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Derek L. Smith* (dls@math.ucsb.edu). *Propagation of regularity of solutions to quasilinear Korteweg-de Vries type equations.*

We consider solutions $u = u(x, t)$ to quasilinear equations of the form

$$\partial_t u + a(u, \partial_x u, \partial_x^2 u) \partial_x^3 u + f(u, \partial_x u, \partial_x^2 u) = 0, \quad x, t \in \mathbb{R},$$

where a and f are smooth in all variables and $1/\kappa \leq a(\dots) \leq \kappa$ for some $\kappa > 1$. Suppose that $u_0 \in H^7(\mathbb{R})$ is additionally contained in $H^k(0, \infty)$ for integer $k > 7$, that is, the function possesses k -derivatives when restricted to the half-line $(0, \infty)$. Then for positive times the solution also possesses k -derivatives on any half-line, i.e. $u(\cdot, t) \in H^k(x_0, \infty)$ for all $x_0 \in \mathbb{R}$. In other words, certain singularities travel to the left with infinite speed. This propagation of regularity result has been established for the k -generalized KdV equation and Benjamin-Ono equation; this work demonstrates that the result is more general in that it does not depend on the integrable character of the model. This result is a portion of a joint work with F. Linares and G. Ponce. (Received September 18, 2015)