

# KIC 009656741

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009656741-01	OBS	No	1.338113	132.615793	87.6	4.731	10.9	9.1	1.87	7557	2.02	13172.99
009656741-02	OBS	No	0.535258	131.533637	78.8	3.659	11.8	9.4	1.87	7557	1.70	44694.81
009656741-03	OBS	No	1.249092	131.953622	240.5	3.855	11.1	9.2	1.87	7557	3.31	14439.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009656741-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009656741-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
009656741-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT

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

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

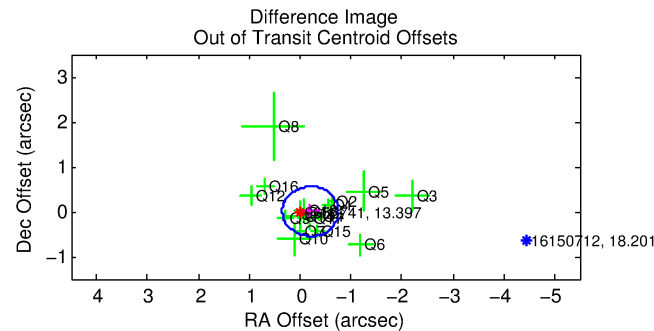
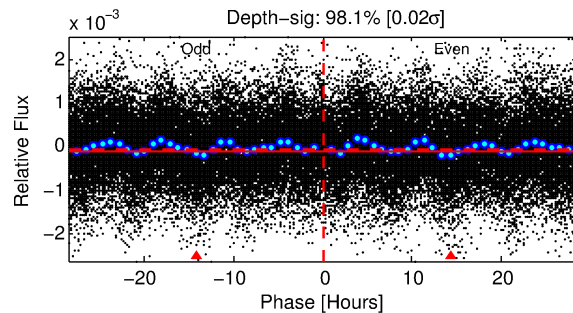
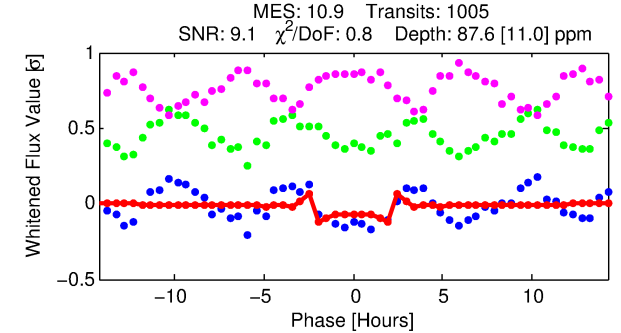
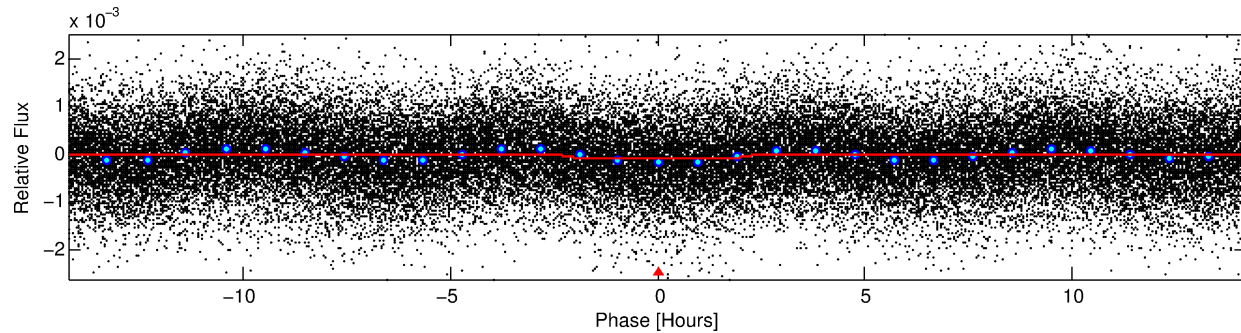
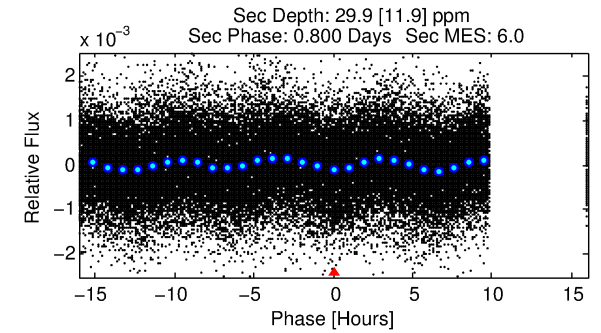
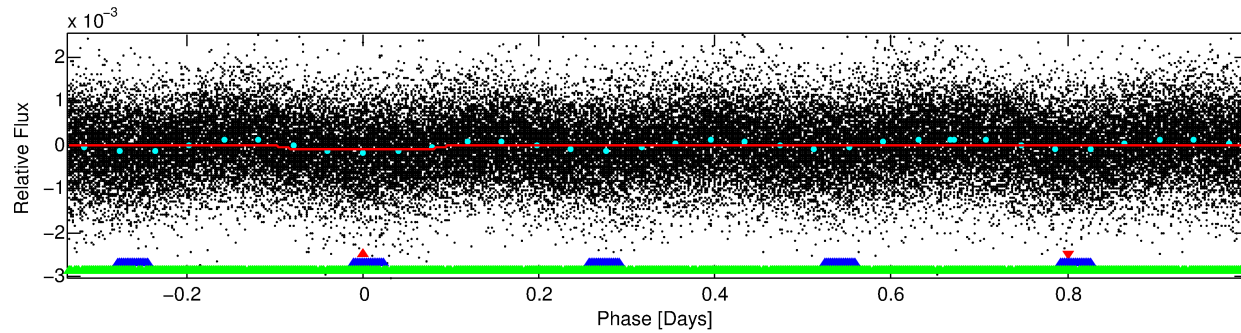
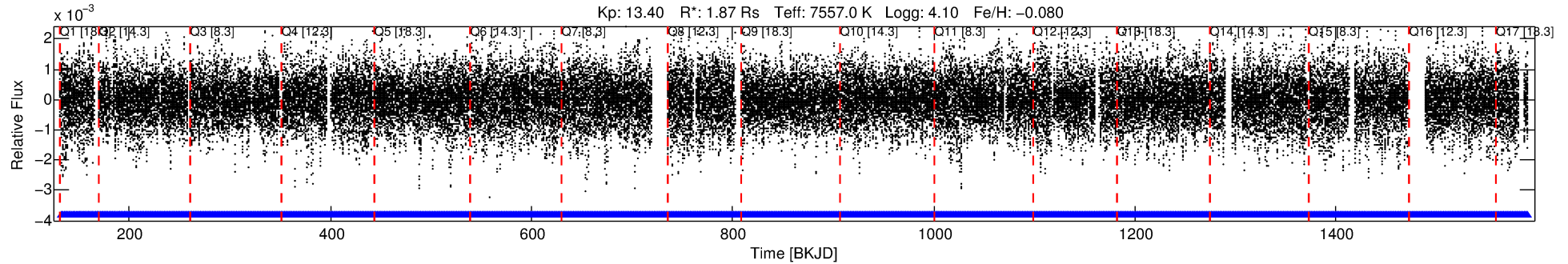
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009656741-01

No Significant Match Found

# DV One-Page Summary

KIC: 9656741 Candidate: 1 of 3 Period: 1.338 d



## DV Fit Results:

Period = 1.33811 [0.00001] d  
Epoch = 132.6158 [0.0017] BKJD  
Rp/R\* = 0.0099 [0.0012]  
a/R\* = 1.36 [0.39]  
b = 0.90 [0.13]  
Seff = 13172.99 [4907.56]  
Teq = 2732 [254] K  
Rp = 2.02 [0.61] Re  
a = 0.0279 [0.0063] AU  
Ag = 3.12 [1.77] [1.19σ]  
Teffp = 5613 [700] K [3.87σ]

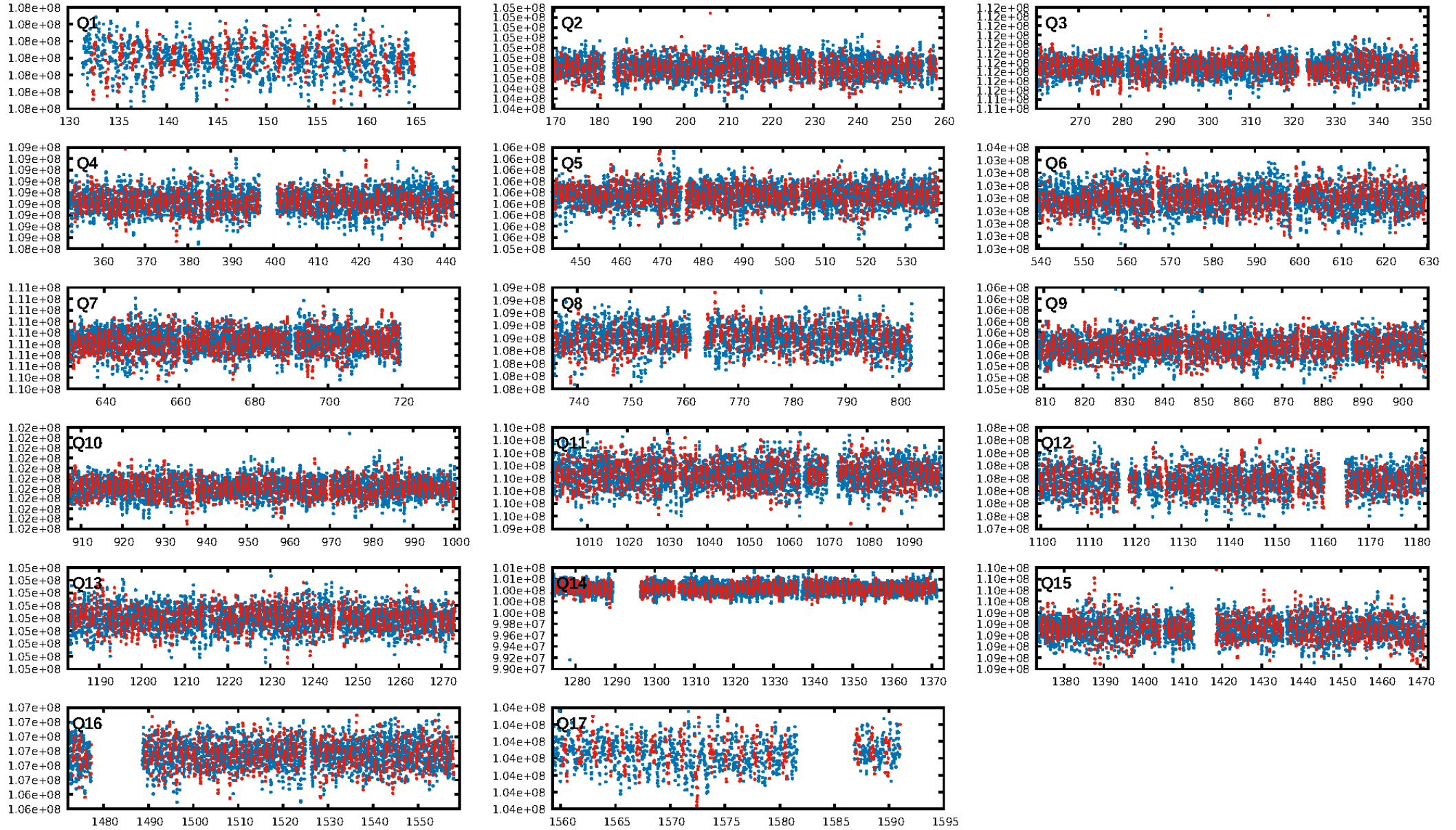
## DV Diagnostic Results:

ShortPeriod-sig: 27.4% [0.35σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [961/961]  
GhostDiagnostic-chr: -94.22  
Centroid-sig: 2.3%  
Centroid-so: 0.279 arcsec [1.15σ]  
OotOffset-rm: 0.202 arcsec [1.10σ]  
KicOffset-rm: 0.311 arcsec [1.55σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.82 [14/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:06:40 Z

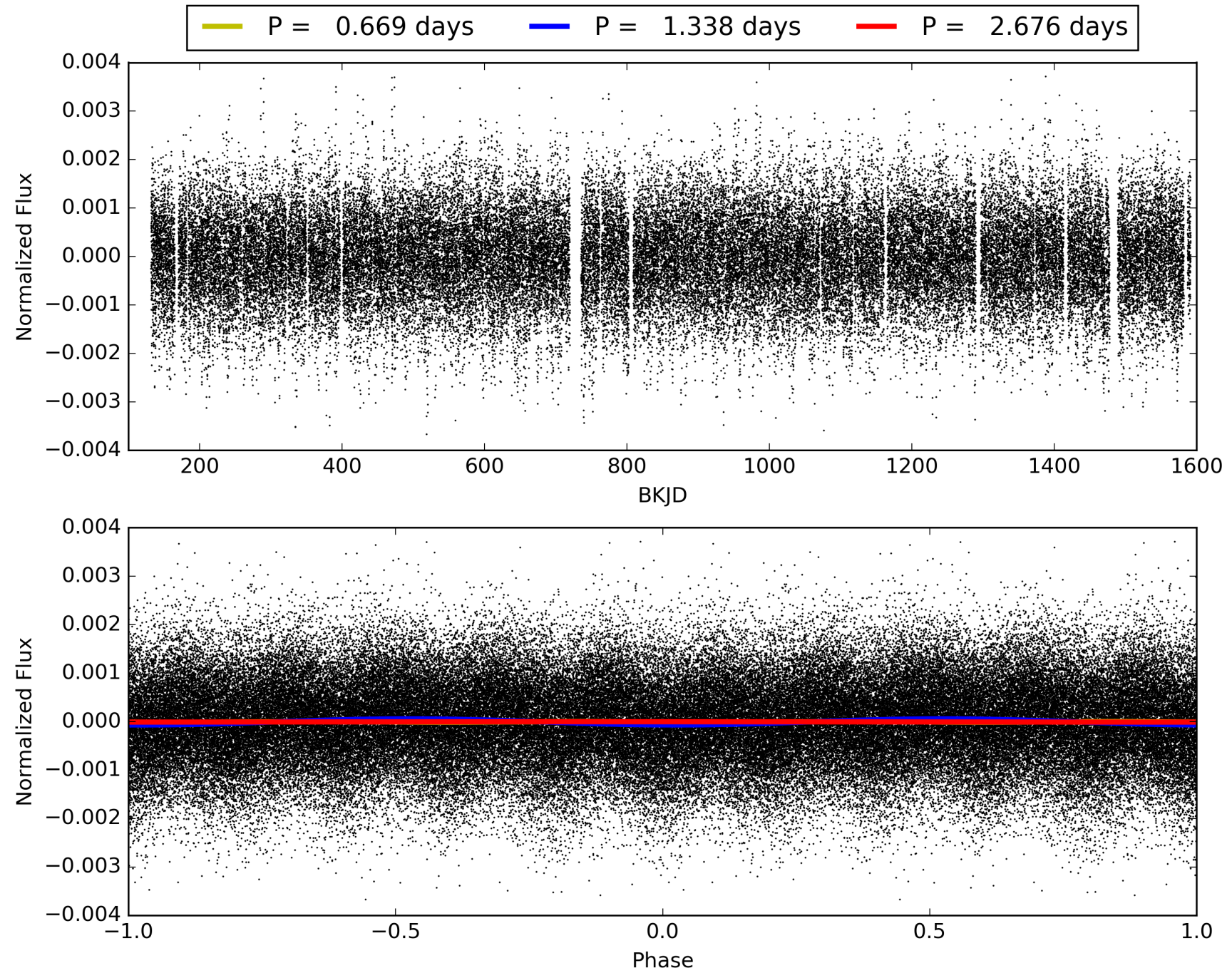
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009656741-01, PDC Light Curves





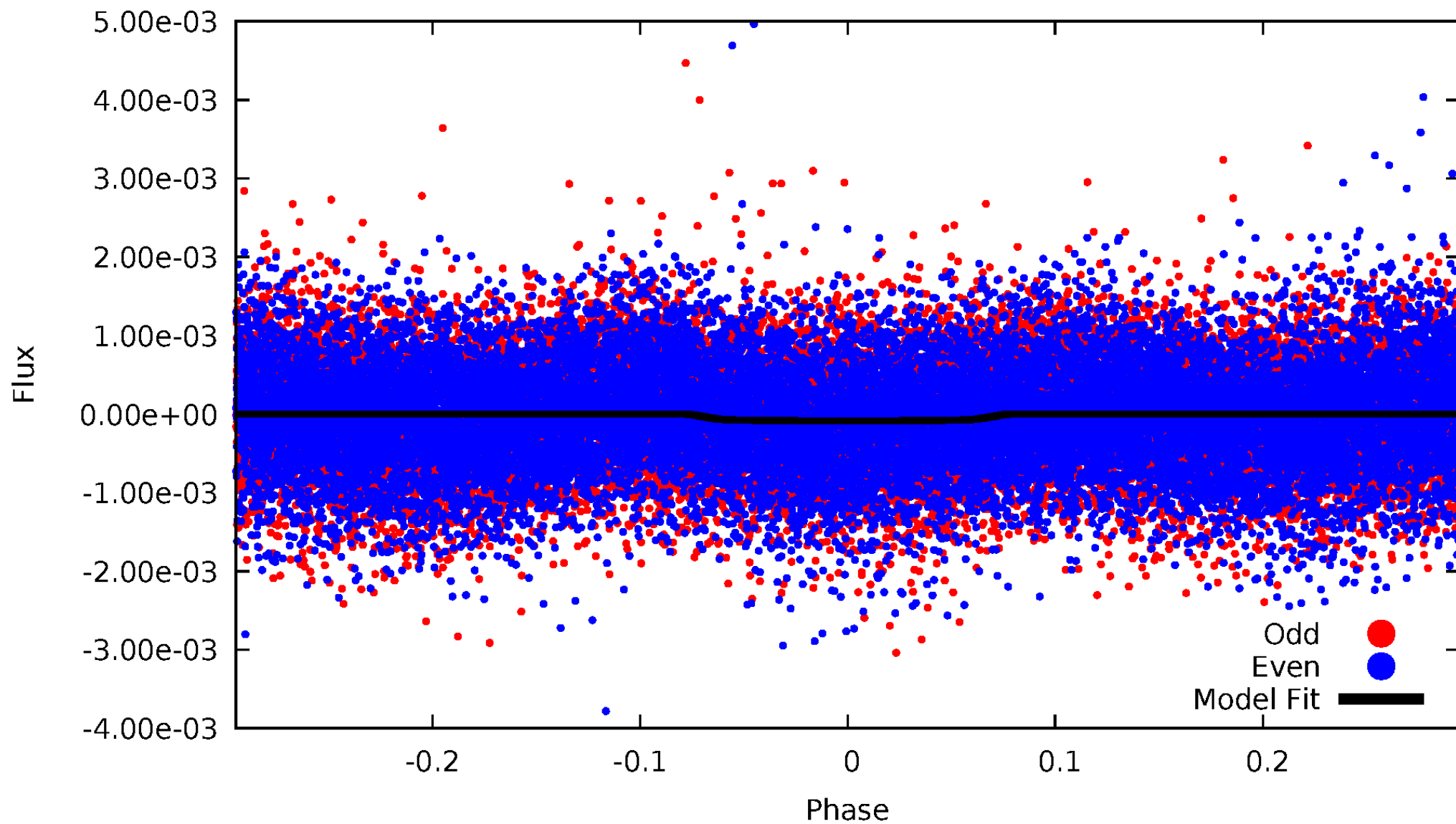
TCE 009656741-01





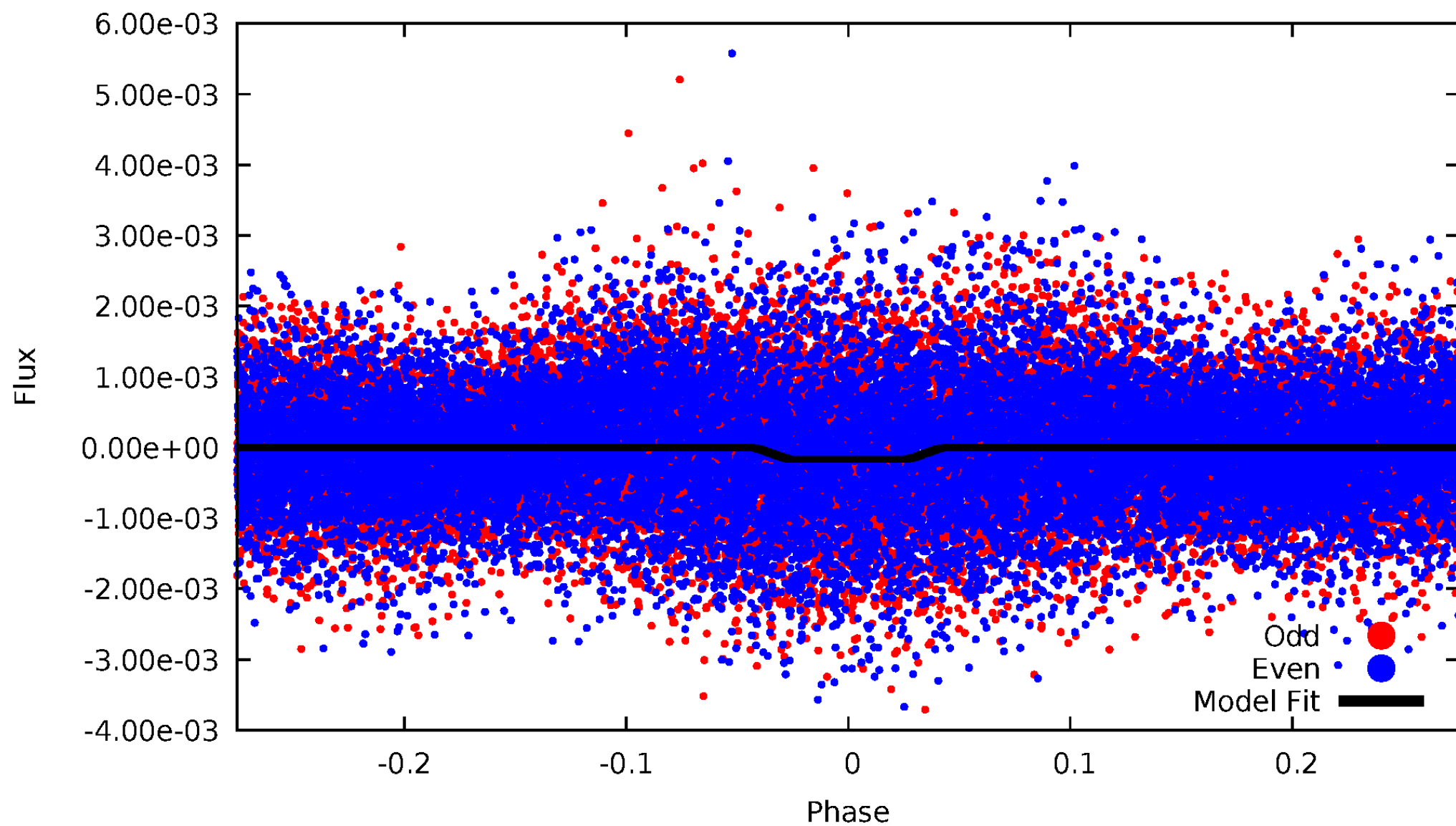
# DV Odd/Even

TCE 009656741-01

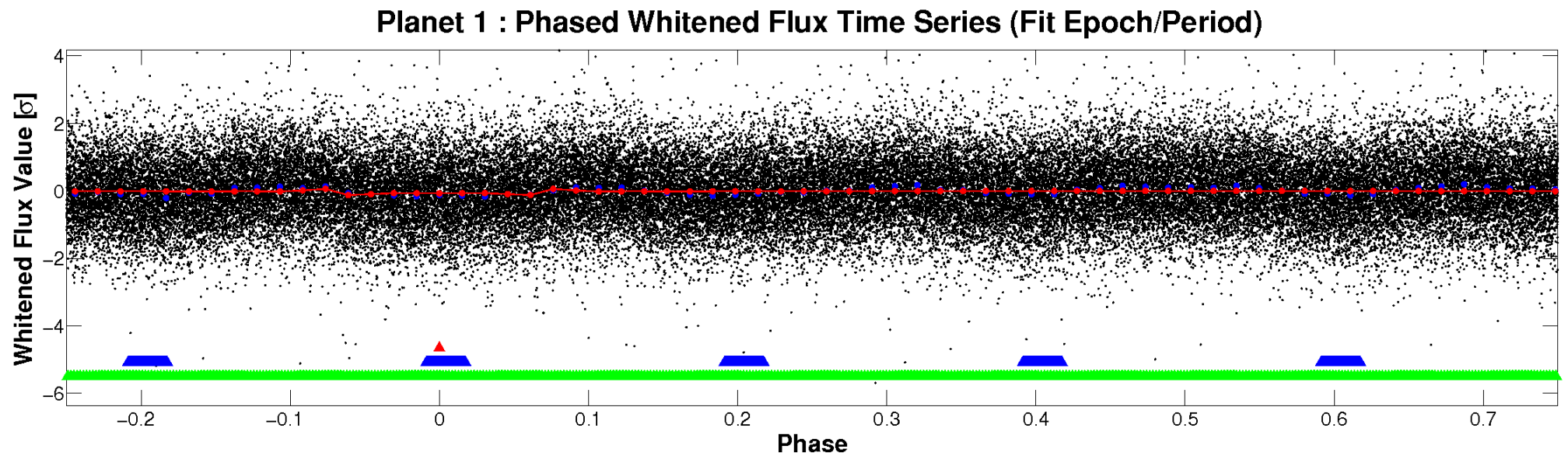
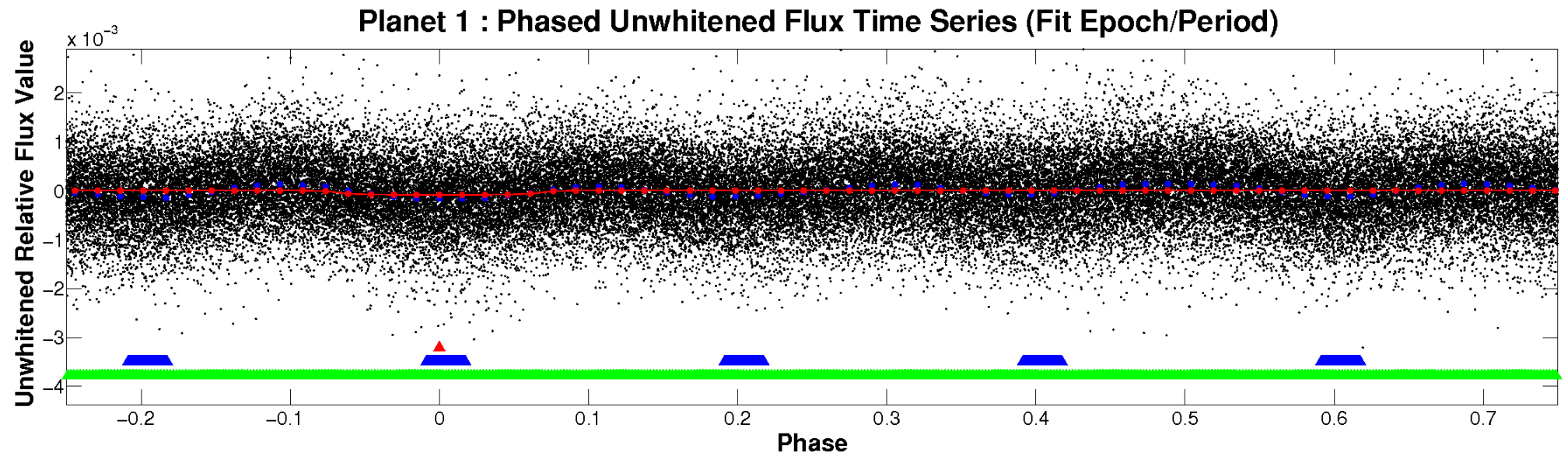


# ALT Odd/Even

TCE 009656741-01



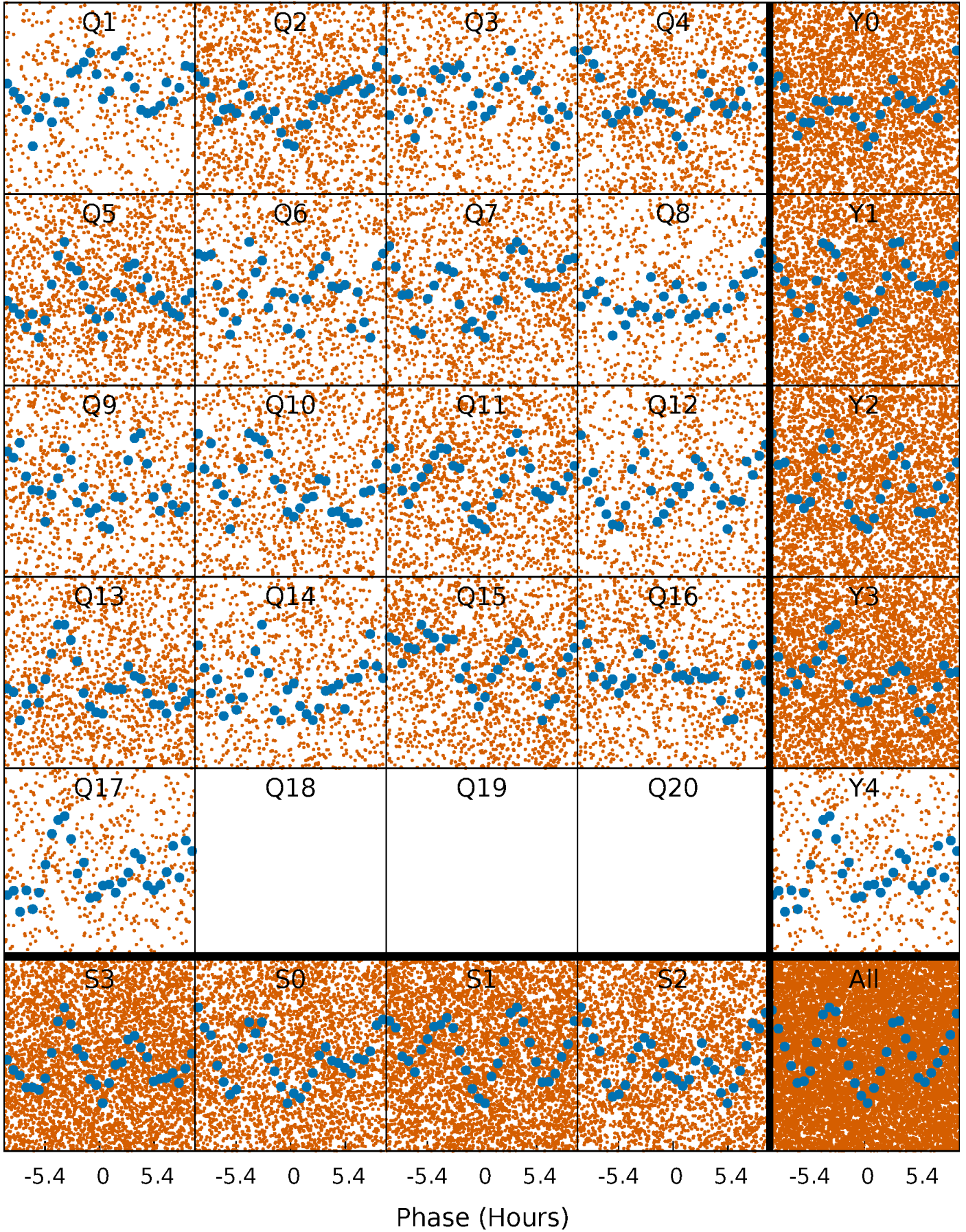
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

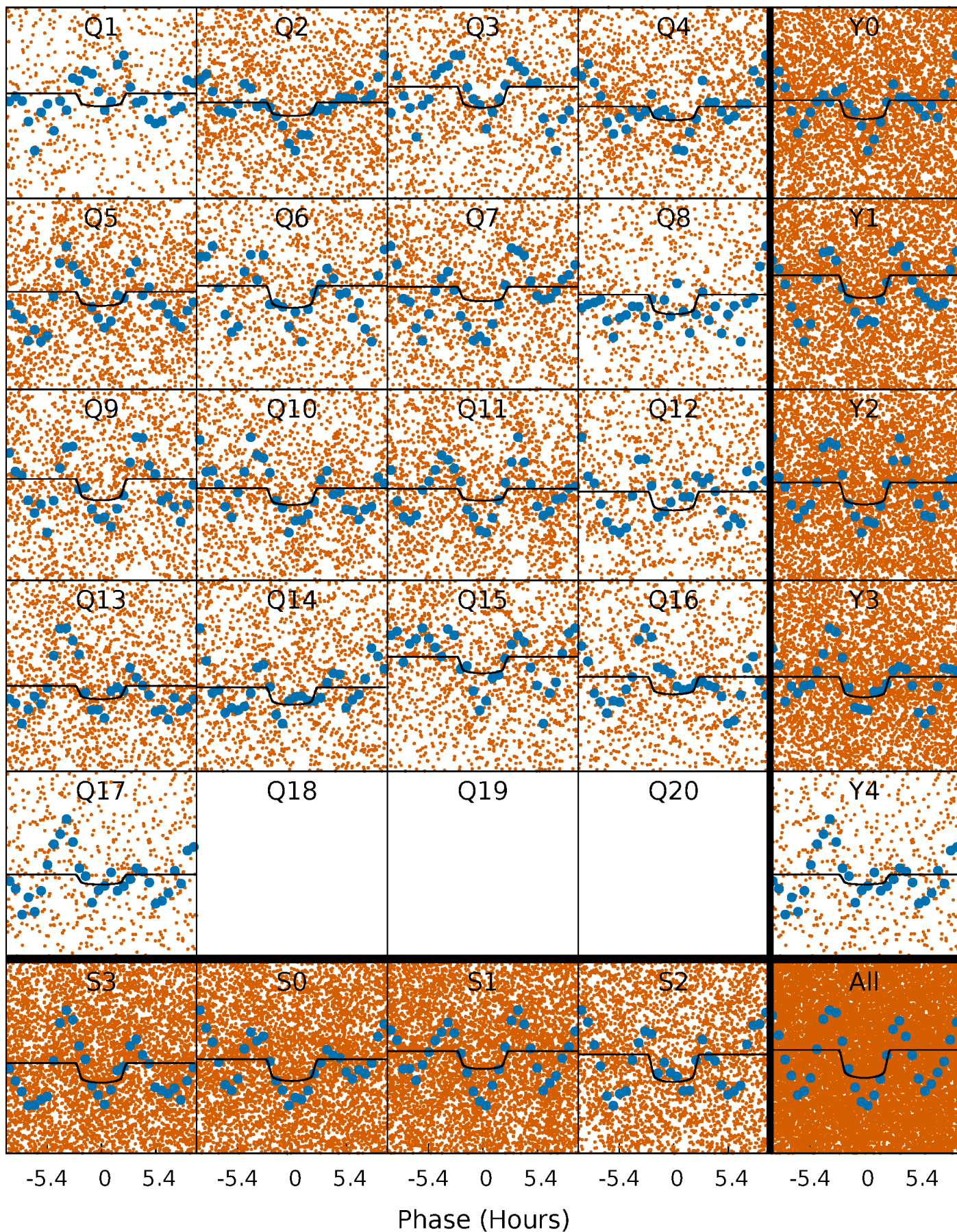
TCE 009656741-01 P= 1.338113 Days  $T_0=132.615793$  (BKJD)





