

Modification of 7-filter synoptic program
toward quiet phase of the solar cycle.

18-Jan-2017, Aki Takeda (MSU)

1. Introduction

As we are proceeding to the quiet phase of the solar cycle, XRT's synoptic program is requiring longer exposures. The current longest exposure time for the thin-Be filter (in regular synoptic program) is 16 sec, but we will soon need moving to 32 sec as we did in 2008-2009.

Use of the longer exposures will probably cause no problem for the regular synoptic program, as we only take 10+ images with relatively thinner filters. However, for the 7-filter synoptics, the current sequence barely fits in the usual pointing period for XRT synoptics (10 minutes), and no room for increasing exposures.

The main reason why 7-filter synoptics takes such long time is that we take double sets (double long/short pairs) of thick-filter images to reduce the chance of imperfect images due to telemetry loss, etc.

2. What I propose.

There are more than one way to solve this problem, but I would like to propose the following scheme:

- 1) Reduce the number of sets of thicker filter images taken in a single 7-filter synoptic program (from twice to once).
- 2) Increase the frequency of running 7-filter synoptic program, from once a week to twice, for secure acquisition of thick-filter images.

I gave priority to keep the 7-filter synoptics taking less than 10 min, so that the CO can replace the regular synoptics with 7-filters anytime.

The current 7-filter synoptic sequence (XOB#1B15) :

Starts 3 min after the pointing change and takes 6:35 to complete (spare time 25 sec or less).

Taking thicker filter images only once will make extra ~90 sec to accommodate increased exposures.

XOB #1B15: Synoptic 7 Filter w/ Al-mesh(24/256/2897), Al-poly(45/512/4096), Thin-Be(181/2048/11571) - Thick-Be(65536), Al-poly+Ti-poly(5														
Term			Pointing (x, y)			Comment								
01/17 18:15:30 - 01/17 18:22:24			Fixed (0.0, 0.0)			synoptic, shifted 12.5 min								
PROG= 18 1-time(s)														
Subr= 1 1-time(s) 2.0sec														
Seqn= 5 1-time(s) 2.0sec														
	Open/Ti-poly	Open/thick-Al	close	Safe	Dark	500ms	Obs	2x2	2048x2048 (1024, 1024)	Q=98	0	0	2.0sec	
	Open/Ti-poly	Open/thick-Al	close	Safe	Dark	500ms	Obs	4x4	2048x2048 (1024, 1024)	Q=98	0	0	2.0sec	
	Open/Ti-poly	Open/thick-Al	close	Safe	Dark	500ms	Obs	8x8	2048x2048 (1024, 1024)	Q=98	0	0	2.0sec	
	Open/Ti-poly	Open/thick-Al	close	Safe	Dark	500ms	Obs	1x1	2048x512 (1024, 1024)	DPCM	0	0	2.0sec	
	Open/Ti-poly	Open/thick-Al	close	Safe	Dark	500ms	Obs	1x1	512x2048 (1024, 1024)	DPCM	0	0	2.0sec	
Seqn= 1 1-time(s) 2.0sec														
	Open/Al-mesh	Open/Al-mesh	close	Safe	Norm	24ms	Obs	2x2	2048x2048 (1024, 1024)	Q=95	0	0	2.0sec	
	Open/Al-mesh	Open/Al-mesh	close	Safe	Norm	250ms	Obs	2x2	2048x2048 (1024, 1024)	Q=95	0	0	2.0sec	
	Open/Al-mesh	Open/Al-mesh	close	Safe	Norm	2.83s	Obs	2x2	2048x2048 (1024, 1024)	Q=95	0	0	2.0sec	
Seqn= 99 1-time(s) 2.0sec														
	Al-poly/Open	Al-poly/Open	close	Safe	Norm	44ms	Obs	2x2	2048x2048 (1024, 1024)	Q=95	0	0	2.0sec	
	Al-poly/Open	Al-poly/Open	close	Safe	Norm	500ms	Obs	2x2	2048x2048 (1024, 1024)	Q=95	0	0	2.0sec	
	Al-poly/Open	Al-poly/thick-Al	close	Safe	Norm	4.00s	Obs	2x2	2048x2048 (1024, 1024)	Q=95	0	0	2.0sec	
Seqn= 67 1-time(s) 2.0sec														
	thin-Be/Open	thin-Be/Open	close	Safe	Norm	177ms	Obs	2x2	2048x2048 (1024, 1024)	Q=95	0	0	2.0sec	
	thin-Be/Open	thin-Be/Open	close	Safe	Norm	2.00s	Obs	2x2	2048x2048 (1024, 1024)	Q=95	0	0	2.0sec	
	thin-Be/Open	thin-Be/Open	close	Safe	Norm	11.3s	Obs	2x2	2048x2048 (1024, 1024)	Q=95	0	0	2.0sec	
Seqn= 54 1-time(s) 4.0sec														
	Open/G-band	Open/G-band	open	Safe	Norm	3ms	Obs	1x1	2048x2048 (1024, 1024)	Q=90	0	0	2.0sec	
	Open/G-band	Open/G-band	close	Safe	Norm	3ms	Obs	1x1	2048x2048 (1024, 1024)	Q=95	0	0	2.0sec	
Subr= 2 1-time(s) 2.0sec														
Seqn= 46 2-time(s) 2.0sec														
	Open/thick-Be	Open/thick-Be	close	Safe	Norm	64.0s	Obs	2x2	2048x2048 (1024, 1024)	Q=98	0	0	2.0sec	
Seqn= 58 2-time(s) 2.0sec														
	Al-poly/Ti-poly	Al-poly/thick-Al	close	Safe	Norm	500ms	Obs	2x2	2048x2048 (1024, 1024)	Q=98	0	0	2.0sec	
	Al-poly/Ti-poly	Al-poly/thick-Al	close	Safe	Norm	4.00s	Obs	2x2	2048x2048 (1024, 1024)	Q=98	0	0	2.0sec	
Seqn= 71 2-time(s) 2.0sec														
	med-Al/Open	med-Al/Open	close	Safe	Norm	4.00s	Obs	2x2	2048x2048 (1024, 1024)	Q=98	0	0	2.0sec	
	med-Al/Open	med-Al/Open	close	Safe	Norm	32.0s	Obs	2x2	2048x2048 (1024, 1024)	Q=98	0	0	2.0sec	
Default Filter		Thicker Filter	VLS	mode	image	Exp.	CCD	Bin	ROI: size (center)		Comp.	AEC Buffer	Interval	