

What's in a Name?

The Senate last week voted to ease rules on cleaning up high-level nuclear waste, allowing remnants to remain in aging tanks rather than being removed for disposal. But critics say the measure, part of a \$447 billion defense authorization bill, is illegal.

Opponents failed, by a vote of 48 to 48, to remove language that would reclassify high-level waste in South Carolina as low-level waste. They hope to force a second vote, however, before both chambers complete work on the legislation. Meanwhile, officials in Idaho and Washington worry that the move could undermine cleanups in their states. And Karen Wayland of the Natural Resources Defense Council in Washington, D.C., says the measure violates a 1982 law by creating uneven rules. "Somebody will challenge it immediately," she predicts.

—ROBERT SERVICE

CNRS President Dies

PARIS—The president of France's major basic research agency, CNRS, died last week after a yearlong battle with cancer. Earth scientist Gérard Mégie, 58, was a leading authority on Earth's ozone layer and had been head of CNRS since November 2000.

—BARBARA CASASSUS

U.K. Faces Math Challenge

Mathematical research in the U.K. is doing just fine, concludes an international panel. But lurking problems could add up to future trouble. Fewer math undergraduates, narrow Ph.D. training, dwindling funding, and poor career paths will all make it hard to recruit enough academics to maintain the U.K.'s international position, the panel says in a report released last week.

The 13-member group, led by Jean-Pierre Bourguignon, director of France's Institut des Hautes Études Scientifiques, was asked to take the field's temperature by Britain's three mathematical societies and its main math research funder, the Engineering and Physical Sciences Research Council. It concluded that the U.K. is a world leader in several areas, including geometry, topology, and number theory, as well as applied disciplines such as fluid mechanics. But the future may not be so bright. "Math is often viewed as a low-cost field—people only need a pencil and paper," says panel member Margaret Wright of the Courant Institute of Mathematical Sciences at New York University. "This is completely false. If not enough is put into equipment and resources, things will start to fall apart." —DANIEL CLERY

Hubble had seen. The red colors suggest that the galaxy's oldest stars—composing most of its mass—are 125 million to 200 million years old, Egami says. That information places the galaxy's birth near when the first organized protogalaxies started to shine, astronomers believe.

The combined amount of light detected by Hubble and Spitzer reveals that the galaxy is 1/200 the size of our Milky Way, at most—making it a respectable dwarf galaxy but a small fry by modern stan-

dards. "This is the kind of object that assembled into bigger and bigger galaxies" by merging with similar collections of stars, Egami says.

Spitzer's unexpectedly deep vision bodes well for one of astronomy's main goals, says Caltech astronomer Christopher Conselice, who was not part of the team: "Together, Spitzer and Hubble will be incredible tools to help us figure out all phases of galaxy evolution."

—ROBERT IRION

ASTRONOMY

Giant Black Holes Shed Their Dusty Veils

Some of the most dazzling objects in the universe are forever hidden from view, teams of astronomers in Europe and the United States have concluded. Working separately with data from orbiting observatories, the astronomers deduced that fiercely energetic glowing cores of distant galaxies—beacons of energy powered by black holes more massive than a billion stars—may be four or five times more numerous than astronomers had recognized.

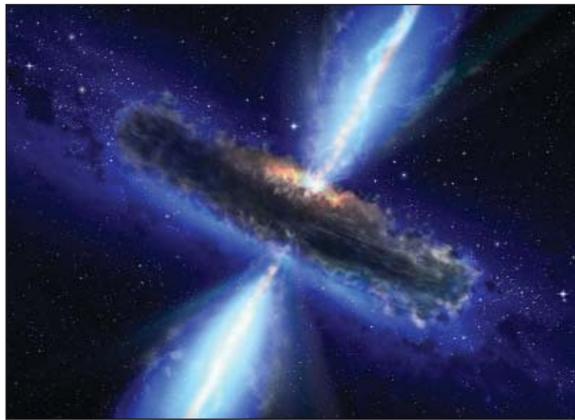
"We had not identified these supermassive black holes even in deep x-ray surveys, because they are likely shrouded by gas and dust," says astronomer C. Megan Urry of Yale University in New Haven, Connecticut. But in new infrared images from the Spitzer Space Telescope, says Urry, "these very distant, luminous objects are easily visible."

Supermassive black holes nestle at the hearts of active galaxies, where their intense gravity sucks in matter and converts it into radiation. Astronomers study them for clues to galactic evolution. Unfortunately, the black holes also attract spiraling rings of dust that, when seen edge-on, block astronomers' view of the galactic core. Such bedimmed galactic nuclei are known as type 2 sources.

Many type 2 sources have been found in our celestial neighborhood, but most give off relatively modest amounts of power. Theorists believed more intense type 2 sources must exist in distant, younger reaches of the universe, but only a few had been spotted.

European researchers led by Paolo Padovani of the European Southern Observatory (ESO) in Munich probed the so-called GOODS fields: patches of sky that Spitzer, the Hubble Space Telescope, and the Chandra X-ray Observatory had studied in a joint effort known as the Great Observatories Ori-

gins Deep Survey (*Science*, 19 March, p. 1750). The team took its data from Europe's 2-year-old Astrophysical Virtual Observatory, which gathers and analyzes public data from astronomical facilities worldwide and makes them available to astronomers at the click of a mouse (*Science*, 14 July 2000, p. 238). Each telescope had spotted features of high-powered type 2 sources, such as high x-ray output or scant emissions of visible light. Pooling the observations revealed what appear to be 30 new high-powered type 2 sources. Until now, only nine had been seen



Out of hiding. Clues from a range of wavelengths revealed distant supermassive black holes enshrouded in dust.

in GOODS fields and at most 10 to 20 elsewhere, says Padovani, who is a co-investigator on GOODS. The U.S.-led study found the same sorts of objects about a month earlier, Urry said last week in Denver at a meeting of the American Astronomical Society.

The results help "balance the books" between the projected population of active, star-forming galaxies in the distant universe and the population of black holes, says astronomer Alan Dressler of the Carnegie Observatories of Washington in Pasadena, California.

—CHARLES Q. CHOI

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