

KIC 005649301

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})
005649301-01	OBS	No	0.544268	131.752378	52.1	2.039	8.0	16.7	1.57	5791	1.35	14094.70
005649301-02	OBS	No	487.667096	390.002260	631.2	7.034	9.3	6.8	1.57	5791	4.58	1.63
005649301-03	OBS	No	163.366625	276.318041	374.2	24.082	13.1	4.1	1.57	5791	3.07	7.01
005649301-04	OBS	No	185.381850	250.507709	359.4	4.590	8.6	4.8	1.57	5791	3.25	5.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005649301-01	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
005649301-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005649301-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
005649301-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_MEAS

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

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

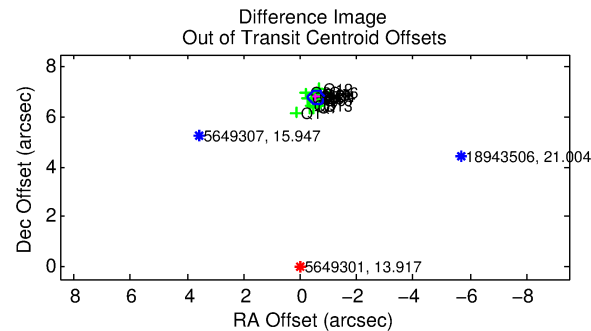
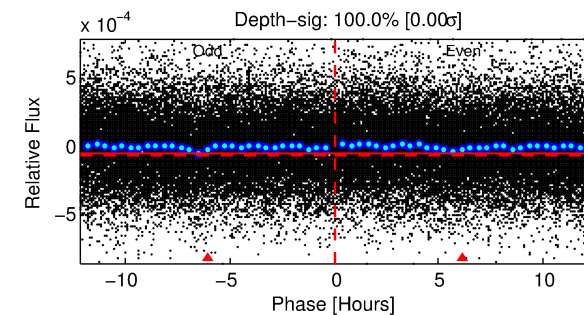
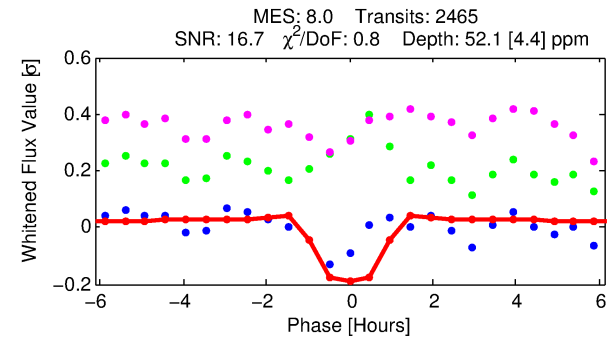
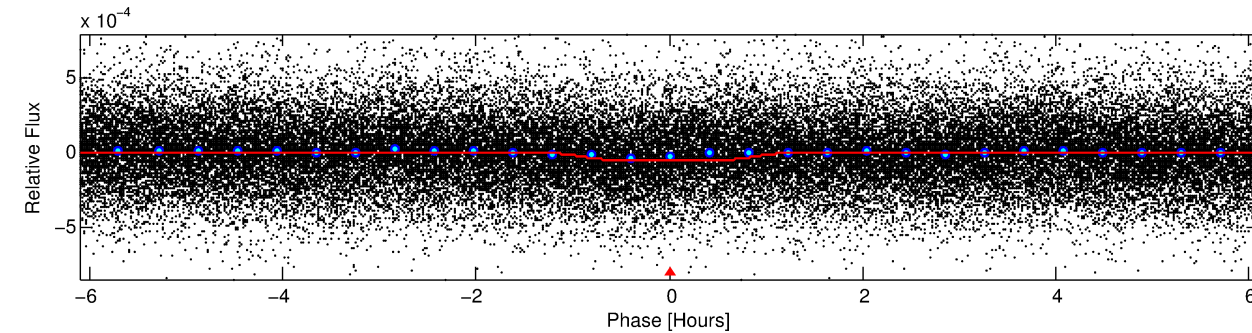
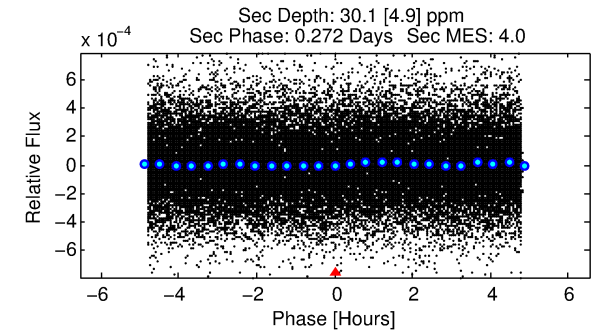
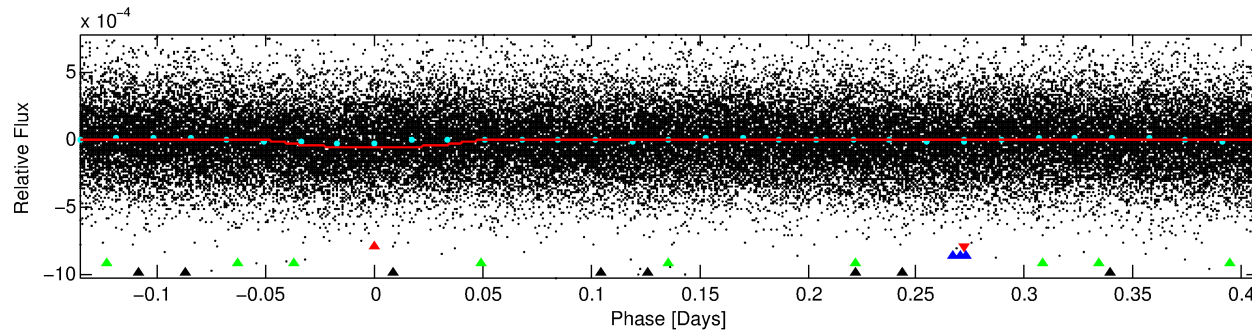
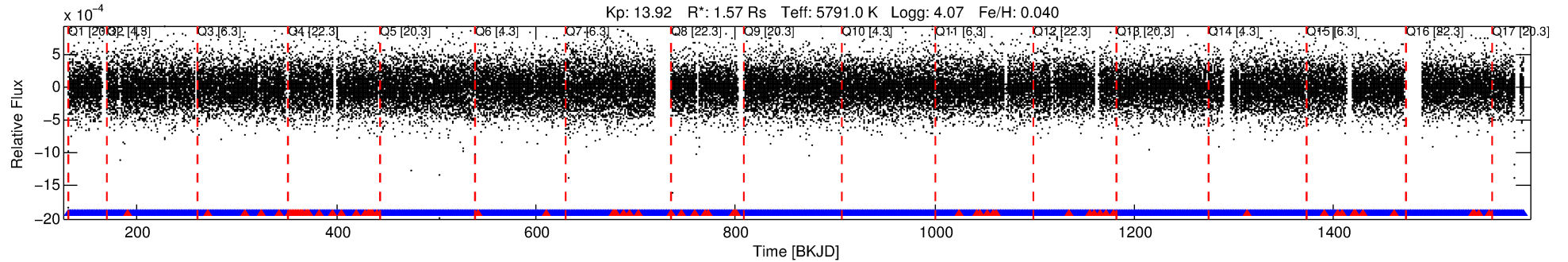
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005649301-01

No Significant Match Found

DV One-Page Summary

KIC: 5649301 Candidate: 1 of 4 Period: 0.544 d



DV Fit Results:

Period = 0.54427 [0.00001] d
Epoch = 131.7524 [0.0014] BKJD
Rp/R* = 0.0079 [0.0026]
a/R* = 1.32 [0.91]
b = 0.90 [0.35]
Seff = 14094.70 [8841.45]
Teq = 2778 [436] K
Rp = 1.35 [0.67] Re
a = 0.0133 [0.0050] AU
Ag = 1.61 [1.49] [0.41σ]
Teffp = 4836 [850] K [2.15σ]

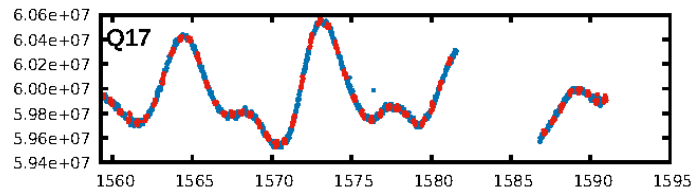
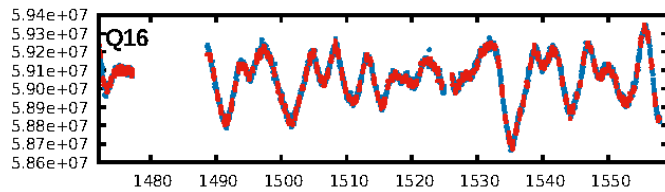
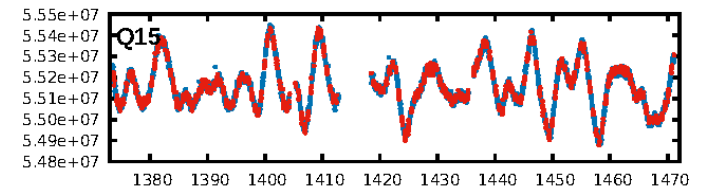
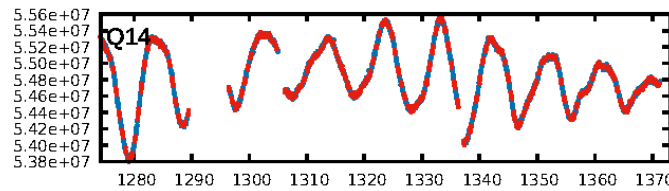
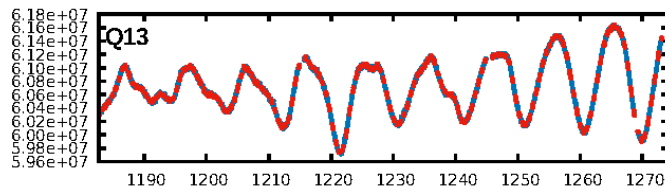
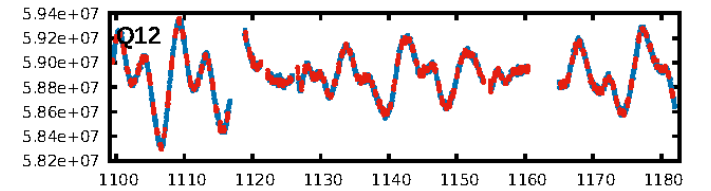
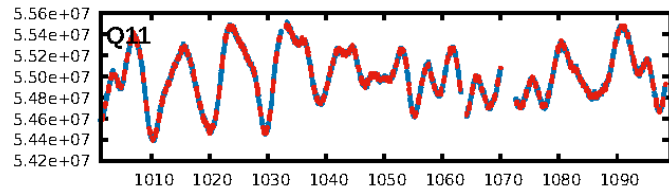
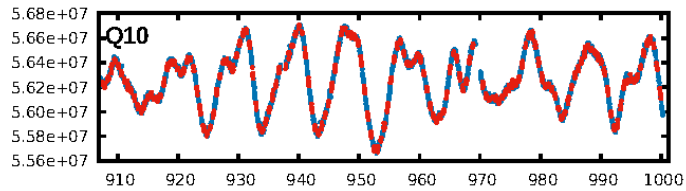
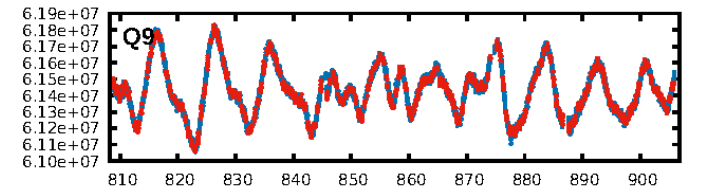
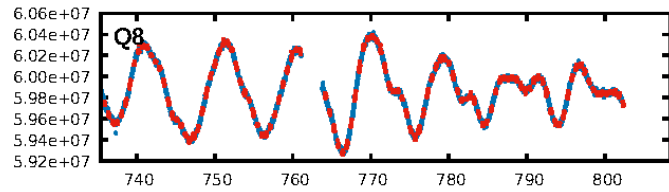
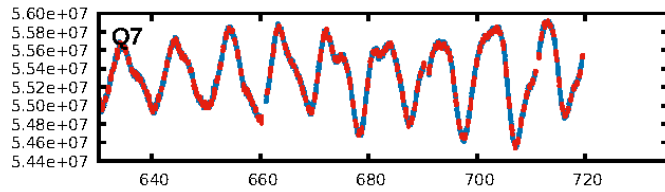
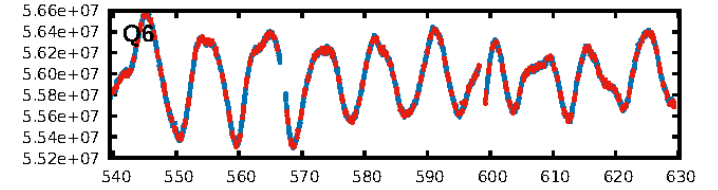
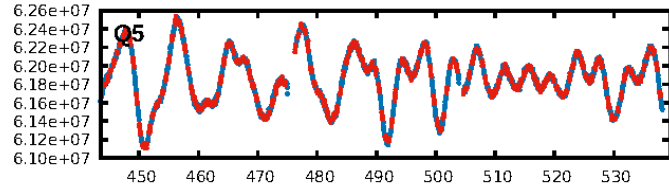
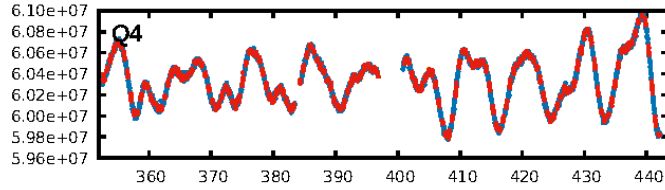
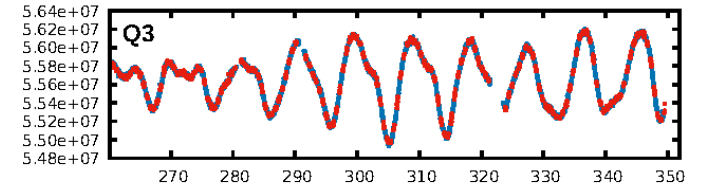
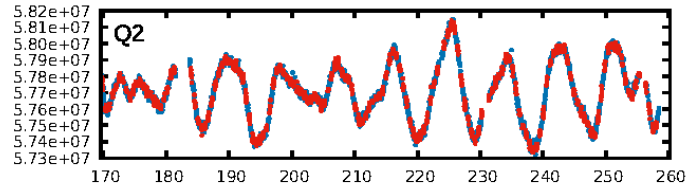
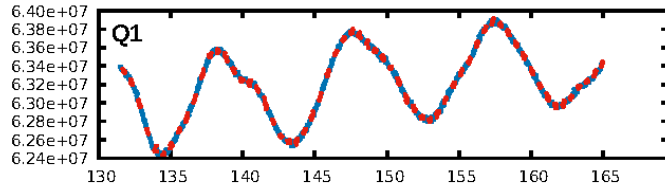
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [161.69σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.36e-15
RollingBand-fgt: 0.97 [2278/2354]
GhostDiagnostic-chr: -1.241
Centroid-sig: 1.0%
Centroid-so: 0.754 arcsec [1.06σ]
OotOffset-rm: 6.809 arcsec [74.64σ]
KicOffset-rm: 6.979 arcsec [76.82σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.94 [15/16]
DiffImageOverlap-fno: 1.00 [17/17]

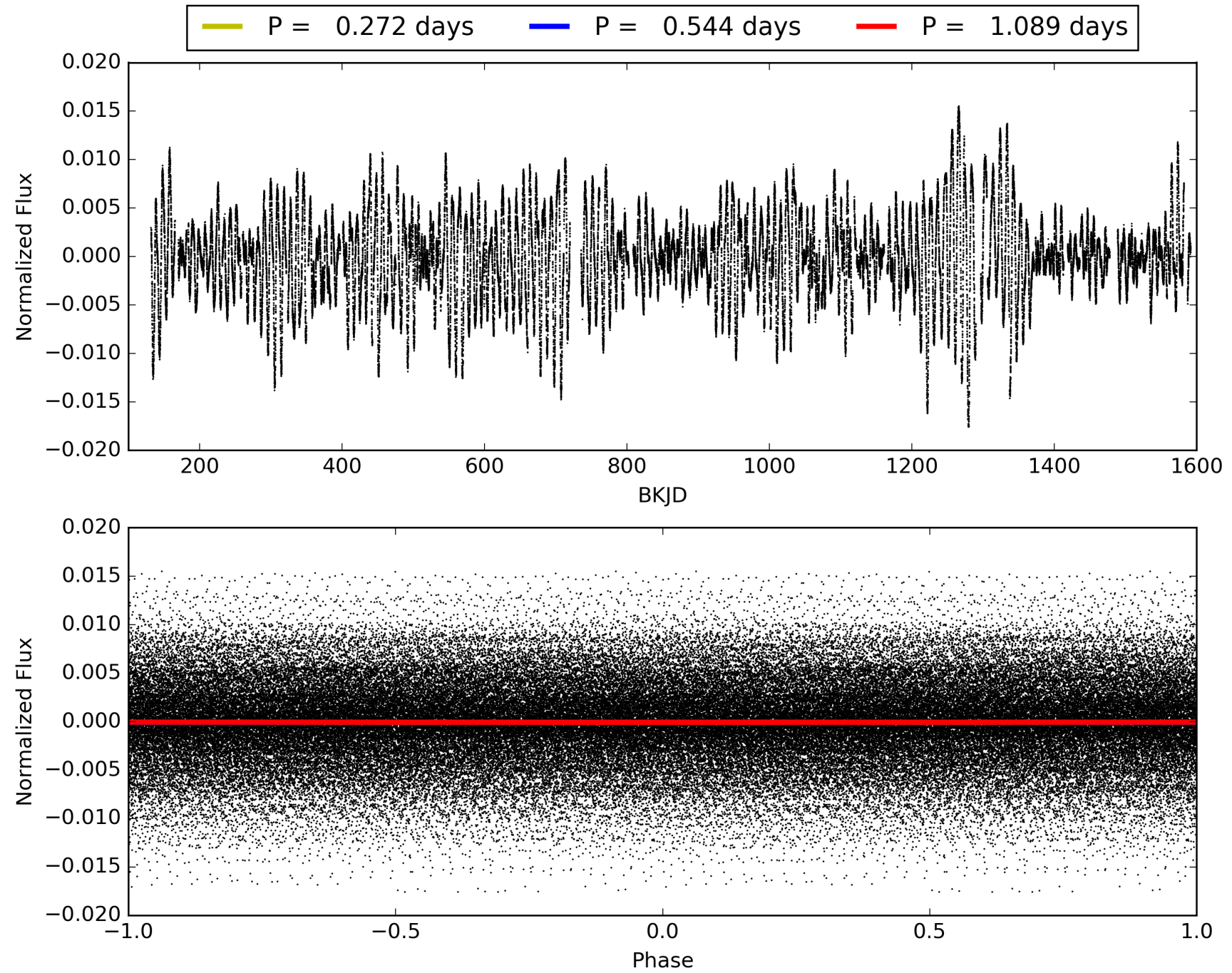
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005649301-01, PDC Light Curves

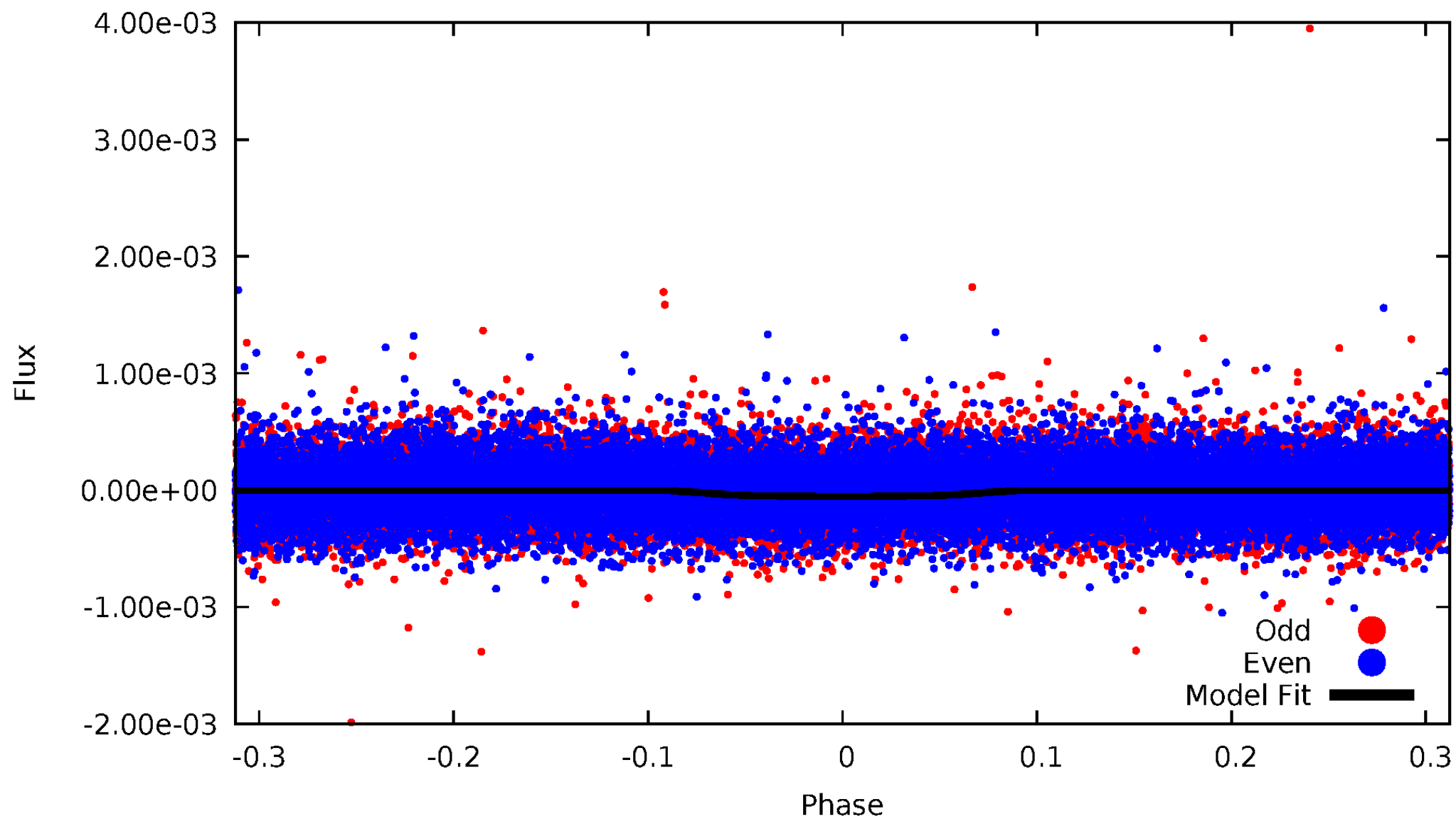


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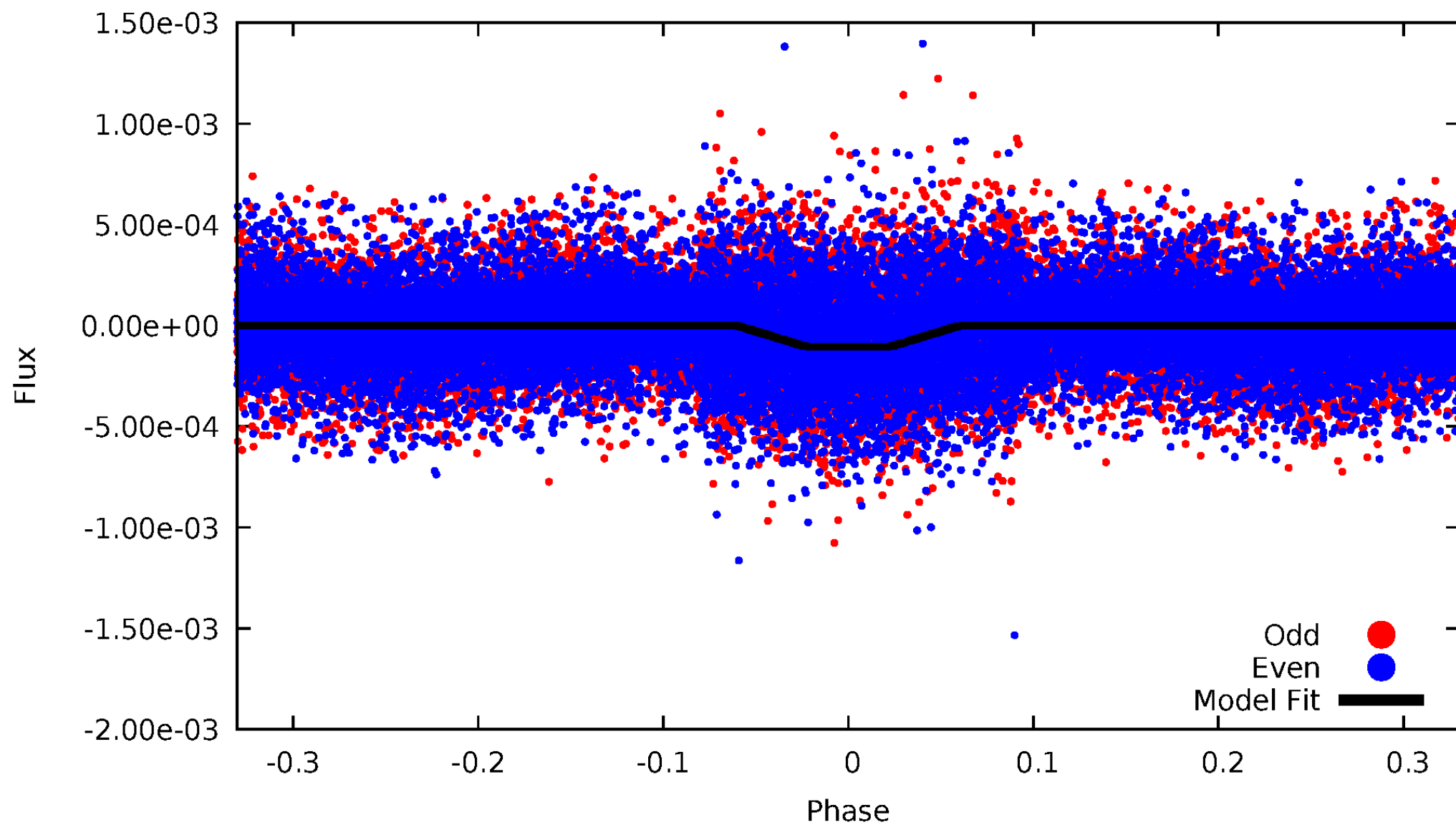
DV Odd/Even

TCE 005649301-01

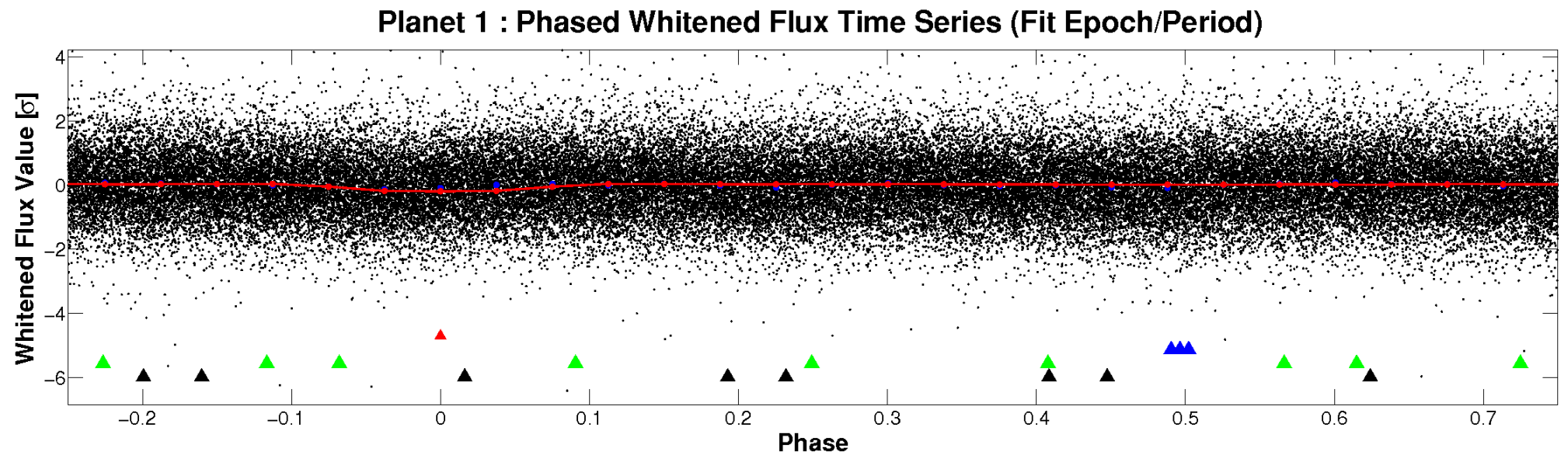
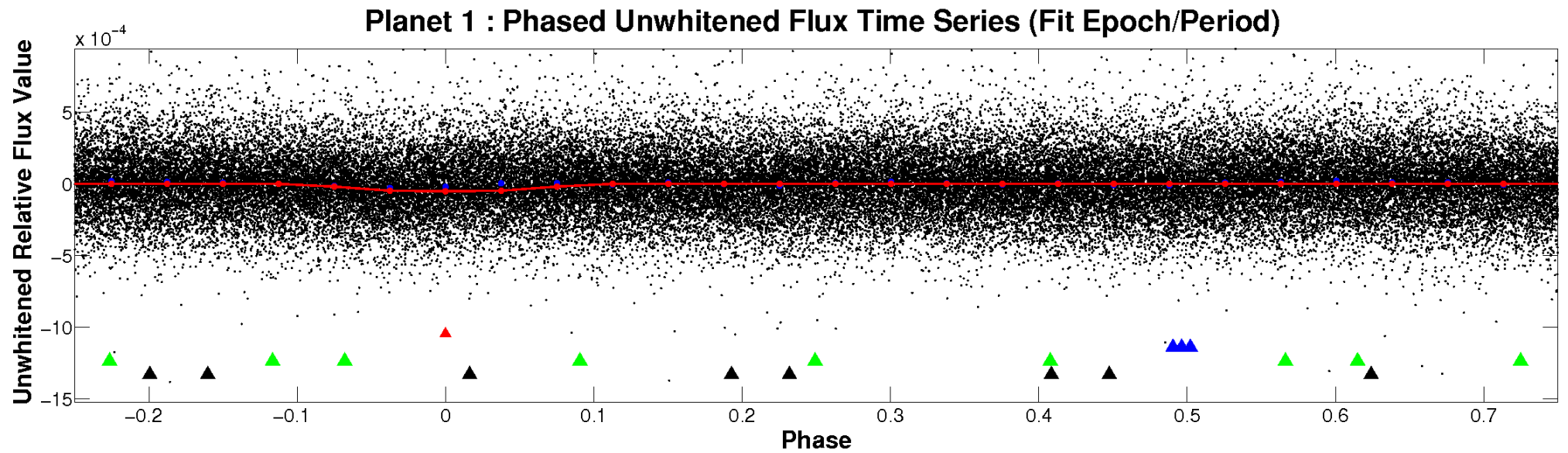


ALT Odd/Even

TCE 005649301-01

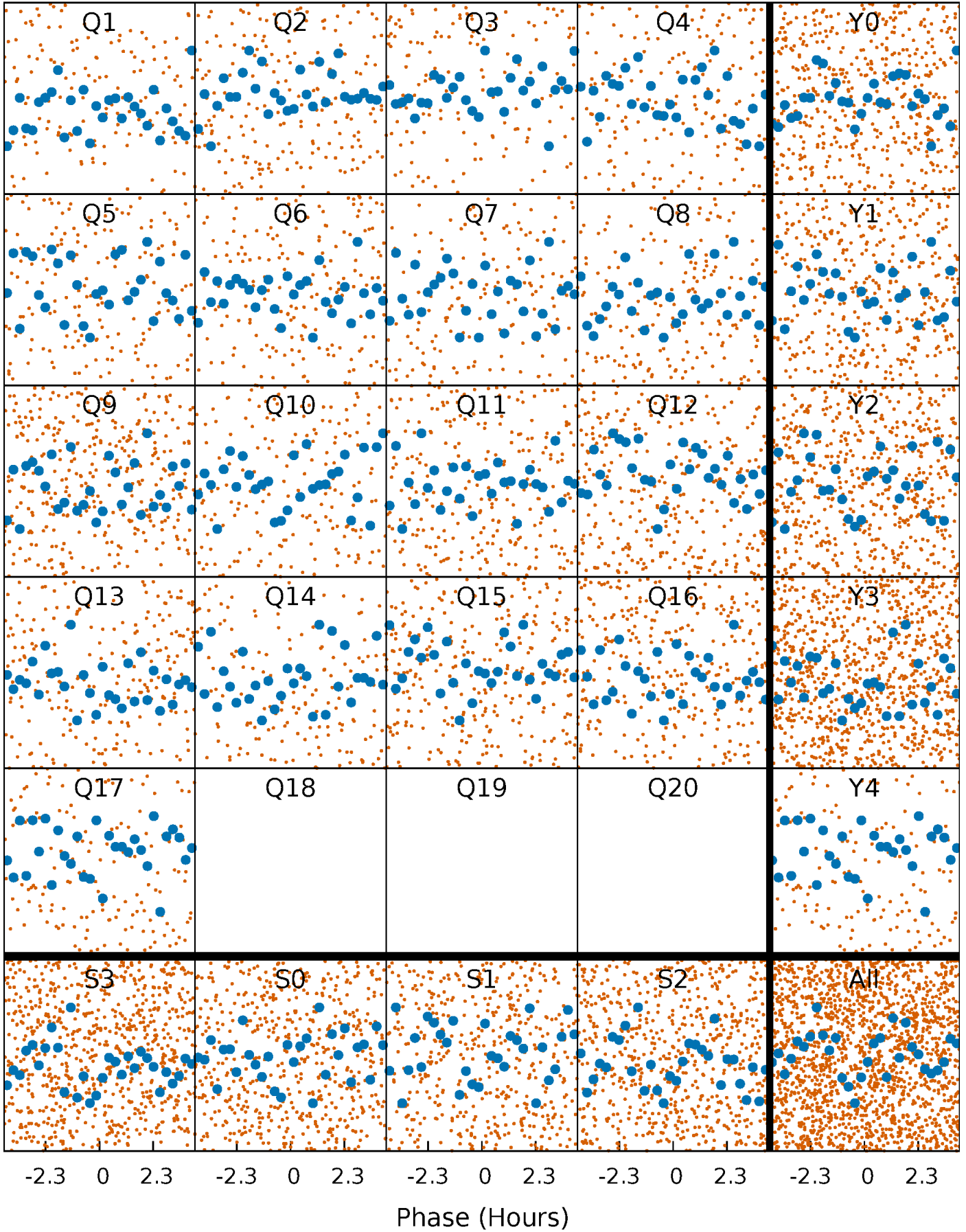


Non-Whitened Vs. Whitened Light Curve



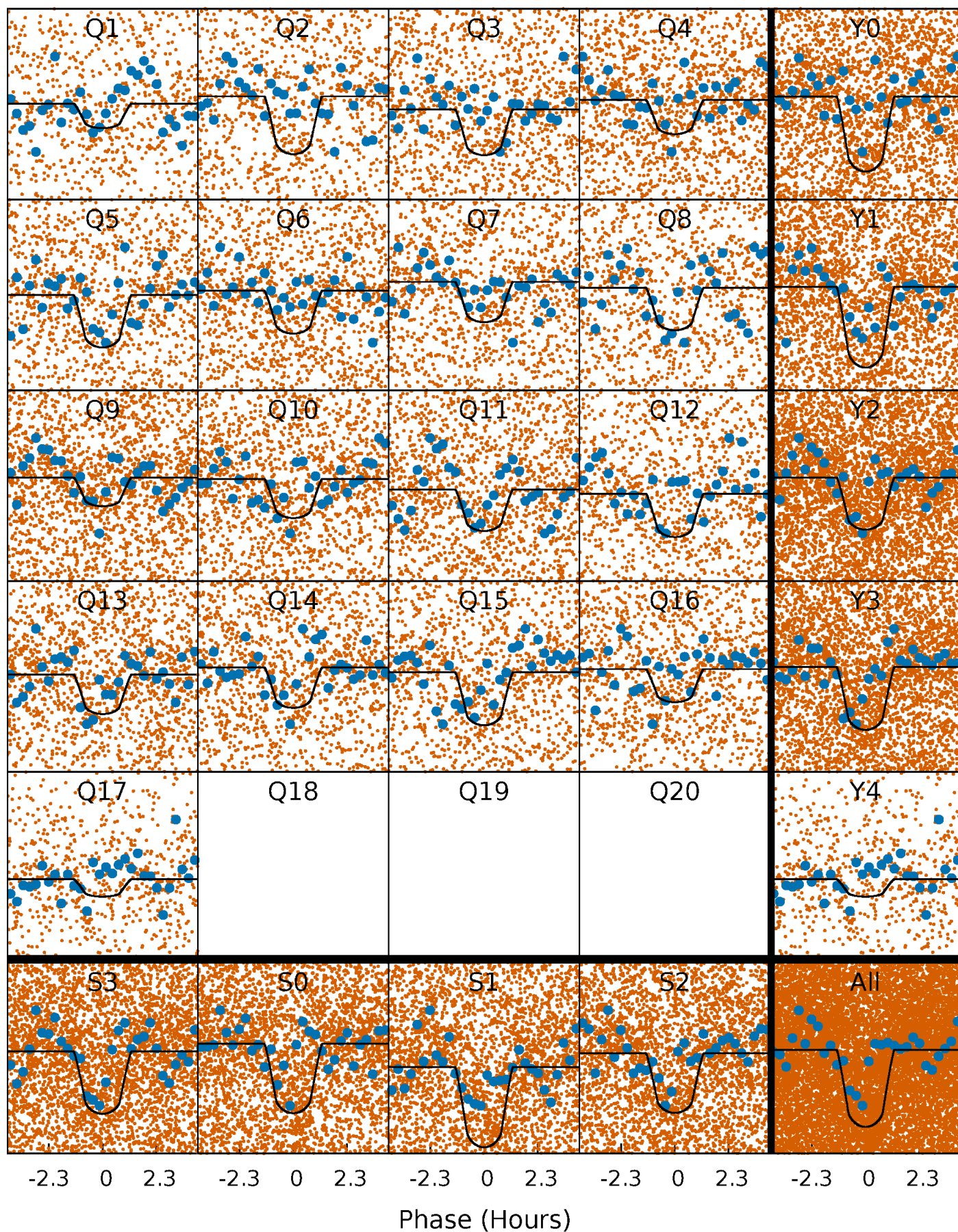
PDC Quarter-Phased Transit Curves

TCE 005649301-01 P= 0.544268 Days $T_0=131.752378$ (BKJD)



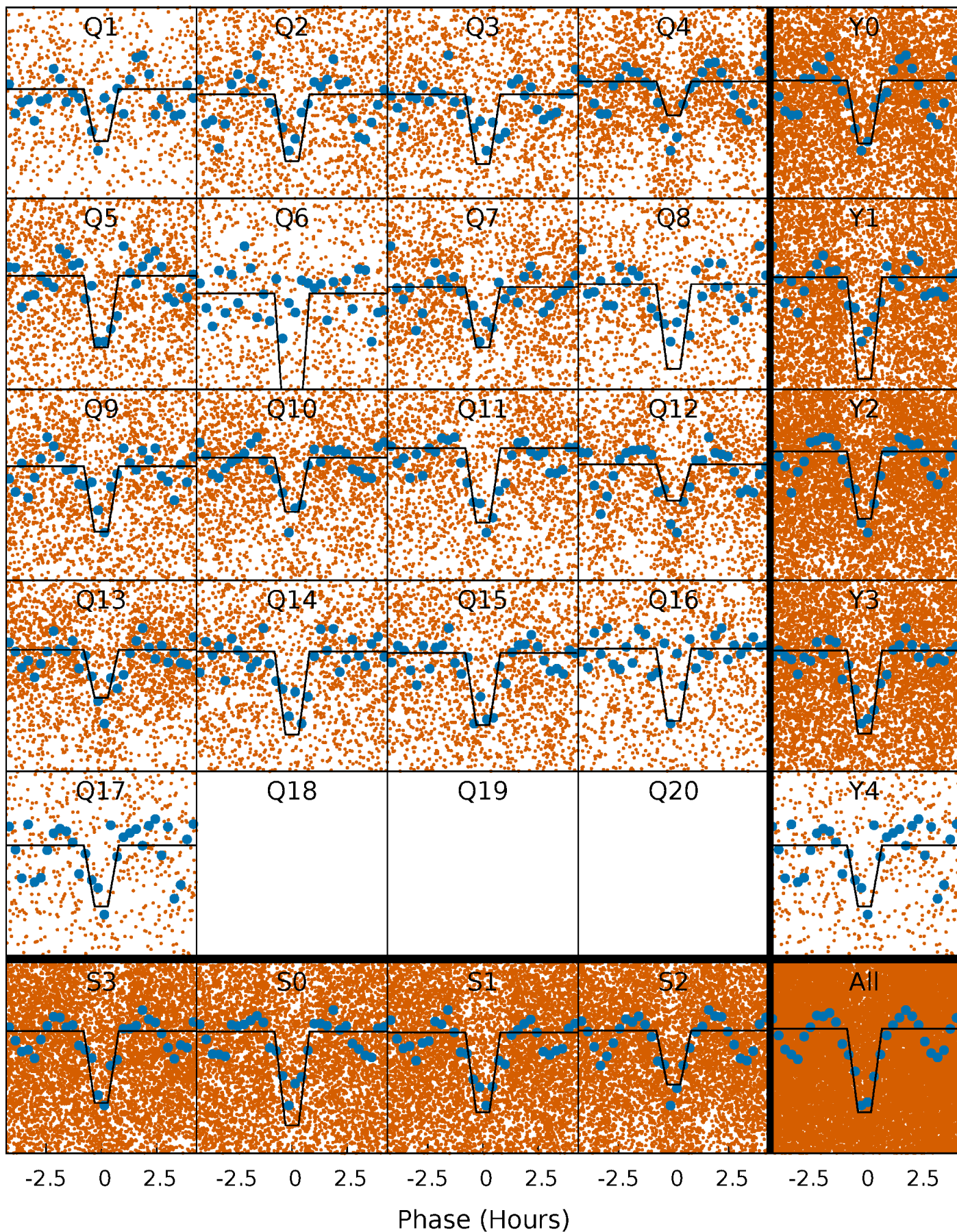
DV Quarter-Phased Transit Curves

TCE 005649301-01 P= 0.544268 Days $T_0=131.752378$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

