

Confirming Light Echoes from SN 2006X in M100

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Scientific Category: ISM IN EXTERNAL GALAXIES

Scientific Keywords: DUST, INTERSTELLAR AND INTERGALACTIC MEDIUM, SUPERNOVAE,
WHITE DWARFS

Instruments: WFPC2

Proprietary Period: 0

Orbit Request	Prime	Parallel
Cycle 16	5	0

Abstract

We propose a minimal investment of spacecraft time to discover and confirm a light echo from Supernova 2006X in M100, the closest Type Ia in many years. Our spectroscopic and photometric data indicate that this SN sits behind a large amount of interstellar dust likely to produce a strong echo signal. This is one of very few cases where we will be able to study the three-dimensional environment of a SN Ia in full detail, and begin to understand how environmental effects play into the evolutionary and observational factors which influence the utility of SN Ia as standard candles for probing cosmology. We propose an efficient program to definitively detect (or not) a light echo of reasonable signal strength, to confirm that it is an echo by demonstrating apparent superluminal motion if it exists, to map the three-dimensional geometry of the reflecting interstellar structures, and to detail the reflectance properties of the dust which can be used to constrain its grain size and composition distribution.

Investigators:

	Investigator	Institution	Country
PI	Dr. Arlin Crotts	Columbia University in the City of New York	USA/NY

Number of investigators: 1

Target Summary:

Target	RA	Dec	Magnitude
SN2006X	12 22 53.9600	+15 48 32.20	V = 20.0 +/- 2.0
SN2007-UNNAMED			

Observing Summary:

Target	Config Mode and Spectral Elements	Flags	Orbits
SN2006X	WFPC2 Imaging F791W		3
	WFPC2 Imaging F702W		
	WFPC2 Imaging F555W		
	WFPC2 Imaging F439W		
	WFPC2 Imaging F380W		
SN2007-UNNAMED	WFPC2 Imaging F791W	TOO	2
	WFPC2 Imaging F555W		
	WFPC2 Imaging F439W		

Total prime orbits: 5