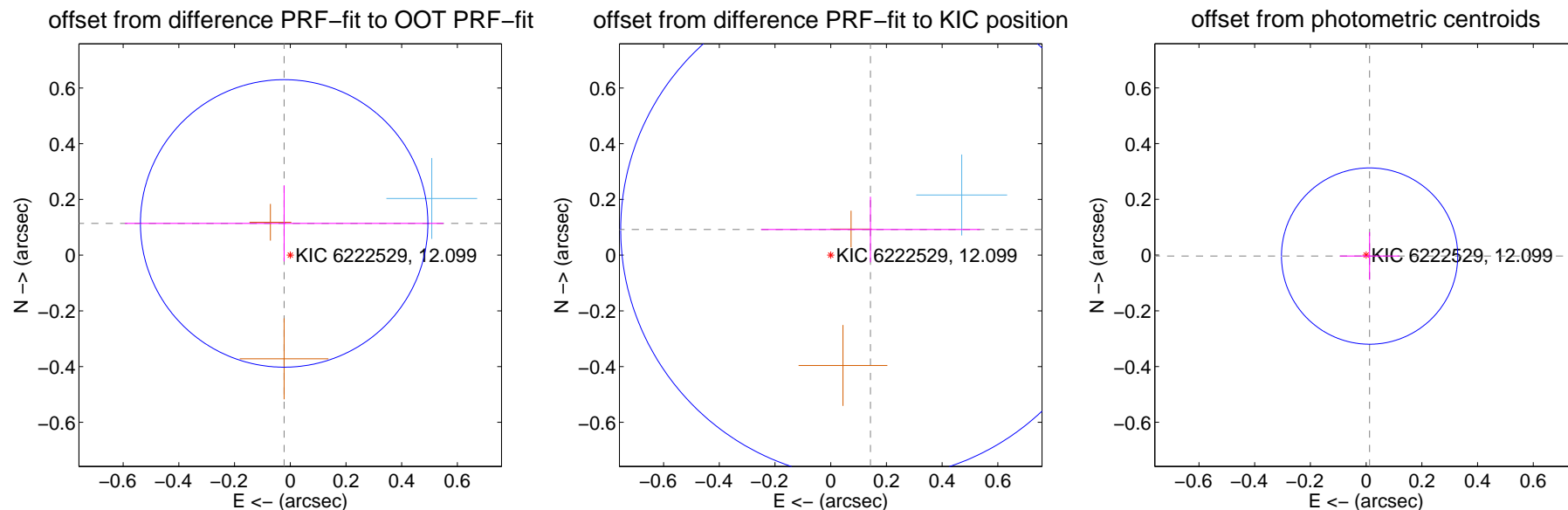
DV Centroid Data

Supplemental centroid analysis for 006222529-02. Kepler magnitude: 12.10. Transit SNR 10.07

There are 3 quarters with good PRF difference image offsets

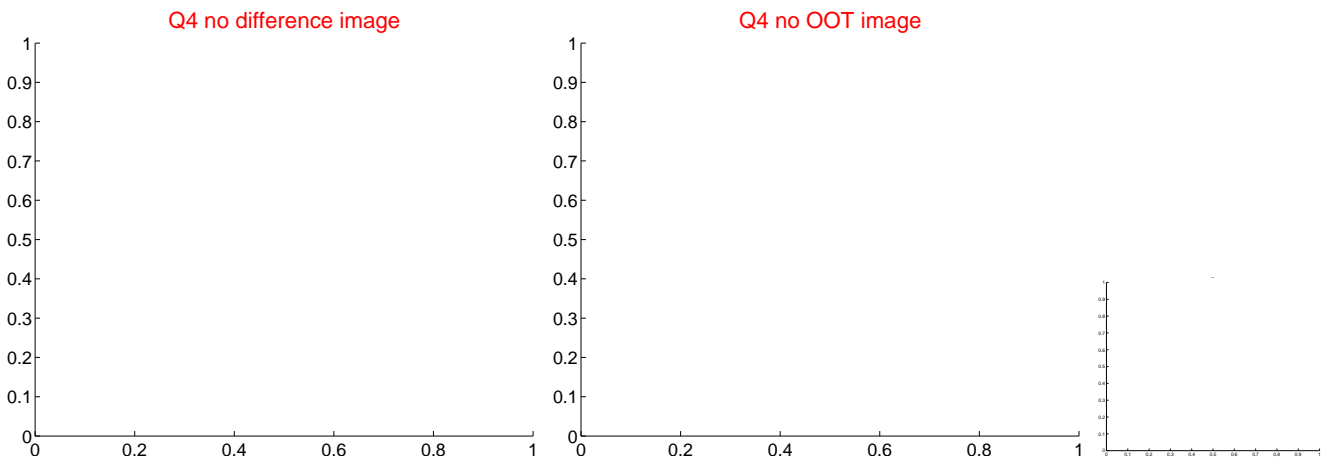
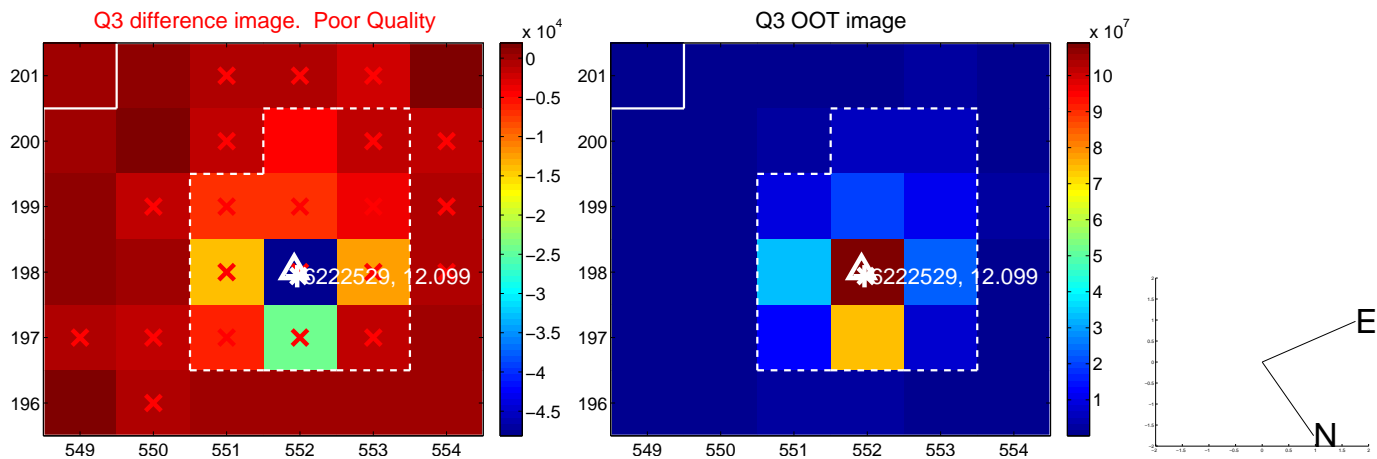
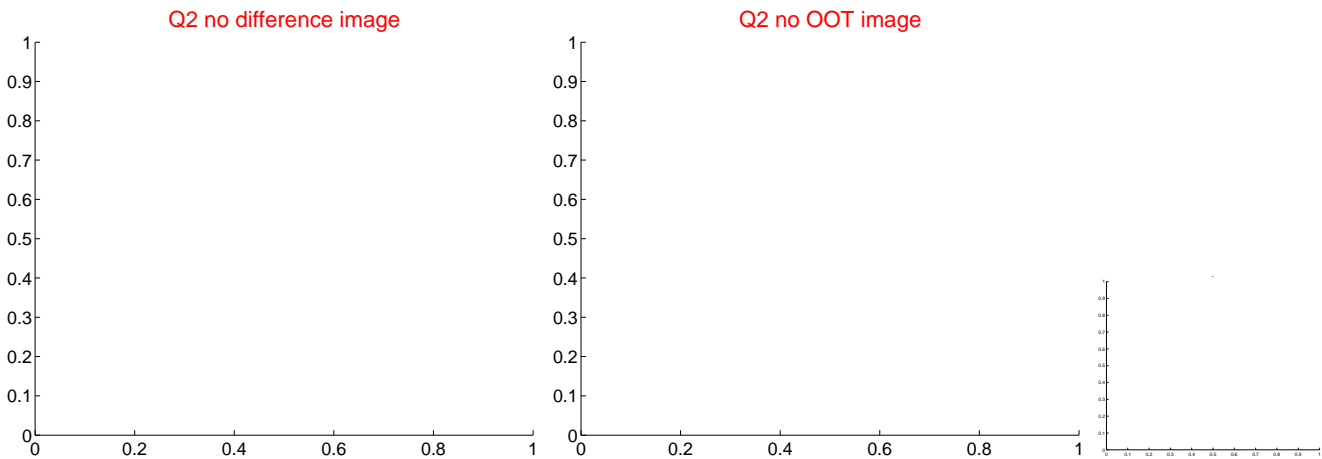
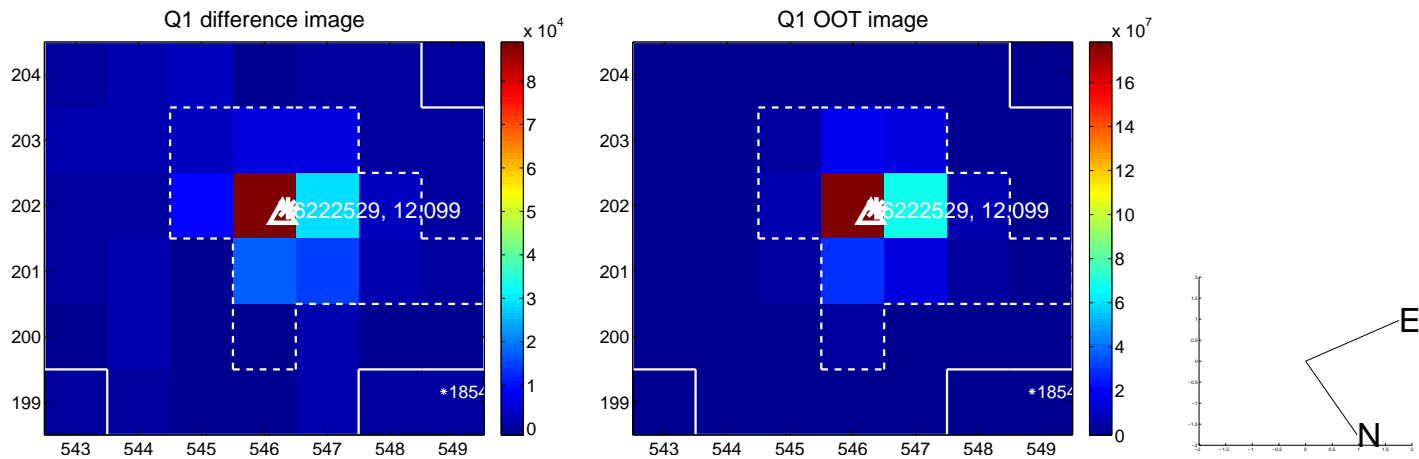
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.116 ± 0.172	0.67	0.022 ± 0.572	0.114 ± 0.136
PRF-fit source offset from KIC position	0.170 ± 0.299	0.57	-0.143 ± 0.393	0.092 ± 0.118
photometric centroid source offset	0.01 ± 0.11	0.12	-0.01 ± 0.11	-0.00 ± 0.09

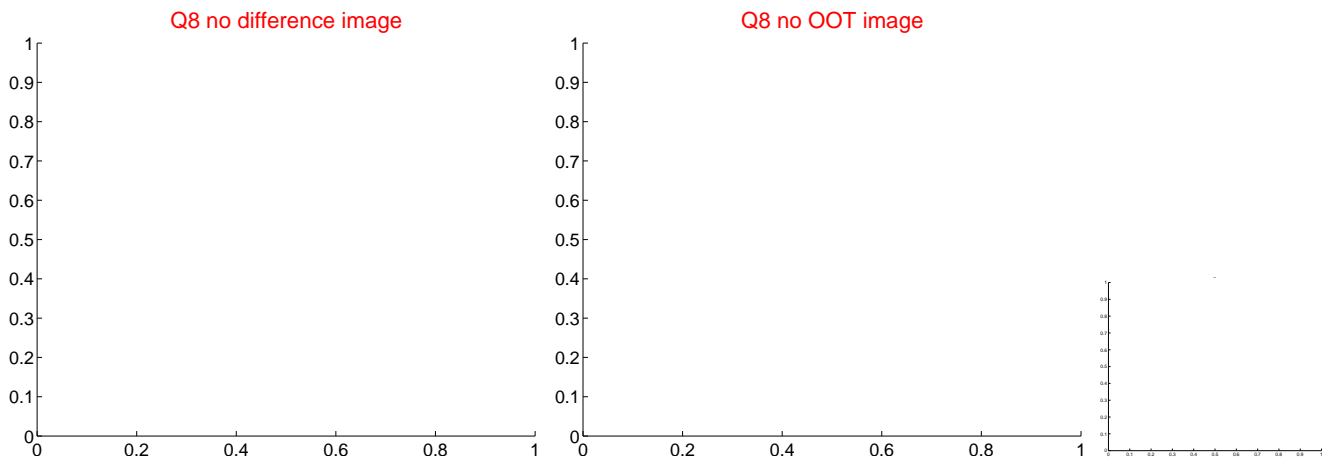
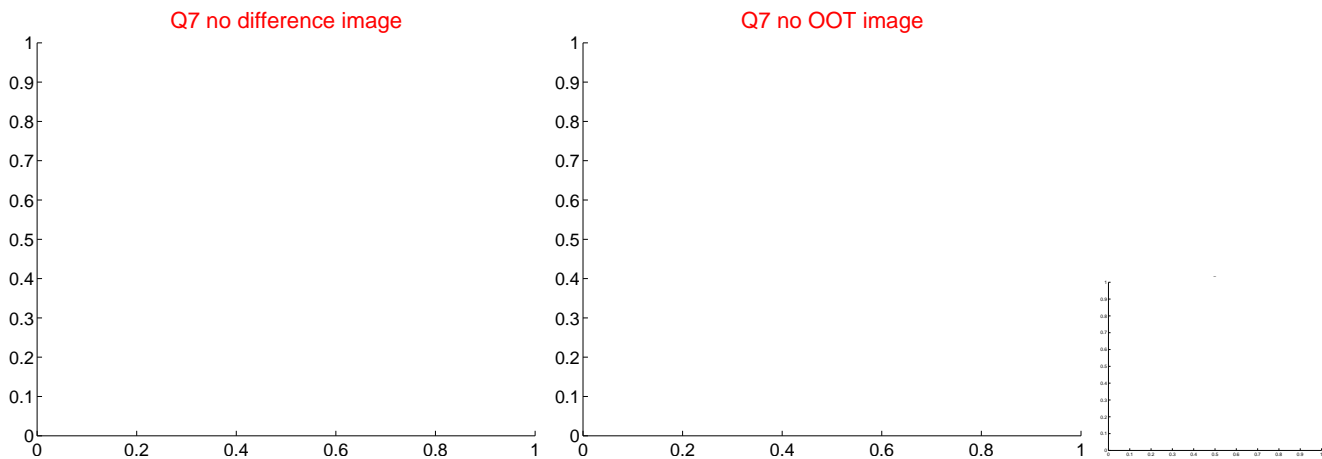
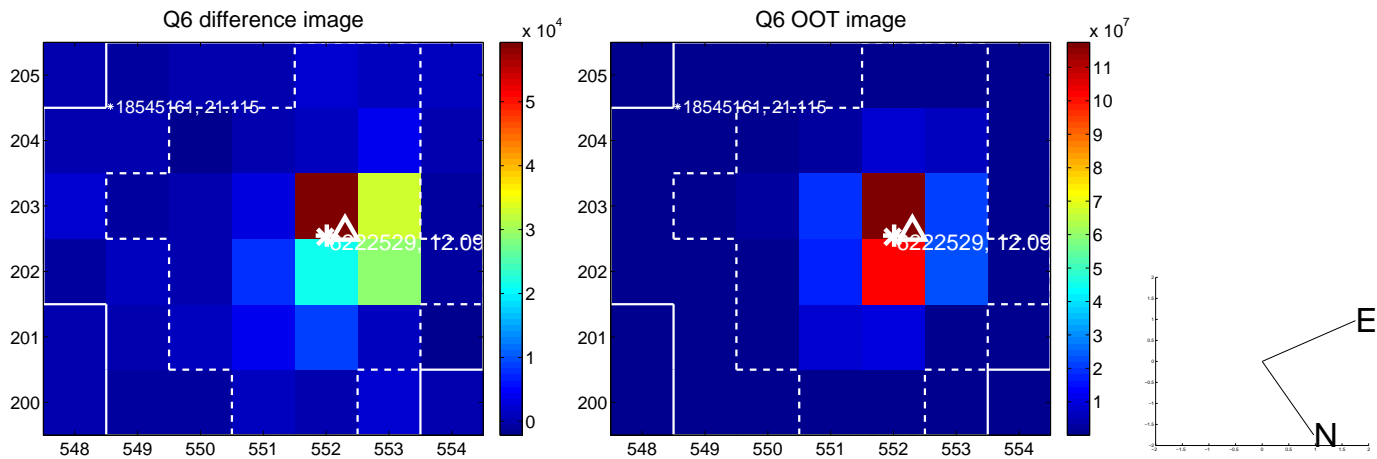
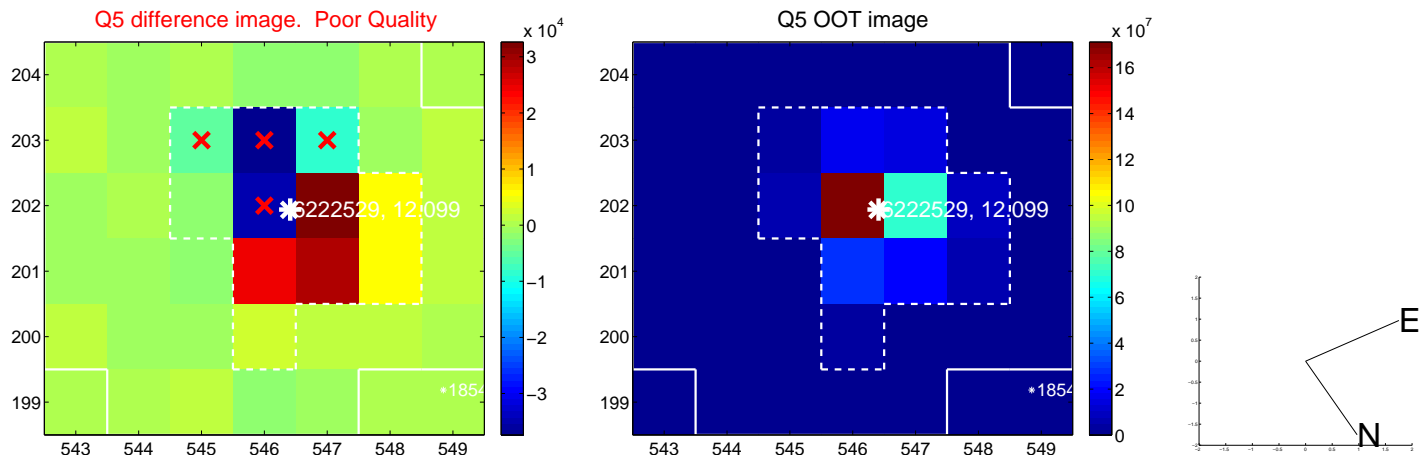


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

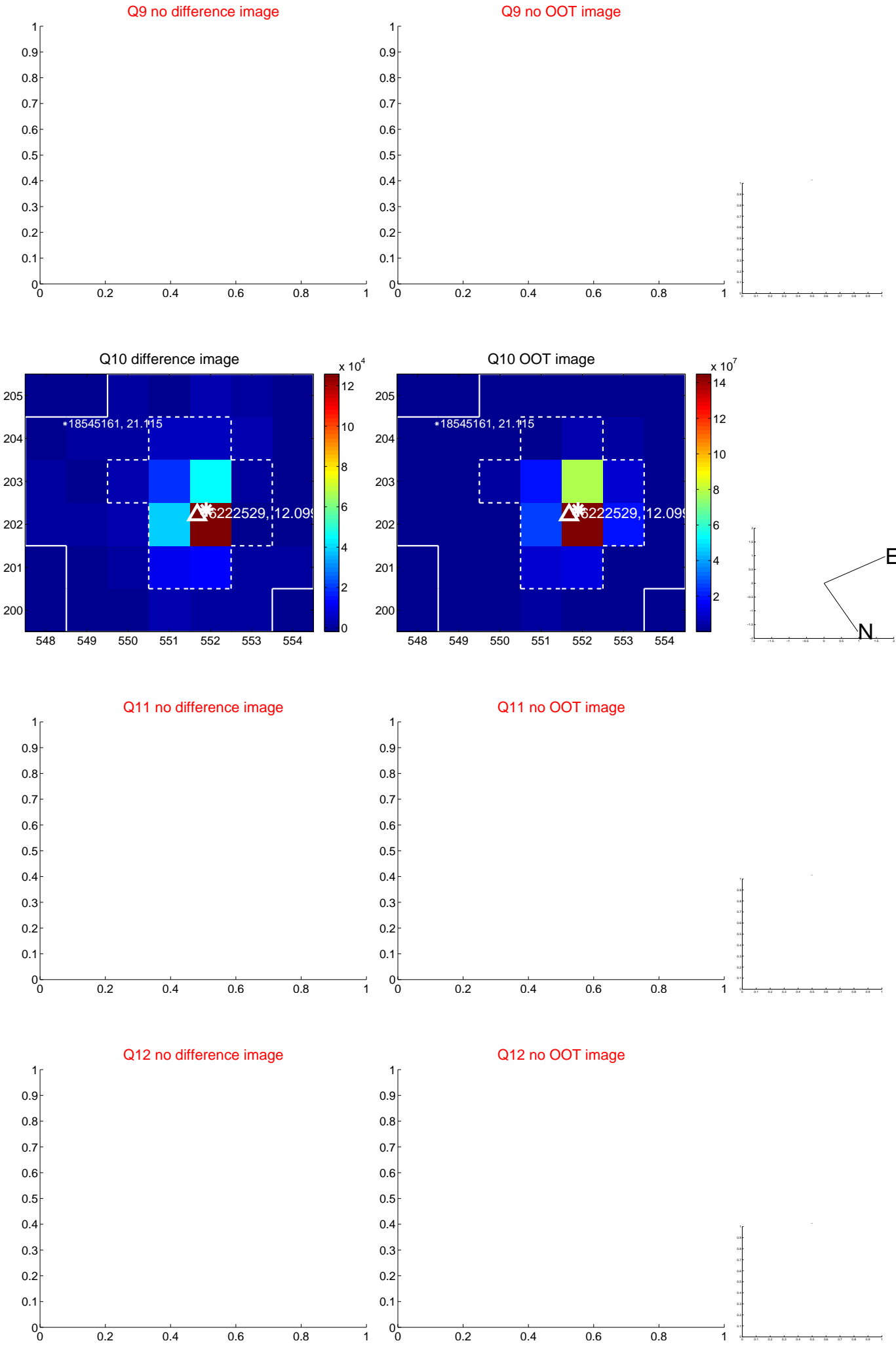
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



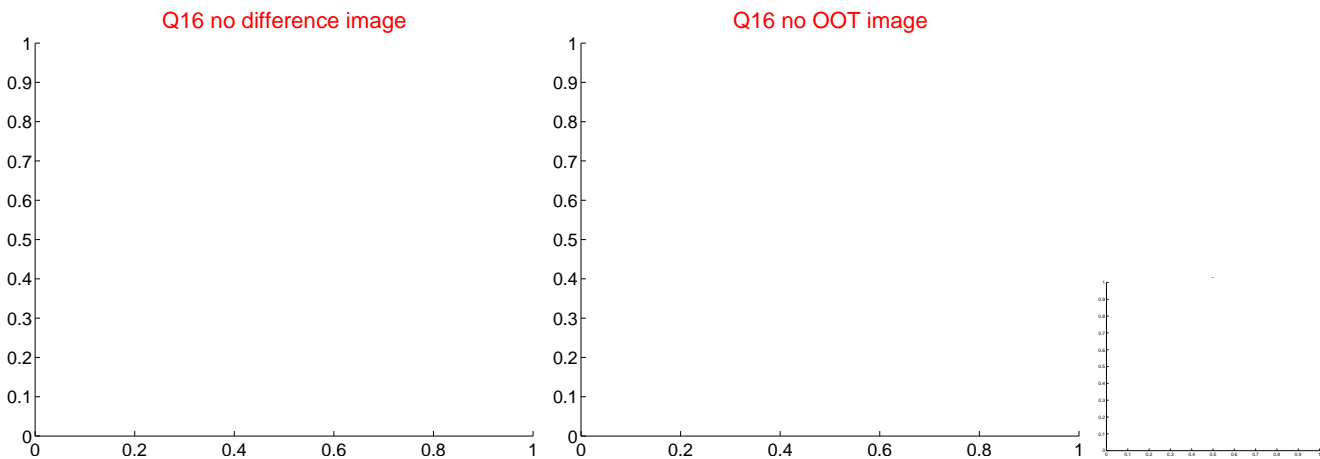
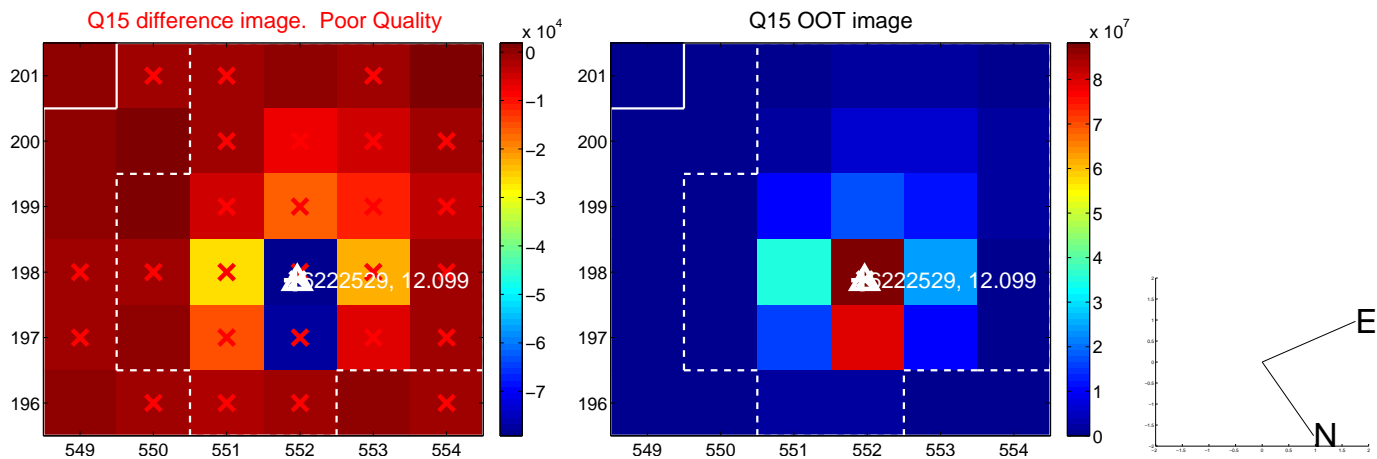
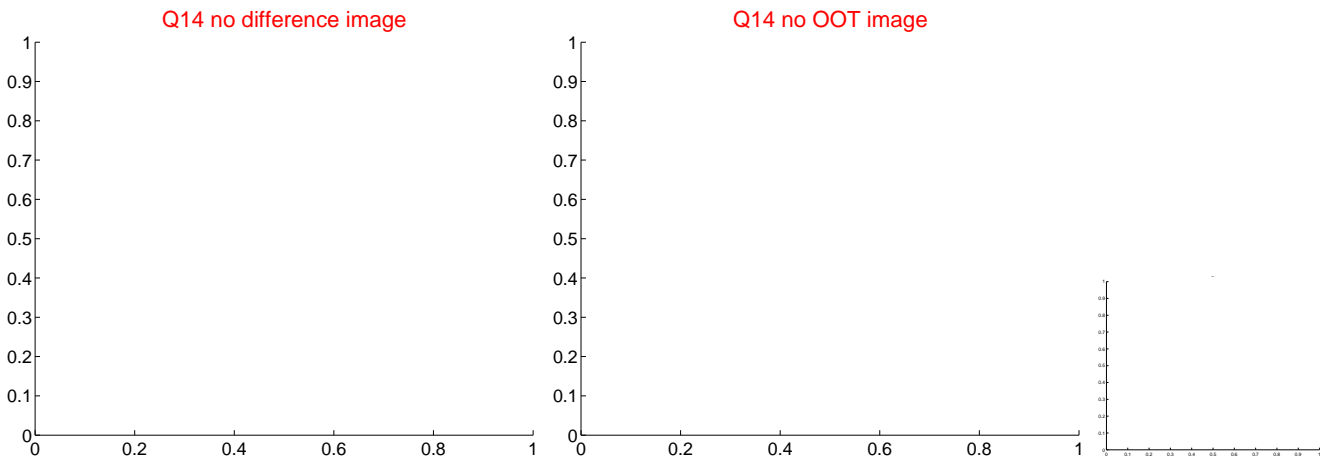
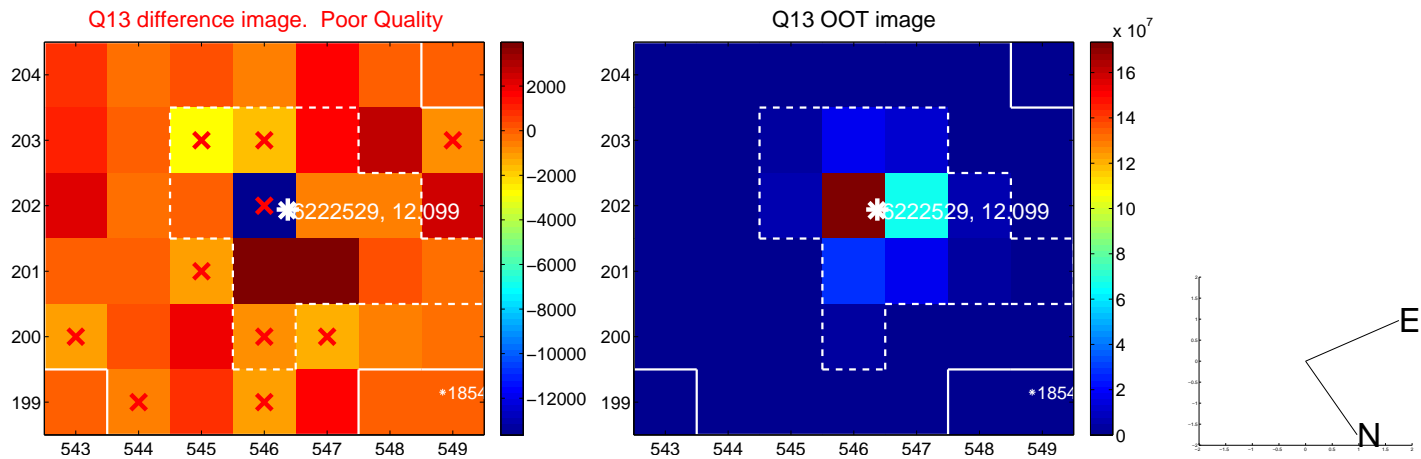
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



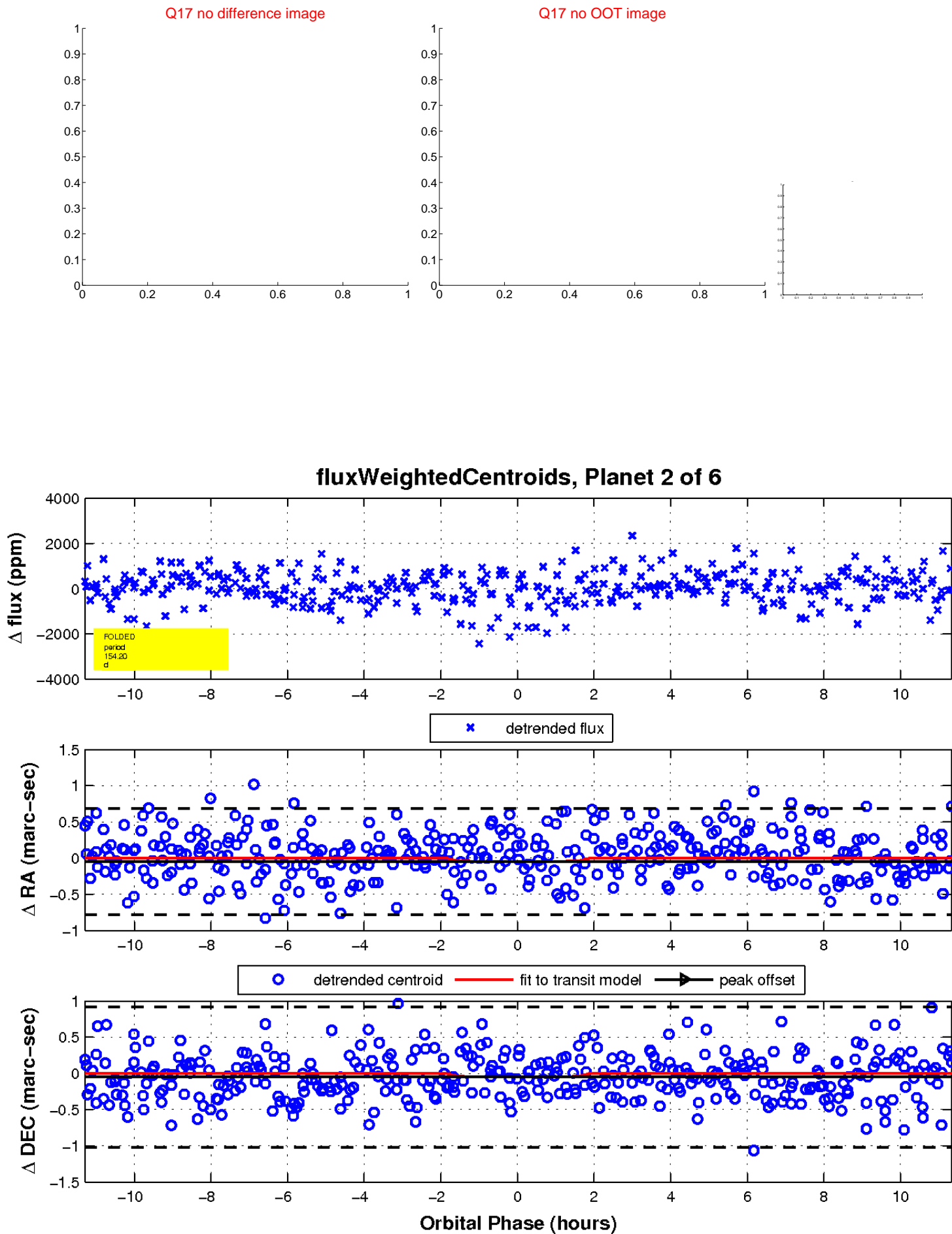
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

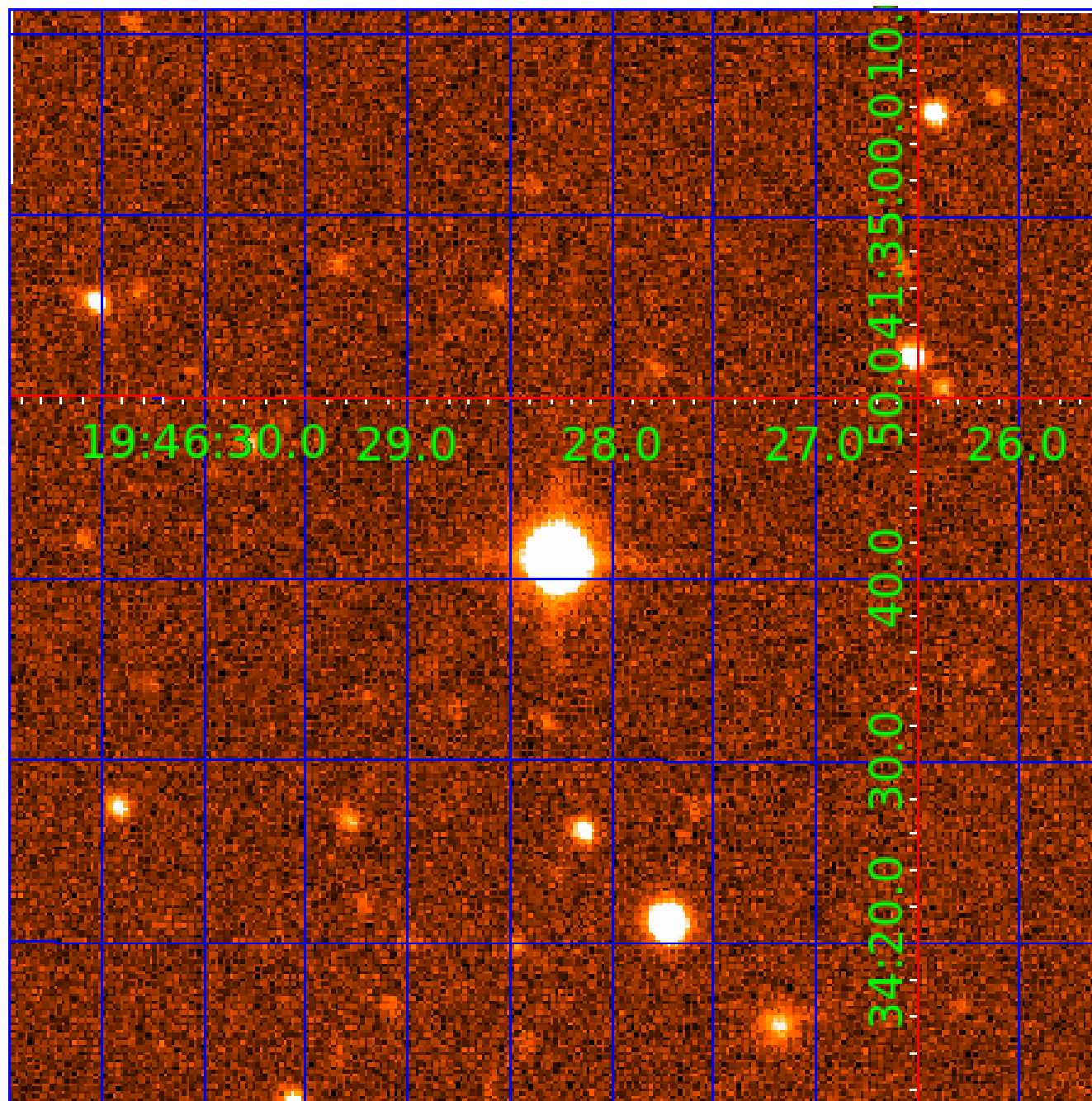


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006222529

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})
006222529-01	OBS	No	0.990206	132.208285	94.3	5.813	11.7	11.2	1.57	7802	1.62	16321.27
006222529-02	OBS	No	154.197849	146.034161	1428.0	3.799	8.6	10.1	1.57	7802	6.41	19.48
006222529-03	OBS	No	15.142085	137.864067	612.7	1.795	8.8	9.5	1.57	7802	4.37	430.00
006222529-04	OBS	No	56.352386	160.131651	563.2	6.682	7.9	6.4	1.57	7802	4.07	74.56
006222529-05	OBS	No	20.869302	150.962001	540.2	3.088	8.0	8.8	1.57	7802	4.20	280.36
006222529-06	OBS	No	74.439496	158.805458	557.0	7.203	7.4	6.2	1.57	7802	3.90	51.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006222529-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
006222529-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006222529-03	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
006222529-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006222529-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006222529-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

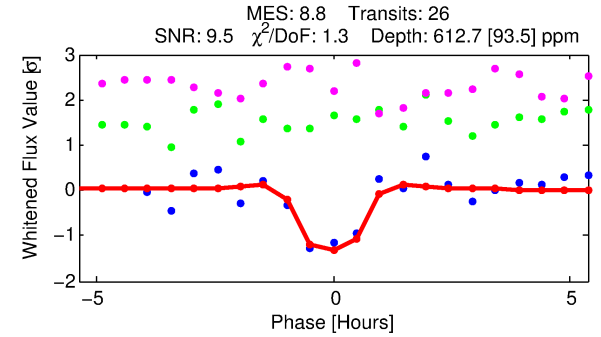
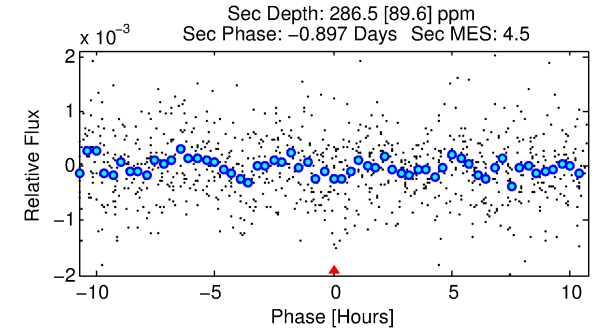
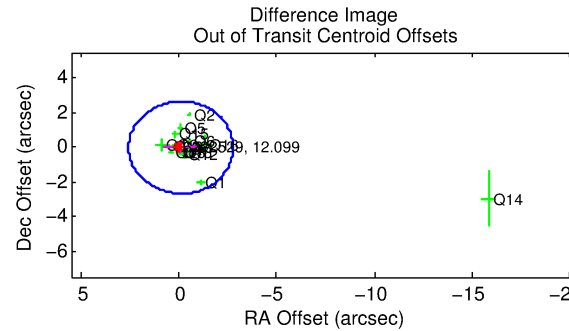
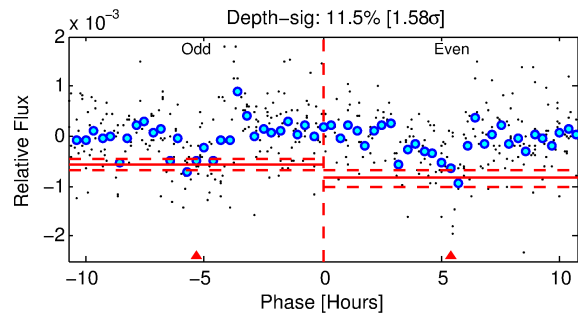
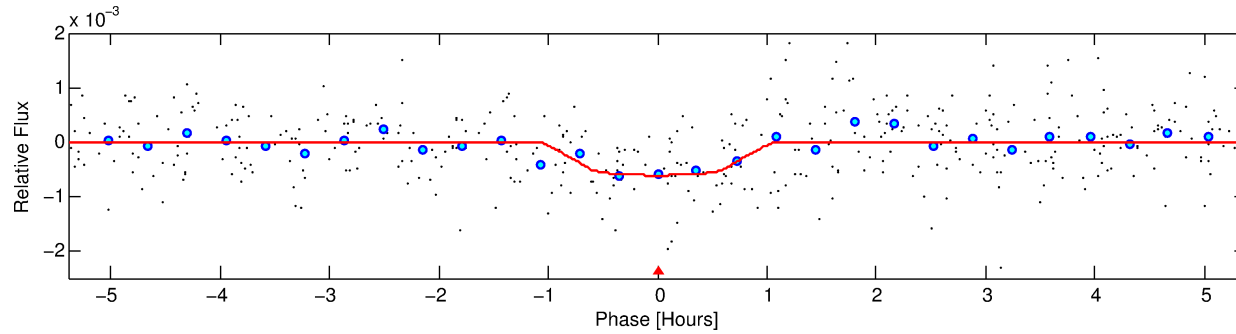
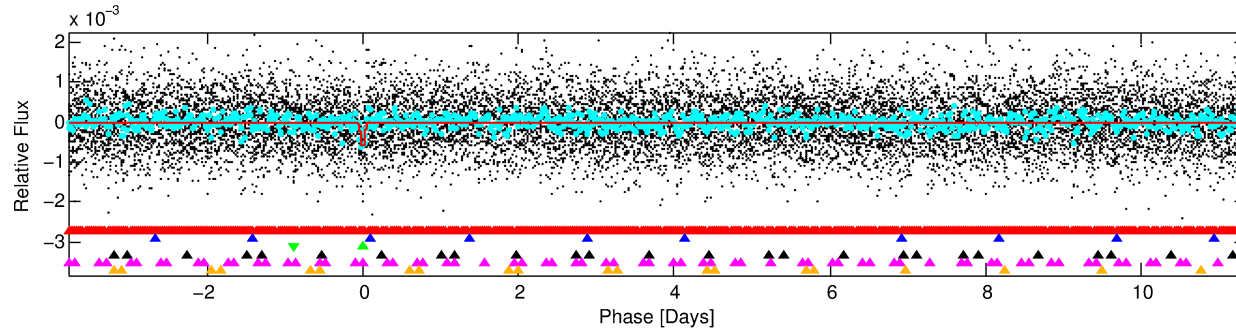
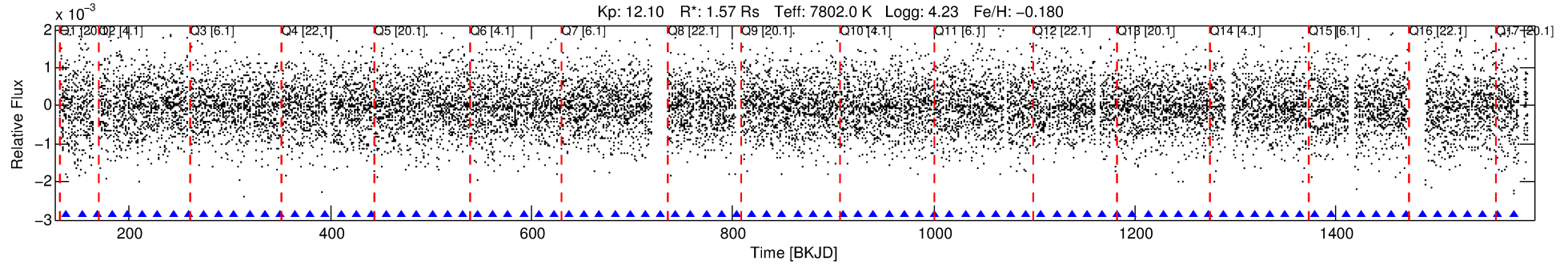
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006222529-03

No Significant Match Found

DV One-Page Summary

KIC: 6222529 Candidate: 3 of 6 Period: 15.142 d



DV Fit Results:

Period = 15.14209 [0.00013] d
Epoch = 137.8641 [0.0066] BKJD
Rp/R* = 0.0254 [0.0206]
a/R* = 38.59 [178.63]
b = 0.83 [1.73]
Seff = 430.01 [108.31]
Teq = 1161 [73] K
Rp = 4.37 [3.65] Re
a = 0.1383 [0.0237] AU
Ag = 158.05 [264.00] [0.59 σ]
Teffp = 6366 [2630] K [1.98 σ]

