

**Abstract**

The paper is concerned with the specification and improvement of the traditional source-filter model of the human vocal tract proposed by G. Fant and analyzed by many scientists. The new method of recording the glottal wave synchronously with an output speech signal was employed to obtain the experimental material. The comparison of the recorded signals enabled to analyze the structure of the speech signal at different stages of its generation. As a result, the classic vocal tract model was specified by distinguishing a feedback component which formalizes the processes in the vocal tract as a complex acoustic nonlinear system. One of the functions of the component is to transform the acoustic energy from the articulation system upstream. In the paper the recording method is described, the results of the perceptual and acoustic study are presented.