11 billion year-old blast from the past captured by UWA Zadko Telescope

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(PhysOrg.com) -- Galileo Galilei, who recorded the first astronomical observations with a telescope 400 years ago, would be impressed. Just in time for the International Year of Astronomy, astronomers at The University of Western Australia have seen a massive gamma ray burst that happened 11 billion years ago - long before our own planet had even been formed.

"As if seeing one of the biggest explosions in the universe wasn't dramatic enough, we had a catastrophic computer crash on the night," said Dr David Coward, UWA Senior Research Fellow and Zadko Project leader.

"We had nothing to record the images with, so team member Timo Vaalsta used a cheap video camera instead of the sophisticated astronomy camera that wasn't working." We were able to capture images of the event before the European Southern Observatory, the site of the most expensive and biggest telescopes in the world. This highlights the importance of WA as a unique and important location for astronomy.

If a similar explosion happened in our galaxy today, it could result in mass extinctions on earth." In fact, the explosion was about a billion times brighter than our sun, so we are lucky that they seem to occur more frequently in the very distant universe.

Remarkably, the UWA Physics team were not sure that they had captured the explosion until weeks later. By comparing the image of the

sky using the NASA satellite location, they discovered a faint glow that shouldn't be there, right at the location later reported by the European Southern Observatory. This glow they found is the signature of a remarkable event - the death of a star and the birth of a black hole.

In December, the team reported their observations to NASA, who distributed the report to observatories around the globe. The Zadko Telescope was the only facility in Australia to detect the 11 billion year old light from this one off event.

"The image we recorded is a window in time, allowing us to peer into the distant past to a time when the universe was very exotic," Dr Coward said. "We are discovering the richness of this transient universe, one that is filled with brief but extremely bright flashes."

UWA Vice-Chancellor, Professor Alan Robson, said the Zadko Telescope put the University on the threshold of an exciting venture that would create a new profile in robotic astronomy in Western Australia. The telescope was linked to a global network of telescopes in direct communication with NASA's Swift satellite ground station, which helped direct the Zadko Telescope to the sky-positions of gamma ray bursts.

"Another key aspect of the project is to encourage high school participation in the research. It is likely that high school students could, as a result, contribute to tracking dangerous near-Earth asteroids. In partnership with the Western Australian Department of Education, the UWA Zadko Telescope Project is committed to enhancing science education," Professor Robson said.

Provided by University of Western Australia