

Other answers

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Artist's view of a super
massive black hole accelerating astroparticles -
NASA/Dana Berry, SkyWorks Digital

In modern times, physicists and astronomers are no longer working alone tirelessly gathering data to better predict events, or waiting all night long for a celestial phenomenon to happen. Telescopes, satellites and ultra-sensitive detectors allow them to reveal invisible objects, to trap tiny particles with energies that would sometimes be impossible to reproduce in the laboratory.

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Cephea Nebula CTA1 / credit
: NASA/ S.Pinault, DRAO

To confirm our theories experiments were carried out which focused on rare phenomena or on the detection of particles which are extremely difficult to observe, such as neutrinos. From high-energy cosmic rays, whose origin is unknown, to exotic particles, from gravitational waves to gamma rays, all these new cosmic "messengers" are precious sources of information on the universe, as well as clues on the real nature of the surrounding matter. They help us probe large structures of the universe and the smallest mechanisms of matter. Astroparticle physics is the science of the two infinities.