1154-35-291 **Avner Peleg*** (avpeleg@gmail.com) and **Debananda Chakraborty**. *Radiation dynamics in fast soliton collisions in the presence of nonlinear dissipation.*

We study the dynamics of emission of radiation (small-amplitude waves) in fast collisions between solitons of the nonlinear Schrödinger (NLS) equation in the presence of nonlinear dissipation, considering cubic loss as an example for the dissipation. We calculate the radiation dynamics by a perturbation technique with two small parameters: the cubic loss coefficient ϵ_3 and the reciprocal of the group velocity difference between the solitons $1/\beta$. We obtain very good agreement between the perturbation theory predictions and the results of numerical simulations with the full coupled-NLS propagation model for large β values, and good agreement for intermediate β values. Additional numerical simulations with four simplified NLS models show that the differences between perturbation theory and numerical simulations for intermediate β values are due to the effects of Kerr nonlinearity on inter-soliton interaction in the collision. Thus, our study demonstrates that the perturbation technique that was originally developed for studying radiation dynamics in fast soliton collisions in the presence of conservative perturbations can also be employed for studying soliton collisions in the presence of dissipative perturbations. (Received August 29, 2019)