## A. А. Запрягаев. Interpretations of Büchi arithmetics in themselves

Büchi arithmetics $\mathrm{BA}_{n}, n \geqslant 2$, are extensions of Presburger arithmetic with an unary functional symbol $V_{n}(x)$ denoting the largest power of $n$ that divides $x$. These theories were introduced by J. Büchi in order to describe the recognizability of sets of natural numbers by finite automata through definability in some arithmetical language. As shown by V. Bruyère, the definability of a set of natural numbers in $\mathrm{BA}_{n}$ is equivalent to its recognizability by a finite automaton receiving $m$-tuples of natural numbers in the form of $m$-tuples of their last, then penultimate, etc. digits of their $n$-ary expansion.
A. Visser has asked the following question: given an weak arithmetical theory $T$ without ability to encode syntax but with full induction, does it hold that each interpretation (one-dimensional or multi-dimensional) of $T$ into itself is isomorphic to the trivial one, and, if it is, is the isomorphism always expressible by a formula of $T$ ? This question was previously answered positively for Presburger arithmetic PrA in the author's joint work with F. Pakhomov.

We show that each interpretation of $\mathrm{BA}_{n}$ itself in its own standard model N and show that each such interpretation is isomorphic to the trivial one. Furthermore, we obtain this result already for the interpretations of Presburger Arithmetic in $\mathrm{BA}_{n}$. The proof is based on the contradiction between a condition on automatic torsion-free abelian groups given by Braun and Strüngmann and the description of the order types of non-standard models of Büchi arithmetics. This gives a partial positive answer to the question of Visser.

## M. В. Зубков. Well-orders realized by CE equivalence relations

A structure $A$ is realized by an equivalence relation $E$ if there exists a structure $B$ such that $B / E$ is isomorphic to $A$. We will describe sets of ordinals that can be realized by one fixed computably enumerable equivalence relation, provided that this equivalence relation can realize an ordinal less than $\omega^{\omega}$.
(Joint work with N. A. Bazhenov.)

## В. Г. Кановей. О существенности параметров в схеме аксиом свертки в арифметике второго порядка

Построена модель арифметики второго порядка, в которой аксиома свертки верна в беспараметрическом варианте но не верна в полном варианте с параметрами.
К. А. Ковалев. Analogues of Shepherdson's Theorem for the arithmetical language with exponentiation

We investigate the following expansions of IOpen (Robinson arithmetic Q with quantifier-free induction):

- IOpen $(\exp ): \mathrm{Q}$ with axioms $\exp (0)=1$ and $\exp (S x)=\exp (x)+\exp (x)$ and quantifier-free induction in the expanded language;
- IOpen $\left(x^{y}\right)$ : Q with axioms $x^{0}=1$ and $x(S y)=\left(x^{y}\right) \cdot x$ and quantifier-free induction in the expanded language.

In 1964 Shepherdson proved the following theorem characterizing models of IOpen: For every discretely ordered ring $M$, the nonnegative part $M^{+}$is a model of IOpen iff $M$ is an integer part

