



|  |   |
|--|---|
| <p><b>ESOCast Episode 62: Three Planets Found in Star Cluster</b></p>  |   |
| <p><b>00:00</b><br/>[Visuals start]</p> <p><b>[Narrator]</b><br/>1. Astronomers using ESO telescopes and others around the world have found three new planets orbiting stars in a cluster called Messier 67. Only a handful of such planets in clusters were known up to now.</p> <p>And, surprisingly, one of the newly found planetary host stars seems to be an almost perfect solar twin — a star that is essentially identical to our own Sun. It's the first exoplanet orbiting a solar twin in a star cluster to be discovered.</p> | <p><b>Images:</b></p> <p>Computer animations on star cluster M67</p> <p>Computer animations on exoplanets</p> |
| <p><b>00:45</b><br/><b>ESOCast intro</b></p> <p>2. This is the ESOCast! Cutting-edge science and life behind the scenes of ESO, the European Southern Observatory. Exploring the ultimate frontier with our host Dr J, a.k.a. Dr Joe Liske.</p>  | <p>ESOCast introduction</p>   |
| <p><b>01:03</b><br/>[Dr J]</p> <p>3. Good news everyone! 3 brand new exoplanets have been discovered.</p> <p>Considering that we know of about a thousand confirmed exoplanets, that might not sound like much but this finding is in fact, a little unusual because these 3 planets orbit stars inside a cluster of stars known as Messier 67.</p>  | <p>Dr J in virtual studio. Background images:</p> <p>Computer animations on M67</p>                           |
| <p><b>01:27</b><br/>[Narrator]</p> <p>4. These recent discoveries confirm that planets in clusters are quite common — although very hard to spot. They will also allow scientists to examine how planets form in the crowded environment of a star cluster.</p>  | <p>Computer animations on M67 and exoplanets</p>  |

|   |   |
|---|---|
| <p><b>01:46</b><br/> <b>[Dr J]</b><br/> 5. To find the new exoplanets astronomers used the HARPS instrument on the 3.6-metre telescope at ESO's La Silla Observatory. They carefully monitored 88 selected stars in Messier 67 for a number of years. That allowed them to look for the tiny tell-tale motions of the stars that reveal the presence of orbiting planets.</p>   | <p>Dr J in virtual studio. Background images:<br/> HARPS instrument and 3.6-m telescope at La Silla<br/> Computer animation on radial velocity method</p> |
| <p><b>02:11</b><br/> <b>[Narrator]</b><br/> 6. Three planets were discovered in the cluster. Two of these planets orbit stars similar to the Sun, and one orbits a more massive and evolved red giant star. The first two planets both have about one third the mass of Jupiter and orbit their host stars in seven and five days respectively. The third planet takes 122 days to orbit its host and is more massive than Jupiter.</p> | <p>Computer animations on M67 and exoplanets</p>  |
| <p><b>02:46</b><br/> <b>[Dr J]</b><br/> 7. The host star of one of the planets turned out to be a remarkable object — it's one of the best solar twins ever identified. The star is almost identical to the Sun in terms of its mass, age, chemical composition and other characteristics. Also, it's the first solar twin in a cluster that has been found to host a planet.</p>   | <p>Dr J in virtual studio. Background images:<br/> Computer animation solar twin</p>  |
| <p><b>03:11</b><br/> <b>[Narrator]</b><br/> 8. Solar twins, solar analogues and solar-type stars are categories of stars based on how similar they are to our own Sun. Solar twins — stars almost identical to the Sun — are very rare, but the other classes, where the similarity is a lot less precise, are much more common.</p>  | <p>Computer animations on stars</p>   |
| <p><b>03:38</b><br/> <b>[Dr J]</b><br/> 9. Astronomers had not found many planets around cluster stars in the past, but now they are finally showing up. The new results from the HARPS instrument show that planets in open star clusters are probably about as common as they are around isolated stars...so that's a lot of planets!</p>   | <p>Dr J in virtual studio. Background images:<br/> Computer animation on M67 and exoplanets</p>   |
| <p><b>03:58</b><br/> <b>[Outro]</b><br/> This is Dr. J signing off for the ESOcast. Join me</p>   |   |

|   |   |
|---|---|
| again next time for another cosmic adventure. |   |
| <b>04:06</b><br><b>[Outro]</b>                | ESOcast is produced by ESO, the European Southern Observatory.<br><br><i>ESO, the European Southern Observatory, is the pre-eminent intergovernmental science and technology organisation in astronomy designing, constructing and operating the world's most advanced ground-based telescopes.</i> |

**END**