

News & Comments

Missing link “Shock Wave in Merging Galaxy Clusters” Detected*Muneeb Abbasi*

Early in the merging process, two galaxy clusters were observed. The galaxy cluster was detected in Abell 98, a large structure composed of three smaller subclusters of galaxies located more than 1.2 billion light-years from Earth. As the two subclusters begin to merge, a massive filament of gas undergoes a massive jolt along the merger axis, which is predicted to be the first contact between them.

The findings that they described as “definitive evidence” of a shocking edge south of the A98N were presented during the 240th American Astronomical Society’s (AAS) semiannual meeting, which took place in Pasadena, California.

Throughout the universe, interactions and arrangements are constantly taking place. Clusters, superclusters, mega clusters, and filaments dance around each other and form larger and larger structures as a result of gravity pushing and pulling them. Gravitational-bound galaxy clusters are the most massive systems in the universe. A shock wave is predicted to occur when two galaxy clusters collide for the first time. For the first time, Arnab Sarkar, a graduate student in the University of Kentucky Department of Physics and Astronomy, and his team detected an axial shock between two clusters that are about to merge.

Observing the clusters at different stages of the merger can allow astronomers to reconstruct how these collisions occur, even though these collisions are not occurring at any near-human time scale. It is easy to imagine how intense the gravitational environment is within clusters of galaxies, with the subshells merging to form larger structures.

“This result is important because different computer simulations are telling us different things about what we should see early in a galaxy cluster merger,” Sarkar said. “It can be used to inform our theoretical model.”

KEYWORDS

Galaxy Cluster, Merging Galaxies, shock wave, Chandra X-Ray Observatory, Big, cluster, Fusion, galaxies, galaxy, Government, groups, Process, Shock, soon, Steps, structures, subgroups, Universe

