1173-05-296 **Joseph Briggs** (jgb0059@auburn.edu), **Michael Gene Dobbins** (mdobbins@binghamton.edu) and **Seunghun Lee*** (shlee@binghamton.edu). *Transversals and colorings of simplicial spheres.*

Motivated from the surrounding property of a finite point set introduced by Holmsen, Pach and Tverberg, we consider the transversal number and chromatic number of a simplicial sphere. First, we show that there are infinitely many simplicial 3-spheres with the transversal ratio greater than 1/2, which was unexpected from what is previously known about the surrounding property. Moreover, we show that, for $d \geq 3$, the facet hypergraph $\mathcal{F}(P)$ of a $(d+1)$-dimensional simplicial polytope P has the chromatic number $\chi(\mathcal{F}(P)) = O(n^{\frac{\lceil d/2 \rceil - 1}{d}})$, where n is the number of vertices of P. This slightly improves the upper bound previously obtained by Heise, Panagiotou, Pikhurko, and Taraz. We also suggest many open problems on this line. (Received September 21, 2021)