

Future storage on rewind: IBM, FUJIFILM envision cassette as #1

October 24 2012, by Nancy Owano

(Phys.org)—Both scientific and vendor interest mounts toward The Square Kilometre Array (SKA), a global collaboration of 20 countries that seeks to provide answers about the universe. Computing power of the highest order is going to be needed for the SKA radio telescope, 10,000 times more powerful than any other telescope. The project is to entail over 3,000 satellite dishes spread across land to allow scientists to see more than ten times further away than the most powerful radio telescopes now available. Potential explorations will include the nature of the first stars, Dark Matter and Dark Energy, theories of gravity and black holes, and the origin of cosmic magnetism.

The SKA will be set up in South Africa and Australia. Once complete in 2024, the \$2 billion SKA is expected to pump out enormous amounts of data for astronomers and researchers and will require a computer system that is capable of doing so. Besides needing high performance computing engines the project will require data storage capacities that amount to no less of an unprecedented computing challenge.

IBM's Zurich labs together with FUJIFILM is collaborating on an answer, a new wave of ultra-dense tape drives using magnetic tape coated in particles of barium ferrite.

Their work is designed to optimize [data transfers](#) and [storage systems](#) based on next-generation tape systems. They have a prototype that can store 35TB (terabytes) of data on to a single cassette tape.

Scientists at IBM Research in Zurich and FUJIFILM have been on this project for some years now, and their claim that the prototype can store 35 terabytes of data can be appreciated when translating that further—35 million books worth of information on a cartridge only 10 centimeters by 10 cm by 2 cm.

FUJIFILM has been noted for its work in "Nanocubic" technology which allows the production of nanometer-scale ultra-thin coatings. Using Nanocubic technology, it is now possible to create data cartridges that offer low noise and excellent storage characteristics, says the company.

This is a dual-coat magnetic tape of barium ferrite (BaFe) particles. The ultra-fine barium-ferrite magnetic medium enables high-density data recording without the use of expensive "metal sputtering" or evaporation coating methods. For consumer use, though, the tape drives worked up by IBM and Fujifilm teams won't be seen for some time. Tape drives generally are known for their time constraints. Accessing data off a tape takes longer than with hard drives. IBM is addressing the limitation, hoping to get the tapes to the point where the process will be comparable to disc drives.

Beyond the SKA project, and as work progresses, ultra-dense tape drives are seen as having an important place potentially in the future of data centers, as a smarter solution to [data storage](#). Data centers with their disc drives in large arrays tend to remain powered up; their platters spin continuously. Data centers based on disc drive arrays use over 200 times more power than would a tape library of similar size, according to The Clipper Group consultancy. Tape drives only use power when they are being read or recorded on. While data centers are choked for space, the tape can fit more storage into a smaller space, as the IBM and FUJIFILM prototype has shown.

More information: [www.newscientist.com/article/m ... ig-data-](http://www.newscientist.com/article/m...ig-data-)

[storage.html](#)

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