# Abstracts

## Photonic time stretch and its application to analog-to-digital conversion

*F. Coppinger, A.S. Bhushan and B. Jalali. "Photonic time stretch and its application to analog-to-digital conversion." 1999 Transactions on Microwave Theory and Techniques 47.7 (Jul. 1999, Part II [T-MTT] (Special Issue on Microwave and Millimeter-Wave Photonics)): 1309-1314.*

We demonstrate a new concept for analog-to-digital (A/D) conversion based on photonic time stretch. The analog electrical signal is intensity modulated on a chirp optical waveform generated by dispersing an ultrashort pulse. The modulated chirped waveform is dispersed in an optical fiber, leading to the stretching of its envelope. We have derived analytical expressions for the stretch factor and the resolution of the system. An analog-to-digital converter (ADC) consisting of the photonic time-stretch preprocessor and a 1-Gsample/s electronic ADC is demonstrated. This technique is promising for A/D conversion of ultrafast signals and, hence, for realization of the digital receiver.

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