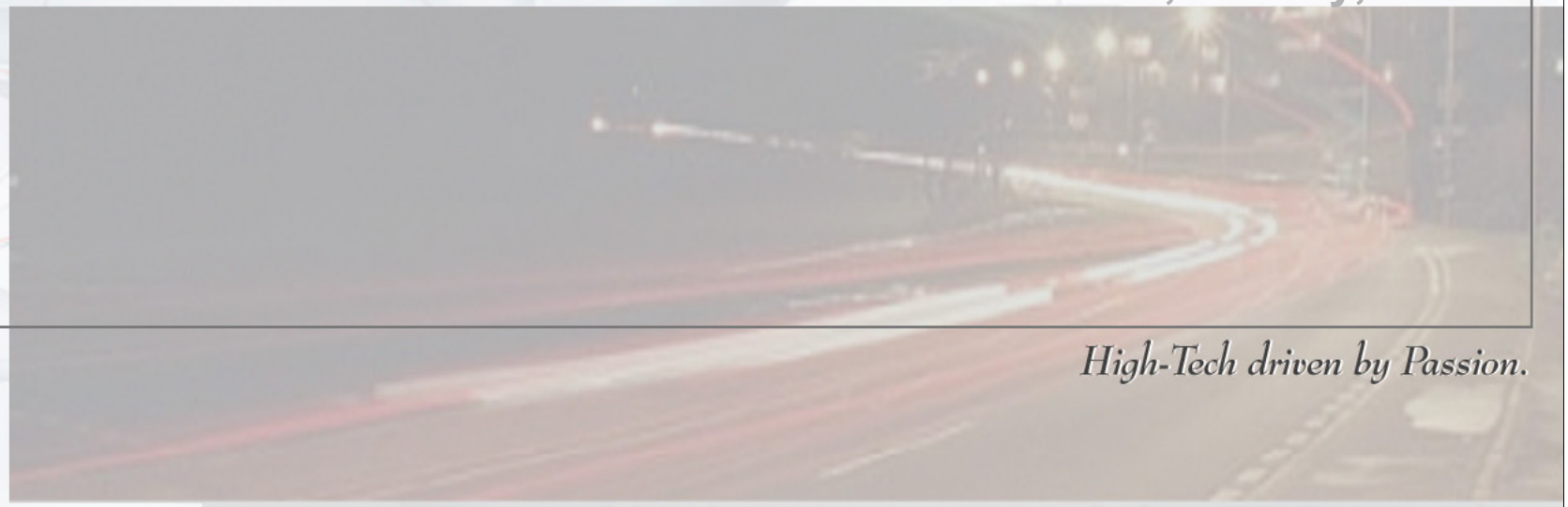
HARMAN/BECKER
AUTOMOTIVE SYSTEMS

Compare Bose-Style Straight-Line Array to CBT Curved-Line Array Frequency Response vs. Distance vs. Height

Don Keele

Harman Technology Meeting

Berlin, 6-7 May, 2004



High-Tech driven by Passion.

