1007-20-204 **Peter S Turbek*** (turbek@calumet.purdue.edu), Dept. of Mathematics, Computer Science and, Statistics, Purdue University Calumet, Hammond, IN 46323, and **Emilio Bujalance**, **Francisco-Javier Cirre** and **Angel Perez del Pozo**. *Riemann surfaces with* $8(g+3)$ *automorphisms.* Preliminary report.

For each integer $g \geq 2$, let $N(g)$ denote the order of the largest group of conformal automorphisms that a Riemann surface of genus g can admit. The famous bound of Hurwitz shows that $N(g) \leq 84(g-1)$. In the late 1960's, Accola and Maclachlan independently determined that $N(g) \geq 8(g+1)$ by constructing, for each $g \geq 2$, the same family of hyperelliptic Riemann surfaces that possess $8(g+1)$ automorphisms. Each author also demonstrated that if $g \equiv 0 \bmod 3$, then $N(g) \geq 8(g+3)$ by exhibiting a family of Riemann surfaces that possess $8(g+3)$ automorphisms. In this case, the families constructed by Accola and Maclachlan are also isomorphic. Both authors determined that the bounds obtained are sharp for an infinite number of g's.

In this paper we examine all Riemann surface that possess $8(g+3)$ automorphisms and show that the surfaces constructed by Accola and Maclachlan are specific cases of two general families. In addition to these families, several exceptional surfaces occur. We examine the defining equations of the members of the families and study their automorphism groups. (Received February 21, 2005)