PETR KULIKOV, *Some constructions on groups of computable automorphisms.*
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The necessary definitions can be found in [1].

Let $\text{Aut}_{\text{rec}} \mathcal{M}$ be the group of all computable automorphisms of a computable structure $\mathcal{M}$.

**Theorem 1.** Let $G$ be a computable group and $H$ be a subgroup of $G$ such that $G \setminus H$ is c.e. Then there exists a computable model $\mathcal{M}$ such that $H \cong \text{Aut}_{\text{rec}} \mathcal{M}$.

Therefore the center of a computable group can be represented as a group of computable automorphisms of a computable model.

Let $\{G_i\}_{i \in \omega}$ be an uniformly computable family of groups and $\{\theta_i\}_{i \in \omega}$ be an uniformly computable family of homomorphisms such that

$$
\ldots \to G_2 \xrightarrow{\theta_1} G_1 \xrightarrow{\theta_0} G_0
$$

A sequence $(\ldots g_2, g_1, g_0)$ is called a thread if for any $i \in \omega, g_i \in G_i$ and $\theta_i(g_{i+1}) = g_i$.

The multiplication of threads is defined in natural way. A thread is computable if there exists a computable function $f$ such that $f(i) = g_i$. The set of all computable threads with defined multiplication operation is a group called a reverse computable limit $\lim_{\text{rec}} G_i$ of $\{G_i\}_{i \in \omega}$.

**Theorem 2.** Let $\{G_i\}_{i \in \omega}$ and $\{\theta_i\}_{i \in \omega}$ be as above. Then there exists a computable model $\mathcal{G}$ such that $\lim_{\text{rec}} G_i \cong \text{Aut}_{\text{rec}} \mathcal{G}$.

Let $B$ be a computable group, $A$ be a group of all computable automorphisms of a computable model $\mathcal{M}$ and $\text{Rec}(A^B)$ be the set of all computable mappings $\mu : B \to A$.

The Cartesian product $B \times \text{Rec}(A^B)$ with an operation $*$

$$(b_1, f_1) * (b_2, f_2) = (b_1b_2, f_1f_2)$$

(here $f_1(x) = f(bx)$) is a group called a computable wreath product $A \circ B$ of $A$ by $B$.

**Theorem 3.** Let $A$ and $B$ be as above. Then there exists a computable model $\mathcal{T}$ such that $A \circ B \cong \text{Aut}_{\text{rec}} \mathcal{T}$.