computer and mathematical models that allow the control system to find the most effective combinations of control actions.

**Conclusion.** As a result of the study, a tree of goals was constructed, which makes it possible to simplify the mathematical and computer modeling of the system under consideration in further research.

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## ON THE CHARACTERIZATION σ-LOCAL FITTING CLASS

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The paper considers only finite groups. In terminology and notation, we follow [1, 2]. In the theory of classes of finite groups, the result of the Bryce-Cossey [3] is known that the local formation solvable groups are hereditary if and only if every value of the canonical formation function is hereditary. In connection with above, the following dual question of Bryce-Cossey Theorem naturally arises: is it true that a local Fitting class is hereditary if and only if every value of the canonical local function is hereditary? A positive solution of this question for generically local Fitting classes (in particular local Fitting classes) is the main goal of this paper.

**Material and methods.** The methods of the theory of groups and their classes are used in the paper. In particular case methods of the theory of formations of groups and Fitting classes of groups.

**Findings and their discussions.** *Class of groups* is a set of groups that, along with each group, contains an isomorphic a group. The class of groups $\mathfrak{F}$ is called *a formation* if $\mathfrak{F}$ closed under taking factor groups and subdirect products, $\mathfrak{F}$ is called *Fitting class* if $\mathfrak{F}$ closed under taking normal subgroups and products of normal $\mathfrak{F}$-subgroups. The Fitting class $\mathfrak{F}$ is called *hereditary* if it is closed under taking subgroups, i.e. from the conditions $G \in \mathfrak{F}$ and H $\leq$ G follows $H \in \mathfrak{F}$.

If $\mathfrak{F}$ is a nonempty Fitting class, then there is the largest normal $\mathfrak{F}$-subgroup in every group. It is denoted by $G_{\mathfrak{F}}$ and is called the $\mathfrak{F}$-radical G. Let $\mathfrak{F}$ and $\mathfrak{H}$ be Fitting classes. Then the class of groups $\mathfrak{F}\mathfrak{H} = (G: G/G_{\mathfrak{F}} \in \mathfrak{H})$ called *the product of Fitting classes* $\mathfrak{F}$ *and* $\mathfrak{H}$. It is well known that the product of Fitting classes is a Fitting class and the operation of multiplying Fitting classes is associative. (see [1, theorem X.1.12]).

For the characterization of the generalized local Fitting classes, we will use the Skiba σ-method of studying groups and formations proposed in paper [4], which was dualized in paper [2] and consists of the following. Let $\mathbb{P}$ be a set of all primes, $\pi \subseteq \mathbb{P}$ and $\pi' = \mathbb{P} \backslash \pi$. If $n$ is a primes, then the symbols $\pi(n)$ denote the set of all prime divisors n and $\pi(G) = \pi(|G|)$ the set of all prime divisors of the order of the group $G$. Ley $\sigma$ is some partition of the set $\mathbb{P}$, that is, $\sigma = \{\sigma_i : i \in I\}$, where $\mathbb{P} = \cup_{i\in I} \sigma_i$ and for all $i \neq j$ intersection $\sigma_i \cap \sigma_j = \emptyset$. Then the symbols $\sigma(n)$ denote the set $\{\sigma_i : \sigma_i \cap \pi(n) \neq \emptyset\}$ и $\sigma(G) = \sigma(|G|)$.

Let $\Pi \subseteq \sigma$. The symbol $\mathfrak{E}_\Pi$ we will denote the class of all $\Pi$-groups. In particular the symbols $\mathfrak{E}_{\sigma_i}$ and $\mathfrak{E}_{\sigma_{i'}}$ denote the classes of all $\sigma_i$-groups and $\sigma_{i'}$-groups respectively.

Let $\emptyset \neq \sigma \subseteq \mathbb{P}$. Following [2], a function $f: \sigma \to \{Fitting\ classes\}$ is called a Hartley $\sigma$-function or simply $H_\sigma$-function. Set $Supp(f) = \{\sigma_i : f(\sigma_i) \neq \emptyset\}$ the support of $H_\sigma$-function $f$.

Let $\Pi = Supp(f)$ and class $LR_\sigma(f) = \mathfrak{E}_\Pi \cap (\cap_{\sigma_i\in\Pi} f(\sigma_i)\mathfrak{E}_{\sigma_i}\mathfrak{E}_{\sigma_{i'}})$.

Definition. A Fitting class $\mathfrak{F}$ is called *$\sigma$-local* if $\mathfrak{F} = LR_\sigma(f)$ for some $H_\sigma$-function $f$.

If $\sigma^1 = \{\{p\},\{q\},\dots\}$ is a minimal partition of the set $\mathbb{P}$ and $\mathfrak{F} = LR_{\sigma^1}(f)$, then class $\mathfrak{F}$ is called *a local Fitting class* and the $H_{\sigma^1}$-function $f$ will be called $H$-function $\mathfrak{F}$.

Following [2], every $\sigma$-local Fitting class $\mathfrak{F}$ can be defined by a $H_\sigma$-function $f$ such that $F(\sigma_i) = F(\sigma_i)\mathfrak{E}_{\sigma_{i'}} \subseteq \mathfrak{F}$ and $F(\sigma_i)$ is a Lockett class for all $i \in I$. Note that $F(\sigma_i)$ is a Lockett class, i.e. $(G \times H)_{F(\sigma_i)} = G_{F(\sigma_i)} \times H_{F(\sigma_i)}$ for all groups $G$ and $H$. A function $F$ called *the canonical* $H_\sigma$-function Fitting class $\mathfrak{F}$.

The main result of the paper, which dualized the above of Bryce-Cossey Theorem from [3], is the proved

**Theorem.** *An $\sigma$-local Fitting class $\mathfrak{F}$ is hereditary if and only if every value of the canonical $H_\sigma$- function of $F$ is hereditary.*

In the case when $\sigma = \sigma^1$ is a minimal partition of the set $\mathbb{P}$, a result of the theorem is the following characterization of local Fitting class, obtained by Guo Wenbin and S.N. Vorob'ev in [5].

Corollary. A local Fitting class $\mathfrak{F}$ is hereditary if and only if all values of the canonical Hartley function are hereditary.

**Conclusion.** In thus paper obtained new characterization of hereditary of σ-local (in particular local) Fitting classes.

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