Exact Recovery Of Higher Order Moments

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Summary

This correspondence addresses the problem of exact recovery of higher order moments of unquantized signals from those of their quantized counterparts, in the context of nonsubtractive dithered quantization. It introduces a new statistical characterization of the dithered quantizer in the form of a pth-order moment-sense input/ouput function $h_p(x)$. A class of signals for which the solution to the exact moment recovery problem is guaranteed is defined, and some of its key properties are stated and proved. Two approaches to this problem are discussed and the practical gains accruing from the 1-bit implementation of the second approach are highlighted. Finally, a fruitful extension of this work to the exact recovery of cumulants is briefly pointed out

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