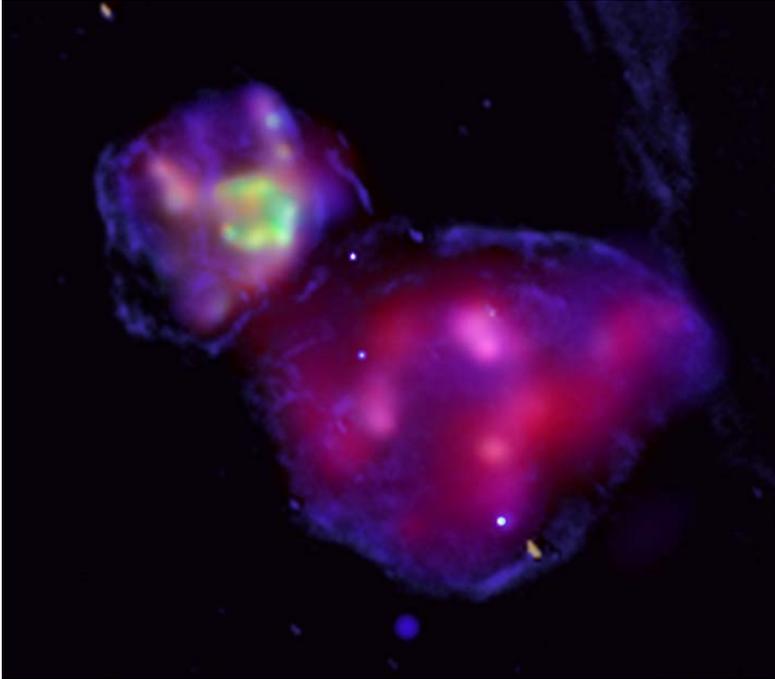




Chandra Science Highlight

DEM L 316: Two Supernova Remnants in the Large Magellanic Cloud

Chandra X-ray Observatory ACIS image.



The image is 5.7 arcmin across. The estimated distance to the Large Magellanic Cloud is 160,000 light years.

(Credit:
X-ray: NASA/CXC/U.Illinois/R.Williams & Y.-H.Chu;
Optical: NOAO/CTIO/U.Illinois/R.Williams & MCELS coll.)

This composite X-ray (red and green)/optical (blue) image shows two supernova remnants in the Large Magellanic Cloud galaxy. Although the shells of hot gas appear to be colliding, this may be an illusion.

- Chandra X-ray spectra show that the supernova remnant on the upper left has abundances of oxygen, neon and iron that are consistent with a Type Ia supernova origin. Type Ia supernovae are thought to be produced by the explosion of a white dwarf star driven over the stability limit by accretion from a nearby companion star.
- In contrast, the abundances of oxygen, neon and iron in the supernova remnant on the lower right are consistent with a Type II supernova. Type II supernovae are produced by the core collapse of a massive young star.
- The disparity of ages in the progenitor stars – it takes billions of years to form a white dwarf star, whereas a massive young star will explode in a few million years – means that it is very unlikely that they exploded very close to each other. The apparent proximity of the remnants is probably the result of a chance alignment.

Reference: R. Williams & Y.-H. Chu, astro-ph/0509696