

NUMERICAL STUDY OF THE PROPAGATION OF TWO CHIRPED VECTOR SOLITONS IN BIREFRINGENT OPTICAL FIBERS WITH VARIABLE COEFFICIENTS

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Abstract : In this work, we study numerically the propagation of two chirped optical vector solitons in birefringent optical fibers with variable coefficients using the compact split step Padé scheme (CSSPS). In the case of one managed chirped vector soliton, a negative chirp makes the vector soliton broadening, while; a positive chirp leads to a vector soliton compression. The effect of the chirp on the vector soliton temporal width of an amplification system ($\gamma > 0$) is greater than that in a loss system ($\gamma < 0$). The evolution of two managed chirped vector solitons is submitted not only to the effect of the chirp, but also to the interaction between the adjacent vector solitons. In all the cases, the energy of each managed chirped vector soliton is conserved.

Keywords : vector solitons, chirped solitons, birefringent optical fibers, compact split step Padé scheme, coupled higher-order nonlinear Schrodinger equations with variable coefficients, temporal waveform.