
Subject: Modal smoothing using dense interference from multiple sound sources
Posted by [Wayne Parham](#) on Sun, 25 Jul 2010 14:37:42 GMT

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Oh, yes, absolutely. Modal smoothing is done with dense interference. It's kind of the opposite approach to what you'd take to get a good point source.

In an anechoic environment (outdoors), you'd want a point source. That would ensure constructive summing even when the listener moved. But indoors, you have self-interference from boundary reflections. That interference makes the benefits of a point source mute at low frequencies, below the Schroeder frequency, around 150Hz to 200Hz, depending on the room.

Since you can't eliminate the interference, what you want to do is to make it so dense the sound becomes an averaged field rather than forming discrete zones of destructive interference and constructive interference. Those make noticeable peaks and dips in the bass and midbass response, all the way up into the lower midrange. The trick is to do this at low frequencies, but phase it out as frequency rises. You want distributed sound sources down low and point sources up high.