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Improving the directivity of a Soundfield microphone using
least-squares estimation

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Faller [1] has recently shown that highly directive microphone systems can be obtained using coincident microphones and appropriate signal processing to separate direct and ambient sound. We apply this approach to a Soundfield microphone in which coincident virtual first-order microphone patterns pointing in any direction are available. The variation with our approach is that we apply a specific gain pattern across a set of coincident cardioid or hypercardioid microphones to determine the pick-up direction. A least-squares estimate is made of the spectrum of the on-axis sound. We empirically investigate the performance of this directive microphone technique. [1] C. Faller, "A highly directive 2-capsule based microphone system," in Proc. of 123rd Audio Engineering Convention, New York, U.S.A., October 5-8, 2007.