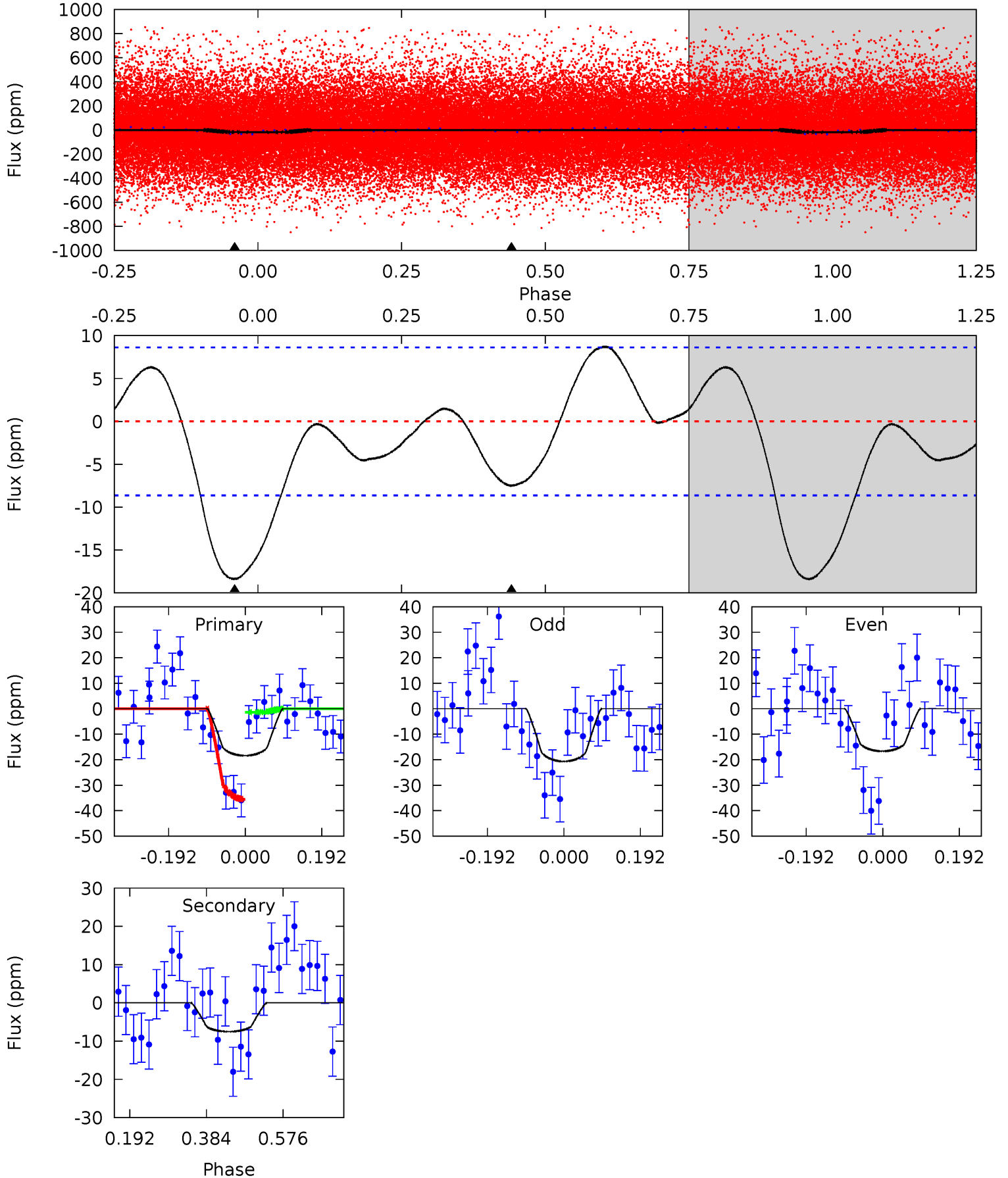
TCE 005649301-01 P= 0.544254 Days $T_0=131.753946$ (BKJD)



DV Model-Shift Uniqueness Test

005649301-01, P = 0.544268 Days, E = 131.208110 Days

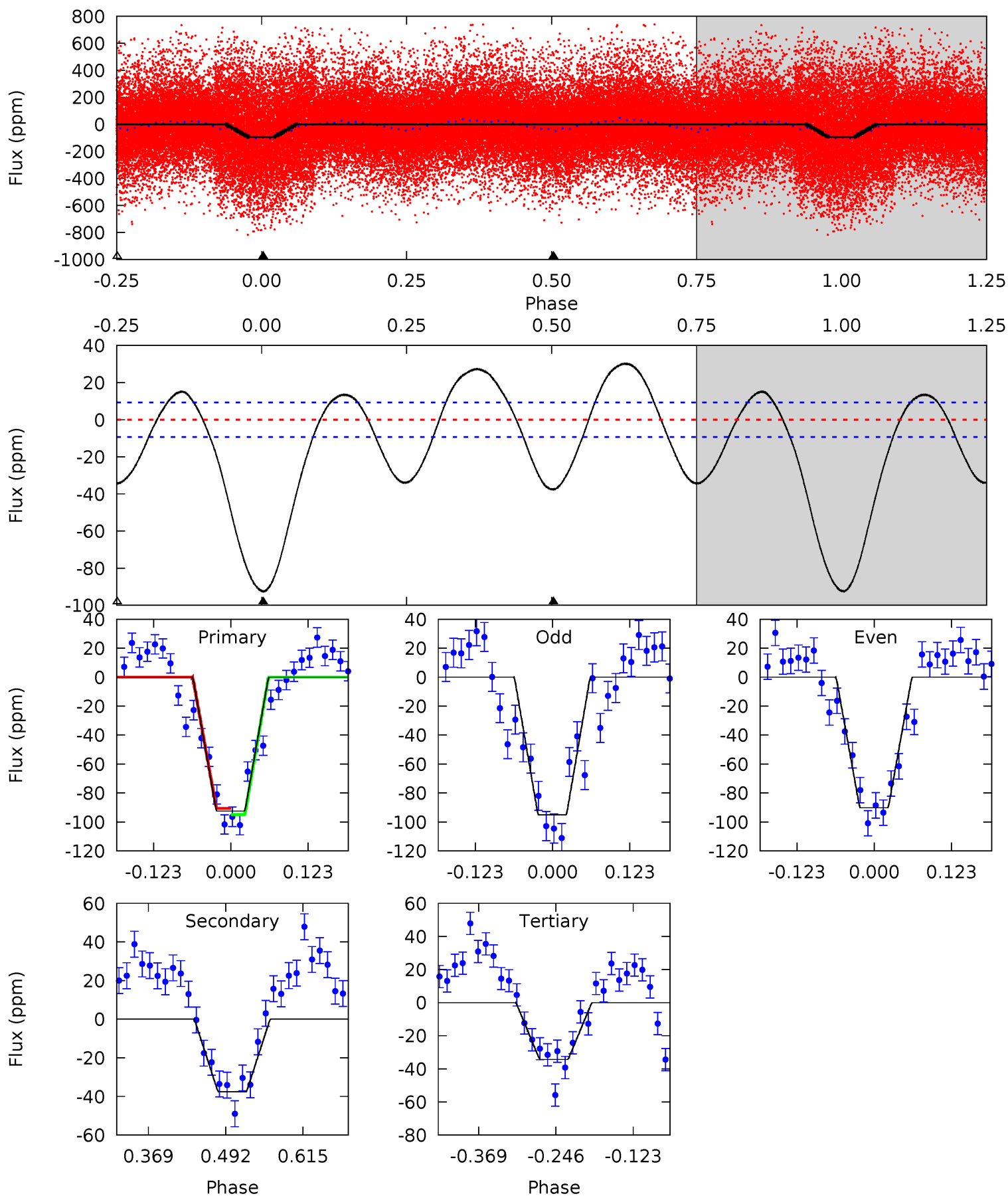
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.45	3.86	0	0	4.43	1.30	1.66	9.45	9.45	3.86	3.86	1.03	0.78	0.32	8.80



Alt Model-Shift Uniqueness Test

005649301-01, P = 0.544254 Days, E = 131.209692 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.0	18.3	16.7	0	4.52	1.54	10.0	28.3	45.0	1.57	18.3	1.17	0.98	0.25	1.02



Stellar Parameters For KIC 005649301

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5791^{+175}_{-175}	$4.068^{+0.368}_{-0.123}$	$0.040^{+0.250}_{-0.300}$	$1.568^{+0.383}_{-0.575}$	$1.050^{+0.133}_{-0.133}$	$0.383^{+0.923}_{-0.153}$
	+3%/-3%	+9%/-3%	+625%/-750%	+24%/-37%	+13%/-13%	+241%/-40%
Source	PHO1	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 005649301-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-8 ± 2	$1.24^{+0.53}_{-0.46}$	3795^{+306}_{-387}	3270^{+891}_{-6232}	$0.491^{+0.697}_{-0.269}$
Alt.	-38 ± 2	$1.64^{+0.56}_{-0.55}$	3806^{+287}_{-365}	4403^{+778}_{-536}	$1.346^{+1.610}_{-0.588}$

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

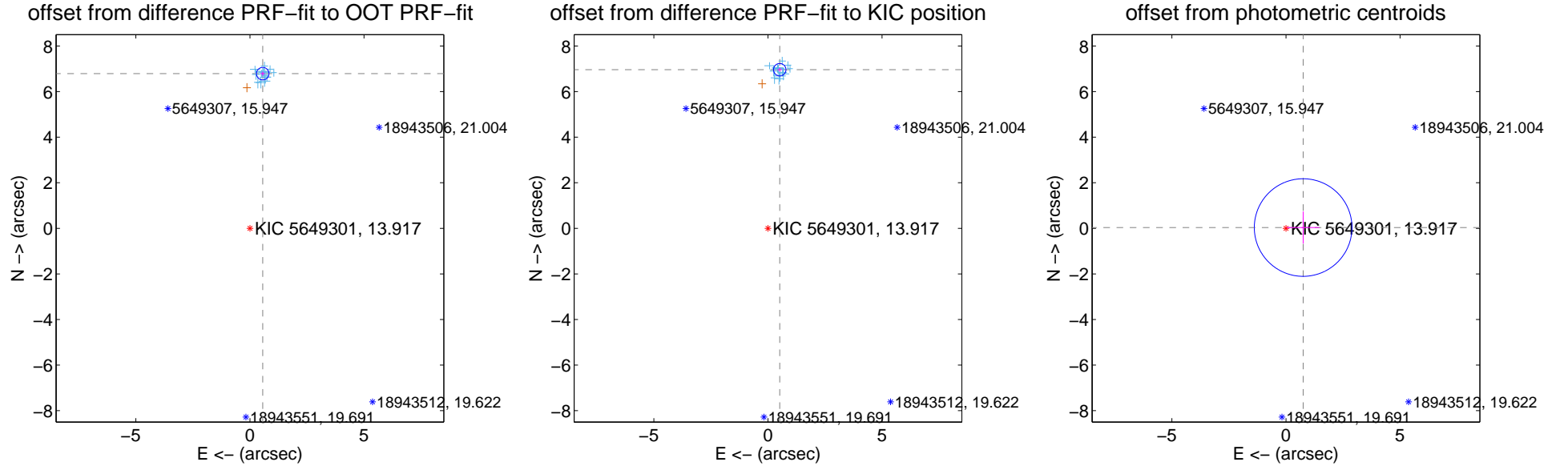
DV Centroid Data

Supplemental centroid analysis for 005649301-01. Kepler magnitude: 13.92. Transit SNR 16.71

There are 15 quarters with good PRF difference image offsets

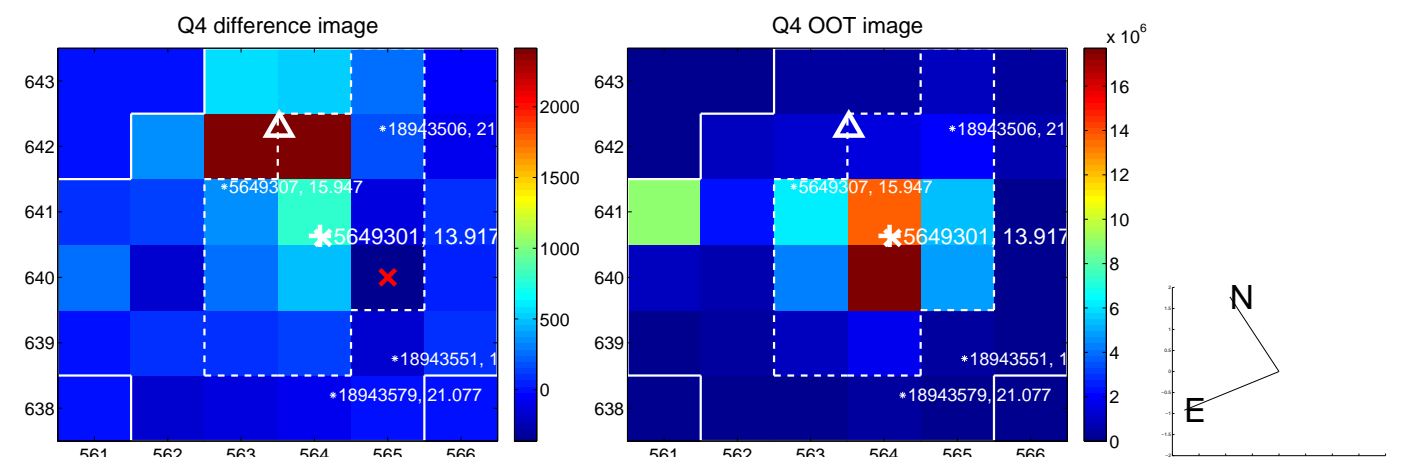
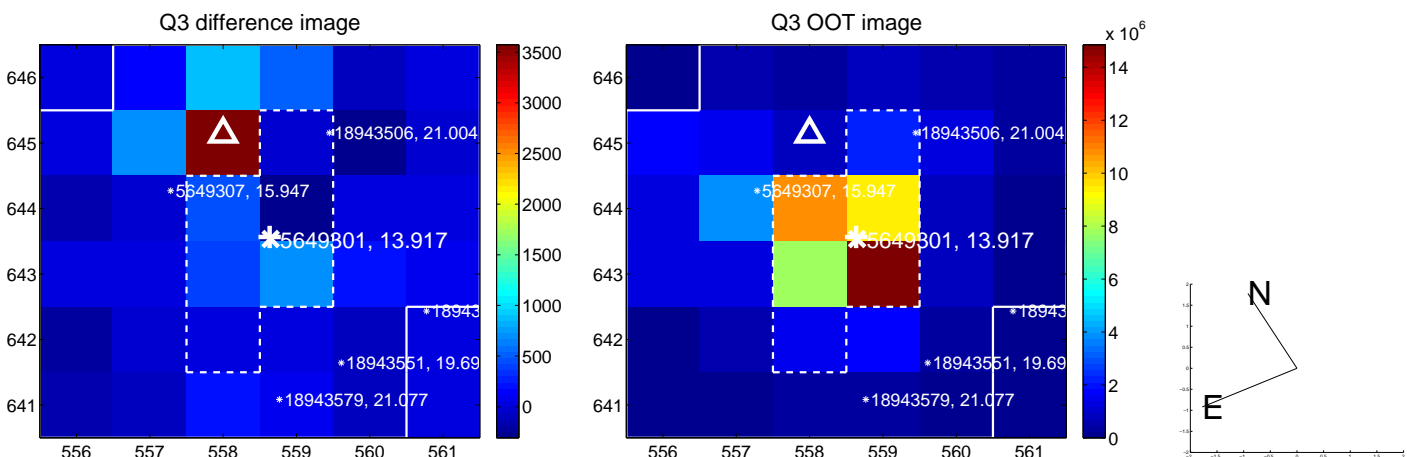
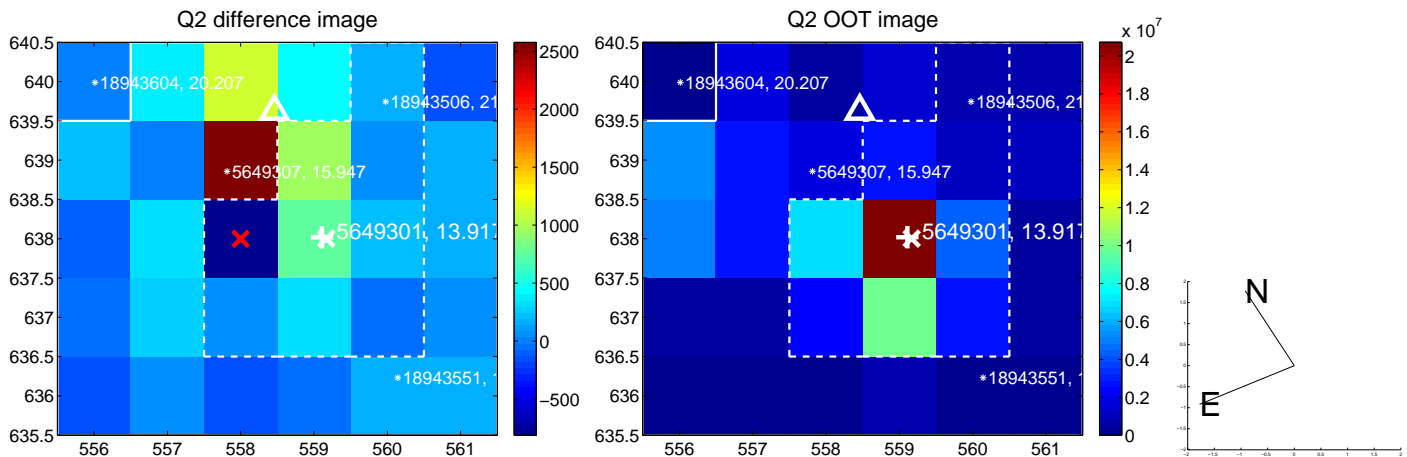
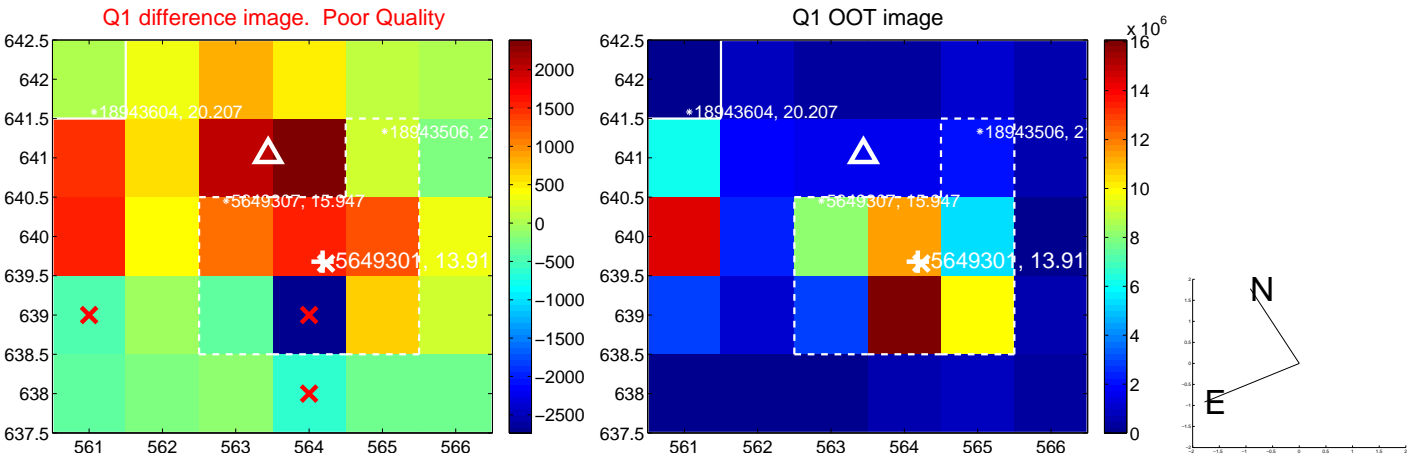
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.809 ± 0.091	74.64	-0.561 ± 0.098	6.786 ± 0.089
PRF-fit source offset from KIC position	6.979 ± 0.091	76.82	-0.517 ± 0.095	6.960 ± 0.089
photometric centroid source offset	0.75 ± 0.71	1.06	-0.75 ± 0.71	0.03 ± 0.70

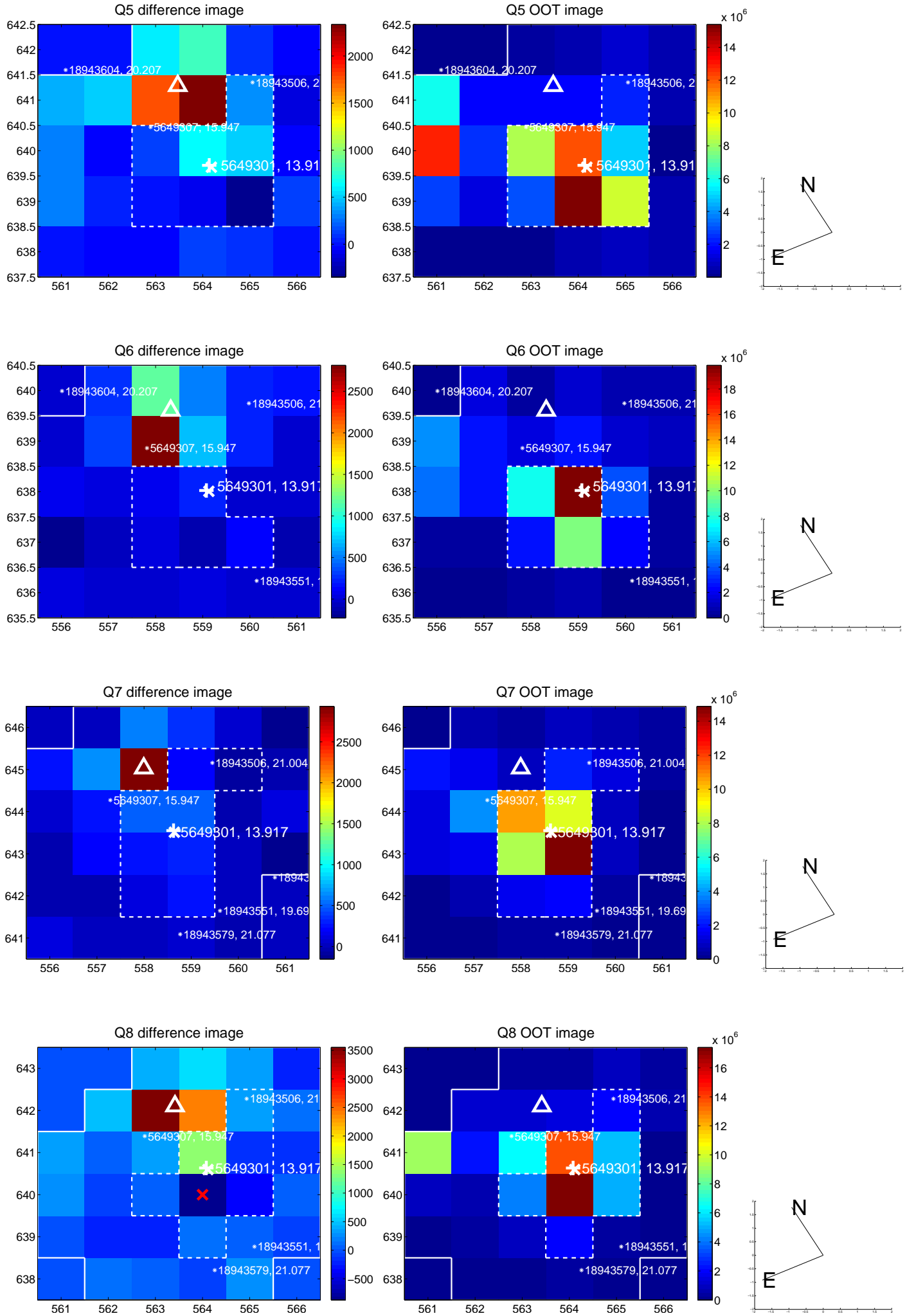


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

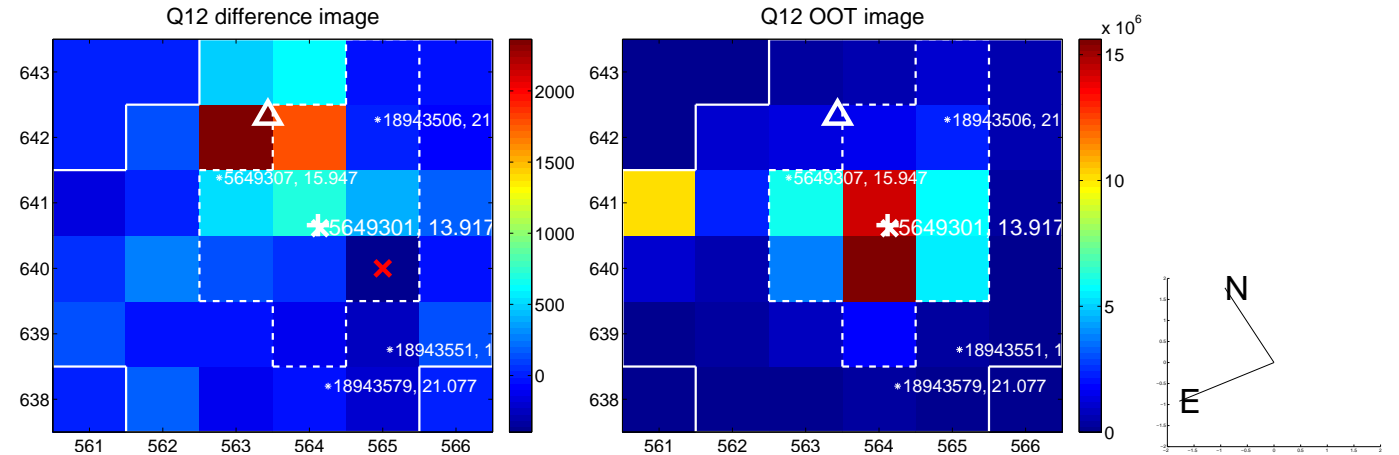
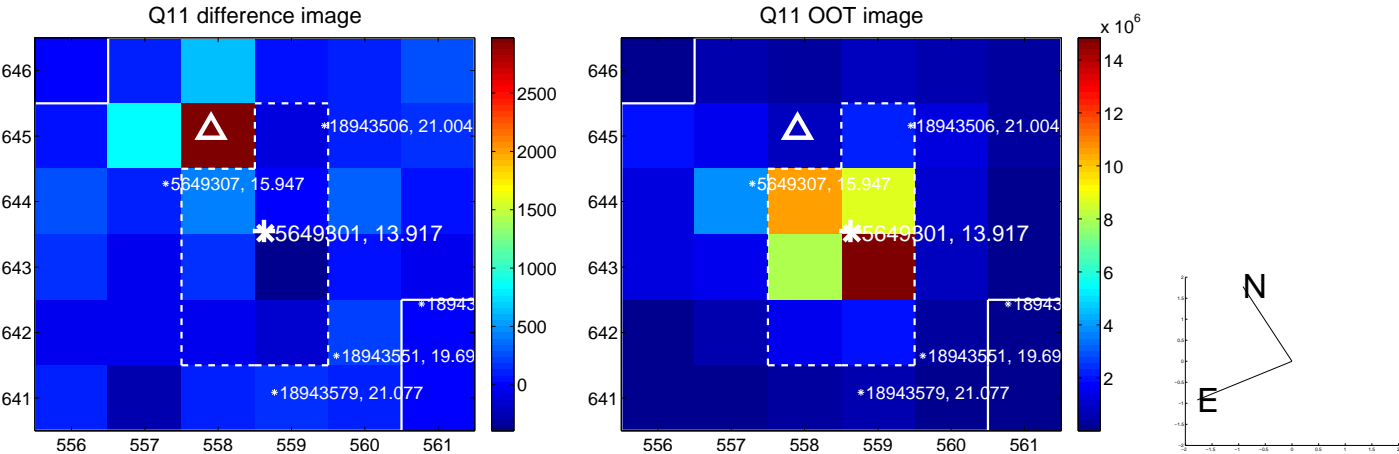
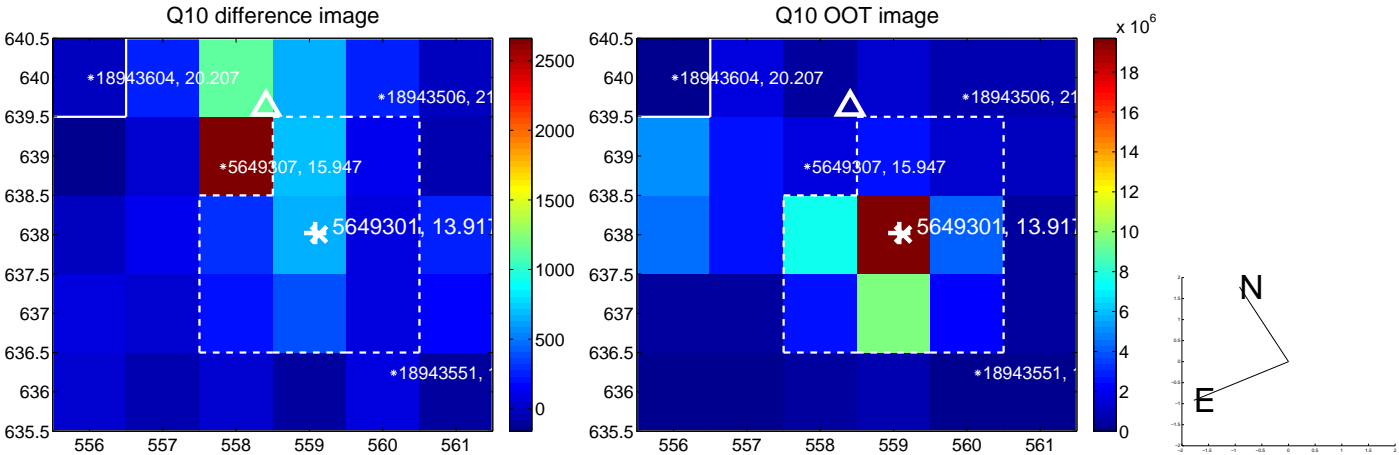
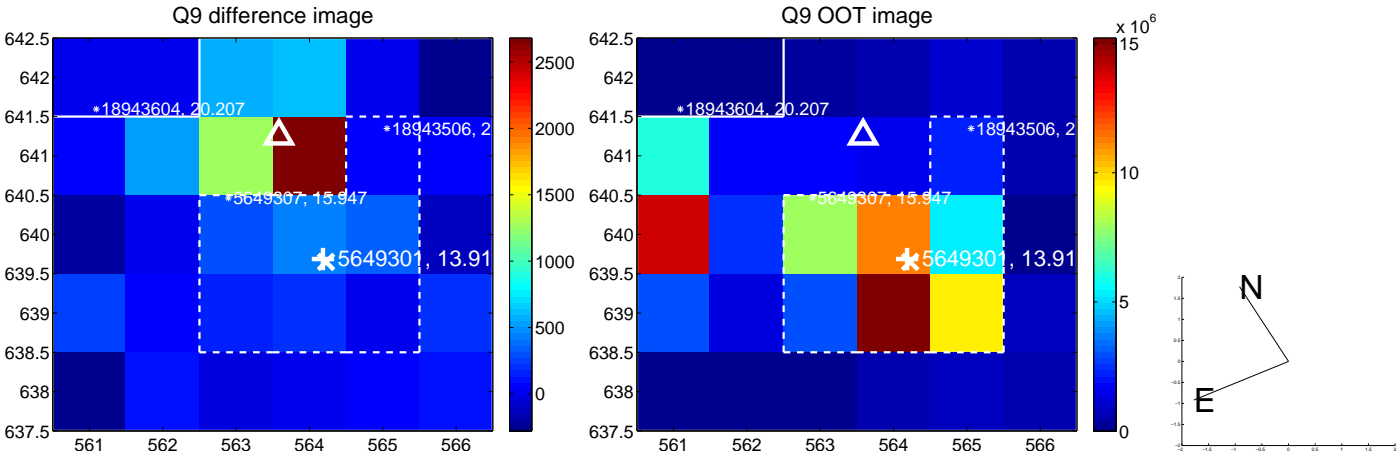
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



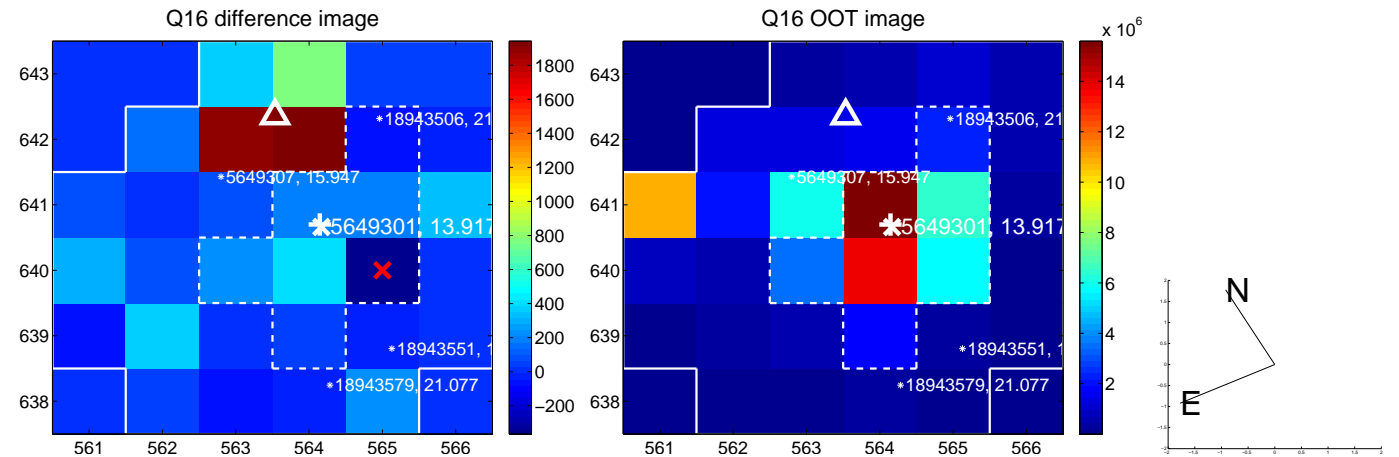
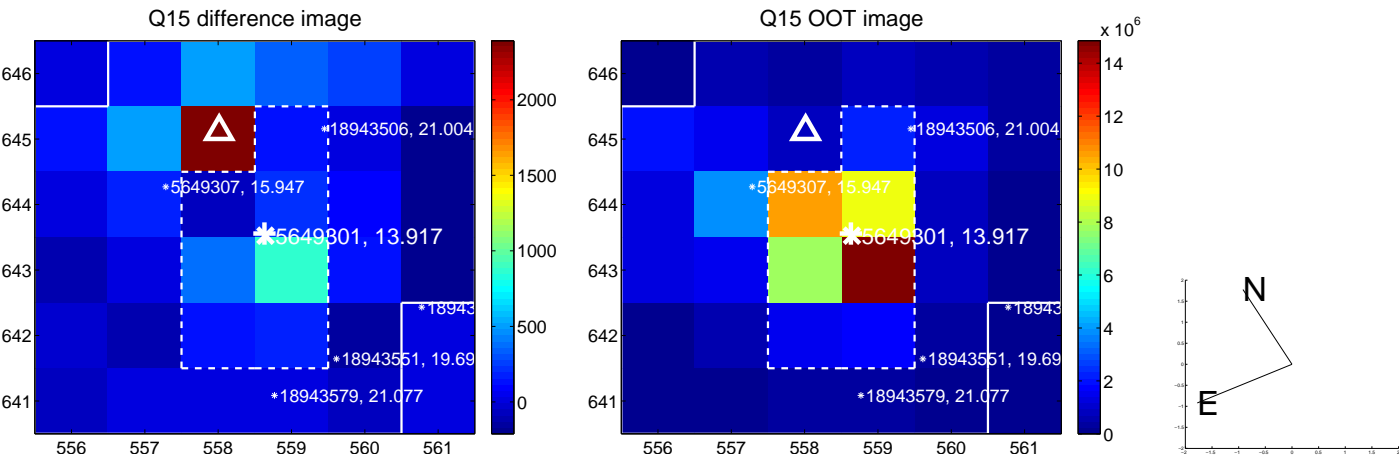
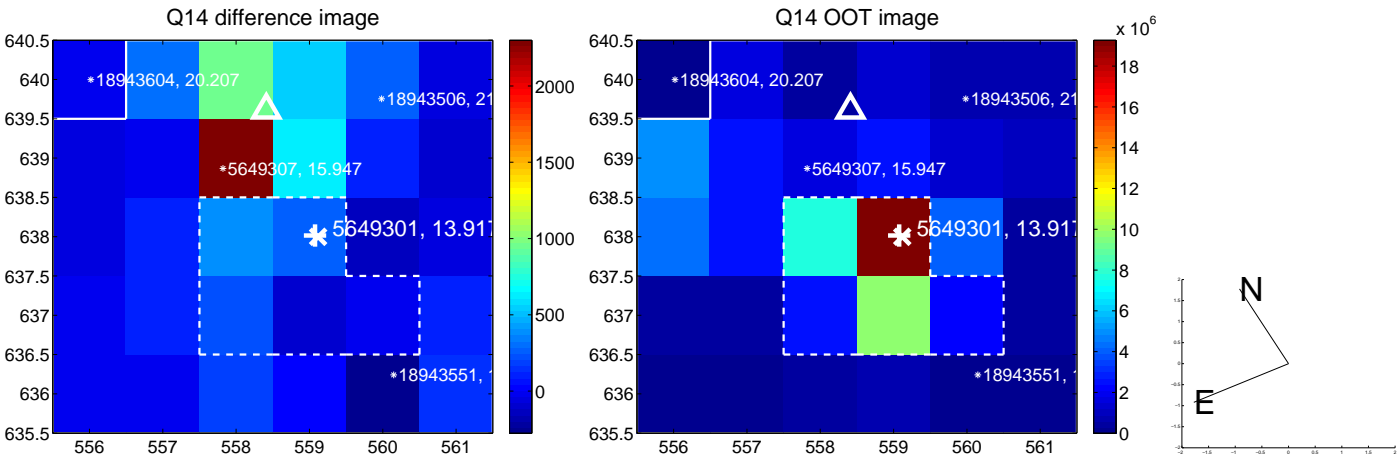
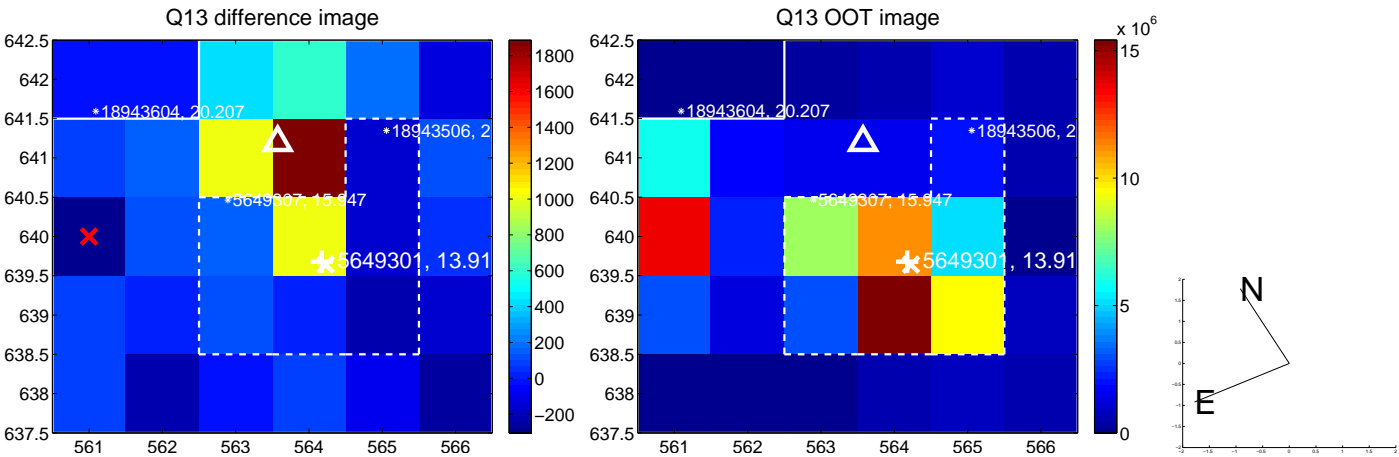
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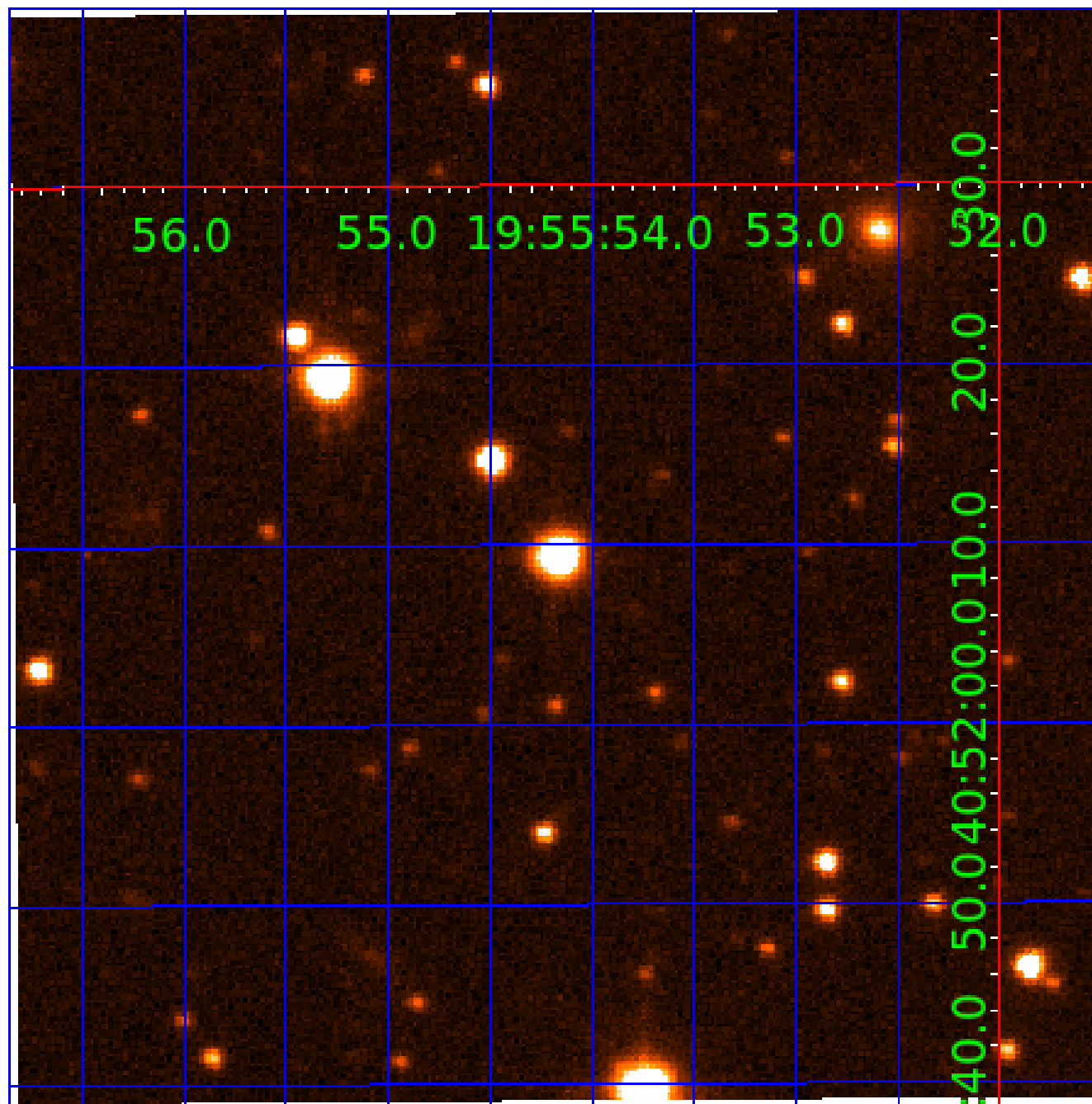


