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## An Introduction to Threshold Graphs

### Abstract for the Combinatorics Seminar 2014 April 1

Threshold graphs were first introduced by Chvatal and Hammer to distinguish cliques of a graph in a polyedral representation. A threshold graph is a graph  $G$ , for which there exist non-negative real weights  $w_v$  for each vertex  $v$  and a threshold number  $t$ , such that for distinct vertices  $x$  and  $y$ ,  $xy$  is an edge in  $G$  if and only if  $w_x + w_y > t$ . They are important partly because they are “perfect”, but also for other reasons.

I will provide and prove several different characterizations of these graphs, as well as discuss properties of randomly generated threshold graphs, which arise very naturally. I will finish up by discussing a new generalization, now under investigation by Vaidy Sivaraman and me.

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