National Aeronautics and Space Administration

CHANDRA SCIENCE HIGHLIGHT: October 2026

NASA's Chandra Breaks Down 'Treble Clef's' Galaxy Cluster Collision

- Using Chandra, astronomers have discovered the origin of an unusual source of radio waves called the “Treble Clef”, because its shape resembles the musical symbol.
- They determined the structure was formed by an outburst from a supermassive black hole followed by a collision between two galaxy clusters.
- The brighter X-rays on the left and right sides of the Treble Clef and the elongation from left to right provide important evidence that there was a collision between two clusters.
- This new image contains X-rays from Chandra and eROSITA, radio data from LOFAR, and infrared data from UKIRT.

Distance estimate: 1.5 billion light-years from Earth
Credit: X-ray: NASA/CXC/INAF-IRA/A. Botteon et al.; Infrared: UKIDSS-GPS ; Radio: ASTRON/LOFAR; Image processing: NASA/CXC/SAO/N. Wolk
Instrument: ACIS
Reference: Botteon, A., et al., 2026, A&A (available here)

More information: The detailed caption and other material are here: https://chandra.si.edu/photo/2026/trebleclef/



This new composite image of the Treble Clef and its cluster shows the multimillion-degree gas detected in X-rays by Chandra and the Extended RÖntgen Survey with an Imaging Telescope Array (eROSITA) in blue, with some of the Chandra data derived from a special technique the authors used to highlight important features in the Chandra data. Radio data shown in red from the LOw Frequency ARray (LOFAR), a large network of radio telescopes in Europe reveals the doppelgänger of the musical notation. The final piece of the combined image comes from infrared data obtained by the United Kingdom Infrared Telescope (UKIRT), appearing mostly white.