

Jacobi iteration and Markov chain.

1st Jacobi iteration: For $Au = f$ in FDM, u : temperature distribution independent with t .

iteration form. $A = D - L - \hat{U}$, $u^{k+1} = D^{-1}(L + \hat{U})u^k + (L + \hat{U})f$

$$\Rightarrow u^* = D^{-1}(L + \hat{U})u^* + (L + \hat{U})f \triangleq T_J u^* + C \quad \text{since } \|T_J\| < 1$$

(Contraction mapping)

2nd MC vision: Gives initial temperature distribution $u^0 \in \mathbb{R}^n$

updating in physics means the "uneven" distribution will let u_i^n change by $u_i^n \rightarrow u_i^{n+1}$ and f_i

Finally, u^* s.t. $Au^* = f$ is the temperature distribution ^{doesn't} ~~don't~~ change.

