Subject: Xover Summing Question
Posted by Spinjack on Tue, 15 May 2007 21:47:28 GMT
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So, I'm trying to find circuit diagrams for a passive xover/summing circuit to drive a passive sub. Bsically, I want to run L/R channels off the amp through a xover to a sub and two satellites. I goggled for some circuits but came up short.All I need is basically a first order low pass (satellites are full range) but was having trouble figuring how do that without commoning the L/R channels for the satellites and effectively making everything mono.

Subject: Re: Xover Summing Question
Posted by Wayne Parham on Wed, 16 May 2007 06:30:05 GMT
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If you have a subwoofer with dual voice coils, you can run the left channel into one and the right channel into the other. That will provide mechanical summing. As for crossover frequency, I'd

that the sub be within a few feet of each satellite.

Subject: Re: Xover Summing Question
Posted by dB on Wed, 16 May 2007 23:10:02 GMT
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I remember the Sequerra speakers. I think that was the case (dual voice coils). I was very impressed by them at the time. picture from http://www.zenn.com.sg/Sequerra_spkrs.JPG

Subject: Re: Xover Summing Question
Posted by Spinjack on Thu, 17 May 2007 11:09:11 GMT
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Unfortunately, dual voice coils is not an option. I'm building a force feedback chair of sorts and am using a bass shaker for the low end vibration. When looking at the application I dicovered it would basically use signals that look very much like audio signals (obviously it would need to be optimised later). So. I'm running any audio signal through a cheap DIY chip-amp and then into the speakers/shaker. But I need to xover and sum the signals to the shaker.The more I thought about it, would it work to build two crossovers and then common the signal line of the load side of each

xover (on the low fequency output) to the shaker?

Subject: Re: Xover Summing Question
Posted by Wayne Parham on Fri, 18 May 2007 19:18:34 GMT
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Combining a pair of different low-impedance outputs by wiring them together usually isn't a good idea. If the signal is the same, that's one thing but if not, what you basically have is one output shorting the other. If there is enough series resistance, you can combine signals passively but to interject that kind of resistance into a low-impedance output is counterproductive. You should probably look at other options. Better to combine the signal at a preamp level.

Subject: Re: Xover Summing Question
Posted by Spinjack on Tue, 22 May 2007 02:05:44 GMT
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That's kinda what I thought, but I was wanting to avoid doing so.I can put in a summing circuit easy enough, but most of the circuits I have looked at combine summing with an active crossover, which increases the complexity quite a bit. What I may try is using a passive xover with a summing circuit either before or after the xover.On a 4 ohm load, what resistor value (if any) would be appropriate to but in series with the capacitor on the low frequency side (second order xover)? I'll be crossing over at about 100Hz, IIRC, so the cap is about 500uf.

Subject: Re: Xover Summing Question
Posted by Wayne Parham on Tue, 22 May 2007 02:21:42 GMT
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There really is not any resistor I could recommend. Inserting resistance changes the Qes of the circuit, which also changes the tuning of the system. Sorry, but I just wouldn't sum the signals at the outputs.

Subject: Re: Xover Summing Question
Posted by dB on Tue, 22 May 2007 17:35:01 GMT
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Hi,I have been reading this tread, and I still don't understand. Isn't the 5+1 (theatre) system adequate in this condition, or the 2+1 (sub ampli plate) good also... if he (Spinjack) doesn't want one sub then let him have the two. I am not confused yet. Right Spinjack?

Subject: Re: Xover Summing Question
Posted by Wayne Parham on Tue, 22 May 2007 18:35:03 GMT
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With a plate amp, he'd be set. That's how I would do it. Plate amps are not very expensive, and would solve the problem nicely.

Subject: Re: Xover Summing Question
Posted by Spinjack on Tue, 22 May 2007 19:15:02 GMT
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True, a plate amp would do the trick, but only for the intitial prototype. I'm trying to keep the component costs as low as possible. Also, for the second iteration I will need to use servo drive of some sort for near-DC and impulse signals.The plate amps have to sum the signals and cross them over at some point. A plate amp has a seperate amp for the sub, but can still accept amplified full range signals. The plate amp will need to filter, sum, and amplify. I was simply trying to find a way to remove the amplify piece.

Subject: Re: Xover Summing Question
Posted by Wayne Parham on Tue, 22 May 2007 20:54:02 GMT
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The thing is, the amplifier also isolates the two channels from one another. It sums the signals and provides a single output without modifying either of the inputs. When you try to sum the amplifier outputs passively, it modifies the characteristics of the circuits and the result is far less than optimal.
