

The Orbit of the Satellite Around Dwarf Planet 2013 FY27

Scott Sheppard (1) and Darin Ragozzine (2)

(1) Department of Terrestrial Magnetism, Carnegie Institution for Science, 5241 Broad Branch Rd. NW, Washington, District of Columbia, USA. (SSheppard@carnegiescience.edu)

(2) Brigham Young University, Department of Physics and Astronomy, N283 ESC, Provo, UT 84602, USA.

Abstract

Using the Hubble Space Telescope, we discovered a moon around the likely dwarf planet 2013 FY27. We have now obtained additional Hubble Space Telescope observations of the 2013 FY27 system to determine the orbit of the moon around the primary. The orbit of the moon appears to be nearly edge-on and remains close to the primary. Possible mutual events could be happening now or in the near future.

1. Introduction

2013 FY27 was discovered during a survey to find Extreme Trans-Neptunian Objects and its bright absolute magnitude suggested it is one of the largest objects known beyond Neptune [1]. A moon around the likely dwarf planet 2013 FY27 was discovered in 2018 using one orbit of the Hubble Space Telescope. The moon was about 0.17 arcsec away and 3 mags fainter than the primary at discovery [2]. 2013 FY17 was also observed with ALMA to determine its diameter and albedo [2]. This means if we could determine the orbit of the moon around 2013 FY17, we could also determine the bulk density of the system. We obtained additional Hubble Space Telescope observations of the 2013 FY27 system to determine the orbit of the moon and its colors with respect to the primary.

Acknowledgements

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References

- [1] Sheppard, S. and Trujillo, C. 2016, AJ, 152, 221.
- [2] Sheppard, S., Fernandez, Y. and Moullet, A. 2018, AJ, 156, 270.