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A Multi-Wavelength Brillouin Erbium Fiber Laser With Double Brillouin Frequency Spacing and Q-Switching Characteristics

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A multiwavelength Brillouin Erbium fiber laser (MWBEFL) with double brillouin frequency spacing and Q-switching characteristics is demonstrated based on figure-of-eight configuration. The proposed MWBEFL uses a four-port circulator as a double-frequency shifter to isolate and circulate the odd-stokes signals through the Brillouin gain medium. Multiwavelength combs with 14 and 8 lasing lines and spacing of 0.16 nm are obtained by the use of 10-km long nonzero dispersion shifted fiber (NZDSF) and 2-km long dispersion compensating fiber (DCF), respectively. The Q-switched pulse trains are obtained in the proposed MWBEFL at 1480-nm pump power within 29 to 40 mW. It has repetition rates of 20.4 and 104.2 kHz with the corresponding pulse widths of 3.84 and 1.03 μ s using the NZDSF and DCF, respectively, as the gain medium.

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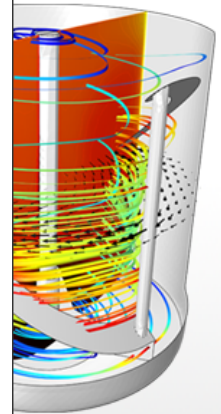
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