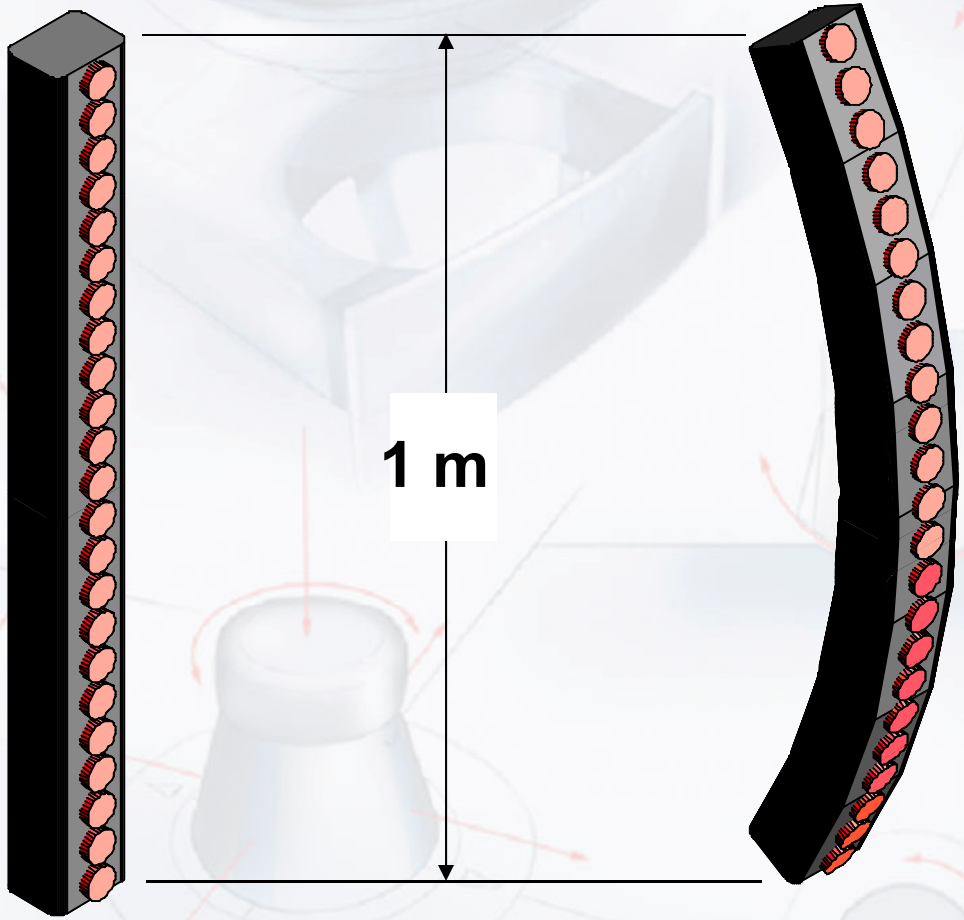
Arrays Compared

BOSE MA12-STYLE

STRAIGHT-LINE ARRAY

CBT 60°

CURVED-LINE ARRAY



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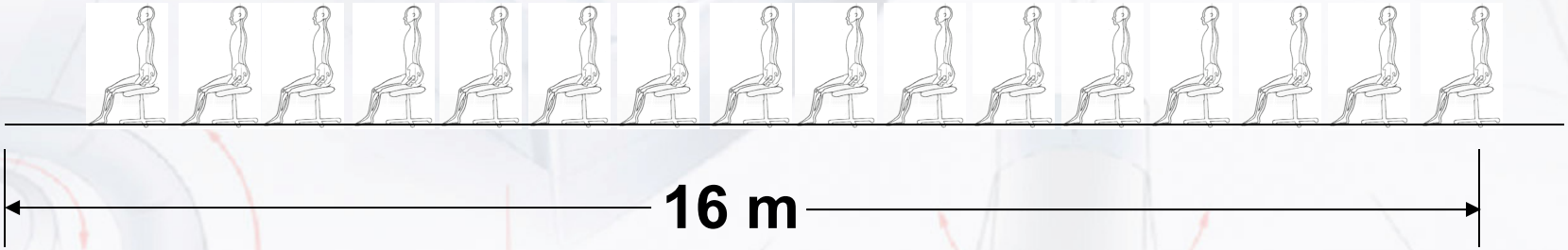
Audience Area to Cover



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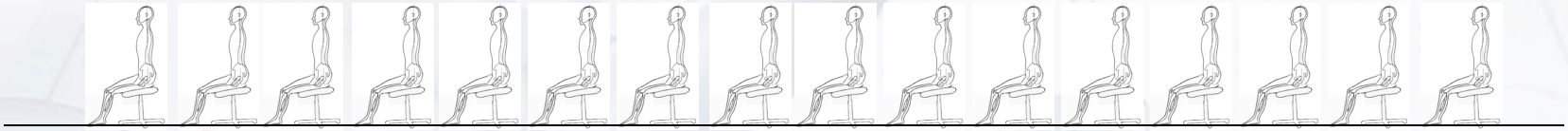
Audience Area to Cover
Where do you put the loudspeaker?



