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**Variability of hearing protection devices attenuation as a function
of source location**

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It is of common knowledge, and well documented, that laboratory-measured noise attenuation values of most hearing protection devices (HPD) exceed significantly the attenuation values obtained in real-world workplace environments. Various reasons may explain such discrepancies (lack of training, wearing time, lack of comfort, bad fitting, noise environments, etc.) but very few of them have been studied in details due to the complexity of the problem. This study focuses on the variability of the attenuation of HPDs as a function of the location of the noise source. Laboratory measurements were performed where subjects, wearing a HPD and facing a loudspeaker, were asked to rotate slowly on a rotating chair to simulate different angular positions of the head relative to the source. The protected and unprotected sound pressure signals for both ears were recorded as time signals using miniature microphones placed respectively inside and outside the HPD (F-MIRE technique). The microphones signals were processed to obtain attenuation values for the different angular positions. Results for different type of HPD (ear-muffs and ear-plugs) are presented and discussed.