

haps to emulate a volcanic eruption, would change the hydrological cycle and weather patterns in ways that would be simply unacceptable, even if they were doable. The cost and viability of any such proposals are other major issues, but in my view, they are overwhelmed by the ethical considerations.

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University of Tsukuba defends professor's dismissal

Administrators at the University of Tsukuba have read the letter from 11 physicists who criticized the university's disciplinary action against Teruji Cho (PHYSICS TODAY, December 2008, page 10). We are concerned that the writers did so without a full grasp of the incident and the procedure followed by the university. The university's website has posted the official investigation report in Japanese (http://www.tsukuba.ac.jp/public/press/080306press_4.pdf) and an abridged English translation (http://www.tsukuba.ac.jp/english/public/pressrelease/p_report/report_d.pdf).

The University of Tsukuba has an established system of handling incidents of research-related misconduct under its Scientific Ethics and Research Conduct Committee. SERCC sets up an investigation committee that examines the details of the case and reports its findings to SERCC. If SERCC concludes that misconduct was perpetrated, the disciplinary committee of the university's Education and Research Council determines the disciplinary measures.

For the incident involving Cho and three assistant professors, the procedure was strictly followed. The investigation committee, whose members are listed in the online documents, included three distinguished plasma physicists from outside the university.

After a year of investigation between April 2007 and March 2008, SERCC concluded that Cho and his three coworkers falsified raw data to make two figures for their paper published in *Physical Review Letters* (PRL)¹ and that the falsification constitutes scientific misconduct. SERCC based its conclusions on an in-depth examination of documentary evidence, including e-mails and intermediate analyses, that it acquired from the students who filed the misconduct complaint and from

Ode to the Large Hadron Collider

Deep beneath the farms of France, physics takes a massive chance.
Europe's best and brightest teams focus up their narrow beams,
While gangs of dedicated geeks tighten tubes and look for leaks.
Giant magnets, so it's said, accelerate a proton thread
Until it hits the speed of light—well, maybe not exactly quite—
But anyhow, extremely fast. The speed of light is unsurpassed.

When protons have sufficient spin, they're whacked against their proton kin,
Spun from an opposing strand, swirled around from Switzerland,
All aligned with great precision, smashed together in collision.
Then, whatever fragments found, fathom matters most profound:
Like, What are mass and gravity, space and supersymmetry?
Dimensions deep and matter dark? What riddles lurk within the quark?
Is it worth the money spent on this vast experiment?
Other questions, not as thrilling, strangely garner equal billing:

What if all this, just perhaps, precipitates a mass collapse?
Could the apparatus heave a flying hadron through Geneva?
Could quantum spin and somersaults zap the gold in Zurich's vaults?
Sour the milk and spook the pigs? Just what if the hunt for Higgs
Tolls our final self-destruction or invites an alien abduction?
What would Isaac Newton think? Would he envision Earth might sink?
Humanity, prosperity, down a singularity?

For this we've waited many years to have a hadron smash,
Boldly probing new frontiers and spending piles of cash.
Scientists seem unconcerned, proudly listing all they've learned,
While their rivals gather traction in equal and opposing action.

Alas, no protons whizz around, and silent is the ring.
No hadrons thread the underground, at least until the spring.
Some free advice on this device, while disappointment lingers:
Find that glitch and throw the switch! Be sure and cross your fingers!

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Cho and coworkers. SERCC reported its conclusions to the president of the university on 4 March 2008 and advised that the authors retract the paper. The president acted on those conclusions and advice. Subsequently, the disciplinary committee determined that Cho should be dismissed from the faculty, and that action was carried out on 27 August 2008. The committee also decided that the three assistant professors be suspended from their positions for one to four months; that was put into effect on 16 October 2008.

During the investigation, the university, through SERCC and the investigation committee, took every measure to guarantee that Cho and the three coworkers had opportunities to present their views and rebuttals in written form. Those rebuttals, however, failed to convince SERCC to reverse its conclusions.

In the incident, the falsification occurred during the process of making two figures from raw data. Since access to the raw data was confined to Cho's group, uncovering such a falsification would have been extremely difficult if

students from the group had not raised the issue. Besides Cho and the suspended professors, 11 University of Tsukuba faculty members are listed as coauthors of the PRL paper. They are experts on the GAMMA-10 tandem mirror and longtime collaborators with Cho. However, even they could not detect the falsification. After the investigation, 23 coauthors, including 1 of the 3 suspended assistant professors, have asked the PRL editorial office to withdraw their names from the paper.

The incident has been deeply troubling for the university, since the mirror fusion research led by Cho had been an important component of our scientific activities for many years. We therefore made every effort to follow the due process of investigation and make sure our decisions were based on fact. The findings left us no choice but to take the action against Cho and three coworkers. The university's investigation was open, and the results have been made public. We invite our colleagues in the international academic community to read the reports so they can understand the reasons for our action.