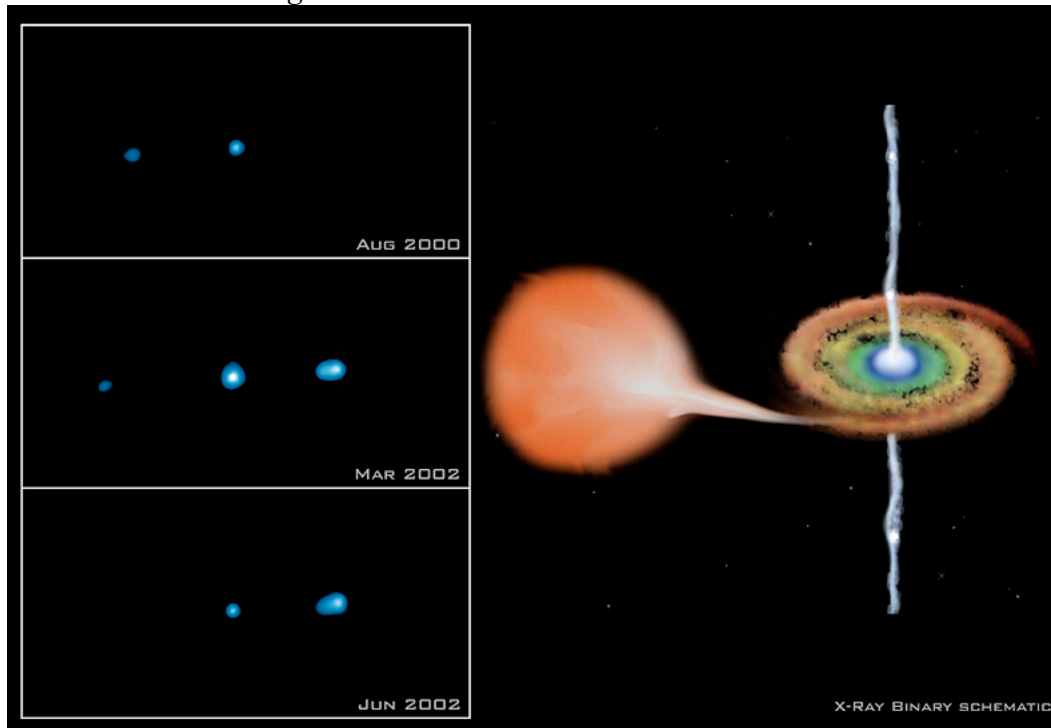




Chandra Science Highlight-II

From Cradle To Grave: Chandra Discovers The History Of Black Hole X-Ray Jets

Chandra ACIS Image.



A series of Chandra images has allowed scientist to trace the evolution of large-scale X-ray jets produced by a black hole in a binary star system. As the schematic shows, gaseous matter pulled from some normal star forms a disk around the black hole. The gas is heated to temperatures of millions of degrees, and intense electromagnetic forces in the disk can expel jets of high-energy particles.

- First discovery at X-ray and radio wavelengths of large-scale moving jets from a binary system containing a black hole.
- The jets have been tracked for more than 4 years to a separation of about 5 light years.
- The expulsion of the jets is tied to an outburst in the central source, and is tracked until the eventual disappearance of one of the jets.
- First direct evidence for the deceleration of a relativistic jet. Both eastern and western jets are observed to decelerate by 20% or more.
- The teardrop shape of the western jet (right) provides evidence for interaction with interstellar medium.

Reference: Corbel et al. Science Oct 4 2002: 298, 196-199.

Credit: Left: X-ray (NASA/CXC); Right: Illustration (CXC/M.Weiss)