

**DYNAMICS OF STRONGLY INTERACTING UNSTABLE
TWO-SOLITONS FOR GENERALIZED KORTEWEG-DE VRIES
EQUATIONS**

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Many evolution PDEs admit special solutions, called solitons, whose shape does not change in time. A multi-soliton is a solution which is close to a superposition of a finite number K of solitons placed at a large distance from each other. I am interested in describing multi-soliton dynamics for generalized Korteweg-de Vries equations. I will present a general method of formally predicting the time evolution of the centers and velocities of each soliton. Then I will discuss in detail the case $K = 2$, in particular in the regime of strong interactions, which occurs when the velocities of both solitons converge to the same value for large times. Under the additional assumption that the solitons are linearly unstable, one can show that the formal method correctly predicts the distance between the solitons for large times. I will outline this proof.