



Relics of the Early Universe are Dustier Than Expected

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ALMA has been delving through dusty corners of the Universe to uncover the secrets of the biggest explosions in the Universe!

Gamma-Ray Bursts are the brightest explosions in the Universe. They release more energy in 10 seconds than the Sun will in its entire 10 billion year lifetime!

We only see Gamma-Ray Bursts in very distant galaxies; galaxies so far away that it takes billions of years for their light to reach us. This means that when we look at these galaxies through telescopes, we are seeing them as they were billions of years ago, when the Universe was still young. (The Universe is 13.8 billion years old.)

Astronomers think that Gamma-Ray Bursts are caused by the detonation of massive stars at the end of their lives. These blazing bursts of light are normally followed by a fainter afterglow. However, some gamma-ray bursts mysteriously seem to have no afterglow. These are referred to as "dark bursts".

One explanation for these dark bursts is that the explosion is hidden by clouds of cosmic dust, which block the faint light. However, this challenges another belief that Gamma-Ray Bursts should be surrounded by large amounts of gas which the original stars were made from.

Until now, we haven't had telescopes powerful enough to peer into the distant Universe to solve this cosmic conundrum. But ALMA came to the rescue.

Using this giant telescope, astronomers have been studying two galaxies that Gamma-Ray Bursts were recently spotted in. For the first time, they've managed to examine the

environments around Gamma-Ray Bursts and found that these ancient galaxies are located in remarkably dusty environments!

▲ **COOL FACT!**

Gamma-Ray Bursts are too far away for us astronomers to be able to see all their details. Instead, an artist has created this awesome picture to give us an idea of how one might look.