



## DYNAMIC VERSUS CONVENTIONAL LAYER SORTING FOR NULLING-AND-CANCELLING BASED MIMO DETECTION (ThuAmOR4)



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★ Abstract :

We analyze the error performance and computational complexity of the recently proposed dynamic nulling-and-cancelling (DNC) method for efficient near-ML MIMO detection. DNC performs a "dynamic" layer sorting (LS) that exploits the information provided by the current received vector, in contrast to conventional LS that is based merely on average reliability measures. Here, we derive an expression for the symbol error probability of the first layer-decoding step of DNC under some simplifying assumptions. This analysis as well as experimental results show the general superiority of dynamic LS and reveal the conditions under which this superiority will be most significant. We furthermore study how the two LS strategies impact the computational complexity of the (D)NC method. Specifically, we show that for practical system sizes the complexity of DNC is only about twice that of NC and only a fraction of that of the sphere-decoding algorithm for ML detection.

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