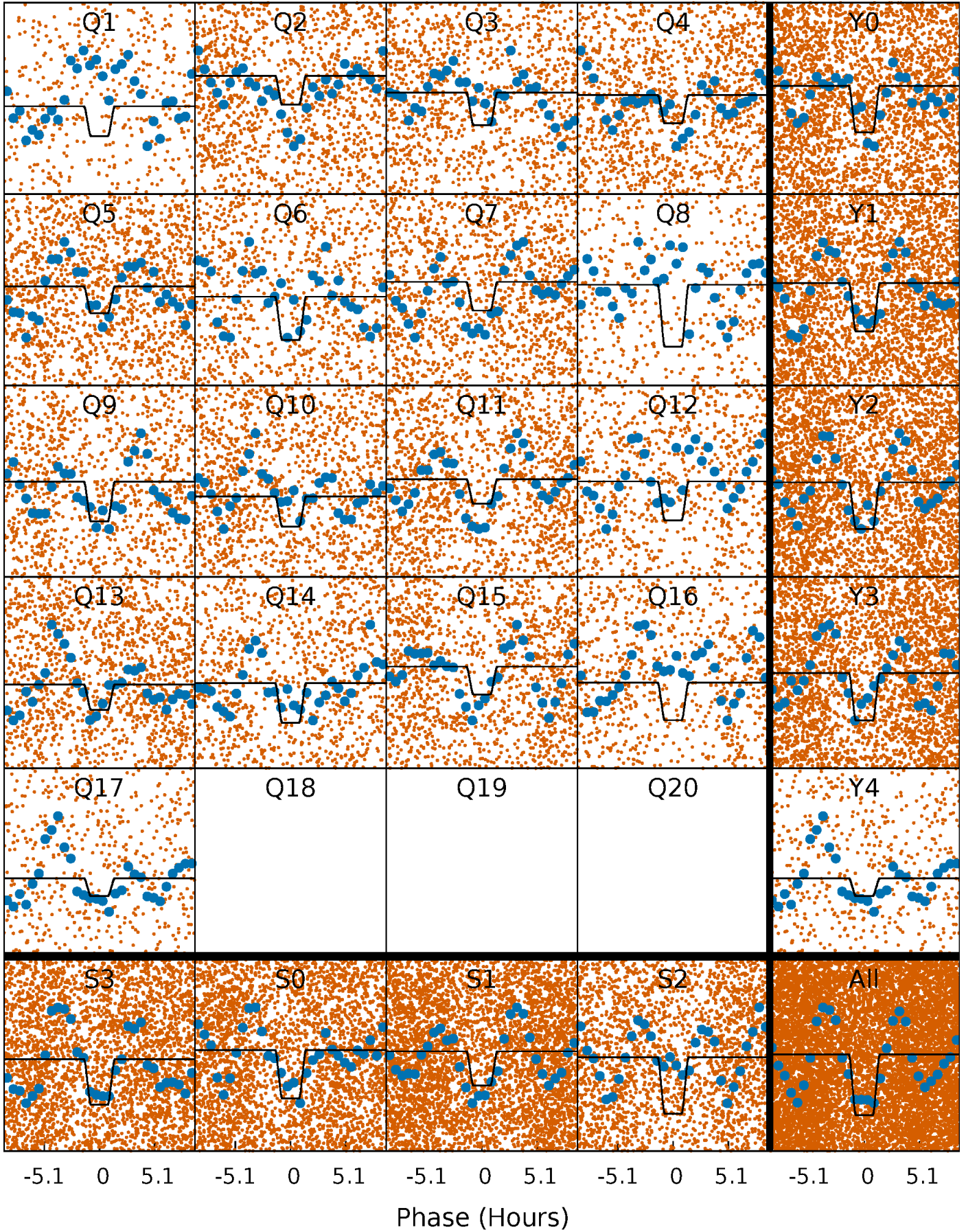
# DV Quarter-Phased Transit Curves

TCE 009656741-01 P= 1.338113 Days  $T_0=132.615793$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009656741-01 P= 1.338131 Days  $T_0=132.610465$  (BKJD)

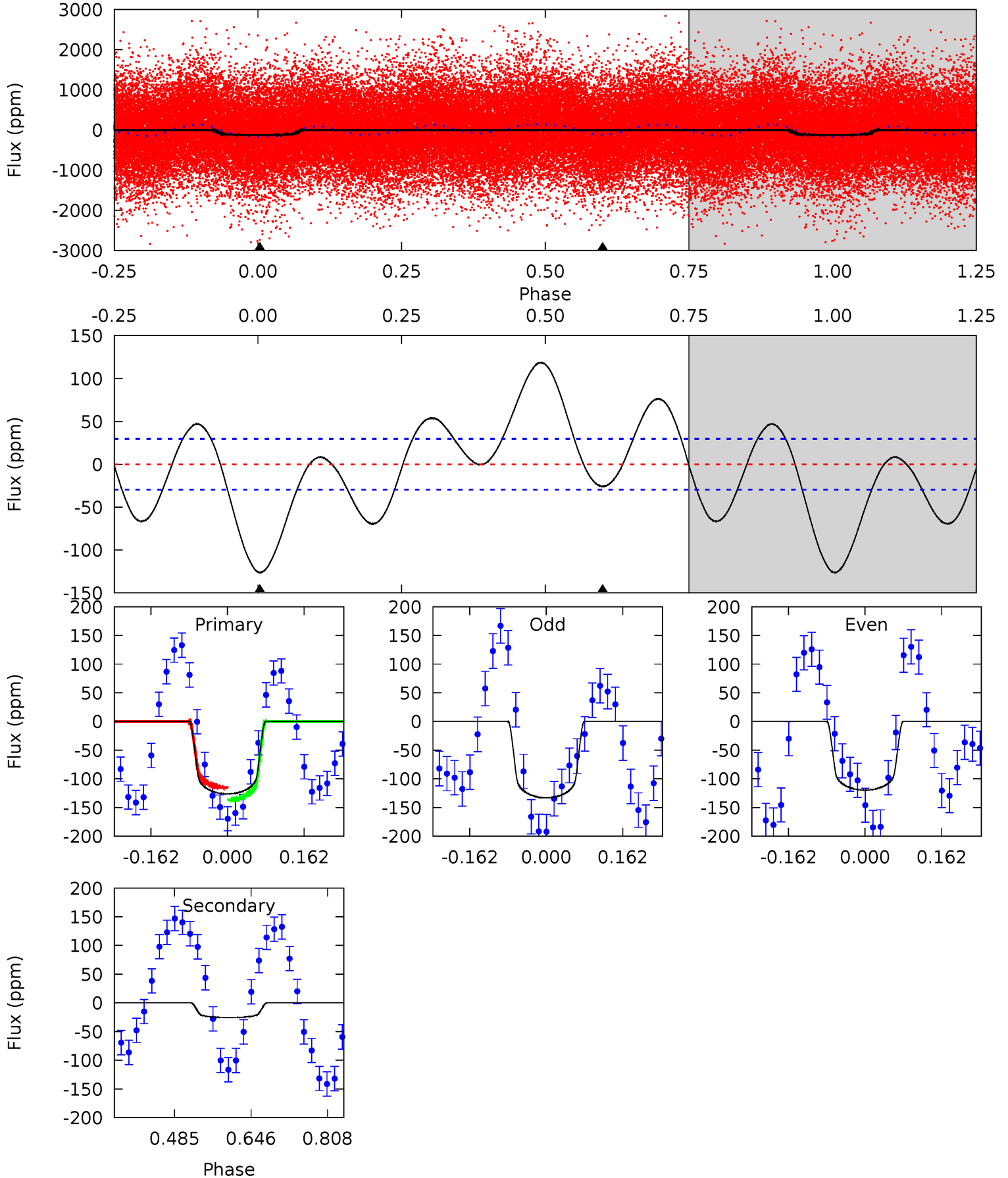




# DV Model-Shift Uniqueness Test

009656741-01, P = 1.338113 Days, E = 131.277680 Days

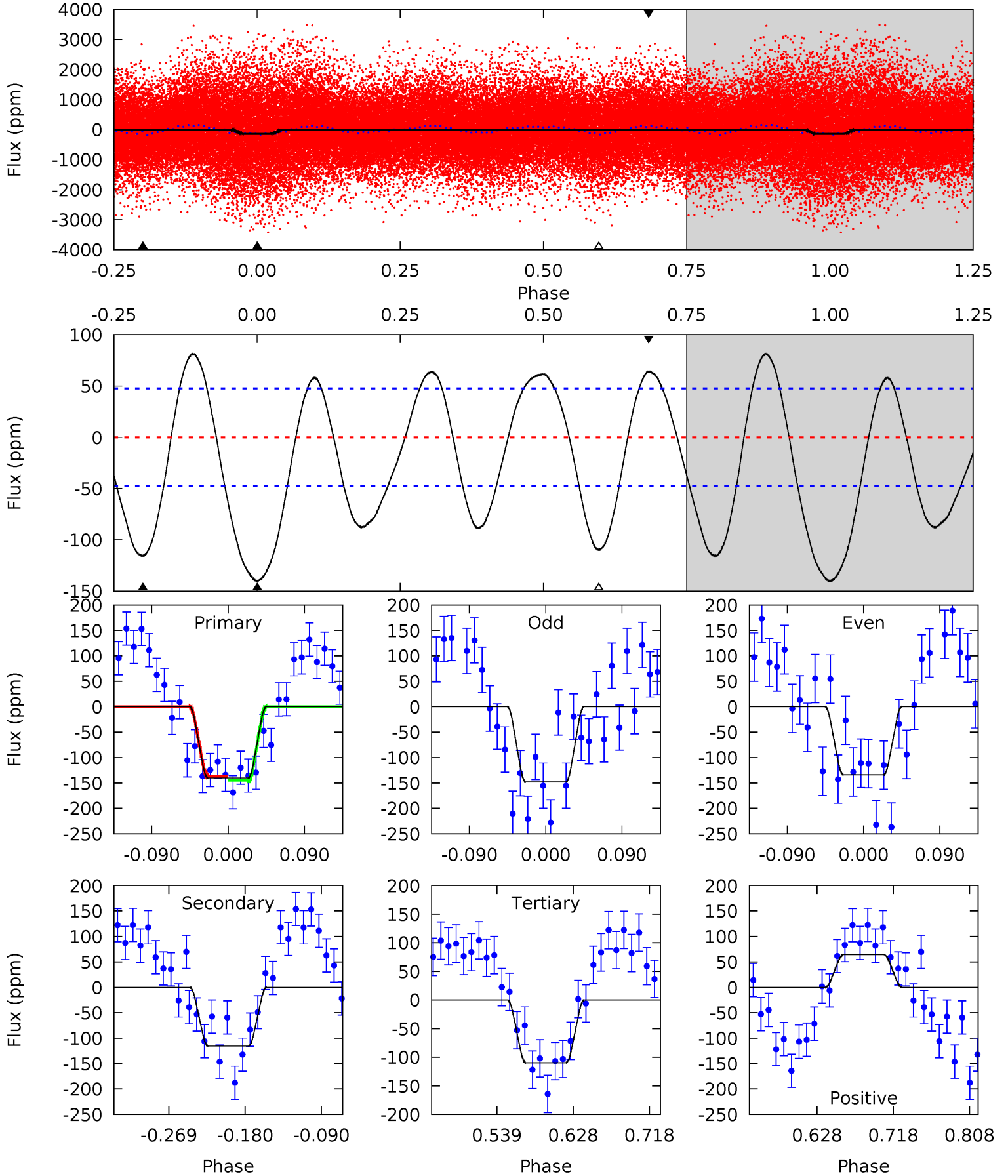
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.1	3.88	0	0	4.46	1.40	6.40	19.1	19.1	3.88	3.88	1.01	1.01	0.48	1.61



# Alt Model-Shift Uniqueness Test

009656741-01, P = 1.338131 Days, E = 131.272334 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	11.1	10.6	6.18	4.59	1.70	5.40	2.94	7.32	0.57	4.95	0.68	0.98	0.37	0.35



### Stellar Parameters For KIC 009656741

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7557^{+209}_{-340}$	$4.101^{+0.160}_{-0.176}$	$-0.080^{+0.200}_{-0.350}$	$1.871^{+0.513}_{-0.420}$	$1.612^{+0.188}_{-0.282}$	$0.347^{+0.287}_{-0.167}$
	+3%/-4%	+4%/-4%	+250%/-438%	+27%/-22%	+12%/-17%	+83%/-48%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 009656741-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-26 \pm 7$	$2.03^{+0.37}_{-0.38}$	$3793^{+277}_{-268}$	$5142^{+491}_{-460}$	$2.569^{+1.416}_{-0.888}$
Alt.	$-115 \pm 10$	$2.66^{+0.44}_{-0.40}$	$3806^{+292}_{-276}$	$6652^{+461}_{-434}$	$6.902^{+2.420}_{-1.990}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$



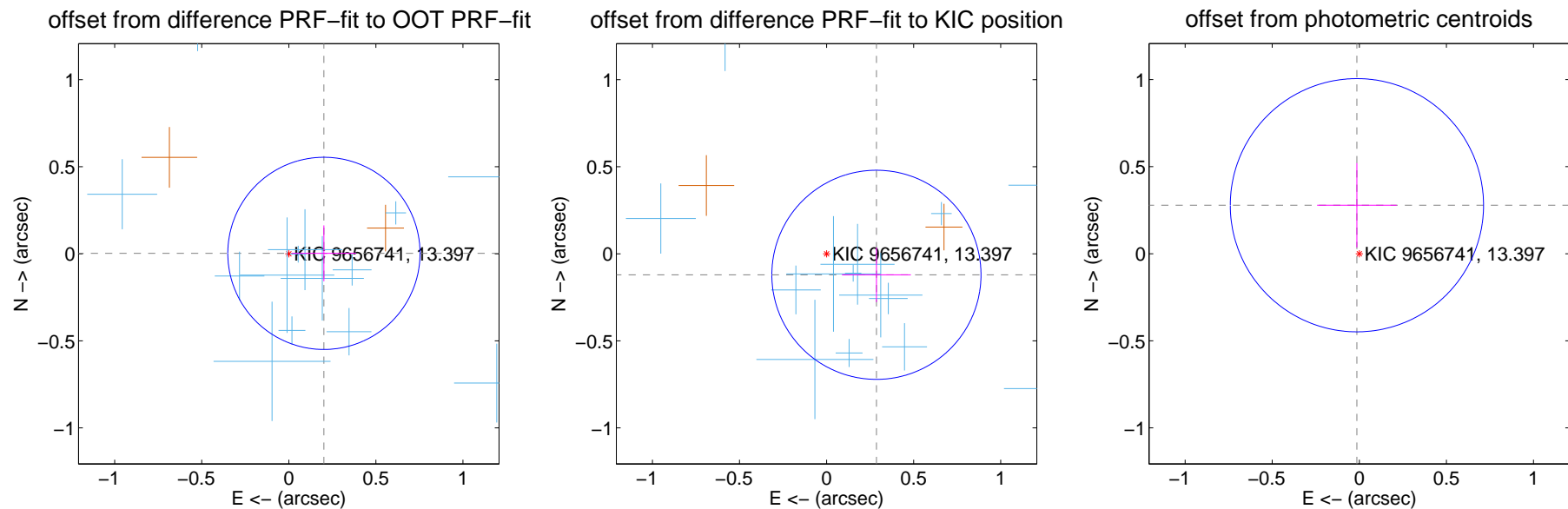
## DV Centroid Data

Supplemental centroid analysis for 009656741-01. Kepler magnitude: 13.40. Transit SNR 9.14

There are 14 quarters with good PRF difference image offsets

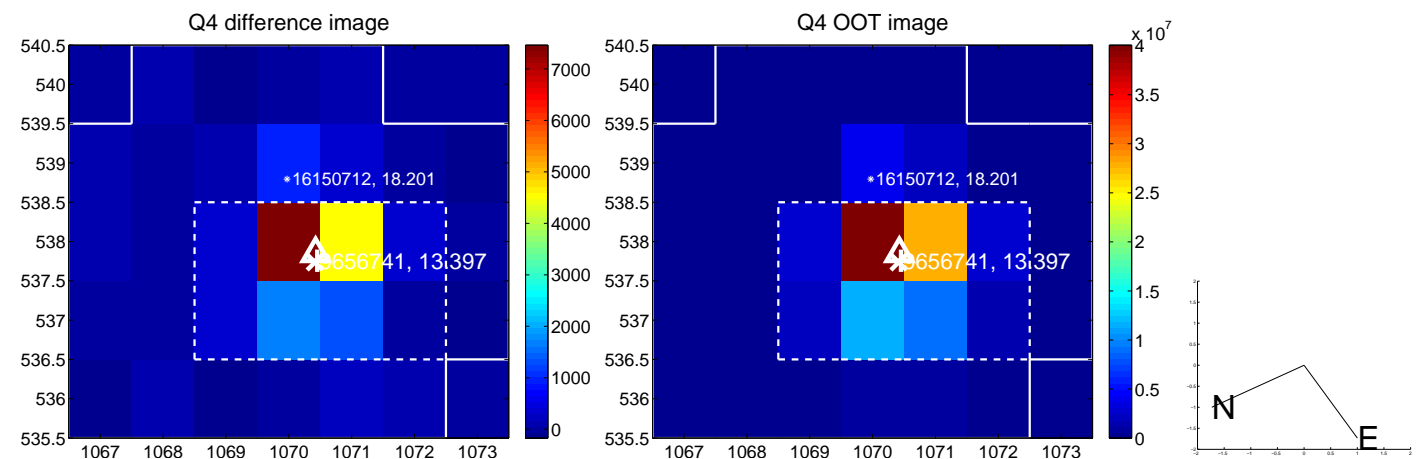
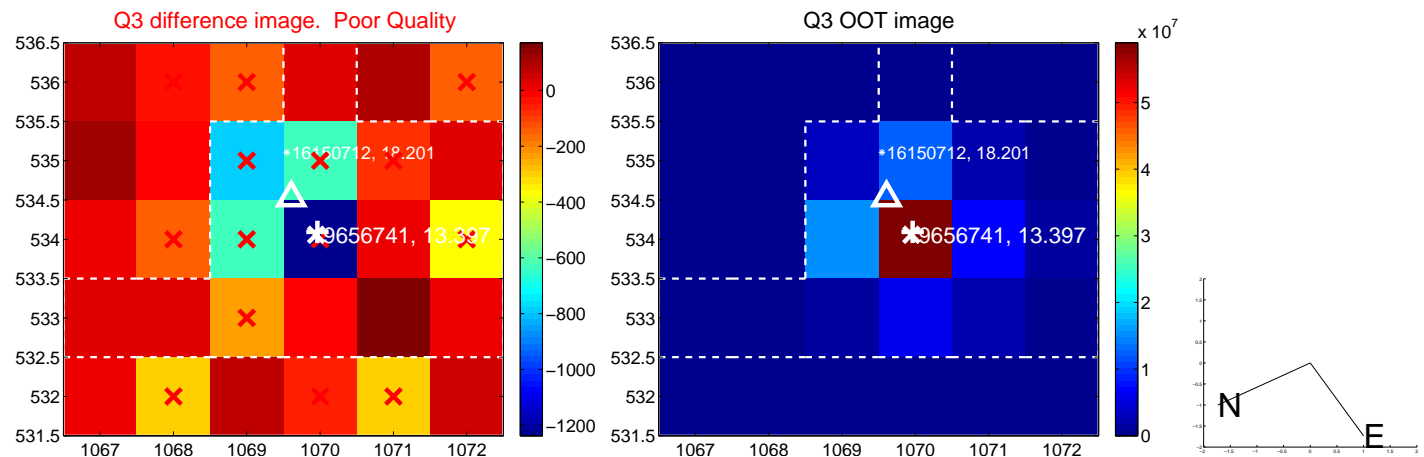
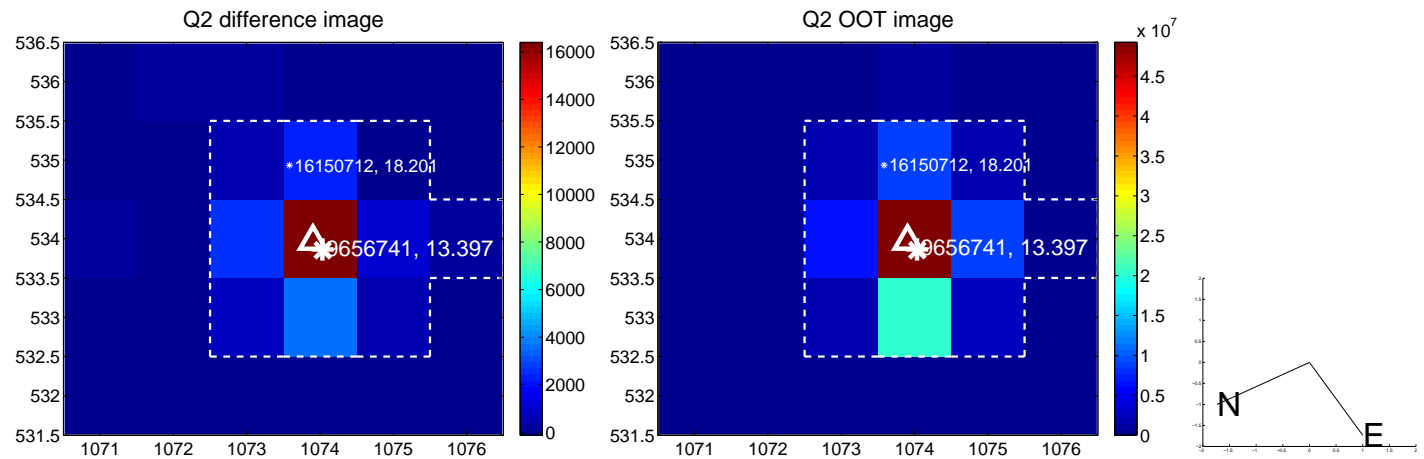
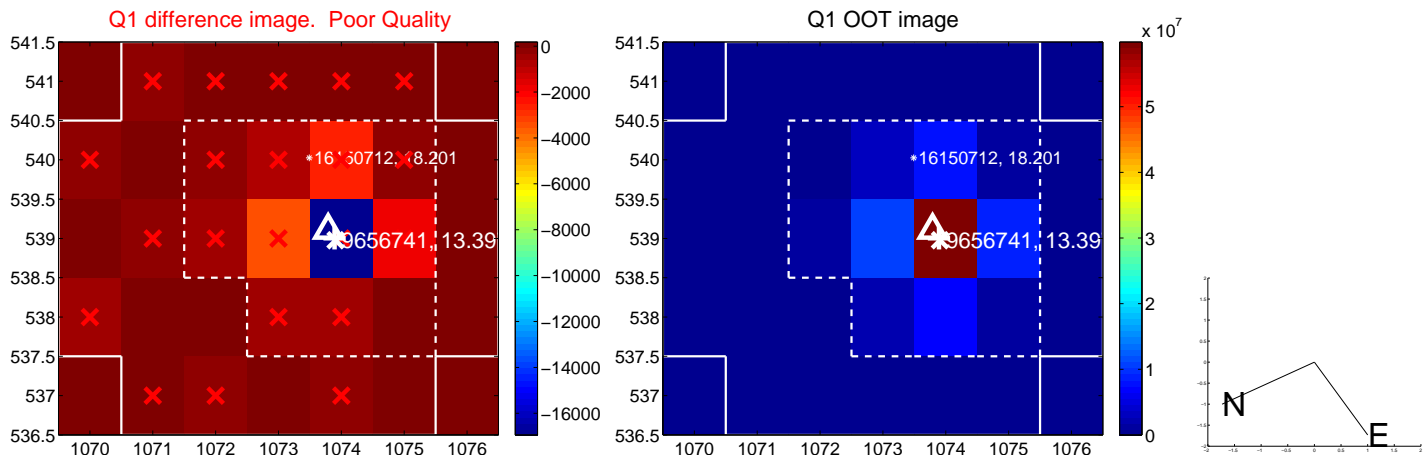
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.202 \pm 0.184$	1.10	$-0.202 \pm 0.184$	$0.002 \pm 0.161$
PRF-fit source offset from KIC position	$0.311 \pm 0.200$	1.55	$-0.286 \pm 0.198$	$-0.121 \pm 0.157$
photometric centroid source offset	$0.28 \pm 0.24$	1.15	$0.01 \pm 0.23$	$0.28 \pm 0.24$

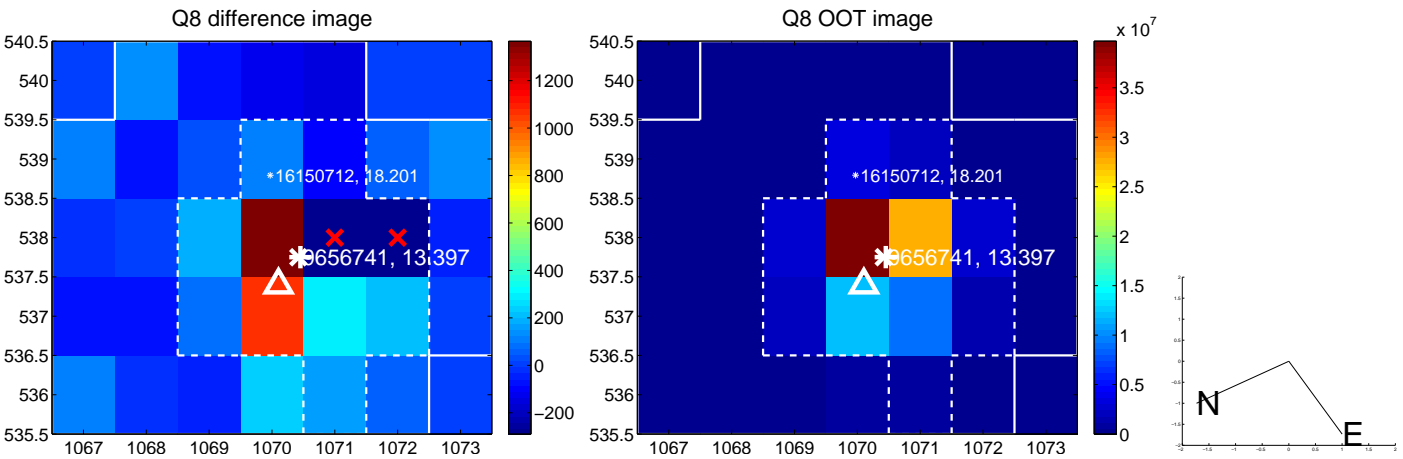
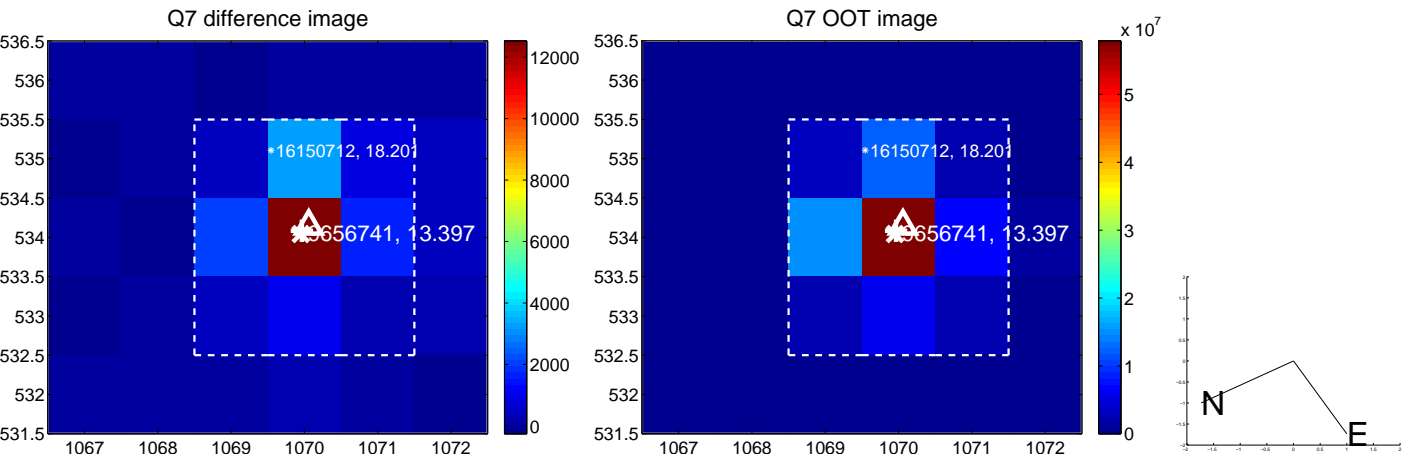
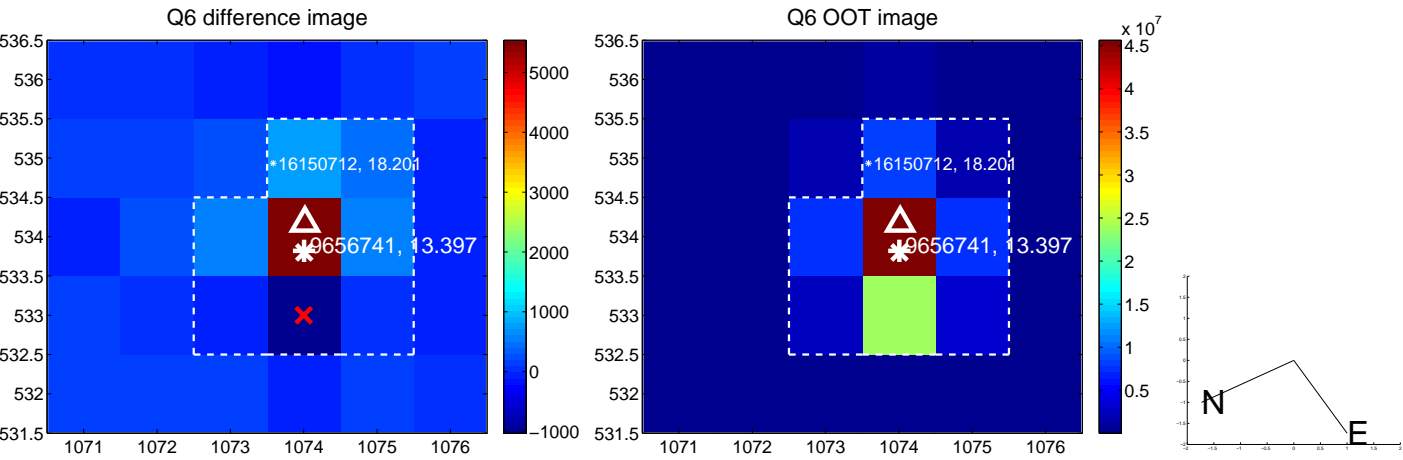
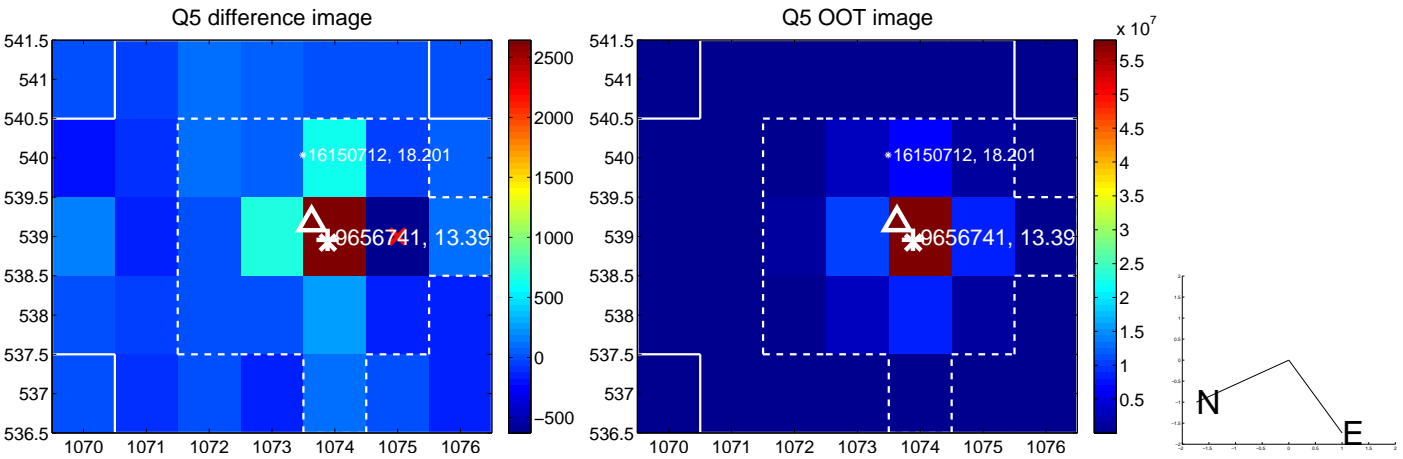


