Iterative Water-Filling for Gaussian Vector Multiple Access Channels

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IEEE Transactions on Information Theory, 50(1):145-151, January 2004. Short version appeared in *Proceedings IEEE Symposium on Information Theory*, Washington DC, June 2001, pages 322-322.

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We develop an efficient iterative water-filling algorithm to find an optimal transmit spectrum for maximum sum capacity in a Gaussian multiple access channel with vector inputs and a vector output. The iterative algorithm converges from any starting point and reaches within (K-1)/2 nats per output dimension from the K-user sum capacity after just one iteration.

Page generated 2018-11-24 09:00:13 PST, by jemdoc.