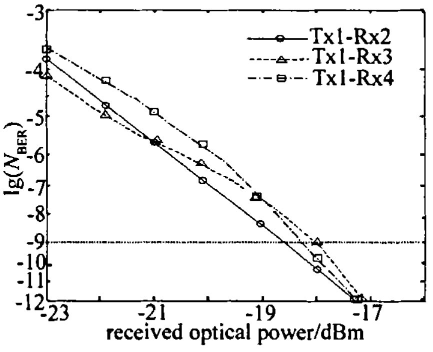

Fig. 12 BER results

Taking Tx1 transmitting signal as an example, when an optical packet enters the optical header ex2 tractor OHE (see Fig. 5), the pulses of the header can be separated according to their wavelengths. Af2 ter received by optical detector D_0 to D_2 respectively, the header pulses are converted to electronic signal, and the address information can be identified. Then, processor controls the OHE to lead the optical payload to the optical switching matrix and at the same time controls the switch matrix to select optical routing and transfer the payload to pre2determined receiving terminator.

Fig. 11 shows the experimental result of the herder spectrum, and Fig. 12 is results of BER measurement. The BERs between terminators were less than 10^{-9} at a received power of about - 18dBm. The simplified principle experiment proves the practicability of multi2wavelength optical label packet switching.

4 Conclusion

As wavelength is an easily recognized optical parameter, multi2wavelength optical label header can be processed comparatively easy and is of powerful anti2interference ability. In this in2band MKOLPS, the multi2wavelength header labeled by several optical pulses at different wavelengths in the same optical communication channel band as optical payload does not occupy extra wavelength channel and can carry a great deal of routing information. The optical trans2 mitter, receiver and switching node, including header generation, packet formation and route processing can be realized. With the progress of optical signal pro2 cessing technology, this kind of optical signal header may be arbitrated all in optical domain (an all optical processed MKOLPS is under study in our laborato2 ry), and the optical switching adopting in2band multi2 wavelength optical label is a promising sort of optical switching technology in all2optical processing with higher speed.

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#简 讯#

层叠式体积全息照相术

体积全息照相通常通过将光敏物质曝光在干涉光下得到。阿拉巴马大学的研究人员另辟蹊径, 通过层叠二进制光栅, 每次产生一径束来形成体积全息。二进制光栅之间的间隔代表布喇格平面。一个典型的全息照相包含 3 个高反射率的 TiO_2 光栅, 用 SU28(一种低折射率聚合物材料) 相互隔离。底部光栅置于玻璃基底上。整个制作过程中最具挑战性的便是光栅层之间的间隔。要获得合适的间隔, 采用了一种针对接触面准直器的高精度层准直技术, 该项技术利用了制造于底层上的光栅和照相复制光栅之间的衍射。这样, 间隔便极易控制在 100nm 公差范围之内, 但是层间距还不能非常理想地控制。用 2.05Lm 的光来检测体积全息照相, 以确定其角灵敏度。测得的峰值衍射效率超过了 80%, 但对光栅层之间的菲涅耳反射非常敏感。这种类型的全息照相术可以用作相干激光雷达系统中的光束反射和扫描器件。

(蒋 锐 叶大华 供稿)