220.Title: Generation of Flat Optical Frequency Comb by Fiber Loop Modulation

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Abstract: We propose a novel flat optical frequency comb generation system that employs fiber loop modulation and experimentally demonstrate its operation. Generally, when an external laser beam is injected into a fiber loop system including an optical modulator and an amplifying medium, multiple sidebands are generated exponentially. On the other hand, the fiber loop starts mode-locked oscillation at a center frequency to maximize the round-trip gain in the fiber loop from the seeds of the injected laser sidebands. By locking the sidebands from fiber loop modulation with the mode-locked oscillation in the fiber loop, the synchronous spectrum between the mode-locked oscillation and the sidebands can be shaped into a flat spectrum. Thus, a flat optical frequency comb with a flatness of about +/- 1dB is obtained in the spectral bandwidth of about 1 THz.