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Nan Jiang* (njiang@usd.edu), 414 E. Clark St., Vermillion, SD 57069. *On the Convergence of α Schemes*. Preliminary report.

An orderly procedure of constructing families of α and β schemes, to approximate homogeneous conservation laws, was introduced by S. Osher and S. Chakravarthy (1985,1986). Among these schemes, we are interested in the entropy consistence of the semi-discrete α schemes in the context of approximating scalar conservation laws. In general α schemes, for $0 < \alpha \leq \frac{1}{2}$ and $m = 2, 3 \dots, 8$, are $2m - 2$ order accurate methods. However when $\alpha = \frac{2}{m} \binom{2m}{m}^{-1}$, we obtain one order higher, i.e. $2m - 1$ order, accurate schemes. Although, for the homogeneous conservation laws, Osher and Chakravarthy were able to show the total variation diminishing (TVD) property of these schemes, the entropy convergence of the schemes has been open. In this paper, for all admissible values of α and $m = 2$, we extend α schemes to approximate the non-homogeneous convex conservation laws, which in general are total variation bounded (TVB). Finally, using one of our convergence criteria (2003), we have established the entropy convergence for both the original and extended α schemes. (Received September 13, 2012)