

No stars in the clouds

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A team of astronomers from the University of Pittsburgh and the Universitäts-Sternwarte München in Munich, Germany, announced today in a paper presented at the meeting of the American Astronomical Society in Washington, D.C., that their search for dwarf galaxies in fast-moving clouds of gas has yielded no results, leading them to suggest alternative avenues of research to find the supposedly "missing" galaxies.

The team, which includes Regina Schulte-Ladbeck, associate dean for undergraduate studies and professor of physics and astronomy in Pitt's School of Arts and Sciences, and Ulrich Hopp of the Universitäts-Sternwarte München, has been searching for stars in high-velocity clouds. However, said Schulte-Ladbeck, "Our searches have come up empty."

The mathematical simulations that astronomers use to establish how galaxies were formed predict that every giant galaxy should have a few hundred "dwarf" galaxy companions. But in our own neighborhood, the Milky Way Galaxy, there are only 50 or so such dwarves.

One simple way to explain the difference would be if the missing dwarf galaxies were located in high-velocity clouds, astronomer Leo Blitz of the University of California, Berkeley, and his colleagues had suggested. Schulte-Ladbeck and Hopp hoped to measure the distances between the clouds and the Milky Way to obtain proof that the clouds indeed held additional satellite galaxies of our Milky Way.

To search for stars in the clouds, the researchers took a two-pronged

approach. First, they used the Two Micron All Sky Survey, a survey conducted by the University of Massachusetts and funded primarily by NASA and the National Science Foundation, to look for bright stars in circular patches of sky two degrees across, the area typically covered by the gas clouds that make the most promising dwarf galaxy candidates.

Second, using accurate positions of where most of the hydrogen gas in several clouds is located--supplied to them by radio astronomer Jürgen Kerp of the University of Bonn--the researchers also trained one of the 8-meter (315-inch) telescopes of the European Southern Observatory's Very Large Telescope, located in northern Chile's Atacama Desert, on small regions within the clouds to search if any faint stars had formed there. However, neither of these methods turned up any stars.

In their paper, Schulte-Ladbeck and Hopp conclude that it is unlikely that hundreds of additional dwarf satellites of the Milky Way have been somehow "hiding" from observers, and they encourage astronomers to pursue other solutions to the discrepancy.

Source: University of Pittsburgh

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