

THE SYMMETRIC MINIMAL RANK SOLUTION OF THE MATRIX EQUATION $AX = B$ AND THE OPTIMAL APPROXIMATION*

QING-FENG XIAO[†], XI-YAN HU[†], AND LEI ZHANG[†]

Abstract. By applying the matrix rank method, the set of symmetric matrix solutions with prescribed rank to the matrix equation $AX = B$ is found. An expression is provided for the optimal approximation to the set of the minimal rank solutions.

Key words. Symmetric matrix, Matrix equation, Maximal rank, Minimal rank, Fixed rank solutions, Optimal approximate solution.

AMS subject classifications. 65F15, 65F20.

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[†]College of Mathematics and Econometrics, Hunan University, Changsha 410082, P.R. of China (qfxiao@hnu.cn). Research supported by National Natural Science Foundation of China (under Grant 10571047) and the Doctorate Foundation of the Ministry of Education of China (under Grant 20060532014).