

**A COMPARISON OF THE JACOBI METHOD, SUCCESSIVE
OVER-RELAXATION (SOR), CONJUGATE GRADIENT (CG),
AND PRECONDITIONED CONJUGATE GRADIENT (PCG) IN
SOLVING LINEAR SYSTEMS**

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ABSTRACT

Four iterative approaches to solve a system of linear equations are considered in this study. The four iteratives approach are Jacobi method, Successive Over Relaxation Method Conjugate Gradient and Preconditioned Conjugate Gradient. This study used symmetric matrices of various sizes, including 3x3, 4x4, and 6x6 matrices. The outcome demonstrates that, out of all the methods, Preconditioned Conjugate Gradient performs the best. When conducting the investigation, a stopping criterion with a tolerance of e^{-6} was required. The maximum iteration represents the solution once the calculation has attained the required tolerance. The procedure is more effective it has the smallest iteration. This study makes it possible for researchers or analysts to learn how iterative approaches can be used to comprehend the system solution of linear equations.

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