Subject: Ping Earl Geddees!
Posted by spkrman57 on Thu, 15 Dec 2005 13:08:59 GMT
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I just have one question, "Why did you sell your JBL 4430's?"With the different designs you have had and promote, I am curious how the 4430's fell within the group.Ron(Current owner of your old 4430's)

Subject: The waveguide
Posted by Earl Geddes on Mon, 19 Dec 2005 13:25:13 GMT
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The waveguide in the 4430's was vastly inferior to my current one. The rest of the 4430 design is OK, but could be improved. I had once thought of just replacing the waveguide, but then I concluded that there were so many other things that I could try at the same time. I have often refered to the Summa as an updated 4430, which was itself an updated A7. The general concept (2-way, CD) is sound (pun intended) but we know so much more today and have so much better components. I am not a nastalgia fan, if you couldn't tell. Nostalgia is for old recordings not old equipment.

Subject: Re: The waveguide
Posted by spkrman57 on Mon, 19 Dec 2005 20:29:39 GMT
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Earl,Thanks for the reply. One of these days when I have time I will have to search out the systems you reference and look them over.Ron

Subject: The A7's
Posted by Earl Geddes on Mon, 19 Dec 2005 21:38:56 GMT
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The only speaker that I referenced besides the 4430's was the A7.This is the Altec-Lansing A7 more effectionately know as the "Voice of the Theater". It was a 15" woofer and a 1" compression driver, as is the 4430's and the Summa.The 4430's were an improvement in that the horn was axi-symetric and Constant directivity, the A7 was not. The 4430's had a better crossover.The Summa's are an improvement in that the waveguide is not a diffraction device - the 4430's are - and it has a foam refractive plug for even lower diffraction in the waveguide. It has a low diffraction

enclosure which is also more solid than either the A7 (which were pretty flexible) or the 4430 (better than the A7. Finally the Summas have a better crossover optimized for polar response not axial response.So each of these speakers has the same basic design, but each of them uses more up to date technology and theory to achieve a better performance. If you liked A7's or 4430's you'd love Summas.

Subject: Re: The A7's
Posted by colinhester on Tue, 20 Dec 2005 18:49:07 GMT
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Earl, Did you ever mod the A7s? I know cabinet bracing is a big part of the process, but did you ever look at the xover?.....ColinPS. I have Spkrmn57's old A7s, which I love (the speaker, not Ron.) Maybe I can talk him out of the 4430s when he gets the Summas .

Subject: Re: The A7's
Posted by Earl Geddes on Tue, 20 Dec 2005 19:11:57 GMT
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I have not used Altec stuff for decades. I have some old drivers and horns for A7's if anyones interested. I simply don't believe in using old obsolete stuff. I like the newer offerings from companies like B&C. Extremely good quality at very reasonable prices. And I prefer composit plastics to wood. Why go anywhere else?

Subject: Re: The A7's
Posted by spkrman57 on Tue, 20 Dec 2005 20:45:09 GMT
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Earl, How about a link to the Summa's you mentioned. The A7's I am already familiar with as I cut my teeth into high efficiency with them and then moved on to JBL with mainly my variations of the 4 Pi Pro system Wayne came up with.I use (Bruce) Edgar wood horns with Altec 902's for most of mine though.By the way, Colin is using stock N-501 8A crossovers which could be improved on.Regards, Ron

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Subject: Summas
Posted by Earl Geddes on Tue, 20 Dec 2005 21:55:23 GMT

Simply go to www.gedlee.com and click on the Summa Link.

Subject: Aspect ratio
Posted by Wayne Parham on Wed, 21 Dec 2005 15:21:35 GMT

I respect you and I respect your work. But I don't like axisymmetric horns, never did. They're nice for mathematical simplicity, and easy to promote as a purist thing. But I can't think of a single instance where a symmetric coverage pattern is desired.I much prefer a radial horn, maybe one of the other horn variants in your book would satisfy. Seems like I recall you mentioned a geometry that provides a rectangular pattern but that still provides some of the other benefits that you have worked towards in respect to reduction of high order modes and diffraction.The rooms in homes are rectangular, and the desired pattern is wider than it is tall. We don't want the sound bouncing off the floors and ceiling, energy there is a waste. The coverage required in a prosound environment is almost always wide, whether inside small indoors venues or large outdoor events. If axisymmetric horns are used, they are best splayed so that they form what is essentially a multicell horn. So since we're working with a rectangular coverage pattern, I prefer a horn with a rectangular aspect ratio.

Subject: I can think of one
Posted by Earl Geddes on Wed, 21 Dec 2005 18:47:56 GMT

"But I can't think of a single instance where a symmetric coverage pattern is desired."Find me a woofer with an asymetrical polar pattern and I'll agree with you. To me MATCHING directivity, DI, power response through the crossover is more important having a narrower vertical directivity.

