

Study of mars and mars retrograde from the year 2000 – 2022 and the brief study of the retrogrades

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Abstract – A Retrograde is a optical illusion happens in space, on naked eye it looks like the mars moves on a reverse orbit and loops back and moves forward. It is most misinformed and misunderstood space topics . Here the retrogrades are discussed, explained and presented with live images took from homemade radio telescope, celestron Astromaster70EQ and a digital camera

Key Words: Retrogrades, Mars Retrogrades , RetrogradeStudy, Mars, Astronomy

1. INTRODUCTION

Retrogrades are natural phenomenon happens every twenty six months for once and it happens due to difference in orbital speed of planets causing a optical illusion and can be clearly explained via Einstein's special theory of relativity on frame of reference [1]. It states the a phenomenon is which is visible where the observer is standing, if you're considering earth as a observer we can clearly observe the mars retrogrades and if you consider the mars as a observer and from mars you can see the earth as in retrograde motion

2. RETROGRADE OBSERVATION

Here is the detailed explanation and images from the different sources and explained the retrogrades via frame of reference.

The recent retrograde happened (as of 2022/05) is 2020 and it has been captured the earth retrograde as mars as a observer via curiosity rover

The retrograde is a optical illusion and it doesn't change any planetary orbit course of a planet

2.1. STUDY OF RETROGRADES

Due to lack of sources and equipment on the previous retrogrades at 19th and 20th century , The data is restricted from 21th century timeframe (2000-2021) and the first retrograde ever recorded in the timeframe is at 2003, by Caltech University

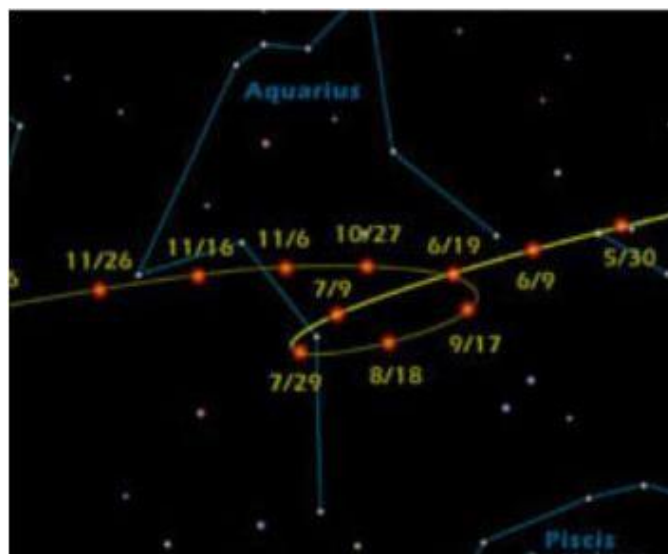


Fig -1: Mars Retrograde Recorded at 2003 , happened between 9th of June to 27th of October Recorded by Caltech University Telescope

And this observation clearly defines us the how retrogrades happen and the yellow dots represents the mars position at that time , upon plotting it as a graph we get a loop, on actual there is no loop in the mars orbit thus the retrograde is an optical illusion not an actual orbit course of the planet

At the same time many speculated that from the mars view , earth might as viewed as a retrograde. At 2011 NASA sent a Mars rover named curiosity to survey the mars and to observe the earth as mars as frame of reference .and it captured 2016 retrograde and proven that the retrogrades are based on the location of the planet. And gave images of earth retrogrades and the position and coordinates of the mars as shown below

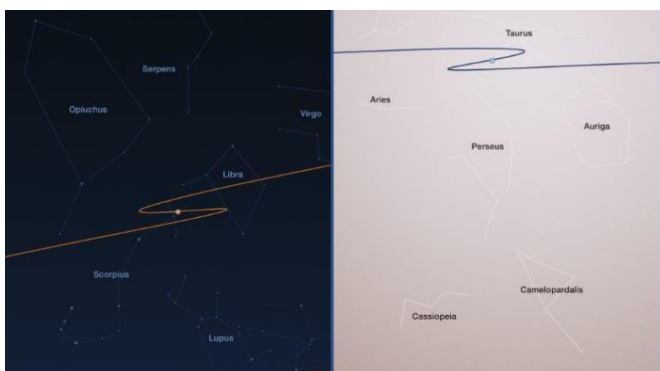


Fig.2 (left) Mars Retrograde and (Right) Earth Retrograde captured by CalTech and Mars curiosity rover captured at 2016

And the data from the rover proved that the retrograde is an illusion and can be observed that the certain point at the orbit relative to the position of the planets in the orbit

In between that, there are multiple retrogrades are observed as shown below



Fig3. Retrograde occurred at 31/7/2005 to 14/1/2006 captured by CalTech

And another significant retrograde happened at 2009, 2011, 2014 and due to lack of data those retrograde captures were lost . and after that the retrograde ever captured is at 2016 and shown below

