

Report 4: Partial Differential Equations (PDEs)

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1 Laplace Equation

1.1 Iterator methods

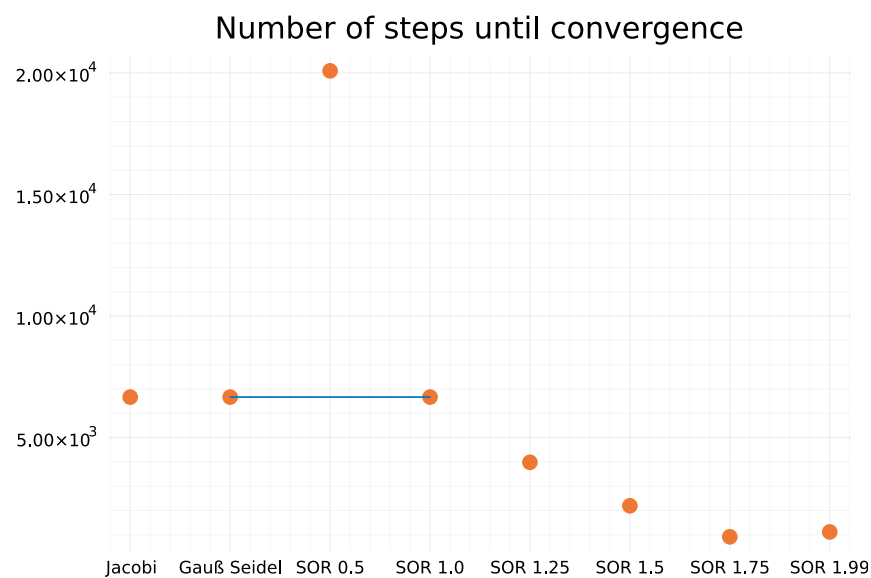


Figure 1: Number of steps until convergence concerning the Laplace error $\max \epsilon < 1 \times 10^{-3}$.

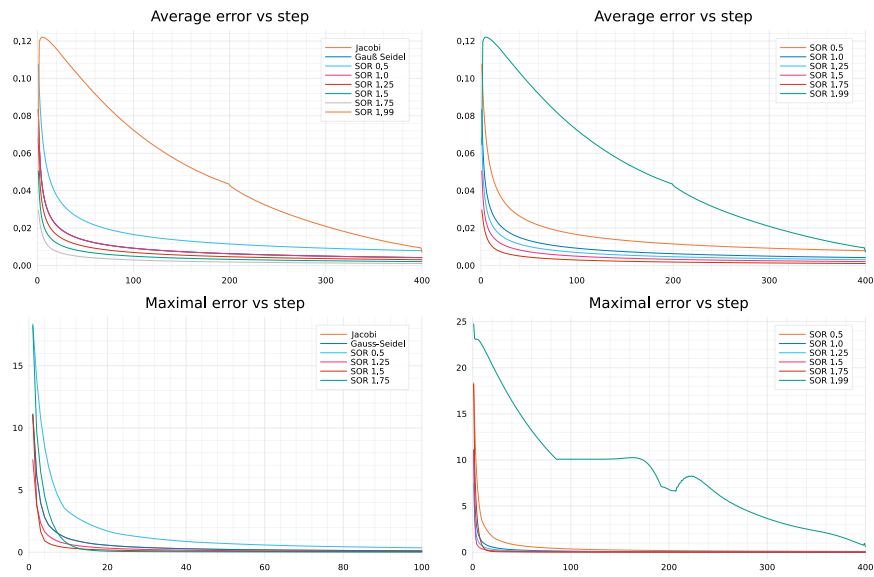


Figure 2: Maximal and average error for different iteration methods.

