Meeting: 1006, Lubbock, Texas, SS 12A, Special Session on Graph Theory

1006-05-94 **John P McSorley*** (mcsorley60@hotmail.com), Department of Mathematics, Mailcode 4408, Southern Illinois University at Carbondale, Carbondale, IL 62901-4408. *Neighborhood anti-Sperner Graphs.* Preliminary report.

Let G be a simple graph, with a finite or infinite number of vertices. For each $u \in V(G)$ let $N(u)$ denote the open neighborhood of u, *i.e.*, the set of vertices to which u is adjacent. Then if for every $u \in V(G)$ there is a $u^p \in V(G)\backslash\{u\}$ such that $N(u) \subseteq N(u^p)$ we say that G is a *neighborhood anti-Sperner (NAS) graph.*

In this talk we discuss NAS graphs: the first interesting class of examples is given by $K_{h_1,h_2,\ldots,h_p}$ where each $h_i \geq 2$, and a related family is $\{G \,|\, G = K_{h_1,h_2,\ldots,h_p} - E$ where $E \subseteq E(K_{h_1,h_2,\ldots,h_p})$ whose removal ensures that G still has at least 2 full vertices in each part$\}$. We indicate how to construct NAS graphs from smaller graphs, called neighborhood distinct (ND) graphs. Some classifications of regular NAS graphs are given. Some Cayley graphs are regular NAS graphs, those for which fix$\Omega \neq \{1\}$ where Ω is the generating set for the Cayley graph. Miscellaneous topics are also discussed. (Received February 08, 2005)