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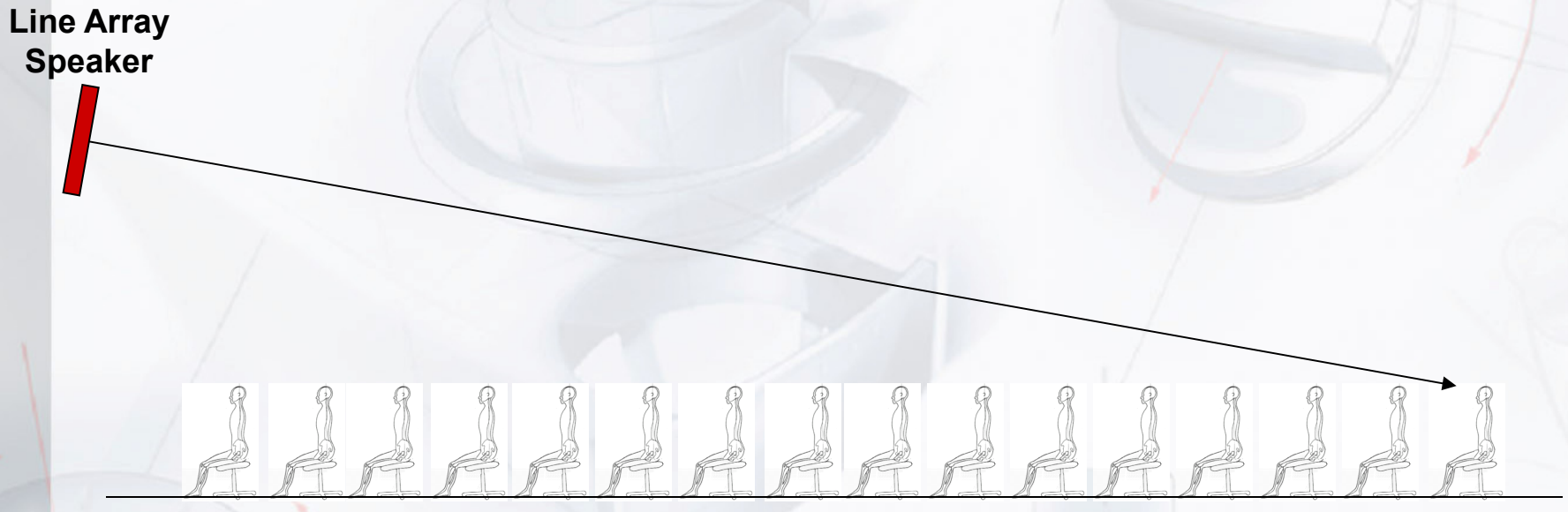
Conventional Hang and Tilt



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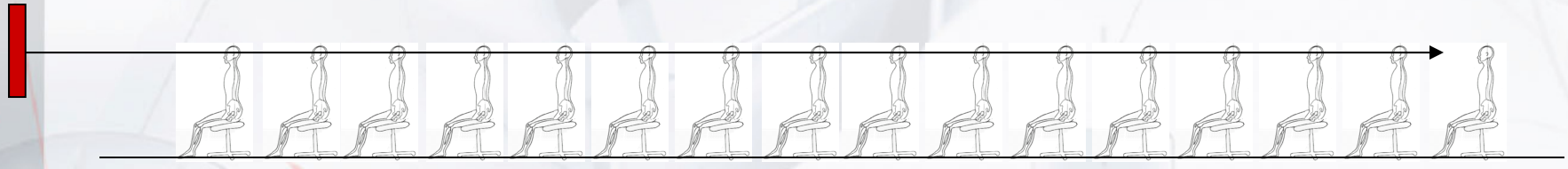
Bose MA12 Recommendation

Line Array Speaker



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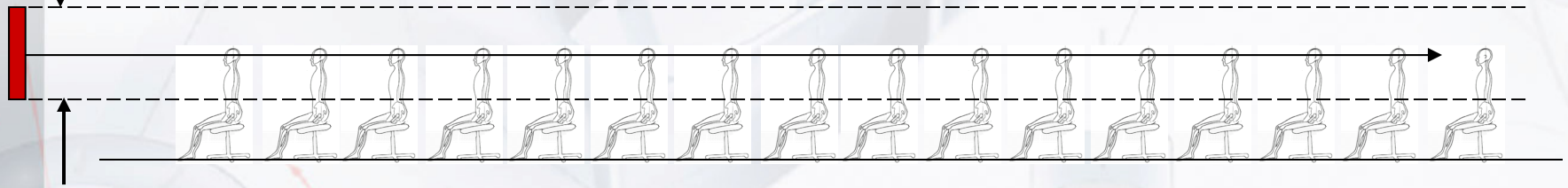
Bose MA12 Recommended Listener Location

Locate listener within a vertical location defined by the top and bottom of the array.

