



15119 - Probing the young circumplanetary environment of Beta Pic b during transit egress

Cycle: 25, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
04	(1) -BET-PIC	WFC3/UVIS	1	19-Jul-2017 15:01:34.0	yes
05	(1) -BET-PIC	WFC3/UVIS	1	19-Jul-2017 15:01:36.0	yes
06	(1) -BET-PIC	WFC3/UVIS	1	19-Jul-2017 15:01:37.0	yes

3 Total Orbits Used

ABSTRACT

Among the thousands of known exoplanets, Beta Pic b is the only directly imaged exoplanet with a nearly edge-on orbit. We show that the latest astrometric measurements rule out a transit by the planet at 10-sigma significance, but we are certain that the Hill sphere of the planet will transit. With a period of ~ 22 years and no other system like it, this Hill sphere transit provides a rare opportunity to study the evolving circumplanetary environment of a young and well-characterized exoplanet. To compliment GO-14621, our Cycle 25 proposal to monitor the ingress of the Hill sphere, we propose a modest HST program to photometrically search for signatures of the planet's large scale circumplanetary material during the egress of the Hill sphere transit. The existence of such material is plausible given that Beta Pic's young age is similar to that of the ring-bearing J1407b system. Combined with GO-14621 and less-precise but dedicated ground-based monitoring, these observations will give us a comprehensive set of observations about this young circumplanetary environment. Given the sparse observational data of circumplanetary environments, non-detections will also be valuable for constraining the timescales relevant to circumplanetary material and moon formation. If photometric variations are detected with HST, these results would yield empirical information concerning the dynamics of the system and the evolution of planetary systems as a whole.

