DISTRIBUTED RAMAN AMPLIFIER (DRA) FOR DENSE WAVELENGTH DIVISION MULTIPLEXING (DWDM) NETWORKS.

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ABSTRACT

This project is to study on Distributed Raman amplifier (DRA) characteristic and the performance for gain control amplification to be applied in the next optical networks by changing the fiber length. From the simulation the optimum fiber length is 50km and the gain is 5.41dB. Next, to study on DRA for Dense Wavelength Division Multiplexing (DWDM) networks characteristic also in terms of gain and noise figure. Modern Dense Wavelength Division Multiplexing (DWDM) optical networks consist of add/drop elements can enhance the flexibility and capacity of the network. Through the careful selection of channel number, wavelength, and power of signal pumps, a greater gain can be produce. From the simulation, 64 DWDM channels were able to achieve maximum gain of 12.2dB with four pump sources. The average power of pump sources used is 140mW. Lastly, 100 nm flatten bandwidth is demonstrated by using 100 channels of pump sources. The combination of DWDM and DRA will produce flatten bandwidth between 1520nm to 1614nm. The maximum gain achieved for this set up is 7 dB and the noise figure is acceptable at 8dB.

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