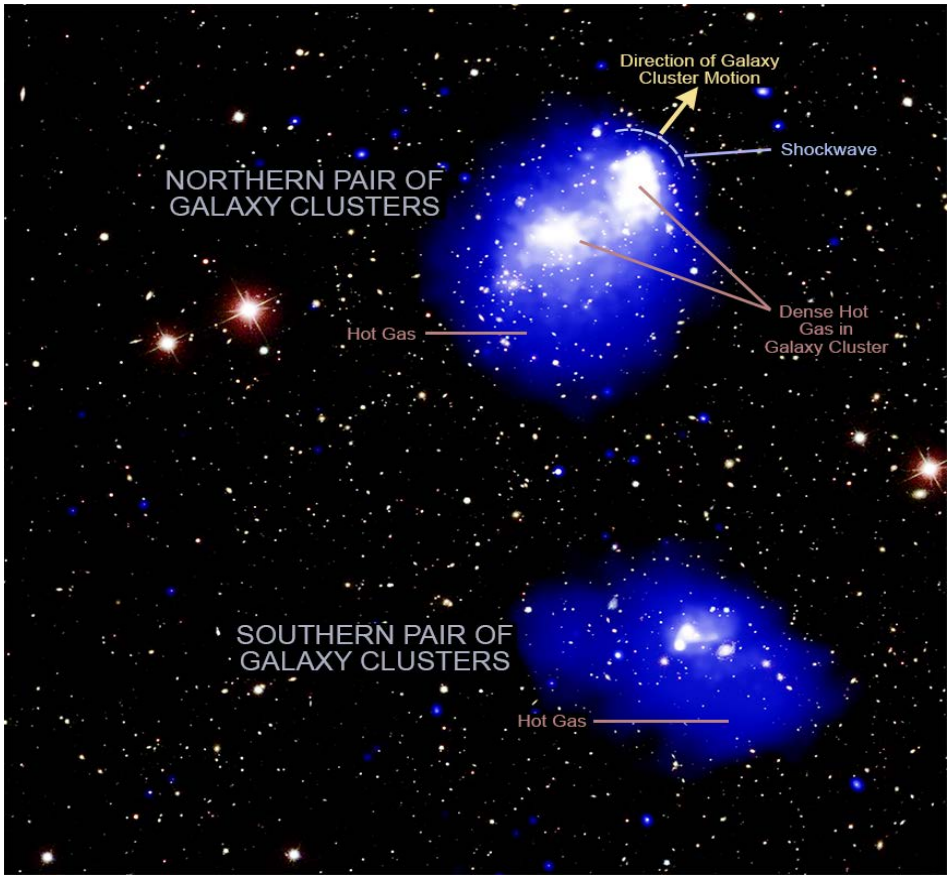
Chandra Science Highlight

Abell 1758: A Quadruple Merger of Galaxy Clusters



Caption: X-rays from Chandra are shown as blue and white, depicting fainter and brighter diffuse emission, respectively. This composite image also includes an optical image from the Sloan Digital Sky Survey.

Distance estimate: 3.2 billion light years (redshift z=0.28)

Scale: Image is about 16.7 arcmin (14 million light years) across.

- Abell 1758 consists of two clusters, Abell 1758 N and S, which will eventually merge to become an exceptionally massive cluster.
- Each of the two clusters is itself a merger, making the whole system a quadruple merger.
- A shock front with a Mach number 1.6, implying a relative velocity of 2100 km s^{-1} was discovered in A 1758N, indicating ~ 300 - 400 Myr-old merger.
- The total system of A 1758 will eventually merge into a cluster with a mass of about 3 quadrillion suns, making it one of the most massive clusters in the universe.

Credits: X-ray: NASA/CXC/SAO/G. Schellenberger et al.; Optical:SDSS.

Instrument: ACIS

Reference: Schellenberger, G., et al, 2019 ApJ, 882, 59; arXiv:1907.10581

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