$$\frac{\partial}{\partial x}\frac{\partial}{\partial x}\phi(\vec{x}) + \ldots = q(\vec{x})$$

discretization

$$\frac{\frac{\phi_{i+1}-\phi_i}{h} - \frac{\phi_i-\phi_{i-1}}{h}}{h} + \ldots = q_{i,j}$$

canonical form

$$\frac{1}{h^2}\phi_{i+1} - \frac{2}{h^2}\phi_i + \frac{1}{h^2}\phi_{i-1} + \ldots = q_{i,j}$$

code generation

```
01 function applyStencil( A, b, i, j )
02     row = index(i, j)
03     A[ row, index(i+1, j) ] = 1/(h*h)
04     A[ row, index(i, j) ] = -2/(h*h)
05     A[ row, index(i-1, j) ] = 1/(h*h)
06     ...
07     b[row] = q[i, j]
```