



LUX hooked up in tank



This view from the bottom of the (empty) LUX water tank requires some explanation. Multimedia Specialist Matt Kapust donned a Tyvek clean suit to lie on the bottom of the tank, which is 20 feet tall, and shoot up. A 14 millimeter wide-angle lens captures most of the tank but produces some distortion. The photomultiplier tube a left, for example, looks much larger than identical PMTs on the right. The LUX detector itself is the gray cylinder, which is 6½ feet tall by 3 feet in diameter. The blue tarp was installed to catch tools or parts that might fall during installation.

Photo by Matt Kapust



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The Large Underground Xenon (LUX) dark matter detector has been lowered into its protective water tank on the 4,850-foot level. (Deionized water will be added next month.) The detector itself is the gray cylinder in the photo above and at left. The detector, which is 6½ feet tall by 3 feet in diameter, is a “cryostat” (vacuum thermos) that will hold about 350 kilograms of liquid xenon, kept frigidly cool by liquid nitrogen and a device called a “thermosyphon.”

Today (Monday) the LUX detector was actually about 5½ feet lower than pictured here. Detector Group Leader Jeremy Mock also reported that plumbing for the xenon circulation system and the thermosyphon had been completed inside the tank.

This coming week, Mock said, the LUX team will finishing wiring the “photomultiplier tubes” (PMTs) in the water

tank. That’s a PMT in the left foreground of the above photo. Nine of the water tank’s 20 PMTs also are visible in the photo. The apparent size difference among the PMTs is an artifact of a wide-angle lens. These PMTs will detect and veto non-dark matter signals in the water tank.

Testing of all the plumbing and electronics for LUX will continue well into September, before water is added to the tank. “We’re not in a hurry,” Mock said. It’s easier to fix problems before the experiment is under water, so testing is rigorous. (Water will shield LUX from stray radiation and provide a medium for PMT vetoes.)

The LUX installation is a complicated process, but Mock said that, so far, every aspect of the operation is “on schedule or ahead of schedule.” Data collection could begin by the end of the year or early in 2013.