



Chandra X-Ray Observatory Center

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GB1508+5714: A quasar 12 billion light years from Earth.

Credit: Image: NASA/CXC/A.Siemiginowska et al.; Illustration: CXC/M.Weiss

Chandra's image of GB1508+5714 (inset) reveals a jet of high-energy particles that extends more than 100,000 light years from a central supermassive black hole powering the quasar, as depicted in the illustration. The discovery of this jet the most distant yet detected is especially significant because it provides astronomers with a way to measure the intensity of the cosmic background radiation about one billion years after the Big Bang. When electrons in the jet collide with cosmic background photons, they produce X-rays. The deduced intensity of the background radiation is consistent with the predictions of the standard Big Bang model for the origin of the universe. The jet's brightness also implies that enormous amounts of energy were deposited in the outer regions of the host galaxy of the quasar at a very early stage.

Scale: Image (inset) is 9 arcsec per side.

Chandra X-ray Observatory ACIS Image