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

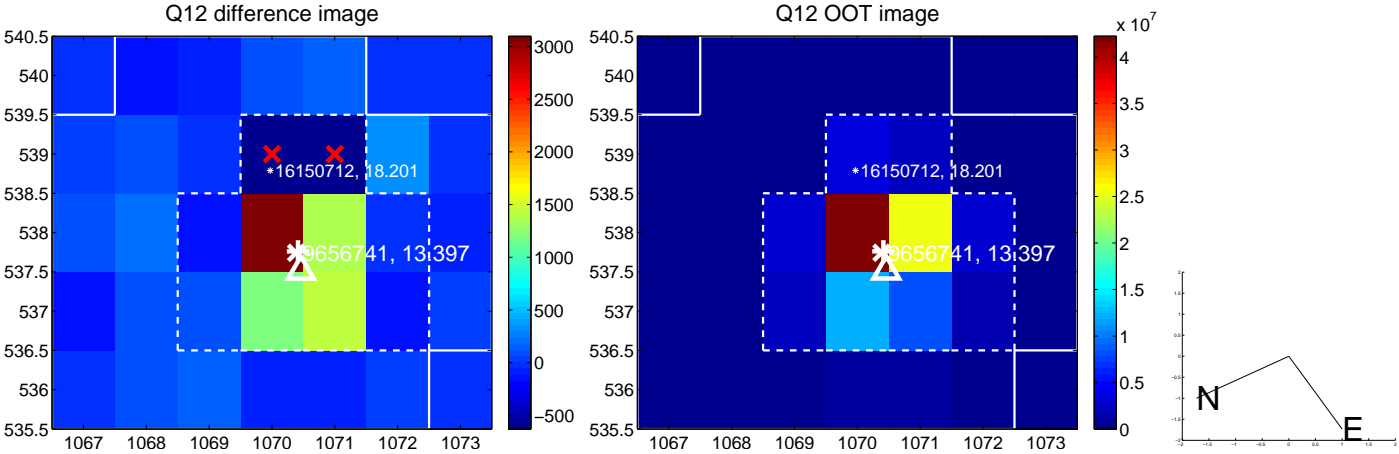
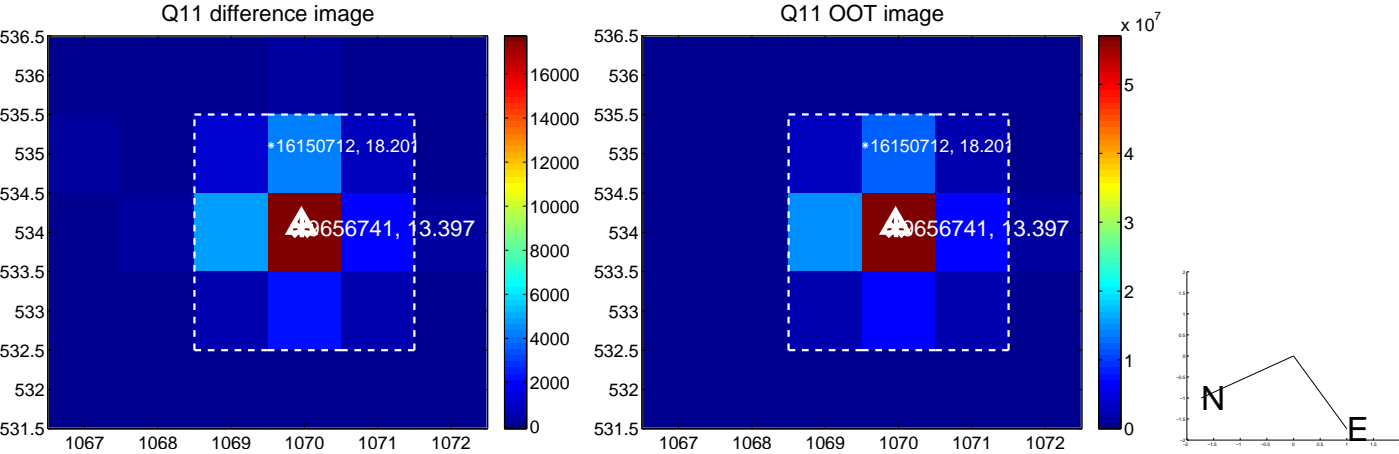
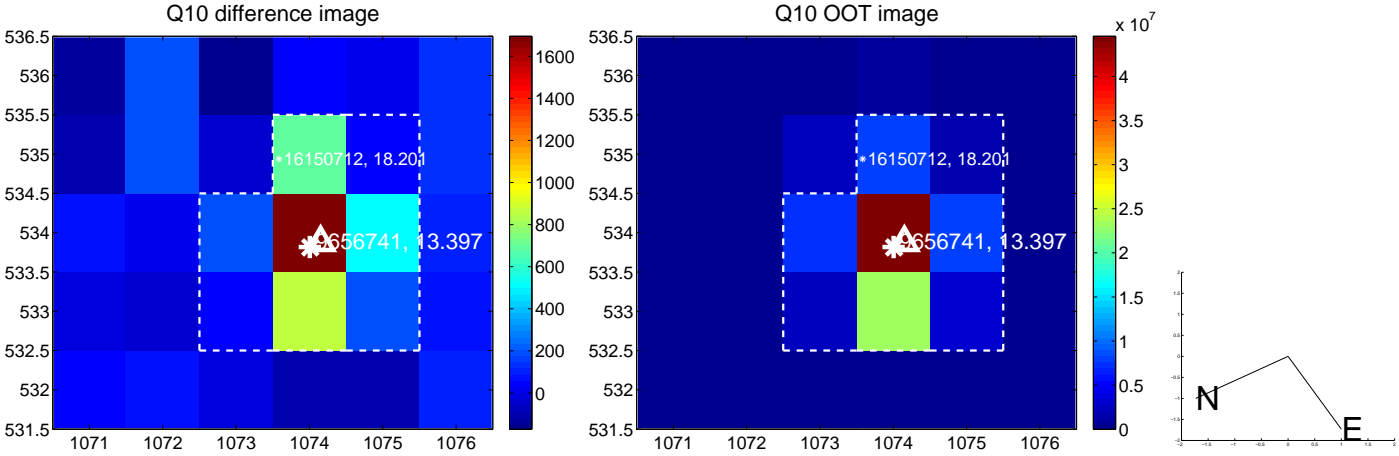
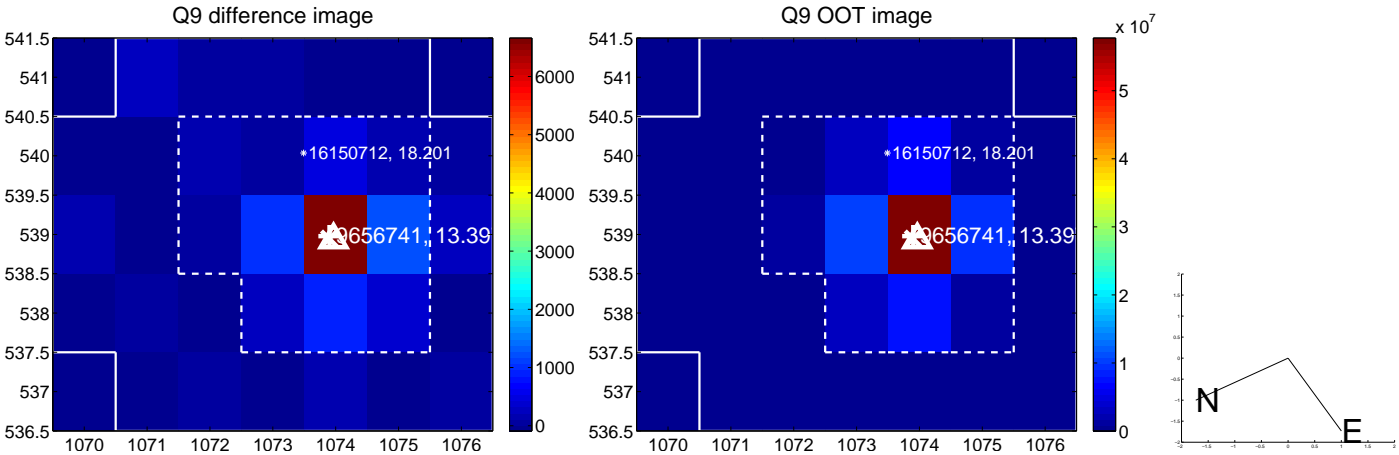


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

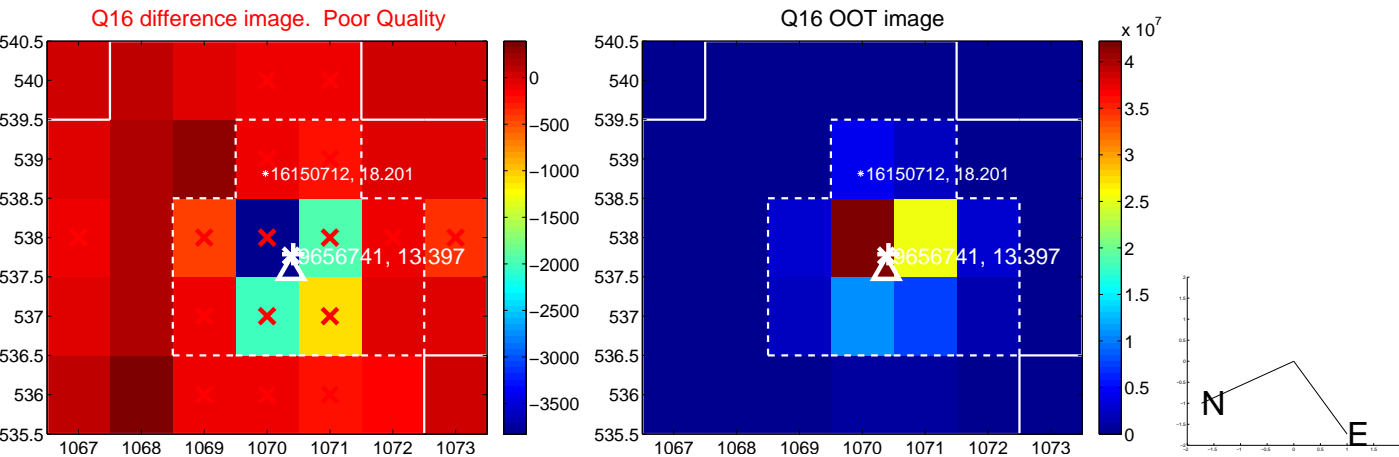
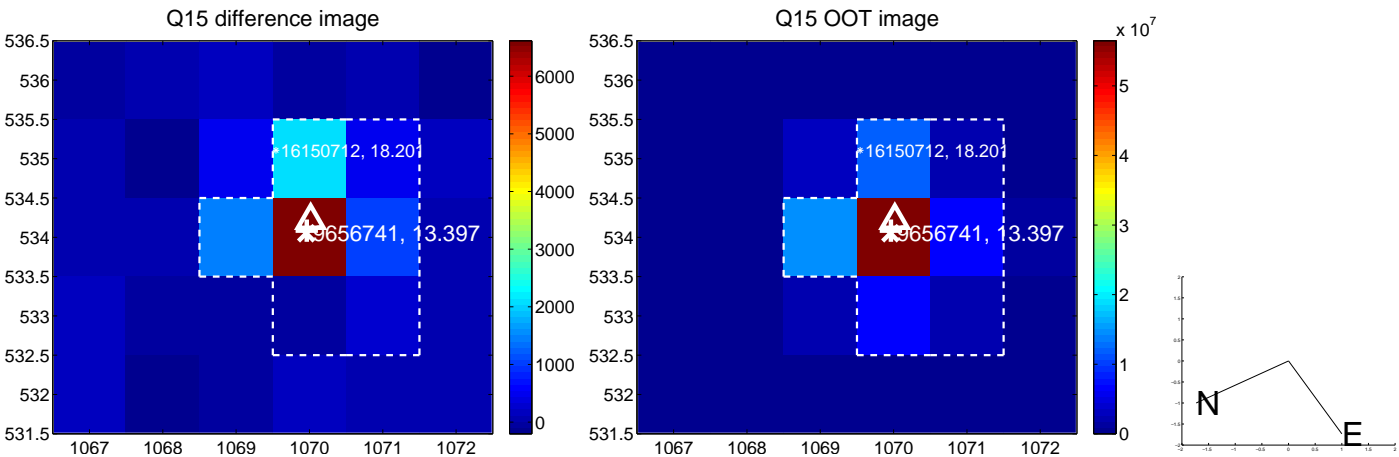
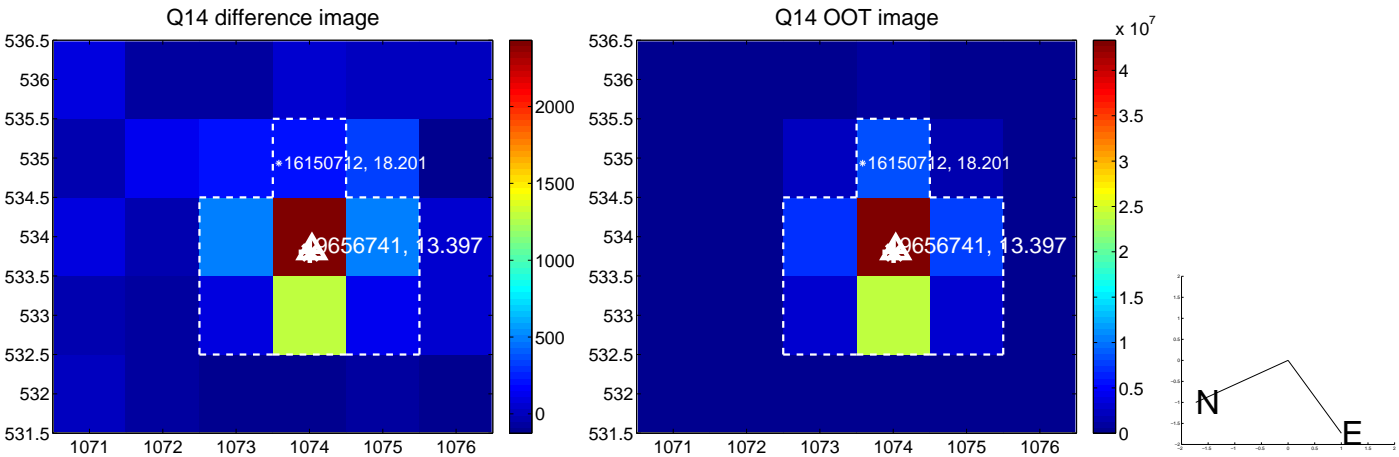
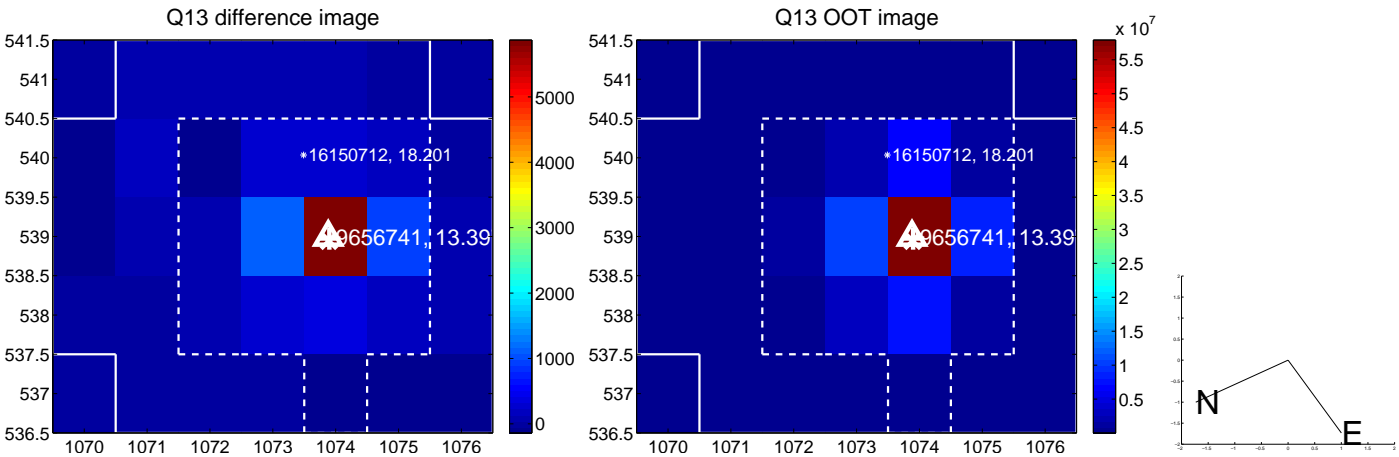




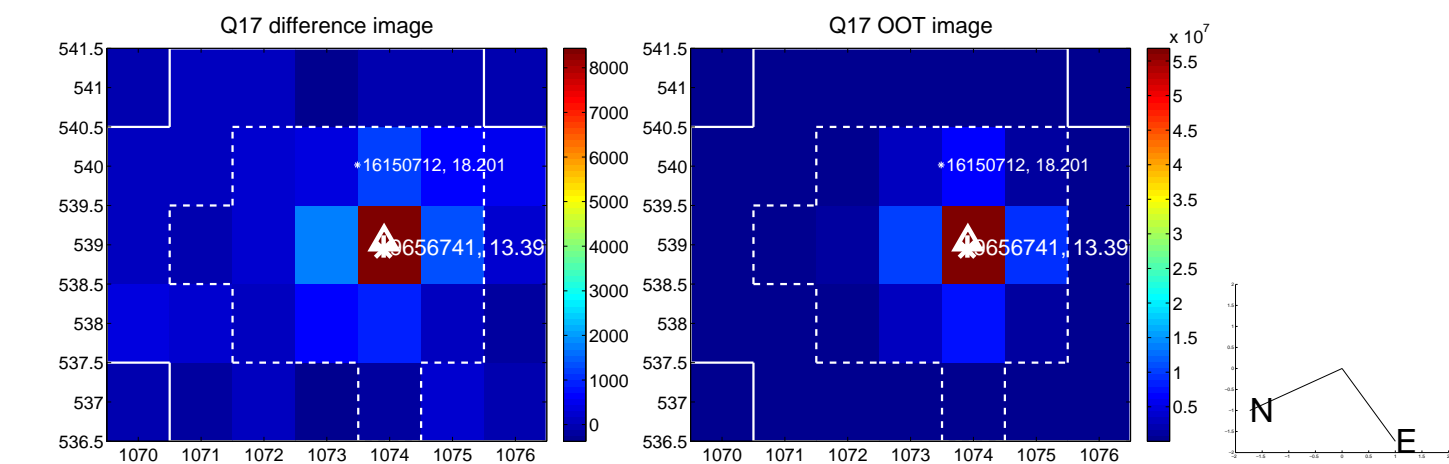
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



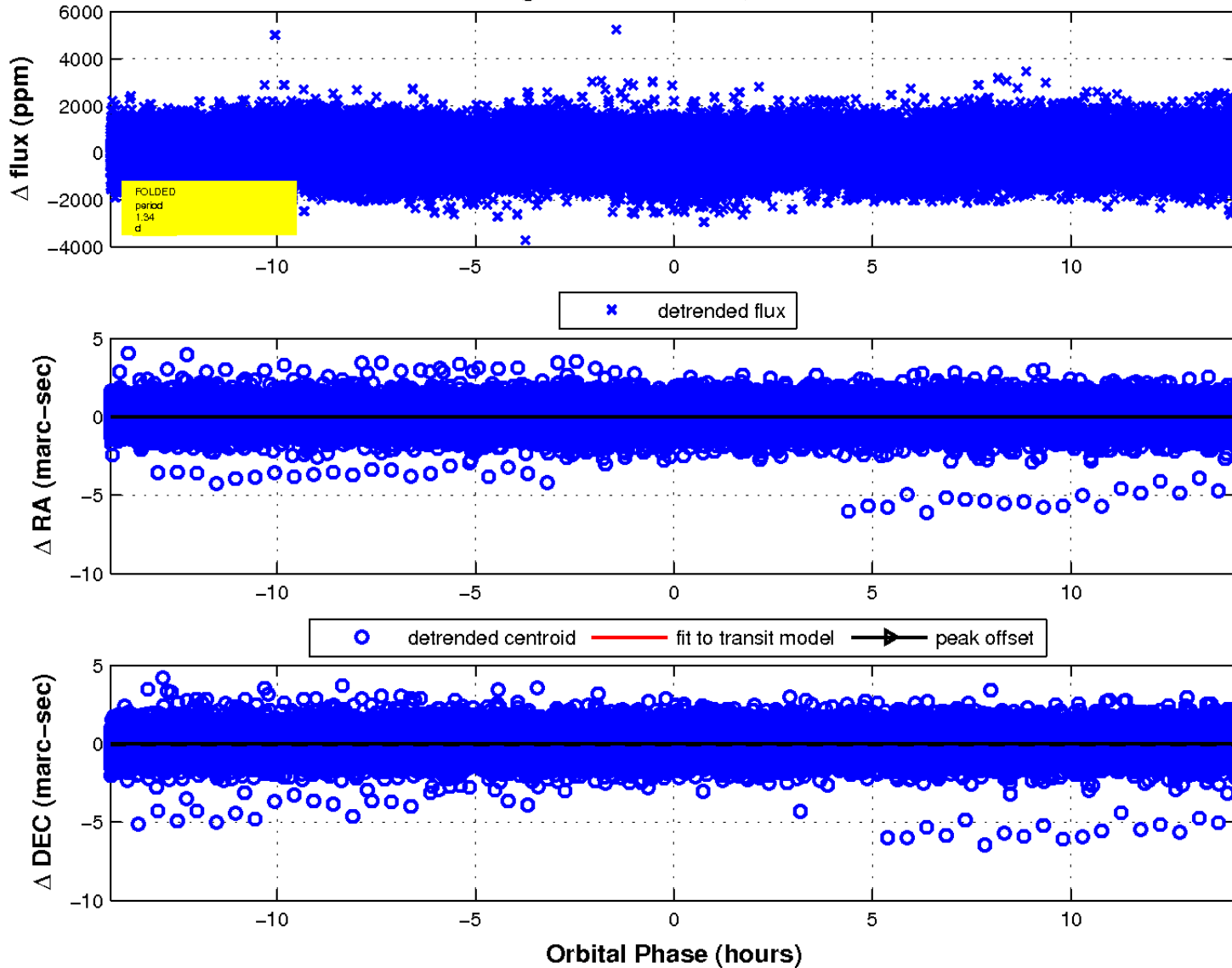
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

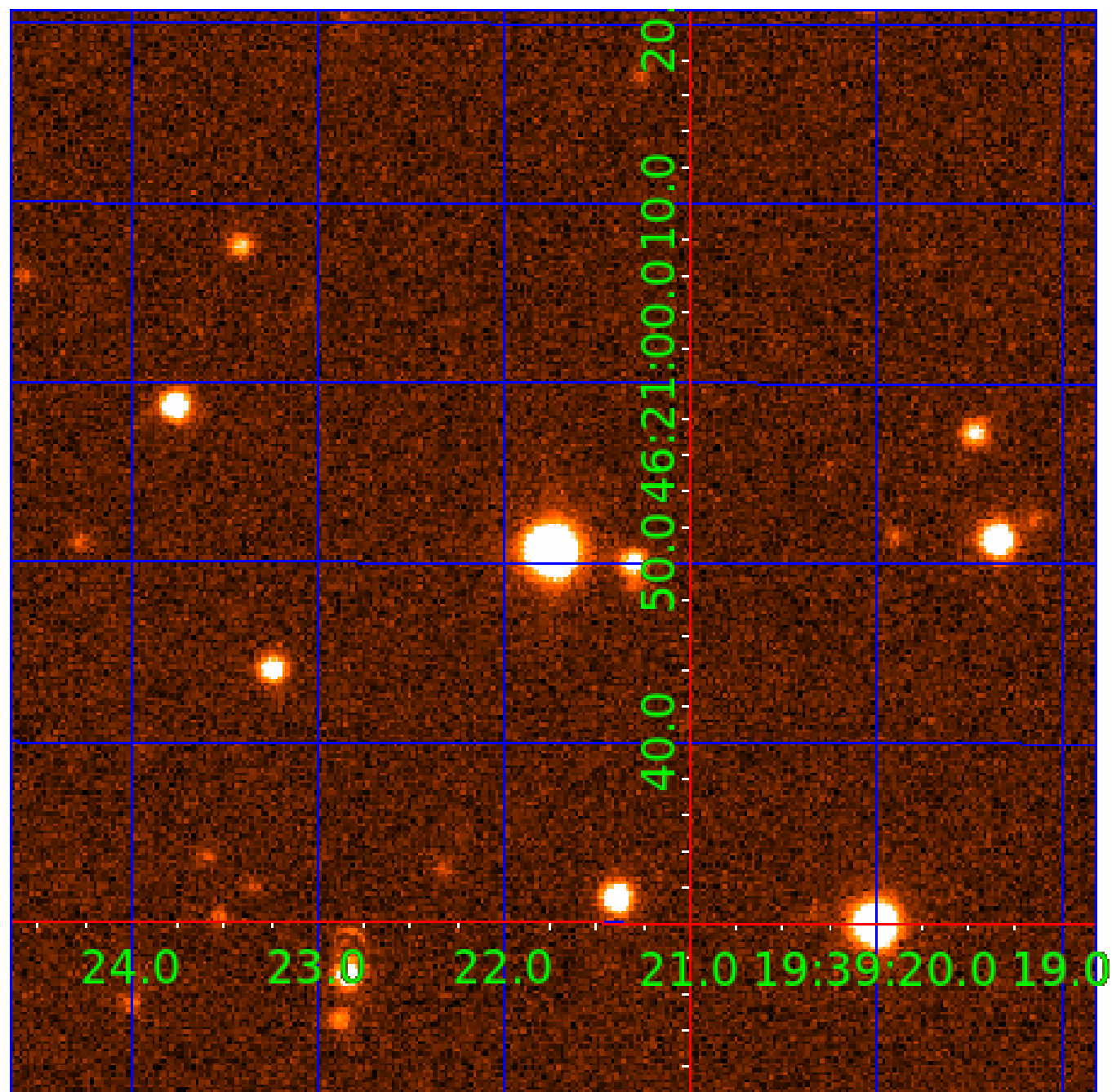


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



# KIC 009656741

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009656741-01	OBS	No	1.338113	132.615793	87.6	4.731	10.9	9.1	1.87	7557	2.02	13172.99
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009656741-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009656741-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
009656741-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

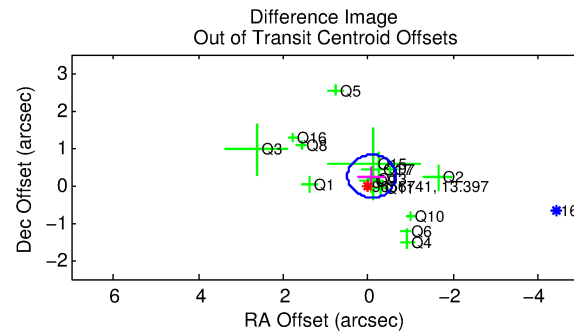
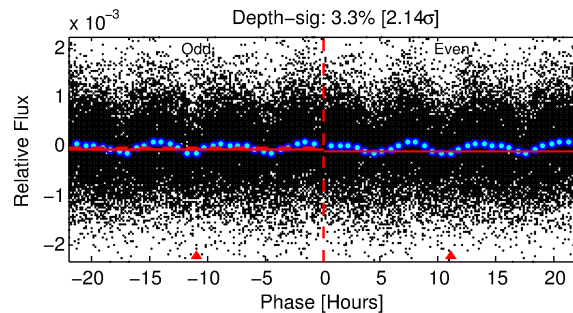
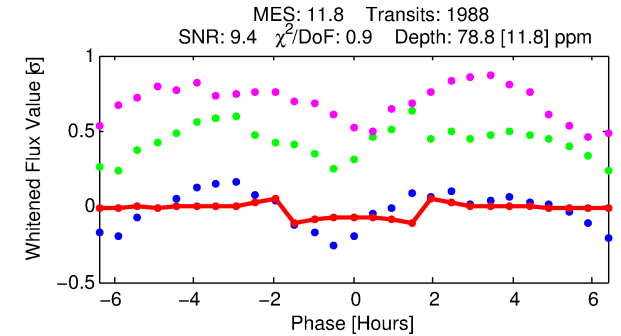
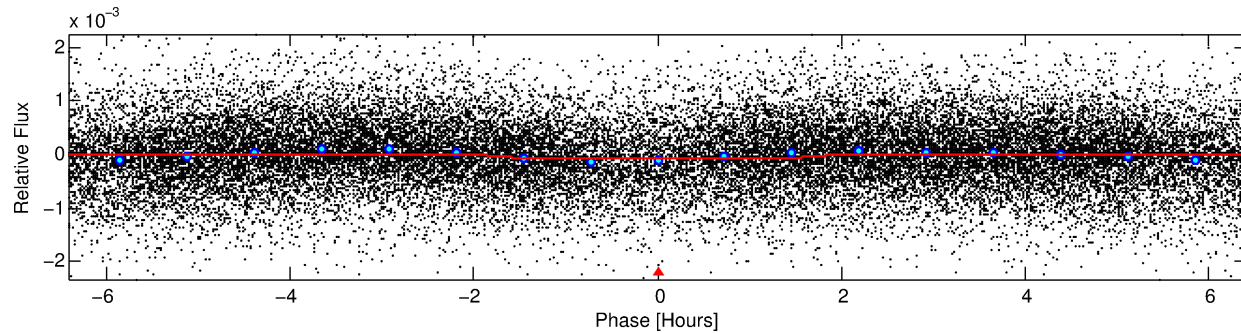
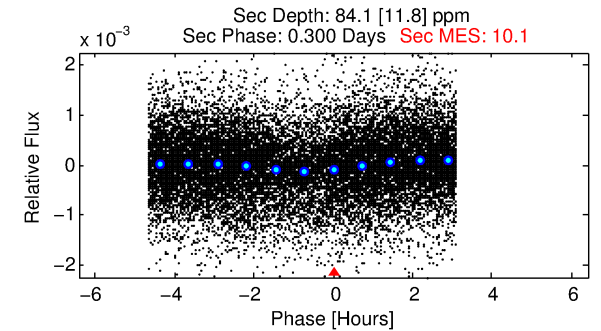
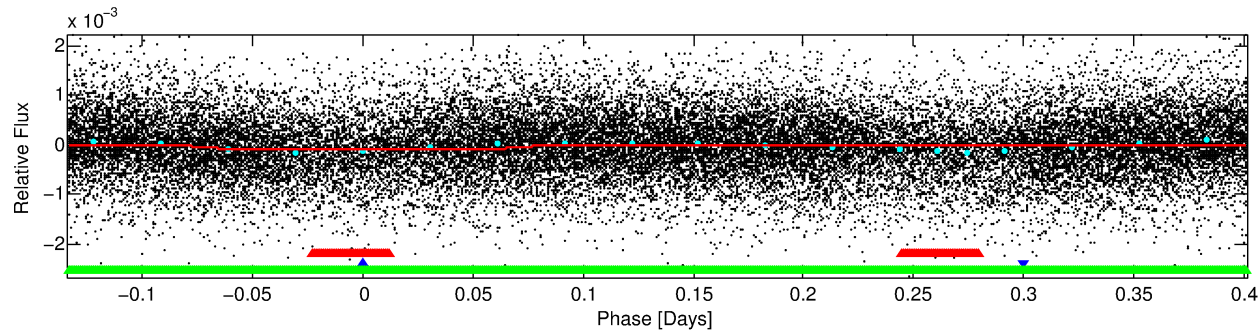
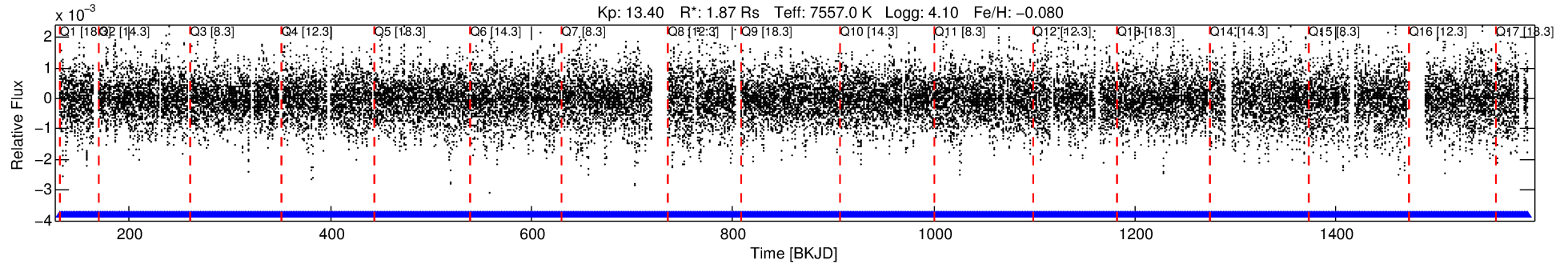
## Ephemeris Match Information For 009656741-02

No Significant Match Found



# DV One-Page Summary

KIC: 9656741 Candidate: 2 of 3 Period: 0.535 d



## DV Fit Results:

Period = 0.53526 [0.00001] d  
Epoch = 131.5336 [0.0016] BKJD  
Rp/R\* = 0.0083 [0.0029]  
a/R\* = 1.28 [1.11]  
b = 0.22 [9.69]  
Seff = 44694.81 [16650.94]  
Teq = 3708 [345] K  
Rp = 1.69 [0.76] Re  
a = 0.0151 [0.0034] AU  
Ag = 3.69 [2.93] [0.92σ]  
Teffp = 7944 [1481] K [2.79σ]

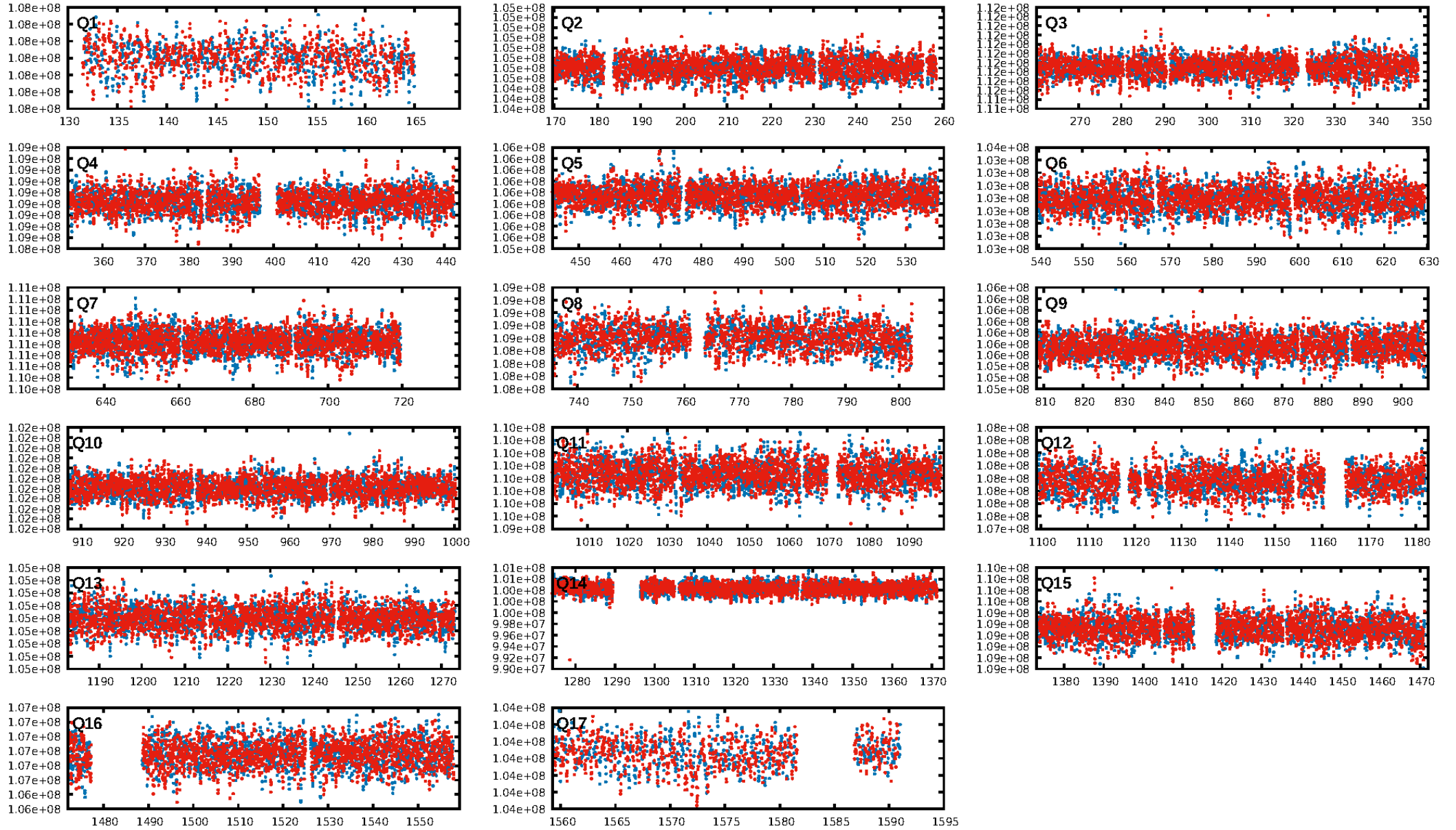
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 99.9% [3.22σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1897/1897]  
**GhostDiagnostic-chr: 0.8261**  
Centroid-sig: 5.0%  
Centroid-so: 0.332 arcsec [1.73σ]  
OotOffset-rm: 0.259 arcsec [1.36σ]  
OotOffset-st: 3/4/3/5 [15]  
KicOffset-rm: 0.212 arcsec [0.76σ]  
KicOffset-st: 3/4/3/5 [15]  
DiffImageQuality-fgm: 0.53 [8/15]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:06:54 Z

