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Subject: Re: 3 Pi Subwoofer Plans

Posted by [Wayne Parham](#) on Sat, 28 May 2011 15:02:08 GMT

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You can put the subwoofer in the same cabinet as the mains, and its vertical offset will help smooth the higher modes, which are mostly from vertical boundary reflections. However, there is another significant self-interference boundary, which is the one from the wall behind the speakers.

If you keep the sub separate, you can place it just a little bit below and behind the mains, and that helps smooth not only the vertical modes but also the self-interference from the wall. Something like this:

As for the crossover design, it really is just a matter of getting the driver spacing and crossover phase right to make the forward lobe clean, and the vertical nulls set just outside the horn's pattern at HF. In theory, it's simple. In practice, it takes some work. There are a lot of good software and hardware/software tools available that make this job easier, but it definitely isn't a half-hour job. You should plan on spending some time working through the design, testing, measuring and retesting.

Crossover optimization for DI-matched two-way speakers, revisited

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