

1153-57-75

**Erica Flapan\***, eflapan@pomona.edu. *Generalized Simon Invariants of Spatial Graphs.*

We introduce invariants of spatial graphs which are a generalization of the Simon invariant for embeddings of  $K_5$  and  $K_{3,3}$  in  $S^3$ . Then we use our invariants to prove that  $K_7$ , all Möbius ladders with an odd number of rungs, and the Heawood graph each have the property that all of their embeddings in  $S^3$  are chiral. We also use our invariants to obtain lower bounds for the minimal crossing number of particular embeddings of graphs in  $S^3$ . (Received August 16, 2019)