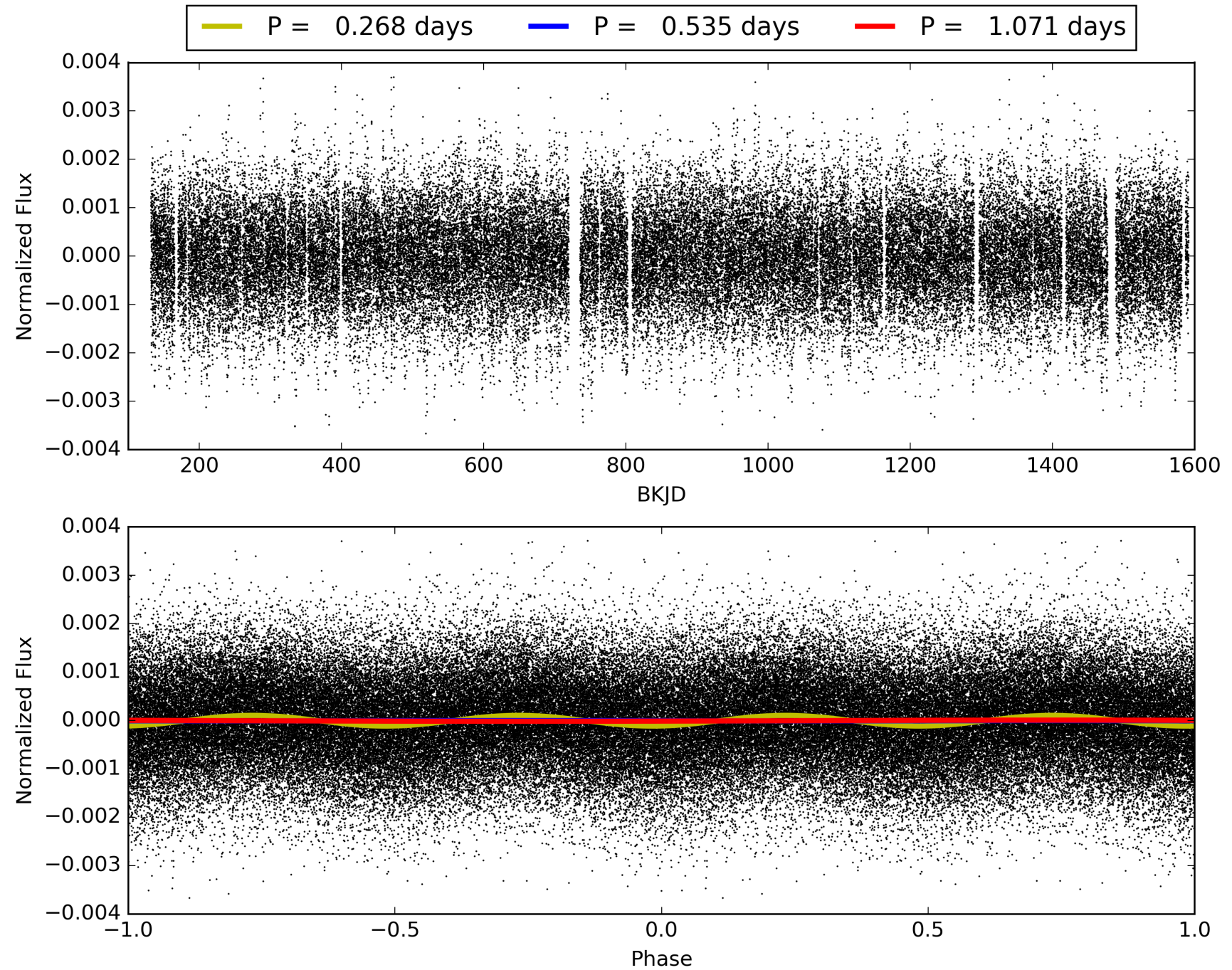
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009656741-02, PDC Light Curves





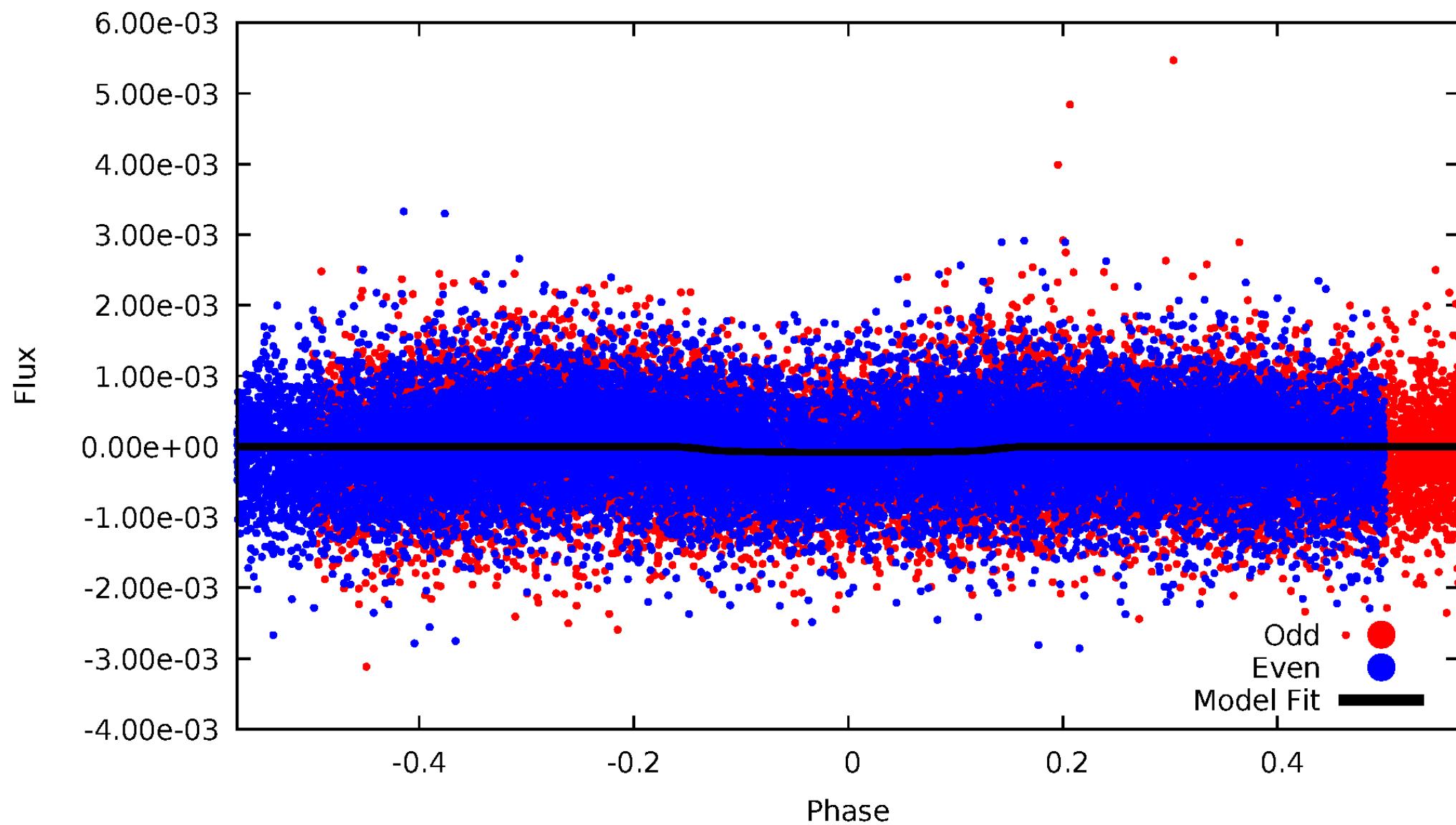
# TCE 009656741-02





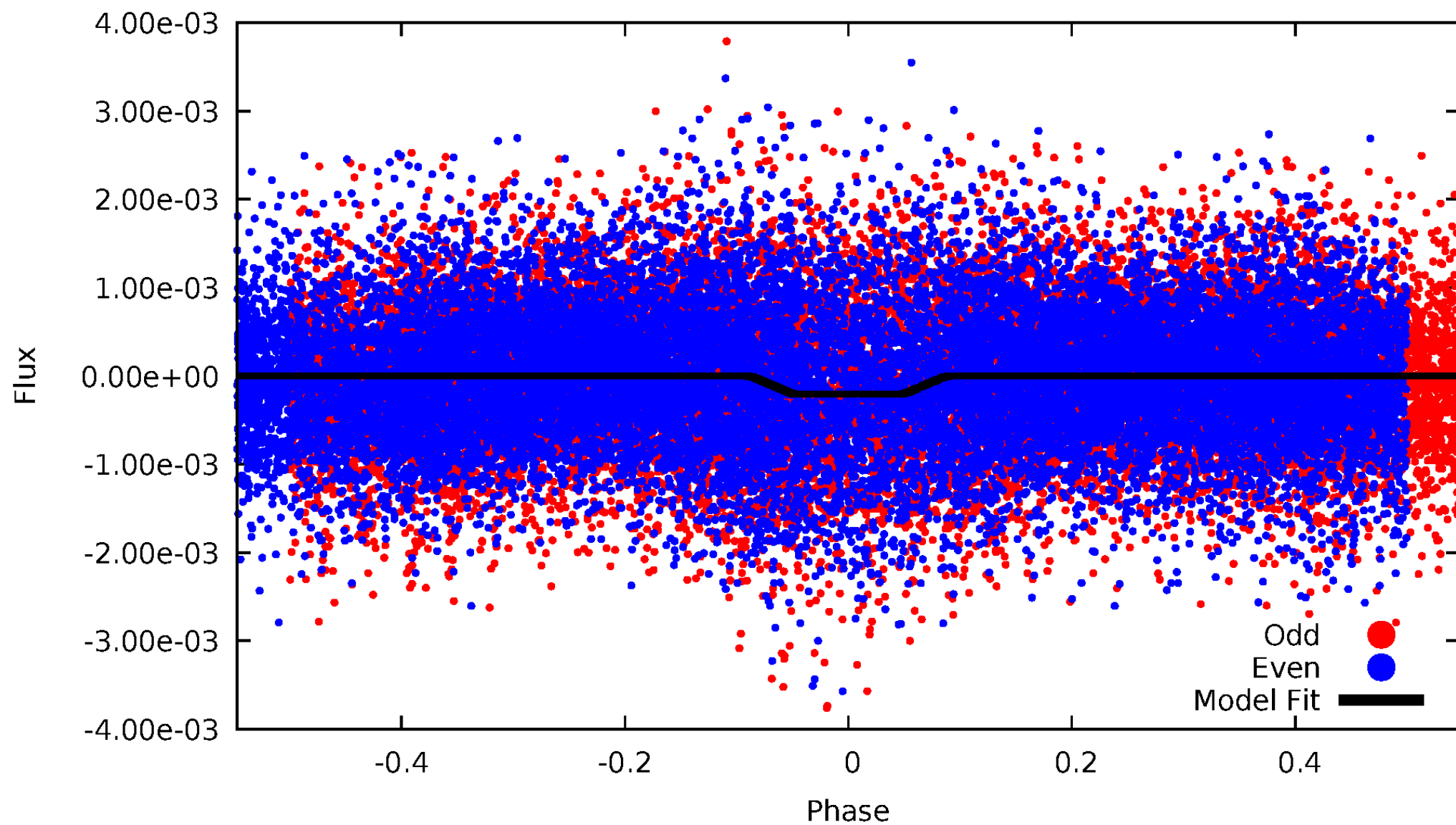
# DV Odd/Even

TCE 009656741-02



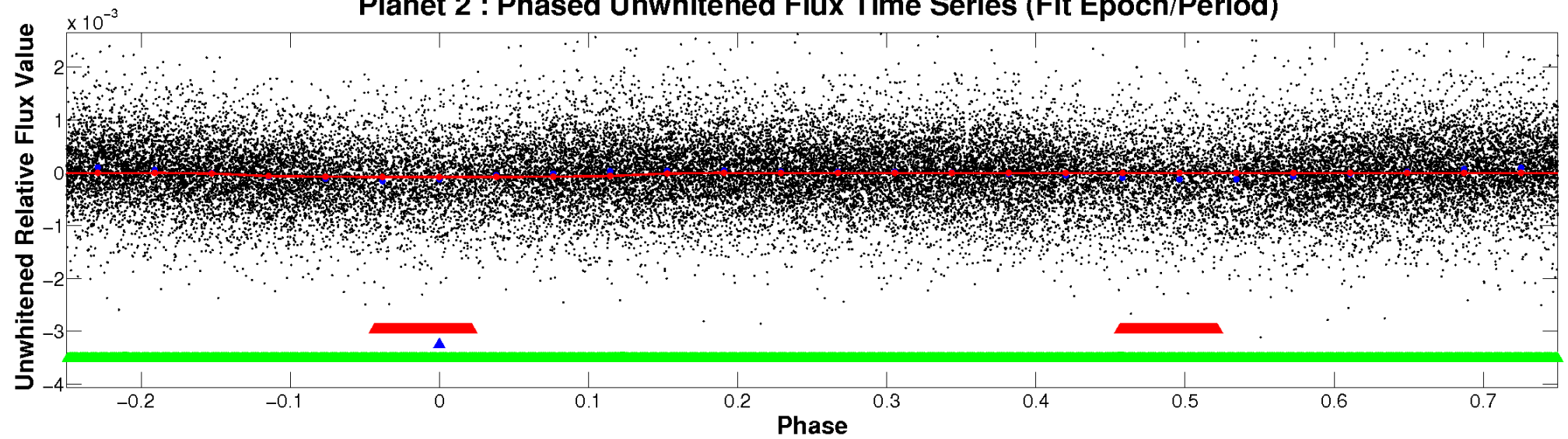
# ALT Odd/Even

TCE 009656741-02

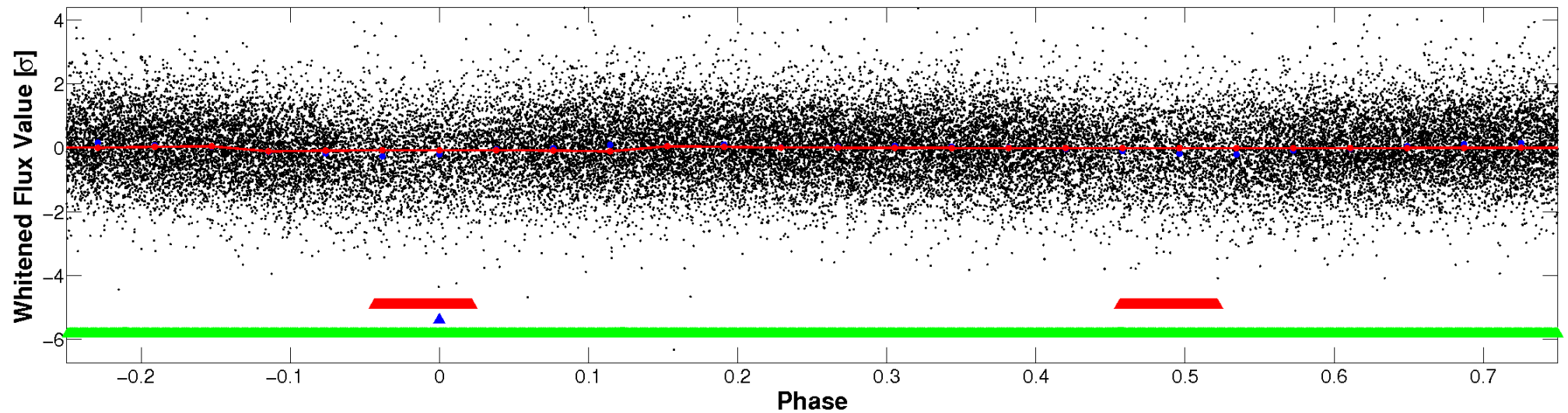


# Non-Whitened Vs. Whitened Light Curve

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

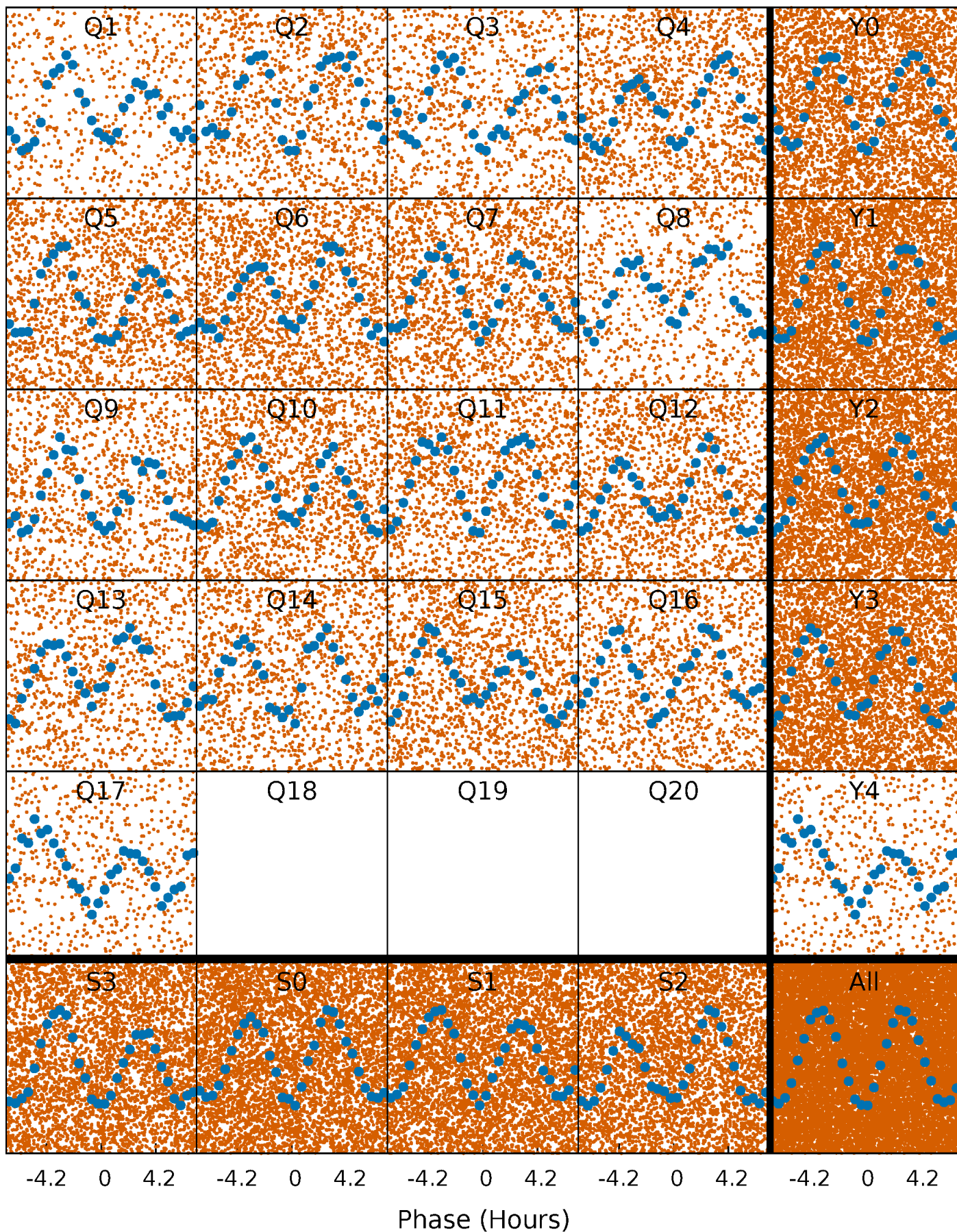


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

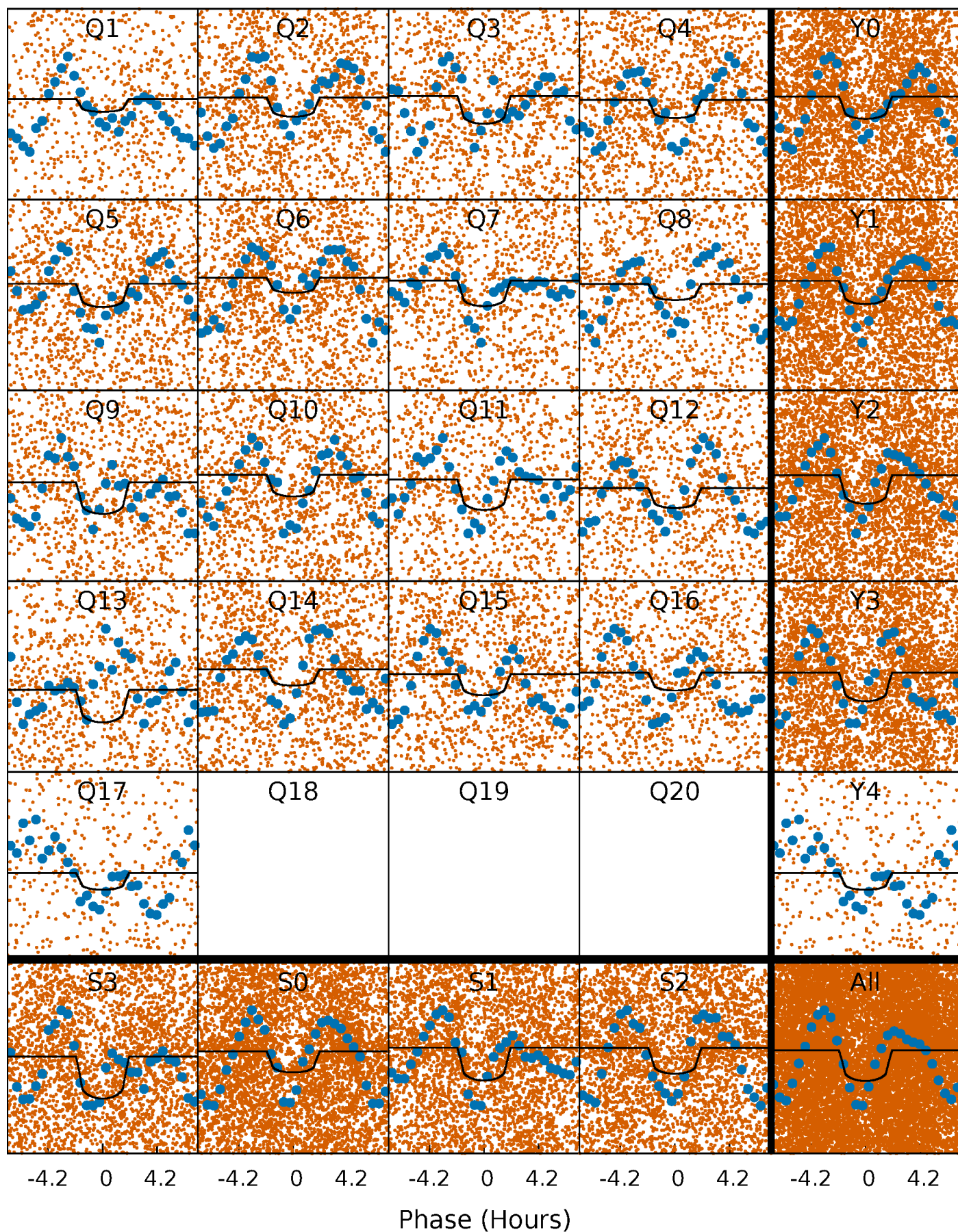
TCE 009656741-02   P= 0.535258 Days    $T_0=131.533637$  (BKJD)





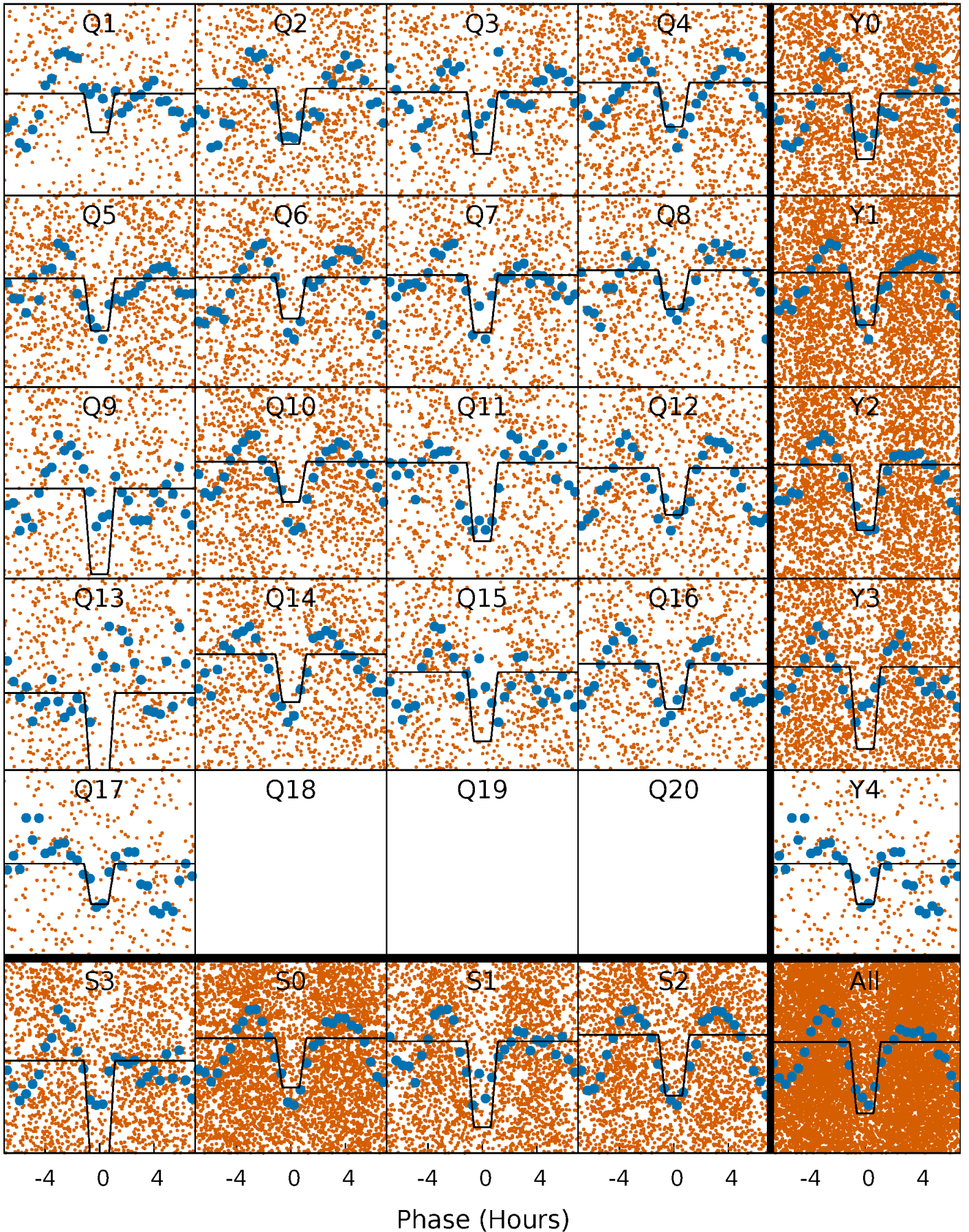
# DV Quarter-Phased Transit Curves

TCE 009656741-02   P= 0.535258 Days    $T_0=131.533637$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009656741-02   P= 0.535253 Days    $T_0=131.521674$  (BKJD)

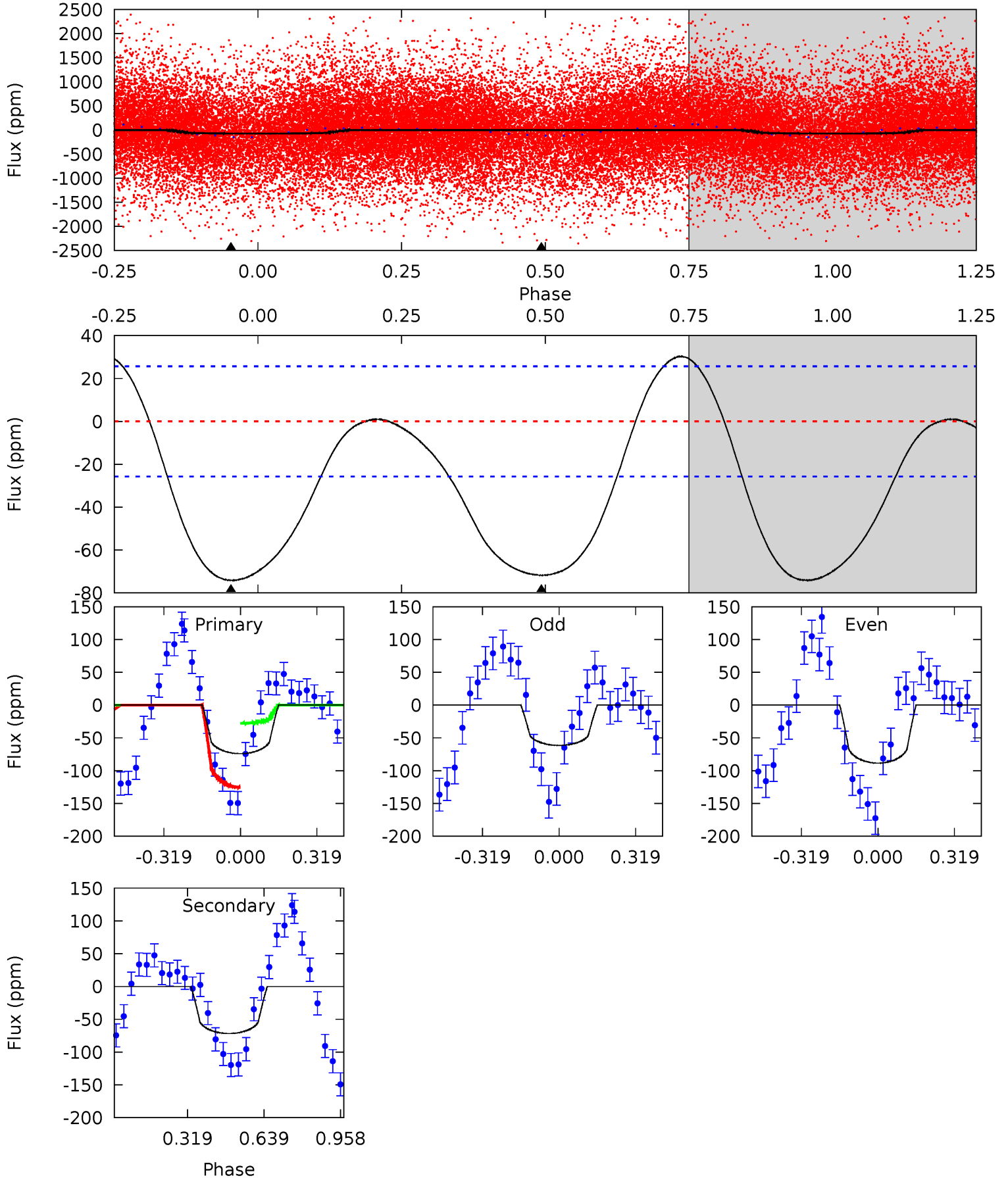




# DV Model-Shift Uniqueness Test

009656741-02, P = 0.535258 Days, E = 131.533637 Days

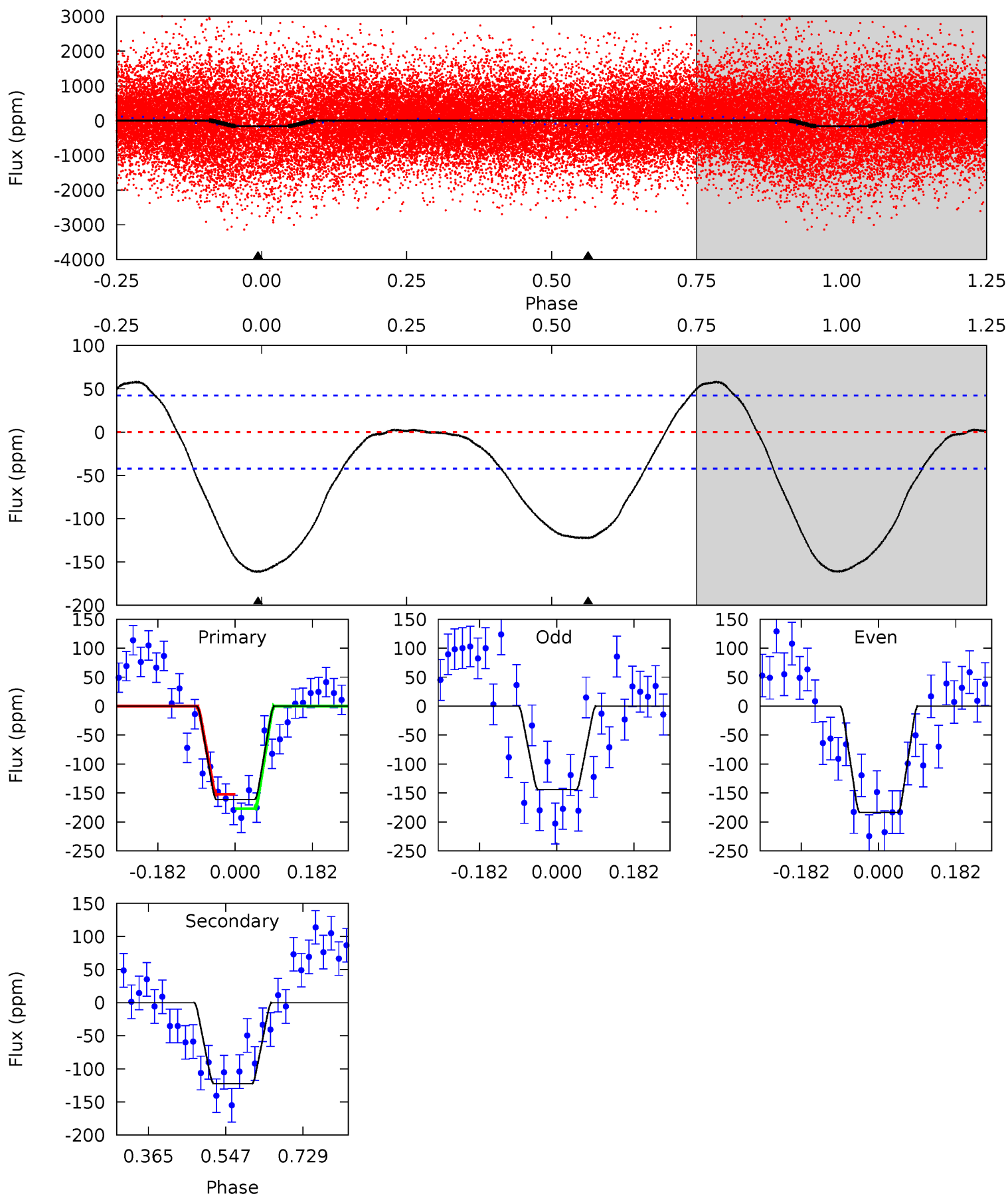
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	12.1	0	0	4.31	1.00	1.29	12.4	12.4	12.1	12.1	2.26	1.01	0.29	8.15



