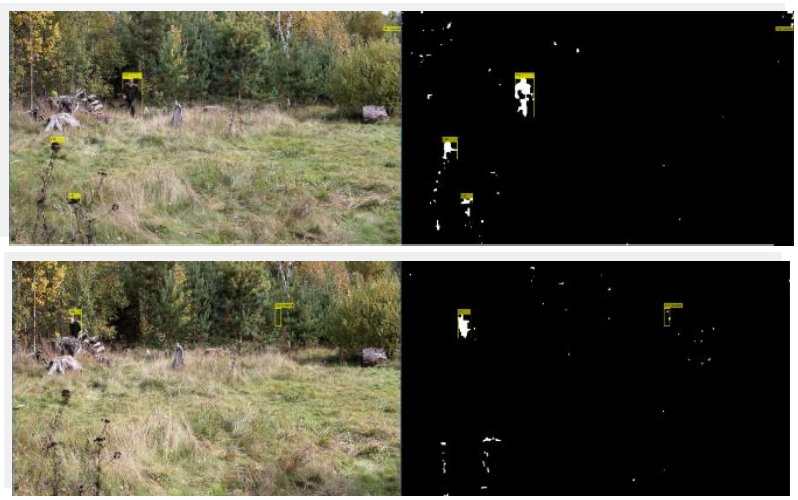

Figure 2 – Visual evaluation of the work of the developed algorithm

Conclusion. Thus, the proposed algorithm for detecting and measuring the coordinates of a ground object allows you to detect and highlight the object of observation in difficult phono-target conditions, but it is worth noting the presence of false positives caused by the flickering of the background. The elimination of false positives can be achieved in the future by subsequent recognition of the selected fragments.

1. Demeshko, V.S. Complex system of security of square objects / V.S. Demeshko, A.I. Fedorov // Actual problems of modern science: collection of articles XIII International Scientific Conference of Aktobe, 2019. – P. 248–254.

2. Methods of automatic detection and maintenance of objects. Image processing and control / B.A. Alpatov [et al.]. – M.: Radiotekhnika, 2008. – P. 176.

3. Digital image processing in information systems / I.S. Gruzman [et al.]. – Novosibirsk: NGTU, 2002. – P. 352.

ON THE CHARACTERIZATION OF HALL-CLOSED FITTING CLASSES

Ludmila Ivanova
VSU named after P.M. Masherov, Vitebsk, Belarus

Keywords: Fitting class, Hall subgroups, Π-soluble groups, Π-closed class.

The paper considers only finite groups. In terminology and notation, we follow [1].

An actual problem in studing the structure of classes of groups is the characterisation of Fitting classes that are closed under taking Hall subgroups [2].

The purpose of the paper is the study of Hall-closed Fitting classes.

Material and methods. Methods of the study of the finite group theory are used as well as methods of the Fitting class finite group theory.

Findings and their discussion. A class of groups is a set of groups that along with each group contains an isomorphic group. The class of group $\mathfrak{F}$ is called a *Fitting class* if $\mathfrak{F}$ closed under taking normal subgroups and products of normal $\mathfrak{F}$-subgroups. A class

$\mathfrak{F}$ is called *normally hereditary class or class, closed under taking normal subgroups*, if the following condition is satisfied: if G $\in$ $\mathfrak{F}$ and N $\trianglelefteq$ G then N $\in$ $\mathfrak{F}$. A class $\mathfrak{F}$ is called *closed under taking products of normal* $\mathfrak{F}$*-subgroups* if the following condition is satisfied: if N_1 and $N_2 \trianglelefteq$ G, N_1 and $N_2 \in \mathfrak{F}$, then $N_1N_2 \in \mathfrak{F}$ [1].

Definition. Let $\mathfrak{F}$ and $\mathfrak{H}$ be Fitting classes, then $\mathfrak{F} \vee \mathfrak{H}$ is a Fitting class generated by union $\mathfrak{F} \cup \mathfrak{H}$.

