Subject: Re: 4 Pi Speaker Plans
Posted by Wayne Parham on Mon, 08 Aug 2011 21:46:17 GMT
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The idea behind putting foam in the horn is to reduce non-axial wavefronts caused by internal diffraction.

One can certainly see evidence of the discontinuity from throat diffraction in impedance sweeps, as are shown in measurements of horns with sharp edges in their throats. You can also see the influence in the polars. Myself, I just avoid using horns with sharp edges inside them.

I don't suppose it hurts to put foam in the throat, but I wonder how much difference it makes. The idea behind the foam is it attenuates the axial wavefront less than non-axial wavefronts, but how much extra attenuation for these non-axial wavefront is realized? I mean, even if the non-axial wavefront went through twice as much foam, it would only be like a 2dB difference. So I don't think it could possibly be very effective.

One thing is for sure, if you put foam in the throat, you'll have to decrease the attenuation of the compensation network by a couple decibels to make up for the loss of the foam. Also, if the foam isn't a spherical section at the face, then the off-axis output that you want is attenuated more than the on-axis output, which hurts the polars. It has to be rounded in front for best results.