# Alt Model-Shift Uniqueness Test

009656741-02, P = 0.535253 Days, E = 131.521674 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.0	12.9	0	0	4.44	1.33	2.61	17.0	17.0	12.9	12.9	2.09	1.11	0.26	1.31





### Stellar Parameters For KIC 009656741

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7557^{+209}_{-340}$	$4.101^{+0.160}_{-0.176}$	$-0.080^{+0.200}_{-0.350}$	$1.871^{+0.513}_{-0.420}$	$1.612^{+0.188}_{-0.282}$	$0.347^{+0.287}_{-0.167}$
	+3%/-4%	+4%/-4%	+250%/-438%	+27%/-22%	+12%/-17%	+83%/-48%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 009656741-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-72 \pm 6$	$1.72^{+0.64}_{-0.65}$	$5148^{+376}_{-363}$	$7300^{+2646}_{-1301}$	$2.972^{+4.745}_{-1.372}$
Alt.	$-122 \pm 10$	$2.93^{+0.81}_{-0.68}$	$5148^{+415}_{-353}$	$6149^{+943}_{-738}$	$1.774^{+1.182}_{-0.700}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

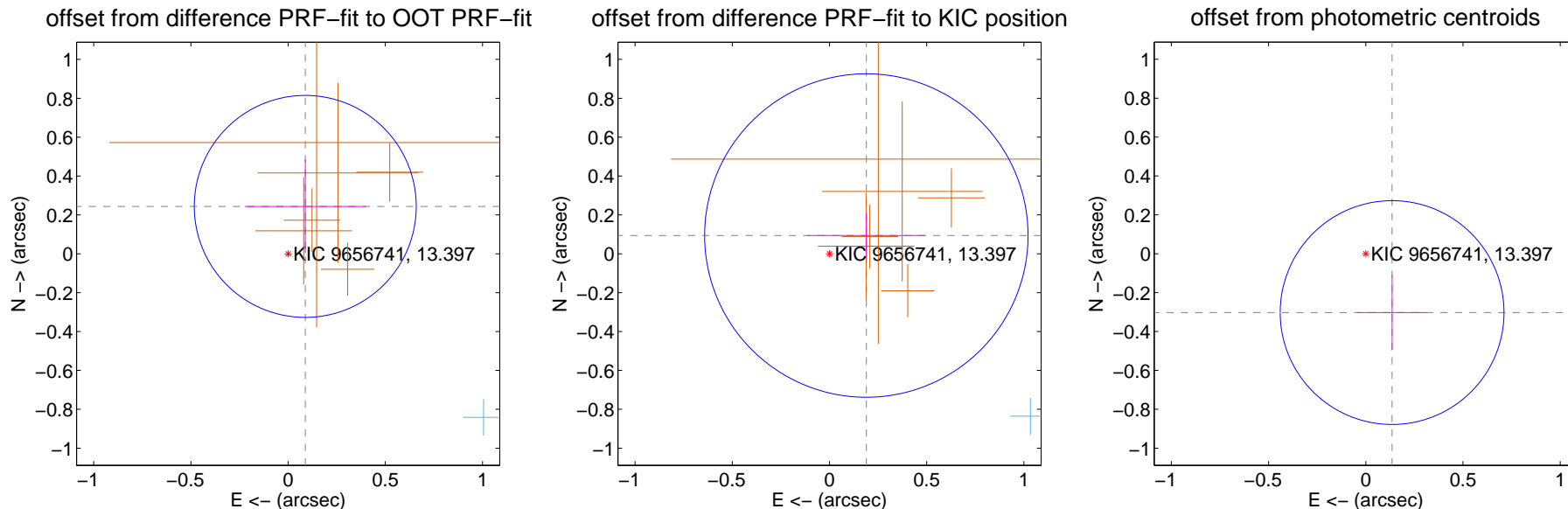
## DV Centroid Data

Supplemental centroid analysis for 009656741-02. Kepler magnitude: 13.40. Transit SNR 9.39

There are 8 quarters with good PRF difference image offsets

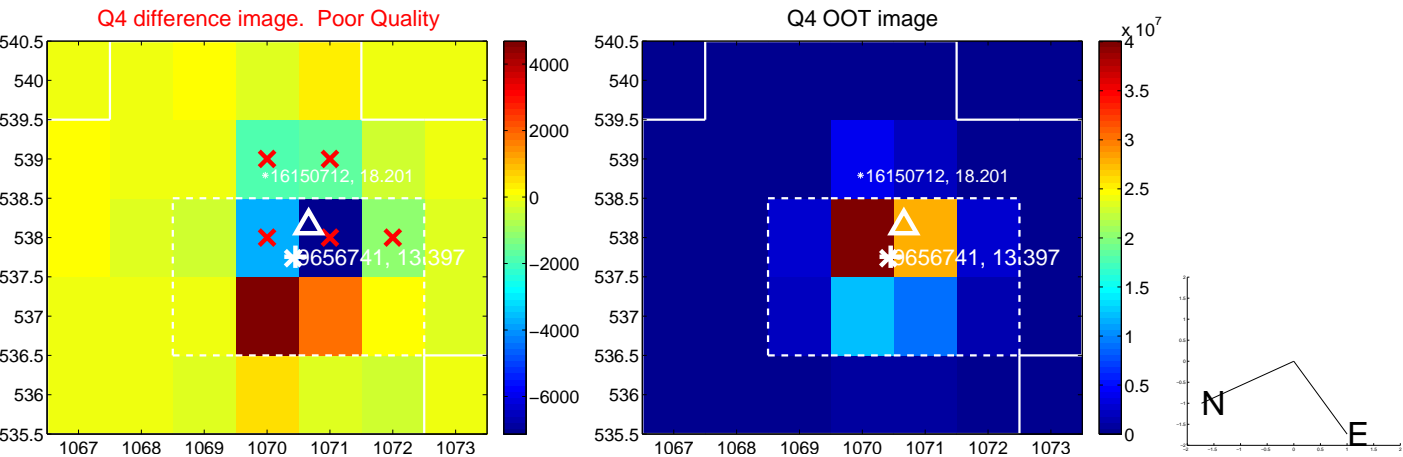
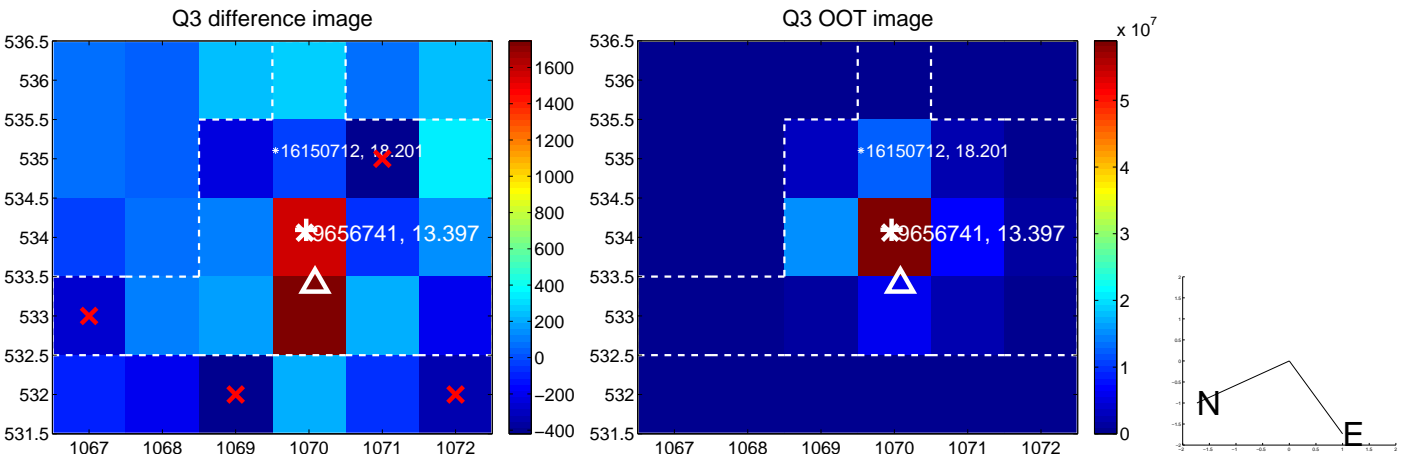
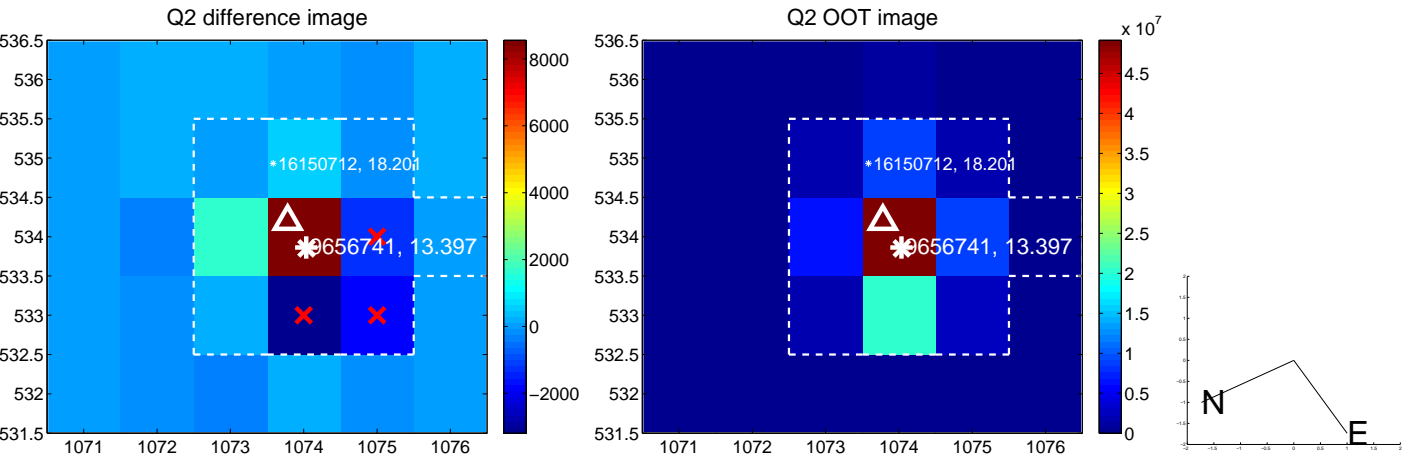
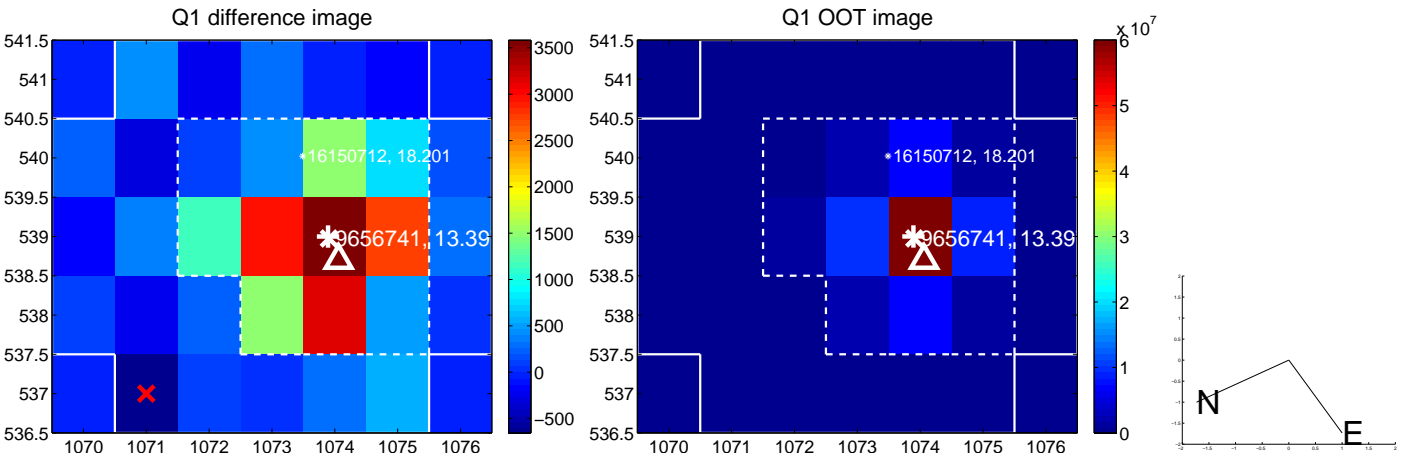
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.259 \pm 0.190$	1.36	$-0.088 \pm 0.312$	$0.244 \pm 0.240$
PRF-fit source offset from KIC position	$0.212 \pm 0.277$	0.76	$-0.190 \pm 0.304$	$0.094 \pm 0.113$
photometric centroid source offset	$0.33 \pm 0.19$	1.73	$-0.14 \pm 0.18$	$-0.30 \pm 0.19$

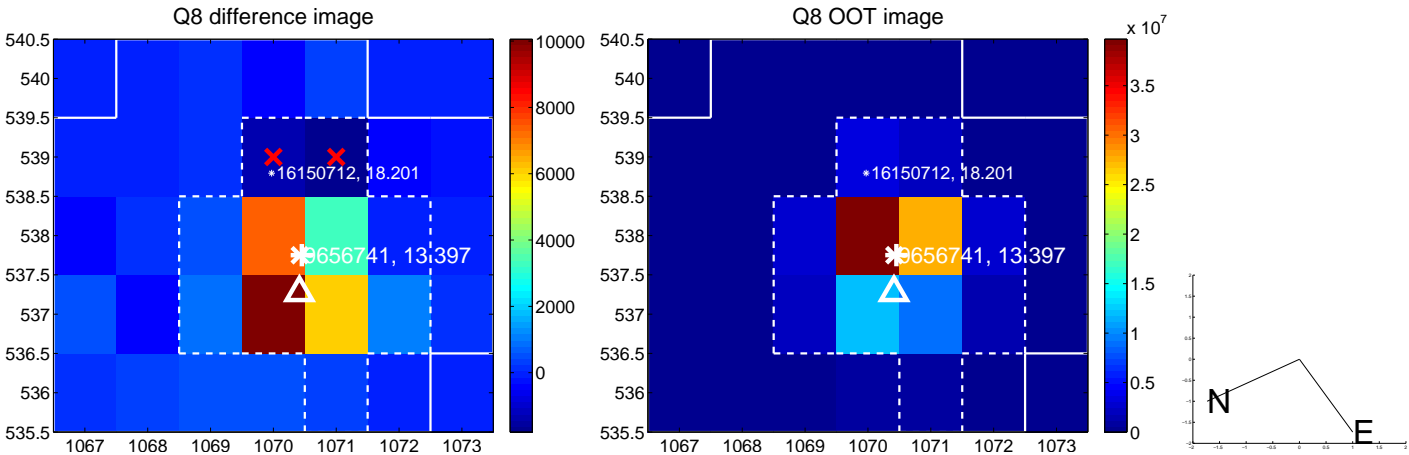
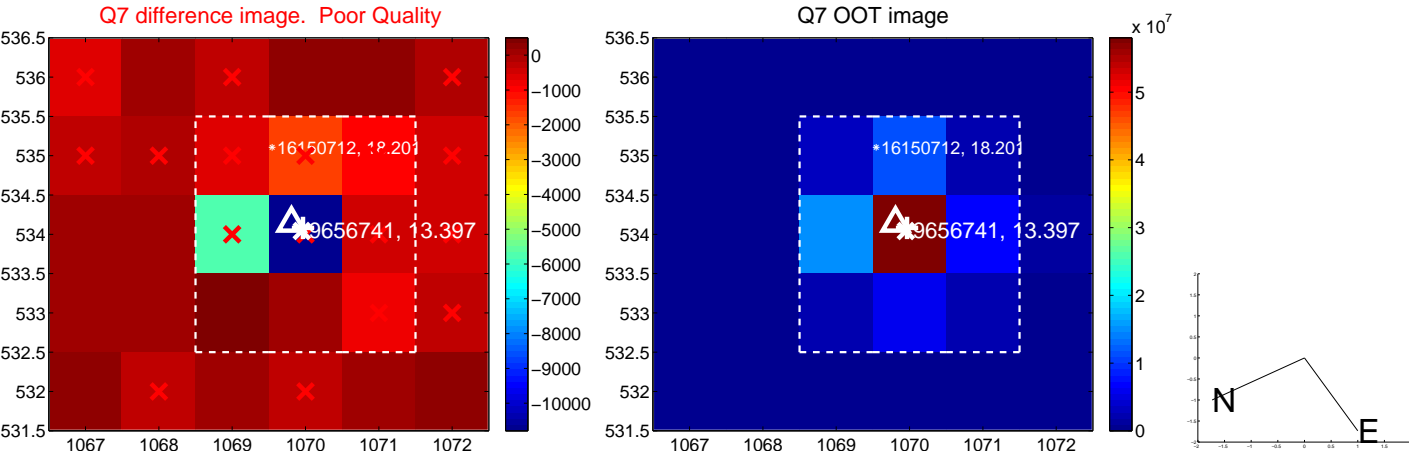
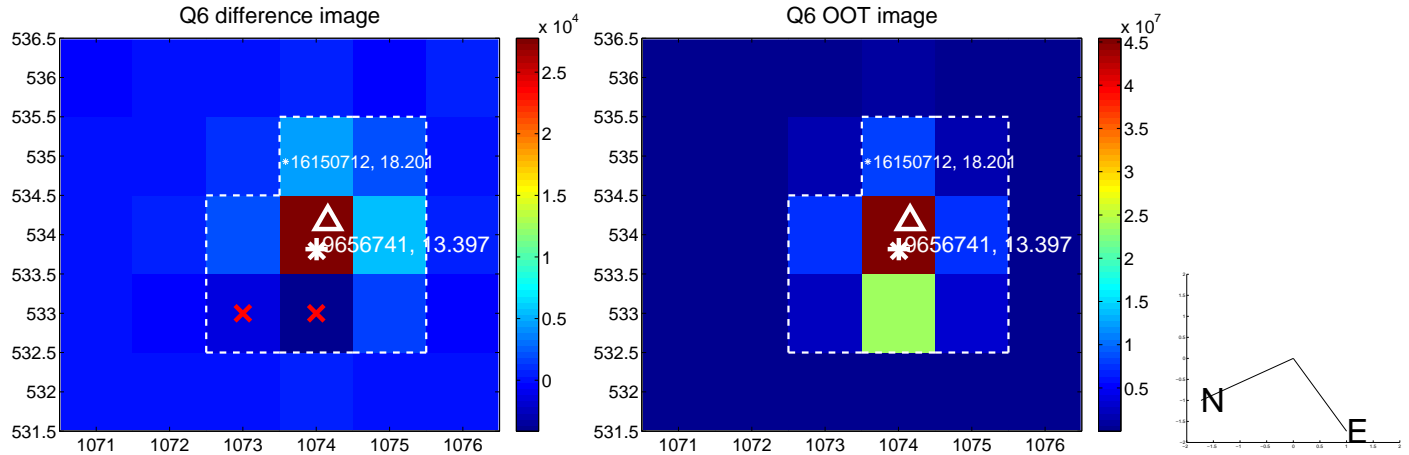
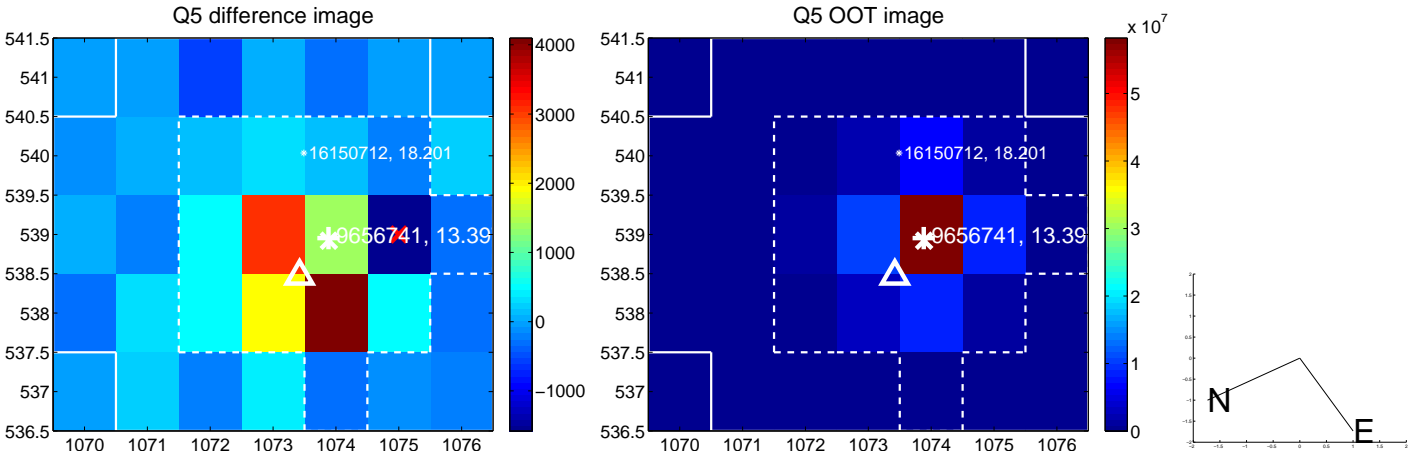


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

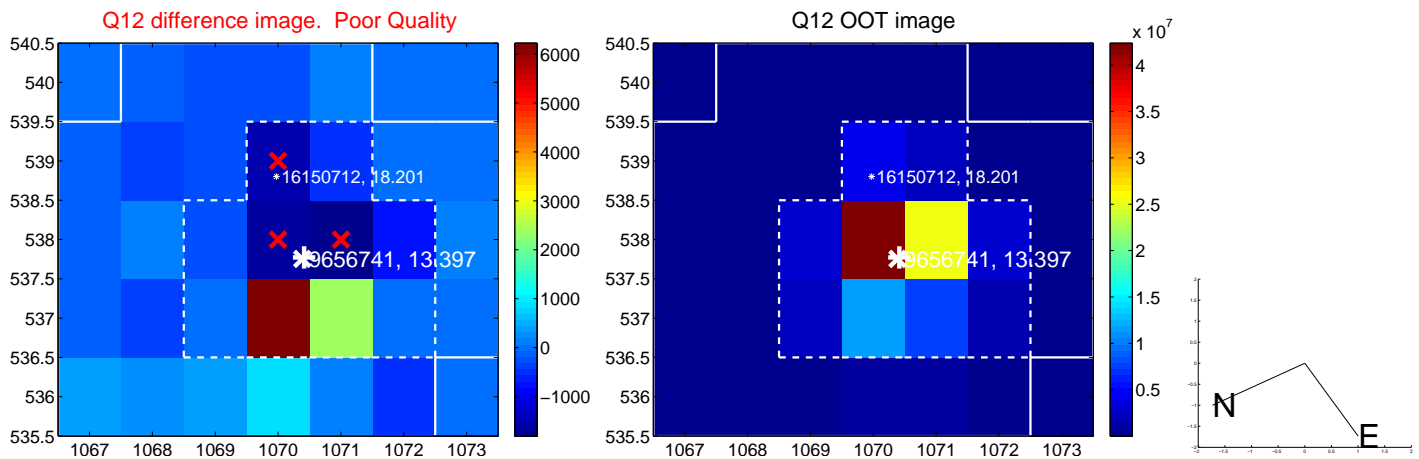
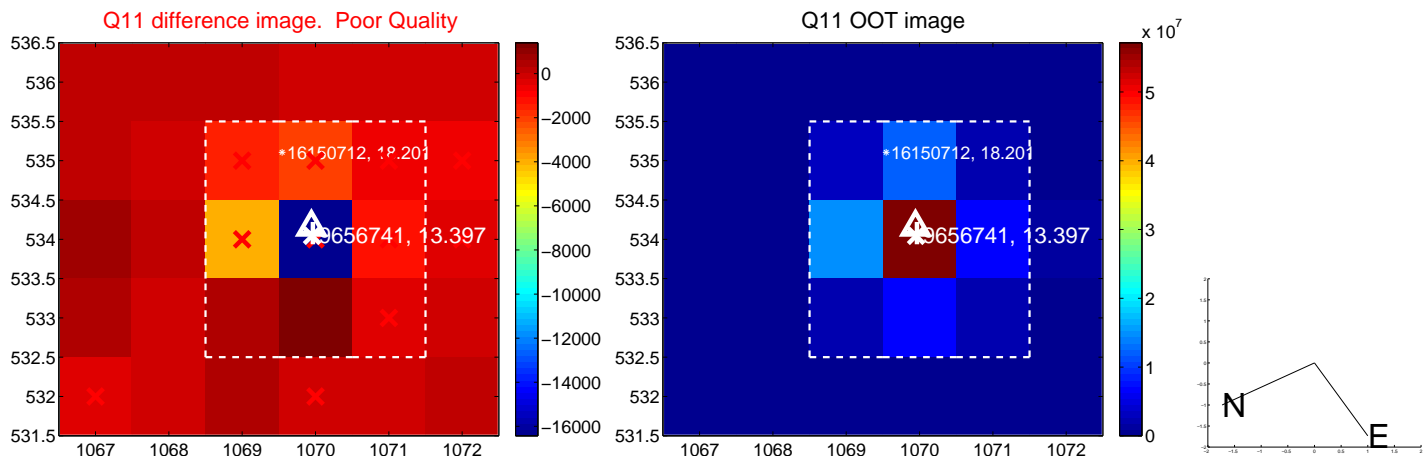
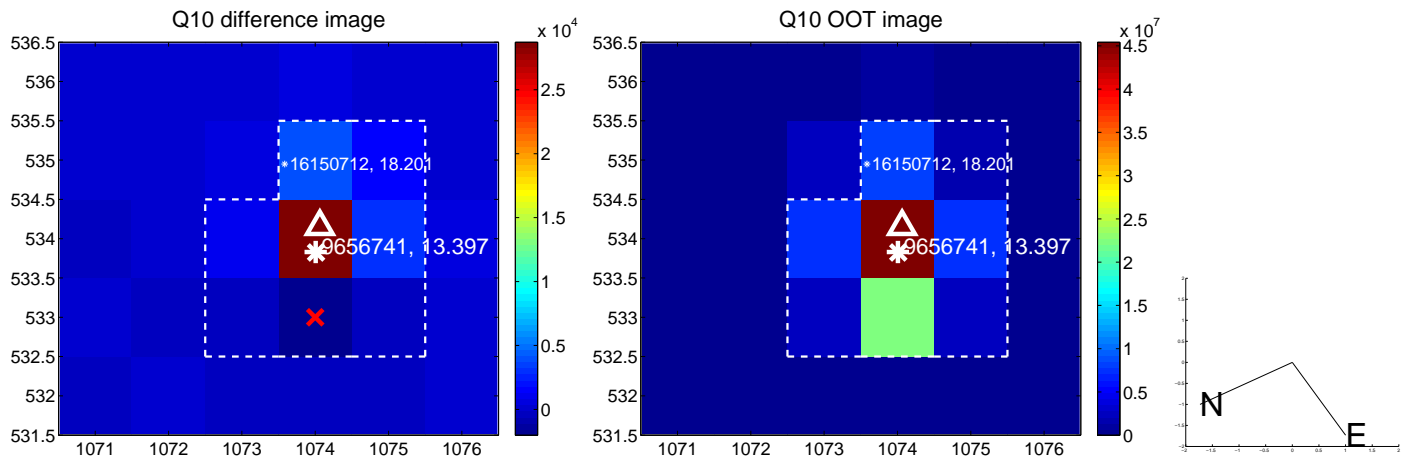
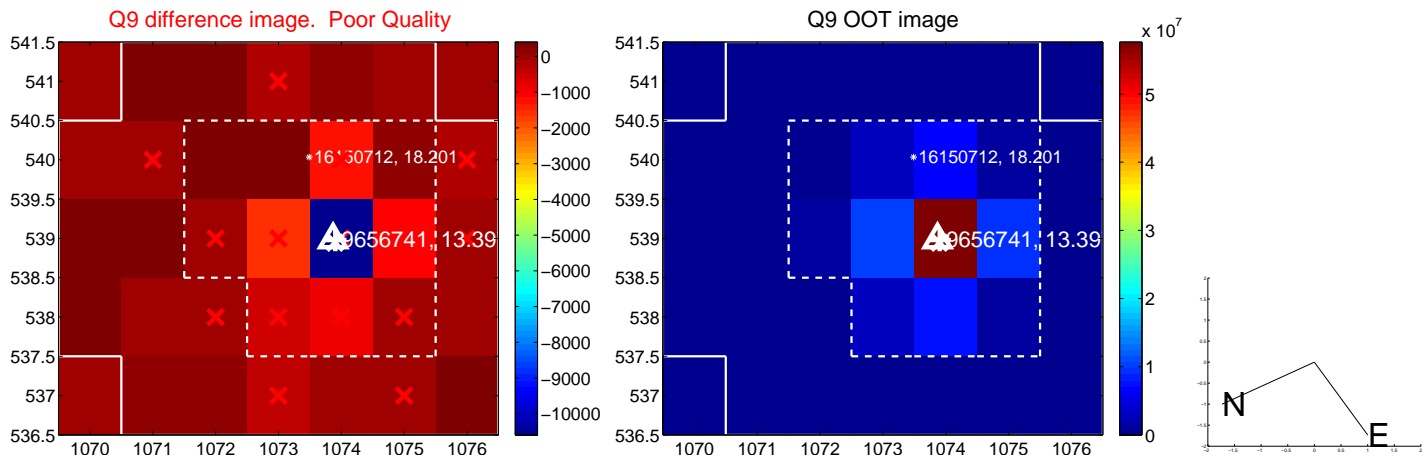
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

