Few Mode EDFA Simulations for Space Division Multiplexing

FM-EDFA Solver Module

Design and Simulation of Few Mode EDFA for Space Division Multiplexing

Module Overview

FM-EDFA (Few Mode – Erbium Doped Fiber Amplifier) Solver Module can be used to calculate gains of all Individual modes or a group of selected modes with arbitrary input powers of few mode two layered and multilayered fiber amplifiers used for next generation space division multiplexed fiber optic communication systems.

Simulation Features

Flexibility to simulate gains of a group of selected number of signal modes simultaneously with assigned arbitrary input powers
Flexibility to choose a group of selected number of pump modes simultaneously with assigned arbitrary input powers

Simulate all the Supported Signal Modes (even and odd modes)
Simulate all the Supported Pump Modes (even and odd modes)

Simulate Gain v/s Fiber Length for a given Total Pump Power
Simulate Gain v/s Total Pump power for a given Fiber Length

Post Process Output Data Files as per Your Requirements
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Doped Fiber Types Simulation Features

General Er-doped Fiber Solver for

Standard Two Layered Step Index Profiles
Multilayered Profiles with Any Arbitrary Number of Core and Cladding Layers
Annular Er-doped Ringed Profiles in the Layer
Er-doped Outer Layered Profiles

Following Universal Input Parameters are Needed

Refractive index profile in each layer with the respective radial positions (um)
Signal wavelength (um) and pump wavelength (um)
Radial doped region of Erbium ions (um)
Erbium ion concentration (m^-3)
Spontaneous emission life time (s)
Absorption and emission cross sections (m^2) at signal wavelength
Absorption and emission cross sections (m^2) at pump wavelength
Fiber length (m)

Following Plots can be Generated

Refractive index profile of the fiber with doped region

Intensity profiles of LPlm signal modes
Intensity profiles of LPlm pump modes

At a given Pump Power (mw): Gain (dB) vs. fiber length (m) for all the even signal modes
At a given Pump Power (mw): Gain (dB) vs. fiber length (m) for all the odd signal modes

At a given Fiber Length (m) : Gain (dB) vs. pump power (m) for all the even signal modes
At a given Fiber Length (m) : Gain (dB) vs. pump power (m) for all the odd signal modes

Generate more EDFA Characteristics Plots as per your Requirements