1128-49-135 **Robert M. Hardt*** (hardt@rice.edu), Rice University. *Some network flows optimizing ramified transport.* Preliminary report.

Suppose A and B are finite sums of atoms in R^n with the same total weights and T is an oriented finite mass network going from A to B. Thus, $\partial T = B - A$. Various segments of T may have different multiplicities and the mass $M(T)$ can be found by integrating the multiplicity function θ_T over the network. Q. Xia (2003) used, for $0 < \alpha < 1$, a different mass $M_\alpha(T)$ obtained by integrating $(\theta_T)^\alpha$ over the network T. Here M_α minimization favors higher multiplicity segments (See the text [Bernot-Caselles-Morel]). C.Downes recently constructed an M_a decreasing network flow T_t in analogy to the (ordinary mass) M decreasing flows of rectifiable currents of X. Cheng (1993) or Almgren-Taylor-Wang (1993) . In research with C.Downes and J.Wu, we consider time-parameterized versions of such networks, which give some models for optimal transport "routings or schedules". Some higher order functionals lead to networks with C^1 junctures, like train tracks. We will discuss briefly existence and regularity of minimizers and flows. (Received February 22, 2017)