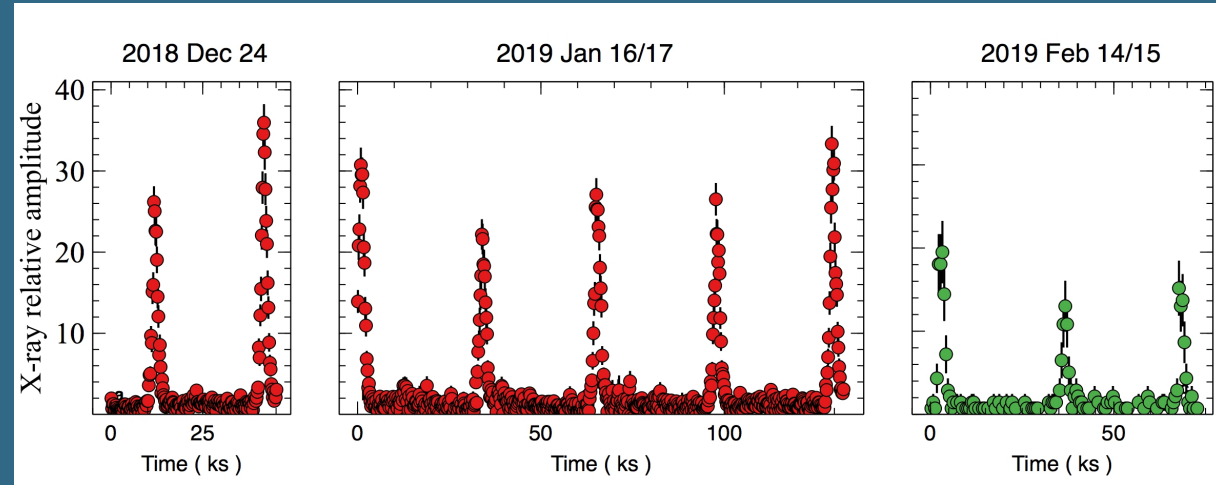


Discovery of X-ray Quasi-Periodic Eruptions from the nucleus of the galaxy GSN 069



CREDIT: G. MINIUTTI (CAB, CSIC-INTA) / XMM / CHANDRA

Further reading:

[ESA's press release](#)

Nature's [News & Views](#)

Nature's blog '[Behind the paper](#)'

[Click](#) for animated X-ray image and light curve

Using ESA's [XMM-Newton X-ray observatory](#), we have discovered some mysterious flashes from the active black hole at the core of the galaxy [GSN 069](#), about 250 million light years away.

The source suddenly increases its X-ray brightness by large factors, dims back to its normal level within one hour, and lits up again nine hours later. Further observations, performed with XMM-Newton as well as [NASA's Chandra X-ray observatory](#) in the following couple of months, confirmed that the distant black hole was still keeping the tempo, emitting nearly periodic bursts every nine hours that we dubbed 'Quasi-Periodic Eruptions', or QPEs. The Figure on the left shows the X-ray brightness as a function of time during three different observations (XMM-Newton in red, Chandra in green).

There are various mechanisms that could give rise to this type of quasi-periodic signal, potentially linked to instabilities in the accretion flow close to the central black hole. Alternatively, the eruptions could be due to the interaction of the disc material with a second orbiting body – another black hole or perhaps the remnant of a star that previously torn apart by the central black hole.