

# **All Optical Switching Operation in a Semiconductor Optical Amplifier based Mach-Zehnder Interferometer**

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## **ABSTRACT**

Optics has been used in computing for a number of years but the main emphasis has been and continues to be to link portions of computers, for communications, or more intrinsically in devices that have some optical application or component. Optical digital computers are still some years away; however a number of devices that can ultimately lead to real optical computers have already been manufactured. The most likely near-term optical computer will really be a hybrid composed of traditional architectural design along with some portions that can perform some functional operations in optical mode. In this paper design of Mach-Zehnder interferometer is shown which works as a switch. This switch can be used in designing the optical memories as well as in add-drop multiplexers. The interferometer employs bidirectional couplers and semiconductor optical amplifier in one of its arms. Interferometer acts as a very high speed switch, since it does not need any conversation from optical to electronic and vice versa.

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