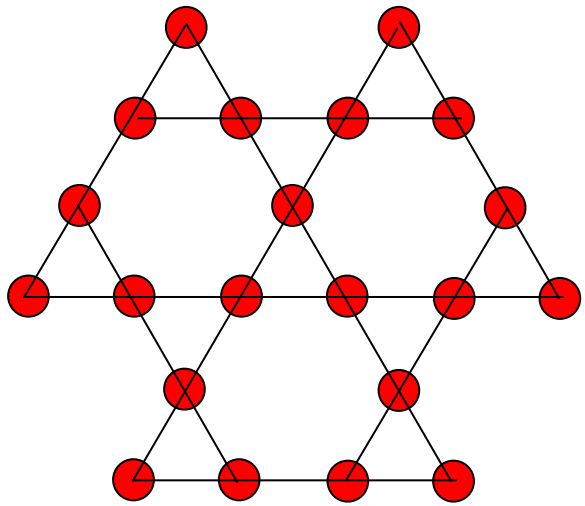
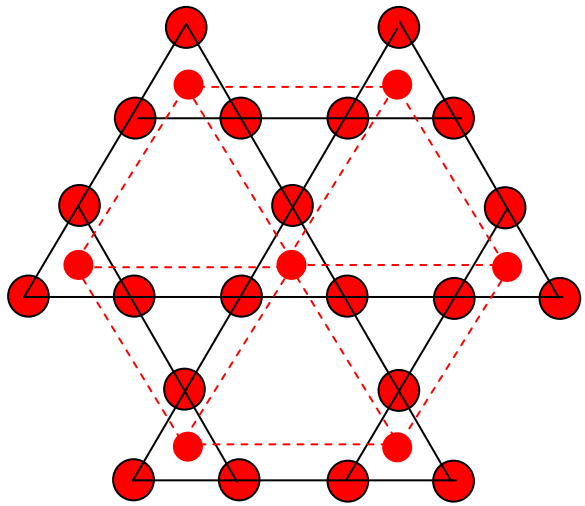
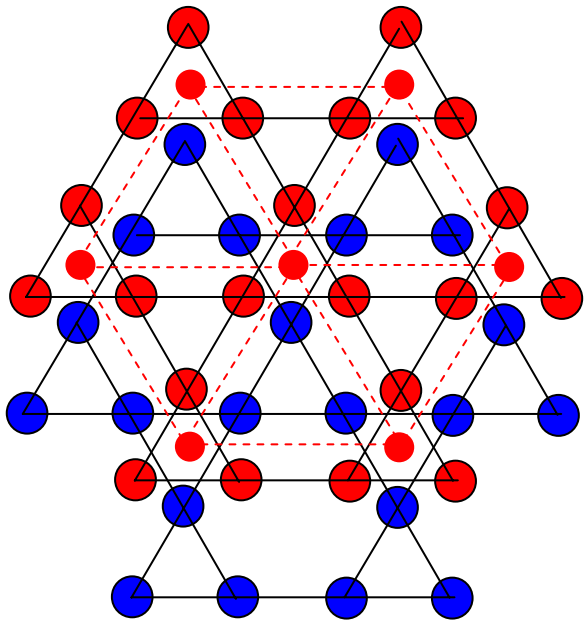
Stacking of pyrochlore



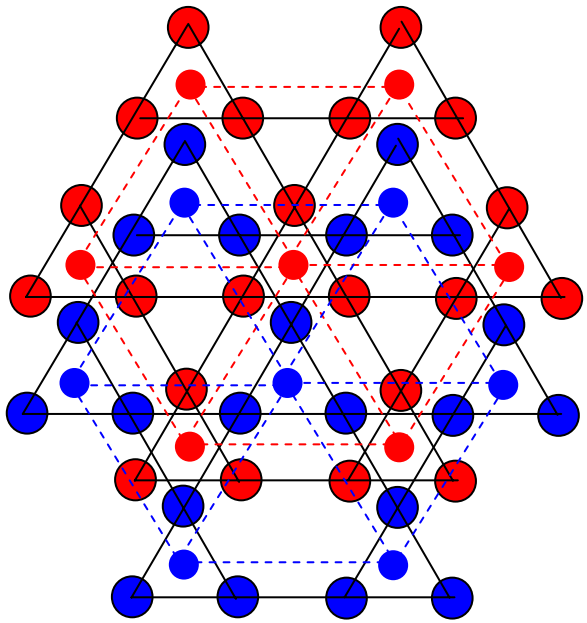
The kagome layer



The triangular layer on top (forming tetraeders)

