

Wolbach Library: CfA in the News ~ Week ending 4 August 2009

1. **Dancing helps galaxies lose weight!**, Hindustan Times, Thursday, July 30, 2009
2. **Giant planet takes hits for the solar system**, Dennis Overbye / The New York Times, Grand Rapids Press, All Editions ed, p A6, Sunday, July 26, 2009

Record - 1

DIALOG(R)

Dancing helps galaxies lose weight!,
Hindustan Times,
Thursday, July 30, 2009

Text:

Washington, July. 30 -- In an interesting new research, astronomers have determined that dwarf spheroidal galaxies, which contain few stars relative to their total mass, are formed by indulging in a cosmic dance.

Dwarf spheroidal galaxies appear to be made mostly of dark matter - a mysterious substance detectable only by its gravitational influence, which outweighs normal matter by a factor of five to one in the universe as a whole.

Astronomers have found it difficult to explain the origin of dwarf spheroidal galaxies.

Previous theories require that dwarf spheroidals orbit near large galaxies like the Milky Way, but this does not explain how dwarfs that have been observed in the outskirts of the "Local Group" of galaxies could have formed.

"These systems are 'elves' of the early universe, and understanding how they formed is a principal goal of modern cosmology," said lead author Elena D'Onghia of the Harvard-Smithsonian Center for Astrophysics (CfA).

D'Onghia and her colleagues used computer simulations to examine two scenarios for the formation of dwarf spheroidals.

While the first scenario features an encounter between two dwarf galaxies far from giants like the Milky Way, with the dwarf spheroidal later accreted into the Milky Way, the second scenario simulates an encounter between a dwarf galaxy and the forming Milky Way in the early universe.

The team found that the galactic encounters excite a gravitational process which they term "resonant stripping," leading to the removal of stars from the smaller dwarf over the course of the interaction and transforming it into a dwarf spheroidal.

"Like in a cosmic dance, the encounter triggers a gravitational resonance that strips stars and gas from the dwarf galaxy, producing long visible tails and bridges of stars," explained D'Onghia.

"This mechanism explains the most important characteristic of dwarf spheroidals, which is that they are dark-matter dominated," added co-author Gurtina Besla.

The long streams of stars pulled off by gravitational interactions should be detectable.

For example, the recently discovered bridge of stars between Leo IV and Leo V, two nearby dwarf spheroidal galaxies, may have resulted from resonant stripping. Published by HT Syndication with permission from Asian News International. For more information on news feed please contact Surit Das at htsyndication@hindustantimes.com

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Record - 2

DIALOG(R)

Giant planet takes hits for the solar system,

Dennis Overbye / The New York Times,

Grand Rapids Press, All Editions ed, p A6,

Sunday, July 26, 2009

Text:

Anybody get the number of that truck?

Astronomers last week were scrambling to get big telescopes turned to Jupiter to observe the remains of what looks like the biggest smashup in the solar system since fragments of the Comet Shoemaker-Levy 9 crashed into the planet in July 1994.

Something -- probably a small comet -- smacked into Jupiter on July 19, leaving a bruise the size of the Pacific Ocean near its south pole. Just after midnight, Australian time, Jupiter came into view in the eyepiece of Anthony Wesley, an amateur astronomer in Murrumbateman. The planet was bearing a black eye spookily similar to the ones left in 1994.

"This was a big event," said Leigh Fletcher of the Jet Propulsion Laboratory. "In the inner solar system it would have been a disaster."

"As far as we can see it looks very much like what happened 15 years ago," said Brian Marsden of the Harvard-Smithsonian Center for Astrophysics, director emeritus of the International Astronomical Union's news operation.

Maybe ... or maybe not

But astronomers admit they might never know for sure. "It's like throwing a stone on the pond," explained Fletcher. "You see the splash, but lose the stone. It's the splash we can study."

Fletcher said that he and his colleagues were frantically writing proposals for telescope time. Among the telescopes they have recruited is the Hubble Space Telescope, making its early return to the fray after a successful repair mission by astronauts this summer. Mario Livio, an astronomer at the Space Telescope Science Institute, said the group was planning to look at Jupiter's bruise and release a picture as soon as possible.

Wesley had thought about quitting for the night to watch sports on television, according to the account on his Web site, when he went back outside for another look and found the spot. He e-mailed other astronomers, among them Fletcher and his colleague Glenn Orton, who had scheduled observing time that night at NASA's Infrared Telescope Facility on top of Hawaii's Mauna Kea. Jupiter's "scar" showed up in infrared light as a bright spot.

News travels fast

Meanwhile, Franck Marchis, an astronomer at the SETI Institute and the University of California, Berkeley, heard about Wesley's discovery through the Minor Planet Mailing List and blogged about it on his Web site.

Paul Kalas, another Berkeley astronomer, and Michael Fitzgerald of the Lawrence Livermore Laboratory, who were then using the Keck II telescope on Mauna Kea next door to the NASA infrared telescope to look for a recently discovered exoplanet, saw the blog and with Marchis' help, also turned their big eye on Jupiter.

Marchis said the shape of the debris splash as revealed in the Keck images suggested that whatever hit Jupiter might have been pulled apart by tidal forces from the planet's huge gravity before it hit. In an e-mail message, he said humans should be thankful for Jupiter.

"The solar system would have been a very dangerous place if we did not have Jupiter," he wrote. "We should thank our giant planet for suffering for us. Its strong gravitational field is acting like a shield protecting use from comets coming from the outer part of the solar system."

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