A 'hungry' black hole has just woken up and started swallowing surrounding matter

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At the center of most galaxies lurks a giant monster: a supermassive black hole, with masses tens of thousands to millions of times that of the Sun. However, not all are the same – some are dormant, while others are active and constantly swallowing surrounding matter. Recently, scientists witnessed a rare moment: a black hole woke up from a long period of hibernation, began to devour nearby matter and emitted intense X-rays.

The black hole, located at the core of the galaxy SDSS1335+0728 (300 million light-years from Earth), has been dormant for decades. But in 2019, it suddenly flared up and emitted intense X-rays – a sign that it was 'eating' nearby matter. The team tracked the phenomenon using the European Space Agency's (ESA) XMM-Newton telescope and NASA's NICER, Chandra and Swift observatories.

' *This is a rare opportunity to directly observe the behavior of a black hole in X-rays,* ' said Dr. Lorena Hernández-García (University of Valparaiso, Chile), who led the study. ' *This phenomenon is called quasiperiodic eruption (QPE) – short bursts of energy. This is the first time we have seen a QPE occurring in a waking black hole* .'

The core of the galaxy SDSS1335+0728 has been nicknamed "Ansky". Scientists still don't know what causes this black hole to "flip the switch", but this is a golden opportunity to study its transition.

" *The X-rays from Ansky were 10 times more powerful and lasted 10 times longer than a typical QPE,* " explains Dr. Joheen Chakraborty (Massachusetts Institute of Technology, USA). " *Each eruption released 100 times more energy than anything previously observed. The Ansky eruption cycle was also the longest ever observed – about 4.5 days. This challenges all current theoretical models of the X-ray production mechanism.* "

Typically, X-rays come from accretion disks (swirling regions of matter around black holes) when matter is extremely hot. But the huge energy from Ansky suggests that another mechanism may be at play—for example, a smaller star or black hole being pulled into the accretion disk, creating shock waves that release X-rays.

" *With QPE, we have more hypotheses than data. More observations are needed to understand the full picture* ," said Dr. Erwan Quintin (ESA), a member of the research team. " *Previously, we thought that QPEs happen when small bodies are sucked into larger ones. But Ansky is telling a different story* ."

The research, published in the journal Nature Astronomy, opens up a new approach to deciphering the mystery of how black holes "wake up" and interact with their surroundings.