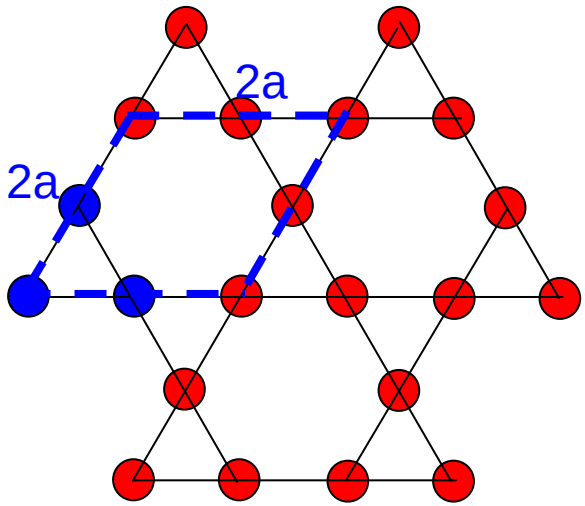


The next kagome layer on top
(forming a double tetraeder, with one shared particle)



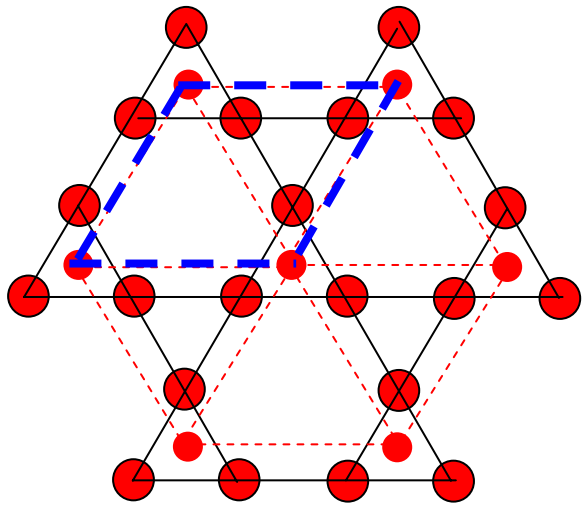
Next triangular layer, etc…

Unit cells and x,y parameters



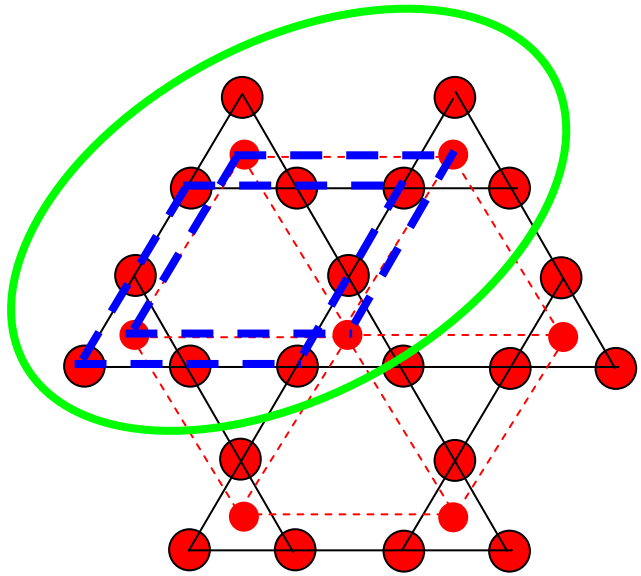
The 2D unit cell of the kagome layer contains three particles

The unit cell is described by vectors of length 2a, where a is the particle diameter

