1099-35-104 **Alexey Miroshnikov***, miroshnikov@math.umass.edu, and **Konstantina Trivisa**, trivisa@math.umd.edu. *Relative Entropy in Hyperbolic Relaxation of Balance Laws.*

We present a general framework for the approximation of systems of hyperbolic balance laws. The novelty of the analysis lies on the construction of suitable relaxation systems and the derivation of a relative entropy identity. We provide a direct proof of convergence in the smooth regime for a wide class of physical systems. We present results for systems arising in materials science, where the presence of source terms presents a number of additional challenges and requires delicate treatment. Our analysis is in the spirit and continuity of the previous work of A. Tzavaras (Comm. Math. Sci. 2005) for systems of hyperbolic conservation laws. (Received February 01, 2014)