Let $\mathbb{P}$ be a set of all primes, $\pi \subseteq \mathbb{P}$, $\pi' = \mathbb{P} \setminus \pi$. The symbol π(n) denotes the set of all prime dividing *n*. Symbol π(G) = π(|G|) denotes a set of all prime devising of the order of the group G. Let $\sigma = \{\sigma_i | i \in I\}$ is a some partition of the set $\mathbb{P}$, that is, $\mathbb{P} = \bigcup_{i \in I} \sigma_i$ and intersection $\sigma_i \cap \sigma_j = \varnothing$ for all $i \neq j$. Let $\Pi \subseteq \sigma$ is a subset of σ, $\Pi' = \sigma \setminus \Pi$, $\sigma(n) = \{\sigma_i : \sigma_i \cap \pi(n) = \emptyset\}$ и $\sigma(\mathrm{G}) = \sigma(|G|)$. A number $n \in \mathbb{N}$ is called *Π-number* if $\pi(n) \subseteq \bigcup_{\sigma_i \in \Pi} \sigma_i$. A group G is called Π-group if σ(G) $\subseteq$ Π. Subgroup H is called *Hall Π-subgroup* if |H| is a Π-number and index |G:H| is a Π′-number. A group G is called *Π-soluble*, if every chief factor of G is either a Π′-group or a σ_i-group for same $\sigma_i \in \Pi$ [3].

Let $\Pi \subseteq \sigma$. The symbol $\mathfrak{S}_\Pi$ denote class of all Π-soluble groups.

Definition. Let H is a Hall Π-subgroup of group G. The Fitting class $\mathfrak{F}$ we will called *Π-Hall closed* if from G $\in$ $\mathfrak{F}$ follow that H $\in$ $\mathfrak{F}$.

Let $\mathfrak{F}$ is a non-empty Fitting class. Then the class $\mathfrak{F}^*$ denote as a smallest of the Fitting classes containing $\mathfrak{F}$ that is $(G \times H)_{\mathfrak{F}^*} = G_{\mathfrak{F}^*} \times H_{\mathfrak{F}^*}$ for all groups G and H. The class $\mathfrak{F}_*$ denote as an intersection of all Fitting classes $\mathfrak{X}$ for which $\mathfrak{X}^* = \mathfrak{F}^*$ [4].

Let $\mathfrak{F}$ is a Fitting class. The symbol $\mathrm{K}_\Pi(\mathfrak{F})$ denote class of all Π-soluble groups whose Hall Π-subgroups belong to the class $\mathfrak{F}$.

Is the proved

Theorem. Fitting class $\mathfrak{F}$ is a Hall Π-closed if and only if

$$\mathfrak{F} = (\mathfrak{S}_\Pi \cap \mathfrak{F}) \vee (\mathrm{K}_\Pi(\mathfrak{F}_*) \cap \mathfrak{F})$$

Conclusion. In this paper obtained new characterization Hall Π-closed Fitting classes.

1. Doerk, K. Finite soluble groups / K. Doerk, T. Hawkes. – Berlin – New-York: Walter de Gruyter, 1992. – P. 891.

2. Brison, O.A Criterion for the Hall-closure of Fitting classes / O. Brison // Bull. Austr. Math. Soc. – 1981. – Vol. 3, № 3. – P. 361–365.

3. Skiba, A.N. On σ-properties of finite groups II / A.N. Skiba // Problems of Physics, Mathematics and Technics. – 2015. – Vol. 3, № 24. – P. 70–83.

4. Lockett, P. The Fitting class F* / P. Lockett. – Math. Z. – 1974. – Vol. 137, № 2. – P. 131–136.

DEFINITION OF ANOMALIES IN SCIENCE AND TECHNOLOGY

Dmitriy Kamenko
BNTU, Minsk, Belarus

Keywords: anomaly detection method, matrix decomposition, anomaly value.

The problem of automating the process of detecting anomalous values of a data array is important in engineering practice. It is known that anomalous values can significantly distort the functioning of mathematical models for data analysis, which can lead to a decrease in reliability and incorrect operation of the entire system.