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Subject: Pete's Home Theater Build

Posted by [petew](#) on Mon, 27 Jun 2011 14:40:40 GMT

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I'm in dire need of four surrounds. Is the 2 pi suitable for on-wall installation? Will they perform well at about 5' to 6' above the floor?

I'm also interested in building a trio of 4 pi for LCR duty. Will need to modify my screen to AT first, and start saving my nickles and dimes.

I'd appreciate any suggestions, and a set of plans.

Thanks in advance

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Subject: Re: Pete's Home Theater Build

Posted by [Wayne Parham](#) on Mon, 27 Jun 2011 16:05:21 GMT

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They don't really need a lot of bass extension, just to match spectral balance above the modal range. So they're perfect when used for surrounds with the larger (3, 4, 6 or 7) models as mains. And wall mounting is a good way to go. I personally have my surrounds on bookshelves, beside and behind the listening area.

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Subject: Re: Pete's Home Theater Build

Posted by [petew](#) on Mon, 27 Jun 2011 16:31:17 GMT

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I appreciate the feedback Wayne. Please send cabinet drawings when you get a chance. Don't need the 4 pi drawings yet, since I have looked at a bunch of build threads and have a pretty good handle on what's involved.

I do want to build the 2 pi's sometime this summer.

Thanks

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Subject: Re: Pete's Home Theater Build

Posted by [Wayne Parham](#) on Mon, 27 Jun 2011 17:33:47 GMT

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You've got mail!

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Tue, 05 Mar 2013 16:50:11 GMT  
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I'm finally moving on this project. I ordered everything from PE last night and have Baltic Birch plywood in stock. I'll start making dust this weekend. I'll post progress pictures here.

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Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Tue, 05 Mar 2013 16:54:26 GMT  
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Yes, please do. We love build pics!

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Mon, 11 Mar 2013 15:06:49 GMT  
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R-13 insulation on the bottom, back, and side nearest the port.

Would 1" rigid rockwool insulation perform equivalently? I have some on hand I'd like to use.

Thanks

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Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Mon, 11 Mar 2013 15:34:41 GMT  
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I don't know, Pete. I haven't tried the stuff.

I will say this: A few years back, I guess about 15 years ago, there was a push to change damping materials so I tried a few alternates. Some were purpose designed for sound absorption,

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others were just stuffing. My testing criteria was pretty simple, run some white noise and see which was most attenuated. What I found surprised me - Nothing worked as well as R11 and some materials were significantly worse. So I decided the old tried-and-true R11 was best and never looked back.

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Tue, 04 Jun 2013 01:08:46 GMT  
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We're a few months after arrival of my components, but I finally got started!

Here's a build thread over at AVS. I'll put together another thread here after everything is up and running.

<http://www.avsforum.com/t/1475658/2-pi-surround-speaker-project>

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Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Tue, 04 Jun 2013 13:55:41 GMT  
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Very cool, Pete. Thanks for keeping us posted on your progress!

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Thu, 06 Jun 2013 03:35:33 GMT  
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Teaser shot here. I'm making good progress on the project.

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### File Attachments

1) [2pi\\_speakers.jpg](#), downloaded 9972 times

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Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Thu, 06 Jun 2013 06:28:20 GMT  
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Excellent, Pete. Thanks for posting the pics here.

Just for curiosity's sake, what is your room layout? Where are your speakers going?

I ask because I found an odd but neat trick for my side surrounds. I wanted to place them beside and slightly above and behind the listeners, much like they are in theaters. But my room layout didn't really support that - The best place to put the side surround speakers was behind the listeners.

So I tried aiming them at the side walls, where the angle of reflection directed their sound into the listening area, approximately towards the same place where the forward axes of the L/R front mains cross. Turned out excellent! It's spooky good that way. People are always looking around, thinking stuff is happening outside or off in the other room and then realize it's in the movie soundtrack.

