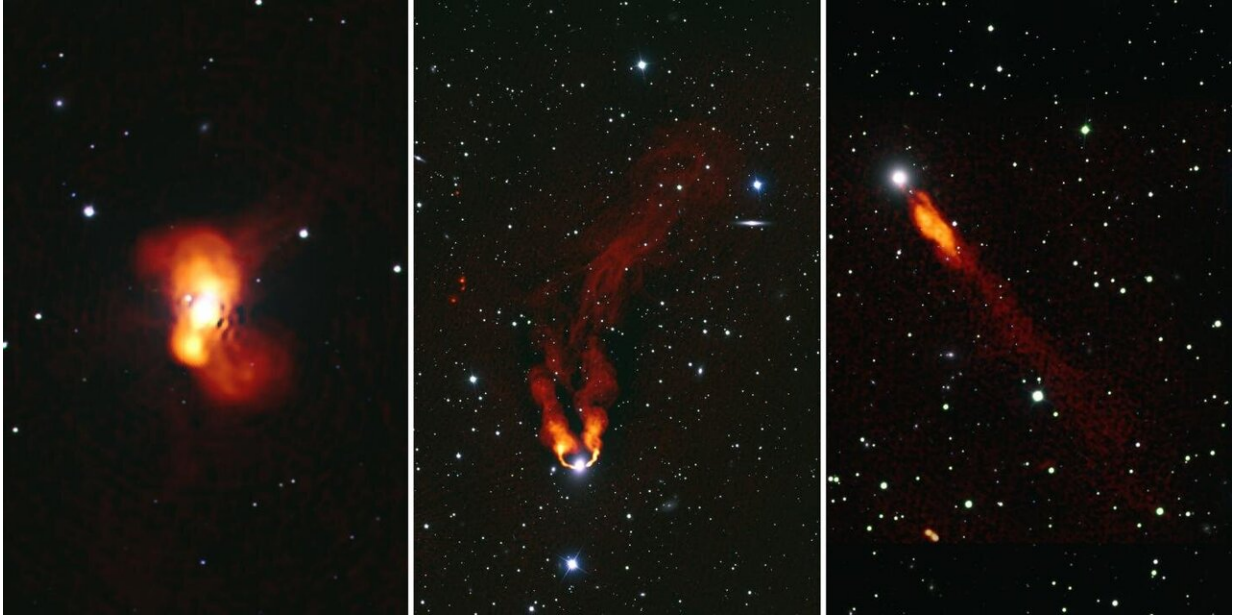


Galaxies in the Perseus Cluster

November 12 2020



Galaxies in the Perseus Cluster, left to right: NGC 1275, NGC 1265, IC 310. Left: The giant galaxy NGC 1275, at the core of the cluster, is seen in new detail, including a newly-revealed wealth of complex, filamentary structure in its radio lobes. Center: The galaxy NGC 1265 shows the effects of its motion through the tenuous material between the galaxies. Its radio jets are bent backward by that interaction, then merge into a single, broad "tail." The tail then is further bent, possibly by motions within the intergalactic material. Right: The jets of the galaxy IC 310 are bent backward, similarly to NGC 1265, but appear closer because of the viewing angle from Earth. That angle also allows astronomers to directly observe energetic gamma rays generated near the supermassive black hole at the galaxy's core. Credit: M. Gendron-Marsolais et al.; S. Dagnello, NRAO/AUI/NSF; Sloan Digital Sky Survey.

For galaxies, as for people, living in a crowd is different from living alone. Recently, astronomers used the National Science Foundation's Karl G. Jansky Very Large Array (VLA) to learn how a crowded environment affects galaxies in the Perseus Cluster, a collection of thousands of galaxies some 240 million light-years from Earth.

Left: The giant galaxy NGC 1275, at the core of the cluster, is seen in new detail, including a newly revealed wealth of complex, [filamentary structure](#) in its radio lobes.

Center: The galaxy NGC 1265 shows the effects of its motion through the tenuous material between the [galaxies](#). Its [radio jets](#) are bent backward by that interaction, then merge into a single, broad "tail." The tail then is further bent, possibly by motions within the intergalactic material.

Right: The jets of the galaxy IC 310 are bent backward, similarly to NGC 1265, but appear closer because of the [viewing angle](#) from Earth. That angle also allows astronomers to directly observe energetic gamma rays generated near the [supermassive black hole](#) at the galaxy's core.

Such images can help astronomers better understand the complex environment of galaxy clusters, which are the largest gravitationally-bound structures in the universe, and which harbor a variety of still poorly understood phenomena.

"These images show us previously unseen structures and details and that helps our effort to determine the nature of these objects," said Marie-Lou Gendron-Marsolais, an ESO/ALMA Fellow in Santiago, Chile. She and a number of international collaborators are announcing their results in the Monthly Notices of the Royal Astronomical Society.

More information: A Richard-Laferrrière et al. On the relation

between mini-halos and AGN feedback in clusters of galaxies, *Monthly Notices of the Royal Astronomical Society* (2020). [DOI: 10.1093/mnras/staa2877](https://doi.org/10.1093/mnras/staa2877)

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