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PRACA DOKTORSKA

Współczesne systemy wielokanałowej projekcji dźwięku
jako środek wyrazu artystycznego

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ABSTRACT

Introduction of this dissertation includes information about human senses and ways of perceptions of the world. It is explained how concept of the Time and concept of the Space in music influence on music. Especially important is geometrical context of the music space which will be investigate with certain mathematical rules. Further more, the author will attempt to formulate musical space as 5-dimentional space with two musical parameter (vertical and horizontal) and three parameters of physical space (width, lenght and height), as the analogy between transformations of musical material amongst different pairs of parameters.

First Chapter include the history of multichannel systems, with the history of musical topology (in choir and instrumental music), appearanceof the first electroacoustic systems and multichannel systems popular nowadays. This chapter refers also to history of systems like: pseudostereophony, stereophony, pseudoquadrophony, quadrophony and other more complex systems (5.1, 6.1 etc.)

Second Chapter is a review of two most popular and promising immersive systems: ambisonics system and binaural system. The chapter includes informations about specification of both systems and their possibilities, also with informations about how immersive systems work and which sound parameters they need to consider (source position, listener position, relative intensity, relative loudness, fixed propagation velocity of sound, reverberation, Doppler effect etc.). Also the history of ambisonics system is outlined, with mentionig two very first polish compositions madein ambisonics system: *Spherical Voices* by Krzysztof Gawlas and *Backstage Pass* by Lidia Zielińska.

Third Chapter includes conclusions and results of the experimental concert. The idea was to show to audience four compositions (*Jyoti* by Katerina Tzedaki, *Verstimmung II* by Krzysztof Gawlas, *Distance liquide* by Hans Tutschku and *Ósma wyspa (Eight Island)* by Lidia Zielińska), in two versions: stereophonic and octophonic.

Summary includes references to Introduction in context of the other chapters and observations about development of new technologies and their exploitation in music. Also the future of multichannel systems is outlined as a very promising branch of the new music.