LICENSING OPPORTUNITY: DIRECT DIGITAL CHIRP SYNTHESIZER AND GENERATING A CHIRPED OPTICAL FREQUENCY COMB

DESCRIPTION

Problem

Previous methods for generating chirped optical frequency combs relied on complicated and costly arbitrary waveform generators.

Invention

A new approach for electro-optic frequency comb generation which overcomes the high cost, size, and power consumption of arbitrary waveform generators while offering higher frequency agility.

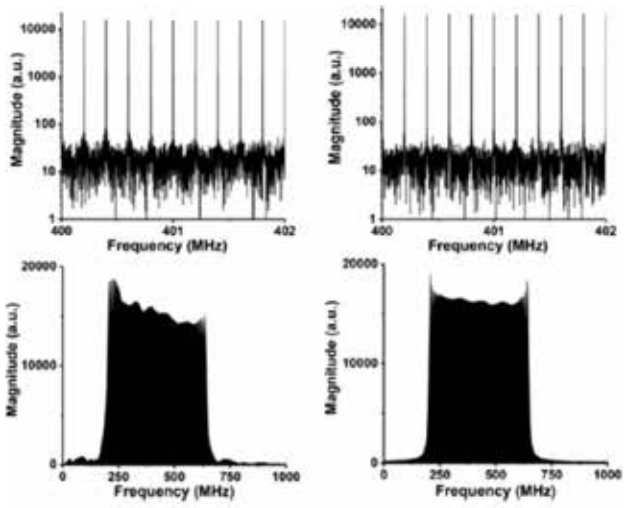
BENEFITS

Commercial Application

This invention can be utilized to perform a wide variety of measurements including molecular and atomic spectroscopy as well as physical metrology for applications such as pressure, temperature, vibration, sound, ultrasound, and numerous other areas.

Competitive Advantage

This approach is far more inexpensive than previously demonstrated approaches which rely upon arbitrary waveform generators. In addition, it does not require the transfer of large time records which limit the frequency agility and flexibility of the method. Further, coherent operation and coherent averaging have been demonstrated which allow for facile averaging.



Typical radiofrequency combs generated by a direct digital synthesizer (left two panels) and an arbitrary waveform generator (right two panels). The far more expensive arbitrary waveform generator produces combs that are only marginally flatter than the direct digital synthesizer. After normalization, both combs result in similar spectroscopic signal-to-noise ratios.

Contact: licensing@nist.gov

NIST TECHNOLOGY PARTNERSHIPS OFFICE

NIST Technology Partnerships Office
National Institute of Standards and Technology
100 Bureau Drive, Gaithersburg, MD 20899-2200