International Journal of Engineering and Advanced Technology (IJEAT)
ISSN: 2249-8958 (Online), Volume-1 Issue-5, June 2012

Formation of Virtual Lenses with the Help of Puissance Radio Telescopic Satellites around the Planets

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Abstract— The technological development of humans has successfully faced all the brutal difficulties it came across. Today's world has almost nothing which it cannot achieve, yet the thirst for innovation has not decreased. We have the most puissance telescopes located at different parts of the world which can track pretty much information regarding the changes that occur in the celestial bodies in the outer space with in no time, but the changes that occur in them is much faster than the captivity speed of the telescopes . This is the point where we need to throw some light, to build something which is capable of capturing the fastest changes that happen in outer space. This paper deals with launching of radio telescopic satellites in orbits around the planets of our solar system. By launching radio telescopic satellites around some of the worthy planets in our solar system, the view of the multiverse will be improved beyond our imagination. This kind of placement of radio telescopic satellites around the planets will aid in taking a dynamic look at the changes that occur in the outer space and leaves us enough time to be on safe side before the actual disaster happens, more over this arrangement of telescopic satellites will help us to predict the change of path of celestial object in due course of time and also to track the most distant celestial bodies in the outer space.

Index Terms- RTS , LEO,MEO,GEO,RT

I.INTRODUCTION

LOW EARTH ORBIT (LEO) :

Typical Uses: *Satellite phone, Military, Observation*

Orbiting the earth at roughly 160-500 miles altitude, low earth orbit (LEO) satellites complete one orbit roughly every 90 minutes [2]. This means that they are fast moving (>17,000mph) and sophisticated ground equipment must be used to track the satellite. This makes for expensive antennas that must track the satellite and lock to the signal while moving.

MIDDLE EARTH ORBIT (MEO)

Typical Uses: *Weather Satellites, Observation*

Most of the satellites in this orbital altitude circle the earth at approximately 6,000 to 12,000 miles above the earth in an elliptical orbit around the poles of the earth. As the earth rotates, these satellites cover the entire surface of the earth. Fewer satellites are required to create coverage for the entire earth, as these satellites are higher and have a larger footprint.

GEOSTATIONARY/GEOSYNCHRONOUS (GEO) :

Typical Uses: *Television, Long Distance Communications, Internet*

At 22,240 miles above the earth, craft inserted into orbit over the equator and traveling at approximately 6,880 miles per hour around the equator following the earth's rotation. This allows these satellites to maintain their relative position over the earth's surface[3]. Since the satellite follows the earth, and takes 24 hours to complete it's orbit around the earth, geostationary orbits are also called geosynchronous.

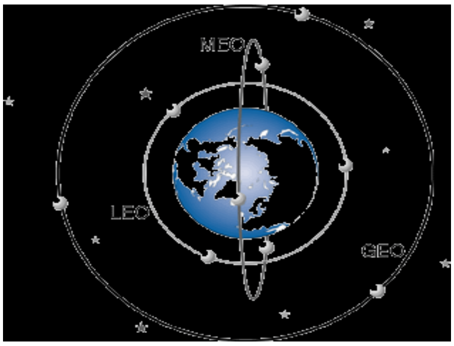

Figure 1 : This explains about the altitudes of GEO , MEO , LEO

TABLE I: ORBITAL DISTANCES

Orbit Distance	Miles	Km
Low Earth Orbit (LEO)	100-500	160 - 1,400
Medium Earth Orbit (MEO)	6,000 - 12,000	10 -15,000
Geostationary Earth Orbit (GEO)	~22,300	36,000

II. KEPLERS LAWS OF PLANEARY MOTION

Law 1:

Each planet orbits the sun in an elliptical path with the sun at one focus

Manuscript published on 30 June 2012.
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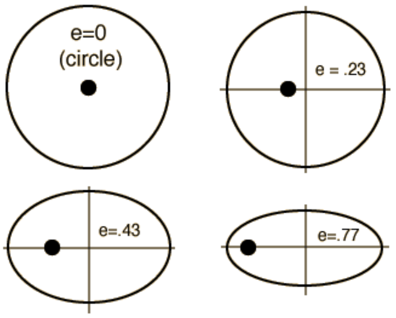

Figure 2: elliptical paths with varying eccentrics

Law 2:-

The radius vector (from sun to planet) sweeps out equal areas in equal time intervals

