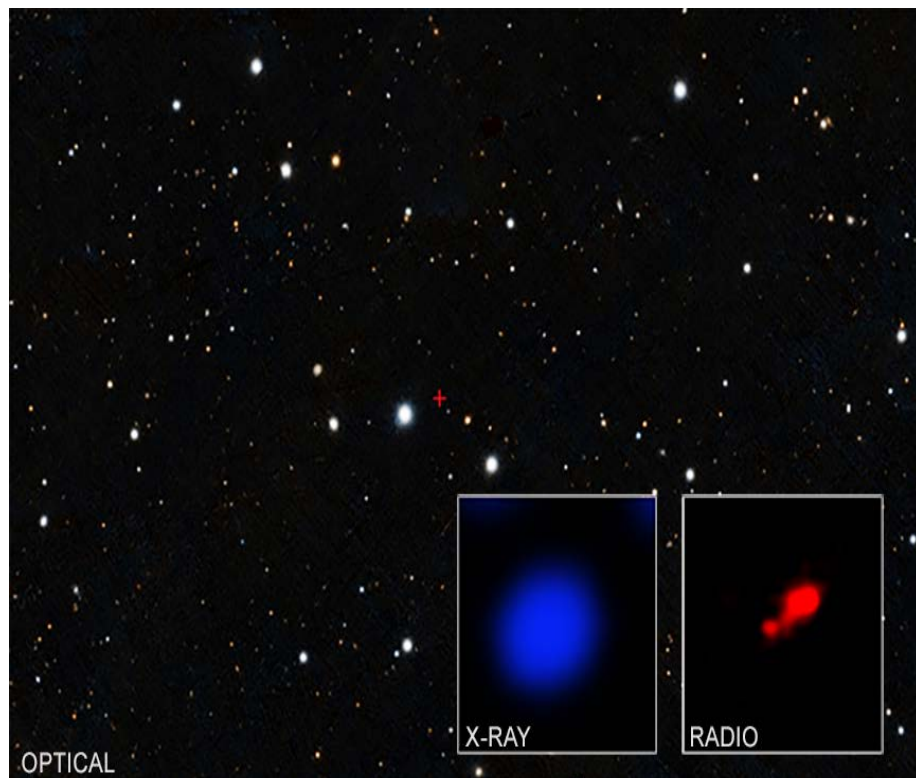




# Chandra Science Highlight

## PSO 167-13: A Distant Heavily Obscured Supermassive Black Hole



Distance estimate: 12.9 billion light years ( $z=6.515$ )

Scale: Large image is about 13.3 arcmin (14.5 million light years) across. Inset images are about 5 arcseconds (91,000 light years) across.

- The X-rays are likely from PSO167-13, a quasar at a distance of 12.9 billion light years.
- Chandra observations of PSO167-13 detected no low-energy (0.5 – 2 keV) X-rays, indicating that the quasar is highly obscured by gas and dust.
- PSO 167-13 is the first highly obscured quasar detected at such large distances, corresponding to an age of only 850 million years, or 6.5% of the estimated age of the universe.
- A plausible explanation for the obscuration is that PSO167-13 is a supermassive black hole rapidly accreting material from a surrounding cloud of dust and gas.

Credits: X-ray: NASA/CXC/Pontificia Catholic Univ. of Chile/F. Vito; Radio: ALMA (ESO/NAOJ/NRAO); Optical: PanSTARRS

Instrument: ACIS

Reference: A&A 628, L6 (2019 [arXiv:1906.04241](https://arxiv.org/abs/1906.04241) [astro-ph.GA])

Caption: Large image: PanSTARRS survey of region containing the quasar PSO167-13 (position marked with a red cross). Insets: images of central region containing PSO167-13 (marked with a red cross) from Chandra (left) and (right) the Atacama Large Millimeter Array (ALMA). The bright source in the ALMA image is the quasar and a faint, nearby companion galaxy is seen to the lower left.

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