I'm wondering if that might not work well for your too. You can always mount the side surrounds on the side walls facing inward, but maybe try them in this reflected mode and see how you like it too. If you like how it sounds, then the sides and the rears can be put in the same place, but the sides directed at the side walls while the rears are directed straight forward.

If you try that, report back and let me know what you think. Maybe live with it for a few movies each way to see.

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Thu, 06 Jun 2013 18:37:48 GMT  
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Here's a layout of my room. Current side surrounds are old B&W towers, the rears are bookshelf speakers on top of two drawer lateral file cabinets.

floor angled slightly downward.

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#### File Attachments

1) [room\\_layout.jpg](#), downloaded 9959 times

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Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Thu, 06 Jun 2013 23:54:03 GMT

Are you planning to put the side surrounds on the subs? Or maybe hung on the walls above them? Looks like that's where they would work best.

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Fri, 07 Jun 2013 17:42:00 GMT  
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I'll be mounting the surrounds on the walls with the bottom of the cabinet at about 5'. I'm going to play around with placement before I build the wall mount brackets.

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Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Fri, 07 Jun 2013 18:35:09 GMT  
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Sounds like a great plan. I think that's what I would do too.

Are you still planning to run constant directivity cornerhorns? Or are you going back to your

will reduce self-interference from nearest boundaries if you blend them with the mains. So that's a good setup too.

Room modes, multisubs and flanking subs  
Helper Woofer Location

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Fri, 07 Jun 2013 19:16:55 GMT  
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I'm definitely going with corner horns. Have not decided between the six and seven yet though. I'm working out the details on the mid-horns and plan to build them soon.

I know you've recommended using a three or four for center channel duty. What would you think about using a mid-horn, HF horn and crossover from a six or seven as the basis of a center channel speaker? I'd build a bass bin to fit the space available behind and below the screen. The seven bin would fit my space but obviously wouldn't have the benefit of living in a corner.

It might make sense to bi-amp the bass bin on one amp and the [mid+HF+passive XO] on another amp with a miniDSP active XO.

It seems that the LF driver in the corner horns covers a much smaller chunk of spectrum than the LF driver in a three or four. I'm concerned (obsessed) that the center blends seamlessly with the left and right corner horns. Since the range covered by the mid-horn is so important I'd think all three front speakers would be better matched up from mid bass to the top end with identical drivers.

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Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Fri, 07 Jun 2013 20:04:54 GMT  
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That's an excellent question, one that has been posed here many times. I think that the method you propose will work well, and there are plenty that have done it that way. In fact, if I did not

cornerhorns as mains, I would probably think the midhorn proposal you make for the center channel would be the right way to go. And it isn't like that's the wrong way to go, so you can certainly do it if you want to.

But the thing is the spectral balance is similar with each of these speakers, so they do sound matched. I would probably use a DI-matched two-way even if my left and right mains were constant directivity cornerhorns. Mostly that's because I know the speakers are already vetted out, tested and optimized. No surprises that way.

The biggest difference is in the room/speaker interface, to tell the truth. The constant directivity cornerhorns having no self-interference, the wavefront launch from the corners and the truly constant directivity throughout the band are things you cannot match with any other configuration. So even if you put a midhorn in the center channel, it's still different than the cornerhorns.

Still, don't let me discourage you. You can do exactly what you've described and it sounds very

midhorns and waveguides on top, just like you've described. The midhorn and tweeter need to be attenuated about 3dB when done this way. Basically, you use the woofer circuit from the constant directivity cornerhorn schematic, but the tweeter circuit uses R1/R2 values shown for the

Either way - center channel being a DI-matched two-way speaker or a hybrid with midhorn - the sound is very good. It sounds natural when things pan across the front channels, through the center. The illusion is maintained, largely because the speakers are all voiced the same.

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Subject: Re: Pete's Home Theater Build  
Posted by [rkeman](#) on Sat, 08 Jun 2013 03:09:45 GMT  
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The tonal and soundstage matching of the 6Pi and 3Pi is excellent, and I agree that developing a "new" center channel using the midrange and high frequency horns and some bass bin is less likely to yield as good results as using the matching two way and corner horn. I recently had an experienced audiophile friend comment on the seamless match between the three front channels is when he realized that he had chosen the Dolby Pro Logic II Music mode rather than stereo while listening to a vinyl record. What also amazed him was that the phono input was being digitized and processed using both Dolby and Audyssey room correction and it really sounded great!

