

NASA's mini BurstCube mission detects its first gamma-ray burst

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BurstCube, trailed by another CubeSat named SNOOPI (Signals of Opportunity P-band Investigation), emerges from the International Space Station on April 18, 2024. Credit: NASA/Matthew Dominick

The shoebox-sized BurstCube satellite has observed its first gamma-ray

burst, the most powerful kind of explosion in the universe, according to a recent analysis of observations collected over the last several months.

"We're excited to collect [science data](#)," said Sean Semper, BurstCube's lead engineer at NASA's Goddard Space Flight Center in Greenbelt, Maryland. "It's an important milestone for the team and for the many early career engineers and scientists that have been part of the [mission](#)."

The event, called GRB 240629A, occurred on June 29 in the southern constellation Microscopium. The team announced the discovery in a GCN (General Coordinates Network) circular on August 29.

BurstCube deployed into orbit April 18 from the International Space Station, following a March 21 launch.

The mission was designed to detect, locate, and study short gamma-ray bursts, brief flashes of high-energy light created when superdense objects like [neutron stars](#) collide. These collisions also produce [heavy elements](#) like gold and iodine, an essential ingredient for life as we know it.

BurstCube is the first CubeSat to use NASA's TDRS (Tracking and Data Relay Satellite) system, a constellation of specialized communications spacecraft. Data relayed by TDRS (pronounced "tee-driss") helps coordinate rapid follow-up measurements by other observatories in [space](#) and on the ground through NASA's GCN.

BurstCube also regularly beams data back to Earth using the Direct to Earth system—both it and TDRS are part of NASA's Near Space Network.

After BurstCube deployed from the [space station](#), the team discovered that one of the two solar panels failed to fully extend. It obscures the

view of the mission's star tracker, which hinders orienting the spacecraft in a way that minimizes drag. The team originally hoped to operate BurstCube for 12–18 months, but now estimates the increased drag will cause the satellite to re-enter the atmosphere in September.

"I'm proud of how the team responded to the situation and is making the best use of the time we have in orbit," said Jeremy Perkins, BurstCube's principal investigator at Goddard. "Small missions like BurstCube not only provide an opportunity to do great science and test new technologies, like our mission's gamma-ray detector, but also important learning opportunities for the up-and-coming members of the astrophysics community."

Provided by NASA's Goddard Space Flight Center

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