1153-05-354 **Yiting Jiang** (dliu@calstatela.edu) and **Daphne Der-Fen Liu*** (dliu@calstatela.edu), Department of Math, California State University Los Angeles, Los Angeles, CA 90032, and **Yeong-Nan Yeh** and **Xuding Zhu**. *Coloring of Generalized Signed Triangle-Free Planar Graphs.*

For a graph G, let D be the digraph that replaces each edge xy by two opposite arcs $e = (x, y)$ and $e^{-1} = (y, x)$. Denote S an inverse closed subset of permutations of positive integers. An S-*signature* of D is a mapping σ which assigns to each arc of D an element in S, where $\sigma(e^{-1}) = (\sigma(e))^{-1}$. We say G is S-k-*colorable* if for every S-signature σ, there exists a mapping $f : V(G) \to [k] = \{1, 2, \ldots, k\}$ so that for every $e = (x, y)$, $\sigma(f(x)) \neq f(y)$. The notion of S-k-colorability generalizes several coloring and choosability definitions, such as DP-coloring and coloring of signed graphs. In this talk, we focus on triangle-free planar graphs, abbreviated as TFP. A set S is called *TFP-good* if every TFP is S-3-colorable. By Grötzsch's theorem that asserts every TFP is 3-choosable, every TFP is $\{id\}$-3-choosable. That is, $\{id\}$ is TFP-good. We prove: For any inverse closed subset S of S_3 which is not isomorphic to $\{id, (12)\}$, S is TFP-good if and only if either $S = \{id\}$ or there exists some $a \in [3]$ such that for each $\pi \in S$, $\pi(a) \neq a$. It remains an open question whether or not $S = \{id, (12)\}$ is TFP-good. (Received September 01, 2019)