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Subject: Custom home theater room

Posted by [Kitt](#) on Sun, 21 Jan 2018 19:32:27 GMT

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I just replied to a thread here that made me think about how some people have custom built home theater systems and media rooms. For someone who isn't on the millionaires list, is this possible to do on your own?

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Subject: Re: Custom home theater room

Posted by [Wayne Parham](#) on Mon, 22 Jan 2018 15:13:31 GMT

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Most times, you can work with what you've got and expect at least reasonably good performance. There are some very difficult rooms though. Examples are basements (or any room with hard walls), very long narrow rooms, very small rooms and rooms with highly irregular shapes.

Basements are difficult because of the solid concrete on all six boundaries. This make reflections and room modes very strong.

Long narrow rooms are hard to setup because there can be either little separation between lateral sound sources or too much. Room modes can also be a problem.

Small rooms have a problem with room modes. They can also be too small to setup all the speakers and screen, so sometimes you have to choose a smaller screen and forego surround speakers.

Highly irregular shapes sometimes just don't allow any sort of reasonable placement. The irregular shape isn't usually bad for acoustics and is often actually beneficial. But a weird room can make it hard to position screen and speakers where they would make the most natural illusion of reality.

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Subject: Re: Custom home theater room

Posted by [Stephan](#) on Tue, 23 Jan 2018 03:23:03 GMT

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I guess what you're saying then, Wayne, is that it is totally possible to do so no matter what kind of room you're starting with?

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Subject: Re: Custom home theater room

Posted by [gofar99](#) on Tue, 23 Jan 2018 21:22:07 GMT

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Hi, I built one as a home addition...it was good for multi media that my wife took it over and booted my stereo out. Ugh. It is possible depending on your skill with lumber, cement, insulation and such. I double walled it for sound proofing, raised floor, sloped ceiling, dedicated power and so on. Since then I have converted the living room to the stereo room.

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Subject: Re: Custom home theater room  
Posted by [Elerie90](#) on Mon, 26 Mar 2018 02:55:08 GMT  
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I'm sorry to hear that you got your room taken over, Bruce. I can only imagine how annoying that was.

Wayne, your comment about the concrete in basements being problematic got me thinking. Would there be any kind of acoustic differences between other floors of a house? For instance, would there be any reason why acoustics on the ground floor might be worse/better than those on the second?

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Subject: Re: Custom home theater room  
Posted by [Wayne Parham](#) on Mon, 26 Mar 2018 14:20:38 GMT  
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I've had the most consistently good results from rooms on concrete slabs with framed drywall construction. Drywall is pretty lossy and acts like panel absorbers. Rooms on hardwood floors over crawlspaces are often problematic though. Second floor rooms are usually OK, even though the floor is a wooden deck, they sometimes are the best sounding rooms in the house.

All rooms benefit from speakers that provide a uniform radiation pattern and multiple subs. These technologies reduce and/or mitigate reflections and room modes.

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Subject: Re: Custom home theater room  
Posted by [Elerie90](#) on Mon, 26 Mar 2018 20:39:41 GMT  
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I hadn't even thought about how a hardwood floor over the cellar would affect things. That's good to know! I've never had a multistory house before, so the option of having it on the second floor is pretty new to me. Would an attic overhead be problematic for any reason?

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Subject: Re: Custom home theater room

Posted by [Wayne Parham](#) on Mon, 26 Mar 2018 21:46:08 GMT

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Attics are usually filled with insulation and so are pretty good absorbers. So the attic isn't a problem by itself.

The problem overhead is "ceiling slap" - the surface reflection at high frequencies that creates a ringing sound. Clap your hands in a room and ceiling slap sounds like the ringing from tinnitus. Some rooms aren't too bad but some are terrible, especially those with gabled ceilings.

Directional speakers really help because so little HF sound is radiated upwards. If you don't have directional speakers, you can solve the problem with acoustic wedges.

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