

Multiple Brillouin Stokes generation utilizing a linear cavity Erbium-doped fibre laser

ABSTRACT

This paper reports the design of a multiwavelength fiber laser source that utilizes a linear cavity of hybrid Brillouin/Erbium fiber laser (BEFL). The output power, threshold power and free running cavity modes were investigated against the pump powers. The structure exhibited low threshold operation of 4 mW at 2.3 mW injected Brillouin pump power. The optimization of Brillouin pump wavelength, power and Erbium gain led to a maximum possible number of channels generated. Simultaneous and stable operation of 21 channels with 10.88 GHz channels spacing were obtained from this architecture at 1 mW injected Brillouin pump power and 90 mW Erbium doped fiber pump power in the 1555 nm region.

Keyword: Brillouin stokes; Erbium; Fiber lasers; Multiwavelength laser source; Optical communications; Stimulated Brillouin scatter