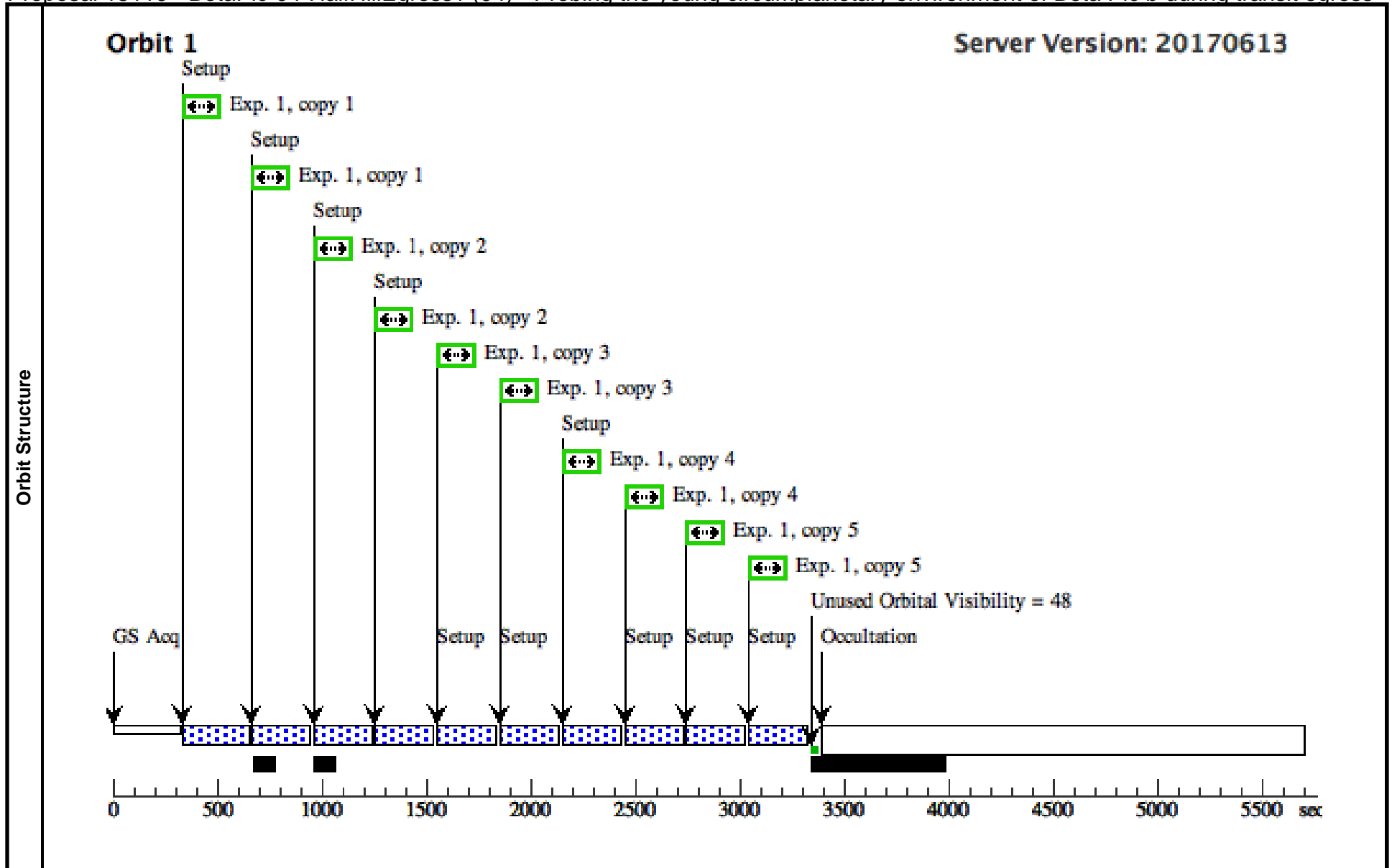
OBSERVING DESCRIPTION

A search for signatures of Beta Pic b's large scale circumplanetary material.

Proposal 15119 - BetaPic-04-HalfHillEgress1 (04) - Probing the young circumplanetary environment of Beta Pic b during transit egress

Wed Jul 19 19:01:38 GMT 2017

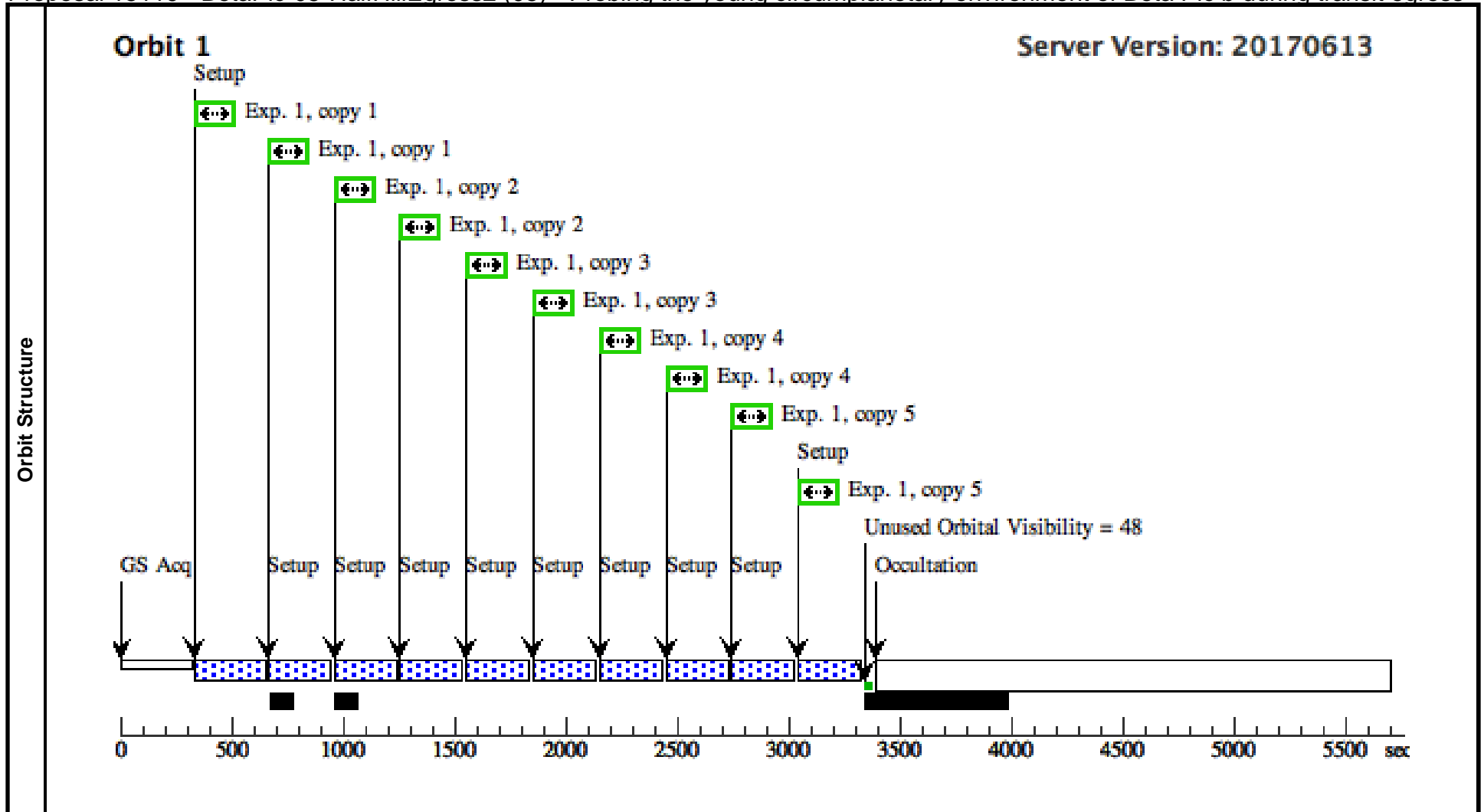
Visit	Proposal 15119, BetaPic-04-HalfHillEgress1 (04), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 30%; ORIENT 160D TO 185 D; ORIENT 200D TO 300 D; ORIENT 340D TO 5 D; ORIENT 20D TO 120 D; BETWEEN 30-SEP-2017:00:00:00 AND 17-OCT-2017:00:00:00 Comments: This visit uses spatial scanning at a rate of 0.5 arcsec/sec. Scanning is in both the forward and reverse directions. This visit has broad timing and orientation requirements.									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
(1)		-BET-PIC	RA: 05 47 17.0877 (86.8211988d) Dec: -51 03 59.44 (-51.06651d) Equinox: J2000		V=3.86	Reference Frame: SIMBAD	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.			
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(WFC3UVI S.si.830752)	(1) -BET-PIC	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F953N	BIN=NONE; CR-SPLIT=NO; FLASH=12	POS TARG -15,-15; SPATIAL SCAN 0.5 .3.7702 Degrees,Rou nd trip	Sequence 1-1 Non-Int in BetaPic-04-Half HillEgress1 (04)	110 Secs X 5 (1100 Secs)	[1]
								[==>(Copy 1, Forward)] [==>(Copy 1, Reverse)] [==>(Copy 2, Forward)] [==>(Copy 2, Reverse)] [==>(Copy 3, Forward)] [==>(Copy 3, Reverse)] [==>(Copy 4, Forward)] [==>(Copy 4, Reverse)] [==>(Copy 5, Forward)] [==>(Copy 5, Reverse)]		



