Erratum: “Resolution of a shock in hyperbolic systems modified by weak dispersion” [Chaos 15, 037103 (2005)]

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(Received 11 February 2006; accepted 22 February 2006; published online 11 May 2006)

[DOI: 10.1063/1.2186766]

1. Formula (23) on p. 5 should be

\[ m = 1: \quad V_2 = V_3 = \frac{1}{3}(\beta_1 + 2\beta_2), \quad V_4 = \beta_1. \]

2. On p. 13, where the problem of the decay of a step for the defocusing modified KdV [mKdV(d)] equation is considered, after formula (90), in the case (i), a wrong expression for the velocity/amplitude relationship for the mKdV soliton was used. This led to an incorrect expression for the lead soliton amplitude in the mKdV equation. Now, after simple calculation one gets

\[ \alpha^* = 2(|u_+| - |u_-|). \]

For \( u_+u_- \neq 0 \) this coincides with the KdV result (31) [to make such a comparison in the case when \( u^* > u^- \neq 0 \), the KdV equation should be taken with the negative sign for the nonlinear term, which would result in the change \( \Delta \to -\Delta \) in (31)]. The location of the mKdV(d) dispersive shock given by (89), however, is different from the respective KdV case; for the KdV equation with the same initial data one has \( |s^+ - s^-| = \frac{5}{3}(|u_+| - |u_-|)t \) rather than \( \frac{5}{3}(u_+^2 - u_-^2)t \).

Of course, these results could have been inferred from the already known periodic solution and the Riemann form of the modulation system for the mKdV(d) equation (see Ref. 1, for instance) but here they were obtained without invoking an integrable structure of the mKdV(d) equation, as an illustration of the effectiveness of the general transition relations for a dispersive shock.

The author is grateful to Tim Marchant for pointing out the error in the expression for the lead soliton amplitude in the mKdV dispersive shock.