CORRECTION TO MY PAPER "ON PRIMITIVE PERMUTATION GROUPS WHOSE STABILIZER OF A POINT INDUCES $L_2(q)$ ON A SUBORBIT"[1]

BY

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The argument on page 61 line –18 (proof of lemma 6.2) gives only a contradiction in the case $i < n/2$. Namely, if $i = n/2$ then $x \notin Z(\langle Z^*, x\rangle)$ as well as $z \notin Z(\langle Z^*, x\rangle)$. Suppose $i = n/2$. $Z^* = C_{\langle Z^*, x\rangle}(z)$ is a subgroup of index 2 in $\langle Z^*, x\rangle$ and $\langle y, Z(T)\rangle = C_{\langle Z^*, x\rangle}(y)$ has index 2^i in $\langle Z^*, x\rangle$ for $y \in Z^*x - Z^*$. Hence $i = 1$ and $n = 2$ and G has a S_2-subgroup of order 2^7 and type $J_{2/3}$ (Janko's second and third simple group). $G = G_\alpha X$ for a minimal normal subgroup X in G. Further $|X\colon (X \cap G_\alpha)|_2 = 2$. Choose $V \in Syl_2(X)$, $S \in Syl_2(G_\alpha)$ such that $SV = T \in Syl_2(G)$. Then $Z \cap [V, S] \neq 1$ and $S \subseteq X$. So $|G\colon X|$ is odd and since all involutions of X are conjugate X is simple. By [1] we have $X \simeq J_3$, the Janko simple group of order 50, 232, 960. [2] implies $G = X$ and this case indeed occurs. We reformulate the result of our paper.

THEOREM. *Let G be a primitive permutation group on the finite set* Ω. *Suppose* $\alpha \in \Omega$ *and* G_α *has a suborbit* Δ *such that the group* G_α^Δ *induced by* G_α *on* Δ *is isomorphic to* $L_2(q)$ *for* $q \geq 4$ *in its natural representation. Then one of the following holds:*

(1) $G_\alpha \simeq L_2(q)$.

(2) $G \simeq J_3$ *and* G_α *is a split extension of an elementary abelian group of order* 2^4 *by* $GL(2, 4)$.

(3) $q = p^n$, $p > 2$, *and* $G_\alpha \simeq L_2(q) \times Y$ *where* Y *is isomorphic to an* S_p*-normalizer in* $L_2(q)$.

I would like to thank Dr. Bernd Baumann who showed me the example $G \simeq J_3$.

REFERENCES

1. D. GORENSTEIN AND K. HARADA, *A characterization of Janko's two new simple groups*, J. Fac. Sci. Univ. Tokyo, vol. 16 (1970), pp. 331–406.
2. L. FINKELSTEIN AND A. RUDVALIS, *The maximal subgroups of Janko's simple group of order 50, 232, 960*, J. Algebra, vol. 30 (1974), pp. 122–143.

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[1] Illinois J. Math., vol. 20 (1976), pp. 48–64.