Multilevel optical storage in tunable photonic crystal cavities

Technology #cu13168

This technology is a high-dimensional holographic data storage method that uses cavity reflections to store information. The cavity consists of a material membrane patterned with holes that yield a refractivity spectrum when probed with an optical field. Because of the nature of this refractivity, one cavity, as small as one micron, can store many bits of information. A photochromic film allows the cavity to change the reflection spectrum, enabling effective data storage. This technology may be used in devices similar to DVDs, but with a much higher storage capacity.

Wide-spectrum light source utilization for improved data recording and storage

Most physical or optical data storage devices (such as DVDs) rely on binary systems. The technology reported here increases storage by using a non-binary system that is based on holographic optical data storage. This read, write, reset, and reverse system takes advantage of multiple cavity resonances, which is an improvement upon binary systems because they have more possible states. It is estimated that this technology could result in 100 GB of data storage per square inch, and this could be further increased by using an even greater portion of the light spectrum.

Lead Inventor:

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Applications:

- Small-scale, portable, high capacity data storage device
- High resolution, high frame rate digital billboards
- High-speed, high-capacity communication cable
- Fast, yet comprehensive search engine/database
- Innovative artificial intelligence products (robots, memory recording toys) with enhanced learning capability
Advantages:

- Increased data storage density
- Sophisticated device design

Patent Information:

Patent Pending (WO/2014/107696 A1)

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