

Title (en)
OPTICAL MATRIX MULTIPLICATION UNIT FOR AN OPTOELECTRONIC SYSTEM FOR FORMING AN ARTIFICIAL NEURAL NETWORK

Title (de)
OPTISCHE MATRIXMULTIPLIKATIONSEINHEIT FÜR EIN OPTOELEKTRONISCHES SYSTEM ZUR BILDUNG EINES KÜNSTLICHEN NEURONALEN NETZES

Title (fr)
UNITÉ DE MULTIPLICATION DE MATRICE OPTIQUE POUR SYSTÈME OPTOÉLECTRONIQUE DESTINÉ À LA FORMATION D'UN RÉSEAU NEURONAL ARTIFICIEL

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Application
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Abstract (en)
[origin: WO2022058307A1] The invention relates to an optical matrix multiplication unit (12) for an optoelectronic system for forming an artificial neural network, having N input waveguides (14), M output waveguides (16) and a plurality of matrix multiplication unit cells (10) for signal processing of optical signals of one each of the N input waveguides (14) and for transferring the processed signals into one each of the M output waveguides (16), wherein each of the matrix multiplication unit cells (10) is allocated to one of the input waveguides (14) and one of the output waveguides (16) and undertakes a unique allocation between said two allocated waveguides (14, 16). According to the invention, each of the matrix multiplication unit cells (10) has, for signal processing and signal transfer, a directional coupler (24), having an electrooptical modulator (26) for transmission control of the directional coupler (24), interconnected between the allocated input waveguide (14) and the allocated output waveguide (16). The invention furthermore relates to a corresponding matrix multiplication unit cell (10) for such an optical matrix multiplication unit (12) and to a corresponding optoelectronic system (44) for forming an artificial neuronal network.

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