Call for Observations of the Venus Lunar Graze on 19th of June 2020

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Abstract

Upon request of the IOTA/ES President I decided to motivate scientifically and culturally the observation of this phenomenon. It is:

1. more rare than we think, in a lifetime;
2. suitable to study photometry in full atmospheric Rayleigh scattering and Mie scattering at 22°40'from the Sun;
3. the occasion to visit the profile of the lunar Cassini Regions, never visibile for their nature, and compare our observations with the Kaguya lunar profile;
4. occasion to evaluate the albedo of Venus and Moon near the South Pole terrains, and on Grimaldi crater (the darkest region of the Moon);
5. the chance to make a photo, and a measurement of the two crescents;
6. time to verify the Venus atmosphere effect on its crescent, far from the Sun's direction;
8. occasion to be opened to new ideas.

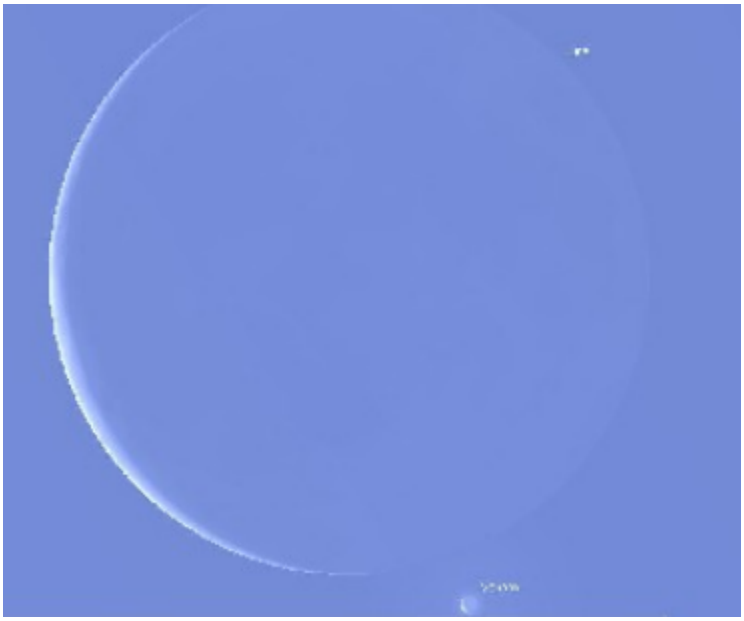

Fig 1. The geometry of the appulse from Rome.

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Introduction

Introduction In the pedigree of an observative astronomer there are few remarkable occasion like that. I observed on 21th of May 2004 in daytime and on 1st of Dec 2008 in the evening an occultation of Venus. On June 19th 2020 will be an appulse for Rome, just too South of the grazing line. Another one was observed in daytime on June 18th, 2007 from Lanciano using televideo as timing. Three occultations with two in daytime. Adding Jupiter on 22nd of June 1983 and 15th of July 2012 by night and Saturn on May 22nd, 2007 in daytime (the chase of the Moon...) and night (egress with a whole classroom guest at home). by the Moon, and 3 in daytime, always difficult, 6 planetary occultations by the Moon, and 3 in daytime, always difficult, 2 of Venus. That's all in 40 years of activity, and I am proud to say: three of them were public events.

Photometry in daytime: This is a complicate issue. The airmass correction, set up with the Sun's observations in January 2003, 0.236 magnitudes per airmass for Rome, does not apply for the stars near the horizon in sunlight, because the sky background is variably brighter in dependance of the solar elongation and of meteorological conditions. The same difficulties that Ptolemy describes for the observations of heliacal risings/settings of the stars. The extinction of 23° from the Sun in daytime beyond normal airmass includes Rayleigh and Mie scattering in the atmosphere, to be evaluated in the occasion of the event. I am actually observing Betelgeuse toward its heliacal setting, in order to evaluate its new maximum magnitude after the deep minimum reached in Feb 2020.

Cassini regions of the Moon: The occasion of such occultation is to reconsider the geometry of Cassini regions: exposed to the Earth, never when in sunlight. I am admired by the deduction made by Giandomenico Cassini, and I had the opportunity to read of it on Harold Povenmire's book. A reprint at least of this passage, along with the recommendations on how to deal with Police when caught near the backyard of someone else to find the grazing point, would be nice to remember this nice author recently passed away. I read this book in US at Wayne Warren Jr house in February 2001.

Albedo of the Moon vs Venus: The themend is interesting, because the Moon offers regions of very different albedo, with the lowest one being Grimaldi, visibile until the last lunation days. Also Venus shows spots of different albedo, early studied on Palatine hill, Rome, by Francesco Bianchini (1662-1729) by using the Campani telescopes of 50 m of focal lenght and a single lens as an oibjective. The lunar Maria have the same albedo of the sky in daytime (that's why the Moon was called «blue-eyed» by Empedocles, quoted by Plutarch). This is an interesting measurement, as well as the Earthshine, which is maximum toward the conjunction, immersed in the two atmospheric scatterings Rayleigh (molecules) and Mie (particles).

References

Ptolemy, Almagest, Book XIII chapter VII.
H. Povenmire, Graze observer's handbook, Vantage Press 1975
F. Bianchini, Celidographia, Roma 1728.
Plutarch, The face of the Moon,16.
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