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Accession number:20123715423116
Title:Dual-wavelength optical parametric oscillator using antiresonant ring interferometer
Authors:Esteban-Martin, Adolfo (1); Ramaiah-Badarla, Venkata (1); Ebrahim-Zadeh, Majid (1)
Author affiliation:(1) ICFO-Institut de Ciencies Fotoniques, Mediterranean Technology Park, 08860 Castelldefels, Barcelona, Spain; (2) Institucio Catalana de Recerca i Estudis Avancats (ICREA), Passeig Lluis Companys 23, Barcelona 08010, Spain
Corresponding author:Esteban-Martin, A.(adolfo.esteban@icfo.es)
Source title:Laser and Photonics Reviews
Abbreviated source title:Laser Photon. Rev.
Volume:6
Issue:5
Issue date:September 2012
Publication year:2012
Pages:L7-L11
Language:English
ISSN:18638880
E-ISSN:18638899
Document type:Journal article (JA)
Publisher:Wiley-VCH Verlag, P.O. Box 101161, Weinheim, D-69451, Germany
Abstract:A novel technique for coupling of two resonant optical cavities using an antiresonant ring (ARR) interferometer is reported. By deploying two synchronously-pumped femtosecond optical parametric oscillators (OPOs), it is shown that the use of an ARR can provide an intracavity common path for the two oscillating fields, but without gain coupling between the two nonlinear media. The new technique permits the generation of two signal (idler) wavelengths, which can be independently and arbitrarily varied across the OPO tuning range. The absence of gain coupling also enables unrestricted and uninterrupted tuning through wavelength degeneracy at any arbitrary point within the OPO tuning range. It is shown that signal wavelength pairs tunable across 1500-1580 nm, corresponding to a frequency separation from ∼ 10 THz down to exact degeneracy, can be generated from the coupled OPOs, limited only by the reflectivity of the available mirrors. © 2012 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.
Number of references:19
Main heading:Optical parametric oscillators
Controlled terms:Interferometers - Interferometry - Laser tuning - Lasers - Optical resonators
Uncontrolled terms:Antiresonant - Arbitrary points - Common path - Dual-wavelength - Femtosecond optical parametric oscillators - Frequency separation - Gain coupling - Intracavities - Non-linear devices - Non-linear media - Novel techniques - Optical cavities - Oscillating fields - Ring interferometers - Signal wavelength - Tuning ranges - Ultrafast optics
Classification code:744.1 Lasers, General - 744.9 Laser Applications - 941.3 Optical Instruments - 941.4 Optical Variables Measurements
DOI:10.1002/lpor.201200018
Database:Compendex