

Quantum Physics

Slow light of an amplitude modulated Gaussian pulse in electromagnetically induced transparency medium

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The slow light effects of an amplitude modulated Gaussian (AMG) pulse in a cesium atomic vapor are presented. In a single- λ type electromagnetically induced transparency (EIT) medium, more severe distortion is observed for an AMG pulse than a Gaussian one. Using Fourier spectrum analysis, we find that the distortion, as well as the loss, is dominantly caused by linear absorption than dispersion. Accordingly, a compensation method is proposed to reshape the slow light pulse based on the transmission spectrum. In addition, we find a novel way to obtain simultaneous slow and fast light.

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