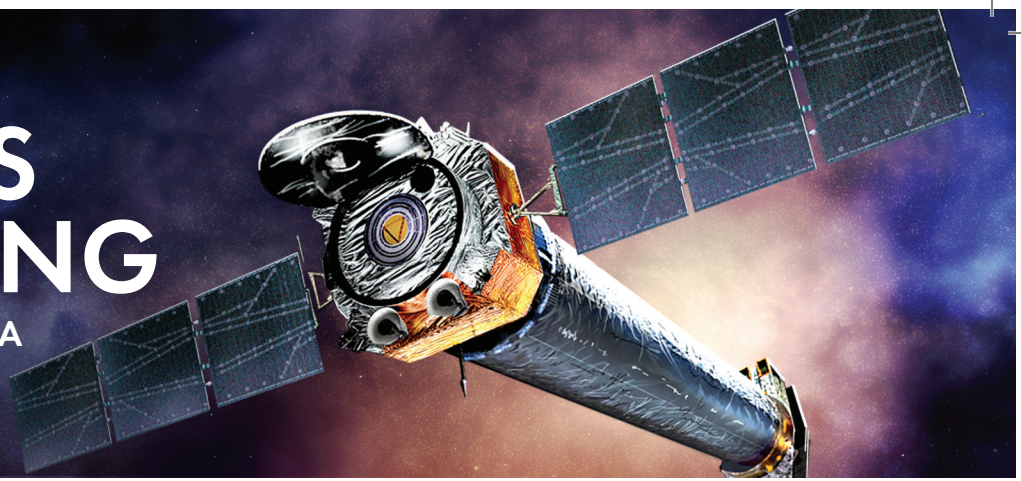
TIMING IS EVERYTHING

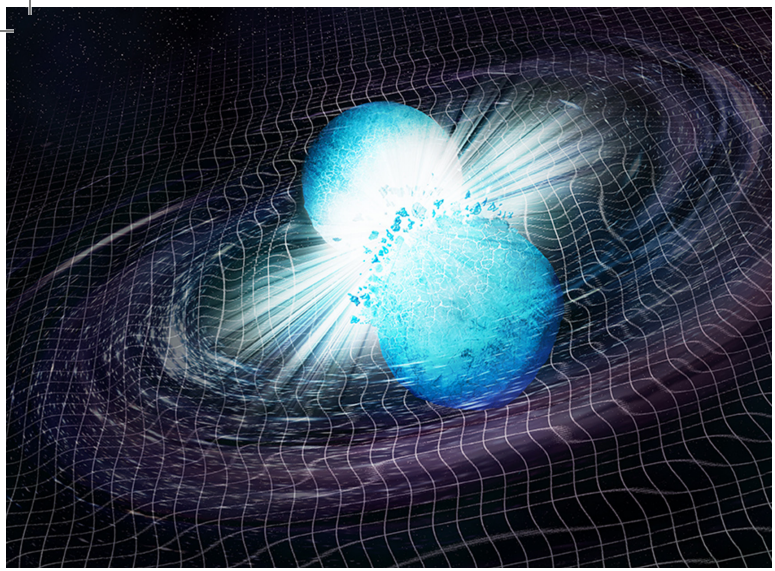
CHANDRA IN THE NEXT ERA OF ASTRONOMY



The Chandra X-ray Observatory is unlike any other telescope. Since its launch into space on July 23, 1999, Chandra has been NASA's flagship mission for X-ray astronomy in the fleet of "Great Observatories." Chandra discovers exotic new phenomena and examines old mysteries, looking at objects within our own Solar System out to nearly the edge of the observable Universe.

"Time domain and multimessenger" (TDAMM) astronomy is predicted to be one of the most important areas in astrophysics in the coming decade. NASA's Chandra X-ray Observatory is critical in TDAMM research. Sudden, short-lived, and changing cosmic phenomena (known as "transient events") typically produce extreme energies and intense X-rays, many of which are located at large distances. Chandra is the only telescope that can provide the high sensitivity and unparalleled angular resolution needed to study these changing and evolving sources in X-ray light.

Fields as diverse as cosmology, accretion physics, and particle physics are heavily influenced by studies of transient phenomena, including the merging of neutron stars and the tidal disruptions of stars by supermassive black holes. Chandra works with telescopes across space as well as facilities on the ground to study these objects.



< The artist's illustration (left) two neutron stars spin around each other while merging. (The purple material depicts debris from the merger.) Illustration: NASA/CXC/M.Weiss

TRANSIENT EVENTS

Chandra can capture X-ray emissions from transient events like gamma-ray bursts, flaring from stars, and newly-discovered phenomena, allowing scientists to study their evolution over time.

MULTI-MESSENGER DATA

By combining Chandra data with observations from other telescopes, gravitational wave instruments, and neutrino detectors, astronomers can get a more complete picture of the changing Universe.

BLACK HOLE STUDIES

Scientists can use Chandra to study tidal disruption events where black holes tear apart stars and other objects that wander too close.

GRAVITATIONAL WAVE EVENTS

Chandra can observe X-rays from colliding neutron stars that generate gravitational waves. It was, in fact, the first telescope to detect X-rays after a gravitational wave event.

SUPERNOVA REMNANTS MONITORING

Astronomers use Chandra to observe how the X-ray emission, representing important physical processes, from a supernova remnant changes over time.