Jay J Zimmerman* (jzimmerman@towson.edu), Department of Mathematics, Towson University, 8000 York Road, Towson, MD 21252. The genus distribution for odd order groups.

Suppose that $G$ is an odd order group with symmetric genus of the form $2^k + 1$ for an integer $k$ or $p + 1$ for an odd prime $p$. Then $G$ is the semidirect product of $Z_m$ by $Z_n$, where $m$ and $n$ are relatively prime. The genus action is given by a triangle group $\Gamma(r, s, t)$ satisfying the condition $|G| = lcm(r, s, t)$, except if $G$ is the image of $\Gamma(5, 5, 5)$ with genus $p + 1$ for $p \equiv 1 \mod 10$. Unfortunately, there is no general relationship between the genus $\sigma$ and the integers $m$ and $n$. However, in the case, $Z_n$ has a Sylow $p$-subgroup, that acts fixed point freely on $Z_m$ and $G$ is not the image of $\Gamma(5, 5, 5)$, then $m$ and $n$ satisfy the equation

$$\sigma = \left(\frac{m - 1}{2}\right)(n - 2).$$

It is easy to show that for an odd order group $G$ with genus of the form $g = p + 1$, the order of $G$ satisfies $2(g - 1) \leq |G| \leq 5(g - 1)$. The metacyclic groups with odd order smaller than 1000 all have Sylow subgroups of $Z_n$ acting fixed point freely on $Z_m$. Thus for $g < 200$ of the form $p + 1$, we can decide if $g$ is the genus of any odd order group. (Received February 22, 2005)