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Optical frequency comb generation utilizing Mach-Zehnder modulator and multi-laser sources

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We investigate a wideband optical frequency comb generator based on multi-laser sources and a single-stage Mach-Zehnder modulator. The generated comb lines were successfully increased as compared with a single laser. In this paper, we propose a new technique to increase the generated comb lines by using multi-laser sources injected simultaneously into an MZM. We also provide a simple equation to correctly define the wavelength of each laser source needed to duplicate the comb signal without a gap. The preliminary results show

the multiplicative growth of the generated comb lines as a function of the number of launched laser sources. A new technique for generating a wideband optical frequency comb based on multi-laser sources and a single MZM has been proposed and simulated. As more and more laser sources are launched simultaneously using a WDM multiplexing system, more OFCG signal bandwidth achieved accordingly.

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