Three-dimensional multi-layered memory
and its prospects

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Critical problems:
- Light source
- Small, high-resolution data, short wavelength laser pulse laser
- Recording Medium (CD)
- Non-linear, high sensitivity, more producibility
- New optics design
- 3D focusing/blanking scene, active aberration correction

Appropriate application
Archive data not only for public data but also private data.

Why I chose 3D multilayered recording?

VHS: analogue vs digital?
DVD: magnetic vs optical?

Most important points for differentiation of dimensions:
3D recording: tape wound on the reel
Sequential access: 3D recording: data on the disk
Random access:

Key technology
3D recording and reading technique
Two-photon absorption
Confocal microscopy

Keyword is "nonlinearity"

Next generation optical storage should have high speed random accessibility as well as large recording capacity.
This can be done by extending the dimension from 2D to 3D.
"Indexing" and "Paging" is fundamental key techniques for enhancing the access speed.

We are already using the 3D recording as well as indexing and paging:
- 12 thousand characters/page
- 1600 pages/sheet
- 1.5 million characters
- 22.4 km in 1D
- 71 m2 in 2D
- Papers easy to handling is bound inside.