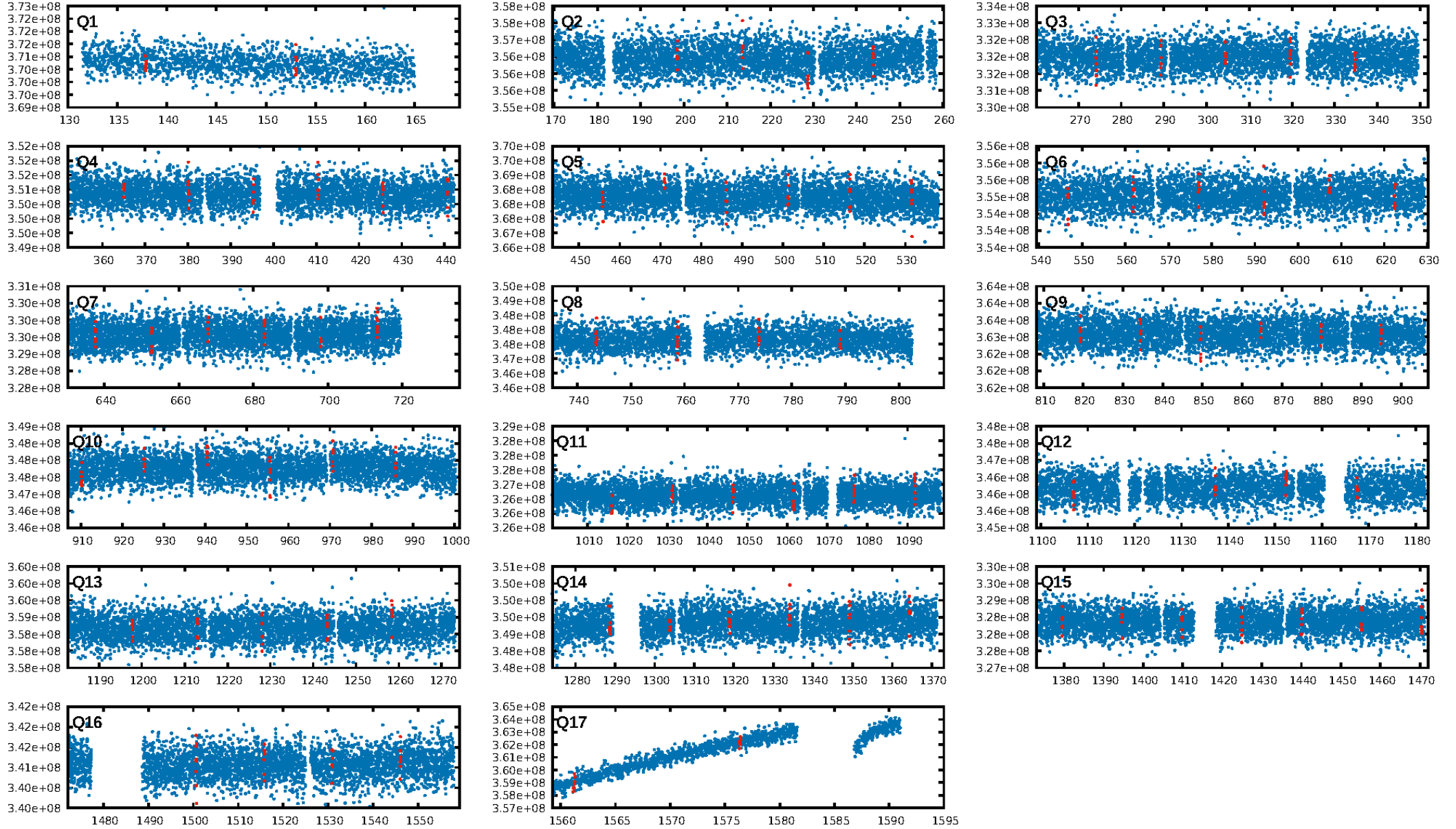
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [55.83 σ]
LongPeriod-sig: 100.0% [38.48 σ]
ModelChiSquare2-sig: 4.1%
ModelChiSquareGof-sig: 98.3%
Bootstrap-pfa: 5.59e-10
RollingBand-fgt: 1.00 [25/25]
GhostDiagnostic-chr: -0.007731
Centroid-sig: 0.8%
Centroid-so: 0.194 arcsec [2.13 σ]
OotOffset-rm: 0.111 arcsec [0.13 σ]
KicOffset-rm: 0.096 arcsec [0.10 σ]
OotOffset-st: 4/3/3/5 [15]
KicOffset-st: 4/3/3/5 [15]
DiffImageQuality-fgm: 0.80 [12/15]
DiffImageOverlap-fno: 0.88 [15/17]

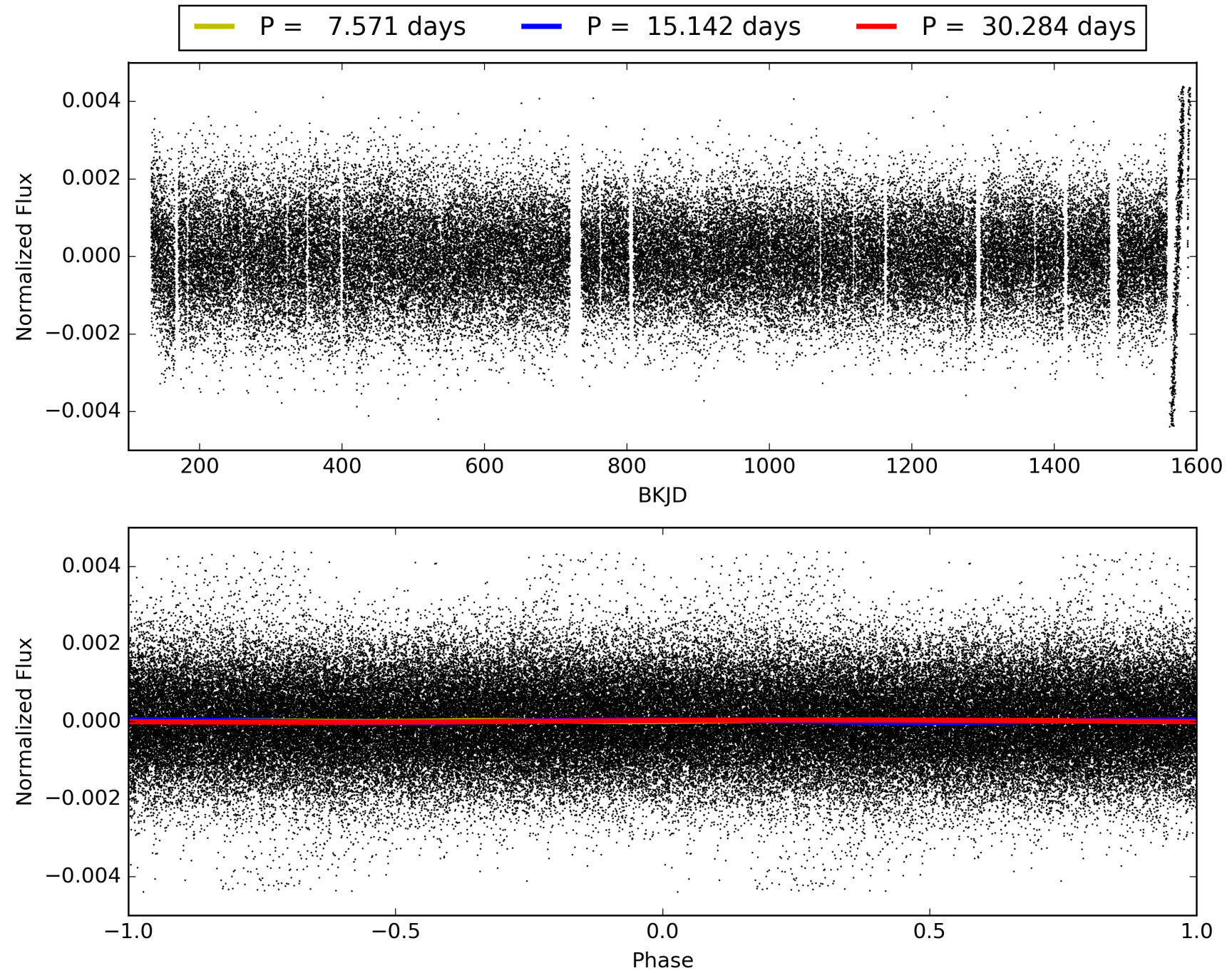
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:29:04 Z

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

TCE 006222529-03, PDC Light Curves

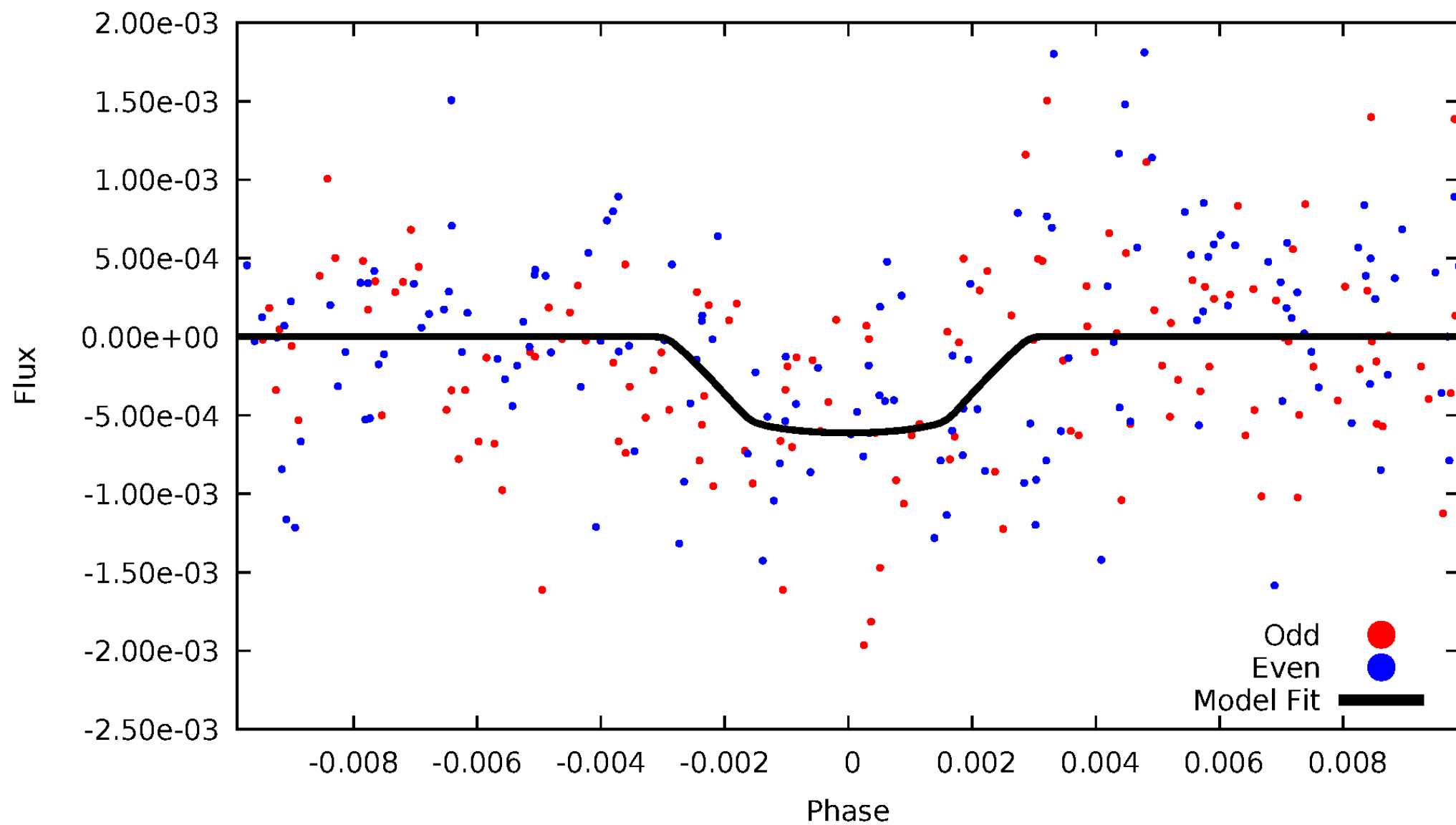


TCE 006222529-03



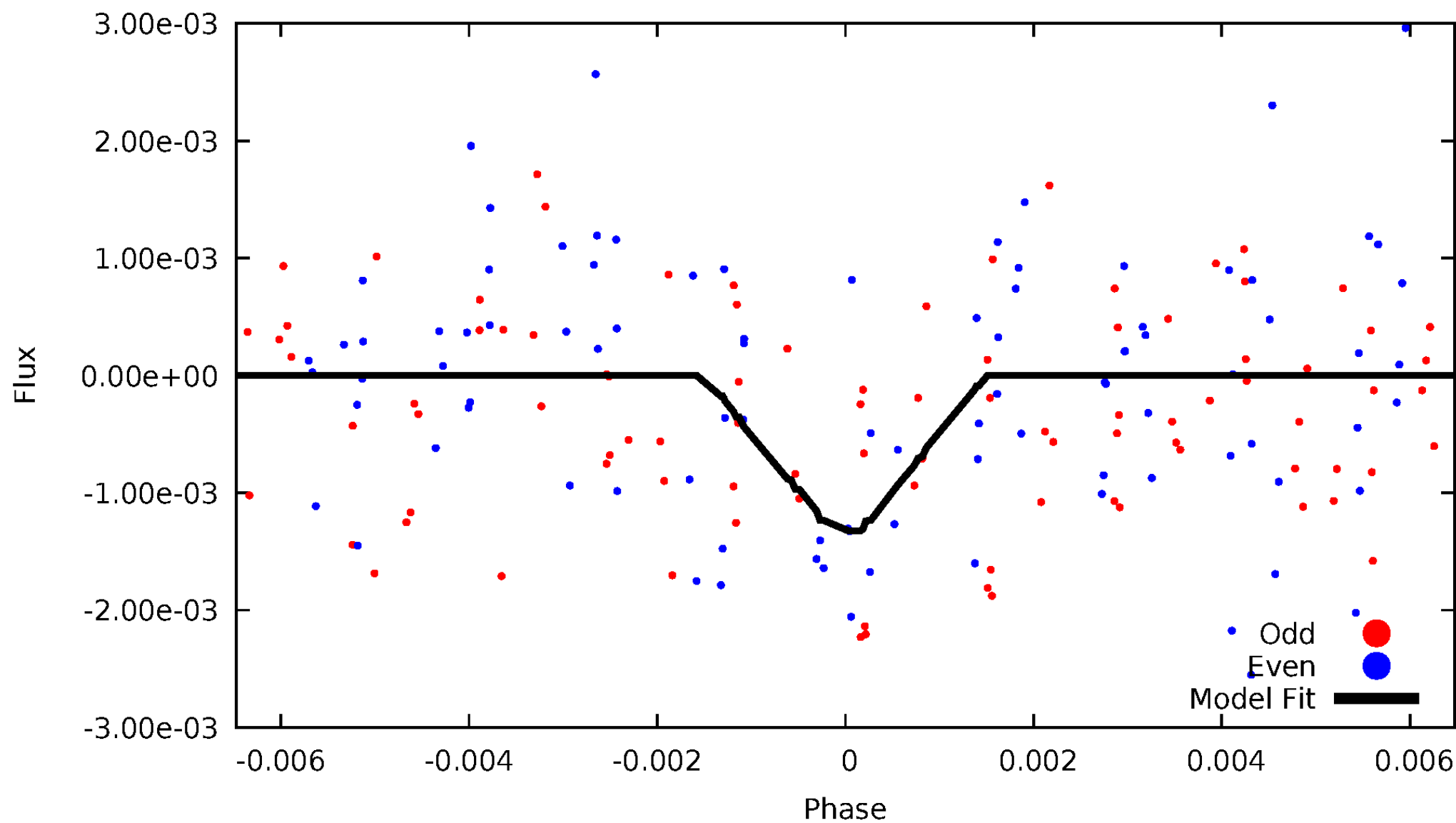
DV Odd/Even

TCE 006222529-03



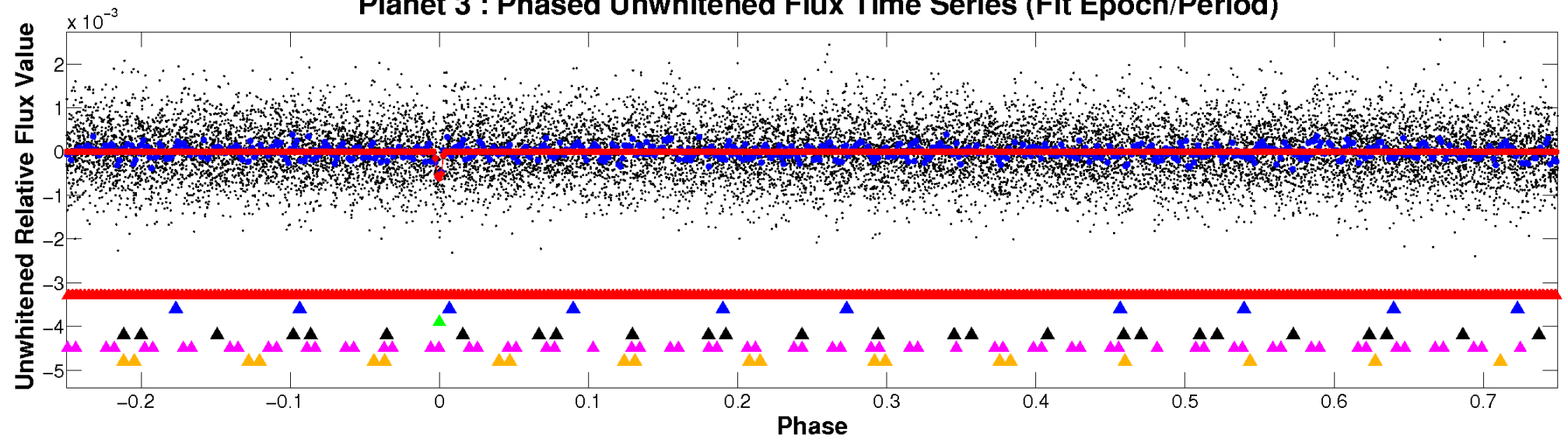
ALT Odd/Even

TCE 006222529-03

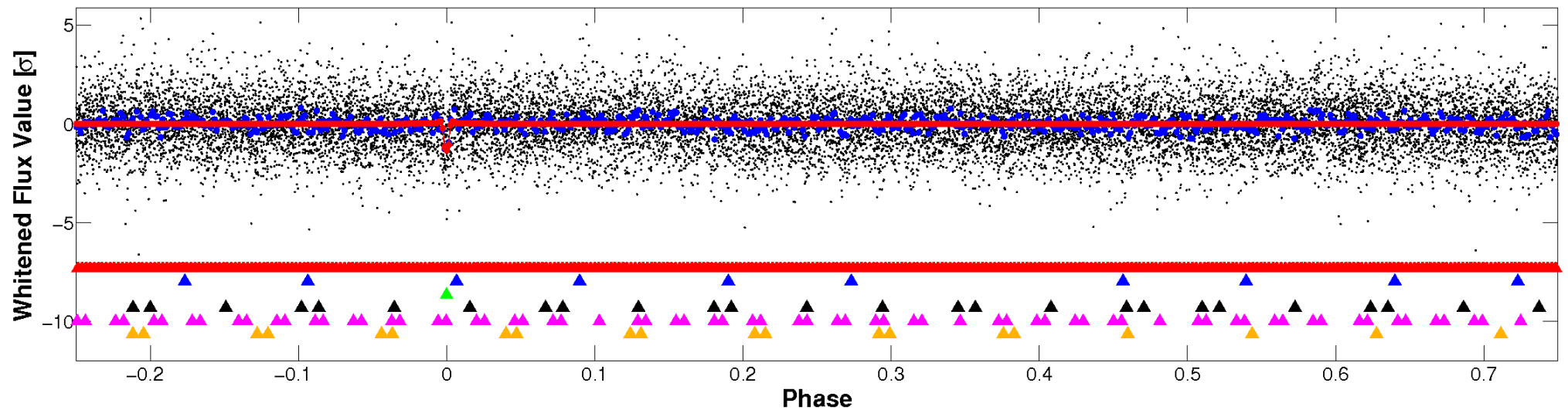


Non-Whitened Vs. Whitened Light Curve

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

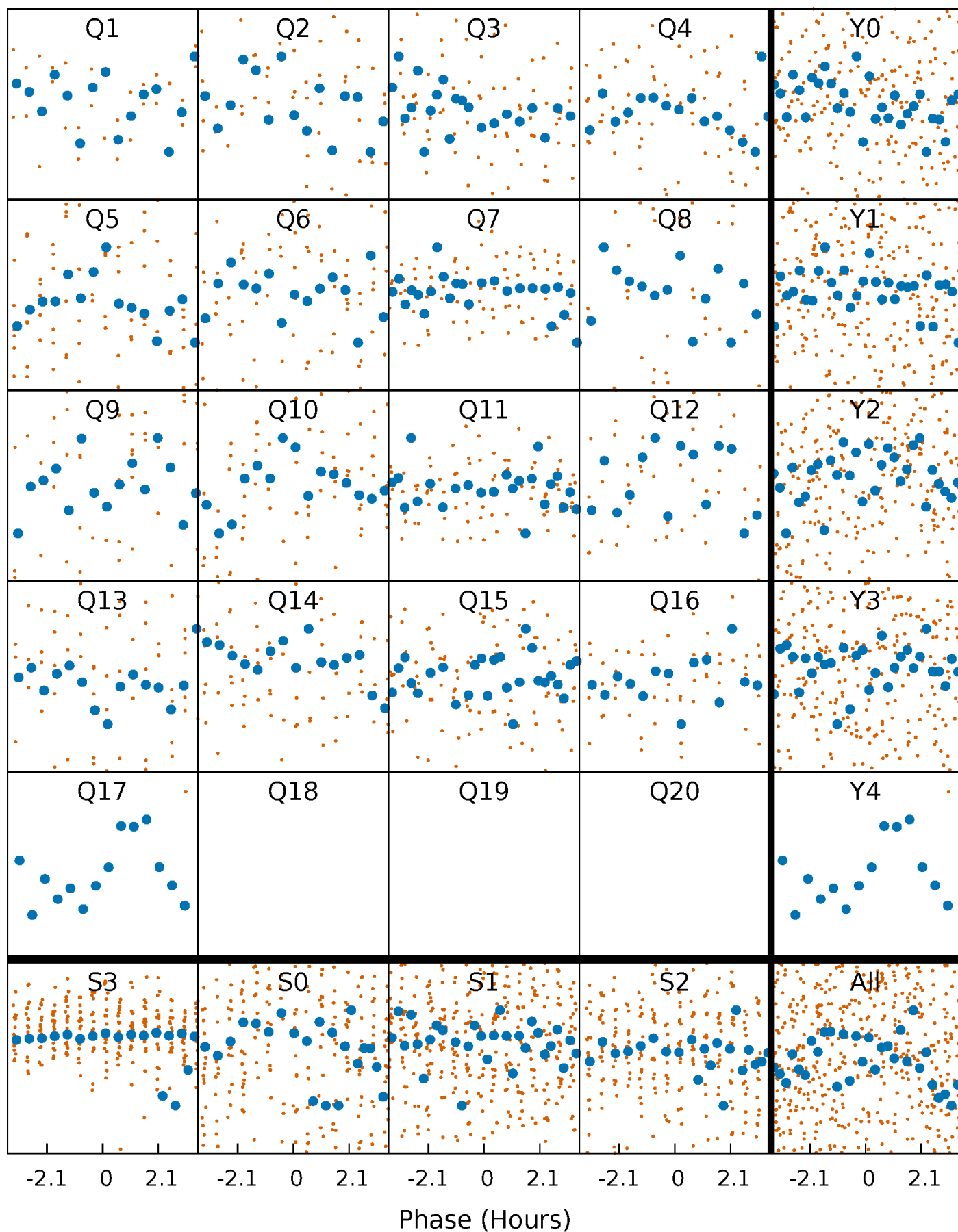


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



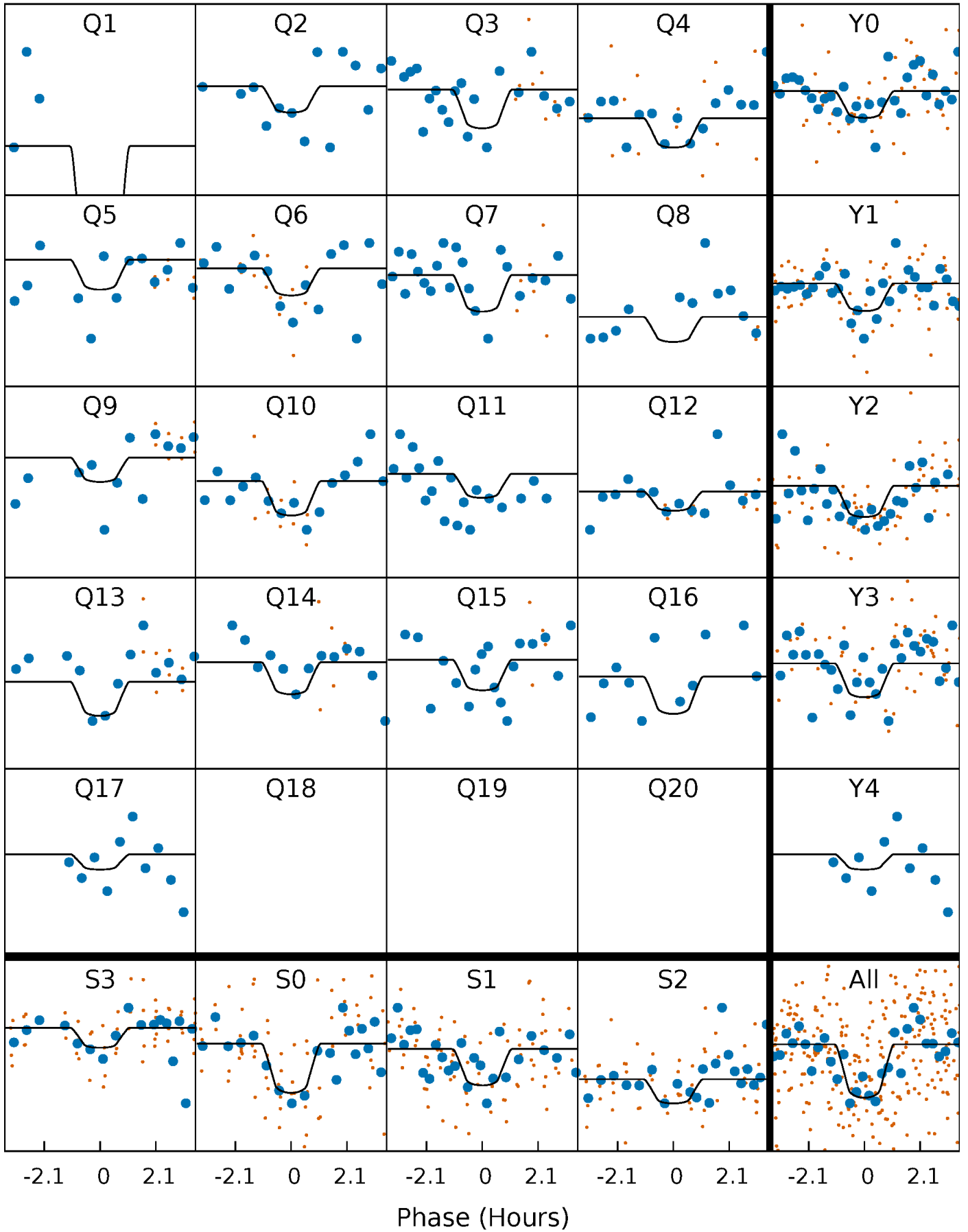
PDC Quarter-Phased Transit Curves

TCE 006222529-03 P= 15.142085 Days $T_0=137.864067$ (BKJD)



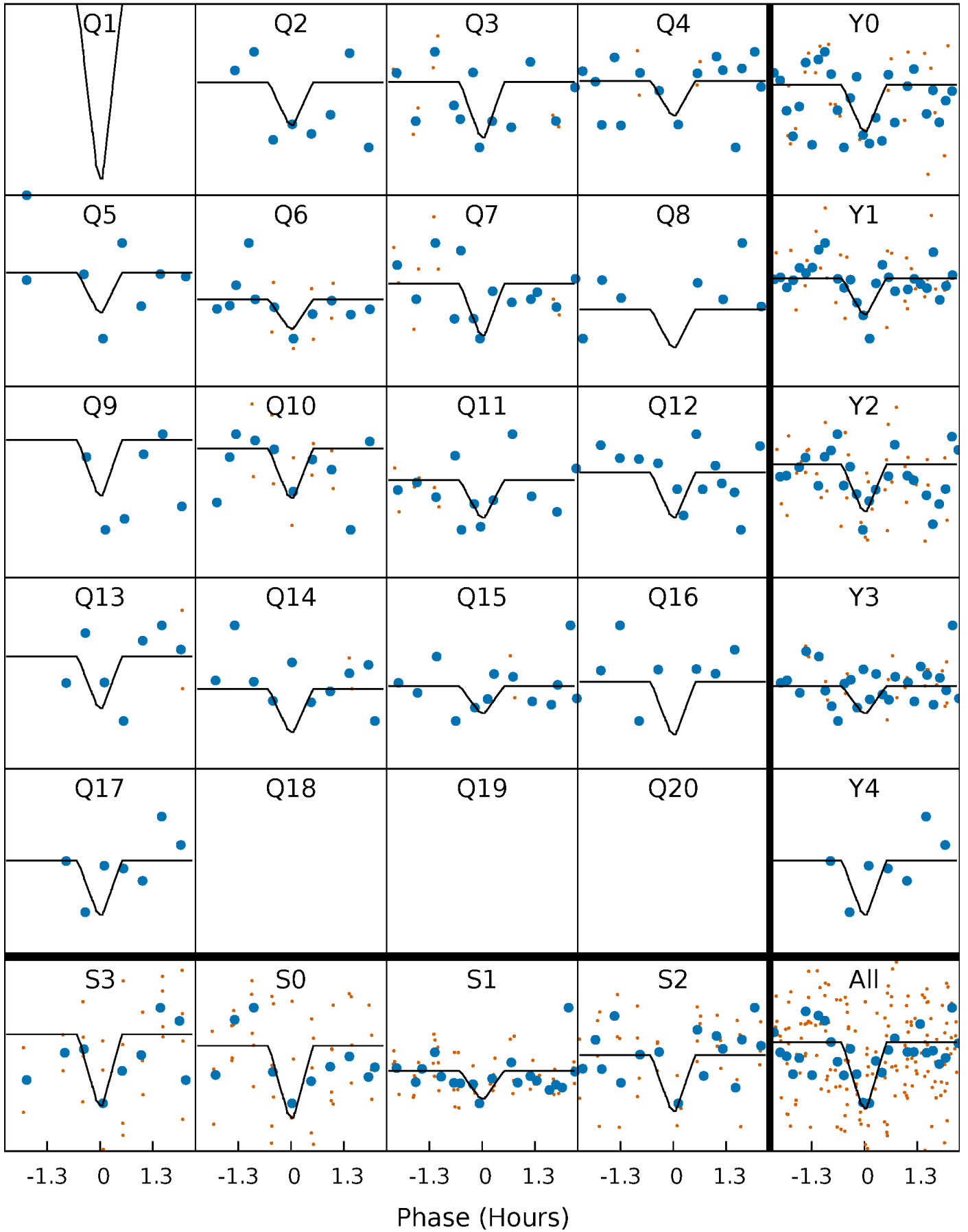
DV Quarter-Phased Transit Curves

TCE 006222529-03 P= 15.142085 Days $T_0=137.864067$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

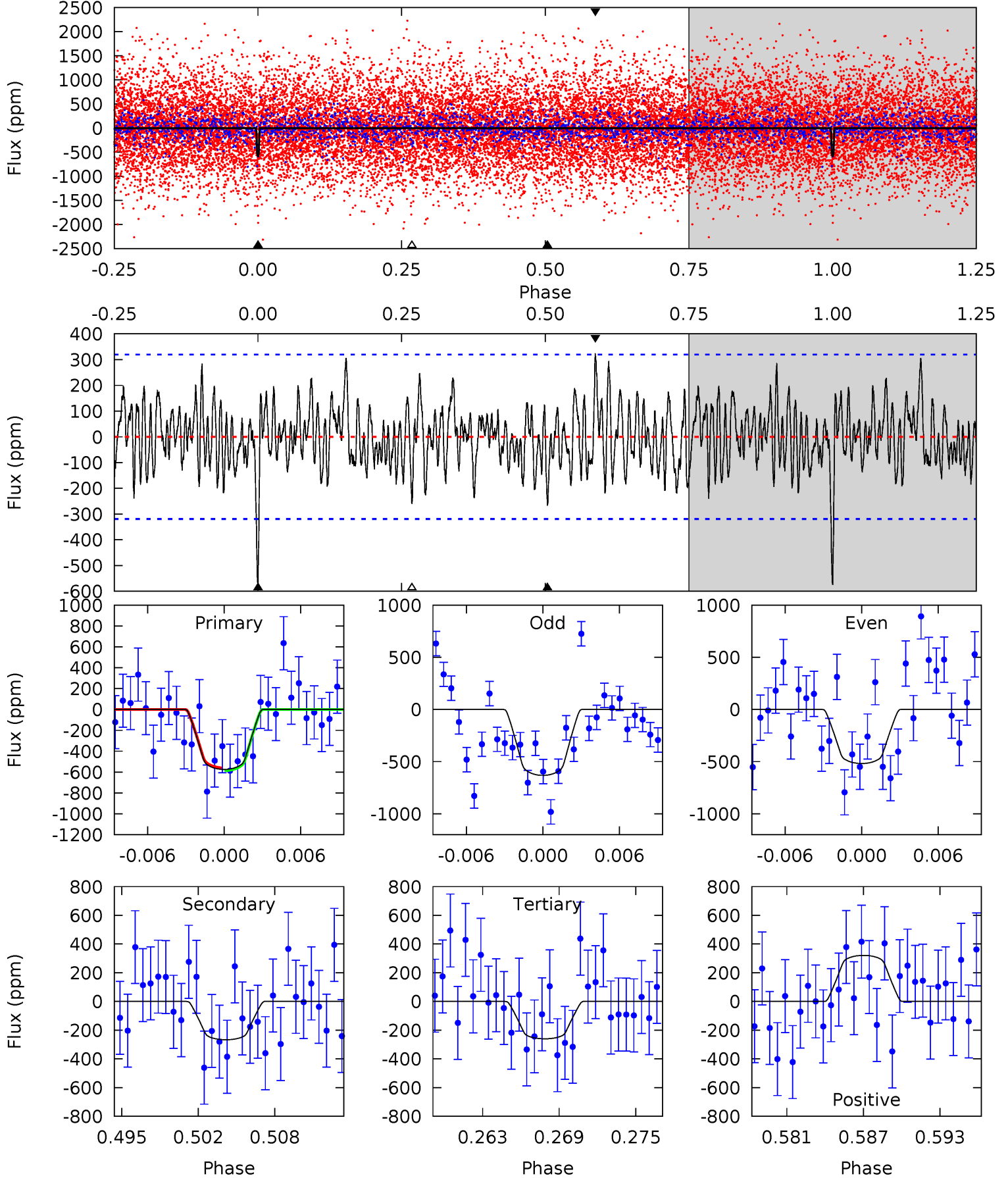
TCE 006222529-03 P= 15.142138 Days $T_0=137.843548$ (BKJD)



DV Model-Shift Uniqueness Test

006222529-03, P = 15.142085 Days, E = 122.721982 Days

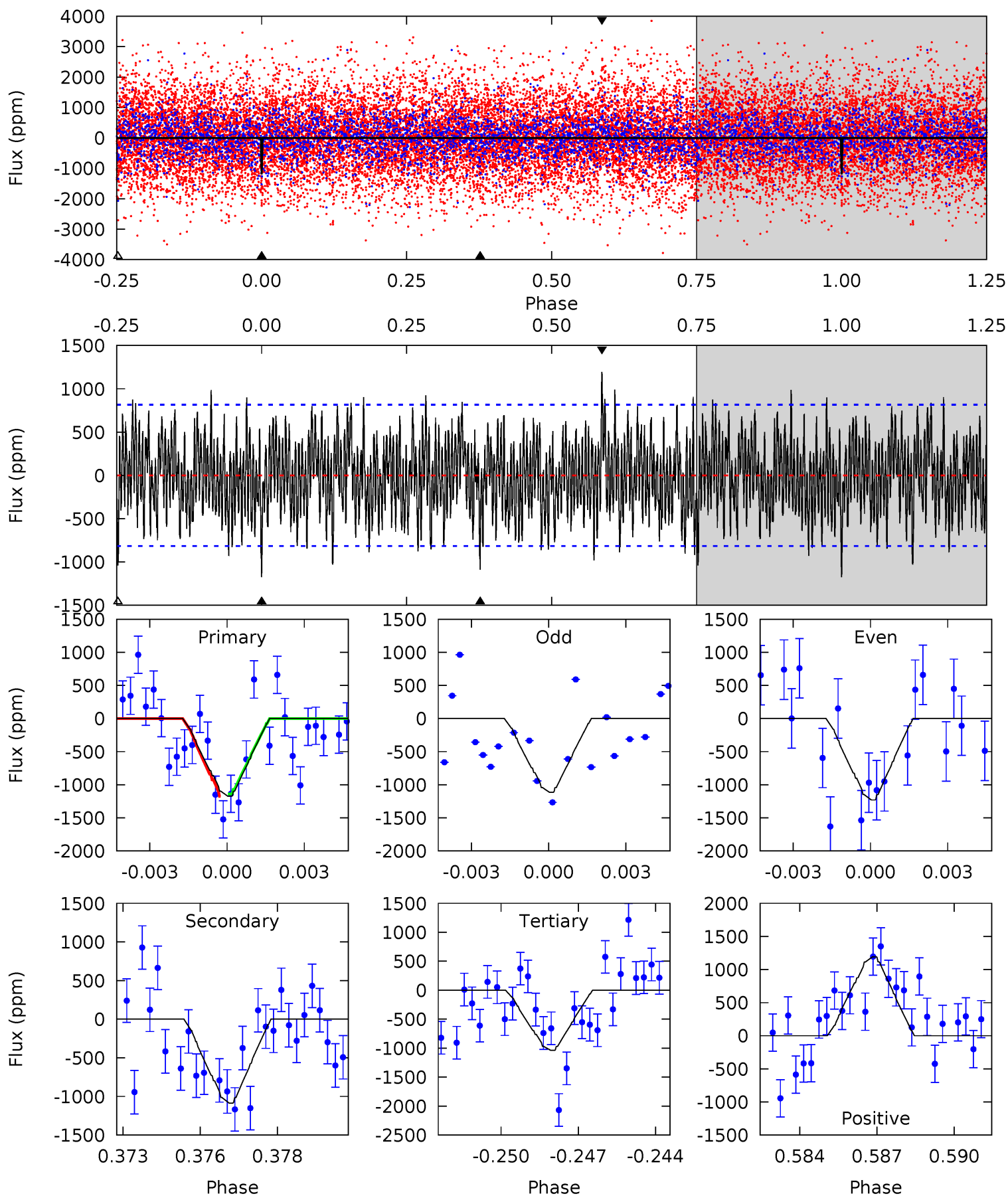
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.21	4.27	4.17	5.15	5.12	2.74	1.63	5.04	4.06	0.10	-0.87	0.91	1.05	0.36	0.21



Alt Model-Shift Uniqueness Test

006222529-03, P = 15.142138 Days, E = 122.701410 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	7.02	6.71	7.70	5.27	3.00	2.45	0.88	-0.12	0.31	-0.69	0.38	1.00	0.50	0.12



Stellar Parameters For KIC 006222529

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7802^{+77}_{-85}	$4.231^{+0.045}_{-0.135}$	$-0.180^{+0.150}_{-0.150}$	$1.574^{+0.322}_{-0.129}$	$1.534^{+0.128}_{-0.096}$	$0.554^{+0.122}_{-0.205}$
	+1%/-1%	+1%/-3%	+83%/-83%	+20%/-8%	+8%/-6%	+22%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 006222529-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-267 ± 62	$4.79^{+3.48}_{-2.71}$	1638^{+79}_{-45}	5861^{+3928}_{-1221}	116^{+532}_{-77}
Alt.	-1086 ± 155	$6.43^{+3.85}_{-3.43}$	1637^{+76}_{-43}	7355^{+5497}_{-1612}	271^{+1030}_{-167}

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 $A_{obs} \gg 1.0$

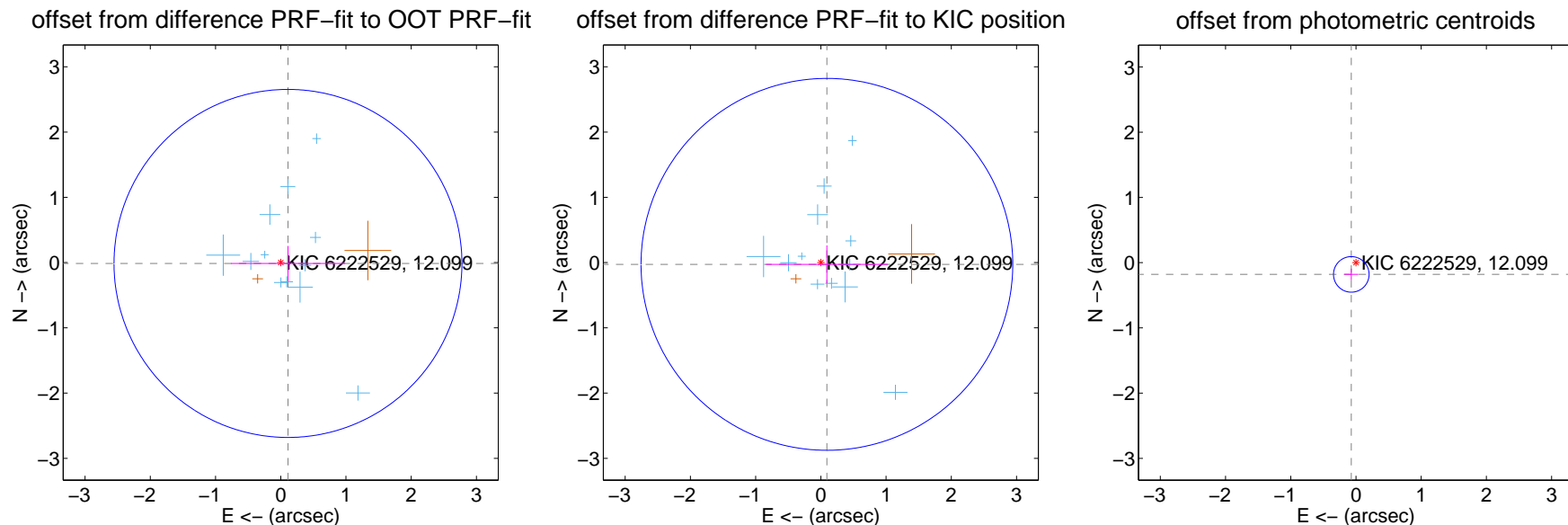
DV Centroid Data

Supplemental centroid analysis for 006222529-03. Kepler magnitude: 12.10. Transit SNR 9.47

There are 12 quarters with good PRF difference image offsets

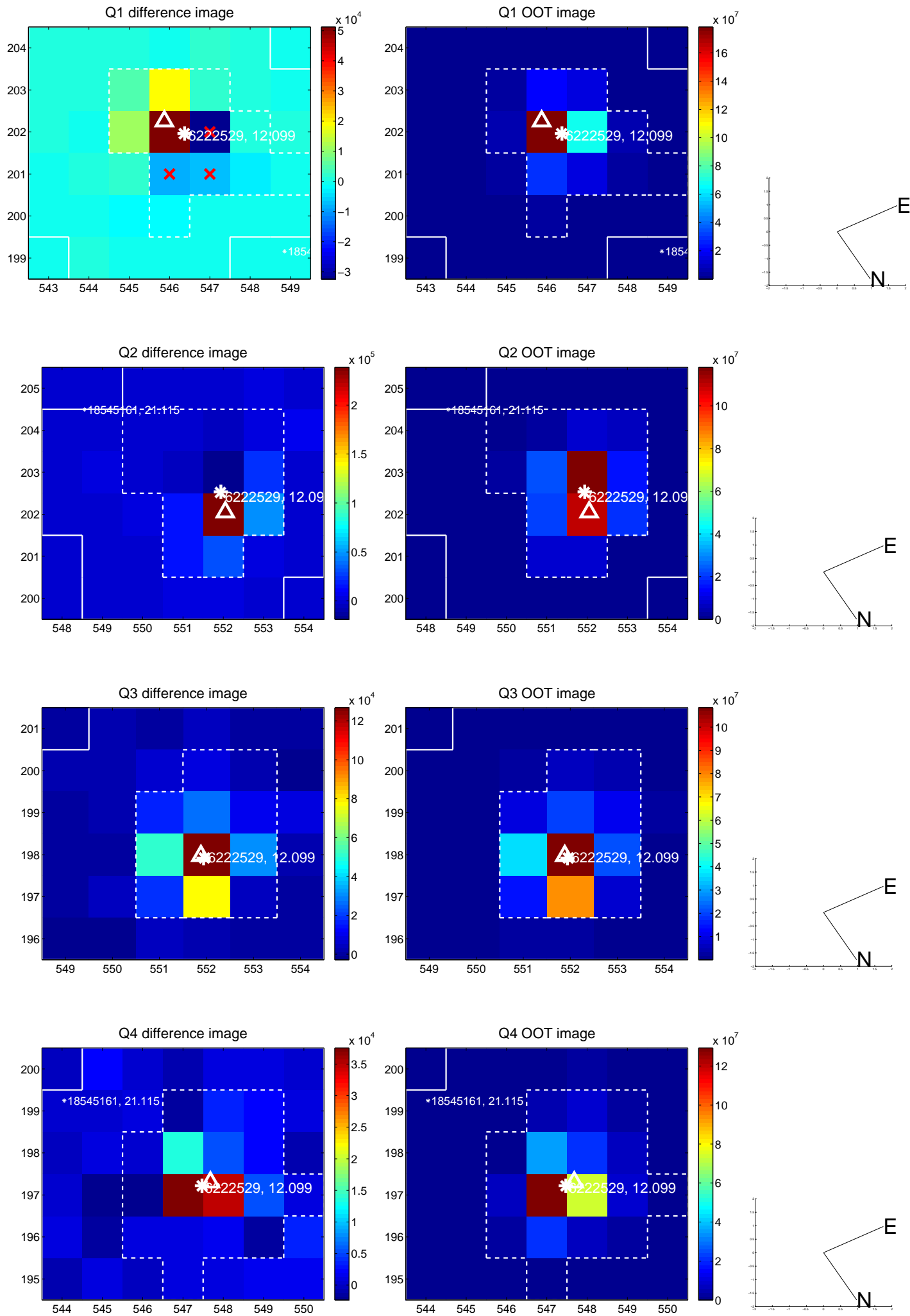
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.111 ± 0.889	0.13	-0.111 ± 0.876	-0.013 ± 0.268
PRF-fit source offset from KIC position	0.096 ± 0.950	0.10	-0.093 ± 0.934	-0.027 ± 0.289
photometric centroid source offset	0.19 ± 0.09	2.13	0.07 ± 0.11	-0.18 ± 0.09

