ACOUSTICS2008/2575
Prediction of impulsive noise waveform under an earmuff worn by a real user

Rafal Mlynski and Jan Zera
Centr. Inst. for Labour Prot. - Natl. Res. Inst., Czerniakowska 16, 00-701 Warsaw, Poland

For the assessment of hearing damage risk caused by impulsive noise, it is important to know the impulse waveform a user is exposed to under the hearing protector. In this study, a complex transmittance of an earmuff was used to predict the waveform under a hearing protector. Earmuff's transmittance was calculated from impulses recorded outside and under the hearing protector, for a real user, as transmittance of the equivalent FIR filter. The transmittance determined in that way was then used to predict the impulse waveforms under the earmuffs produced in response to various outside impulses. Accuracy of predictions was assessed by a comparison of peak SPL, L_{Aeq8}, A, C, or D duration of the impulse waveforms calculated and measured under the earmuffs. Results obtained for a real user were compared with the measurements made with the use of an artificial test fixture (ATF, ISO 4869-3). [Work supported by Polish grants R18004304 (MNiSzW) and 3.S.03 (MPiPS)].