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Alpine detector fails to confirm Italian sighting of dark matter

Alison Abbott, Munich

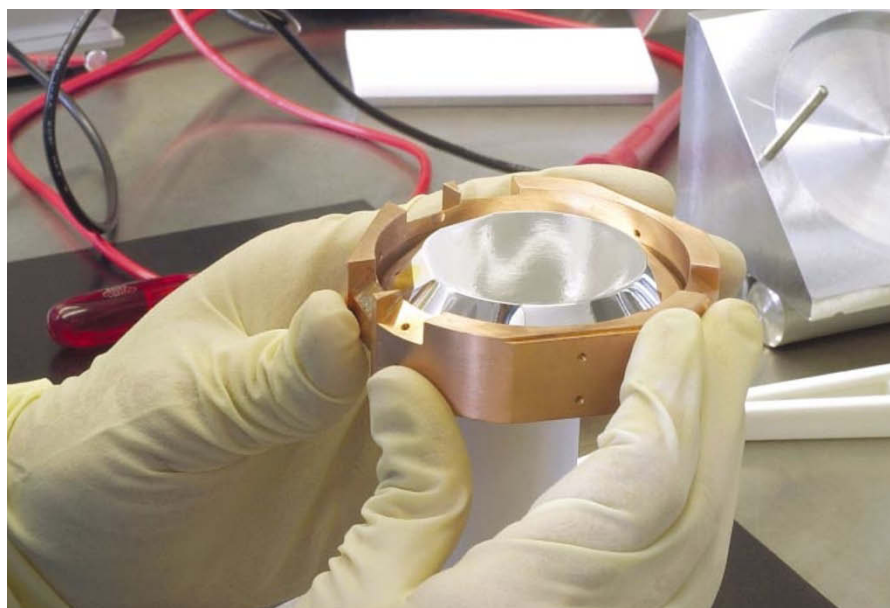
Despite a three-month search for the mysterious particles thought to make up 90% of the Universe's mass, dark matter has remained rooted in its shadowy world.

French high-energy physicists last week revealed that their highly sensitive detector had failed to detect a single particle of dark matter with the characteristics claimed to have been spotted by an Italian team two years ago.

The results, presented at a hastily arranged special session of the 20th International Conference on Neutrino Physics and Astrophysics in Munich, contradict findings of the four-year DAMA experiment, led by Rita Bernabei of the University of Rome.

Bernabei's team controversially claimed that it had detected WIMPs — weakly interacting massive particles — a theoretical type of dark-matter particle (see R. Bernabei *et al.* *Eur. Phys. J. C* **18**, 283–292; 2000).

DAMA, based in the Gran Sasso laboratory near Rome, uses a detector containing iodine, which measures the light emitted when incoming WIMPs collide with the iodine nuclei. The change in the Earth's orientation as it orbits the Sun means that its interaction with the cloud of WIMPs that is believed to fill the Solar System should vary on a seasonal basis. Bern-



The highly sensitive detectors at Edelweiss use germanium to spot any interactions with dark matter.

abei claimed to have detected this variation.

DAMA is isolated from interfering radiation by a covering of 1,400 metres of rock. But many physicists claimed that the detector was not sensitive enough to distinguish a true WIMP response from background noise. In addition, most sources of noise,

such as cosmic rays, would be subject to seasonal variation, they argued.

Two years ago, the CDMS experiment, led by Bernard Sadoulet, a cosmologist at the University of California, Berkeley, failed to find conclusive evidence for the type of WIMP that Bernabei claimed to have

Supreme Court closes loophole for copycat patents

Jonathan Knight, San Francisco

Holders of valuable patents breathed a sigh of relief last week, when the US Supreme Court reversed a lower-court decision that many feared would pave the way for more copycat inventions.

In 2000, a federal appeals court upset supporters of tight patent protection by limiting the 'doctrine of equivalents'. This principle broadly states that a patent on blue nails can be extended to cover red nails as well, as their function is essentially the same.

In a decision known as the Festo ruling, the federal court had decreed that if a patent's claim had been narrowed during review —

say from yellow and red nails to red nails only — it could not be widened again later by claiming equivalence. The case involved Festo Corporation, a machine-tool-maker in New York state, which argued that its patent on a part for a robotic arm should cover a similar device made by a Japanese rival.

As most patents are the product of negotiation with the Patent and Trademark Office, patent holders were worried that Festo would open the floodgates to close imitations of patented inventions.

In one related case, for example, MedImmune of Gaithersburg, Maryland, is fighting with the British biotechnology

company Celltech to claim rights to an antibody for treating respiratory infections. MedImmune's version differs by one amino acid in 1,320 from Celltech's patented one.

One of the several petitions MedImmune filed with the Supreme Court argues that the doctrine of equivalents has been too widely interpreted, and should be limited as the federal court suggested.

