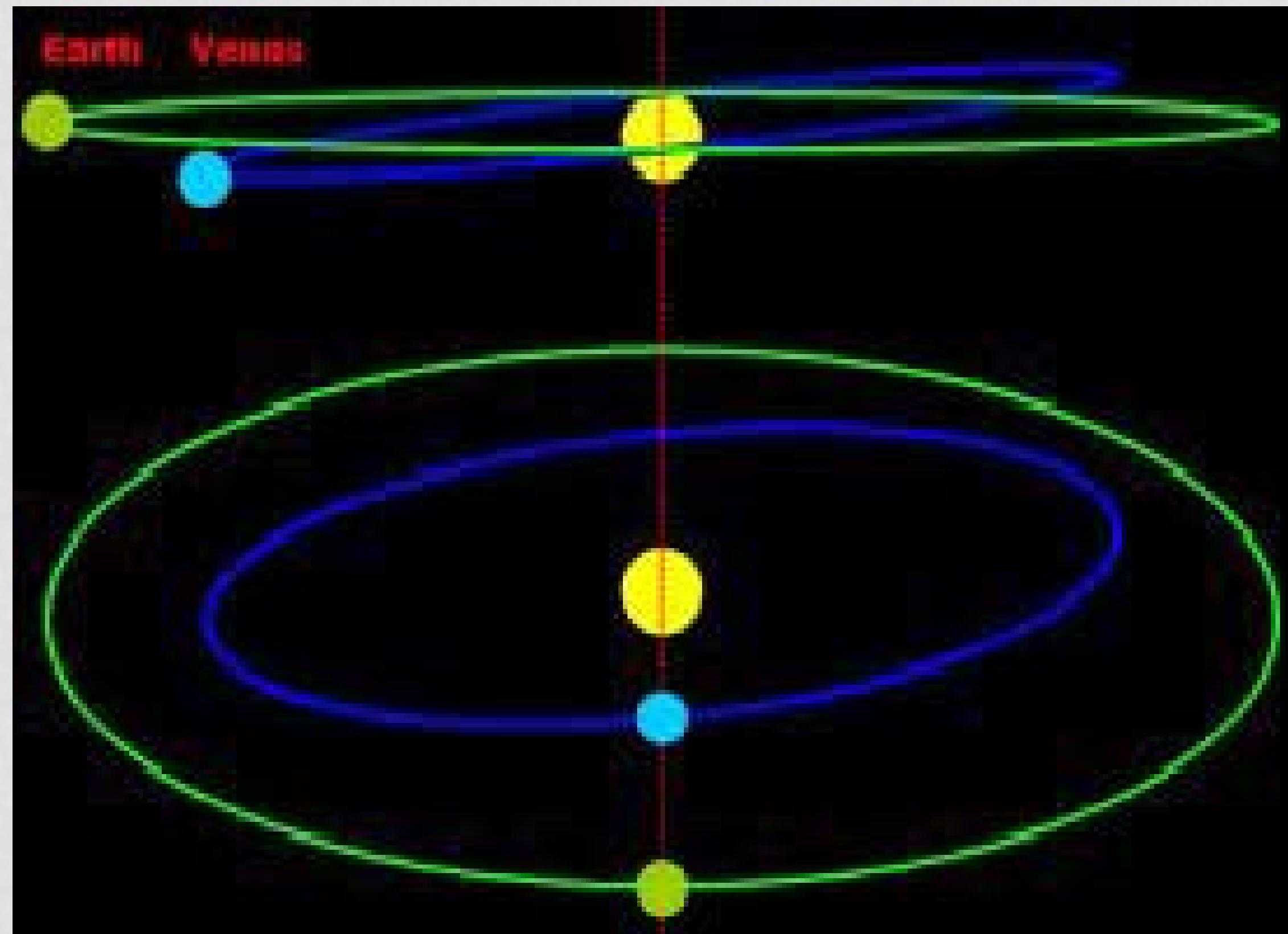


FREQUENCY OF VENUS TRANSIT



- Sidereal period of Venus: 224.701 days
- Sidereal period of Earth: 365.256 days
- Orbit of Venus is aligned at 3.4° to the earth orbit plane.
- Alignment of the Sun, Venus and Earth can only take place along the line of nodes, where the plane of the orbit of Venus crosses that of the Earth – transit.

