TITLE OF INVENTION: [A PHOTONIC COMPUTING METHOD, A PHOTONIC COMPUTING ARRAY, AN OPTOELECTRONIC HYBRID COMPUTING METHOD, AND AN OPTOELECTRONIC HYBRID COMPUTING ARRAY]

ABSTRACT

The present invention relates to the field of optical computing technology, and in particular, to a method for performing a computation in an optical domain by means of a photonic computing unit, the method comprises the following steps: S101. encoding a multiplier value into a write signal; S102. using the write signal to map the multiplier value to a state of an electro-optic modulator, wherein the state corresponds to an absorption coefficient α of the optical waveguide for light that varies with different concentrations of the free carrier; S103. encoding a multiplicand value into an input signal; S104. generating an output signal intensity when the input signal passes through a doped region of the electro-optic modulator via the first optical waveguide, wherein a product of the multiplier value and the multiplicand value is encoded into the output signal intensity. Accordingly, the present invention further provides a photonic computing array, an optoelectronic hybrid computing method, and an array thereof for on-chip large-scale matrix multiplication operation.

[Fig. 1]