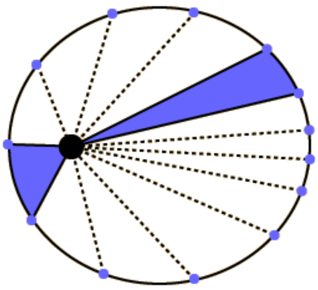

Figure 3 : The positions of the planet in its orbit

Law 3:-

The square of the period is proportional to the cube of the semi-major axis of the orbit. (i.e.)

$$T^2 = k a^3$$

For some constant k

III. POSITIONING OF RT SATELLITES IN DIFFERENT ORBITS AROUND THE PLANETS

How ever large the Radio Telescope may be it still suffers from the translucent effect of earth's atmosphere (filtering gamma , x-ray , uv rays etc) [4] . To over come this we need to put radio telescopic satellites (RTSs) into orbits round the earth . A conventional radio telescope mounted on earth's surface is enormously large and so are its parametrical statistics[5]. Launching an RTS with similar dimensions is quite challenging task. To ease off things we can mimic the properties of a radio telescope by forming a geometric array of RT satellites and by launching them into orbits around the earth whose dimensions are not as large as that of a typical radio telescope used on earth [11,13].

For achieving this, these miniature Radio telescopic satellites will have to rotate in different elliptical orbits around the earth, upon doing so they will form circular and elliptical antenna arrays of various dimensions[6]. These arrays will contribute to work similar to a large radio telescope mounted on the surface of the earth and gives aid to view the objects in space more clearly than ever before[15]. They align themselves in the form of perimeter of a circle or an ellipse with different altitudes thus acting like different reflecting points on the parabolic reflecting dish of a radio telescope. All this results in the formation of a virtual radio telescopic lense orbiting the earth. [7]

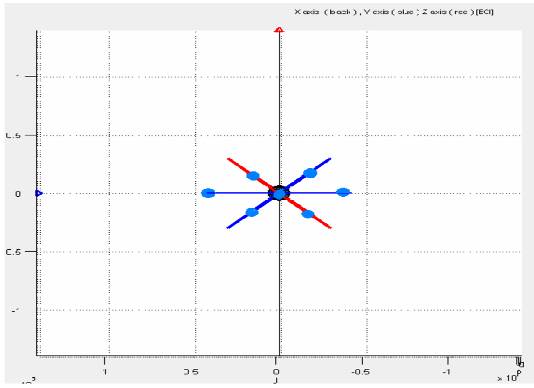

Figure 4: Plot of Elliptical array of Radio Telescopic Satellites

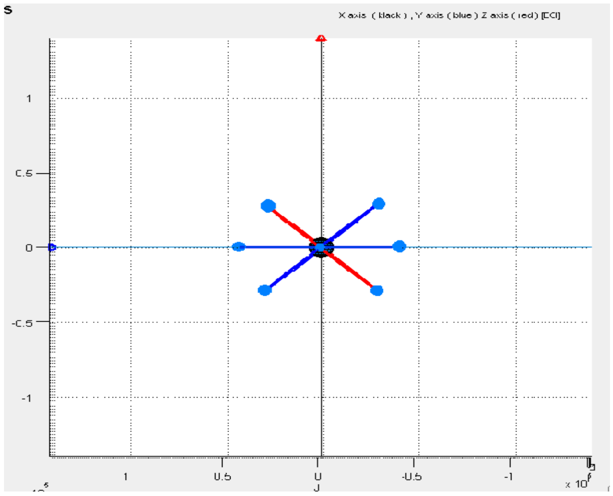

Figure 5: Plot of Circular Array of Radio Telescopic Satellites

The idea of this paper is to form the virtual lense with the help of radio telescopic satellites in all 4 quarters of the planets, the earth , mars , Jupiter , Saturn , Uranus and Neptune .

The explanation about the arrangement of the orbits and its telescopic satellites is given for a single planet and the same procedure is applied for the remaining planets too[8]. There would be 12 elliptical trajectories in four quarter parts of the magnetic field of attraction of the planet , while each quarter part consists of 3 orbits (ONE GEO AND TWO MEO) . Of these 12 orbits 4 are geo-stationary that is the Radio Telescopic satellites in them would revolve parallel to the equator and these orbits have four satellites each , the remaining, 8 orbits are MEO (medium earth orbit) each orbit having 4 RTS (refer figure-6,7,8,9,10,11) [9].

