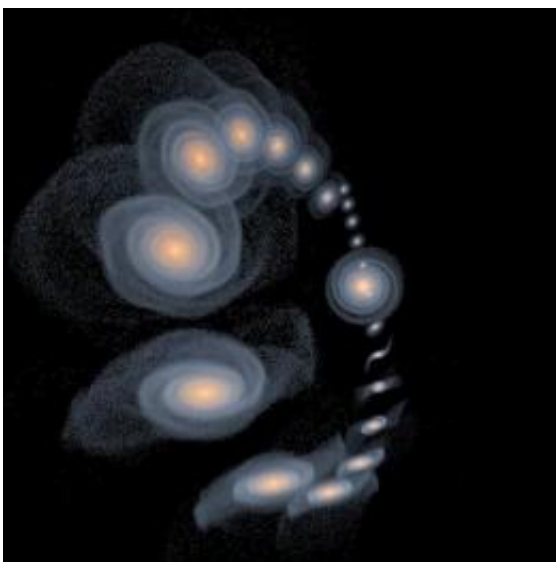


No strain for Andromeda: Galaxy is cosmic cannibal (w/ Video)

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This undated artist's rendering provided by the University of Cambridge, England, shows the spiral galaxy of Andromeda, center right, over a period of about three billion years as repeated, but modified views of the dwarf galaxy Triangulum, move away from it, clockwise towards Earth, then back towards it, where Triangulum will be ultimately devoured by the Andromeda galaxy says astronomer John Dubinski. (AP Photo/Illustration by John Dubinski and Larry Widrow)

(PhysOrg.com) -- A huge galaxy neighbouring our own Milky Way appears to have expanded by "digesting" smaller galaxies nearby, a new study has shown.

The survey of the Andromeda Galaxy, which lies approximately 2.5million light years away, has revealed what seems to be evidence of the cosmic formation process absorbing some of its nearest neighbours.

An international team of astronomers, including scholars from the University of Cambridge, made the observations during an ongoing survey of Andromeda using the Canada-France-Hawaii telescope and its MegaCam/MegaPrime digital camera.

The study, which is the biggest of its kind, took in an area with a diameter equivalent to one million light years, enabling scientists to produce the broadest and deepest panoramic image of a galaxy ever made. The results will be published in the journal *Nature* on September 3rd.

Theory holds that galaxies evolve and grow by absorbing smaller galaxies over time. One way to test this is to find the leftovers from this process. Finding these faint structures is difficult, since it involves looking over an area hundreds of time larger than the main "disc" at the galaxy's centre.

The new study found streams and structures on the fringes of Andromeda which appear to be the leftovers from exactly this sort of process. It suggests that Andromeda has expanded by cannibalising other galaxies nearby, and that the process is still under way.

"This is a startling visual demonstration of the truly vast scale of galaxies," Dr Mike Irwin, from the University of Cambridge's Institute of Astronomy and one of the report's lead authors, said. "The survey has produced an unrivalled panorama of galaxy structure which reveals that galaxies are the result of an ongoing process of accretion and interaction with their neighbours."

Andromeda is the nearest large galaxy visible to the naked eye from the Northern Hemisphere. The researchers charted the unexplored outskirts of the galaxy for the first time, detecting stars and giant structures in the process.

Although these now form part of its furthest reaches, many of these stars could not have formed within Andromeda itself because the density of gas so far from the galaxy's core would have been too low to allow formation to take place. Therefore, the team reason that they are almost certainly the remnants of other, smaller galaxies which have been absorbed by Andromeda - and that Andromeda itself is still in a state of expansion.

On a similar basis, the paper argues that the larger-scale substructures identified on the galaxy's fringes are probably the "undigested" remains of previously accreted dwarf galaxies. In all likelihood, they originally belonged to dwarf galaxies or other, proto-galactic fragments.

The results also indicate that Andromeda is presently interacting with a nearby region called the Triangulum Galaxy, which is also visible in the Northern Hemisphere using a small telescope. "Ultimately, these two galaxies may end up merging completely," Dr Scott Chapman, Reader in Astrophysics at the Institute of Astronomy, University of Cambridge, said. "Ironically, galaxy formation and galaxy destruction seem to go hand in hand."

Provided by University of Cambridge

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