

Localization in the anechoic environment and with virtual acoustical directional presentation investigated with a laser-pointing method

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Many scientific studies investigate the acoustical localization in the field of vision. Hence it is suitable to display the perceived auditory direction by a light point. In formerly known methods subjects use a hand-held light pointer or a pivoted pointer in front of them. However, the subject's motor system or the optical parallax may influence the results of those techniques. Instead, the newly proposed method utilizes a laser pointer with a deflection unit. Subjects enter the perceived direction with a trackball. The laser spot moves according to the rotation of the ball smoothly on a defined track. Localization results obtained by this method are presented. The reproduction of the acoustical direction was varied in three ways: free-field, headphones using individual HRTFs, and headphones using selected non-individual HRTFs. Furthermore, the influence of the initial laser spot position is investigated. The intuitive experimental operation and the high resolution of the laser-pointer method make it particularly suitable for localization research in audiology, psychoacoustics, and virtual acoustics.