

# Gas 'finger' points to galaxies' future

February 4 2008

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Gas streaming from the Magellanic Clouds is piercing the disk of our Milky Way Galaxy. Credit: John Rowe Animations

Like a fork piercing a fried egg, a giant finger of hydrogen gas is poking through our Milky Way Galaxy from outside, astronomers using CSIRO radio telescopes at Parkes and Narrabri have found.

The location of the intrusion may give a crucial clue to the fate of the little galaxies the gas flows from, the Large and Small Magellanic Clouds.

“We’re thrilled because we can determine exactly where this gas is ploughing into the Milky Way – it’s usually extremely hard to get distances to such gas features,” said the research team leader, Dr Naomi McClure-Griffiths of CSIRO’s Australia Telescope National Facility.

The gas finger, called HVC306-2+230, is running into the starry disk of our Galaxy about 70 thousand light-years (21kpc) away from us. On the sky, the point of contact is near the Southern Cross.

The finger is the pointy end of the so-called Leading Arm of gas that streams ahead of the Magellanic Clouds towards the Milky Way.

Until last year, astronomers generally thought that the Magellanic Clouds had orbited our Galaxy many times, and were doomed to be ripped apart and swallowed by their gravitational overlord.

But then new Hubble Space Telescope measurements showed the Clouds were moving much faster than previously thought. In turn, this implied that the Clouds are paying our Galaxy a one-time visit rather than being its long-term companions.

Knowing where the Leading Arm is crossing the Galactic Disk may help astronomers to predict where the Clouds themselves will go in future.

“We think the Leading Arm is a tidal feature, gas pulled out of the Magellanic Clouds by the Milky Way’s gravity,” said Dr McClure-Griffiths.

“Where this gas goes, we’d expect the Clouds to follow, at least approximately.”

The team’s measurement of where the Leading Arm intrudes into the Milky Way is more in line with the models that assume the Magellanic Clouds have been orbiting our Galaxy than with the models that have the Clouds just passing by.

Dr McClure-Griffiths cautions that this is not the final word on the subject, saying that the latter models were far from ruled out.

But the new result suggests that the Magellanic Clouds will eventually merge with the Milky Way, rather than zooming past.

Source: CSIRO

Citation: Gas 'finger' points to galaxies' future (2008, February 4) retrieved 17 April 2024 from <https://phys.org/news/2008-02-gas-finger-galaxies-future.html>

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