Six Cosmological Systems
Phases of Venus

Athanasius Kircher, Iter exstaticum (Würzburg, 1660; “Ecstatic Journey through the Heavens”)
Which of the six world systems are compatible with Galileo’s discovery of the phases of Venus?

1. **Ptolemaic system**
   All planets revolve around the central Earth.

   **Venus phases:** Yes | No

2. **Platonic system**
   Like the Ptolemaic, except the positions of Venus and Mercury are switched.

   **Venus phases:** Yes | No

3. **Capellan or Egyptian system**
   Venus and Mercury revolve around the Sun.

   **Venus phases:** Yes | No

4. **Tychonic system**
   Planets revolve around the Sun. The Sun in turn revolves around the Earth.

   **Venus phases:** Yes | No

5. **Semi-Tychonic system**
   Like the Tychonic, except Jupiter and Saturn revolve around the Earth.

   **Venus phases:** Yes | No

6. **Copernican system**
   All planets revolve around the Sun. The Moon is a satellite and not a planet.

   **Venus phases:** Yes | No

Six chief world systems were debated in Galileo’s world, some geocentric and some heliocentric. Galileo’s *Il Saggiatore* (1623) contains Galileo’s earliest published illustration of the phases of Venus (left) which he had discovered through his telescope. When Galileo looked at Venus through the telescope, he saw a full set of phases. The phases prove that Venus revolves around the Sun.

Circle "Yes" or "No" if Venus would show phases.

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