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Composite solitons for the Choi-Camassa model (C C-model) and their importance for the description of the evolution of internal waves without amplitude and velocity constraint.

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General investigation of N-soliton solution for the Choi-Camassa model (ÑÑ-model) by perturbation theory was completed. The basic importance to represent solitons with almost limiting parameters as composite structures formed by kinks of different polarities was revealed . Such a representation allows description of the evolution and interaction of solitary waves in a wide range of their amplitudes and velocities, including almost threshold ones.. It was found that the general character of soliton motion corresponds to their mutual repulsion with complete recovery of parameters on repulsion. Approximate descriptions of stationary solitons and their interaction within the framework of different nonlinear models of internal wave propagation were compared. It was found that dynamics of soliton impacts in different models is the same to an accuracy of scaling transformations (along x,t), separately for distances between the kinks forming a soliton and for distances between the nearest kinks of the neighboring solitary waves. Approximate description of intense internal wave solitons and their pair interaction was compared with observations and with direct numerical solution and showed good qualitative and quantitative agreement in amplitudes and pulse durations.

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