Subject: Reactance annulling
Posted by Kevin Jordan on Mon, 04 Oct 2004 16:14:35 GMT
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Why is the process of tuning the rear chamber to the flare frequency called "reactance annulling"?I understand the process but isn't it a little bit optimistic to refer to it as "annulling"? Maybe"reactance mitigation" or "reactance reduction". Reactance "annulling" seems inaccurate.Comments anyone?Rgs,Kevin

Subject: Re: Reactance annulling
Posted by Julenk on Mon, 04 Oct 2004 16:24:38 GMT
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Ur prolly right but u gotta call it something.

Subject: Re: Reactance annulling
Posted by footstony on Tue, 05 Oct 2004 02:05:27 GMT
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Hi Kevin,By reactance annulling you can gain extra bass near cuttoff by aligning the reactive part of the drivers "load" below resonance with the air mass reactance in the throat of the horn. May sound more interesting if it were called "free bass"(!)Regards Philip

Subject: Re: Reactance annulling
Posted by Bill Fitzmaurice on Tue, 05 Oct 2004 12:02:24 GMT
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Exactly- though the mathematical terminology used is far more complicated than the physical processes involved; perhaps mathemeticians, like lawyers and politicians, enjoy cloaking simple concepts within complex jargon to make their importance in the overall scheme of things seem more signifiicant than it really is.The simple explanation is that a horn is most efficient to Fc if the system resonance is close to the Fc. When system resonance is below Fc you push it up higher by making the compression chamber smaller. This ties in with why you don't want to start with a driver Fs below Fc, because the acoustic impedance load of the horn and the front chamber push the effective Fs down, and can make the size chamber required to get system resonance back up near Fc impractical or even impossible.

Subject: Re: Reactance annulling
Posted by S on Tue, 05 Oct 2004 12:08:00 GMT
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I suggest a few basic books on the subject of horns. Look for Marshal Leach. Olson is also good. Might search online for references too.Like Phillip said, essentially set the sealed rear chamber to shift fs to match fc. The rear chamber is small so this results in an underdamped sealed system with Q much higher than 1.0. You can see this with T/S programs. Where the horn response falls, the sealed chamber response peaks.In effect this "mitigates" reactance (I like your choice of words) at fc because horn impedance is imaginery at that point. Impedance swings alternating resistive and reactive for an octave or more above cutoff. The amount and severity of impedance peaks are set by horn characteristics. It is most severe on undersized horns. In any case, impedance becomes more and more pure resistance as frequency rises.The peaked rear chamber makes the horns first reactive peak act more resistive if done properly. It cannot mitigate every peak but it can address the first and largest one. It fills the response dip which also means it has made impedance more resistive there. Any system at resonance has counteracting reactive properties, making impedance resistive.

Subject: Re: Reactance annulling
Posted by Mike.e on Mon, 11 Oct 2004 03:13:24 GMT
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Reactance annulling- Reminds me of Power Factor correction in typical commercial installations! Similar concept but different in practise?