Place listeners within this vertical range



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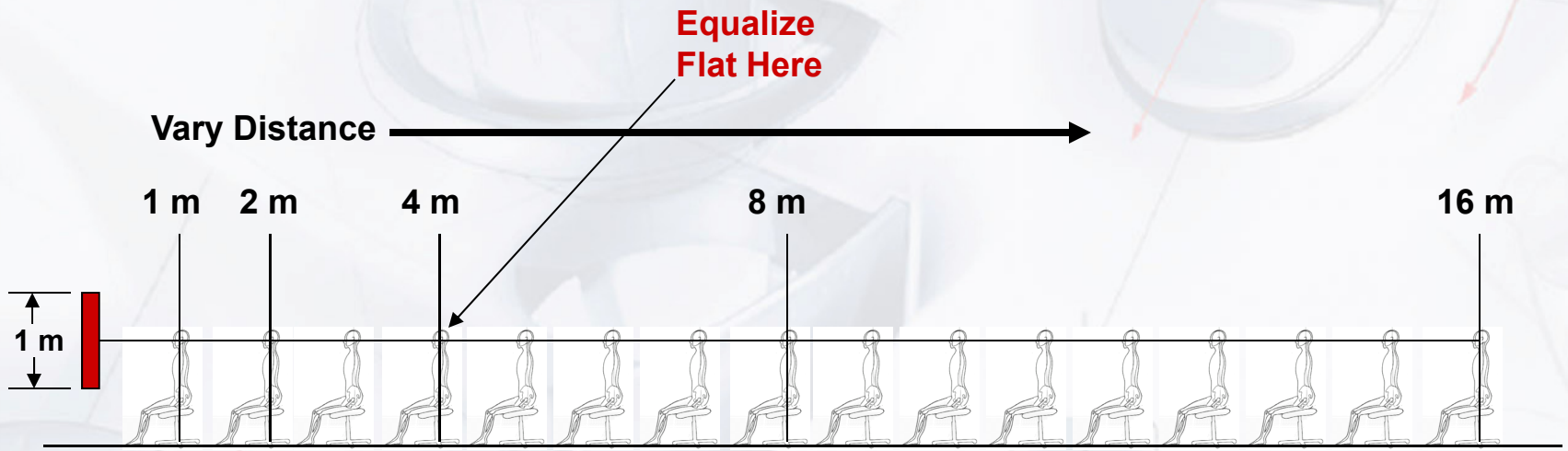
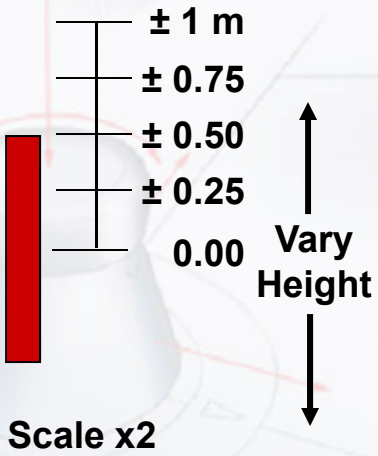
Calculate Frequency Response at Different Distances and Heights
Equalize On-Axis Response at 4 m





Note: Both systems are modeled as continuous line sources.

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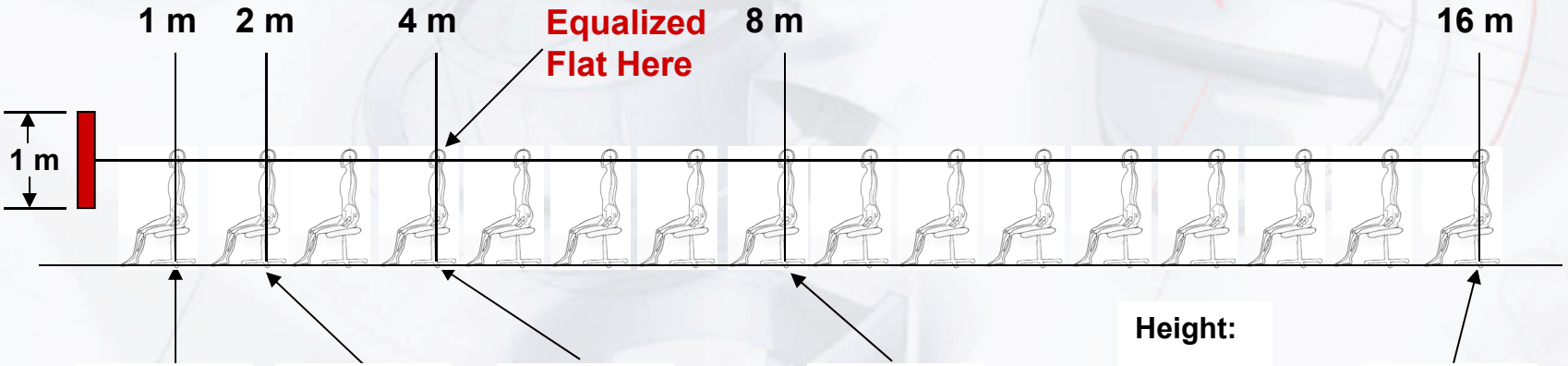
Frequency Responses of Straight-Line Array



