1114-35-327 **Derek L Smith*** (dls@math.ucsb.edu) and **Jun-ichi Segata**. *Propagation of regularity and persistence of decay for the fifth order Korteweg-de Vries equation.*

We consider solutions $u = u(x,t)$ to the fifth order Korteweg-de Vries (KdV) equation

$$\partial_t u - \partial_x^5 u - 30u^2\partial_x u + 20\partial_x u\partial_x^2 u + 10u\partial_x^3 u = 0, \quad x,t \in \mathbb{R},$$

corresponding to initial data $u_0(x) \in H^s(\mathbb{R}), s > 5/2$. Suppose that u_0 is additionally contained in $H^k(0,\infty)$, that is, the function possesses k-derivatives when restricted to the half-line $(0,\infty)$ for integer $k > s$. 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 was recently established for the k-generalized KdV equation by a modification of a technique used to prove Kato's local smoothing effect. We will also discuss persistence of one-sided polynomial decay, as well as an extension of both results to the KdV hierarchy. (Received September 01, 2015)