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Subject: Re: Cool.

Posted by [Wayne Parham](#) on Sun, 14 Sep 2003 06:37:44 GMT

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In an air-suspension speaker, there is really only one resonant frequency, and it is that of the woofer/box system. You can think of it as being just the woofer, with the box stiffening it and shifting the resonant frequency higher. That's basically what is happening - There is only one moving system and it's a mass/spring system that has some resistance for damping. It's very much like the spring and shock absorber on a car. But in a bass-reflex speaker, we have one extra item - the Helmholtz resonator. Since there are two resonant systems, we can have conditions that cause the two to be in-phase and others that cause them to be out-of-phase. That introduces additional reactive components for damping, by introducing an additional resonator. It's sort of like adding another spring with a counterweight. These are mechanical and pneumatic properties. The electrical impedance will reflect these conditions, and the electro-magnetic system will add some properties of its own. But even without the electro-magnetic part of the system, you still have a mass/spring resonant system in a sealed box, and a pair of resonators in a vented box.

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