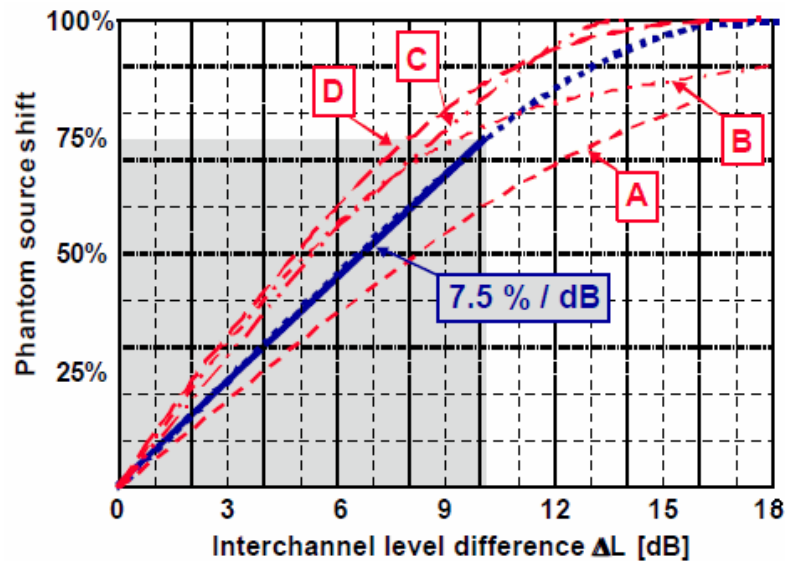




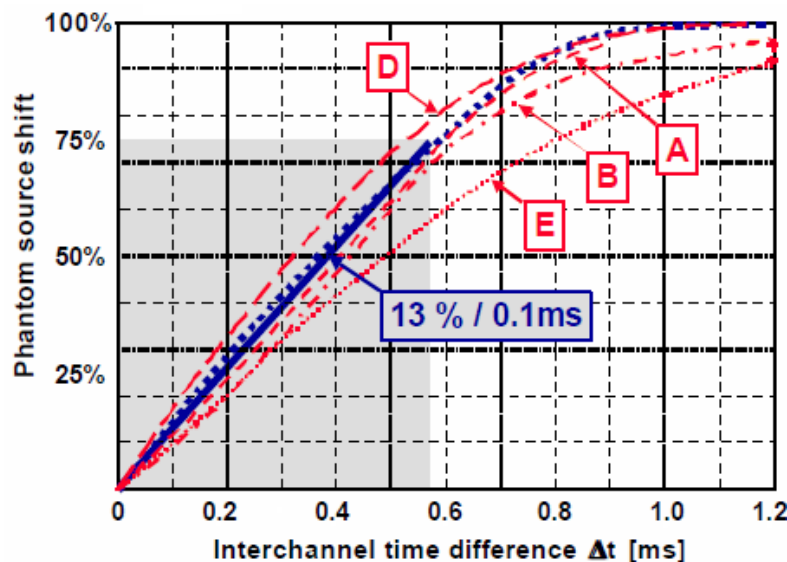
# Direction of [Phantom sources](#) - Stereo loudspeaker signals - 2 Interchannel level differences and interchannel time differences

From: Helmut Wittek, Günther Theile, "The Recording Angle - Based on Localisation Curves", 112th Convention 2002, Munich: [http://www.hauptmikrofon.de/HW/AES112\\_Wittek\\_Theile.pdf](http://www.hauptmikrofon.de/HW/AES112_Wittek_Theile.pdf)

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**Fig. 1:** Relative phantom sound source shift  $A_{\Delta L} = f(\Delta L)$   
(dotted thick curve after Wittek [1]) and center shift factor  $Z_{\Delta L} = 7.5 \% / \text{dB}$  (thick line)  
Curve A: After Leakey [2]  
Curve B: After Mertens [3]  
Curve C: After Brittain and Leakey [4]  
Curve D: After Simonson [5]



**Fig. 2:** Relative phantom sound source shift  $A_{\Delta t} = f(\Delta t)$   
dotted thick curve after Wittek and center shift factor  $Z_{\Delta t} = 13 \% / 0.1 \text{ ms}$  (thick line)  
Curve A: After Leakey [2]  
Curve B: After Mertens [3]  
Curve D: After Simonson [5]  
Curve E: After Sengpiel [6]

<http://www.sengpielaudio.com/InterchannelLevelDifferencesAndInterchannelTimeDifferences1.pdf>

Sengpiel - Level Difference Curve: <http://www.sengpielaudio.com/HoerereignRichtungDL.pdf>

Sengpiel - Time Difference Curve: <http://www.sengpielaudio.com/HoerereignRichtungDt.pdf>