Height:					
0.00 m					
±0.25 m					
±0.50 m					
±0.75 m					
±1.00 m					

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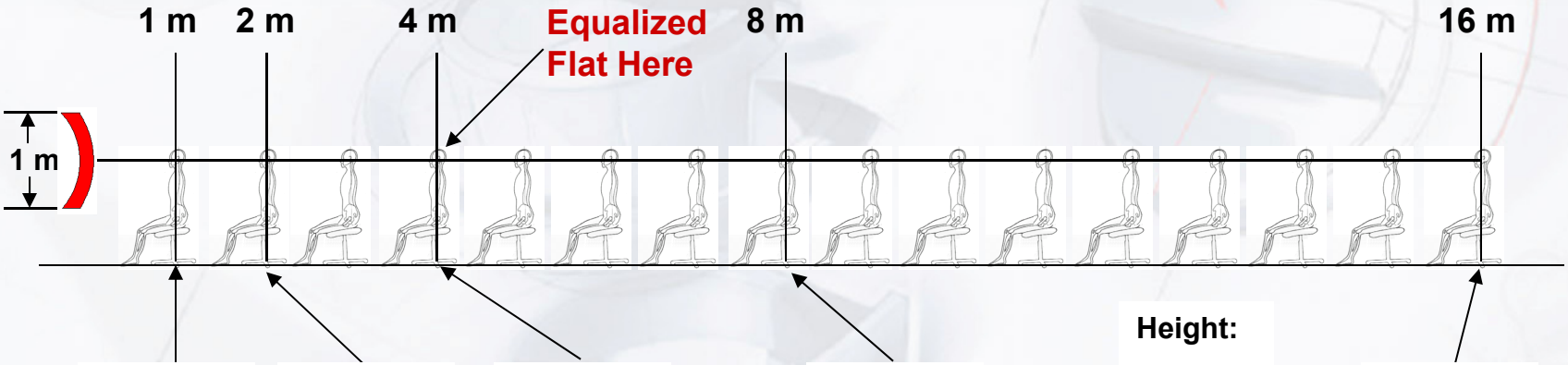
Frequency Responses of CBT Curved-Line Array



