1158-78-127   **Michail D Todorov*** (`mtod@tu-sofia.bg`), 6111 Estelle St, San Diego, CA 92115. *Coupled System of Nonlinear Schroedinger equations: Nonlinearity and/or Integrability.*

For a coupled system of nonlinear Schroedinger equations (CSNSE) we investigate numerically the head-on collision dynamics of solitons. In the case of general elliptic polarization, exact solutions for the shapes of steadily propagating solitons are not available. We use a superposition of sech-like polarized solitons as the initial condition for investigating the soliton dynamics. We consider the interactions with and without cross-modulation, with stationary shapes and with breathers. For general nontrivial cross-modulation, a polarization shock takes place after the collision. For moderate and large alues of the nonlinear coupling parameter, additional solitons are created during the collision of the initial ones. Depending on the initial phases of the solitons, the polarizations of the system of solitons after the collision change, even for trivial cross-modulation. This sets the limits of practical validity of the celebrated Manakov solution. In the majority of cases the interaction is ostensibly inelastic: either one of the solitons virtually disappears, or additional solitons are born after the interaction. Since the Manakov system loses its full integrability when the nontrivial nonlinear coupling is present, the approach for its study is numerical. (Received February 26, 2020)