Unusual Rotations Of Venus And Uranus: Arguments For And Against Collision

In Lesson 5, it was stated that the most widely accepted theory for the formation of the Moon is that it arose from the collision of the Earth with another planetary body. A similar collision is believed to have caused the unusual rotations of Venus and Uranus. What are the theories and supporting evidence to explain this phenomenon? Uranus was discovered by Sir William Herschel in 1781 and was initially named Georgian situs or Georgia star after King George the 3rd. A German astronomer named Johann bode changed its name and is now the only planet named after a Greek god. Its atmosphere is made up of hydrogen, helium, methane, and ammonia. Massive storms hide and surround a small core made up of rock and possibly ice where methane ice clouds absorbedalmost all red light from the Sun and reflect the blue light back into space making the planet appear blue. It has four times the diameter of Earth 64 times the volume and more than 14 times the mass of our planet, and at its closest, Uranus is 2.74 billion kilometres from Earth and on its farthest it's 3 billion kilometres away if we shine a light towards Uranus it would take two and a half hours to reach the planet when the planet is at its closest to us it takes 17 hours and 14 earth minutes for the planet to rotate on its axis and around 84 earth years to make one trip around the Sun.

Since Uranus was discovered in 1781, astronomers have only observed it for two complete trips around the Sun. As it orbits around the Sun it lies on its side at 98 degrees along its orbital path almost as if it's rolling instead of spinning no other planet in our solar system is tilted for more than 30 degrees off its axis, in comparison earth is tilted ~4 degrees Jupiter at 3 degrees and Saturn at 29 degrees.

- Astronoo. (2017). Earth Retrograde tilts [Image]. Retrieved from http://www.astronoo.com/en/articles/axial-tilt-planets.html
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This tilt is responsible for extreme seasons because for 21 years at a time one hemisphere is facing the Sun and is exposed to constant sunlight while the other gets 21 years of continuous darkness it is the coldest planet in our solar system with the minimum temperature of -224 degrees Celsius this is because Uranus gives off less heat than it absorbs from the Sun. Astronomers once assumed that a single giant impact with a planet-sized object might have collided with Uranus causing it to flip to its new axis, but there are a few problems with this scenario, i.e. the moons are also tilted at 98 degrees like other planets the impact would have destroyed any ring formations, and it would have resulted in the planet and its satellites to rotate backwards similar to Venus. This means that not one but at least two smaller collisions occurred during the formation of the planet while it was still surrounded by the disk of gas and dust that its moons formed from. It has 27 known moons, and many of them are named after Shakespearean characters the five major moons are Miranda which is the smallest Ariel which is the brightest, Puck which is the darkest and heavily cratered, Titania and Oberon which are the largest. The moons followed the tilt of the planet, and from Earth, they appear to orbit the planet from top to bottom.

Uranus also has two sets of very thin dark coloured rings consisting of 11 inner rings and two outer rings together the Rings extend out from 12400 to 25600 km from the planet, unlike Saturn the Rings are very narrow and widely spread apart that is it has more gaps than it has Rings. The Rings probably formed when one or more of the moons were broken on impact and were made into dust particles and charcoal. Dark pieces of carbon-rich materials measuring from a few inches to a few yards across these are not very reflective materials making the Rings not as bright as Saturn's. The Rings weren't discovered until 1977 when the planet passed in front of a star blocking the star's light, in 1986 the Voyager 2 spacecraft flew by Uranus returning the first close-up images of the planet its moons and its rings and in 2011 the New Horizons spacecraft passed Uranus on its way to Pluto becoming the first spacecraft a journey beyond the planet's orbit since voyager 2.

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