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Spatial Audio Reproduction Using Distributed Mode Loudspeakers

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For future telecommunication systems to become more pervasive in society they must have the ability to produce high quality surround sound audio for multiple listeners. Current 5.1 audio systems lack the capacity to handle large group telecommunications because of their limited optimal listening positions ("sweet spots") and their preference for sound generated in front of the listeners. This is due in part to the non-optimal position of the loudspeakers and also to the fact that very directional speakers are commonly used. Recently, a new form of speaker has been developed called a distributed mode loudspeaker (DML). These speakers use bending waves in a panel to radiate sound. Consequently, they can be very good omnidirectional sources throughout nearly all of the human hearing range. Experiments using a higher order ambisonics (HOA) approach to soundfield capture and generation will be presented to show how conventional electrodynamic speaker arrays compare to equivalent DML arrays for spatial sound reproduction. This work is funded by NSF Grant IIS-0534221.