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CORRIGENDUM TO: "REAL CLOSED FIELDS AND MODELS OF ARITHMETIC"

P. D'AQUINO, J. F. KNIGHT, AND S. STARCHENKO

In [1], it is shown that a countable real closed field has an integer part that is a model of PA just in case it is either Archimedean or recursively saturated. David Marker pointed out an error in the proof of one of the preliminary results, Proposition 3.3. Here is a corrected version.

PROPOSITION 3.3. *Suppose R is a real closed ordered field with an integer part I that is a nonstandard model of PA. Then R has "unbounded growth"; i.e., for any tuple $\overline{a}$ in R, there is some $b \in R$ greater than all elements of $RC(\overline{a})$.*

PROOF. To prove this, we use the following well-known fact. For a proof, see the paper by M. Tressl [2, Lemma, p. 92].

FACT. In a non-Archimedean real closed field of finite transcendence degree, there is some element whose powers are cofinal in the field.

Take $c \in RC(\overline{a})$ whose powers are cofinal. Take $i \in I$ such that $i > c$. Since I is a nonstandard model of PA, we have $b \in I$ such that $b > i^n$ for all n. For each $x \in RC(\overline{a})$, there is some n such that $x < c^n$, and $c^n < i^n < b$. ⊣

REFERENCES

[1] P. D'AQUINO, J. F. KNIGHT, and S. STARCHENKO, *Real closed fields and models of Peano arithmetic*, this JOURNAL, vol. 75 (2010), pp. 1–11.

[2] M. TRESSL, *Valuation theoretic content of the Marker–Steinhorn theorem*, this JOURNAL, vol. 69 (2004), pp. 91–93.

DIPARTIMENTO DI MATEMATICA
SECONDA UNIVERSITÁ DI NAPOLI
VIA VIVALDI 43
CASERTA 81100, ITALY
E-mail: paola.daquino@unina2.it

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF NOTRE DAME
255 HURLEY HALL
NOTRE DAME, INDIANA 46556, USA
E-mail: knight.1@nd.edu
E-mail: sstarche@nd.edu

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