

Brillouin slow light: substantial optical delay in the second-order Brillouin gain spectrum

ABSTRACT

We experimentally demonstrate optical delay in the second-order Brillouin gain spectrum by incorporating a double Brillouin-frequency shifter into the system. By coinciding the seed signal with the second-order Brillouin gain spectrum, it was found that the seed signal experienced significantly larger delay as compared to the Brillouin slow light generated from the first-order Brillouin spectrum. At a Brillouin gain of 17 dB, the delay was found to be at maximum of 60 ns. This widens the window of promising opportunities into the deployment of all optical tunable delay into the existing optical signal processing.

Keyword: Brillouin; Brillouin gain; Brillouin gain spectrum; First-order; Optical delay; Second orders