

Effect of Nonlinear Gradient Terms on the Dynamics of Solitons in the Cubic-Quintic Complex Ginzburg-Landau Equation

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The modulational instability of the one-dimensional cubic-quintic complex Ginzburg-Landau equation with the nonlinear gradient terms is investigated. The presence of the nonlinear gradient terms modifies the modulational instability gain spectrum. We numerically investigate the dynamics of modulational instability in the presence of the nonlinear gradient terms. It is found that they introduce more interactions (both elastic and inelastic) dynamics to the solitons generated by the modulational instability. The signs of the gradient terms determine the propagation direction of the soliton. – PACS numbers: 42.65.Tg, 42.81Dp, 42.65.Sf.

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