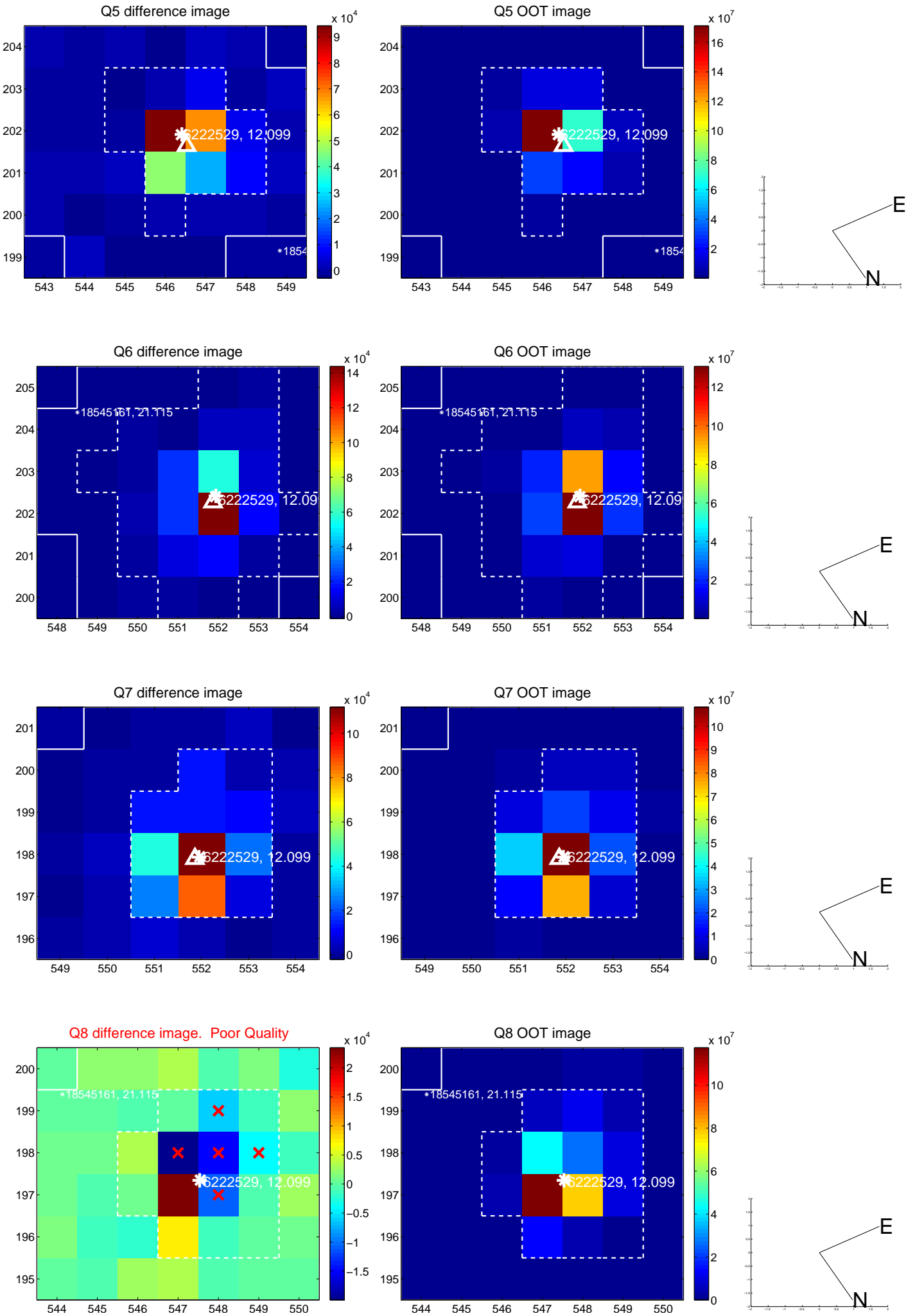


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

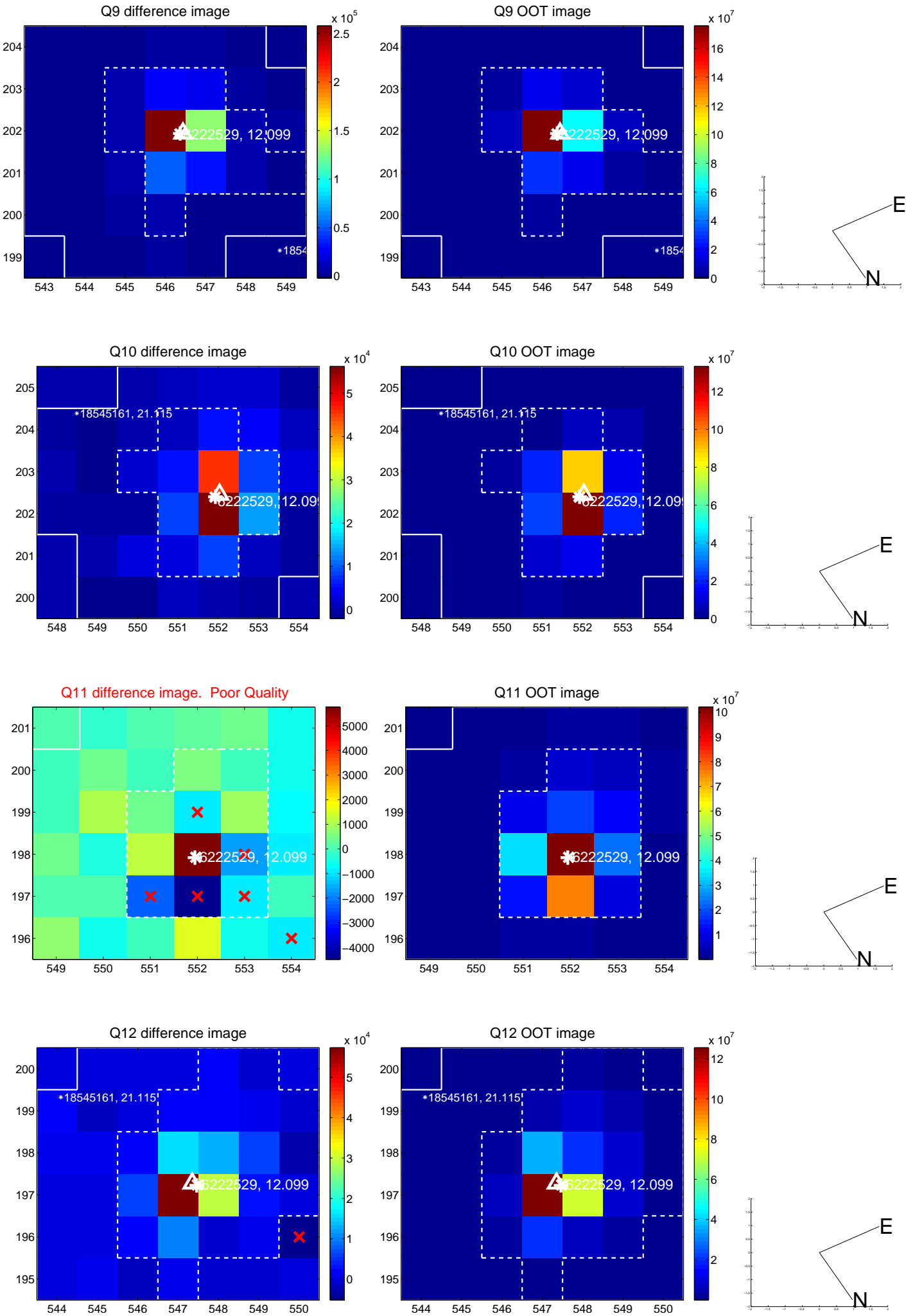
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



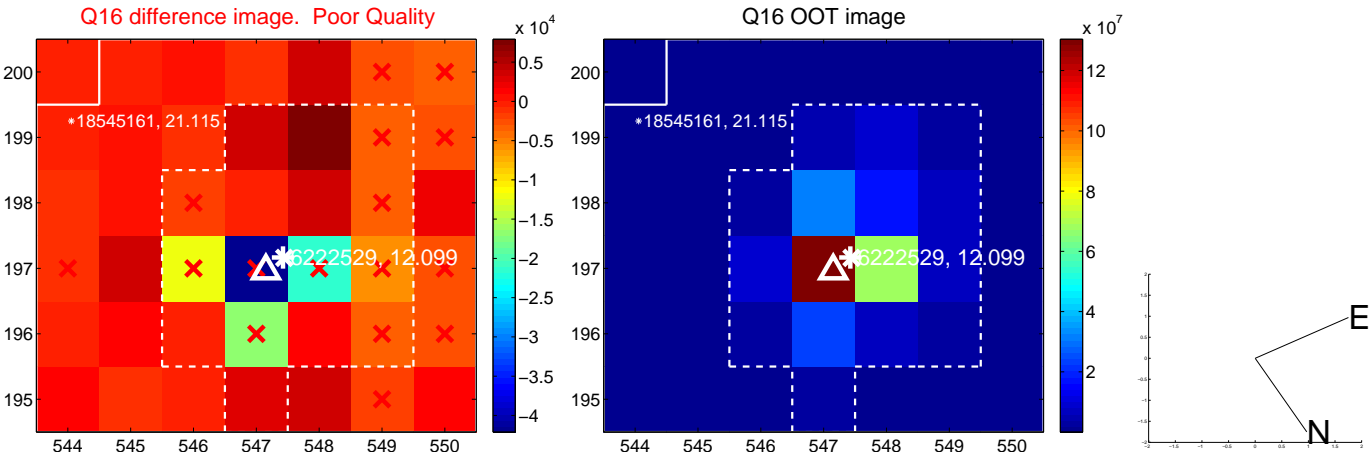
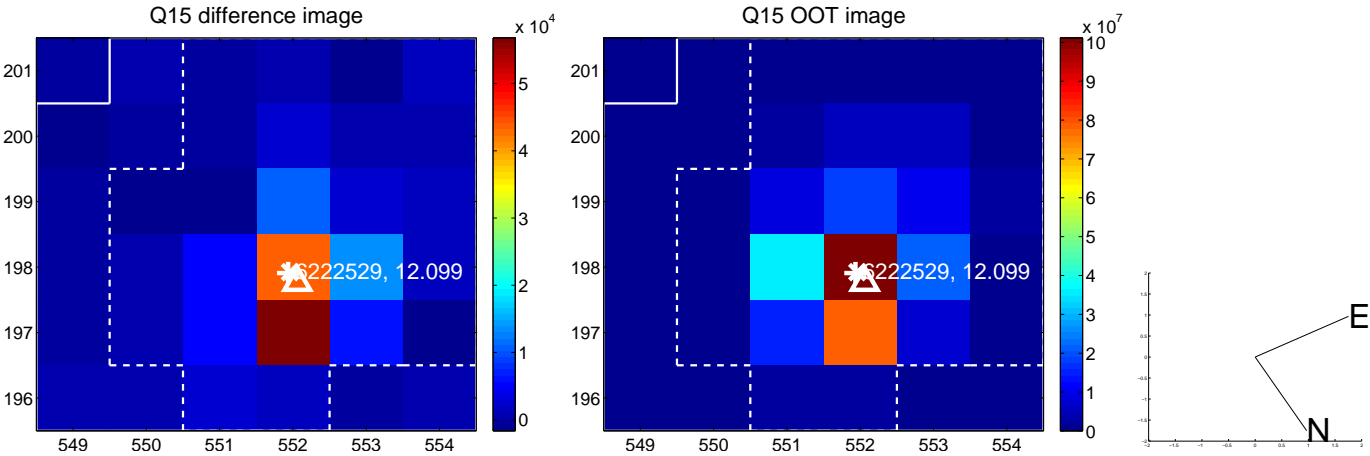
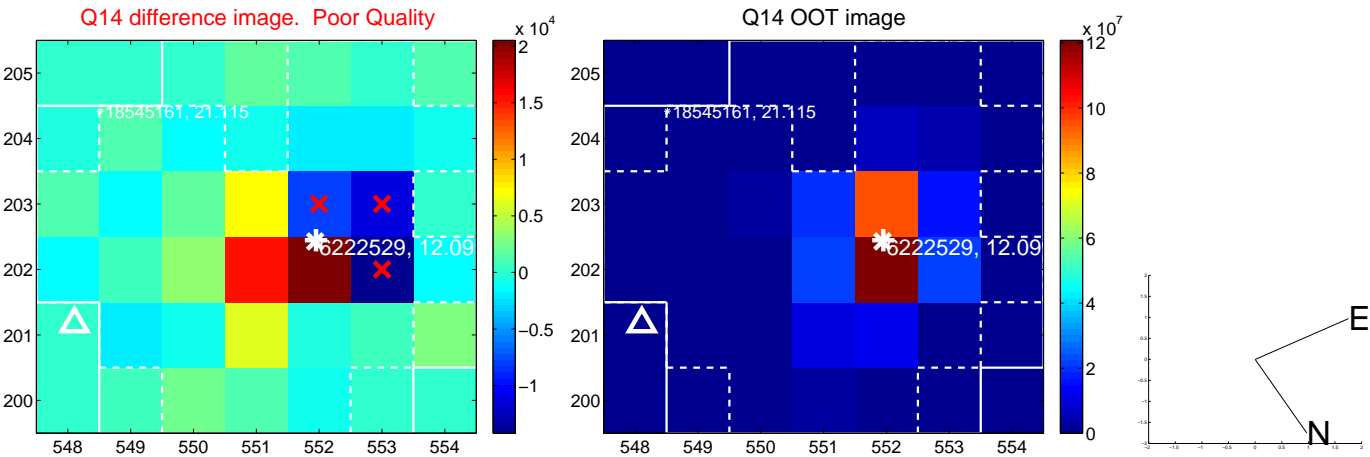
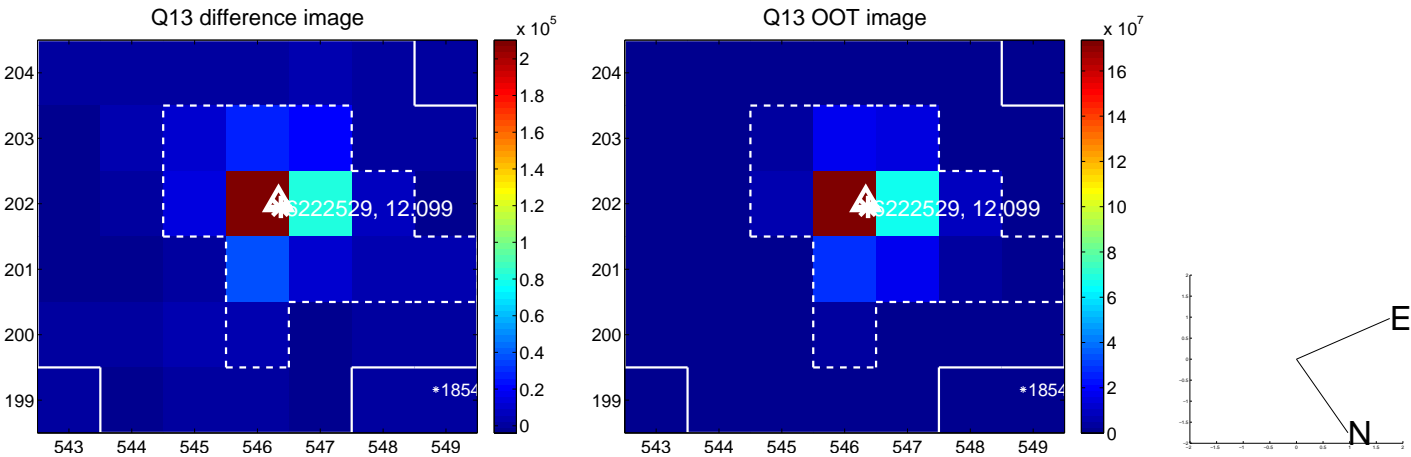
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



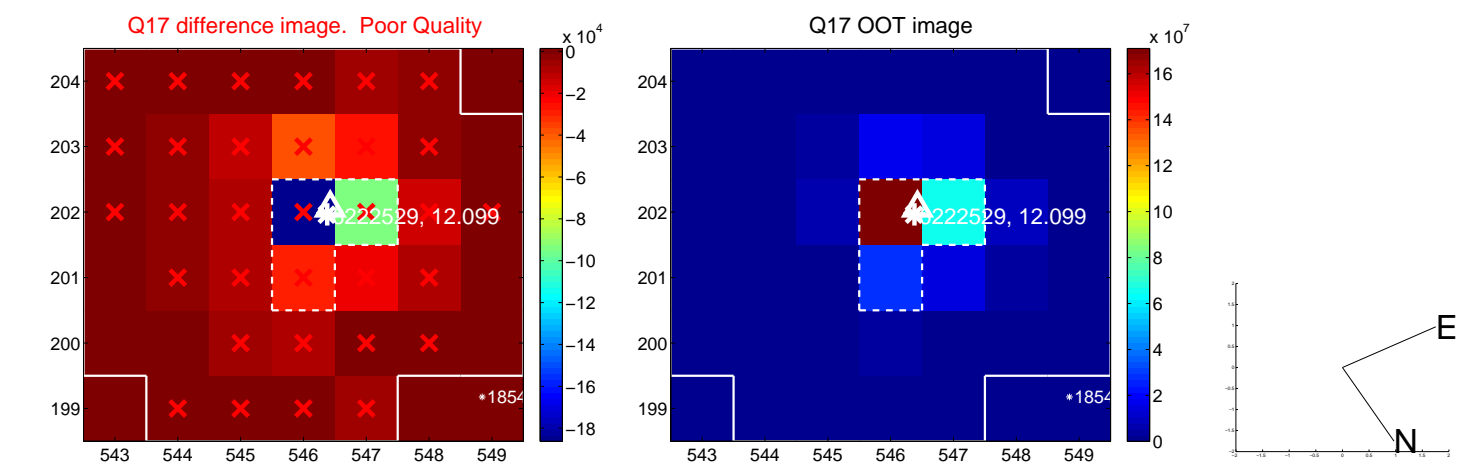
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



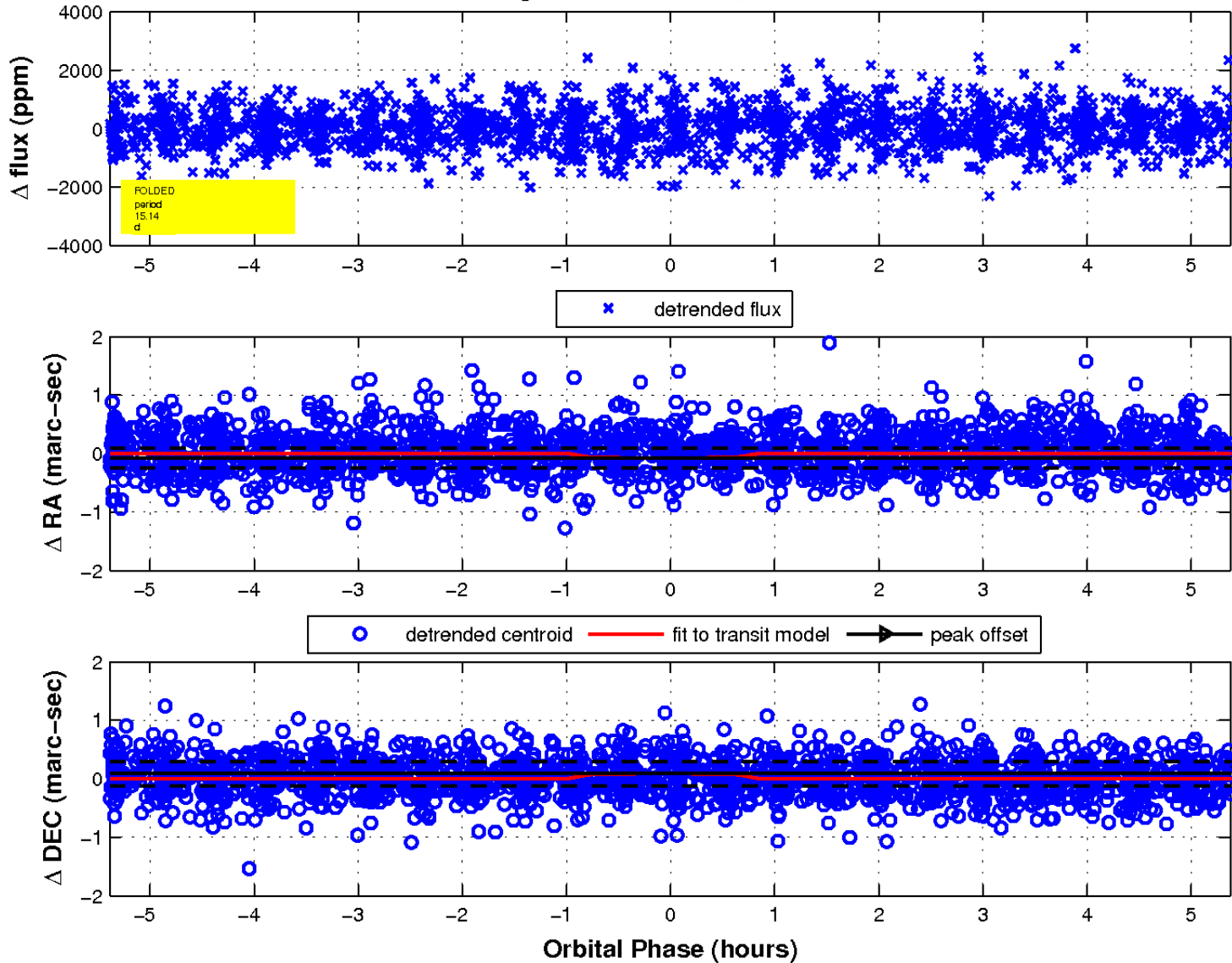
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

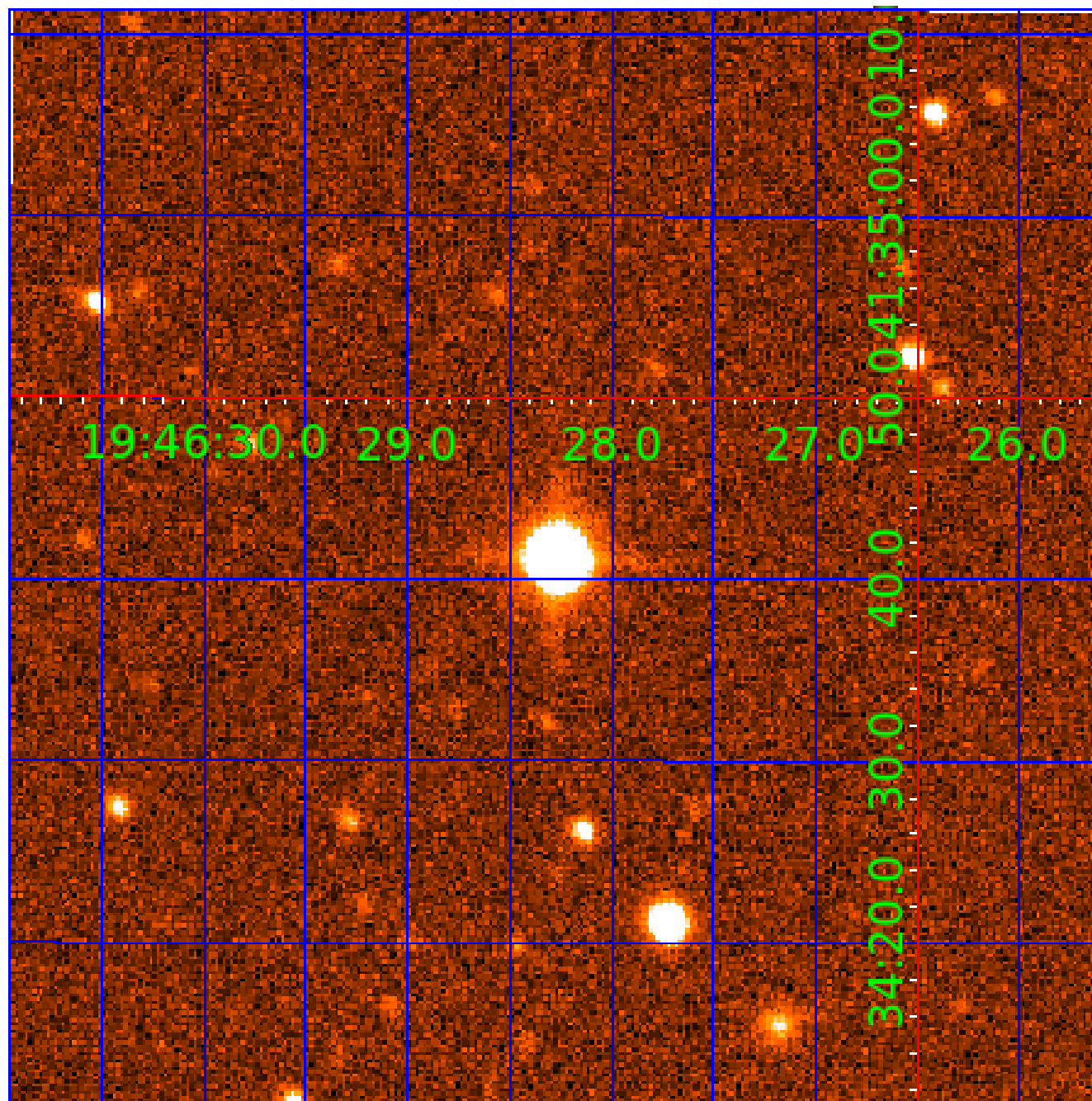


fluxWeightedCentroids, Planet 3 of 6



UKIRT Image

Declination



KIC 006222529

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})
006222529-01	OBS	No	0.990206	132.208285	94.3	5.813	11.7	11.2	1.57	7802	1.62	16321.27
006222529-02	OBS	No	154.197849	146.034161	1428.0	3.799	8.6	10.1	1.57	7802	6.41	19.48
006222529-03	OBS	No	15.142085	137.864067	612.7	1.795	8.8	9.5	1.57	7802	4.37	430.00
006222529-04	OBS	No	56.352386	160.131651	563.2	6.682	7.9	6.4	1.57	7802	4.07	74.56
006222529-05	OBS	No	20.869302	150.962001	540.2	3.088	8.0	8.8	1.57	7802	4.20	280.36
006222529-06	OBS	No	74.439496	158.805458	557.0	7.203	7.4	6.2	1.57	7802	3.90	51.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006222529-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
006222529-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006222529-03	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
006222529-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006222529-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006222529-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

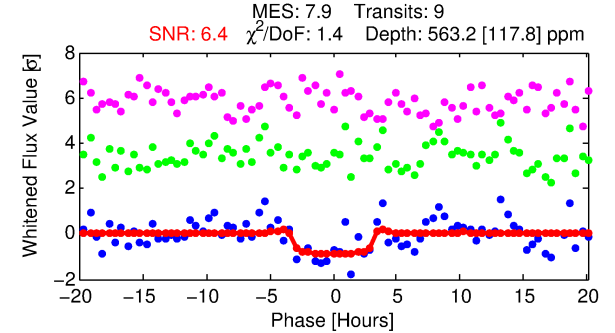
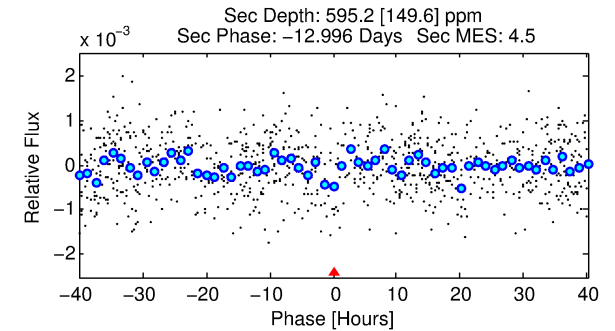
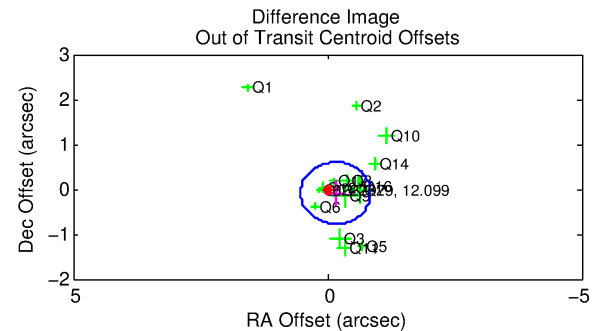
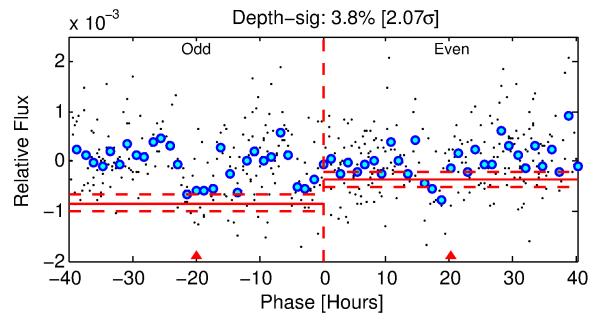
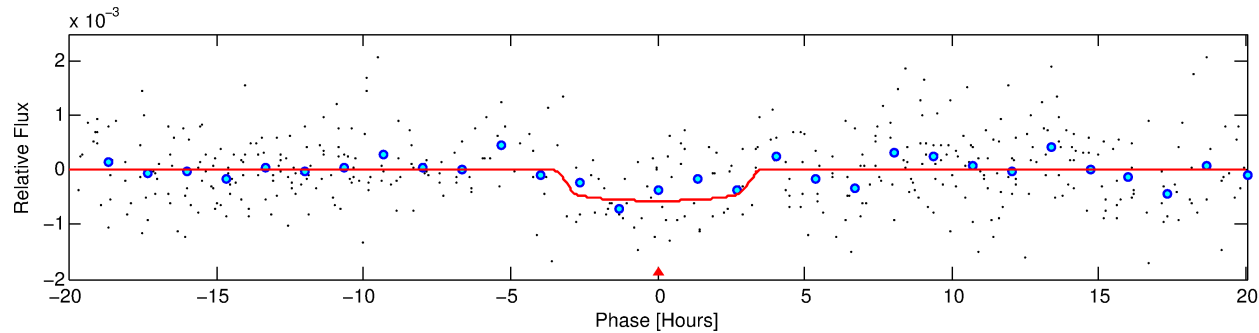
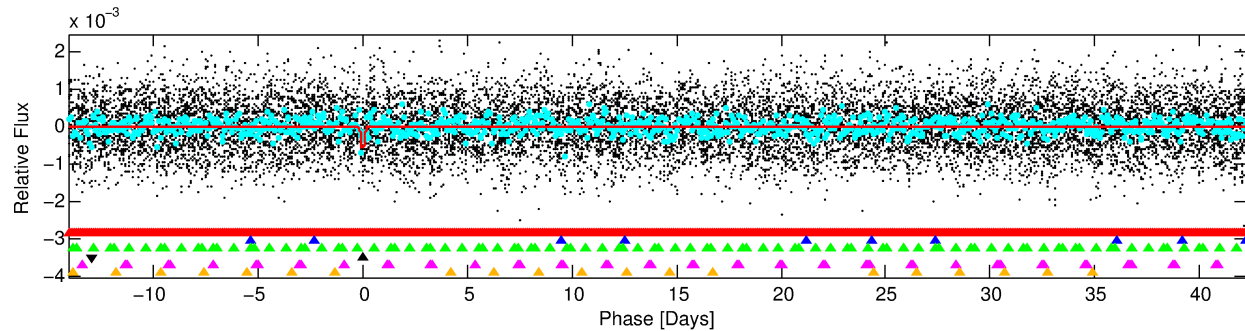
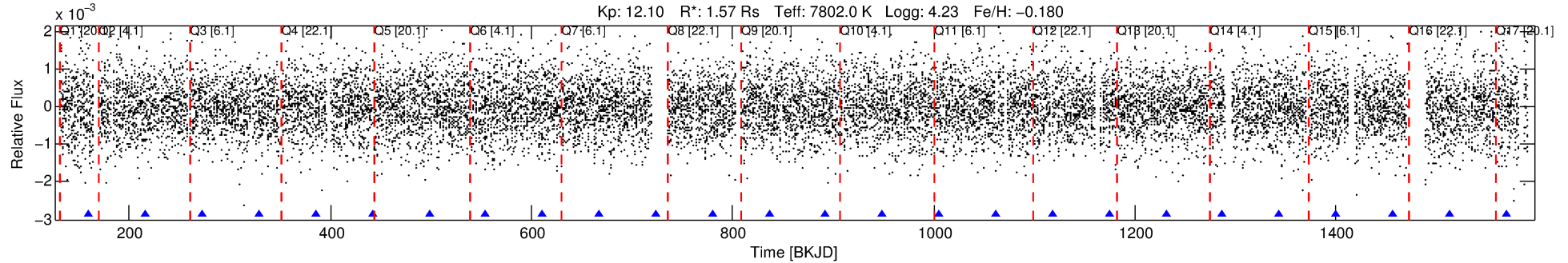
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006222529-04

No Significant Match Found

DV One-Page Summary

KIC: 6222529 Candidate: 4 of 6 Period: 56.352 d



DV Fit Results:

Period = 56.35239 [0.00224] d
Epoch = 160.1317 [0.0316] BKJD
Rp/R* = 0.0237 [0.0127]
a/R* = 43.85 [129.80]
b = 0.76 [1.64]
Seff = 74.56 [18.78]
Teq = 749 [47] K
Rp = 4.07 [2.34] Re
a = 0.3321 [0.0569] AU
Ag = 2179.09 [2466.01] [0.88 σ]
Teffp = 7915 [2187] K [3.28 σ]

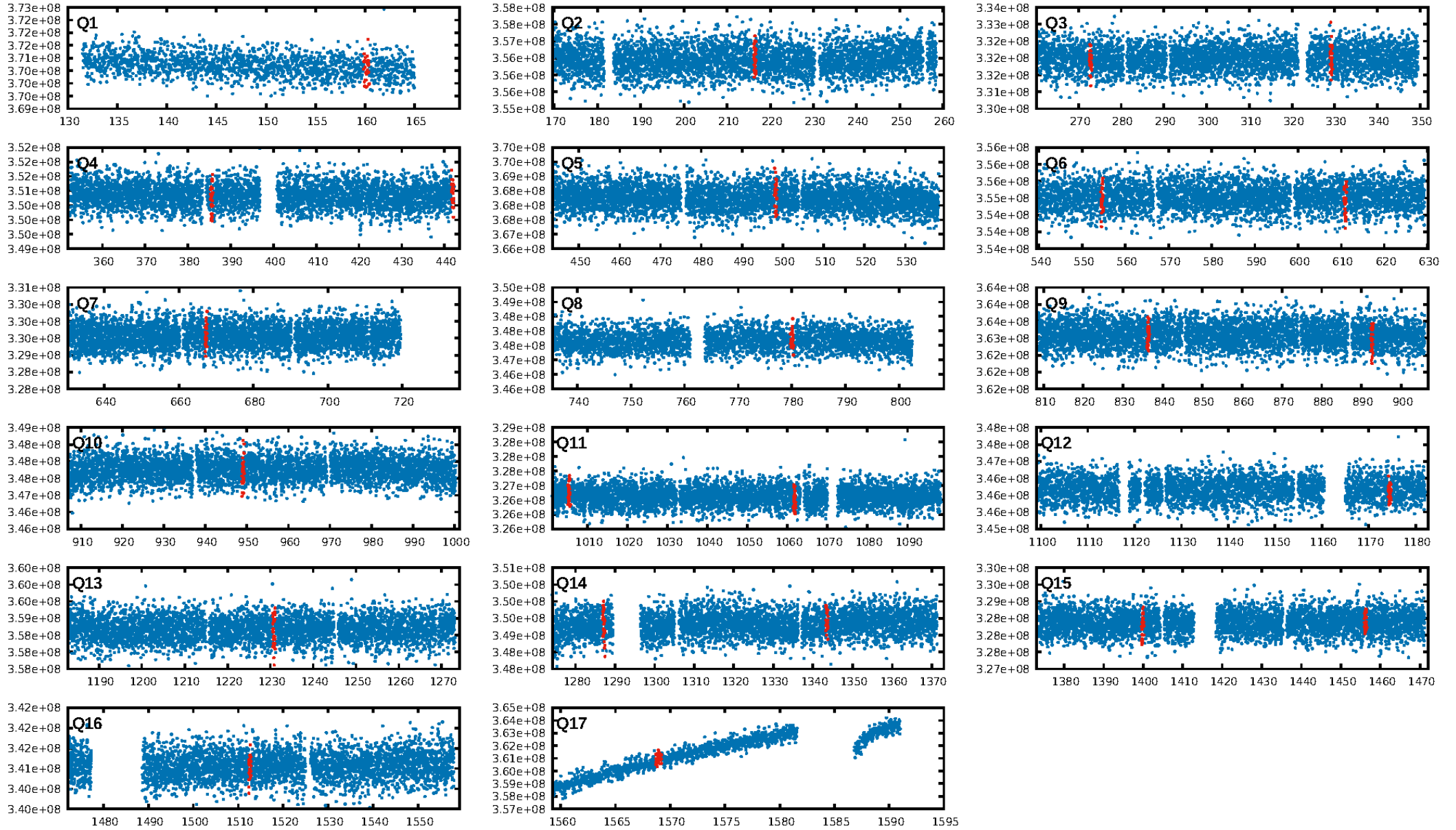
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [115.69 σ]
LongPeriod-sig: 100.0% [44.18 σ]
ModelChiSquare2-sig: 3.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.66e-12
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: -1.44
Centroid-sig: 0.2%
Centroid-so: 0.270 arcsec [2.04 σ]
OotOffset-rm: 0.179 arcsec [0.78 σ]
KicOffset-rm: 0.139 arcsec [0.49 σ]
OotOffset-st: 4/3/3/5 [15]
KicOffset-st: 4/3/3/5 [15]
DiffImageQuality-fgm: 0.40 [6/15]
DiffImageOverlap-fno: 0.00 [0/16]

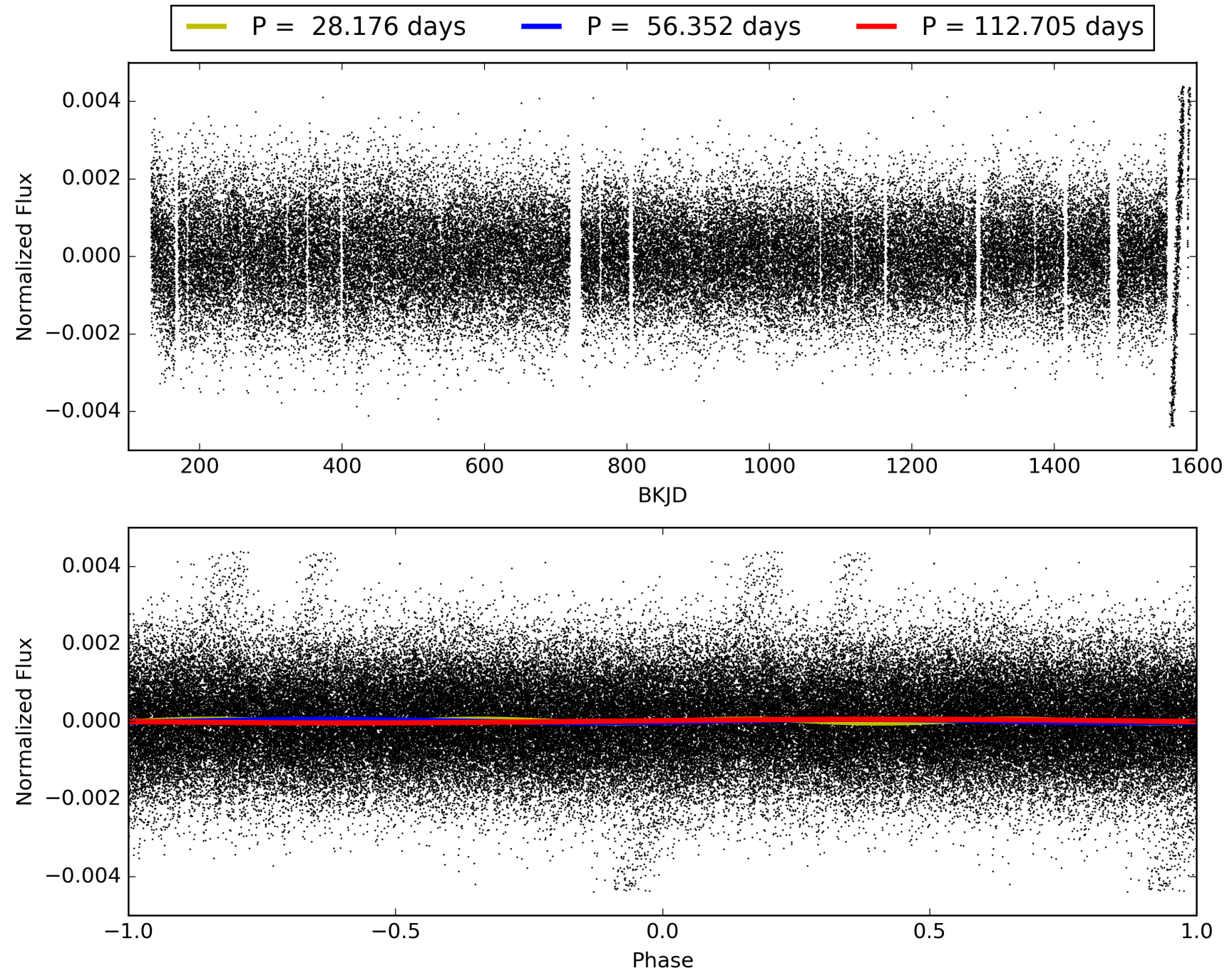
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:29:09 Z

