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ASTRONOMY

Telescope launch will open our eyes to gamma rays

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Imagine that you could hear only one octave. Thirteen consecutive keys on the piano, a range of pitch narrower than most of us sing in the shower.

The world of music would be hopelessly dull. You wouldn't need subwoofers or tweeters because you couldn't hear bass or treble.

Entire parts of the natural world would be lost to you. You'd never hear bird songs or a lion's roar.

But that's what we get if we look at the universe in visible light. Human eyes are sensitive to only about one octave of electromagnetic frequencies, but the universe produces a far broader spectrum visible through telescopes.

The highest-frequency electromagnetic waves are called gamma rays. Until now, our gamma-ray vision has been extremely limited.

But this is poised to change next month with the launch of the Gamma-Ray Large-Area Space Telescope, or GLAST. Like the Hubble Space Telescope, GLAST will orbit Earth above the layers of atmosphere that block incoming gamma rays.

GLAST will see gamma rays from some of the most extreme and energetic environments in the universe. Moreover, GLAST will give us the sharpest view we have ever had of the gamma-ray sky, and new insights into some fundamental questions.

For example, we want to understand how black holes create powerful jets, stretching millions of light-years through space. The first super massive black holes set the stage for the formation of galaxies, the places where stars, planets and living organisms can develop.

We want to understand supernovae, the exploding stars responsible for enriching galaxies with the chemical elements necessary for planet formation.

And we want to understand dark matter, which dominates the universe, putting our own constituent atoms and molecules into the minority category.

New data from GLAST could be a key to understanding where we came from, in the cosmic sense.

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