



**Chandra X-ray
Observatory Center**

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H1821+643: A quasar with a supermassive black hole about 3.4 billion light years away.
(Credit: X-ray: NASA/CXC/Univ. of Cambridge/J. Sisk-Reynés et al.; Radio: NSF/NRAO/VLA; Optical: PanSTARRS)

Caption: Astronomers have used Chandra to determine the spin of the supermassive black hole in the quasar H1821+643. This is the most massive black hole — which has between 3 and 30 billion solar masses — to have an accurate measurement of this fundamental property. This composite image of H1821+643 contains X-rays from Chandra (blue) along with radio data from NSF's Karl G. Jansky Very Large Array (red) and an optical image from the PanSTARRS telescope on Hawaii (white and yellow). The supermassive black hole is located in the bright dot in the center of the radio and X-ray emission. It is spinning about only half as fast as those with a lower mass, giving clues to how it and others like it may have grown and evolved.

Scale: The image is about 6.4 arcmin (5.6 million light years) across.

Chandra X-ray Observatory ACIS Image

CXC operated for NASA by the Smithsonian Astrophysical Observatory
