1067-05-29   **Bangteng Xu*** (`bangteng.xu@eku.edu`), Eastern Kentucky University, Richmond, KY 40475.
Common Divisor Graphs of Permutation Groups and IP-graphs of Association Schemes.

Isaacs and Praeger studied the common divisor graph of a permutation group. Their main results deal with the number of connected components of the graph, and the diameter of each nontrivial component. For a group G and its subgroup A, Kaplan proved that if A is stable in G and the common divisor graph of (A, G) has two components, then G has a nice structure. The action of G on a set X induces an association scheme (X, S). Camina introduced the IP-graph of a naturally valenced association scheme, and proved that the main results of Isaacs and Praeger are also true for the IP-graph of a naturally valenced association scheme with paired valencies equal. In this talk we will first present similar results for IP-graphs of naturally valenced association schemes without the assumption that all paired valencies are equal. These results generalize the results of Isaacs and Praeger, and Camina. Then for the IP-graph of a naturally valenced association scheme (X, S) that is stable and has two nontrivial components, we show that S has a closed subset T that has very nice properties. Applying these results to common divisor graphs of groups, we obtain the results of Kaplan as direct consequences. (Received June 03, 2010)