Subject: Re: I can think of one
Posted by Wayne Parham on Wed, 21 Dec 2005 21:34:26 GMT

I understand your position but I do not agree with it fully. Let me explain.The strength of a loudspeaker designed to match DI at the crossover point is that the polar response is pretty uniform, not just the axial response. On this, you and I agree.But in a system with a direct radiating midwoofer, you cannot control vertical directivity at all until the HF horn takes over, and

even then, only at a fairly high frequency. I would rather limit vertical dispersion as much as possible, because that is a source of early reflections just as much as side wall bounce. I prefer to have the system match horizontal directivity or average DI while limiting vertical directivity.As I see it, the DI matched two-way loudspeaker is a good solution, but like all good solutions, it has its compromises. It has no control of low frequency and midrange directivity. The system starts to become directional near the crossover point, which is pretty high in the midrange band. The whole vocal range and below has hemispherical radiation or greater.The ideal would be to have controlled relatively narrow directivity throughout the audio spectrum. My personal preference would be that the pattern have an aspect ratio wider than it is tall, because this better utilizes the acoustic energy to cover the listening area. In an indoor environment, it also serves to reduce reflections from the ceiling and floor.There are systems that can accomplish this, but they are larger than the typical DI matched two-way loudspeaker. The DI matched idea is a good one for making speakers of moderate size, since it helps make the transition between subsystems less abrupt and creates a more uniform reverberent field. But I don't think that widening the vertical pattern of the tweeter to match is productive.

Subject: A fiction
Posted by Earl Geddes on Wed, 21 Dec 2005 23:03:17 GMT
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Either I misunderstand you or what you are saying is not correct.The way that I make a two way is the ONLY way to get a matched DI through crossover. You seem to be implying that you can do this with a narrower vertical coverage which I don't believe is possible in a two driver system.Further you say"But in a system with a direct radiating midwoofer, you cannot control vertical directivity at all until the HF horn takes over"Untrue, with a 15" woofer I get substantial directivity above about 500 Hz, well below where the waveguide comes in at about 1000 Hz and the two are perfectly matched in coverage."I prefer to have the system match horizontal directivity or average DI while limiting vertical directivity."But I do both - matched DI in both Horizontal and Vertical AND matched directivity. You cannot do both with your approach. I can elliminate the floor and ceiling reflections with absorbers, which I do in my rooms, so this, which is your best point, is an easily resolved problem."It has no control of low frequency and midrange directivity."Nothing can control low frequency directivity except complex, large solutions that are totally impractical in small listening rooms so I don't see your point here. And as I said I do get substantial directivity out of a 15" at 500 Hz - a DI > 6 dB as measured, and shown on my web site. I've already covered midrange directivity."The ideal would be to have controlled relatively narrow directivity throughout the audio spectrum."I actually agree with this. BUT, there is a practical LF limit for which this can be done. I go as low as is practical given contraints on enclosure size. Give me a larger enclosure and I'll go lower with directivity control. You forgot the word "constant" applied to directivity though.We don't see eye to eye on this, but you seem to be saying things that just aren't true. Show me a system that you have built that has the kind of directivity matching and narrow coverage control that I achieve AND show and that will go a long ways towards convincing me that you have a good point."Show me the data."

Subject: Re: A fact
Posted by Wayne Parham on Thu, 22 Dec 2005 02:55:41 GMT
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What I am saying is that the desired coverage pattern is wider than it is tall in nearly all cases. So I find it desirable to use horns that will provide this.A DI matched two-way loudspeaker is a nice compromise solution that does provide some degree of uniformity through the crossover region, but that's about it. I prefer to limit vertical dispersion more than a DI matched loudspeaker with an axisymmetric horn will allow.By the way, at 500Hz, with DI at 6dB, the radiation angle is still so wide that early reflections are significant in both the horiziontal and vertical axis. There's no way around that in a DI matched two-way loudspeaker system. Regardless, I still find DI matched two-way speakers to be a good compromise of size and performance. I just don't like using axisymmetric horns.

Subject: Re: The A7's
Posted by colinhester on Thu, 22 Dec 2005 04:43:49 GMT
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Please email me with what you have and how much you want for it....Colin

Subject: Re: A fact
Posted by Earl Geddes on Thu, 22 Dec 2005 12:38:53 GMT
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"What I am saying is that the desired coverage pattern is wider than it is tall in nearly all cases. So I find it desirable to use horns that will provide this."To which I agree, if doing this did not create more problems than it fixes."I prefer to limit vertical dispersion more than a DI matched loudspeaker with an axisymmetric horn will allow. "I preferthe matched DI - weve been through this before."By the way, at 500Hz, with DI at 6dB, the radiation angle is still so wide that early reflections are significant in both the horiziontal and vertical axis."True, but not very important, nor is there any alternative. To get a DI < 6 at 500 Hz would require a speaker much much larger, I mentioned this already. A non-axisymmetric horn does nothing to solve this problem. At 500 Hz our hearing and localization is not very sensitive to reflections - not at all like they are above 1000 Hz. You also have not considered that a narrow vertical coverage requires a horn to be twice as wide as mine to control the vertival pattenr as well as mine. Thus for a given cabinet size at the crossover, the non-axisymmetric device does not actually work as well for pattern control as the axisymetric one.If you actually measure the pattern that you get you will find that your narrow device will actually be wider than mine vertically at the crossover.Your "solution", as I keep saying, sounds good on paper, but actually creates more problems that it solves. My solution while not theoretically ideal has a singular problem that is easily fixed in the room itself. Again, we don't agree on this point.

