

NASA's NICER Maps Debris From Recurring Cosmic Crashes



For the first time, astronomers have probed the physical environment of repeating X-ray outbursts near monster black holes thanks to data from NASA's NICER and other missions.

Scientists only recently encountered this class of X-ray flares, called QPEs, or quasi-periodic eruptions. A system astronomers have nicknamed Ansky is the eighth QPE source discovered, and it produces the most energetic outbursts seen to date. Ansky also sets records in terms of timing and duration, with eruptions every 4.5 days or so that last approximately 1.5 days.

A leading theory suggests that QPEs occur in systems where a relatively low-mass object passes through the disk of gas surrounding a supermassive black hole.

When the lower-mass object punches through the disk, its passage drives out expanding clouds of hot gas that we observe as QPEs in X-rays.

NICER's position on the International Space Station allowed it to observe Ansky about 16 times every day from May to July 2024. The frequency of the observations was critical in detecting the X-ray fluctuations that revealed Ansky produces QPEs.

