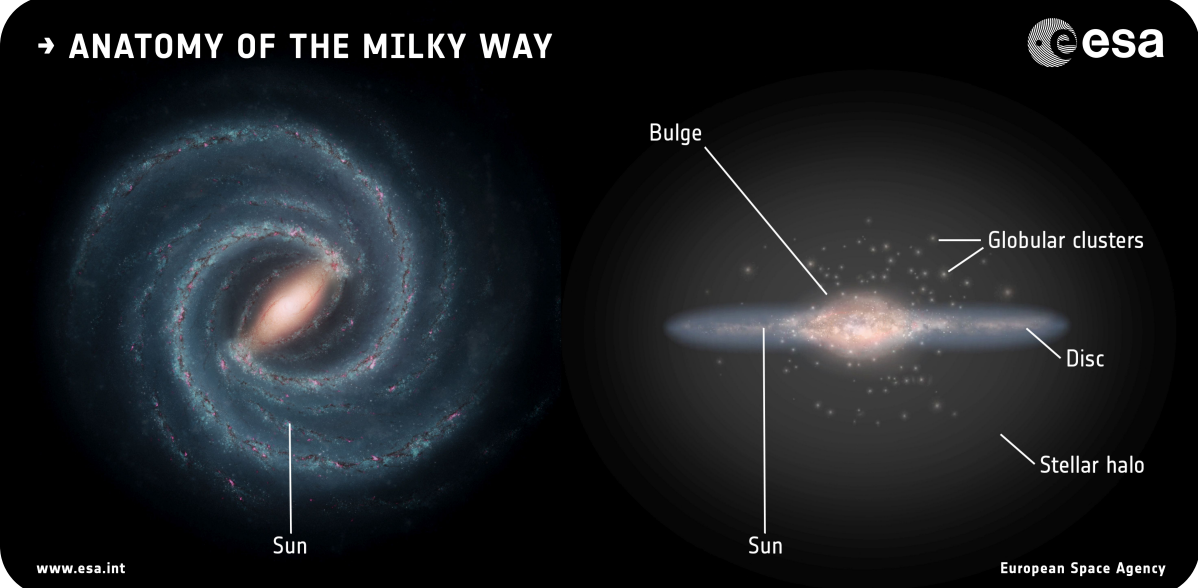


Mystery of the missing matter

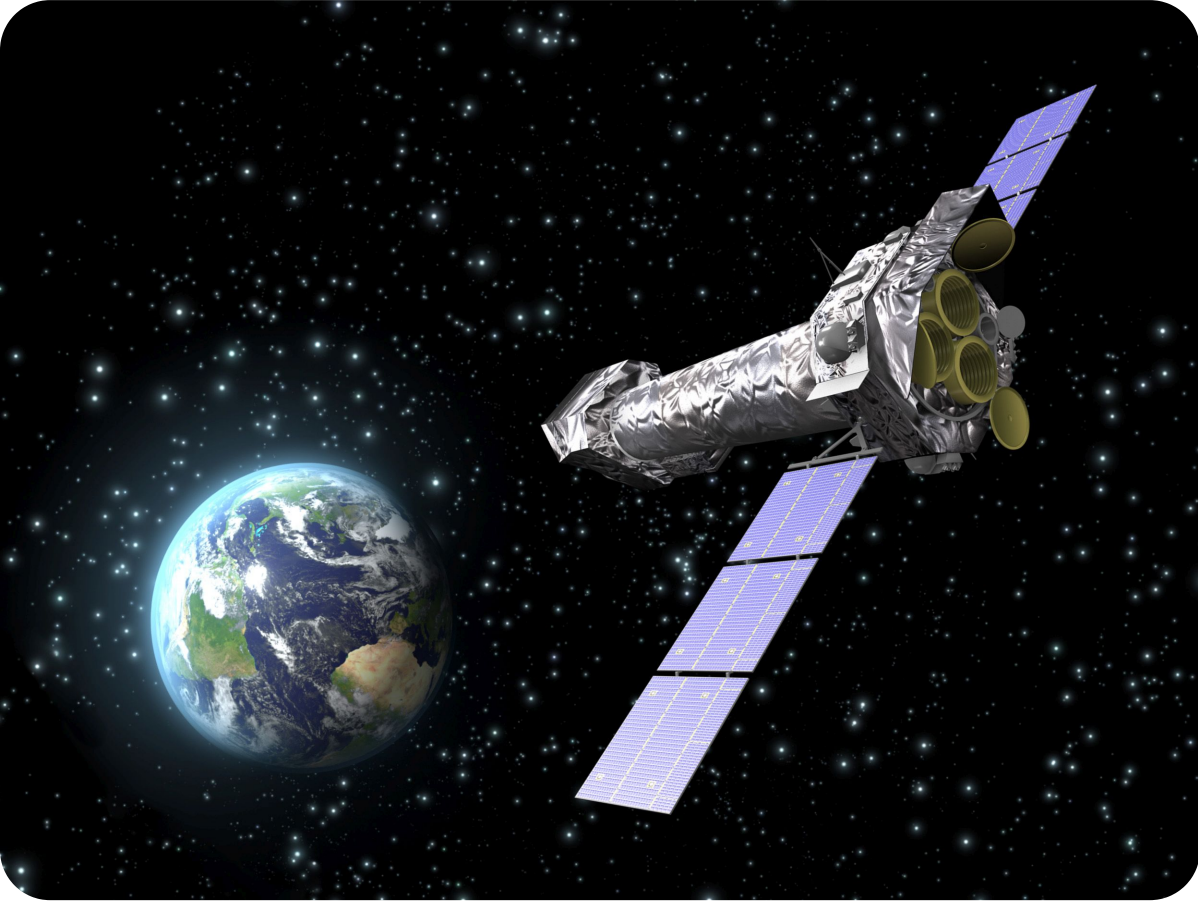


Galaxy haloes are huge!
[Access the image](#)

08 May 2018

Did you know that the Universe seems to be missing some matter? You may have heard of dark matter, which is very mysterious and has yet to be found by scientists. However, ordinary matter, which makes things we are used to: stars, planets, and everything we can see, touch, or smell, can be mysterious too! By studying nearby galaxies, we have found that some contain three times less matter than we would expect. Our own galaxy – the Milky Way – contains less than half the matter it should! Where is this missing matter?

