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Multi-Channel Recording and Modeling Strategies for Improved Source Realism in Auralizations

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ABSTRACT
The effectiveness of an auralization as a learning and decision-making tool is greatest when listeners are able to actively engage in a plausibly realistic experience. One of the most significant contributors to a sense of realism is the reproduction of the varying timbre of a source radiating in different directions. While often reduced to a level-versus-direction based directivity around a point source, this oversimplifies the complex tonal radiation patterns of musical instruments, voices, and machinery. More authentic 3D imaging, and dynamic directivity may be realized by expanding upon methods using multichannel recording techniques that have been previously proposed, and adapted to a workflow that can be implemented in a commercial setting. These techniques offer the opportunity to expedite the source capture and implementation process, and to more easily represent larger/multiple sound sources while improving the feasibility and opportunity for high quality source content. Recording techniques, modeling strategies and playback methods will be presented for single- and multi-source auralizations (up to and including full orchestras).

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