The Greedy Monster in a Dusty Blanket
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Almost every single galaxy has a gigantic monster at its centre. Some are lurking quietly in the dark, waiting for their next victims to stray too close. Others are feeding messily as we speak, growing more and more massive as they swallow material ripped from their surroundings. These wild monsters are black holes, and when one of them feeds, it creates the brightest and most energetic objects in the Universe: active galactic nuclei!

As the black hole pulls in gas and cosmic dust, it forms a doughnut-shaped ring, like water being sucked down a drain. The ring spins faster and faster as it falls inwards, causing it to heat up to incredible temperatures. When this happens, the rings release huge, powerful jets of light that are detected by our telescopes.

So, when we look at one of these brilliant powerhouses, we expect to find a gigantic black hole at the centre of a hot dust ring, munching on its dinner. We don't expect to see it hiding in a blanket of cool dust. But that's just what has been observed around an active black hole! The cool dust is at about room temperature, which is much, much cooler than the rest of the dust, which is about 700 degrees Celsius! The dust forms a cool, sooty wind that is blowing away from the black hole.

These new findings are very odd—black holes need to pull in material to fuel them, but the intense energy created as they do this seems to be blowing material away! For now, this is another mystery about these extraordinary objects that we have yet to solve.

▲ COOL FACT!

Like most things in the Universe—including planets, galaxies and stars—there are many different types of active galactic nuclei. However, many of the 'differences' between the types are just due to where they are facing when we see them. For example, there are 'blazars' and 'quasars', which we view straight down the jet. 'Seyferts', however, are viewed from the side of the jet.