1107-05-502 Farhad Shahrokhi* (farhad@cse.unt.edu). Crossing Number and Congestion of Tree Decompositions. Preliminary report.

Let H = (V, E) be a hypergraph on vertex set V and the edge set E. Define the *congestion* of H, denoted by $\mu(H)$, to be the maximum minimum cardinality of any edge, where the maximum is taken overall subhypergraphs of H. The congestion can be shown to be the dual parameter to the *degeneracy* of a hypergraph. Now let G = (V, E) be a graph and let T be a tree decomposition of G. Clearly, T is a hypergraph on the vertex set V whose edges are *bags* of T. We establish a connection between the crossing number of G and the congestion of T, or $\mu(T)$, that generalizes and strengthens some of the existing results for the crossing numbers. (Received January 20, 2015)