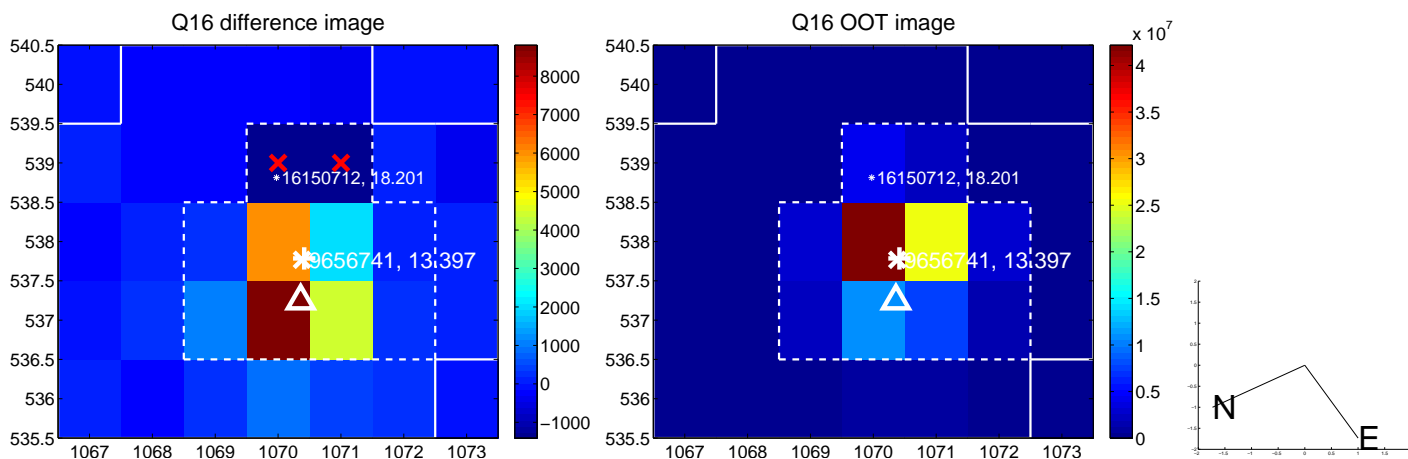
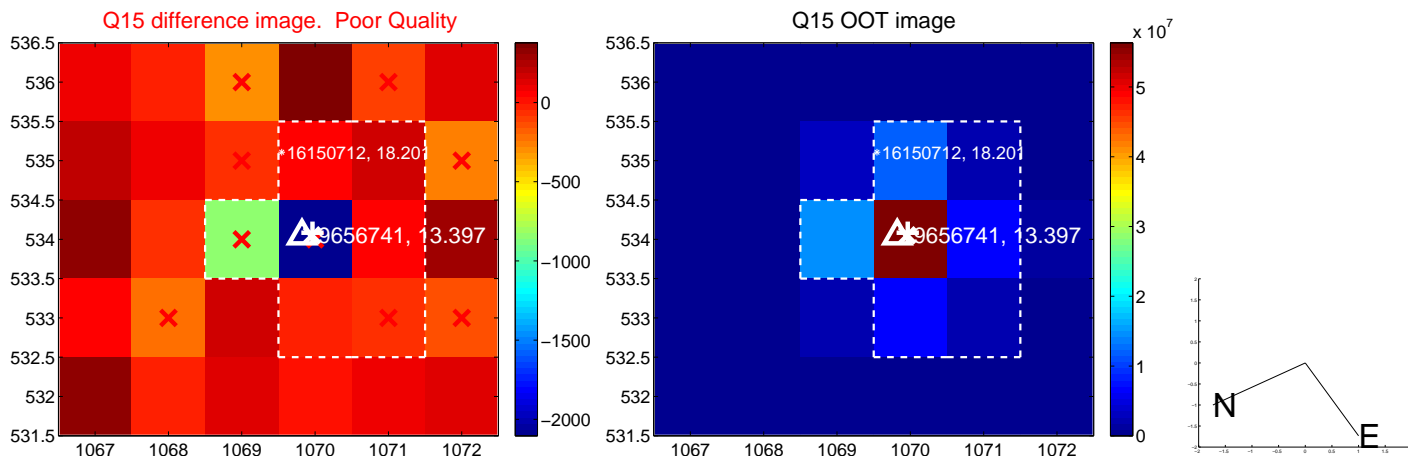
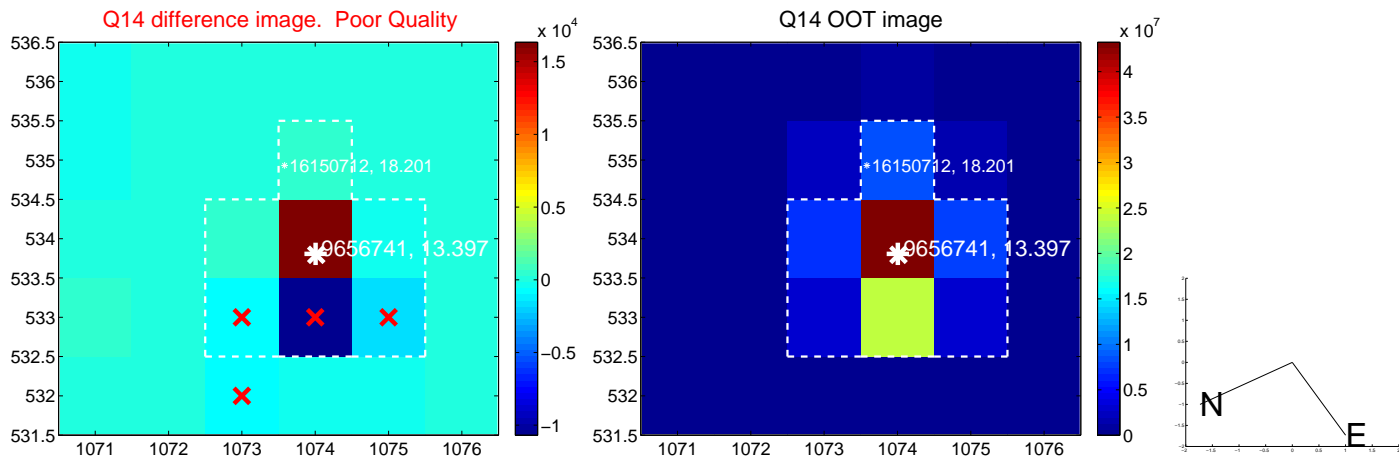
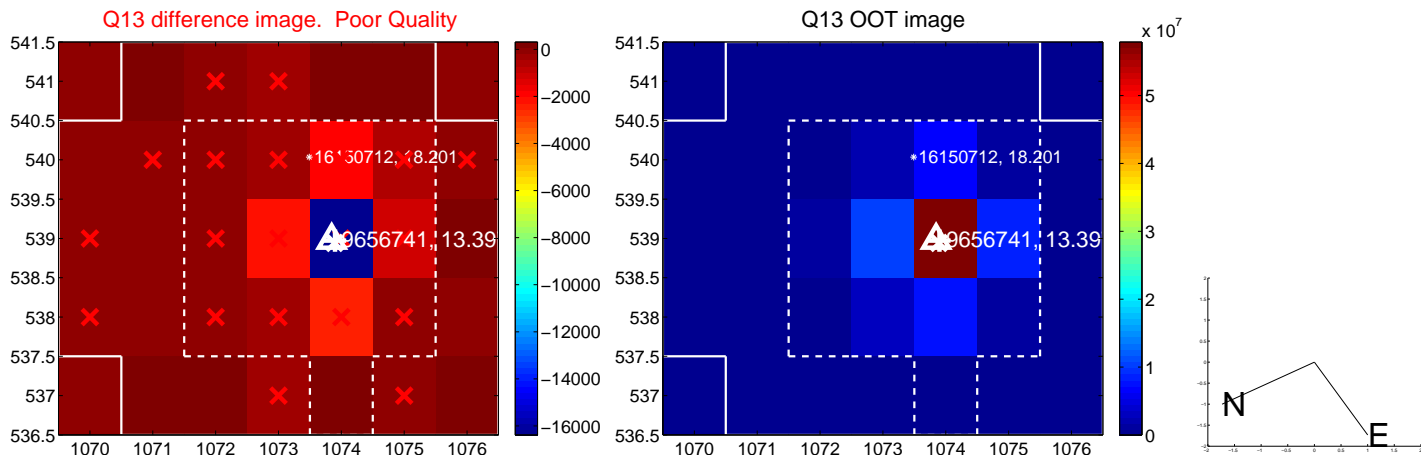


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

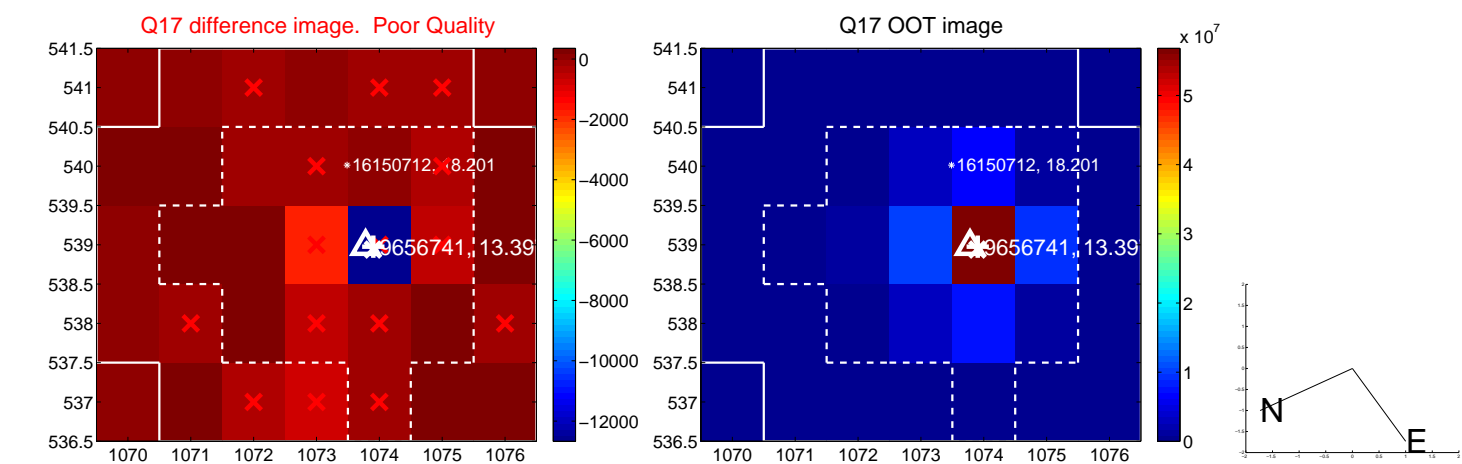




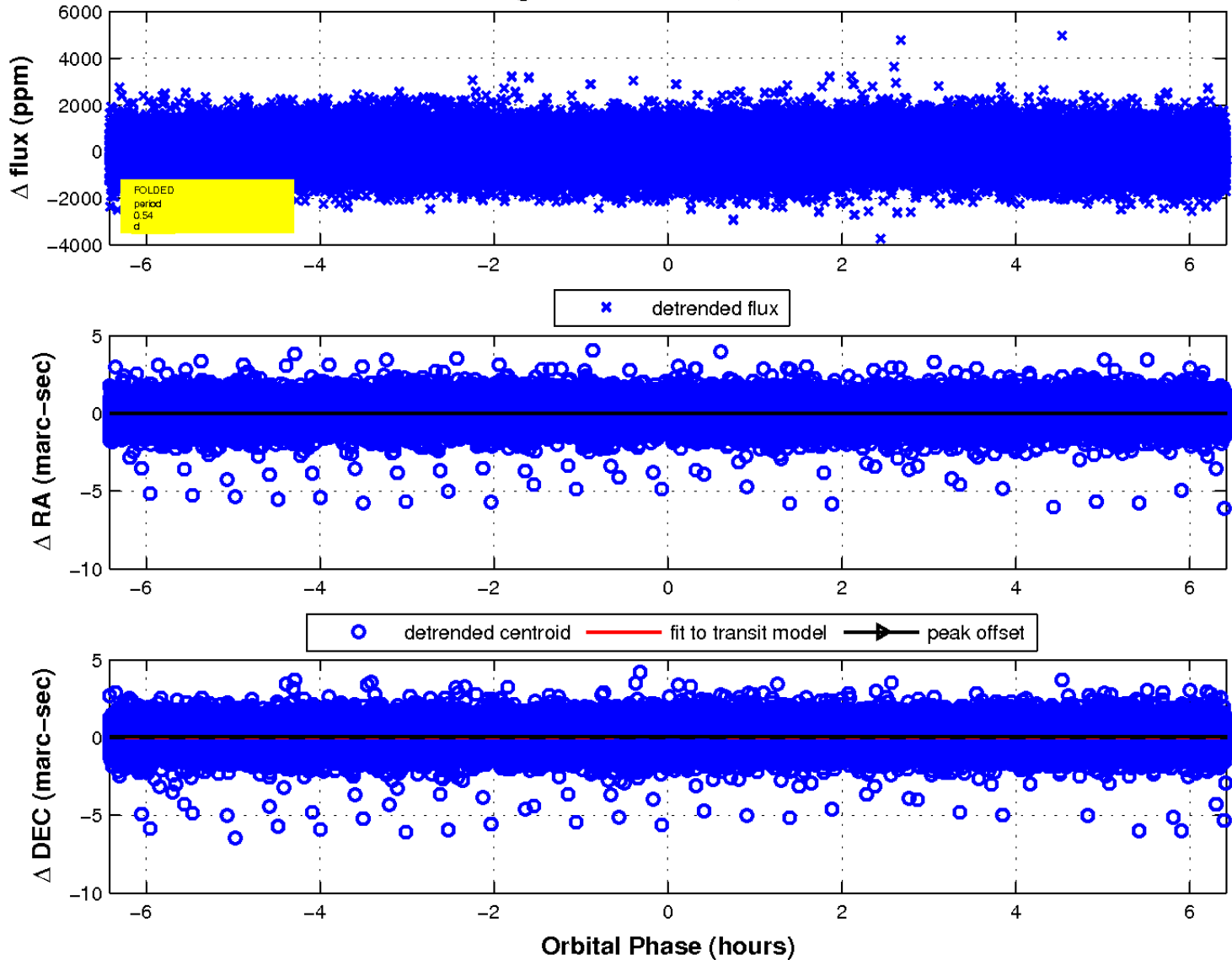
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

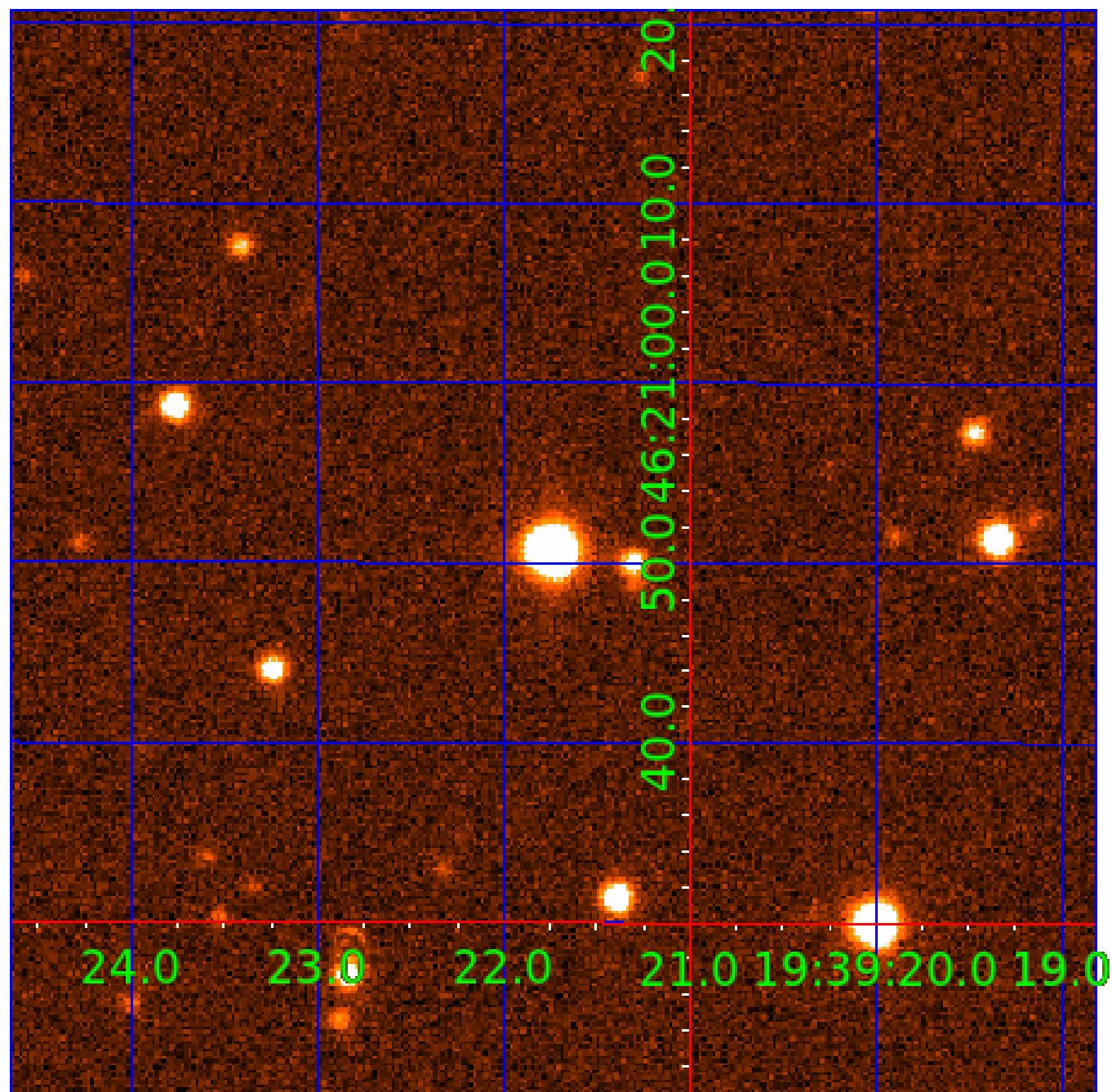


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



# KIC 009656741

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009656741-01	OBS	No	1.338113	132.615793	87.6	4.731	10.9	9.1	1.87	7557	2.02	13172.99
009656741-02	OBS	No	0.535258	131.533637	78.8	3.659	11.8	9.4	1.87	7557	1.70	44694.81
009656741-03	OBS	No	1.249092	131.953622	240.5	3.855	11.1	9.2	1.87	7557	3.31	14439.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009656741-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009656741-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
009656741-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

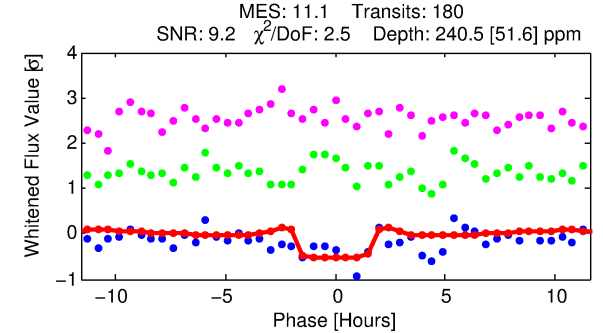
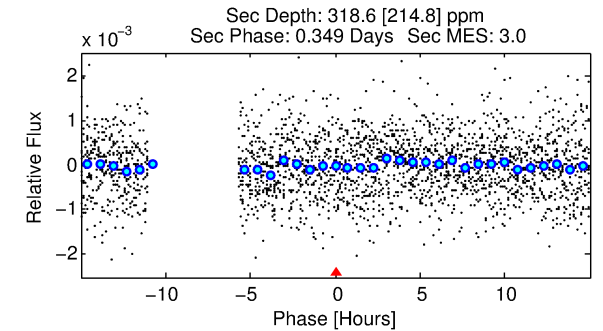
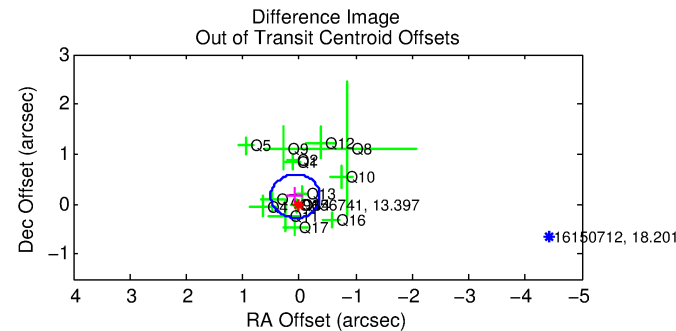
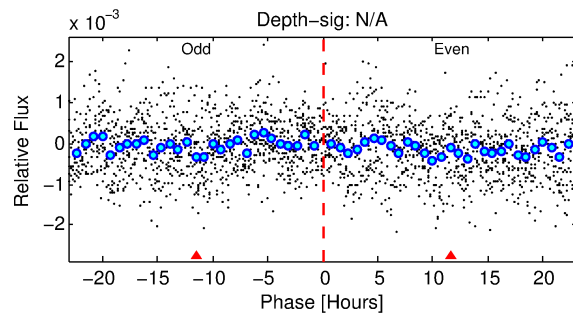
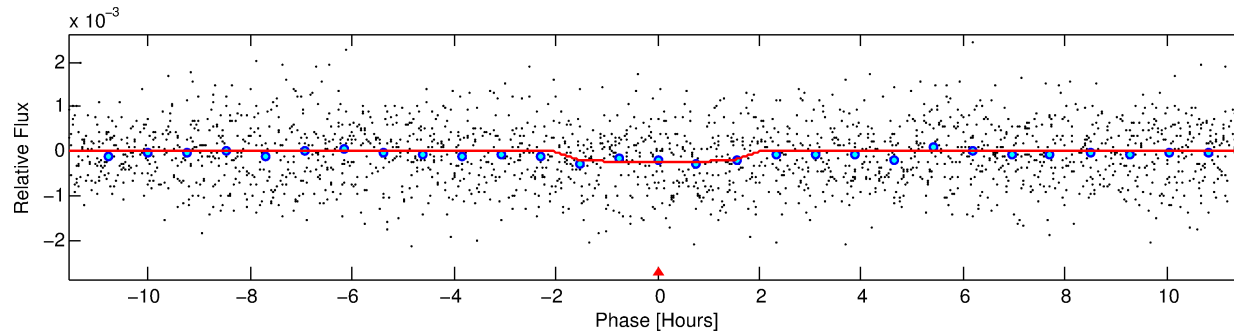
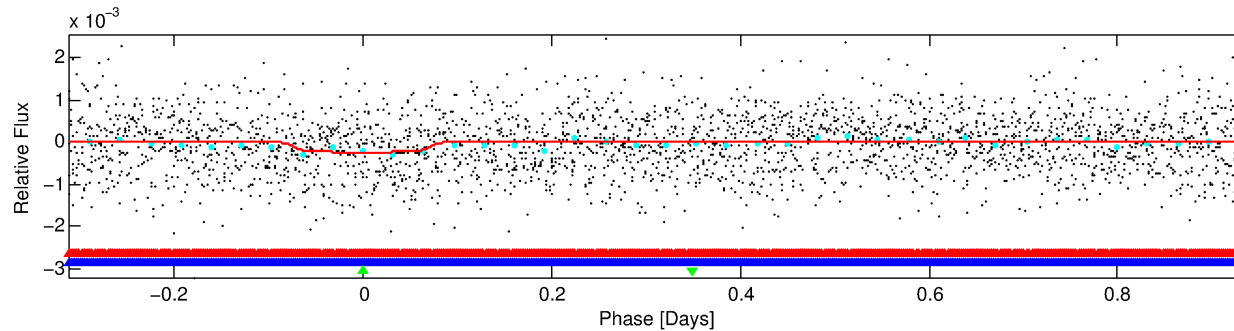
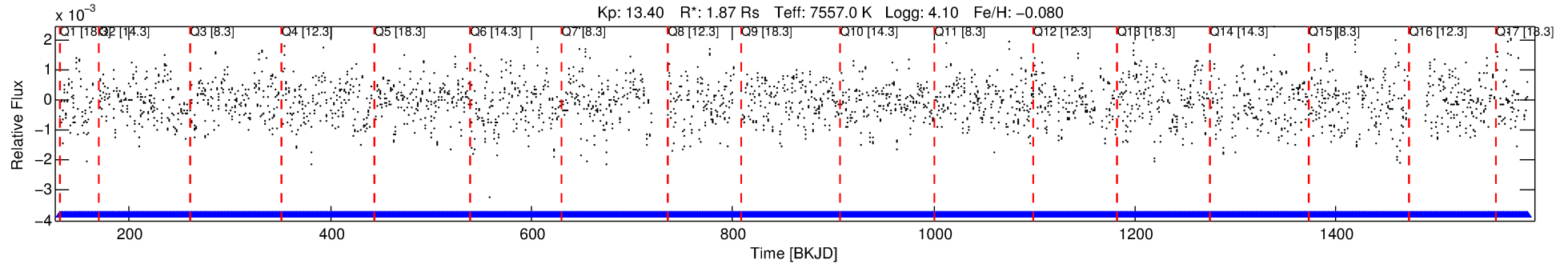
Ephemeris Match Information For 009656741-03

No Significant Match Found



# DV One-Page Summary

KIC: 9656741 Candidate: 3 of 3 Period: 1.249 d



## DV Fit Results:

Period = 1.24909 [0.00002] d  
Epoch = 131.9536 [0.0052] BKJD  
Rp/R\* = 0.0162 [0.0063]  
a/R\* = 1.56 [2.19]  
b = 0.88 [0.61]  
Seff = 14439.39 [5379.36]  
Teff = 2795 [260] K  
Rp = 3.32 [1.58] Re  
a = 0.0266 [0.0060] AU  
Ag = 11.30 [12.19] [0.84σ]  
Teffp = 7923 [2068] K [2.46σ]

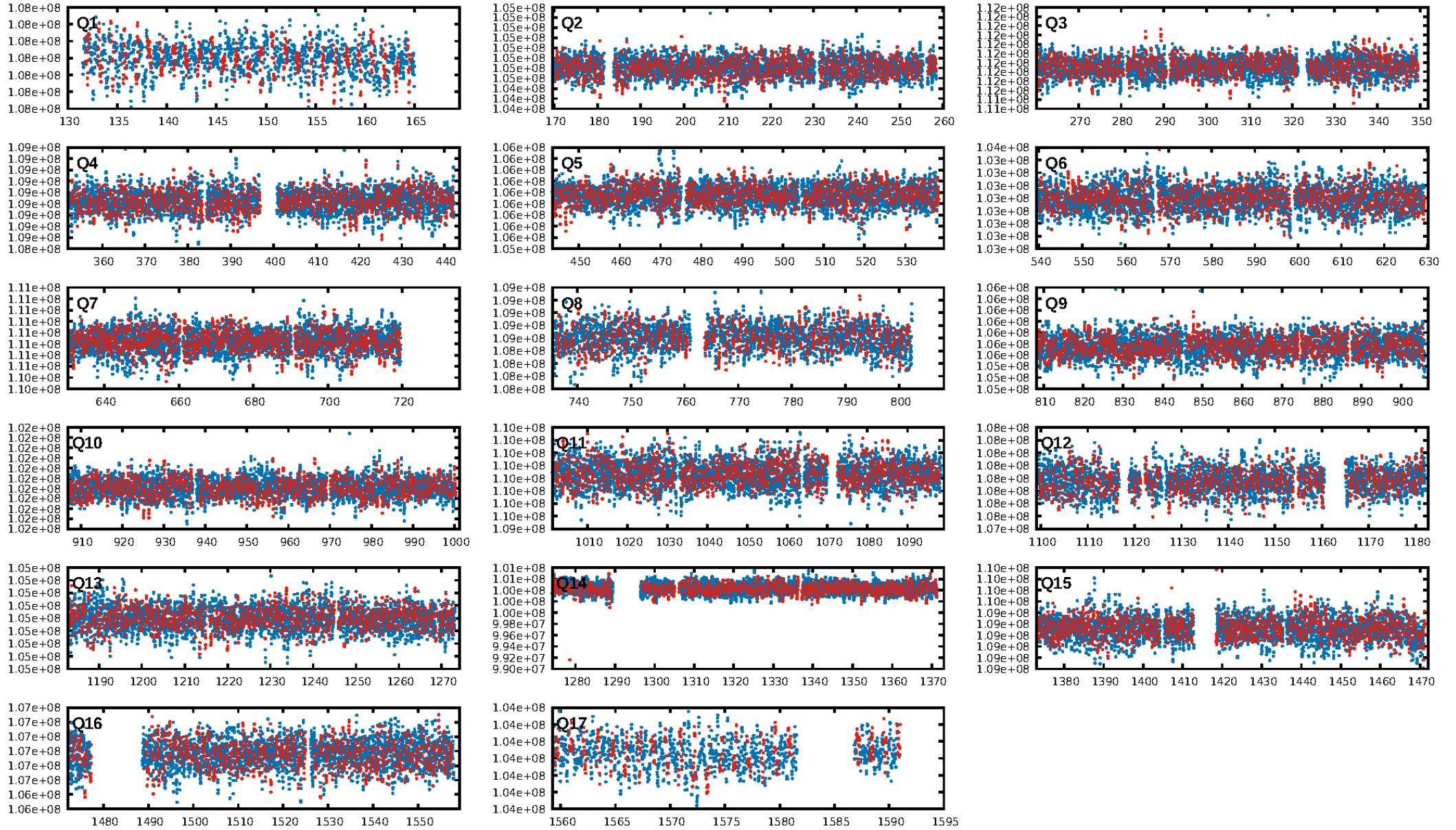
## DV Diagnostic Results:

ShortPeriod-sig: 99.9% [3.22σ]  
LongPeriod-sig: 27.4% [0.35σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [174/174]  
GhostDiagnostic-chr: 0.6677  
Centroid-sig: 17.4%  
Centroid-so: 0.066 arcsec [0.76σ]  
OotOffset-rm: 0.173 arcsec [1.19σ]  
OotOffset-st: 3/4/4/5 [16]  
KicOffset-rm: 0.089 arcsec [0.55σ]  
KicOffset-st: 3/4/4/5 [16]  
DiffImageQuality-fgm: 0.56 [9/16]  
DiffImageOverlap-fno: 0.00 [0/17]

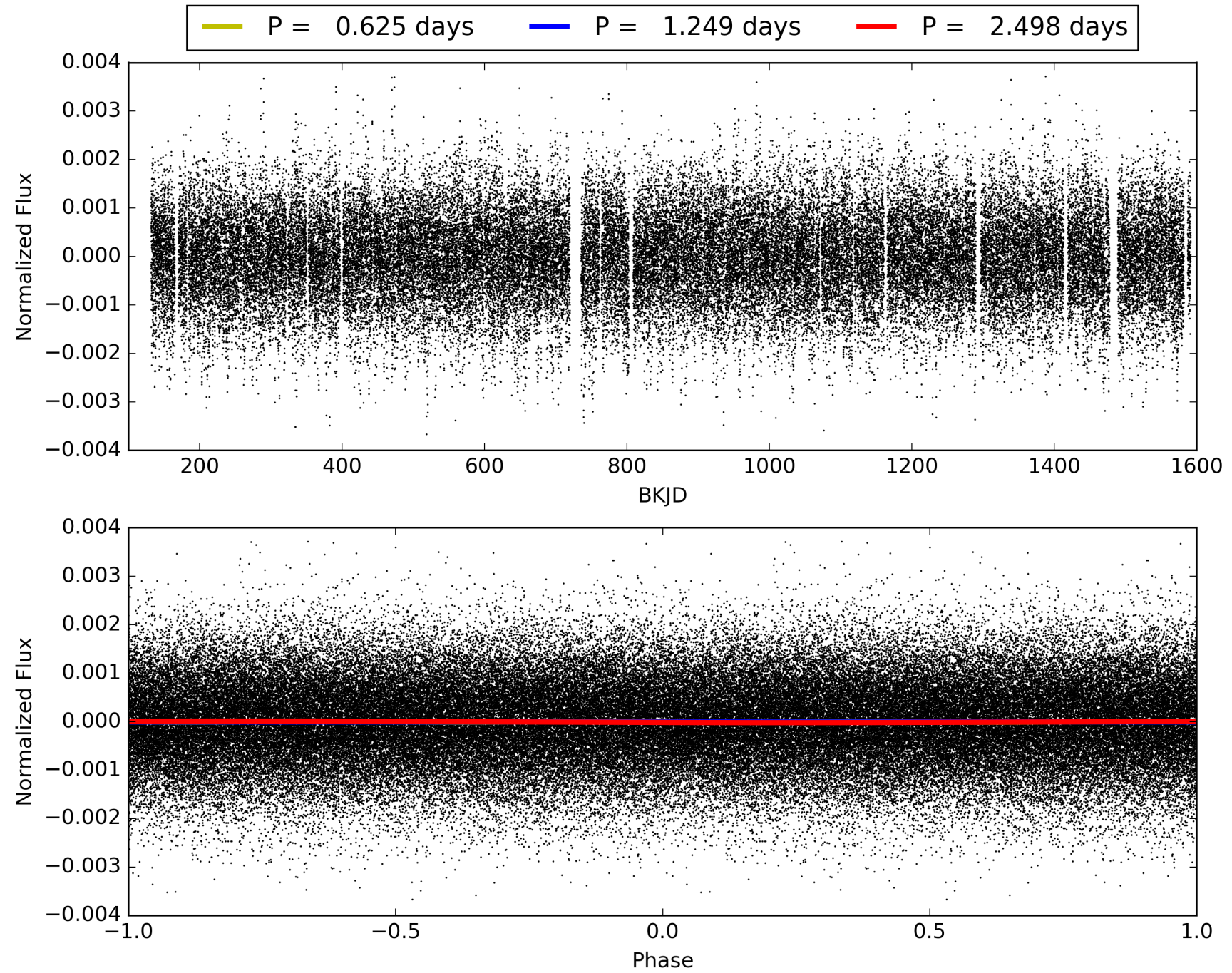
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:07:04 Z

