

Experimental Investigation of pump propagating direction in double-pass Er³⁺-doped fiber amplifiers

ABSTRACT

In this paper, the impacts of pump propagating direction in double-pass Erbium-doped fiber amplifier are experimentally demonstrated. The double-pass optical amplifier architecture is constructed using a fiber loop mirror that consists of a circulator to reflect the amplified signal back into the Erbium-doped fiber. The gain and noise figure performance of the double-pass optical amplifier is not affected by the direction of pump light, forward- or backward-pumped scheme. The population inversion along the Erbium-doped fiber is locked to a specific fraction due to the double-pass amplification of the signal.

Keyword: Erbium; Optical amplifier; Double-pass