Subject: Re: Smoothing Effect on FR of multiple speakers
Posted by Wayne Parham on Tue, 01 Sep 2009 15:41:14 GMT
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Have you tried to use "art" as your password for your original login? When we ported to the new forum software, everyone's password was originally set to "art" because we don't store passwords, so couldn't copy them over.

If you try to login with "art" password and it doesn't work, I can easily and would gladly reset it for you. Just send a note to webmaster@audioroundtable.com. It will probably be Thursday before I can get to it though, as I'll be away from computers for the next two days.

I suppose drivers would vary some from unit to unit, but I think the biggest deal is the change in position in 3D space (or as you say, each driver being isolated from its peers). This causes different path lengths to the room boundaries and shifts the phase of reflections.

When I've measured drivers, I usually see pretty much the same response curve from each. The electro-mechanical parameters do vary, but those set the low frequency range and the differences between units is not large enough to make one hugely peaked and the other overdamped in the same cabinet. So the shifts are subtle, really, and completely swamped by room effects. Up high, the cone flex modes are more chaotic looking, but unless the cones are very different (like one has a glob of glue and another doesn't), then the major breakup peaks and dips happen pretty close to the same place. So while you might see some averaging of the "little squiggies", the major peaks and dips (that really count) stay in the same place.

On the other hand, modal averaging in 3D space is a big deal, accounting for a significant smoothing. As an example, a floor bounce (self-interference) notch from a single driver placed a few feet up is usually 10dB or thereabouts. Put a few more drivers in an array and they all average together to smooth the notch, making it completely unnoticeable. One driver may have a notch at 90Hz, another at 120Hz and the third at 150Hz - if each were driven alone - but when the three are run together, each notch that would have appeared from a single driver alone is "filled in" by the other two. So this kind of spatial averaging is extremely significant.