

$$\frac{\partial u}{\partial t} - \frac{\partial^2 u}{\partial x^2} - \frac{\partial^2 u}{\partial y^2} = b$$

Ignore relativity.  $\Rightarrow$  Heat conducting speed  $\rightarrow \infty$

$$\frac{u[t][x][y] - u[t-j][x][y]}{j} -$$

$$\left( \frac{u[t][x+1][y] + u[t][x-1][y] + u[t][x][y+1] + u[t][x][y-1]}{h^2} \right)$$

$$+ \frac{4u[t][x][y]}{h^2} = b$$

Let  $h = 1$ .

$$(1 + \frac{1}{j})u[t][x][y] = b[t][x][y] + \frac{u[t-j][x][y]}{j}$$

+

$$(u[t][x+1][y] + u[t][x-1][y] + u[t][x][y+1] + u[t][x][y-1])$$

$$\Rightarrow u[t][x][y] = \frac{j}{4j+1} b[t][x][y] + \frac{u[t-j][x][y]}{4j+1}$$

+

$$\frac{j}{4j+1} (u[t][x+1][y] + u[t][x-1][y] + u[t][x][y+1] + u[t][x][y-1])$$