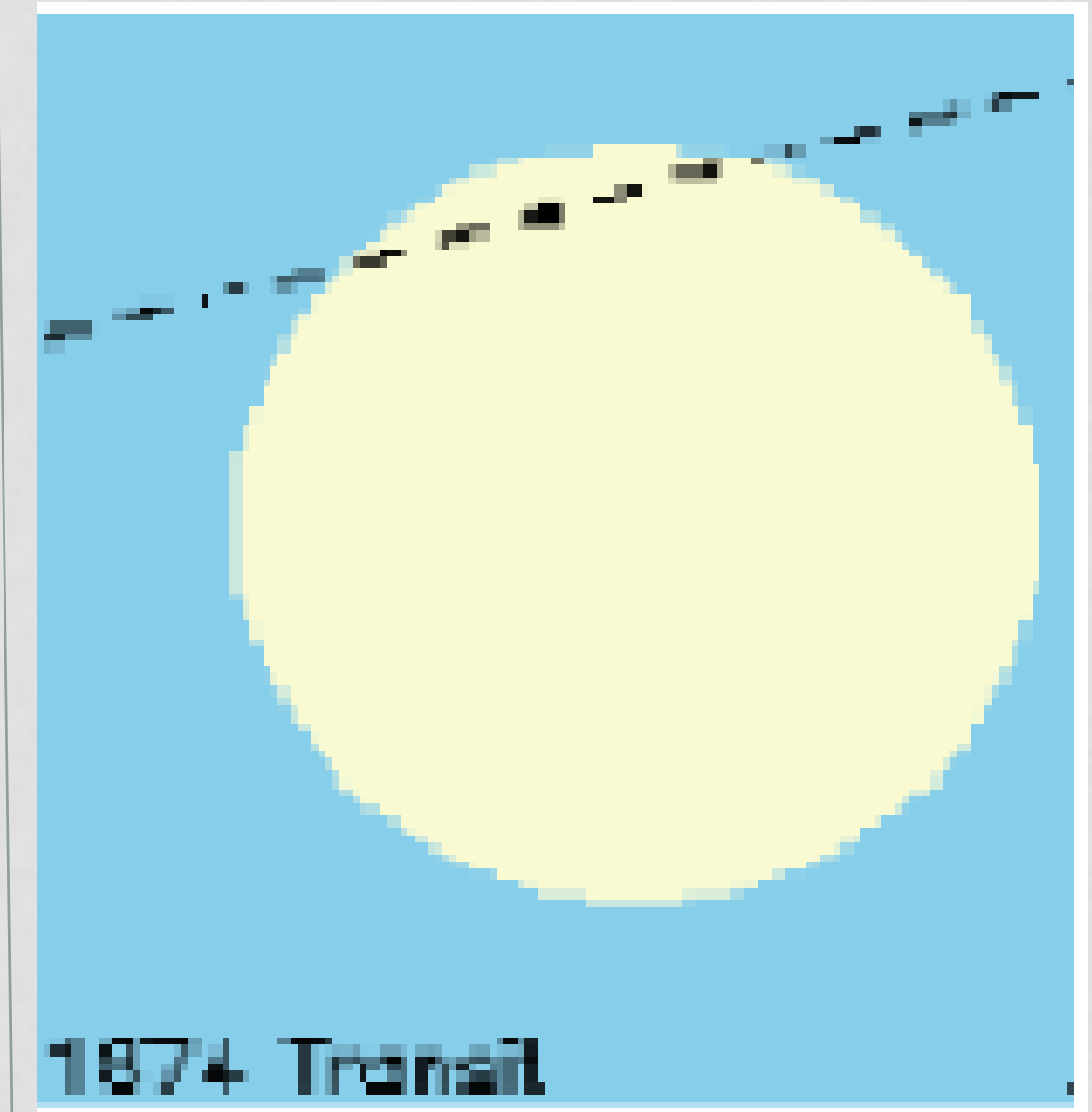
- Beginning of one Of the Venus transit Cycles in 1874

- Transit condition: $M \cdot P_E = N \cdot P_V$
It is solved for $M=8$ and $N=13$ So, next transit occurs in 1882 (same node) (with Venus ahead of Earth by ~ 22.4 hours; after next 8 Years, it will be 44.8 hours ahead, resulting in no transit)

