

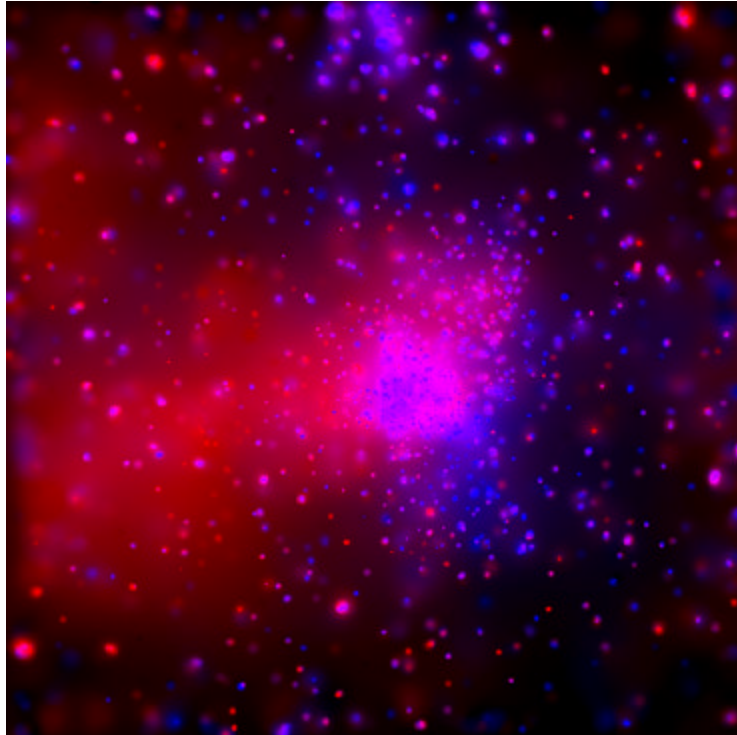


Chandra Science Highlight

M17, a.k.a. the Horseshoe Nebula, a.k.a. The Omega Nebula:

A young Star Cluster 5,000 light years from Earth in the Constellation Sagittarius

Chandra X-ray Observatory ACIS/HETGS image.



- Chandra's resolving power enabled astronomers to separate for the first time the contribution of stars in the nebula from X-rays produced by the hot gas flowing out of the nebula.
- The stars in the Horseshoe Nebula are only about a million years old, so the nebula is too young for one of its stars to have exploded as a supernova and heated the gas.
- Collisions between high-speed winds of particles flowing away from the massive stars in the central regions could heat the gas, or the hot gas could be produced as these winds collide with cool clouds to form bubbles of hot gas.
- The hot gas appears to have carved out a horseshoe-shaped cavity in cool gas and dust that appears in optical and infrared images and gives the Horseshoe Nebula its name.

Credit: X-ray: NASA/CXC/PSU/L. Townsley et al.)

Reference: L. Townsley et al. 2003 *Astrophys. J.* 593, 874

Chandra's image shows hot gas flowing away from young, massive stars clustered in the center of the Horseshoe Nebula (pink). This gas shows up as the red regions, which have temperatures ranging from about 1.5 million kelvins to about 7 million kelvins. The blue color indicates areas where stars are embedded in clouds of dust and gas that absorb low

energy X-rays.