Height:
0.00 m
±0.25 m
±0.50 m
±0.75 m
±1.00 m

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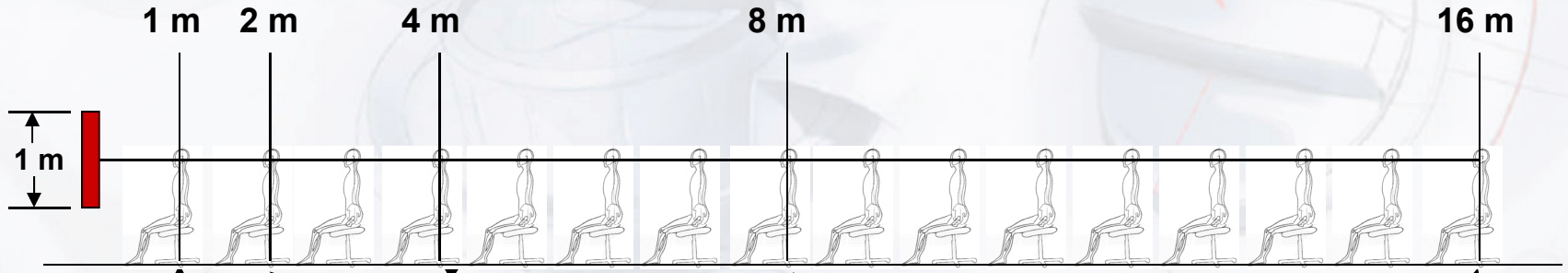
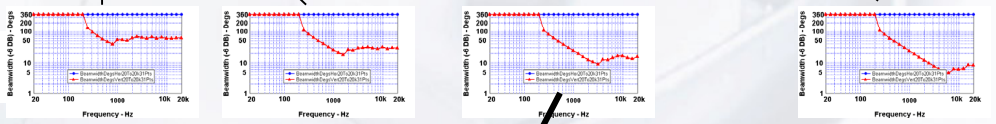
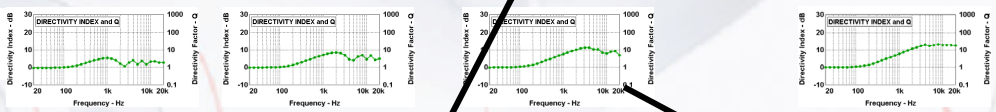
Beamwidth and Directivity of Straight-Line Array



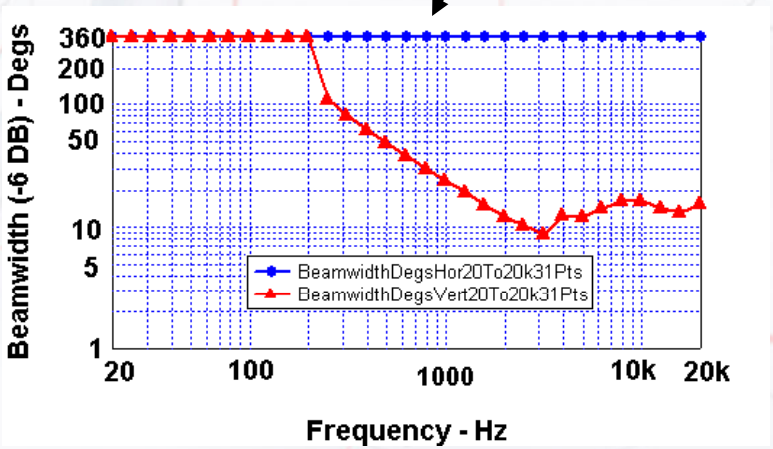
Beamwidth

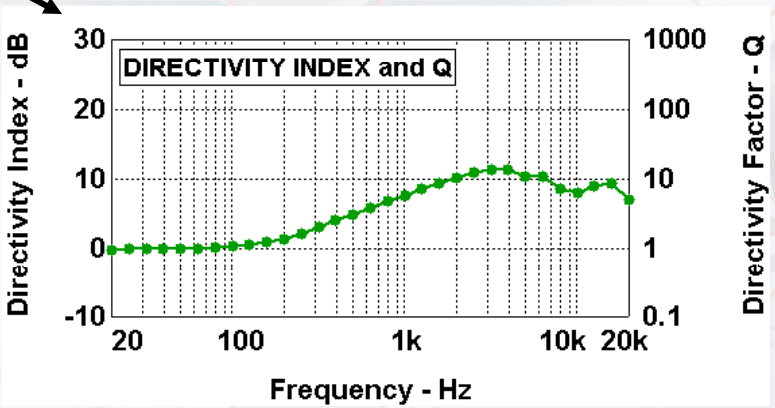


Directivity



The beamwidth and directivity of the straight-line array is strongly dependent on distance!