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

TCE 006222529-04, PDC Light Curves

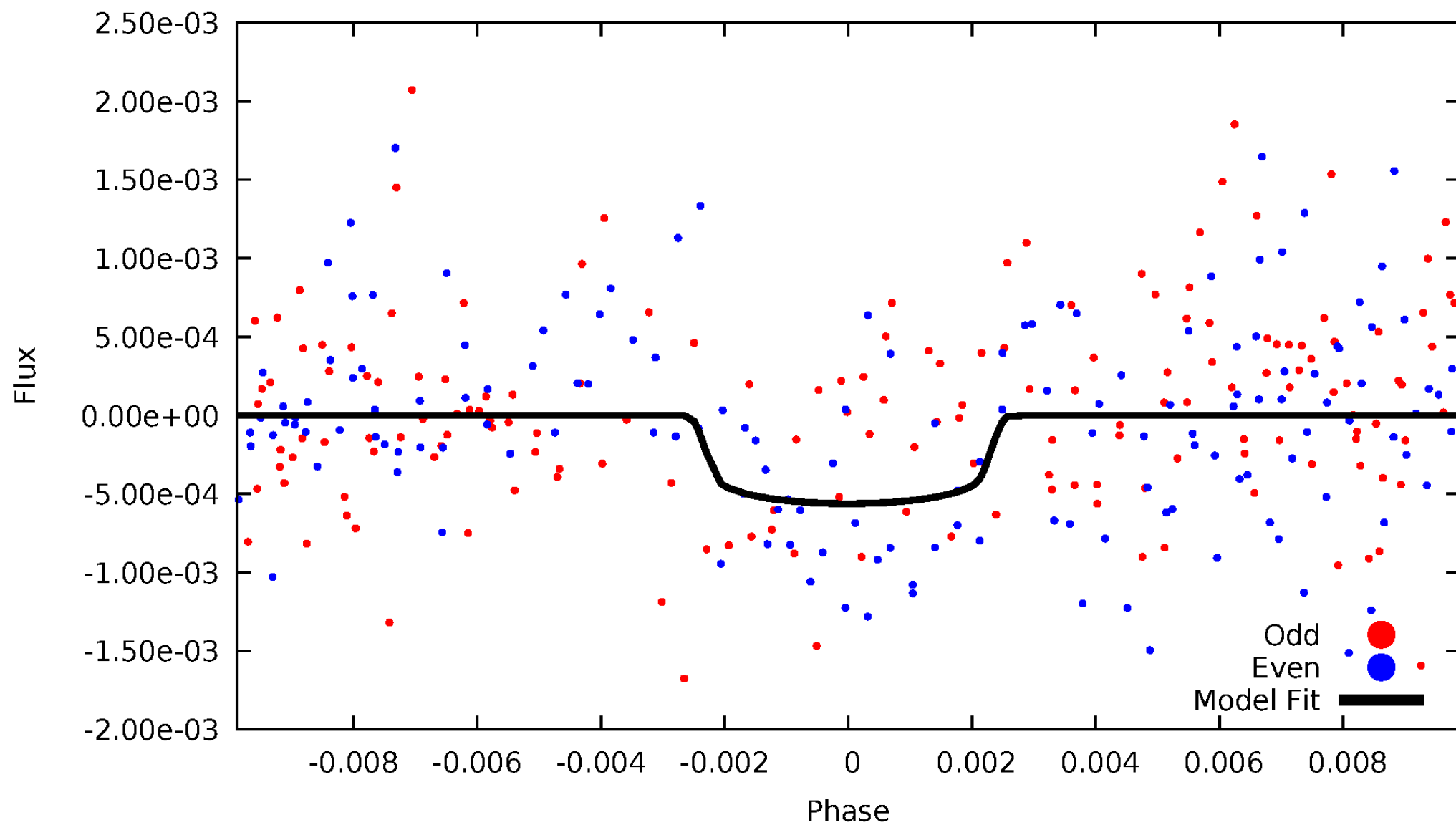


TCE 006222529-04



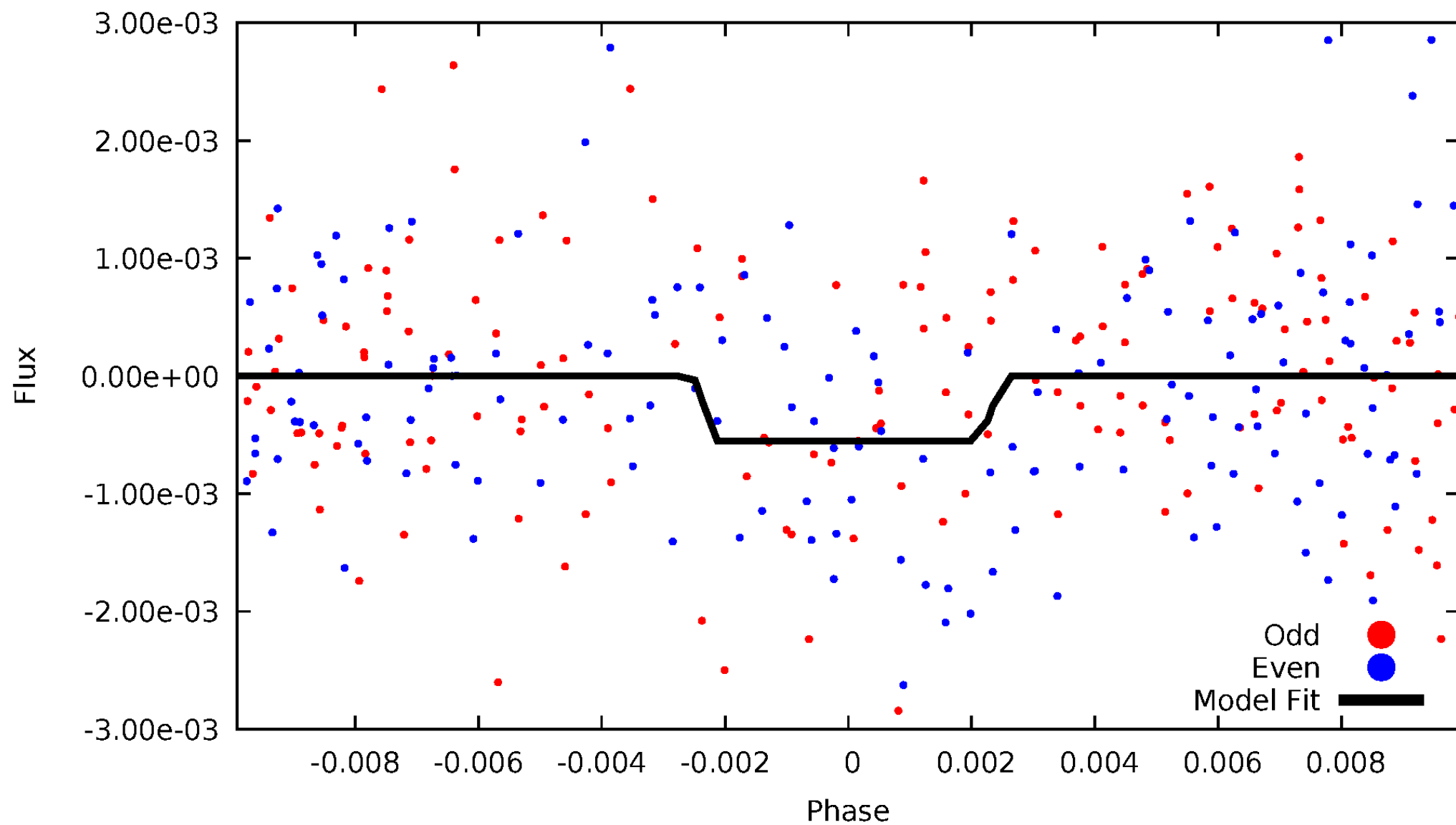
DV Odd/Even

TCE 006222529-04



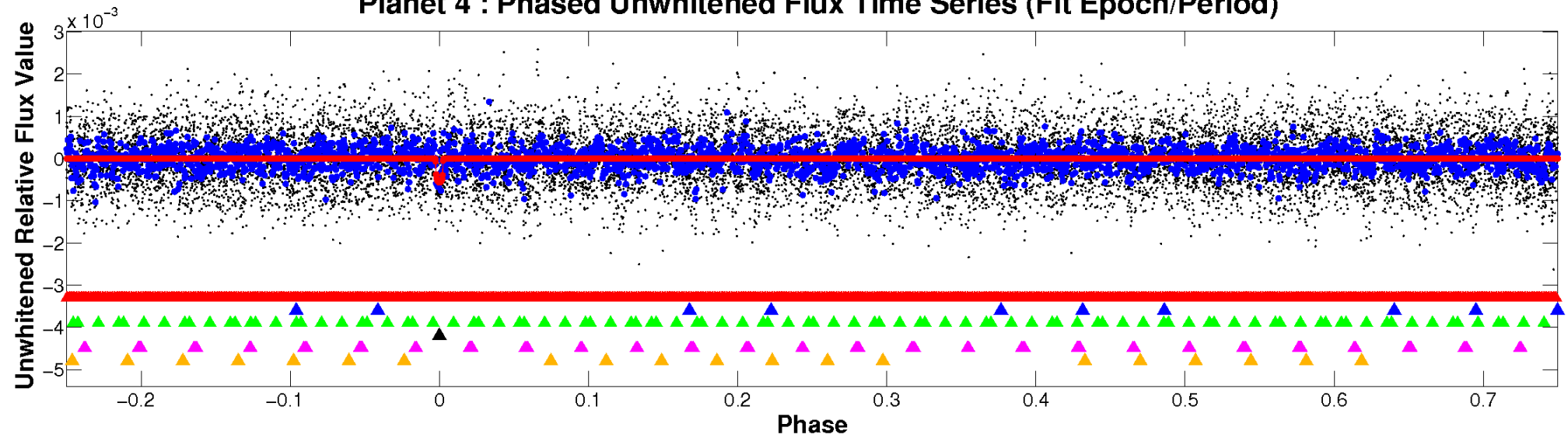
ALT Odd/Even

TCE 006222529-04

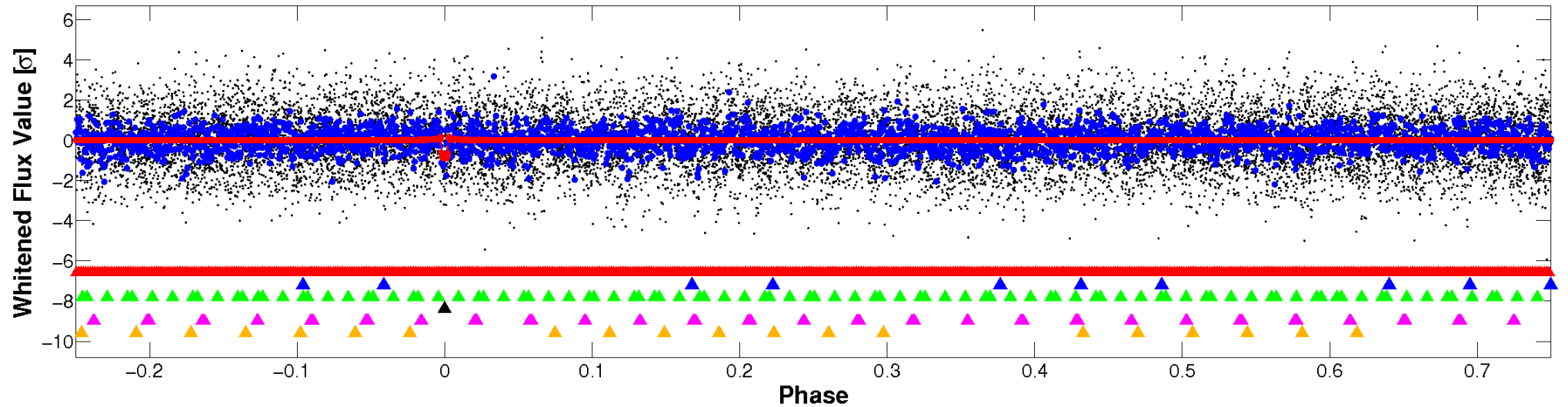


Non-Whitened Vs. Whitened Light Curve

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

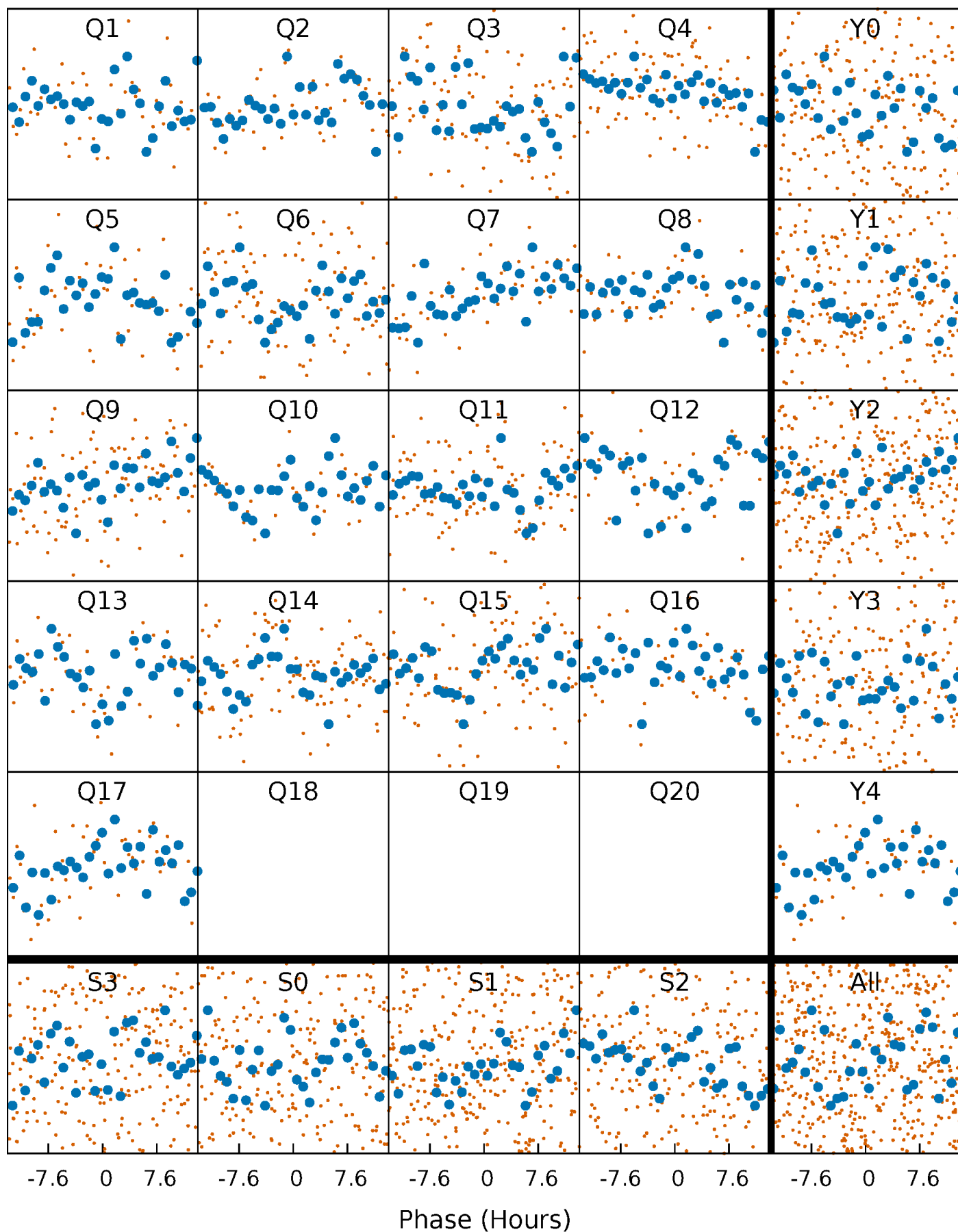


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



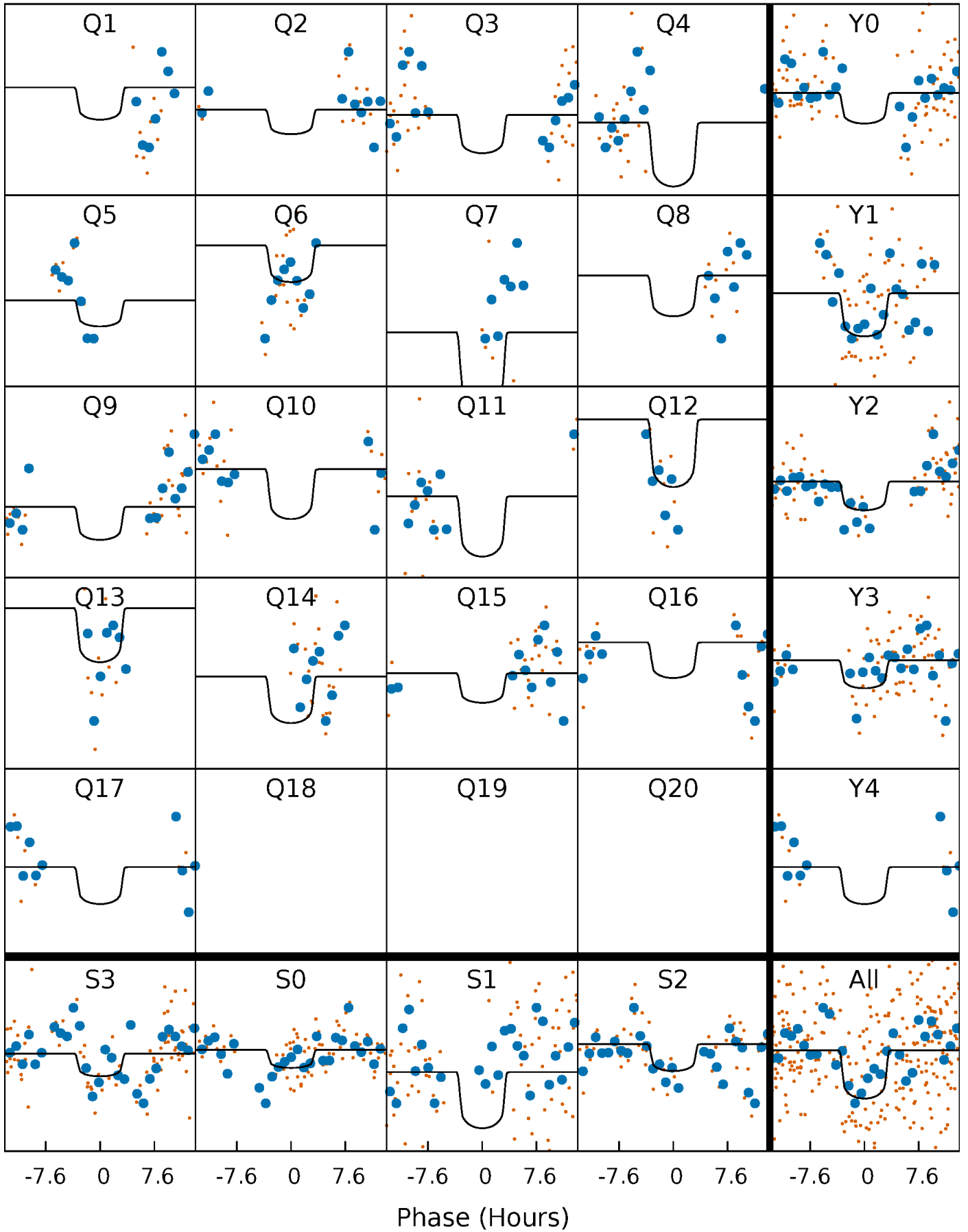
PDC Quarter-Phased Transit Curves

TCE 006222529-04 P= 56.352386 Days $T_0=160.131651$ (BKJD)



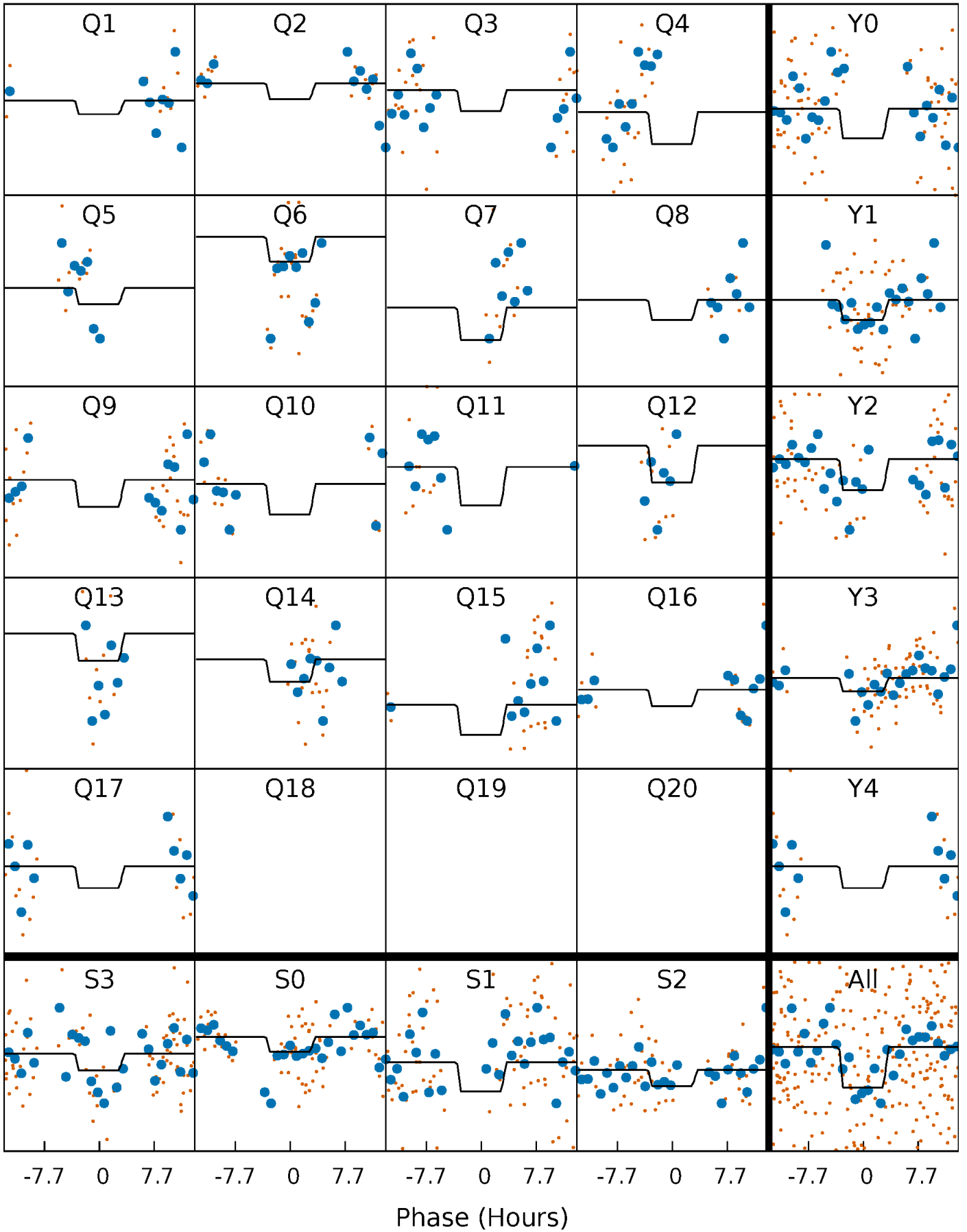
DV Quarter-Phased Transit Curves

TCE 006222529-04 P= 56.352386 Days $T_0=160.131651$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

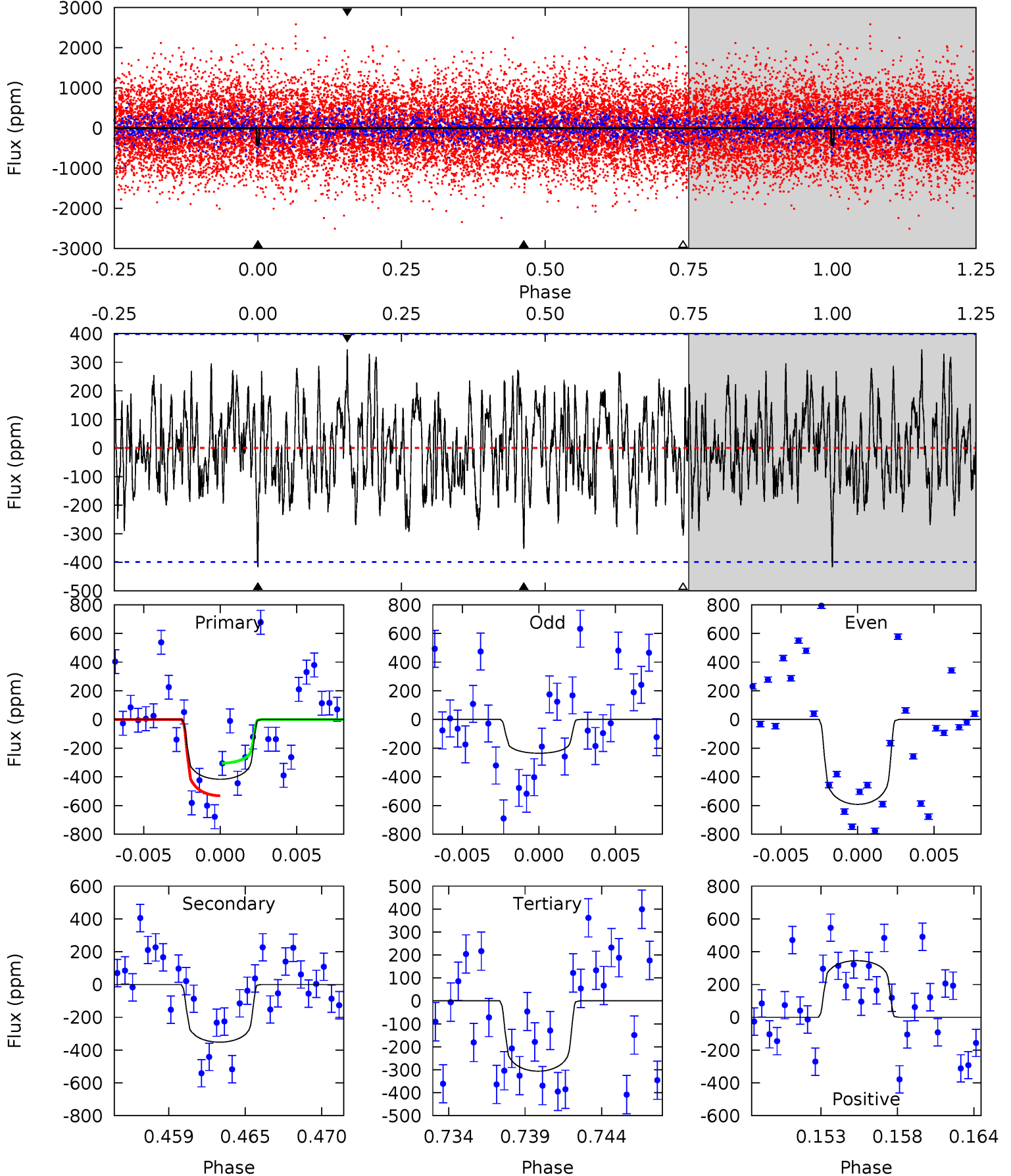
TCE 006222529-04 P= 56.356010 Days $T_0=160.069956$ (BKJD)



DV Model-Shift Uniqueness Test

006222529-04, P = 56.352386 Days, E = 103.779265 Days

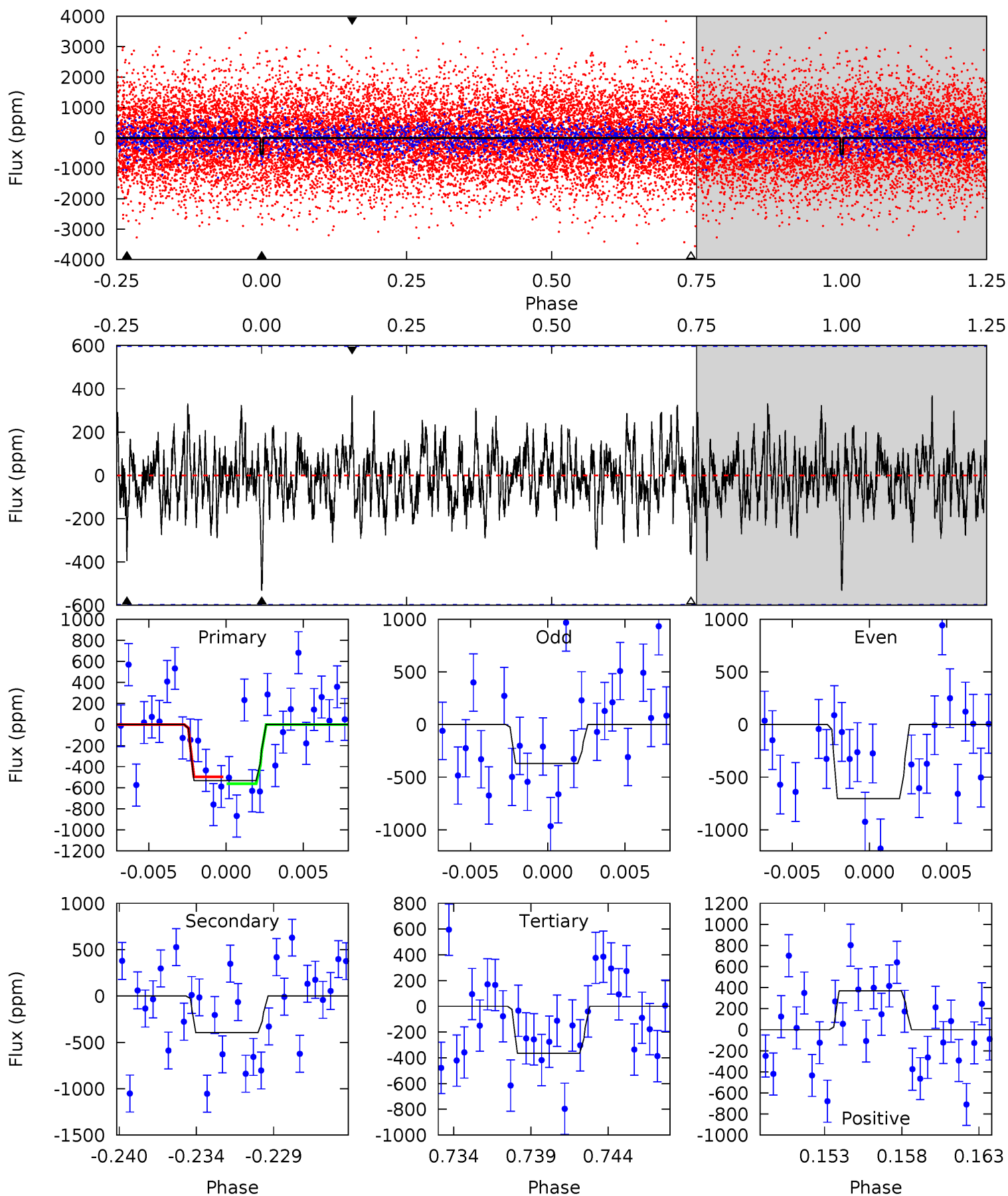
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.38	4.54	3.95	4.45	5.15	2.79	1.57	1.43	0.93	0.59	0.09	2.30	1.12	0.45	1.46



Alt Model-Shift Uniqueness Test

006222529-04, P = 56.356010 Days, E = 103.713946 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.59	3.41	3.15	3.19	5.15	2.80	0.95	1.43	1.40	0.26	0.22	1.44	0.58	0.41	0.28



Stellar Parameters For KIC 006222529

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7802^{+77}_{-85}	$4.231^{+0.045}_{-0.135}$	$-0.180^{+0.150}_{-0.150}$	$1.574^{+0.322}_{-0.129}$	$1.534^{+0.128}_{-0.096}$	$0.554^{+0.122}_{-0.205}$
	+1%/-1%	+1%/-3%	+83%/-83%	+20%/-8%	+8%/-6%	+22%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 006222529-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-352 ± 77	$4.16^{+2.46}_{-2.09}$	1057^{+50}_{-28}	6750^{+3729}_{-1377}	1167^{+3625}_{-719}
Alt.	-395 ± 116	$4.26^{+2.26}_{-2.05}$	1055^{+49}_{-27}	6800^{+3734}_{-1238}	1261^{+3452}_{-736}

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

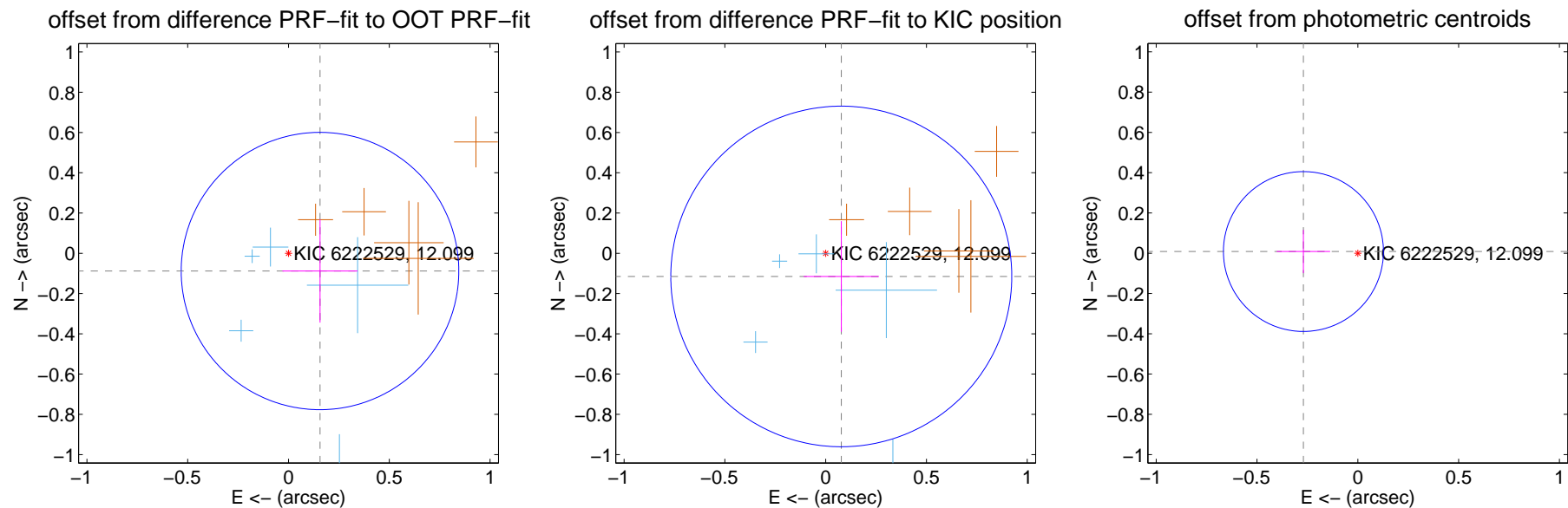
DV Centroid Data

Supplemental centroid analysis for 006222529-04. Kepler magnitude: 12.10. Transit SNR 6.35

There are 6 quarters with good PRF difference image offsets

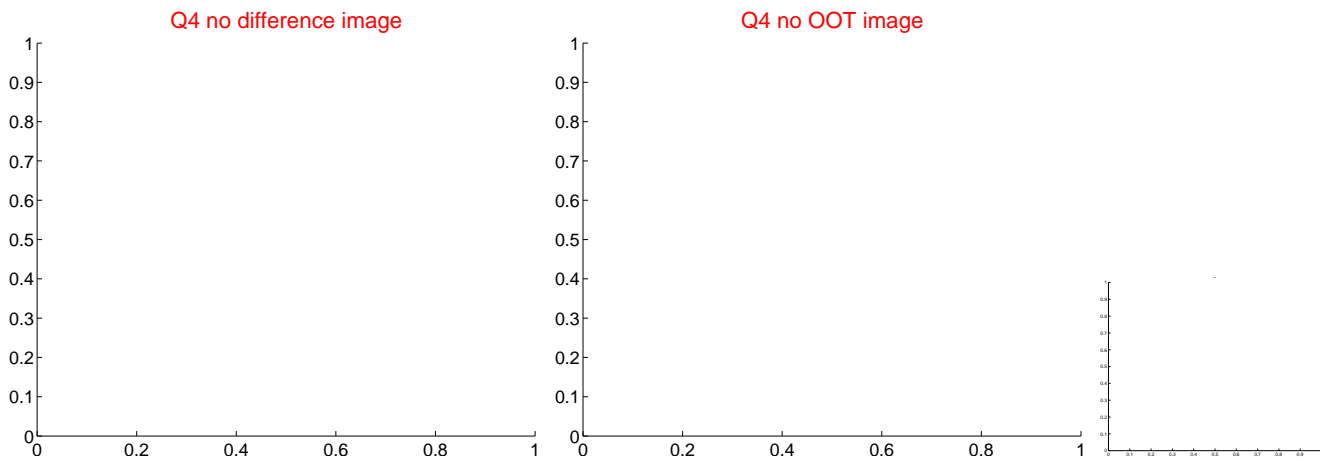
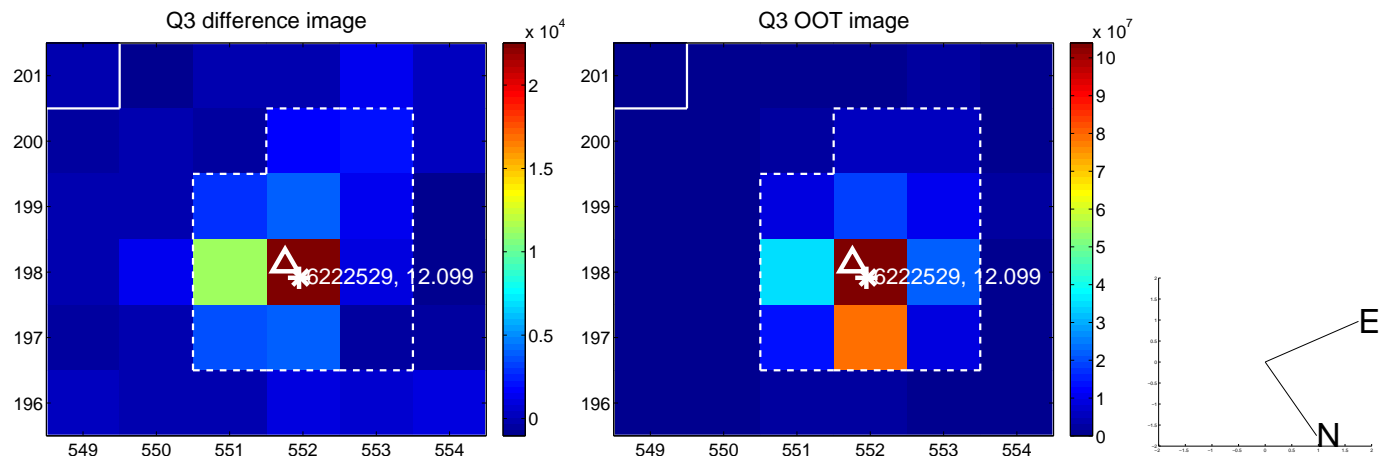
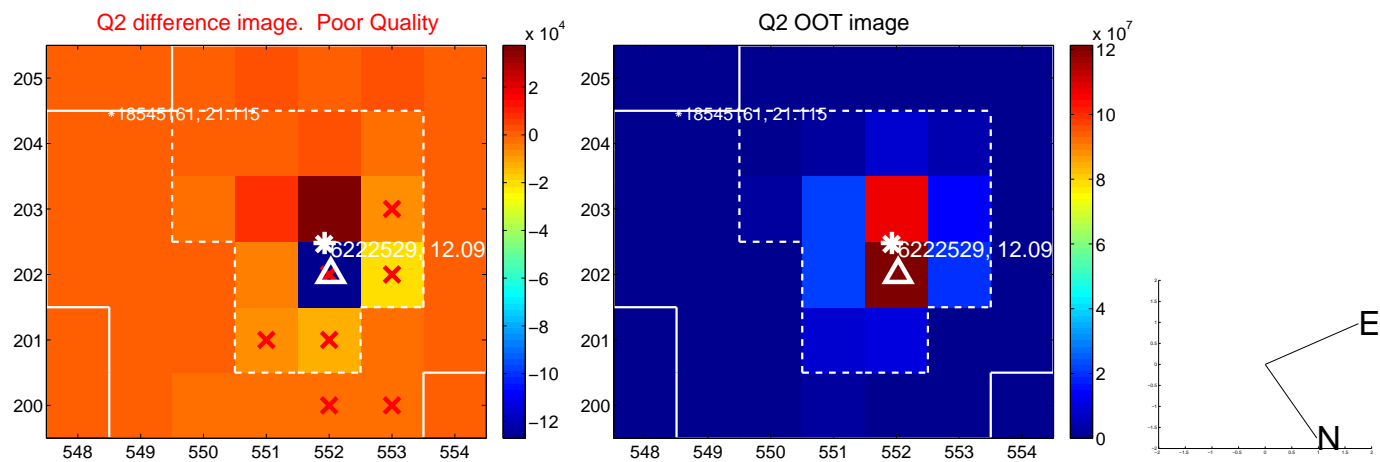
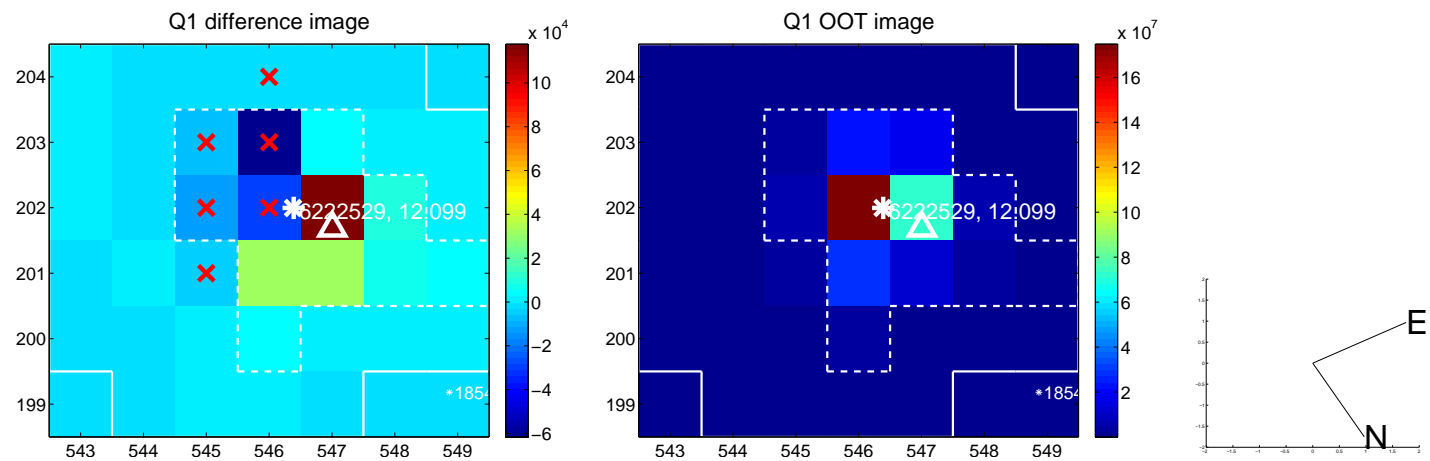
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.179 ± 0.230	0.78	-0.156 ± 0.187	-0.088 ± 0.256
PRF-fit source offset from KIC position	0.139 ± 0.282	0.49	-0.078 ± 0.186	-0.115 ± 0.275
photometric centroid source offset	0.27 ± 0.13	2.04	0.27 ± 0.13	0.01 ± 0.11

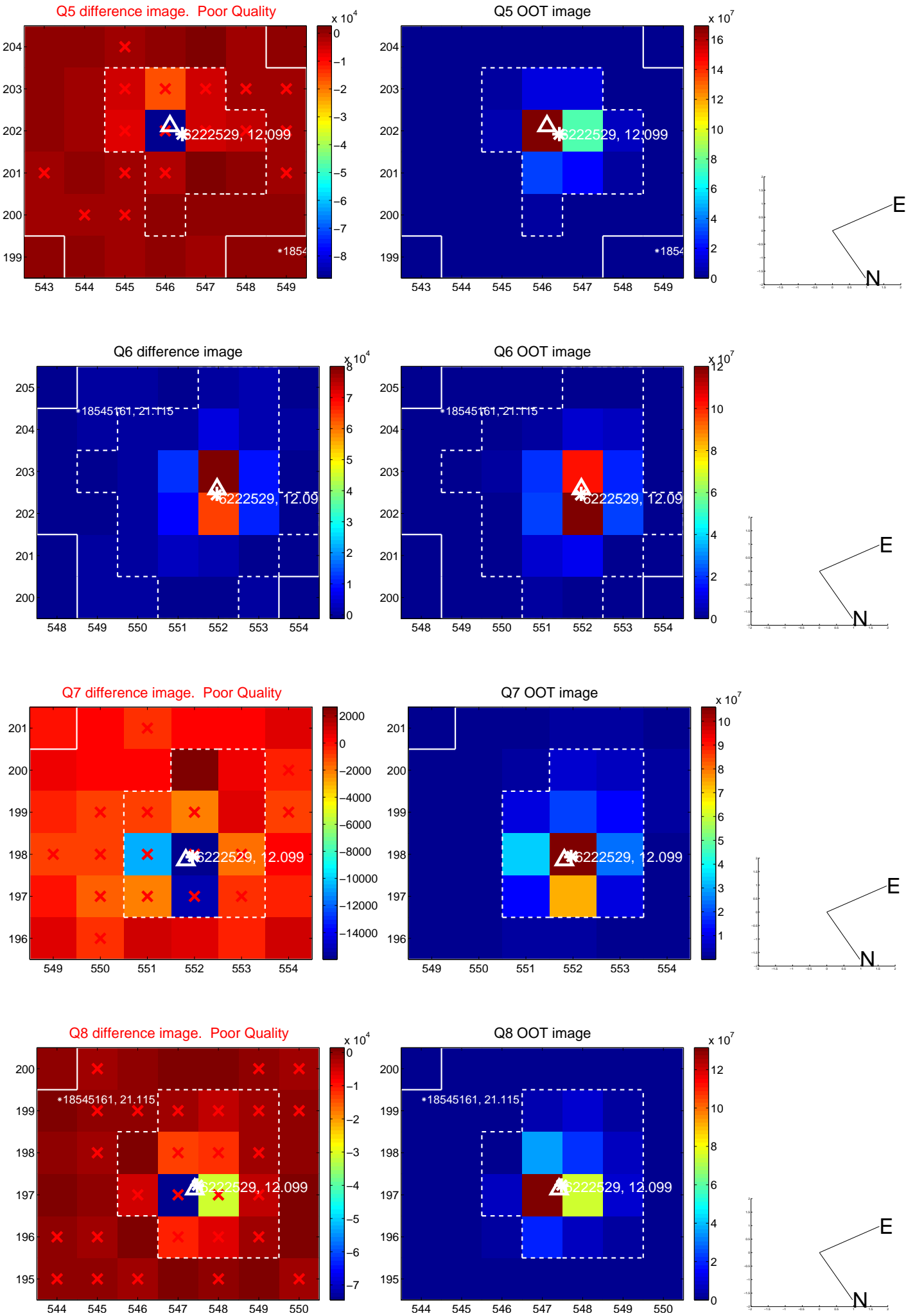


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

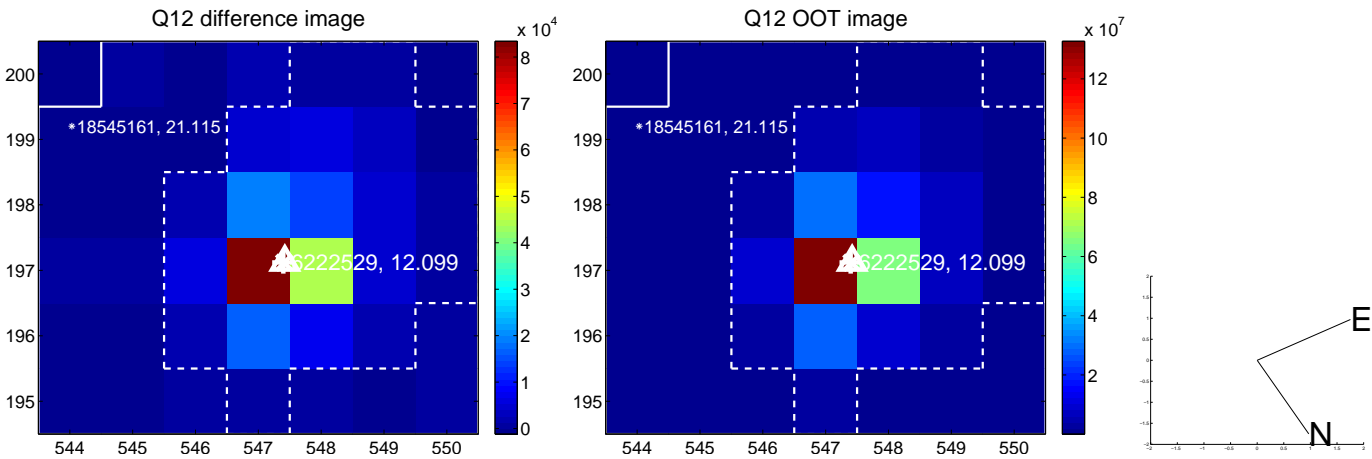
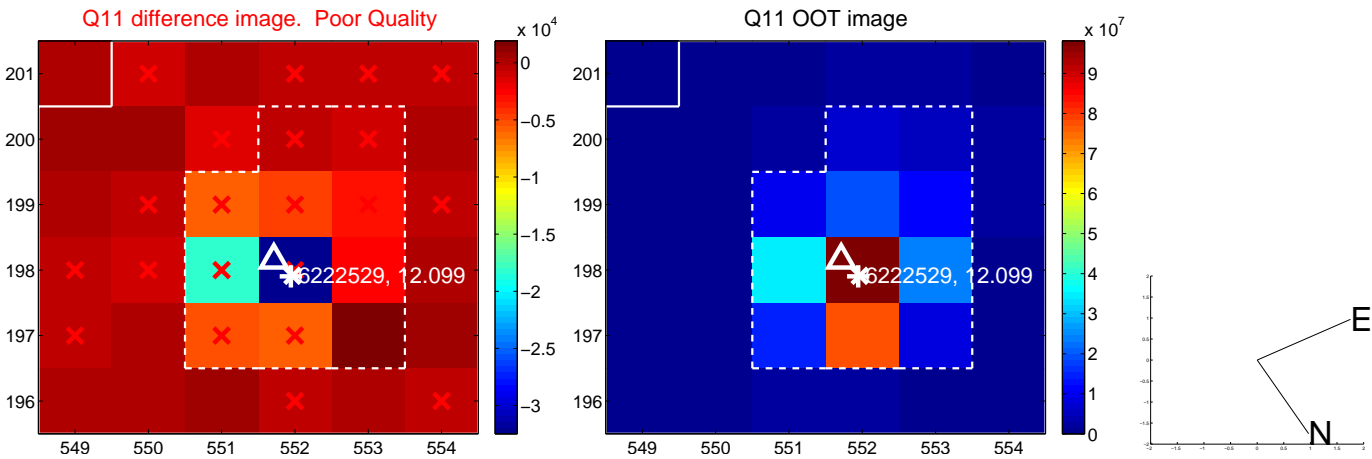
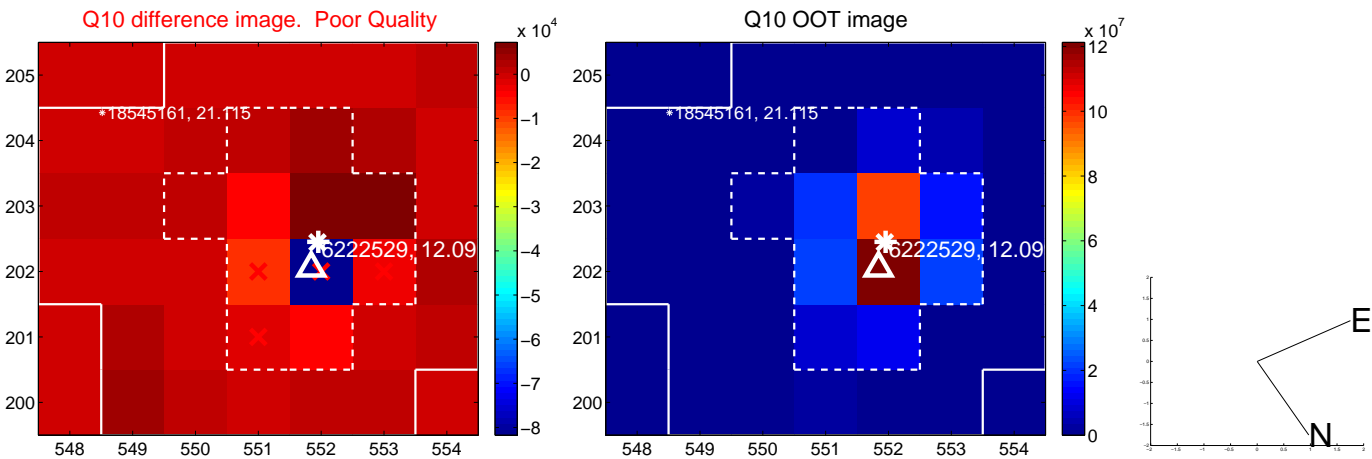
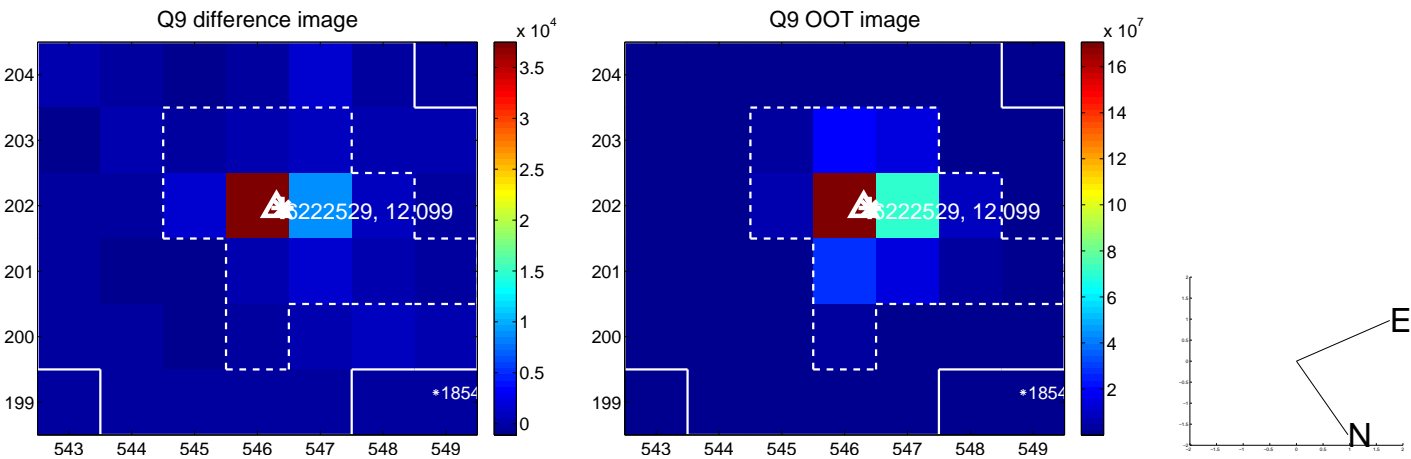
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



