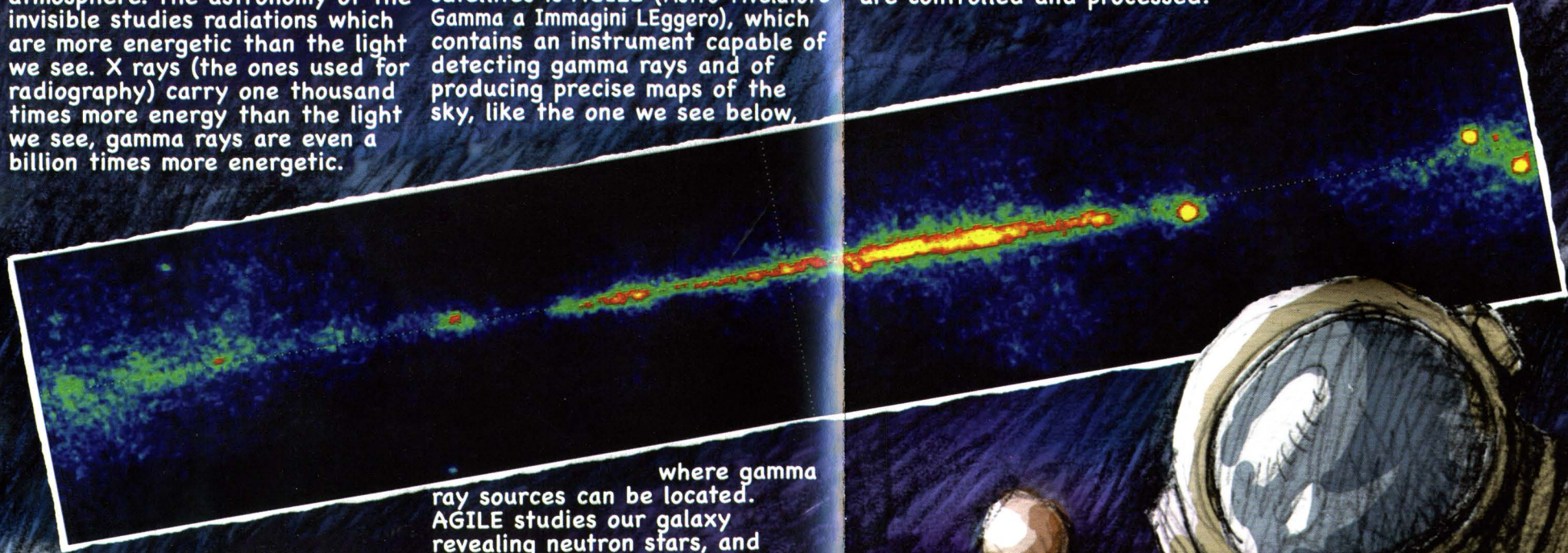


Since our eyes can only detect "visible" radiation, optical astronomy was for millennia the only way to study celestial objects. We learnt a lot thanks to our eyes and to telescopes, but about 50 years ago we realized that celestial sources also emit different radiations, which we cannot see and which are absorbed by our atmosphere. These radiations must be studied from outer space, putting suitable instruments into orbit, above the atmosphere. The astronomy of the invisible studies radiations which are more energetic than the light we see. X rays (the ones used for radiography) carry one thousand times more energy than the light we see, gamma rays are even a billion times more energetic.

These sources are joined, every now and then, by a gamma ray burst, a source that for a few seconds becomes the most brilliant in the sky, like lightning illuminating the night sky and then disappearing. To study gamma rays produced by celestial bodies, we need peculiar instruments, with no mirrors but with particle detectors. That is why gamma ray instruments do not look like telescopes at all. One of these new generation satellites is AGILE (Astro-rivelatore Gamma a Immagini LEggero), which contains an instrument capable of detecting gamma rays and of producing precise maps of the sky, like the one we see below,

AGILE is part of an important programme of the Italian Space Agency, called "Small scientific missions". Its name notwithstanding, it has very ambitious goals: it will allow new scientific discoveries using small satellites, built and launched with ease and reasonable cost. ASI, in its Malindi base (Kenya), collects data sent to Earth by AGILE and transmits them in Italy, at Fucino Space Center, where they are controlled and processed.

ASI then distributes data to astronomers through its Science Data Center, with software needed to study them. Much remains to be studied and understood, but new space missions, and AGILE among them, hold the promise of revealing fascinating mysteries, taking us on a trip in that wonderful enigma that is the Universe, still so unknown but no longer so far away.



Celestial bodies capable of producing such radiation are not normal stars, but rather particularly dense stars with high magnetic fields. They are the remains of the explosion of a star much larger than our Sun. Neutron stars and black holes at the centre of shiny galaxies are the most powerful sources in the gamma sky.

where gamma ray sources can be located. AGILE studies our galaxy revealing neutron stars, and observes the bizarre behaviour of special active galaxies, that light up and turn off every few days or weeks. As the mission progresses, AGILE will allow astronomers to discover some of the remaining mysteries about how distant galaxies originate and about black holes, objects so dense that light cannot escape from them.

