

Periodicity in Venus Transit

Venus Transit: A very rare event in our life time.

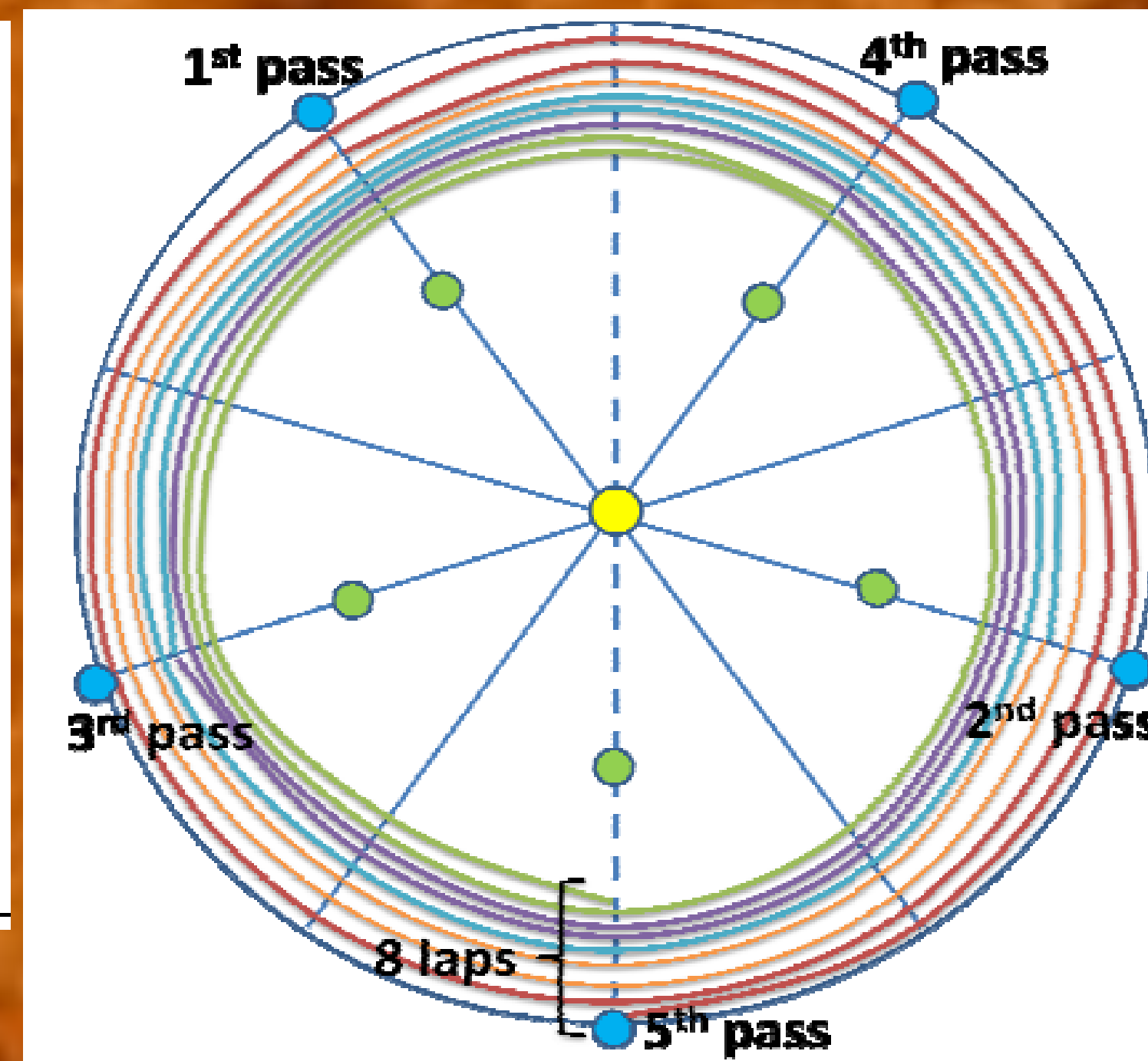