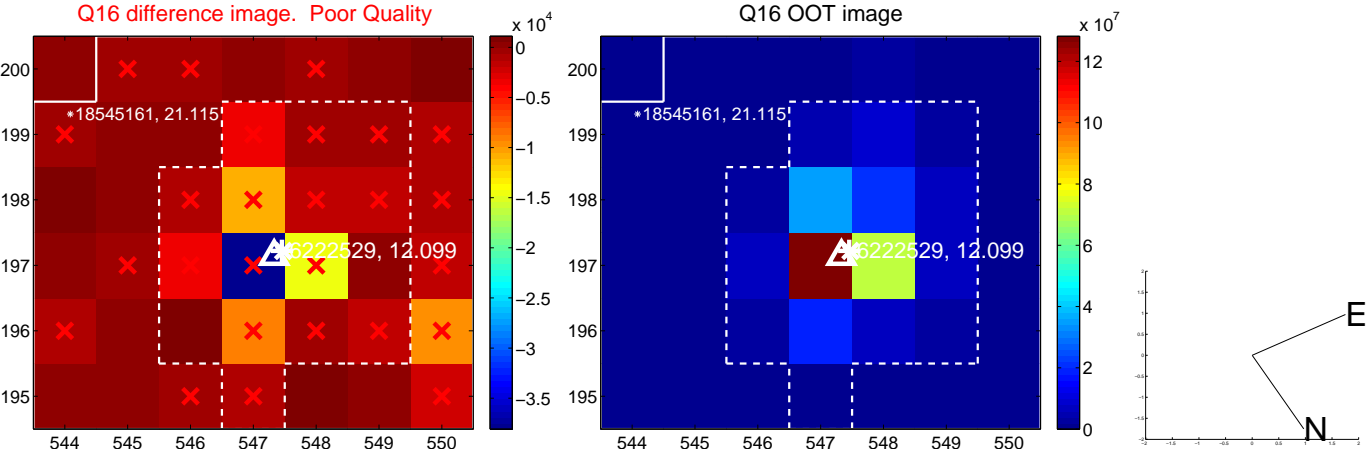
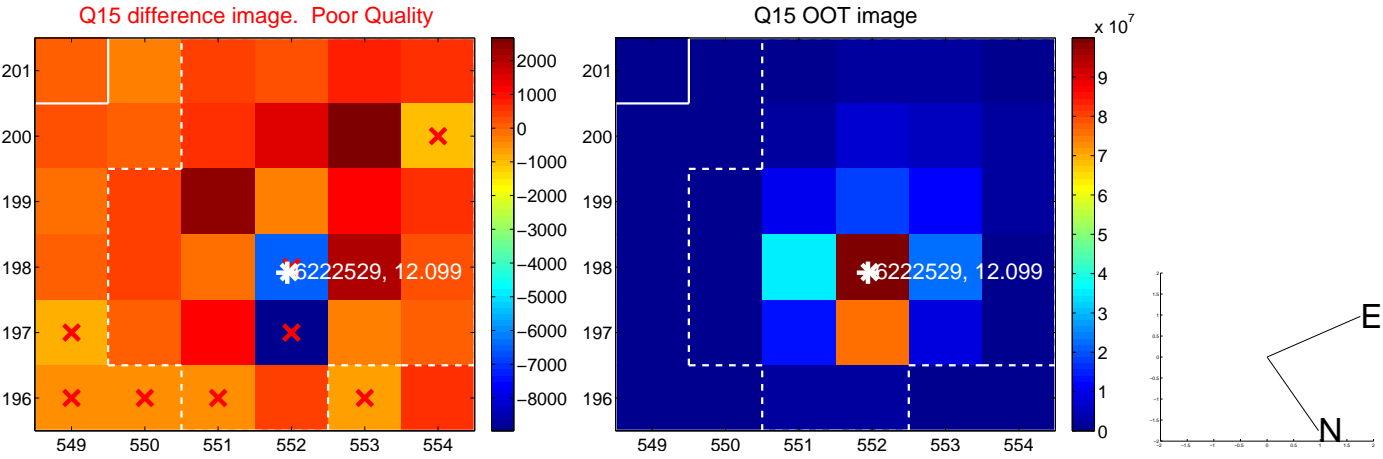
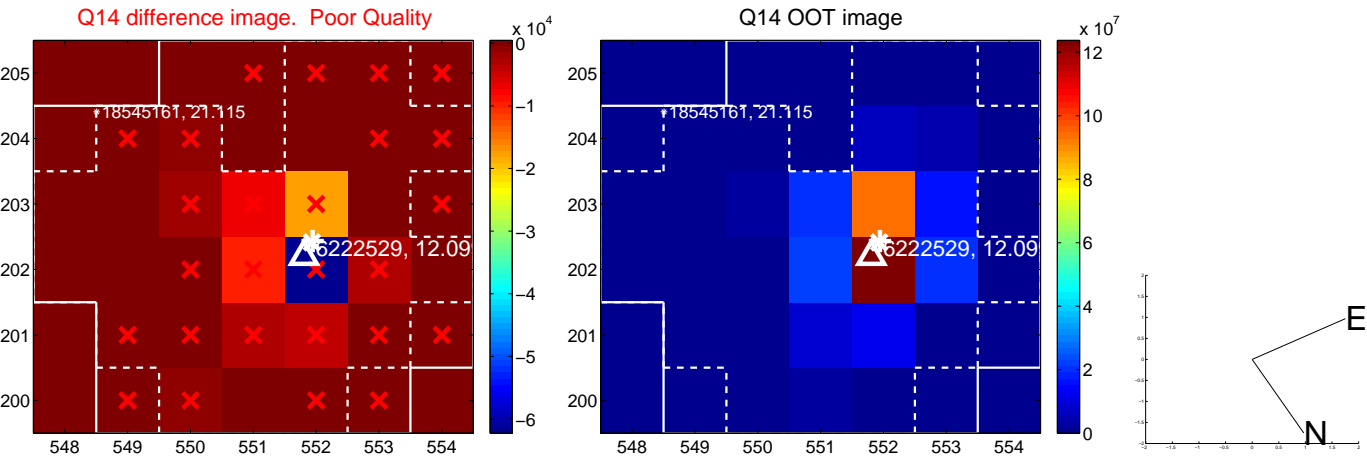
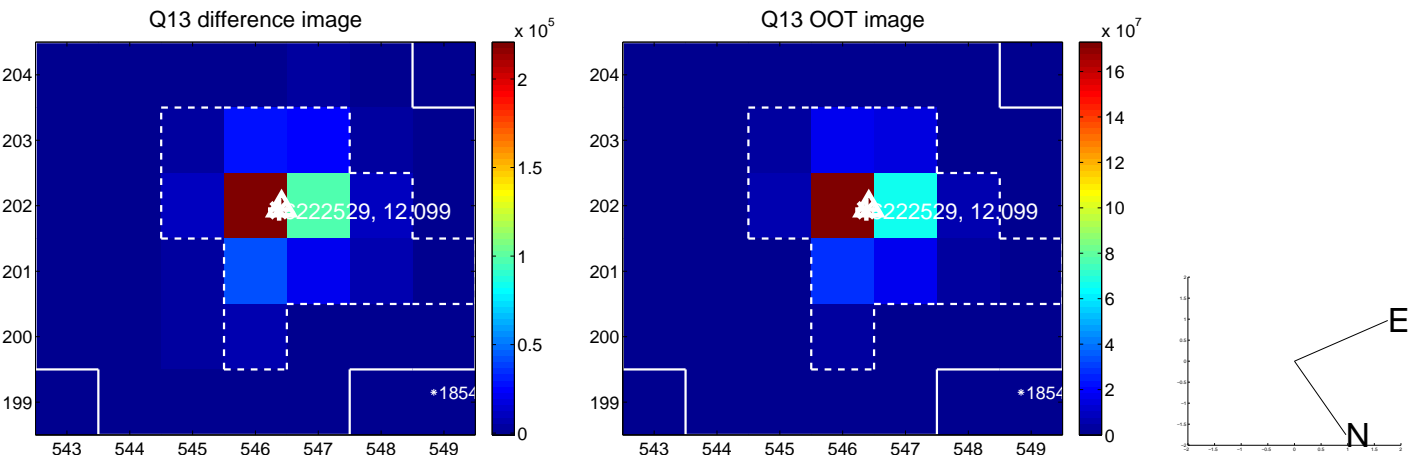
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



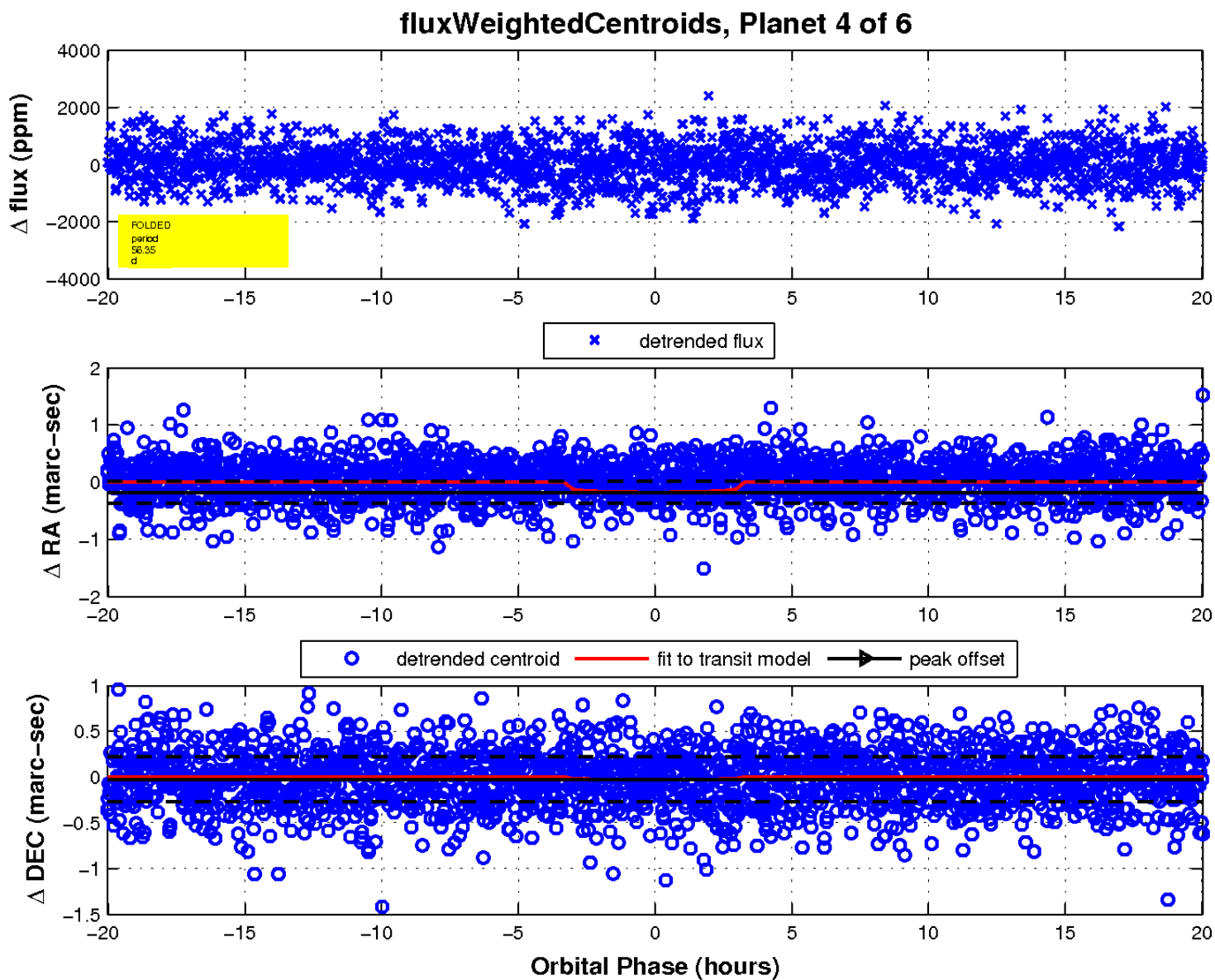
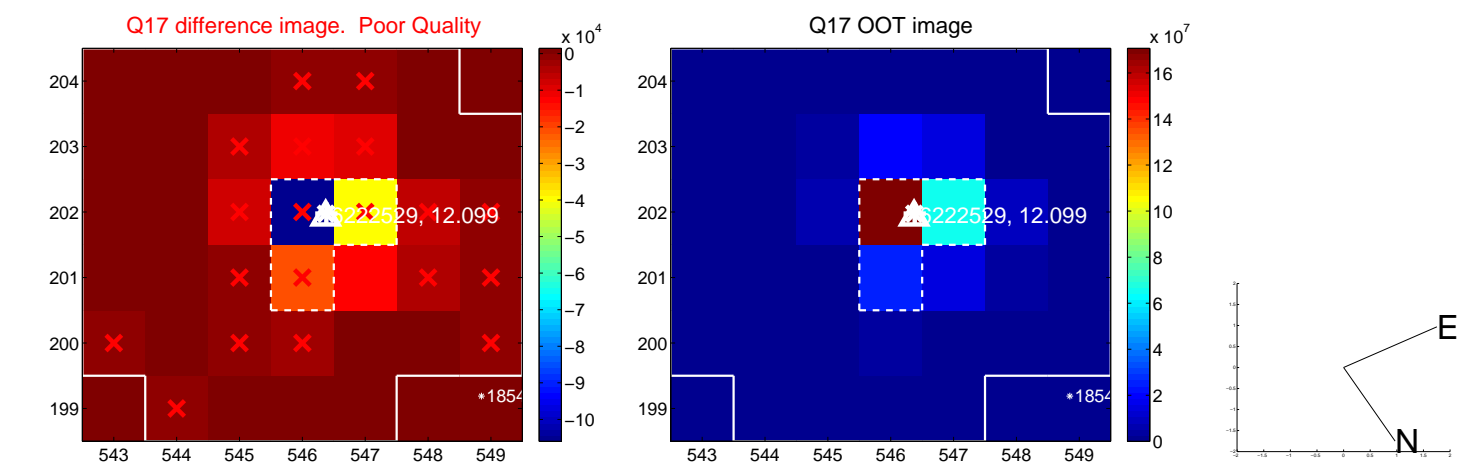
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

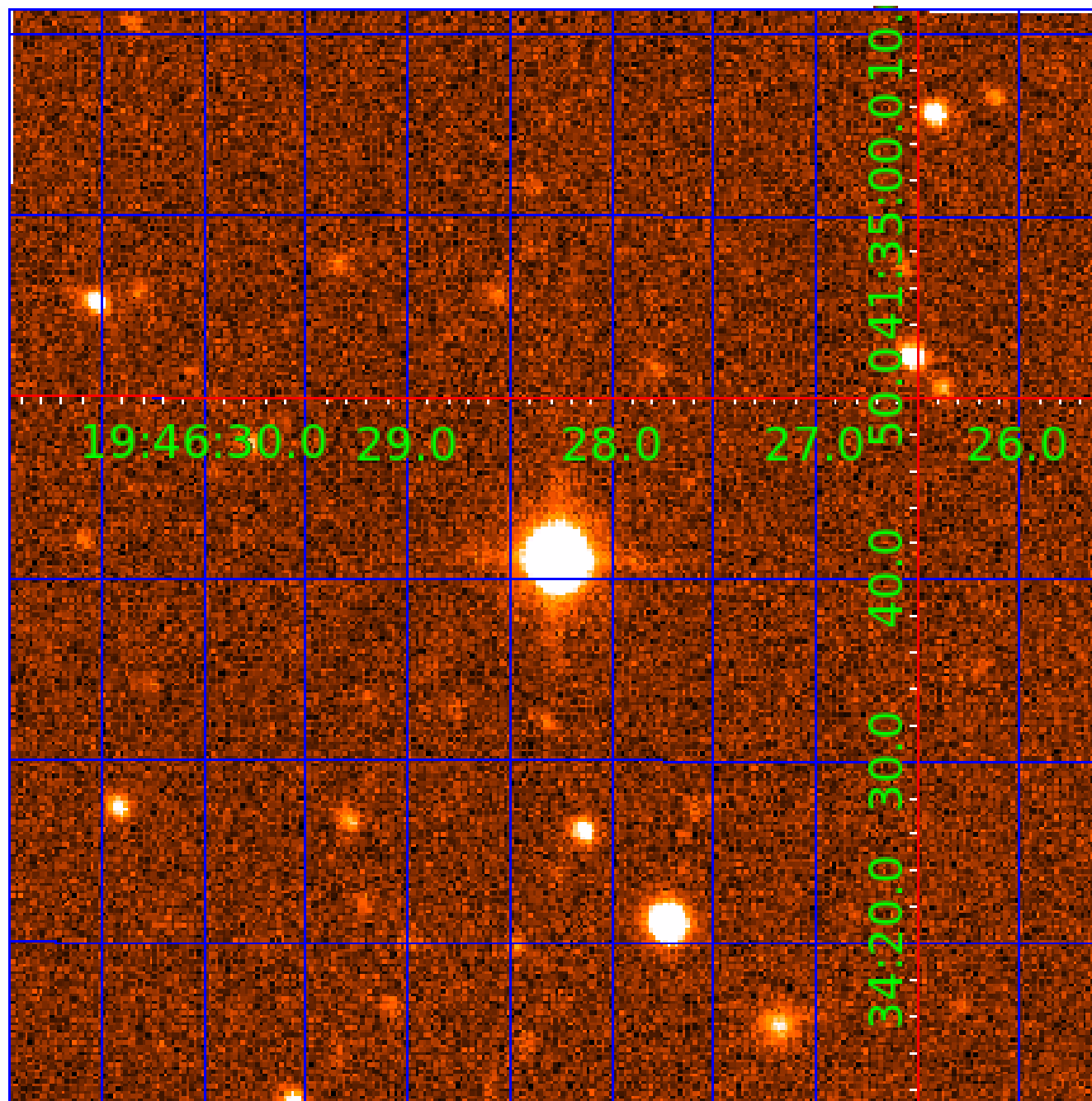


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006222529

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})
006222529-01	OBS	No	0.990206	132.208285	94.3	5.813	11.7	11.2	1.57	7802	1.62	16321.27
006222529-02	OBS	No	154.197849	146.034161	1428.0	3.799	8.6	10.1	1.57	7802	6.41	19.48
006222529-03	OBS	No	15.142085	137.864067	612.7	1.795	8.8	9.5	1.57	7802	4.37	430.00
006222529-04	OBS	No	56.352386	160.131651	563.2	6.682	7.9	6.4	1.57	7802	4.07	74.56
006222529-05	OBS	No	20.869302	150.962001	540.2	3.088	8.0	8.8	1.57	7802	4.20	280.36
006222529-06	OBS	No	74.439496	158.805458	557.0	7.203	7.4	6.2	1.57	7802	3.90	51.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006222529-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
006222529-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006222529-03	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
006222529-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006222529-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006222529-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

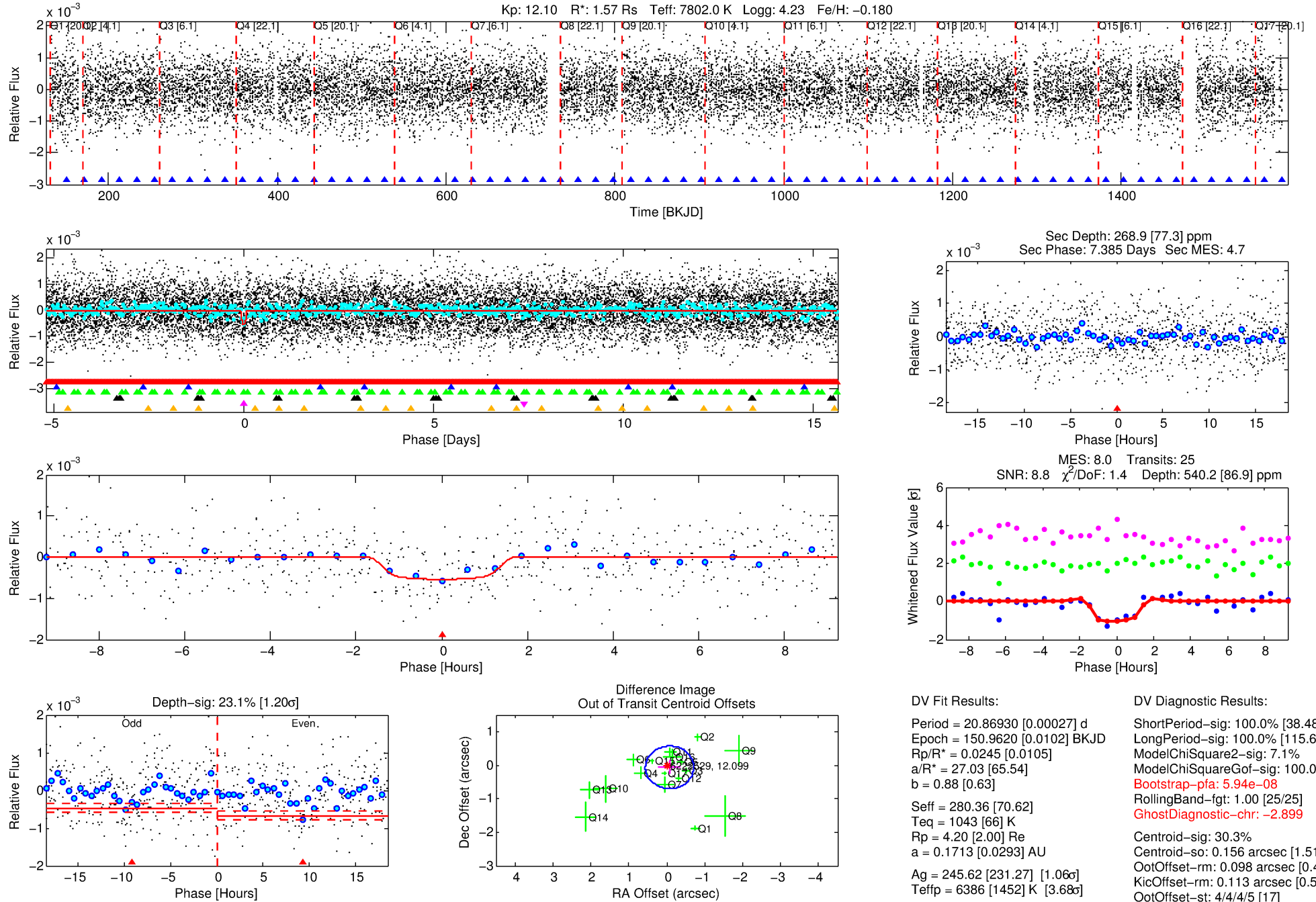
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006222529-05

No Significant Match Found

DV One-Page Summary

KIC: 6222529 Candidate: 5 of 6 Period: 20.869 d



DV Fit Results:

Period = 20.86930 [0.00027] d
Epoch = 150.9620 [0.0102] BKJD
Rp/R* = 0.0245 [0.0105]
a/R* = 27.03 [65.54]
b = 0.88 [0.63]
Seff = 280.36 [70.62]
Teq = 1043 [66] K
Rp = 4.20 [2.00] Re
a = 0.1713 [0.0293] AU
Ag = 245.62 [231.27] [1.06σ]
Teffp = 6386 [1452] K [3.68σ]

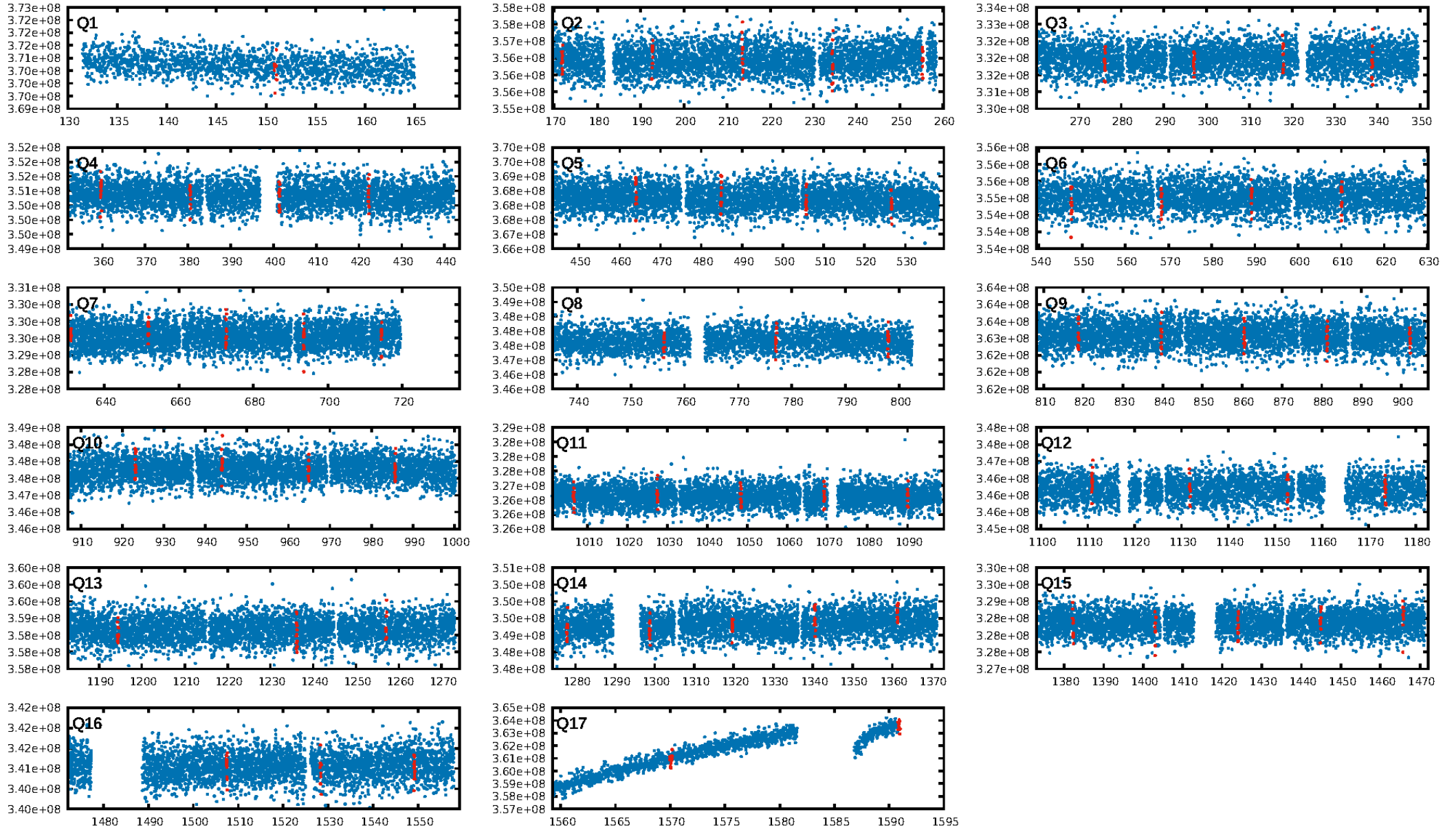
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [38.48σ]
LongPeriod-sig: 100.0% [115.69σ]
ModelChiSquare2-sig: 7.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.94e-08
RollingBand-fgt: 1.00 [25/25]
GhostDiagnostic-chr: -2.899
Centroid-sig: 30.3%
Centroid-so: 0.156 arcsec [1.51σ]
OotOffset-rm: 0.098 arcsec [0.46σ]
KicOffset-rm: 0.113 arcsec [0.51σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.47 [8/17]
DiffImageOverlap-fno: 0.29 [5/17]

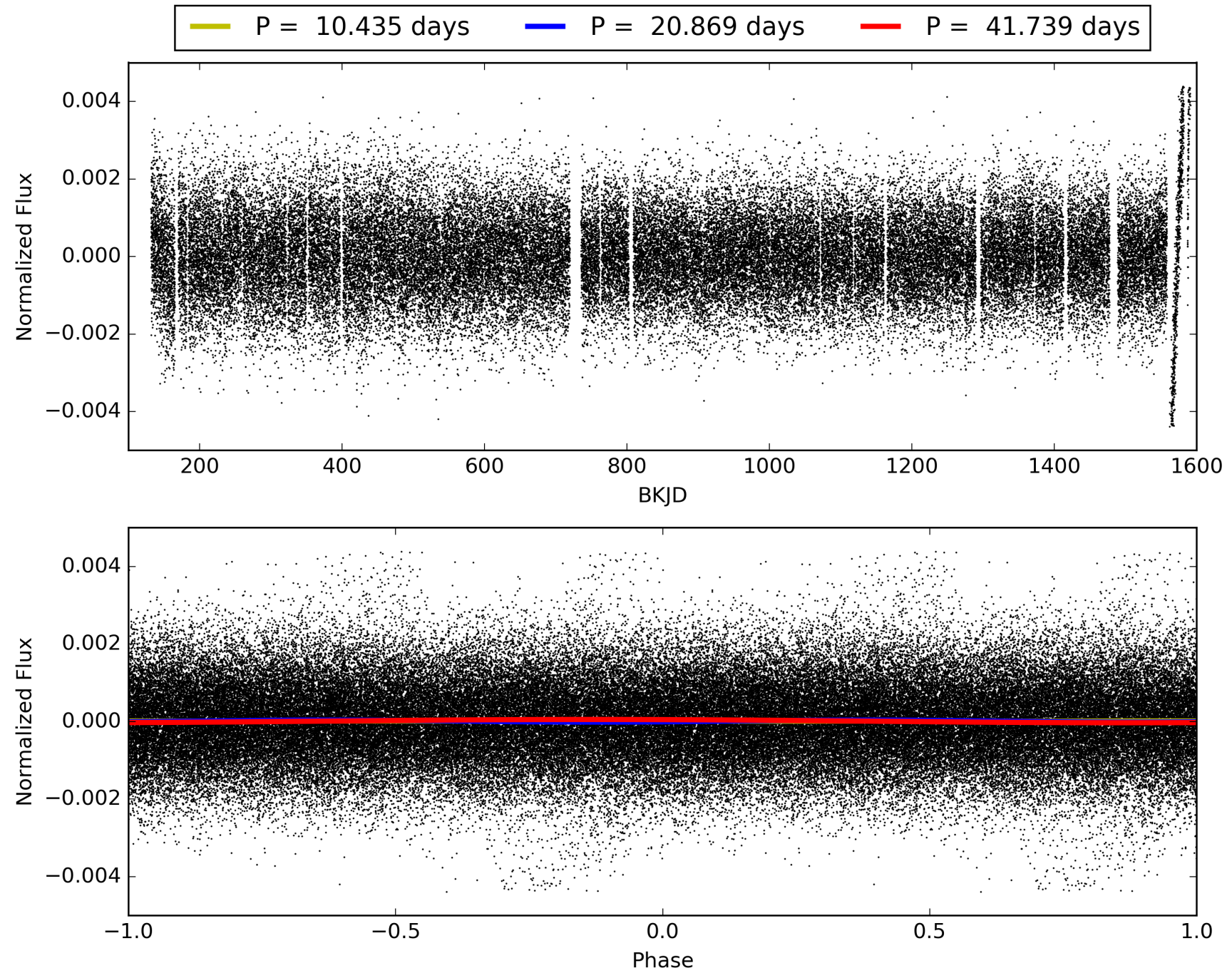
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:29:13 Z

