

ACOUSTICS2008/1297
Low-frequency response in active acoustic practice rooms

Ronald Freiheit
Wenger Corporation, 555 Park Drive, Owatonna, MN 55060, USA

Integrating active (virtual) acoustics into relatively small practice rooms to create a sense of envelopment is critical to the satisfaction of the musicians using these spaces for learning. The number of speakers and their locations play an important role in minimizing the ability to localize to the sources supporting this sense of envelopment. Equally important is the frequency response required for the speakers used in these applications, to more accurately simulate the acoustics of a performance environment.

Excessive high frequencies increase the ability to localize and decrease the sensation of a larger space, since the air in larger spaces naturally absorbs many high frequencies. Another challenge is creating the sense of envelopment for instruments in the bass region (125Hz octave band and below) by providing enough low-frequency energy response. Work will be presented on low-frequency response desired to satisfy a sampling of solo cello players using active acoustic practice rooms. The optimal sources for these low frequencies - single or multiple - will be discussed. Updated information will also be provided on the sound field coverage in active rooms with extended low-frequency response.