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005649301

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005649301-01	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
005649301-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005649301-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
005649301-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_MEAS

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

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

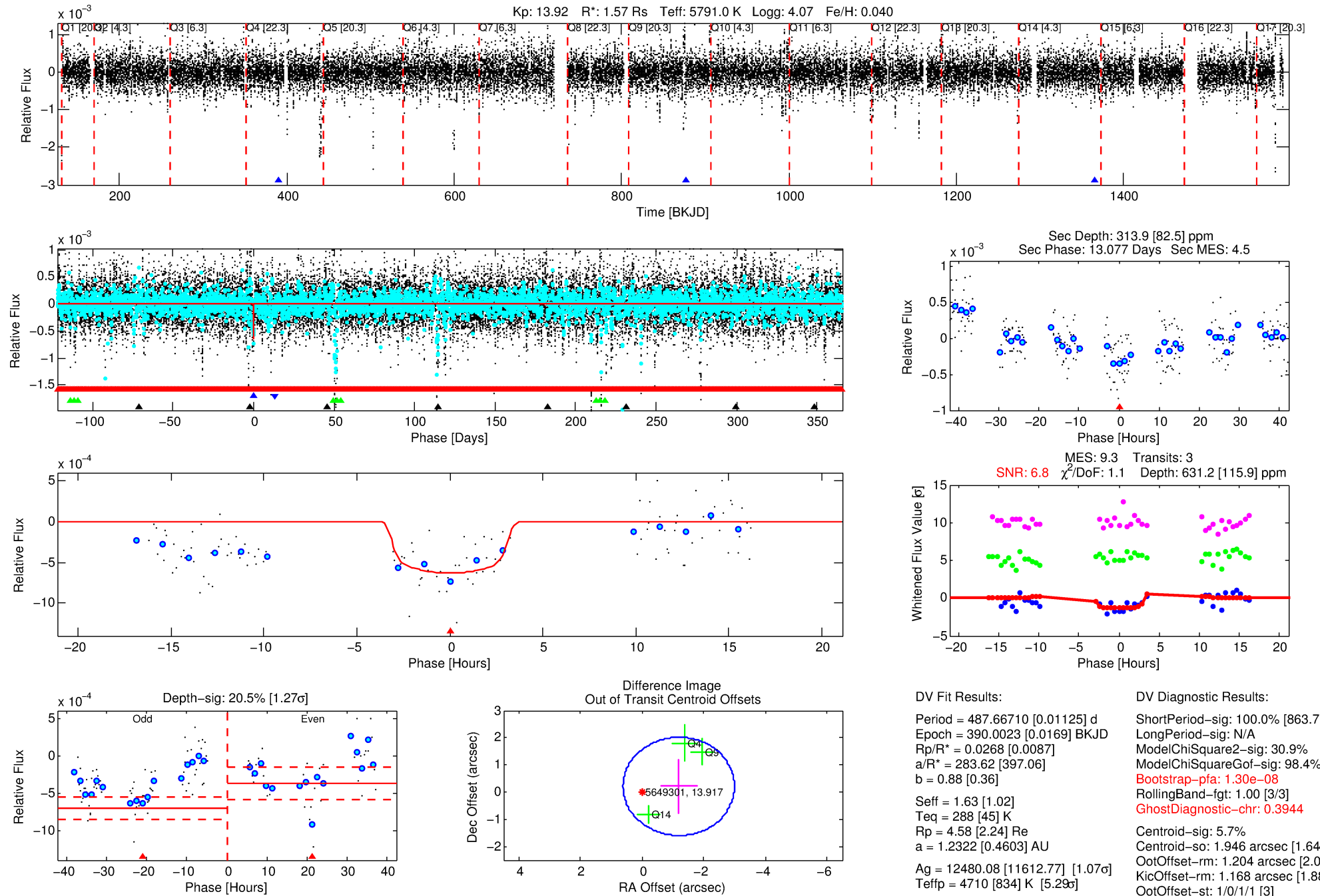
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005649301-02

No Significant Match Found

DV One-Page Summary

KIC: 5649301 Candidate: 2 of 4 Period: 487.667 d



DV Fit Results:

Period = 487.66710 [0.01125] d
Epoch = 390.0023 [0.0169] BKJD
Rp/R* = 0.0268 [0.0087]
a/R* = 283.62 [397.06]
b = 0.88 [0.36]
Seff = 1.63 [1.02]
Teff = 288 [45] K
Rp = 4.58 [2.24] Re
a = 1.2322 [0.4603] AU
Ag = 12480.08 [11612.77] [1.07 σ]
Teffp = 4710 [834] K [5.29 σ]

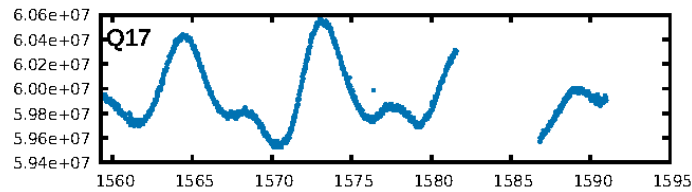
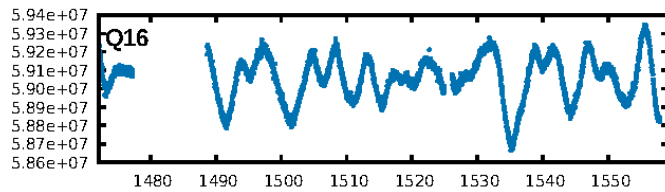
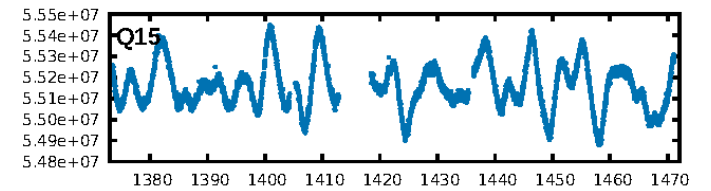
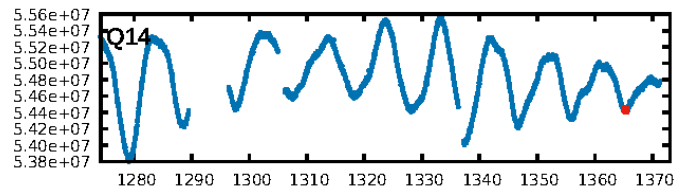
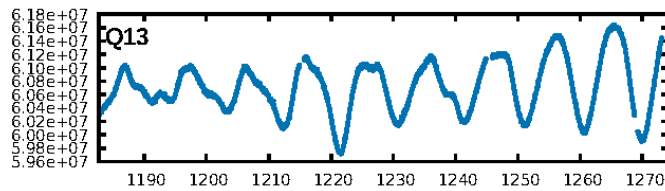
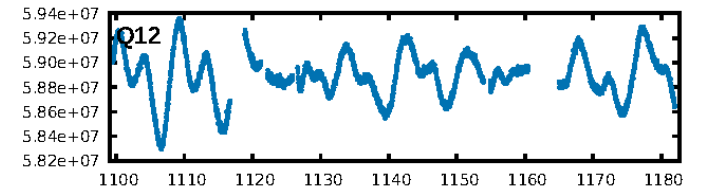
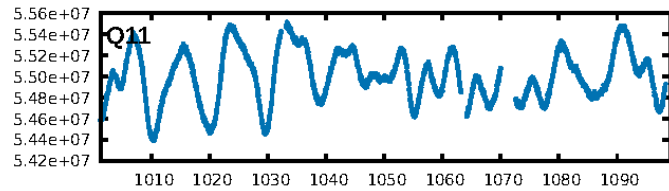
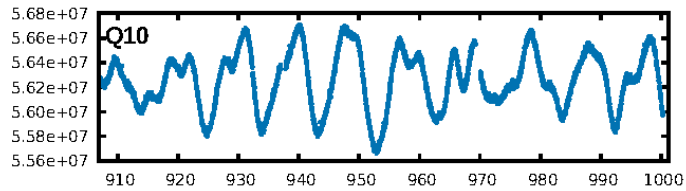
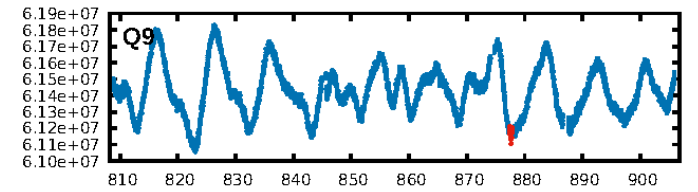
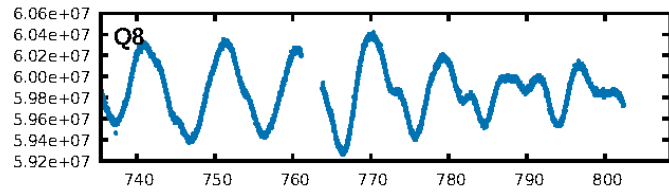
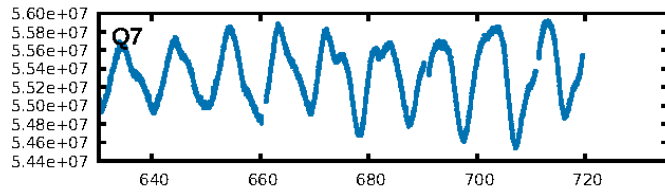
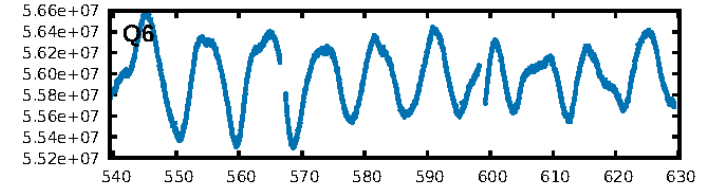
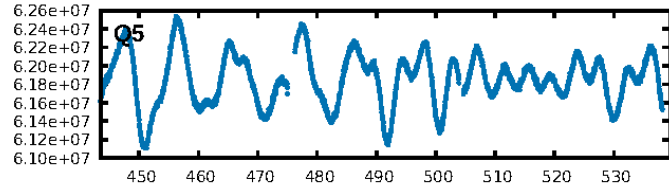
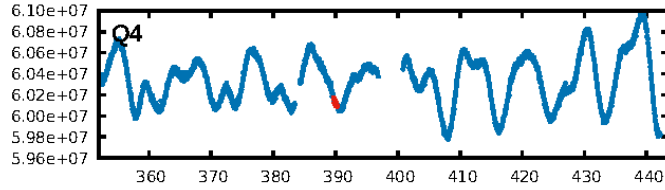
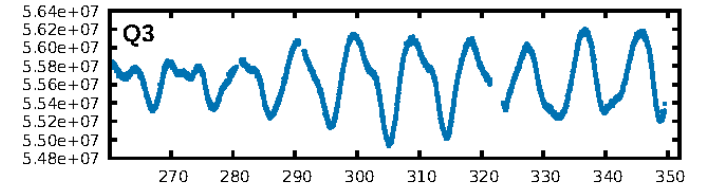
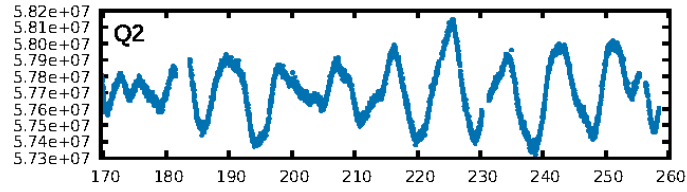
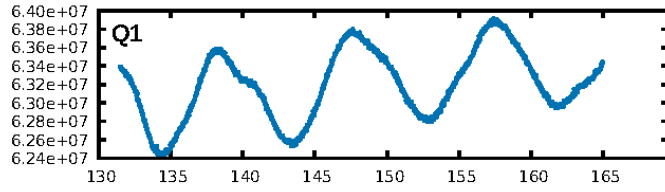
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [863.77 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 30.9%
ModelChiSquareGof-sig: 98.4%
Bootstrap-pfa: 1.30e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.3944
Centroid-sig: 5.7%
Centroid-so: 1.946 arcsec [1.64 σ]
OotOffset-rm: 1.204 arcsec [2.00 σ]
KicOffset-rm: 1.168 arcsec [1.88 σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

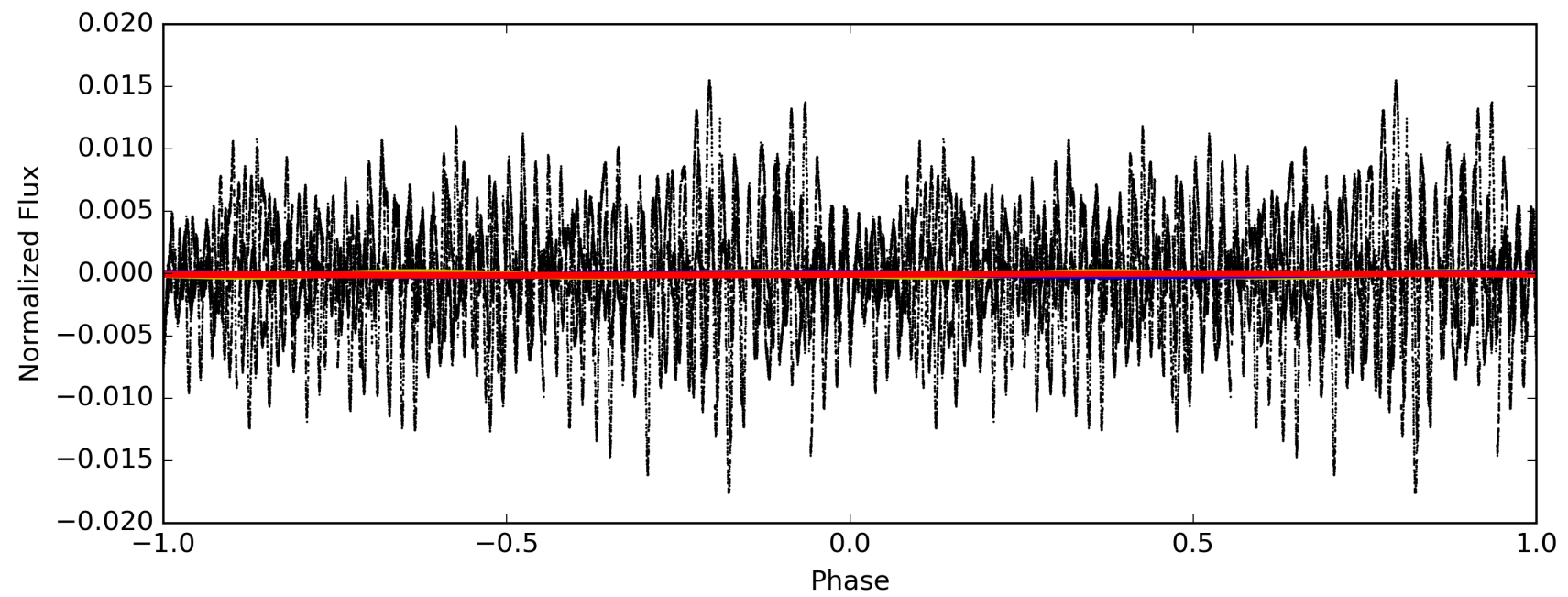
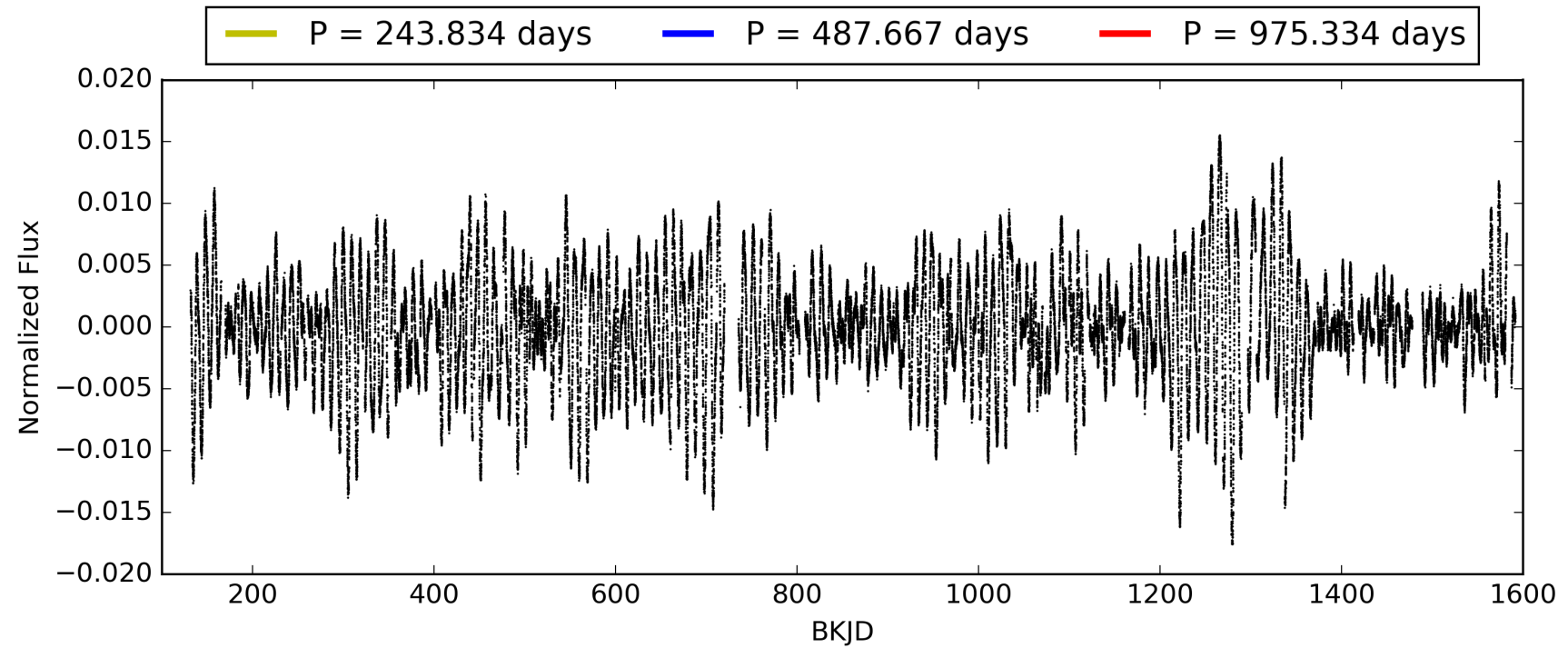
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:10:11 Z

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

TCE 005649301-02, PDC Light Curves

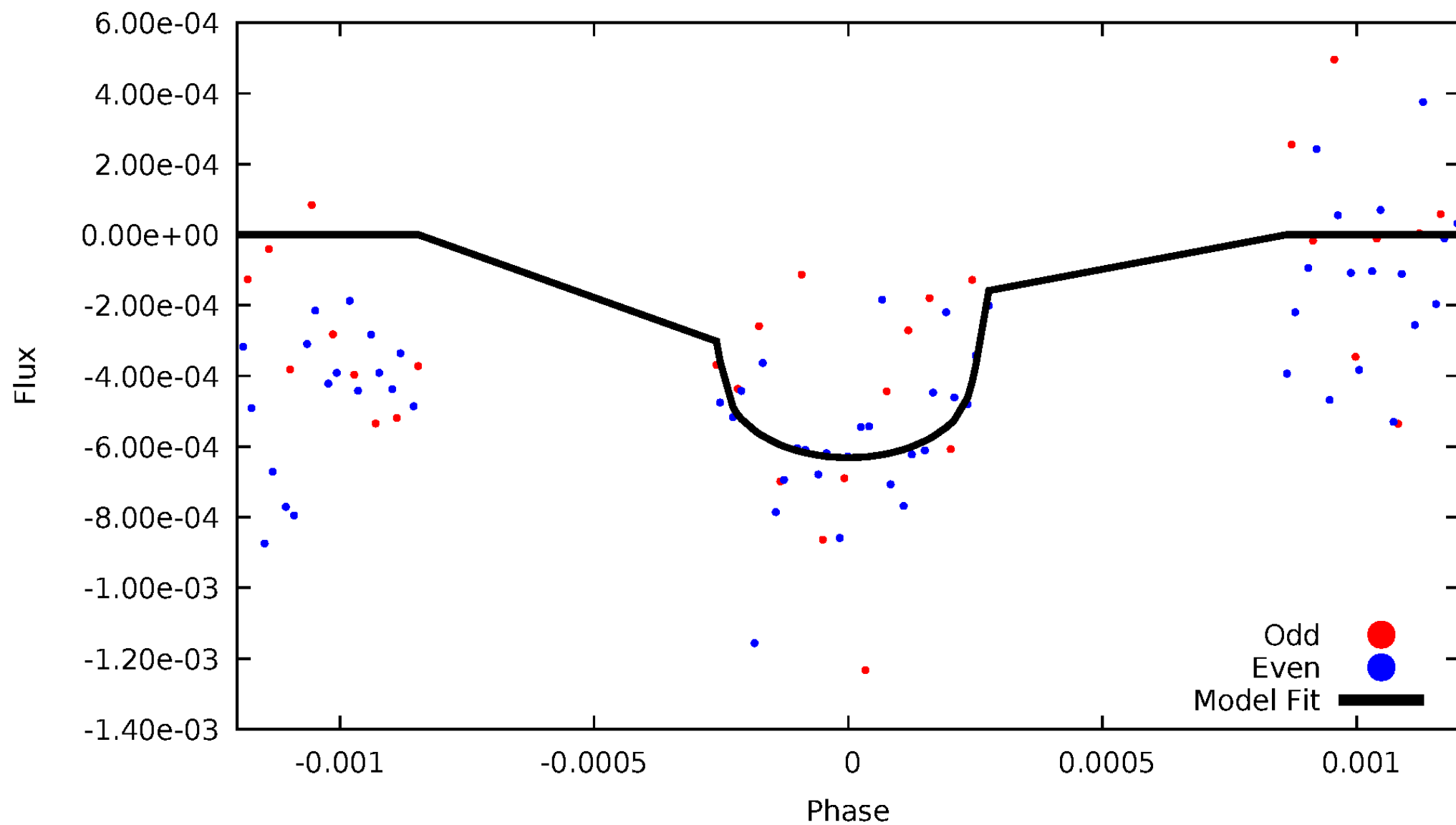


TCE 005649301-02



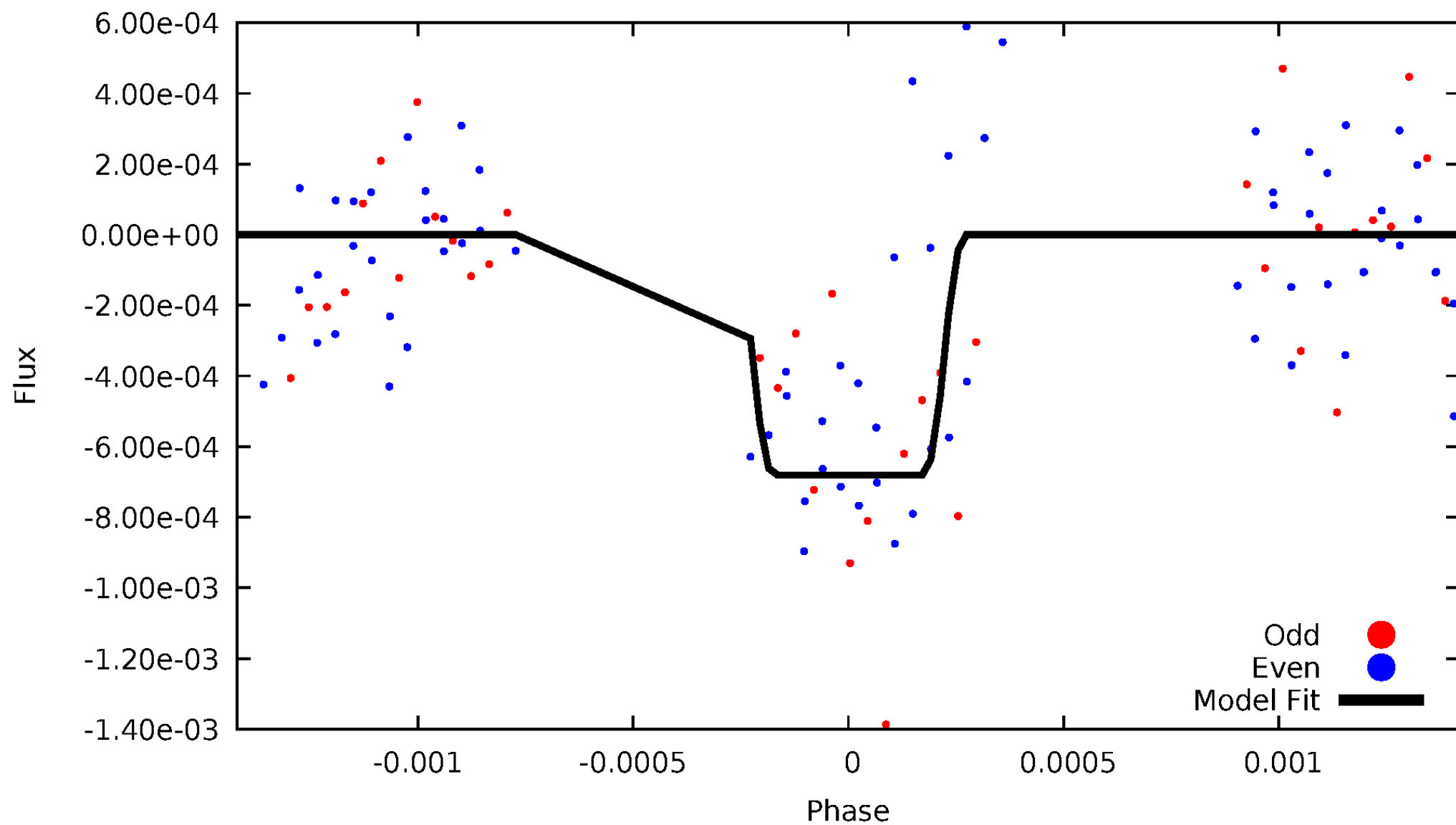
DV Odd/Even

TCE 005649301-02



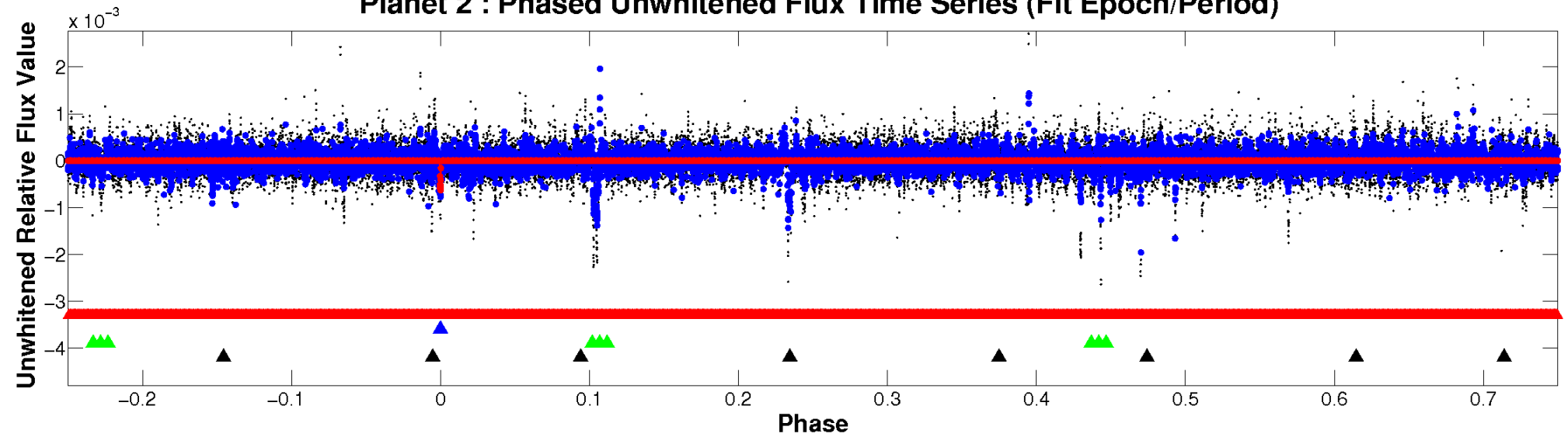
ALT Odd/Even

TCE 005649301-02

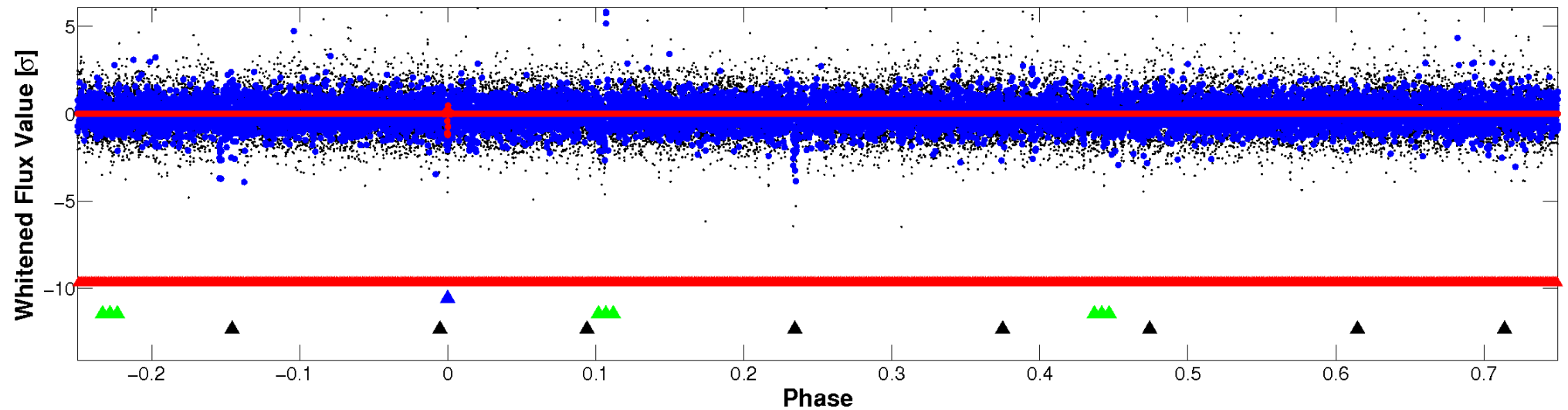


Non-Whitened Vs. Whitened Light Curve

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

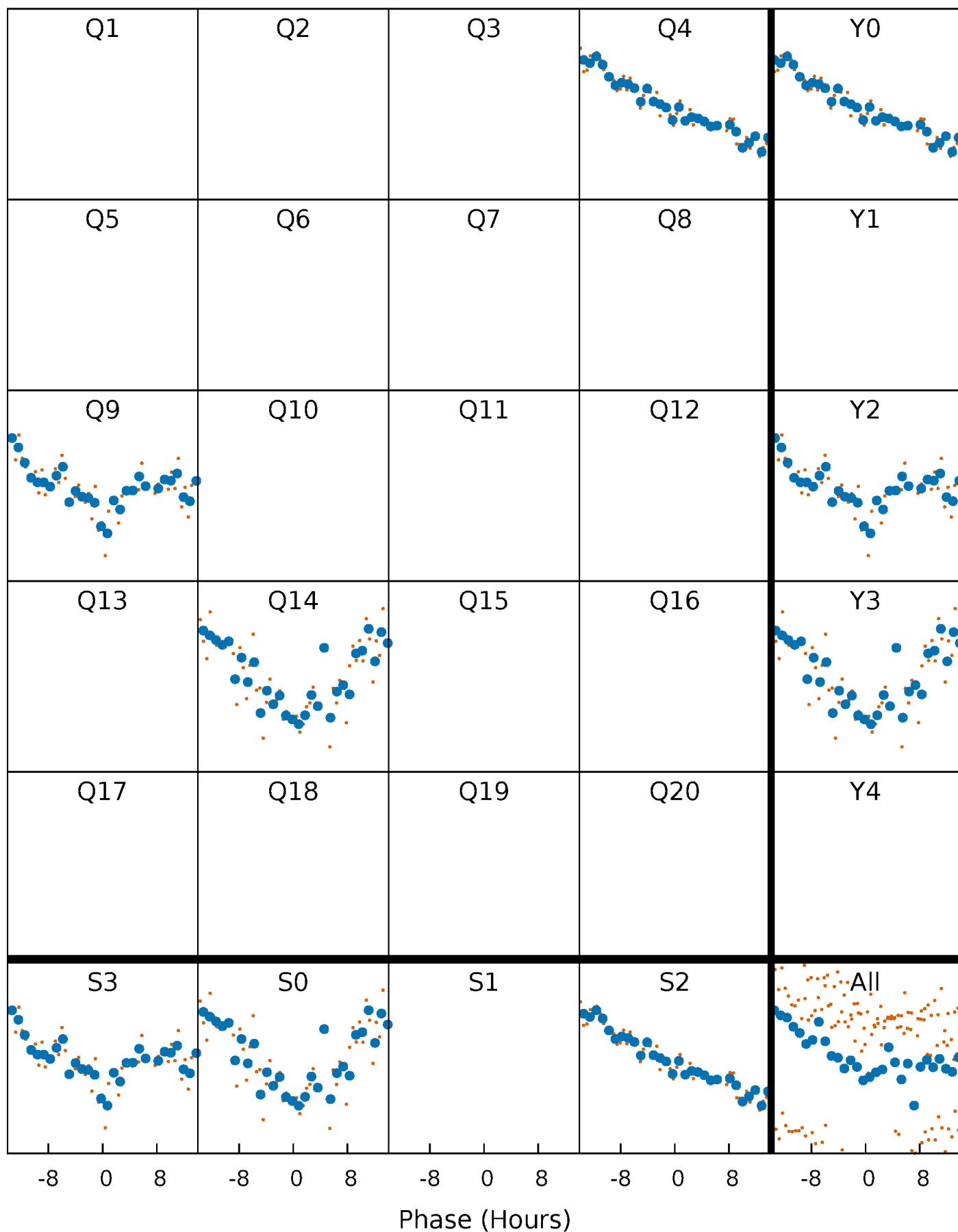


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



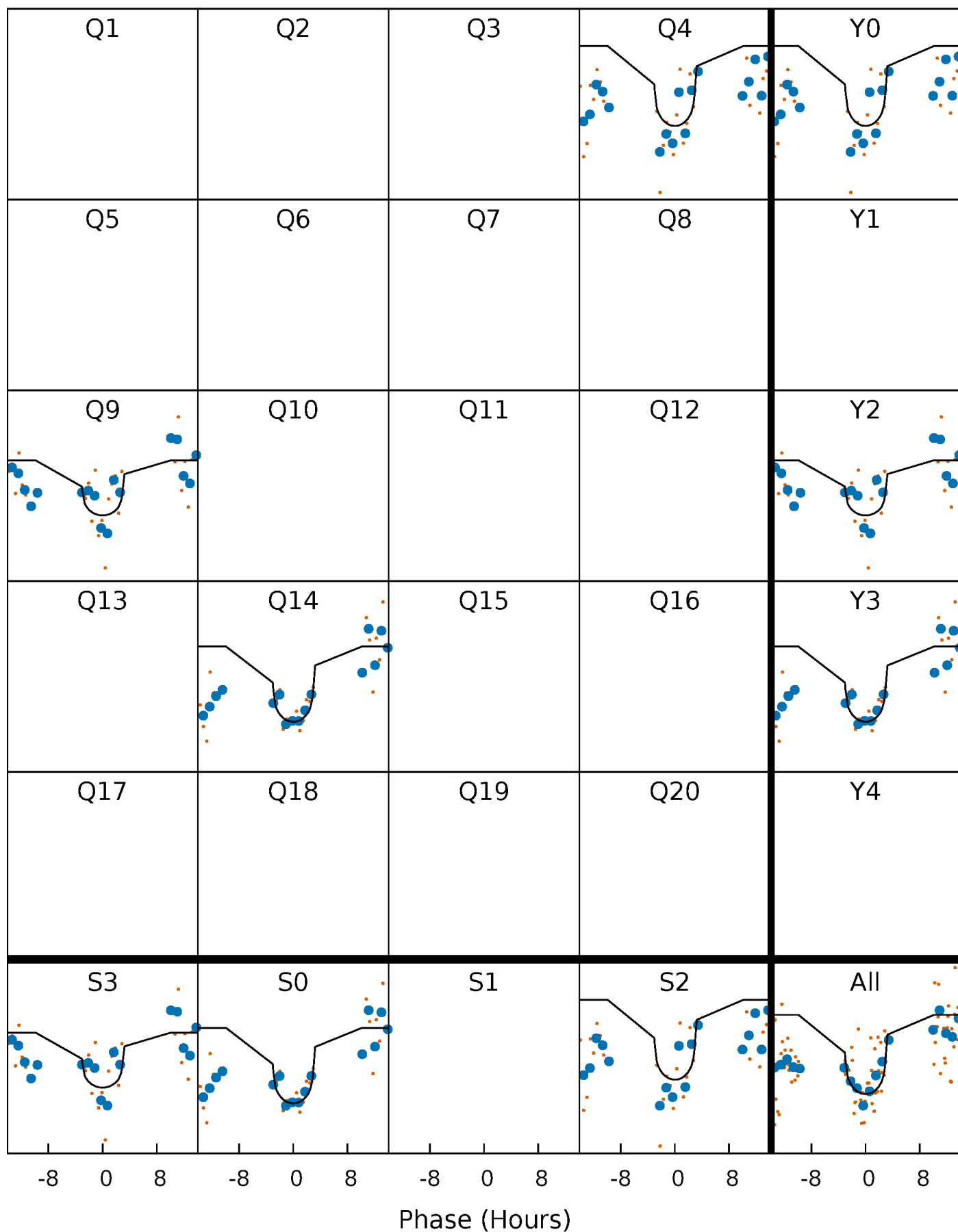
PDC Quarter-Phased Transit Curves

TCE 005649301-02 $P=487.667096$ Days $T_0=390.002259$ (BKJD)



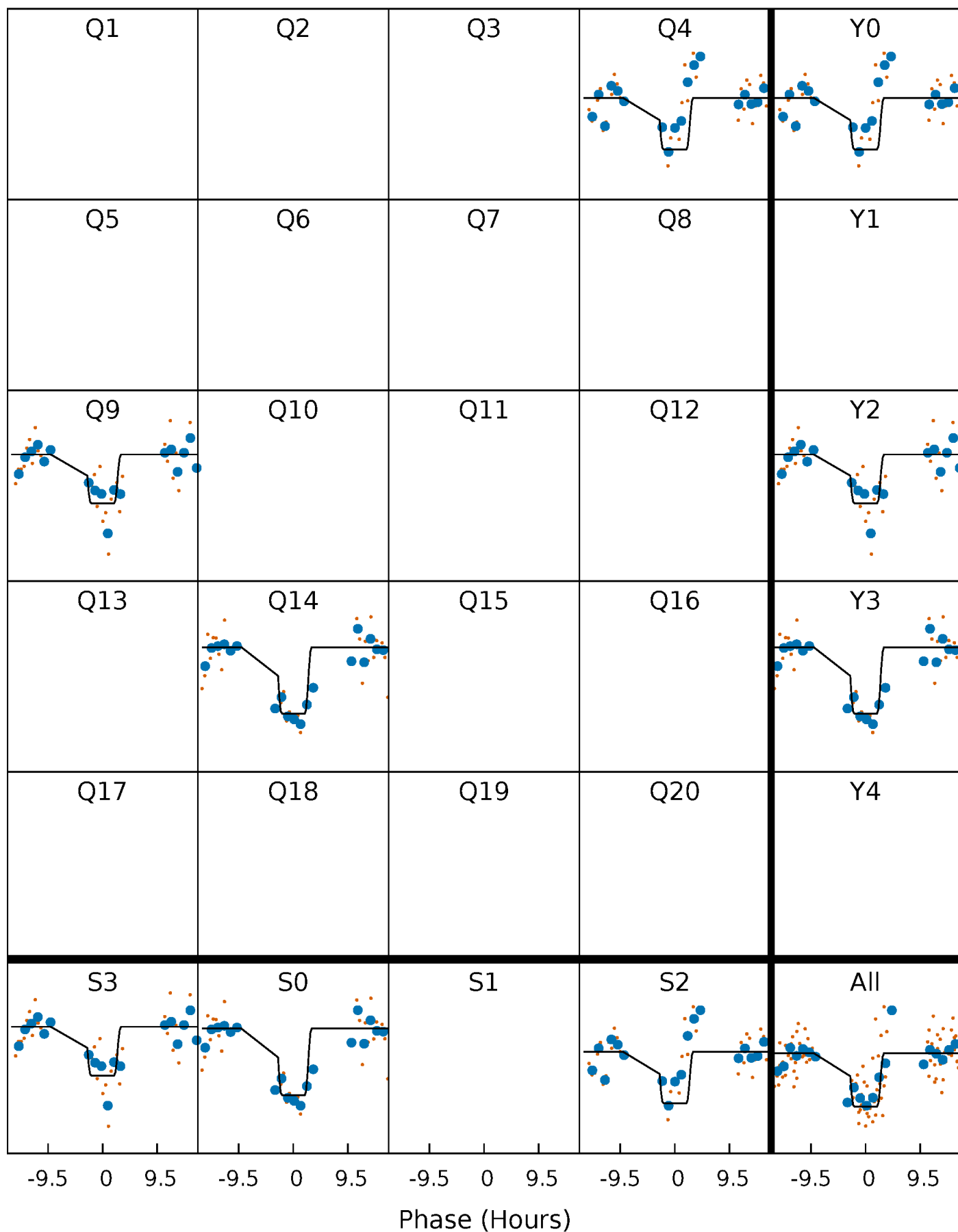
DV Quarter-Phased Transit Curves

TCE 005649301-02 $P=487.667096$ Days $T_0=390.002259$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