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

TCE 006222529-05, PDC Light Curves

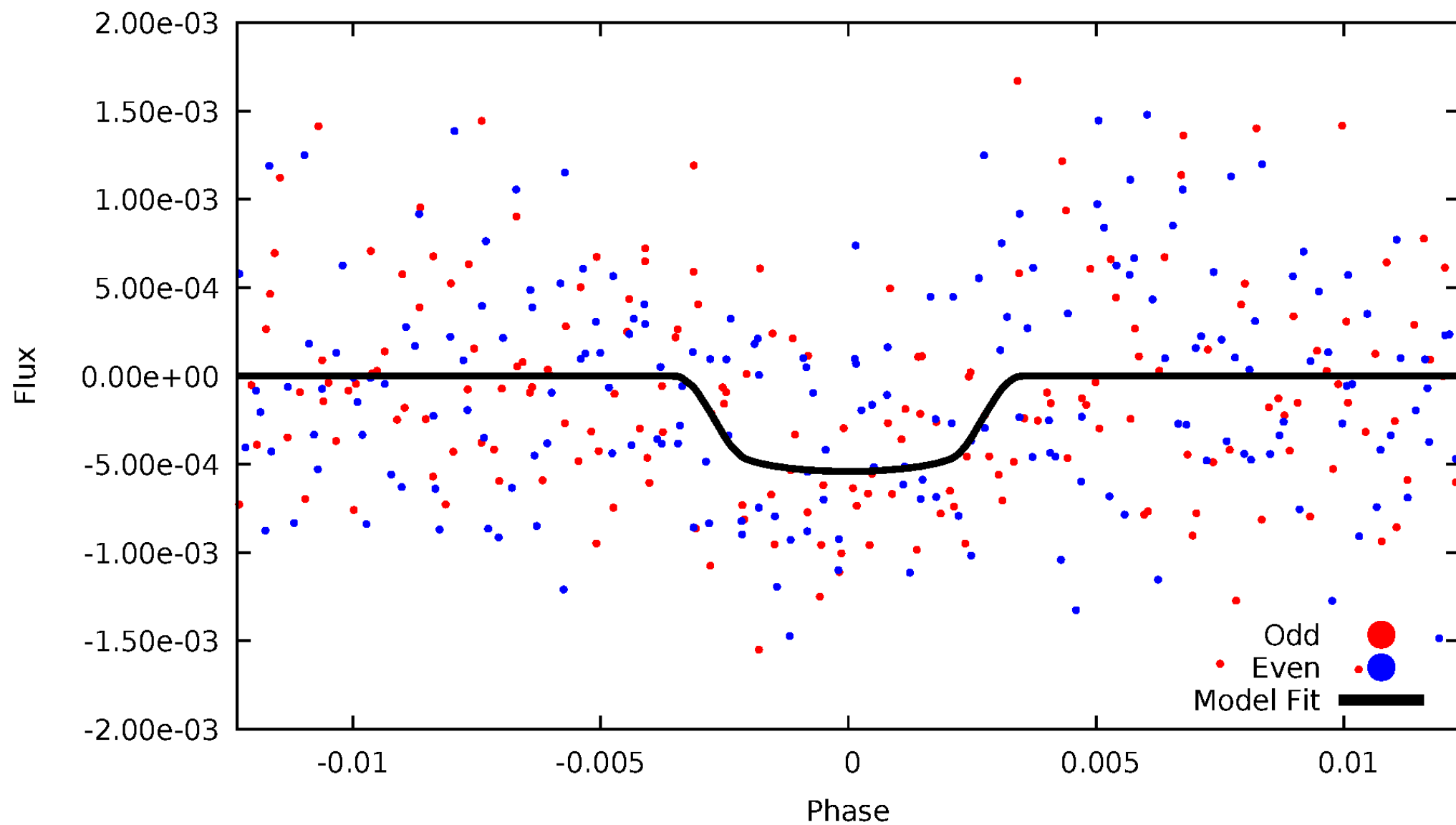


TCE 006222529-05



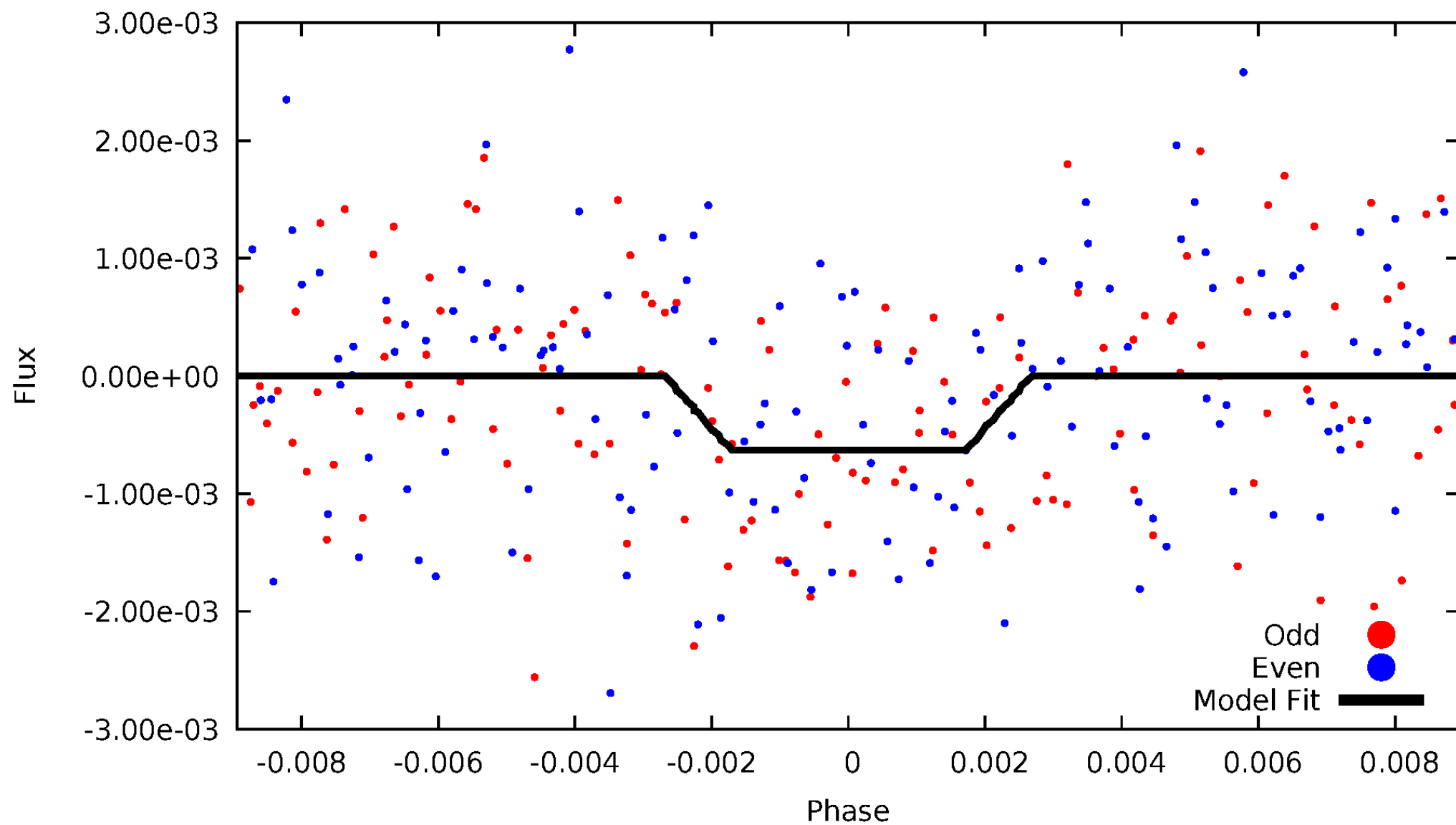
DV Odd/Even

TCE 006222529-05



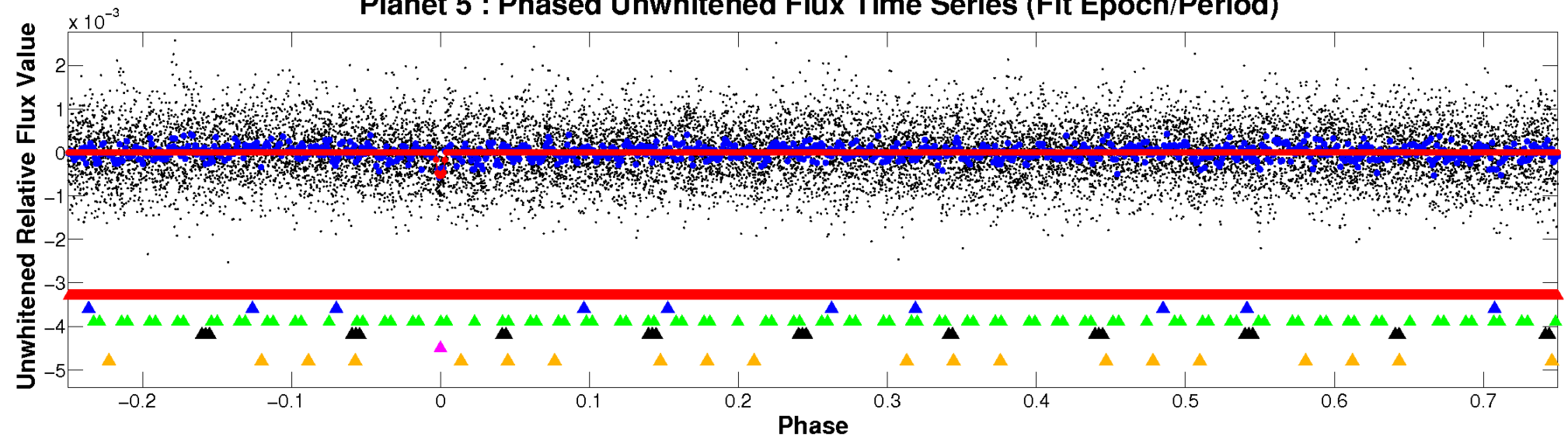
ALT Odd/Even

TCE 006222529-05

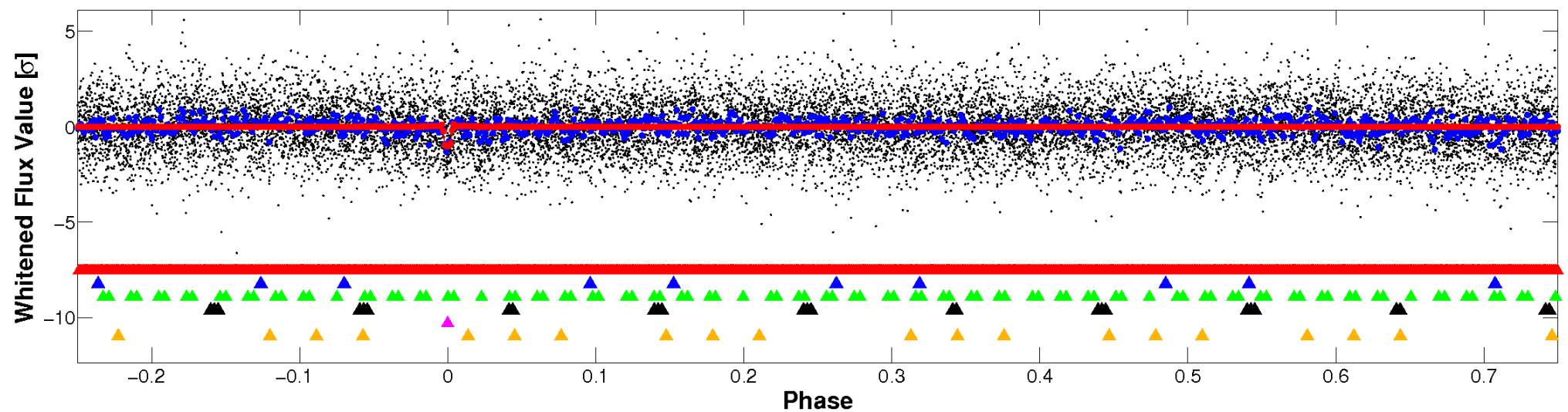


Non-Whitened Vs. Whitened Light Curve

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

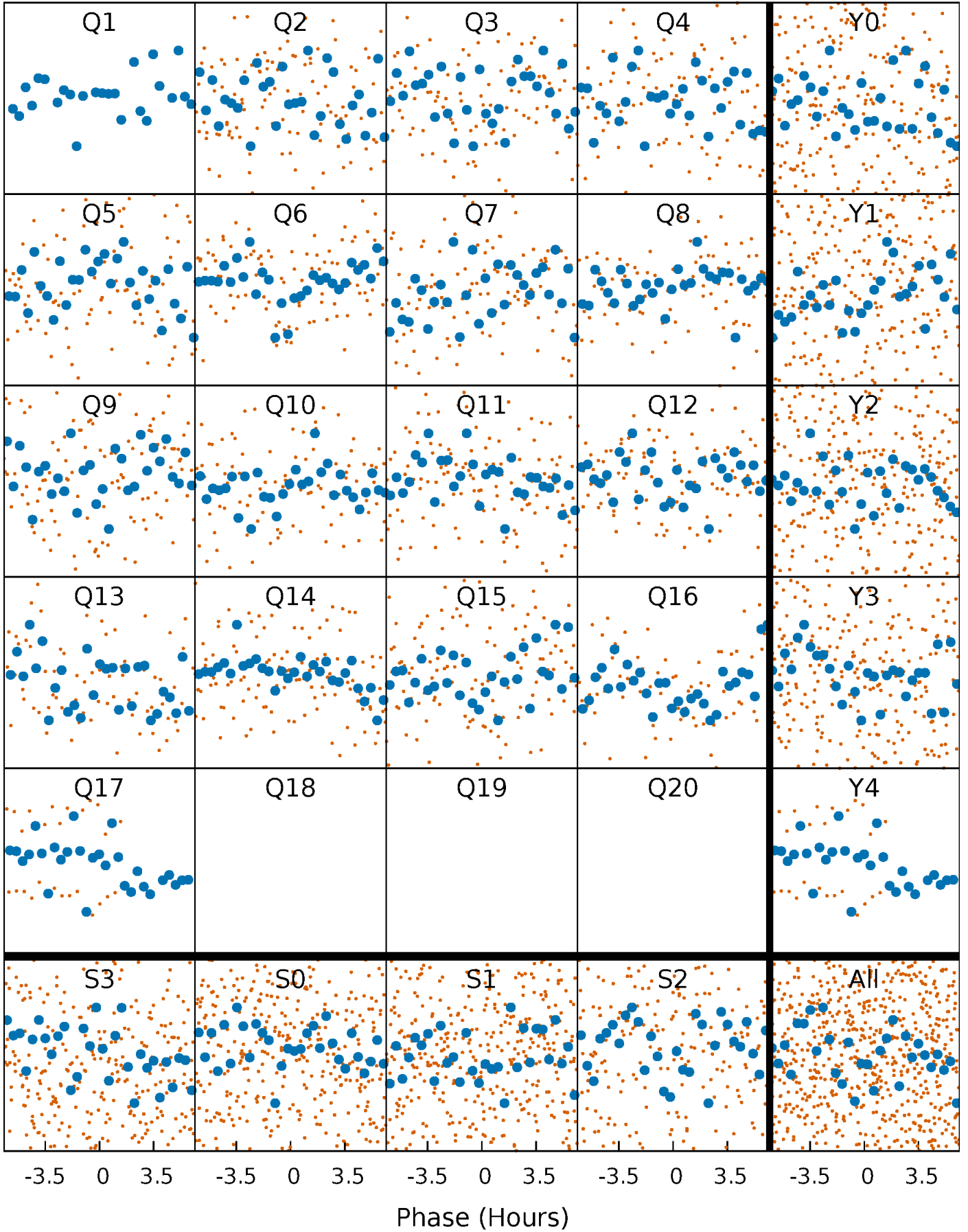


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



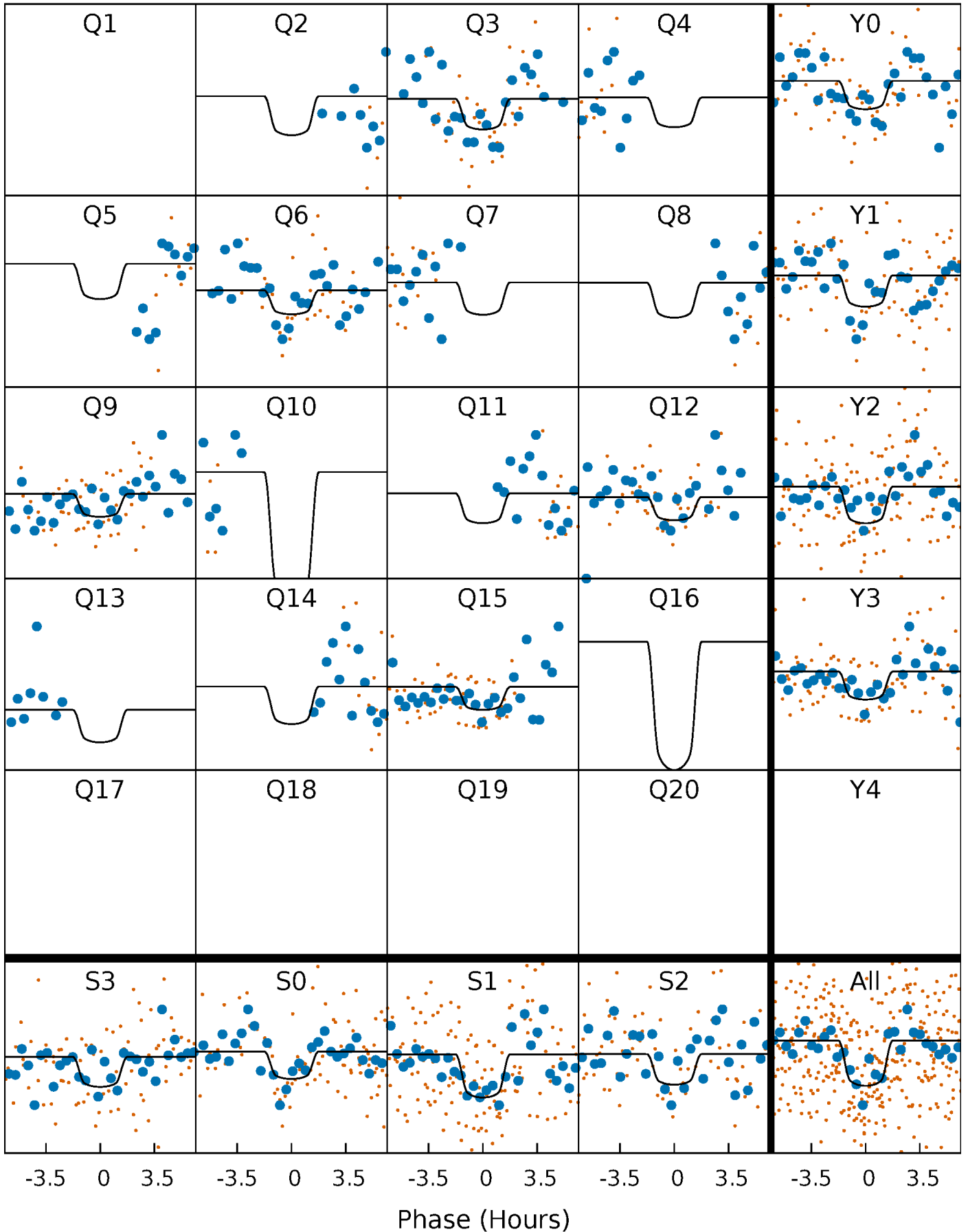
PDC Quarter-Phased Transit Curves

TCE 006222529-05 $P = 20.869302$ Days $T_0 = 150.962001$ (BKJD)



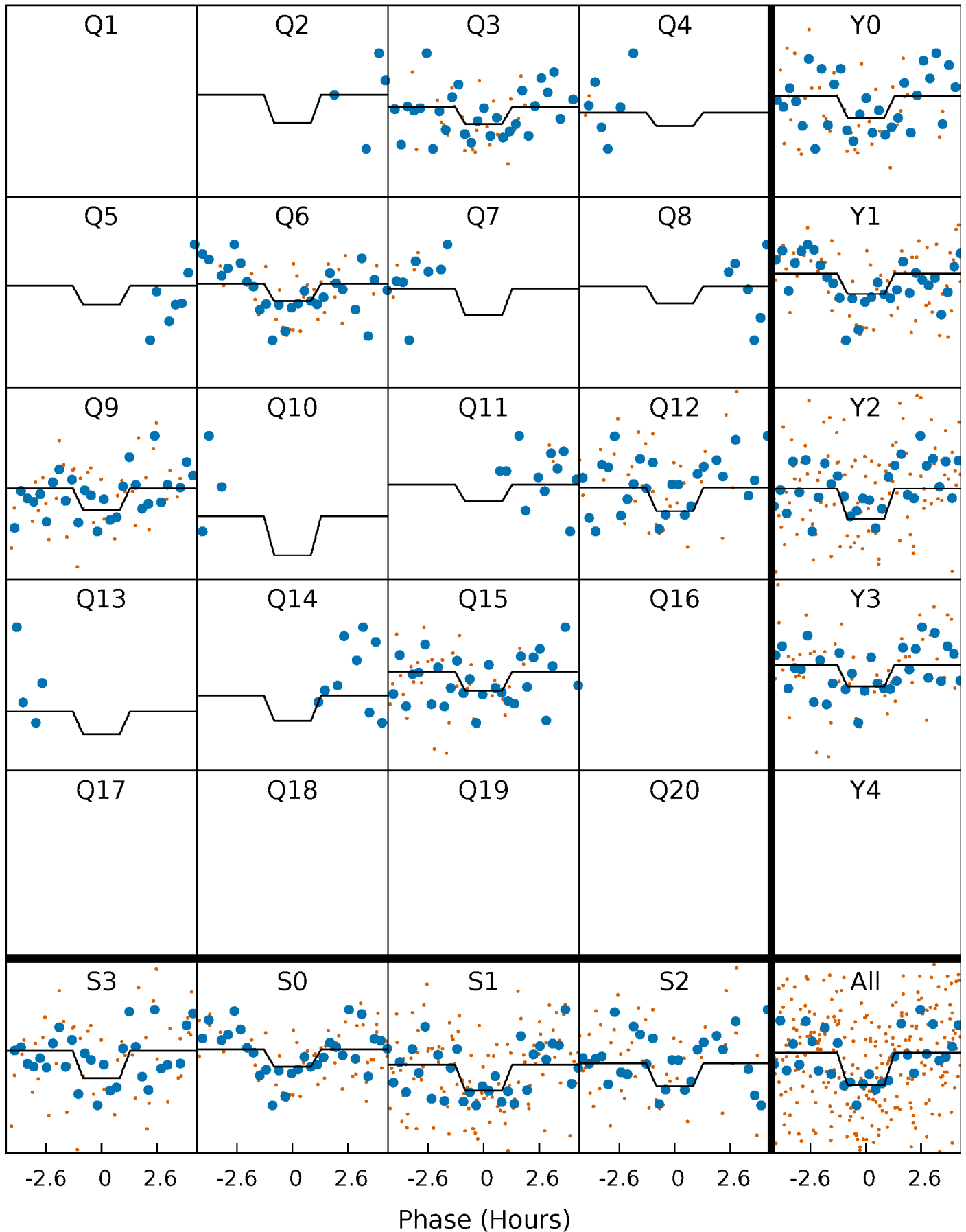
DV Quarter-Phased Transit Curves

TCE 006222529-05 P= 20.869302 Days $T_0=150.962001$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

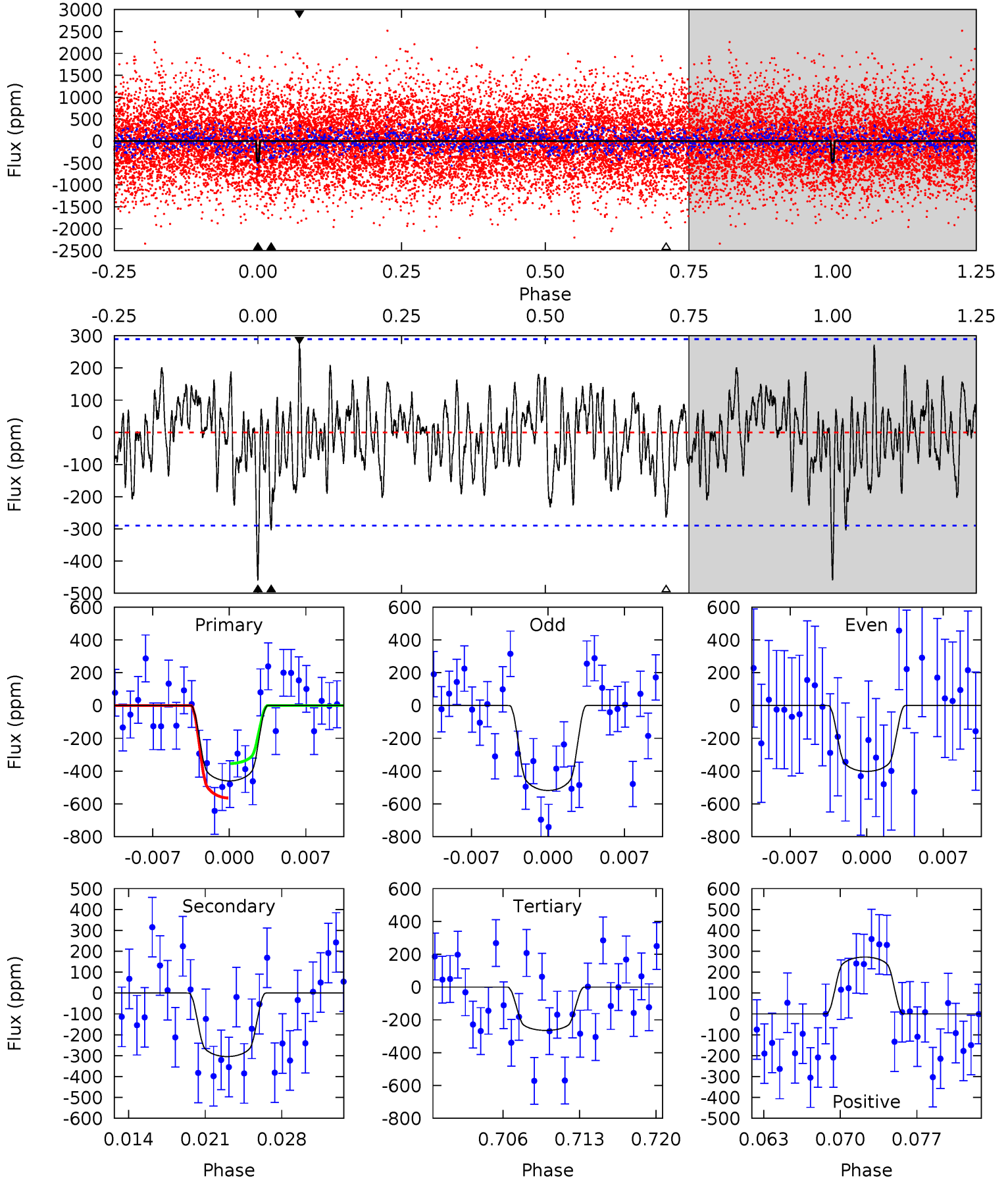
TCE 006222529-05 P= 20.869467 Days $T_0=150.959597$ (BKJD)



DV Model-Shift Uniqueness Test

006222529-05, P = 20.869302 Days, E = 130.092699 Days

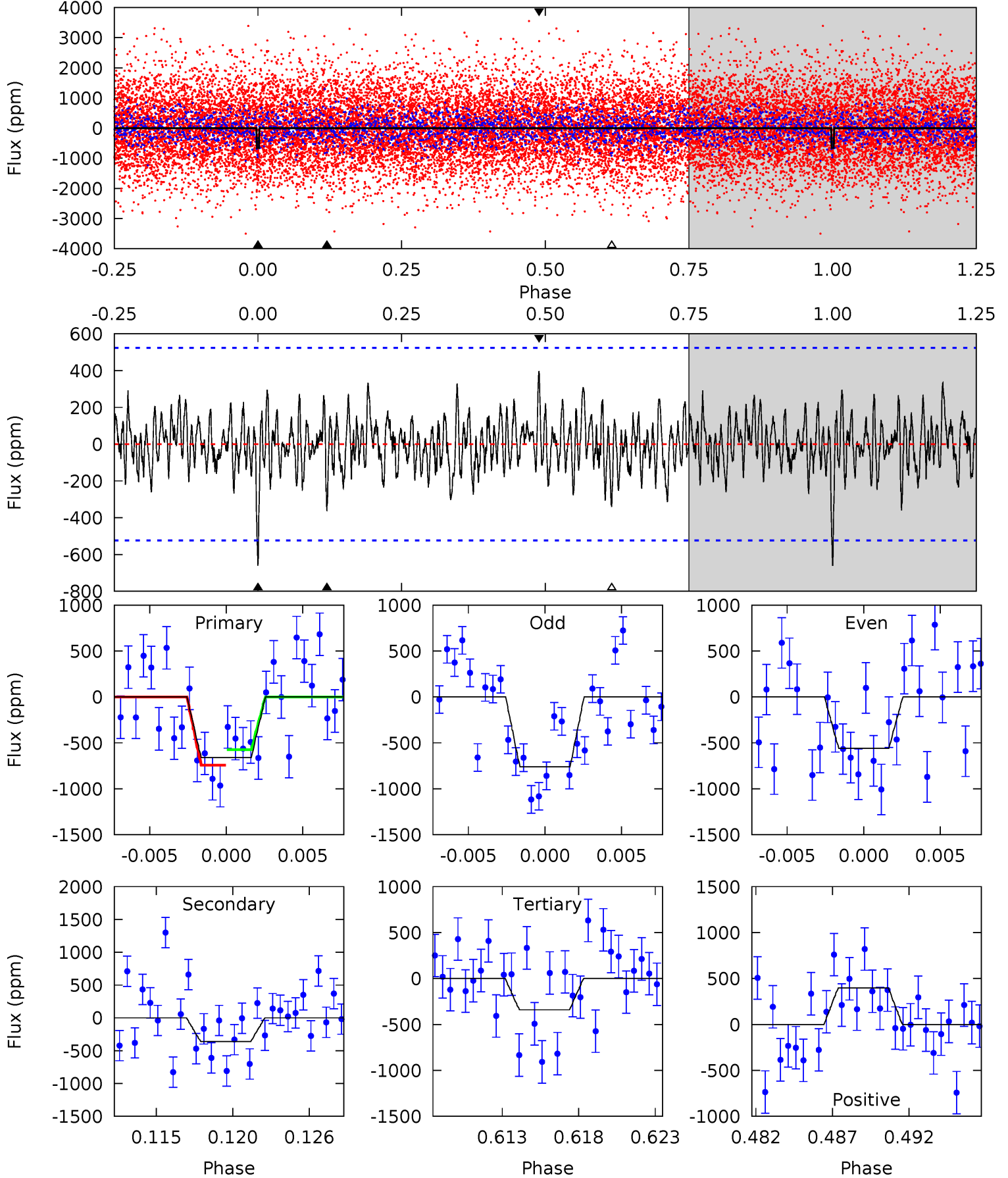
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.09	5.35	4.65	4.79	5.09	2.70	1.59	3.44	3.30	0.70	0.56	1.03	0.80	0.37	1.85



Alt Model-Shift Uniqueness Test

006222529-05, P = 20.869467 Days, E = 130.090130 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.49	3.54	3.35	3.91	5.15	2.79	1.17	3.15	2.59	0.19	-0.37	0.99	0.84	0.38	0.83



Stellar Parameters For KIC 006222529

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7802^{+77}_{-85}	$4.231^{+0.045}_{-0.135}$	$-0.180^{+0.150}_{-0.150}$	$1.574^{+0.322}_{-0.129}$	$1.534^{+0.128}_{-0.096}$	$0.554^{+0.122}_{-0.205}$
	+1%/-1%	+1%/-3%	+83%/-83%	+20%/-8%	+8%/-6%	+22%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 006222529-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-304 ± 57	$4.30^{+1.97}_{-1.73}$	1471^{+73}_{-40}	6453^{+2338}_{-1037}	260^{+474}_{-133}
Alt.	-360 ± 102	$4.44^{+1.92}_{-1.87}$	1470^{+67}_{-38}	6661^{+2389}_{-1199}	297^{+560}_{-164}

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 $A_{obs} \gg 1.0$

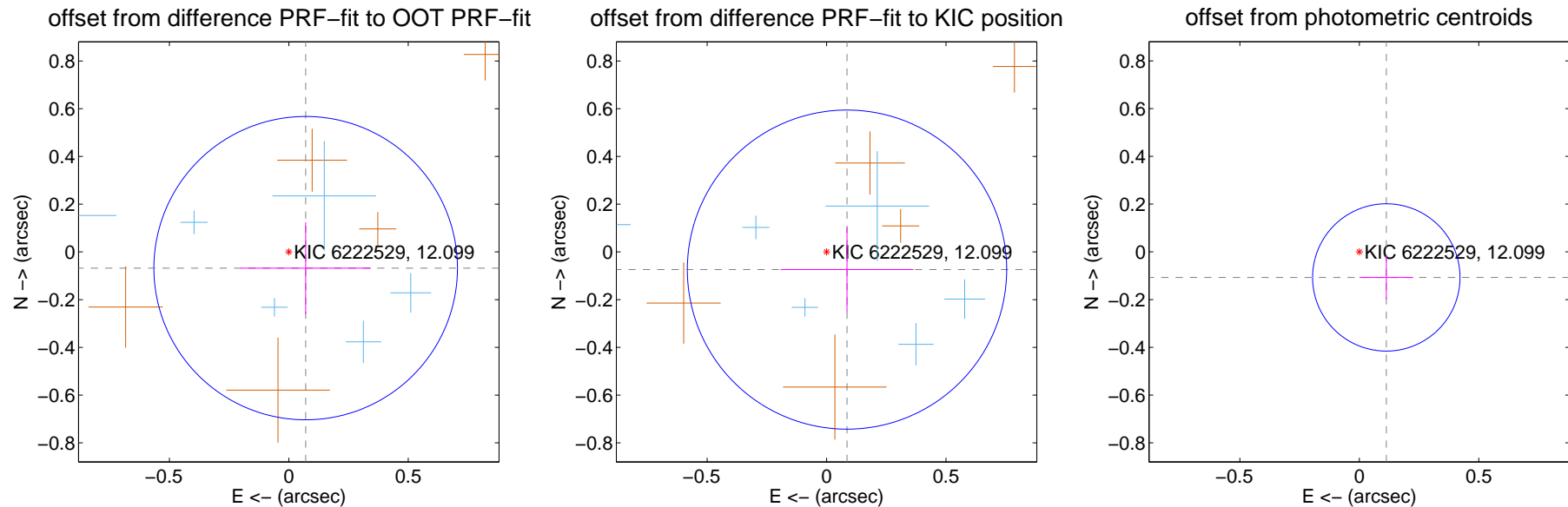
DV Centroid Data

Supplemental centroid analysis for 006222529-05. Kepler magnitude: 12.10. Transit SNR 8.80

There are 8 quarters with good PRF difference image offsets

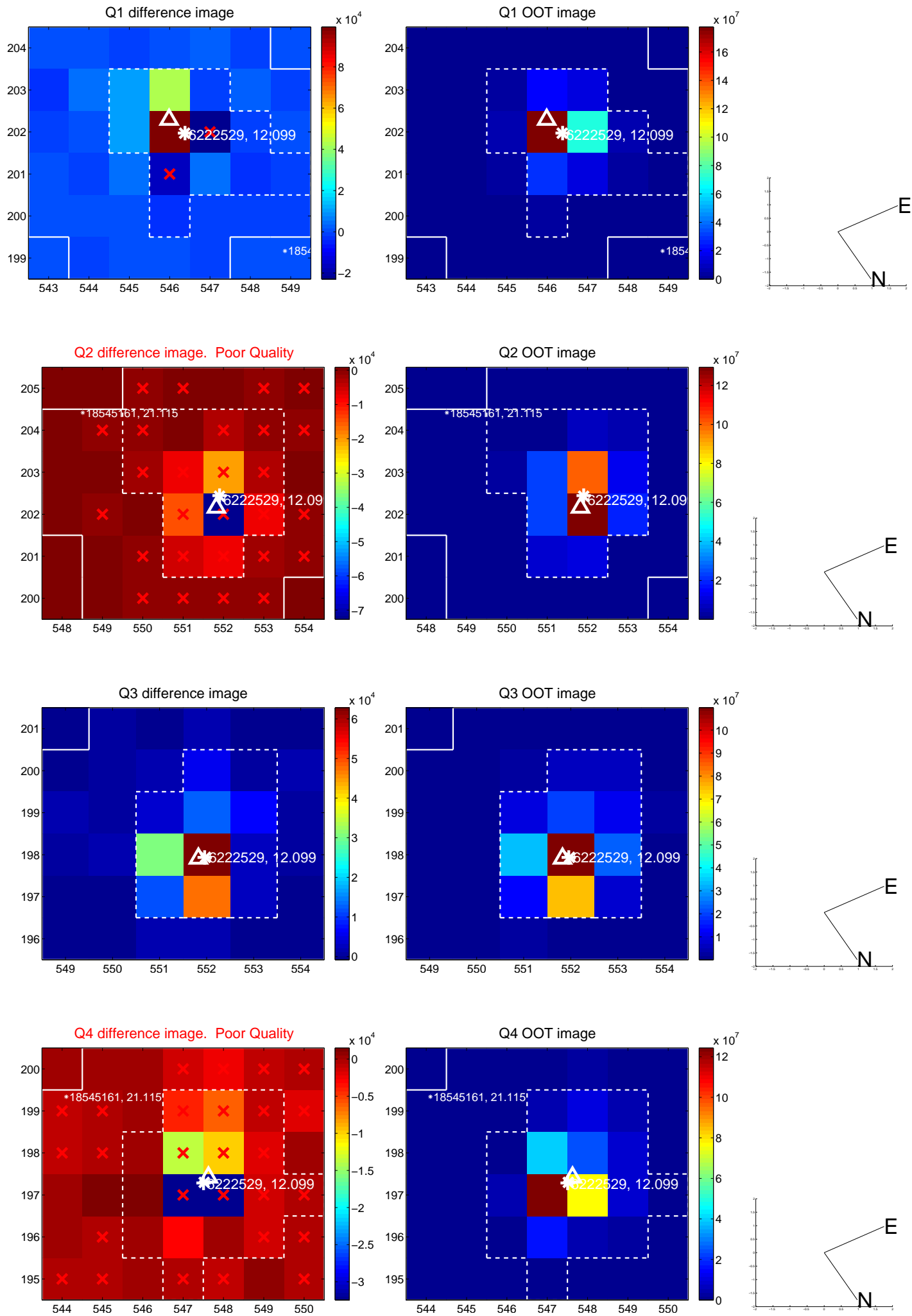
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.098 ± 0.212	0.46	-0.071 ± 0.273	-0.068 ± 0.192
PRF-fit source offset from KIC position	0.113 ± 0.223	0.51	-0.086 ± 0.278	-0.074 ± 0.177
photometric centroid source offset	0.16 ± 0.10	1.51	-0.11 ± 0.11	-0.11 ± 0.09

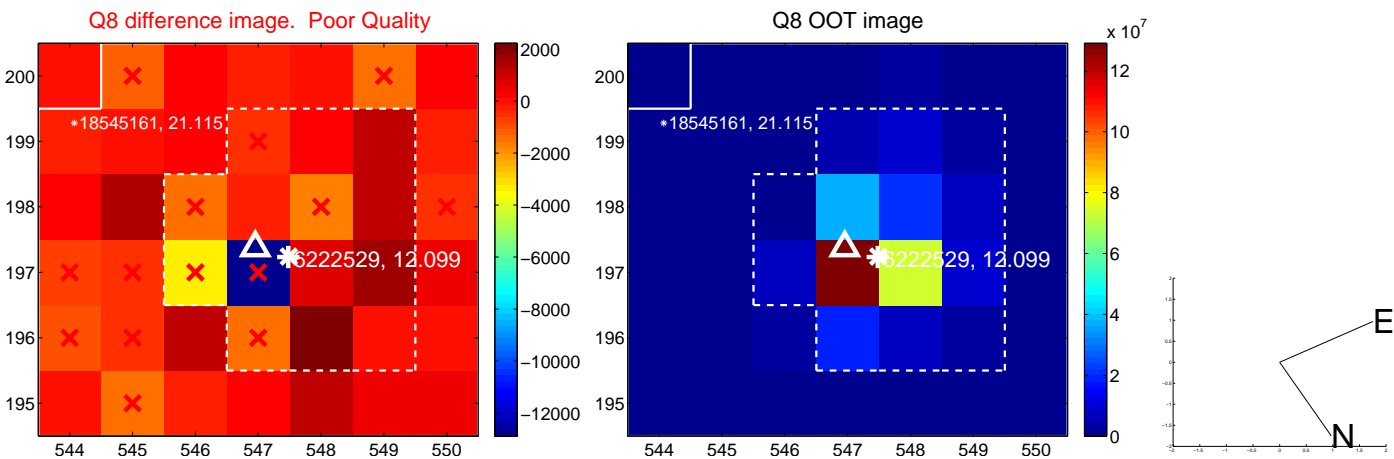
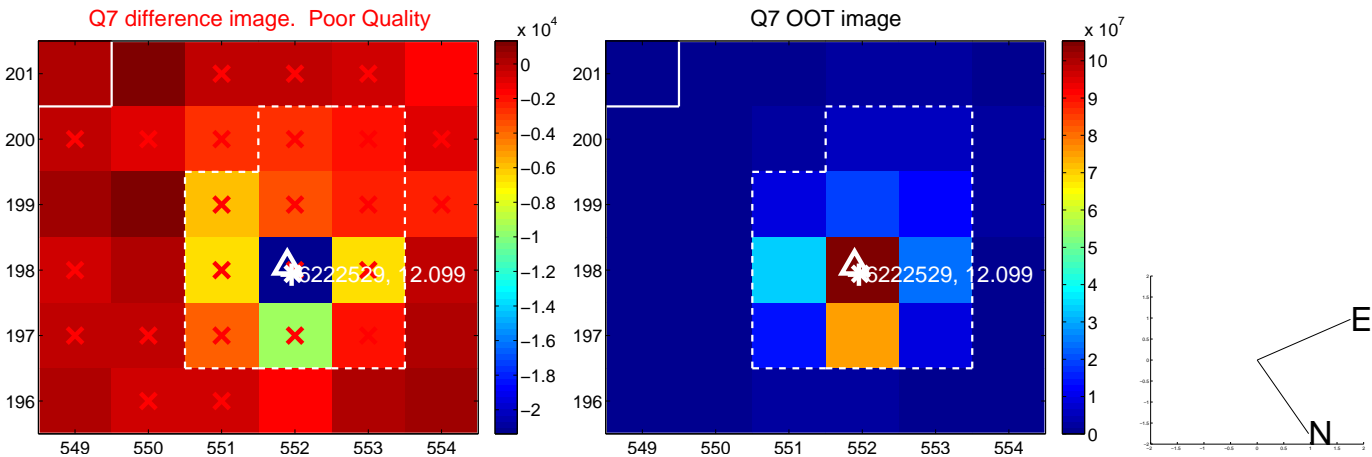
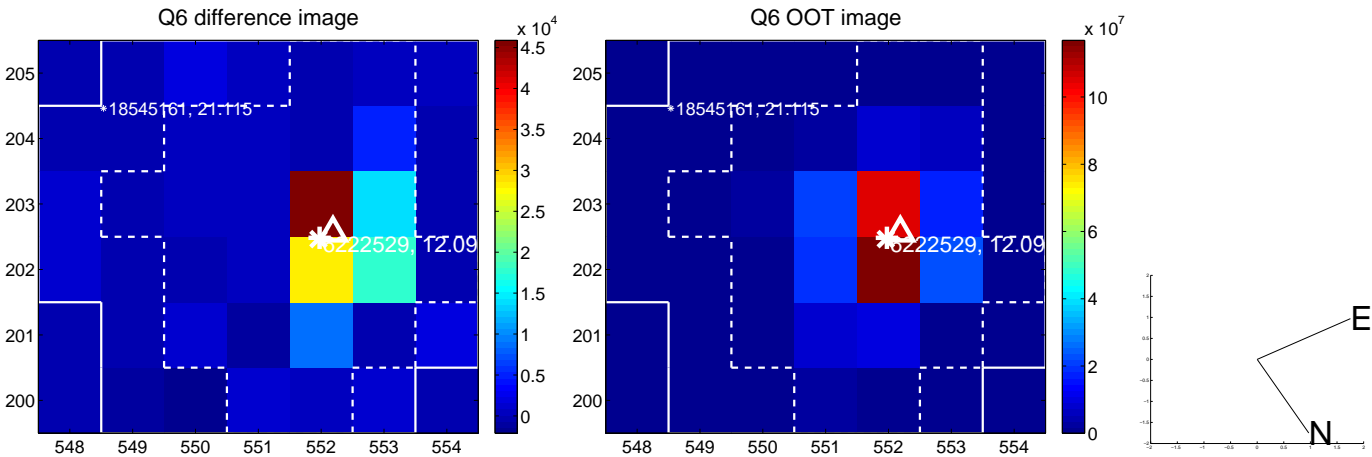
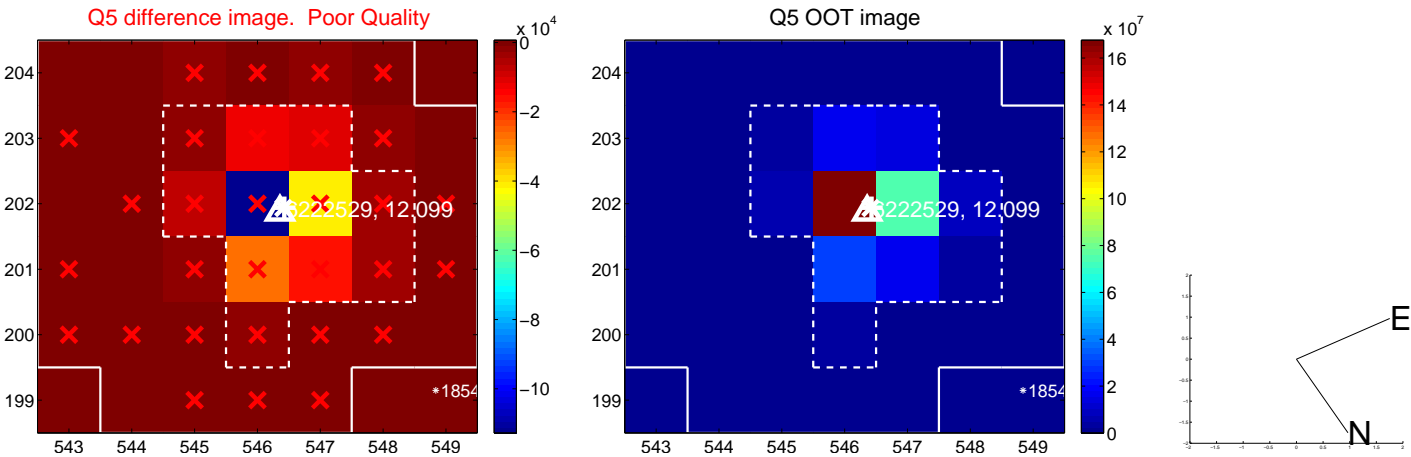


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

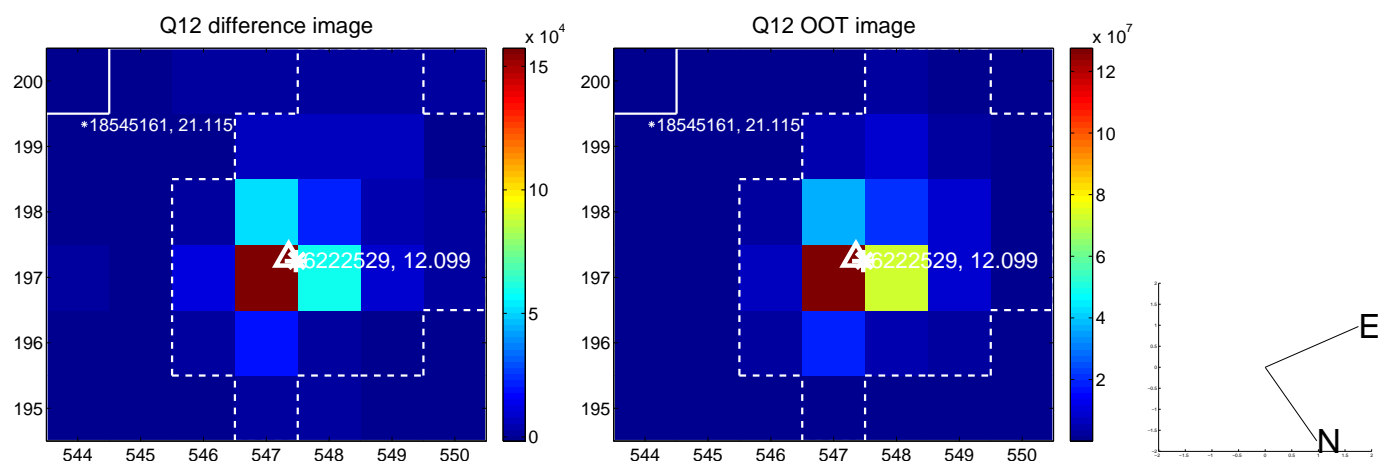
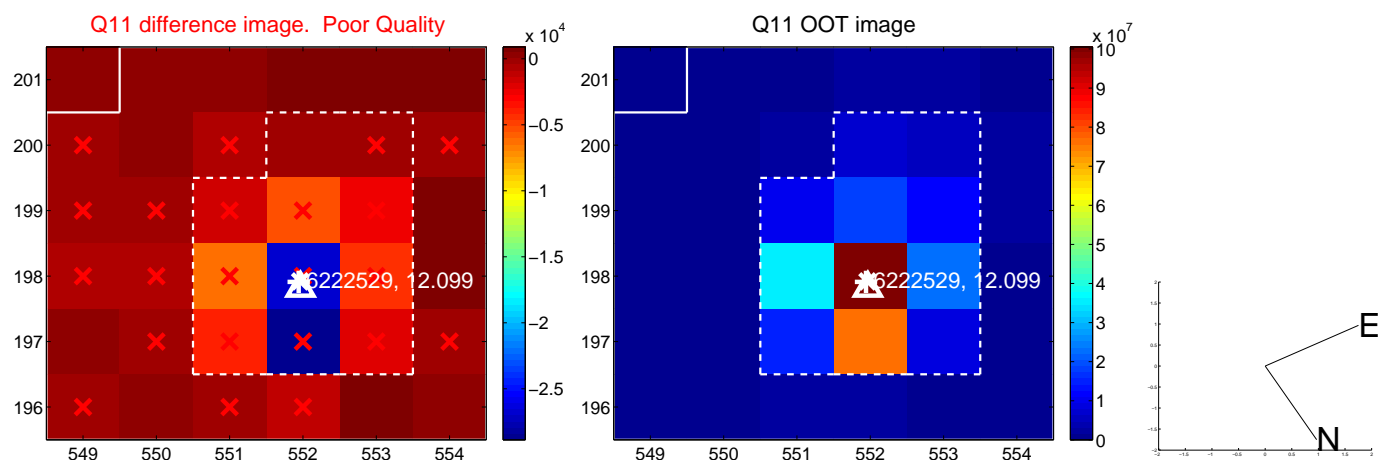
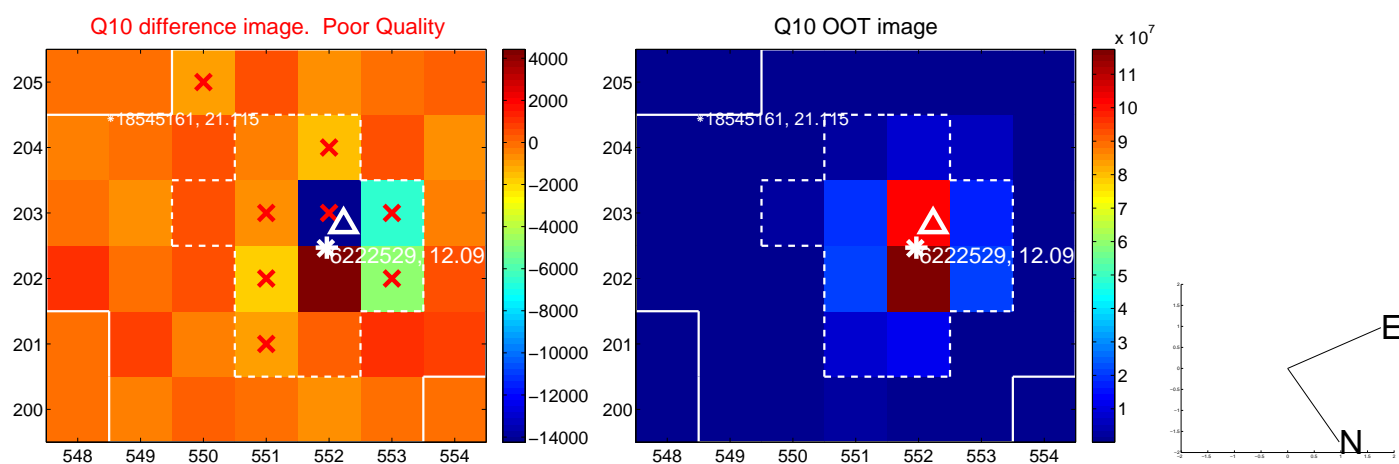
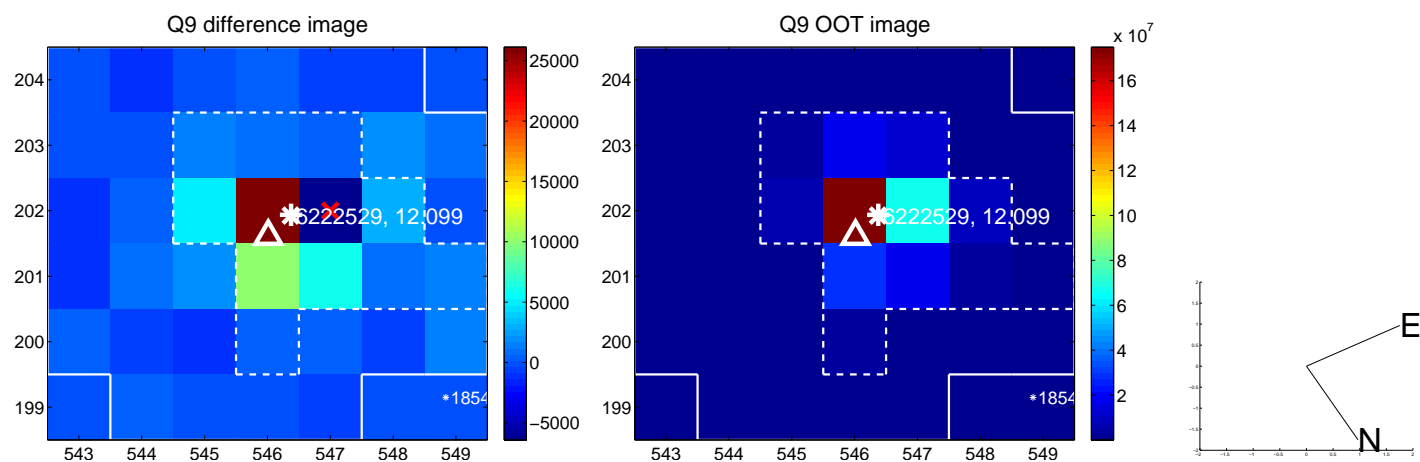
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



