









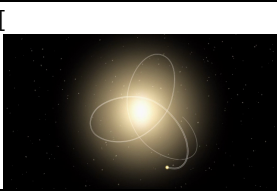




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Hubblecast Episode 55: Crash of the Titans		
00:00 [Narrator] Astronomers have used the Hubble Space Telescope to forecast a future cosmic pile up: the titanic collision of the Milky Way and the Andromeda galaxy in about four billion years time.		
		
00:36 [Narrator] The Andromeda Galaxy, some 2.2 million light-years away, is the closest spiral galaxy to our home, the Milky Way. For around a century, astronomers have known it is moving towards us, but whether or not the two galaxies would actually collide, or simply fly past each other, remained unclear.		
01:04 [Narrator] Now, a team of astronomers has used the Hubble Space Telescope to shed light on this question, by looking at the motion stars in the Andromeda Galaxy.		
01:14 [Jay Anderson] We wanted to figure out how Andromeda was moving through space. So in order to do that we measured the location of the Andromeda stars relative to the background galaxies. In 2002 they were in one place, and in 2010 they were in a slightly different place. And that allowed us to measure the motion over a period of eight years.		
01:34 [Narrator] The motion is actually incredibly subtle, and not obvious to the human eye, even when looking at Hubble's sharp images. However, sophisticated image analysis revealed tiny movements that the scientists were able to project into the future.		
01:54 [Narrator] Based on these findings, it is finally possible to show what will happen to the Milky Way over the next eight billion years, as the galaxies drift closer...		

<p>02:09 [Narrator] ...then collide and gradually merge into a single, larger, elliptical galaxy with reddish stars.</p> <p>And yet the Solar System should in fact survive this huge crash.</p>		
<p>02:29 [Roeland van der Marel] The reason we think that our Solar System will not be much affected by this collision between the Milky Way and Andromeda is that galaxies are mostly empty space.</p> <p>Even though our galaxy, as well as the Andromeda Galaxy, has a hundred billion stars in it, they are very far apart. So if two galaxies actually collide with each other, the stars basically pass right between each other and the chance of two stars directly hitting each other is really, really small. So the likelihood that our Solar System will be directly impacted by another star, for example, in Andromeda as we collide with it is really, really small.</p>		
<p>03:07 [Roeland van der Marel on camera] Well, if life is still present on Earth when this happens, the changes in the sky will be quite spectacular.</p> <p>Now they will be very very slow because the timescales on the scales of galaxies in the Universe are very very long. So you have to think, millions of years but even then over these timescales over millions of years, we will see big changes.</p> <p>If we wait a few billion years, Andromeda will be huge on the sky. It will be as big as our Milky Way because we'll be very close to it.</p> <p>And then later, when the galaxies merge, the merged remnant of the Milky Way Galaxy and Andromeda will look more like an elliptical galaxy and we'll be sitting right in it.</p> <p>So the view of the Milky Way on the night sky will be completely gone and this band of light will be replaced by a more spheroidal distribution of light.</p>		
<p>03:59 [Narrator] And so, the Sun, born in the Milky Way almost 5 billion years ago will end its life in a new orbit, as part of a new galaxy.</p>		
<p>05:06 [ENDS]</p>		