

ABSTRACTOPTICALLY ENCODED SIGNALS

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In a method of recognising an optically encoded binary word, the word is chosen from a subset of binary words for which

$$W \otimes T = 0 \quad \text{if } W = T$$

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$$W \otimes T = 1 \quad \text{if } W \neq T$$

is true, where T is the target word, W is the word to be compared and $\otimes$ is the operation

$$\sum_{i=1}^n (w_i \cdot \bar{t}_i)$$

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The word is recognised by carrying out in the optical domain a bit-wise Boolean AND operation. The operation is carried out on the word to be recognised and the complement of the target word.

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The AND operation may be carried out by introducing the word to be recognised and the target word into a non-linear crystal and detecting the second harmonic output from the crystal. The complement of the target word may be generated by a fixed word-forming network. The method may be applied to recognising the address of a packet on an optical network.

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This Sheet Has Been Replaced

