

**Key words:** AU Microscopii, AU Mic, disc, Very Large Telescope, Hubble Space Telescope.



<p><b>ESOCast Episode 77: Mysterious Ripples Found Racing Through Planet-forming Disc</b></p>	
<p><b>00:00</b> <b>[Visuals start]</b> Images from ESO's Very Large Telescope and the NASA/ESA Hubble Space Telescope have revealed unique and totally unexpected structures in the dusty disc around the star AU Microscopii.</p> <p>These fast-moving wave-like dust features are unlike anything ever observed, or even predicted, before now.</p>	<p><b>00:00</b> <b>[Visuals start]</b></p>  
<p><b>00:29</b> <b>ESOCast intro</b> 2. This is the ESOCast! Cutting-edge science and life behind the scenes at ESO, the European Southern Observatory.</p>	 <p>Brought to you by the European Southern Observatory <a href="http://www.eso.org">www.eso.org</a></p>
<p><b>00:50</b> <b>[Narrator]</b> 3. AU Microscopii, or AU Mic for short, is a young nearby star surrounded by a large disc</p>	

of dust. Studies of such discs can provide valuable clues about how planets form.

Astronomers have been searching AU Mic's disc for any signs of clumpy or warped features for years. Such features might give away the location of possible planets.



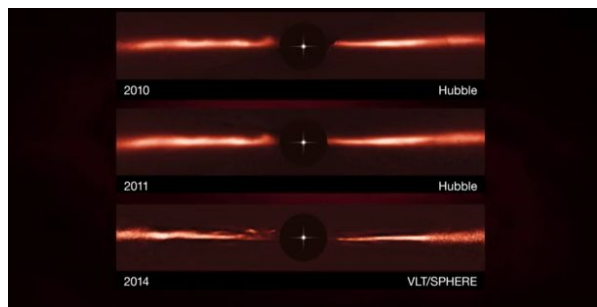
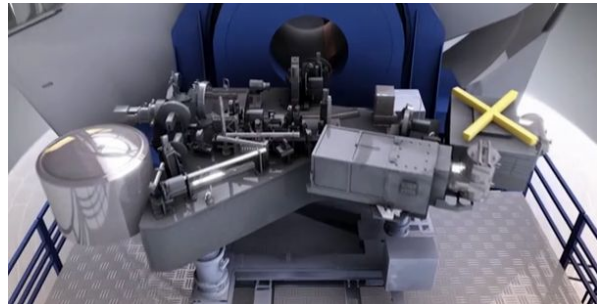
**01:24**

**[Narrator]**

4. For their search, astronomers have now used the powerful new imaging capabilities of ESO's SPHERE instrument, mounted on the Very Large Telescope. And they discovered something completely unexpected.

Five wave-like arches at different distances from the star showed up in the new image.

The astronomers compared the SPHERE data with images of the disc taken by Hubble in 2010 and 2011. The comparison of the data showed that these ripples were moving — and moving very fast!



**02:26**

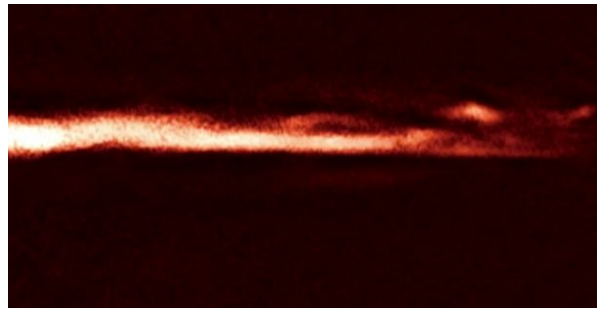
**[Narrator]**

5. At least three of the features are moving so fast that they are escaping from the gravitational pull of the star.

Such high speeds rule out the possibility that these are conventional disc features caused

by planets disturbing material in the disc while orbiting the star.

There must have been something else involved to speed up the ripples and make them move so quickly. This means that they are a sign of something truly unusual.

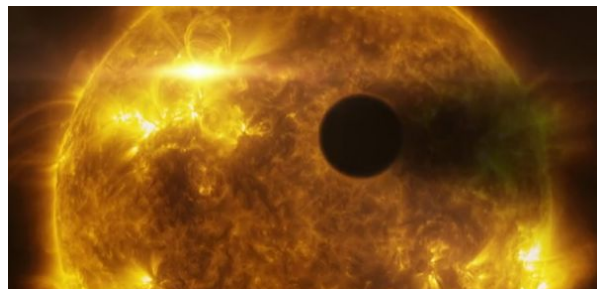


**02:59**

**[Narrator]**

6. One explanation for the strange structure could be flares from the star. AU Mic often lets off huge bursts of energy from its surface.

One of these flares could perhaps have violently stripped away material from one of the planets — if there are any planets. This material could now be propagating through the disc, propelled by the force of the flare.



**03:30**

**[Narrator]**

7. To get the final answer to the nature of these features astronomers will need additional observations made from the ground and from space. But, for now, these

curious features remain a big surprise and an unsolved mystery.



**03:54**  
**[Outro]**

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