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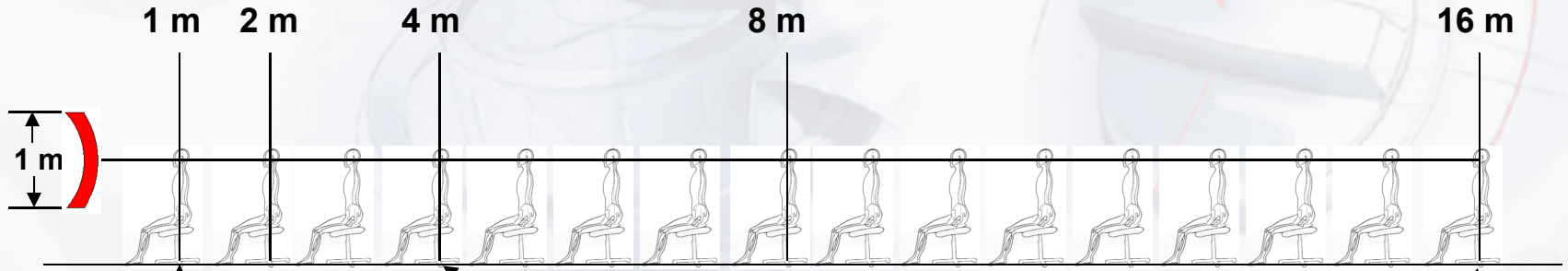
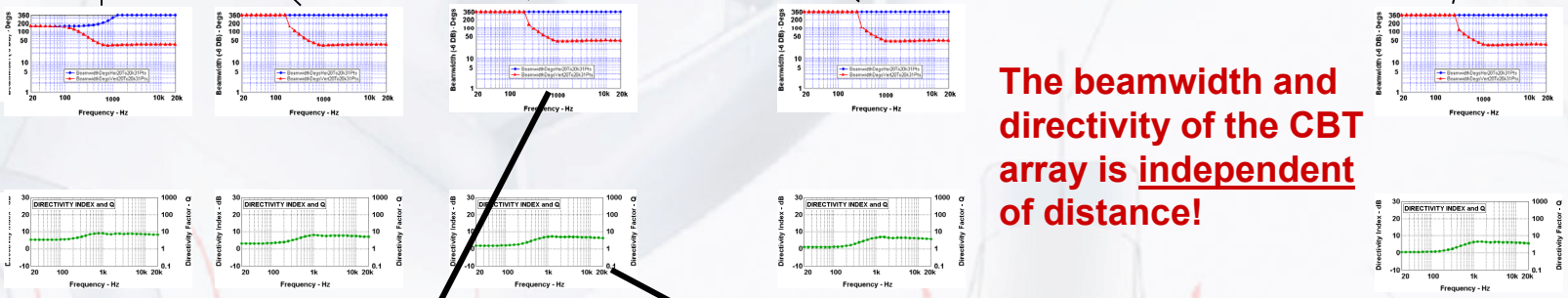
Beamwidth and Directivity of CBT Curved-Line Array

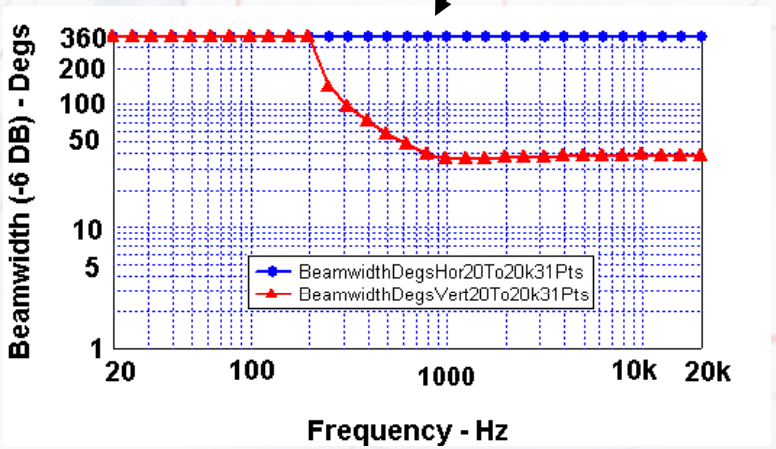


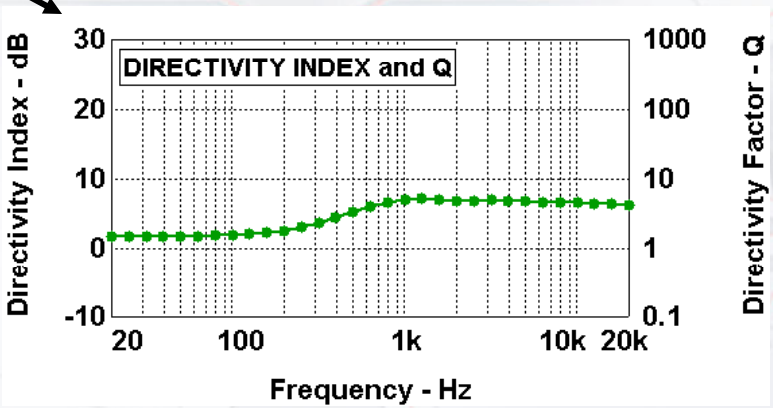
Beamwidth

Directivity



The beamwidth and directivity of the CBT array is independent of distance!





