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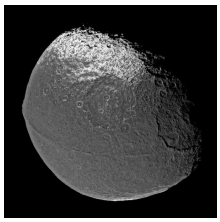

The ridge on Iapetus remains almost exactly parallel to the equator to within a couple of degrees
NASA/JPL/Space Science Institute

Radioactivity Gave Saturn's Moon Strange Walnut Shape

Iapetus, the weird satellite of Saturn

Although we are used to the round or oval shape of most celestial bodies, some of them are just defying the cosmic laws and display some really weird characteristics. Saturn's moon, Iapetus, is one of these strange appearances, because it looks like a walnut instead of a sphere.The third-largest moon of Saturn is known for its strange exterior aspect, having a unique equatorial ridge so high that it visibly distorts the moon's shape even when viewed from a distance. This is not the only strange feature as parts of its globe appear to be squashed flat and it's actually displaying a two-tone coloration.Now, a new theory might have the answer to what created the unusual narrow ridge that capes the broad bulge around its equator. A team led by Julie Castillo of NASA's Jet Propulsion Laboratory in Pasadena, California, US, thinks that it was a burst of radioactivity that caused a warming and a softening of the satellite, which moulded it into the current shape, making it look like a space walnut.It would seem that Iapetus was warmer and more malleable in its early days and probably had a higher rotation speed, which might explain the formation of the equatorial bulge. Eventually it slowed down, but it was already too cool and rigid to adopt another shape."Iapetus spun fast, froze young, and left behind a body with lasting curves," says Castillo. The interesting development is a short burst of radioactivity which may have provided the crucial ingredient of early heat needed to make it all work.Vast amounts of radioactive material, like aluminium-26 and iron-60, which Iapetus was born with, were probably introduced into the solar system by a supernova, rapidly decayed, thus providing a burst of heat to soften Iapetus soon after it formed.Their conclusion is that Iapetus was formed in just the window of opportunity in the solar system's early history, when these short-lived radioactive materials are thought to have been abundant, probably around 4.565 to around 4.562 billion years ago.