Proposal 15119 - BetaPic-05-HalfHillEgress2 (05) - Probing the young circumplanetary environment of Beta Pic b during transit egress

Wed Jul 19 19:01:38 GMT 2017

Visit	Proposal 15119, BetaPic-05-HalfHillEgress2 (05), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 30%; ORIENT 160D TO 185 D; ORIENT 200D TO 300 D; ORIENT 340D TO 5 D; ORIENT 20D TO 120 D; AFTER 04 BY 7 D TO 21 D; BETWEEN 30-SEP-2017:00:00:00 AND 17-OCT-2017:00:00:00 Comments: This visit uses spatial scanning at a rate of 0.5 arcsec/sec. Scanning is in both the forward and reverse directions. This visit has broad timing and orientation requirements.																				
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>-BET-PIC</td> <td>RA: 05 47 17.0877 (86.8211988d) Dec: -51 03 59.44 (-51.06651d) Equinox: J2000</td> <td></td> <td>V=3.86</td> <td>Reference Frame: SIMBAD</td> </tr> <tr> <td colspan="6">Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</td> </tr> </tbody> </table>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(1)	-BET-PIC	RA: 05 47 17.0877 (86.8211988d) Dec: -51 03 59.44 (-51.06651d) Equinox: J2000		V=3.86	Reference Frame: SIMBAD	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.						
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Proposal 15119 - BetaPic-06-FullHillEgress (06) - Probing the young circumplanetary environment of Beta Pic b during transit egress

Wed Jul 19 19:01:39 GMT 2017

Visit	Proposal 15119, BetaPic-06-FullHillEgress (06), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 30%; ORIENT 160D TO 185 D; ORIENT 200D TO 300 D; ORIENT 340D TO 5 D; ORIENT 20D TO 120 D; BETWEEN 23-NOV-2017:00:00:00 AND 10-DEC-2017:00:00:00 Comments: This visit uses spatial scanning at a rate of 0.5 arcsec/sec. Scanning is in both the forward and reverse directions. This visit has broad timing and orientation requirements.									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
(1)		-BET-PIC	RA: 05 47 17.0877 (86.8211988d) Dec: -51 03 59.44 (-51.06651d) Equinox: J2000		V=3.86	Reference Frame: SIMBAD	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.			
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(WFC3UVI S.si.830752)	(1) -BET-PIC	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F953N	BIN=NONE; CR-SPLIT=NO; FLASH=12	POS TARG -15,-15; SPATIAL SCAN 0.5 .3.7702 Degrees,Rou nd trip	Sequence 1-1 Non-Int in BetaPic-06-Full HillEgress (06)	110 Secs X 5 (1100 Secs)	[1]
								[==>(Copy 1, Forward)] [==>(Copy 1, Reverse)] [==>(Copy 2, Forward)] [==>(Copy 2, Reverse)] [==>(Copy 3, Forward)] [==>(Copy 3, Reverse)] [==>(Copy 4, Forward)] [==>(Copy 4, Reverse)] [==>(Copy 5, Forward)] [==>(Copy 5, Reverse)]		

