

Effect of double-pass and single-pass architecture in Brillouin-Raman fiber laser

ABSTRACT

We experimentally investigate effect of double pass and single pass configuration in multi-wavelength Brillouin-Raman fiber laser in a linear cavity. Up to 110 flat amplitude multi-wavelengths Brillouin Stokes with spacing of 0.16 nm within wavelength range of 1554 to 1570 nm in single pass configuration are generated. The generated wavelengths with OSNR 25 dB compared with that of double pass architecture. Single space configuration has a superior performance due to double line spacing, higher OSNR, wider bandwidth and high stability than that of double pass configuration. Lasing lines in double pass has 0.08 nm space due to the increment of Rayleigh scattering in double pass configuration.

Keyword: Brillouin spectra; Raman lasers; Fibre lasers; Laser cavity resonators; Spectral line breadth