

capped in the “Doctrine for Joint Nuclear Operations,” a document from the Joint Chiefs of Staff, a body composed of the highest-ranking member from each branch of the military. The policy, says Griest, blurs the distinctions between nuclear weapons and other weapons and endorses preemptive nuclear strikes on non-nuclear states.

Among the reasons listed in the doctrine for which “combatant commanders may request presidential approval for use of nuclear weapons” are “to counter potentially overwhelming adversary conventional forces,” “for rapid and favorable war termination on US terms,” and “to demonstrate US intent and capability to use nuclear weapons to deter adversary use of WMD [weapons of mass destruction].” (The petition, with links to the doctrine and other documents, is at <http://physics.ucsd.edu/petition>.)

“This policy is much more dangerous than people think,” says Griest. “It will destroy the NPT. If the US can attack a non-nuclear state, then the only defense is to make your own nuclear weapons. Every country will want to build their own.”

Under the NPT, the official nuclear weapons states—the US, Russia, the UK, France, and China—have made “negative security assurances”: They have promised not to strike non-nuclear states. “Those promises are part of what is being called into question now,” says Hans Kristensen, director of the nuclear information project at the Federation of American Scientists. Under the new policy, he says, a member of the NPT that has no nuclear weapons “but may have developed biological or chemical weapons can be attacked, or threatened with attack, by US nuclear weapons.”

Steven Weinberg, one of the nine Nobel laureates among the more than 1600 physicists who had signed the petition as of press time, says, “I think it’s a terrible thing for our country to weaken the taboo against the use of nuclear weapons.” Pointing to Congress’s decision in October 2005 not to fund the Robust Nuclear Earth Penetrator, which was intended to be used preemptively on buried chemical or biological weapons, Weinberg adds, “I think the bunker-buster case is an example where public opinion did have an effect.”

“We are physicists,” says Hirsch. “We made these weapons. We work on these weapons. We benefit from the defense establishment—they give us money. Physicists need to take a stand as a community.” Adds Griest, “Our goal is to generate enough discussion so that the policy is revised.” **Toni Feder**

News Notes

SALT inauguration. “We are feeling elated to be where we are today,” says David Buckley, project scientist for the Southern African Large Telescope. “We built this telescope on schedule and on budget and we are starting to get science out of it.” On 10 November 2005, South Africa’s president, Thabo Mbeki, officially inaugurated the \$19 million telescope, which is sited near Sutherland, about 260 km north-east of Cape Town (see *PHYSICS TODAY*, November 1999, page 61).

With an effective aperture of about 9 meters, SALT is the largest single telescope in the Southern Hemisphere. So far, it has two instruments, an optical imager that extends down to 320 nm in the UV and records images at 12.5 Hz, and a spectrograph capable of tunable filter imaging

and polarimetry.

Parts of SALT’s instruments are actually made of salt: For efficient UV transmission, the spectrograph has two lenses, each about 20 cm in diameter, that were ground and polished from salt crystals and are sealed and sandwiched between other lenses to prevent water absorption.

SALT was conceived as a replica of the Hobby-Eberly Telescope in West Texas but, says Buckley, “we made significant design alterations.” SALT has 11 partners in 6 countries: South Africa, Germany, New Zealand, Poland, the US, and the UK. **TF**

China joins XFEL. On 24 November 2005, China became the first non-European country to join the x-ray free-electron laser (XFEL) to be built at the German Electron Synchrotron lab (DESY) in Hamburg, Germany. By mid-2006, the 13—and still counting—partners aim to set forth details on the mode of collaboration, technical design, schedule, cost breakdown, and financing for the project. Germany will pay roughly 60% of the projected C908 million (\$1.1 million) construction cost.

The XFEL will produce x rays in the wavelength range 0.085–6.0 nm with pulse times less than 100 femtoseconds (see *PHYSICS TODAY*, May 2005, page 26). The x-ray pulses will be used to observe molecular and atomic processes in materials and biomolecules in real time. Construction begins late this year and the facility is supposed to go on line in 2012. **TF ■**



SALT: The Southern African Large Telescope.

WEB WATCH

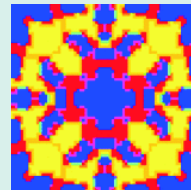
<http://www.archive.org/details/FindingH1929>



In its 10-minute span, the 1929 cartoon **Finding His Voice** explains the then-new technology of putting sound into movies. With remarkable clarity and accessibility, the cartoon follows the recorded sound energy through its conversion to electricity, light, electricity, then back to sound.

<http://www.univie.ac.at/virtuallabs>

Game theory’s origins and applications lie in physics, economics, ecology, and other fields. To navigate this rich, interdisciplinary terrain, visit **VirtualLabs**, a set of online tutorials put together by Harvard University’s Christoph Hauert.



<http://whyfiles.org>



From the University of Wisconsin–Madison comes the **Why Files**, an online news magazine devoted to explaining the science behind topics of current interest. Recent installments have covered earthquakes, high gas prices, and teaching (or not teaching) evolution.

To suggest topics or sites for Web Watch, please visit <http://www.physicstoday.org/suggestwebwatch.html>.

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