



# Chandra Science Highlight

## Fornax Cluster: A Nearby Galaxy Cluster about 65 million light years from Earth



- The motion of the cluster core appears to be on a collision course with a large group of galaxies (outside this field of view) that is falling toward the center of the cluster.
- These motions indicate that the galaxy group and the cluster core lie along a large, unseen, filamentary structure composed mostly of dark matter that is collapsing and flowing toward a common center of gravity. Most galaxies, gas, and dark matter in the universe are thought to be concentrated in such structures, and galaxy clusters are believed to form where the structures intersect.
- The bright galaxy NGC 1404 -- to the left and below the core of the cluster -- has a sharp leading edge and a trailing tail of gas, indicating that gas is being swept from the galaxy as it falls toward the core of the cluster.
- Some of the other bright sources in the X-ray image are galaxies in the cluster, but most of them are due to distant background galaxies with active supermassive black holes.

Reference: C. Scharf et al. 2004, astro-ph/0406216

A Chandra mosaic of images of the Fornax galaxy cluster shows that the vast cloud of ten-million-degree Celsius gas surrounding the cluster core has a swept-back cometary shape that extends for more than half a million light years. This geometry suggests that the hot gas cloud is moving through a larger, but less dense cloud of gas, creating a ram pressure, or intergalactic headwind.

Credit: NASA/CXC/Columbia U./C.Scharf et al.