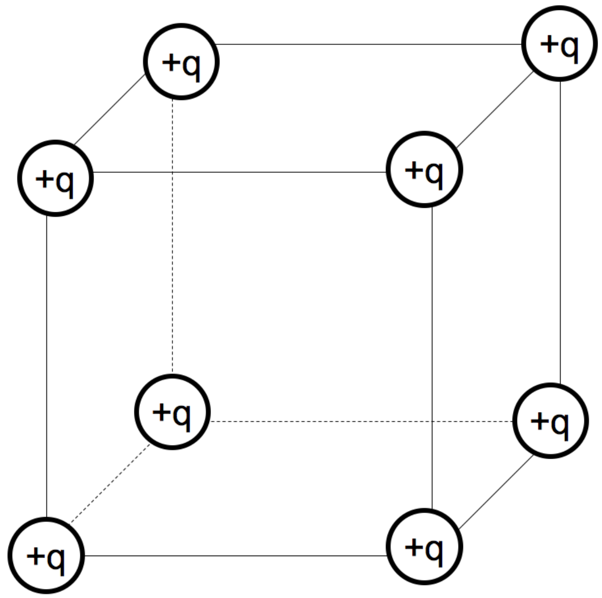
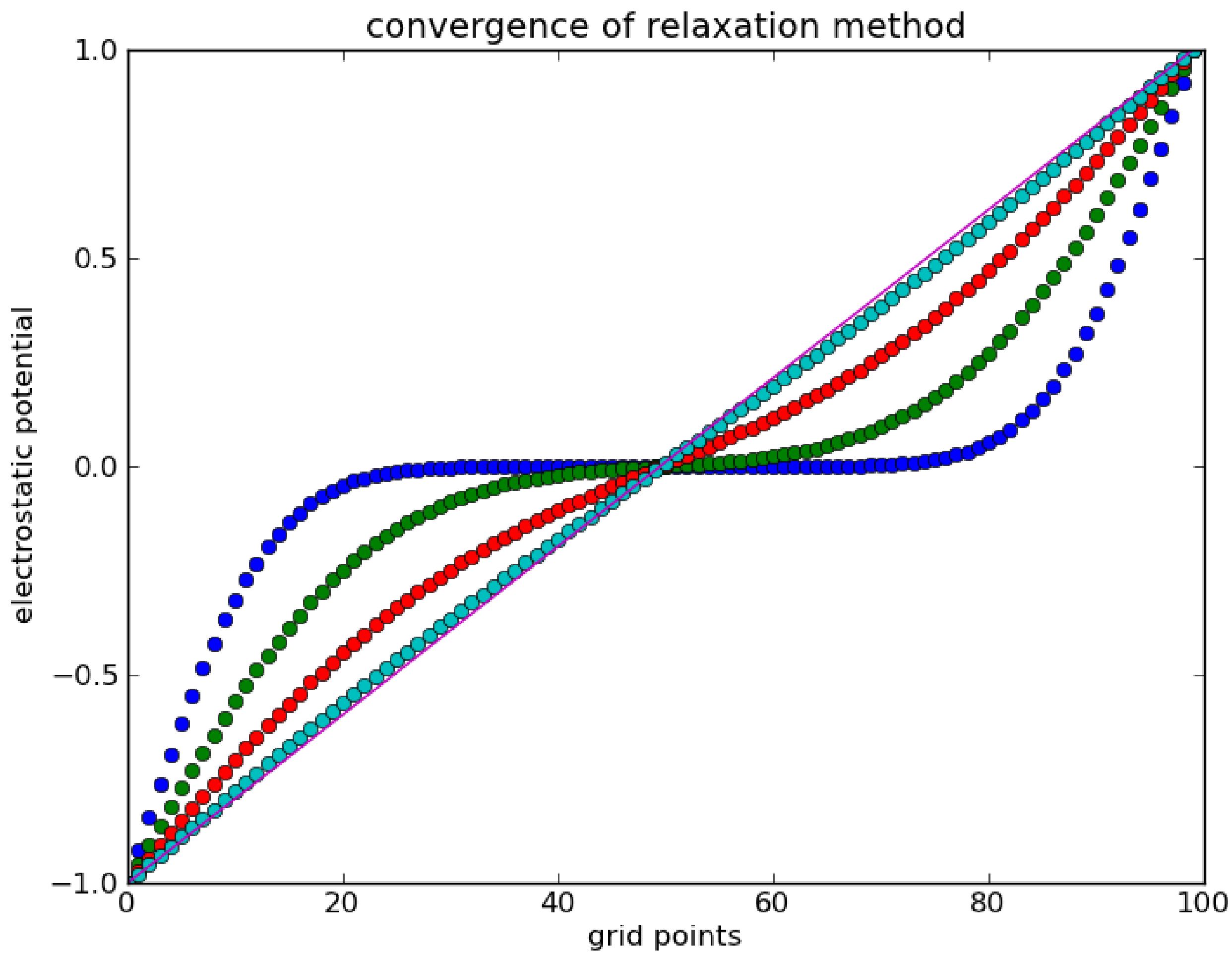


If you put a positive test charge at the center of this cube of charges, could it be in stable equilibrium?

A. Yes
B. No
C. ???

METHOD OF RELAXATION



Consider a function $f(x)$ that is both continuous and continuously differentiable over some domain. Given a step size of a, which could be an approximate derivative of this function somewhere in that domain? $df/dx \approx$

A. $f(x_i + a) - f(x_i)$

B. $f(x_i) - f(x_i - a)$

C. $\frac{f(x_i+a)-f(x_i)}{a}$

D. $\frac{f(x_i)-f(x_i-a)}{a}$

E. More than one of these

If we choose to use:

$$\frac{df}{dx} \approx \frac{f(x_i + a) - f(x_i)}{a}$$

Where are we computing the approximate derivative?

A. a

B. x_i

C. $x_i + a$

D. Somewhere else

Taking the second derivative of $f(x)$ discretely is as simple as applying the discrete definition of the derivative,

$$f''(x_i) \approx \frac{f'(x_i + a/2) - f'(x_i - a/2)}{a}$$

Derive the second derivative in terms of f.

To investigate the convergence, we must compare the estimate of V before and after each calculation. For our 1D relaxation code, V will be a 1D array. For the kth estimate, we can compare V_k against its previous value by simply taking the difference.

Store this in a variable called `err`. What is the type for `err`?

A. A single number
B. A 1D array
C. A 2D array
D. ???