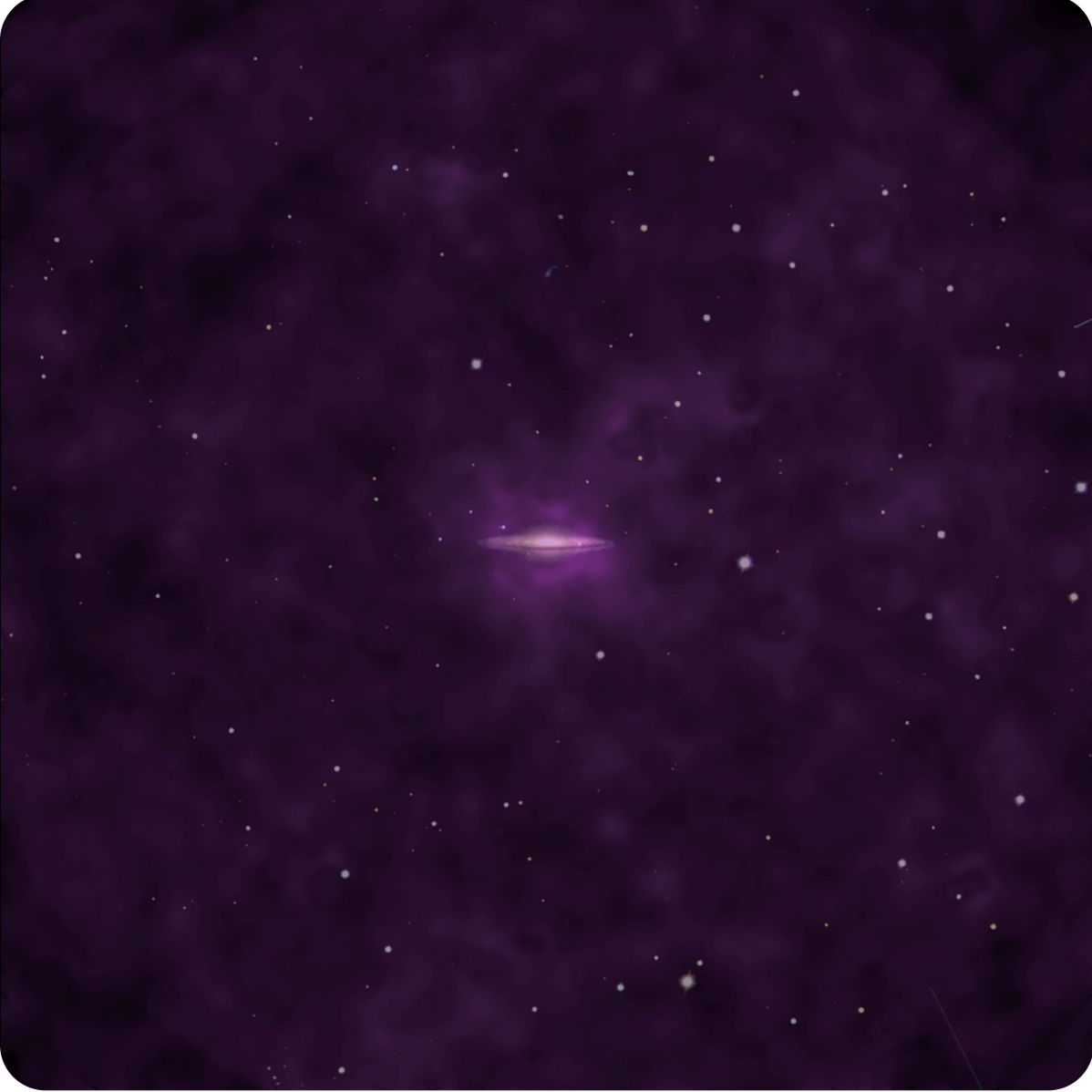
Astronomers have spent a lot of time and effort trying to track down the missing matter. Rather than lying in the main part of galaxies, where most of the stars are, a group of researchers had an idea: maybe this matter is in the haloes of galaxies. Haloes are areas of hot gas that surround galaxies. It is difficult to observe haloes, and astronomers are normally only able to peer into them, and not see very far. Could galaxy haloes be the perfect hiding place for the Universe's missing matter?



ESA's XMM-Newton is a space telescope that observes X-rays
[Access the image](#)

A team of astronomers have used an ESA space telescope called XMM-Newton to probe galaxy haloes deeper than before to search for matter. XMM-Newton is an X-ray telescope, meaning it does not see the normal light that our eyes can detect, but rather it observes X-rays. Studying galaxy haloes using X-rays allows for better observations!

The team looked at six spiral galaxies, searching for clues that matter may be present. After checking the data, they were ready to announce their results: nearly three-quarters of the expected matter was still missing!



Could there be matter hiding in galaxy haloes?
[Access the image](#)

So where could it be? There are a few theories. Perhaps it is stored in a type of gas that we find difficult to observe. It could be in an area of space that we have not yet searched. Or maybe the matter is there in the haloes, but its X-rays are too faint for even XMM-Newton to see.

Scientists are keen to continue investigating. Perhaps one day we will solve the mystery of the missing matter!

Cool fact: ESA's upcoming Advanced Telescope for High-ENergy Astrophysics will probe the outer regions of galaxies in the search for the missing matter.