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

# TCE 009656741-03, PDC Light Curves

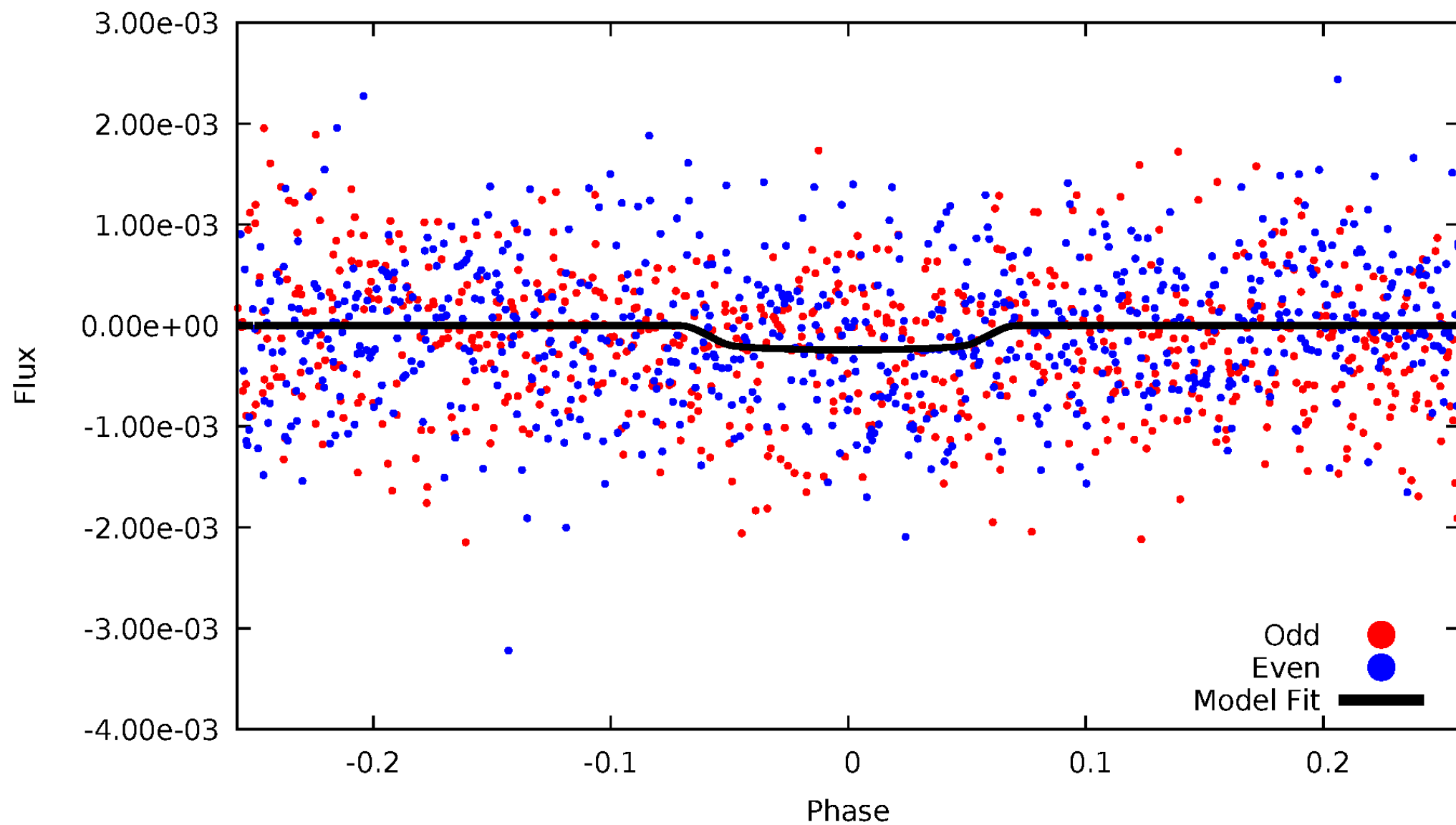


TCE 009656741-03



DV Odd/Even

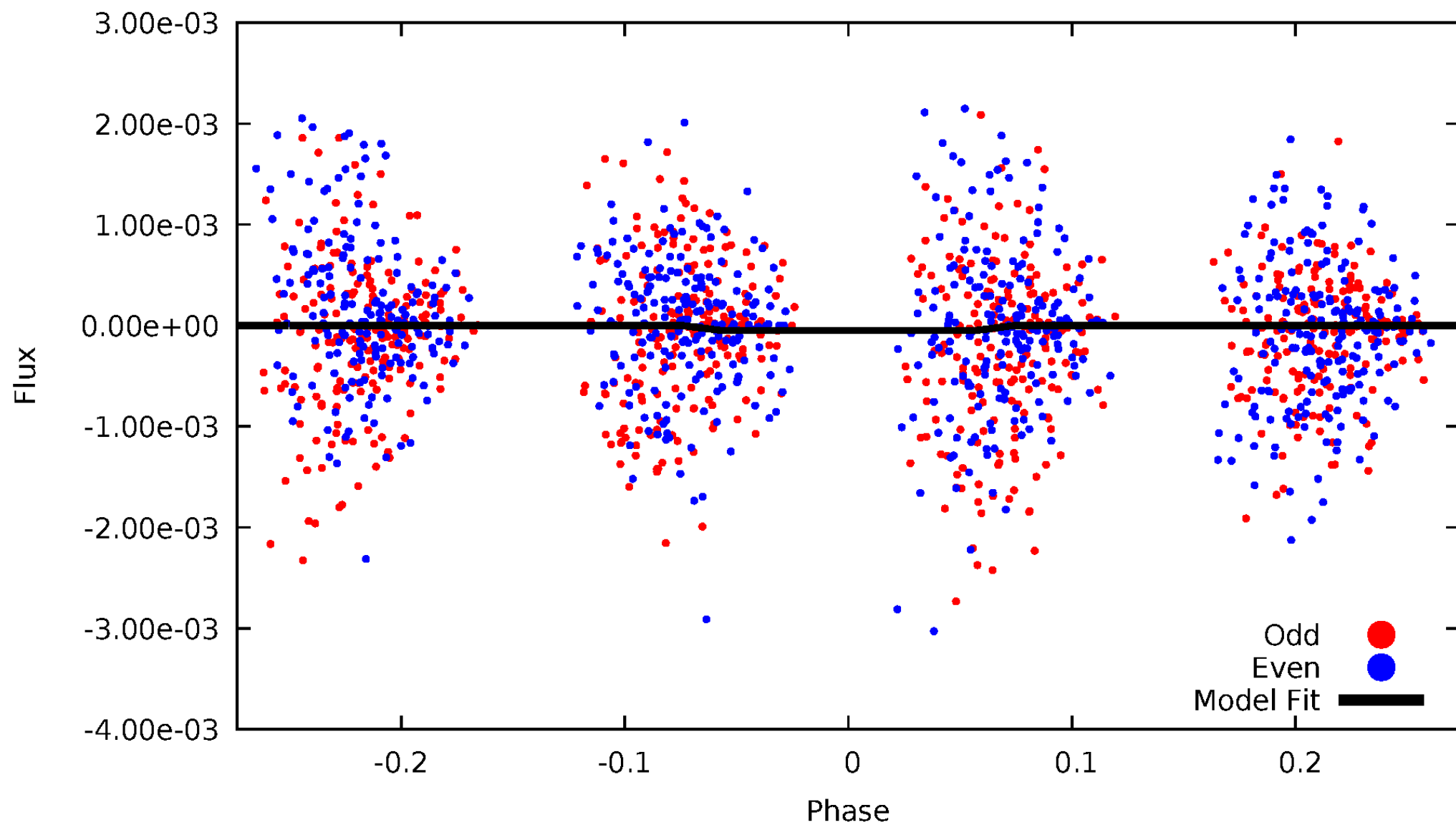
TCE 009656741-03





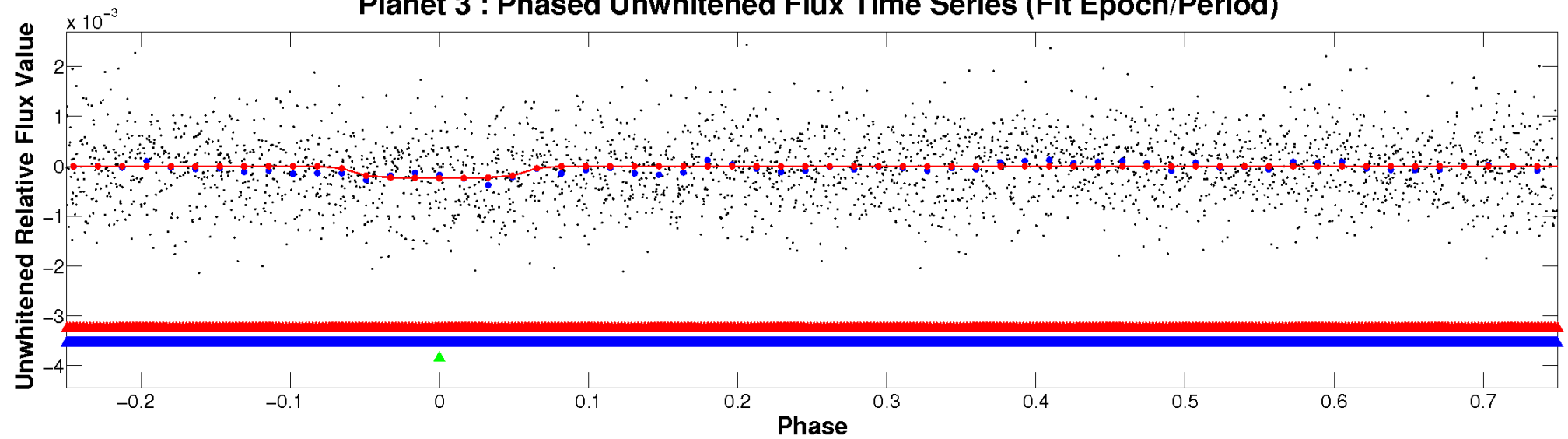
# ALT Odd/Even

TCE 009656741-03

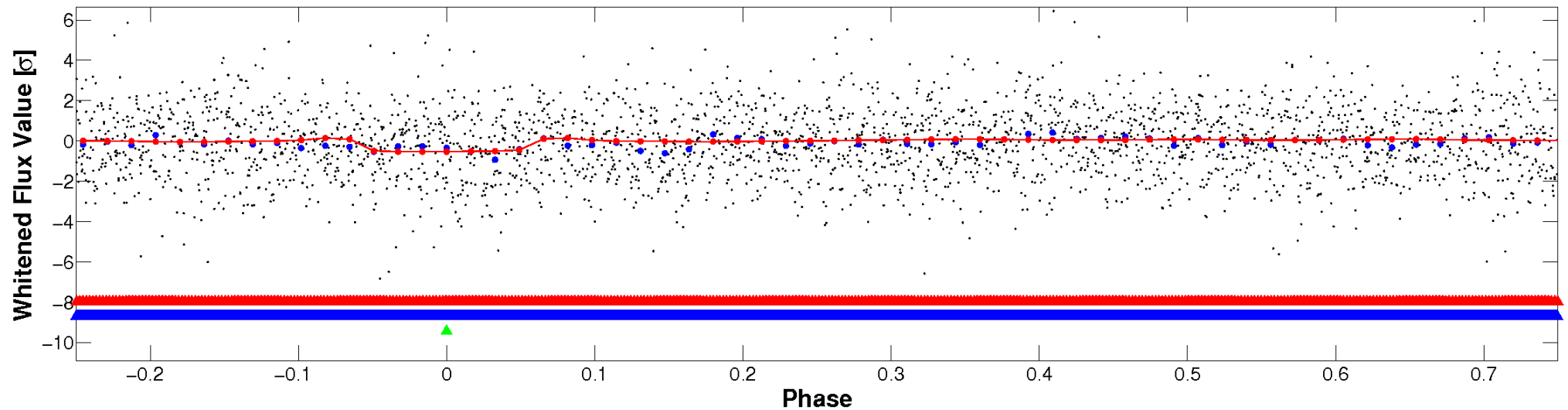


# Non-Whitened Vs. Whitened Light Curve

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

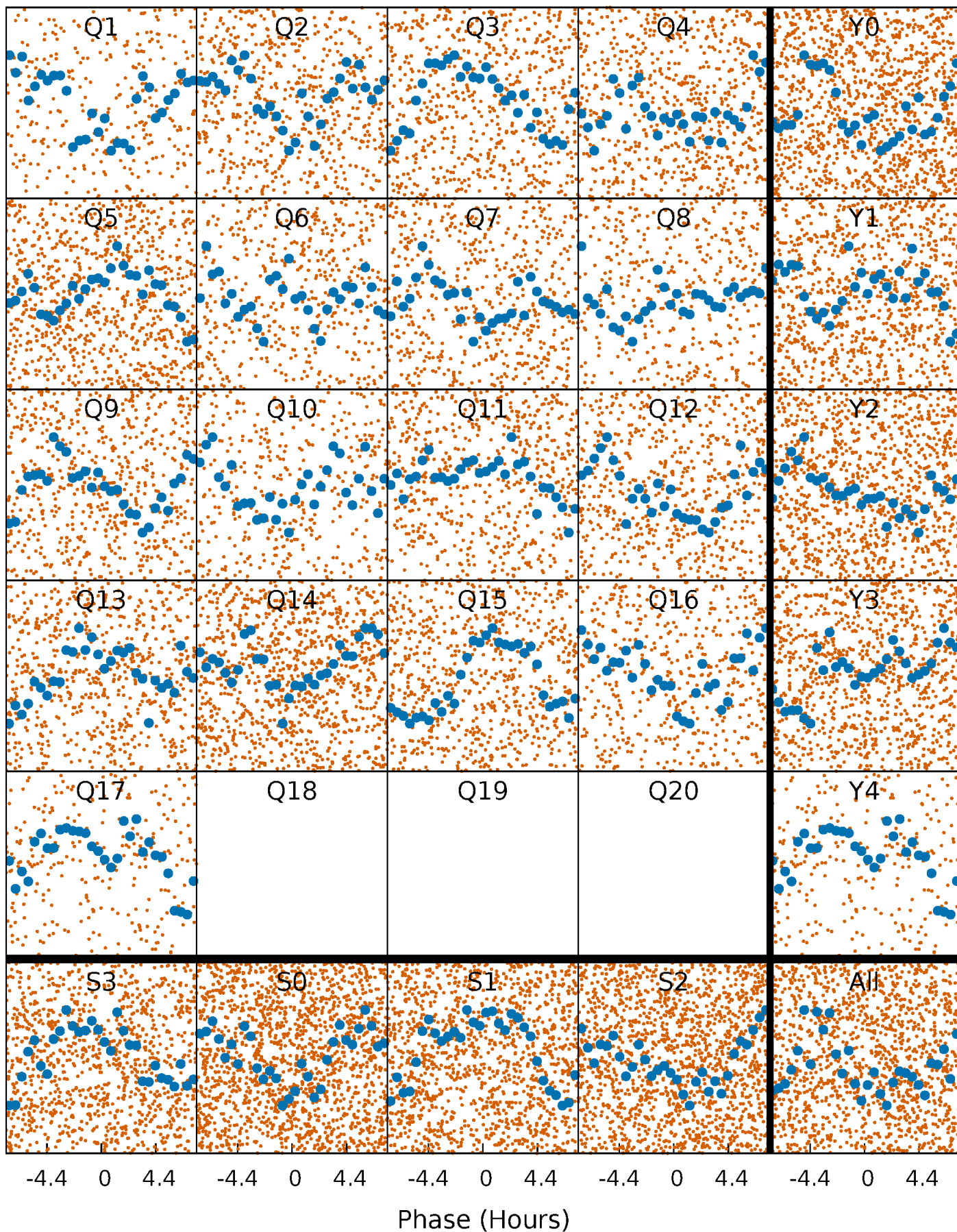


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



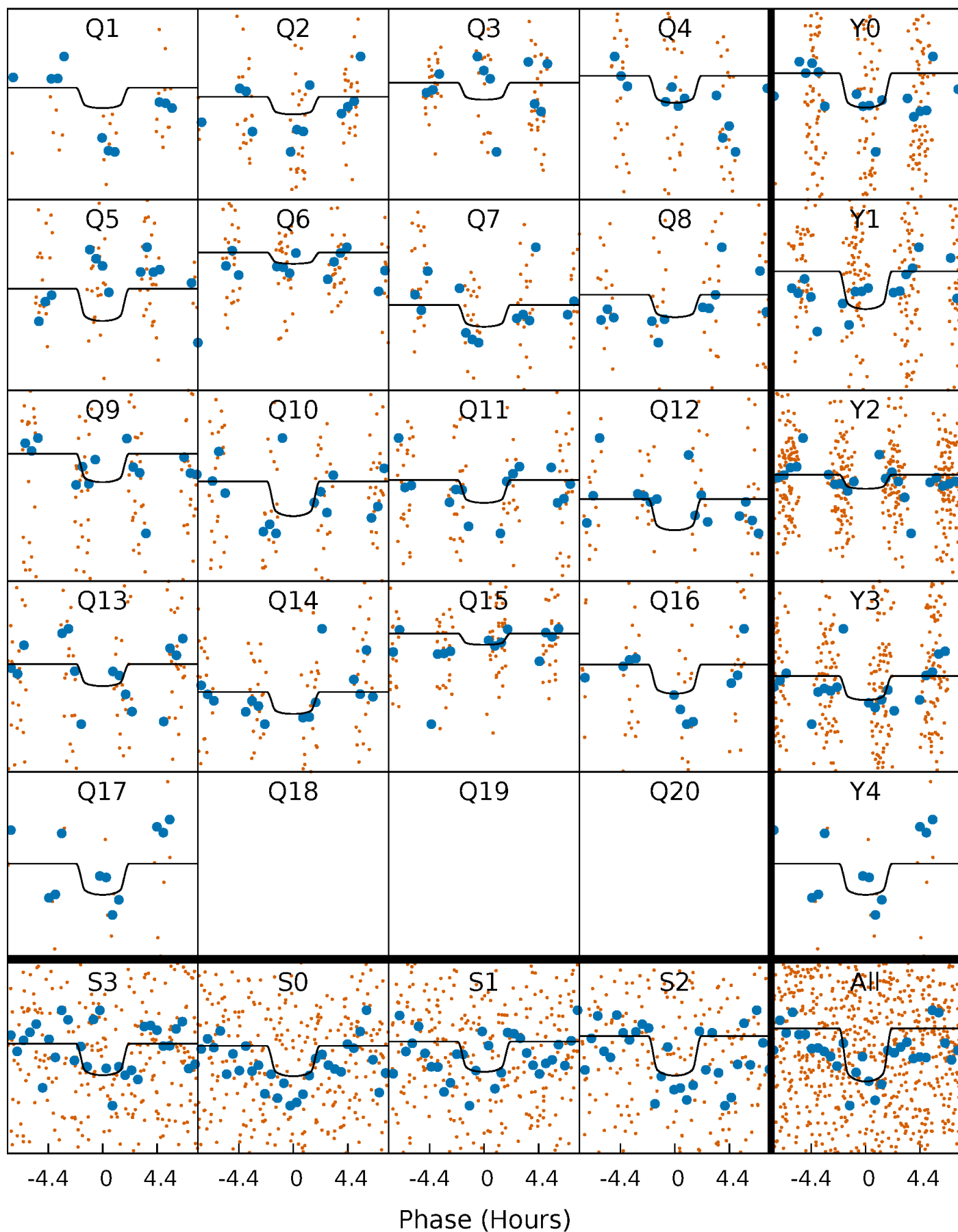
# PDC Quarter-Phased Transit Curves

TCE 009656741-03 P= 1.249092 Days  $T_0=131.953622$  (BKJD)



# DV Quarter-Phased Transit Curves

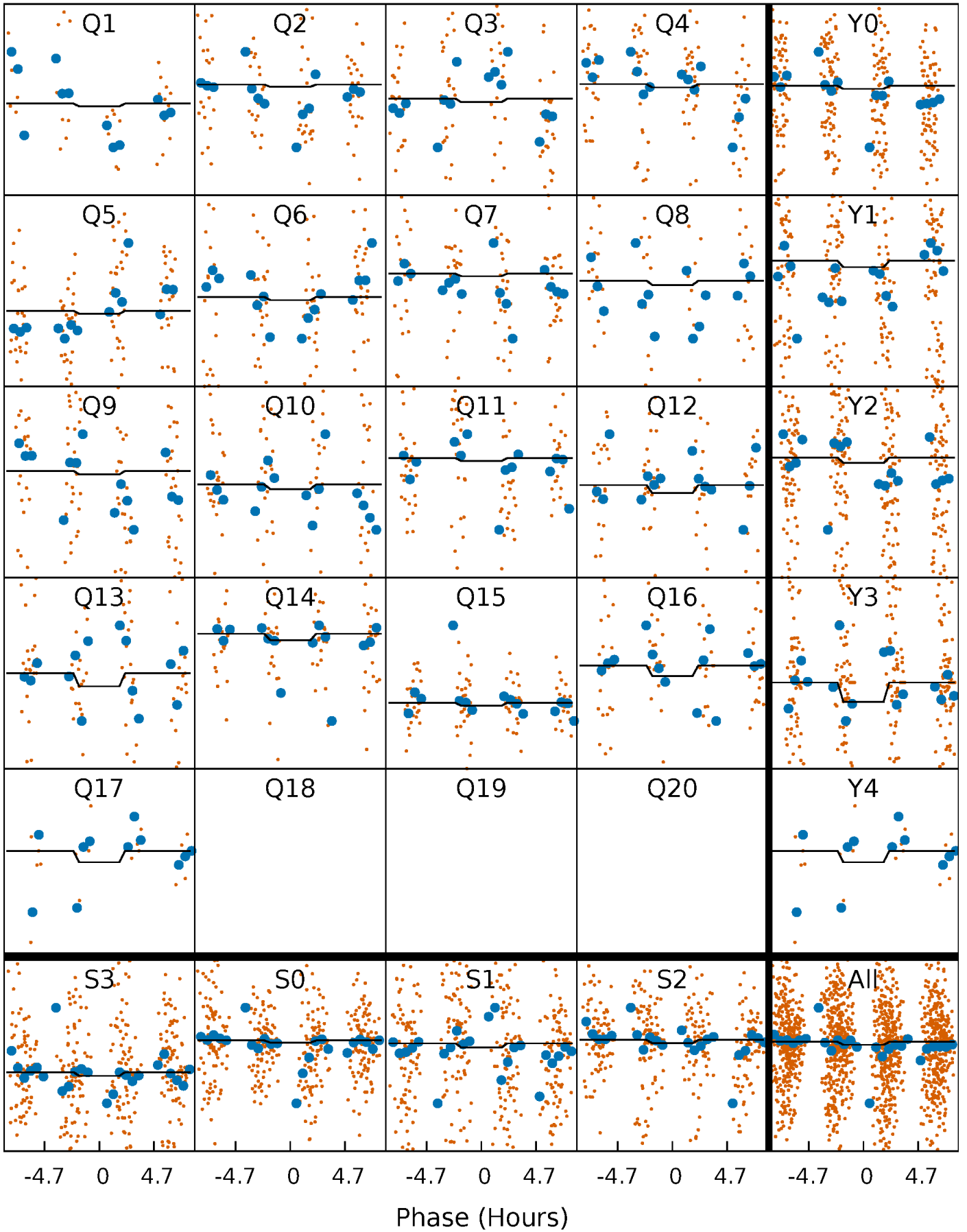
TCE 009656741-03 P= 1.249092 Days  $T_0=131.953622$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

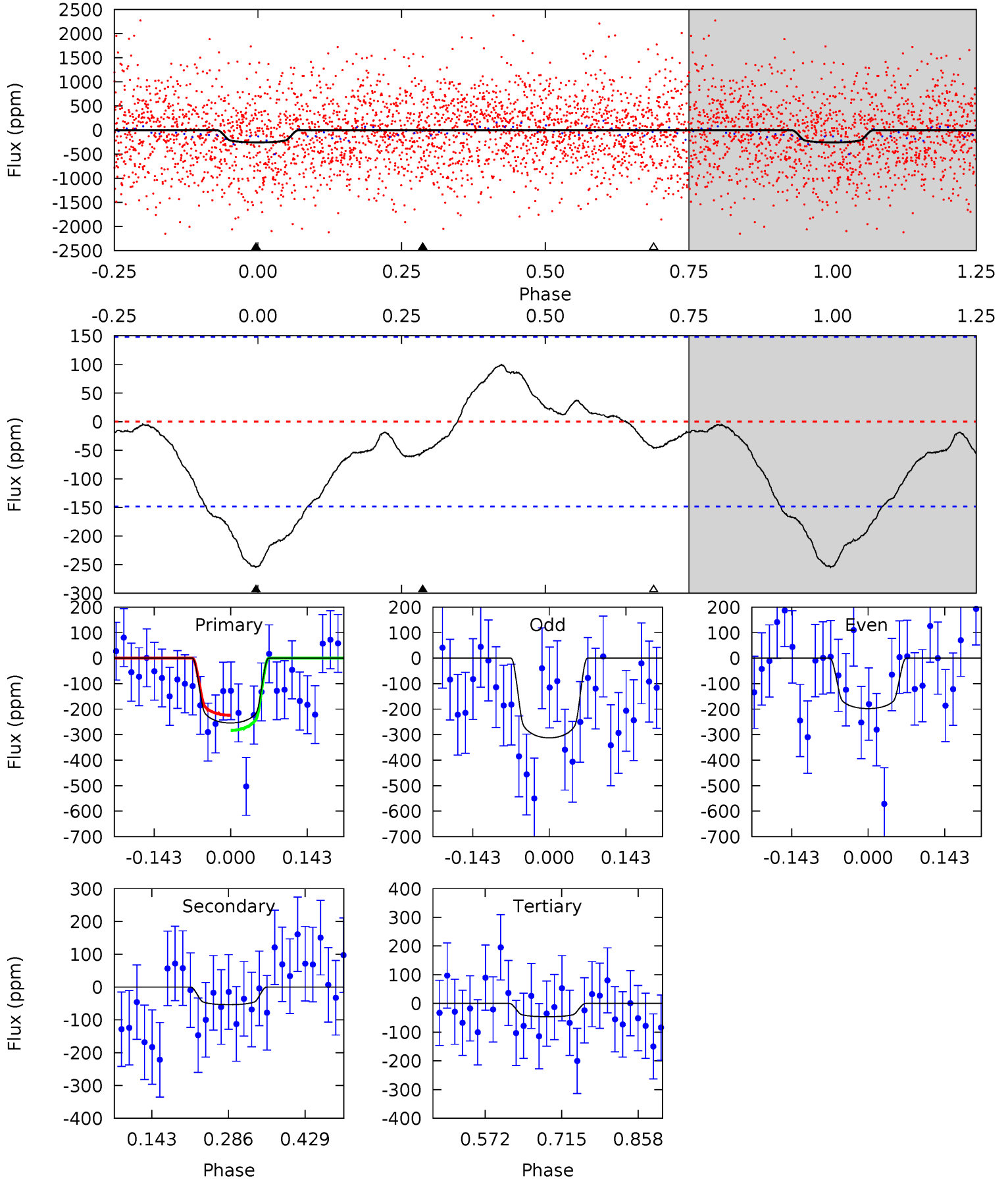
TCE 009656741-03 P= 1.248873 Days  $T_0=131.929024$  (BKJD)



# DV Model-Shift Uniqueness Test

009656741-03, P = 1.249092 Days, E = 130.704530 Days

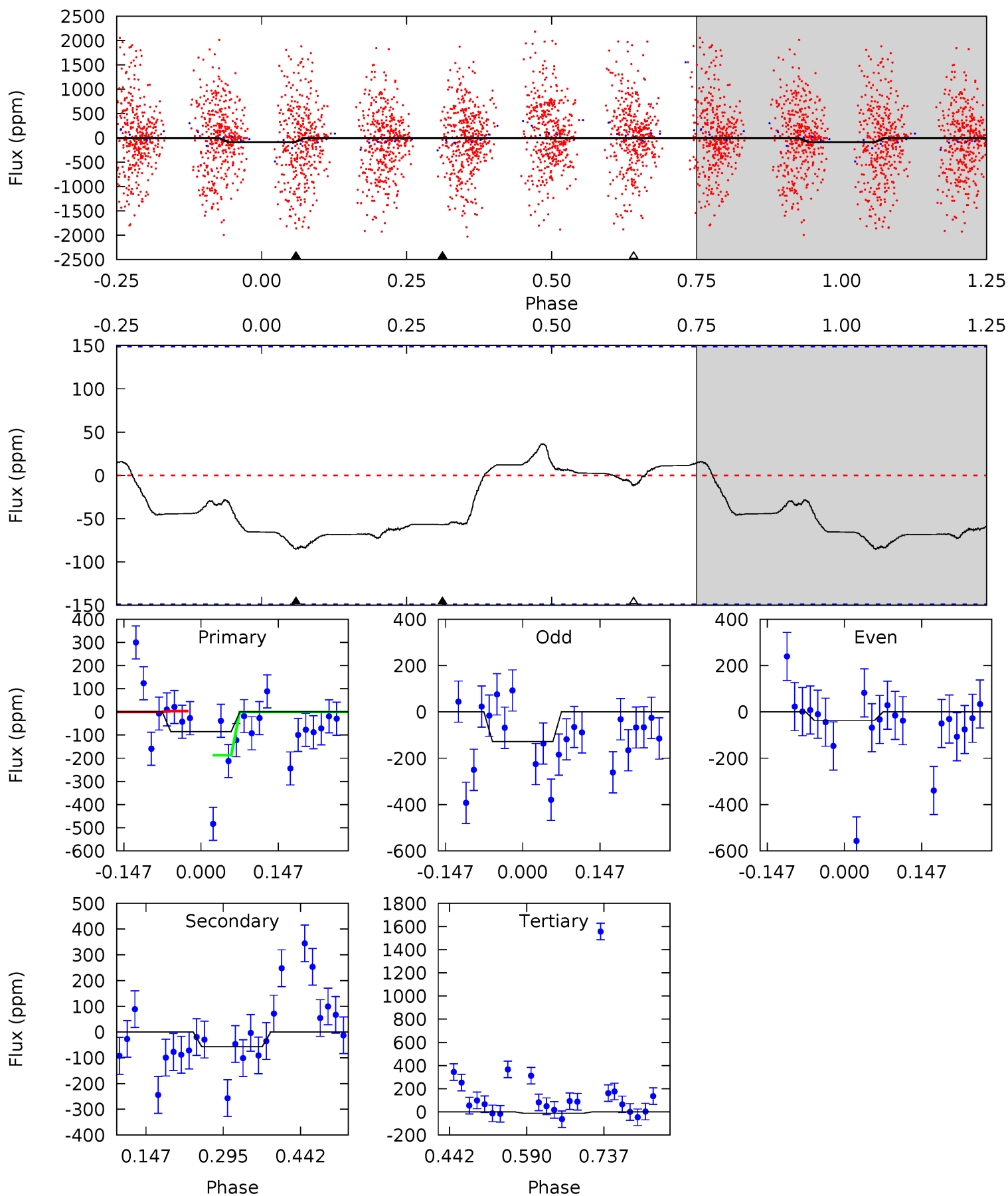
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.69	1.63	1.40	0	4.49	1.46	1.10	6.30	7.69	0.23	1.63	1.76	1.30	0.28	0.87



# Alt Model-Shift Uniqueness Test

009656741-03, P = 1.248873 Days, E = 130.680151 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.56	1.72	0.35	0	4.48	1.45	0.62	2.21	2.56	1.37	1.72	1.41	4.41	0.30	3.11



### Stellar Parameters For KIC 009656741

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7557^{+209}_{-340}$	$4.101^{+0.160}_{-0.176}$	$-0.080^{+0.200}_{-0.350}$	$1.871^{+0.513}_{-0.420}$	$1.612^{+0.188}_{-0.282}$	$0.347^{+0.287}_{-0.167}$
	+3%/-4%	+4%/-4%	+250%/-438%	+27%/-22%	+12%/-17%	+83%/-48%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 009656741-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-54 \pm 33$	$3.44^{+1.36}_{-1.34}$	$3912^{+267}_{-288}$	$4757^{+1460}_{-1264}$	$1.642^{+3.191}_{-1.104}$
Alt.	$-57 \pm 33$	$1.63^{+1.22}_{-1.02}$	$3906^{+281}_{-295}$	$6987^{+8224}_{-2146}$	$7.466^{+51.637}_{-5.694}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

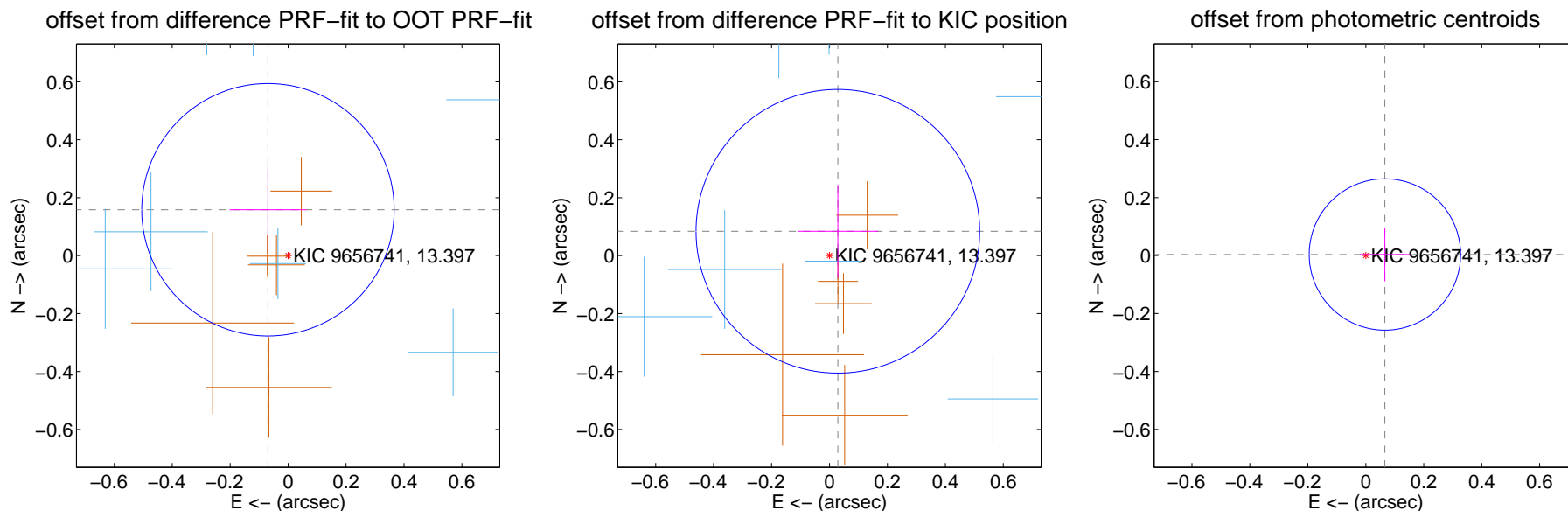
## DV Centroid Data

Supplemental centroid analysis for 009656741-03. Kepler magnitude: 13.40. Transit SNR 9.16

There are 9 quarters with good PRF difference image offsets

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

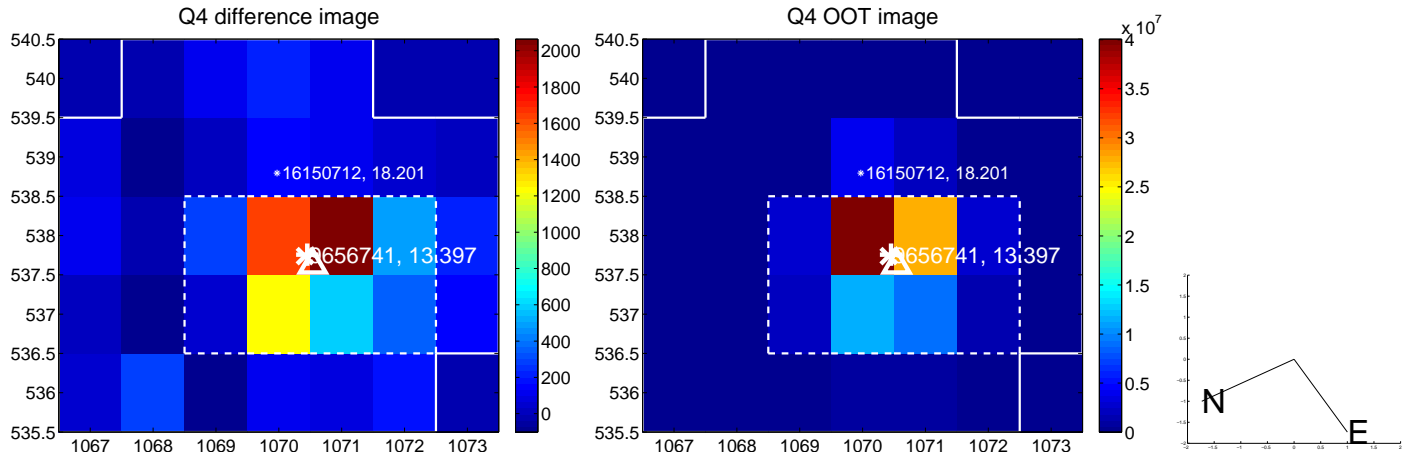
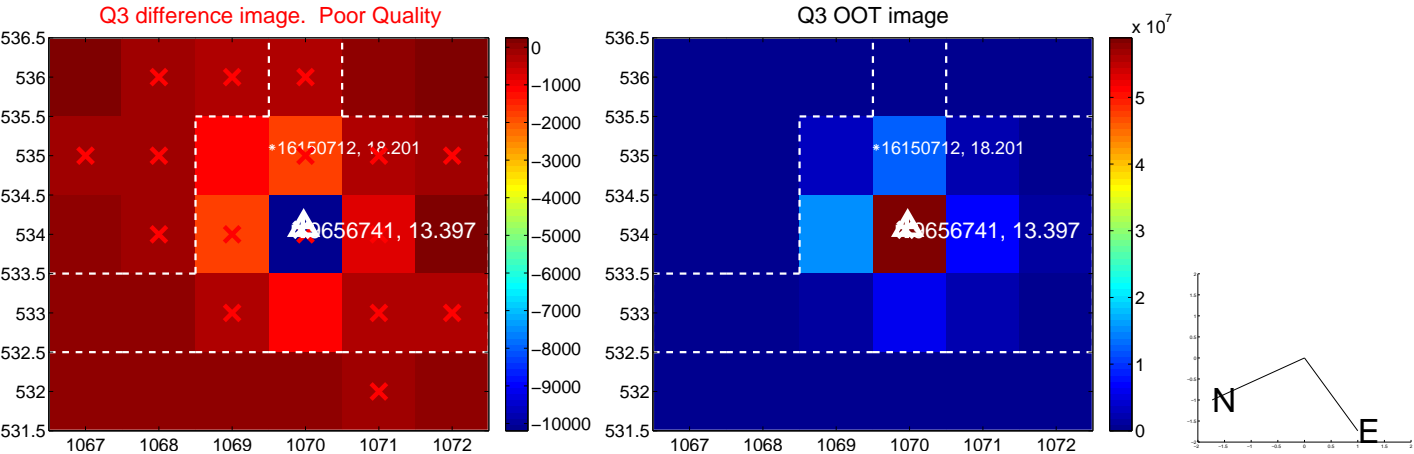
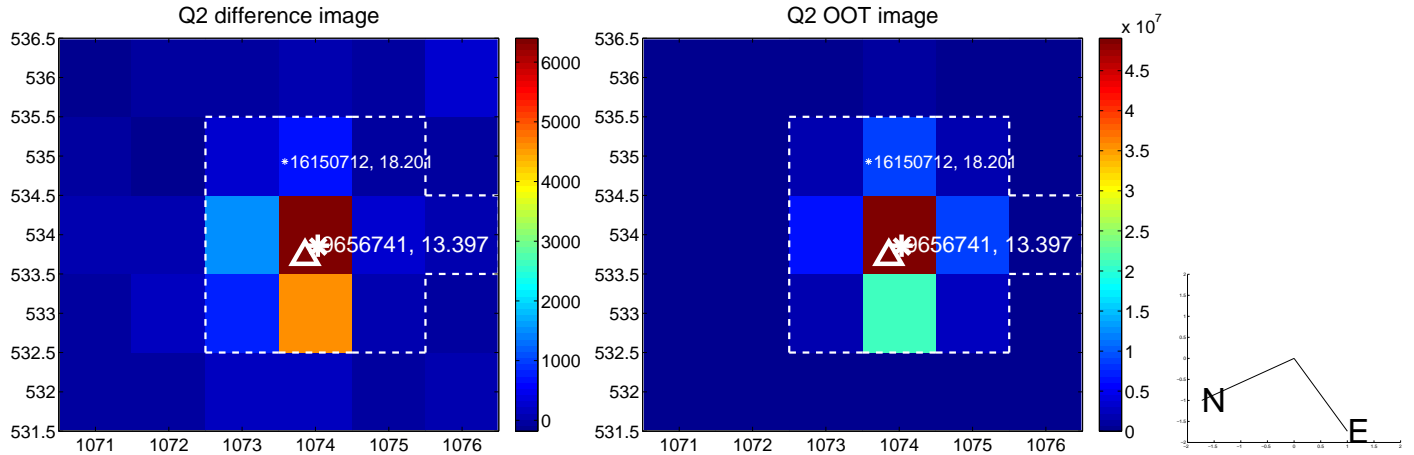
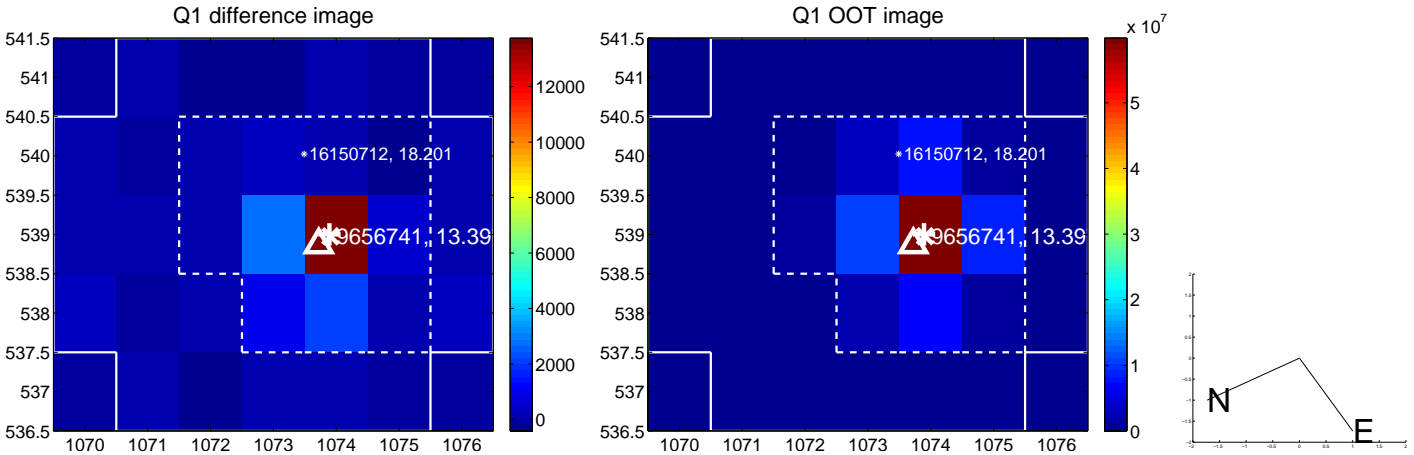
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.173 \pm 0.145$	1.19	$0.070 \pm 0.132$	$0.158 \pm 0.151$
PRF-fit source offset from KIC position	$0.089 \pm 0.163$	0.55	$-0.029 \pm 0.139$	$0.084 \pm 0.160$
photometric centroid source offset	$0.07 \pm 0.09$	0.76	$-0.07 \pm 0.09$	$0.00 \pm 0.09$



