

THE MOST SUPER

of 10,000 SUPERnovae

24

The brightest

On first inspection, SN 2022qmx looked like one of the many thousands of Type Ia supernovae that ZTF detects – but taking account of its distance (4 billion light-years), it appeared far too luminous. The culprit: a galaxy directly between SN 2022qmx and us, the gravity of which magnified the light 24 times!

21M

The closest

Located “only” 21 million light years away, SN 2023ixf (in the Pinwheel galaxy) is in our backyard by supernova standards. It is the closest supernova of the past decade and one of the best studied to date.

8B

The furthest

It took the power of the James Webb Space Telescope to reveal the faint, distant supernova AT2023lcr located 8 billion light years away. This transient was first discovered by ZTF via its short-lived shockwave “afterglow”: a brief flash of light from the collision of a jet of material traveling at almost the speed of light with the surrounding gas.

7K

The most common...

Type Ia supernovae – explosions of dead stars known as white dwarfs – are by far the most common type of transient found by ZTF. While any specific galaxy rarely hosts Type Ia, they are sufficiently luminous that ZTF can spot them from very far away. More than 7,000 of ZTF's first 10,000 transients are of this type.

13

The most rare...

The light from a cosmic explosion named AT2022tsd was thought to have faded away for good – until it suddenly began producing short, intense bursts of light. In total, 13 such flashes were detected. This behavior has never been seen in any other cosmic transient, before or since.

Do you want to find the “most musical” among the 10 000 supernovae? You can do that yourself with our “Sonify the cosmos” outreach project. Visit <https://www.ztf.caltech.edu/ztf-sonification.html> and play around



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