

**FEDERAL STATE BUDGETARY EDUCATIONAL INSTITUTION OF
HIGHER EDUCATION
SAINT-PETERSBURG STATE UNIVERSITY**

REVIEW

of the academic supervisor on the graduate qualification work of the student

Konnov Kirill Igorevich

(surname, first name, patronymic)

Head of the graduate qualification work

Professor Borisov Nikolay Valentinovich

(title, last name, first name, patronymic)

Topic of the graduate qualification work

“Using multimedia technologies when recording 3D audio content”

Contents of the work

This work explores the possibilities of modern surround sound recording systems, namely the use of microphone arrays. Kononov K.I. studied several such systems that are used in the recording of classical music. In the end, he chose two such systems and produced a three-dimensional audio recording of a string orchestra in a concert hall with appropriate acoustics. This recording was mixed not only with traditional studio monitors, in stereo and surround, but also using binaural technologies, thanks to which it is possible to create not only stereo and surround sound, but also a virtual surround sound field using headphones. Ambisonics technology was used for processing and placement of playback channels, for which there are various software packages, both commercial and in the public domain.

Practical Significance.

Konnov K.I. showed that it is possible to record, process and play surround audio in various formats, from stereo, surround, to surround, and that creating content for each of them does not require separate technological chains, one file is enough that fits all formats, the choice is made on rendering stages, that is, the format is flexible, adapts to a given playback system.

Disadvantages

The microphone array turned out to be bulky, because you need a large number of microphones (from 9) to record surround audio. Rendering of binaural audio still leaves much to be desired, as the quality of the final sound depends on the individualization of the HRTF transfer function.


Characteristics of the student's work on the thesis

In the process of completing the graduate qualifying work, Kirill Igorevich Konnov showed independence, a creative approach in solving the tasks set, deeply analyzed the possibilities of modern information technologies.

Head of the graduate qualifying work,

Doctor of Physical and Mathematical Sciences, Professor Borisov Nikolay
Valentinovich

(title, last name, first name, patronymic)

Signature  _____
“ 22 ” _____ May _____ 2023 г.