1086-52-2058 **Md. Jawaherul Alam*** (mjalam@cs.arizona.edu), 3528 East 2nd Street # 74, Tucson, AZ 85716, and **James R. Ashe** (jashe@math.utk.edu), **Michael Dobbins** (athmwiji@gmail.com), **Muriel Dulieu** (mdulieu@gmail.com) and **Justin Iwerks** (jiwerks@gmail.com). *Tetrahedron Contact Graphs.* Preliminary report.

We explore a problem posed by Joseph O'Rourke which asks to characterize tetrahedron contact graphs, i.e. the class of undirected simple graphs that can be realized as arrangements of interior-disjoint intersections of tetrahedra. More precisely, in such a representation of a graph G, the vertices of G are represented by interior-disjoint tetrahedra and each edge of G corresponds to a shared boundary between the two corresponding tetrahedra such that for each edge one can specify a unique point on the common boundary. We studied this problem for different variants where we considered contacts between only regular tetrahedra, or general (possibly) irregular tetrahedra; along with a more restricted contact model that requires vertex-to-vertex touching for each edge. We give some preliminary results in different variants of the problem. For example, using irregular tetrahedra in the general contact model, we can realize any complete graph K_n for $n \leq 10$ as well as any complete tripartite graph. For regular tetrahedra in the vertex-to-vertex model we demonstrate that K_n can be realized for $n \leq 4$, but K_5 is not realizable. (Received September 24, 2012)