

Il doppio dipolo delle Celestino 6000 secondo Linkwitz

Linkwitz commette un grave errore le sorgenti non sono $++$ ma $+-$. Questo comporta una emissione molto maggiore da quella prevista da Linkwitz che evidentemente non ha capito una fava di questo sistema.

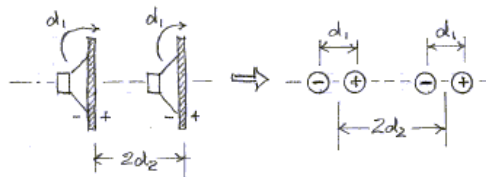
Come lo ha messo lui non c'è differenza tra un dipolo e un doppio dipolo.

B1 - "Compound dipole" woofer model

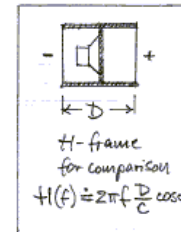
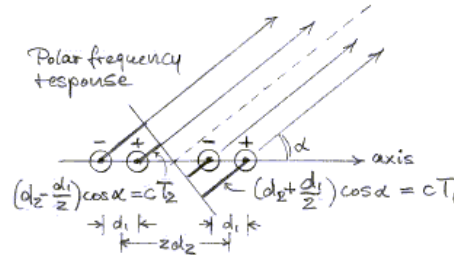
Completely open driver arrangements have been used by Celestion and Legacy Audio. A simple model to describe this case would be given by two drivers mounted on their own small baffles of effective radius d_1 and separated by $2d_2$ from each other.

Compound dipole woofer

1/18/05 ZL



Driver arrangement \Rightarrow Point source model



Impulse resp. $h(t) = \delta(t+T_1) - \delta(t+T_2) + \delta(t-T_2) - \delta(t-T_1)$

Frequ. resp. $H(s) = e^{sT_1} - e^{sT_2} + e^{-sT_2} - e^{-sT_1}$

$s = \sigma + j\omega, \sigma = 0 \rightarrow H(\omega) = e^{j\omega T_1} - e^{j\omega T_2} + e^{-j\omega T_2} - e^{-j\omega T_1}$

$e^{\pm jx} = \cos x \pm j \sin x \rightarrow H(\omega) = 2j \sin(\omega T_1) - 2j \sin(\omega T_2)$

$|H(\omega)| = 2 \sin(\omega \frac{d_2 + d_1}{c} \cos \alpha) - 2 \sin(\omega \frac{d_2 - d_1}{c} \cos \alpha)$

With $\sin(x) \approx x$ when $2\pi \frac{d_2 \pm d_1}{\lambda} \cos \alpha \ll 1$ at long wavelengths:

$H(f) \approx 4\pi f \frac{d_1}{c} \cos \alpha \Rightarrow \underline{2d_1 = D}$ for equivalent single driver H-frame

The model predicts that the SPL at very low frequencies is merely the sum of two dipoles with spacing $D = d_1$. The separation $2d_2$ between them has no influence on the total output as long as it is small compared to the wavelength of radiation. I see no compounding effect other than summing two dipoles, but the two baffles might as well be placed next to each other. A single driver in an H-frame would have the same output if the distance D between the openings is $2d_1$. Even order non-linear distortion can be reduced by reversing one of the drivers in the compound configuration so that the two magnets face each other. The whole arrangement does not strike me as a very effective use of a second driver and cabinet space compared to an H or W frame. I have no data [how high in frequency](#) the "compound woofer" can be used, but its radiation pattern will become more lobing than that of the two point source woofer. [Top](#)

