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On the Computation of the Higher-Order Statistics of the Channel Capacity for Amplify-and-Forward Multihop Transmission

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(Submitted on 2 Jun 2012 (v1), last revised 20 Aug 2012 (this version, v2))

Higher-order statistics (HOS) of the channel capacity provide useful information regarding the level of reliability of the signal transmission at a particular rate. We propose in this letter a novel and unified analysis, which is based on the moment-generating function (MGF) approach, to efficiently and accurately compute the HOS of the channel capacity for amplify-and-forward multihop transmission over generalized fading channels. More precisely, our mathematical formulism is easy-to-use and tractable specifically requiring only the reciprocal MGFs of the instantaneous signal-to-noise ratio distributions of the transmission hops. Numerical and simulation results, performed to exemplify the usefulness of the proposed MGF-based analysis, are shown to be in perfect agreement.

Comments: Two Figures, one table, ad submitted to a possible publication

Subjects: **Information Theory (cs.IT)**; Probability (math.PR); Statistics Theory (math.ST)

Cite as: [arXiv:1206.0399 \[cs.IT\]](#)
(or [arXiv:1206.0399v2 \[cs.IT\]](#) for this version)

Submission history

From: Ferkan Yilmaz [[view email](#)]

[v1] Sat, 2 Jun 2012 19:27:23 GMT (346kb)

[v2] Mon, 20 Aug 2012 12:55:22 GMT (331kb)

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