

The solution of 2D elliptic equation using modified geometric mean method on skewed grid with red-black ordering

### **ABSTRACT**

This paper presents the development of a new variant of two-stage Geometric Mean (GM) method for solving 2D elliptic equation. The proposed iterative scheme, called the Skewed Modified Geometric Mean (SkMGM), is derived from finite difference approximation discretized on a skewed grid with red-black ordering. The skewed finite difference scheme combined with redblack ordering is shown to be suitable for parallel implementation. The developed SkMGM scheme is compared with the other methods on the standard grid to confirm the effectiveness of the proposed method in terms of computational complexity and execution time. It is shown that the new proposed method gives the least number of iterations and fastest execution time compared to the other tested methods.