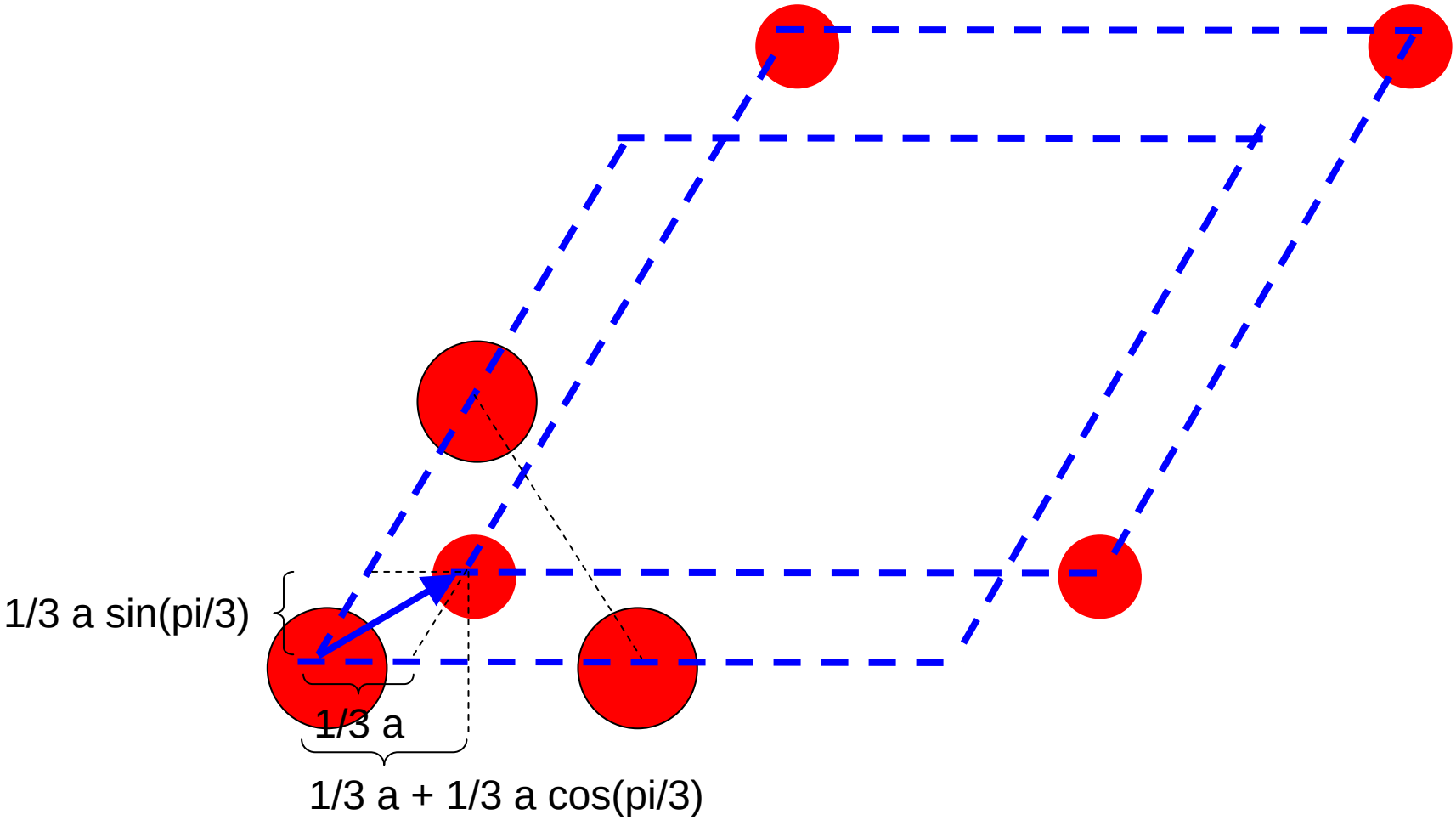


The triangular layer has one particle per unit cell.

The unit cell has the same dimensions as in the kagome layer.