But more than a dozen universities and research organizations, including Stanford University and the Massachusetts Institute of Technology, filed briefs urging the Supreme Court to undo the court judgement, which it did on 28 May. ■

detected. But the CDMS detector is only around 10 metres below Stanford University's campus, and background noise was too high for researchers to draw unambiguous conclusions.

The latest results were obtained by researchers working on the Edelweiss detector at the Modane Underground Laboratory, located 1,700 metres below the Alps.

Edelweiss has lower levels of background noise than the CDMS detector. And, by virtue of using germanium instead of iodine, it is more sensitive than DAMA. Germanium allows the measurement of two properties of any potential interactions — temperature change and an ionization signal — rather than just one.

"The results reported by the DAMA team could have been generated by background events or could have been statistical fluctuations," says Gilles Gerbier of the Saclay Centre of the French Atomic Energy Commission near Paris, and a member of the Edelweiss collaboration.

Other researchers agree. "The DAMA results were hard to believe, but also hard to disprove. The Edelweiss results are very convincing," says Yorck Ramachers, who works on another dark-matter experiment at Gran Sasso. But Bernabei is sticking to her guns, insisting that the DAMA WIMPs are real, and that experiments using different detectors are not comparable.

The search for WIMPs with other characteristics will go on. Edelweiss will be able to extend its search after two more detectors are installed in the next nine months — a total of 21 will be online by the end of 2003. In addition, the CDMS experiment will soon move to a deeper site in north Minnesota. ■

♦ <http://edelweiss.in2p3.fr>

South African cabinet backs merger plan for universities

Michael Cherry, Cape Town

South Africa is to proceed with a controversial plan to merge institutes of higher education that taught blacks and whites separately under apartheid (see *Nature* 417, 377–378; 2002).

The cabinet accepted the merger plan late last month after Kader Asmal, the education minister, made concessions that will allow two of the nation's best-known historically black universities — the University of the Western Cape and the University of Fort Hare — to retain their separate identities.

The country's 21 universities and 15 technikons (polytechnics) will now be streamlined into 11 universities, 6 technikons and 4 comprehensive institutions that will offer both university and technikon programmes. The government says that this will create "a system that is equitable, academically and financially sustainable, and productive".

The government also hopes to counter falling registration numbers by increasing the participation rate — the percentage of 20–24-year-olds enrolled in higher education — from 15% to 20% over the next 10 years. This will involve an estimated additional 200,000 students, most of whom will need to be supported by increased government allocations to the National Student Financial Aid Scheme — although the government also hopes to recruit more students from other countries in the region.

The South African government is also committed to reducing the percentage of



The historically black University of the Western Cape is set to retain its separate identity.

UWC

enrolments in the humanities from 49% to 40% over the next five to ten years, while increasing those in business or commerce from 26% to 30%, and those in science, engineering and technology from 25% to 30%.

Derrick Swartz, rector of the University of Fort Hare, said in a statement that the cabinet's decision had vindicated its long campaign against the merger, and that he hoped it would make the "new Fort Hare the major player in the region". But others were less satisfied. "These are senseless proposals that amount to merely tinkering with the status quo," Itumeleng Mosala, Rector of the Technikon North-West and chairman of the Association of Historically Disadvantaged Institutions, told the Johannesburg daily *Business Day*. ■

Chinese researcher accused of stealing cell samples

Rex Dalton, San Diego

A Chinese-born scientist has been held in a Californian jail for nearly three weeks, after being arrested for allegedly stealing materials and methods used to grow corneal cells which, police files claim, he intended to export to China.

Veterinary researcher Bin Han was jailed on 17 May after police searched his home and found records of stem-cell experiments and serum samples allegedly misappropriated from the University of California, Davis, where he is employed. They also found a ticket for a round-trip to China for the following week.

The jailing of Han — who was born in China but has been a US citizen since 1999 — is the latest example of the increasingly hard line US authorities are taking with researchers who stand accused of exporting

biological samples or information without permission. Last May, for example, two Japanese researchers were charged with industrial espionage for their alleged involvement in such exports (see *Nature* 411, 225–226; 2001).

At a state court hearing on 4 June in a suburb of Sacramento, California, a judge allowed Han to be released after authorities had taken possession of his passports. Han now faces a preliminary hearing on 16 July on at least one felony charge of embezzlement.

Since 1990, Han has worked in various laboratories at the University of California, Davis, after coming to the United States in 1989. During one period, according to university records, he also said he was running an investment firm on behalf of Chinese financiers.

Two years ago, Han became a postdoctoral fellow in the laboratory of ophthalmologist Ivan Schwab and dermatologist Rivkah Isseroff — who are investigating how to make stem cells grow into corneal epithelial cells to replace damaged eye tissue. The technique might also have wide application for making other epithelial cells, researchers say.

Early last month, court records show, officials at the University of California, Davis, became suspicious of Han after learning that he was setting up a stem-cell research laboratory in China, where he frequently travelled. Police raided Han's home after vials of human sera used in Schwab and Isseroff's research went missing.

If convicted, Han could face a prison term. Neither he nor his attorney could be reached for comment. ■