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**Splitting of coupled bright solitons in two-component Bose-Einstein condensates under parametric perturbation.** (English) [Zbl 1479.35758](#)  
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**Summary:** We analyze the dynamics of bright-bright solitons in two-component Bose-Einstein condensates (BECs) subject to parametric perturbations using the variational approach and direct numerical simulations. The system is described by a vector nonlinear Schrödinger equation (NLSE) appropriate to coupled multi-component BECs. A periodic variation of the inter-component coupling coefficient is used to explore nonlinear resonances and splitting of the coupled bright solitons. The analytical predictions are confirmed by direct numerical simulations of the vector NLSE.

**MSC:**

- [35Q55](#) NLS equations (nonlinear Schrödinger equations)
- [35Q41](#) Time-dependent Schrödinger equations and Dirac equations
- [35C08](#) Soliton solutions
- [35B20](#) Perturbations in context of PDEs
- [35B05](#) Oscillation, zeros of solutions, mean value theorems, etc. in context of PDEs
- [82D05](#) Statistical mechanics of gases
- [82C10](#) Quantum dynamics and nonequilibrium statistical mechanics (general)

**Keywords:**

[bright soliton](#); [bound state](#); [normal modes](#); [resonant splitting](#)

**Full Text:** [DOI](#)

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