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| **Title:** | Optimized Gain Performance Analysis of Erbium Doped Fiber Amplifier | | | |
| **Author(s) Name:** | Md. Sajid Hossain and **Rinku Basak** | | | |
| **Contact Email(s):** | rinku@aiub.edu | | | |
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| **Abstract:** |  |
| This paper aims to present the gain characteristics of Erbium Doped Fiber Amplifier. EDFA gain characteristics have been investigated by analyzing gain equations and also solving the rate equations of the system. Various simulation of the gain characteristics are performed by varying different parameters such as signal wavelength, pump power, input signal power, doping density etc. of EDFA by using MATLAB v7.10 simulation tool. The analysis provides an insight into the features of EDFA for improving the gain performance by varying different parameters. It is seen that by varying doped fiber length up to 10 m, maximum gain of 41 dB can be achieved at pump power of 120 mW. It is also seen from the simulation that gain reaches to the saturation level at around 150 mW of pump power. So, after the increase of the pump power there is very negligible change of gain characteristics. But the effect of variation of doped fiber length has significant effect on the gain characteristics of EDFA. | |