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Mon, 10 Jun 2013 21:58:27 GMT  
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budget would be stretched using three JBL drivers, but I'd guess the upgrade is more important in

Your advice is much appreciated.

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Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Mon, 10 Jun 2013 22:55:37 GMT  
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cornerhorns with the midhorn.

so much of the gain from the flux stabilization ring is unused. But their spectral balance is pretty

model. And if budget is a concern, don't upgrade the woofer in the cornerhorns because it covers less of the band.

As an aside, the midhorn reduces distortion in its midrange, so has less need for flux stabilized drivers. I've used them and they sound nice, but I wouldn't say the difference is noticeable. In fact, I think I prefer the standard ferrite driver in the midhorn, for whatever reason.

I've listened to constant directivity cornerhorns with Delta 10 mids at trade shows, where I have

them playing pretty much all day, every day from Thursday through Sunday, and I don't get listener fatigue at all. This has been a sort of litmus test for me. The better drivers always leave me refreshed and the lesser drivers always seem to give me temporary tinnitus at the end of the show. Constant directivity cornerhorns don't fatigue me no matter what drivers are in them, which I attribute to their horn loading.

One of the effects of distortion is listener fatigue. It becomes irritating, and even causes temporary tinnitus. It seems to be a function of SPL/time, in that high sound levels cause irritation fairly soon, but the same irritation can be felt at low sound levels if experienced over a longer period of time. These are my own personal observations but I have also heard comments from many other people that make me believe they experience the same things.

This is what I perceive where distortion is concerned:

1. In main speakers, lower distortion speakers tend to sound clearer to me, all other things being equal. However, the audibility is a function of SPL, and below a certain level, I cannot detect the distortion.
2. At high power level, a speaker with a little more distortion will be more fatiguing, making me want to "turn it down" much sooner than a less distorted speaker.
3. At low power levels, a speaker with a little more distortion will be more fatiguing over a long period of time. At low power levels, I cannot tell that it is going to fatigue me at first, even for a few hours, but after a few days at a trade show, for example, the higher distortion speaker will fatigue me, where the lower distortion speaker does not.
4. In subwoofers, distortion is much less noticeable, but higher distortion tends to sound louder and fatter. (Sorry for the subjective terms, just trying to describe what I hear)
5. Just like the mains, a high distortion woofer will be fatiguing, even if it cannot be easily detected. I gained these opinions after many years of using my own speakers which often come in a stock or upgraded version. The upgraded version usually has a midwoofer with a shorting ring, creating less distortion. Their response curves are very similar between the stock and upgraded versions, but the upgraded model has lower distortion. And as I said, the differences in woofers are much more pronounced in the DI-matched two-ways than the constant directivity cornerhorns, because the woofer covers so much more of the audio band in the two-ways. In the cornerhorns, it's less of an issue.

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Mon, 17 Jun 2013 15:40:36 GMT  
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Crossover assembly under way:

Crossovers done - I sized the boards to fit through the terminal cup holes in the cabinets. I wanted to get everything completely assembled and tested on the bench prior to buttoning up the



cabinets.

Crossover closeup.

Final coat of Duratex on the boxes.

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### File Attachments

- 1) [2pi\\_surrounds\\_crossovers.jpg](#), downloaded 11752 times
  - 2) [2pi\\_surrounds\\_connector\\_panels.jpg](#), downloaded 11761 times
  - 3) [2pi\\_surrounds\\_crossover\\_closeup.jpg](#), downloaded 11801 times
  - 4) [2pi\\_speaker\\_cabinets.jpg](#), downloaded 11585 times
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Subject: Re: Pete's Home Theater Build

Posted by [Wayne Parham](#) on Mon, 17 Jun 2013 16:33:23 GMT

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They look great!

