

# Milky Way seen to be a galactic cannibal

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A stream of debris across the sky is the result of intergalactic cannibalism, researchers from The Australian National University conclude, and it is not the first time our galaxy has had one of its neighbours for breakfast.

Astronomers from the Research School of Astronomy and Astrophysics at ANU have identified a huge swathe of debris that has been wrenched from a neighbouring galaxy to our Milky Way. Their findings are published in the April issue of the *Astrophysical Journal*.

“The stars we have found have been stripped from the Sagittarius dwarf galaxy,” said lead author Dr Stefan Keller. “The Sagittarius dwarf is a cosmic lightweight weighing 10,000 times less than our Milky Way. It has ventured too close to our galaxy and is now getting stretched out and torn apart.”

The pieces of debris from the Sagittarius dwarf sweep across the entire sky but are buried among the countless foreground Milky Way stars. In order to trace the stream, Dr Keller and his colleagues – Professor Gary Da Costa, Professor Brian Schmidt and PhD students Simon Murphy and Sayuri Prior – sifted through over 15,000 images of the sky looking for a very rare type of pulsating star called an RR Lyrae variable.

These stars change their brightness as they get bigger and smaller. “The great thing about RR Lyraes is that they all have the same intrinsic brightness so each time we found one we were able to derive an accurate distance to the star,” Dr Keller said.

The team was able to trace the extent of the debris to over 150,000 light years, further than previous studies. “The new debris patches are particularly exciting as they offer us the best chance to measure the mass and shape of the Milky Way,” Dr Keller said. “We know that the Milky Way contains roughly ten times more mass than we can see, suggesting the presence of mysterious dark matter. We can’t see the dark matter itself but our study can see the effects of its gravitational pull on the Sagittarius dwarf.”

It’s currently thought that the Milky Way has had a steady diet of smaller galaxies during its lifetime. “Early in the life of the Milky Way galaxy mergers such as this occurred on a much more frequent basis, contributing substantially to the mass of the Milky Way,” Dr Keller said. “The devouring of the Sagittarius dwarf is like the after dinner mint on top of what has been an extensive banquet for the Milky Way.”

The research is based on data taken with the Great Melbourne Telescope at the ANU Mt Stromlo Observatory.

Source: Australian National University

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