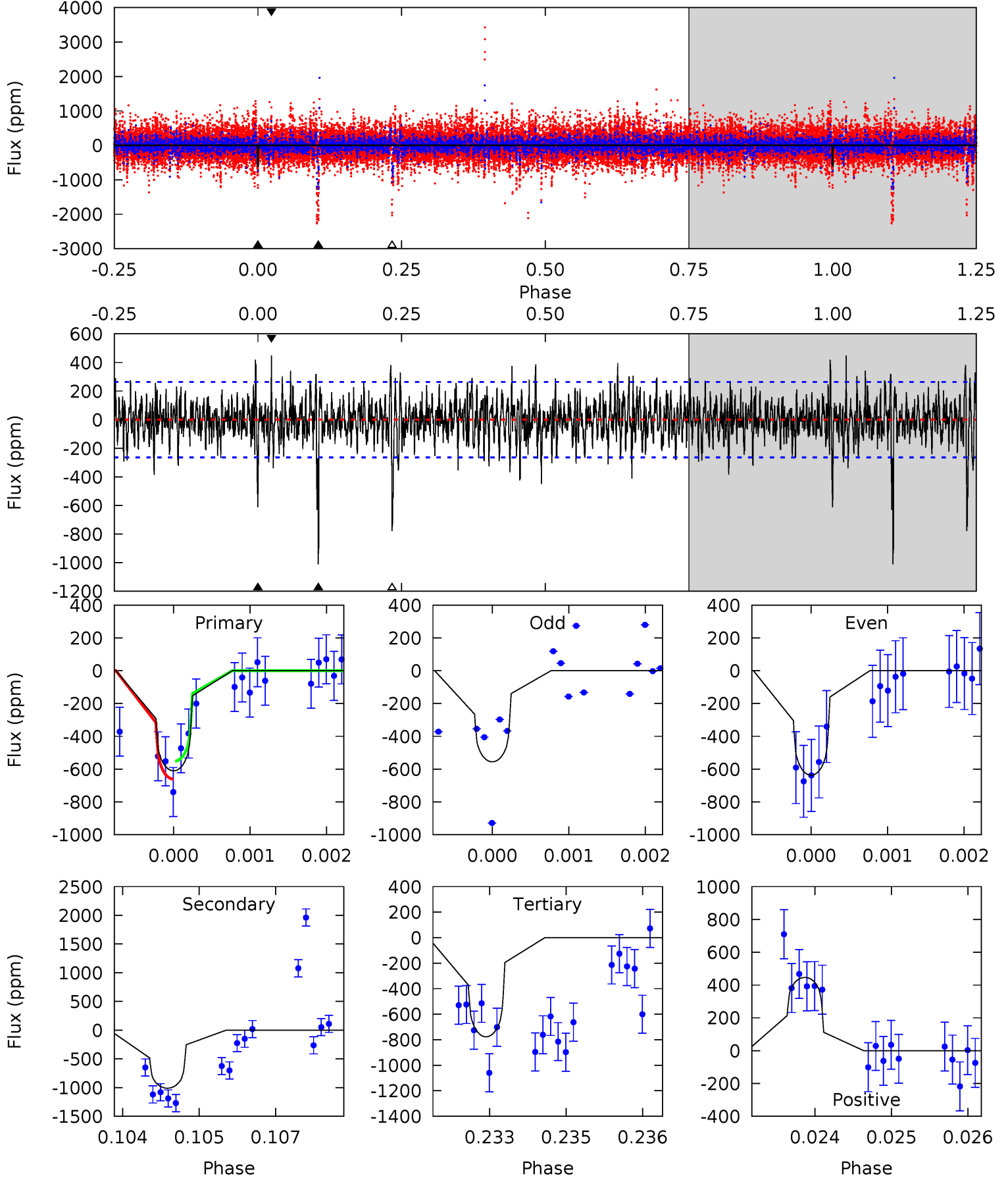
TCE 005649301-02 $P=487.680965$ Days $T_0=389.962228$ (BKJD)



DV Model-Shift Uniqueness Test

005649301-02, P = 487.667096 Days, E = 390.002259 Days

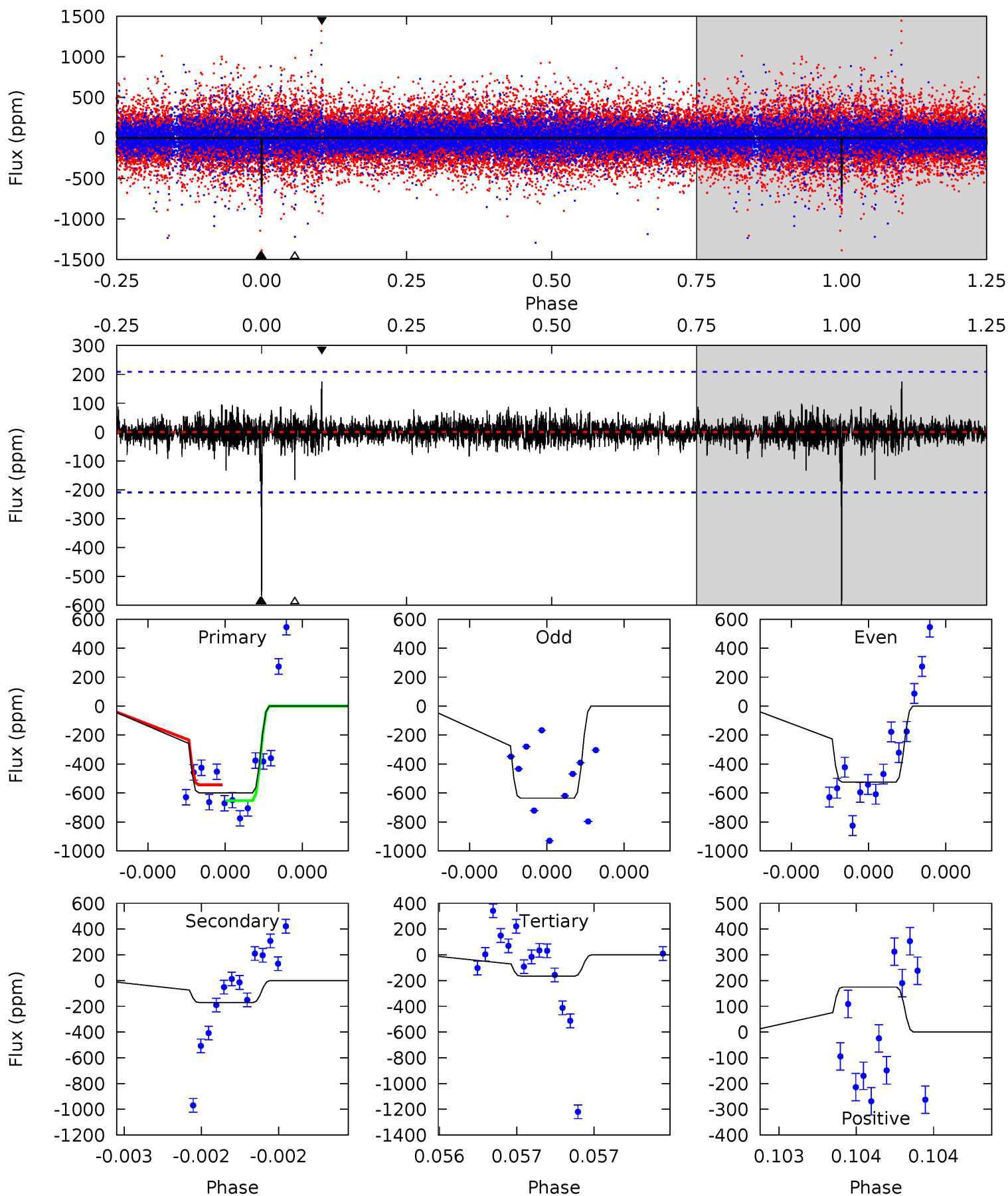
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	20.8	16.0	9.21	5.43	3.26	2.45	-3.44	3.37	4.82	11.6	0.76	1.01	0.31	1.13



Alt Model-Shift Uniqueness Test

005649301-02, P = 487.680965 Days, E = 389.962228 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.0	4.56	4.41	4.67	5.58	3.49	0.64	11.6	11.3	0.14	-0.11	1.46	0.87	0.23	1.45



Stellar Parameters For KIC 005649301

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5791^{+175}_{-175}	$4.068^{+0.368}_{-0.123}$	$0.040^{+0.250}_{-0.300}$	$1.568^{+0.383}_{-0.575}$	$1.050^{+0.133}_{-0.133}$	$0.383^{+0.923}_{-0.153}$
	+3%/-3%	+9%/-3%	+625%/-750%	+24%/-37%	+13%/-13%	+241%/-40%
Source	PHO1	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 005649301-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1011±49	$4.26^{+1.72}_{-1.59}$	391^{+30}_{-37}	6273^{+1619}_{-787}	48156^{+68637}_{-23862}
Alt.	-171±37	$4.06^{+1.80}_{-1.47}$	394^{+31}_{-42}	4315^{+813}_{-492}	8263^{+12910}_{-4404}

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 $A_{obs} \gg 1.0$

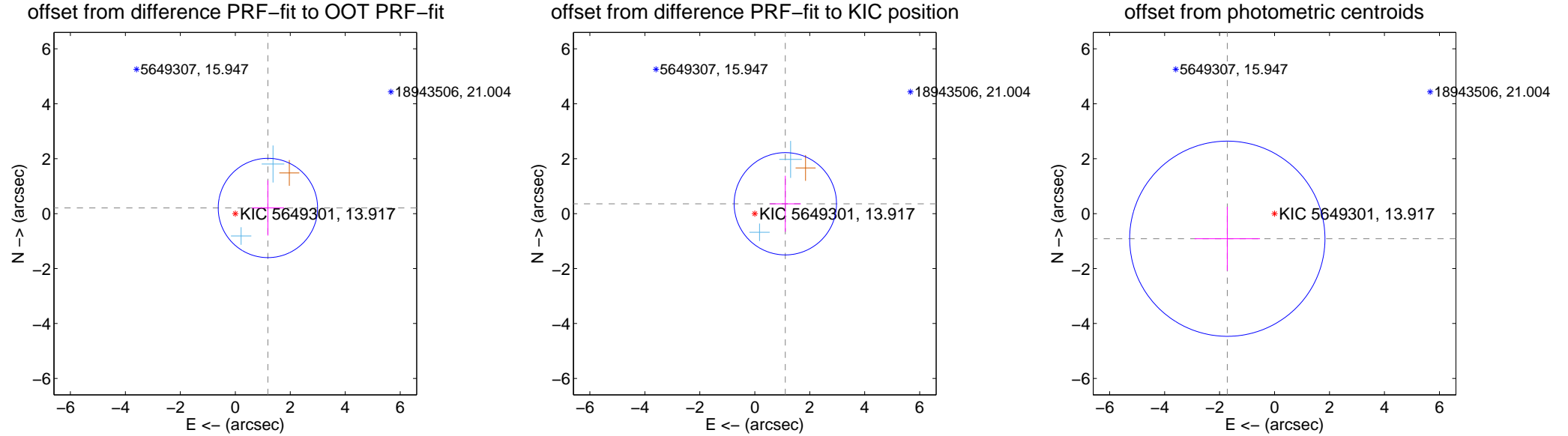
DV Centroid Data

Supplemental centroid analysis for 005649301-02. Kepler magnitude: 13.92. Transit SNR 6.79

There are 2 quarters with good PRF difference image offsets

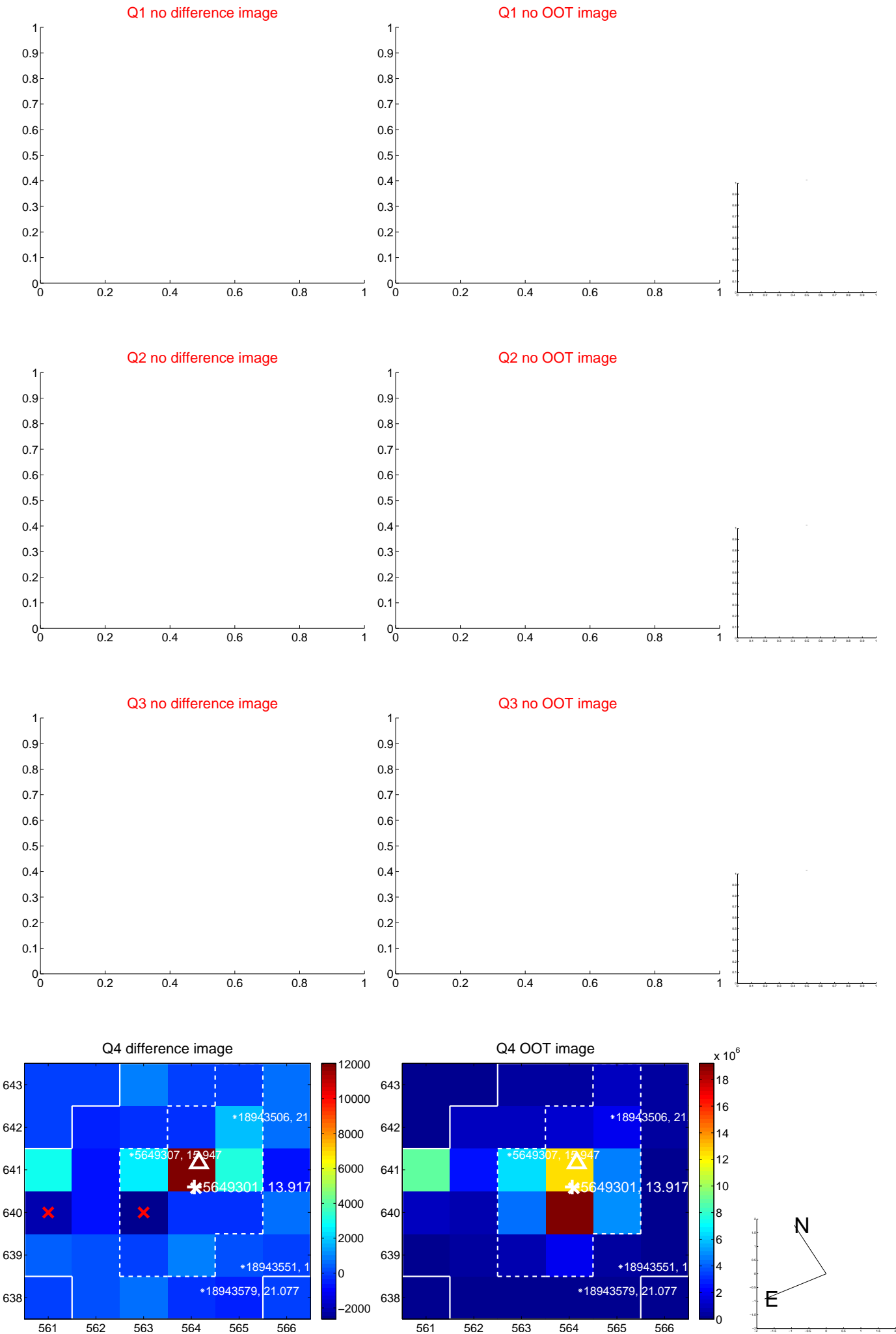
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.204 ± 0.603	2.00	-1.186 ± 0.586	0.206 ± 1.003
PRF-fit source offset from KIC position	1.168 ± 0.621	1.88	-1.112 ± 0.563	0.359 ± 1.018
photometric centroid source offset	1.95 ± 1.18	1.64	1.72 ± 1.19	-0.91 ± 1.16

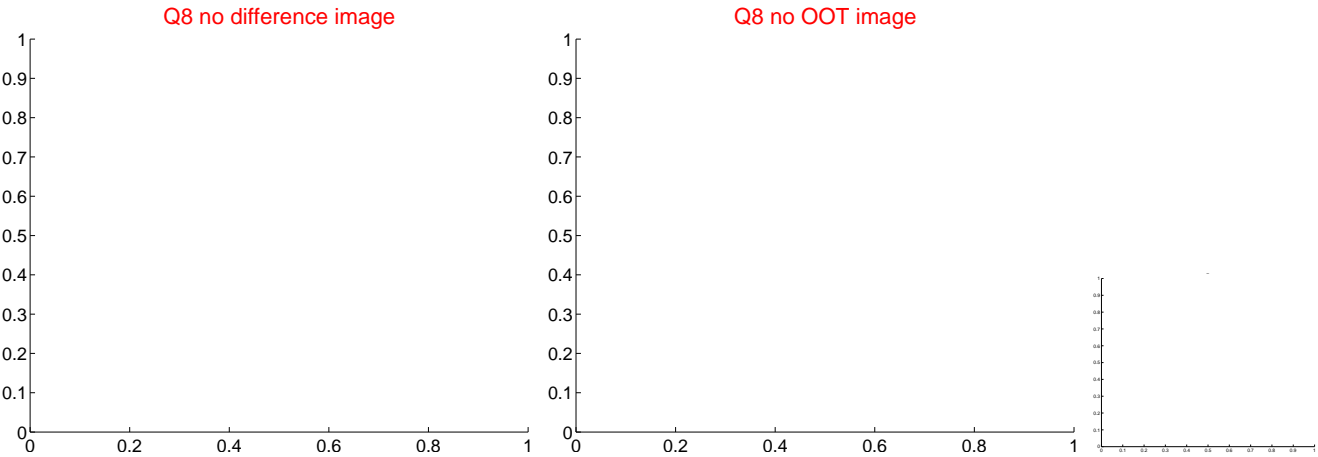
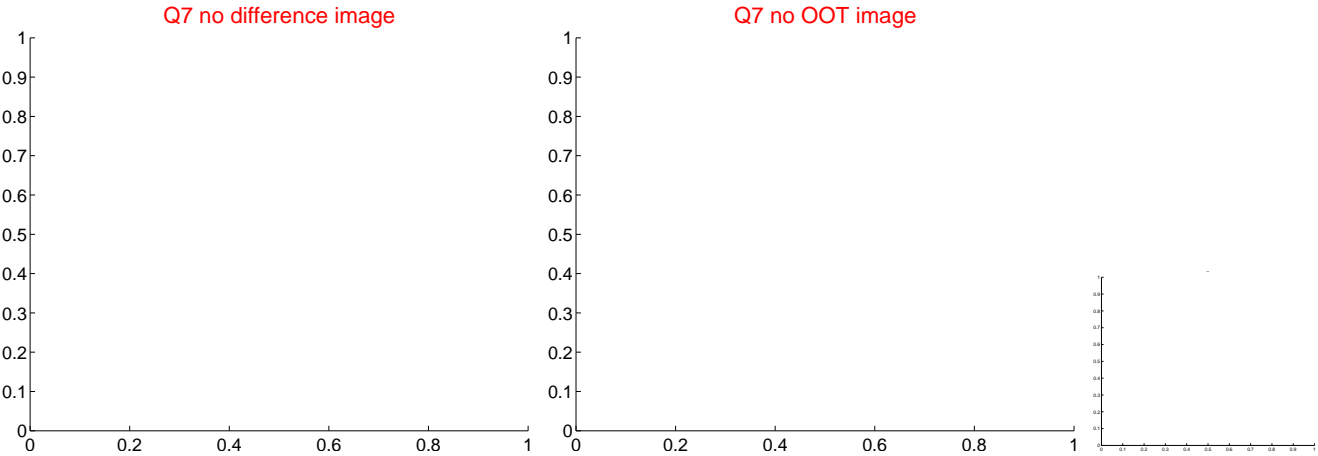
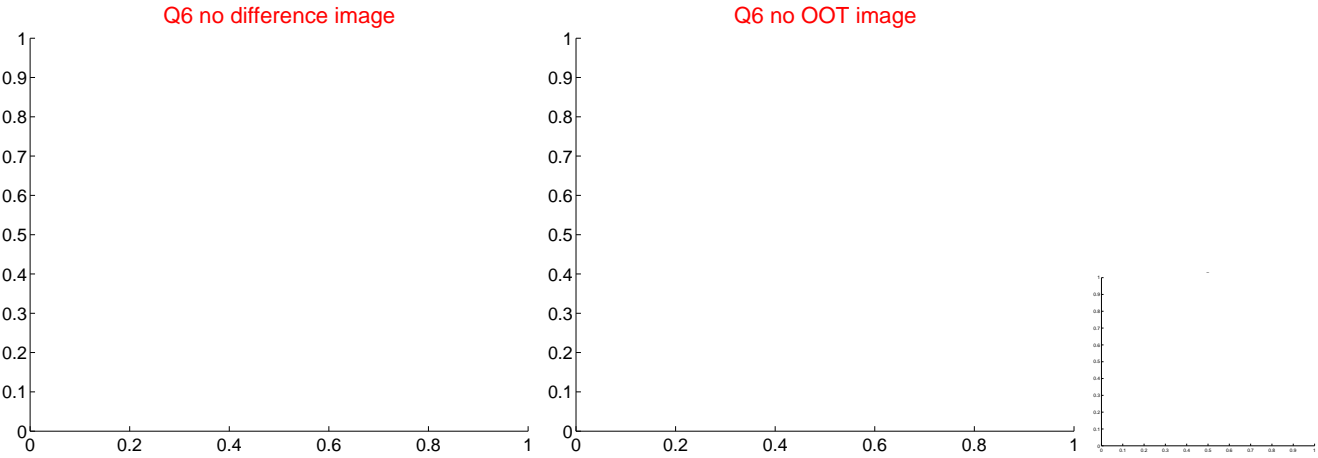
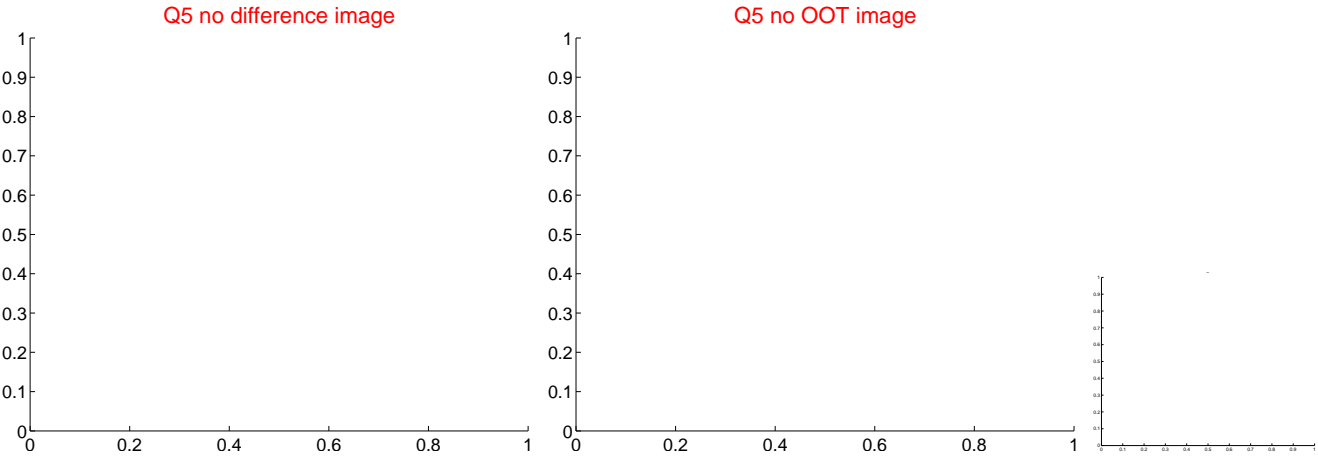


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

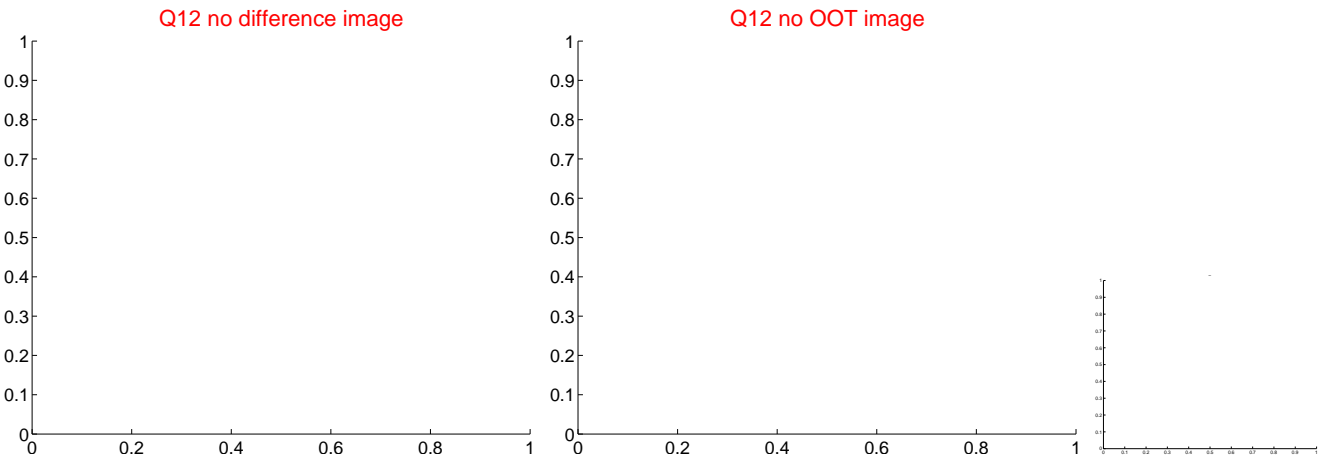
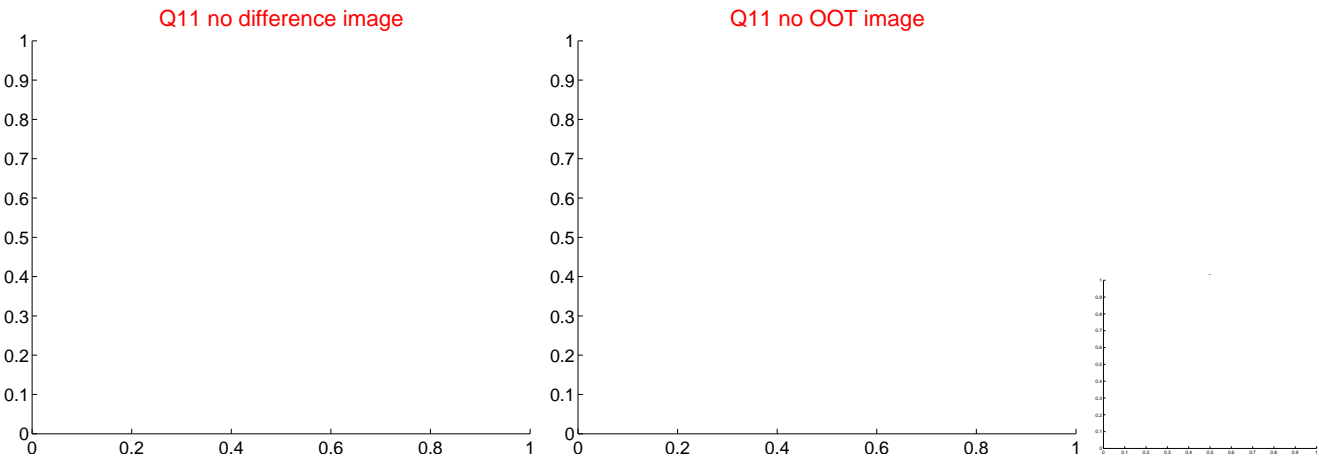
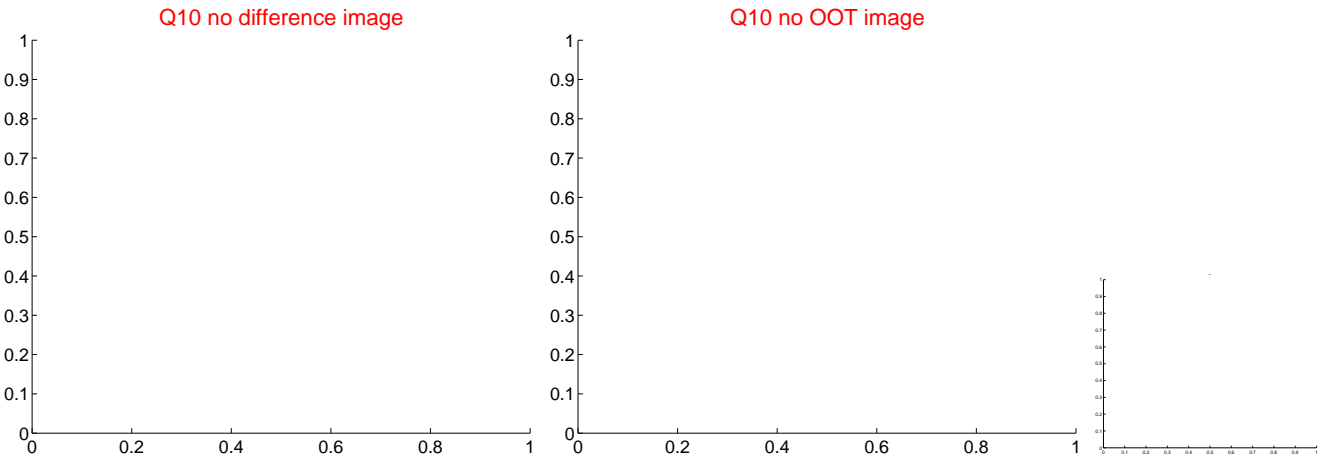
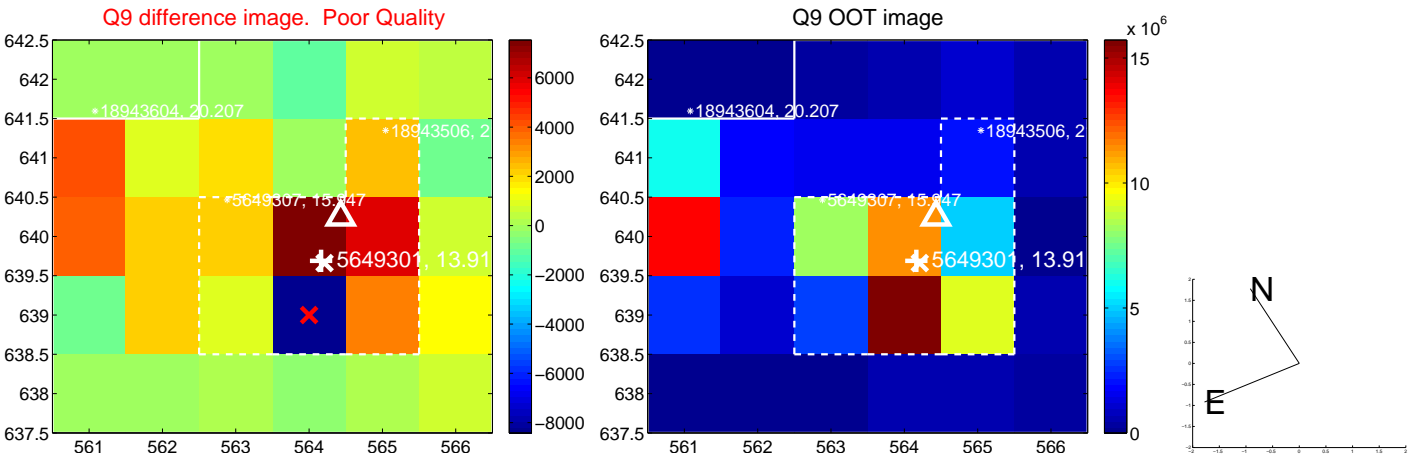
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



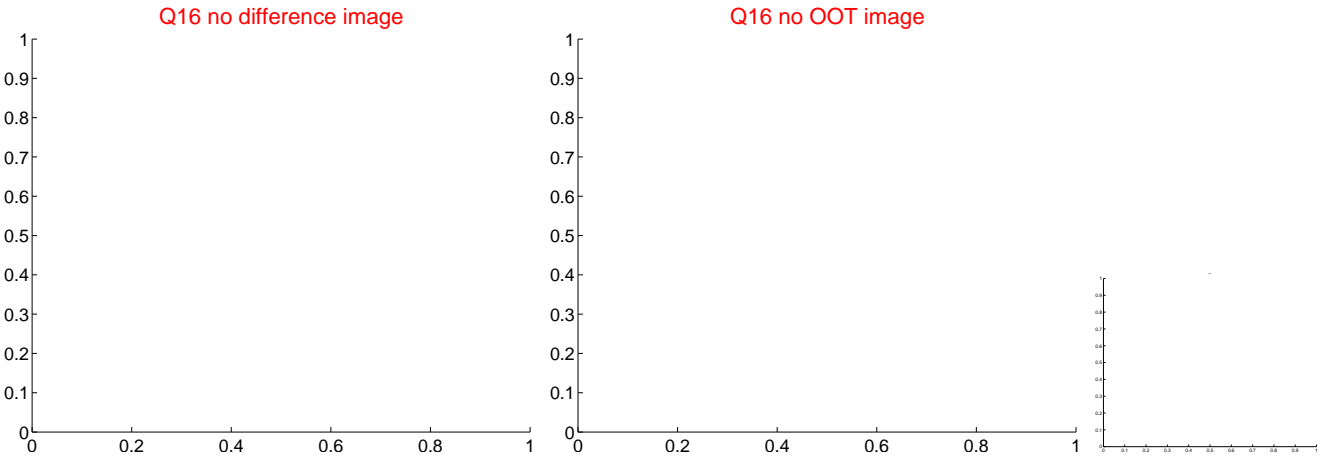
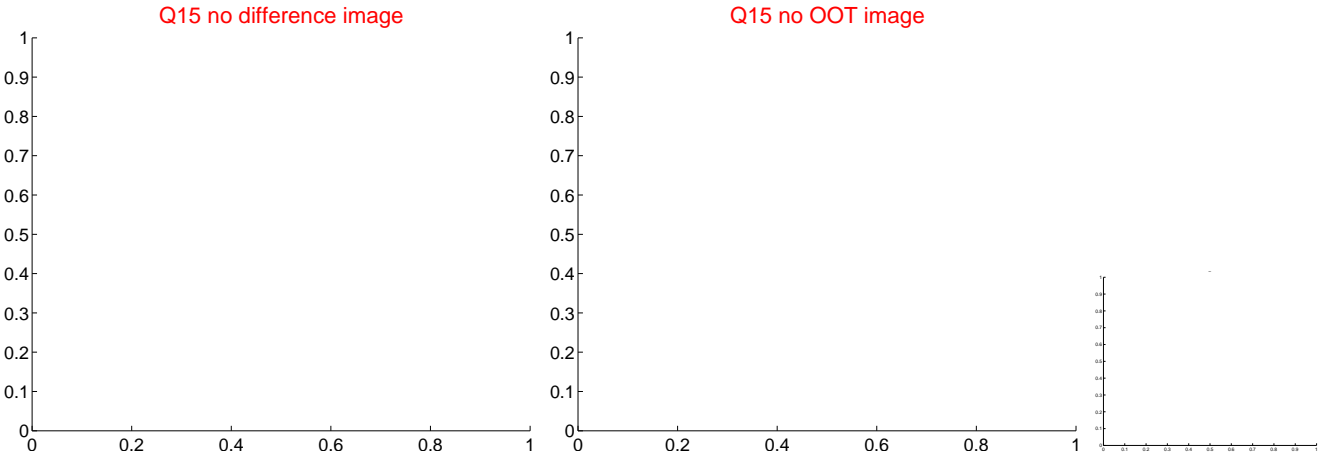
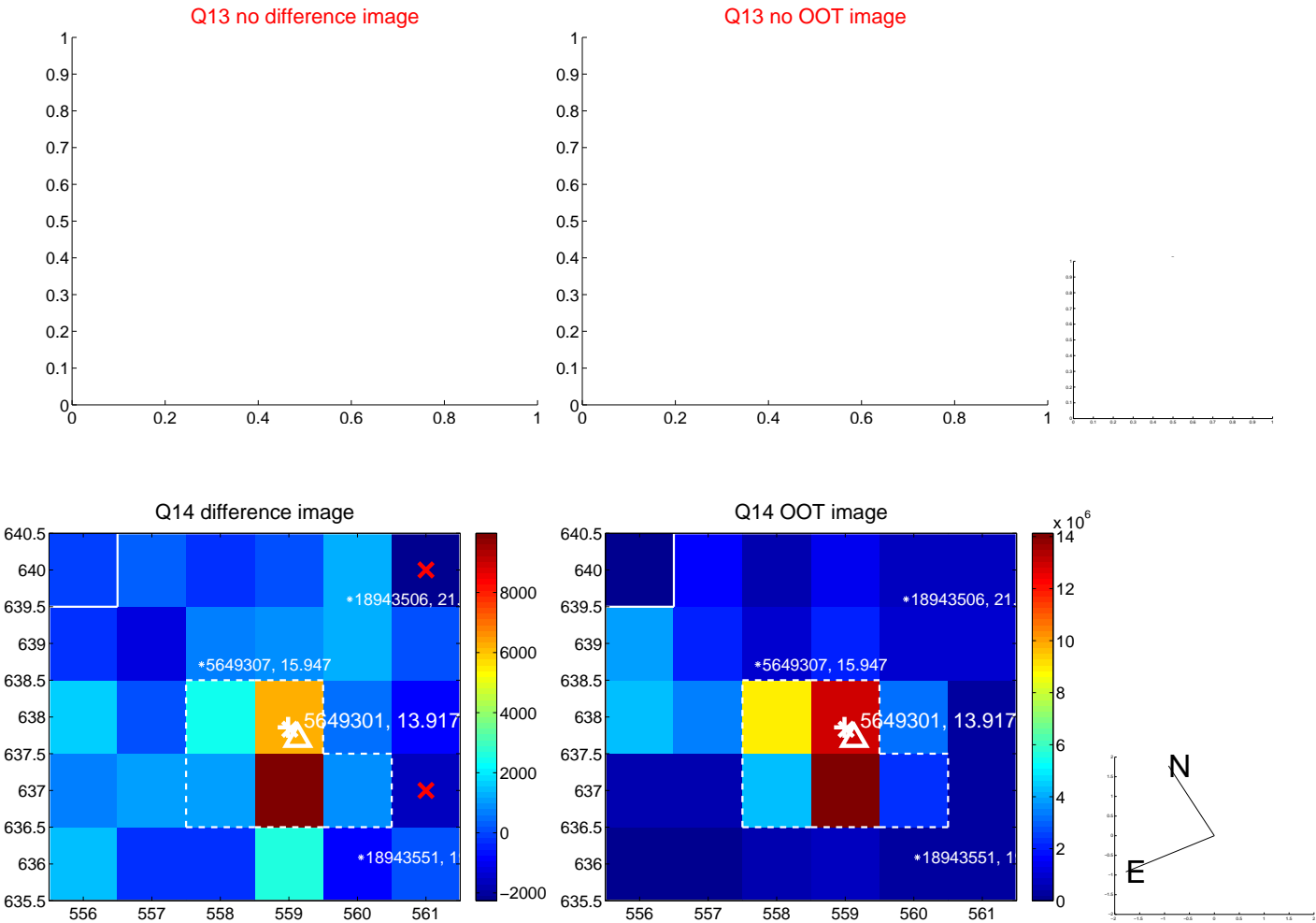
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



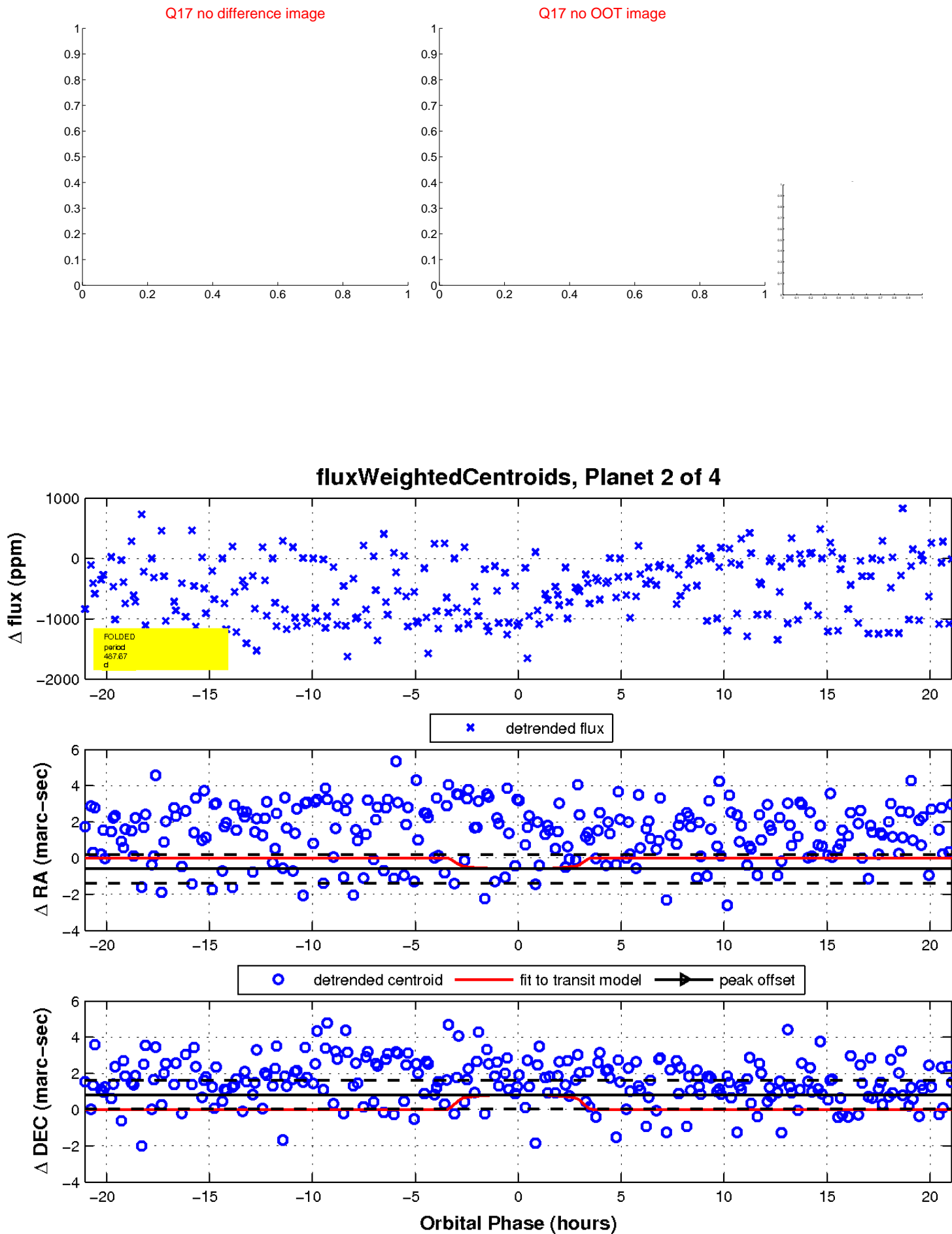
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

