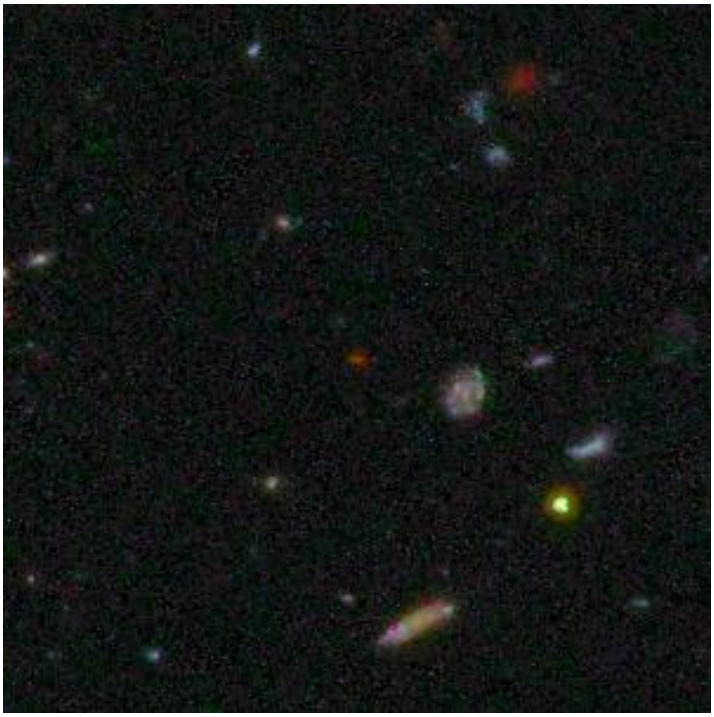


Visible/infrared image from the Euclid Space Telescope, with the record-breaking quasar seen as the compact red source in the center.

Discovery of the Most Distant Quasar

24 November 2026

Recent observations with the Large Binocular Telescope have led to the discovery of the most distant known quasar, detected in the light it emitted only 630 million years after the Big Bang.

The source was detected as a candidate quasar based on measurements with the European Space Agency's Euclid Space Telescope. Supporting evidence was provided by follow-up observations with the W. M. Keck Observatory and Hubble Space Telescope. Observations with the LBT were key to unambiguously confirming the quasar nature of this source, signaled by atomic features in the spectrum that were highly redshifted to longer wavelengths by the expansion of the Universe between the time of emission and our measurement billions of years later. The object is the first luminous quasar discovered at a redshift greater than 8, at 8.13.

Quasars are powered by growing supermassive black holes, via infalling matter that converts gravitational energy to heat, which is radiated in the emitted light we see. The LBT results enabled the research team to secure follow-on observations with the James Webb Space Telescope (JWST). The JWST measurement allowed an estimate of the black hole's mass, based on the speed of orbiting gas revealed by atomic features in the quasar spectrum, with a result of 360 million times the mass of the Sun.

The discovery thus sets a record for the most distant accreting supermassive black hole and demonstrates that the genesis and growth of these exotic objects can happen relatively quickly after the birth of the Universe in the Big Bang. The remnants of quasars are detected today as quiescent supermassive black holes in the centers of galaxies, and there are strong indications that the formation of a black hole is closely linked to the assembly of gas and stars that are now seen in the surrounding galaxy. The discovery of this record-breaking object provides new insight into how this process gets underway in early times.

Reference:
Euclid: Discovery of a quasar at z = 8.13 hosting a 360-million solar-mass black hole by J. Wolf et al is published in Astronomy & Astrophysics on 24 November 2026. DOI: 10.1051/0004-6361/202662243, https://www.aanda.org/10.1051/0004-6361/202662243