

Abstract of Patent Application

Optical Terabyte Storage

Fast optical data storage - based on confocal interferometry

In this method, Optical Terabyte Volume Storage, resp. its implementation, couples:

- The two-beam spectral interferometry with a broadband source of electromagnetic radiation, with the
- Chromatic-confocal technology, which allows diffraction-limited longitudinal splitting of foci in the memory volume.

We call this new process **Chromatic-Confocal Spectral Interferometry (CC-SI)**. The instrumentation consists of an interferometer with confocal discrimination in the beam path, followed by a spectrometer. The longitudinal chromatic splitting is achieved by a diffractive optical zone lens (DOZE) placed in the beam path of the interferometer and making use of first order diffraction.

The interferometer can take the form of a fibre-coupled interferometer with retroreflector in the fibre-coupled reference arm and with wavelength-dependent optical path difference modification by means of dispersion or diffraction.

The optical path difference in the interferometer is set in such a way as to allow, by means of spectral analysis, clearly detectable wavelets to be formed from detectable interferograms. In this manner, a spacial pattern of locally changing areas of increased and reduced reflection on a microscopic scale is being created in the optically transparent memory volume. Digital data is obtained by numerical analysis of the wavelets, in the simplest case one bit per wavelet. In this way, data located at varying depths in the storage medium can be read simultaneously.

This process achieves an extremely high data transfer rate, such as is required for example for databases or during the saving of data.

**Patentportfolio: granted Patents in DE 50 2006 003 379 / EP 1846923 B1 valid in GB, FR, CH
US-Patentapplication 2008-0151253-A1**

Technology Offer

TLB GmbH commercializes this technology and offers interested companies the opportunity to acquire an appropriate license.

For further information contact:

Dr.-Ing. Florian Schwabe
fschwabe@tlb.de
Technologie-Lizenz-Büro (TLB)
der Baden-Württembergischen Hochschulen GmbH
Ettlinger Straße 25, D-76137 Karlsruhe
Tel. 0721 79004-0, Fax 0721 79004-79
info@tlb.de, www.tlb.de

