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**WAYS OF ENHANCING THE EFFECTIVENESS OF FORENSIC  
IDENTIFICATION OF DIGITAL AUDIO RECORDING EQUIPMENT**

The article deals with the issues of building a toolkit for diagnosing the originality of digital soundtracks and identification of digital audio recording equipment. One of the last variants of creation of the expert toolkit intended for identification of digital recording equipment is the “Fractal” toolkit, but its efficiency is reduced because identification signs are allocated from signals of pauses in the language information (pauses between words) recorded on a

phonogram. The purpose of the article is to improve the expert toolkit for identification of sound recording equipment based on the fractal approach to the signals of its own noises. It is suggested to use the separation of hardware noises not only from pauses, but also from a mixture of signals with the entire duration of the phonogram. At the same time, the volume of information from which the identification features of the equipment are allocated increases significantly. Such separation of the own noise signals ensures the increased efficiency of the identification system. The proposed methods of separation and processing of self-similar structures from phonograms, used as identification features in the examination. One of the proposed methods is based on the separation of self-similar structures of the phonogram's own noises along its entire length from their mixture with language and sound environment signals. The second method provides for mandatory building of error curves of the first and second types when developing the system. When building them, it is necessary to use a large amount of data that can be obtained from a limited number of phonograms by dividing them into separate sections of different lengths in automatic mode. It has been established that for phonograms lasting more than 20 seconds, the error curves are stable, in other words, they practically do not change. The degree of closeness of parameters of self-similar structures, separated from the compared phonograms, is offered to define as the module of distance between the normalized fractal curves, received at measurements of fractal characteristics. The proposed methods allow increasing considerably the efficiency of establishing the originality of soundtracks and identification of digital recording equipment during the expertise.

**Keywords:** digital audio recording equipment, probability, identification features, degree of proximity, self-similar structures, digital phonogram, fractal approach, expertise

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