Answer on Question #63595, Physics / Solid State Physics

Given that the primitive basis vectors of a lattice are

a=(a/2)i

b=(a/2)j

c=(a/2)k

Where I,j,k are unit vectors in coordinate system

Determine the bravais lattice

Calculate the volume of the primitive unit cell

Solution:

The primitive unit cell has a shape of cube.

Volume of primitive unit cell:

$$V = a \times b \times c \ (1)$$

Of $(1) \Rightarrow V = \dfrac{a^3}{8}$

Answer:

$\dfrac{a^3}{8}$