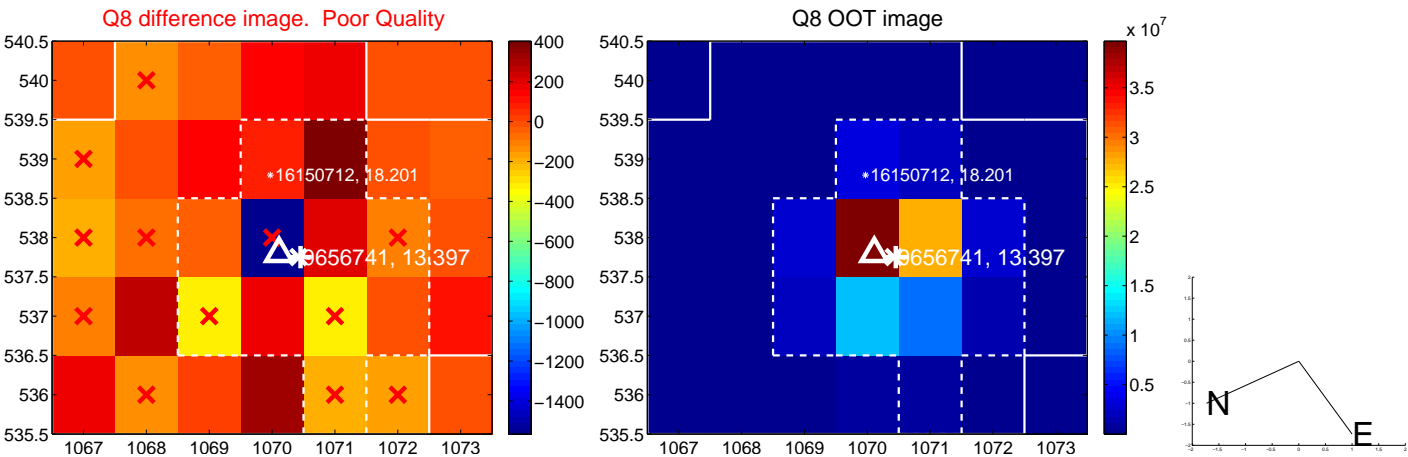
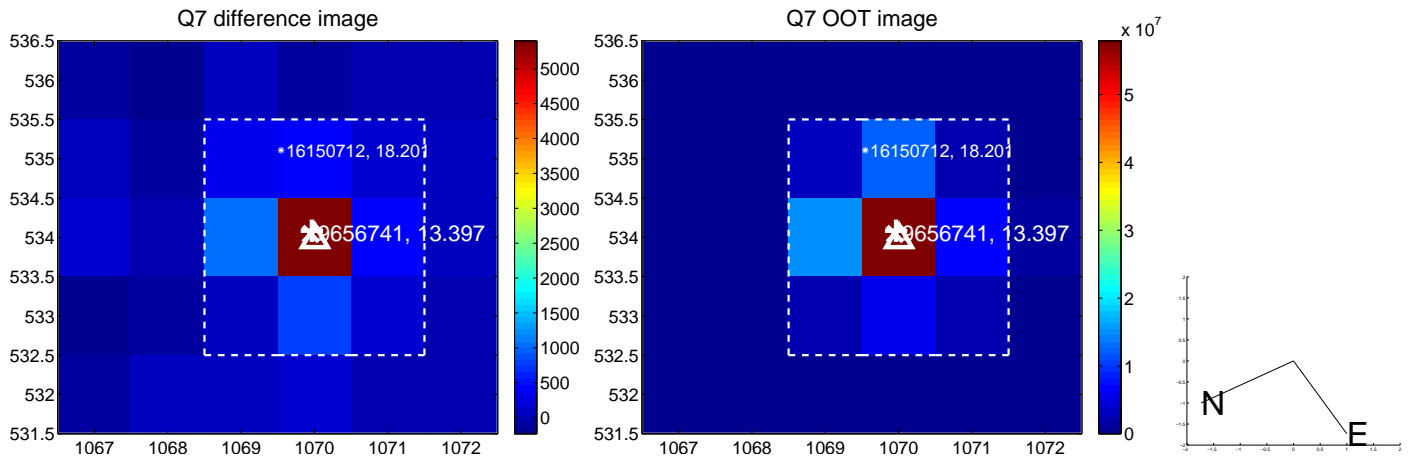
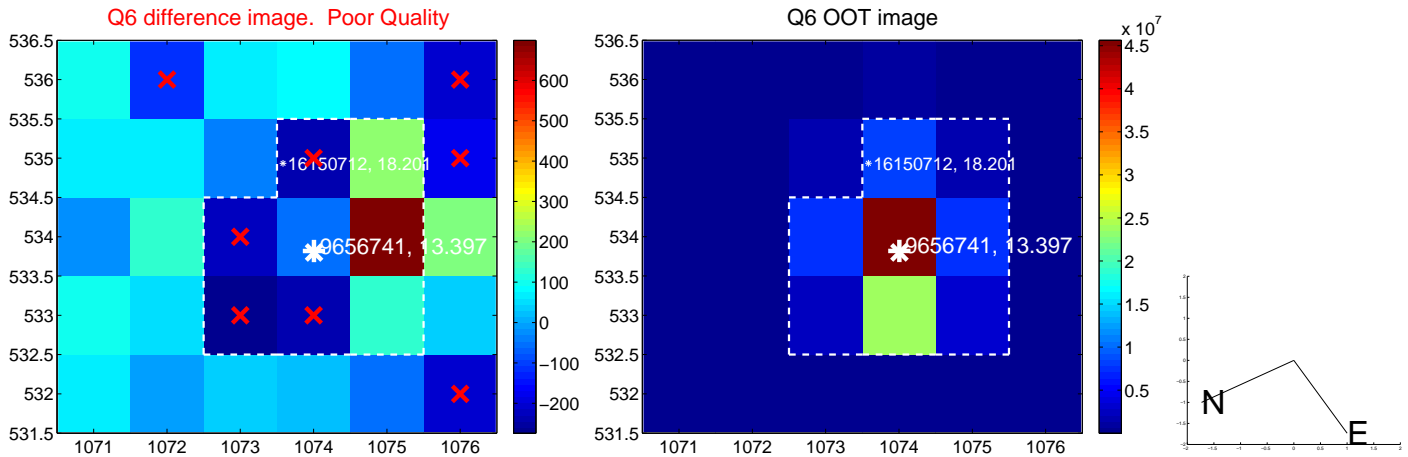
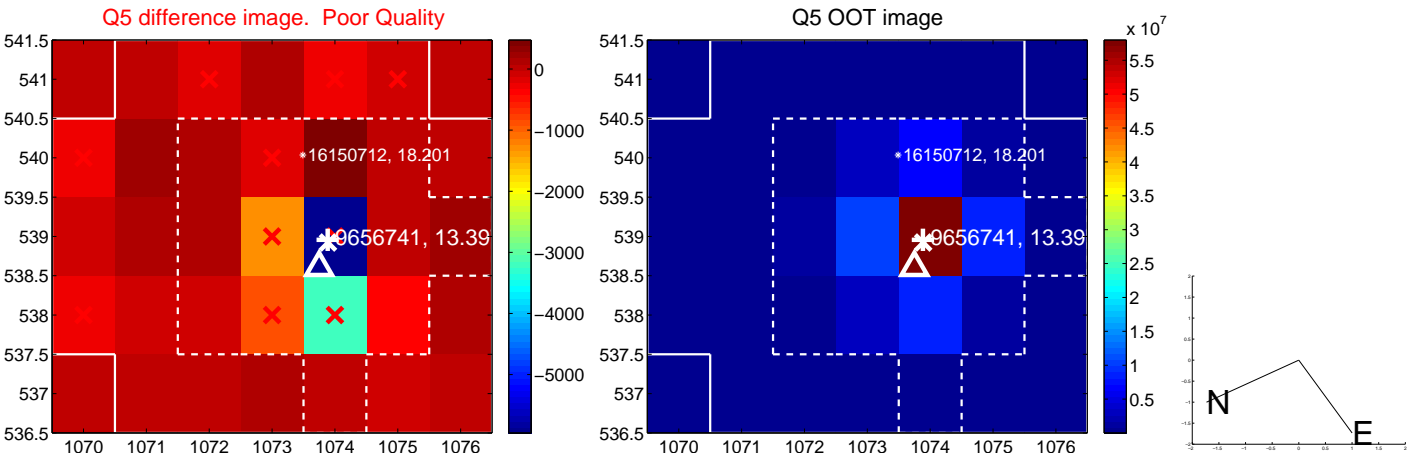
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



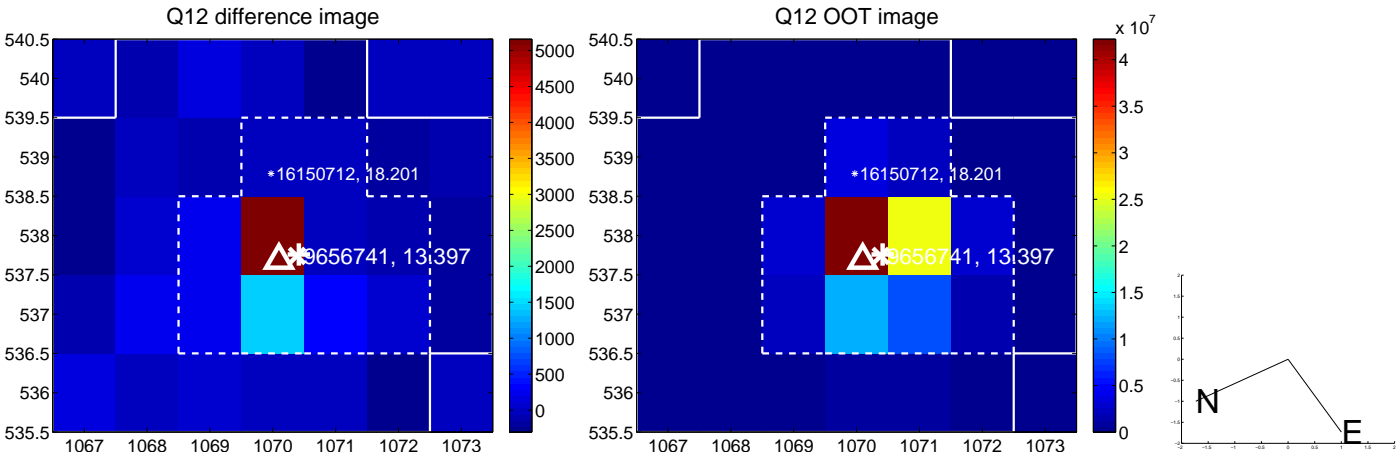
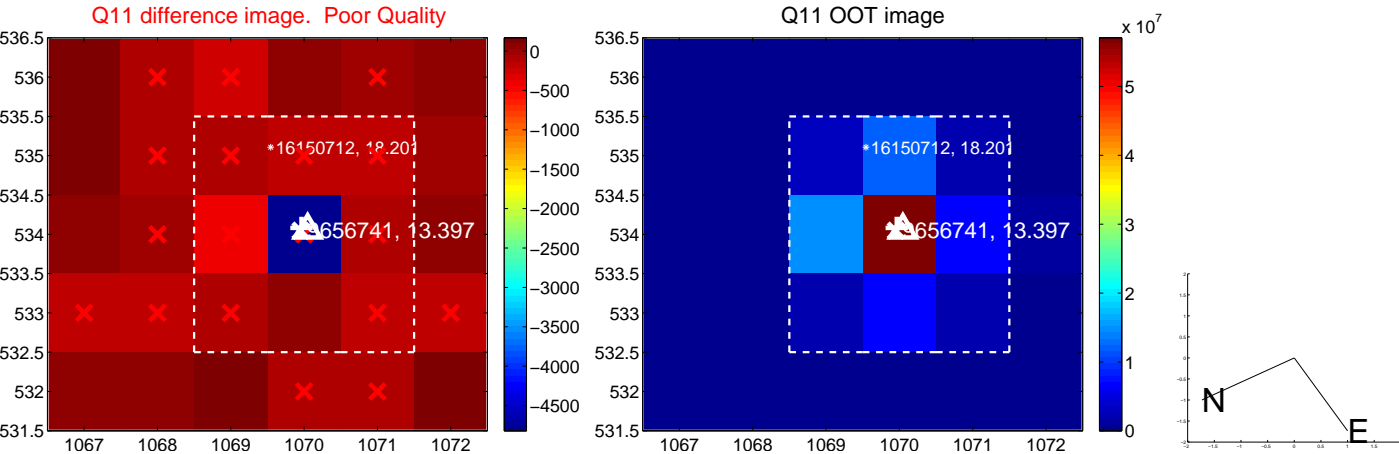
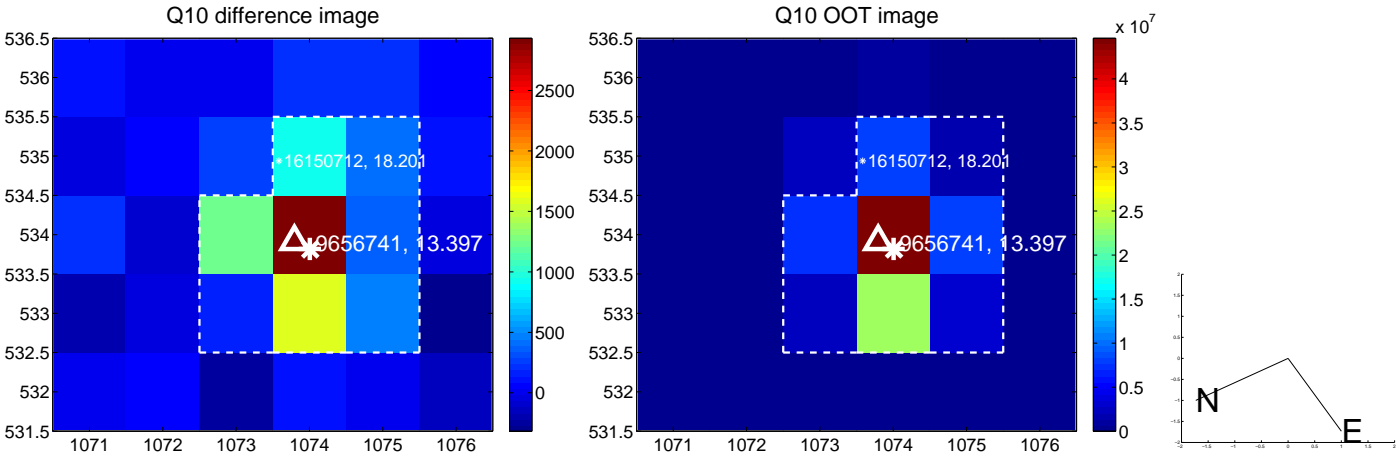
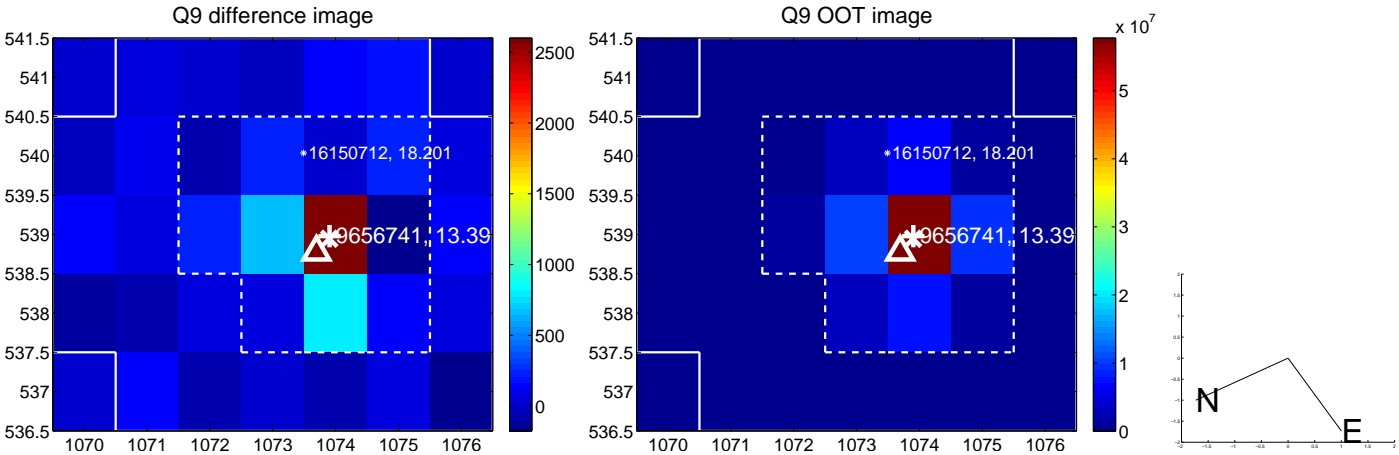
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



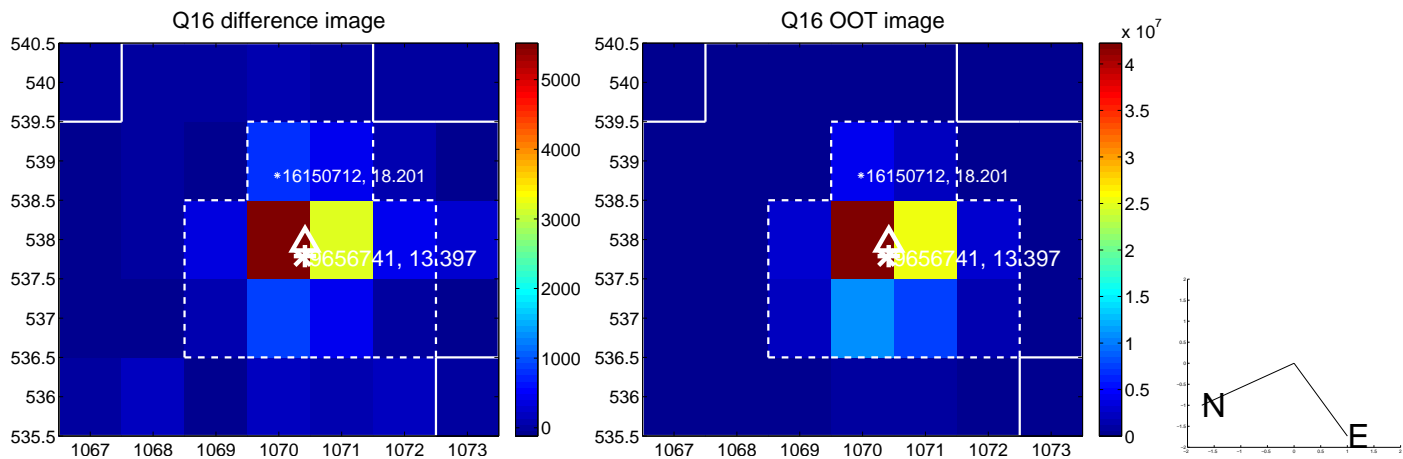
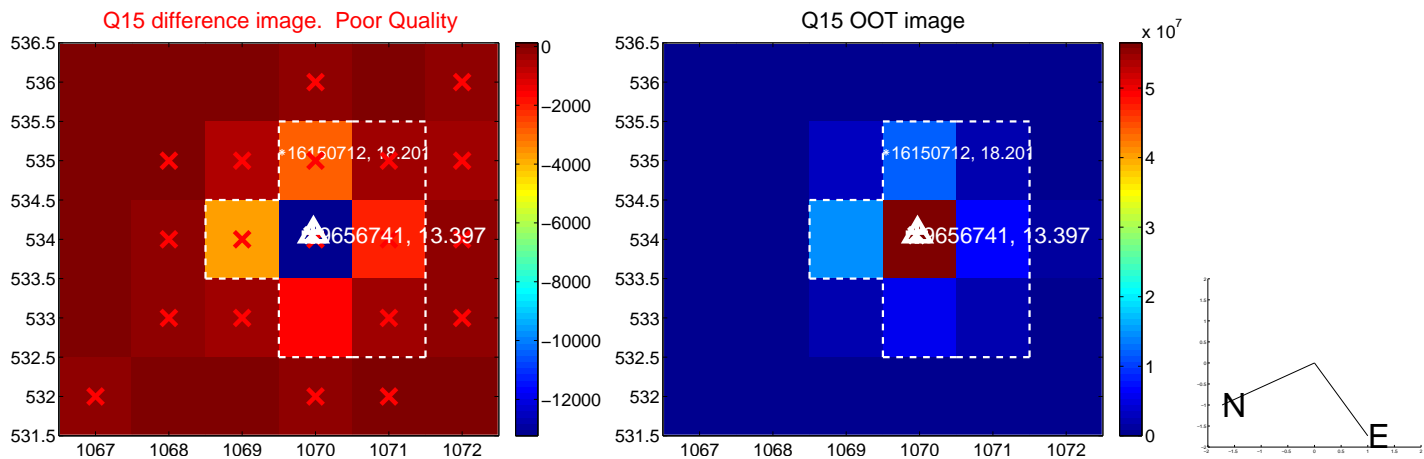
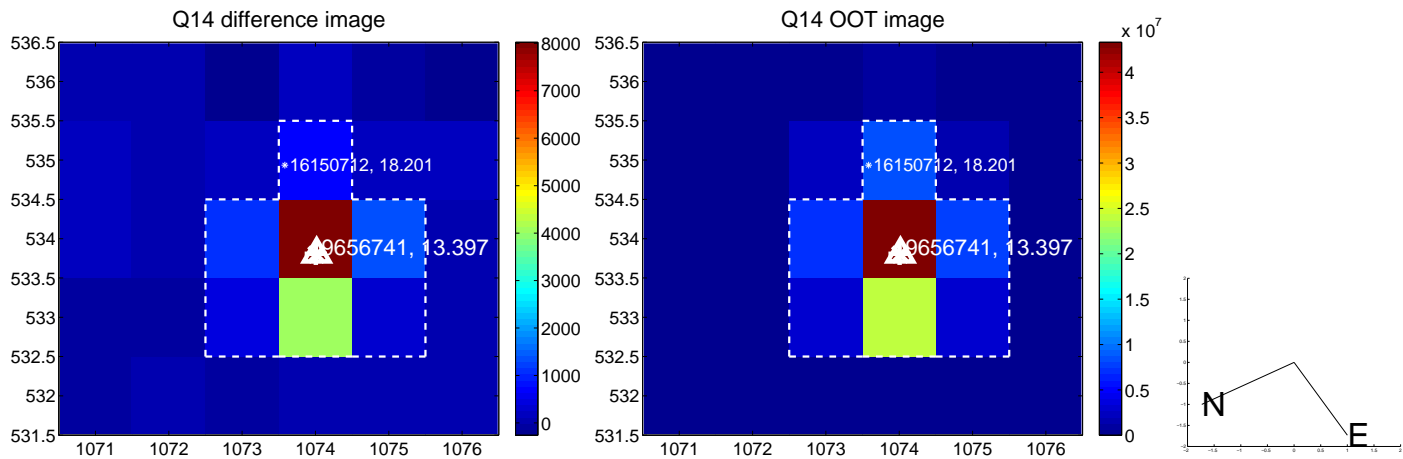
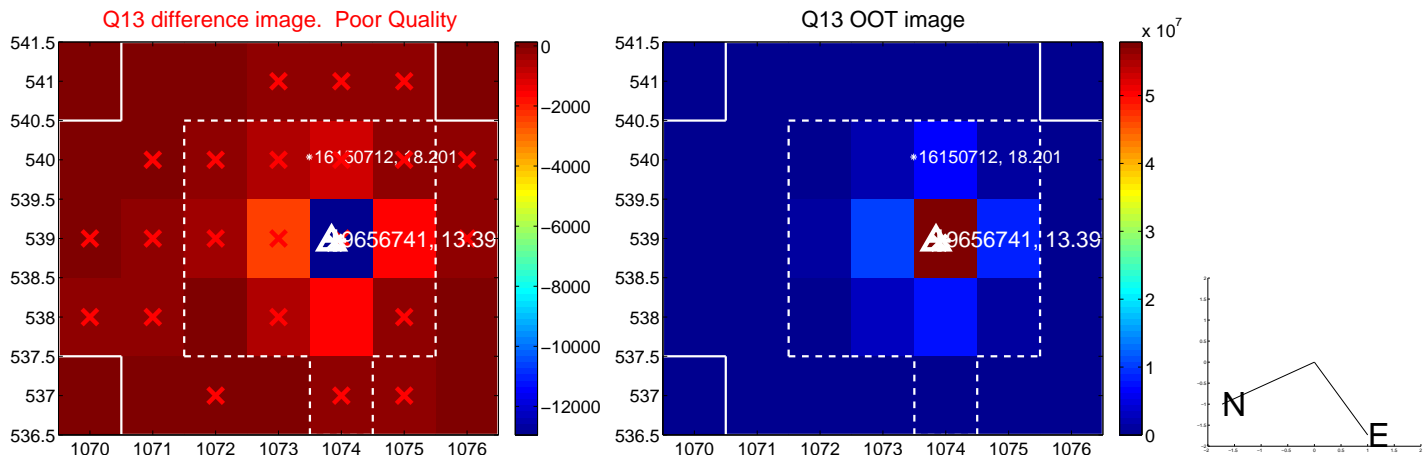
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



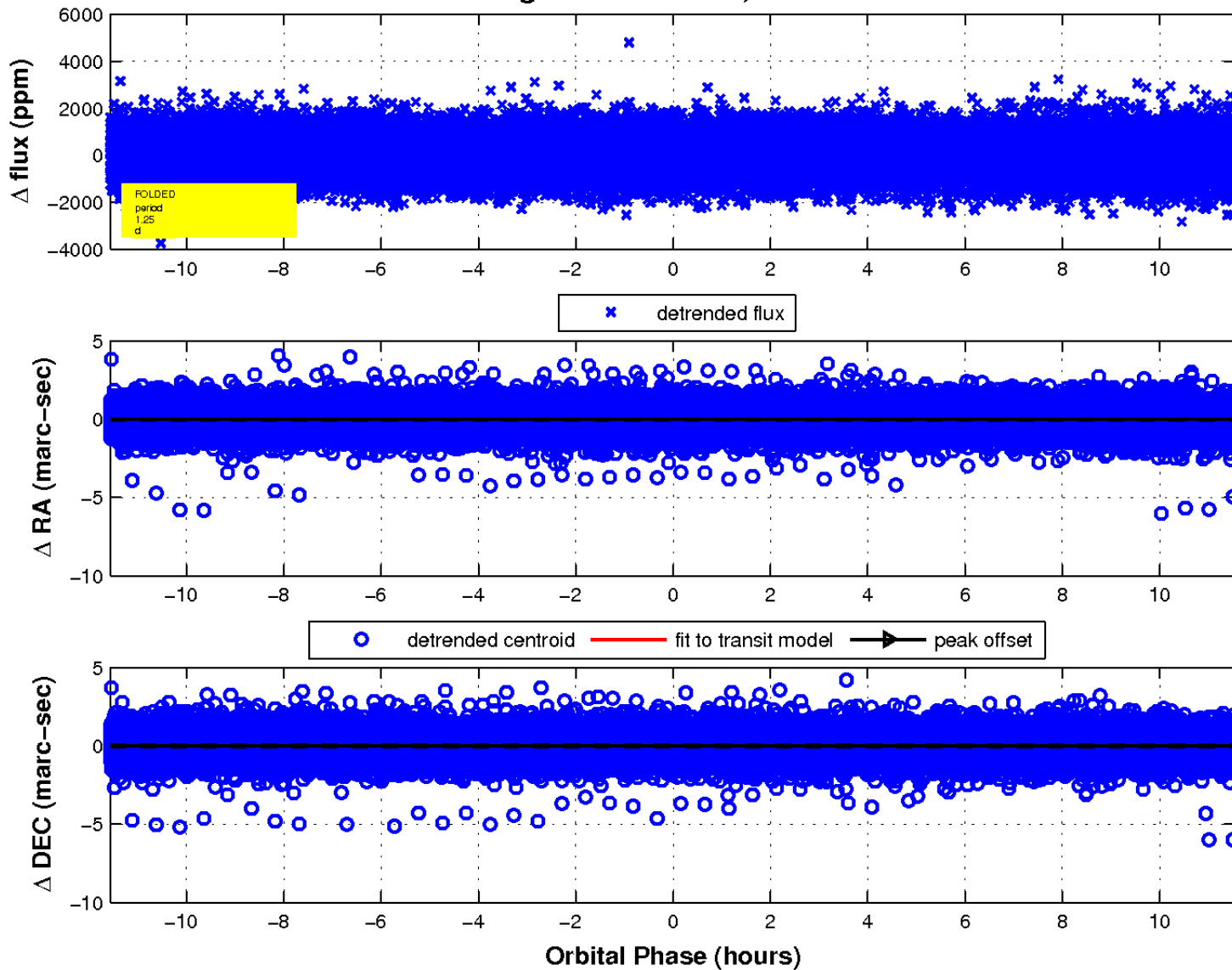
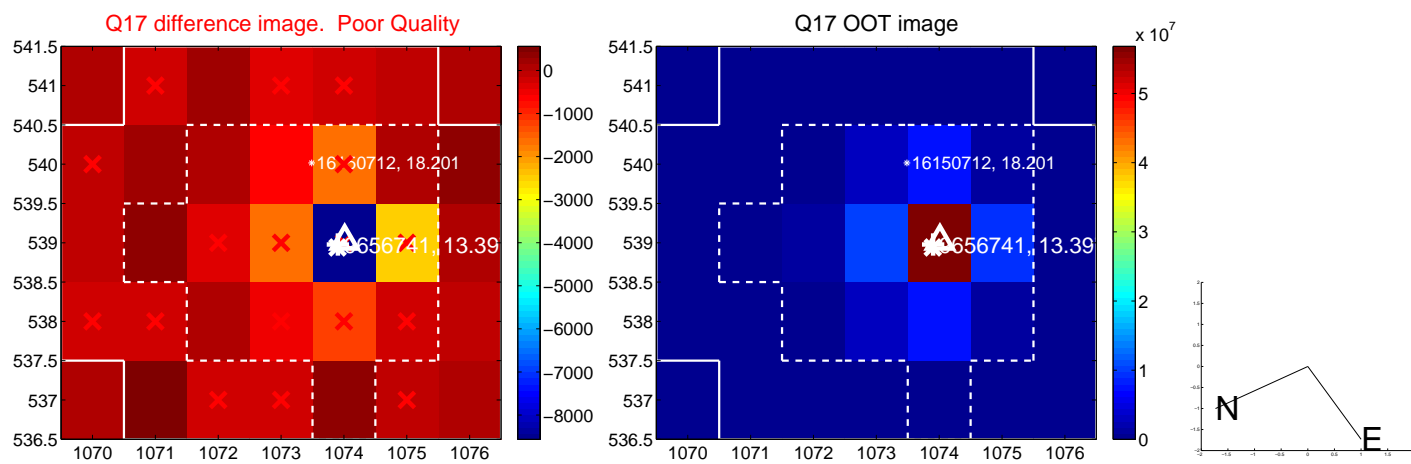
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

