

1117-52-489

**Osman Yardimci\*** (ozy0003@auburn.edu), Auburn University, Parker Hall, Office 138-B,  
Auburn, AL 36849. *On polyhedronizations of parallel polygons*. Preliminary report.

We study a specific existence question: given two parallel polygons in  $R^3$ , under what conditions is it possible to find a polyhedron that has these polygons as faces, and whose vertices are precisely the vertices of the two polygons. The general question ‘Can every two parallel polygons be polyhedronized?’ was answered negatively by C. Gitlin, J. O’rourke and V. Subramanian. In this talk we survey the known partial results and prove some new ones: The following statement illustrates the form of our new partial results. Two parallel monotone polygons, which can have different directional monotonicities, but one of them has an edge whose extension is a line which does not split the polygon into two or more parts, can be polyhedronized. Variations of the original question include polyhedronizations of a finite planar point set and a polygon contained by a parallel plane. Among others we give a positive answer when the polygon is a so called a serpentine polygon. (Received January 19, 2016)