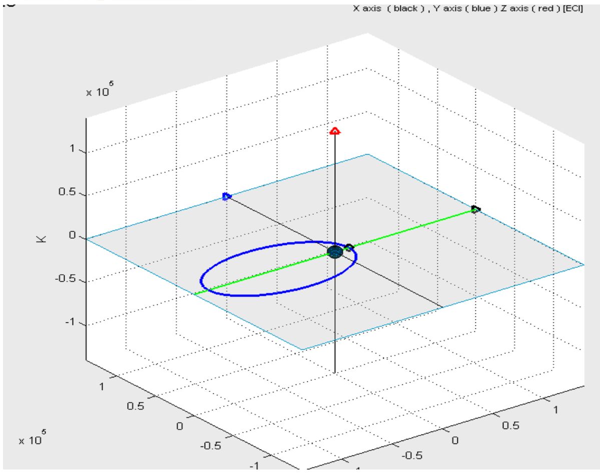

Figure-6: horizontal view of GEO

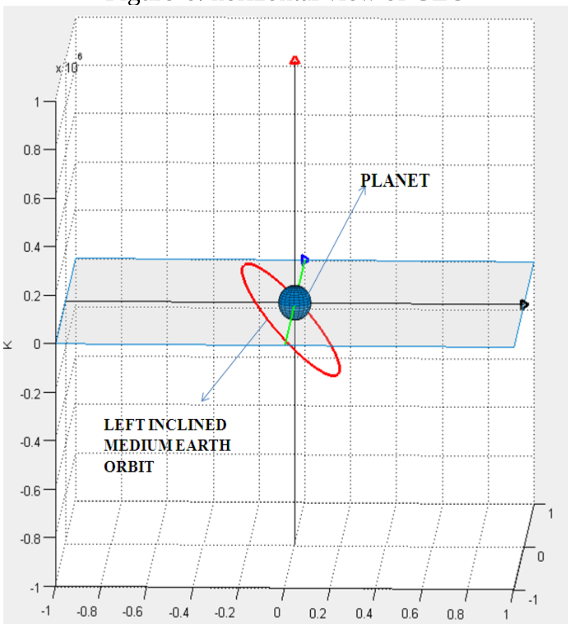

Figure-7: horizontal view of MEO (left incined)

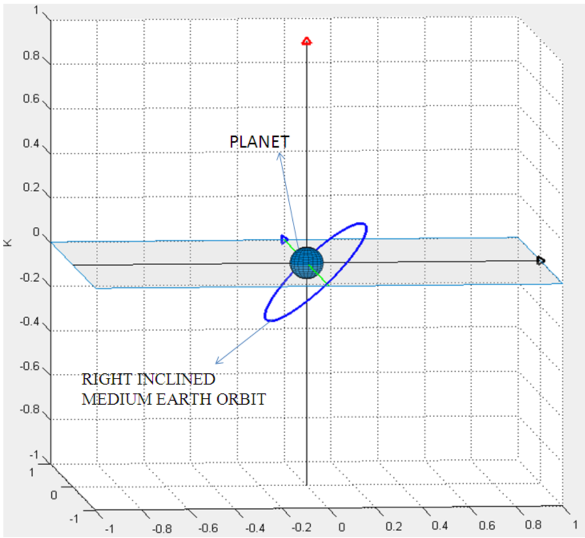

Figure-8: horizontal view of MEO (right inclined)

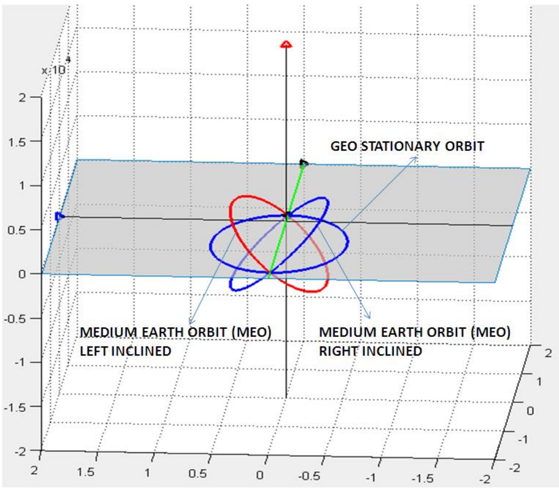

Figure- 9: horizontal view of the 3 orbits (one geo + two meo) in one quarter part of the planet.

