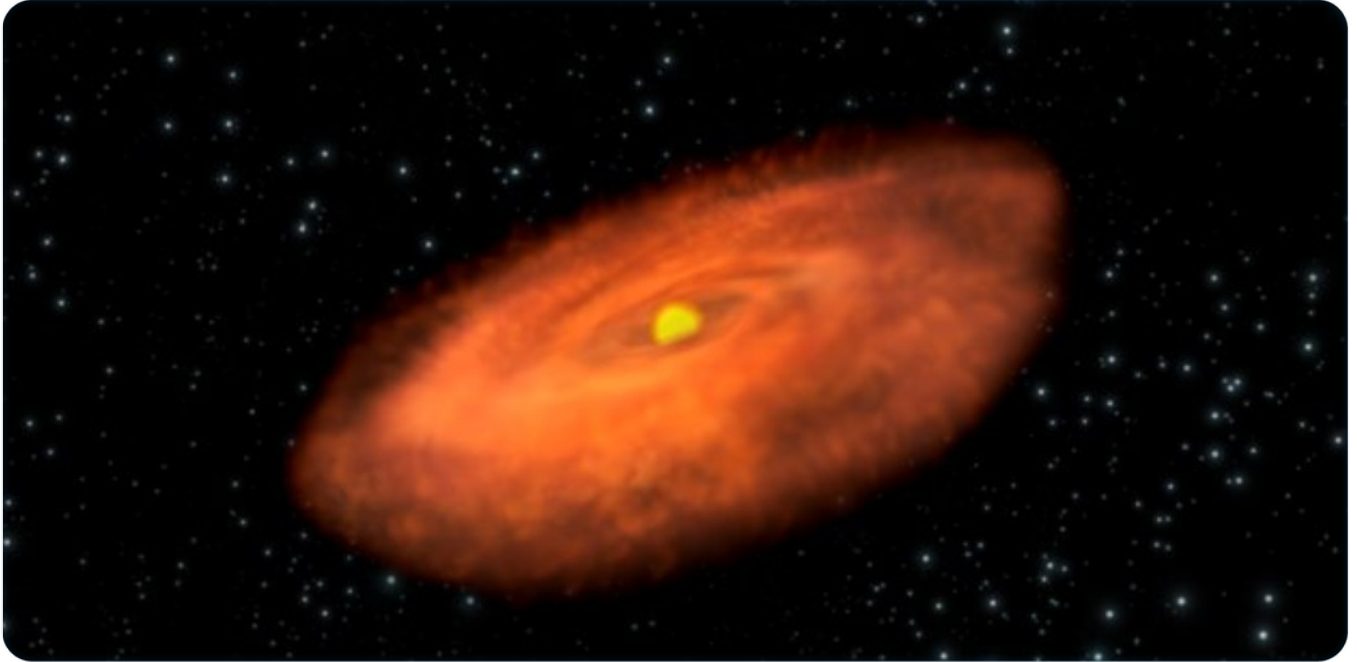




Cosmic Weight Watchers



The orange cloud in this picture shows a disc of material leftover from when the star at the centre formed. These kinds of discs contain all the raw ingredients for building planets! But if astronomers want to know how many planets this disc could make, they need to know its weight.

This is quite tricky to work out. Much of the disc is gas – mostly a type of gas called 'hydrogen' – which is can be very hard to see. Travelling there with a pair of weighing scales isn't possible, space is just too big! Even using the most impressive technology we can imagine, it would still take about 85 years to fly to the closest star to the Sun, Proxima Centauri! This means that astronomers have to get very creative.

A simple but clever trick they use is look at our neighbouring stars for help. Nearby discs can be seen in much more detail than those far away. After studying lots of them, astronomers learned that there is a very useful pattern in all these types of disc! For every particle of 'normal' hydrogen gas there is a specific amount of a gas called 'heavy' hydrogen.

This is pretty lucky for astronomers, because heavy hydrogen is easy to detect, even over long distances. This means they could work out the amount of normal hydrogen in the far away discs. By adding the normal hydrogen to the weight of all the other material in the disc, they found exactly how much the entire disc weighs.

It turns out that the disc in the picture contains enough to build all eight planets of our Solar System, and still have leftovers! In fact, the disc around this star has enough material for 50 Jupiter-sized planets– each one big enough to fit the Earth inside 1000 times!

COOL FACT

In a different study, scientists identified that the same disc contains enough water to fill several thousand oceans on Earth!