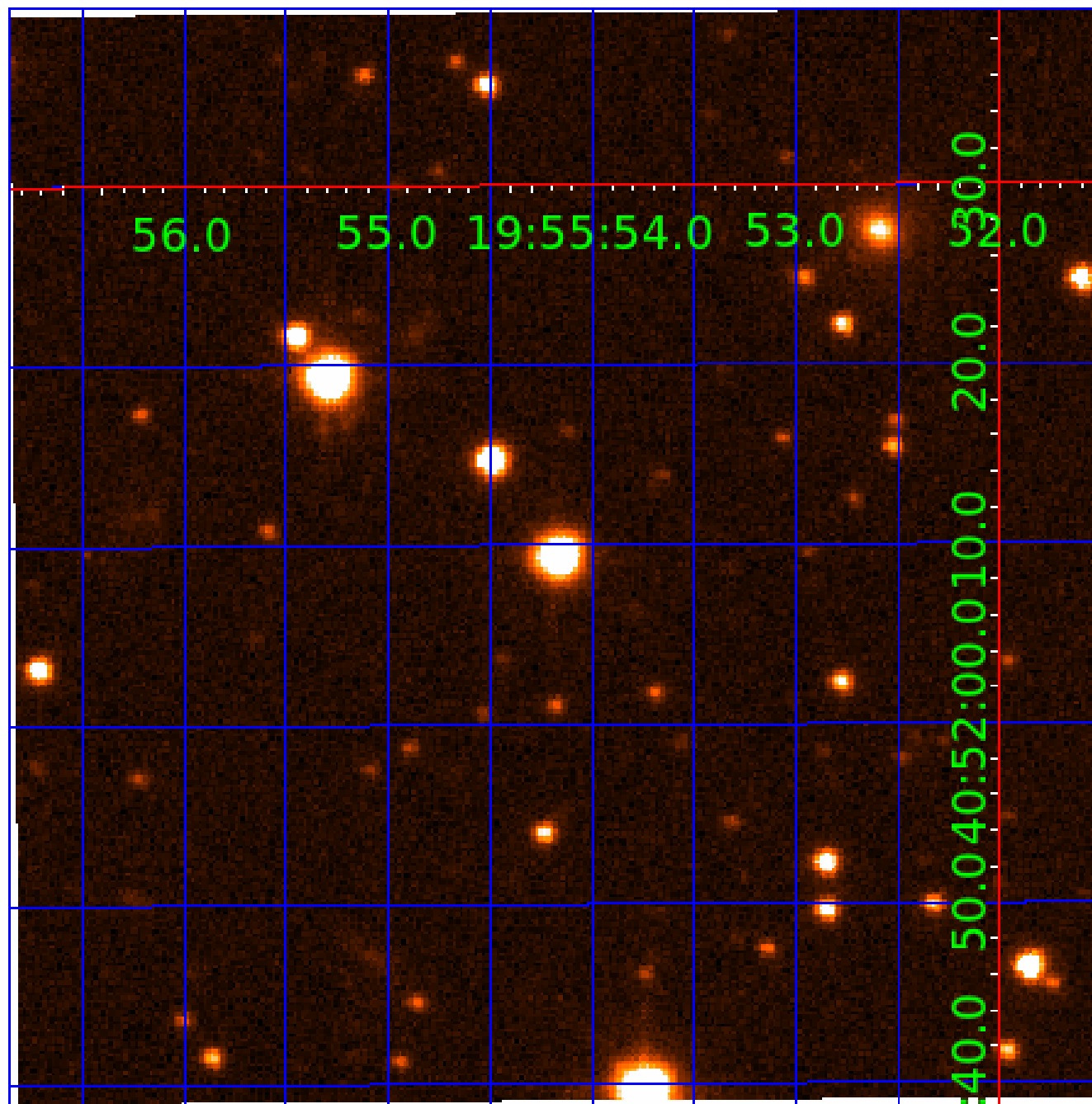


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005649301

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})
005649301-01	OBS	No	0.544268	131.752378	52.1	2.039	8.0	16.7	1.57	5791	1.35	14094.70
005649301-02	OBS	No	487.667096	390.002260	631.2	7.034	9.3	6.8	1.57	5791	4.58	1.63
005649301-03	OBS	No	163.366625	276.318041	374.2	24.082	13.1	4.1	1.57	5791	3.07	7.01
005649301-04	OBS	No	185.381850	250.507709	359.4	4.590	8.6	4.8	1.57	5791	3.25	5.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005649301-01	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
005649301-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005649301-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
005649301-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_MEAS

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

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

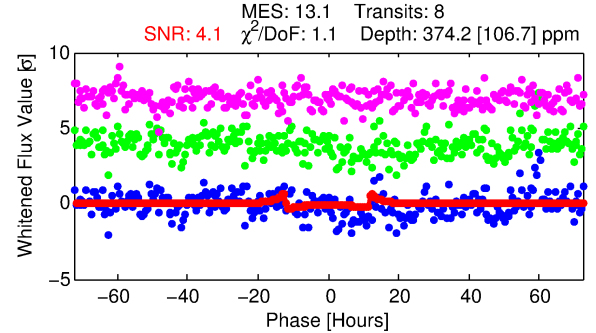
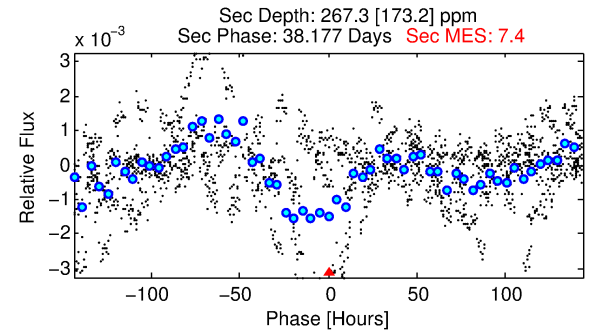
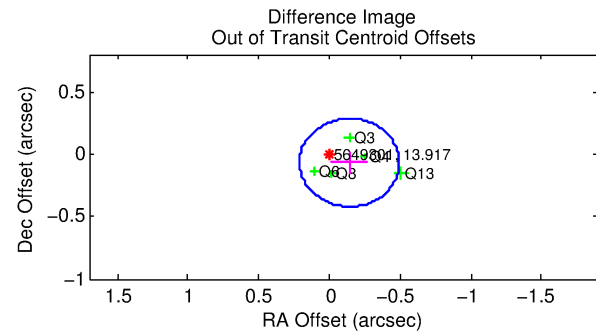
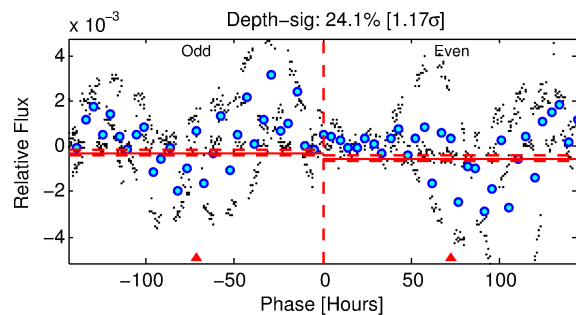
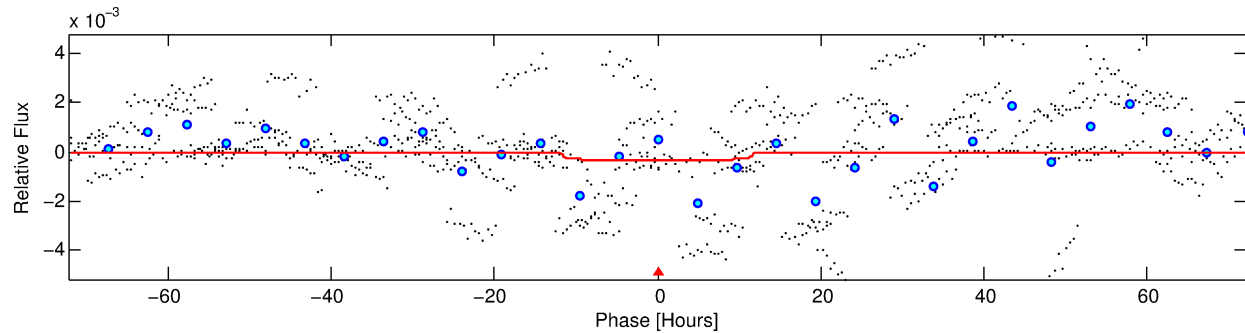
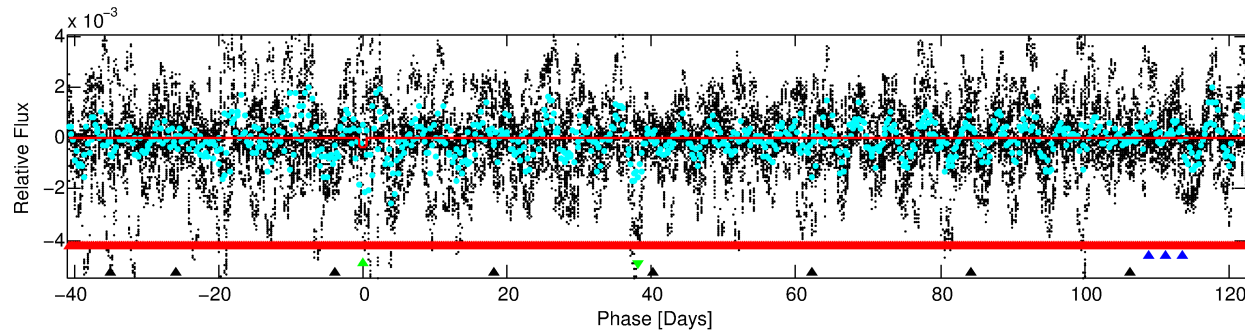
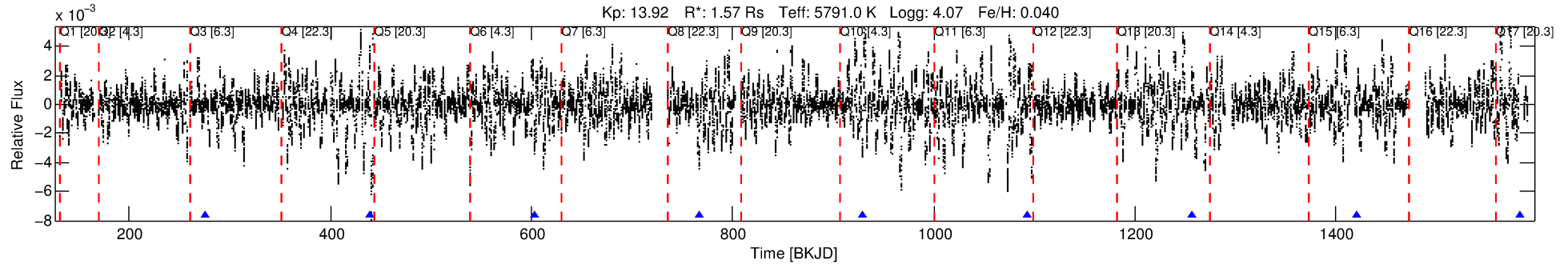
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005649301-03

No Significant Match Found

DV One-Page Summary

KIC: 5649301 Candidate: 3 of 4 Period: 163.367 d



DV Fit Results:

Period = 163.36663 [0.00467] d
Epoch = 276.3180 [0.0230] BKJD
Rp/R* = 0.0179 [0.0071]
a/R* = 47.97 [74.44]
b = 0.42 [3.02]
Seff = 7.01 [4.40]
Teq = 415 [65] K
Rp = 3.07 [1.66] Re
a = 0.5943 [0.2220] AU
Ag = 5519.14 [6594.23] [0.84 σ]
Teffp = 5530 [1426] K [3.58 σ]

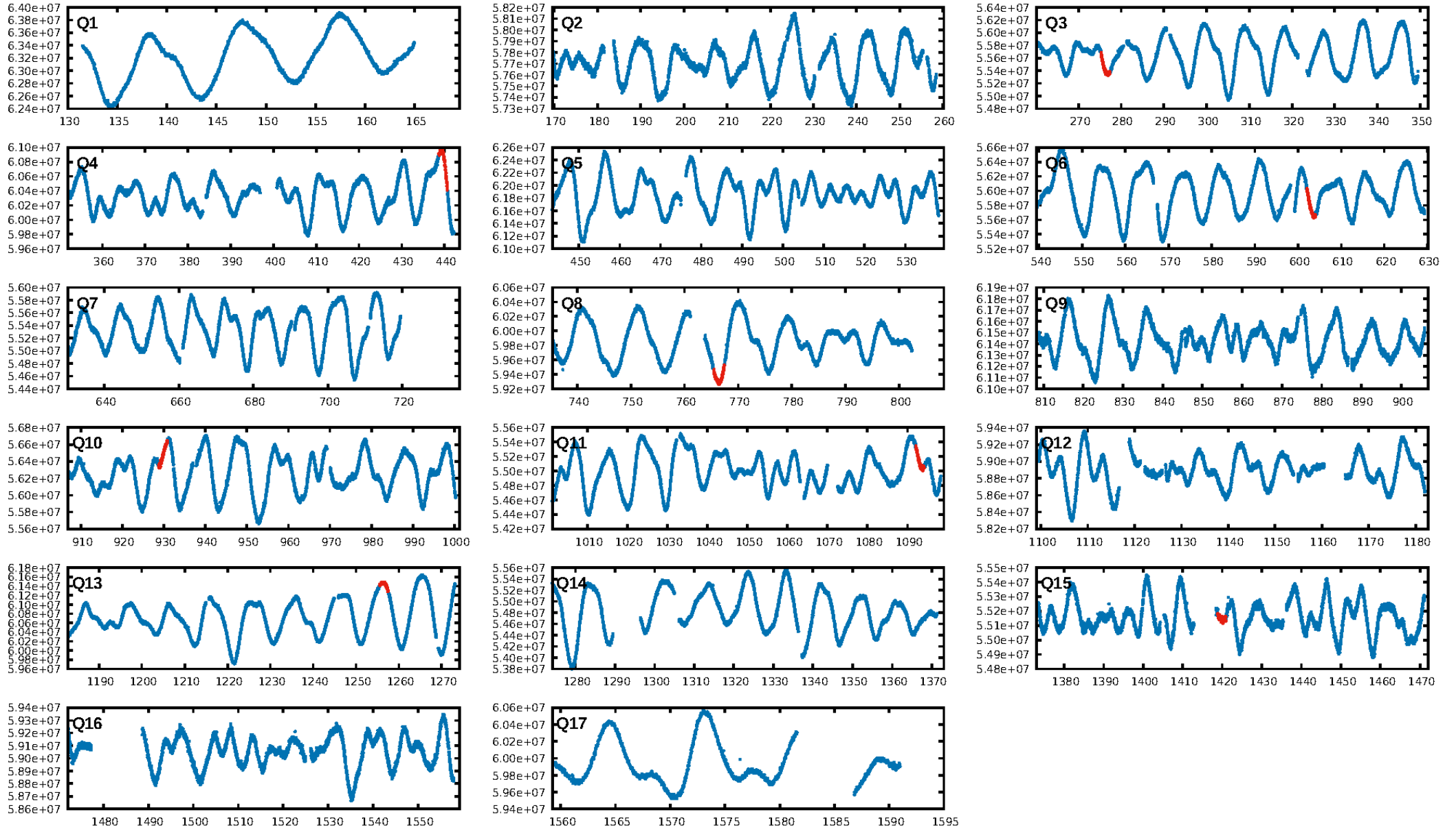
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [161.69 σ]
LongPeriod-sig: 100.0% [21.55 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.15e-11
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 1.101
Centroid-sig: 4.6%
Centroid-so: 2.320 arcsec [1.96 σ]
OotOffset-rm: 0.157 arcsec [1.33 σ]
KicOffset-rm: 0.123 arcsec [1.39 σ]
OotOffset-st: 1/1/2/1 [5]
KicOffset-st: 1/1/2/1 [5]
DiffImageQuality-fgm: 0.60 [3/5]
DiffImageOverlap-fno: 0.00 [0/5]

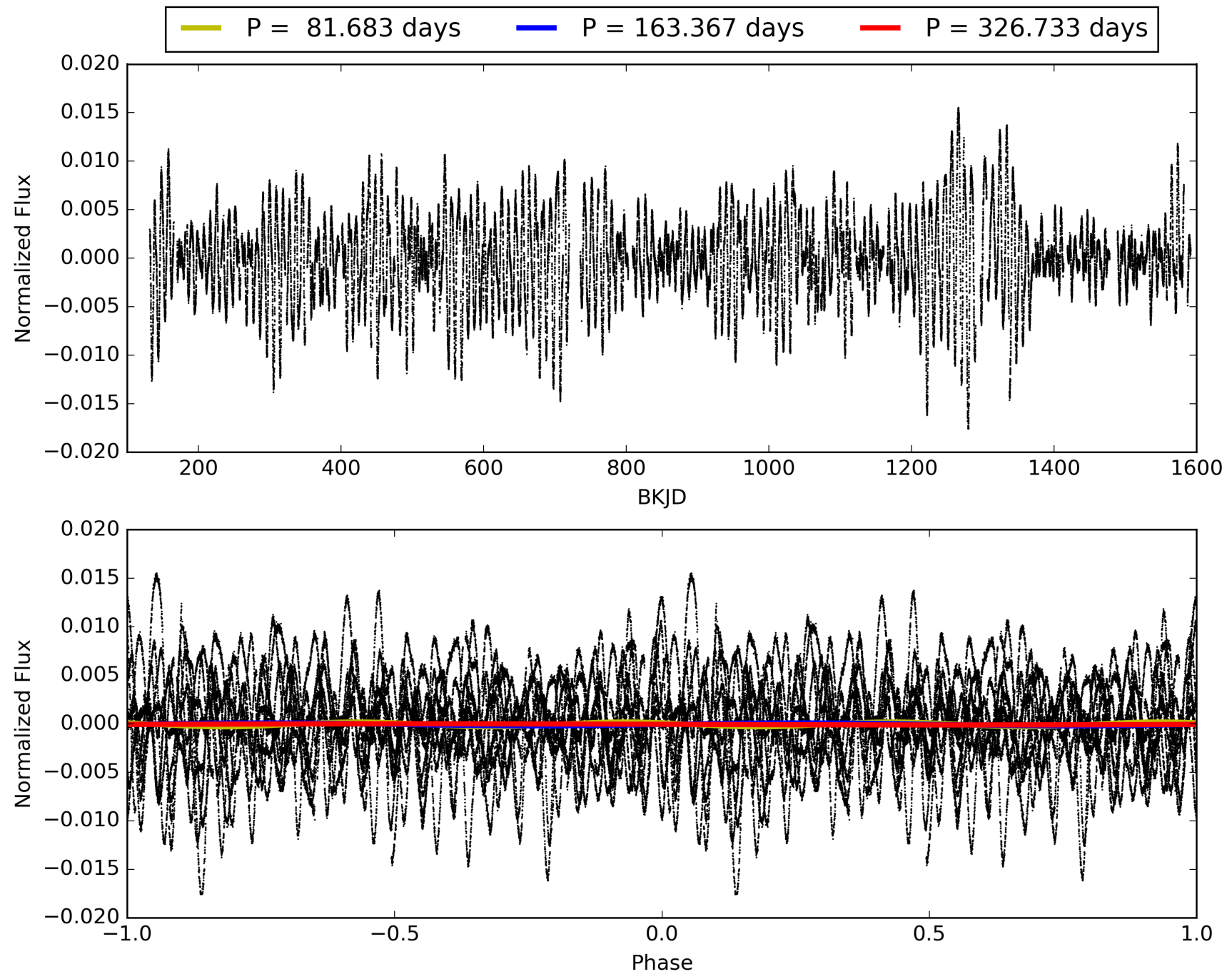
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:10:16 Z

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

TCE 005649301-03, PDC Light Curves

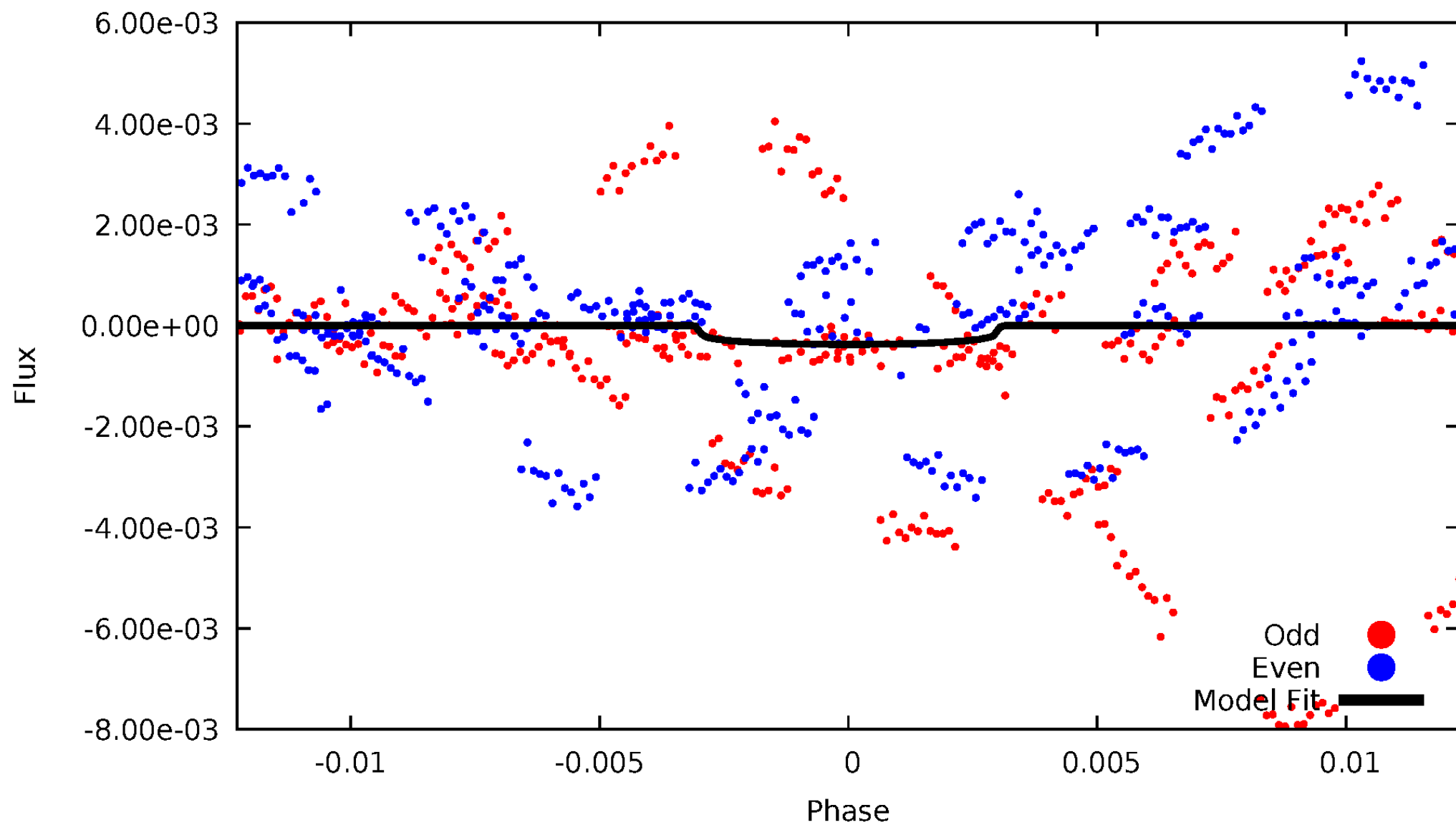


TCE 005649301-03



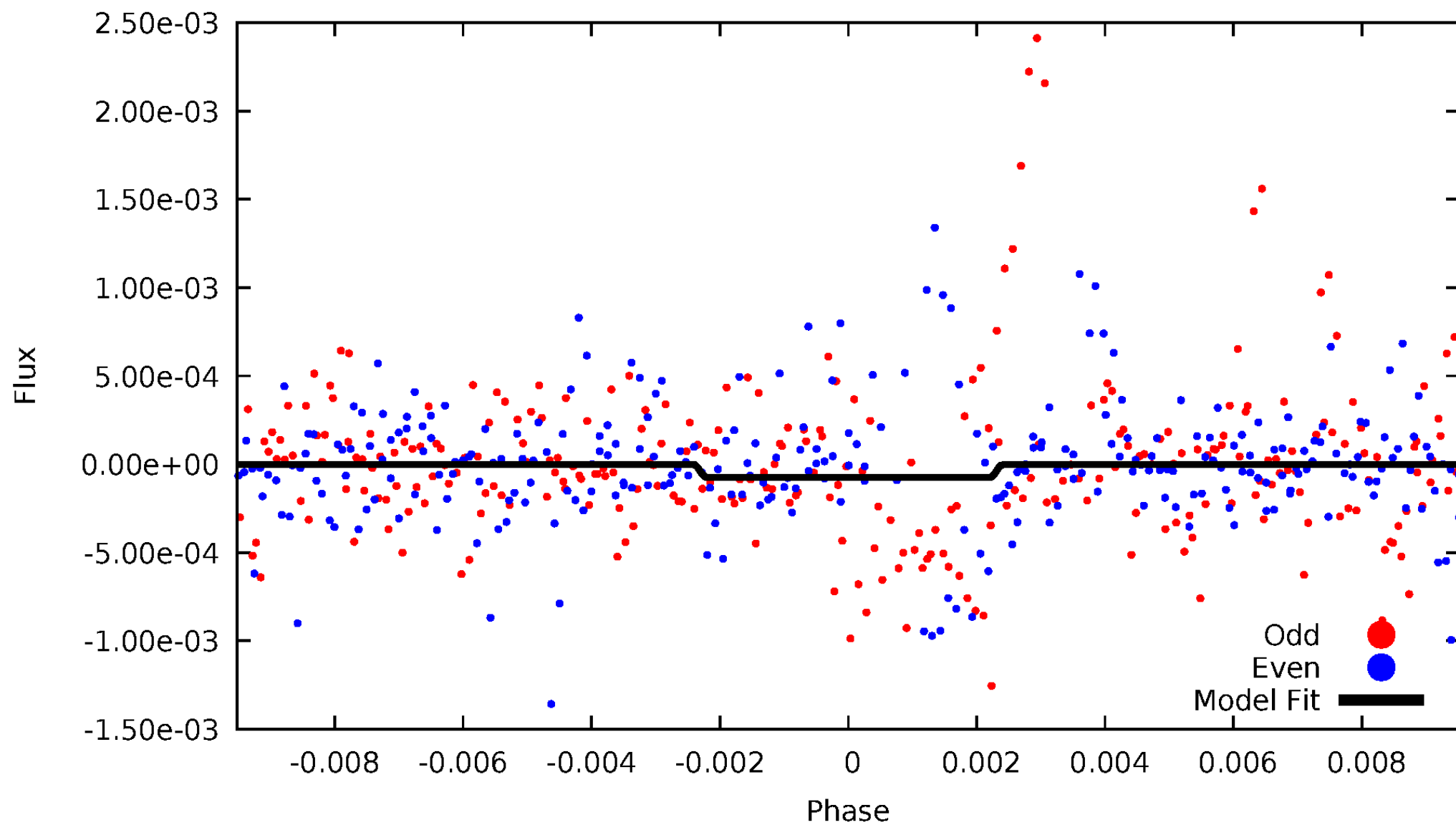
DV Odd/Even

TCE 005649301-03

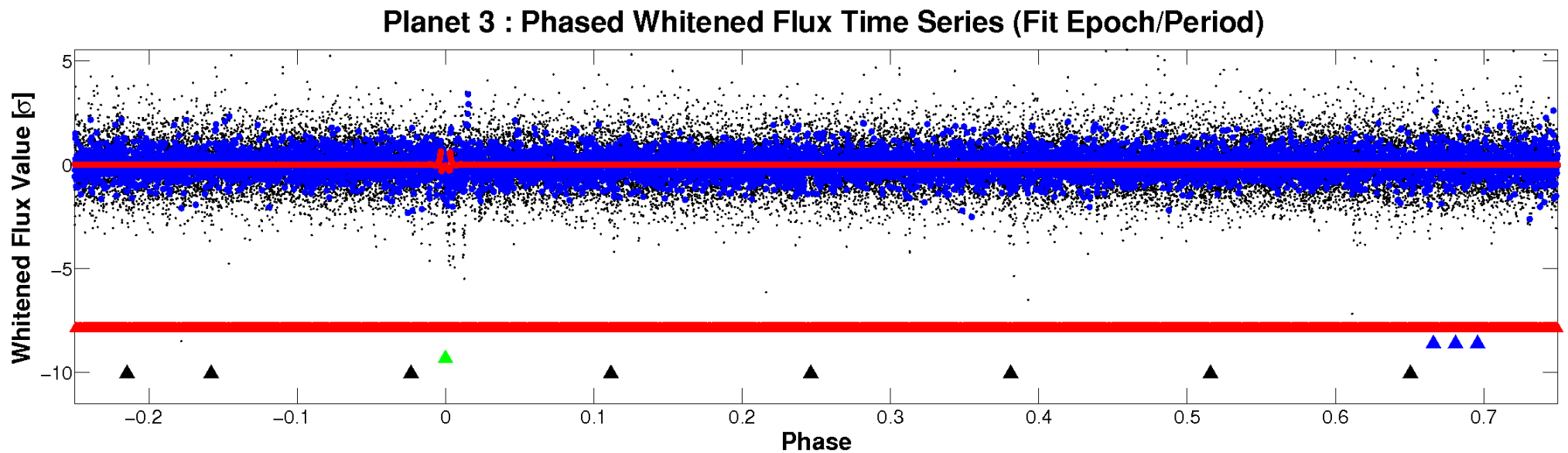
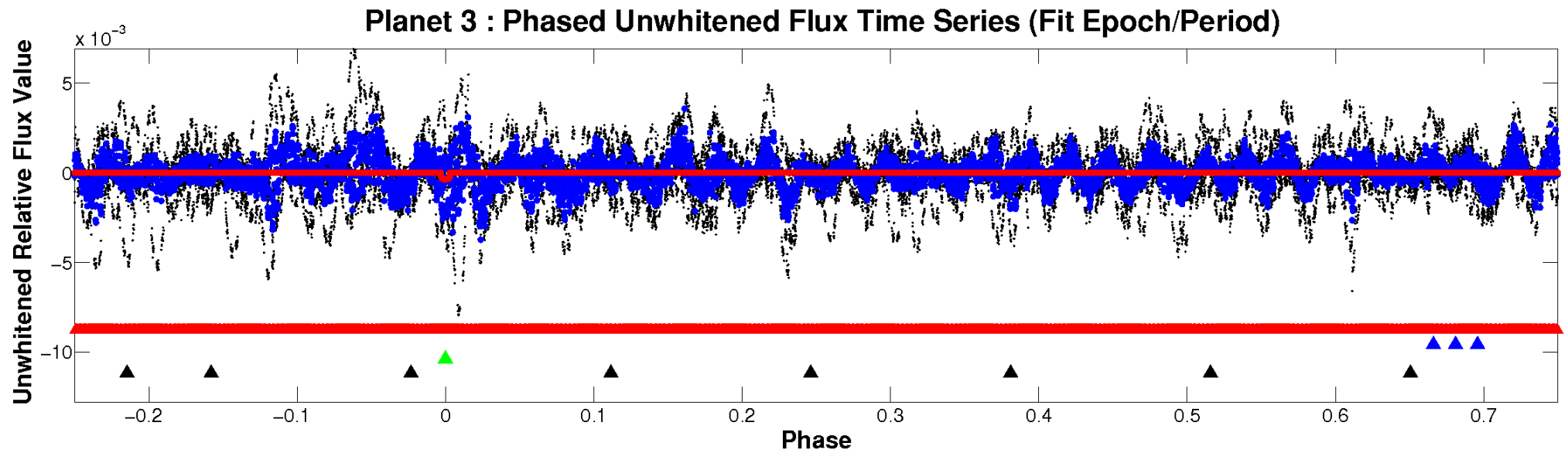


ALT Odd/Even

TCE 005649301-03

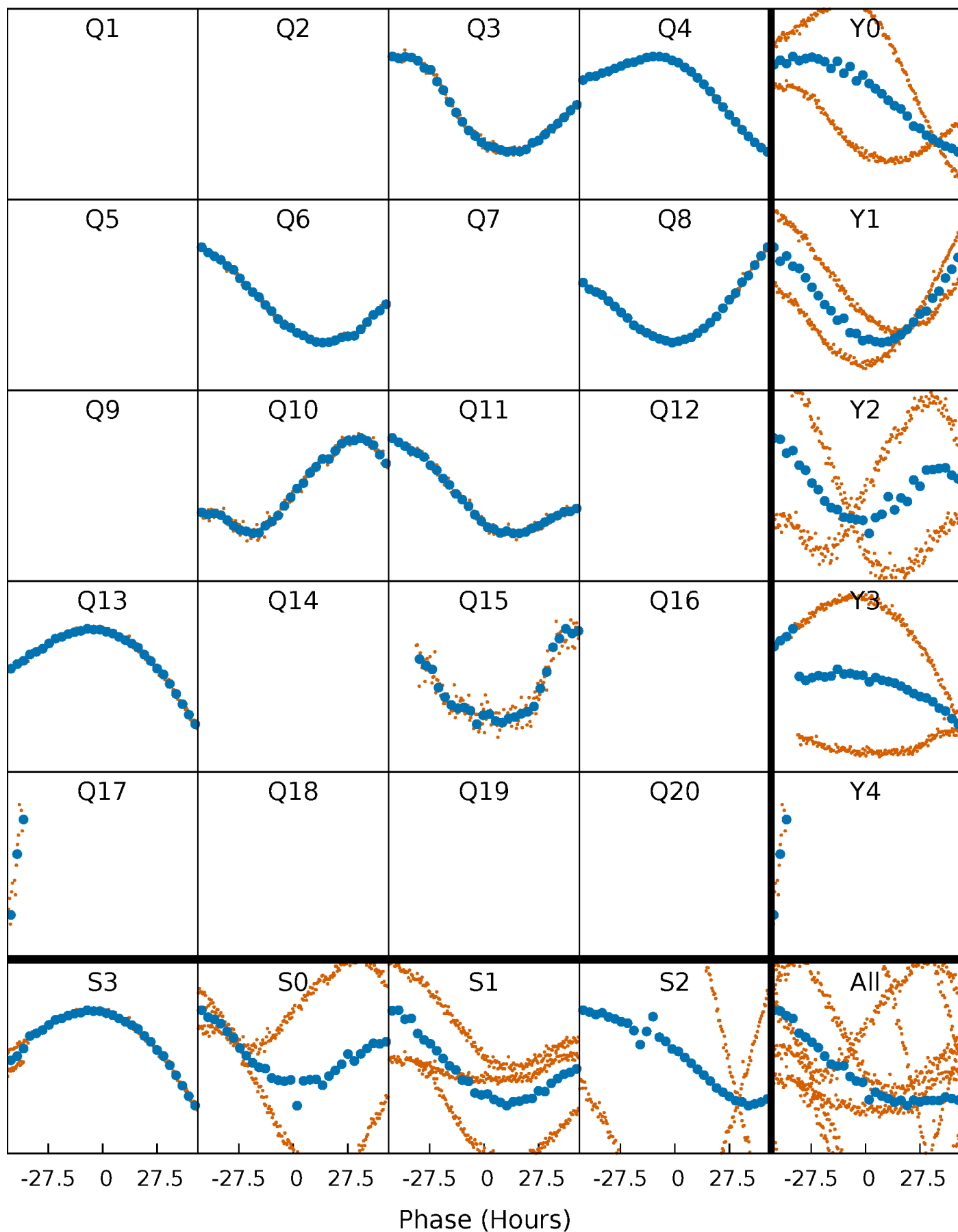


Non-Whitened Vs. Whitened Light Curve



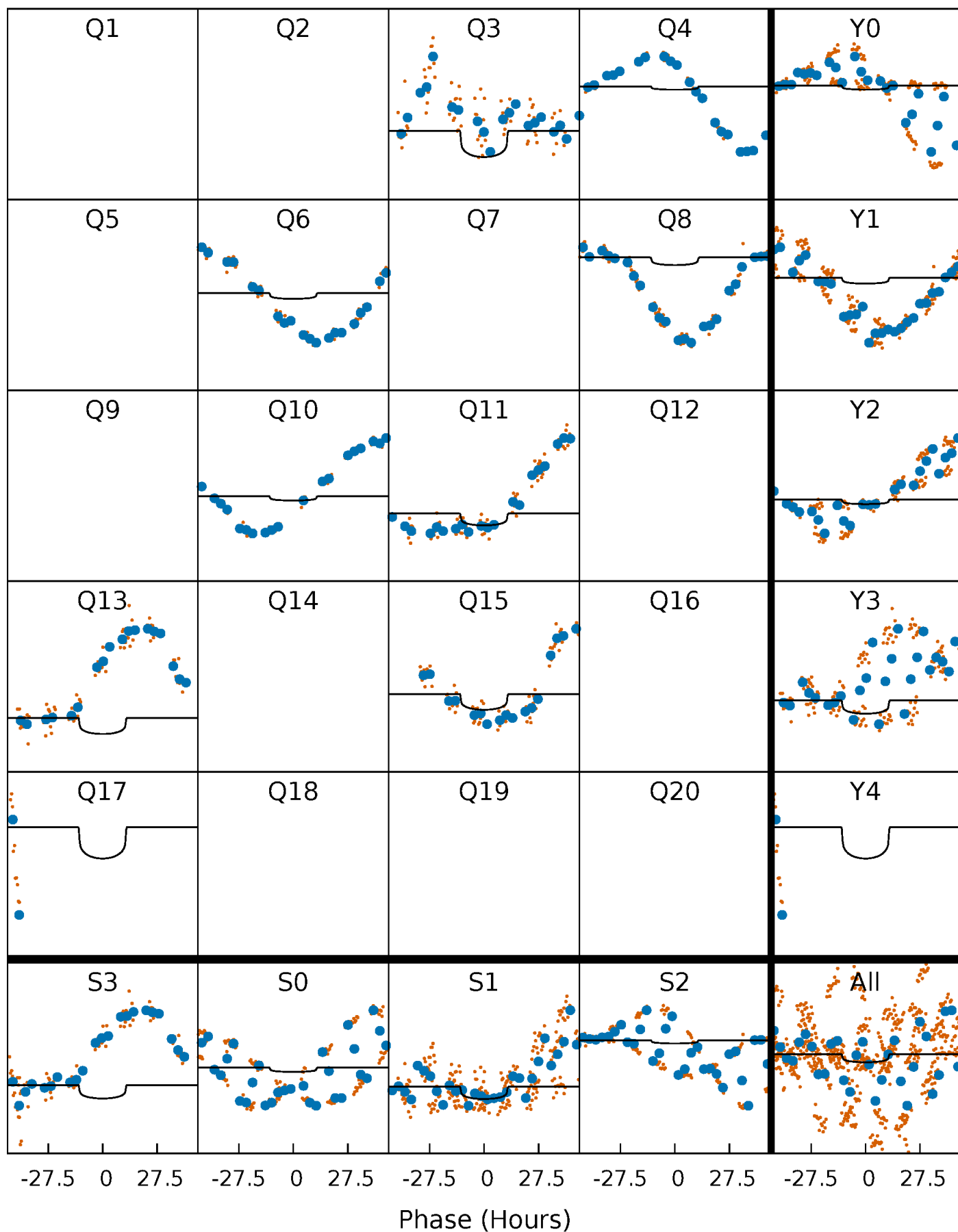
PDC Quarter-Phased Transit Curves

TCE 005649301-03 $P=163.366625$ Days $T_0=276.318041$ (BKJD)



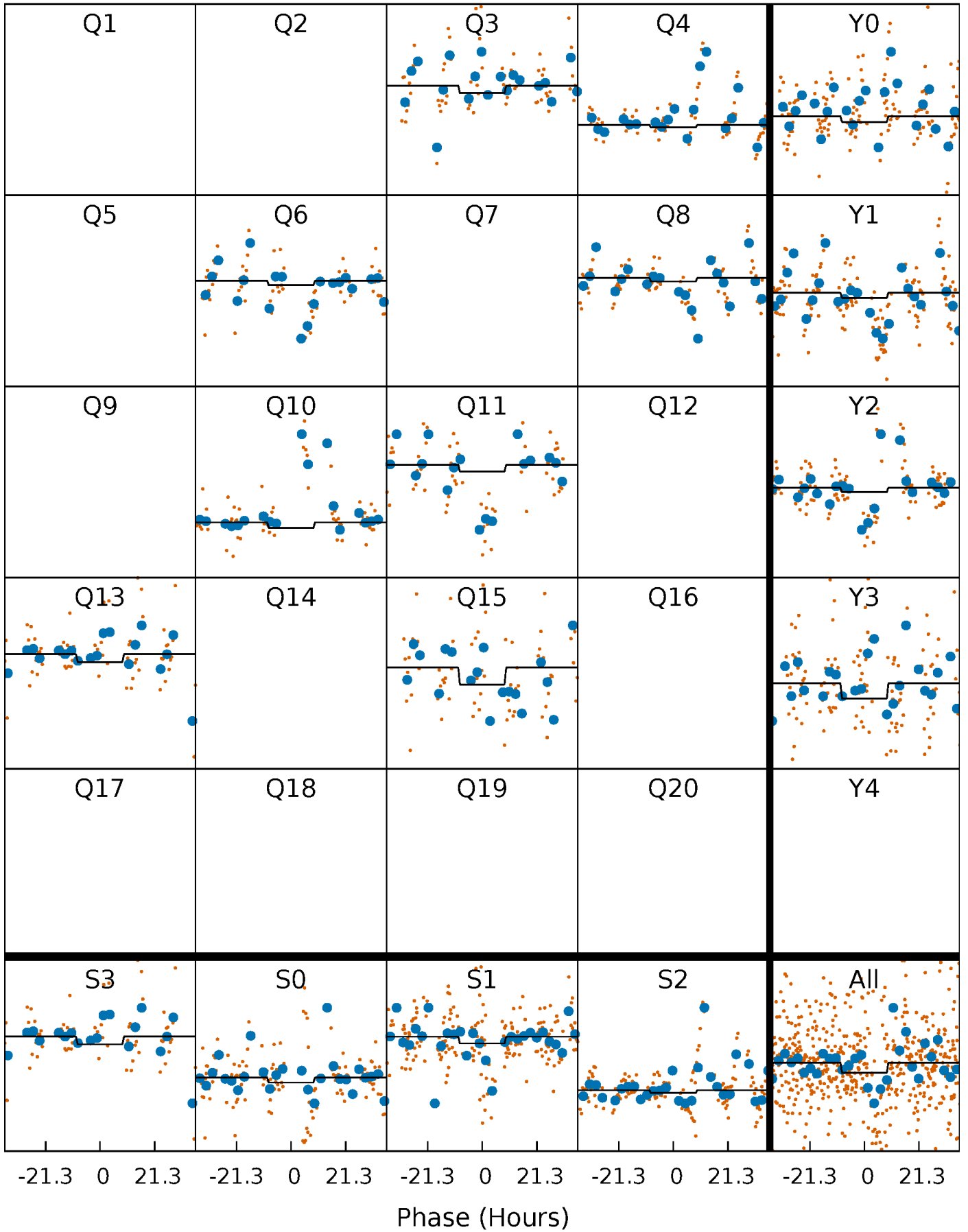
DV Quarter-Phased Transit Curves

TCE 005649301-03 $P=163.366625$ Days $T_0=276.318041$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