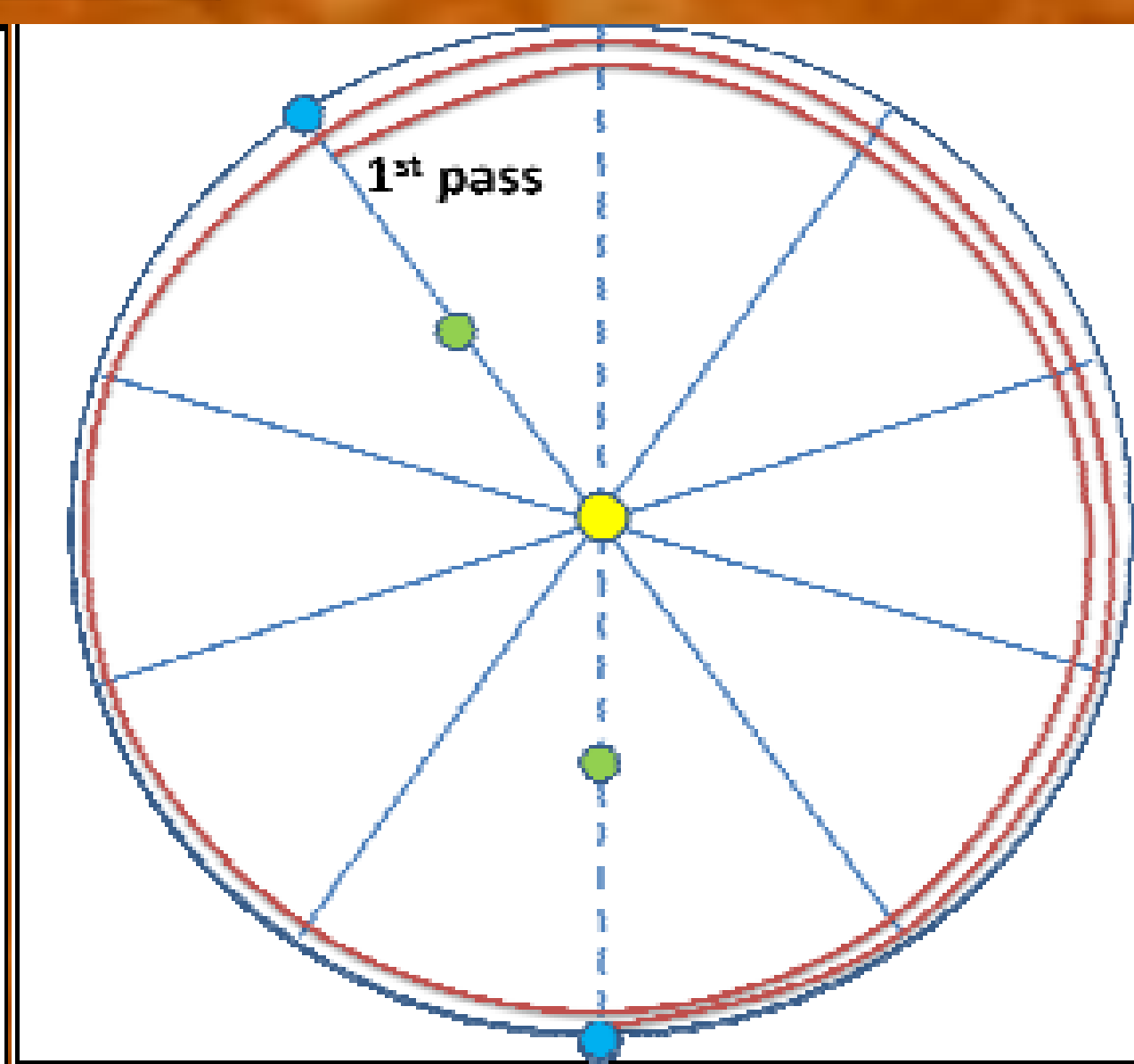
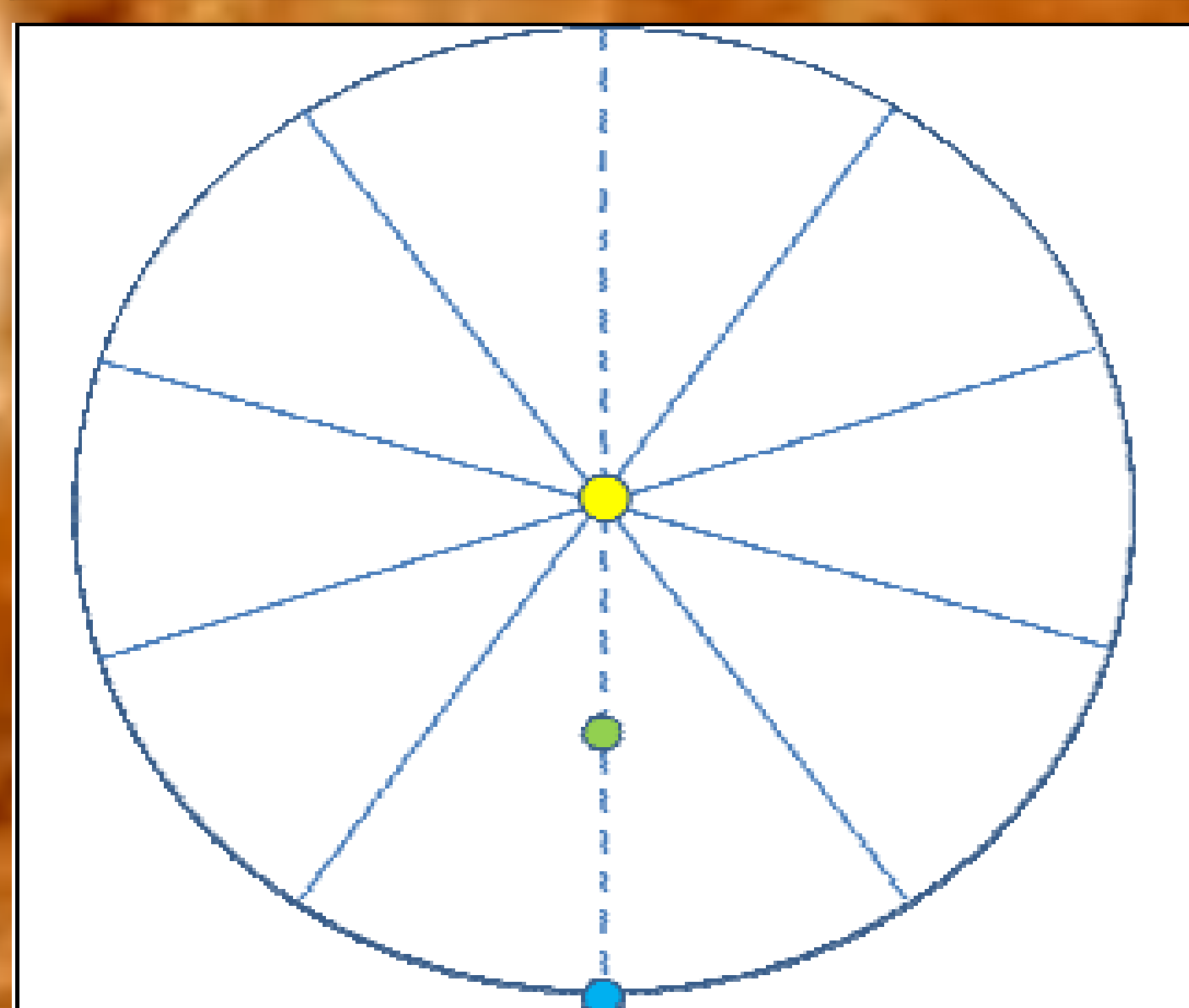
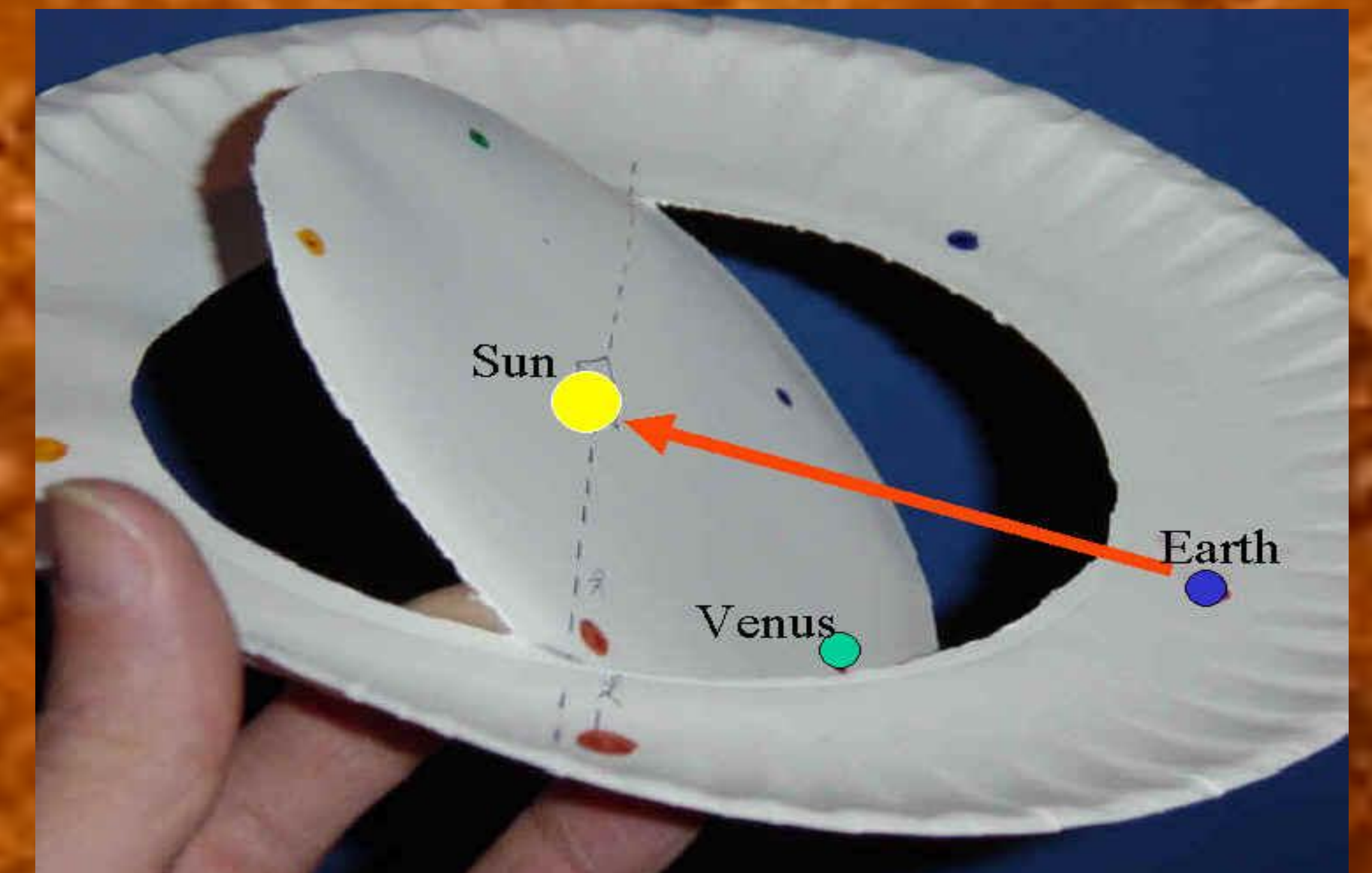