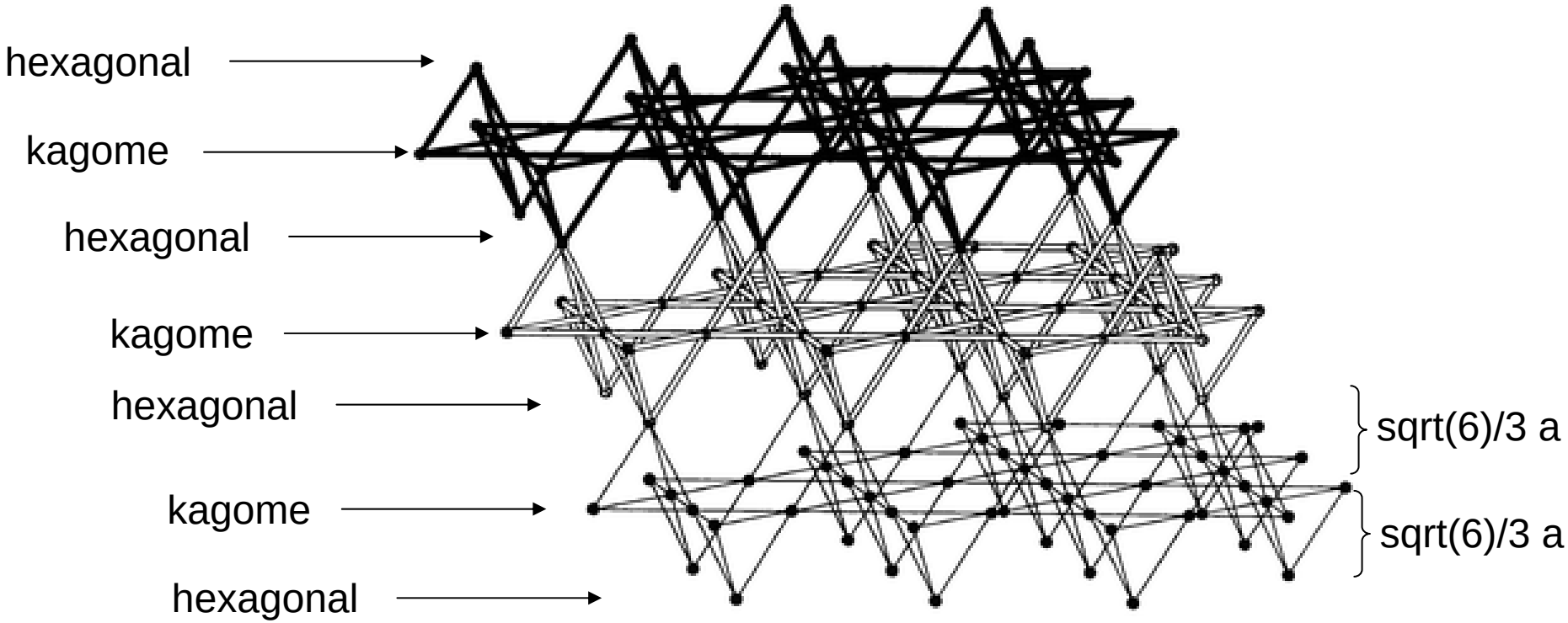


Enlarging this part…



The unit cell of a layer is shifted with respect to the previous layer by:
(1/3 a, 1/3 a) in unit cell vectors
(1/3 a + 1/3 a cos(pi/3), 1/3 a sin(pi/3)) in cartesian unit vectors

Stacking and z parameters



The distance between the layers is sqrt(6)/3 a

Summary

- Alternating hexagonal and kagome layers
- Same 2D unit cell for the hexagonal and kagome layers: vectors with length 2a, fab=60°
- Vector between the unit cells in neighboring layers:

  (1/3 a, 1/3 a, sqrt(6)/3 a) in unit cell (a,b,z) vectors

  (1/3 a + 1/3 a cos(pi/3), 1/3 a sin(pi/3), sqrt(6)/3 a) in cartesian (x,y,z) vectors