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Subject: Re: Pete's Home Theater Build

Posted by [petew](#) on Tue, 18 Jun 2013 04:13:16 GMT

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We got these completed and lit them up today. The 2 pi exceed my expectations by miles. The whole system just opens up and fills the room.

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### File Attachments

- 1) [2pi\\_surrounds\\_in\\_room.jpg](#), downloaded 11595 times
  - 2) [2pi\\_speaker\\_closeup.jpg](#), downloaded 11744 times
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Subject: Re: Pete's Home Theater Build

Posted by [Wayne Parham](#) on Tue, 18 Jun 2013 13:20:27 GMT

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Very nice, Pete! Glad you're liking them!

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**Subject: Re: Pete's Home Theater Build**  
Posted by [petew](#) on Tue, 18 Jun 2013 23:47:20 GMT  
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I'm going to haul a pair upstairs to compare to my little B&W CM1 stand mounted monitors. Should be interesting.

I have a multichannel DTS CD of Eric Clapton 461 Ocean Boulevard. The organ track is mixed into the surrounds and sounded great on the 2 pi.

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**Subject: Re: Pete's Home Theater Build**  
Posted by [petew](#) on Wed, 19 Jun 2013 19:37:05 GMT  
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I did some pretty extensive two channel listening to one pair last night in my living room (not the theater). At first listen, the highs were a bit harsh and mid bass seemed "thick". Once I backed away from the speakers - further than my normal listening position - they sounded much more balanced and smooth. Normal couch to TV distance is about 7'. They sounded much better at 10' or more. My little B&W stand mount speakers work well nearfield, but I think the 2pi needs more room and distance to get into the sweet spot. My living room is irregular, hard and reflective. Room treatments would do wonders for the two Pi's.

I think five of the two pi's would make a great home theater on a budget. They have good dynamics that you need for HT. Musical performance is good. Like any speaker, placement and room treatments will contribute a lot.

I'll let Nube give them a listen in the living room and hear his opinion. I'll try some two channel listening in my theater too, since it's a much better space, acoustically, than the living room.

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**Subject: Re: Pete's Home Theater Build**  
Posted by [Wayne Parham](#) on Wed, 19 Jun 2013 20:08:14 GMT  
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Thanks for the update.

You mentioned the listening room is irregular, hard and reflective. That no doubt contributes to

speakers need a little more foundation, something to give them more bottom end. If they are used as mains, they really need subs. They're perfect for surrounds, but don't have enough output below 60Hz, so they sound thin by themselves.

They also sound great in a tiny space, like a car. No need for subs there! But in their native environment - in a home - they're best as surrounds or if used as mains, with subwoofers added.

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Wed, 19 Jun 2013 20:59:57 GMT  
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I'll crossover to my subs when I do some test listening in the theater. I'll also run a 4.1 another review.

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Thu, 11 Jul 2013 01:04:41 GMT  
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I never got around to putting more listening sessions together with the 2pi's running as mains. I did get around to inserting them into their designated slots as surround speakers.

I am simply amazed at how they have opened up the soundfield in my theater. It's almost like I'm running front-wide channels, although I'm firmly planted in the 7.1 universe. The wide dispersion of the 2pi's is perfect for surround duty. I can hear every channel distinctly, but they blend and image across the whole rear of the room and mesh with the front main speakers.

They effortlessly reproduce explosions or gunshots, but also can recreate gentle raindrops and chirping crickets.

The other day I was giving a demo to some friends. I was in the back of the room at the equipment racks - actually behind the left side and left rear surrounds. Even from that compromised position I could clearly hear all four surrounds and the mains were still distinct and clear.

I could not be happier with the 2pi speakers. I am so glad that I did not give in to "horn hysteria" for my surround project.

In a nutshell, HIGHLY RECOMMENDED!!

Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Thu, 11 Jul 2013 01:31:59 GMT  
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Thanks for your continued feedback, Pete.

