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Title: Widely Tuneable Dual-Wavelength Operation of a Highly Doped Erbium Fiber Laser Based on Diffraction Gratings
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Abstract: We present, discuss, and compare several schemes for tuneable dual-wavelength operation of a highly doped erbium fiber laser with adjustable frequency difference. The different schemes are all based on external optical feedback with different diffraction grating configurations. Each wavelength can be tuned between 1528 and 1569 nm limited by the fiber gain spectrum, enabling a wavelength separation between 0 and 34 nm in dual-wavelength operation. Laser linewidths as narrow as 0.04 nm (limited by the instrumentation resolution) can be achieved depending on the grating configuration used.