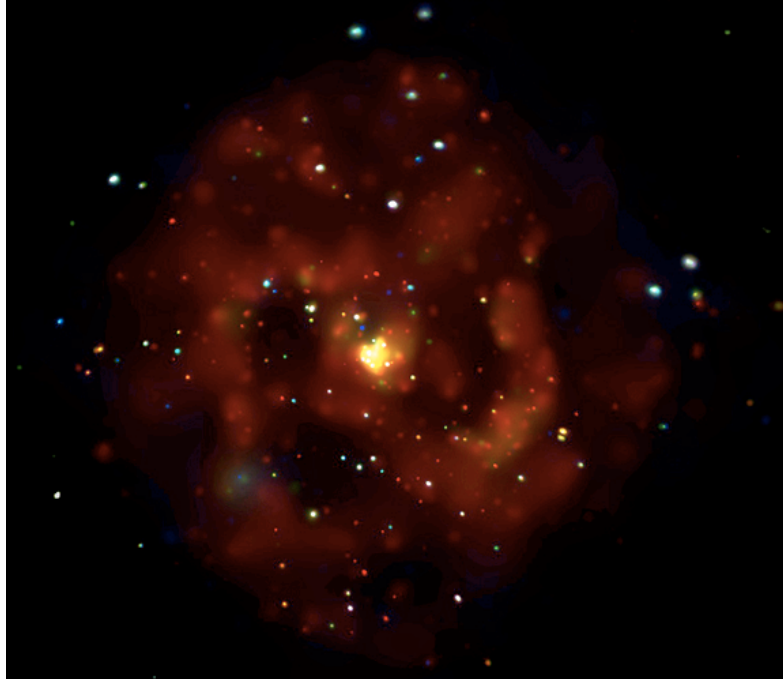




Chandra Science Highlight

M83, A Starburst Spiral Galaxy

Chandra X-ray Observatory ACIS Image.



Scale: Image is 11 x 10 arc min

Chandra's image of M83 shows numerous point-like neutron star and black hole X-ray sources scattered throughout the disk of the galaxy. The bright nuclear region glows prominently due to a cloud of 7 MK gas and a high concentration of neutron stars and black holes. Hot gas with a slightly lower temperature of 4 MK was observed along the spiral arms of the galaxy.

- Eighty-one point sources detected, 15 in the nucleus, resolved for the first time.
- Total luminosity of the nucleus is 5×10^{39} erg/s, mostly from X-ray binaries containing a neutron star or black hole.
- The higher concentration of sources in the nucleus is thought to be due to a large number of neutron stars and black holes that were created during a burst of star formation that is estimated to have begun about 20 million years ago in the galaxy's time frame.
- The hot gas cloud in the nucleus has abundances of C, Ne, Mg, Si and S that are higher than solar, consistent with enrichment by core-collapse supernova ejecta and winds from very massive stars.

Reference: R. Soria and K. Wu, astro-ph/0202014

Credit: NASA/CXC/U.Leicester/U.London/R.Soria & K. Wu