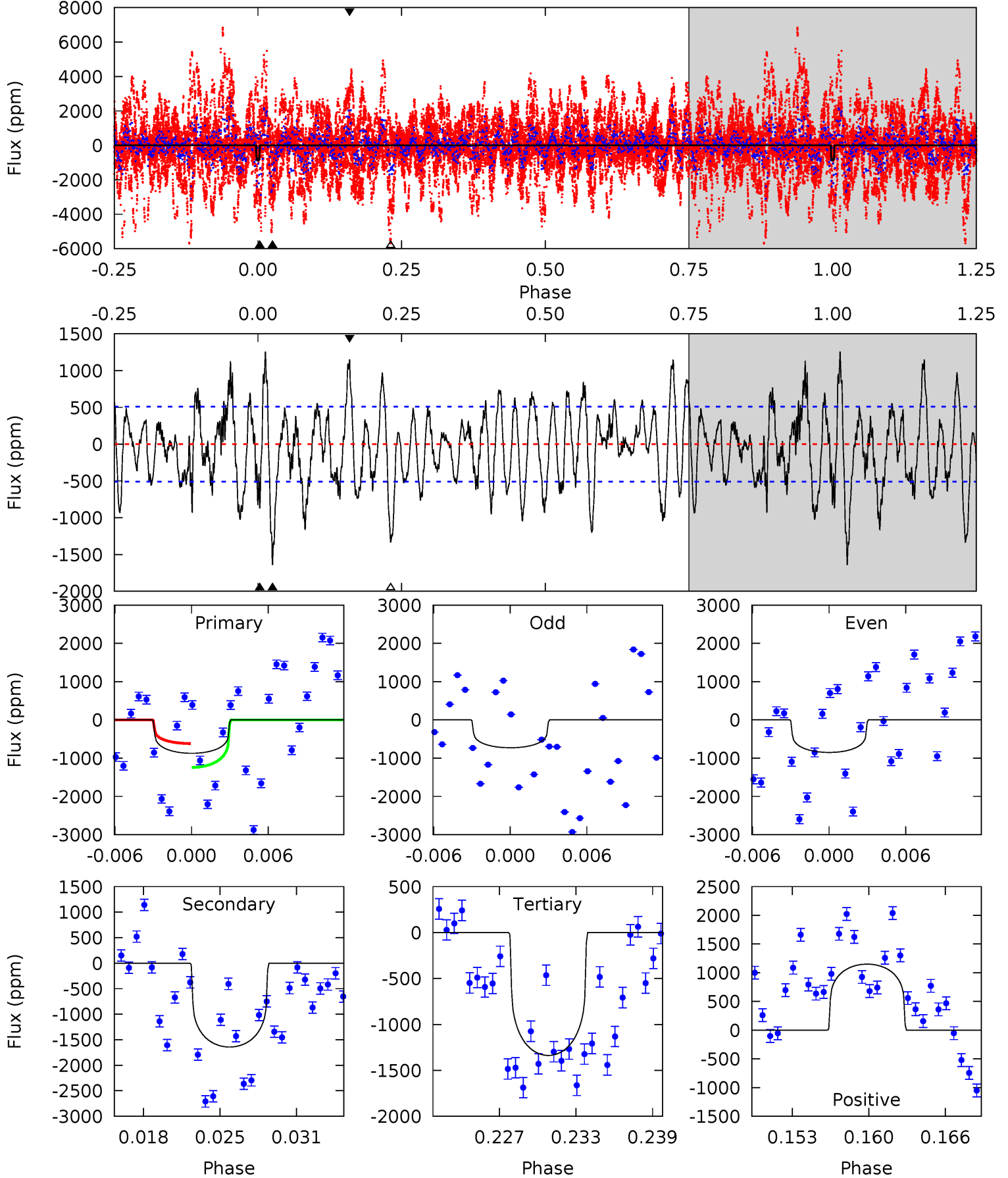
TCE 005649301-03 P=163.352690 Days $T_0=276.346651$ (BKJD)



DV Model-Shift Uniqueness Test

005649301-03, P = 163.366625 Days, E = 112.951416 Days

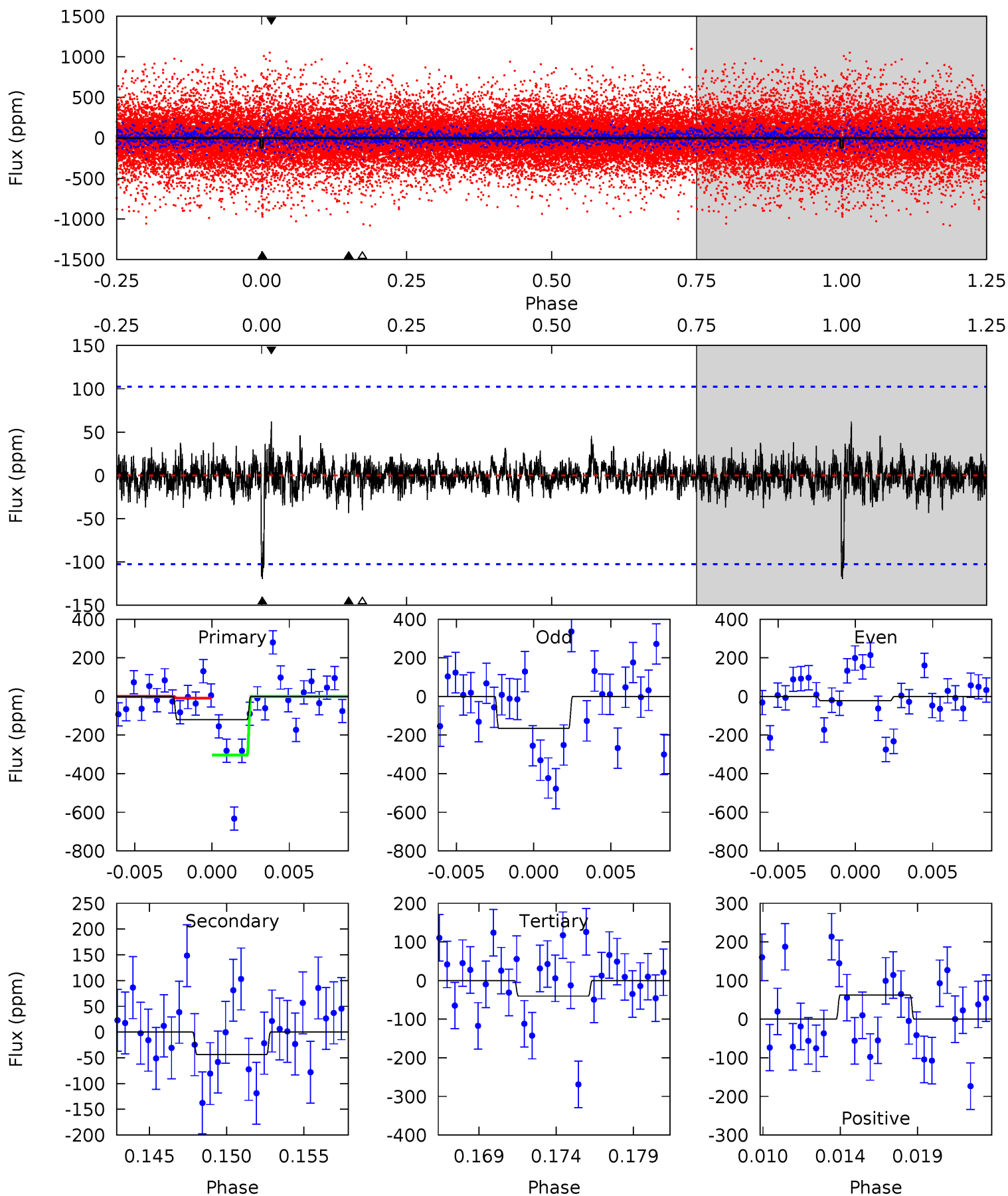
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.77	16.5	13.4	11.6	5.12	2.74	4.63	-4.67	-2.79	3.06	4.95	0.61	1.43	0.43	3.17



Alt Model-Shift Uniqueness Test

005649301-03, P = 163.352690 Days, E = 112.993961 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.03	2.18	2.03	3.14	5.16	2.82	0.58	4.00	2.89	0.16	-0.96	3.59	-1.64	0.34	7.37



Stellar Parameters For KIC 005649301

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5791^{+175}_{-175}	$4.068^{+0.368}_{-0.123}$	$0.040^{+0.250}_{-0.300}$	$1.568^{+0.383}_{-0.575}$	$1.050^{+0.133}_{-0.133}$	$0.383^{+0.923}_{-0.153}$
	+3%/-3%	+9%/-3%	+625%/-750%	+24%/-37%	+13%/-13%	+241%/-40%
Source	PHO1	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 005649301-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1642 ± 100	$2.88^{+1.38}_{-1.23}$	569^{+41}_{-57}	9160^{+4350}_{-1847}	38260^{+80026}_{-20644}
Alt.	-43 ± 20	$1.56^{+1.14}_{-0.88}$	564^{+44}_{-60}	4809^{+2341}_{-973}	3269^{+14767}_{-2292}

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

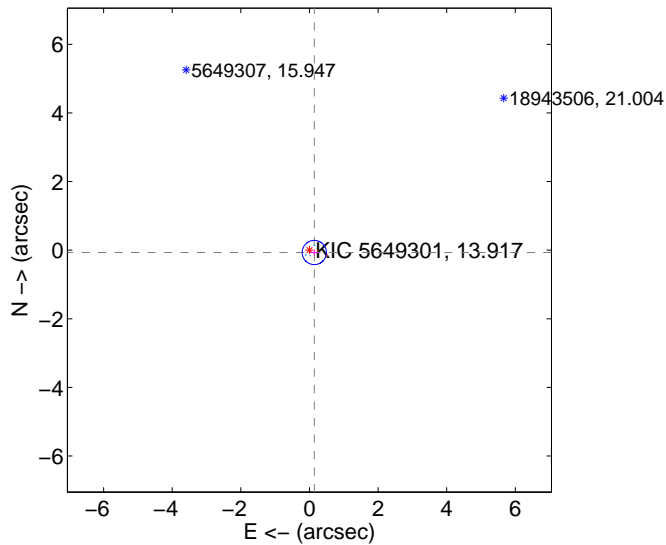
Supplemental centroid analysis for 005649301-03. Kepler magnitude: 13.92. Transit SNR 4.11

There are 3 quarters with good PRF difference image offsets

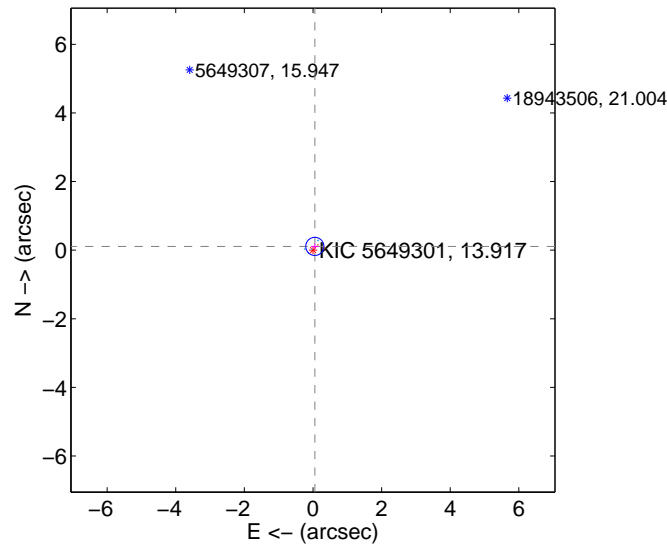
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.157 ± 0.118	1.33	-0.141 ± 0.122	-0.068 ± 0.084
PRF-fit source offset from KIC position	0.123 ± 0.088	1.39	-0.054 ± 0.108	0.110 ± 0.083
photometric centroid source offset	2.32 ± 1.19	1.96	2.14 ± 1.17	-0.88 ± 1.28

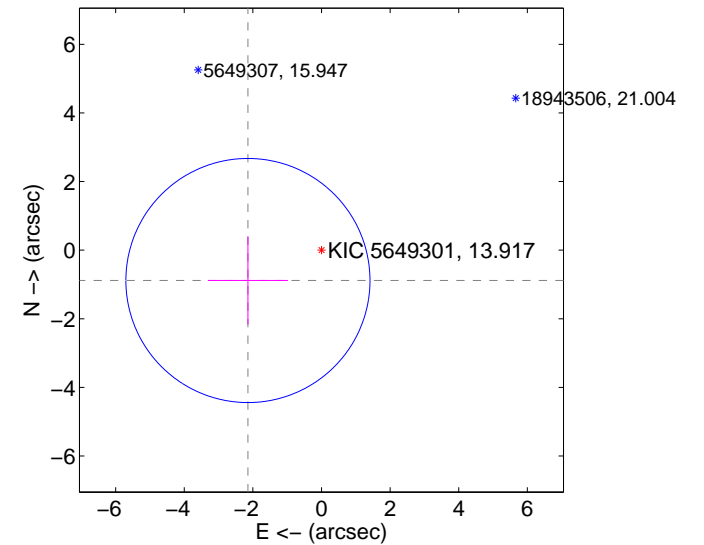
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

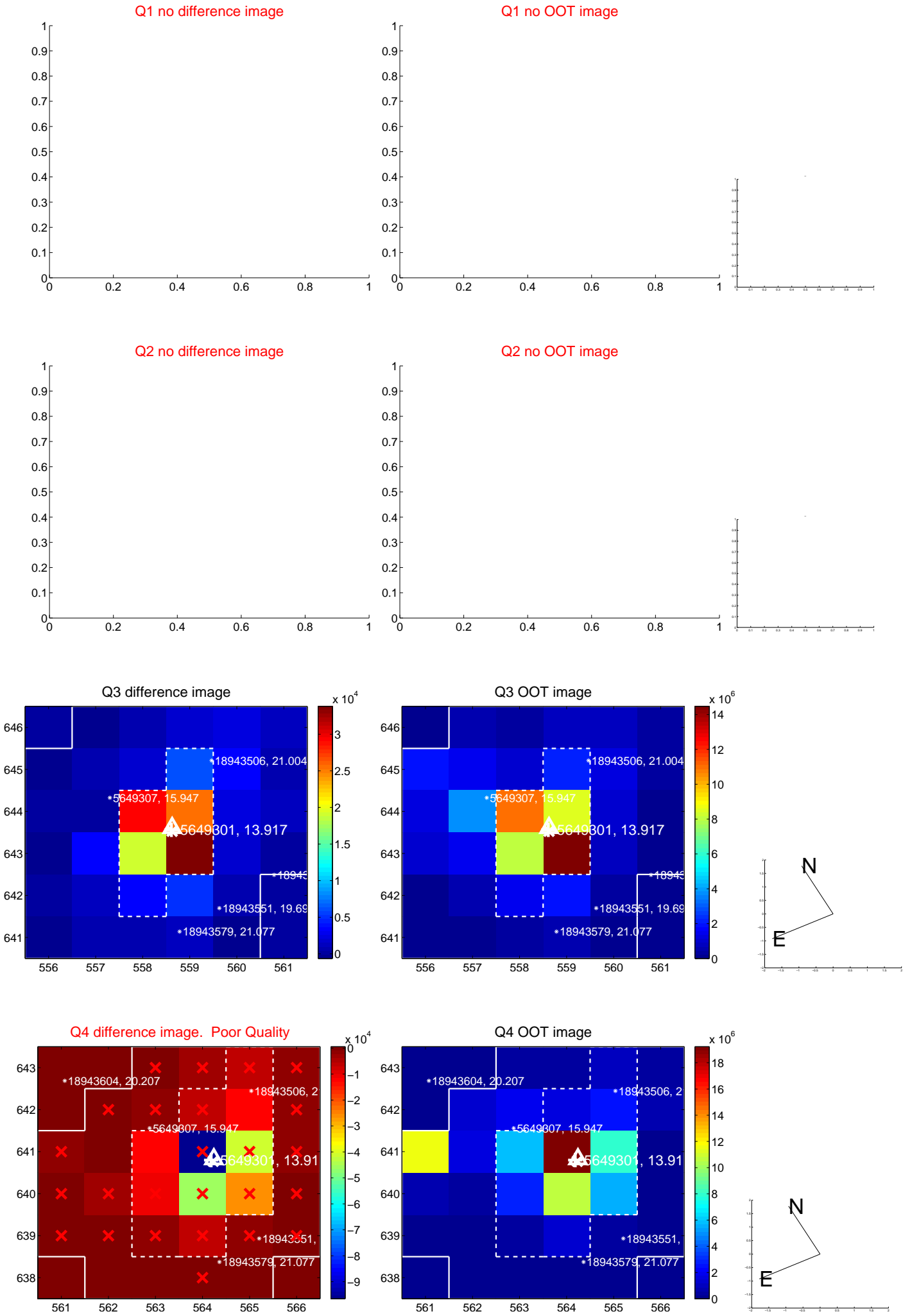


offset from photometric centroids



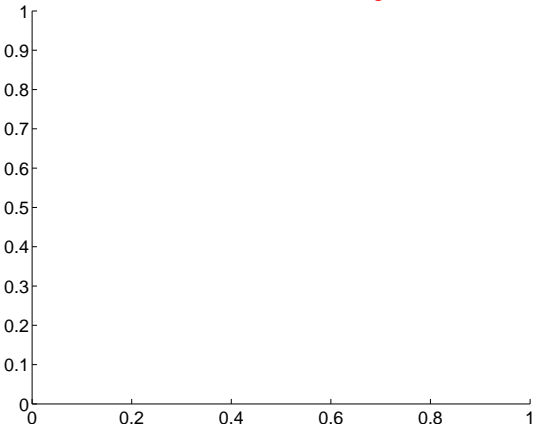
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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

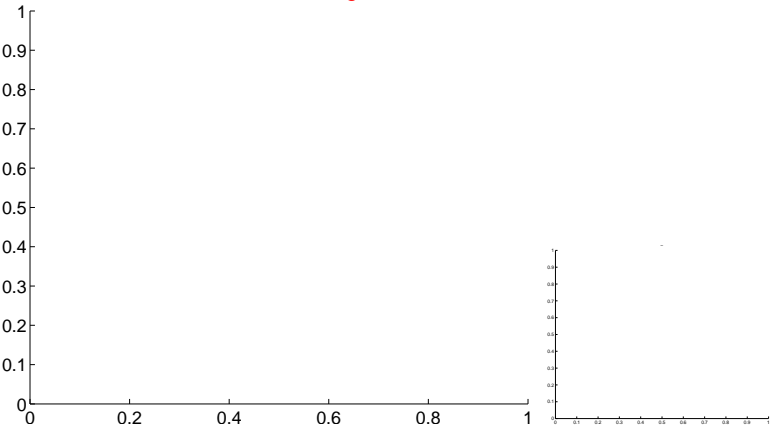


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

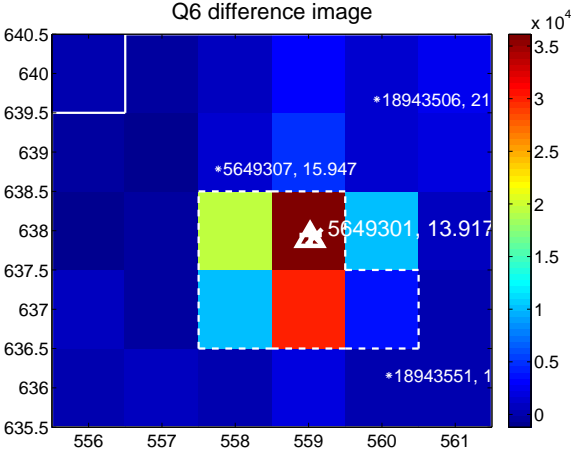
Q5 no difference image



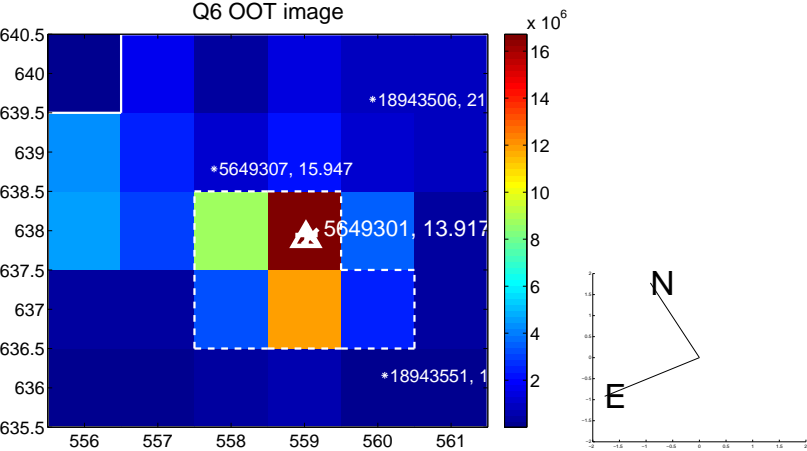
Q5 no OOT image



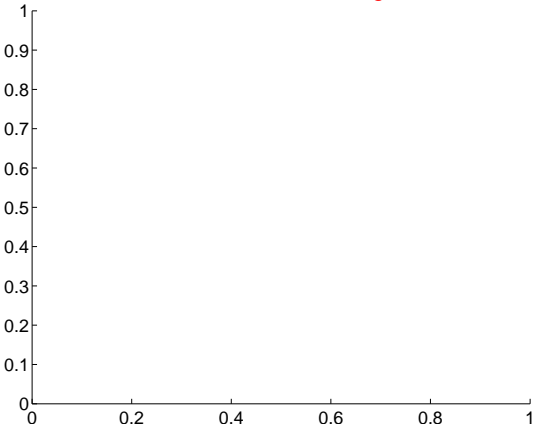
Q6 difference image



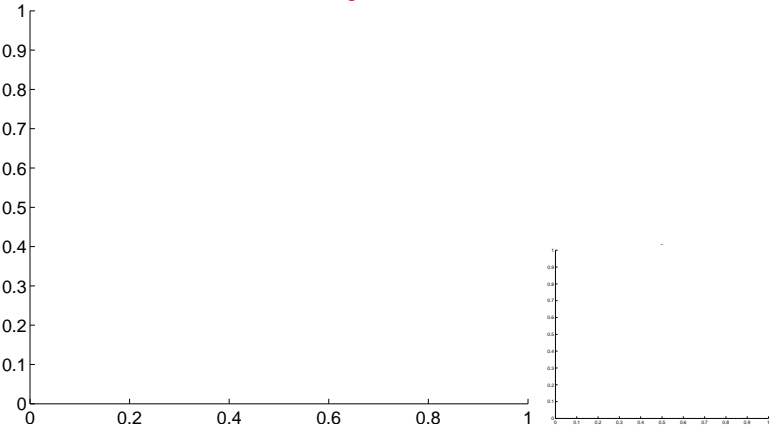
Q6 OOT image



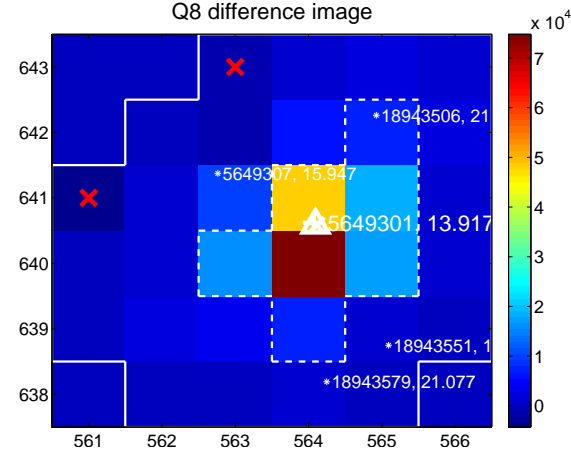
Q7 no difference image



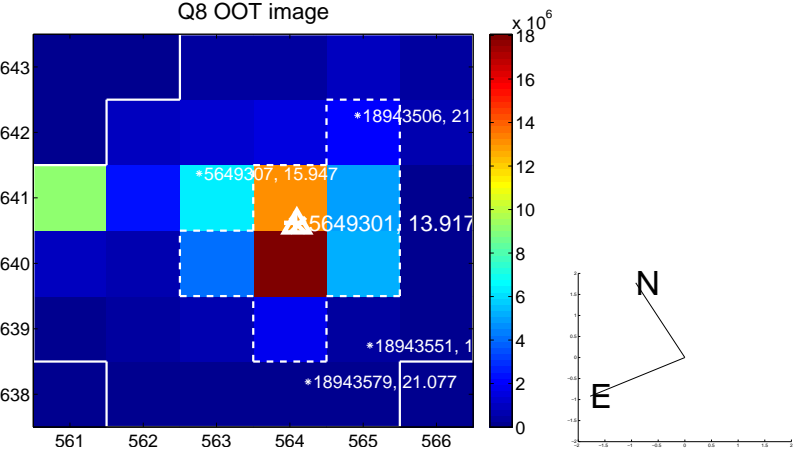
Q7 no OOT image



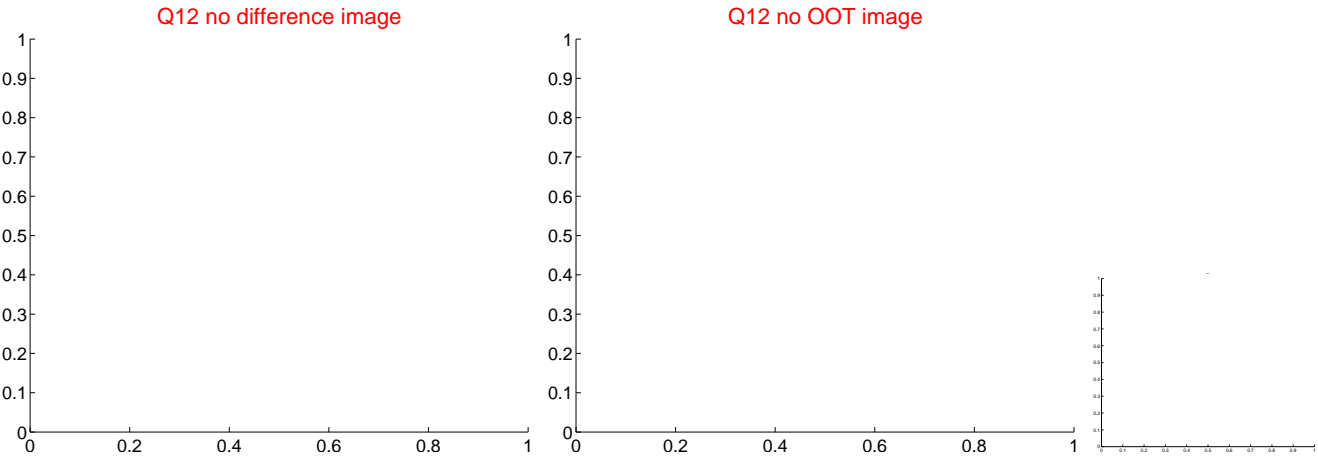
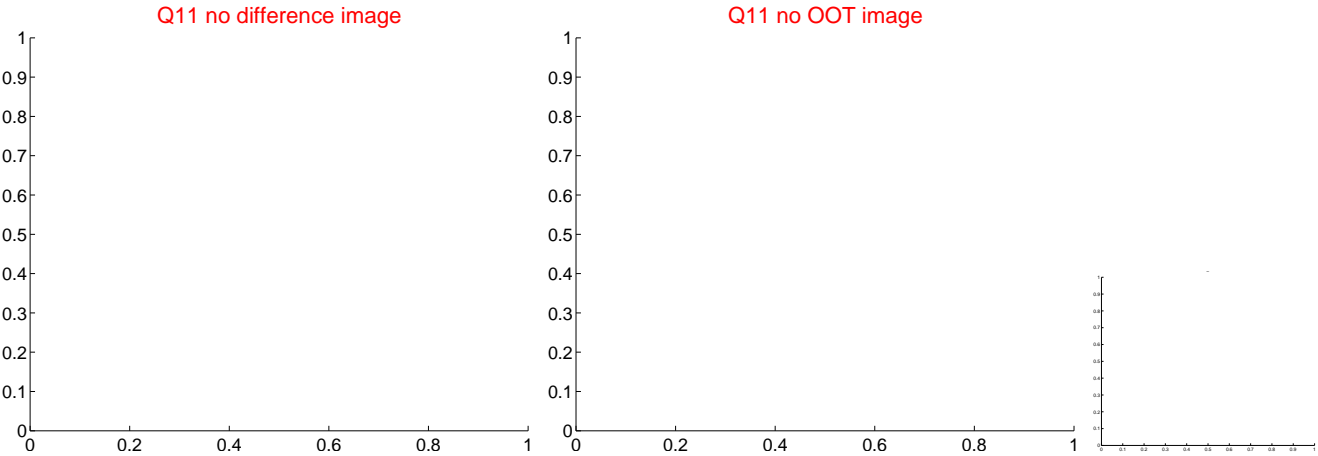
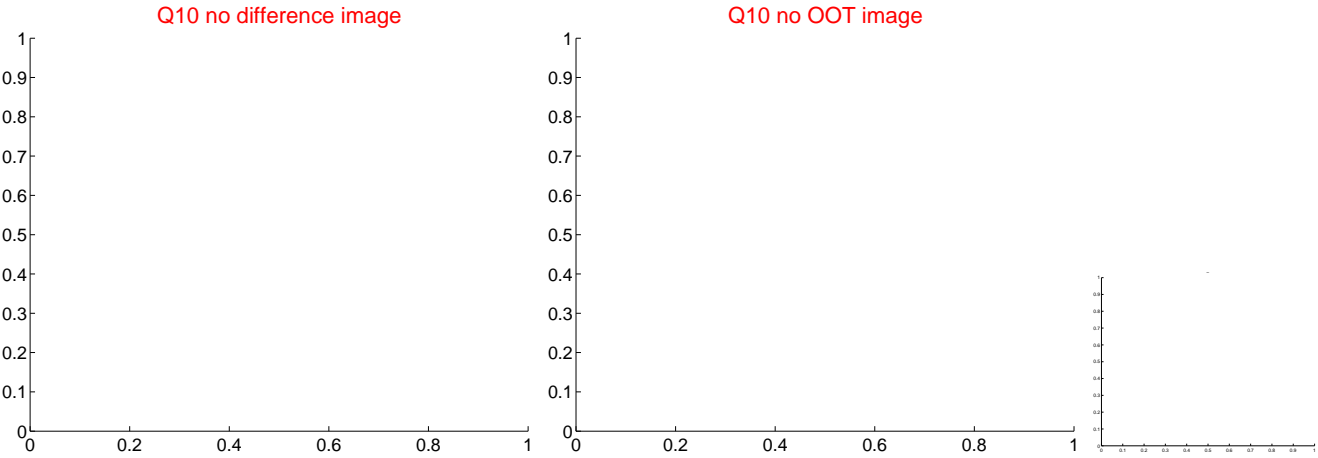
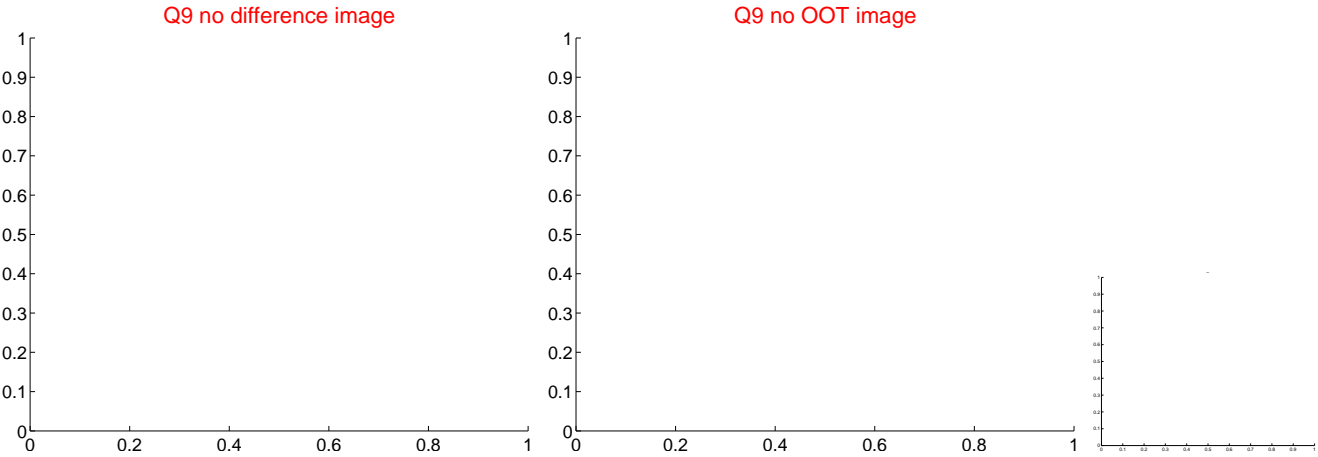
Q8 difference image



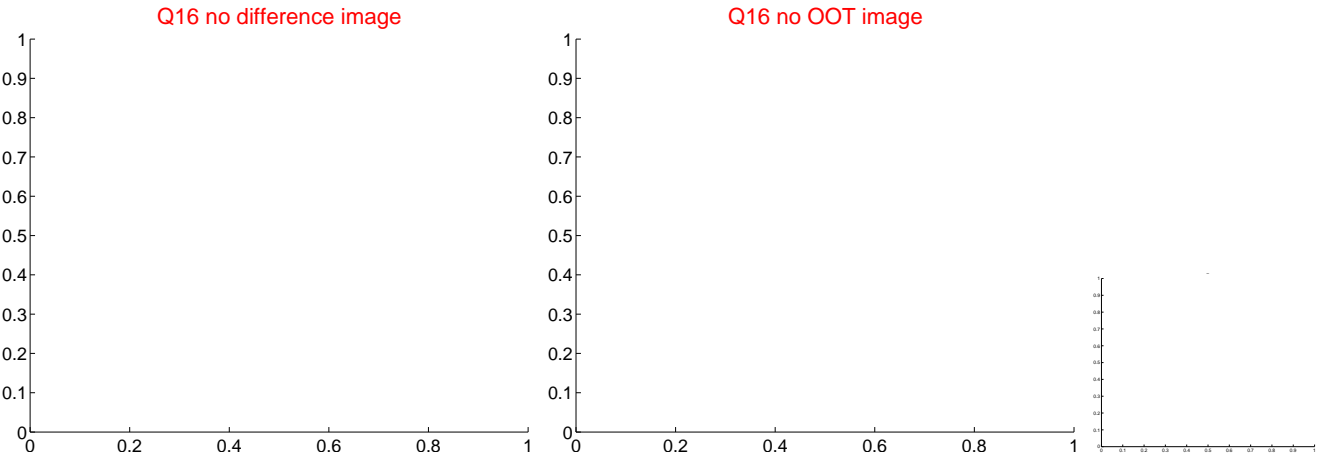
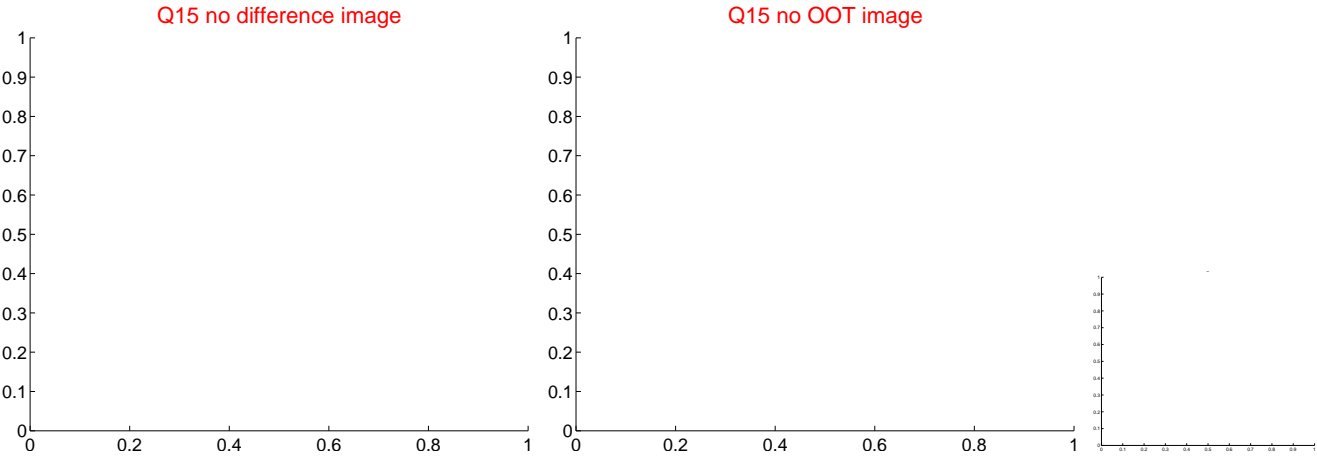
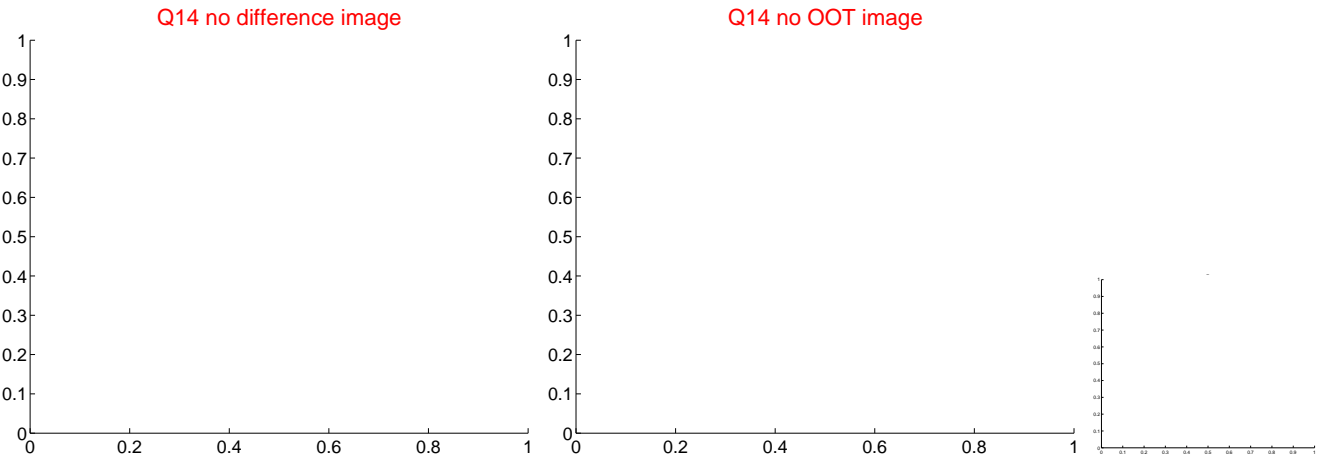
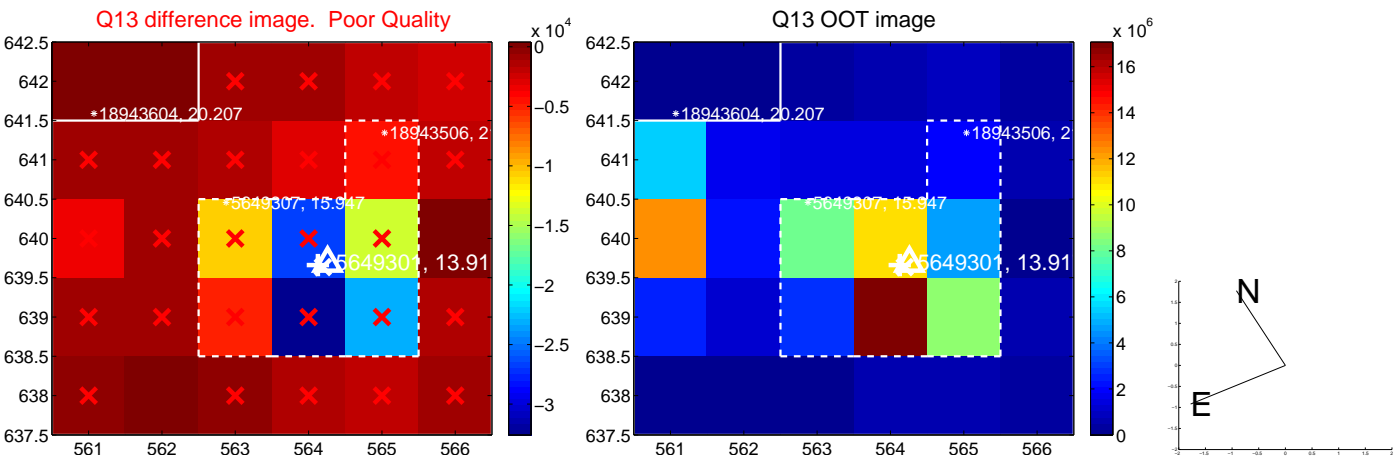
Q8 OOT image



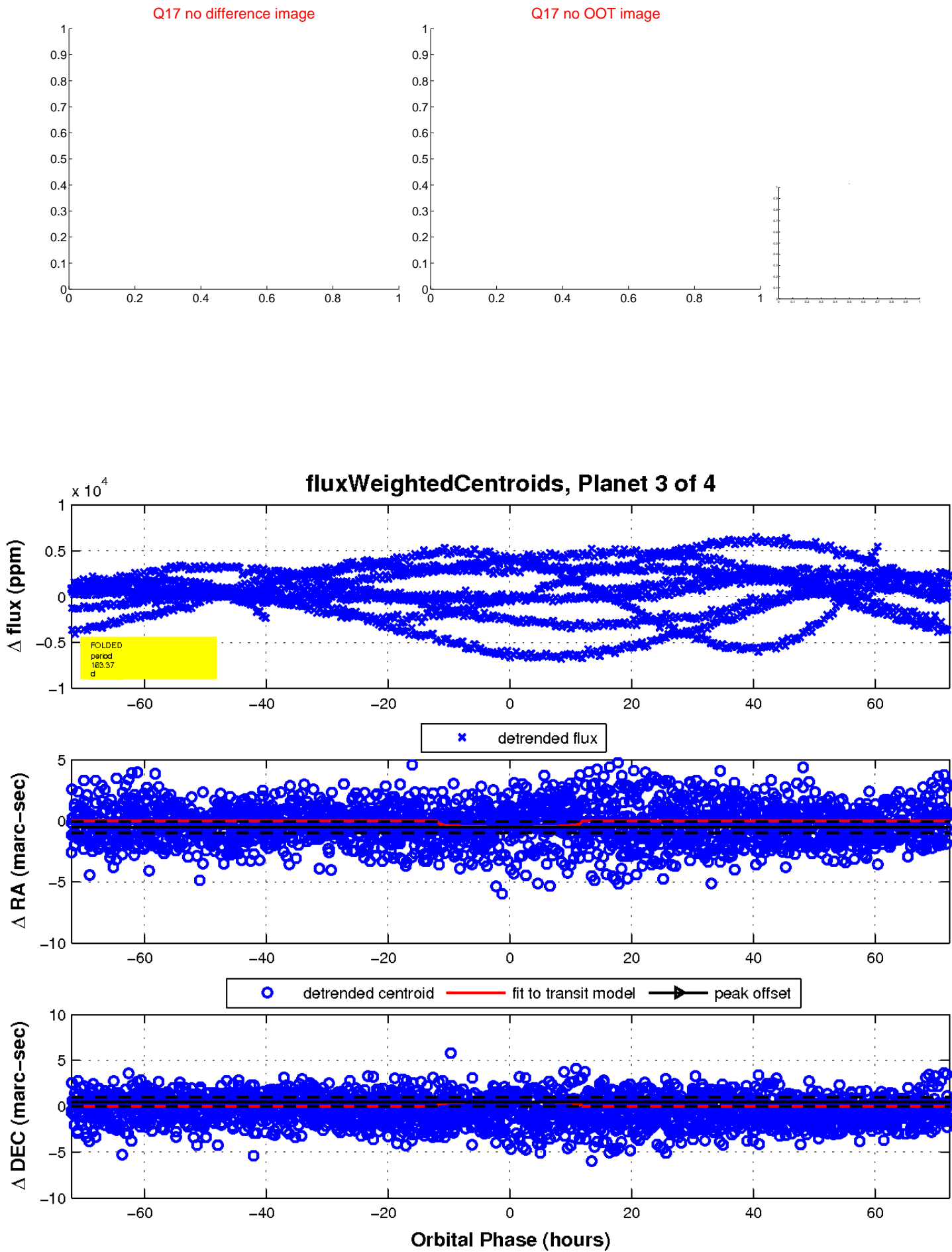
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

