

1125-05-2094 **sarah-marie belcastro*** (smbelcas@toroidalsnark.net) and **Ruth Haas**. *Grünbaum colorings extended to non-facial 3-cycles*. Preliminary report.

A *Grünbaum coloring* of a triangulation of a surface assigns 3 colors to the edges such that every facial triangle receives all three colors. It is known that all planar triangulations and many classes of toroidal, projective-planar, and Klein-bottle triangulations have Grünbaum colorings.

We consider first the question of when a triangulation with a Grünbaum coloring can be edge-colored with three colors such that the non-facial cycles also receive all three colors. We show that for the sphere, every triangulation has this type of generalized Grünbaum coloring, and that for every other topological surface there exist triangulations with such a generalized Grünbaum coloring and triangulations that have Grünbaum colorings but that cannot have a generalized Grünbaum coloring.

We also consider the question of how many colors are needed to assign colors to edges of a triangulation of a surface such that every 3-cycle (both facial and non-facial) receives three distinct colors. (Received September 19, 2016)