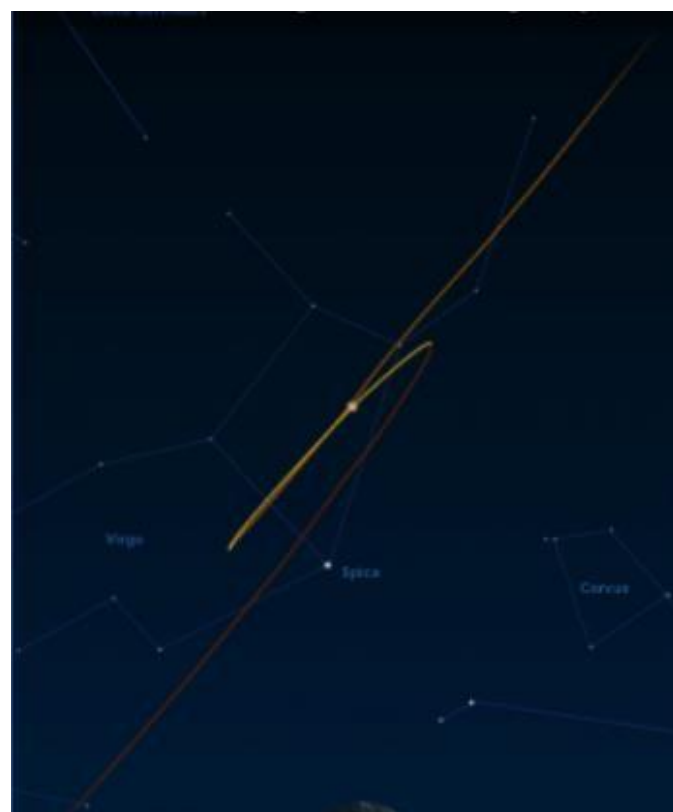


Fig.4 Mars retrograde captured at 2016

2.2 REASON FOR RETROGRADES FORMATION

The major cause for the retrogrades happen is the location of the planet at the orbit. Mars revolve sun at 24 km/s, and earth revolve 30 km/s and the orbits have two different points called apogee and perigee and the orbits are elongated ellipse and due to this variation in speed and difference in the orbital distance where at march – September being the perigee and the October-December being perigee periods, retrogrades are also occurs at those time. This can be proved by fixed object and a rotating camera in a elliptical path and since there is no source of radiation from mars, since the lack of /thin atmosphere there is no harmful or ionizing radiation emitted from the mars.

2.3 PSEUDOSCIENCE AROUND THE RETROGRADE CONCEPT

The science behind the retrogrades have been misused and misinterpreted as a harmful sign in the name of pseudoscientific concepts of astrology . and there are multiple pseudoscientific concepts and articles than a scientific article made multiple people more misinformed in the topic of retrogrades. The earth’s magnetosphere is stronger enough to protect multiple nuclear blast radiation,

yet most of the pseudoscientific concepts claim the radiation from the planets causing harm, and there is no such evidence and proof for any such planet emit radiation, because stars are the primary source of radiation in the whole universe and sun is the primary source of radiation in the solar system and the sun emits three kinds of radiation such as UV-A, UV-B, UV-C among them UV-A and UV-B absorbed by the Ozone layer causing blue sky and the UV-C is weakened and absorbed by the earth. In case of mars the lack of atmosphere causing UV-A and UV-B, UV-C to enter inside the planet and the surface of the mars absorb it along with the other visible light spectrum and other planets like venus has a thick carbon dioxide atmosphere causing the UV radiation to enter and getting trapped in the system, thus making it as the hottest planet in solar system,

2.4 OTHER OBSERVED RETROGRADE MOTIONS AND METHODS OF OBSERVATION

Other retrograde motion other than mars is visible in the comets, asteroids and other planetary bodies, this can be observed via mounting an Astro modified telescope (IR filter removed and cooling fan fitted) or a astro camera mounted on a telescope (In this case we used Celestron Astromaster 70EQ) Equatorial Mounted Camera is suggested since it has the mount adjusted and tilted according to the tilt of the earth , a 5 long exposure image (ISO 3200 is suggested) at the course of 6 months will show you comets retrograde and every 2.3 years once take image in the same procedure to get the mars retrograde image , radio telescope can be used to ensure and to prove that the data is received is from the mars or the other planetary bodies

3. CONCLUSIONS

The study shows that the retrogrades are the natural phenomenon occurred due to an optical illusion and it does'nt have any relation to pseudoscientific concepts like astrology and it has been proven by the data sent by curiosity rover and the CalTech and it can also be proven by the data which can be collected from home optical telescopes

REFERENCES

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