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Physics 454 - Descriptive Astronomy

Biography on Johannes Kepler

Johannes Kepler was a mathematician turned astronomer/astrologist. Hailing from Germany, his life revolved around his role as a mathematician, father, and physicist. As a German, he was Christian at the time and that proved to be part of some complications in his life. Despite the complications between the church and his research, Kepler moved on to contribute to the field of astronomy and physics.

As like most people born in the late 1500’s, Kepler’s life wasn’t easy. Kepler’s life started off poorly as early in his childhood was living with his large family and fatherless. His family comprised of his elder siblings and his mother and himself, deemed the “weakest” of the children. His upbringing wasn’t exactly the easiest for a person of his intellect. Kepler mostly relied on working in his grandfather’s inn. Aside from the work he did for the inn, he made extra money by impressing travelers passing by the inn with his mathematical ability.

At a young age, Kepler was introduced to astronomy through events he’s witnessed in his life. Kepler had seen things like a lunar eclipse which was what fascinated him at first. He was surprised by the color of the moon and wanted to know if there was an explanation. That wasn’t the only thing he witnessed; he was able to see the Great Comet of 1577. The combination of these Astronomical events piqued his interest. Although he was greatly interested, his weak nature made things difficult. His illnesses caused poor eyesight and poor physical strength making it hard to go out and observe.

Once Kepler moved onto his scholarly position as a mathematics teacher, he used his resources to try and apply to work with the astronomer, Tycho Brahe. He and Brahe were associates because Kepler had wanted to use his data for his own interests and research. Although that may have been true, Kepler did also rely on Brahe as his main source of income for his family. Even though they spent hours bargaining and attempting to come to an agreement, Kepler had to temporarily leave Brahe’s study due to the disagreement between the two of them. Eventually, they come to agreement again and this is where most of Kepler’s work shows through.

Kepler’s work extended beyond his contribution of the three laws governing celestial bodies. Kepler first dabbled in optics as it was necessary to make his studying to planets easier. His used the concept of parallax to determine things like distance. Most of his work can be considered the original of modern optics.

Kepler’s major contributions to astronomy were the three laws governing the motion of celestial bodies. His work came in fragments however and it did not come to him easily. Most of the work he did was based off of Brahe’s observational data. The work he did was mostly guesswork and applying his guesses. The first law regarding the ellipses shaped orbits of planets came as a guess. He tried several different ways to map out the way planets, but to him, they were not simply ellipses even though they were. As for the second law, it was the result of proving the distance that planets traveled. These two laws were prevalent in his second work. As for the third law, it was not descriptive to how he found it. It was simply mentioned but the work was not found.

Kepler’s faith made things hard for him as at the time, the church had people believe that everything revolved around the Earth. The church would frequently make publishing hard for Kepler. As a workaround, he just simply stated that’s how planets move, not necessarily that the Sun is the center of the solar system. Despite this, Kepler still pursued his work on astronomy. In actuality, Kepler’s belief in Christianity is what led to his dedication. He believe that his work explained the world that God has created for people to understand.

Kepler’s life was difficult. His weak stature and his dedication to God proved to be some roadblocks in his life. Even though they may have been roadblocks, he turned them into motivation to move on. His weak stature led him into the slope of curiosity of the skies which became his love for astronomy. His dedication to God was what motivated him even though the church would set him back. Kepler took his dedication and difficulties and turned them into his legacy.