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Frequency switching multiwavelength Brillouin Raman fibre laser based on feedback power adjustment technique (Article)

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Abstract

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A simple switchable multiwavelength Brillouin – Raman fibre laser (BRFL) was demonstrated. The laser was arranged in a half-open cavity configuration including a physical mirror device with an adjustable reflectivity at one side of the laser cavity. The impact of the feedback power adjustment on frequency switching was carried out by comparing the peak power difference between odd- and even-order Stokes lines. Up to 468 flat-amplitude lines with a 10 GHz frequency spacing and average optical signal to noise ratio (OSNR) of 33 dB were observed with mirror reflectivity values of ~15% up to 60% at a 1534 nm Brillouin pump power of 7 dBm and 0.9 W Raman pump power of 0.9 W. – Under the same pumping conditions, setting the mirror reflectivity at its OFF state (where reflectivity is nearly 0%) allows for up to 242 lines with 20 GHz spacing to be realized, with ONSR values of ~35 dB. © 2020, © 2020 Informa UK Limited, trading as Taylor & Francis Group.

SciVal Topic Prominence

Topic: Erbium-Doped Fiber | Ring Lasers | Thulium

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Author keywords

Fiber laser | multi-wavelength Brillouin - Raman fibre laser | Raman amplifier | reflectivity | Reflector

Indexed keywords

Engineering controlled terms: Fiber lasers | Reflection | Signal to noise ratio

Engineering uncontrolled terms: Frequency switching | Mirror reflectivity | Multiwavelength | Optical signal to noise ratio | Power adjustments | Pumping condition | Raman fibre lasers | Switchable multi wavelengths

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