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ROLE OF THE NONLINEAR COUPLING IN THE COLLISION DYNAMICS OF QUASI-PARTICLES GOVERNED BY VECTOR NLSE

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Abstract. We present a conservative fully implicit scheme using complex arithmetic for the Coupled Nonlinear Schrödinger Equations (CNLSE) which allows us to reduce the computational time fourfold. In this work we investigate collisions of solitons with no time frequency of the carrier wave in the initial configuration. We obtain various results numerically and investigate the role of nonlinear coupling on the quasi-particle dynamics. For nontrivial but moderate nonlinear coupling parameter, we find that the polarization of the system changes, but no other effects are present. For moderate and large values of the nonlinear coupling parameter, additional solitons are created during the collision of the initial ones. These seem to be new effects, not reported in the literature.

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