probably five hours each weekend with them. So I'm starting to get a pretty good feel for them.

experience with them.

As for the reduction of bass amplitude at flea-power levels, let me be candid. But first, let me be clinical. Measurements confirm that very low power levels (like 1/10th watt) leave the system more overdamped than it is at higher power levels. So there is a measurable shift. That's the clinical part.

But let me be clear - This is the candid part - The alignment shift is a designed trait. It isn't an unintended consequence. It's an understood, designed feature that I don't even consider a compromise. The last thing I want is for a speaker to shift into an underdamped condition, so I always design all my loudspeakers this way. If they are able to handle a lot of power, then they are overdamped at low power levels because all speakers will shift towards less damping as power increases.

I'd rather have smooth rolloff characteristic of an overdamped alignment than an underdamped peak. So all my designs are overdamped at low power levels, and they shift away from this condition as power is increased, but never enough to create a peak. That's why they have less bass at flea-power levels, in order to make sure they don't start getting thrummy at moderate power levels. And yet, even at low levels, they don't sound like they lack bass.

You heard them in Dallas. Did you think they lacked bass? We rarely reached power levels of even one watt, so they were always in that flea-power mode. I think we turned the subs off while you were there at some point, didn't we? Many people ask for that, and most everyone is surprised that they almost cannot tell the difference. The subs are there for smoothing as much or more than they're there for extension. They're barely audible, just there for subtle fill.

apartment in Arkansas right now. I am running a little bitty tube amp. And I don't have subs. They have plenty of bass, even at less than a watt. I'd like to have subs for modal smoothing, but it's not like I miss them. The speakers sound great without them. I'd have smoother response around ~120Hz with flanking subs, and I'd have smoother response around 60Hz with distributed multisubs, but unless I throttled the subs strictly and kept the volume way down, I'd most likely

speakers sound great and have plenty of bass, even at really low volume levels.

So don't get too analytical about the low power damping and the shift to high power levels. You can easily offset this with a "loudness contour" if you want to. I don't even bother with that, it sounds great without any tone controls or loudness countour even at 1/10th watt. Don't make too much about the alignment shift from flea power to moderate power.

Now to get even more candid. There are some people that talk about drivers with light cones, a decidedly 1950s thought process. I remember having this argument on messageboards about ten years ago, mostly in respect to horn loading but it was still the same basic argument. And it was decidedly smashed, old thinking, wrong thinking. When we talk about mass, we must also talk about motor strength or we aren't seeing the whole picture. Who cares whether we double from 20 grams to 40 grams, if we have a motor with ten times the power?

And then there is an even more important aspect, which is how the cone flexes, its rigidity and its internal damping. You are much better served with a cone that has enough internal damping to damp flex modes than a light rigid cone. Light and rigid is exactly the worst thing to do for a midwoofer. It ensures huge breakup modes, making it completely unusable as a midwoofer. So its not surprising that the boutique woofers with cones like that aren't documented with response charts. Because you'd see 10-15dB dips, and even with smoothing, they'd still show up as having at least 5dB valleys. Not good.

So as far as low-level detail is concerned, my preference has always been for drivers with cones / diaphragms that have a good amount of internal damping. I also prefer that the motor structure use some mechanism for flux stabilization. Both of these techniques are slightly lossy, in that they require some energy be removed from the system to do their job. Just like a shock absorber removes energy from the bouncing suspension springs. Without damping, you have uncontrolled resonance, and that is not good for low-level detail, in any way, shape or form.

I hope I've made myself clear without being too over the top. You'll be pleased with the

evaluation using tough hi-res measurement systems. They sound great and they measure great too, even when measured using a high-resolution system that is brutal and exposes every nook and cranny. There are a lot of other designers that wax on poetically about the musical nuances in their design choices using boutique low-production drivers, but I promise you don't want to measure them. It's an Emperors New Clothes thing.

I'm not saying there aren't other good designs out there - there are, obviously. But I am saying that I don't think you should overthink the alignment shift, nor do I think you should consider the "light mass" arguments some have proffered around the internet. They come and go. And they're wrong. So don't be swayed by minutia, and understand the reasons for these design choices. A well-damped cone in a cabinet that provides a slightly overdamped alignment provides the smoothest and best response in all conditions.