You know how big of an enthusiast I am of horns and waveguides. But for surrounds, I do think that the wider pattern of direct radiators makes more sense.

But for mains, now that's where we want the horns!

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Subject: Re: Pete's Home Theater Build  
Posted by [dheflin44](#) on Thu, 11 Jul 2013 13:34:53 GMT  
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Wide dispersion sounds like the way to go for side surrounds (especially for longer rooms), but what about rear surrounds?

Thanks,  
Darrell

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Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Thu, 11 Jul 2013 17:48:48 GMT  
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I think rear surrounds sound more natural with wide patterns too, at least for movies.

Multi-channel music is a little different, but frankly every music disk I've heard with both multi-channel and stereo mixes sounded better in stereo mode.

I do think there may come a time when more attention is paid to the multi-channel music mixes, and when that time comes, more directional speakers might be better. But that's only a suspicion, just based on the fact that one could produce material that essentially recorded every channel like the mains. It's mostly a matter of content. The surround channels could potentially capture the room acoustics of the source material, if recorded and mixed well.

But right now - as surrounds - I think a wider pattern sounds better. The content of those channels is more suitable for sources with wider patterns. And I do think that will always be the case with movies, because the focus is always forward, towards the screen. The side and rear surrounds are just ambience and occasional effects. Now that I think about it, this is largely true for music content too, because all you would really expect to get in the rear channels is the room acoustics and the audience.

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Thu, 11 Jul 2013 23:39:38 GMT  
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I've got a few music mixes where you're "on stage" with the band - instruments spread all around you. Most of my DVD and BD concert videos use the surround channels to reproduce the ambiance of the venue and audience sounds. I much prefer that kind of mix.

The "on stage" mixes just seem artificial to me. Even the musicians wouldn't hear it from that perspective with the stage monitors and in ear monitors that they all seem to be using these days.

That said, I think wide dispersion is good for all four surround channels.

K.D. Lang Live in London  
Stevie Wonder - Live at Last  
James Taylor - Live at the Beacon Theater  
Dave Matthews and Tim Reynolds at Radio City Music Hall (remote always nearby to skip Matthews pinhead rambling and babbling).

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Sat, 17 Aug 2013 14:47:58 GMT  
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I've been helping a friend build a pair of speakers. We got them up and running earlier this week and I'm blown away by these things! I've heard all the talk about the merits of high efficiency speakers capable of extreme dynamic range, but I didn't realize what I've been missing 'til I put these into my system.

I have to get started on my six or seven pi cornerhorns!! Can my system really sound any better than it does right now???

These speakers are built around an Acoustic Elegance TD-12X woofer, 12" SEOS horn, Denovo DNA-360 compression driver and crossover designed by Bill Waslo. Details here at avsforum.

Here's a shot next to my B&W 804's

Another shot showing more of the room and one (of four) of my 15" sealed subs

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Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Sat, 17 Aug 2013 19:02:55 GMT  
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Very nice looking speakers!

smoother, and I think they're more refined. I've been doing this a while.

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Subject: Re: Pete's Home Theater Build  
Posted by [rkeman](#) on Sat, 17 Aug 2013 20:58:58 GMT  
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The 6Pi is a substantial improvement over the 3Pi if the listening room will accommodate corner horns. The upper bass and lower midrange is smoother and creates a larger and more stable stereo image. The new H290C tweeter horns have been in my 6Pi corner horn main loudspeakers and 3Pi center and surround channels for a few months and are an improvement over the Eminence H290. Some time soon I hope to post a more detailed comparison.

Most of the DIY Sound Group (DSG) designs appear to be similar to the 3Pi and 4Pi i.e. two-way loudspeakers with relatively large woofers and horn loaded tweeters using compression drivers. The crossovers are substantially different from the Pi crossover and the SEOS 12 horn is both shallower and of a different flare profile. There is no corner horn design available at this point in time. I've not had the opportunity to audition any of the DSG loudspeakers and cannot comment on their performance compared to the Pi Speakers offerings.