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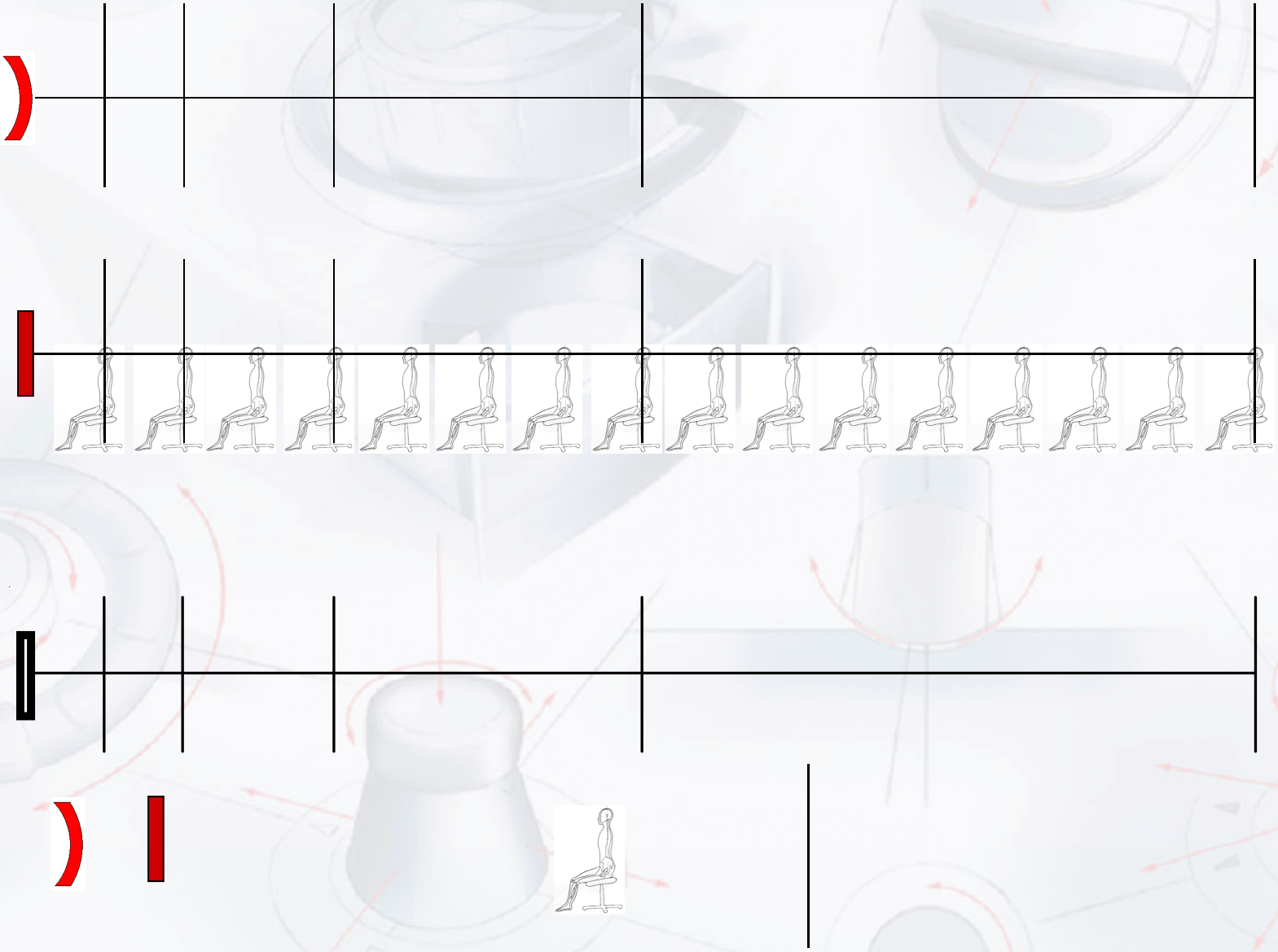

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