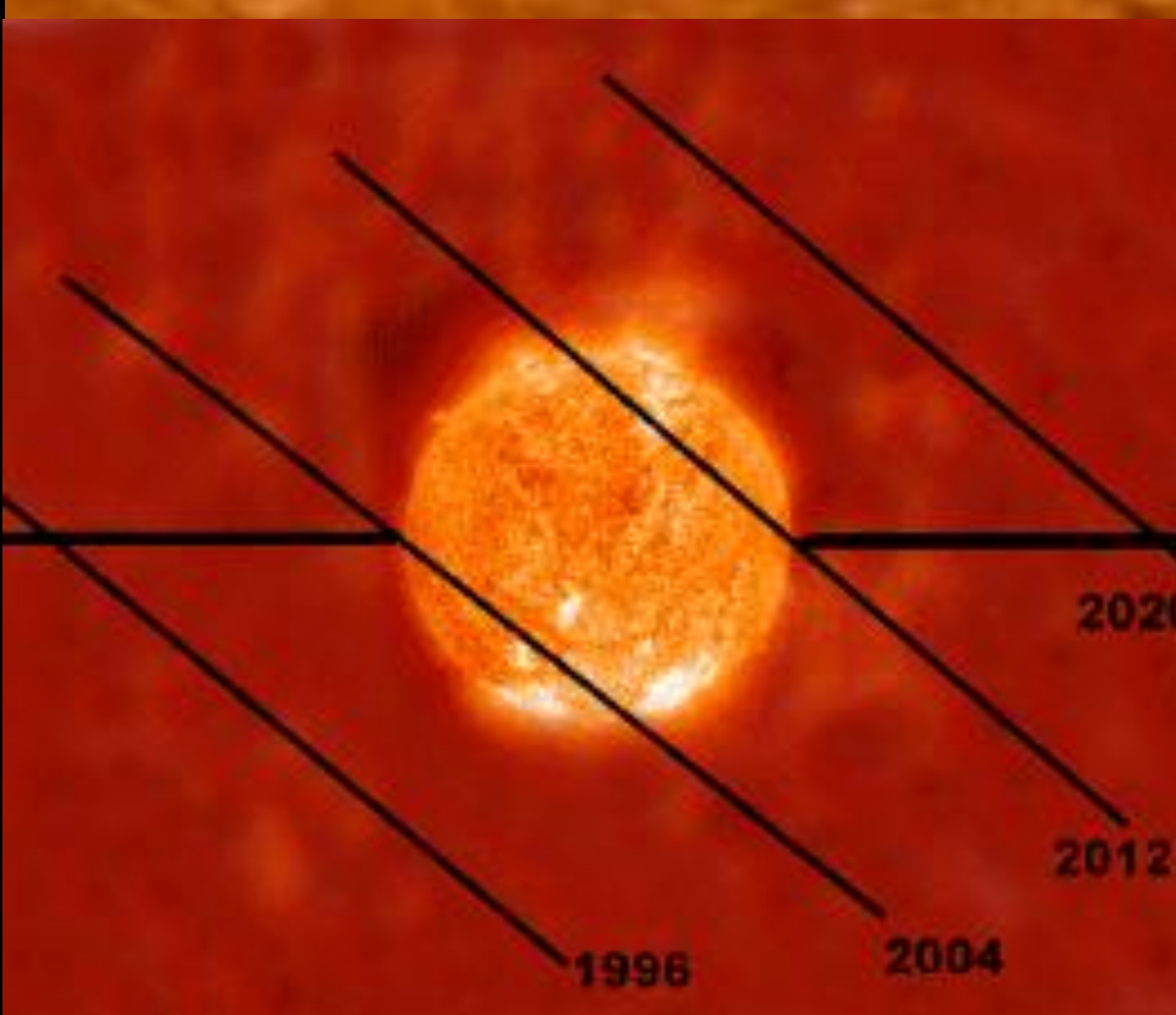
On 6th June 2012, Venus will pass in front of the Sun and we will be able to see this from Earth. This activity explores why this is a lifetime event, the last time this happened was in 2004.