1.2 SOR for $\alpha = 2.0$

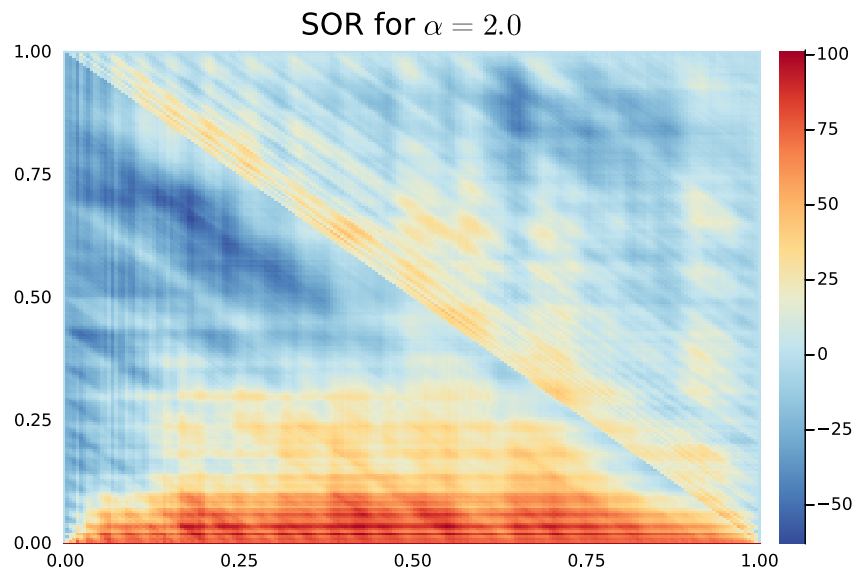


Figure 3

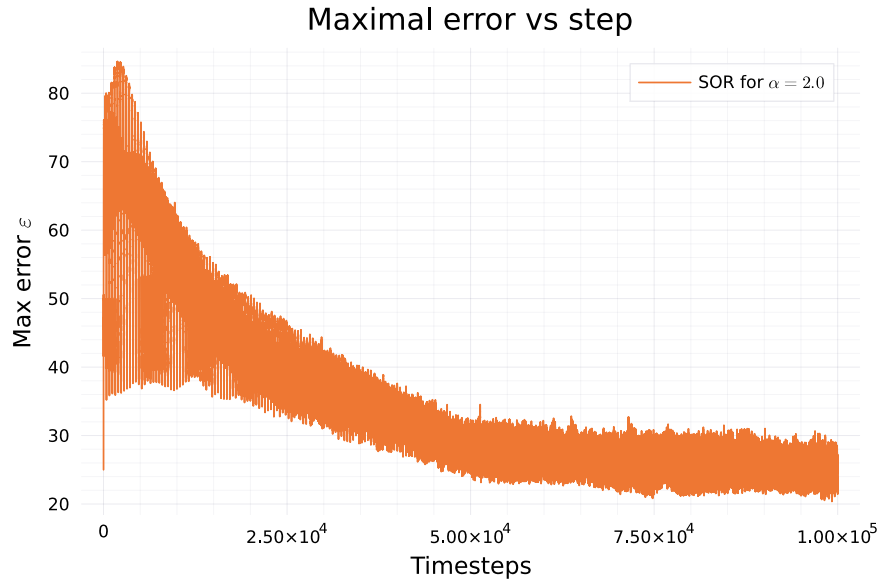


Figure 4

1.3 Infinite sum solution

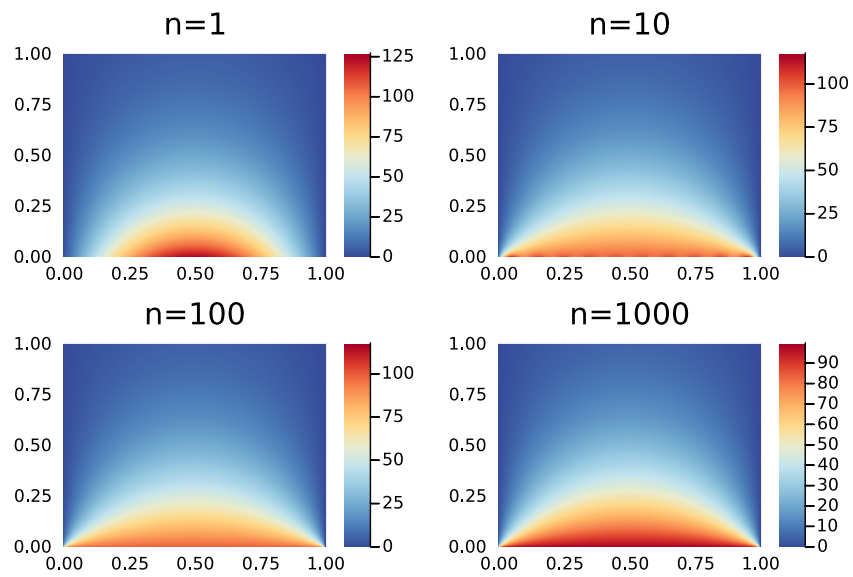
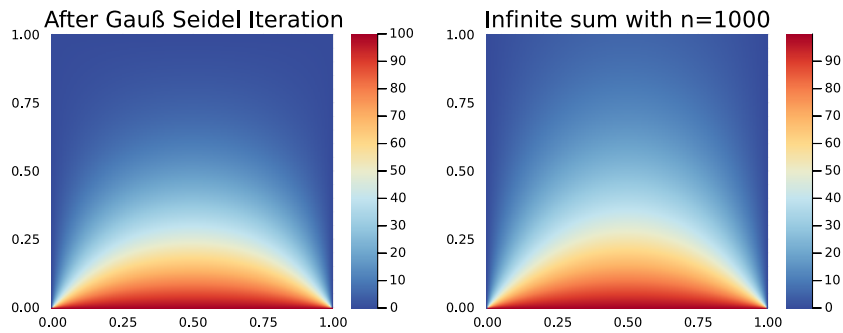
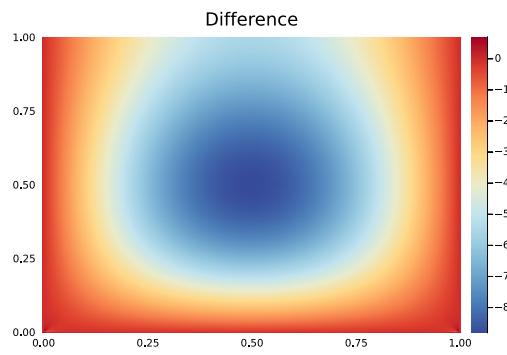


Figure 5: Results for the "infinite" sum solution to the Laplace equation for different numbers of terms n .



(a) Comparison of the infinite sum solution with 1000 terms and the Gauß Seidel iterator solution.



(b) Difference between the infinite sum solution with 1000 terms and the Gauß Seidel iterator solution.

2 Diffusion

3 Solitons