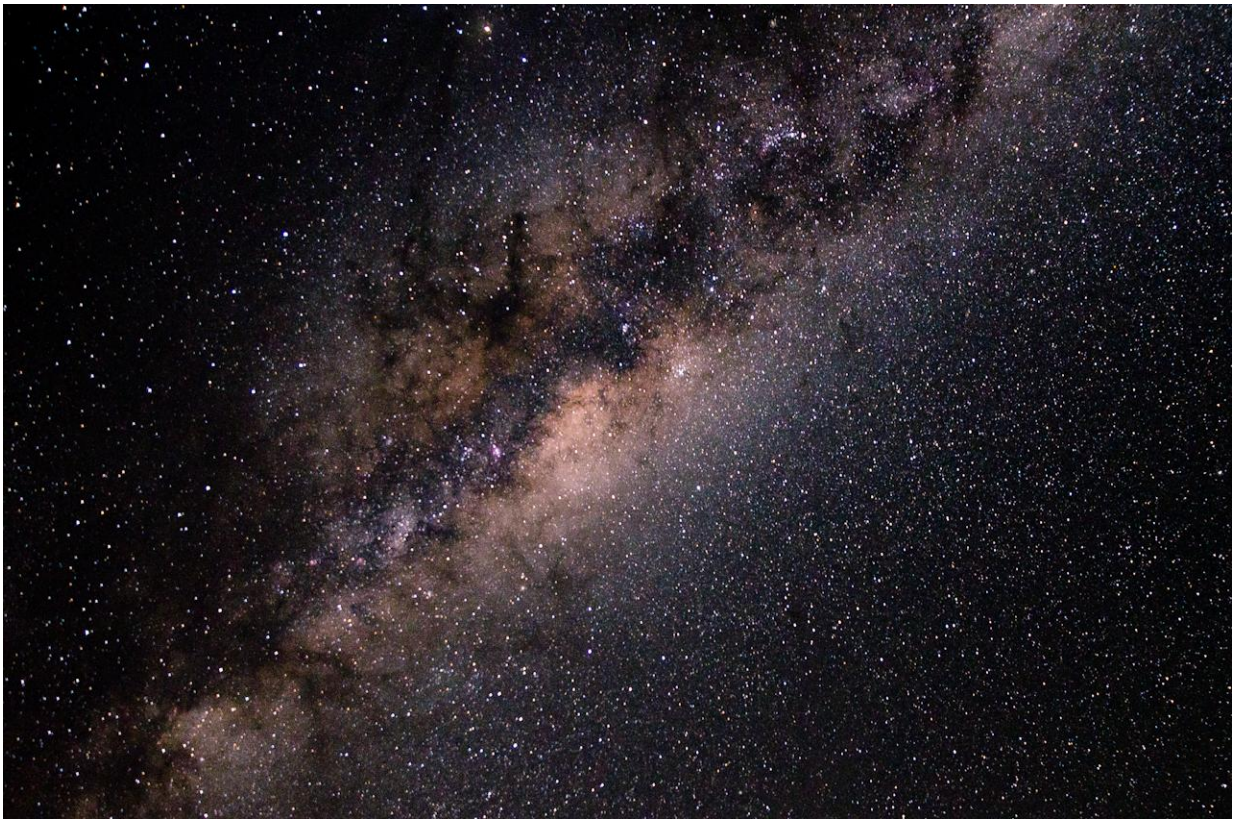


Astrophysicists create most detailed map of the Milky Way

October 19 2016



The Milky Way. Credit: Roanish, Flickr.

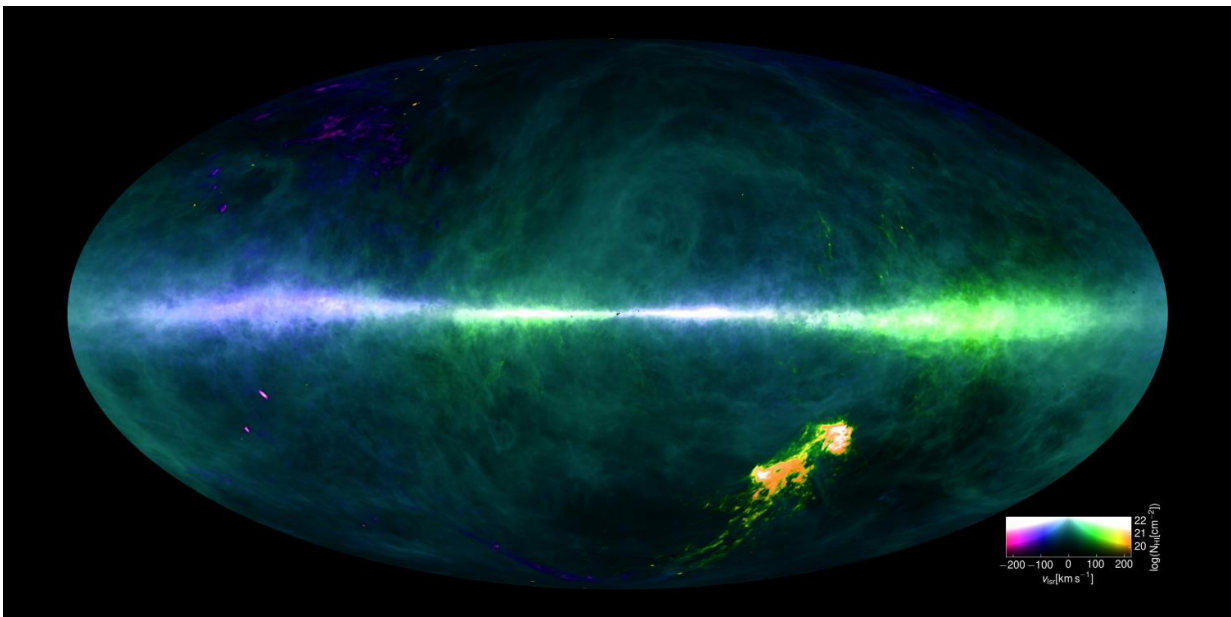
Australian scientists have worked with researchers in Germany to create the most detailed map of the Milky Way, using the world's largest radio telescopes.