Transits of Venus are only possible during early December and June when Venus's orbital nodes pass across the Sun. Venus Transits show a clear pattern of recurrence at intervals of 8 years, 121.5 years, 8 years, and 105.5 years.

TRANSITS OF VENUS (1601 – 2400)

1631	Dec 07	A. Node	2012	June 06	D. Node
1639	Dec 04	A. Node	2117	Dec 11	A. Node
1761	June 06	D. Node	2125	Dec 08	A. Node
1769	June 03	D. Node	2247	June 11	D. Node
1874	Dec 09	A. Node	2255	June 09	D. Node
1882	Dec 06	A. Node	2360	Dec 13	A. Node
2004	June 08	D. Node	2368	Dec 10	A. Node

Transit Path of Venus.



Orbital period of Venus and Earth are 224.7 and 365.25 days. Assuming circular orbits and same orbital plane, Venus passes Earth after 2.6 laps (1st pass in figure). 2.6 laps of Venus = 1.6 laps of Earth. Venus and Earth meet each other after each 2.6 laps of Venus (1.6 laps of Earth).

After 8 laps of Earth i.e. 8 years (13 laps of Venus), both reach the starting point during which they meet 5 times (see figure).

Orbital Velocity of Venus : It can be calculated that Venus completes 13 laps JUST BEFORE Earth completes 8 laps (8 years). Therefore the 5 pass points (as shown in figure) rotates clockwise a little bit every year. In 2004 and 2012, the transit is at different places of the disk of the Sun. In 2020, the position of Venus will be beyond the disk of the Sun, hence NO VENUS TRANSIT. We need to wait for the alignment to happen at next node for Venus transit to happen in 2117 and 2125.

Therefore, **NEVER MISS THIS EVENT...**

Safety procedure to view Venus Transit :

Viewing with Protection, Telescopes with Solar Filters, Pinhole Projectors

As the orbit of Venus is inclined to that of Earth by ~3.4 degree, we do not see Venus transits in each 1.6 years. Only when Sun, Venus, and Earth are in a straight line, we see Venus transit. The rest of the time when Venus passes us, it is either above of below the Sun as seen from Earth (see above figure). Why don't we see Venus transit in every 8 years??

TRANSITS OF EARTH FROM MARS : 10th NOVEMBER 2084

