



Technology Offer

Method and apparatus for optical frequency comb generation using a monolithic micro-resonator

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The invention relates to a monolithic optical frequency comb generator. Furthermore, the invention relates to a method of generating an optical frequency comb.

Technology

An optical frequency comb generator includes a laser device arranged for generating input laser light having a predetermined input light frequency, a dielectric micro-resonator having a cavity exhibiting a third order nonlinearity, so that the micro-resonator is capable of optical parametric generation providing parametrically generated light, and a waveguide optically coupled to the micro-resonator, the waveguide being arranged for in-coupling the input laser light into the micro-resonator and out-coupling the parametrically generated light out of the micro-resonator, wherein the laser device, the waveguide and the micro-resonator being arranged for resonantly in-coupling the laser input light to a mode of the micro-resonator with a minimum power level so that an optical field inside the cavity exceeds a predetermined cascaded parametric oscillation threshold at which the parametrically generated light includes frequencies of frequency sidebands of the input light frequency and of the sidebands thereof.

Patent Information

- US Patent US7982944, Priority Date: May 4, 2007.
- EP Patent (DE, GB, FR) EP1988425, Priority: Date May 4, 2007.

Literature

Generation of an Optical Frequency Comb from a Monolithic Micro-Resonator via the Kerr Nonlinearity

Pascal Del'Haye, Albert Schliesser, Tobias Wilken, Ronald Holzwarth, and Tobias Kippenberg

<http://dx.doi.org/10.1364/CQO.2007.CMI41>

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