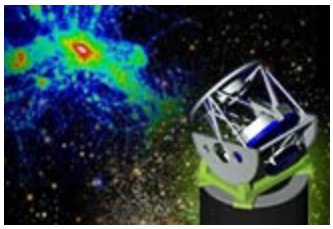

Dark Matters: New Telescope to Seek Elusive Matter and Energy

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NEW YORK, New York -- There are dark forces at work in this universe of ours, hidden from the naked eye but affecti everything from the mass of galaxies to the shape of the universe.

Astronomers attribute these forces to dark matter and dark energy, unseen phenomena whose existence can be infer not seen directly -- though other sky observations. A better understanding of these forces could help researchers dete how the universe evolved.

A group of research organizations are hoping to build a new telescope that might just do the trick, scanning the entire night sky repeatedly over a period of years. The telescope, researchers hope, will prove itself invaluable for finding da matter and dark energy, as well as tracking near-Earth asteroids, supernovae and other astronomical phenomena.

"We're looking to cover a wide field of view, look deep into space and do it fast," said project director Anthony Tyson, Lucent Technology's Bell Labs in Murray Hill, New Jersey. "And there's a huge laundry list of astronomy that we could with it."

Seeing the 'dark' of space

Tyson is directing efforts to design and build the Large Synoptic Survey Telescope (LSST) by the LSST Corporation In collective of professional research groups and academic universities working to make the telescope a reality. The tele is expected to go online by 2011.

Project designers plan to equip their telescope with both a wide field of view and an extremely sensitive digital camera combination that should allow LSST to make a comprehensive sky survey in about four days. The process can then b repeated over and over again to compare changes in objects and asteroids.

"But when you look at the night sky, you can only see things that glow in the dark," Tyson said. "They are really just a constituent, a minor player in the dynamical game." Dark matter is the real heavy hitter, he added

LSST scientists will to use weak gravitational lensing of the most distant objects in the universe to detect dark matter. Gravitational lensing occurs when light from a distant galaxy or other object is distorted by the gravitational pull of the between it and observer's on Earth. The phenomenon is also known as cosmological shear. By measuring the amoun distortion of an object, LSST researchers will be able to map dark matter across the night sky.

Weak gravitational lensing can also be used to detect dark energy, a mysterious force thought by some to be respons the continued expansion of the universe. In 1998, astronomers studying supernovae found them to be moving faster t they expected, leading them to postulate that some force -- now called dark energy - had imparted the additional acceleration.

LSST should be able to measure dark energy by observing its effects on cosmic structures in two ways. First, it will se massive clusters of material, such as a group of galaxies, over a timeframe of between 1 billion to 8 billion years to fo three-dimensional maps of each region's mass. Charting the growth of these regions over time should give researche idea of how much dark energy is present.

The telescope should also be able to measure dark energy through observations of the overall redshift of the night sk weak gravitational shear. Objects moving away from earth emit light closer to red end, or redshifted, of the visible ligh spectrum.

"Those two measurements get at the physics of dark energy, and both are complimentary to each other," Tyson said. cannot just rely on just one of these methods, such as the supernovae measurements for example, because there are