TEXAS STATE UNIVERSITY

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Discrete Mathematics Seminar

Time: Friday, Novenber 11, 2022, 1:00 - 2:00 PM (Central Time)
Title: On the Taketa Problem
Speaker: Dr. Burcu Çınarcı, Piri Reis University
Room: 328 Derrick Hall

Abstract:

The character degrees of a finite group provide some important information about the structure of the group. A famous problem on the character degrees of a finite solvable group G is known as the Taketa Problem. This problem states that the inequality $\mathrm{dl}(G) \leq |\mathrm{cd}(G)|$ holds for a finite solvable group G, where $\mathrm{dl}(G)$ is the derived length of G and $|\mathrm{cd}(G)|$ is the cardinality of the set of all irreducible character degrees of G. Since this problem has been first conjectured by Isaacs and Seitz, it is also known as Isaacs-Seitz conjecture in the literature. Although this conjecture is still open, there have been many research articles published on the Taketa inequality. For example, Berger has shown that the conjecture is true for a group of odd order. In this talk, we show that the Taketa inequality holds for G under some sufficient conditions related to monolithic or real-valued irreducible characters of G.

Bio:

Burcu Çınarcı is Assistant Professor of Mathematics at Piri Reis University, Istanbul, Turkey. She is also a postdoctoral researcher in the Mathematics Department at Texas State University. Her research is in character theory of finite groups. She has published some papers in prestigious journals on the Taketa problem, which is a part of her doctoral studies.