TERABITS IN THE VORTEX

Consider a hard drive that can store thousands of movies per square inch. Is it possible? Rice University researchers in Houston are on the case after decoding the multidimensional structure of a tornado-like magnetic vortex the size of a red blood cell. Next-generation storage devices are likely to depend on “the nuances and functions of these magnetic vortices,” says Rice physics professor Carl Rau.

Rau and other researchers used a unique scanning ion microscope to capture an image of a magnetic vortex. It appears as a cone-like structure, as seen in the diagram, that gets created in a magnetic field as a disk spins. Rau believes that making the magnetism of the vortices readable can help scientists store terabits of writable, readable data per square inch on hard drives.

MAN-MADE BLACK HOLES?

Can a particle collider be taken too far? That question is being raised about the next-generation Large Hadron Collider (LHC), shown in the photo here. The huge particle pulverizer and accelerator is located at the CERN particle physics laboratory, near Geneva, Switzerland. It is due to open for business late next year and is slated to simulate the Big Bang.

The LHC is being constructed in a massive underground tunnel. The tunnel’s core contains two pipes, each containing a proton beam. The two beams will travel in opposite directions around the tunnel and create massive, as-yet-unseen amounts of energy when they collide, which will be measured and analyzed by scores of computers and physics equipment.

The Lifeboat Foundation, which serves as a watchdog for next-generation particle accelerators, has posted a set of concerns about LHC experiments. In particular, the foundation notes this citation from CERN’s Web site: “According to some theoretical models, tiny black holes could be produced in collisions at the LHC. They would then very quickly decay into what is known as Hawking radiation (the tinier the black hole, the faster it evaporates) which would be detected by experiments.” The primary concern of Lifeboat is that the black holes may never decay, creating unstable, possibly disastrous physical consequences. Find more, including a 3D tour, at www.lifeboat.com/ex/particle.accelerator.shield.—SR