Subject: Re: A fact
Posted by Wayne Parham on Thu, 22 Dec 2005 14:38:57 GMT
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One good solution for making a wider coverage angle is to splay two axisymmetric horns. Another solution is to use a radial horn of similar dimensions.I like DI matched two-way speakers because they provide good performance in a relatively small package. But I also like the idea of using room corners, which constrains the radiation angle. The speakers need only be designed to

directional control at lower frequencies from a relatively small horn. DI is set at 9dB, and is that at 500Hz and below. The only requirement is that the horns be designed with a 90° flare angle and

extensions, effectively forming a very large CD horn.

Subject: I've heard this before
Posted by Earl Geddes on Thu, 22 Dec 2005 16:08:51 GMT
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WayneYou've made this argument before and I still don't buy it. DI of a system in a room is not defined as DI is only applicable to free space. So using DI the way that you are is not reasonable. If we are talking about how speakers perform in real rooms thats fine, but then lets drop any DI discussions. If we are talking about DI then we have to assume that we are talking about a free field.You room boundary extension concepts are grossly over-simplified and I continue to doubt that things work the way you hope they do.Your dual axi-symmetric approach does work fine - agreed - if you can live with a cabinet that is now twice as wide. I made this point earlier too. You keep repeating your points as if you don't even read my rebuttal.

Subject: Angular coverage defined
Posted by Wayne Parham on Thu, 22 Dec 2005 16:53:00 GMT
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The DI of radiation from a trihedral corner is defined as 9dB. This is not an interpretation of the facts, this is a definition of the angular coverage.

Subject: Your twisting arround the def
Posted by Earl Geddes on Thu, 22 Dec 2005 18:36:27 GMT
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Wayne,you are twisting the deffinition to suite your purposes.To wit see Beranek, Acoustics, sec XI. The DI is not defined for a "corner" it is only defined for a "source of sound".The 9 dB comes from only defining the sound field for a 1/8 space and using full space as a reference - not very meaningful. ANY source in that space would thus have a minimum of 9 dB of DI, making the value meaningless. Even an omni-directional source would have a DI of 9 dB by this deffinition. The 9 dB is simply an artifact of the boundary conditions in an unrealistic situation where there is only ONE corner. Klipsch actually built a chamber like this in Hope, but I know of no other. They did it because it was the only way to test corner horns.

Subject: Eighth-space = 9dB DI
Posted by Wayne Parham on Thu, 22 Dec 2005 19:36:07 GMT
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Earl, no offense but I think you are being overly pedantic.When the sound source eminates from the apex of a set of radiating planes that meet to form a trihedral triangle, then the DI of the source is 9dB. This condition can be made by a large stand-alone horn, rows of bricks or a room's corner that forms the boundaries. Consider the ceiling and the radiating pattern is constrained even more.Seems like I recall you had mentioned one of your horns had a rectangular radiating pattern. One of the reasons I brought it up is that a 90x40 horn is useful for matching the condition formed by the room's boundaries when sound radiates from the corner.Anyway, it's been great to chat with you and I hope you and Lidia have a very merry Christmas.

Subject: Re: Eighth-space = 9dB DI
Posted by Earl Geddes on Thu, 22 Dec 2005 20:05:51 GMT
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And I think you deliberately twist around definitions and concepts to suite your needs, never giving an inch to an argument. It seems like you think that repeating something enough times will make it true.As I said ALL sources have a 9 dB DI in a corner - so what - its meaningless.You have a nice holiday too.

Subject: Re: Eighth-space = 9dB DI
Posted by Wayne Parham on Thu, 22 Dec 2005 22:29:26 GMT
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By that argument, all DI increases from waveguides would be meaningless. A sound source

radiating from the apex of a trihedral boundary is a CD source, one having of the most purely constant directivity you can find. It is quite literally a large waveguide with radiation angle defined by the walls.

Subject: Re: Eighth-space = 9dB DI
Posted by Earl Geddes on Fri, 23 Dec 2005 01:11:06 GMT
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WayneYou continue to amaze me.

Subject: Re: A fact
Posted by majestik6 on Fri, 30 Dec 2005 00:35:14 GMT
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Wayne, Dr Geddes -If you splay two axisymmetric horns, wouldn't you get massive comb filtering?
 I've never tried this, but I assumed that the frequency response would be practically unusable.As you know, I use horns and waveguides in cars, and in this environment, vertical size is severely limited.I've considered oblate bispheroidal as well, but assumed that it would suffer from the same comb filtering. And OBS waveguides are all but undocumented.Patrick Bateman
 this is what a horn looks like in a car

Subject: Re: A fact
Posted by Wayne Parham on Fri, 30 Dec 2005 01:35:41 GMT
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 A few useful links
