1143-35-541 **Thomas Trogdon*** (ttrogdon@math.uci.edu), University of California, Irvine, Rowland Hall, Irvine, CA 92697-3875. *The construction and evaluation of shock wave solutions to the KdV equation and a linear KdV-like equation.*

We consider the problem of computing the inverse scattering transform for the KdV equation on $\mathbb{R}$ when the initial data $q_0(x)$ satisfies $\lim_{x\to+\infty} q_0(x) \neq \lim_{x\to-\infty} q_0(x)$. We build on the work of Cohen and Kappeler (1985) and Andreiev et al. (2016). In particular, we demonstrate how the use of both left and right reflection coefficients is necessary, in contrast to decaying initial data. Properties of this solution motivate a linearization that shares non-trivial structure with its nonlinear counterpart. This is joint work with Deniz Bilman, Dave Smith and Vishal Vasan. (Received August 21, 2018)