

Propagation of regularity of solutions to the k-generalized Korteweg-de Vries equation

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We will discuss special regularity properties of solutions to the IVP associated to the k-generalized KdV equations. In particular, for datum $u_0 \in H^{3/4+}(\mathbb{R})$ whose restriction belongs to $H^k((b, \infty))$ for some $k \in \mathbb{Z}^+$ and $b \in \mathbb{R}$ we prove that the restriction of the corresponding solution $u(\cdot, t)$ belongs to $H^k((\beta, \infty))$ for any $\beta \in \mathbb{R}$ and any $t \in (0, T)$. Thus, this type of regularity propagates with infinite speed to its left as time evolves.