Kepler Music of the Spheres

This is an animation of Kepler's model of the universe. As you zoom in on the center of the solar system, you are able to view the paths of the six planets. First you see Saturn (orange), then Jupiter (pink), then Mars (red), then Earth (aquamarine), then Venus (yellow), and finally Mercury (white). In order to keep the speed of each planet proportionately accurate, Saturn and Jupiter cannot move very far in their respective orbits. However, with the other four planets it is easy to see the elliptical orbits that Kepler proposed. Each planet travels in a perfect ellipse, according to Kepler, and is constrained within an archetypal celestial orb. While Kepler was quite clear in stating that he did not believe in solid planetary spheres, he does believe that there exist at least figurative spheres that encompass each planet's motion. For each planet in the animation, the aphelion position (when the planet is at its furthest point from the Sun) is on the right side of the sphere, and the perihelion position is on the left. As you can see, the aphelion and perihelion positions determine the thickness of each planet's celestial orb.

A crucial part of Kepler's model of the universe was its incorporation of music. He proposed that each planet followed a scale as it moved through its orbit. In the case of the animation, Mercury's scale repeats many times, while you only hear a small portion of Saturn's scale. At the beginning of the animation the planets are in the necessary positions to create a chord. This is one of four possible harmonious chords that the six planets can produce, and possibly the chord that was played at the time of Creation. The other harmonious chords and the full scales of each planet individually can be seen (and heard) in the music theory section.

What you are looking at is a vertical perspective straight down onto Kepler's model of the solar system, which forms the background to this text: it is not a "big bang," and Kepler never imagined such an event. The viewer must imagine that spaced in between each orb (of which the edges are outlined in the image) is one of the five perfect solids. For example, inscribed in the inner surface of Saturn's celestial orb is a cube, and the sphere inscribed within this cube will form the outer surface of Jupiter's orb. This same principle applies for all the planets. Kepler believed that between Jupiter and Mars lay a tetrahedron, between Mars and Earth a dodecahedron, between Earth and Venus a icosahedron, and between Venus and Mercury an octahedron. http://www.cco.caltech.edu/~winter/unilab/module1650/kepler/orbit.html 3

See Also

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