Subject: Re: Where To Learn More?
Posted by Wayne Parham on Sun, 30 Jan 2011 17:04:43 GMT
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The sound in a room passes through three distinct ranges, the pressure range (where the room is acoustically small), the modal range (where the room is approximately equal in scale to wavelength) and the reverberant range (where the room is acoustically large).

In the case of very small rooms (like car cabins), the pressure range extends much higher than in a typical indoors room. It often extends through the whole subwoofer region, and in this range, there is approximately 12dB/octave bass boost. That's why a little speaker in a car can produce so much bass (and a larger woofer can get really ridiculous).

In the case of headphones, a large part of the audio band is in the pressure region.

At the opposite end, very large rooms like auditoriums, only infrasonics are in the pressure region, so it effectively does not have one. In the largest rooms, even the modal range is shifted down below the passband, so again, it effectively doesn't have one. These sort of very large rooms can be treated pretty much the same as an outdoor space.

There's more information about speaker-room interactions in the document called "High-Fidelity Uniform-Directivity Loudspeakers", towards the end, starting on page 25.