The samples of the Denovo DNA-360 that I've worked with are very similar to the B&C DE250 and required no modification to the 3Pi crossover when used with the Eminence H290 tweeter horn and Eminence Delta 12LFA woofer. The Acoustic Elegance TD-12X is very similar to the TD-12S in most respects but would benefit from somewhat different enclosure volume and tuning than the 3Pi. I've found the AE TD-12S to be a superb performer in both the 3Pi and 6Pi. If you do decide to pursue either a 3Pi or 6Pi build, please consider posting your impressions.

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Sat, 17 Aug 2013 23:00:34 GMT  
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I'll definitely be building either the six or seven cornerhorns matched up with a three or four for center channel duty. I plan to start building the mid horns and enclosures for the HC290 tweeter horns once I get a few other woodwork projects wrapped up. Once I get construction underway I'll make a decision and order the kits from Wayne with the upgraded woofer for the center channel speaker.

Your insight has been invaluable rkeman. Very much appreciated!

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Subject: Re: Pete's Home Theater Build

Posted by [petew](#) on Sun, 13 Oct 2013 00:36:21 GMT

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I got the wall mount brackets done for my 2 pi surrounds.

I used construction grade pine - a few trips through the surface planer makes some nice (free) stock. Here's a pic of the rough brackets on the bench.

I used bed rail hardware screwed to the bracket and speaker to hang the two pi surrounds.

Here's a pic of the bracket attached to the speaker - sitting on the workbench with the drivers facing down.

I sunk redheads into my concrete back wall to mount the brackets. The side surrounds are mounted with toggle bolts, and regular screws where I could hit a stud.

Here's a blurry pic of the left side and back surrounds.

These speakers sound simply wonderful. It's nice getting rid of retired speakers and milk crates serving as speaker stands now that I've got wall mounts done.

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Subject: Re: Pete's Home Theater Build

Posted by [Wayne Parham](#) on Sun, 13 Oct 2013 15:25:36 GMT

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Nice work! Those brackets look sturdy and functional.

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Wed, 05 Feb 2014 00:28:34 GMT  
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I'm looking for opinions on bass trapping. I've got a lead on some fairly high density foam acoustic panels from a recording studio that's being decommissioned. I could repurpose the panels easily to make bass traps in the front corners of my room. My question is what to do with corner traps once I get around to building my 7 pi corner horns? Could I place the corner horn as usual and keep the bass trap from the top of the cabinet to the ceiling or would it affect the performance of the corner horn?

And a somewhat related subject, I've got open bottom soffits that I have planned to stuff to also absorb bass. Would these foam panels be good for that application too?

I've read "you can't have too much bass trapping" as long as you don't make the room too dead. My room sounds really good now, I just want to jump on the free stuff if it might make it better.

A 200 amp Equi=Tech balanced power unit is coming out of this studio too. Any ideas how to market such a contraption? I figured I'd start with craigslist. Maybe try audiogon and flea bay too.

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Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Fri, 07 Feb 2014 18:04:52 GMT  
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Damping is even more important than placement, in my opinion. Actually, it's not an opinion, the facts support this - You can measure more benefit from damping than anything else. The good news is framed drywall construction provides much better damping than hard walls, and most North American homes are made this way. The drywall acts something like a panel absorber. As for additional damping, it never hurts. I would prefer panel dampers to resonant bass traps though. A large lossy panel just works better.

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Wed, 02 Jul 2014 00:22:27 GMT  
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Oh what an interesting week it's been (and its only Tuesday).

Over the Memorial weekend and the following week, I worked on a cabin that my family is building in the Jemez Mountains in NM. Obviously, ear protection is always a top priority when working with power tools. I was diligent with my foam ear plugs.

Anyway, last week my right ear started to go kaput. I couldn't hear squat, and the left channel was fading too. I tried the over the counter remedies to no avail, and finally went to see the doctor

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yesterday. I hate going to the doctor - I always assume the worst.