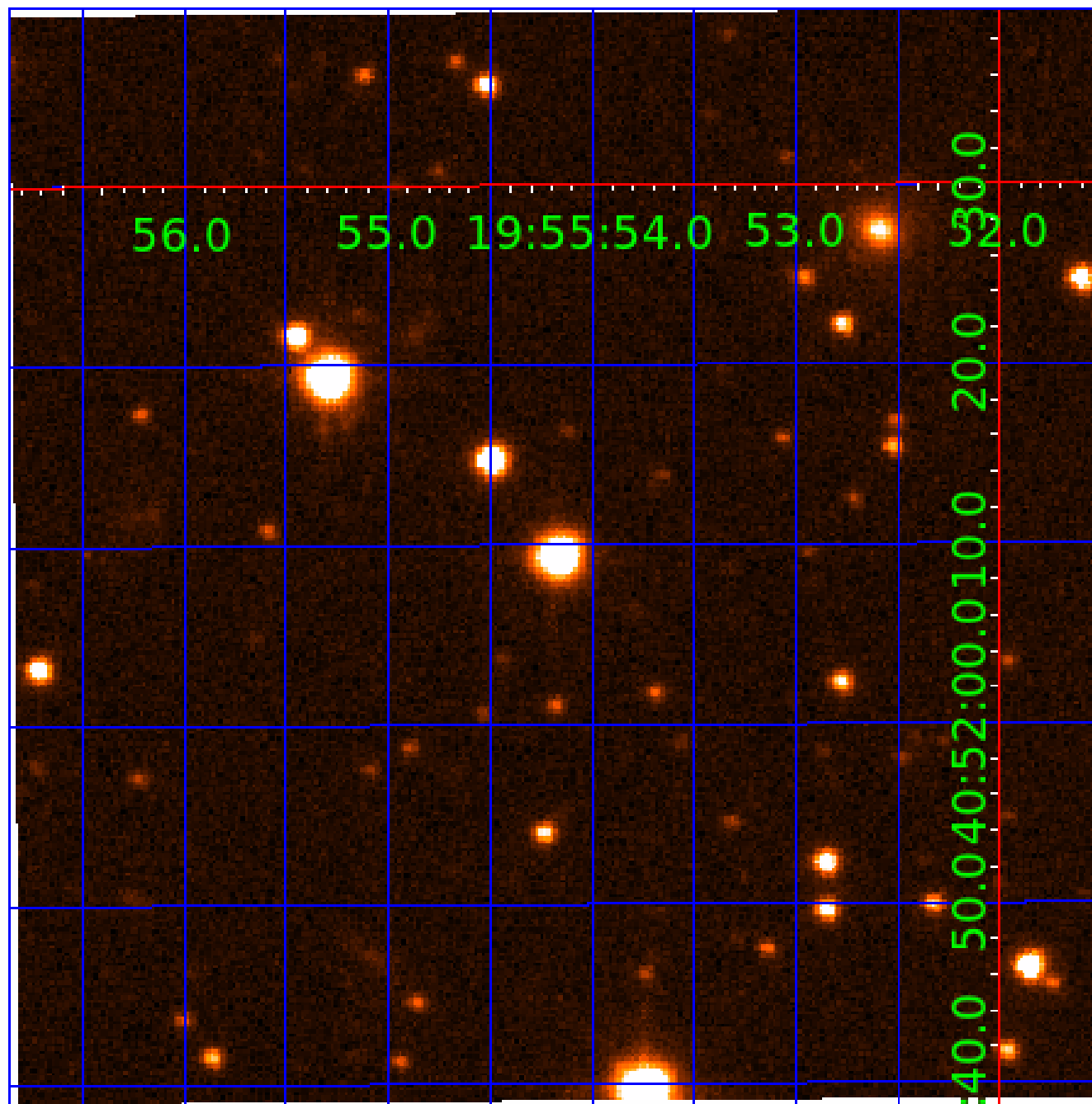


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005649301

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})
005649301-01	OBS	No	0.544268	131.752378	52.1	2.039	8.0	16.7	1.57	5791	1.35	14094.70
005649301-02	OBS	No	487.667096	390.002260	631.2	7.034	9.3	6.8	1.57	5791	4.58	1.63
005649301-03	OBS	No	163.366625	276.318041	374.2	24.082	13.1	4.1	1.57	5791	3.07	7.01
005649301-04	OBS	No	185.381850	250.507709	359.4	4.590	8.6	4.8	1.57	5791	3.25	5.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005649301-01	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
005649301-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005649301-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
005649301-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_MEAS

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

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

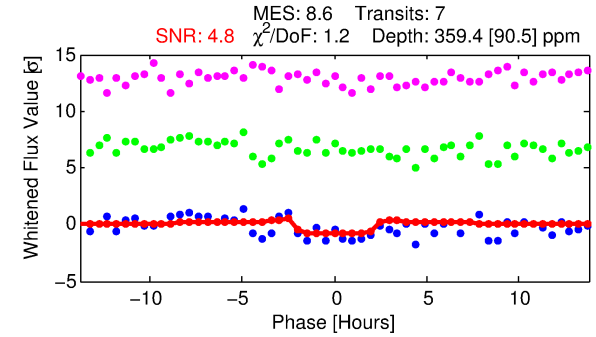
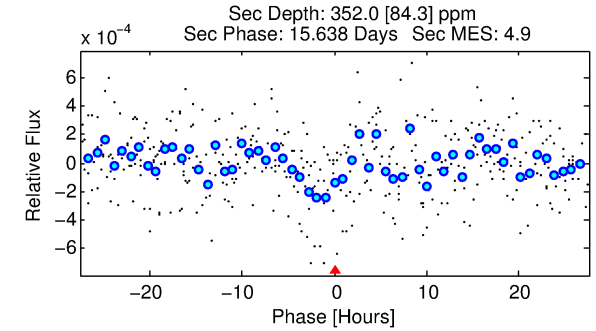
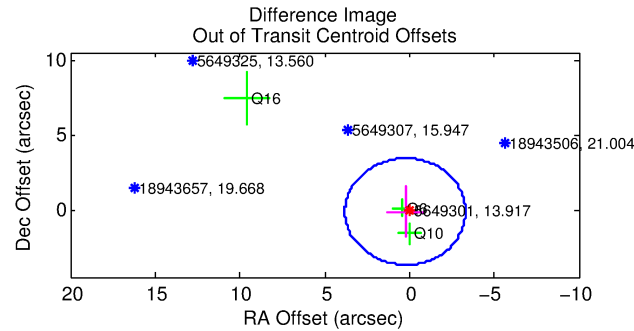
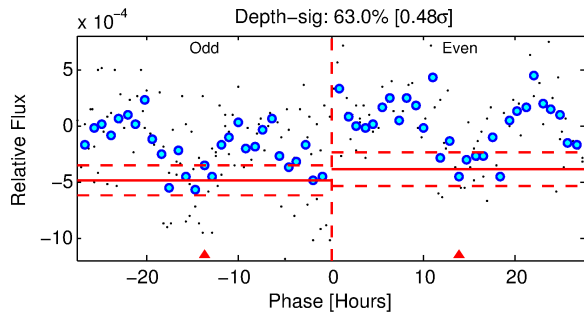
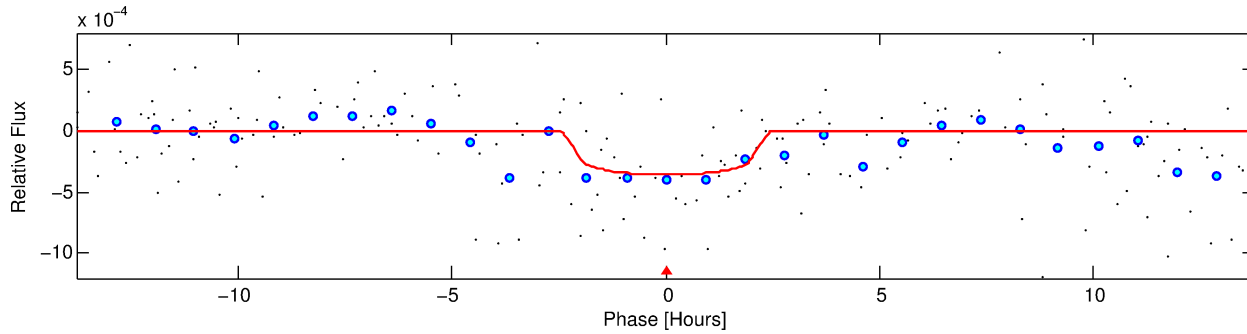
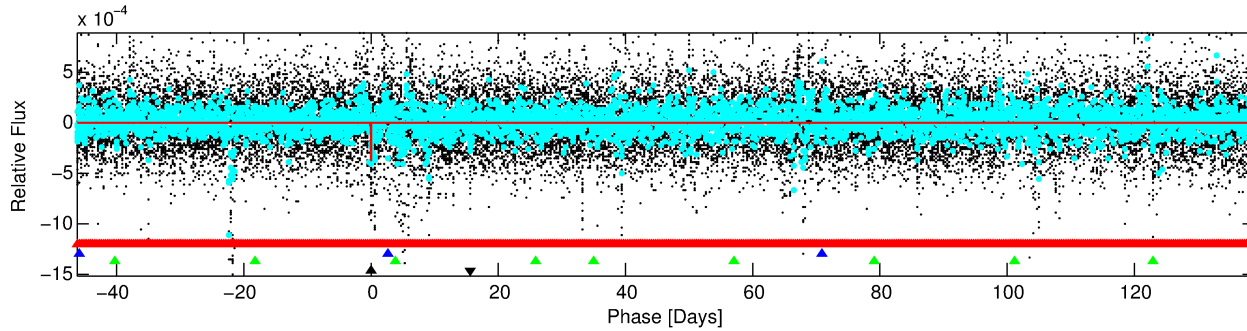
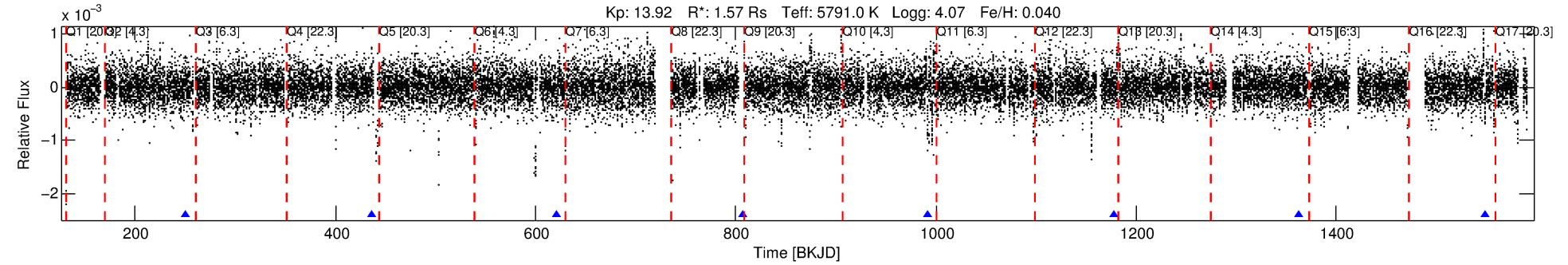
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005649301-04

No Significant Match Found

DV One-Page Summary

KIC: 5649301 Candidate: 4 of 4 Period: 185.382 d



DV Fit Results:

Period = 185.38185 [0.00341] d
Epoch = 250.5077 [0.0168] BKJD
Rp/R* = 0.0190 [0.0254]
a/R* = 207.48 [1248.22]
b = 0.77 [3.30]
Seff = 5.93 [3.72]
Teq = 398 [62] K
Rp = 3.25 [4.51] Re
a = 0.6466 [0.2415] AU
Ag = 7671.48 [21139.06] [0.36 σ]
Teffp = 5757 [3869] K [1.38 σ]

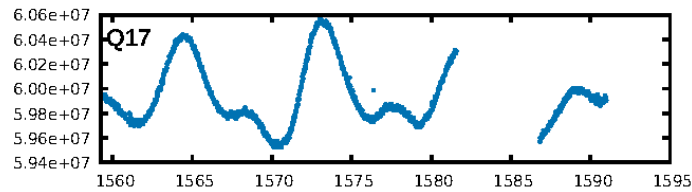
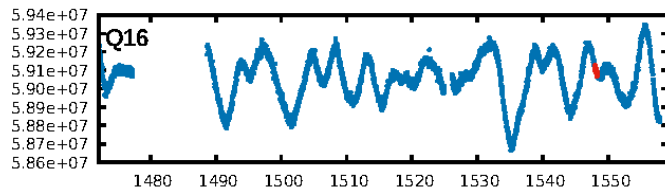
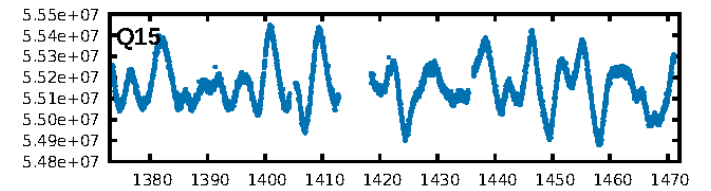
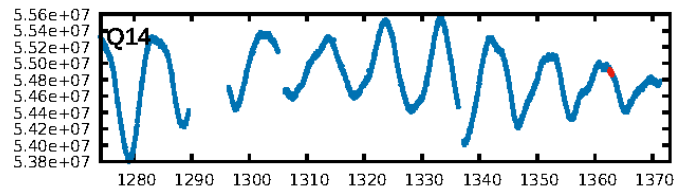
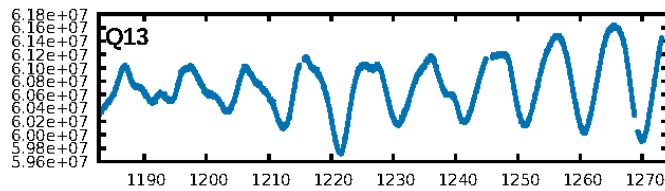
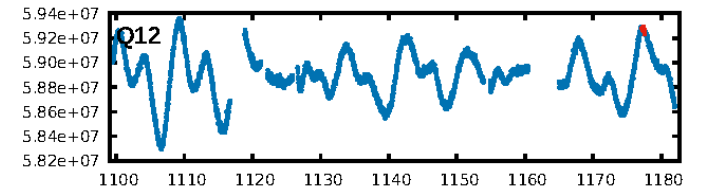
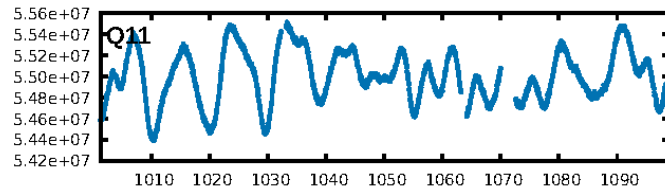
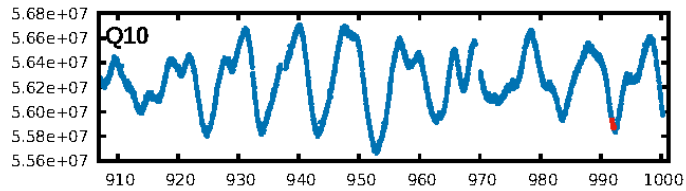
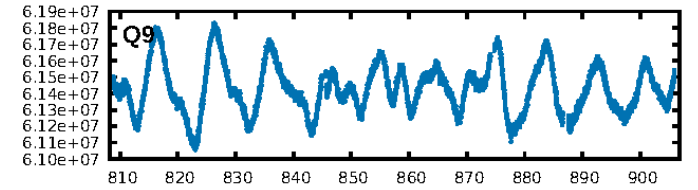
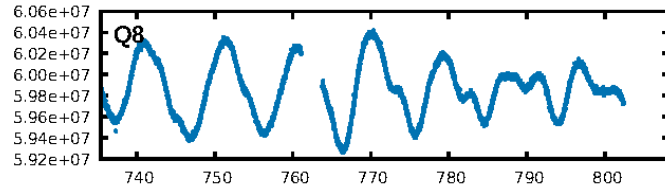
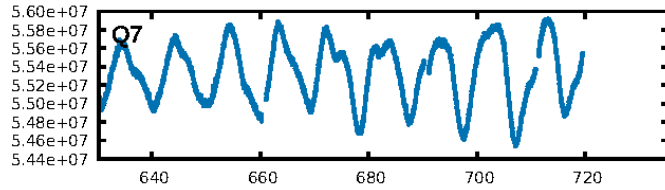
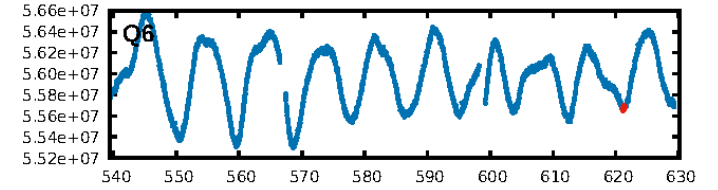
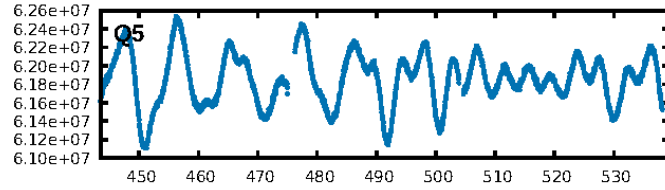
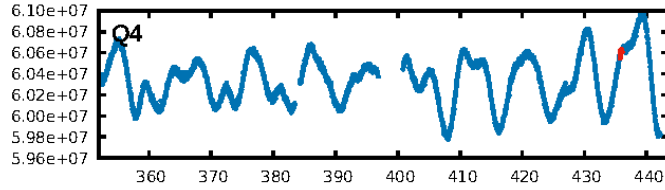
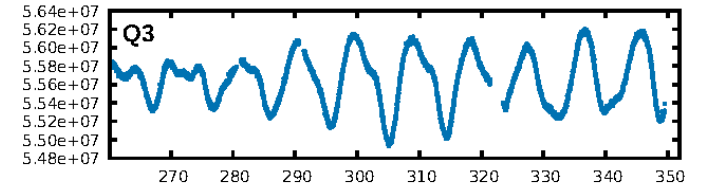
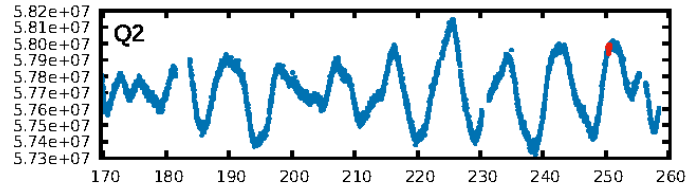
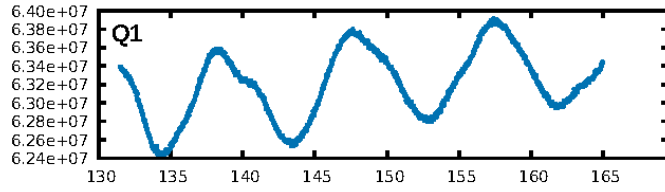
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [21.55 σ]
LongPeriod-sig: 100.0% [863.77 σ]
ModelChiSquare2-sig: 9.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.49e-08
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -0.5508
Centroid-sig: 26.5%
Centroid-so: 1.207 arcsec [0.80 σ]
OotOffset-rm: 0.279 arcsec [0.24 σ]
KicOffset-rm: 0.350 arcsec [0.13 σ]
OotOffset-st: 2/0/1/0 [3]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/6]

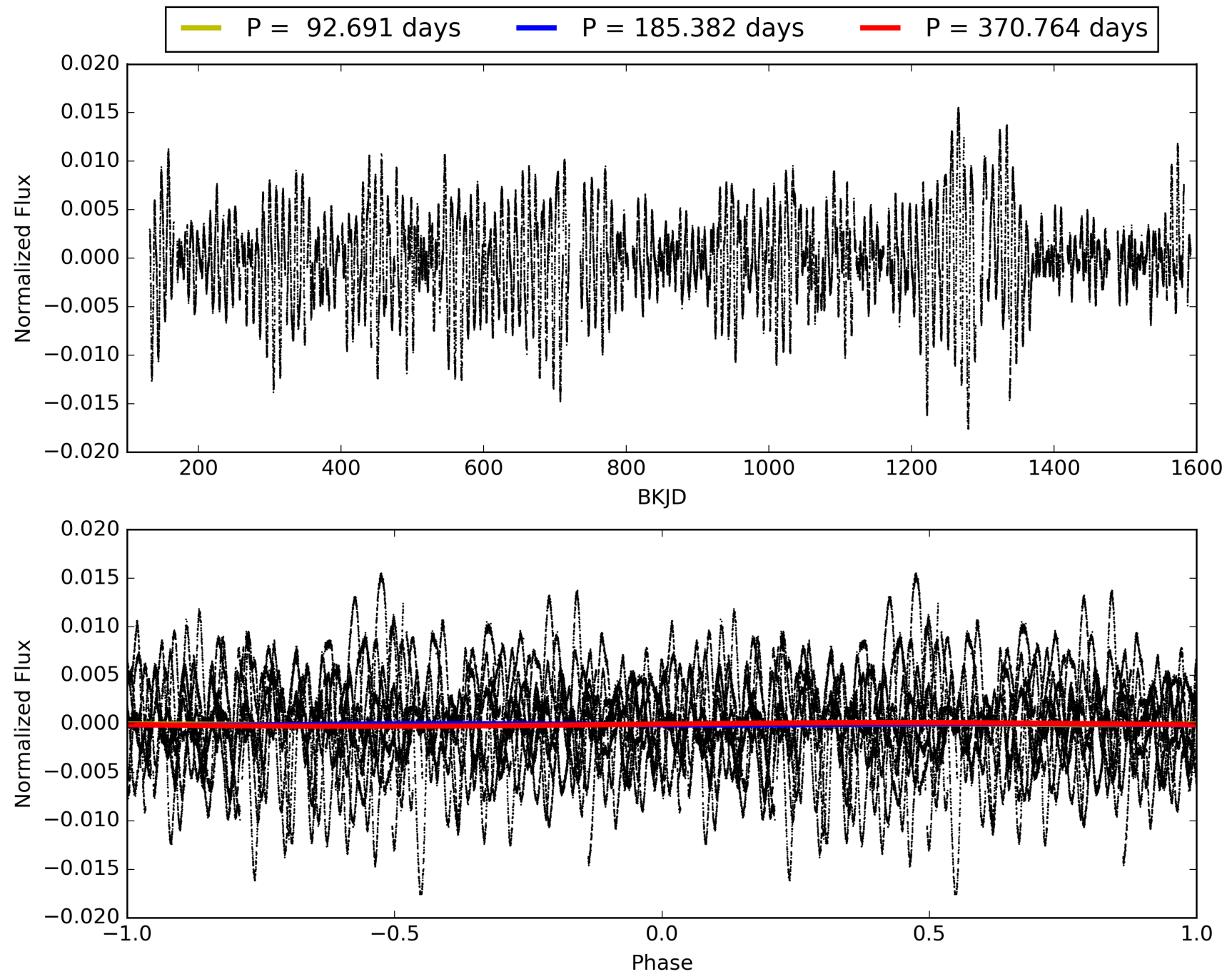
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:10:23 Z

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

TCE 005649301-04, PDC Light Curves

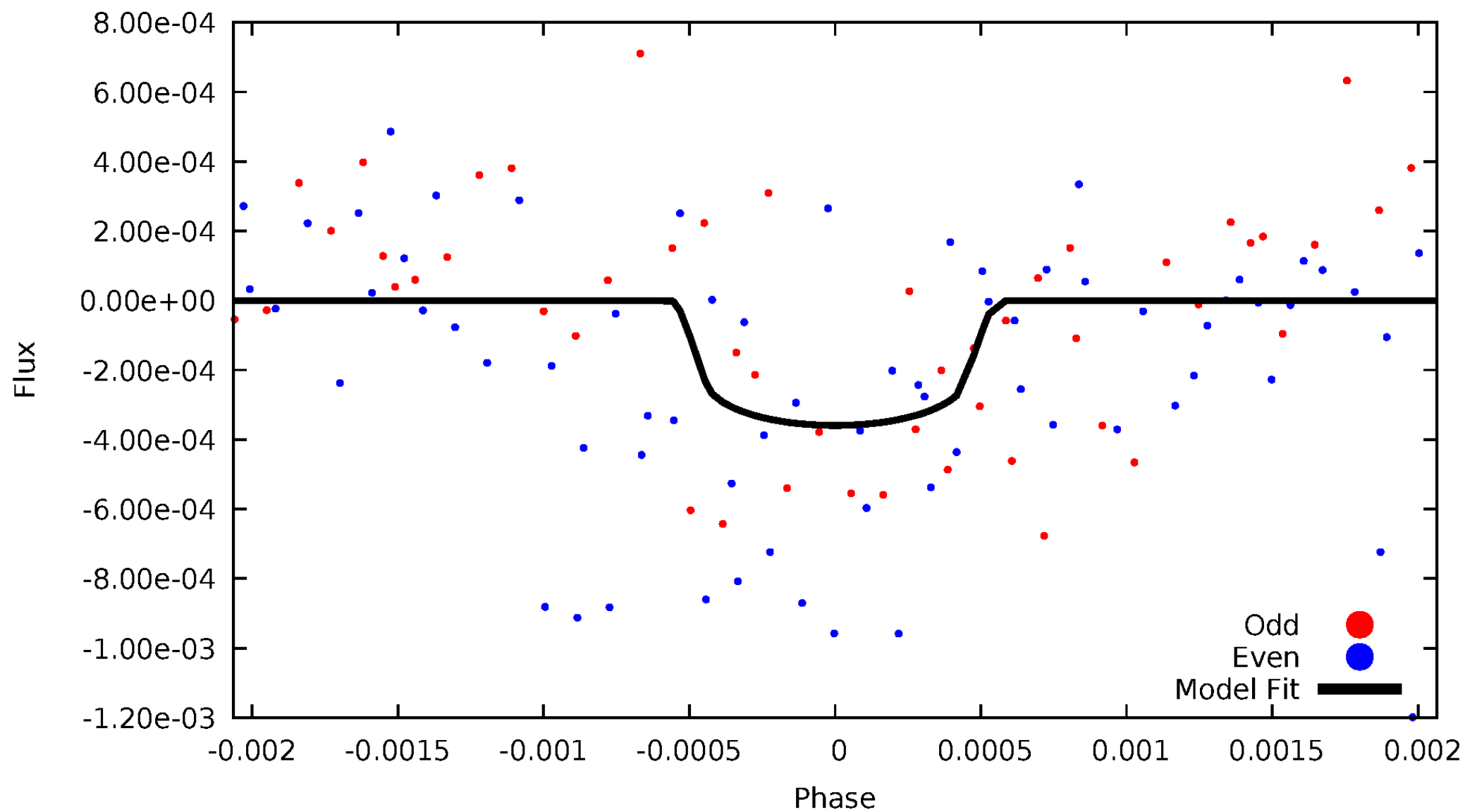


TCE 005649301-04



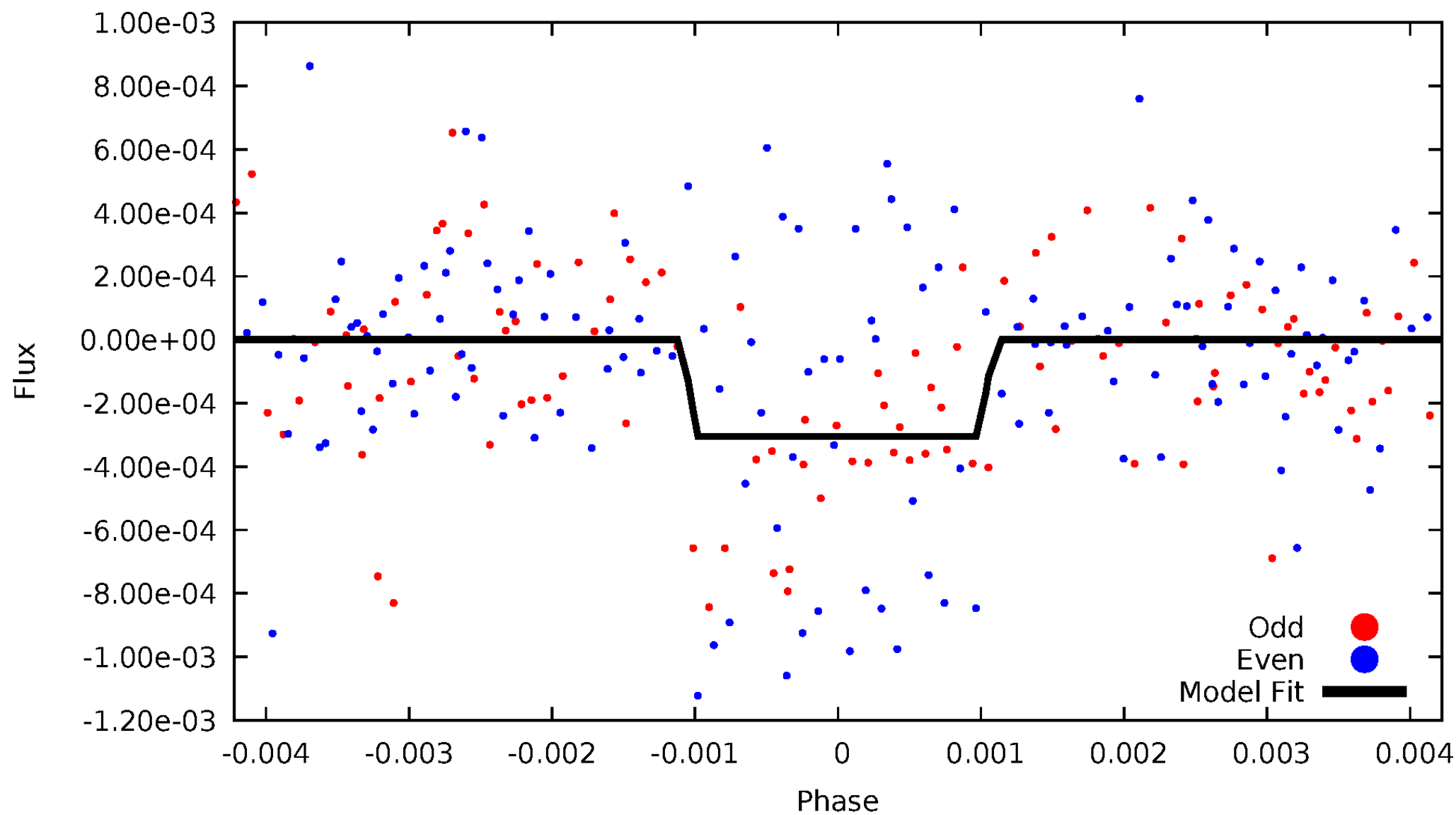
DV Odd/Even

TCE 005649301-04



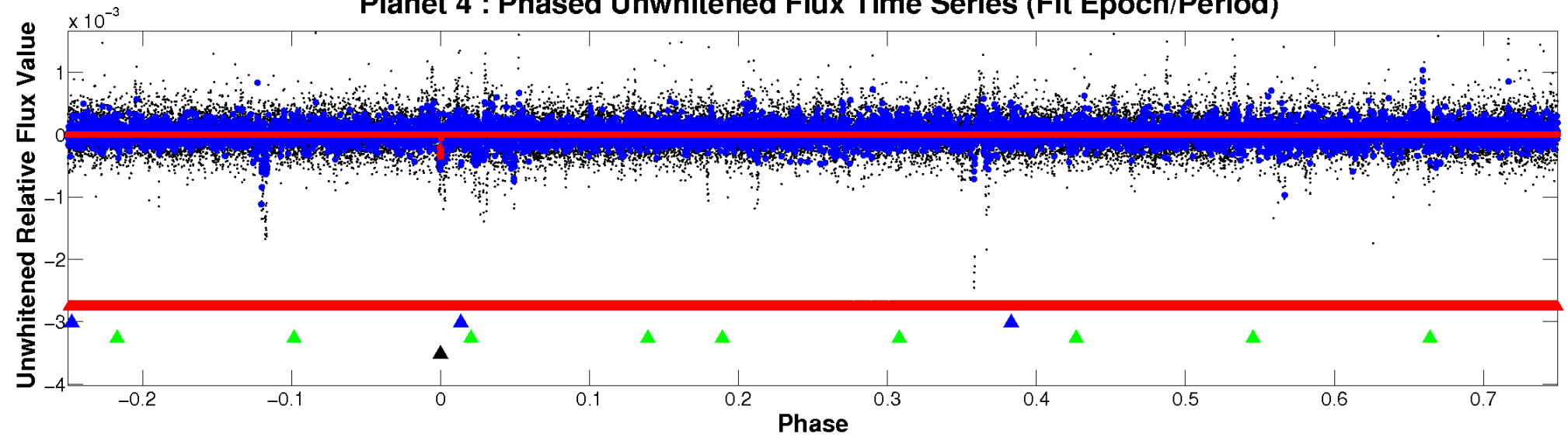
ALT Odd/Even

TCE 005649301-04

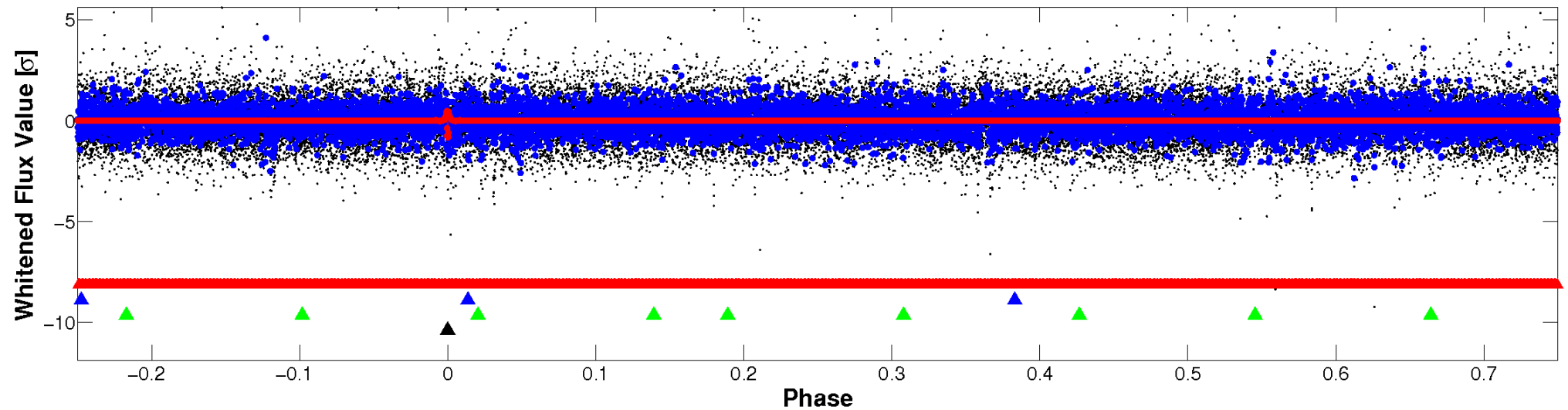


Non-Whitened Vs. Whitened Light Curve

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

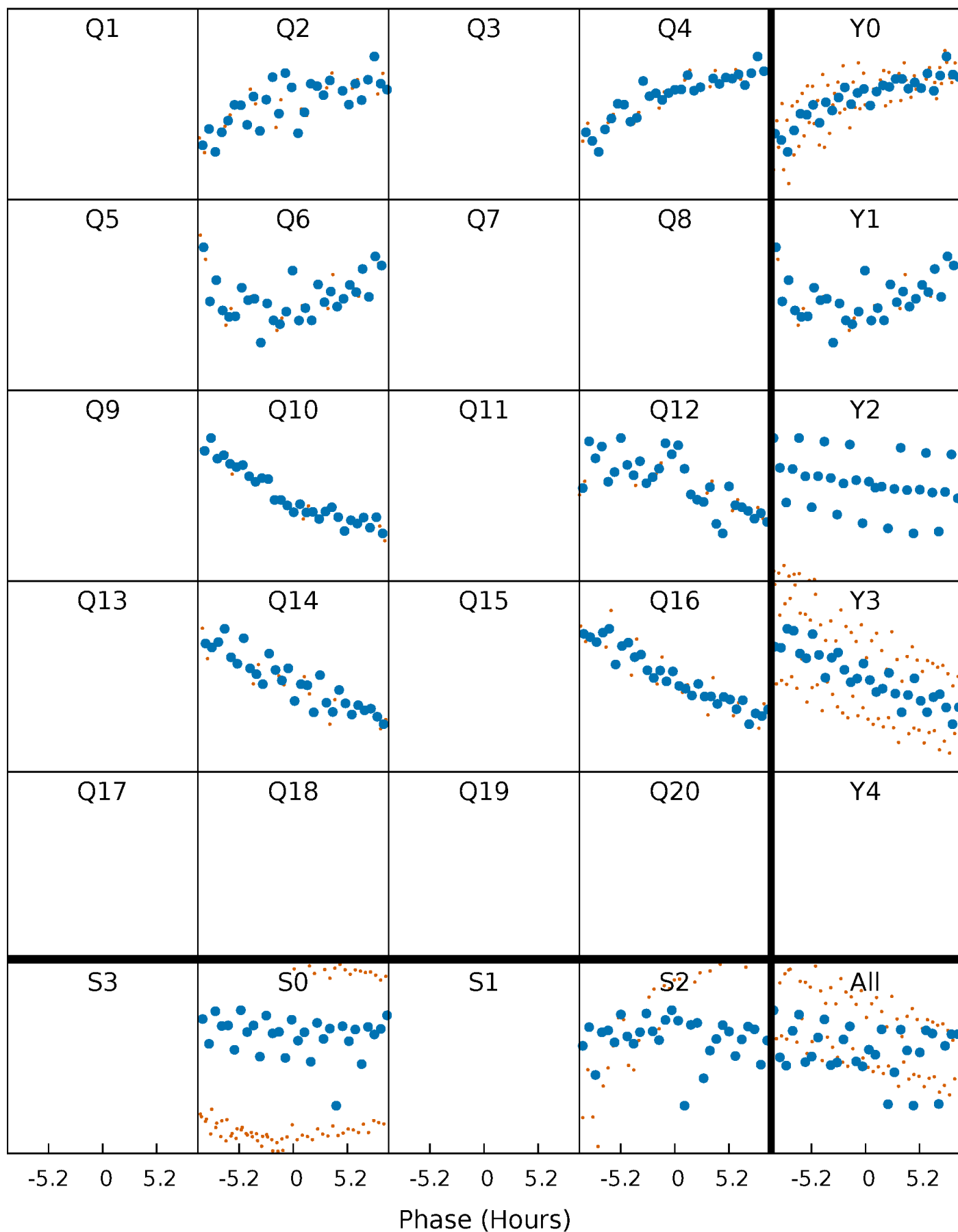


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



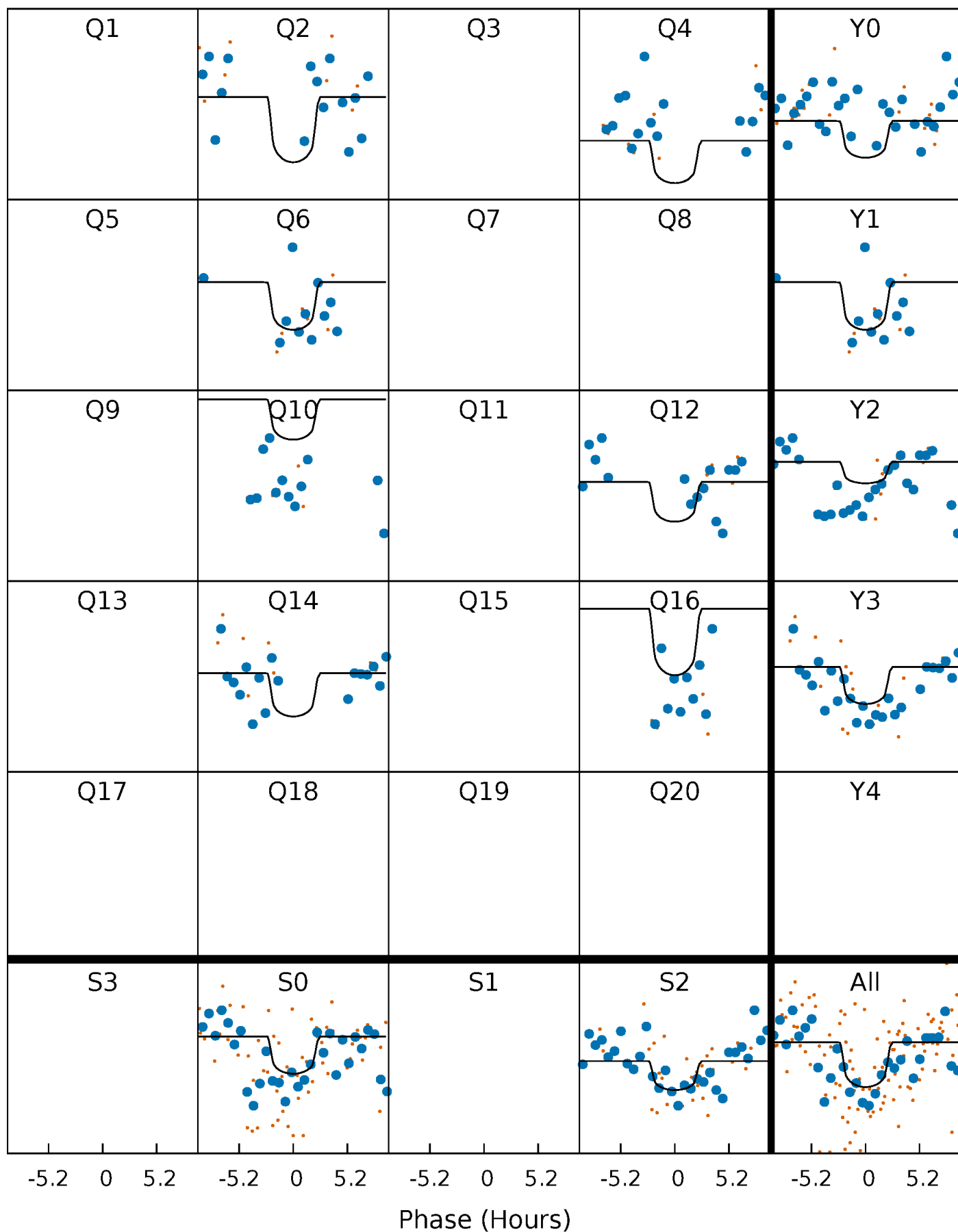
PDC Quarter-Phased Transit Curves

TCE 005649301-04 $P=185.381850$ Days $T_0=250.507709$ (BKJD)



