

Antenna selection in rank-deficient MIMO systems

Vu X.-T., Nguyen T., Vu T.A.

College of Technology, Vietnam National University, Hanoi, Viet Nam; Faculty of Engineering and Information Technology, University of Technology, Sydney, Australia

Abstract: In a rank-deficient $M \times N$ MIMO system, the number of non-zero eigen-modes is smaller than $\min(M, N)$. In such a system, it is desirable to be able to identify then eliminate the most 'inactive' antennas or equivalently to select the most 'active' antennas for operation. In this paper we use the incremental algorithm for the successive selection technique for receive antenna selection applied to a rank-deficient indoor MIMO link transmitting through a small window between two rooms. It is shown that there is a close correspondence between the rank of the ill-conditioned MIMO channel and the minimum number of receive antennas that can be selected for a given small reduction in capacity. © 2008 IEEE.

Author Keywords: Antenna selection; Diversity combining.; MIMO; Rank deficiency

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Correspondence Address: Vu, X. -T.; College of Technology, Vietnam National University, Hanoi, Viet Nam; email: thangvx@vnu.edu.vn

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Authors with affiliations:

- Vu, X.-T., College of Technology, Vietnam National University, Hanoi, Viet Nam
- Nguyen, T., Faculty of Engineering and Information Technology, University of Technology, Sydney, Australia
- Vu, T.A., College of Technology, Vietnam National University, Hanoi, Viet Nam

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