

# Parametric Model of the Spectrum of Traffic Noise

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Acoustic noise is an important ecological factor in the environment. In urban conditions, acoustic noise is characterized by a great variety of manmade sources related to human activity. The most common sources are our substations, heavy construction equipment, and traffic. The technological, industrial, and social development of human settlements is accompanied by increased noise pollution of the environment. In the last decade, the noise level in large cities has grown by a factor of 10–15. Affecting the human psyche, it leads to distraction, fatigue, and other symptoms. Long exposure to the impact of noise can lead to various mental illnesses and disorders, and it may also affect the cardiovascular system. Therefore, there is an acute need to identify areas with increased noise pollution in cities, since the most frequent crashes and other accidents occur in these areas during construction and assembly. The aim of this paper is to analyze the traffic noise in urbanized areas with a case study of the city. To achieve this goal, the following problems were solved: analysis of the spectral characteristics of acoustic noise in urban environments, mapping of the territory by the spectral characteristics of acoustic noise, analysis of the impact of transportation noise on the overall level of the acoustic background in the city, and analysis of the impact of different engine operating modes on the level of traffic noise. Noise pollution maps are used to identify areas with the highest acoustic noise level. A noise pollution map is a handy tool for studying, predicting, and controlling noise in the environment. The main purpose of a noise pollution map is to create a visual representation of noise in the environment in a certain geographic area.

The technique of mapping urban noise is proposed on the basis of a two parameter model of the acoustic noise spectrum. The acoustic noise and spatial distribution of the decay rate are mapped. The factors influencing the formation of the acoustic noise of traffic flow are described. Analysis is performed on how different operating modes of a vehicle's internal combustion engine affect the background level of acoustic noise.