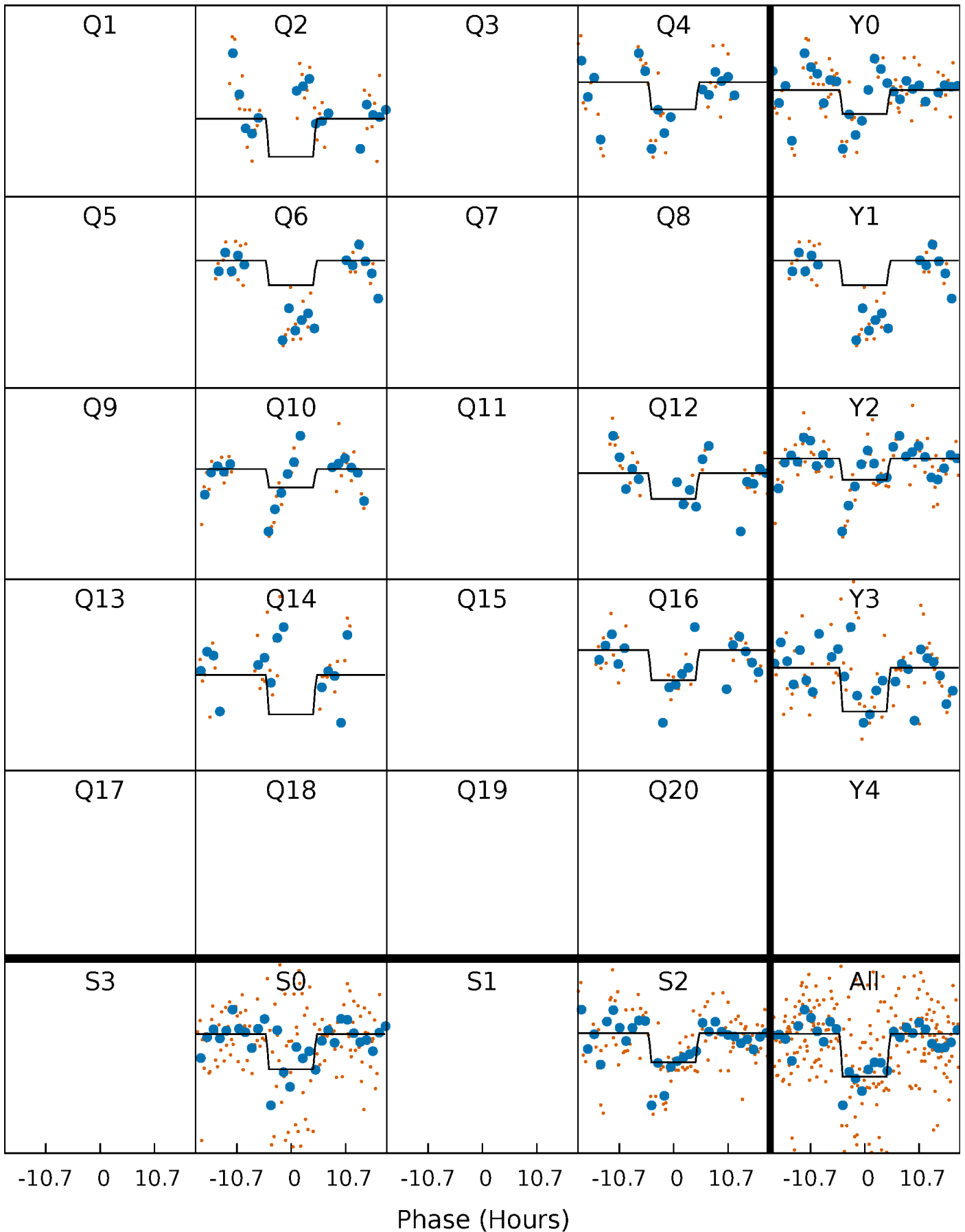
DV Quarter-Phased Transit Curves

TCE 005649301-04 $P=185.381850$ Days $T_0=250.507709$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

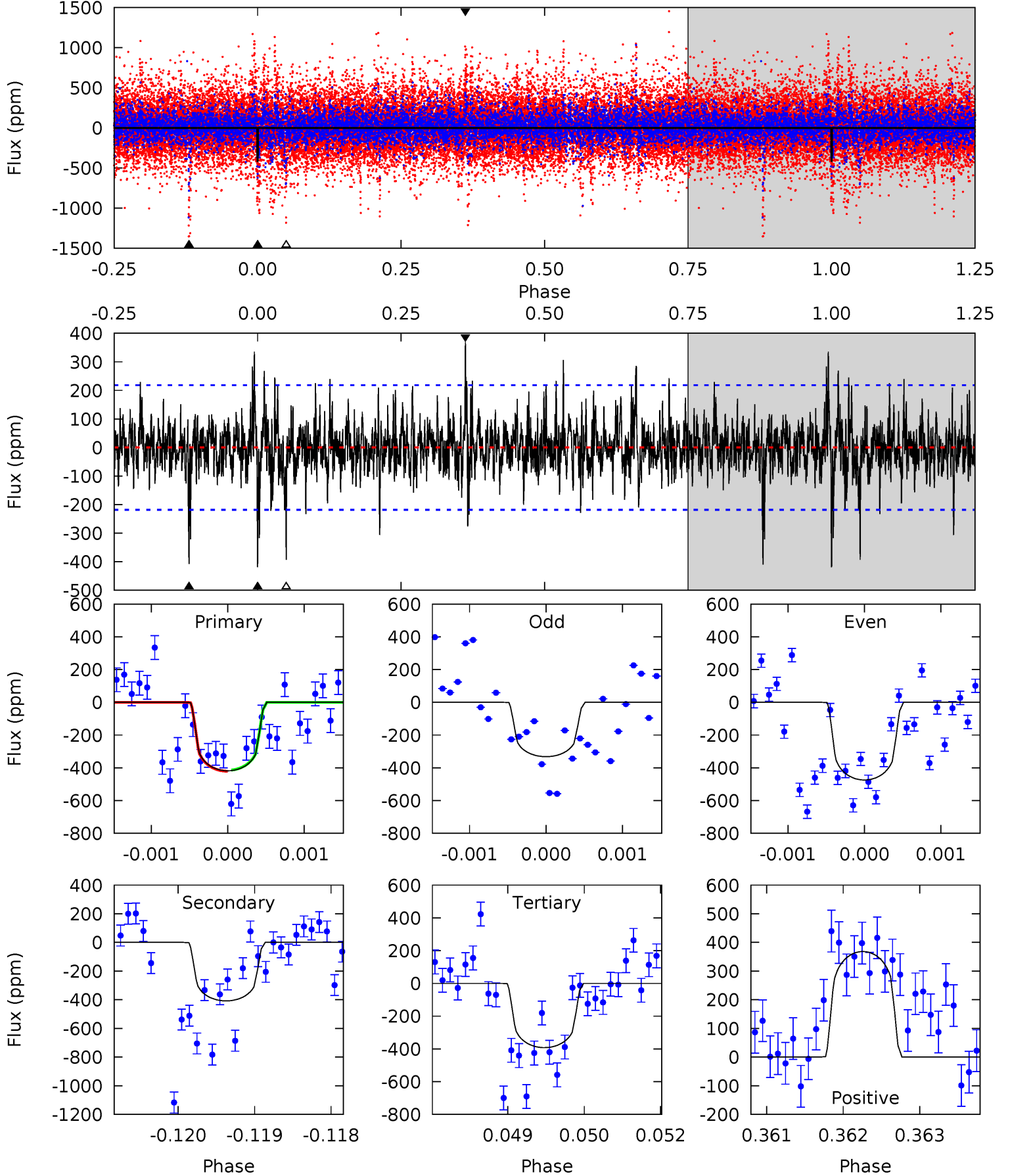
TCE 005649301-04 $P=185.380067$ Days $T_0=250.511889$ (BKJD)



DV Model-Shift Uniqueness Test

005649301-04, P = 185.381850 Days, E = 65.125859 Days

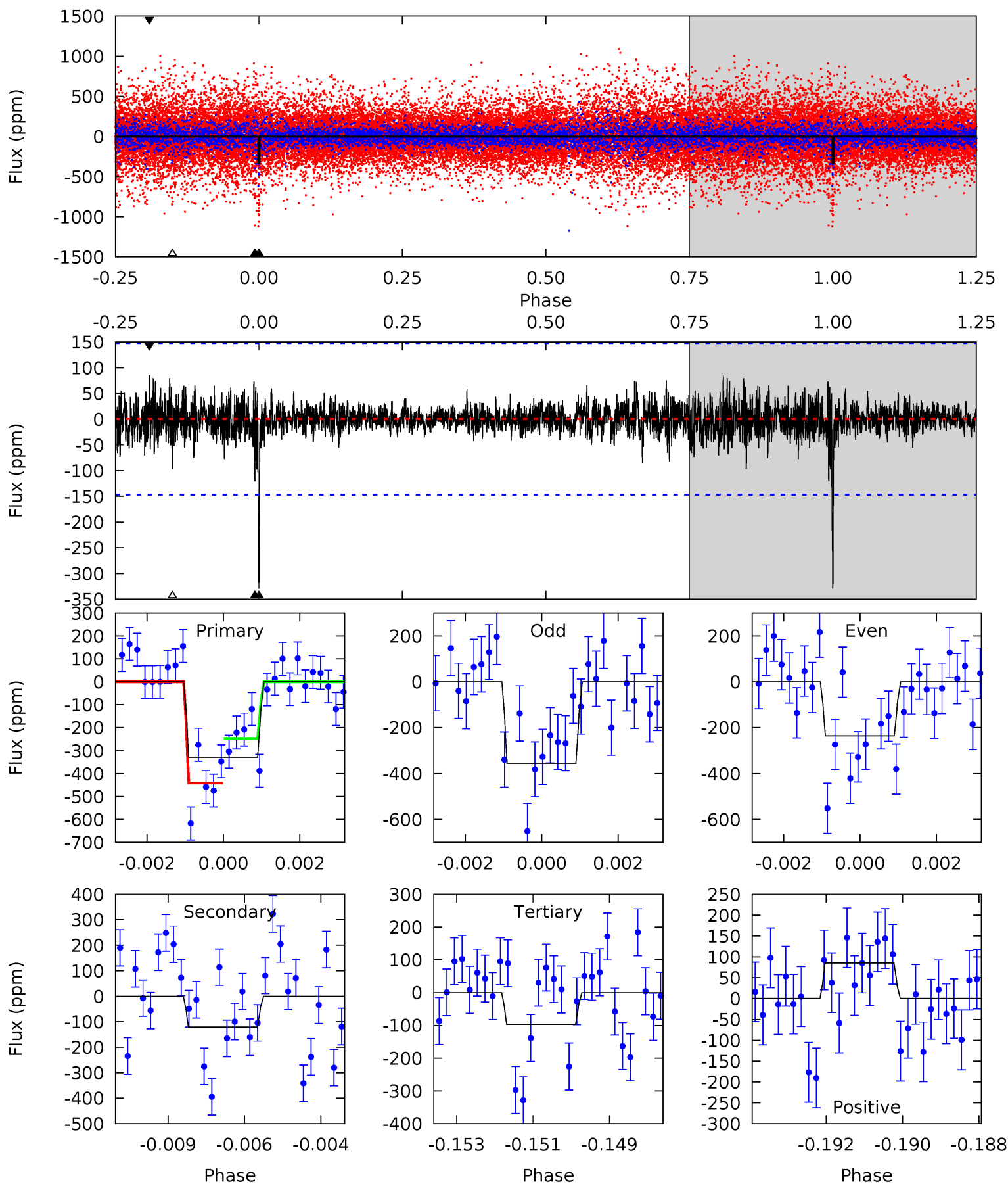
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	10.1	9.76	9.16	5.43	3.25	1.83	0.65	1.24	0.39	0.98	1.71	2.12	0.47	0.09



Alt Model-Shift Uniqueness Test

005649301-04, P = 185.380067 Days, E = 65.131822 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	4.35	3.50	3.08	5.31	3.07	0.75	8.41	8.84	0.85	1.28	2.07	0.80	0.21	3.41



Stellar Parameters For KIC 005649301

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5791^{+175}_{-175}	$4.068^{+0.368}_{-0.123}$	$0.040^{+0.250}_{-0.300}$	$1.568^{+0.383}_{-0.575}$	$1.050^{+0.133}_{-0.133}$	$0.383^{+0.923}_{-0.153}$
	+3%/-3%	+9%/-3%	+625%/-750%	+24%/-37%	+13%/-13%	+241%/-40%
Source	PHO1	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 005649301-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-408 ± 40	$4.24^{+3.70}_{-2.70}$	541^{+42}_{-56}	5050^{+3417}_{-1027}	5174^{+33608}_{-3657}
Alt.	-120 ± 28	$4.16^{+3.68}_{-2.61}$	544^{+39}_{-55}	4024^{+2342}_{-735}	1574^{+10388}_{-1122}

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

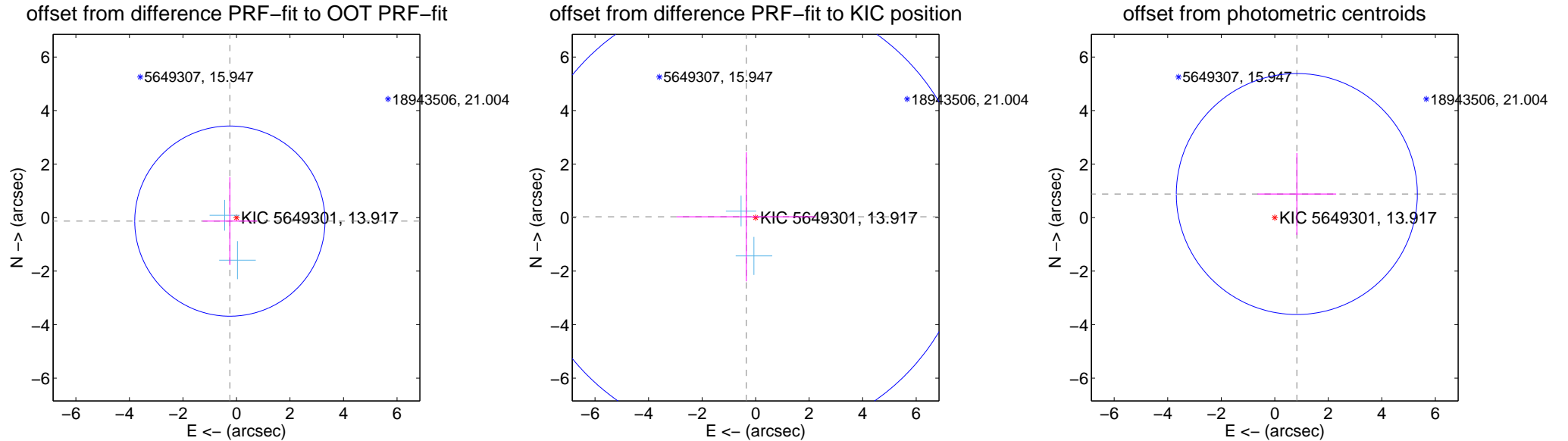
DV Centroid Data

Supplemental centroid analysis for 005649301-04. Kepler magnitude: 13.92. Transit SNR 4.79

There are 2 quarters with good PRF difference image offsets

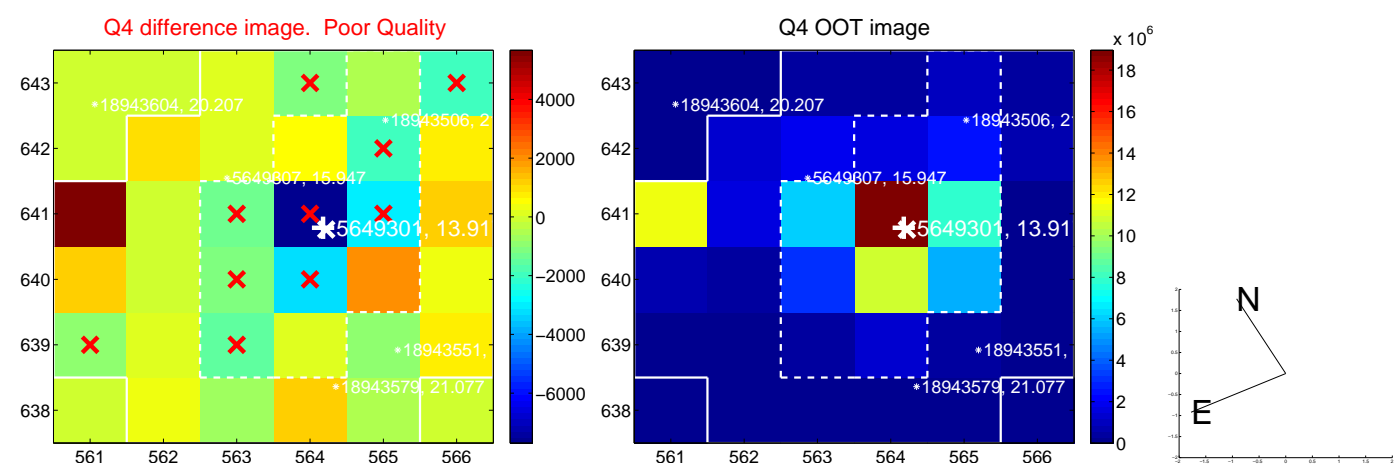
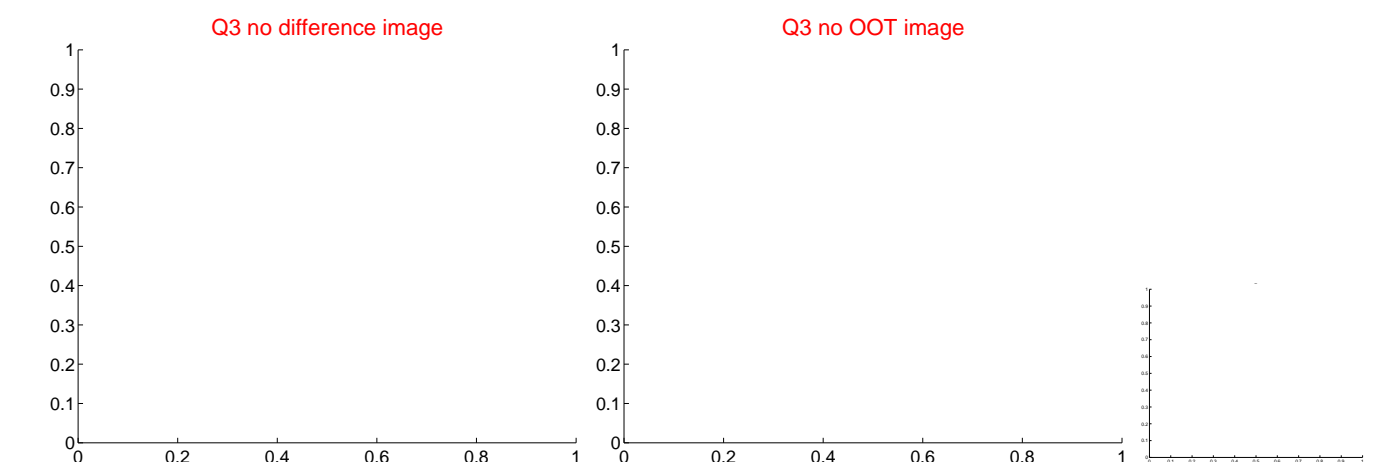
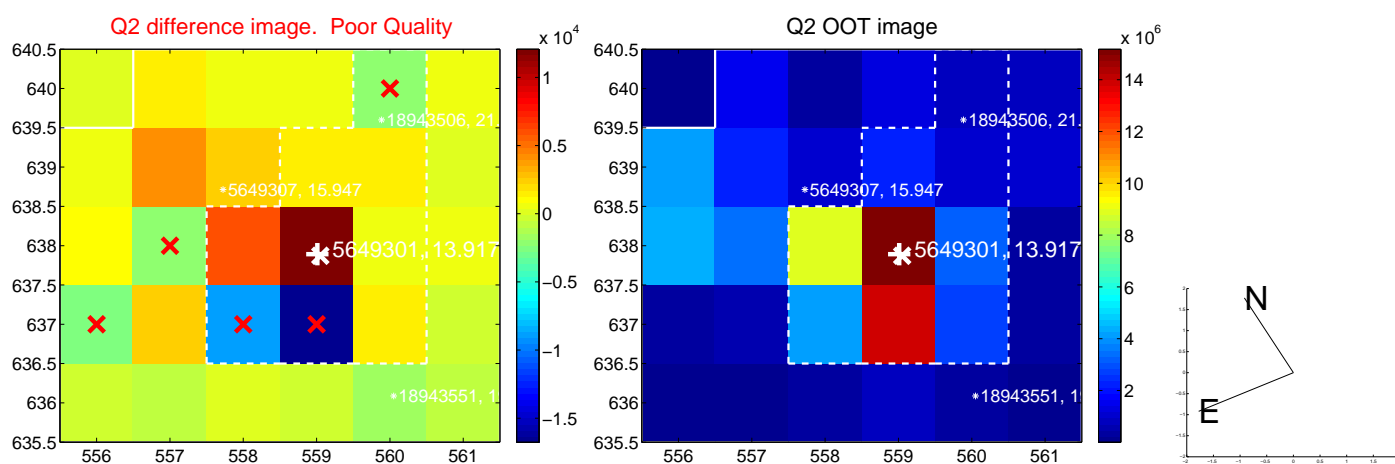
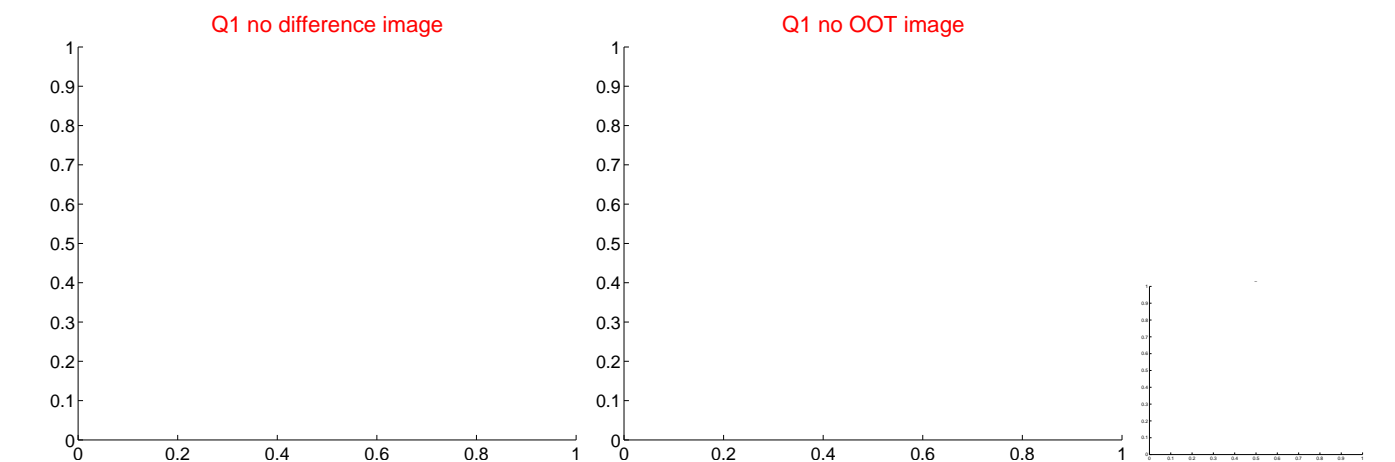
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.279 ± 1.185	0.24	0.247 ± 1.018	-0.131 ± 1.644
PRF-fit source offset from KIC position	0.350 ± 2.795	0.13	0.349 ± 2.603	0.029 ± 2.412
photometric centroid source offset	1.21 ± 1.50	0.80	-0.82 ± 1.47	0.88 ± 1.53

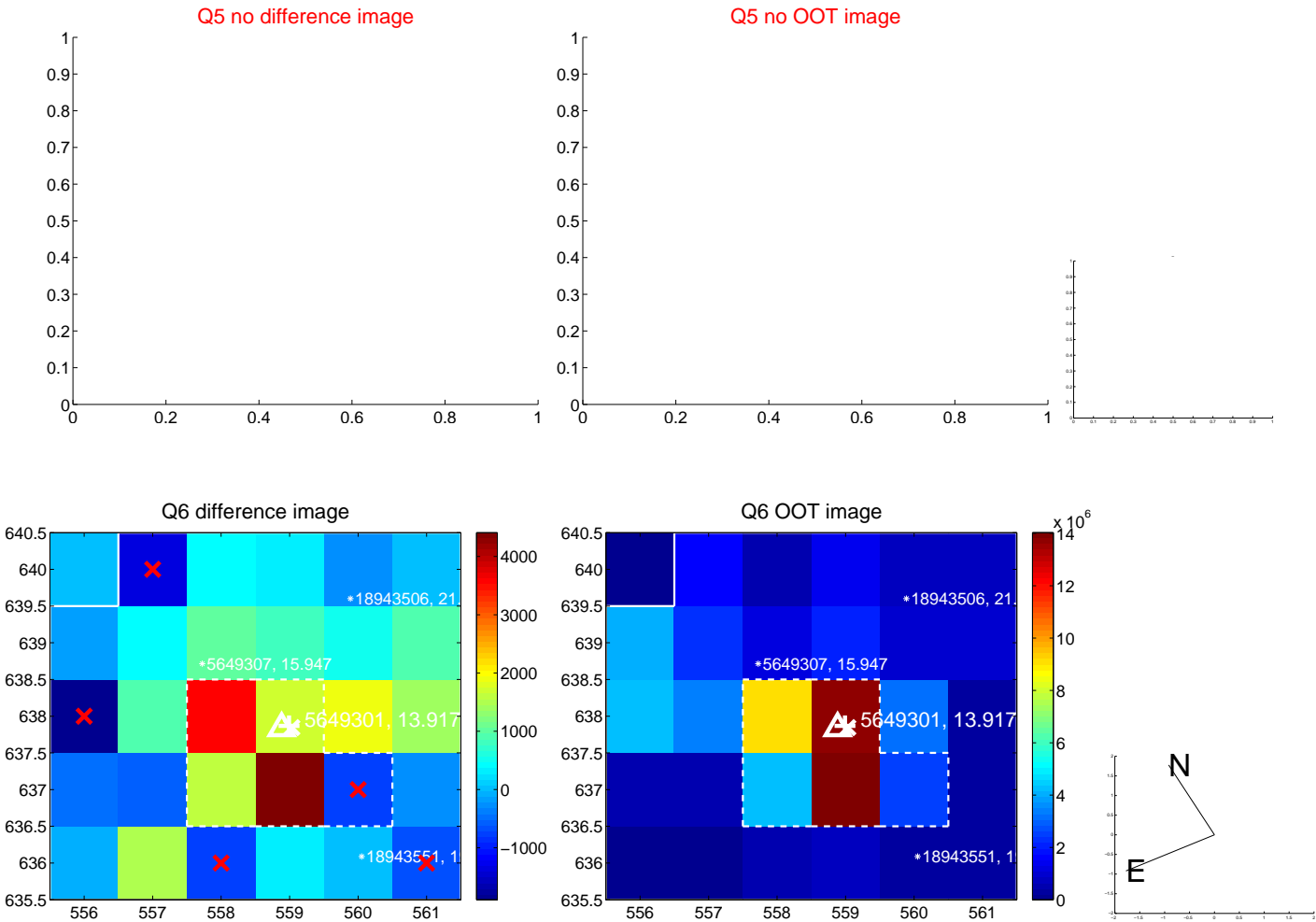


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

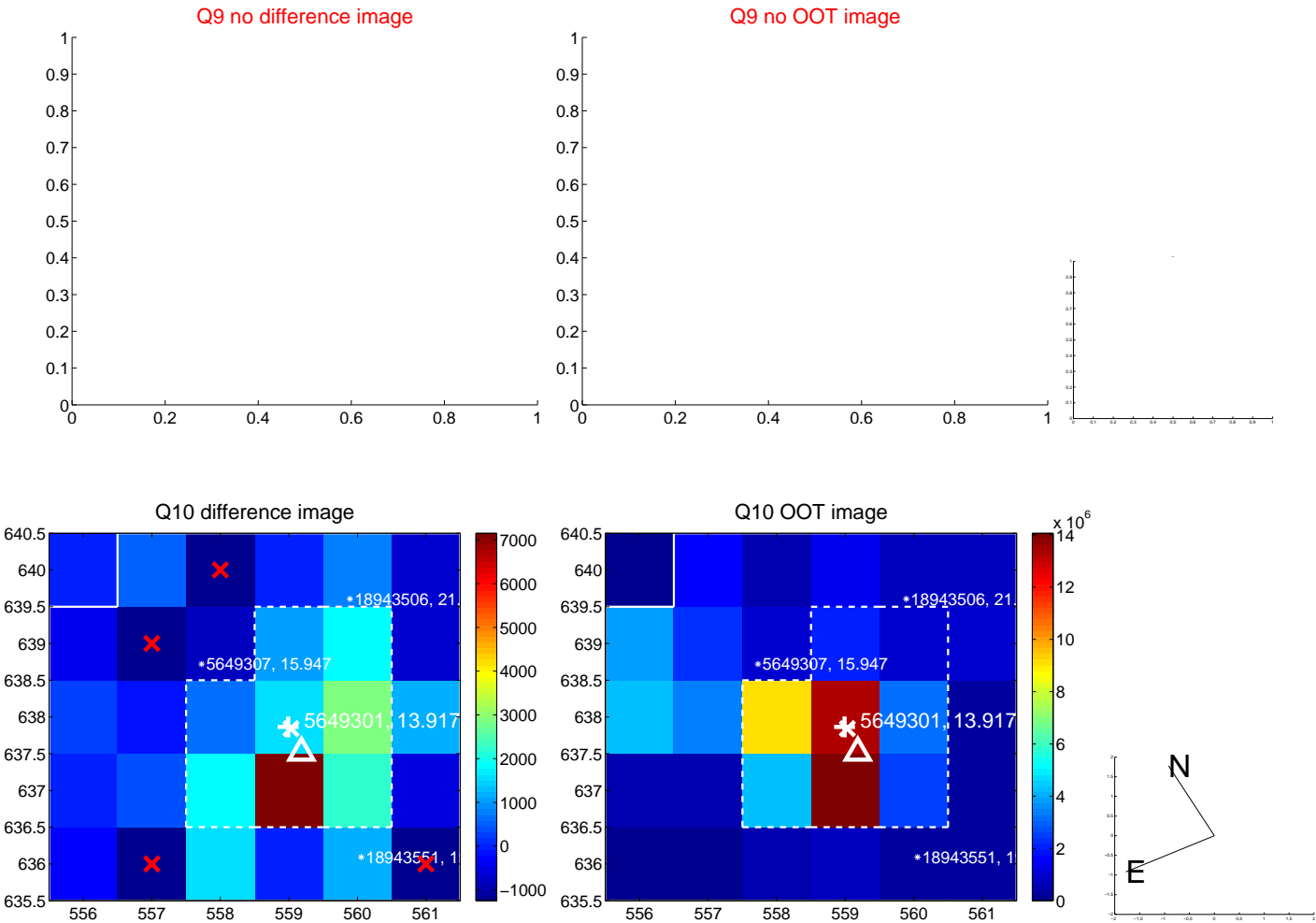
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



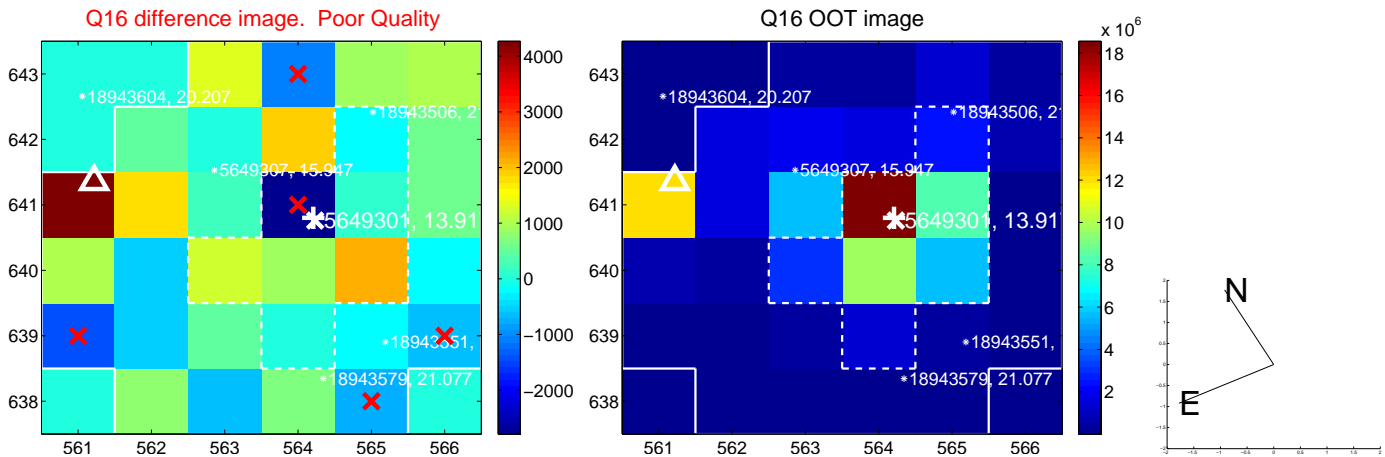
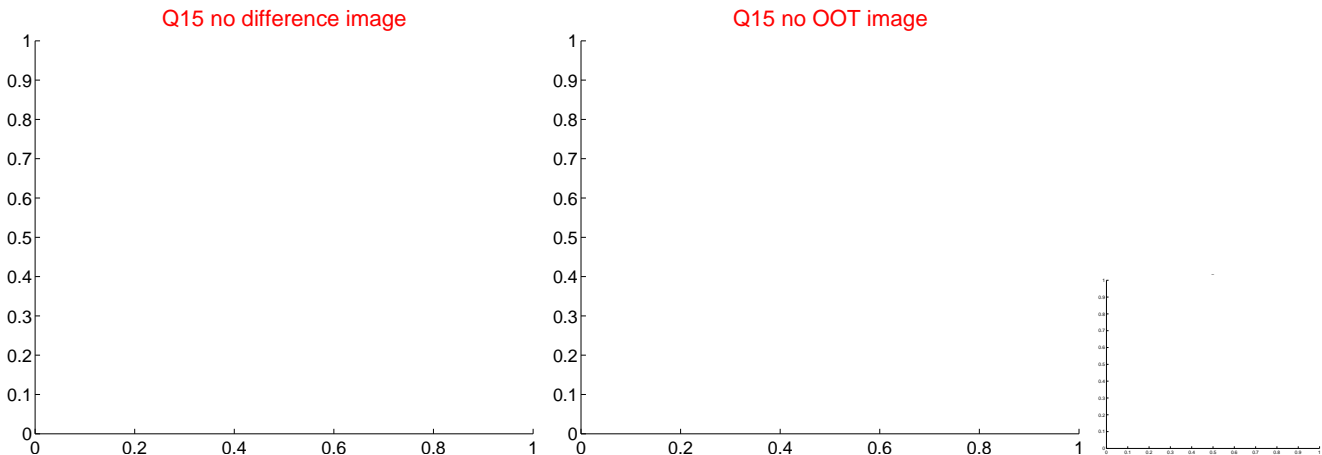
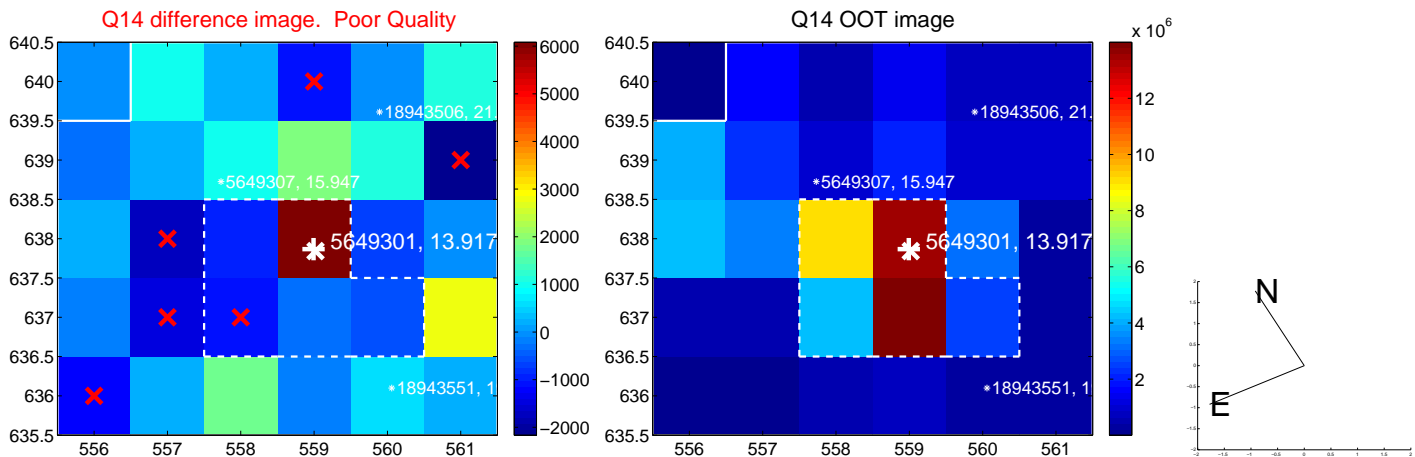
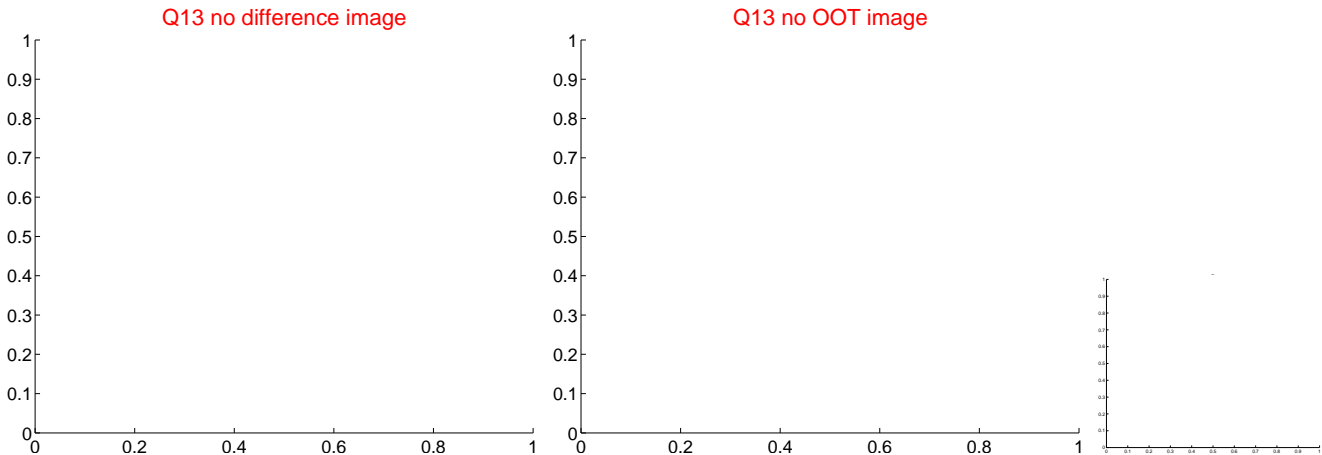
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



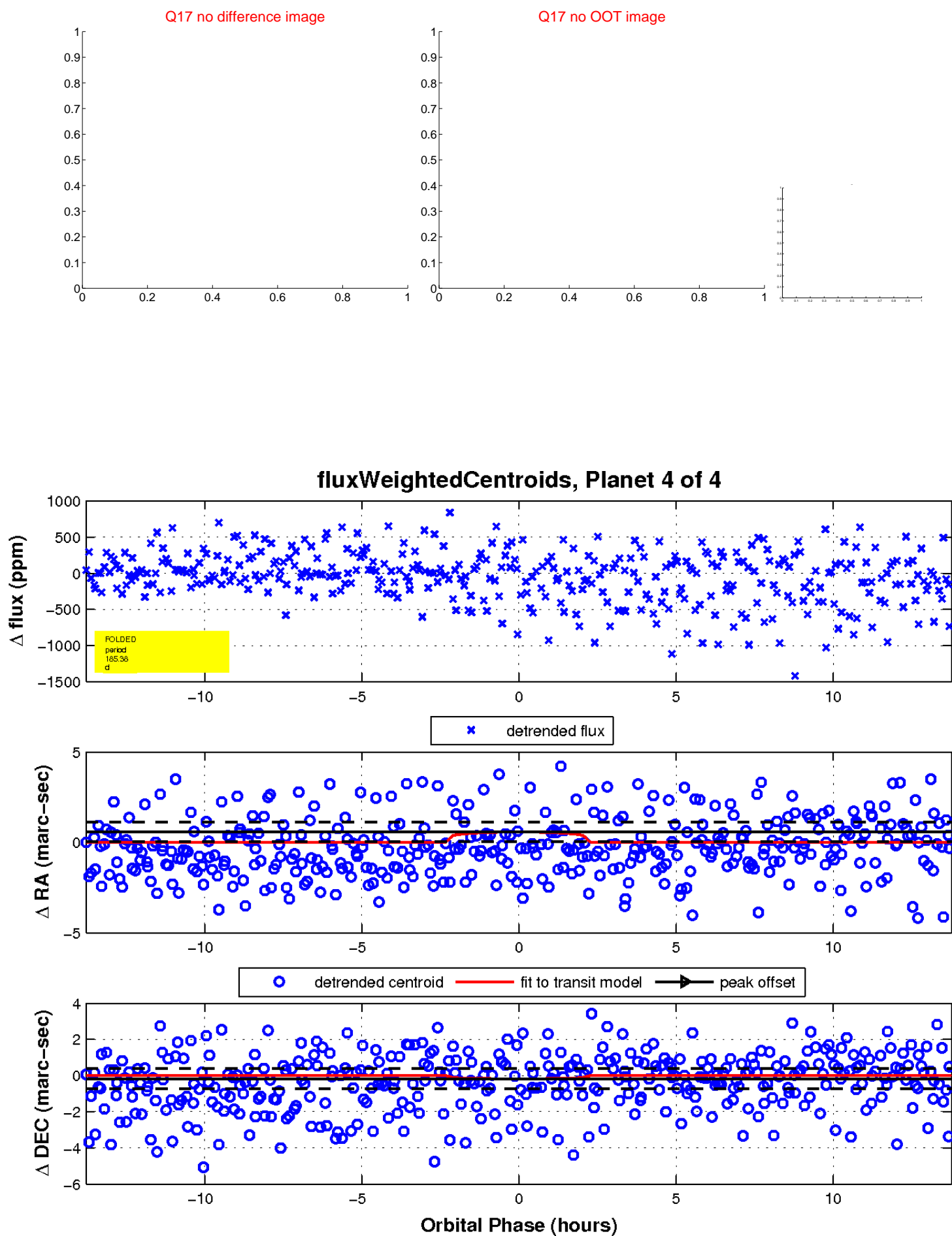
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