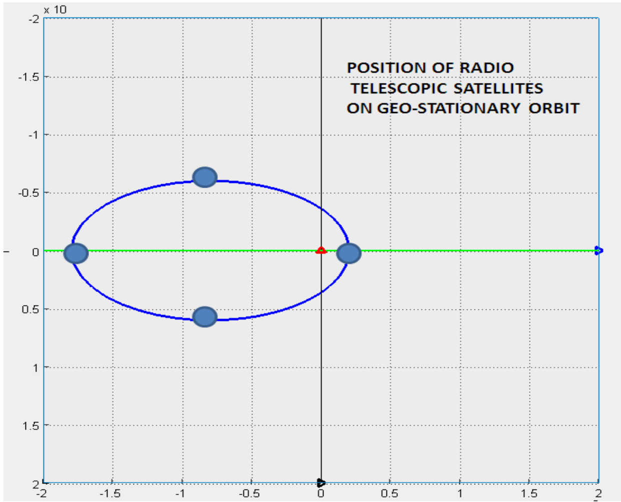

Figure-10: top view of single GEO with 4 RTS positioned in it.

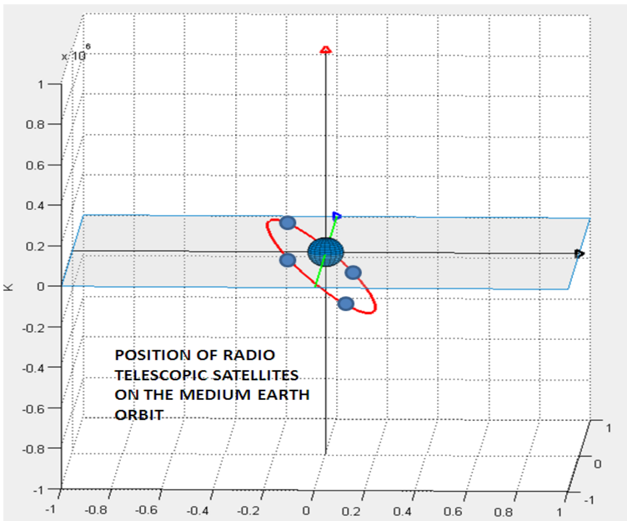

Figure-11: horizontal view of single MEO with 4 RTS positioned on it.

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The RTS positioned in the orbit doesn't mean that the satellites maintain the same distance between them every time, the distance changes according to the keplers laws of planetary motion [10].
Three of the four Radio Telescopic satellites in the first geo-stationary orbit along with the 4 Radio Telescopic Satellites two from each of the two MEO orbits (one left inclined and one right inclined) which are in the same quarter part of the first geo-stationary orbit, contribute to form the circular array of virtual lense in the 1st quarter part of the planet [11]. Similarly three of the four Radio Telescopic satellites on the second geo-stationary orbit along with the 4 Radio Telescopic Satellites two from each of the two MEO orbits (one left inclined and one right inclined) which are in the same quarter part of the second geo-stationary orbit ,contribute to form a geometric array in the second quarter of the planet[12] . The same procedure repeats with the 3rd and 4th quarters of the planet. Due to the movement of Radio Telescopes in their orbits around the planet the shape of the geometric array varies from time to time indeed for some time it will be circular and for some time it might be elliptical (refer figure -13,14,15,16,17)

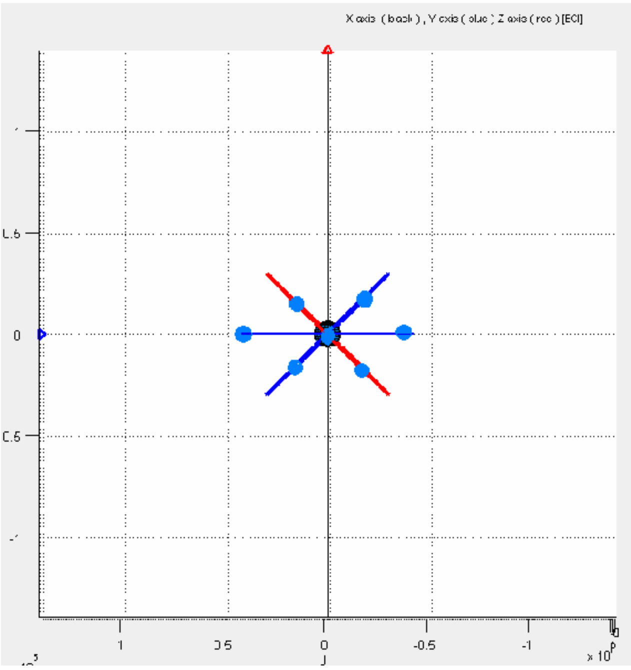

Figure-12 : view of elliptical array of radio telescopic satellites forming a virtual lense

