A challenge for routing algorithms in optical multistage interconnection networks

ABSTRACT

Problem statement: A class of dynamic interconnection networks is Multistage Interconnection Networks (MINs) that connects input devices to output devices through a number of switch stages. MINs have assumed importance in recent years; because of their cost-effectiveness. Optical MINs are one type of MINs that have large transmission capacity in the communication networks. There is a major problem in Optical MIN that is crosstalk, which is caused by coupling two signals within a switching element. Approach: To avoid crosstalk in Optical MINs many algorithms have been proposed by many researchers that we review applying five routing algorithms and scheduling them in the Optical MINs. Results: The comparative results of routing algorithms show affective of avoiding crosstalk in number of passes and execution time for different algorithm. Conclusion: The challenge between these routing algorithms is thoroughly investigated, by applying them on Optical MIN and showing which algorithm has better performance to avoid crosstalk.

Keyword: Genetic algorithm (GA); Multilayer multistage interconnection networks (MLMINs); Multistage interconnection networks (MINs); Optical multistage interconnection networks; Routing algorithm; Simulated annealing (SA); Switching element; Switching elements (SEs)