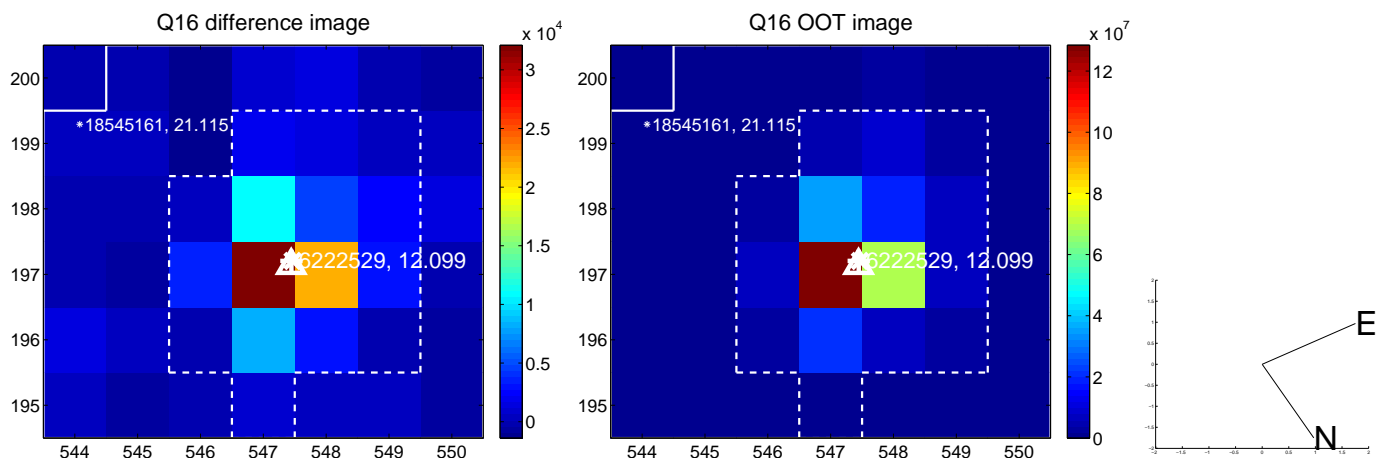
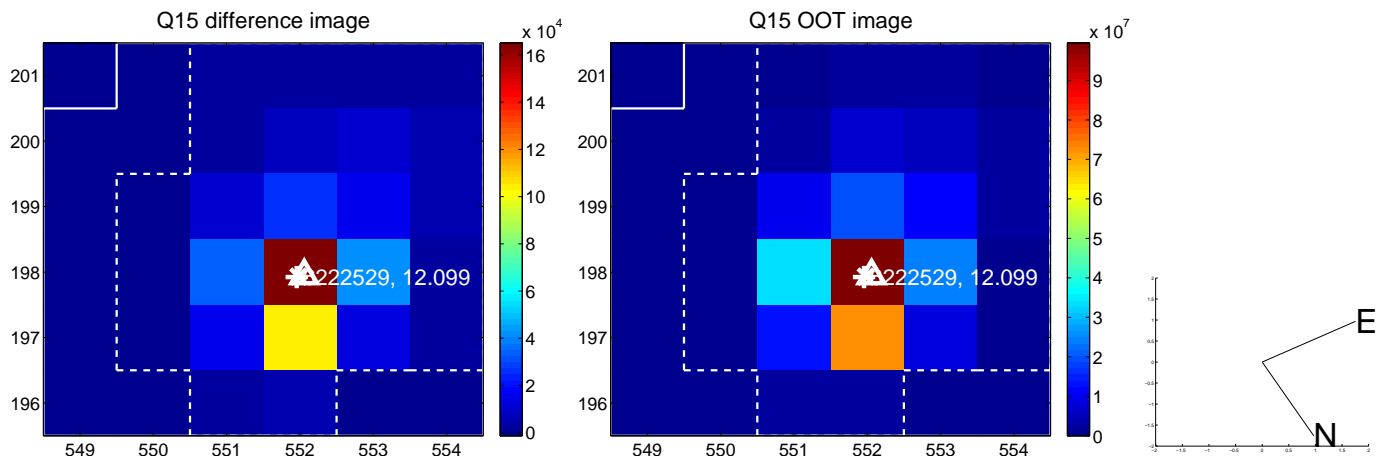
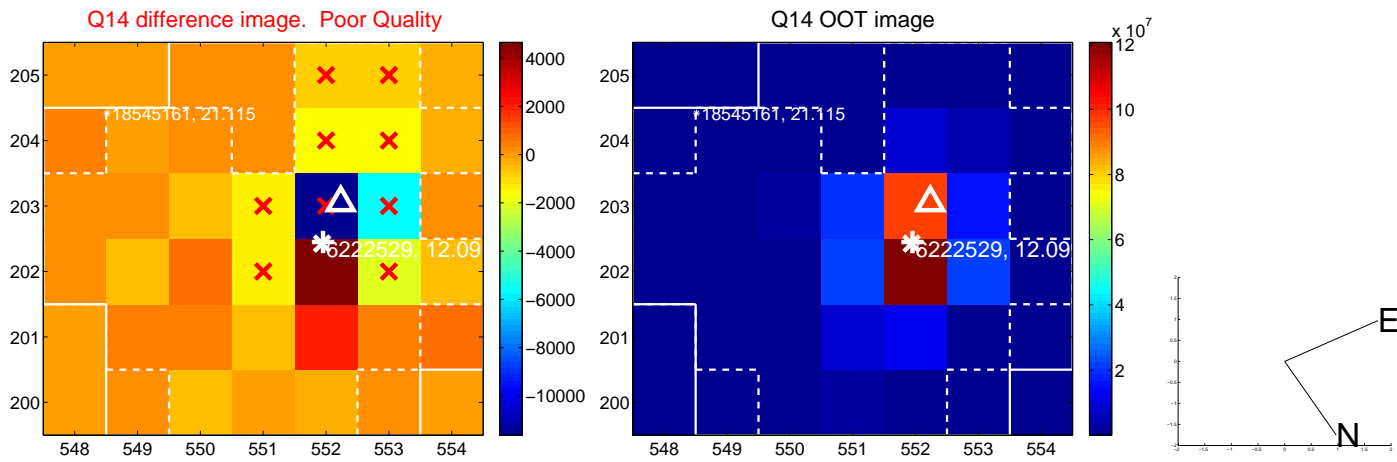
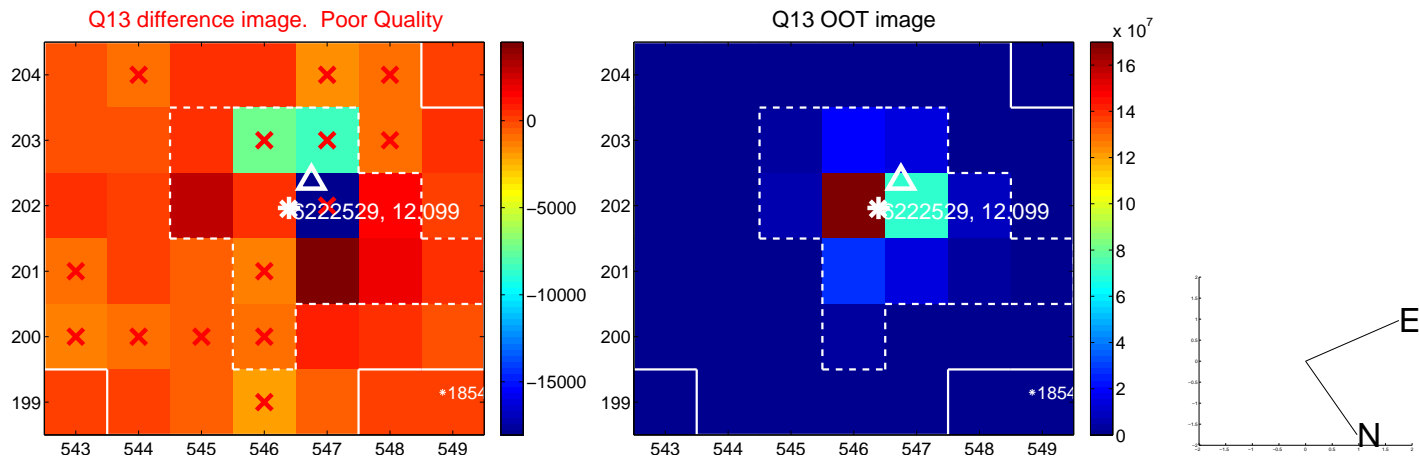
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



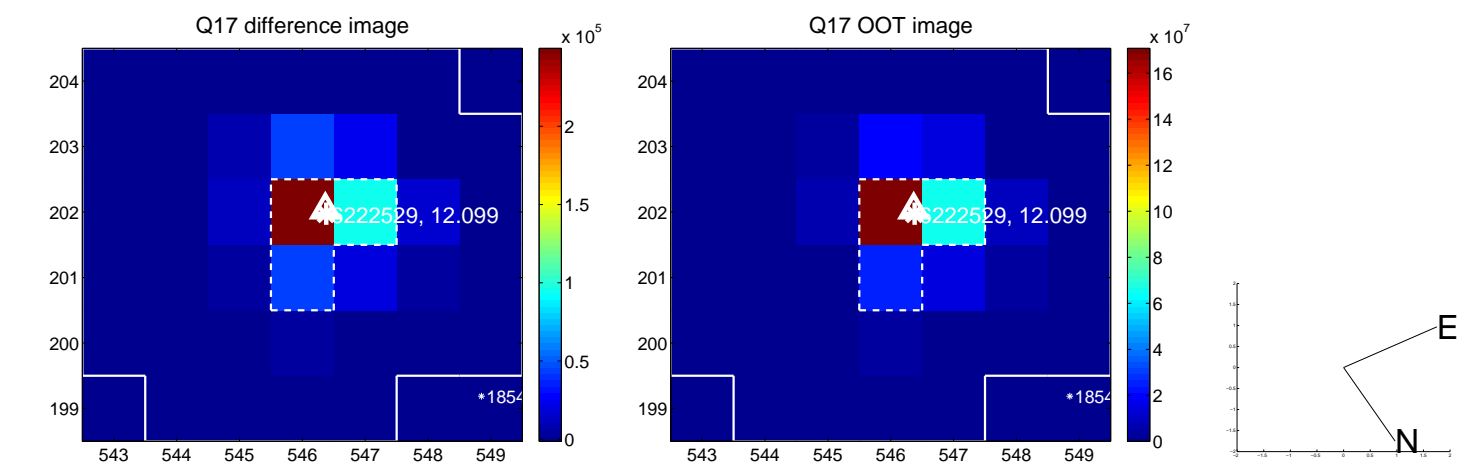
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



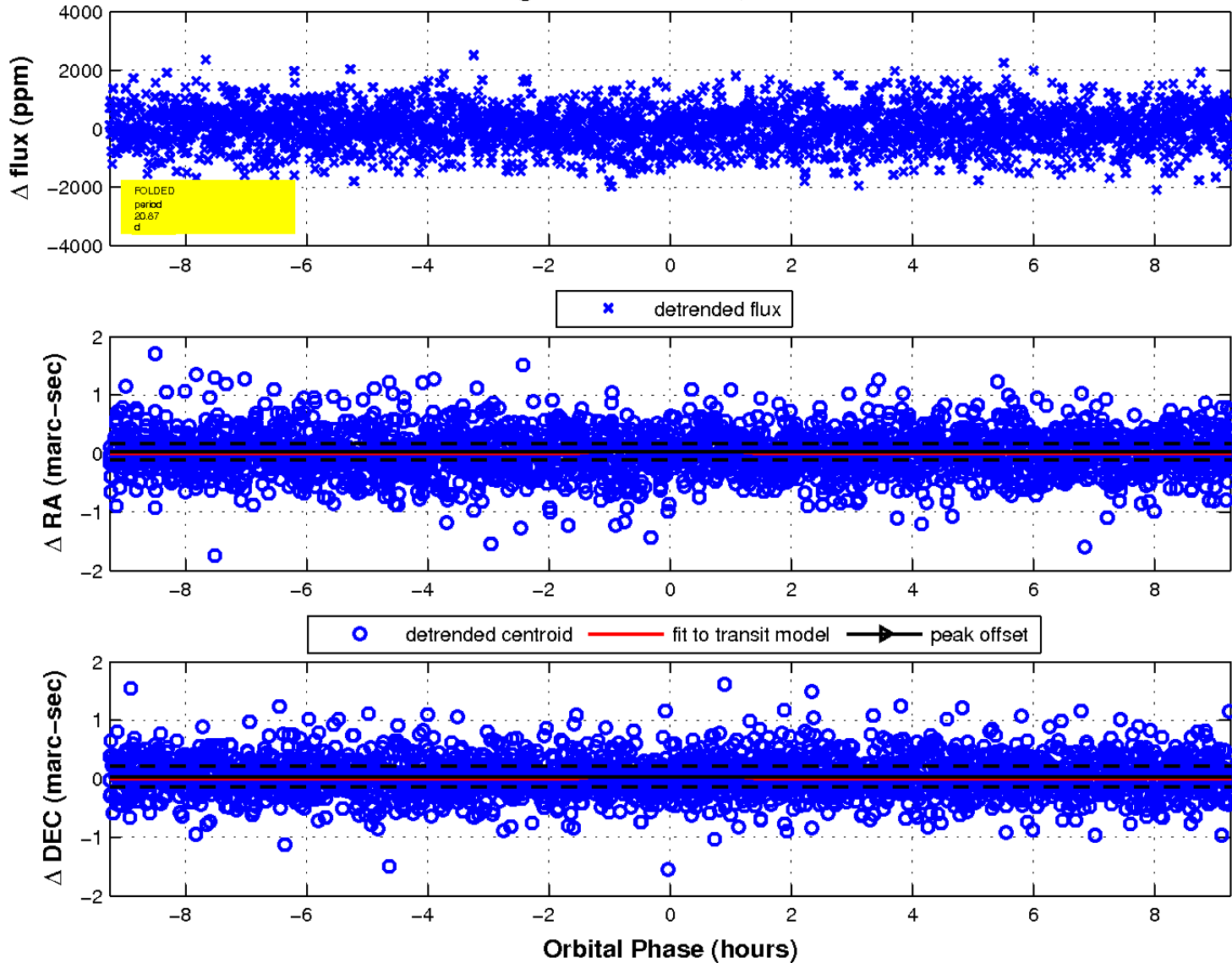
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

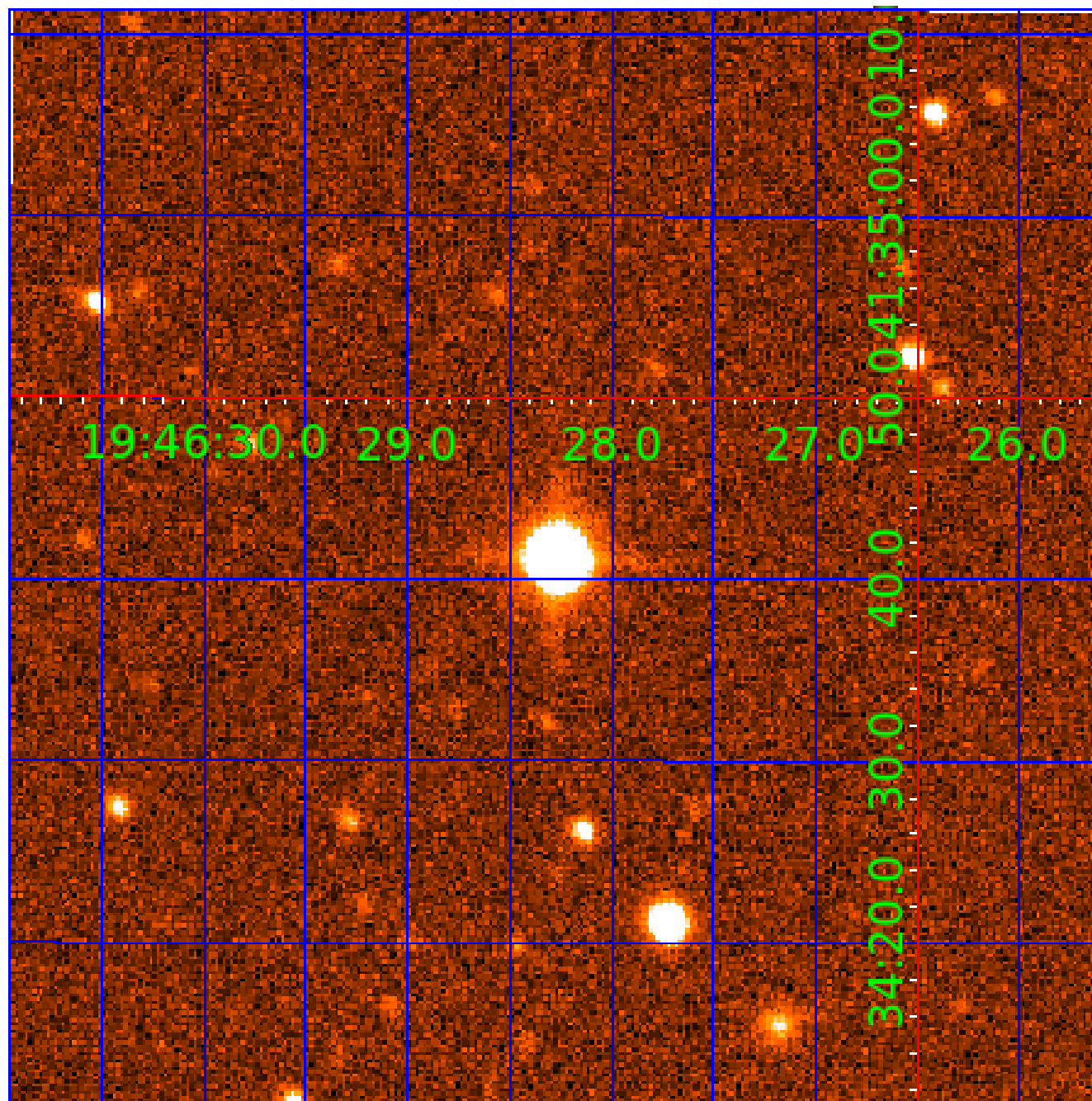


fluxWeightedCentroids, Planet 5 of 6



UKIRT Image

Declination



KIC 006222529

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})
006222529-01	OBS	No	0.990206	132.208285	94.3	5.813	11.7	11.2	1.57	7802	1.62	16321.27
006222529-02	OBS	No	154.197849	146.034161	1428.0	3.799	8.6	10.1	1.57	7802	6.41	19.48
006222529-03	OBS	No	15.142085	137.864067	612.7	1.795	8.8	9.5	1.57	7802	4.37	430.00
006222529-04	OBS	No	56.352386	160.131651	563.2	6.682	7.9	6.4	1.57	7802	4.07	74.56
006222529-05	OBS	No	20.869302	150.962001	540.2	3.088	8.0	8.8	1.57	7802	4.20	280.36
006222529-06	OBS	No	74.439496	158.805458	557.0	7.203	7.4	6.2	1.57	7802	3.90	51.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006222529-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
006222529-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006222529-03	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
006222529-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006222529-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006222529-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

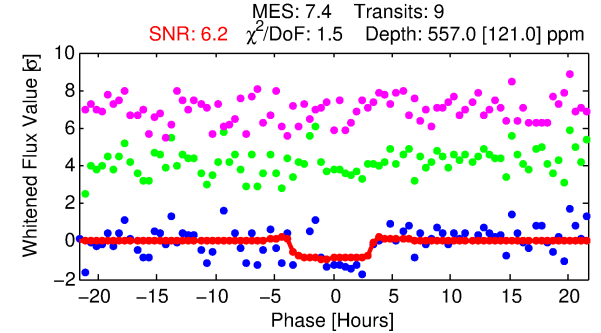
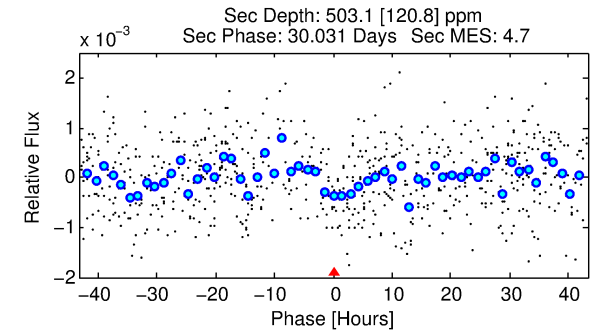
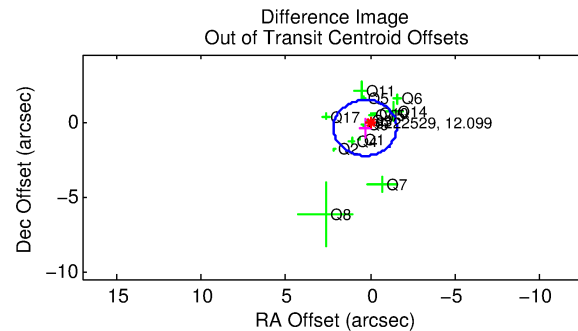
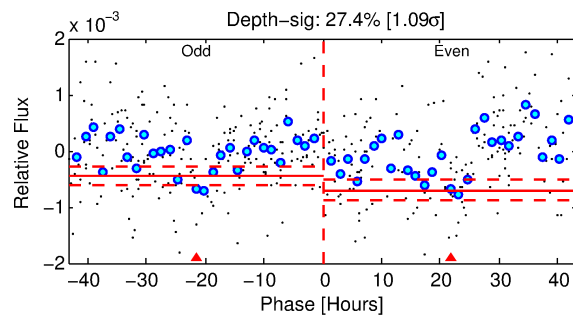
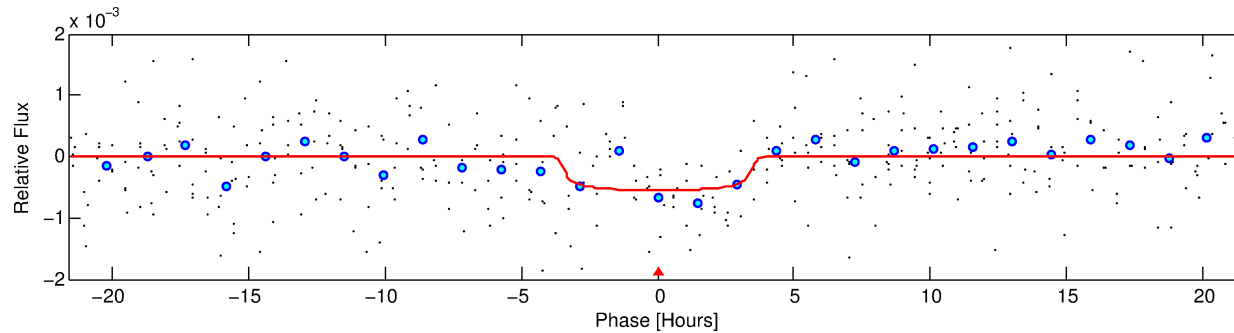
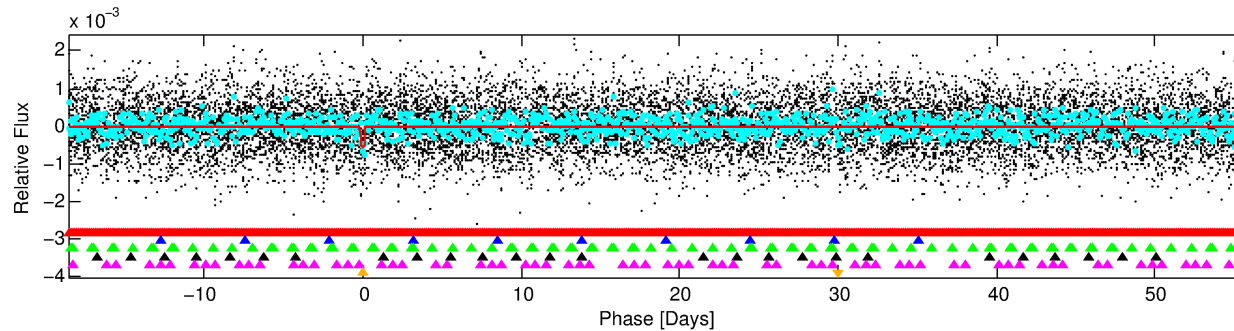
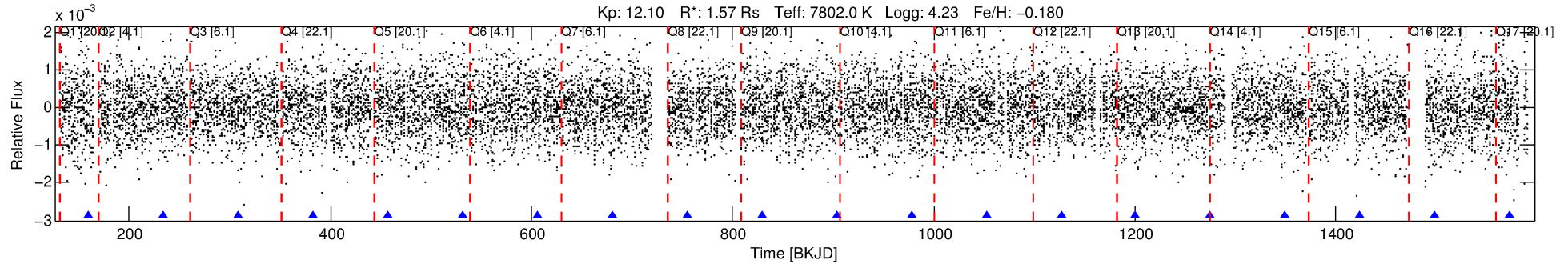
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006222529-06

No Significant Match Found

DV One-Page Summary

KIC: 6222529 Candidate: 6 of 6 Period: 74.439 d



DV Fit Results:

Period = 74.43950 [0.00292] d
Epoch = 158.8055 [0.0267] BKJD
Rp/R* = 0.0227 [0.0287]
a/R* = 65.88 [473.85]
b = 0.59 [7.96]
Seff = 51.44 [12.96]
Teq = 683 [43] K
Rp = 3.89 [4.99] Re
a = 0.3999 [0.0685] AU
Ag = 2917.06 [7448.76] [0.39σ]
Teffp = 7759 [4931] K [1.44σ]

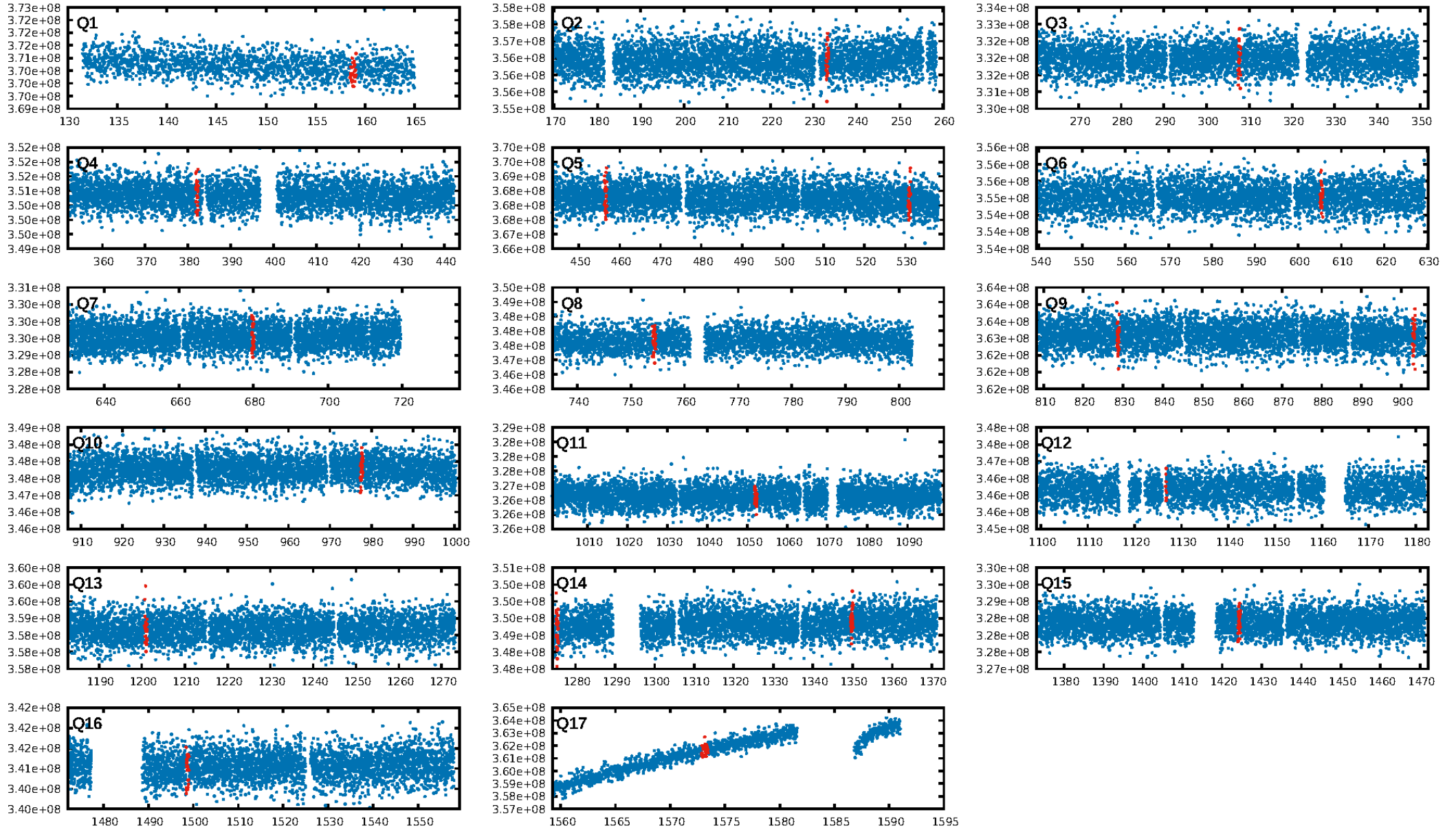
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [44.18σ]
LongPeriod-sig: 100.0% [235.07σ]
ModelChiSquare2-sig: 41.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.29e-07
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: -1.807
Centroid-sig: 35.5%
Centroid-so: 0.143 arcsec [1.18σ]
OotOffset-rm: 0.516 arcsec [0.83σ]
KicOffset-rm: 0.540 arcsec [0.87σ]
OotOffset-st: 4/4/2/4 [14]
KicOffset-st: 4/4/2/4 [14]
DiffImageQuality-fgm: 0.29 [4/14]
DiffImageOverlap-fno: 0.00 [0/14]

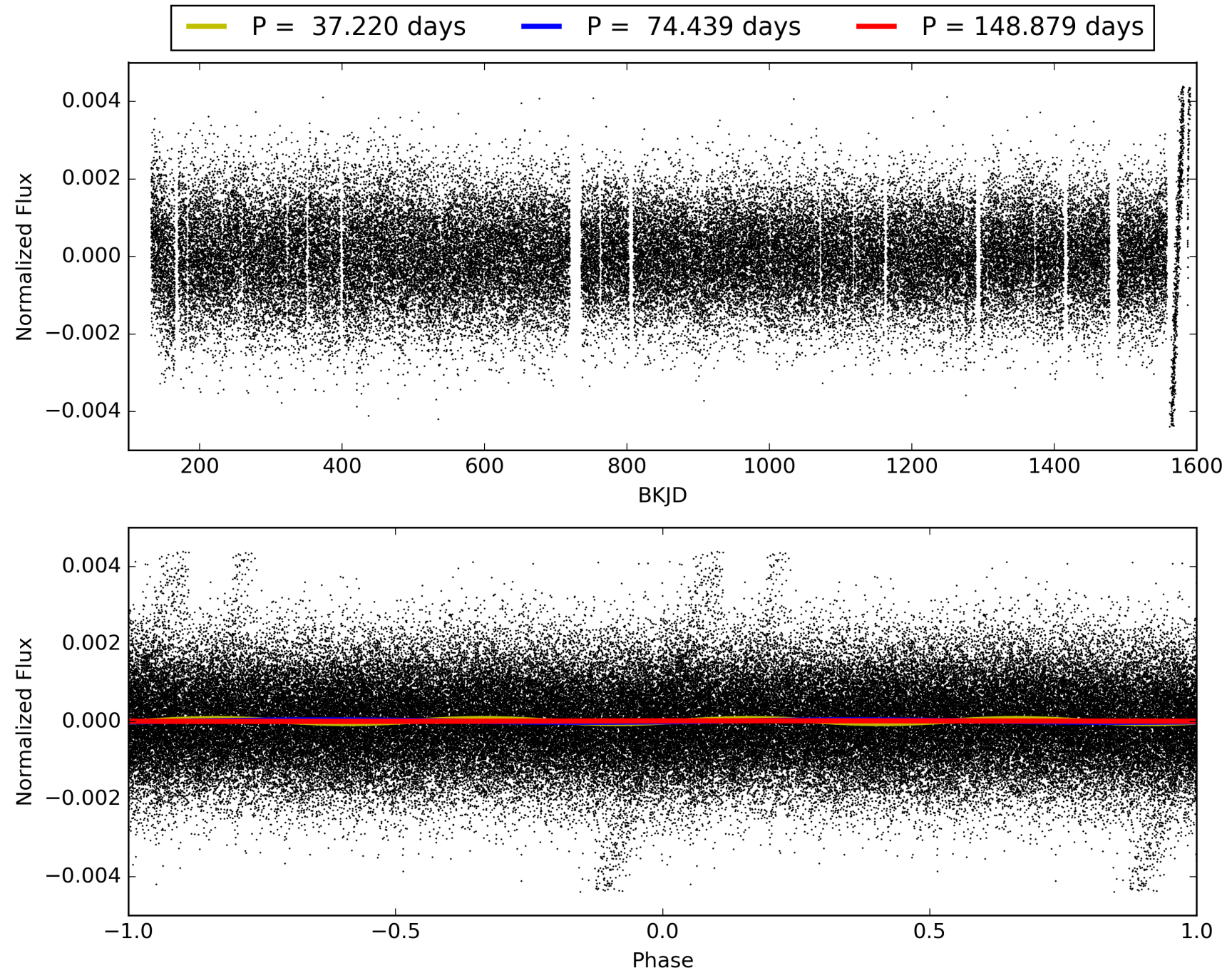
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:29:17 Z

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

TCE 006222529-06, PDC Light Curves

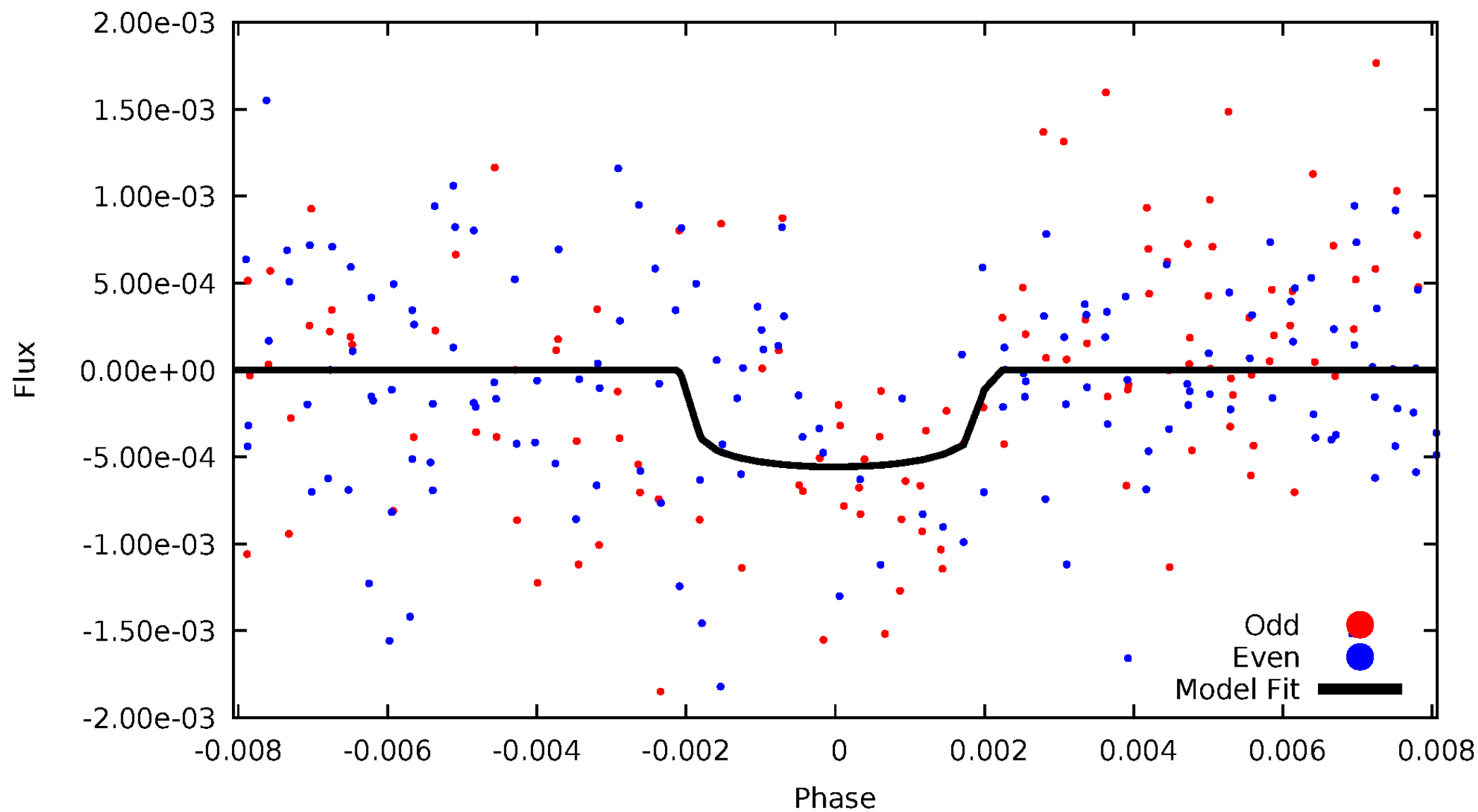


TCE 006222529-06



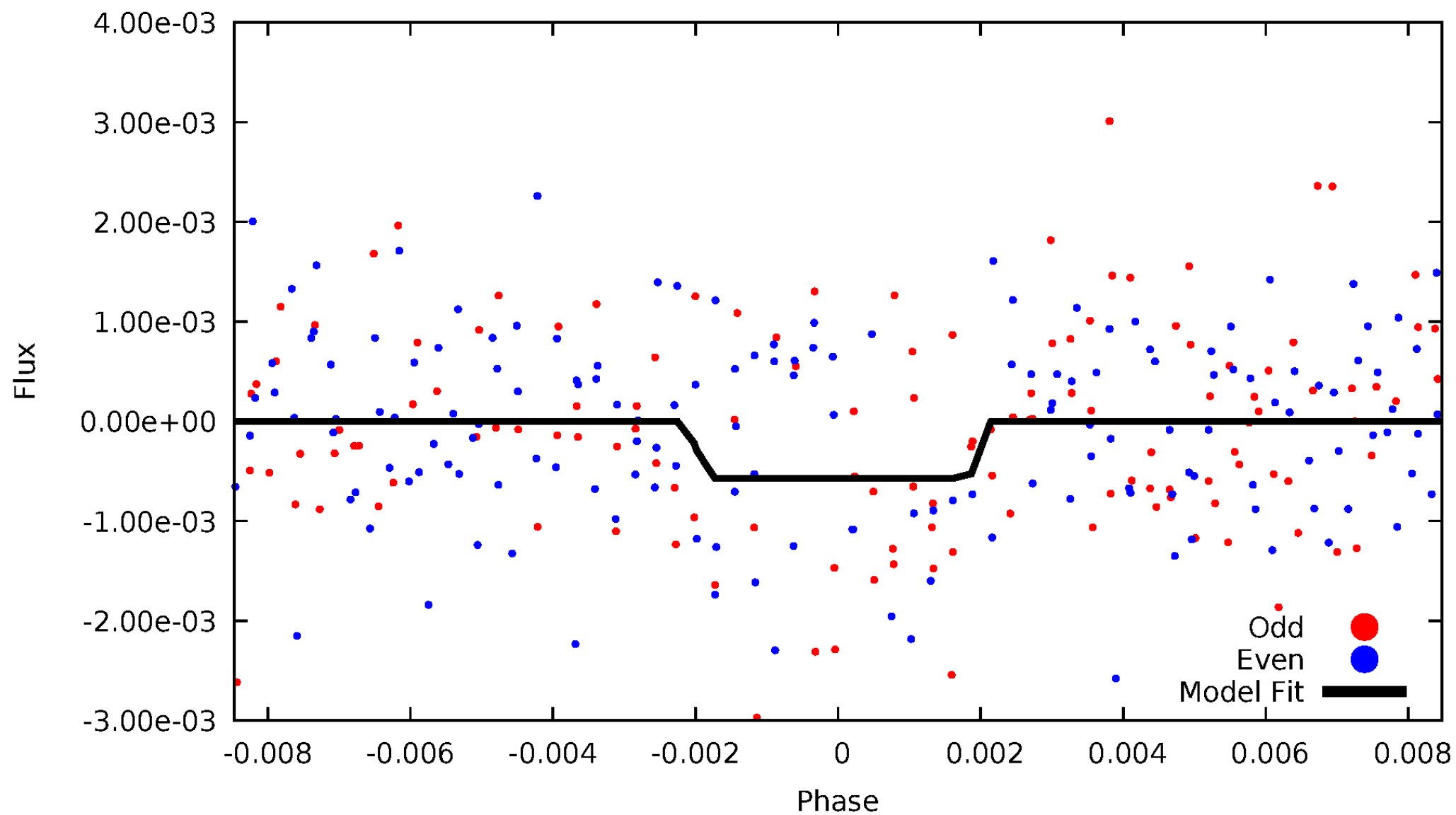
DV Odd/Even

TCE 006222529-06



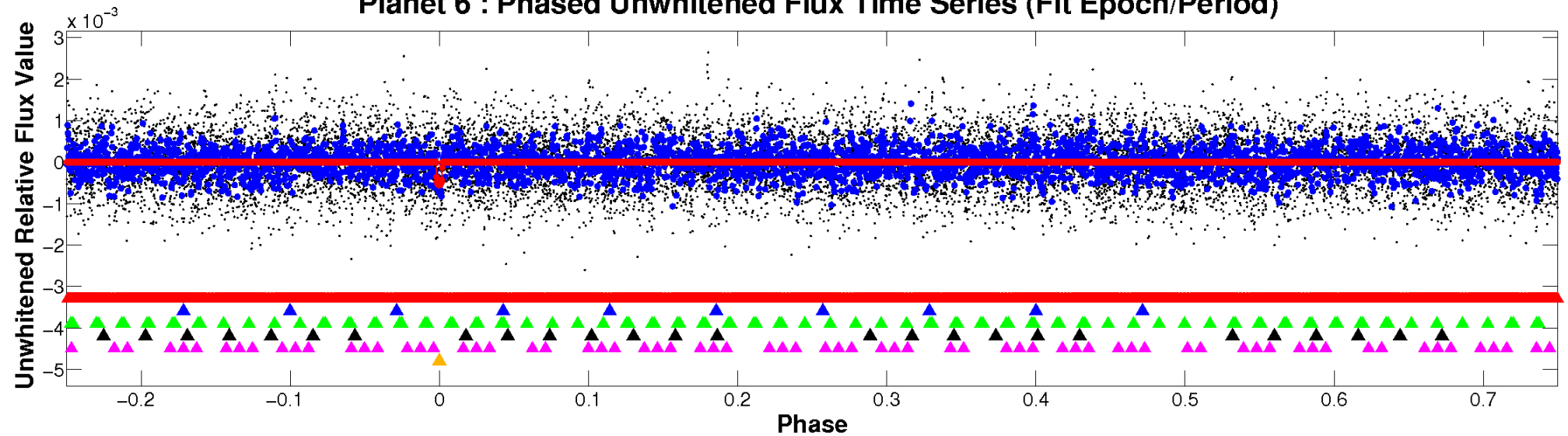
ALT Odd/Even

TCE 006222529-06

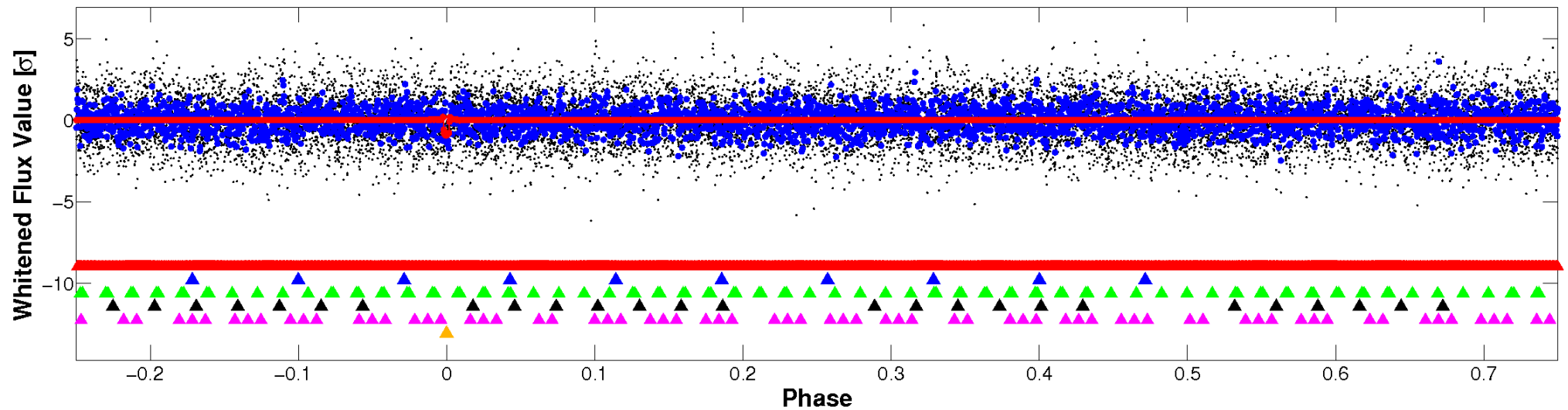


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

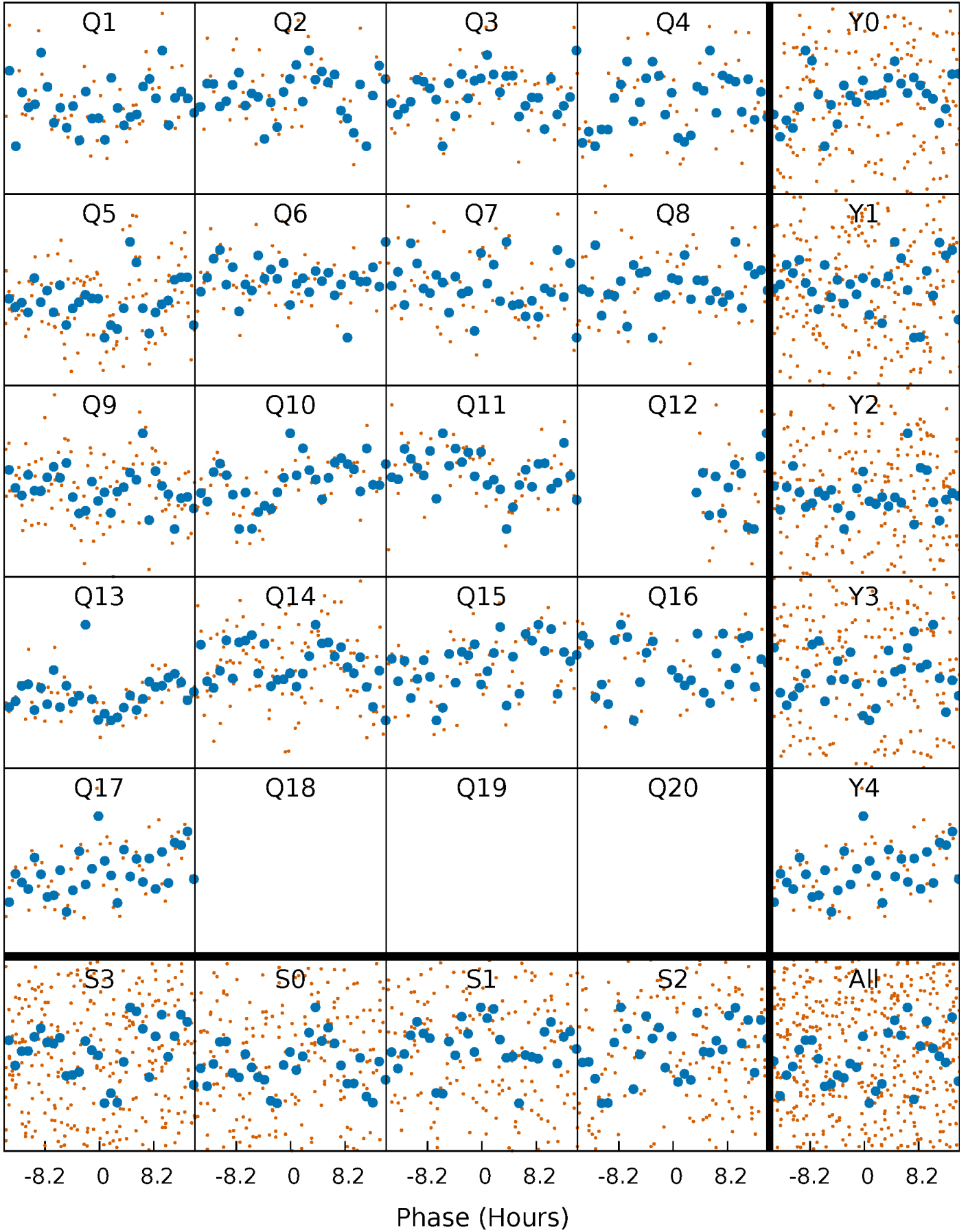


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



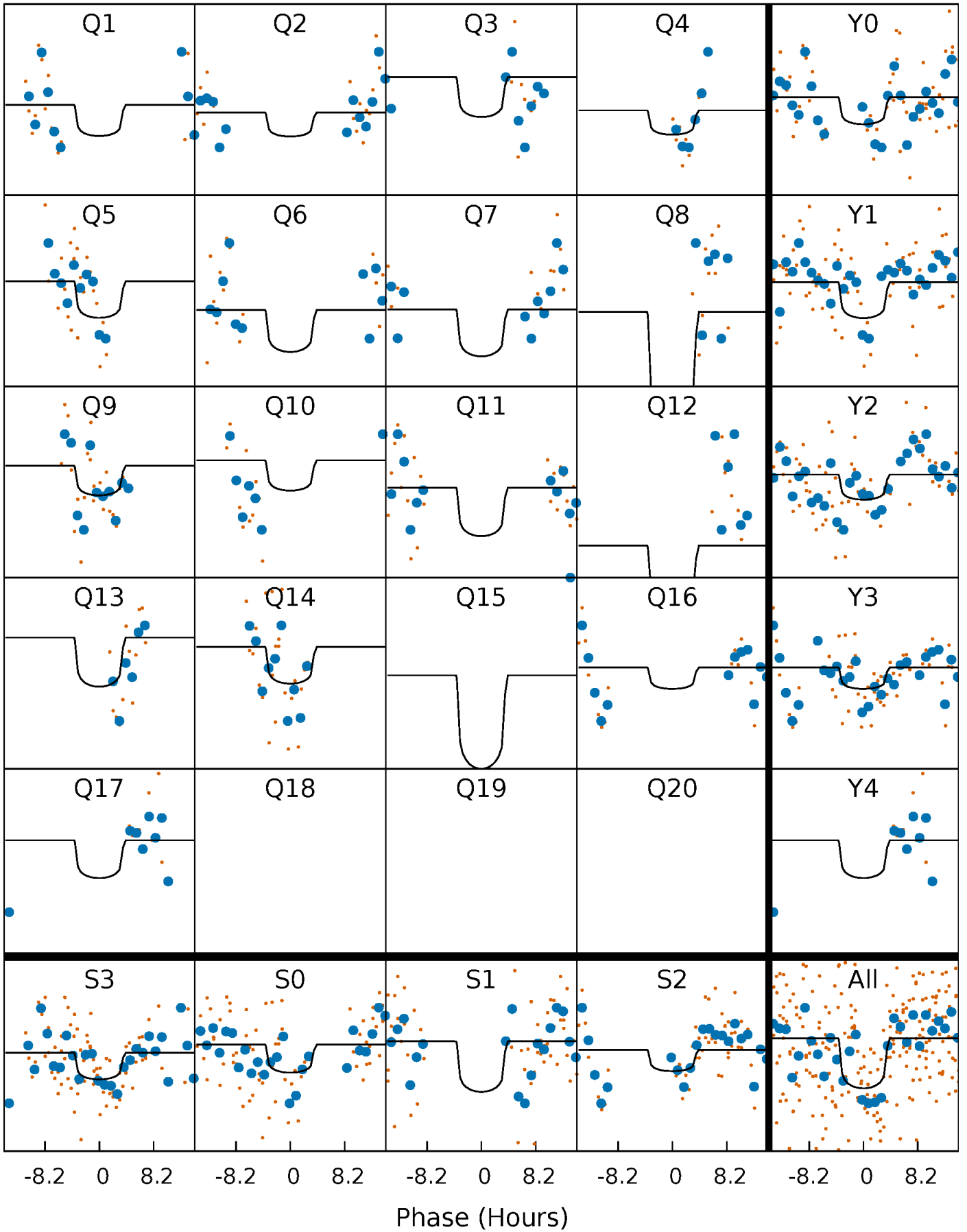
PDC Quarter-Phased Transit Curves

TCE 006222529-06 $P = 74.439496$ Days $T_0 = 158.805458$ (BKJD)