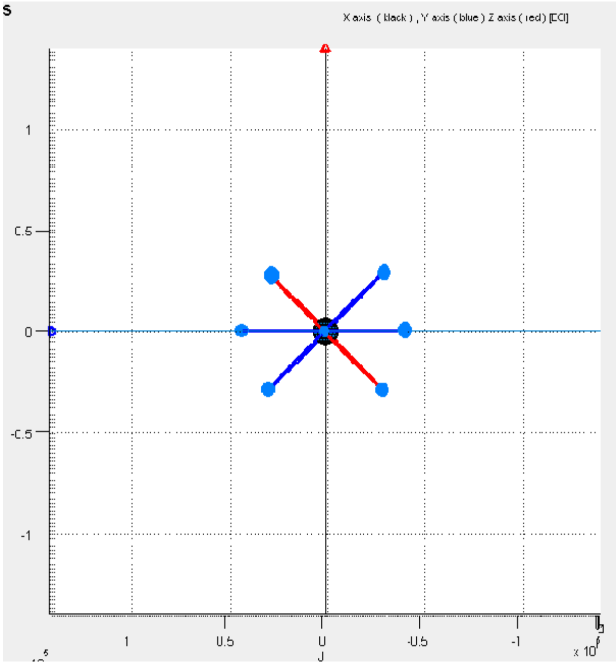

Figure-13: view of circular array of radio telescopic satellites forming a virtual lense

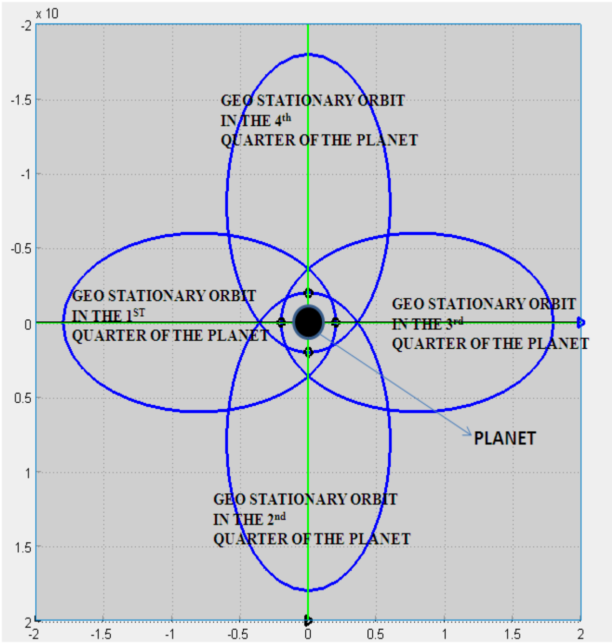

Figure -14 : Top View Of 4 Geo-Stationary Orbits Around The Planet In Its Four Quarters.

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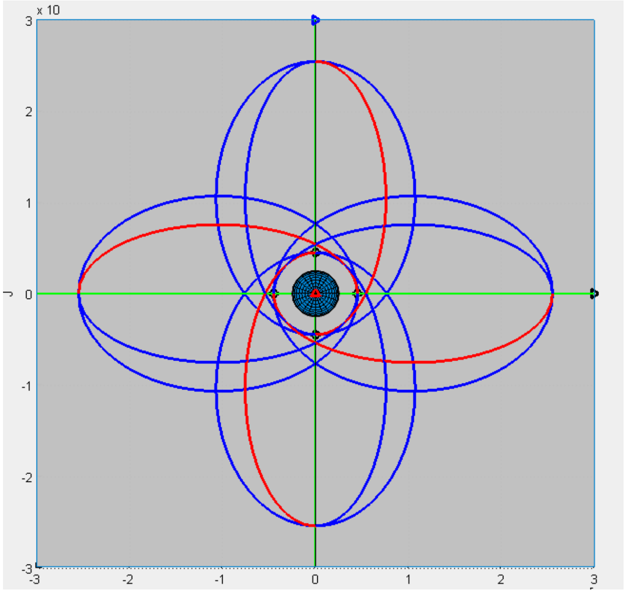

Figure-15: view all the orbits in the four quarters of the planet , which includes GEO , MEO . each quarter part of the planet has 3 orbits (one GEO + two MEO)

