

**Abbasi, Sarmad**

**On the genus of the star graph.** (English) Zbl 0993.05053  
Ars Comb. 55, 217-225 (2000).

Author's abstract: The star graph  $\mathcal{S}_n$  is a graph with  $S_n$ , the set of all permutations over  $\{1, \dots, n\}$ , as its vertex set; two vertices  $\pi_1$  and  $\pi_2$  are connected if  $\pi_1$  can be obtained from  $\pi_2$  by swapping the first element of  $\pi_1$  with one of the other  $n - 1$  elements. In this paper we establish the genus of the star graph. We show that the genus  $g_n$  of  $\mathcal{S}_n$  is exactly equal to  $n!(n - 4)/6 + 1$  by establishing a lower bound and inductively giving a drawing on a surface of appropriate genus.

Reviewer: [Tomáš Kaiser \(Plzeň\)](#)

**MSC:**

- 05C10** Planar graphs; geometric and topological aspects of graph theory
- 05C25** Graphs and abstract algebra (groups, rings, fields, etc.)
- 94C15** Applications of graph theory to circuits and networks
- 57M15** Relations of low-dimensional topology with graph theory

**Keywords:**

star graphs; genus; Cayley graphs; interconnection networks; topology