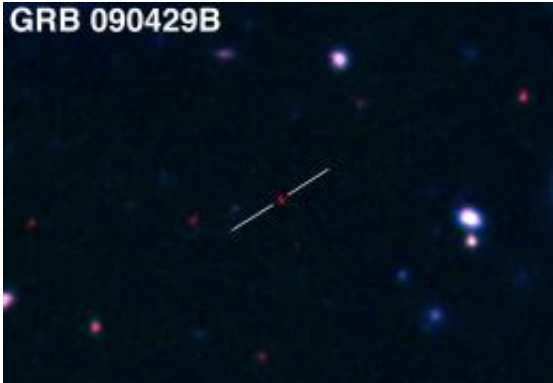


# Possibly the most distant object known

July 18 2011

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A deep optical image of the afterglow of the gamma-ray burst GRB 090429B, arguably the most distant object known in the universe.

The most distant objects in the universe are also the oldest -- or at least that is how they appear to us, because their light has had to travel for billions of years to get here. They are also extraordinarily faint since they are so far away, and only in the last decade have astronomers been able to stretch their vision using the newest telescopes and clever techniques.

One such innovation occurred with the launch of the [NASA Swift satellite](#) in 2004; it searches for bursts of gamma-ray emission, called GRBs. These flashes, thought to result from the especially spectacular deaths of [massive stars](#), are the brightest events in the cosmos during their brief (only seconds-long) existence. But because they are so bright, they can be seen even when they are very, very far away.

A large international team of astronomers including CfA astronomers Edo Berger, Alicia Soderberg, and Ryan Foley used the Swift satellite to spot a GRB that rapid, ground-based followup studies determined was possibly the most [distant object](#) known (but measurement uncertainties allow a few other candidates to compete for this title). The light from this object has been traveling towards us for about 13.2 billion years, or 96% of the [age of the universe](#). Since the universe is not static but expanding, today this object is much farther away than 13.2 billion light-years - more like about thirty billion light-years.

The scientists were unable to detect any faint trace of the putative galaxy in which this massive star once lived, helping to confirm the great distance of this GRB. Other important details in their new paper confirm that the object is similar to more nearby GRBs, and consequently that - even at this early stage of cosmic life - at least some stars already resembled stars in our local universe.

Provided by Harvard-Smithsonian Center for Astrophysics

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