

Solitons in multicomponent nonlinear Schrödinger equations

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Motivated by experimental observations, as well as by a large volume of the theoretical and computational studies in the physics of atomic Bose-Einstein condensates [1], we study multicomponent nonlinear Schrödinger equations, and the localized structures that they support [2]. We focus on dark-bright and dark-dark solitons in one-dimensional, two-component Hamiltonian models, and we also discuss variants, including three-component models arising in the description of spinor $F = 1$ condensates [3]. In all cases, connection with experiments is provided.

References

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- [3] T. M. Bersano, V. Gokhroo, M. A. Khamsehchi, J. D'Ambroise, D. J. Frantzeskakis, P. Engels, and P. G. Kevrekidis, Three-component soliton states in spinor $F = 1$ Bose-Einstein condensates, *Phys. Rev. Lett.* **120**, 063202 (2018).