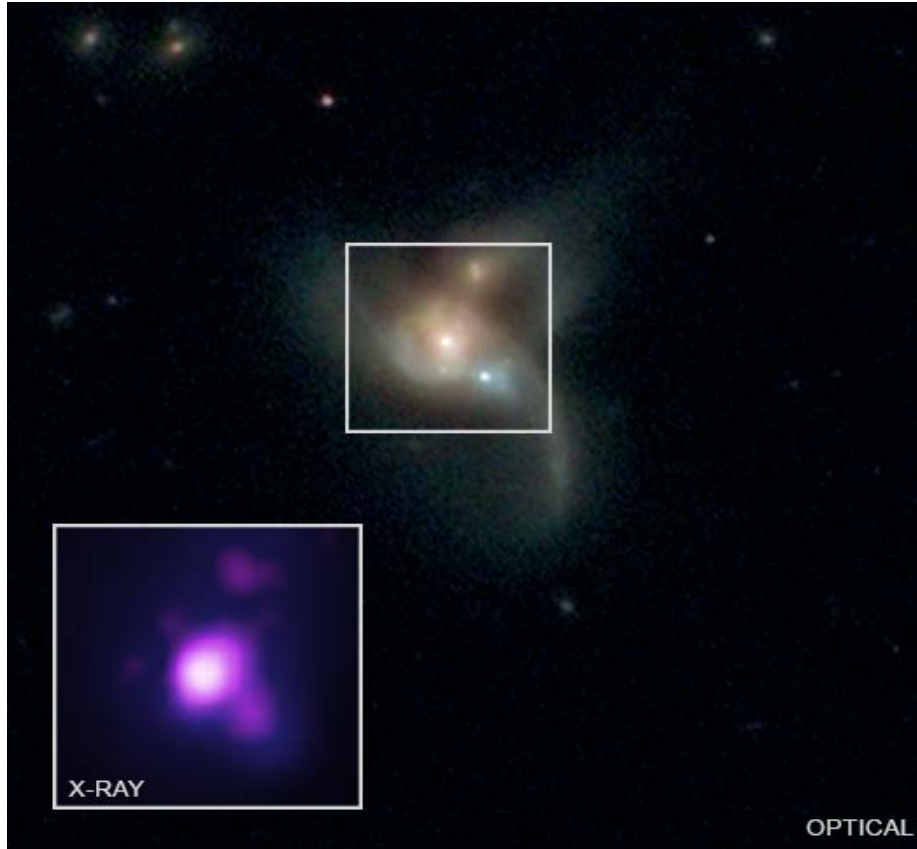




Chandra Science Highlight

SDSS J084905.51+111447.2: Three Supermassive Black Holes on a Collision Course



Caption: Large image: Combined Hubble Space Telescope and Sloan Digital Sky Survey (red, green, and blue) optical image. Inset: X-ray image from Chandra..

Distance estimate: 1 Billion light years (redshift $z=0.077$)

Scale: The Optical image is about 36 arcsec (172,000 light years) across. The inset X-Ray image is about 9 arcsec (43,000 light years) across.

- Following up on an infrared detection by NASA's Wide-field Infrared Survey Explorer, Chandra data revealed three X-ray sources in the nuclei of the merging galaxies, strong evidence for supermassive black holes in the process of merging.
- The separations between the black holes range between about 10,000 and 30,000 light years.
- Detection of large amounts of gas and dust around one of the black holes by Chandra and NASA's Nuclear Spectroscopic Telescope Array (NuSTAR) satellite provides further evidence for merging black holes.
- The presence of a third black hole in a merging system can greatly accelerate the merger of two of the black holes because it can take up excess orbital energy from the system.

Credits: X-ray: NASA/CXC/George Mason Univ./R. Pfeifle et al.; Optical: SDSS & NASA/STScI.

Instrument: ACIS

Reference: Pfeifle R et al 2019 Ap J (accepted)

[arXiv:1908.01732v3](https://arxiv.org/abs/1908.01732v3)



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