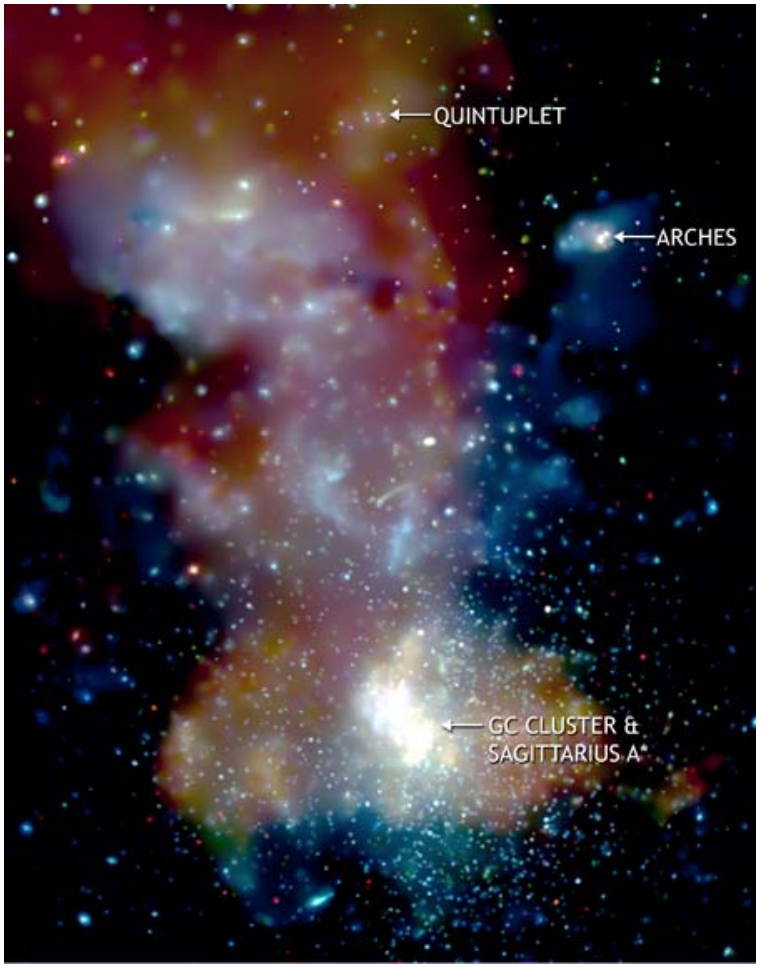
Chandra Science Highlight

Chandra X-ray Images of Arches, Quintuplet, and GC Star Clusters



The new X-ray image shows three massive star clusters, the Arches (upper right), Quintuplet (upper center), and the GC star cluster (bottom center), which is near the enormous black hole known as Sagittarius A*.

- The Galactic center (GC) provides a unique laboratory for a detailed examination of the interplay between massive star formation and the nuclear environment of our galaxy.
- The number-flux relation of point-like X-ray sources indicates an overpopulation of relatively bright X-ray sources, which are apparently associated with the clusters.
- The sources in the core of the Arches and Quintuplet clusters are most likely extreme colliding wind massive star binaries.
- The diffuse X-ray emission from the core of the Arches cluster has a spectrum showing a 6.7-keV emission line and a surface intensity profile declining steeply with radius, indicating an origin in a cluster wind.
- Much of the enhancement in the outer regions near the Arches cluster, may result from an ongoing collision between the cluster and the adjacent molecular cloud.

Reference: Q.D. Wang et al. 2006 (astro-ph/0606282)

Credit: NASA/UMass Amherst/Q.D. Wang