998-49-121   **Qinglan Xia*** (`qlxia@math.utexas.edu`), Department of Mathematics, University of Texas at Austin, Austin, TX 78712. *The formation of tree leaf.* Preliminary report.

Tree leaf have diverse and elaborate leaf venation patterns and shapes. It is interesting to understand the mathematics behind it. In this talk, I am going to provide a mathematical model to formulate leaf venation patterns as well as their shapes. In the model, cells aggregated in a way to build an efficient transport system for leaf. The efficient transport system of tree leaf build here is a modified version of optimal transport paths, which is used to study the phenomenon of ramifying structures in mass transportation. Some computer visualization of tree leave will be provided at the end of the talk. These figures resemble many tree leaf (like maples) well. Different parameters will grow into tree leave of various shapes. Unlike other models, the shapes of tree leaf are not predefined here. Also, unlike the diffusuin limited aggregation model, the aggregation of cells here are based on one of the basic functions of tree leaf: to build an efficient transport system. (Received February 19, 2004)