

Milky Way in mid-life crisis

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Barred Spiral Milky Way. Illustration Credit: R. Hurt (SSC), JPL-Caltech, NASA

(PhysOrg.com) -- The Milky Way is suffering from a mid-life crisis with most of its star formation behind it, new research from Swinburne University of Technology has shown.

Galaxies typically fall into one of two categories - energetic blue [galaxies](#) that form new stars at an impressive rate, or lethargic red galaxies which are slowly dying.

In a paper accepted for publication in the *Astrophysical Journal*, Mr Simon Mutch, Dr Darren Croton and Dr Gregory Poole, have shown that our own [Milky Way](#) galaxy is neither of these. Rather it is a rare 'green valley' galaxy that is half way between a youthful blue galaxy and a geriatric red one.

This is the first time that astronomers have compared both the colour and the star formation rate of the Milky Way to that of other galaxies in the Universe.

"Determining the state of our own galaxy while

we're stuck inside it is very difficult to do," Dr Croton said. "The phrase 'it's hard to see the forest for the trees' really rings true here."

To overcome this, the researchers have taken the best available measurements of the Milky Way from the past 20 years and compiled them into a big picture view of the galaxy's current state.

"The properties we've looked at all point to the Milky Way having global colours that we'd classify as green - they're midway along an evolutionary track between 'blue and star forming' and 'red and dead'," Dr Croton said.

According to Mr Mutch, this means that the production of stars in the Milky Way will slow down to a mere trickle over the next few billion years.

"Star formation in our galaxy will continue to decrease," he said. "But those concerned about the Milky Way's decline needn't worry just yet - retirement is still a long way off."

And according to Dr Poole, even in its twilight years our home galaxy will still have some life left in it.

"In about five billion years, the Milky Way is expected to merge with neighbouring spiral galaxy Andromeda," he said. "This will liven things up a lot, with any residual hydrogen gas in both [galaxies](#) providing a new, but short-lived, burst of [star formation](#)."

'The Mid-Life Crisis of the Milky Way and M31' can be downloaded from: arxiv.org/abs/1105.2564v1

Provided by Swinburne University of Technology

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