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Posted by [Wayne Parham](#) on Tue, 23 Aug 2022 19:29:58 GMT

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I agree with you generally about almost everything you said except the part about time alignment. This is impossible in the modal region.

hornsubs - because acoustic centers are far from the mouth. In that case, a delay line can be employed to keep everything in sync. It's not really important that they be "aligned" to the

Indoors, this isn't possible because of interactions with reflections that are nearly as loud as the direct sound. SBIR and room modes rear their ugly head. So since we cannot possibly have the sources and reflections in phase, we might do the next best thing. We can create a sound field at low frequencies that acts similarly to the reverberant field that exists at higher frequencies. That's created by dense interference. It's done by blending sound sources of lots of different phases.

So - no - don't plug your ports. Totally unnecessary and actually counter-productive. Just setup a flanking sub / multisub system.

To summarize:

If everything is in-sync and there are no reflections, a coherent wavefront can be generated. This is the best case outdoors, or in very large rooms and auditoriums.

If there are just a few sources and/or reflections, then well-defined lobes and nulls form. It looks like a checkerboard of hot and dead spots in 3D space. This is what the modal region acts like - if there are few bass sound sources - it's a worst-case scenario. You can picture it as choppy waves on water with high peaks and troughs, like what is formed from a single large item or maybe a couple of large items thrown into the water.

If there are many sound sources and/or reflections, then the lobes and nulls become so dense you don't really notice them. Picture it as rainfall on the surface of a pond. There are lots of little impacts, but there are so many it all blends together. This is how the reverberant field acts, and it's the next best thing to a coherent wavefront. Multisubs can create this too, changing the modal region into something that acts like a reverberant field.