Subject: Does anybody here know how to add and subtract?
Posted by wunhuanglo on Tue, 05 Apr 2005 22:30:22 GMT
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For the life of me, I can't seem to.I've been trying to figure out resistive damping of dual voice coil woofers.First I went to Adire:http://www.adireaudio.com/Files/TechPapers/RDOOperation.pdfI put the eq.s into Excel, but the higher the damping resistor, the closer you get to the original Qts and no higher. At Rl=0 the Qts is halved (more or less)Then I went here:http://www.geocities.com/kreskovs/Dual-VC.htmlSame story. Either there's something fundamentally wrong with the eq.s as written, or I'm so far out in left field I cant see the plate from here.Has anybody fooled with this before?

Subject: Re: Does anybody here know how to add and subtract?
Posted by Wayne Parham on Tue, 05 Apr 2005 22:42:27 GMT
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When you short the voice coil, you increase damping. That makes Qts go down. When the voice coil is open, it has no effect, no change on Qts. When you partially short it, as in putting a resistor across it of a few ohms, it is in between.This is in parallel with the output impedance of the amplifier. Less impedance makes more damping, lower system Q. Higher output impedance makes less damping, higher total Q.

Subject: Well, dammit...
Posted by wunhuanglo on Wed, 06 Apr 2005 01:37:53 GMT
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that's exactly what the equations say, that's exactly what I calculated.Thanks, Wayne.But if you read the references they claim the exact opposite - they talk about doubling Qts with a couple of hundred ohms across a second 8 ohm coil. From the Adire paper:"It allows you to vary the Qts of the driver over a range of nearly 2 to 1, from the "nominal" Qts up to nearly double that value."How can they get it so 180 out?

Subject: Re: Well, dammit...
Posted by Wayne Parham on Wed, 06 Apr 2005 09:21:32 GMT
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Perhaps what they're calling the nominal value is with the voice coil shorted, then double is with it

open.

Subject: Unfortunately....
Posted by wunhuanglo on Thu, 07 Apr 2005 06:57:55 GMT
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still a mystery.I did some considerable web crawling on this and I have Adire's engineer saying explicity that the technique allows you to double the driver Qts, going from 0.38 with both coils driven to 0.76 with one coil driven and one coil shorted with the appropriate resistance.There just doesn't seem to be any way that's possible given the derivation I found, which looks pretty consistent to me (but dynamics was never my long suit).
Derivation

Subject: Re: Unfortunately....
Posted by Wayne Parham on Thu, 07 Apr 2005 09:52:29 GMT
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Very interesting. I'll look over this. My first thought is that shorting a second coil would act much like shorting a single voice coil does, increasing damping and lowering Qts. But maybe shorting a second voice coil increases stiffness like using a small sealed box. Thanks for bringing this to my attention, it is interesting and I'll look into it.
