Dynamics of Paired Bright Solitons Induced by the Modulational Instability of Two-component Bose-Einstein Condensates

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We investigate numerically the dynamics of paired bright solitons induced by the modulational instability of two-component Bose-Einstein condensates. We derive the analytic gain spectrum by the modulational instability in terms of the interspecies and intraspecies scattering constants and classify the region where the instability occurs. The constraints on the interspecies and intraspecies scattering constants for the existence of the paired bright solitons are found. Using numerical simulations, it is shown that the paired bright solitons induced by the modulational instability exhibit complicated dynamical behaviors depending on the sign and strength of the interspecies and intraspecies scattering constants. – PACS numbers: 03.75.Fi, 05.30.Jp, 32.80Pj, 67.90.+z

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