Numerical Examination of Structural Slow-Light Delays in Fiber Bragg Gratings of Varied Parameters

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Abstract. Fiber Bragg gratings designed specifically for controlling the group velocity of light have been extensively studied in recent years to explore and improve their properties. Use of slow-light fiber Bragg gratings (FBGs) is increasingly recognized as an important component in the optical telecommunication networks, and plays a key role in resolving a problem of buffering of optical signals. This paper analyzes the slow light mechanism in FBG theoretically, explores the influences of different parameters of FBG on the characteristics of slow light by numerical simulation, and discusses the requirements for achieving large group delays.