

Fast zerox algorithm for routing in optical multistage interconnection networks.

Abstract

Based on the ZeroX algorithm, a fast and efficient crosstalk-free time- domain algorithm called the Fast ZeroX or shortly FastZ_X algorithm is proposed for solving optical crosstalk problem in optical Omega multistage interconnection networks. A new pre-routing technique called the inverse Conflict Matrix (iCM) is also introduced to map all possible conflicts identified between each node in the network as another representation of the standard conflict matrix commonly used in previous Zero-based algorithms. It is shown that using the new iCM, the original ZeroX algorithm is simplified, thus improved the algorithm by reducing the time to complete routing process. Through simulation modeling, the new approach yields the best performance in terms of minimal routing time in comparison to the original ZeroX algorithm as well as previous algorithms tested for comparison in this paper.

Keyword: Optical multistage interconnection networks (OMINs); Zero-based routing algorithm; Heuristics sequential increase algorithm and time domain approach.