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Performance Configuration of Raman-EDFA Hybrid Optical Amplifier for WDM Applications (Conference Paper)

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Abstract

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A hybrid configuration of Raman amplifier and erbium-doped fiber amplifier (EDFA) is proposed to obtain a better performance in term of gain, noise figure and flat gain. It is based on the optimum parameter configuration of a singly-based Raman amplifier and EDFA. The best parameter for both amplification has been analyze in terms of its input signal power, pump power and their fiber length whereas the best erbium ion density has also been analyze in EDFA setup. All the parameters are varied to some values to get the optimum result. The simulation is done by using Optisystem 14.0 software. The hybrid amplifier consists of Raman amplifier with multi-pump power set up and bidirectional pump power of EDFA with the pump wavelength of 980 nm is designed and simulated in order to obtain higher gain and lower noise figure. From the simulation of the hybrid configuration, the optimum output has been achieved. The hybrid configurations exhibit the average gain of 46 dB and average noise figure of 3 dB. The flat gain obtained is between 1530 nm to 1600 nm which include C-Band and L-Band frequency with the gain bandwidth of 70 nm.

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