Use of higher order statistics in source signature estimation

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Higher order statistical blind deconvolution methods are implemented for use in removing multipath distortion from passively received underwater acoustic transient signals. Using single channel data and simulations, it is demonstrated that a fourth order method based on cumulant maximization can work well if the associated multipath Green's function is sufficiently "sparse." The iterative method is parameterized by filter length, and while there is a range of values at which the best solutions are obtained with conventional convergence criteria, useful solutions exist across a much broader range of filter lengths if the iterations are not always allowed to proceed to convergence. The fourth order objective functional is generalized to arbitrary order, and the method is shown to also produce good results for the third order objective functional.