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**Thomas Tucker\*** (ttucker@colgate.edu), Math Department, Colgate University, Hamilton, NY 13346. *Seeing symmetries of surfaces in 3-space.*

It is shown that a surface of genus  $g > 1$  can be embedded in 3-space with rotational symmetry of order  $n$  if and only if  $g = cn - r$  where  $-1 \leq r < n$  and  $c > r$ ; these are the cyclic group actions on surfaces that one can “see”. Orientation-preserving actions by the other spherical groups  $A_4, S_4, A_5$  are also considered. In general, given a group  $G$ , one can ask for the spectrum of all  $g$  such that  $G$  acts on the surface of genus  $g$  (not necessarily as isometries of 3-space). An interesting class of groups would be those whose genus spectrum includes all sufficiently large  $g$ . (Received August 23, 2009)