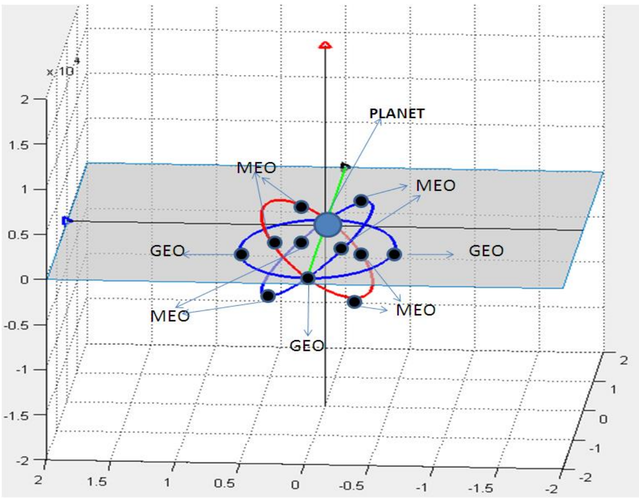

Figure-16 : positioning of radio telescopic satellites into orbits after launch

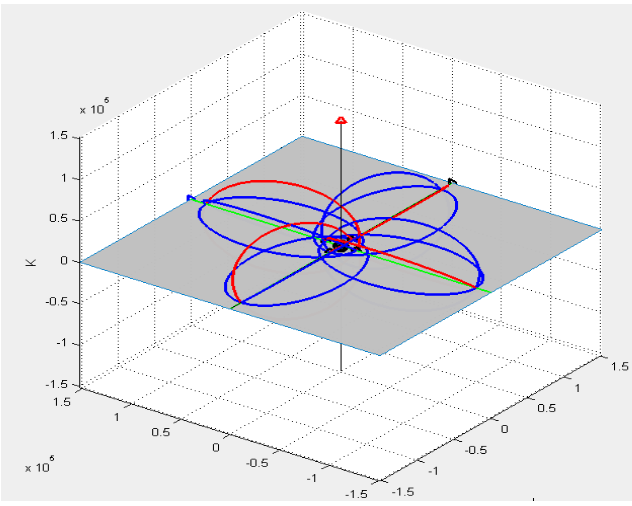

Figure-17 : view of all the 12 orbits , which includes 4 geo-stationary and 8 medium earth orbits .

Thus the formation of virtual lenses in all the four quarter parts will aid in having the dynamic look at the multiverse, since the circumference of the virtual lense formed around it in four sides is hundreds of times greater than the circumference of the planet [13].

The different elliptical paths have certain parameters that are needed to evaluate and to form that particular orbit. The statistical parameters of each orbit are uniquely different, those three parameters are

1. Semi-major axis length,
2. Inclination in degrees.
3. Eccentricity

Table-II : different parameters useful for the positioning of RTS around the planet earth. the values shown in the table are for formation of three orbits in single quarter part , the same values should be used for the formation of orbits in remaining three quarter parts.

PLANET EARTH				
SL: NO.	**ORBIT**	**SEMI -MAJOR AXIS**	**INCLINATION**	**ECCEN-TRICITY**
1.	**GEO-1**	**70,000**	**0**	**0.8**
2.	**MEO-1**	**70,000**	**225**	**0.7**
3.	**MEO-2**	**70,000**	**-225**	**0.6**

Table-III: different parameters useful for the positioning of RTS around the planet mars. The values shown in the table are for formation of three orbits in single quarter part, the same values should be used for the formation of orbits in remaining three quarter parts.

PLANET MARS				
SL:NO.	**ORBIT**	**SEMI-MAJOR AXIS**	**INCLINATION**	**ECCENTRICITY**
1.	**GEO-1**	**50,000**	**0**	**0.8**
2.	**MEO-1**	**50,000**	**225**	**0.7**
3.	**MEO-2**	**50,000**	**-225**	**0.6**

Table-IV: different parameters useful for the positioning of RTS around the planet Jupiter. The values shown in the table are for formation of three orbits in single quarter part, the same values should be used for the formation of orbits in remaining three quarter parts.

PLANET JUPITER				
SL: NO.	**ORBIT**	**SEMI-MAJOR AXIS**	**INCLINATION**	**ECCENTRICITY**

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1.	**GEO-1**	**20,00,000**	**0**	**0.8**
2.	**MEO-1**	**20,00,000**	**225**	**0.7**
3.	**MEO-2**	**20,00,000**	**-225**	**0.6**

Table-V: different parameters useful for the positioning of RTS around the planet Saturn . The values shown in the table are for formation of three orbits in single quarter part, the same values should be used for the formation of orbits in remaining three quarter parts .

Table-VI: different parameters useful for the positioning of RTS around Uranus. The values shown in the table are for formation of three orbits in single quarter part, the same values should be used for the formation of orbits in remaining three quarter parts.