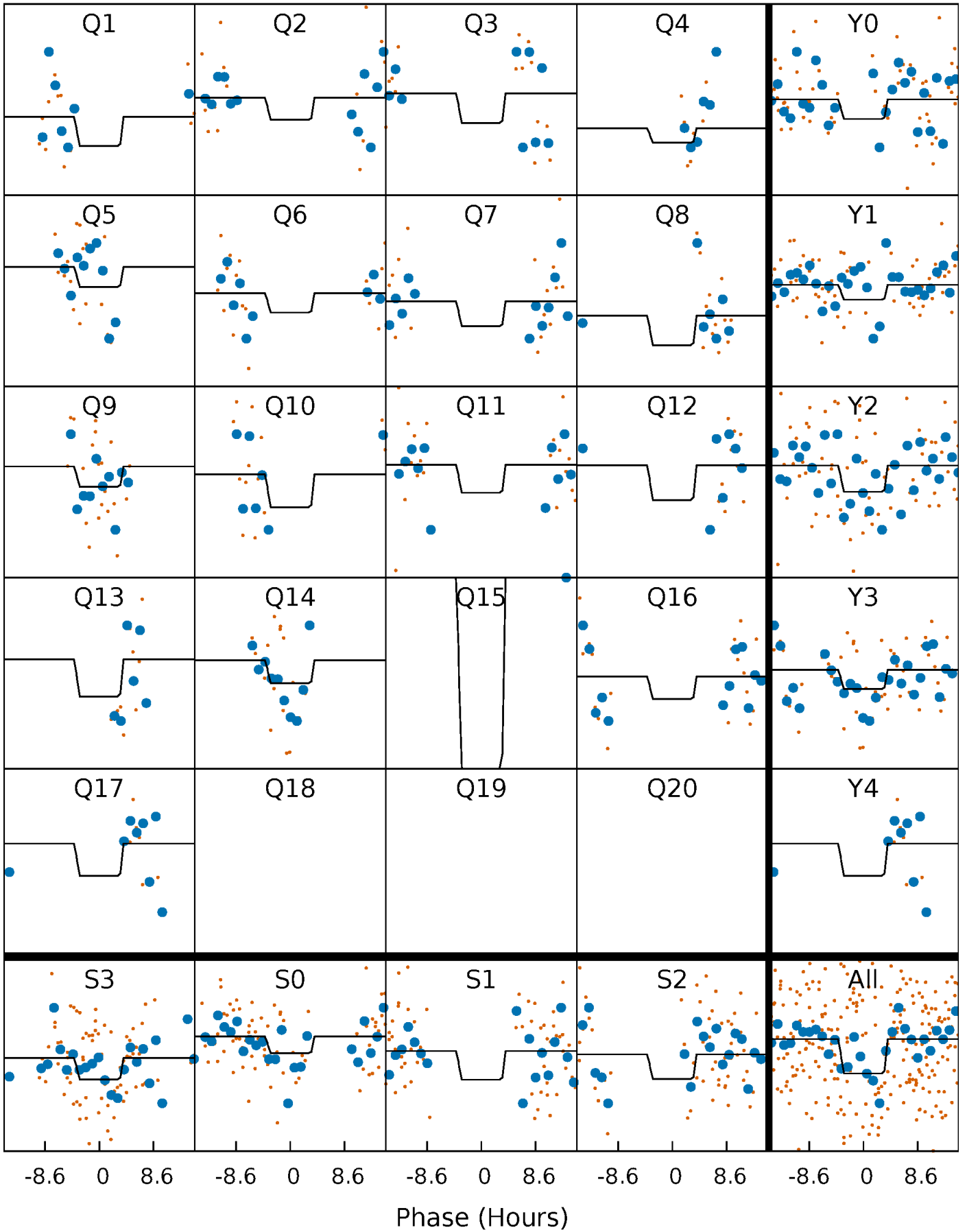
DV Quarter-Phased Transit Curves

TCE 006222529-06 $P = 74.439496$ Days $T_0 = 158.805458$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

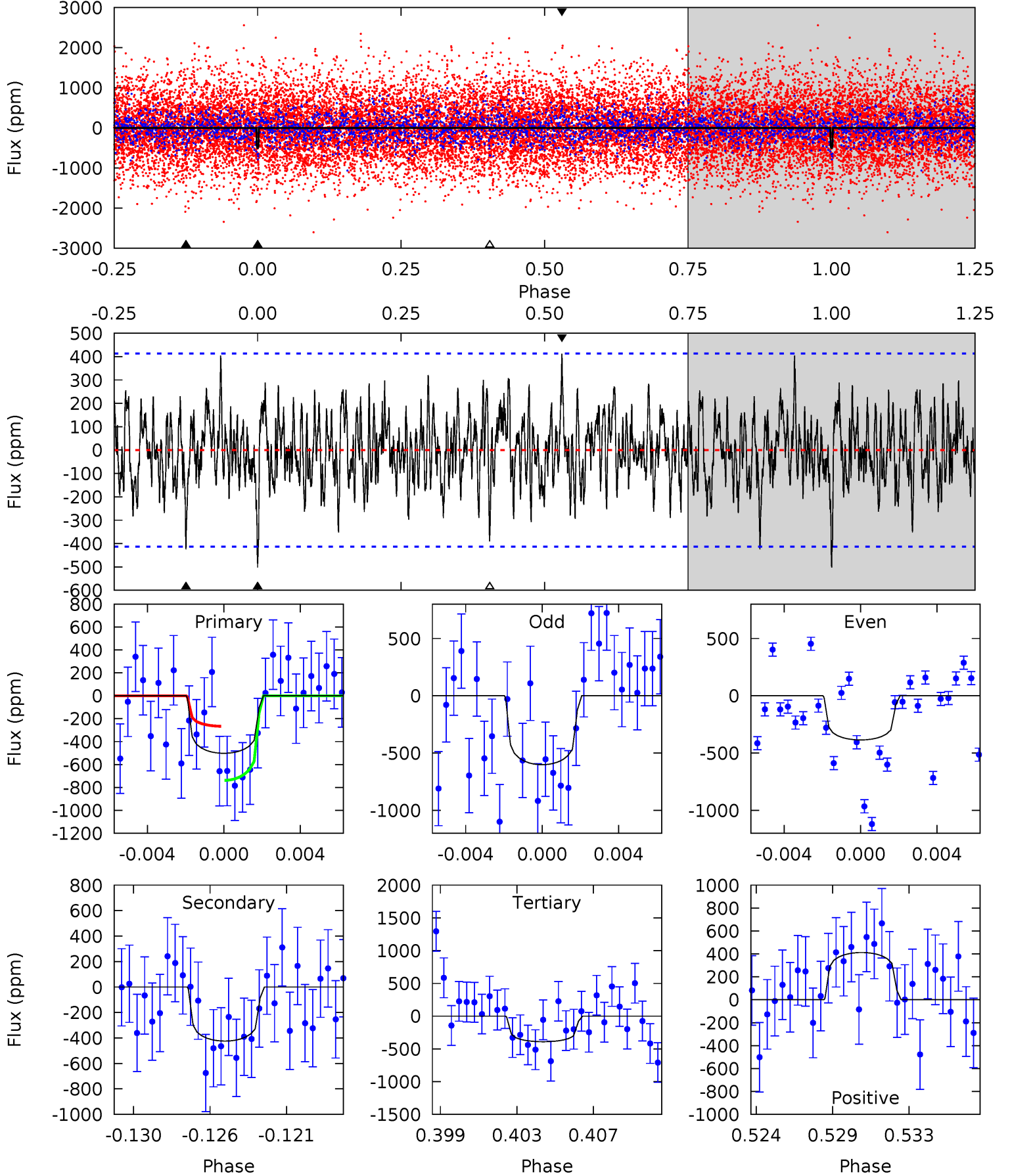
TCE 006222529-06 P= 74.443408 Days $T_0=158.738220$ (BKJD)



DV Model-Shift Uniqueness Test

006222529-06, P = 74.439496 Days, E = 84.365962 Days

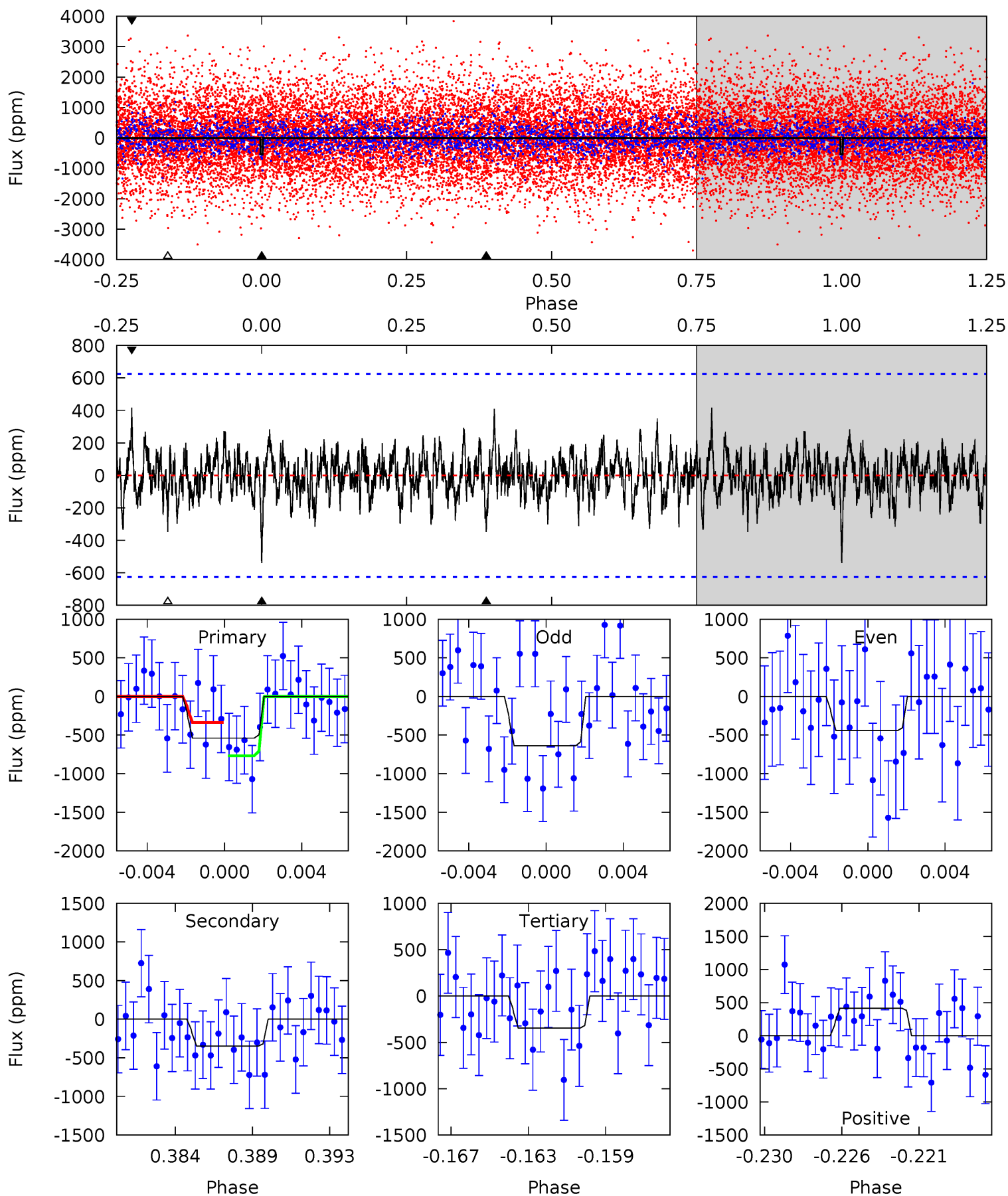
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.29	5.32	4.90	5.17	5.18	2.85	1.55	1.39	1.13	0.42	0.15	1.35	0.98	0.45	2.96



Alt Model-Shift Uniqueness Test

006222529-06, P = 74.443408 Days, E = 84.294812 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.48	2.89	2.88	3.46	5.19	2.86	0.89	1.60	1.02	0.01	-0.57	0.82	0.90	0.44	1.79



Stellar Parameters For KIC 006222529

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7802^{+77}_{-85}	$4.231^{+0.045}_{-0.135}$	$-0.180^{+0.150}_{-0.150}$	$1.574^{+0.322}_{-0.129}$	$1.534^{+0.128}_{-0.096}$	$0.554^{+0.122}_{-0.205}$
	+1%/-1%	+1%/-3%	+83%/-83%	+20%/-8%	+8%/-6%	+22%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 006222529-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-424 ± 80	$5.25^{+4.94}_{-3.35}$	962^{+44}_{-26}	6357^{+5840}_{-1653}	1318^{+9090}_{-963}
Alt.	-347 ± 120	$5.40^{+4.38}_{-3.63}$	962^{+48}_{-25}	5915^{+5739}_{-1468}	1005^{+7992}_{-731}

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

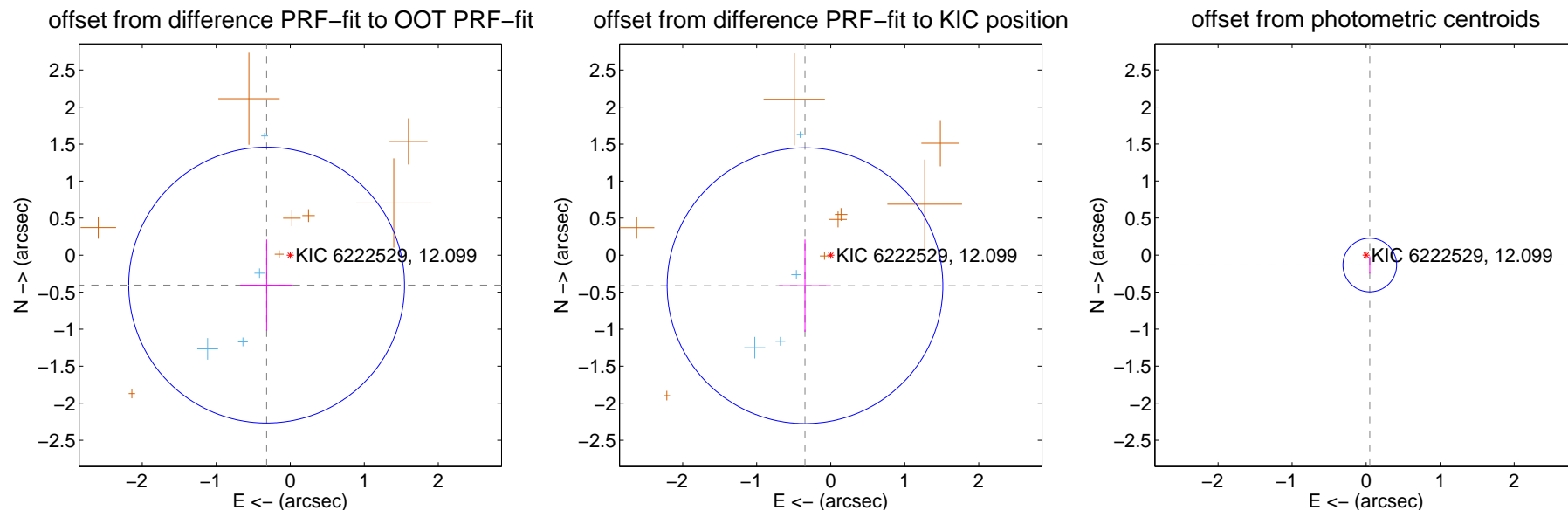
DV Centroid Data

Supplemental centroid analysis for 006222529-06. Kepler magnitude: 12.10. Transit SNR 6.23

There are 4 quarters with good PRF difference image offsets

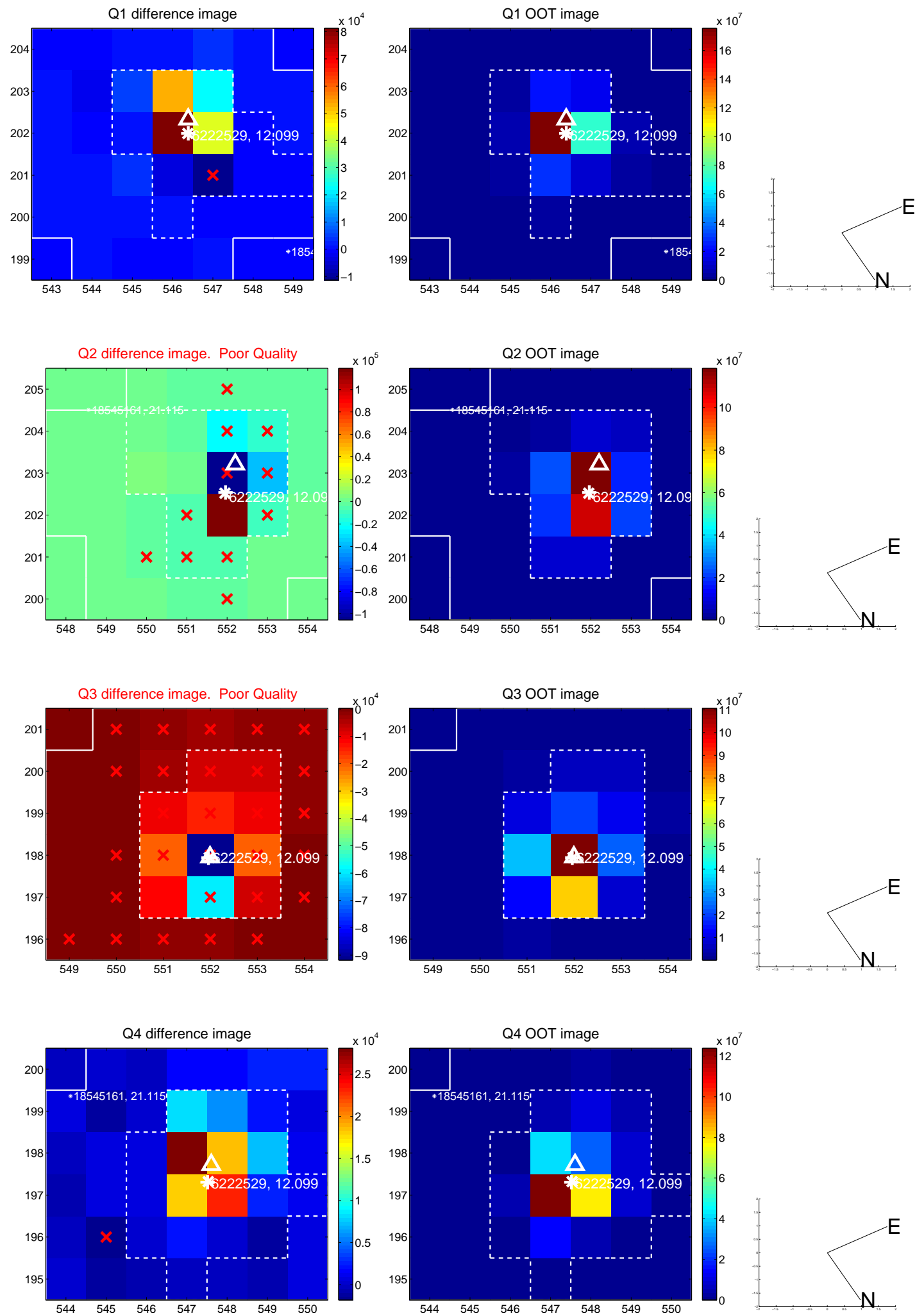
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.516 ± 0.621	0.83	0.320 ± 0.355	-0.405 ± 0.616
PRF-fit source offset from KIC position	0.540 ± 0.621	0.87	0.348 ± 0.350	-0.413 ± 0.624
photometric centroid source offset	0.14 ± 0.12	1.18	-0.05 ± 0.15	-0.13 ± 0.12

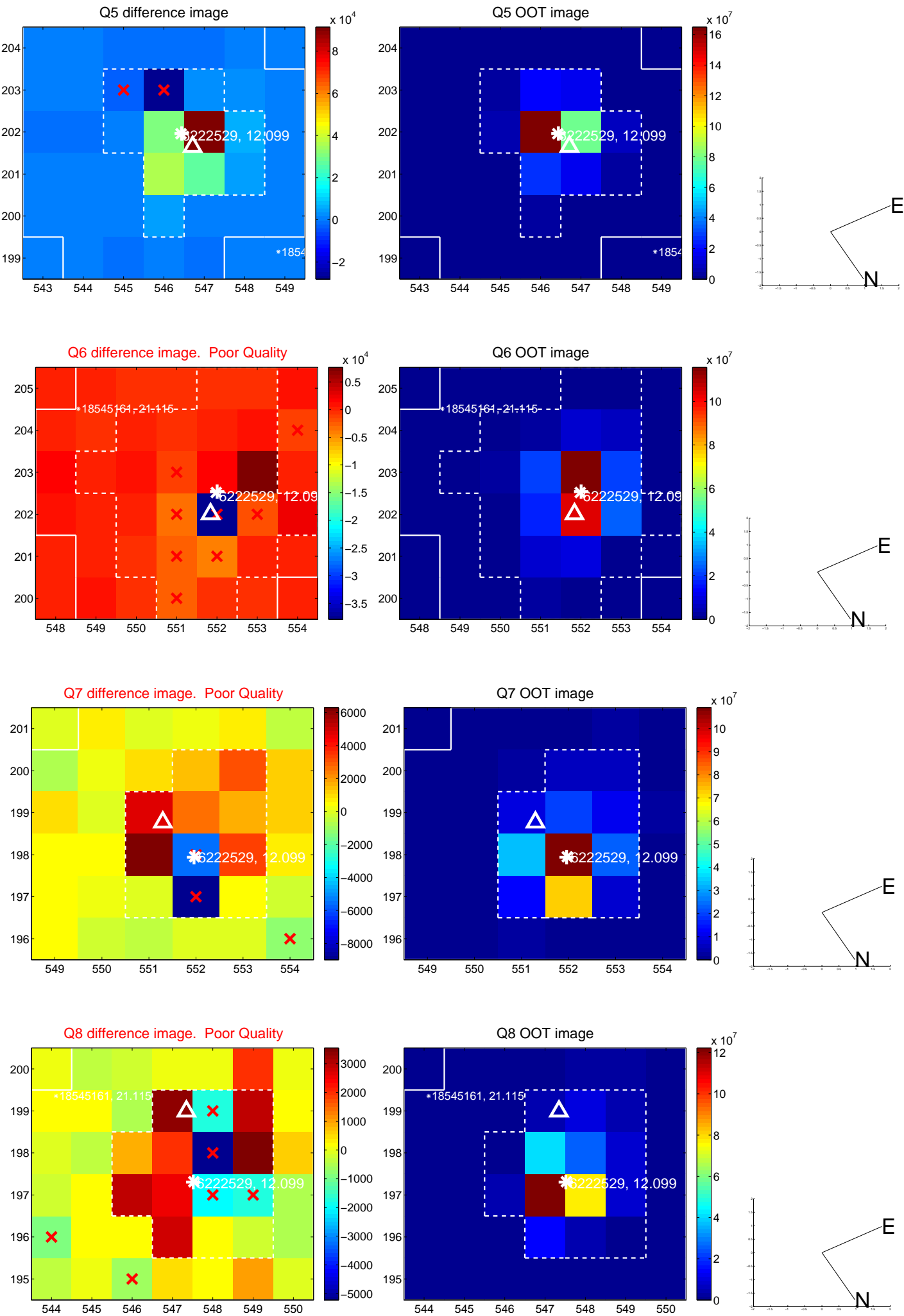


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

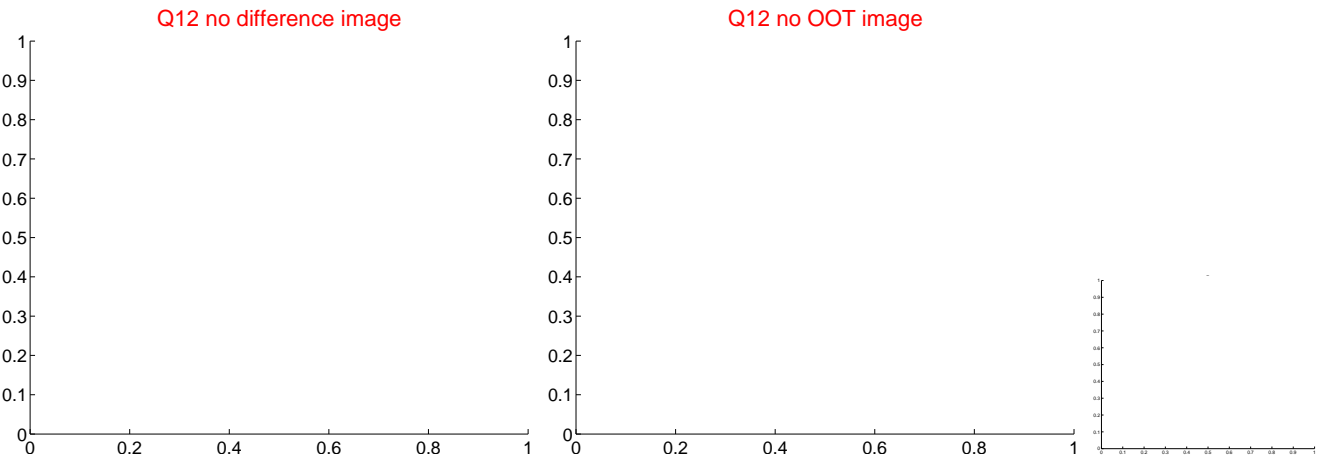
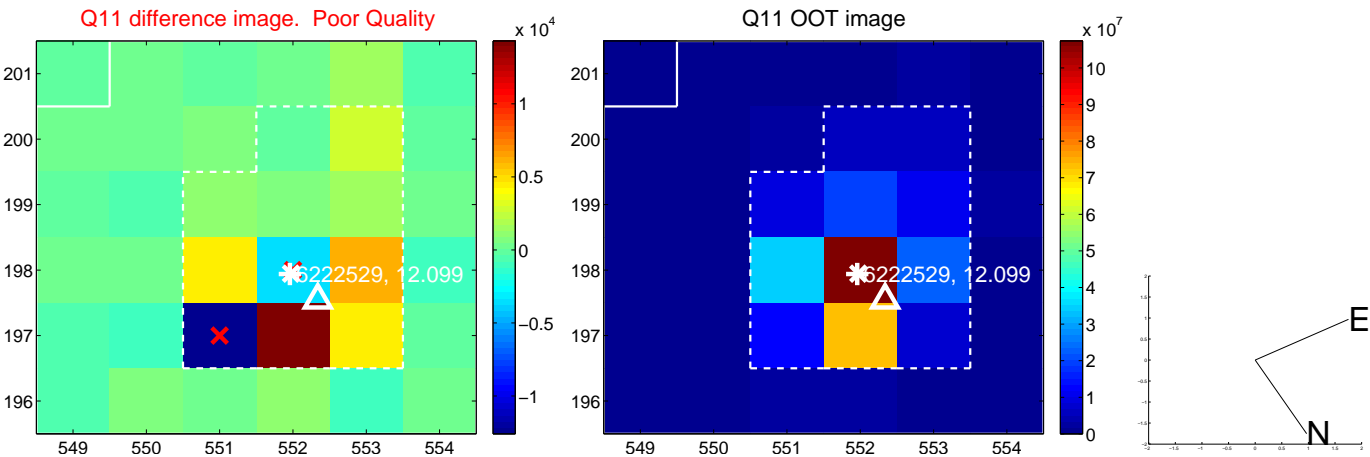
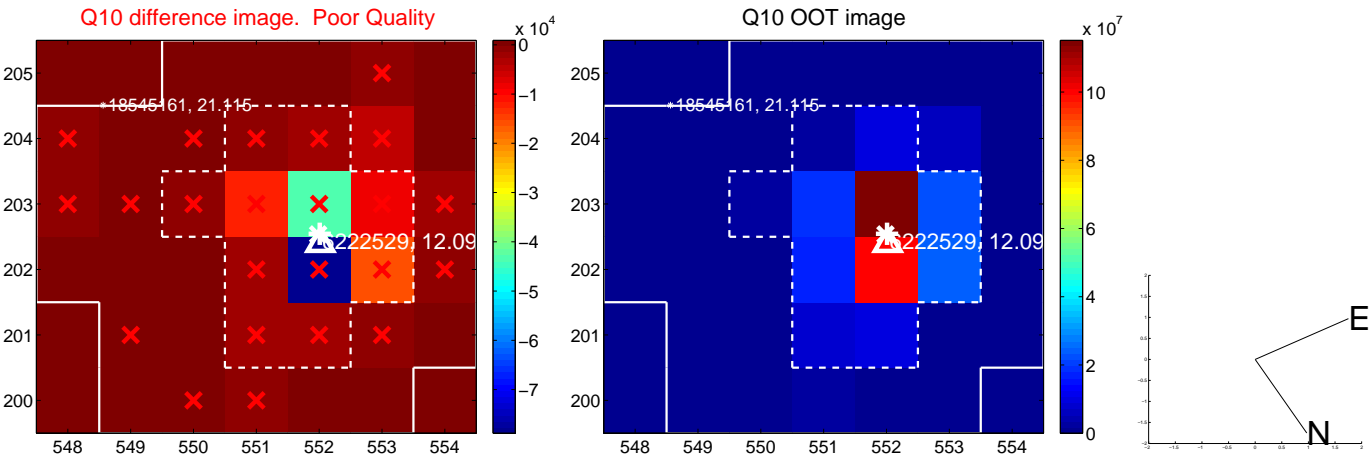
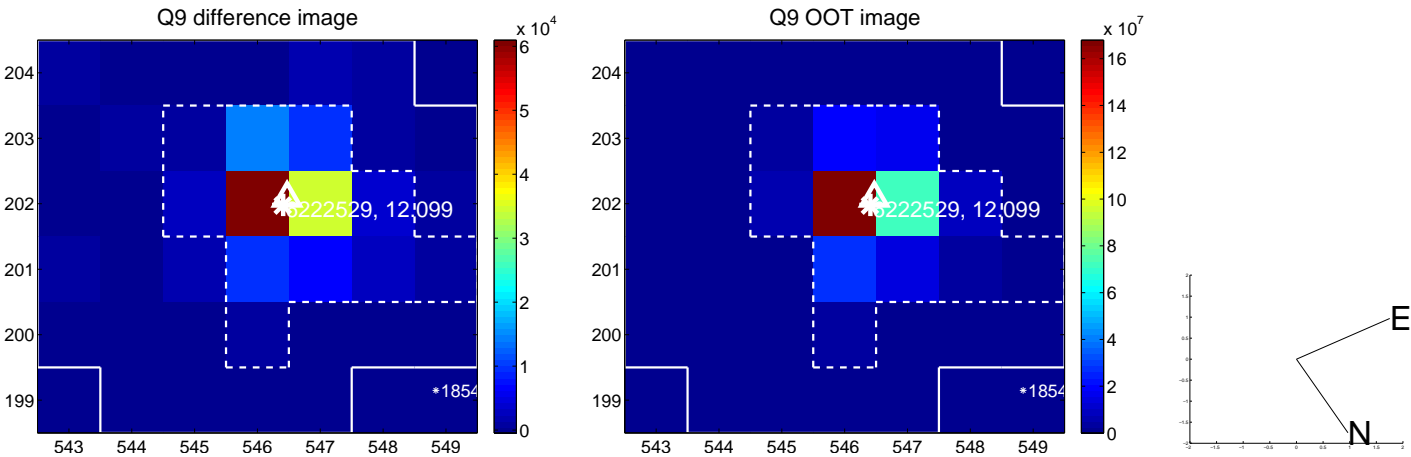
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



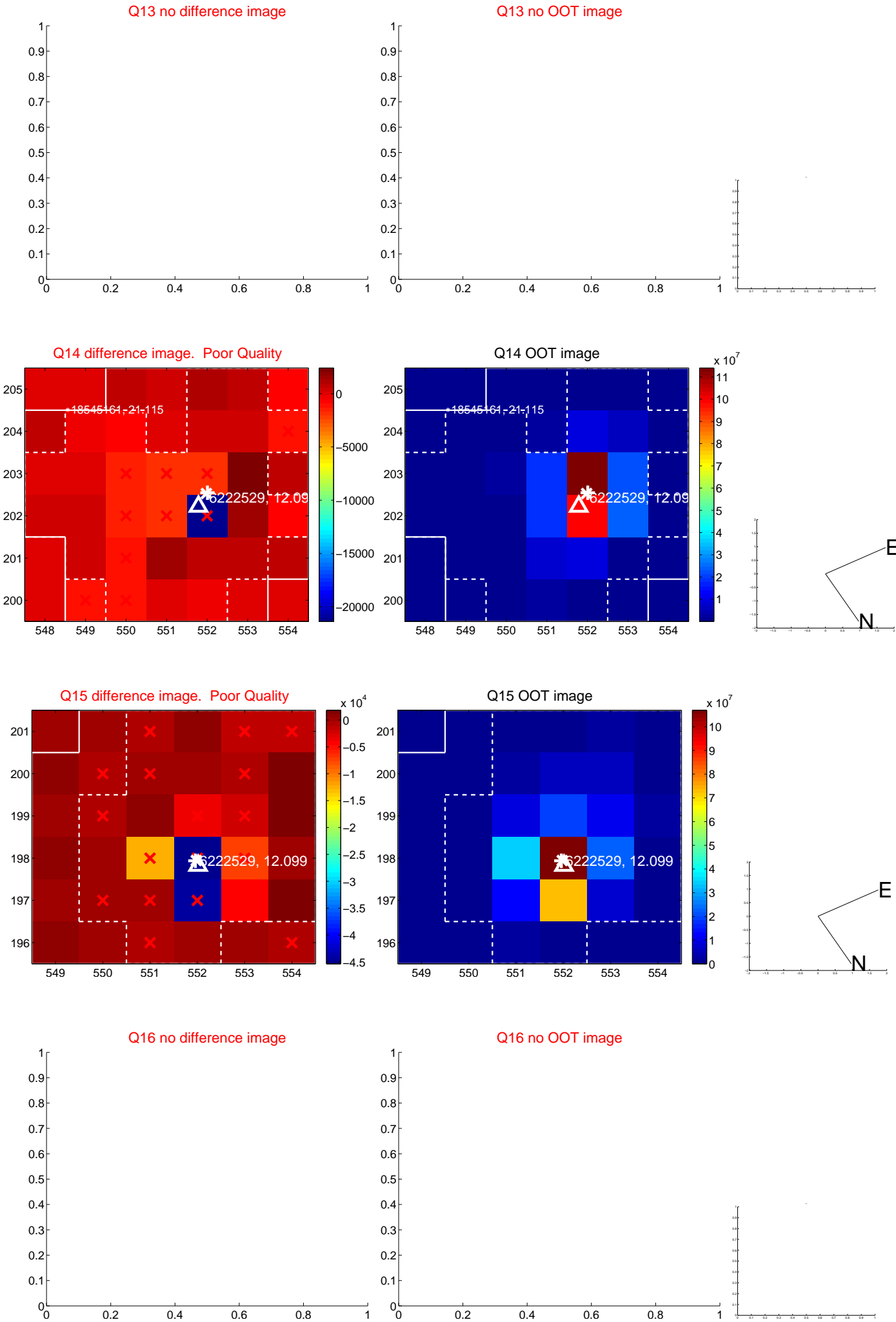
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



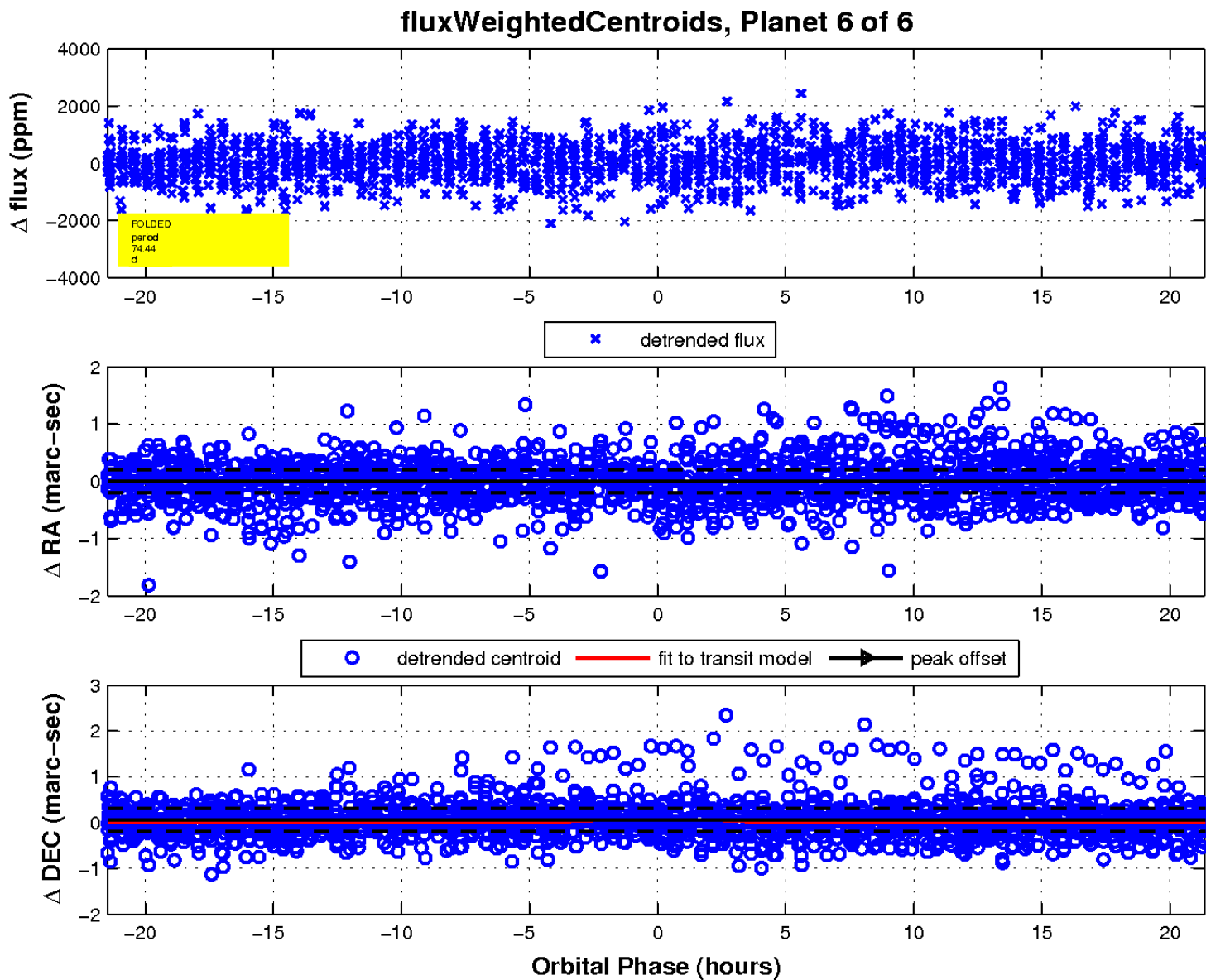
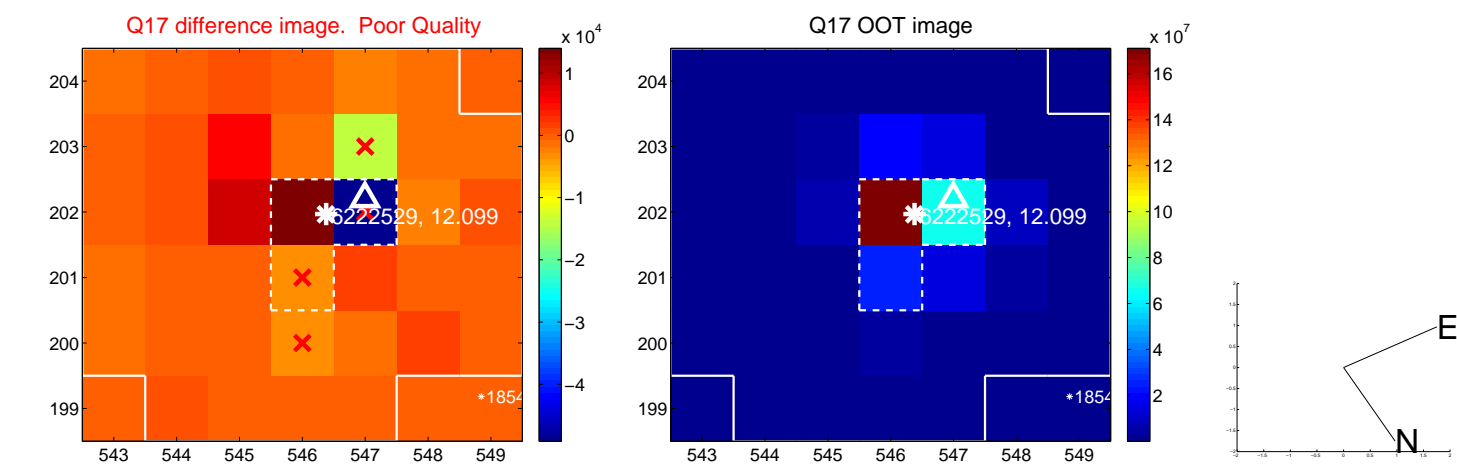
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

