# ERRATA: SOME PROPERTIES ON RINGS WITH UNITS SATISFYING A GROUP IDENTITY

CHIA-HSIN LIU

There are some errors in the proofs of Theorem 2.3 and Lemma 2.4 in paper [Liu00].

About the proof of Theorem 2.3, we cannot get $c_{ij} = 0$ unless the ring is torsion-free. The argument should be changed as follows. From the original proof, we have $w(u_1, u_2, u_3) = 1$ and writing this out, we get $\sum_{1\le i<j\le d+1} c_{ij}e_{ij} = 0$ where $c_{ij}$ are integers. Note that the term $e_{1\,d+1} = e_{12}e_{23}\cdots e_{d\,d+1}$ has coefficient $\pm 1$. Namely, $c_{1\,d+1} = \pm 1$. On the other hand, we have $c_{1\,d+1}e_{1\,d+1} = e_{11}(\sum_{1\le i<j\le d+1} c_{ij}e_{ij})e_{d+1\,d+1} = 0$. Together with $c_{1\,d+1} = \pm 1$, it follows that $e_{1\,d+1} = 0$. This gives us a contradiction and hence $R$ is Dedekind finite.

About the proof of Lemma 2.4, the claim "these matrix units are linearly independent over integers" is not correct. We change the argument in the following way. From the original proof, we get an upper half system of matrix units $\{e_{ij} \mid 1 \le i < j \le n+1\}$. Following the proof of Theorem 2.3, we may assume that $w$ is a group identity in 3 variables. Suppose $n > d+2$ where $d$ is as in the proof of Theorem 2.3. Instead of considering elements $e_{12}, e_{23}, ..., e_{d\,d+1}$, let us consider $d$ elements $e_{23}, e_{34}, ..., e_{d+1\,d+2}$ and proceed as the proof of Theorem 2.3. Then we get an equation $\sum_{2\le i<j\le d+2} c_{ij}e_{ij} = 0$ with intergal coefficients $c_{ij}$ and $c_{2\,d+2} = \pm 1$. It follows that $c_{2\,d+2}e_{1\,d+3} = e_{12}(\sum_{2\le i<j\le d+2} c_{ij}e_{ij})e_{d+2\,d+3} = 0$. So we get $e_{1\,d+3} = 0$ and this is a contradiction. Therefore, $n \le d+2$ which is an integer determined by $w$.

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## References

[Liu00] Chia-Hsin Liu, *Some properties on rings with units satisfying a group identity*, J. Algebra,**232** (2000), no. 1, 226–235.

Department of Mathematics, National Taiwan Normal University, Taipei, Taiwan 116, R.O.C.

*E-mail address*: chliu@math.ntnu.edu.tw

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