PLANET JUPITER				
SL:NO.	**ORBIT**	**SEMI-MAJOR AXIS**	**INCLINATION**	**ECCENTRICITY**
1.	**GEO-1**	**20,00,000**	**0**	**0.8**
2.	**MEO-1**	**20,00,000**	**225**	**0.7**
3.	**MEO-2**	**20,00,000**	**-225**	**0.6**

Table-V: different parameters useful for the positioning of RTS around the planet Saturn . The values shown in the table are for formation of three orbits in single quarter part, the same values should be used for the formation of orbits in remaining three quarter parts .

PLANET SATURN				
SL: NO.	**ORBIT**	**SEMI-MAJOR AXIS**	**INCLIN AION**	**ECCENTRICITY**
1.	**GEO-1**	**3,00,000**	**0**	**0.8**
2.	**MEO-1**	**3,00,000**	**225**	**0.7**
3.	**MEO-2**	**3,00,000**	**-225**	**0.6**

Table-VI: different parameters useful for the positioning of RTS around Uranus. The values shown in the table are for formation of three orbits in single quarter part, the same values should be used for the formation of orbits in remaining three quarter parts.

Table VII: different parameters useful for the positioning of RTS around Neptune. The values shown in the table are for formation of three orbits in single quarter part, the same values should be used for the formation of orbits in remaining three quarter parts .

PLANET NEPTUNE				
SL: NO.	**ORBIT**	**SEMI-MAJOR AXIS**	**INCLINATION**	**ECCENTRICITY**
1.	**GEO-1**	**4,00,000**	**0**	**0.8**
2.	**MEO-1**	**4,00,000**	**225**	**0.7**
3.	**MEO-2**	**4,00,000**	**-225**	**0.6**

IV.CONCLUSION

This paper finally explains about the formation of virtual lense with the help of RTS in the outer space around the planets . the virtual lense is much more in diameter when compared with diameter of radio telescope(RT) present on the earth . as a result the time taken to track a celestial body decreases

V. SIMILATION RESULTS

This plot explains the orbits in which the radio telescopic satellites are to be positioned , and this particular result explains about the orbits around the planet earth . with the help of these orbits and satellites virtual telescopic lense is formed

PLANET SATURN				
SL:NO.	**ORBIT**	**SEMI-MAJOR AXIS**	**INCLINATION**	**ECCENTRICITY**
1.	**GEO-1**	**3,00,000**	**0**	**0.8**
2.	**MEO-1**	**3,00,000**	**225**	**0.7**
3.	**MEO-2**	**3,00,000**	**-225**	**0.6**

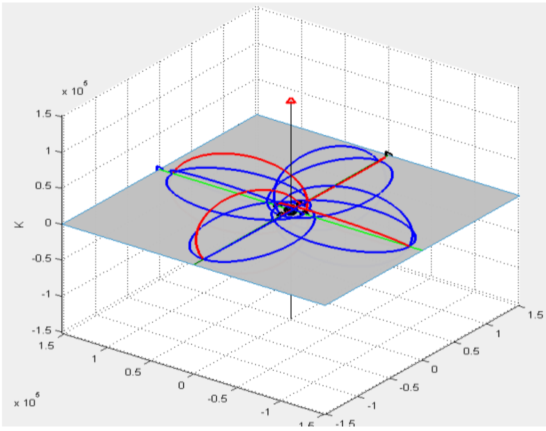

Figure 18: view of all orbits around planet earth

This plot explains about the orbits around the planet mars

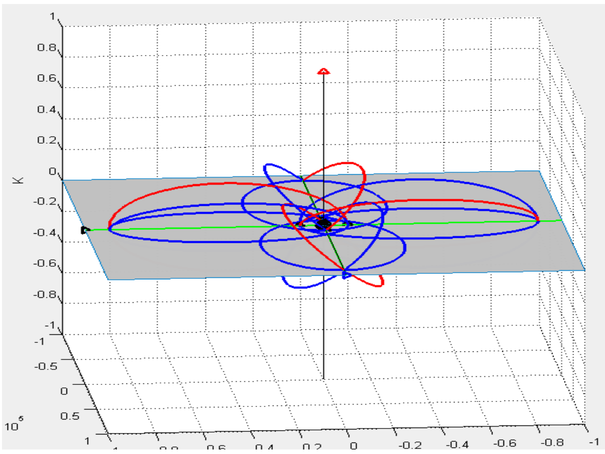

Figure 19: view of all orbits around planet mars

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This plot explains the orbits present around the Jupiter

