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Subject: Re: Boundary conditions and floor bounce

Posted by [Wayne Parham](#) on Thu, 30 Apr 2009 18:39:27 GMT

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I use a 12dB/octave slope for the low-pass filter to subs. I do not high-pass the mains for home hifi applications. The key here is blending, so overlap is your friend. For subs placed close to the mains, something like 4-8 feet away, I usually use 80-100Hz low pass, something like that. Subs placed further away need lower crossover to prevent localization problems. You want subs to be invisible, not call attention to themselves but rather give subtle foundation. They may rock the house when an earthquake scene is played on a movie, but it should not sound like you have distinct subs. That's what I mean by "subtle". The rumble they can produce may be anything but subtle, but the blend with the mains should be seamless. It's best if people can't tell subs are being used at all. Floor bounce is essentially a modal problem. I distinguish it from others simply because it is fairly constant between various environments while other modes are more variable from room to room. But the solution is the same, you want to overlap sound sources in the floor bounce range, which is basically upper midbass to lower midrange. The floor bounce notch frequency is not set solely by the distance from midwoofer to floor, it is also set by the distance to the listener. It is, after all, caused by the path length difference from the direct sound and the reflection from the floor. So as the angles change because of varying listener distance, so does the frequency of the bounce. That's why the most effective thing to do to mitigate floor bounce is to have overlapping sound sources spaced a few feet apart in the upper midbass to lower midrange. This can be from flanking subs or it can be from a midrange and woofer, positioned properly and sharing the same range. Multiple subs can be used to smooth the lower room modes as well.

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