



### ***Weber-Fechner Law in Perception of Short Acoustic Pulses***

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The notion of pitch is routinely associated with the periodicity of an acoustic signal. However, extremely short pulses appear the higher the shorter they are. The results present the just perceptible difference (difference limen) in the pitch and in the timbre sensed by subjects in response to Gaussian acoustic pulses of the duration time in the range 0 - 20 ms. Two groups of people were examined: musicians and non-musicians. The test allows one to study the relation between the difference limen in discrimination of the duration time and the duration time itself. A strict proportionality amounts to Weber-Fechner law (W-F). The examined subjects remarked that a change in pulse's duration time manifests itself either in a change of an effective pitch or timbre or both. The results indicate that the difference limen in discrimination time perceived upon the effective pitch difference is an increasing function, close to linear, of the duration time in an analogy to the W-F law. The results of the behavioral tests have been compared with the model of basilar membrane formally elaborated by the authors and the corresponding model parameters have been fitted.