

145.

Accession number:20113714319557

Title:Octave-spanning frequency comb generation in a silicon nitride chip

Authors:Okawachi, Yoshitomo (1); Saha, Kasturi (1); Levy, Jacob S. (2); Wen, Y. Henry (1); Lipson, Michal (2); Gaeta, Alexander L. (1)

Author affiliation:(1) School of Applied and Engineering Physics, Cornell University, Ithaca, NY 14853, United States; (2) School of Electrical and Computer Engineering, Cornell University, Ithaca, NY 14853, United States; (3) Kavli Institute at Cornell for Nanoscale Science, Cornell University, Ithaca, NY 14853, United States

Corresponding author:Okawachi, Y.(yo22@cornell.edu)

Source title:Optics Letters

Abbreviated source title:Opt. Lett.

Volume:36

Issue:17

Issue date:September 1, 2011

Publication year:2011

Pages:3398-3400

Language:English

ISSN:01469592

E-ISSN:15394794

CODEN:OPLEDP

Document type:Journal article (JA)

Publisher:Optical Society of America, 2010 Massachusetts Avenue NW, Washington, DC 20036-1023, United States

Abstract:We demonstrate a frequency comb spanning an octave via the parametric process of cascaded four-wave mixing in a monolithic, high-Q silicon nitride microring resonator. The comb is generated from a single-frequency pump laser at 1562nm and spans 128 THz with a spacing of 226 GHz, which can be tuned slightly with the pump power. In addition, we investigate the RF amplitude noise characteristics of the parametric comb and find that the comb can operate in a low-noise state with a 30 dB reduction in noise as the pump frequency is tuned into the cavity resonance. © 2011 Optical Society of America.