

The Color of 2014 MU69 from New Horizons

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Abstract

On New Year's Day 2019, NASA's New Horizons spacecraft made the first flyby of a cold classical Kuiper Belt Object (2014 MU69). This paper presents the color of 2014 MU69 as measured by the Ralph instrument on New Horizons.

1. Observations

The Ralph instrument has two channels: a visible channel (MVIC) and an infrared channel (LEISA). The visible channel is composed of 6 time delay integration (TDI) CCDs and one frame transfer CCD. Four of the MVIC channels (all TDI) provide color information on the target while the other three detectors are panchromatic. The four passbands are given in Table 1. This paper will focus on results from the three broadband filters (Blue, Red and NIR).

Table 1: MVIC Color Passbands

Filter	Wavelength, nm
Blue	400-550
Red	540-700
NIR	780-975
CH4	860-910

Observations with the Ralph instrument started on day of year 364 in 2018 and continued through day of year 003 in 2019. This paper will concentrate on the observations taken near closest approach.

The closest approach image of 2014 MU69 is shown in Figure 1. The average color slope of 2014 MU69 is $\sim 30\%$ per 100 nm. The average color of 2014 MU69 will be presented and placed into context with other small body populations. Also, variations in the color across 2014 MU69 will be presented.



Figure 1: Enhanced color of 2014 MU69 from the Blue, Red and NIR channels of the Ralph/MVIC instrument overlaid on a LORRI panchromatic image.