1161-05-175 **Martin Rolek*** (mrolek1@kennesaw.edu), Department of Mathematics, 850 Polytechnic Lane, MD #9085, Marietta, GA 30060, and **Paul Scemama**. *A fractional look at Steinberg's conjecture.*

Steinberg's conjecture claims that every planar graph with no 4- or 5-cycles is 3-colorable. After significant attention in recent decades, the conjecture was finally disproved in 2017. Hope remains, however, for a fractional version of Steinberg's conjecture, which claims that every planar graph with no 4- or 5-cycles has fractional chromatic number at most 3. A graph G is $(s:t)$-*colorable* if there is a function ϕ which assigns to each vertex of G a t-element subset of $\{1, 2, \ldots, s\}$ such that $\phi(u) \cap \phi(v) = \emptyset$ whenever $uv \in E(G)$, and the *fractional chromatic number* of a graph G is $\min\{s/t : G$ is $(s:t)$-colorable$\}$. In this talk, we will discuss some relaxations of Steinberg's conjecture that have been investigated over the years, and we will look at some very recent results on fractional coloring which relate to these relaxations of Steinberg's conjecture. In particular, the authors have shown that any planar graph with no 4- or 5-cycles and no incident triangles has fractional chromatic number at most 7/2. (Received August 16, 2020)