After about 20 minutes with the pressure washer he knocked a massive wax plug out of the right channel. The left channel only took a few minutes to clear. I think a week of foam ear plugs and sweat pushed the crud up into the earholes. I'm hearing high frequencies and nuances that I had forgotten about! It got me thinking about all the great concerts and movies I've got queued up to listen to in my theater.

On a whim I searched eBay today for "2226H" and got a hit! Someone had a few for sale for only \$200 each "buy now" plus \$30 shipping. I ended up buying three for \$600 with shipping included!! I should receive them next week. From the photos they appear to be in great shape, and the DC resistance of the coils was within expectations.

Finally I've taken the first step towards 7pi corner horns with a 4pi center. It'll be a while before I can start construction with the cabin and a hundred other projects ahead of me, but IT'S A START!!

---

Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Wed, 02 Jul 2014 14:33:51 GMT  
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Wow, Pete, that's horrible about your ears! Well, actually it's great but what an ordeal.

Good to hear you're underway on the cornerhorns. You'll love 'em!

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Fri, 04 Jul 2014 19:03:57 GMT  
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Hello Wayne

I'm excited to finally finish my theater soundstage. I never did request plans for the four pi (center). Can you send a pdf when you get a chance?

Much appreciated!!

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Subject: Re: Pete's Home Theater Build  
Posted by [Wayne Parham](#) on Sat, 05 Jul 2014 15:30:35 GMT  
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You've got mail!

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Thu, 10 Jul 2014 15:47:58 GMT  
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I received the 2226H drivers this week. They look to be in excellent condition and got here unscathed due to great packaging. I just ordered three waveguides from Wayne. I'll keep collecting up parts as budget allows. I should have all the components on hand before I can fit the build into my schedule.

I'm really looking forward to building these!

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Subject: Re: Pete's Home Theater Build  
Posted by [NWCgrad](#) on Sat, 30 Aug 2014 01:02:21 GMT  
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Any updates?

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Sat, 06 Sep 2014 16:00:02 GMT  
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I received the horns from Wayne a few weeks ago. Delta 10a mids and DE250 cd's are on the way from Parts Express.

Still needed:  
Wood (have 1/2" baltic in stock for the mid horns)  
Crossovers  
Free time

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Subject: Pete's Home Theater Build  
Posted by [petew](#) on Tue, 17 Mar 2015 23:45:36 GMT  
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Getting closer here. I've got the living room end tables just about done, then I can start building pi's. Wayne is sending me a set of pc boards for the crossovers. The xo parts are in my wish list at Parts-Express, just waiting for me to do another double-check before I hit send. Plywood is on hand for the bass bins. I've got the mid horns modeled in sketch up. I'm itching to make dust!

Outlaw 990 prepro got retired in December and replaced with an Emotiva UMC-200 (nice piece). I'm ripping all my Blu-Ray and DVD discs to the server and I'll be exclusively using the HTPC. Finally had a belly full of forced ads and trailers on disc.

I'll be updating this with relevant information (instead of irrelevant rambling) as soon as I get under way.

Wayne, thanks for all you do!

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Subject: Re: Pete's Home Theater Build  
Posted by [NWCgrad](#) on Sun, 19 Apr 2015 18:50:38 GMT  
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Cool that you are making progress, will be following along with interest. I am still interested in the full monty Pi's when I retire and have room with corners.

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Subject: Re: Pete's Home Theater Build  
Posted by [petew](#) on Thu, 31 Mar 2016 17:58:23 GMT  
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I've been gathering up parts and supplies to build a pair of 7Pi corner horns and a 4Pi center channel for quite some time. I've finally cleared enough stuff off the "to do" list that I can get this project underway.

The speakers will be behind an AT screen and acoustically transparent screen wall, so I'm not getting fancy with the cabinets. I'm using good quality BC plywood from the big orange box. I'll apply duratex for a quick and easy finish that looks decent. I do plan to take the time to make the mid horns nice looking since they're much more complicated to build than the bass bins. If I ever want to use the 7Pi corner horns out in plain sight I can always build nice looking bass bins.

