

## Fermi Spots a Supernova's 'Fizzled' Gamma-ray Burst

- When a massive star collapses and forms a black hole, matter swirls inward, some of it escaping in the form of powerful jets. Astronomers detect a long Gamma-Ray Burst (GRB) when one of these jets points almost directly toward Earth. Short GRBs, on the other hand, form when pairs of compact objects, such as neutron stars, spiral inward and collide.
- The Fermi Space Telescope has detected the shortest gamma-ray burst (GRB) caused by the death of a massive star ever seen. Researchers suspect that this burst was powered by jets that barely emerged from the star before they shut down, instead of the more typical case where long-lasting jets break out of the star and travel considerable distances from it.
- The discovery helps resolve a long-standing puzzle: astronomers detect far greater numbers of supernovae than they do long GRBs. The researchers conclude that collapsing stars producing short GRBs must be marginal cases whose light-speed jets teeter on the brink of success or failure, a conclusion consistent with the notion that most massive stars die without producing jets and GRBs at all.
- Goddard manages Fermi as well as the Neil Gehrels Swift Observatory, which contributed to follow-up observations.

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