



Chandra X-Ray Observatory Center

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RDCS 1252.9-2927: A massive cluster of galaxies 8.5 billion light years from Earth.

Credit: X-ray: NASA/CXC/ESO/P. Rosati et al.; Optical: ESO/VLT/P. Rosati et al.

This color composite image of the cluster shows the optical (red, yellow and green) light from the galaxies and X-ray (purple) light from hot gas (70 million degrees Celsius) surrounding the galaxies. The X-ray data from Chandra and the XMM-Newton Observatory indicate that this cluster formed more than 8 billion years ago and has a mass at least 200 trillion times that of the Sun. It is the most massive cluster ever observed at such an early stage in the evolution of the universe. The favored theory for the formation of galaxy clusters is that they were built up over time by mergers of sub-clusters. This process limits how fast a cluster can grow and therefore how massive it can be at early epochs. The existence of one cluster as massive as RDCS 1252.9-2927 is consistent with the theory, but the discovery of more would pose a serious challenge.

Scale: Image is 2 arcmin per side.

Chandra X-ray Observatory ACIS Image

CXC operated for NASA by the Smithsonian Astrophysical Observatory