The HI4PI project, which is a combination of an Australian survey and a German survey, provides the most sensitive and detailed view of all of the hydrogen gas in and around the Milky Way and will help solve the mysteries of our galaxy.

Team leader for the Australian survey, Professor Naomi McClure-Griffiths from The Australian National University (ANU), said the study revealed for the first time the fine details of structures between stars in the Milky Way.

"Very small gas clouds appear to have helped form stars in the Milky Way over billions of years," she said.

Professor McClure-Griffiths said her research group at ANU was using the data map to answer the big questions about the Milky Way and neighbouring galaxies.



This HI4PI map was produced using data from the 100 meter Max-Planck radio

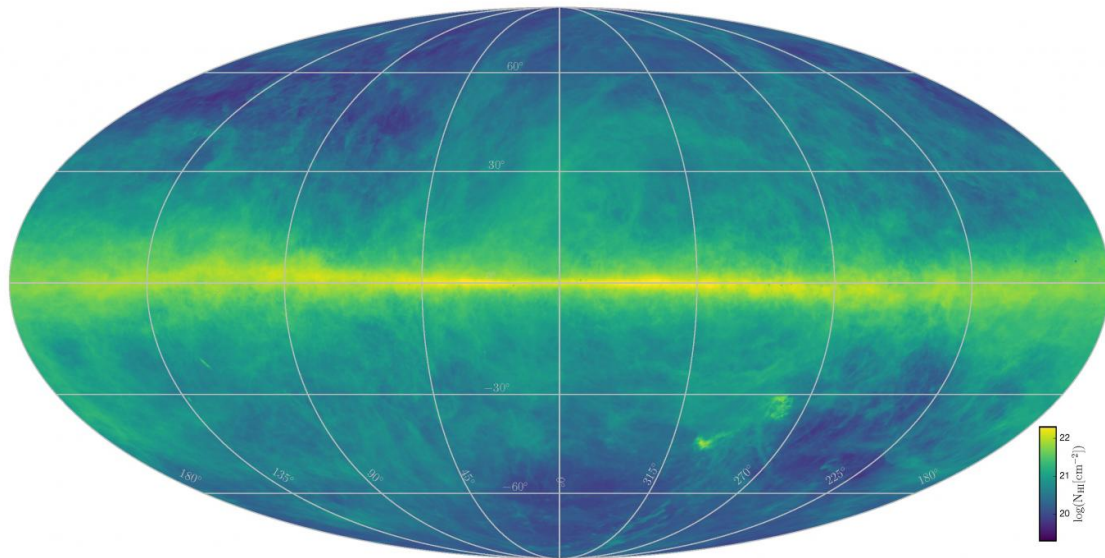
telescope in Effelsberg, Germany and the 64 meter CSIRO radio telescope in Parkes, Australia. The image colors reflect gas at differing velocities. The plane of the Milky Way runs horizontally across the middle of the image. The Magellanic Clouds can be seen at the lower right. Credit: Benjamin Winkel and the HI4PI collaboration.

"How does the Milky Way get the new gas it requires to continue forming stars? And where are all of the small dwarf galaxies that must surround our Milky Way? The next steps will be exciting," she said.

Professor McClure-Griffiths said her research group would use the map to hone their work with the Square Kilometre Array and the Australian Square Kilometre Array Pathfinder, which will provide even more detailed maps of the Milky Way.

The HI4PI project used the largest fully steerable radio telescopes in the southern and northern hemispheres, Australia's 64m CSIRO Parkes dish and the 100m Max-Planck telescope in Effelsberg, Germany.

The project improves the previous neutral hydrogen study, the Leiden-Argentine-Bonn (LAB) survey, by a factor of two in sensitivity and a factor of four in angular resolution.



This HI4PI map was produced using data from the 100 meter Max-Planck radio telescope in Effelsberg, Germany, and the 64 meter CSIRO radio telescope in Parkes, Australia. The image intensity reflects the total hydrogen content. The plane of the Milky Way runs horizontally across the middle of the image. Credit: Benjamin Winkel and the HI4PI collaboration.

The HI4PI project involved ANU and the University of Western Australia in Australia, and the University of Bonn and Max Planck Institute for Radio Astronomy in Germany. The research article, titled 'HI4PI: A full-sky Hi survey based on EBHIS and GASS', is published in *Astronomy and Astrophysics*.

Provided by Australian National University

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