

## Self-Steepening and Third-Order Dispersion Induced Optical Solitons in Fiber

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Abstract: Usually, one considers only the group velocity dispersion (GVD)- and self-phase modulation (SPM)-induced solitons in optic soliton communication while other higher order effects such as the third-order dispersion (TOD), self-steepening (SS), and stimulated Raman scattering are considered only perturbatively. In this paper, we study the existence of the TOD- and SS-induced soliton solutions. The existence conditions of the TOD- and SS-induced bright and dark solitons are quite different from those of the GVD- and SPM-induced solitons.

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Key words: self-steepening and third-order dispersion, optic soliton communication, bright and dark solitons

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