Blocking and Coloring in Interconnection Networks

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Abstract

The Banyan-type networks are built by basic 2×2 directional couplers with the network structure topology derived from a horizontal expansion and vertical stacking of 2×2 Banyan networks. Some necessary and sufficient conditions of Banyan-type networks which are rearrangeably nonblocking that haves been proposed for optical interconnection network fabrics, where these rearrangeably nonblocking conditions are well-supported assuming that all the connections are not allowed to have any crosstalk. In this talk, we use the coloring methods to study the necessary and sufficient conditions for Banyan-type networks, which are rearrangeable nonblocking by considering all possible degrees of crosstalk constraints.