I made good progress on the bass bins for all three speakers today. All the wood is cut and the sides and tops are glued together. I've also fabricated the ports, and installed the 4pi port into its cabinet.

Here's a closeup of a couple of the compression drivers and the crossover PC boards.

Box construction is straightforward - dado joints, cleaned up with a flush trim bit. The baffles will be glued in place.

I'll run a roundover bit over all the edges and slather duratex on for finish. I used the same method on my 2Pi surrounds.

I have not ordered crossover parts yet (except for the PC boards). I'll do that soon.

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### File Attachments

- 1) [IMG\\_4699.jpg](#), downloaded 3330 times
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  - 4) [IMG\\_4703.jpg](#), downloaded 3237 times
  - 5) [null.jpg](#), downloaded 3162 times
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Subject: Re: Pete's Home Theater Build

Posted by [Wayne Parham](#) on Fri, 13 May 2016 15:50:31 GMT

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Lookin' good!

Thanks for keeping us posted on your progress. That's going to be an excellent system!

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Subject: Re: Pete's Home Theater Build

Posted by [petew](#) on Wed, 24 Aug 2016 01:27:15 GMT

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I finally got things moving again. The bass bins are done, now on to the mid horns.

I've posted details at avs. Sorry no time to post a thread here at the moment.

## File Attachments

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1) [IMG\\_5404.jpg](#), downloaded 2303 times

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**Subject: Re: Pete's Home Theater Build**

Posted by [petew](#) on Sat, 14 Nov 2020 17:40:25 GMT

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I'm Back!

Over four years since my last post. Oh how life gets in the way. I did manage to finish the Pi 4, which sounds absolutely great.

I closed my business in early 2017 after nearly 35 years. It was a clean, planned shutdown. I went to work for a giant corporation designing wood trusses. So all is good with work life. But with a career change and other chaos, I never got anything more done on the speaker build.

Forward to 2018, my dishwasher had a valve fail one night and flooded my media room with scalding hot water. Amazingly there was very little damage to equipment but the room got trashed. I only had a bit of water on a subwoofer and one of the surrounds, but the damage was only cosmetic. It took three weeks for the remediation company to get the house dried out.

Since I was "dead in the water" on the theater build, I decided to make the jump to Atmos. So my B&W Nautilus speakers and Emotiva preamp moved upstairs to the living room. I stripped out the damaged finishes from the theater and started planning.

I bought four DIYSG Volt 10 coax speakers with flatpacks for Atmos duty. As of right now those just need final assembly and installation.

I had planned to use discrete amplification with an XMC-2 from Emotiva (later changed my plans to the Monolith HTM-1). But after reading the excellent reviews on the Denon AVR-X3600H I decided to go that route instead with the receiver driving the surround and Atmos speakers. I have an Emotiva XPR-2 stereo amp for the Pi 7 corner horns and will use two channels of my three channel Rotel RB-993 to run the Pi 4 (I split the crossover HF and LF sections during assembly).

I have the AV side of my equipment rack just about completely built out with equipment mounted. Now I will finish and install the Atmos speakers, then get the Pi 7's completed. Once I get the sound system set up I will do acoustic tweaks as needed, then move on to video projection and finishes.

I'll be posting details and more pictures as I go!

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Subject: Re: Pete's Home Theater Build

Posted by [petew](#) on Sat, 14 Nov 2020 18:02:23 GMT

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Here is a shot of the Volt 10 Atmos speakers. My Pi 2 surrounds are in the shot too.

And the rack. I modified Emotiva rack mount kits for the Denon receiver and my Rotel amps that drive the speakers in my shop and yard. That mess of network equipment is moving into the closet behind the rack and I will install a shelf for my vintage Nakamichi gear. I will also rack mount my unRaid server and the monitor.

#### File Attachments

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- 1) [IMG\\_8393.jpg](#), downloaded 505 times
  - 2) [IMG\\_8394.jpg](#), downloaded 499 times
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