Subject: Room gain AKA cabin gain
Posted by Morpheus on Wed, 10 Mar 2004 17:12:32 GMT
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Does any of you know a mathematical derivation for bass room gain, AKA cabin gain? I've read elsewhere that it is 12db/oct as frequency drops and this coming by respected (by some) people in the biz. That's why I ask here to get a fresh perspective. I have a hard time with the idea of a fixed 12db/oct figure. I think it should be 3db gain when the frequency makes the nearest surface act like half space, then 6db when the next surface comes into play and then 9db when the next does. That gets us to 8th space, below that ther must be some additional gain but I can't see it going at a logarithmically increasing rate as frequency drops. That would seem to imply a logarithmic change in space to wavelength, but how can this be when every change (decrease in frequency, space) is linear? Do any of you know a reliable mathematical derivation of cabin gain? Is it really 12db/oct or is it stepped as room surfaces come into play? At very low frequencies what is it mathematically?

Subject: Re: Room gain AKA cabin gain
Posted by Audio Jones on Wed, 10 Mar 2004 19:35:27 GMT
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My understanding is that room gain is the reverse of sealed box roll off. I can see what you're getting at though. Maybe you're on to something and room gain isn't as simple as a sealed box in reverse.

Subject: Re: Room gain AKA cabin gain
Posted by Wayne Parham on Wed, 10 Mar 2004 22:03:20 GMT
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I think you're right, actually.  I've always treated the room's corner as a conical section, but this changes at the ceiling.  When looking at it like this, the expansion into the room from a corner apex appears to act like a conical section that changes to a parabolic section at the ceiling junction.  See the post called "Room corner characteristics".  Then there's also the opposing wall and the standing waves setup by it as well.It would be a good excercise to take a loudspeaker's anechoic response as a baseline and then measure it in various rooms of different sizes to compare their effects.  I'd be very interested to see that kind of data.