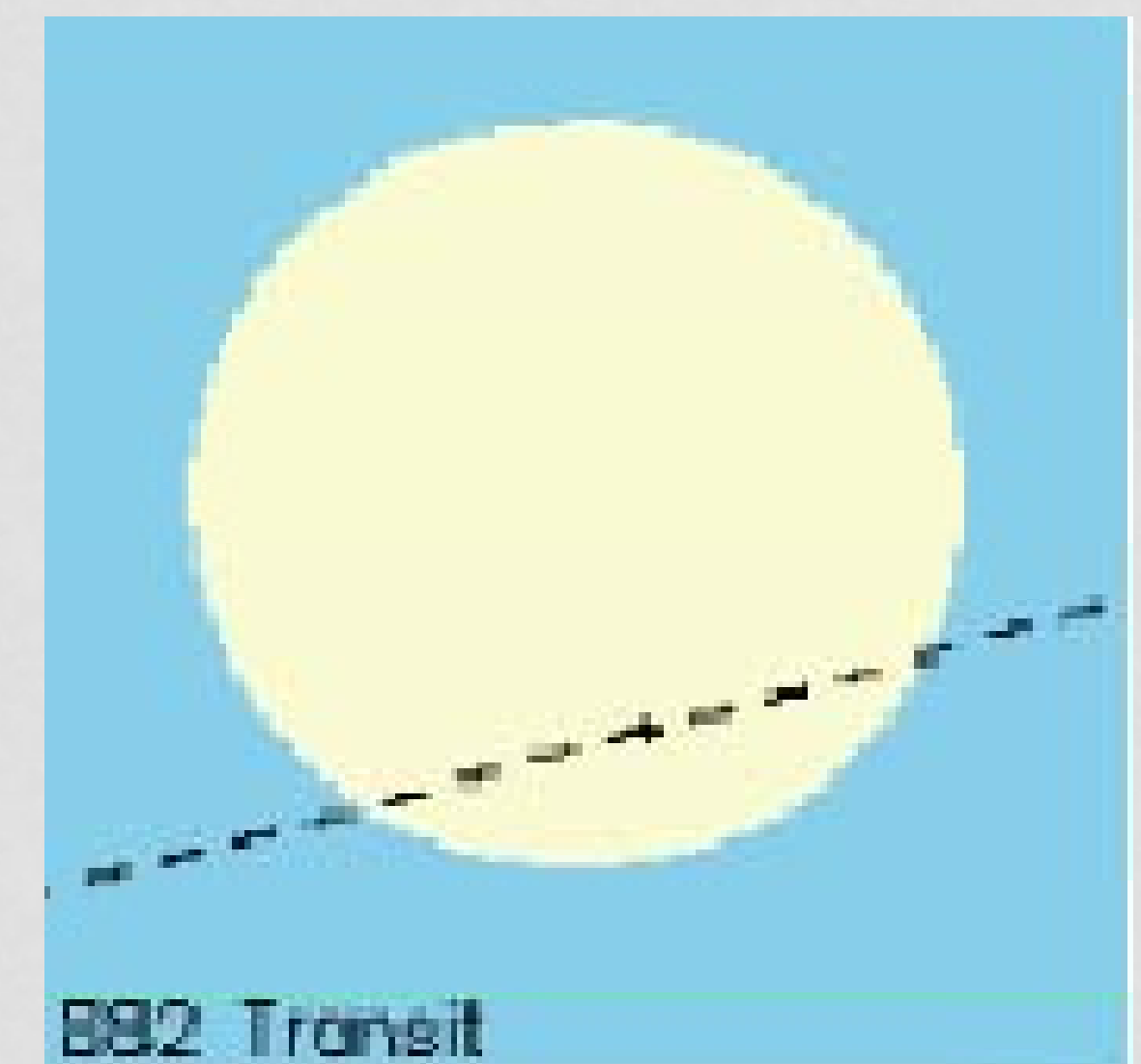
- After 15 times of 8 such cycles (i.e. 120Y) Venus is ahead of Earth by $15 \cdot 22.4 = 14$ days. In Another 2.5 cycles of earth, Venus and earth align in opposite node – 3rd transit

- Again after 8 years another transit occurs in the same node
--- transit in 2012

- Similarly in 121.5 years gap, another cycle of Venus transit starts. However, it is found that time gap between 2nd and 3rd transit and last and 1st of next cycle is 121.5Y and 105.5 Y instead of 113.5 Y. It is due to ellipticity of the orbits.



8Y



121.5Y



8Y

