15492 - Enabling physical studeis of the Kuiper belt via HST tracking observations of close fly-by targets for the New Horizons spacecraft.

Cycle: 26, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
06	(3) 2013L35U	WFC3/UVIS	1	27-Mar-2019 11:02:08.0	yes

1 Total Orbits Used

ABSTRACT

In winter 2018 / 2019, the New Horizons spacecraft will make close (~0.1 au) fly-bys of two small outer solar system bodies (2014 OS393 and 2014PN70). These two objects are among the three that we discovered during our HST based search for a New Horizons Kuiper belt enconter target (now selected; 2014 MU69). These will be our closest fly-by observations, amoung the nearly dozen TNOs that we will observed from NH. They

will appear the brightest as seen from NH, be the best resolved (about 10x higher resolution than HST) and will provide the largest science impact among our flyby targets. We will measure their phase curves, their rotational light curves and search for rings and compangion objects.

Although the orbits of these two TNOs are amoung some of the best known they are not yet well enough constrained to enable the science. Due to the closeness of the fly-by we must furthre refine our knowledge of their orbits so as to reduce the uncertainty in the projeted sky-plane when viewed from New Horizons.

We are requesting 5 HST orbits to further secure the ephemrides of these objects and enable this high-impact science return from the New Horizons Kuiper Extended Mission.

OBSERVING DESCRIPTION

Recovery observation of 2 TNOs that are part of the New Horizons encounter plan. The plan here is to aquire 2 visits on each of 2 TNOs to obtain tracking observations.

Each Visit is a single orbit and we pack the maximum number of exposures we can manage into the orbit, for WFC/UVIC this about 440s per exposure.

Observations should be trailed at the motion rate of the object to get the maximal SNR.

We have special trailed PSF software to compute a small correction to the STScI WCS for the images, which we derive from Gaia.

Visit

Proposal 15492, 2013 LU35 Visit (06), implementation Wed Mar 27 15:02:08 GMT 2019

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; AFTER 26-MAR-2019:00:00:00

Comments: Tracking at motion rate of target.

Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(3)	2013L35U	TYPE=ASTEROID,A=43.522151033619 05,E=0.08457517513808686,I=3.009397756197836 ,O=157.0110378292828,W=11.0002417633085,M=101.7397024037399,EQUINOX=J2000,EPOCH=22-JUL-2013:00:00:00,EpochTimeScale=TDB				EARTH

Comments: Orbital uncertainty is large
Description=Kuiper belt object
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	First recovery	(3) 2013L35U	WFC3/UVIS, ACCUM, UVIS1	F350LP	CR-SPLIT=NO			400 Secs X 5 (2068 Secs)	
								[==>413.0 Secs (Copy 1)]	
								[==>413.0 Secs (Copy 2)]	
								[==>413.0 Secs (Copy 3)]	***[1]***
								[==>413.0 Secs (Copy 4)]	
								[==>416.0 Secs (Copy 5)]	

Orbit Structure