

Self-Induced Transparency in Dispersive Medium

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We present an integrable generalizations of the Maxwell-Bloch equations describing electromagnetic field interaction with a two-level systems implemented in a dispersive host medium. To derive the model we use a set of realistic assumptions. Respective technique of the inverse scattering transform for the two sets of physical parameters is presented. It is found that the model posses as singular as nonsingular soliton solutions. Application of the results for a lossless nonlinear dispersion management of solitons is discussed.