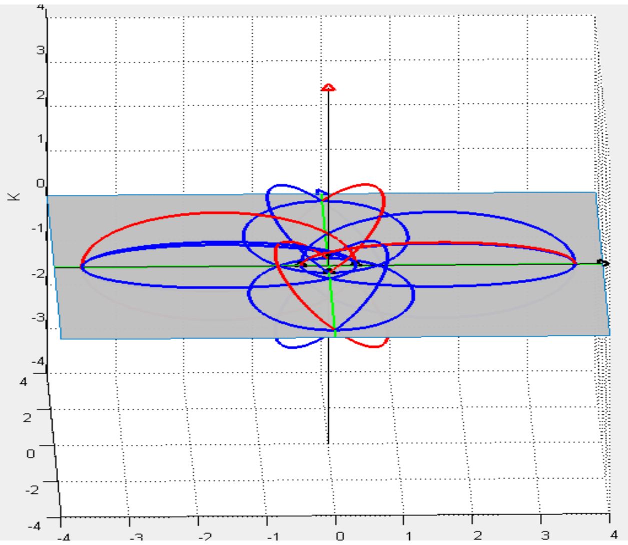

Figure 20: view of all orbits around Jupiter

This plot explains about the orbits around the planet Saturn

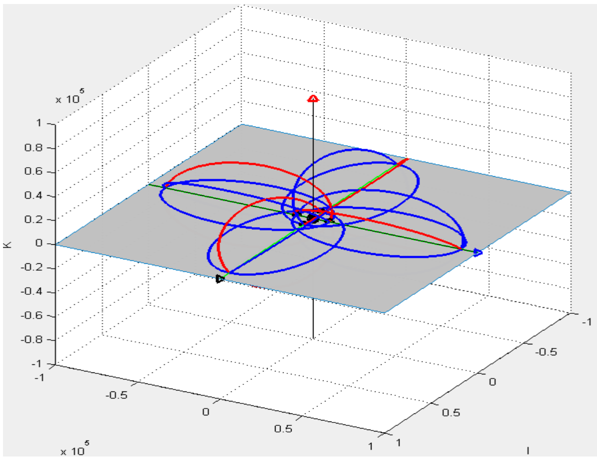

Figure 21: view of all orbits around Saturn

This plot explains about the orbits around Uranus

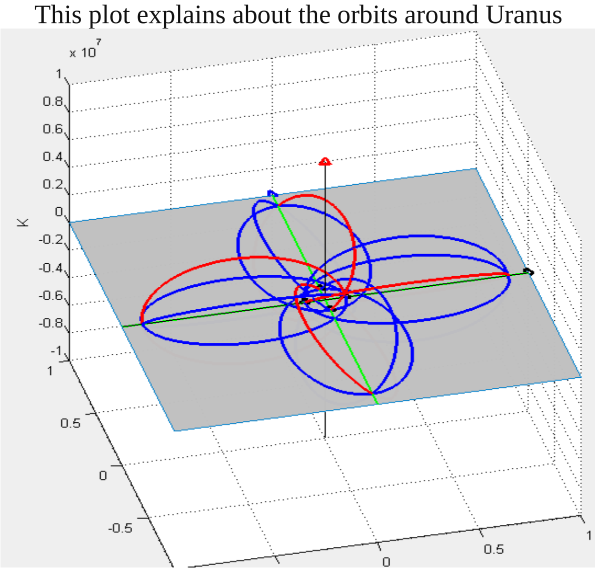

Figure 22: view of all orbits around Uranus

This plot explains about orbits around Neptune

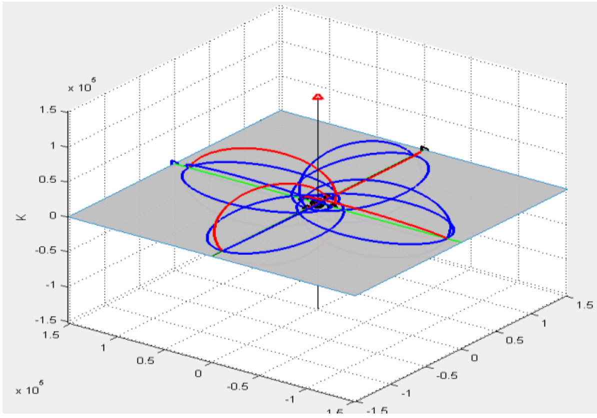

Figure 23: view of all orbits around the planet Neptune

ACKNOWLEDGMENT

The First author likes to thank his parents and sister for giving financial aid in publishing this paper

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