TEXAS ★ STATE
UNIVERSITY

The rising STAR of Texas

Discrete Mathematics Seminar

Time: Friday, December 1, 2017, 2:15-3:15 PM
Room: 237 Derrick Hall
Title: On properties of subgroups and solubility of finite groups
Speaker: Dr. Jinbao Li, Visiting Scholar, Department of Mathematics, Texas State
          University

Abstract:

It has been a long history to study the influence of *s*-permutability (or *s*-quasinormality) of subgroups on the structure of finite groups. A subgroup *H* of a group *G* is said to be *s*-permutable in *G* if *HP=PH* is a subgroup of *G* for every Sylow subgroup *P* of *G*. In recent years, this concept has been generalized by many authors, and a number of new permutability of subgroups together with new embedded properties of subgroups have been introduced and studied. For example, *H* is said to be *s*-semipermutable in *G* if for every Sylow *p*-subgroup *P* of *G* with order coprime to *|H|*, we have *PH=HP*. Recently, Isaacs investigated further the properties of *s*-semipermutable subgroups and obtained many interesting results. On the other hand, *H* is said to be complemented in *G* if *G=HK* and the intersection of *H* and *K* is trivial. P. Hall's famous result shows that a group *G* is soluble if and only if all Sylow subgroups of *G* are complemented in *G*.

In this talk, we give a generalization of subgroup properties mentioned above and present a new characterization of solubility of finite groups. Our result includes many well-known results in this area as special cases. This is a joint work with Dr. Yang.