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AN EXAMPLE OF A NONCLASSICAL SCHOTTKY GROUP

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To Professor Moichiroh Nagae on his sixty fifth birthday

0. Introduction. Let D be a $2g$-ply connected domain in the extended complex plane surrounded by $2g$ mutually disjoint Jordan loops $C_1, \dots, C_{2g}$. If there exist loxodromic Moebius transformations $\gamma_1, \dots, \gamma_g$ such that $\gamma_i(D) \cap D = \phi$ and $\gamma_i(C_i) = C_{i+g}$, $i = 1, \dots, g$, then the group generated by $\gamma_1, \dots, \gamma_g$ is called a Schottky group. In the above definition of a Schottky group, if $2g$ Jordan loops can be replaced by $2g$ circles, then the Schottky group is said to be classical. In his paper Marden [M] showed the existence of a nonclassical Schottky group. Soon, Zarrow [Z] constructed a Schottky group which looks nonclassical. Recently, Sato [S] pointed out that, in fact, the group is classical. The purpose of this note is to construct a nonclassical Schottky group in terms of explicit Moebius transformations.

THEOREM. *The group generated by*

$$z \mapsto \frac{\sqrt{2}(1 - 10^{-20})^{-1}z + (1 - 10^{-20})(2(1 - 10^{-20})^{-2} - 1)}{(1 - 10^{-20})^{-1}z + \sqrt{2}(1 - 10^{-20})^{-1}}$$

and

$$z \mapsto i(\sqrt{2} + 1)z$$

is a nonclassical Schottky group.

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1. Let h_ε, $\varepsilon \geqq 0$, be the hyperbolic transformation keeping the upper half-plane invariant and mapping the exterior of the circle $C_{2,\varepsilon}$: $|z + \sqrt{2}| = 1 - \varepsilon$ onto the interior of the circle $C_{4,\varepsilon}$: $|z - \sqrt{2}| = 1 - \varepsilon$. Namely, h_ε is of the form

$$z \mapsto \frac{\sqrt{2}(1 - \varepsilon)^{-1}z + (1 - \varepsilon)(2(1 - \varepsilon)^{-2} - 1)}{(1 - \varepsilon)^{-1}z + \sqrt{2}(1 - \varepsilon)^{-1}}.$$

Let l be the loxodromic transformation of the form $z \mapsto i(\sqrt{2} + 1)z$. Let $C_{1,\varepsilon}$ be the

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